



WQI-TG-002

The WiFi Quality Institute: The WiFi Quality Scoring Architecture Methodological Requirements for the Construction, Interpretation and Governance of WiFi Quality Scores

WQI Technical Guide | 002

The WiFi Quality Institute: The WiFi Quality Scoring Architecture

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Document Status

This document is WQI-TG-002 v1.0 — Public Technical Review Draft (PTR-1). It defines the architecture within which WiFi Quality scores may be constructed, interpreted, reviewed and governed consistently with the WQI Body of Knowledge. It is issued for Public Technical Review from 4 October 2026 through 3 November 2026 at 23:59 UK time. It is not an approved WQI edition and may change as a result of review.

The Architecture does not prescribe a single proprietary scoring algorithm, fixed commercial threshold set, certification class, vendor implementation or mandatory numerical scale. Its purpose is to establish methodological conditions that a scoring model shall satisfy if its output is represented as a WiFi Quality Score or as another WQI-related composite score.

WQI decisions concerning Overall WiFi Quality coverage, anti-masking, first-edition governance and Working Score controls have been incorporated into this review draft. Those decisions and the internal development record are not normative parts of this Guide.

No proprietary coefficients, thresholds, gates, caps, formulae, source code or implementation identifiers are disclosed or required by this Guide.

Public Technical Review comments may be submitted to research@wifiquality.institute using the WQI-TG-002 PTR-1 Comment Form or an equivalent structured submission.

The authorised PTR-1 review copy is identified by this document code, version, PTR identifier and issue date and is made available through the WQI Publications archive at <https://wifiquality.institute/publications.php>. Comments must be received by 3 November 2026 at 23:59 UK time.

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Revision Note — Public Technical Review Draft (PTR-1)

This review draft incorporates closure corrections identified through successive internal review rounds, including source traceability, evidence and comparability safeguards, Overall WiFi Quality coverage rules, anti-masking requirements, Working

Score controls, model-governance requirements and conformance-checklist alignment.

The review draft remains methodological. It standardises obligations that scoring architectures shall respect without standardising one universal scoring formula or exposing implementation-specific scoring parameters.

A Note on Terminology

This publication uses the unhyphenated form “WiFi”. Domain, Dimension, Attribute, WiFi Performance, WiFi Experience, WiFi Quality, WiFi Quality Assessment, Assessment Scope, Declared Service Area, Site Area, Representative Test Location, Assessment Evidence, Evidence Correlation, Observed Network Reality, Assessment Finding, Assessment Confidence, Operational Context and WiFi Service Area are used in the senses established by the applicable WQI publications.

Abbreviations used in this Guide include RTL (Representative Test Location), RCD (Representative Consumer Device), RSSI (Received Signal Strength Indicator), AP (access point), MAC (Media Access Control) and UDP (User Datagram Protocol).

Whether an assessment is sufficiently rigorous for wider recognition is expected to be addressed by WQI-AS-001 (forthcoming). Determination, qualification and withholding rules in this Architecture concern score outputs and do not anticipate the scope or recognition rules of that publication.

Foreword

Numerical scores are attractive because they compress complexity. They make comparison easier, communication faster and decisions more accessible to readers who cannot reasonably examine every item of underlying technical evidence. The same compression creates methodological risk: an aggregate can conceal material variation, a decimal can imply unsupported precision, and weighting can embed assumptions that remain invisible to those relying on the result.

WiFi Quality is inherently multidimensional. Strong signal does not guarantee sufficient capacity; high throughput does not guarantee responsiveness; excellent behaviour in one room does not establish quality across an Assessment Scope; and a technically capable network may not sustain that capability under representative operational conditions. A responsible score can summarise those distinctions only after they have been established through a valid assessment.

The central proposition of this Guide is therefore that a WiFi Quality Score is not a second assessment engine hidden behind a formula. It is a controlled expression of Assessment Findings. Mathematics may be sophisticated, implementations may be proprietary and calibration may evolve, but the score must preserve the meaning, limits and provenance of the assessment on which it depends.

Executive Summary

The WiFi Quality Scoring Architecture sits between the WQI assessment methodology and an implementation-specific Scoring Profile. It defines required relationships among Assessment Findings, conceptual coverage, spatial and temporal aggregation, anti-masking, contextual interpretation, confidence, score outputs, validation and governance while leaving implementation-specific weights, transformations and

certification thresholds to controlled profiles.

A WiFi Quality Score shall be derived from Assessment Findings rather than isolated measurements; material local or dimensional failure shall remain visible; missing or uncertain evidence shall not be converted silently into favourable or unfavourable quality; diagnostic causes shall remain distinguishable from service effects; correlated indicators shall not create unjustified repeated penalties; and any bounded scale shall have defined anchors and normalisation.

The Architecture requires an output represented as overall WiFi Quality to address material characteristics across the Technical, Operational and Human Domains. Where material conceptual coverage is absent, the output is narrowed or withheld; qualification applies only where material characteristics are addressed but the evidential basis is limited. Assessment Confidence, diagnostic confidence, capability outputs, certification eligibility and certification decisions remain separate from the WiFi Quality Score.

The Architecture also requires controlled model documentation, calibration and sensitivity analysis, reference cases, holdout or independent validation where practicable, versioning, technical review, reconstruction and implementation-conformity checks. The objective is not one universal formula. It is a durable set of methodological obligations that different scoring formulae are required to respect.

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PART I — Foundations

This Part establishes the purpose, scope and place of scoring architecture within the WQI body of knowledge.

1 Introduction

A WiFi Quality assessment produces a body of evidence and a set of reasoned conclusions about a service observed within a defined scope. A score is one possible way of expressing part of that outcome in concise form. The distinction is fundamental: the score exists because the assessment exists; the assessment does not exist in order to produce the score.

The attraction of scoring lies in compression. Stakeholders can compare results, track changes over time, communicate quality to non-specialist audiences and use a common scale where underlying assessments are methodologically comparable. The danger lies in the same compression. Once several characteristics are reduced to one number, material differences can disappear unless the model is explicitly designed to preserve them.

Scoring is a controlled expression of Assessment Findings. It is not a substitute assessment method.

Source basis: WQI-TG-001 clauses 10.1, 26.10, 27.5; Architecture framing (A).

2 Purpose and Scope

2.1 Purpose

This publication defines methodological requirements governing the construction, aggregation, interpretation, validation, communication and governance of WiFi Quality scores.

Its objectives are to:

- define the relationship between Assessment Findings and score outputs;
- preserve alignment between scoring constructs and the WQI Domain → Dimension → Attribute taxonomy;
- prevent material failures from being concealed by aggregation;
- separate quality scoring from Assessment Confidence, diagnostic attribution and certification eligibility;
- establish requirements for scale design, normalisation, weighting, contextual adjustment and missing evidence;
- support transparent explanation without requiring unrestricted public disclosure of proprietary computational detail;
- provide a basis for calibration, sensitivity analysis, technical review, versioning and score reconstruction; and
- allow distinct controlled Scoring Profiles while preserving methodological comparability where the underlying rules are materially equivalent.

2.2 Scope

This publication applies to any model represented as producing a WiFi Quality Score from an assessment conducted under, or explicitly aligned with, the WQI Methodology.

It also applies, where relevant, to Domain scores, Dimension scores and other composite scoring outputs that make claims concerning WiFi Quality. A model claiming alignment with this Architecture shall identify the applicable edition and the extent of the alignment claim.

The following remain outside scope:

- certification classes, levels and eligibility thresholds;
- commercial badge or registry rules;
- fixed vendor-specific measurement procedures;
- specific implementation code;
- mandatory numerical weights;
- a universal requirement to use a 0–100 scale; and
- application-specific thresholds that belong to a certification programme or controlled implementation profile.

Source basis: WQI-TG-001 clauses 2.3, 27.9 and 51.3; Architecture scope provisions (A).

3 Intended Audience

This publication is intended for methodology developers, scoring-model designers, assessors, researchers, certification programmes, review bodies, technical auditors, software developers implementing assessment systems, and organisations that communicate or rely upon WiFi Quality scores.

A reader does not need to implement a scoring engine in order to use this Guide. Those responsible for reviewing, governing or communicating score-based claims may use its requirements to determine whether a score has a sufficiently intelligible, evidence-linked and reviewable methodological basis.

