

Ookla response
to
Telecom Regulatory Authority of India
Consultation Paper
on
'Regulation on
Rating Framework for Digital Connectivity in
Buildings or
Areas'



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This document has been specifically prepared in response to the Consultation Paper on 'Regulation on Rating Framework for Digital Connectivity in Buildings or Areas'.

The document is submitted on the understanding that the information contained within this document will be treated with the same care and attention that TRAI treats its own confidential and proprietary information.

1. Introduction

The Ookla mission is to measure, understand, and help improve connected experiences and help make the internet better, faster and more accessible for everyone. We are very happy to add some feedback to this assessment and would be happy to add additional insight or comment in the future if needed.

This document is structured to give the reader some background on Ookla who we are and why we have responded. It contains

- a high level introduction to Ookla
- direct responses to the consultation questions
- some additional items which may be of interest

At any time Ookla is open to discussing our test methodologies, practises and results with a relevant audience.

James Carroll - November 9th 2023

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2. Ookla background and solutions

Founded in 2006, Ookla is part of Ziff Davis (NASDAQ: ZD), an American media, internet information and services company. Headquartered in Seattle, Ookla is the global leader in mobile and fixed broadband network intelligence, testing applications, and related technologies. The company's flagship platform, Speedtest®, provides invaluable quality of service (QoS) insights into the performance, quality, and accessibility of networks worldwide. These crowdsourced QoS insights are combined with deep RF and lower-layer measurements collected from controlled drive/walk testing plus real-world consumer quality of experience (QoE) measurements that show a real-world view of popular activities like video streaming, video conferencing, web browsing, gaming, and more. Together, these complementary datasets provide a holistic view of network performance designed to improve connectivity for all.

Ookla's core mission includes providing unbiased, accurate, transparent, and independent data on the state of the internet to three distinct constituencies: consumers, the telecommunications industry, and governments and industry associations. Consumers make informed choices when they have accurate information on the quality and performance of their internet connections. The telecommunication industry relies on Ookla's benchmarking analytics to optimize and improve their networks and better position their services to consumers. The industry also leverages the excellent reputation of Ookla's data to validate claims used in marketing campaigns.

2.1 Points of note about Ookla and Speedtest®

- As official members of the ITU-T (Study Group 12), Ookla partners with leading global operators, test and measurement companies, infrastructure and hardware providers, network analytics providers and regulators to help develop and define quality of service (QoS) and experience (QoE) standards.
- Ookla is the exclusive provider of global network performance data to GSMA Intelligence (GSMAi), a trade body that represents the interests of mobile operators worldwide, uniting more than 750 operators with almost 400 companies in the broader mobile ecosystem.
- As a widely adopted consumer internet intelligence standard, Ookla fixed and mobile data is used by the U.S. Federal Communications Commission (FCC) for internal analysis, reports to Congress and public documents on the status of the telecommunications marketplace.
- Ookla's methodology is globally recognized and accepted as a standard way to measure speed performance having been adopted by more than 400 enterprise clients worldwide.
- The Ookla consumer test methodology is designed to represent real user experience and our test platform has access to more than 15,000 servers worldwide and has conducted over 50 billion tests to date.

- Ookla is fully GDPR compliant and transparent in its data collection methodologies.
- Ookla has a strong Data Science team and applies rigorous data science and filtering to ensure the analyzed results are an accurate and true reflection of real-world performance.
- As an independent third party, Ookla is able to provide validated endorsements of network performance. Ookla does this in more than 80 countries, substantiating marketing claims for more than 120 operators.

3. Ookla's response to TRAI consultation

3.1 Specific Answers to Questions asked

Please note, that as a crowd sourced Internet test and measurement company Ookla's responses relate only to the components within the consultation which we consider ourselves to be experts in. Most items we address are within Chapter 4

3.1.1 With reference to the rating criteria proposed in table at Section 6.2, kindly provide list of possible sub-criteria and corresponding sub-weightage against each criterion with justification? Please also indicate any other aspect which need to be included or modified in the proposed weightage criteria. Please provide your answer with suitable justifications.

Criteria No.	Main Criteria	Weightage	Sub-Criteria Name: sub-weightage
5	Future Readiness of Digital Connectivity Infrastructure	10	Whether Digital Connectivity Infrastructure can accommodate future wireless and wireline technologies
<p>The sub criteria here need better definitions and perhaps also differing criteria based on the building size and location. But in most instances the accommodation for future technologies are based on the availability of future proofed ducting, power and vertical assets for deployment of technology.</p> <p>Giving this a weighting equal to the current experience seems too high.</p>			
6	Provision of Wired Connectivity infrastructure	10	(i) Fibre connectivity (ii) Ethernet connectivity
<p>This criteria could be merged with the wireless connectivity, allowing for an over all 20% for connectivity infrastructure.</p>			
7	Provision of Wireless Connectivity infrastructure	10	(i) Mobile network (ii) Wi-Fi network

What is not clear in the criteria is which methodology will be used to determine these two items. So while they only make up a combined 10% of the overall score these items could be some of the most test intensive items to gather.

