



**Suruhanjaya Komunikasi dan Multimedia Malaysia**  
Malaysian Communications and Multimedia Commission

**A REPORT ON PUBLIC INQUIRY**

**REVIEW OF THE DETERMINATION NO.  
5 OF 2003, COMMISSION  
DETERMINATION ON THE  
MANDATORY STANDARDS FOR THE  
QUALITY OF SERVICE FOR  
BROADBAND ACCESS SERVICE**

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## **SECTION 1: SUMMARY AND CONCLUSION**

### **Introduction**

- 1 The Determination No. 5 of 2003, Commission Determination on the Mandatory Standard for Quality of Service for Broadband Access Service came into force on 1 January 2004.
- 2 The Commission believed that the Mandatory Standard needs to keep abreast with consumer demands and expectations alongside with technology advancement. Therefore, with the power conferred by Section 106 (1) of the Communications and Multimedia Act 1988 [Act 588], the Commission decided to review the Mandatory Standard.

### **Public Inquiry**

- 3 The Commission embarked on a public inquiry on 9 April 2007 and released a Public Inquiry Paper on the Proposal for the Review of Determination No. 5, Commission Determination on the Mandatory Standards for the Quality of Service for Broadband Access Service as part of the inquiry process. The paper contained a preface and the proposed revision of quality of service mandatory standards for Broadband Access Service.
- 4 The deadline for submissions was 12:00 pm, 24 May 2007. At the close of inquiry the Commission had received eight submissions. A summary of comments/suggestions are annotated in Section 4 of this Report, entitled "Findings".
- 5 The Commission was obliged to consider those eight submissions which met the deadline specified. Therefore, any position in this Report emanates from the Commission's deliberation of those

submissions and reassessment undertaken of various position hitherto adopted.

## **Conclusion**

- 6 The Commission believes that the proposed mandatory standards for Broadband Access Service would further strengthen and streamline the quality of service frameworks under Communications and Multimedia Act (CMA) 1998.
- 7 In selecting a benchmark for the Quality of Service, the Commission has endeavored to make certain that the benchmark is meaningful to the customer and enables the customer to assess and make informed decisions on the level of quality that they are enjoying. The benchmark will be equally useful for the Commission to gauge the performance of service providers and operators in fulfilling its role to monitor the industry.
- 8 Proposed standards are objective measures with taking into consideration basis as below:
  - a. Parameters in the proposed standards should be easily understood by the public, and be useful and important to them.
  - b. Performance parameters are applicable at the network termination point. Where measurements are possible, they should be made on the customer's premises, using in-service lines.
  - c. Parameters should be capable of verification by independent organizations. This verification might be made by direct measurements or by audit of the operator's measurements.
  - d. The accuracy of QoS parameter values should be set to a level consistent with cost-effectively available measurement methods.

- 9 The mandatory standards in Broadband Access Service proposed here are capable of implementation from a financial and technical standpoint. The standards on the quality of service are further clarified through clear definitions that avoid ambiguity of the concept / parameters involved. The standard, measurement and reporting procedures are clear and precise to facilitate clear-cut compliance on the part of industry.
- 10 The Commission is of the view that the industry as a whole being subjected to a mandated standard would give rise to quality consciousness and best industry practices that act as ideal platform for companies with regional or global ambitions to launch or expand their business operations. This is necessary given that technology, knowledge and capital are no longer confined to national boundaries. Thus our business models and practices must be in sync with global norms and expectations.
- 11 Above conclusions are captured in this Report and clarified in the following sections:
  - a. Section 2 describes the framework for the proposed mandatory standards for quality of service for Broadband Access Service. It will be regulated by the Commission under Section 123 of the CMA in its role as a monitor and gauge of industry performance;
  - b. Section 3 highlights the methodology used to evaluate the input arose from the public inquiry;
  - c. Section 4 paraphrases public inputs received; and
  - d. Section 5 highlights the way forward

## **SECTION 2: PROPOSED MANDATORY STANDARDS FOR QUALITY OF SERVICE FOR WIRED BROADBAND ACCESS SERVICE**

- 12 This section applies to all Network Service Providers (NSP) providing wired broadband access service. "Broadband" in this determination means an always-on bandwidth service that has minimum downstream capacity of 256 Kbps.

