



Suruhanjaya Komunikasi dan Multimedia Malaysia

Malaysian Communications and Multimedia Commission

**GUIDELINES TO THE COMMISSION DETERMINATION
ON THE MANDATORY STANDARDS FOR
QUALITY OF SERVICE (WIRELESS BROADBAND ACCESS SERVICE),
DETERMINATION NO. 2 OF 2021**

(SKMM(T)06-SEIR/140.003/Jil. 2 (37))

July 2021

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GLOSSARY

CIMS	Communication Infrastructure Management System
ETSI	European Telecommunications Standards Institute
eNodeB	Radio base station or network node for LTE
FTP	File Transfer Protocol
FWA	Fixed Wireless Access
GPS	Global Positioning System
Klang Valley	Area centered in Federal Territories of Kuala Lumpur and surrounding cities in Selangor districts
LTE	Long Term Evolution
PRB	Physical Resource Block
QoS	Quality of Service
RSCP	Received Signal Code Power
RSRP	Reference Signal Receive Power
UE	User Equipment
WGS	World Geodetic System

PART A: OBJECTIVE AND SCOPE

1. These guidelines are developed by the Malaysian Communications and Multimedia Commission (the "Commission") pursuant to Paragraph '8' of the Commission Determination on the Mandatory Standards for Quality of Service (Wireless Broadband Access Service), Determination No. 2 of 2021 ("Mandatory Standards").
2. These guidelines set out the testing procedures, including test parameter and methodology, reporting templates and explanatory notes for the purpose of network QoS assessment.
3. These guidelines are applicable to terrestrial wireless broadband service, including Fixed Wireless Access Service.

PART B: NETWORK PERFORMANCE QUALITY OF SERVICE

Measurement Methodology

4. Network latency or ping time measures the round-trip time taken by a standard packet size of 32 to 128 bytes to travel across the network from the end user to a dedicated test server located in Klang Valley and back to the end user.
5. Broadband download speed or download throughput measures the speed of downloading data measured in units of megabits per second (Mbps) from dedicated test server located in Klang Valley to the end user.
6. Packet loss measures the percentage of data packets transmitted from the source that fails to arrive at their destinations. It is calculated based on the average of sample measurements between the end user and the dedicated test server located in Klang Valley.
7. The test may be conducted by way of a drive test, walk test or static test.
8. These tests will be carried out by the wireless broadband service providers or the service providers' appointed consultant in accordance to these guidelines and the measurement report shall be provided to the Commission.
9. The Commission at its discretion, may also perform tests on any selected service provider deemed necessary.
10. All tests must be performed during workdays unless allowed by the Commission.

Location Identification

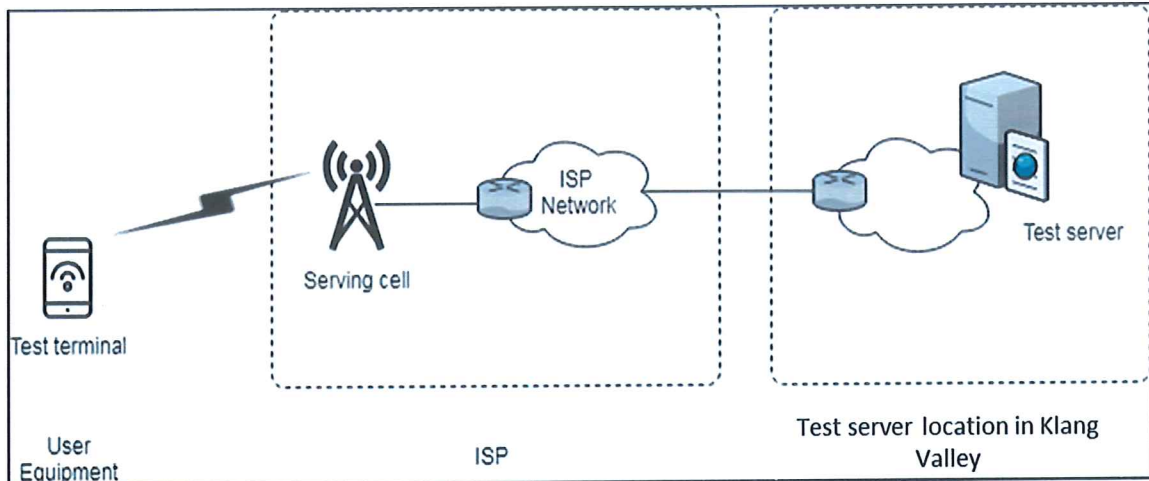
11. Service Provider or the Commission may list out the locations prior to the assessment exercise. Locations of measurement shall not be the same unless requested by the Commission for retest or for verification of network improvements.
12. The tests are to be carried out at locations that have been ascertained to have wireless broadband service coverage.
13. The service coverage will be identified in the following manner:
 - a. Through the service coverage information as advertised in the wireless broadband Service Providers' websites; or
 - b. Through the network indicator display on UE; or
 - c. Where complaints from consumers on individual services by a particular service provider (within service provider's advertised coverage area) are lodged to the Commission.
14. At least 120 locations shall be selected nationwide on quarterly basis, evenly distributed across all regions. Each test location shall have at least 10 samples of throughput attempt and 100 samples of ping attempt.
15. The regions shall be categorized as below:

Northern: Perak, Pulau Pinang, Kedah and Perlis.
Central: Selangor, Negeri Sembilan, Wilayah Persekutuan Putrajaya and Kuala Lumpur.
Southern: Johor and Melaka.
Eastern: Pahang, Kelantan, and Terengganu.
Sabah: Sabah and Wilayah Persekutuan Labuan.
Sarawak: Sarawak.

Testing Procedures

16. The test set up configuration is as shown below:

Diagram 1: Test set up configuration



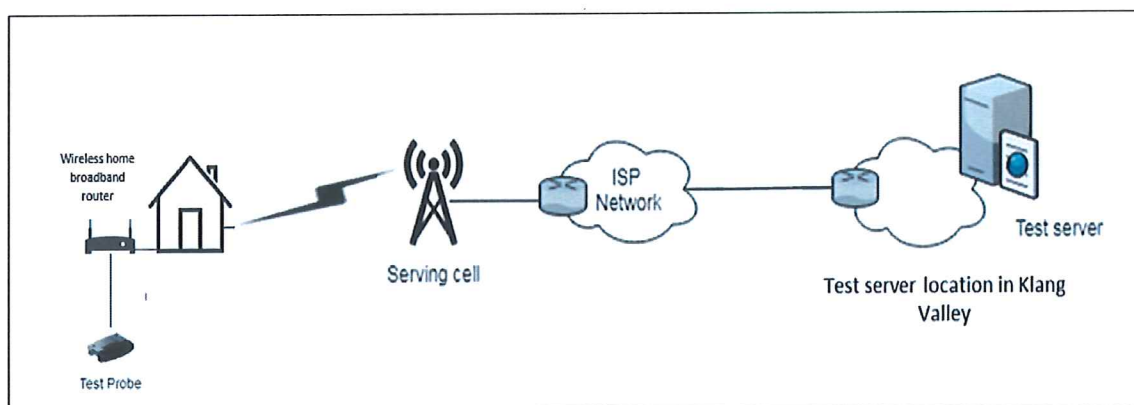
17. A test server or a responder will be configured at MyIX or respective service providers' server located in Klang Valley to act as the target server. UE supporting frequency bands in Malaysia are to be installed with QoS monitoring software for broadband based system testing.
18. Packet size of 32/64/128 bytes will be used for network latency or ping time measurement.
19. The throughput test to be conducted via File Transfer Protocol (FTP). The selection of download file size is subject to the Commission's discretion.
20. The measurement tools used for the tests shall comply with the relevant recommendations from European Telecommunications Standards Institute (ETSI)'s standards or equivalent.
21. The measurement logs produced by the tools must be compatible with the Commission's requirement for the purpose of the Commission's verification and analysis procedure.
22. Geographical positioning will be based on the Global Positioning System (GPS) and the WGS-84 digital map or its equivalent.

23. Serving site network configurations and frequency bands for each test location shall be recorded as required in the reporting template presented within this guideline.
24. All test log files shall be kept accordingly and must be presented to the Commission as and when required.

Fixed Wireless Access Testing Procedures

25. The test set up configuration is as shown below:

Diagram 2: Test set up configuration



26. A test probe will be connected to customer premise equipment (CPE) via LAN cable prior to generate traffic and simulate end-user experience while a test server or responder will be configured at MyIX or respective service providers' server located in Klang Valley to act as the target server.
27. Packet size of 32/64/128 bytes will be used for network latency or ping time measurement. The selection of test packet size is subject to the Commission's discretion.
28. The throughput test to be conducted via file transfer protocol (FTP). The selection of download file size is subject to the Commission's discretion.
29. Geographical positioning will be based on the Global Positioning System (GPS) and the WGS-84 digital map or its equivalent.
30. Serving site network configurations and frequency bands for each test location shall be recorded as required in the reporting template presented within this guideline.

31. All test log files shall be kept accordingly and must be presented to the Commission as and when required.

Service Prioritization & Misrepresentation

32. A validation procedure shall be applied to avoid any service/application prioritization in order to ensure the test is conducted in a fair manner representing real user experience. These prioritizations include but not limited to the following:
 - a. SIM based prioritization.
 - b. Service based prioritization such as, application, port number, IP address, type of service, etc.
33. Any service provider found to perform alteration to the network configuration or manipulation during test measurement such as service prioritization, shall be considered as non-compliance and shall be penalized with the following, but not limited to:
 - a. All results found to be manipulated during the said test will be zeroed.
 - b. The zeroed results will be included into the overall calculation for compliance.
34. The report of the test shall not be misrepresented. Any misrepresentation or false reporting of measurement and report shall be considered as non-compliance to the Mandatory Standards.

