



**Audit & Assessment of Quality of Service
Of
Cellular Mobile Telephone Service
Basic Telephone Service (Wireline)
&
Broadband Service
For
Telecom Regulatory Authority of India
North Zone – UP (East) Service Area**

(July 2014 – September 2014)

**Prepared by
TÜV SÜD SOUTH ASIA PVT. LTD,
C-153/1, Okhla Industrial Estate,
Phase-1, New Delhi – 110020
Telephone 011- 30889611
Fax: 011-30889595**

PREFACE

The Telecom Regulatory Authority of India (TRAI) was established in 1997 by an Act of Parliament, called the Telecom Regulatory Authority of India Act, 1997, to regulate telecom services. The Authority's mission is to ensure that the interest of consumers are protected and at the same time to nurture conditions for growth of telecommunications, broadcasting and cable services in a manner and at a pace which will enable India to play a leading role in emerging global information society.

The Authority, in exercise of its functions as per the provisions in the TRAI Act, has been entrusted to measure the Quality of Service provided by the Service Providers from time to time and to compare them with the benchmarks so as to assess the level of performance. In pursuance of this, TRAI has appointed **M/s TUV-SUD South Asia Pvt. Ltd.** to carry out "Audit and Assessment of Quality of Service" provided by Basic (Wire line), Cellular Mobile and Broadband service providers in terms of the benchmarks specified in the respective regulations, in North and West Zones.

TUV-SUD South Asia carried out QoS audit as per the norms of TRAI in all the eight circles / services areas of the North Zone and four circles of the West Zone. This report details the performance of the various service providers in **UP (E) circle** against the QoS bench marks laid down by TRAI in the respective regulations.



Table of Contents

1. BACKGROUND 6

2. OBJECTIVES AND METHODOLOGY 9

3. SAMPLE SIZE 11

 3.1 SAMPLING FOR CELLULAR MOBILE (WIRELESS) SERVICE PROVIDERS 11

 3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES 12

 3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS 12

4. EXECUTIVE SUMMARY 14

5. PMR AUDIT REPORTS:..... 17

 5.1 MONTHLY PMR: 17

 5.1.1 BUSY HOUR OF VARIOUS SERVICE PROVIDERS: 17

 5.1.2 SWITCHES/BSC/BTS DETAILS OF SERVICE PROVIDERS: 17

 5.1.3 QOS PERFORMANCE OF MONTHLY PMR – JULY 14 MONTH:..... 18

 5.1.4 QOS PERFORMANCE OF MONTHLY PMR – AUGUST 14 MONTH:..... 19

 5.1.5 QOS PERFORMANCE OF MONTHLY PMR – SETEMBER 14 MONTH 20

 5.1.6 QOS PERFORMANCE OF QUARTERLY PMR –AVERAGE OF QE- SEPTEMBER 14
(JULY TO SEPTEMBER 2014 MONTHS AUDITED DATA) 21

 5.1.7 KEY FINDINGS ON MONTHLY PMR AUDIT REPORTS:..... 22

 5.2 LIVE MEASUREMENT DATA (3-DAYS) FOR CELLULAR MOBILE SERVICE PROVIDERS
(NETWORK SERVICE QUALITY PARAMETER):..... 25

 5.2.1 LIVE MEASURMENT DATA (3-DAYS) – JULY 14 MONTH:..... 25

 5.2.2 LIVE MEASURMENT DATA (3-DAYS) – AUGUST 14 MONTH:..... 26

 5.2.3 LIVE MEASURMENT DATA (3-DAYS) – SEPTEMBER 14 MONTH:..... 27

 5.2.4 QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT AUDITED
DATA (AVERAGE OF JULY TO SEPTEMBER 2014) 28

 5.2.5 KEY FINDING ON 3 DAYS LIVE MEASUREMENTS:..... 28

 5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE
SERVICES: 29

 5.3 CUSTOMER SERVICE QUALITY PARAMETERS MEASUREMENT FOR CMTS - QE SEPT
14: 37

 5.3.1 QUARTERLY CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR
CELLULAR MOBILE SERVICES (JULY TO SEPTEMBER 2014 MONTHS AUDITED DATA):
..... 37

 5.3.2 3 DAYS LIVE CSD AUDITED DATA FOR CELLULAR MOBILE SERVICES (QE-SEPT
2014): 39

 5.3.3 KEY FINDINGS ON CUSTOMER SERVICE DELIVERY (CSD) PARAMETERS..... 40

6. LIVE CALLING ASSESSMENT: 42

 6.1 INTER OPERATOR CALLS ASSESSMENT:..... 42

6.2 CUSTOMER CARE / HELPLINE ASSESSMENT:	43
6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLIANTS:.....	43
6.4 LEVEL -1 CALLING ASSESSMENT:	44
7. OPERATOR ASSISTED DRIVE TEST.....	46
7.1 OPERATOR ASSISTED DRIVE TEST: FAIZABAD SSA (JULY-14).....	47
7.2 OPERATOR ASSISTED DRIVE TEST: GHAZIPUR SSA (AUGUST-14).....	50
7.3 OPERATOR ASSISTED DRIVE TEST: VARANASI SSA (SEPTEMBER-14).....	53
7.4 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:.....	56
7.5 SSA WISE DRIVE TEST OBSERVATION:.....	58
7.6 KEY FINDINGS ON DRIVE TEST:.....	61
8. GRAPHICAL REPRESENTATION:.....	64
9. QOS AUDIT OF BASIC TELEPHONE SERVICE (WIRELINE).....	69
9.1 SERVICE PROVIDER PERFORMANCE REPORT BASED ON QUARTERLY MEASUREMENT DATA VERIFICATION FOR BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:	70
9.2 SERVICE PROVIDER PERFORMANCE REPORT BASED ON 3 DAYS LIVE MEASUREMENT DATA VERIFICATION FOR BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:	71
9.3 KEY FINDINGS: BASIC TELEPHONE SERVICES (WIRELINE).....	72
9.4 INTER OPERATOR CALL ASSESSMENT (WIRELINE)	73
9.5 LEVEL-1 LIVE CALLING (WIRELINE)	73
9.6 CUSTOMER CARE / HELPLINE ASSESSMENT (WIRELINE SERVICES)	74
9.7 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:	76
9.8 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:	80
10. QUALITY OF SERVICE AUDIT OF BROADBAND SERVICE PROVIDERS.....	83
10.1 QUARTERLY MEASUREMENT DATA FOR BROADBAND SERVICE PROVIDERS	84
10.2 SERVICE PROVIDER PERFORMANCE REPORT BASED ON 3 DAYS MEASUREMENT DATA VERIFICATION FOR BROADBAND SERVICE PROVIDERS:	88
10.3 KEY FINDINGS: BROADBAND SERVICES	90
10.4 CUSTOMER CARE / HELPLINE ASSESSMENT	91
10.5 LIVE CALLING FOR BILLING COMPLIANTS	91
10.6 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF BROADBAND SERVICE PROVIDERS:	93
11.7 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BROADBAND SERVICE PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:	96



1. BACKGROUND



1. BACKGROUND

Telecom Regulatory Authority of India has been entrusted to “lay down the standards of quality of service to be provided by the service providers and ensure the quality of service and conduct the periodical survey of such service provided by the service providers so as to protect interest of the consumers of telecommunication services” vide sub-clause (v) of clause (b) of sub-section (1) of section 11 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997).

The purpose of laying down Quality of Service Parameters is to:

- i) Create conditions for consumer satisfaction by making known the quality of service, which the Service provider is required to provide, and the user has a right to expect.
- ii) Measure the Quality of Service provided by the Service Providers from time to time and to compare them with the norms so as to assess the level of performance.
- iii) Generally protect the interests of consumers of telecommunication services.

TRAI, the regulatory watch dog for the Quality of Service for the telecom services – Basic (Wire line), Cellular Mobile (Wireless) and Broadband has commissioned **M/s TUV-SUD South Asia Pvt. Ltd.** for conducting audit and assessment of quality of service of service providers, in terms of the benchmarks specified in the “The Standards of Quality of Service of Basic Telephone Service (Wire line) and Cellular Mobile Telephone Service Regulations, 2009 (7 of 2009) dated 20th March, 2009 and the Quality of Service of Broadband Service Regulations, 2006 (11 of 2006) dated 6th October, 2006 on zonal basis for **North Zone and West Zone** comprising of the following Telecom Circles/Metro Service Areas:

North Zone: Delhi, Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Rajasthan, Uttar Pradesh-East and Uttar Pradesh-West (including Uttarakhand). For the cellular mobile telephone service the service area of Delhi includes Ghaziabad, Faridabad, Noida and Gurgaon.

West Zone: Mumbai, Maharashtra (including Goa and excluding Mumbai), Gujarat and Madhya Pradesh (including Chhattisgarh).



The Audit exercise would assess the Quality of Service of telecom operators providing Basic (Wire line), Cellular Mobile (Wireless) and Broadband services by auditing the relevant QoS records maintained by the operators, conducting drive tests as well as live measurements and comparing them with quality of service benchmarks stipulated by TRAI. The audit would be carried out by **TUV-SUD South Asia** every quarter across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. However, in respect of Basic telephone service (wireline) and Broadband service, a circle would be audited once in a year.

2. OBJECTIVES AND METHODOLOGY



2. OBJECTIVES AND METHODOLOGY

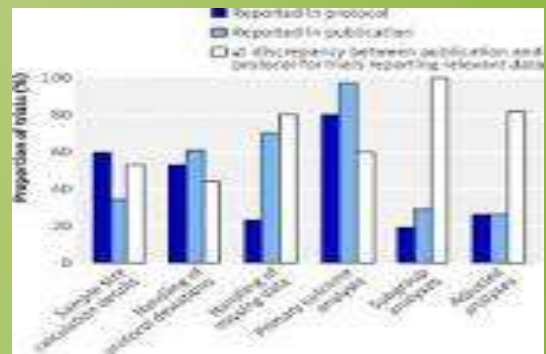
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

The audit and assessment of Quality of Service was carried out by **TUV SUD South Asia across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. Apart from this, QoS audit for Basic (Wire line) and Broadband Services was also undertaken for UP (E), UP (W) and MP&CG circles during the quarter July – September 2014.**

The Scope of work as per the Terms of Reference (TOR) includes the following:

- i) Preparation of Performance Monitoring reports (PMRs) and uploading in the system.
- ii) Live measurements of the performance of Service Providers (SPs) against the benchmarks for three days during each audit.
- iii) Monthly audit based on one month data of the SPs.
- iv) Drive test of the RF networks.
- v) Audit of the performance of call centers with respect to their accessibility and percentage of calls answered by the operators and random customer feedback by calling the customers to get feedback of the services provided by the service providers.
- vi) Transfer of data generated by the RF drive test/Live measurements / PMR/ monthly audit to the server located at TRAI premises on real time basis.

3. SAMPLE SIZE



3. SAMPLE SIZE

3.1 SAMPLING FOR CELLULAR MOBILE (WIRELESS) SERVICE PROVIDERS

- 100% of the Gateway MSC's (GMSC's) and Mobile Switching Centers (MSC's) of all the Cellular Mobile Service Providers or Unified Access Service Providers (UASP) were covered for audit in specified circles/service areas. Following are the various operators covered in UP(E) circle

Sl. No.	Name of Service Provider	Dates of live measurement Audit			Audit Location/Address
		July-14	August-14	September-14	
GSM Operators					
1	AIRCEL	3 to 4 & 7 Jul-14	7 to 9 Aug-14	5 to 6 & 8 Sep-14	3rd floor,Ratan Square,Hajratganj,Lucknow
2	AIRTEL	4, 7 to 8 Jul-14	12 to 14 Aug-14	8 to 10 Sep-14	TCG 7/7,vibhuti khand,Gomti Nagar,Lucknow
3	BSNL	15 to 17 Jul-14	18 to 20 Aug-14	18 to 20 Sep-14	BSNL,Mahanager , Lucknow
4	IDEA	9 to 11 Jul-14	11 to 13 Aug-14	3 to 5 Sep-14	Idea Cellular Ltd., Fortuna Towers, 10 Rana Pratap Road, Lucknow-226001
5	RCOM GSM	17 to 19 Jul-14	5 to 7 Aug-14	2 to 4 Sep-14	House No. 12, C\O BTC House Eldeco Greens, Gomti Nagar, Lucknow-226010
6	VODAFONE	7 to 9 Jul-14	9, 11 to 12 Aug-14	11 to 13 Sep-14	Shalimar Titanium , Vibhuti Khand, Gomti Nagar , Lucknow
7	UNINOR	18, 21 to 22 Jul-14	19 to 21 Aug-14	17 to 19 Sep-14	Telewings Communications Services Pvt Ltd. (Uninor) Welldone Technology Park Sec-48 Sohana Road Gurgaon
8	TATA GSM	10 to 12 Jul-14	7 to 9 Aug-14	8 to 10 Sep-14	Tata Teleservices Ltd., Prem Plaza Building 2, RF Bahadurji Marg, Lucknow
CDMA Operators					
9	RCOM CDMA	17 to 19 Jul-14	5 to 7 Aug-14	2 to 4 Sep-14	House No. 12, C\O BTC House Eldeco Greens, Gomti Nagar, Lucknow-226010
10	TATA CDMA	10 to 12 Jul-14	7 to 9 Aug-14	8 to 10 Sep-14	Tata Teleservices Ltd., Prem Plaza Building 2, RF Bahadurji Marg, Lucknow

For all the above operators, audit was conducted in all the three months of the Quarter ended Sept. 2014.

The data generated by monthly PMR and 3-days live measurements audit for the period July 2014 to September 2014 has been successfully uploaded to the server located at TRAI premises.

3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES

The QoS audit for basic (wire line) service was to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles. Out of **2142** (present no. of BSNL exchanges), audit was done for **102** sampled (**26-Urban and 76-Rural**) exchanges, 1 exchange each of Bharti, TTL, RCL and Vodafone. As UP (E) Circle is having 163 SDCAs, so 102 BSNL exchanges spread over 17 SDCAs (10% of total 163 SDCAs) have been taken for audit. (List of BSNL exchanges undertaken for QoS audit attached as Annex-1)

3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS

TUV-SUD South Asia has to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who are having broadband subscriber base of more than 10,000 subscribers in their licensed service area, for 5% of Point of Presence (PoPs) spread over in 10% SDCAs in specified Telecom Circle. Based on this criterion, total **107 PoPs** (exchanges) i.e. 5% of **2142** PoPs/Exchanges have been taken for QoS audit.

Discussion with the private broadband service providers revealed that there is no concept of their PoPs on SDCA basis; they are maintaining their entire data on centralized basis so audit has been done for the centralized data.

4. EXECUTIVE SUMMARY



4. EXECUTIVE SUMMARY

The executive summary put in a nutshell the key findings of the Audit by providing: -

- “Service provider performance report” for Cellular mobile, Basic (wire line) and Broadband services , which gives a foretaste of the performance of various operators against the benchmark specified by TRAI, during the months in which the Audit was carried out by TUV-SUD Auditors
- “Parameter wise critical findings” for Cellular mobile, Basic (wire line) and Broadband services: This indicates key observations and findings from different activities carried out during the Audit process
- TUV-SUD conducted audit involved a 3 stage verification process which consisted of auditing the records of the service providers and verifying the data submitted to TRAI. The second step involved a three day live measurement of all the network parameters. On the basis of the three days live measurement, the auditors checked the busy hour of the day for the service provider and collected the data for this busy hour for the month in which the audit was conducted. Finally, the performance of the service providers was also gauged by conducting drive tests in three select SSAs per service provider per quarter.
- The three stage audit / verification viz audit of the records, live measurements and drive tests of all the cellular mobile operators was repeated every month. In case of Basic (Wire line) and Broadband, this exercise is required to be carried out on quarterly basis.
- **Essence of compliance report of service providers with respect to the QoS:**

1. Cellular Mobile

(i) From monthly audit findings, it was concluded that the service providers largely met the benchmarks except **Aircel, Tata (GSM), Tata (CDMA), Vodafone and Uninor** failed to meet the benchmarks of some of the parameters. **Aircel** could not meet the benchmark of the parameters **Worst affected BTS due to down time, SDCCH Channel congestion and Worst affected cells > 3% TCH drop** with its quarterly average performance as **2.69%, 1.10% and 4.85%** respectively. The parameter **‘Worst affected cells having > 3% TCH drop’** also remained non-complied by **Tata (GSM), Tata (CDMA) and Vodafone** achieving their average performance as **7.39%, 8.19% and 8.99%** respectively. Further, **Uninor** lagged behind the benchmark of parameter **Voice Quality** having achieved the value of **92.85%**.

(ii) From three days live assessment, it was found that the operators were meeting the benchmark of most of the parameters. However, **Aircel, Tata (GSM), Tata (CDMA) and Vodafone** failed to meet the benchmark for the parameter **“worst affected Cell > 3% TCH Drop”** in all the three month of the quarter. Their average performance for this parameter was **4.72%, 6.97%, 7.80% and 6.71%** respectively. **Uninor**, lagged behind in meeting the benchmark for the parameter **‘Voice Quality’** in all the three months of the quarter with its average performance as **92.65%** and for parameter **‘Worst affected cells’** it remained non-complied in the months of August-14 (**3.34%**) and

September-14 (3.15%), however on quarterly average it was within the benchmark. **Aircel and Tata (GSM)** also could not meet the benchmark of parameters **SDCCH Congestion (1.14%) and TCH congestion (2.37%)** in the month of July-14, though their quarterly performance was within norms.

Similar non-compliance of **Aircel, Tata (GSM), Tata (CDMA), Vodafone and Uninor** with respect to above indicated parameters was also observed in monthly PMR audit.

(iii) With regard to the **Customer Service Quality Parameters**, it was revealed that most of the operators were in well compliance of the parameters on Metering and Billing Credibility, Termination of Service and Time taken for refunds. However, RCOM (GSM) and RCOM (CDMA) failed to meet the benchmark of parameter '**Billing Complaints – Prepaid**' with their performance as **0.30%** and **0.19%** respectively.

With regard to the parameter **Calls answered by Operators (Voice to Voice)**, **BSNL** lagged behind the benchmark with its performance as **73.00%**.

In respect of the parameter **Time taken for refunds of deposits after closure**, only **Tata (GSM)** failed to meet the benchmark achieving **99.84%**, marginally below the benchmark of 100%.

(iv) With regard to the **Drive Test** results, it was revealed that the performance of majority of operators namely **BSNL, Tata (GSM), RCOM (GSM) / (CDMA), Uninor, Vodafone, Airtel and Idea** was not satisfactory as they failed to meet the benchmarks of the prime network parameters namely Voice Quality, CDR, CSSR and Blocked Call Rate as mentioned above in all the three SSAs where the drive tests were conducted during the quarter ended September 2014. The service providers need to improve their network quality with respect to these parameters immediately. The drive test results further suggest that **BSNL** needs to pay special attention to improve their network quality in respect of the prime network parameters **Call Drop rate, Voice Quality, Call Setup success rate and Blocked Call rate**. However, for other service providers, the network parameters **Voice Quality and Call Drop rate** also, were the areas of concern.

2. Basic (Wireline) Service

From the audit findings, it was concluded that the performance of BSNL was not satisfactory in respect of the parameters **Fault Repairs** and **Metering & Billing**. Hence, **BSNL** need to improve their services in respect of these parameters.

3. Broadband Service

From the audit analysis, it was concluded that only BSNL could not meet the benchmarks of Provision of Service and Fault repairs. For rest of the parameters other service providers were within compliance range.

5. PMR AUDIT REPORT



5. PMR AUDIT REPORTS:

5.1 MONTHLY PMR:

5.1.1 BUSY HOUR OF VARIOUS SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	Month of Audit	Network TCBH Hour
GSM Operators			
1	AIRCEL	Sept-14	20:00 - 21:00
2	AIRTEL	Sept-14	20:00 - 21:00
3	BSNL	Sept-14	20:00 - 21:00
4	IDEA	Sept-14	20:00 - 21:00
5	RCOM GSM	Sept-14	20:00 - 21:00
6	UNINOR	Sept-14	20:00 - 21:00
7	TATA GSM	Sept-14	20:00 - 21:00
8	VODAFONE	Sept-14	19:00 - 20:00
CDMA Operators			
9	RCOM CDMA	Sept-14	20:00 - 21:00
10	TATA CDMA	Sept-14	20:00 - 21:00

The TCBH reported by all the service providers matched the network busy hour calculated by TUV auditors for the UP (E) circle.

5.1.2 SWITCHES/BSC/BTS DETAILS OF SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	No. of MSC + GMSC	No. of BSC	No. of BTS	NSS make	BSS make
GSM Operators						
1	AIRCEL	5	26	3314	ZTE	ZTE
2	AIRTEL	45	109	9742	Ericsson	Ericsson
3	BSNL	25	96	6405	Ericsson & ZTE	Ericsson, NSN & ZTE
4	IDEA	10	43	7284	NSN	NSN
5	RCOM GSM	4	19	2118	Huawei	Huawei
6	UNINOR	12	32	4275	Ericsson	Ericsson
7	TATA GSM	4	22	2360	NSN	NSN
8	VODAFONE	18	141	9300	NSN	NSN
CDMA Operators						
9	RCOM CDMA	9	11	1153	Huawei & Lucent	Huawei & Lucent
10	TATA CDMA	4	6	321	Huawei & Ericsson	Huawei, ZTE & Motorola

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – JULY 14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - UP(E) CIRCLE- JULY 14 MONTH													
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators								CDMA Operators	
Network Service Quality Parameter													
Network Availability													
1	a) BTS Accumulated Downtime	<=2%	July-14	0.49%	0.70%	1.70%	0.31%	0.29%	0.59%	0.30%	0.17%	0.47%	0.10%
	b) Worst affected BTSs due to downtime	<=2%	July-14	3.30%	1.30%	1.72%	0.95%	0.57%	1.93%	1.86%	0.69%	1.57%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	July-14	98.42%	98.28%	98.02%	98.49%	99.28%	97.41%	95.56%	99.26%	96.44%	96.52%
	b) SDCCH/PAGING Channel congestion	<=1%	July-14	1.19%	0.55%	0.74%	0.64%	0.04%	0.59%	0.52%	0.33%	0.00%	0.00%
	c) TCH congestion	<=2%	July-14	1.26%	0.69%	1.71%	1.54%	0.09%	1.61%	2.38%	0.74%	0.14%	1.92%
Connection maintenance (Retainability)													
3	a) CDR (Call Drop Rate)	<=2%	July-14	0.80%	0.77%	1.70%	1.03%	0.54%	0.72%	1.06%	1.46%	0.69%	0.65%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	July-14	4.63%	2.80%	2.10%	2.81%	0.03%	2.22%	7.54%	8.46%	2.32%	7.81%
	c) Connections with good voice quality	>=95%	July-14	96.52%	97.50%	96.50%	97.13%	98.81%	93.09%	97.20%	96.57%	99.84%	99.16%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	July-14	0	0	0	0	0	0	0	0	0	0

5.1.4 QOS PERFORMANCE OF MONTHLY PMR – AUGUST 14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - UP(E) CIRCLE - AUGUST 14 MONTH													
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators
Network Service Quality Parameter													
1	Network Availability												
	a) BTS Accumulated Downtime	<=2%	Aug-14	0.49%	0.64%	1.80%	0.38%	0.28%	0.50%	0.31%	0.38%	0.35%	0.07%
	b) Worst affected BTSs due to downtime	<=2%	Aug-14	2.77%	1.81%	1.80%	1.47%	0.43%	1.80%	1.69%	1.37%	1.04%	0.00%
2	Connection Establishment (Accessibility)												
	a) CSSR (Call Setup Success Rate)	>=95%	Aug-14	98.32%	98.14%	97.51%	98.43%	99.38%	97.46%	96.69%	99.00%	96.62%	98.67%
	b) SDCCH/PAGING Channel congestion	<=1%	Aug-14	1.22%	0.63%	0.85%	0.49%	0.04%	0.52%	0.33%	0.43%	0.00%	0.00%
	c) TCH congestion	<=2%	Aug-14	0.98%	0.71%	1.80%	1.57%	0.10%	1.46%	1.56%	1.00%	0.12%	0.15%
3	Connection maintenance (Retainability)												
	a) CDR (Call Drop Rate)	<=2%	Aug-14	0.84%	0.92%	1.55%	1.11%	0.49%	0.77%	1.03%	1.56%	0.53%	0.64%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Aug-14	5.16%	2.85%	2.62%	2.83%	0.02%	2.69%	7.30%	9.97%	1.72%	8.08%
	c) Connections with good voice quality	>=95%	Aug-14	96.56%	97.19%	96.50%	96.72%	98.85%	92.77%	97.15%	96.20%	99.84%	98.79%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Aug-14	0	0	0	0	0	0	0	0	0	0

5.1.5 QOS PERFORMANCE OF MONTHLY PMR – SETEMBER 14 MONTH

CELLULAR MOBILE TELEPHONE SERVICES - UP(E) CIRCLE- SEPTEMBER 14 MONTH													
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators								CDMA Operators	
Network Service Quality Parameter													
Network Availability													
1	a) BTS Accumulated Downtime	<=2%	Sep-14	0.37%	0.54%	1.90%	0.35%	0.26%	0.48%	0.22%	0.17%	0.31%	0.08%
	b) Worst affected BTSs due to downtime	<=2%	Sep-14	1.99%	1.89%	1.90%	1.28%	0.57%	1.76%	0.76%	0.66%	0.78%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	Sep-14	98.52%	98.45%	96.00%	98.10%	99.43%	97.36%	96.72%	99.17%	97.30%	98.77%
	b) SDCCH/PAGING Channel congestion	<=1%	Sep-14	0.89%	0.40%	0.90%	0.49%	0.04%	0.59%	0.23%	0.34%	0.00%	0.00%
	c) TCH congestion	<=2%	Sep-14	0.92%	0.62%	1.90%	1.90%	0.10%	1.49%	1.64%	0.83%	0.07%	0.08%
Connection maintenance (Retainability)													
3	a) CDR (Call Drop Rate)	<=2%	Sep-14	0.77%	0.87%	1.80%	1.06%	0.48%	0.80%	1.02%	1.30%	0.38%	0.63%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Sep-14	4.77%	2.78%	2.79%	2.81%	0.04%	2.97%	7.33%	8.53%	2.09%	8.69%
	c) Connections with good voice quality	>=95%	Sep-14	96.70%	97.33%	96.50%	96.72%	98.89%	92.69%	97.26%	96.23%	99.84%	99.21%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Sep-14	0	0	0	0	0	0	0	0	0	0

5.1.6 QOS PERFORMANCE OF QUARTERLY PMR –AVERAGE OF QE- SEPTEMBER 14 (JULY TO SEPTEMBER 2014 MONTHS AUDITED DATA)

QUARTERLY QOS PERFORMANCE (AVERAGE OF QE-SEPT-14) OF UP(E) CIRCLE													
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators								CDMA Operators	
Network Service Quality Parameter													
Network Availability													
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.45%	0.63%	1.80%	0.35%	0.28%	0.52%	0.28%	0.24%	0.38%	0.08%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	2.69%	1.67%	1.81%	1.23%	0.52%	1.83%	1.44%	0.91%	1.13%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	98.42%	98.29%	97.18%	98.34%	99.36%	97.41%	96.32%	99.14%	96.79%	97.99%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	1.10%	0.53%	0.83%	0.54%	0.04%	0.57%	0.36%	0.37%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	1.05%	0.67%	1.80%	1.67%	0.10%	1.52%	1.86%	0.86%	0.11%	0.72%
Connection maintenance (Retainability)													
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.80%	0.85%	1.68%	1.07%	0.50%	0.76%	1.04%	1.44%	0.53%	0.64%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	4.85%	2.81%	2.50%	2.82%	0.03%	2.63%	7.39%	8.99%	2.04%	8.19%
	c) Connections with good voice quality	>=95%	Quarterly	96.59%	97.34%	96.50%	96.86%	98.85%	92.85%	97.20%	96.33%	99.84%	99.05%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Quarterly	0	0	0	0	0	0	0	0	0	0

5.1.7 KEY FINDINGS ON MONTHLY PMR AUDIT REPORTS:

The audit of network related parameters for cellular mobile service providers was conducted at their respective MSCs in the circles.

TUV conducted audit for cellular mobile operators based on **three stage audit / verification viz audit of the records, live measurements and drive tests. This exercise has been repeated every month for CMSPs.**

The audit for BSNL has been done for the network coming under jurisdiction of GM / BSNL/ Lucknow in all the three months.

Network Service Quality Parameters:

- **Network Availability**

- i. BTS Accumulated Downtime (Not Available for Service):
- ii. Worst affected BTSs due to downtime

For measuring the performance against the benchmark for this parameter, down time of each BTS lasting for more than 1 hour at a time in a day during the period of a month has been taken for computation.

In UP(E) circle, all the operators were found meeting benchmark on the above parameters 'BTS accumulated downtime' and 'worst affected BTSs due to down time' **except Aircel. Aircel** could not meet the benchmark for the parameter '**worst affected BTSs due to down time**'. The performance level of **Aircel** was **2.69%** on an average for the quarter.

- **Connection Establishment (Accessibility)**

- i. Call Set-up Success Rate(CSSR)

CSSR includes complete signaling in the call set up process and does not aim to measure the performance of the called exchange or that of the Point of Interconnection (POI). CSSR was established as the ratio of total number of successful call attempts (establishment) to the total number of call attempts made. **All the operators were found to be calculating the parameter as per the TRAI's specified norms.**

All the operators were meeting the benchmark on this parameter.

- **Parameters related to Network Congestion:**

The parameters namely SDCCH / Paging Channel Congestion, TCH and POI are prescribed with the aim of measuring the congestion in the network.

In CDMA system, there is no direct counter defined for reporting Paging Channel Congestion as reported by Tata Teleservices. However, they have a defined counter for Paging Channel Occupancy Ratio (**PCH Average Using Ratio**) which is used to determine the Paging Channel Occupancy which on an average is < 50% on all sites in the network. When the value of this parameter is less than 100%, it is counted as 0% congestion. Thus, there is no congestion on the paging channel in CDMA system.

With respect to this parameter, the performance of the operators is quite satisfactory as all operators met the TRAI specified benchmarks on the congestion parameters **except Aircel**. **Aircel** could not meet the benchmark for the parameter '**SDCCH Channel Congestion**'. The quarterly average performance level of **Aircel** was **1.10%**.

- **Connection Maintenance (Retainability)**

- i. Call Drop Rate:

This parameter gives a reliable measurement of the mobile network used by the service provider for maintaining a call once it has been correctly established. Failures in coverage, network congestion and network failures have important impact on this parameter.

The audit of this parameter revealed that all the service providers were measuring this parameter as per the TRAI guidelines. Also, **all the service providers were found to be meeting the TRAI specified benchmark**. The lowest call drop rate (average 0.50%) was for RCOM GSM during the quarter.

- ii. Worst affected cells having more than 3% TCH drops

Worst affected cells are defined as cells in which the call drop rate exceeds 3% during cell Bouncing Busy Hour (CBBH) or at any other hour of a day.