### **Standard on Fulfillment of Installation Orders**

#### **Definition**

- 13 Fulfillment of installation orders means the duration taken from time and date requested and agreed by customer for services either on-line or at the NSP's business outlet to the time when the service is provided.

#### **Standard**

- 14 Installation orders shall be fulfilled in the following time frames:
- (a) 80% of all installation orders shall be fulfilled within 24 hours from time and date requested by customer;
  - (b) 90% of all installation orders shall be fulfilled within 48 hours from time and date requested by customer; and
  - (c) Notwithstanding the above, 100% of installation orders shall be fulfilled within 7 business days.
- 15 Cancellation or deferment of agreed date of service installation shall be reflected with proof of the same with the signed form by customer or verbal proof of telephone conversation with the customer.
- 16 The measurement is described by the ratio:
- $$\frac{\text{Total number of installation orders met within a 12 month period} \times 100}{\text{Total number of installation orders for the 12 month period}}$$

- 17 When measuring the time taken to fulfill installation orders, installation orders not fulfilled within the requisite time due to the following reasons, may be excluded from the total number of installation orders for the 12 month period:
- (a) Wrong address given by the customer;
  - (b) Damage to network facility due to force majeure;
  - (d) Damage to network facility by third parties;
  - (e) Customer premises inaccessible;
  - (f) Customer premises internal wiring not ready at the committed or agreed time;
  - (g) Network facility not available.

## **Reporting**

- 18 Complete and accurate records of installation orders shall be maintained by the relevant NSPs. Such reports shall be in the form and format as may be prescribed by the Commission from time to time. Each report shall be accompanied by a declaration signed by an officer of the NSP duly authorized by the board of directors, stating that the report is true and accurate. These reports shall be submitted to the Commission not later than six weeks after 30 June for reporting period January to June, and 31 December for reporting period July to December respectively.

## **Standard on Service Restoration Performance**

### **Definition**

- 19 Service restoration performance means the time taken to restore a service from the time the fault was reported by the customer to the time of restoration. The restoration time is calculated from the time of

report to the time of restoration, including weekends and public holidays.

### **Standard**

- 20 Service restoration shall be effected within the following time frames:
- (a) 80% of all service restoration requests shall be fulfilled within 24 hours of receipt of request; and
  - (b) 90% of all service restoration requests shall be fulfilled within 48 hours of receipt of request.

### **Measurement**

- 21 The measurement is described by the ratio:
- $$\frac{\text{Total number of service requests fulfilled within the time frame} \times 100}{\text{Total number of service requests received over a 12-month period}}$$
- 22 When measuring the time taken to restore service, service not restored within the requisite time due to the following reasons, may be excluded from the total number of service restoration requests received over the 12 month period:
- (a) Faulty customer equipment;
  - (b) Network facility damage due to third parties;
  - (c) Fault due to other service providers;
  - (d) Customer premises inaccessible;
  - (e) Damage to network facility due to force majeure;
  - (f) Faulty customer infrastructure or internal wiring; and
  - (g) Genuine deferment of service restoration request by customers, proved via signed form or verbal proof of telephone conversation.



## **Reporting**

- 23 Complete and accurate records of all service restoration requests shall be maintained by relevant NSPs. Such reports shall be in the form and format as may be prescribed by the Commission from time to time. Each report shall be accompanied by a declaration signed by an officer of the NSP duly authorized by the board of directors, stating that the report is true and accurate. These reports shall be submitted to the Commission not later than six weeks after 30 June for reporting period January to June, and 31 December for reporting period July to December respectively.

