

Public Inquiry Document for Mandatory Standards for Quality of Service for Wireless Broadband
Access Service



Suruhanjaya Komunikasi dan Multimedia Malaysia

Malaysian Communications and Multimedia Commission

**PROPOSAL FOR THE NEW MANDATORY STANDARDS FOR THE
QUALITY OF SERVICE (WIRELESS BROADBAND ACCESS SERVICE)**

18 September 2015

This Public Inquiry Paper is prepared in fulfilment of Sections 58 and 61 of the Communications and Multimedia Act 1998.

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PREFACE

The Commission is hereby holding a Public Inquiry on the proposal for the new Mandatory Standards for Quality of Service (Wireless Broadband Access Service), and invites members of the public and interested parties to participate in this inquiry by making written submissions on any matter they consider relevant to the inquiry. Written submissions, in both hard copy and electronic form, should be provided to the Commission in full by **12 noon, 5 November 2015 (Thursday)** and addressed to:

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

Attention : Service Quality and Spectrum Operation Division
Or E-mail : smts@cmc.gov.my
Or Fax : +60 3 86 88 10 00

In the interest of fostering informed and robust consultative process, the Commission may make available extracts of or entire submissions for others to read. Any commercially sensitive information should be provided under a separate cover and clearly marked "CONFIDENTIAL". Respondents are encouraged to support their comments with reasons and where appropriate provide or refer to evidence or other relevant information in support of their comments.

Incomplete and/or late submissions will not be considered.

The Commission thanks the public and all interested parties for their participation in this consultative process and for providing their submissions and feedback.

GLOSSARY

CMA1998	Communications and Multimedia Act 1998 (Act 588)
Commission	Malaysian Communications and Multimedia Commission
MS	Mandatory Standards
MSQoS	Mandatory Standards for Quality of Service
PI	Public Inquiry
QoS	Quality of Service

PREAMBLE

1. Broadband usage in Malaysia is growing at a very fast pace. In steering the industry to accommodate the Malaysian public and moving Malaysia to be a smart nation by year 2020, an MSQoS for Wireless Broadband Service is proposed.
2. The Commission recognizes in the determination of an MSQoS for Wireless Broadband service, certain considerations must be taken including the current network scenario, network capabilities or readiness and user devices availability. Considerations are also made due to the increase of broadband usage, changes in customer expectations and perception towards service delivery. Therefore, pursuant to section 104 (2) of the CMA1998, the Commission hereby undertakes the initiative to determine an MSQoS for Wireless Broadband Service. This MSQoS covers the standards for Quality of Service for delivery of data, video or voice over the internet protocol for Wireless systems.
3. The proposed mandatory standards are based on international best practices where possible and address current issues in relation to wireless broadband service in Malaysia. This mandatory standards proposal also seeks to strengthen and streamline the QoS framework for current and future technologies. In order to meet the year 2020 target, this MSQoS spells out a progressive phase of standards i.e:
 - a. Phase 1: Effective 1 January 2016 - 31 December 2017 and;
 - b. Phase 2: Effective 1 January 2018 – 1 January 2020.

PUBLIC INQUIRY PROCESS

4. Section 58(2) of the CMA1998 provides that the Commission may hold a public inquiry if it is satisfied that the matter is of significant interest to either the public or to current or prospective licensees under the CMA1998. The objective of such a public inquiry is to inform as well as to invite views of the public and the licensees under the CMA1998 on the matter at hand.
5. The Commission is of the view that it is appropriate in the circumstances to hold a public inquiry under section 58 (2)(b) of the CMA1998 in order to obtain industry and public comment, and to promote transparency in the exercise of its powers.
6. Under section 61 (1) (d) of the CMA1998, the Public Inquiry period shall be a minimum of forty-five (45) days, within which public submissions are invited. In the present Public Inquiry, licensees and the public are given 45 days to formulate and submit their views on the matter.
7. The Commission shall take into consideration all submissions received within the Public Inquiry period. The Commission is required under section 65 of the CMA1998 to publish a report setting out its findings as a result of any inquiry it conducted, and such report shall be published within thirty (30) days of the conclusion of the inquiry. The Commission shall summarize the submissions received and publish the same in the report.