Source basis: Architecture-specific audience statement (A).

4 Position within the WQI Body of Knowledge

The WQI body of knowledge distinguishes conceptual definition, normative governance, methodological assessment and scoring implementation. This publication occupies the layer between the general assessment methodology and application-specific computational models.

Doctrine → Framework → Principles → Methodology → Scoring Architecture → Scoring Profile / Implementation → Application or Certification Programme

The Doctrine establishes why WiFi Quality warrants systematic treatment. The Framework defines what WiFi Quality consists of. The Principles establish how claims and judgements are governed. WQI-TG-001 establishes how representative evidence becomes Assessment Findings. This Guide governs how those Findings may become score outputs. A Scoring Profile determines detailed calculation, thresholds and weighting for a particular implementation.

This Architecture does not modify the WQI Framework taxonomy and does not replace WQI-TG-001 Chapter 27. It operationalises the methodological independence reserved by that chapter. Whether an assessment qualifies for wider recognition remains outside this Guide and is expected to be addressed by WQI-AS-001.

Source basis: WQI-TG-001 clauses 4.7, 27.9 and 51.3; WQI-FWK-001 Chapters 3–10.

5 Normative and Informative Basis

5.1 Referenced WQI publications

Reference	Publication	Role in this Architecture
WQI-DOC-001	The WiFi Quality Doctrine: Principles, Frameworks and Foundations for an Emerging Discipline, document version 1.1 (First Edition, July 2026), DOI 10.5281/zenodo.21821067.	Foundational rationale for WiFi Quality as a distinct discipline.
WQI-FWK-001	The WiFi Quality Framework: Conceptual Architecture, Taxonomy and Domains of WiFi Quality, v1.0 (August 2026), DOI 10.5281/zenodo.21825711 as cited by WQI-TG-001 clause5.2	Defines the Domain → Dimension → Attribute taxonomy and conceptual boundaries.
WQI-PRN-001	The WiFi Quality Principles, v1.0 (August 2026), DOI 10.5281/zenodo.21938039	Provides principles governing Objectivity, Independence, Transparency, Relevance, Contextuality and Integrity.
WQI-TG-001	Methodology for Real-World WiFi Quality Assessment, v1.0 (September 2026), DOI 10.5281/zenodo.23019135	Defines the assessment lifecycle, Evidence Correlation, Observed Network Reality, Assessment Findings and the WiFi Quality Score concept.

5.2 Source attribution

A **Source basis** line at the end of each chapter identifies provisions on which the chapter draws; it does not assert that every requirement in the chapter is contained verbatim in those provisions. This Architecture may adopt, strengthen or specialise a principle where the distinction is made explicit. Appendix E identifies whether each conformance check is principally received from a cited source (R) or proposed or strengthened by this Architecture (A).

5.3 Requirement provenance

References are edition-specific. A later edition shall not silently replace a cited edition in the interpretation of a historical score or conformity claim. Development records shall distinguish: requirements or limitations received from published WQI sources; architectural choices retained or refined from earlier TG-002 drafts; and new architectural proposals. A requirement proposed here shall not be attributed retrospectively to WQI-TG-001 merely because it is consistent with that Methodology.

5.4 Verbal forms and appendices

In this Guide, “shall” expresses a requirement of this Architecture; “should” expresses a

recommendation; “may” expresses permission or an available option. “Must” is reserved for ordinary necessity or external constraints and is not used as a substitute for “shall”.

Where a scoring term used in a requirement is not defined in the body, its definition in Appendix A applies. Appendices B–F are informative aids and introduce no independent requirements beyond those already established in the body.

5.5 Materiality standard

Materiality is determined according to the standard of WQI-PRN-001 clause7.6: whether a condition or item of evidence could reasonably affect the interpretation, judgement or decision under consideration, having regard to its nature, context, reliability, frequency or persistence and its relationship to the relevant characteristic of WiFi Quality, and not by magnitude alone. The reasons for treating a condition as not material shall be documented where that judgement affects aggregation, qualification, withholding or public communication.

Source basis: WQI-TG-001 clause5.2 for identification of the referenced WQI editions; WQI-PRN-001 clause7.6 for materiality. The edition-specific historical-reference rule in clause5.3 is an Architecture provision (A).

PART II — The Problem of Scoring WiFi Quality

This Part explains why scoring requires a dedicated architecture rather than a direct mapping from measurements to points.

6 Why Scores Exist

The principal purpose of a WiFi Quality Score is communicative. It provides a concise expression of an assessment outcome for readers who may not examine the full evidence record. It can support benchmarking, change tracking, public communication, service improvement and certification activity where a programme chooses to use it.

A score is useful only to the extent that it compresses complexity without materially changing its meaning. Compression is therefore not neutral: the model determines which differences are preserved, which are reduced and which may disappear.

A score should simplify the communication of an assessment, not simplify the assessment itself.

Source basis: WQI-TG-001 Chapter 27; WQI-PRN-001 clause16.3; Architecture communication rationale (A).

7 Why Measurement Is Not Scoring

A measurement describes an observed characteristic at a defined place, time and condition. A score describes an assessment conclusion several methodological stages later. Directly assigning points to isolated readings risks bypassing Evidence Correlation and recreating a measurement-centred model that the WQI Methodology is intended to avoid.

Measurements may enter quantitative scoring functions, but their scoring significance shall be determined within the Assessment Findings established by the assessment. The relevant question is not merely “what value was measured?” but “what does the validated and correlated evidence establish about the relevant characteristic of WiFi Quality?”

A limitation of the measurement infrastructure or measurement endpoint is not, by itself, a limitation of the assessed service. Conversely, remote ownership of an endpoint or a limitation arising beyond the physical venue does not exclude a real end-to-end service limitation where the assessment evidence establishes that effect.

Source basis: WQI-TG-001 clauses10.1, 23.2, 23.13, 26.10, 27.5, 35.7 and 40.11.

8 Why Aggregation Creates Risk

Composite scores necessarily aggregate. The methodological question is whether aggregation preserves material meaning.

Aggregation risks include:

- masking a materially weak Site Area through strong results elsewhere;
- allowing a high-performing metric to compensate for an unrelated failure beyond a defensible degree;
- double-counting one underlying impairment because it affects several correlated indicators;

- rewarding missing or optional data as though it were evidence of good quality;
- producing the same maximum from materially different underlying performance because the raw total exceeds the display range;
- using averages where lower-tail, worst-area or extent-sensitive behaviour is material;
- treating diagnostic causes as additional penalties after the service effect has already been represented;
- combining scales with different meanings without documented normalisation; and
- creating apparent precision that exceeds assessment repeatability.

Source basis: WQI-TG-001 clause15.9; WQI-PRN-001 clause16.3; Architecture aggregation safeguards (A).

9 Score Types and Terminological Discipline

Output type	Question answered	May be called a WiFi Quality Score?
Overall WiFi Quality Score	What level of WiFi Quality did the assessment establish within scope?	Yes, only when Chapter 16 requirements are satisfied.
Domain / Dimension Score	How strong was a named component of WiFi Quality?	Only with the Domain or Dimension clearly named.
Assessment Confidence	How strongly is the assessment conclusion supported?	No.
Diagnostic confidence / causal likelihood	How strongly does evidence support an explanation?	No.
Certification readiness / compliance	How much of a programme appears satisfied?	No.
Use-case capability score	How suitable is the service for a defined activity?	No, unless incorporated explicitly into a declared WiFi Quality Scoring Profile.

A scoring component is not automatically a WQI Dimension. An implementation shall not use WQI terminology to imply conceptual coverage that the model does not actually provide.

Source basis: WQI-TG-001 clauses26.10, 27.3, 27.11, 28.8 and 30.5–30.7; WQI-FWK-001 taxonomy.

PART III — Governing Methodological Requirements

This Part applies the WQI Principles to scoring-model design and communication.

10 Objectivity and Evidential Proportionality

Weights, thresholds, transformations, gates and equivalent controls shall have a documented methodological or evidential rationale. Deterministic code is not sufficient by itself to establish objectivity.