Doing a complete wifi and mobile survey of all premises is an absolute must, but deciding to do this via walk testing, crowd source data or some other metric needs to be determined to understand if the weighting is correct.

This being 10% seems low.

8	Availability of Service Providers	10	(i) No. of ISPs having integration with Digital Connectivity Infrastructure (ii) No. of TSPs having integration with digital connectivity infrastructure
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This should not be weighted at 10, it should be lower. While the existence of multiple operators for resilience and also competition is important it should not be more important than the experience on the network.

9	User Experience	10	(i) Subjective assessment i.e., user feedback (ii) Objective assessment i.e., network coverage, average latency and average data rates for wireline and wireless network
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These parameters should be collected from active measurements of some description. Either crowd source metrics, probe metrics within the buildings or from end user devices. Using user feedback to determine this would make this a component which could be manipulated to increase a score. If this remains as user feedback rather than generated by network KPIs the weighting should be lowered.

As a general comment to the overall weighting feels biased towards the installation of equipment. It should follow a balancing act of equipment installation and infrastructural readiness mixed with real user experience. As the user experience cannot be delivered without the underlying infrastructure it would be fair to weigh the experience metrics higher.

3.1.2 The proposed workflow and process of Rating of Buildings for digital connectivity is given in Section-8 of this Chapter. Kindly provide your comments or suggestion for improvement of the proposed workflow and process of rating with justification, if any.

There should be the capacity to have the digital user experience re-assessed at renewal time. Large other components of the scoring methodology will be infrastructural items which do not change without significant capital or outside effort.

However the access to wifi, access to mobile technologies and the quality of experience of these services can be improved within an existing building. Also these items can be assessed remotely using crowd source metrics and tools.

Also over time the expectations of these services will alter. What might be considered adequate experience now will not be the case in the future. These items in particular should be subject to review and alteration at renewal time.

3.1.3 Draft regulation 25 provides broad rating criteria and distribution of weightage out of total rating score at a scale of 100. Please suggest new criteria or changes in proposed criteria if any, and relevant sub-criteria for each criterion and their sub- weightage against respective main criteria with suitable justifications in context of rating of buildings for digital connectivity.

While we do not wish to suggest alternative weightings as the building of compound KPIs involving differing metric types is not a core Ookla competency. What is a core Ookla competency is crowd source network measurements and the building of compound KPIs using them.

Modern networks and connectivity often suffers from having poor quality of experience despite the network infrastructure being appropriately deployed. This is often due to poor coverage, not enough backhaul, poor wifi design, poor interconnect and other reasons. Ookla believes that a higher weighting should be given to the actual experience occurring for end users of the infrastructure.

For example under the current weightings the actual end user experience is given the same weighting as readiness for future technologies which as yet have not been determined.

This will validate that the infrastructure has been correctly deployed, that service is available and that the end result is a positive connectivity experience.

3.1.4 The score threshold for ratings is provided in draft regulation 26. Do you agree with the proposed thresholds? If no, please suggest changes with justification and global references, if any.

These seem adequate.

4. Testing Methods general comment

It would be advantageous to understand the chosen test methodology for connectivity, Quality of Experience, Quality of Service and wifi and mobile coverage surveys.

Knowing if these are to be carried out as intensive in person surveys, crowdsourced metrics, or self certification give a better understanding of what the weightings should be.

It is the belief of Ookla that a mixed methodology for achieving these results is best. Understanding indoor coverage in a granular level is best achieved with walk testing, building world class wifi networks requires scanning and optimization, and benchmarking performance and network changes requires crowd sourcing data.

The understanding of what you wish to measure is a good first step, understanding how you will measure it is however key to making sure the certification is standardized and repeatable.

5. Conclusion

We are always willing to discuss our collection methodologies and the manner in which we in Ookla measure connectivity. Uniquely we have solutions and methodologies which can answer all parts of the connectivity components of this consultation. We would be keen to understand how we can support this further and we are always available for further clarifications and or comments.

Appendix 1

1. Ookla capabilities for regulators and governmental bodies

In many respects, Ookla created the standard for consumer-initiated network performance testing measurements on the web, natively on mobile devices and computer operating systems, and embedded on routers and industrial equipment.