PART A: INTERPRETATION PART OF THE STANDARDS

8. The following interpretations shall be used in this Mandatory Standards for Quality of Service (Wireless Broadband Access Service):

“ASP” means Applications Service Provider;

“business day” means a day in which commercial banks in the respective states in Malaysia are normally open for business, and excludes gazetted public holidays;

“complaint” means any verbal or written expression of dissatisfaction by customer to service provider regarding the service provider’s service and product, which requires action by the service provider to address the issues raised. A request by customer for information or advice or an inquiry seeking clarification will not be classified as a complaint. However, if no or inadequate action is taken by the service provider on a request for information or advice or inquiry seeking clarification, the subsequent follow up to the service provider would be classified as a complaint;

“customer” means a person who, for consideration, acquires or subscribes to the wireless broadband access service;

“MyIX” means Malaysia Internet Exchange, a non-profit Internet Exchange where local Internet Service Providers and content providers connect to in order to exchange internet traffic.

“NSP” means Network Service Provider;

“service providers” means an Applications Service Providers or a Network Service Provider who provide wireless broadband access service.

“end user” means a person who receives, requires, acquires, uses or subscribes to the wireless broadband access service and may include a customer;

“guidelines” means a guidelines issued by the Commission pursuant to paragraph 9 of the Commission Determination on the Mandatory Standards for Quality of Service (Wireless Broadband Access Service);

“reporting period” means the calendar quarters ending 31 March, 30 June, 30 September and 31 December;

“resolved” in relation to a complaint means that the complaint was addressed and the problem was rectified;

“RNC” means radio network controller;

“eNodeB” means E-UTRAN Node B;

“ASN” means access service network;

“FDD” means frequency division duplex;

“TDD” means time division duplex; and

“wireless broadband access service” means a wireless connectivity of communication bandwidth service has a minimum downstream capacity of 650Kbps.

PART B: REQUIREMENT FOR REPORT SUBMISSION

9. The Commission is proposing for the Quality of Service performance reports to be submitted to the Commission no later than 30 days from the end of the reporting period. The timelines for reporting are as follows:

Table 1: Reporting Timelines

No	Reporting Period	QoS Report Submission Date
1.	1st January to 31st March	By 30th April of the same year
2.	1st April to 30th June	By 31st July of the same year
3.	1st July to 30th September	By 31st October of the same year
4.	1st October to 31st December	By 31st January of the next year

10. The relevant NSPs and ASPs shall publish the report on their official websites.

PART C: PROPOSED QUALITY OF SERVICE STANDARD

11. A summary of the proposed QoS standards are outline in the Table 2 below:

Table 2: Proposed Quality of Service Standards

	Quality of Service Indicator	Proposed Quality of Service Standard
i.	Network latency (ping time)	Network latency must be not more than 250 ms, 70 % of the time based on test sample.
ii.	Broadband speed (Throughput)	Broadband speed must be: (a) not less than 650Kbps, 80.0 % of the time for TDD and 65 % of the time for FDD effective from 1 January 2016; and (b) not less than 1 Mbps, 80.0% of the time for both TDD and FDD effective from 1 January 2018.
iii.	Packet loss	Packet loss must be not more than 3.0 %, calculated based on the average of the test sample.
iv.	Advanced Notice of Scheduled downtime	Every session of scheduled downtime due to occur in a quarterly reporting period must be notified to customers not less than 24 hours in advance; and Every session of scheduled downtime due to occur in a quarterly reporting period must be notified to the Commission in writing not less than 72 hours in advance.
v.	Service Disruption	Any RNC, eNodeB or ASN must not be out of service for 30 minutes or longer. Service provider must notify the Commission within 60 minutes of any single service disruption incident that involves a RNC, eNodeB or ASN being out of service for 30 minutes or longer and affecting customers. Service provider must submit a comprehensive report to the Commission within 7 business days of the occurrence of

		any single service disruption incident that involves a RNC, eNodeB or ASN being out of service for 30 minutes or longer and affecting customers.
vi.	Percentage of billing related complaints	Percentage of billing related complaints must be not more than 1.0% per quarterly reporting period.
vii.	Non-billing related complaints per 1,000 customers	Non-billing related complaints must be not more than 6.0 complaints per 1,000 customers per quarterly reporting period.
viii.	Promptness in resolving customer complaints	<p>The standard on promptness in resolving customer complaints, separately measured for billing related complaints and non-billing related complaints, for every quarterly reporting period is:</p> <p>Not less than 60.0% must be resolved within 3 business days;</p> <p>Not less than 90.0% must be resolved within 5 business days; and</p> <p>Not less than 95.0% must be resolved within 15 business days.</p>
ix.	Promptness in answering calls to Customer Hotline	<p>At least 80.0% of calls to Customer Hotline that opted for human operator in a quarterly reporting period must be answered within 20 seconds; and</p> <p>At least 90.0% of calls to Customer Hotline that opted for human operator in a quarterly reporting period must be answered within 40 seconds.</p>

PART D: QUALITY OF SERVICE INDICATORS, MEASUREMENTS, STANDARDS, NOTIFICATION AND REPORTS

12. The Mandatory Standards shall be segregated into two (2) parts, namely Network Performance and Customer Service Quality of Service. The applicable indicators, measurements and standards are listed in Tables 3 & 4.