A scoring rule shall not be selected or altered merely because it produces a preferred outcome on a known assessment. Calibration shall be separated, where practicable, from validation evidence used to test the resulting model.

The influence assigned to a Finding shall remain proportionate to what the supporting evidence establishes. A model shall not use precision, scale or weighting to imply a stronger conclusion than the evidence supports.

An automated transformation shall not turn a plausible Causal Hypothesis into an Assessment Finding. The absence of a negative Finding is not evidence of a favourable condition, and any implicit starting credit or favourable default shall have an explicit evidential basis.

Source basis: WQI-TG-001 clause11.17 for the Causal Hypothesis/Finding boundary; WQI-PRN-001 principles of Objectivity, Relevance and Integrity; Architecture-specific calibration controls (A).

11 Transparency and Explainability

The purpose, conceptual coverage, evidence categories, material transformations, aggregation logic, limitations and governance of a Scoring Profile shall be intelligible to a technically competent reviewer.

Public explanations may be shorter than technical explanations, but shall not be substantively more favourable, comprehensive or certain than the underlying technical basis.

Transparency does not require unrestricted publication of proprietary coefficients or source code. It requires enough controlled disclosure and retained reconstruction information for meaningful scrutiny.

Source basis: WQI-PRN-001 clause16.6; Architecture-specific reviewability requirements (A).

12 Relevance and Contextuality

Only evidence and Findings meaningfully related to the quality characteristic being scored shall affect that score. Contextual adjustment shall have a documented relationship to the claim being made and shall not be used to manufacture a preferred result after the outcome is known.

Methodological comparability of Representative Consumer Devices does not establish numerical calibration equivalence for device-reported RF values. Numerical equivalence shall not be presumed merely because devices are both acceptable for assessment use. A valid service limitation observed on an appropriate Representative Consumer Device shall not be discarded merely because a more capable device performs better.

Where context affects scoring, the applicable Operational Context shall be documented with the score record and versioned where necessary for reconstruction.

Source basis: WQI-TG-001 clause18.9 and clause35.6; WQI-FWK-001 Chapter 9.

13 Integrity, Uncertainty and Missing Evidence

Valid negative evidence, unavailable evidence and invalid measurement are different states and shall not be collapsed into a single numerical value. Missing or insufficient evidence shall not be converted automatically into either favourable quality or failure. Where only part of a metric family is scoreable, the scoring rule shall preserve the distinction between the observed components and those that are missing, invalid or outside the applicable measurement semantics.

Uncertainty shall be represented explicitly through Assessment Confidence, evidence-completeness, qualification, narrowing of claim scope or withholding where appropriate. It shall not be hidden inside an unexplained numerical penalty.

Repeated attempts, remediation observations and superseding measurements shall retain their temporal and evidential identity. A later favourable observation shall not silently erase earlier valid evidence.

Source basis: WQI-TG-001 clauses17.7, 20.11, 23.8, 23.10, 24.10 and 35.7.

14 Independence and Reviewability

Material score design, calibration, review and approval decisions should be protected from improper commercial or outcome-driven influence. Neither commercial objectives nor the desire to match a certification tier shall determine Assessment Findings or cause an undocumented scoring adjustment. Where organisational independence is limited, the limitation should be disclosed and proportionate safeguards applied.

A reviewer shall have access to enough of the model's material mechanics to assess purpose, logic, evidence handling, aggregation, calibration, limitations and governance. Observation of final scores alone is not a meaningful technical review. No review shall be described as independent validation beyond the work actually performed.

Source basis: WQI-TG-001 clause12.10 (WQR-09); WQI-PRN-001 clause11.2; Architecture-specific model-review controls (A).

PART IV — Scoring Architecture

This Part defines the structural requirements that connect Assessment Findings to score outputs.

15 The Score Derivation Chain

*Real WiFi Service → Measurement → Observation → Assessment Evidence →
Evidence Correlation → Observed Network Reality → Assessment Findings →
Scoring Profile → Score Output*

The Scoring Profile is applied only after Assessment Findings have been established. It shall not silently reopen the assessment and replace correlated Findings with a second simplified reading of raw measurements.

A working score may be calculated from the current, not yet final, Assessment Findings while an assessment remains open and the evidence can still change. Such a result is mutable and shall be identified as provisional and not reviewed. Findings and any associated final score are subject to the applicable Review before finalisation.

An implementation may calculate operational indicators earlier in the workflow. Indicators calculated before Assessment Findings exist are not WiFi Quality Scores, whether working or final.

Source basis: WQI-TG-001 clauses 10.1, 21.10–21.11, 26.10, 27.5 and 28.8.

16 Relationship with the WQI Taxonomy

16.1 Canonical taxonomy

A Scoring Profile shall not create alternative “Dimensions” that conflict with the referenced edition of WQI-FWK-001. Implementation-specific components such as Speed Score, Stability Under Load or RF Health may be useful analytical constructs, but shall be identified as scoring components, indicators or derived attributes unless they correspond directly to a WQI-defined Dimension.

16.2 Coverage declaration

Every Scoring Profile shall declare its conceptual coverage. A profile producing an overall, composite or Domain-level WiFi Quality output shall document how each Dimension defined in the referenced Framework edition is addressed, not assessed or not applicable. A deliberately narrow profile may instead state the Domains and Dimensions it covers and shall name its output accordingly.

A Dimension may be treated as not applicable only where that treatment is compatible with the Framework definition and the reason is documented and disclosed with the score where material. An output represented as overall WiFi Quality shall not treat an entire Domain as not applicable.

16.3 Overall WiFi Quality claim

An output represented as overall WiFi Quality shall address the material characteristics across the Technical, Operational and Human Domains within the Assessment Scope. For this purpose, a Dimension is addressed when at least one supported Assessment

Finding bears on the Dimension within scope. Where the evidential basis is limited, the profile may apply a documented qualifier describing the limits of that supported Finding. A statement of evidential limitation without such a Finding is a disclaimer for the purposes of this section and does not make the Dimension addressed. A Finding that records only the absence or insufficiency of evidence for a Dimension does not make that Dimension addressed.

Where material conceptual coverage is absent, the output shall use a narrower name or shall be withheld. A qualified overall score may be used where a material characteristic has been addressed but the evidential basis limits certainty or coverage; qualification shall not be used to convert a wholly unassessed material Domain or Dimension into an overall claim.

16.4 Human and capability outputs

Human-Domain interpretation and use-case capability may require contextual or separately governed evidence. Human-Domain coverage is not established merely by labelling a network metric as “experience”, and this Architecture does not require a satisfaction survey merely to claim alignment. Inferred capability shall not be presented as though a particular user session or application was directly observed unless the evidence establishes that claim.

Source basis: WQI-FWK-001 Chapters 4–9 and Glossary; WQI-PRN-001 clauses 9.6 and 16.3; WQI-TG-001 Appendix A.3.

17 Scoring Profiles and Assessment Scope

A Scoring Profile is a controlled implementation specification defining the purpose, conceptual coverage, transformations, aggregation, contextual rules, normalisation, missing-evidence treatment and governance of a score.

The profile shall state the Assessment Scope to which the score applies, the included Declared Service Areas, the applicable Site Area structure, the measurement and evidence prerequisites relevant to scoring, and the profile and parameter-set version required for reconstruction. The assessment record shall also retain the applicable Assessment Protocol identifier and version where the protocol determines the evidence basis used by the score.

A Scoring Profile shall not silently expand a claim beyond the Assessment Scope merely because the venue or organisation declares service more widely. Conversely, a failed area inside the Assessment Scope shall not be removed from the scoring basis merely because the resulting WiFi Service Area is narrower than the intended service commitment.

Source basis: WQI-TG-001 clauses 11.8, 11.21, 15.8, 16.6, 17.10 and Appendix F.12–F.14.

18 Findings-to-Score Transformation

18.1 Finding-led transformation

Score contributions shall be derived from Assessment Findings. Where measured values enter a scoring function, the function shall form part of the controlled Finding-to-score transformation and shall preserve the measurement semantics, provenance

and limitations established by the assessment.

18.2 Continuous and banded functions

A profile may use continuous transformations, bands, decision logic, gates or combinations of these. The chosen transformation shall have defined anchors and shall not imply precision beyond the evidence or the stability of the model.

