



**Audit & Assessment of Quality of Service
Of
Cellular Mobile Telephone Service
Basic Telephone (Wire line) Service
&
Broadband service
For
Telecom Regulatory Authority of India**

**West Zone – Madhya Pradesh & Chhattisgarh
Service Area
(July 2015 – September 2015)**

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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 **MP&CG 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 6th October, 2006 on zonal basis for **North Zone and West Zone** comprising of the following Telecom Circles/Metro Service Areas:

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

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

The Audit exercise would assess the Quality of Service of telecom operators providing Basic (Wire line), Cellular Mobile (Wireless) and Broadband services by auditing the relevant QoS records maintained by the operators, conducting drive tests as well as live measurements and comparing them with quality of service benchmarks



stipulated by TRAI. The audit would be carried out by **TUV-SUD South Asia** every quarter across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. However, in respect of Basic telephone service (wireline) and Broadband service, a circle would be audited once in a year.

2. OBJECTIVES AND METHODOLOGY



2. OBJECTIVES AND METHODOLOGY

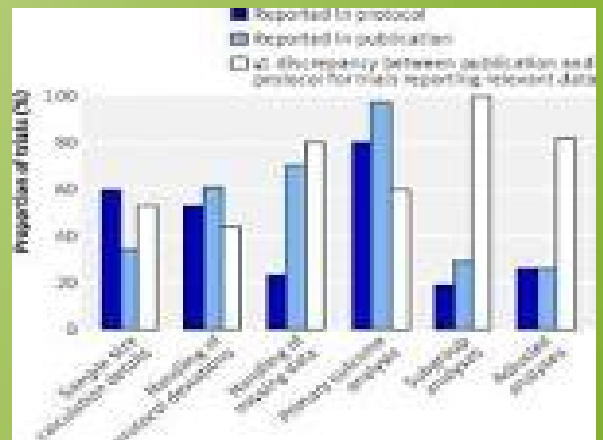
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

The audit and assessment of Quality of Service was carried out by **TUV SUD South Asia across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. Apart from this, QoS audit for Basic (Wire line) and Broadband Services was also undertaken for UP (E), UP (W), and MP&CG circles during the quarter July 2015 – September 2015.**

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 MP&CG circle

Sl. No.	Name of Service Provider	Dates of live measurement Audit			Audit Location
		July-15	August-15	September-15	
GSM Operators					
1	AIRCEL	12th to 14th July'15	15th to 17th Aug'15	4th to 6th Sept'15	Dishnet Wireless LTD.Office No. 2 ,Ground Floor Chinnar Incube Business Center, Hoshangabad Road Bhopal M.P. 462023
2	AIRTEL	08th to 10th July'15	8th to 10th Aug'15	5th to 7th Sept'15	47-49 Electronics Complex, Pardeshipura, Indore(M.P.) 452010
3	BSNL(MP)	14th to 16th July'15	18th to 20th Aug'15	20th to 22th Sept'15	BSNL Bhawan,Near paryawas bhawan Bhopal
4	BSNL(CG)	14th to 16th July'15	18th to 20th Aug'15	20th to 22th Sept'15	SDE QoS CM, 2nd floor Auto exchange BSNL Exchange near Lala Ganga Complex GE Road Raipur.
5	VIDEOCON	12th to 14th July'15	23rd to 25th Aug'15	6th to 8th Sept'15	Videocon Telecommunication Ltd. 2nd Floor Chinar Fortune City, Hoshangabad Road Bhopal (MP)
6	TATA GSM	13th to 15th July'15	21st to 23rd Aug'15	7th to 9th Sept'15	3rd floor, Chinaar Business center, Chinaar Fortune City, Hoshangabad Road,Bhopal M.P. 462023
7	IDEA	6th to 8th July'15	4th to 6th Aug'15	10th to 12th Sept'15	139-140, Electronics Complex, Pardeshi Pura, Indore(M.P.) 452010
8	RCOM GSM	25th to 27th July'15	14th to 16th Aug'15	7th to 9th Sept'15	7th floor, Industry House, AB Road, Indore
9	VODAFONE	14th to 16th July'15	13th to 15th Aug'15	7th to 9th Sept'15	Vodafone Spacetel Ltd, 2nd Floor Center Point New Market TT Nagr , Bhopal 462001
CDMA Operators					
10	RCOM CDMA	25th to 27th July'15	14th to 16th Aug'15	7th to 9th Sept'15	Reliance communication ltd, MCN Suvindh Vihar, Asharam Tiraha, Gandhi nagar, Narsing garh Bypass Road, Bhopal (M.P.) 462036
11	TATA CDMA	13th to 15th July'15	21st to 23rd Aug'15	7th to 9th Sept'15	3rd floor, Chinaar Business center, Chinaar Fortune City, Hoshangabad Road,Bhopal M.P. 462023

For all the above operators, audit was conducted in all the three months of the Quarter ended Sept. 2015.

The data generated by monthly PMR and 3-days live measurements audit for the period July 2015 to September 2015 has been successfully uploaded to the server located at TRAI premises.

3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES

The QoS audit for basic (wire line) service was to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles. Based on this criterion, the QoS audit for basic (wire line) service was undertaken for assessment of quarterly performance of the service providers for quarter ended September-2015. **Out of 3105 (Present no. of BSNL exchanges i.e. Madhya Pradesh-2537 & Chhattisgarh - 568), audit was done for 119 sampled (30-Urban and 89-Rural in Madhya Pradesh) and 28 (10-Urban and 18-Rural in Chhattisgarh) exchanges**, and one exchange each of Bharti Airtel, RCL, Vodafone & TTL. As MP&CG Circle is having 244 SDCAs in Madhya Pradesh and 96 SDCAs in Chhattisgarh, so 119 BSNL exchanges spread over 25 SDCAs in MP (10% of total 244 SDCAs) and 28 BSNL exchanges spread over 10 SDCAs in Chhattisgarh (10% of total 96 SDCAs) have been taken for audit.

3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS

TUV-SUD South Asia was required to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who were 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.

Discussion with the broadband service providers revealed that they are maintaining their networks data on centralized basis so audit has been done for the centralized data.

4. EXECUTIVE SUMMARY



4. EXECUTIVE SUMMARY

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

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

1. Cellular Mobile Service

(i) From **monthly audit**, it was concluded that on an average, performance of the operators in the MP&CG Service area was satisfactory for **Network Parameters**. However, the audit with respect to the parameter **‘Worst affected cells having > 3% TCH drop’** revealed that **Tata (GSM), Vodafone and Tata (CDMA)** failed to meet the benchmark of this parameter with their quarterly average performance as **3.63%, 4.30 and 7.69%** respectively.

(ii) From three days live measurement/assessment, it was revealed that the performance of the operators was satisfactory as they have largely met the benchmarks except for the parameter **‘Worst affected cells> 3 % TCH drops’**, which could not be complied with by **Tata (GSM), Vodafone and Tata (CDMA)** in all the three months of the quarter. Their average performance for the quarter was **3.83%, 4.07% and 7.37 %** respectively. The similar non-complied performance of **Tata GSM / Tata CDMA** was also observed during the monthly PMR audit.

(iii) With regard to the **Customer Service Quality Parameters**, it is revealed that all operators are in well compliance of the parameters on Metering and Billing Credibility, Termination of Service and Time taken for refunds. However, **only Vodafone** failed to meet the benchmark of Billing complaints for both post-paid and pre-paid with its performance as **0.16%**.

In regard to the parameter 'Response Time to the Customer for assistance', all service providers are in compliance with respect to the parameter **Accessibility of call center**. However, **RCOM (GSM), Tata (GSM) and RCOM (CDMA)** failed to meet the benchmark of parameter '**calls answered by Operators (voice to voice) within 90 seconds**' having their achieved level as **87.89%, 93.53% and 93.37% respectively**.

In case of this parameters also, **all service providers except Idea have settled** the closure/termination within the benchmark of 7 days. **Idea** remained non-complied with its performance as **99.42%**.

The results for **three days live measurements** reveal that all operators have met the benchmarks for the parameters '**Accessibility to call center**' (except **Aircel = 86.40%**), whereas **RCOM(GSM), Tata (GSM) and RCOM(CDMA)** could not meet the benchmark of parameter '**Call answered by operators (Voice to voice)**' with their performance as **91.46%, 93.97% and 88.74%** respectively.

(iv) On analyzing the overall performance of service providers on the basis of **Drive tests**, it was concluded that the service providers were in general meeting the benchmark except **BSNL** could not perform well on the parameters **Call drop rate** and '**Good Voice Quality**' in **Satna and Sahdol** SSAs. **BSNL** needs to improve its network in the interest of the consumers.

2. Wireline (Basic) Services:

The audit findings with regard to the Basic (wireline) service revealed that the performance of **BSNL** was remained non-complied with in respect of the parameters "**Fault Repair / Restoration Time**", "**Disputed Bills over bills issued (Post Paid)**" and "**Billing Complaints resolved within 4 weeks**", Whereas **Bharti Airtel & TTL** failed to achieve the benchmark of "**Calls answered by the operators (Voice to voice)**". Hence, the concern operators need to improve their services for these parameters.

3. Broadband Services: Parameter wise non compliance is suumerised as follows;

Fault Repair/Restoration Time: With regards to the fault related parameters, the performance of the service providers was within TRAI norms except for **BSNL**. **BSNL** failed to meet the benchmark of parameter **Fault repaired by next working day and within 3 days** with their performance as **60.29% and 96.47% respectively**.

Billing Performance: For this parameter the performance of the service providers was found well within the compliance benchmarks. However, in case of parameter **Billing Complaints resolved within 4 weeks**, **BSNL** could not meet the benchmark with their performance level as **94.39%** against the benchmark of 100%.

Regarding the parameter of **Refunds**, **BSNL** could not settle 100 % of cases within 60 days with its performance as **81.40%**.

Response Time to Customer for assistance by operator (Voice to Voice): Only **Airtel** could not meet the benchmark for the parameter “% age calls answered by the operator within 60 seconds”; and “% age calls answered by the operator within 90 seconds”; its achievement level was **54.83%** and **65.39%** respectively.

Live measurement: Airtel also failed to meet the benchmark for the same parameter during 3 days live measurement and its achievement level was **58.85% (Within 60 Sec.)**.

Bandwidth Utilization/ Throughput: 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 except **Broadband Packnet** could not meet the benchmark during live measurement for the parameter %age **Bandwidth utilization during the period (84.78%)**.

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	AIRTEL	September-15	20 Hrs-21 Hrs
2	AIRCEL	September-15	18 Hrs-19 Hrs
3	TATA GSM	September-15	20 Hrs-21 Hrs
4	BSNL (MP)	September-15	19 Hrs-20 Hrs
5	BSNL (CG)	September-15	19 Hrs-20 Hrs
6	IDEA CELLULAR	September-15	20 Hrs-21 Hrs
7	RCOM GSM	September-15	20 Hrs-21 Hrs
8	VIDEOCON	September-15	20 Hrs-21 Hrs
9	VODAFONE	September-15	19 Hrs-20 Hrs
CDMA Operators			
10	RCOM CDMA	September-15	20 Hrs-21 Hrs
11	TATA CDMA	September-15	20 Hrs-21 Hrs

The TCBH reported by all the service providers matched the network busy hour calculated by TUV auditors for the MP&CG circle.

5.1.2 SWITCHES/BSC/BTS DETAILS OF SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	No. of MSC + GMSC	No. of BSC	No. of BTS	NSS make	BSS make
GSM Operators						
1	AIRTEL	18	147	9566	NSN	NSN
2	AIRCEL	1	1	128	Huawei	Huawei
3	TATA GSM	4	26	2935	Huawei	Huawei
4	BSNL (MP)	9	83	3699	Alcatel	Alcatel
5	BSNL (CG)	5	46	1859	Alcatel	Alcatel
6	IDEA CELLULAR	35	76	10044	Ericsson	Ericsson
7	RCOM GSM	12	49	3979	Huawei, Ericsson	ZTE, Alcatel Lucent
8	VIDEOCON	1	10	1682	Huawei	Huawei
9	VODAFONE	8	51	5710	NSN	NSN
CDMA Operators						
10	RCOM CDMA	8	8	1806	Huawei, ZTE, Lucent	Lucent, Huawei
11	TATA CDMA	3	5	429	Huawei & Ericsson	Motorola & Huawei

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – JULY-15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES MP&CG CIRCLE – JULY 15 MONTH														
PMR Generation Data		Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter	GSM Operators								CDMA Operators				
Network Service Quality Parameter														
Network Availability														
1	a) BTS Accumulated Downtime	<=2%	July-15	0.15%	0.19%	0.05%	1.93%	1.65%	0.53%	0.34%	0.29%	0.35%	0.42%	0.08%
	b) Worst affected BTSs due to downtime	<=2%	July-15	0.16%	0.00%	0.00%	1.10%	1.99%	1.54%	0.15%	1.50%	1.66%	0.17%	0.23%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	July-15	99.61%	98.00%	98.64%	96.29%	95.72%	98.10%	98.86%	98.70%	99.51%	98.91%	98.62%
	b) SDCCH/PAGING Channel congestion	<=1%	July-15	0.04%	0.20%	0.04%	0.63%	0.81%	0.39%	0.12%	0.19%	0.08%	0.00%	0.00%
	c) TCH congestion	<=2%	July-15	0.51%	0.04%	0.03%	1.74%	1.46%	1.30%	0.17%	0.39%	0.49%	0.04%	0.45%
Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	July-15	0.89%	0.82%	0.66%	1.59%	1.51%	0.84%	0.52%	0.64%	0.84%	0.18%	0.54%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	July-15	2.05%	1.04%	3.10%	2.40%	2.79%	2.12%	0.03%	2.75%	2.98%	0.51%	7.10%
	c) Connections with good voice quality	>=95%	July-15	97.15%	99.49%	98.70%	NP	NP	96.93%	97.87%	98.15%	98.82%	99.80%	99.15%
4	No. of POI's having >=0.5% POI congestion		July-15	0	0	0	0	0	0	0	0	0	0	0

*NP: Data not provided: ALCATEL LUCENT Technology being used by BSNL and OMCR does not support the parameter "Connections with good voice quality", hence BSNL has not provided data for this parameter.

Note: Data not provided by RCOM (GSM & CDMA) during 1st July to 23rd July-15 due to TTI server issue.

5.1.4 QOS PERFORMANCE OF MONTHLY PMR – AUGUST 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - MP&CG CIRCLE – AUGUST 15 MONTH														
PMR Generation Data		Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators	
Network Service Quality Parameter														
Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Aug-15	0.14%	0.21%	0.03%	1.88%	1.72%	0.40%	0.19%	0.19%	0.21%	0.44%	0.00%
	b) Worst affected BTSs due to downtime	<=2%	Aug-15	0.07%	0.00%	0.00%	1.49%	1.99%	1.48%	0.30%	0.48%	0.90%	1.43%	0.00%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Aug-15	98.68%	97.91%	98.56%	96.55%	96.48%	97.38%	98.80%	98.74%	99.55%	99.28%	98.93%
	b) SDCCH/PAGING Channel congestion	<=1%	Aug-15	0.03%	0.33%	0.05%	0.55%	0.56%	0.43%	0.04%	0.13%	0.09%	0.00%	0.00%
	c) TCH congestion	<=2%	Aug-15	0.40%	0.00%	0.04%	1.58%	1.24%	1.26%	0.20%	0.35%	0.45%	0.00%	0.15%
Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Aug-15	0.75%	0.90%	0.73%	1.53%	1.43%	0.86%	0.49%	0.67%	0.88%	0.12%	0.67%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Aug-15	1.85%	1.04%	4.00%	2.42%	2.81%	2.12%	0.04%	2.69%	4.63%	0.59%	8.56%
	c) Connections with good voice quality	>=95%	Aug-15	96.94%	99.40%	98.66%	NP	NP	96.84%	97.85%	98.13%	98.74%	99.80%	99.09%
4	No. of POI's having >=0.5% POI congestion		Aug-15	0	0	0	0	0	0	0	0	0	0	0

*NP: Data not provided: ALCATEL LUCENT Technology being used by BSNL and OMCR does not support the parameter "Connections with good voice quality", hence BSNL has not provided data for this parameter.

