



**NATIONAL
COMMUNICATIONS
AUTHORITY**

**QUALITY OF SERVICE TEST
RESULTS - 2018 SECOND QUARTER**

Table of Contents

Quality of Service Monitoring Results for Airtel	3
Voice Test.....	3
Voice Quality (MOS)	5
3G Data/Coverage Test.....	9
Quality of Service Monitoring Results for Tigo	13
Voice Test.....	13
Voice Quality (MOS)	15
3G Data/Coverage Test.....	20
Quality of Service Monitoring Results for Glo	25
Voice Test.....	25
Voice Quality (MOS)	27
3G Data/Coverage Test	31
Quality of Service Monitoring Results for MTN	35
Voice Test.....	35
Voice Quality (MOS)	37
3G Data/Coverage Test	42
Quality of Service Monitoring Results for Vodafone	46
Voice Test.....	46
Voice Quality (MOS)	48
3G Data/Coverage Test	53
Definitions	57

MONITORING TEST RESULTS FOR AIRTEL

VOICE TEST

Central Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
Airtel	0.00	0.00	0.00	7.50	96.22

- Service Provider met all Key Performance Indicators (KPIs) in the Central Region

Ashanti Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
Airtel	0.00	0.04	0.00	6.91	93.06

- Service Provider met all KPIs in the Ashanti Region

Brong Ahafo Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
Airtel	0.03	0.00	0.00	7.80	84.72

- Service Provider met all KPIs in the Brong Ahafo Region

Volta Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	$\leq 1\%$	$\leq 1\%$	$\leq 3\%$	<10 sec	>70%
Airtel	0.00	0.00	0.00	7.69	97.44

- *Service Provider met all KPIs in the Volta Region*

Upper East Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	$\leq 1\%$	$\leq 1\%$	$\leq 3\%$	<10 sec	>70%
Airtel	0.10	0.00	0.00	6.94	82.67

- *Service Provider met all KPIs in the Upper East Region*

Upper West Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	$\leq 1\%$	$\leq 1\%$	$\leq 3\%$	<10 sec	>70%
Airtel	0.00	0.00	0.00	6.73	72.79

- *Service Provider met all KPIs in the Upper West Region*

VOICE QUALITY (MOS)

Ashanti Region

District Capital	Airtel		
	(95% of call connections >3.5)	Compliance	Non-Compliance
Agogo	66.10%		✓
Agona	63.08%		✓
Akomadan	81.25%		✓
Asiwa	No Network Coverage		
Bekwai	59.97%		✓
Drobonso	No Network Coverage		
Effiduase	63.57%		✓
Ejisu	77.89%		✓
Ejura	70.83%		✓
Foase	81.01%		✓
Fomena	72.91%		✓
Jacobi	46.56%		✓
Juaso	70.11%		✓
Kodie	63.25%		✓
Konongo-Odumase	78.07%		✓
Kumawu	70.88%		✓
Kuntanase	73.47%		✓
Mampong	76.50%		✓
Mampongten	69.15%		✓
Mankraso	68.10%		✓
Manso-Nkwanta	69.86%		✓
New Edubiase	62.53%		✓
Nkawie	64.13%		✓
Nsuta	72.39%		✓
Nyinahin	90.60%		✓
Obuasi	63.22%		✓
Offinso	60.74%		✓
Tepa	86.52%		✓

- Service Provider failed to meet the MOS minimum requirement in all twenty eight (28) tested district capitals in the Ashanti Region
- Service Provider did not have network coverage in two (2) district capitals

Brong Ahafo Region

District Capital	Airtel		
	(95% of call connections >3.5)	Compliance	Non-Compliance
Atebubu	85.40%		✓
Banda Ahenkro	No Network Coverage		
Bechem	56.33%		✓
Berekum	47.37%		✓
Busunya	0.00%		✓
Dormaa-Ahenkro	30.23%		✓
Drobo	71.91%		✓
Duayaw-Nkwanta	7.51%		✓
Goaso	50.83%		✓
Hwidiem	28.21%		✓
Jema	No Network Coverage		
Kajaji			
Kenyasi	18.49%		✓
Kintampo	63.07%		✓
Kukuom	62.04%		✓
Kwame Danso	78.68%		✓
Nkoranza	30.28%		✓
Nkran Nkwanta	No Network Coverage		
Nsawkaw			
Odumasi	18.60%		✓
Sampa	90.65%		✓
Sunyani	37.26%		✓
Techiman	63.38%		✓
Tuobodom	16.74%		✓
Wamfie	69.12%		✓
Wenchi	35.53%		✓
Yeji	67.27%		✓

- Service Provider failed to meet the MOS minimum requirement in all twenty seven (27) tested district capitals in the Brong Ahafo Region
- Service Provider did not have network coverage in five (5) district capitals

Volta Region

District Capital	Airtel		
	(95% of call connections >3.5)	Compliance	Non-Compliance
Adaklu Waya	0.00%		✓

Adidome	74.05%		✓
Agortime-Kpetoe	80.38%		✓
Akatsi	27.95%		✓
Amfoega	0.00%		✓
Ave Dakpa	8.64%		✓
Battor Dugame	0.83%		✓
Chinderi	65.08%		✓
Dambai	70.20%		✓
Denu	77.97%		✓
Dzodze	63.45%		✓
Dzolokpuita	0.00%		✓
Ho	37.53%		✓
Hohoe	42.10%		✓
Jasikan	88.91%		✓
Kadjebi	91.91%		✓
Keta	33.94%		✓
Kete-Krachi	91.24%		✓
Kpando	65.63%		✓
Kpasa	90.86%		✓
Kpeve	7.94%		✓
Nkonya-Ahenkro	82.00%		✓
Nkwanta	58.54%		✓
Sogakope	61.43%		✓
Ve-Golokwati	7.66%		✓

- Service Provider failed to meet the MOS minimum requirement in all twenty five (25) tested district capitals in the Volta Region

Central Region

District Capital	Airtel		
	(95% of call connections >3.5)	Compliance	Non-Compliance
Abura-Dunkwa	57.85%		✓
Afransi	58.29%		✓
Agona Swedru	65.06%		✓
Ajumako	62.48%		✓
Apam	71.88%		✓
Assin Fosu	66.32%		✓
Awutu Breku	63.26%		✓
Breman Asikuma	64.04%		✓
Cape Coast	67.15%		✓

Diaso	67.02%		✓
Dunkwa-On-Offin	66.03%		✓
Elmina	63.11%		✓
Essarkyir	62.47%		✓
Kasoa	50.91%		✓
Komenda	54.68%		✓
Mankessim	52.49%		✓
Nsaba	55.27%		✓
Nsuaem-Kyekyewere	No Network Coverage		
Saltpond	53.58%		✓
Twifo Hemang	51.87%		✓
Twifo Praso	53.78%		✓
Winneba	55.22%		✓

- Service Provider failed to meet the MOS requirement in all twenty two (22) tested district capitals in the Central Region
- Service Provider did not have network coverage in one (1) district capital

Upper East Region

District Capital	AIRTEL		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Bawku	86.64%		✓
Binduri	0.00%		✓
Bolgatanga	82.38%		✓
Bongo	70.29%		✓
Fumbisi	0.00%		✓
Garu	90.11%		✓
Nangodi	43.08%		✓
Navrongo	83.53%		✓
Paga	83.33%		✓
Pusiga	11.86%		✓
Sandema	No Network Coverage		
Tongo	65.67%		✓
Zebilla	78.28%		✓

- Service Provider failed to meet the MOS requirement in all thirteen (13) tested district capitals in the Upper East Region
- Service Provider did not have network coverage in one (1) district capital

Upper West Region

District Capital	AIRTEL		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Funsi	1.27%		✓
Gwollu	33.71%		✓
Issa	No Network Coverage		
Jirapa	0.00%		✓
Lambussie	52.00%		✓
Lawra	No Network Coverage		
Nadowli	47.22%		✓
Nandom	No Network Coverage		
Tumu	96.53%	✓	
Wa	61.87%		✓
Wechiau	32.14%		✓

- Service Provider complied with the minimum MOS in only one (1) of the tested district capitals in the Upper West Region
- Service Provider did not have network coverage in three (3) district capital