## **Billing Performance**

### **Definition**

- 24 Billing performance means the integrity and reliability of the billing system as shown in billing accuracy and timeliness in resolving billing disputes, which will be reflected in the number of billing complaints. Billing complaints include payments made and wrongly credited or not credited, double charges, non-refund of deposits, late bills, non-receipt of bills, fraud, wrongly addressed bills and other billing errors.

### **Standard**

- 25 The percentage of billing complaints in any one billing period shall not exceed 2% of the total number of bills issued during the billing period. For this purpose all billing complaints on one bill shall be taken as one complaint.
- 26 Billing complaints shall be resolved within the following time frames:
- (a) 90% of billing complaints shall be resolved within 15 business days of receipt of the complaint; and

- (b) 95% of billing complaints shall be resolved within 30 business days of receipt of the complaint.

### **Measurement**

- 27 The measurement is described by the ratio:

$$\frac{\text{Total number of billing complaints for the billing period} \times 100}{\text{Total number of bills issued over a billing period}}$$

### **Reporting**

- 28 Complete and accurate records of billing complaints shall be maintained by relevant NSPs. Such reports shall be in the form and format as may be prescribed by the Commission from time to time. Each report shall be accompanied by a declaration signed by an officer of the NSP duly authorized by the board of directors, stating that the report is true and accurate. These reports shall be submitted to the Commission not later than six weeks after 30 June for reporting period January to June, and 31 December for reporting period July to December respectively.

### **General Customer Complaint Handling**

#### **Definition**

- 29 General customer complaint means any complaint received on service matters including late or no service restoration after a report has been made, slow network response, unprofessional staff or contractors and other complaints related to customer services.

#### **Standard**

- 30 The number of customer complaints shall not exceed 50 complaints per 1000 customers in a 12-month period.

## Measurement

31 The measurement is described by the ratio:

$$\frac{\text{Total number of complaints received over a 12 month period} \times 1000}{\text{Customer base at the end of the reporting period}}$$

## Reporting

32 Complete and accurate records of customer complaints shall be maintained by relevant NSPs. Such reports shall be in the form and format as may be prescribed by the Commission from time to time. Each report shall be accompanied by a declaration signed by an officer of the NSP duly authorized by the board of directors, stating that the report is true and accurate. These reports shall be submitted to the Commission not later than six weeks after 30 June for reporting period January to June, and 31 December for reporting period July to December respectively.

## Standard on Network Performance

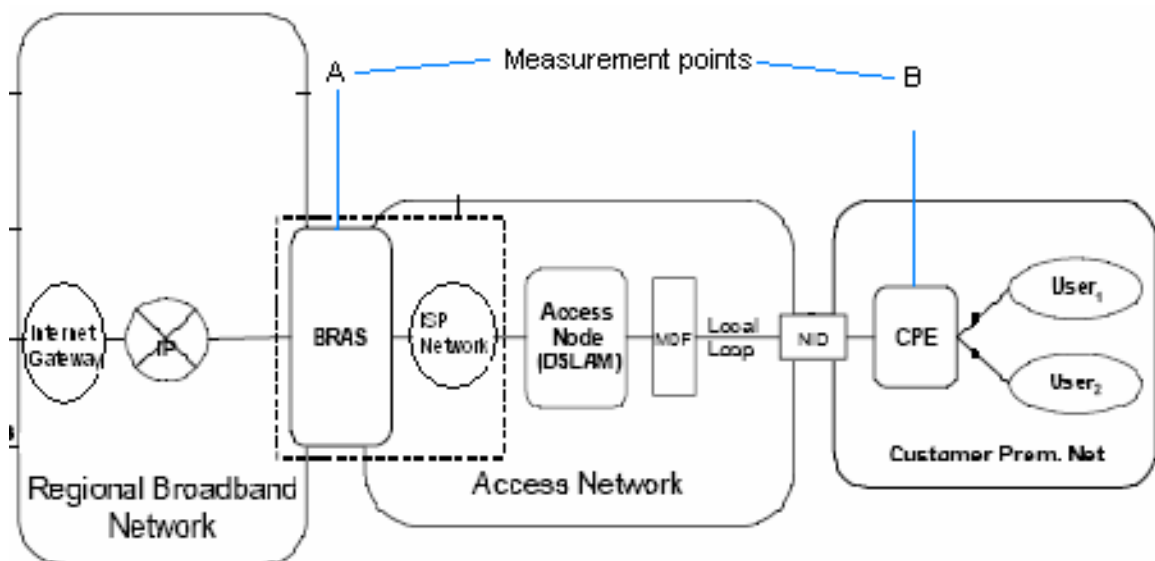
33 Network Performance covers the following parameters:

### Definitions

34 **Network latency or ping time** means the round trip delay for traffic within the local broadband network from the end-user to the nearest edge node of the regional broadband network or Broadband Remote Access Server (BRAS), based on a minimum standard packet size of 32 bytes.

35 **Throughput** means the amount of data moved to and from the end-user to the nearest edge node of the regional broadband network or Broadband Remote Access Server (BRAS) successfully in a given time period.

- 36 **Packet loss** means the percentage of packets lost between end user and the nearest edge node of the regional broadband network or Broadband Remote Access Server (BRAS).
- 37 **Annual network service availability** means the total operational hours of the service, less the total transmission downtime or disruption to the service due to service failure over the period of 12 months.
- 38 Downtime for the purposes of upgrading or maintaining the network system will be excluded from this ratio, provided users are informed in advance of such maintenance action.
- 39 Figure below depicts components involved in definitions mentioned above:



## Standards

- 40 **Network latency:** The proposed standard for network latency from the broadband user to the nearest edge node of the regional broadband network or Broadband Remote Access Server (BRAS) shall be no more than 85ms, 95% of the time.
- 41 **Throughput:** The proposed standard for throughput between the broadband user and the nearest edge node of the regional broadband network or Broadband Remote Access Server (BRAS) shall be no less than 90% of the subscribed level for 95% of the time; both for the purposes of uploading and downloading.
- 42 **Packet loss:** The packet loss shall not exceed 1% between the broadband user and the nearest edge node of the regional broadband network or Broadband Remote Access Server (BRAS). Packet loss is measured by averaging sample measurements.
- 43 **Annual network service availability:** Annual network service availability must be 99.9% for all users and the measurement of the standard is described by the ratio:

$$\frac{(\text{Total operational hours over a 12 month period} - \text{Total downtime over the 12 month period}) \times 100\%}{\text{Total operational hours over the 12 month period}}$$

## Measurement

- 44 All measurements for network performance standards shall be conducted at Layer 2 (Data Link Layer) and Layer 3 (Network Link Layer).
- 45 The Network Service Provider shall be required to install a test server to monitor, record and report the above parameters. The standard end user equipment configuration is personal computer equivalent of

at least a 1GHz Pentium IV with 256Mb memory. The test server shall be placed at the edge node of the regional broadband network or Broadband Remote Access Server (BRAS) of the NSP. Sampling tests may be initiated either by the end user or by the service provider. A minimum sample size for any of the tests shall be at least 30 samples per user. A minimum of 10 user locations per BRAS or the edge node of the regional broadband network shall be tested for this purpose. The test results accumulated by the test server shall be reported.

### **Reporting**

- 46 Complete and accurate records of the Network Performance shall be maintained by the relevant NSP. Such reports shall be in the form and format as may be prescribed by the Commission from time to time. Each report shall be accompanied by a declaration signed by an officer of the NSP duly authorized by the board of directors, stating that the report is true and accurate. These reports shall be submitted to the Commission not later than six weeks after 30 June for reporting period January to June, and 31 December for reporting period July to December respectively.

### **Audit and verification**

- 47 The Commission may from time to time conduct an audit on the report(s) submitted, perform test call sampling and/or service observation to verify compliance with these mandatory standards.

### **SECTION 3: METHODOLOGIES USED TO ANALYZE INPUT FROM PUBLIC INQUIRY**

48 The Commission believes that national policy should act as a background against which all comments/information given should be evaluated. In particular, the Commission feels that the mandatory quality of service obligations are in tandem with the aim to establish Malaysia as a global center and hub for communications and multimedia information; and content services. It will equally be pertinent to our intent to achieve a high level of consumer confidence in the industry.

49 The objectives that are particularly relevant to this initiative is Section 3 (2) of the CMA are:

*(a) To establish Malaysia as a major global center and hub for communications and multimedia information and content services;*

*(d) To regulate for the long term benefit of the end user; and*

*(e) To promote a high level of user confidence in service delivery from the industry*

50 The macro objectives of this policy aim at creating an educated and information-rich society through a modern and sophisticated communications network. The objectives of the above include the provision of modern sophisticated and quality communications services at a reasonable cost. A mandatory quality of service standard would encourage the growth of value added services to facilitate long-term industry development.

51 The Commission further believes that this further encourages competitiveness in a healthy and orderly manner; as such an approach would result in efficiency and excellent service quality levels. This is expected to strengthen and develop further basic communications

services, value added communications services and a superhighway network infrastructure in an effort to use technology to support national development and national aspirations as we usher in a new technology based century.

- 52 Objective, measurable and auditable standards are vital to ascertain whether the minimum quality of service is being offered. Approaches to be undertaken in this respect include test sampling; observed measurements and recourse to Section 268 of the CMA 1998 to facilitate record keeping and auditing where appropriate. International standards and best practices have been considered carefully in the course of this exercise, in an effort to ensure that Malaysia evolves into a competitive and dynamic global communications hub.



## SECTION 4: FINDINGS

### Definition

53 Table below provides main concerns received from public:

Area of comment	Comments	Response
Broadband Access Service Definition	<ul style="list-style-type: none"> <li>▪ The definition should mention "an always on internet bandwidth service"</li> <li>▪ Definition should focus on minimum guaranteed downstream of 256 kbps and minimum guaranteed upstream of 20 % of the minimum guaranteed downstream</li> <li>▪ To include peak upstream at 128 kbps</li> <li>▪ To redefine to higher speed with minimum downstream of 1 Mbps</li> </ul>	<p>Reference was made to ITU-T Key telecommunication/ICT Indicators which defines that broadband refers to high speed access of equal to or greater than 256 kbps, as the sum of capacity in both directions. Likewise, consumer interest especially those subscribed to bandwidth of 512 kbps and below has to be protected. Therefore the definition remains unchanged.</p>
Fulfillment of Installation Order	<ul style="list-style-type: none"> <li>▪ Definition should mention the duration from appointment time and date agreed by both parties (customer &amp; provider) to the service provision</li> <li>▪ Differentiate standards through factors of distance and subscribed level requested, e.g. 80% for copper less than 3 km to the nearest node of subscribed level not exceeding 2 Mbps, or for copper less than 2 km to the nearest node for subscribed level not exceeding 4 Mbps</li> <li>▪ Deferment or</li> </ul>	<ul style="list-style-type: none"> <li>▪ The definition, "Fulfillment of installation orders means the duration taken from time and date requested and agreed by customer for services either on-line or at the NSP's business outlet to the time when the service is provided", is to ensure commitment by service providers to meet customer demand. Therefore it is important for service providers to comply with those requests timely or otherwise advise customers on the suitable installation time.</li> <li>▪ There shall be no different or discrimination for installation</li> </ul>

Area of comment	Comments	Response
	<p>cancellation shall be retained in exemption clause</p> <ul style="list-style-type: none"> <li>▪ Disagreement with verbal proof for cancellation or deferment due to difficulty to ensure genuine caller</li> <li>▪ Deferment of agreed date of service installation shall be reflected with proof of the same through, but not limited to any of the following means: <ul style="list-style-type: none"> <li>○ A formed signed by customer</li> <li>○ Record of text sent through the short messaging service; or</li> <li>○ Logging of verbal proof of telephone conversation with customer</li> </ul> </li> </ul>	<p>either by distance or services as service providers already have or shall have information beforehand on readiness of their infrastructures.</p> <ul style="list-style-type: none"> <li>▪ Deferment and cancellation are not in the exclusion list as both will affect the figures directly. Deferments of installation maintain number of installation orders but the installation time will be calculated based on new time and date. Cancellation of installation will reduce the number of installation orders based on installations being cancelled. Therefore both deferment and cancellation of installation orders need valid proof from service providers.</li> <li>▪ Verbal proof through telephone conversation would be a convenient solution to customer. Authenticity of callers could be verified through questions such as their I.C. numbers, and other questions relevant with their applications.</li> <li>▪ The proposal to have other means as proof is accepted, but those means must be a valid and could be verified.</li> </ul>
Service Restoration Performance	<ul style="list-style-type: none"> <li>▪ Additional clause, "In the case of a service restoration for which the customer has agreed on an appointment time and date, restoration time is</li> </ul>	<ul style="list-style-type: none"> <li>▪ Suggestion on additional clause is accepted but the deferment shall be with valid proof.</li> <li>▪ In prioritizing the consumer needs, there shall be no</li> </ul>

Area of comment	Comments	Response
	<p>calculated from the agreed appointment time to the time of restoration”</p> <ul style="list-style-type: none"> <li>▪ Exclusion for service restoration during weekend and public holidays</li> <li>▪ Exclusion for newly launched network service for service restoration</li> <li>▪ To specify that 100% service must be restored within 7 days</li> <li>▪ For exclusion on restoration time through genuine deferment, there is disagreement with verbal proof for cancellation due to difficulty to ensure genuine caller</li> </ul>	<p>exclusion for service restoration during weekend and public holiday. In reality, consumers also pay for services they subscribed to during public holidays and weekend.</p> <ul style="list-style-type: none"> <li>▪ There shall be no exclusion for newly launched service. Consumers still have to pay for service despite it is a newly launched service.</li> <li>▪ To specify that 100% service must be restored within 7 days</li> <li>▪ For verbal proof through telephone conversation, authenticity of callers could be verified through questions such as their I.C. numbers, and other questions relevant with their applications.</li> </ul>
Billing Performance	<ul style="list-style-type: none"> <li>▪ Propose exclusion for late delivery of bills due to third party</li> <li>▪ Propose other standard for newly established company for the first year only, e.g. billing complaints shall be less than 5% billing</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Commission is of the opinion that there shall be no exclusion for late delivery of bills. Service providers shall anticipate those problems and send bills earlier.</li> <li>▪ There shall be no exclusion for newly launched service.</li> </ul>
General Customer Complaint Handling	<ul style="list-style-type: none"> <li>▪ Propose exclusion for: <ul style="list-style-type: none"> <li>○ Wrong information from customer</li> <li>○ “Slow network response”, which should be under restoration</li> <li>○ Customer’s faulty</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ There is no exclusion in the General Customer Complaint as literally and by definition complaints could be anything related with services subscribed by customer, unless it is significant that a complaint does not have anything to do with services subscribed.</li> </ul>

Area of comment	Comments	Response
	<p>equipment</p> <ul style="list-style-type: none"> <li>○ Speed and actual experience of internet surfing</li> <li>▪ Proposals to increase the number of complaints to not exceeding 100, 200 and staggering yearly</li> </ul>	<ul style="list-style-type: none"> <li>▪ As it is an important parameter to measure general service provision, the Commission does not see strong reasons to increase complaints threshold. Service providers should strive more to improve their services.</li> </ul>
Standards on Network Performance	<ul style="list-style-type: none"> <li>▪ Request exclusion on Annual Service Availability for: <ul style="list-style-type: none"> <li>○ Faulty customer equipment</li> <li>○ Network facility damaged due to third party</li> <li>○ Network facility damaged due to force majeure</li> <li>○ Fault due to other service provider</li> <li>○ Customer premises inaccessible</li> <li>○ Deferment of service restoration by customer</li> </ul> </li> <li>▪ Annual Service Availability standard reduction to at least 99.7%</li> <li>▪ Throughput standard: <ul style="list-style-type: none"> <li>○ Propose to maintain current standard of 70%, 95% of the time and revise at later stage</li> <li>○ Propose to have 70%, 95% of the time for subscription of up to</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ The only exclusion for Annual Service Availability is the downtime for the purpose of upgrading and maintenance. Service providers have to ensure availability of their network all the time except for the above exclusion, up to the Network Interface Device. In other words, service providers shall have backups or redundancies on their network for any problems, including external problems.</li> <li>▪ The Annual Service Availability is a crucial parameter from the perspective of consumers. The proposed standard has been reduced from current Determination, which is 99.9%. Furthermore, the proposed standard has been benchmarked with committed value by major broadband service providers in the world. Therefore, the proposed standard for Annual Service Availability will remain at 99.9%.</li> <li>▪ Most of respondents are against the increase of Throughput standard from 70% to 90% of subscribed</li> </ul>

Area of comment	Comments	Response
	512 kbps, 90%, 95% of the time for subscription exceeding 512 kbps	level, 95% of the time. However, this is another crucial parameter from the perspective of consumers. Also, the standards shall complement MyICMS 886 goals for broadband penetration. Therefore, considering the above, the Commission will enforce the Throughput standard to be no less than 80% of subscribed level, 95% of the time from 1 January 2008, and then increase to no less than 90% of subscribed level, 95% of the time from 1 January 2009 and onwards.
Licensees involved	Propose to include ASP (I) particularly for Billing Performance and General Customer Complaint	The proposal to impose on NSP is due to the fact that both ASP and NSP are within the same company. However, to have more specific responsibility, the suggestion is accepted to include ASP.
Reporting Calculations	Performance measurement should be measured on a six month period to be in line with half yearly reporting to MCMC	Despite Performance Measurement is reported half yearly, the measurement is based on 12 months period. This is to ensure reporting consistency for each six months period.
Audit/Test Methodology	<ul style="list-style-type: none"> <li>▪ There are 2 proposal on network elements involved, from regional broadband network, to: <ul style="list-style-type: none"> <li>○ DSLAM; and</li> <li>○ Network Interface Device at customers' premises</li> </ul> </li> <li>▪ Request for only one(1) user location for each regional broadband</li> </ul>	<ul style="list-style-type: none"> <li>▪ The audit/test will be conducted from regional broadband network to the Network Interface Device (NID) at customers' premises. These elements are still under NSPs responsibility and also closer to user experience.</li> <li>▪ The Commission agreeable with proposal to have one (1) user location for each</li> </ul>

<b>Area of comment</b>	<b>Comments</b>	<b>Response</b>
	network instead of 10 user locations	regional broadband network. The minimum sample shall be at least 100, and NSPs shall have prior consent from MCMC on the user location.
Non-compliance to Mandatory Standards	Clarification on either Section 109 (1) or Section 242 of CMA as reference for the non-compliance	Section 109 is to be used for compliance of the Commission Direction while Section 242 is a general penalty for non-compliance of a mandatory standard. The Commission will decide on a case to case basis on which section is to be used.
Document's Title	Revision of document's title to "Mandatory Standards for Wired Broadband Access Service"	As it is a variation to the earlier Determination No. 5 of 2003, the title used is not going to be changed. Note that the current Determination states the standards are for the wired broadband access.
Other recommendation	Proposal to have another standards on Wireless Broadband Access	There will be another standards on wireless broadband access

## **SECTION 5: THE WAY FORWARD**

- 54 The Commission is of the view that the proposed revision of the QoS Mandatory Standards for Broadband Access Service would further ensure improvement in the service provision for wired broadband services.
- 55 Therefore, the new revised QoS Mandatory Standards for Broadband Access Service should come into force from 1 January 2008.