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The WiFi Quality Institute: Methodology for Real-World WiFi Quality Assessment Principles, Methodological Framework and Assessment Guidance

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The WiFi Quality Institute: Methodology for Real-World WiFi Quality Assessment

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Executive Summary

WiFi has become, over the course of little more than two decades, infrastructure in the fullest sense of the word — supporting communication, education, healthcare, hospitality, commerce and public services in ways that make its quality a matter of practical consequence rather than technical curiosity. Yet no methodology has achieved general acceptance for assessing that quality as a coherent whole. Organisations continue to rely on isolated measurements, proprietary techniques, or narrow technical indicators — a speed test, a signal reading, a coverage heatmap — each of which captures a genuine fragment of network behaviour without ever accounting for the service as it is actually experienced. This Technical Guide exists to close that gap.

It does not introduce a new measurement technique, nor propose additional performance metrics to sit alongside those already in circulation. It defines, instead, a methodological framework: a structured, evidence-based account of how WiFi Quality — understood as a real-world service experienced by users under representative operating conditions — can be assessed in a manner that is rigorous, transparent and reproducible. The methodology is technology-neutral and vendor-neutral throughout, applicable across venue types and deployment models without favouring any manufacturer, wireless standard or measurement platform.

The Guide's central premise is that WiFi Quality cannot be measured directly, in the way that distance or voltage can. It is an emergent characteristic, arising from the interaction of radio behaviour, network architecture, consumer devices, Internet connectivity and operational conditions together — and it must therefore be *reconstructed* through the structured correlation of representative evidence, rather than read off any single instrument. This is the discipline the methodology calls **Observed Network Reality**: not the network itself, and not an opinion about it, but the best-supported evidence-based reconstruction of the service that the available Assessment Evidence permits at the time of assessment. Every element of the methodology that follows — sampling strategy, evidence collection, evidence correlation, quality assurance — exists to make that reconstruction as faithful as the available evidence allows.

To support this reconstruction, the Guide establishes a spatial hierarchy that governs

where and how evidence is gathered: an **Assessment Scope** defines what is being evaluated; **Declared Service Areas** identify where a provider intends WiFi service to be available; **Site Areas** subdivide that area into methodologically coherent units; **Representative Test Locations** mark the specific points within each unit where evidence is collected; and **Representative Consumer Devices** ensure that evidence reflects the devices actual users rely on, not specialised engineering equipment built for a different purpose. Measurement — the technical act of capturing a reading — sits at the *end* of this hierarchy, not its beginning: before any measurement is taken, the methodology requires a series of prior decisions about scope, declared service, subdivision and sampling that shape what that measurement will actually mean.

Evidence gathered in this way does not speak for itself. The Guide distinguishes **Evidence** in the general sense — any objective information obtained through observation or measurement — from **Assessment Evidence**, which additionally satisfies requirements of sufficiency, relevance, representativeness and reliability, and is therefore fit to support a conclusion. Only Assessment Evidence contributes to **Evidence Correlation**, the structured process through which multiple, independent observations are interpreted together — reinforcing, qualifying or occasionally contradicting one another — to build the Observed Network Reality they collectively support. No individual measurement, however precise, is permitted to determine the overall WiFi Quality of the assessed service on its own; this is not a matter of caution but of principle, since the multidimensional nature of WiFi Quality means that excellent performance on one dimension (say, throughput) can coexist with serious deficiency on another (say, roaming or authentication) in ways a single metric would never reveal.

From this reconstructed reality, the methodology develops **Assessment Findings** — evidence-based conclusions about the observed service, always traceable to the evidence behind them, and deliberately distinct from **Recommendations**, which concern what might be done to improve a service and belong to a separate deliverable rather than to the assessment itself. Where appropriate, Findings may be expressed through a **WiFi Quality Score** — a structured summary used to communicate an outcome, never a substitute for the assessment that produced it, and never meaningful in isolation from the Assessment Scope, date and methodology version it depends on.

Evidence Correlation also imposes a boundary on causal interpretation. Assessment Evidence that is valid for one purpose is not automatically comparable for every causal question: the relevance of a comparison depends on the hypothesis being considered, the Operational Context in force, and the network relationships the evidence is capable of representing. The methodology therefore requires causal conclusions to remain no more specific than the evidence can support. Where the available evidence distinguishes a local limitation from an upstream one but does not identify the responsible component, the assessment stops at that boundary rather than converting confidence into unsupported precision.

The same discipline applies over time. A Measurement may remain authentic and historically valid after a material change in network context while no longer being suitable for a causal conclusion about the current service. The recurrence of one or more parameter values does not, by itself, restore comparability; current relevance must be established from the technical and operational context in which the evidence is to be used.

Part VI of the Guide addresses the quality assurance of the methodology itself: the distinction between Assessment Repeatability (comparable conclusions under comparable conditions) and the mistaken expectation of identical measurements; the treatment of Measurement Variability across its operational, environmental and instrumental sources; the honest acknowledgement of Measurement Uncertainty and its progression into Assessment Confidence through correlation; and a frank accounting of the methodology's own limitations — what it does and does not claim to establish. A methodology that concealed its own boundaries would not be more rigorous for doing so; it would simply be less honest.

Part VII situates this methodology within the wider landscape of professional WiFi practice. RF Engineering, Professional Site Surveys, heatmap analysis, Internet Performance assessment and Network Monitoring Platforms each answer a genuine and valuable question about a WiFi deployment — none of which is the question this Guide addresses. The relationship throughout is complementary rather than competitive: this methodology occupies one branch of a wider professional ecosystem, not its centre, and reliable understanding of a WiFi service is generally best achieved by combining several of these disciplines rather than relying on any single one.

Finally, the Guide establishes how it governs its own evolution — distinguishing Maintenance, which clarifies the methodology without changing it, from Revision, which changes what the methodology actually requires; and insisting, throughout, that technological change and methodological change are not the same thing. A new WiFi standard or a new measurement application does not, by itself, require this methodology to change; a revision is warranted only where a genuine methodological improvement can be demonstrated.

Taken as a whole, this Technical Guide offers a common, principled and reproducible methodological framework for addressing a question every venue owner, network operator, assessor and regulator eventually asks in some form — not "what does this network measure," but "how good is this service, actually, for the people who rely on it". That is the question this methodology exists to answer.

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Foreword

WiFi has become, over the course of little more than two decades, something considerably more consequential than a convenient substitute for a network cable. It now underpins communication, education, healthcare delivery, hospitality, commerce and a great many public services. This shift in dependence has not been matched, however, by a corresponding maturity in how the quality of that service is assessed.

The assessment of WiFi Quality remains, at present, a fragmented practice. Organisations, professionals and technology vendors tend to rely on measurements taken in isolation, on proprietary methodologies developed for internal purposes, or on narrow technical indicators — signal strength, throughput, a handful of RF parameters — each of which captures a fragment of network behaviour without accounting for the experience of the service as a whole.

The WiFi Quality Institute was established, in part, as a response to this fragmentation, with the aim of promoting an approach to WiFi Quality assessment that is consistent, evidence-based and applicable across jurisdictions and deployment contexts. The present Technical Guide is a significant step in that direction, though it should be read for what it is rather than for what it is not.

It does not introduce a new measurement technique, nor does it propose additional performance metrics to sit alongside those already in circulation. What it offers instead is a methodological framework: a structured account of how WiFi Quality, understood as a real-world service experienced by users under representative operating conditions, can be assessed in a manner that is both rigorous and reproducible.

The methodology set out in the following chapters has been developed to be technology-neutral and vendor-neutral, and adaptable to deployment scenarios ranging from small hospitality venues to large public infrastructure. It is not intended to replace

RF engineering practice, professional site surveys, or the network monitoring platforms already in widespread use. These remain, in their respective domains, indispensable. The methodology is intended instead to address a question that those approaches, individually, do not: how might the overall quality of a WiFi service be assessed in a way that is structured, repeatable, and grounded in evidence rather than in impression.

Methodological consistency and repeatability receive particular attention throughout this document — not as abstract virtues, but as the precondition for any assessment to be compared meaningfully with another, whether conducted by a different assessor, at a different time, or in a different environment. Without this, an assessment is little more than an opinion supported by numbers.

This Technical Guide sits within a wider body of Institute publications — the WiFi Quality Doctrine, the WiFi Quality Principles, the WiFi Quality Framework, together with a series of technical reports and position papers — which collectively aim to give WiFi Quality the standing of an independent professional discipline, with its own body of knowledge and its own methodological discipline.

Wireless technologies will continue to change, as will user expectations and the environments in which networks operate. This methodology is offered, accordingly, as a living document rather than a finished one — subject to periodic review in light of practical experience, technological development and the feedback of those who apply it. Assessors, researchers, network professionals, venue operators and equipment manufacturers who engage critically with this framework, and who bring evidence of where it succeeds or falls short, do more to advance the discipline than any single revision from within the Institute could.

Part I – Introduction

1 Purpose

1.1 General Purpose

This Technical Guide sets out the methodological foundations for assessing WiFi Quality in real-world operational environments — that is, for evaluating how effectively a wireless network delivers service to its intended users under conditions representative of actual use, rather than under laboratory or idealised test conditions.

This is a narrower undertaking than it might first appear. Radio engineering, infrastructure design and individual technical measurements each address important aspects of network performance, but none of them, on their own, answers the question this document is concerned with: whether the service delivered by a network, taken as a whole and experienced by the people who rely on it, meets an acceptable standard of quality. Answering that question requires an evidence-based methodology rather than a measurement technique, and it is such a methodology that this Guide defines. What follows, accordingly, is a set of common principles, terminology and procedural guidance intended to support assessments that remain consistent, repeatable and transparent regardless of venue type, deployment model or operational context.

1.2 Objectives

Four objectives run through this publication, though they are closely interdependent rather than sequential.

The first is to establish a common methodological vocabulary for describing and assessing WiFi Quality — a matter that may seem secondary but is not: much of the fragmentation described in the Foreword stems as much from the absence of shared terminology as from the absence of shared method. The second is to define an assessment process sufficiently consistent that its outcomes can be meaningfully compared across different assessors and different venues, which is a considerably more demanding requirement than consistency within the work of a single assessor. Third, the Guide introduces a structured, evidence-based approach to evaluating WiFi Quality — one built on the correlation of multiple complementary observations rather than reliance on any isolated measurement, however precise. Finally, this document is written to remain useful independently of any specific certification scheme. Where a conformity assessment framework or certification programme chooses to draw on the principles set out here, this Guide is intended to support that use — without itself depending on, or being defined by, any single scheme's adoption of it.

1.3 Nature of this Document

This is a methodological guide rather than a technical specification. It is concerned with principles, concepts and assessment guidance, and deliberately does not prescribe particular implementation technologies, hardware platforms or proprietary measurement tools — a distinction that matters more than it might seem, since a methodology tied to specific equipment or software would age with that equipment and would, moreover, tend to exclude assessors working with alternative but equally valid tools.

The methodology is intended to remain technology-neutral. Equipment manufacturer,

wireless standard, software platform and measurement solution do not determine methodological conformity; the evidence and assessment process must satisfy the requirements set out in this Guide. These statements concern methodological applicability, not permission to reproduce protected material, use proprietary technology or claim official status. Those matters are addressed separately in the Copyright, Permitted Use and Intellectual Property Notice and any applicable authorisations.

1.4 Guiding Principle

A single premise underlies the whole of this methodology, and it is worth stating plainly at the outset: WiFi Quality cannot be established from a single measurement, a single metric, or a single observation, however carefully obtained. A reliable assessment depends instead on the systematic collection, interpretation and correlation of multiple sources of evidence, gathered under conditions representative of real-world operation.

Nearly every methodological choice described in this Guide — from the definition of a Representative Test Location to the treatment of Evidence Correlation in Part V — follows, directly or indirectly, from this premise.

1.5 Terminology: Scope of "WiFi" in This Technical Guide

Wireless communication encompasses a wide range of technologies, including cellular networks, Bluetooth, Zigbee, satellite communications and WiFi. Consistent with the WiFi Quality Doctrine, this Technical Guide focuses exclusively on WiFi (IEEE 802.11), given its position as the predominant local wireless networking technology supporting homes, enterprises, hospitality, education, healthcare and public environments — and, correspondingly, as the primary subject of the real-world quality assessment this Guide describes.

Unless otherwise stated, every reference to wireless connectivity throughout this Technical Guide — including in the definitions of Chapter 11 and Appendix A, and in every discussion of Representative Consumer Devices in Chapter 18 — should be understood as referring specifically to WiFi-based wireless networking, rather than to wireless connectivity in the broader sense. Where a Representative Consumer Device also connects via cellular data, Bluetooth, or other non-WiFi wireless technology, this methodology is concerned solely with that device's behaviour on the WiFi network under assessment.

A brief note on orthography: while "Wi-Fi" remains the formal designation used by the Wi-Fi Alliance, this Technical Guide adopts the unhyphenated form "WiFi" throughout, in line with the WiFi Quality Doctrine and with common industry and consumer usage. The distinction is orthographic rather than substantive; both forms refer to wireless networking based on the IEEE 802.11 family of standards, and no difference in meaning should be inferred from the choice of spelling.

1.6 Verbal Forms and Normative Language

The verbal forms used in this Technical Guide distinguish different levels of methodological force.

shall indicates a methodological requirement;

should indicates a recommendation or preferred practice from which justified deviation may be appropriate;

may indicates permission or an available methodological option; and
can indicates capability or factual possibility.

Where the word **must** appears in explanatory prose, it expresses ordinary necessity rather than a separate category of normative requirement and shall not be interpreted as displacing the convention above.

Where a recommendation appears to conflict with an express requirement, the requirement takes precedence.

2 Scope

2.1 General Scope

This Technical Guide sets out the methodological framework for assessing WiFi Quality in real-world operational environments: the principles, concepts, terminology and assessment guidance needed to carry out evaluations of WiFi service quality that are consistent, repeatable and grounded in evidence, within whatever assessment scope has been defined for a given engagement.

The methodology is written with operational environments in mind — that is, environments where a WiFi network is already deployed and in use, serving actual users under ordinary conditions, as opposed to laboratory settings or pre-deployment design exercises. Within that boundary, the guidance is deliberately agnostic to venue type, wireless technology generation, equipment manufacturer or network architecture: an assessment of a hotel network and an assessment of a stadium network should, in principle, follow the same methodological logic, even though almost nothing about their infrastructure resembles the other's.

2.2 What This Document Covers

This publication addresses:

- the conceptual definition of WiFi Quality;
- the methodological principles underlying real-world WiFi Quality assessment;
- the definition of assessment scope and declared service areas;
- the identification of representative test locations;
- principles for evidence collection and evidence integrity;
- the use of representative consumer devices during assessments;
- the assessment lifecycle, from planning through to certification;
- the interpretation and correlation of assessment evidence;
- the principles governing evidence-bounded causal interpretation and the causal specificity of Assessment Findings;
- the concept of Observed Network Reality;
- guidance for assessment repeatability and quality assurance;
- the relationship between this methodology and complementary engineering approaches.

2.3 What This Document Does Not Cover

Equally, this publication does not specify:

- detailed RF engineering methodologies;
- wireless network design procedures;

- predictive RF modelling techniques;
- site survey methodologies;
- heatmap generation procedures;
- vendor-specific measurement tools or hardware requirements;
- access point configuration or network optimisation practices;
- troubleshooting procedures;
- performance benchmarking of specific products or vendors;
- the mathematical algorithms underlying the WiFi Quality Score;
- certification rules, criteria or governance, which fall instead under the applicable certification programme and conformity assessment framework.

None of these exclusions should be read as a judgement on the relative importance of the disciplines concerned. RF engineering and site survey practice, in particular, are indispensable to the correct deployment of any WiFi network, and this methodology depends on that work having been done well elsewhere — it does not attempt to redo it. The distinction being drawn is one of purpose rather than of value: this document is concerned with assessing the quality of a service as delivered, not with designing, configuring or optimising the network that delivers it. Chapter 46, Complementary Methodologies, returns to this distinction in more detail.

2.4 Intended Use

This Technical Guide is meant to serve as a shared methodological reference for organisations and professionals who carry out, or evaluate, WiFi Quality assessments. Its purpose is to secure consistency of method, not to mandate a single implementation.

Assessors remain free to use whichever tools, measurement technologies and operational procedures suit their circumstances, provided the resulting evidence meets the requirements this methodology establishes — the point of the framework being the evidence it demands, not the instrument used to produce it.

3 Intended Audience and Intended Use

3.1 General

This Technical Guide addresses organisations and professionals involved, in whatever capacity, in the assessment, delivery, management or governance of WiFi services. Its principles, however, are not of interest only to those who conduct assessments directly; they are equally relevant to anyone who needs a structured account of how WiFi Quality can be evaluated in a manner that is transparent and defensible under scrutiny.

A general understanding of wireless networking is assumed throughout. Specialist expertise in radio frequency engineering is not, except where a passage states otherwise.

3.2 Venue Owners and Operators

For venue owners and operators — hotels and hospitality venues, conference centres, educational institutions, healthcare facilities, retail environments, offices, transport hubs, public venues — the practical value of this document lies less in the methodology's technical detail than in what it allows them to do with an assessment once it exists: read the findings, understand what a given score does and does not claim

about their network, and use that understanding in conversations with tenants, guests or regulators. An owner does not need to conduct an assessment to benefit from knowing how one was constructed.

3.3 WiFi Quality Assessors

Assessors are the primary audience, and the one for whom the bulk of this Guide is written. Everything from the definition of a Representative Test Location to the procedures for Evidence Correlation exists, ultimately, to be applied by someone standing in a venue with a device in hand, deciding where to measure and how to interpret what the measurement shows. The methodology's value to every other audience listed in this chapter is, in a sense, downstream of how well it serves this one.

3.4 Independent Auditors

An auditor's relationship to this document differs from an assessor's in one respect that matters considerably: the auditor is not verifying a network, but verifying that an assessment of a network was conducted correctly. The methodology accordingly serves auditors as a reference against which procedural compliance, evidence quality and methodological consistency can be checked — a role closer to that of a technical reviewer working from a specification than that of a practitioner applying a technique in the field.

3.5 Managed Service Providers and IT Service Providers

MSPs and network integrators occupy a slightly delicate position with respect to this methodology, and it is worth being direct about it: an MSP is frequently the party responsible for the network being assessed, which is precisely why an independent assessment methodology needs to exist in the first place. Read in that light, this document is less a tool for MSPs to apply themselves than a means of understanding what an independent assessment will and will not take into account — knowledge that is, in practice, no less useful to them than to the venues they serve.

3.6 Researchers and Academic Institutions

For researchers, the document's contribution is primarily terminological and conceptual rather than procedural: a stable vocabulary — Assessment Scope, Declared Service Area, Observed Network Reality, among others — against which studies of WiFi service quality and user experience can be compared without each adopting incompatible definitions of the same underlying phenomena. Comparative research on network quality has historically been hampered as much by definitional inconsistency across studies as by any technical limitation, and it is this particular gap that the methodology is best positioned to address.

3.7 Equipment Manufacturers and Technology Vendors

Manufacturers will find the methodology deliberately silent on the merits of any specific product, architecture or implementation, and this silence is intentional rather than incidental: a methodology that favoured a particular technology could not credibly claim to assess quality as experienced, since that experience is, by design, meant to be independent of how it was produced. What the document does offer vendors is a way of situating their products within a broader account of service quality — one in which a well-engineered access point is a necessary contributor to good WiFi Quality, but not, on its own, sufficient evidence of it.

3.8 Regulators, Policymakers and Standards Organisations

This publication establishes no regulatory requirement of any kind, and nothing in it should be read as implying otherwise. It may nonetheless be of use to regulators and standards bodies considering how evidence-based approaches to public WiFi Quality assurance might be structured, in much the same way that a technical reference from a professional body might inform, without dictating, subsequent policy work.

3.9 Other Stakeholders

Consultants, certification bodies, procurement teams and quality assurance professionals will generally find their interests already addressed, in one form or another, by the audiences described above; where they are not, the general principles set out in the chapters that follow should still apply without significant adaptation.

3.10 Who Should Conduct an Assessment

The methodology described in this Technical Guide is written for, and presupposes, a competent assessor — someone possessing the working knowledge of WiFi technologies, assessment principles and evidence interpretation already required of assessors in Chapter 31.11. Selecting a Representative Test Location, correlating conflicting evidence, or distinguishing genuine service variability from a measurement artefact are not mechanical steps; they require the professional judgement this Guide relies on throughout, from Chapter 16's treatment of RTL selection to Chapter 24's account of Evidence Correlation.

This section concerns professional competence, not the grant of intellectual property rights or official status. The permitted reading and reference uses of the Guide are set out in the Copyright, Permitted Use and Intellectual Property Notice. A person applying the methodology without the relevant technical background should expect the quality of the resulting assessment to depend heavily on that background. Access to the text does not, by itself, supply professional judgement or establish competence, accreditation or approval.

Simplified or technology-assisted implementations of this methodology — including guided applications, automated workflows or AI-supported tools — may distribute methodological competence between the system and the human participants involved in the assessment. Such an implementation conforms to this Guide only insofar as it preserves the requirements of the methodology, including the Review safeguards described in 28.8 and the competence requirements described in 31.11.

Technology assistance may reduce the technical knowledge required of the person operating an assessment workflow, but it does not remove the requirement for competent judgement wherever the system identifies a question that cannot responsibly be resolved by rule. Conformity depends on the methodological functions being performed correctly, not on every function residing in a single individual.

4 Relationship with Other WQI Publications

4.1 General

This Technical Guide is one component of a wider publication ecosystem developed by the WiFi Quality Institute to support the understanding, assessment, governance and continued development of WiFi Quality as an independent professional discipline. Each

publication in that ecosystem addresses a distinct concern — vision, principle, structure and methodology — while remaining consistent with the others in terminology and underlying logic. This document, specifically, sets out the methodological foundations for real-world assessment, and it should be read alongside the related publications described in the sections that follow rather than in isolation.

4.2 Relationship with the WiFi Quality Doctrine

The WiFi Quality Doctrine sets out the vision, rationale and philosophy underlying the concept of WiFi Quality itself — why it warrants treatment as a distinct discipline in the first place, rather than as a subset of network engineering or customer experience management. It is, in that sense, the conceptual root from which the rest of the WQI publication series grows. This Technical Guide takes that reasoning as given and puts it to work: where the Doctrine argues for a way of thinking, this document supplies a way of doing.

4.3 Relationship with the WiFi Quality Principles

The WiFi Quality Principles articulate the fundamental principles governing the assessment and interpretation of WiFi Quality, and these principles run through every methodological choice described in the present Guide — the treatment of sampling, of evidence correlation, of measurement uncertainty, all trace back to commitments established there. The distinction between the two publications is best understood as one of register rather than of subject: the Principles state what should guide an assessment; this document explains, at the level of procedure, how that guidance is actually carried out in the field.

4.4 Relationship with the WiFi Quality Framework

The WiFi Quality Framework defines the conceptual structure of WiFi Quality — its principal domains, their components, and the relationships between them. This Technical Guide presupposes that structure and does not attempt to redefine it; its contribution is the assessment methodology through which the model set out by the Framework can actually be evaluated against a real network. Put simply, the Framework describes what WiFi Quality consists of, and this document describes how one goes about finding out whether a given network has it.

4.5 Relationship with Technical Reports

Technical Reports issued by the Institute provide supporting research, technical analysis, case studies and implementation guidance on specific aspects of WiFi Quality assessment — material that is often more detailed, more exploratory, or more narrowly scoped than what a methodological guide of this kind can accommodate. Such reports may expand considerably on topics introduced here; they do not, however, modify or supersede the methodological requirements of this document unless a future revision explicitly says so.

4.6 Relationship with Position Papers

Position Papers serve a different function again: they communicate the Institute's perspective on emerging topics, industry developments or open methodological questions, and exist chiefly to stimulate professional debate rather than to settle it. Nothing in a Position Paper carries normative weight for the purposes of this methodology unless and until its substance is formally incorporated into a subsequent

revision of an official WQI publication — a distinction worth keeping in mind, since the two document types can otherwise read as similarly authoritative.

4.7 Relationship with Future Publications

The Institute may, over time, publish further Technical Guides, Technical Reports, Position Papers and other material addressing specific facets of WiFi Quality as the discipline develops. Unless a future publication states otherwise, this Technical Guide is to be treated as the primary methodological reference for real-world WiFi Quality assessment within the WQI ecosystem — the document against which any later, more specialised guidance should be read as an elaboration rather than a replacement.

A further planned publication, WQI-AS-001 — WiFi Quality Assessment Standard, is expected to address when an assessment conducted under this Guide may be recognised as sufficiently rigorous for wider use. Such a publication would build upon this methodology without modifying it except through the controlled revision process established in Part VIII.

5 Normative and Informative References

5.1 General

Two categories of reference are used throughout this Technical Guide. Normative references provide requirements or foundations that apply to the extent this Guide expressly invokes them; where invoked, their relevant provisions form part of the methodological basis of the assessment. Informative references, by contrast, situate the methodology within a wider technical and academic context; they inform the reasoning behind certain choices but impose no requirement of their own unless a specific clause states otherwise. Where a document is referenced without a specific edition or date, the latest published version should be consulted.

5.2 Normative References

The following WQI publications provide normative foundations for this Technical Guide and apply to the extent their concepts, principles or requirements are invoked by its provisions.

- WQI-DOC-001 — *WiFi Quality Doctrine: Principles, Frameworks and Foundations for an Emerging Discipline* (WiFi Quality Institute, v1.1, July 2026; DOI: 10.5281/zenodo.21821067)
- WQI-FWK-001 — *The WiFi Quality Framework: Conceptual Architecture, Taxonomy and Domains of WiFi Quality* (WiFi Quality Institute, v1.0, August 2026; DOI: 10.5281/zenodo.21825711)
- WQI-PRN-001 — *WiFi Quality Principles* (WiFi Quality Institute, v1.0, August 2026; DOI:10.5281/zenodo.21938039)

Future revisions of this Technical Guide may add further normative WQI publications as the ecosystem develops.

5.3 Informative References

The documents below are cited for background and context only. Their presence here does not extend, and their absence would not diminish, the methodological requirements set out in this Guide.

Wireless and Internet Standards

- IEEE 802.11™ family of Wireless LAN standards, relevant editions in force at the time of assessment
- Internet Engineering Task Force (IETF) publications relating to IP network performance measurement

Industry Standards, Programmes and Methodologies

- Broadband Forum. TR-398 Issue 4: Wi-Fi Residential & SOHO Performance Testing. TR-398i4. Broadband Forum, 2026.
- Broadband Forum. BBF.398 Carrier-Grade Wi-Fi. Broadband Forum Certification Programme, based on the TR-398 performance test plan. Broadband Forum, 2025.
- World WLAN Application Alliance (WAA). Technical Specification for Campus Office WLAN Performance and Experience (Based on IEEE 802.11be-2024). WAA-TS 013-2025. World WLAN Application Alliance, 2025.
- World WLAN Application Alliance (WAA). Technical Specification for WLAN Single-Device Performance and Experience in Home Scenarios (Based on IEEE 802.11be-2024). WAA-TS 015-2025. World WLAN Application Alliance, 2025.
- World WLAN Application Alliance (WAA). Technical Specification for WLAN Device Networking Performance and Experience in Home Scenarios (Based on IEEE 802.11be-2024). WAA-TS 017-2025. World WLAN Application Alliance, 2025.
- Wireless Broadband Alliance (WBA). Building a Global Benchmark: Introducing the WBA Wi-Fi Design Standard. Wireless Broadband Alliance, 2026.
- Ookla, Inc. Ookla's Speedtest Certified™ Methodology. Version 0.2. Ookla, Inc., 2025.

Industry and Professional Literature

- Published guidance on RF engineering and wireless network design, where addressing topics adjacent to, but distinct from, real-world quality assessment
- Literature on Quality of Experience (QoE) and on service quality assessment more broadly
- Established literature on statistical sampling and measurement uncertainty, insofar as it informs the treatment of these topics in Part VI

Academic Literature

- Peer-reviewed research on WiFi performance evaluation, user experience, network measurement methodology, and the human factors affecting perceived network quality

This list is deliberately limited to material with a direct bearing on the methodology described in this Guide. It is not intended as a survey of the field.

5.4 External References

Citation of an external publication in this Technical Guide implies no endorsement of it by the WiFi Quality Institute, and, conversely, the absence of a publication from this section implies nothing about its technical merit. External references are included for one purpose only: to situate this methodology within, and acknowledge its debts to, the wider professional and academic community from which it draws.

Part II – Why a New Methodology is Needed

6 The WiFi Quality Problem

6.1 Introduction

Wireless networking has, over a relatively short span of time, moved from being a convenience to being infrastructure in the fullest sense of the word. Homes, hotels, hospitals, schools, offices, transport systems, retail environments and public spaces now depend on WiFi to support activities that, a generation ago, would not have been thought of as network-dependent at all.

With that dependence has come a correspondingly casual use of a phrase that turns out to be far less precise than it sounds: good WiFi. Users, organisations and service providers all reach for some version of this judgement — is the network good enough for what it needs to do — without, in most cases, being able to say with any rigour what the judgement is based on. Despite how routinely the term is invoked, no methodology has achieved anything like general acceptance for assessing WiFi Quality as a coherent whole.

6.2 The Growing Importance of WiFi Quality

Most users have stopped experiencing WiFi as infrastructure at all. It has become, for practical purposes, simply a service that is expected to work — an expectation formed without reference to, or even awareness of, the distinction between radio performance, Internet connectivity, network architecture and device behaviour that a network engineer would draw as a matter of course.

What a user expects, in the end, is fairly simple to state even if it is not simple to deliver: that the service works reliably, wherever it is meant to be available, for whatever they reasonably intend to do with it. This shift — from an infrastructure-centred way of thinking about WiFi to a service-centred one — is precisely what has made the structured assessment of WiFi Quality a matter of practical consequence rather than academic interest.

6.3 Existing Measurements Answer Different Questions

Modern wireless networks are prolific generators of technical data. An engineer working on a deployment can, without particular difficulty, obtain figures for radio coverage, channel utilisation, retransmission rates, roaming behaviour, latency, throughput, packet loss, airtime utilisation and signal strength, among a great many other parameters — and each of these figures is genuinely informative about the specific technical question it was designed to answer.

The difficulty is that none of them, taken on its own, answers the broader question this Guide is concerned with: whether the WiFi service, as a whole, is of good quality within the environment being assessed. This is not a shortage of measurement. If anything, the opposite is closer to the truth — the practical challenge lies not in generating evidence but in knowing how a great deal of heterogeneous evidence ought to be interpreted together, and it is this challenge, rather than any deficiency in instrumentation, that a methodology needs to address.

6.4 The Absence of a Common Assessment Methodology

In practice, different organisations tend to evaluate the same kind of network using different criteria, different measurements and different underlying assumptions about what matters. Two competent professionals assessing the same venue may reasonably focus on entirely different technical indicators, depending on their training, their objectives or simply the tools available to them — and there is nothing wrong with this for engineering or operational purposes, where the question being asked is usually narrower and better defined than "is this good WiFi".

The difficulty arises only when the broader question is the one being asked. Without some shared methodological basis, it becomes correspondingly difficult to say what a high-quality WiFi service actually consists of, in terms specific enough to be checked, and comparable enough to mean the same thing from one assessment to the next.

6.5 WiFi Quality as a Multidimensional Concept

No single technical characteristic is capable of describing WiFi Quality adequately, because the quality of a service experienced by a user is not the property of any one layer of the system that delivers it. It emerges instead from the interaction of many factors — among them radio coverage, capacity, stability, roaming behaviour, latency, packet loss, service availability, network responsiveness, environmental conditions, user device behaviour and operational consistency — whose relative weight shifts depending on the context in which the assessment is being conducted. A hospital ward and a stadium concourse do not fail in the same way, even when the underlying technical fault is identical.

It follows that evaluating WiFi Quality is, by its nature, a matter of weighing multiple complementary sources of evidence against one another, rather than reading a verdict off any single measurement, however carefully that measurement was taken.

6.6 The Need for a Methodological Framework

As WiFi has taken on the character of critical infrastructure, the absence of a shared methodology has become correspondingly harder to justify. What is needed is not another measurement technique, but an approach capable of producing assessments that are structured and transparent enough to be checked, evidence-based rather than impressionistic, repeatable across assessors and occasions, technology-neutral, and flexible enough to accommodate deployment environments as different as a small office and a transport hub.

Such a methodology does not compete with existing measurement techniques; it gives them somewhere to go. Its contribution lies in providing a systematic basis for interpreting evidence that, on its own, already exists in abundance.

6.7 Purpose of this Technical Guide

This Technical Guide has been developed in response to that need. It sets out a common methodological foundation for assessing WiFi Quality under representative, real-world operating conditions — not by replacing the engineering disciplines and operational practices already in use, but by providing the structure through which evidence drawn from many of those practices can be collected, interpreted and correlated into a single, defensible account of service quality.

7 Limitations of Existing Evaluation Approaches

7.1 General

A considerable number of methods have been developed, over the past decades, to evaluate particular aspects of wireless networks, and each has genuinely advanced the design, optimisation and operation of WiFi systems within its own domain. Nothing in this chapter should be read as a challenge to that record.

What distinguishes the methodology set out in this Technical Guide is simply its object of enquiry. Where most existing approaches evaluate a specific technical characteristic of a network, this methodology is concerned with the overall quality of a WiFi service as experienced within a defined assessment scope, under conditions representative of ordinary use — a different question, not a better one. The sections that follow examine several widely used approaches in that light, not to weigh their merits against each other, but to locate the boundary of what each is actually designed to answer.

7.2 Speed Tests

The Internet speed test is probably the most familiar tool available to anyone wanting to know something about their network, and for good reason: performed under reasonable conditions, it yields genuinely useful evidence about data transfer rate, latency and, often, packet loss between a device and a remote server at a specific place and moment.

What it cannot do is tell you much beyond that place and moment. A single test, however favourable, does not establish whether comparable performance holds throughout the Declared Service Area, or whether a user moving from a lobby to a conference room three floors up would experience a comparable result. Conversely, a poor result may arise from the wireless access layer, local service delivery, Internet backhaul, or the measurement endpoint and its path. These possibilities are not interchangeable: factors outside the WLAN radio layer or the venue's control may still affect the assessed service, while limitations of the measurement infrastructure must be distinguished from limitations of that service in accordance with 23.13 and Chapter 40. Within the present methodology, a speed test is accordingly treated as one item of evidence among several, never as a stand-in for the assessment itself.

7.3 Single-Metric Evaluation

Signal strength, throughput, latency, packet loss, jitter, channel utilisation, retransmission rate — each of these can be measured with reasonable precision, and each tells you something true about one dimension of network behaviour. The trouble is not that any of these metrics is unreliable; it is that reliability on one dimension implies remarkably little about the others.

A network can report excellent signal strength throughout a venue while remaining unusable at peak occupancy, because signal strength has nothing to say about capacity. High throughput, measured against a single client, coexists comfortably with poor roaming behaviour that only becomes visible once a device starts moving between access points. What a given metric means, in practice, depends heavily on the operational context surrounding it and on what the other available evidence shows — which is precisely why this methodology treats no single indicator as sufficient on its own, and instead builds its findings from the interpretation of several such indicators together.

7.4 RF-Focused Approaches

RF engineering — surveys, predictive modelling, spectrum analysis and the associated body of technique — is indispensable to the planning and deployment of any wireless network, and nothing in real-world quality assessment substitutes for the work it does. A network that has not been properly engineered at the RF level is unlikely to deliver good service under any definition; that much is not in question.

The question RF engineering is built to answer, however, is a narrower one than the question this methodology addresses. A radio environment can be modelled and surveyed to a high standard and still fail to deliver consistent service, because a great deal of what users actually experience — authentication flows, backend Internet connectivity, client device behaviour, operational policy around access — sits outside the domain that RF analysis was designed to cover. The relationship between the two is consequently one of complementarity rather than substitution: an RF survey and a real-world quality assessment can be conducted on the same network, at the same time, and neither would make the other redundant.

7.5 Subjective User Opinions

User feedback — reviews, support tickets, satisfaction surveys — carries a kind of evidential value that no technical measurement can replicate: it captures how a service is actually perceived, which is, after all, close to the point of the exercise. Recurring complaints, in particular, are often a reliable signal that something in a deployment merits closer investigation.

They are not, on their own, a methodology, and the reason is straightforward: two users on the same network, under conditions that appear identical from the outside, can report entirely different experiences, because the experience itself is filtered through expectation, device capability, the demands of whatever application is being used, and a dozen contextual factors that vary from one person to the next. This does not make subjective feedback worthless — quite the opposite, it is a valuable complement to more structured evidence — but it does mean it cannot serve, in isolation, as objective assessment evidence of the kind this methodology requires.

7.6 No Single Approach Provides a Complete Assessment

None of the approaches discussed above is inferior to any other; each was built to answer a different question, and each answers its own question well. What none of them does, individually, is answer the question this Technical Guide is concerned with — and it is worth being clear that this is not a deficiency in any of them, but simply a consequence of the fact that WiFi Quality, as this methodology defines it, is not the kind of thing any single measurement, engineering discipline or user observation was ever designed to capture on its own.

The methodology that follows proceeds from that recognition. It does not ask which of these approaches to trust; it asks how evidence from several of them, collected and interpreted together within a clearly defined framework, can be made to answer a question that none of them was built to answer alone.

8 Objectives of Real-World WiFi Quality Assessment

8.1 General

The objective of a WiFi Quality assessment is not to prove that a network is good or bad, but to determine, through objective and representative evidence, the level of service quality that is actually being delivered within the defined assessment scope. This distinction is not a matter of phrasing. An assessment that sets out to confirm a verdict — that a venue's WiFi is adequate, or that it is failing — has already compromised the very evidence it produces; an assessment that sets out to observe, and only afterward to conclude, has not.

The sections that follow describe what this methodology is trying to achieve in practice, and, taken together, they follow from that single premise more than they might first appear to.

8.2 Assessing WiFi as a Service, Not as a Collection of Parameters

The methodology treats WiFi as a service delivered to users, not as an inventory of technical characteristics to be measured and reported separately. Individual measurements remain essential — nothing here dispenses with them — but they are interpreted throughout in light of what they mean for the service as a whole, rather than reported as isolated facts about the network. A venue with excellent signal strength and unreliable roaming has not, on this view, been given two separate scores to reconcile later; it has one service, whose quality happens to be undermined by one of several contributing factors.

8.3 Reflecting Representative Conditions Rather Than Extremes

Assessments conducted under this methodology should characterise the service within its declared purpose, Assessment Scope and relevant operating conditions. A selectively favourable result or an artificially adverse condition shall not be presented as the ordinary experience of all users. This does not make controlled load testing methodologically irrelevant. A documented load test may provide valid evidence of responsiveness, stability or degradation under the applied conditions, provided its measurement purpose, limits and relationship to ordinary use are explicit. Client-induced test traffic does not, by itself, demonstrate the occupancy, concurrent demand or peak operational conditions of a venue. Conclusions about those conditions require appropriate operational and representative evidence.

8.4 Grounding Findings in Evidence Rather Than Judgement

Assessment conclusions are expected to rest on objective evidence gathered through systematic observation, not on the individual impression of whoever happens to be conducting the assessment. This has a direct practical consequence: a finding produced under this methodology should be capable of being explained to someone who was not present, reviewed by someone who disagrees with it, and, where necessary, independently checked against the underlying evidence — a bar that a purely subjective judgement, however experienced the person making it, cannot meet.

8.5 Consistency, Repeatability and Comparability

Three closely related objectives are worth treating together, since they are, in practice, different facets of the same underlying requirement. The methodology aims to reduce unwarranted inconsistency between assessments carried out by different assessors and at different times; to allow the same assessor, returning to the same venue later, to obtain a result that is recognisably comparable to the earlier one, variability

notwithstanding; and to allow assessments of entirely different venues — a hotel and a hospital ward, say — to be read against a common methodological foundation even though nothing about their deployments resembles the other's. None of this requires identical technical environments. It requires identical method.

No assessment methodology eliminates variability altogether, and this one does not claim to; what it aims for is variability small enough, and understood well enough, not to undermine the comparison.

8.6 Technology Neutrality

The methodology is built to remain independent of any particular equipment manufacturer, software platform, wireless standard or proprietary measurement tool, and to go on being applicable as each of these evolves. Different assessors may accordingly use different instruments to gather their evidence, provided that evidence satisfies the requirements this Guide sets out — the requirement being on the evidence produced, not on the tool that produced it.

8.7 Supporting Independent Verification

An assessment outcome under this methodology should never be a black box. The emphasis placed throughout on verifiable evidence, documented procedure and transparent interpretation exists precisely so that an independent auditor can retrace an assessor's steps and reach an informed view on whether the conclusion follows from the evidence — a capacity for scrutiny that does more to build confidence in an assessment than any claim of accuracy could on its own.

8.8 Supporting Continuous Improvement

Determining whether a service meets a defined expectation is not the only useful thing an assessment can do. Because this methodology requires evidence to be collected and interpreted systematically rather than reduced immediately to a single verdict, the same evidence base often reveals a good deal about *why* observed quality is what it is — information that an organisation can use to improve the service, quite apart from whatever certification decision may or may not follow from it.

8.9 A Common Methodological Foundation

Every objective described above ultimately serves one purpose: to give WiFi Quality assessment a shared foundation — common terminology, common principles, a common procedure — capable of supporting confidence in how WiFi services are evaluated across industries and operational contexts that otherwise have very little in common. It is this foundation, more than any single measurement technique, that this Technical Guide is ultimately offering.

It is also the foundation on which Observed Network Reality, defined in 11.13 and developed in Chapter 25, depends: a concept that only makes sense once an assessment has committed itself to describing what is actually there, rather than confirming what it expected to find.

9 Defining WiFi Quality

9.1 Introduction

WiFi Quality has already been introduced, at the conceptual level, within the WiFi

Quality Doctrine, where it is presented as a field of study requiring its own foundations, its own terminology and, in time, its own methodologies. This Technical Guide takes those foundations as given and addresses a narrower, more practical question: how WiFi Quality, once defined, can actually be assessed in a structured and evidence-based way.

Nothing in this chapter, accordingly, should be read as an attempt to redefine what the Doctrine has already established. Its purpose is only to lay out, in the terms this Guide will use throughout, the conceptual ground on which the assessment methodology is built.

9.2 WiFi Quality as a Distinct Concept

The Doctrine draws a deliberate distinction between WiFi Quality and two related but not equivalent concepts — WiFi Performance and WiFi Experience. The three are easily confused precisely because they concern the same underlying network, and the confusion is not merely terminological: an assessment methodology built on a conflated understanding of these concepts tends, in practice, to produce conclusions that look rigorous while measuring the wrong thing.

9.3 WiFi Performance

WiFi Performance is the observable technical behaviour of a wireless network — throughput, latency, packet loss, signal strength, roaming behaviour, airtime utilisation, and the considerable range of similar indicators that can be measured directly and objectively. Measurements of this kind form essential assessment evidence, and nothing in this methodology treats them as dispensable. What they do not do, whether taken singly or in combination, is amount to an assessment of WiFi Quality — a point already argued at length in Chapter 7, and one worth restating here precisely because it is where the two concepts are most often, and most understandably, run together.

9.4 WiFi Experience

WiFi Experience is a different matter: it is the way a given user perceives the network's behaviour while carrying out whatever they actually came to do. That perception is shaped by technical performance, certainly, but also by operational conditions, environmental context, individual expectation, device characteristics and the specific demands of the activity in question — which is why two users on an identical network, doing broadly similar things, can walk away with genuinely different impressions of how well it worked. Neither impression is wrong; both are simply partial. WiFi Experience is accordingly treated in this methodology as valuable contextual evidence, not as a direct measure of quality in its own right.

9.5 WiFi Quality

WiFi Quality, within the methodology set out by the Institute, is an *assessed* characteristic of a service — the degree to which that service delivers an appropriate and consistent level of service for its intended purpose, within a defined assessment scope, under conditions representative of real-world use. It differs from Performance in that it cannot be read directly off any measurement, however comprehensive; it differs from Experience in that it cannot rest on individual perception alone, however genuine. It is established, instead, through the structured interpretation of objective evidence — which is precisely the gap the next section addresses.

9.6 A Fourth Level: From Quality to Assessment

The distinction drawn above leaves one question still open, and it is the question this entire Technical Guide exists to answer: if WiFi Quality is neither a raw measurement nor a personal impression, how is it actually determined? The Doctrine's three-level distinction — Performance, Experience, Quality — describes what WiFi Quality *is* and how it differs from its neighbouring concepts, but it does not, on its own, describe the process by which it is *established*. This Technical Guide supplies that fourth level.

Level	What it captures
WiFi Performance	What is observed and measured — the network's technical behaviour
WiFi Experience	What is lived — how users perceive that behaviour in the course of their own activity
WiFi Quality	What results — the service characteristic that emerges from the interaction of the relevant technical, operational and human factors
WiFi Quality Assessment	What is determined — the methodological process by which the level of WiFi Quality is established through objective evidence

Assessment, in this sense, is not a synonym for Quality, nor a mechanical extension of Performance measurement. It is the discipline that connects these concepts — the structured process through which Performance data and Experience-related evidence are gathered, correlated and interpreted so as to arrive at a defensible statement about Quality. This is also what gives the WQI publication series its internal logic: the Doctrine establishes *why* Quality matters as a distinct concept; the Framework establishes *what* it consists of; this Technical Guide establishes *how* it is assessed.

9.7 A Multidimensional Characteristic

Consistent with the Doctrine, WiFi Quality is treated throughout this methodology as inherently multidimensional — the product of interacting technical, operational and human factors rather than the readout of any single measurement. It follows directly from this that no individual metric, observation or engineering discipline can be expected to determine WiFi Quality on its own, and that any credible assessment methodology must be built around the systematic interpretation of multiple complementary sources of evidence rather than reliance on any one of them.

9.8 From Concept to Assessment

Having distinguished WiFi Quality from Performance and Experience, and having situated Assessment as the process that connects all three, one question remains: how, in practice, can such an assessment be made objective, repeatable and transparent? Answering that question — through the methodological principles, the assessment model, and the evidence-based procedures that follow — is the purpose of the remainder of this Technical Guide.

Part III — Methodological Foundations

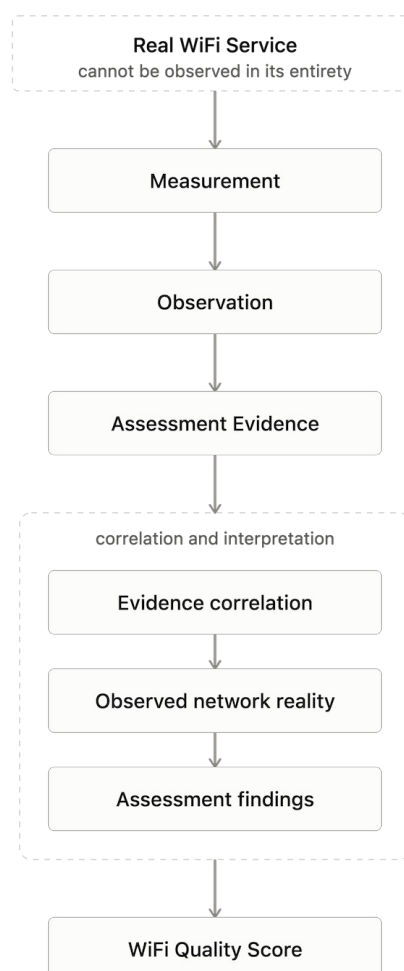
10 Assessment Philosophy

10.1 Introduction

Every assessment methodology rests on philosophical commitments that shape not only how evidence is collected, but how it is interpreted and turned into a conclusion — commitments that are usually left implicit, to the detriment of the methodology built on top of them. This chapter makes ours explicit.

The starting premise is simple to state and considerably harder to apply consistently: WiFi Quality cannot be observed directly. It has to be inferred, through the structured interpretation of objective evidence gathered within a defined assessment scope under conditions representative of real-world use. Everything else in this chapter, and much of what follows in the rest of this Guide, is really an elaboration of that one premise.

Figure 10.1 sets out the chain of transformation this methodology relies on — from a raw technical reading to a defensible statement about WiFi Quality:



Each arrow in this chain marks a transformation, not a mere restatement of what came

before: a measurement becomes an observation only once it is placed within the specific context it was taken in — location, device, time, operating conditions, as Chapter 23.2 sets out in full; an observation becomes evidence only once it is understood in relation to the assessment scope it was gathered within; evidence becomes part of the Observed Network Reality only once it has been correlated against other evidence rather than read in isolation; and Observed Network Reality becomes Assessment Findings and, where applicable, a WiFi Quality Score; those outputs are then subject to the Review Process in Chapter 28 before finalisation.

Nearly every subsequent chapter of this Guide corresponds to one link in this chain, and it is worth returning to this figure whenever the relationship between two adjacent chapters seems unclear.

10.2 Assessment Is Not Measurement

This methodology insists on a distinction that is easy to state and, in practice, easy to lose sight of: measurement and assessment are not the same activity. A measurement describes a single characteristic of a wireless environment — what throughput was observed, what latency was recorded, what signal strength was received at a given point. An assessment asks something else entirely: what these observations, taken together, indicate about the quality of the service within the scope being assessed.

The two questions are related but not reducible to one another, and confusing them is precisely the failure mode examined in Chapter 7. Assessment, in the terms this Guide uses, begins at the point where measurement leaves off — not because measurement is unimportant, but because it is not, by itself, sufficient.

10.3 WiFi Quality Cannot Be Measured Directly

WiFi Quality does not belong to the same category of thing as distance, temperature or voltage — quantities that can be read directly off an instrument built for the purpose. It is instead an emergent characteristic, arising from the interaction of technical, operational and contextual factors that no single instrument is built to capture jointly. No sensor measures WiFi Quality, for the same reason no thermometer measures a restaurant's atmosphere. What can be determined, through the systematic interpretation of several complementary sources of evidence, is the *level* of quality the service exhibits — which is a rather different, and more demanding, undertaking than taking a reading.

10.4 Evidence Before Judgement

Assessment conclusions rest on objective evidence, and on nothing else. Assumptions, prior expectations, anecdotal impressions or a single isolated observation are not, by themselves, permitted to determine an outcome under this methodology, however experienced the assessor forming them may be.

None of this displaces professional judgement, which remains essential to any assessment worth the name — evidence rarely interprets itself. What it does is bound that judgement: an assessor may and must exercise discretion, but only within the limits set by the evidence actually gathered and the methodological principles this Guide establishes, never ahead of them.

10.5 Representative Reality Rather Than Exceptional Circumstances

The aim of assessment is to characterise the service within the defined Assessment

Scope and the operating conditions relevant to its intended purpose. Representative observation of ordinary use remains central; deliberately induced conditions may also contribute evidence for a clearly stated question, as explained in 8.3. Neither a best-case measurement nor a controlled stress result automatically represents ordinary use across the venue. Where the scope includes several materially different operating situations, or an explicit peak-operation claim, the evidence must address those situations rather than substitute the easiest observed period for them.

10.6 Multiple Sources of Evidence

No single observation, however carefully obtained, is sufficient to determine WiFi Quality — a point already argued in Chapter 8 and worth restating here as a matter of philosophy rather than procedure. Reliable assessment depends on the correlation of several complementary sources of evidence, which may reinforce one another, may qualify one another, or may occasionally sit in tension in a way that itself becomes informative. What this methodology asks of an assessor is to weigh the collective significance of everything relevant that has been gathered, rather than allowing any single measurement — however striking — to carry more weight than it can bear on its own.