3G DATA/COVERAGE TEST

Brong Ahafo Region

District Capital	AIRTEL			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Atebubu	100.00	0.00	11294.38	-90.10
Banda	No 3G Coverage			
Bechem	100.00	0.00	7394.00	86.92
Berekum	100.00	0.00	7359.93	-103.04
Busunya	100.00	0.00	1276.86	-116.53
Dormaa	100.00	0.00	11370.31	-91.85
Drobo	100.00	0.00	10011.42	-95.23
Duayaw Nkwanta	100.00	0.00	6629.90	-114.99
Goaso	100.00	0.00	8511.51	-93.99

Hwediem	No Successful Data Session			-85.88
Jema	No 3G Coverage			
Kajaji	No Successful Data Session			-125.70
Kenyasi	No Successful Data Session			-99.61
Kintampo	100.00	0.00	6284.50	-89.36
Kukuom	100.00	0.00	10824.88	-85.87
Kwame Danso	100.00	0.00	12401.78	-88.05
Nkoranza	100.00	0.00	5619.99	-95.49
Nkrankwanta	No Successful Data Session			-88.12
Nsawkaw	No 3G Coverage			
Odumasi	100.00	0.00	9374.76	-88.05
Sampa	100.00	0.00	6900.01	-84.33
Sunyani	100.00	0.00	7416.33	-87.28
Techiman	100.00	0.00	7128.27	-85.22
Tuobodom	100.00	0.00	7016.59	-80.60
Wamfie	100.00	0.00	8318.71	-91.08
Wenchi	100.00	0.00	6829.78	-95.15
Yeji	100.00	0.00	7388.00	-97.08

- Service Provider did not meet 3G Coverage obligations in three (3) of the tested district capitals in the Brong Ahafo Region
- Service Provider did not have 3G coverage in three (3) district capitals

Central Region

AIRTEL				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Abura-Dunkwa	100.00	0.00	7511.55	-94.08
Afransi	100.00	0.00	9259.54	-83.38
Agona Swedru	100.00	0.00	1782.44	-91.35
Ajumako	100.00	0.00	11940.62	-83.17
Apam	100.00	0.00	8153.87	-89.31
Assin Fosu	100.00	0.00	10886.85	-86.83
Awutu Breku	100.00	0.00	7409.51	-81.99
Breman Asikuma	100.00	0.00	10244.61	-86.86
Cape Coast	100.00	0.00	8276.29	-90.67
Diaso	100.00	0.00	11011.50	-91.21
Dunkwa-On-Offin	100.00	0.00	8721.75	-89.26
Elmina	100.00	0.00	7390.79	-95.49
Essarkyir	No Successful Data Session			-118.03
Kasoa	100.00	0.00	4491.90	-83.54
Komenda	100.00	0.00	9446.44	-81.04
Mankessim	100.00	0.00	2125.46	-94.15
Nsaba	100.00	0.00	6055.48	-80.52
Nsuaem-Kyegyewere	No 3G Coverage			
Saltpond	No Successful Data Session			-102.74

Twifo Hemang				-115.08
Twifo Praso	100.00	0.00	9651.46	-84.03
Winneba	100.00	0.00	3887.07	-90.80

- Service Provider did not meet 3G Coverage obligations in two (2) of the tested district capitals in the Central Region
- Service Provider did not have 3G coverage in one (1) district capital

Upper East Region

AIRTEL				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Bawku	100.00	0.00	5727.09	-89.23
Binduri	No Successful Data Session			-113.55
Bolgatanga	100.00	0.00	5267.69	-94.96
Bongo	100.00	0.00	6082.39	-100.64
Fumbisi	No 3G Coverage			
Garu	100.00	0.00	12055.47	-90.93
Nangodi	No 3G Coverage			
Navrongo	100.00	0.00	3956.64	-97.02
Paga	100.00	0.00	897.18	-109.27
Pusiga	100.00	0.00	2302.23	-91.56
Sandema	No Successful Data Session			-83.27
Tongo	100.00	0.00	5041.95	-107.64
Zebilla	100.00	0.00	6326.42	-95.00

- Service Provider did not meet 3G Coverage obligations in three (3) of the tested district capitals in the Upper East Region
- Service Provider did not have 3G coverage in two (2) district capitals

Upper West Region

AIRTEL				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Funsi	100.00	0.00	420.57	-87.71
Gwollu	100.00	0.00	9165.42	-86.77
Jirapa	No Successful Data Session			-69.72
Lambussie	No Successful Data Session			-72.79
Lawra	No 3G Coverage			
Nadowli	No 3G Coverage			
Nandom	No Successful Data Session			-90.00
Tumu	100.00	0.00	8130.53	-90.21

Wa	No Successful Data Session			-95.76
Wechiau	100.00	100.00	3644.02	-

- Service Provider did not have 3G coverage in two (2) district capitals

Volta Region

AIRTEL				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Adaklu	No Successful Data Session			-109.40
Adidome	100.00	0.00	9046.04	-94.66
Akatsi	100.00	0.00	5759.63	-97.23
Anfoega	100.00	0.00	7819.98	-
Ave Dakpa	100.00	0.00	11701.66	-
Battor	100.00	0.00	1560.47	-113.08
Chinderi	No Successful Data Session			-114.19
Dambai	100.00	0.00	230.59	-91.47
Denu	100.00	0.00	7585.87	-75.22
Dzodze	100.00	0.00	9781.16	-91.82
Dzolokpuita	No 3G Coverage			
Golokwati	No Successful Data Session			-102.68
Ho	100.00	0.00	4829.38	-92.09
Hohoe	100.00	0.00	7921.49	-95.70
Jasikan	100.00	0.00	15656.66	-81.76
Kadjebi	100.00	0.00	5106.53	-87.84
Keta	100.00	0.00	8447.83	-102.16
Kete Krachi	100.00	0.00	9894.55	-84.65
Kpando	100.00	0.00	6623.90	-92.13
Kpassa	100.00	0.00	7457.63	-97.25
Kpetoe	100.00	0.00	9906.04	-95.21
Kpeve	100.00	0.00	3016.83	-
Nkonya Ahenkro	100.00	0.00	12695.73	-87.02
Nkwanta	100.00	0.00	189.45	-91.74
Sogakope	100.00	0.00	9472.85	-92.16

- Service Provider did not meet 3G Coverage KPI in three (3) of the tested district capitals in the Volta Region

MONITORING TEST RESULTS FOR TIGO

VOICE TEST

Central Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
Tigo	0.00	0.02	0.00	6.71	97.16

- *Service Provider met all Key Performance Indicators (KPIs) in the Central Region*

Ashanti Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
Tigo	0.00	0.00	0.00	7.10	84.49

- *Service Provider met all KPIs in the Ashanti Region*

Brong Ahafo Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
Tigo	0.00	0.35	0.00	7.80	89.61

- *Service Provider met all KPIs in the Brong Ahafo Region*

Volta Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
Tigo	0.00	0.13	0.00	7.60	87.53

- *Service Provider met all KPIs in the Volta Region*

Upper East Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
Tigo	0.00	0.05	0.00	8.71	88.60

- *Service Provider met all KPIs in the Upper East Region*

Upper West Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
Tigo	0.00	0.08	0.00	9.40	77.12

- *Service Provider met all KPIs in the Upper West Region*

VOICE QUALITY (MOS)

Ashanti Region

District Capital	TIGO		
	(95% of call connections >3.5)	Compliance	Non-Compliance
Agogo	95.33%	√	
Agona	68.16%		√
Akomadan	67.98%		√
Asiwa	72.35%		√
Bekwai	66.32%		√
Drobonso	No Network Coverage		
Effiduase	52.15%		√
Ejisu	57.02%		√
Ejura	67.39%		√
Foase	58.70%		√
Fomena	71.56%		√
Jacubu	No Network Coverage		
Juaso	47.54%		√
Kodie	67.12%		√
Konongo-Odumase	61.89%		√
Kumawu	59.62%		√
Kuntanase	63.57%		√
Mampong	70.78%		√
Mampong teng	49.21%		√
Mankraso	65.41%		√
Manso-Nkwanta	70.23%		√
New Edubiase	57.51%		√
Nkawie	51.09%		√
Nsuta	73.76%		√
Nyinahin	69.77%		√
Obuasi	53.04%		√
Offinso	59.56%		√
Tepa	72.05%		√

