

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.

The report is based on findings on quality of service in all regions for October and November 2012.

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) Stand-alone Dedicated Control Channel (SDCCH) Congestion Rate

SDCCH Congestion Rate should be equal or less than one per cent (1%).

SDCCH Congestion is defined as the probability of failure of accessing a stand-alone dedicated control channel during call set up.

For analysis and calculations,

$$\text{SDCCH Congestion [\%]} = \frac{\text{Number of connect fails due to Immediate Assignment Failures}}{\text{MOC call attempts}} \times 100\%$$

b) 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

c) 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;

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

d) 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 Signalling Congestion Rate Cellular Mobile Voice Service, 2012

Month	City/Town	MTN	Vodafone	Tigo	Airtel	Glo
October	Cape Coast	0.17%	0%	0%	0%	2.31%
October	Elmina	1.03%	0%	0%	0%	0%
October	Winneba	0%	0%	0%	0%	0%
October	Sweduro	0%	0%	0%	0%	1.05%
October	Kasoa	0%	0%	0.63%	0%	0.90%
November	Koforidua	1.40%	0%	0%	0%	0%
November	Akim-Oda	0%	0%	0%	0%	0%
November	Akosombo	1.10%	0%	0%	0%	N/A
November	Akuse	14.04%	0%	5.97%	0%	N/A
November	Asamankese	0%	0%	0%	0%	0%
November	Aflao	0%	0%	0%	0%	1.29%
November	Keta	0%	0%	1%	N/A	2.85%
November	Hohoe	0%	0%	0%	0%	8.69%
November	HO	0%	0%	1.17%	0%	0%
November	Kpando	0%	0%	0%	6.74%	18.96%

REMARK:

- ❖ All operators except Vodafone could not achieve the treahold in certain areas. However Airtel and Tigo recorded values below the threshold except for one or two towns in the Eastern and Volta regions.

Table 2. Call Setup Time of Cellular Mobile Voice Service, 2012

Month	City/Town	MTN	Vodafone	Tigo	Airtel	Expresso	GLO
October	Cape Coast	7.69	7.04	6.78	7.78	23.03	6.87
October	Elmina	8.27	7.85	6.41	9.11	22.49	9.91
October	Winneba	7.09	7.39	8.95	7.32	19.89	6.23
October	Swedru	8.06	7.35	9.32	7.52	19.89	7.08
October	Kasoa	11.98	7.39	11.07	8.43	21.15	9.65
November	Koforidua	7.75	7.83	6.56	7.61	12.38	6.58
November	Akim-Oda	7.44	8.79	7.69	8.02	12.38	4.44
November	Akosombo	6.5	6.76	6.4	7.21	11.17	N/A
November	Akuse	14.64	6.5	8.2	6.93	N/A	N/A
November	Asamankese	6.54	6.61	6.08	7.53	13.08	3.83
November	Aflao	10.66	9.22	8.83	8.82	9.74	8.48
November	Keta	10.69	6.91	7.97	8.4	N/A	8.94
November	Hohoe	10.51	9.71	8.13	9.07	8.75	20.93
November	Ho	10.74	8.93	8.81	8.7	13.03	7.88
November	Kpando	14.81	8.97	9.32	8.19	8.67	12.52

REMARK:

- ❖ MTN, Tigo, Expresso and Glo violated the license threshold in some localities.
- ❖ Vodafone and Airtel were compliance with the licence obligation.

Table 3 Call Congestion Rate Cellular Mobile Voice Service, 2012

Month	City/Town	MTN	Vodafone	Tigo	Airtel	Expresso	GLO
October	Cape Coast	4.60%	0%	0%	0%	0.45%	0%
October	Elmina	0%	0%	0%	0%	1.10%	0%
October	Winneba	1.10%	0%	0%	0%	0%	0%
October	Swedru	1%	0%	0.81%	0%	0%	0%
October	Kasoa	0.53%	0%	0%	0%	0%	0%
November	Koforidua	3.08%	0%	0%	0%	0.88%	0%
November	Akim-Oda	21.21%	0%	0%	0%	3.41%	0%
November	Akosombo	0%	0%	1.05%	0%	1.11%	N/A
November	Akuse	5.26%	0%	5.97%	0%	N/A	N/A
November	Asamankese	0%	0%	0%	0%	0%	0%
November	Aflao	2.59%	0%	0%	0%	0%	0%
November	Keta	0%	0%	0%	0%	N/A	0%
November	Hohoe	0%	0%	0.84%	0.85%	0%	0%
November	Ho	0%	0%	0%	0%	0.38%	0%
November	Kpando	1%	0%	2.59%	0%	0%	0%

REMARK:

- ❖ Vodafone , Airtel and Glo are the networks that were within the licence threshold in all localities.
- ❖ MTN,Tigo and Expresso violated the licence threshold .

Table 4 Call Drop Rate Cellular Mobile Voice Service, 2012

Month	City/Town	MTN	Vodafone	Tigo	Airtel	Expresso	GLO
October	Cape Coast	0%	0%	0.39%	0.19%	0%	0.57%
October	Elmina	0%	0%	0%	1.26%	0%	0%
October	Winneba	0%	0%	0%	0%	0%	0%
October	Swedru	0%	0%	0%	0%	0%	0%
October	Kasoa	0%	0.54%	0.63%	1.30%	0%	0%
November	Koforidua	0%	1.19%	0%	2.4%	0.59%	0.81%
November	Akim-Oda	0%	0%	1.23%	0%	0%	0%
November	Akosombo	0%	0%	0%	0%	1.11%	N/A%
November	Akuse	0%	1.49%	0%	0%	N/A	N/A
November	Asamankese	0%	1.19%	0%	0%	0%	0%
November	Aflao	0%	0%	0%	0%	0%	0%
November	Keta	0.88%	0.00%	0%	0%		0%
November	Hohoe	0.86%	5.12%	0.84%	0%	1.29%	0%
November	Ho	0%	0%	0.78%	0%	0%	0%
November	Kpando	0%	0%	0%	0%	0%	0%

REMARK:

- ❖ All operators were in compliance with licence threshold.

REMEDIES

The NCA has notified Operators of publication of these findings.

- ❖ MTN has been sanctioned to cease from selling and adding new subscribers to their network upon persistent deteriorating Network quality of service and further sanctioned GhC 130,000.00 penalty for not complying to the Authority's sanctions as stated earlier. The penalty will accrue GhC 5,000 for each day non-compliance exist.
- ❖ Concerning QOS monitoring, MTN has been sanctioned GhC50, 000.00 penalty each for Call congestion in Central Region and Signaling Congestion in Eastern region.
- ❖ Tigo has been sanctioned GhC50, 000.00 penalty for Call Setup Time in Western Region.

- ❖ Espresso has been sanctioned GhC50, 000.00 penalty each for Call Congestion in Western and Eastern regions.

- ❖ Glo has been directed to cure their Call Setup delays and Signaling problems before the next monitoring in the last quarter.