5.1.5 QOS PERFORMANCE OF MONTHLY PMR – SEPTEMBER- 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - MP&CG CIRCLE – SEPTEMBER 15 MONTH														
PMR Generation Data		Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators								CDMA Operators		
Network Service Quality Parameter														
Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Sep-15	0.10%	0.41%	0.07%	1.92%	1.68%	0.35%	0.15%	0.15%	0.19%	0.41%	0.05%
	b) Worst affected BTSs due to downtime	<=2%	Sep-15	0.02%	0.00%	0.00%	1.43%	1.99%	1.47%	0.13%	0.42%	0.95%	0.72%	0.00%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Sep-15	98.83%	98.53%	98.53%	96.56%	96.63%	97.33%	98.75%	98.65%	99.61%	99.25%	98.58%
	b) SDCCH/PAGING Channel congestion	<=1%	Sep-15	0.04%	0.57%	0.05%	0.52%	0.61%	0.51%	0.02%	0.27%	0.16%	0.00%	0.00%
	c) TCH congestion	<=2%	Sep-15	0.36%	0.00%	0.05%	1.67%	1.28%	1.24%	0.23%	0.40%	0.39%	0.00%	0.57%
Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Sep-15	0.85%	1.25%	0.69%	1.57%	1.56%	0.83%	0.47%	0.69%	0.79%	0.11%	0.55%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Sep-15	2.02%	1.04%	3.79%	2.36%	2.77%	2.05%	0.03%	2.25%	5.28%	0.62%	7.41%
	c) Connections with good voice quality	>=95%	Sep-15	97.04%	99.43%	98.76%	NP	NP	96.86%	97.86%	98.15%	98.78%	99.83%	99.26%
4	No. of POI's having >=0.5% POI congestion		Sep-15	0	0	0	0	0	0	0	0	0	0	0

*NP: Data not provided: ALCATEL LUCENT Technology being used by BSNL and OMCR does not support the parameter "Connections with good voice quality", hence BSNL has not provided data for this parameter.

Note: Data not provided by RCOM GSM during 18th to 20th September 2015 due to TTI server issue.

5.1.6 QOS PERFORMANCE OF QUARTERLY PMR-AVERAGE OF QE- SEPTEMBER- 15 (JULY-AUG- SEPT 2015 MONTHS AUDITED DATA)

QUARTERLY QOS PERFORMANCE (AVERAGE OF THREE MONTHS) OF MP&CG CIRCLE														
PMR Generation Data		Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators	
Network Service Quality Parameter														
Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.13%	0.27%	0.05%	1.91%	1.68%	0.43%	0.23%	0.21%	0.25%	0.42%	0.04%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.08%	0.00%	0.00%	1.34%	1.99%	1.50%	0.19%	0.80%	1.17%	0.77%	0.08%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.04%	98.15%	98.58%	96.47%	96.28%	97.60%	98.80%	98.70%	99.56%	99.15%	98.71%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.04%	0.37%	0.05%	0.57%	0.66%	0.44%	0.06%	0.20%	0.11%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.42%	0.01%	0.04%	1.66%	1.33%	1.27%	0.20%	0.38%	0.44%	0.01%	0.39%
Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.83%	0.99%	0.69%	1.56%	1.50%	0.84%	0.49%	0.67%	0.84%	0.14%	0.59%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	1.97%	1.04%	3.63%	2.39%	2.79%	2.10%	0.03%	2.56%	4.30%	0.57%	7.69%
	c) Connections with good voice quality	>=95%	Quarterly	97.38%	99.44%	98.71%	NP	NP	96.88%	97.86%	98.14%	98.78%	99.81%	99.17%
4	No. of POI's having >=0.5% POI congestion		Quarterly	0	0	0	0	0	0	0	0	0	0	0

*NP: Data not provided: ALCATEL LUCENT Technology being used by BSNL and OMCR does not support the parameter "Connections with good voice quality", hence BSNL has not provided data for this parameter.

5.1.7 KEY FINDINGS ON MONTHLY PMR AUDIT REPORTS:

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

TUV conducted audit for cellular mobile operators based on **three stage audit / verification viz audit of the records, live measurements and drive tests. This exercise has been repeated every month for all 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 MP&CG circle, **all the operators were found meeting benchmark** on the above parameters.

- **Connection Establishment (Accessibility)**
 - i. Call Set-up Success Rate(CSSR)

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

All operators were complying with the benchmark 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 paging channel in CDMA system.

With respect to this parameter, the performance of the operators is quite satisfactory as **all operators met the TRAI specified benchmarks on the congestion parameters.** 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.**

- 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 operators except **Tata (GSM), Vodafone and Tata (CDMA)**, met the benchmark for this parameter. The quarterly average performance of **Tata (GSM), Vodafone and Tata (CDMA)** for this parameter was **3.63%, 4.30% and 7.69%** respectively.

- iii. Connections with good voice quality:

OMCR of BSNL does not support for the data of Voice Quality, so not provided the data for this parameter. The audit results for this parameter indicates that **all operators have met the bench mark** during the quarter.

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



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

5.2.1 LIVE MEASUREMENT DATA (3-DAYS) – JULY 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - MP&CG CIRCLE - JULY 15 MONTH														
Live measurement Data		Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators								CDMA Operators		
Network Service Quality Parameter														
Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Live data	0.15%	0.14%	0.02%	1.92%	1.35%	0.45%	0.52%	0.13%	0.22%	0.42%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	1.04%	0.27%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.62%	97.22%	98.68%	96.56%	95.25%	98.15%	98.84%	98.67%	99.47%	99.03%	98.36%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.04%	0.26%	0.03%	0.56%	0.78%	0.41%	0.14%	0.24%	0.09%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.47%	0.00%	0.02%	1.80%	1.78%	1.34%	0.17%	0.43%	0.53%	0.00%	0.81%
Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.88%	1.22%	0.68%	1.69%	1.67%	0.88%	0.53%	0.64%	0.82%	0.22%	0.49%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	2.15%	1.13%	3.43%	2.31%	2.70%	2.49%	0.03%	2.67%	3.57%	0.79%	6.56%
	c) Connections with good voice quality	>=95%	Live data	97.10%	99.25%	98.68%	NP	NP	97.07%	97.88%	98.07%	98.82%	99.81%	99.18%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0

*NP: Data not provided: ALCATEL LUCENT Technology being used by BSNL and OMCR does not support the parameter "Connections with good voice quality", hence BSNL has not provided data for this parameter.

5.2.2 LIVE MEASUREMENT DATA (3-DAYS) – AUGUST-15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - MP&CG CIRCLE - AUGUST 15 MONTH														
Live measurement Data		Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators	
Network Service Quality Parameter														
Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Live data	0.12%	0.14%	0.01%	1.09%	1.95%	0.65%	0.19%	0.14%	0.24%	0.42%	0.10%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.22%	1.04%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.66%	98.38%	98.47%	96.88%	96.69%	98.09%	98.83%	98.68%	99.61%	99.39%	98.75%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.02%	0.52%	0.02%	0.56%	0.51%	0.41%	0.01%	0.13%	0.06%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.36%	0.00%	0.04%	1.33%	1.81%	1.45%	0.18%	0.43%	0.39%	0.00%	0.22%
Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.67%	0.53%	0.72%	1.32%	1.78%	0.86%	0.48%	0.62%	0.90%	0.13%	0.56%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	1.65%	0.70%	4.29%	2.52%	2.45%	2.08%	0.03%	2.55%	3.30%	0.60%	8.38%
	c) Connections with good voice quality	>=95%	Live data	96.97%	98.62%	98.64%	NP	NP	96.90%	97.83%	98.10%	98.71%	99.76%	99.09%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0

*NP: Data not provided: ALGATEL LUCENT Technology being used by BSNL and OMCR does not support the parameter "Connections with good voice quality", hence BSNL has not provided data for this parameter.

5.2.3 LIVE MEASUREMENT DATA (3-DAYS) – SEPTEMBER 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES MP&CG CIRCLE - SEPTEMBER 15 MONTH														
Live measurement Data		Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators	
Network Service Quality Parameter														
Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Live data	0.10%	0.07%	0.03%	1.94%	1.07%	0.56%	0.15%	0.14%	0.14%	0.34%	0.00%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	1.03%	0.16%	0.24%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.82%	97.96%	98.48%	96.24%	96.17%	97.01%	98.80%	98.30%	99.59%	99.30%	99.02%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.04%	0.02%	0.04%	0.44%	0.59%	0.52%	0.02%	0.40%	0.11%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.47%	0.00%	0.06%	1.83%	1.32%	1.41%	0.27%	0.70%	0.41%	0.00%	0.02%
Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.75%	2.35%	0.68%	1.77%	1.57%	0.85%	0.48%	0.71%	0.82%	0.11%	0.54%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	1.87%	1.74%	3.77%	2.31%	2.82%	2.21%	0.02%	2.86%	5.33%	0.57%	7.18%
	c) Connections with good voice quality	>=95%	Live data	96.95%	99.85%	98.71%	NP	NP	96.82%	97.87%	98.06%	98.77%	99.83%	99.15%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0

*NP: Data not provided: ALCATEL LUCENT Technology being used by BSNL and OMCR does not support the parameter "Connections with good voice quality", hence BSNL has not provided data for this parameter.

5.2.4 QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT AUDITED DATA (AVERAGE OF JULY TO SEPTEMBER 2015 MONTHS)

QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT (AVERAGE OF THREE MONTHS) – MP&CG CIRCLE														
Live measurement Data		Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators								CDMA Operators		
Network Service Quality Parameter														
Network Availability														
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.12%	0.12%	0.02%	1.65%	1.46%	0.55%	0.29%	0.14%	0.20%	0.39%	0.04%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.00%	0.00%	0.00%	0.76%	0.49%	0.25%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.37%	97.85%	98.54%	96.56%	96.04%	97.75%	98.82%	98.55%	99.56%	99.24%	98.71%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.03%	0.27%	0.03%	0.52%	0.63%	0.45%	0.06%	0.26%	0.09%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.43%	0.00%	0.04%	1.65%	1.64%	1.40%	0.21%	0.52%	0.44%	0.00%	0.35%
Connection maintenance (Retainability)														
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.77%	1.37%	0.69%	1.59%	1.67%	0.86%	0.50%	0.66%	0.85%	0.15%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	1.89%	1.19%	3.83%	2.38%	2.66%	2.26%	0.03%	2.69%	4.07%	0.65%	7.37%
	c) Connections with good voice quality	>=95%	Quarterly	97.01%	99.24%	98.68%	NP	NP	96.93%	97.86%	98.08%	98.77%	99.80%	99.14%
4	No. of POI having >=0.5% congestion		Quarterly	0	0	0	0	0	0	0	0	0	0	0

*NP: Data not provided: ALCATEL LUCENT Technology being used by BSNL and OMCR does not support the parameter "Connections with good voice quality", hence BSNL has not provided data for this parameter.

5.2.5 KEY FINDING ON 3 DAYS LIVE MEASUREMENTS:

From three days live measurement/assessment, it was revealed that the performance of the operators was satisfactory as they have largely met the benchmarks except for the parameter '**Worst affected cells> 3 % TCH drops**', which could not be complied with by **Tata (GSM), Vodafone and Tata (CDMA)** in all the three months of the quarter. Their average performance for the quarter was **3.83%, 4.07% and 7.37 %** respectively. The similar non-complied performance of **Tata GSM / Tata CDMA** was also observed during the monthly PMR audit.

Thus, the assessment of QoS with regard to the parameter mentioned above during live measurement is a matter of concern for the operators who could not meet the benchmark.

5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES:

TABLE: 1

Detailed Network Data Assessment of Cellular Mobile Telephone Services- MP&CG Circle- July 15 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators
Network Service Quality Parameter														
Network Availability														
1	a) Total no. of BTSs in the licensed service area		July-15	9519	128	2935	3642	1859	9874	3985	1665	5738	1814	429
	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-15	10384	185	1070	52239	22800	38986	2952	3535	15104	1649	248
	c) BTS Accumulated Downtime	<=2%	July-15	0.15%	0.19%	0.05%	1.93%	1.65%	0.53%	0.34%	0.29%	0.35%	0.42%	0.08%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		July-15	15	0	0	40	37	152	6	25	95	3	1
	e) Worst affected BTSs due to downtime	<=2%	July-15	0.16%	0.00%	0.00%	1.10%	1.99%	1.54%	0.15%	1.50%	1.66%	0.17%	0.23%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	<=2%	July-15	99.61%	98.00%	98.64%	96.29%	95.72%	98.10%	98.86%	98.70%	99.51%	98.91%	98.62%
	b) SDCCH/PAGING Congestion	<=3%	July-15	0.04%	0.20%	0.04%	0.63%	0.81%	0.39%	0.12%	0.19%	0.08%	0.00%	0.00%
	c) TCH congestion	<=2%	July-15	0.51%	0.04%	0.03%	1.74%	1.46%	1.30%	0.17%	0.39%	0.49%	0.04%	0.45%
Connection Maintenance (Retainability)														
3	a) Call Drop Rate (CDR)	<=2%	July-15	0.89%	0.82%	0.66%	1.59%	1.51%	0.84%	0.52%	0.64%	0.84%	0.18%	0.54%
	b) Worst affected cells>3% TCH drop	<=3%	July-15	2.05%	1.04%	3.10%	2.40%	2.79%	2.12%	0.03%	2.75%	2.98%	0.51%	7.10%
	c) % of connections with good voice quality	>=95%	July-15	97.15%	99.49%	98.70%	NP	NP	96.93%	97.87%	98.15%	98.82%	99.80%	99.15%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		July-15	600	4	273	291	153	629	4	139	513	28	92
	e) Total no. of cells (Sector) in the licensed service area		July-15	29299	384	8803	12141	5487	29619	11883	5050	17192	5457	1295
No. of POI's having >=0.5% POI congestion														
4	No. of POI's having >=0.5% POI congestion		July-15	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		July-15	0	0	0	0	0	0	0	0	0	0	0
Network Data														
5	a) Equipped Capacity of Network in Erlang		July-15	292598	613	142261	224500	130000	490199	NP	70535	123775	NP	103586
	b) Total traffic in TCBH in erlang (Avg.)		July-15	218213	1	62813	58390	52819	398664	NP	35504	105952	NP	14177
	c) Total no. of customers served (as per VLR) on last day of the month		July-15	11011220	284	3384979	1922108	926451	21163820	NP	1667219	4964259	NP	175930

TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- MP&CG Circle - July 15 month														
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators
Network Service Quality Parameter														
Network Availability														
1	a) Total no. of BTSs in the licensed service area		Live data	9501	128	2934	3642	1859	9844	3985	1658	5713	1814	429
	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	1058	13	41	5023	1803	3196	1490	161	903	553	8
	c) BTS Accumulated Downtime	<=2%	Live data	0.15%	0.14%	0.02%	1.92%	1.35%	0.45%	0.52%	0.13%	0.22%	0.42%	0.02%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	0	38	5	26	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	1.04%	0.27%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.62%	97.22%	98.68%	96.56%	95.25%	98.15%	98.84%	98.67%	99.47%	99.03%	98.36%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.04%	0.26%	0.03%	0.56%	0.78%	0.41%	0.14%	0.24%	0.09%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.47%	0.00%	0.02%	1.80%	1.78%	1.34%	0.17%	0.43%	0.53%	0.00%	0.81%
Connection Maintenance (Retainability)														
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.88%	1.22%	0.68%	1.69%	1.67%	0.88%	0.53%	0.64%	0.82%	0.22%	0.49%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	2.15%	1.13%	3.43%	2.31%	2.70%	2.49%	0.03%	2.67%	3.57%	0.79%	6.56%
	c) % of connections with good voice quality	>=95%	Live data	97.10%	99.25%	98.68%	NP	NP	97.07%	97.88%	98.07%	98.82%	99.81%	99.18%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	630	4	302	280	148	739	3	135	613	43	85
	e) Total no. of cells (Sector) in the licensed service area		Live data	29300	384	8804	12141	5487	29675	11883	5047	17184	5457	1295
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
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0