13. Standards for Network Performance are outlined in Table 3 below:

Table 3: Network Performance

	Quality of Service Indicator	Description / Definition / Formula / Measurement / Reporting Requirement	Quality of Service Standard	Remarks / Rationale / Justification
i.	Network latency (ping time)	This indicator measures the round-trip time taken by a standard packet of 64 bytes to travel across the network from the end user to MyIX and back to the end user.	Network latency must be not more than 250 ms, 70 % of the time based on test sample.	<ul style="list-style-type: none"> • Network latency will test the responsiveness of the network from the end user to the destination server hosted locally in MyIX. Radio frequency (RF) environment such as interference, signal attenuation and coverage have been considered in deriving the standards of 250 ms round-trip time 70% of the time. • Based on other countries publication¹ on wireless broadband latency, the 3G

¹ IDA MyConnection SG results from October 2014 to March 2015

				<p>services latency varies from 100 ms to 260 ms. Better latency performance can be seen for 4G network with average of 47 ms.</p> <ul style="list-style-type: none"> The Commission has taken into account the RF environment effect on the network latency hence 250 ms is considered since 3G network has been widely adopted within Malaysia.
ii.	Broadband speed (Throughput)	This indicator measures the speed of uploading and downloading data measured in units of megabits per second (Mbps) between the end user and MyIX. This is to be measured and reported separately for uploading and downloading.	<p>Broadband speed must be:</p> <p>(a) not less than 650Kbps, 80.0 % of the time for TDD and 65 % of the time for FDD effective from 1 January 2016; and</p> <p>(b) not less than 1 Mbps, 80.0% of the time for both TDD and FDD effective</p>	<ul style="list-style-type: none"> Broadband speed of at least 650 Mbps is taken based on standard video streaming download speed needed to stream video². Current TDD spectrum is specifically used for data services while FDD spectrum have to cater for both data and voice services, therefore a different sets of standards are

² <https://www.fcc.gov/guides/broadband-speed-guide>

			from 1 January 2018.	<p>required between the two technologies in the initial phase.</p> <ul style="list-style-type: none"> • A moratorium period of 2 years is given as future use of wireless broadband is critical in ever increasing demand on interactive video. Therefore a minimum broadband speed of 1 Mbps is required thereafter.
iii.	Packet loss	This indicator 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 MyIX.	Packet loss must be not more than 3.0 %, calculated based on the average of the test sample.	<ul style="list-style-type: none"> • The Commission has taken into account the various RF environment effect on the packet loss therefore 3.0 % is considered acceptable for wireless broadband operation.
iv.	Advanced Notice of Scheduled downtime	Service provider is required to inform customers and the Commission in advance in respect of any network service downtime planned and scheduled by the service provider to take place for the purpose of maintenance and upgrading of the network.	Every session of scheduled downtime due to occur in a quarterly reporting period must be notified to customers not less than 24 hours in advance; and	<ul style="list-style-type: none"> • This standard will assist the Commission to deal with possible complaints by customers due to disruption of services whilst ensuring that customers are notified about any service disruption

			Every session of scheduled downtime due to occur in a quarterly reporting period must be notified to the Commission in writing not less than 72 hours in advance.	caused by maintenance or upgrading of network.
V.	Service Disruption	<p>Service disruption means the unplanned interruption of the services that a customer subscribes to but does not include disruption of service from scheduled downtime. Service provider shall notify customers as soon as practicable in respect of any service disruption incident.</p> <p>A service provider is considered to have breached the service disruption standard where a Radio Access Network (RAN) node with control functionality such as (but not limited to) Radio Network Controller (RNC), eNodeB or Access Service Network (ASN) is out of service for 30 minutes or longer and affecting customers. A RNC, eNodeB or ASN is out of service when it is unable to perform the functions for which it is intended.</p> <p>In the event a RNC, eNodeB or ASN</p>	<p>Any RNC, eNodeB or ASN must not be out of service for 30 minutes or longer.</p> <p>Service provider must notify the Commission within 60 minutes of any single service disruption incident that involves a RNC, eNodeB or ASN being out of service for 30 minutes or longer and affecting customers.</p> <p>Service provider must submit a comprehensive</p>	<ul style="list-style-type: none"> • Currently, the Commission obtains information about service disruption from complaints lodged by customers, after the incident has occurred. • This is not acceptable as the Commission needs to have sufficient information to deal with customer complaints and to also ensure that the service providers take necessary steps to address the service disruption expeditiously. • The report submitted