18.3 Diminishing returns and saturation

Where additional improvement beyond a quality level has little material meaning, a profile may use diminishing returns or saturation. Such treatment shall be explicit and shall not create hidden positive credit beyond the published scale.

18.4 Direction and denominator discipline

Download and upload, sending and receiving, one-way and round-trip quantities, application-layer and link-layer loss, and protocol-specific denominators shall remain distinguishable. A score shall not treat semantically different measurements as interchangeable merely because they share units. One metric or protocol family shall not be used to validate or replace another unless the applicable measurement semantics establish that relationship. IP- or UDP-layer packet loss shall not be relabelled as IEEE 802.11 link-layer loss, and an undefined denominator shall not be converted into 0% or 100%.

18.5 Bounds and partial measurements

A bound, timeout or partial result shall be scored only according to the meaning established by the measurement contract. An upper or lower bound shall not be replaced by an invented point estimate, and missing components shall not be inferred as zero.

Source basis: WQI-TG-001 clauses 23.7, 23.10, 24.10 and 35.7; Architecture-specific transformations (A).

19 Spatial Aggregation

19.1 Representative Test Locations

Representative Test Locations (RTLs) are evidence locations, not votes. Under the same Scoring Profile, parameter set and documented Operational Context, repeated or investigative observations shall not acquire additional spatial influence merely because more observations were collected in one part of the scope.

Primary and Secondary RTLs establish representative coverage according to the applicable assessment method. Verification or Targeted locations may answer specific questions but shall not silently substitute for the representative baseline or multiply the represented spatial unit.

19.2 Site Areas

Every Site Area included within the Assessment Scope shall receive an evaluation appropriate to the evidence available for it. Strong results in one Site Area shall not erase a material supported failure in another.

19.3 Site Area materiality and breadth

A profile may assign different significance to Site Areas where the basis is documented and relevant to the claim. Materiality of a Site Area and extent of a failure are distinct concepts: an area may be important without its failure being spatially widespread, and a failure may affect several areas without each area having the same importance. A spatial aggregation rule shall preserve the distinction between the number or breadth of represented areas affected and the number of observations collected within an area. Re-labelling, splitting or duplicating Site Areas shall not be used to dilute or amplify a failure.

19.4 Individual units and coverage basis

Where individually occupied or otherwise materially distinct units require separate representation under the assessment method, a scoring profile shall not average across them merely because they share a commercial category or similar furnishing. The coverage basis and the role of each representative unit shall remain reconstructable. A coverage basis shall not waive a Primary Representative Test Location required by the applicable assessment method.

19.5 Declared Service Area and Assessment Scope

The Declared Service Area records where WiFi service is intended to be provided, whereas the WiFi Service Area records where the assessment found service to be available. Neither changes the Assessment Scope. A Declared Service Area extending beyond the Assessment Scope does not enlarge that Scope, and a WiFi Service Area smaller than the declared service area within scope does not remove the unsupported or unavailable portions from the assessment outcome.

A supported absence of service within the Assessment Scope remains relevant to its evaluation. A declared area that was legitimately excluded from the Assessment Scope does not become part of the score merely because it was included in the wider service commitment.

Source basis: WQI-TG-001 clauses 11.12, 11.20, 15.8–15.9, 16.6, 16.9, 17.6, 17.10 and Appendix F.12–F.14.

20 Temporal and Operational Aggregation

20.1 Representative load

Measurements obtained under induced or controlled load shall be interpreted according to the declared test condition. Induced load is not itself evidence of venue occupancy or ordinary demand. A scoring model shall distinguish observed service behaviour under the applied condition from conclusions about typical or peak operational state.

20.2 Persistence and recurrence

Frequency, persistence and recurrence may affect materiality, but repeated measurements of the same condition shall not be treated as independent spatial evidence. Pre-remediation and post-remediation observations shall remain distinguishable. A return from state A to state B and later to numerically similar values

associated with state A shall not, by value equivalence alone, restore comparability or the same evidential context across those states.

20.3 Temporal coverage

A short observation window cannot establish conditions that require temporal persistence, rare-event resilience or peak-load behaviour unless the applicable evidence supports those claims. The score name, qualification or withholding decision shall reflect the temporal coverage actually established.

Source basis: WQI-TG-001 clauses 8.3, 12.3, 19.7, 20.11, 23.14 and 36.4–36.7.

21 Anti-Masking and Material Failure

21.1 General requirement

No favourable aggregate shall conceal a supported material local or dimensional failure. Materiality shall be determined under clause 5.5. A deficiency judged not material for the composite remains visible in the Site Area evaluation required by clause 19.2 and in the supporting Assessment Findings.

A Scoring Profile shall document how material failures are identified, the level at which masking risk is evaluated, the control used to prevent masking, the trigger conditions and the consequence for the score or score state.

Triggers, caps and equivalent controls shall be fixed in the controlled profile before the results they govern are known and changed only through the version control of Chapter 35.

21.2 Within-Dimension anti-masking

Where a Dimension aggregates several Site Areas or components, the profile shall contain a documented mechanism preventing strong results from concealing a material weak area or lower-tail condition, such that its consequence remains visible in the Dimension result. The Architecture does not prescribe a universal mathematical form; a cap, lower-tail component, worst-material-area contribution or another validated non-compensatory mechanism may be used.

21.3 Cross-Dimension non-compensation

Where independent Dimensions are aggregated, material simultaneous failure in several characteristics shall not be neutralised solely by excellence in unrelated characteristics. A profile shall distinguish genuine multi-Dimension failure from several correlated indicators of one underlying impairment and shall document the non-compensatory consequence.

21.4 Small-scope, breadth and dominant-area safeguards

A high proportional share created solely by a small number of Site Areas shall not, by itself, establish that a failure is spatially widespread. Profiles using breadth or prevalence shall distinguish the significance of an area from the extent of impairment and shall include reference cases that expose small-scope artefacts.

A profile may define a severe dominant-area rule where one Site Area is sufficiently important and the internal extent of failure is independently severe. Such a rule shall

not be treated as equivalent to distributed multi-area failure unless the profile states and justifies that meaning.

21.5 No universal WQI formula

This Architecture specifies required outcomes and governance, not one mandatory anti-masking formula. Conformance depends on whether the declared profile prevents the masking risks relevant to its scope and demonstrates that behaviour through the reference cases of Chapter 34.

Source basis: WQI-TG-001 clause15.9 and clauses2.3, 27.9; WQI-PRN-001 clause16.3; Architecture-specific anti-masking controls (A).

22 Diagnostic Cause and Observed Effect

Observed condition	Diagnostic interpretation	Primary scoring treatment
Material degradation in responsiveness-related service behaviour	Possible WAN queueing, local gateway contention or RF contention	Represent the supported service effect under the Dimension(s) assigned by the profile's documented mapping, for example Responsiveness where the Finding concerns reaction to changing demand; retain cause separately.
High RF density without demonstrated service impairment	Potential airtime contention risk	Diagnostic or contextual evidence; it may support a qualified Capacity Finding only under declared demand assumptions and within the limits of Chapter 20. Not an automatic service-quality deduction.
Suboptimal AP selection with no demonstrated continuity or quality impact	Possible sticky-client or roaming behaviour	Diagnostic only unless a material service effect is established.
Persistent loss and interruption across an area	Possible RF, AP, branch or upstream fault	Represent the supported Reliability or Availability effect; diagnose cause separately.

This separation prevents a model from penalising the same service impairment once for the effect and again for every suspected cause. A diagnostic cause may affect the score only where the cause is itself a defined quality characteristic or where it establishes a separate supported Finding.

A scoring explanation shall not make a causal conclusion more specific than the Assessment Findings and supporting evidence permit. The Causal Boundary established by the assessment governs the maximum specificity of any causal interpretation associated with the score. Absence of a supported narrow cause is not evidence that the service is healthy.

A limitation of an endpoint or measurement infrastructure shall remain distinguishable

from a limitation of the assessed service, while a genuine end-to-end limitation shall not be excluded solely because its contributing cause lies outside the venue.

Source basis: WQI-TG-001 clauses 11.17–11.18, 23.13–23.14, 24.13–24.14, 35.7, 36.6–36.7 and 40.11; WQI-FWK-001 Chapter 5.

