QUARTERLY STATISTICAL BULLETIN ON COMMUNICATIONS IN GHANA

Volume 1 Issue 3

NATIONAL COMMUNICATIONS AUTHORITY

THIRD QUARTER

JULY - SEPTEMBER, 2016

Communications for Development

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Vision

A world-class communications Regulator that facilitates innovative, reliable and sustainable communication solutions to meet stakeholders' expectations.

Mission

Regulate the communications industry in a forward-looking and transparent manner that promotes fair and sustainable competition, stimulates innovation, encourages investment, protects stakeholders' interests and facilitates universal access to quality communications services for national development.

Core Values

- Teamwork
- Accountability
- Consistency
- Trust
- Innovation
- Transparency

Tag Line /Slogan

Communications for Development

INTRODUCTION

This Quarterly Statistical Bulletin on Communications is a reference document containing disaggregated data, industry trends, and analysis of the Ghanaian communications sector. It is intended to enhance open and enriched public discussions on policies for telecom analyst, consumers, academia, policy makers, investors and other stakeholders for decision-making.

This bulletin is the product of the responses from the monthly and quarterly questionnaires sent to the various licencees; notably the mobile network operators, broadband wireless access operators, internet service providers and broadcasting entities.

The publication of this bulletin is consistent with the National Communications Authority's mandate under section 26 (2)(a) of the 2008, Electronic Communications Act 775; "to publish the result of research that it carries out or that is carried out on its behalf on its website and in any other manner that it considers appropriate to bring the results to the attention of the public".

LIST OF ABBREVIATIONS

BWA	Broadband Wireless Access
FM	Frequency Modulation
GB	Gigabytes
GH¢	Ghana Cedis
ICT	Information Communication Technology
MB	Megabytes
MNP	Mobile Number Portability
MoU	Minutes of Usage
NCA	National Communication Authority
Q1	First Quarter
Q2	Second Quarter
Q3	Third Quarter
Q4	Fourth Quarter
Q-o-Q	Quarter-on-Quarter
SMS	Short Message Service
TV	Television
Y-o-Y	Year-on-year

DEFINITION OF TERMS

Cellular network or mobile network - A communication network where the last link is wireless. The network is distributed over land areas called cells, each served by at least one fixed-location transceiver, known as a cell site or base station. This base station provides the cell with the network coverage, which can be used for transmission of voice, data and others.

Fixed-line network - The term typically refers to all of the wired networks that are used for voice and data communications. A fixed-line can be seen as a connection to an end-user, by means of a cable, through which they can make phone calls or connect to the Internet.

Mobile Number Portability (MNP) – This service enables mobile telephone users to switch to a new operator or service provider and still retain their mobile telephone numbers.

Mobile penetration or teledensity – It represents the total number of mobile subscriptions per every 100 inhabitants in a geographical area.

Net subscription addition – It refers to the total number of new mobile network subscribers minus customers that terminate a service with the service provider at a given time.

On-net traffic - refers to phone calls made to a recipient on the same network as the caller.

Off-net traffic - refers to phone calls made to a recipient on a different network.

Quarter-on-quarter – comparison of quarter under review with the preceding quarter.

Year-on-year – comparison of period under review (month, quarter etc.) with the same period of the preceding year.

THE COMMUNICATIONS INDUSTRY AT A GLANCE

A1. Service Providers in the Communications Industry

Operator/Service Providers	Number of Authorisation/Licences	Number in Operation
Mobile Network Operators	6	6
Fixed Network Operators	3	2
Broadband Wireless Access	4	3
Television Stations	83	35
FM Stations	452	354
Tower Infrastructure Companies	3	3
International Submarine Cables	5	5
Domestic Fibre Operators	10	10

B1. Total Subscriptions/Connected lines

	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
SUBSCRIPTION	Q2 2016	Q3 2016	Growth (%)	Q3 2015	Q3 2016	Growth (%)	
Mobile Voice Subscription	36.6	37.2	1.7%	33.2	37.2	11.9%	Million
Fixed Voice Subscription	256	254	-1.0%	270	254	-6.0%	Thousand
Mobile Data Subscription	18.8	19.3	3.1%	17.3	19.3	11.7%	Million
Fixed Data Subscription	84	87	4.1%	69	87	26.5%	Thousand
Broadband Wireless Access	109	105	-3.6%	93	105	13.0%	Thousand

B2. Traffic

	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
TRAFFIC	Q2 2016	Q3 2016	Growth (%)	Q3 2015	Q3 2016	Growth (%)	
Mobile Voice Traffic	14.8	15.4	4.30%	13.7	15.4	13.00%	Billion
Fixed Voice Traffic	28.2	24.4	-13.60%	36.1	24.4	-32.40%	Million
International Traffic	334	326	-2.40%	374	326	-12.90%	Million
Mobile Data Traffic (GB)	14.9	20	34.10%	5.1	20	293.10%	Million GB
BWA Data Traffic (GB)	2.6	2.9	12.40%	2.1	2.9	43.10%	Million GB

B3. Penetration Rate

PENETRATION RATE (%)	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
	Q2 2016	Q3 2016	Growth (%)	Q3 2015	Q3 2016	Growth (%)	
Mobile Voice Subscription	131.9	133.3	1.10%	122	133.3	9.30%	%
Fixed Voice Subscription	0.92	0.91	-1.10%	0.99	0.91	-8.10%	%
Mobile Data Subscription	67.6	69.2	2.40%	63.5	69.2	9.00%	%
Fixed Data Subscription	0.3	0.32	6.70%	0.25	0.32	28.00%	%
Broadband Wireless Access	0.4	0.38	-5.80%	0.3	0.38	25.60%	%

1.0 MOBILE NETWORK

1.1 Mobile Subscription and Penetration

There are six Mobile Network Operators (MNOs) in Ghana, namely MTN, Vodafone, Tigo, Airtel, Glo and Expresso. The number of mobile telephone subscriptions in Ghana as reported by these Six MNO's increased from 36,613,987 at the end of second quarter 2016 to 37,239,720 at the end of third quarter 2016, indicating 1.7% quarter-on-quarter growth rate (Table 1). There was a year-on-year (y-o-y) growth of 11.9%, from 33,270,440 in September 2015 to 37,239720 in September 2016.

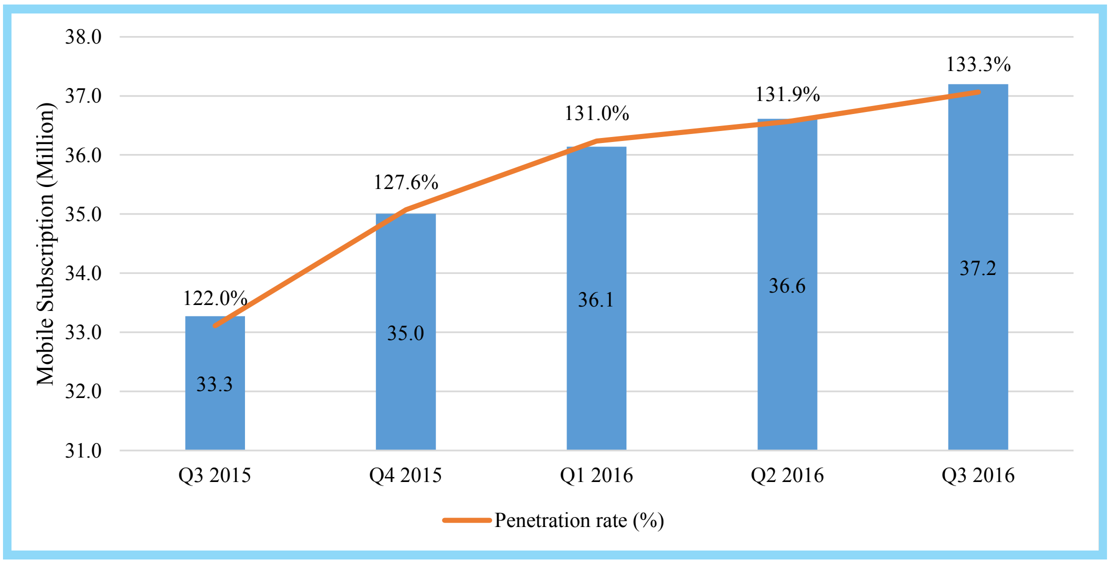
Ghana's Mobile penetration rate increased from 131.9% in the second quarter of 2016 to 133.3% at the end of third quarter of 2016. Total net additions to mobile subscription increased by 32% from 475,281 in the second quarter to 625,733 in the third quarter (Table 1).

Table 1: Mobile Subscription and Penetration Rate

Subscription	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
Mobile Subscription	33,270,440	35,008,387	36,138,706	36,613,987	37,239,720
Mobile Subscription Growth rate (%)	*2.80*	*5.22*	*3.23*	*1.32*	*1.71*
Net additions	907,329	1,737,947	1,130,319	475,281	625,733
Net additions Growth Rate (%)	*-24.9*	*91.5*	*-35.0*	*-58.0*	*32.0*
Population	27,265,312	27,429,231	27,594,136	27,760,032	27,926,926
Penetration rate (%)	*122.0*	*127.6*	*131.0*	*131.9*	*133.3*

Source: NCA; Mobile Network Operators, 2016

Figure 1: Mobile Subscription and Penetration Rate



Source: NCA; Mobile Network Operators, 2016

1.1.1 Mobile Subscription per Operator

At the end of the third quarter of 2016, MTN had the largest share with a total Subscription of 18,050,144 representing 48.5% of the total mobile market in Ghana, followed by Vodafone with subscription of 8,158,527 (21.9%), Tigo 5,402,668 subscriptions (14.5%) and Airtel 4,697653 subscriptions (12.6%). Glo and Expresso had a subscription of 828,162 and 102,566 representing 2.2% and 0.3% market shares respectively (Table 2).

Table 2: Subscription and Market Share (%) per Operator

Mobile Network Operator		Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
MTN	Subscription	15,493,052	16,254,984	17,004,445	17,579,045	18,050,144
	Market Share (%)	*46.6*	*46.4*	*47.1*	*48.0*	48.5
Vodafone	Subscription	7,397,022	7,612,059	7,900,534	8,093,710	*8,158,527*
	Market Share (%)	*22.2*	*21.7*	*21.9*	*22.1*	21.9
Tigo	Subscription	4,479,898	4,850,034	5,062,304	5,261,454	5,402,668
	Market Share (%)	*13.5*	*13.9*	*14*	*14.4*	14.5
Airtel	Subscription	4,383,674	4,796,645	5,012,239	4,678,736	*4,697,653*
	Market Share (%)	*13.2*	*13.7*	*13.9*	*12.8*	12.6
Glo	Subscription	1,383,812	1,369,402	1,048,635	897,082	828,162
	Market Share (%)	*4.2*	*3.9*	*2.9*	*2.5*	2.2
Expresso	Subscription	132,982	125,263	110,549	103,960	102,566
	Market Share (%)	*0.4*	*0.4*	*0.3*	*0.3*	0.3
Total		33,270,440	35,008,387	36,138,706	36,613,987	37,239,720

Source: NCA; Mobile Network Operators, 2016

1.1.2 Prepaid and Post-paid Mobile Subscription

At the end of the third quarter of 2016, there were 36,855,555 prepaid subscriptions which represents 99.0% of the total mobile subscription (Table 3). Both post-paid and prepaid subscription have been increasing over the past five quarters with growth in post-paid relatively higher than prepaid.

Table 3: Prepaid and Post-paid Subscription

Subscription		Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
Prepaid	Subscription	33,091,299	34,797,888	35,923,390	36,259,719	36,855,555
	Share (%)	*99.5*	*99.4*	*99.4*	*99.0*	*99.0*
Post-paid	Subscription	179,141	210,499	215,316	354,268	384,164
	Share (%)	*0.5*	*0.6*	*0.6*	*1.0*	*1.0*
Total mobile subscription		**33,270,440**	**35,008,387**	**36,138,706**	**36,613,987**	**37,239,720**

Source: NCA; Mobile Network Operators, 2016

1.2 Mobile Voice Traffic (Domestic)

There was an increase in voice traffic in the third quarter after it declined in the previous quarter. Total voice traffic grew by 4.3% from 14.80 billion minutes in the second quarter of 2016 to 15.44 billion minutes in the third quarter of 2016 (Figure 2). On-net traffic increased from 9.60 billion minutes in the second quarter of 2016 to 10.12 billion minutes (5.4%) in the third quarter of 2016, and off-net traffic also increased from 5.21 billion minutes to 5.32 billion minutes (2.1%) over the same period (Figure 2).

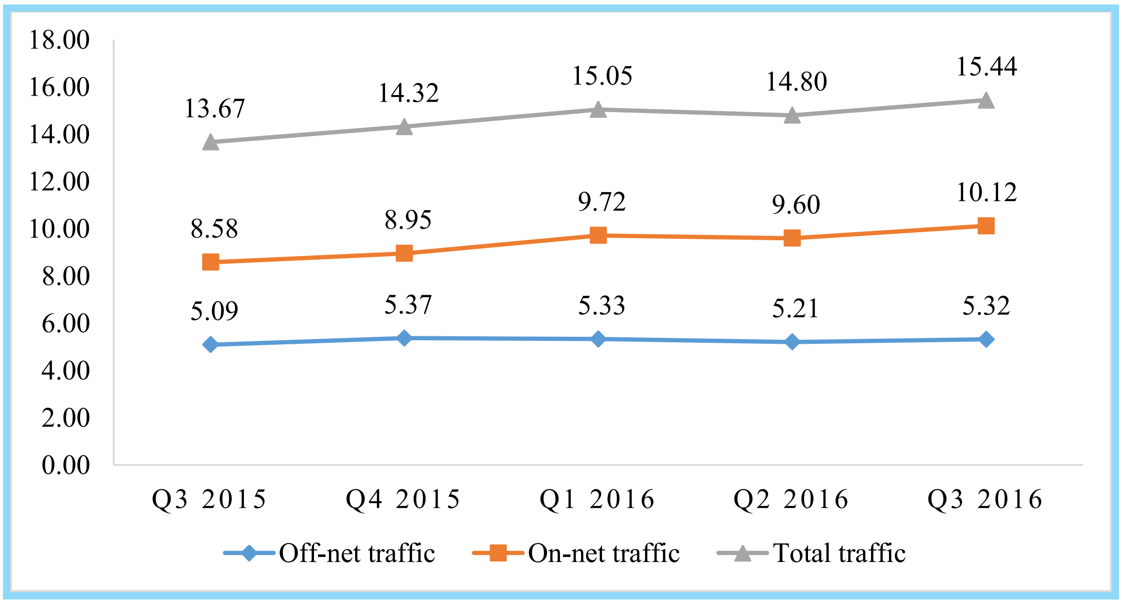
Both on-net and off-net mobile traffic grew by 18.0% and 4.6% respectively on annual basis (year-on-year). Year-on-year total mobile traffic also increased by 13.05%, from 13.76 billion minutes in the third quarter of 2015 to 15.44 billion minutes in the third quarter of 2016 (Table 4).

Table 4: Mobile Voice Traffic (Domestic)

Traffic	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
Off-net traffic	5,089,401,649	5,366,842,012	5,330,578,533	5,205,705,482	5,322,087,302
On-net traffic	8,579,666,051	8,954,442,437	9,717,413,378	9,597,512,186	10,122,604,500
Total traffic	**13,669,067,700**	**14,321,284,449**	**15,047,991,911**	**14,803,217,668**	**15,444,691,802**

Source: NCA; Mobile Network Operators, 2016

Figure 2: Mobile Voice Traffic (Domestic)



Source: NCA; Mobile Network Operators, 2016

1.2.1 Minutes of Use (MoU)

The total minutes of use (MoU) per subscription increased by 1.9% from 134 minutes in the second quarter of 2016 to 137 minutes in the third quarter of 2016 (Table 5). This represents an average of 3 minutes' increase in the MoU per subscription in the third quarter of 2016.

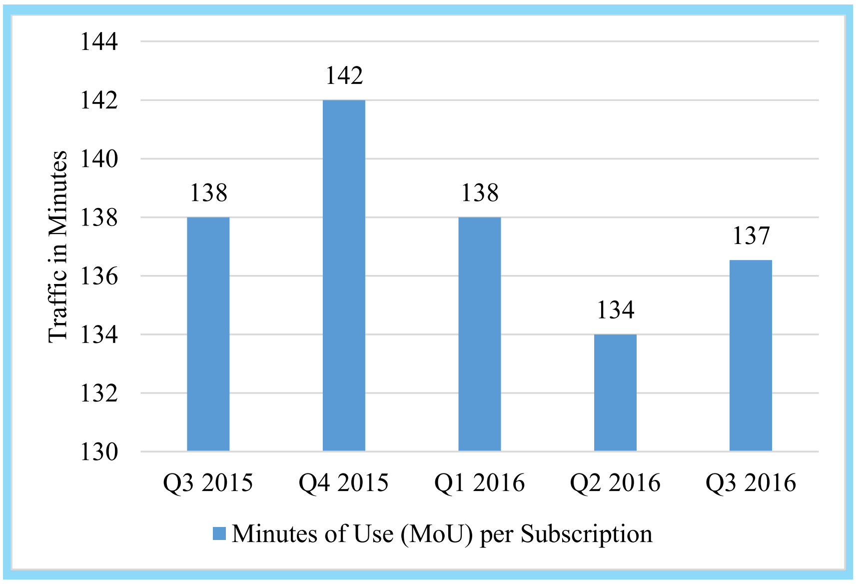
There was a decline (0.7%) in the year-on-year minutes of use from 138 minutes to 137 minutes (Figure 3).

Table 5: Mobile Voice Traffic Minutes of Use (MoU) per Subscription

Traffic	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
Total mobile traffic	4,576,410,790	4,986,378,886	4,989,862,159	4,905,966,394	5,084,495,193
Mobile subscription	33,270,440	35,008,387	36,138,706	36,613,987	37,239,720
Minutes of Use (MoU) per Subscription	138	142	138	134	137
MoU growth rate (%)	4.5	2.9	-2.8	-2.9	1.9

Source: NCA; Mobile Network Operators, 2016

Figure 3: Mobile Voice Traffic Minutes of Use (MoU) per Subscription



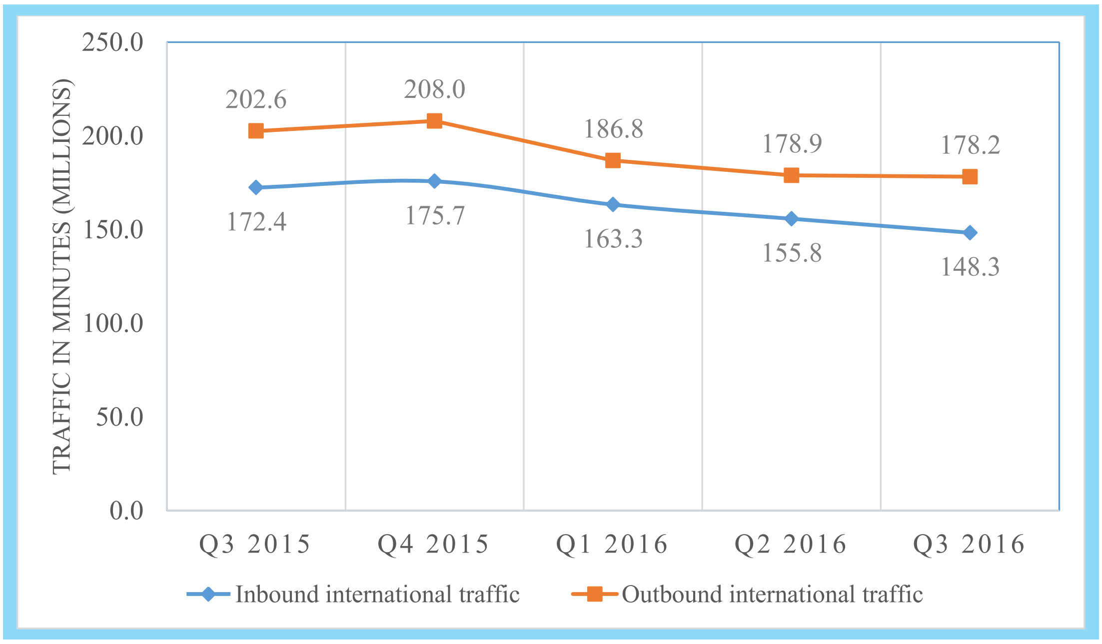
Source: NCA; Mobile Network Operators, 2016

1.3 International Traffic

The decline in international traffic continued in the third quarter of 2016, with inbound international traffic decreasing by 7.5 million minutes (4.8%) quarter-on-quarter to 148.3 million minutes in the third quarter of 2016 (Figure 4). Outbound international traffic also decreased by 0.4% from 178.9 million minutes in the second quarter of 2016 to 178.2 million minutes in the third quarter of 2016 (Figure 4).

The year-on-year international voice traffic followed a similar trend as the quarterly performance, with a slump (14.0%) in annual volume of inbound international traffic from 172.4 million minutes in the third quarter of 2015 to 148.3 million minutes in the third quarter of 2016.Outbound international traffic also decreased by 24.4 million minutes (12.0%), from 202.6 million minutes in the third quarter of 2015 to 178.2 million in the third quarter of 2016 (Figure 4).

Figure 4: International Traffic



Source: NCA; Mobile Network Operators, 2016

1.4 Short Message Service (SMS)

Total volume of Short Messaging Service (SMS), increased (26.5%) from 511,858,875 in the second quarter of 2016 to 647,671,344 in the third quarter of 2016 (Table 6). On annual basis, the SMS volume increased by 30.7%, increasing from 495,446,559 in the third quarter of 2015 to 647,671,344 in the third quarter of 2016.

The two leading mobile operators, MTN and Vodafone accounted for more than half (66.5%) of the total number of SMS in the third quarter of 2016. MTN recorded 256 million SMS, representing 39.6% of the total SMS for third quarter of 2016. This is followed by Vodafone with 174 million SMS (26.9%). Tigo had 153 million SMS (23.7%). Airtel and Glo had 59 million (9.1%) and 4 million (0.7%) respectively. There was no data on SMS transaction by Expresso in the third quarter of 2016 (Table 6).

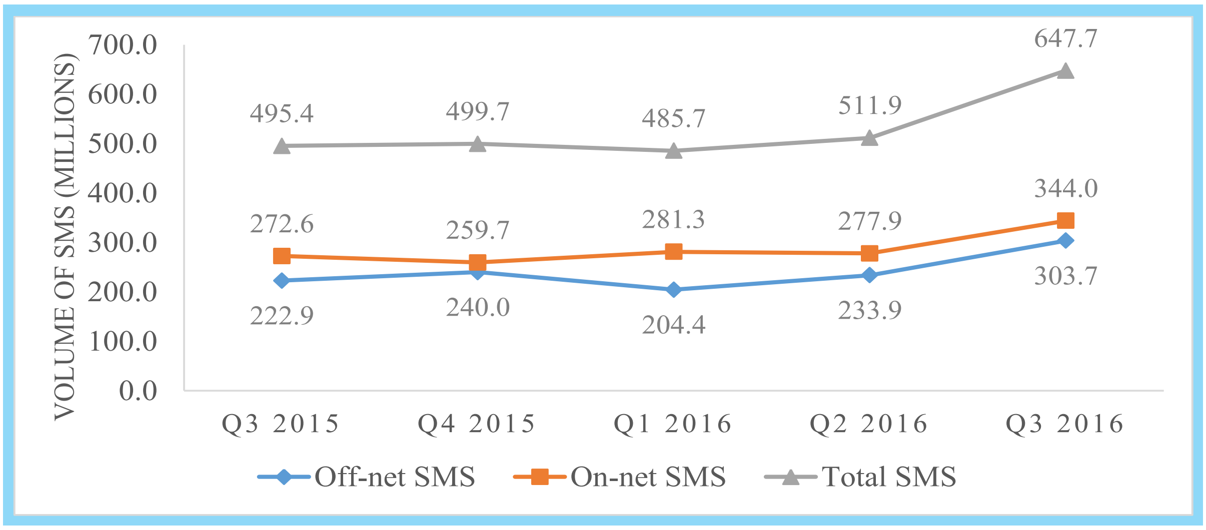
Table 6: Total Number of SMS per Mobile Network Operator

Mobile Operators	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
	Off-net SMS				
MTN	81,516,694	81,810,904	78,905,652	88,794,140	129,008,674
Vodafone	51,757,738	56,500,441	50,471,063	57,089,493	78,039,253
Tigo	37,668,673	43,860,991	50,347,010	44,476,299	52,335,434
Airtel	44,584,503	54,163,483	21,816,756	39,500,452	40,177,723
Glo	6,057,005	3,645,322	2,903,232	4,082,610	4,101,189
Expresso	1,286,475	38,519	-	-	-
Total	**222,871,088**	**240,019,660**	**204,443,713**	**233,942,994**	**303,662,273**

	On-net SMS				
MTN	103,346,119	102,030,573	93,791,420	112,089,090	127,386,287
Vodafone	85,234,238	53,592,693	88,531,025	84,439,040	96,173,719
Tigo	70,852,730	93,728,877	89,484,263	65,019,211	100,986,018
Airtel	12,104,646	9,847,445	9,027,249	16,078,366	19,064,329
Glo	1,033,692	454,662	418,743	290,174	398,718
Expresso	4,046	8,709	-	-	-
Total	**272,575,471**	**259,662,959**	**281,252,700**	**277,915,881**	**344,009,071**
	Total SMS				
MTN	184,862,813	183,841,477	172,697,072	200,883,230	256,394,961
Vodafone	136,991,976	110,093,134	139,002,088	141,528,533	174,212,972
Tigo	108,521,403	137,589,868	139,831,273	109,495,510	153,321,452
Airtel	56,689,149	64,010,928	30,844,005	55,578,818	59,242,052
Glo	7,090,697	4,099,984	3,321,975	4,372,784	4,499,907
Expresso	1,290,521	47,228	-	-	-
Total	**495,446,559**	**499,682,619**	**485,696,413**	**511,858,875**	**647,671,344**

Source: NCA; Mobile Network Operators, 2016

Figure 5: Total Number of SMS per Mobile Network Operator

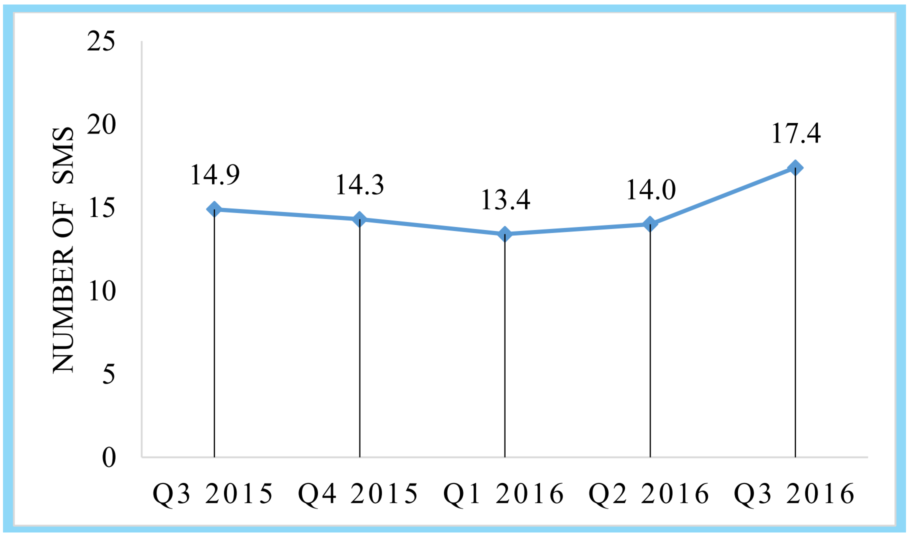


Source: NCA; Mobile Network Operators, 2016

1.4.1 Average SMS per Subscription

Average SMS per subscription increased by 24.2% from an average of 14.0 SMS per subscription in the second quarter of 2016 to an average of 17.4 SMS per subscription in the third quarter of 2016 (Figure 6). This means that on average, a subscriber sent or received 17 SMS in the third quarter of 2016.

Figure 6: Average SMS per Subscription



Source: NCA; Mobile Network Operators, 2016

1.5 Mobile Telecommunications Service Tariffs

With the exception of tariffs for on-net SMS and mobile data traffic which increased by 1 pesewas each, the defaults tariffs for all telecommunications services remained unchanged during the third quarter of 2016. These default tariffs as advertised by the mobile operators may however, differ from promotional prices the various operators may charge during the third quarter of 2016.

Table 7: Average Tariff per Service (GHp)

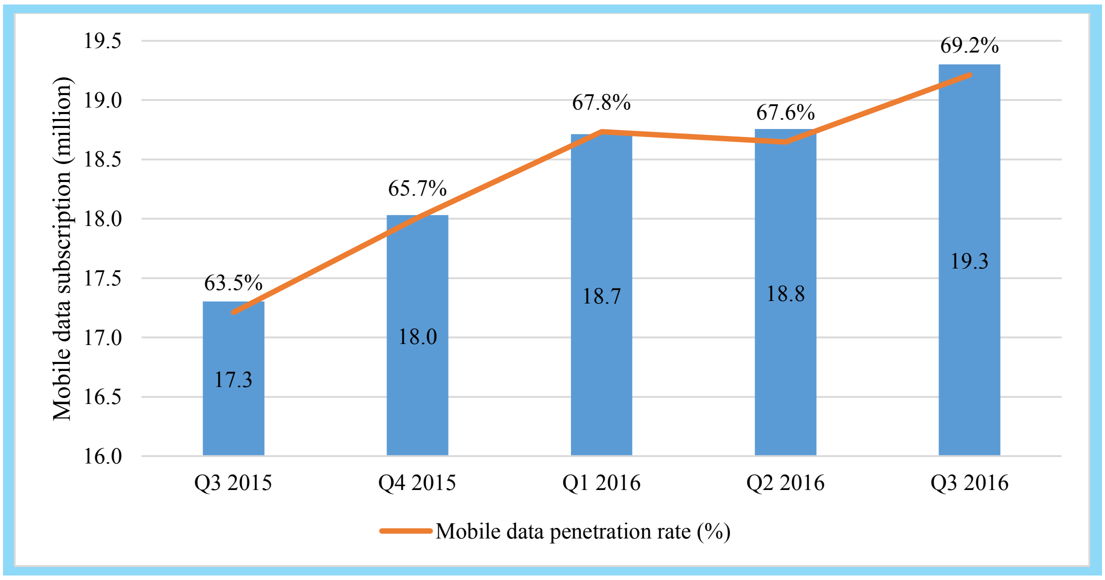
Tariff	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
Average on-net mobile tariff (Pesewas)	10	10	11	11	11
Average off-net mobile tariff (Pesewas)	12	12	13	13	13
Average on-net SMS tariff (Pesewas)	4	5	5	5	6
Average off-net SMS tariff (Pesewas)	5	5	6	6	6
Average data/Mb tariff (Pesewas)	10	11	11	11	12

Source: NCA; Mobile Network Operators, 2016

1.6 Mobile Data Subscription and Penetration

The availability of devices, services and technologies that offers reliable and faster internet access is growing in Ghana, thereby driving growth in internet usage. Total number of mobile data subscriptions increased from 18.8 million in the second quarter of 2016 to 19. 3 million in the third quarter of 2016, a growth rate of 3.1% (Figure 7). Annual growth for mobile data subscription was 11.7%, increasing from 17.3 million in the third quarter of 2015 to 19.3 million in the third quarter of 2016. Mobile data penetration rate increased from 67.6% in the second quarter of 2016 to 69.2% in the third quarter of 2016 (Figure 7).

Figure 7: Mobile Data Subscription and Penetration Rate (%)



Source: NCA; Mobile Network Operators, 2016

1.6.1 Mobile Data Subscription per Operator

MTN is the biggest operator (50.4%) in terms of mobile data subscription, with a total subscription of 9.7 million, followed by Vodafone with subscription of 3.3 million (17. 1%) (Table 8). Airtel is the third largest operator with a market share of (16.0%) and subscription of 3.0 million (Table 8). Tigo occupies the fourth spot with 2.8 million subscriptions (14.9%), followed by Glo 265,085 (1.4%). Expresso is the least operator with total mobile data subscription of 40,181 (0.2%).

Table 8: Mobile Data Subscription per Operator

Mobile Network Operator		**Q3 2015**	**Q4 2015**	**Q1 2016**	**Q2 2016**	**Q3 2016**
MTN	Subscription	8,298,114	8,634,914	9,066,405	9,369,407	9,745,986
	Market Share (%)	*48.0*	*47.9*	*48.5*	*50.0*	*50.4*
Vodafone	Subscription	3,148,350	3,316,343	3,390,276	3,271,790	3,314,912
	Market Share (%)	*18.2*	*18.4*	*18.1*	*17.4*	*17.1*
Tigo	Subscription	2,615,347	2,732,863	2,707,411	2,716,023	2,872,375
	Market Share (%)	*15.1*	*15.2*	*14.5*	*14.5*	*14.9*
Airtel	Subscription	2,700,430	2,879,431	3,177,620	3,058,545	3,092,700
	Market Share (%)	*15.6*	*16*	*17*	*16.3*	*16.0*
Glo	Subscription	496,332	419,459	325,987	298,622	265,085
	Market Share (%)	*2.9*	*2.3*	*1.7*	*1.6*	*1.4*
Expresso	Subscription	45,323	48,178	44,136	41,541	40,181
	Market Share (%)	*0.3*	*0.3*	*0.2*	*0.2*	*0.2*
Total		**17,303,896**	**18,031,188**	**18,711,835**	**18,755,928**	**19,331,239**

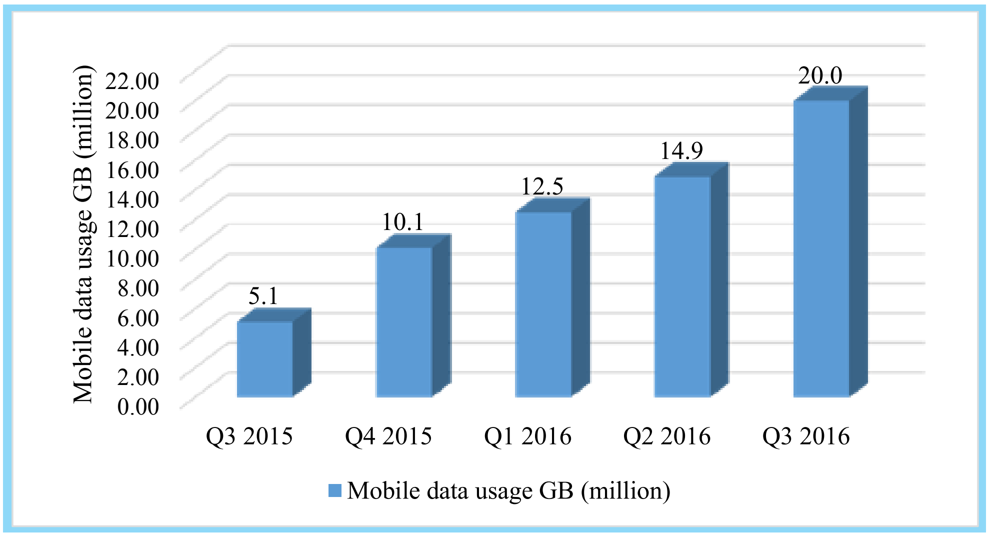
Source: NCA; Mobile Network Operators, 2016

1.6.2 Mobile Data Traffic

There has been a consistent increase in mobile data traffic over the past five quarters, consistent with the growth in data subscription. Service providers, consumers and government institutions are steadily embracing e-services, and this contributes to the growth in data traffic. Total volume of data traffic expanded by 30.7% in the third quarter of 2016, increasing from 14.9 million gigabytes (GB) in the second quarter of 2016 to 20.0 million gigabytes (GB) in the third quarter of 2016 (Figure 8).

There was a sharp increase (292.2%) in the year-on-year traffic, increasing by 14.9 million gigabytes from 5.1 million gigabytes (GB) in the third quarter of 2015 to 20.0 million gigabytes (GB) in the third quarter of 2016 (Figure 8).

Figure 8: Mobile Data Traffic in Millions of Gigabyte (GB)

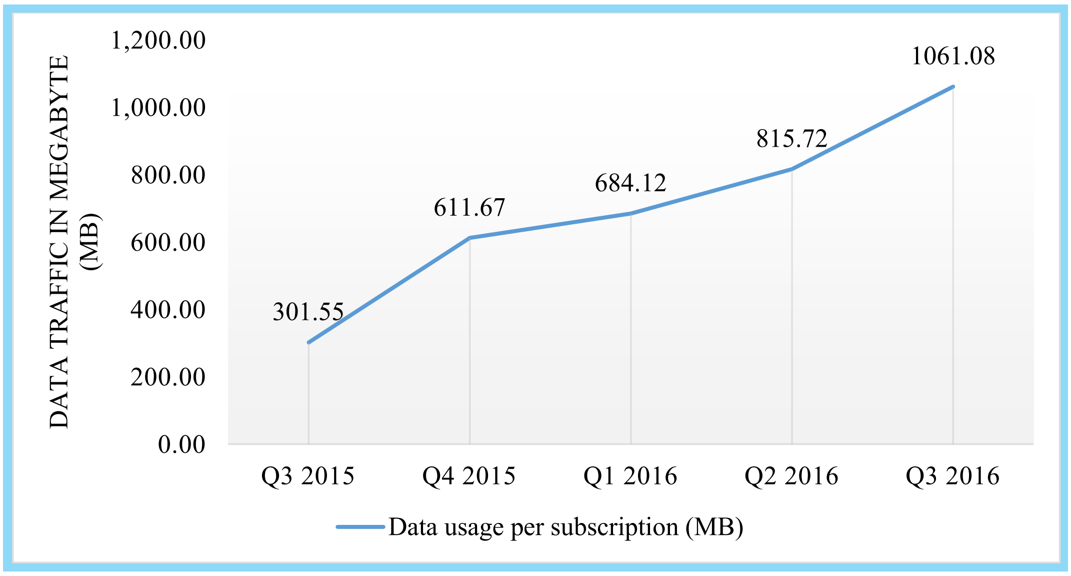


Source: NCA; Mobile Network Operators, 2016

1.6.3 Mobile Data Usage per Subscription

Average monthly data usage per subscription increased by 30.1% quarter-on-quarter, increasing from 815.72 megabytes (MB) in the second quarter of 2016 to 1,061.72 megabytes (MB) at the end of September 2016 (Figure 9). Year-on-year data usage per subscription grew in excess of 250%, between the third quarter of 2015 and the third quarter of 2016, increasing from 301.55 MB to 1,061.08 MB.

Figure 9: Mobile Data Usage per Subscription (MB)



Source: NCA; Mobile Network Operators, 2016

1.6.4 Mobile Data Traffic per Operator

MTN accounted for 45.5% of the total mobile data traffic with 9.12 million gigabytes of data, followed by Airtel with 4.53 million gigabytes of data (22.6%). The third largest market share in terms of data traffic was Vodafone with 4.41 million gigabytes (22.0%) data usage (Table 9). The top three operators accounted for 90.1% of the total volume of data traffic in the mobile industry. Tigo and Glo had 1.54 million and 432 thousand gigabytes of data representing 7.70% and 2.20% respectively. Expresso did not report any information on data traffic.

Table 9: Mobile Data Traffic (GB) per Operator

Mobile Operator	Data Usage (GB)	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
MTN	Data Usage (GB)	2,224,110	3,828,998	4,606,692	6,187,604	9,121,837
	Market Share (%)	43.6	35.6	36.9	41.4	45.5
Vodafone	Data Usage (GB)	954,793	3,606,483	3,856,199	3,905,874	4,405,475
	Market Share (%)	18.7	33.5	30.8	26.1	22.0
Tigo	Data Usage (GB)	1,120,902	959,477	1,126,399	1,310,040	1,540,357
	Market Share (%)	22	8.9	9	8.8	7.7
Airtel	Data Usage (GB)	732,420	2,361,873	2,879,227	3,448,327	4,531,206
	Market Share (%)	14.4	21.9	23	23.1	22.6
Glo	Data Usage (GB)	21,633	13,853	32,624	89,151	432,361
	Market Share (%)	0.4	0.1	0.3	0.6	2.2
Expresso*	Data Usage (GB)	41,762	-	-	-	-
	Market Share (%)	0.8	-	-	-	-
Total		**5,095,621**	**10,770,684**	**12,501,140**	**14,940,996**	**20,031,236**

Source: NCA; Mobile Network Operators, 2016

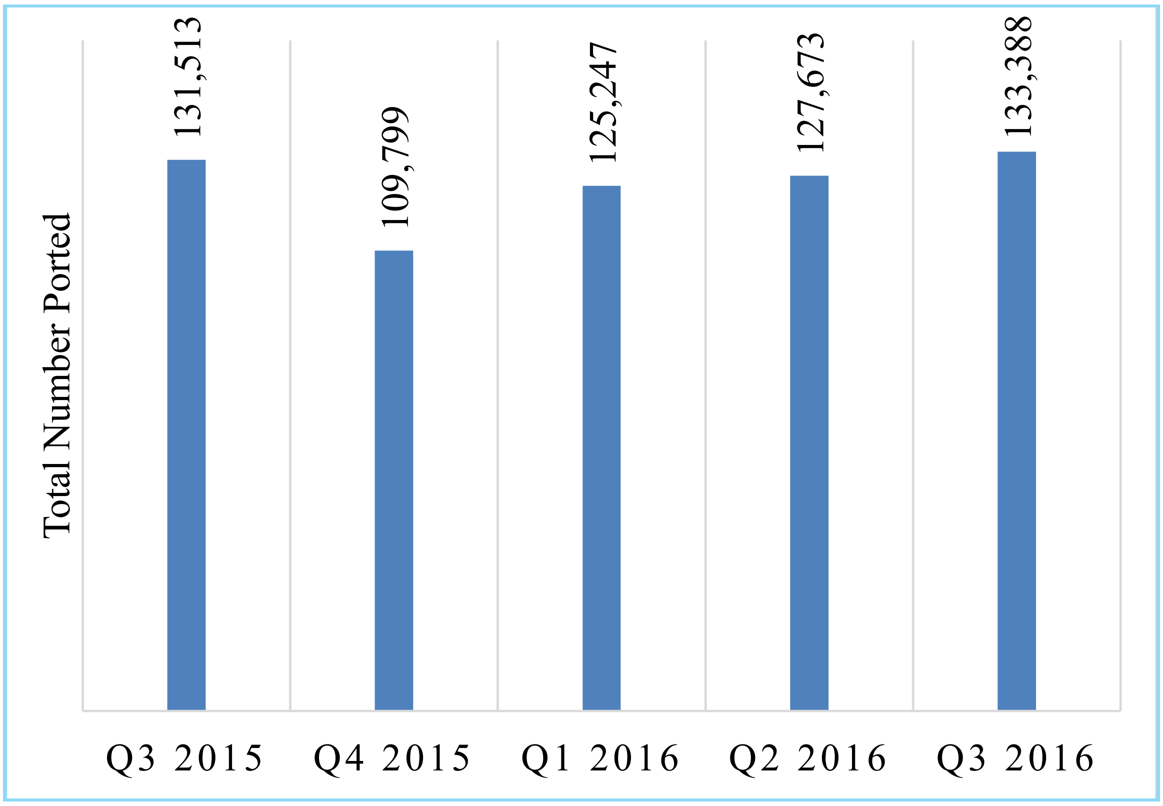
* Expresso did not submit data for this period.

1.7 Mobile Number Portability (MNP)

Promoting and sustaining competition in the communications sector is central to the regulatory policies of the National Communications Authority (NCA). This is aimed at stimulating innovation and investment in the communications sector, to the ultimate benefit of the Ghanaian consumer. The mobile number portability (MNP) is one of such policies, introduced by the Authority to stimulate competition among mobile wireless operators and provide the flexibility for subscribers to switch among service providers. Mobile number portability in Ghana started in July 2011. The first quarter for this period is from July to September, Second quarter comprise October to December, third quarter spans from January to March and April to June is the fourth quarter.

The total number of mobile numbers ported from one service provider to another in the third quarter of 2016 was 133,388, representing a growth rate of 4.5% quarter-on-quarter from 127,673 in the second quarter of 2016 and 1.4% year-on-year (Figure 10).

Figure 10: Mobile Number Portability



Source: NCA; PortingXS, 2016

2.0 BROADBAND WIRELESS ACCESS (BWA)

2.1 BWA Subscription and Penetration

There are three operators offering broadband wireless access service in Ghana, namely; Surfline, Broadband Home (BBH, formerly Zipnet) and Blu Telecommunications. These operators offer only data services.

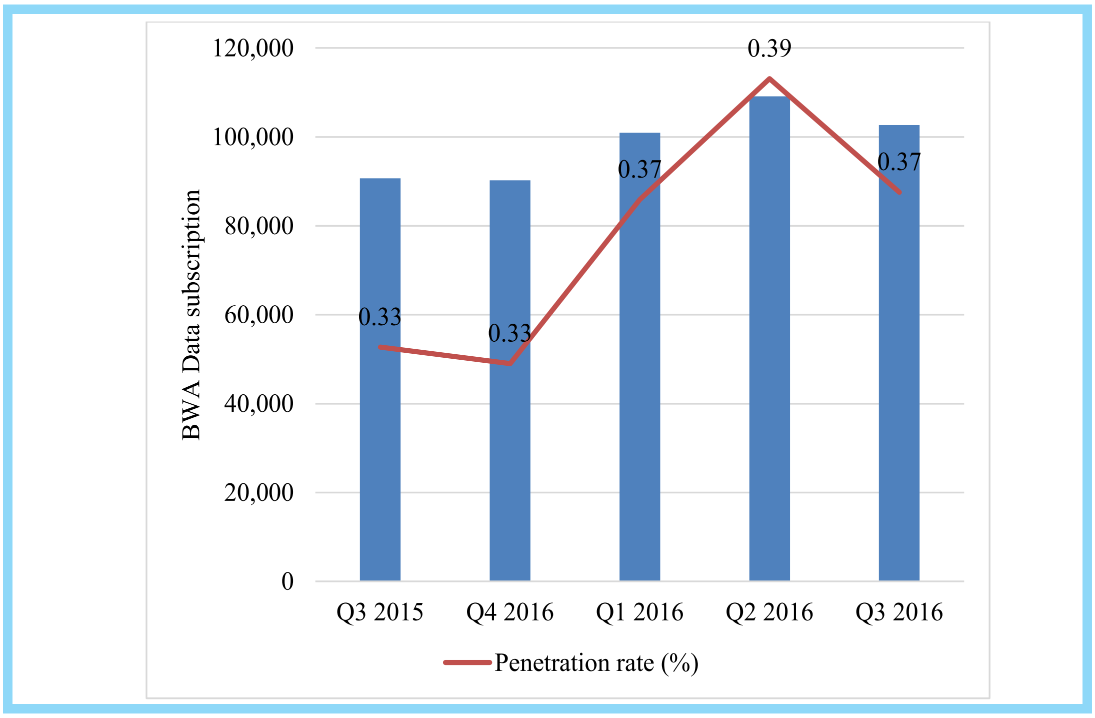
Total number of BWA subscriptions as reported by the three operators, decreased by 5.9%, from 109,124 in the second quarter of 2016 to 102,655 at the end of the third quarter of 2016 (Table 10). The year-on-year subscription, however, increased by 13.2% from 90,711 in the third quarter of 2015 to 102,655 at the end of the third quarter of 2016. Penetration rate for Broadband Wireless Access decreased to 0.37% at the end of the third quarter of 2016 from 0.39% in the second quarter of 2016 (Figure 11).

Table 10: BWA Data Subscription and Penetration

BWA Operator	Q3 2015	Q4 2016	Q1 2016	Q2 2016	Q3 2016
Subscription	90,711	90,246	100,965	109,124	102,655
Growth rate (%)	*11.9*	*8.3*	*1.0*	*7.1*	*-5.9*
Net Additions	7510	-465	10,719	8,159	-6,469
Population	27,265,312	27,429,231	27,594,136	27,760,032	27,926,926
Penetration rate (%)	*0.33*	*0.33*	*0.37*	*0.39*	*0.37*

Source: NCA; Broadband Wireless Access Operators, 2016

Figure 11: BWA Data Subscription and Penetration Rate



Source: NCA; Broadband Wireless Access Operators, 2016

2.1.1 Subscription per BWA Operator

Surfline is the market leader with market share of 73.8% and 77,617 subscriptions, followed by Broadband Home (Zipnet), with subscription of 26,536 (24.3%), and Blu Telecommunications serving 1.1% of the market with subscription of 1,176 (Table 11).

For the first time in four consecutive quarters, subscriptions for all the three BWAs have declined.

Table 11: Subscription per Broadband Wireless Access (BWA) Operator

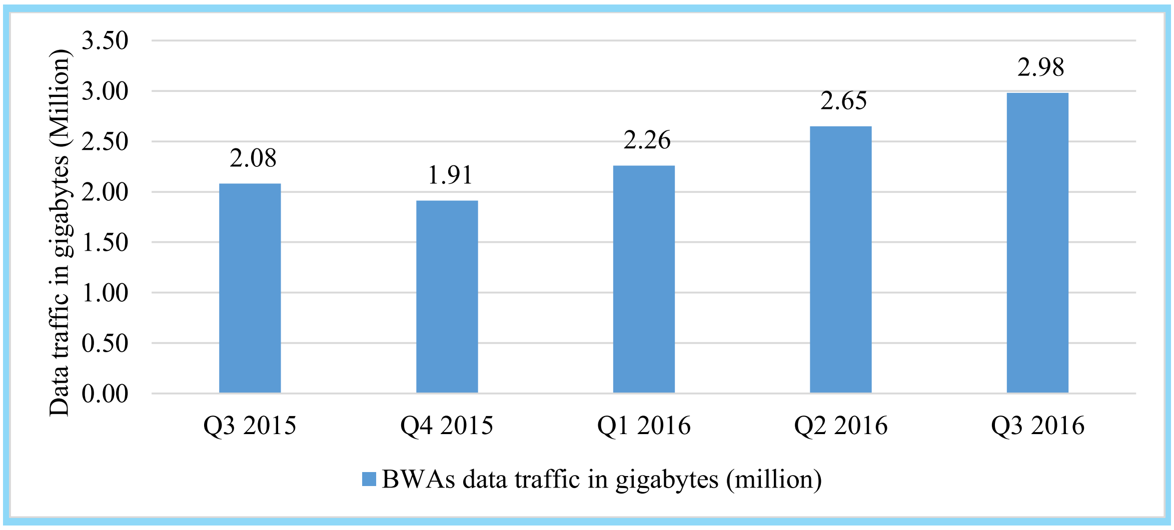
BWA operator		**Q3 2015**	**Q4 2016**	**Q1 2016**	**Q2 2016**	**Q3 2016**
Surfline	Subscription	62,299	61,980	72,903	81,325	75,065
	Market share (%)	*68.7*	*68.7*	*72.2*	*74.5*	*73.1*
BBH	Subscription	26,748	26,786	26,666	26,536	26,423
	Market share (%)	*29.5*	*29.7*	*26.4*	*24.3*	*25.7*
BLU	Subscription	1,664	1,480	1,396	1,263	1,167
	Market share (%)	*1.8*	*1.6*	*1.4*	*1.2*	*1.1*
Industry total		**90,711**	**90,246**	**100,965**	**109,124**	**102,655**

Source: NCA; Broadband Wireless Access Operators, 2016

2.2 Broadband Wireless Access (BWA) Volume of Data Traffic

Total volume of BWA data traffic has been increasing in the past four quarters, despite the decline in subscription. Data traffic increased by 12.4% quarter-on-quarter from 2.65 million gigabytes of data in the second quarter of 2016 to 2.98 million gigabytes of data in the third quarter of 2016 (Figure 12). Year-on-year data traffic also increased by 43.1% from 2.08 million gigabytes of data in the third quarter of 2015 to 2.98 million gigabytes of data at the end of third of 2016.

Figure 12: BWA Data Usage in Gigabytes (millions)



Source: NCA; Broadband Wireless Access Operators, 2016

2.2.1 *Volume of Broadband Data Traffic per Operator*

In the third quarter of 2016, Surfline's total volume of data traffic was 2,564,837 gigabytes, representing 86.2% of the total volume of data generated by all the three BWA's (Table 12). BBH generated the second highest volume of data traffic of 306,864 gigabytes (10.3%). The total volume of data generated by Blu was 104,983 gigabytes of data (3.5%).

Table 12: Data Traffic (GB) per Broadband Wireless Access (BWA) Operator

BWA operator		**Q3 2015**	**Q4 2015**	**Q1 2016**	**Q2 2016**	**Q3 2016**
Surfline	Data usage (GB)	1,684,993.62	1,590,405.36	1,851,101.97	2,253,167.49	2,564,837.32
	Market share (%)	*81.0*	*83.2*	*81.9*	*85.1*	*86.2*
BBH	Data usage (GB)	257,910.00	200,494.37	280,747.23	291,928.83	306,864.14
	Market share (%)	*12.4*	*10.5*	*12.4*	*11.0*	*10.3*
BLU	Data usage (GB)	137,060.62	120,615.79	127,965.99	103,878.55	104,982.83
	Market share (%)	*6.6*	*6.3*	*5.7*	*3.9*	*3.5*
Industry Total (GB)		**2,079,964.24**	**1,911,515.52**	**2,259,815.19**	**2,648,974.87**	**2,976,684.30**

Source: NCA; Broadband Wireless Access Operators, 2016

2.2.2 *Monthly Data Usage per BWA Subscription*

Data usage per subscription per month increased by 26.4% from 8.19 gigabytes in month of June 2016 to 10.35 gigabytes at the end September 2016 (Table 13). This increase is as a result of an increase traffic and a decrease in subscription.

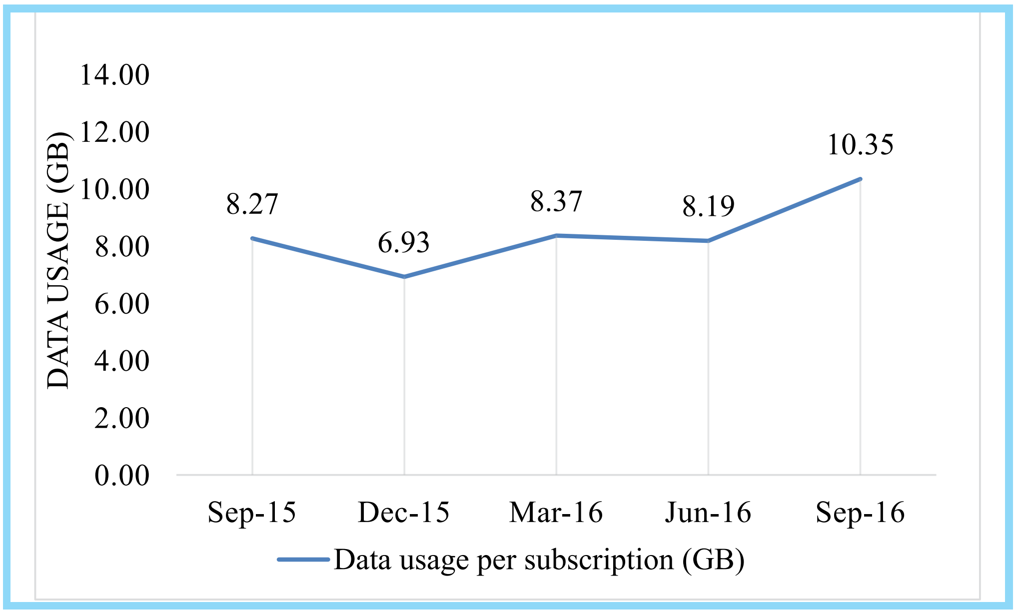
Year-on-year data usage also increased by 25.1% from 8.27 gigabytes in September 2015 to 10.35 gigabytes at the end of September 2016

Table 13: Data Usage per BWA Subscription (GB)

BWA Operator	**Q3 2015**	**Q4 2016**	**Q1 2016**	**Q2 2016**	**Q3 2016**
Volume of data traffic	750,229.22	625,022.13	844,629.14	893,618.38	1,062,189.94
Subscription	90,711	90,246	100,965	109,124	102,655
Data usage per subscription (GB)	8.27	6.93	8.37	8.19	10.35
Data usage per subscription (GB) Growth rate (%)	*46.7*	*-16.3*	*20.8*	*-2.1*	*26.4*

Source: NCA; Broadband Wireless Access Operators, 2016

Figure 13: Data Usage per BWA Subscription (GB)

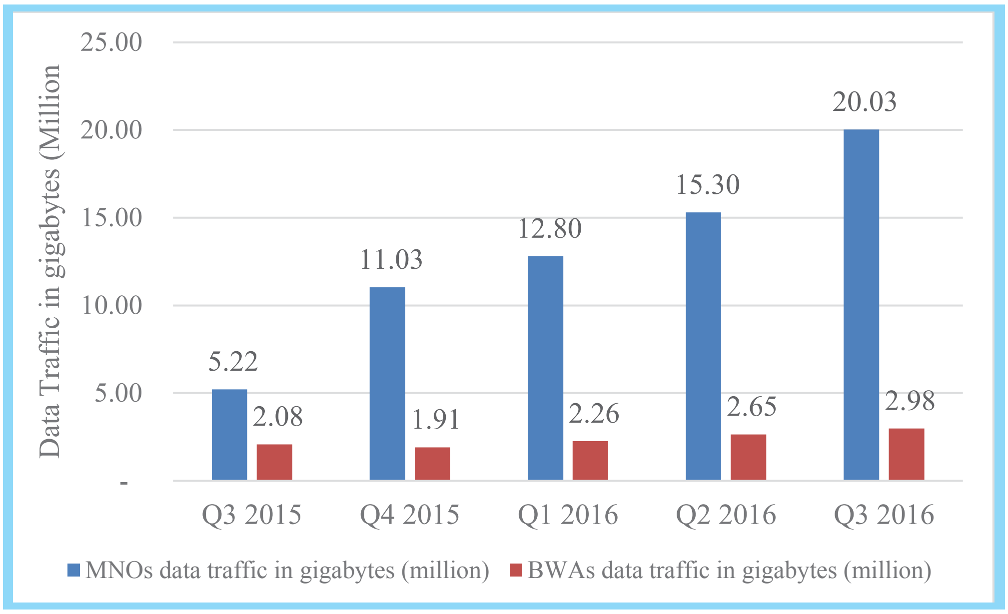


Source: NCA; Broadband Wireless Access Operators, 2016

2.3 Monthly Data Traffic for MNOs Compared to BWAs

Mobile network operators generated 20.03 million gigabytes of data traffic compared to 2.98 million gigabytes of data generated by BWA's (Figure 14). However, the average monthly data usage per subscription for the BWAs was 28.29 GB compared to 1.1 GB for the MNOs.

Figure 14: Data Traffic for MNO's and BWA's



Source: NCA, 2016

3.0 FIXED NETWORK

3.1 Fixed Network Subscription and Penetration

There are three fixed line operators in Ghana although only two are operational. Vodafone and Airtel are the fixed network operators in Ghana. Although MTN has acquired fixed line licence from the National Communications Authority, it is not yet operational.

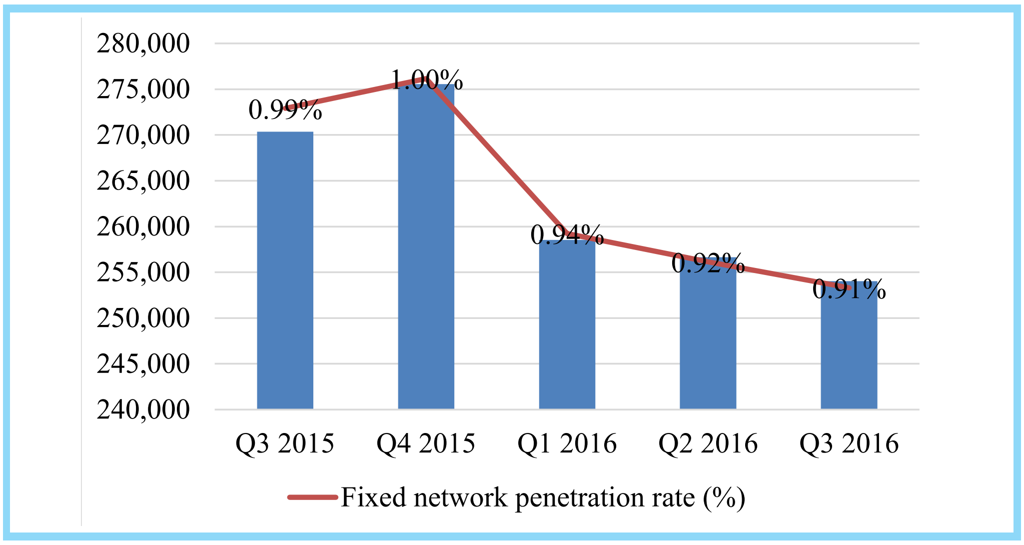
Total fixed line subscription as reported by the two operators decreased (1.0%) in the third quarter of 2016 from 254,653 in the second quarter of 2016 to 254,021 in the third quarter of 2016 (Table 14). For the third consecutive time, fixed subscription has declined. Fixed line penetration declined to 0.91% at the end of the third quarter of 2016 compared to 0.92% for the previous quarter (Figure 15).

Table 14: Fixed Network Subscription and Penetration

Subscription	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
Fixed network subscription	270,356	275,570	258,536	256,653	254,021
Fixed Subscription growth rate (%)	*3.3*	*1.9*	*-6.2*	*-0.7*	*-1.0*
Net Additions	8,542	5,214	-17,034	-1,883	-2,632
Net Additions Growth Rate (%)	*5.9*	*-0.4*	*-4.3*	*-0.9*	*0.4*
Population	27,265,312	27,429,231	27,594,136	27,760,032	27,815,552
Fixed network penetration rate (%)	*0.99*	*1.00*	*0.94*	*0.92*	*0.91*

Source: NCA; Fixed Network Operators, 2016

Figure 15: Fixed Network Subscription and Penetration Rate



Source: NCA; Fixed Network Operators, 2016

Vodafone is the largest fixed line operator by subscription in Ghana with a market share of 97.0% and a subscription of 246,425. Airtel has 7,596 subscriptions representing 3.0% of the total market share.

Table 15: Fixed Network Subscription per Operator

Fixed Operator		**Q3 2015**	**Q4 2015**	**Q1 2016**	**Q2 2016**	**Q3 2016**
Vodafone	Subscription	262,109	267,161	250,546	248,536	246,425
	Market share (%)	*96.9*	*96.9*	*96.9*	*96.8*	*97.0*
Airtel	Subscription	8,247	8,409	7,990	8,117	7,596
	Market share (%)	*3.1*	*3.1*	*3.1*	*3.2*	*3.0*
Total industry subscription		270,356	275,570	258,536	256,653	254,021

Source: NCA; Fixed Network Operators, 2016

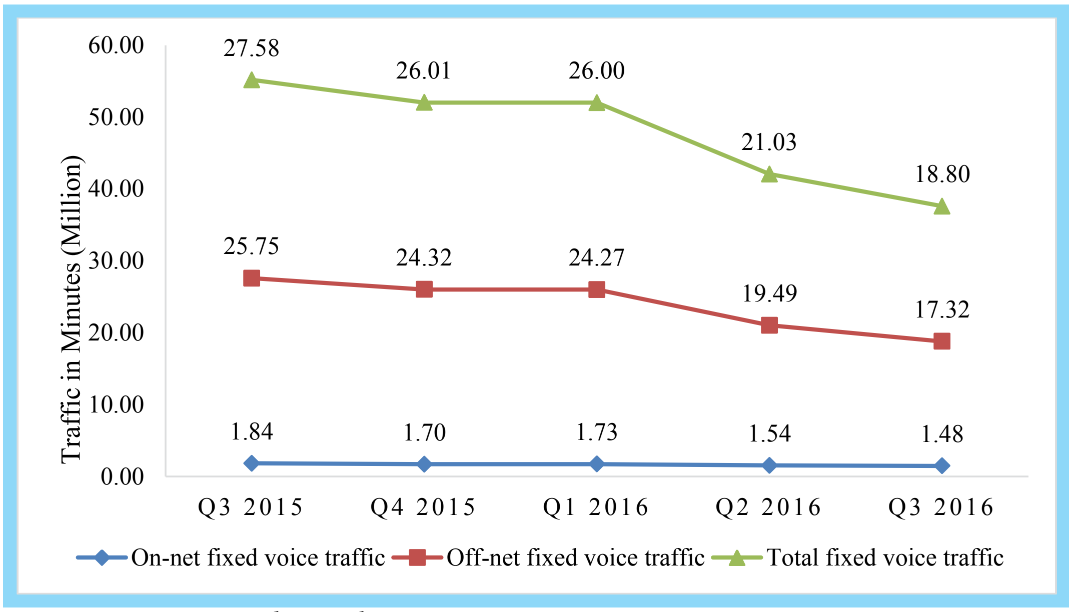
3.2 Fixed Network Traffic

Total volume of fixed network traffic decreased from 21.03 million minutes in the second quarter of 2016 to 18.80 million at the end of the third quarter of 2016 (Table 16). Off-net traffic decrease by 11.1% quarter-on-quarter from 19.49 million minutes to 17.32 million minutes. On-net traffic decline by 8.4% quarter-on-quarter from 1.54 million minutes to 1.48 million minutes (Table 16).

Table 16: Fixed Network Volume of Traffic in Minutes

Traffic	**Q3 2015**	**Q4 2015**	**Q1 2016**	**Q2 2016**	**Q3 2016**
On-net fixed voice traffic	1,837,819	1,696,416	1,726,187	1,542,355	1,482,483
Off-net fixed voice traffic	25,746,598	24,318,335	24,272,057	19,487,240	17,321,284
Total fixed voice traffic	27,584,417	26,014,751	25,998,244	21,029,595	18,803,767

Figure 16: Fixed Network Volume of Traffic in Minutes (Million)



Source: NCA; Fixed Network Operators, 2016

3.2.1 Fixed Networks Volume of Traffic per Operator (minutes)

Airtel on-net traffic decreased (22.7%) from 47 thousand minutes in the second quarter of 2016 to 36 thousand minutes in the third quarter of 2016. There was however, an increase (24.5%) in on-net traffic from 0.29 million minutes to 0.36 million minutes year-on-year (Table 17). Vodafone on-net traffic decreased (3.3%) from 1.49 million minutes in the second quarter of 2016 to 1.44 million minutes in the third quarter of 2016. Year-on-year on-net traffic for Vodafone decrease by 20.1% from 1.80 million in the third quarter of 2015 (Table 17).

Off-net traffic for Vodafone decreased by 27.2% from 17.5 million minutes in the second quarter of 2016 to 12.7 million minutes in the third quarter of 2016. Year-on-year Vodafone off-net traffic also decreased by 46.6% from 23.8 million minutes in the third quarter of 2015 (Table 17). Airtel off-net traffic increased by 130.0% from 1.9 million minutes in the second quarter of 2016 to 4.6 million in the third quarter of 2016 (Table 17).

Table 17: Fixed Networks Volume of Traffic per Operator (minutes)

Fixed network operator	**Traffic**	**Q3 2015**	**Q4 2015**	**Q1 2016**	**Q2 2016**	**Q3 2016**
	On-net traffic					
Vodafone	On-net traffic	1,808,196	1,671,595	1,684,219	1,494,630	1,445,594
	Market share (%)	*98.39*	*98.54*	*97.57*	*96.91*	*97.51*
Airtel	On-net traffic	29,623	24,821	41,968	47,725	36,889
	Market share (%)	*1.61*	*1.46*	*2.43*	*3.09*	*2.49*
Total on-net traffic		1,837,819	1,696,416	1,726,187	1,542,355	1,482,483
	Off-net traffic					
Vodafone	Off-net traffic	23,832,920	22,714,957	22,522,176	17,488,864	12,724,955
	Market share (%)	*92.57*	*93.41*	*92.79*	*89.75*	*73.46*
Airtel	Off-net traffic	1,913,678	1,603,378	1,749,881	1,998,376	4,596,329
	Market share (%)	*7.43*	*6.59*	*7.21*	*10.25*	*26.54*
Total off-net traffic		25,746,598	24,318,335	24,272,057	19,487,240	17,321,284
	Total traffic					
Vodafone	Total traffic	25,641,116	24,386,552	24,206,395	18,983,494	14,170,549
	Market share (%)	*92.96*	*93.74*	*93.11*	*90.27*	*75.36*
Airtel	Total traffic	1,943,301	1,628,199	1,791,849	2,046,101	4,633,218
	Market share (%)	*7.04*	*6.26*	*6.89*	*9.73*	*24.64*
Total fixed network traffic		**27,584,417**	**26,014,751**	**25,998,244**	**21,029,595**	**18,803,767**

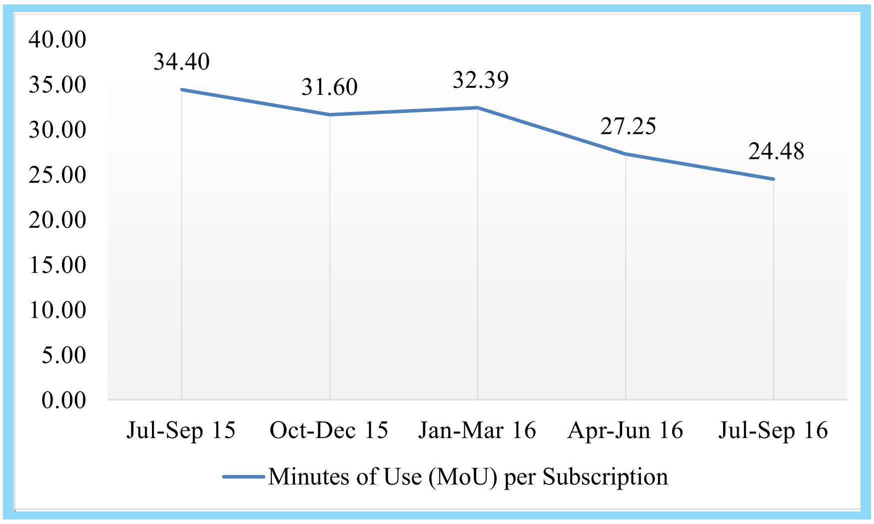
Source: NCA; Fixed Network Operators, 2016

*Vodafone on-net traffic for this period is estimated due to non-submission of data

3.3 Fixed Network Minutes of Use

Fixed network minutes of use per month decreased by 10.17% from 27.25 minutes in June 2016 to 24.48 minutes in September 2016 (Figure 17). Year-on-year minutes of use decreased by 24.84% from 34.04 minutes in June 2015 to 24.48 minutes at the end of September 2016.

Figure 17: Fixed Network Minutes of Use per Subscription



Source: NCA; Fixed Network Operators, 2016

3.4 Fixed Data Subscription and Penetration

Total fixed data subscription has been increasing for the past four quarters. Quarter-on-quarter subscription increased by 4.1% from 84,343 in the second quarter of 2016 to 87,789 at the end of the third quarter of 2016 (Table 18). Year-on-year subscription also grew by 26.5%. Fixed data penetration rate increased from 0.3% in the second quarter of 2016 to 0.32% at the end of the third quarter of 2016 (Figure 18).

Table 18: Fixed Data Subscription and Penetration

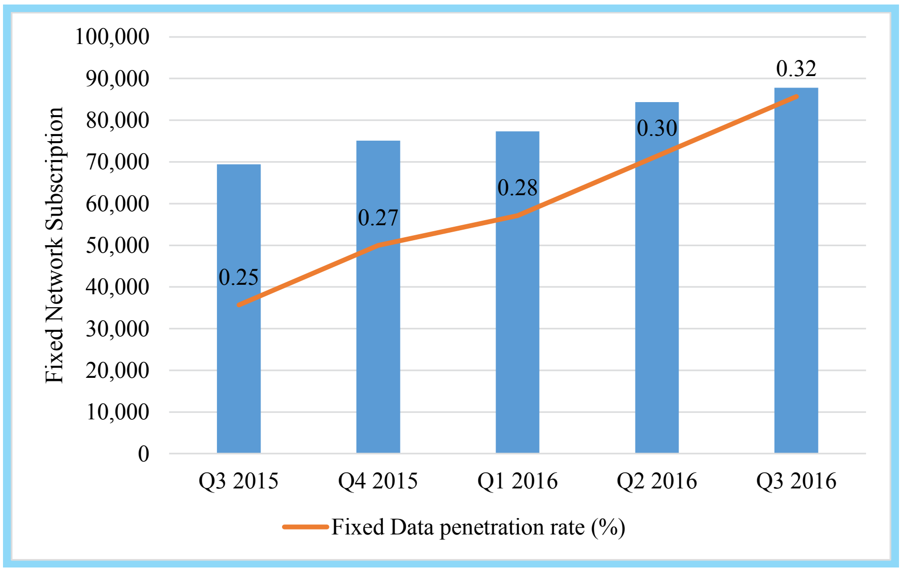
Data subscription	**Q3 2015**	**Q4 2015**	**Q1 2016**	**Q2 2016**	**Q3 2016**
Fixed data subscription	69,425	75,092	77,312	84,343	87,789
Fixed data subscription growth rate (%)	*2.08*	*8.16*	*2.96*	*9.09*	*4.09*
Net Additions	1,414	5,667	2,220	7,031	3,446
Net Additions growth rate (%)	*-0.52*	*3.01*	*-0.61*	*2.17*	*-0.51*
Population	27,265,312	27,429,231	27,594,136	27,760,032	27,815,552
Fixed Data penetration rate (%)	*0.25*	*0.27*	*0.28*	*0.30*	*0.32*

Source: NCA; Fixed Network Operators, 2016

Vodafone on-net traffic for this period is estimated due to non-submission of data.

Fixed Network minutes of use per subscription is calculated by dividing the total volume of Fixed voice traffic for the last month ending the quarter with the total Fixed voice subscription for that month.

Figure 18: Fixed Data Subscription and Penetration



Source: NCA; Fixed Network Operators, 2016

Vodafone is the market leader for the fixed data subscription with 86,283 subscription representing 98.3% (Table 19). Airtel subscription during the second quarter was 1,506 (1.7%). Vodafone quarter-on-quarter subscription increased by 4.3% while Airtel subscription declined by 5.8% quarter-on-quarter. Year-on-year subscription for Vodafone grew by 27.4% and airtel subscription declined by 11.2% over the same period.

Table 19: Fixed Networks Data Subscriptions per Operator

Fixed network operator	Data subscription	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
Vodafone	Data subscription	67,729	73,464	75,738	82,745	86,283
	Market share (%)	*97.6*	*97.8*	*98.0*	*98.1*	*98.3*
Airtel	Data subscription	1,696	1,628	1,574	1,598	1,506
	Market share (%)	*2.4*	*2.2*	*2.0*	*1.9*	*1.7*
Total fixed data subscription		**69,425**	**75,092**	**77,312**	**84,343**	**87,789**

Source: NCA; Fixed Network Operators, 2016

4.0 BROADCASTING

4.1 Authorised Frequency Modulation (FM) Radio Stations

The National Communications Authority (NCA) authorised 19 Frequency Modulation (FM) radio stations in the third quarter of 2016, bringing the total number of authorised FM stations 452, out of which 354 are operational (Table 20).

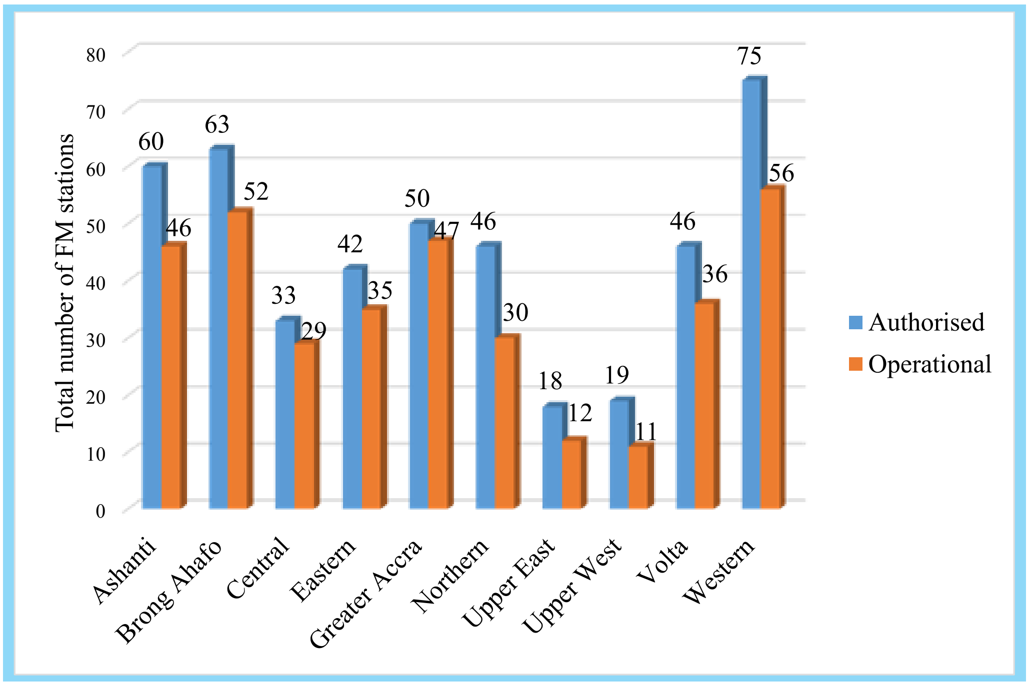
The regional distribution indicates that, Volta and Upper West region received no authorisation in the third quarter of 2016. The rest of the regions received at least one authorisation, with Western region receiving the highest number (5) of authorisations, followed by Eastern (4) and Ashanti (3) regions (Table 20). All the 19 newly authorised FM stations are for commercial operations (Table 20).

Table 20: Regional Distribution of FM Stations as at the end of Q3 2016

Region	Authorised FM Station			No. of FM stations in operation (Q3 2016)
	End of Q2 2016	Q3 2016	End of Q3 2016	
Ashanti	57	3	60	46
Brong Ahafo	58	5	63	52
Central	32	1	33	29
Eastern	38	4	42	35
Greater Accra	49	1	50	47
Northern	44	2	46	30
Upper East	18	0	18	12
Upper West	17	2	19	11
Volta	46	0	46	36
Western	74	1	75	56
TOTAL	**433**	**19**	**452**	**354**

Source: NCA, 2016.

Figure 19: Regional distribution of Authorised and Operational FM stations as at end of Q3 2016



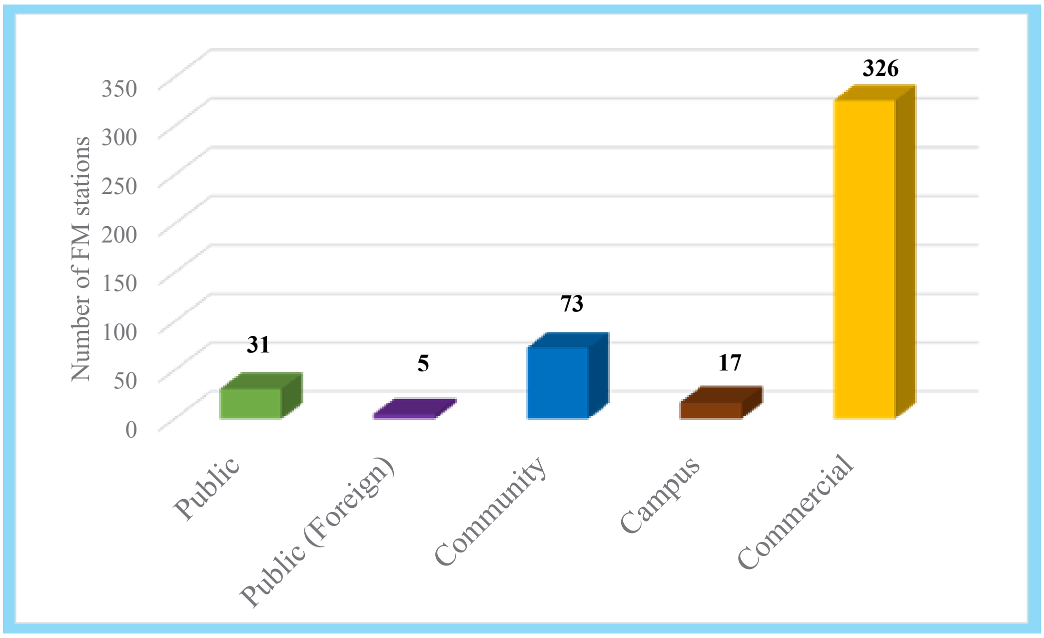
Source: NCA, 2016

Table 21: Authorised FM Stations by type and Region as at the end of Q3 2016

Name of Regions	Total no. Authorised	Public	Public (Foreign)	Community	Campus	Commercial
Ashanti	60	2	1	4	2	51
Brong Ahafo	63	3	-	7	2	51
Central	33	2	-	8	3	20
Eastern	42	2	-	6	1	33
Greater Accra	50	2	3	6	3	36
Northern	46	7	-	13	1	25
Upper East	18	2	-	6	1	9
Upper West	19	2	-	8	1	8
Volta	46	4	-	10	1	31
Western	75	5	1	5	2	62
Total	**452**	**31**	**5**	**73**	**17**	**326**

Source: NCA, 2016

Figure 20: Types of Authorised Radio Stations as at Q3 2016



Source: NCA, 2016

4.2 Authorised Television Stations

During the third quarter of 2016, NCA issued authorisation to eight (8) new television stations, bringing the total number of authorised TV stations in Ghana to 83, out of which 35 TV stations are operational. These newly authorised TV stations comprised of six (6) Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel) and two (2) Digital Terrestrial Free-To-Air Television programme Network (Table 22).

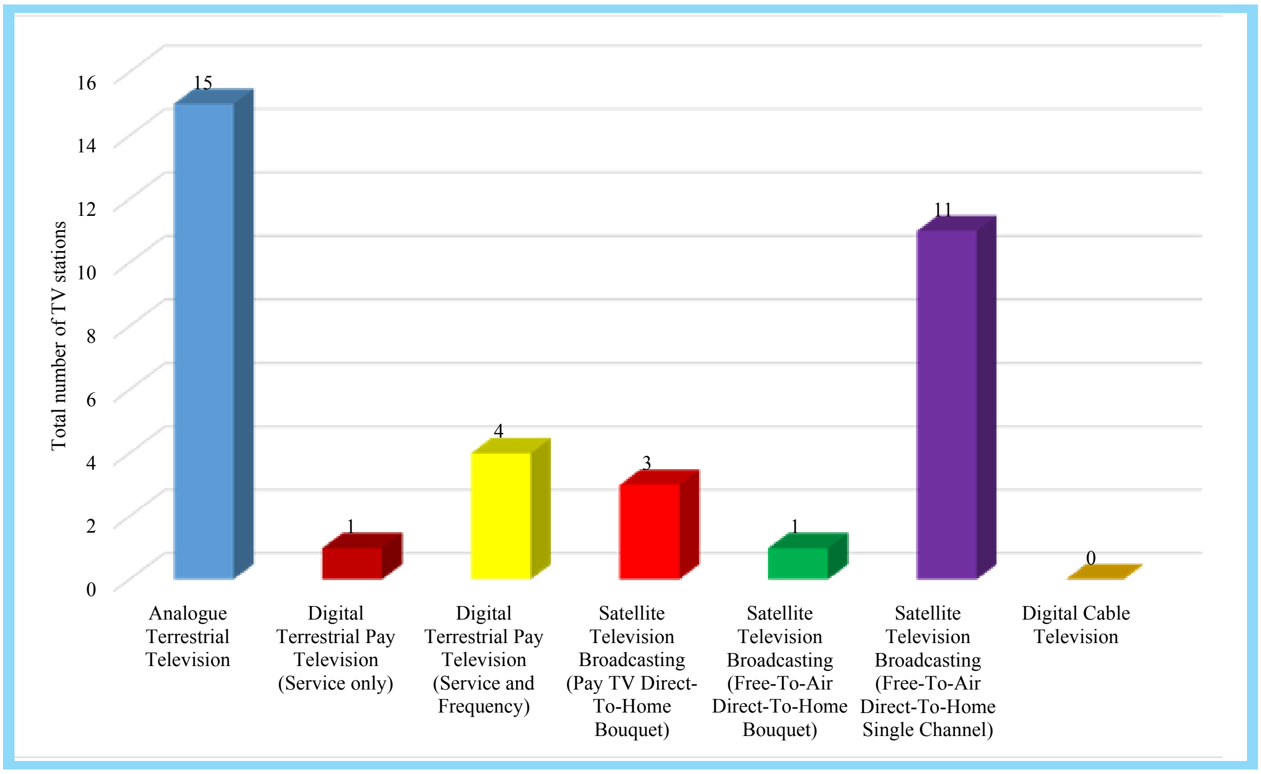
Table 22: Authorised TV Stations in Ghana as at end of Q3 2016

Types of TV stations	Authorised TV stations			No. of TV stations in operation (Q3 2016)
	End of Q2 2016	Q3 2016	End of Q3 2016	
Analogue Terrestrial Television	21	0	21	15
Digital Terrestrial Pay Television (Service only)	1	0	1	1
Digital Terrestrial Pay Television (Service and Frequency)	5	0	5	4
Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	7	0	7	3
Satellite Television Broadcasting (Free-To-Air Direct-To-Home Bouquet)	6	0	6	1
Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel)	29	6	35	11

Types of TV stations	Authorised TV stations			No. of TV stations in operation (Q3 2016)
	End of Q2 2016	Q3 2016	End of Q3 2016	
Digital Terrestrial Free-To-Air Television programme Network	5	2	7	0
Total	**75**	**8**	**83**	**35**

Source: NCA, 2016

Figure 21: Total Number of TV Stations on Air as at end of Q3 2016



Source: NCA, 2016

5.0 TYPE APPROVAL

5.1 Total Number of Type Approval Certificates Issued

The National Communications Authority is empowered under Section 3(n) of NCA Act 769 of 2008 to certify and ensure the testing of communications equipment for compliance with International standards, and environmental health and safety standards including electromagnetic radiation and emissions. Regulations 78 and 79 of the Electronic Communications Regulations L.I.1991 enjoin the Authority to ensure that communications equipment used for radio transmission for commercial purposes are duly type approved. As such, all communications devices such as mobile phones, laptops, i-pads, tablets, computers and related devices need to be type approved before usage in Ghana.

During the third quarter of 2016, the NCA issued 99 type approval certificates, compared to 57 issued in the second quarter of 2016 (Table 23).

Table 23: Total Number of Type Approval Certificates Issued

Type approval	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
Total number of type approval issued	47	31	71	57	99

6.0 CONCLUSION

The communications industry in Ghana expanded in terms of subscription, volume of traffic and authorisation of broadcasting entities during the third quarter of 2016. Total mobile subscription increased to 37,239,720 with a penetration rate of 133.3%. Nineteen (19) additional FM radio stations and eight (8) television stations were authorised during the third quarter, bringing the total number of authorised FM radio and television stations in Ghana to 452 and 83 respectively.

7.0 APPENDICES

Table 1: Monthly Mobile Subscription

Mobile Operators	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
MTN	15,046,417	15,211,803	15,493,052	15,711,124	15,950,876	16,254,984	16,511,670	16,787,446	17,004,445	17,192,543	17,428,380	17,579,045	17,774,481	17,890,958	18,050,144
Vodafone	7,337,205	7,353,155	7,397,022	7,468,843	7,526,704	7,612,059	7,740,240	7,859,486	7,900,534	7,976,348	8,054,346	8,093,710	8,160,351	8,223,957	8,158,527
Tigo	4,509,354	4,452,988	4,479,898	4,639,152	4,786,094	4,850,034	5,004,386	5,026,237	5,062,304	5,213,398	5,203,063	5,261,454	5,211,811	5,225,021	5,402,668
Airtel	4,176,115	4,279,835	4,383,674	4,528,416	4,684,429	4,796,645	4,821,760	4,910,607	5,012,239	4,942,181	4,798,480	4,678,736	4,636,374	4,642,569	4,697,653
Glo	1,413,824	1,396,958	1,383,812	1,389,545	1,324,833	1,369,402	1,252,275	1,103,301	1,048,635	962,338	944,260	897,082	854,912	822,539	828,162
Expresso	132,234	131,666	132,982	126,546	127,217	125,263	121,113	115,058	110,549	108,292	106,082	103,960	101,881	106,975	102,566
Total	**32,615,149**	**32,826,405**	**33,270,440**	**33,863,626**	**34,400,153**	**35,008,387**	**35,451,444**	**35,802,135**	**36,138,706**	**36,395,100**	**36,534,611**	**36,613,987**	36,739,810	36,912,019	37,239,720

Table 2: Monthly Prepaid Mobile Subscription

Mobile Operators	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
MTN	14,941,672	15,100,381	15,382,628	15,597,630	15,831,028	16,106,958	16,361,960	16,634,702	16,847,615	17,027,426	17,262,177	17,411,418	17,598,073	17,711,566	17,865,305
Vodafone	7,318,209	7,329,434	7,373,302	7,445,122	7,506,781	7,593,854	7,722,035	7,841,281	7,884,489	7,838,186	7,915,864	7,950,796	8,015,711	8,078,374	8,003,589
Tigo	4,482,765	4,426,375	4,453,250	4,612,566	4,759,723	4,823,684	4,978,467	5,000,412	5,037,529	5,187,849	5,176,854	5,235,048	5,185,381	5,198,446	5,376,059
Airtel	4,164,549	4,268,250	4,372,056	4,516,733	4,672,713	4,784,895	4,809,980	4,898,751	5,000,334	4,930,206	4,786,471	4,666,702	4,624,331	4,629,707	4,684,772
Glo	1,412,384	1,395,572	1,382,535	1,388,315	1,323,623	1,368,215	1,251,079	1,102,163	1,047,455	961,172	943,123	896,019	853,948	821,639	827,307
Expresso	127,091	126,265	127,528	121,152	122,114	120,282	116,193	110,383	105,968	103,848	101,771	99,736	97,741	102,628	98,523
Total	**32,446,670**	**32,646,277**	**33,091,299**	**33,681,518**	**34,215,982**	**34,797,888**	**35,239,714**	**35,587,692**	**35,923,390**	**36,048,687**	**36,186,260**	**36,259,719**	36,375,185	36,542,360	36,855,555

Table 3: Monthly Post Paid Mobile Subscription

Mobile Operators	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
MTN	104,745	111,422	110,424	113,494	119,848	148,026	149,710	152,744	156,830	165,117	166,203	167,627	176,408	179,392	184,839
Vodafone	18,996	23,721	23,720	23,721	19,923	18,205	18,205	18,205	16,045	138,162	138,482	142,914	144,640	145,583	154,938
Tigo	26,589	26,613	26,648	26,586	26,371	26,350	25,919	25,825	24,775	25,549	26,209	26,406	26,430	26,575	26,609
Airtel	11,566	11,585	11,618	11,683	11,716	11,750	11,780	11,856	11,905	11,975	12,009	12,034	12,043	12,862	12,881
Glo	1,440	1,386	1,277	1,230	1,210	1,187	1,196	1,138	1,180	1,166	1,137	1,063	964	900	855
Expresso	5,143	5,400	5,454	5,394	5,103	4,981	4,921	4,675	4,581	4,444	4,310	4,224	4,140	4,347	4,042
Total	**168,479**	**180,127**	**179,141**	**182,108**	**184,171**	**210,499**	**211,731**	**214,443**	**215,316**	**346,413**	**348,350**	**354,268**	364,625	369,659	384,164

Table 4: Incoming SMS from other Networks

Mobile Operators	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
MTN	15,879,933	17,198,287	14,930,847	14,813,871	14,248,605	19,387,473	17,461,383	14,527,758	12,175,218	12,366,855	15,976,260	24,234,178	28,223,515	30,899,745	28,519,987
Voda fone	8,452,632	10,171,757	10,126,611	10,886,901	10,470,356	10,967,755	10,358,175	10,201,660	6,226,416	10,656,939	7,222,080	13,799,611	11,827,270	24,271,044	14,411,241
Tigo	6,856,461	8,307,265	-	8,143,299	7,285,752	9,028,206	8,692,426	7,709,368	7,541,729	7,916,931	7,449,493	8,651,355	11,631,390	9,352,158	8,205,596
Airtel	5,272,015	5,714,075	5,132,940	5,184,657	5,007,900	5,384,173	4,137,953	4,308,075	4,318,250	4,212,307	4,328,870	6,930,885	7,285,162	8,336,025	7,547,564
Glo	1,006,376	1,091,552	962,178	948,819	536,655	-	491,918	-	652,186	738,886	725,465	615,790	764,942	878,060	795,943
Expresso	23,187	1,091,552	-	29,942	-	-	-	-	-						
Total	37,490,604	43,574,488	31,152,576	40,007,489	37,549,268	44,767,607	41,141,855	36,746,861	30,913,799	35,891,918	35,702,168	54,231,819	59,732,279	73,737,032	59,480,331

Table 5: Outgoing SMS to other Networks

Mobile Operators	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
MTN	10,772,663	11,688,532	11,046,432	10,864,786	10,419,278	12,076,891	12,299,394	10,686,131	11,755,768	11,867,000	12,052,204	12,297,643	13,260,101	14,768,315	13,337,011
Voda fone	7,520,292	7,987,232	7,499,214	7,667,792	7,532,679	8,974,958	8,970,129	7,207,946	7,506,737	7,363,743	8,676,972	9,370,148	10,331,648	9,501,292	7,696,758
Tigo	7,240,174	8,307,265	6,957,508	6,319,643	5,913,393	7,170,698	7,314,304	6,126,281	12,962,902	6,701,949	6,873,332	6,883,239	7,373,151	8,228,736	7,544,403
Airtel	8,754,970	9,428,183	10,282,320	10,423,189	10,810,511	17,353,054	-	-	9,052,478	9,294,728	9,769,462	4,964,200	5,411,524	6,166,528	5,430,920
Glo	986,341	1,069,860	940,698	850,060	647,701	662,087	1,102,373	119,370	537,385	1,031,624	534,474	436,371	533,346	592,661	536,237
Expresso	26,119	145,617	-	4,346	4,231	-	-	-	-						
Total	35,300,559	38,626,689	36,726,172	36,129,816	35,327,793	46,237,688	29,686,200	24,139,728	41,815,270	36,259,044	37,906,444	33,951,601	36,909,770	39,257,532	34,545,329

Table 6: On-net SMS

Mobile Operators	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
MTN	32,939,284	36,179,536	34,227,299	34,211,952	31,574,817	36,243,804	24,598,788	32,986,520	36,206,112	37,018,658	36,792,435	38,277,997	39,098,337	45,044,809	43,243,142
Voda fone	26,923,226	30,026,082	28,284,930		24,835,974	28,756,719	30,497,916	28,049,336	29,983,773	29,585,775	25,271,071	29,582,194	32,617,714	37,121,468	26,434,537
Tigo	25,256,455	31,681,259	13,915,016	32,887,566	27,946,553	32,894,758	32,811,938	26,202,310	30,470,015		32,753,041	32,266,170	34,335,759	33,090,602	33,559,657
Airtel	3,721,515	4,430,492	3,952,639	3,289,150	3,024,045	3,534,250	3,596,973	-	5,430,276	5,560,721	5,204,833	5,312,812	6,093,711	6,751,037	6,219,581
Glo	338,627	376,781	318,284	268,668	-	185,994	156,702	119,370	142,671	151,429	138,745		129,214	145,038	124,466
Expresso	341	3,705	-	8,692	-	17		-	-						
Total	89,179,448	102,697,855	80,698,168	70,666,028	87,381,389	101,615,542	91,662,317	87,357,536	102,232,847	72,316,584	100,160,124	105,439,173	112,274,735	122,152,953	109,581,383

Table 7: Mobile Voice On-net Tariff per Operator (GHp)

Mobile Operators	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
MTN	11	11	11	11	11
Vodafone	11	11	11	11	11
Tigo	4	6	11	11	12
Airtel	11	11	11	11	11
Glo	14	14	14	14	14
Expresso	8	8	10	10	10
Industry average	**10**	**10**	**11**	**11**	11

Table 8: Mobile Voice Off-net Tariff per Operator (GHp)

Mobile Operators	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
MTN	13	13	13	13	13
Vodafone	13	13	13	13	13
Tigo	11	11	11	11	12
Airtel	12	12	12	12	12
Glo	14	14	14	14	14
Expresso	12	12	15	15	15
Industry average	**12**	**12**	**13**	**13**	**13**

Table 9: SMS On-net Tariff per Operator (GHp)

Mobile Operators	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
MTN	5	5	5	5	5
Vodafone	5	5	5	6	6
Tigo	5	8	8	8	8
Airtel	4	4	4	4	4
Glo	4	4	5	5	5
Expresso	4	4	4	4	4
Industry average	**4**	**5**	**5**	**5**	**6**

Table 10: SMS Off-net Tariff per Operator (GHp)

Mobile Operators	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
MTN	6	6	6	6	6
Vodafone	5	6	7	7	7
Tigo	6	8	8	8	8
Airtel	5	5	5	5	5
Glo	5	5	5	5	5
Expresso	4	4	4	4	4
Industry average	**5**	**5**	**6**	**6**	6

Table 11: Data Tariff per Megabyte per Operator (GHp)

Mobile Operators	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016
MTN	10	10	10	10	10
Vodafone	11	11	12	13	13
Tigo	11	14	14	14	14
Airtel	14	14	14	14	15
Glo	10	10	11	12	12
Expresso	5	5	5	5	5
Industry average	**10**	**11**	**11**	**11**	12

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Disclaimer:

The National Communications Authority has been diligent to ensure the data in this bulletin are accurate. However, the Authority is not liable for inconsistencies, errors, and gaps in any data or information contained in this bulletin, which is dependent upon the various licensees data submissions to the Authority.

NCA CONTACTS AND PRESENCE COUNTRYWIDE

The Authority currently has eight (8) regional offices to support its operations. Their addresses are listed below

- ### Accra, Head Office

National Communications Authority,
NCA Tower, No 6 Airport City
Close to the Marina Mall
P. O. Box CT 1568, Cantonments, Accra
Tel: +233 (0) 302 776621, 771701
Fax: +233 (0) 302 763449
E-mail: info@nca.org.gh
Complaints: +233 (0) 30 701 1419
complaints@nca.org.gh
Website: www.nca.org.gh

- ### Bolgatanga Office

National Communications Authority,
H/No ZB 70, Zorbisi Estates
Bolgatanga, Upper East Region
Tel: +233 (0) 3820 21141
E-mail: complaints.bolgatanga@nca.org.gh

- ### Ho Office

National Communications Authority,
H/No A6/29, Stadium Road
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- ### Koforidua Office

National Communications Authority,
Residency Road
Behind New Juabeng Municipal Library
Private Mail Bag, Koforidua, Eastern Region
Tel: +233 (0) 3420 28378, 28380, 28382
E-Mail: complaints.koforidua@nca.org.gh

- ### Kumasi Office

National Communications Authority,
Danyame, Kumasi
P. O. Box KS 10768, Kumasi,
Ashanti Region, Ghana
Tel: + 233 (0) 32 202 0014 / 32 202 0018 / 32 202 0019
Fax: (+233) 32 002 0064
E-Mail: complaints.kumasi@nca.org.gh

- ### Sunyani Office

National Communications Authority,
Plot No 83/D Peakwase
P. O. Box SY125, Sunyani, Brong Ahafo Region
Tel: +233 (0) 3520 27564
E-Mail: complaints.sunyani@nca.org.gh

- ### Takoradi Office

National Communications Authority,
Bakado, 1.2kms away from the Female Prisons
P. O. Box SL 409, Sekondi,
Western Region, Ghana
Tel: +233 (0) 31 202 8073 / 31 202 8049
Fax: +233 (0) 31 202 8063
E-Mail: complaints.takoradi@nca.org.gh

- ### Tamale Office

National Communications Authority,
Watherson Residential Area
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