		is out of service for 30 minutes or longer and affecting customers, the service provider must submit a comprehensive report to the Commission within 7 business days of the incident.	report to the Commission within 7 business days of the occurrence of any single service disruption incident that involves a RNC, eNodeB or ASN being out of service for 30 minutes or longer and affecting customers.	by the service providers will also enable the Commission to monitor the disruption frequency and how effectively the service providers deal with the issues.
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14. Standards for Customer Service Quality of Service as Table 4:

Table 4: Customer Service Quality of Service

	Quality of Service Indicator	Description / Definition / Formula / Measurement / Reporting Requirement	Quality of Service Standard	Remarks / Rationale / Justification
i	Percentage of billing related complaints	This indicator measures the percentage of billing related complaints to the number of customers per reporting period. Billing related complaint is any complaint related to the service provider's billing made or charges imposed on customers including, but is not limited to, complaints regarding payments made and wrongly credited or not credited, non-refund of deposits, late billing, non-receipt of bills, fraud,	Percentage of billing related complaints must be not more than 1.0% per quarterly reporting period.	<ul style="list-style-type: none"> Complaints received by the Commission on billing and charging dispute³ are high. The proposed standard seeks to compel the service providers to take additional measures to improve their process and billing

³ Billing and charging is the 2nd highest type of complaint received by the Commission from 2008-2013.

		<p>wrongly addressed bills and other billing errors. Bills issued by service provider may include, but are not limited to, bills sent by postal service, email or accessible online by customer. Billings of pre-paid and post-paid services are included for this indicator.</p> <p>Formula:</p> $\frac{\text{Total number of billing related complaints received in the reporting period}}{\text{Total number of active customers at the end of the reporting period}} \times 100\%$		<p>system.</p>
ii	<p>Non-billing related complaints per 1,000 customers</p>	<p>This indicator measures the percentage of non-billing related complaints per 1,000 customers per reporting period.</p> <p>Non-billing related complaint means any complaint other than billing related complaint. It includes, but is not limited to, complaints received on service matters including late or no service activation after a report has been made, unprofessional staff or contractors and other complaints related to customer service.</p> <p>Formula:</p>	<p>Non-billing related complaints must be not more than 6.0 complaints per 1,000 customers per quarterly reporting period.</p>	<ul style="list-style-type: none"> • The telecommunication sector topped the number of customer complaints registered by NCC⁴ for three straight years which may indirectly suggest that there is a need for improvement on the QoS. • The usage of mobile broadband services has increased substantially these

⁴ National Complaints Centre (NCC) 2012 Annual Report

		$\frac{\text{Total number of non – billing related complaints received in the reporting period}}{\text{Total number of active customers at the end of the reporting period}} \times 100\%$		<p>past few years. Due to the pervasiveness and high dependence by end users on the services, standards for the manner in which complaints are dealt with by service providers have to be more stringent.</p>
iii	Promptness in resolving customer complaints	<p>This indicator measures the percentage of customer complaints resolved by the service provider within specified timeframes, measured from the day the complaint was received to the time the complaint was resolved.</p> <p>Formula:</p> $\frac{\text{Total number of complaints resolved within the specific timeframe}}{\text{Total number of complaints received within the reporting period}} \times 100\%$ <p>This Quality of Service indicator is to be separately measured and reported for billing related complaints and non-billing related complaints, where the same QoS standard is applicable for both categories of complaints.</p>	<p>The standard on promptness in resolving customer complaints, separately measured for billing related complaints and non-billing related complaints, for every quarterly reporting period is:</p> <p>Not less than 60.0% must be resolved within 3 business days;</p> <p>Not less than 90.0% must be resolved within</p>	<ul style="list-style-type: none"> • With the significantly large numbers of customers that rely on wireless broadband service, it is incumbent upon service providers to resolve complaints effectively and quickly. • The proposed standards are achievable as there are a few tiers provided depending on the complexity of the issue.