Network Utilization

35. Service providers shall provide to the Commission the statistics obtained from the service providers' actual network monitoring on the following parameters:
 - a. Percentage of PRB utilization for each eNodeB.
 - b. Percentage of Backhaul utilization for each base station.

PART C: REQUIREMENT FOR REPORT SUBMISSION

36. All reports that are required to be sent to the Commission should be sent to address and/or email as below. The Commission shall notify the service providers of any changes to the reporting address or email.

Malaysian Communications and Multimedia Commission
MCMC Tower 1, Jalan Impact, Cyber 6,
63000 Cyberjaya
Selangor Darul Ehsan

Email: qos.dept@mcmc.gov.my

37. These reports shall be in the form and format as described below. Each report shall be accompanied by a declaration signed by the Chief Executive Officer (or any other person that holds an equivalent designation) of the service provider duly authorised by the board of directors, stating that each report is true and accurate.
38. The service provider shall submit the reports based on the following timelines:

Table 1: Reporting Timeline

No	Item	Reporting Period	Report Submission Date
1	Quarterly Measurement Report for Wireless Broadband Access Service	Quarterly	By 30 th of the following month of each quarter
2	Quarterly Report on Network Utilization	Quarterly	By 30 th of the following month of each quarter

39. The report submitted shall include all relevant information regarding the test conducted including but not limited to:
- Time and date for each test conducted for each location.
 - Information on the test tools used for the test.
40. The service providers shall submit network QoS measurement assessment report based on the format as described in **Attachment 1** of this document.
41. The service providers shall submit network utilization reports based on the format as described in **Attachment 2** of this document. The Commission shall request proof of rectifications and any relevant data and/or access to data for verification.

Subjected Areas for Mandatory Standards

42. The Mandatory Standards for wireless broadband access service shall be enforced in all states and federal territories in Malaysia.
43. The Mandatory Standards for wireless broadband access service measurement shall be enforced per location.
44. The Mandatory Standards for wireless broadband access service network utilization shall be enforced per base station.

PART D: EFFECTIVE DATE AND COMMISSION CONTACT

45. These guidelines shall come into effect on 1 August 2021, and shall continue to be effective unless modified, varied or revoked by the Commission. For avoidance of doubt, all actions under investigation initiated, actions taken and/or decisions made, under the revoked guidelines, shall continue to be valid and effective in relation to whom they apply, until discontinued or revoked, as the case may be.
46. These guidelines shall replace the Guidelines to The Commission Determination on the Mandatory Standards for Quality of Service (Wireless Broadband Access Service) - Determination No. 1 of 2016.

Attachment 1

Table 2: Format for Wireless Broadband Access Service Measurement Report

No.	Location Name	Coordinate (Latitude, Longitude)	State	[1] Serving Site ID	[2] Serving Site Technology and frequency bands	[3] PRB utilization (%)	[4] Backhaul Type	Backhaul capacity (Mbps)	[5] Backhaul Utilization (%)	Avg. Signal Strength (i.e. RSRP, RSCP in dBm)	Avg. DL Speed (Mbps)	[6] (%) of DL Speed \geq 2.5 Mbps	Avg. Packet Round-Trip Time (ms)	[7] (%) of Ping RTT \leq 150 ms	[8] Packet Loss (%)		
1																	
2																	
.																	
.																	
n																	

- [1] Site identification name should be the same as uploaded in CIMS
- [2] Frequency band configuration for each base station (LTE900, LTE1800, LTE2100, WCDMA2100, etc.)
- [3] Average eNodeB utilization during test day
- [4] Microwave or Fiber backhaul
- [5] Average backhaul utilization during test day
- [6] Based on application throughput download average
- [7] Based on successful ping transmitted and received
- [8] Based on ping transmitted but was not received at sender

Attachment 2

Table 3: Format for Network Utilization Reports

No	Serving Site ID	Coordinate (Longitude & Latitude)	State	Backhaul Type (Microwave /Fiber)	[1] Backhaul Capacity (Mbps)	[2] Backhaul Utilization (%)	[3] LTE Frequency Configuration	[4] LTE PRB Utilization (%)	Compliance (Yes/No)
1									
2									
.									
.									
n									

[1] Total backhaul capacity in Mbps for each base station

[2] Percentage of utilization based on average of daily backhaul utilization per quarter for each base station

[3] Frequency band configuration for each base station (LTE900, LTE1800, LTE2100, etc.)

[4] Percentage of utilization based on average daily PRB utilization per quarter for each base station (eNodeB)