TABLE: 3

Detailed Network Data Assessment of Cellular Mobile Telephone Services - MP&CG Circle – August 15 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators
Network Service Quality Parameter														
Network Availability														
1	a) Total no. of BTSs in the licensed service area		Aug-15	9552	128	2936	3699	1859	9894	3985	1674	5765	1814	429
	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-15	10014	202	607	51662	23796	29767	5539	2402	8949	5968	5
	c) BTS Accumulated Downtime	<=2%	Aug-15	0.14%	0.21%	0.03%	1.88%	1.72%	0.40%	0.19%	0.19%	0.21%	0.44%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Aug-15	7	0	0	55	37	146	12	8	52	26	0
	e) Worst affected BTSs due to downtime	<=2%	Aug-15	0.07%	0.00%	0.00%	1.49%	1.99%	1.48%	0.30%	0.48%	0.90%	1.43%	0.00%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	<=2%	Aug-15	98.68%	97.91%	98.56%	96.55%	96.48%	97.38%	98.80%	98.74%	99.55%	99.28%	98.93%
	b) SDCCH/PAGING Congestion	<=3%	Aug-15	0.03%	0.33%	0.05%	0.55%	0.56%	0.43%	0.04%	0.13%	0.09%	0.00%	0.00%
	c) TCH congestion	<=2%	Aug-15	0.40%	0.00%	0.04%	1.58%	1.24%	1.26%	0.20%	0.35%	0.45%	0.00%	0.15%
Connection Maintenance (Retainability)														
3	a) Call Drop Rate (CDR)	<=2%	Aug-15	0.75%	0.90%	0.73%	1.53%	1.43%	0.86%	0.49%	0.67%	0.88%	0.12%	0.67%
	b) Worst affected cells>3% TCH drop	<=3%	Aug-15	1.85%	1.04%	4.00%	2.42%	2.81%	2.12%	0.04%	2.69%	4.63%	0.59%	8.56%
	c) % of connections with good voice quality	>=95%	Aug-15	96.94%	99.40%	98.66%	NP	NP	96.84%	97.85%	98.13%	98.74%	99.80%	99.09%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Aug-15	543	4	352	295	154	652	5	137	801	32	111
	e) Total no. of cells (Sector) in the licensed service area		Aug-15	29400	384	8806	12180	5487	30775	11886	5088	17301	5456	1296
No. of POI's having >=0.5% POI congestion														
4	No. of POI's having >=0.5% POI congestion		Aug-15	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Aug-15	0	0	0	0	0	0	0	0	0	0	0
Network Data														
5	a) Equipped Capacity of Network in Erlang		Aug-15	294065	652	142312	270025	130000	489214	NP	70783	124191	NP	103586
	b) Total traffic in TCBH in erlang (Avg.)		Aug-15	202328	1	62137	61581	54139	382750	NP	36026	102045	NP	13318
	c) Total no. of customers served (as per VLR) on last day of the month		Aug-15	11265472	250	2961781	1952773	936140	21586597	NP	1688626	4979965	NP	173012

TABLE: 4

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- MP&CG Circle - August 15 month														
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators
Network Service Quality Parameter														
1	Network Availability													
	a) Total no. of BTSs in the licensed service area		Live data	9517	128	2935	1859	3642	9874	3985	1672	5749	1814	429
	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	818	13	20	1455	5124	4617	535	163	975	550	32
	c) BTS Accumulated Downtime	<=2%	Live data	0.12%	0.14%	0.01%	1.09%	1.95%	0.65%	0.19%	0.14%	0.24%	0.42%	0.10%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	0	4	38	26	0	0	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.22%	1.04%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%	
2	Connection Establishment (Accessibility)													
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.66%	98.38%	98.47%	96.88%	96.69%	98.09%	98.83%	98.68%	99.61%	99.39%	98.75%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.02%	0.52%	0.02%	0.56%	0.51%	0.41%	0.01%	0.13%	0.06%	0.00%	0.00%
c) TCH congestion	<=2%	Live data	0.36%	0.00%	0.04%	1.33%	1.81%	1.45%	0.18%	0.43%	0.39%	0.00%	0.22%	
3	Connection Maintenance (Retainability)													
	a) Call Drop Rate (CDR)	<=2%	Live data	0.67%	0.53%	0.72%	1.32%	1.78%	0.86%	0.48%	0.62%	0.90%	0.13%	0.56%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	1.65%	0.70%	4.29%	2.52%	2.45%	2.08%	0.03%	2.55%	3.30%	0.60%	8.38%
	c) % of connections with good voice quality	>=95%	Live data	96.97%	98.62%	98.64%	NP	NP	96.90%	97.83%	98.10%	98.71%	99.76%	99.09%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	483	3	378	138	297	617	4	130	571	33	108.66
e) Total no. of cells (Sector) in the licensed service area		Live data	29339	384	8807	5487	12141	29698	11662	5096	17303	5457	1296	
4	No. of POI's having >=0.5% POI congestion													
	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0

TABLE: 5

Detailed Network Data Assessment of Cellular Mobile Telephone Services- MP&CG Circle - September 15 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators
Network Service Quality Parameter														
1 Network Availability														
	a) Total no. of BTSs in the licensed service area		Sep-15	9566	128	2935	3699	1859	10044	3979	1682	5770	1806	429
1	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-15	6812	374	1528	51084	22473	25177	4337	1804	7982	5269	161
	c) BTS Accumulated Downtime	<=2%	Sep-15	0.10%	0.41%	0.07%	1.92%	1.68%	0.35%	0.15%	0.15%	0.19%	0.41%	0.05%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Sep-15	2	0	0	53	37	148	5	7	55	13	0
	e) Worst affected BTSs due to downtime	<=2%	Sep-15	0.02%	0.00%	0.00%	1.43%	1.99%	1.47%	0.13%	0.42%	0.95%	0.72%	0.00%
2 Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	<=2%	Sep-15	98.83%	98.53%	98.53%	96.56%	96.63%	97.33%	98.75%	98.65%	99.61%	99.25%	98.58%
2	b) SDCC/PAGING Congestion	<=3%	Sep-15	0.04%	0.57%	0.05%	0.52%	0.61%	0.51%	0.02%	0.27%	0.16%	0.00%	0.00%
	c) TCH congestion	<=2%	Sep-15	0.36%	0.00%	0.05%	1.67%	1.28%	1.24%	0.23%	0.40%	0.39%	0.00%	0.57%
3 Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Sep-15	0.85%	1.25%	0.69%	1.57%	1.56%	0.83%	0.47%	0.69%	0.79%	0.11%	0.55%
3	b) Worst affected cells>3% TCH drop	<=3%	Sep-15	2.02%	1.04%	3.79%	2.36%	2.77%	2.05%	0.03%	2.25%	5.28%	0.62%	7.41%
	c) % of connections with good voice quality	>=95%	Sep-15	97.04%	99.43%	98.76%	NP	NP	96.86%	97.86%	98.15%	98.78%	99.83%	99.26%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Sep-15	594	4	334	291	152	617	4	115	917	34	96
	e) Total no. of cells (Sector) in the licensed service area		Sep-15	29471	384	8808	12312	5487	30117	11702	5113	17351	5458	1296
4 No. of POI's having >=0.5% POI congestion														
4	No. of POI's having >=0.5% POI congestion		Sep-15	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Sep-15	0	0	0	0	0	0	0	0	0	0	0
5 Network Data														
	a) Equipped Capacity of Network in Erlang		Sep-15	294646	653	142527	270025	130000	488183	NP	71064	124157	NP	103689
5	b) Total traffic in TCBH in erlang (Avg.)		Sep-15	221030	1	63515	57194	53948	380375	NP	37718	103961	NP	12504
	c) Total no. of customers served (as per VLR) on last day of the month		Sep-15	11282268	261	2933576	1995347	951090	21443694	NP	1681620	5026907	NP	170334

TABLE: 6

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- MP&CG Circle - September 15 month														
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL (MP)	BSNL (CG)	IDEA CELLULAR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators
Network Service Quality Parameter														
Network Availability														
1	a) Total no. of BTSs in the licensed service area		Live data	9548	128	2935	3699	1859	9894	3979	1675	5769	1806	429
	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	697	7	64	5169	1434	3982	416	166	567	437	1
	c) BTS Accumulated Downtime	<=2%	Live data	0.10%	0.07%	0.03%	1.94%	1.07%	0.56%	0.15%	0.14%	0.14%	0.34%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	0	38	3	24	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	1.03%	0.16%	0.24%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)														
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.82%	97.96%	98.48%	96.24%	96.17%	97.01%	98.80%	98.30%	99.59%	99.30%	99.02%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.04%	0.02%	0.04%	0.44%	0.59%	0.52%	0.02%	0.40%	0.11%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.47%	0.00%	0.06%	1.83%	1.32%	1.41%	0.27%	0.70%	0.41%	0.00%	0.02%
Connection Maintenance (Retainability)														
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.75%	2.35%	0.68%	1.77%	1.57%	0.85%	0.48%	0.71%	0.82%	0.11%	0.54%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	1.87%	1.74%	3.77%	2.31%	2.82%	2.21%	0.02%	2.86%	5.33%	0.57%	7.18%
	c) % of connections with good voice quality	>=95%	Live data	96.95%	99.85%	98.71%	NP	NP	96.82%	97.87%	98.06%	98.77%	99.83%	99.15%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	550	7	332	285	155	665	3	146	925	31	93
	e) Total no. of cells (Sector) in the licensed service area		Live data	29475	384	8807	12312	5487	30051	12087	5108	17353	5460	1296
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
	Name of POI not meeting the benchmark		Live data	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:

5.3.1 QUARTERLY CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (JULY TO SEPTEMBER 2015 MONTHS AUDITED DATA):

QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES

Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	RCOM (CDMA)	TATA (CDMA)
S/N	Name of Parameter			GSM Operators									CDMA Operators
Customer Service Quality Parameters													
1 Metering & Billing Credibility -Post Paid													
	A) No. Of bills issued during the quarter		MP&CG	28	692866	421047	1541742	417354	136134	NA	423845	252428	17131
	B) No. of bills disputed including billing complaints during the quarter		MP&CG	0	68	33	471	375	2	NA	666	245	0
	C)% of billing complaints during the quarter	<= 0.1%	MP&CG	0.00%	0.01%	0.008%	0.03%	0.09%	0.001%	NA	0.16%	0.097%	0.00%
2 Metering & Billing Credibility -Pre Paid													
	A) Total No. of Pre-paid customers at the end of the quarter		MP&CG	20691	11594309	3412575	19621535	10153774	5241098	3294857	6402459	2040306	217429
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		MP&CG	0	121	820	6331	7618	0	17	9973	1829	0
	C) % of Pre-paid Charging Complaints	<= 0.1%	MP&CG	0.00%	0.001%	0.02%	0.03%	0.08%	0.00%	0.001%	0.16%	0.09%	0.00%
3 Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints													
	A) No. of Billing/Charging/Credit/Validity Complaints received during the quarter		MP&CG	0	189	847	32445	7993	2	17	10639	2074	0
	B) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 4 weeks during the quarter		MP&CG	NA	189	847	32445	7993	2	17	10639	2074	NA

QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES

Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	RCOM (CDMA)	TATA (CDMA)
S/N	Name of Parameter			GSM Operators								CDMA Operators	
	C) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 6 weeks during the quarter.		MP&CG	NA	189	847	32445	7993	2	17	10639	2074	NA
	D) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	>=98% within 4 weeks	MP&CG	NA	100.00%	100.00%	100.00%	100.00%	100.00%	99.26%	100.00%	100.00%	NA
	E) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 6 weeks	100% within 6 weeks	MP&CG	NA	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA
	F) % of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week	MP&CG	NA	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA
4	Response time to customers for assistance												
	A) Total no of calls attempted to customer care/Call center		MP&CG	5973	2877607	1343920	57449035	237026	1065225	630417	14954879	143472	45610
	B) Total no. of calls successfully established to customer care/Call center		MP&CG	5783	2877607	1332687	56588378	231711	1029097	630417	14954879	141842	44574
	C) % Accessibility of Call centre /customer Care (Total call successfully established *100/ Total call attempt)	>=95%	MP&CG	96.82%	100.00%	99.16%	98.50%	97.76%	96.61%	100.00%	100.00%	98.86%	97.73%
	D) Total Calls reached to operator for Voice to Voice (Total call attempt)		MP&CG	774	3837562	1857133	11308286	4157211	1826054	2226882	5053180	519037	52506
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		MP&CG	763	3739108	1771267	10865045	3653623	1707941	2136437	5016724	484604	51566

QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES

Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	RCOM (CDMA)	TATA (CDMA)
S/ N	Name of Parameter			GSM Operators								CDMA Operators	
	F) % age of calls answered by operator(voice to voice) (Total call successfully established within 90 sec.*100 / Total call attempts)	>=95%	MP&CG	98.58%	97.43%	95.38%	99.08%	87.89%	93.53%	95.94%	99.28%	93.37%	98.21%
5	Termination/closure of service												
	A) Total No. of requests for Termination / Closure of service received during the quarter		MP&CG	0	2140	1551	41714	690	1897	NA	6158	767	446
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		MP&CG	0	2140	1551	41470	690	1897	NA	6158	767	446
	C) % of Termination/ Closure of service within 7 days	<=7days	MP&CG	NIL	100.00%	100.00%	99.42%	100.00%	100.00%	NA	100.00%	100.00%	100.00%
6	Time taken for refunds of deposits after closures.												
	A) No. of Payments/ Refunds due during the quarter		MP&CG	0	260	692	2254	1709	724	NA	4217	637	201
	B) No. of Payments/ Refunds Cleared during the quarter		MP&CG	0	260	692	2254	1709	724	NA	4217	637	201
	C) Time taken for refunds of deposits after closures.	100% within 60 days	MP&CG	NA	100.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	100.00%	100.00%

NA: Not Applicable

Videocon have no post-paid customers, so data for parameters related to post-paid bills not applicable for them.

NB: Accessibility of call center / Customer care data of RCOM (GSM & CDMA) are based on average of two months' data i.e. August & September 15, July-15 month data has not provided by RCOM (GSM & CDMA) due to technical issue in their system.

5.3.2 3 DAYS LIVE CSD AUDITED DATA FOR CELLULAR MOBILE SERVICES:

CSD 3 DAYS LIVE DATA FOR CELLULAR MOBILE TELEPHONE SERVICES													
3 days live CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	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		MP&CG	125	104833	107125	1712266	NP	33110	19226	423345	NP	1370
	Total no. of calls successfully established to customer care/Call center		MP&CG	108	104833	106398	1693707	NP	32343	19226	423345	NP	1339
	% Accessibility of Call centre /customer Care (Total call successfully established *100/ Total call attempt)	>=95%	MP&CG	86.40%	100.00%	99.32%	98.92%	NP	97.68%	100.00%	100.00%	NP	97.74%
2	Total Calls reached to operator for Voice to Voice (Total call attempt)		MP&CG	33	122199	52935	330684	163298	60731	61860	163711	26642	1391
	Total number of calls answered by the operator (Voice to voice) within 90 seconds		MP&CG	33	121068	52935	330591	149357	57069	59921	162849	23641	1370
	% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100 / Total call attempts)	>=95%	MP&CG	100.00%	99.07%	100.00%	99.97%	91.46%	93.97%	96.87%	99.47%	88.74%	98.49%

NP: RCOM (GSM & CDMA) has not provided data for the parameter "Accessibility of call center / Customer care" due to TTI server issue.

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 within the prescribed bench mark against the benchmark of $\leq 0.1\%$. However, **only Vodafone** failed to meet the benchmark of Billing complaints for both post-paid and pre-paid with its performance as **0.16%**.

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 are in compliance with respect to the parameter **Accessibility of call center**. However, **RCOM (GSM), Tata (GSM) and RCOM (CDMA)** failed to meet the benchmark of parameter 'calls answered by Operators (voice to voice) within 90 seconds' having their achieved level as **87.89%, 93.53% and 93.37% respectively**.

4. Termination/Closure of Service

In case of this parameters also, **all service providers except Idea have settled** the closure/termination within the benchmark of 7 days. **Idea** remained non-complied with its performance as **99.42%**.

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.

Live Measurements:

The results for **three days live measurements** reveal that all operators have met the benchmarks for the parameters '**Accessibility to call center**' (except **Aircel = 86.40%**), whereas **RCOM(GSM), Tata (GSM) and RCOM(CDMA)** could not meet the benchmark of parameter '**Call answered by operators (Voice to voice)**' with their performance as **91.46%, 93.97% and 88.74%** respectively.

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 MP&CG 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	VIDEOCON	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	VODAFONE
AIRCEL	MP & CG	Nil	-	-	-	-	-	-	-	-	-
AIRTEL		Nil	-	100%	96%	100%	100%	100%	100%	98%	100%
VIDEOCON		Nil	100%	-	100%	100%	99%	98%	99%	100%	98%
BSNL		Nil	100%	99%	-	97%	100%	100%	100%	99%	100%
IDEA		Nil	98%	100%	100%	-	100%	100%	100%	100%	98%
RCOM GSM		Nil	100%	100%	96%	100%	-	98%	98%	100%	100%
RCOM CDMA		Nil	100%	100%	100%	100%	100%	-	100%	98%	99%
TATA GSM		Nil	100%	100%	100%	98%	98%	100%	-	100%	100%
TATA CDMA		Nil	100%	98%	100%	100%	100%	100%	100%	-	100%
VODAFONE		Nil	99%	100%	99%	100%	99%	99%	99%	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. Call inter connections were ranging from 96 % to 100%.