		<p>Unresolved complaints due to the following are excluded from the computation:</p> <p>(a) Damage to network facility due to force majeure or by third parties;</p> <p>(b) Customer premises inaccessible; and</p> <p>(c) Faulty Customer Premise Equipment (CPE), customer infrastructure or internal wiring.</p> <p>The Commission shall determine whether the service provider has taken steps to address the complaint and whether it is reasonable to conclude that such steps have addressed the dissatisfaction of the complainant.</p> <p>Service provider is required to inform customers of their right to refer any unresolved complaint to the Consumer Forum of Malaysia (CFM).</p>	<p>5 business days; and</p> <p>Not less than 95.0% must be resolved within 15 business days.</p>	
iv	Promptness in answering calls to Customer Hotline	<p>This indicator measures the service provider's promptness in answering customer phone calls to the Customer Hotline, from the time when the customer presses the button opting for a human operator to the time it is answered by a human operator. The duration when the call is attended to by the interactive voice response system (IVRS) before being transferred to a human operator's phone is excluded.</p> <p>Formula:</p>	<p>At least 80.0% of calls to Customer Hotline that opted for human operator in a quarterly reporting period must be answered within 20 seconds; and</p>	<ul style="list-style-type: none"> The Commission has also received complaints relating to unanswered calls to the customer hotline, long waiting period, no free customer hotline and the need to repetitively press a number of buttons before being finally connected to human

		<p style="text-align: center;"><i>Number of calls answered by human operator within the specific timeframe</i></p> <hr style="width: 20%; margin: auto;"/> <p style="text-align: center;"><i>Total number of calls to Customer Hotline opting for human operator assistance in the reporting period</i></p> <p style="text-align: center;">× 100%</p>	<p>At least 90.0% of calls to Customer Hotline that opted for human operator in a quarterly reporting period must be answered within 40 seconds.</p>	<p>operator. As such, this standard is introduced to address these complaints.</p>
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PART E: APPLICABLE GUIDELINES

- The Commission has developed a set of guidelines that sets out the testing procedures, examples of computations, reporting templates, explanatory notes and list of designated routes and areas to the standards proposed in this document. The said guideline is annexed in Appendix – Guidelines to the Commission Determination on the Mandatory Standards for Quality of Service (Wireless Broadband Access Service).

PART F: VIEW SOUGHT

16. **The Commission seeks views on the proposed interpretations and the proposed Mandatory Standards highlighted in Parts A, B and D above, including comments on the proposed Guidelines stated in Part E, which will be used for the purpose of the Determination.**

17. **The Commission also welcomes comments on related matters that stakeholders or respondents believe are relevant to improve the Mandatory Standards for Quality of Service (Wireless Broadband Access Service).**

18. **The Commission also seeks views on other possible approaches that may be employed to improve quality of service for the wireless broadband access services in Malaysia.**



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 'X' OF 2015**

(MCMC/SQSOD/CIA/No. 'X' of 2015)

18 SEPTEMBER 2015

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GLOSSARY

BB	Broadband
FTP	File Transfer Protocol
GPS	Global Positioning System
HTTP	Hypertext Transfer Protocol
ICMP	Internet Control Message Protocol
ISP	Internet Service Provider
Mbps	Mega bit per second
MEF	Metro Ethernet Forum
MyIX	Malaysian Internet Exchange
QoS	Quality of Service
RF	Radio Frequency
TCP	Transport Control Protocol
UE	User Equipment
UDP	User Datagram Protocol
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 9 of the Commission Determination on the Mandatory Standards for Quality of Service (Wireless Broadband Access Service), Determination 'X' of 2015 ("Mandatory Standards").
2. These guidelines set out the testing procedures, examples of computations, reporting templates, explanatory notes and list of designated areas to the standards proposed in the Mandatory Standards.

