QUARTERLY STATISTICAL BULLETIN ON COMMUNICATIONS IN GHANA

Volume 2 Issue 3

NATIONAL COMMUNICATIONS AUTHORITY

THIRD QUARTER

JULY – SEPTEMBER 2017

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

LIST OF ABBREVIATIONS

BWA	Broadband Wireless Access
FM	Frequency Modulation
GB	Gigabytes
GH¢	Ghana Cedi
GHp	Ghana pesewas
GSM	Global System for Mobile communication
ICT	Information Communication Technology
MB	Megabytes
MNO	Mobile Network Operator
MNP	Mobile Number Portability
MoU	Minutes of Usage
NCA	National Communications 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

Average SMS per subscription - This is calculated by dividing the total average volume of SMS for the quarter with the total average mobile subscription for that quarter.

BWA Data Usage per Subscription - This is calculated by dividing the total average volume of BWA's traffic for the quarter with the total BWA subscription for that quarter.

Cellular network or mobile network – refers to 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 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.

Long-Term Evolution (LTE) - is a standard for high-speed wireless communication for mobile phones and data terminals, based on the GSM/EDGE and UMTS/HSPA technologies

Minutes of Use per Subscription - It is calculated by dividing the total average volume of traffic for that quarter with the total average subscription for that quarter

Mobile Data Usage per Subscription -It is calculated by dividing the total average volume of data traffic for the quarter with the total average mobile data subscription for that quarter.

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

Mobile Penetration or Teledensity – This 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 – This is a comparison of the quarter under review with the preceding quarter.

Q1 – First Quarter (January – March)

Q2 – Second Quarter (April – June)

Q3 – Third Quarter (July – September)

Q4 – Fourth Quarter (October – December)

Year-on-year – This is a comparison of a 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	128	53
FM Stations	471	367
Tower Infrastructure Companies	3	3
International Submarine Cables	5	5
Domestic Fibre Operators	10	10

B1. Total Subscriptions/Connected lines

SUBSCRIPTION	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
	Q3 2017	Q2 2017	*Growth (%)*	Q3 2017	Q3 2016	*Growth (%)*	
Mobile Voice Subscription	37.44	36.43	*2.77%*	37.44	37.23	*0.56%*	Million
Fixed Voice Subscription	286	271	*5.54%*	286	254	*12.60%*	Thousand
Mobile Data Subscription	22.86	21.85	*4.62%*	22.86	19.33	*18.26%*	Million
Fixed Data Subscription	91	88	*3.41%*	91	87	*4.60%*	Thousand
Broadband Wireless Access	94	103	*-9.09%*	94	102	*-7.84%*	Thousand

B2. Traffic and SMS Count

TRAFFIC	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
	Q3 2017	Q2 2017	*Growth (%)*	Q3 2017	Q3 2016	*Growth (%)*	
Mobile Voice Traffic (Minutes)	16.17	14.42	*12.14%*	16.17	12.78	*26.53%*	Billion
Fixed Voice Traffic (Minutes)	14.5	14.08	*2.84%*	14.5	48.8	*-22.87%*	Million
Incoming International Traffic (Minutes)	116.5	128.2	*-9.13%*	116.5	144.2	*-19.21%*	Million
Outgoing International Traffic (Minutes)	141.8	147.9	*-4.12%*	141.8	178.2	*-20.43%*	Million
Mobile Data Traffic (MB)	39.74	33.9	*16.95%*	39.74	20.51	*93.76%*	Billion MB
BWA Data Traffic (GB)	3.92	3.68	*6.52%*	3.92	2.97	*31.99%*	Million GB
SMS Count	456	470	*-2.98%*	456	455	*0.22%*	Million

B3. Penetration Rate

PENETRATION RATE (%)	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
	Q3 2017	Q2 2017	*Growth (%)*	Q3 2017	Q3 2016	*Growth (%)*	
Mobile Voice Subscription	130.9	128.1	*0.02%*	130.9	133.3	*-0.02%*	%!
Fixed Voice Subscription	1.00	0.95	*0.05%*	1.00	0.91	*0.10%*	%!
Mobile Data Subscription	79.94	76.86	*0.04%*	79.94	69.22	*0.15%*	%!
Fixed Data Subscription	0.32	0.31	*0.03%*	0.32	0.32	*0.00%*	%!
Broadband Wireless Access	0.33	0.36	*-0.08%*	0.33	0.37	*-0.11%*	%!

C1. Broadcasting Growth Rate

FM/TV AUTHORISATION & OPERATIONS	QUARTER-ON-QUARTER			YEAR-ON-YEAR		
	Q3 2017	Q2 2017	*Growth (%)*	Q3 2017	Q3 2016	*Growth (%)*
FM Authorisation	471	505	*-6.73%*	471	452	*4.20%*
FM Station Operating	367	392	*-6.38%*	367	354	*3.67%*
TV Authorisations	128	117	*9.40%*	128	83	*54.22%*
TV Stations Operating	53	51	*3.92%*	53	35	*51.43%*

C2. Categories of FM Radio Stations Growth Rate

CATEGORIES OF FM RADIO STATIONS	QUARTER-ON-QUARTER			YEAR-ON-YEAR		
	Q3 2017	Q2 2017	*Growth (%)*	Q3 2017	Q3 2016	*Growth (%)*
PUBLIC	31	31	*0.00%*	31	31	*0.0%*
PUBLIC FOREIGN	5	5	*0.00%*	5	5	*0.0%*
CAMPUS	74	81	*-8.64%*	74	73	*1.37%*
COMMUNITY	21	22	*-4.55%*	21	17	*23.53%*
COMMERCIAL	342	366	*-6.56%*	342	326	*4.91%*

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. It also includes data on internet service providers, broadcasting entities, Mobile Number Portability and Equipment Type Approval that was gathered in-house.

The publication of this bulletin is consistent with the National Communications Authority's mandate under section 26 (2) (a) of the Electronic Communications Act 2008, 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".

1.0 CELLULAR MOBILE NETWORK

1.1 Mobile Voice Subscription and Penetration

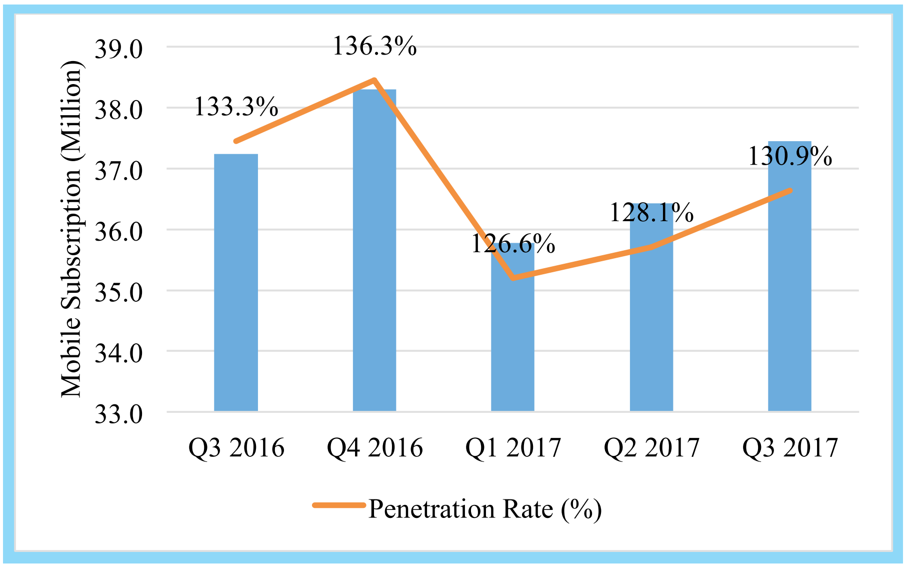
Mobile voice subscriptions at the end of the third quarter of 2017 increased (2.78 %) from 36.4 million in the second quarter of 2017 to 37.4 million (Table 1). Year-on-year subscription increased by 0.55% from 37.2 million in the third quarter of 2016 to 37.4 million at the end of the third quarter of 2017. Penetration rate at the end of the third quarter increased from 128.1% in the previous quarter to 130.9% (Figure 1). Net additions in mobile subscriptions increased by 1,014,201 during the quarter under review.

Table 1: Mobile Voice Subscription and Penetration Rate

Subscription	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Mobile Subscription	37,239,720	38,305,078	35,780,667	36,430,847	37,445,048
Mobile Subscription Growth rate (%)	*1.71*	*2.86*	*-6.59*	*1.82*	*2.78*
Net additions	625,733	1,065,359	-2,524,411	650,180	1,014,201
Net additions Growth Rate (%)	*31.66*	*70.26*	*-336.95*	*-125.76*	*55.99*
Population	27,926,926	28,094,823	28,263,729	28,433,651	28,604,594
Penetration rate (%)	*133.3*	*136.3*	*126.6*	*128.1*	*130.9*

Source: NCA; Mobile Network Operators, 2017

Figure 1: Mobile Voice Subscription and Penetration Rate



Source: NCA; Mobile Network Operators, 2017

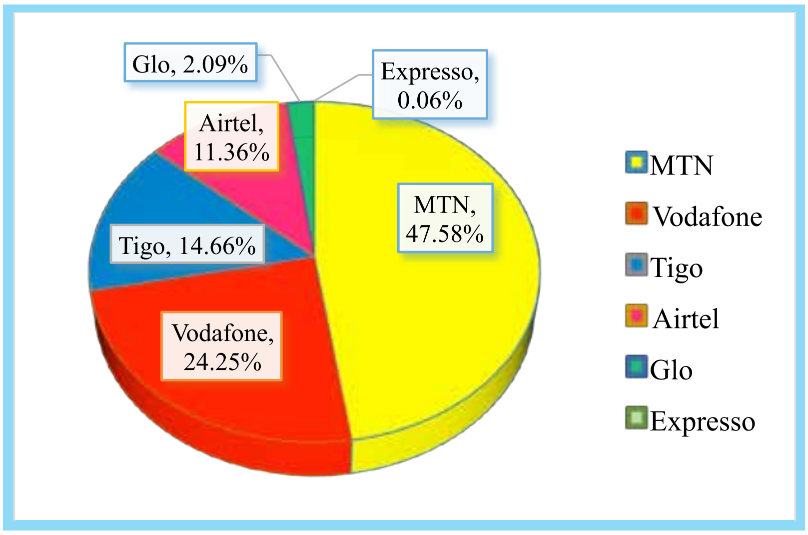
*1.1.1 Mobile Voice Subscription per Operator**

Mobile voice subscriptions for MTN increased (2.96%) from 17.3 million in the second quarter of 2017 to 17.8 million at the end of the third of quarter of 2017 representing

* Expresso did not submit data for Q2 and Q3 2017, however April's data (last month of submission of data) was used for this Bulletin.
* Minutes of use per subscription is calculated by dividing the total average volume of traffic for the quarter with the

47.58% of the total market share (Figure 2). Vodafone's subscription increased (3.49%) from 8.8 million in the previous quarter to 9.1 million with a market share of 24.25%. Tigo's subscription also increased (2.42 %) from 5.4 million in the first quarter of 2017 to 5.5 million in the second quarter of 2017 with a share of 14.66%. Airtel's subscription increased (5.87%) to 4.3 million at the end of the third quarter of 2017 up from 4.2 million in the second quarter of 2017 with a market share of 11.36%. Glo also increased (4.83%) its subscription to 781,022 at the end of the third quarter of 2017, up from 732,483 in the previous quarter (Table 2) with a market share of 2.09%. Expresso had a subscription of 22,293 with a market share of 0.06% at the end of the quarter.

Figure 2: Mobile Voice Subscription Market Share (%) per Operator



Source: NCA; Mobile Network Operators, 2017

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

Mobile Network Operator		Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
MTN	Subscription	18,050,144	19,296,157	16,789,161	17,304,425	17,817,273
	Market Share (%)	*48.47*	*50.37*	*46.92*	*47.50*	*47.58*
Vodafone	Subscription	8,158,527	8,289,913	8,582,387	8,773,444	9,079,502
	Market Share (%)	*21.91*	*21.64*	*23.99*	*24.08*	*24.25*
Tigo	Subscription	5,402,668	5,339,052	5,098,480	5,360,443	5,489,994
	Market Share (%)	*14.51*	*13.94*	*14.25*	*14.71*	*14.66*
Airtel	Subscription	4,697,653	4,591,051	4,500,907	4,236,788	4,253,993
	Market Share (%)	*12.61*	*11.99*	*12.58*	*11.63*	*11.36*
Glo	Subscription	828,162	695,306	769,621	732,483	781,022
	Market Share (%)	*2.22*	*1.82*	*2.15*	*2.01*	*2.09*
Expresso	Subscription	102,566	93,599	40,111	22,293	22,293
	Market Share (%)	*0.28*	*0.24*	*0.11*	*0.06*	*0.06*
Total		37,239,720	38,305,078	35,780,667	36,430,847	37,445,048

Source: NCA; Mobile Network Operators, 2017

1.1.2 Prepaid and Post-paid Mobile Voice Subscription

Pre-paid subscriptions increased by 2.89% with a market share of 98.88% at the end of third quarter of 2017 (Table 3). Post-paid subscription decreased by 5.97% at the end of the quarter under review with a decrease in its market share from 1.22% to 1.12% (Table 3).

Table 3: Prepaid and Post-paid Voice Subscription

Subscription		Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Prepaid	Subscription	36,855,555	37,918,623	35,392,261	35,985,016	37,025817
	Share (%)	*99.0*	*99.0*	*98.91*	*98.78*	*98.88*
Post-paid	Subscription	384,164	386,455	388,407	445,831	419,231
	Share (%)	*1.03*	*1.01*	*1.09*	*1.22*	*1.12*
Total mobile subscription		**37,239,720**	**38,305,078**	**35,780,667**	**36,430,847**	**37,445,048**

Source: NCA; Mobile Network Operators, 2017

1.2 Mobile Voice Traffic (Domestic)

At the end of the third quarter of 2017, mobile voice traffic increased by 12.17% from 14.42 billion minutes in the second quarter of 2017 to 16.17 billion minutes. Year-on-year mobile voice traffic also increased (26.58%) to 16.17 billion minutes at the end of the third quarter of 2017, up from 12.78 billion minutes in the third quarter of 2016 (Figure 3).