Thus there was no remarkable problem in interconnection from one operator to other operators. Aircel was not having coverage in major cities in MP&CG circle.

6.2 CUSTOMER CARE / HELPLINE ASSESSMENT:

LIVE CALLING TO CALL CENTRE										
Parameter	Circle Name	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	RCOM (CDMA)	TATA (CDMA)
Total no of calls attempted to customer care/Call center	MP&CG	100	100	100	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	MP&CG	100	100	100	100	100	100	100	100	100
% Accessibility of Call centre /customer Care (Total call successfully established * 100/ Total call attempts)	MP&CG	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total Calls reached to agent desk for Voice to Voice (Total call attempts)	MP&CG	100	100	100	100	100	100	100	100	100
Total number of calls answered by the operator (Voice to voice) within 90 seconds	MP&CG	100	100	100	100	100	100	100	100	100
% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100/Total call attempts)	MP&CG	100%	100%	100%	100%	100%	100%	100%	100%	100%

In case of calls answered by operators (voice to voice) within 90 seconds when test calls were made to the call centers, all service providers were found to have 100% of call access and answered from the call center operators within 90 Seconds.

6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLAINTS:

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS										
Parameter	Circle Name	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	MP&CG	68	33	100	100	2	NA	100	100	NA
Total No. of calls Answered	MP&CG	45	15	100	100	2	NA	100	100	NA
Resolution of Billing complaints	MP&CG	45	15	100	100	2	NA	100	100	NA
%age of cases resolved	MP&CG	100%	100%	100%	100%	100%	NA	100%	100%	NA

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, so shortfall was made good by taking other complaints to make verification of 100 Complaints. Some of the complainants reported that they didn't exactly remember about the resolution of complaints. However, majority of the customers reported that the billing complaints were resolved to their satisfaction.

6.4 LEVEL -1 CALLING ASSESSMENT:

LEVEL 1 LIVE CALLING																
Emergency no.	Month of Drive Test	SSA Name	Name of SDCA	No. of calls made	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	VIDEOCON	VODAFONE		
100 /108 /1091 /1098	JULY'15	Satna	Satna	12	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓		
			Nagod	12	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Jaitwara	12	NC	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓
			Maihar	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Amarpatan	12	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100 /108 /1091 /1098	AUGUST'15	Guna	Guna	8	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓		
			Aron	8	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Raghavgarh	8	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Ashoknagar	8	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Isagarh	8	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Chanderi	8	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
100 /108 /1091 /1098	SEPT'15	Shahdol	Shahdol	8	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓		
			Jaisingh Nagar	7	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Manpur	7	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Beohari	7	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Kotma	7	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Pali	7	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	
			Jaithari	7	NC	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓

- Aircel having no services in major cities, so the service is not functional.
- NC – No Coverage in respective SDCAs.

The level-1 services were found functional in the SDCAs where there was coverage of the service providers as mentioned above in the table.

7. DRIVE TEST



7. OPERATOR ASSESTID 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 **Satna, Guna and Shahdol** in the months of July, August and September 2015 respectively. The total route Km covered during drive tests in respective SSAs was **303 KMs, 303 KMs and 327 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 ≥ -75 dBm for in-door coverage and ≥ -85 dBm for in-vehicle.

7.1 OPERATOR ASSISTED DRIVE TEST: SATNA SSA (JULY-15)

DRIVE TEST TABLE: 1

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM		VIDEOCON		VODAFONE		TATA CDMA		RCOM CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
1	Call Attempts	Highways	28	25	128	25	130	27	140	25	109	26	121	28	138	25	128	26	94	25	122	28
		Major Roads	28	NC	137	25	174	29	118	25	132	25	143	28	143	25	153	25	99	25	145	28
		Within City	32	NC	188	25	208	30	186	25	177	24	184	26	192	25	197	26	148	NC	186	26
		Overall SSA	88	25	453	75	512	86	444	75	418	75	448	82	473	75	478	77	341	50	453	82
2	Blocked Call Rate	Highways	0.00%	0.00%	0.00%	0.00%	3.08%	3.70%	0.71%	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%
		Major Roads	0.00%	NC	0.00%	0.00%	1.15%	0.00%	1.69%	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%
		Within City	0.00%	NC	0.00%	0.00%	3.37%	0.00%	1.08%	0.00%	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.51%	3.85%	0.00%	NC	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	2.54%	1.16%	1.13%	0.00%	0.24%	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%	1.30%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	0.00%	0.00%	0.00%	0.00%	3.17%	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%
		Major Roads	0.00%	NC	0.00%	0.00%	1.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	0.00%	NC	0.00%	0.00%	3.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.51%	0.00%	0.00%	NC	0.00%	0.00%	
		Overall SSA	0.00%	0.00%	0.00%	0.00%	2.61%	0.00%	0.00%	0.00%	0.00%	0.00%	0.22%	0.00%	0.00%	0.00%	0.21%	0.00%	0.00%	0.00%	0.00%	0.00%
4	Percentage connections with good voice quality (=>95%)																					
	(a) 0-4 (w/o frequency hopping for CDMA)	Highways	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.79%	99.97%	97.59%	100%
		Major Roads	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.25%	99.93%	98.51%	99.81%
		Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.54%	NC	97.59%	100%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2015-MP&CG CIRCLE



S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM		VIDEOCON		VODAFONE		TATA CDMA		RCOM CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			Overall SSA																			
Operators)	Overall SSA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.52%	99.95%	97.88%	99.91%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	98.62%	98.78%	98.02%	96.67%	97.40%	99.02%	98.34%	98.77%	96.61%	96.89%	97.96%	98.72%	99.00%	99.26%	97.24%	98.47%	NA	NA	NA	NA
		Major Roads	95.98%	NC	97.34%	97.15%	96.70%	95.71%	97.12%	100%	96.31%	99.27%	97.97%	99.35%	98.53%	99.29%	97.72%	99.56%	NA	NA	NA	NA
		Within City	98.69%	NC	96.89%	98.09%	95.71%	95.94%	96.89%	99.57%	96.01%	98.45%	97.95%	98.02%	98.09%	99.97%	97.17%	97.97%	NA	NA	NA	NA
		Overall SSA	97.81%	98.78%	97.35%	97.30%	96.37%	96.71%	97.40%	99.44%	96.28%	98.09%	97.96%	98.72%	98.49%	99.49%	97.36%	98.65%	NA	NA	NA	NA
Service Coverage																						
5	In door (>= - 75dBm)	Highways	93.68%	100%	82.16%	65.42%	41.66%	42.16%	52.45%	83.93%	95.43%	100%	78.03%	100%	87.24%	100%	91.80%	99.86%	61.01%	98.76%	40.95%	98.62%
		Major Roads	78.17%	NC	74.79%	100%	36.66%	45.63%	49.74%	84.82%	96.05%	100%	82.49%	100%	79.23%	99.11%	85.66%	100%	60.09%	100%	53.12%	100%
		Within City	93.08%	NC	85.39%	86.51%	35.02%	51.53%	50.42%	24.08%	93.98%	99.92%	80.37%	100%	81.25%	99.80%	86.51%	95.39%	69.83%	NC	51.02%	99.74%
		Overall SSA	88.31%	100%	80.78%	83.98%	36.94%	46.19%	50.80%	64.86%	95.09%	99.97%	80.40%	100%	82.57%	99.67%	87.73%	99.91%	64.54%	99.38%	49.27%	99.66%
5	In-vehicle (>= - 85dBm)	Highways	98.37%	100%	95.69%	99.94%	95.42%	99.31%	95.69%	99.81%	99.58%	100%	96.04%	100%	99.52%	100%	99.40%	100%	95.69%	100%	66.38%	100%
		Major Roads	96.67%	NC	95.62%	100%	90.86%	99.95%	89.95%	99.89%	99.86%	100%	98.24%	100%	99.42%	99.31%	97.72%	100%	96.89%	100%	85.94%	100%
		Within City	99.53%	NC	98.40%	97.02%	92.55%	99.95%	92.90%	95.45%	99.74%	100%	98.36%	100%	99.58%	100%	98.04%	99.38%	95.86%	NC	87.10%	100%
		Overall SSA	98.19%	100%	96.57%	98.99%	92.66%	99.77%	92.84%	98.42%	99.73%	100%	97.70%	100%	99.51%	99.80%	98.32%	100%	96.12%	100%	81.79%	100%
5	Outdoor-in city (>= - 95dBm)	Highways	100%	100%	99.92%	100%	99.97%	100%	99.98%	100%	100%	100%	100%	100%	99.95%	100%	99.74%	100%	99.92%	100%	94.37%	100%
		Major Roads	100%	NC	99.85%	100%	99.49%	100%	99.33%	100%	100%	100%	99.96%	100%	99.99%	99.50%	99.24%	100%	99.98%	100%	99.41%	100%
		Within City	100%	NC	99.99%	99.25%	99.67%	100%	99.87%	99.93%	100%	100%	100%	100%	100%	100%	99.71%	100%	99.96%	NC	99.73%	100%
		Overall SSA	100%	100%	99.92%	99.75%	99.68%	100%	99.74%	99.98%	100%	100%	99.99%	100%	99.98%	99.86%	99.57%	100%	99.96%	100%	98.35%	100%
6	Call Setup	Highways	100%	100%	100%	100%	96.92%	96.30%	99.29%	100%	100%	100%	100%	100%	100%	99.22%	100%	98.94%	100%	100%	100%	

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2015-MP&CG CIRCLE



S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM		VIDEOCON		VODAFONE		TATA CDMA		RCOM CDMA		
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	
Success Rate (>=95%)	Major Roads		100%	NC	100%	100%	98.85%	100%	98.31%	100%	100%	100%	100%	100%	100%	100%	99.35%	100%	100%	100%	100%	100%	
	Within City		100%	NC	100%	100%	96.63%	100%	98.92%	100%	99.44%	100%	100%	100%	100%	100%	98.98%	96.15%	100%	NC	100%	100%	
	Overall SSA		100%	100%	100%	100%	97.46%	98.84%	98.87%	100%	99.76%	100%	100%	100%	100%	100%	99.16%	98.70%	99.71%	100%	100%	100%	
	Highways		100%	100%	100%	100%	99.45%	100%	99.46%	100%	95.27%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
7	Hand Over Success Rate (HOSR)	Major Roads		100%	NC	100%	100%	99.13%	100%	98.50%	100%	97.72%	100%	98.88%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City		100%	NC	100%	100%	96.43%	100%	99.29%	100%	98.10%	100%	99.31%	100%	100%	100%	100%	100%	100%	NC	100%	100%
		Overall SSA		100%	100%	100%	100%	98.20%	100%	99.10%	100%	97.16%	100%	99.33%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Highways		100%	100%	100%	100%	99.45%	100%	99.46%	100%	95.27%	100%	100%	100%	100%	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.

7.2 OPERATOR ASSISTED DRIVE TEST: GUNA SSA (AUGUST-15)

DRIVE TEST TABLE: 2

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM		VIDEOCON		VODAFONE		TATA CDMA		RCOM CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
1	Call Attempts	Highways	NC	NC	77	25	52	25	83	25	74	25	57	25	69	25	63	26	22	NC	57	25
		Major Roads	NC	NC	108	25	102	25	105	25	111	25	110	26	112	25	107	22	23	NC	110	26
		Within City	NC	NC	150	25	130	25	143	25	148	25	127	25	140	25	127	26	32	NC	127	25
		Overall SSA	NC	NC	335	75	284	75	331	75	333	75	294	76	321	75	297	74	77	NC	294	76
2	Blocked Call Rate	Highways	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%	NC	0.00%	0.00%
		Major Roads	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%	NC	0.00%	0.00%
		Within City	NC	NC	0.67%	0.00%	0.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.71%	0.00%	2.36%	0.00%	0.00%	NC	0.00%	0.00%
		Overall SSA	NC	NC	0.30%	0.00%	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.31%	0.00%	1.01%	0.00%	0.00%	NC	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	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%	NC	0.00%	0.00%
		Major Roads	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%	4.55%	0.00%	NC	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	0.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	0.00%
		Overall SSA	NC	NC	0.00%	0.00%	0.35%	0.00%	0.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.35%	0.00%	NC	0.00%	0.00%
4	Percentage connections with good voice quality (=>95%)																					
	(a) 0-4 (w/o frequency hopping for CDMA)	Highways	NA	NA	NA	NA	NA	NA	97.57%	99.85%	NA	NA	NA	NA	NA	NA	NA	NA	94.88%	NA	98.03%	100%
		Major Roads	NA	NA	NA	NA	NA	NA	98.85%	99.97%	NA	NA	NA	NA	NA	NA	NA	NA	93.39%	NA	96.35%	100%
		Within	NA	NA	NA	NA	NA	NA	98.72%	99.75%	NA	NA	NA	NA	NA	NA	NA	NA	98.88%	NA	97.85%	100%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2015-MP&CG CIRCLE



S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM		VIDEOCON		VODAFONE		TATA CDMA		RCOM CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			Operators)																			
		City																				
		Overall SSA	NA	NA	NA	NA	NA	NA	98.52%	99.85%	NA	NA	NA	NA	NA	NA	NA	NA	96.27%	NA	97.34%	100%
(b) 0-5 (with frequency hopping for GSM Operators)	Highways	NC	NC	97.56%	99.31%	91.65%	100%	NA	NA	97.13%	98.81%	92.68%	97.04%	98.05%	98.99%	98.22%	99.75%	NA	NC	NA	NA	
	Major Roads	NC	NC	97.72%	99.33%	93.07%	96.50%	NA	NA	98.12%	99.50%	94.36%	91.88%	98.53%	99.79%	98.07%	98.20%	NA	NC	NA	NA	
	Within City	NC	NC	97.56%	99.62%	93.93%	100%	NA	NA	97.83%	99.09%	90.73%	93.35%	98.82%	97.40%	98.32%	99.70%	NA	NC	NA	NA	
	Overall SSA	NC	NC	97.61%	99.41%	93.21%	96.73%	NA	NA	97.77%	99.13%	92.50%	94.30%	98.54%	98.82%	98.21%	99.32%	NA	NC	NA	NA	
Service Coverage																						
5	In door (>= - 75dBm)	Highways	NC	NC	64.04%	92.71%	67.20%	100%	84.33%	99.24%	85.49%	99.96%	73.00%	99.00%	42.13%	62.34%	84.38%	97.99%	27.00%	NC	62.20%	100%
		Major Roads	NC	NC	75.65%	100%	78.47%	100%	85.33%	69.45%	89.24%	100%	80.00%	100%	36.89%	92.77%	84.30%	100%	25.70%	NC	66.13%	26.12%
		Within City	NC	NC	81.06%	60.46%	79.40%	100%	85.00%	97.24%	90.75%	85.61%	79.00%	97.00%	49.68%	99.75%	87.44%	100%	32.02%	NC	70.92%	98.69%
		Overall SSA	NC	NC	73.58%	84.39%	76.96%	100%	84.89%	91.52%	89.17%	95.28%	78.00%	99.00%	40.74%	84.65%	85.59%	99.33%	29.03%	NC	67.22%	82.75%
5	In-vehicle (>= - 85dBm)	Highways	NC	NC	93.65%	100%	92.60%	100%	96.00%	100%	98.30%	100%	97.00%	100%	87.70%	99.92%	96.60%	100%	54.00%	NC	90.67%	100%
		Major Roads	NC	NC	95.85%	100%	97.13%	100%	97.00%	100%	98.64%	100%	97.00%	100%	75.50%	99.96%	97.62%	100%	41.20%	NC	98.07%	100%
		Within City	NC	NC	97.89%	99.80%	96.37%	100%	97.73%	99.83%	99.51%	99.66%	99.00%	99.00%	83.25%	100%	99.22%	100%	71.50%	NC	98.50%	100%
		Overall SSA	NC	NC	95.80%	99.93%	96.00%	100%	96.91%	98.67%	98.98%	99.89%	98.00%	100%	80.44%	99.96%	98.04%	100%	59.05%	NC	96.60%	100%
5	Outdoor-in city (>= - 95dBm)	Highways	NC	NC	99.28%	100%	99.70%	100%	99.67%	100%	99.98%	100%	100%	100%	98.24%	100%	98.69%	100%	76.50%	NC	99.95%	100%
		Major Roads	NC	NC	99.67%	100%	99.94%	100%	99.33%	100%	100%	100%	100%	100%	98.04%	100%	99.48%	100%	54.02%	NC	99.94%	100%
		Within City	NC	NC	99.86%	100%	99.85%	100%	99.77%	100%	100%	100%	100%	99.00%	97.67%	100%	99.98%	100%	98.70%	NC	99.98%	100%
		Overall	NC	NC	99.60%	100%	99.86%	100%	99.59%	100%	100%	100%	100%	100%	97.96%	100%	99.51%	100%	79.74%	NC	99.96%	100%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2015-MP&CG CIRCLE



