



NATIONAL COMMUNICATIONS AUTHORITY

QUALITY OF SERVICE TEST RESULTS - 2021 FIRST QUARTER

1.0. Introduction

In pursuance of obligations of the 3G Cellular Mobile Licence of Telecommunication Operators, the consumer perspective of quality of service are tested to ensure the compliance of Operators to the obligations on service quality to the user.

This First Quarter Monitoring Report highlights the Call Setup Time, Voice Quality (Mean Opinion Score), Data Throughput and 3G Coverage compliance statuses of all four (4) Mobile Network Operators in four (4) Regions with regards to parameters outlined in their 3G Licences. The Regions monitored during this period were the Ashanti, Eastern, Greater Accra and Northern Regions.

Definition of KPIs measured:

- ***Call Setup Time*** is a measure of the time it takes to setup a voice call. It is how long it takes to hear a ring back tone after initiating a call. It is measured in seconds. Threshold for compliance is over 95% of Call Setup Time measurements being less than 10 seconds.
- ***Voice Quality (Mean Opinion Score)*** is a measure of the perception of the audio quality of the conversation on a call. The MOS Score scale ranges from 1 to 5 with 1 being poor and 5 being excellent audio quality. Threshold for compliance is an average of all Voice Quality (MOS) measurements being greater than 3.5.
- ***Data Throughput*** is a measure of the rate of data transfer. It measures how fast data is transferred from a file transfer protocol (ftp) server to a mobile device. It is measured in kilobits per second (kbps) and the threshold for compliance is over 90% of all Data Throughput measurements being greater than or equal to 256kbps.
- ***3G Coverage*** is an assessment of whether an MNO has 3G presence in a district capital or not. This is done by measuring the downlink signal level, Received Signal Code Power (RSCP). Unit of measurement is the decibel-milliwatts (dBm) and threshold for compliance is an average of all measured RSCP levels being greater than or equal to -105dBm.

The details of the report are as below:

AIRTELTIGO RESULTS

CALL SETUP TIME (CST)

Ashanti Region

District Capital	95th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	8.32	5.67	5.11	5.62	Pass
Bekwai	7.48	5.97	6.74	6.93	Pass
Ejura	6.00	5.38	5.21	No Data	Pass
Jacobu	5.61	5.20	6.16	6.13	Pass
Kodie	8.50	9.91	9.41	11.46	Pass
Kumawu	No Data	No Data	5.54	6.71	Pass
Mampong	6.67	5.51	5.06	No Data	Pass
Nkawie	7.31	6.11	7.55	7.62	Pass
Obuasi	12.3	5.90	5.70	14.2	Pass
Offinso	8.10	8.41	6.51	7.90	Pass
Tepa	6.71	6.24	6.89	7.00	Pass
Tutuka	10.44	6.70	5.40	7.10	Pass
Twedie	13.24	10.50	16.86	11.94	Fail

Eastern Region

District Capital	95th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	7.04	6.16	6.63	4.91	Pass
Akwatia	5.72	5.65	5.77	6.90	Pass
Kade	5.21	5.04	5.06	5.27	Pass
Mpraeso	5.70	8.65	7.13	7.39	Pass
Nkawkaw	5.30	5.50	5.50	5.51	Pass
Nsawam	5.11	5.50	5.96	6.09	Pass

Greater Accra Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	07.51	06.88	08.80	06.64	Pass
Adenta	08.30	08.79	07.86	09.25	Pass
Ashaiman	07.38	05.73	06.88	06.85	Pass
Darkuman	06.36	06.14	05.78	06.00	Pass
Madina	08.94	08.22	08.95	08.67	Pass
Nima	05.50	05.54	05.41	05.90	Pass
Nungua	07.72	06.52	08.41	09.25	Pass
Tema Community 1	08.58	10.55	05.64	05.54	Pass

Northern Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushiegu	13.80	05.30	05.20	05.40	Pass
Karaga	17.90	05.00	05.40	05.60	Pass
Savelugu	04.90	04.80	04.50	04.70	Pass
Tatale	05.40	05.30	04.70	04.60	Pass
Yendi	05.50	05.20	05.50	05.20	Pass
Zabzugu	05.40	04.80	04.70	05.50	Pass

VOICE QUALITY (MOS)

Ashanti Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	1.76	3.31	3.78	3.75	Pass
Bekwai	2.79	3.72	2.21	3.64	Pass
Ejura	3.29	3.38	3.73	No Data	Pass
Jacobu	3.48	3.46	2.23	2.22	Pass
Kodie	3.25	3.51	3.49	3.55	Pass
Kumawu	No Data	No Data	3.72	3.68	Pass
Mampong	1.98	3.73	3.59	No Data	Pass
Nkawie	3.60	3.60	3.74	3.66	Pass
Obuasi	1.01	3.67	3.68	2.47	Pass
Offinso	3.51	3.41	3.64	3.47	Pass
Tepa	1.94	3.48	3.54	3.05	Pass
Tutuka	1.01	3.57	3.74	3.62	Pass
Twedie	3.12	3.28	3.11	3.30	Fail