The audit with respect to this parameter revealed that all the operators met the benchmark for this parameter except **Aircel, Tata (GSM), Tata (CDMA) and Vodafone** which remained non-complied in all the 3 months of the quarter. The quarterly average performance level of **Aircel, Tata (GSM), Tata (CDMA) and Vodafone** was **4.85 %**, **7.39%**, **8.19%** and **8.99%** respectively.

- iii. Connections with good voice quality:

The audit results for this parameter indicates that all operators have met the bench mark for the parameter except **Uninor**. **Uninor** failed to meet the benchmark with its average performance of **92.85%**.

**3-DAYS LIVE MEASUREMENT DATA VERIFICATION FOR
CELLULAR MOBILE SERVICE PROVIDERS
(NETWORK SERVICE QUALITY PARAMETER)**



5.2 LIVE MEASUREMENT DATA (3-DAYS) FOR CELLULAR MOBILE SERVICE PROVIDERS (NETWORK SERVICE QUALITY PARAMETER):

5.2.1 LIVE MEASUREMENT DATA (3-DAYS) – JULY 14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES UP(E) CIRCLE- JULY 14 MONTH													
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCON GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators							CDMA Operators		
Network Service Quality Parameter													
Network Availability													
1	a) BTS Accumulated Downtime	<=2%	Live data	0.52%	0.72%	1.89%	0.25%	0.42%	0.52%	0.30%	0.66%	0.53%	0.07%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.06%	0.39%	0.00%	0.08%	0.00%	0.07%	0.00%	0.04%	0.00%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.46%	99.49%	98.58%	98.47%	99.24%	97.53%	95.38%	99.32%	95.21%	96.73%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	1.14%	0.10%	0.79%	0.54%	0.04%	0.55%	0.67%	0.23%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	1.36%	0.35%	1.30%	1.52%	0.09%	1.46%	2.37%	0.68%	0.13%	1.90%
Connection maintenance (Retainability)													
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.76%	0.60%	0.39%	1.02%	0.55%	0.72%	1.04%	1.51%	0.70%	0.38%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	4.40%	2.59%	0.13%	2.89%	0.04%	2.35%	7.11%	4.01%	3.31%	7.58%
	c) Connections with good voice quality	>=95%	Live data	96.48%	98.77%	96.65%	97.08%	98.80%	93.11%	97.20%	96.48%	99.85%	99.17%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0



5.2.2 LIVE MEASUREMENT DATA (3-DAYS) – AUGUST 14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES UP(E) CIRCLE – AUGUST 14 MONTH													
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators								CDMA Operators	
Network Service Quality Parameter													
Network Availability													
1	a) BTS Accumulated Downtime	<=2%	Live data	0.48%	0.38%	1.86%	0.27%	0.23%	0.50%	0.33%	0.28%	0.44%	0.06%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.09%	0.17%	0.19%	0.05%	0.00%	0.13%	0.04%	0.11%	0.00%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.28%	98.49%	97.61%	98.95%	99.40%	97.48%	96.79%	99.31%	95.98%	98.76%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.91%	0.41%	0.67%	0.45%	0.03%	0.46%	0.23%	0.28%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	1.04%	0.63%	1.24%	1.03%	0.10%	1.31%	1.63%	0.69%	0.09%	0.09%
Connection maintenance (Retainability)													
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.83%	0.82%	0.80%	1.07%	0.48%	0.83%	1.00%	1.43%	0.50%	0.65%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	4.67%	2.81%	0.44%	2.85%	0.01%	3.34%	7.32%	7.66%	2.34%	8.10%
	c) Connections with good voice quality	>=95%	Live data	96.45%	97.42%	96.72%	97.04%	98.84%	92.53%	97.16%	96.48%	99.84%	98.82%
4	No. of POI having >=0.5% congestion	<0.5%	Live data	0	0	0	0	0	0	0	0	0	0

5.2.3 LIVE MEASUREMENT DATA (3-DAYS) – SEPTEMBER 14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES UP(E) CIRCLE - SEPTEMBER 14 MONTH													
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators
Network Service Quality Parameter													
Network Availability													
1	a) BTS Accumulated Downtime	<=2%	Live data	0.35%	0.56%	1.89%	0.20%	0.24%	0.65%	0.22%	0.53%	0.30%	0.24%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.03%	0.54%	0.16%	0.00%	0.00%	0.15%	0.00%	0.03%	0.00%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.46%	98.57%	97.31%	98.03%	99.44%	97.33%	97.41%	99.11%	97.82%	98.90%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.83%	0.30%	0.80%	0.37%	0.03%	0.69%	0.29%	0.32%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.92%	0.65%	1.53%	1.95%	0.09%	1.45%	1.84%	0.89%	0.05%	0.02%
Connection maintenance (Retainability)													
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.83%	0.74%	0.45%	1.07%	0.46%	0.85%	0.95%	1.23%	0.34%	0.58%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	5.10%	2.71%	0.39%	2.87%	0.03%	3.15%	6.49%	8.46%	2.14%	7.72%
	c) Connections with good voice quality	>=95%	Live data	96.69%	97.72%	96.64%	96.80%	98.94%	92.31%	97.19%	96.65%	99.84%	99.21%
4	No. of POI having >=0.5% congestion	<0.5%	Live data	0	0	0	0	0	0	0	0	0	0

5.2.4 QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT AUDITED DATA (AVERAGE OF JULY TO SEPTEMBER 2014)

QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT (AVERAGE OF QE- SEPT 14) – UP (E) CIRCLE													
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators						CDMA Operators			
Network Service Quality Parameter													
Network Availability													
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.45%	0.55%	1.88%	0.24%	0.30%	0.56%	0.28%	0.49%	0.42%	0.12%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.06%	0.37%	0.12%	0.04%	0.00%	0.12%	0.01%	0.06%	0.00%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	98.40%	98.85%	97.83%	98.48%	99.36%	97.45%	96.53%	99.25%	96.34%	98.13%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.96%	0.27%	0.75%	0.45%	0.03%	0.57%	0.40%	0.28%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	1.11%	0.54%	1.36%	1.50%	0.09%	1.41%	1.95%	0.75%	0.09%	0.67%
Connection maintenance (Retainability)													
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.81%	0.72%	0.55%	1.05%	0.50%	0.80%	1.00%	1.39%	0.51%	0.54%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	4.72%	2.70%	0.32%	2.87%	0.03%	2.95%	6.97%	6.71%	2.60%	7.80%
	c) Connections with good voice quality	>=95%	Quarterly	96.54%	97.97%	96.67%	96.97%	98.86%	92.65%	97.18%	96.54%	99.84%	99.07%
4	No. of POI having >=0.5% congestion	<0.5%	Quarterly	0	0	0	0	0	0	0	0	0	0

5.2.5 KEY FINDING ON 3 DAYS LIVE MEASUREMENTS:

From three days live assessment, it was found that the operators were meeting the benchmark of most of the parameters. However, **Aircel, Tata (GSM), Tata (CDMA) and Vodafone** failed to meet the benchmark for the parameter “**worst affected Cell > 3% TCH Drop**” in all the three month of the quarter. Their average performance for this parameter was **4.72%, 6.97%, 7.80%** and **6.71%** respectively. **Uninor**, lagged behind in meeting the benchmark for the parameter ‘**Voice Quality**’ in all the three months of the quarter with its average performance as **92.65%** and for parameter ‘**Worst affected cells**’ it remained non-complied in the months of August (**3.34%**) and September-14 (**3.15%**), however on quarterly average it was within the benchmark. **Aircel and Tata (GSM)** also could not met the benchmark of parameters **SDCCH Congestion (1.14%) and TCH congestion (2.37%) in the month of July-14**, though their quarterly performance was within norms.

Similar non-compliance of **Aircel, Tata (GSM), Tata (CDMA), Vodafone and Uninor** with respect to above indicated parameters was also observed in monthly PMR audit.



5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES:

TABLE: 1

Detailed Network Data Assessment of Cellular Mobile Telephone Services- UP(E) Circle - July 14 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators								CDMA Operators	
Network Service Quality Parameter													
Network Availability													
1	a) Total no. of BTSs in the licensed service area		July-14	3238	9677	6405	7281	2105	4404	2360	8870	1143	321
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		July-14	11897	50181	81025	16539	3408	19486	5345	11503	4009	247
	c) BTS Accumulated Downtime	<=2%	July-14	0.49%	0.70%	1.70%	0.31%	0.29%	0.59%	0.30%	0.17%	0.47%	0.10%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		July-14	107	126	110	69	12	85	44	61	18	0
	e) Worst affected BTSs due to downtime	<=2%	July-14	3.30%	1.30%	1.72%	0.95%	0.57%	1.93%	1.86%	0.69%	1.57%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	July-14	98.42%	98.28%	98.02%	98.49%	99.28%	97.41%	95.56%	99.26%	96.44%	96.52%
	b) SDCCCH/PAGING Congestion	<=1%	July-14	1.19%	0.55%	0.74%	0.64%	0.04%	0.59%	0.52%	0.33%	0.00%	0.00%
	c) TCH congestion	<=2%	July-14	1.26%	0.69%	1.71%	1.54%	0.09%	1.61%	2.38%	0.74%	0.14%	1.92%
Connection Maintenance (Retainability)													
3	a) Call Drop Rate (CDR)	<=2%	July-14	0.80%	0.77%	1.70%	1.03%	0.54%	0.72%	1.06%	1.46%	0.69%	0.65%
	b) Worst affected cells>3% TCH drop	<=3%	July-14	4.63%	2.80%	2.10%	2.81%	0.03%	2.22%	7.54%	8.46%	2.32%	7.81%
	c) % of connections with good voice quality	>=95%	July-14	96.52%	97.50%	96.50%	97.13%	98.81%	93.09%	97.20%	96.57%	99.84%	99.16%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		July-14	452	809	125	616	2	289	532	2232	80	76
	e) Total no. of cells (Sector) in the licensed service area		July-14	9759	28911	5946	21919	6284	13011	7064	26381	3439	967
No. of POI's having >=0.5% POI congestion													
4	No. of POI's having >=0.5% POI congestion		July-14	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		July-14	0	0	0	0	0	0	0	0	0	0



Detailed Network Data Assessment of Cellular Mobile Telephone Services- UP(E) Circle - July 14 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators								CDMA Operators	
5	Network Data												
	a) Equipped Capacity of Network in Erlang		July-14	143343	512593	439000	217984	140000	227976	137342	563486	176000	51455
	b) Total traffic in TCBH in erlang (Avg.)		July-14	116333	499367	224737	205741	98505	310665	63327	488501	60006	6214
	c) Total no. of customers served (as per VLR) on last day of the month		July-14	3492280	15579652	4733842	8532641	5137530	6860341	2411898	15606748	2535996	146661



TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- UP(E) Circle – July 14 month													
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators								CDMA Operators	
Network Service Quality Parameter													
1	Network Availability												
	a) Total no. of BTSs in the licensed service area		Live data	3194	9645	6095	7275	2105	4291	2358	8806	1143	321
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Live data	1187	5025	8286	1312	635	1596	516	4214	435	17
	c) BTS Accumulated Downtime	<=2%	Live data	0.52%	0.72%	1.89%	0.25%	0.42%	0.52%	0.30%	0.66%	0.53%	0.07%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	2	38	0	6	0	3	0	4	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.06%	0.39%	0.00%	0.08%	0.00%	0.07%	0.00%	0.04%	0.00%	0.00%
2	Connection Establishment (Accessibility)												
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.46%	99.49%	98.58%	98.47%	99.24%	97.53%	95.38%	99.32%	95.21%	96.73%
	b) SDCCH/PAGING Congestion	<=1%	Live data	1.14%	0.10%	0.79%	0.54%	0.04%	0.55%	0.67%	0.23%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	1.36%	0.35%	1.30%	1.52%	0.09%	1.46%	2.37%	0.68%	0.13%	1.90%
3	Connection Maintenance (Retainability)												
	a) Call Drop Rate (CDR)	<=2%	Live data	0.76%	0.60%	0.39%	1.02%	0.55%	0.72%	1.04%	1.51%	0.70%	0.38%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	4.40%	2.59%	0.13%	2.89%	0.04%	2.35%	7.11%	4.01%	3.31%	7.58%
	c) % of connections with good voice quality	>=95%	Live data	96.48%	98.77%	96.65%	97.08%	98.80%	93.11%	97.20%	96.48%	99.85%	99.17%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	423	747	7	633	2	304	502	1057	114	73
	e) Total no. of cells (Sector) in the licensed service area		Live data	9630	28860	5610	21917	6284	12959	7063	26348	3439	967
4	No. of POI's having >=0.5% POI congestion												
	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0



TABLE: 3

Detailed Network Data Assessment of Cellular Mobile Telephone Services- UP(E) Circle - August 14 month

S/N	Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators								CDMA Operators	
Network Service Quality Parameter													
Network Availability													
1	a) Total no. of BTSs in the licensed service area		Aug-14	3280	9703	6405	7285	2117	4679	2360	8924	1153	321
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Aug-14	11870	45980	85776	20587	4417	17324	5371	25026	2990	160
	c) BTS Accumulated Downtime	<=2%	Aug-14	0.49%	0.64%	1.80%	0.38%	0.28%	0.50%	0.31%	0.38%	0.35%	0.07%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Aug-14	91	176	115	107	9	84	40	122	12	0
	e) Worst affected BTSs due to downtime	<=2%	Aug-14	2.77%	1.81%	1.80%	1.47%	0.43%	1.80%	1.69%	1.37%	1.04%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	Aug-14	98.32%	98.14%	97.51%	98.43%	99.38%	97.46%	96.69%	99.00%	96.62%	98.67%
	b) SDCCCH/PAGING Congestion	<=1%	Aug-14	1.22%	0.63%	0.85%	0.49%	0.04%	0.52%	0.33%	0.43%	0.00%	0.00%
	c) TCH congestion	<=2%	Aug-14	0.98%	0.71%	1.80%	1.57%	0.10%	1.46%	1.56%	1.00%	0.12%	0.15%
Connection Maintenance (Retainability)													
3	a) Call Drop Rate (CDR)	<=2%	Aug-14	0.84%	0.92%	1.55%	1.11%	0.49%	0.77%	1.03%	1.56%	0.53%	0.64%
	b) Worst affected cells>3% TCH drop	<=3%	Aug-14	5.16%	2.85%	2.62%	2.83%	0.02%	2.69%	7.30%	9.97%	1.72%	8.08%
	c) % of connections with good voice quality	>=95%	Aug-14	96.56%	97.19%	96.50%	96.72%	98.85%	92.77%	97.15%	96.20%	99.84%	98.79%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Aug-14	510	823	156	521	2	369	515	2647	60	78
	e) Total no. of cells (Sector) in the licensed service area		Aug-14	9886	28855	5946	21953	6309	13700	7056	26543	3457	967
No. of POI's having >=0.5% POI congestion													
4	No. of POI's having >=0.5% POI congestion		Aug-14	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Aug-14	0	0	0	0	0	0	0	0	0	0
Network Data													
5	a) Equipped Capacity of Network in Erlang		Aug-14	144986	511851	439000	215821	140000	234286	137388	567182	176000	51455
	b) Total traffic in TCBH in erlang (Avg.)		Aug-14	113600	488578	229743	204728	102050	307471	62572	467280	57959	6214
	c) Total no. of customers served (as per VLR) on last day of the month		Aug-14	3615237	15154747	4544823	8376836	5173813	6898866	2411038	15389028	2472931	135955



TABLE: 4

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(E) Circle - August 14 month													
S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators									
Network Service Quality Parameter													
1	Network Availability												
	a) Total no. of BTSs in the licensed service area		Live data	3248	9677	6405	7281	2105	4610	2360	8870	1143	321
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Live data	1134	2618	8573	1441	351	1665	557	1771	361	14
	c) BTS Accumulated Downtime	<=2%	Live data	0.48%	0.38%	1.86%	0.27%	0.23%	0.50%	0.33%	0.28%	0.44%	0.06%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	3	16	12	4	0	6	1	10	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.09%	0.17%	0.19%	0.05%	0.00%	0.13%	0.04%	0.11%	0.00%	0.00%	
2	Connection Establishment (Accessibility)												
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.28%	98.49%	97.61%	98.95%	99.40%	97.48%	96.79%	99.31%	95.98%	98.76%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.91%	0.41%	0.67%	0.45%	0.03%	0.46%	0.23%	0.28%	0.00%	0.00%
c) TCH congestion	<=2%	Live data	1.04%	0.63%	1.24%	1.03%	0.10%	1.31%	1.63%	0.69%	0.09%	0.09%	
3	Connection Maintenance (Retainability)												
	a) Call Drop Rate (CDR)	<=2%	Live data	0.83%	0.82%	0.80%	1.07%	0.48%	0.83%	1.00%	1.43%	0.50%	0.65%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	4.67%	2.81%	0.44%	2.85%	0.01%	3.34%	7.32%	7.66%	2.34%	8.10%
	c) % of connections with good voice quality	>=95%	Live data	96.45%	97.42%	96.72%	97.04%	98.84%	92.53%	97.16%	96.48%	99.84%	98.82%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	457	813	26	625	1	464	517	2022	80	78
e) Total no. of cells (Sector) in the licensed service area		Live data	9789	28920	5946	21951	6284	13902	7062	26381	3439	967	
4	No. of POI's having >=0.5% POI congestion												
	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0



TABLE: 5

Detailed Network Data Assessment of Cellular Mobile Telephone Services - UP(E) Circle - September 14 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators								CDMA Operators	
Network Service Quality Parameter													
1	Network Availability												
	a) Total no. of BTSs in the licensed service area		Sep-14	3314	9742	6405	7284	2118	4725	2359	9300	1153	321
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Sep-14	8918	37847	87619	18182	3953	16334	3755	11152	2607	186
	c) BTS Accumulated Downtime	<=2%	Sep-14	0.37%	0.54%	1.90%	0.35%	0.26%	0.48%	0.22%	0.17%	0.31%	0.08%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Sep-14	66	184	122	93	12	83	18	61	9	0
e) Worst affected BTSs due to downtime	<=2%	Sep-14	1.99%	1.89%	1.90%	1.28%	0.57%	1.76%	0.76%	0.66%	0.78%	0.00%	
2	Connection Establishment (Accessibility)												
	a) CSSR (Call Setup Success Rate)	>=95%	Sep-14	98.52%	98.45%	96.00%	98.10%	99.43%	97.36%	96.72%	99.17%	97.30%	98.77%
	b) SDCCCH/PAGING Congestion	<=1%	Sep-14	0.89%	0.40%	0.90%	0.49%	0.04%	0.59%	0.23%	0.34%	0.00%	0.00%
c) TCH congestion	<=2%	Sep-14	0.92%	0.62%	1.90%	1.90%	0.10%	1.49%	1.64%	0.83%	0.07%	0.08%	
3	Connection Maintenance (Retainability)												
	a) Call Drop Rate (CDR)	<=2%	Sep-14	0.77%	0.87%	1.80%	1.06%	0.48%	0.80%	1.02%	1.30%	0.38%	0.63%
	b) Worst affected cells>3% TCH drop	<=3%	Sep-14	4.77%	2.78%	2.79%	2.81%	0.04%	2.97%	7.33%	8.53%	2.09%	8.69%
	c) % of connections with good voice quality	>=95%	Sep-14	96.70%	97.33%	96.50%	96.72%	98.89%	92.69%	97.26%	96.23%	99.84%	99.21%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Sep-14	477	811	166	617	3	419	516	2360	73	84
e) Total no. of cells (Sector) in the licensed service area		Sep-14	9993	29189	5946	21965	6320	14122	7049	27671	3469	967	
4	No. of POI's having >=0.5% POI congestion												
	No. of POI's having >=0.5% POI congestion		Sep-14	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Sep-14	0	0	0	0	0	0	0	0	0	0
5	Network Data												
	a) Equipped Capacity of Network in Erlang		Sep-14	147227	528784	439000	215608	140000	244689	136760	569520	176000	51455
	b) Total traffic in TCBH in erlang (Avg.)		Sep-14	114094	483312	240523	206146	102801	315687	63577	466840	57098	5372
c) Total no. of customers served (as per VLR) on last day of the month		Sep-14	3678074	16660291	4561544	8453162	5167572	7121607	2489917	15757922	2431787	130985	



TABLE: 6

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(E) Circle - September 14 month													
S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	UNINOR	TATA GSM	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators								CDMA Operators	
Network Service Quality Parameter													
Network Availability													
1	a) Total no. of BTSs in the licensed service area		Live data	3294	9703	6405	7285	2117	4690	2360	8924	1153	321
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Live data	835	3883	8710	1027	371	2208	370	3406	247	56
	c) BTS Accumulated Downtime	<=2%	Live data	0.35%	0.56%	1.89%	0.20%	0.24%	0.65%	0.22%	0.53%	0.30%	0.24%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	1	52	10	0	0	7	0	3	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.03%	0.54%	0.16%	0.00%	0.00%	0.15%	0.00%	0.03%	0.00%	0.00%
Connection Establishment (Accessibility)													
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.46%	98.57%	97.31%	98.03%	99.44%	97.33%	97.41%	99.11%	97.82%	98.90%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.83%	0.30%	0.80%	0.37%	0.03%	0.69%	0.29%	0.32%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.92%	0.65%	1.53%	1.95%	0.09%	1.45%	1.84%	0.89%	0.05%	0.02%
Connection Maintenance (Retainability)													
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.83%	0.74%	0.45%	1.07%	0.46%	0.85%	0.95%	1.23%	0.34%	0.58%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	5.10%	2.71%	0.39%	2.87%	0.03%	3.15%	6.49%	8.46%	2.14%	7.72%
	c) % of connections with good voice quality	>=95%	Live data	96.69%	97.72%	96.64%	96.80%	98.94%	92.31%	97.19%	96.65%	99.84%	99.21%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	506	786	23	629	2	445	458	2247	74	75
	e) Total no. of cells (Sector) in the licensed service area		Live data	9924	29023	5946	21963	6320	14135	7053	26543	3469	967
No. of POI's having >=0.5% POI congestion													
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0

CUSTOMER SERVICE QUALITY (CSD) PARAMETERS





5.3 CUSTOMER SERVICE QUALITY PARAMETERS MEASUREMENT FOR CMTS - QE SEPT 14:

5.3.1 QUARTERLY CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (JULY TO SEPTEMBER 2014 MONTHS AUDITED DATA):

QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES

Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	RCOM CDMA	TATA CDMA
S/ N	Name of Parameter			GSM Operators						CDMA Operators			
Customer Service Quality Parameters													
1	Metering & Billing Credibility -Post Paid												
	A) No. of bills issued during the quarter		UPE	5959	395796	263315	187169	68365	95569	NA	1189536	253255	25119
	B) No. of bills disputed including billing complaints during the quarter		UPE	1	59	121	178	58	0	NA	462	244	0
	C)% of billing complaints during the quarter	<= 0.1%	UPE	0.02%	0.01%	0.05%	0.10%	0.08%	0.00%	NA	0.04%	0.10%	0.00%
2	Metering & Billing Credibility -Pre Paid												
	A) Total No. of Pre-paid customers at the end of the quarter		UPE	5743379	17012744	9393934	8192098	5193290	4351640	9772784	16032561	2410445	313610
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		UPE	1	422	693	2184	15526	0	723	8484	4475	0
	C) % of Pre-paid Charging Complaints	<= 0.1%	UPE	0.00%	0.002%	0.01%	0.03%	0.30%	0.00%	0.01%	0.05%	0.19%	0.00%
3	Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints												
	A) No. of Billing/Charging/Credit/Validity Complaints received during the quarter		UPE	2	481	693	13186	15584	219	723	8946	4719	17
	B) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 4 weeks during the quarter		UPE	2	481	693	13186	15584	219	723	8946	4719	17
	C) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	100 % within 4 week	UPE	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
	D) % of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week	UPE	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%



4 Response time to customers for assistance												
A) Total no of calls attempted to customer care/Call center		UPE	22013755	10593582	8265983	19584810	6810164	1327381	41019579	39796506	3729984	83237
B) Total no. of calls successfully established to customer care/Call center		UPE	21194099	10593582	8265983	19584337	6727421	1318797	39509460	39796474	3630970	82628
C) % Accessibility of Call centre /customer Care (Total call successfully established*100/ Total call attempt)	>=95%	UPE	96.28%	100.00%	100.00%	100.00%	98.79%	99.35%	96.32%	99.9999%	97.35%	99.27%
D) Total Calls reached to agent desk for Voice to Voice (Total call attempt)		UPE	4686261	10273759	4239892	7311436	1390248	1615815	11562824	9278247	593208	49926
E) Total number of calls answered by the operator (Voice to voice) within 60/90 seconds		UPE	4430438	10036798	3095207	7282551	1342659	1583832	11396260	9103177	572000	48262
F) % age of calls answered by operator(voice to voice) (Total call successfully established within 60 Sec./ 90 sec *100 / Total call attempt)	>=90% (60 Sec.) & >=95% (90 Sec.)	UPE	94.54%	97.69%	73.00%	*99.60%	*96.58%	98.02%	*98.56%	98.11%	*96.42%	96.67%
5 Termination/closure of service												
A) Total No. of requests for Termination / Closure of service received during the quarter		UPE	58	2086	26068	786	84	763	NA	21546	544	253
B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		UPE	58	2086	26068	786	84	763	NA	21546	544	253
C) % of Termination/ Closure of service within 7 days	<=7days	UPE	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	100.00%	100.00%
6 Time taken for refunds of deposits after closures.												
A) No. of Payments/ Refunds due during the quarter		UPE	136	1133	534	1027	414	610	NA	2158	1333	324
B) No. of Payments/ Refunds Cleared during the quarter		UPE	136	1133	534	1027	414	609	NA	2158	1333	324
C) Time taken for refunds of deposits after closures.	100% within 60 days	UPE	100.00%	100.00%	100.00%	100.00%	100.00%	99.84%	NA	100.00%	100.00%	100.00%

- NA-Not Applicable as Uninor is not having Post paid connections.
- N.B: BSNL has not provided data for the month of July-14 for the parameters "Total No. of complaints relating to charging, Credit and Validity during the month", Total No. of requests for Termination / Closure of service received during the month" hence, calculation is done on the basis of August and September 2014 months data.
- * Calls Answered by Operator (Voice to Voice) within 90 seconds as per TRAI QoS Regulation (Third amendment) dated 21st August 2014.



5.3.2 3 DAYS LIVE CSD AUDITED DATA FOR CELLULAR MOBILE SERVICES (QE-SEPT 2014):

CSD 3 DAYS LIVE DATA FOR CELLULAR MOBILE TELEPHONE SERVICES - QE- SEPTEMBER 14													
3 days live CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VODAFONE	RCOM (CDMA)	TATA (CDMA)
S/ N	Name of Parameter			GSM Operators									
RESPONSE TIME TO CUSTOMERS FOR ASSISTANCE													
1	Total no of calls attempted to customer care/Call center		UP East	760820	247639	219949	653207	1264500	216601	496951	1164545	102712	30170
	Total no. of calls successfully established to customer care/Call center		UP East	749173	247639	219949	653207	1216703	215114	493829	1164545	100430	30064
	% Accessibility of Call centre /customer Care (Total call successfully established *100 / Total call attempt)	>=95%	UP East	98.47%	100.00%	100.00%	100.00%	96.22%	99.31%	99.37%	100.00%	97.78%	99.65%
2	Total Calls reached to agent desk for Voice to Voice (Total call attempt)		UP East	175042	322079	114230	232477	385696	50763	57992	298972	15556	1506
	Total number of calls answered by the operator (Voice to voice) within 60/90 seconds.		UP East	165532	305497	104502	231503	381368	48864	57127	295862	14760	1401
	% age of calls answered by operator (voice to voice) (Total call successfully established within 60/90 Sec.*100 / Total call attempts)	>=90% (60 Sec.) & >=95% (90 Sec.)	UP East	94.57%	94.85%	91.48%	*99.58%	*98.88%	*96.26%	98.51%	98.96%	*94.88%	93.03%

* Calls Answered by Operator (Voice to Voice) within 90 seconds as per TRAI QoS Regulation (Third amendment) dated 21st August 2014.

5.3.3 KEY FINDINGS ON CUSTOMER SERVICE DELIVERY (CSD) PARAMETERS

1. Metering and billing credibility-(Post paid & Pre-paid)

The performance of the service providers with respect to the parameter metering and billing credibility for both post-paid and pre-paid is well within the prescribed bench mark of $\leq 0.1\%$. However, RCOM (GSM) and RCOM (CDMA) failed to meet the benchmark of parameter '**Billing Complaints – Prepaid**' with their performance as **0.30%** and **0.19%** respectively.

2. Resolution of Billing complaints and applying credits -

- i. Resolution of billing /charging complaints
- ii. Period of applying credit/waiver/adjustment to customer's account from the date of resolution of complaints

All operators have 100 % resolved the billing complaints within stipulated period of 4 weeks. In all cases where customers were due for credit / adjustment, all the service providers have met the benchmark of 100 % refund in one week.

3. Response Time to the Customer for assistance

- i. Accessibility of call centre/customer care
- ii. Percentage of calls answered by Operators (Voice to Voice)

All service providers are in compliance with respect to the parameter Accessibility of call center. However, **BSNL** failed to meet the benchmark of parameter '**Calls answered by Operators (Voice to Voice)**' with its performance as **73.00%**.

4. Termination/Closure of Service

In case of this parameters also, all service providers have settled the closure/termination within the benchmark of 7 days.

5. Time Taken for Refund of deposits after closures

All operators were found to have complied with the benchmark of 100% refund of deposits within 60 days of closure except **Tata (GSM)**, which could achieve **99.84%**, marginally below the benchmark of 100%.

Live Measurements

The results for three days live measurements revealed that all service providers were in compliance with respect to the parameter '**Accessibility of call center**' and '**calls answered by operators (voice to voice)**' except **RCOM (CDMA)**. **RCOM CDMA** has not met the benchmark of **calls answered by Operators (voice to voice) within 90 seconds** as they provided the data for 90 seconds. **RCOM CDMA** achieved its performance as **94.88%** against the benchmark of $\geq 95\%$.

6. LIVE CALLING ASSESSMENT



6. LIVE CALLING ASSESSMENT:

6.1 INTER OPERATOR CALLS ASSESSMENT:

Inter operator call assessment with a sample of 2x50 test calls for each Service provider operating in UP (E) service area during the time 1100 to 1400 Hrs and 1600 to 1900 was carried out by TUV auditors. The test calls were made from one operator to another within the same licensed area to judge the ease of connectivity amongst the operators. While doing this exercise, the radio part, the switch part and POI in between the two operators are involved. Congestion in any of these network elements could result in congestion in the network.