On-net traffic increased by 14.64% quarter-on-quarter from 11.92 billion minutes in the previous quarter to 13.66 billion minutes at the end of the third quarter of 2017. Year-year on-net traffic also increased by 34.94% from 10.12 billion minutes in the previous year to 13.66 billion minutes at the end of the third quarter of 2017 (Table 4).

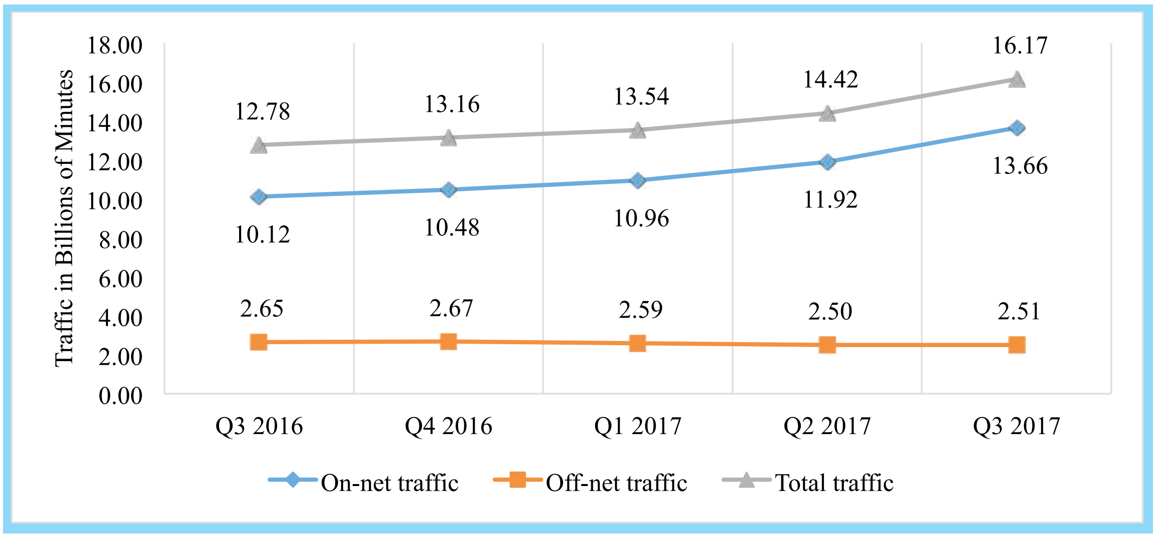
Off-net traffic grew by 0.36% from 2.50 billion minutes in the second quarter of 2017 to 2.51 billion minutes at the end of the third quarter of 2017. However, year-on-year off-net traffic dropped by 5.35% from 2.65 billion minutes in the third quarter of 2016 to 2.51 billion minutes at the end of the third quarter of 2017 (Table 4).

Table 4: Mobile Voice Traffic (Domestic)

Traffic	**Q3 2016**	**Q4 2016**	**Q1 2017**	**Q2 2017**	**Q3 2017**
Off-net traffic					
Traffic	2,652,712,749	2,671,763,781	2,587,441,912	2,501,583,680	2,510,663,574
Share (%)	*20.76*	*20.31*	*19.10*	*17.35*	*15.53*
Growth (%)	*2.49*	*0.72*	*-3.16*	*-3.32*	*0.36*
On-net traffic					
Traffic	10,122,604,500	10,483,435,828	10,956,196,789	11,915,199,608	13,659,942,184
Share (%)	*79.24*	*79.69*	*80.90*	*82.65*	*84.47*
Growth (%)	*4.24*	*3.56*	*4.51*	*8.75*	*14.64*
Total traffic	12,775,317,248	13,155,199,609	13,543,638,701	14,416,783,288	16,170,605,758

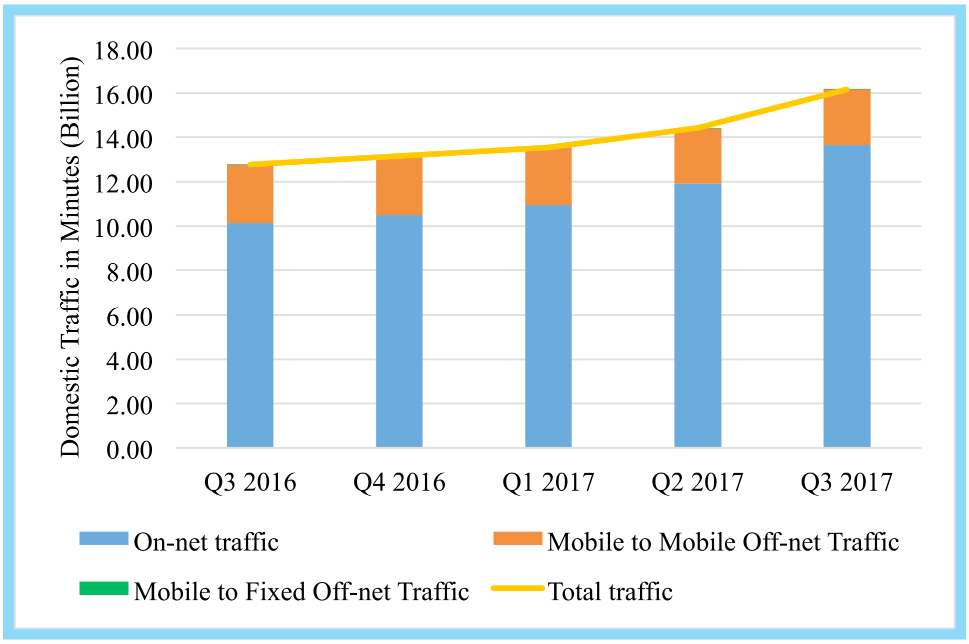
Source: NCA; Mobile Network Operators, 2017

Figure 3: Mobile Voice Traffic (Domestic) in Billions of Minutes



Source: NCA; Mobile Network Operators, 2017

Figure 4: Breakdown of Domestic Voice Traffic in Minutes



Source: NCA; Mobile Network Operators

1.2.1 Distribution of mobile off-net traffic between mobile and fixed networks

Mobile to mobile off-net traffic increased (0.35 %) from 2.49 billion minutes in the second quarter of 2017 to 2.50 billion minutes in the third quarter of 2017 with a share of 99.71%. Year-on-year mobile to mobile off-net traffic however decreased by 5.43% from 2.65 billion minutes in the second quarter of 2016 to 2.50 billion minutes at the end of the third quarter of 2017 (Table 5).

Mobile to fixed off-net traffic increased by 6.72% quarter-on-quarter from 6.96 million minutes to 7.43 million minutes with a share of 0.29%. Year-on-year mobile to fixed off-net traffic also increased by 26.28% from 5.88 million minutes in the third quarter of 2016 to 7.43 million minutes in the third quarter of 2017 (Table 5).

Table 5: Mobile Off-net Traffic Distribution between Mobile and Fixed Networks

Breakdown of Off-net Traffic	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Mobile to Mobile Networks					
Traffic	**2,646,830,836**	**2,665,813,679**	**2,581,025,238**	**2,494,712,788**	**2,503,235,845**
Share (%)	*99.78*	*99.78*	*99.75*	*99.72*	*99.70*
Growth (%)	*2.67*	*0.72*	*-3.18*	*-3.35*	*0.35*
Mobile to Fixed Networks					
Traffic	**5,881,912**	**5,950,102**	**6,416,673**	**6,959,874**	**7,427,729**
Share (%)	*0.22*	*0.22*	*0.25*	*0.28*	*0.30*
Growth (%)	*-43.10*	*1.16*	*7.84*	*8.47*	*6.72*
Total Off-net Traffic	**2,652,712,748**	**2,671,763,781**	**2,587,441,912**	**2,501,583,680**	**2,510,663,574**

Source: NCA; Mobile Network Operators, 2017

*1.2.2 Minutes of Use (MoU)**

Average minutes of use per subscription increased (8.88 %) from 132.6 minutes in the second quarter of 2017 to 144.4 minutes in the third quarter of 2017 (Figure 5). Year-on-year minutes of use also increased (25.32 %) from 115.2 minutes in the third quarter of 2016 to 144.4 minutes in the third quarter of 2017 (Table 6). Minutes of use increased by 11.77 minutes and 29.17 minutes' quarter-on-quarter and year-on-year respectively.

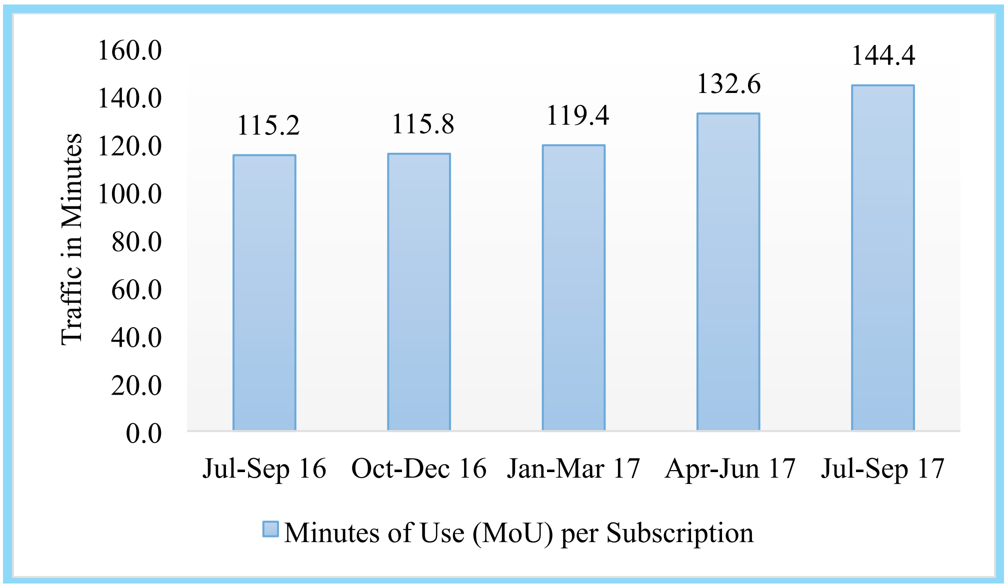
Table 6: Mobile Voice Traffic Minutes of Use (MoU) per Subscription

Traffic	Jul-Sep 16	Oct-Dec 16	Jan-Mar 17	Apr-Jun 17	Jul-Sep 17
Total mobile traffic	4,258,439,083	4,385,066,536	4,514,546,234	4,805,594,429	5,390,201,919
Mobile subscription	36,963,850	37,869,062	37,946,583	36,231,141	37,330,452
Minutes of Use (MoU) per Subscription	115.2	115.8	119.4	132.6	**144.4**
MoU growth rate (%)	2.62	0.50	3.08	11.11	**8.88**

Source: NCA; Mobile Network Operators, 2017

* Minutes of use per subscription is calculated by dividing the total average volume of traffic for the quarter with the total average subscription for that quarter.

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



Source: NCA; Mobile Network Operators, 2017

1.3 International Traffic

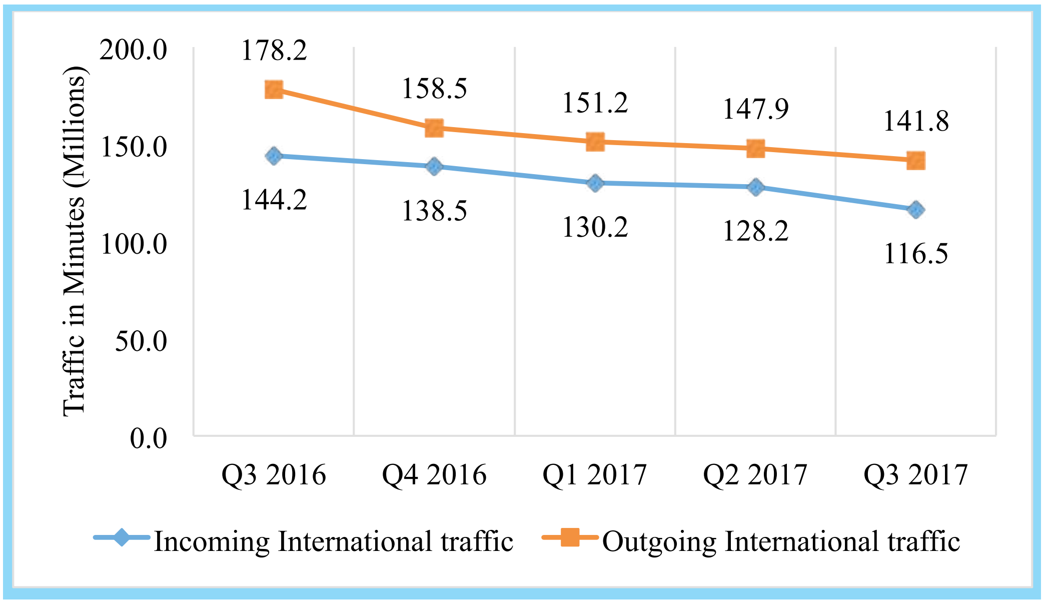
International incoming and outgoing voice traffic have shown a decreasing trend for the last five quarters. International incoming traffic decreased by 9.09% quarter-on-quarter from 128.2 million minutes to 116.5 million minutes (Table 7). Year-on-year incoming international traffic also decreased by 19.19%. International outgoing traffic reduced by 4.16% from 147.9 million minutes in the second quarter of 2017 to 141.8 million minutes at the end of the third quarter of 2017. Year-on-year outgoing international traffic also reduced by 20.43% from 178.2 million minutes to 141.8 million minutes.