S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM		VIDEOCON		VODAFONE		TATA CDMA		RCOM CDMA			
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR		
			SSA																					
6	Call Setup Success Rate (>=95%)	Highways	NC	NC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	95.45%	NC	100%	100%	
		Major Roads	NC	NC	100%	100%	100%	100%	99.05%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NC	100%	100%
		Within City	NC	NC	99.33%	100%	99.23%	100%	100%	100%	100%	100%	100%	100%	99.29%	100%	95.28%	100%	100%	100%	NC	100%	100%	
		Overall SSA	NC	NC	99.70%	100%	99.65%	100%	99.70%	100%	100%	100%	100%	100%	99.69%	100%	97.98%	100%	98.70%	NC	100%	100%		
7	Hand Over Success Rate (HOSR)	Highways	NC	NC	100%	100%	100%	100%	100%	100%	100%	100%	96.55%	100%	100%	100%	100%	100%	100%	100%	NC	100%	100%	
		Major Roads	NC	NC	100%	100%	100%	100%	97.92%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NC	100%	100%	
		Within City	NC	NC	100%	100%	99.34%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NC	100%	100%	
		Overall SSA	NC	NC	100%	100%	99.70%	100%	99.25%	100%	100%	100%	99.41%	100%	100%	100%	100%	100%	100%	100%	NC	100%	100%	

NA: Not Applicable

NC: No Coverage

7.3 OPERATOR ASSISTED DRIVE TEST: SHAHDOL SSA (SEPTEMBER -15)

DRIVE TEST TABLE: 3

S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM		VIDEOCON		VODAFONE		TATA CDMA		RCOM CDMA		
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	
1	Call Attempts	Highways	12	NC	94	25	91	33	90	26	96	25	105	26	113	25	102	25	18	26	111	26	
		Major Roads	15	25	144	25	141	32	127	25	158	25	134	33	147	25	157	25	30	NC	136	33	
		Within City	68	NC	241	25	215	25	215	25	219	25	188	27	217	25	201	25	110	NC	194	27	
		Overall SSA	95	25	479	75	447	76	432	76	473	75	427	86	477	75	460	75	158	26	441	86	
2	Blocked Call Rate	Highways	0.00%	NC	1.06%	0.00%	3.30%	0.00%	1.11%	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%	
		Major Roads	0.00%	0.00%	0.69%	0.00%	1.42%	0.00%	1.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	0.00%	
		Within City	0.00%	NC	0.41%	0.00%	0.93%	0.00%	0.93%	0.00%	0.00%	0.00%	0.00%	0.00%	0.92%	0.00%	0.50%	0.00%	0.00%	NC	0.00%	0.00%	
		Overall SSA	0.00%	0.00%	0.63%	0.00%	1.57%	0.00%	1.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.42%	0.00%	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	
3	Dropped Call Rate (<=2%)	Highways	0.00%	NC	0.00%	0.00%	4.55%	3.03%	1.12%	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%	
		Major Roads	0.00%	0.00%	0.00%	0.00%	2.88%	0.00%	1.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.68%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	0.00%	
		Within City	0.00%	NC	0.00%	0.00%	0.94%	0.00%	0.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	0.00%	
		Overall SSA	0.00%	0.00%	0.00%	0.00%	2.27%	1.11%	1.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
4	Percentage connections with good voice quality (=>95%)																						
	(a) 0-4 (w/o frequency hopping for CDMA)	Highways	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.64%	99.92%	95.79%	99.79%
		Major Roads	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.18%	NC	97.22%	100%
		Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.60%	NC	97.86%	99.41%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2015-MP&CG CIRCLE



S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM		VIDEOCON		VODAFONE		TATA CDMA		RCOM CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			Operators)	Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.52%
(b) 0-5 (with frequency hopping for GSM Operators)	Highways	99.82%	NC	98.21%	98.46%	97.38%	88.62%	99.14%	99.95%	98.37%	99.85%	99.40%	99.64%	99.02%	99.93%	99.19%	99.50%	NA	NA	NA	NA	
	Major Roads	99.79%	99.82%	98.59%	99.64%	96.61%	99.97%	97.89%	99.88%	98.16%	99.85%	99.12%	99.83%	97.18%	99.54%	98.85%	NA	NA	NA	NA	NA	
	Within City	99.72%	NC	98.26%	99.00%	93.01%	99.00%	97.79%	99.48%	99.01%	99.77%	98.24%	99.67%	97.23%	97.91%	98.61%	98.72%	NA	NA	NA	NA	
	Overall SSA	99.74%	99.82%	98.35%	99.02%	94.99%	95.57%	98.11%	99.77%	98.57%	99.82%	98.80%	99.72%	97.63%	99.09%	98.82%	99.14%	NA	NA	NA	NA	
Service Coverage																						
5	In door (>= - 75dBm)	Highways	35.94%	NC	43.94%	44.41%	43.83%	20.10%	46.77%	100%	71.56%	100%	70.14%	92.43%	54.83%	100%	54.88%	78.03%	37.41%	97.49%	35.40%	39.80%
		Major Roads	59.29%	97.19%	46.99%	99.57%	43.28%	79.18%	64.16%	1.03%	70.80%	99.29%	56.69%	99.33%	58.76%	62.31%	49.55%	NA	59.09%	NC	41.23%	92.45%
		Within City	55.22%	NC	56.12%	99.86%	45.23%	99.64%	61.48%	99.57%	86.32%	100%	69.32%	99.08%	66.09%	97.50%	58.68%	97.21%	53.17%	NC	49.10%	91.92%
		Overall SSA	50.15%	97.19%	49.02%	81.28%	44.35%	66.31%	57.47%	66.86%	78.03%	99.76%	65.69%	97.10%	59.89%	86.60%	54.71%	87.61%	49.89%	97.49%	43.20%	83.27%
5	In-vehicle (>= - 85dBm)	Highways	89.54%	NC	76.61%	98.46%	71.68%	92.88%	87.70%	100%	91.58%	100%	95.34%	100%	86.47%	100%	85.06%	99.19%	96.47%	99.91%	77.00%	99.88%
		Major Roads	86.22%	99.68%	78.91%	100%	77.41%	94.25%	90.80%	46.25%	95.65%	100%	87.94%	100%	87.43%	98.79%	84.52%	NA	85.05%	NC	80.13%	97.55%
		Within City	85.95%	NC	88.22%	100%	74.47%	100%	90.50%	100%	96.79%	100%	94.27%	100%	93.32%	100%	89.63%	100%	88.71%	NC	83.55%	100%
		Overall SSA	87.24%	99.68%	81.25%	99.49%	74.86%	95.71%	89.67%	82.08%	95.34%	100%	92.62%	100%	89.07%	99.60%	86.86%	99.59%	90.08%	99.91%	80.83%	98.91%
5	Outdoor-in city (>= - 95dBm)	Highways	99.21%	NC	97.81%	99.97%	91.76%	97.67%	99.10%	100%	99.66%	100%	99.94%	100%	99.02%	100%	99.08%	99.98%	100%	100%	99.93%	100%
		Major Roads	99.32%	100%	97.55%	100%	95.75%	99.90%	99.87%	100%	99.86%	100%	99.30%	100%	99.26%	99.95%	98.71%	NA	99.89%	NC	99.65%	100%
		Within City	98.80%	NC	98.67%	100%	95.34%	100%	99.23%	100%	99.52%	100%	99.81%	100%	99.62%	100%	99.09%	100%	99.74%	NC	99.54%	100%
		Overall SSA	99.11%	100%	98.01%	99.99%	94.78%	99.19%	99.40%	100%	99.67%	100%	99.69%	100%	99.30%	99.98%	98.96%	99.99%	99.88%	100%	99.67%	100%
6	Call Setup	Highways	100%	NC	98.94%	100%	93.41%	96.97%	98.89%	100%	100%	100%	100%	100%	100%	99.02%	100%	100%	100%	100%	100%	

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER-2015-MP&CG CIRCLE



S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM		VIDEOCON		VODAFONE		TATA CDMA		RCOM CDMA		
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	
			Success Rate (>=95%)	Major Roads	100%	100%	99.31%	100%	97.87%	100%	98.43%	100%	100%	100%	100%	100%	100%	100%	100%	99.36%	100%	100%	NC
Within City	100%	NC		99.59%	100%	98.14%	100%	99.07%	100%	100%	100%	100%	100%	99.08%	100%	99.50%	100%	100%	100%	NC	100%	100%	
Overall SSA	100%	100%		99.37%	100%	97.09%	98.89%	98.84%	100%	100%	100%	100%	100%	99.58%	100%	99.35%	100%	100%	100%	100%	100%	100%	
Highways	100%	NC		100%	100%	98.15%	100%	96.97%	100%	99.41%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
7	Hand Over Success Rate (HOSR)	Major Roads	100%	100%	100%	100%	97.83%	100%	100%	100%	99.59%	100%	100%	100%	99.33%	100%	100%	100%	100%	100%	NC	100%	100%
		Within City	100%	NC	100%	100%	100%	100%	99.21%	100%	100%	100%	100%	100%	99.51%	100%	100%	100%	100%	100%	NC	100%	100%
		Overall SSA	100%	100%	100%	100%	98.86%	100%	99.15%	100%	99.74%	100%	100%	100%	99.55%	100%	100%	100%	100%	100%	100%	100%	100%
		Highways	100%	NC	100%	100%	98.15%	100%	96.97%	100%	99.41%	100%	100%	100%	100%	100%	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.

7.4 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

DRIVE TEST ROUTE OF JULY TO SEPTEMBER 15 – MP&CG CIRCLE							
Name of SSA	Drive test Period	Day 1		Day 2		Day 3	
		Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered
Satna	Jul-15	Maihar & Amarpatan / 94 KM	<p>MAIHAR SDCA: Major Road:- Devi ji Road, Electricity Board Office, Kils Chowk Rd, Masjid Road, Zalelal Chowk, Jail Road, Gyan Vihar Vidyapith Rd. Within City:- Police Station Rd, Sarlanagar Road, Near Maihar Railway Station Road, Civil Court Maihar, PWD Office Road, Near Shantinagar. Highway:- Jabalpur Highway, Satna Highway, Rewa Highway.</p> <p>AMARPATAN SDCA: Major Road:- Satna Road, Near Swastik Public School. Within City:- Nyayadhish Nivas Road, Main Market Road, Main Market area amarpatan, Nagarpalika Road, Bus Stand Road. Highway:- Rewa Highway, Rampur Road, Maihar Road.</p> <p>Indoor: SSICAIT Building_Baba Alauddin Chouraha.</p>	Satna / 106 KM	<p>SATNA SDCA: Within City:- Stadium Road, Collector Office, Head Post Office, Main chowk market, Nazeerabad, Krishna Nagar, Tikuriya Tola, Daalibaba Road, Lakhan Chouraha Road, City Kotwali, Jawahar Nagar, Pateri Road, Gali No 10 Rajendra Nagar, Shakti Nagar colony, Mukhtyarganj, Kanwar Road, BUs Stand area, Bank Colony. Major Road:- Birla Cement Plant Road, Somriya Chowk, Near Ram Vikas Nagar, Station Colony, Jay Stambh Chowk, Talaab Road, Barhut Road. Highway:- Jablapur Highway, Chitrakut Highway, Rewa Highway, Transport Nagar, Nagod Highway.</p> <p>Indoor: Town Hall-Satna</p>	Nagod & Jaitwara / 103 KM	<p>NAGOD SDCA: Major Road:- Purani Kotwali Area, Gopal Tola, Narhendra Singh High school Road, Satya Niketan School, Sabji Mandi Road, Indranagar Naka. Within City:- Opposite Nagar Paalika Nagod, Bus stand Area Nagod, Main Market Area, Jaso Road, Jail Road, Gayatri Nagar. Highway:- Kalinjar Highway, Panna Highway, Satna Highway. JAITWARA SDCA: Major Road:- Khuhata Road, Sabji Mandi, Police Station Road. Within City:- Birsinghpur Road, Haati Road, Satna Road.</p> <p>Indoor: Bus stand Nagod</p>

DRIVE TEST ROUTE OF JULY TO SEPTEMBER 15 – MP&CG CIRCLE							
Name of SSA	Drive test Period	Day 1		Day 2		Day 3	
		Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered
Guna	Aug-15	Radhogarh & Aron SDCA / 103 KM	<p>Raghogarh SDCA:- Within City:- Raghogarh Main Road, Sada Road, Jagrati Devi Sangh Marg, Milan Public School Rd, Hanuman Road, Katra Mohalla, Giridhar Road. Major Road:- Hindupat Public School, Bus Stand, MG Road, Main Market, Nichla Bazaar, Police Station, Kanya Ashram Road.</p> <p>Aaron SDCA:- Within City:- BSNL Exchange Road, HP Petrol Pump, Rijoda Road, Gulabganj Chouraha, Main Bazaar Area, Sadar Bazaar, Ghosa Mohalla, Sohani Nagar, Purani Galla Mandi Road, Godown Road. Major Road:- Sironj Road, SBI Bank Road, Block Colony, Police Station Road.</p> <p>Highway:- Guna Highway, Raghogarh Highway.</p> <p>Indoor: Aron Market</p>	Guna & Ashok Nagar SDCA / 120 KM	<p>Guna SDCA:- Within City:- New Road Mian market, Nichla Bazaar, Sadar bazaar, Jai Stambh Chowk, Bypass Road, Vidyarthi Nagar, Police Station Cant, Haat Road, Jagdish Colony, Stadium Nagar, Jail Road, Lal Pared Ground. Major Road:- Manas Chowk, Airport Road, Cant Road, Collector Office Road, Meteorological Office Road. Highway:- Agra Highway, Bombay Highway, Ashoknagar Highway.</p> <p>Ashok Nagar SDCA:- Major Road:- Vidhisha Road, Tara Sadan School, Police station Road, Purana Bus Stand, Nagarpalika, Gandhi Park, New Market, New Bus stand, Milan Chouraha, Vidhisha Road. Within City:- Nagarpalika Road, Station Road, Railway Station, Subhash Ganj, Vilala Mill Road, Gaushala Road, Proshesan Road, Gandhi Park. Highway:- Vidhisha Highway, Ashoknagar Bypass Road, Guna Highway.</p>	Isagarh & Chanderi SDCA / 80 KM	<p>Isagarh SDCA:- Major Road:- Police Station, Isagarh bus stand, Kadvaya road, Main Market, Gurudwara, Talaab Road, Mian Road, Agrasen chouraha ,Shivpuri Road, Circuit House, Anantpur. Highway:- Chanderi Highway, Ashiknagar Highway, Gwalior Road, Sukhpur Road. Chanderi SDCA:- Within City:- Police Station Roa, Station Colony, Main Market Road, IPO, Badal Mahal Road, Bypass Road, Durga Nagar, Lalitpur Road, Bus Stand Chanderi, Yuvraj Hotal , Zama masjid ,Dholia gate, Chanderi Palace, indira park, Govt School, Ware House, Saraswati Vidya Mandi.</p> <p>Indoor: Chanderi Bus Stand</p>

DRIVE TEST ROUTE OF JULY TO SEPTEMBER 15 – MP&CG CIRCLE							
Name of SSA	Drive test Period	Day 1		Day 2		Day 3	
		Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered
					Indoor: Harihar Complex, Ashoknagar		
Shahdol	Sep-15	Jaisingnagar , Beohari , Manpur/102	JaisinghNagar-- Shahdol highway ,Sidhi-highway , Bus Stand ,Janakpur road ,Phul mati asram marg ,police station ayodhya marg. Beohari - Beohari lake , Rewa Road , Bus Stand , Tehsil office , Sarswati vidhya mandir , Sidhi highway Manpur : Umariya road ,Bandhav garh road ,Jaisingh Nagar Road ,Imam chowk ,Main market ,Bus stand. Indoor: Bus stand beohari	Kotma , Jaithari/110	Jaithari : Bilaspur highway, Shahdol highway, Bus stand,Railway stand, Jaithari Highway,Main Market,Civil line. Kotma :Anuppur Highway,Lic Office,Vikas Nagar,Hospital Road,Mukharji chowk,Barrier Road,Bus Stand. Indoor: Hotel Vijay palace.	Shahdol , Birsinghpur Pali/115	Shahdol -Gandhi Road,Mandir Road,Nagar Palika,police Station,pandAV Nagar,Kiran Talkies,Station Road,Burhar Road,Burhar Chowk. Pali - jabalpur Highway ,Shahdol Highway ,Chinda Road,Pali Railway Station,Pali Outer Road. Indoor: Hotel surya, Shahdol.