- Service Provider complied with the minimum Mean Opinion Score(MOS) in only one of the tested district capitals in the Ashanti Region
- Service Provider did not have network coverage in two (2) district capitals

Brong Ahafo Region

District Capital	TIGO		
	(95% of call connections >3.5)	Compliance	Non-Compliance
Atebubu	61.84%		✓
Banda Ahenkro	84.47%		✓
Bechem	39.07%		✓
Berekum	47.71%		✓
Busunya	69.70%		✓
Dormaa-Ahenkro	59.92%		✓
Drobo	71.22%		✓
Duayaw-Nkwanta	6.25%		✓
Goaso	86.56%		✓
Hwidiem	85.17%		✓
Jema	70.21%		✓
Kajaji	70.59%		✓
Kenyasi	84.18%		✓
Kintampo	60.33%		✓
Kukuom	82.69%		✓
Kwame Danso	61.41%		✓
Nkoranza	70.00%		✓
Nkran Nkwanta	69.84%		✓
Nsawkaw	67.59%		✓
Odumasi	73.20%		✓
Sampa	54.85%		✓
Sunyani	68.42%		✓
Techiman	51.77%		✓
Tuobodom	56.97%		✓
Wamfie	66.87%		✓
Wenchi	52.98%		✓
Yeji	60.24%		✓

- Service Provider failed to meet the MOS minimum requirement in all twenty seven (27) tested district capitals in the Brong Ahafo Region

Volta Region

District Capital	TIGO		
	(95% of call connections >3.5)	Compliance	Non-Compliance
Adaklu Waya	64.39%		✓
Adidome	75.59%		✓
Agortime-Kpetoe	47.41%		✓
Akatsi	40.73%		✓
Amfoega	75.48%		✓
Ave Dakpa	69.74%		✓
Battor Dugame	78.90%		✓
Chinderi	0.00%		✓
Dambai	87.04%		✓
Denu	76.89%		✓
Dzodze	63.45%		✓
Dzolokpuita	0.00%		✓
Ho	46.72%		✓
Hohoe	54.56%		✓
Jasikan	16.51%		✓
Kadjebi	94.33%		✓
Keta	61.15%		✓
Kete-Krachi	8.73%		✓
Kpando	33.09%		✓
Kpasa	55.92%		✓
Kpeve	78.80%		✓
Nkonya-Ahenkro	22.41%		✓
Nkwanta	55.85%		✓
Sogakope	63.85%		✓
Ve-Golokwati	66.67%		✓

- Service Provider failed to meet the MOS minimum requirement in all twenty five (25) tested district capitals in the Volta Region

Central Region

District Capital	TIGO		
	(95% of call connections >3.5)	Compliance	Non-Compliance
Abura-Dunkwa	27.31%		✓
Afransi	36.55%		✓
Agona Swedru	51.56%		✓
Ajumako	54.99%		✓
Apam	64.84%		✓
Assin Fosu	54.86%		✓
Awutu Breku	64.33%		✓
Breman Asikuma	58.39%		✓
Cape Coast	54.71%		✓
Diaso	51.47%		✓
Dunkwa-On-Offin	53.02%		✓
Elmina	57.22%		✓
Essarkyir	58.54%		✓
Kasoa	53.53%		✓
Komenda	57.95%		✓
Mankessim	55.82%		✓
Nsaba	60.19%		✓
Nsuaem-Kyekyawere	60.75%		✓
Saltpond	66.96%		✓
Twifo Hemang	67.18%		✓
Twifo Praso	65.49%		✓
Winneba	63.70%		✓

- Service Provider failed to meet the MOS requirement in all twenty two (22) tested district capitals in the Central Region

Upper East Region

District Capital	TIGO		
	Voice Quality (95% of call connections >3.5)	Compliance	Non-Compliance
Bawku	34.08%		✓
Binduri	68.02%		✓
Bolgatanga	12.24%		✓

Bongo	12.23%		✓
Fumbisi	71.28%		✓
Garu	62.32%		✓
Nangodi	2.37%		✓
Navrongo	31.10%		✓
Paga	29.74%		✓
Pusiga	6.25%		✓
Sandema	53.87%		✓
Tongo	71.27%		✓
Zebilla	53.66%		✓

- Service Provider failed to meet the MOS requirement in all thirteen (13) tested district capitals in the Upper East Region

Upper West Region

District Capital	TIGO		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Funsi	0.00%		✓
Gwollu	58.05%		✓
Issa	No Network Coverage		
Jirapa	48.48%		✓
Lambussie	40.32%		✓
Lawra	55.56%		✓
Nadowli	51.04%		✓
Nandom	18.70%		✓
Tumu	67.79%		✓
Wa	44.56%		✓
Wechiau	68.55%		✓

- Service Provider failed to meet the MOS requirement in all thirteen (11) tested district capitals in the Upper West Region
- Service Provider did not have network coverage in one (1) district capital

3G DATA/COVERAGE TEST

Brong Ahafo Region

District Capital	TIGO			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Atebubu	100.00	0.00	2950.08	-101.32
Banda	No Successful Data Session			-110.37
Bechem	100.00	0.00	6371.86	-96.12
Berekum	100.00	0.00	4489.31	-97.74
Busunya	100.00	0.00	7150.89	-77.60
Dormaa	100.00	0.00	7032.24	-93.86
Drobo	100.00	0.00	6890.58	-91.92
Duayaw Nkwanta	100.00	0.00	6629.90	-105.57
Goaso	100.00	0.00	4268.29	-102.56
Hweddiem	No Successful Data Session			-111.51
Jema	100.00	0.00	3438.72	-87.69
Kajaji	100.00	0.00	6059.04	-84.76
Kenyasi	100.00	0.00	4451.38	-100.34
Kintampo	100.00	0.00	4377.95	-99.07
Kukuom	100.00	0.00	6919.02	-86.92
Kwame Danso	100.00	0.00	3246.04	-93.26
Nkoranza	100.00	0.00	6052.83	-100.31
Nkrankwanta	No 3G Coverage			
Nsawkaw	100.00	0.00	6846.11	-78.19
Odumasi	100.00	0.00	4106.58	-86.67
Sampa	100.00	0.00	1172.83	-87.98
Sunyani	100.00	0.00	5264.57	-87.94
Techiman	100.00	0.00	5013.41	-96.01
Tuobodom	100.00	0.00	5385.72	-96.75
Wamfie	100.00	0.00	3800.03	-85.16
Wenchi	100.00	0.00	2286.38	-90.93
Yeji	100.00	0.00	2783.78	-100.20

- Service Provider did not meet 3G Coverage obligations in three (3) of the tested district capitals in the Brong Ahafo Region
- Service Provider did not have 3G coverage in one (1) district capital

Central Region

District Capital	TIGO			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Abura-Dunkwa	100.00	0.00	5989.68	-93.84
Afransi	100.00	0.00	5625.29	-80.61
Agona Swedru	100.00	0.00	4440.74	-86.26
Ajumako	100.00	0.00	7134.93	-79.39
Apam	100.00	0.00	6715.42	-92.81
Assin Fosu	100.00	0.00	3033.02	-92.64
Awutu Breku	100.00	0.00	6797.36	-89.50
Breman Asikuma	100.00	0.00	6102.59	-85.51
Cape Coast	100.00	0.00	3607.37	-86.74
Diaso	100.00	0.00	7296.07	-80.52
Dunkwa-On-Offin	100.00	0.00	3717.97	-83.79
Elmina	100.00	0.00	7054.68	-97.33
Essarkyir	No Successful Data Session			-111.63
Kasoa	100.00	0.00	5608.66	-80.70
Komenda	100.00	0.00	8113.60	-79.83
Mankessim	100.00	0.00	4186.92	-101.02
Nsaba	100.00	0.00	6005.96	-82.32
Nsuaem-Kyekyawere	100.00	0.00	9081.54	-82.47
Saltpond	100.00	0.00	7963.32	-96.72
Twifo Hemang	No Successful Data Session			-115.93
Twifo Praso	100.00	0.00	6473.97	-112.42
Winneba	100.00	0.00	4571.69	-90.40