Ookla is the preferred provider of network performance data for many regulatory bodies and trade organisations worldwide. As people and businesses rely more heavily on the internet for education, health and entertainment, access to broadband and mobile internet services doesn't just drive economic growth — it also impacts public safety and quality of life.

That's why providing universal access to fast, reliable internet service is a key priority for most regulators and governments around the world. Ookla® is fiercely committed to measuring the performance and availability of the internet worldwide and reporting on it transparently.

Regulatory bodies need definitive information to make informed policy decisions. A foundation of good governance is ensuring that policy makers have access to the highest-quality, most comprehensive data available in the market. While individual operators' standards for reporting on network performance and coverage may vary, Ookla provides independent and comprehensive data on network speeds, latency, availability, coverage and other key performance metrics.

Good governance is also predicated on policy makers being excellent stewards of public funds. When evaluating where networks need to be improved, it is imperative that regulators leverage unbiased information from private data sources with proven methodological practises.

1.1 How Regulators Use Ookla Data

- Map nationwide broadband service availability and mobile coverage to analyse geographic trends and see how people are or are not connecting with networks
- Access network coverage and consumer-initiated performance data that can be compared against telecommunications service providers' declared coverage maps to validate network claims
- Understand the quality, performance and location of existing networks, how operators are meeting the service obligations of their current agreements and where infrastructure investments are needed
- View how mobile networks perform by operator, spectrum band and device
- Access historical network performance and coverage data to understand trends and progress over time

- Inform policy and spectrum allocation decisions
- Track the rollout and adoption of new spectrum
- Analyse networks in high-traffic areas, popular venues and public spaces to ensure public safety
- Measure a country's network development over time, benchmarked against other countries, regions and the world

2. Items of potential interest

2.1 Cell Analytics

Powered by performance, coverage, and signal measurements from the Ookla® Speedtest® network testing platform, Cell Analytics provides unparalleled intelligence about wireless service quality, RF measurements, data usage, user density (both indoors and outdoors), cell site locations, and much more — surfaced in one easy-to-navigate platform.

Cell Analytics rapidly assesses all networks and technologies down to the individual building level to help operators:

- Assess the performance, quality, and availability of existing networks
- Focus engineering effort where most needed
- Identify and fix network issues faster
- Locate opportunities for capacity expansion to existing macro cell sites
- Prioritize both network optimization and marketing efforts based on coverage, demand, and competitive benchmarking

2.2 Ookla Wind

Ookla's handset-based testing and monitoring solution provides comprehensive network measurements with real-time data processing and visualization. Wind solutions empower users to rapidly build, launch, optimize, and monitor both indoor and outdoor networks, all with consumer network experience at the heart of the system.

Our handset-based Android app provides standalone live testing solutions and chipset-level KPIs. Fully automated, instant reports are processed on the device, within seconds, for faster site verification, acceptance testing.

2.3 Speedtest Intelligence

Drawn from billions of measurements from consumer devices, Speedtest Intelligence provides comprehensive insights on virtually every fixed and mobile network worldwide. Compare network metrics by historical period, chipset, device, and other key variables.

Speedtest Intelligence provides data analysis and competitive insights on:

- Network performance
- Coverage and availability
- Video experience

2.4 Ekahau

Ekahau Connect is the complete collection of must-have tools for Wi-Fi pros and network owners alike. It includes everything you need to design, validate, optimize and troubleshoot your network all wrapped up in an easy-to-use, mobile-optimized package.

Key items that the Ekahau products can achieve are:

Post-Deployment Site Survey – A survey to check that the network has been deployed and configured properly and that the performance is meeting the expectations of the predictive design.

Health Check Survey – Ongoing maintenance surveys used to proactively check Wi-Fi performance over time so you can spot potential interference, coverage or capacity problems before they become costly outages.

2.5 Consumer QoE

Crowdsourced from billions of daily samples on hundreds of millions of consumer mobile devices worldwide, Ookla's powerful combination of network quality of service (QoS) and quality of experience (QoE) analytics helps operators understand and improve their networks.

Analyze in-depth consumer experience metrics for multiple services, including web browsing, streaming video, gaming, and video conferencing. Based on active tests through the SDK, this module allows you to:

- Visualize real-world user experience KPIs with detailed geographic location information
- Identify areas of weakness or strength
- Identify pain points that matter most to users, such as poor video playback or gaming latency
- Correlate user experience with radio environment, throughput, or latency
- Filter results by device, device capabilities, network technology, radio cells, locations, time, and more