7.5 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF SATNA SSA (JULY-15)

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	AIRTEL	Maihar, Amarpatan	--	Satna	--	Nagod, Jaitwara	--
2	AIRCEL		NC in Amarpatan		NC		
3	BSNL		--		Worst Rx Quality observed near Barhut Nagar & Jawahar Nagar		--
4	IDEA		--		--		--
5	VODAFONE		--		--		--
6	VIDEOCON		--		--		--
7	TATA GSM		--		Worst Rx Quality observed near Hotel Sidhant		--
8	TATA CDMA		--		--		--
9	RCOM GSM		--		--		--
10	RCOM CDMA		Poor Rx Level observed at South Gate Temple Maihar		Poor Rx Level observed at Rewa Road		Poor Rx Level observed at Singhpur Rd, panna road

NC: No Coverage

DRIVE TEST TABLE: 6

DRIVE TEST OBSERVATION OF GUNA SSA (AUGUST-15)

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	AIRTEL	Aron, Raghavgarh	NC	Guna, Ashoknagar	NC	Isagrah, Chanderi	NC
2	AIRCEL		--		--		Poor Rx Level observed at Ashoknagar Road-Isagarh
3	BSNL		--		--		
4	IDEA		--		Poor Rx Quality obsrved near Lal Pared Ground-Guna		--
5	VODAFONE		Poor Rx Level observed in raghaogarh SDCA		--		Poor Rx Level at Daharda Road in Isagarh SDCA
6	VIDEOCON		--		--		
7	TATA GSM		--		Poor Rx Quality observed near Khiyavda Colony- Guna SDCA		--
8	TATA CDMA		NC		Worst Rx Level & Rx Quality observed near Lal Pared Ground, Ashoknagar Road-Guna SDCA		NC
9	RCOM GSM		Poor Rx Qulaity observed at Shahwajpur Rd- Aron		Poor Rx Quality observed near Krisnni Nagar- Guna SDCA		--
10	RCOM CDMA		--		--		--

NC: No Coverage

DRIVE TEST TABLE: 7

DRIVE TEST OBSERVATION OF SHAHDOL SSA (SEPTEMBER-15)

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	AIRTEL	Beohari, Jaisingh Nagar, Manpur	NC	Kotma, Jaithari	NC in Jaithari	Shadol, Pali	NC
2	AIRCEL		--		--		
3	BSNL		Poor Rx Level near Mahadev Temple- Jaisinghnagar SDCA, Poor Rx Level in various location in Beohari.		Poor Rx level near Gandhi Chowk, Railway Station- Kotma SDCA		Poor Rx Quality near Budhar Chowk- Shahdol SDCA
4	IDEA		--		--		
5	VODAFONE		--		--		Poor Rx Quality near Kalyanpur- Shahdol SDCA
6	VIDEOCON		--		--		
7	TATA GSM		--		--		Poor Rx Quality near Kalyanpur- Shahdol SDCA
8	TATA CDMA		NC		NC		NC in Pali
9	RCOM GSM		--		--		Poor Rx Quality near Kalyanpur- Shahdol SDCA
10	RCOM CDMA		--		--		

NC: No Coverage

DRIVE TEST TABLE: 8

NO NETWORK COVERAGE STATUS OF DRIVE TEST – JULY TO SEPTEMBER 15

S. No	Month of Drive Test	Operator	SSA	Total SDCA Covered	Status of no network coverage area (SDCA Name)	ICR Status (SDCA Name)
1	Jul-15	Aircel	Satna	Maihar, Amarpatan, Satna, Nagod, Jaitwara	Amarpatan, Satna, Jaitwara, Nagod.	No
		Airtel			No Coverage issue	No
		BSNL			No Coverage issue	No
		Idea			No Coverage issue	No
		Videocon			No Coverage issue	Videocon is on ICR with Tata GSM in Maihar, Amarpatan, Nagod SDCA
		Vodafone			No Coverage issue	No
		Tata GSM			No Coverage issue	TATA GSM is on ICR with Videocon in Jaitwara SDCA
		Tata CDMA			Nagod, Jaitwara	No
		RCOM GSM			No Coverage issue	No
		RCOM CDMA			No Coverage issue	No
2	Aug-15	Aircel	Guna	Aron, Raghavgarh, Guna, Ashoknagar, Isagarh, Chanderi	Aron, Raghavgarh, Guna, Ashoknagar, Isagarh, Chanderi	No
		Airtel			No Coverage issue	No
		BSNL			No Coverage issue	No
		Idea			No Coverage issue	No
		Videocon			No Coverage issue	Videocon is on ICR with Tata GSM in Aron, Raghavgarh, Isagarh SDCA
		Vodafone			No Coverage issue	No
		Tata GSM			No Coverage issue	No
		Tata CDMA			Aron, Raghavgarh, Ashoknagar, Isagarh, Chanderi	No
		RCOM GSM			No Coverage issue	No
		RCOM CDMA			No Coverage issue	No
3	Sep-15	Aircel	Shahdol	Beohari, Jaisingh Nagar, Manpur, Kotma, Jaithari, Shahdol, Pali	Beohari, Jaisingh Nagar, Manpur, Jaithari, Shadol, Pali	No
		Airtel			No Coverage issue	No
		BSNL			No Coverage issue	No
		Idea			No Coverage issue	No
		Videocon			No Coverage issue	Videocon is on ICR with Tata GSM in Beohari, Jaisingh Nagar, Kotma, Shadol, Pali SDCA
		Vodafone			No Coverage issue	
		Tata GSM			No Coverage issue	TATA GSM is on ICR with Videocon in in Manpur SDCA

S. No	Month of Drive Test	Operator	SSA	Total SDCA Covered	Status of no network coverage area (SDCA Name)	ICR Status (SDCA Name)
		Tata CDMA			Beohari, Jaisingh Nagar, Manpur, Kotma, Jaithari, Pali	No
		RCOM GSM			No Coverage issue	No
		RCOM CDMA			No Coverage issue	No

7.6 KEY FINDINGS ON DRIVE TEST:

The key observations, derived from the results of drive tests were as under –

July -2015: Satna SSA

- (i) Drive test was conducted across **Satna SSA** (covering total 303 Kms).
- (ii) Aircel was not having its coverage in Amarpatan, Satna, Jaitwara, Nagod SDCAs.

Drive Test Results: The drive test results revealed that performance of the service providers in general, was satisfactory. However, **BSNL** was not able to meet the benchmark of parameter '**Call drop rate**' with its achieved level as **2.61%**.

August -2015: Guna SSA

- (i) Drive test was conducted across **Guna SSA** (covering total 303 KMs)
- (ii) Aircel was not having its coverage in Guna SSA.
- (iii) Tata (CDMA) was not having its coverage in Aron, Raghavgarh, Ashoknagar, Isagarh, Chanderi SDCAs.

Drive Test Results: In this SSA also, the performance of the service providers was satisfactory as all operators were found meeting the benchmarks of the network parameters.

September -2015 : Shadol SSA

- (i) Drive test conducted across **Shadol SSA** (covering total 327 Kms).
- (ii) Aircel was not having its coverage in Beohari, Jaisingh Nagar, Manpur, Jaithari, Shadol, Pali SDCAs.
- (iii) Tata (CDMA) was not having its coverage in Beohari, Jaisingh Nagar, Manpur, Kotma, Jaithari, Pali SDCA

Drive Test Results: The drive test results revealed that performance of the service providers in general, was satisfactory. However, **BSNL** was not able to meet the benchmark of parameters **CDR** and '**Voice Quality**' with its achieved level as **2.27% and 94.99 %** respectively

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

The detail of Network coverage and Intra Circle Roaming (ICR) status of different service providers at various locations in the three SSAs is given in table-8.

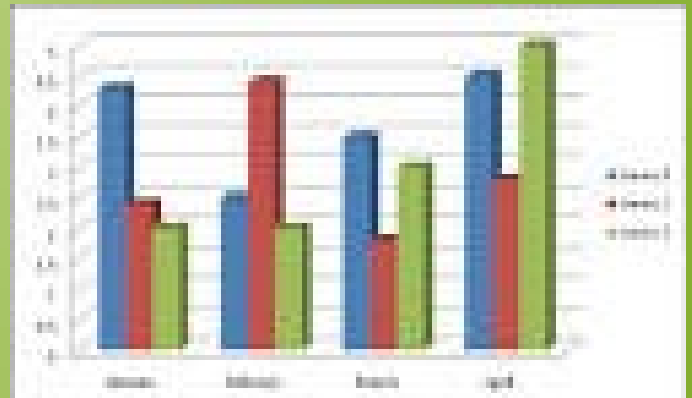
*Thus, on analyzing the overall performance of service providers on the basis of Drive tests, it was concluded that the service providers were in general meeting the benchmark except **BSNL** could not perform well on the parameters **Call drop rate** and '**Good Voice Quality**' in Satna and shadol SSAs. **BSNL** needs to improve its network in the interest of the consumers.*

8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

AVERAGED QUARTERLY PMR

V/S

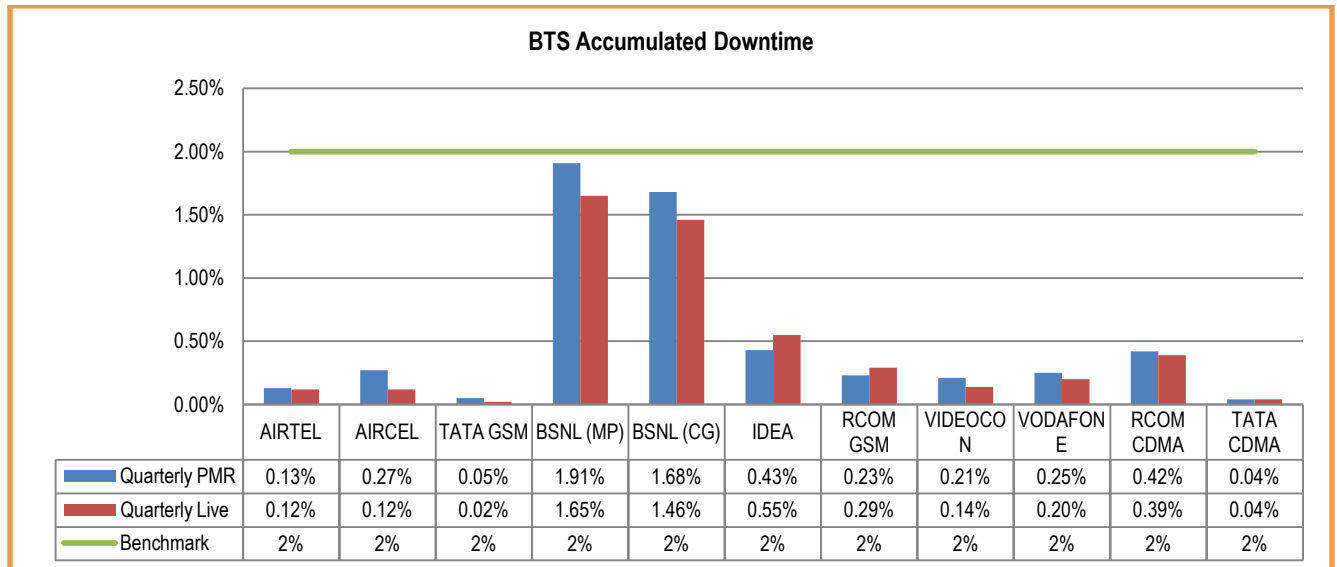
AVERAGED QUARTERLY 3-DAYS LIVE MEASUREMENT



8. GRAPHICAL REPRESENTATION (CMTS):

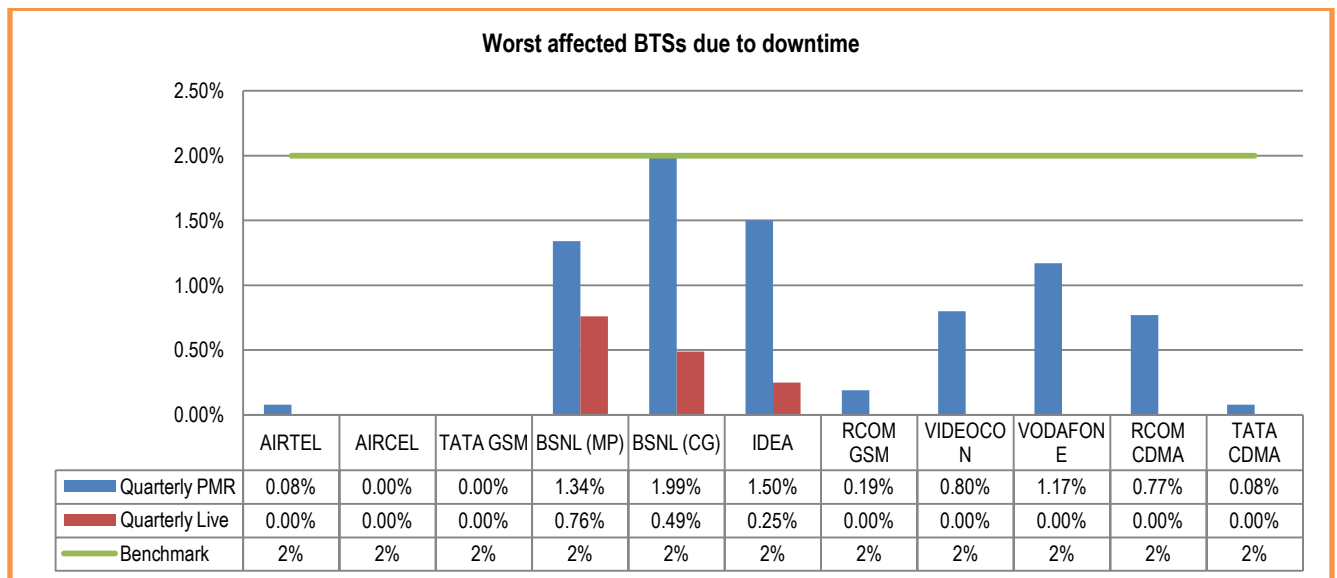
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

1. BTS ACCUMULATED DOWNTIME :



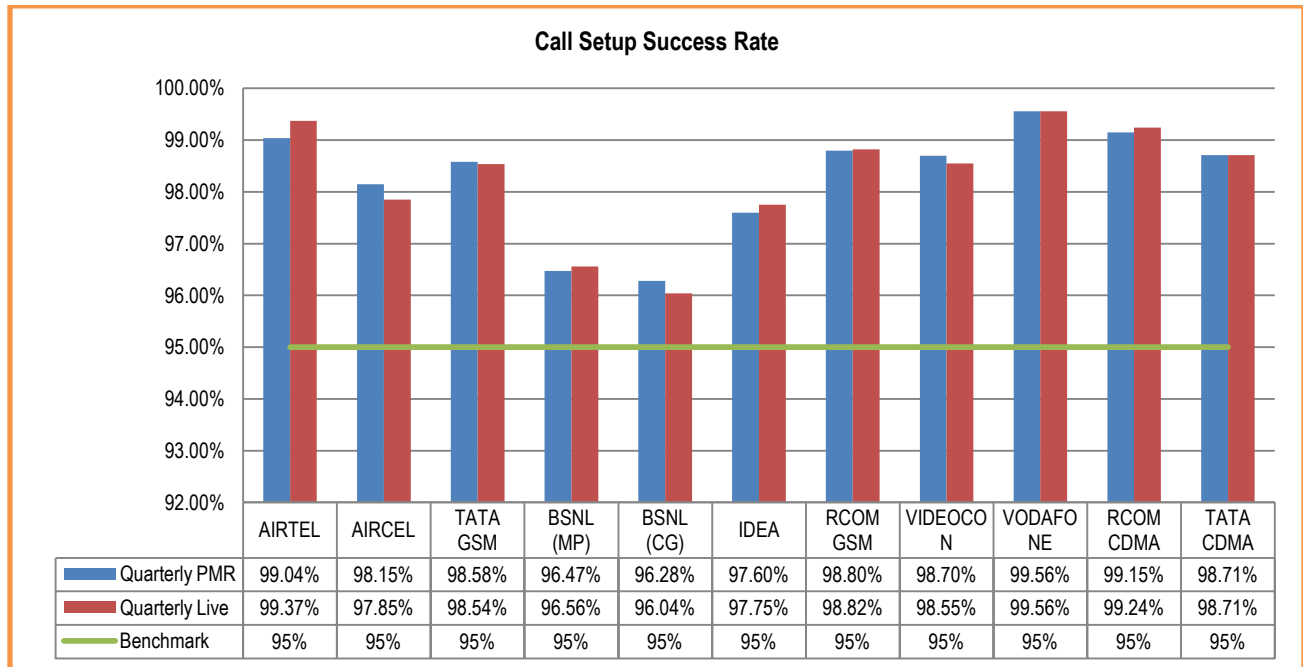
All operators are meeting the benchmarks.