Table 7: International Traffic

Traffic	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Incoming international traffic					
Traffic	144,175,704	138,515,521	130,152,496	128,159,377	116,513,274
Growth (%)	*-5.66*	*-3.93*	*-6.04*	*-1.53*	*-9.09*
Outgoing international traffic					
Traffic	178,203,087	158,524,688	151,173,654	147,940,726	141,787,356
Growth (%)	*-0.38*	*-11.04*	*-4.64*	*-2.14*	*-4.16*

Source: NCA; Mobile Network Operators, 2017

Figure 6: International Traffic



Source: NCA; Mobile Network Operators, 2017

1.4 Short Messages Service (SMS) per Operator

Total volume of SMS counts decreased (3.01 %) from 470 million in the second quarter of 2017 to 456 million at the end of the third quarter of 2017. Year-on-year SMS counts increased (0.24%) from 455 million in the third quarter of 2016 to 456 million at the end of the third quarter of 2017 (Figure 7).

MTN generated 211 million messages on their network at the end of the third quarter of 2017 with a market share of 46.48%. Vodafone recorded 79 million messages during the quarter under review with a market share of 17.39%. Tigo recorded an increase in the number of messages during the third quarter of 2017 from 113 million to 138 million with a share of 30.48%. Airtel had a decrease in the total volume of SMS from 24 million in the previous quarter to 23 million messages at the end of the third quarter 2017 and a share of 5.17%. Glo registered the smallest share (0.48%) with a total SMS of 2.1 million (Table 8).

Table 8: Total Number of SMS per Mobile Network Operator

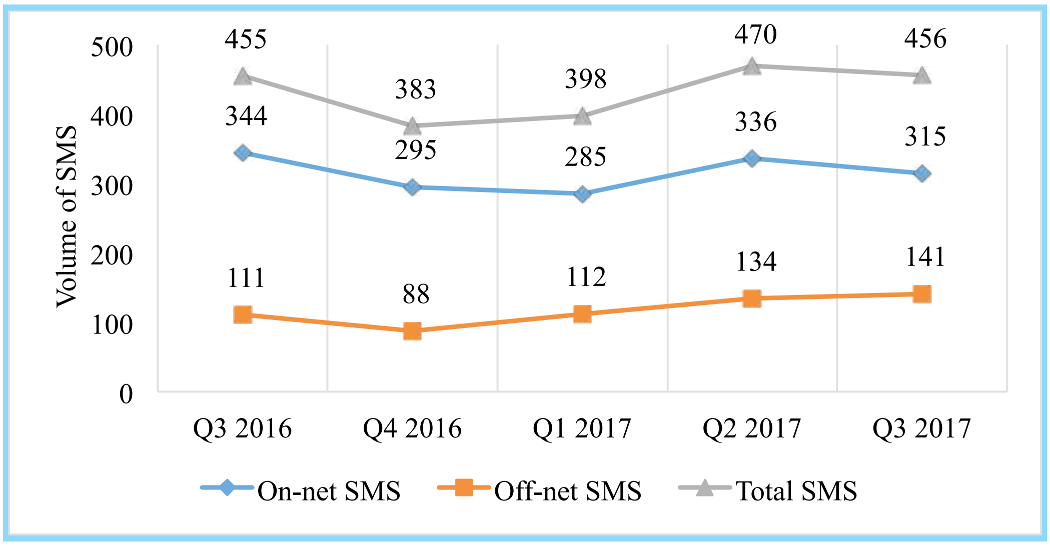
Mobile Operators	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
	Off-net SMS				
MTN	41,365,427	38,464,815	35,866,792	38,645,746	40,244,539
Vodafone	27,529,698	9,789,941	43,829,131	60,327,675	65,115,370
Tigo	23,146,290	19,079,594	17,733,576	20,525,144	20,873,632
Airtel	17,008,972	18,703,069	13,355,902	13,258,201	12,930,947
Glo	1,662,244	1,511,808	1,483,370	1,371,352	2,009,493
Total	**110,712,631**	**87,549,227**	**112,268,771**	**134,128,118**	**141,173,981**

Vodafone did not submit data on On-net SMS for August and September

	On-net SMS				
MTN	127,386,287	132,876,086	145,180,286	164,162,415	171,597,670
Vodafone	96,173,719	74,721,854	63,165,825	67,618,312	14,143,291
Tigo	100,986,018	72,610,909	64,938,743	92,894,117	118,063,807
Airtel	19,064,329	14,551,296	11,749,566	10,939,898	10,642,389
Glo	398,718	298,753	252,027	222,678	177,750
Total	**344,009,071**	**295,058,898**	**285,286,447**	**335,837,420**	**314,624,907**
	Total SMS				
MTN	168,751,714	171,340,901	181,047,078	202,808,161	211,842,209
Vodafone	123,703,417	84,511,795	106,994,956	127,945,987	79,258,661
Tigo	124,132,308	91,690,503	82,672,319	113,419,261	138,937,439
Airtel	36,073,301	33,254,365	25,105,468	24,198,099	23,573,336
Glo	2,060,962	1,810,561	1,735,397	1,594,030	2,187,243
Total	**454,721,702**	**382,608,125**	**397,555,218**	**469,965,538**	**455,798,888**

Source: NCA; Mobile Network Operators, 2017

Figure 7: Total Number of SMS



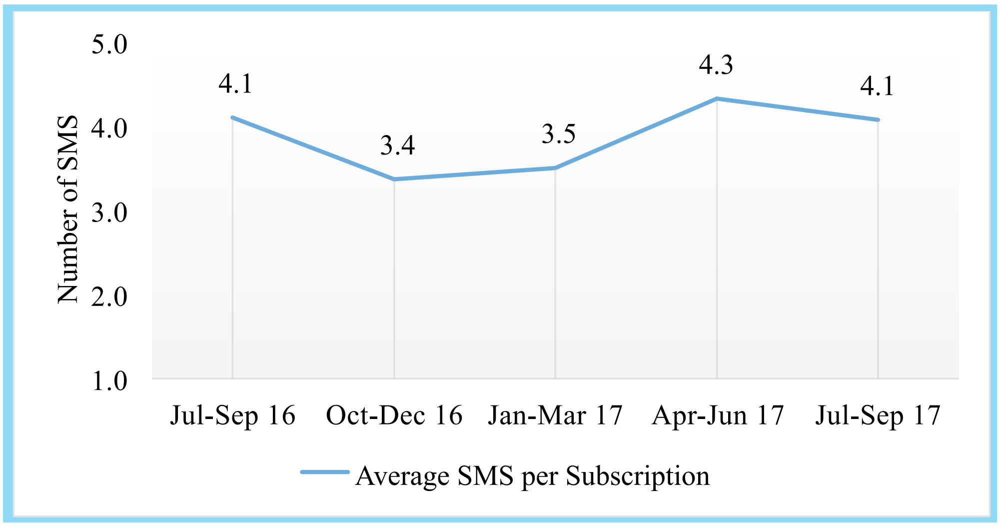
Source: NCA; Mobile Network Operators, 2017

*1.4.1 Average SMS per Subscription**

Average SMS sent per subscription during the quarter under review decreased by 5.83% from 4.3 SMS per subscription to 4.1 SMS per subscription quarter-on-quarter. There was no change for year-on-year SMS per subscription (Figure 8).

* This is calculated by dividing the total average volume of SMS for the quarter with the total average mobile subscription for that quarter

Figure 8: Average SMS per Subscription



Source: NCA; Mobile Network Operators, 2017

1.5 Mobile Telecommunications Service Tariffs

Average default tariffs remained unchanged for mobile telecommunications services at the end of the third quarter of 2017.

Table 9: Average Tariff per Service (GHp)

Tariff	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Average on-net mobile tariff	11	12	12	11	11
Average off-net mobile tariff	13	13	13	12	12
Average on-net SMS tariff	6	6	5	5	5
Average off-net SMS tariff	6	6	6	6	6
Average data/Mb tariff	12	13	12	11	11

Source: NCA; Mobile Network Operators, 2017

1.6 Mobile Data Subscription and Penetration Rate (%)

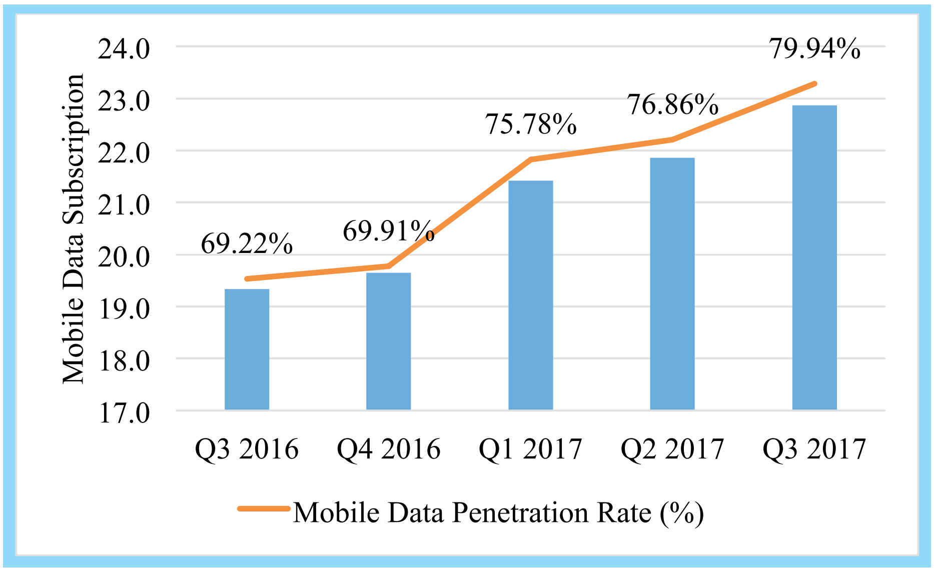
Mobile Data subscription has shown a consistent growth over the last five quarters. Data subscription increased (4.63) % from 21.8 million subscriptions to 22.8 million subscriptions during the quarter under review. Year-on-year subscription also increased by 18.28% from 19.3 million in third quarter of 2016 to 22.8 million in the third quarter of 2017 (Table 10). Mobile Data penetration stood at 79.94% at the end of the third quarter of 2017 (Figure 9).

Table 10: Mobile Data Subscription and Penetration

Subscription	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Mobile data subscription	19,331,239	19,642,152	21,419,477	21,854,764	22,865,821
Data Subscription Growth Rate (%)	*3.07*	*1.61*	*9.05*	*2.03*	*4.63*
Net Additions	575,311	310,913	1,777,326	435,287	1,011,057
Net Additions Growth Rate (%)	*1204.78*	*-45.96*	*471.65*	*-75.51*	*137.82*
Population	27,926,926	28,094,823	28,263,729	28,433,651	28,604,594
Mobile data penetration rate (%)	*69.22*	*69.91*	*75.78*	*76.86*	*79.94*

Source: NCA; Mobile Network Operators, 2017

Figure 9: Mobile Data Subscription and Penetration



Source: NCA; Mobile Network Operators, 2017

1.6.1 Mobile Data Prepaid and Post-paid Subscriptions

Mobile data prepaid subscription increased (4.59%) from 21.6 million to 22.6 million subscriptions quarter-on-quarter. Its market share however decreased from 99.02% to 98.99% (Table 11). Post-paid subscription increased (7.99%) from 214,492 to 231,624 with a corresponding increase of market share from 0.98% to 1.01% during the quarter under review (Table 11).

Table 11: Mobile Data Prepaid and Post-paid Subscriptions

Mobile Data Subscription		Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Prepaid	Subscription	19,167,447	19,463,829	21,234,616	21,630,121	22,624,046
	Share (%)	*99.15*	*99.09*	*99.14*	*99.02*	*98.99*
Post-paid	Subscription	163,792	178,323	184,861	214,492	231,624
	Share (%)	*0.85*	*0.91*	*0.86*	*0.98*	*1.01*
Total mobile data subscription		19,331,239	19,642,152	21,419,477	21,844,613	22,855,670

Source: NCA; Mobile Network Operators, 2017

*1.6.2 Mobile Data Subscription per Operator**

MTN leads the mobile data subscription market with 12.9 million subscriptions (56.53%) followed by Vodafone, with 3.9 million subscriptions (17.01%). Tigo the third largest operator in terms of mobile data subscription had 3.0 million subscriptions (13.25%) and Airtel had a total subscription of 2.7 million (11.89%). Glo ended the quarter with subscriptions of 245,729 (1.28 %) and Expresso had 10,151 representing a share of (0.04) (Table 12).

Table 12: Mobile Data Subscription per Operator

Mobile Network Operator		Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
MTN	Subscription	9,745,986	10,226,520	11,903,262	12,229,090	12,925,524
	Market Share (%)	*50.42*	*52.06*	*55.57*	*55.98*	*56.55*
Vodafone	Subscription	3,314,912	3,474,090	3,685,895	3,643,298	3,889,821
	Market Share (%)	*17.15*	*17.69*	*17.21*	*16.68*	*17.02*
Tigo	Subscription	2,872,375	2,725,489	2,746,803	2,968,076	3,029,361
	Market Share (%)	*14.86*	*13.88*	*12.82*	*13.59*	*13.25*
Airtel	Subscription	3,092,700	2,902,009	2,802,097	2,758,420	2,718,966
	Market Share (%)	*16.00*	*14.77*	*13.08*	*12.63*	*11.9*
Glo	Subscription	265,085	277,372	263,919	245,729	291,998
	Market Share (%)	*1.37*	*1.41*	*1.23*	*1.12*	*1.28*
Expresso	Subscription	40,181	36,672	17,501	10,151	10,151
	Market Share (%)	*0.21*	*0.19*	*0.08*	*0.05*	*0.04*
Total		**19,331,239**	**19,642,152**	**21,419,477**	**21,844,613**	**22,855,670**

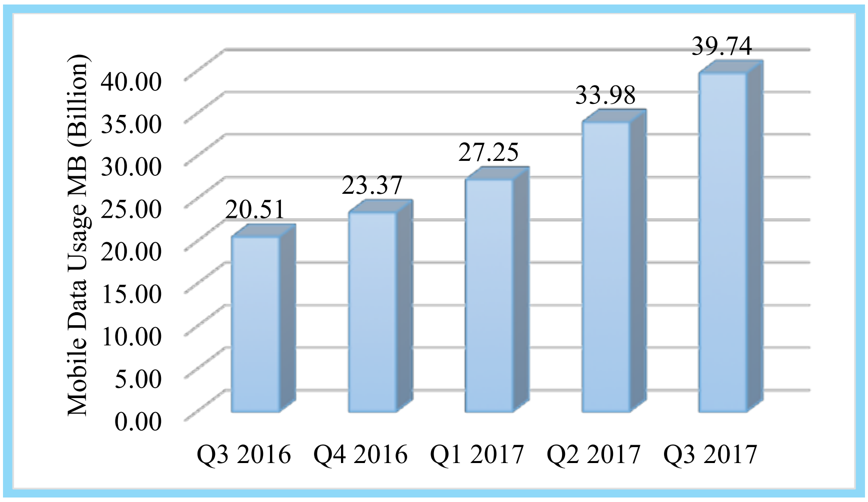
Source: NCA; Mobile Network Operators, 2017

Expresso did not submit data for Q2 and Q3 2017, however April's data (last month of submission of data) was used for this Bulletin.

1.7 Mobile Data Traffic

Mobile data traffic continues to show a positive growth over the last five quarters. At the end of the third quarter of 2017 data traffic generated by the mobile network operators increased (16.95%) from 33.98 billion megabytes in the second quarter of 2017 to 39.74 billion megabytes of data (Figure 10). Year-on-year data traffic increased (93.72%) from 20.51 billion megabytes in the previous year to 39.74 billion megabytes at the end of the third quarter of 2017 (Figure 10).

Figure 10: Mobile Data Traffic in Millions of Gigabyte (GB)

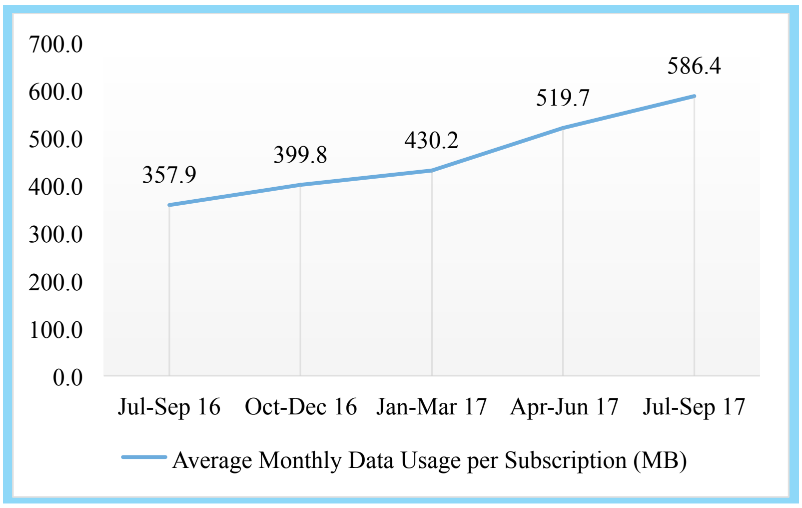


Source: NCA; Mobile Network Operators, 2017

*1.7.1 Mobile Data Usage per Subscription (MB)**

The average mobile data usage per subscription per month increased (12.83%) from 519.7 megabytes in the second quarter 2017 to 586.4 megabytes at the end of the third quarter of 2017 (Figure 11). Year-on-year data usage per subscription increased significantly (63.85%) from 357.9 megabytes per subscription in the previous year to 586.4 megabytes at the end of the third quarter of 2017 (Figure 11).

Figure 11: Mobile Data Usage per Subscription (MB)



Source: NCA; Mobile Network Operators, 2017

* Mobile Data usage per subscription is calculated by dividing the total average volume of Data traffic for the quarter with the total average mobile data subscription for that quarter.

1.7.2 Mobile Data Traffic (MB) per Operator

MTN lead the market in terms of data traffic (51.55%), generating 20.48 billion megabytes of data during the quarter under review. Vodafone maintained the second spot (21.08%) with data traffic of 8.38 billion megabytes, followed by Airtel with data traffic of 6.40 billion megabytes (16.12%). Tigo had 3.25 billion megabytes of data usage representing 8.17% of the total data usage. Glo generated the least data usage of 1.22 billion megabytes with a market share of 3.08% (Table 13).

Table 13: Mobile Data Traffic (MB) per Operator

Mobile Operator	Data Usage	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
MTN	Data Usage	9,340,761,161	11,452,168,764	13,568,944,709	17,392,496,730	20,483,618,135
	Market Share (%)	*45.54*	*49.00*	*49.80*	*51.19*	*51.55*
Vodafone	Data Usage	4,511,206,628	5,331,524,507	6,318,942,994	7,339,384,505	8,378,416,866
	Market Share (%)	*21.99*	*22.81*	*23.19*	*21.60*	*21.08*
Tigo	Data Usage	1,577,325,549	1,782,818,988	2,140,747,503	3,024,418,169	3,246,164,928
	Market Share (%)	*7.69*	*7.63*	*7.86*	*8.90*	*8.17*
Airtel	Data Usage	4,639,955,063	3,712,037,914	4,005,712,369	4,920,701,233	6,404,025,743
	Market Share (%)	*22.62*	*15.88*	*14.70*	*14.48*	*16.12*
Glo	Data Usage	442,737,209	1,092,310,255	1,211,478,791	1,299,907,316	1,224,251,874
	Market Share (%)	*2.16*	*4.67*	*4.45*	*3.83*	*3.08*
Total Industry Traffic (MB)		**20,511,985,610**	**23,370,860,429**	**27,245,826,366**	**33,976,907,953**	**39,736,477,545**

Source: NCA; Mobile Network Operators, 2017

1.8 Mobile Number Portability (MNP)

Promoting and sustaining competition in the communications industry is at the core of the regulatory policies of the National Communications Authority (NCA). The mobile number portability (MNP) is one of such policies, introduced by the Authority to stimulate competition among mobile network operators and provide the flexibility for subscribers to switch among service providers.

This sub-section assesses the total number of mobile numbers ported averagely in each quarter. It also accounts for the quarter-on-quarter and year-on-year growth in mobile number portability in Ghana. Mobile number portability in Ghana started in July 2011, as such, the calendar year for the MNP begins in July and ends in June. The first quarter 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.

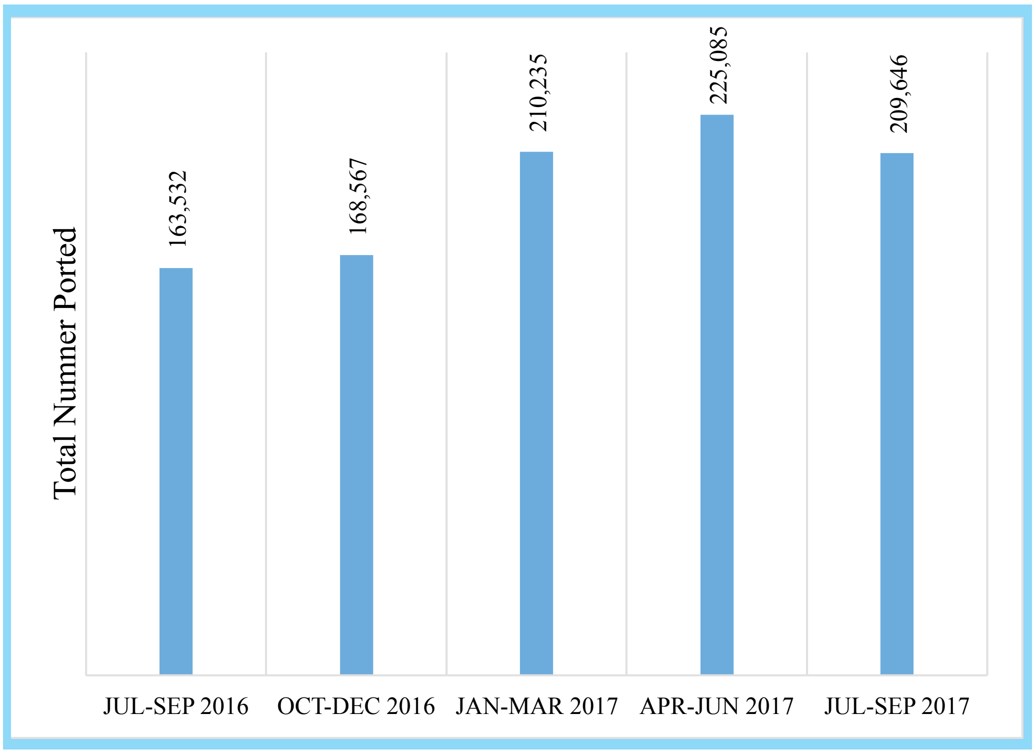
The number of mobile numbers ported decreased by (6.86%) during the quarter under review, from 225,085 in the previous quarter to 209,646 in the third quarter of 2017 (Table 14). The total number ported during the period under review represents 0.60% of the total mobile voice subscriptions for the same period.

Table 14: Mobile Number Portability and Growth Rate (%)

Porting	Jul-Sep 2016	Oct-Dec 2016	Jan-Mar 2016	Apr-Jun 2017	Jul-Sep 2017
Total Number Ported	163,532	168,567	210,235	225,085	209,646
Growth Rate (%)	*1.13*	*3.08*	*24.72*	*7.06*	*-6.86*

Source: NCA; PortingXS; 2017

Figure 12: Mobile Number Portability



Source: NCA; PortingXS; 2017

2.0 BROADBAND WIRELESS ACCESS (BWA)

There are four operators who have been licensed by the National Communications Authority to provide broadband wireless services in Ghana, namely; Surfline, Broadband Home (BBH, formerly Zipnet), Blu Telecommunications and Goldkey. However, three out of the four are currently in operation.

2.1 BWA Subscription and Penetration

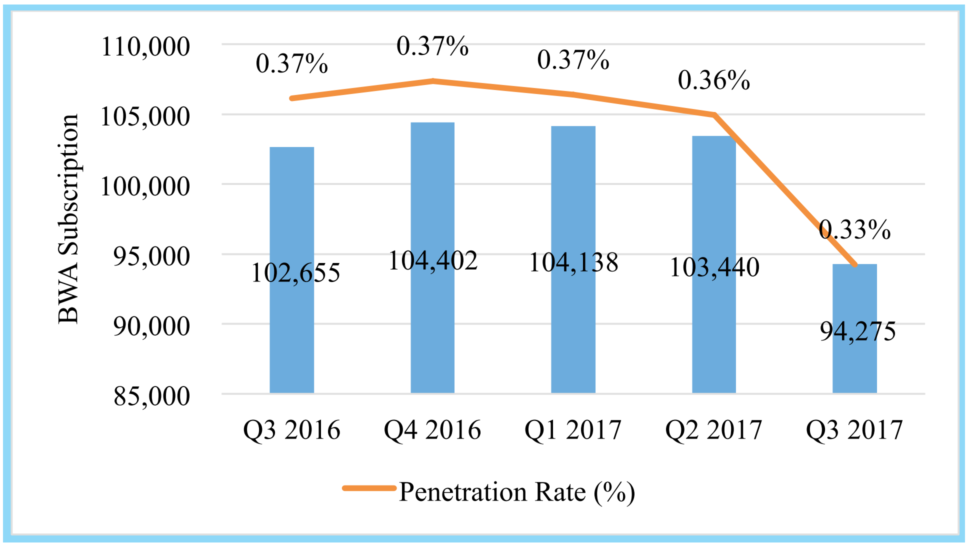
BWA subscription had been decreasing over the last three quarters. It decreased (8.86) from 103,440 in the previous quarter to 94,275 at the end of the third quarter of 2017 (Figure 13). Year-on-year subscription also decreased (8.16%) from 102,655 in the third quarter of 2016 to 94,275 at the end of third quarter of 2017. Penetration rate for Broadband Wireless Access decreased to 0.33% at the end of the third quarter of 2017 (Table 15).

Table 15: BWA Data Subscription and Penetration

BWA Operator	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Subscription	102,655	104,402	104,138	103,440	94,275
Growth rate (%)	*-5.93*	*1.70*	*-0.25*	*-0.67*	*-8.86*
Net Additions	-6,469	1,747	-264	-698	-9,165
Population	27,926,926	28,094,823	28,263,729	28,433,651	28,604,594
Penetration rate (%)	*0.37*	*0.37*	*0.37*	*0.36*	*0.33*

Source: NCA; Broadband Wireless Access Operators, 2017

Figure 13: BWA Data Subscription and Penetration



Source: NCA; Broadband Wireless Access Operators, 2017

2.1.1 Subscription per Broadband Wireless Access (BWA) Operator

Surfline's subscription decreased (11.19%) to 67,702 during the quarter under review with a market share of 71.81%. Broadband Home subscription also declined by 2.25%

with a market share of 27.25%. Blu Telecommunications subscription also decreased by 4.64% with a market share of 0.94% (Table 16)

Table 16: Subscription per Broadband Wireless Access (BWA) Operator

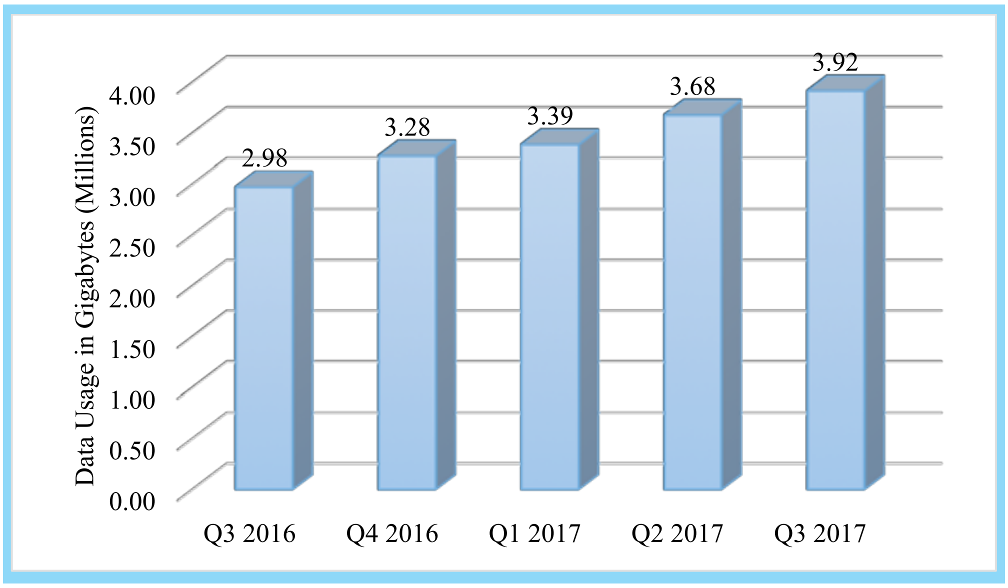
BWA operator		Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Surfline	Subscription	75,065	76,919	76,792	76,232	67,702
	Market share (%)	*73.12*	*73.68*	*73.74*	*74.36*	*71.81*
BBH	Subscription	26,423	26,402	26,381	26,281	25,689
	Market share (%)	*25.74*	*25.29*	*25.33*	*25.64*	*27.25*
BLU	Subscription	1,167	1,081	965	927	884
	Market share (%)	*1.14*	*1.04*	*0.93*	*0.90*	*0.94*
Industry total		**102,655**	**104,402**	**104,138**	**103,440**	**94,275**

Source: NCA; Broadband Wireless Access Operators, 2017

2.2 Broadband Wireless Access (BWA) Volume of Data Traffic

Data traffic shown a positive growth despite a decrease in its subscription. Data traffic generated by BWA's increased (6.44%) from 3.68 million gigabytes of data in the previous quarter to 3.92 million gigabytes in the second quarter of 2017 (Figure 14). Year-on-year data traffic also increased (31.72%) from 2.98 million gigabytes of data in the previous year to 3.92 million gigabytes at the end of the third quarter of 2017.

Figure 14: BWA Data Usage in Gigabytes (millions)



Source: NCA; Broadband Wireless Access Operators, 2017

2.2.1 Volume of Broadband Data Traffic per Operator

At the end of the second quarter of 2017, Surfline's total volume of data traffic was 3,543,882 gigabytes representing 90.38% of the total volume of data traffic generated by the BWA's. BBH recorded the second highest volume of data traffic of 277,100 gigabytes (7.07%). Blu generated the least volume of data traffic of 100,022 gigabytes representing 2.55% of the total volume of data (Table 17).

Table 17: Data Traffic (GB) per Broadband Wireless Access (BWA) Operator

BWA operator		Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Surfline	Data usage (GB)	2,564,837	2,902,870	3,015,547	3,300,344	3,543,882
	Market share (%)	*86.16*	*88.49*	*88.91*	*90.31*	*90.38*
BBH	Data usage (GB)	306,864	271,931	276,862	288,083	277,100
	Market share (%)	*10.31*	*8.29*	*8.16*	*7.88*	*7.07*
BLU	Data usage (GB)	104,983	105,556	99,135	95,191	100,022
	Market share (%)	*3.53*	*3.22*	*2.92*	*2.58*	*2.55*
Industry Total (GB)		**2,976,684**	**3,280,357**	**3,391,544**	**3,683,618**	**3,921,004**

Source: NCA; Broadband Wireless Access Operators, 2017

*2.2.2 Monthly Data Usage per BWA Subscription**

Average Data usage per BWA subscription per month increased (9.77%) from 11.87 gigabytes in the previous quarter to 13.03 gigabytes in the third quarter of 2017 (Figure 16). Year-on-year data usage per subscription also increased by 30.51% from 9.98 gigabytes in the third quarter of 2016 to 13.03 gigabytes at the end of the third quarter of 2017.

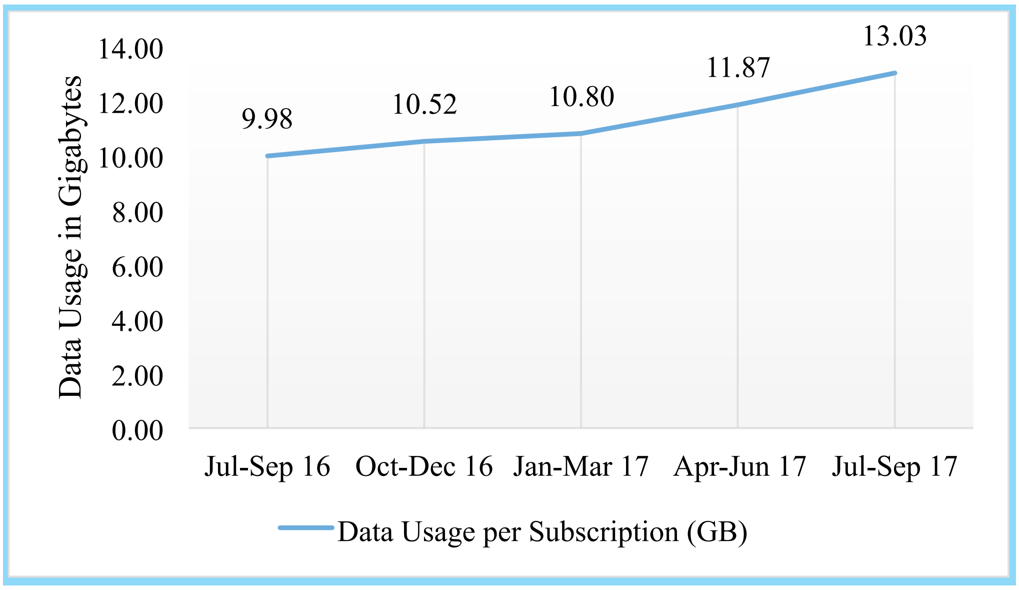
Table 18: Data Usage per BWA Subscription (GB)

BWA Operator	Jul-Sep 16	Oct-Dec 16	Jan-Mar 17	Apr-Jun 17	Jul-Sep 17
Volume of data traffic	992,228	1,093,452	1,130,515	1,227,873	1,307,001
Subscription	99,422	103,976	104,715	103,479	100,460
Data usage per subscription (GB)	9.98	10.52	10.80	11.87	13.03
Data usage per subscription (GB) Growth rate (%)	*11.56*	*5.38*	*2.66*	*9.91*	*9.77*

Source: NCA; Broadband Wireless Access Operators, 2017

* BWA data usage per subscription is calculated by dividing the total average volume of BWA's traffic for the quarter with the total average of BWA subscription for that quarter

Figure 15: Data Usage per BWA Subscription (GB)



Source: NCA; Broadband Wireless Access Operators, 2017

3.0 FIXED NETWORK

Three fixed network operators have been licensed by the National Communications Authority of which two are in operation (Vodafone and Airtel) and the remaining one (MTN) is yet to begin operation.

3.1 Fixed Network Voice Subscription and Penetration

Total fixed network subscriptions increased (5.58%) from 271,356 in the previous quarter to 286,493 at the end of the third quarter of 2017. Year-on-year fixed subscription also increased by 12.78% from 254,021 in the third quarter of 2016 to 286,493 at the end of the third quarter of 2017. Fixed penetration rate increased to 1.00% during the period under review (Figure 16).

Vodafone subscription increased (5.70 %) from 264,606 to 279,681 quarter-on-quarter and from 246,425 to 279,681 year-on-year (13.50%). Vodafone had a market share of 97.62% at the end of the third quarter of 2017 (Table 19).

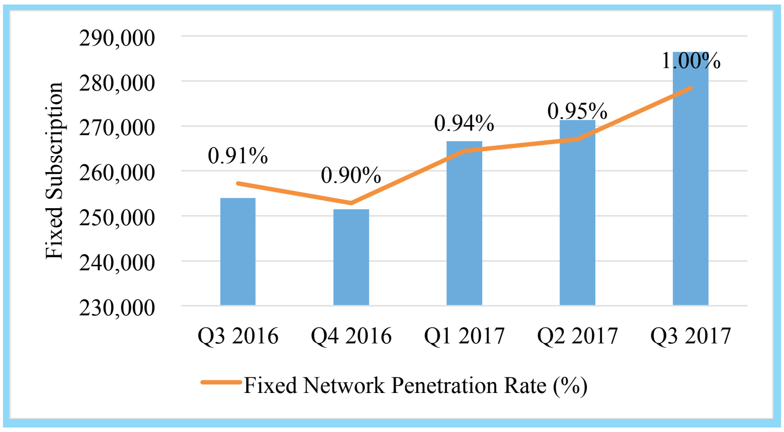
Airtel's subscription increased by 0.92% from 6,750 in the second quarter of 2017 to 6,812 at the end of the third quarter of 2017. Year-on-year subscription decreased by 10.32%. Market share for Airtel at the end of the third quarter of 2017 was 2.38% (Table 19).

Table 19: Fixed Network Voice Subscription and penetration

Fixed Operator	Subscription	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Vodafone	Subscription	246,425	244,299	259,609	264,606	279,681
	Market share (%)	*97.01*	*97.14*	*97.38*	*97.51*	*97.62*
Airtel	Subscription	7,596	7,191	6,978	6,750	6,812
	Market share (%)	*2.99*	*2.86*	*2.62*	*2.49*	*2.38*
Total industry subscription		**254,021**	**251,490**	**266,587**	**271,356**	**286,493**
Population		27,815,552	28,094,823	28,263,729	28,433,651	28,604,594
Fixed network penetration rate (%)		*0.91*	*0.90*	*0.94*	*0.95*	*1.00*

Source: NCA; Fixed Network Operators, 2017

Figure 16: Fixed Network Voice Subscription and penetration



Source: NCA; Fixed Network Operators, 2017

3.2 Fixed Network Traffic

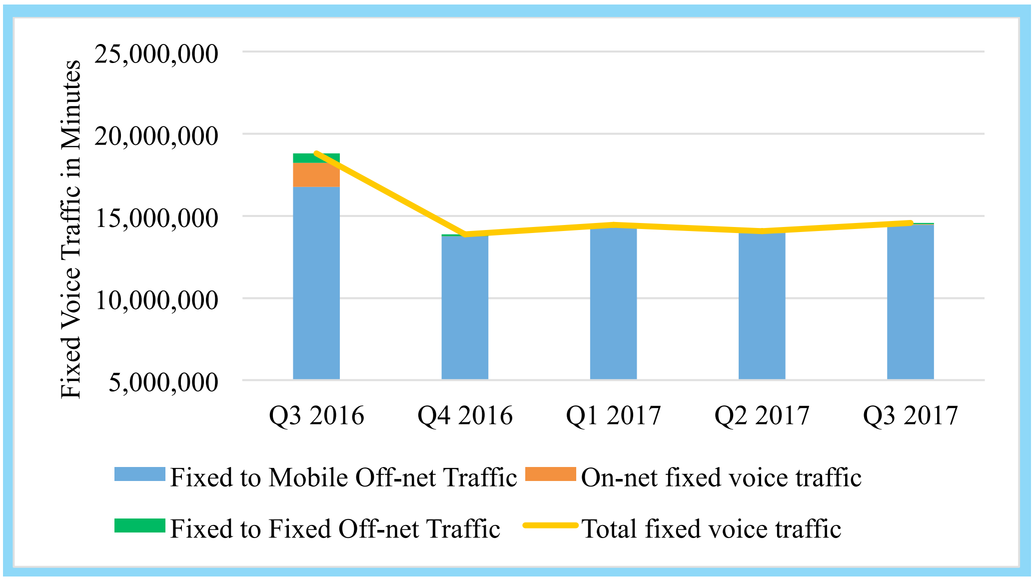
Total volume of fixed network traffic grew 4.77% during the quarter under review from 14.08 million minutes to 14.75 million minutes (Table 20). On-net traffic decreased by 15.23% and off-net traffic increased by 4.82% at the end of the quarter under review. It should be noted that on-net traffic for the last four quarters consist of data from Airtel only.

Table 20: Fixed Network Volume of Traffic in Minutes

Traffic	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
On-net fixed voice traffic	1,482,483	36,455	39,017	37,205	31,537
Off-net fixed voice traffic	17,321,284	13,830,301	14,414,674	14,045,122	14,722,771
Total fixed voice traffic	**18,803,767**	**13,866,756**	**14,453,691**	**14,082,327**	**14,754,308**

Source: NCA; Fixed Network Operators, 2017

Figure 17: Fixed Network Volume of Traffic in Minutes



Source: NCA; Fixed Network Operators, 2017

3.2.1 Distribution of fixed off-net traffic between mobile and fixed networks

Fixed to mobile network traffic increased by 3.56% to 14.64 million minutes during the quarter. Fixed to fixed network traffic also increased (1.38%) from 79,500 in the second quarter of 2017 to 80,600 at the end of the third quarter of 2107 (Table 21).

Table 21: Distribution fixed off-net traffic between mobile and fixed networks

Breakdown of Fixed Traffic (Minutes)	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Fixed to Mobile Networks Off-net Traffic					
Traffic	16,754,687	13,743,296	14,331,815	13,965,622	14,642,170
Share (%)	*96.73*	*99.37*	*99.43*	*99.43*	*99.45*
Growth (%)	*-13.61*	*-17.97*	*4.28*	*-2.56*	*3.56*
Fixed to Fixed Networks Off-net Traffic					
Traffic	566,597	87,005	82,860	79,500	80,600
Share (%)	*3.27*	*0.63*	*0.57*	*0.57*	*0.55*
Growth (%)	*507.98*	*-84.64*	*-4.76*	*-4.05*	*1.38*
Total Off-net Traffic	**17,321,284**	**13,830,301**	**14,414,674**	**14,045,122**	**14,722,771**

Source: NCA; Fixed Network Operators, 2017

3.2.2 Fixed Networks Volume of Traffic per Operator (minutes)

On-net traffic for Airtel decreased by 15.23%% from 37,205 minutes in the second quarter of 2017 to 31,537 minutes at the end of the third quarter of 2017, whereas year-on-year on-net traffic also decreased (14.51%) from 36,889 minutes to 31,537 minutes. Off-net traffic increased by 15.64% quarter-on-quarter and decreased 60.38% year-on-year respectively (Table 22).

Vodafone recorded an increased (3.46%) in off-net traffic from 12.47 million minutes in the second quarter of 2017 to 12.90 million minutes at the end of the third quarter of 2017. Year-on-year off-net traffic decreased by 1.39% from 12.72 million minutes in the third quarter of 2016 to 12.90 million minutes at the end of the third quarter of 2017. Vodafone did not submit information to NCA on on-net traffic for fixed network during the third quarter of 2017 (Table 22).

Table 22: Fixed Networks Volume of Traffic per Operator

Fixed network operator	Traffic	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
On-net traffic						
Vodafone	On-net traffic	1,445,594	-	-	-	-
	Market share (%)	*97.51*	-	-	-	-
Airtel	On-net traffic	36,889	36,455	39,017	37,205	31,537
	Market share (%)	*2.49*	*100.00*	*100.00*	*100.00*	*100.00*
Total on-net traffic		1,482,483	36,455	39,017	37,205	31,537
Off-net traffic						
Vodafone	Off-net traffic	12,724,955	12,040,453	12,522,710	12,470,586	12,901,930
	Market share (%)	*73.46*	*87.06*	*86.87*	*88.79*	*87.48*
Airtel	Off-net traffic	4,596,329	1,789,847	1,891,964	1,574,536	1,820,841
	Market share (%)	*26.54*	*12.94*	*13.13*	*11.21*	*12.52*
Total off-net traffic		17,321,284	13,830,301	14,414,674	14,045,122	14,722,771
Total traffic						
Vodafone	Total traffic	14,170,550	12,040,453	12,522,710	12,470,586	12,901,930
	Market share (%)	*0.75*	*86.83*	*86.64*	*88.55*	*87.29*
Airtel	Total traffic	4,633,218	1,826,302	1,930,981	1,611,741	1,852,378
	Market share (%)	*0.25*	*13.17*	*13.36*	*11.45*	*12.71*
Total fixed network traffic		**18,803,768**	**13,866,756**	**14,453,691**	**14,082,327**	**14,754,308**

Source: NCA; Fixed Network Operators, 2017

3.3 Fixed Network Minutes of Use*

Average fixed network minutes of use per subscription decreased (0.03%) from 17.48 minutes in the second quarter of 2017 to 17.47 minutes at the end of the third quarter of 2017 (Figure 18). Year-on-year minutes of use per subscription decreased (28.63 %) from 24.48 minutes in the third quarter of 2016 to 17.47 minutes at the end of the third quarter of 2017 (Table 23).

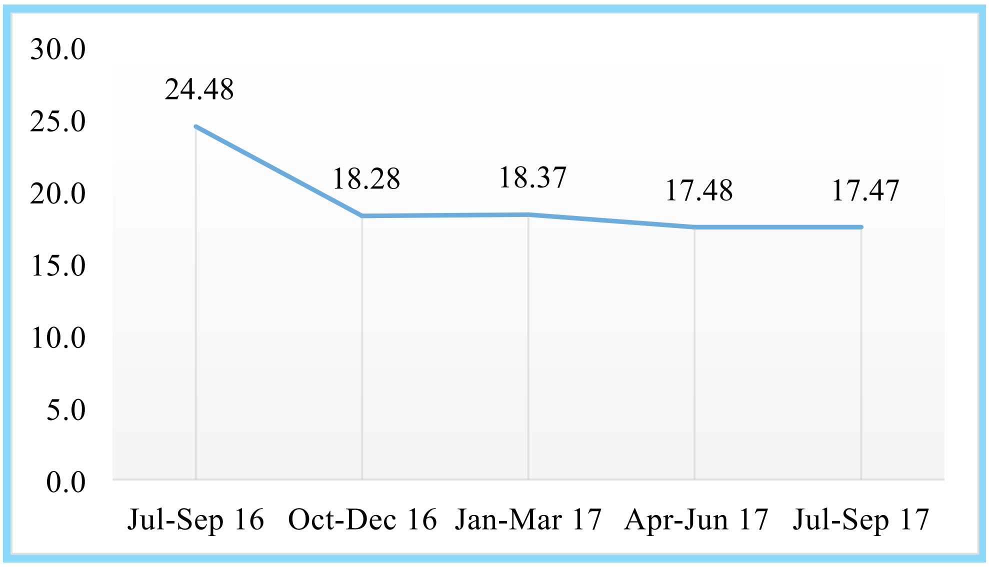
Table 23: Fixed Network Minute of Use per Subscription

Traffic	Jul-Sep 16	Oct-Dec 16	Jan-Mar 17	Apr-Jun 17	Jul-Sep 17
Total Fixed Voice Traffic	6,267,923	4,622,252	4,817,897	4,694,109	4,858,103
Subscription	256,037	252,737	262,264	268,545	281,619
Minutes of Use per Subscription (MoU)	24.48	18.28	18.37	17.48	17.47
Minutes of Use per Subscription (MoU) Growth (%)	*-10.16*	*-25.31*	*0.49*	*-4.88*	*-0.03*

Source: NCA; Fixed Network Operators, 2017

* Fixed Network Minutes of use per subscription is calculated by dividing the total average volume of traffic for the quarter with the total average Fixed subscription for that quarter

Figure 18: Fixed Network Minute of Use



Source: NCA; Fixed Network Operators, 2017

3.4 Fixed Data Subscription and Penetration

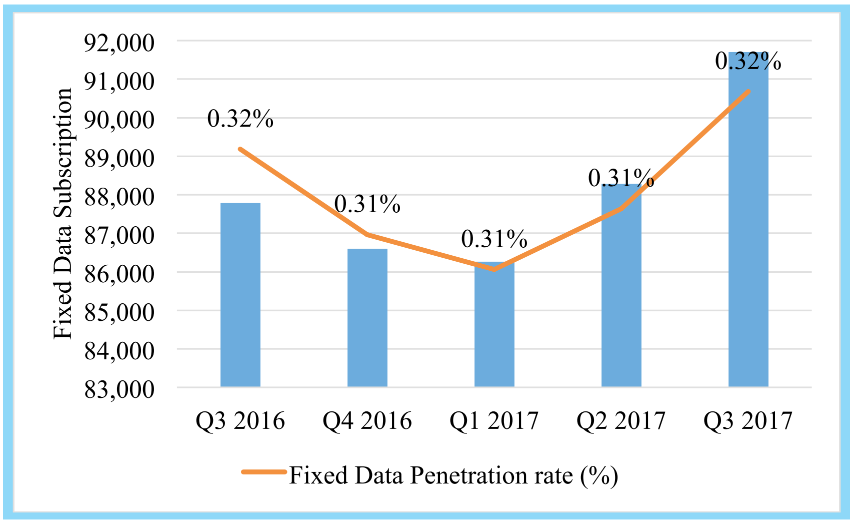
Fixed data subscription during the quarter under review increased (3.98%) from 88,277 in the previous quarter to 91,708. The year-on-year fixed data subscription also increased (4.46%) from 87,789 in the preceding year to 91,708 at the end of the third quarter of 2017. Fixed data penetration rate increased to 0.32% at the end of the third quarter of 2017 (Table 24).

Table 24: Fixed Data Network Subscription and Penetration

Data subscription	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Fixed data subscription	87,789	86,596	86,260	88,277	91,708
Fixed data subscription growth rate (%)	*4.09*	*-1.36*	*-0.39*	*2.34*	*3.98*
Net Additions	3,446	-1,193	-336	2,017	3431
Net Additions growth rate (%)	*-50.99*	*-134.62*	*-71.84*	*-700.3*	*70.10*
Population	27,815,552	28,094,823	28,263,729	28,433,651	28,604,594
Fixed Data penetration rate (%)	*0.32*	*0.31*	*0.31*	*0.31*	*0.32*

Source: NCA; Fixed Network Operators, 2017

Figure 19: Fixed Data Network Subscription and Penetration



Source: NCA; Fixed Network Operators, 2017

3.5 Fixed Network Data Subscription per Operator

At the end third quarter of 2017 Vodafone's subscription stood at 90,396 representing 98.57% of the total fixed data subscription (Table 25). Airtel's fixed data subscription declined at the end of the third quarter of 2017 to 1,312 (1.43% of total market share). Vodafone quarter-on-quarter subscription increased by 3.99% while Airtel's subscription decreased by 2.74%. Year-on-year subscription for Vodafone grew by 4.77% whiles Airtel's subscription declined by 12.88% over the same period.

Table 25: Fixed Network Data Subscription per Operator

Fixed network operator	Data subscription	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Vodafone	Data subscription	86,283	85,190	84,903	86,928	90,396
	Market share (%)	*98.28*	*98.38*	*98.43*	*98.47*	*98.57*
Airtel	Data subscription	1,506	1,406	1,357	1,349	1,312
	Market share (%)	*1.72*	*1.62*	*1.57*	*1.53*	*1.43*
Total fixed data subscription		**87,789**	**86,596**	**86,260**	**88,277**	**91,708**

Source: NCA; Fixed Network Operators, 2017

4.0 EQUIPMENT TYPE APPROVAL

Type Approval certification is granted to a product that meets a minimum set of regulatory, technical and safety requirements in Ghana. The main objective of type approval is to ensure that all electronic communications equipment that are used in Ghana comply with international standards that protect consumers from products that are hazardous and ensure that their operation do not affect in any way the normal functioning of other equipment or the health of people around the operational areas. Also in compliance with section 3(n) of the National Communications Authority Act of 2008, Act 769; and Sections 66 and 67 of the Electronics Communication Act, Act 775 of 2008, all communications equipment in Ghana should be certified by the Authority.

4.1 Total Number of Certificates Issued

The number of certificates issued by the Authority for various communications equipment at the end of the third quarter of 2017 was 83 (Table 26).

Table 26: Total Number of Certificates Issued

Type approval	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Total number of approval issued	98	118	101	98	83

Source: National Communications Authority, 2017

5.0 BROADCASTING

5.1 Authorised Frequency Modulation (FM) Radio Stations

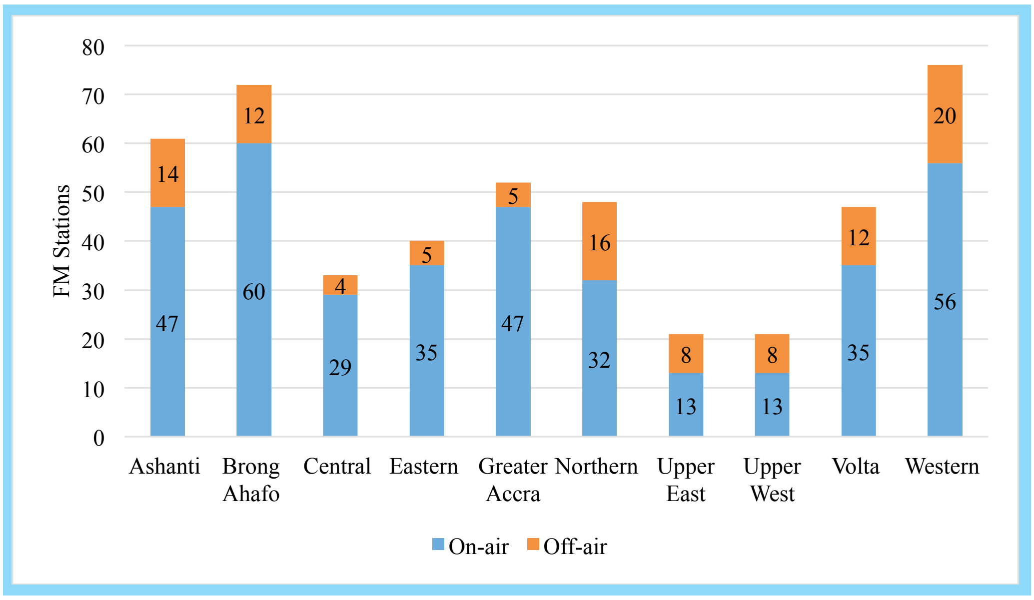
The total number of authorised Frequency Modulation (FM) radio stations at the end of the third quarter of 2017 reduced to 471 out of which 367 are operational (Table 27). License for thirty-four (34) FM stations were revoked. Volta and western regions received the highest number of revocations of eight (8) each. This is followed by Northern region with 6 revocations. Ashanti region received four (4) revocations. Central and Great Accra regions received two (2) revocations each. The rest of the regions received one (1) revocation each.