Eastern Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	3.77	3.72	3.73	3.71	Pass
Akwatia	3.76	3.65	3.73	3.73	Pass
Kade	3.74	3.72	3.73	3.75	Pass
Mpraeso	3.61	3.54	3.57	3.66	Pass
Nkawkaw	3.77	3.77	3.72	3.76	Pass
Nsawam	3.76	3.75	3.76	3.73	Pass

Greater Accra Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	3.68	3.64	3.67	3.65	Pass
Adenta	3.69	3.59	3.57	3.63	Pass
Ashaiman	3.46	3.62	3.67	3.61	Pass
Darkuman	3.61	3.66	3.60	3.59	Pass
Madina	3.64	3.63	3.63	3.62	Pass

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Nima	3.68	3.64	3.65	3.59	Pass
Nungua	3.60	3.62	3.66	3.65	Pass
Tema Community 1	3.63	3.58	3.62	3.68	Pass

Northern Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	2.21	2.13	2.26	2.15	Fail
Karaga	1.91	3.77	3.64	2.87	Pass
Savelugu	3.77	3.76	3.77	3.75	Pass
Tatale	2.26	3.76	3.80	3.77	Pass
Yendi	2.01	1.93	3.77	3.73	Pass
Zabzugu	2.11	3.77	3.74	3.79	Pass

DATA THROUGHPUT

Ashanti Region

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	84.38	100.00	98.06	100.00	Pass
Bekwai	97.73	100.00	97.67	100.00	Pass
Ejura	88.00	100.00	100.00	100.00	Pass
Jacobu	100.00	100.00	100.00	88.89	Pass
Kodie	83.33	96.55	96.30	97.67	Pass
Kumawu	100.00	93.65	100.00	98.72	Pass
Mampong	66.67	100.00	100.00	100.00	Pass
Nkawie	100.00	100.00	100.00	95.74	Pass
Obuasi	20.00	98.55	100.00	82.35	Pass
Offinso	97.83	100.00	100.00	99.30	Pass
Tepa	100.00	99.05	100.00	98.90	Pass
Tutuka	57.14	98.77	100.00	100.00	Pass
Twedie	97.50	97.73	97.67	100.00	Pass

Eastern Region

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	100.00	100.00	100.00	100.00	Pass
Akwatia	100.00	99.26	100.00	99.24	Pass
Kade	98.18	100.00	99.17	100.00	Pass
Mpraeso	100.00	100.00	100.00	100.00	Pass
Nkawkaw	99.04	100.00	99.04	97.41	Pass
Nsawam	No Data	98.1	100.00	100.00	Pass

Greater Accra Region

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	100.00	100.00	100.00	100.00	Pass
Adenta	91.11	98.23	93.41	97.98	Pass
Ashaiman	100.00	100.00	100.00	100.00	Pass
Darkuman	87.50	100.00	100.00	100.00	Pass
Madina	100.00	100.00	98.62	99.12	Pass
Nima	100.00	100.00	100.00	100.00	Pass

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Nungua	100.00	100.00	100.00	100.00	Pass
Tema Community 1	100.00	84.13	100.00	100.00	Pass

Northern Region

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushiegu	55.56	100.00	100.00	100.00	Pass
Karaga	100.00	100.00	100.00	100.00	Pass
Savelugu	95.38	97.92	100.00	100.00	Pass
Tatale	100.00	100.00	100.00	100.00	Pass
Yendi	89.47	97.73	100.00	100.00	Pass
Zabzugu	56.67	100.00	100.00	100.00	Pass

3G COVERAGE

Ashanti Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	-74.80	-72.16	-73.71	-73.37	Pass
Bekwai	-84.92	-77.40	-82.44	-78.29	Pass
Ejura	-83.27	-82.17	-86.08	-84.94	Pass
Jacobu	-81.17	-79.44	-79.21	-79.80	Pass
Kodie	-98.36	-98.02	-99.02	-98.32	Pass
Kumawu	-83.96	-83.60	-83.06	-86.00	Pass
Mampong	-86.70	-87.37	-86.32	-88.64	Pass
Nkawie	-89.29	-89.28	-90.24	-90.62	Pass
Obuasi	-81.62	-84.11	-85.45	-78.23	Pass
Offinso	-82.39	-83.75	-82.65	-83.04	Pass
Tepa	-84.17	-88.02	-86.58	-86.80	Pass
Tutuka	-79.48	-80.91	-78.07	-79.24	Pass
Twedie	-99.77	-100.40	-101.17	-99.85	Pass

Eastern Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	-87.50	-90.30	No Data	-88.08	Pass
Akwatia	-81.72	-82.22	-82.84	-81.82	Pass
Kade	-81.57	-81.52	-80.92	-81.75	Pass
Mpraeso	-82.29	-82.46	-83.35	-84.01	Pass
Nkawkaw	-84.43	-85.91	-84.58	-81.92	Pass
Nsawam	-88.47	-87.44	-86.26	-88.40	Pass

Greater Accra Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	-80.42	-77.58	-82.49	-83.88	Pass
Adenta	-82.13	-87.37	-90.13	-85.15	Pass
Ashaiman	-73.19	-71.74	-71.92	-70.56	Pass
Darkuman	-73.04	-76.25	-75.19	-73.62	Pass
Madina	-73.51	-76.26	-75.48	-77.26	Pass
Nima	-67.96	-66.58	-68.06	-67.83	Pass
Nungua	-75.28	-74.96	-72.29	-75.02	Pass
Tema Community 1	-71.92	-76.95	-70.79	-71.83	Pass

Northern Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushiegu	-85.48	-86.06	-85.31	-86.06	Pass
Karaga	-77.27	-77.61	-75.21	-75.46	Pass
Savelugu	-83.15	-81.92	-81.87	-81.19	Pass
Tatale	-89.00	-80.88	-79.88	-79.22	Pass
Yendi	-83.28	-85.24	-85.09	-85.58	Pass
Zabzugu	-84.85	-82.52	-84.49	-83.98	Pass

GLO RESULTS

CALL SETUP TIME (CST)

Ashanti Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	No 3G Coverage				-
Bekwai	9.1	8.2	7.55	7.51	Pass
Ejura	No Coverage				-
Jacobu					-
Kodie	13.74	17.11	15.40	20.49	Fail
Kumawu	No 3G Coverage				-
Mampong	6.63	6.42	7.79	7.79	Pass
Nkawie	10.69	18.49	19.50	19.84	Fail
Obuasi	6.80	11.10	9.65	6.48	Pass
Offinso	6.24	17.15	16.58	16.21	Pass
Tepa	No 3G Coverage				-
Tutuka	7.73	11.70	11.06	7.39	Pass
Twedie	18.69	09.27	11.42	17.88	Pass

Eastern Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	17.23	23.01	11.29	12.26	Fail
Akwatia	No 3G Coverage				-
Kade					-
Mpraeso	8.18	5.81	7.50	No Data	Pass
Nkawkaw	9.11	29.38	24.45	10.46	Pass
Nsawam	9.59	8.81	6.51	12.67	Pass

Greater Accra Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	09.18	06.92	08.84	07.61	Pass
Adenta	10.80	09.97	08.68	09.72	Pass
Ashaiman	09.09	06.70	08.54	08.33	Pass

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Darkuman	08.96	07.95	09.30	07.28	Pass
Madina	06.54	06.90	11.61	11.72	Pass
Nima	09.36	08.52	06.17	08.71	Pass
Nungua	18.46	17.80	29.71	14.58	Fail
Tema Community 1	07.68	13.60	12.41	06.27	Pass

Northern Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	No 3G Coverage				-
Karaga					-
Savelugu					-
Tatale					-
Yendi					-
Zabzugu					-

VOICE QUALITY (MOS)

Ashanti Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	No 3G Coverage				-
Bekwai	2.91	2.85	2.82	2.88	Fail
Ejura	No 3G Coverage				-
Jacobu					-
Kodie	1.01	1.01	2.16	2.21	Fail
Kumawu	1.01	1.79	No 3G Coverage		-
Mampong	2.85	2.72	2.73	2.73	Fail
Nkawie	3.57	3.39	1.01	1.01	Fail
Obuasi	0.0	2.57	2.5	2.6	Fail
Offinso	1.01	1.01	2.31	2.45	Fail
Tepa	No 3G Coverage				-
Tutuka	0.00	2.75	2.75	2.75	Fail
Twedie	No Data	No Data	No Data	No Data	-

Eastern Region

District Capital	Average MOS (>3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	1.01	1.01	1.01	1.01	Fail
Akwatia	No 3G Coverage				-
Kade					-
Mpraeso	1.01	1.01	No data	No data	-
Nkawkaw	No data	No data	No data	No data	-
Nsawam	No data	No data	No data	No data	-

Greater Accra Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	2.55	2.55	2.57	2.52	Fail
Adenta	2.51	2.50	2.56	2.52	Fail
Ashaiman	2.54	2.58	2.62	2.52	Fail
Darkuman	2.52	2.55	2.50	2.56	Fail
Madina	2.61	2.60	2.48	2.50	Fail
Nima	2.65	2.60	2.60	2.56	Fail

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Nungua	2.46	2.48	2.50	2.44	Fail
Tema Community 1	2.54	2.57	2.50	2.64	Fail

Northern Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	No 3G Coverage				-
Karaga					-
Savelugu					-
Tatale					-
Yendi					-
Zabzugu					-

DATA THROUGHPUT

Ashanti Region

District Capital	Average Data Throughput ≥ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	No 3G Coverage				-
Bekwai	24.14	96.15	94.23	95.35	Pass
Ejura	No 3G Coverage				-
Jacobu					-
Kodie	No Data	89.80	100.00	No Data	Pass
Kumawu	No 3G Coverage			33.33	-
Mampong	4.76	100.00	100.00	100.00	Pass
Nkawie	No 3G Coverage				-
Obuasi	0.00	77.78	73.33	98.25	Pass
Offinso	70.37	70.37	94.12	81.40	Pass
Tepa	No 3G Coverage				-
Tutuka	0.00	66.67	100.00	93.75	Pass
Twedie	No Data	No Data	No Data	No Data	-

Eastern Region

District Capital	Average Data Throughput $\geq$ 256kbps ($>90\%$)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	100.00	100.00	-	100.00	Pass
Akwatia	No 3G Coverage				-
Kade					-
Mpraeso	100.00	100.00	100.00	100.00	Pass
Nkawkaw	78.79	53.85	94.5	97.37	Pass
Nsawam	100.00	100.00	100.00	64.00	Pass

Greater Accra Region

District Capital	Average Data Throughput $\geq$ 256kbps ($> 90\%$)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	88.89	96.81	91.43	95.31	Pass
Adenta	100.00	90.32	100.00	100.00	Pass
Ashaiman	97.78	91.84	89.47	86.11	Pass
Darkuman	No Data	98.46	100.00	88.89	Pass
Madina	100.00	97.06	97.06	98.48	Pass
Nima	100.00	100.00	98.21	100.00	Pass
Nungua	100.00	92.31	100.00	100.00	Pass
Tema Community 1	97.37	97.44	90.91	84.62	Pass

Northern Region

District Capital	Average Data Throughput $\geq$ 256kbps ($> 90\%$)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	No 3G Coverage				-
Karaga					-
Savelugu					-
Tatale					-
Yendi					-
Zabzugu					-

3G COVERAGE

Ashanti Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	No 3G Coverage				Fail
Bekwai	-98.84	-91.30	-97.33	-86.44	Pass
Ejura	No 3G Coverage				Fail
Jacobu					Fail
Kodie	-102.75	-102.20	-104.84	-104.62	Fail
Kumawu	-111.20	-107.10	-111.00	-111.08	Fail
Mampong	-92.95	-90.27	-90.73	-94.77	Pass
Nkawie	-110.11	-110.63	-110.94	-110.31	Fail
Obuasi	-79.85	-90.33	-81.65	-80.72	Pass
Offinso	-79.77	-82.06	-81.70	-81.70	Pass
Tepa	No 3G Coverage				Fail
Tutuka	-73.89	-79.37	-80.21	-82.32	Pass
Twedie	-99.09	-97.06	-99.10	-97.69	Pass

Eastern Region

District Capital	Average RSCP (≥ -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	-111.38	-112.22	-110.48	-111.68	Fail
Akwatia	No 3G Coverage				Fail
Kade					Fail
Mpraeso	-92.81	-92.95	No Data	No Data	Pass
Nkawkaw	-89.96	-90.05	-89.34	-93.08	Pass
Nsawam	-88.66	-86.04	-85.85	-89.68	Pass

Greater Accra Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	-99.91	-95.80	-96.58	-96.54	Pass
Adenta	-84.36	-84.71	-80.97	-80.67	Pass
Ashaiman	-76.63	-76.51	-74.83	-76.36	Pass
Darkuman	-77.41	-77.16	-76.84	-77.11	Pass
Madina	-81.05	-80.01	-77.79	-77.97	Pass
Nima	-72.12	-72.32	-70.85	-71.75	Pass

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Nungua	-73.36	-73.93	-75.90	-75.64	Pass
Tema Community 1	-73.22	-74.63	-73.63	-74.34	Pass

Northern Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	No 3G Coverage				Fail
Karaga					Fail
Savelugu					Fail
Tatale					Fail
Yendi					Fail
Zabzugu					Fail

MTN RESULTS

CALL SETUP TIME (CST)

Ashanti Region

District Capital	95th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	5.61	6.03	7.59	6.82	Pass
Bekwai	6.53	8.29	7.60	9.31	Pass
Ejura	8.87	9.50	10.36	8.08	Pass
Jacobu	10.65	7.01	10.14	9.18	Pass
Kodie	10.40	11.35	9.30	8.60	Pass
Kumawu	4.80	4.40	5.09	4.20	Pass
Mampong	9.10	9.10	11.71	8.91	Pass
Nkawie	9.16	10.47	9.68	8.24	Pass
Obuasi	8.24	9.85	8.20	8.58	Pass
Offinso	12.16	8.96	9.71	9.00	Pass
Tepa	9.00	8.43	9.08	8.60	Pass
Tutuka	8.01	9.06	7.70	7.96	Pass
Twedie	7.79	9.93	7.58	7.56	Pass

Eastern Region

District Capital	95th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	7.49	7.20	6.84	6.54	Pass
Akwatia	8.69	9.81	7.70	9.03	Pass
Kade	6.98	7.38	9.15	8.59	Pass
Mpraeso	9.54	10.00	7.70	8.56	Pass
Nkawkaw	9.83	10.25	11.81	9.35	Pass
Nsawam	9.54	10.84	9.40	9.27	Pass

Greater Accra Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	08.38	08.21	08.63	08.40	Pass
Adenta	07.72	08.24	07.63	07.45	Pass
Ashaiman	08.18	06.31	07.99	11.02	Pass
Darkuman	06.86	08.83	09.30	08.51	Pass
Madina	08.85	08.97	08.26	07.50	Pass
Nima	07.32	07.72	06.66	08.64	Pass
Nungua	08.40	10.10	08.80	07.51	Pass
Tema Community 1	08.23	08.32	07.83	08.15	Pass

Northern Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushiegu	05.50	06.80	06.50	06.50	Pass
Karaga	05.10	05.00	05.20	05.60	Pass
Savelugu	07.50	07.00	08.40	10.50	Pass
Tatale	05.10	05.20	05.90	06.60	Pass
Yendi	09.80	09.10	08.40	10.06	Pass
Zabzugu	08.20	07.60	06.80	06.70	Pass

VOICE QUALITY (MOS)**Ashanti Region**

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	3.68	3.75	3.69	3.71	Pass
Bekwai	3.59	3.68	3.67	3.63	Pass
Ejura	3.55	3.65	3.59	3.70	Pass
Jacobu	3.29	3.61	3.46	3.39	Pass
Kodie	3.60	3.54	3.56	3.57	Pass
Kumawu	3.76	3.78	3.75	3.71	Pass
Mampong	3.50	3.58	3.52	3.62	Pass
Nkawie	3.62	3.01	3.01	3.63	Pass

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Obuasi	3.74	3.67	3.67	3.64	Pass
Offinso	3.60	3.64	3.66	3.67	Pass
Tepa	3.63	3.49	3.46	3.57	Pass
Tutuka	3.76	3.74	3.75	3.70	Pass
Twedie	3.70	3.61	3.67	3.64	Pass

Eastern Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	3.73	3.69	3.67	3.67	Pass
Akwatia	3.54	3.57	3.58	3.66	Pass
Kade	3.67	3.63	3.69	3.71	Pass
Mpraeso	3.45	3.45	3.52	3.48	Pass
Nkawkaw	3.65	3.66	3.66	3.65	Pass
Nsawam	3.59	3.61	3.54	3.60	Pass

Greater Accra Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	3.64	3.63	3.67	3.68	Pass
Adenta	3.68	3.69	3.70	3.71	Pass
Ashaiman	3.69	3.69	3.73	3.67	Pass
Darkuman	3.64	3.61	3.65	3.58	Pass
Madina	3.68	3.67	3.68	3.66	Pass
Nima	3.68	3.71	3.72	3.67	Pass
Nungua	3.65	3.66	3.70	3.68	Pass
Tema Community 1	3.68	3.71	3.66	3.70	Pass

Northern Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	3.76	3.76	3.74	3.77	Pass
Karaga	3.78	3.75	3.78	3.79	Pass
Savelugu	3.70	3.62	3.60	3.69	Pass
Tatale	3.79	3.79	3.74	3.76	Pass
Yendi	3.72	3.71	3.74	3.73	Pass
Zabzugu	3.48	3.48	3.62	3.54	Pass

DATA THROUGHPUT

Ashanti Region

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	100.00	100.00	94.92	100.00	Pass
Bekwai	92.31	98.44	100.00	100.00	Pass
Ejura	100.00	97.10	100.00	100.00	Pass
Jacabu	97.80	100.00	97.37	100.00	Pass
Kodie	100.00	96.97	100.00	100.00	Pass
Kumawu	100.00	100.00	100.00	98.48	Pass
Mampong	100.00	86.36	87.27	100.00	Pass
Nkawie	44.44	65.38	71.88	95.24	Pass
Obuasi	100.00	100.00	100.00	100.00	Pass
Offinso	100.00	100.00	100.00	100.00	Pass
Tepa	100.00	100.00	100.00	100.00	Pass
Tutuka	100.00	100.00	100.00	97.83	Pass
Twedie	100.00	98.84	100.00	98.82	Pass

Eastern Region

District Capital	Average Data Throughput $\geq$ 256kbps ($>90\%$)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	100.00	100.00	95.12	100.00	Pass
Akwatia	94.67	91.30	100.00	94.74	Pass
Kade	87.80	100.00	100.00	94.74	Pass
Mpraeso	96.30	96.77	97.5	100.00	Pass
Nkawkaw	86.89	92.00	100.00	98.91	Pass
Nsawam	100.00	100.00	100.00	100.00	Pass

Greater Accra Region

District Capital	Average Data Throughput $\geq$ 256kbps ($> 90\%$)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	98.18	98.55	100.00	97.22	Pass
Adenta	100.00	98.48	98.68	97.22	Pass
Ashaiman	100.00	98.00	100.00	95.65	Pass
Darkuman	91.84	100.00	100.00	100.00	Pass
Madina	100.00	98.44	91.38	94.23	Pass
Nima	98.67	100.00	98.84	100.00	Pass
Nungua	100.00	100.00	98.08	68.00	Pass
Tema Community 1	100.00	100.00	100.00	93.55	Pass

Northern Region

District Capital	Average Data Throughput $\geq$ 256kbps ($> 90\%$)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	100.00	100.00	95.74	94.29	Pass
Karaga	100.00	100.00	100.00	100.00	Pass
Savelugu	100.00	98.63	100.00	98.63	Pass
Tatale	100.00	100.00	100.00	100.00	Pass
Yendi	100.00	98.65	90.54	97.18	Pass
Zabzugu	93.85	100.00	100.00	100.00	Pass

3G COVERAGE

Ashanti Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	-71.25	-74.76	-77.88	-76.65	Pass
Bekwai	-77.18	-76.35	-77.61	-77.73	Pass
Ejura	-77.89	-78.02	-79.28	-81.94	Pass
Jacobu	-84.78	-82.61	-82.63	-83.08	Pass
Kodie	-76.86	-77.82	-81.59	-83.18	Pass
Kumawu	-81.23	-79.58	-77.92	-82.19	Pass
Mampong	-80.98	-80.40	-80.42	-79.31	Pass
Nkawie	-76.78	-76.83	-78.34	-81.63	Pass
Obuasi	-71.97	-80.97	-72.71	-74.00	Pass
Offinso	-76.00	-74.73	-75.48	-75.79	Pass
Tepa	-74.62	-76.08	-75.84	-76.06	Pass
Tutuka	-72.83	-74.78	-72.07	-72.54	Pass
Twedie	-78.85	-81.95	-82.54	-81.56	Pass

Eastern Region

District Capital	Average RSCP (≥ -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	-76.87	-76.79	-77.12	-78.08	Pass
Akwatia	-77.01	-76.48	-77.69	-77.74	Pass
Kade	-76.58	-76.84	-76.64	-76.84	Pass
Mpraeso	-75.88	-76.68	-75.36	-76.07	Pass
Nkawkaw	-78.47	-76.19	-77.13	-75.03	Pass
Nsawam	-80.22	-80.03	-82.30	-81.05	Pass
Nsawam	-80.84	-80.62	-82.93	-81.85	Pass

Greater Accra Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	-80.29	-81.14	-81.87	-81.92	Pass
Adenta	-78.00	-76.27	-75.46	-74.23	Pass
Ashaiman	-70.13	-70.28	-69.92	-72.90	Pass
Darkuman	-77.05	-76.92	-77.27	-76.59	Pass

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Madina	-72.38	-74.55	-73.98	-75.80	Pass
Nima	-66.77	-66.26	-62.44	-66.93	Pass
Nungua	-75.65	-76.11	-75.28	-75.19	Pass
Tema Community 1	-73.81	-75.28	-74.18	-75.32	Pass

Northern Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	-76.05	-76.37	-74.99	-76.22	Pass
Karaga	-70.70	-71.37	-70.14	-69.55	Pass
Savelugu	-76.60	-76.71	-76.90	-77.41	Pass
Tatale	-77.20	-75.07	-74.93	-75.17	Pass
Yendi	-73.05	-72.58	-73.33	-73.66	Pass
Zabzugu	-73.65	-74.59	-74.62	-75.64	Pass

VODAFONE RESULTS

CALL SETUP TIME (CST)

Ashanti Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	4.22	3.91	4.30	4.26	Pass
Bekwai	6.01	5.34	4.54	5.94	Pass
Ejura	4.28	4.00	3.80	3.81	Pass
Jacobu	12.80	12.94	12.23	10.75	Fail
Kodie	4.89	5.47	5.19	5.05	Pass
Kumawu	4.80	4.40	5.09	4.20	Pass
Mampong	5.40	6.38	5.69	6.29	Pass
Nkawie	5.75	5.73	5.38	6.55	Pass
Obuasi	5.42	12.70	9.86	5.23	Pass
Offinso	8.91	8.08	5.20	5.52	Pass
Tepa	5.53	7.91	5.50	5.41	Pass
Tutuka	6.04	4.90	4.60	5.62	Pass
Twedie	4.88	4.61	4.18	5.25	Pass

Eastern Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	12.32	10.39	5.35	5.25	Pass
Akwatia	4.85	5.08	5.80	5.33	Pass
Kade	12.69	4.04	4.20	4.75	Pass
Mpraeso	12.71	12.58	5.75	9.88	Pass
Nkawkaw	5.60	6.20	9.49	6.41	Pass
Nsawam	12.4	13.06	12.9	12.6	Fail

Greater Accra Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	12.55	12.51	13.05	12.40	Fail
Adenta	10.74	10.60	12.49	11.63	Fail

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Ashaiman	12.45	07.20	07.79	12.40	Pass
Darkuman	08.70	11.78	12.24	12.01	Pass
Madina	12.27	12.51	10.36	12.09	Fail
Nima	12.57	12.07	05.40	12.40	Pass
Nungua	08.66	09.21	08.78	08.32	Pass
Tema Community 1	06.16	11.93	12.46	12.49	Pass

Northern Region

District Capital	95 th Percentile of Call Setup Time (<10 sec)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	06.10	07.00	06.00	05.90	Pass
Karaga	04.30	07.70	11.80	04.70	Pass
Savelugu	05.20	04.40	04.10	05.80	Pass
Tatale	04.10	04.00	03.60	03.70	Pass
Yendi	06.80	08.10	07.00	07.70	Pass
Zabzugu	03.90	04.60	04.90	04.50	Pass

VOICE QUALITY (MOS)

Ashanti Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	3.65	3.67	3.62	3.75	Pass
Bekwai	3.69	3.68	3.70	3.68	Pass
Ejura	3.70	3.68	3.73	3.74	Pass
Jacobu	3.62	3.66	3.63	3.54	Pass
Kodie	3.63	3.64	3.69	3.65	Pass
Kumawu	3.69	3.70	3.71	3.73	Pass
Mampong	3.61	3.61	3.56	3.46	Pass
Nkawie	3.50	3.53	3.58	3.06	Pass
Obuasi	3.55	3.22	3.26	3.62	Pass
Offinso	3.59	3.61	3.67	3.67	Pass
Tepa	3.48	3.45	3.41	3.55	Pass
Tutuka	3.62	3.59	3.68	3.74	Pass
Twedie	3.76	3.74	3.68	3.63	Pass

Eastern Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	3.65	3.63	3.63	3.64	Pass
Akwatia	3.41	3.31	3.37	3.37	Fail
Kade	3.26	3.66	3.57	3.62	Pass
Mpraeso	3.67	3.57	3.64	3.64	Pass
Nkawkaw	3.51	3.54	3.57	3.58	Pass
Nsawam	3.49	3.48	3.38	3.43	Fail

Greater Accra Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	3.52	3.48	3.48	3.41	Pass
Adenta	3.61	3.52	3.58	3.58	Pass
Ashaiman	3.55	3.57	3.59	3.55	Pass
Darkuman	3.45	3.52	3.51	3.43	Pass
Madina	3.52	3.51	3.54	3.55	Pass
Nima	3.57	3.55	3.56	3.60	Pass
Nungua	3.54	3.57	3.55	3.48	Pass
Tema Community 1	3.34	3.51	3.48	3.56	Pass

Northern Region

District Capital	Average MOS (> 3.5)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushiegu	3.44	3.52	3.57	3.47	Pass
Karaga	3.64	3.62	3.33	3.49	Pass
Savelugu	3.67	3.56	3.65	3.57	Pass
Tatale	3.73	3.77	3.73	3.75	Pass
Yendi	3.42	3.46	3.44	3.47	Fail
Zabzugu	3.65	3.45	3.63	3.67	Pass