- Service Provider did not meet 3G Coverage obligations in three (3) of the tested district capitals in the Central Region

Upper East Region

TIGO				
District Capital	Data Access Success Rate (%) $\geq 95\%$	Data Drop Rate (%) $\leq 1\%$	Data Throughput (kbps) $\geq 256\text{kbps}$	3G Coverage $\geq -105\text{dBm}$
Bawku	100.00	0.00	5627.00	-80.85
Binduri	100.00	0.00	8676.21	-99.72
Bolgatanga	100.00	0.00	5318.72	-98.12
Bongo	100.00	0.00	3950.42	-102.27
Fumbisi	100.00	0.00	7496.14	-78.30
Garu	100.00	0.00	5501.40	-90.53
Nangodi	No 3G Coverage			
Navrongo	100.00	0.00	4430.10	-100.97
Paga	100.00	0.00	3164.29	-101.97
Pusiga	100.00	0.00	3268.54	-150.80
Sandema	100.00	0.00	6225.04	-93.50
Tongo	100.00	0.00	7517.51	-93.41
Zebilla	100.00	0.00	5328.80	-90.68

- Service Provider did not meet 3G Coverage obligations in one (1) of the tested district capitals in the Upper East Region
- Service Provider did not have 3G coverage in one (1) district capitals

Upper West Region

TIGO				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Funsi	100.00	0.00	251.79	-
Gwollu	100.00	0.00	6486.42	-88.51
Jirapa	100.00	0.00	3095.24	-97.47
Lambussie	100.00	0.00	3782.75	-96.84
Lawra	100.00	0.00	6326.56	-90.23
Nadowli	100.00	0.00	3255.29	-90.73
Nandom	No Successful Data Session			-112.30
Tumu	100.00	0.00	5394.64	-90.28
Wa	100.00	0.00	5571.54	-98.63
Wechiau	100.00	0.00	3312.82	-82.68

- Service Provider did not meet 3G Coverage obligations in one (1) of the tested district capitals in the Upper West Region

Volta Region

TIGO				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Adaklu	100.00	0.00	8843.61	-78.31
Adidome	100.00	0.00	6582.38	-93.96
Akatsi	100.00	0.00	2019.59	-106.63
Anfoega	100.00	0.00	6812.58	-88.33
Ave Dakpa	100.00	0.00	9095.03	-86.23
Battor	100.00	0.00	8258.83	-90.94
Chinderi	No 3G Coverage			
Dambai	No 3G Coverage			
Denu	100.00	0.00	1559.60	-107.31
Dzodze	100.00	0.00	6037.79	-95.47
Dzolokpuita	No Successful Data Session			-115.47
Golokwati	100.00	0.00	6625.71	-84.39
Ho	100.00	0.00	3888.27	-86.29
Hohoe	100.00	0.00	6048.81	-102.18
Jasikan	No 3G Coverage			
Kadjebi	No 3G Coverage			

Keta	100.00	0.00	6586.40	-97.36
Kete Krachi	100.00	0.00	3396.44	-94.02
Kpando	100.00	0.00	3065.32	-111.69
Kpassa	No 3G Coverage			
Kpetoe	100.00	0.00	6582.38	-104.56
Kpeve	100.00	0.00	3077.44	-80.03
Nkonya Ahenkro	No Successful Data Session			-115.07
Nkwanta	No Successful Data Session			-71.99
Sogakope	100.00	0.00	4121.82	-90.92

- *Service Provider did not meet 3G Coverage obligations in five (5) of the tested district capitals in the Volta Region*
- *Service Provider did not have 3G coverage in five (5) district capitals*

MONITORING TEST RESULTS FOR GLO

VOICE TEST

Central Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
GLO	0.02	0.11	0.00	11.08	75.16

- Service Provider did not meet Call Setup Time KPI in the Central Region

Ashanti Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
GLO	0.00	0.78	0.00	11.93	42.58

- Service Provider did not meet Call Setup Time and Call Completion Rate KPIs in the Ashanti Region

Brong Ahafo Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
GLO	0.00	0.59	0.00	7.50	42.49

- Service Provider did not meet Call Completion Rate KPI in the Brong Ahafo Region

Volta Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
GLO	0.02	0.08	0.00	9.66	21.97

- *Service Provider did not meet Call Completion Rate KPI in the Volta Region*

Upper East Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
GLO	-	-	-	-	-

- **Glo did not have Network Coverage in all District Capitals in Upper East*

Upper West Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
GLO	-	-	-	-	-

- **Glo did not have Network Coverage in all District Capitals in Upper West*

VOICE QUALITY (MOS)

Central Region

District Capital	GLO		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Abura-Dunkwa	No Network Coverage		
Afransi			
Ajumako			
Apam			
Asikuma			
Assin Fosu			
Awutu-Breku			
Cape Coast			
Diaso			
Dunkwa-On-Offin			
Elmina			
Essarkyir			
Hemang			
Kasoa			
Nsaba	No Network Coverage		
Nsuaem-Kyekyawere			
Saltpond			
Swedru			
Twifo Praso			
Winneba			

- Service Provider failed to meet the MOS requirement in the Central Region
- Service Provider had coverage in one (1) out of twenty (20) district capitals

Volta Region

District Capital	GLO		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Adaklu	No Network Coverage		
Adidome	2.70%		✓
Akatsi	41.99%		✓
Amfoega	10.26%		✓
Ave Dakpa	No Network Coverage		
Battor	18.50%		✓

Chinderi	No Network Coverage		
Dambai	No Network Coverage		
Denu	13.43%		✓
Dzodze	4.55%		✓
Dzolokpuita	No Network Coverage		
Golokwati	15.32%		✓
Ho	36.77%		✓
Hohoe	No Network Coverage		
Jasikan	No Network Coverage		
Kadjebi	No Network Coverage		
Keta	1.69%		✓
Ketekrachi	No Network Coverage		
Kpando	No Network Coverage		
Kpassa	No Network Coverage		
Kpetoe	No Network Coverage		
Kpeve	No Network Coverage		
Nkonya Ahenkro	No Network Coverage		
Nkwanta	No Network Coverage		
Sogakope	32.14%		✓

- Service Provider failed to meet the MOS requirement in all tested district capitals in the Volta Region
- Service Provider did not have network coverage in fifteen (15) district capitals

Ashanti Region

District Capital	GLO		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Agogo	5.39%		✓
Agona	2.21%		✓
Akomadan	No Network Coverage		
Asiwa	No Network Coverage		
Bekwai	10.31%		✓
Drobonso	No Network Coverage		
Effiduase	7.50%		✓
Ejisu	3.10%		✓
Ejura	No Network Coverage		
Foase	0.00%		✓
Fomena	No Network Coverage		
Jacobu	9.30%		✓
Juaso	8.50%		✓
Kodie	2.53%		✓

Konongo	10.99%		✓
Kumawu	No Network Coverage		
Kuntanase	8.74%		✓
Mampong	0.51%		✓
Mampongteᅡ	4.35%		✓
Mankranso	No Network Coverage		
Manso Nkwanta			
New Edubiase			
Nkawie	13.24%		✓
Nsuta	4.76%		✓
Nyinahin	No Network Coverage		
Obuasi	5.57%		✓
Offinso	1.64%		✓
Tepa	0.00%		✓

- Service Provider failed to meet the MOS requirement in all tested district capitals in the Ashanti Region
- Service Provider did not have network coverage in ten (10) district capitals

Brong Ahafo Region

District Capital	GLO		
	Voice Quality (95% of call connections >3.5)	Compliance	Non-Compliance
Atebubu	4.56%		✓
Banda Ahenkro	No Network Coverage		
Bechem			
Berekum			
Busunya	No Network Coverage		
Dormaa-Ahenkro			
Drobo			
Duayaw-Nkwanta			
Goaso	13.06%		✓
Hwidiem	No Network Coverage		
Jema			
Kajaji			
Kenyasi			
Kintampo	13.72%		✓
Kukuom	13.52%		✓
Kwame Danso	No Network Coverage		
Nkoranza			
Nkran Nkwanta			
Nsawkaw			