10.7 Context Matters

No observation means the same thing in every setting. Its significance depends on the purpose the WiFi service is meant to serve, the assessment scope it was gathered within, the character of the environment, the population of users the service is meant for, and the operational conditions that can reasonably be expected. Two identical technical observations, taken in a hospital corridor and in a hotel lobby, can legitimately support two different conclusions — not because the methodology is inconsistent, but because the context genuinely differs, and a methodology blind to that difference would be a poorer one.

10.8 Objectivity Through Methodology

Objectivity, in this framework, is not a property that comes bundled with the use of technical instruments — a common enough assumption, but a mistaken one. It comes instead from the consistent application of a shared method. Two assessors may use entirely different measurement tools and still produce assessments that are equally objective, provided both sets of tools yield evidence meeting the requirements this Guide sets out. Methodological consistency, in other words, does more to secure objectivity than any particular piece of equipment ever could.

10.9 Transparency and Explainability

Every conclusion reached under this methodology should be one that can be explained — not asserted, explained. The evidence behind it should be documented in enough detail to allow independent review, verification, and, where warranted, challenge. An assessment outcome that cannot withstand this kind of scrutiny has not, in any meaningful sense, been assessed; it has simply been declared.

10.10 Assessment as a Process of Understanding

Classification is not, in the end, the point of an assessment. Its purpose is to build an evidence-based understanding of the service actually being delivered — an understanding from which a classification, where one is needed, can subsequently

follow. Assessment, on this view, is best understood as a disciplined process of interpretation: the mechanism by which the raw material at the top of Figure 10.1 is progressively transformed into the conclusion at its foot.

10.11 Foundational Assessment Principles

The commitments set out in this chapter can be read directly off Figure 10.1, and it may be more useful to return to the figure than to a restated list: WiFi Quality sits at the end of a chain that begins with measurement and passes through observation, evidence, correlation and Observed Network Reality before any conclusion is drawn — and it is this chain, rather than any single step within it, that this methodology asks an assessor to respect.

What follows in the remainder of this Technical Guide is, in essence, an account of how each link in that chain is built in practice: how observations are gathered under representative conditions (Part IV), how they are correlated into an Observed Network Reality (Part V), and how the resulting findings are reviewed, audited and, where appropriate, translated into a certification decision (Chapters 28–30).

11 Fundamental Concepts

11.1 General

This chapter sets out the principal concepts on which the methodology described in this Technical Guide rests. The definitions are written to be used, not merely read: subsequent chapters rely on them being applied consistently, and a term introduced here should not reappear later carrying a slightly different meaning. Where a concept also receives a formal entry in Appendix A, the definition given in this chapter constitutes its normative introduction; Appendix A is a reference restatement, not a competing source.

11.2 WiFi Quality

The degree to which a WiFi service delivers an appropriate and consistent level of service for its intended purpose, within a defined assessment scope, under representative real-world operating conditions.

NOTE 1 — WiFi Quality is an assessed characteristic rather than a directly measurable quantity; see Chapter 10.

NOTE 2 — It is established through the interpretation of objective assessment evidence, not through any single measurement.

11.3 WiFi Experience

The experience perceived by users while interacting with a WiFi service in the course of their intended activities.

NOTE 1 — WiFi Experience may legitimately differ between users operating within the same wireless environment, for reasons unrelated to the network itself.

NOTE 2 — It is a valuable source of contextual information but does not, on its own, determine WiFi Quality.

11.4 Service Quality

The overall capability of a WiFi service to satisfy its intended operational objectives within the defined assessment scope.

NOTE — Service Quality provides the broader operational context within which WiFi Quality is assessed; the two terms are related but not interchangeable.

11.5 Assessment

A structured process through which objective evidence is collected, interpreted and correlated in order to determine WiFi Quality.

NOTE 1 — Assessment is distinct from measurement; see 10.2.

NOTE 2 — Assessment requires professional judgement, exercised within the boundaries of a defined methodology rather than in place of one.

11.6 Evidence

Any objective information obtained through observation, measurement or analysis.

NOTE — Evidence, in this general sense, may be technical, operational or contextual in nature, and may derive from a wide variety of sources of varying reliability.

11.7 Assessment Evidence

Evidence that satisfies the methodological requirements established by this Technical Guide and is, on that basis, suitable for supporting assessment findings.

NOTE 1 — Not all Evidence qualifies as Assessment Evidence. A customer review, an unsupervised speed test result, or a controller log extracted without proper context are each Evidence in the general sense defined in 11.6, but none becomes Assessment Evidence until it has been collected, verified and contextualised in accordance with the requirements set out in Chapters 19 and 20.

NOTE 2 — The distinction matters because it is Assessment Evidence, and only Assessment Evidence, that may be used to support an Observed Network Reality or an Assessment Finding. This methodology does not merely gather information; it qualifies which information is fit to bear the weight of a conclusion.

11.8 Assessment Scope

The defined boundaries within which a WiFi Quality assessment is conducted, specifying what is included in, and excluded from, the assessment.

NOTE — Assessment findings hold only within the defined Assessment Scope and should not be generalised beyond it.

11.9 Declared Service Area

The physical area within which the organisation declares that WiFi service is intended to be provided.

NOTE 1 — The Declared Service Area is established before the assessment begins; it is a commitment made by the organisation, not a conclusion reached by the assessor.

NOTE 2 — It follows that a Declared Service Area may turn out, once assessed, not to match the area within which service is actually delivered — a discrepancy that is itself a legitimate assessment finding rather than a methodological error.

11.10 Site Area

A physically identifiable portion of a Declared Service Area within the Assessment Scope possessing sufficiently similar environmental or operational characteristics to be treated as a single assessment area.

NOTE — Site Areas are defined for methodological convenience and do not necessarily

correspond to architectural or administrative divisions of a venue; a single open-plan floor may contain several Site Areas, or several rooms may form one.

11.11 Test Location

A specific physical point or position at which assessment observations or measurements are obtained.

NOTE — A single Site Area will typically contain multiple Test Locations.

11.12 Representative Test Location (RTL)

A Test Location assigned a defined methodological role within a Site Area in accordance with Chapter 16.

Primary and Secondary RTLs support representative characterisation of ordinary conditions and relevant spatial variation within the Site Area. Verification and Targeted RTLs serve diagnostic or investigative purposes and are not required, individually, to represent the Site Area as a whole.

Evidence obtained at an RTL may contribute to the assessment of the Site Area only in accordance with the methodological role assigned to that RTL and the sampling requirements set out in Chapter 17.

NOTE — Selection of a Representative Test Location is a matter of methodological judgement, not convenience. Chapter 16 defines the Primary, Secondary, Verification and Targeted roles and explains how each is to be applied.

11.13 Observed Network Reality

The evidence-based representation of the WiFi service as observed during the assessment, established through the structured interpretation and correlation of Assessment Evidence collected within the defined Assessment Scope under representative real-world operating conditions. It constitutes the best-supported reconstruction available from the Assessment Evidence of the service actually delivered at the time of the assessment.

NOTE 1 — Observed Network Reality is derived from evidence, never from assumption; where evidence is insufficient to support a conclusion, this should be recorded as a limitation rather than filled by inference.

NOTE 2 — It forms the basis on which Assessment Findings, and ultimately the WiFi Quality Score, are established; see Chapters 25 through 27.

NOTE 3 — Observed Network Reality describes the service as it was found at the time of assessment. It is a statement about a moment, not a permanent characteristic of the environment, and it should never be read as a claim about how the network will behave at some other time.

11.14 Operational Context

The set of environmental, temporal, usage, service and network conditions within which an Observation is obtained and within which the resulting Assessment Evidence must be interpreted.

NOTE 1 — Operational Context may include intended use, occupancy, user activity, service state, access context, relevant network path or dependency, and other conditions capable of affecting the meaning of an Observation.

NOTE 2 — A change in Operational Context may alter the relevance or comparability of existing Assessment Evidence without making the underlying Observation false.

11.15 Measurement Validity

The degree to which a Measurement faithfully records the technical characteristic it purports to record under the conditions in which it was obtained.

NOTE 1 — Measurement Validity is distinct from the later relevance, representativeness or causal use of that Measurement within an assessment.

NOTE 2 — A Measurement may remain valid as a historical record while no longer being suitable for a current causal conclusion after a material change in Operational Context.

11.16 Endpoint Validity

The degree to which a measurement endpoint, and the conditions under which it is operating, are suitable for the measurement purpose for which its results are to be interpreted.

NOTE 1 — Endpoint Validity may be informed by endpoint health, capacity availability, inter-endpoint consistency, path stability and other measurement-infrastructure evidence described in 23.13.

NOTE 2 — A valid endpoint does not make a Measurement representative of the assessed service; it establishes only that the endpoint is not known to invalidate the particular measurement purpose for which it is being used.

11.17 Causal Hypothesis

A technically plausible explanation of an observed service condition, expressed at a defined layer, segment, relationship, component or causal scope and capable of being supported, qualified or contradicted by Assessment Evidence.

NOTE — A Causal Hypothesis does not become an Assessment Finding merely because it is plausible; it must remain subject to the evidential and correlative requirements of this methodology.

11.18 Causal Boundary

The most specific causal scope that the available Assessment Evidence can support without exceeding its evidential resolution.

NOTE 1 — Evidence may, for example, support a distinction between a local limitation and an upstream limitation without supporting attribution to a particular component.

NOTE 2 — Greater Assessment Confidence does not, by itself, justify a narrower Causal Boundary where the structural or comparative evidence required for that narrower conclusion is absent or unresolved.

11.19 Assessment Validity

The degree to which an assessment conclusion is justified by Assessment Evidence that is sufficient, relevant, representative and reliable, interpreted within the defined Assessment Scope and Operational Context in accordance with this methodology.

NOTE 1 — Valid individual Measurements do not, by themselves, guarantee a valid assessment conclusion.

NOTE 2 — Assessment Validity depends on the complete relationship between scope, evidence, context, correlation and Findings.

11.20 WiFi Service Area

The subset of a Declared Service Area for which Assessment Findings support the conclusion that WiFi service was available under the representative conditions observed during the assessment, within the stated Assessment Scope and at the time of assessment.

NOTE 1 — A WiFi Service Area is an assessment outcome, not a pre-assessment declaration and not a permanent property of the venue.

NOTE 2 — Any public communication of a WiFi Service Area shall retain sufficient information about Assessment Scope, assessment date and applicable methodology version to prevent the result from being interpreted outside the conditions under which it was established.

11.21 Assessment Protocol

A versioned implementation-level specification defining operational procedures or additional controls for applying this Technical Guide within a particular assessment system, programme or implementation context.

An Assessment Protocol may add procedural or evidential requirements but shall not modify, override or redefine the methodology established by this Technical Guide.

Where an Assessment Protocol applies, its identifier and version shall be recorded with the assessment.

NOTE — The distinction between methodological authority and implementation authority is established in 51.3.

12 Methodological Requirements

12.1 General

The methodology set out in this Technical Guide rests on twelve methodological requirements, governing the planning, execution, interpretation and review of WiFi Quality assessments. Every methodological requirement described elsewhere in this publication is to be read and applied consistently with them; where a specific procedure and a stated requirement appear to conflict, the requirement takes precedence, and the procedure should be understood as requiring correction rather than the requirement requiring exception.

Each requirement listed below carries a permanent code — WQR-01 through WQR-12 — under which it is intended to be cited throughout the WQI publication ecosystem. These requirements are not free-standing; they operationalise, within the specific domain of WiFi Quality assessment, the six governing principles established by the WiFi Quality Principles (WQI-PRN-001) — Objectivity, Independence, Transparency, Relevance, Contextuality and Integrity. Where the Principles state what values must govern any activity within the discipline, the requirements below state what those values demand, specifically, of an assessment conducted under this methodology. The correspondence between each requirement and the Principle or Principles it derives from is set out in full in WQI-PRN-001, Chapter 19 (Principles-to-Requirements

Mapping), and is summarised beneath each requirement here for ease of reference.

12.2 WQR-01 — Evidence Before Assumption

Derives primarily from Objectivity; supporting derivation from Transparency (WQI-PRN-001, 19.3, 19.5, 19.8).

WiFi Quality assessments shall be grounded in objective Assessment Evidence rather than in assumption, expectation, or anecdotal impression. Every conclusion reached under this methodology must be traceable to evidence that is relevant, representative, and obtained in accordance with the requirements set out in Chapters 19 and 20 — a requirement that follows directly from the assessment philosophy set out in Chapter 10.

12.3 WQR-02 — Represent Reality

Derives primarily from Objectivity, with Contextuality and Relevance as supporting derivations (WQI-PRN-001, 19.3, 19.7, 19.6).

An assessment shall seek evidence representative of the service, intended users and operating conditions included in the Assessment Scope. It shall not substitute selectively favourable or artificially adverse results for that evidence. Controlled load testing is a means of obtaining Assessment Evidence about how the service responds to a defined traffic demand. Where the measurement and comparison are valid, it can reveal changes in responsiveness, delivery reliability, throughput continuity and recovery that observations without the induced load may not reveal. These findings contribute to the assessment of WiFi Quality within their documented device, location, path, time and load-profile context, subject to the distinctions in 8.3 and 10.5. An induced test load shall not, by itself, establish that real venue occupancy, normal concurrent demand or peak-operation conditions were observed.

12.4 WQR-03 — Representative Sampling

Derives primarily from Objectivity, with Contextuality as a supporting derivation (WQI-PRN-001, 19.3, 19.7).

Assessment evidence shall be obtained through a representative sampling strategy, not through exhaustive measurement of every location within the assessment scope — an approach that would be, in most real deployments, both impractical and unnecessary. Sampling is designed, per Chapter 17, to provide sufficient confidence that the evidence gathered reasonably reflects the environment as a whole, rather than a false impression of exhaustiveness.

12.5 WQR-04 — Context Matters

Corresponds directly to Contextuality (WQI-PRN-001, 19.7).

Assessment evidence shall always be interpreted in light of its operational context: the intended use of the service, the characteristics of the environment, and the boundaries of the assessment scope within which it was gathered. An observation read outside this context risks being technically accurate and methodologically meaningless at the same time — precision in the measurement does not excuse imprecision in its interpretation.

Operational Context is also temporal and relational. Evidence obtained before a material change in the service or network context shall not be assumed to retain the same relevance for a later causal interpretation merely because one or more measured

or configured values recur. Where current comparability matters to a conclusion, it must be justified from the context relevant to that conclusion.

12.6 WQR-05 — Correlate the Evidence

Derives primarily from Objectivity, with Relevance as a supporting derivation (WQI-PRN-001, 19.3, 19.6).

No individual observation, measurement or technical indicator shall, on its own, be treated as determining WiFi Quality. Reliable assessment depends on the structured correlation of multiple complementary sources of evidence, in the manner set out in Chapter 24 — a requirement that follows directly from the multidimensional character of WiFi Quality discussed in Chapters 6 and 9.

Correlation shall also preserve the relevance and comparability of the evidence to the question being considered. Assessment Evidence that is valid for one analytical or causal purpose shall not be assumed to be comparable for another where the relevant technical relationships differ. Where a causal interpretation is made, its specificity shall not exceed the Causal Boundary supported by the correlated evidence.

12.7 WQR-06 — Technology Neutrality

Derives primarily from Independence (first limb); Integrity and Transparency in combination (second limb) (WQI-PRN-001, 19.4, 19.5, 19.8, 19.9).

The methodology shall remain independent of any specific technology, vendor, equipment manufacturer or proprietary measurement platform. Evidence obtained through different technical means is to be regarded as equally valid, provided it satisfies the methodological requirements this Guide establishes; the requirement falls on the evidence, never on the tool used to produce it. Where a specific measurement instrument is nonetheless required for a given assessment, that requirement is permissible only where justified by considerations of evidential integrity — such as a verifiable chain of custody, consistent data formatting, or reliable timestamping — and never by commercial preference; and the justification itself must be capable of being stated and independently reviewed.

12.8 WQR-07 — Methodological Consistency

Dual primary derivation from Objectivity and Transparency (WQI-PRN-001, 19.3, 19.5).

Assessments carried out by different assessors, under comparable conditions and using this methodology, should produce comparable outcomes. This is, in a fairly direct sense, the requirement from which every other requirement in this chapter ultimately draws its purpose: none of the others would matter greatly if two competent assessors, applying them correctly to the same venue, could still arrive at incompatible conclusions. Consistency of this kind depends both on the discipline with which each assessor reasons from evidence and on that reasoning remaining sufficiently visible to be followed and, where necessary, challenged.

12.9 WQR-08 — Transparency

Corresponds directly to Transparency (WQI-PRN-001, 19.5).

Assessment activities, the evidence gathered, and the conclusions drawn from it shall be documented in sufficient detail to permit independent review and verification. A conclusion that cannot be explained by reference to the evidence behind it does not

meet the standard this methodology sets, regardless of how accurate that conclusion may, in fact, turn out to be.

12.10 WQR-09 — Independence

Corresponds directly to Independence (WQI-PRN-001, 19.4).

Assessment findings shall be determined independently of commercial interest, vendor preference, or implementation choice. This methodology evaluates the quality of a WiFi service as delivered — not the products, technologies or organisations responsible for delivering it, a distinction that matters particularly where the party commissioning an assessment has a commercial relationship with a vendor whose equipment is in use.

12.11 WQR-10 — Repeatability

Derives primarily from Contextuality, with Objectivity as a supporting derivation (WQI-PRN-001, 19.7, 19.3).

The methodology shall be designed to maximise repeatability, while acknowledging that real-world wireless environments are, by nature, dynamic and will rarely yield identical readings on two separate occasions. Repeatability, in this context, means consistency of methodological application rather than identical measurement outcomes — Chapter 32 defines this distinction, while Chapter 33 examines the sources of legitimate variability it accommodates in detail.

12.12 WQR-11 — Proportionality

Derives primarily from Contextuality, with Objectivity as a supporting derivation (WQI-PRN-001, 19.7, 19.3).

The scope, depth and complexity of an assessment should be proportionate to the characteristics of the environment being assessed. A single-floor café and a multi-building campus do not warrant the same assessment effort, and a methodology that demanded otherwise would sacrifice practicality for a uniformity it does not actually need — flexibility of this kind is a design requirement, not a concession.

12.13 WQR-12 — Continuous Improvement

Primary derivation from Objectivity, with Independence as a supporting derivation (WQI-PRN-001, 19.3, 19.4).

The methodology shall remain open to refinement in light of new evidence, technological development and accumulated practical experience. Any such refinement is to be guided by evidence, not by tradition or commercial influence — a commitment that applies to the Institute's own publications as much as to any assessment conducted under them.

Part IV – Assessment Model

13 Assessment Scope

13.1 General

Every WiFi Quality assessment begins with the definition of an Assessment Scope — the boundary within which the assessment is conducted and, in effect, the definition of what "the WiFi service" being evaluated actually consists of. This is not a formality to be dispensed with quickly. Without a clearly defined scope, findings cannot be interpreted consistently, compared against other assessments, or reproduced by a different assessor returning to the same venue; the scope is the foundation on which every subsequent activity described in this Guide depends, and an assessment conducted without one is not merely incomplete, it is not yet meaningfully an assessment at all.

13.2 Purpose of the Assessment Scope

The Assessment Scope exists to establish a shared understanding, between assessor and organisation, of exactly what is being evaluated. In practice this means specifying what falls inside the assessment and what falls outside it, where the assessment applies physically, what the assessed WiFi service is actually intended to do, and the conditions under which its findings should — and should not — be read. Taken together, these specifications supply the contextual framework that objective assessment requires; without them, "the WiFi service" remains an ambiguous phrase rather than a defined object of study.

13.3 Why Assessment Scope Is Necessary

WiFi Quality cannot be interpreted apart from the scope it was assessed within — a finding means something only in relation to the environment, the operational objectives and the service boundaries it actually pertains to. Absent a defined scope, this chain of meaning tends to break down in a fairly predictable sequence: evidence gets interpreted inconsistently from one occasion to the next; two assessors working in the same environment end up, without realising it, evaluating different parts of it; the resulting findings become difficult or impossible to compare; and any certification decision built on top of them inherits the ambiguity. It is precisely to prevent this chain of failure that the methodology requires the Assessment Scope to be settled before evidence collection begins, not derived retrospectively from whatever evidence happens to have been gathered.

13.4 Components of the Assessment Scope

An Assessment Scope should normally specify:

- the venue or organisation being assessed;
- the physical boundaries of the assessment;
- the Declared Service Areas included within it;
- any areas explicitly excluded;
- the intended users of the WiFi service;
- the intended purpose of the service;
- any operational constraints relevant to its interpretation.

Further detail may be added where necessary to support consistent interpretation,

though the items above represent the minimum an assessor should expect to find settled before proceeding.

13.5 Assessment Scope Does Not Define Quality

It is worth being explicit about what the Assessment Scope is not: it does not, in itself, say anything about whether a WiFi service is good or poor. Its function is confined to defining the environment within which quality will subsequently be assessed. Findings are derived from evidence gathered within that scope and should never be extrapolated beyond its boundaries — a finding about a hotel's guest-room WiFi says nothing, methodologically, about the same hotel's conference facilities, however tempting the inference might be.

13.6 Assessment Scope Is Established Before Assessment

The Assessment Scope is to be settled before assessment activities begin. Minor clarifications may still prove necessary once work is underway, and this is unremarkable; what matters is that any change affecting the fundamental scope — as opposed to a minor clarification of detail — be documented and justified rather than absorbed silently. Where such a change is substantial enough, the assessment may need to be repeated in whole or in part, since methodological consistency cannot survive a scope that shifts unacknowledged partway through the work.

13.7 A Methodological Hierarchy

The Assessment Scope is best understood not as an isolated boundary but as the top of a methodological hierarchy, each stage of which progressively constrains where, with what and under which methodological role evidence is gathered — set out in full in Figure 18.1 (Chapter 18.10), which this section anticipates before the concept of the Representative Consumer Device has been introduced:

Assessment Scope → Declared Service Areas → Site Areas → Representative Test Locations → [...] → Observed Network Reality

The order here is deliberate and carries a substantive claim: measurement is one of the last steps in this sequence, not the first. Before any measurement is taken, the methodology first requires a decision about what is being evaluated (the Assessment Scope), then about where the organisation has declared service to be available (the Declared Service Areas), then about how that area is methodologically subdivided into zones of reasonably similar character (the Site Areas), and only then about the specific points within each zone at which observation will actually occur (the Representative Test Locations). Measurement is what happens once all four of these decisions have already been made — not, as is often assumed, the activity that assessment methodology exists to organise around.

This hierarchy answers a different question from the one addressed by Figure 10.1. Where that earlier figure traces how a single observation is transformed into a conclusion about WiFi Quality, the hierarchy set out here establishes where within the assessed environment such observations are gathered in the first place. The two are complementary rather than overlapping: Figure 18.1 governs the design of an assessment in space; Figure 10.1 governs its reasoning once evidence begins to accumulate. Chapters 14 through 18 develop each level of this hierarchy in turn.

13.8 Principle

No WiFi Quality assessment exists independently of its Assessment Scope, and every finding, conclusion or certification decision produced under this methodology is valid only within the boundaries that scope defines. An assessment finding carried outside its scope is not a stronger claim — it is simply no longer a claim this methodology can support.

14 Declared Service Areas

14.1 General

Knowing the Assessment Scope does not, by itself, tell an assessor where WiFi service is actually meant to be available. Within any given scope, it is therefore necessary to identify the specific areas in which the organisation declares that service is offered to users — areas this methodology refers to as **Declared Service Areas (DSAs)**. A Declared Service Area marks out the part of the assessed environment for which WiFi service is intentionally provided, and it is only within these areas that WiFi Quality is subsequently evaluated.

14.2 Purpose of Declared Service Areas

The purpose of the concept is to separate areas where WiFi service is intentionally offered from areas where it is not — a distinction that turns out to matter more than it might first appear, since this methodology does not assume that every square metre of a venue is meant to carry WiFi coverage. A car park, a plant room, or an outdoor terrace at the edge of a property may simply never have been part of the service being offered, and treating their absence of coverage as a defect would misunderstand what the assessment is actually there to check.

This is worth stating as a matter of principle, because it resolves what would otherwise be a recurring and largely avoidable dispute: **a network cannot fail where it has never claimed to provide service**. The converse holds with equal force, and is no less important: **where service is declared, users acquire a reasonable expectation that the service will be available**. Together, these two statements are the entire reason Declared Service Areas exist as a distinct concept — they draw the line past which an absence of service becomes a finding, rather than an irrelevance.

14.3 Declared Service Areas Are Service Boundaries

A Declared Service Area is a boundary of service, not a boundary of architecture, and the two do not necessarily coincide. Depending on how the service is actually delivered, a single DSA may consist of one room, several adjoining rooms, an entire floor, an outdoor space, a whole building, or several buildings taken together — the determining factor is always how the WiFi service was intended to be delivered, never the shape of the walls around it.

14.4 Relationship with Assessment Scope

Declared Service Areas sit inside the Assessment Scope rather than alongside it: the Scope defines the environment being assessed as a whole, while the DSAs within it mark out where, specifically, service is intentionally provided. A single Assessment Scope will commonly contain more than one Declared Service Area — a hotel's guest floors, its conference centre and its restaurant, for instance, may reasonably be treated as three separate DSAs within one overall assessment.

14.5 Declared Service Areas Are Not Coverage Maps

It is worth being precise about what a Declared Service Area is not: it is not a record of measured coverage, and it carries no claim about how well the service actually performs. It describes intended availability, as stated before any assessment activity has taken place — whether that intention is actually met is a question the assessment itself exists to answer, not one the declaration answers in advance.

14.6 Declared Service Areas Do Not Guarantee Performance

Following directly from this, the existence of a Declared Service Area is not evidence that the service meets any particular standard of quality. It identifies only where users may reasonably expect WiFi to be available; whether the service delivered there is actually good is precisely what remains to be assessed.

14.7 Determining Declared Service Areas

Declared Service Areas should normally be settled before evidence collection begins, drawing on whatever combination of the following is available and relevant:

- venue documentation and floor plans;
- service descriptions and operational information;
- public representations made by the organisation;
- information supplied during assessment planning.

Where genuine ambiguity remains, declared areas may be clarified during the assessment itself, though this should be the exception rather than the rule.

14.8 Public Expectations

An organisation's public representations carry real weight in this determination. Where a venue publicly states, through whatever channel, that WiFi is available in a given location, users acquire a reasonable expectation that the location falls within the service — regardless of what any internal document might say to the contrary. Relevant sources here include website information, booking platforms, marketing material, on-site signage, guest information and other operational communications, and assessment planning should weigh these alongside more formal documentation rather than deferring to the latter automatically.

14.9 Excluded Areas

Some parts of the Assessment Scope will typically fall outside the Declared Service Areas by design — maintenance rooms, plant rooms, service corridors, storage facilities, restricted operational spaces, or areas simply inaccessible to ordinary users. Such exclusions are not, in themselves, deficiencies in WiFi Quality; they are simply a reflection of what the service was ever intended to cover.

14.10 Relationship with Subsequent Assessment Activities

Declared Service Areas provide the basis for a number of activities described later in this Guide, in particular the determination of Site Areas, the selection of Representative Test Locations, the design of the sampling strategy, the collection of evidence, and ultimately the interpretation of the findings themselves. It follows that DSAs need to be settled before any measurement work begins — the hierarchy set out in Chapter 13 depends on it.

14.11 Principle

WiFi Quality can only be assessed in areas where the intended service has first been explicitly declared, and every finding must be read with reference to the Declared Service Area it pertains to. The two maxims introduced in 14.2 stand as this chapter's clearest expression of that principle: a network cannot fail where it has never claimed to provide service, and where service is declared, users acquire a reasonable expectation that it will be there.

It is this expectation, and the boundary drawn to protect it, that the next chapter builds upon — Site Areas take each Declared Service Area and subdivide it, methodologically, into the units an assessor will actually work with in the field.

15 Site Areas

15.1 General

Within each Declared Service Area, the environment being assessed is divided into one or more **Site Areas** — a distinct unit of assessment within which WiFi service can reasonably be evaluated as a single, coherent environment. Site Areas supply the structural scaffolding around which the rest of an assessment is organised: evidence is collected within them, findings originate within them, and, as Chapter 13 established, they occupy the third level of the methodological hierarchy that runs from Assessment Scope down to individual measurements.

15.2 Purpose of Site Areas

A hotel is not one environment; it is several, loosely stitched together under a single roof. A guest room, a conference hall and a poolside terrace place entirely different demands on a wireless network and are used by entirely different numbers of people at entirely different times, and assessing all three as though they were a single undifferentiated space would obscure precisely the kind of localised variation a real-world assessment is meant to surface. Site Areas exist to prevent that flattening: they let the methodology organise assessment activity systematically, collect evidence that is genuinely representative of each distinct environment, and identify strengths or weaknesses specific to one part of a venue rather than relying on a site-wide average that would conceal them. The result, as a secondary benefit, is also an assessment that is more transparent and more repeatable — a later assessor working from the same Site Area boundaries can check the earlier work directly, rather than trying to reconstruct what "the venue" was taken to mean.

15.3 Site Areas Are Methodological Units

A Site Area is defined for the purposes of assessment, not for the purposes of architecture, and it need not correspond to a room, a floor, a building, an administrative division or a network segment — though it may, of course, coincide with any of these where that happens to be the natural boundary. What determines a Site Area's boundary is the requirement of the assessment itself, not the layout of the building it sits within.

15.4 Determining Site Areas

Site Areas should be established with regard to factors such as:

- expected user behaviour and the intended use of the WiFi service;
- physical layout and operational characteristics;
- differences in user density between adjoining spaces;
- functional separation between spaces serving different purposes;
- environmental characteristics with a bearing on WiFi Quality.

None of these factors mechanically determines a boundary on its own; professional judgement remains necessary to ensure that the resulting Site Areas are genuinely meaningful units of assessment, rather than an arbitrary subdivision applied for its own sake.

15.5 Examples of Site Areas

Typical examples include hotel guest rooms, reception areas, conference facilities, restaurants, cafés, coworking spaces, hospital waiting areas, classrooms, airport departure lounges, railway platforms, outdoor terraces, swimming pool areas and exhibition halls. Any single venue of reasonable size will normally contain several such areas, each warranting separate treatment within the same overall assessment.

15.6 Site Areas May Vary in Size

No fixed physical size applies to a Site Area. It may consist of a single room, several adjacent rooms, an entire floor, an outdoor environment, an individual building, or several connected spaces that perform the same operational function despite being physically separate. What matters is not scale but homogeneity: a Site Area should be defined at whatever size makes it a coherent unit for evaluation, whether that unit turns out to be a single office or an entire wing.

15.7 Site Areas Support Representative Assessment

Site Areas are also the framework within which Representative Test Locations are subsequently selected. Rather than attempting to assess every point within a venue individually — an approach that would be both impractical and, per Chapter 17, unnecessary — the methodology seeks evidence that reasonably represents conditions throughout each Site Area, which is what makes representative assessment practically achievable at all.

15.8 Individually-Occupied Units and the Defensible Basis Test

The general logic set out in 15.7 — that assessing every point individually is both impractical and unnecessary — presupposes a defensible basis for treating one location as representative of another, an assumption examined here for a specific and important category of space where it does not automatically hold.

Some Site Areas are not simply spaces users pass through or share, but units assigned to a single occupant for exclusive, extended use — a hotel guest room, a private hospital room, a dedicated office. Sampling across similar spaces of this kind is legitimate only where a defensible basis exists for treating one as representative of another — a requirement that follows directly from Contextuality, one of the governing Principles of this discipline (WQI-PRN-001, 13.4): *"conditions observed at one point in time or location may not support general conclusions unless there is a defensible basis for treating them as representative."* For a corridor, an open-plan floor, or a continuous outdoor area — the kind of space 15.7 has in mind — that basis is usually straightforward to establish: signal conditions tend to vary gradually with distance and

structure, and a well-chosen sample captures the pattern of that variation.

For individually-occupied units, this basis cannot be assumed by default. A structural boundary — a wall separating one room from the next — may coincide with differences invisible from a floor plan alone: a structural pillar embedded in one wall and not another, proximity to a lift shaft or riser, a section of cabling routed differently, a prior renovation affecting only part of a floor. None of these differences need be visible to an assessor working from general similarity of furnishing and layout, and none of them would necessarily average out across a sample the way continuous variation across an open space tends to.

Accordingly, where a Site Area consists of individually-occupied units, similarity in construction and furnishing does not, by itself, constitute a defensible basis for sampling across them. Such a basis exists only where the assessor can affirmatively establish — through documented structural information, consistent measured distance from the relevant access point, or equivalent evidence — that the units in question do not differ in ways plausibly capable of affecting the service delivered within them. Where this cannot be established, each individually-occupied unit within the Assessment Scope is treated as warranting its own Representative Test Location, and sampling across the group is not applied.

This is not a departure from 15.7's general logic, but its precise application to a category of space where the underlying assumption is harder to establish and carries higher stakes: a guest sleeping in a room for the night, or a patient occupying a ward bed, has not purchased "the average service across the floor," but the service delivered within the specific unit assigned to them. This requirement is stated here as a general principle of the methodology, independent of how any specific implementation — manual, application-assisted, or otherwise — chooses to satisfy it. The burden it describes is evidential, not procedural: what this Guide requires is that representativeness be demonstrable, not that it be established through any particular tool or workflow.

15.9 Site Areas Are Evaluated Individually, and Not All Carry Equal Weight

Two consequences follow from treating Site Areas as the primary unit of assessment, and they are worth reading together rather than separately, since each qualifies the other.

The first is that findings are interpreted at the level of the individual Site Area before any site-wide conclusion is drawn. This matters because strong performance in one part of a venue can otherwise mask a genuine deficiency elsewhere — a hotel with excellent guest-room coverage and an unusable conference centre has not, on balance, delivered good WiFi Quality, even if an average across the two spaces might suggest otherwise. Each Site Area, in other words, contributes independently to the overall picture; none is permitted to be averaged away by another.

The second is that not every Site Area carries the same significance within that picture. Some represent core service environments where users have every reason to expect reliable performance; others may be of comparatively marginal operational importance. This difference in weight may legitimately shape assessment planning and sampling strategy, and it may inform how findings are ultimately interpreted — but it does not exempt any declared Site Area from being assessed on its own terms. A low-priority area is still assessed; it is simply not read as equivalent, in consequence, to a failure in

a core service environment.

15.10 Relationship with Representative Test Locations

Representative Test Locations, discussed in the next chapter, are always selected within a specific Site Area, and their selection should reflect the characteristics of that Site Area rather than the venue as a whole. This is what keeps the evidence gathered genuinely representative of the environment it is meant to describe, rather than representative of the building in some vaguer, less useful sense.

15.11 Relationship with Assessment Findings

Assessment findings originate within Site Areas, and any overall conclusion about a venue's WiFi Quality is built up through the structured interpretation of findings gathered across all the relevant Site Areas together. The resulting assessment is, in this sense, an evaluation of a complete set of areas considered individually and then in relation to one another — not a single aggregated measurement that treats the venue as an undifferentiated whole.

15.12 Principle

WiFi Quality is assessed area by area before it is interpreted site-wide. Site Areas are, accordingly, the primary units through which this methodology organises, interprets and evaluates assessment evidence — and it is at this level, rather than at the level of the venue as a whole, that the next chapter's Representative Test Locations are chosen.

16 Representative Test Locations

16.1 General

Within each Site Area, Assessment Evidence is collected from one or more **Representative Test Locations (RTLs)** assigned a methodological role under 16.6. Primary and Secondary RTLs support representative characterisation of the Site Area; Verification and Targeted RTLs address doubts or specific documented concerns. RTL selection is never intended to locate whichever position produces the best or worst result, but to obtain evidence appropriate to the role assigned to each location.

16.2 Purpose of Representative Test Locations

RTLs exist to make the assessment of large, complex environments practically achievable without requiring measurement at every conceivable position — an approach that would be both unnecessary and, per Chapter 17, methodologically counterproductive.

By concentrating baseline evidence collection on Primary and Secondary RTLs that appropriately represent the Site Area, while using Verification and Targeted RTLs only for their defined diagnostic or investigative roles, the methodology obtains sufficient evidence without requiring exhaustive measurement. The validity of an assessment rests on each RTL being appropriate to the methodological role assigned to it; a poorly chosen or misclassified location, however precisely measured, weakens the assessment.

16.3 Representative Does Not Mean Average

Representativeness does not mean statistical averaging. For Primary and Secondary

RTLs, the relevant question is whether the location appropriately reflects ordinary use or meaningful spatial variation within the Site Area. Verification and Targeted RTLs serve different purposes: their validity depends on whether they properly address the doubt or documented concern that justified them, not on whether they represent the Site Area as a whole.

16.4 Representative Does Not Mean Convenient

An RTL is never chosen because it happens to be easy to reach, quick to test, or operationally convenient for the assessor — a temptation worth naming plainly, since it is probably the single most common way representativeness quietly erodes in practice. Selection depends on professional judgement applied to the actual characteristics of the Site Area; convenience may occasionally coincide with representativeness, but it is never the criterion doing the work.

16.5 Selection Criteria

Assessors selecting Primary and Secondary RTLs should weigh factors including expected user behaviour and typical occupancy, the intended use of the area, environmental characteristics and physical layout, furniture and obstacles, expected traffic patterns, typical device usage, and prevailing operational conditions. Verification RTLs are selected in response to an anomaly or doubt arising from earlier evidence, while Targeted RTLs are selected to investigate a specific documented concern. The objective is not to maximise the number of points tested, but to ensure that each RTL is appropriate to the methodological role assigned to it. For baseline characterisation, a smaller number of well-chosen Primary and Secondary RTLs will generally produce more reliable evidence than a larger number of poorly chosen locations.

16.6 Categories of Representative Test Location

Not every RTL serves the same purpose within an assessment, and making this explicit resolves a question the methodology would otherwise leave open: how can two assessors, working independently in the same Site Area, choose different physical points and still be said to be following the same method? The answer is that representativeness is a matter of methodological *role*, not of coordinates — and four such roles recur consistently enough across assessments to warrant naming.

Primary RTL. The location that most directly captures the normal experience of a typical user within the Site Area — the default reference point against which the rest of the assessment is built. Every Site Area requires at least one.

Secondary RTL. A location selected to check for legitimate variation within an otherwise homogeneous Site Area — a different seating zone in the same restaurant, a different stretch of the same reception lobby. Secondary RTLs exist to confirm that the Primary RTL was not, in fact, an unrepresentative choice.

Verification RTL. Selected reactively, once evidence from a Primary or Secondary RTL appears anomalous, in order to establish whether that anomaly is an isolated artefact or a genuine feature of the Site Area. A Verification RTL is diagnostic in purpose: it exists to settle a doubt the earlier evidence has raised, not to gather fresh baseline evidence.

Targeted RTL. Chosen for a specific, documented reason external to the general sampling logic of the Site Area — a recurring guest complaint, a known structural feature (a lift shaft, a firewall, an area of unusual construction), or a characteristic the

organisation itself has declared as relevant. A Targeted RTL is not meant to represent the Site Area as a whole; it is meant to investigate something specific within it, and should be documented and interpreted as such.

The value of this classification is practical rather than merely taxonomic: it allows two assessors to arrive at different physical points while performing methodologically equivalent work, provided each point can be justified in terms of the role it plays. What this methodology asks an assessor to fix is the *role* a location serves within the assessment — Primary, Secondary, Verification or Targeted — not its exact position on a floor plan.

16.7 Multiple Representative Test Locations

A Site Area often requires more than a single Primary RTL — additional locations, whether Secondary, Verification or Targeted, become appropriate where the area exhibits meaningful variation in layout, user behaviour, expected utilisation, environmental conditions or service characteristics. The number and category of RTLs selected should be proportionate to the actual complexity of the Site Area, consistent with WQR-11; a small, uniform meeting room may need nothing beyond a single Primary RTL, while a large, functionally varied conference centre may require several Primary and Secondary RTLs and, where evidence or documented concerns justify them, one or more Verification or Targeted RTLs.

16.8 Representative Test Locations Are Not Permanent

RTLs are established for the purposes of a given assessment, not fixed for all time. A later assessment of the same venue may legitimately select different points, provided each satisfies the requirements applicable to its assigned methodological role. Primary and Secondary RTLs must remain appropriate for representative characterisation; Verification and Targeted RTLs must remain justified by the doubt or documented concern they are intended to address. The methodology is built around methodological role rather than fixed measurement coordinates to be revisited unchanged on every future occasion.

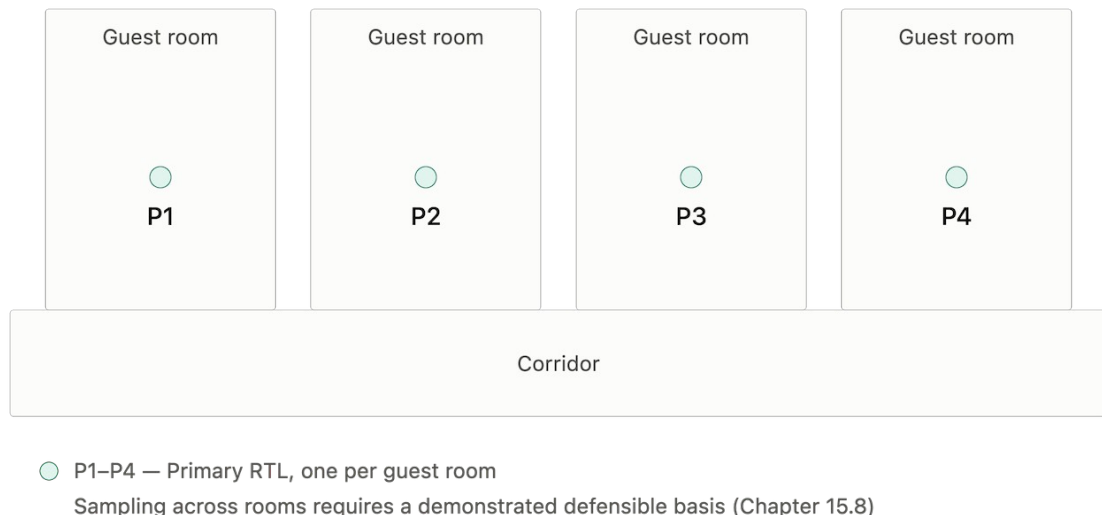
16.9 Relationship with Assessment Findings

Evidence gathered at an RTL contributes to the evaluation of the Site Area in accordance with the methodological role assigned to that RTL. A Primary RTL establishes the representative baseline; Secondary RTLs examine relevant spatial variation; Verification RTLs resolve doubts raised by earlier evidence; and Targeted RTLs investigate specific documented concerns. Evidence from a Verification or Targeted RTL shall not be generalised to the Site Area as a whole unless the wider Assessment Evidence supports that conclusion. The overall assessment of the Site Area is therefore built from representative baseline evidence together with any diagnostic or investigative evidence relevant to its interpretation.

16.10 Examples

Example 1 — Hotel Guest Room Corridor. A floor of twenty guest rooms is an instance of the individually-occupied units discussed in Chapter 15.8: similarity in furnishing and layout does not, by itself, establish a defensible basis for sampling across them. Unless the assessor can affirmatively establish — through structural documentation, consistent measured distance from the relevant access point, or equivalent evidence

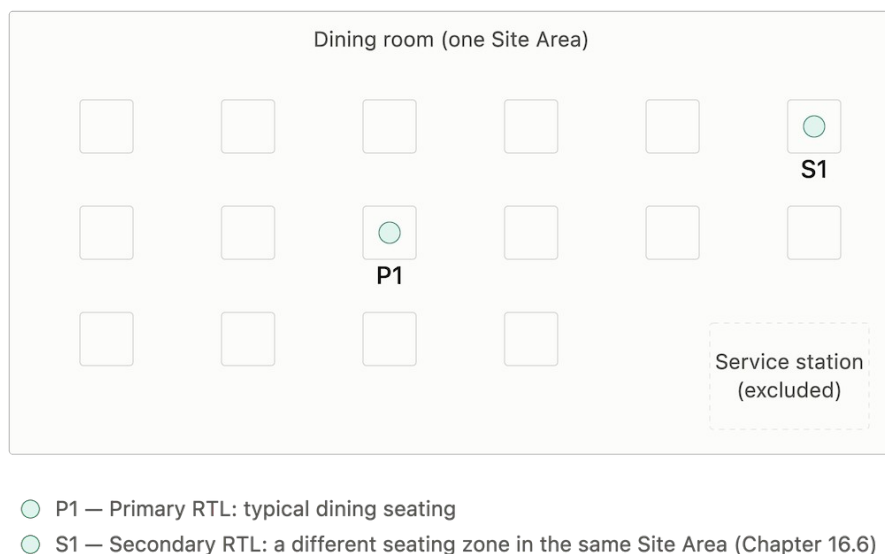
— that the rooms do not differ in ways capable of affecting service, each room warrants its own Primary RTL. Where such a basis genuinely exists (for instance, an identical row of rooms served by a single corridor-mounted access point, with confirmed uniform construction and no intervening structural features), Secondary RTLs may still be used to confirm that basis empirically — but the burden of establishing it rests with the assessor, and is not assumed by default from general similarity alone.



(Figure 16.1) — Guest-room RTL coverage. Each guest room requires its own Primary RTL unless the defensible basis for sampling across individually occupied units required by 15.8 has been demonstrated.

Example 2 — Hotel Reception. The Primary RTL should reflect where guests actually stand or linger while using WiFi — not the space behind the reception desk, which no guest ever occupies.

Example 3 — Restaurant Dining Area. Primary RTLs should reflect the tables at which diners ordinarily use the service, rather than service stations or kitchens. Different seating zones within one justified Site Area may be represented by additional Secondary RTLs. If the interior and terrace are separate Site Areas under Chapter 15, each requires its own Primary RTL. The accompanying P1/S1 illustration applies only to the former, single-Site-Area case; it does not waive the Primary requirement for a separate terrace Site Area.

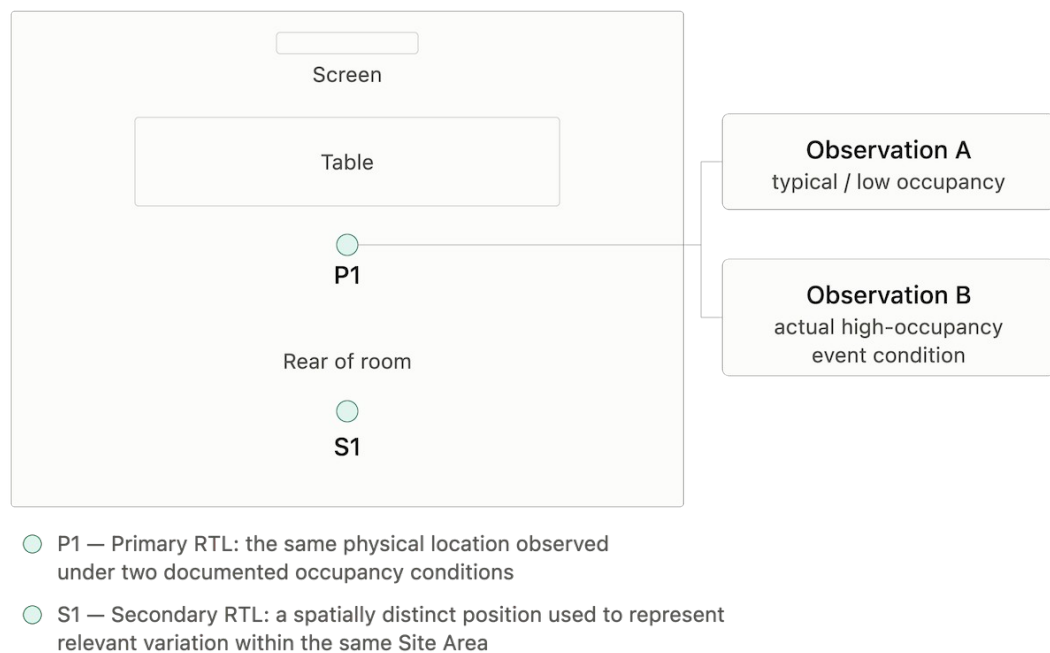


(Figure 16.2) — Primary and Secondary RTLs within a single restaurant Site Area. P1 represents typical dining use; S1 checks legitimate variation within a different seating zone of the same Site Area.

Example 4 — Airport Departure Lounge. RTLs should reflect the seating areas passengers actually occupy while waiting, not isolated corners or maintenance spaces that see no genuine use.

Example 5 — Hospital Waiting Area. Locations should represent the space normally occupied by patients and visitors, not staff-only clinical areas that fall outside the relevant user population.

Example 6 — Conference Centre. A conference room should retain a Primary RTL representing ordinary user seating. Where both typical and peak event conditions fall within the Assessment Scope, the same Primary RTL may be observed under more than one documented Operational Context, including low-occupancy and actual high-occupancy event conditions. Additional Secondary RTLs may represent meaningful spatial variation within the room. A Targeted RTL is reserved for a specific documented concern and is not created merely because the same location is observed at a different time or load condition.



(Figure 16.3) — *Conference-room RTL roles and Operational Context. The same Primary RTL may be observed under different documented occupancy conditions; a change in occupancy does not, by itself, create a Targeted RTL. A Secondary RTL may be used to represent relevant spatial variation within the same Site Area.*

Example 7 — Outdoor Terrace. Where outdoor WiFi is declared, RTLs should sit where guests actually sit, not along boundary fences or landscaped margins nobody occupies.

Example 8 — University Classroom. RTLs should be distributed across student seating areas rather than concentrated at the lecturer's position alone, which is not representative of where the majority of users are located.

Example 9 — Railway Platform. Assessment should focus on the areas where passengers actually wait, not maintenance access routes or infrastructure enclosures that fall outside normal use.

Example 10 — Open-Plan Office. A Targeted RTL near a server cabinet or communications room may be justified where interference is suspected, but it should never substitute for Primary RTLs at ordinary employee workstations, which remain the baseline the assessment is actually concerned with.

16.11 Principle

Representative Test Locations are defined by methodological role, not by fixed coordinates. Primary and Secondary RTLs represent ordinary use or relevant spatial variation within the Site Area; Verification and Targeted RTLs address specific doubts or documented concerns. Two assessors may select different physical points and still apply the same methodology where the role and justification of each RTL are methodologically equivalent. It is this invariance of role rather than coordinate identity that allows the methodology to remain both rigorous and adaptable to diverse real-world environments.

17 Sampling Strategy

17.1 General

Real-world WiFi environments are complex almost by definition. Even a modest venue may contain hundreds, if not thousands, of physical positions at which a measurement could in principle be taken, and assessing every one of them is neither practical nor, as this chapter sets out to show, methodologically necessary. This Technical Guide adopts instead a representative sampling strategy, built on the selection of Representative Test Locations within defined Site Areas — the aim being to gather evidence sufficient to support a reliable assessment, not to produce an exhaustive survey of every point in the environment.

17.2 Why Complete Measurement Is Neither Practical nor Necessary

The purpose of an assessment is to determine the quality of the WiFi service delivered within a defined Assessment Scope, and that purpose does not require measuring every physical location within it. Many points inside the same Site Area share broadly similar characteristics, and repeating a measurement at each of them adds little beyond what the first measurement already showed — considerable additional effort, in other words, for very little additional insight. The methodology's priority, accordingly, is the quality of the evidence gathered, not the quantity of measurements taken to gather it.

17.3 Representative Sampling

Representative sampling is established principally through Primary and Secondary RTLs selected to characterise ordinary use and relevant variation within each Site Area. Verification and Targeted RTLs may supplement that baseline for diagnostic or investigative purposes but do not replace it.

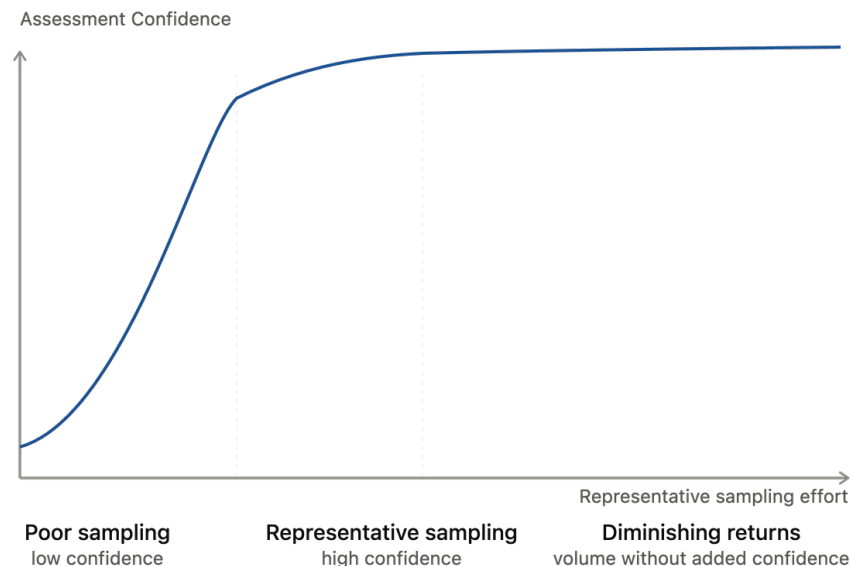
17.4 From Sampling to Assessment Confidence

It is worth being precise about what additional sampling actually buys an assessment, because the relationship is not the linear one it might appear to be at first glance. Confidence in an assessment's conclusions depends far more on how well the sampled locations were chosen than on how many of them there are — a fact that can be set out schematically:

Poor sampling → low Assessment Confidence, regardless of how many points are tested

Representative sampling → high Assessment Confidence, achieved with a modest, well-chosen set of locations

Sampling beyond this point → diminishing returns: additional measurements mostly reproduce what earlier ones already showed, adding volume without adding confidence



(Figure 17.1) Schematic relationship for a representative sampling design. The horizontal axis represents increasing sampling effort only after a defensible sampling strategy has been established; poorly selected RTLs do not become representative merely because their number increases.

Confidence, in other words, rises steeply as sampling moves from poor to representative, and then flattens: once a Site Area's characteristics have genuinely been captured, further measurement does not make the assessment more correct — it simply accumulates redundant evidence. A smaller number of well-chosen Representative Test Locations will, in practice, generate more Assessment Confidence than a much larger number of carelessly chosen ones, which is precisely why this methodology treats thoughtful planning as doing more work than exhaustive measurement ever could.

This distinction matters commercially as much as it does methodologically. What an organisation is paying for, in the end, is not a count of tests performed, but a defensible level of confidence in the conclusion reached — and a methodology that conflated the two would be selling volume rather than assurance.

17.5 Proportionality

The sampling strategy applied to a given assessment should be proportionate to the environment being assessed, with regard to the size of the Assessment Scope, the number of Declared Service Areas, the diversity of Site Areas, the variation expected in WiFi service across them, environmental complexity, user behaviour, and the operational significance of individual areas. More complex environments will, as a rule, require a correspondingly larger set of Representative Test Locations to reach the same level of Assessment Confidence — not because more measurement is inherently better, but because more genuine variation needs to be captured.

17.6 Sampling Does Not Apply Uniformly Across All Space Types

The diminishing-returns logic set out in 17.4 (Figure 17.1) presupposes that a defensible basis for representativeness exists within the Site Area being sampled — the premise examined in Chapter 15.8. That premise generally holds for shared and transitional spaces: corridors, lobbies, dining rooms, open-plan offices, and similar environments

where conditions vary continuously and a well-chosen sample captures that variation without requiring exhaustive coverage.

The same premise does not hold by default for individually-occupied units — hotel guest rooms, private hospital rooms, dedicated offices, and comparable spaces assigned to a single occupant for exclusive use. For these, Assessment Confidence is not established through representative sampling across the group; it is established through coverage of each unit individually, unless the assessor has affirmatively demonstrated the defensible basis for representativeness that Chapter 15.8 requires. Proportionality (WQR-11, 17.5) is not set aside by this distinction — it is precisely what this distinction expresses: the effort proportionate to an individually-occupied unit is different in kind from the effort proportionate to a shared space, because the population being characterised, and the stakes of extrapolating incorrectly, are different in each case.

17.7 Additional Sampling

Additional Representative Test Locations may become necessary where the evidence already gathered proves insufficient to characterise a Site Area with confidence — for instance where measurements show unexpected variability, inconsistent service behaviour, significant environmental diversity, conflicting evidence, or operational conditions not previously identified. The methodology remains adaptive in this respect without sacrificing consistency: additional sampling, when it happens, is a response to a documented gap in confidence, not an open-ended search for more data.

An additional Representative Test Location constitutes a further planned observation. It does not replace, supersede or annul observations already recorded, which remain part of the assessment record. The methodological role of an additional RTL shall be determined at the point of its addition, since that role governs whether it contributes to the coverage required for the Site Area. Additional sampling is documented as an application of the sampling requirements of this Chapter to the observed characteristics of the Site Area.

17.8 Representative Sampling Is Not Random Sampling

This methodology does not rely on statistical randomisation. Representative Test Locations are chosen through professional judgement informed by the actual characteristics of the Site Area, because the goal is methodological representativeness, not statistical randomness — two properties that are related but by no means identical, and a random sample of a Site Area's positions is not automatically a representative one. The sampling strategy accordingly combines structured planning with the kind of informed judgement discussed at length in Chapter 16.

17.9 Relationship with Site Areas

Sampling is always conducted within individual Site Areas, each considered independently when the number and distribution of RTLs is determined. This keeps the evidence gathered representative of the specific assessment unit it belongs to, rather than representative of some vaguer notion of "the venue" that no single sampling strategy could actually capture.

17.10 Relationship with Assessment Findings

Findings are built from the collective interpretation of evidence gathered across all

sampled Site Areas, and no individual measurement is extrapolated indiscriminately beyond the location it was taken at. Each RTL contributes to the understanding of the Site Area it belongs to; overall conclusions are then developed by interpreting the findings from every Site Area together, in the manner set out in Part V.

The applicable coverage basis combines the express requirements of this Technical Guide with the assessor's documented, scope-specific determination under Chapters 15–17 and any additional requirements of an applicable Assessment Protocol. This Guide does not prescribe a universal sampling formula or a fixed total count for every venue; it does require at least one Primary RTL in every Site Area under 16.6. Where 17.6 applies, each individually occupied unit is covered unless the defensible basis required by 15.8 has been established and recorded. Professional judgement does not waive these express requirements or a stricter applicable Assessment Protocol. The adopted coverage basis and the versions of the methodology and any applicable Assessment Protocol shall be recorded with the assessment.

17.11 Principle

The objective of sampling is not to measure more. The objective is to know enough to support a reliable assessment.

Assessment quality, in the end, depends on the representativeness of the evidence gathered — on Assessment Confidence — far more than on the raw number of Representative Test Locations tested. A methodology that mistook the second for the first would be optimising for the wrong thing entirely.

18 Consumer Devices

18.1 General

WiFi services are, in the end, used through consumer devices — smartphones, tablets, laptops, and the growing range of similar equipment ordinary users actually carry. This methodology is built on the corresponding principle that assessment evidence should be gathered using devices that reasonably represent those the intended users of a given service would actually use. The object of assessment is not the theoretical capability of the wireless infrastructure in isolation, but the quality of the service as it is delivered through the devices by which it is genuinely accessed.

18.2 Why Consumer Devices Matter

Every interaction between a user and a WiFi service passes through a client device, and no amount of sophistication in the underlying infrastructure escapes the constraints that device imposes. A perfectly engineered network still delivers whatever a five-year-old smartphone chipset is capable of receiving. This methodology accordingly treats the consumer device not as a neutral measuring instrument standing outside the system, but as an integral part of what is actually being assessed.

18.3 Assessing the Service, Not the Infrastructure

The purpose of this assessment is to evaluate the service available to users — not to benchmark access points, compare wireless chipsets, or establish the maximum performance achievable under laboratory conditions, none of which tells you much about what an ordinary user actually experiences. Assessment evidence should

accordingly reflect the behaviour of the complete service as experienced through representative consumer devices, operating under the normal conditions described in Chapter 10, rather than through equipment designed to extract a network's theoretical ceiling.

18.4 Representative Consumer Devices (RCDs)

This methodology accordingly formalises a concept that runs parallel to the Representative Test Location introduced in Chapter 16: the **Representative Consumer Device (RCD)** — a consumer device selected because it reasonably represents the devices commonly used by the intended user population of the assessed WiFi service.

The parallel with the RTL is deliberate and, in practice, exact. Where a Representative Test Location answers the question of *where* users access a service, a Representative Consumer Device answers the question of *what they access it with* — and a methodology that took the first question seriously while leaving the second to whatever equipment happened to be on hand would be only half representative. Relevant device categories will typically include smartphones, tablets, laptops and any other consumer WiFi devices appropriate to the service's intended use, selected with reference to the characteristics of the expected user population rather than the availability of specialised equipment an assessor happens to own.

NOTE — For the purposes of this methodology, the term Representative Consumer Device describes the representative client-device class through which intended users actually consume the assessed WiFi service. In operational environments this may include specialised user devices, such as handheld scanners or other task-specific wireless terminals, where those devices constitute the normal means by which the intended users access the service.

18.5 Device Diversity

Consumer devices legitimately behave differently from one another — differences that can arise from WiFi generation, antenna design, radio sensitivity, transmit power, chipset implementation, operating system behaviour, roaming algorithm, power management strategy, or simple software configuration. None of this variation is a nuisance to be engineered away. It is an inherent feature of real-world WiFi environments, and the methodology accordingly seeks to represent the diversity of typical user devices — through the selection of more than one RCD where the user population itself is diverse — rather than to flatten that diversity into a single idealised reading.

18.6 Consumer Devices Are Part of the System

An RCD is not, within this methodology, an external observer looking in on the network from outside. It is one component of the operational system being assessed, standing alongside the wireless infrastructure, the network architecture, the Internet connection and the operational environment itself. The service actually observed emerges from the interaction of all five; assessment accordingly considers the complete ecosystem rather than isolating any single component, the RCD included, as though it could be studied apart from the rest.

18.7 Specialised Measurement Equipment

Specialised engineering tools — for RF analysis, spectrum analysis, troubleshooting,

network optimisation, infrastructure validation — remain genuinely valuable for the professional activities they were built for, and nothing here questions their worth in that domain. Their objective, however, is different from this methodology's own: such tools are typically built to see past the constraints an RCD would impose, which is precisely what makes them unsuited to standing in for one. Evidence obtained solely through specialised engineering equipment is accordingly treated as complementary to RCD-based observation, never as a substitute for it.

Representative Consumer Devices are not calibrated spectrum analysers, reference receivers or laboratory RF instruments, and this methodology does not treat them as such. Their methodological value arises from their representativeness of the devices through which users actually receive the service, not from an assumption of calibration-grade measurement precision.

Accordingly, evidence obtained through an RCD may support conclusions about the service delivered through that class of device under the observed conditions. It shall not, without appropriate supporting evidence, be interpreted as establishing the calibration-grade RF characteristics that specialised measurement equipment is designed to determine.

18.8 RCD Selection

The RCDs selected for an assessment should be appropriate to the venue's actual user population, having regard to venue type, expected users, common device categories, the operational objectives of the assessment, and the general technological relevance of the devices chosen. Consistent with the technology-neutral character of this methodology, no specific manufacturer, operating system or device model is prescribed.

This extends to the age and generation of the devices themselves. An RCD should reflect what a representative user population would realistically be carrying at the time of the assessment — neither the newest hardware available on the market, which few ordinary users would yet own, nor obsolete devices no longer in common use, which few ordinary users would still be carrying. This methodology does not prescribe a fixed threshold of device age, consistent with its avoidance of fixed numerical parameters throughout; the judgement required is the same one already governing RTL selection in Chapter 16 — representativeness of what is actually encountered, not convenience, and not either extreme of what technology currently permits.

18.9 Technology Neutrality

This methodology remains independent of any particular device manufacturer or operating system. Equivalent evidence gathered using different RCDs is regarded as equally valid, provided each device selected is genuinely appropriate to the assessment's intended user population — a requirement on the evidence's representativeness, not on the brand of the device that produced it. This is what allows the methodology to remain applicable as consumer devices continue to change, generation after generation, without needing revision each time a new chipset reaches the market.

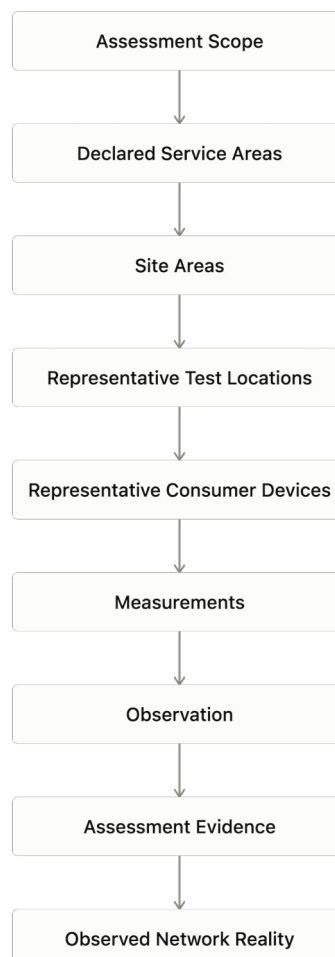
Methodological validity does not imply numerical interchangeability between devices. Device-reported measurements may be influenced by differences in antenna design, chipset implementation, radio sensitivity, driver behaviour, operating-system reporting

and other device-specific characteristics. This is particularly relevant to received signal indicators such as RSSI, whose reported values should be interpreted within the context of the device that produced them rather than assumed to be calibration-equivalent across different consumer devices.

Where measurements obtained from different RCDs are compared directly, the assessor should therefore distinguish between evidence that is methodologically comparable for the assessment purpose and values that can legitimately be treated as numerically equivalent. The former does not automatically establish the latter.

18.10 Relationship with Observed Network Reality

Observed Network Reality, as defined in Chapter 11, is established through evidence collected using Representative Consumer Devices operating within representative real-world conditions at Representative Test Locations. Assessment findings, in consequence, describe the service actually delivered to users — not the theoretical ceiling of the infrastructure beneath it. With the introduction of the RCD, the methodological hierarchy anticipated in Chapter 13.7 should accordingly be read in its complete form:



(Figure 18.1)

The addition of the RCD to this chain makes explicit what was previously only implicit in

the concept of Observed Network Reality: representativeness in this methodology is a joint property of *where* evidence is gathered and *what* it is gathered with, and neither dimension can compensate for a failure in the other. A perfectly chosen Representative Test Location, tested with an unrepresentative device, produces evidence no more trustworthy than an unrepresentative location tested with an ideal one.

18.11 Principle

WiFi Quality is assessed through the devices by which the service is actually intended to be used. Just as this methodology places the Representative Test Location at the centre of where evidence is gathered, it places the Representative Consumer Device at the centre of what gathers it — two halves of the same underlying commitment to representativeness, neither of which the methodology treats as sufficient on its own.

19 Evidence Collection

19.1 General

An assessment is only as reliable as the evidence it rests on, which makes evidence collection one of the most consequential activities this methodology governs — not a preliminary chore to be completed quickly, but the point at which the quality of everything that follows is largely determined. The objective here is not to maximise how much information gets gathered; it is to obtain Assessment Evidence that is sufficient, relevant and representative enough to support a reliable finding. Collection accordingly proceeds in a manner that is systematic, transparent and methodologically consistent, or it does not produce evidence this methodology can use.

19.2 Purpose of Evidence Collection

Evidence collection exists to build an objective understanding of the service actually delivered within the defined Assessment Scope. What is gathered here becomes the material from which Observed Network Reality is established, from which findings are developed, from which conclusions are justified, and against which independent review subsequently becomes possible. It is worth holding onto this framing throughout: evidence collection is a means of understanding a service, not an exercise in accumulating measurements for their own sake.

19.3 Assessment Evidence

Assessment Evidence, as defined in Chapter 11, consists of objective information that satisfies the methodological requirements this Technical Guide establishes — drawn from observation, measurement, analysis, or other verifiable sources, but qualifying as Assessment Evidence only once it has been collected within this methodological framework and shown to be relevant to the assessment's objectives. Information gathered outside that framework, however factually accurate, remains Evidence in the general sense of Chapter 11 without yet being Assessment Evidence in the stricter sense this chapter requires.

19.4 Four Attributes of Evidence Quality

Rather than treating "good evidence" as a single, undifferentiated quality, this methodology distinguishes four attributes that Assessment Evidence should possess, each answering a different question an assessor needs to ask before relying on what has been gathered:

Attribute	Governing Question
Sufficiency	Has enough evidence been gathered to support a finding?
Relevance	Does this evidence actually bear on the question the assessment is asking?
Representativeness	Does it represent the users and operating conditions relevant to the assessment question, with any deliberately induced or exceptional conditions identified and their limits stated?
Reliability	Can this evidence be trusted — was it obtained and recorded in a way that withstands scrutiny?

(Table 19.1)

These four attributes are independent of one another, which is precisely why each needs to be checked separately: evidence can be abundant without being relevant, relevant without being representative, and representative without being reliable. A finding built on evidence that fails even one of these four tests is, to that extent, a weaker finding — regardless of how well it performs against the other three. Sections 19.5 through 19.8 examine each attribute in turn; Chapter 20 then addresses the procedural safeguards — documentation, traceability, protection against tampering — through which Reliability specifically is established and defended in practice.

19.5 Sufficiency

Sufficiency asks whether enough evidence has actually been gathered to support the finding an assessor is about to make — a question answered, in practice, through the sampling logic set out in Chapter 17 and the concept of Assessment Confidence it introduces. Evidence is sufficient not when a predetermined quota of measurements has been reached, but when the assessor has enough to be confident the conclusion would not change with further sampling.

19.6 Relevance

Only evidence that actually bears on the assessment's objectives should be collected; gathering information for its own sake adds complexity without necessarily adding insight, and can obscure the evidence that actually matters beneath material that does not. Professional judgement is required here, and it cuts in both directions — an assessor should resist the temptation to over-collect just as much as the temptation to under-collect.

19.7 Representativeness

Evidence intended to represent ordinary service conditions should reflect the WiFi service as it operates under conditions relevant to the Assessment Scope. Deliberately induced or controlled conditions, including documented load tests of the kind described in 8.3 and 12.3, may constitute valid Assessment Evidence where their purpose, limits and relationship to ordinary use are explicit.

Undocumented exceptional conditions, or deliberately induced conditions presented as though they represented ordinary service without an appropriate basis, are not representative evidence of ordinary operation. The methodological requirement is therefore not that every Observation occur under ordinary conditions, but that the conditions represented by each item of evidence are accurately identified and not generalised beyond what they support.

19.8 Reliability

Reliability asks whether a given piece of evidence can actually be trusted — whether it was obtained and recorded in a way capable of withstanding independent scrutiny. Where reasonably practicable, Assessment Evidence should be verifiable: enough contextual detail should be recorded that a reviewer, working from the documentation alone, could retrace how the evidence was obtained and satisfy themselves of its reliability. Every assessment conclusion should, in the end, be traceable back to evidence that meets this standard — a requirement Chapter 20 develops into concrete procedural terms.

19.9 Multiple Sources of Evidence

No single observation should normally determine an outcome on its own. A reliable assessment depends on multiple complementary sources of Assessment Evidence, which may reinforce one another, resolve an apparent inconsistency, supply context a single measurement could not provide on its own, or simply raise the overall confidence behind a finding. Evidence of this kind is interpreted collectively, in the manner set out in Chapter 24, rather than read item by item in isolation.

19.10 Evidence Collection Is Iterative

Evidence collection rarely proceeds in a straight line. An early observation may reveal the need for additional measurement, an extra Representative Test Location, or further investigation the original plan had not anticipated — and the methodology accommodates this, provided the resulting adjustments are made in a way that preserves methodological consistency rather than undermining it. This connects directly to the additional-sampling provisions of Chapter 17.7: iteration in response to genuine gaps in confidence is expected, not a departure from method.

19.11 Relationship with Evidence Correlation

Evidence collection is the first stage of a longer process of interpretation, not its conclusion. Collected Assessment Evidence does not, by itself, determine a finding; findings emerge only once the evidence gathered here has passed through the structured correlation described in Chapter 24. Collection precedes correlation, in other words, but does not substitute for it — a distinction worth keeping in mind, since it is easy to mistake a well-stocked evidence base for a finished assessment.

19.12 Principle

Assessment conclusions rest on Assessment Evidence that is sufficient, relevant, representative and reliable — the four attributes set out in Table 19.1 — gathered within the defined Assessment Scope. The quality of an assessment depends on how well its evidence satisfies these four attributes together, not on how much evidence was collected in total.

20 Evidence Integrity

20.1 General

An assessment is reliable only to the extent that the evidence behind it is reliable, which is a different requirement from simply having collected enough of it. **Evidence Integrity** refers to the degree to which Assessment Evidence can be regarded as authentic,

accurate, complete, consistent, traceable and reliable enough to support the findings built upon it. Where Chapter 19 asked whether the right evidence was gathered, this chapter asks whether that evidence can still be trusted by the time it is actually used.

20.2 Purpose of Evidence Integrity

Evidence Integrity exists to ensure that Assessment Evidence continues to represent, faithfully, what was actually observed during the assessment — retaining its meaning, its context and its traceability throughout the process, rather than degrading into an unmoored data point somewhere between collection and conclusion. The methodology accordingly requires evidence to be managed in a way that preserves confidence in both its authenticity and its correct interpretation.

20.3 Evidence Integrity as a Property of the Chain, Not of the Data Point

It is worth being precise about what Evidence Integrity actually protects, because a narrower reading — "don't tamper with the data" — badly understates it. Integrity is better understood as a property of the entire chain a piece of evidence travels through, from the moment it is measured to the moment it supports a finding: the chain set out in Figure 10.1, running from Measurement through Observation, Evidence, Correlation and Observed Network Reality to Assessment Findings.

Each link in that chain can be weakened independently, and weakened without any single number ever being falsified. A measurement recorded without noting which Representative Consumer Device produced it has already lost something, even if the figure itself is perfectly accurate — because the evidence can no longer be checked against the device-diversity considerations of Chapter 18. A measurement recorded without its Representative Test Location has lost something else — it can no longer be placed within the Site Area it was meant to characterise. A measurement recorded without a timestamp has lost the ability to be checked against the operational conditions prevailing at the time. None of these omissions is fraud. Each is, nonetheless, a genuine loss of integrity, because it breaks the traceability that connects a data point back to the context Chapter 19 requires it to have.

This is why Evidence Integrity is treated here as a methodological requirement running through collection, recording, storage, analysis, interpretation, reporting, review and auditing alike — not as a single checkpoint that, once passed, can be forgotten.

20.4 Characteristics of Evidence Integrity

Assessment Evidence is expected to exhibit six characteristics: authenticity, accuracy, completeness, consistency, traceability and reliability. None of these operates independently — a piece of evidence that is authentic but untraceable, or accurate but stripped of context, has still lost something essential — and it is their combination, not any one in isolation, that gives an assessor grounds for confidence in what has been gathered.

20.5 Authenticity

Assessment Evidence must genuinely originate from the assessment activities it purports to relate to, and must represent those activities honestly — not fabricated, not manipulated, not presented in a way that creates a misleading impression of what was actually observed. This is the most basic of the six characteristics, and the one whose violation is least excusable: everything else in this chapter assumes authenticity as a

starting point.

20.6 Accuracy

Evidence should reflect the conditions actually observed at the time of collection. Where genuine limitations or uncertainties exist — and they very often will — these should be documented rather than smoothed over, so that whoever later interprets the evidence can weigh it appropriately rather than mistaking an uncertain reading for a precise one.

20.7 Completeness

Assessment Evidence should be complete enough to support the findings drawn from it, and where it falls short of that standard, the gap should be acknowledged rather than quietly papered over during interpretation. Incomplete evidence is not disqualifying in itself; treating incomplete evidence as though it were complete is the actual failure this requirement guards against.

20.8 Consistency

Evidence gathered over the course of an assessment should hold together internally, and where it does not, the inconsistency deserves investigation rather than automatic dismissal as an error. An apparent contradiction between two pieces of evidence may turn out to reflect a genuine feature of the assessed service — a network that behaves differently at different times of day, for instance — rather than a defect in how either piece of evidence was gathered; determining which is the case is itself part of the assessor's work, and is developed further in Chapter 24.

20.9 Traceability

Every significant finding should be traceable back to the Assessment Evidence that supports it, and, in the other direction, every item of Assessment Evidence should be traceable to the Assessment Scope, Site Area, Representative Test Location, Representative Consumer Device, time of collection and specific assessment activity that produced it. This is not bureaucratic completism for its own sake; it is what makes independent review, and eventual reassessment, possible at all.

20.10 Preservation of Context

Evidence considered apart from its context can mislead even when every figure in it is accurate — a measurement severed from the operational conditions, the Assessment Scope, the Representative Test Location, the Representative Consumer Device or the time it was taken is a measurement that has lost the very information needed to interpret it correctly. Context, on this view, is not supplementary detail attached to evidence; it is part of what makes something Assessment Evidence in the first place, rather than a number floating free of any assessment at all.

20.11 Integrity Throughout the Assessment Lifecycle

Evidence Integrity is maintained across the full lifecycle of an assessment — collection, recording, storage, analysis, interpretation, reporting, review and auditing alike. The original observation and the evidential basis of an issued conclusion shall remain traceable and recoverable. A justified correction, revised interpretation or change in which evidence or interpretation is treated as currently applicable shall be recorded as an explicitly identified successor or linked correction, with its basis and relationship to

the prior record preserved; it shall not silently overwrite the original evidence or make a historical conclusion appear to have used a later basis. Derived values and current-status indicators may change under controlled rules, but the distinction between the original observation, the correction and the currently applicable interpretation must remain visible.

20.12 Relationship with Evidence Correlation

Evidence Integrity does not, by itself, determine a Finding. It establishes whether collected evidence is sufficiently trustworthy and traceable to be admitted as Assessment Evidence and carried forward into Evidence Correlation. Only evidence satisfying the applicable integrity requirements should contribute to Observed Network Reality.

20.13 Principle

Assessment Evidence that cannot be traced cannot be independently verified, and evidence that cannot be independently verified should not support assessment findings.

This single requirement binds together four linked functions across the methodology: evidence is gathered (Chapter 19), its integrity and traceability are preserved (this chapter), it is interpreted alongside other evidence (Chapter 24), and, in due course, a third party can retrace every one of these steps and confirm the conclusion follows from what was actually found (Chapter 29). An assessment methodology that could not support this last step would not, in any meaningful sense, be independently auditable — and an assessment that cannot be independently audited is, ultimately, an assertion rather than a finding.

Part V – Assessment Methodology

21 Assessment Lifecycle

21.1 General

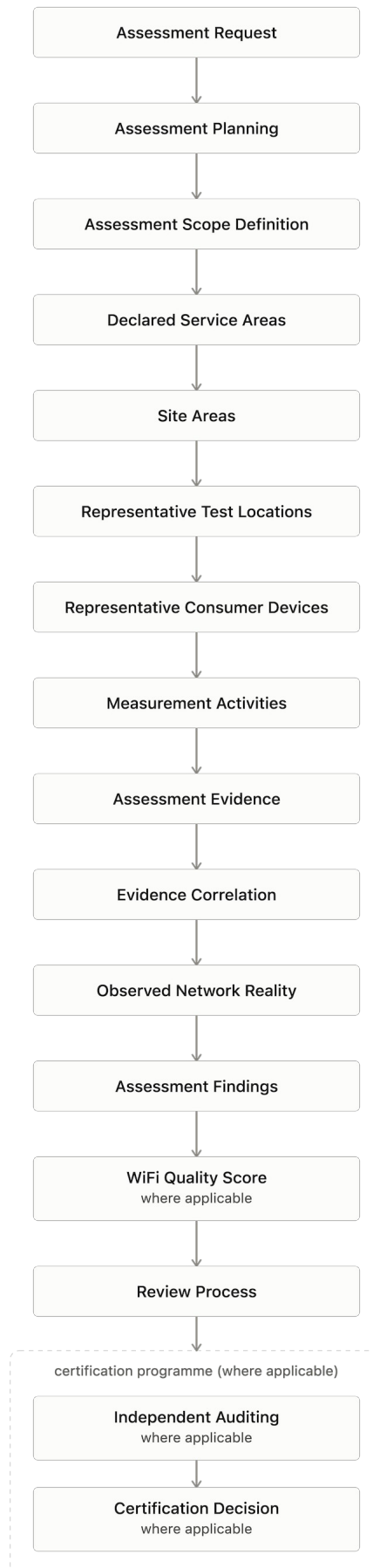
A WiFi Quality assessment is not a single event, however carefully executed, but a structured process made up of interrelated stages, each contributing something the others cannot supply on their own. This Technical Guide adopts a lifecycle model precisely so that assessments conducted by different assessors, at different times, in different environments, follow the same underlying sequence — a requirement that follows directly from WQR-07, Methodological Consistency, introduced in Chapter 12.

21.2 Purpose of the Assessment Lifecycle

The lifecycle exists to organise assessment activity from initial request through to final outcome, ensuring that activities proceed in a coherent order, that methodological consistency is preserved throughout, that Assessment Evidence is collected and interpreted systematically rather than haphazardly, and that the resulting findings remain open to independent review and, where applicable, certification. None of these properties can be secured by any single stage in isolation; they emerge from the lifecycle as a whole.

21.3 Overview of the Lifecycle

The Assessment Lifecycle unifies, into a single sequence, the concepts developed individually throughout Parts III and IV of this Technical Guide:



(Figure 21.1)

It is worth being explicit about what this figure actually does: it is not a new methodological structure competing with the hierarchy of Figure 18.1 or the epistemic chain of Figure 10.1, but the timeline along which both of those structures are actually put into practice, stage by stage, over the course of a real assessment. A reader who has followed this Guide chapter by chapter will recognise nearly every node in this sequence already; what the Lifecycle adds is the order in which they occur and the dependencies between them.

Two things about this sequence deserve particular attention. First, each stage depends on the integrity of the one before it — a point developed further in 21.13. Second, and more consequentially, **certification is the final stage of a considerably longer process**, not a parallel activity running alongside it. Everything from Assessment Request through Review belongs to the methodology this Technical Guide defines; only the last two stages — Independent Auditing and the Certification Decision — belong to the separate governance apparatus of whichever certification programme, if any, an assessment is conducted under. This ordering is deliberate: it keeps the question 'was this assessment conducted correctly' and the question 'does this network satisfy certification requirements' as two distinct questions, answered by two distinct bodies of guidance, even though one naturally follows the other.

21.4 Assessment Request and Planning

The lifecycle begins before any technical activity takes place, with a request that establishes why an assessment is being sought and what it needs to achieve, followed by planning that turns that request into a workable strategy — identifying, at least provisionally, the environment to be assessed and the resources the assessment will require. Planning done well here saves considerably more effort later than it costs at the outset; a poorly planned assessment tends to generate exactly the kind of mid-assessment scope confusion Chapter 13 warns against.

21.5 Assessment Scope Definition

The Assessment Scope is then formally established, in accordance with Chapter 13 — defining what is included, what is excluded, the intended purpose of the assessed service, and the operational assumptions the rest of the assessment will proceed under. Every subsequent stage in this lifecycle depends on this one having been done properly; a Scope revisited midway through an assessment, as Chapter 13 notes, can force the assessment itself to be repeated.

21.6 Declared Service Areas, Site Areas and Representative Test Locations

Within the established Scope, Declared Service Areas are identified (Chapter 14), each is subdivided into methodologically coherent Site Areas (Chapter 15), and Representative Test Locations are selected within each Site Area according to their methodological role — Primary, Secondary, Verification or Targeted (Chapter 16). These three stages, taken together, answer the question of *where* evidence will be gathered, before any measurement actually begins.

21.7 Evidence Collection

Evidence is gathered at the selected Representative Test Locations, using Representative Consumer Devices appropriate to the assessed service's intended

users (Chapters 18 and 19). The objective, consistent with Chapter 19's four evidence-quality attributes, is sufficiency, relevance, representativeness and reliability — not an arbitrary volume of measurement.

21.8 Evidence Validation

Before collected evidence is admitted to correlation, it is checked against the integrity requirements set out in Chapter 20: is it authentic, accurate, complete, consistent, traceable and reliable? Evidence that fails this check is not thereby discarded outright, but it is flagged, and its limitations are documented rather than carried forward silently into the next stage. This is the gatekeeping step referred to in 20.12 — only evidence that clears it should contribute to what follows.

21.9 Evidence Correlation and Observed Network Reality

Validated evidence is then interpreted collectively, through the structured process of Evidence Correlation described in Chapter 24, rather than read item by item in isolation. The product of this correlation is the Observed Network Reality — the best-supported reconstruction available from the validated Assessment Evidence of the service actually delivered at the time of the assessment, as defined in Chapter 11 and formalised in Chapter 25.

21.10 Assessment Findings

Assessment Findings are developed from the Observed Network Reality, describing the assessed service and the extent to which it meets the objectives established for the assessment. Where relevant, these findings may also support the determination of a WiFi Quality Score, the concept for which is introduced in Chapter 27.

21.11 Review

Before findings are finalised, they undergo review for methodological consistency — checking the completeness of the underlying evidence, compliance with this methodology, the internal consistency of the interpretation reached, and the adequacy of the supporting documentation. Review is the last methodological opportunity, preferably exercised by someone other than the assessor where reasonably practicable, to identify inconsistencies or deficiencies before the assessment proceeds to any independent audit or certification activity.

21.12 Independent Auditing and the Certification Decision

Where an assessment forms part of a certification programme, it may subsequently undergo independent auditing, verifying that the methodology set out in this Guide was actually followed and that the findings are properly supported by the underlying evidence (Chapter 29). A certification decision, where one follows, is then made on the basis of the assessment findings, the applicable certification requirements, and the governance framework under which the decision is taken (Chapter 30) — matters governed by the relevant certification programme, not by this Technical Guide, which supplies the assessment methodology those decisions ultimately rest upon and nothing further.

21.13 The Lifecycle Is Iterative, Not Rigidly Linear

Presented as a sequence, the lifecycle can look more rigid than it actually is in practice. Information surfacing at a later stage frequently sends an assessor back to an earlier

one — additional evidence may need to be gathered, a Representative Test Location may need to be refined, the Assessment Scope may need clarification, or a conflicting observation may need to be investigated at its source rather than simply noted and set aside. None of this represents a failure of the lifecycle model; it is exactly what Chapters 17 and 19 already anticipate when they describe sampling and evidence collection as inherently iterative activities. What the lifecycle requires is not that an assessor never look back, but that any step backward be documented and methodologically justified rather than absorbed silently.

21.14 Principle

A reliable assessment is the product of a structured lifecycle in which each stage depends on the integrity of the ones preceding it — evidence collection depends on a properly defined scope; correlation depends on evidence that has passed validation; findings depend on a properly conducted correlation; and any eventual certification decision depends on findings that have survived review and, where applicable, independent audit. An assessment finding is accordingly the outcome of this entire chain, never the product of an isolated measurement — and a certification decision, in turn, is only ever as sound as the assessment lifecycle that preceded it.

22 Pre-Assessment Activities

22.1 General

Pre-Assessment Activities comprise everything done before Assessment Evidence collection actually begins — the preparatory work that ensures an assessment is properly planned, its Scope clearly settled, and the methodology positioned to be applied consistently across the lifecycle that follows. No finding is produced at this stage, and it would be a mistake to treat it as a mere formality on that account: the quality of what happens here determines, to a considerable degree, how reliable and how efficient everything downstream turns out to be.

22.2 Objectives

The objectives of this phase are to establish a shared understanding of what the assessment is meant to achieve, confirm the Assessment Scope, identify the Declared Service Areas, define preliminary Site Areas, surface any operational constraints likely to affect the work, settle on an assessment strategy, and prepare the resources the assessment will require. Taken together, these objectives serve a single underlying purpose: to minimise the ambiguity an assessor would otherwise be resolving on the fly, under pressure, once evidence collection has already begun.

22.3 Planning Information and Assessment Evidence

Before any of the planning above can proceed, an assessor typically gathers a range of preliminary material — floor plans, venue documentation, a stated number of access points, a marketing brochure claiming "WiFi available throughout the property," information about operating hours or expected user population. This methodology refers to material of this kind as **Planning Information**: information gathered to support the design of an assessment, as distinct from Assessment Evidence, which — as defined in Chapter 11 — is information that has satisfied this methodology's requirements for sufficiency, relevance, representativeness and reliability, and is

therefore suitable for supporting a finding.

The distinction is not a bureaucratic nicety. A brochure's claim that WiFi is available "throughout the property" is Planning Information: useful for deciding where to look, and relevant to establishing the Declared Service Area under Chapter 14, but it is not itself evidence that the service actually performs anywhere, let alone everywhere. It becomes Assessment Evidence only once it has been checked against what is actually observed in the field — confirmed, qualified, or contradicted by the evidence gathered during the Measurement Activities described in Chapter 23. Treating Planning Information as though it were already Assessment Evidence is one of the more common and more consequential errors an assessment can make, since it allows a client's own representations to substitute, unexamined, for the independent observation this methodology exists to provide.

22.4 Preliminary Assessment Scope

The Assessment Scope should be reviewed and confirmed before assessment activities begin, covering the venue being assessed, its physical boundaries, the Declared Service Areas, any explicit exclusions, the intended users of the service, and any limitations agreed in advance. Where genuine uncertainty remains at this stage, it should be documented and, wherever reasonably practicable, resolved before evidence collection starts — not carried forward as an ambiguity to be sorted out mid-assessment.

22.5 Preliminary Identification of Site Areas

A preliminary subdivision of the environment into Site Areas should be prepared from the Planning Information available, providing the initial structure from which Representative Test Locations, sampling strategy, assessment sequence and evidence collection activities can subsequently be planned. This preliminary structure is exactly that — preliminary — and may be refined once the assessor is actually on site and able to see whether the Planning Information matched reality.

22.6 Selection of Representative Consumer Devices

The Representative Consumer Devices to be used should be selected before the assessment begins, reflecting the characteristics of the venue's intended users and the objectives of the assessment. As established in Chapter 18, no particular manufacturer or operating system is required — only that the devices selected genuinely represent the population the service is meant to serve.

22.7 Assessment Resources

Before commencing, the assessor should confirm that everything the assessment will require is actually in hand: the selected RCDs, any supporting measurement equipment, documentation tools, floor plans, assessment record templates, and whatever else the methodology requires to be applied properly. Consistent with the technology-neutral character of this Guide, no particular hardware or software platform is mandated.

22.8 Operational Considerations

The assessor should also identify operational circumstances likely to affect how the assessment is planned — restricted access, opening hours, scheduled events, temporary maintenance, seasonal patterns of use, health and safety requirements, or

security procedures specific to the venue. None of these factors necessarily invalidates an assessment, but each may need to be accommodated in how it is planned and sequenced.

22.9 Flexibility During the Assessment

Pre-Assessment planning establishes an initial framework, not a fixed script. Additional information will often emerge once assessment activities are actually underway, and planning decisions may legitimately be revised in light of it — provided the reasons for any change are documented, methodological consistency is preserved, and the integrity of the assessment as a whole remains intact. This is the same iterative logic already established for sampling (Chapter 17) and evidence collection (Chapter 19), applied here to the planning stage that precedes both.

22.10 Relationship with Measurement Activities

Pre-Assessment Activities prepare the ground for an assessment; they do not themselves produce findings. Assessment Evidence begins to accumulate only once the assessment enters the Measurement Activities described in the next chapter — and, as established in 22.3, Planning Information gathered here should not be mistaken for Assessment Evidence unless and until it has actually been confirmed through that later process.

22.11 Principle

Effective assessment begins well before the first measurement is taken. Careful planning, a clearly defined Scope, and thorough preparation are what make representative, reliable and interpretable Assessment Evidence possible in the first place — but the distinction between what is merely known in advance and what has actually been verified in the field is what keeps that preparation from quietly substituting for the assessment itself.

23 Measurement Activities

23.1 General

Measurement Activities comprise the systematic technical acts performed during an assessment for the purpose of eventually producing Assessment Evidence. Within this methodology, a measurement is never treated as an end in itself; it is the raw material from which something more useful is subsequently built. Measurement Activities are accordingly conducted throughout in accordance with the methodological principles set out earlier in this Guide.

23.2 Three Levels: Measurement, Observation, Assessment Evidence

It is worth being precise here about a distinction this methodology treats as fundamental, because the value of an assessment is not created at the moment a reading is taken — it is created at the moment that reading is placed in context.

Measurement is the technical act of capturing a specific characteristic of the WiFi service — a throughput figure, a latency value, the outcome of an authentication attempt. A measurement, on its own, is simply a number or a recorded event; it carries no context and, strictly speaking, answers nothing yet.

Observation is what a measurement becomes once it is associated with the specific

circumstances under which it was taken — the Representative Test Location it came from, the Representative Consumer Device used to obtain it, the time it was recorded, and the operational conditions prevailing at that moment. A measurement without this context is not yet an Observation in the sense this methodology requires; the same numeric reading, contextualised, becomes something an assessor can actually reason about.

Assessment Evidence, as already defined in Chapter 11, is the further step of qualification: an Observation, or a set of Observations, that satisfies this methodology's requirements for sufficiency, relevance, representativeness and reliability, and is therefore suitable for supporting a finding.

The relationship between the three is accordingly sequential and cumulative:

Measurement → Observation → Assessment Evidence

(Figure 23.1)

23.3 Measurements Support Assessment, Not the Reverse

Measurement is never pursued for its own sake, or simply because a given reading happens to be technically available to capture. Each measurement taken should have a clear assessment purpose behind it, contributing meaningfully — once turned into an Observation and, where appropriate, Assessment Evidence — to the understanding the assessment is trying to build. The emphasis, consistent with Chapter 19, falls on the quality and relevance of what is gathered, not on its sheer volume.

23.4 Representative Conditions

Measurement is conducted, wherever possible, under conditions that reasonably represent the normal operation of the service being assessed. Where a measurement is taken under exceptional circumstances — a temporary outage, an unusual event, a maintenance window — this should be recorded as part of the resulting Observation's context, and weighed accordingly during interpretation, rather than treated as though it characterised ordinary use.

23.5 Representative Consumer Devices

Measurements are taken using Representative Consumer Devices appropriate to the venue's intended users, as established in Chapter 18. Where specialised engineering equipment is used alongside RCDs, the resulting readings are interpreted within the broader methodological context set out in 18.7, and do not substitute for Observations obtained through representative devices.

23.6 Representative Test Locations

Measurement Activities take place at the Representative Test Locations selected under Chapter 16 and are interpreted according to their assigned methodological roles. Measurements from Primary and Secondary RTLs support representative characterisation; measurements from Verification and Targeted RTLs address the specific doubts or concerns that justified those roles. No RTL is interpreted beyond the scope its methodological role can support.

23.7 Multiple Types of Measurements

An assessment may draw on many categories of measurement depending on its objectives — connectivity, service availability, throughput, latency, packet loss, roaming behaviour, application performance, authentication, stability, and other characteristics relevant to the service under review. No fixed measurement set is prescribed; what matters is that whatever is captured can, once turned into Observations, plausibly contribute to reliable Assessment Evidence.

A performance value should retain the measurement meaning necessary for its intended use: the phenomenon, protocol and direction, observation source, relevant time window, units, and the population or denominator used for an aggregate. Uplink and downlink are distinct observations; evidence that a sender attempted or completed a send does not, by itself, establish reception at the other end. Where both ends contribute records, their respective observations and timing bases remain identifiable. Bidirectional exchange does not, without an appropriate timing basis, establish one-way latency.

End-to-end IP or UDP delivery evidence shall not be labelled as IEEE 802.11 frame loss, MAC retry rate or a uniquely local radio fault. Missing observation coverage, unavailable records or an undefined denominator shall not be converted into a zero-loss or total-loss percentage. A measurement of one protocol or metric family does not automatically validate or replace another family's evidence. These are requirements on interpretation and traceability, not a prescription of packet formats, rates, reconciliation algorithms or numerical thresholds.

23.8 Repeat Measurements

Measurements may be repeated where doing so improves confidence in an observed pattern or helps investigate an apparent inconsistency — an activity that should be understood, per Chapter 17's treatment of Assessment Confidence, as a way of strengthening understanding rather than a search for a more favourable reading. The aim throughout remains accurate characterisation, never the maximisation or minimisation of an observed result.

The purpose and context of a repetition, and its relationship to earlier evidence, should be recorded. A later or more favourable result does not erase a valid earlier adverse observation. Where an implementation uses an Assessment Protocol, its applicable planning, valid-attempt and repetition rules govern which observations may satisfy the documented coverage requirements of the assessment. Additional diagnostic evidence and evidence obtained after remediation remain distinguishable from the original assessment basis; neither is retrospectively relabelled as the original required observation.

23.9 Professional Judgement During Measurement

Assessors exercise professional judgement continuously during this stage. An unexpected reading may warrant an additional measurement to clarify what is actually happening, and decisions of this kind should be guided by the goal of improving the representativeness and completeness of the resulting Observations and Assessment Evidence — never by an arbitrary quota of measurements to be reached.

23.10 From Measurement to Assessment Evidence

Not every measurement automatically becomes Assessment Evidence, and the three-level distinction set out in 23.2 explains why: a measurement must first be contextualised into an Observation, and that Observation must then satisfy the requirements of sufficiency, relevance, representativeness and reliability discussed in Chapter 19, before it earns the status of Assessment Evidence. Only Assessment Evidence, at the end of that chain, contributes to the findings the assessment ultimately produces.

A valid negative observation, an unavailable observation and an invalid measurement are different outcomes. The inability to run a throughput test because the assessed WiFi service is validly observed to be absent does not turn that absence into missing evidence. Conversely, a measurement-system failure does not prove that the assessed service failed.

Where a multi-component measurement has a valid component and another unavailable or invalid component, the usable component may be retained only for the purposes its own evidence and shared integrity conditions support. It does not cure an invalid common acquisition basis or justify assembling one apparently complete observation from incompatible attempts.

A timeout setting is not an observed response time. Where acquisition evidence justifies only a bound, that bound and its observation semantics must remain distinguishable from an observed point value; no eventual response is implied. A bound may support only conclusions justified by the retained observation interval and applicable interpretation rules. An unverified interval or unavailable result shall not be silently imputed into an average, variation metric or score as though it were a measured value.

23.11 Relationship with Observed Network Reality

Observations gathered during Measurement Activities, once qualified as Assessment Evidence, contribute to the determination of Observed Network Reality — but no single Observation, however striking, is permitted to define the assessed service on its own. Observed Network Reality emerges only from the collective interpretation of all relevant Assessment Evidence, through the correlation process the next chapter describes.

23.12 Measurement-to-Evidence Progression

Measurement, Observation and Assessment Evidence are distinct stages in the evidential progression established in 23.2. Sections 23.13 and 23.14 add the infrastructure-validity and current-relevance conditions that determine whether resulting evidence is suitable for Internet-performance and causal interpretation.

23.13 Internet Performance Measurement Validation

Measurements of Internet Performance may be influenced by factors beyond the assessed WiFi service, including the selected measurement endpoint, network path, routing conditions, peering arrangements, server capacity and temporary conditions affecting external infrastructure.

Accordingly, a result obtained from a single Internet Performance measurement should not automatically be interpreted as a complete representation of the Internet performance available to the assessed user.

Where an Internet Performance result is materially relevant to an Assessment Finding,

appears anomalous, or may reasonably be influenced by the measurement infrastructure, the result should be corroborated through additional independent observations where practicable.

Corroborative measurements may use different measurement endpoints, network paths, service infrastructures or measurement providers in order to reduce dependency upon any single external measurement source.

The purpose of corroboration is not to identify a preferred measurement provider or to require identical results across different measurement systems. Different measurement infrastructures may legitimately produce different observations.

Instead, corroboration provides additional Assessment Evidence that assists in determining whether an observed limitation is consistently present across independent measurement paths or is associated primarily with a particular endpoint or external infrastructure.

A corroborative measurement is not intended to replace the primary measurement, but to increase or reduce confidence in the interpretation of the observed result.

Endpoint and Measurement Infrastructure Assurance

Where the assessment platform provides visibility into the operational state of its own measurement infrastructure, such evidence may also be considered when determining the reliability of a measurement.

This may include, where available:

- endpoint health;
- capacity availability;
- inter-endpoint consistency;
- path stability;
- abnormal infrastructure conditions;
- other indicators relevant to measurement integrity.

Such information provides an additional assurance layer by enabling the assessment process to consider whether the infrastructure used to obtain a measurement was operating under conditions suitable for producing reliable Assessment Evidence.

For the purposes of this methodology, Endpoint Validity concerns whether a measurement endpoint was suitable for the measurement purpose at the time the Observation was obtained. It may be supported by endpoint health, available capacity, inter-endpoint consistency, path stability, corroborative observations and other evidence relevant to the integrity of the measurement. Endpoint Validity is always purpose-specific: an endpoint may be suitable for one measurement purpose without being assumed suitable for every other one.

Measurement infrastructure assurance does not establish WiFi Quality and should not independently determine an Assessment Finding. Its purpose is to contribute to the evaluation of the integrity and interpretability of the measurement itself.

Results obtained through primary measurements, corroborative measurements and

measurement infrastructure assurance shall be interpreted through Evidence Correlation and within the context of the complete Assessment Evidence.

No individual Internet Performance measurement, endpoint, measurement provider or measurement infrastructure indicator shall independently determine WiFi Quality.

23.14 Measurement Validity, Current Relevance and Causal Use

A Measurement can remain valid as a record of what was observed without remaining suitable for every later conclusion. This distinction becomes particularly important where the service or its network context changes after the Measurement was obtained.

For the purposes of this section, a material network change is a change reasonably capable of altering the technical comparability of Observations — for example a change in serving access identity, gateway or service-domain identity, relevant path or dependency, association context, routing or backhaul relation, or another condition material to the question being assessed.

Evidence gathered before such a change is not automatically rendered false or discarded. It may remain authentic, accurate and useful as historical Assessment Evidence. What changes is the basis on which it may be applied to a conclusion about the current service. Before earlier evidence is used for current causal interpretation, the assessor must be able to justify that the technical conditions relevant to that interpretation have been re-established or remain sufficiently comparable.

A return of one or more configured or observed parameter values to values previously seen does not, by itself, establish a return to the same evidential context. An $A \rightarrow B \rightarrow A$ sequence may therefore contain two superficially similar conditions that are not methodologically interchangeable for causal purposes. Comparability is established from the relevant technical and operational relationships, not from numeric equality alone.

Where current comparability cannot be established, the earlier Observation remains part of the assessment history but shall not determine a current causal conclusion. Additional current evidence should be obtained where necessary.

Measurement Validity answers whether a Measurement can be trusted as a record of what occurred. Current causal use answers a different question: whether that record is suitable for the particular conclusion now being considered.