INTER OPERATOR CALL ASSESSMENT BASED ON LIVE MEASUREMENT											
Calling Operators	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	VODAFONE	UNINOR
AIRCEL	UP-E	---	100.00%	100.00%	100.00%	98.00%	100.00%	100.00%	100.00%	100.00%	100.00%
AIRTEL	UP-E	100.00%	---	97.00%	100.00%	100.00%	100.00%	98.00%	100.00%	100.00%	100.00%
BSNL	UP-E	100.00%	100.00%	---	100.00%	90.00%	100.00%	97.00%	97.00%	100.00%	100.00%
IDEA	UP-E	100.00%	100.00%	100.00%	---	100.00%	100.00%	100.00%	100.00%	100.00%	99.00%
RCOM GSM	UP-E	100.00%	100.00%	96.00%	100.00%	---	100.00%	100.00%	100.00%	100.00%	100.00%
RCOM CDMA	UP-E	97.00%	100.00%	100.00%	100.00%	100.00%	---	100.00%	100.00%	100.00%	100.00%
TATA GSM	UP-E	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	---	100.00%	100.00%	98.00%
TATA CDMA	UP-E	100.00%	100.00%	100.00%	98.00%	100.00%	95.00%	100.00%	---	100.00%	100.00%
VODAFONE	UP-E	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	---	100.00%
UNINOR	UP-E	100.00%	100.00%	98.00%	100.00%	98.00%	100.00%	100.00%	100.00%	100.00%	---

The result of the testing revealed that the inter connection performance among the operators was quite satisfactory. However, in case where Calls attempted from Aircel to RCOM(GSM), successful interconnection was 98.0%, Airtel to BSNL and Tata (GSM) was 97% and 98%, BSNL to RCOM(GSM), Tata (GSM) and Tata (CDMA) was 90%, 97% and 97%, RCOM (GSM) to BSNL was 96%, RCOM (CDMA) to Aircel was 97%, Tata (CDMA) to Idea and RCOM (CDMA) was 98% and 95%, and Uninor to BSNL and RCOM (GSM) was 98%. Thus there was no remarkable problem in interconnection from one operator to other operators.

6.2 CUSTOMER CARE / HELPLINE ASSESSMENT:

LIVE CALLING TO CALL CENTRE											
Parameter	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VODAFONE	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	UP East	100	100	100	100	100	100	100	100	100	100
Total no of calls attempted to customer care/Call center	UP East	100	100	100	100	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	UP East	100	100	100	100	100	100	100	100	100	100
% Accessibility of Call centre /customer Care (Total call successfully established*100/ Total call attempt)	UP East	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Total Calls reached to agent desk for Voice to Voice (Total call attempt)	UP East	100	100	100	100	100	100	100	100	100	100
Total number of calls answered by the operator (Voice to voice) within 90 seconds	UP East	98	100	100	100	97	97	98	96	97	99
% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100/ Total call attempts)	UP East	98.00%	100.00%	100.00%	100.00%	97.00%	97.00%	98.00%	96.00%	97.00%	99.00%

In case of calls answered by operators (voice to voice) within 60 seconds when test calls were made to the call centers, all operators were able to connect the calls with their call center operators/agents successfully. However, Aircel, Uninor, RCOM (GSM), Tata (GSM), Vodafone, RCOM (CDMA) and Tata (CDMA) could achieve their performance as 98.00%, 97.00%, 97.00%, 98.00%, 96.00%, 97.00%, and 99.00% respectively.

6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLAINTS:

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS											
	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VODAFONE	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	UP East	2	100	100	100	100	100	100	100	100	17
Total No. of calls Answered	UP East	2	90	53	77	66	67	71	85	75	12
Cases resolved within 4 weeks	UP East	2	90	53	77	66	67	71	85	75	12
%age of cases resolved	UP East	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

To test the Service Providers performance on billing related complaints and their resolutions, TUV-SUD auditors conducted a customer feedback calling for about random 100 nos. of customers. However, in some cases, the number of customers contacted for verification was very less due to less number of billing complaints. During live calling, some of the customers did not attend the calls/ or their mobile was off, while few others reported that there complaints have been resolved but not remembering of duration of their resolution. However, most of the customers reported their satisfaction on resolution of the billing complaints.

6.4 LEVEL -1 CALLING ASSESSMENT:

LEVEL 1 LIVE CALLING															
Emergency no.	Circle Name	SSA Name	Name of SDCA	No. of calls made per operator	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA CDMA	TATA GSM	UNINOR	VODAFONE	
100, 101, 102, 108, 1090	UPE	Faizabad	Faizabad	10	√	√	√	√	√	√	√	√	√	√	
			Akbarpur	10	√	√	√	√	√	√	√	√	√	√	
			Tanda	10	X	√	√	√	√	√	√	X	√	√	√
100, 101, 102, 108, 1090	UPE	Ghazipur	Ghazipur	10	√	√	√	√	√	√	√	√	√	√	
			Mohammadabad	10	√	√	√	√	√	√	X	√	√	√	
			Zamania	10	√	√	√	√	√	√	√	X	√	√	√
			Saidpur	10	√	√	√	√	√	X	X	√	√	√	√
100, 101, 102, 108, 1090	UPE	Varanasi	Mughal Sarai	10	√	√	√	√	√	√	√	√	√	√	
			Chandauli	10	√	√	√	√	√	√	√	√	√	√	√
			Chakia	10	√	√	√	√	√	√	√	√	√	√	√
			Varanasi	10	√	√	√	√	√	√	√	√	√	√	√
			Bhadohi	10	√	√	√	√	√	√	√	√	X	√	√

To assess the availability and efficiency of level 1 services such as police, fire, ambulance (emergency services) offered by various mobile service providers in the SDCAs where the drive tests were conducted, the calls were made from mobile phones provided by the service providers during the drive tests. In these SDCAs of UP (E) service areas, the emergency services as mentioned in the above table were largely found functional except for some of the service providers, level-1 calling was not matured in the SDCAs and have been ticked as "X".

7. DRIVE TEST



7. OPERATOR ASSISTED DRIVE TEST

In terms of TRAI's letter dated 21st January, 2014, the drive tests were conducted for three consecutive days in one select SSA each month in each service area. Thus, the drive tests were carried out in three select SSA's namely **Faizabad, Ghazipur and Varanasi** in the months of July, August and September 2014 respectively. The total route Kms covered during the drive tests in respective SSAs was **230 Kms, 360 Kms and 322 Kms** respectively. The performance of the operators has been highlighted below in the tables. The drive test was conducted simultaneously for all the operators following the same route of drive tests. The holding period for all test calls was 120 seconds. The drive test vehicle across all routes plied at a speed of about 30-50 km per hour.

For measuring voice quality, Rx Qual samples on a scale from 0 to 7 for GSM operators and Frame Error Rate (FERs) for CDMA service providers were measured. As per the QoS norms, Rx Qual between 0- 5 for GSM operators and between 0-4% FER value for CDMA operators is considered to be good, where as Rx Qual beyond this benchmark is considered to be bad. Call drops were measured by the number of calls that were dropped to the total number of calls established during the drive test. Similarly CSSR was measured as the ratio of total calls established to the total call attempts made. Signal strength was measured in dBm at street level with strength ≥ -75 dBm for in-door coverage and ≥ -85 dBm for in-vehicle.

7.1 OPERATOR ASSISTED DRIVE TEST: FAIZABAD SSA (JULY-14)

DRIVE TEST TABLE: 1

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
1	Call Attempts	Major Road	47	25	47	25	86	28	51	26	23	27	20	25	29	25	56	25	15	25	NC	25
		Highway	91	25	84	25	43	30	112	26	75	25	42	25	72	25	85	25	38	25	16	NC
		Within City	131	25	73	25	153	25	116	27	123	25	132	25	92	25	120	25	88	25	56	25
		Overall SSA	269	75	204	75	282	83	279	79	221	77	194	75	193	75	261	75	141	75	72	50
2	Blocked Call Rate	Major Road	0.00%	0.00%	0.00%	0.00%	2.33%	14.29%	0.00%	0.00%	17.39%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	13.33%	0.00%	NC	0.00%
		Highway	3.30%	0.00%	0.00%	0.00%	9.30%	0.00%	0.89%	0.00%	6.67%	4.00%	2.38%	0.00%	1.39%	0.00%	0.00%	0.00%	5.26%	0.00%	0.00%	NC
		Within City	0.00%	0.00%	0.00%	0.00%	3.27%	8.00%	0.86%	0.00%	0.00%	0.00%	0.00%	0.00%	1.09%	0.00%	0.83%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	1.12%	0.00%	0.00%	0.00%	3.90%	7.23%	0.72%	0.00%	4.07%	1.30%	0.52%	0.00%	1.04%	0.00%	0.38%	0.00%	2.84%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Major Road	0.00%	0.00%	0.00%	0.00%	2.50%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	1.79%	0.00%	7.69%	0.00%	NC	0.00%
		Highway	0.00%	0.00%	0.00%	0.00%	8.82%	0.00%	0.00%	0.00%	1.43%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.56%	0.00%	0.00%	NC
		Within City	0.00%	0.00%	0.00%	0.00%	3.57%	0.00%	0.88%	0.00%	4.07%	0.00%	1.52%	0.00%	0.00%	0.00%	0.00%	0.00%	1.14%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	3.94%	0.00%	0.36%	0.00%	2.83%	0.00%	2.07%	0.00%	0.00%	0.00%	0.38%	0.00%	2.92%	0.00%	0.00%	0.00%
4	Percentage connections with good voice quality (=>95%)																					
	(a) 0-4 (w/o)	Major Road	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	94.26%	99.61%	NC	99.01%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2014-UP (EAST) CIRCLE

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			frequency hopping for CDMA Operators)	Highway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	85.84%
Within City	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97.25%	99.49%	95.72%	98.21%
Overall SSA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	91.86%	99.59%	96.16%	98.61%
(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	97.56%		98.91%	96.33%	98.20%	92.38%	93.76%	94.73%	97.54%	94.88%	99.37%	91.43%	99.18%	92.83%	95.08%	94.47%	99.48%	NA	NA	NA	NA
	Highway	97.94%	99.60%	95.65%	99.70%	92.59%	93.86%	95.18%	99.03%	94.99%	99.20%	96.64%	99.73%	93.71%	95.44%	94.35%	99.23%	NA	NA	NA	NA	
	Within City	97.53%	99.25%	95.99%	99.10%	93.26%	96.81%	96.23%	98.90%	94.12%	99.32%	91.54%	98.55%	93.80%	93.75%	95.05%	99.31%	NA	NA	NA	NA	
	Overall SSA	97.67%	99.25%	95.92%	98.99%	92.93%	94.79%	95.53%	98.31%	94.53%	99.11%	93.80%	99.15%	93.65%	94.75%	94.67%	99.34%	NA	NA	NA	NA	
	Service Coverage																					
5	In door (>= - 75dBm)	Major Road	23.33%	20.32%	51.77%	99.30%	31.13%	55.55%	54.57%	96.81%	19.25%	100%	20.67%	89.93%	29.23%	97.89%	81.95%	100%	3.99%	98.37%	NC	99.40%
		Highway	18.64%	4.63%	55.83%	98.30%	30.50%	64.76%	41.58%	31.17%	45.84%	95.10%	22.08%	76.64%	19.50%	97.44%	86.56%	100%	11.48%	84.98%	18.26%	NC
		Within City	35.40%	40.79%	53.36%	98.60%	52.64%	18.21%	91.99%	37.52%	59.85%	99.30%	36.27%	0.74%	57.47%	98.85%	97.95%	100%	43.60%	98.40%	73.89%	100%
		Overall SSA	27.34%	21.81%	54.04%	98.74%	43.83%	46.99%	59.30%	50.16%	48.16%	98.17%	28.81%	55.78%	40.42%	98.03%	90.41%	100%	25.46%	93.29%	61.33%	99.70%
	In-vehicle (>= - 85dBm)	Major Road	70.24%	79.58%	80.41%	100%	63.09%	99.40%	90.38%	100%	59.46%	100%	40.94%	99.86%	44.76%	99.94%	96.04%	100%	9.32%	99.98%	NC	100%
		Highway	70.01%	81.93%	82.02%	100%	62.58%	98.88%	87.24%	96.28%	73.79%	99.70%	55.64%	99.30%	47.52%	99.98%	99.46%	100%	21.98%	99.99%	66.31%	NC
		Within City	89.66%	98.81%	87.36%	100%	88.16%	90.97%	97.62%	91.26%	89.33%	100%	64.13%	58.56%	83.12%	99.96%	99.99%	100%	66.08%	100%	94.39%	100%
		Overall SSA	79.21%	86.31%	83.57%	100%	77.91%	96.50%	90.96%	96.84%	78.52%	99.90%	55.54%	85.93%	65.12%	99.96%	98.96%	100%	40.89%	99.99%	88.05%	100%
	Outdoor-in city (>= - 95dBm)	Major Road	85.71%	99.90%	98.63%	100%	93.16%	100%	99.37%	100%	84.22%	100%	66.43%	100%	77.54%	100%	100%	100%	29.02%	100%	NC	100%
		Highway	94.93%	99.74%	98.12%	100%	92.62%	99.57%	99.08%	100%	91.12%	100%	76.76%	99.94%	81.64%	100%	100%	100%	55.33%	100%	91.78%	NC
		Within City	99.41%	99.98%	99.57%	100%	99.66%	99.62%	99.04%	99.92%	98.41%	100%	91.20%	99.94%	97.43%	100%	100%	100%	97.83%	100%	99.44%	100%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2014-UP (EAST) CIRCLE



S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		RCOM CDMA		TATA CDMA		
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	
			Overall SSA	95.26%	99.88%	98.75%	100%	96.96%	99.72%	99.11%	99.99%	93.31%	100%	80.96%	99.95%	88.96%	100%	100%	100%	71.86%	100%	97.71%	100%
6	Call Setup Success Rate (>=95%)	Major Road	100%	100%	100%	100%	93.02%	78.57%	100%	100%	82.61%	100%	100%	100%	100%	100%	100%	100%	100%	86.67%	100%	NC	100%
		Highway	96.70%	100%	100%	100%	79.07%	83.33%	99.11%	100%	93.33%	96.00%	97.62%	100%	98.61%	100%	100%	100%	100%	94.74%	100%	100%	NC
		Within City	100%	100%	100%	100%	91.50%	92.00%	97.41%	100%	100%	100%	100%	100%	98.91%	100%	99.17%	100%	100%	100%	100%	100%	100%
		Overall SSA	98.88%	100%	100%	100%	90.07%	84.34%	98.57%	100%	95.93%	98.70%	99.48%	100%	98.96%	100%	99.62%	100%	97.16%	100%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Major Road	100%	100%	100%	100%	92.37%	92.86%	96.49%	100%	100%	100%	100%	100%	100%	100%	96.23%	100%	100%	100%	NC	100%	
		Highway	86.79%	100%	99.20%	100%	62.69%	100%	90.52%	100%	100%	100%	100%	93.33%	100%	100%	100%	100%	100%	100%	100%	100%	NC
		Within City	97.01%	100%	100%	100%	97.84%	90.00%	100%	100%	98.52%	100%	100%	100%	99.49%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	93.28%	100%	99.73%	100%	92.43%	91.67%	94.90%	100%	99.04%	100%	100%	93.33%	99.57%	100%	99.06%	100%	100%	100%	100%	100%	100%

NA: Not Applicable

NC: No Coverage

Note: Day 3 drive test was not conducted due to curfew imposed in faizabad SSA.

The service providers having block call rate more than 3% have been shaded in yellow colour.

7.2 OPERATOR ASSISTED DRIVE TEST: GHAZIPUR SSA (AUGUST-14)

DRIVE TEST TABLE: 2

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
1	Call Attempts	Major Road	86	25	195	25	434	35	172	25	26	25	41	26	124	25	162	25	72	32	29	25
		Highway	45	27	121	25	182	35	103	25	77	28	43	26	78	25	69	25	43	30	27	NC
		Within City	104	26	162	25	313	49	158	25	98	18	103	26	112	26	168	26	107	32	72	25
		Overall SSA	235	78	478	75	929	119	433	75	201	71	187	78	314	76	399	76	222	94	128	50
2	Blocked Call Rate	Major Road	6.98%	0.00%	1.03%	0.00%	54.38%	0.00%	2.91%	0.00%	0.00%	0.00%	2.44%	0.00%	5.65%	0.00%	1.23%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highway	4.44%	0.00%	0.00%	0.00%	42.31%	0.00%	3.88%	0.00%	0.00%	0.00%	2.33%	0.00%	1.28%	12.00%	2.90%	0.00%	0.00%	0.00%	0.00%	NC
		Within City	1.92%	0.00%	0.00%	0.00%	33.23%	8.16%	0.63%	0.00%	0.00%	5.56%	0.00%	0.00%	0.89%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	4.26%	0.00%	0.42%	0.00%	44.89%	3.36%	2.31%	0.00%	0.00%	1.41%	1.07%	0.00%	2.87%	3.95%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Major Road	1.25%	0.00%	0.00%	0.00%	29.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highway	0.00%	0.00%	0.00%	0.00%	23.86%	0.00%	1.01%	0.00%	0.00%	0.00%	0.00%	0.00%	1.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC
		Within City	1.96%	0.00%	0.00%	0.00%	19.57%	4.55%	0.00%	0.00%	0.00%	0.00%	0.00%	3.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	1.33%	0.00%	0.00%	0.00%	24.37%	1.75%	0.24%	0.00%	0.00%	0.00%	0.00%	1.28%	0.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
4	Percentage connections with good voice quality (=>95%)																					
	(a) 0-4 (w/o)	Major Road	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	91.58%	100%	97.47%	99.66%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2014-UP (EAST) CIRCLE

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			frequency hopping for CDMA Operators)	Highway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.31%
	Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.87%	100%	99.72%	100%
	Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	96.99%	100%	99.05%	99.83%
(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	94.91%	98.21%	94.15%	99.10%	92.13%	99.36%	92.64%	97.89%	95.69%	95.56%	93.44%	100%	91.06%	94.12%	88.98%	94.30%	NA	NA	NA	NA	
	Highway	94.16%	99.68%	97.05%	99.39%	92.47%	96.32%	95.16%	99.11%	86.64%	99.01%	93.58%	100%	94.36%	99.05%	93.34%	97.32%	NA	NA	NA	NA	
	Within City	95.21%	98.18%	97.80%	99.72%	95.92%	94.91%	96.63%	99.66%	94.19%	98.38%	95.08%	99.65%	94.14%	94.66%	93.98%	81.46%	NA	NA	NA	NA	
	Overall SSA	94.88%	98.95%	96.38%	99.41%	93.91%	96.09%	94.72%	98.89%	91.46%	97.61%	94.25%	99.88%	93.04%	95.79%	92.23%	90.94%	NA	NA	NA	NA	
Service Coverage																						
5	In door (>= - 75dBm)	Major Road	28.23%	10.57%	75.28%	75.67%	27.65%	87.40%	91.53%	91.16%	33.13%	54.00%	25.58%	99.65%	40.88%	93.50%	88.39%	99.17%	6.17%	96.48%	3.25%	2.42%
		Highway	38.04%	12.19%	69.16%	84.30%	38.28%	78.80%	92.34%	100%	57.10%	93.52%	26.28%	100%	48.75%	60.60%	92.31%	89.08%	16.10%	100%	18.68%	NC
		Within City	41.53%	29.02%	73.76%	72.60%	49.02%	96.10%	96.77%	90.18%	43.93%	3.18%	56.53%	4.01%	56.76%	92.30%	92.34%	58.60%	46.97%	2.47%	57.48%	0.09%
		Overall SSA	35.23%	14.48%	73.27%	77.76%	39.28%	88.18%	93.61%	93.84%	47.68%	51.03%	41.60%	61.75%	48.26%	81.83%	91.09%	81.64%	26.75%	67.78%	37.44%	1.25%
	In-vehicle (>= - 85dBm)	Major Road	50.01%	86.87%	95.21%	95.63%	76.58%	98.90%	99.11%	100%	89.28%	98.14%	55.25%	100%	72.06%	100%	99.21%	100%	23.17%	100%	32.54%	93.95%
		Highway	63.61%	88.00%	93.00%	100%	82.56%	99.80%	99.65%	100%	80.91%	99.90%	71.63%	100%	83.60%	97.60%	99.30%	100%	45.11%	100%	52.93%	NC
		Within City	78.91%	94.36%	93.95%	92.90%	88.69%	98.70%	99.76%	100%	81.47%	91.24%	78.35%	13.82%	87.31%	99.80%	99.71%	99.20%	76.87%	93.37%	88.93%	85.63%
		Overall SSA	63.64%	88.70%	94.20%	96.25%	83.16%	99.15%	99.47%	100%	82.38%	96.68%	70.33%	65.73%	80.04%	99.11%	99.42%	99.71%	51.98%	97.89%	68.98%	89.77%
	Outdoor-in city (>= - 95dBm)	Major Road	77.25%	99.86%	99.38%	99.98%	94.78%	100%	99.75%	100%	97.83%	99.73%	90.34%	100%	94.30%	100%	100%	100%	76.49%	100%	86.72%	98.42%
		Highway	90.09%	99.81%	99.62%	100%	97.13%	100%	99.97%	100%	97.31%	100%	91.87%	100%	98.78%	100%	100%	100%	85.02%	100%	82.13%	NC
		Within City	96.94%	99.85%	99.24%	99.00%	98.49%	99.50%	99.94%	100%	96.94%	99.92%	92.58%	90.60%	98.76%	99.99%	100%	100%	98.01%	100%	97.00%	96.78%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2014-UP (EAST) CIRCLE



S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			Overall SSA	87.27%	99.83%	99.38%	99.62%	96.90%	99.77%	99.87%	100%	97.22%	99.86%	91.79%	96.26%	96.88%	100%	100%	100%	87.99%	100%	91.67%
6	Call Setup Success Rate (>=95%)	Major Road	93.02%	100%	98.97%	100%	38.48%	100%	97.09%	100%	100%	100%	97.56%	100%	92.74%	100%	95.06%	100%	100%	100%	96.55%	100%
		Highway	95.56%	100%	100%	100%	48.35%	100%	96.12%	100%	100%	100%	100%	100%	98.72%	88.00%	94.20%	100%	100%	100%	100%	NC
		Within City	98.08%	100%	100%	100%	58.79%	89.80%	99.37%	100%	100%	94.44%	99.03%	100%	99.11%	100%	95.24%	100%	100%	100%	100%	100%
		Overall SSA	95.74%	100%	99.58%	100%	47.26%	95.80%	97.69%	100%	100%	98.59%	98.93%	100%	96.50%	96.05%	94.99%	100%	100%	100%	99.22%	100%
7	Hand Over Success Rate (HOSR)	Major Road	100%	100%	99.00%	100%	46.61%	100%	95.51%	100%	100%	100%	100%	100%	97.01%	100%	94.49%	100%	100%	100%	100%	100%
		Highway	91.67%	100%	100%	100%	77.19%	100%	94.32%	100%	97.89%	100%	96.55%	100%	96.94%	100%	98.67%	100%	100%	100%	100%	NC
		Within City	97.10%	100%	98.78%	100%	82.57%	100%	96.03%	100%	100%	100%	100%	100%	99.35%	100%	97.67%	96.88%	100%	100%	100%	100%
		Overall SSA	97.14%	100%	99.19%	100%	71.78%	100%	95.43%	100%	98.86%	100%	99.27%	100%	97.92%	100%	96.53%	96.97%	100%	100%	100%	100%

NA: Not Applicable

NC: No Coverage

The service providers having block call rate more than 3% have been shaded in yellow colour.

7.3 OPERATOR ASSISTED DRIVE TEST: VARANASI SSA (SEPTEMBER-14)

DRIVE TEST TABLE: 3

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
1	Call Attempts	Major Road	134	24	175	25	77	26	151	28	81	26	122	26	127	25	152	25	136	29	93	25
		Highway	160	25	111	25	151	27	140	25	99	25	124	26	153	25	159	25	137	29	40	25
		Within City	163	30	188	25	210	25	151	32	157	25	165	25	180	25	156	25	179	29	79	NC
		Overall SSA	457	79	474	75	438	78	442	85	337	76	411	77	460	75	467	75	452	87	212	50
2	Blocked Call Rate	Major Road	1.49%	0.00%	1.71%	0.00%	10.39%	0.00%	0.66%	0.00%	0.00%	0.00%	1.64%	0.00%	3.94%	0.00%	0.00%	0.00%	0.00%	0.00%	1.08%	0.00%
		Highway	1.88%	0.00%	0.00%	0.00%	15.23%	0.00%	0.71%	0.00%	0.00%	0.00%	0.81%	0.00%	0.65%	0.00%	0.00%	0.00%	0.73%	0.00%	2.50%	0.00%
		Within City	1.84%	0.00%	0.00%	0.00%	4.29%	0.00%	1.32%	0.00%	0.64%	0.00%	0.61%	0.00%	0.00%	0.00%	0.00%	0.00%	0.56%	0.00%	0.00%	NC
		Overall SSA	1.75%	0.00%	0.63%	0.00%	9.13%	0.00%	0.90%	0.00%	0.30%	0.00%	0.97%	0.00%	1.30%	0.00%	0.00%	0.00%	0.44%	0.00%	0.94%	0.00%
3	Dropped Call Rate (<=2%)	Major Road	0.76%	0.00%	9.30%	0.00%	4.69%	0.00%	1.36%	0.00%	1.23%	0.00%	1.67%	0.00%	0.82%	0.00%	0.00%	0.00%	3.68%	0.00%	0.00%	0.00%
		Highway	0.64%	0.00%	0.00%	0.00%	5.51%	4.00%	1.44%	0.00%	1.01%	0.00%	0.81%	0.00%	0.00%	0.00%	0.00%	0.00%	2.19%	0.00%	0.00%	0.00%
		Within City	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%	0.68%	0.00%	1.28%	0.00%	1.22%	0.00%	0.00%	0.00%	0.00%	0.00%	1.12%	0.00%	0.00%	NC
		Overall SSA	0.45%	0.00%	3.40%	0.00%	4.09%	1.32%	1.15%	0.00%	1.19%	0.00%	1.23%	0.00%	0.22%	0.00%	0.00%	0.00%	2.21%	0.00%	0.00%	0.00%
4	Percentage connections with good voice quality (=>95%)																					
	(a) 0-4 (w/o)	Major Road	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	95.98%	93.10%	96.47%	95.50%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2014-UP (EAST) CIRCLE

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			frequency hopping for CDMA Operators)	Highway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97.46%
Within City	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97.63%	99.83%	96.56%	NC
Overall SSA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97.08%	97.76%	96.75%	96.57%
(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	93.15%		98.89%	92.96%	92.78%	81.08%	95.57%	94.58%	88.41%	87.58%	88.51%	91.02%	87.25%	91.57%	97.07%	95.41%	95.19%	NA	NA	NA	NA
(b) 0-5 (with frequency hopping for GSM Operators)	Highway	95.81%	98.31%	92.52%	99.69%	88.15%	81.10%	95.46%	95.69%	93.05%	99.13%	94.78%	96.71%	91.82%	91.44%	94.51%	98.16%	NA	NA	NA	NA	
	Within City	97.49%	99.50%	95.62%	98.36%	90.43%	99.06%	97.30%	98.27%	94.83%	99.84%	95.60%	97.24%	94.82%	96.67%	96.49%	94.85%	NA	NA	NA	NA	
	Overall SSA	95.67%	98.94%	93.84%	96.75%	88.16%	92.05%	95.80%	94.21%	92.64%	95.80%	94.04%	93.62%	93.06%	95.14%	95.51%	96.07%	NA	NA	NA	NA	
	Service Coverage																					
5	In door (>= - 75dBm)	Major Road	46.76%	43.90%	66.30%	94.30%	46.23%	32.18%	95.79%	99.75%	43.72%	42.06%	59.91%	98.90%	87.25%	98.49%	86.82%	43.00%	78.00%	1.00%	76.63%	91.91%
		Highway	35.66%	87.85%	59.25%	98.60%	39.24%	92.35%	94.14%	100%	49.88%	98.50%	45.31%	97.57%	57.55%	99.85%	76.29%	100%	65.64%	53.23%	75.71%	100%
		Within City	46.48%	74.68%	72.23%	65.70%	53.54%	81.98%	97.98%	100%	66.21%	89.14%	61.05%	73.30%	81.96%	79.18%	91.83%	100%	75.52%	86.00%	83.34%	NC
		Overall SSA	43.09%	69.43%	66.46%	87.05%	47.77%	68.63%	96.03%	99.92%	56.24%	74.66%	55.68%	90.41%	75.81%	91.92%	85.72%	81.29%	72.99%	55.71%	78.98%	94.57%
5	In-vehicle (>= - 85dBm)	Major Road	85.93%	96.05%	88.16%	100%	76.99%	90.10%	98.97%	99.90%	76.97%	92.07%	87.95%	100%	98.51%	99.99%	99.52%	98.80%	93.71%	1.00%	99.22%	100%
		Highway	78.91%	99.65%	82.31%	100%	70.38%	99.76%	98.78%	100%	77.96%	100%	72.14%	99.91%	88.44%	100%	96.21%	100%	78.66%	99.93%	98.97%	100%
		Within City	90.21%	99.85%	91.62%	92.60%	87.91%	99.12%	99.73%	100%	88.19%	99.76%	90.99%	98.45%	98.60%	99.48%	98.71%	100%	89.26%	99.88%	98.94%	NC
		Overall SSA	85.31%	98.63%	87.66%	97.75%	80.52%	96.30%	99.16%	99.97%	82.69%	96.89%	84.08%	99.48%	95.40%	99.81%	98.48%	99.61%	87.07%	76.04%	99.06%	100%
5	Outdoor-in city (>= - 95dBm)	Major Road	97.71%	99.92%	98.47%	100%	96.20%	99.62%	99.85%	100%	98.15%	99.98%	97.80%	100%	99.67%	99.99%	100%	100%	99.89%	1.00%	100%	100%
		Highway	96.77%	99.99%	92.79%	100%	94.10%	100%	99.75%	100%	95.24%	100%	94.09%	100%	99.03%	100%	100%	100%	94.97%	100%	100%	100%
		Within City	99.41%	100%	99.16%	100%	98.88%	100%	99.92%	100%	98.86%	100%	99.42%	100%	99.93%	100%	100%	100%	98.85%	100%	100%	NC