2. WORST AFFECTED BTS DUE TO DOWNTIME:



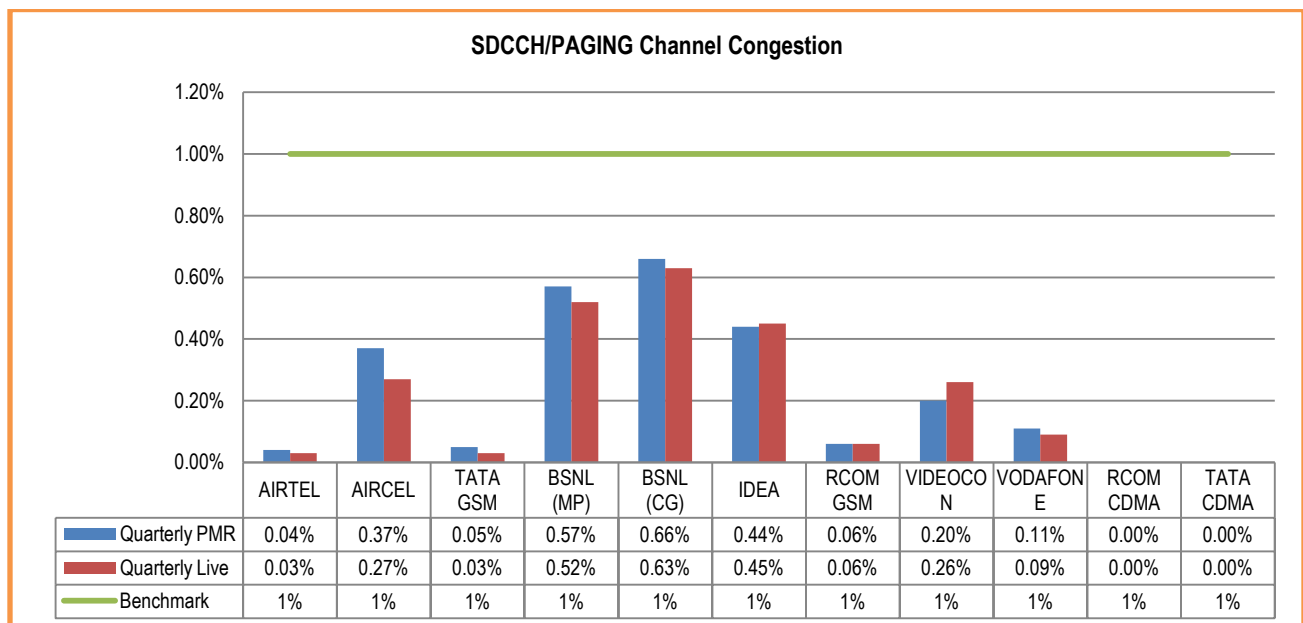
All operators are meeting the benchmarks.

3. CALL SETUP SUCCESS RATE :



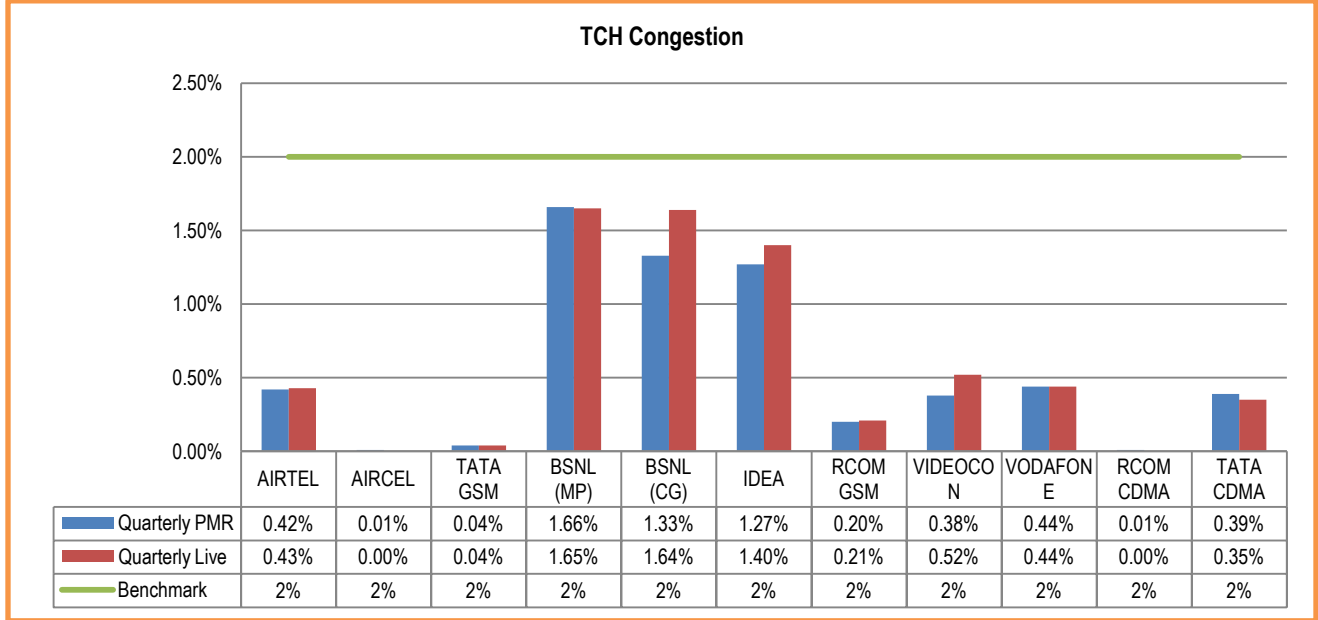
All operators are meeting the benchmarks.

4. SDCCH/PAGING CHANNEL CONGESTION:



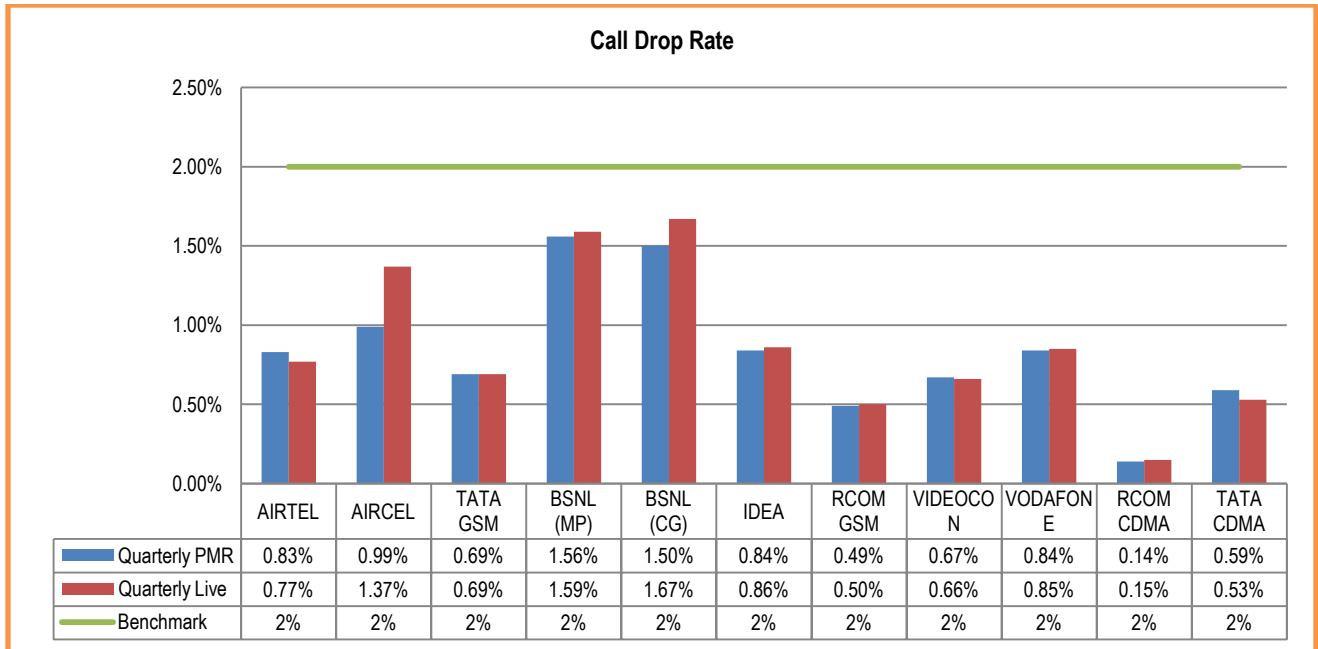
All operators are meeting the benchmarks.

5. TCH CONGESTION :



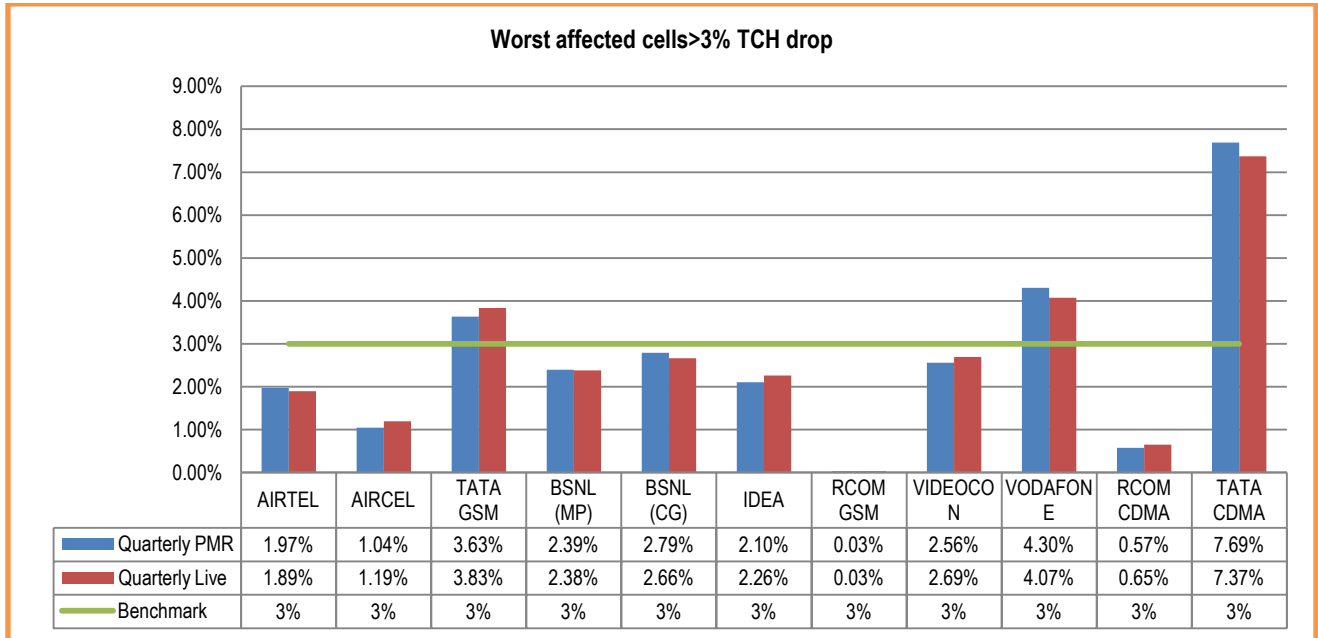
All operators are meeting the benchmarks.

6. CALL DROP RATE :



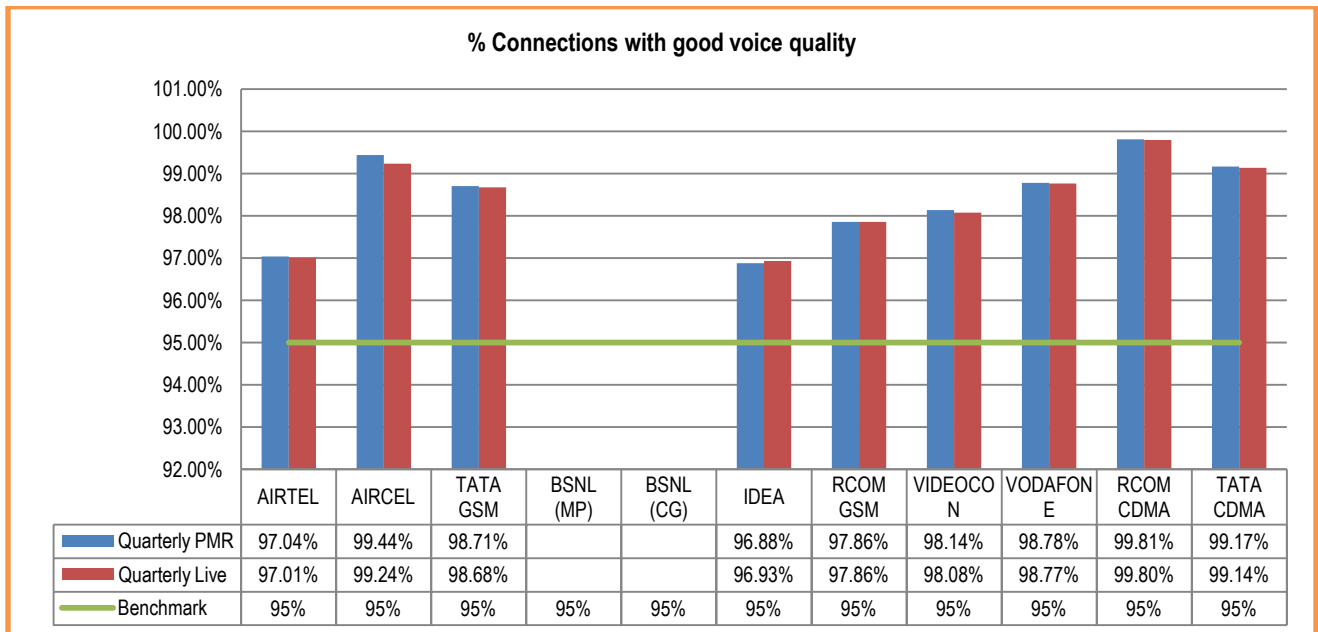
All operators are meeting the benchmarks.

7. WORST AFFECTED CELLS>3% TCH DROP :



All operators are meeting the benchmarks except Tata GSM, Vodafone and Tata CDMA.

8. PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY:



All operators are meeting the benchmarks. Alcatel Lucent Technology being used by BSNL, OMCR does not support the parameter “Connections with good voice quality”, hence BSNL has not provided data for this parameter.