Table 27: Regional Distribution of FM Stations as at the end of Q3 2017

Regions	End of Q3 2017	No. of FM Stations in Operation (Q3 2017)	No. of FM Stations not in Operation (Q3 2017)
Ashanti	61	47	14
Brong Ahafo	72	60	12
Central	33	29	4
Eastern	40	35	5
Greater Accra	52	47	5
Northern	48	32	16
Upper East	21	13	8
Upper West	21	13	8
Volta	47	35	12
Western	76	56	20
TOTAL	**471**	**367**	**104**

Source: National Communications Authority, 2017

Figure 20: Regional distribution of On-air and Off-air FM stations as at end of Q3 2017



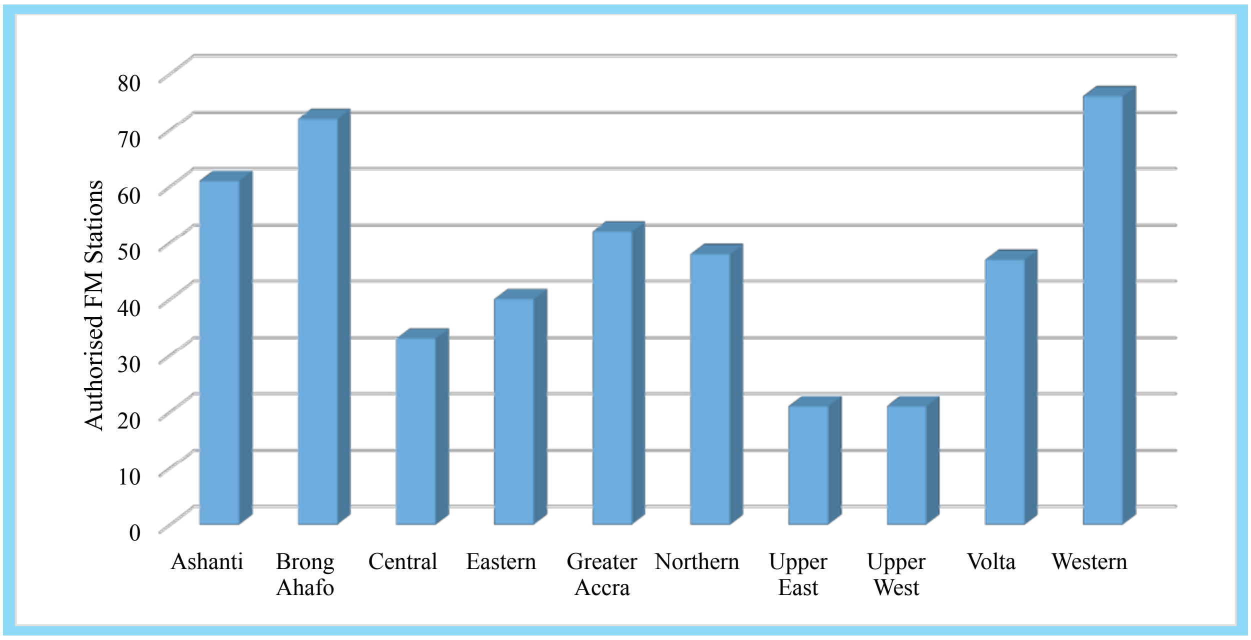
Source: National Communications Authority, 2017

Table 28: Regional Distribution of Authorised FM Stations by Purpose as at the end of Q2 2017

Name of Regions	Total no. Authorised	Public	Public (Foreign)	Community	Campus	Commercial
Ashanti	61	2	1	6	3	49
Brong Ahafo	72	3	-	5	3	61
Central	33	2	-	8	3	20
Eastern	40	2	-	6	1	31
Greater Accra	52	2	3	6	4	37
Northern	48	7	-	16	2	23
Upper East	21	2	-	8	0	11
Upper West	21	2	-	7	2	10
Volta	47	4	-	7	1	35
Western	76	5	1	5	2	63
Total	**471**	**31**	**5**	**74**	**21**	**340**

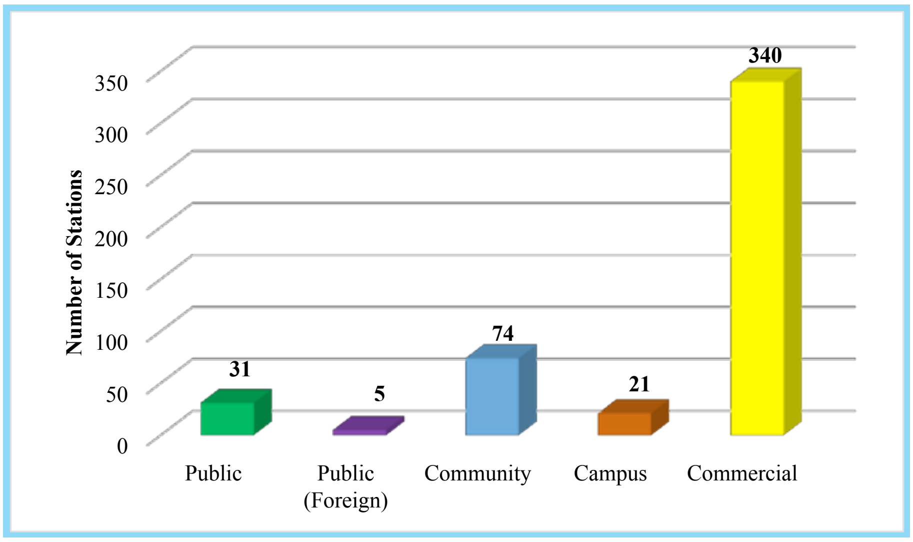
Source: National Communications Authority, 2017

Figure 21: Regional distribution of Authorised FM stations as at end of Q2 2017



Source: National Communications Authority, 2017

Figure 22: Purpose of Authorised Radio Stations as at Q2 2017



Source: National Communications Authority, 2017

5.2 Authorised Television Stations

Eleven (11) new TV stations were giving authorisations, bringing the total number of authorised TV stations in Ghana to one hundred and twenty-eight (128), out of which fifty-three (53) TV stations are operational (Table 29). Eight (8) of the newly authorised TV stations were Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel), two (2) Satellite Television Broadcasting (Free-To-Air Direct-To-Home Bouquet) stations and one (1) Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet) station.

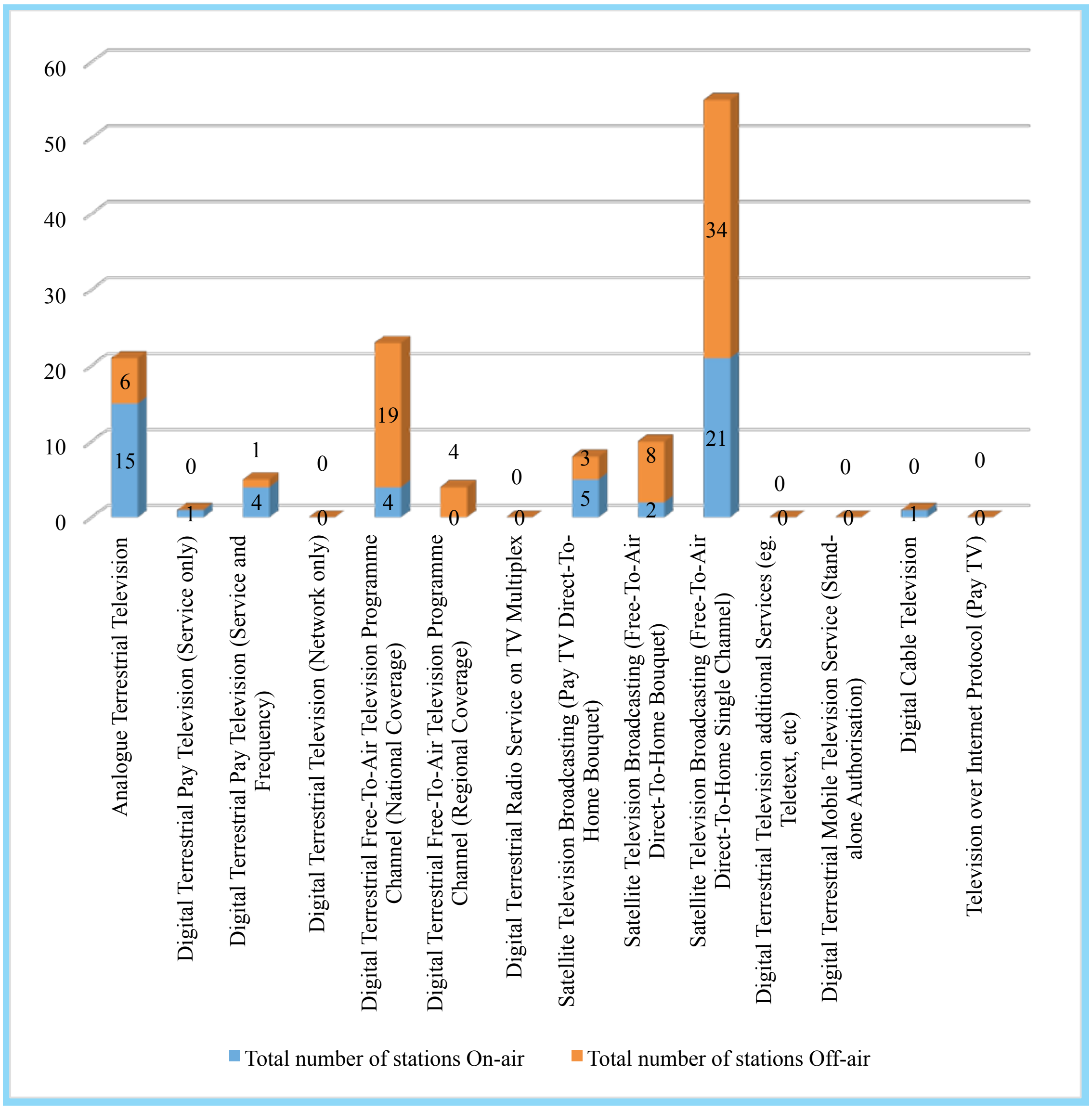
Table 29: Authorised TV Stations in Ghana as at end of Q2 2017

Types of TV stations	Authorised TV stations			No. of TV Stations in Operation (Q3 2017)
	End of Q2 2017	Q3 2017	End of Q3 2017	
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
Digital Terrestrial Television (Network only)	0	0	0	0
Digital Terrestrial Free-To-Air Television Programme Channel (National Coverage)	23	0	23	4
Digital Terrestrial Free-To-Air Television Programme Channel (Regional Coverage)	4	0	4	0
Digital Terrestrial Radio Service on TV Multiplex	0	0	0	0
Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	7	1	8	5
Satellite Television Broadcasting (Free-To-Air Direct-To-Home Bouquet)	8	2	10	2

Types of TV stations	Authorised TV stations			No. of TV Stations in Operation (Q1 2017)
	End of Q4 2016	Q1 2017	End of Q1 2017	
Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel)	47	8	55	21
Digital Terrestrial Television additional Services (eg. Teletext, etc)	0	0	0	0
Digital Terrestrial Mobile Television Service (Stand-alone Authorisation)	0	0	0	0
Digital Cable Television	1	0	1	1
Television over Internet Protocol (Pay TV)	0	0	0	0
Total	117	11	128	53

Source: National Communications Authority, 2017

Figure 23: Distribution of On-Air and Off-Air TV Stations as at end of Q2 2017



Source: National Communications Authority, 2017

6.0 CONCLUSION

The total mobile subscription in Ghana increased (2.78%) to 37,445,048 with a penetration rate of 130.9%. Volume of mobile voice traffic also increased by 12.17% to 16.17 billion minutes in the third quarter of 2017. Mobile data subscriptions increased (1.96%) to 22,865,821. Its data traffic also increased by 4.63% to 39.74 billion megabytes. BWA subscriptions decreased (8.86) to 94,275 but its data traffic increased (6.44%) to 3.92 million gigabyte. At the end of the third quarter of 2017, eighteen (11) additional television stations were authorised and FM stations reduced by thirty-four (34) bringing the total number of authorised television stations and FM radio stations in Ghana to 128 and 471 respectively.

7.0 APPENDICES

Table 1: Monthly Mobile Subscription

Mobile Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
MTN	17,774,481	17,890,958	18,050,144	18,280,956	18,766,106	19,296,157	19,841,360	20,265,399	16,789,161	16,969,311	17,119,549	17,304,425	17,654,968	17,715,212	17,817,273
Vodafone	8,160,351	8,223,957	8,158,527	8,170,504	8,304,783	8,289,913	8,401,072	8,428,088	8,582,387	8,651,515	8,737,414	8,773,444	8,920,617	9,108,424	9,079,502
Tigo	5,211,811	5,225,021	5,402,668	5,362,642	5,365,318	5,339,052	5,257,424	5,160,279	5,098,480	5,187,936	5,342,817	5,360,443	5,510,992	5,505,146	5,489,994
Airtel	4,636,374	4,642,569	4,697,653	4,686,625	4,649,934	4,591,051	4,565,618	4,529,315	4,500,907	4,398,913	4,309,982	4,236,788	4,217,490	4,244,759	4,253,993
Glo	854,912	822,539	828,162	769,450	750,751	695,306	670,399	784,283	769,621	753,341	745,271	732,483	809,269	812,904	781,022
Expresso	101,881	106,975	102,566	99,489	95,548	93,599	88,993	66,852	40,111	23,264	23,264	23,264	23,264	23,264	23,264
Total	**36,739,810**	**36,912,019**	**37,239,720**	**37,369,666**	**37,932,440**	**38,305,078**	**38,824,866**	**39,234,216**	**35,780,667**	**35,984,280**	**36,278,297**	**36,430,847**	**37,136,600**	**37,409,709**	**37,445,048**

Table 2: Monthly Prepaid Mobile Subscription

Mobile Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
MTN	17,598,073	17,711,566	17,865,305	18,091,304	18,573,076	19,100,570	19,644,531	20,068,227	16,586,063	16,766,424	16,875,001	17,041,208	17,390,942	17,485,710	17,589,527
Vodafone	8,015,711	8,078,374	8,003,589	8,011,304	8,160,418	8,143,344	8,262,055	8,286,576	8,440,200	8,507,272	8,595,414	8,633,561	8,780,095	8,965,248	8,931,071
Tigo	5,185,381	5,198,446	5,376,059	5,336,023	5,338,664	5,312,298	5,230,646	5,133,006	5,071,151	5,160,575	5,315,254	5,332,792	5,483,209	5,477,251	5,462,082
Airtel	4,624,331	4,629,707	4,684,772	4,673,725	4,637,026	4,578,126	4,552,662	4,516,344	4,487,922	4,385,908	4,296,973	4,223,767	4,204,465	4,231,727	4,240,956
Glo	853,948	821,639	827,307	768,604	749,798	694,375	669,486	783,283	768,488	752,161	744,134	731,395	808,190	811,810	779,888
Expresso	97,741	102,628	98,523	95,567	91,745	89,910	85,414	64,061	38,437	22,293	22,293	22,293	22,293	22,293	22,293
Total	**36,375,185**	**36,542,360**	**36,855,555**	**36,976,527**	**37,550,727**	**37,918,623**	**38,444,794**	**38,851,497**	**35,392,261**	**35,594,633**	**35,849,069**	**35,985,016**	**36,689,194**	**36,994,039**	**37,025,817**

