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 (West) Service Area

(July 2014 – September 2014)

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 (W) circle** against the QoS bench marks laid down by TRAI in the respective regulations.

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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 6thOctober, 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

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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 is 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 is 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
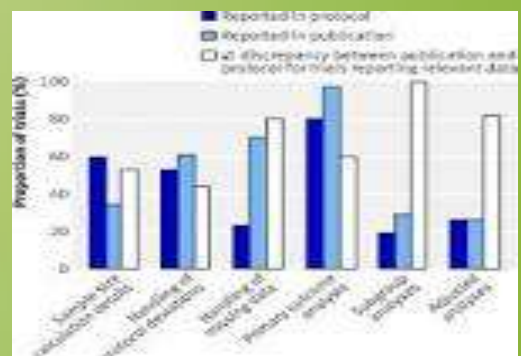
3. SAMPLE SIZE

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(W) circle

Sl. No.	Name of Service Provider	Dates of live measurement Audit			Audit Location/Address
GSM Operators		July-14	August-14	September-14	
1	AIRCEL	10 to 11 & 14 Jul-14	4 to 6 Aug-14	1 to 3 Sep-14	325/1,DISHNET WIRELESS LTD. SHIKHAR TOWER,MANGAL PANDEY NAGAR, GARH ROAD, MEERUT
2	AIRTEL	15 to 17 Jul-14	21 to 22 & 25 Aug-14	4 to 5 & 8 Sep-14	BHARTI AIRTEL LTD., DIVIDER CHOWK,GANGANAGAR,MWANA ROAD, MEERUT
3	BSNL (UK)	16 to 18 Jul-14	11 to 13 Aug-14	9 to 11 Sep-14	BSNL TELEPHONE EXCHANGE, PATEL NAGAR NEAR LAL PUL, DEHRADUN UK.
5	BSNL (UPW)	18 to 19 & 21 Jul-14	6 to 8 Aug-14	15 to 17 Sep-14	BSNL TELEPHONE EXCHANGE,BRAHAMPURI,DELHI ROAD,MEERUT
4	IDEA	7 to 9 Jul-14	26 to 28 Aug-14	24 to 26 Sep-14	IDEA CELLULAR LIMITED, FIRST FLOOR A-68, SECTOR-64, NOIDA (UP)
6	RCOM GSM	16 to 18 Jul-14	20 to 22 Aug-14	5, 8 to 9 Sep-14	RCOM LTD.,VILL-JATAULI,NEAR KRISHNA PUBLIC SCHOOL,BYPASS ROAD MEERUT
7	UNINOR	21 to 23 Jul-14	19 to 21 Aug-14	17 to 19 Sep-14	TELEWINGS COMMUNICATIONS SERVICES PVT LTD. (UNINOR) WELLDONE TECHNOLOGY PARK SEC-48 SOHNA ROAD GURGAON
8	TATA GSM	9 to 11 Jul-14	6 to 8 Aug-14	3 to 5 Sep-14	TTSL,NEAR CCS UNIVERSITY, MEERUT
9	VODAFONE	14 to 16 Jul-14	7 to 8 & 11 Aug-14	3 to 5 Sep-14	VODAFONE SOUTH LTD.,NISHYAM KUNJ BUILDING,NEAR KAILASH PRKASH STADIUM,CIVIL LINES,MEERUT
CDMA Operators					
10	MTS	10 to 11 & 14 Jul-14	5 to 7 Aug-14	2 to 4 Sep-14	SSTL,NEAR SRI RAM PLAZA,OPP.CCS UNIVERSITY, MEERUT
11	RCOM CDMA	16 to 18 Jul-14	20 to 22 Aug-14	5, 8 to 9 Sep-14	RCOM LTD.,VILL-JATAULI,NEAR KRISHNA PUBLIC SCHOOL,BYPASS ROAD MEERUT
12	TATA CDMA	9 to 11 Jul-14	6 to 8 Aug-14	3 to 5 Sep-14	TTSL,NEAR CCS UNIVERSITY, MEERUT

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

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 1007 in UP (W) (present no. of BSNL exchanges), audit was done for **52 sampled (25-Urban and 27-Rural) exchanges** & in Uttrakhand, out of 466 exchanges audit was done for **24 sampled (7 Urban and 17 Rural) exchanges**. In case of Private Service provider's one exchange each of Bharti, TTL and RCL were covered for audit. As UP (W) Circle is having 78 SDCAs and Uttrakhand Circle is having 42 SDCAs, so total 76 sampled BSNL exchanges spread over 13 (8 UPW and 5 UK)SDCAs, (10% of SDCAs in UP-W & UK) 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, **51** no. of BSNL (UP-W) PoPs i.e. 5% of 1007 BSNL (UP-W) PoPs / Exchanges and **24** no. of BSNL (Uttarakhand) i.e. 5% of 466 BSNL (Uttarakhand) PoPs / Exchanges, spread over 10% SDCAs have been taken for QoS audit. Location of PoPs, covered for QoS audit is attached as **Annex-2**.

Discussion with the private broadband service providers reveled 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

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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 Service:**

(i) From monthly audit it was concluded that on an average, performance of the operators in the UP (W) service area was satisfactory for **Network Parameters** as most of the parameters were found to be in compliance during monthly QoS audit except parameter namely **'Worst affected cells having > 3% TCH drop'** which could not be met by **Aircel, Tata (GSM)** and **Tata (CDMA)** in all the three months of the quarter. Their quarterly average performance with respect to this parameter was **5.72%, 6.37%** and **4.68%** respectively. **Uninor** remained under performed for parameter '**Voice Quality'** with its average performance as **94.57%**.

(ii) From three days live assessment, it was found that the performance of the operators was in compliance for most of the parameters except for the parameter **'Worst affected cells> 3 % TCH drops'** which could not be met by **Aircel, Tata (GSM)** and **Tata (CDMA)** in all the three months of the quarter with their average performance as **5.91%, 6.45%** and **4.55%** respectively. **Uninor** failed to meet the bench mark of **'Voice Quality'** with its performance as **94.54%. The similar non-compliance of these operators was also observed in the monthly audit.**

(iii) With regard to the **Customer Service Quality Parameters,** all service providers were found to have complied with the most of the parameters. However, **RCOM (GSM)** and **RCOM (CDMA)** failed to meet the benchmark of parameter **'Billing Complaints – Prepaid'** with their performance as **0.30%** and **0.16%** respectively. All service providers were in compliance with respect to the parameter 'Accessibility of call center'. **BSNL (UK** and **UP-W)** have failed to meet the benchmark of **'calls answered by Operators (voice to voice within 60 Seconds)'**. Their achievement for this parameter was **60.74%** and **60.30%** respectively whereas **Tata (GSM)** has not met the benchmark of 'calls answered by Operators (voice to voice) within **90 seconds** as they provided the data for 90 seconds and achieved its performance as **91.95%** against the benchmark of >=95%. The performance of BSNL was poor with respect to this parameter. The call center is common for BSNL (Uttarakhand) and BSNL (UPW).

In case of parameter **'Time taken for refunds of deposit**, only **BSNL (UK) and Tata (CDMA)** have failed to settle the 100% refund cases with their achieved level as **95.65%** and **99.84%** respectively**.**

During 3 days live measurement, all service providers were in compliance with respect to the parameter Accessibility of call center except **MTS** with its achieved value as **90.19%. Airtel** has failed to meet the benchmark of calls answered by Operators (voice to voice within **60 seconds**). Its achievement for this parameter was **89.29%** whereas **RCOM (GSM)** has not met the benchmark of 'calls answered by Operators (voice to voice) within **90 seconds** as they provided the data for 90 seconds and achieved its performance as **94.73%** against the benchmark of >=95%.

(iv) **Drive Test** results revealed that the parameters **Voice Quality, CDR and CSSR** remained non-complied by some of the service providers namely **BSNL, RCOM (GSM), Idea, Uninor and Vodafone** in different parts of the SSAs where drive tests were conducted during the quarter ended September 2014. However, the parameter **'Voice Quality'** remained main area of concern for all the above mentioned operators. The service providers need to improve their network quality with respect to these parameters.

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 Incidences, MTTR, Fault Repair/Restoration Time, and Response time to customer for assistance.** Hence, BSNL need to improve their services in respect of these parameters.**TTL** also failed to meet the benchmarks of the parameters **Fault Repair, Accessibility of Call center and Termination/ Closures.**

3) **Broadband Service:**

From the audit findings, it was concluded that only **BSNL (UPW) and BSNL (UKD)** could not meet the benchmarks for parameters "**Fault repairs and Call answered by Operator**". For rest of the parameters other services providers were meeting the benchmarks.

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	19:00 - 20:00
3	BSNL (UP-W)	Sept-14	19:00 - 20:00
4	BSNL UTTRAKHAND	Sept-14	20:00 - 21:00
5	IDEA	Sept-14	20:00 - 21:00
6	RCOM GSM	Sept-14	19:00 - 20:00
7	TATA GSM	Sept-14	20:00 - 21:00
8	UNINOR	Sept-14	20:00 - 21:00
9	VODAFONE	Sept-14	20:00 - 21:00
CDMA Operators			
10	MTS	Sept-14	20:00 - 21:00
11	RCOM CDMA	Sept-14	19:00 - 20:00
12	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 (W) circle.

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.

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	2	7	633	ZTE	ZTE
2	AIRTEL	19	68	6550	Ericsson	Ericsson
3	BSNL (UP-W)	12	33	2354	Ericsson, NSN & ZTE	Ericsson, NSN & ZTE
4	BSNL UTTRAKHAND	5	14	863	Ericsson & ZTE	Ericsson, NSN & ZTE
5	IDEA	16	56	7408	NSN	NSN
6	RCOM GSM	4	14	1680	Huawei	Huawei
7	TATA GSM	3	18	1821	NSN	NSN
8	UNINOR	12	24	3815	Ericsson	Ericsson
9	VODAFONE	11	88	6232	NSN	NSN
CDMA Operators						
10	MTS	1	1	332	Huawei	Huawei
11	RCOM CDMA	3	4	1000	Huawei & Lucent	Huawei & Lucent
12	TATA CDMA	5	4	587	Huawei & Ericsson	Huawei & Motorola

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – JULY 14 MONTH:

S/N	PMR Generation Data / Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators		
	Network Service Quality Parameter														
	Network Availability														
1	a) BTS Accumulated Downtime	<=2%	July-14	0.28%	0.68%	1.25%	0.64%	0.20%	0.54%	0.26%	0.33%	0.31%	0.03%	0.58%	0.05%
	b) Worst affected BTSs due to downtime	<=2%	July-14	1.43%	1.13%	1.89%	0.35%	0.04%	1.54%	1.15%	1.50%	0.67%	0.00%	1.81%	0.00%
	Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	July-14	99.15%	97.55%	96.65%	97.31%	99.98%	99.38%	98.13%	97.05%	99.40%	99.59%	97.27%	99.07%
	b) SDCCH/PAGING Channel congestion	<=1%	July-14	0.42%	0.54%	0.61%	0.70%	0.81%	0.04%	0.23%	0.93%	0.34%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	July-14	0.58%	1.57%	1.01%	1.55%	1.98%	0.10%	0.55%	1.62%	0.60%	0.00%	0.07%	0.04%
	Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	July-14	0.70%	1.27%	0.81%	1.60%	1.00%	0.44%	0.96%	0.49%	0.84%	0.53%	0.36%	0.52%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	July-14	**6.36%**	2.45%	1.32%	2.55%	2.45%	0.10%	**6.82%**	1.49%	2.45%	1.85%	1.57%	**4.45%**
	c) Connections with good voice quality	>=95%	July-14	97.26%	97.56%	96.64%	95.60%	96.07%	98.64%	97.33%	**94.65%**	97.51%	99.19%	99.78%	98.89%
4	No. of POI's having >=0.5% POI congestion		July-14	0	0	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(W) CIRCLE – AUGUST 14 MONTH

S/N	PMR Generation Data / Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				colspan="9" align="center"	GSM Operators								colspan="3" align="center"	CDMA Operators
	Network Service Quality Parameter														
	Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Aug-14	0.40%	1.07%	1.24%	0.67%	0.22%	0.32%	0.30%	0.37%	0.27%	0.05%	0.38%	0.07%
	b) Worst affected BTSs due to downtime	<=2%	Aug-14	1.42%	1.90%	1.84%	1.40%	0.35%	0.77%	1.97%	1.51%	0.78%	0.00%	0.90%	0.17%
	Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Aug-14	98.98%	97.98%	96.41%	97.49%	99.98%	99.49%	98.42%	97.48%	99.49%	99.55%	98.84%	99.10%
	b) SDCCH/PAGING Channel congestion	<=1%	Aug-14	0.51%	0.31%	0.52%	0.72%	0.76%	0.02%	0.12%	0.73%	0.21%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Aug-14	0.80%	1.18%	1.26%	1.40%	1.57%	0.07%	0.37%	1.48%	0.51%	0.00%	0.01%	0.07%
	Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Aug-14	0.80%	1.40%	0.98%	1.58%	1.06%	0.42%	0.94%	0.59%	0.91%	0.57%	0.34%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Aug-14	**5.98%**	2.65%	2.02%	2.67%	2.31%	0.04%	**6.40%**	2.31%	2.95%	1.80%	1.29%	**4.70%**
	c) Connections with good voice quality	>=95%	Aug-14	97.08%	97.62%	96.75%	96.07%	95.83%	98.68%	97.33%	**94.53%**	97.31%	99.19%	99.77%	98.91%
4	No. of POI's having >=0.5% POI congestion		Aug-14	0	0	0	0	0	0	0	0	0	0	0	0

5.1.5 QOS PERFORMANCE OF MONTHLY PMR – SEPTEMBER 14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - UP(W) CIRCLE – SEPT 14 MONTH																
PMR Generation Data		Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	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	0.66%	1.13%	1.20%	0.50%	0.16%	0.33%	0.21%	0.28%	0.26%	0.05%	0.35%	0.06%
	b) Worst affected BTSs due to downtime	<=2%	Sep-14	1.11%	1.65%	1.83%	1.62%	0.45%	0.95%	1.21%	1.34%	0.56%	0.00%	1.20%	0.00%
	Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Sep-14	98.92%	97.78%	96.14%	97.11%	99.99%	99.49%	98.36%	97.30%	99.52%	99.51%	99.03%	99.09%
	b) SDCCH/PAGING Channel congestion	<=1%	Sep-14	0.54%	0.50%	0.52%	0.63%	0.76%	0.02%	0.11%	0.68%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Sep-14	0.76%	1.18%	1.08%	1.53%	1.54%	0.06%	0.45%	1.61%	0.48%	0.00%	0.09%	0.12%
	Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Sep-14	0.77%	1.28%	0.90%	1.33%	1.04%	0.39%	0.93%	0.55%	0.89%	0.55%	0.29%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Sep-14	**4.81%**	2.70%	1.59%	2.44%	2.41%	0.02%	**5.89%**	2.47%	2.85%	1.75%	1.61%	**4.89%**
	c) Connections with good voice quality	>=95%	Sep-14	96.96%	97.64%	96.58%	96.23%	95.81%	98.75%	97.27%	**94.54%**	97.35%	99.13%	99.78%	98.91%
4	No. of POI's having >=0.5% POI congestion		Sep-14	0	0	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)

PMR Generation Data		Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators		
S/N	Name of Parameter														
	Network Service Quality Parameter														
1	**Network Availability**														
	a) BTS Accumulated Downtime	<=2%	Quarterly	0.45%	0.96%	1.23%	0.60%	0.19%	0.40%	0.26%	0.33%	0.28%	0.04%	0.44%	0.06%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	1.32%	1.56%	1.85%	1.12%	0.28%	1.09%	1.44%	1.45%	0.67%	0.00%	1.30%	0.06%
2	**Connection Establishment (Accessibility)**														
	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.02%	97.77%	96.40%	97.30%	99.98%	99.45%	98.30%	97.28%	99.47%	99.55%	98.38%	99.09%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.49%	0.45%	0.55%	0.68%	0.78%	0.03%	0.15%	0.78%	0.24%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.71%	1.31%	1.12%	1.49%	1.70%	0.08%	0.46%	1.57%	0.53%	0.00%	0.06%	0.08%
3	**Connection maintenance (Retainability)**														
	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.76%	1.32%	0.90%	1.50%	1.03%	0.42%	0.94%	0.54%	0.88%	0.55%	0.33%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	**5.72%**	2.60%	1.64%	2.55%	2.39%	0.05%	**6.37%**	2.09%	2.75%	1.80%	1.49%	**4.68%**
	c) Connections with good voice quality	>=95%	Quarterly	97.10%	97.61%	96.66%	95.97%	95.90%	98.69%	97.31%	**94.57%**	97.39%	99.17%	99.78%	98.90%
4	No. of POI's having >=0.5% POI congestion		Quarterly	0	0	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-SUD 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.**

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(W) circle, **all the operators were found meeting benchmark of the above parameters** 'BTS accumulated downtime' and 'worst affected BTSs due to down time' in all the three months of 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 meeting the benchmark successfully of 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 pegging 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.** There was no congestion on individual POI links between a service provider vis-à-vis other service providers.

▪ **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 0.33%) was for RCOM (CDMA) 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)** and **Tata (CDMA).** These operators failed to meet the benchmark in all the three months of the quarter. Their quarterly average performance with respect to this parameter was **5.72%, 6.37%** and **4.68%** respectively.

    iii.   Connections with good voice quality:

The audit results for this parameter indicates that all operators have met the bench mark during the quarter except **Uninor**, remained underperformed with its average performance as **94.57%.**

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 MEASURMENT DATA (3-DAYS) – JULY 14 MONTH:

				AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
	Live measurement Data	Bench-mark	Average of 3 Days	GSM Operators									CDMA Operators		
S/N	Name of Parameter														
	Network Service Quality Parameter														
	Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Live data	0.21%	0.83%	1.27%	1.03%	0.15%	0.51%	0.23%	0.19%	0.23%	0.02%	0.52%	0.04%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.69%	1.86%	0.00%	0.01%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%
	Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.21%	98.80%	96.65%	96.98%	99.98%	99.44%	98.37%	95.79%	99.33%	99.63%	97.67%	99.08%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.23%	0.29%	0.69%	0.58%	0.80%	0.06%	0.20%	0.48%	0.24%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.62%	0.43%	1.40%	1.53%	**2.19%**	0.10%	0.49%	1.93%	0.67%	0.00%	0.05%	0.03%
	Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.62%	0.78%	0.93%	1.36%	1.04%	0.42%	0.86%	0.53%	0.79%	0.45%	0.34%	0.47%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	**5.81%**	2.40%	2.51%	2.45%	2.94%	0.10%	**5.94%**	1.93%	2.69%	1.73%	2.11%	**4.32%**
	c) Connections with good voice quality	>=95%	Live data	97.32%	97.56%	95.87%	95.17%	96.03%	98.68%	97.43%	**94.60%**	97.71%	99.23%	99.74%	98.91%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0

CELLULAR MOBILE TELEPHONE SERVICES - UP(W) CIRCLE - JULY 14 MONTH

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

														CDMA

CELLULAR MOBILE TELEPHONE SERVICES UP(W) CIRCLE - AUGUST 14 MONTH

S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
	Live measurement Data						GSM Operators							CDMA Operators	
	Network Service Quality Parameter														
	Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Live data	0.18%	1.45%	1.24%	1.14%	0.27%	0.33%	0.35%	0.33%	0.20%	0.04%	0.35%	0.33%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	1.32%	1.89%	0.00%	0.07%	0.00%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%
	Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.01%	98.14%	96.60%	97.28%	99.99%	99.54%	98.27%	97.52%	99.54%	99.60%	98.30%	99.00%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.29%	0.26%	0.57%	0.81%	0.95%	0.02%	0.16%	0.75%	0.26%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.63%	0.99%	1.25%	1.58%	1.68%	0.07%	0.37%	1.36%	0.46%	0.00%	0.02%	0.15%
	Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.78%	1.40%	0.93%	1.64%	1.07%	0.38%	1.01%	0.54%	0.89%	0.59%	0.46%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	6.85%	2.29%	1.82%	2.57%	2.33%	0.04%	7.28%	2.48%	3.31%	1.62%	2.23%	4.53%
	c) Connections with good voice quality	>=95%	Live data	97.15%	97.70%	97.39%	95.42%	95.81%	98.82%	97.21%	94.53%	97.34%	99.18%	99.72%	98.89%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0

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

	CELLULAR MOBILE TELEPHONE SERVICES UP(W) CIRCLE- SEPTEMBER 14 MONTH														
	Live measurement Data	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	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	0.32%	1.28%	1.24%	0.85%	0.21%	0.34%	0.29%	0.36%	0.56%	0.06%	0.42%	0.05%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.16%	1.19%	1.87%	0.00%	0.00%	0.00%	0.05%	0.00%	0.32%	0.00%	0.00%	0.00%
	Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.07%	98.17%	95.85%	97.36%	99.98%	99.52%	98.52%	97.34%	99.55%	99.49%	99.11%	99.21%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.09%	0.29%	0.67%	0.60%	**1.15%**	0.02%	0.06%	0.57%	0.19%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.44%	0.94%	0.93%	1.59%	1.68%	0.06%	0.35%	1.62%	0.45%	0.00%	0.94%	0.02%
	Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.74%	1.25%	1.02%	1.55%	0.99%	0.39%	0.95%	0.55%	0.80%	0.58%	0.29%	0.57%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	**5.06%**	2.77%	2.13%	2.61%	2.41%	0.04%	**6.14%**	2.54%	2.81%	1.76%	1.68%	**4.80%**
	c) Connections with good voice quality	>=95%	Live data	97.18%	97.55%	97.07%	95.85%	95.85%	98.80%	97.30%	**94.48%**	97.66%	99.03%	99.74%	98.91%
4	No. of POI having >=0.5% congestion		Live data	0	0	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-SEPTEMBER 14) – UP (W) CIRCLE													
Live measurement Data		Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	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	0.24%	1.19%	1.25%	1.01%	0.21%	0.39%	0.29%	0.29%	0.33%	0.04%	0.43%	0.14%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.05%	1.07%	1.87%	0.00%	0.03%	0.00%	0.02%	0.00%	0.16%	0.00%	0.00%	0.00%
	Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.10%	98.37%	96.37%	97.21%	99.98%	99.50%	98.39%	96.88%	99.47%	99.57%	98.36%	99.10%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.20%	0.28%	0.64%	0.66%	0.97%	0.03%	0.14%	0.60%	0.23%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.56%	0.79%	1.19%	1.57%	1.85%	0.08%	0.40%	1.64%	0.53%	0.00%	0.34%	0.07%
	Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.71%	1.14%	0.96%	1.52%	1.03%	0.40%	0.94%	0.54%	0.83%	0.54%	0.36%	0.52%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	**5.91%**	2.49%	2.15%	2.54%	2.56%	0.06%	**6.45%**	2.32%	2.94%	1.70%	2.01%	**4.55%**
	c) Connections with good voice quality	>=95%	Quarterly	97.22%	97.60%	96.78%	95.48%	95.90%	98.77%	97.31%	**94.54%**	97.57%	99.15%	99.73%	98.90%
4	No. of POI having >=0.5% congestion		Quarterly	0	0	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 performance of the operators was in compliance for most of the parameters except for the parameter **'Worst affected cells> 3 % TCH drops'** which could not be met by **Aircel, Tata (GSM)** and **Tata (CDMA)** in all the three months of the quarter with their average performance as **5.91%, 6.45%** and **4.55%** respectively. **Uninor** failed to meet the bench mark of **'Voice Quality'** with its performance as **94.54%.** The similar non-compliance of these operators was also observed in the monthly audit.

Idea failed to meet the benchmark for the parameters **TCH Congestion** and "**SDCCH Channel congestion"** with its performance as **2.19%** in the month of July 2014 and **1.15%** in the month of September- 2014 respectively; however its average performance on quarterly basis was within the benchmarks.

5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES:

TABLE: 1

S/N	Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
Detailed Network Data Assessment of Cellular Mobile Telephone Services - UP(W) Circle - July 14 month														
								GSM Operators						CDMA Operators		
Network Service Quality Parameter															
1	**Network Availability**															
	a) Total no. of BTSs in the licensed service area		July-14	628	6571	2334	855	7327	1689	1835	3256	6140	323	997	587
	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	1305	33456	21739	4083	10726	6831	3602	8024	14367	82	4331	218
	c) BTS Accumulated Downtime	<=2%	July-14	0.28%	0.68%	1.25%	0.64%	0.20%	0.54%	0.26%	0.33%	0.31%	0.03%	0.58%	0.05%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		July-14	9	74	44	3	3	26	21	49	41	0	18	0
	e) Worst affected BTSs due to downtime	<=2%	July-14	1.43%	1.13%	1.89%	0.35%	0.04%	1.54%	1.15%	1.50%	0.67%	0.00%	1.81%	0.00%
2	**Connection Establishment (Accessibility)**															
	a) CSSR (Call Setup Success Rate)	>=95%	July-14	99.15%	97.55%	96.65%	97.31%	99.98%	99.38%	98.13%	97.05%	99.40%	99.59%	97.27%	99.07%
	b) SDCCH/PAGING Congestion	<=1%	July-14	0.42%	0.54%	0.61%	0.70%	0.81%	0.04%	0.23%	0.93%	0.34%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	July-14	0.58%	1.57%	1.01%	1.55%	1.98%	0.10%	0.55%	1.62%	0.60%	0.00%	0.07%	0.04%
3	**Connection Maintenance (Retainability)**															
	a) Call Drop Rate (CDR)	<=2%	July-14	0.70%	1.27%	0.81%	1.60%	1.00%	0.44%	0.96%	0.49%	0.84%	0.53%	0.36%	0.52%
	b) Worst affected cells>3% TCH drop	<=3%	July-14	**6.36%**	2.45%	1.32%	2.55%	2.45%	0.10%	**6.82%**	1.49%	2.45%	1.85%	1.57%	**4.45%**
	c) % of connections with good voice quality	>=95%	July-14	97.26%	97.56%	96.64%	95.60%	96.07%	98.64%	97.33%	**94.65%**	97.51%	99.19%	99.78%	98.89%
	d) d) Total No. of cells exceeding 3% TCH drop (call drop)		July-14	120	481	94	65	541	5	381	144	453	19	47	82
	e) Total no. of cells (Sector) in the licensed service area		July-14	1892	19651	7123	2552	22126	5069	5581	9675	18482	1022	2991	1846
4	**No. of POI's having >=0.5% POI congestion**															
	No. of POI's having >=0.5% POI congestion		July-14	0	0	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	0	0

S/N	Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
								GSM Operators					CDMA Operators		
	Network Data														
5	a) Equipped Capacity of Network in Erlang		July-14	28345	189940	137541	118000	290430	122000	115432	163747	276831	21000	86000	103197
	b) Total traffic in TCBH in erlang (Avg.)		July-14	640	143182	39125	285794	325934	87741	39724	209340	266655	2653	24375	23831
	c) Total no. of customers served (as per VLR) on last day of the month		July-14	43987	6474262	1563218	757178	12055960	3910234	1835200	5019967	9562985	114573	1284180	390603

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

TABLE: 2

S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators		

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle – July 14 month

S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	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	628	6562	2316	855	7315	1689	1831	3142	6140	323	997	587
	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	95	3930	2115	634	790	620	302	435	1028	4	371	16
	c) BTS Accumulated Downtime	<=2%	Live data	0.21%	0.83%	1.27%	1.03%	0.15%	0.51%	0.23%	0.19%	0.23%	0.02%	0.52%	0.04%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	45	43	0	1	0	0	0	1	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.69%	1.86%	0.00%	0.01%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%
	Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.21%	98.80%	96.65%	96.98%	99.98%	99.44%	98.37%	95.79%	99.33%	99.63%	97.67%	99.08%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.23%	0.29%	0.69%	0.58%	0.80%	0.06%	0.20%	0.48%	0.24%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.62%	0.43%	1.40%	1.53%	2.19%	0.10%	0.49%	1.93%	0.67%	0.00%	0.05%	0.03%
	Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.62%	0.78%	0.93%	1.36%	1.04%	0.42%	0.86%	0.53%	0.79%	0.45%	0.34%	0.47%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	5.81%	2.40%	2.51%	2.45%	2.94%	0.10%	5.94%	1.93%	2.69%	1.73%	2.11%	4.32%
	c) % of connections with good voice quality	>=95%	Live data	97.32%	97.56%	95.87%	95.17%	96.03%	98.68%	97.43%	94.60%	97.71%	99.23%	99.74%	98.91%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	110	471	174	62	657	5	331	183	498	18	63	80
	e) Total no. of cells (Sector) in the licensed service area		Live data	1892	19639	6919	2548	22373	5069	5576	9480	18482	1020	2979	1846
	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	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0	0

TABLE: 3

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	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	636	6581	2340	859	7335	1680	1824	3704	6173	327	999	587
	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	1878	52225	21506	4293	11931	4047	4111	10202	12382	127	2794	321
	c) BTS Accumulated Downtime	<=2%	Aug-14	0.40%	1.07%	1.24%	0.67%	0.22%	0.32%	0.30%	0.37%	0.27%	0.05%	0.38%	0.07%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Aug-14	9	125	43	12	26	13	36	56	48	0	9	1
	e) Worst affected BTSs due to downtime	<=2%	Aug-14	1.42%	1.90%	1.84%	1.40%	0.35%	0.77%	1.97%	1.51%	0.78%	0.00%	0.90%	0.17%
	Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Aug-14	98.98%	97.98%	96.41%	97.49%	99.98%	99.49%	98.42%	97.48%	99.49%	99.55%	98.84%	99.10%
	b) SDCCH/PAGING Congestion	<=1%	Aug-14	0.51%	0.31%	0.52%	0.72%	0.76%	0.02%	0.12%	0.73%	0.21%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Aug-14	0.80%	1.18%	1.26%	1.40%	1.57%	0.07%	0.37%	1.48%	0.51%	0.00%	0.01%	0.07%
	Connection Maintenance (Retainability)														
3	a) Call Drop Rate (CDR)	<=2%	Aug-14	0.80%	1.40%	0.98%	1.58%	1.06%	0.42%	0.94%	0.59%	0.91%	0.57%	0.34%	0.53%
	b) Worst affected cells>3% TCH drop	<=3%	Aug-14	5.98%	2.65%	2.02%	2.67%	2.31%	0.04%	6.40%	2.31%	2.95%	1.80%	1.29%	4.70%
	c) % of connections with good voice quality	>=95%	Aug-14	97.08%	97.62%	96.75%	96.07%	95.83%	98.68%	97.33%	94.53%	97.31%	99.19%	99.77%	98.91%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Aug-14	115	525	144	68	512	2	357	245	547	19	39	87
	e) Total no. of cells (Sector) in the licensed service area		Aug-14	1916	19812	7142	2560	22166	5042	5579	10617	18542	1044	2997	1846
	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	0	0
	Name of POI not meeting the		Aug-14	0	0	0	0	0	0	0	0	0	0	0	0

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
								GSM Operators						CDMA Operators	
	benchmark														
	Network Data														
5	a) Equipped Capacity of Network in Erlang		Aug-14	28585	187919	138645	118000	291769	122000	115236	169771	278072	21000	86000	103197
	b) Total traffic in TCBH in erlang (Avg.)		Aug-14	1167	148211	42263	286871	315863	98753	40542	206621	263071	2401	24645	23621
	c) Total no. of customers served (as per VLR) on last day of the month		Aug-14	58963	6361693	1526080	762039	11770032	3912433	1776936	5060588	9485580	109315	1218047	363220

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

TABLE: 4

S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
								GSM Operators					CDMA Operators		
Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle - August 14 month														
Network Service Quality Parameter															
	Network Availability															
1	a) Total no. of BTSs in the licensed service area		Live data	636	6572	2334	857	7330	1680	1824	3583	6173	323	996	587
	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	83	6873	2084	705	1450	394	464	842	901	9	250	138
	c) BTS Accumulated Downtime	<=2%	Live data	0.18%	1.45%	1.24%	1.14%	0.27%	0.33%	0.35%	0.33%	0.20%	0.04%	0.35%	0.33%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	87	44	0	5	0	0	0	8	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	1.32%	1.89%	0.00%	0.07%	0.00%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%
	Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.01%	98.14%	96.60%	97.28%	99.99%	99.54%	98.27%	97.52%	99.54%	99.60%	98.30%	99.00%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.29%	0.26%	0.57%	0.81%	0.95%	0.02%	0.16%	0.75%	0.26%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.63%	0.99%	1.25%	1.58%	1.68%	0.07%	0.37%	1.36%	0.46%	0.00%	0.02%	0.15%
	Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.78%	1.40%	0.93%	1.64%	1.07%	0.38%	1.01%	0.54%	0.89%	0.59%	0.46%	0.53%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	**6.85%**	2.29%	1.82%	2.57%	2.33%	0.04%	**7.28%**	2.48%	**3.31%**	1.62%	2.23%	**4.53%**
	c) % of connections with good voice quality	>=95%	Live data	97.15%	97.70%	97.39%	95.42%	95.81%	98.82%	97.21%	**94.53%**	97.34%	99.18%	99.72%	98.89%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	131	452	127	66	523	2	405	268	614	17	39	84
	e) Total no. of cells (Sector) in the licensed service area		Live data	1916	19783	6973	2553	22438	5042	5565	10801	18542	1027	1766	1846
	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	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0	0

TABLE: 5

S/N	Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
	Detailed Network Data Assessment of Cellular Mobile Telephone Services - UP(W) Circle - September 14 month														
								GSM Operators						CDMA Operators	
	Network Service Quality Parameter														
1	**Network Availability**														
	a) Total no. of BTSs in the licensed service area		Sep-14	633	6550	2354	863	7408	1680	1821	3815	6232	332	1000	587
	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	3003	53087	20403	3641	8712	3992	2809	7651	11528	125	2511	273
	c) BTS Accumulated Downtime	<=2%	Sep-14	0.66%	1.13%	1.20%	0.50%	0.16%	0.33%	0.21%	0.28%	0.26%	0.05%	0.35%	0.06%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Sep-14	7	108	43	14	33	16	22	51	35	0	12	0
	e) Worst affected BTSs due to downtime	<=2%	Sep-14	1.11%	1.65%	1.83%	1.62%	0.45%	0.95%	1.21%	1.34%	0.56%	0.00%	1.20%	0.00%
2	**Connection Establishment (Accessibility)**														
	a) CSSR (Call Setup Success Rate)	>=95%	Sep-14	98.92%	97.78%	96.14%	97.11%	99.99%	99.49%	98.36%	97.30%	99.52%	99.51%	99.03%	99.09%
	b) SDCCH/PAGING Congestion	<=1%	Sep-14	0.54%	0.50%	0.52%	0.63%	0.76%	0.02%	0.11%	0.68%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Sep-14	0.76%	1.18%	1.08%	1.53%	1.54%	0.06%	0.45%	1.61%	0.48%	0.00%	0.09%	0.12%
3	**Connection Maintenance (Retainability)**														
	a) Call Drop Rate (CDR)	<=2%	Sep-14	0.77%	1.28%	0.90%	1.33%	1.04%	0.39%	0.93%	0.55%	0.89%	0.55%	0.29%	0.53%
	b) Worst affected cells>3% TCH drop	<=3%	Sep-14	4.81%	2.70%	1.59%	2.44%	2.41%	0.02%	5.89%	2.47%	2.85%	1.75%	1.61%	4.89%
	c) % of connections with good voice quality	>=95%	Sep-14	96.96%	97.64%	96.58%	96.23%	95.81%	98.75%	97.27%	94.54%	97.35%	99.13%	99.78%	98.91%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Sep-14	92	530	110	63	538	1	327	275	535	19	48	90
	e) Total no. of cells (Sector) in the licensed service area		Sep-14	1910	19607	6938	2585	22352	5041	5556	11118	18763	1072	2988	1846
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	0	0
	Name of POI not meeting the benchmark		Sep-14	0	0	0	0	0	0	0	0	0	0	0	0

S/N	Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
								GSM Operators						CDMA Operators	
5	**Network Data**														
	a) Equipped Capacity of Network in Erlang		Sep-14	28376	186898	138985	118000	291088	122000	114727	181589	280498	21000	86000	103197
	b) Total traffic in TCBH in erlang (Avg.)		Sep-14	1720	141861	42743	267174	305724	96914	41716	212765	252096	2277	24428	23494
	c) Total no. of customers served (as per VLR) on last day of the month		Sep-14	77700	6383119	1543323	765723	11889855	3867414	1825153	5183392	9569465	108892	1194599	351756

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

TABLE: 6

S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
	Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle - September 14 month														
								GSM Operators					CDMA Operators		
Network Service Quality Parameter															
	Network Availability															
1	a) Total no. of BTSs in the licensed service area		Live data	636	6580	2348	859	7367	1680	1825	3726	6232	327	1000	587
	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	147	6072	2089	524	1090	411	379	974	2506	14	302	20
	c) BTS Accumulated Downtime	<=2%	Live data	0.32%	1.28%	1.24%	0.85%	0.21%	0.34%	0.29%	0.36%	0.56%	0.06%	0.42%	0.05%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	1	78	44	0	0	0	1	0	20	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.16%	1.19%	1.87%	0.00%	0.00%	0.00%	0.05%	0.00%	0.32%	0.00%	0.00%	0.00%
	Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.07%	98.17%	95.85%	97.36%	99.98%	99.52%	98.52%	97.34%	99.55%	99.49%	99.11%	99.21%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.09%	0.29%	0.67%	0.60%	1.15%	0.02%	0.06%	0.57%	0.19%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.44%	0.94%	0.93%	1.59%	1.68%	0.06%	0.35%	1.62%	0.45%	0.00%	0.94%	0.02%
	Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.74%	1.25%	1.02%	1.55%	0.99%	0.39%	0.95%	0.55%	0.80%	0.58%	0.29%	0.57%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	5.06%	2.77%	2.13%	2.61%	2.41%	0.04%	6.14%	2.54%	2.81%	1.76%	1.68%	4.80%
	c) % of connections with good voice quality	>=95%	Live data	97.18%	97.55%	97.07%	95.85%	95.85%	98.80%	97.30%	94.48%	97.66%	99.03%	99.74%	98.91%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	97	541	147	67	548	2	341	285	528	19	50	89
	e) Total no. of cells (Sector) in the licensed service area		Live data	1916	19547	6886	2577	22796	5041	5556	11199	18763	1059	2988	1846
	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	0	0
	Name of POI not meeting the benchmark		Live data	0	0	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 (QE - SEPTEMBER 2014):

QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES- QE SEPTEMBER 14														
Quarterly CSD Audit Data	**Bench-mark**	**Circle Name**	**AIRCEL**	**AIRTEL**	**BSNL (UK)**	**BSNL (UP-W)**	**IDEA**	**RCOM GSM**	**TATA GSM**	**UNINOR**	**VODAFONE**	**MTS**	**RCOM CDMA**	**TATA CDMA**
S/N / **Name of Parameter**			GSM Operators									CDMA Operators		
Customer Service Quality Parameters														
Metering & Billing Credibility -Post Paid														
1 A) No. of bills issued during the quarter		UPW	55	382781	47101	105758	1018191	52981	110798	NA	664220	40378	152961	64746
B) No. of bills disputed including billing complaints during the quarter		UPW	0	87	0	9	328	44	1	NA	567	14	145	0
C)% of billing complaints during the quarter	<= 0.1%	UPW	**0.00%**	**0.02%**	**0.00%**	**0.01%**	**0.03%**	**0.08%**	**0.00%**	**NA**	**0.09%**	**0.03%**	**0.09%**	**0.00%**
Metering & Billing Credibility -Pre Paid														
2 A) Total No. of Pre-paid customers at the end of the quarter		UPW	120916	6901242	871557	2788944	11750421	3878046	3521237	6923233	9992855	200988	1201586	517274
B) Total No. of complaints relating to charging, Credit and Validity during the quarter		UPW	0	511	38	68	553	11595	0	822	5885	52	1884	0
C) % of Pre-paid Charging Complaints	<= 0.1%	UPW	**0.00%**	**0.01%**	**0.00%**	**0.00%**	**0.00%**	**0.30%**	**0.00%**	**0.01%**	**0.06%**	**0.03%**	**0.16%**	**0.00%**
Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints														
3 A) No. of Billing/Charging/Credit/Validity Complaints received during the quarter		UPW	0	598	38	77	16185	11639	1129	822	6542	422	2029	46
B) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 4 weeks during the quarter		UPW	0	598	38	77	16185	11639	1129	822	6542	422	2029	46
C) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid	100 % within 4 week	UPW	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES- QE SEPTEMBER 14													
Quarterly CSD Audit Data	**Bench-mark**	**Circle Name**	**AIRCEL**	**AIRTEL**	**BSNL (UK)**	**BSNL (UP-W)**	**IDEA**	**RCOM GSM**	**TATA GSM**	**UNINOR**	**VODAFONE**	**MTS**	**RCOM CDMA**	**TATA CDMA**
S/N	**Name of Parameter**					GSM Operators							CDMA Operators	

S/N	Name of Parameter	Bench-mark	Circle Name	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UP-W)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
	customer) resolved within 4 weeks														
	D) % of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week	UPW	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.0%
	Response time to customers for assistance														
	A) Total no of calls attempted to customer care/Call center		UPW	319539	2616712	1185414	3763770	30035263	5000646	1025899	31653721	30423403	351626	1965459	106082
	B) Total no. of calls successfully established to customer care/Call center		UPW	314261	2616513	1185414	3763770	29902698	4899536	1019187	30318209	30423403	337068	1925116	104972
4	C) % Accessibility of Call centre /customer Care (Total call successfully established*100/Total call attempt)	>=95 %	UPW	98.35%	99.99%	100.00%	100.00%	99.56%	97.98%	99.35%	95.78%	100.00%	95.86%	97.95%	98.95%
	D) Total Calls reached to agent desk for Voice to Voice (Total call attempt)		UPW	67829	4710982	436084	1506547	8668535	654178	1445821	6056765	8712775	83948	194878	105019
	E) Total number of calls answered by the operator (Voice to voice) within 60/90 seconds		UPW	63385	4591684	264890	908387	8401430	631785	1329484	5875028	8518344	82312	188019	100331
	F) % age of calls answered by operator (voice to voice) (Total call successfully established within 60 Sec./ 90 sec*100 /Total call attempts.)	>=90 % (60 Sec.) & >=95 % (90 Sec.)	UPW	93.45%	97.47%	60.74%	60.30%	96.92%	*96.58%	*91.95%	*97.00%	*97.77%	*98.05%	*96.48%	*95.54%

								GSM Operators						CDMA Operators	
	Quarterly CSD Audit Data	**Bench-mark**	**Circle Name**	**AIRCEL**	**AIRTEL**	**BSNL (UK)**	**BSNL (UP-W)**	**IDEA**	**RCOM GSM**	**TATA GSM**	**UNINOR**	**VODAFONE**	**MTS**	**RCOM CDMA**	**TATA CDMA**
S/N	**Name of Parameter**														
	Termination/closure of service														
5	A) Total No. of requests for Termination / Closure of service received during the quarter		*UPW*	0	1342	0	420	2549	120	1409	NA	2545	646	600	648
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		*UPW*	0	1342	0	420	2549	120	1409	NA	2545	646	600	648
	C) % of Termination/ Closure of service within 7 days	*<=7days*	*UPW*	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**NA**	**100.00%**	**100.00%**	**100.00%**	**100.0%**
	Time taken for refunds of deposits after closures.														
6	A) No. of Payments/ Refunds due during the quarter		*UPW*	0	783	23	168	4864	507	543	NA	1366	0	1294	618
	B) No. of Payments/ Refunds Cleared during the quarter		*UPW*	0	783	22	168	4864	507	543	NA	1366	0	1294	617
	C) Time taken for refunds of deposits after closures.	*100 % within 60 days*	*UPW*	**100.00%**	**100.00%**	**95.65%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**NA**	**100.00%**	**100.00%**	**100.00%**	**99.84%**

*NA-Not Applicable
* Indicates % calls answered by operator within 90 seconds (Voice to Voice) 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 (UK)**	**BSNL (UPW)**	**IDEA**	**RCOM GSM**	**TATA (GSM)**	**UNINOR**	**VODAFONE**	**MTS**	**RCOM (CDMA)**	**TATA (CDMA)**
S/N	**Name of Parameter**			**GSM Operators**									**CDMA Operators**		
RESPONSE TIME TO CUSTOMERS FOR ASSISTANCE															
1	Total no of calls attempted to customer care/Call center		UP West	13346	112818	38585	111413	926765	151925	279360	1302651	983701	9811	66964	3056
	Total no. of calls successfully established to customer care/Call center		UP West	13181	112818	38585	111413	920370	149087	277061	1254173	983701	8849	65118	3028
	% Accessibility of Call centre /customer Care (Total call successfully established *100 / Total call attempt)	>=95%	UP West	**98.76%**	**100.00%**	**100.00%**	**100.00%**	**99.31%**	**98.13%**	**99.18%**	**96.28%**	**100.00%**	**90.19%**	**97.24%**	**99.08%**
2	Total Calls reached to agent desk for Voice to Voice (Total call attempt)		UP West	2787	153242	12530	43964	267221	22678	51530	200868	286900	1935	6588	2979
	Total number of calls answered by the operator (Voice to voice) within 60/90 seconds		UP West	2607	136836	12222	42894	258931	21484	49697	198693	279570	1927	6259	2925
	% 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.)	UP West	93.54%	**89.29%**	97.54%	97.57%	96.90%	*94.73%	*96.44%	*98.92%	*97.45%	*99.59%	*95.01%	*98.19%

* indicates % calls answered by operator 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 was well within the prescribed bench mark of <=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 **0.16%** respectively. Uninor was not having the post paid customers.

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 were found to have met the benchmarks for the above parameters.

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 were in compliance with respect to the parameter 'Accessibility of call center'. **However, BSNL (UK** and **UP-W)** have failed to meet the benchmark of **'Calls answered by Operators (voice to voice) within 60 seconds'.** Their achievement for this parameter was **60.74% and 60.30%** respectively whereas **Tata (GSM)** has not met the benchmark of 'calls answered by Operators (voice to voice) within **90 seconds** as they provided the data for 90 seconds and achieved its performance as **91.95%** against the benchmark of >=95%. The performance of BSNL was very poor with respect to this parameter. The call center is common for BSNL (Uttarakhand) and BSNL (UPW).

4. Termination/Closure of Service

In case of this parameters also, all service providers have settled the closure 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 **BSNL (UK) and Tata (CDMA)** with their performance of **95.65% and 99.84%** respectively failed to settle 100% refund cases.

Live Measurement

The results of three days live measurements reveal that all service providers were in compliance with respect to the parameter Accessibility of call center except **MTS** with its achieved value as **90.19%. Airtel** has failed to meet the benchmark of calls answered by Operators (voice to voice within **60 seconds**). Its achievement for this parameter was **89.29%** whereas **RCOM (GSM)** has not met the benchmark of 'calls answered by Operators (voice to voice) within **90 seconds** as they provided the data for 90 seconds and achieved its performance as **94.73%** against the benchmark of >=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(W) 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 (UK)	BSNL (UP-W)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
AIRCEL	UPW	--	100%	100%	**98%**	100%	**98%**	**98%**	100%	100%	100%	100%	**99%**
AIRTEL	UPW	100%	--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
BSNL (UK)	UPW	100%	100%	--	100%	100%	100%	100%	100%	100%	100%	100%	100%
BSNL (UP-W)	UPW	100%	100%	100%	--	100%	100%	100%	100%	100%	100%	100%	100%
IDEA	UPW	100%	100%	100%	100%	--	100%	100%	100%	100%	100%	100%	100%
RCOM GSM	UPW	100%	100%	100%	100%	100%	--	100%	100%	100%	100%	100%	100%
TATA GSM	UPW	100%	100%	100%	100%	100%	100%	--	100%	100%	100%	100%	100%
UNINOR	UPW	100%	100%	100%	100%	100%	100%	100%	--	100%	100%	100%	100%
VODAFONE	UPW	100%	100%	100%	100%	100%	100%	100%	100%	--	100%	100%	100%
MTS	UPW	100%	100%	100%	100%	100%	100%	100%	100%	100%	--	100%	100%
RCOM CDMA	UPW	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	--	100%
TATA CDMA	UPW	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	--

The result of the testing revealed that the inter connection performance among the operators was quite satisfactory. 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 (UK)	BSNL (UPW)	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	UP West	100	100	100	100	100	100	100	100	100	100	100	100
Total no of calls attempted to customer care/Call center	UP West	100	100	100	100	100	100	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	UP West	100	100	100	100	100	100	98	100	100	100	97	100
% Accessibility of Call centre /customer Care (Total calls successfully established*100/ Total call attempt)	UP West	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.00%	100.00%	100.00%	100.00%	97.00%	100.00%
Total Calls reached to agent desk for Voice to Voice (Total call attempt)	UP West	100	100	100	100	100	100	98	100	100	100	97	100
Total number of calls answered by the operator (Voice to voice) within 90 seconds	UP West	95	100	100	100	100	100	96	98	100	100	95	99
% age of calls answered by operator(voice to voice) (Total calls successfully established within 90 Sec.*100/ Total call attempt)	UP West	95.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.00%	98.00%	100.00%	100.00%	98.00%	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, RCOM (GSM), Tata GSM, RCOM (CDMA) and Tata CDMA remained under performance 95 % to 99%.

6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLIANTS:

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS													
Parameter	**Circle Name**	**AIRCEL**	**AIRTEL**	**BSNL (UK)**	**BSNL (UPW)**	**IDEA**	**UNINOR**	**RCOM (GSM)**	**TATA (GSM)**	**VODAFONE**	**MTS**	**RCOM (CDMA)**	**TATA (CDMA)**
Total No. of calls Attempted	UPW	0	100	38	77	100	100	44	100	100	100	100	46
Total No. of calls Answered	UPW	0	79	22	52	72	67	44	58	79	61	53	29
Cases resolved within 4 weeks	UPW	0	79	22	52	72	67	44	58	79	61	53	29
%age of cases resolved	UPW	**100.00%**	**100.00%**	**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 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.

6.4 LEVEL -1 CALLING ASSESSMENT:

						LEVEL 1 LIVE CALLING										
Emergency no.	Circle Name	SSA Name	Name of SDCA	No. of calls made	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	MTS	VODAFONE	UNINOR
100,101,102,1090, 1098	UPW	Nainital	NAINITAL	10	√	√	√	√	√	√	√	√	√	√	√
			HALDWANI-I	10	√	√	√	√	√	√	√	√	√	√	√
			HALDWANI-II	10	NC	√	√	√	√	√	NC	NC	NC	√	NC
			KHATIMA	10	NC	√	√	√	√	√	√	√	√	√	√
			KHATIMA-II	10	NC	√	√	√	√	√	√	√	√	√	√
			KICHHA-I	10	NC	√	√	√	√	√	√	√	√	√	√
			KICHHA-II	10	NC	√	√	√	√	√	√	NC	NC	√	√
			KASHIPUR	10	NC	√	√	√	√	√	√	√	√	√	√
100,101,102,1090, 1098	UPW	Saharanpur	SAHRANPUR	15	NC	√	√	√	√	√	√	√	√	√	√
			NAKUR(GANGOH)	15	NC	√	√	√	√	√	√	√	√	√	√
			DEOBAND	15	NC	√	√	√	√	√	√	√	√	√	√
100,101,102,1090, 1098	UPW	Aligarh	ALIGARH	15	NC	√	√	√	√	√	√	√	√	√	√
			HATHRAS	15	NC	√	√	√	√	√	√	√	√	√	√
			SIKANDRA RAO	15	NC	√	√	√	√	√	√	√	√	√	√
			KHAIR	15	NC	√	√	√	√	√	√	√	√	√	√
			ATRAULI	15	NC	√	√	√	√	√	√	√	√	√	√

*NC: No Coverage

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 drive tests were conducted, the calls were made from mobile phones provided by the service providers. In these SDCAs of UP (West) service areas, the emergency services as mentioned in the above table were found functional in the networks of all the service providers except at some places where there was no coverage as mentioned in the table above.

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 SSA's namely **Nainital, Saharanpur and Aligarh** in the months of July, August and September 2014 respectively. The total route Kms covered during the drive tests in respective SSAs was **385 Kms, 375 Kms and 330 Kms**.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 $\geq$ -75 dBm for in-door coverage and $\geq$ -85 dBm for in-vehicle.

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

DRIVE TEST TABLE – 1

S/N	Parameter	Classification of routes covered	AIRCEL OUTDOOR	AIRCEL INDOOR	AIRTEL OUTDOOR	AIRTEL INDOOR	BSNL OUTDOOR	BSNL INDOOR	IDEA OUTDOOR	IDEA INDOOR	TATA GSM OUTDOOR	TATA GSM INDOOR	RCOM GSM OUTDOOR	RCOM GSM INDOOR	UNINOR OUTDOOR	UNINOR INDOOR	VODAFONE OUTDOOR	VODAFONE INDOOR	MTS CDMA OUTDOOR	MTS CDMA INDOOR	RCOM CDMA OUTDOOR	RCOM CDMA INDOOR	TATA CDMA OUTDOOR	TATA CDMA INDOOR
1	Call Attempts	Major Road	39	25	105	25	67	27	59	27	51	25	40	25	69	25	70	28	44	25	37	25	63	25
		Highway	25	NC	227	25	199	26	173	24	134	25	97	26	93	25	163	27	124	25	89	26	134	25
		Within City	61	NC	225	25	202	26	199	35	202	24	158	25	236	25	163	25	163	25	151	25	178	25
		Overall SSA	**125**	**25**	**557**	**75**	**468**	**79**	**431**	**86**	**387**	**74**	**295**	**76**	**398**	**75**	**396**	**80**	**331**	**75**	**277**	**76**	**375**	**75**
2	Blocked Call Rate	Major Road	5.13%	0.00%	0.00%	0.00%	2.99%	0.00%	3.39%	0.00%	0.00%	0.00%	0.00%	0.00%	4.35%	0.00%	5.71%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highway	0.00%	NC	1.32%	0.00%	6.53%	0.00%	1.73%	0.00%	0.00%	0.00%	0.00%	0.00%	3.85%	1.08%	3.07%	0.00%	0.00%	0.00%	2.25%	0.00%	0.00%	0.00%
		Within City	1.64%	NC	0.89%	0.00%	8.42%	11.54%	1.01%	0.00%	0.00%	0.00%	1.27%	0.00%	0.85%	0.00%	1.84%	0.00%	0.00%	0.00%	0.66%	0.00%	0.00%	0.00%
		Overall SSA	**2.40%**	**0.00%**	**0.90%**	**0.00%**	**6.84%**	**3.80%**	**1.62%**	**0.00%**	**0.00%**	**0.00%**	**0.68%**	**1.32%**	**1.51%**	**0.00%**	**3.03%**	**0.00%**	**0.00%**	**0.00%**	**1.08%**	**0.00%**	**0.00%**	**0.00%**
3	Dropped Call Rate (<=2%)	Major Road	2.70%	0.00%	0.00%	0.00%	1.54%	0.00%	0.00%	0.00%	1.96%	0.00%	0.00%	0.00%	1.52%	0.00%	1.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highway	0.00%	NC	0.00%	0.00%	2.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.10%	0.00%	3.80%	0.00%	0.00%	0.00%	2.30%	0.00%	0.00%	0.00%
		Within City	0.00%	NC	0.00%	0.00%	0.54%	0.00%	1.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.43%	0.00%	1.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	**0.82%**	**0.00%**	**0.00%**	**0.00%**	**1.61%**	**0.00%**	**0.47%**	**0.00%**	**0.26%**	**0.00%**	**0.00%**	**0.00%**	**0.77%**	**0.00%**	**2.34%**	**0.00%**	**0.00%**	**0.00%**	**0.73%**	**0.00%**	**0.00%**	**0.00%**

S/N	Parameter	Classification of routes covered	AIRCEL OUTDOOR	AIRCEL INDOOR	AIRTEL OUTDOOR	AIRTEL INDOOR	BSNL OUTDOOR	BSNL INDOOR	IDEA OUTDOOR	IDEA INDOOR	TATA GSM OUTDOOR	TATA GSM INDOOR	RCOM GSM OUTDOOR	RCOM GSM INDOOR	UNINOR OUTDOOR	UNINOR INDOOR	VODAFONE OUTDOOR	VODAFONE INDOOR	MTS CDMA OUTDOOR	MTS CDMA INDOOR	RCOM CDMA OUTDOOR	RCOM CDMA INDOOR	TATA CDMA OUTDOOR	TATA CDMA INDOOR
4	**Percentage connections with good voice quality (=>95%)**																							
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Major Road	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.13%	99.57%	99.80%	99.80%	98.52%	98.01%
		Highway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97.80%	99.21%	99.70%	100%	98.13%	99.44%
		Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.91%	99.65%	99.81%	99.99%	98.41%	99.84%
		Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.52%	99.49%	99.77%	99.93%	98.33%	99.10%
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	97.06%	99.28%	97.58%	98.90%	85.28%	94.72%	97.93%	96.48%	96.21%	99.84%	88.61%	89.05%	94.72%	88.81%	94.26%	94.91%	NA	NA	NA	NA	NA	NA
		Highway	93.99%	NC	96.92%	99.74%	89.00%	94.85%	91.76%	98.62%	97.91%	93.14%	91.65%	94.83%	95.31%	95.35%	90.42%	97.05%	NA	NA	NA	NA	NA	NA
		Within City	94.62%	NC	96.79%	99.03%	89.24%	93.85%	94.87%	98.16%	95.87%	97.72%	90.65%	86.51%	94.29%	95.79%	94.06%	92.07%	NA	NA	NA	NA	NA	NA
		Overall SSA	95.21%	99	96.98%	99.22%	88.57%	94.51%	94.79%	97.79%	96.64%	96.90%	90.66%	89.03%	94.58%	95.32%	92.61%	94.66%	NA	NA	NA	NA	NA	NA
5	**Service Coverage**																							
	In door (>= -75dBm)	Major Road	79.27%	65.70%	71.30%	68.60%	54.45%	94.80%	97.35%	99.68%	44.06%	66.30%	68.08%	5.47%	41.87%	56.42%	45.80%	33.30%	88.26%	90.05%	65.07%	14.23%	83.29%	98.36%
		Highway	56.08%	NC	56.38%	97.92%	52.93%	77.80%	84.08%	99.98%	38.93%	26.90%	44.15%	8.28%	36.25%	72.34%	39.51%	35.90%	56.94%	86.62%	45.52%	97.47%	62.21%	99.86%
		Within City	77.20%	NC	63.60%	79.44%	69.23%	93.50%	96.84%	100%	43.31%	80.50%	58.83%	24.19%	56.30%	98.22%	57.41%	78.30%	72.94%	99.71%	59.24%	64.63%	74.30%	100%
		Overall SSA	72.25%	65.70%	62.18%	82.02%	59.88%	86.31%	93.48%	99.90%	41.89%	57.76%	54.90%	12.78%	49.27%	75.34%	48.08%	48.61%	68.83%	92.38%	55.67%	59.03%	71.50%	99.41%
	In-vehicle (>= -85dBm)	Major Road	98.35%	96.51%	93.95%	99.00%	82.92%	100%	99.45%	100%	77.10%	93.10%	89.34%	37.52%	80.16%	97.06%	79.90%	75.50%	97.23%	100%	91.16%	70.00%	94.08%	100%
		Highway	83.64%	NC	86.13%	99.88%	81.71%	99.80%	96.72%	100%	73.41%	75.40%	74.81%	61.79%	72.60%	99.75%	70.43%	80.30%	80.53%	100%	77.23%	100%	87.38%	100%

S/N	Parameter	Classification of routes covered	AIRCEL OUTDOOR	AIRCEL INDOOR	AIRTEL OUTDOOR	AIRTEL INDOOR	BSNL OUTDOOR	BSNL INDOOR	IDEA OUTDOOR	IDEA INDOOR	TATA GSM OUTDOOR	TATA GSM INDOOR	RCOM GSM OUTDOOR	RCOM GSM INDOOR	UNINOR OUTDOOR	UNINOR INDOOR	VODAFONE OUTDOOR	VODAFONE INDOOR	MTS CDMA OUTDOOR	MTS CDMA INDOOR	RCOM CDMA OUTDOOR	RCOM CDMA INDOOR	TATA CDMA OUTDOOR	TATA CDMA INDOOR
		Within City	94.66%	NC	92.80%	99.30%	94.92%	100%	99.62%	100%	84.59%	98.80%	88.86%	85.99%	91.98%	100%	86.44%	98.50%	97.20%	100%	92.48%	100%	90.88%	100%
		Overall SSA	92.89%	96.51%	90.43%	99.39%	87.34%	99.91%	98.79%	100%	79.69%	89.03%	83.99%	62.05%	85.53%	98.88%	78.74%	84.36%	90.85%	100%	87.43%	90.29%	90.17%	100%
	Outdoor-in city (>= -95dBm)	Major Road	99.94%	99.96%	99.58%	100%	100%	100%	99.99%	100%	93.58%	100%	98.11%	84.88%	97.34%	99.96%	97.76%	98.70%	100%	100%	100%	100%	99.89%	100%
		Highway	97.06%	NC	98.16%	100%	100%	100%	99.55%	100%	95.14%	98.40%	94.29%	98.18%	93.96%	100%	92.84%	97.90%	99.52%	100%	95.49%	100%	99.68%	100%
		Within City	99.31%	NC	99.13%	99.98%	100%	100%	99.97%	100%	97.82%	99.90%	99.06%	99.94%	99.64%	100%	98.52%	100%	99.98%	100%	99.72%	100%	99.96%	100%
		Overall SSA	98.91%	99.96%	98.83%	99.99%	100%	100%	99.86%	100%	96.32%	99.42%	97.26%	94.40%	97.93%	99.98%	96.05%	98.88%	99.81%	100%	98.41%	100%	99.85%	100%
6	Call Setup Success Rate (>=95%)	Major Road	94.87%	100%	98.10%	100%	97.01%	100%	96.61%	100%	100%	100%	100%	100%	95.65%	100%	94.29%	100%	100%	100%	100%	100%	100%	100%
		Highway	100%	NC	98.24%	100%	93.47%	100%	98.27%	100%	100%	100%	100%	96.15%	97.85%	100%	96.93%	100%	100%	100%	97.75%	100%	100%	100%
		Within City	98.36%	NC	97.33%	100%	91.58%	88.46%	97.99%	100%	100%	100%	98.73%	100%	99.15%	100%	98.16%	100%	100%	100%	99.34%	100%	100%	100%
		Overall SSA	97.60%	100%	97.85%	100%	93.16%	96.20%	97.91%	100%	100%	100%	99.32%	98.68%	98.24%	100%	96.97%	100%	100%	100%	98.92%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Major Road	100%	100%	100%	100%	97.28%	100%	100%	100%	100%	100%	100%	100%	94.44%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Highway	100%	NC	100%	100%	98.48%	100%	98.89%	100%	99.12%	100%	100%	100%	96.88%	96.15%	98.81%	100%	100%	100%	100%	100%	100%	100%
		Within City	95.12%	NC	99.34%	100%	99.73%	100%	98.76%	100%	98.70%	100%	99.46%	100%	94.84%	95.92%	99.13%	95.00%	100%	100%	100%	100%	100%	100%
		Overall SSA	97.83%	100%	99.65%	100%	98.82%	100%	98.98%	100%	99.08%	100%	99.66%	100%	94.89%	97.20%	99.20%	98.41%	100%	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.

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

DRIVE TEST TABLE – 2

S/N	Parameter	Classification of routes covered	AIRCEL OUTDOOR	AIRCEL INDOOR	AIRTEL OUTDOOR	AIRTEL INDOOR	BSNL OUTDOOR	BSNL INDOOR	IDEA OUTDOOR	IDEA INDOOR	TATA GSM OUTDOOR	TATA GSM INDOOR	RCOM GSM OUTDOOR	RCOM GSM INDOOR	UNINOR OUTDOOR	UNINOR INDOOR	VODAFONE OUTDOOR	VODAFONE INDOOR	MTS CDMA OUTDOOR	MTS CDMA INDOOR	RCOM CDMA OUTDOOR	RCOM CDMA INDOOR	TATA CDMA OUTDOOR	TATA CDMA INDOOR
1	Call Attempts	Major Road	NC	NC	96	25	84	25	87	26	102	25	110	25	81	25	100	27	70	25	120	27	76	25
		Highway	NC	NC	270	25	192	25	249	25	187	25	115	25	208	25	248	26	108	25	121	26	130	25
		Within City	NC	NC	104	25	106	25	102	25	107	25	91	25	90	25	99	26	110	25	105	25	118	25
		Overall SSA	**NC**	**NC**	**470**	**75**	**382**	**75**	**438**	**76**	**396**	**75**	**316**	**75**	**379**	**75**	**447**	**79**	**288**	**75**	**346**	**78**	**324**	**75**
2	Blocked Call Rate	Major Road	NC	NC	1.04%	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%	0.00%	0.00%	0.00%	0.00%
		Highway	NC	NC	0.00%	0.00%	0.52%	0.00%	0.00%	0.00%	0.00%	0.00%	4.35%	0.00%	1.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	**NC**	**NC**	**0.21%**	**0.00%**	**0.26%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**1.58%**	**0.00%**	**1.06%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**
3	Dropped Call Rate (<=2%)	Major Road	NC	NC	0.00%	0.00%	1.19%	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%	0.00%	0.00%
		Highway	NC	NC	0.00%	0.00%	1.59%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.47%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	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%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	**NC**	**NC**	**0.00%**	**0.00%**	**1.06%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.81%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

S/N	Parameter	Classification of routes covered	AIRCEL OUTDOOR	AIRCEL INDOOR	AIRTEL OUTDOOR	AIRTEL INDOOR	BSNL OUTDOOR	BSNL INDOOR	IDEA OUTDOOR	IDEA INDOOR	TATA GSM OUTDOOR	TATA GSM INDOOR	RCOM GSM OUTDOOR	RCOM GSM INDOOR	UNINOR OUTDOOR	UNINOR INDOOR	VODAFONE OUTDOOR	VODAFONE INDOOR	MTS CDMA OUTDOOR	MTS CDMA INDOOR	RCOM CDMA OUTDOOR	RCOM CDMA INDOOR	TATA CDMA OUTDOOR	TATA CDMA INDOOR
4	**Percentage connections with good voice quality (=>95%)**																							
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Major Road	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97.58%	99.04%	97.13%	95.69%	98.24%	99.18%
		Highway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97.72%	99.93%	97.05%	100%	98.23%	99.77%
		Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97.96%	99.93%	97.04%	100%	98.39%	98.66%
		Overall SSA	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**97.78%**	**99.64%**	**97.07%**	**97.98%**	**98.29%**	**99.20%**
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	NC	NC	96.99%	98.77%	99.60%	99.87%	96.57%	98.20%	96.38%	99.39%	91.65%	94.74%	94.07%	93.20%	96.41%	99.14%	NA	NA	NA	NA	NA	NA
		Highway	NC	NC	95.41%	99.62%	98.66%	99.81%	97.37%	99.49%	95.82%	99.75%	91.61%	97.01%	89.61%	88.34%	95.64%	97.17%	NA	NA	NA	NA	NA	NA
		Within City	NC	NC	96.90%	99.64%	99.48%	99.99%	96.62%	97.15%	97.19%	99.25%	89.79%	98.21%	88.83%	92.55%	96.36%	96.27%	NA	NA	NA	NA	NA	NA
		Overall SSA	**NC**	**NC**	**96.07%**	**99.34%**	**99.09%**	**99.88%**	**97.12%**	**98.27%**	**96.34%**	**99.46%**	**91.00%**	**96.33%**	**90.42%**	**91.38%**	**95.96%**	**97.87%**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
5	**Service Coverage**																							
	In door (>= -75dBm)	Major Road	NC	NC	72.51%	57.90%	77.00%	36.81%	97.98%	99.90%	53.98%	78.80%	87.49%	100%	56.13%	94.00%	74.98%	70.44%	70.65%	24.99%	84.96%	100%	86.48%	100%
		Highway	NC	NC	47.58%	97.40%	56.03%	73.99%	92.97%	100%	32.83%	47.90%	54.43%	100%	34.51%	98.17%	61.84%	99.92%	49.48%	100%	66.63%	100%	64.25%	100%
		Within City	NC	NC	74.42%	99.73%	68.26%	100%	98.67%	98.50%	46.92%	55.70%	79.93%	95.00%	68.40%	98.99%	78.78%	89.16%	67.62%	99.82%	90.77%	0.00%	87.73%	100%
		Overall SSA	**NC**	**NC**	**58.75%**	**85.00%**	**64.00%**	**67.79%**	**94.46%**	**99.53%**	**42.14%**	**60.81%**	**72.87%**	**98.77%**	**46.86%**	**97.04%**	**68.39%**	**84.62%**	**61.48%**	**74.85%**	**79.38%**	**75.42%**	**77.99%**	**100%**
	In-vehicle (>= -85dBm)	Major Road	NC	NC	93.79%	99.68%	96.73%	88.17%	99.84%	100%	92.78%	98.50%	98.60%	100%	84.29%	100%	92.83%	94.07%	84.61%	98.53%	94.91%	100%	95.97%	100%
		Highway	NC	NC	76.40%	99.95%	81.61%	98.55%	98.78%	100%	74.10%	96.00%	81.50%	100%	62.90%	99.91%	89.88%	100%	76.31%	100%	86.94%	100%	88.84%	100%

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
		Within City	NC	NC	92.99%	99.99%	93.66%	100%	99.84%	100%	87.18%	98.90%	94.74%	100%	90.30%	100%	96.31%	99.91%	90.93%	100%	97.79%	100%	98.72%	100%
		Overall SSA	NC	NC	83.71%	99.87%	88.20%	95.21%	99.07%	100%	82.50%	97.80%	91.05%	100%	73.73%	99.97%	91.95%	97.36%	83.83%	99.51%	92.60%	100%	94.10%	100%
	Outdoor-in city (>= -95dBm)	Major Road	NC	NC	99.11%	100%	99.90%	97.87%	99.94%	100%	99.06%	100%	100%	100%	99.22%	100%	99.34%	99.66%	95.79%	100%	100%	100%	99.94%	100%
		Highway	NC	NC	96.43%	100%	97.47%	100%	99.93%	100%	95.65%	99.40%	95.94%	100%	89.98%	99.98%	99.31%	100%	95.17%	100%	99.59%	100%	99.72%	100%
		Within City	NC	NC	99.65%	100%	99.83%	100%	99.98%	100%	99.07%	99.60%	100%	100%	98.69%	100%	99.71%	100%	98.22%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	97.71%	100%	98.64%	99.23%	99.94%	100%	97.47%	99.67%	98.52%	100%	93.95%	99.99%	99.41%	99.85%	96.47%	100%	99.83%	100%	99.87%	100%
6	Call Setup Success Rate (>=95%)	Major Road	NC	NC	98.96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	97.53%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Highway	NC	NC	99.63%	100%	98.44%	100%	99.60%	100%	100%	100%	95.65%	100%	98.08%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	NC	NC	99.04%	100%	100%	100%	100%	100%	100%	100%	100%	100%	96.67%	100%	100%	100%	100%	100%	100%	100%	99.15%	100%
		Overall SSA	NC	NC	99.36%	100%	99.21%	100%	99.77%	100%	100%	100%	98.42%	100%	97.63%	100%	100%	100%	100%	100%	100%	100%	99.69%	100%
7	Hand Over Success Rate (HOSR)	Major Road	NC	NC	100%	100%	98.08%	100%	98.68%	100%	100%	100%	99.39%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Highway	NC	NC	99.73%	100%	100%	100%	98.56%	100%	100%	100%	100%	100%	98.58%	100%	99.18%	100%	100%	100%	100%	100%	100%	100%
		Within City	NC	NC	99.44%	100%	100%	100%	100%	100%	100%	100%	98.99%	100%	98.64%	98.67%	98.90%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	99.64%	100%	99.47%	100%	98.94%	100%	100%	100%	99.32%	100%	99.01%	99.52%	99.30%	100%	100%	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.

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

DRIVE TEST TABLE – 3

S/N	Parameter	Classification of routes covered	AIRCEL OUTDOOR	AIRCEL INDOOR	AIRTEL OUTDOOR	AIRTEL INDOOR	BSNL OUTDOOR	BSNL INDOOR	IDEA OUTDOOR	IDEA INDOOR	TATA GSM OUTDOOR	TATA GSM INDOOR	RCOM GSM OUTDOOR	RCOM GSM INDOOR	UNINOR OUTDOOR	UNINOR INDOOR	VODAFONE OUTDOOR	VODAFONE INDOOR	MTS CDMA OUTDOOR	MTS CDMA INDOOR	RCOM CDMA OUTDOOR	RCOM CDMA INDOOR	TATA CDMA OUTDOOR	TATA CDMA INDOOR
1	Call Attempts	Major Road	NC	NC	111	26	81	26	99	25	132	25	122	25	108	25	109	26	124	25	123	25	119	25
		Highway	NC	NC	288	25	124	31	220	26	149	25	128	25	190	25	219	26	130	25	146	25	164	25
		Within City	NC	NC	142	25	121	ND*	125	25	149	25	150	25	149	25	151	25	137	25	158	25	124	25
		Overall SSA	**NC**	**NC**	**541**	**76**	**326**	**57**	**444**	**76**	**430**	**75**	**400**	**75**	**447**	**75**	**479**	**77**	**391**	**75**	**427**	**75**	**407**	**75**
2	Blocked Call Rate	Major Road	NC	NC	0.00%	0.00%	0.00%	3.85%	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%	0.00%
		Highway	NC	NC	0.00%	0.00%	4.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.78%	0.00%	0.53%	0.00%	0.00%	0.00%	0.00%	0.00%	1.37%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	1.65%	ND*	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	**NC**	**NC**	**0.00%**	**0.00%**	**2.45%**	**1.75%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.25%**	**0.00%**	**0.89%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.47%**	**0.00%**	**0.00%**	**0.00%**
3	Dropped Call Rate (<=2%)	Major Road	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.93%	0.00%	0.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.81%	0.00%	0.00%	0.00%
		Highway	NC	NC	0.35%	0.00%	3.39%	0.00%	0.00%	0.00%	0.00%	0.00%	0.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.39%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	0.00%	ND*	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.37%	0.00%	0.00%	0.00%	0.00%	0.00%	0.63%	0.00%	0.00%	0.00%
		Overall SSA	**NC**	**NC**	**0.18%**	**0.00%**	**1.26%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.25%**	**0.00%**	**0.68%**	**0.00%**	**0.21%**	**0.00%**	**0.00%**	**0.00%**	**0.94%**	**0.00%**	**0.00%**	**0.00%**

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
	Percentage connections with good voice quality (=>95%)																								
4	**(a) 0-4 (w/o frequency hopping for CDMA Operators)**	Major Road	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.12%	98.84%	96.48%	95.78%	97.18%	99.16%
		Highway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.10%	98.37%	95.43%	100%	96.83%	99.48%
		Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.32%	98.94%	95.68%	100%	96.48%	99.61%
		Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.19%	98.72%	95.79%	98.08%	96.82%	99.42%
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	NC	NC	97.40%	99.37%	99.30%	99.60%	97.88%	94.88%	97.75%	98.93%	92.71%	99.88%	91.38%	98.31%	96.99%	94.11%	NA	NA	NA	NA	NA	NA
		Highway	NC	NC	96.53%	99.43%	98.68%	99.82%	96.25%	99.47%	98.16%	98.33%	88.81%	99.66%	91.13%	95.80%	95.60%	98.87%	NA	NA	NA	NA	NA	NA
		Within City	NC	NC	97.41%	97.56%	99.69%	ND*	97.32%	99.06%	96.47%	99.72%	90.10%	96.57%	88.19%	98.48%	95.63%	94.89%	NA	NA	NA	NA	NA	NA
		Overall SSA	NC	NC	96.95%	98.79%	99.30%	99.62%	97.01%	97.83%	97.45%	99.00%	90.36%	99.07%	90.20%	97.53%	95.94%	95.99%	NA	NA	NA	NA	NA	NA
	Service Coverage																								
5	**In door (>= -75dBm)**	Major Road	NC	NC	88.86%	0.08%	86.24%	81.28%	99.57%	83.10%	72.11%	85.80%	79.12%	96.33%	92.10%	56.96%	71.60%	43.10%	75.08%	61.44%	48.08%	0.00%	83.46%	99.86%
		Highway	NC	NC	74.85%	100%	79.27%	61.72%	97.28%	99.10%	55.03%	59.60%	52.42%	100%	78.94%	99.39%	59.90%	93.20%	52.61%	42.13%	34.36%	81.51%	72.37%	98.11%
		Within City	NC	NC	87.52%	27.27%	91.96%	ND*	97.02%	100%	75.46%	43.30%	73.49%	99.76%	52.51%	88.83%	68.16%	57.10%	82.32%	33.60%	72.43%	17.11%	91.50%	74.57%
		Overall SSA	NC	NC	80.84%	43.15%	86.80%	79.36%	97.73%	94.11%	67.34%	62.87%	67.70%	98.28%	70.41%	81.71%	65.17%	64.77%	70.23%	45.94%	53.26%	29.96%	81.40%	90.85%
	In-vehicle (>= -85dBm)	Major Road	NC	NC	99.03%	52.70%	98.40%	97.80%	99.93%	99.30%	96.27%	99.80%	88.75%	100%	99.15%	97.50%	94.61%	92.80%	95.97%	93.75%	82.20%	0.00%	97.62%	99.99%
		Highway	NC	NC	94.41%	100%	93.32%	94.46%	99.66%	100%	87.76%	98.20%	74.02%	100%	95.58%	100%	92.52%	99.50%	79.57%	97.99%	62.97%	99.66%	98.92%	99.99%

S/N	Parameter	Classification of routes covered	AIRCEL OUTDOOR	AIRCEL INDOOR	AIRTEL OUTDOOR	AIRTEL INDOOR	BSNL OUTDOOR	BSNL INDOOR	IDEA OUTDOOR	IDEA INDOOR	TATA GSM OUTDOOR	TATA GSM INDOOR	RCOM GSM OUTDOOR	RCOM GSM INDOOR	UNINOR OUTDOOR	UNINOR INDOOR	VODAFONE OUTDOOR	VODAFONE INDOOR	MTS CDMA OUTDOOR	MTS CDMA INDOOR	RCOM CDMA OUTDOOR	RCOM CDMA INDOOR	TATA CDMA OUTDOOR	TATA CDMA INDOOR
		Within City	NC	NC	99.47%	98.35%	98.12%	ND*	99.62%	100%	97.90%	90.30%	94.84%	99.76%	78.08%	99.78%	95.27%	96.50%	97.31%	80.04%	93.21%	67.71%	99.54%	99.86%
		Overall SSA	NC	NC	96.61%	83.67%	96.77%	97.47%	99.71%	99.77%	93.88%	96.07%	86.25%	99.95%	88.83%	99.09%	93.85%	96.30%	91.04%	90.63%	80.05%	47.09%	98.73%	99.94%
	Outdoor-in city (>=-95dBm)	Major Road	NC	NC	100%	99.69%	99.88%	100%	100%	100%	99.76%	99.90%	90.92%	100%	99.85%	100%	99.63%	100%	99.72%	100%	98.57%	0.00%	100%	99.99%
		Highway	NC	NC	99.68%	100%	98.24%	99.96%	99.98%	100%	99.68%	99.50%	88.87%	100%	99.45%	100%	99.45%	100%	99.73%	100%	93.08%	100%	99.99%	99.99%
		Within City	NC	NC	99.96%	100%	99.89%	ND*	99.97%	100%	99.89%	99.50%	99.79%	100%	96.25%	100%	99.30%	100%	99.97%	100%	98.88%	100%	100%	99.99%
		Overall SSA	NC	NC	99.82%	99.90%	99.40%	100%	99.98%	100%	99.78%	99.70%	93.89%	100%	98.16%	100%	99.44%	100%	99.81%	99.78%	97.21%	54.42%	100%	99.99%
6	Call Setup Success Rate (>=95%)	Major Road	NC	NC	100%	100%	100%	96.15%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Highway	NC	NC	100%	100%	95.16%	100%	100%	100%	100%	100%	99.22%	100%	99.47%	100%	100%	100%	100%	100%	98.63%	100%	100%	100%
		Within City	NC	NC	100%	100%	98.35%	ND*	100%	100%	100%	100%	100%	100%	97.99%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	100%	100%	97.55%	98.25%	100%	100%	100%	100%	99.75%	100%	99.11%	100%	100%	100%	100%	100%	99.53%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Major Road	NC	NC	98.75%	100%	99.50%	92.45%	100%	100%	100%	100%	100%	100%	99.55%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Highway	NC	NC	98.63%	100%	97.94%	100%	98.97%	100%	99.07%	100%	100%	100%	99.53%	100%	99.46%	100%	100%	100%	100%	100%	100%	100%
		Within City	NC	NC	99.48%	100%	95.51%	ND*	99.26%	100%	98.15%	100%	100%	100%	99.67%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	98.95%	100%	97.50%	95.92%	99.28%	100%	98.84%	100%	100%	100%	99.59%	100%	99.76%	100%	100%	100%	100%	100%	100%	100%

- NA: Not Applicable
- NC: No Coverage and The service Providers having block call rate more than 3% have been shaded in yellow colour.
- ND: Drive test not done, BSNL did not turn up Drive test on Day - 3 due to not functioning of Drive test-Kit during Drive Test.

7.4 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

Name of SSA	Month	Day 1		Day 2		Day 3	
		Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered
NAINITAL	July-14	NAINITAL, HALDWANI-I, HALDWANI-II (CHORGALIYA) / **130KM**	**WITHIN CITY**:-ROADWAYS BUS STAND NAINITAL,RESERVE POLICE LINES,CIVIL COURT,RAJBHAWAN,SBI NAINITAL,MALL ROAD,ST. FRANCIS CATHOLIC CHURCH, HALDWANI TALLITAL,UTTAR UJALA OFFICE, SINDHI CHOWK,RAMPUR ROAD,MEDICAL COLLEGE,TRANSPORT NAGAR,ITI DHANMILL, ECO TOWN,PILI KOTHI,BADI MUKHANI, KUSUMKHERA,BLOCK OFFICE,NAWABI ROAD, DURGA CITY CENTRE. **MAJOR ROADS**:-WOODPECKER FOOD PLAZA, TIKONIA, ROADWAYS HALDWANI, RAILWAY STN. GOLAPUL,GOLAPUL-TEENPANI,BAREILLY ROAD,TALLI,UTTAR UJALA OFFICE,HIGHWAY GOLAPUR **HIGHWAYS**:-NAINITAL-BHOWALI ROAD,NAINITAL CANTT.,BHUNIYA DHAR,BHOWALI,MAIN MKT. BHOWALI, BHEEMTAL ROAD, GOLADHAR,KHUTANI,MEHRAGAON, VIKAS BHAWAN CHOWK, MALLITAL,BHEEMTAL LAKE,BOHRAKUN,CHANDA DEVI. **INDOOR:** 1. CANTT. BOARD DISPENSERY, BHOWALI ROAD NAINITAL, 2.WOODPECKER FOOD PLAZA, HALDWANI, 3.BOMBAY HOSPITAL , HALDWANI	KHATIMA, KHATIMA -II (SITARGANJ) / **125 KM**	**HIGHWAYS**:-AVAS VIKAS HALDWANI, TEHSIL HALDWANI,BUS STAND HLD, TEENPANI,NH-109 ,BAREILLY ROAD, GORAPOAR,MOTINAGAR, MOTA HALDU, LALKUAN,LALKUAN JUNCTION,MAIN MKT.,CPP MILL, N.H.44,N AGLA,KICHHA,SUGAR MILL, KICHHA RLY. STN., BUS STOP,AMBEDKAR CHOWK, PUL BHATTA,UTTAM NAGAR, NH-74, BARA, SISIYA, BHITORA, AMRIYA CHOURAHA, SITARGANJ., **MAJOR ROADS**:-SITARGANJ-KHATIMA ROAD,BAGHORA,SISAI KHERA, BIDORA,NANAKMATTA,MAIN CHOURAHA NANAKMATTA, NANAK SAGAR DAM, PRATAP PUR, JHANKAT,MAIN ROAD KHATIMA,DISTT. CIVIL COURT KHATIMA, JOSHI BHOJNALYA KHATIMA., **WITHIN CITY**:-PNB SITARGANJ,SBI,KICHHAULI, SITARGANJ, MAIN CHOWK, KOTWALI,SIDCULA,GOVT. INTER COLLEGE,HOTEL SITAR,BYPASS ROAD,KATIMA ROAD,SITARGANJ. JOSHI BHOJNALYA,MAIN MKT. KHATIMA,TANAK PUR ROAD, KHATIMA BUS STAND,AMU HIMALAYAN ACADEMY,MELAGHAT ROAD,SHAGUN MANDAP, GAYTRI HOSPITAL,RAJEEV NAGAR,PILIBHIT ROAD,JAMUNA HOSPITAL, HOTEL HOLIDAY,ESTER INDUSTRY,KANJABAGH ROAD,AMAR CHOWK,KANJABAGH. **INDOOR:** 1.RELIANCE PETROL PUMP, SITARGANJ, 2.JOSHI BHOJNALYA, KHATIMA	KICHHA-I (RUDRAPUR), KICHHA-II (BAZPUR), KASHIPUR./ **130 KM**	**HIGHWAYS**:-HDFC BANK HLD, SINDHI CHOWK, TRANSPORT NAGAR HLD, RUDRAPUR ROAD,BAIL BABA,TANDA FOREST AREA,POLICE CHOWKI TANDA,MADKOTA ROAD,NH-87,SIDCUL RDPR,LANCER,GADARPUR OUTER,, SARDAR NAGAR CHOWK,KELA KHEERA,BAZPUR, DORAHA,KASHIPUR RD, JAGANNATH PURA, SULTANPUR., **WITHIN CITY**:-METROPOLIS MALL, NH-87, COLLECTRATE (UDHAM SINGH NAGAR),DISTT. COURT U.S. NAGAR ,J.P.SCHOOL,CRYSTAL RESTAURENT, KIACHHA ROAD RDPR,SANJAY NAGAR, FCI RDPR,BHEL,TEENPANI RDPR,KLA FACTORY,BADAIPURA,SSP HOUSE, BHAGAT SINGH DEGREE COLG,RTO RDPR,POST OFFICE,BUS STAND,CIVIL LINES,KASHIPUR BYPASS RD,GALLA MANDI,INDIRA CHOWK, MAIN MKT. RDPR,ADARSH COLONY,INDANE GAS GODOWN,GABA CHOWK,HOTEL ANAND AWE SPRING,BAZPUR DORAHA, S.V.GARDEN,MAIN RD BAZPUR, GURUDWARA MKT.,KOTWALI BAZPUR, BHARIA RD,BHAGAT SINGH CHOWK, KRISHI MANDI,RLY STN.,KEHLON FOOD PLAZA,DORAHA,RAM NAGAR CROSSING, KASHIPUR,ICICI BANK,CITY HOSPITAL KASHIPUR, CHEEMA CHOWK,JASSPUR

Name of SSA	Month	Day 1		Day 2		Day 3	
		Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered
							KHURD,SUGAR MILL RD,SUGAR MILL KASHIPUR.. **MAJOR ROADS:**-RDPR RLY.STN.,RDPR-KASHIPUR RD,GREEN PARK CITY,BHAGWANPUR UNITY COLG,JAFARPUR,NH-74, MAHESHPUR,MEHTOSH, TEHSIL GADARPUR, SURAJPUR,GADARPUR MAIN RD ,KASHIPUR ITI,HOTEL GAUTAM HEIGHTS,DRONASAGAR,ROADWAYS BUSSTAND KASHIPUR,KASHIPUR-RAMNAGAR ROAD,CHEEMA CHOWK,RAILWAY CROSSING RAMNAGAR ROAD. **INDOOR:** 1. HOTEL ANAND AWE SPRING, RUDRAPUR. 2.HOTEL CORBETT, KASHIPUR
SAHRANPUR	Aug-14	SAHRANPUR / 135KM	**WITH IN CITY**-:-MISSION COMP,INCOME TAX OFFICE , COLLECTRATE , DEHLI RD , HASANPUR CHUNGI , BLOCK OFFICE , PHULWARI GARDEN , TATA SHOWROOM , NEW , KANSIRAM AMBEDKAR COLONY , TAHARPUR,HASANPUR , ITC RD , SHARADA NAGAR , CKT HOUSE , RAJBAHA TIRAHA , MANAKMAU , MANDI RD , MYSOOR PALACE , CHILKANA RD , KESHAV NAGAR , ARBIMEDERSA , DHOBI GHAT , BEHAT ADDA, **HIGHWAY:**- MANAK MAU , MEGHCHAPPER , SAHARANPUR AMBALA HW , SAGAR RATNA , PILKHANI ,AIRFORCE STATION SERSAWA , SERSAWA MAIN MKT , THANA SERSAWA , NH-73, PILKHANI ,PTTC, MANAKMAU , GAGALHEDI , CHUTMALPUR , BIHARIGARH, **MAJOR ROAD**:- BEHAT ADDA , CHAKROTA RD , NAWAB GANJ , PULICE CHOKI JOGYANPUL KISANPUR , PERTAP MKT , NEHRU MKT ,CLOCK	NAKUR(GANGOH) / 105KM	**HIGHWAY:**- MANAKMAU , KUMARHEDA , MBANDUKHEDI , FANDPURI , PILKHANI , NAKUR , KALVIN CENTRAL ACADEMY , NAYA GAON ,CHAPPER , SHERMAU , SUGARMILL , GANGOH OUTER, GANGOH SHN RD , DHALAPEDA B, BERAKHEDI , AMBEHTA PEER , KHERA AFGAN , FANDPURI , MANAKMAU, **WITHIN CITY**:- SALARPURA , SRE BUS STAND GANGOH , MIRGA ENG CENTRAL , MAIN RD GANGOH , SHIV CHOWK , BLOCK OFFICE , KANKROLI RD , NANOTA RD , BYPASS RD GANGOH , TITRO RD , DOON VALLY PUBLIC SCHOOL , KOTWALI GANGOH, **MAJOR ROAD**:- AGARSEN INTER COLLEGE NAKUR , MAIN RD NAKUR , TABAR RD , HOLI CHOWK , MAIN MKT NAKUR , TEHSIL NAKUR , GANGOH RD ,	DEOBAND/ 135KM	**HIGHWAY** :- DARUL ULUM , DEOBAND COLLEGE OF EDUCATION , TELHEDI , BASEDA , NAGAL , BHUT KHERI , RASULPUR KHERI , TAPRI , RLY CROSSING , BACK TO DARUL ULUM , RAMPUR RD DEOBAND , BHAILA , MAHESHPUR , BADGAON , SHIRSALI , RAMPUR TEHSIL , RAMPUR DELHI RD AND BACK TO DEOBAND. **WITHIN CITY** :- RAILWAY STATION DEOBAND , RLY RD , SUBHASH CHOWK , MAJNU WALA RD , MAIN RD DEOBAND , MANGLORE CHOWKY DEOBAND ,HASIM PURA , HONDA SHOWROOM , MEERUT RD DEOBAND. **MAJOR ROAD**:-DARUL ULUM DEOBAND, GT RD DEOBAND , MANGLORE CHOWKY DEOBAND ,

Name of SSA	Month	Day 1		Day 2		Day 3	
		Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered
			TOWER , AMBALA BUS ADDA , SPORT STADIUM , THANA KUTUBSHER , MANDI , SAHARANPUR RLY STATION , TIKONI KOTHI , TRANSPORT NAGAR , NOGAJJA PEER , KAILASHPUR GAGALHEDI **INDOOR:** 1.CHILIZONE RESTORENT(SAHRANPUR) 2.PARSWANATH PLAZA		BY PASS GANGOH , VISWA KARMA CHOK , KOTWALI NAKUR . **INDOOR:** DOON VALLEY PUBLIC SCHOOL(GANGOH)		BUS STAND DEOBAND , BLOCK OFFICE DEOBAND , SAI TEMPLE , TEHSIL DEOBAND , DARUL ULUM. INDOOR: MALHOTRA RESTORENT (DEOBAND)
ALIGARH	Sep-14	ALIGARH/ **105KM**	**WITHIN CITY**:-BSNL T/EXCHANGE, DM HOUSE, SUBHASH CHOWK, JALALPUR, BANNA DEVI, DELHI GATE, KHAIR ROAD,CHAURAHA,SUTMILL CHAURAHA,SARAI REHRAH,CENTRE POINT,QUASI BYPASS,RAMGARH ROAD,NIRANJANPURI,MEENAKSHI LAKES,DUBEY KA PADAR,SASHI GATE,TURKMOON GATE,ITI ROAD. **MAJOR ROADS**:-SUIT MILL CHAURAHA,GT ROAD,CHAUDHARY RESTAURENT,,GT TOWERDS,DHANPUR MANDI,KHURJA,KHATPURA,GANDHIPUR,DUBEY KA PADAV,NAWANGABAD,ETAH CHUNGI. **HIGHWAY:**-ETAH CHUNGI,QUASI CHOWK,ANUP SEHER ROAD,CHERAT,FM TOWER. **INDOOR:** CHOUDHARY RESTAURANT, G.T. ROAD ALIGARH	HATHRAS & SIKANDRA RAO/ **120KM**	**HIGHWAY**:- SASNI GATE ALIGARH, AGRA ROAD ALIGARH, PADIYAWALI MADRAK, MANGLAYATAN,SASHI ARJOI,RUHERI,TEHSIL SADAR HATHRAS,TALAB CHOWK, HATHRAS,MENDUI,SALEMPUR,SIKANDRA RAO,AKRABAD **WITHIN CITY**:-HARI EYE HOSPITAL,B.H.MILL ROAD,CHARMAR GATE,CHAKKI BAZAR,BHURAPEER, MAYA PALACE,CHANDRAPUR,RAILWAY STATION KHATIKHANA,NAYA GANJ,CLOCK TOWER,MURSAN GATE,HALWAI KHANA,TALAB CHOWK,BAINIGANJ. **MAJOR ROAD**:-CHAURAHA,KOTWALI ROAD,MORSAN GATE,BUS STAND HATHRAS,NAYA BAGH,POLYTECHNIC HATHRAS,SSD PUBLIC SCHOOL,HARI EYE HOSPITAL,HATHRAS ROAD,SIKANDRA RAO,KASGANJ ROAD,PANT CHOWK,ETAH ROAD,RAILWAY STATION SIKANDRA RAO,PETROL PUMP, GT ROAD SIKANDRA RAO. **INDOOR:** 1.HARI EYE HOSPITAL, HATHRAS, 2.INDIAN OIL PETROL PUMP, G.T. ROAD SIKANDRA RAO	KHAIR & ATRAULI /105KM	**HIGHWAY**:-KHAIR ROAD CHAURAH,ALIGARH KHAIR ROAD,LODHA,ITM COLLEGE KERSUA,INDANE GAS PLANT ANDLA,KHAIR,LODHA,SUITMILL CHAURAHA,BAROLA,BYPASS,QUARSI CHOWK,ATROLI RAOD,HARDWAGANJ CHAURAHA,ATRAULI. **MAJOR ROAD:**-MAIN ROAD KHAIR,DEV MANDIR,TAITI GAON TIRAHA,MAIN CHOWK ATRAULI,MAIN ROAD ATRAULI,BLOCK OFFICE ATRAULI. **WITHIN CITY**:-TAITI GAON TIRAHA,MATIPURA,PATH MAIDAN,SUBHASH CHOWK,SOMNA ROAD,BYPASS ROAD KHAIR,BYPASS ATRAULI,GHANTAGHAR ATRAULI,ATRAULI PVT.BUS STAND,AVANTI BAI CHOWK,PRIMARY HOSPITAL ATRAULI. **INDOOR:** 1.DRIVER HOTEL, G.T. ROAD KHAIR, 2.PRIMARY HEALTH CENTRE, ATRAULI

7.5 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF NAINITAL 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	Nainital, Bhowali, Bhimtal & Haldwani	Poor Level & Quality near Nainital Outer, Bhowali Outer, Bhimtal	Haldwani, Sitarganj & Khatima	NC	Rudrapur, Bazpur & Kashipur	NC
2	AIRTEL		Poor Level & Qaulity near Haldwani, Ranibagh, Chorgaliya		Poor Level & Quality near Kichha Rly Stn		Poor Level & Quality on Kashipur to Rudrapur Rd, near Haripur
3	BSNL		Poor Level & Quality near Gethia, Jantwal Dhura, ITBP, Sitapur		Poor Level & Quality near Arjunpur, Sisaikhera, Malaghat Rd, Sisaiya		Poor Level & Quality near kashipur, Cheema Paper Mill, mahtoshmod, Kheradham, Rudrapur Outer, Bazpur
4	TATA GSM		No Coverage between Bhowali to Bhimtal, Bhimtal to Ranibagh and Poor Level & Quality near Nainital Outer, Bhimtal Outer		No Highway Coverage and Poor Level & Quality near Khatima Outer, Nagla, Sitaganj Outer		Poor Level & Quality Sultanpur, Kalakhera, Gadarpur
5	TATA CDMA		No Highway Coverage and Poor Level & Quality near Nainital Outer, Haldwani Outer		No Highway Coverage and Poor Level & Quality near Khatima Outer, Nagla, Sitaganj Outer		Poor Level & Quality near Kashipur, Rudrapur Outer, Gadarpur
6	IDEA		Poor Level & Quality near Nairajbhawan, Bhimtal, Azadnagar Haldwani		Poor Quality near Madhopur, Sisaiya, Sitarganj, Khatima Outer		Poor Quality near Harimandir, Golemarket Rudrapur
7	RCOM GSM		Poor Level & Quality near Nainital Outer, Kathgodham Outer, Chorgaliya Outer		Poor Level & Quality near Khatima Outer		No Highway Coverage and Poor Level & Quality at Kashipur Outer
8	RCOM CDMA		Poor Level near Nainital Outer, Kathgodham Outer, Chorgaliya Outer		Poor Level near Khatima Outer		No Highway Coverage and Poor Level at Kashipur Outer
9	MTS		No Highway Coverage between Nainital to Haldwani and Poor Level & Quality near Kathgodam Outer, Haldwani Outer, Nainital Outer		No Highway Coverage and Poor Level & Quality at all Towns covered in day2		No Highway Coverage and Poor Level & Quality at all Towns covered in day3
10	UNINOR		Poor level & Quality near Nainital Outer, bhowali Outer, kathgodham Outer and No Highway Coverage		Poor Level & Qaulity near Halduchor, Kichha, Jawaharnagar, Sadda		Poor Level & Quality near Tanda Outer, Kelakhera, Gadarpur
11	VODAFONE		Poor Level & Quality patches near Bhumiadhar, Amritpur, Chorgaliya forest and Poor Quality Damuyadoonga, Pilikothi, Sheeshmahal Nainital		Poor Level & Quality near Lalkuan, Nagla, Sirauli, Sirsa		Poor Level & Quality near Sidcul Sec-4, Belbaba

NC: No Coverage

DRIVE TEST TABLE: 6

DRIVE TEST OBSERVATION OF SAHARANPUR 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	Saharanpur	NC	Gangoh & Nakur	NC	Deoband	NC
2	AIRTEL		Poor Level & Quality near Biharigarh, Sarsawa		Poor Level & Quality near Kamarheda, Bandukhedi, Dhakdevi, Gangoh Rd, Nakur		Poor Level & Quality near Nagel, Deoband, Deoband Rampur Rd, Budgaon
3	BSNL		Poor Level & Quality near Sherpur Khanzadpur, Chamarikhera, Pilakhani, PTTC Ambala Rd		Poor Level near Phandpuri, Nakur, Gangoh		Poor Level near Paharpur, Badgaon
4	TATA GSM		Poor Level & Quality near Biharigarh, Saharour Khana, Danakpur, Gagalheri, Seorana, PNP Center		Poor Level & Quality near Khera Afgan, Madak Mau, Gangoh		Poor Level & Quality near Sirsali, Beragaon
5	TATA CDMA		Poor Level & Quality near Biharigarh, Gagalheri, Sarswana		No Coverage on Highway and Poor Level & Quality near Gangoh Outer, Nakur		No Highway Coverage and Poor Level & Quality near Nangal, Deoband Outer
6	IDEA		----		Poor Quality near Bandukheri		Poor Level & Quality near Islamnagar, Sakhankalan
7	RCOM GSM		Poor Level & Quality near Biharigarh, Sarsawa		No Highway Coverage and Poor Level & Quality near Gangoh Outer		No Highway Coverage and Poor Level & Quality near Deoband Outer
8	RCOM CDMA		Poor Level & Quality near Biharigarh, Sarsawa		No Highway Coverage and Poor Level & Quality near Gangoh Outer		No Highway Coverage and Poor Level & Quality near Deoband Outer
9	MTS		Poor Level near Kailashpur, Sayad Mazra, Pilkhani		Poor Level & Quality near Gangoh Outer, Unali and No Highway Coverage		No Highway Coverage and Poor Level & Quality Meghrajpur, Sahajadpur, Labkari, Sirasali
10	UNINOR		Poor Level & Quality patches near Balwantput, Bhatpura, Nanakgarh, Beedpur, Saorana, Phoolwari Garden		Poor Level & Quality near Aghyana, Gangoh, Nakur, Badhi majra		Poor Leveel & Quality near Nagal, Islamnagar, Deoband Outer
11	VODAFONE		Poor Level & Quality near Ismailpur, Meerpur, Sadak Dudhi, Dara Rajpura, Mukhlispur		Poor Level & Quality patches near Ambehta, Mahdul Islami, Badhi majra, Budanpur		Poor Level & Quality near Rampur Badgaon to Deoband Rd, Bhat kheri, Hisampur majra, Bhagwanpur, Dalheri

NC: No Coverage

DRIVE TEST TABLE: 7

DRIVE TEST OBSERVATION OF ALIGARH 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	Aligarh	NC	Hathras & Sikandra Rao	NC	Khair & Atrauli	NC
2	AIRTEL		----		Poor Level near Sasni, Poor Quality near Ladhauwa		Poor Level & Quality near Khair Rd, Chaumuhan
3	BSNL		Poor Level & Quality patches near Royal Residency, Hamza Colony		Poor Level & Quality near Nagana, Meerpur, Ladpur, Saleempur, Agra Rd		
4	TATA GSM		Poor Level & Quality near Chherat Sundal, Vishwanathpuram, Banna devi		They have coverage only in major towns or SDCA's with Poor Level & Quality at Outers		They have coverage only in major towns or SDCA's with Poor Level & Quality at Outers
5	TATA CDMA		Poor Quality near Delhi gate, Masodabad		Poor Level & Quality near Sasni, No Highway Coverage		They have coverage only in major towns or SDCA's with Poor Level & Quality at Outers
6	IDEA		----		----		----
7	RCOM GSM		Poor Level & Quality near Chherat Talab, Lalkha Market, Delhi gate		They have coverage only in major towns or SDCA's with Poor Level & Quality at Outers		They have coverage only in major towns or SDCA's with Poor Level & Quality at Outers
8	RCOM CDMA		Poor Level & Quality near Chherat Talab, Lalkha Market, Delhi gate		They have coverage only in major towns or SDCA's with Poor Level & Quality at Outers		They have coverage only in major towns or SDCA's with Poor Level & Quality at Outers
9	MTS		Poor Level & Quality near Chherat Talab, Jail Rd		They have coverage only in major towns or SDCA's with Poor Level & Quality at Outers		They have coverage only in major towns or SDCA's with Poor Level & Quality at Outers
10	UNINOR		Poor level & Quality near Kundan, Income Tax Office, Sudiya, Poor Quality near Nagraula, Issapur		NC		NC
11	VODAFONE		Poor Quality near Chherat Talab, Sudhal, Mohamadnagar, Janakpuri, Samsad market, Ngla Dalchand, Delhi gate		Poor Level & Quality near Rawat Nagar, Poor Quality near Mukungpur, Samamai, mendu, Salempur		Poor Level & Quality near Karsua, Morthal, Poor Quality near Bajhera, Andala, Gaur Nagar, Hamdam Nagar, Madhauni

NC: No Coverage

7.6 KEY FINDINGS ON DRIVE TEST:

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

Aircel was not having its coverage in any of the 3 SSAs namely Nainital, Saharanpur and Aligarh.

(i) **In the Month of July-14**, drive tests were conducted across **Nainital** SSA covering Nainital, Haldwani-I, Haldwani-II, Khatima, Khatima-II, (Sitarganj), Kichha-I (Rudrapur), Kichha-II (Bazpur) and Kashipur SDCAs. The performance of some of the Service providers was not satisfactory with respect to the parameters Call Drop Rate, Voice Quality, CSSR and Blocked Call rate. On SSA level, **BSNL** remained non-complied for the parameters **Voice Quality, CSSR and Blocked Call Rate** with its performance as **88.57% (Outdoor) / 94.51 % (Indoor), 93.16% and 6.84%** respectively. **Idea, RCOM (GSM), Uninor, and Vodafone** remained under performed for parameter **Voice Quality** with their performance as **94.79%, 90.66 (Outdoor) / 89.03% (Indoor), 94.58% and 92.61% (Outdoor) / 94.66% (Indoor)** respectively. **Vodafone also** remained beyond benchmark for parameters **Call Drop rate** with its achievement level as **2.34%.**

(ii) **In the Month of August-14,** drive test was conducted across **Saharanpur** SSA covering Saharanpur, Nakur (Gangoh) and Deoband SDCAs. The results of the drive tests carried out in this SSA revealed that performance of the service providers was satisfactory as they were largely meeting the benchmarks. Only one parameter **'Voice Quality'** remained under performed by **RCOM(GSM) and Uninor** with their performance as **91.00% and 90.42% (Outdoor) / 91.38% (Indoor)** respectively

(iii) **In the month of September-14**, drive test was conducted across **Aligarh** SSA covering Aligarh, Hathras, Sikandrarao, Khair and Atrauli SDCAs. The drive test results exposed that only one parameter i.e **'Voice Quality'** could not be performed well by **RCOM (GSM) and Uninor** as they could achieve **90.36%** and **90.20%** respectively . The performance of all other service providers was well within the benchmark for most of the parameters on SSA basis.

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

Thus, the parameters Voice Quality, CDR and CSSR remained non-compliant by some of the service providers namely **BSNL, RCOM (GSM), Idea, Uninor and Vodafone** *in different parts of the SSAs where drive tests were conducted during the quarter ended September 2014. However, the parameter* **'Voice Quality'** *remained main area of concern for all the above mentioned operators. The service providers need to improve their network quality with respect to these parameters.*

8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

AVERAGED QUARTERLY PMR

V/S

AVERAGED QUARTERLY 3-DAYs LIVE MEASURMENT
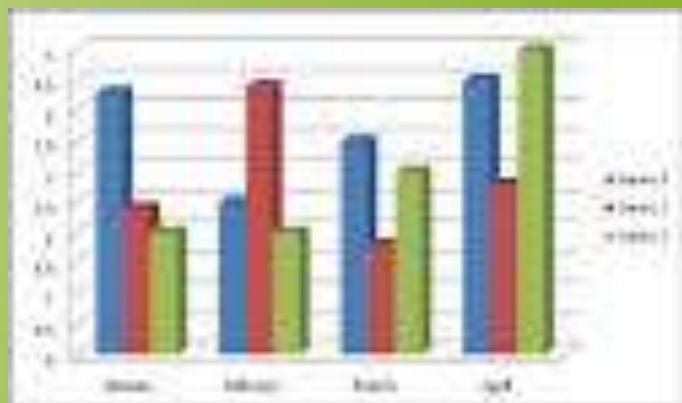
8. GRAPHICAL REPRESENTATION:

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

1)   BTS ACCUMULATED DOWNTIME :

BTS Accumulated Downtime

	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
Quarterly PMR	0.45%	0.96%	1.23%	0.60%	0.19%	0.40%	0.26%	0.33%	0.28%	0.04%	0.44%	0.06%
Quarterly Live	0.24%	1.19%	1.25%	1.01%	0.21%	0.39%	0.29%	0.29%	0.33%	0.04%	0.43%	0.14%
Benchmark	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
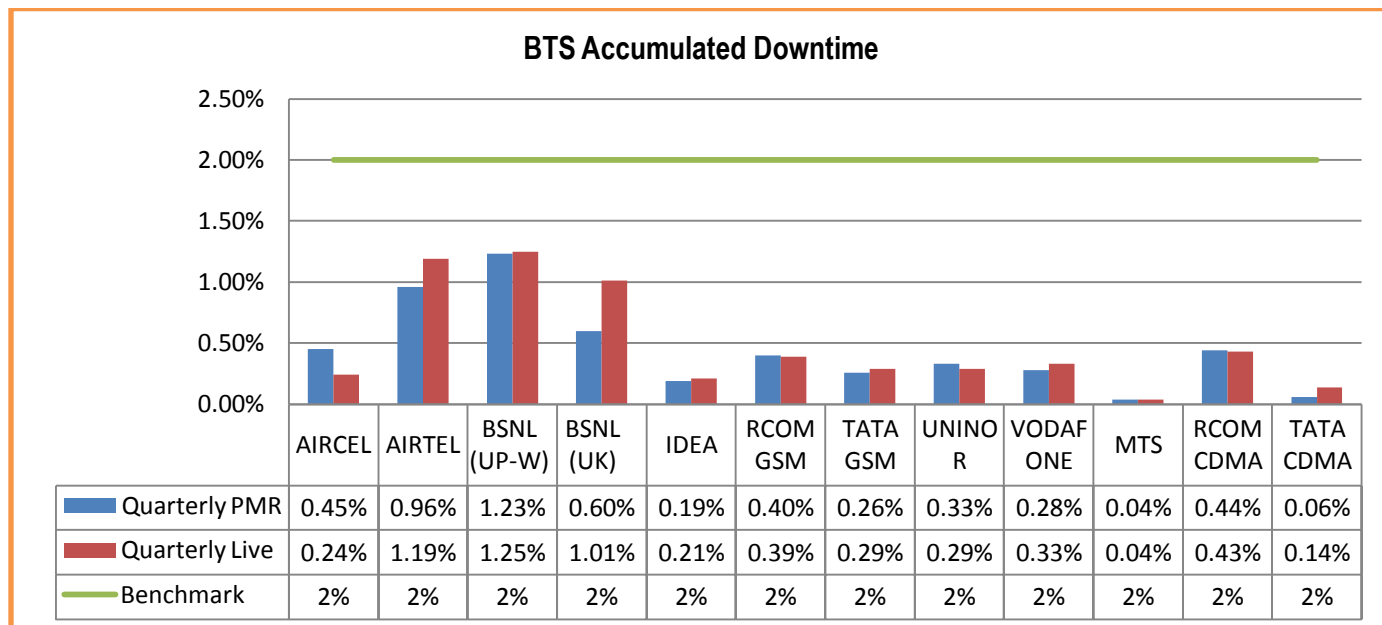
All operators are meeting the benchmarks.

2)   WORST AFFECTED BTSs DUE TO DOWNTIME :

Worst affected BTSs due to downtime

	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
Quarterly PMR	1.32%	1.56%	1.85%	1.12%	0.28%	1.09%	1.44%	1.45%	0.67%	0.00%	1.30%	0.06%
Quarterly Live	0.05%	1.07%	1.87%	0.00%	0.03%	0.00%	0.02%	0.00%	0.16%	0.00%	0.00%	0.00%
Benchmark	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
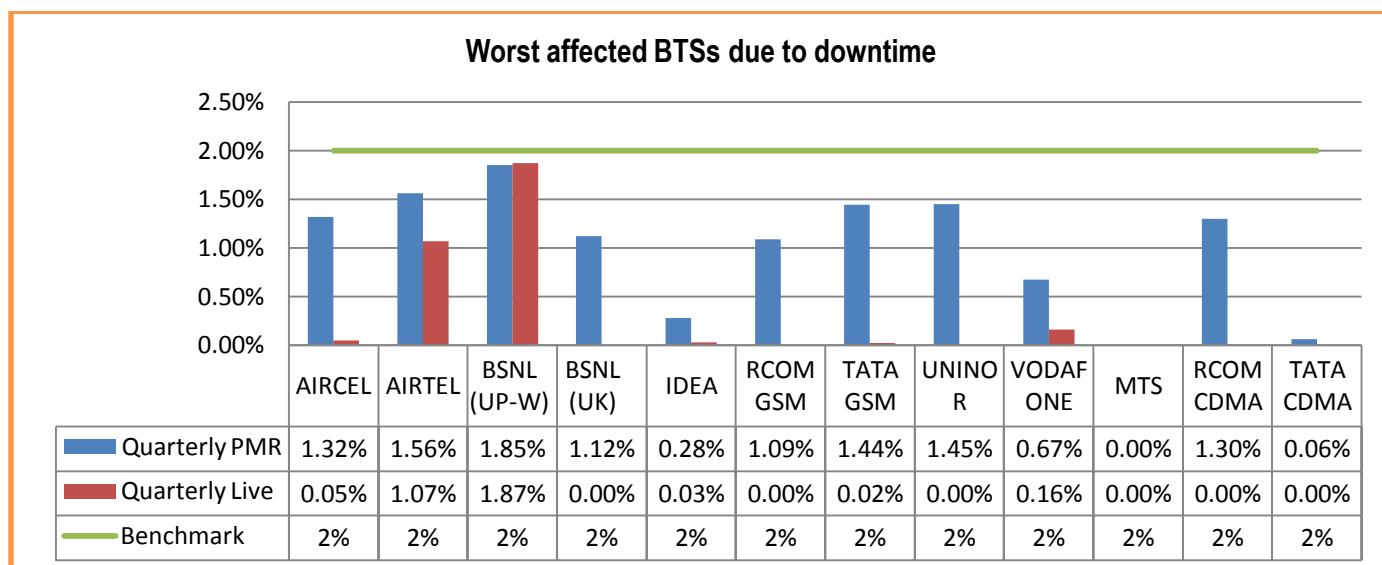
All operators are meeting the benchmarks.

3)   **CALL SETUP SUCCESS RATE :**

Call Setup Success Rate

	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
Quarterly PMR	99.02%	97.77%	96.40%	97.30%	99.98%	99.45%	98.30%	97.28%	99.47%	99.55%	98.38%	99.09%
Quarterly Live	99.10%	98.37%	96.37%	97.21%	99.98%	99.50%	98.39%	96.88%	99.47%	99.57%	98.36%	99.10%
Benchmark	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
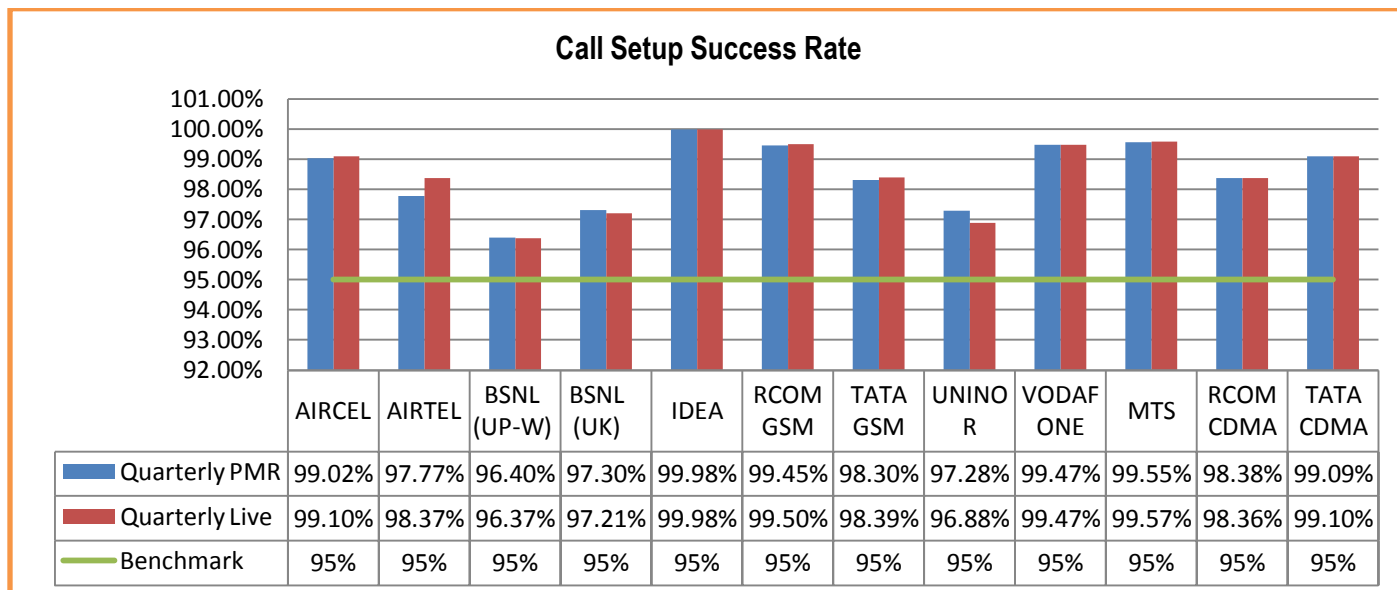
All operators are meeting the benchmarks.

4)   **SDCCH/PAGING CHANNEL CONGESTION :**

SDCCH/PAGING Channel Congestion

	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
Quarterly PMR	0.49%	0.45%	0.55%	0.68%	0.78%	0.03%	0.15%	0.78%	0.24%	0.00%	0.00%	0.00%
Quarterly Live	0.20%	0.28%	0.64%	0.66%	0.97%	0.03%	0.14%	0.60%	0.23%	0.00%	0.00%	0.00%
Benchmark	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
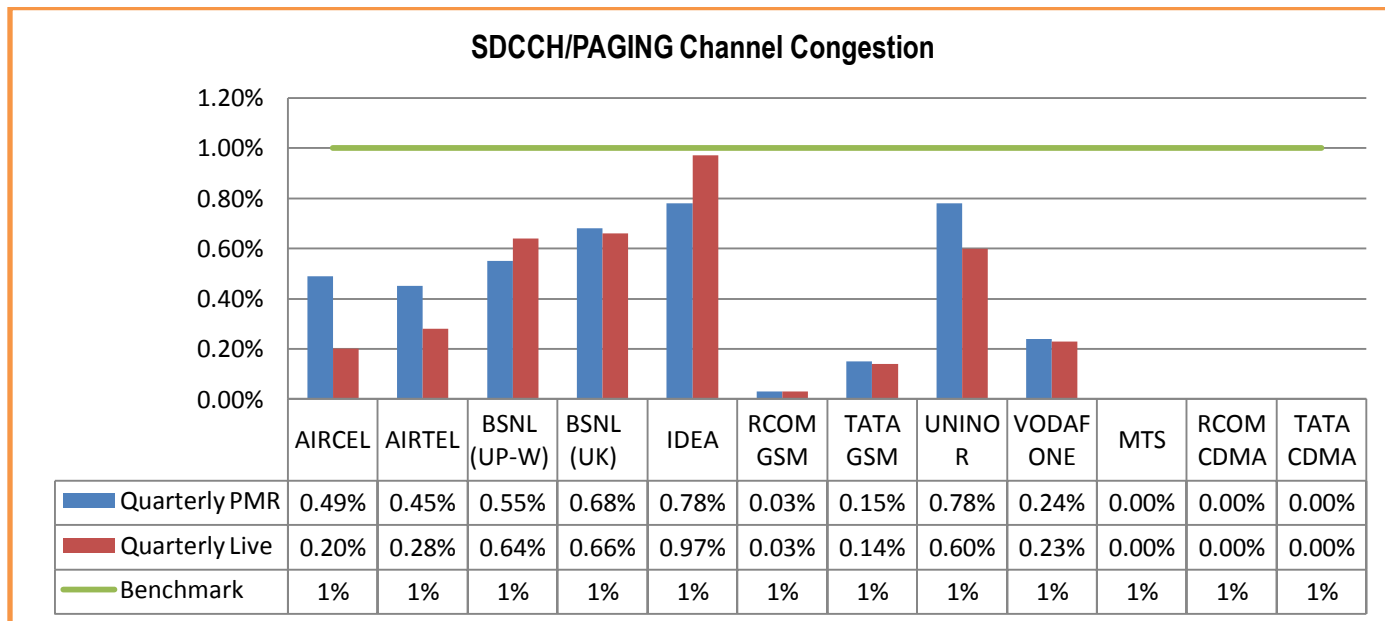
All operators are meeting the benchmarks.

5)   TCH CONGESTION:

TCH Congestion

	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
Quarterly PMR	0.71%	1.31%	1.12%	1.49%	1.70%	0.08%	0.46%	1.57%	0.53%	0.00%	0.06%	0.08%
Quarterly Live	0.56%	0.79%	1.19%	1.57%	1.85%	0.08%	0.40%	1.64%	0.53%	0.00%	0.34%	0.07%
Benchmark	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
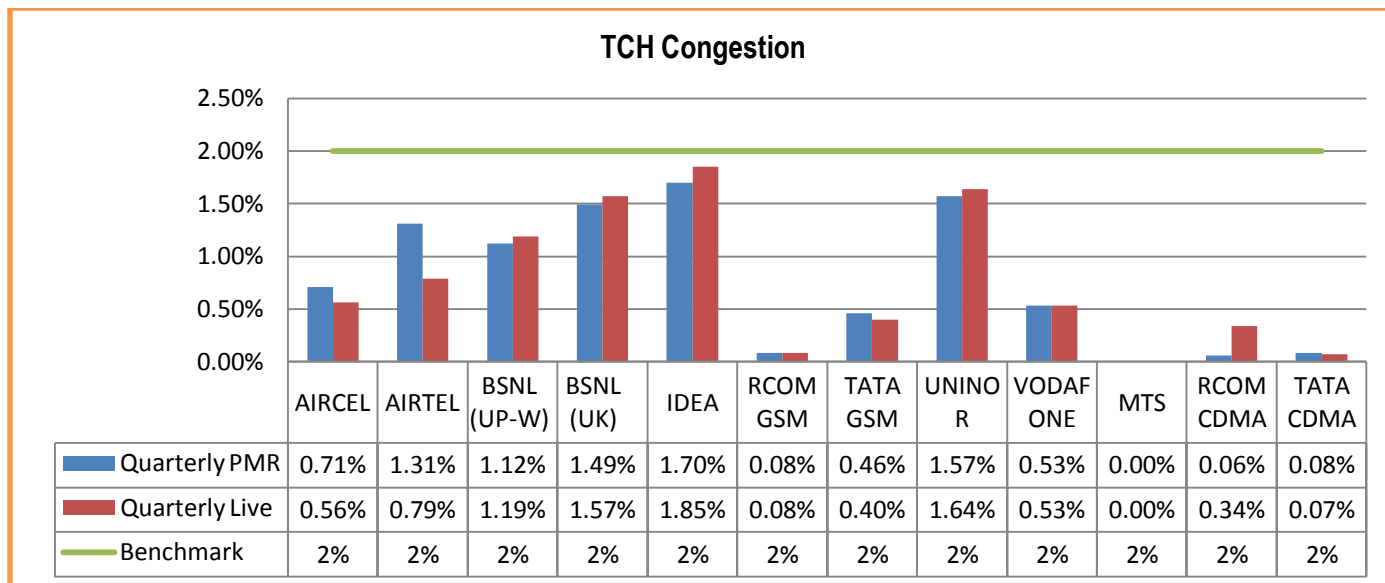
All operators are meeting the benchmarks.

6)   CALL DROP RATE :

Call Drop Rate

	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
Quarterly PMR	0.76%	1.32%	0.90%	1.50%	1.03%	0.42%	0.94%	0.54%	0.88%	0.55%	0.33%	0.53%
Quarterly Live	0.71%	1.14%	0.96%	1.52%	1.03%	0.40%	0.94%	0.54%	0.83%	0.54%	0.36%	0.52%
Benchmark	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
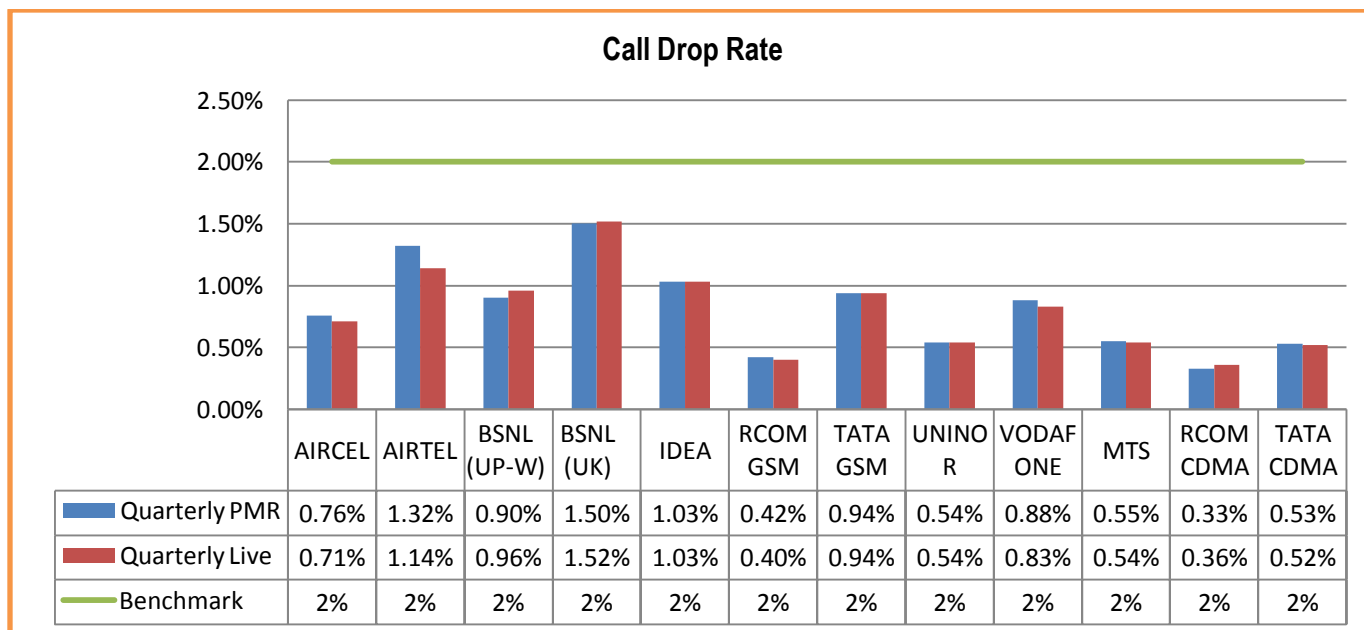
All operators are meeting the benchmarks.

7)   WORST AFFECTED CELLS>3% TCH DROP :

Worst affected cells>3% TCH drop

	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAF ONE	MTS	RCOM CDMA	TATA CDMA
Quarterly PMR	5.72%	2.60%	1.64%	2.55%	2.39%	0.05%	6.37%	2.09%	2.75%	1.80%	1.49%	4.68%
Quarterly Live	5.91%	2.49%	2.15%	2.54%	2.56%	0.06%	6.45%	2.32%	2.94%	1.70%	2.01%	4.55%
Benchmark	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
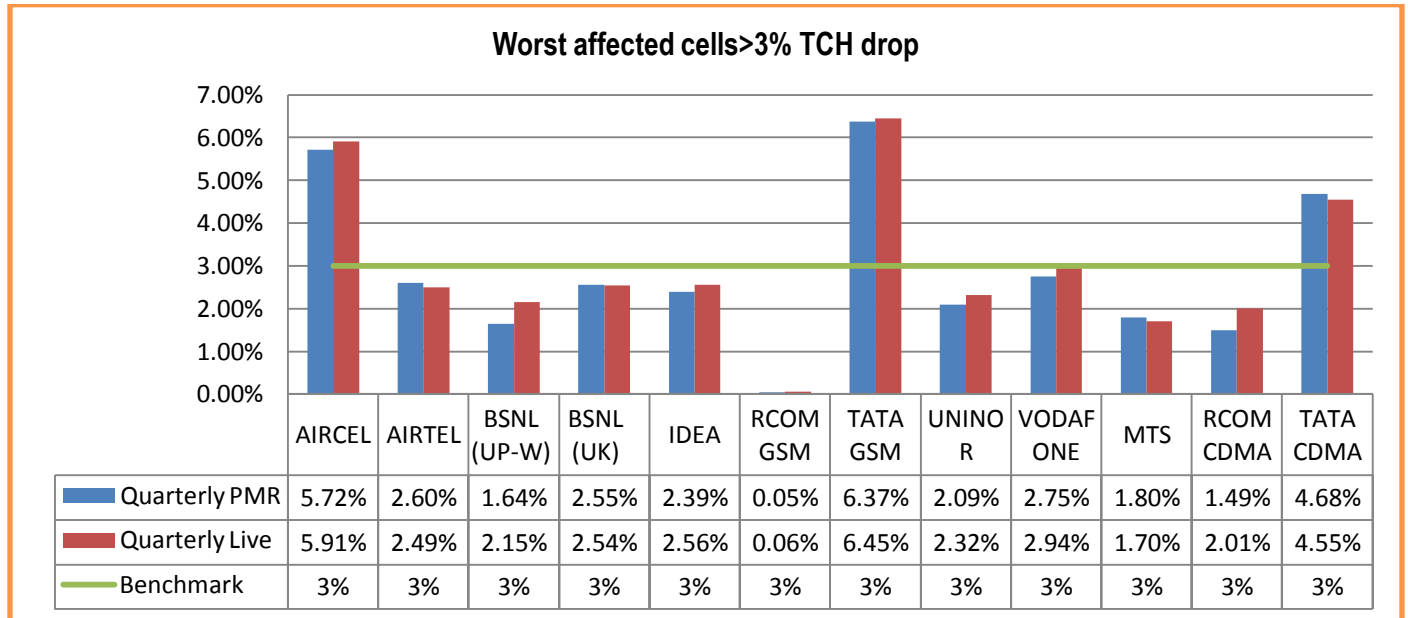
All operators are meeting the benchmarks except Aircel, Tata GSM & CDMA.

8)   PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY :

% Connections with good voice quality

	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAF ONE	MTS	RCOM CDMA	TATA CDMA
Quarterly PMR	97.10%	97.61%	96.66%	95.97%	95.90%	98.69%	97.31%	94.57%	97.39%	99.17%	99.78%	98.90%
Quarterly Live	97.22%	97.60%	96.78%	95.48%	95.90%	98.77%	97.31%	94.54%	97.57%	99.15%	99.73%	98.90%
Benchmark	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
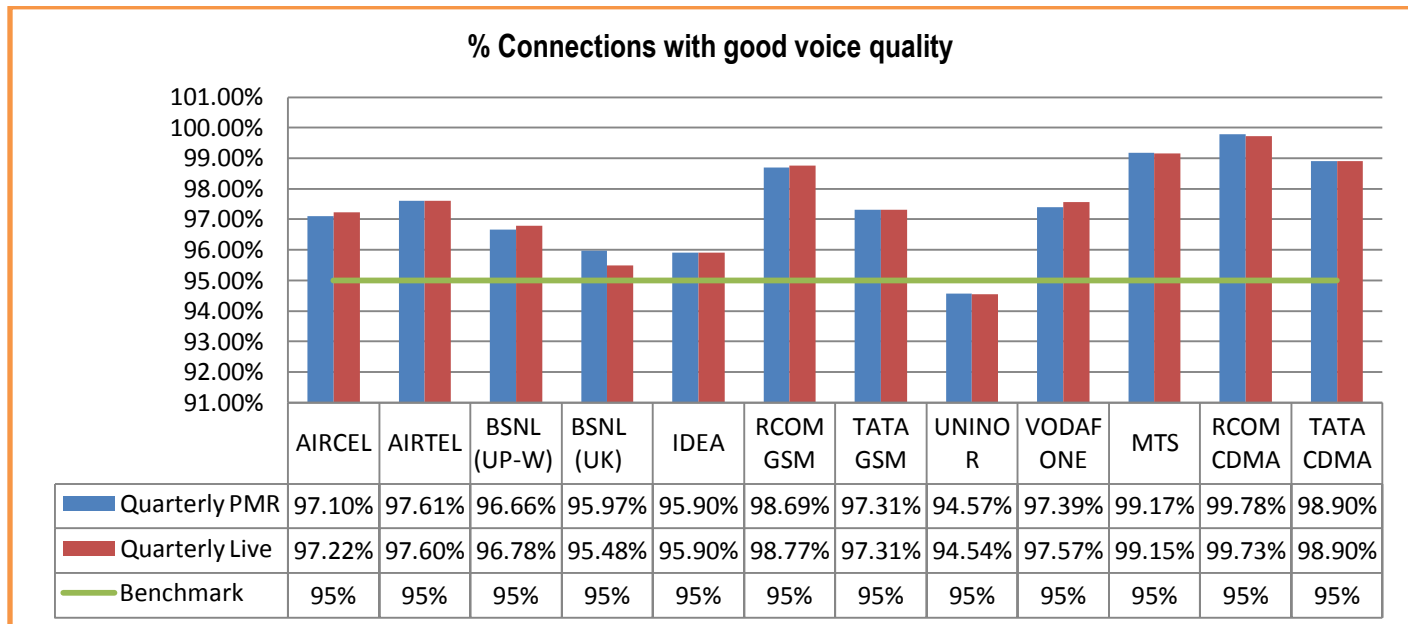
All operators are meeting the benchmarks except Uninor.

9. QOS AUDIT OF BASIC (WIRELINE) SERVICE PROVIDERS

9. QOS AUDIT OF BASIC TELEPHONE SERVICE (WIRELINE)

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 1007 in UP (W) (present no. of BSNL exchanges), audit was done for 52 sampled (25-Urban and 27-Rural) exchanges & in Uttrakhand, out of 466 exchanges audit was done for 24 sampled (7 Urban and 17 Rural) exchanges. In case of Private Service provider's one exchange each of Bharti, TTL, RCL and Vodafone were covered for audit. As UP (W) Circle is having 78 SDCAs and Uttrakhand Circle is having 42 SDCAs, so total 76 sampled BSNL exchanges spread over 13 (8 UPW and 5 UK)SDCAs, (10% of SDCAs in UP-W & UK) 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((W)	497	510	1007	25	27
2	BSNL	UK	136	330	466	7	17
3	Bharti	UP(W)&UK	1	0	1	1	0
4	TTL	UP(W)&UK	1	0	1	1	0
5	RCL	UP(W)&UK	1	0	1	1	0
6	VODAFONE	UP(W)&UK	1	0	1	1	0
Total Exchanges			**637**	**840**	**1477**	**36**	**44**

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:

Sl. No.	Parameters	Benchmark	Period	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
	Averaged Audited data for Wireline (Basic) Services – UP(W) Circle								
1	**Fault incidences**								
	(No. of faults/100 subscribers /month)	< 5%	*Quarterly*	4.50%	3.98%	**6.68%**	Nil	1.71%	0.51%
2	**Faults Repair/Restoration Time**								
	Fault repair by next working day(Urban Area)	>90%	*Quarterly*	95.64%	**89.80%**	**59.12%**	Nil	**80.55%**	100.00%
	Within 3 days day	100%	*Quarterly*	100.00%	**98.49%**	**84.54%**	Nil	**89.00%**	100.00%
	Fault repair by next working day(Rural & hilly Area)	>90%	*Quarterly*	NA	**80.52%**	**74.28%**	NA	NA	NA
	Within 5 days	100%	*Quarterly*	NA	**96.72%**	**94.03%**	NA	NA	NA
	Mean time to Repair(MTTR)	≤8 Hrs	*Quarterly*	3.44	**14.06**	**24.19**	Nil	2.19	0.28
3	**Rent Rebate**								
	Fault pending > 3 days & <7 days	Rebate for 7 days	*Quarterly*	4	0	0	0	0	0
	Fault Pending > 7 days & < 15 days	Rebate for 15 days	*Quarterly*	0	1	2	0	0	0
	Fault pending > 15 days	Rebate for 1 month	*Quarterly*	0	21	9	0	0	0
4	**Call Completion Ratio (CCR) & Answer to seizure Ratio(ASR)**								
	CCR	> 55%	*Quarterly*	59.14%	61.21%	57.81%	NA	100.00%	98.26%
	ASR	> 75%	*Quarterly*	NA	NA	NA	92.48%	NA	NA
5	**Metering & Billing Performance**								
	% of disputed Bills over bills issued (Post Paid)	< 0.1%	*Quarterly*	0.01%	0.00%	0.01%	0.00%	0.00%	0.00%
	% of Pre-paid Charging Complaints	< 0.1%	*Quarterly*	NA	NA	NA	NA	NA	NA
	% of billing complaints resolved within 4 weeks	100% within 4 weeks	*Quarterly*	100.00%	100.00%	100.00%	NA	100.00%	NA
	Period of all refunds/payments from the date of resolution of complaints within 1weeks	100% within 1 week of resolution of compliant	*Quarterly*	100.00%	100.00%	100.00%	NA	100.00%	NA
6	**POI Congestion**								
	No. of POI's having congestion >0.5%		*Quarterly*	0	0	0	0	0	0
7	**Response Time to customer for assistance**								
	Accessibility of Call centre/customer Care	>=95%	*Quarterly*	100.00%	**36.76%**	96.94%	96.13%	**75.00%**	99.78%
	% age of calls answered by operator(voice to voice) within 60 seconds	>=90%	*Quarterly*	99.32%	**66.39%**	**75.07%**	96.13%	100.00%	98.06%
8	**Customer care(promptness in attending to customers request)**								
	Termination / Closures	100% within 7 days	*Quarterly*	100.00%	100.00%	100.00%	Nil	**0.00%**	NA
	Time taken for refunds of deposit after closures	100% within 60 days	*Quarterly*	100.00%	100.00%	100.00%	Nil	Nil	NA

NA-Not Applicable

TUV-SUD South Asia Private Limited

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

SI No.	Parameters	Benchmark	Period	BHARTI AIRTEL	BSNL UP West	BSNL UKD	RCL	TTL	VODAFONE
	3 DAYS LIVE DATA FOR WIRELINE (BASIC) SERVICES – UP(W) CIRCLE								
1	**Call Completion Ratio (CCR) & Answer to seizure Ratio(ASR)**								
	CCR	> 55%	*Quarterly*	56.17%	58.65%	57.93%	NA	100.00%	95.03%
	ASR	> 75%	*Quarterly*	NA	NA	NA	91.23%	NA	NA
2	**POI Congestion**								
	No. of POI's having congestion >0.5%		*Quarterly*	0	0	0	0	0	0
3	**Response Time to customer for assistance**								
	Accessibility of Call centre/customer Care	≥95%	*Quarterly*	100.00%	**61.95%**	96.69%	95.33%	NA	99.69%
	% age of calls answered by operator(voice to voice) within 60 seconds	≥90%	*Quarterly*	99.29%	**72.61%**	**87.50%**	100.00%	NA	99.85%

NA-Not Applicable

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. However, **BSNL (UKD**) failed to meet the benchmark achieving its performance level as **6.68%**

Fault Repair/Restoration Time: BSNL (UPW), BSNL (UKD) and TTL could not meet the benchmark of Fault repaired by next working day with their performance value as **89.80%, 59.12%, 80.55%** and within 3 days **98.49%, 84.54%, 98.00%** respectively**.**
In case of Rural and hilly areas, **BSNL(UPW) and UP(UKD)** also remained under performed for fault repaired by next working days with their performance as **80.52%, 74.28%** and within 5 days, **96.72%, 94.03%** respectively**.**

Mean Time to Repair: Only **BSNL (UPW / UKD)** failed to meet the benchmark for MTTR with their performance as **14.06 Hrs / 24.19 Hrs** against the benchmark of ≤8 Hrs.

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.

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

Response Time to Customer for assistance: For percentage of calls getting connected to call center, the performance of TTL only was found below the benchmark with its performance level as 75% against the benchmark of >95%.
With respect to the parameter of **calls answered by operator (voice to voice), BSNL(UKD) & BSNL (UPW)** could not meet the benchmark with their performance as **75.07% & 66.39%** respectively against the benchmark of >= 90% and also failed to comply with the benchmark for this parameter during 3 days live measurements as **87.50% & 72.61%** respectively.

With respect to the parameter of **Accessibility of Call centre/customer Care, BSNL(UW)** could not meet the benchmark with its performance as **36.76%** against the benchmark of >= 90% and also failed to comply with the benchmark for this parameter during 3 days live measurements as **61.95%**.

Termination/Closures: All operators (**except TTL**) were found meeting the benchmark on this parameter. **TTL** could not close any connections out three requests for closure.

Time taken for refund of deposit: All operators met 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 Incidences, MTTR, Fault Repair/Restoration Time, and Response time to customer for assistance**. Hence, BSNL need to improve their services in respect of these parameters.**TTL** also failed to meet the benchmarks of the parameters **Fault Repair, Accessibility of Call center and Termination/ Closures.***

9.4 INTER OPERATOR CALL ASSESSMENT (WIRELINE)

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 UP WEST	BSNL UKD	RCL	TTL	VODAFONE
BHARTI AIRTEL	UP WEST	100	--	100.00%	100.00%	100.00%	100.00%	100.00%
BSNL UP WEST	UP WEST	100	100.00%	--	100.00%	94.00%	100.00%	100.00%
BSNL UKD	UP WEST	100	100.00%	100.00%	--	93.00%	95.00%	100.00%
RELIANCE	UP WEST	100	100.00%	98.00%	100.00%	--	100.00%	100.00%
TTL	UP WEST	100	100.00%	100.00%	95.00%	100.00%	--	100.00%
VODAFONE	UP WEST	100	100.00%	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 BSNL (UPW) to RCL, successful interconnection was 94.0%, BSNL(UKD) to RCL and TTL was 93% and 95%, Reliance to BSNL (UPW) was 98% and TTL to BSNL(UKD) was 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 (WIRELINE)

LEVEL 1 LIVE CALLING											
Emergency no.	Circle Name	No. of calls made	BSNL- MEERUT SSA	BSNL-MUZAFFER NAGAR SSA	BSNL-NOIDA SSA	BSNL- AGRA SSA	BSNL- NANITAL SSA	BSNL- DEHRADUN SSA	BHARTI AIRTEL	RCL	TTL	VODAFONE
100	UP West	50	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
101	UP West	50	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
102	UP West	50	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

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 (WIRELINE SERVICES)

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

NA: Not Applicable, as there is no agent option for voice to voice only IVR is functional in the SSA- Noida, Meerut, Muzaffer Nagar and Agra.

In case of calls answered by operators (voice to voice), when test calls were made to the call centers of different service providers, 100% of calls were answered by the call center operators within stipulated tine.

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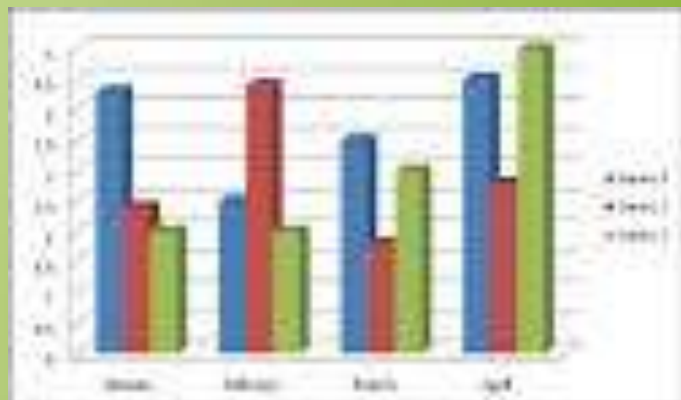
9.7 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:

1) FAULT INCIDENCE:

Fault Incidence
(No. of faults/100 subscribers /month)

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
(No. of faults/100 subscribers /month)	4.50%	3.98%	6.68%	0.00%	1.71%	0.51%
Benchmark < 5%	5%	5%	5%	5%	5%	5%
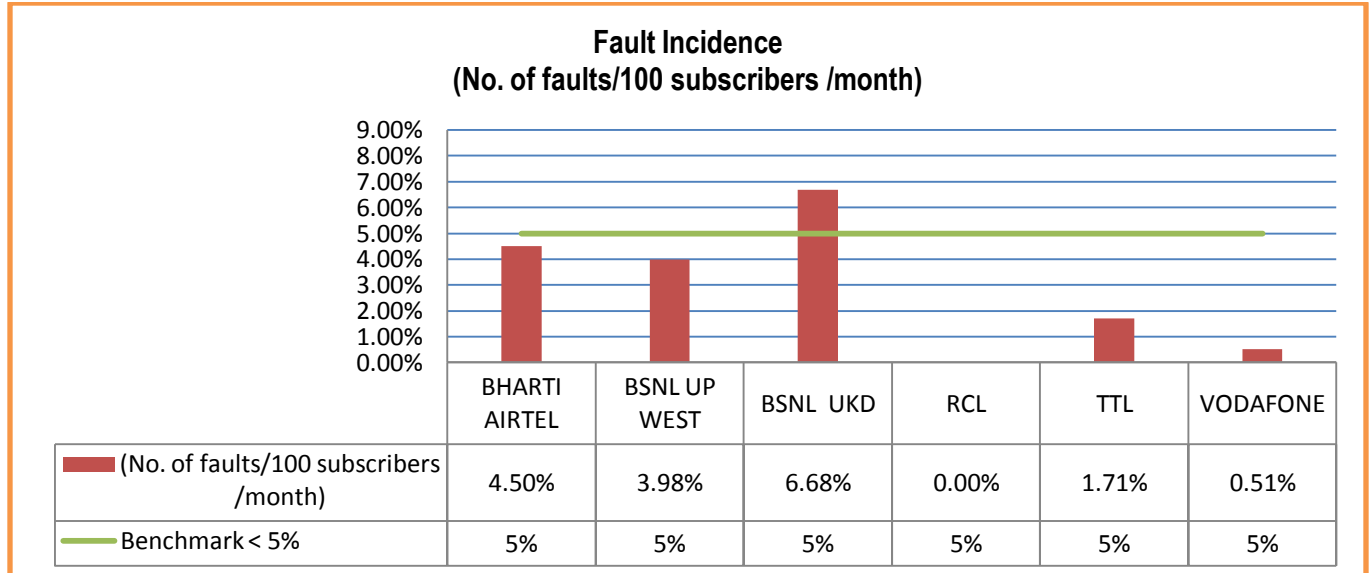
All Operators are meeting the benchmarks except BSNL Uttarakhand.

2) FAULTS REPAIR/RESTORATION TIME:

Faults Repair/Restoration Time

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
Fault repair by next working day(Urban Area)	95.64%	89.80%	59.12%	100.00%	80.55%	100.00%
Fault repair by next working day(Rural & hilly Area)		80.52%	74.28%			
Benchmark >90%	90%	90%	90%	90%	90%	90%
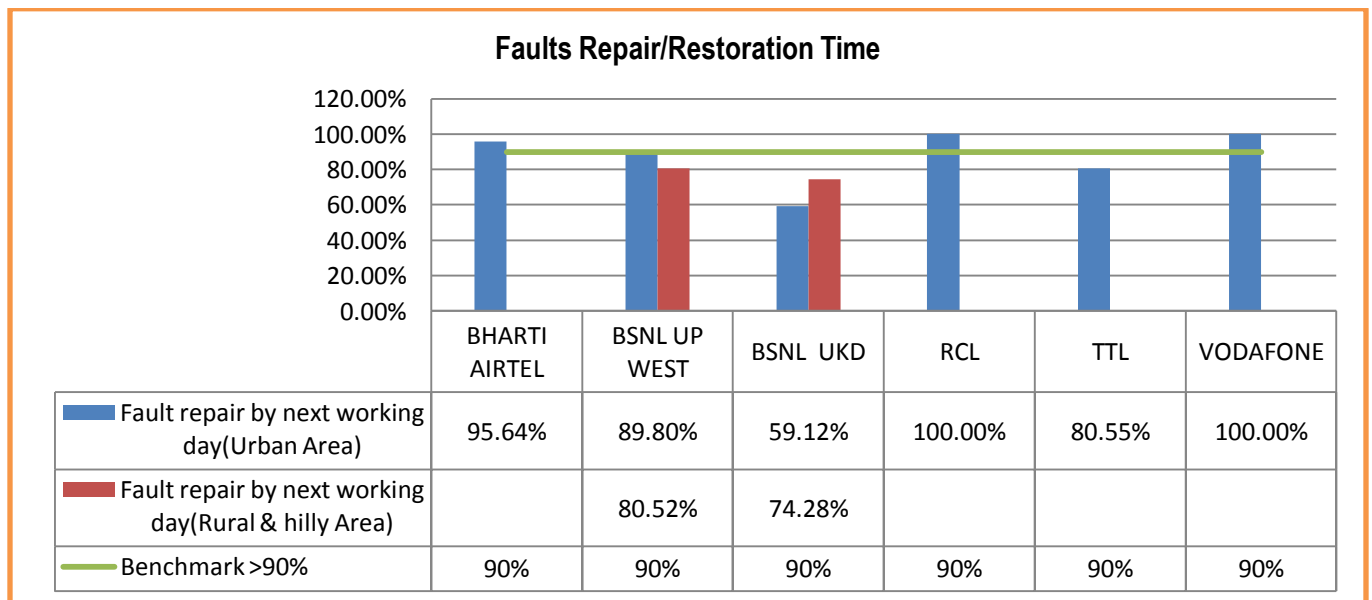
All Operators are meeting the benchmarks except BSNL (UPW & Uttarakhand) and TTL.

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

Faults Repair/Restoration Time

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
Within 3 days (Urban Area)	100.00%	98.49%	84.54%	100.00%	89.00%	100.00%
Within 5 days (Rural & hilly Area)		96.72%	94.03%			
Benchmark-100%	100%	100%	100%	100%	100%	100%
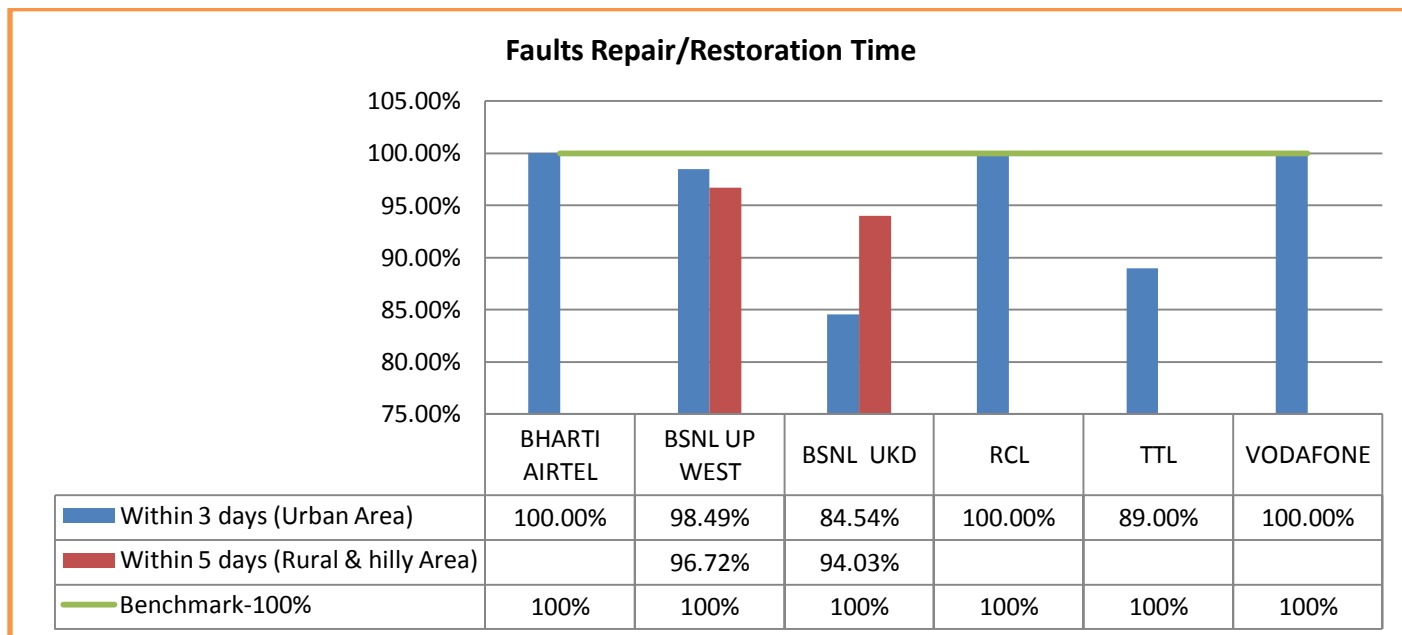
All Operators are meeting the benchmarks except BSNL (UPW & Uttarakhand) and TTL.

4) MEAN TIME TO REPAIR (MTTR):

Mean Time to Repair(MTTR)

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
Mean Time to Repair (MTTR)	3.44	14.06	24.19		2.19	0.28
Benchmark ≤8 Hrs	8	8	8	8	8	8
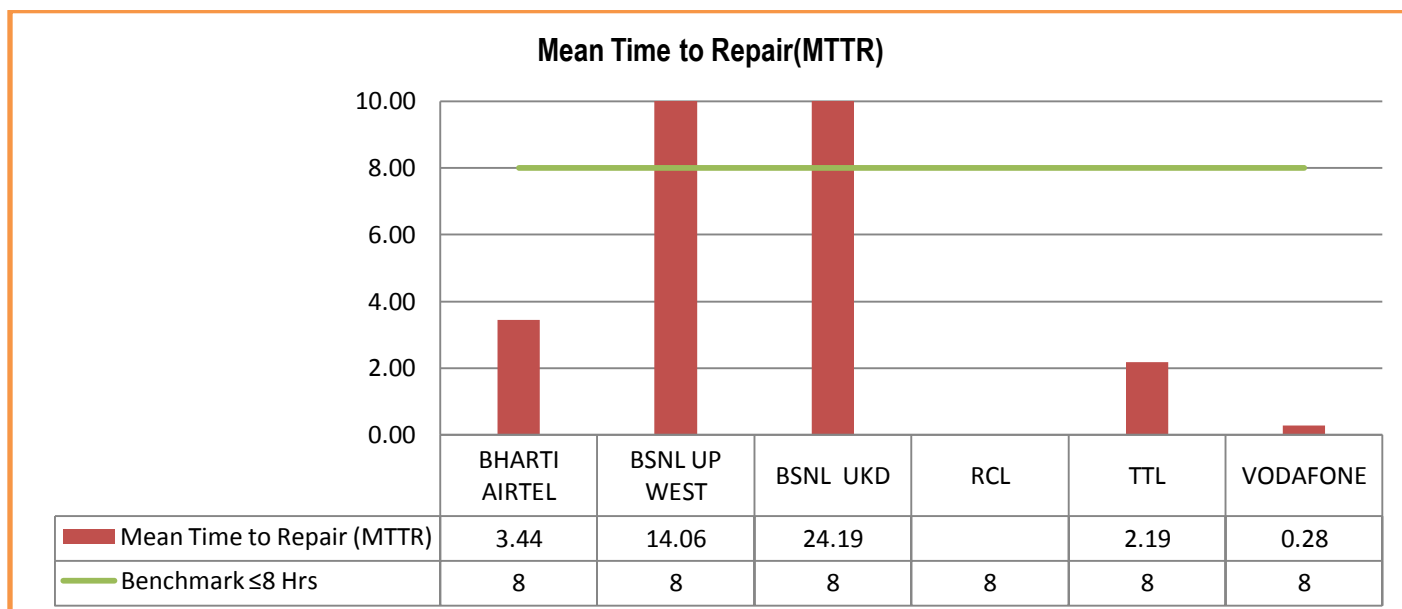
All Operators are meeting the benchmarks except BSNL (UPW & Uttarakhand).

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

CCR (> 55%) & ASR (> 75%)

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
Quarterly	59.14%	61.21%	57.81%	92.48%	100.00%	98.26%
Benchmark > 55%(CCR) & > 75%(ASR)	55%	55%	55%	75%	55%	55%
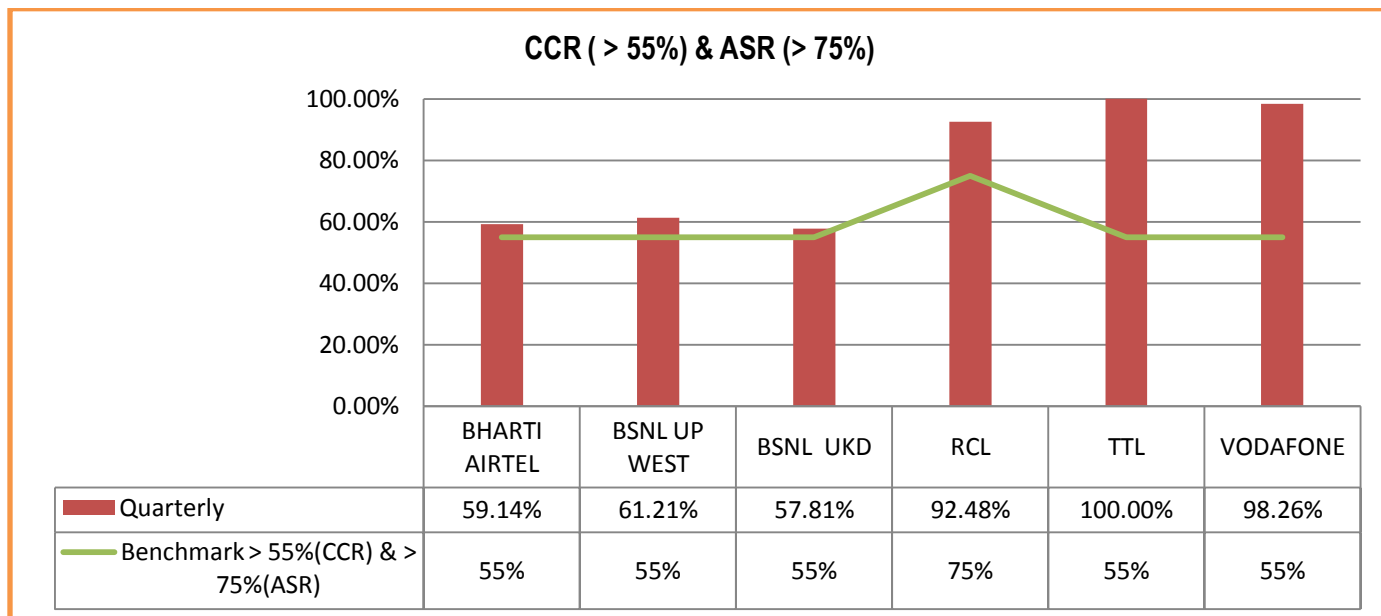
All Operators are meeting the benchmarks. RCL has provided ASR instead of CCR.

6) **METERING & BILLING PERFORMANCE:**

   a) **DISPUTED BILLS OVER BILL ISSUED :**

**Metering & Billing Performance
Disputed Bills over bills issued**

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
% of disputed Bills over bills issued (Post Paid)	0.01%	0.00%	0.01%	0.00%	0.00%	0.00%
Benchmark < 0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
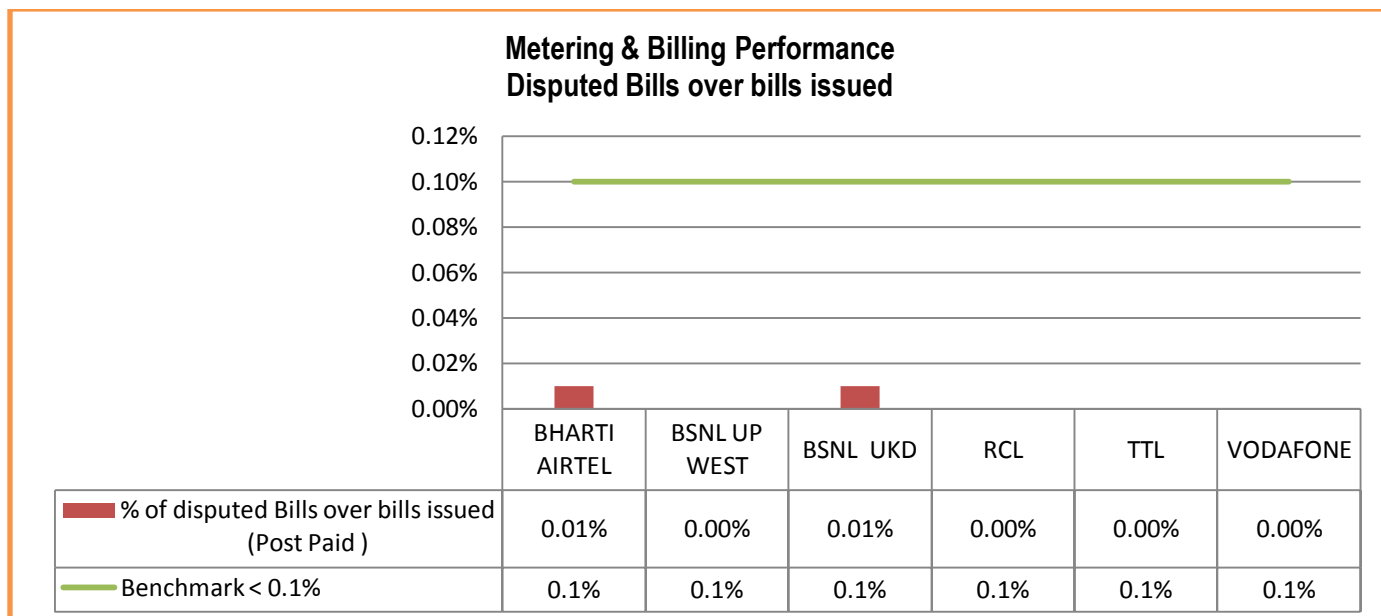
All Operators are meeting the benchmarks.

b) BILLING COMPLAINT RESOLUTION:

Billing Complaints Resolution

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
% of billing complaints resolved within 4 weeks	100.00%	100.00%	100.00%		100.00%	0.00%
Period of all refunds/payments from the date of resolution of complaints within 1weeks	100.00%	100.00%	100.00%		100.00%	0.00%
Benchmark 100%	100%	100%	100%	100%	100%	100%
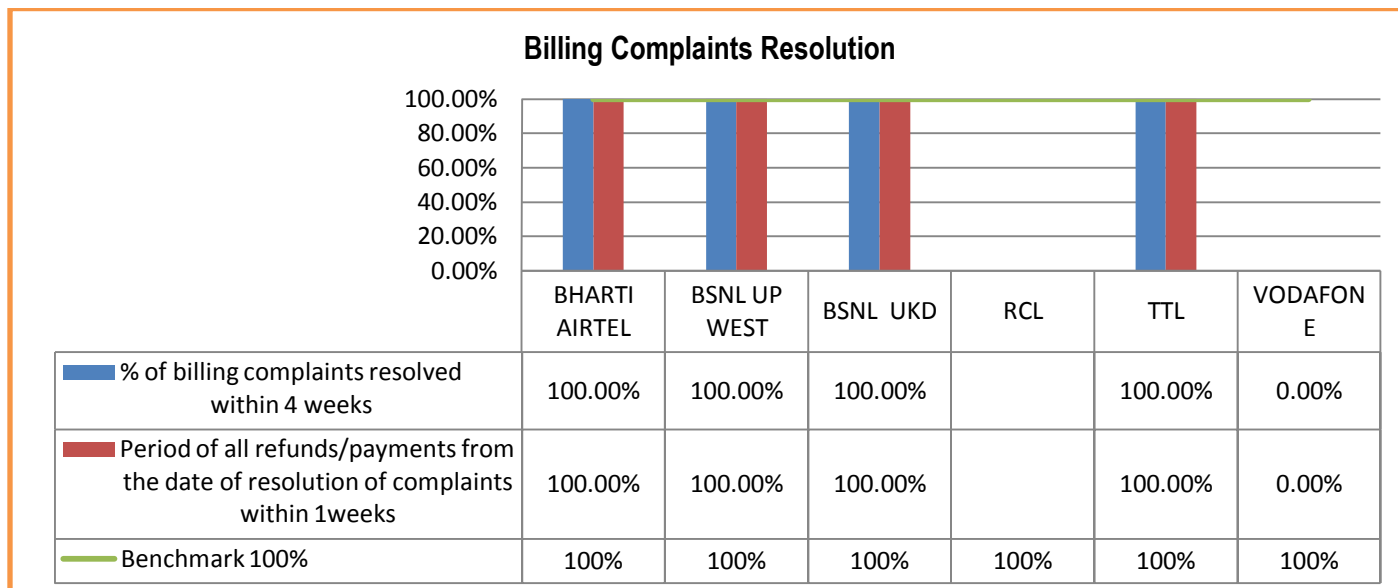
All Operators are meeting the benchmarks.

7) TERMINATION & CLOSURES:

Termination / Closures

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
Termination / Closures	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%
Time taken for refunds of deposit after closures	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Benchmark 100%	100%	100%	100%	100%	100%	100%
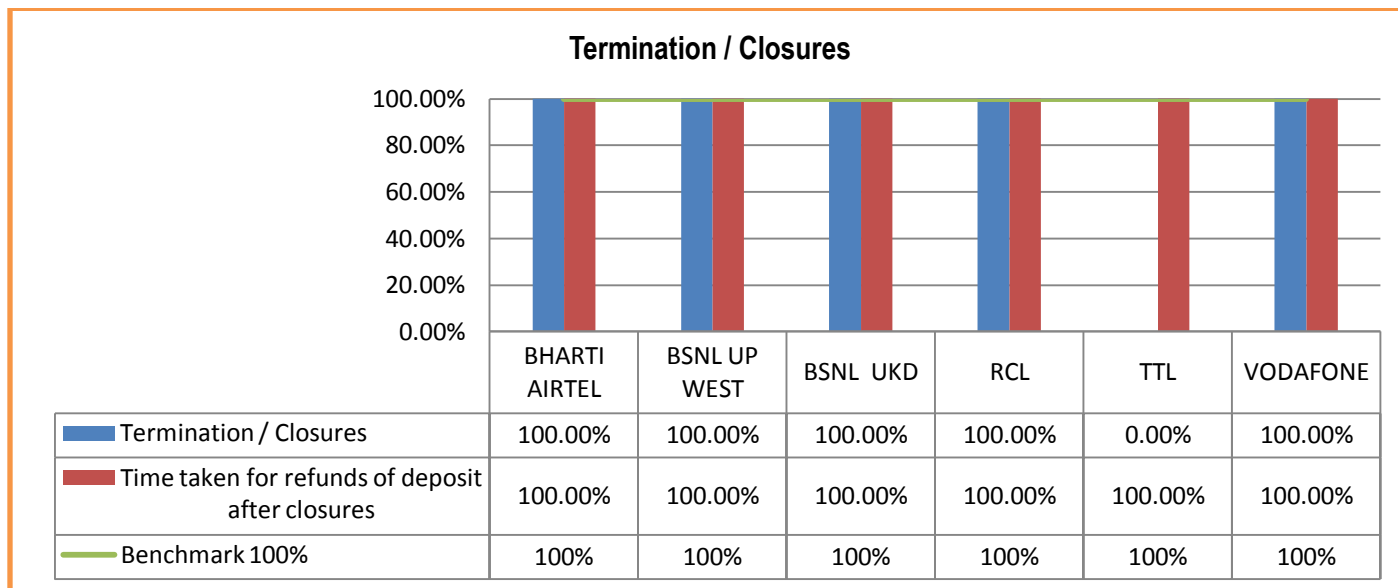
All Operators are meeting the benchmarks except TTL.

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

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

CCR (> 55%) & ASR (> 75%)

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
Quarterly	59.14%	61.21%	57.81%	92.48%	100.00%	98.26%
Live	56.17%	58.65%	57.93%	91.23%	100.00%	95.03%
Benchmark > 55%(CCR) & > 75%(ASR)	55%	55%	55%	75%	55%	55%
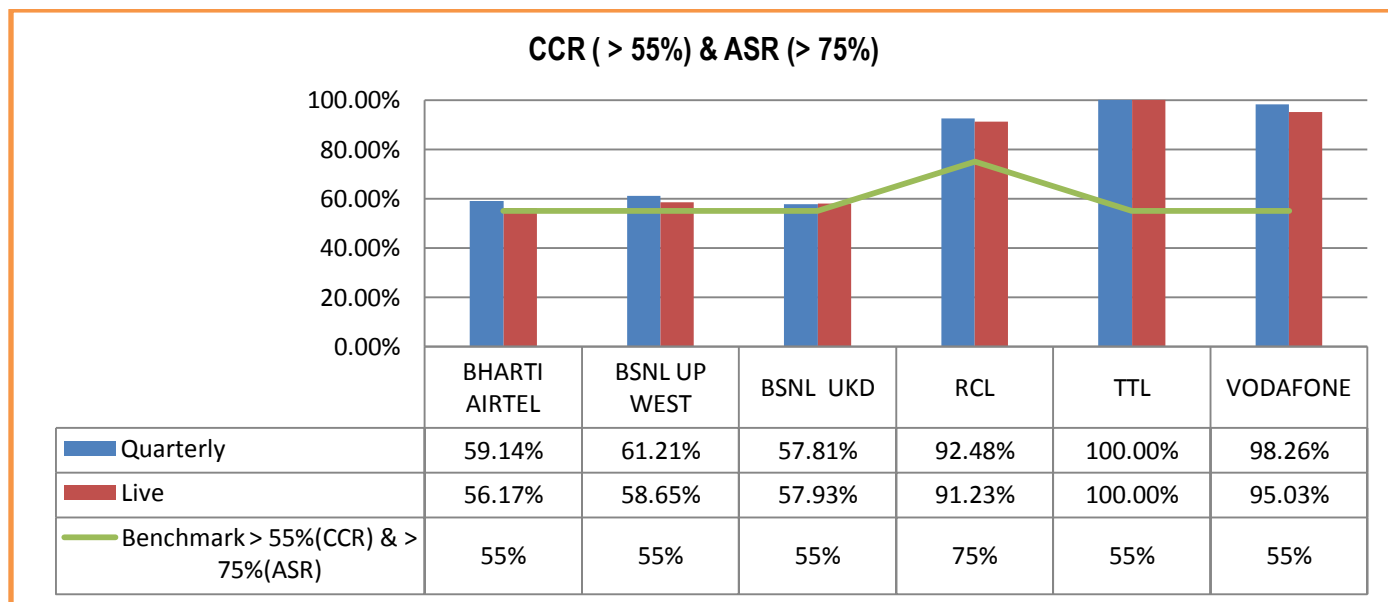
All Operators are meeting the benchmarks.

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

Response Time to customer for assistance Accessibility of Call centre/customer Care

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
Quarterly	100.00%		96.94%	96.13%	75.00%	99.78%
Live	100.00%		96.69%	95.33%	100.00%	99.69%
Benchmark ≥95%	95%	95%	95%	95%	95%	95%
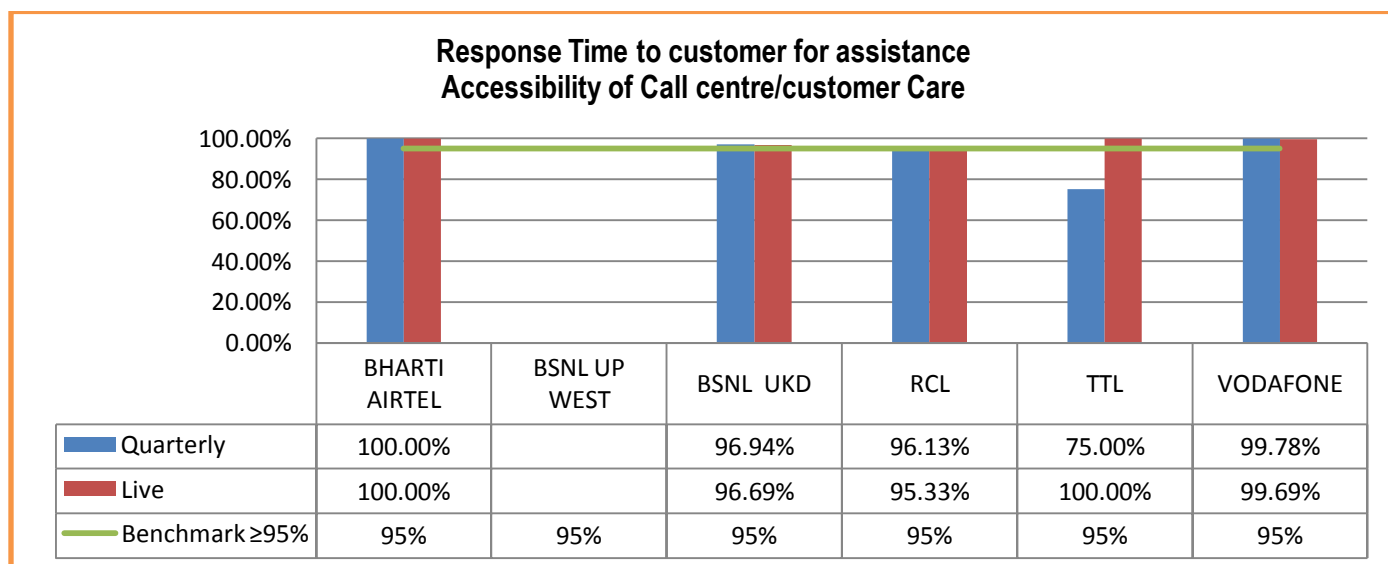
All Operators are meeting the benchmarks except TTL. BSNL UP (W) has not provided data for this parameter.

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

Response Time to customer for assistance calls answered by operator (voice to voice) within 60 seconds

	BHARTI AIRTEL	BSNL UP WEST	BSNL UKD	RCL	TTL	VODAFONE
Quarterly	99.32%		75.07%	96.13%	100.00%	98.06%
Live	99.29%		87.50%	100.00%	100.00%	99.85%
Benchmark ≥90%	90%	90%	90%	90%	90%	90%
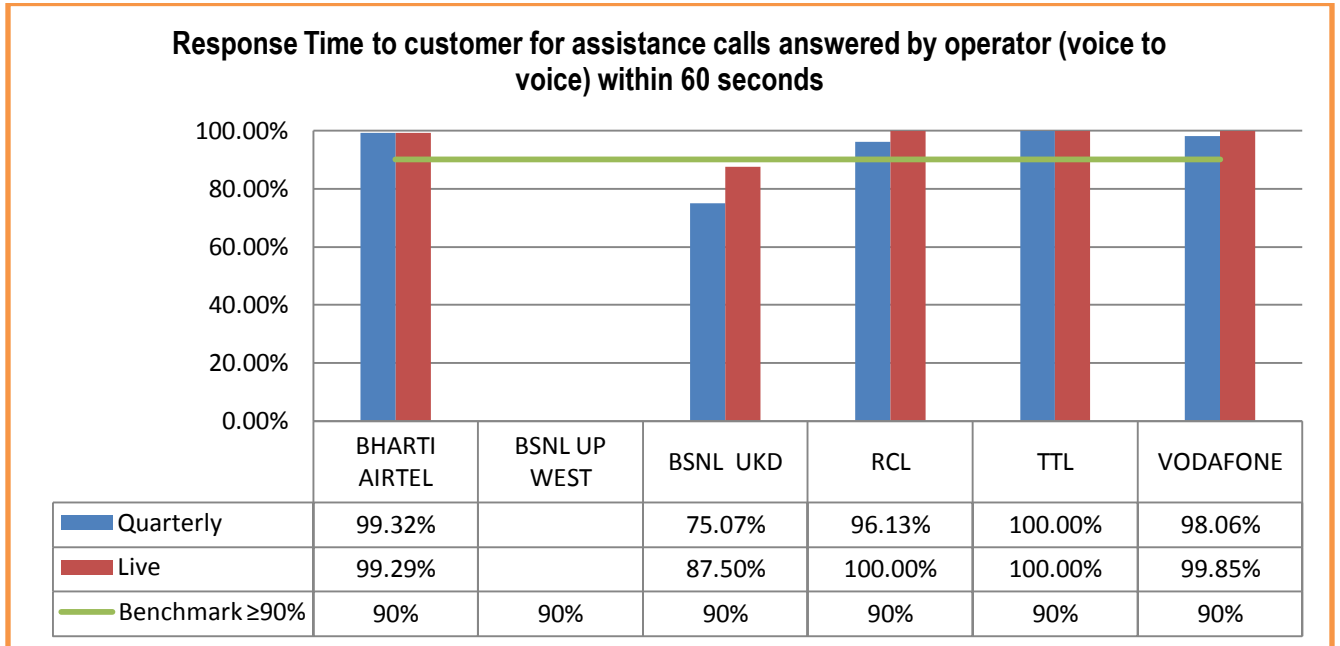
All Operators are meeting the benchmarks except BSNL Uttarakhand (Quarterly and live). BSNL UP (W) has not provided data for this parameter.

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, **51** no. of BSNL (UP-W) PoPs i.e. 5% of 1007 BSNL (UP-W) PoPs / Exchanges and **24** no. of BSNL (Uttarakhand) i.e. 5% of 466 BSNL (Uttarakhand) PoPs / Exchanges, spread over 10% SDCAs have been taken for QoS audit. Location of PoPs, covered for QoS audit is attached as **Annex-2**.

Discussion with the private broadband service providers reveled 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	36	BHARTI AIRTEL LIMITED, MEERUT, UP
2	BSNL UPW	1007 (51 POPS COVERED)	AGRA, MEERUT, NOIDA and MUZZAFARNAGAR SSA
3	BSNL UK	466 (24 POPS COVERED)	DEHRADUN, NAINITAL SSA
4	NSTPL	19	NSTPL, AGRA, UP
5	RCL	1	DAKC, MUMBAI
6	PACENET	5	BROADBAND PACENET INDIA PVT LTD. S-23,AJAY ENCLAVE ,NEAR SUBHASH NAGAR METRO STATION,NEW DELHI 110018.
7	TIKONA	8	TIKONA, MEERUT, UP

10.1 QUARTERLY MEASURMENT DATA FOR BROADBAND SERVICE PROVIDERS

	AVERAGED QUARTERLY (JULY TO SEPT 14) AUDIT DATA FOR BROADBAND SERVICES – UP(W) CIRCLE									
	Broadband Audit Data	**Bench-mark**	**Circle Name**	**BHARTI AIRTEL**	**PACENET**	**BSNL UPW**	**BSNL UKD**	**NSTPL**	**RCL**	**TIKONA**
S/N	**Name of Parameter**			**BROADBAND SERVICE PROVIDERS**						
1	**Service Provisioning/Activation Time**									
	A) No of connections registered during the period		UPW	674	6	702	504	7	52	157
	B) Total number of connections provided within 15 days of registration on demand during the period		UPW	674	6	702	504	7	52	157
	C) % age of connections provided within 15 days of registration on demand (subject to technical feasibility)	<15 days	UPW	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
	D)Total number of connections provided after 15 days of registration on demand		UPW	0	0	0	0	0	0	0
	E) %age of connections provided after 15 days of registration on demand		UPW	0.00%	0.00%	0.00%	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.	UPW	0	0	0	0	0	0	0
2	**Fault Repair/Restoration Time**									
	A) Total number of faults registered during the period		UPW	1826	111	4141	1857	143	0	777
	B) Total number of faults repaired by next working day		UPW	1747	111	3778	1558	131	0	701
	C) % age of faults repaired by next working day	>90%	UPW	95.67%	100.00%	91.23%	**83.90%**	91.61%	100.00%	90.22%
	D) Total number of faults repaired within three working days		UPW	1822	111	4077	1780	142	0	771
	E)% age of faults repaired within three working days	≥99%	UPW	99.78%	100.00%	**98.45%**	**95.85%**	99.30%	100.00%	99.23%
3	**Rent Rebate**									
	A) Faults Pending for > 3 working days and < 7 working days: (Rebate equivalent to 7 days of minimum monthly charge or equivalent usage allowance)		UPW	4	0	0	0	0	0	5
	B) Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)		UPW	0	0	0	1	0	0	4

	AVERAGED QUARTERLY (JULY TO SEPT 14) AUDIT DATA FOR BROADBAND SERVICES – UP(W) CIRCLE									
	Broadband Audit Data	**Bench-mark**	**Circle Name**	**BHARTI AIRTEL**	**PACENET**	**BSNL UPW**	**BSNL UKD**	**NSTPL**	**RCL**	**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)		UPW	0	0	0	5	0	0	1
4	**Billing Performance**									
	A) Total bills generated during period		UPW	42357	236	67427	79576	93	3	57
	B) Total complaints received from customers/ Bills disputed		UPW	1	0	5	9	0	0	0
	C) Billing complaints per 100 bills issued	<2%	UPW	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%
	D) Total number of complaints resolved in 4 weeks from date of receipt		UPW	1	0	5	9	0	0	0
	E) %age billing complaints resolved in 4 weeks	*100%*	UPW	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		UPW	22	0	3	311	2	0	1
	G) Total number of cases where refund was made in <60 days		UPW	22	0	3	311	2	0	1
	H) Percentage cases in which refund received within 60 days	*100%*	UPW	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
5	**Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)**									
	A) Total number of calls received by the operator		UPW	5571	111	93655	19744	NA	88084	6807
	B) Total number of calls answered by the operator within 60 seconds		UPW	5358	101	87852	9100	NA	83635	4158
	C) % age calls answered by the operator in 60 seconds	>60%	UPW	96.18%	90.99%	93.80%	**46.09%**	NA	94.95%	61.08%
	D) Total number of calls answered by the operator within 90 seconds		UPW	5444	111	91065	9844	NA	87346	5471
	E) % age calls answered by the operator within 90 seconds	>80%	UPW	97.72%	100.00%	97.23%	**49.86%**	NA	99.16%	80.37%
6	**Bandwidth Utilization/ Throughput:**									
	A) POP to ISP Gateway Node [Intra-network] Link(s)									
6.1	A) Total Bandwidth Available at the link for the period days		UPW	11244	285	7168	12888	60	6000	1277
	B) Total Bandwidth utilized during the period during TCBH (In Mpbs)		UPW	3489.32	139.60	3041	8575.26	38.61	1600.00	995.13
	C) % age Bandwidth utilized during the period	<80%	UPW	31.03%	48.98%	42.43%	66.54%	64.35%	26.67%	77.93%
	B) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity									
6.2	A) Total number of upstream links for International connectivity		UPW	NA	NA	NP	NA	NA	30	18

S/N	Broadband Audit Data — Name of Parameter	Bench-mark	Circle Name	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
				BROADBAND SERVICE PROVIDERS						
	AVERAGED QUARTERLY (JULY TO SEPT 14) AUDIT DATA FOR BROADBAND SERVICES – UP(W) CIRCLE									
	B) Number of Links having Bandwidth utilization > 90% during TCBH		UPW	NA	NA	NP	NA	NA	0	0
	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		UPW	NA	NA	NP	NA	NA	282000	850
	D) Total international bandwidth utilization during peak hours (TCBH) in Mbps		UPW	NA	NA	NP	NA	NA	125559	629
	E) %age International Bandwidth utilization during peak hours (TCBH)	*<80%*	UPW	NA	NA	NP	NA	NA	44.52%	74.00%
6.3	**Broadband Connection Speed (download) - from ISP Node to User**									
	A) Total committed download speed to the sample subscribers (In Mpbs)		UPW	5.25	NP	NP	NP	NP	5.76	8.00
	B) Total average download speed observed for the sample subscribers during TCBH (In Mbps)		UPW	5.76	NP	NP	NP	NP	5.33	7.80
	C) % age subscribed speed available to the subscriber during TCBH	*>80%*	UPW	109.71%	NP	NP	NP	NP	92.53%	97.50%
7	**Service Availability/Uptime**									
	A) Total operational Hours		UPW	2208	2208	2208.00	2208.00	NP	2208.00	2208
	B) Total downtime (In hours)		UPW	0.20	1.00	0.00	0.00	NP	0.00	1.64
	C) Total time when the service was available (In Hrs)		UPW	2207.80	2207.00	2208.00	2208.00	NP	2208.00	2206.36
	D) % age of Service availability uptime	*>98%*	UPW	99.99%	99.95%	100.00%	100.00%	NP	100.00%	99.93%
8	**Packet Loss**									
	A) Total number of ping packets transmitted		UPW	3000	NP	NP	NP	NP	91000	3000
	B) Total number of ping packets lost		UPW	0	NP	NP	NP	NP	626	0
	C) % age packet loss	*<1%*	UPW	0.00%	NP	NP	NP	NP	0.69%	0.00%
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		UPW	3000	NP	NP	NP	NA	3000	NA
	B) Total round trip time for all the ping packets transmitted during the period		UPW	97300	NP	NP	NP	NA	78.50	NA
	C) Average round trip tip time for all the ping transmitted	*<120 ms*	UPW	97.30	NP	NP	NP	NA	26.17	NA
	Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)									
9.2	A) Total number of ping packets transmitted		UPW	3000	NP	NP	NP	NA	3000	NA
	B) Total round trip time for all the ping packets transmitted during the period		UPW	233000	NP	NP	NP	NA	103.90	NA
	C) Average round trip tip time for all the ping transmitted	*<350 ms*	UPW	233.00	NP	NP	NP	NA	34.63	NA
9.3	**Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)**									
	A) Total number of ping packets transmitted		UPW	NA	NA	NA	NA	NA	NA	NA

AVERAGED QUARTERLY (JULY TO SEPT 14) AUDIT DATA FOR BROADBAND SERVICES – UP(W) CIRCLE										
Broadband Audit Data		**Bench-mark**	**Circle Name**	**BHARTI AIRTEL**	**PACENET**	**BSNL UPW**	**BSNL UKD**	**NSTPL**	**RCL**	**TIKONA**
S/N	**Name of Parameter**			**BROADBAND SERVICE PROVIDERS**						
	B) Total round trip time for all the ping packets transmitted during the period		UPW	NA	NA	NA	NA	NA	NA	NA
	C) Average round trip tip time for all the ping transmitted	<800 ms	UPW	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 (WEST) CIRCLE										
3 days live Broadband Audit Data		**Bench-mark**	**Circle Name**	**BHARTI AIRTEL**	**PACENET**	**BSNL UPW**	**BSNL UKD**	**NSTPL**	**RCL**	**TIKONA**
S/N	**Name of Parameter**			**BROADBAND SERVICE PROVIDERS**						
1	**Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)**									
	A) Total number of calls received by the operator		UPW	264	14	2557	543	NA	3051	184
	B) Total number of calls answered by the operator within 60 seconds		UPW	249	8	2373	395	NA	2819	139
	C) % age calls answered by the operator in 60 seconds	>60%	UPW	94.32%	**57.14%**	92.80%	72.74%	NA	92.40%	75.54%
	D) Total number of calls answered by the operator within 90 seconds		UPW	258	14	2474	395	NA	3051	165
	E) % age calls answered by the operator within 90 seconds	>80%	UPW	97.73%	100.00%	96.75%	**72.74%**	NA	100.00%	89.67%
2	**Bandwidth Utilization/ Throughput:**									
2.1	**POP to ISP Gateway Node [Intra-network] Link(s)**									
	A) Total Bandwidth Available at the link for the period days		UPW	10452	285	7168	22386	180	6000	1317
	B) Total Bandwidth utilized during the period during TCBH (In Mpbs)		UPW	3594.32	172.42	3741	1373	97.71	2700.90	954.82
	C) % age Bandwidth utilized during the period	<80%	UPW	34.39%	60.50%	52.20%	6.13%	54.28%	45.02%	72.50%
2.2	**ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity**									
	A) Total number of upstream links for International connectivity		UPW	NA	NA	NP	NA	NA	33	18
	B) Number of Links having Bandwidth utilization > 90% during TCBH		UPW	NA	NA	NP	NA	NA	0	0
	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		UPW	NA	NA	NP	NA	NA	312000	990
	D) Total international bandwidth utilization during peak hours (TCBH) in Mpbs		UPW	NA	NA	NP	NA	NA	209588.50	725.26
	E) %age International Bandwidth utilization during peak hours (TCBH)	<80%	UPW	NA	NA	NP	NA	NA	67.12%	73.26%
2.3	**Broadband Connection Speed (download) - from ISP Node to User**									
	A) Total committed download speed to the sample subscribers (In mpbs)		UPW	3	7	5.33	6.50	18	3.00	8
	B) Total average download speed observed for the sample subscribers during TCBH (In Mpbs)		UPW	3.45	6.61	5.24	5.96	17.33	3.00	7.81

	C) % age subscribed speed available to the subscriber during TCBH	>80%	UPW	115.00%	94.43%	98.19%	91.62%	96.28%	100.00%	97.63%
3	**Packet Loss**									
	A) Total number of ping packets transmitted		UPW	3000	3000	1667	2000	3000	3000	3000
	B) Total number of ping packets lost		UPW	3	0	2	0	9	0	0
	C) % age packet loss	<1%	UPW	0.10%	0.00%	0.12%	0.00%	0.30%	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		UPW	3000	3000	3000	3000	NA	3000	NA
	B) Total round trip time for all the ping packets transmitted during the period		UPW	89.00	6.00	146	144	NA	3.46	NA
	C) Average round trip tip time for all the ping transmitted	<120 ms	UPW	29.99	2.00	48.84	48.10	NA	1.15	NA
	Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)									
4.2	A) Total number of ping packets transmitted		UPW	3000	9000	3000	5750	NA	9000	NA
	B) Total round trip time for all the ping packets transmitted during the period		UPW	285.00	628.00	728	948	NA	6.84	NA
	C) Average round trip tip time for all the ping transmitted	<350 ms	UPW	95.00	209.32	242.64	213.32	NA	2.28	NA
	Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)									
4.3	A) Total number of ping packets transmitted		UPW	NA	NA	NA	NA	NA	NA	NA
	B) Total round trip time for all the ping packets transmitted during the period		UPW	NA	NA	NA	NA	NA	NA	NA
	C) Average round trip tip time for all the ping transmitted	<800 ms	UPW	NA	NA	NA	NA	NA	NA	NA
5	**Service Availability/Uptime**									
	A) Total operational Hours		UPW	1011384	72	72	72	72	72	72
	B) Total downtime (In hours)		UPW	322.24	0.00	0	0	0.00	0.00	0.00
	C) Total time when the service was available (In Hrs)		UPW	1011061.76	72	72.00	72.00	72	72	72
	D) % age of Service availability uptime	>98%	UPW	99.97%	100.00%	100.00%	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.

Fault Repair/Restoration Time: With regards to this parameter, the performances of all Broadband service providers were within TRAI norms. Only **BSNL (UKD)** failed to meet the benchmark of parameter Fault repaired by next working day with its performance level as **83.90%** against the benchmark of >90%. **BSNL (UPW)** and **BSNL(UKD)** also lagged behind the benchmark of parameter Fault repaired within 3 days. They could achieve the performance level as **98.45% and 95.85%** respectively against the benchmark of > 99%.

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 except **BSNL (UKD). BSNL (UKD)** could not meet the benchmark for the parameter % **age calls answered by the operator within 60 seconds and within 90 seconds;** its achievement level was **46.09% and 49.86% respectively.** During live measurements**, Pacenet** and **BSNL (UKD)** also failed to meet the benchmark of this parameter having achieved their performance as **57.14%** and **72.74%** respectively.

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.

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.

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

Packet Loss and Network Latency: It was observed that almost all operators were measuring packet loss and latency by conducting ping test on random basis for their internal assessment. **Pacenet, BSNL and NSTPL** are not monitoring the packet loss so they did not provide any data for audit.
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 (UPW) and BSNL (UKD)** could not meet the benchmarks for parameters **Fault repairs and Call answered by Operator**. For rest of the parameters other services providers were meeting the benchmarks.*

10.4 CUSTOMER CARE / HELPLINE ASSESSMENT

LIVE CALLING TO CALL CENTRE FOR BROADBAND SERVICES								
Parameter	Circle Name	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Total No. of calls Attempted	UPW	100	100	100	100	NA	100	100
Total number of calls answered by the operator within 60 seconds	UPW	100	90	93	85	NA	100	88
% age calls answered by the operator in 60 seconds	UPW	100.00%	90.00%	93%	85%	NA	100.00%	88.00%
Total number of calls answered by the operator within 90 seconds	UPW	100	100	98	99	NA	100	90
% age calls answered by the operator within 90 seconds	UPW	100.00%	100.00%	98.00%	99%	NA	100.00%	90.00%

NA: Not Applicable, NSTPL not having call center.

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. Tikona could connect 90% calls within 90 seconds.

10.5 LIVE CALLING FOR BILLING COMPLIANTS

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS								
Parameter	Circle Name	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Total No. of calls Attempted	UPW	1	0	5	9	0	0	0
Total No. of calls Answered	UPW	1	0	5	9	0	0	0
Cases resolved within 4 weeks	UPW	1	0	5	9	0	0	0
%age of cases resolved	UPW	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Note: Pacenet, NSTPL and Tikona have prepaid model of billing so no billing complaints for these operators.

To test the Service Providers performance on billing related complaints and their resolutions, TUV-SUD auditors conducted a customer feedback calling the effected customers. However, in some cases, the number of customers contacted for verification was very less due to less number of billing complaints. 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:

Service Provisioning/Activation Time

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
100% cases in 15 days (subject to technical feasibility)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Benchmark <15 days	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
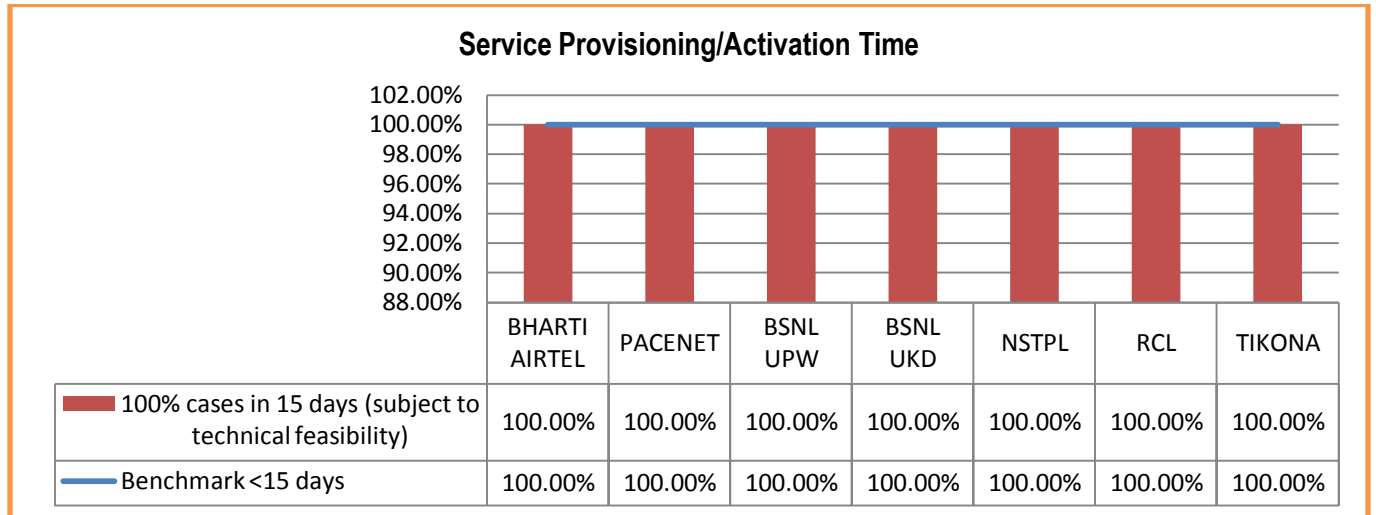
All Operators are meeting the benchmarks.

2. BILLING PERFORMANCE:

Billing Performance

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Billing complaints per 100 bills issued	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%
Benchmark <2%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
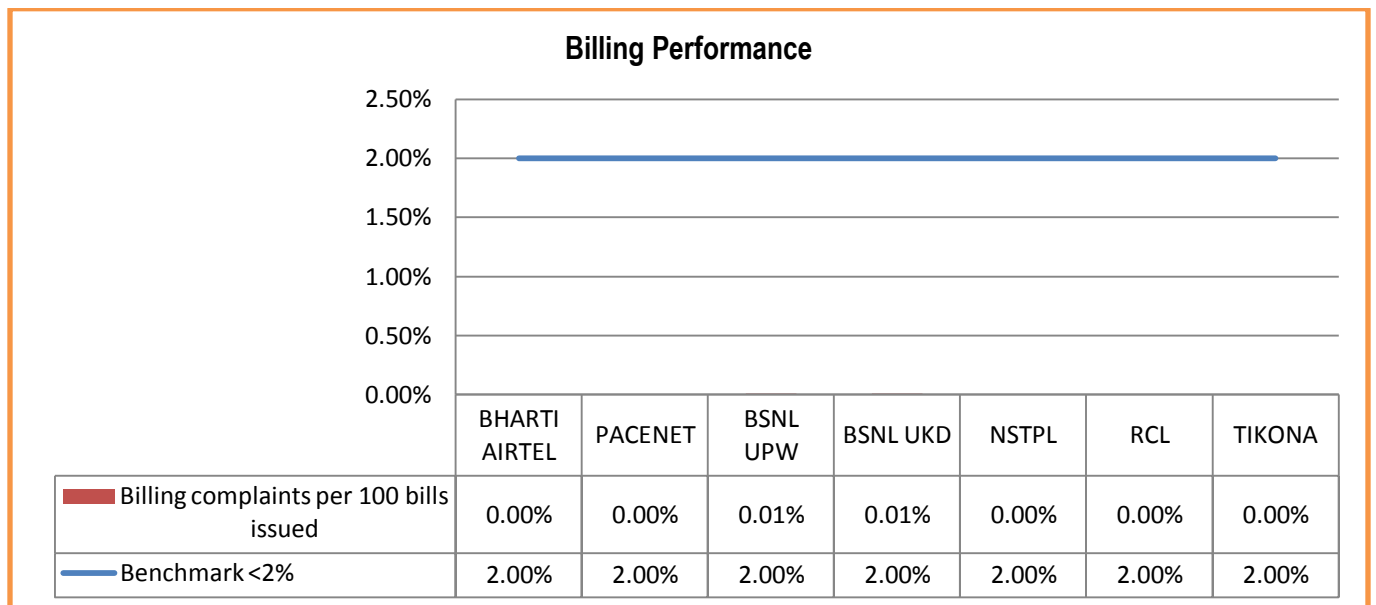
All Operators are meeting the benchmarks.

3. FAULTS REPAIR/RESTORATION TIME:

Faults Repair/Restoration Time

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Faults Repair/Restoration Time within 3 working day	99.78%	100.00%	98.45%	95.85%	99.30%	100.00%	99.23%
Benchmark ≥99%	99.00%	99.00%	99.00%	99.00%	99.00%	99.00%	99.00%
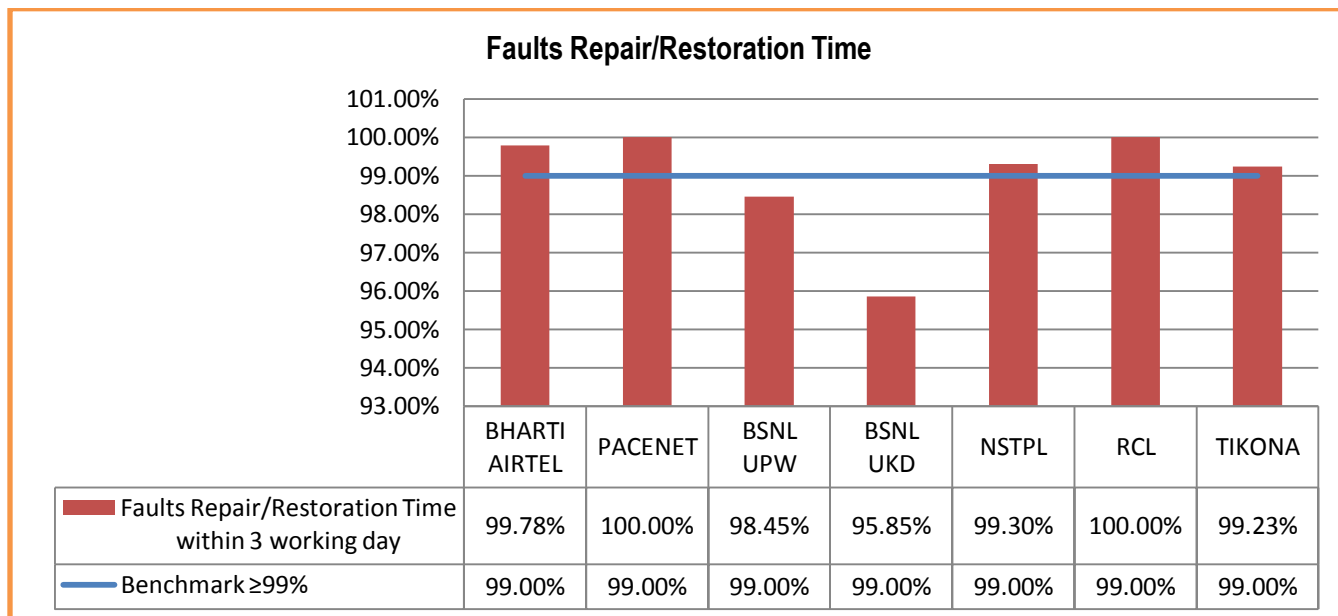
All Operators are meeting the benchmarks except BSNL (UPW & UKD).

4. COMPLAINT RESOLUTION:

Billing Compliant Resolved within 4 Weeks

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
%age of complaints resolved within 4 weeks	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Benchmark 100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
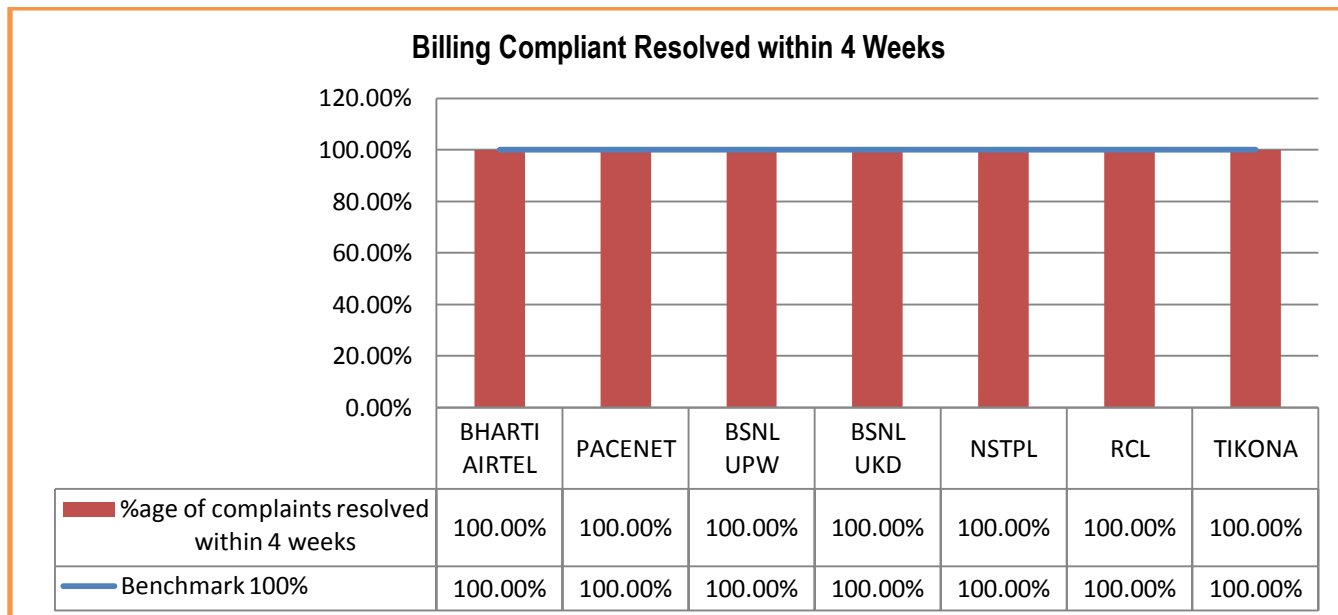
All Operators are meeting the benchmarks.

5. REFUND:

Refund

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Time taken for refund of deposits after closure (within 60 days)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Benchmark 100% (within 60 days)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
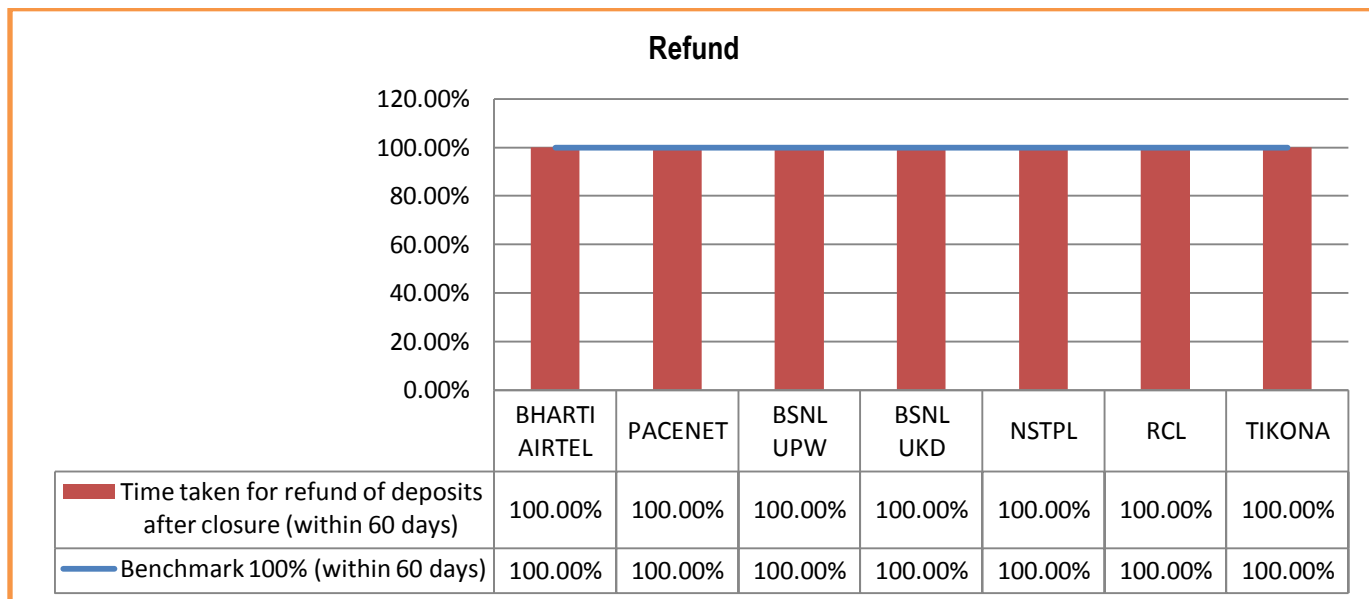
All Operators are meeting the benchmarks.

6. SERVICE AVAILABILITY/UPTIME:

Service Availability/Uptime (for all users) in %age

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Service Availability/Uptime (for all users) in %age	99.99%	99.95%	100.00%	100.00%		100.00%	99.93%
Benchmark >98%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
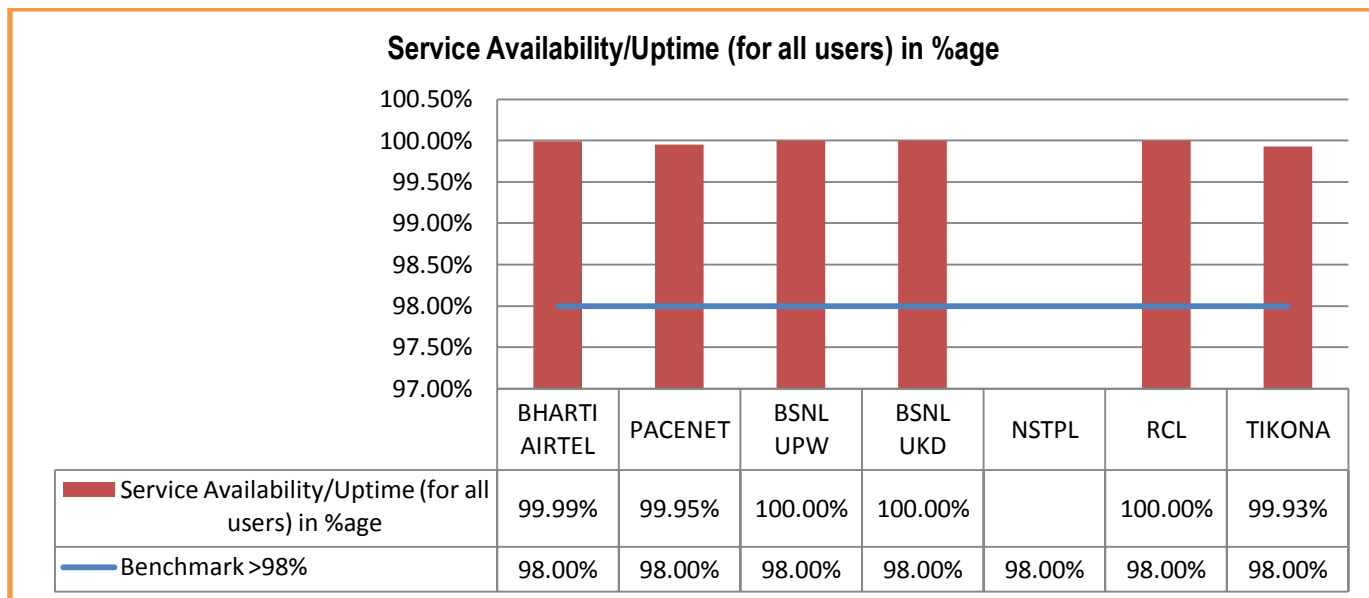
All Operators are meeting the benchmarks.

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

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

Bandwidth Utilization/ Throughput
POP to ISP Gateway Node [Intra-network] Link(s)

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Quarterly	31.03%	48.98%	42.43%	66.54%	64.35%	26.67%	77.93%
Live	34.39%	60.50%	52.20%	6.13%	54.28%	45.02%	72.50%
Benchmark <80%	80.00%	80.00%	80.00%	80.00%	80.00%	80.00%	80.00%
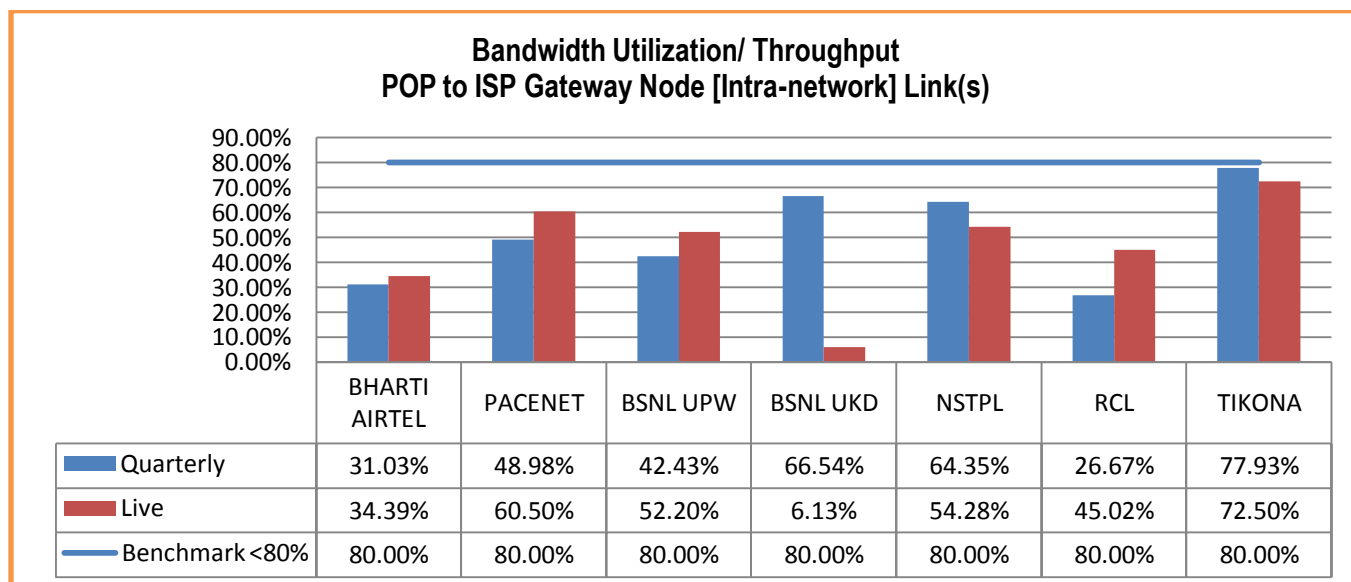
All Operators are meeting the benchmarks.

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

Bandwidth Utilization/ Throughput
ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Quarterly						44.52%	74.00%
Live						67.12%	73.26%
Benchmark <80%	80.00%	80.00%	80.00%	80.00%	80.00%	80.00%	80.00%
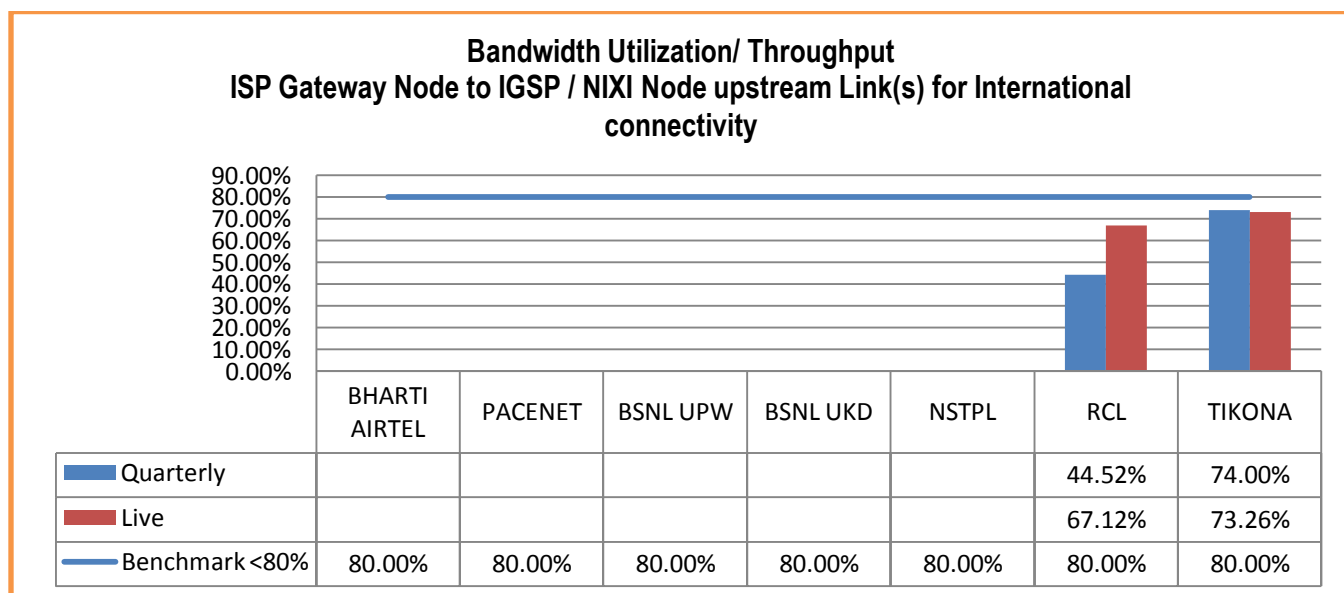
All Operators are meeting the benchmarks except TTL.

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

Broadband Connection Speed (download) - from ISP Node to User

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Quarterly	109.71%					92.53%	97.50%
Live	115.00%	94.43%	98.19%	91.62%	96.28%	100.00%	97.63%
Benchmark >80%	80.00%	80.00%	80.00%	80.00%	80.00%	80.00%	80.00%
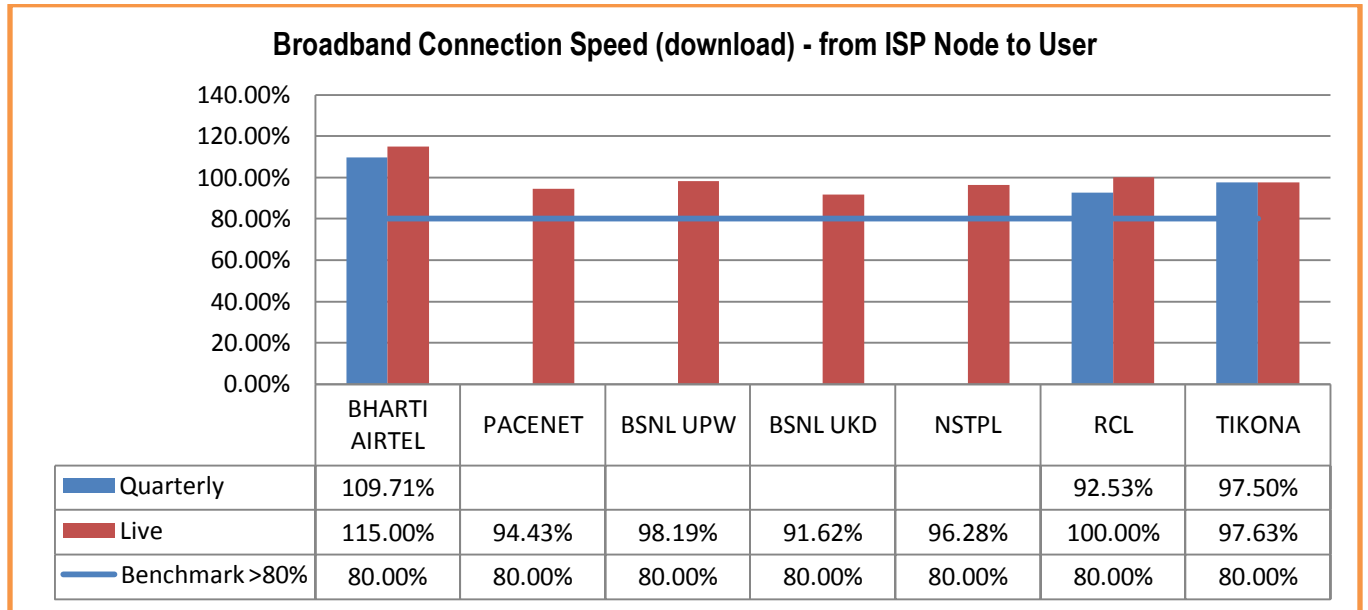
All Operators are meeting the benchmarks.

4. PACKET LOSS:

% of Packet loss

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Quarterly	0.00%					0.69%	0.00%
Live	0.10%	0.00%	0.12%	0.00%	0.30%	0.00%	0.00%
Benchmark <1%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
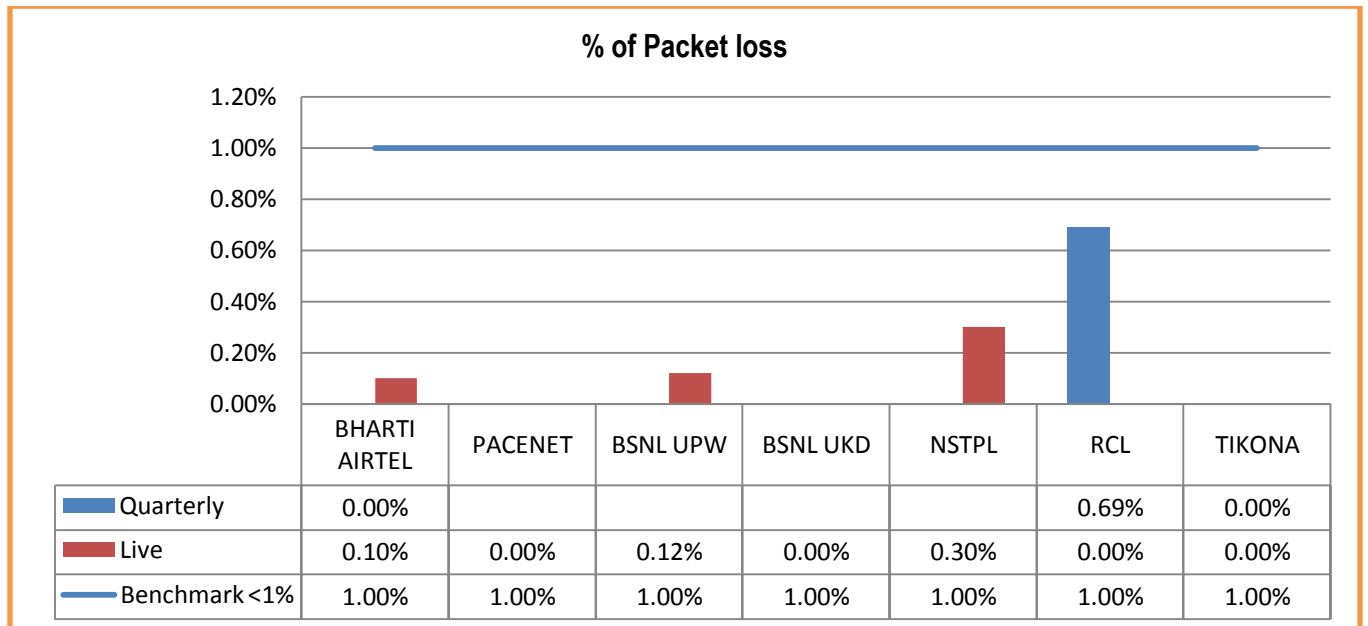
All Operators are meeting the benchmarks.

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

Network latency (for wired broadband access)
User reference point at POP/ISP Gateway node to IGSP/NIXI

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Quarterly	97.30					26.17	
Live	29.99	2.00	48.84	48.10		1.15	
Benchmark <120 ms	120	120	120	120	120	120	120
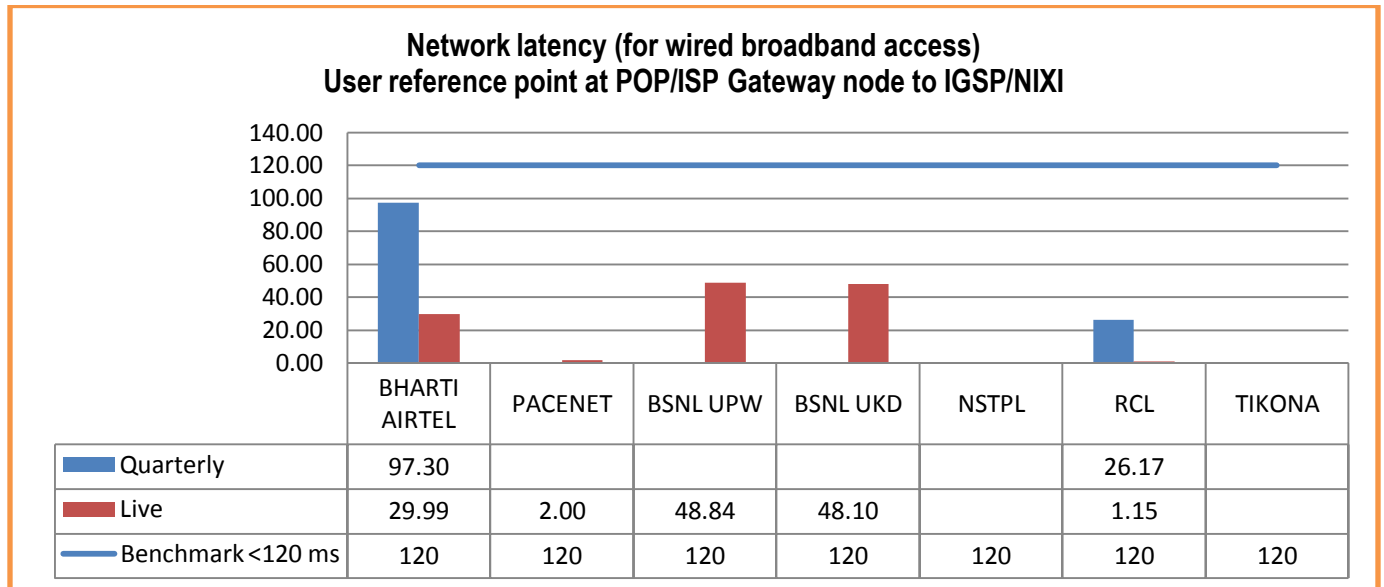
All Operators are meeting the benchmarks.

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

Network latency (for wired broadband access) User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Quarterly	233.00					34.63	
Live	95.00	209.32	242.64	213.32		2.28	
Benchmark <350 ms	350	350	350	350	350	350	350
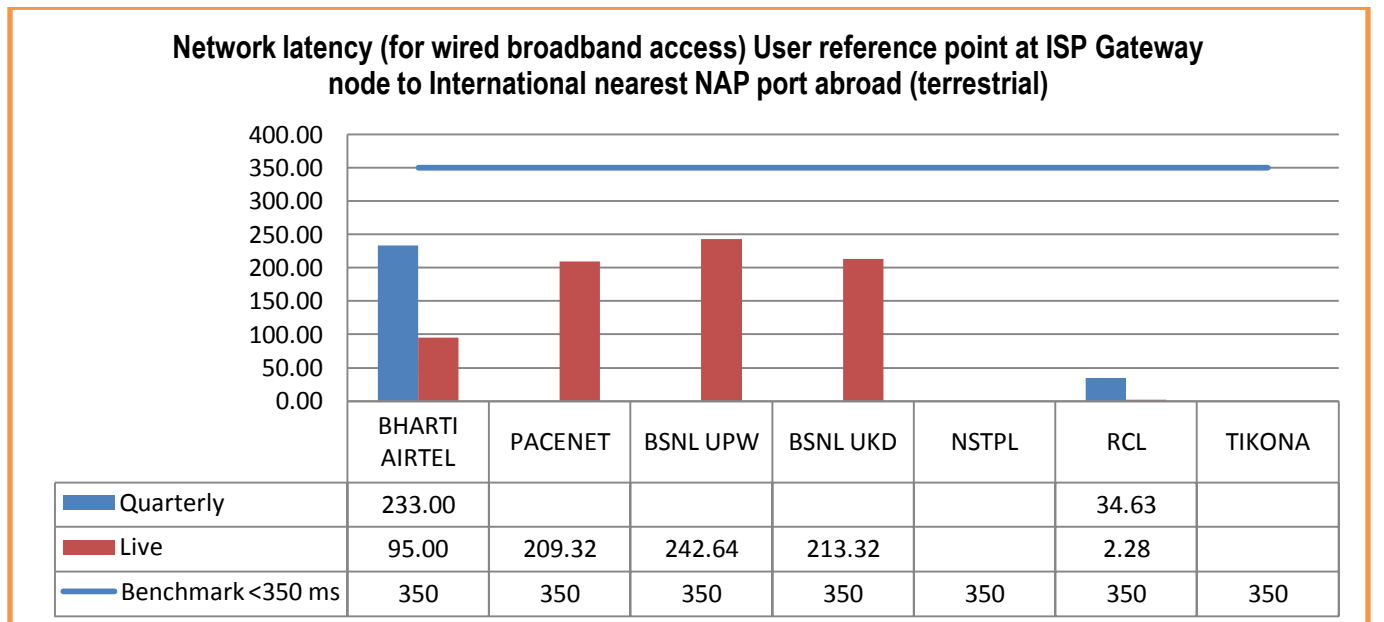
All Operators are meeting the benchmarks.

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

Response time to the customer for assistance % age of calls answered by operator (Voice to Voice within 60 sec.)

	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Quarterly	96.18%	90.99%	93.80%	46.09%		94.95%	61.08%
Live	94.32%	57.14%	92.80%	72.74%		92.40%	75.54%
Benchmark >60% (within 60 sec)	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%
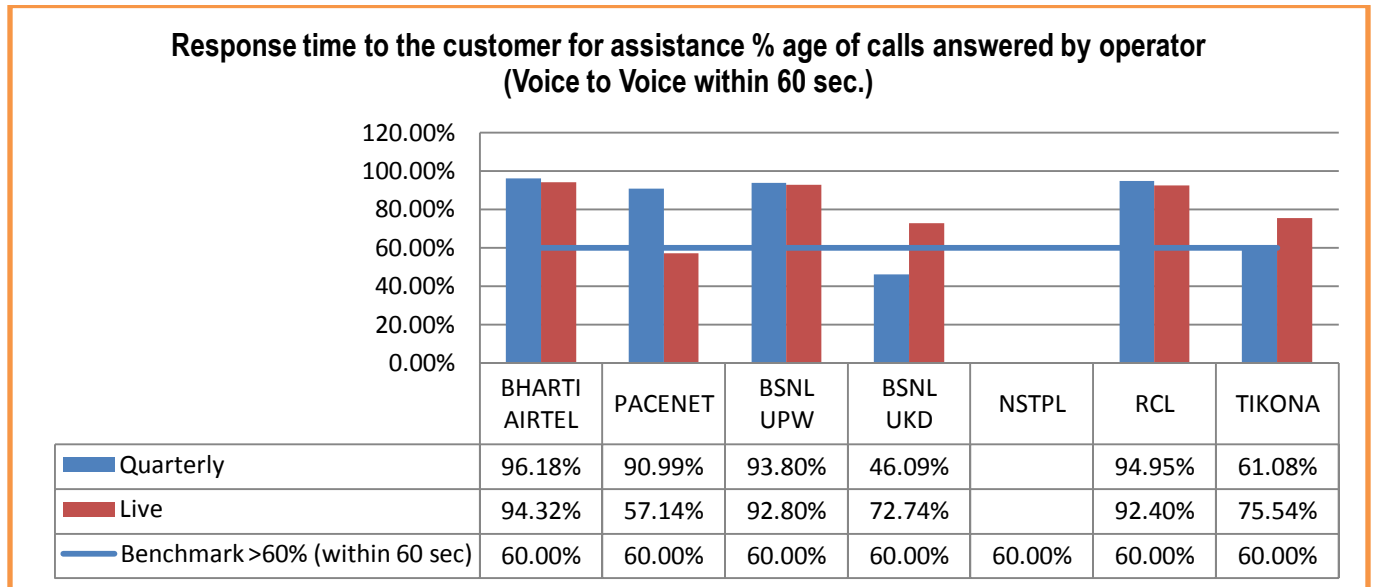
All Operators are meeting the benchmarks except BSNL UKD and Pacenet (3 days live).

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

Response time to the customer for assistance % age of calls answered by operator (Voice to Voice within 90 sec.)

|	BHARTI AIRTEL	PACENET	BSNL UPW	BSNL UKD	NSTPL	RCL	TIKONA
Quarterly	97.72%	100.00%	97.23%	49.86%		99.16%	80.37%
Live	97.73%	100.00%	96.75%	72.74%		100.00%	89.67%
Benchmark >80% (within 90 sec)	80.00%	80.00%	80.00%	80.00%	80.00%	80.00%	80.00%
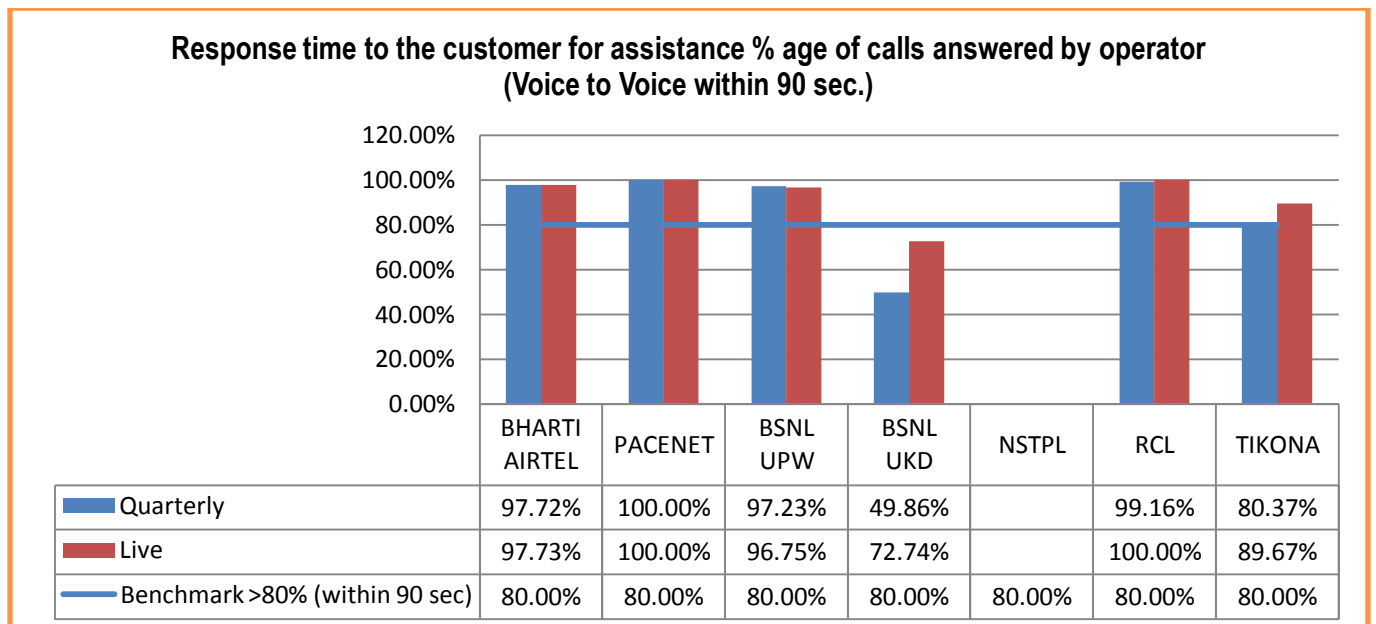
All Operators are meeting the benchmarks except BSNL UKD.

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	AGRA	AGRA	BARALI AHIR	0562-287	RURAL
2	BSNL			BICHPURI	0562-263	RURAL
3	BSNL			AGRA FORT	0562-225,226,245,246	URBAN
4	BSNL			SANJAY PLACE	0562-252,255,285	URBAN
5	BSNL			SHALIMAR EXT.	0562-288,258	URBAN
6	BSNL			ITAURA	0562-273	RURAL
7	BSNL		FIROZABAD	HAZRATPUR	05612-276	RURAL
8	BSNL			NAI BASTI	05612-232,233,234,260,261	URBAN
9	BSNL			NAGLA MIRZA	05612-280,281,282	URBAN
10	BSNL			NARKHI	05612-223	RURAL
11	BSNL			RAJA KA TAL	05612-221	RURAL
12	BSNL			SUHAG NAGAR	05612-230,231	URBAN
13	BSNL	NOIDA	GHAZIABAD	NOIDA SEC-24	0120-2444	URBAN
14	BSNL			NOIDA SEC-29	0120-2451	URBAN
15	BSNL			NOIDA SEC-33	0120-2505	URBAN
16	BSNL			NOIDA SEC-37	0120-2430	URBAN
17	BSNL			NOIDA SEC-39	0120-2501	URBAN
18	BSNL			BISRAKH	0120-2360	RURAL
19	BSNL			CHHOLAS	0120-2391	RURAL
20	BSNL			KASNA	0120-2340	RURAL
21	BSNL			LUHARLI	0120-2392	RURAL
22	BSNL			M.S.NAGAR	0120-2565	RURAL
23	BSNL		KHURJA	NEEMKA	05738-2700	RURAL
24	BSNL			NOIDA SEC-51	0120-2480	URBAN
25	BSNL	MEERUT	MEERUT	BOUNDARY ROAD	0121-266	URBAN
26	BSNL			BRAHMPURI OCB	0121-252	URBAN
27	BSNL			GANGANAGAR	0121-262	URBAN
28	BSNL			PARTAPUR	0121-2444	URBAN
29	BSNL			AZARADA	0121-2448	RURAL
30	BSNL			INCHOLI	0121-2887	RURAL
31	BSNL			PACHPERA	0121-2889	RURAL
32	BSNL			SISOLI	0121-2882	RURAL
33	BSNL		BAGHPAT	DHANORA	0121-2236	RURAL

S. N.	SERVICE PROVIDER	SSA NAME	SDCA NAME	EXCHANGE NAME	EXCHANGE CODE/LEVEL	EXCHANGE TYPE
34	BSNL			SAROORPUR KALAN	0121-2258	RURAL
35	BSNL			BEHSUMA	01233-289	URBAN
36	BSNL			HASTINAPUR	01233-280	URBAN
37	BSNL		MAWANA	MAWANA	01233-2751	URBAN
38	BSNL			ALIPUR MORNA	01233-2212	RURAL
39	BSNL			RATHORA KHURD	01233-2822	RURAL
40	BSNL			RAHAVTI	01233-2844	RURAL
41	BSNL			SHIV CHOWK	0131-243	URBAN
42	BSNL			MAHVEER CHOWK	0131-262	URBAN
43	BSNL		MUZAFFARN AGAR	PATEL NAGAR	0131-245	URBAN
44	BSNL			ROHANA	0131-2485	RURAL
45	BSNL			BASERA	0131-2483	RURAL
46	BSNL	MUZAFFARN AGAR		BAGHRA	0131-2481	RURAL
47	BSNL			BUDAHNA	01392-235	URBAN
48	BSNL			KANDHLA	01392-222	URBAN
49	BSNL			SHAHPUR	01392-256	URBAN
50	BSNL		BUDAHNA	GOYALA	01392-253	RURAL
51	BSNL			PARASOLI	01392-232	RURAL
52	BSNL			M.. P. R. SINGH	01392-264	RURAL
53	BSNL			PATELNAGAR	0135-262,272,252	URBAN
54	BSNL			LAXMIROAD	0135-267	URBAN
55	BSNL			BANJARAWALA	0135-2532	RURAL
56	BSNL		DEHRADUN	NATHUWALA (MIYAWALA)	0135-2685	RURAL
57	BSNL			NAYA GAON	0135-2693	RURAL
58	BSNL			IIP	0135-2660,2661	RURAL
59	BSNL	DEHRADUN		GUJRADA	0135-2607,2608	RURAL
60	BSNL			VIKASNAGAR	01360-250,251	URBAN
61	BSNL			CHAKRATA	01360-272	URBAN
62	BSNL			DHALIPUR	01360-224	RURAL
63	BSNL		CHAKRATA	BAROTIWALA	01360-233	RURAL
64	BSNL			RUDRAPUR	0135-231	RURAL
65	BSNL			KALSIGATE	01360-275	RURAL
66	BSNL			BAJOON	05942-240	RURAL
67	BSNL			JEOLIKOT	05942-224	RURAL
68	BSNL	NAINITAL	NAINITAL	MUKTESHWAR	05942-247	RURAL
69	BSNL			NAINITAL	05942-230-239	URBAN
70	BSNL			PADAMPURI	05942-246	RURAL

S. N.	SERVICE PROVIDER	SSA NAME	SDCA NAME	EXCHANGE NAME	EXCHANGE CODE/LEVEL	EXCHANGE TYPE
71	BSNL		HALDWANI	DAULATPUR	05946-240	RURAL
72	BSNL			LAMACHOUR	05946-238	RURAL
73	BSNL			RANIBAGH	05946-244	RURAL
74	BSNL			HALDWANI	05946-222,228	URBAN
75	BSNL		KHATIMA	KHATIMA	05943-250,251,252	URBAN
76	BSNL			PARTAPPUR	05943-258	RURAL
77	BHARTI AIRTEL	NA	NA	MEERUT	--	URBAN
78	RCL	NA	NA	DAKC, MUMBAI	--	URBAN
79	TTL	NA	NA	MEERUT	--	URBAN
80	VODAFONE	NA	NA	MEERUT	--	URBAN

Annex-2

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

S.N.	CIRCLE	SERVICE PROVIDER	POPS LOCATION	ACTIVITY
1	UPW	BSNL	BOUNDARY ROAD	BB AUDIT
2	UPW	BSNL	BRAHAMPURI (OCB)	BB AUDIT
3	UPW	BSNL	GANGA NAGAR	BB AUDIT
4	UPW	BSNL	BRAHAMPURI (E-10B)	BB AUDIT
5	UPW	BSNL	AZARADA	BB AUDIT
6	UPW	BSNL	INCHOLI	BB AUDIT
7	UPW	BSNL	PACHPERA	BB AUDIT
8	UPW	BSNL	SISOLI	BB AUDIT
9	UPW	BSNL	DHANORA	BB AUDIT
10	UPW	BSNL	SAROORPUR KALAN	BB AUDIT
11	UPW	BSNL	BEHSUMA	BB AUDIT
12	UPW	BSNL	HASTINAPUR	BB AUDIT
13	UPW	BSNL	MAWANA	BB AUDIT
14	UPW	BSNL	ALIPUR MORNA	BB AUDIT
15	UPW	BSNL	RATHORA KHURD	BB AUDIT
16	UPW	BSNL	RAHAVTI	BB AUDIT
17	UPW	BSNL	SHIV CHOWK	BB AUDIT
18	UPW	BSNL	MAHVEER CHOWK	BB AUDIT
19	UPW	BSNL	PATEL NAGAR	BB AUDIT
20	UPW	BSNL	ROHANA	BB AUDIT
21	UPW	BSNL	BASERA	BB AUDIT
22	UPW	BSNL	BAGHRA	BB AUDIT
23	UPW	BSNL	BUDAHNA	BB AUDIT
24	UPW	BSNL	KANDHLA	BB AUDIT
25	UPW	BSNL	SHAHPUR	BB AUDIT
26	UPW	BSNL	GOYALA	BB AUDIT
27	UPW	BSNL	PARASOLI	BB AUDIT
28	UPW	BSNL	M.. P. R. SINGH	BB AUDIT
29	UPW	BSNL	AG-S PLACE	BB AUDIT
30	UPW	BSNL	AG-FORT	BB AUDIT
31	UPW	BSNL	AG-SHALIMAR	BB AUDIT
32	UPW	BSNL	BARAULI AHIR	BB AUDIT
33	UPW	BSNL	BICHPURI	BB AUDIT
34	UPW	BSNL	ITAURA	BB AUDIT

S.N.	CIRCLE	SERVICE PROVIDER	POPS LOCATION	ACTIVITY
35	UPW	BSNL	FEROZABAD MAIN	BB AUDIT
36	UPW	BSNL	SUHAG NAGAR	BB AUDIT
37	UPW	BSNL	NAGLA MIRZA	BB AUDIT
38	UPW	BSNL	HAZRATPUR	BB AUDIT
39	UPW	BSNL	RAJA KA TAL	BB AUDIT
40	UPW	BSNL	NARKHI	BB AUDIT
41	UPW	BSNL	NOIDA SEC-24	BB AUDIT
42	UPW	BSNL	NOIDA SEC-29	BB AUDIT
43	UPW	BSNL	NOIDA SEC-33	BB AUDIT
44	UPW	BSNL	NOIDA SEC-37	BB AUDIT
45	UPW	BSNL	NOIDA SEC-39	BB AUDIT
46	UPW	BSNL	BISRAKH	BB AUDIT
47	UPW	BSNL	CHHOLAS	BB AUDIT
48	UPW	BSNL	KASNA	BB AUDIT
49	UPW	BSNL	LUHARLI	BB AUDIT
50	UPW	BSNL	M.S.NAGAR	BB AUDIT
51	UPW	BSNL	NOIDA SEC-51	BB AUDIT
52	UKND	BSNL	PATELNAGAR	BB AUDIT
53	UKND	BSNL	LAXMIROAD	BB AUDIT
54	UKND	BSNL	BANJARAWALA	BB AUDIT
55	UKND	BSNL	NATHUWALA (MIYAWALA)	BB AUDIT
56	UKND	BSNL	NAYA GAON	BB AUDIT
57	UKND	BSNL	IIP	BB AUDIT
58	UKND	BSNL	NATHUWALA (MIYAWALA)	BB AUDIT
59	UKND	BSNL	VIKASNAGAR	BB AUDIT
60	UKND	BSNL	CHAKRATA	BB AUDIT
61	UKND	BSNL	DHALIPUR	BB AUDIT
62	UKND	BSNL	BAROTIWALA	BB AUDIT
63	UKND	BSNL	RUDRAPUR	BB AUDIT
64	UKND	BSNL	KALSIGATE	BB AUDIT
65	UKND	BSNL	NTL	BB AUDIT
66	UKND	BSNL	JEOLIKOT	BB AUDIT
67	UKND	BSNL	MUKTESHWAR	BB AUDIT
68	UKND	BSNL	PADAMPURI (DHARI)	BB AUDIT
69	UKND	BSNL	BAJOON	BB AUDIT
70	UKND	BSNL	HALDWANI OCB (LOCAL)	BB AUDIT
71	UKND	BSNL	DAULATPUR	BB AUDIT
72	UKND	BSNL	RANIBAGH	BB AUDIT

S.N.	CIRCLE	SERVICE PROVIDER	POPS LOCATION	ACTIVITY
73	UKND	BSNL	LAMACHAUR	BB AUDIT
74	UKND	BSNL	KHATIMA	BB AUDIT
75	UKND	BSNL	PRATAP PUR (KTM)	BB AUDIT
76	UPW	BHARTI-AIRTEL	MEERUT	BB AUDIT
77	UPW	RCL	DAKC-MUMBAI	BB AUDIT
78	UPW	PACENET	DELHI	BB AUDIT
79	UPW	TIKONA	MEERUT	BB AUDIT
80	UPW	NSTPL	MUZZAFARNAGAR	BB AUDIT