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2014-UP (EAST) CIRCLE



S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			Overall SSA	98.05%	99.97%	96.82%	99.94%	96.91%	99.87%	99.85%	100%	97.76%	99.99%	97.25%	99.92%	99.58%	100%	100%	100%	97.87%	76.12%	100%
6	Call Setup Success Rate (>=95%)	Major Road	98.51%	100%	98.29%	100%	83.12%	100%	97.35%	100%	100%	100%	98.36%	100%	96.06%	100%	98.68%	100%	100%	100%	98.92%	100%
		Highway	98.13%	100%	100%	100%	84.11%	92.59%	99.29%	100%	100%	100%	99.19%	100%	99.35%	100%	96.23%	100%	99.27%	100%	97.50%	100%
		Within City	98.16%	100%	100%	100%	95.24%	100%	98.01%	100%	99.36%	100%	99.39%	100%	100%	100%	98.72%	100%	99.44%	100%	100%	NC
		Overall SSA	98.25%	100%	99.37%	100%	89.27%	97.44%	98.19%	100%	99.70%	100%	99.03%	100%	98.70%	100%	97.86%	100%	99.56%	100%	99.06%	100%
7	Hand Over Success Rate (HOSR)	Major Road	97.06%	100%	99.49%	100%	88.81%	100%	97.38%	100%	100%	100%	99.08%	100%	96.80%	100%	98.78%	100%	100%	100%	100%	100%
		Highway	99.22%	100%	98.94%	100%	94.00%	95.24%	97.37%	100%	100%	100%	100%	90.48%	98.98%	99.39%	98.79%	100%	100%	100%	100%	100%
		Within City	96.99%	100%	99.25%	100%	97.21%	100%	99.40%	90.91%	95.92%	100%	100%	100%	99.38%	100%	99.12%	100%	100%	100%	100%	NC
		Overall SSA	97.68%	100%	99.29%	100%	95.01%	98.72%	98.04%	96.88%	98.38%	100%	99.61%	97.66%	98.44%	99.43%	98.87%	100%	100%	100%	100%	100%

NA: Not Applicable

NC: No Coverage

The service providers having block call rate more than 3% have been shaded in yellow colour

7.4 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

Name of SSA	Day 1		Day 2		Day 3	
	Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered
FAIZABAD	Faizabad / 110KM	Highway-(Darshan Nagar -Maya-Gosaiganj). Major Roads- (Gosai Ganj To Bikapur) , Faizabad Within City-(Bsnl Office,Dm Office, District Hospital, Devkali Bypass, Roadways Bus Stand,Court) , Bikapur Hospital, Tehsil, Main Market, Bypass Chaurha. INDOOR: Gokul Hotel	Akbarpur & Tanda / 120KM	Highway (Gosai Ganj To Akabarpur). Major Roads: (Faizabad To Tanda) , Akabarpur Within City: (Thana, Roadways Stand, Hospital,SBI Tahseel (Court). Tanda Withn City (Police Chowki) INDOOR: Atithi Devobhava Restaurant	Drive test was not conducted on 3 day due to curfew imposed in Faizabad SSA.	---
GHAZIPUR	Ghazipur & Mohammadbad / 80KM	Highway: (Rauza - Ghat Station - Talia - Katwamod - Firozpur - Gauspur - Mohammadbad Tehsil Mod) , Major Roads (Nawapura towards Nonhara - Maniavdeah - Mahui - Nonhara- Malipur - Katwamod) . Within City: (a) Ghazipur City (Railway Station - Phullanpur Byepass - Lanka Maidan - Prakash Nagar - Tulsiapur Road - Police Line - Gora Bazar - Peer Nagar - Sikandarpur - Nawapura - Mishra Bazar - Lal Darwaza - Rauza) ,	Zamania / 120 KM	Highway (Zamania Mod - Ganga Bridge - Mednipur - Maksudpur - Malsa - Sabbalpur - Matsa - Tajpur - Zamania-Dildar Nagar Mod) , Major Roads (Zamania-Dildar Nagar Mod - Phully - Dildar Nagar - Nagsar - Assaw - Dharani - Anharipur - Sonaul - Sohawal - Thana - Mednipur) ,	Saidpur / 160 KM	Highway (Prakash Nagar - Maharajganj - Mundwal Saheri - Nand Ganj - Paharpur - Deokali - Bhitari Mod) , Major Roads (Saidpur Chiraiyyakot Marg - Ludipur - Bhimapar - Baragaon - Bahariyabad - Mahuabari - Dora - Majui - Nasirpur - Jakhania Ghazipur Road - Roohipur -

		<p>(b) Mohammadabad City (Mohammadabad Tehsil Mod - Alawalpur - Tehsil - Hata Mod - Mohammadabad Railway Station - Nawapura Mode.</p> <p>INDOOR: BSNL Office</p>		<p>Within City : Zamania City (Zamania Kasba - Tehsil - Thana - Darauli - Zamania Railway Station - Zamania BSNL Exchange)</p> <p>INDOOR: Zamania Thana</p>		<p>Nooranpur - Mirmapur - Paharpur Chauraha) ,</p> <p>Within City: Saidpur City (Bhitari Mod - Sabzi Mandi - Bada Bazar - Saidpur Railway Station - Saidpur Chiraiyyakot Marg)</p> <p>INDOOR: Saidpur Kotwali</p>
VARANASI	Mughal Sarai, Chandauli & Chakia / 105KM	<p>Highway (Nadesar to Mughal Sarai- Mughal Sarai to Chandauli)</p> <p>Major Roads (Chanduli-Baburi-Chakia- Alinagar-Ramnagar Industrial Area- Tengra Mod-Ramnagar-Padaw) ,</p> <p>Within City (Mughal Sarai- Chanduli- Chakia)</p> <p>INDOOR: Mughal Sarai Railway Station</p>	Varanasi / 107KM	<p>Highway (Shivpur to Babatpur and Chuwkaghat to Mudaila)</p> <p>Major Roads (Sunderpur-DLW- Mehmoorganj-Rathyatra- Luxa-Nai Sadak- Lahurabir-Kabir Chowra- Madagin-Bishwarganj- Alaipura-Sarnath- Pahariya-Shivpur- Kachahari-Chowkaghat)</p> <p>Within City (Mughal Sarai- Sagra-Naisadak- KabirChwora-Madagin- Chowk-Sonarpura- Lanka-BHU)</p> <p>INDOOR: Sampoomanand Sanskrit University</p>	Bhadohi / 110KM	<p>Highway (Varanasi to Bhadohi, Aurai to Varanasi) ,</p> <p>Major Roads (Bhadohi to Aurai) ,</p> <p>Within City (Mughal Sarai- Indira Mill chauraha, Anand Nagar, Nayi Bazar, Railway Station Road, Rajpura Chauraha)</p> <p>INDOOR: Deepak Raugs Industry</p>

7.5 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF FAIZABAD SSA – JULY 14

S NO	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Faizabad, Gosaiganj & Fatehganj	Poor Level at Faizabad Outer, near Pura Bazar, Mayabazar, Gosaiganj, Poor Quality near Bikapur, Masudha	Akbarpur, Tanda & Ambedkar Nagar	Poor Level & Quality near Gosaiganj, Katehri, Ambedkar Nagar Outer, Tanda Outer, Illitifatganj		ND
2	AIRTEL		Poor Level near Naka bypass, Gosaiganj Outer		Poor Level near Illitifatganj, NTPC, Akbarpur Outer		ND
3	BSNL		Poor Level & Quality near Pura Bazar, Pimparipul, Bikapur, Gosaiganj		Poor Level & Quality near Tehsil Akbarpur, Khemapur, Tanda, Illitifatganj		ND
4	TATA GSM		Poor Level & Quality near CEB Area Ghazipur, Baskharimod, Bagpath Rd		Poor Level & Quality near Tanda, Akbarpur Outer		ND
5	TATA CDMA		No Highway Coverage and Poor Level & Quality at Faizabad Outer		No Highway Coverage and Poor Level & Quality at Tanda Outer		ND
6	IDEA		Poor Level & Quality near Pura Bazar, Tarun bazar, masundha		Poor Level & Quality near Maya Bazar, Annawa, Katehri		ND
7	RCOM GSM		They have coverage only in SDCA's or Mjaor Towns with Poor Level & Quality at Outers		Poor Level & Quality at Outer of all SDCA's		ND
8	RCOM CDMA		They have coverage only in SDCA's or Mjaor Towns with Poor Level & Quality at Outers		Poor Level & Quality at Outer of all SDCA's		ND
9	UNINOR		Poor Level & Quality near Bikapur, Bhagan, Sarai Barisal, Pakraila, Tikari		Poor Level & Quality near Dariyapur, Husainpur Sudana, Daharpur, Tanda Outer, Govindpur		ND
10	VODAFONE		Poor Level & Quality near Tarun Bazar		---		ND

N.B: Day 3 drive test was not conducted due to curfew imposed in faizabad SSA

DRIVE TEST TABLE: 6

DRIVE TEST OBSERVATION OF GAZHIPUR SSA – AUGUST 14

S NO	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Ghazipur & Yusufpur	Poor Level & Quality near Ghazipur Rly Stn, Satpura	Ghazipur & Zamaniya	Poor Level & Quality near Dhadni, Zamania, Shewal	Saidpur & Bhimapar	Poor Level & Quality near Saidpur, Bahariyabad, Daulatnagar, Yusufpur, Hansraipur
2	AIRTEL		Poor Quality near Yusufpur, Poor Level near Ghazipur Outer, Kothwa, Yusufpur Rly Stn		---		Poor Level & Quality near Baragaon
3	BSNL		-----				
4	TATA GSM		Poor Level near Gorabazar, Chazpurghat, Kathwamod, Yusufpur Outer, Salempur		Poor Level & Quality near Jeevpur, Dharni, No Coverage between Zamania to Suhawal		Poor Level & Quality near Naisara, Nandganj, Bujurga, No Coverage between Ghazipur to Saidpur
5	TATA CDMA		Poor Level at Ghazipur Outer		No Highway Coverage and Poor Level & Quality at Zamania Outer, No Coverage in other SDCA's		No Highway Coverage and Poor Level & Quality at Saidpur Outer, No Coverage in other SDCA's
6	IDEA		Poor Quality near Katwamod, Mahuli, Ghazaipur Rly Stn		Poor Quality near Mednipur, Dildarnagar, Nagsar, Zamania City		Poor Quality near Bhimapar, Baragaon, Paharpur
7	RCOM GSM		No Highway Coverage and Poor Level & Quality in Mohamdabad, Umrani Pipari		Poor Level & Quality near kaithwalia, Zamania, Dildarnagar, Bhadaura, Zamania Rly Stn		No Highway Coverage and Poor Level & Quality near Saidpur, Ghazipur Outer
8	RCOM CDMA		No Highway Coverage and Poor Level & Quality at Nunhara, Gouspur, Ghazipur Outer		Poor Level & Quality near Dharni, Kaithwalia, Pokhara, Dildar Nagar, Mainpur, Khizirpur, Zamania Rly Stn		No Highway Coverage and Poor Level & Quality near Saidpur, Ghazipur Outer
9	UNINOR		Poor Level & Quality near Ghazipur Rly Stn, Jalalpur, Noohana, Mohamadabad		Poor Level & Quality Patches near Bhagirathpur, Dharni, Phulli		Poor Level & Quality near Bariyabad, Makhadumpur, Choki, Dhamu
10	VODAFONE		Poor Level & Quality near Khatwamod, Yusufpur Outer		Poor Level & Quality near Zamania Ext, Poor Quality near Dharni, Suhawal		Poor Level & Quality near Bhimapar, Nandganj

DRIVE TEST TABLE: 7

DRIVE TEST OBSERVATION OF VARANASI SSA – SEPTEMBER 14

S NO	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Varanasi, Mugal Sarai, Chandauli & Chakia	Poor Level & Quality near Chandauli, Baburi	Sundernagar, Naisadak & Bhelupur	Poor Level on Sultanpur Varanasi HW	Varanasi & Bhadohi	Poor Level & Quality near Gorai Bazar, Ugapur, Baradhahar
2	AIRTEL		Poor Level & Quality near Suzabad, Padao, Poor Quality near Mugal Sarai Rly StnChandousi Gaon		Poor Level & Quality near Sunderpur		Poor Level & Quality near Baradhahar, Mirza Murad
3	BSNL		Poor Level & Quality near Prem Nagar, Rema		Poor Level & Quality near Dafi Bypass, Paharia, Haruwa		Poor Level & Quality near Sajohi, Jansa, Barshipur, Asnao, Maharajganj
4	TATA GSM		Poor Level & Quality near Chandausi, Parrow Area, Bhikhampur		Poor Level & Quality near Babatpur, Ashapur, Rly Stn, Assi		Poor Level & Quality near Chauribazar
5	TATA CDMA		Poor Level near Adampura and No highway Coverage between Mugak Sarai to Chandauli		No Highway Coverage		NC
6	IDEA		Poor Quality near Baburi, Mugal Sarai Outer		---		Poor Level & Quality near Bhadohi Outer, Rajpura
7	RCOM GSM		Poor Level & Quality near Chandausi, Katesar, Chandauli, Chakia		Poor Level & Quality near Babatpur, Kazi Sarai, Assi Ghat, Ashapur, Giltebazar, Cant Rly Stn		Poor Level & Quality near Chowribazar, Ugapur, Mainmarket Bhadohi
8	RCOM CDMA		Poor Level & Quality near Chandausi, Parrow Area, Bhikhampur		Poor Level & Quality near Baragaon, Ganeshpur, Shivpur		Poor Level & Quality near Bhadohi Mainmarket, Daropur, Chauribazar, Jansa, RohaniyaMaharajganj
9	UNINOR		Poor Level & Quality near Niyma, Dabak, Sikand, Ramnagar		Poor Level & Quality near Ktira		Poor Level on Varanasi to Bhadohi HW
10	VODAFONE		Poor Level & Quality near Sikanderpur, Poor Quality near Ramnagar		Poor Level near Gatewel Hospital, Poor Quality near Ashapur, BHU		Poor Level & Quality near Chowribazar, Saroibazar, Naipura

NC: No Coverage

7.6 KEY FINDINGS ON DRIVE TEST:

The key observations that could be derived from the results of the drive tests were as under –

- (i) **In the Month of July-14**, drive tests were conducted across **Faizabad SSA** covering Faizabad, Akbarpur and Tanda SDCAs. The performance of some of the operators was not satisfactory as they failed to meet the benchmarks of the key network parameters. On SSA level, **non-compliance** of the service providers was as follows:

BSNL: Call drop rate (3.94%), Voice Quality (92.93%-outdoor) / (94.79%-Indoor) and Call set up success rate (90.07%- Outdoor) / (84.34%-Indoor) and Blocked Call rate (3.90%-Outdoor) / (7.23%-Indoor).

Tata (GSM): Call Drop rate (2.83%), Voice Quality (94.53%), Blocked Call rate (4.07%)

RCOM (GSM): Call Drop rate (2.07%) and Voice Quality (93.80%).

RCOM (CDMA): Call Drop rate (2.92%) and Voice Quality (91.86%)

Uninor and Vodafone: Voice Quality (93.65%- Outdoor) / (94.75%-Indoor) and 94.67% respectively.

- (ii) **In the Month of August-14**, drive tests were conducted across **Ghazipur SSA** covering Ghazipur, Mohammadbad, Zamania and Saidpur SDCAs. The performance of some of the service providers on SSA level remained under performed for different network parameters. On SSA level, **non-compliance** of the service providers was as follows:

Aircel: Voice Quality (94.88%), Blocked Call rate (4.26%)

BSNL: Call Drop rate (24.37% - way beyond the benchmark of < 2%), Voice Quality (93.91%), CSSR (47.26% - way below the benchmark) and Blocked Call rate (44.89% - Outdoor) / (3.36%-Indoor)

Uninor: Voice Quality (93.04%) and Blocked Call rate (3.95% - Indoor)

Idea, Tata (GSM), RCOM (GSM) and Vodafone: Voice Quality (94.72%, 91.46%, 94.25% and (92.23 %- Outdoor /90.94% -Indoor) respectively,

- (iii) **In the month of September-14**, drive tests were conducted across **Varansi SSA** covering Mughalsarai, Chandauli, Chakia, Varansi, and Bhadoi SDCAs. On SSA level, **non-compliance** of the service providers was as follows:

BSNL: Call Drop rate (4.09%), Voice Quality (88.16%-Outdoor) / (92.05%-Indoor), CSSR (89.27%) and Blocked Call rate (9.13%).

Airtel: Call Drop rate (3.40%), Voice Quality (93.84%) and

Tata (GSM), RCOM (GSM), Uninor and Idea: Voice Quality (92.64%, 94.04 % (Outdoor) / 93.62% (Indoor), 93.06 and 94.28%-Indoor) respectively.

RCOM (CDMA): Call Drop rate (2.21%).

The deficiencies with respect to inadequate coverage and voice quality, encountered by different Service providers at various places as shown in the drive tests plots, are detailed in the above table.-5, table-6 and table-7.

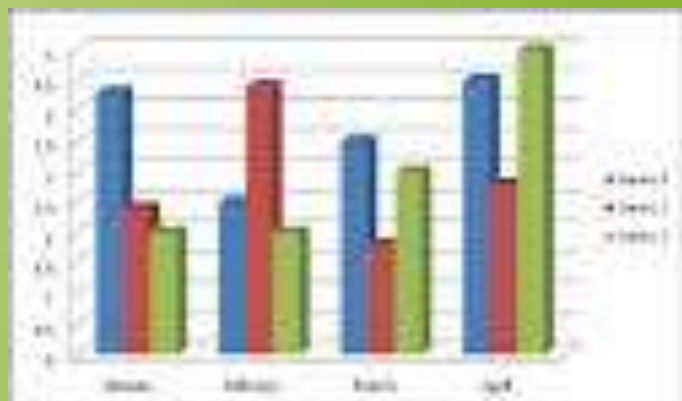
*Thus, the performance of the operators namely BSNL, Tata (GSM), RCOM (GSM) / (CDMA), Uninor, Vodafone, Airtel and Idea was not satisfactory as they failed to meet the benchmarks of the prime network parameters namely Voice Quality, CDR, CSSR and Blocked Call Rate as mentioned above in all the three SSAs where the drive tests were conducted during the quarter ended September 2014. The service providers need to improve their network quality with respect to these parameters immediately. The drive test results further suggest that **BSNL** needs to pay special attention to improve their network quality in respect the prime network parameters **Call Drop rate, Voice Quality, Call Setup success rate and Blocked Call rate**. However, for other service providers, the network parameters **Voice Quality and Call Drop rate also**, were the areas of concern.*

8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

AVERAGED QUARTERLY PMR

V/S

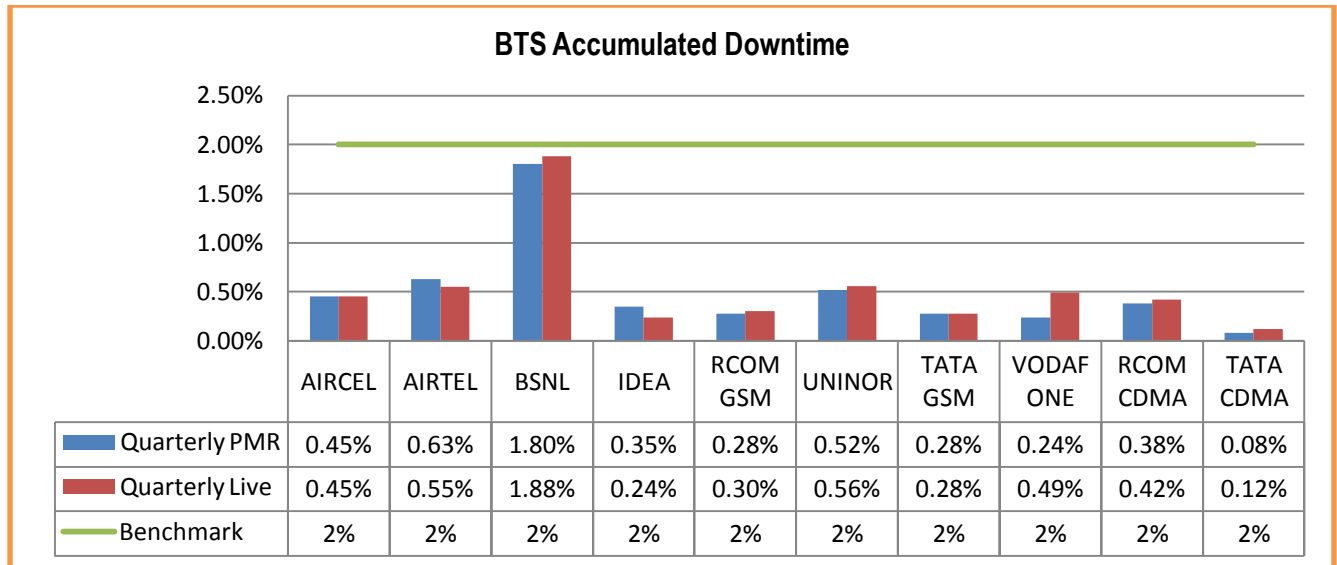
AVERAGED QUARTERLY 3-DAYs LIVE MEASURMENT



8. GRAPHICAL REPRESENTATION:

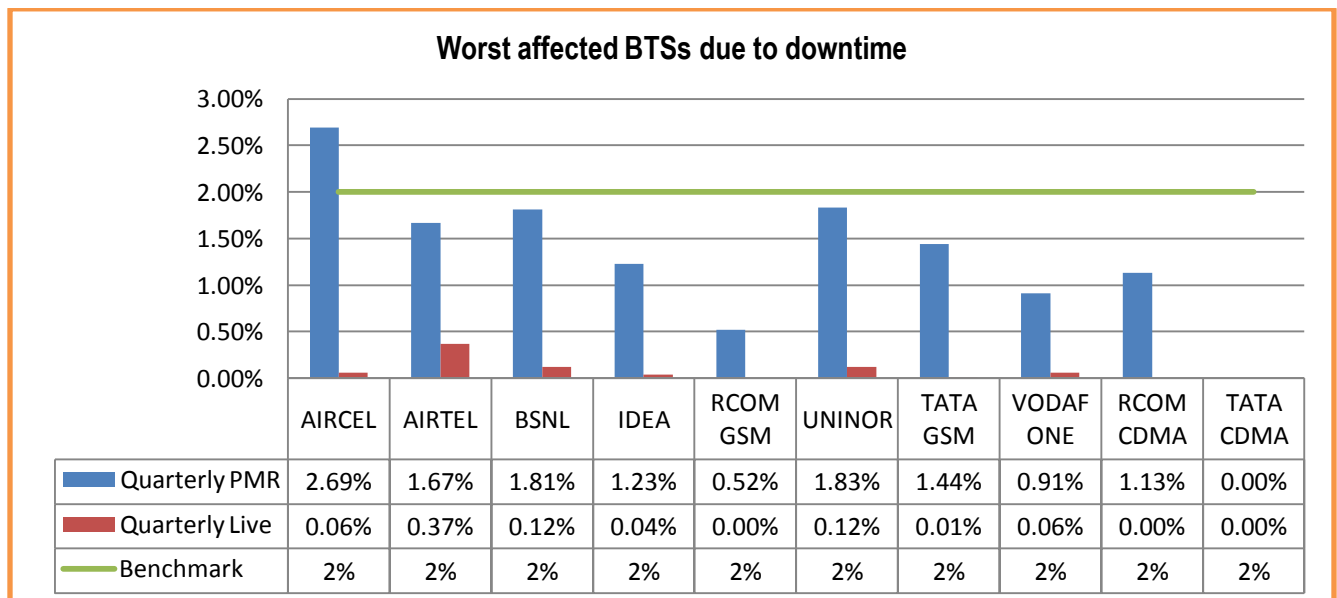
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

1) BTS ACCUMULATED DOWNTIMES:



All operators are meeting the benchmarks.

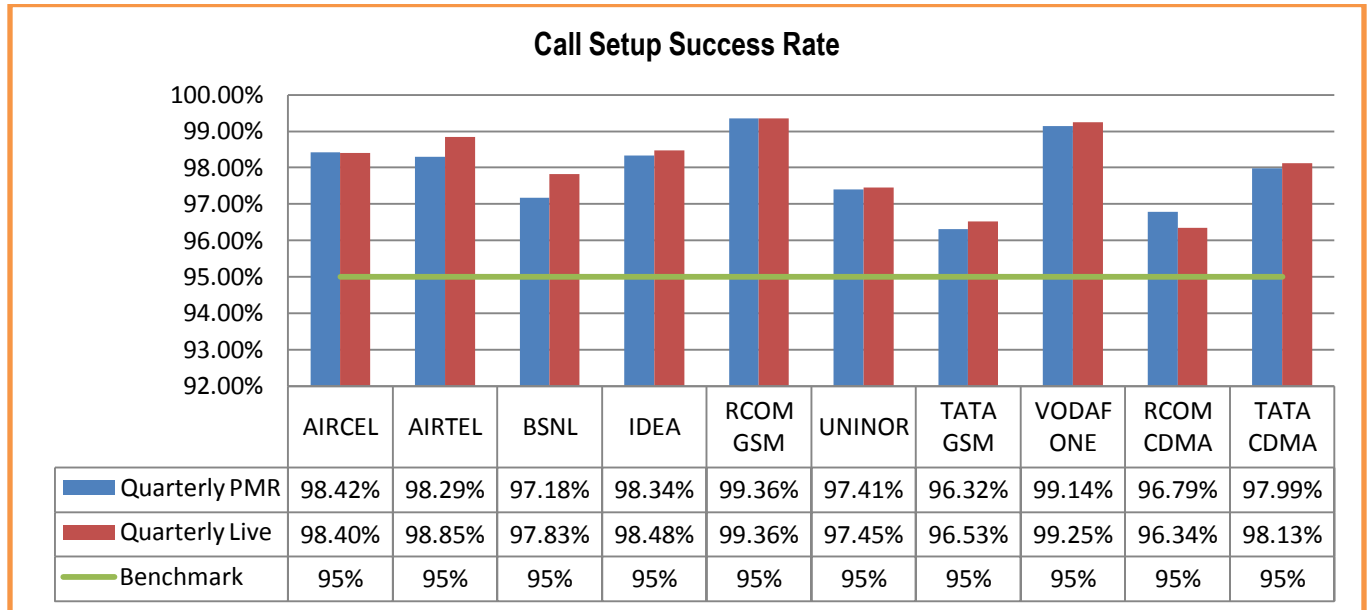
2) WORST AFFECTED BTSs DUE TO DOWNTIME:



All operators are meeting the benchmarks except Aircel.

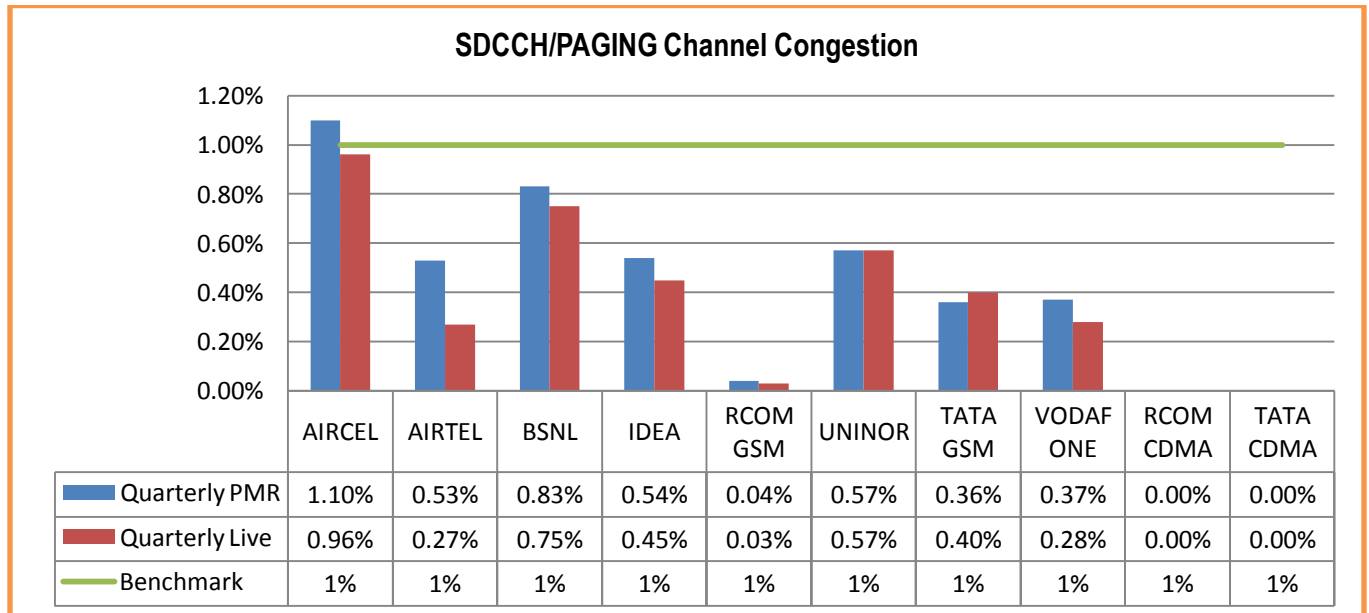


3) CALL SETUP SUCCESS RATE:



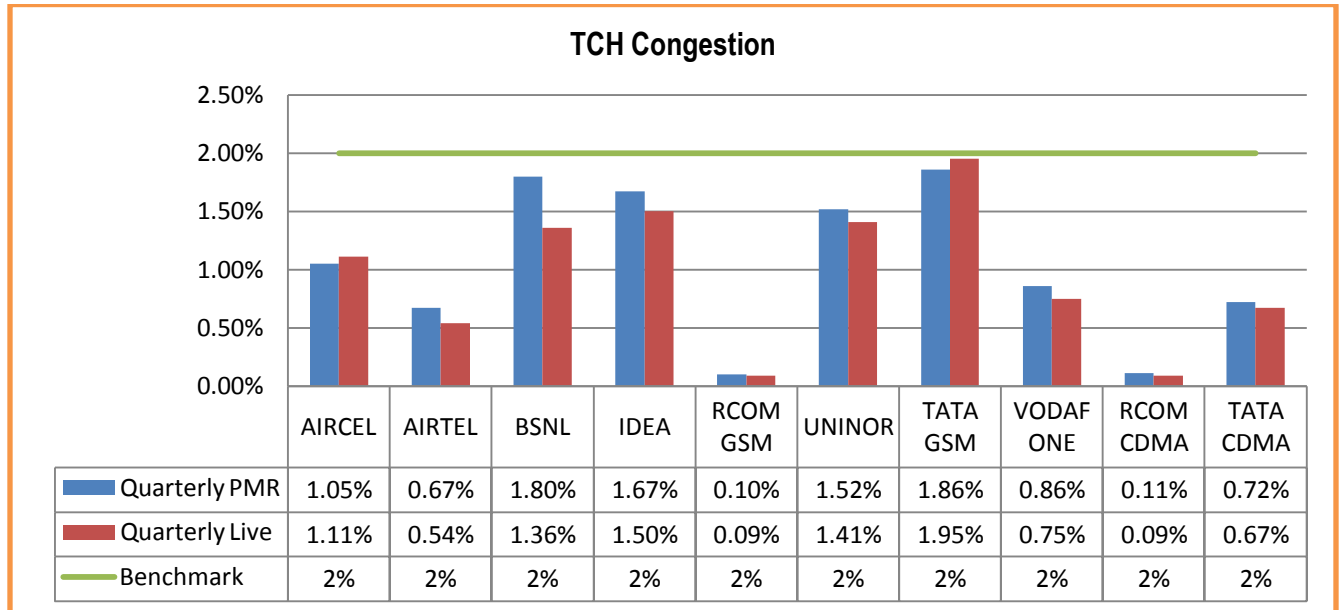
All operators are meeting the benchmarks.

4) SDCCH/PAGING CHANNEL CONGESTION:



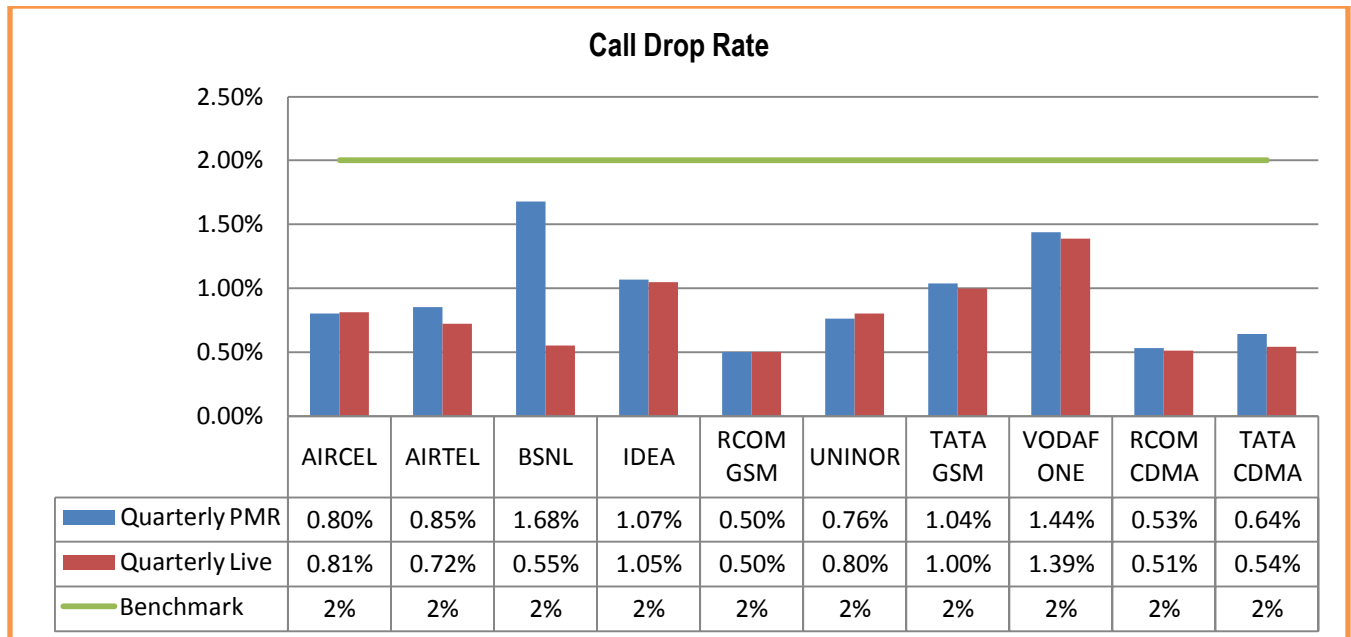
All operators are meeting the benchmarks except Aircel.

5) TCH CONGESTION:



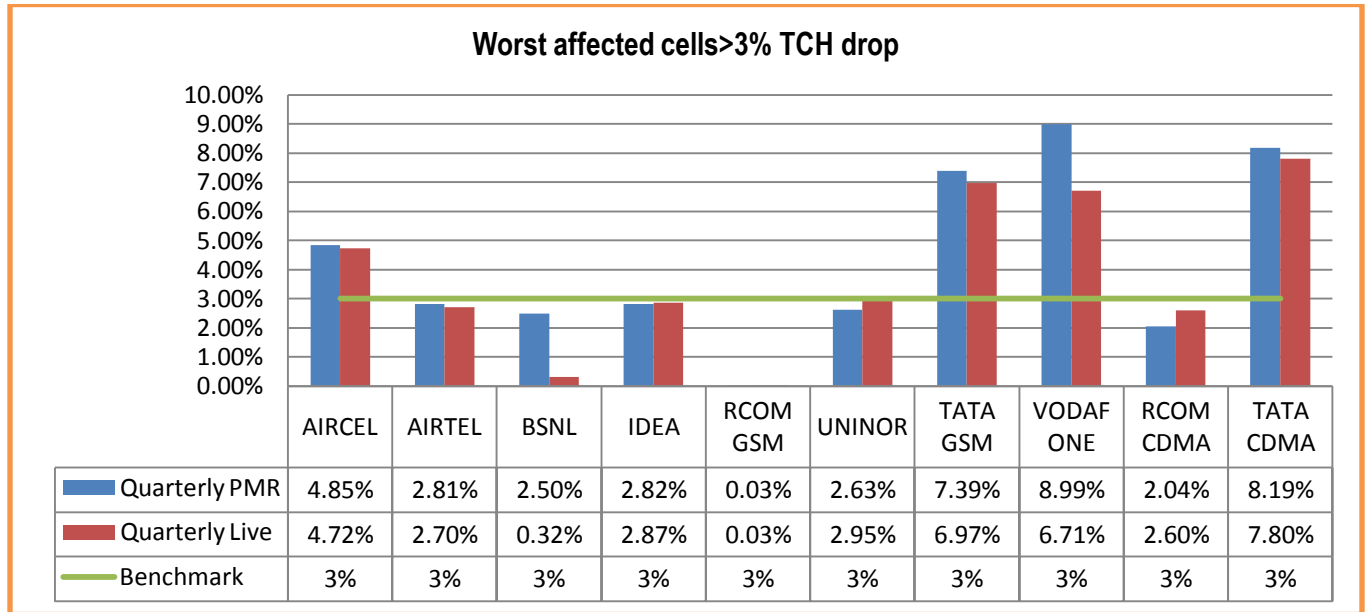
All operators are meeting the benchmarks.

6) CALL DROP RATE:



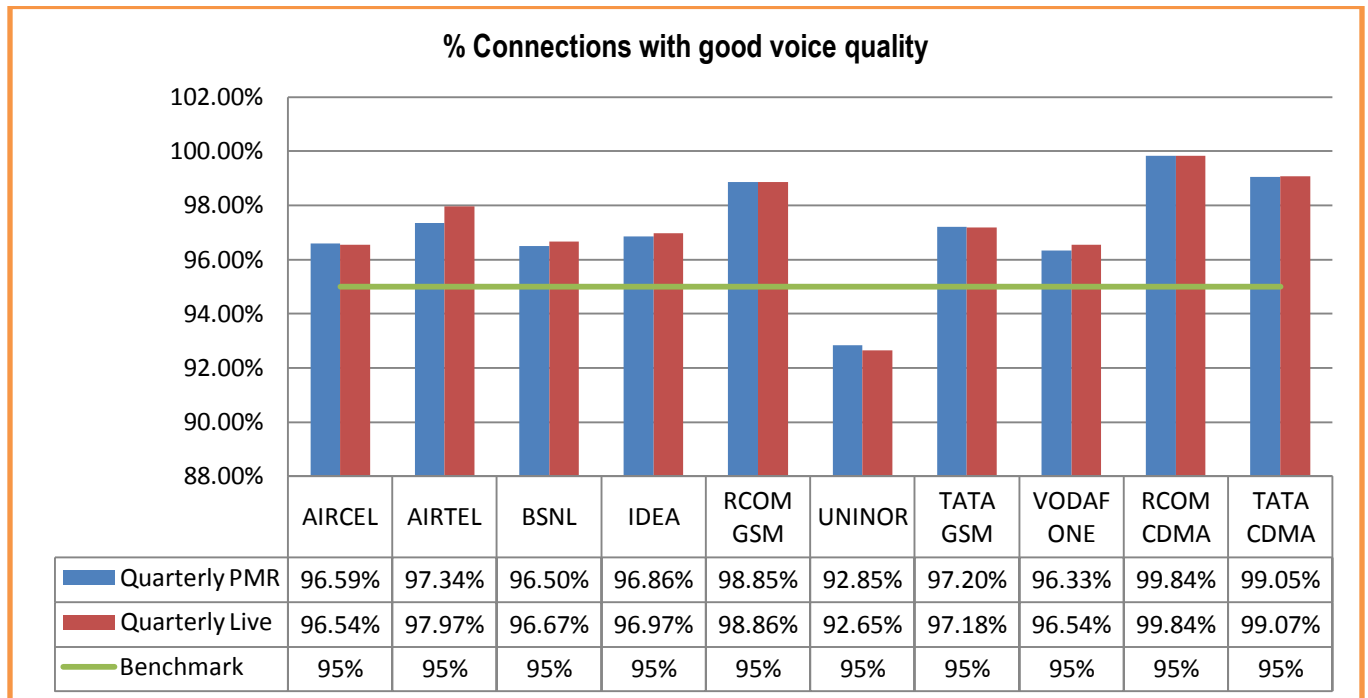
All operators are meeting the benchmarks.

7) WORST AFFECTED CELLS>3% TCH DROP:



All operators are meeting the benchmarks except Aircel, Vodafone and Tata (GSM & CDMA).

8) PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY:



All operators are meeting the benchmarks except Uninor.

9. QOS AUDIT OF BASIC (WIRELINE) SERVICE PROVIDERS



9. QOS AUDIT OF BASIC TELEPHONE SERVICE (WIRELIN)

The QoS audit for basic (wire line) service was to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles. Out of 2142 (present no. of BSNL exchanges), audit was done for **102 sampled (26-Urban and 76-Rural) exchanges, 1 exchange each of Bharti, TTL, RCL and Vodafone**. As UP (E) Circle is having 163 SDCAs, so 102 BSNL exchanges spread over 17 SDCAs (10% of total 163 SDCAs) have been taken for audit. (**List of BSNL exchanges undertaken for QoS audit attached as Annex-1**)

Sr. No	Service Provider	Circle	Urban Exchange	Rural Exchange	Total Exchange	No. of Urban Exchanges Covered for audit	No. of Rural Exchanges Covered for audit
1	BSNL	UP(E)	578	1564	2142	26	76
2	Bharti-Airtel	UP(E)	1	0	1	1	0
3	RCL	UP(E)	1	0	1	1	0
4	TTL	UP(E)	1	0	1	1	0
5	Vodafone	UP(E)	1	0	1	1	0
Total Exchanges at present			582	1564	2146	30	76

For BSNL exchanges, performance against each parameter has been evaluated by taking average of performance value of each parameter for all the audited exchanges. The average value of each parameter has been tabulated as follows:



9.1 SERVICE PROVIDER PERFORMANCE REPORT BASED ON QUARTERLY MEASUREMENT DATA VERIFICATION FOR BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:

AVERAGED AUDITED DATA FOR WIRELINE (BASIC) SERVICES – UP(E) CIRCLE								
Sl. No.	Parameters	Benchmark	Period	BHARTI AIRTEL	BSNL	RCL	TTL	VODAFONE
1	Fault incidences							
	(No. of faults/100 subscribers /month)	< 5%	Quarterly	4.89%	8.03%	0.16%	2.29%	0.83%
2	Faults Repair/Restoration Time							
	Fault repair by next working day(Urban Area)	>90%	Quarterly	93.68%	74.71%	100.00%	98.00%	100.00%
	Within 3 days day	100%	Quarterly	100.00%	90.75%	100.00%	100.00%	100.00%
	Fault repair by next working day(Rural & hilly Area)	>90%	Quarterly	NA	75.06%	NA	NA	NA
	Within 5 days	100%	Quarterly	NA	93.71%	NA	NA	NA
	Mean time to Repair(MTTR)	≤8 Hrs	Quarterly	6.02	6.47	NP	1.61	1.21
3	Rent Rebate							
	Fault pending > 3 days & <7 days	Rebate for 7 days	Quarterly	0	146	0	0	0
	Fault Pending > 7 days & < 15 days	Rebate for 15 days	Quarterly	0	98	0	0	0
	Fault pending > 15 days	Rebate for 1 month	Quarterly	0	939	0	0	0
4	Call Completion Ratio (CCR) & Answer to seizure Ratio(ASR)							
	CCR	> 55%	Quarterly	56.93%	60.26%	NA	99.95%	89.37%
	ASR	> 75%	Quarterly	NA	NA	90.20%	NA	NA
5	Metering & Billing Performance							
	% of disputed Bills over bills issued (Post Paid)	< 0.1%	Quarterly	0.003%	0.14%	0.003%	0.00%	0.00%
	% of Pre-paid Charging Complaints	< 0.1%	Quarterly	NA	NA	NA	NA	NA
	% of billing complaints resolved within 4 weeks	100%	Quarterly	100.00%	99.94%	100.00%	100.00%	100.00%
	Period of all refunds/payments from the date of resolution of complaints within 1weeks	100%	Quarterly	100.00%	100.00%	100.00%	100.00%	100.00%
6	POI Congestion							
	No. of POI's having congestion >0.5%		Quarterly	0	0	0	0	0
7	Response Time to customer for assistance							
	Accessibility of Call centre/customer Care	>=95%	Quarterly	100.00%	NP	96.13%	100.00%	99.78%
	% age of calls answered by operator(voice to voice) within 60 seconds	>=90%	Quarterly	99.38%	NP	96.13%	100.00%	98.06%
8	Customer care(promptness in attending to customers request)							
	Termination / Closures	100%	Quarterly	100.00%	100.00%	100.00%	100.00%	100.00%
	Time taken for refunds of deposit after closures	100%	Quarterly	100.00%	100.00%	100.00%	100.00%	100.00%

- NA-Not Applicable
- NP: Data not provided

9.2 SERVICE PROVIDER PERFORMANCE REPORT BASED ON 3 DAYS LIVE MEASUREMENT DATA VERIFICATION FOR BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:

3 DAYS LIVE DATA FOR WIRELINE (BASIC) SERVICES – UP(E) CIRCLE								
SI No.	Parameters	Benchmark	Period	BHARTI AIRTEL	BSNL	RCL	TTL	VODAFONE
1	Call Completion Ratio (CCR) & Answer to seizure Ratio(ASR)							
	CCR	> 55%	Quarterly	55.81%	64.08%	NA	99.97%	87.90%
	ASR	> 75%	Quarterly	NA	NA	88.15%	NA	NA
2	POI Congestion							
	No. of POI's having congestion >0.5%		Quarterly	0	0	0	0	0
3	Response Time to customer for assistance							
	Accessibility of Call centre/customer Care within 40 seconds	≥95%	Quarterly	100.00%	NP	95.33%	NA	99.69%
	% age of calls answered by operator(voice to voice) within 60 seconds	≥90%	Quarterly	99.66%	NP	100.00%	NA	99.85%

- NA-Not Applicable
- NP: Data not provided

9.3 KEY FINDINGS: BASIC TELEPHONE SERVICES (WIRELINE)

Fault Incidences: The audit of the service providers revealed that the performance of all service providers was well within the benchmark except BSNL. **BSNL** could not meet the benchmark achieving its performance as **8.03%** .

Fault Repair/Restoration Time: Only **BSNL** failed to meet the benchmark of parameter Fault repairs by next working day and within three days with its performance as **74.71%** and **90.75%** respectively. Similarly for the same parameter in rural area it remained under performed having achieved the performance values as **75.06%** and **93.71%** respectively.

Mean Time to Repair: All operators were meeting the benchmark of this parameter.

Call Completion Rate/Answer to seizure ratio: All the operators were found to have met the benchmark on this parameter at various exchanges.

Metering and Billing performance: For this parameter also, the performance of the service providers was found well within the compliance benchmarks except **BSNL**. **BSNL** could not meet the benchmark for the parameter '**% of disputed Bills over bills issued (Post Paid)**' and '**Resolution of billing complaints within 4 weeks**' with its performance as **0.14%** and **99.94%** respectively against the benchmark of **< 0.1%** and **100%**.

POI Congestion: All operators were found meeting the benchmark for this parameter.

Response Time to Customer for assistance: For parameters '**percentage of calls getting connected to call center**' and '**Calls answered by operator (voice to voice)**', the performance of the service providers was found well within the compliance.

Termination/Closures: All operators were found meeting the benchmark on this parameter.

Time taken for refund of deposit: All operators were meeting the benchmark for this parameter.

*Thus, from the above findings that, it was concluded that the performance of **BSNL** was not satisfactory in respect of the parameters **Fault Repairs** and **Metering & Billing**. Hence, **BSNL** needs to improve their services in respect of these parameters.*

9.4 INTER OPERATOR CALL ASSESSMENT (WIREFINE)

Inter operator call assessment with a sample of 2x50 test calls for each Service provider operating in UP (E) Circle during the time 1000 to 1300 Hrs and 1500 to 1700 was carried out by TUV auditors. The test calls were made from one operator to another within the same licensed area to judge the ease of connectivity amongst the operators.

INTER OPERATOR CALL ASSESSMENT BASED ON LIVE MEASUREMENT							
Calling Operators	Circle Name	Total No. of calls Made	BHARTI AIRTEL	BSNL	RCL	TTL	VODAFONE
BHARTI AIRTEL	UP EAST	100	--	100.00%	100.00%	100.00%	100.00%
BSNL	UP EAST	100	100.00%	--	100.00%	94.00%	100.00%
RCL	UP EAST	100	100.00%	100.00%	--	95.00%	96.00%
TTL	UP EAST	100	100.00%	98.00%	97.00%	--	95.00%
VODAFONE	UP EAST	100	100.00%	100.00%	100.00%	100.00%	--

The result of the testing revealed that the inter connection performance among the operators was quite satisfactory. However, in case where calls attempted from BSNL to TTL, successful interconnection was 94.0%, RCL to TTL and Vodafone was 95% and 96%, and from TTL to RCL and Vodafone was 97% and 95%. Thus there was no remarkable problem in interconnection from one operator to other operators except in few cases where Service providers could not achieve 100% marks.

9.5 LEVEL-1 LIVE CALLING (WIREFINE)

LEVEL 1 LIVE CALLING											
EMERGENCY NO.	CIRCLE NAME	NO. OF CALLS MADE	BSNL - RAIBARELY SSA	BSNL-KANPUR SSA	BSNL-LUCKNOW SSA	BSNL-ALLAHABAD SSA	BSNL- VARANSI SSA	BHARTI AIRTEL	RCL	TTL	VODAFONE
100	UP EAST	45	✓	✓	✓	✓	✓	✓	✓	✓	✓
101	UP EAST	45	✓	✓	✓	✓	✓	✓	✓	✓	✓
102	UP EAST	45	✓	✓	✓	✓	✓	✓	✓	✓	✓

To assess the availability and efficiency of level 1 service such as police, fire, ambulance (emergency services) offered by BSNL, Bharti Airtel, Reliance, TTL and Vodafone, the calls were made from telephone provided by service providers, these services were found functional in the networks of all the service providers.

9.6 CUSTOMER CARE / HELPLINE ASSESSMENT (WIRESERVICE)

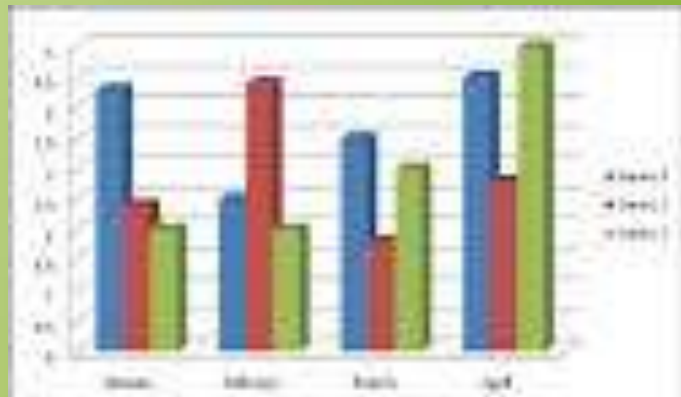
LIVE CALLING TO CALL CENTRE						
Parameter.	Circle Name	BHARTI AIRTEL	BSNL	RCL	TTL	VODAFONE
Total No. of calls Attempted	UP East	100	100	100	100	100
Total No. of calls connected to IVR	UP East	100	100	100	100	100
Calls got connected to agent within 60 Sec	UP East	100	NA	100	100	100
%age of calls got answered	UP East	100.00%	NA	100.00%	100.00%	100.00%

NA: Not Applicable

BSNL-There is no agent option for voice to voice only IVR is functional in all SSA.

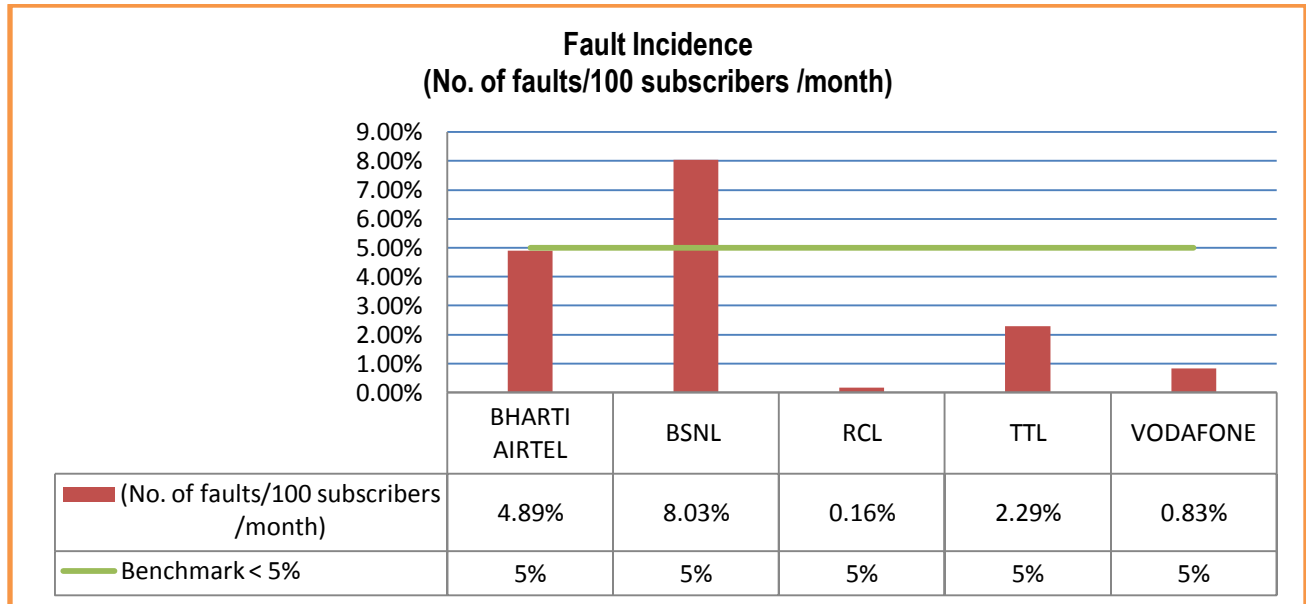
In case of calls answered by operators (voice to voice), when test calls were made to the call centers, all operators were successful in connecting their call center and answered.

GRAPHICAL REPRESENTATION OF BASIC (WIRELINE) SERVICES



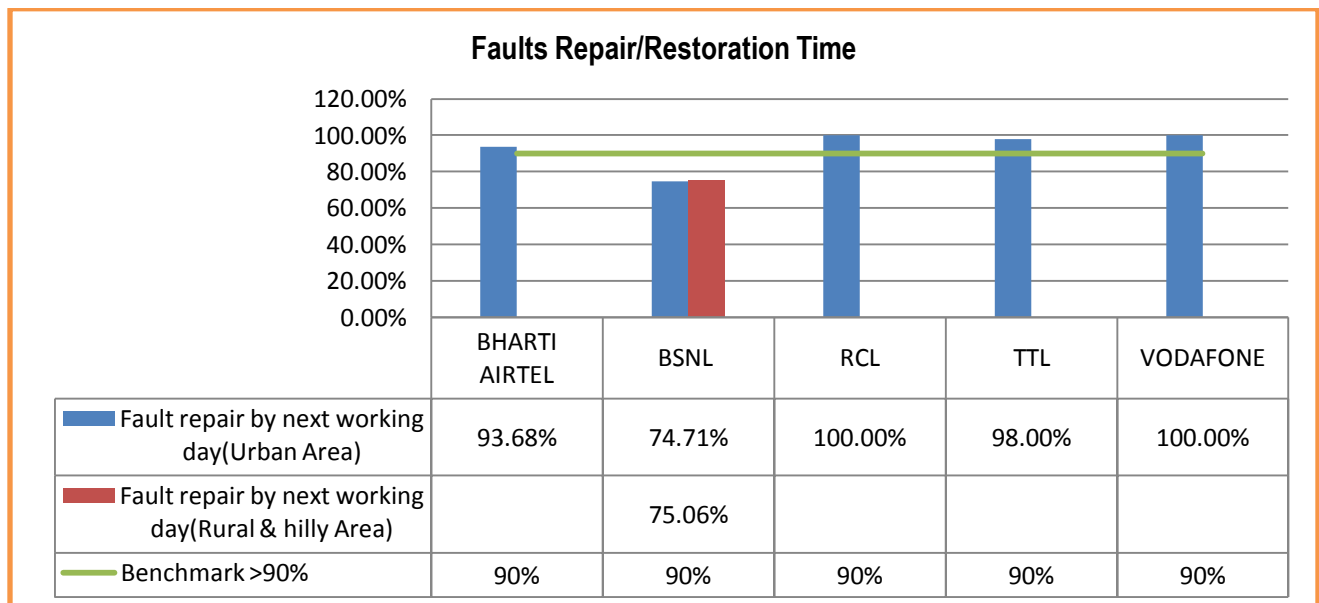
9.7 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINER) PROVIDERS:

1) FAULT INCIDENCE:



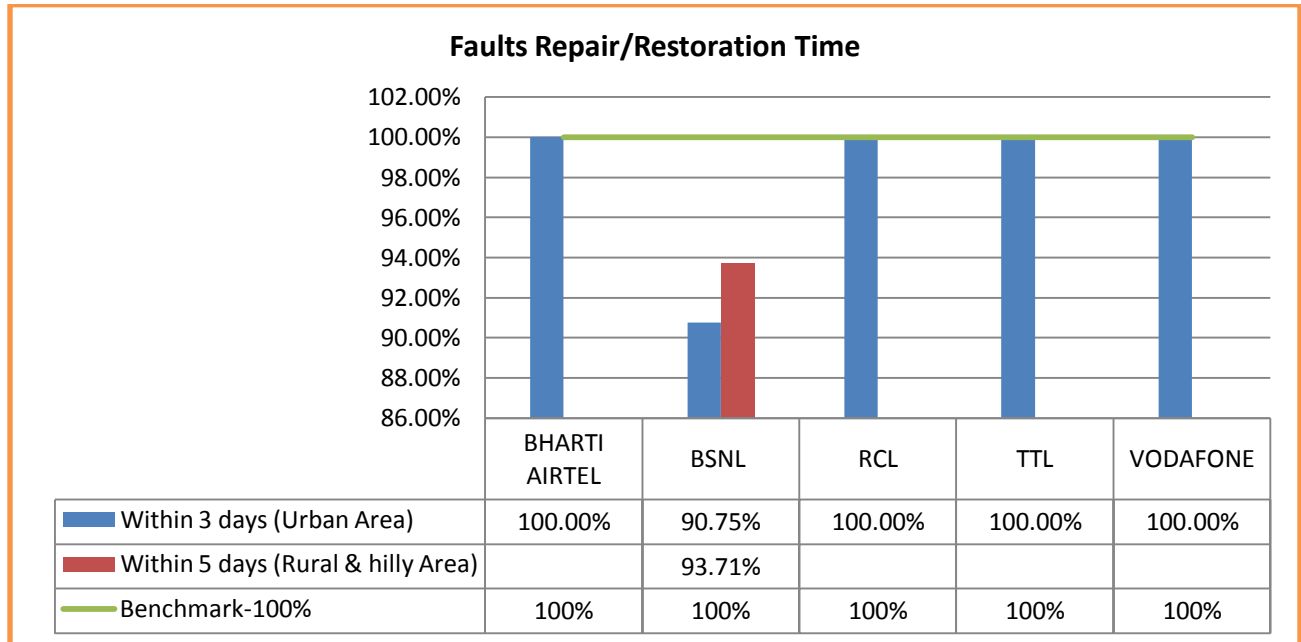
All Operators are meeting the benchmarks except BSNL.

2) FAULTS REPAIR/RESTORATION TIME:



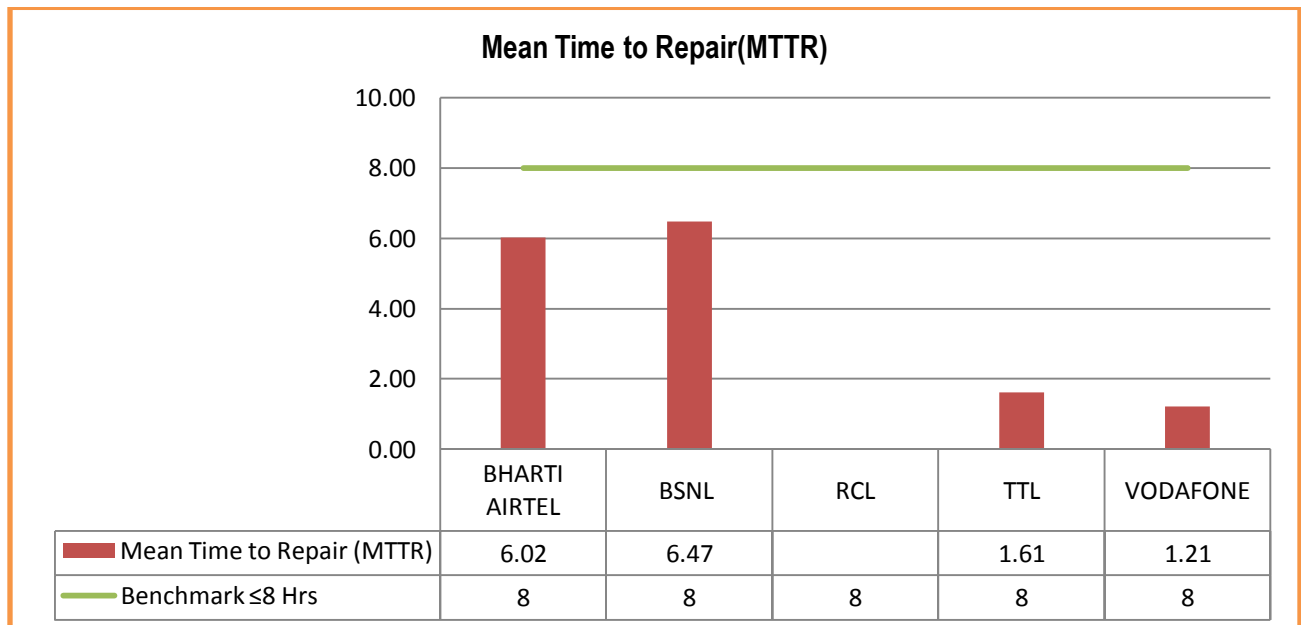
All Operators are meeting the benchmarks except BSNL.

3) FAULTS REPAIR/RESTORATION TIME WITHIN 3 DAYS & 5 DAYS:



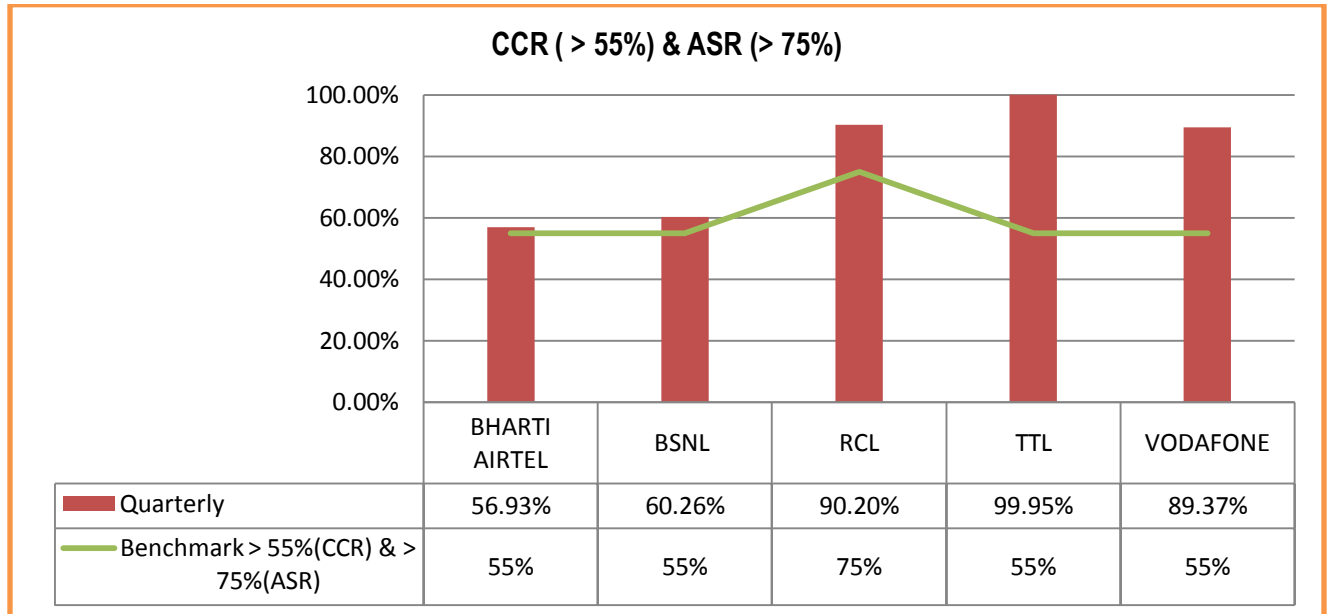
All Operators are meeting the benchmarks except BSNL.

4) MEAN TIME TO REPAIR (MTTR):



All Operators are meeting the benchmarks.

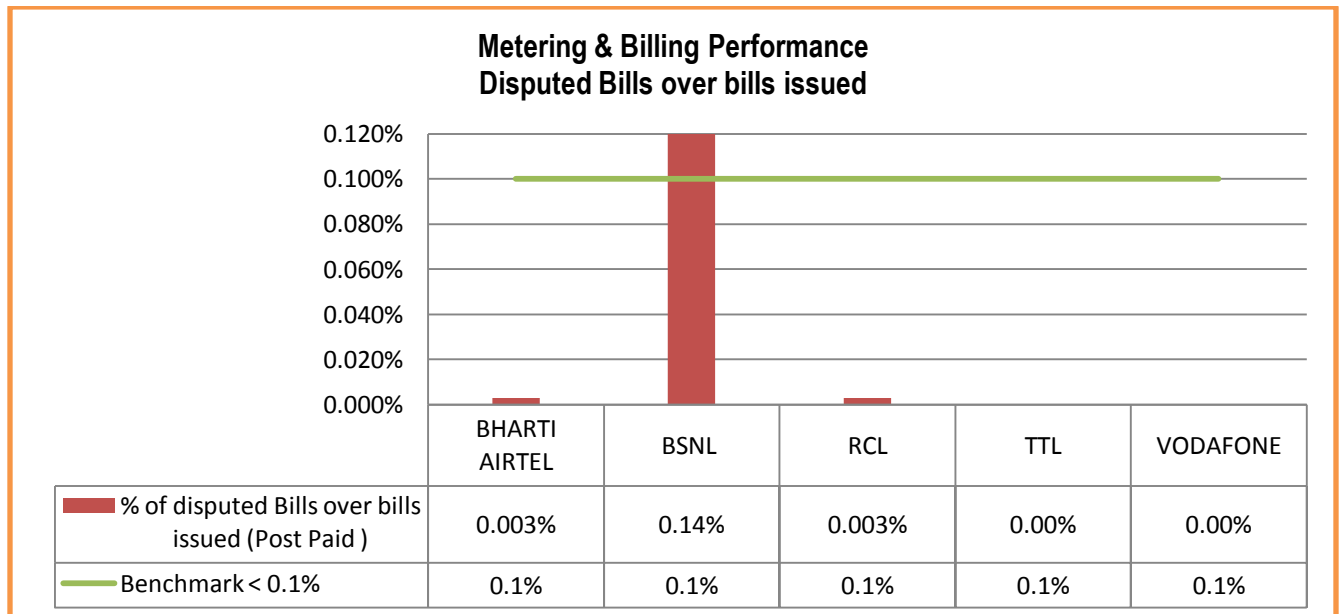
5) CALL COMPLETION RATIO (CCR) & ANSWER TO SEIZURE RATIO(ASR):



All Operators are meeting the benchmarks. RCL has provided ASR instead of CCR.

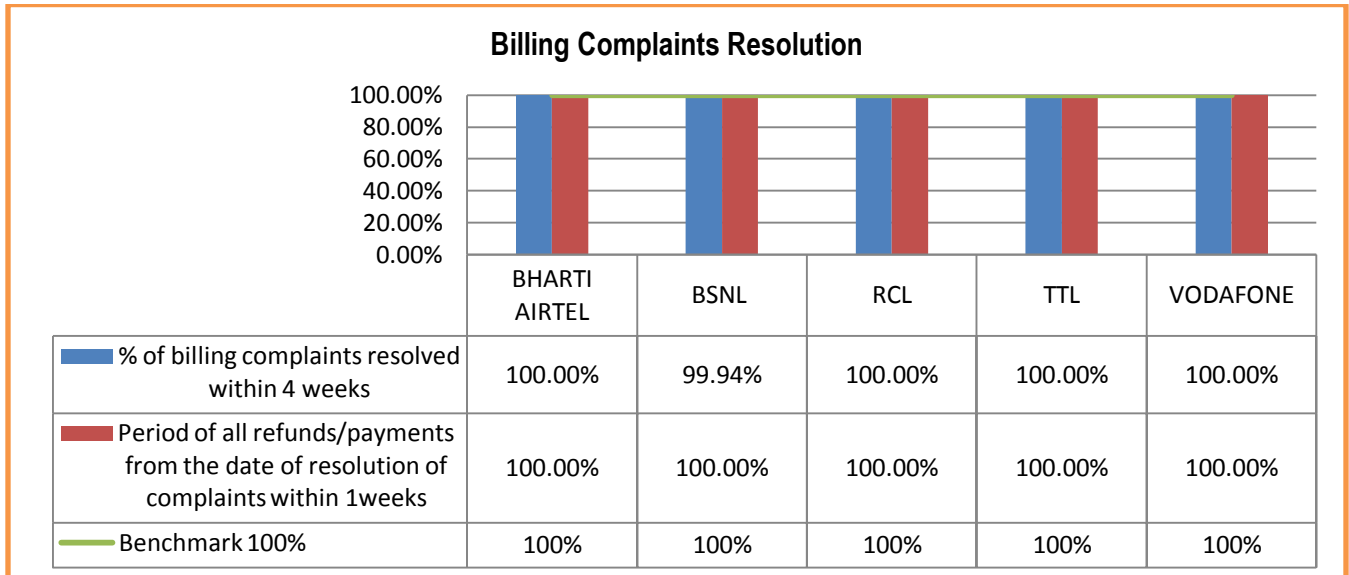
6) METERING & BILLING PERFORMANCE:

a) DISPUTED BILLS OVER BILL ISSUED :



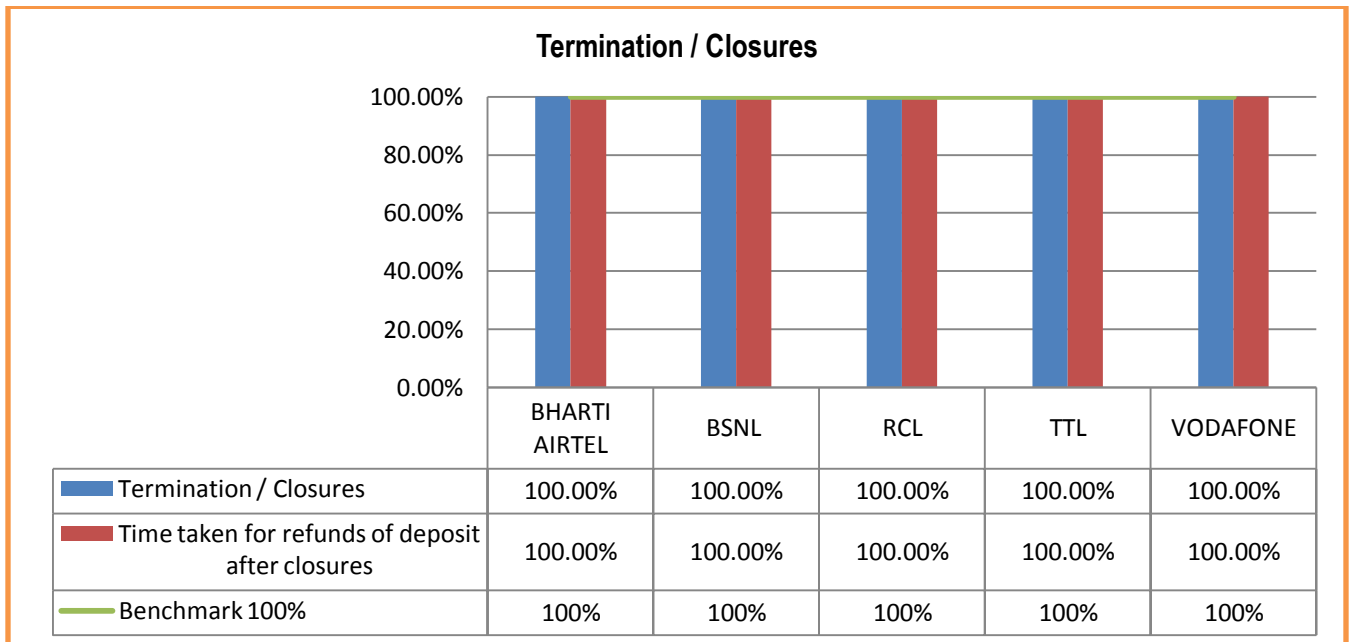
All Operators are meeting the benchmarks except BSNL.

b) BILLING COMPLAINT RESOLUTION:



All Operators are meeting the benchmarks except BSNL with its performance very marginally below the benchmark.

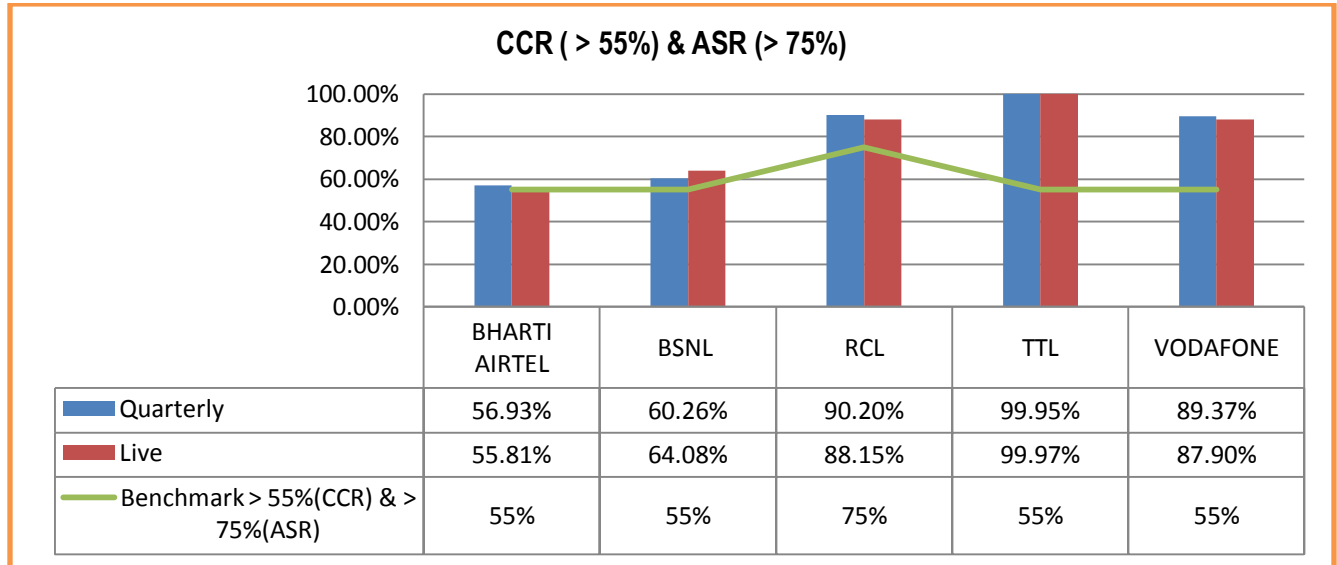
7) TERMINATION & CLOSURES:



All Operators are meeting the benchmarks.

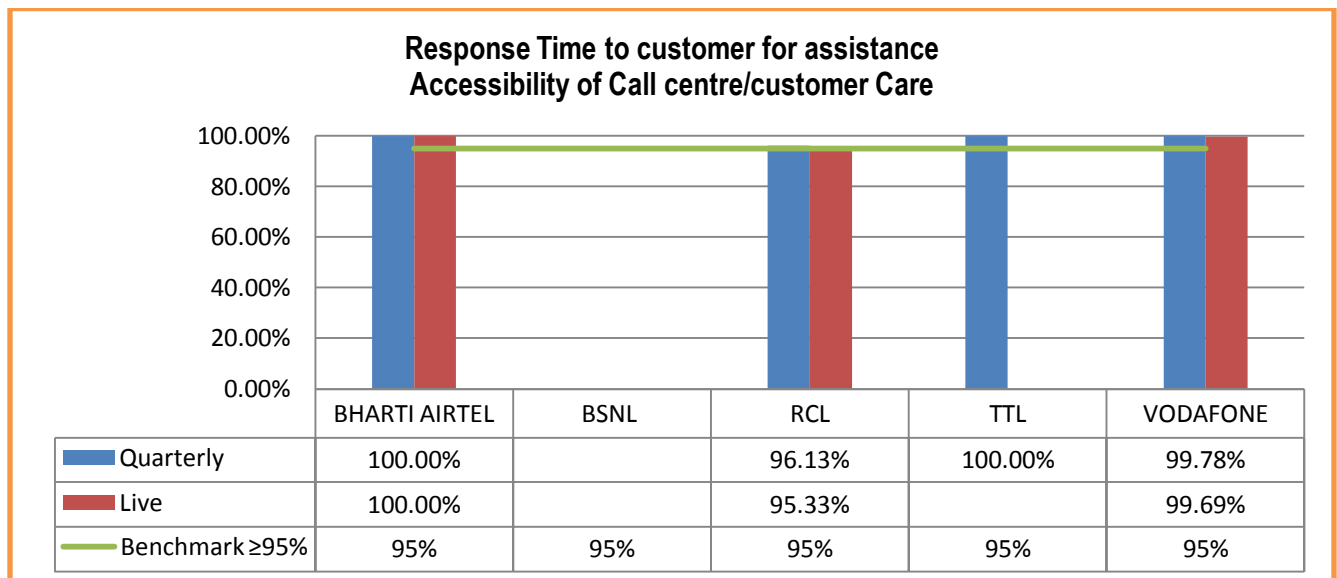
9.8 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINER) PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:

1) CALL COMPLETION RATIO (CCR) & ANSWER TO SEIZURE RATIO(ASR):



All Operators are meeting the benchmarks.

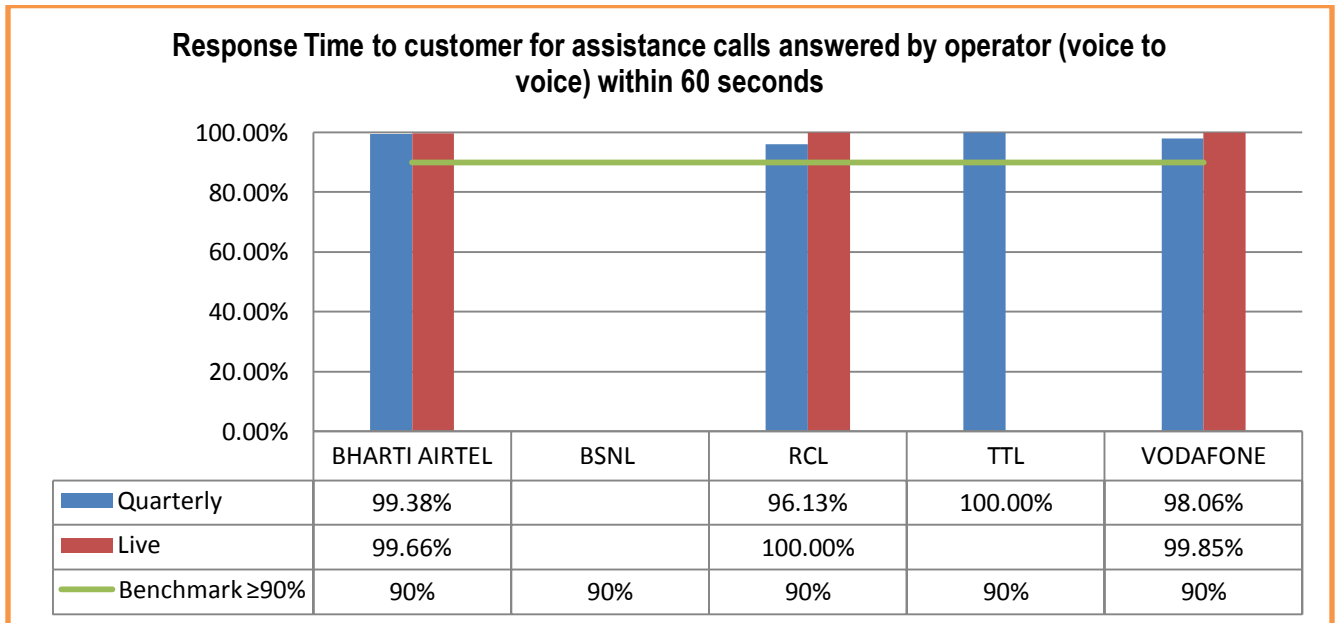
2) RESPONSE TIME TO CUSTOMER FOR ASSISTANCE ACCESSIBILITY OF CALL CENTRE/CUSTOMER CARE:



All Operators are meeting the benchmarks.



3) **RESPONSE TIME TO CUSTOMER FOR ASSISTANCE CALL ANSWERED BY OPERATORS :**



All Operators are meeting the benchmarks.

10. QOS AUDIT OF BROADBAND SERVICE PROVIDERS



10. QUALITY OF SERVICE AUDIT OF BROADBAND SERVICE PROVIDERS

TUV-SUD South Asia has to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who are having broadband subscriber base of more than 10,000 subscribers in their licensed service area, for 5% of Point of Presence (PoPs) spread over in 10% SDCAs in specified Telecom Circle. Based on this criterion, total **107** PoPs (exchanges) i.e. 5% of **2142** PoPs/Exchanges have been taken for QoS audit.

Discussion with the private broadband service providers revealed that there is no concept of their PoPs on SDCA basis; they are maintaining their entire data on centralized basis so audit has been done for the centralized data.

SL. NO.	NAME OF BROADBAND SERVICE PROVIDERS	TOTAL POPS	LOCATION OF AUDIT
1	BHARTI AIRTEL LIMITED	48	BHARTI AIRTEL LIMITED, LUCKNOW, UP
2	BSNL	2142 (107 POPS COVERED)	LUCKNOW, KANPUR, ALLAHABAD, VARANASI, RAEBARELI SSA
3	NSTPL	6	NSTPL, KANPUR, UP
4	RCL	1	DAKC, MUMBAI
5	TCL	4	VIDESH SANCHAR NIGAM LIMITED 406,411 4TH FLOOR, CHINTELS HOUSE,16, STATION ROAD, LUCKNOW-226001.
6	PACENET	1	BROADBAND PACENET INDIA PVT LTD. S-23,AJAY ENCLAVE ,NEAR SUBHASH NAGAR METRO STATION,NEW DELHI 110018.
7	TIKONA	18	TIKONA, LUCKNOW, UP

10.1 QUARTERLY MEASUREMENT DATA FOR BROADBAND SERVICE PROVIDERS

AVERAGED QUARTERLY (JULY TO SEPT 14) AUDIT DATA FOR BROADBAND SERVICES – UP(E) CIRCLE

Broadband Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	PACENET	BSNL	NSTPL	RCL	TCL	TIKONA
S/ N	Name of Parameter			BROADBAND SERVICE PROVIDERS						
Service Provisioning/Activation Time										
1	A) No of connections registered during the period		UPE	3095	46	1064	0	0	0	1394
	B) Total number of connections provided within 15 days of registration on demand during the period		UPE	3095	46	1052	0	0	0	1394
	C) % age of connections provided within 15 days of registration on demand (subject to technical feasibility)	<15 days	UPE	100.00%	100.00%	98.87%	100.00%	100.00%	100.00%	100.00%
	D) Total number of connections provided after 15 days of registration on demand		UPE	0	0	12	0	0	0	0
	E) %age of connections provided after 15 days of registration on demand		UPE	0.00%	0.00%	1.13%	0.00%	0.00%	0.00%	0.00%
	F) In all cases where payment towards installation charge & SD is taken and the Broadband connection is NP within 15 working days	credit @ Rs.10/ per day.	UPE	0	0	0	0	0	0	0
Fault Repair/Restoration Time										
2	A) Total number of faults registered during the period		UPE	6648	55	12813	187	294	136	5106
	B) Total number of faults repaired by next working day		UPE	6148	55	8593	187	294	135	4665
	C) % age of faults repaired by next working day	>90%	UPE	92.48%	100.00%	67.06%	100.00%	100.00%	99.26%	91.36%
	D) Total number of faults repaired within three working days		UPE	6610	55	11395	187	294	136	5069
	E) % age of faults repaired within three working days	≥99%	UPE	99.43%	100.00%	88.93%	100.00%	100.00%	100.00%	99.28%
Rent Rebate										
3	A) Faults Pending for > 3 working days and < 7 working days: (Rebate equivalent to 7 days of minimum monthly charge or equivalent usage allowance)		UPE	29	0	143	0	0	0	2
	B) Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)		UPE	9	0	88	0	0	0	0



AVERAGED QUARTERLY (JULY TO SEPT 14) AUDIT DATA FOR BROADBAND SERVICES – UP(E) CIRCLE

Broadband Audit Data		Benchmark	Circle Name	BHARTI AIRTEL	PACENET	BSNL	NSTPL	RCL	TCL	TIKONA
S/N	Name of Parameter			BROADBAND SERVICE PROVIDERS						
	C) Faults Pending for > 15 working days:(Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)		UPE	38	0	924	0	0	0	4
Billing Performance										
4	A) Total bills generated during period		UPE	107824	284	44425	156	35565	117	15264
	B) Total complaints received from customers/ Bills disputed		UPE	4	0	85	0	59	0	79
	C) Billing complaints per 100 bills issued	<2%	UPE	0.00%	0.00%	0.19%	0.00%	0.17%	0.00%	0.52%
	D) Total number of complaints resolved in 4 weeks from date of receipt		UPE	4	0	85	0	0	0	79
	E) %age billing complaints resolved in 4 weeks	100%	UPE	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
	F) Total number of cases requiring refund of deposits after closure		UPE	11	0	435	0	1	0	0
	G) Total number of cases where refund was made in <60 days		UPE	11	0	435	0	1	0	0
	H) Percentage cases in which refund received within 60 days	100%	UPE	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)										
5	A) Total number of calls received by the operator		UPE	18311	55	NP	NA	88084	179966	46105
	B) Total number of calls answered by the operator within 60 seconds		UPE	17646	37	NP	NA	83635	148509	28740
	C) % age calls answered by the operator in 60 seconds	>60%	UPE	96.37%	67.27%	NP	NA	94.95%	82.52%	62.34%
	D) Total number of calls answered by the operator within 90 seconds		UPE	17970	55	NP	NA	87346	154713	37206
	E) % age calls answered by the operator within 90 seconds	>80%	UPE	98.14%	100.00%	NP	NA	99.16%	85.97%	80.70%
6	Bandwidth Utilization/ Throughput:									
POP to ISP Gateway Node [Intra-network] Link(s)										
6.1	A) Total Bandwidth Available at the link for the period days		UPE	355303	135	7548	NP	6000	337920	3528
	B) Total Bandwidth utilized during the period during TCBH (In Mbps)		UPE	11013	28	2225	NP	1600	162816	2764.42
	C) % age Bandwidth utilized during the period	<80%	UPE	3.10%	20.47%	29.48%	NP	26.67%	48.18%	78.36%
ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity										
6.2	A) Total number of upstream links for International connectivity		UPE	NA	NA	9	NA	30	48	18



AVERAGED QUARTERLY (JULY TO SEPT 14) AUDIT DATA FOR BROADBAND SERVICES – UP(E) CIRCLE

Broadband Audit Data		Benchmark	Circle Name	BHARTI AIRTEL	PACENET	BSNL	NSTPL	RCL	TCL	TIKONA
S/N	Name of Parameter			BROADBAND SERVICE PROVIDERS						
	B) Number of Links having Bandwidth utilization > 90% during TCBH		UPE	NA	NA	0	NA	0	0	0
	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		UPE	NA	NA	9000	NA	282000	806912	3375
	D) Total international bandwidth utilization during peak hours (TCBH) in Mpbs		UPE	NA	NA	4107	NA	125559	543744	2591.40
	E) %age International Bandwidth utilization during peak hours (TCBH)	<80%	UPE	NA	NA	45.63%	NA	44.52%	67.39%	76.78%
Broadband Connection Speed (download) - from ISP Node to User										
6.3	A) Total committed download speed to the sample subscribers (In mpbs)		UPE	9.94	NP	NP	NP	6	256	NP
	B) Total average download speed observed for the sample subscribers during TCBH (In Mpbs)		UPE	11.76	NP	NP	NP	5.89	236	NP
	C) % age subscribed speed available to the subscriber during TCBH	>80%	UPE	118.31%	NP	NP	NP	98.17%	92.19%	NP
Service Availability/Uptime										
7	A) Total operational Hours		UPE	2208	2208	2208	2208	2208	26496	2208
	B) Total downtime (In hours)		UPE	0.44	18.05	2.40	0	10.68	47.98	0.94
	C) Total time when the service was available (In Hrs)		UPE	2207.56	2189.15	2205.60	2208	2197.32	26448.02	2207.06
	D) % age of Service availability uptime	>98%	UPE	99.98%	99.15%	99.89%	100.00%	99.52%	99.82%	99.96%
Packet Loss										
8	A) Total number of ping packets transmitted		UPE	3000	NP	NP	NP	91000	3000	NP
	B) Total number of ping packets lost		UPE	0	NP	NP	NP	608	0	NP
	C) % age packet loss	<1%	UPE	0.00%	NP	NP	NP	0.67%	0.00%	NP
9 Network latency (for wired broadband access)										
Network Latency from User reference point at POP/ISP Node to IGSP/NIXI gateway										
9.1	A) Total number of ping packets transmitted		UPE	3000	NP	NP	NP	3000	3000	NP
	B) Total round trip time for all the ping packets transmitted during the period		UPE	95000	NP	NP	NP	78.50	77	NP
	C) Average round trip time for all the ping transmitted	<120 ms	UPE	95.00	NP	NP	NP	26.17	25.67	NP
Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)										
9.2	A) Total number of ping packets transmitted		UPE	3000	NP	NP	NP	3000	3000	NP
	B) Total round trip time for all the ping packets transmitted during the period		UPE	232020	NP	NP	NP	103.90	831	NP
	C) Average round trip time for all the ping transmitted	<350 ms	UPE	77.34	NP	NP	NP	34.63	277.00	NP
9.3 Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)										
9.3	A) Total number of ping packets transmitted		UPE	NA	NA	NA	NA	NA	NA	NA



AVERAGED QUARTERLY (JULY TO SEPT 14) AUDIT DATA FOR BROADBAND SERVICES – UP(E) CIRCLE										
<u>Broadband Audit Data</u>		Bench- mark	Circle Name	BHARTI AIRTEL	PACENET	BSNL	NSTPL	RCL	TCL	TIKONA
S/ N	Name of Parameter			BROADBAND SERVICE PROVIDERS						
	B) Total round trip time for all the ping packets transmitted during the period		UPE	NA	NA	NA	NA	NA	NA	NA
	C) Average round trip tip time for all the ping transmitted	<800 ms	UPE	NA	NA	NA	NA	NA	NA	NA

NA- Not Applicable

NP-Not Provided- Monthly Data Not Monitored by ISPs



10.2 SERVICE PROVIDER PERFORMANCE REPORT BASED ON 3 DAYS MEASUREMENT DATA VERIFICATION FOR BROADBAND SERVICE PROVIDERS:

3 DAYS LIVE DATA FOR BROADBAND SERVICES - UP(E) CIRCLE										
3 days live Broadband Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	PACENET	BSNL	NSTPL	RCL	TCL	TIKONA
S/ N	Name of Parameter			BROADBAND SERVICE PROVIDERS						
Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)										
1	A) Total number of calls received by the operator		UPE	459	11	NP	NA	3051	3195	1528
	B) Total number of calls answered by the operator within 60 seconds		UPE	437	7	NP	NA	2819	2932	1096
	C) % age calls answered by the operator in 60 seconds	>60%	UPE	95.21%	63.64%	NP	NA	92.40%	91.77%	71.73%
	D) Total number of calls answered by the operator within 90 seconds		UPE	448	11	NP	NA	3051	2966	1342
	E) % age calls answered by the operator within 90 seconds	>80%	UPE	97.60%	100.00%	NP	NA	100.00%	92.83%	87.83%
2 Bandwidth Utilization/ Throughput:										
POP to ISP Gateway Node [Intra-network] Link(s)										
2.1	A) Total Bandwidth Available at the link for the period days		UPE	361077	135	8445	135	6000	337920	3768
	B) Total Bandwidth utilized during the period during TCBH (In Mpbs)		UPE	11477.94	93.98	4514	127.50	2700.90	157696	2822.74
	C) % age Bandwidth utilized during the period	<80%	UPE	3.18%	69.61%	53.45%	94.44%	45.02%	46.67%	74.91%
ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity										
2.2	A) Total number of upstream links for International connectivity		UPE	NA	NA	8	NA	33	48	18
	B) Number of Links having Bandwidth utilization > 90% during TCBH		UPE	NA	NA	0	NA	0	0	0
	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		UPE	NA	NA	12000	NA	312000	955392	3555
	D) Total international bandwidth utilization during peak hours (TCBH) in Mpbs		UPE	NA	NA	6593	NA	209588.50	603136	2567.45
	E) %age International Bandwidth utilization during peak hours (TCBH)	<80%	UPE	NA	NA	54.94%	NA	67.18%	63.13%	72.22%
2.3 Broadband Connection Speed (download) - from ISP Node to User										
2.3	A) Total committed download speed to the sample subscribers (In Mbps)		UPE	6	7	36	135	4.50	4.50	6.00
	B) Total average download speed observed for the sample subscribers during TCBH (In Mbps)		UPE	6.52	6.93	30	127.30	4.20	4.72	4.90
	C) % age subscribed speed available to the subscriber during TCBH	>80%	UPE	108.67%	99.00%	83.57%	94.30%	93.33%	104.89%	81.67%



3 DAYS LIVE DATA FOR BROADBAND SERVICES - UP(E) CIRCLE

3 days live Broadband Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	PACENET	BSNL	NSTPL	RCL	TCL	TIKONA
S/ N	Name of Parameter			BROADBAND SERVICE PROVIDERS						
Packet Loss										
3	A) Total number of ping packets transmitted		UPE	3000	3000	3000	15836	3000	3000	3000
	B) Total number of ping packets lost		UPE	0	0	0.20	5	0	0	0
	C) % age packet loss	<1%	UPE	0.00%	0.00%	0.01%	0.03%	0.00%	0.00%	0.00%
4 Network latency (for wired broadband access)										
Network Latency from User reference point at POP/ISP Node to IGSP/NIXI gateway										
4.1	A) Total number of ping packets transmitted		UPE	9000	3000	2600	15836	3000	3000	3000
	B) Total round trip time for all the ping packets transmitted during the period		UPE	101	3	149.87	128	3.46	79.98	27
	C) Average round trip tip time for all the ping transmitted	<120 ms	UPE	33.66	3.00	49.94	42.66	1.15	26.66	9
Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)										
4.2	A) Total number of ping packets transmitted		UPE	9000	9000	2333	9563	9000	9000	9000
	B) Total round trip time for all the ping packets transmitted during the period		UPE	312	818	669.82	2780	6.84	1035	652.67
	C) Average round trip tip time for all the ping transmitted	<350 ms	UPE	104.00	272.66	223.27	308.89	2.28	115	217.56
Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)										
4.3	A) Total number of ping packets transmitted		UPE	NA	NA	NA	NA	NA	NA	NA
	B) Total round trip time for all the ping packets transmitted during the period		UPE	NA	NA	NA	NA	NA	NA	NA
	C) Average round trip tip time for all the ping transmitted	<800 ms	UPE	NA	NA	NA	NA	NA	NA	NA
Service Availability/Uptime										
5	A) Total operational Hours		UPE	2208	72	72	72	72	12096	72
	B) Total downtime (In hours)		UPE	0.04	0.00	0.29	0.00	0.00	0.48	0.00
	C) Total time when the service was available (In Hrs)		UPE	2207.96	72	71.71	72	72	12095.52	72
	D) % age of Service availability uptime	>98%	UPE	100.00%	100.00%	99.60%	100.00%	100.00%	100.00%	100.00%

NA: Not Applicable
NP: Data not provided

10.3 KEY FINDINGS: BROADBAND SERVICES

Service Provisioning / Activation Time: The audit of the service providers revealed that all Broadband service providers were well within the benchmark except BSNL . **BSNL** could provide **98.87%** connections within 15 days. .

Fault Repair/Restoration Time: With regards to this parameter, the performances of all Broadband service providers were within TRAI norms. However, **BSNL** failed to meet the benchmark for the parameter **Fault repairs by next working day** and **within three days** with its achieved performance as **67.06%** and **88.93%** respectively.

Billing Performance: For this parameter also the performance of the service providers was found well within the compliance benchmarks.

Response Time to Customer for assistance by operator (Voice to Voice): For percentage of calls getting connected to call center and answered, all service providers were found meeting the benchmark for this parameter.

Bandwidth Utilization/ Throughput: All the service providers were found using Multiple Router Traffic Grapher (MRTG) and also it was observed that all service providers were reporting combined bandwidth utilization for corporate customers and household customers. All operators were found meeting the benchmark. The performance of service providers with respect of these parameters was found satisfactory i.e. within benchmark during quarterly audit as well as 3 days live measurement.

Broadband Connection speed (down load): All were having the speed more than 80%. Pacnet, BSNL NSTPL and Tikona not provided the data.

Service Availability/Uptime: All service providers were found meeting the benchmark for this parameter.

Packet Loss and Network Latency: It was observed that operators mostly were measuring packet loss and latency by conducting ping test on random basis for their internal assessment. Pacenet, BSNL NSTPL and Tikona not measuring the parameter. However, the ping test conducted during live measurement revealed that all service providers were meeting the benchmark prescribed by TRAI.

*From the above analysis, it was concluded that only **BSNL** could not meet the benchmarks of **provision of Service** and **Fault repairs**. For rest of the parameters other service providers were within compliance range.*

10.4 CUSTOMER CARE / HELPLINE ASSESSMENT

LIVE CALLING TO CALL CENTRE FOR BROADBAND SERVICES						
parameter	Circle Name	BHARTI AIRTEL	PACENET	RCL	TCL	TIKONA
Total No. of calls Attempted	UPE	100	100	100	100	100
Total number of calls answered by the operator within 60 seconds	UPE	100	86	100	97	96
% age calls answered by the operator in 60 seconds	UPE	100.00%	86.00%	100.00%	97.00%	96.00%
Total number of calls answered by the operator within 90 seconds	UPE	100	100	100	100	100
% age calls answered by the operator within 90 seconds	UPE	100.00%	100.00%	100.00%	100.00%	100.00%

In case of calls answered by operators (voice to voice) within 60 seconds and 90 seconds, when test calls were made to the call centers, all broadband service providers were found meeting the TRAI prescribed benchmark.

10.5 LIVE CALLING FOR BILLING COMPLIANTS

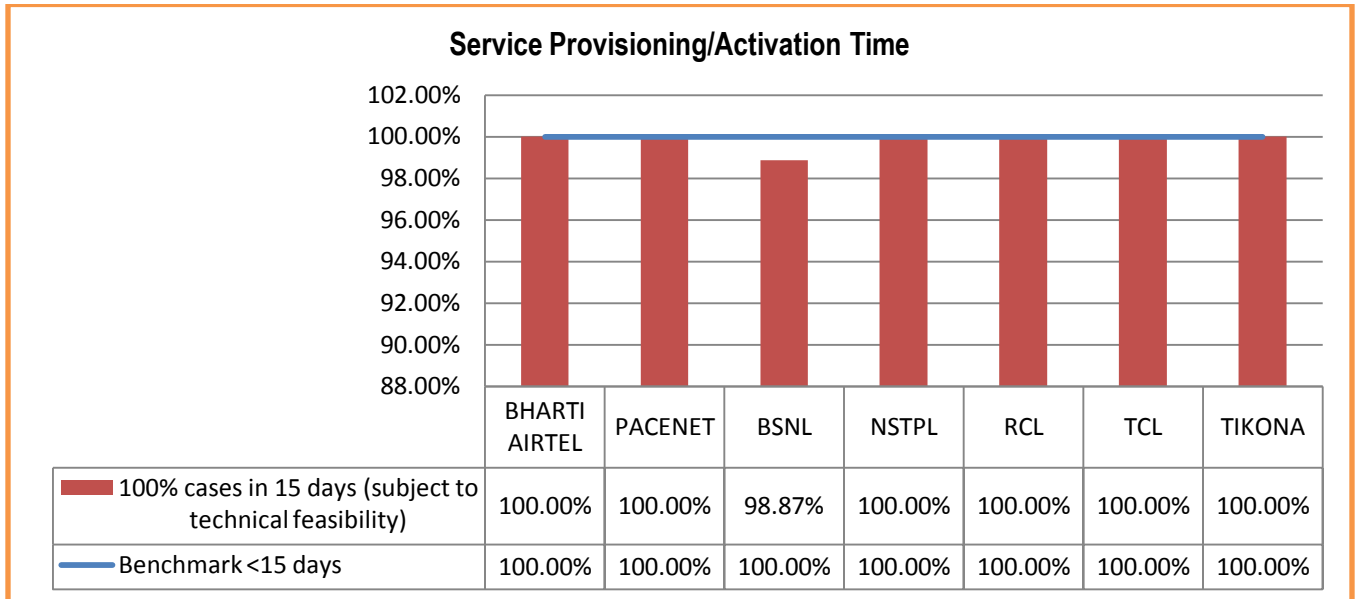
TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS								
Parameter	Circle Name	BHARTI AIRTEL	PACENET	BSNL	NSTPL	RCL	TCL	TIKONA
Total No. of calls Attempted	UPE	4	0	85	0	59	0	79
Total No. of calls Answered	UPE	4	0	70	0	59	0	79
Cases resolved within 4 weeks	UPE	4	0	70	0	59	0	79
%age of cases resolved	UPE	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

To test the Service Providers performance on billing related complaints and their resolutions, TUV-SUD auditors conducted a customer feedback calling some subscribers on random basis. However, in some cases, the number of customers contacted for verification was very less due to less number of billing complaints. During live calling, some of the customers did not attend the calls while few others reported that there complaints have been resolved but not sure of duration of their resolution. However, most of the customers reported their satisfaction on resolution of the billing complaints.

GRAPHICAL REPRESENTATION OF BROADBAND SERVICES

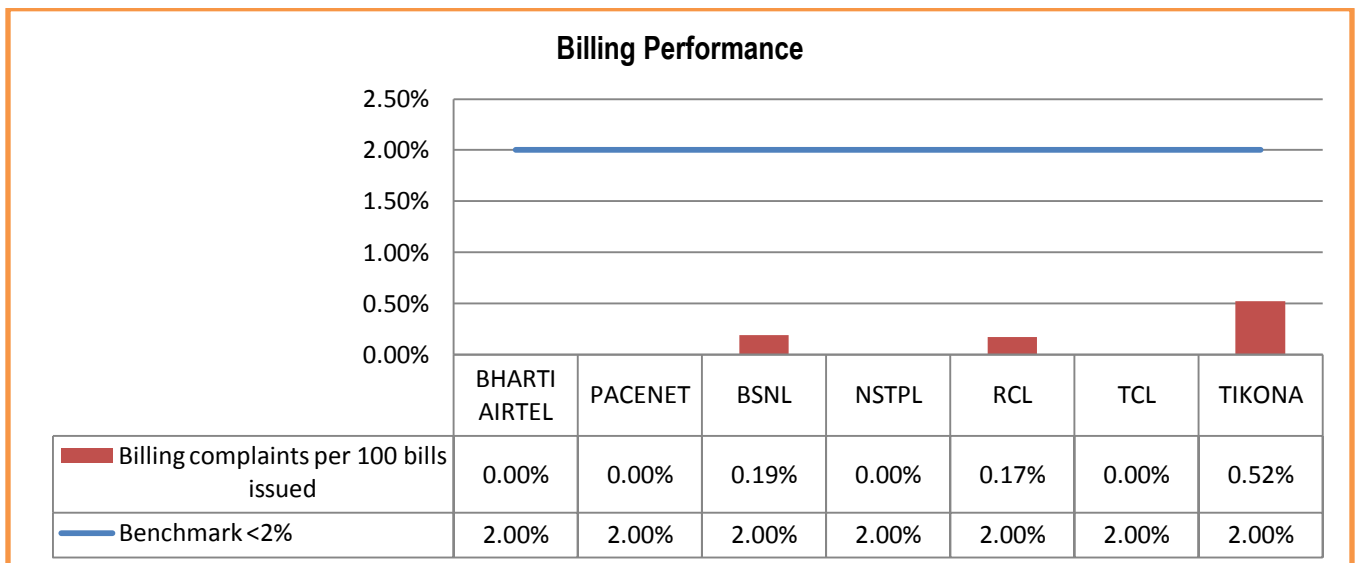
10.6 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF BROADBAND SERVICE PROVIDERS:

1. SERVICE PROVISIONING/ACTIVATION TIME:



All Operators are meeting the benchmarks except BSNL.

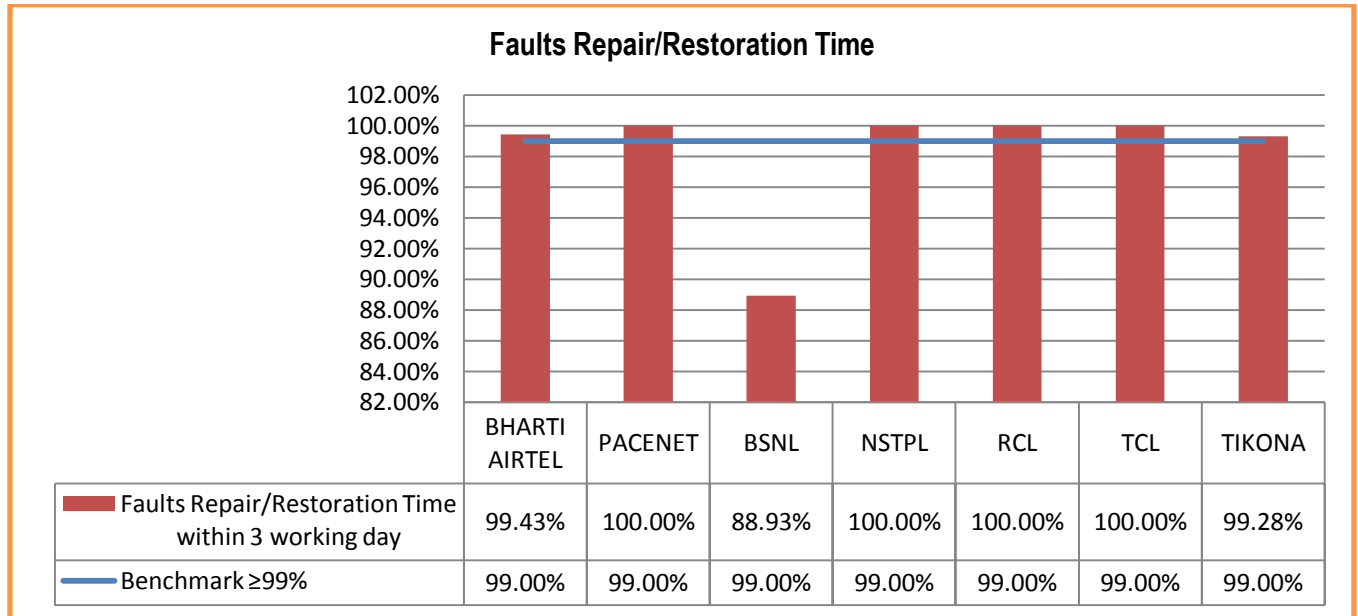
2. BILLING PERFORMANCE:



All Operators are meeting the benchmarks.

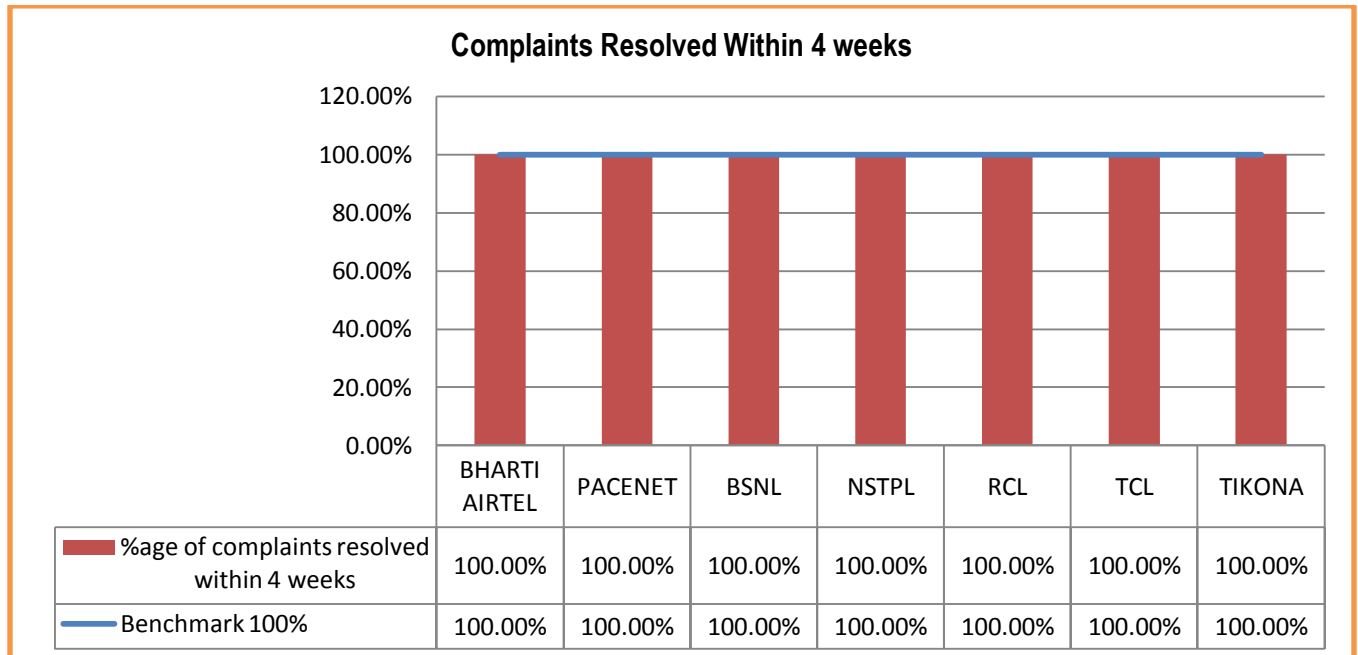


3. FAULTS REPAIR/RESTORATION TIME:



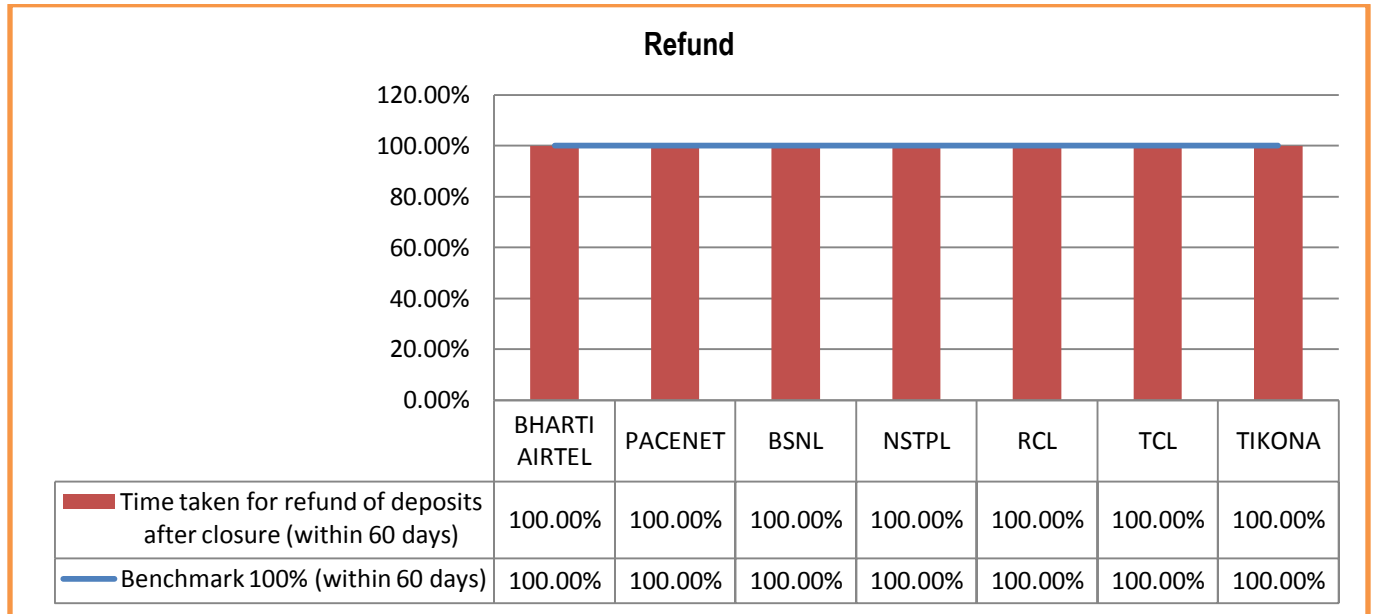
All Operators are meeting the benchmarks except BSNL.

4. COMPLAINT RESOLUTION:



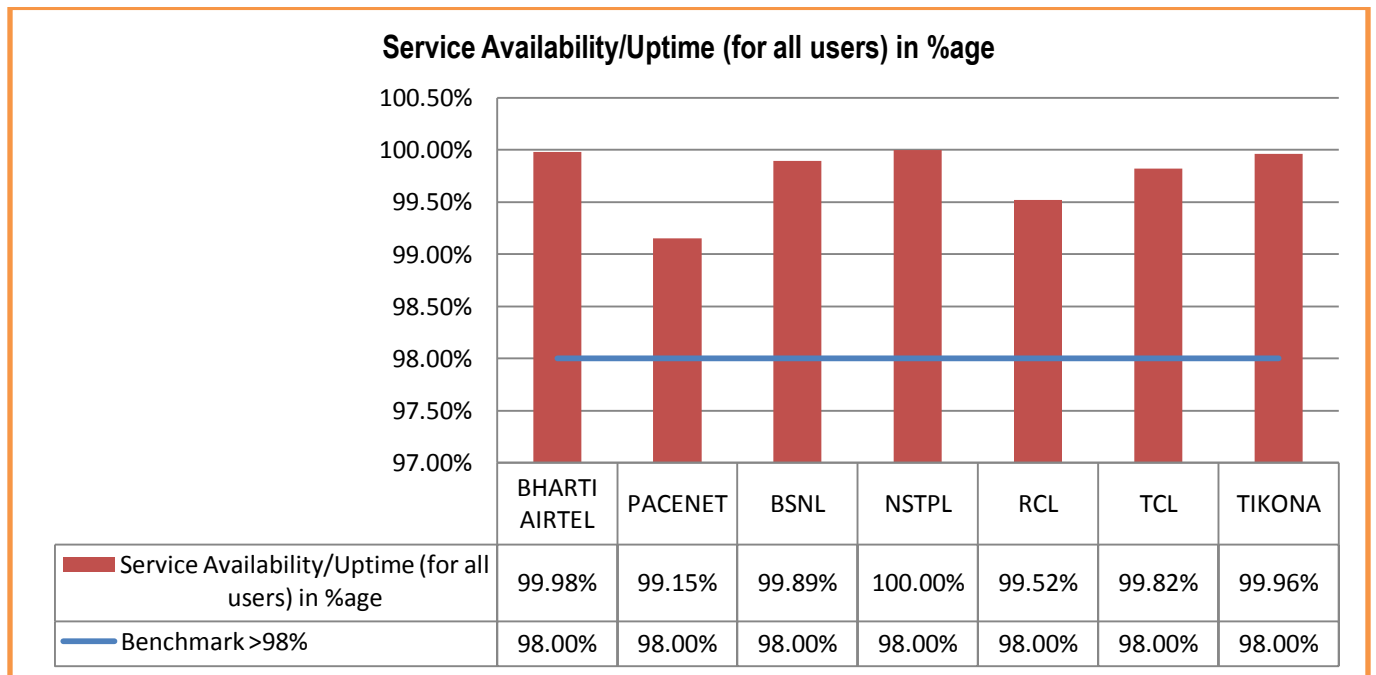
All Operators are meeting the benchmarks.

5. REFUND:



All Operators are meeting the benchmarks.

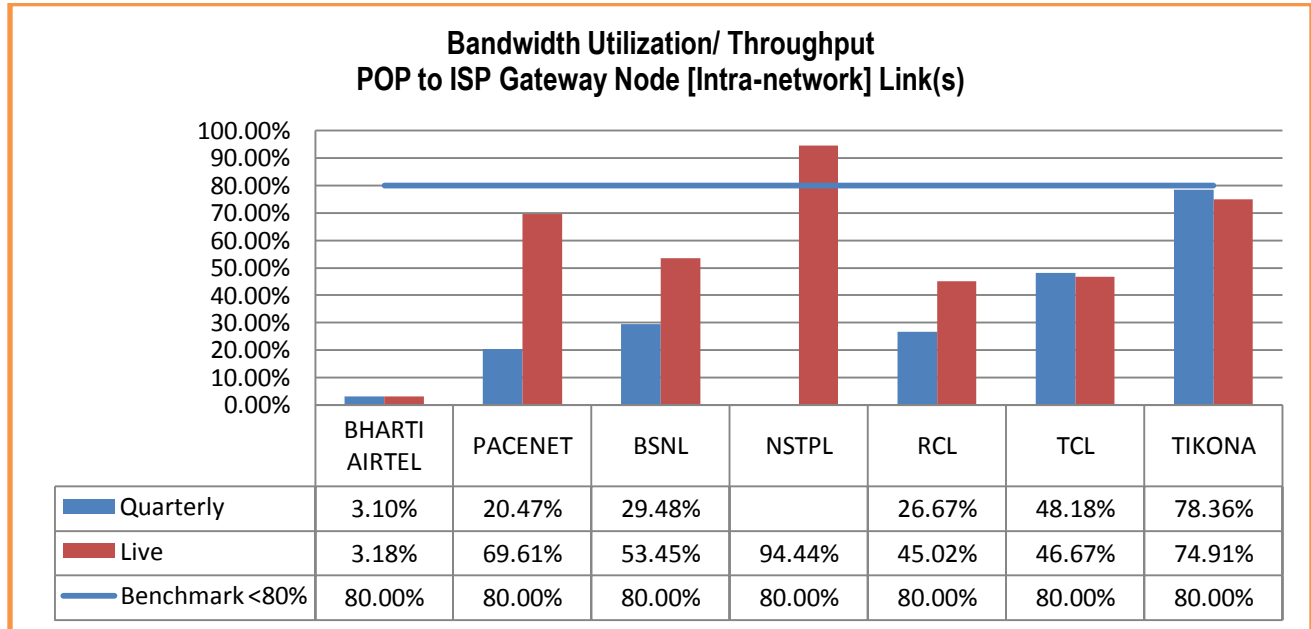
6. SERVICE AVAILABILITY/UPTIME:



All Operators are meeting the benchmarks.

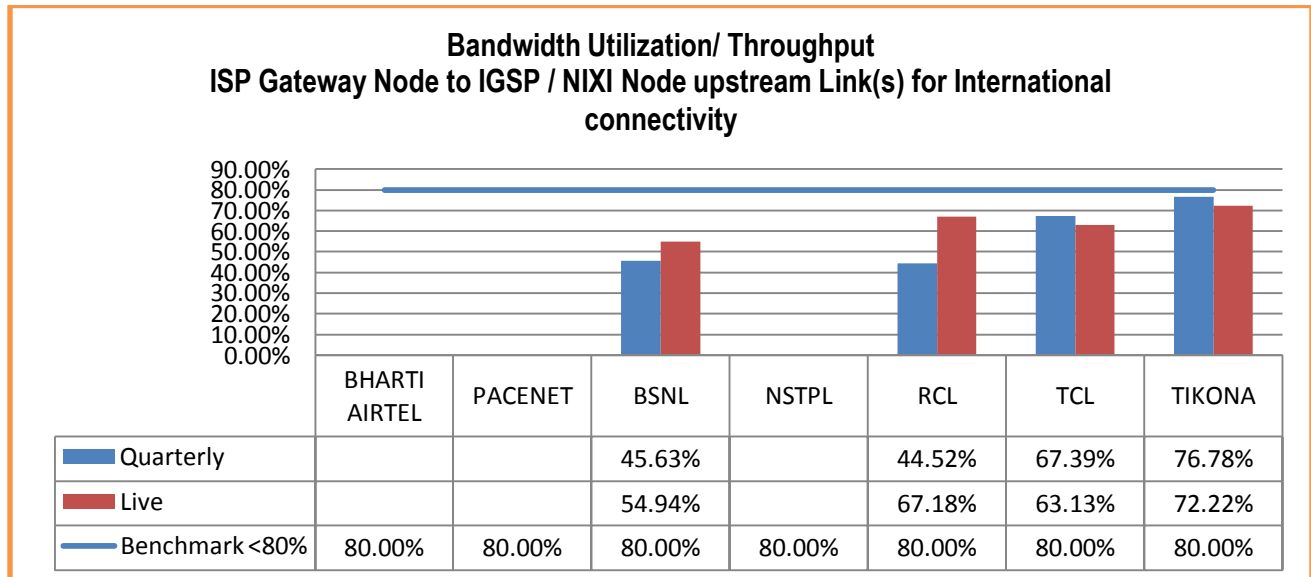
11.7 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BROADBAND SERVICE PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:

1. BROADBAND UTILIZATION/THROUGHPUT POP TO ISP GATEWAY NODE:



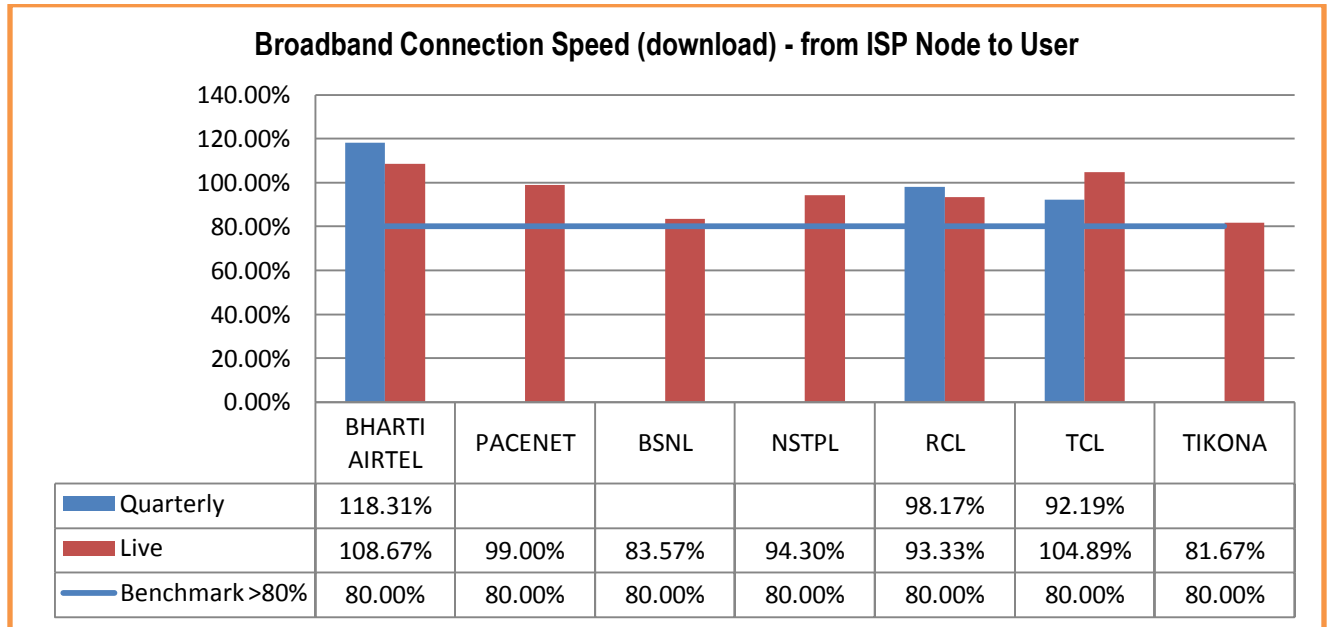
All Operators are meeting the benchmarks except NSTPL during live measurement.

