

QUALITY OF SERVICE (QoS) MONITORING OF CELLULAR MOBILE VOICE SERVICES

In pursuance of Annexures D1 and D2 of the Cellular Mobile Licence of Telecommunication Operators, the user perspective of the quality of voice services are tested to ensure the compliance of Operators to the obligations on service quality to the user.

This report is based on findings on the quality of service from various regions in the country for the period April to September 2011 which includes Greater Accra, Central, Western, Northern, Upper East, Upper West and the Brong Ahafo Region.

As per the Cellular Mobile licence obligations, the QoS indicators and their respective threshold for compliance under assessment considering the user's perspective are;

a) Call Setup Time (CST)

CST should be less than ten seconds (<10secs) in 95% of cases.

Call Setup Time is the period of time elapsing from the sending of a complete destination address (target telephone number) to the setting up of a call to the receiving terminal;

$$\text{Call set - up time [s]} = t_{\text{alerting-signal}} - t_{\text{address-sending}}$$

$t_{\text{alerting signal}}$ – Moment when an alerting signal is sent to the called terminal

$t_{\text{address sending}}$ – Moment user presses the SEND button on the calling terminal

b) Call Congestion Rate

Traffic Channel Congestion should be equal or less than one per cent (1%).

Call Congestion Rate is the probability of failure of accessing a traffic channel during call setup;

$$\text{Call Congestion [\%]} = \frac{\text{Number of Connect failed calls}}{\text{Total number of call attempts}} \times 100\%$$

c) Call Drop Rate (CDR)

Call drop rate should be equal or less than three per cent (3%).

Voice Call Drop Rate is the probability of a call terminating without any of the users' will;

$$\text{Drop Rate [\%]} = \frac{\text{Number of calls terminated unwillingly}}{\text{Total number of call attempts}} \times 100\%$$

The results for the cities and towns tested this year are as below:

Table 1. Call Setup Time of Cellular Mobile Voice Service, 2011

Month	City/Town	MTN	Vodafone	Tigo	Airtel	Expresso
Apr-11	Cape Coast	9.30secs	7.59secs	8.69secs	10.62secs	10.50secs
Apr-11	Elmina	9.05secs	8.40secs	9.81secs	10.36secs	9.78secs
Apr-11	Winneba	8.77secs	7.59secs	8.94secs	13.71secs	9.93secs
May-11	Sekondi Takoradi	9.75secs	8.64secs	9.72secs	10.27secs	8.53secs
May-11	Tarkwa & Prestea	7.23secs	6.81secs	9.27secs	8.25secs	
Jun-11	Wa & Jirapa	10.89secs	10.6secs	8.98secs	18.06secs	12.58secs
Jun-11	Bolgatanga & Navrongo	9.71secs	9.19secs	9.09secs	11.81secs	10.44secs
Jun-11	Tamale	11.18secs	10.86secs	8.86secs	10.42secs	10.12secs
Aug-11	Sunyani	9.36secs	12.09secs	8.10secs	9.58secs	11.33secs
Aug-11	Berekum	10.10secs	15.00secs	8.86secs	9.38secs	8.38secs
Aug-11	Dormaa Ahenkro	10.39secs	9.31secs	8.97secs	9.39secs	9.70secs
Aug-11	Techiman	9.20secs	9.53secs	7.98secs	9.83secs	7.83secs
Sep-11	Accra	10.84secs	11.47secs	10.27secs	16.61secs	14.60secs

Table 2 Call Congestion Rate Cellular Mobile Voice Service, 2011

Month	City/Town	MTN	Vodafone	Tigo	Airtel	Expresso
Apr-11	Cape Coast	1%	4%	1%	3%	8%
Apr-11	Elmina	0%	2%	0%	0%	0%
Apr-11	Winneba	0%	0%	0%	18%	3%
May-11	Sekondi Takoradi	2.18%	0.37%	1.82%	2.54%	5.24%
May-11	Tarkwa & Prestea	8.82%	0%	0%	13%	78.57%
Jun-11	Wa & Jirapa	1.32%	0.68%	3.95%	31.81%	15.63%
Jun-11	Bolgatanga & Navrongo	1.47%	0%	1%	8.53%	21.29%
Jun-11	Tamale	1.41%	1.72%	1%	23.10%	5.64%
Aug-11	Sunyani	2.76%	10.32%	0.69%	3.01%	1.73%
Aug-11	Berekum	3.57%	4.87%	0%	1.50%	0.75%
Aug-11	Dormaa Ahenkro	0%	1.61%	1.61%	0%	0%
Aug-11	Techiman	1.03%	3.05%	0.35%	6.22%	1.70%
Sep-11	Accra	7.90%	5.67%	3.08%	14.74%	4.40%

Table 3 Call Drop Rate Cellular Mobile Voice Service, 2011

Month	City/Town	MTN	Vodafone	Tigo	Airtel	Expresso
Apr-11	Cape Coast	0%	0%	0%	1%	1%
Apr-11	Elmina	0%	0%	0%	0%	0%
Apr-11	Winneba	0%	0%	0%	0%	0%
May-11	Sekondi Takoradi	0.20%	1.85%	1.09%	0.54%	1.05%
May-11	Tarkwa & Prestea	0%	0%	0%	0%	0%
Jun-11	Wa & Jirapa	0%	0%	0%	1.95%	0%
Jun-11	Bolgatanga & Navrongo	0%	0%	0%	0.95%	0.41%
Jun-11	Tamale	1.41%	0.57%	0.28%	1.23%	0%
Aug-11	Sunyani	1.72%	0.29%	0%	1.33%	0.34%
Aug-11	Berekum	1.42%	0%	0%	0%	0%
Aug-11	Dormaa Ahenkro	0%	0%	0%	0%	1.64%
Aug-11	Techiman	0.70%	0%	0%	1.96%	0%
Sep-11	Accra	1.28%	0.78%	0.77%	1.62%	0.71%