23 Double Counting and Correlated Indicators

WiFi Quality indicators are often correlated. Congestion can reduce throughput and increase latency and jitter; weak signal can increase retransmissions and reduce effective throughput; insufficient capacity can create both transfer and responsiveness degradation.

A scoring model shall define whether correlated indicators represent distinct Dimensions, corroborating evidence for one Finding, or multiple manifestations of one impairment. Multiple numerical effects shall be applied only where the model can explain why they represent distinct aspects of WiFi Quality rather than repeated penalisation for the same phenomenon.

The prohibition on double counting does not mean that one impairment can affect only one Dimension. Distinct supported service effects may legitimately appear in more than one Dimension where their meanings remain different and the model documents the relationship.

Source basis: WQI-FWK-001 clause 4.1; Architecture-specific double-counting safeguard (A).

24 Bounded Scales, Normalisation and Score Anchors

24.1 Choice of scale

This Architecture does not prescribe a universal numerical scale. A score may be expressed as a bounded number, percentage, grade, band or other controlled representation. The chosen scale shall have an intelligible interpretation and support the claims made from it.

24.2 Bounded numerical scales

Where a model uses a bounded numerical scale, its minimum and maximum shall be defined by construction. An implementation shall not rely on uncontrolled positive credit above the scale followed by routine truncation at the display maximum where that practice can conceal material penalties or collapse materially different states into the same result.

24.3 Meaning of the maximum and minimum

A maximum score represents the highest level of quality recognised by the profile within its defined scope and conditions. It is not a claim of permanent perfection. The minimum of a quality scale represents the lowest quality state defined by the profile; missing or insufficient evidence is not automatically that state.

24.4 Rounding and precision

Computational precision, rounding order and any effect on score bands, gates or caps shall be documented. Displayed precision should not materially exceed the precision

supported by the assessment and the stability of the scoring model.

24.5 Device and measurement semantics

Normalisation shall not imply that numerically similar values from different Representative Consumer Devices are calibration-equivalent unless that relationship has been established. Bounds, protocol semantics and denominators shall remain explicit through the transformation. Automatic renormalisation of the components that happen to remain available shall not substitute for the required assessment of scope, conceptual coverage and evidence sufficiency.

Source basis: WQI-TG-001 clauses 18.9, 23.7 and 23.10; Architecture-specific scale design (A).

25 Confidence and Score Separation

Assessment Confidence concerns the strength of the evidential basis for the assessment conclusion. WiFi Quality concerns the service that the evidence supports. They are related but conceptually distinct.

Low Assessment Confidence shall not automatically be converted into a low WiFi Quality Score. The appropriate response may be qualification, narrowing of scope, additional evidence, separate confidence communication or withholding. Conversely, a high-confidence assessment may establish poor WiFi Quality.

Where an entire materially relevant Site Area or Dimension lacks scoreable evidence, the absence shall be represented explicitly in evidence-completeness or Assessment Confidence outputs. For an overall claim, a materially relevant Dimension without scoreable evidence requires a narrower score name or withholding under clause 16.3; qualification remains available only where that section permits it. For a materially relevant Site Area without scoreable evidence, the composite shall be qualified or withheld according to Chapters 19 and 31.

Source basis: WQI-TG-001 clause 31.12 and clause 23.10; Architecture-specific output qualification rules (A).

PART V — Outputs, Interpretation and Communication

This Part governs how scores and related numerical outputs are named, compared and communicated.

26 Composite WiFi Quality Scores

A composite WiFi Quality Score summarises the assessment outcome across the conceptual coverage declared by its Scoring Profile. It shall be accompanied by enough dimensional or Finding-level information to prevent the scalar result from being mistaken for uniformity.

Two services may receive the same composite score for different reasons. Composite equivalence is not evidence of identical network behaviour.

An output represented as overall WiFi Quality is subject to the coverage rules of Chapter 16. A materially incomplete conceptual scope shall not be converted into an overall claim merely through a footnote or general disclaimer. Separate phased assessments shall not be turned into one wider assessment merely by averaging their score outputs; any later combined claim requires a separately justified Assessment Scope and compatible evidence basis.

Source basis: WQI-TG-001 clauses 26.10, 27.3, 27.9, 27.11 and Appendix F.12.

27 Domain and Dimension Scores

Domain and Dimension scores can improve transparency by showing which parts of WiFi Quality contributed to the composite. A Dimension score shall correspond to a WQI-defined Dimension. An implementation-specific score combining several Dimensions shall use a distinct analytical name.

A Domain score shall not imply that all material characteristics of that Domain were established when only a narrow subset was assessed. Domain and Dimension scores may also support anti-masking by ensuring that a materially weak component remains visible even when a composite is comparatively high.

Source basis: WQI-FWK-001 Chapters 5–7; WQI-PRN-001 clause 16.3; Architecture-specific output-coverage rules (A).

28 Use-Case and Capability Scores

Use-case capability scores answer whether an observed service appears suitable for a particular activity. They may draw on the same Assessment Findings but apply use-case-specific thresholds or weights. They are conceptually narrower than a WiFi Quality Score and shall not be averaged into an overall score unless the Scoring Profile explicitly justifies that relationship.

Where capability scores are communicated publicly, the assumptions and evidence basis shall be stated sufficiently to avoid treating a generic activity label as a guarantee of individual application performance.

Source basis: WQI-TG-001 Appendix G.10; Architecture-specific capability-output governance (A).

29 Relationship with Certification

Certification is a conformity decision under the applicable programme. A WiFi Quality Score may inform that decision, but does not determine it unless the programme explicitly establishes such a rule.

Certification requirements that do not directly describe observed quality — for example governance, evidence retention or programme assurance — shall remain distinguishable from the WiFi Quality Score. Conversely, a characteristic relevant to quality is not excluded from scoring solely because a programme also regulates it; its treatment shall follow the declared conceptual coverage and evidential basis of the Scoring Profile. Programme-specific obligations shall not be inserted into the quality score solely to align it with a certification tier, and programme determinations of coverage completion, sampling sufficiency or eligibility shall remain distinguishable from the assessed level of quality.

The following outputs shall remain distinguishable:

- WiFi Quality Score — structured expression of assessed quality;
- Certification Eligibility / Readiness — the extent to which applicable programme requirements appear satisfied;
- Certification Decision — the formal conformity outcome reached under programme governance.

A WiFi Quality Score is not a grant of certification. A certification tier is not a score band unless the programme explicitly chooses and justifies that design.

Source basis: WQI-TG-001 clauses30.5–30.7; Architecture-specific separation of score and programme obligations (A).

30 Comparability

Scores are meaningfully comparable only where the underlying assessments and Scoring Profiles are sufficiently comparable. Surface equality of scale does not establish methodological equivalence.

A comparison shall identify material differences in:

- assessment-methodology version;
- Scoring Profile and parameter-set version;
- Assessment Scope and included Declared Service Areas;
- Operational Context where material;
- evidence availability and assessment pathway;
- sampling strategy and temporal coverage;
- device class or measurement method where material; and
- changes in calibration, weighting, transformation or missing-data treatment.

Where scores are used in a comparison or ranking, the possibility that similar composites conceal materially different conditions, and that ordinal positions may reflect differences smaller than the assessment supports, should be disclosed in accordance with WQI-PRN-001 clause16.5.

Historical scores shall remain associated with the versions under which they were calculated. Recalculation may be permitted where retained evidence is sufficient and the recalculated result is clearly distinguished from the original.

Source basis: WQI-PRN-001 clause16.5; WQI-TG-001 clauses18.9 and 27.8.

31 Public Communication

31.1 Final public scores

A publicly communicated WiFi Quality Score shall remain linked to the assessment context that gives it meaning and shall not be represented as the final outcome of an assessment before the applicable Review and finalisation have been completed.

The communication shall identify, or link clearly to:

- the assessed entity or venue;
- the Assessment Scope or an intelligible summary of it;
- the assessment date or actual observation period and, where applicable, validity period;
- the applicable WQI Methodology or equivalent methodological basis;
- the Scoring Profile and score-model version;
- any applicable certification status, identified separately from the score;
- material limitations or qualifications where omission would mislead; and
- a route to supporting Findings or a sufficiently informative assessment summary.

Public communication shall make the status of a score intelligible where relevant, including whether it is final, qualified, corrected or superseded. A validity period shall not substitute for the date or observation period that supports the result, and material deficiencies shall not be hidden behind a composite presentation.

31.2 Working scores

A working score may be shown within the assessment function or provided directly to the assessment customer in an access-controlled context. Each disclosure outside the assessment function shall be recorded with the score version, date and recipient, and the value shall carry its provisional, mutable and not-reviewed status inseparably with it. It shall not be communicated publicly as the outcome of the assessment before Review, and shall not be used as the basis of a public comparison, ranking, certification claim or equivalent external quality representation. Customer or commercial reactions to a working score are not Assessment Evidence and shall not alter Assessment Findings except through new evidence obtained, admitted and qualified under WQI-TG-001.

Public communication about an assessment in progress shall not state a working score.

31.3 Simplification

Public communication may simplify technical detail, but simplification shall not make the score appear more certain, comprehensive or permanent than the underlying assessment supports.

Source basis: WQI-TG-001 clauses 10.1, 27.3, 27.11 and 28.12; WQI-PRN-001 clause 16.6; Architecture-specific Working Score provisions (A).

PART VI — Validation and Governance

A scoring model is a methodological instrument. Its credibility depends on how it is tested, reviewed, versioned and reconstructed over time.

32 Model Documentation

Every approved Scoring Profile shall have a controlled technical specification. Source code alone is not an adequate specification because code records implementation behaviour without necessarily preserving the methodological rationale for that behaviour.

The specification shall document the profile's purpose, conceptual coverage, eligible Findings, transformations, spatial and temporal aggregation, missing-data treatment, anti-masking, confidence separation, calibration, reference cases, versioning, review authority and public-disclosure level. A conformity or review claim shall identify the Scoring Profile, the applicable Architecture edition and the scope actually examined. Appendix B provides an informative documentation aid.

Source basis: WQI-PRN-001 principles of Transparency and Integrity; Architecture-specific documentation controls (A).

33 Calibration and Sensitivity Analysis

Calibration determines whether transformations correspond to the intended meaning of the scale. Sensitivity analysis determines how strongly the output changes when inputs or Findings change.

Calibration and sensitivity analysis should examine:

- whether improvement in a genuinely relevant characteristic produces a non-worsening score, all else being equal; any plateau should be explained;
- whether small fluctuations near a threshold create disproportionately large score changes;
- whether extreme high values dominate beyond their material significance;
- whether penalties remain visible rather than being absorbed by hidden positive credit;
- whether different reasonable weighting assumptions materially alter rankings;
- whether missing evidence creates systematic upward or downward bias;
- whether repeated investigation changes an outcome merely by changing observation count; and
- whether contextual adjustments improve representativeness rather than produce preferred outcomes.

A scoring model should be calibrated to meaning, not to a desired distribution of scores.

Cases used to select or tune thresholds, weights, transformations or caps should be distinguished, where practicable, from holdout or otherwise independent cases used later to test generalisation. Contrary, negative, null and inconclusive results material to a public validation claim shall not be suppressed.

Source basis: WQI-PRN-001 Chapter 14; WQI-TG-001 clause 49.11 as methodological precedent; Architecture-specific validation controls (A).

34 Reference Cases and Stress Testing

Before approval, a Scoring Profile should be exercised against reference cases designed to expose logical weaknesses. The suite should include, at minimum, the following contrasting conditions. A case family may be omitted only where it is demonstrably inapplicable to the profile's declared purpose and scope, with the reason recorded. For a profile using spatial breadth, prevalence, dominant-area or cross-Dimension controls, the corresponding case families are required.

- uniformly strong service;
- uniformly poor service;
- excellent average performance with one material dead zone;
- strong coverage with inadequate capacity;
- high throughput with poor responsiveness;
- stable moderate performance versus highly variable peak performance;
- high RF density without demonstrated service impact;
- diagnostic anomalies without user-visible degradation;
- severe loaded degradation under representative and non-representative stress conditions;
- induced test load distinguished from genuine representative peak operation;
- missing evidence in one material Dimension;
- low Assessment Confidence with otherwise favourable observations;
- multiple Site Areas of different materiality;
- one underlying impairment producing several correlated symptoms;
- two materially different networks producing a similar composite;
- boundary cases immediately above and below material thresholds;
- a small-scope assessment in which one high-materiality Site Area is multi-dimensionally weak while the remaining scope is materially stronger;
- a dominant Site Area containing severe internal failure;
- widespread multi-Dimension failure across several independent Site Areas;
- a materially relevant Site Area with insufficient evidence while the remaining assessed scope is favourable; and
- holdout cases not used to tune the model.

The suite should also test evidential edge cases relevant to the profile, including where applicable: valid service absence versus capture failure; configured timeout versus observed response or supported bound; partial components affected by a shared integrity failure; missing uplink or downlink direction; undefined denominators; investigative repetition; remediation and successor evidence; $A \rightarrow B \rightarrow A$ state return; differences between appropriate Representative Consumer Devices; and phased or reduced Assessment Scope.

Expected qualitative behaviour should be stated before the result of each reference case is examined. The reference-case record should retain unexpected, contrary and inconclusive outcomes rather than rewriting the expected behaviour after the fact. The result of testing one profile shall not be represented as validation of every profile permitted by this Architecture. Reference cases demonstrate behaviour of the profile actually tested.

Source basis: Architecture-specific reference-case governance (A), exercising WQI-TG-001 evidence, scope, temporal and device semantics.

35 Versioning and Change Control

35.1 Scoring-profile versions

Every scoring output shall remain associated with a Scoring Profile version. A material change to weighting, transformations, caps, contextual rules, missing-data treatment or aggregation shall trigger a controlled revision.

35.2 Parameter sets and implementation identity

Where the computational model separates a Scoring Profile from a controlled parameter set, each score shall retain both identifiers. Where practicable, a canonical parameter-set hash and implementation build or source identifier should also be retained for reconstruction.

35.3 Historical scores and rescoring

Historical final scores shall retain their original profile basis. Later rescoring shall create a distinguishable new result rather than silently replacing the original evidence-linked scoring record. A score change caused solely by application of a different Scoring Profile or Architecture edition shall not be described as a service improvement or deterioration. Adoption of a new Architecture edition shall not silently alter existing profiles or historical score records.

35.4 Change classification

Editorial clarification that cannot alter an output may retain the same scoring version. A change capable of altering outcomes under the same Findings shall be treated as a scoring revision and shall have transition instructions where relevant.

35.5 First-edition review and approval record

On 4 October 2026, WQI decided to conduct a Public Technical Review of WQI-TG-002 v1.0 — Public Technical Review Draft (PTR-1) from 4 October 2026 through 3 November 2026 at 23:59 UK time. The review is intended to provide external technical scrutiny before first-edition approval.

Before final first-edition publication, WQI shall record all material comments received through the Public Technical Review and their disposition, together with the final approval authority and approval date.

The 60-day period applicable to Major revisions of WQI-TG-001 is a reference point and is not automatically a requirement for the first edition of this Guide.

Source basis: WQI-TG-001 clauses 27.8 and 49.10 as versioning/governance precedents; Architecture-specific change control (A).

36 Technical Review

Before a Scoring Profile is represented as mature or authoritative, it should be subject to technical review by a competent party with sufficient access to assess purpose, logic, data handling, calibration, limitations and governance. The reviewer's organisational relationship and degree of independence shall be described accurately where they are material to the assurance claimed.

Technical review of a profile's design is distinct from assessment Review under WQI-

TG-001. The former examines the scoring model; the latter examines an assessment and its outputs. Automated checks may support either process but do not erase the distinction.

The reviewer need not receive unrestricted public-disclosure rights to proprietary details. Meaningful review nevertheless requires access sufficient to inspect the material mechanics of the model. Review claims remain subject to the independence and non-overstatement requirements of Chapter 14.

Source basis: WQI-PRN-001 clause11.2; Architecture-specific model-review governance (A).