PART B: REQUIREMENT FOR REPORT SUBMISSION

3. All reports (including notices and notifications) that are required to be sent to the Commission should be sent to Monitoring & Compliance (Communications) Department's address and/or email as follows:

Monitoring & Compliance (Communications) Department
Malaysian Communications and Multimedia Commission
MCMC Tower 1, Jalan Impact, Cyber 6,
63000 Cyberjaya
Selangor Darul Ehsan
Email : qos.admin@cmc.gov.my

4. These reports shall be in the form and format as described in these guidelines. Each report shall be accompanied by a declaration signed by an officer of the service provider duly authorised by the board of directors, stating that each report is true and accurate.
5. The timelines for reporting are as follows:

Table 1: Reporting Timelines

No	Item	Reporting Period	QoS Report Submission Date
1.	QoS performance report (1 st Quarter)	1st January to 31st March	By 30th April of the same year
2.	QoS performance report (2 nd Quarter)	1st April to 30th June	By 31st July of the same year

3.	QoS performance report (3 rd Quarter)	1st July to 30th September	By 31st October of the same year
4.	QoS performance report (4 th Quarter)	1st October to 31st December	By 31st January of the next year
5.	Advance notice of scheduled downtime	-	72 hours in advance
6.	Notification of service disruption (<i>via email only</i>)	-	Within 60 minutes
7.	Comprehensive report of service disruption	-	Within 7 working days

PART C: NETWORK PERFORMANCE QUALITY OF SERVICE

NETWORK LATENCY, THROUGHPUT AND PACKET LOSS

6. Network latency or ping time measures the round-trip time taken by a standard packet size of 64 bytes to travel across the network from the end user to MyIX and back to the end user.
7. Broadband speed or throughput measures the speed of uploading and downloading data measured in units of megabits per second (Mbps) between the end user and MyIX. This is to be measured and reported separately for uploading and downloading.
8. Packet loss measures the percentage of data packets transmitted from the source that fails to arrive at their destinations. It is computed based on the average of sample measurements between the end user and MyIX.
9. These tests will be carried out by the Commission or the Commission's appointed consultant in accordance with these guidelines. However, the Commission may, at its sole discretion, request the Broadband Service Providers to conduct the tests, if necessary.

Location Identification

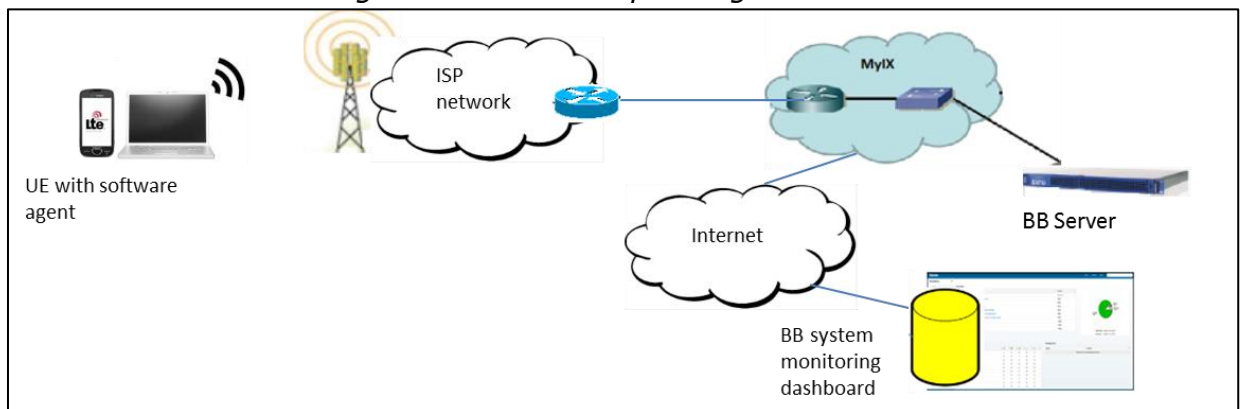
10. The tests are to be carried out 'static' at locations identified to at least have 3G broadband service coverage.

11. The service coverage will be identified in the following manner:
 - a. Confirmation from the wireless broadband service providers;
 - b. Through the service coverage information as advertised in the wireless broadband service providers' websites; or
 - c. Through the network indicator display on user equipment (UE) device with minimum RF signal strength equivalent to -90 dBm or 3 bars.

Testing parameters

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

Diagram 1: Test set up configuration



13. A dongle specific to the service provider will be used for laptops or UE with minimum device of Category 3 (100 Mbps) for cellular based systems. A test server or a responder will be configured at MyIX to act as the target server.
14. The tests are to be conducted up to transport layer (ICMP, TCP, UDP, etc.). Additional test up to application layer (web browsing http, ftp, etc.) to simulate customer's experience may be conducted by the Commission, if necessary.
15. Packet size of 64 bytes will be used for network latency or ping time measurement.
16. The software/measurement tools used for the tests shall be in compliance with the relevant recommendations from Metro Ethernet Forum (MEF) or equivalent.