2. BROADBAND UTILIZATION/THROUGHPUT ISP GATEWAY NODE TO IGSP/NIXI NODE:



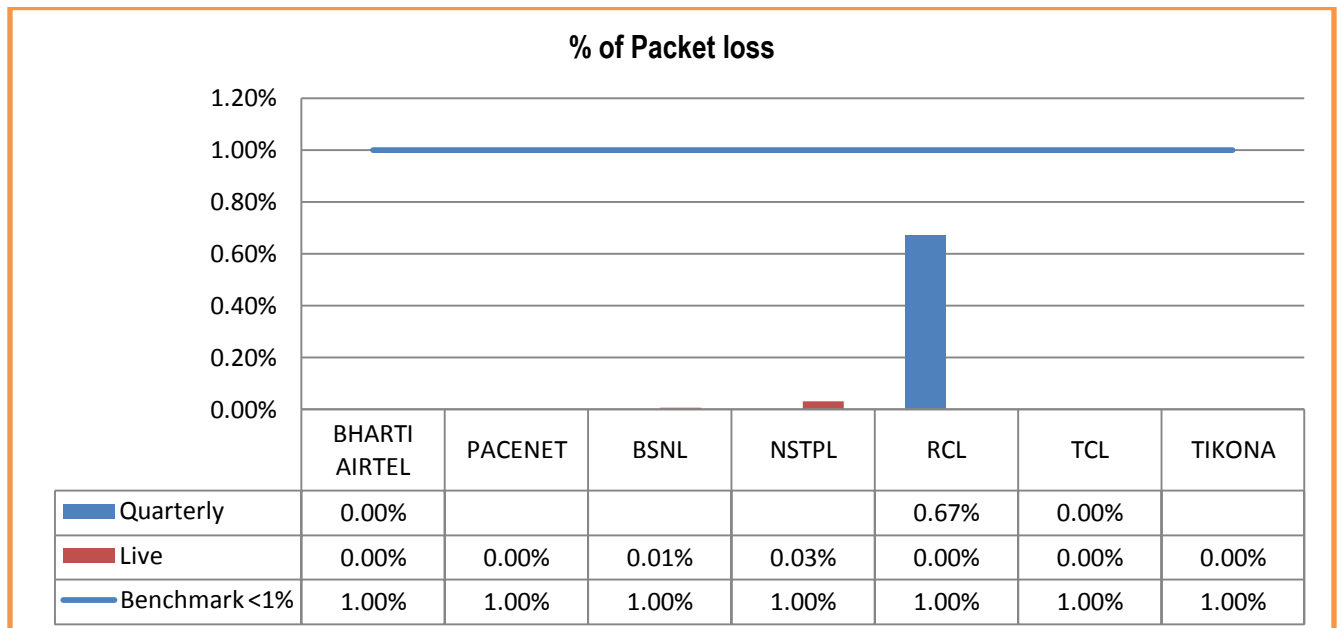
All Operators are meeting the benchmarks.

3. BROADBAND CONNECTION SPEED (DOWNLOAD) FROM ISP NODE TO USER:



All Operators are meeting the benchmarks.

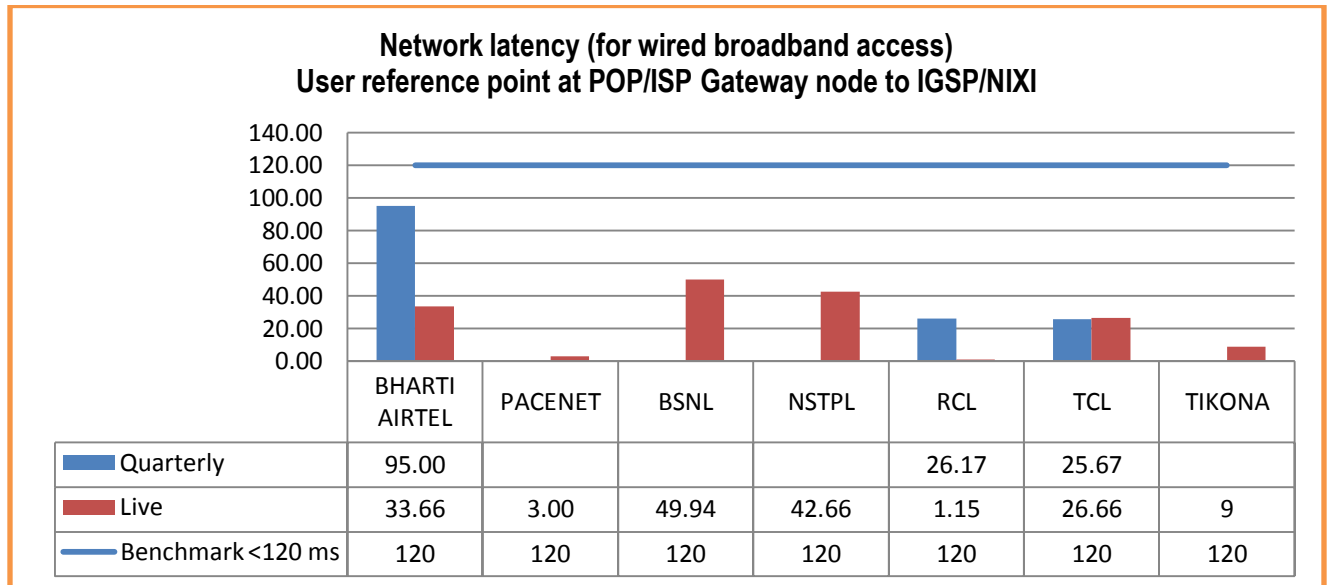
4. PACKET LOSS:



All Operators are meeting the benchmarks.

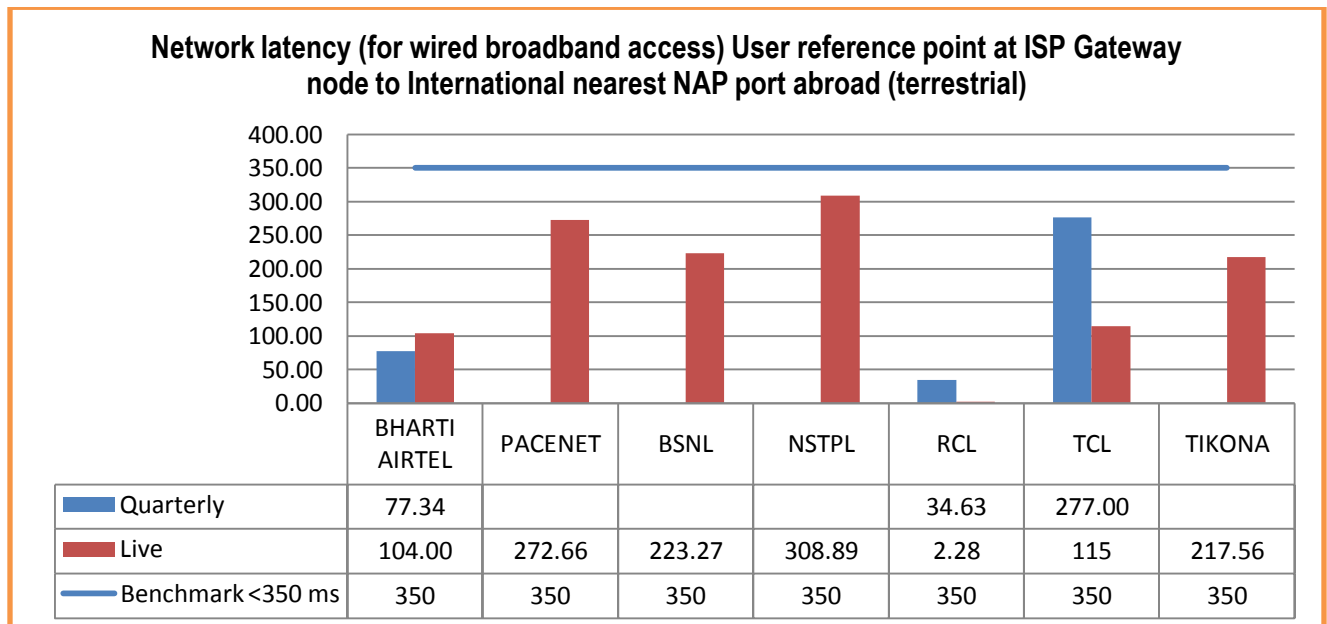


5. NETWORK LATENCY USER REFERENCE POINT AT POP/ISP GATEWAY NODE TO IGSP/NIXI:



All Operators are meeting the benchmarks.

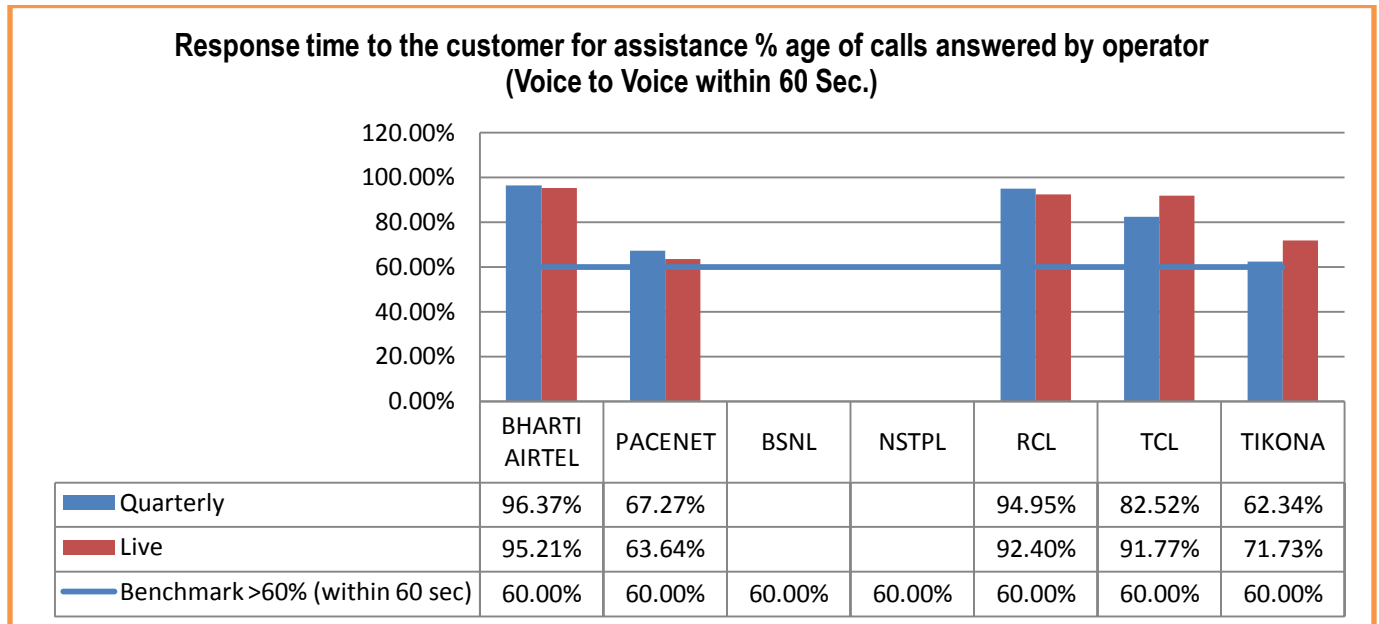
6. NETWORK LATENCY USER REFERENCE POINT AT ISP GATEWAY NODE TO INTERNATIONAL NEAREST NAP PORT ABROAD (TERRESTRIAL):



All Operators are meeting the benchmarks.

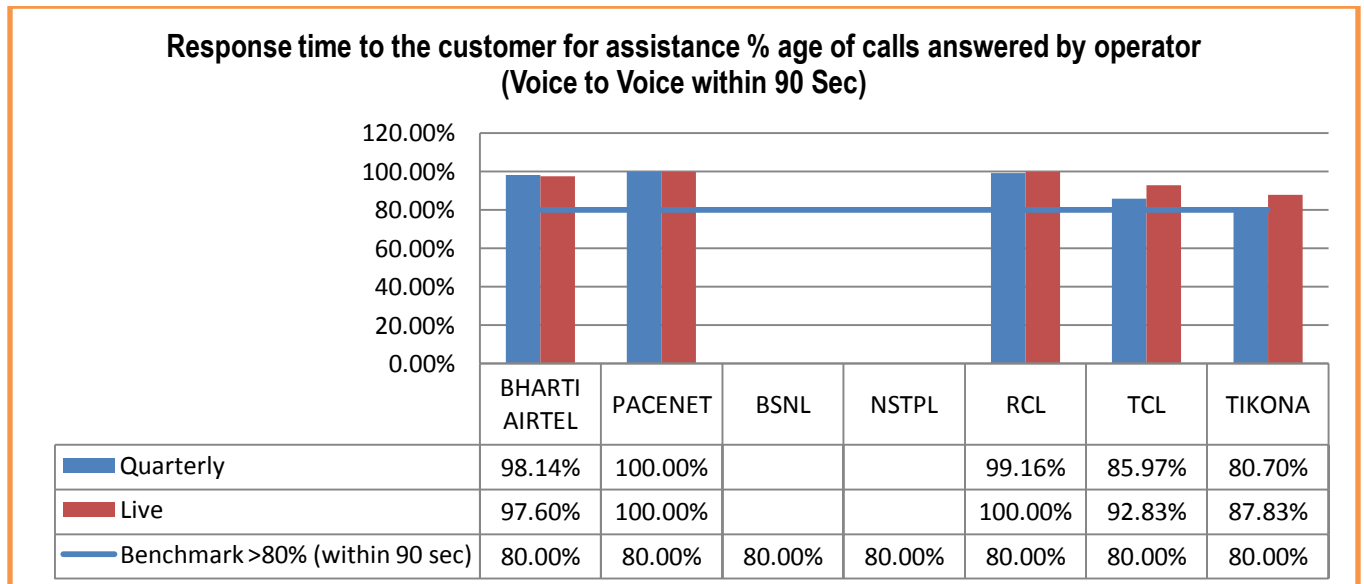


7. RESPONSE TIME TO THE CUSTOMER FOR ASSISTANCE ACCESSIBILITY BY OPERATOR WITHIN 60 SECONDS:



All Operators are meeting the benchmarks.

8. RESPONSE TIME TO THE CUSTOMER FOR ASSISTANCE ACCESSIBILITY BY OPERATOR WITHIN 90 SECONDS:



All Operators are meeting the benchmarks.



Annex-1

LIST OF THE WIRELINE EXCHANGES COVERED FOR QOS AUDIT FOR QE-SEPTEMBER 2014:

S.N.	SERVICE PROVIDER	SSA NAME	SDCA NAME	EXCHANGE NAME	EXCHANGE CODE/LEVEL	EXCHANGE TYPE	
1	BSNL	LUCKNOW	LUCKNOW	ALAMBAGH MAIN	0522-245,246	URBAN	
2	BSNL			BHADEWAN MAIN	0522-265,225	URBAN	
3	BSNL			GOMTI NAGAR MAIN	0522-230,239	URBAN	
4	BSNL			IND-NAGAR MAIN	0522-234,235,271	URBAN	
5	BSNL			JANKIPURAM	0522-2360,2361,2362,2363,2365,2730,2731,2732,2733,2734	URBAN	
6	BSNL			MAHANAGAR MAIN	0522-232,233	URBAN	
7	BSNL			AMETHI	0522-2835	RURAL	
8	BSNL			ARJUNGANJ	0522-2812	RURAL	
9	BSNL			BANTHRA	0522-2816	RURAL	
10	BSNL			BIJNORE	0522-2817	RURAL	
11	BSNL			CHINHAT	0522-2815,2814	RURAL	
12	BSNL			DASAULI	0522-2890	RURAL	
13	BSNL			DEWA ROAD	0522-2818	RURAL	
14	BSNL			FATEHGANJ	0522-2891	RURAL	
15	BSNL			GANGA GANJ	0522-2835	URBAN	
16	BSNL			GHAILA	0522-2851	RURAL	
17	BSNL			AMANIGANJ	05212-2942	RURAL	
18	BSNL			B.K.TALAB	05212-298	RURAL	
19	BSNL			GAHDOW	05212-2102	RURAL	
20	BSNL			ITAUNJA	05212-2952	RURAL	
21	BSNL			KATHWARA	05212-2900	RURAL	
22	BSNL			KOHILA	05212-2184,2185	RURAL	
23	BSNL		KANPUR	KANPUR	AMAN PATEL	0512-253	URBAN
24	BSNL				AVAS VIKAS	0512-251	URBAN
25	BSNL				BANS MANDI	0512-234	URBAN
26	BSNL				CANTT	0512-238,239	URBAN
27	BSNL				CITY CENTRE	0512-230,231	URBAN
28	BSNL				BAHUTI PRATAP PUR	0512-2696	RURAL
29	BSNL				BIDHNOO	0512-2732	RURAL
30	BSNL				BITHOOR	0512-279	RURAL
31	BSNL				RAIL BAZAR	0512-232	URBAN
32	BSNL				KATHARA	0512-2733	RURAL
33	BSNL				RURA	05111-283,284	RURAL
34	BSNL				AKBERPUR	SHIVLI	05111-225



S.N.	SERVICE PROVIDER	SSA NAME	SDCA NAME	EXCHANGE NAME	EXCHANGE CODE/LEVEL	EXCHANGE TYPE	
35	BSNL			BAGHPUR	05111-226	RURAL	
36	BSNL			MATI (AKBERPUR)	05111-270,271	RURAL	
37	BSNL			BILHAUR	BILHAUR	05112-270,271	RURAL
38	BSNL				CHAUBEYPUR	05112-282	RURAL
39	BSNL				UTTARIPURA	05112-238	RURAL
40	BSNL			DERAPUR	DERAPUR	05114-250	RURAL
41	BSNL		RASULABAD		05114-240	RURAL	
42	BSNL		JHINJHAK		05114-234	RURAL	
43	BSNL		RAIBREALI		RAIBREALI - GE	BACHHRAWAN	0535-2636
44	BSNL			DEDUR		0535-2535	RURAL
45	BSNL			GANGAGANJ		0535-2253	RURAL
46	BSNL			GURBAXGANJ		0535-2565	RURAL
47	BSNL	HARCHANDPUR		0535-26317		RURAL	
48	BSNL	HALOR		0535-2446		RURAL	
49	BSNL	RAIBREALI			GHANTAGHAR	0535-2212	URBAN
50	BSNL				LADHWAMAU	0535-2448	RURAL
51	BSNL				RAHWAN	0535-26311	RURAL
52	BSNL				CDOT-MAIN	0535-2200	URBAN
53	BSNL				DEVANDPUR	0535-2217	URBAN
54	BSNL				OCB LOCAL	0535-2700	URBAN
55	BSNL	MAHARAJGANJ		KUNDAGANJ	0535-2621	RURAL	
56	BSNL			KURRISUDANLI	0535-2623	RURAL	
57	BSNL			MANGARRI	0535-2445	RURAL	
58	BSNL			RAJAFATEHPUR	0535-2444	RURAL	
59	BSNL	LALGANJ		AIHAR	05315-257	RURAL	
60	BSNL			BEHTAKALAN	05315-259	RURAL	
61	BSNL			BENIMADOGANJ	05315-242	RURAL	
62	BSNL			ATAURA	0535-2546	RURAL	
63	BSNL	ALLAHABAD	ALLAHABAD	ALDCTX	0532-622,623,624,420,421,422	URBAN	
64	BSNL			ALDCTO	0532-2560,2561	URBAN	
65	BSNL			ALDCTY	0532-224	URBAN	
66	BSNL			MEERAPUR	0532-2450,2451,2452	URBAN	
67	BSNL			COLONELGANJ	0532-460,461,462	URBAN	
68	BSNL			TILHAPUR MOD	0532-274	RURAL	
69	BSNL			SARAIKIL	0532-270,271	RURAL	
70	BSNL		BHARWARI		AJHUWA	05331-255	RURAL
71	BSNL				BISARA	05331-	RURAL
72	BSNL				KARARI	05331-2775	RURAL



S.N.	SERVICE PROVIDER	SSA NAME	SDCA NAME	EXCHANGE NAME	EXCHANGE CODE/LEVEL	EXCHANGE TYPE	
73	BSNL		MEJA	DEVIGANJ	05331-252	RURAL	
74	BSNL			KORAON	05334-2324	RURAL	
75	BSNL			MEJA	05334-257	RURAL	
76	BSNL			BHARATGANJ	05334-2345	RURAL	
77	BSNL			MANDA ROAD	05334-2373	RURAL	
78	BSNL		PHOOLPUR	HANDIA	05332-284	RURAL	
79	BSNL			SAHSON	05332-288	RURAL	
80	BSNL			PHOOLPUR	05332-251,252,253	RURAL	
81	BSNL			BARAUT	05332-287	RURAL	
82	BSNL			BARETHI	05332-286	RURAL	
83	BSNL		VARANASI	VARANASI	CANTT	0542-250,251	URBAN
84	BSNL				RAMNAGAR CITY	0542-266	URBAN
85	BSNL	BENIABAGH			0542-240,249	URBAN	
86	BSNL	BHAGATUA			0542-2619	RURAL	
87	BSNL	BARKI			0542-2610	RURAL	
88	BSNL	CHOLAPUR			0542-2612	RURAL	
89	BSNL	CHAUBEYPUR			0542-2615	RURAL	
90	BSNL	AJAGARA			0542-2611	RURAL	
91	BSNL	AYAR			0542-2626	RURAL	
92	BSNL	BABATPUR			0542-2622,2623	RURAL	
93	BSNL	CHANDAULI		BARHANI	05412-268	RURAL	
94	BSNL			BARHAULI	05412-2612	RURAL	
95	BSNL			BABURI	05412-263	RURAL	
96	BSNL			BHOPAULI	05412-247	RURAL	
97	BSNL			CHANDAULI	05412-262	URBAN	
98	BSNL	BHADOHI		ABHIYA	05414-277	RURAL	
99	BSNL			BABUSARAI	05414-262	RURAL	
100	BSNL			BASWAPUR	05414-276	RURAL	
101	BSNL			ASHNAW	0514-272	RURAL	
102	BSNL			BHADOHI	05414-220	URBAN	
103	BHARTI-AIRTEL	NA	NA	LUCKNOW	--	URBAN	
104	TTL	NA	NA	LUCKNOW	--	URBAN	
105	RCL	NA	NA	DAKC-MUMBAI	--	URBAN	
106	VODAFONE	NA	NA	LUCKNOW	--	URBAN	

Annex-2

LOCATION OF THE POPs COVERED FOR QOS AUDIT FOR QE-SEPTEMBER 2014:

S.N.	CIRCLE	SERVICE PROVIDER	POPS LOCATION	ACTIVITY
1	UPE	BSNL	ALAMBAGH MAIN	BB AUDIT
2	UPE	BSNL	BHADEWAN MAIN	BB AUDIT
3	UPE	BSNL	GOMTI NAGAR MAIN	BB AUDIT
4	UPE	BSNL	IND-NAGAR MAIN	BB AUDIT
5	UPE	BSNL	JANKIPURAM	BB AUDIT
6	UPE	BSNL	MAHANAGAR MAIN	BB AUDIT
7	UPE	BSNL	AMETHI	BB AUDIT
8	UPE	BSNL	ARJUNGANJ	BB AUDIT
9	UPE	BSNL	BANTHRA	BB AUDIT
10	UPE	BSNL	BIJNORE	BB AUDIT
11	UPE	BSNL	CHINHAT	BB AUDIT
12	UPE	BSNL	DASAULI	BB AUDIT
13	UPE	BSNL	DEWA ROAD	BB AUDIT
14	UPE	BSNL	FATEHGANJ	BB AUDIT
15	UPE	BSNL	GANGA GANJ	BB AUDIT
16	UPE	BSNL	GHAILA	BB AUDIT
17	UPE	BSNL	AMANIGANJ	BB AUDIT
18	UPE	BSNL	B.K.TALAB	BB AUDIT
19	UPE	BSNL	GAHDOW	BB AUDIT
20	UPE	BSNL	ITAUNJA	BB AUDIT
21	UPE	BSNL	KATHWARA	BB AUDIT
22	UPE	BSNL	KOHILA	BB AUDIT
23	UPE	BSNL	AMAN PATEL	BB AUDIT
24	UPE	BSNL	AVAS VIKAS	BB AUDIT
25	UPE	BSNL	BANS MANDI	BB AUDIT
26	UPE	BSNL	CANTT	BB AUDIT
27	UPE	BSNL	CITY CENTRE	BB AUDIT
28	UPE	BSNL	BAHUTI PRATAP PUR	BB AUDIT
29	UPE	BSNL	BIDHNOO	BB AUDIT
30	UPE	BSNL	BITHOOR	BB AUDIT
31	UPE	BSNL	RAIL BAZAR	BB AUDIT
32	UPE	BSNL	KATHARA	BB AUDIT
33	UPE	BSNL	RURA	BB AUDIT
34	UPE	BSNL	SHIVLI	BB AUDIT
35	UPE	BSNL	BAGHPUR	BB AUDIT

S.N.	CIRCLE	SERVICE PROVIDER	POPS LOCATION	ACTIVITY
36	UPE	BSNL	MATI (AKBERPUR)	BB AUDIT
37	UPE	BSNL	BILHAUR	BB AUDIT
38	UPE	BSNL	CHAUBEYPUR	BB AUDIT
39	UPE	BSNL	UTTARIPURA	BB AUDIT
40	UPE	BSNL	DERAPUR	BB AUDIT
41	UPE	BSNL	RASULABAD	BB AUDIT
42	UPE	BSNL	JHINJHAK	BB AUDIT
43	UPE	BSNL	BACHHRAWAN	BB AUDIT
44	UPE	BSNL	DEDUR	BB AUDIT
45	UPE	BSNL	GANGAGANJ	BB AUDIT
46	UPE	BSNL	GURBAXGANJ	BB AUDIT
47	UPE	BSNL	HARCHANDPUR	BB AUDIT
48	UPE	BSNL	HALOR	BB AUDIT
49	UPE	BSNL	GHANTAGHAR	BB AUDIT
50	UPE	BSNL	LADHWAMAU	BB AUDIT
51	UPE	BSNL	RAHWAN	BB AUDIT
52	UPE	BSNL	CDOT-MAIN	BB AUDIT
53	UPE	BSNL	DEVANDPUR	BB AUDIT
54	UPE	BSNL	OCB LOCAL	BB AUDIT
55	UPE	BSNL	KUNDAGANJ	BB AUDIT
56	UPE	BSNL	KURRISUDANLI	BB AUDIT
57	UPE	BSNL	MANGARRI	BB AUDIT
58	UPE	BSNL	RAJAFATEHPUR	BB AUDIT
59	UPE	BSNL	AIHAR	BB AUDIT
60	UPE	BSNL	BEHTAKALAN	BB AUDIT
61	UPE	BSNL	BENIMADOGANJ	BB AUDIT
62	UPE	BSNL	ATAURA	BB AUDIT
63	UPE	BSNL	ALDCTX	BB AUDIT
64	UPE	BSNL	ALDCTO	BB AUDIT
65	UPE	BSNL	ALDCTY	BB AUDIT
66	UPE	BSNL	MEERAPUR	BB AUDIT
67	UPE	BSNL	COLONELGANJ	BB AUDIT
68	UPE	BSNL	TILHAPUR MOD	BB AUDIT
69	UPE	BSNL	SARAIKIL	BB AUDIT
70	UPE	BSNL	AJHUWA	BB AUDIT
71	UPE	BSNL	BISARA	BB AUDIT
72	UPE	BSNL	KARARI	BB AUDIT
73	UPE	BSNL	DEVIGANJ	BB AUDIT

S.N.	CIRCLE	SERVICE PROVIDER	POPS LOCATION	ACTIVITY
74	UPE	BSNL	KORAON	BB AUDIT
75	UPE	BSNL	MEJA	BB AUDIT
76	UPE	BSNL	BHARATGANJ	BB AUDIT
77	UPE	BSNL	MANDA ROAD	BB AUDIT
78	UPE	BSNL	HANDIA	BB AUDIT
79	UPE	BSNL	SAHSON	BB AUDIT
80	UPE	BSNL	PHOOLPUR	BB AUDIT
81	UPE	BSNL	BARAUT	BB AUDIT
82	UPE	BSNL	BARETHI	BB AUDIT
83	UPE	BSNL	CANTT	BB AUDIT
84	UPE	BSNL	RAMNAGAR CITY	BB AUDIT
85	UPE	BSNL	BENIABAGH	BB AUDIT
86	UPE	BSNL	BHAGATUA	BB AUDIT
87	UPE	BSNL	BARKI	BB AUDIT
88	UPE	BSNL	CHOLAPUR	BB AUDIT
89	UPE	BSNL	CHAUBEYPUR	BB AUDIT
90	UPE	BSNL	AJAGARA	BB AUDIT
91	UPE	BSNL	AYAR	BB AUDIT
92	UPE	BSNL	BABATPUR	BB AUDIT
93	UPE	BSNL	BARHANI	BB AUDIT
94	UPE	BSNL	BARHAULI	BB AUDIT
95	UPE	BSNL	BABURI	BB AUDIT
96	UPE	BSNL	BHOPAULI	BB AUDIT
97	UPE	BSNL	CHANDAULI	BB AUDIT
98	UPE	BSNL	ABHIYA	BB AUDIT
99	UPE	BSNL	BABUSARAI	BB AUDIT
100	UPE	BSNL	BASWAPUR	BB AUDIT
101	UPE	BSNL	ASHNAW	BB AUDIT
102	UPE	BSNL	BHADOHI	BB AUDIT
103	UPE	BSNL	DASHARATHPUR	BB AUDIT
104	UPE	BSNL	DHANTULSI	BB AUDIT
105	UPE	BSNL	DURGAGANJ	BB AUDIT
106	UPE	BSNL	GOSAI BAZAR	BB AUDIT
107	UPE	BSNL	JANGIGANJ	BB AUDIT
108	UPE	BHARTI-AIRTEL	LUCKNOW	BB AUDIT
109	UPE	TCL	LUCKNOW	BB AUDIT
110	UPE	TTL	LUCKNOW	BB AUDIT
111	UPE	RCL	DAKC-MUMBAI	BB AUDIT



S.N.	CIRCLE	SERVICE PROVIDER	POPS LOCATION	ACTIVITY
112	UPE	PACENET	LUCKNOW	BB AUDIT
113	UPE	TIKONA	LUCKNOW	BB AUDIT
114	UPE	NSTPL	KANPUR	BB AUDIT