Odumasi	14.40%		✓
Sampa	No Network Coverage		
Sunyani	16.97%		✓
Techiman	15.07%		✓
Tuobodom	No Network Coverage		
Wamfie			
Wenchi	8.96%		✓
Yeji	No Network Coverage		

- *Service Provider failed to meet the MOS requirement in all tested district capitals in the Brong Ahafo Region*
- *Service Provider did not have network coverage in eighteen (18) district capitals*

***Glo did not have Network Coverage in the Upper East & West Regions**

3G DATA/COVERAGE TEST

Central Region

District Capital	GLO			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Abura-Dunkwa	No Successful Data Session			-116.36
Afransi				-106.67
Ajumako				-108.39
Apam				-111.41
Asikuma	No 3G Coverage			
Assin Fosu	No Successful Data Session			-88.88
Awutu-Breku				-112.91
Cape Coast				-95.90
Diaso	No 3G Coverage			
Dunkwa-On-Offin	No Successful Data Session			-104.21
Elmina				-112.06
Essarkyir	No 3G Coverage			
Hemang				
Kasoa	No Successful Data Session			-100.22
Nsaba				-116.29
Nsuaem-Kyekyewere				-111.88
Saltpond				-93.38
Swedru				-95.28
Twifo Praso	No 3G Coverage			
Winneba	No Successful Data Session			-98.45

- Service Provider did not meet the 3G Coverage obligations in eight (8) tested district capitals in the Central Region
- Service Provider did not have network coverage in five (5) district capitals

Volta Region

District Capital	GLO			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Adaklu	100.00	0.00	375.38	-115.40
Adidome	100.00	0.00	2594.21	-116.17

Akatsi	100.00	0.00	3490.70	-88.49
Amfoegu	No 3G Coverage			
Ave Dakpa				
Battor	100.00	0.00	394.08	-113.93
Chinderi	No 3G Coverage			
Dambai				
Denu	100.00	0.00	3178.11	-82.17
Dzodze	No Successful Data Session			-110.63
Dzolokpuita	No Successful Data Session			-115.35
Golokwati	No 3G Coverage			
Ho	100.00	0.00	3641.98	-85.57
Hohoe	No 3G Coverage			
Jasikan				
Kadjebi				
Keta	No Successful Data Session			-114.01
Ketekrachi	No 3G Coverage			
Kpando				
Kpassa				
Kpetoe	No Successful Data Session			-111.59
Kpeve	100.00	0.00	3077.44	-64.97
Nkonya Ahenkro	No 3G Coverage			
Nkwanta				
Sogakope	100.00	0.00	2840.41	-80.77

- Service Provider did not meet the 3G Coverage obligations in seven (7) tested district capitals in the Volta Region
- Service Provider did not have network coverage in thirteen (13) district capitals

Brong Ahafo Region

District Capital	GLO			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Atebubu	No 3G Coverage			
Banda Ahenkro				
Bechem				
Berekum				
Busunya				
Dormaa-Ahenkro				
Drobo				
Duayaw-Nkwanta				
Goaso				

Hwidiem								
Jema								
Kajaji	No 3G Coverage							
Kenyasi								
Kintampo								
Kukuom								
Kwame Danso								
Nkoranza								
Nkran Nkwanta								
Nsawkaw								
Odumasi					No Successful Data Session			-95.83
Sampa					No 3G Coverage			
Sunyani	No Successful Data Session			-86.53				
Techiman	100.00	0.00	2678.58	-86.76				
Tuobodom	No Successful Data Session			-111.97				
Wamfie	No 3G Coverage							
Wenchi								
Yeji								

- Service Provider did not meet the 3G Coverage obligations in one (1) tested district capital in the Brong Ahafo Region
- Service Provider did not have network coverage in twenty three (23) district capitals

Upper East Region

GLO				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Bawku	No 3G Coverage			
Binduri				
Bolgatanga				
Bongo				
Fumbisi				
Garu				
Nangodi				
Navrongo				
Paga				
Pusiga				
Sandema				
Tongo				
Zebilla				

- Service Provider did not have 3G Coverage in all thirteen district capitals in the Upper East Region

Upper West Region

District Capital	GLO			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Funsi	No 3G Coverage			
Gwollu	No Successful Data Session			-92.04
Issa	No 3G Coverage			
Jirapa				
Lambussie				
Lawra				
Nadowli				
Nandom				
Tumu				
Wa	No Successful Data Session			-99.52
Wechiau	No Successful Data Session			-81.24

- Service Provider did not meet the 3G Coverage obligations in one (1) tested district capital in the Upper West Region
- Service Provider did not have network coverage in seven (7) district capitals

MONITORING TEST RESULTS FOR MTN

VOICE TEST

Central Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
MTN	0.00	0.00	0.00	10.77	96.83

- *Service Provider did not meet Call Setup Time KPI in the Central Region*

Ashanti Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
MTN	0.00	0.00	0.00	7.60	98.46

- *Service Provider met all KPIs in the Ashanti Region*

Brong Ahafo Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
MTN	0.00	0.00	0.00	7.14	98.65

- *Service Provider met all KPIs in the Brong Ahafo Region*

Volta Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
MTN	0.00	0.00	0.00	7.10	99.42

- *Service Provider met all KPIs in the Volta Region*

Upper East

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
MTN	0.00	0.00	0.00	9.29	95.13

- *Service Provider met all KPIs in the Upper East Region*

Upper West

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
MTN	0.00	0.00	0.00	8.10	96.13

- *Service Provider met all KPIs in the Upper West Region*

VOICE QUALITY (MOS)

Central Region

District Capital	MTN		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Abura-Dunkwa	11.44%		✓
Afransi	12.63%		✓
Ajumako	28.08%		✓
Apam	46.21%		✓
Asikuma	36.72%		✓
Assin Fosu	9.26%		✓
Awutu-Breku	16.41%		✓
Cape Coast	27.46%		✓
Diaso	15.93%		✓
Dunkwa-On-Offin	10.55%		✓
Elmina	30.59%		✓
Essarkyir	48.87%		✓
Hemang	14.86%		✓
Kasoa	20.43%		✓
Nsaba	25.21%		✓
Nsuaem-Kyekyawere	68.55%		✓
Saltpond	30.33%		✓
Swedru	38.97%		✓
Twifo Praso	9.35%		✓
Winneba	23.26%		✓

- Service Provider failed to meet MOS requirement in all twenty (20) tested district capitals in the Central Region

Volta Region

District Capital	MTN		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Adaklu	49.12%		✓
Adidome	43.65%		✓
Akatsi	17.95%		✓
Amfoega	22.95%		✓
Ave Dakpa	42.44%		✓
Battor	25.93%		✓
Chinderi	38.82%		✓

Dambai	17.31%		✓
Denu	14.29%		✓
Dzodze	15.86%		✓
Dzolokpuita	22.83%		✓
Golokwati	15.86%		✓
Ho	25.69%		✓
Hohoe	10.43%		✓
Jasikan	29.03%		✓
Kadjebi	34.74%		✓
Keta	32.96%		✓
Ketekrachi	25.83%		✓
Kpando	15.07%		✓
Kpassa	3.63%		✓
Kpetoe	15.08%		✓
Kpeve	34.88%		✓
Nkonya Ahenkro	19.55%		✓
Nkwanta	23.80%		✓
Sogakope	22.30%		✓

- Service Provider failed to meet MOS requirement in all twenty five (25) tested district capitals in the Volta Region

Brong Ahafo Region

District Capital	MTN		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Atebubu	18.30%		✓
Banda Ahenkro	83.33%		✓
Bechem	40.41%		✓
Berekum	56.96%		✓
Busunya	95.15%	✓	
Dormaa-Ahenkro	13.92%		✓
Drobo	44.90%		✓
Duayaw-Nkwanta	55.23%		✓
Goaso	52.32%		✓
Hwidiem	63.37%		✓
Jema	25.00%		✓
Kajaji	74.25%		✓
Kenyasi	56.90%		✓
Kintampo	35.97%		✓
Kukuom	34.06%		✓
Kwame Danso	38.31%		✓

Nkoranza	20.36%		✓
Nkran Nkwanta	25.86%		✓
Nsawkaw	75.21%		✓
Odumasi	61.97%		✓
Sampa	48.57%		✓
Sunyani	56.12%		✓
Techiman	25.83%		✓
Tuobodom	9.16%		✓
Wamfie	4.43%		✓
Wenchi	19.94%		✓
Yeji	17.97%		✓

- Service Provider complied with the minimum MOS in only one (1) of the tested district capitals in the Brong Ahafo Region

Ashanti Region

District Capital	MTN		
	Voice Quality (95% of call connections >3.5)	Compliance	Non-Compliance
Agogo	18.04%		✓
Agona	8.90%		✓
Akomadan	63.11%		✓
Asiwa	97.64%	✓	
Bekwai	11.15%		✓
Drobonso	98.86%	✓	
Effiduase	19.75%		✓
Ejisu	33.98%		✓
Ejura	16.02%		✓
Foase	99.07%	✓	
Fomena	24.46%		✓
Jacobu	23.51%		✓
Juaso	19.27%		✓
Kodie	48.55%		✓
Konongo	14.02%		✓
Kumawu	18.24%		✓
Kuntanase	47.31%		✓
Mampong	13.38%		✓
Mampong teng	27.19%		✓
Mankranso	23.19%		✓
Manso Nkwanta	39.39%		✓
New Edubiase	12.42%		✓
Nkawie	14.68%		✓
Nsuta	24.21%		✓

Nyinahin	3.96%		✓
Obuasi	23.04%		✓
Offinso	32.06%		✓
Tepa	21.84%		✓

- Service Provider complied with the minimum MOS in three (3) of the tested district capitals in the Ashanti Region

Upper East Region

District Capital	MTN		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Bawku	16.58%		✓
Binduri	48.55%		✓
Bolgatanga	43.31%		✓
Bongo	14.33%		✓
Fumbisi	47.72%		✓
Garu	2.54%		✓
Nangodi	48.00%		✓
Navrongo	25.21%		✓
Paga	67.90%		✓
Pusiga	8.53%		✓
Sandema	53.08%		✓
Tongo	12.45%		✓
Zebilla	23.98%		✓

- Service Provider failed to meet MOS requirement in all thirteen (13) tested district capitals in the Upper East Region

Upper West Region

District Capital	MTN		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Funsi	0.63%		✓
Gwollu	1.92%		✓
Issa	89.13%		✓
Jirapa	1.81%		✓
Lambussie	95.00%	✓	
Lawra	63.54%		✓
Nadowli	26.69%		✓
Nandom	45.60%		✓
Tumu	54.70%		✓

Wa	58.77%		✓
Wechiau	17.78%		✓

- *Service Provider complied with the minimum MOS in only one(1) of the tested district capitals in the Upper West Region*

3G DATA/COVERAGE TEST

Central Region

District Capital	MTN			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Abura-Dunkwa	100.00	0.00	5184.61	-82.91
Afransi	100.00	0.00	5378.88	-79.96
Ajumako	100.00	0.00	6698.02	-81.75
Apam	100.00	0.00	7777.19	-74.67
Asikuma	100.00	0.00	6770.16	-77.70
Assin Fosu	100.00	0.00	4345.74	-79.71
Awutu-Breku	100.00	0.00	7049.36	-78.56
Cape Coast	100.00	0.00	6196.42	-81.61
Diaso	100.00	0.00	6044.46	-80.45
Dunkwa-On-Offin	100.00	0.00	6948.07	-81.51
Elmina	100.00	0.00	7335.61	-93.13
Essarkyir	100.00	0.00	7601.12	-81.42
Hemang	100.00	0.00	7201.67	-84.59
Kasoa	100.00	0.00	6817.38	-79.08
Nsaba	100.00	0.00	6719.38	-81.37
Nsuaem-Kyekyewere	100.00	0.00	8655.44	-84.21
Saltpond	100.00	0.00	8452.08	-83.50
Swedru	100.00	0.00	6677.93	-75.61
Twifo Praso	100.00	0.00	5502.45	-79.42
Winneba	100.00	0.00	3271.98	-83.03

- Service Provider met all KPIs in all tested district capitals in the Central Region

Volta Region

District Capital	MTN			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Adaklu	100.00	0.00	9462.79	-74.23
Adidome	100.00	0.00	8170.82	-84.28
Akatsi	100.00	0.00	5886.32	-81.61

Amfoegu	100.00	0.00	4397.14	-75.16
Ave Dakpa	100.00	0.00	6408.45	-84.85
Battor	100.00	0.00	7312.56	-83.08
Chinderi	100.00	0.00	5103.14	-76.95
Dambai	100.00	0.00	4045.21	-85.53
Denu	100.00	0.00	2544.67	-78.63
Dzodze	100.00	0.00	3600.93	-77.56
Dzolokpuita	100.00	0.00	5736.35	-96.48
Golokwati	100.00	0.00	4726.31	-80.70
Ho	100.00	0.00	2716.25	-76.24
Hohoe	100.00	0.00	2915.47	-77.74
Jasikan	100.00	0.00	3475.86	-85.35
Kadjebi	100.00	0.00	5601.20	-83.01
Keta	100.00	0.00	4772.90	-83.22
Ketekrachi	100.00	0.00	4232.64	-78.00
Kpando	100.00	0.00	3104.08	-87.38
Kpassa	100.00	0.00	4273.84	-76.75
Kpetoe	100.00	0.00	-	-84.54
Kpeve	100.00	0.00	5771.30	-81.63
Nkonya Ahenkro	100.00	0.00	4790.32	-80.97
Nkwanta	100.00	0.00	3804.52	-77.59
Sogakope	100.00	0.00	2640.66	-78.98

- Service Provider met all KPIs in all tested district capitals in the Volta Region

Brong Ahafo Region

District Capital	MTN			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Atebubu	100.00	0.00	3528.60	-81.54
Banda Ahenkro	100.00	0.00	4792.95	-80.83
Bechem	100.00	0.00	1768.64	-81.40
Berekum	100.00	0.00	3476.87	-80.00
Busunya	100.00	0.00	4579.07	-82.30
Dormaa-Ahenkro	100.00	0.00	1936.84	-86.56
Drobo	100.00	0.00	3403.51	-79.18
Duayaw-Nkwanta	100.00	0.00	3733.92	-82.30
Goaso	100.00	0.00	4561.70	-81.10
Hwidiem	100.00	0.00	4012.36	-84.16
Jema	100.00	0.00	4427.05	-84.13
Kajaji	100.00	0.00	4842.94	-75.57

Kenyasi	100.00	0.00	3568.49	-79.09
Kintampo	100.00	0.00	3724.76	-82.57
Kukuom	100.00	0.00	3429.74	-83.06
Kwame Danso	100.00	0.00	4342.23	-79.85
Nkoranza	100.00	0.00	4100.57	-86.94
Nkran Nkwanta	100.00	0.00	3976.97	-90.55
Nsawkaw	100.00	0.00	4582.31	-75.24
Odumasi	100.00	0.00	3834.13	-77.53
Sampa	100.00	0.00	4205.73	-90.73
Sunyani	100.00	0.00	3025.14	-77.75
Techiman	100.00	0.00	3041.12	-77.88
Tuobodom	100.00	0.00	3953.30	-79.01
Wamfie	100.00	0.00	1768.64	-78.03
Wenchi	100.00	0.00	3446.50	-77.84
Yeji	100.00	0.00	4115.48	-84.39

- *Service Provider met all KPIs in all tested district capitals in the Brong Ahafo Region*