17. Geographical positioning will be based on the Global Positioning System (GPS) and the WGS-84 digital map or its equivalent.

Designated areas

18. The designated areas for wireless broadband access service testing covers all 6 regions as follow:

- a. Central Region
- b. Northern Region
- c. Southern Region
- d. Eastern Region
- e. Sabah
- f. Sarawak

19. At least 15 locations will be selected based on the designated areas and a minimum of 100 samples per location is required on quarterly basis.

20. The selection of test location is subject to the Commission’s discretion.

QUALITY OF SERVICE PERFORMANCE REPORT

21. The Service Provider shall submit quarterly reports on quality of service as per the following format:

Table 2: Format for quality of service in quarterly reports

Location (address and longitud & latitude)	Throughput				Latency				Packet Loss			
	No of total sample	download		Compliance (YES/NO)	No of total sample	No. of sample ≤250ms	% of sample ≤250ms	Compliance (YES/NO)	Total Packet Sent	Total Packet Loss	% of packet loss	Compliance (YES/NO)
		Average	No of sample ≥650Kbps									

22. The raw data for every location measured shall be included.

ADVANCE NOTICE OF SCHEDULED DOWNTIME

23. Advance notice of scheduled downtime to customers via service provider’s official website should clearly state at least the following:

- a. Date, time and area affected by the scheduled downtime;
 - b. Type of service affected; and
 - c. Details of Helpline.
24. Advance written notice of scheduled downtime to the Commission should clearly state at least the following:
- a. Date, time and area affected by the scheduled downtime;
 - b. Type of service affected;
 - c. Details of Helpline; and
 - d. Justification for the scheduled downtime.

SERVICE DISRUPTION

25. The Service Provider shall submit quarterly reports on service disruption as per the following format:

Table 3: Format for service disruption in quarterly reports

Report Items	Impact of single incident of service disruption	QoS Standard	Compliance
Duration the Radio Network Controller (RNC), eNodeB or Access Service Network (ASN) is out of service (minutes)		Less than 30 minutes	Yes/No

26. The Service Provider must notify the Commission within 60 minutes after the occurrence of any single service disruption incident that involves a RNC or eNodeB being out of service for any duration. The details of the report shall be presented in the following format:

Table 4: Format for service disruption notification report

No	Report Items	Details/Remarks
1.	Date and time of service disruption	(a) Start: (date/time) (b) End: (date/time)
2.	Area affected by the service disruption	
3.	Type of services affected and service impact	
4.	Current status of service disruption	

27. The service provider must submit a comprehensive report to the Commission within 7 business days of the occurrence any single service disruption incident that involves a RNC or eNodeB or ASN being out of service for 30 minutes or longer and affecting customers. The details of the report shall be presented in the following format:

Table 5: Format for service disruption (involving RNC/eNodeB/ASN) comprehensive report

No	Report Items	Details/Remarks
1.	Date and time of service disruption	(a) Start: (date/time) (b) End: (date/time)
2.	Area affected by the service disruption	
3.	Exact duration of service disruption	
4.	Type of services affected and service impact	
5.	Number of affected customers	
6.	Status of service disruption	<i>*The date and time are to be specified if the service is fully restored</i>
7.	Photographic evidence of faulty network element (if applicable)	
8.	Description of the cause and problem	

9.	Rectification steps taken to restore the service	
10.	Preventive actions to avoid the recurrence of the same or similar service disruption	
11.	Compensation Plan offered to affected customers, if any	

28. Service Provider shall notify customers via electronic media (i.e. website and social media) as soon as is practicable in respect of any service disruption incident.

PART D: CUSTOMER SERVICE QUALITY OF SERVICE

PERCENTAGE OF BILLING RELATED COMPLAINTS

29. Service Provider shall submit quarterly reports on billing related complaints as per the following format:

Table 6: Format for billing related complaints quarterly reports

Report Items	Total number over the reporting period	QoS Standard	Compliance
Total number of active customers at the end of the reporting period			
Total number of billing related complaints received at the end of the reporting period			
% of billing related complaints		not more than 1.0%	Yes/No

30. Service provider is required to provide details on the types of billing related complaints received in a quarter as per the following format:

Table 7: Format for types of billing related complaints quarterly reports

No.	Types of Billing related complaints	No. of complaints received in a reporting period
		Total 3 Months
1.	Wrongly / not credited	
2.	Double charges	
3.	Non-refund of deposits	
4.	Late bills	
5.	Non-receipt of bills	
6.	Fraud	
7.	Wrongly addressed	
8.	Other billing errors	
9.	(Please list other types of billing related complaints, if any)	

31. The above list of types of billing related complaints is not exhaustive. The report should include all billing related complaints and not just those specified in the report format.