23.15 Principle

Measurement produces a reading. Observation gives that reading a context. Assessment Evidence gives it a status this methodology can build a Finding on. Measurement Validity and Endpoint Validity establish whether the Measurement and its supporting measurement infrastructure can be trusted for the purpose for which they are used, while current relevance governs whether previously valid evidence remains suitable for a later causal conclusion.

No Measurement becomes methodologically stronger merely because it remains historically valid, and no prior Observation regains current causal relevance merely because one or more parameter values recur. Measurements, Observations and Assessment Evidence are therefore interpreted according to their validity, context, current relevance and intended evidential purpose before they enter the Evidence Correlation process described in Chapter 24.

The methodological value of Measurement lies not in the act of taking a reading, but in the disciplined progression by which that reading becomes evidence capable of supporting a conclusion.

24 Evidence Correlation

24.1 General

No single item of Assessment Evidence tells the whole story of a WiFi service; each contributes, at best, a partial view. This methodology accordingly requires evidence to be interpreted collectively, through a structured process of **Evidence Correlation** — the mechanism by which individually contextualised Observations are woven into a single, coherent account of the service being assessed.

It is worth stating the underlying purpose of this chapter as plainly as possible, because everything else in it follows from it: **the central evidential task of WiFi Quality assessment is not merely to measure a network, but to reconstruct, as faithfully as possible, the Observed Network Reality from representative Assessment Evidence, from which WiFi Quality is subsequently assessed.** Measurement, in this light, is not the objective of an assessment — it is the raw material an assessment eventually reconstructs something meaningful from.

24.2 Purpose of Evidence Correlation

Evidence Correlation exists to build a consistent understanding of the assessed service by examining the relationships between multiple, complementary pieces of Assessment Evidence, rather than reading each in isolation. The question being asked at this stage is never "what does this one observation show," but "what do these observations, considered together, tell us about how the service actually behaves".

24.3 Correlation, Not Aggregation

It is important not to mistake Evidence Correlation for the arithmetic of averaging. This methodology does not assume that a finding can be produced by averaging individual readings or combining isolated metrics into a composite figure — a mean throughput value across ten locations says considerably less than the pattern of variation between those ten locations does. Evidence is instead interpreted in light of the Assessment Scope, the Declared Service Areas, the relevant Site Areas, the Representative Test Locations and Representative Consumer Devices involved, and the operational conditions under which it was obtained. A finding, in other words, emerges from the *relationships* between observations, not from a number produced by collapsing them together.

24.4 Complementary Evidence

Different pieces of Assessment Evidence very often describe different facets of the same underlying service — satisfactory throughput can coexist with poor roaming behaviour; strong signal strength can sit alongside unreliable authentication; acceptable latency can mask intermittent service interruptions that a single latency reading would never reveal on its own. None of these observations means much read in isolation; correlation is precisely the process of asking how they characterise the service jointly, in a way none of them could individually.

24.5 Consistent Evidence

Where several independent Observations point toward the same interpretation, confidence in the resulting finding rises accordingly — consistency across different Representative Test Locations, different Representative Consumer Devices, or different measurement activities is exactly the kind of convergence that gives an assessor grounds for a stronger conclusion than any single Observation could support alone.

24.6 Apparently Conflicting Evidence

Evidence will occasionally appear inconsistent: one RCD performs well where another struggles at the same location; one RTL behaves differently from its immediate neighbours; service quality shifts with user activity or with operational conditions that were not initially obvious. None of this should be read reflexively as a methodological error. It is, instead, exactly the kind of pattern that warrants further investigation — the question being whether the inconsistency reflects a genuine feature of the service (a device-specific compatibility issue, a localised interference source) or whether it points to a gap in the evidence gathered so far that additional sampling, per Chapter 17, needs to close.

24.7 Contextual Interpretation

Evidence is never interpreted apart from context — the intended purpose of the service, the character of the Site Area it came from, representative user behaviour, environmental conditions, and the Assessment Scope as a whole all bear on what a given Observation actually means. Two identical readings, taken in different contexts, can quite legitimately support two different conclusions; this is not an inconsistency in the methodology, but a consequence of the fact that meaning, here as elsewhere, depends on context.

24.8 Confidence Through Correlation

Correlation is where Assessment Confidence, introduced in Chapter 17, is actually built up in practice. Confidence strengthens when independent observations converge on the same conclusion, when evidence holds up consistently across different Representative Test Locations, when readings from different Representative Consumer Devices mutually reinforce one another, and when contextual information successfully explains behaviour that might otherwise look anomalous. Where inconsistencies remain unresolved after correlation has been attempted, confidence is correspondingly reduced — a signal, not a failure, that further evidence is needed before a finding can responsibly be reached.

24.9 Relationship with Observed Network Reality

Investigative and scientific disciplines share a premise this methodology adopts directly: no single observation tells the whole story, but the disciplined correlation of independent observations can reconstruct, with considerable reliability, what actually happened. Evidence Correlation culminates, on exactly this logic, in the determination of **Observed Network Reality** — not the sum of the evidence gathered, but the best-supported reconstruction that the correlated Assessment Evidence is capable of supporting. Two assessments built from largely overlapping evidence can, in principle, arrive at the same Observed Network Reality by somewhat different correlative reasoning; what matters is that the reasoning itself, in each case, can withstand the scrutiny of independent review.

24.10 Relationship with Assessment Findings

Assessment Findings are developed through the structured interpretation of Assessment Evidence within its scope, context and evidential limits, not by treating an isolated raw value as a complete account of the service. This does not prohibit a narrowly scoped Finding supported by a valid, contextualised negative observation, such as the absence of the assessed WiFi service at a Test Location required by the documented coverage basis, when the relevant validity and evidence requirements are satisfied. Such a Finding establishes the observed condition at its supported scope; it does not, by itself, establish the venue-wide quality or a specific root cause. Evidence Correlation preserves this distinction rather than requiring an adverse observation to be discarded until a more favourable result is obtained.

24.11 Hypothesis-Specific Comparability

Evidence comparability is purpose-dependent. An item of Assessment Evidence may be valid, reliable and technically useful while still being unsuitable as comparative evidence for a particular causal question.

Where Evidence Correlation is used to evaluate a Causal Hypothesis, the evidence compared must share the technical relationships material to that hypothesis. Evidence suitable for considering an upstream or Internet-related hypothesis may not be suitable for considering an RF, access or local-delivery hypothesis, and the reverse is equally true.

This distinction does not classify the excluded evidence as poor-quality data. It recognises that the same Observation can legitimately perform different methodological roles according to the question being asked. The validity of the Observation and its comparability for a particular Causal Hypothesis are separate matters.

24.12 Configured and Observed Network Relationships

Configured, declared or documented network relationships provide valuable contextual evidence about how a service is intended to operate, but they shall not be treated as unquestionable statements of current operating reality where reliable current observations materially contradict them.

Where such a conflict matters to a causal interpretation, the conflict must be recorded and resolved to the degree necessary before the configured relationship is relied upon for a strong causal conclusion. The configured record need not be discarded or rewritten; it may remain valid as planning or configuration evidence while its use for the current causal interpretation is limited.

Conversely, a single anomalous Observation should not automatically displace a stable configured relationship. The evidential weight given to an observed alternative must reflect the sufficiency, independence, consistency and current relevance of the observations supporting it.

Where the evidence is sufficient to question a configured relationship but insufficient to establish a reliable alternative, the relationship remains unresolved for the purposes of any causal conclusion that depends upon it.

24.13 Evidence-Bounded Causal Interpretation

The specificity of a causal conclusion shall not exceed the specificity supported by the available Assessment Evidence.

Assessment Confidence and causal specificity are related but distinct. Strong confidence that a limitation exists within a broad layer or service region does not, by itself, justify attribution to a particular branch, access point, link, endpoint, configuration element or other narrower cause.

A narrower conclusion requires the comparative, contextual and relational evidence appropriate to that narrower conclusion. Missing structural evidence cannot be replaced by confidence alone.

Where the evidence supports a broader conclusion but not a narrower one, the broader conclusion is the correct methodological outcome and the narrower question remains unresolved.

24.14 Causal Boundary

Evidence Correlation establishes not only what conclusions are supported, but how far causal interpretation may responsibly proceed. The limit reached is the Causal Boundary defined in 11.18.

The Causal Boundary may lie at the level of a service region, network layer, Site Area, branch, path, access context, component or another technically meaningful scope. It is determined by the resolution of the Assessment Evidence relevant to the Causal Hypothesis being considered.

The Causal Boundary shall govern the maximum specificity of the resulting Assessment Finding. Where Recommendations or further diagnostic work are subsequently developed outside the Finding itself, they shall not imply a level of causal certainty that the assessment did not establish.

A methodology that stops at the supported boundary is not incomplete. It is behaving correctly by distinguishing what the evidence establishes from what remains to be investigated.

Evidence may support more than one causal hypothesis or more than one incomparable causal scope. These remain distinct rather than being merged into an unsupported single attribution. Where no causal scope is sufficiently supported, the assessment records that limitation; the absence of a supported causal explanation is not a finding that the service is healthy. A broader fallback conclusion must itself be supported rather than assumed merely because a narrower explanation could not be established.

24.15 Principle

Assessment Findings emerge from the structured correlation of Assessment Evidence, not from isolated Observations or undifferentiated pools of data. Evidence is correlated only where it is relevant and comparable to the question being considered; configured and observed network relationships are reconciled where they conflict; and the specificity of any causal conclusion is bounded by the evidence capable of supporting it. Evidence Correlation therefore produces not merely confidence, but a disciplined limit on what the assessment is entitled to claim.

25 Observed Network Reality

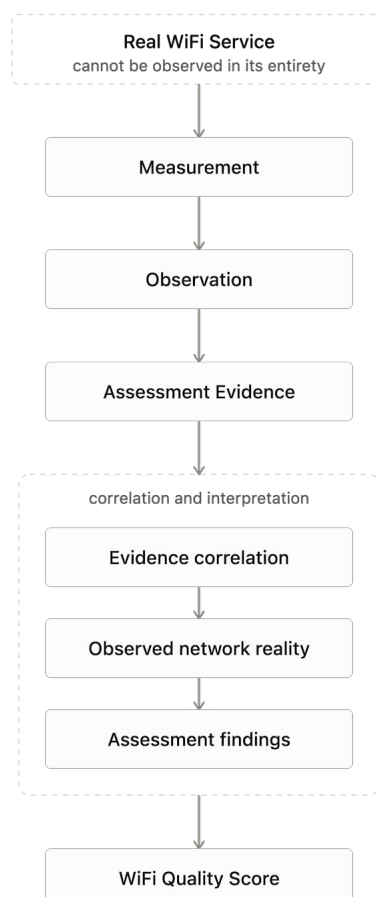
25.1 General

The principal objective of this methodology is to establish the **Observed Network Reality** — the best-supported, evidence-based representation of a WiFi service that can be constructed through the structured collection, validation and correlation of Assessment Evidence within a defined Assessment Scope. Everything downstream — Assessment Findings, the WiFi Quality Score, and any eventual certification decision — is built on this foundation, which makes it worth pausing here to state precisely what Observed Network Reality is, and, just as importantly, what it is not.

25.2 The Real Service Cannot Be Observed in Its Entirety

No assessment methodology — this one included — observes a WiFi service directly, in its full and complete behaviour, at every point and every moment. What it observes are traces: measurements taken at specific locations, at specific times, using specific devices, each capturing only a fragment of a service that is, in reality, continuous, dynamic and far larger than any finite set of observations could exhaustively cover.

This is not a limitation particular to WiFi assessment. It is the condition under which most observational disciplines operate. A physician does not observe a disease directly, only its symptoms and test results; a geologist does not observe deep time, only the strata it left behind; an investigator does not witness a crime, only the evidence it left in its wake; an astronomer does not visit a star, only receives the light it emitted years or millennia ago. Each of these disciplines has, over time, developed rigorous methods for reconstructing, with justified confidence, a reality that cannot be observed whole — and it is this same logic that underlies the concept of Observed Network Reality:



(Figure 10.1, reproduced here — see Chapter 10.1 for the complete chain, including the unobservable source it reconstructs from)

An assessment conducted under this methodology never claims to have measured the WiFi service as it truly is, in some absolute sense. What it claims, more modestly and more defensibly, is to have constructed the best evidence-based representation of that service that a rigorous methodology, properly applied, is capable of producing within a defined scope.

25.3 Concept

Observed Network Reality is not the network itself, and it is not an opinion about the network either. It is the methodological reconstruction of the WiFi service as it was found during the assessment — the best understanding available, given the evidence gathered, of how that service actually behaved under representative real-world conditions.

25.4 Why Observed Network Reality Is Necessary

Individual Observations describe only fragments of the service being assessed; no single measurement, device, location or moment can stand in for the whole. This is precisely why the methodology requires multiple complementary Observations to be interpreted together rather than read one at a time — Observed Network Reality is the product of that collective interpretation, and it offers a coherent account of the service that no isolated observation, however carefully obtained, could ever supply on its own.

25.5 An Evidence-Based Reconstruction

Observed Network Reality is a reconstruction, not a direct observation — built from Assessment Evidence gathered across Representative Test Locations, Representative Consumer Devices, multiple measurement activities, and the contextual and operational information surrounding them. What results is an account of the service that *was* observed, not a statement about how the service *ought* to perform under some idealised assumption.

25.6 Scope and Validity

Observed Network Reality holds only within the Assessment Scope, the Declared Service Areas, and the representative conditions under which the assessment was actually conducted. It is not a permanent or universal property of the network — a later assessment, conducted after changes to infrastructure, user behaviour or operational conditions, may legitimately establish a different Observed Network Reality without either assessment having been wrong. Chapter 33 examines this variability, and the legitimate reasons behind it, in more depth.

25.7 Confidence in Observed Network Reality

Confidence in a given Observed Network Reality depends on the quality of the evidence it was built from — representative sampling, evidence integrity, consistency across independent Observations, methodological compliance, and the completeness of what was gathered. Stronger, more coherent evidence produces greater confidence than a larger number of measurements ever could on its own, a point already established in Chapters 17 and 24 and worth restating here at the level of the concept it ultimately

supports.

25.8 Observed Reality Versus Theoretical Capability

Observed Network Reality describes what was actually found during the assessment — not the theoretical ceiling of the infrastructure, vendor specifications, predicted performance, design intentions, or laboratory results obtained under conditions no ordinary user would ever encounter. The methodology evaluates the service that was observed, not the service that might, in principle, be achievable under circumstances that do not resemble real use.

25.9 Observed Reality Versus User Opinion

Observed Network Reality is not to be confused with any individual user's experience. User feedback, as Chapter 9 established, remains valuable contextual information — but Observed Network Reality is built from objective Assessment Evidence, interpreted within a structured methodological framework, and represents an independent reconstruction of the service rather than a collection of subjective impressions, however sincerely held.

25.10 Relationship with Assessment Findings

Observed Network Reality is the direct input from which Assessment Findings are subsequently developed — never a substitute for that step, and never bypassed by it. The methodology maintains a clear distinction between four successive stages: Observations, Assessment Evidence, Observed Network Reality, and Assessment Findings, each representing a distinct act of methodological transformation rather than a synonym for the one before it.

25.11 Relationship with WiFi Quality

Observed Network Reality is not itself WiFi Quality. It is the evidence-based understanding from which WiFi Quality is subsequently assessed, in the sense established in Chapter 9 — the reconstructed reality supplies what is judged; the judgement itself, in the form of Assessment Findings and, where relevant, a WiFi Quality Score, is a further and distinct step.

25.12 Relationship with Future Assessments

An Observed Network Reality describes a particular service at a particular time. A future assessment, conducted under different conditions, may reasonably arrive at a different Observed Network Reality without either result contradicting the other — this is not methodological inconsistency, but a faithful reflection of the fact that operational WiFi environments are themselves dynamic, and a reconstruction of reality is only ever as current as the evidence it was built from.

25.13 Principle

Observed Network Reality is the best-supported, evidence-based understanding of a WiFi service that this methodology is capable of constructing from the available Assessment Evidence — not the service itself, observed in its totality, but the best reconstruction a rigorous method can support from the traces that service actually left behind. Every Assessment Finding produced under this methodology is derived from that reconstruction, and from nothing prior to it: not from isolated measurements, not from vendor claims, not from user opinion alone, and not from assumption.

26 Assessment Findings

26.1 General

Assessment Findings are the formal conclusions derived from the Observed Network Reality established during an assessment. They describe the assessed service through the structured interpretation of Assessment Evidence, and communicate the outcome of the assessment in terms that are clear, objective and methodologically consistent. Every Finding is, without exception, supported by the Assessment Evidence it rests on.

26.2 Purpose of Assessment Findings

Findings exist to communicate what the assessment process has actually established — translating an evidence-based understanding of the service into structured conclusions capable of supporting technical understanding, service improvement, independent review, conformity assessment and, where applicable, certification decisions. They are, in this sense, the principal output the entire methodology has been building toward.

26.3 Findings Are Derived, Not Measured

A Finding is not a measurement, and it is not a direct observation either. It is a professional conclusion, derived through the structured interpretation of Observed Network Reality — which means a Finding must always remain distinguishable from the evidence it was built from, never presented as though it were itself a piece of evidence.

26.4 Objectivity

Findings are objective: supported by Assessment Evidence, not by assumption, expectation or personal opinion. Where the evidence available does not support a definitive conclusion, that limitation is acknowledged directly rather than papered over with speculation dressed up as certainty.

26.5 Findings Are Not Recommendations

It is worth drawing a sharp line here, because the two are easily blurred in practice and blurring them undermines exactly the independence WQR-09 requires. An Assessment Finding states what was observed:

The WiFi service did not consistently provide reliable connectivity throughout the declared conference facilities under representative operating conditions.

A **Recommendation** states what might be done about it:

Consider increasing capacity within the conference facilities through infrastructure redesign or additional access points.

The first is a conclusion this methodology is built to support — traceable to Assessment Evidence, derived through Evidence Correlation, grounded in Observed Network Reality. The second is advisory in nature: a judgement about remediation that depends on considerations — cost, vendor choice, architectural constraints, commercial priorities — this methodology neither gathers evidence about nor claims competence over.

This methodology accordingly produces Assessment Findings and Assessment Findings alone. Where recommendations are useful — and they very often will be — they belong

in a separate deliverable, such as an Improvement Plan issued outside the assessment itself, rather than inside the assessment proper. Keeping the two apart is not a bureaucratic formality; it is what allows an assessor to remain independent of the remediation ultimately chosen, consistent with WQR-09, and what keeps a Finding from being read — or produced — as an implicit endorsement of one vendor's solution over another's.

26.6 Scope of Findings

Findings apply only within the defined Assessment Scope, the Declared Service Areas and Site Areas to which they pertain, and the representative operational conditions actually observed during the assessment. They should never be read as universal statements about the assessed service beyond those methodological boundaries — a Finding about the conference facilities says nothing, on its own, about the guest rooms three floors away, because they fall outside one another's supported assessment unit — whether as distinct Site Areas or, where separately declared under Chapter 14.4, as distinct Declared Service Areas.

26.7 Characteristics of Good Assessment Findings

A well-formed Finding is evidence-based, objective, traceable, understandable, proportionate to the evidence supporting it, and reproducible by an independent assessor applying the same methodology to the same evidence. These characteristics are not independent virtues to be pursued separately; together, they are what makes a Finding something a third party can actually trust without having been present for the assessment itself.

26.8 Relationship with Assessment Evidence

Every significant Finding should be traceable to one or more specific items of Assessment Evidence, and that evidence should, in turn, be capable of supporting the reasoning through which the Finding was reached. A Finding that cannot be explained by reference to its underlying evidence has not met the standard this methodology sets, however plausible it might sound on its own.

26.9 Relationship with Observed Network Reality

Observed Network Reality and Assessment Findings answer two distinct questions, and it is worth keeping them separate even though one flows directly into the other. Observed Network Reality answers: *what was observed?* Assessment Findings answer: *what does the observed reality tell us about the WiFi service?* The first is a reconstruction; the second is a conclusion drawn from that reconstruction — and the distinction between the two is one of the load-bearing structures of this entire methodology.

26.10 Relationship with the WiFi Quality Score

Assessment Findings precede any WiFi Quality Score. Where a score is assigned, it represents a structured expression of the Findings already reached, not an independent act of assessment running in parallel to them — which means Findings remain fully valid on their own, whether or not a score is ever calculated from them.

26.11 Positive and Negative Findings

A Finding should present a balanced account of the assessed service, identifying

strengths as readily as limitations, observed deficiencies as readily as aspects of consistent, reliable performance, and areas warranting further investigation where the evidence genuinely leaves a question open. The aim throughout is to describe the service observed, not to build a case in either direction — an assessment that only ever finds fault is no more objective than one that only ever finds success.

26.12 Uncertainty

Where the available evidence does not support a definitive conclusion, the Finding says so explicitly, rather than resolving the ambiguity through an unsupported claim to certainty. Transparent acknowledgement of uncertainty is, in this methodology, a mark of rigour rather than a weakness to be concealed.

26.13 Causal Specificity of Findings

Where an Assessment Finding includes causal interpretation, the Finding shall distinguish between what was directly observed, what the correlated Assessment Evidence supports as a causal conclusion, and what remains unresolved.

A Finding shall not identify a narrower layer, branch, access point, component, dependency or other technical cause where the available Assessment Evidence supports only a broader causal scope. Where the evidence supports a boundary such as local service delivery rather than upstream Internet performance, but does not support attribution to a particular component, the Finding shall stop at the supported boundary.

Increased Assessment Confidence does not, by itself, justify increased causal specificity. A more specific Finding requires the structural and comparative evidence appropriate to that more specific conclusion.

Where the Causal Boundary prevents definitive attribution, the Finding should state the supported scope and the unresolved remainder explicitly. This is not incomplete assessment; it is the correct expression of the evidential limit established by the methodology.

26.14 WiFi Service Area

WiFi Service Area denotes the assessment outcome defined in 11.20: the subset of a Declared Service Area for which Assessment Findings support the conclusion that WiFi service was available under the representative conditions observed, within the stated Assessment Scope and at the time of assessment.

It is distinct from the Declared Service Area, which records an organisation's pre-assessment service commitment, and from the Site Area, which is a methodological unit used to organise assessment activity.

Where an organisation chooses to communicate a WiFi Service Area to users through signage, digital indicators or another public representation, that communication shall not imply permanence or coverage beyond the assessment conditions actually established. The assessment date, applicable scope and methodology version shall remain available in accordance with 11.20, 11.13 NOTE 3 and the communication principles of Chapter 27.

This methodology does not prescribe the design, wording or physical placement of such communication. Those are implementation matters for the organisation or applicable

certification programme.

26.15 Principle

Assessment Findings are evidence-based conclusions, derived from Observed Network Reality and supported throughout by traceable Assessment Evidence — nothing more, and nothing else. Where they include causal interpretation, they remain within the Causal Boundary supported by that evidence and distinguish supported attribution from what remains unresolved. They state what was found, never what should be done about it; that second question, where it needs answering at all, belongs to a distinct activity and a distinct deliverable. It is this discipline, as much as any single methodological requirement in the chapters preceding it, that keeps an assessment conducted under this Technical Guide recognisable as an independent evaluation rather than an exercise in consultancy.

27 WiFi Quality Score

27.1 General

The outcome of a WiFi Quality assessment may, where appropriate, be expressed through a **WiFi Quality Score** — a concise representation of the assessment outcome, intended to communicate the overall quality of the assessed service in a form accessible to stakeholders who were not present for, and may not read in full, the underlying assessment. The score does not replace the methodology that produced it; it is one possible expression of the Assessment Findings this Technical Guide has already described, and nothing more.

27.2 Purpose of the WiFi Quality Score

The score exists to communicate an assessment's outcome in terms readily understood by different audiences — supporting comparison between assessments conducted under the same methodology, reporting, certification activity, and public understanding of what "WiFi Quality" actually means for a given venue. It should be read, throughout, as a communication mechanism built on top of the assessment, never as the assessment itself.

27.3 A Score Has No Meaning Apart From Its Assessment

It is worth stating this as a principle in its own right, because a great deal of what follows in this chapter is really an application of it: **a WiFi Quality Score has meaning only when it remains inseparably linked to the assessment from which it was derived.** A number on its own — a "4.2," a "92%," a letter grade — says nothing at all. What gives it meaning is everything this methodology requires to sit alongside it: the Assessment Scope it was calculated within, the date it was established, the version of the methodology applied, and, where relevant, the certification status attached to it.

This has a direct and fairly strict consequence: a WiFi Quality Score should never be published, cited, or relied upon in isolation from this context. The score is not a property of the network, existing independently and waiting to be reported; it is a property of the *assessment*, and it travels with that assessment or it loses its claim to meaning entirely. A score detached from its assessment is not a smaller or less precise version of the real thing — it is simply no longer the thing this methodology produces.

27.4 A Score Is Not the Assessment

The score is never a substitute for the assessment methodology itself. The assessment remains the structured process through which evidence is gathered, correlated and interpreted; the score is derived from the Assessment Findings that process produces. It follows that identical scores do not necessarily imply identical Findings, and that two different services may arrive at broadly similar scores for entirely different underlying reasons — a consequence of 27.3 worth bearing in mind whenever scores alone are being compared.

27.5 Relationship with Assessment Findings

A score is determined only after Assessment Findings have already been established, which remain the primary output of the assessment. The score is a structured summary of those Findings, and should always be read together with the supporting assessment information — never as a number capable of standing in for the Findings it summarises.

27.6 Relationship with Observed Network Reality

The score describes neither individual measurements nor isolated observations; it reflects the overall assessment of the Observed Network Reality reached through this methodology. It is, accordingly, several steps removed from the raw evidence and the process by which that evidence was interpreted — which is exactly why it cannot responsibly travel without the context described in 27.3.

27.7 Interpretation

A higher score indicates a higher level of quality observed within the defined Assessment Scope, under the representative conditions the assessment was conducted within; a lower score indicates that the assessment identified genuine limitations. Either reading, however, depends entirely on the Assessment Scope, the Declared Service Areas, the assessment date, the applicable methodology and the representative operating conditions being available alongside the score — precisely the requirement set out in 27.3, restated here in terms of what a reader actually needs to interpret a number correctly rather than misread it.

27.8 Comparability

Meaningful comparison between scores requires that the assessments behind them were conducted under the same methodological framework; scores produced by different methodologies are not automatically comparable, whatever their surface similarity might suggest. The value of any given score, in other words, is only as strong as the consistency of the method that produced it — which returns, once again, to the principle in 27.3: a score is never more trustworthy than the assessment it remains attached to.

27.9 Methodological Independence

This Technical Guide establishes the concept of the WiFi Quality Score without prescribing the specific algorithm, weighting model or calculation methodology used to derive it; such implementation detail may be defined separately and may evolve over time. This separation keeps the assessment methodology itself stable even as scoring models are refined — a distinction of layers, not a loosening of the requirement in 27.3, which applies regardless of which specific scoring model is eventually adopted.

27.10 Relationship with Certification

A score may contribute to certification activity where a certification programme requires it, but its existence does not, on its own, determine certification; certification decisions are governed by the relevant conformity assessment framework, as set out in Part V.

27.11 Communication

When a score is communicated publicly, it must remain accompanied by enough context to be interpreted correctly — the identity of the assessed venue, the Assessment Scope, the assessment date, the applicable methodology, and the certification status where relevant. This is not a stylistic preference; it is the direct, practical enforcement of 27.3. A score presented without this context is not simply less informative — it is a number that has been separated from the only thing that ever made it meaningful, and it should be treated by any careful reader with corresponding caution.

27.12 Principle

A WiFi Quality Score has meaning only when it remains inseparably linked to the assessment from which it was derived. It is a structured expression of Assessment Findings, never a substitute for the methodology that produced them — and its value, in every case, is borrowed entirely from the robustness of the assessment behind it. A number without its assessment is not a smaller claim about WiFi Quality; it is no claim at all.

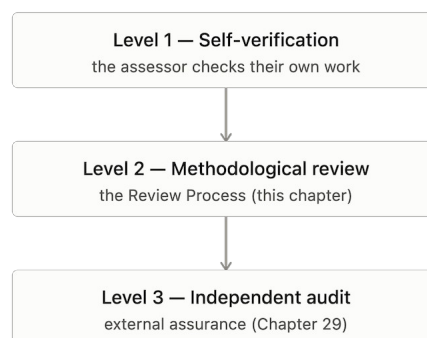
28 Review Process

28.1 General

The Review Process is the final methodological stage of an assessment before it becomes subject to any independent auditing or certification activity. Its purpose is to confirm that the assessment was conducted in accordance with this Technical Guide, and that the resulting Assessment Findings are adequately supported by the Assessment Evidence gathered — a stage that contributes directly to the reliability and credibility of the outcome, and one that should never be skipped in the interest of speed.

28.2 Three Levels of Verification

It is worth situating the Review Process within a broader hierarchy of verification, because the methodology in fact recognises three distinct levels, each answering a different question:



(Figure 28.1)

Self-Verification asks the narrowest of the three questions: *have I completed the assessment correctly?* — a check every competent assessor performs continuously throughout the lifecycle, not a formal stage with its own documentation requirements. The Review Process asks a broader question, and one that benefits from a perspective other than the assessor's own: *is the assessment methodologically coherent, and adequately supported by the evidence gathered?* Independent Audit, addressed in the next chapter, asks a broader question still: *can an independent party confirm that the assessment complies with the applicable framework and governance requirements?*

This hierarchy is not incidental; it reflects a more general principle that runs throughout this methodology. This Technical Guide is concerned with the quality of the assessment; any conformity assessment framework built on top of it is concerned with the quality of the certification system that relies on that assessment; a certification programme, in turn, applies both to reach an actual certification decision. Each level of verification has a distinct question to answer, and none is a substitute for the others.

28.3 Purpose of the Review

The Review Process determines whether an assessment is methodologically complete and adequately supported by evidence — it does not perform a new assessment of its own. What it verifies is that the work already done holds together: that the assessment proceeded consistently, and that its conclusions are genuinely justified by what was collected, rather than simply asserted.

28.4 Scope of the Review

A reviewer should consider the Assessment Scope, the Declared Service Areas and Site Areas, the selection of Representative Test Locations, the suitability of the Representative Consumer Devices used, the completeness and integrity of the Assessment Evidence, the Evidence Correlation process, the resulting Observed Network Reality, and the Assessment Findings themselves — evaluated as a coherent whole rather than picked apart measurement by measurement. The Review Process is an audit of coherence, not a repetition of the assessment at finer resolution.

28.5 Methodological Verification

The reviewer's central task is to determine whether this methodology was applied consistently throughout — whether the assessment followed the lifecycle set out in Chapter 21, whether evidence was gathered appropriately, whether the methodological principles of Chapter 12 were respected, and whether the conclusions reached remain consistent with the evidence actually available. The emphasis, accordingly, falls on methodological integrity rather than on the technical performance of the network itself, which is not what the Review Process exists to judge.

28.6 Sufficiency of Evidence

The reviewer determines whether the Assessment Evidence gathered is sufficient to support the Findings it underpins. Where the evidence appears incomplete, inconsistent, or simply thin, additional assessment activity may be recommended before the assessment is finalised — a recognition that confidence in a Finding, as established in Chapter 17, depends on the quality and completeness of what supports it, not on the mere fact that a conclusion has been written down.

28.7 Internal Consistency

Reviewers should check that the assessment holds together internally: that the Findings are consistent with the Observed Network Reality they were derived from, that the Observed Network Reality is itself supported by properly correlated evidence, that every item of evidence remains traceable to the observation it came from, and that the reasoning connecting evidence to conclusion is transparent enough to follow. Where any of this breaks down, the resulting inconsistency should be investigated and resolved before the assessment is considered complete — not carried forward as an unresolved loose end.

28.8 Independence of the Reviewer

Wherever reasonably practicable, the Review Process should be carried out by someone other than the assessor who conducted the original work — a separation that reduces the risk of confirmation bias and adds directly to the credibility of the outcome, since an assessor reviewing their own conclusions is, almost by definition, poorly placed to catch their own blind spots. Where independent review genuinely is not practicable, appropriate safeguards should be put in place to preserve objectivity regardless.

An automated system may constitute such a safeguard, provided it satisfies three conditions. First, it applies the methodological consistency checks set out in this chapter systematically — device consistency, RTL sufficiency, evidence traceability, and comparable rule-based verification. Second, it recognises the categories of genuinely ambiguous evidence this Guide has already identified as requiring judgement rather than rule — including the apparently conflicting evidence discussed in Chapter 24.6 — and escalates these to human review rather than resolving them automatically. Third, the resulting documentation distinguishes clearly between findings verified by rule and findings resolved through human judgement on escalation, so that the traceability required by Chapter 20 is not obscured by the mechanism that produced it. A system meeting these conditions performs Review in the sense this methodology requires; a system that resolves ambiguous evidence silently, without escalation, does not — regardless of how sophisticated its underlying analysis may be.

28.9 Outcomes of the Review

A review may confirm that the assessment is methodologically complete, identify minor issues needing clarification, recommend additional Assessment Evidence or further assessment activity, or confirm that the assessment is ready to proceed to independent auditing where such auditing applies. The review itself, however, does not determine certification — that decision, as Chapter 30 sets out, belongs to a separate governance process entirely.

28.10 Relationship with Independent Auditing

The Review Process and Independent Auditing are distinct activities occupying distinct levels of the hierarchy set out in 28.2, and it would be a mistake to treat successful completion of the former as making the latter unnecessary. The Review Process verifies completeness and consistency from within the assessment function itself, before the work leaves that function; Independent Auditing, by contrast, is a separate governance activity providing external assurance that the assessment complies with the applicable conformity assessment requirements. Passing Level 2 does not substitute for Level 3

wherever Level 3 is actually required.

28.11 Documentation

The outcome of the review should be documented clearly enough to show its scope, the issues considered, any deficiencies identified, any corrective action required, and the review's final conclusion — documentation that itself becomes part of what makes the assessment lifecycle transparent and traceable to whoever examines it later, including, where relevant, an independent auditor.

28.12 Principle

No assessment proceeds to independent auditing or certification until it has passed successfully through Levels 1 and 2 of the verification hierarchy set out in this chapter. The Review Process exists to give assurance that the assessment is methodologically sound on its own terms, before it is ever placed in front of the kind of external, higher-level scrutiny the next chapter describes.

29 Independent Auditing

29.1 General

Independent Auditing adds a further layer of confidence to the assessment process, verifying that a completed assessment was conducted in accordance with this Technical Guide and, where applicable, the relevant conformity assessment framework. It is performed by a party independent of the original assessment activities, and its purpose is not to repeat the assessment, but to determine whether the assessment already performed can be relied upon.

29.2 From Assessment to Certification: Four Questions

Chapter 28 established a three-level hierarchy of verification — Self-Verification, Review, Independent Audit — each answering progressively broader questions about the assessment's reliability. It is worth extending that hierarchy here to its full span, from the assessment itself through to the eventual certification decision, since each stage answers a genuinely distinct question and confusing any two of them is a common and consequential error:

Activity	Question Answered
Assessment	What does the observed evidence tell us about the WiFi service?
Review (<i>Level 2, Chapter 28</i>)	Has the assessment been carried out correctly and completely?
Independent Audit (<i>Level 3, this chapter</i>)	Can an independent party trust that the methodology was correctly applied?
Certification Decision (<i>Chapter 30</i>)	Does this assessment satisfy the requirements of the certification programme?

(Table 29.1 — extends the verification hierarchy of Figure 28.1)

The critical point this table makes explicit is that Independent Auditing does not ask whether the WiFi service is good. It asks whether the *assessment of that service* can be trusted — a question about the credibility of a process, not a second opinion on the network itself. Confusing the two is precisely the mistake this chapter exists to prevent:

an auditor who starts re-evaluating the network's technical performance has stopped auditing and started reassessing, which is a different activity governed by different rules.

29.3 Purpose of Independent Auditing

Independent Auditing provides objective assurance that the methodology has been correctly applied, that Assessment Findings are adequately supported by Assessment Evidence, that the assessment demonstrates methodological integrity throughout, and that its documented conclusions are traceable and justifiable. It contributes confidence in the assessment already performed — it does not constitute a separate technical evaluation running alongside it.

29.4 Independence

The auditor must be independent of the assessment under review, having played no part in planning it, collecting its evidence, developing its Findings, or determining any associated WiFi Quality Score. This separation is what preserves impartiality and gives the audit's conclusion real weight — an auditor reviewing their own prior work would be subject to exactly the confirmation bias Chapter 28 already flags in the context of the Review Process, only with higher stakes attached.

29.5 Scope of the Audit

An audit considers compliance with this Technical Guide, the consistency of the Assessment Scope, the appropriateness of the Declared Service Areas and Site Areas, the selection of Representative Test Locations, the suitability of the Representative Consumer Devices used, the sufficiency and integrity of the Assessment Evidence, the correctness of the Evidence Correlation process, and the traceability of the resulting Findings — evaluated as a matter of methodological compliance, not by re-performing the assessment itself.

29.6 Evidence-Based Verification

Auditing rests on documented Assessment Evidence, and its conclusions must remain traceable to the assessment records they are drawn from. Where something in those records is unclear, an auditor may reasonably request clarification or supplementary documentation — but this is a request for better visibility into what was already done, not an invitation to gather new evidence of the auditor's own.

29.7 Audit Outcomes

An audit may conclude that the assessment is methodologically compliant, that minor issues require clarification or correction, that additional Assessment Evidence is needed, that specific elements should be reconsidered, or — in the more serious case — that the assessment cannot presently support the findings it reports. These outcomes exist to establish confidence in the assessment, not to assign blame; an audit that returns a negative outcome has done its job correctly, whatever the consequences for the assessment under review.

29.8 Relationship with Assessment Findings

Auditing does not create new Findings. It evaluates whether the Findings already reached are adequately supported by the evidence available and whether they were developed through this methodology as written — responsibility for the Findings

themselves remains, throughout, with the original assessment process, never transferring to the auditor who reviews it.

29.9 Relationship with Certification

Where an assessment forms part of a certification programme, successful completion of Independent Auditing may be a prerequisite for the certification decision that follows — but the audit itself neither grants, refuses, suspends nor withdraws certification. That decision, as Table 29.1 makes clear, answers a further and distinct question, governed by the applicable certification programme and conformity assessment framework rather than by this Technical Guide.

29.10 Transparency and Traceability

Audit records should identify the assessment reviewed, the scope of the audit, the evidence considered, the activities performed, any issues identified, and the audit's conclusion — documentation that allows the audit itself, in turn, to be reviewed later, extending the same principle of traceability that governs every other stage of this methodology.

29.11 Independence Does Not Mean Repetition

An Independent Audit is not a full re-performance of the original assessment; its objective is to establish whether sufficient confidence already exists in the work done, which means it concentrates on methodological compliance, evidence integrity, and the logical connection between evidence and Findings. Additional assessment activity is warranted only where the available record genuinely cannot support that confidence — not as a routine feature of every audit.

29.12 Principle

Independent Auditing provides confidence in the assessment process — not an alternative assessment of the WiFi service. Its purpose, as Table 29.1 sets out, is to answer a single question distinct from every other stage in this methodology: can an independent party trust that the methodology was correctly applied? It is this question, and only this question, that separates Independent Auditing from the Review Process that precedes it and the Certification Decision that follows it.

30 Certification Decision

30.1 General

Where a WiFi Quality assessment forms part of a certification programme, the assessment lifecycle concludes with a **Certification Decision** — the formal determination of whether the completed assessment satisfies the applicable certification requirements. It is distinct from the assessment itself, resting on the completed assessment process together with the relevant conformity assessment framework and certification programme requirements.

30.2 Purpose of the Certification Decision

The Certification Decision determines whether an assessment justifies granting, maintaining, renewing, suspending or withdrawing certification, as applicable. It is a governance activity, not an assessment activity — it relies on the completed

assessment, but it neither replaces nor modifies the methodology that produced it.

30.3 Relationship with the Assessment

The Certification Decision is based on the Assessment Findings produced through this methodology — the Assessment Scope, the Observed Network Reality, the Findings themselves, and the WiFi Quality Score where one has been calculated. The assessment supplies the evidential basis; the certification programme's requirements determine what is subsequently done with it. Assessment and certification remain, in this sense, two separate acts joined at exactly one point.

30.4 Independence of the Certification Decision

The Certification Decision should be made independently of the assessment activities themselves. Wherever practicable, the individual or body responsible for the decision should not have participated in planning the assessment, gathering its evidence, developing its Findings, conducting the Review Process, or performing the Independent Audit — the same logic of separation already applied at each earlier stage of the verification hierarchy, extended here to its final link.

30.5 Inputs to the Certification Decision

Depending on the certification programme in question, the decision may draw on the completed Findings, the WiFi Quality Score where applicable, the outcome of the Review Process, the outcome of any Independent Audit, and any further requirements the programme itself defines. This Technical Guide deliberately does not prescribe how these inputs should be weighted or combined — that belongs to the certification programme, not to the assessment methodology.

Where a certification programme makes separate determinations about whether sampling requirements were satisfied or whether an assessment is eligible to proceed, those determinations shall remain distinguishable from the WiFi Quality Score and from the certification decision itself. Demonstrating that required observations were validly collected does not establish that the service performed well. A favourable score does not substitute for missing mandatory evidence or override a separately applicable certification requirement. Equally, a blocked or indeterminate programme evaluation is not, by itself, a technical Finding of poor service. Any such consequences are defined by the applicable versioned programme requirements; none of these intermediate determinations independently grants certification.

30.6 Methodological Neutrality

This Guide establishes how WiFi Quality is assessed; it does not define certification criteria, thresholds, classes or levels, validity periods, surveillance requirements, or the conditions under which certification might be suspended or withdrawn. These matters belong entirely to the applicable certification programme and conformity assessment framework. The separation is deliberate, and it serves a specific purpose: it keeps the assessment methodology stable even as certification schemes built on top of it evolve, are revised, or are eventually replaced by newer ones.

30.7 Certification Decisions Are Not Technical Findings

A Certification Decision should never be read as a further technical assessment of the WiFi service. The technical conclusions were already established through the assessment methodology described in the preceding chapters; the decision simply

determines whether those conclusions meet the bar a given certification programme has set. Conflating the two — treating a certification outcome as though it were itself a finding about network quality — is precisely the confusion the distinction drawn in Chapter 29 (Table 29.1) exists to prevent.

30.8 Traceability

Every Certification Decision should remain traceable to the completed assessment, its supporting Assessment Evidence, its Findings, the methodology applied, and the certification requirements invoked — the same principle of traceability that has run through every stage of this methodology, applied here at its final governance step.

30.9 Relationship with the WiFi Quality Score

Where a score is communicated as part of certification, it must remain linked to its assessment in the manner Chapter 27 requires; the decision considers that score within its full methodological context, never as an isolated figure detached from the assessment that produced it.

30.10 The Complete Methodological Sequence

It is worth closing this part of the Technical Guide by returning to the full sequence in one place — the entire chain this methodology has built, chapter by chapter, from the first definition of scope to the final governance decision. That sequence is set out in full as Figure 21.1 (Chapter 21.3); every stage of it has now been described in detail across this Guide, and it is worth returning to that figure here with the whole of this Technical Guide behind it, rather than repeating it a second time.

What this final view of the sequence makes plain is that the Certification Decision sits at the very end of the chain — and, just as importantly, that it is not what the chain was built to achieve. The purpose of this methodology, from its first chapter to its last, is to produce an assessment that is reliable, transparent and repeatable. Certification is one of several things that reliable assessment can subsequently be used for — alongside service improvement, public communication of results, benchmarking, and research — and it happens to be the use case most fully developed by certification programmes that choose to build on this methodology. It is not, however, the reason the methodology exists. An assessment conducted under this Technical Guide remains a complete and valid piece of work whether or not it is ever submitted to a certification programme at all — which is precisely what keeps this methodology a reference for the discipline of WiFi Quality assessment, rather than a methodology defined by any single certification scheme built upon it. This independence is not a diminishment of what certification adds — external verification, market recognition, third-party accountability — but the foundation that makes such certification meaningful in the first place.

30.11 Principle

Certification is a decision based on an assessment; it is not the assessment itself. The credibility of a Certification Decision depends, in every case, on the integrity, consistency and independence of the assessment process it was derived from — which means that everything this Technical Guide has set out to establish, from Chapter 1 onward, is what ultimately gives a certification decision its meaning, and not the other way around.

Part VI – Quality Assurance

31 Assessment Integrity

31.1 General

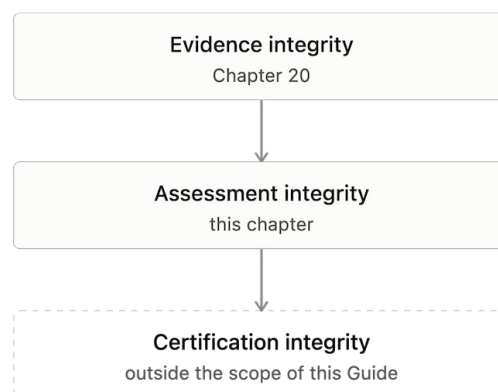
Assessment Integrity is the foundation of confidence in the WiFi Quality assessment process — the degree to which an assessment is conducted consistently, objectively, transparently and in accordance with the methodology this Technical Guide establishes. It reaches beyond the integrity of any individual item of Assessment Evidence, discussed in Chapter 20, to the integrity of the assessment as a complete methodological undertaking.

31.2 Purpose of Assessment Integrity

The purpose of Assessment Integrity is simple to state: to ensure that an assessment's outcomes are actually worthy of the confidence placed in them. An assessment possessing high integrity is one that interested parties can reasonably rely upon — not just its final number or conclusion, but the process that produced it. Assessment Integrity is, in this sense, what makes credibility, comparability and trust in WiFi Quality assessment possible at all.

31.3 Three Levels of Integrity

It is worth situating Assessment Integrity within a broader chain this methodology relies on, because the word "integrity" gets asked to do different work at different stages, and conflating them tends to blur exactly the distinctions this Guide has taken care to establish elsewhere:



(Figure 31.1)

Evidence Integrity asks whether individual items of evidence can be trusted — whether they are authentic, accurate, complete, consistent, traceable and reliable, as Chapter 20 sets out. Assessment Integrity asks a broader question: whether the process built from that evidence — scope definition, sampling, correlation, findings, review — can itself be trusted, independent of how sound any single piece of evidence within it happens to be.

Certification Integrity, broader again, asks whether the eventual decision made on the basis of a trustworthy assessment can itself be trusted — a question of governance, criteria and conformity rules that belongs to whichever certification programme and conformity assessment framework an assessment is submitted to, not to this methodology.

This Technical Guide accordingly addresses the first two levels in full. The third is deliberately left to the publications responsible for certification governance, consistent with the methodological neutrality already established in Chapter 30.6 — but naming it here, as part of the same chain, makes explicit that the trust an end user eventually places in a certification mark rests on integrity accumulated across all three levels, not on any one of them alone.

31.4 Assessment Integrity Is a Property of the Process

Assessment Integrity is not a characteristic of any individual measurement; it belongs to the process as a whole. It reflects the extent to which every stage of the lifecycle set out in Chapter 21 — from initial scope definition through to final review — was conducted in keeping with the principles this Guide establishes, rather than any single stage having been executed well in isolation from the rest.

31.5 Elements of Assessment Integrity

Assessment Integrity depends on the combined effect of several methodological elements: a clearly defined Assessment Scope, representative sampling, appropriately selected Representative Test Locations and Representative Consumer Devices, sufficient Assessment Evidence, the Evidence Integrity discussed in Chapter 20, structured Evidence Correlation, transparent Assessment Findings, and a properly documented Review Process. None of these, taken alone, is sufficient to establish Assessment Integrity — it is their combination, sustained across the entire lifecycle, that does the work.

31.6 Objectivity

Assessment activities are conducted objectively, with conclusions derived from Assessment Evidence rather than from personal expectation, commercial interest, or an outcome decided in advance of the evidence that was meant to support it. Objectivity contributes directly to Assessment Integrity, and its absence is one of the more corrosive ways integrity can quietly fail without any single step in the process being obviously wrong.

31.7 Methodological Consistency

Assessment Integrity requires this methodology to be applied consistently. Different assessors, working under comparable conditions, should be capable of reaching comparable Findings — not identical observations, which real-world variability makes an unreasonable expectation, but a consistent application of the same underlying principles, in the sense already developed at length in Chapters 12, 16 and 32.

31.8 Transparency

Assessment Integrity depends on transparency: activities, methodological decisions, and Findings documented well enough that an independent party can follow how a conclusion was actually reached. This is precisely what makes both the Review Process (Chapter 28) and Independent Auditing (Chapter 29) possible; an assessment that

cannot be followed cannot, in any meaningful sense, be reviewed or audited.

31.9 Traceability

Every significant Finding should remain traceable back through the chain that produced it — through Observed Network Reality, through Evidence Correlation, through Assessment Evidence, to the Measurement Activities where it began. This traceability is what allows independent verification to actually happen, rather than remaining a claim the assessment makes about itself without the means to substantiate it.

31.10 Impartiality

Assessments must remain free from inappropriate influence — commercial interest, personal preference, vendor pressure, or organisational expectation should play no role in how Assessment Evidence is interpreted. Conclusions reflect what was observed, not what any party involved might have preferred to find; this is, in effect, WQR-09 (Independence) applied at the level of the process as a whole, rather than at the level of any single Finding.

31.11 Competence

Assessment Integrity also depends on the competence of the people applying the methodology — a sufficient working knowledge of the methodology itself, of WiFi technologies, of assessment principles, and of how evidence is properly interpreted. A methodologically sound framework applied incompetently produces an assessment no more trustworthy than a poorly designed one applied well; competence and methodology are not substitutes for each other, and Assessment Integrity requires both.

This competence need not reside entirely in a single individual. Consistent with 3.10, a technology-assisted implementation may distribute competence between a system designed by competent practitioners and a human who exercises judgement only where the system itself recognises its limits — the same structure already described for automated Review in 28.8. What Assessment Integrity requires is that this competence be present somewhere in the chain, and applied at the point where judgement is actually needed; it does not require that every individual operating the methodology personally hold it in full.

31.12 Assessment Validity

Assessment Validity concerns whether the conclusions reached are actually justified by the assessment process and the evidence from which they were derived. It is related to, but distinct from, Assessment Integrity: Integrity asks whether the methodology was applied faithfully; Validity asks whether the resulting conclusion is warranted by what that faithful application actually established.

Four dimensions should be considered:

- **Evidential Validity** — whether the Assessment Evidence is sufficient, relevant, representative and reliable.
- **Contextual Validity** — whether evidence is interpreted within the Assessment Scope and Operational Context to which it belongs.
- **Interpretative Validity** — whether Evidence Correlation and any causal interpretation remain within what the evidence supports.

- **Scope Validity** — whether the Finding is confined to the physical, temporal and service boundaries actually assessed.

A valid individual Measurement does not guarantee a valid Assessment Finding. Valid data combined across incompatible contexts, interpreted beyond its Causal Boundary, or generalised beyond the Assessment Scope can still produce an invalid conclusion.

Assessment Validity is therefore a property of the relationship between evidence, context, reasoning and conclusion, rather than of any one of those elements considered alone.

31.13 Continuous Assurance

Assessment Integrity is not established at a single checkpoint and then assumed to persist; it is maintained continuously, from planning through to final reporting and, where applicable, certification. A lapse at any single stage of the lifecycle — however sound the stages before and after it were — degrades the integrity of the assessment as a whole, which is precisely why this chapter treats integrity as a property of the entire process rather than a box to be ticked once near the end.

31.14 Principle

Assessment Integrity is achieved when every stage of the lifecycle is conducted objectively, consistently, transparently and in accordance with this methodology. Assessment Validity is achieved when the conclusions produced by that process remain justified by the evidence, context, scope and causal boundaries the process established. Confidence in an assessment therefore depends not only on the quality of the evidence behind it — Evidence Integrity — and the integrity of the complete process that evidence passed through — Assessment Integrity — but also on the validity of the relationship between that evidence and the conclusions ultimately drawn from it. Whatever a certification programme subsequently builds on top of these foundations, in the form of Certification Integrity, is only ever as strong as the methodological foundations beneath it.

32 Repeatability

32.1 General

Repeatability is a fundamental characteristic of a reliable assessment methodology — the ability of the methodology to produce consistent outcomes when applied under comparable conditions. Repeatability does not mean identical measurements. It means that the methodology consistently characterises a WiFi service despite the ordinary variability every real-world wireless environment exhibits.

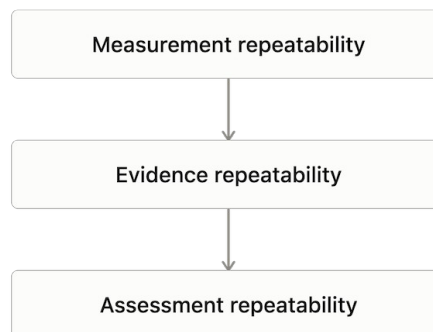
32.2 Purpose of Repeatability

Repeatability exists to make assessment outcomes dependable and reproducible, through the consistent application of method rather than through any expectation that two assessments will produce the same numbers. It gives confidence that an assessment reflects genuine characteristics of the service being evaluated, rather than random variation or inconsistent practice on the assessor's part.

32.3 Three Levels of Repeatability

It is worth being precise about what, exactly, this methodology promises to reproduce,

because "repeatability" can mean quite different things depending on which stage of the assessment it is applied to. Three distinct levels are worth distinguishing, corresponding to the successive stages set out in Chapter 23's account of how a raw reading becomes Assessment Evidence:



(Figure 32.1)

Measurement Repeatability asks the narrowest question: can the same individual measurement — a given throughput test, a given latency reading — be reproduced at a given moment, at a given location, with a given device? This level is the most susceptible to ordinary environmental noise, and this methodology does not require it: two throughput tests taken minutes apart, at the same RTL, with the same RCD, may legitimately differ.

Evidence Repeatability asks a broader question: can comparable Assessment Evidence be gathered when the assessment is repeated — not identical readings, but a body of evidence that, taken as a whole, characterises the same service in recognisably the same way? This level tolerates considerably more variation than the first, because it operates on correlated evidence rather than single data points.

Assessment Repeatability asks the question this methodology actually cares about: can independent assessors, applying this Technical Guide to the same service under comparable conditions, reach comparable Assessment Findings? This is the level Chapters 12, 17 and 24 have been building toward throughout, and it is the level at which this methodology stakes its claim to reliability. It does not depend on either of the levels beneath it holding with any precision — a methodology can tolerate considerable Measurement variability and even meaningful Evidence variability while still achieving strong Assessment Repeatability, provided the correlation process is sound.

The practical significance of this hierarchy is worth stating plainly: **this methodology does not promise to reproduce identical numbers. It promises to reproduce reliable conclusions.** Confusing the two — expecting Measurement Repeatability where only Assessment Repeatability was ever claimed — is one of the more common misunderstandings this Guide is written to prevent.

32.4 Repeatability of the Methodology

The methodology is built to be repeatable at the level that matters: when different assessors apply this Technical Guide to the same service under comparable conditions, they should reasonably be expected to arrive at comparable Observed Network

Realities and comparable Findings. Minor differences in individual observations — variation at the Measurement Repeatability level — do not, on their own, indicate any failure of Assessment Repeatability.

32.5 Comparable Conditions

Repeatability can only meaningfully be judged where assessments are conducted under reasonably comparable conditions — the same Assessment Scope, the same Declared Service Areas, broadly similar operational conditions, similar Representative Consumer Devices, equivalent Representative Test Locations, and a consistently applied methodology. A significant change to any of these factors may legitimately produce a different outcome, and this should not be mistaken for a lapse in repeatability; it is, instead, exactly what a sound methodology should do when the underlying conditions have genuinely changed.

32.6 Repeatability and Professional Judgement

This methodology relies throughout on professional judgement, and repeatability does not require every assessor to make identical decisions in every circumstance — it requires that judgement be exercised consistently within the principles this Guide establishes. Two assessors may select slightly different Representative Test Locations, or weigh a piece of ambiguous evidence slightly differently, and still arrive at comparable Findings, provided each decision can be justified against the same underlying methodology. This is the same logic already developed for RTL selection in Chapter 16: consistency of methodological role, not identity of choice.

32.7 Repeatability and Observed Network Reality

Where repeated assessments are conducted under genuinely comparable conditions, the resulting Observed Network Reality should remain broadly consistent from one to the next. Where it does not, the difference should be explainable — by a change in operational conditions, a genuine change in the assessed service, a difference in the evidence actually available, or a documented methodological consideration specific to one of the two assessments. An unexplained divergence, by contrast, is a signal worth investigating rather than dismissing.

32.8 Repeatability Supports Confidence

Confidence in both the methodology and the Findings it produces grows when repeated assessments, conducted under comparable conditions, consistently reach comparable conclusions. Unexplained inconsistency, conversely, warrants further investigation — and, where it recurs, may point to a genuine gap in the methodology itself rather than simply an unlucky assessment.

32.9 Relationship with Measurement Variability

Repeatability should be read alongside the concept of Measurement Variability, addressed in the next chapter: normal variation at the level of individual readings — the first level of the hierarchy set out in 32.3 — does not, by itself, reduce Assessment Repeatability. The distinction this methodology draws throughout is between variation that is expected and normal at the Measurement level, and inconsistency that would actually undermine confidence at the Assessment level; Chapter 33 develops this distinction in full.

32.10 Relationship with Continuous Assessment

Repeatability is what makes assessments conducted over time meaningfully comparable to one another. Because the methodology stays consistent, a change observed between one assessment and a later one is more likely to reflect a genuine change in the service than an artefact of how the two assessments happened to be conducted — which is precisely what makes trend analysis, and continual improvement built on that analysis, possible at all.

32.11 Principle

Repeatability concerns the consistency of the methodology, not the identical reproduction of individual measurements — a distinction the three levels set out in this chapter make precise. A repeatable methodology enables comparable Assessment Findings under comparable conditions, at the level of Assessment Repeatability, while fully accommodating the ordinary variability that operational WiFi environments exhibit at the level of any single measurement.

33 Measurement Variability

33.1 General

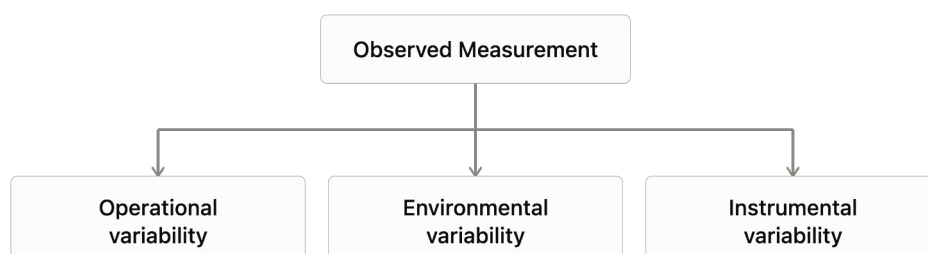
Measurements taken during a WiFi Quality assessment are subject to natural variability, arising from the dynamic character of operational wireless environments. This is an expected feature of real-world assessment, not a sign of methodological weakness, and this chapter provides the framework for interpreting it correctly rather than treating it as noise to be explained away.

33.2 Purpose

The aim here is to ensure that ordinary fluctuation in individual measurements is interpreted appropriately — distinguishing expected operational variability from a genuinely significant difference in the service being observed. Assessment conclusions, throughout, are drawn from the behaviour of the service as a whole, never from an isolated measurement value read in isolation from everything around it.

33.3 Three Sources of Variability

It is more useful to think of variability not as a single undifferentiated phenomenon but as arising from three distinct sources, each requiring a slightly different interpretive response:



(Figure 33.1)

Operational Variability arises when the network's actual behaviour changes — shifts in

user activity, network utilisation, radio interference, or congestion. This is variability in the thing being assessed.

Environmental Variability arises when the physical environment surrounding the network changes — doors opened or closed, the presence or absence of people, lifts in motion, a scheduled event filling a room that was empty an hour before. This is variability in the conditions the network operates within, distinct from the network's own behaviour.

Instrumental Variability arises from the measurement process itself — ordinary test-to-test variation attributable to the measuring procedure, measurement-software behaviour, reporting granularity, timing effects or other artefacts introduced by the means through which an Observation is obtained. This is variability introduced by the observation process, rather than by the network or its environment.

The distinction matters because each source calls for a different kind of scrutiny. Operational and Environmental Variability are, in a meaningful sense, part of what an assessment is trying to characterise — genuine features of how the service behaves in the real world. Instrumental Variability, by contrast, is a property of the measurement act and should be minimised through consistent measurement procedures and appropriate control of measurement-tool effects wherever possible, rather than mistaken for a real feature of the service under assessment.

33.4 Sources of Variability, in Detail

Within these three categories, variability may arise from changes in user activity, variations in network utilisation, radio interference, environmental change, the movement of people, furniture and physical obstructions, client device behaviour, roaming decisions, Internet performance, background network traffic, application behaviour, and time-dependent fluctuation — all of them normal characteristics of operational WiFi environments, and none of them, on their own, indicative of a flawed assessment.

33.5 Variability Is Not Necessarily Error

A difference between two measurements should never automatically be read as measurement error. Many such differences reflect genuine change in one of the three sources set out above. The methodology accordingly distinguishes between expected variability, methodological error, and abnormal service behaviour — three quite different explanations for the same observed discrepancy — and only Evidence Correlation, described in Chapter 24, can properly determine which of the three is actually responsible in a given case.

33.6 Interpreting Variable Measurements

Any individual measurement is interpreted in relation to the other measurements around it, the broader Assessment Evidence, the Representative Test Location and Representative Consumer Device it came from, the operational conditions prevailing at the time, and the Assessment Scope as a whole. No single measurement should ordinarily determine a conclusion; the significance of a given variation only becomes clear once it is read against everything else the assessment has gathered.

33.7 Variability Across Representative Test Locations

Different RTLs may legitimately produce different results, and this difference often

reflects a genuine characteristic of the Site Area rather than any flaw in the assessment — Operational or Environmental Variability at work, in the terms of 33.3. The objective is never to eliminate such differences, but to understand how they contribute to the overall picture of quality across the Site Area as a whole.

33.8 Variability Across Consumer Devices

Different RCDs may behave differently within the same wireless environment, for reasons rooted in normal variation in device capability and implementation — a genuine feature of the interaction between the service and the Representative Consumer Device, which this methodology treats as valuable evidence in its own right, rather than as noise to be filtered out, provided it is interpreted in light of the intended user population it represents (Chapter 18).

33.9 Variability Over Time

Measurements taken at different times may differ because of genuinely changing operational conditions — peak occupancy, quiet periods, scheduled events, fluctuating Internet utilisation, or temporary environmental change. Time-dependent variability of this kind, being largely Operational or Environmental in origin, is an expected feature of any operational WiFi service and should be planned for, not treated as an anomaly once encountered.

33.10 Relationship with Repeatability

Measurement Variability does not, on its own, undermine the Assessment Repeatability discussed in Chapter 32. Individual observations may differ considerably while the structured application of this methodology still produces comparable Findings under comparable conditions — the distinction between variability of observation and repeatability of conclusion is exactly the distinction Chapter 32 draws between its three levels, and this chapter should be read as its complement.

33.11 Relationship with Observed Network Reality

Observed Network Reality is built from evidence that inherently contains variability of all three kinds described above. The methodology does not attempt to eliminate this variability before interpreting it; it seeks instead to understand where a given variation comes from, and to incorporate that understanding into the reconstruction itself. Variability, properly understood, adds to the picture of the service rather than undermining confidence in it.

33.12 Variability Is Not the Same as Uncertainty

It is worth flagging a distinction the next chapter develops in full: variability and uncertainty are not the same thing, and confusing them is a common source of imprecise thinking about assessment reliability. Variability, as this chapter has described it, concerns the fact that the system being observed — the network, its environment, and the act of measuring it — genuinely changes and fluctuates. Uncertainty concerns something different: the limits within which an assessor can confidently interpret what has actually been observed, given that variability. A network can exhibit considerable Operational Variability and still be assessed with high confidence, provided the evidence gathered is sufficient to characterise that variability reliably — which is precisely the question Chapter 34 takes up next.

33.13 Principle

Measurement variability — whether Operational, Environmental or Instrumental in origin — is an inherent characteristic of real-world WiFi services, to be understood and interpreted as part of the assessment rather than treated as evidence of methodological failure. This methodology seeks to understand variability, not to eliminate it — and understanding where a given variation comes from is the necessary first step before its implications for Measurement Uncertainty, addressed next, can properly be assessed.

34 Measurement Uncertainty

34.1 General

Every measurement carries some degree of uncertainty. Within this methodology, **Measurement Uncertainty** refers to the limitations involved in interpreting an individual observation obtained during an assessment — an inherent feature of real-world measurement, to be understood, documented and accounted for rather than treated as a defect. Uncertainty does not invalidate Assessment Evidence; it defines the level of confidence that can reasonably be placed in any given observation.

NOTE — Measurement Uncertainty is used in this Technical Guide in a broader assessment-oriented sense concerned with limitations on the interpretation of real-world Observations. It shall not be assumed to be identical to the formal metrological definition of measurement uncertainty in the International Vocabulary of Metrology (VIM). Where quantitative measurement uncertainty is evaluated, appropriate metrological guidance, including JCGM 100 where applicable, should be followed.

34.2 Purpose

Considering Measurement Uncertainty exists to keep assessment conclusions honestly proportioned to the confidence the evidence actually supports — avoiding unwarranted certainty by acknowledging the practical limits of real-world measurement. A conclusion should never claim more certainty than its underlying evidence can bear.

34.3 Sources of Measurement Uncertainty

Uncertainty can arise from limitations inherent to measurement devices, client device behaviour, environmental influence, operational variability, the timing of a given observation, the measurement procedure itself, network dynamics, or application behaviour — all of them ordinary features of assessing real-world WiFi environments, not signs that something has gone wrong.

34.4 Uncertainty Is Not Error, and Is Not Variability

Measurement Uncertainty should not be confused with measurement error: an observation can be entirely valid and still carry a degree of uncertainty about how far it can be relied upon. Nor should it be confused with the Measurement Variability discussed in Chapter 33 — variability describes the fact that the system being observed genuinely changes; uncertainty describes the limits within which an assessor can confidently interpret what was actually observed, given that change. The two concepts are related but distinct, and this methodology treats them as such throughout.

34.5 From Measurement Confidence to Assessment Confidence

It is worth distinguishing explicitly between two related but different notions of

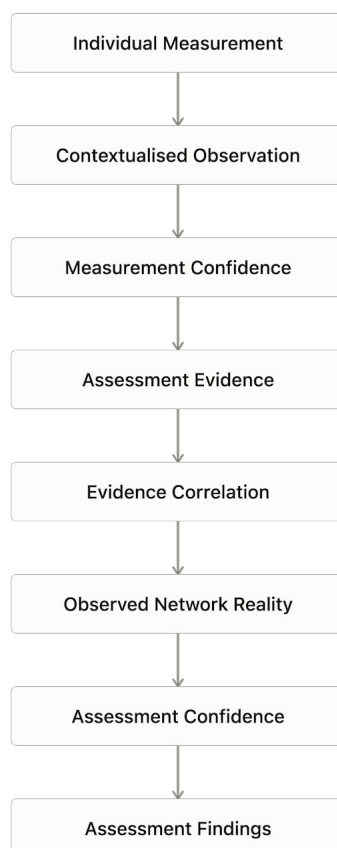
confidence that this methodology relies on at different stages:

Concept	Meaning
Measurement Confidence	The confidence reasonably placed in a single observation, taken on its own.
Assessment Confidence	The confidence reasonably placed in the assessment as a whole, once all relevant Assessment Evidence has been correlated.

(Table 34.1 — extends the concept of Assessment Confidence first introduced in Chapter 17)

The relationship between the two is not one of simple addition. A single speed test, taken in isolation, may carry fairly limited Measurement Confidence — it reflects one moment, one location, one device, subject to all the sources of uncertainty described in 34.3. But twenty independent observations, gathered across different Representative Test Locations and different Representative Consumer Devices, and properly correlated through the process described in Chapter 24, can support a considerably higher Assessment Confidence than any of the twenty individual measurements could claim on its own.

This is, in effect, the same logic Chapter 17 introduced in the context of sampling — that confidence rises steeply as evidence moves from poor to representative, and that the diminishing-returns curve set out in Figure 17.1 describes Assessment Confidence, not Measurement Confidence. What this chapter adds is the recognition that the same principle applies not only to how evidence is *sampled*, but to how it is *interpreted*: correlation, not accumulation, is what actually converts a set of individually uncertain measurements into a confidently supported conclusion.



(Figure 34.1)

34.6 Uncertainty and Assessment Evidence

Assessment Evidence is interpreted in light of the uncertainty attached to the observations it was built from. Where uncertainty is low and the evidence remains internally consistent, Findings may be held with correspondingly greater confidence; where uncertainty runs higher, an assessor should weigh whether additional evidence is warranted before a definitive conclusion is reached — a judgement call governed by the same logic of Assessment Confidence set out above.

34.7 Managing Uncertainty

This methodology does not attempt to eliminate Measurement Uncertainty — an impossible goal for any real-world measurement — but to manage it, through representative sampling, multiple Representative Test Locations, appropriately chosen Representative Consumer Devices, repeated observation where warranted, Evidence Correlation, and transparent interpretation throughout. None of these tools removes uncertainty from any individual reading; together, they reduce its influence on the conclusion the assessment ultimately reaches.

34.8 Uncertainty and Evidence Correlation

Individual observations carry varying degrees of uncertainty, and Evidence Correlation is precisely what allows them to be interpreted collectively rather than trusted individually — raising Assessment Confidence even where Measurement Confidence, taken observation by observation, remains modest. This methodology relies on the correlation of multiple complementary observations for exactly this reason, rather than placing excessive weight on any single measurement, however precise that measurement appears to be in isolation.

34.9 Uncertainty and Observed Network Reality

Observed Network Reality is established notwithstanding the Measurement Uncertainty present in its underlying evidence — it represents the best-supported evidence-based understanding achievable from the Assessment Evidence actually gathered, not a claim to certainty beyond what that evidence can support. It should accordingly be read as the best-supported reconstruction available, not as an assertion that no uncertainty remains.

34.10 Confidence in Assessment Findings

Findings should reflect the Assessment Confidence the underlying evidence actually supports. Where meaningful uncertainty remains, this should be stated plainly within the Findings themselves — this methodology treats the explicit acknowledgement of uncertainty as a mark of rigour, never as a weakness to be concealed behind confident-sounding language the evidence does not actually justify.

34.11 Relationship with Repeatability and Variability

Three related but distinct concepts run through this part of the methodology, and it is worth holding them apart clearly: Repeatability (Chapter 32) concerns the consistent application of the methodology itself; Measurement Variability (Chapter 33) describes the natural fluctuation of the system being observed; Measurement Uncertainty

concerns the confidence that can be placed in individual observations and, once correlated, in the assessment as a whole. A sound assessment can exhibit considerable Variability, be built on observations of only moderate Measurement Confidence, and still achieve strong Assessment Repeatability and high Assessment Confidence — provided the correlation process linking the three concepts together is applied properly.

34.12 Principle

Measurement Uncertainty is an inherent feature of real-world assessment, to be recognised, managed and transparently reported rather than eliminated or concealed. This methodology does not promise conclusions free of uncertainty; it promises conclusions whose stated confidence is proportionate to the evidence that actually supports them — and it is Assessment Confidence, built through correlation rather than through any single measurement's precision, that ultimately makes such conclusions defensible.

35 Sources of Error

35.1 General

No assessment methodology can eliminate the possibility of error entirely. The aim of this chapter is accordingly not to assume errors will never occur, but to identify their principal sources and establish safeguards that minimise their influence on assessment outcomes. Within this methodology, error is distinguished from both Measurement Variability (Chapter 33) and Measurement Uncertainty (Chapter 34): those two concepts describe the ordinary behaviour of real-world systems and real-world observation; error describes something that has actually gone wrong in the process itself.

35.2 Purpose

Identifying Sources of Error improves the reliability of assessments by naming, in advance, the factors most likely to compromise them. Understanding how error can arise allows an assessor to take concrete steps to reduce its likelihood and limit its impact on the resulting Findings, rather than discovering the problem only after a conclusion has already been reached.

35.3 Five Categories of Error

Error in this methodology is best understood across five distinct categories, each describing a different way in which observation, evidence handling or methodological interpretation can become unreliable:

Category	Typical Examples
Human	Recording mistakes, incorrect interpretation, procedural omissions
Environmental	Unrecorded environmental change; misinterpreting an exceptional observed condition as representative of a different context
Device	Acquisition or reporting malfunction; device configuration unsuitable for the intended measurement purpose
Operational	Unrecorded maintenance or service-state change; attributing an outage to an unsupported cause or extrapolating it beyond the

Category	Typical Examples
	observed scope
Methodological	Incorrectly defined scope, poor sampling, inappropriate RTL selection, unsupported findings

(Table 35.1)

These categories identify ways in which the observation process or its interpretation can become unreliable. The environmental or operational event itself is not necessarily an error: a genuine outage, interference episode or period of congestion can be valid Assessment Evidence. The error may instead lie in failing to record its context, treating it as a different phenomenon, attributing an unsupported cause, or generalising beyond what was observed. **Methodological Error** concerns the design or interpretation of the assessment itself, including incorrectly drawn scope, inappropriate subdivision, convenient rather than representative sampling, faulty correlation or unsupported Findings. The categories can overlap; they are not a reason to discard valid adverse evidence.

A well-designed methodology seeks to prevent errors in both acquisition and interpretation. Some leave visible traces, such as a capture failure, an inconsistent record or a documented context mismatch. Others can produce a Finding that appears confident while resting on an unjustified sampling or interpretative basis. This is why the Review Process (Chapter 28) and Independent Auditing (Chapter 29), where applicable, are dedicated safeguards rather than substitutes for preserving and examining the original evidence.

35.4 Human Sources of Error

Human error can occur at any stage of the lifecycle — an incorrectly defined Assessment Scope, a poorly chosen Representative Test Location, an unsuitable Representative Consumer Device, a misrecorded observation, an omission of relevant evidence, a misinterpretation, a procedural slip, incomplete documentation. This methodology reduces its likelihood through structured procedure, a documented methodology to follow, the Review Process, and, where applicable, Independent Auditing — safeguards discussed at length in the preceding chapters.

35.5 Environmental Sources of Error

Environmental conditions can influence an assessment in ways that are not representative of normal operation — temporary physical obstruction, abnormal crowding, ongoing construction, transient radio interference, unusual weather affecting an outdoor environment, or a temporary power interruption. Where such conditions arise, they should be recognised and documented wherever they may meaningfully affect the Assessment Evidence gathered.

35.6 Device-Related Sources of Error

Assessment devices can introduce acquisition or reporting error through malfunction, software defects or configuration unsuitable for the intended measurement. Their suitability and preparation shall be considered in accordance with Chapter 18. However, a genuine limitation of a Representative Consumer Device may also be part of the device-service interaction being assessed. A poor result shall not be invalidated merely because a different or more capable device performs better. The assessment

distinguishes measurement error from device-dependent service behaviour using the relevant evidence and records the basis for any restriction on use.

35.7 Operational Sources of Error

Operational circumstances — maintenance, a network change during assessment, an authentication outage, an Internet service interruption or exceptional traffic — can materially change the service observed. They shall be recorded and interpreted within their actual scope and timing. An interruption outside the WLAN radio layer or the venue's control may still affect the assessed end-to-end service. Error arises where the observation process is invalid or the resulting evidence is misrepresented, not merely because the service outcome is poor. A valid negative observation remains part of the assessment; a technically invalid or unavailable measurement does not, by itself, establish venue failure.

35.8 Methodological Sources of Error

As set out in 35.3, error can also arise from incorrect application of the methodology itself — insufficient or unrepresentative sampling, an inappropriate subdivision into Site Areas, faulty correlation of evidence, or Findings that outrun what the underlying evidence can actually support. Errors of this kind strike directly at Assessment Integrity (Chapter 31), and detecting them is a principal reason the Review Process and Independent Auditing exist as distinct, structured stages rather than optional extras.

35.9 Detecting Errors

Not every error becomes apparent during evidence collection itself. Useful indicators include inconsistent observations, unexplained contradictions, missing evidence, gaps in traceability, Findings that seem to outpace their supporting evidence, or unexpected deviation from otherwise representative behaviour. Where any of these indicators surface, further investigation is generally warranted before Findings are finalised — and, notably, several of these same indicators are exactly what a reviewer or auditor is trained to look for when checking specifically for Methodological Error, which rarely announces itself as clearly as a device malfunction does.

35.10 Managing Errors

The methodology limits the influence of error through a clearly defined Assessment Scope, representative sampling, properly selected Representative Test Locations and Representative Consumer Devices, Evidence Integrity, Evidence Correlation, the Review Process, and, where applicable, Independent Auditing. These safeguards work cumulatively, each catching what the others might miss — which is precisely why Methodological Error, the hardest of the five categories to detect from within a single assessment, benefits most from the external perspective the Review Process and Independent Auditing supply.

35.11 Relationship with Previous Chapters

Sources of Error should be read alongside, but never confused with, the two preceding chapters: Measurement Variability describes genuine change in the service being observed; Measurement Uncertainty describes the confidence that can be placed in what was observed, given that variability; Sources of Error, including the methodological category given particular weight in this chapter, describe something that has actually gone wrong in the process or its conclusions — a different kind of

concept from either of the other two, and one that should never be excused by appeal to them.

35.12 Principle

Errors — human, environmental, device-related, operational, or methodological — are to be recognised, documented and managed through structured safeguards, never ignored or mistaken for the ordinary behaviour of real-world WiFi environments. Assessment Integrity depends not on the absence of error, which no methodology can guarantee, but on the methodology's demonstrated ability to detect, understand and manage the sources of error most likely to arise — with particular vigilance reserved for Methodological Error, because it can produce an apparently coherent conclusion even where the underlying assessment design or reasoning is unsound.

36 Limitations of the Methodology

36.1 General

No assessment methodology can describe every aspect of a real-world WiFi service under every possible condition, and this one makes no claim to the contrary. It is designed to provide a structured, representative, evidence-based assessment of WiFi Quality — and its Findings should always be read within the methodological boundaries this publication has set out from the beginning. Naming these boundaries explicitly, rather than leaving them implicit, is itself part of what makes an assessment conducted under this methodology credible.

36.2 Purpose

Setting out these limitations clarifies exactly where assessment conclusions remain valid, allowing interested parties to understand both the strengths of this methodology and its inherent constraints. A limitation, here, is not a weakness of the methodology to be apologised for — it is a reflection of the genuine complexity and dynamism of the environments this methodology is built to assess.

36.3 The Methodology Assesses the Observed Service

This methodology evaluates the WiFi service as it was observed during the assessment. It does not attempt to predict future performance, model hypothetical scenarios, characterise behaviour under conditions never actually observed, or establish the theoretical maximum capability of the underlying infrastructure. Its conclusions describe the service that was found — not every state that service might, in principle, occupy.

36.4 Assessments Are Time-Bound

Findings describe the service observed during a specific, defined assessment. Operational environments evolve — infrastructure changes, software updates, client devices are replaced, user behaviour shifts, environmental conditions change — and any of these may legitimately alter a service after an assessment has concluded. Findings should never be read as a permanent characteristic of the environment they describe, a point already established in Chapter 25 and worth restating here as a limitation in its own right.

The duration of observation also constrains what may be concluded. Evidence gathered

during a short assessment window can demonstrate behaviour observed within that window and may support conclusions about representative service conditions where the sampling basis justifies them; it cannot, by itself, establish every aspect of long-term behaviour, rare-event frequency, seasonal variation or service conditions that require substantially longer observation to characterise.

Where a conclusion concerns behaviour over an extended period, it should be supported by evidence appropriate to that timescale, which may include repeated assessments, longitudinal observations or relevant monitoring evidence.

36.5 Representative Rather Than Exhaustive

This methodology relies on representative sampling, not exhaustive measurement — not every physical location, consumer device or operational condition can reasonably be assessed, nor would attempting to do so improve the reliability of the conclusion, as Chapter 17 has already argued. The validity of an assessment depends on the representativeness of the evidence gathered, not on how completely the environment was physically covered.

36.6 Dynamic Operational Environments

Operational WiFi environments are inherently dynamic — occupancy, radio conditions, Internet connectivity, user activity and the physical environment itself all shift continuously. This methodology characterises behaviour under representative conditions; it cannot, and does not claim to, eliminate the influence of natural operational variability, discussed at length in Chapter 33.

The operational load present during evidence collection is therefore part of the context in which the resulting Findings must be interpreted. An assessment conducted under low, typical or high utilisation does not automatically establish how the service would behave under materially different load conditions unless evidence representative of those conditions is also available.

36.7 Dependence Upon Available Evidence

Findings can only be supported by the Assessment Evidence actually available at the time of the assessment. Evidence that was unavailable, inaccessible, or fell outside the defined Assessment Scope cannot contribute to a conclusion it was never in a position to inform — which means every Finding is limited, in the end, by the quantity, quality and representativeness of what was actually gathered, never by what might, in principle, have been gathered under different circumstances.

An unobserved condition shall not be represented as a demonstrated condition. Likewise, the absence of an observed failure during the Assessment does not, by itself, demonstrate that the failure can never occur. Conclusions must distinguish between what the evidence positively establishes, what it reasonably supports, and what remains unknown because it was not observed.

36.8 Professional Judgement

This methodology requires informed professional judgement at several points — selecting Representative Test Locations, interpreting Assessment Evidence, correlating that evidence into a coherent whole. It does not attempt to eliminate this judgement; it seeks instead to make it consistent, transparent and evidence-based, in the manner Chapters 12 and 16 have already set out.

36.9 Technology Independence

This Technical Guide deliberately avoids prescribing specific hardware, software, measurement applications or vendor technologies, in keeping with the technology-neutral character established from Chapter 1 onward. This supports long-term applicability, but it also means that detailed implementation guidance — which tools to use, how to configure them — is left to separate operational documentation rather than specified here.

36.10 Relationship with Other Professional Activities

This methodology does not replace RF engineering, predictive network design, professional site surveys, spectrum analysis, network troubleshooting, network monitoring, or infrastructure optimisation. Each of these disciplines addresses a different question, examined individually in Chapters 37 through 41, and each may supply complementary information that enriches an assessment without this methodology absorbing or duplicating it.

The same limitation applies to causal interpretation. Evidence obtained through Representative Consumer Devices and associated measurement endpoints can support distinctions between classes or regions of impairment where the relevant evidence is sufficient — for example between wireless-access behaviour, local service delivery and an upstream service path. It does not follow that endpoint evidence can uniquely identify every underlying component or physical root cause.

Where the available Assessment Evidence supports a broader causal conclusion but does not uniquely discriminate between multiple technically plausible causes within that boundary, the methodology shall preserve that uncertainty. A more specific root cause requires evidence capable of supporting that greater specificity; it shall not be inferred merely because one explanation appears plausible.

36.11 Appropriate Interpretation

Findings should always be read together with the Assessment Scope, the Declared Service Areas, the assessment date, the representative operational conditions observed, and the methodology applied — and should never be generalised beyond these boundaries, a discipline this Guide has insisted on since Chapter 13 and repeats here as a limitation in its own right.

36.12 Continuous Evolution

This methodology reflects the current understanding of WiFi Quality assessment. As wireless technology, operational practice and assessment technique continue to develop, future revisions of this Technical Guide may refine or extend the methodology while preserving the fundamental principles set out in Chapter 12 — the acknowledgement of present limitations being, in this sense, part of what makes future improvement possible rather than something to be defended against.

36.13 What the Methodology Does Not Claim

It is worth closing this chapter by stating plainly what this Technical Guide does not claim, rather than leaving these boundaries to be inferred from the limitations discussed above. This methodology does not claim to:

- measure every possible aspect of a WiFi service;

- observe every operational condition a service might ever encounter;
- eliminate measurement variability or measurement uncertainty;
- predict future network behaviour;
- guarantee future user experience;
- replace engineering design, troubleshooting, or optimisation activity;
- establish absolute truth regarding the assessed WiFi service;
- establish calibration-grade RF characteristics from Representative Consumer Device measurements where the measurement method does not support that level of precision;
- assume that device-reported RF values, including RSSI, are numerically interchangeable across different consumer devices without evidence supporting that equivalence;
- attribute end-to-end Internet degradation exclusively to infrastructure controlled by the assessed organisation without supporting evidence;
- establish long-term service behaviour solely from short-duration observations where the relevant timescale was not observed;
- claim as demonstrated any operational condition that was not observed or otherwise supported by appropriate Assessment Evidence;
- uniquely identify a component-level root cause where the available Assessment Evidence supports only a broader causal scope.

What this methodology does claim is considerably narrower, and considerably more defensible: to establish an evidence-based representation of the observed WiFi service whose scope and specificity remain limited to what the available Assessment Evidence can reasonably support through the structured application of the principles set out in this Guide. It is a modest claim by design — and it is precisely its modesty that makes it one this methodology can actually stand behind.

36.14 Principle

The methodology provides a structured assessment within a defined Assessment Scope, using representative Assessment Evidence gathered under representative operational conditions, with conclusions limited to what that evidence can support. Its conclusions are evidence-based, context-dependent, and bounded by the methodology that produced them — never more, and never presented as though they were.

No assessment methodology can eliminate the complexity of real-world WiFi services. The objective of this methodology is not to remove that complexity, but to understand it — through representative observation, structured evidence, and transparent interpretation.

Part VII – Relationship with Other Approaches

37 RF Engineering

37.1 General

RF Engineering is a well-established professional discipline concerned with the design, analysis, optimisation and operation of radio frequency systems. Within WiFi networks specifically, it plays a fundamental role in achieving reliable coverage, efficient spectrum use and sound radio performance. This methodology takes the importance of that discipline as given; what it maintains is only that RF Engineering and Real-World WiFi Quality Assessment are built to answer different questions.

37.2 Different Objectives

Both disciplines concern themselves with the same WiFi network, but from different vantage points. RF Engineering is concerned, primarily, with the behaviour and optimisation of the wireless infrastructure itself. This methodology is concerned with the quality of the service that infrastructure ultimately delivers to the people using it. Neither vantage point makes the other redundant; the two are complementary by design, not competitors for the same territory.

37.3 Two Disciplines, Two Perspectives

The distinction is perhaps clearest when the two disciplines are set out side by side:

Aspect	RF Engineering	Real-World WiFi Quality Assessment
Primary objective	Design and optimise the radio infrastructure	Assess the quality of the delivered WiFi service
Primary focus	Wireless infrastructure	End-to-end service
Typical perspective	Network-centric	User-centric
Typical outputs	RF analysis, coverage optimisation, channel planning	Assessment Findings, Observed Network Reality, WiFi Quality Score
Main question	How does the radio network perform?	How well does the service perform for users?
Nature	Engineering discipline	Assessment methodology

(Table 37.1)

Nothing in this table implies a hierarchy between the two disciplines. It says only that the same operational environment can be examined from two legitimate and largely independent perspectives — one asking how well the transmission medium itself has been engineered, the other asking how well the resulting service actually performs once delivered.

37.4 RF Engineering Focus

RF Engineering typically encompasses radio frequency planning, access point placement, channel planning, transmit power optimisation, spectrum analysis,

interference management, antenna selection and broader infrastructure optimisation — activities that contribute enormously to how a WiFi network performs, without, on their own, establishing what quality of service a user actually experiences.

37.5 WiFi Quality Assessment Focus

This methodology, by contrast, evaluates the service delivered to representative users under representative conditions — how the complete service behaves in practice, rather than how any individual radio component performs in isolation. It does this by considering the interaction between the wireless infrastructure, consumer devices, network behaviour, operational conditions, Internet connectivity and user experience together, in the manner set out throughout Parts IV and V of this Guide.

37.6 Infrastructure Versus Service

A well-engineered radio network does not automatically guarantee a high-quality service, and reduced WiFi Quality, when observed, does not necessarily point to a deficiency in the RF engineering behind it. Observed quality emerges from the interaction of many technical and operational factors, of which radio engineering is one important contributor among several — which is exactly why this methodology evaluates the service as a complete operational system, rather than isolating the radio layer and treating it as the whole story.

37.7 Appropriate Use of RF Engineering

RF Engineering is the appropriate discipline where the objective is to design a new network, optimise an existing one, investigate a suspected RF issue, manage spectrum, improve coverage, or validate an engineering assumption made at the design stage. These activities complement a WiFi Quality assessment; they do not substitute for one, any more than an assessment substitutes for them.

37.8 Relationship with Assessment Findings

Findings produced under this methodology are not a substitute for RF Engineering or for the detailed engineering diagnosis required to design, optimise or remediate a wireless network. They may, however, include bounded causal interpretation where the Assessment Evidence supports it — for example distinguishing a limitation associated primarily with wireless access, local service delivery, or an upstream service path.

The methodology does not assume that every service limitation can be localised to a specific engineering cause. Attribution to a particular access point, interference source, channel plan, cabling fault, configuration error or other component-level mechanism is justified only where the required Assessment Evidence supports that level of specificity. Otherwise the Finding remains at the broader Causal Boundary established through Evidence Correlation, and specialist engineering investigation may then be used to resolve what remains.

The relationship is therefore complementary: Real-World WiFi Quality Assessment establishes what the service evidence supports, including the causal scope that can responsibly be stated; RF Engineering and other specialised disciplines may subsequently investigate the detailed mechanism and remedy where greater technical specificity is required.

37.9 Complementary Disciplines

The two disciplines work well together, and often in a natural sequence: a WiFi Quality assessment may establish that a service exhibits reduced quality in a given area and, where the evidence supports it, may bound the limitation to a particular service layer or causal scope. RF Engineering can then investigate the remaining radio-specific mechanism in greater detail, determine whether radio design contributes to the Finding, and identify an appropriate technical remedy. An organisation is frequently best served by both — the assessment establishing what quality is actually being delivered and how far the evidence can localise the limitation, RF Engineering resolving the specialised engineering questions that remain.

37.10 Relationship with the WiFi Quality Framework

RF Engineering contributes primarily to the Technical Domain as defined in the WiFi Quality Framework (WQI-FWK-001) — the perspective concerned with the capability designed and deployed into a wireless environment, independently of how that capability is sustained over time or experienced in practice. This methodology neither replaces nor supersedes RF Engineering; it provides, instead, an independent framework for assessing the quality of the service that discipline, among others, ultimately helps produce.

37.11 Principle

RF Engineering evaluates the radio infrastructure; Real-World WiFi Quality Assessment evaluates the service experienced through it. The two answer different questions about the same environment, and — as Table 37.1 sets out — neither ranks above the other. They are complementary components of professional WiFi practice, each most valuable when applied alongside the other rather than in place of it.

38 Professional Site Surveys

38.1 General

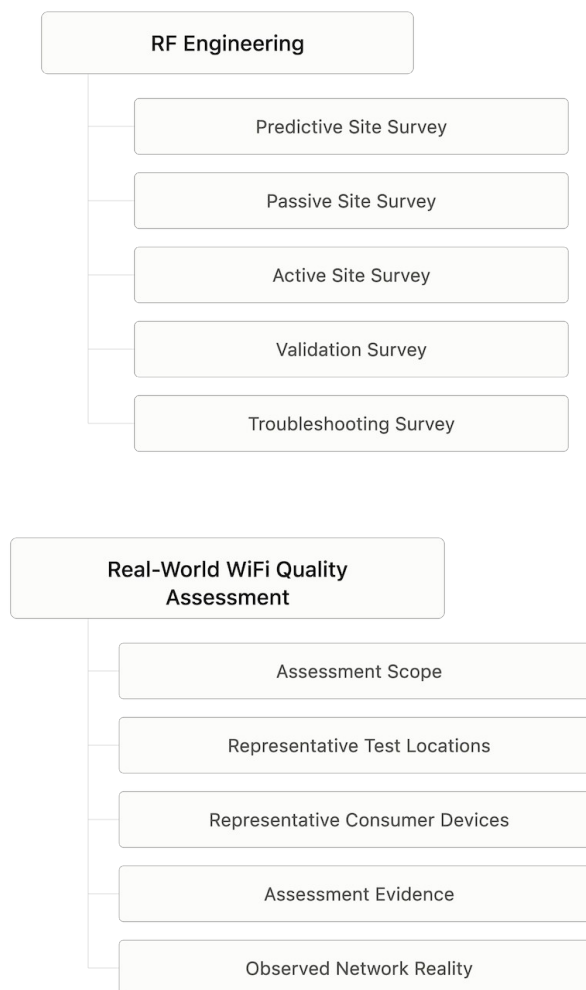
Professional Site Surveys are well-established engineering activities used to design, validate and optimise WiFi networks, providing valuable technical information about the radio environment and the expected behaviour of the wireless infrastructure. This methodology recognises their importance while distinguishing their objectives from those of a Real-World WiFi Quality Assessment.

38.2 Different Objectives

Both activities involve evaluating a WiFi environment, but toward different ends. A Professional Site Survey primarily seeks to understand and optimise the wireless infrastructure. This methodology seeks to determine the quality of the service experienced by representative users under representative operational conditions. The two accordingly address different assessment questions, even when performed in the same physical space.

38.3 An Activity, Not a Competing Discipline

It is worth being precise here about what a Professional Site Survey actually is, in relation to the discipline discussed in the previous chapter: it is not a rival methodology to RF Engineering, nor a rival to this Technical Guide — it is one of the characteristic *activities* carried out under the discipline of RF Engineering, alongside several others:



(Figure 38.1)

Setting the two hierarchies side by side makes the relationship between them harder to misread. A Site Survey, in any of its forms, is a technique belonging to RF Engineering — the discipline whose objectives and typical outputs were set out in Table 37.1. Real-World WiFi Quality Assessment is a distinct methodology, with its own structure of Assessment Scope, Representative Test Locations, Representative Consumer Devices, Assessment Evidence and Observed Network Reality, as described throughout Parts III through V of this Guide. Neither hierarchy is a subset of the other, and a Site Survey result cannot be substituted for an Assessment Finding, or vice versa, without collapsing a distinction this methodology treats as fundamental.

38.4 Typical Objectives of Professional Site Surveys

Site Surveys are typically undertaken to support wireless network design, validate a completed deployment, optimise access point placement, assess radio coverage, investigate an RF-related issue, support capacity planning, or verify compliance with an engineering specification — activities that contribute enormously to the successful deployment and maintenance of a WiFi network.

38.5 Typical Objectives of WiFi Quality Assessment

This methodology, by contrast, evaluates the complete service rather than the engineering characteristics of the infrastructure alone — considering how users actually experience the service within a defined Assessment Scope, through representative Observations gathered with Representative Consumer Devices under representative conditions. The objective is to understand the delivered service, not to validate the design decisions that produced it.

38.6 Design Versus Operational Assessment

A Site Survey often supports decisions about design or optimisation, frequently before or shortly after a network goes live. A Real-World WiFi Quality Assessment, by contrast, evaluates the service as it exists during ordinary, ongoing operation — the methodology's focus falls on observed service quality, not on design intent, and whether the underlying infrastructure was designed correctly remains a distinct engineering question this methodology does not attempt to answer.

38.7 Relationship with Observed Network Reality

A Site Survey provides genuinely valuable engineering information, but it does not, on its own, establish Observed Network Reality as this Technical Guide defines it. That reconstruction is built specifically from Assessment Evidence gathered from the operational service as experienced by representative users — Site Survey results may contribute useful contextual information alongside that evidence, but they do not replace the assessment methodology itself.

38.8 Appropriate Use of Professional Site Surveys

A Site Survey, in whichever of its forms shown in Figure 38.1 is applicable, is the right tool where the objective is to design a new network, verify coverage following deployment, investigate an engineering issue, optimise infrastructure, support a refurbishment or expansion project, or validate compliance with an engineering specification — objectives distinct from, though often complementary to, determining the quality of the operational service.

38.9 Relationship with Assessment Findings

Findings produced under this methodology should never be read as engineering recommendations. Where an assessment identifies a limitation in WiFi Quality, it may, where the Assessment Evidence supports it, also bound that limitation to a particular causal scope. A subsequent Site Survey may then help determine whether infrastructure design or radio behaviour explains the unresolved engineering mechanism within that scope — complementing, rather than replacing, the causal interpretation already supported by the assessment, in the same relationship described for RF Engineering in Chapter 37.

38.10 Complementary Methodologies

A Site Survey and a WiFi Quality Assessment work well in sequence: a survey may support infrastructure improvements, and a subsequent assessment may determine whether those improvements actually translated into better service for representative users. Together, the two provide a considerably fuller picture of a WiFi environment than either could produce alone.

38.11 Relationship with the WiFi Quality Framework

As an activity within RF Engineering, Professional Site Surveys likewise contribute primarily to the Technical Domain defined in the WiFi Quality Framework (WQI-FWK-001) — positioned, as Figure 38.1 makes explicit, as an activity within that discipline rather than as an alternative to assessment. Neither replaces the other; each contributes different evidence toward understanding, improving and assuring the quality of a WiFi service.

38.12 Principle

A Professional Site Survey evaluates the wireless environment, as one of several characteristic activities within the discipline of RF Engineering. Real-World WiFi Quality Assessment evaluates the operational service delivered within that environment, through a distinct methodology of its own. The two provide complementary perspectives on the same deployment — and the next chapter, on Heatmaps, examines one of the tools most commonly produced within the Site Survey activities set out in Figure 38.1, and where its own, more limited, purpose actually lies.

39 Heatmaps

39.1 General

Heatmaps are widely used visual representations of selected characteristics of a WiFi network, offering an effective way to illustrate how a given engineering measurement is distributed across a physical space. They are valuable tools, playing a genuine role in the design, validation and optimisation of wireless networks — and this methodology recognises that value fully, while distinguishing what a heatmap is built to show from what a Real-World WiFi Quality Assessment is built to establish.

39.2 Purpose of Heatmaps

A heatmap visualises how a specific measured parameter varies across an environment — signal strength, signal quality, signal-to-noise ratio, channel utilisation, predicted coverage, measured throughput, or another engineering metric, depending on what the survey was designed to capture. Its purpose is to make the spatial behaviour of that one characteristic visible and easy to interpret at a glance.

39.3 What Heatmaps Describe, and What They Do Not

The distinction this chapter turns on is best set out directly, question by question:

Question	Heatmap	Real-World WiFi Quality Assessment
Where is the signal strongest or weakest?	Directly answers this	May draw on this as supporting evidence
How does a measured parameter vary across space?	Directly answers this	May use this as one input among several
Is the WiFi service delivering an appropriate level of quality to users?	Not designed to answer this	Directly answers this
Can representative users reliably use the service?	Not designed to answer this	Directly answers this
What is the Observed Network	Not designed to answer this	Directly answers this

Question	Heatmap	Real-World WiFi Quality Assessment
Reality?		
What does the structured evidence establish about the quality of the assessed service?	Not designed to answer this	Directly answers this

(Table 39.1)

A heatmap represents the geographical distribution of one or a small number of measured variables; it says something true and often useful about that distribution, and nothing beyond it. It does not, by itself, establish WiFi Quality, determine user experience, represent the complete behaviour of a service, or establish the Observed Network Reality this methodology is built to reconstruct — not because it fails at these things, but because it was never designed to attempt them.

39.4 One Dimension Versus Many

The underlying reason for this difference is worth stating plainly, because it explains the table above rather than merely restating it. A heatmap is, by its nature, low-dimensional: it represents one variable, or a small handful of related variables, distributed spatially across a site. WiFi Quality, as Chapters 6 and 9 have already established, is inherently multidimensional — the product of interaction between radio behaviour, authentication, roaming, stability, latency, packet loss, service availability, device behaviour, operational conditions and the wider body of evidence an assessment gathers.

Put simply: **a heatmap answers "how does this parameter vary across the site?" A WiFi Quality assessment answers "how well does the complete service perform for representative users?"** These are not competing answers to the same question — they are answers to genuinely different questions, and the value of a heatmap is in no way diminished by its not attempting the second.

39.5 Relationship with WiFi Quality Assessment

Within this methodology, a heatmap may serve as useful contextual or supporting information — one possible source among several, never the sole basis for a Finding. Assessment Findings are developed through the structured correlation of representative Assessment Evidence, gathered under representative operational conditions, in the manner Chapter 24 describes; a heatmap may contribute to that correlation without ever determining its outcome on its own.

39.6 Appropriate Use of Heatmaps

Heatmaps are genuinely valuable for visualising RF coverage, identifying potential coverage gaps, comparing alternative infrastructure designs, supporting engineering optimisation, communicating engineering findings to stakeholders, or validating that a deployment met its design objectives. These uses complement this methodology; none of them substitutes for it.

39.7 Heatmaps and Observed Network Reality

Observed Network Reality represents the complete operational understanding this methodology reconstructs through correlated evidence, as set out in Chapters 24 and

25. A heatmap may contribute information about one dimension of that understanding — but no single visualisation, however well produced, is treated as sufficient on its own to establish it; that understanding depends on the correlation of multiple, complementary forms of evidence, of which a heatmap may be one.

39.8 Relationship with Assessment Findings

Findings are never derived directly from a heatmap. A heatmap may, however, help explain a Finding already reached through this methodology — illustrating, for instance, why reduced quality was observed in a particular Site Area by showing a coverage gap coinciding with it. The heatmap supports the explanation; it does not constitute the Finding itself.

39.9 Complementary Use

A heatmap and a WiFi Quality assessment ask different questions of the same environment, exactly as Table 39.1 sets out: the heatmap shows where a technical characteristic changes across space; the assessment establishes how the complete service actually behaves for the representative users operating within that space. Each supplies a form of understanding the other cannot.

39.10 Relationship with Professional Site Surveys

Heatmaps are typically produced as part of the Professional Site Survey activities described in Chapter 38, and should accordingly be understood as engineering visualisation tools belonging to that activity, rather than as an independent assessment methodology in their own right. Their proper interpretation depends on the engineering context — survey type, methodology, calibration — that produced them.

39.11 Principle

A heatmap visualises selected characteristics of a WiFi environment; it does not, on its own, determine the quality of the service delivered to users, because it was never built to answer that question in the first place. Its greatest value lies in supporting engineering understanding alongside a structured WiFi Quality assessment — one dimension, clearly and usefully shown, contributing to a picture that this methodology, by design, builds in several dimensions at once.

40 Internet Performance

40.1 General

Internet Performance is an important component of many WiFi services — the performance of the connection between a local network and external Internet resources directly shapes how users experience online applications, cloud services and Internet-based content accessed over WiFi. This methodology treats Internet Performance as an important source of Assessment Evidence, while distinguishing it clearly from the broader concept of WiFi Quality itself.

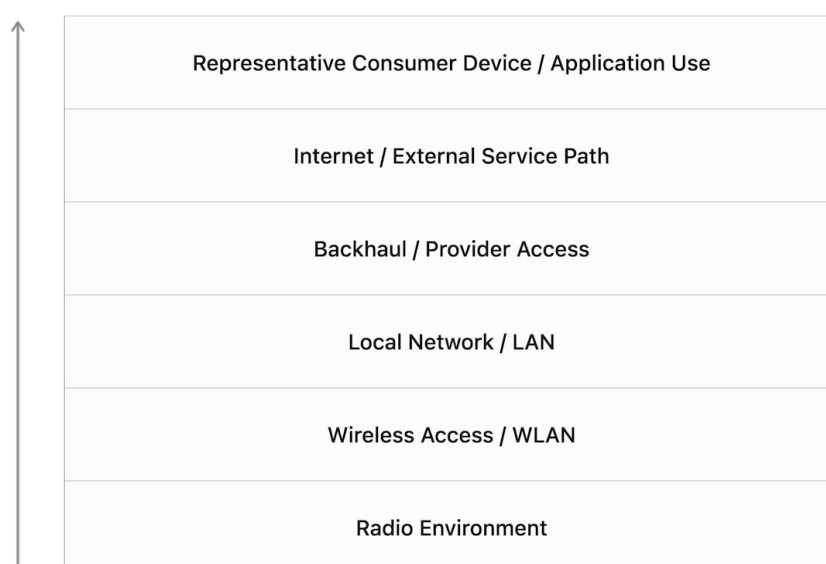
40.2 Different Concepts

Internet Performance and WiFi Quality are closely related but not the same thing. Internet Performance describes characteristics of the connection between the local network and the wider Internet; WiFi Quality describes the overall quality of the service experienced by representative users within the defined Assessment Scope. Internet

Performance is accordingly one component the assessed service depends on — not the objective the assessment as a whole is built to determine.

40.3 The Service Layers

It is worth setting out explicitly why Internet Performance can matter enormously to a user's experience without ever being sufficient, on its own, to establish WiFi Quality. A WiFi service can be understood as a stack of layers, each depending on the ones beneath it:



(Figure 40.1)

The point this figure makes is a simple one, but it has real consequences for how evidence is interpreted: **WiFi Quality does not evaluate any single layer. It evaluates the service that results from the interaction of all of them together.** Excellent Internet Performance cannot compensate for deficiencies elsewhere in the chain — a fast, low-latency Internet connection does nothing for a user who cannot maintain a stable association with the access point in the first place. Equally, an excellent wireless infrastructure cannot compensate for poor Internet Performance — flawless radio coverage and seamless roaming are of limited comfort to a user whose applications time out because the upstream connection is congested. WiFi Quality, as this methodology defines it, is what emerges from the combined behaviour of the complete service chain, not from any one layer performing well in isolation from the others.

40.4 Typical Characteristics of Internet Performance

Depending on the objectives of a given assessment, Internet Performance may be characterised through throughput, latency, packet loss, jitter, connection stability, or the responsiveness of specific Internet services — observations that contribute valuable evidence about one layer of the service chain set out in 40.3, without, on their own, describing the chain as a whole.

40.5 Relationship with WiFi Quality

Internet Performance can significantly influence the quality a user experiences, but

satisfactory Internet Performance does not automatically imply satisfactory WiFi Quality — nor does reduced Internet Performance necessarily point to a deficiency in the wireless infrastructure itself. Observed quality results from the interaction of multiple technical and operational factors, Internet Performance being one of several, never the entirety of the picture.

40.6 End-to-End Service Perspective

This methodology evaluates the WiFi service end to end, which means Internet Performance observations are interpreted alongside connectivity, authentication, roaming behaviour, service availability, stability, Representative Consumer Device behaviour and other operational observations — not read in isolation. Assessment Findings describe the complete service the layers in Figure 40.1 combine to produce, never Internet Performance considered on its own.

40.7 Internet Performance as Assessment Evidence

Internet Performance measurements can contribute directly to the Assessment Evidence gathered during an assessment, but no single Internet Performance metric determines a Finding independently. Such observations are interpreted through Evidence Correlation, described in Chapter 24, alongside every other relevant piece of evidence the assessment has gathered.

40.8 Relationship with Observed Network Reality

Observed Network Reality incorporates Internet Performance observations where they contribute to understanding the delivered service, but it represents the behaviour of the complete service chain set out in 40.3 — never the performance of the Internet connection considered alone. Internet Performance is accordingly one component of the evidence supporting the overall reconstruction, not a proxy for it.

40.9 Appropriate Use of Internet Performance Measurements

Measurements of this kind are particularly useful for assessing user access to Internet-based services, identifying end-to-end limitations, understanding application responsiveness, supporting the broader correlation process, and — perhaps most usefully — distinguishing genuinely local wireless behaviour from conditions originating further upstream, in the layers above the wireless infrastructure itself.

40.10 Relationship with Other Disciplines

Internet Performance assessment complements both RF Engineering and this methodology, without belonging fully to either. RF Engineering, as Chapter 37 established, focuses on the wireless infrastructure layer; Internet Performance concerns the layers above it. This methodology draws on both perspectives, together with the further evidence described throughout Part IV, when assessing the complete service experienced by representative users.

40.11 Local, Delivery and Upstream Boundaries

For the purposes of causal interpretation, it is useful to distinguish several service regions within the end-to-end path without treating them as isolated systems:

- **Wireless Access / WLAN** — association, RF conditions, access selection, roaming and traffic exchange over the wireless access layer.

- **Local Network / LAN** — local switching, segmentation, gateway reachability and other delivery paths within the venue or operator-controlled local network.
- **Backhaul / Provider Access** — the path by which the local network reaches provider or other upstream infrastructure.
- **Internet / External Service Path** — routing, interconnection and service conditions beyond the local and provider-access boundaries, including the path toward an external measurement or application endpoint.

These regions are functional boundaries for evidence interpretation, not a requirement that every network be implemented using the same physical architecture.

End-to-end degradation observed on a WiFi-connected device shall not automatically be attributed to the WLAN merely because WiFi is the user's access medium. The Assessment Evidence must support the layer or service region to which any causal limitation is attributed. Conversely, satisfactory WLAN evidence does not establish satisfactory local-delivery or upstream performance, and satisfactory upstream performance does not establish satisfactory WLAN behaviour.

Where the evidence can distinguish one service region from another but cannot isolate a component within that region, the resulting Finding shall remain at the supported Causal Boundary in accordance with Chapter 24.

40.12 Principle

Internet Performance is an important component of WiFi Quality, but — as the layered structure in Figure 40.1 makes explicit — it does not, by itself, determine the quality of the service. No layer compensates for another, and no single layer's performance stands in for the whole. Assessment Findings are based on the structured interpretation of all relevant Assessment Evidence across the service chain, and any attribution of a limitation to WLAN, local delivery, backhaul or an external Internet path must remain within the Causal Boundary that evidence supports.

41 Network Monitoring Platforms

41.1 General

Network Monitoring Platforms provide continuous visibility into the operational behaviour of a WiFi network and its associated infrastructure, allowing organisations to observe status, detect events and analyse trends over time. This methodology recognises the significant value of these platforms while distinguishing their objectives from those of a Real-World WiFi Quality Assessment.

41.2 Purpose of Network Monitoring

The primary purpose of a monitoring platform is ongoing operational awareness — monitoring availability, detecting operational faults, observing infrastructure health, identifying abnormal behaviour, supporting troubleshooting, tracking long-term trends, and generating alerts when something requires attention. These are the activities that keep an operational network running smoothly day to day.

41.3 Purpose of WiFi Quality Assessment

This methodology has a different objective. Rather than continuously monitoring

network operation, it establishes an evidence-based assessment of the quality of the service experienced by representative users, within a defined Assessment Scope, at a particular point in time. It produces Assessment Findings, not operational monitoring information — a distinction of kind, not merely of degree.

41.4 Three Perspectives: Monitoring, Observability and Assessment

It is worth situating this methodology within a slightly broader landscape than the one this chapter's title alone suggests, because network monitoring, network observability and Real-World WiFi Quality Assessment approach the same operational environment from different primary perspectives. Their purposes overlap in places, but they are not interchangeable:

Activity	Primary Purpose
Network Monitoring	Establish what is happening in the network over time
Network Observability	Explain how and why observed network behaviour is occurring
Real-World WiFi Quality Assessment	Determine how good the service delivered to representative users is, and — where the Assessment Evidence supports it — how far an observed limitation can responsibly be localised

(Table 41.1)

Monitoring is primarily oriented toward operational status — availability, faults, alerts, utilisation and change over time. Observability extends this perspective by correlating telemetry from across a network in order to explain behaviour and, where its data permits, identify underlying technical causes.

Real-World WiFi Quality Assessment has a different primary purpose: determining the quality of the service actually delivered to representative users through a structured and evidence-based assessment. That purpose does not prohibit causal interpretation. Where the Assessment Evidence gathered under this methodology supports a distinction between plausible causal scopes, Evidence Correlation may establish how far an observed limitation can responsibly be localised. Any such interpretation remains subject to the Causal Boundary established by the evidence and shall not be made more specific than that evidence permits.

The distinction is therefore one of primary purpose rather than exclusive capability. A monitoring platform may contain diagnostic functions; an observability platform may provide evidence relevant to service quality; and a WiFi Quality Assessment may support bounded causal interpretation without becoming a continuous observability system or a substitute for specialist root-cause analysis.

None of these activities displaces the others. An observability platform may explain, with considerable technical precision, why a particular component is behaving abnormally while saying little about whether the service, taken as a whole and experienced by representative users, satisfies an appropriate standard of quality. Conversely, a Real-World WiFi Quality Assessment may establish that poor service is associated with a particular service region or causal scope while lacking the telemetry necessary to identify the exact component-level mechanism responsible. The two

conclusions answer different questions and may usefully inform one another.

This distinction also preserves the technology-neutral character of the present Technical Guide: it takes no position on any particular monitoring or observability platform, architecture or diagnostic implementation, and defines only the methodological conditions under which evidence from such systems may contribute to the assessment of WiFi Quality.

41.5 Continuous Observation Versus Structured Assessment

Monitoring platforms typically operate continuously, gathering operational information over extended periods. A Real-World WiFi Quality Assessment, by contrast, is a structured exercise conducted according to a defined methodology at a particular time — it characterises the service under representative operational conditions rather than providing ongoing surveillance, and the two activities are complementary precisely because they operate on different timescales and answer different questions.

41.6 Typical Information Provided by Monitoring Platforms

Depending on their capabilities, these platforms may report infrastructure status, client associations, access point availability, traffic utilisation, device inventory, authentication events, alarms, performance trends and general operational statistics — information that can supply valuable context about how a WiFi environment behaves operationally.

41.7 Relationship with Assessment Evidence

Information drawn from a monitoring or observability platform may contribute useful Assessment Evidence where it bears on the objectives of a given assessment, but it should always be interpreted alongside the other evidence this methodology requires, per Chapter 24. Operational monitoring data, however comprehensive, does not establish WiFi Quality on its own.

41.8 Relationship with Observed Network Reality

Monitoring and observability platforms provide valuable observations of a network's operational state. Observed Network Reality, however, represents the evidence-based understanding of the service delivered to representative users, established through this methodology's own process of correlation. Monitoring data may contribute to that reconstruction; it does not, by itself, constitute it.

41.9 Appropriate Use of Network Monitoring Platforms

These platforms are especially valuable for monitoring operational health, identifying faults, supporting incident response, analysing long-term behaviour, reviewing historical trends, assisting capacity management, and supporting infrastructure maintenance — activities that complement, without replacing, a WiFi Quality assessment.

41.10 Relationship with Assessment Findings

Findings describe the quality of the service observed during the assessment; monitoring platforms describe aspects of the network's operational behaviour over time. Where relevant, monitoring information may help explain an observation the assessment has identified — but Findings are always based on the structured interpretation of representative Assessment Evidence, never on monitoring or observability data taken

alone.

Where such information contributes to causal interpretation, it remains subject to the same requirements of relevance, comparability, current relevance and Evidence Correlation as any other Assessment Evidence, and shall not support a causal conclusion beyond the Causal Boundary established by the complete evidential record.

41.11 Relationship with the WiFi Quality Framework

Monitoring and observability platforms contribute primarily to the Operational Domain defined in the WiFi Quality Framework (WQI-FWK-001) — the perspective concerned with how consistently technical capability is sustained during real operation, rather than with the capability itself. Continuous monitoring builds understanding of how a network behaves over time; this methodology determines how the service performs for representative users at the time of assessment. Taken together, monitoring, observability and Real-World WiFi Quality Assessment provide complementary perspectives on the same service: continuous operational behaviour, technical explanation, and structured evaluation of the quality delivered to representative users. Their areas of evidence and interpretation may overlap, but none is reducible to either of the others.

41.12 Principle

Network Monitoring, Network Observability and Real-World WiFi Quality Assessment provide complementary but distinct forms of understanding. Monitoring establishes operational behaviour over time; observability seeks to explain the technical mechanisms underlying that behaviour; Real-World WiFi Quality Assessment determines the quality of the service delivered to representative users through structured Assessment Evidence.

These distinctions describe primary purpose, not absolute boundaries of capability. Where sufficient and appropriate Assessment Evidence exists, a WiFi Quality Assessment may support causal interpretation and may distinguish between broader or narrower causal scopes. Such interpretation remains bounded by what the evidence can establish and does not convert the assessment into a continuous monitoring system, an observability platform or an unrestricted root-cause diagnosis.

The methodological question is therefore not whether an assessment is permitted to ask why, but how far the available Assessment Evidence permits that question to be answered responsibly.

42 Broadband Forum TR-398 and BBF.398 Carrier-Grade Wi-Fi

42.1 General

The Broadband Forum's TR-398 test plan, first published in 2019 and currently in Issue 4 (September 2026), defines a structured set of laboratory test cases for evaluating the in-premises performance of residential and small-office WiFi access points and related CPE devices — including receiver sensitivity, throughput, coverage, multi-station performance, interference robustness and stability. Devices meeting its mandatory requirements may be listed under the associated BBF.398 Carrier-Grade Wi-Fi programme. This methodology recognises TR-398 as a rigorous, industry-developed laboratory test plan, developed with extensive industry participation, and takes its value

within its own domain as given.

42.2 A Different Object of Evaluation

TR-398 evaluates a device: a specific access point, tested under controlled laboratory conditions — within controlled RF test environments—using isolated or anechoic chambers and/or conducted paths—with calibrated attenuation, against a defined set of station configurations — to determine what that device is technically capable of. This methodology evaluates a service: the WiFi experienced by representative users within a specific, occupied, real-world environment, shaped by construction, furnishing, occupancy, interference from neighbouring networks, and the behaviour of whatever consumer devices those users actually carry.

The distinction is not a matter of one approach being more rigorous than the other — TR-398's laboratory control is precisely what makes it useful for comparing devices on a level playing field, a control this methodology deliberately does not impose, since Chapter 10 treats representative real-world conditions, not laboratory conditions, as the object of assessment. A device that performs exceptionally under TR-398 conditions may still be deployed into an environment with poor placement, inadequate capacity planning, or destructive interference — conditions no device-level laboratory test could ever observe, and conditions this methodology exists specifically to characterise.

42.3 Complementary Roles

An organisation selecting WiFi equipment may reasonably consult TR-398/BBF.398 results to compare candidate devices before deployment — a question of procurement this methodology has no view on. Once that equipment is deployed into an actual venue, however, its BBF.398 certification or listing says nothing about whether the resulting service, in that specific environment, meets the standard of quality this methodology is built to assess. The two are sequential rather than competing: device selection benefits from TR-398; the service that results from deploying the selected device benefits from assessment under this methodology.

42.4 Principle

TR-398 answers the question: how does this device perform under controlled conditions? This methodology answers a different question: how does the resulting service perform where it is actually used? Neither answer substitutes for the other, and an organisation concerned with WiFi Quality in the sense this Guide describes will generally find both useful, applied at different stages of a network's lifecycle.

43 WAA WLAN Performance and Experience Standards

43.1 General

The World WLAN Application Alliance (WAA) publishes scenario-based technical specifications addressing WLAN performance and experience across defined use cases, including home and campus-office environments. Its specifications may include device-level and network-level requirements and are often aligned to defined IEEE 802.11 generations. WAA supports this work through a testing and certification infrastructure, including authorised test laboratories. This methodology takes the scope and seriousness of that work as given, and offers no view on the technical merit of its

specifications.

43.2 Scope and Orientation

WAA's specifications are, in substance, scenario-based WLAN performance and experience specifications. They define measurable device- and network-level requirements—including throughput, latency, stability and related parameters—that a WLAN solution should satisfy in the scenario addressed by the relevant specification, verified through the applicable WAA test and certification arrangements. This orientation places WAA's work in the same broad family as specification-conformance frameworks such as TR-398, while covering a wider range of scenarios. It assesses conformance to defined requirements and test conditions; it is not, in itself, an independent in-situ assessment of the WiFi service experienced by occupants of a specific, existing venue.

This methodology does not test devices against a specification, and does not certify conformance to one. It observes a service already in operation, within its actual Assessment Scope, using the sampling and evidence-correlation procedures set out in Parts IV and V — a different starting point, and a different kind of conclusion, from a specification-conformance test.

43.3 Where the Two Bodies of Work Meet

A venue whose infrastructure has been selected or validated against a WAA specification for its relevant scenario has some basis for confidence in the technical capability of that infrastructure — capability in the sense already discussed in Chapter 37 as the domain of RF Engineering and, correspondingly, of specification-based device standards generally. Whether that capability translates into good WiFi Quality once the venue is occupied, configured, and in daily use remains a separate question, answered only by assessing the operational service in situ — which is precisely the role this methodology fulfils.

43.4 Principle

WAA's specifications establish what a WLAN device or network should be technically capable of within a given scenario. This methodology establishes what a WiFi service actually delivers, once deployed, to the people who use it. The two describe different stages of the same underlying concern — good WiFi — without either one being sufficient on its own to establish it.

44 The WBA Wi-Fi Design Standard

44.1 General

The Wireless Broadband Alliance (WBA), in a project led by Ookla and announced in January 2026, is developing a vendor-neutral Wi-Fi Design Standard intended to harmonise WiFi planning, deployment, configuration and validation across residential, enterprise, public-venue, hospitality, education, industrial/IoT and smart-campus environments. At the time of writing, the standard remains in development, with an initial version anticipated during 2026. This methodology offers no assessment of a standard not yet published, and notes its development here in the interest of completeness rather than comparison.

44.2 A Design Standard, Not an Assessment Methodology

Based on its publicly stated objectives, the WBA Wi-Fi Design Standard is intended to provide end-to-end design guidance, measurable minimum requirements across RF, backhaul and QoE metrics, multi-band and security requirements, and a reference model capable of supporting RFPs, SLAs, managed-service agreements and future certification programmes. It therefore concerns network planning and deployment practice, while also expressly encompassing validation. However, until version 1.0 is published, the public material does not establish the detailed validation procedure, its sampling model, whether it is intended for in-situ assessment of already-operational venues, or the nature of the conclusions it will support.

This methodology observes a service already in operation within its actual Assessment Scope, using the sampling and evidence-correlation procedures set out in Parts IV and V. The relationship between that approach and any validation procedure eventually specified by the WBA standard cannot properly be determined in advance of publication. This chapter accordingly makes no claim about that relationship and should be revisited once WBA Wi-Fi Design Standard v1.0 is available.

44.3 Principle

A design standard establishes the requirements and guidance by which a network should be planned, built and, potentially, validated. This methodology establishes how an already-operational WiFi service is actually performing within a defined Assessment Scope. The distinction may remain material even where a design standard includes validation criteria, but its exact significance in relation to the WBA Wi-Fi Design Standard should be assessed only once the published standard defines those criteria.

45 Ookla Speedtest Certified

45.1 General

Ookla, through its Speedtest Certified programme launched in 2025, offers commercial, third-party assessment and certification of WiFi networks at properties such as hotels, stadiums, offices and airports — evaluating RF quality, network configuration, security posture, performance metrics and Internet backhaul through an on-site audit process. Unlike the disciplines and standards discussed elsewhere in this Part, Speedtest Certified addresses substantially the same underlying question this methodology addresses: how good is the WiFi service actually delivered at a real, occupied venue? The relationship between the two accordingly needs to be stated with particular care.

45.2 A Difference of Institutional Nature, Not of Object

The distinction that matters here is not one of what is being evaluated — both this methodology and Speedtest Certified concern themselves with the real-world quality of an operational WiFi service — but of what kind of thing each one is. Speedtest Certified is a proprietary commercial service, owned and operated by a single company, using that company's tools, certification criteria and commercial framework. Ookla has published documentation describing the Speedtest Certified data-collection and measurement methodology; however, the certification programme itself remains proprietary, and its certification criteria, implementation, commercial terms and

certification authority remain under Ookla's control.

This Technical Guide is a published, vendor-neutral methodological reference, made available for public consultation and technical scrutiny. Public access allows readers to examine the vocabulary, reasoning, evidential requirements and limitations of the method without procuring any particular assessment service. It does not make the Guide an openly licensed implementation package, place its protected content in the public domain, or confer official status on a third-party product or programme. Permissions concerning the text, figures, tables and other protected material are set out in the Copyright, Permitted Use and Intellectual Property Notice. The distinction from a commercial certification programme is therefore one of function and accessibility, not an assertion that every right associated with this publication or a particular implementation is freely licensed.

45.3 Neither Claim Diminishes the Other

None of this implies that Speedtest Certified is methodologically deficient, nor that a commercial certification service has no place in the market; a property owner may have entirely legitimate commercial reasons to seek a recognised, widely marketed certification mark, in much the same way a venue might seek any comparable commercial certification programme. The contribution of this Guide is an independently inspectable methodological reference: practitioners, researchers, venue operators and certification programmes can examine, critique and cite the reasoning and evidential requirements against which an assessment may be evaluated. That opportunity for scrutiny is distinct from permission to reproduce protected content or to claim official approval, affiliation or certification authority. Those matters remain subject to the Copyright, Permitted Use and Intellectual Property Notice, applicable law and any separate authorisation actually granted.

45.4 Principle

Where this methodology and a proprietary commercial service address the same underlying question, the relevant distinction is not which produces the more rigorous result — a question this Guide is not positioned to adjudicate absent access to that programme's complete certification criteria, decision rules and implementation — but which is available, on what terms, and to whom. A published, vendor-neutral methodology and a proprietary commercial certification service can coexist without contradiction, serving different needs for different users of WiFi Quality assessment, provided neither is mistaken for the other.

46 Complementary Methodologies

46.1 General

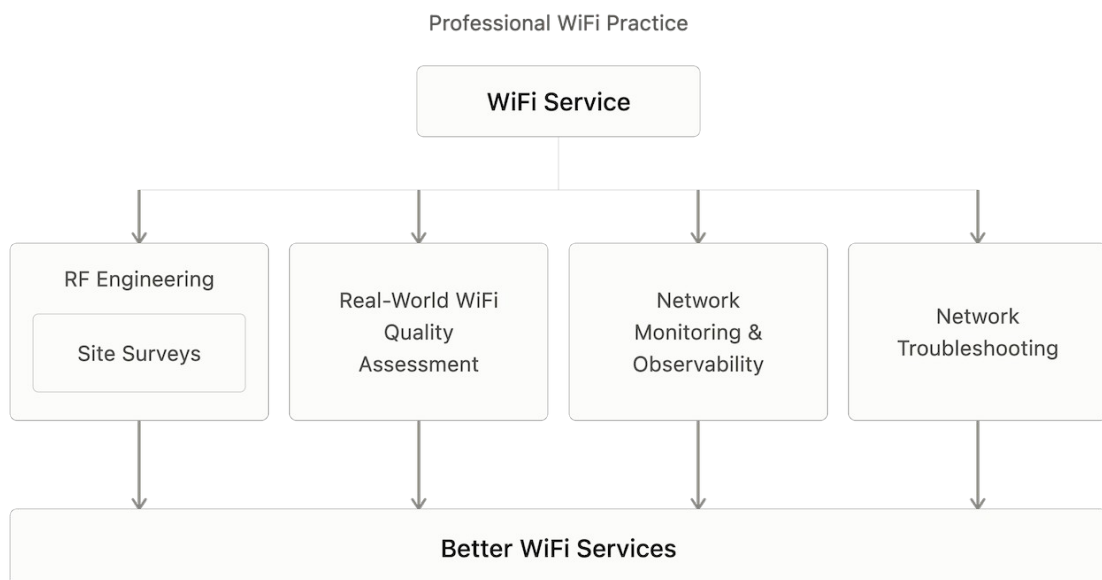
The methodology described in this Technical Guide was developed to assess the quality of WiFi services delivered to representative users under representative operational conditions. It is not intended to replace existing engineering disciplines, operational practices or assessment approaches. It provides, instead, an additional methodological perspective focused specifically on Real-World WiFi Quality — and should be read, throughout this chapter and this Guide as a whole, as complementary to the established professional practices discussed in the preceding chapters.

46.2 Different Methodologies Answer Different Questions

No single methodology can answer every question relevant to designing, operating, optimising and assessing a WiFi network. RF Engineering, Professional Site Surveys, heatmap analysis, Internet Performance assessment, Network Monitoring Platforms, spectrum analysis, troubleshooting, and infrastructure design and optimisation each address a specific and valuable question within their own domain, as Chapters 37 through 45 have set out individually. This methodology addresses a further, distinct question: the quality of WiFi as experienced by representative users — a question none of the disciplines above was built to answer on its own.

46.3 An Ecosystem, Not a Hierarchy

It is worth drawing together everything the previous nine chapters have established into a single picture, because the relationship between this methodology and the disciplines surrounding it is best understood not as a hierarchy, with one approach positioned above the others, but as an ecosystem of complementary contributions to the same underlying goal:



(Figure 46.1)

What this figure is meant to convey is deliberately modest, and the modesty is the point: Real-World WiFi Quality Assessment sits alongside RF Engineering, Network Monitoring & Observability, and Network Troubleshooting as one contributor among several, not above them and not in place of any of them. Site Surveys are shown within RF Engineering as one of that discipline's characteristic activities. Each branch contributes a different form of understanding toward the same ultimate objective — better WiFi services for the people who rely on them. No branch can, on its own, replace the complementary contributions of the others.

No single methodology can fully characterise a professional WiFi service. Reliable understanding is achieved by combining complementary methodologies, each answering different but equally important questions.

This is, in a fairly direct sense, the thesis of this entire Part of the Technical Guide, and it is worth stating as plainly as this rather than leaving it to be inferred from nine separate chapters of comparison.

46.4 Complementarity Rather Than Substitution

Assessment Findings identify characteristics of an observed WiFi service and may, where the Assessment Evidence supports it, establish a bounded causal interpretation up to the Causal Boundary justified by that evidence. Complementary methodologies then extend the analysis where greater technical specificity is required — identifying detailed underlying mechanisms, optimising infrastructure, redesigning architecture, validating an engineering solution, or monitoring performance once a change has been made. These methodologies support one another across the full lifecycle of a WiFi service, from initial design through ongoing operation to eventual reassessment.

46.5 Different Perspectives

An RF Engineering study examines radio behaviour; a Site Survey evaluates infrastructure deployment; a Network Monitoring Platform observes operational trends over time; a WiFi Quality assessment evaluates the delivered service as representative users actually experience it. None of these perspectives contradicts any other — together, as Figure 46.1 shows, they build a considerably more complete picture of a WiFi environment than any one of them could produce alone.

46.6 Assessment Before Improvement

This methodology establishes an objective understanding of the service as observed and, where the Assessment Evidence supports it, may also establish how far an observed limitation can responsibly be localised. It does not, on its own, prescribe how a network should subsequently be redesigned or remediated. Where greater technical specificity or an engineering response is required, the complementary methodologies discussed in this Part investigate the unresolved mechanism and develop the technical response — preserving the distinction between Findings and Recommendations established in Chapter 26 while allowing bounded causal interpretation within the assessment itself.

46.7 Integration with Professional Practice

A natural sequence often emerges in practice: a WiFi Quality assessment identifies a service limitation; a Professional Site Survey investigates the infrastructure behind it; RF Engineering activity optimises the design accordingly; a Network Monitoring Platform verifies the resulting operational behaviour over time; and a subsequent WiFi Quality assessment evaluates whether the improvement actually translated into better service for representative users. This integration supports continual improvement across the lifecycle of a WiFi service, while each methodology involved retains its own independence and its own distinct question to answer.

46.8 Technology Neutrality

The complementary relationship described in this chapter holds regardless of hardware manufacturer, software vendor, network architecture, deployment model, management platform or measurement technology — this methodology evaluates the delivered service irrespective of which technologies happen to be involved in producing it, consistent with the technology-neutral character established since Chapter 1.

46.9 Relationship with the WiFi Quality Framework

This methodology supplies the structured process by which WiFi Quality, as defined in 11.2 consistently with the conceptual architecture established by WQI-FWK-001, is assessed; the other disciplines discussed throughout this Part contribute the engineering, operational and analytical knowledge that supports the ongoing understanding and improvement of the Technical and Operational Domains that Framework describes. Coordinated use of these complementary disciplines together, rather than reliance on any single one of them in isolation, is what Figure 46.1 exists to make visually explicit.

46.10 Benefits of Complementary Use

Combining methodologies in this way tends to produce broader technical understanding, improved diagnostic capability, more effective infrastructure optimisation, greater confidence in assessment findings, stronger evidence to support continual improvement, and better alignment between engineering activity and the experience users actually have. These benefits arise for a simple reason: different methodologies contribute different forms of evidence and expertise, and no single one of them was ever meant to carry the whole weight alone.

46.11 Principle

Real-World WiFi Quality Assessment is one component of professional WiFi practice, occupying one branch of the ecosystem set out in Figure 46.1 — not its centre, and not a substitute for the branches around it. Its purpose is to assess the quality of a delivered service through a structured, evidence-based methodology; RF Engineering, Site Surveys, Network Monitoring, troubleshooting and the other disciplines discussed in this Part remain essential to designing, operating and optimising the networks this methodology assesses. Together, and only together, these complementary approaches provide an understanding of WiFi services that no single methodology, including this one, could achieve in isolation.

Part VIII – Governance of the Methodology

47 Method Maintenance

47.1 General

The methodology described in this Technical Guide is intended to provide a stable, consistent and authoritative framework for assessing Real-World WiFi Quality. It also recognises that wireless technologies, operational practice and industry knowledge continue to evolve — and it is maintained, accordingly, through a structured governance process built to preserve its integrity while still allowing genuine, justified development over time.

It is worth stating the underlying philosophy plainly before anything else in this chapter: **the objective of Method Maintenance is not to keep the methodology changing. It is to keep the methodology trustworthy.** The WiFi Quality Institute does not revise this Guide to chase every new technology or market trend; it revises it only where a sound methodological reason exists to do so — because the trust assessors, auditors, certification bodies and venue owners place in this methodology depends, in no small part, on its not changing for reasons that would not withstand scrutiny.

47.2 Purpose of Method Maintenance

Method Maintenance exists to keep this methodology technically relevant, methodologically consistent, evidence-based, technologically neutral, and suitable for continued professional use — supporting, in equal measure, both the stability and the long-term credibility on which its value depends.

47.3 Principles of Maintenance

Maintenance is guided by stability, transparency, consistency, evidence-based decision-making, backward compatibility wherever reasonably practicable, and openness to genuinely justified improvement. These principles exist to ensure that any revision strengthens the methodology, rather than disrupting its application for reasons that do not clearly justify the disruption.

47.4 Maintenance Is Not the Same as Revision

It is worth drawing a sharp line here, in the manner familiar from international standards practice, between two activities this chapter's title risks running together:

Maintenance	Revision
Clarifies the methodology	Changes the methodology
Editorial improvement	New or modified methodological requirement
Resolves an ambiguity	Introduces a new concept or principle
Preserves methodological continuity	May alter how an assessment is actually conducted

(Table 47.1)

Maintenance covers activity that leaves the substance of the methodology untouched — correcting an ambiguous sentence, improving an example, clarifying a definition that practical experience has shown to be unclear. Nothing an assessor does in the field

changes as a result. **Revision** is a different matter entirely: it changes what the methodology actually requires, and may accordingly change how an assessment is conducted, how evidence is interpreted, or what a Finding is permitted to claim.

This distinction matters practically, not just conceptually. An assessor reading that a new version of this Technical Guide has been published should be able to tell, immediately, whether that update is a Maintenance release — in which case their existing practice remains unaffected — or a Revision, in which case something about how they work has genuinely changed. Publications describing version history should identify which of the two categories a given update belongs to, precisely so that this question never has to be inferred.

47.5 Scope of Maintenance

Maintenance, in the narrower sense set out in 47.4, may include clarifying existing requirements, refining guidance, incorporating new industry knowledge that does not alter the methodology's substance, adapting examples to reflect technological change, correcting identified ambiguities, or making editorial improvements. It preserves the fundamental objectives and principles set out in this Technical Guide; where a change would alter them, it is a Revision, and should be developed and communicated as one.

47.6 Triggers for Maintenance and Revision

Either activity may be prompted by technological development, practical experience gained through assessments already conducted, findings from independent audits, implementation experience, stakeholder feedback, academic or technical developments, or an identified inconsistency in the text itself. The existence of a new technology does not, on its own, require any change to the methodology — a change is introduced only where it demonstrably improves the methodology, in keeping with 47.1's opening principle.

47.7 Governance Responsibility

Responsibility for maintaining this methodology rests with the WiFi Quality Institute, which ensures that both Maintenance and Revision activity proceed through an appropriate governance process and remain consistent with the Doctrine, Principles and Framework that underpin the methodology as a whole.

47.8 Controlled Development

Both Maintenance and Revision proceed through a controlled process: proposed changes are documented, technically justified, checked for consistency with existing principles, and assessed for their impact on the wider body of related publications. The Institute does not itself conduct assessments and accordingly has no direct visibility into assessments already carried out under a previous version; what it can and does control is whether, and how clearly, a given change to this Guide is communicated as affecting the comparability of results produced under different versions — leaving it to whoever conducted a given assessment, or to the certification programme it may have supported, to determine what that change means for their own prior work. This is what allows the methodology to evolve in a disciplined manner, rather than through ad hoc adjustment that risks eroding exactly the consistency this Guide exists to protect.

47.9 Relationship with Related Publications

Any change to this Technical Guide, whether Maintenance or Revision, is considered in

relation to the wider WQI publication ecosystem — the Doctrine, the Principles, the Framework, and the applicable Technical Reports and Position Papers — to preserve coherence across the complete body of WQI publications rather than allowing any single document to drift out of step with the others.

47.10 Stability of Published Assessments

A Revision to this methodology does not automatically invalidate an assessment conducted under a previous published version. Assessments remain valid within the methodological version under which they were performed, unless the applicable certification or governance framework explicitly determines otherwise — a principle that preserves confidence in historical assessment records even as the methodology itself continues to develop.

47.11 Continuous Improvement

Improvement to this methodology is grounded in objective evidence, implementation experience and technical understanding, not in changing industry trends pursued for their own sake. The goal, throughout, is to improve the methodology while preserving the integrity that gives it value in the first place — which returns, in the end, to the principle stated at the opening of this chapter.

47.12 Principle

A professional assessment methodology evolves through controlled governance, not through uncontrolled change — and Maintenance and Revision, as distinguished in Table 47.1, are not the same act performed at different speeds, but two genuinely different activities requiring different levels of scrutiny. Its long-term value depends on maintaining the right balance between stability and improvement: the methodology should change often enough to remain sound, and rarely enough to remain trusted.

48 Versioning

48.1 General

Versioning provides a structured mechanism for identifying, controlling and communicating changes to this Technical Guide over time — ensuring that every published edition can be uniquely identified, and that any given assessment remains traceable to the specific version of the methodology under which it was conducted. Effective versioning is what makes transparency, consistency and long-term confidence in this methodology possible in practice, not just in principle.

48.2 Purpose of Versioning

Versioning exists to uniquely identify each published edition, distinguish between different stages of methodological development, preserve the traceability of assessments, support reproducibility of outcomes, and enable the methodology to evolve in a controlled rather than an ad hoc manner. It is, in this sense, an essential component of methodological governance rather than a purely administrative label.

48.3 A Versioning Scheme Aligned with Maintenance and Revision

It is worth making explicit how version numbers map onto the distinction between Maintenance and Revision established in Chapter 47, so that a version number alone tells a reader something meaningful about what actually changed:

Version Level	Meaning
Major (e.g. 2.0)	Introduces significant methodological changes that may affect how an assessment is conducted or interpreted — a Revision in the sense of Table 47.1.
Minor (e.g. 2.1)	Introduces refinements, clarifications or limited methodological improvements while preserving the overall structure of the methodology — a smaller Revision, still substantive enough to warrant a version-level distinction.
Editorial (e.g. 2.1.1)	Corrects editorial issues, typographical errors, or non-substantive clarifications, without changing the methodology itself — Maintenance, in the sense of Chapter 47.

(Table 48.1)

This scheme will already be familiar to most professional readers, and that familiarity is deliberate: it is generic enough not to commit the WQI to any particular technical convention, while still giving a reader, at a glance, a reliable signal of how much attention a given update actually warrants. An assessor encountering a jump from 2.1.1 to 2.2 knows, without reading further, that something in how an assessment is conducted may have changed; an assessor seeing a move from 2.1 to 2.1.1 knows their existing practice is unaffected.

48.4 Version Identification

Each published edition carries a unique version identifier, which should accompany the methodology wherever it is referenced or applied. Assessments conducted under this Guide should record the version in force at the time the assessment took place — a small requirement with a large consequence, since it is what makes everything else in this chapter actually usable in practice.

48.5 Stability of Published Versions

Once published, a version of this Technical Guide remains unchanged. Where a modification is required, it is issued as a new published version — Editorial, Minor or Major, as Table 48.1 sets out — rather than by silently altering a version already released. This is what preserves the integrity of every assessment conducted under an earlier version, and what keeps historical assessment records fully traceable rather than resting on a document that may have quietly shifted beneath them.

48.6 Version Traceability

Assessment documentation should identify the specific version of the methodology applied. This traceability supports independent review, independent auditing, reproducibility, the correct interpretation of historical assessments, and meaningful comparison between assessments performed at different times, potentially under different versions of this Guide. Without it, the methodological basis of a given assessment can become genuinely unclear — a gap this chapter exists specifically to prevent.

48.7 Relationship with Related Publications

Versioning is coordinated across the wider WQI publication ecosystem — the Doctrine, the Principles, the Framework, related Technical Guides, Technical Reports and Position Papers — so that a change significant enough to touch more than one

publication is reflected consistently across all of them, rather than leaving one document out of step with the rest.

48.8 Backward Compatibility

Wherever reasonably practicable, a new version preserves compatibility with the version it replaces. Where compatibility genuinely cannot be maintained — a Major revision, in the terms of Table 48.1 — the nature and significance of the change is documented clearly enough that users can understand exactly what adopting the newer version would actually mean for their practice.

48.9 Relationship with Published Assessments

Assessments remain associated with the version of the methodology under which they were conducted, and the publication of a new version does not automatically invalidate work completed under an earlier one — consistent with the principle already established in Chapter 47.10. Unless the applicable governance or certification framework explicitly determines otherwise, a historical assessment continues to be interpreted according to the methodology actually in force when it was performed.

48.10 Documentation of Changes

Each published version should include enough information for a reader to understand what actually changed — identifying, as relevant, editorial corrections, clarifications, methodological refinements, new requirements, or withdrawn content. Transparent documentation of this kind is what allows Table 48.1's scheme to function as intended: a version number is only as informative as the change log standing behind it.

48.11 Controlled Evolution

The purpose of versioning is not simply to assign numbers to documents; it is to ensure that change, when it happens, happens in a disciplined, transparent and traceable manner. Effective versioning is, in this sense, one of the more concrete mechanisms by which the principles of Chapter 47 are actually put into practice.

48.12 Principle

Every assessment remains permanently traceable to the specific version of the methodology under which it was performed. Versioning preserves the continuity of the assessment process while allowing the methodology to evolve in a controlled and transparent way — through the same Maintenance and Revision distinction established in Chapter 47, now given a concrete numbering scheme through which it can actually be tracked.

The authority of a methodology depends not only on how it evolves, but also on how consistently its evolution is documented and controlled.

49 Future Revisions

49.1 General

This Technical Guide represents the current state of the methodology for Real-World WiFi Quality assessment as established by the WiFi Quality Institute. The methodology is expected to evolve over time, in response to technological progress, implementation experience and advances in professional knowledge — through the governance

processes set out in Chapter 47, developed to keep the methodology relevant while preserving its integrity and continuity.

49.2 Purpose of Future Revisions

Future revisions exist to ensure the methodology continues to provide an appropriate framework for assessing WiFi Quality as technical and operational environments change. A revision should strengthen the methodology without altering its fundamental principles unless a clear case exists for doing so — the objective, throughout, is continual improvement, not continual change for its own sake.

49.3 Principles Governing Future Revisions

Future revisions are guided by methodological continuity, technical relevance, evidence-based development, technological neutrality, transparency, proportionality, and the preservation of Assessment Integrity. These principles are what allow a revision to improve the methodology while keeping confidence in previously published editions intact.

49.4 Drivers for Future Revisions

A revision may be considered in response to developments in WiFi technology, advances in assessment methodology, implementation experience, findings from Review Processes or Independent Audits, academic research, stakeholder feedback, an identified ambiguity or limitation, or a change elsewhere in the WQI publication ecosystem that this Guide needs to remain consistent with. The mere existence of a new technology, on its own, is never sufficient justification — a change is warranted only where it demonstrates a genuine methodological benefit.

49.5 Preservation of Fundamental Principles

A revision preserves the fundamental principles this Technical Guide has established — evidence-based assessment, representative observation, Assessment Evidence, Evidence Correlation, Observed Network Reality, Assessment Integrity, technological neutrality — wherever reasonably practicable. A revision refines the methodology; it does not redefine its purpose, absent compelling justification for doing so.

49.6 Technology Evolution Is Not Methodology Evolution

It is worth drawing a distinction here that separates this methodology from a great deal of technical documentation in adjacent fields, where a new product cycle tends to trigger a new edition almost as a matter of habit:

Technology Evolution	Methodology Evolution
New WiFi standards	Improved assessment principles
New hardware and software tools	Improved evidence collection and methodological guidance
Advances in AI capability	Better interpretation of evidence

(Table 49.1)

These are not the same axis, and this methodology treats them accordingly: **the methodology should not change simply because technology changes. It should change only when technological or professional developments demonstrate that the methodology itself can be improved.** If a new WiFi standard is published next

year, this Guide does not need to change on that account alone — the concepts of Representative Test Location, Assessment Evidence, Evidence Correlation and Observed Network Reality do not depend on which generation of WiFi happens to be in use. If a new measurement application enters the market, the same holds: a new tool does not, by itself, imply a new methodology, only a new means of gathering evidence within the one already established.

This is what allows the WQI to govern a methodological discipline rather than a running commentary on the technology of the moment — and it is precisely the kind of restraint that gives a professional methodology the long-term stability a certification scheme, an auditor, or a venue owner planning years ahead can actually rely on.

49.7 Consideration of Emerging Technologies

Consistent with the distinction in 49.6, this methodology remains applicable as WiFi technology continues to develop. Future revisions may take into account new IEEE 802.11 standards, emerging consumer device capability, evolving deployment architecture, advances in automation and artificial intelligence, or new approaches to gathering and analysing evidence — incorporated only where doing so demonstrably improves the methodology itself, never simply because the technology in question is new.

49.8 Relationship with Other WQI Publications

Future revisions are developed in coordination with the wider WQI publication ecosystem — the Doctrine, the Principles, the Framework, related Technical Guides, Technical Reports and Position Papers — so that a methodological change with implications beyond this document is reflected consistently across all of them, in keeping with the coordination already required under Chapters 47 and 48.

49.9 Impact on Existing Assessments

A future revision does not invalidate a previously completed assessment simply because a newer version of the methodology has since been published. Assessments remain valid within the methodological context under which they were performed, unless the applicable governance or certification framework explicitly determines otherwise — the same principle already established in Chapters 47.10 and 48.9, restated here as it applies specifically to revisions still to come.

49.10 Public Technical Review and Technical Evaluation

A proposed Major revision, as defined in Chapter 48.3, shall be subjected to a formal WQI Public Technical Review before final approval and publication.

The proposed revision shall be published in draft form for a review period of not less than 60 calendar days. The draft shall be clearly identified as a review document, shall not supersede the current published version of this Technical Guide, and shall not be represented as an approved methodological requirement while the review remains open.

The purpose of Public Technical Review is to expose significant proposed methodological change to informed external scrutiny before it becomes authoritative. Contributions may be invited from assessors, auditors, researchers, academic institutions, network professionals, equipment and software vendors, managed service providers, certification bodies, venue and hospitality technology specialists, standards

professionals and other parties capable of providing relevant technical or methodological evidence.

Comments received during the review period are evaluated on their technical and methodological merits in accordance with Chapter 50. Participation in the review does not confer decision-making authority, and neither numerical majority nor stakeholder prominence determines whether a proposed change is accepted.

A Public Technical Review may therefore result in a proposed change being accepted, accepted with modification, deferred for further evidence or rejected.

Minor revisions may also be subjected to Public Technical Review where the WiFi Quality Institute determines that the nature or likely impact of the proposed change would benefit from wider scrutiny. Editorial releases do not ordinarily require Public Technical Review.

Formal consultation supplements, rather than replaces, the ongoing public feedback process established in Chapter 50.

49.11 Contrary, Negative and Inconclusive Evidence

Evidence relevant to the development or validation of this methodology does not become methodologically less important because it fails to confirm an expected result. Negative, null, contradictory and inconclusive findings may identify limitations, boundary conditions, unsupported assumptions or areas in which further investigation is required, and shall therefore be considered on their technical merits rather than on whether they support a preferred conclusion.

Where the WiFi Quality Institute publishes or relies publicly upon formal validation, comparative evaluation or methodological research in support of this Technical Guide, material findings should be reported in a manner that does not selectively suppress results solely because they are unfavourable to the methodology or to an expected outcome.

This principle does not require publication of every internal experiment, working test or implementation record, nor does it require disclosure of confidential, security-sensitive, personal or proprietary implementation information. It requires that public claims derived from validation or research fairly represent the material evidential record on which those claims rely, including relevant limitations, contrary evidence and unresolved results.

A negative or inconclusive result is not, by itself, evidence that a methodology has failed. Concealing such a result, where it is material to a public methodological claim, would be evidence that the methodology's governance had failed.

49.12 Continuous Improvement

Future revisions aim to improve clarity, strengthen methodological consistency, increase assessment reliability, support genuine technological development where it warrants support, and enhance the methodology's usability for the professionals who apply it — increasing confidence in the methodology over time while preserving the fundamental identity that confidence depends on.

49.13 Principle

A professional methodology evolves only when there is clear evidence that a change

will improve its reliability, relevance or clarity — and, as Table 49.1 makes explicit, technological change and methodological change are not the same thing, nor does the first automatically require the second. Future revisions to this Technical Guide are accordingly governed by disciplined process, technical justification, and continued respect for the principles this methodology was founded on — evolving, when it evolves at all, because the methodology itself can be shown to improve, not because the world around it has simply moved on.

50 Public Feedback

50.1 General

The WiFi Quality Institute recognises that valuable insight can arise from the practical application of this methodology by assessors, auditors, researchers, industry professionals and other interested parties, and it welcomes constructive feedback as a genuine contribution to the methodology's continual improvement — one that supports its ongoing development without compromising the stability, consistency and integrity this Guide depends on.

50.2 Purpose of Public Feedback

Feedback exists to identify opportunities for improvement, clarify ambiguity, report implementation experience, surface emerging technical challenges, encourage professional engagement, and support the methodology's continual refinement. It contributes to that evolution; it does not, by itself, modify a single requirement of this Guide.

50.3 Eligible Sources of Feedback

The Institute welcomes contributions from assessors, auditors, certification bodies, venue owners, managed service providers, network operators, equipment manufacturers, software developers, researchers, academic institutions, standards professionals and other parties with a legitimate interest in WiFi Quality assessment — a broad invitation, deliberately so, since useful insight rarely arrives exclusively from any single category of stakeholder.

50.4 Types of Feedback

Feedback may address editorial improvement, clarification of existing guidance, implementation experience, an identified ambiguity, a methodological limitation, a proposal for future development, a technological development worth considering, or supporting research relevant to the methodology's scope.

50.5 Feedback Is Not the Same as a Change Request

It is worth distinguishing clearly between two things that are easily, and unhelpfully, conflated:

Feedback	Change Request
An observation or suggestion	A formal proposal to modify the methodology
May simply identify an issue	Includes a proposed solution
May not require any action	Requires technical evaluation

Feedback	Change Request
Contributes to ongoing discussion	May lead to a future revision

(Table 50.1)

Not every comment received is, or needs to become, a Change Request, and treating every piece of feedback as though it demanded a formal response would make constructive engagement considerably harder to sustain in practice. A great deal of valuable feedback simply adds to the Institute's understanding of how the methodology performs in the field, without itself proposing — let alone requiring — any specific modification. Where feedback does mature into a genuine Change Request, it is evaluated under the process set out below and, ultimately, under the governance established in Chapter 47.

50.6 Evaluation of Feedback

All feedback that rises to the level of a Change Request is evaluated through an appropriate technical and governance process, considering technical validity, methodological consistency, supporting evidence, impact on existing publications, impact on current assessment practice, and the potential benefit to the methodology as a whole. Acceptance is based on technical merit — never on the identity or commercial interest of whoever submitted it.

50.7 Transparency and Comment Disposition

Where appropriate, the Institute maintains transparency in how significant feedback is handled — acknowledging submissions received, documenting methodological changes accepted as a result, and explaining, where a significant proposal is not adopted, why that decision was reached. For comments received during a formal WQI Public Technical Review under Chapter 49.10, the Institute shall publish a Comment Disposition Report following completion of the review and before, or together with, publication of the resulting Major revision. The Comment Disposition Report should record, for each material technical comment or consolidated group of substantially equivalent comments:

- a comment identifier;
- a concise description of the issue raised;
- the WQI technical response;
- the disposition — Accepted, Accepted in Part, Rejected or Deferred;
- where applicable, the resulting change made to the draft or the reason no change was made.

Comments may be consolidated where several submissions raise substantially the same technical issue. Personal information, confidential material, security-sensitive information and proprietary implementation detail need not be published.

Publication of comment disposition does not imply that every submission must be accepted. Its purpose is to make the reasoning visible: external scrutiny strengthens the methodology only where the Institute remains equally transparent about why a comment was accepted and why another was not.

50.8 Relationship with Future Revisions

Public Feedback operates at two distinct levels within the governance of this methodology. The first is continuous feedback: observations, implementation experience, research, limitations and Change Requests may be submitted at any time and may contribute to the development of a future revision. The second is formal Public Technical Review: where a proposed Major revision has reached draft form, the review process defined in Chapter 49.10 provides a specific period during which the wider professional community may scrutinise the proposed text before final approval. Neither process transfers methodological authority away from the WiFi Quality Institute. Continuous feedback helps identify what may need to change; Public Technical Review tests a developed proposal before it becomes authoritative; final approval remains governed by the evidence-based decision process established in Chapters 47 through 51.

50.9 Independence

Evaluation of feedback remains independent, objective and free from undue commercial influence. No organisation, vendor, technology provider or individual is afforded preferential weight in how the methodology develops; it evolves in the interest of technical quality, professional practice and the broader public interest, rather than in the interest of any single contributor.

50.10 Relationship with the WQI Publication Ecosystem

Feedback concerning this Technical Guide can have implications extending beyond it, and the Institute considers, where relevant, whether accepted feedback also requires a corresponding update to the Doctrine, the Principles, the Framework, related Technical Guides, Technical Reports or Position Papers — the same coordination already required for Maintenance and Revision under Chapters 47 through 49.

50.11 Continuous Engagement

Public Feedback is best understood as an ongoing dialogue between the Institute and the wider professional community, not as activity confined only to formal Public Technical Review periods. Constructive engagement of this kind supports the methodology's long-term relevance and credibility, while its stability continues to rest on the structured governance set out in Chapter 47.

50.12 Principle

Constructive public feedback strengthens a methodology when it is evaluated through transparent, evidence-based and independent governance — and its value lies not in changing the methodology as often as feedback arrives, but in helping ensure that whatever revisions do occur remain technically sound and consistent with the principles this Guide is founded on.

The WQI values openness to professional feedback while recognising that methodological authority derives from evidence, technical judgement and disciplined governance — not from popularity or majority opinion. A methodology governed by consensus alone would answer to whoever spoke loudest or most often; this one answers, instead, to whether a proposed change can be shown, on its own technical merits, to make the methodology more reliable.

51 Methodological Authority and Change Control

51.1 General

The methodology established by this Technical Guide is governed by the WiFi Quality Institute (WQI).

Methodological authority includes responsibility for the interpretation, maintenance, controlled development and formal approval of changes to the methodology.

No assessor, auditor, certification programme, certification operator, technology provider, vendor or other stakeholder may independently modify the methodology established by a published version of this Technical Guide.

51.2 Methodological Authority

The WiFi Quality Institute retains authority over the methodology established by this Technical Guide.

This authority includes responsibility for:

- maintaining the methodological framework;
- evaluating proposed methodological changes;
- resolving identified methodological ambiguities;
- approving revisions;
- determining the appropriate classification of changes;
- authorising publication of new versions;
- maintaining consistency with the wider WQI publication framework.

The exercise of methodological authority should remain consistent with the principles of independence, technological neutrality, transparency and evidence-based development established throughout this publication.

51.3 Separation of Methodological and Implementation Authority

Methodological authority should be distinguished from implementation authority.

Organisations applying this methodology may establish operational procedures, tools, systems and workflows necessary for its implementation, provided that such arrangements remain consistent with the requirements and principles of the applicable published version of this Technical Guide.

Implementation decisions shall not modify, override or redefine the methodology.

This separation enables the methodology to remain independent of any particular assessment platform, certification programme, technology provider or implementation model.

51.4 Sources of Proposed Changes

Proposals for methodological change may arise from:

- implementation experience;
- technical research;
- assessment experience;

- independent review or audit observations;
- public feedback;
- identified ambiguities or inconsistencies;
- developments in measurement science;
- technological developments;
- changes affecting related WQI publications.

The origin of a proposal shall not determine its acceptance.

All proposed changes should be evaluated according to their methodological merit and supporting evidence.

51.5 Change Control Process

Proposed methodological changes should be subject to a controlled evaluation process.

Depending upon the nature and significance of the proposed change, this process should include:

1. identification and documentation of the proposed change;
2. statement of the reason or problem motivating the proposal;
3. technical and methodological evaluation;
4. consideration of available supporting evidence;
5. assessment of consistency with existing methodological principles;
6. evaluation of potential impacts;
7. formal approval or rejection;
8. classification and versioning of any approved change;
9. publication and communication through the appropriate WQI process.

The depth of evaluation should be proportionate to the significance of the proposed change.

51.6 Change Impact Assessment

Before a substantive methodological change is approved, its potential impact should be considered.

Impact assessment may include consideration of:

- assessment activities;
- Assessment Evidence;
- Evidence Correlation;
- Assessment Findings;
- repeatability and comparability;
- previously published guidance;
- related WQI publications;

- organisations or programmes applying the methodology.

The purpose of Change Impact Assessment is to identify the consequences of a proposed change before it becomes part of a published methodology.

51.7 Classification of Changes

Changes should be classified according to their methodological significance.

They may include:

Editorial changes — corrections or improvements that do not alter methodological meaning.

Clarifications — changes intended to remove ambiguity without materially changing methodological requirements.

Methodological refinements — limited changes that improve the application or interpretation of the methodology while preserving its fundamental structure.

Substantive methodological changes — changes that materially affect the conduct, interpretation or outcome of assessments.

The classification of changes should inform the versioning process described in Chapter 48.

For versioning purposes, Editorial Changes and Clarifications normally correspond to an Editorial release; Methodological Refinements normally correspond to a Minor revision; and Substantive Methodological Changes correspond to a Major revision, subject to the impact assessment required by Chapters 47 and 48.

51.8 Integrity of Published Versions

A published version of this Technical Guide represents a defined methodological reference.

Once published, its methodological content shall not be altered retrospectively.

Any approved change affecting the published methodology shall be introduced through a subsequent controlled version in accordance with the versioning provisions of this Technical Guide.

This ensures that assessments remain permanently traceable to the methodology under which they were conducted.

51.9 Relationship with Existing Assessments

The publication of a revised methodology does not, by itself, invalidate assessments conducted under an earlier published version.

Such assessments remain associated with, and should be interpreted according to, the methodological version under which they were performed.

Where the methodology is used by an external conformity assessment or certification programme, the consequences of a methodological revision for existing certifications are determined by the governance rules of that programme and not by this Technical Guide.

51.10 Independence from Certification Programmes

The methodology established by this Technical Guide is independent of any particular

certification programme.

A certification programme may adopt this methodology and establish additional rules governing its application, including transition arrangements following publication of a new methodological version.

Such programme-specific rules shall not modify the methodology itself.

This separation preserves the independence of the methodological framework while allowing it to be applied within different conformity assessment, certification, research or quality assurance contexts.

Where the methodology is applied within a certification programme, that programme shall establish and maintain versioned technical specifications governing evidence acquisition and handling, identified by name and version. Those specifications may define the technical means by which evidence integrity is established and preserved; the methodological requirements for Evidence Integrity remain those established by Chapter 20.

This Technical Guide defines what constitutes Assessment Evidence and the conditions under which it may support assessment conclusions. It does not prescribe any particular software architecture, data schema, cryptographic mechanism, measurement platform or other implementation means by which those requirements must be satisfied.

References in this Guide to adoption or application by another programme describe methodological relationships; they do not grant permission to reproduce protected content, use proprietary technology or operate under another organisation's marks. A third party making a statement of methodological conformity should identify itself as the issuer and identify the edition of this Guide to which the statement relates. Its statement does not, by itself, constitute WQI approval, WiFiCert certification or a right to use a certification mark or Registry entry. The Copyright, Permitted Use and Intellectual Property Notice governs permissions concerning this publication, without altering the evidential requirements of the methodology.

51.11 Transparency and Traceability

Significant methodological changes should be documented sufficiently to allow users to understand:

- what changed;
- why the change was introduced;
- the version in which the change became effective;
- whether the change affects the interpretation or application of the methodology.

Change documentation contributes to long-term methodological transparency and traceability.

51.12 Principle

The methodology may evolve only through controlled methodological authority and documented change control.

Implementation organisations may determine how the methodology is operationalised, but they shall not independently redefine what the methodology requires.

This separation between methodological authority and implementation authority protects the independence, consistency and long-term integrity of Real-World WiFi Quality Assessment.

Appendices

Appendix A — Definitions

A.1 Purpose

This Appendix provides the normative glossary of terms used throughout this Technical Guide. Where a term also receives a substantive introduction in the body of the Guide, that introduction constitutes its primary normative statement; this Appendix serves as a consolidated reference restatement, not a competing source, and includes a cross-reference to the originating chapter for each entry.

A.2 Alphabetical Glossary

Assessment

A structured process through which objective evidence is collected, interpreted and correlated in order to determine WiFi Quality. (*Chapter 11.5*)

Assessment Confidence

The confidence reasonably placed in an assessment as a whole, once all relevant Assessment Evidence has been correlated — distinct from Measurement Confidence, which concerns a single observation taken alone. (*Chapters 17.4, 34.5*)

Assessment Evidence

Evidence that satisfies the methodological requirements established by this Technical Guide and is, on that basis, suitable for supporting Assessment Findings. Not all Evidence qualifies as Assessment Evidence. (*Chapter 11.7*)

Assessment Findings

The formal, evidence-based conclusions derived from the Observed Network Reality established during an assessment. Findings are derived, not measured, and are distinct from Recommendations. (*Chapter 26*)

Assessment Integrity

The degree to which an assessment is conducted consistently, objectively, transparently and in accordance with this methodology — a property of the assessment process as a whole, not of any individual measurement. (*Chapter 31*)

Assessment Lifecycle

The structured sequence of stages, from Assessment Request through to Certification Decision where applicable, through which a WiFi Quality assessment is planned, conducted, reviewed and, where relevant, certified. (*Chapter 21*)

Assessment Protocol

A versioned implementation-level specification defining operational procedures or

additional controls for applying this Technical Guide within a particular assessment system, programme or implementation context. An Assessment Protocol may add procedural or evidential requirements but shall not modify, override or redefine this methodology. *(Chapters 11.21, 51.3)*

Assessment Repeatability

The ability of independent assessors, applying this methodology to the same service under comparable conditions, to reach comparable Assessment Findings — distinct from Measurement Repeatability and Evidence Repeatability. *(Chapter 32.3)*

Assessment Scope

The defined boundaries within which a WiFi Quality assessment is conducted, specifying what is included in, and excluded from, the assessment. *(Chapter 11.8)*

Assessment Validity

The degree to which an assessment conclusion is justified by Assessment Evidence that is sufficient, relevant, representative and reliable, interpreted within the defined Assessment Scope and Operational Context in accordance with this methodology. *(Chapters 11.19, 31.12)*

Causal Boundary

The most specific causal scope that the available Assessment Evidence can support without exceeding its evidential resolution. *(Chapters 11.18, 24.14)*

Causal Hypothesis

A technically plausible explanation of an observed service condition, expressed at a defined layer, segment, relationship, component or causal scope and capable of being supported, qualified or contradicted by Assessment Evidence. *(Chapter 11.17)*

Certification Decision

The formal determination, made under the applicable certification programme, of whether a completed assessment satisfies the requirements for granting, maintaining, renewing, suspending or withdrawing certification. Distinct from the assessment itself. *(Chapter 30)*

Corroborative Evidence

Evidence obtained by an independent means for the purpose of testing, supporting, qualifying or challenging an interpretation suggested by other Assessment Evidence. *(Appendix G.13)*

Contextual Evidence

Evidence describing the operational or environmental conditions under which other observations were made. *(Appendix G.13)*

Declared Service Area (DSA)

The physical area within which an organisation declares that WiFi service is intended to be provided. Established before the assessment begins; a service commitment, not an assessment outcome. *(Chapter 11.9)*

Direct Evidence

Evidence obtained directly through observation or measurement during the assessment itself. *(Appendix G.13)*

Endpoint Validity

The degree to which a measurement endpoint, and the conditions under which it is operating, are suitable for the measurement purpose for which its results are to be interpreted. (*Chapters 11.16, 23.13*)

Environmental Variability

Variability arising from changes in the physical environment surrounding a WiFi network — occupancy, obstruction, scheduled events — as distinct from Operational Variability and Instrumental Variability. (*Chapter 33.3*)

Evidence

Any objective information obtained through observation, measurement or analysis. Evidence in this general sense may or may not qualify as Assessment Evidence. (*Chapter 11.6*)

Evidence Correlation

The structured process through which multiple, independent items of Assessment Evidence are interpreted together, rather than in isolation, to establish the Observed Network Reality. (*Chapter 24*)

Evidence Integrity

The degree to which Assessment Evidence can be regarded as authentic, accurate, complete, consistent, traceable and reliable — a property of the evidence chain as a whole, not merely of an individual data point. (*Chapter 20*)

Instrumental Variability

Variability introduced by the measurement process itself — including test-to-test effects attributable to the measurement procedure, measurement-software behaviour, reporting granularity or other measurement-tool artefacts — as distinct from genuine device-dependent service behaviour, Operational Variability and Environmental Variability. (*Chapter 33.3*)

Measurement

The technical act of capturing a specific characteristic of a WiFi service — a throughput figure, a latency value, an authentication outcome — prior to its contextualisation as an Observation. (*Chapter 23.2*)

Measurement Confidence

The confidence reasonably placed in a single observation, taken on its own, as distinct from Assessment Confidence. (*Chapter 34.5*)

Measurement Repeatability

The ability to reproduce the same individual measurement under the same conditions — the narrowest of the three levels of repeatability this methodology distinguishes. (*Chapter 32.3*)

Measurement Uncertainty

The limitations associated with interpreting an individual observation, distinct from both Measurement Variability and measurement error. (*Chapter 34*)

Measurement Validity

The degree to which a Measurement faithfully records the technical characteristic it purports to record under the conditions in which it was obtained; distinct from whether

that Measurement remains relevant or suitable for a later causal conclusion. (*Chapters 11.15, 23.14*)

Measurement Variability

The natural fluctuation exhibited by real-world WiFi measurements, arising from Operational, Environmental or Instrumental sources, and recognised as a normal characteristic of assessment rather than evidence of methodological weakness. (*Chapter 33*)

Methodological Error

Error arising from the incorrect application of this methodology itself — an incorrectly defined scope, unrepresentative sampling, faulty evidence correlation — as distinct from human, environmental, device-related and operational sources of error. (*Chapter 35.3*)

Observation

A Measurement once associated with the specific context in which it was taken — location, device, time, operational conditions. (*Chapter 23.2*)

Observed Network Reality

The evidence-based representation of the WiFi service as observed during the assessment, established through the structured interpretation and correlation of Assessment Evidence. The best-supported reconstruction available from the Assessment Evidence of the service actually delivered at the time of assessment — not a permanent characteristic of the environment. (*Chapters 11.13, 25*)

Organisation

The entity — venue owner, operator, or service provider — responsible for a WiFi service within a given Assessment Scope, and for declaring the Declared Service Area within which that service is intended to be provided. Distinct from the assessor, whose role is to evaluate the service independently of the organisation's own declarations. (*Chapter 14*)

Operational Context

The set of environmental, temporal, usage, service and network conditions within which an Observation is obtained and within which the resulting Assessment Evidence must be interpreted. (*Chapter 11.14*)

Operational Variability

Variability arising from genuine change in the behaviour of the network itself — user activity, utilisation, interference, congestion — as distinct from Environmental Variability and Instrumental Variability. (*Chapter 33.3*)

Planning Information

Information gathered to support the design of an assessment — venue documentation, floor plans, marketing claims — as distinct from Assessment Evidence, which it becomes only once confirmed through the assessment process itself. (*Chapter 22.3*)

Recommendation

A statement of what might be done to address a limitation identified by an assessment. Distinct from an Assessment Finding, and properly belonging to a separate deliverable such as an Improvement Plan. (*Chapter 26.5*)

Representative Consumer Device (RCD)

A consumer device selected because it reasonably represents the devices commonly used by the intended user population of an assessed WiFi service. *(Chapter 18.4)*

Representative Test Location (RTL)

A Test Location assigned a defined methodological role within a Site Area. Primary and Secondary RTLs support representative characterisation; Verification and Targeted RTLs serve diagnostic or investigative purposes and need not individually represent the Site Area as a whole. *(Chapters 11.12, 16)*

Service Quality

The overall capability of a WiFi service to satisfy its intended operational objectives within the defined Assessment Scope — the broader operational context within which WiFi Quality is assessed. *(Chapter 11.4)*

Site Area

A physically identifiable portion of a Declared Service Area within the Assessment Scope possessing sufficiently similar environmental or operational characteristics to be treated as a single assessment area. A methodological unit, not necessarily an architectural one. *(Chapter 11.10)*

Supporting Evidence

Evidence assisting in the interpretation, traceability or validation of other evidence, without itself constituting a primary observation. *(Appendix G.13)*

Test Location

A specific physical point or position at which assessment observations or measurements are obtained. *(Chapter 11.11)*

WiFi Experience

The experience perceived by users while interacting with a WiFi service in the course of their intended activities. May legitimately differ between users on the same network; valuable contextual information, but not, on its own, determinative of WiFi Quality. *(Chapter 11.3; see Note A.3)*

WiFi Performance

The observable technical behaviour of a wireless network, characterised through objective measurements such as throughput, latency and signal strength. Necessary evidence, but not sufficient, on its own or in combination, to constitute an assessment of WiFi Quality. *(Chapter 9.3)*

WiFi Quality

The degree to which a WiFi service delivers an appropriate and consistent level of service for its intended purpose, within a defined Assessment Scope, under representative real-world operating conditions. An assessed characteristic, not a directly measurable quantity. *(Chapters 9.5, 11.2)*

WiFi Quality Assessment

The methodological process by which the level of WiFi Quality is established through objective evidence — the fourth and final level distinguishing this Guide's contribution from WiFi Performance, WiFi Experience and WiFi Quality as concepts in their own right. *(Chapter 9.6)*

WiFi Quality Score

Where applicable, a structured expression of Assessment Findings, intended to

communicate an assessment's outcome accessibly. Has no meaning apart from the assessment it was derived from, and is never a substitute for the underlying methodology. (Chapter 27)

WiFi Service Area

The subset of a Declared Service Area for which Assessment Findings support the conclusion that WiFi service was available under the representative conditions observed during the assessment, within the stated Assessment Scope and at the time of assessment. An assessment declaration or a permanent characteristic of the venue. (Chapters 11.20, 26.14)

A.3 Note on Terminology

This Guide adopts WiFi Experience as the canonical term for the concept defined above, consistent with the WQI-FWK-001), which resolves an inconsistency in the WiFi Quality Doctrine's own use of "User Experience" and "WiFi Experience" interchangeably (WQI-FWK-001, Scope, Canonical Terminology; and Chapter 7, Human Domain). WiFi Experience as the term of record throughout the WQI publication series; it is deliberately narrower than the broader concept of User Experience in computer interaction and service design, with which it should not be confused (WQI-FWK-001, Scope).

Appendix B — Assessment Workflow

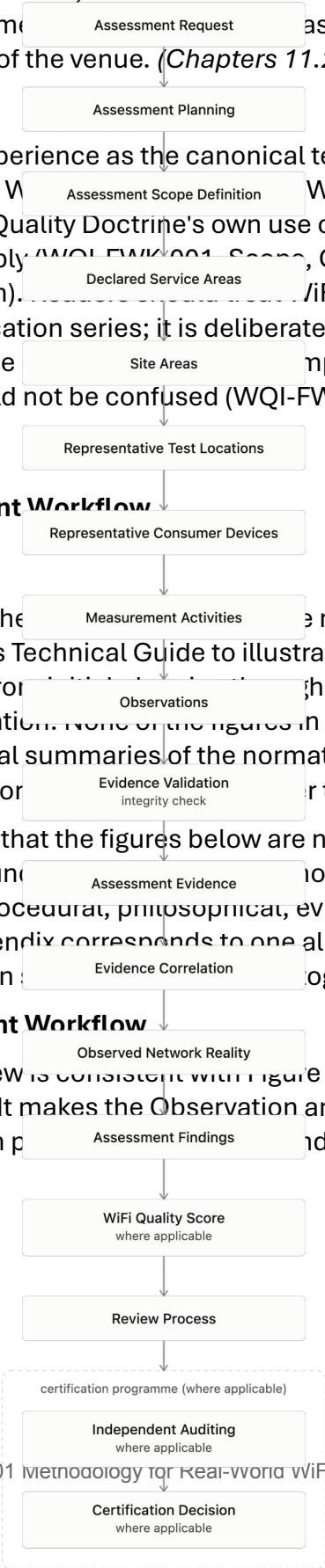
B.1 Purpose

This Appendix brings together the reference, the several diagrams introduced throughout this Technical Guide to illustrate the Real-World WiFi Quality Assessment workflow — from Assessment Request through to Assessment Findings and, where applicable, certification. None of the figures in this Appendix introduces a new requirement; they are visual summaries of the normative content set out in the body of this Guide, provided here for reference rather than as a substitute for it.

It is worth noting explicitly that the figures below are not six independent models. They are six views of the same underlying process shown at different levels of detail and from different angles — procedural, philosophical, evidential, and assurance-related. Where a figure in this Appendix corresponds to one already presented in the main text, the cross-reference is given together.

B.2 Complete Assessment Workflow

This expanded lifecycle view is consistent with Figure 21.1 (Chapter 21.3), also referenced in Chapter 30. It makes the Observation and Evidence Validation stages explicit alongside the main process, and, where applicable, certification sequence:

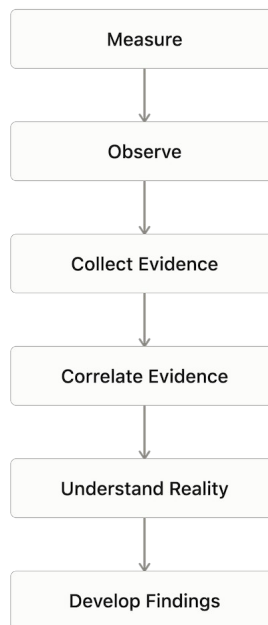


(Figure B.1 — expanded lifecycle view consistent with Figure 21.1; Observation and Evidence Validation are shown explicitly)

B.3 Simplified Conceptual Workflow

For audiences who need the underlying logic without the full procedural detail — a venue owner, a journalist, a regulator encountering the methodology for the first time —

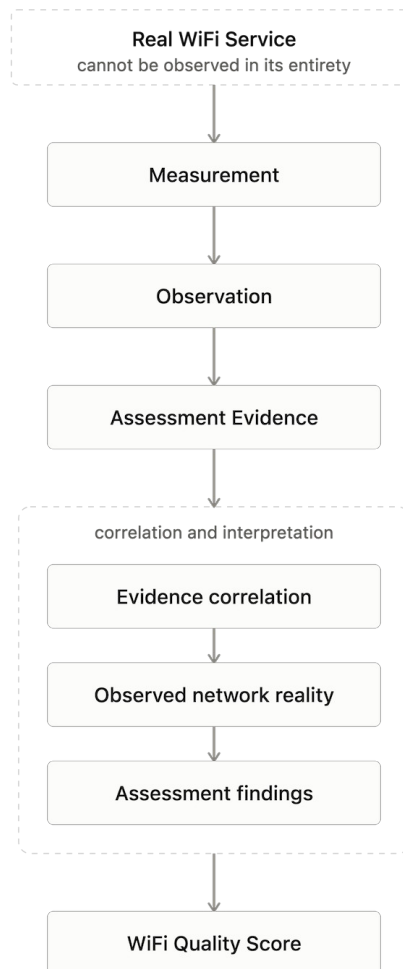
the same architecture can be reduced to its philosophical core:



(Figure B.2 — conceptual summary of Figure B.1, suitable for non-technical audiences and general communication)

B.4 Evidence Transformation Model

The evidentiary heart of the methodology — the chain introduced as Figure 10.1 (Chapter 10), incorporating the node order established in Chapter 23 and the unobservable source discussed in Chapter 25 — is repeated here as the single most important sequence in this Guide:

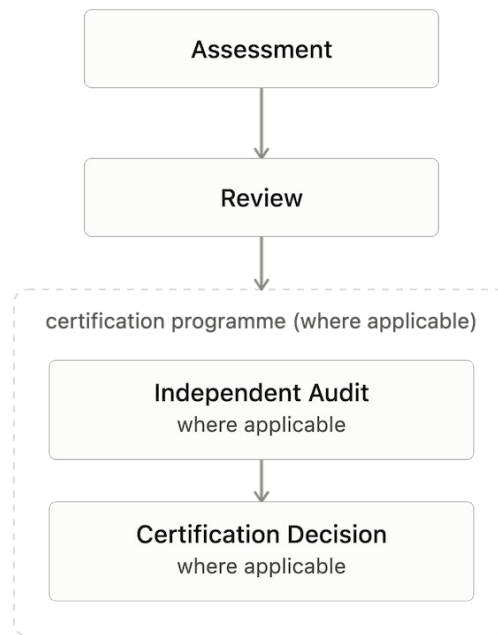


(Figure B.3 — reproduces Figure 10.1 in full, incorporating both the node order established in Chapter 23 and the unobservable source discussed in Chapter 25; presented again here for ease of reference within this Appendix)

Note on consolidation. The figure reproduced above is not a distinct diagram in its own right, but the same epistemic chain established as Figure 10.1 in Chapter 10 — the authoritative source, given first in the order this Guide is meant to be read. Chapter 25 and this Appendix each refer back to that same figure rather than presenting independent variants of it; no chapter in this Guide should be read as defining a competing version of this chain under a different figure number.

B.5 Assessment Assurance Workflow

The quality-assurance dimension of the methodology — corresponding to the verification hierarchy of Figure 28.1 (Chapter 28) and Table 29.1 (Chapter 29) — separates the act of assessment from the successive layers of scrutiny applied to it:



(Figure B.4 — assurance hierarchy; corresponds to Figure 28.1 and Table 29.1)

This figure exists to keep four activities that are easily conflated clearly distinct: an assessment produces a conclusion about a WiFi service; a review checks that the assessment was conducted correctly; an independent audit provides external assurance that the methodology was properly applied; and a certification decision — governed by whatever conformity assessment framework the certification programme in question applies — determines whether the resulting Findings satisfy that programme's own requirements. This Technical Guide is directly responsible for the first two stages and provides the methodological basis the third and fourth rely on, without itself defining how those later stages are governed.

B.6 Continuous Improvement Workflow

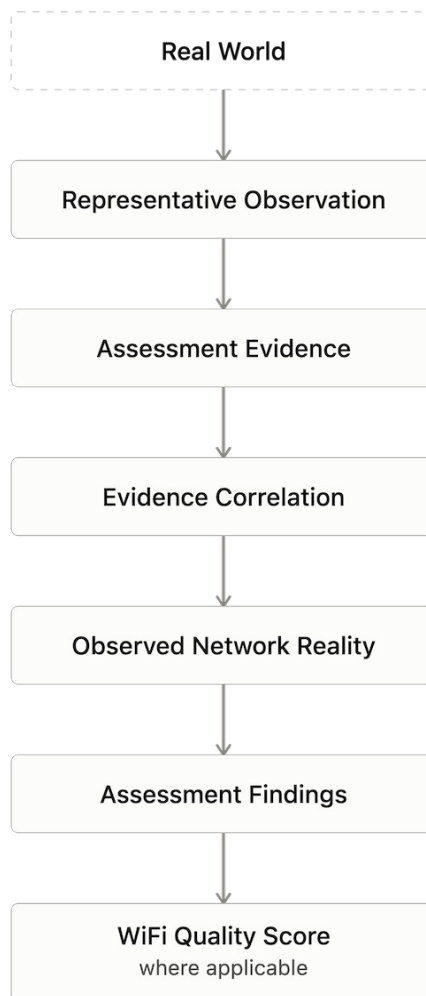
The governance cycle by which the methodology itself evolves — corresponding to the Maintenance and Revision framework of Chapter 47, the versioning scheme of Chapter 48, the future-revision process of Chapter 49, and the public-feedback process of Chapter 50:



(Figure B.5 — governance cycle; corresponds to Chapters 47 through 50)

B.7 The WiFi Quality Assessment Model

Of the figures presented in this Appendix, one is intended to serve as the recognisable emblem of this methodology as a whole — a deliberately simplified rendering of Figure B.3, showing the essential movement from unobservable reality to a communicable conclusion, without the procedural detail of Figure B.1:



(Figure B.6 — The WiFi Quality Assessment Model)

This figure condenses, into six steps, the argument developed throughout this Technical Guide: that WiFi Quality cannot be observed directly, that it must be reconstructed through representative observation and correlated evidence, and that the resulting understanding — Observed Network Reality — is what ultimately supports a Finding and, where applicable, a Score. For this reason, it is offered here as the visual signature of the methodology, suitable for use wherever the WQI needs to communicate the essence of Real-World WiFi Quality Assessment in a single image — presentations, summary materials, or the opening pages of related publications.

A brief methodological note on its scope: Figure B.6 begins directly at "Representative Observation," omitting the raw "Measurement" step shown in Figure B.3. This is a deliberate simplification appropriate to an emblematic, non-technical figure, not a contradiction of the fuller chain — a reader moving from this figure to the body of the Technical Guide should understand that "Representative Observation" here stands for the Measurement–Observation pair described in full in Chapter 23.

B.8 A Note on the Wider WQI Ecosystem

The architecture shown in Figure B.6 is not confined to this Technical Guide. A simplified version of the same chain already appears in the WiFi Quality Doctrine,

tracing the more general movement from observed reality to understanding, and the WiFi Quality Framework (WQI-FWK-001) develops the conceptual structure — Domains, Dimensions and Attributes — that this chain presupposes at its 'Assessment Evidence' and 'Observed Network Reality' stages. This Technical Guide, in turn, develops the full methodological model shown here, including the layers of review, independent audit and certification decision summarised in Figure B.4. A certification programme choosing to build on this methodology may extend the chain further still, adding its own governance and decision-making apparatus — but such an extension belongs to that programme's own documentation, not to the WQI publication series itself. Each WQI publication, in this sense, adds one further layer to the same underlying conceptual and methodological architecture, rather than introducing a competing model of its own — which is what gives the WQI body of work its coherence across documents, and what this Appendix has tried to make visible in one place.

Appendix C — Example Assessment Scenarios

C.1 Purpose

This Appendix provides illustrative examples of how the methodology described in this Technical Guide may be applied across different operational environments. The examples are informative only; they establish no additional methodological requirement and should not be read as prescriptive procedures for any specific venue type. Their purpose is to show how the reasoning set out in Parts III through VI is actually carried through, scenario by scenario, from an initial description of a site to an illustrative Finding.

Each scenario below follows the same nine-part structure, applied consistently so that the underlying method — not the specific venue — is what the reader takes away from this Appendix:

1. **Assessment Context** — a brief description of the site.
2. **Assessment Scope** — what is included, and what is excluded.
3. **Declared Service Areas** — where service is declared available.
4. **Site Areas** — the methodological subdivision of the site.
5. **Representative Test Locations** — illustrative points, and why each was chosen.
6. **Representative Consumer Devices** — devices selected for the expected user population.
7. **Typical Assessment Evidence** — the kinds of evidence gathered.
8. **Observed Network Reality (illustrative)** — an example reconstruction.
9. **Illustrative Assessment Findings** — an example conclusion.

None of the Observed Network Reality or Findings examples below are drawn from an actual assessment; they are illustrative constructions intended to show the *form* a Finding takes, not to suggest that any real venue of this type would necessarily produce this result.

C.2 Small Café

Assessment Context. An independent café with a single indoor seating area, approximately 25 seats, serving a mix of short-stay and longer-stay customers.

Assessment Scope. The customer-facing areas of the café; the kitchen and staff-only

areas are excluded, as WiFi service was never declared there.

Declared Service Areas. The customer seating area.

Site Areas. Given the café's small, largely uniform layout, a single Site Area typically suffices, encompassing both front and rear seating.

Representative Test Locations. A Primary RTL near the centre of the seating area (where most customers linger); a Secondary RTL near the entrance (higher foot traffic, more transient use); a Secondary RTL at the rear (furthest from the access point, testing the edge of the Declared Service Area).

Representative Consumer Devices. A smartphone and a tablet, reflecting the venue's predominantly short-session, browsing-oriented user base.

Typical Assessment Evidence. Connectivity and authentication behaviour, throughput, latency, and general service stability; roaming is rarely relevant given the venue's single-room layout.

Observed Network Reality (illustrative). The service connects reliably and authenticates without friction at all three RTLs; throughput is consistent and adequate for browsing and messaging, with a modest but non-disruptive reduction in throughput observed at the rear RTL.

Illustrative Assessment Findings. The WiFi service consistently supported the intended activities (browsing and messaging) throughout the Declared Service Area, with a minor, non-material reduction in throughput at the area's furthest point from the access point.

C.3 Hotel

Assessment Context. A medium-sized hotel offering guest rooms, food and beverage outlets, meeting facilities, and outdoor guest areas.

Assessment Scope. The entire guest-facing property, including guest rooms, public areas, conference facilities and outdoor terraces; back-of-house and staff-only areas are excluded.

Declared Service Areas. Reception, guest rooms, corridors, restaurant, bar, conference rooms, gym, and outdoor terrace — each declared, whether formally or through public representation (per Chapter 14), as a location where WiFi is available.

Site Areas. Reception → ground-floor corridor → guest rooms → restaurant → bar → conference facilities → gym → outdoor guest areas. Each is treated as methodologically distinct, since user density, dwell time and typical activity differ sharply between, for example, a guest room and a conference room.

Representative Test Locations. Reception desk and adjacent waiting area; per Chapter 15.8, guest rooms are treated as individually-occupied units — absent a documented basis for treating them as structurally equivalent (uniform construction, consistent distance from the relevant access point), each room on the assessed floor(s) warrants its own Primary RTL, with corner rooms in particular expected to require dedicated testing given their frequently distinct construction; a corridor location; restaurant centre and a restaurant corner partially shielded by a structural feature; a Primary RTL within the bar; conference room front and rear (front as Primary, rear as Secondary, since rear-of-room signal often differs); a Primary RTL within the gym; and an outdoor seating RTL.

Representative Consumer Devices. Smartphone, laptop and tablet — reflecting a guest population that ranges from casual browsing to business use requiring video conferencing.

Typical Assessment Evidence. Roaming behaviour (guests move between corridor, room and public areas continuously), authentication consistency, service continuity during video calls, streaming performance, and general mobility-related stability.

Observed Network Reality (illustrative). Guest rooms show consistently strong, stable service across the great majority of rooms tested, with one corner room on the second floor showing a measurable reduction in signal strength associated spatially with its adjacency to a lift shaft; that proximity identifies a plausible structural explanation, not a uniquely established cause — an example of precisely the kind of structural difference Chapter 15.8 anticipates. Reception shows consistently strong service; the conference room rear RTL shows intermittent authentication delay during periods of high occupancy; roaming between corridor and guest room is seamless, but roaming between corridor and outdoor terrace occasionally drops the connection briefly before re-establishing.

Illustrative Assessment Findings. The WiFi service reliably supported guest-room and reception use, with one isolated exception in a structurally distinct corner room, consistent with the individual coverage this methodology requires for such units. Service in the conference facilities showed a documented, occupancy-linked authentication delay during peak use, and a brief service interruption was observed during the corridor-to-terrace transition — both material to guests relying on continuous connectivity during that transition.

C.4 Restaurant

Assessment Context. A standalone restaurant with a main dining room, a private dining room, outdoor seating, and a bar area.

Assessment Scope. All customer-facing dining and bar areas; kitchen and storage excluded.

Declared Service Areas. Entrance, dining room, private dining room, outdoor seating, bar, and waiting area.

Site Areas. Entrance and waiting area; main dining room; private dining room; outdoor seating; bar — treated separately where their occupancy patterns, use or physical characteristics justify distinct assessment units.

Representative Test Locations. A Primary RTL is selected at an ordinarily occupied table in each distinct dining or bar Site Area, on the basis of user activity and the area's characteristics rather than proximity to an access point or an expected favourable result. A Primary RTL is also selected within the entrance/waiting Site Area where WiFi service is declared there. A table behind a structural pillar may provide a Secondary RTL where it checks variation within the same Site Area; a specifically documented concern may additionally justify a Targeted RTL. The outdoor seating and private dining room, where treated as separate Site Areas, each retain their own Primary RTL. The objective is not to test every table, but to establish the required baseline and the additional coverage needed to represent the conditions diners actually encounter.

Representative Consumer Devices. Smartphone and tablet, reflecting typical customer

use during a meal (checking messages, occasional streaming, payment applications).

Typical Assessment Evidence. Connectivity, throughput, latency, and service stability; roaming is rarely a significant factor given customers' limited movement during a meal.

Observed Network Reality (illustrative). Service is strong and consistent at the Primary RTL and in the private dining room; the pillar-obstructed table shows a measurable but non-disruptive reduction in signal quality; outdoor seating shows intermittent service during peak evening occupancy.

Illustrative Assessment Findings. WiFi Quality was consistent across most of the Declared Service Area. A structurally obstructed table showed reduced, though still functional, service; outdoor seating showed reduced reliability during peak occupancy, warranting further investigation into whether this reflects congestion or coverage.

C.5 University Building

Assessment Context. A university building comprising lecture theatres, classrooms, a library, laboratories, corridors and a cafeteria — a high-density, high-turnover environment.

Assessment Scope. All student- and staff-facing teaching and study spaces within the building.

Declared Service Areas. Lecture theatres, classrooms, library, laboratories, corridors, cafeteria.

Site Areas. Each space type is treated as a distinct Site Area, given sharply different occupancy patterns — a 300-seat lecture theatre during a scheduled class bears little resemblance, in terms of demand on the network, to a quiet corridor between classes.

Representative Test Locations. Front and rear locations within the large lecture theatre; at least one Primary RTL within each classroom Site Area included in scope; several points within the library reflecting both quiet study areas and higher-traffic circulation zones; a laboratory; a busy corridor at a change-of-class period; and a Primary RTL within the cafeteria. Additional RTLs may be added where occupancy, layout or operational variation requires them.

Representative Consumer Devices. Smartphone and laptop, reflecting the population of students and lecturers who make up the vast majority of representative users, with occasional consideration of visitor devices.

Typical Assessment Evidence. Capacity-related behaviour under high occupancy, roaming as students move between spaces, authentication consistency at scale, and service availability during peak transition periods.

Observed Network Reality (illustrative). Service in the library and laboratories is consistently strong; the lecture theatre shows a measurable decline in throughput and an increase in authentication delay when occupancy approaches capacity, an effect not observed at lower occupancy.

Illustrative Assessment Findings. WiFi Quality was consistent across most Site Areas assessed. In the largest lecture theatre, service quality was found to degrade materially under near-capacity occupancy — a limitation specific to peak-demand conditions rather than to the venue as a whole.

C.6 Hospital

Assessment Context. A hospital comprising reception, waiting rooms, wards, outpatient clinics and a cafeteria — an environment where operational sensitivity constrains how an assessment can be conducted.

Assessment Scope. Public and patient-facing areas; clinical and restricted operational areas are typically excluded or require special arrangement, given the operational and privacy considerations set out below.

Declared Service Areas. Reception, waiting rooms, wards, outpatient clinics, cafeteria.

Site Areas. Each is treated separately, reflecting very different patterns of use — a waiting room's transient population differs sharply from a ward's longer-stay patients and visitors.

Representative Test Locations. Reception and adjacent waiting area; a general ward bay; an outpatient clinic waiting area; the cafeteria — selected, throughout, with explicit regard to patient privacy and clinical operations rather than simply the locations most convenient to access.

Representative Consumer Devices. Smartphone, tablet and laptop, reflecting patients, visitors and, where relevant, non-clinical staff use.

Typical Assessment Evidence. Connectivity and stability in waiting and ward environments, with particular attention to any operational constraint (restricted access, scheduling around clinical activity) documented as part of Pre-Assessment planning under Chapter 22.

Observed Network Reality (illustrative). Reception and cafeteria show strong, stable service; ward bays show generally reliable connectivity with an isolated instance of reduced signal near a particular structural feature (a lift shaft), consistent with the kind of Targeted RTL investigation described in Chapter 16.

Illustrative Assessment Findings. WiFi Quality was consistent across the majority of the Declared Service Area. A localised reduction in service was observed in proximity to a specific structural feature in one ward, warranting further RF investigation to determine its cause.

C.7 Airport

Assessment Context. An airport terminal comprising check-in, departures, gates, lounges and retail areas — an environment defined by extreme variability in user population and dwell time.

Assessment Scope. Public passenger-facing areas across the terminal; restricted operational and staff areas are excluded.

Declared Service Areas. Check-in, departures hall, gate areas, lounges, retail areas.

Site Areas. Each area type is treated separately, given how differently users behave in each — a check-in queue involves brief, mobile use; a gate area involves longer dwell times; a lounge involves the longest and most stationary use.

Representative Test Locations. At least one Primary RTL is selected in each defined Site Area, including the relevant check-in, concourse, gate, lounge and retail areas. Additional Secondary RTLs check legitimate variation within a Site Area. Where distinct

gate areas are separate Site Areas, their baseline locations are Primary RTLs, not substitutes labelled Secondary. Specific complaints or unusual operating situations may justify additional Targeted RTLs without removing the required baseline.

Representative Consumer Devices. Smartphone and laptop, reflecting a passenger population that ranges from brief connectivity checks to extended work sessions in lounges.

Typical Assessment Evidence. Roaming behaviour across a very large physical area, authentication consistency (including multilingual captive portal behaviour, a common source of friction in this environment), and service availability under highly variable, congestion-prone conditions.

Observed Network Reality (illustrative). Service in lounges and check-in is consistently strong; certain gate areas show longer authentication times during peak departure periods, coinciding with high concurrent user counts.

Illustrative Assessment Findings. WiFi Quality was generally consistent across the terminal. Specific gate areas showed a measurable increase in authentication delay during peak occupancy periods — a pattern consistent with congestion-related, rather than coverage-related, service limitation.

C.8 Stadium

Assessment Context. A large stadium venue — the case that most directly tests this methodology's treatment of extreme, temporary variability, and a useful illustration of why representative conditions, not worst-case conditions, are what this methodology is built to characterise.

Assessment Scope. Seating bowl, concourses, and hospitality areas during an event.

Declared Service Areas. General seating areas, concourses, hospitality suites.

Site Areas. Distinguished primarily by occupancy tier — general seating, concourse circulation zones, and premium hospitality areas each present a different demand profile.

Representative Test Locations. Primary RTLs establish the required baseline in each defined seating, concourse and hospitality Site Area, with Secondary RTLs where needed to represent variation in user positions and infrastructure context. Observations during pre-event, in-play, half-time and post-event periods address the distinct operating conditions included in scope. A documented, specific demand concern may justify additional Targeted RTLs or temporal observations, but their designation does not replace required Primary or Secondary coverage. Event-period evidence is interpreted within the actual load and occupancy context recorded at collection.

Representative Consumer Devices. Smartphone, given that this is overwhelmingly the device profile of a stadium's user population.

Typical Assessment Evidence. Service behaviour under extreme, near-capacity occupancy; capacity-related degradation; authentication performance under simultaneous mass connection attempts — precisely the conditions Chapter 10.5 describes as representative for this venue type, however atypical they would be for a hotel or café.

Observed Network Reality (illustrative). Service is generally functional throughout the

seating bowl during normal play, with a documented, temporary degradation in throughput and authentication speed during the concentrated demand of half-time — a pattern that recurs consistently across the sampled locations rather than appearing at only one.

Illustrative Assessment Findings. The WiFi service performed adequately under sustained, near-capacity attendance, with a temporary, occupancy-linked degradation observed during the half-time period specifically — a finding that reflects genuine, representative operating conditions for this venue type, not an anomaly to be dismissed. This scenario exists specifically to illustrate that this methodology does not require, or expect, identical conditions across every assessment; it requires representativeness of *this* venue's actual conditions.

C.9 Outdoor Public Space

Assessment Context. An outdoor venue — a town square, public park, or tourist attraction — where environmental exposure is itself a primary variable.

Assessment Scope. The declared outdoor coverage area.

Declared Service Areas. Specific zones of the public space where WiFi is publicly declared available, per the public-representation criteria of Chapter 14.8.

Site Areas. Divided by physical and environmental character — an open plaza differs materially from a tree-lined path in terms of both RF propagation and typical dwell behaviour.

Representative Test Locations. A central open area; a location partially shaded by trees or foliage; a location near a scheduled-event space, tested both during and outside of events where practicable.

Representative Consumer Devices. Smartphone, reflecting typical outdoor, mobile use.

Typical Assessment Evidence. Service consistency under variable environmental conditions (wind, foliage density, temporary crowding during events), and coverage at the edges of the Declared Service Area.

Observed Network Reality (illustrative). Service is reliable in the open plaza; the foliage-obstructed location shows reduced but still functional connectivity; a location near the event space shows degraded service during a scheduled public event, coinciding with a substantial, temporary increase in occupancy.

Illustrative Assessment Findings. WiFi Quality was consistent under normal conditions across the Declared Service Area. A temporary degradation was observed during a scheduled event, consistent with the environmental and occupancy variability inherent to outdoor public spaces.

C.10 Enterprise Office

Assessment Context. An enterprise office comprising an open-plan floor, meeting rooms, a cafeteria and informal breakout areas.

Assessment Scope. All employee-facing work areas.

Declared Service Areas. Open-plan office, meeting rooms, cafeteria, breakout areas.

Site Areas. Each treated separately, given differing occupancy and application demands — a meeting room hosting video conferencing has different requirements from an open-

plan floor of individual workstations.

Representative Test Locations. Several points across the open-plan floor (reflecting typical workstation locations, per the guidance of Chapter 16, Example 10); a meeting room during active video conferencing; the cafeteria; a breakout area.

Representative Consumer Devices. Laptop, smartphone and tablet, reflecting a workforce whose primary applications include video conferencing, cloud services and VPN access.

Typical Assessment Evidence. Application-level performance for business-critical tools (video conferencing stability in particular), authentication consistency, and general reliability under typical workday occupancy.

Observed Network Reality (illustrative). Service across the open-plan floor is consistently strong; the assessed meeting room shows intermittent video conferencing disruption correlating with periods of high concurrent room usage across the floor.

Illustrative Assessment Findings. WiFi Quality was consistent for general business use across the office. Video conferencing reliability in one meeting room showed a documented pattern of disruption during periods of high concurrent usage, warranting further capacity-related investigation.

C.11 Warehouse

Assessment Context. A large distribution warehouse with high-bay racking, used for inventory management and order fulfilment — a scenario in which WiFi serves a primarily operational rather than guest-facing function.

Assessment Scope. The warehouse floor, including racking aisles, picking areas and loading docks, together with a small administrative office; areas with no operational reliance on WiFi, such as disused storage, are excluded where not part of the declared operational coverage.

Declared Service Areas. Here declaration takes a different form from the guest-facing scenarios elsewhere in this Appendix: rather than a public representation to customers, the Declared Service Area reflects the zones the operations team has documented as requiring reliable connectivity for scanning and inventory systems — racking aisles, picking zones, loading docks, and the administrative office.

Site Areas. Racking aisles, loading dock area, and administrative office, distinguished by markedly different structural characteristics — dense metal racking behaves very differently, from an RF perspective, than the open loading dock or a conventional office space.

Representative Test Locations. Primary RTLs represent ordinary picking, loading and administrative work within their respective Site Areas; Secondary RTLs check relevant variation within those areas. A far aisle end or loading-dock position may additionally be a Targeted RTL where a documented structural or operational concern motivates its selection. A normally occupied spatial extremity remains part of required representative coverage where relevant; calling a position Targeted does not substitute for the baseline or exclude difficult user locations.

Representative Consumer Devices. Handheld barcode scanners and forklift-mounted terminals — not the smartphone, tablet or laptop combinations seen elsewhere in this

Appendix, since the actual population of users in this environment operates specialised industrial devices rather than conventional consumer hardware. This is worth noting explicitly: a Representative Consumer Device, per Chapter 18.4, reflects the devices an environment's real users actually carry, not a default assumption of what "consumer device" tends to mean in guest-facing contexts.

Typical Assessment Evidence. Roaming reliability as handheld devices and forklifts move continuously along aisles, connection drop rate (of particular operational consequence here, since a dropped scan can interrupt a fulfilment process mid-task), and observed signal variation across areas with different racking density.

Observed Network Reality (illustrative). Service is strong and stable through most of the picking and loading areas; the far end of the longest racking aisle shows a measurable reduction in signal strength and occasional roaming delay, consistent with the density of metal racking between that point and the nearest access point.

Illustrative Assessment Findings. WiFi Quality was consistent across most of the operational floor. A localised reduction in service was observed at the far end of the longest aisle. Racking density is a plausible contextual explanation, but the evidence described in this example does not uniquely establish the physical mechanism or an access-point placement fault. The Finding remains at the supported spatial and service scope; further RF investigation may resolve the mechanism, consistent with Chapters 24 and 38.9.

C.12 Camping and Caravan Site

Assessment Context. A camping and caravan site with pitches spread across open and wooded ground, a reception and amenities block, and a communal area — an environment where coverage is deliberately concentrated rather than site-wide, and where the physical environment itself is subject to seasonal change.

Assessment Scope. The site's declared WiFi coverage area, typically the amenities block, communal area, and a defined range of nearby pitches; remote or heavily wooded pitches without declared coverage are excluded.

Declared Service Areas. The amenities block, the communal area, and pitches within a documented range of the coverage source — explicitly not the entire site, since coverage is deliberately limited rather than an oversight to be treated as a deficiency.

Site Areas. The amenities block (indoor); the open communal area; nearby pitches in open ground; nearby pitches under tree cover — the latter two distinguished because canopy density materially affects propagation in a way open ground does not.

Representative Test Locations. A point within the amenities block; the open communal area; a pitch at the edge of declared coverage in open ground; a pitch at a comparable distance under moderate tree cover, selected specifically to characterise the difference canopy cover makes at the boundary of the Declared Service Area.

Representative Consumer Devices. A smartphone, reflecting typical camper use — messaging, navigation, occasional streaming.

Typical Assessment Evidence. Coverage consistency at the edge of the Declared Service Area, and the difference in propagation between open and wooded locations. This scenario also raises a consideration specific to outdoor, vegetated environments: foliage density varies by season, and an assessment conducted under full summer

canopy may not represent conditions once deciduous trees have shed their leaves. Chapter 10.5's emphasis on representative conditions requires this to be made explicit for a venue of this kind, rather than left as an unstated assumption of the assessment's timing.

Observed Network Reality (illustrative). Service is strong throughout the amenities block and communal area; the open-ground pitch at the edge of the Declared Service Area shows adequate, consistent service; the wooded pitch at a comparable distance shows reduced, though still functional, service, consistent with a possible effect of canopy or other local conditions, without uniquely establishing the cause.

Illustrative Assessment Findings. WiFi Quality was consistent within the Declared Service Area under the environmental conditions present at the time of assessment, conducted under full summer foliage. Service at wooded locations may reasonably be expected to differ outside this season — a limitation of representativeness across seasons that Chapter 33 (Environmental Variability) treats as a legitimate source of variation, not a defect in the assessment itself.

C.13 Mixed-Use Venue

Assessment Context. A useful composite scenario: a single property combining a hotel, a restaurant, a conference centre and a spa under one ownership and one Assessment Scope.

Assessment Scope. The entire property, spanning four functionally distinct service types within a single assessment.

Declared Service Areas. One DSA per functional zone — hotel guest areas, restaurant, conference centre, spa — rather than a single undifferentiated DSA for the property as a whole, since each zone was, in practice, likely declared and marketed separately.

Site Areas. Subdivided within each DSA following the same logic already illustrated in C.3 (Hotel) and C.10 (Office) above — this scenario does not introduce new methodological logic so much as demonstrate that the same hierarchy scales cleanly across a property combining several venue types that, individually, this Appendix has already treated on their own.

Representative Test Locations and Devices. Selected independently within each functional zone, following the same reasoning already set out in the scenarios most closely resembling each zone (Hotel for guest areas, Restaurant for dining, Office-like considerations for conference facilities, and a spa-specific selection reflecting relaxed, low-mobility use).

Typical Assessment Evidence. The full range already described across C.3, C.4 and C.10, gathered independently within each zone and only combined at the level of overall property reporting, never blended across zones with materially different Declared Service Areas.

Observed Network Reality (illustrative). Observed service conditions vary meaningfully by zone — strong, consistent service in guest rooms and the restaurant; occupancy-linked degradation in the conference centre, echoing C.3; consistently strong, low-demand service in the spa.

Illustrative Assessment Findings. WiFi Quality varied materially by functional zone within the same property. This variation is reported and interpreted at the level of the

Declared Service Area and Site Areas within it, precisely because — as Chapter 13 establishes — a finding in one DSA does not extend to another, however closely they sit under the same roof.

This scenario exists specifically to demonstrate the scalability of the hierarchy set out in Chapter 13: **Assessment Scope → Declared Service Areas → Site Areas → Representative Test Locations**, applied not once but four times within a single assessment, each application following the same logic while producing a genuinely independent conclusion.

C.14 Summary

Scenario	Typical Challenge	Assessment Focus
Café	Small, uniform area	Basic connectivity and service consistency
Restaurant	Variable seating and obstruction	Coverage, stability, representative dining experience
Hotel	High user mobility	Roaming, continuity, guest experience across zones
Enterprise Office	Business-critical applications	Application reliability, capacity under typical load
University	High density, scheduled peaks	Mobility, capacity, behaviour at near-capacity occupancy
Hospital	Operational and privacy sensitivity	Availability, continuity, constrained assessment access
Airport	Extreme user turnover	Mobility, congestion, multilingual authentication
Stadium	Extreme, temporary density	Representative behaviour under genuine peak conditions
Outdoor Public Space	Environmental exposure	Coverage consistency under variable conditions
Warehouse	High-density racking, operational (non-guest) use	Roaming reliability, structural interference, operational continuity
Camping and Caravan Site	Deliberately limited coverage, seasonal foliage variability	Coverage boundary consistency, environmental variability across seasons
Mixed-Use Venue	Multiple service types, one property	Scope definition, independent findings per zone

(Table C.1)

What these twelve scenarios have in common matters more than what distinguishes them: in every case, the same reasoning sequence applies — define the scope, identify where service is declared, subdivide methodologically, sample representatively, gather evidence appropriate to the venue's actual users, and reconstruct an Observed Network Reality specific to that scope. The venue changes considerably from one scenario to the next; the method does not.

Appendix D — Representative Test Location Examples

D.1 Purpose

This Appendix provides illustrative examples of Representative Test Locations (RTLs) across different operational environments, demonstrating how the methodological roles established in Chapter 16 may be applied within a Site Area. The examples focus principally on Primary and Secondary RTLs used for representative characterisation; Verification and Targeted RTLs are introduced where a doubt, anomaly or specific documented concern justifies them. These examples are informative; they establish no mandatory procedure and should not be read as a checklist to be applied mechanically.

D.2 Representative Does Not Mean Geometrically Distributed

Primary and Secondary RTLs are selected to represent user behaviour and relevant spatial variation, not geometric symmetry. Verification and Targeted RTLs serve diagnostic or investigative purposes and need not represent the Site Area as a whole. A greater number of Primary and Secondary RTLs may therefore legitimately be concentrated within areas of greater operational significance, while fewer may be sufficient in areas of lower relevance — regardless of how the physical floor space happens to be distributed between them.

Representative Test Locations are selected to represent user behaviour, not geometric symmetry. A greater number of Representative Test Locations may legitimately be concentrated within areas of greater operational significance, while fewer may be sufficient in areas of lower relevance — regardless of how the physical floor space happens to be distributed between them.

A hotel corridor and a hotel conference room may occupy comparable floor area, but a conference room hosting video calls throughout a working day warrants considerably more attention than a corridor guests pass through for a few seconds at a time. Testing both with the same density of RTLs, on the grounds that they occupy similar square footage, would satisfy a geometric intuition about representativeness while actively undermining the service-centric one this methodology actually requires. What determines how many RTLs a given space warrants is not its area, but the significance and diversity of the user behaviour occurring within it — precisely the logic already set out in Chapter 16.7 on proportionality.

D.3 Principles of Selection

Primary and Secondary RTLs are selected by weighing typical user behaviour, the intended use of the space, expected occupancy, physical characteristics, mobility patterns and operational significance. Verification RTLs are selected reactively to investigate an anomaly or doubt raised by earlier evidence; Targeted RTLs are selected to investigate a specific documented concern. No RTL should be selected because it is expected to produce a particularly favourable or unfavourable result; selection is governed by the methodological role the location is required to fulfil.

D.4 Hotel Guest Room

Site Area: Standard guest rooms.

Illustrative RTLs: Bedside table, writing desk, seating area, entrance doorway.

Rationale: These points reflect where guests actually use WiFi — sleeping, working, browsing, communicating — rather than an arbitrary subdivision of the room's floor area.

D.5 Hotel Reception

Illustrative RTLs: Reception counter, guest waiting area, entrance lobby, concierge area.

Rationale: Guests commonly authenticate, retrieve booking confirmations, and communicate while occupying these specific points — not the space behind the desk, which no guest ever uses.

D.6 Restaurant

Illustrative RTLs: Central dining table, a table adjacent to an external wall, a table partially screened by a structural feature, an outdoor dining table.

Rationale: Different seating positions may legitimately experience different service characteristics while all remaining representative of ordinary customer use — the point is not to find the best table, but to reflect the range a typical diner might actually occupy.

D.7 Conference Room

Illustrative RTLs: Front seating, centre seating, rear seating, presenter position.

Rationale: Business users participate in video conferencing, presentations and collaborative work from different positions within the room, and rear-of-room behaviour in particular often differs from the front in ways worth capturing explicitly consistent with Chapter 16.7's treatment of additional RTLs where meaningful spatial variation exists.

D.8 Open-Plan Office

Illustrative RTLs: An individual workstation, a collaborative workspace, a meeting area, a breakout area.

Rationale: These reflect the diversity of ordinary business activity across the floor — not, per D.2, an attempt to sample every individual desk at regular intervals.

D.9 University Lecture Theatre

Illustrative RTLs: Front row, middle seating, rear seating, side seating.

Rationale: Student experience should be represented across the room rather than concentrated near the lecturer's position alone (see Chapter 16, Example 8) — and, per D.2, more RTLs may be warranted here than in a smaller, more uniform classroom, given the theatre's higher occupancy and greater potential for capacity-related variation.

D.10 Hospital Waiting Area

Illustrative RTLs: Seating near the entrance, the central waiting area, seating adjacent to consulting rooms.

Rationale: These reflect typical patient and visitor behaviour, selected with explicit regard to the operational and privacy constraints discussed in Chapter 22.8 and illustrated in Appendix C.6.

D.11 Airport Gate Lounge

Illustrative RTLs: Gate seating, charging stations, café seating, circulation areas.

Rationale: Passengers use WiFi while waiting, working and moving through the gate environment, and RTLs should reflect this range of behaviour rather than a single static seating pattern.

D.12 Outdoor Terrace

Illustrative RTLs: Central seating, perimeter seating, covered seating, exposed seating.

Rationale: Outdoor environments often show greater environmental variability (per Chapter 33's discussion of Environmental Variability), which still requires representative — not exhaustive — assessment across the range of conditions guests actually experience.

D.13 Pool Area

Illustrative RTLs: Poolside lounge area, shaded seating adjacent to the pool, pool bar or service point.

Rationale: Water, human bodies and wet surfaces can alter the local RF environment through absorption, reflection and changes in propagation conditions — while device usage itself is markedly different from most other Site Areas: users are rarely holding a device while in the water, but device use resumes at poolside seating, which is accordingly the more representative location for testing.

D.14 Garden

Illustrative RTLs: Open lawn area, a pathway or seating area under tree cover, a garden feature (pergola, gazebo) where guests commonly linger.

Rationale: As with the Camping and Caravan Site scenario in Appendix C, foliage density affects propagation and varies by season; a Representative Test Location selected under full summer canopy may not represent conditions once deciduous cover has thinned, a consideration this Guide treats as a legitimate source of Environmental Variability (Chapter 33) rather than a defect in the assessment.

D.15 Locations That Should Normally Be Avoided

RTLs should not normally consist solely of maintenance rooms, communications cupboards, equipment cabinets, locations inaccessible to intended users, temporary work areas, or points outside the Declared Service Area. A non-user location that remains within the relevant Site Area and Declared Service Area may nevertheless constitute a valid Verification or Targeted RTL where a specific evidential doubt or documented concern justifies its investigation; it does not replace the representative baseline required from Primary and, where applicable, Secondary RTLs. Locations outside the Declared Service Area are not RTLs under this methodology, although observations obtained there may provide useful supporting or engineering information where relevant. Such information may contribute to complementary RF Engineering or Site Survey activity of the kind discussed in Chapters 37 and 38, but it does not constitute representative evidence of the intended user experience within the assessed Site Area.

D.16 Typical Selection Criteria

In identifying RTLs, an assessor might reasonably ask: where do users actually spend their time? Where are the activities that matter most to them actually performed? Which locations best represent normal use of the service? Does the Site Area contain more than one distinct pattern of use? And, per D.2, does the operational significance of any part of this Site Area warrant a greater concentration of RTLs than its floor area alone would suggest? These questions support the consistent exercise of the professional judgement Chapter 16 requires.

D.17 Summary Table

Environment	Typical Representative Test Locations
Hotel guest room	Bedside table, desk, seating area
Reception	Counter, waiting area, lobby
Restaurant	Central table, corner table, outdoor seating
Office	Workstation, meeting room, breakout area
Conference room	Front, centre, rear, presenter position
University	Front, middle and rear seating
Hospital	Waiting area, reception, visitor seating
Airport	Gate seating, charging area, café
Pool area	Poolside loungers, shaded seating, pool bar
Garden	Open lawn, shaded pathway, garden feature
Outdoor venue	Central area, perimeter, sheltered area

(Table D.1)

Every row in this table reflects the same underlying logic set out in D.2: the number and placement of RTLs follows from where a service actually matters to the people using it, not from any uniform spatial rule applied regardless of context.

Appendix E — Declared Service Area Examples

E.1 Purpose

This Appendix provides illustrative examples of Declared Service Areas (DSAs) across a range of operational environments, showing how the principles set out in Chapter 14 may be applied when defining the intended scope of a WiFi service. The examples are informative only and establish no mandatory form of service declaration.

E.2 General Principles

A Declared Service Area identifies where a provider intends WiFi service to be available to its intended users, establishing the operational boundary within which WiFi Quality may subsequently be assessed. A DSA should be clearly identifiable, should reflect the service actually intended, should be understandable to both provider and user, and should remain entirely independent of observed technical performance — it is, as Chapter 14 already establishes, a service declaration, not an assessment result.

E.3 Small Café

Included: Customer seating area, order collection area, indoor waiting area.

Excluded: Kitchen, food preparation areas, staff office, storage rooms.

Rationale: The service is intended for customers, not for operational areas customers never occupy.

E.4 Restaurant

Included: Dining room, private dining rooms, bar, waiting area, outdoor dining terrace.

Excluded: Kitchen, staff changing rooms, storage, service corridors.

E.5 Hotel

Included: Guest rooms, reception, lobby, corridors, restaurant, bar, conference facilities, gym, swimming pool area, garden, outdoor guest areas

Excluded: Housekeeping offices, maintenance rooms, plant rooms, staff accommodation, equipment rooms.

E.6 Office Building

Included: Workspaces, meeting rooms, breakout areas, reception, cafeteria.

Excluded: Communications rooms, electrical rooms, plant areas, restricted maintenance zones.

E.7 University

Included: Lecture theatres, classrooms, library, student study areas, cafeteria.

Excluded: Communications rooms, research laboratories not publicly served, maintenance facilities.

E.8 Hospital

Included: Waiting areas, reception, public corridors, patient rooms where applicable, outpatient areas.

Excluded: Restricted clinical areas, equipment rooms, plant rooms, technical facilities.

The Declared Service Area here should always take account of clinical policy and operational restriction, in keeping with the considerations already discussed in Appendix C.6.

E.9 Airport

Included: Check-in, security waiting areas, departure lounges, gate seating, retail areas, public circulation spaces.

Excluded: Baggage handling, airside operational areas, engineering facilities, restricted staff zones.

E.10 Stadium

Included: Spectator seating, hospitality suites, food courts, concourses.

Excluded: Control rooms, media production rooms, equipment areas, maintenance facilities.

E.11 Outdoor Public Space

Included: Public square, seating areas, visitor information points, pedestrian areas.

Excluded: Maintenance compounds, service roads, utility installations.

E.12 Warehouse

Included: Racking aisles, picking zones, loading docks, administrative office.

Excluded: Disused storage areas, external yard space without declared connectivity,

plant and machinery rooms.

E.13 Camping and Caravan Site

Included: Amenities block, communal area, pitches within a documented range of the coverage source.

Excluded: Remote or heavily wooded pitches without declared coverage, maintenance and utility areas.

E.14 Mixed-Use Development

A single property — hotel, restaurant, conference centre, retail — may contain a distinct DSA for each operational function while remaining within a single Assessment Scope, exactly as illustrated in Appendix C.13.

E.15 Typical Sources of Service Declarations

DSAs may be identified from publicly communicated service information, venue maps, customer information, operational documentation, contractual service descriptions, provider declarations, and on-site verification — the same sources already discussed in Chapter 14.7 and 14.8. Where ambiguity remains, it should be resolved before assessment activities begin, per Chapter 22.4.

E.16 Areas That Should Not Normally Be Declared

A DSA should not normally include plant rooms, communications rooms, maintenance facilities, inaccessible roofs, service voids, construction areas, or temporary work compounds. Whether WiFi coverage happens to exist in such locations afterward falls outside the scope of the declared service entirely — a point already established in Chapter 14.9 and worth repeating here across concrete examples.

E.17 Declared Service Area Is Not a Coverage Map

It is worth restating, in the context of these examples, a principle Chapter 14.5 already establishes in the abstract: a DSA is not a radio coverage map, a prediction of signal strength, a guarantee of identical performance across its extent, or a technical description of the wireless infrastructure serving it. It identifies only where the service is *intended* to be available. Whether that intention is actually met — whether the guest rooms in E.5, or the gate seating in E.9, genuinely deliver an appropriate level of quality — is a question this methodology answers only through assessment, never through the declaration itself.

**A Declared Service Area defines where the service is intended to exist.
The assessment determines how well that declared service is actually delivered.**

This sequence is not reversible, and every example in this Appendix depends on it holding in that order: the provider declares first; the assessment evaluates second. A DSA drawn up to match whatever an assessment happened to find — rather than what the provider actually intended to offer — would defeat the purpose the concept exists to serve, which is precisely why 11.9 NOTE 1 and 14.7 require the declaration to remain established independently of, and prior to, any assessment finding.

E.18 Summary Table

Environment	Typical Declared Service Areas
Café	Seating area, waiting area
Restaurant	Dining rooms, bar, terrace
Hotel	Guest rooms, reception, restaurant, leisure facilities
Office	Workspaces, meeting rooms, reception
University	Teaching areas, library, student spaces
Hospital	Public and patient areas
Airport	Check-in, lounges, gates, retail
Stadium	Seating, hospitality, concourses
Warehouse	Racking aisles, picking zones, loading docks, administrative office
Camping and Caravan Site	Amenities block, communal area, pitches within declared range
Public Space	Visitor areas, pedestrian zones

(Table E.1)

Appendix F — Assessment Scope Examples

F.1 Purpose

This Appendix provides illustrative examples of how the Assessment Scope may be defined across different operational environments, highlighting the distinction between Assessment Scope and Declared Service Area established in Chapters 13 and 14. The examples are informative only.

F.2 Relationship Between Assessment Scope and Declared Service Area

The Assessment Scope defines the boundaries of the assessment itself — what is being evaluated and, just as importantly, what is not. The Declared Service Area identifies where, within that Scope, WiFi service is intended to be available. In many cases, the Assessment Scope will encompass every Declared Service Area a provider has established; in other cases, it may cover only a defined subset of them, for reasons of phasing, budget, or a narrower assessment objective. Either way, the Assessment Scope should be explicitly documented before assessment activities begin, consistent with Chapter 13.6.

F.3 Example 1 — Entire Small Café

Assessment Scope: Entire venue.

Declared Service Areas within Scope: Customer seating area, waiting area.

Assessment Objective: Assessment of the complete guest WiFi service.

F.4 Example 2 — Hotel (Entire Property)

Assessment Scope: The entire hotel.

Declared Service Areas within Scope: Guest rooms, reception, restaurant, bar, conference rooms, corridors, leisure facilities.

Assessment Objective: Certification of the complete guest WiFi service.

F.5 Example 3 — Hotel (Conference Facilities Only)

Assessment Scope: Limited to conference rooms, the conference lobby, and the business centre.

Declared Service Areas (property-wide): The entire hotel — of which only the conference-related DSAs fall within this narrower Scope.

Assessment Objective: Assessment of the WiFi service specifically provided to conference delegates.

F.6 Example 4 — Restaurant with Outdoor Terrace

Assessment Scope: Indoor dining only.

Declared Service Areas (property-wide): Indoor dining, outdoor terrace, waiting area.

Rationale: The operator wishes to assess the indoor dining experience before extending the Scope to outdoor areas in a subsequent assessment.

F.7 Example 5 — University Campus

Assessment Scope: Library and teaching buildings only.

Declared Service Areas (campus-wide): Teaching buildings, library, student union, sports centre, outdoor study areas.

Rationale: The assessment is limited to facilities directly supporting teaching and learning.

F.8 Example 6 — Hospital

Assessment Scope: Public and visitor areas only.

Declared Service Areas (site-wide): Public waiting areas, patient wards, outpatient clinics, visitor areas.

Rationale: Clinical areas fall outside the objectives of this particular assessment, consistent with the operational considerations discussed in Appendix C.6.

F.9 Example 7 — Airport

Assessment Scope: International departures only.

Declared Service Areas (terminal-wide): Check-in, security waiting areas, departure lounges, retail, gates.

Rationale: Domestic terminals are excluded from this particular assessment.

F.10 Example 8 — Mixed-Use Venue

Assessment Scope: Hotel and conference centre only.

Declared Service Areas (property-wide): Hotel, restaurant, conference centre, spa.

Rationale: The operator intends to certify these two business units before extending the Scope to the remaining ones — the same property discussed in full in Appendix C.13, here assessed in phases rather than all at once.

F.11 Example 9 — Multi-Building Office Campus

Assessment Scope: Building A only.

Declared Service Areas (campus-wide): Building A, Building B, Building C, visitor centre.

Rationale: The assessment forms part of a phased improvement programme.

F.12 Partial Assessments

An Assessment Scope may legitimately cover only part of a provider's Declared Service Areas, provided the excluded areas are clearly identified, the Scope is documented before assessment begins, findings are interpreted only within that Scope, and no

certification or public reporting implies assessment of areas that were, in fact, excluded. A partial assessment is entirely legitimate; a partial assessment presented as though it were comprehensive is not.

This holds with equal force where a narrower assessment is understood, from the outset, as the first of several planned in sequence — as in Examples 4 and 8 above. Each such assessment remains a complete and independent piece of work in its own right, bounded by its own Assessment Scope; any certification associated with it applies only to that Scope, and is not itself extended, merged, or superseded by a later assessment covering additional areas. A subsequent assessment of the remaining areas is a new assessment under this methodology, with its own Findings and, where sought, its own Certification Decision — not a continuation of the first.

F.13 Scope Changes

Where the Assessment Scope changes after activities have commenced, the change should be documented, justified, communicated where relevant, and reflected in the resulting Findings — consistent with Chapter 13.6. A sufficiently significant change may require reassessment of evidence already collected, rather than simply appending the new Scope onto findings gathered under the old one.

F.14 The Four Governing Questions

It is worth setting out, in one place, the question each concept in this methodology's spatial hierarchy actually answers — because the four are easily conflated, and confusing them is one of the more common planning errors this Guide is written to prevent:

Concept	Answers the Question
Assessment Scope	What part of the WiFi service is being assessed?
Declared Service Area	Where, within that Scope, is service intended to be available?
Site Area	How is the assessed area organised for the purposes of the assessment?
Representative Test Location	Where, specifically, should evidence be collected?

(Table F.1)

This sequence follows the hierarchy already established in Chapters 13 and 18 (Figure 18.1) and developed further in Chapter 14:

**Assessment Scope → Declared Service Areas → Site Areas →
Representative Test Locations → Assessment Evidence**

Each level narrows the one before it and answers a genuinely different question. Confusing any two of them — treating a Declared Service Area as though it defined the Assessment Scope, for instance, rather than the reverse — is precisely the error the examples throughout this Appendix are meant to prevent: F.5, F.6, F.7, F.8, F.9, F.10 and F.11 all illustrate an Assessment Scope narrower than the full set of Declared Service Areas a provider maintains, which is only a coherent idea once the two concepts are held clearly apart.

F.15 Summary Table

Environment	Declared Service Area (full extent)	Assessment Scope (this assessment)
Café	Entire customer area	Entire venue
Hotel	Entire hotel	Entire hotel, or selected facilities
Restaurant	Indoor and outdoor dining	Indoor only, or complete venue
University	Whole campus	Selected buildings
Hospital	Public and patient areas	Public areas only
Airport	Entire terminal	Selected terminal or departure area
Mixed-use venue	All business units	Selected services
Office campus	Multiple buildings	One or more buildings

(Table F.2)

F.16 Key Principles

The Assessment Scope is established before assessment activities begin; it is clearly documented and communicated; it may encompass all or only part of a provider's Declared Service Areas; Assessment Findings apply only within its defined boundaries; and it is never expanded or reinterpreted beyond what was documented, without additional assessment work to justify the expansion.

Appendix G — Evidence Examples

G.1 Purpose

This Appendix provides illustrative examples of Assessment Evidence that may contribute to a Real-World WiFi Quality assessment, demonstrating the breadth of evidence a structured assessment can draw on. The examples are informative only; the actual evidence gathered in any given assessment depends on its Assessment Scope and objectives.

G.2 General Principles

Assessment Evidence originates from multiple complementary sources, and no single item should normally determine an outcome on its own — Findings are developed through the structured correlation described in Chapter 24, drawing on the diversity of evidence illustrated throughout this Appendix.

G.3 Connectivity Evidence

Examples: successful connection, unsuccessful connection, authentication outcome, captive portal accessibility, DHCP acquisition, Internet reachability.

Purpose: To establish whether users can actually access the service.

G.4 Performance Evidence

Examples: throughput, latency, jitter, packet loss, application responsiveness, connection stability.

Purpose: To characterise the operational performance of the service.

G.5 Mobility Evidence

Examples: roaming behaviour, service continuity while moving, session persistence, reconnection behaviour, handover observations.

Purpose: To understand continuity during ordinary user mobility.

G.6 Availability Evidence

Examples: service accessibility, unexpected disconnection, intermittent availability, operational interruption.

Purpose: To determine whether the service remains available under representative conditions.

G.7 Device Behaviour Evidence

Examples: behaviour observed across different Representative Consumer Devices, differences between device categories, consistency of experience across the representative device set.

Purpose: To determine whether the service behaves consistently for the intended user population.

G.8 Environmental Evidence

Examples: occupancy conditions, temporary obstructions, representative operational activity, environmental circumstances observed during the assessment.

Purpose: To provide the context needed to interpret other evidence correctly.

G.9 Operational Evidence

Examples: declared maintenance activity, temporary service restrictions, unusual operational conditions, scheduled events affecting the venue.

Purpose: To surface factors that may legitimately influence Findings.

G.10 Service Observation Evidence

Examples: successful video conferencing, interrupted streaming, delayed application response, authentication delays, service interruptions.

Purpose: To characterise observed behaviour from the user's own perspective.

A note on inference. The examples above describe genuine application-level behaviour, directly observed. Where an assessment instead relies on network-level metrics — throughput, latency, packet loss, gathered through a device's operating system rather than through an actual application session — those metrics may still inform a Finding through Evidence Correlation (Chapter 24), but they do not themselves constitute Service Observation Evidence in the sense intended here. An inferred conclusion about likely application behaviour is not the same claim as a directly observed one, and this Guide requires that distinction to remain visible in how evidence is recorded, rather than blurred by labelling an inference as though it were an observation.

G.11 Supporting Documentation

Examples: venue floor plans, DSA and Assessment Scope documentation, assessment notes, photographs where appropriate, assessor observations.

Purpose: To support the traceability and correct interpretation of Findings.

G.12 Evidence Is Not Limited to Measurements

Assessment Evidence is not confined to numerical measurement — it may include

observations, operational information, contextual detail, documented facts, and representative behavioural observations, since this methodology recognises both quantitative and qualitative evidence as legitimate, provided each satisfies the requirements set out in Chapters 19 and 20.

G.13 A Functional Classification of Evidence

The categories in G.3 through G.11 group evidence by *subject matter* — connectivity, performance, mobility, and so on. It is worth adding a second, orthogonal classification, grouping evidence instead by the *methodological function* it performs once gathered — a distinction independent of the tool, metric or vendor involved in producing it:

Evidence Type	Primary Function
Direct Evidence	Obtained directly through observation or measurement during the assessment itself.
Contextual Evidence	Describes the operational or environmental conditions under which other observations were made.
Supporting Evidence	Assists in interpreting, tracing, or validating other evidence, without itself being a primary observation.
Corroborative Evidence	Obtained by an independent means for the purpose of testing, supporting, qualifying or challenging an interpretation suggested by other Assessment Evidence.

(Table G.1)

Note. This classification presupposes that the material in question has already satisfied the requirements of Assessment Evidence set out in Chapters 19 and 20; it is not a substitute for that earlier qualification, but a further distinction applied to evidence that has already cleared it. A piece of information that fails the tests in Chapter 19 — insufficient, irrelevant, unrepresentative or unreliable — does not become "Contextual Evidence" as a way of admitting it through a side door; it remains outside the scope of Assessment Evidence entirely.

Within this classification, the same physical artefact can serve different functions depending on how it is used: a roaming test is typically Direct Evidence; a maintenance log noting a temporary service restriction is Contextual Evidence; a photograph documenting where a Representative Test Location was actually taken is Supporting Evidence; and a second, independent observation confirming a pattern already suggested by a first is Corroborative Evidence. None of these labels depends on the instrument that produced the material — a photograph and a throughput reading can both function as Direct Evidence, or both as Supporting Evidence, depending entirely on the role each plays in a given assessment.

This is, in a fairly direct sense, the point of the classification: **Assessment Evidence is not defined by how it is collected, but by how it contributes to understanding the observed WiFi service.** The instrument, the metric, and the manufacturer are all, in this respect, beside the point — what matters is the contribution a given piece of evidence makes to the reconstruction of Observed Network Reality, which is precisely the discipline Chapter 24's Evidence Correlation is built around.

G.14 Evidence Correlation Example

A throughput measurement, taken alone, might suggest satisfactory Internet

performance. Additional evidence, however — repeated authentication failures (Direct Evidence), intermittent roaming interruption (Direct Evidence), an unstable video call reported during the assessment (Service Observation Evidence, functioning here as Corroborative Evidence), and a maintenance log noting scheduled work in an adjacent area (Contextual Evidence) — when correlated together, may indicate that the overall service exhibits real limitations that the throughput figure, on its own, entirely concealed. Findings are accordingly based on the collective interpretation of all relevant evidence, categorised by both subject matter and function, rather than on any individual observation read in isolation.

G.15 Example Evidence Matrix

Evidence Category	Example
Connectivity	Authentication, DHCP, Internet access
Performance	Throughput, latency, jitter, packet loss
Mobility	Roaming, handover, reconnection
Availability	Accessibility, continuity, interruptions
Device Behaviour	Representative Consumer Device observations
Environmental	Occupancy, physical environment
Operational	Maintenance, exceptional events
Service Behaviour	Application responsiveness, streaming, conferencing
Documentation	Notes, photographs, floor plans

(Table G.2 — classification by subject matter; may be read alongside Table G.1's classification by function)

G.16 Key Principles

Evidence should be relevant to the Assessment Scope, representative of normal operational conditions, and documented sufficiently to support traceability. Findings should be supported by multiple, complementary forms of evidence — drawing, where useful, on the functional distinctions set out in Table G.1 — and no single item of evidence should normally determine an outcome on its own.

Appendix H — Assessment Checklists

H.1 Purpose

This Appendix provides illustrative checklists to assist assessors applying this Technical Guide. They are practical aids supporting consistency and completeness; they are informative only and do not replace the methodological requirements established elsewhere in this publication. Alternative documented procedures are permitted, provided they remain consistent with the methodology.

H.2 Methodological Checklists Versus Operational Checklists

It is worth drawing a distinction here that this Technical Guide observes deliberately throughout: a **Methodological Checklist** verifies that the *process* set out in this Guide was followed correctly — was the Scope defined, were RTLs selected appropriately, was evidence correlated rather than read in isolation. An **Operational Checklist**, by

contrast, guides the practical execution of a specific implementation — opening a particular application, synchronising a project file, checking a device's battery level, uploading photographs to a portal, completing a specific certification programme's online forms.

Every checklist in this Appendix is a Methodological Checklist, and deliberately so. Operational checklists of the kind just described belong in the internal procedures of whichever organisation is applying this methodology — never in this Technical Guide itself. This separation is what keeps the methodology independent of any specific tool: the portal, the mobile application, the data-collection software and the internal workflow an assessor happens to use may all change — indeed, are likely to change considerably over the lifetime of this Guide — while the methodological requirements below remain exactly as they are. A Technical Guide that specified which button to press in which application would tie its own stability to a product roadmap it does not control; this one does not make that mistake.

H.3 Assessment Planning Checklist *(Methodological)*

Before commencing assessment activities, the assessor should verify that:

- ☐ The Assessment Scope has been clearly defined.
- ☐ The Declared Service Areas have been identified.
- ☐ The Site Areas have been established.
- ☐ Representative Test Locations have been selected.
- ☐ Representative Consumer Devices have been identified.
- ☐ The assessment objectives are documented.
- ☐ Operational constraints have been considered.
- ☐ Any necessary permissions have been obtained.
- ☐ Relevant supporting documentation is available.

H.4 On-Site Preparation Checklist *(Methodological)*

Before collecting Assessment Evidence:

- ☐ Representative Consumer Devices are ready for use, in a general methodological sense (device readiness itself, at the level of specific configuration steps, is an operational matter).
- ☐ Assessment tools are functioning correctly.
- ☐ Assessment documentation is available.
- ☐ Representative operational conditions have been considered.
- ☐ Site access has been confirmed.
- ☐ Environmental conditions have been noted where relevant.
- ☐ Any exceptional operational circumstances have been recorded.

H.5 Evidence Collection Checklist *(Methodological)*

During evidence collection:

- ☐ Assessment activities remain within the defined Assessment Scope.
- ☐ Representative Test Locations have been assessed.
- ☐ Assessment Evidence has been collected under representative operational conditions.
- ☐ Multiple forms of evidence have been considered where appropriate.
- ☐ Significant observations have been documented.

- ☐ Evidence remains traceable to the relevant location and activity.
- ☐ Unexpected observations have been recorded.

H.6 Evidence Integrity Checklist *(Methodological)*

Following evidence collection:

- ☐ Evidence is complete.
- ☐ Evidence is clearly identified.
- ☐ Evidence is authentic.
- ☐ Original evidence and the basis of issued conclusions remain recoverable; corrections or successor interpretations are explicitly linked and documented.
- ☐ Missing evidence has been identified.
- ☐ Supporting documentation is available where appropriate.

H.7 Evidence Correlation Checklist *(Methodological)*

Before developing Assessment Findings:

- ☐ Individual observations have been reviewed.
- ☐ Contradictory observations have been considered.
- ☐ Contextual information has been taken into account.
- ☐ Evidence has been interpreted collectively.
- ☐ Findings are supported by multiple complementary observations.
- ☐ Conclusions are consistent with the available evidence.

H.8 Assessment Findings Checklist *(Methodological)*

Before finalising the assessment:

- ☐ Findings are supported by Assessment Evidence.
- ☐ Findings remain within the Assessment Scope.
- ☐ Assumptions have been avoided.
- ☐ Limitations have been identified where appropriate.
- ☐ Findings are clearly documented.
- ☐ Findings accurately represent the Observed Network Reality.
- ☐ Where causal interpretation is included, the Finding does not exceed the supported Causal Boundary.
- ☐ Supported causal scope and any unresolved narrower scope are distinguished explicitly.
- ☐ Findings are stated as evidence-based conclusions, not recommendations (per Chapter 26.5).

H.9 Review Checklist *(Methodological)*

Before completing the Review Process:

- ☐ Assessment documentation is complete.
- ☐ Evidence traceability has been verified.
- ☐ Findings are internally consistent.
- ☐ Significant observations have been adequately explained.
- ☐ Any outstanding issues have been addressed.

H.10 Independent Audit Checklist *(Methodological)*

Where Independent Auditing is performed:

- ☐ Assessment documentation is available.
- ☐ Evidence traceability has been confirmed.
- ☐ The methodology has been applied consistently.
- ☐ Findings are supported by evidence.
- ☐ Any deviations have been documented.
- ☐ Audit conclusions have been recorded.

H.11 Quality Assurance Checklist (Methodological)

Before closing the assessment:

- ☐ Assessment Integrity has been maintained.
- ☐ Assessment Validity has been considered across evidential, contextual, interpretative and scope dimensions.
- ☐ Evidence Integrity has been preserved.
- ☐ Representative sampling has been applied.
- ☐ The Assessment Scope has been respected.
- ☐ Assessment limitations have been documented.
- ☐ Assessment documentation is complete.

H.12 Summary Checklist

Assessment Stage	Checklist Focus
Planning	Scope, DSAs, Site Areas, RTLs
Preparation	Devices, tools, documentation
Evidence Collection	Representative evidence gathered
Evidence Validation	Integrity and completeness confirmed
Evidence Correlation	Evidence interpreted collectively
Findings	Supported by evidence, not recommendations
Review	Internal consistency verified
Audit	Independent verification, where applicable
Completion	Documentation complete

(Table H.1 — all rows are Methodological in nature; the corresponding Operational Checklists for any given certification programme are maintained separately, outside this Technical Guide)

H.13 Key Principles

Checklists support this methodology; they do not replace professional judgement. Completing a checklist does not, by itself, demonstrate methodological conformity, and the absence of a single checklist item does not automatically invalidate an assessment where the methodology has otherwise been applied correctly. Checklists should be adapted to the Assessment Scope and operational context at hand, and professional judgement remains essential throughout the assessment lifecycle — a checklist is a memory aid for a competent assessor, not a substitute for their competence.

Finally, it is worth restating the distinction this Appendix opened with: should any organisation applying this methodology wish to develop Operational Checklists — the specific steps of using a particular application, portal or device configuration — those checklists belong in that organisation's own operational documentation, cross-

referenced to the Methodological Checklists above, but never merged into this Technical Guide. This is what allows the methodology to remain stable through as many generations of tooling as the WiFi industry produces.

Appendix I — Frequently Asked Questions

I.1 Purpose

This Appendix answers questions that arise frequently in the interpretation and application of this Technical Guide. The answers are informative only; they clarify, but do not extend, the normative requirements set out elsewhere in this publication. Where any apparent inconsistency exists between this Appendix and the body of the Guide, the normative clauses prevail.

I.2 General Questions

Q1. What is the purpose of this methodology?

To provide a structured framework for assessing the quality of WiFi services as experienced by representative users under representative operational conditions — establishing how Assessment Evidence is gathered, interpreted, and turned into Assessment Findings.

Q2. Is this methodology intended to replace existing engineering practices?

No. It is designed to complement RF Engineering, Professional Site Surveys, Network Monitoring and the other disciplines discussed in Part VII, each of which answers a different question about the same underlying network.

Q3. Does this methodology certify WiFi services?

No. This Technical Guide establishes an assessment methodology. Certification is governed separately, through the applicable conformity assessment and certification framework, and rests on — without being defined by — this methodology.

I.3 Assessment Questions

Q4. Does every location within a venue need to be measured?

No. The methodology relies on representative sampling rather than exhaustive measurement. Primary and Secondary RTLs establish the representative baseline within a Site Area; Verification and Targeted RTLs may be added to investigate doubts or specific documented concerns and need not represent the Site Area as a whole. No RTL is selected merely to cover every square metre.

Q5. Why doesn't the methodology require testing every square metre?

Because the objective is to assess the quality of the service, not to produce a complete engineering survey — and, as Chapter 17 sets out, additional sampling beyond a certain point adds volume without adding confidence.

Q6. Can different assessors legitimately obtain different measurements?

Yes. Operational WiFi environments are inherently dynamic, and this methodology's concern is Assessment Repeatability — comparable Findings under comparable conditions — rather than identical individual readings, as Chapter 32 explains in detail.

Q7. Can the Assessment Scope include only part of a venue?

Yes, provided it is clearly defined before assessment activities begin. Appendix F sets out several worked examples of exactly this.

I.4 Evidence Questions

Q8. Is a speed test sufficient to assess WiFi Quality?

No. A speed test provides useful evidence about Internet Performance specifically, but WiFi Quality is established only through the correlation of multiple complementary forms of evidence, as Chapters 7 and 24 both argue at length.

Q9. Why is Evidence Correlation necessary?

Because no single observation fully characterises how a service behaves. Correlation is what allows several observations to be read together and reconstructed into an Observed Network Reality, rather than left as disconnected data points.

Q10. Does every assessment require the same types of evidence?

No. The appropriate evidence depends on the Assessment Scope, the venue's characteristics, and the specific objectives of the assessment in question.

I.5 Interpretation Questions

Q11. What is Observed Network Reality?

The best-supported evidence-based representation of a WiFi service that can be established through the structured collection, validation and correlation of Assessment Evidence — a reconstruction, not a direct observation, as Chapter 25 sets out in full.

Q12. Does a WiFi Quality Score describe every aspect of the service?

No. Where one is calculated, the Score is a structured summary of the Findings, and has no meaning apart from the assessment it was derived from — the principle Chapter 27 establishes explicitly.

Q13. Why does the methodology recognise Measurement Variability?

Because operational WiFi environments genuinely change over time — in their behaviour, their environment, and even in the act of measurement itself. Variability of this kind, as Chapter 33 explains, is a normal characteristic of real-world assessment, not a sign of methodological weakness.

I.6 Professional Practice Questions

Q14. Can this methodology be used independently of certification?

Yes — for technical evaluation, benchmarking, research, internal quality assurance, or service improvement. Certification, as Chapter 30 makes clear, is only one of several possible uses of an assessment conducted under this Guide.

Q15. Does the methodology specify which hardware or software should be used?

No. It is technology-neutral throughout, establishing principles rather than prescribing products, vendors, or measurement platforms.

Q16. Does this methodology replace RF Engineering or Professional Site Surveys?

No. These remain essential disciplines in their own right; this methodology adds a different perspective — the quality of the service as experienced by representative

users — alongside them, not in place of them.

I.7 Governance Questions

Q17. Can the methodology change over time?

Yes, through the governance processes set out in Chapters 47 through 51 — but only where a genuine methodological improvement can be shown, never simply because a new technology has appeared, as Chapter 49.6 makes explicit.

Q18. Does a new version invalidate previous assessments?

No. An assessment remains associated with the version of the methodology in force when it was conducted, unless a certification or governance framework explicitly determines otherwise.

Q19. Can feedback be submitted to the WQI?

Yes. The Institute welcomes constructive feedback, evaluated through the process set out in Chapter 50 before any change to the methodology is considered.

Q20. Are major revisions publicly reviewed before publication?

Yes. A proposed Major revision is published in draft form for a formal WQI Public Technical Review of not less than 60 calendar days before final approval. Material comments received during that process are evaluated on their technical merits and addressed through a published Comment Disposition Report, as described in Chapters 49 and 50.

I.8 Summary Principles

WiFi Quality is assessed through representative observation. Assessment Findings are evidence-based. No single measurement determines WiFi Quality. Evidence is interpreted collectively, through correlation, rather than item by item. The methodology complements existing professional practice rather than replacing it. And throughout, professional judgement remains an essential component of the process this Guide describes — never eliminated, only made consistent, transparent and evidence-based.

I.9 Common Misconceptions

Some misunderstandings recur often enough to be worth addressing directly, in one place, rather than left scattered across the chapters that already correct them individually:

Misconception	Methodological Clarification
"A speed test measures WiFi Quality"	No. It measures one aspect of Internet Performance and represents one possible item of Assessment Evidence among many (Chapter 7.2).
"Every square metre must be tested"	No. The methodology is built on representative sampling, not exhaustive measurement (Chapter 17).
"Good signal strength guarantees good WiFi"	No. Signal strength is one dimension among several; excellent coverage can still coexist with poor capacity, authentication or roaming (Chapters 6.5, 7.3).
"A heatmap is a WiFi Quality assessment"	No. A heatmap visualises the spatial distribution of a small number of engineering parameters; it does not assess the complete, multidimensional service (Chapter 39).

Misconception	Methodological Clarification
"Different measurement results mean the methodology is unreliable"	No. Operational WiFi environments naturally exhibit Measurement Variability; this methodology's target is Assessment Repeatability, not identical readings (Chapters 32, 33).
"The methodology replaces RF Engineering"	No. It complements RF Engineering by answering a different question about the same network (Chapter 37).
"Excellent Internet Performance means the WiFi service is good"	No. WiFi Quality emerges from every layer of the service chain together; no single layer, however well it performs, compensates for a failure elsewhere (Chapter 40.3).
"This methodology only has value if it leads to certification"	No. It is a general-purpose methodology, equally applicable to research, benchmarking, internal quality assurance, and any conformity assessment scheme that chooses to draw on it — certification is one possible use among several, never a precondition for the methodology's validity (Chapter 30.10).

(Table I.1)

Nearly every misconception in this table traces back to the same underlying error: mistaking one dimension of a WiFi service — a speed test, a signal reading, a heatmap, a single measurement — for the whole of it. This is, in the end, the misunderstanding this entire Technical Guide was written to correct, and if a reader takes away only one thing from this Guide, it should be this: WiFi Quality is not any single thing that can be measured directly. It is assessed from an evidence-based reconstruction built carefully from multiple Observations and forms of Assessment Evidence.

Appendix J — Selected Bibliography and Further Reading

J.1 Purpose

This Appendix offers a selected set of publications for readers wishing to explore, in greater depth, the fields this Technical Guide draws on — wireless networking, RF engineering, conformity assessment, service quality, and measurement science. It is entirely informative. Nothing listed here forms a normative requirement of this Guide; that role belongs to Chapter 5 alone, and the distinction is worth restating explicitly given how easily the two could otherwise be conflated. Inclusion in this Appendix implies no endorsement by the WiFi Quality Institute, and omission implies nothing about a publication's merit.

J.2 Bibliography by Knowledge Area

Rather than presenting a single undifferentiated list, this bibliography is organised by the knowledge area each reference primarily supports — allowing a reader interested in, say, metrology or conformity assessment to go directly to the relevant row rather than searching through material organised for no particular purpose:

Knowledge Area	Typical References
Wireless Networking	IEEE Std 802.11™ family (standard); CWNP study guides (CWNA, CWDP, CWSP) — practitioner reference, not methodological

Knowledge Area	Typical References
	authority; Jim Geier, <i>Designing and Deploying 802.11 Wireless Networks</i> , 2nd ed. (Cisco Press, 2015); Jerome Henry, Brian Hart, Binita Gupta and Malcolm Smith, <i>Wi-Fi 7 In Depth</i> (Addison-Wesley Professional, 2024)
RF Engineering	Literature on RF fundamentals, antenna systems, propagation, and spectrum management
Site Surveys	Literature on predictive, active, passive, validation, and troubleshooting WLAN survey methodologies; Bruce E. Alexander, <i>802.11 Wireless Network Site Surveying and Installation</i> (Cisco Press, 2004); Jim Geier, <i>Designing and Deploying 802.11 Wireless Networks</i> , 2nd ed. (Cisco Press, 2015), particularly its treatment of wireless site surveying
Internet Performance	Literature on latency, throughput, packet loss, and Internet and application performance measurement
Service Quality	ITU-T Recommendation P.10/G.100 (Vocabulary for Performance, QoS and QoE); Osama S. Aboul-Magd, <i>Wireless Local Area Networks Quality of Service: An Engineering Perspective</i> (Wiley/IEEE Standards Wireless Networks Series, 2011); peer-reviewed studies on WiFi-QoE correlation under real-world operating conditions; ETSI GS F5G 005 V1.1.1 (2022-03), Fifth Generation Fixed Network (F5G); F5G High-Quality Service Experience Factors Release #1
Conformity Assessment	ISO/IEC 17000 (Vocabulary and General Principles); ISO/IEC 17065 (Certification Bodies); ISO/IEC 17020 (Inspection Bodies); ISO/IEC 17025 (Testing and Calibration Laboratories)
Metrology	JCGM 100 (GUM); International Vocabulary of Metrology (VIM); NIST Technical Note 1900 (Simple Guide to Uncertainty); NIST SOP 29 (Assignment of Uncertainty)
WQI Publications	WiFi Quality Doctrine; WiFi Quality Principles; WiFi Quality Framework; WQI Technical Guides, Technical Reports and Position Papers

(Table J.1)

Selected Technical Monographs:

Aboul-Magd, O. S. *Wireless Local Area Networks Quality of Service: An Engineering Perspective*. IEEE Standards Wireless Networks Series. John Wiley & Sons, 2011.

Alexander, B. E. *802.11 Wireless Network Site Surveying and Installation*. Cisco Press, 2004.

Geier, J. *Designing and Deploying 802.11 Wireless Networks: A Practical Guide to Implementing 802.11n and 802.11ac Wireless Networks for Enterprise-Based Applications*. 2nd ed. Cisco Press, 2015.

Henry, J., Hart, B., Gupta, B., and Smith, M. *Wi-Fi 7 In Depth: Your Guide to Mastering Wi-Fi 7, the 802.11be Protocol, and Their Deployment*. Addison-Wesley Professional, 2024.

Selected Industry Standards, Programmes and Methodologies:

Broadband Forum. *TR-398 Issue 4: Wi-Fi Residential & SOHO Performance Testing.* TR-398i4. Broadband Forum, 2026.

Broadband Forum. *BBF.398 Carrier-Grade Wi-Fi.* Broadband Forum Certification Programme, based on the TR-398 performance test plan. Broadband Forum, 2025.

World WLAN Application Alliance (WAA). *Technical Specification for Campus Office WLAN Performance and Experience (Based on IEEE 802.11be-2024).* WAA-TS 013-2025. World WLAN Application Alliance, 2025.

World WLAN Application Alliance (WAA). *Technical Specification for WLAN Single-Device Performance and Experience in Home Scenarios (Based on IEEE 802.11be-2024).* WAA-TS 015-2025. World WLAN Application Alliance, 2025.

World WLAN Application Alliance (WAA). *Technical Specification for WLAN Device Networking Performance and Experience in Home Scenarios (Based on IEEE 802.11be-2024).* WAA-TS 017-2025. World WLAN Application Alliance, 2025.

Wireless Broadband Alliance (WBA). *Building a Global Benchmark: Introducing the WBA Wi-Fi Design Standard.* Wireless Broadband Alliance, 2026.

Ookla, Inc. *Ookla's Speedtest Certified™ Methodology.* Version 0.2. Ookla, Inc., 2025.

Consistent with the approach already taken in Chapter 5, this list is deliberately limited. It favours a small number of genuinely relevant works over a long list assembled for the appearance of thoroughness — a reader looking for a comprehensive survey of any one of these fields should treat this table as a starting point, not a complete reading list.

J.3 A Note on Metrology and Conformity Assessment References

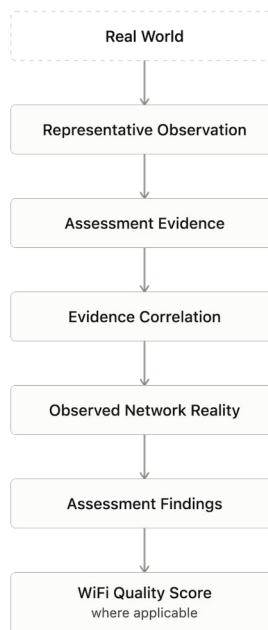
Two rows in Table J.1 deserve a brief word of context, since their relevance to a WiFi-specific methodology may not be immediately obvious. The Metrology references — the GUM and the VIM — underpin the treatment of Measurement Uncertainty in Chapter 34, even though neither publication was written with wireless networking in mind; the treatment of uncertainty in this Guide is informed by the broader discipline of measurement science, while the assessment-oriented concepts used here are defined for the purposes of this methodology, not invented independently for WiFi assessment. Similarly, the ISO/IEC 17000 series informs the general vocabulary of conformity assessment referenced at points throughout Part V, without this Technical Guide adopting any of those standards as a normative requirement in its own right.

J.4 Future Publications

As the WQI publication ecosystem continues to develop, further publications may supplement the material referenced in this Appendix. Readers are encouraged to consult the latest editions of relevant WQI publications, since this bibliography, like any other, reflects the state of the field at the time this Technical Guide was published rather than a permanently fixed reading list.

Closing Statement

The methodology set out in this Technical Guide draws on established principles from assessment practice, conformity assessment, service quality, measurement science and wireless networking — combined, adapted and, in places, extended to address a question none of these fields on its own was built to answer: how the quality of a WiFi service, as actually delivered to the people using it, can be assessed in a manner that is structured, evidence-based, and repeatable.



(Figure B.6, Appendix B.7)

This Guide should not, however, be read as a fixed or final procedure. Real-world environments will continue to diversify, consumer devices will continue to change, and the tools available to assessors will improve in ways this Guide cannot anticipate in detail. What is intended to remain stable is not any particular technique described in the chapters above, but the underlying discipline those techniques serve: evidence gathered representatively, correlated honestly, and reported in a form that remains inseparable from the conditions under which it was obtained.

Nor does this Guide claim to be the only lens through which a WiFi service can usefully be examined. Part VII situates it deliberately alongside RF Engineering, Site Surveys, Network Monitoring and the standards and commercial services discussed there — each answering a different question, none dispensable in favour of the others. This methodology complements, rather than replaces, that wider body of practice.

This Technical Guide completes the core series of WQI publications begun with the Doctrine, developed through the Framework, and given its governing values in the Principles — though completion, here, means only that this particular question has now been answered, not that the discipline itself has reached a settled state. The WiFi Quality Assessment Standard (WQI-AS-001, forthcoming) is expected to extend this work further, addressing when an assessment conducted under this Guide may be recognised as sufficiently rigorous for wider use; and the governance set out in

Chapters 47 through 51 exists precisely to allow this Guide itself to keep pace with what future evidence, practice and technology reveal.

The long-term value of this methodology will ultimately depend not on the document itself, but on whether it succeeds in giving a fragmented set of existing practices — engineering, measurement, quality management — a shared, disciplined answer to a question that increasingly matters: not what a network measures, but how good the service actually is, for the people who depend on it.

About the WiFi Quality Institute

The WiFi Quality Institute (WQI) is an independent technical and research initiative dedicated to advancing the understanding of WiFi Quality as a recognised discipline through research, education, conceptual development, evidence-based methodologies and the stewardship of professional knowledge.

The Institute develops and publishes a structured body of publications supporting this mission. The WiFi Quality Doctrine (WQI-DOC-001) establishes the philosophical, conceptual and institutional foundations of the discipline. The WiFi Quality Framework (WQI-FWK-001) builds upon those foundations by defining the conceptual architecture — the taxonomy, terminology and relationships — through which WiFi Quality is organised and understood. The WiFi Quality Principles (WQI-PRN-001) establish the governing values — Objectivity, Independence, Transparency, Relevance, Contextuality and Integrity — that apply to every activity within the discipline. This Technical Guide (WQI-TG-001) provides the methodological assessment layer of this core body of work by defining how WiFi Quality is assessed in practice, on the basis of the concepts and principles established in those foundations.

The WiFi Quality Assessment Standard (WQI-AS-001, forthcoming) is expected to build upon this Guide by establishing when an assessment conducted under it may be recognised as sufficiently rigorous for wider use.

Together, these publications and the research, educational and analytical work that accompanies them support the advancement of WiFi Quality for the benefit of organisations, professionals and society.