37 Audit Trail and Reconstruction

A final score shall be reconstructable from retained assessment records and the applicable Scoring Profile version.

The retained record shall identify or reference:

- assessment identifier;
- methodology version;
- Scoring Profile and parameter-set version;
- Assessment Scope and Site Area structure;
- material Assessment Findings used by the score;
- intermediate Domain or Dimension results;
- contextual adjustments;
- caps, gates or equivalent controls applied;
- missing-evidence treatment;
- rounding and display transformation;
- working/final scoring state;
- final unrounded and displayed outputs; and
- superseded-run relationship where later rescoring occurs.

Reconstruction does not require public disclosure of all proprietary coefficients. It requires the organisation responsible for the score to be able to demonstrate, under appropriate review, how the result followed from retained assessment records and the controlled model. The record shall retain the Architecture edition and shall make any departure from the controlled profile or implementation-conformity state visible rather than relying on a completed checklist alone.

Source basis: WQI-TG-001 Chapter 27 and clause20.11 for retention of a traceable and recoverable evidential basis; Architecture-specific reconstruction controls (A).

38 Implementation Conformity

Software calculating a WiFi Quality Score shall implement a controlled Scoring Profile and shall not become the undocumented source of scoring policy.

Implementation conformity should be verified through automated regression tests, reference-case comparison and periodic checks that running software produces outputs consistent with the controlled specification. A conformity claim shall identify the profile, Architecture edition, implementation identity where relevant, and the scope actually examined.

Where code and specification conflict, the difference shall be treated as a controlled

defect and shall be disclosed to the extent material to any conformity claim. The methodological description shall not be rewritten silently to legitimise unintended software behaviour. Implementation principle: specification defines the model; software implements the specification; tests verify conformity.

Source basis: WQI-TG-001 clause 5.1.3; Architecture-specific implementation-conformity controls (A).

PART VII — Conclusion

Scoring can make WiFi Quality easier to communicate only when numerical simplicity remains subordinate to methodological integrity.

39 The Role of Scoring within WiFi Quality

The WiFi Quality Score occupies a deliberately limited place within the WQI assessment architecture. It follows evidence and Findings; it does not precede them. It communicates an assessment; it does not replace one. It may support certification; it is not certification. It may support comparison; it does not make methodologically different assessments comparable merely because they share a numerical scale. These distinctions are what make useful scoring possible. Once the model preserves scope, material variation, conceptual alignment, uncertainty and traceability, the result gains meaning because the reader can understand what it represents and a competent reviewer can examine how it was produced.

The purpose of this Architecture is not to standardise one universal formula. The more durable objective is to standardise the methodological obligations that any scoring formula must respect.

Source basis: WQI-TG-001 Chapters 26–27; WQI-PRN-001 clauses 16.3, 16.5–16.6.

40 Closing Principle

A WiFi Quality Score is a structured expression of Assessment Findings. Its authority derives from the assessment behind it, its meaning from the scope and methodology within which it was produced, and its credibility from the transparency, relevance, contextuality, integrity, objectivity and reviewability of the scoring architecture that transformed those Findings into a communicable result.

Source basis: WQI-TG-001 clauses 26.10 and 27.5; WQI Principles of Objectivity, Transparency, Relevance, Contextuality and Integrity.

Appendix A — Definitions

Term	Definition
Assessment Confidence	The confidence reasonably placed in an assessment as a whole once all relevant Assessment Evidence has been correlated, distinct from Measurement Confidence. Source: WQI-TG-001 Appendix A.
Assessment Scope	The defined boundaries within which a WiFi Quality assessment is conducted, specifying what is included in, and excluded from, the assessment. Source: WQI-TG-001 clause11.8 and Appendix A.
Declared Service Area	The physical area within which the organisation declares that WiFi service is intended to be provided. Source: WQI-TG-001 clause11.9.
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. Source: WQI-TG-001 clause11.20.
Causal Boundary	The most specific causal scope that the available Assessment Evidence can support without exceeding its evidential resolution. Source: WQI-TG-001 clause11.18 and Appendix A.
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. Source: WQI-TG-001 clause11.16 and Appendix A.
Composite Score	A score derived from the controlled aggregation of two or more score components, Domains, Dimensions or Findings.
Diagnostic Finding	A Finding supported by the Assessment Evidence concerning the explanation of an observed condition, within the applicable Causal Boundary. A possible explanation not so supported remains a Causal Hypothesis.
Dimension Score	A score explicitly representing one WQI-defined Dimension of WiFi Quality.
Domain Score	A score explicitly representing one of the WQI Technical, Operational or Human Domains.

Term	Definition
Material Failure	A failure that is material, in the sense of WQI-PRN-001 clause 7.6, to the claim made at the level at which aggregation occurs. See Chapter 21.
Non-Compensatory Rule	A scoring rule that prevents strength in one component from fully cancelling a material failure in another.
Scoring Component	An implementation-specific quantitative element used within a Scoring Profile. A scoring component is not automatically a WQI Dimension.
Scoring Profile	A controlled implementation specification defining the purpose, conceptual coverage, transformation logic, aggregation, contextual rules, normalisation, missing-data treatment and governance of a particular score.
Working Score	A provisional, mutable score calculated from current, not yet final, Assessment Findings while the assessment evidence state remains open and before applicable Review and finalisation.
Final Scoring Record	A controlled record of a final score associated with a defined evidence state and profile version, preserved so that later rescoring remains distinguishable.
WiFi Quality Score	A structured score output derived from Assessment Findings and intended to communicate the level of WiFi Quality established within a defined Assessment Scope under the applicable methodology and Scoring Profile. WQI-DOC-001 describes the Score in metric/Attribute aggregation terms; this Architecture follows WQI-TG-001 in deriving scores from Assessment Findings, within which measured values enter only through controlled Finding-to-score transformations.

Appendix B — Scoring Model Documentation Aid

A controlled Scoring Profile should document at least the following recommended content:

1. Score name and stated purpose.
2. Scale and interpretation of minimum, maximum and intermediate values.
3. Conceptual coverage and mapping of each Dimension of the referenced Framework edition where the output is overall, composite or Domain-level.
4. Assessment Findings eligible to affect the score.
5. Evidence prerequisites for each Finding category.
6. Transformation functions, bands or decision logic.
7. Spatial aggregation from RTLs to Site Areas and Assessment Scope.
8. Temporal and operational aggregation rules.
9. Contextual adjustment rules.
10. Missing-evidence and uncertainty treatment.
11. Anti-masking rules, caps, floors, gates or equivalent controls.
12. Double-counting safeguards.
13. Normalisation, computational precision and rounding rules.
14. Relationship with Assessment Confidence.
15. Relationship with diagnostic outputs.
16. Relationship with certification or other external decisions.
17. Calibration basis and validation evidence.
18. Reference-case test suite and holdout/independent validation approach.
19. Version identifier, effective date and change history.
20. Working/final score lifecycle and finalisation event.
21. Controlled parameter-set identity and reconstruction identifiers where used.
22. Review and approval authority.
23. Public-disclosure level and any proprietary elements.

Appendix C — Output Classification Matrix

Output	Primary concept	Primary WQI role	Automatic effect on WiFi Quality Score?
WiFi Quality Score	Assessed overall or declared-scope quality	Structured expression of Assessment Findings	N/A — it is the quality score.
Coverage / Capacity / Reliability / other Dimension score	Specific WQI Dimension	Dimensional explanation	Only through declared composite logic.
Assessment Confidence	Strength of evidential basis	Quality assurance	No.
Diagnostic confidence	Strength of causal hypothesis	Evidence interpretation	No.
RF congestion indicator	Environmental or causal context	Diagnostic / contextual evidence	Only where it supports a material quality Finding under the profile.
Roaming-efficiency indicator	Possible mobility inefficiency	Diagnostic evidence	Only where material continuity or quality impact is established.
Demand-capacity indicator	Capacity sustainability evidence	Supports Capacity interpretation	May support a qualified Capacity Finding under declared assumptions; not an automatic deduction.
Certification readiness	Programme compliance	External conformity layer	No.
Use-case capability	Suitability for a defined activity	Application-specific interpretation	Not unless explicitly incorporated into the profile.