DATA THROUGHPUT

Ashanti Region

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	100.00	100.00	100.00	100.00	Pass
Bekwai	100.00	100.00	100.00	100.00	Pass
Ejura	100.00	100.00	100.00	100.00	Pass
Jacobu	100.00	100.00	100.00	100.00	Pass
Kodie	100.00	100.00	100.00	100.00	Pass
Kumawu	100.00	100.00	100.00	100.00	Pass
Mampong	100.00	100.00	92.59	No Data	Pass
Nkawie	100.00	100.00	100.00	100.00	Pass
Obuasi	100.00	100.00	100.00	100.00	Pass
Offinso	100.00	100.00	100.00	100.00	Pass
Tepa	100.00	99.17	100.00	100.00	Pass
Tutuka	100.00	100.00	100.00	100.00	Pass
Twedie	100.00	99.17	100.00	100.00	Pass

Eastern Region

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	100.00	100.00	No Data	100.00	Pass
Akwatia	100.00	99.08	100.00	99.07	Pass
Kade	96.55	100.00	100.00	98.81	Pass
Mpraeso	100.00	100.00	100.00	100.00	Pass
Nkawkaw	100.00	100.00	100.00	99.37	Pass
Nsawam	100.00	100.00	100.00	100.00	Pass

Greater Accra Region

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	100.00	100.00	100.00	100.00	Pass
Adenta	100.00	100.00	99.05	100.00	Pass
Ashaiman	100.00	100.00	100.00	100.00	Pass
Darkuman	100.00	100.00	100.00	100.00	Pass
Madina	100.00	100.00	100.00	100.00	Pass
Nima	100.00	100.00	No Data	100.00	Pass
Nungua	100.00	100.00	100.00	100.00	Pass

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Tema Community 1	100.00	100.00	100.00	100.00	Pass

Northern Region

District Capital	Average Data Throughput $\geq$ 256kbps (> 90%)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushegu	100.00	100.00	100.00	100.00	Pass
Karaga	100.00	100.00	100.00	100.00	Pass
Savelugu	100.00	100.00	100.00	100.00	Pass
Tatale	100.00	100.00	100.00	100.00	Pass
Yendi	100.00	100.00	100.00	100.00	Pass
Zabzugu	87.50	100.00	100.00	100.00	Pass

3G COVERAGE

Ashanti Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Akomadan	-75.56	-77.35	-78.78	-77.07	Pass
Bekwai	-81.61	-79.02	-79.33	-80.78	Pass
Ejura	-78.40	-81.93	-81.41	-81.89	Pass
Jacobu	-97.75	-96.30	-98.22	-95.23	Pass
Kodie	-76.85	-71.45	-86.70	-79.25	Pass
Kumawu	-86.55	-81.37	-85.18	-82.28	Pass
Mampong	-76.35	-75.35	-75.26	-75.82	Pass
Nkawie	-81.04	-81.62	-81.98	-82.75	Pass
Obuasi	-72.93	-82.05	-84.68	-73.24	Pass
Offinso	-80.07	-86.18	-82.51	-76.31	Pass
Tepa	-85.81	-88.61	-87.66	-90.58	Pass
Tutuka	-73.51	-78.34	-73.98	-71.79	Pass
Twedie	-71.16	-77.06	-75.79	-75.62	Pass

Eastern Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abetifi	No Data	-86.39	-81.83	No Data	Pass
Akwatia	-77.64	-78.75	-79.49	-80.25	Pass
Kade	-84.52	-82.70	-84.50	-82.88	Pass
Mpraeso	-84.24	-83.11	-86.57	-86.75	Pass
Nkawkaw	-81.48	-78.68	-81.47	-81.52	Pass
Nsawam	-89.61	-87.24	-87.26	-89.13	Pass

Greater Accra Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Abokobi	-81.73	-85.30	-82.73	-86.33	Pass
Adenta	-73.70	-74.12	-78.42	-73.68	Pass
Ashaiman	-73.06	-72.22	-71.59	-71.97	Pass
Darkuman	-70.13	-73.38	-73.77	-73.64	Pass
Madina	-68.77	-69.69	-72.86	-69.59	Pass
Nima	-70.01	-69.19	-70.38	-70.33	Pass
Nungua	-73.82	-75.30	-74.99	-75.04	Pass
Tema Community 1	-72.24	-72.27	-74.11	-71.15	Pass

Northern Region

District Capital	Average RSCP (> -105dBm)				Compliance Status
	Day 1	Day 2	Day 3	Day 4	
Gushiegu	-80.23	-78.67	-79.40	-79.53	Pass
Karaga	-89.44	-87.01	-88.76	-88.75	Pass
Savelugu	-87.43	-90.00	-87.75	-88.07	Pass
Tatale	-78.52	-75.43	-75.79	-74.56	Pass
Yendi	-76.51	-76.86	-76.99	-77.52	Pass
Zabzugu	-81.11	-79.25	-81.88	-80.89	Pass