Upper East Region

District Capital	MTN			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Bawku	100.00	0.00	4223.67	-82.27
Binduri	100.00	0.00	6187.75	-78.50
Bolgatanga	100.00	0.00	5117.32	-80.53
Bongo	100.00	0.00	4268.72	-88.97
Fumbisi	100.00	0.00	5629.96	-82.65
Garu	100.00	0.00	4022.69	-82.57
Nangodi	100.00	0.00	4093.41	-91.36
Navrongo	100.00	0.00	3401.71	-91.10
Paga	100.00	0.00	3895.37	-86.32
Pusiga	100.00	0.00	3974.41	-80.72
Sandema	100.00	0.00	4267.98	-84.26
Tongo	100.00	0.00	3988.59	-83.15
Zebilla	100.00	0.00	4310.27	-84.36

- *Service Provider met all KPIs in all tested district capitals in the Upper East Region*

Upper West Region

District Capital	MTN			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Funsi	100.00	0.00	4339.16	-80.00
Gwollu	100.00	0.00	8442.53	-81.48
Issa	100.00	0.00	10543.05	-76.19
Jirapa	100.00	0.00	1548.00	-90.16
Lambussie	100.00	0.00	10387.11	-79.31
Lawra	100.00	0.00	8721.20	-87.02
Nadowli	100.00	0.00	8270.16	-87.02
Nandom	100.00	0.00	8665.34	-84.47
Tumu	100.00	0.00	4116.56	-85.24
Wa	100.00	0.00	5369.81	-83.32
Wechiau	100.00	0.00	9763.89	-91.87

- *Service Provider met all KPIs in all tested district capitals in the Upper West Region*

MONITORING TEST RESULTS FOR VODAFONE

VOICE TEST

Central Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
VODAFONE	0.00	0.02	0.00	9.50	99.18

- Service Provider met all KPIs in the Central Region

Ashanti Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
VODAFONE	0.00	0.08	0.00	6.81	97.9

- Service Provider met all KPIs in the Ashanti Region

Brong Ahafo Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
VODAFONE	0.00	0.02	0.00	8.60	97.11

- Service Provider met all KPIs in the Brong Ahafo Region

Volta Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
VODAFONE	0.00	0.38	0.00	7.69	97.57

- *Service Provider met all KPIs in the Volta Region*

Upper East Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
VODAFONE	0.00	0.12	0.00	9.87	97.82

- *Service Provider met all KPIs in the Upper East Region*

Upper West Region

KPI	SDCCH CONGEST. RATE	TCH CONGEST. RATE	CALL DROP RATE	CALL SETUP TIME	CALL COMPLETION RATE
Threshold	≤ 1%	≤ 1%	≤ 3%	<10 sec	>70%
VODAFONE	0.00	0.00	0.00	6.86	98.81

- *Service Provider met all KPIs in the Upper West Region*

VOICE QUALITY (MOS)

Central Region

VODAFONE			
District Capital	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Abura-Dunkwa	80.44%		✓
Afransi	100.00%	✓	
Ajumako	56.62%		✓
Apam	80.03%		✓
Asikuma	65.00%		✓
Assin Fosu	72.00%		✓
Awutu-Breku	69.00%		✓
Cape Coast	46.00%		✓
Diaso	84.00%		✓
Dunkwa-On-Offin	24.00%		✓
Elmina	47.00%		✓
Essarkyir	16.00%		✓
Hemang	60.00%		✓
Kasoa	28.00%		✓
Nsaba	86.00%		✓
Nsuaem-Kyekyewere	83.00%		✓
Saltpond	18.00%		✓
Swedru	52.00%		✓
Twifo Praso	70.00%		✓
Winneba	34.00%		✓

- Service Provider complied with the minimum MOS in only one (1) of the tested district capitals in the Central Region

Volta Region

VODAFONE			
District Capital	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Adaklu	21.19%		✓
Adidome	44.68%		✓
Akatsi	29.01%		✓
Amfoega	55.05%		✓
Ave Dakpa	52.70%		✓
Battor	29.00%		✓

Chinderi	74.64%		✓
Dambai	90.00%		✓
Denu	56.02%		✓
Dzodze	51.62%		✓
Dzoloƙpuita	17.24%		✓
Golokwati	38.68%		✓
Ho	44.39%		✓
Hohoe	45.31%		✓
Jasikan	84.16%		✓
Kadjebi	83.68%		✓
Keta	37.07%		✓
Ketekrachi	53.04%		✓
Kpando	55.34%		✓
Kpassa	73.15%		✓
Kpetoe	61.03%		✓
Kpeve	85.29%		✓
Nkonya Ahenkro	66.12%		✓
Nkwanta	78.74%		✓
Sogakope	41.46%		✓

- Service Provider failed meet MOS requirement in all tested district capitals in the Volta Region

Brong Ahafo Region

District Capital	VODAFONE		
	Voice Quality (95% of call connections >3.5)	Compliance	Non-Compliance
Atebubu	51.69%		✓
Banda Ahenkro	57.86%		✓
Bechem	71.81%		✓
Berekum	23.62%		✓
Busunya	100.00%	✓	
Dormaa-Ahenkro	19.81%		✓
Drobo	52.45%		✓
Duayaw-Nkwanta	54.28%		✓
Goaso	42.22%		✓
Hwidiem	87.86%		✓
Jema	54.79%		✓
Kajaji	93.49%		✓
Kenyasi	59.44%		✓
Kintampo	63.00%		✓
Kukuom	32.61%		✓

Kwame Danso	87.89%		✓
Nkoranza	79.15%		✓
Nkran Nkwanta	65.97%		✓
Nsawkaw	100.00%	✓	
Odumasi	32.57%		✓
Sampa	31.93%		✓
Sunyani	26.02%		✓
Techiman	37.13%		✓
Tuobodom	56.97%		✓
Wamfie	54.12%		✓
Wenchi	54.92%		✓
Yeji	56.25%		✓

- Service Provider complied with the minimum MOS in two (2) of the tested district capitals in the Brong Ahafo Region

Ashanti Region

District Capital	VODAFONE		
	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Agogo	78.52%		✓
Agona	83.44%		✓
Akomadan	90.70%		✓
Asiwa	94.53%		✓
Bekwai	74.95%		✓
Drobonso	33.33%		✓
Effiduase	76.11%		✓
Ejisu	50.52%		✓
Ejura	83.62%		✓
Foase	53.22%		✓
Fomena	88.06%		✓
Jacobu	64.46%		✓
Juaso	89.60%		✓
Kodie	64.81%		✓
Konongo	70.68%		✓
Kumawu	66.59%		✓
Kuntanase	63.31%		✓
Mampong	52.53%		✓
Mampong teng	32.10%		✓
Mankranso	71.92%		✓
Manso Nkwanta	95.09%	✓	
New Edubiase	86.35%		✓

Nkawie	35.35%		✓
Nsuta	89.47%		✓
Nyinahin	55.03%		✓
Obuasi	83.10%		✓
Offinso	75.57%		✓
Tepa	74.46%		✓

- Service Provider complied with the minimum MOS in only one (1) of the tested district capitals in the Ashanti Region

Upper East Region

District Capital	VODAFONE		
	Voice Quality (95% of call connections >3.5)	Compliance	Non-Compliance
Bawku	58.61%		✓
Binduri	4.23%		✓
Bolgatanga	39.00%		✓
Bongo	57.3%		✓
Fumbisi	89.21%		✓
Garu	71.93%		✓
Nangodi	46.44%		✓
Navrongo	51.02%		✓
Paga	77.27%		✓
Pusiga	92.75%		✓
Sandema	85.54%		✓
Tongo	61.80%		✓
Zebilla	71.91%		✓

- Service Provider failed to meet MOS requirement in all tested district capitals in the Upper East Region

Upper West Region

VODAFONE			
District Capital	Voice Quality (95% of call connections >3.5)	Compliance	Non- Compliance
Funsi	79.73%		✓
Gwollu	1.53%		✓
Issa	45.75%		✓
Jirapa	28.86%		✓
Lambussie	77.00%		✓
Lawra	31.74%		✓
Nadowli	38.08%		✓
Nandom	43.00%		✓
Tumu	80.09%		✓
Wa	47.53%		✓
Wechiau	48.65%		✓

- *Service Provider failed to meet MOS requirement in all tested district capitals in the Upper West Region*