Appendix D — Principles-to-Scoring Traceability

WiFi Quality Principle	Scoring implication
Objectivity	Weights, thresholds and transformations require an evidential or methodological rationale; deterministic code is not sufficient by itself.
Independence	Material model-design, review and approval decisions should be protected from improper commercial or outcome-driven influence.
Transparency	Purpose, conceptual coverage, evidence categories, transformations, limitations and reviewability shall be intelligible.
Relevance	Only evidence and Findings meaningfully related to the characteristic being scored shall affect the result.
Contextuality	The meaning of evidence and score outputs remains tied to Assessment Scope, representative conditions, service purpose and Operational Context.
Integrity	Material evidence, limitations, uncertainty, aggregation effects and model changes shall not be concealed or selectively represented.

Appendix E — Conformance Checklist

This checklist is an informative aid and is not exhaustive. Conformity is assessed against every requirement in the body. A check does not replace clause-level review. “R” means the check is principally received from a cited WQI source; “A” means it is proposed or strengthened by this Architecture. “Req.” indicates that the body contains a corresponding shall requirement; “Rec.” indicates a recommendation.

Clause	Check	Strength	Basis
2.2, 5	The applicable Architecture and source editions and the extent of any alignment claim are identified.	Req.	A
5.5	Materiality uses the WQI-PRN-001 clause 7.6 standard and is not determined by magnitude alone.	Req.	R/A
7, 15, 18	The score is derived from Assessment Findings rather than isolated measurements.	Req.	R
7, 22	Endpoint or measurement-infrastructure limitations remain distinguishable from supported service limitations.	Req.	R
10, 22	Causal hypotheses are not promoted to Findings and causal specificity does not exceed the Causal Boundary.	Req.	R/A
11	Public explanations are not substantively more favourable, comprehensive or certain than the technical basis.	Req.	R/A
12–13	Device, measurement, missing, invalid and temporal evidence semantics remain	Req.	R/A

Clause	Check	Strength	Basis
	distinct; later favourable evidence does not erase earlier valid evidence.		
14	Commercial objectives or certification-tier targets do not determine Findings or undocumented score adjustments.	Req.	R
15	Working and final scores are derived from Findings; pre-Findings indicators are not WiFi Quality Scores.	Req.	R/A
16.1	Implementation-specific analytical categories are not mislabelled as WQI Dimensions.	Req.	R/A
9	Score types, confidence, diagnostic outputs, capability and certification outputs remain terminologically distinct.	Req.	R/A
16.2–16.4	Overall claims address material characteristics across all Domains; wholly unassessed material Dimensions are not converted into overall claims; Human-Domain coverage is not created by relabelling a network metric.	Req.	A
17	The profile declares Assessment Scope, included Declared Service Areas, Site Area structure, protocol/evidence basis and controlled versions.	Req.	R/A
18	Direction, protocol family, denominators, bounds and partial	Req.	R/A

Clause	Check	Strength	Basis
	results retain their measurement semantics.		
19.2–19.5	Site Areas and materially distinct units remain represented; Assessment Scope, Declared Service Area and WiFi Service Area remain distinct.	Req.	R/A
19, 21	Material Site Area failure cannot be hidden solely by favourable aggregation.	Req.	R/A
20	Induced load is not occupancy; state recurrence and temporal coverage do not create unsupported comparability or persistence claims.	Req.	R/A
21	Anti-masking controls are fixed prospectively in the controlled profile and versioned.	Req.	A
21.4, 34	Where the profile uses spatial breadth, prevalence, dominant-area or cross-Dimension controls, the corresponding small-scope and stress-test families are required.	Req. where applicable	A
22	Observed service effects remain distinct from diagnostic causes.	Req.	R/A
23	The model contains a documented safeguard against unjustified double counting.	Req.	A
24	Scale anchors, normalisation, precision and rounding are controlled; renormalisation does	Req.	A

Clause	Check	Strength	Basis
	not replace scope/evidence-sufficiency assessment.		
25	Assessment Confidence is separate from the quality score; absent evidence is not converted to low quality.	Req.	R/A
26–28	Composite, Domain/Dimension and capability outputs are named according to their actual scope; phased assessments are not merged by averaging alone.	Req.	R/A
29	Score, certification readiness and certification decision remain distinguishable; programme obligations do not enter the score merely to align with a tier.	Req.	R/A
30	Comparisons identify material methodological differences; ranking limitations are disclosed where relevant.	Req./Rec.	R/A
31.1	Public score communication identifies scope, date/observation period, versions, certification status, limitations and supporting context, and makes result status intelligible.	Req.	R/A
31.2	Customer disclosure of a working score is access-controlled, recorded and	Req.	A

Clause	Check	Strength	Basis
	inseparably labelled provisional/unreviewed; customer reaction does not alter Findings without new Assessment Evidence.		
31.3	Simplification does not overstate certainty, coverage or permanence.	Req.	R/A
32	The Scoring Profile has a controlled technical specification and review/conformity claims state the edition and scope examined.	Req.	A
33	Calibration and sensitivity analysis examine non-worsening behaviour, threshold sensitivity, missingness bias, observation-count effects and contextual effects.	Rec.	A
33	Public validation claims disclose contrary, negative, null and inconclusive material results.	Req.	R/A
34	The reference suite covers the minimum contrasting families unless demonstrably inapplicable and includes applicable evidential edge cases.	Rec.; Req. where invoked by clause 21.4/21.5	A
34	Expected behaviour should be stated before results are examined; testing one profile is not represented as validation of every permitted profile.	Rec./Req.	A
35	Profile, parameter, implementation and	Req.	A

Clause	Check	Strength	Basis
	Architecture versions support reconstruction and controlled revision; model-version changes are not misreported as service change.		
36	The reviewer's relationship and degree of independence are described accurately; review is not overstated as independent validation.	Req./Rec.	R/A
37	The retained final record identifies the reconstruction inputs and versions; later rescoring does not overwrite the original silently.	Req.	A
38	Software implements the controlled profile; conflicts are treated as defects, and conformity claims identify the profile, Architecture edition and examined scope.	Req.	A

Appendix F — Illustrative Architecture Diagrams

F.1 Complete scoring relationship

REAL WIFI SERVICE → Measurement → Observation → Assessment Evidence → Evidence Correlation → Observed Network Reality → Assessment Findings → Scoring Profile → WiFi Quality Score

Parallel outputs after Findings may include Assessment Confidence, Diagnostic Findings, Use-Case Capability and Certification Input. Findings and any associated score are subject to Review before finalisation.

F.2 Spatial aggregation

Representative Test Locations → Site Area Findings → Site Area Dimension Evaluation → Assessment-Scope Dimension Evaluation → Composite Score

Anti-masking controls may operate at Site Area, Dimension or composite level. Assessment Scope and included Declared Service Areas remain explicit.

F.3 Governance relationship

WQI Doctrine → WQI Framework → WQI Principles → WQI Methodology → WQI Scoring Architecture → Controlled Scoring Profile → Software Implementation → Score Output

Technical review and version control apply across the Scoring Profile and implementation layers.

F.4 Score lifecycle

Open Assessment → Current Assessment Findings → Working / Provisional Score → Evidence may change → Recalculation → Applicable Review → Controlled finalisation event → Fixed evidence state → Final Scoring Record → Versioned reconstruction / superseding rescoring

References

1. WQI-DOC-001 — The WiFi Quality Doctrine: Principles, Frameworks and Foundations for an Emerging Discipline, document version 1.1 (First Edition), July 2026. DOI 10.5281/zenodo.21821067.
2. WQI-FWK-001 — *The WiFi Quality Framework: Conceptual Architecture, Taxonomy and Domains of WiFi Quality*, v1.0, August 2026. DOI 10.5281/zenodo.21825711 as cited by WQI-TG-001 clause5.2.
3. WQI-PRN-001 — *The WiFi Quality Principles*, v1.0, August 2026. DOI 10.5281/zenodo.21938039.
4. WQI-TG-001 — *Methodology for Real-World WiFi Quality Assessment*, v1.0, September 2026. DOI 10.5281/zenodo.23019135.

About the WiFi Quality Institute

The WiFi Quality Institute develops technology- and vendor-neutral resources for the study, assessment and communication of WiFi Quality.