Table 3: Monthly Post-Paid Mobile Subscription

Mobile Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
MTN	176,408	179,392	184,839	189,652	193,030	195,587	196,829	197,172	203,098	202,887	244,548	263,217	264,026	229,502	227,746
Vodafone	144,640	145,583	154,938	159,200	144,365	146,569	139,017	141,512	142,187	144,243	142,000	139,883	140,522	143,176	148,431
Tigo	26,430	26,575	26,609	26,619	26,654	26,754	26,778	27,273	27,329	27,361	27,563	27,651	27,783	27,895	27,912
Airtel	12,043	12,862	12,881	12,900	12,908	12,925	12,956	12,971	12,985	13,005	13,009	13,021	13,025	13,032	13,037
Glo	964	900	855	846	953	931	913	1,000	1,133	1,180	1,137	1,088	1,079	1,094	1,134
Expresso	4,140	4,347	4,042	3,921	3,804	3,689	3,579	2,791	1,675	971	971	971	971	971	971
Total	**364,625**	**369,659**	**384,164**	**393,138**	**381,714**	**386,455**	**380,072**	**382,719**	**388,407**	**389,647**	**429,228**	**445,831**	**447,406**	**415,670**	**419,231**

Table 4: Monthly Mobile Data Subscription

Mobile Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
MTN	9,429,065	9,608,952	9,745,986	9,875,422	9,981,935	10,226,520	10,505,087	10,865,059	10,866,873	12,110,284	12,310,158	12,229,090	12,442,647	12,888,465	12,925,524
Vodafone	3,278,834	3,301,319	3,314,912	3,340,171	3,345,418	3,474,090	3,579,362	3,616,216	3,685,895	3,657,020	3,717,118	3,643,298	3,641,806	3,738,710	3,889,821
Tigo	2,743,364	2,817,896	2,872,375	2,857,291	2,782,031	2,725,489	2,708,016	2,723,389	2,746,803	2,802,950	2,876,905	2,968,076	3,028,013	3,063,109	3,029,361
Airtel	3,052,219	3,082,800	3,092,700	3,052,100	2,971,378	2,902,009	2,859,238	2,841,368	2,802,097	2,761,521	2,763,982	2,758,420	2,734,649	2,744,033	2,718,966
Glo	281,724	271,756	265,085	263,817	245,874	277,372	272,084	269,466	263,919	242,973	239,207	245,729	246,201	295,951	291,998
Expresso	40,710	42,746	40,181	38,975	37,806	36,672	35,572	29,169	17,501	10,151	10,151	10,151	10,151	10,151	10,151
Total	**18,825,916**	**19,125,469**	**19,331,239**	**19,427,776**	**19,364,442**	**19,642,152**	**19,959,359**	**20,344,667**	**20,383,088**	**21,584,899**	**21,917,521**	**21,854,764**	**22,103,467**	**22,740,419**	**22,865,821**

Table 5: Monthly Prepaid Data Subscription

Mobile Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
MTN	9,315,265	9,489,759	9,622,891	9,746,707	9,846,347	10,089,003	10,364,316	10,722,880	10,722,880	11,968,222	12,170,245	12,055,478	12,254,885	12,697,751	12,734,386
Vodafone	3,264,915	3,287,493	3,301,040	3,326,321	3,331,546	3,460,195	3,565,495	3,602,419	3,672,051	3,643,148	3,703,223	3,629,394	3,627,933	3,724,833	3,876,212
Tigo	2,734,718	2,809,253	2,863,782	2,848,696	2,773,763	2,717,222	2,699,719	2,715,050	2,738,478	2,794,650	2,868,606	2,959,779	3,019,725	3,054,823	3,021,068
Airtel	3,034,667	3,065,233	3,075,133	3,034,532	2,953,807	2,884,424	2,841,622	2,823,735	2,784,438	2,743,842	2,746,303	2,740,731	2,716,960	2,726,344	2,701,277
Glo	280,504	270,585	264,420	263,173	244,793	276,313	271,019	268,411	262,879	241,960	238,236	244,739	245,224	294,977	291,103
Expresso	40,710	42,746	40,181	38,975	37,806	36,672	35,572	29,169	17,501	10,151	10,151	10,151	10,151	10,151	10,151
Total	**18,670,779**	**18,965,069**	**19,167,447**	**19,258,404**	**19,188,062**	**19,463,829**	**19,777,743**	**20,161,664**	**20,198,227**	**21,401,973**	**21,736,764**	**21,640,272**	**21,874,878**	**22,508,879**	**22,634,197**

Table 6: Monthly Post-Paid Mobile Data Subscription

Mobile Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
MTN	113,800	119,193	123,095	128,715	135,588	137,517	140,771	142,179	143,993	142,062	139,913	173,612	187,762	190,714	191,138
Vodafone	13,919	13,826	13,872	13,850	13,872	13,895	13,867	13,797	13,844	13,872	13,895	13,904	13,873	13,877	13,609
Tigo	8,646	8,643	8,593	8,595	8,268	8,267	8,297	8,339	8,325	8,300	8,299	8,297	8,288	8,286	8,293
Airtel	17,552	17,567	17,567	17,568	17,571	17,585	17,616	17,633	17,659	17,679	17,679	17,689	17,689	17,689	17,689
Glo	1,220	1,171	665	644	1,081	1,059	1,065	1,055	1,040	1,013	971	990	977	974	895
Expresso	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**155,137**	**160,400**	**163,792**	**169,372**	**176,380**	**178,323**	**181,616**	**183,003**	**184,861**	**182,926**	**180,757**	**214,492**	**228,589**	**231,540**	**231,624**

Table 7: Off-net SMS to other Networks

Mobile Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
MTN	13,260,101	14,768,315	13,337,011	12,992,266	12,123,754	13,348,795	13,003,557	10,798,163	12,065,072	12,088,691	13,328,951	13,228,104	13,169,640	14,177,471	12,897,428
Vodafone	10,331,648	9,501,292	7,696,758	-	-	9,789,941	11,993,964	13,557,469	18,277,698	19,428,793	19,849,587	21,049,295	20,198,494	22,780,783	22,136,093
Tigo	7,373,151	8,228,736	7,544,403	6,729,420	5,884,314	6,465,860	6,254,220	5,349,512	6,129,844	6,395,209	7,080,086	7,049,849	7,183,129	7,512,558	6,177,945
Airtel	5,411,524	6,166,528	5,430,920	9,250,086	4,528,356	4,924,627	4,888,948	4,080,113	4,386,841	4,511,899	4,434,059	4,312,243	4,270,309	4,656,766	4,003,872
Glo	533,346	592,661	536,237	511,721	480,347	519,740	444,720	522,217	516,433	482,567	438,788	449,997	546,402	665,234	797,857
Total	**36,909,770**	**39,257,532**	**34,545,329**	**29,483,493**	**23,016,771**	**35,048,963**	**36,585,409**	**34,307,474**	**41,375,888**	**42,907,159**	**45,131,471**	**46,089,488**	**45,367,974**	**49,792,812**	**46,013,195**

Table 8: On-net SMS

Mobile Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
MTN	39,098,337	45,044,809	43,243,142	43,213,681	41,951,350	47,711,055	50,226,720	44,474,853	50,478,713	50,688,361	56,963,188	56,510,866	53,949,351	60,470,497	57,177,822
Vodafone	32,617,714	37,121,468	26,434,537	25,483,546	21,623,136	27,615,172	25,055,506	17,860,758	20,249,561	23,603,345	25,732,219	18,282,748	14,143,291	-	-
Tigo	34,335,759	33,090,602	33,559,657	28,742,141	21,127,360	22,741,408	21,776,008	19,479,421	23,683,314	25,287,352	33,792,775	33,813,990	36,245,891	41,596,407	40,221,509
Airtel	6,093,711	6,751,037	6,219,581	5,388,074	4,528,356	4,634,866	4,475,446	3,496,238	3,777,882	3,871,181	3,617,306	3,451,411	3,491,084	3,823,127	3,328,178
Glo	129,214	145,038	124,466	109,840	91,828	97,085	79,675	84,287	88,065	77,504	80,148	65,026	61,566	63,555	52,629
Total	**112,274,735**	**122,152,953**	**109,581,383**	**102,937,282**	**89,322,030**	**102,799,586**	**101,613,355**	**85,395,557**	**98,277,535**	**103,527,743**	**120,185,636**	**112,124,041**	**107,891,183**	**105,953,586**	**100,780,138**

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

Mobile Network Operator	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
MTN	11	11	11	11	11
Vodafone	11	11	11	11	11
Tigo	12	13	13	13	13
Airtel	11	11	11	11	11
Glo	14	14	12	11	11
Expresso	10	-	-	-	-
Industry Average	**11**	**12**	**12**	**11**	**11**

Table 10: Mobile Voice Off-net Tariff per Operator (GHp

Mobile Network Operator	**Q3 2016**	**Q4 2016**	**Q1 2017**	**Q2 2017**	**Q3 2017**
MTN	13	13	13	13	13
Vodafone	13	13	13	13	13
Tigo	12	13	13	13	13
Airtel	12	12	12	12	12
Glo	14	14	12	11	11
Expresso	15	-	-	-	-
Industry Average	**13**	**13**	**13**	**12**	**13**

Table 11: SMS On-net Tariff per Operator (GHp)

Mobile Network Operator	**Q3 2016**	**Q4 2016**	**Q1 2017**	**Q2 2017**	**Q3 2017**
MTN	5	5	5	5	5
Vodafone	6	6	6	6	6
Tigo	8	8	8	8	8
Airtel	4	4	4	4	4
Glo	5	5	5	5	5
Expresso	4	-	-	-	-
Industry Average	**6**	**6**	**5**	**5**	**5**

Table 12: SMS Off-net Tariff per Operator (GHp)

Mobile Network Operator	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
MTN	6	6	6	6	6
Vodafone	7	7	7	7	7
Tigo	8	8	8	8	8
Airtel	5	5	5	5	5
Glo	5	5	5	5	5
Expresso	4	-	-	-	-
Industry Average	**6**	**6**	**6**	**6**	**6**

Table 13: Data Tariff per Megabyte per Operator (GHp)

Mobile Network Operator	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
MTN	10	10	10	10	10
Vodafone	13	13	13	13	13
Tigo	14	14	14	14	14
Airtel	15	16	16	16	16
Glo	12	12	6	3	3
Expresso	5	-	-	-	-
Industry Average	**12**	**13**	**12**	**11**	**11**

Table 14: Monthly Voice Fixed Subscription

Fixed Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
Vodafone	248,463	249,043	246,425	246,425	245,550	244,299	246,205	259,863	259,609	259,189	261,384	264,606	270,062	274,818	279,681
Airtel	8,877	7,708	7,596	7,425	7,322	7,191	7,116	7,022	6,978	6,893	6,812	6,750	6,748	6,736	6,812
Total	**257,340**	**256,751**	**254,021**	**253,850**	**252,872**	**251,490**	**253,321**	**266,885**	**266,587**	**266,082**	**268,196**	**271,356**	**276,810**	**281,554**	**286,493**

Table 15: Monthly Data Fixed Subscription

Fixed Network Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
Vodafone	85,703	86,107	86,283	82,084	86,345	85,190	85,410	83,873	84,903	86,380	85,376	86,928	88,545	89,270	90,396
Airtel	1,555	1,539	1,506	1,477	1,446	1,406	1,367	1,368	1,357	1,353	1,346	1,349	1,333	1,339	1,312
Total	**87,258**	**87,646**	**87,789**	**83,561**	**87,791**	**86,596**	**86,777**	**85,241**	**86,260**	**87,733**	**86,722**	**88,277**	**89,878**	**90,609**	**91,708**

Table 16: Monthly BWA Subscription

BWA Subscription	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
Surfline	66,935	73,244	75,065	76,269	76,171	76,919	77,306	77,882	76,792	76,554	75,827	76,232	76,969	76,236	67,702
BBH	26,535	26,479	26,423	26,417	26,411	26,402	26,394	26,383	26,381	26,378	26,374	26,281	26,126	25,945	25,689
BLU	1,235	1,184	1,167	1,132	1,127	1,081	1,051	992	965	945	920	927	910	920	884
Total	**94,705**	**100,907**	**102,655**	**103,818**	**103,709**	**104,402**	**104,751**	**105,257**	**104,138**	**103,877**	**103,121**	**103,440**	**104,005**	**103,101**	**94,275**

Table 17: Monthly BWA Traffic (GB)

BWA Operator	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
Surfline	795,672	864,605	904,560	933,994	948,395	1,020,481	1,032,359	924,189	1,058,999	1,059,012	1,118,630	1,122,702	1,180,339	1,220,283	1,143,260
BBH	88,681	91,543	126,641	88,604	91,610	91,718	91,144	92,148	93,570	97,480	95,397	95,206	91,670	89,941	95,488
BLU	36,441	37,553	30,989	36,307	35,001	34,247	34,286	30,460	34,389	32,809	33,380	29,001	32,960	34,118	32,943
Total	**920,793**	**993,701**	**1,062,190**	**1,058,905**	**1,075,006**	**1,146,446**	**1,157,789**	**1,046,797**	**1,186,958**	**1,189,302**	**1,247,407**	**1,246,910**	**1,304,969**	**1,344,343**	**1,271,692**

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

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Fax: +233 (0) 302 763449
E-mail: info@nca.org.gh
Website: www.nca.org.gh

Complaints:
Hotline: +233 (0) 30 701 1419, Toll Free: 0800 110 622
complaints@nca.org.gh

- ### Bolgatanga Office

National Communications Authority,
H/No ZB 70, Zorbisi Estates
Bolgatanga, Upper East Region
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- ### Ho Office

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E-Mail: complaints.ho@nca.org.gh

- ### 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

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Danyame, Kumasi
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Ashanti Region, Ghana
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- ### Takoradi Office

National Communications Authority,
Bakado
P. O. Box SL 409, Sekondi,
Western Region, Ghana
Tel: +233 (0) 31 202 8073 / 31 202 8049
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- ### Tamale Office

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