3G DATA/COVERAGE TEST

Central Region

VODAFONE				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Abura-Dunkwa	100.00	0.00	5211.20	-91.52
Afransi	100.00	0.00	9,460.55	-75.85
Ajumako	100.00	0.00	6,507.51	-89.62
Apam	100.00	0.00	7,321.64	-79.25
Asikuma	100.00	0.00	6090.42	-92.72
Assin Fosu	100.00	0.00	5957.49	-83.87
Awutu-Breku	100.00	0.00	7455.57	-79.6
Cape Coast	100.00	0.00	5,115.62	-83.06
Diaso	100.00	0.00	6,952.82	-79.98
Dunkwa-On-Offin	100.00	0.00	2,677.73	-83.4
Elmina	100.00	0.00	6,533.44	-90.61
Essarkyir	100.00	0.00	1,404.16	-102.23
Hemang	No Successful Data Session			-91.49
Kasoa	100.00	0.00	5486.09	-79.03
Nsaba	100.00	0.00	7,160.49	-82.27
Nsuaem-Kyekyewere	100.00	0.00	8,282.77	-79.25
Saltpond	100.00	0.00	6,153.21	-88.42
Swedru	100.00	0.00	6507.51	-83.03
Twifo Praso	100.00	0.00	8,628.45	-83.65
Winneba	100.00	0.00	3,295.33	-82.04

- Service Provider met all KPIs in the tested district capitals in the Central Region

Volta Region

VODAFONE				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Adaklu	No Successful Data Session			-116.00
Adidome	100.00	0.00	7478.97	-85.49
Akatsi	100.00	0.00	4394.35	-90.96
Amfoega	100.00	0.00	6549.13	-91.22

Ave Dakpa	No Successful Data Session			-111.02
Battor	100.00	0.00	7436.24	-77.51
Chinderi	100.00	0.00	4519.31	-80.56
Dambai	100.00	0.00	430.10	-84.46
Denu	100.00	0.00	3292.89	-82.19
Dzodze	100.00	0.00	6037.79	-93.56
Dzolokpuita	100.00	0.00	476.24	-115.13
Golokwati	100.00	0.00	4494.78	-108.31
Ho	100.00	0.00	2583.94	-75.86
Hohoe	100.00	0.00	2425.61	-85.31
Jasikan	100.00	0.00	4301.27	-81.47
Kadjebi	100.00	0.00	4635.87	-79.90
Keta	100.00	0.00	7072.45	-97.99
Ketekrachi	100.00	0.00	5411.38	-89.08
Kpando	100.00	0.00	4871.31	-82.79
Kpassa	100.00	0.00	3638.51	-79.85
Kpetoe	100.00	0.00	8197.68	-87.19
Kpeve	100.00	0.00	5552.97	-83.16
Nkonya Ahenkro	100.00	0.00	5415.71	-93.79
Nkwanta	100.00	0.00	4008.66	-82.47
Sogakope	100.00	0.00	6677.64	-92.74

- Service Provider did not meet 3G Coverage obligations in four (4) tested district capitals in the Volta Region

Brong Ahafo Region

District Capital	VODAFONE			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Atebubu	100.00	0.00	8299.80	-92.19
Banda Ahenkro	100.00	0.00	8316.76	-97.22
Bechem	100.00	0.00	7995.40	-80.16
Berekum	100.00	0.00	7801.97	-79.96
Busunya	100.00	0.00	2392.38	-68.40
Dormaa-Ahenkro	100.00	0.00	3162.43	-92.05
Drobo	100.00	0.00	5784.89	-79.73
Duayaw-Nkwanta	100.00	0.00	6729.32	-85.45
Goaso	100.00	0.00	6841.03	-86.21
Hwidiem	100.00	0.00	8791.46	-79.68
Jema	100.00	0.00	2412.02	-88.07
Kajaji	100.00	0.00	8485.26	-76.44

Kenyasi	100.00	0.00	8081.45	-84.68
Kintampo	100.00	0.00	3219.89	-83.55
Kukuom	100.00	0.00	5098.33	-86.98
Kwame Danso	100.00	0.00	7827.44	-83.26
Nkoranza	100.00	0.00	6874.85	-79.32
Nkran Nkwanta	100.00	0.00	7105.00	-84.73
Nsawkaw	100.00	0.00	6409.83	-73.14
Odumasi	100.00	0.00	4972.81	-78.45
Sampa	100.00	0.00	1877.47	-84.07
Sunyani	100.00	0.00	4283.31	-76.95
Techiman	100.00	0.00	4549.25	-79.65
Tuobodom	100.00	0.00	5624.03	-87.36
Wamfie	100.00	0.00	5335.94	-83.45
Wenchi	100.00	0.00	7639.09	-79.32
Yeji	100.00	0.00	6301.77	-82.36

- *Service Provider met all KPIs in the tested district capitals in the Brong Ahafo Region*

Upper East Region

District Capital	VODAFONE			
	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Bawku	100.00	0.00	5661.23	-90.94
Binduri	100.00	0.00	2,893.49	-109.15
Bolgatanga	100.00	0.00	6,298.46	-87.66
Bongo	100.00	0.00	7,740.94	-90.95
Fumbisi	100.00	0.00	9,047.20	-86.21
Garu	100.00	0.00	11,268.03	-84.44
Nangodi	100.00	0.00	6,090.55	-102.62
Navrongo	100.00	0.00	7,476.33	-89.49
Paga	100.00	0.00	6,247.72	-81.94
Pusiga	100.00	0.00	7,486.14	-81.15
Sandema	100.00	0.00	9,910.42	-84.62
Tongo	100.00	0.00	5,369.53	-79.73
Zebilla	100.00	0.00	6,532.76	-84.17

- *Service Provider did not meet 3G Coverage obligations in one (1) tested district capital in the Upper East Region*

Upper West Region

VODAFONE				
District Capital	Data Access Success Rate (%) ≥ 95%	Data Drop Rate (%) ≤ 1%	Data Throughput (kbps) ≥ 256kbps	3G Coverage ≥ -105dBm
Funsi	100.00	0.00	9478.41	-79.67
Gwollu	100.00	0.00	3867.10	-75.88
Issa	No Successful Data Session			-116.65
Jirapa	100.00	0.00	7016.37	-97.54
Lambussie	100.00	0.00	9421.38	-79.02
Lawra	100.00	0.00	3766.60	-83.26
Nadowli	100.00	0.00	7134.91	-100.87
Nandom	100.00	0.00	7857.42	-81.90
Tumu	100.00	0.00	3701.86	-77.14
Wa	100.00	0.00	6858.33	-80.81
Wechiau	100.00	0.00	8583.32	-87.65

- *Service Provider did not meet 3G Coverage obligations in one (1) tested district capital in the Upper West Region*

Voice Quality of Service Parametres – Definitions

Voice Quality or Mean Opinion Score - MOS, Mean Opinion Score is a measure of voice quality, and is a quality measure that has been used as a way to assess the human user's opinion of call quality. The test is used widely to ensure quality voice transmission, test for quality issues, and measures voice degradation and performance.

Call Setup Time (CST) - Call Setup Time is the length of time it takes from initiating a call to the time the call is delivered or the fraction of the attempts to make a call that result in a connection to the dialed number. Due to various reasons not all call attempts end with a connection to the dialed number. Call Setup Time is thus, measuring this fraction as a percentage of all call attempts.

Call Congestion Rate (CCR) - It is the ease or difficulty with which a consumer is able to get a call through their service provider's network system. The measurement of the frequency of Call Congestion is termed as Call Congestion Rate.

Call Drop Rate (CDR) - It is the frequency in which a consumer's on-going call is cut off or disconnected without their permission or knowledge. The measurement of the frequency of call drops is termed as Call Drop Rate.

Stand-Alone Dedicated Control Channel (SDCCH) Congestion Rate - It is the frequency of a consumer's inability to access a Provider's network for other services such as the transmission of data (texting). The measurement of the frequency is termed as Stand-alone Dedicated Control Channel Congestion rate.

Data Quality of Service Parametres – Definitions

Data Drop Rate - Data Drop Rate is the probability to drop or release a data session without end consumer or user's intervention.

Data Access Success Rate - Data Access Success Rate is the probability to successfully access a public data server.

Data Throughput - Data Throughput is the speed at which data is downloaded.