NON-BILLING RELATED COMPLAINTS PER 1000 CUSTOMERS

32. Service Provider shall submit quarterly reports on non-billing related complaints as per the following format:

Table 8: Format for non-billing related complaints quarterly reports

Report Items	Total number over the reporting period	QoS Standard	Compliance

Total number of active customers at the end of reporting period			
Total number of non-billing received in the reporting period			
No. of non-billing related complaints per 1000 customer per reporting period		not more than 6.0	Yes/No

33. Service provider is required to provide details of the types of non-billing related complaints received in a quarter as per the following format:

Table 9: Format for types of non-billing related complaints quarterly reports

Types of non-billing related complaints	Total no. of complaints for 3 months
No or late service activation	
No or late service restoration	
Customer service related complaints	
(Please list other types of non-billing related complaints, if any)	

34. The above list of types of non-billing related complaints is not exhaustive. The report should include all non-billing related complaints and not just those specified in the report format.

PROMPTNESS IN RESOLVING CUSTOMER COMPLAINTS

35. For this standard, the indicator is to be separately measured and reported for (a) billing related complaints and (b) non-billing related complaints.
36. Service Provider shall submit quarterly reports on performance of promptness in resolving customer complaints as per the following format:
- a. Billing related complaints

Table 10: Format for performance of promptness in resolving customer complaints (billing related) quarterly reports

Report items	Total for 3 months of the reporting period	QoS Standards	Compliance
No. of complaints received			
No. of complaints resolved			
Resolved within 3 business days		Not less than 60.0%	Yes/ No
Resolved within 5 business days		Not less than 90.0%	Yes/ No
Resolved within 15 business days		Not less than 95.0%	Yes/ No

b. Non-billing related complaints

Table 11: Format for performance of promptness in resolving customer complaints (non-billing related) quarterly reports

Report items	Total for 3 months of the reporting period	QoS Standards	Compliance
No. of complaints received			
No. of complaints resolved			
Resolved within 3 business days		Not less than 60.0%	Yes/ No
Resolved within 5 business days		Not less than 90.0%	Yes/ No
Resolved within 15 business days		Not less than 95.0%	Yes/ No

* No. of complaints resolved as per the template refers to the number of complaints resolved regardless of the number of days it took to resolve the complaints.

37. Service provider shall submit quarterly reports on the unresolved complaints excluded from the above report as per the following format:

Table 12: Format for excluded (from Table 9 & Table 10) unresolved complaints quarterly reports

	Exclusion	No. of unresolved complaints excluded from the computation for 3 months of the reporting period
1.	Damage to network facility due to force majeure or by third parties.	
2.	Customer premises inaccessible.	
3.	Faulty Customer Premise Equipment (CPE), customer infrastructure or internal wiring.	
	Total	

PROMPTNESS IN ANSWERING CALLS TO CUSTOMER HOTLINE

38. Service Provider shall submit quarterly reports on promptness in answering calls to Customer Hotline as per the following format:

Table 13: Format for promptness in answering calls to Customer Hotline quarterly reports

Report items	Total for 3 months of the reporting period	QoS Standards	Compliance
No. of calls opted for human operator			
No. of calls answered by human operator			
Answered within 20 seconds			
Answered within 40 seconds			
% answered within 20 seconds		Not less than 80.0%	Yes/ No
% answered within 40 seconds		Not less than	Yes/ No

		90.0%	
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PART E: EFFECTIVE DATE AND COMMISSION CONTACT

39. These guidelines shall come into effect on 1 January 2016, and shall continue to be effective unless modified, varied or revoked by the Commission.

40. For any queries and further information on these Guidelines please contact:

A. Service Quality and Spectrum Operations Division

Phone : 03-8688 8000

Email : smts@cmc.gov.my

With respect to Network Performance:

B. The Monitoring & Compliance (Communications) Department

Phone : 03-8688 8000

Email : qos.admin@cmc.gov.my

With respect to Customer Service Quality of Service: