

QOS STANDARDS FOR PUBLIC CELLULAR MOBILE TELEPHONE SERVICE (PCMTS)

This is applicable to Facilities-Based Operators (FBO) providing Public Cellular Mobile Telephone Service.

Please note that all FBOs providing PCMTS will be required to submit the QoS performance of the “Compliance Indicators” and “Monitoring Indicators” below for IDA’s monitoring and publishing purpose on a quarterly basis when the finalised PCMTS framework goes into effect. For consistency, the same QoS standards would also apply to the bi-annual Cellular Mobile Telephone Network Performance survey (otherwise known as the “mobile drive-test”) which is conducted by IDA. This PCMTS QoS framework is separate from the recently implemented Short Message Service (SMS) QoS framework.

(A)	Performance Indicators (for Compliance ¹)	QoS Standards
(1)	Service Coverage² (a) On street level (b) In-building service coverage (within and outside of CDB)	> 95% > 85% (for public access areas ³)
(B)	Performance Indicators (for Monitoring)	QoS Standards
(1)	Network Availability⁴ Base Stations (BS) Mobile Switching Centre (MSC) (a) Total outage time (hrs/min) in a mth (b) No. of days with > 15 min outage (c) Worst outage time over 24-hr period in a month	For monitoring
(2)	Network Congestion During Busy Hour⁵ (a) Total no. of base stations/cells as at end period (b) % of network congestion for the busiest cell during busy hour (c) % of cells with > 5% reduced GOS during busy hour	For monitoring
(3)	Success rate for PSTN and Mobile Originated Calls⁶ (a) Success rate for PSTN and mobile originated calls during busy hour in the busiest/worst cell locality	For monitoring
(4)	Average Call Set-up time for⁷ (a) Land to Mobile calls (b) Mobile to Land calls (c) Mobile to Mobile calls	For monitoring
(5)	Drop call rate of PSTN and mobile originated calls during busy hour⁸ (a) Drop call rate of PSTN and mobile originated calls (b) Localities where drop call rates exceeds 5%	For monitoring
(6)	Complaints on coverage per 1000 subscribers	For monitoring

(7)	Data Throughput Speed⁹	For Monitoring
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- 1 For each instance of non-compliance, a financial penalty of S\$5,000 per standard per month may be imposed.
- 2 The on-street level service coverage shall be > 95% for each defined test route. Test routes will include all major and small roads and expressways but excludes all car parks. The in-building service coverage shall be > 85% per building that includes all public access areas of buildings within CBD and outside CBD, including the first basement level.
- 3 Public access areas refer to areas that are generally accessible to the public without any restriction. For the purpose of in-building radio coverage, the public access areas within a building are classified into 3 categories:
- (a) Main Lobby Area
 - (b) High Traffic Area
 - (i) Podium floors of tower building;
 - (ii) Multi-storey car parks (above level ground); and
 - (iii) Basement levels where services are made available to the public (e.g. shops, food courts, supermarkets)]
 - (c) Basement Car Park Area (refers to car parks at basement level 1 where the above (b)(iii) does not apply)
- 4 Network availability is a measure of the degree to which the BSs/MSCs are operable and not in a state of failure or outage at any given point of time. It measures the downtime of the BS and the MSC over a month but excludes all planned service downtime for any maintenance or software upgrades.
- 5 The acceptable congestion level experienced within the network should be such that not more than 5% of cells should be experiencing > 5% reduced GoS during busy hour and/or at any one time.
- 6 A successful call attempt refers to a call from a calling party who is successfully switched through to the called party, or receives busy tone when the called party is engaged speaking.
- 7 The average call set-up time refers to the total time taken for setting up a call i.e., from the time when the last key is depressed to the time when a tone or signal from the network for successful connection. The call set-up time shall include all time taken for encryption and authentication features, but shall exclude additional delay caused by any call forwarding features.
- 8 The drop call rates during busy hour refer to the percentage of actual calls originated from the PSTN and mobile phones that are terminated abnormally during the busy hour. This include calls that failed due to : (a) mobile subscribers moving into poor cell coverage areas; (b) subscribers moving into cells that are experiencing congestion; and (c) calls that are not properly terminated.
- 9 Average FTP download speed of 5 MB file from a reference server.