9. QOS AUDIT OF BASIC (WIRELINE) SERVICE PROVIDERS



9. QOS AUDIT OF BASIC TELEPHONE SERVICE (WIRELINER)

The QoS audit for basic (wire line) service is to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles. Based on this criterion, the QoS audit for basic (wire line) service was undertaken for assessment of quarterly performance of the service providers for quarter ended September-2015. **Out of 3105 (Present no. of BSNL exchanges i.e. Madhya Pradesh-2537 & Chhattisgarh - 568), audit was done for 119 sampled (30-Urban and 89-Rural in Madhya Pradesh) and 28 (10-Urban and 18-Rural in Chhattisgarh) exchanges**, and one exchange each of Bharti Airtel, RCL, Vodafone & TTL. As MP&CG Circle is having 244 SDCAs in Madhya Pradesh and 96 SDCAs in Chhattisgarh, so 119 BSNL exchanges spread over 25 SDCAs in MP (10% of total 244 SDCAs) and 28 BSNL exchanges spread over 10 SDCAs in Chhattisgarh (10% of total 96 SDCAs) have been taken for audit. List of all exchanges taken for QoS audit is 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	Total Exchanges Covered for audit
1	Bharti-Airtel	MP & CG	5	0	5	1	0	1
2	RCL		1	0	1	1	0	1
3	TTL		1	0	1	1	0	1
4	Vodafone		1	0	1	1	0	1
5	BSNL MP		744	1793	2537	30	89	119
6	BSNL CG		206	362	568	10	18	28
Total Exchanges at present					3113	44	107	151

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 (WIRES) PROVIDERS:

AVERAGED QUARTERLY (APR TO JUN 15) AUDIT DATA FOR WIRES (BASIC) SERVICES – MP &CG CIRCLE								
Wireline Audit Data		Benchmark	Audit Period	BHARTI AIRTEL	RCL	TTL	VODAFONE	BSNL
S/ N	Name of Parameter			WIRES SERVICE PROVIDERS				
Fault incidences								
1	% of (No. of faults/100 subscribers /month)	< 7%	Quarterly	6.48%	0.20%	1.18%	3.33%	4.03%
Faults Repair/Restoration Time								
2	% of fault repair by next working day (Urban Area)	>85%	Quarterly	89.72%	100.00%	96.00%	100.00%	62.85%
	% of fault repair Within 5 days (Urban Area)	100%	Quarterly	100.00%	100.00%	100.00%	100.00%	96.73%
	% of fault repair by next working day (Rural & hilly Area)	>75%	Quarterly	NA	NA	NA	NA	81.18%
	% of fault repair Within 5 days (Rural & hilly Area)	100%	Quarterly	NA	NA	NA	NA	99.49%
	Mean time to Repair(MTTR)	≤10 Hrs	Quarterly	4.71	4.23	4.82%	1.10	6.80
Rent Rebate								
3	Fault pending > 3 days & <7 days	Rebate for 7 days	Quarterly	NA	NA	NA	NA	NP
	Fault Pending > 7 days & < 15 days	Rebate for 15 days	Quarterly	NA	NA	NA	NA	NP
	Fault pending > 15 days	Rebate for 1 month	Quarterly	NA	NA	NA	NA	NP
Metering & Billing Credibility								
4	% of disputed Bills over bills issued (Post Paid)	< 0.1%	Quarterly	0.03%	0.00%	0.047%	0.00%	0.18%
	% of Pre-paid Charging Complaints	< 0.1%	Quarterly	NA	NA	NA	NA	NA
	% of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	98% within 4 weeks	Quarterly	100.00%	100.00%	100.00%	NA	96.56%
	% of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 6 weeks	100% within 6 weeks	Quarterly	100.00%	100.00%	100.00%	NA	100.00%
	Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	≤1 week	Quarterly	Within 1 Week	Within 1 Week	Within 1 Week	Within 1 Week	Within 1 Week
POI Congestion								
5	No. of POI's having congestion >0.5%		Quarterly	0.00%	0.00%	0.00%	0.00%	0.00%
Response Time to customer for assistance								
6	% Accessibility of Call centre /customer Care (Total call attempt*100/ Total call successfully established)	≥95%	Quarterly	99.97%	98.98%	98.39%	99.50%	NP
	% age of calls answered by the operators (voice to voice) within 90 seconds.	≥95%	Quarterly	64.04%	NP	91.67%	100.00%	NP
Customer care(promptness in attending to customers request)								
7	Termination / Closures	100% within ≤7days	Quarterly	100.00%	100.00%	100.00%	100.00%	100.00%
	Time taken for refunds of deposit after closures	100% within 60 days	Quarterly	100.00%	100.00%	NP	100.00%	100.00%

- NA-Not Applicable
- NP: Data not provided by the service providers despite our best efforts.

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

3 DAYS LIVE DATA FOR WIRELIN (BASIC) SERVICES – MP&CG CIRCLE								
3 days live Wireline Audit Data		Benchmark	Audit Period	BHARTI AIRTEL	RCL	TTL	VODAFONE	BSNL
S/ N	Name of Parameter			WIRELIN SERVICE PROVIDERS				
POI Congestion								
1	No. of POI's having congestion >0.5%		Live	0.00%	0.00%	NP	NP	0.00%
Response Time to customer for assistance								
2	A) Total no of calls attempted to customer care /Call center		Live	NP	1154	10	950	NP
	B) Total no. of calls successfully established to customer care/Call center		Live	NP	1134	10	950	NP
	C) % Accessibility of Call centre /customer Care (Total call attempt*100/ Total call successfully established)	>=95%	Live	NP	98.27%	100.00%	100.00%	NP
	D) Total Calls reached to agent desk for Voice to Voice (Total call attempt)		Live	NP	1134	10	949	NP
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		Live	NP	1134	9	949	NP
	F) % age of calls answered by the operators (voice to voice) within 90 seconds (E *100/ D)	>=95%	Live	NP	100.0%	90.00%	100.00%	NP

NP: BSNL & Bharti Airtel have not provided 3-days live data for the parameter “Response Time to customer for assistance” despite our best efforts.

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 against the benchmark of < 7 %.

Fault Repair/Restoration Time: BSNL could not meet the benchmark of Fault repaired by next working day & within 5 days (Urban area) / (Rural area) with their performance as **62.85%, 96.73% / 99.49%** respectively.

Mean Time to Repair: All operators met the benchmark for MTTR.

Metering and Billing performance: For this parameter also, the performance of the service providers was found well within the compliance benchmarks. However, BSNL remained under performed for parameters “% of disputed Bills over bills issued (Post Paid)” and “Billing Complaints resolved within 4 weeks” with its performance as **0.18% and 96.56 %** respectively.

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 all service providers was within the benchmark of >95%.

With respect to the parameter of **calls answered by operator (voice to voice)**, Airtel and TTL could not meet the benchmark with their performance as **64.04% and 91.67%** respectively against the benchmark of >= 95%.

TTL also failed to comply with the benchmark for this parameter during 3 days live measurements with its performance as **90%** against the benchmark of >=95%.

Termination/Closures: For this parameter, the performance of all the service providers was within the prescribed benchmark.

Time taken for refund of deposit: In respect of this parameter, all operators complied with the benchmark.

*Thus, from the above findings that, it was concluded that the performance of BSNL was remained non-complied with in respect of the parameters **Fault Repair / Restoration Time, Disputed Bills over bills issued (Post Paid) and Billing Complaints resolved within 4 weeks**. Whereas **Bharti Airtel & TTL** failed to achieve the benchmark of **Calls answered by the operators (Voice to voice)**. Hence, the concern operators need to improve their services for these parameters.*

9.4 INTER OPERATOR CALL ASSESSMENT (WIREFLINE)

Inter operator call assessment with a sample of 2x50 test calls for each Service provider operating in MP&CG 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	BSNL	TTL	BHARTI AIRTEL	RCL	VODAFONE
BSNL	MP & CG	100	--	100%	100%	100%	100%
TTL	MP & CG	100	100%	--	100%	100%	100%
BHARTI AIRTEL	MP & CG	100	100%	100%	--	100%	100%
RCL	MP & CG	100	100%	100%	100%	--	100%
VODAFONE	MP & CG	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.

9.5 LEVEL-1 LIVE CALLING (WIREFLINE)

LEVEL 1 LIVE CALLING							
Emergency no.	Circle Name	No. of calls made	BHARTI AIRTEL	RCL	TTL	VODAFONE	BSNL
100	MP & CG	30	√	√	√	√	√
108	MP & CG	30	√	√	√	√	√
1091	MP & CG	30	√	√	√	√	√
1095	MP & CG	30	√	√	√	√	√
1098	MP & CG	30	√	√	√	√	√

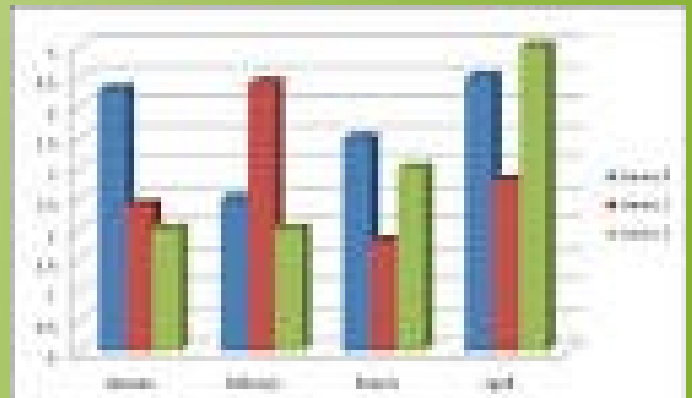
To assess the availability and efficiency of level 1 service such as police, fire, ambulance (emergency services) offered by BSNL, Bharti Airtel, Reliance, TTL and Vodafone, the calls were made from telephone provided by service providers, these services were found functional in the networks of all the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

9.6 CUSTOMER CARE / HELPLINE ASSESSMENT (WIRELINER SERVICES)

LIVE CALLING TO CALL CENTRE							
Parameters	Benchmark	Circle Name	BHARTI AIRTEL	RCL	TTL	VODAFONE	BSNL
Total No. of calls Attempted		MP & CG	100	100	100	100	100
A) Total no of calls attempted to customer care/Call center		MP & CG	100	100	100	100	100
B) Total no. of calls successfully established to customer care/Call center		MP & CG	100	100	100	100	100
C) % Accessibility of Call centre /customer Care (Total call attempt*100/ Total call successfully established)	>=95%	MP & CG	100.00%	100.00%	100.00%	100.00%	100.00%
D) Total Calls reached to agent desk for Voice to Voice (Total call attempt)		MP & CG	100	100	100	100	100
E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		MP & CG	100	100	100	100	100
F) % age of calls answered by the operators (voice to voice) within 90 seconds (E *100/ D)	>=95%	MP & CG	100.00%	100.00%	100.00%	100.00%	100.00%

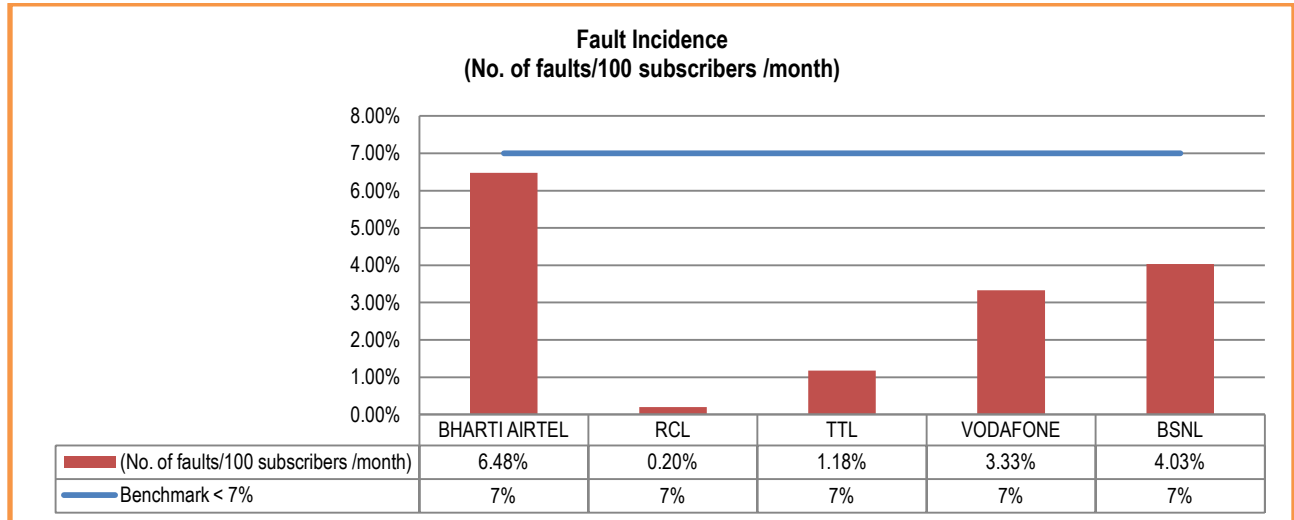
In case of calls answered by operators (voice to voice), when test calls were made to the call centers of different service providers, 100% of calls were answered by the call center operators within stipulated time in the network of Airtel, RCL, Vodafone, BSNL and TTL.

GRAPHICAL REPRESENTATION OF BASIC (WIRELINER) SERVICES



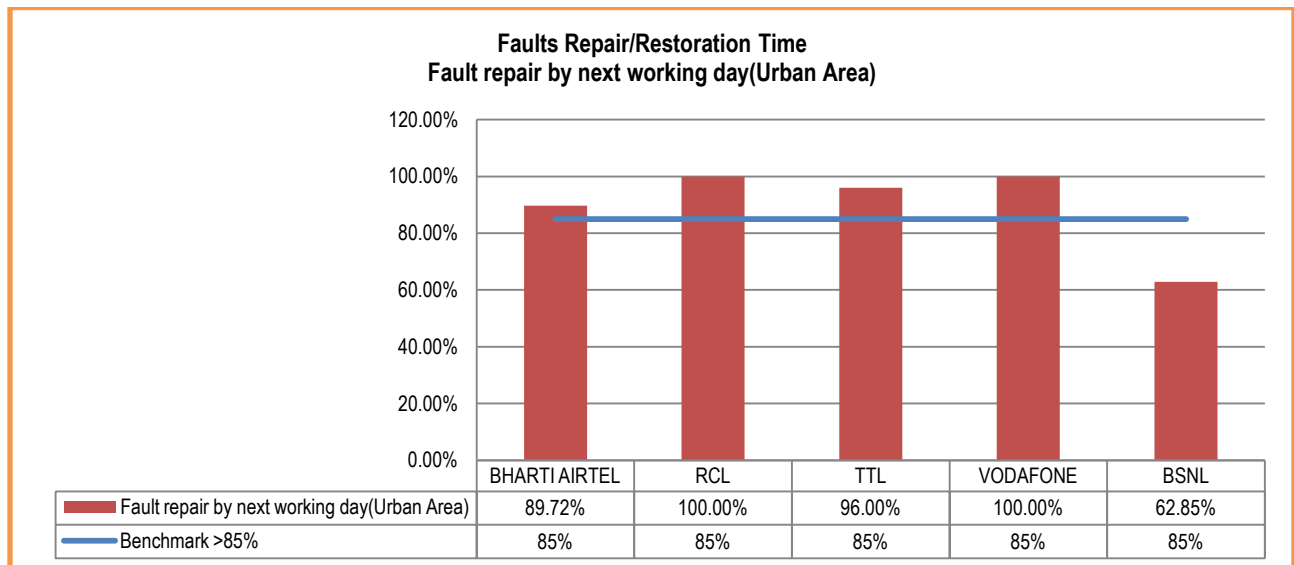
9.7 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:

1) FAULT INCIDENCE:



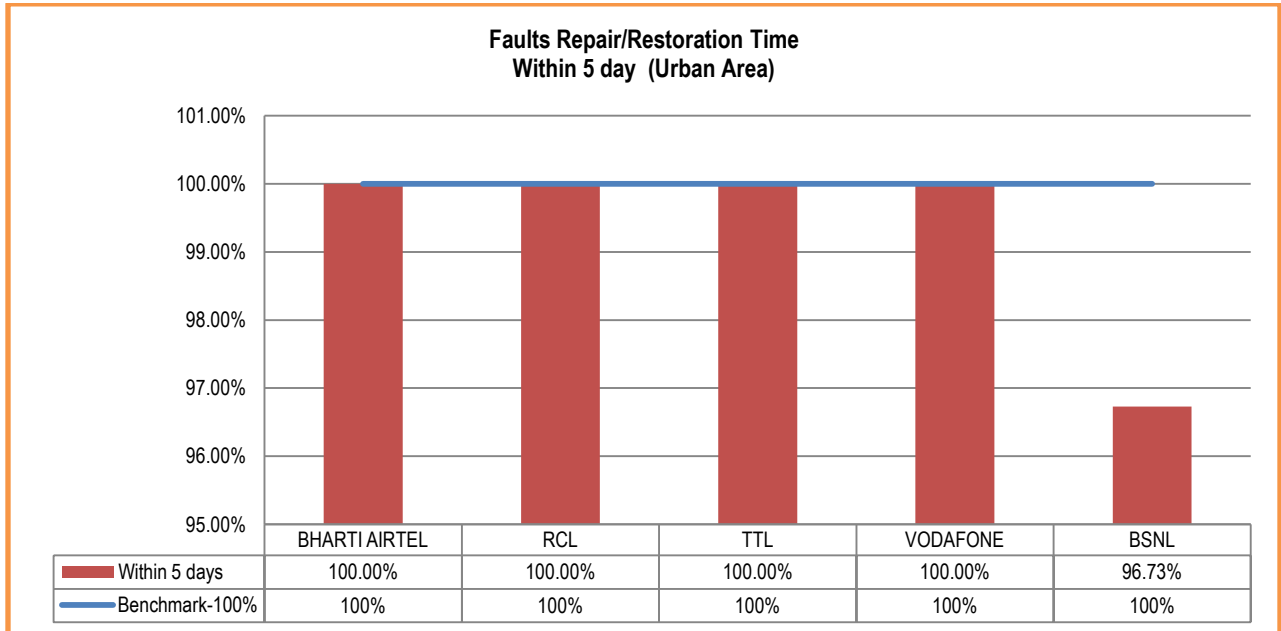
All Operators are meeting the benchmarks.

2) FAULTS REPAIR/RESTORATION TIME:



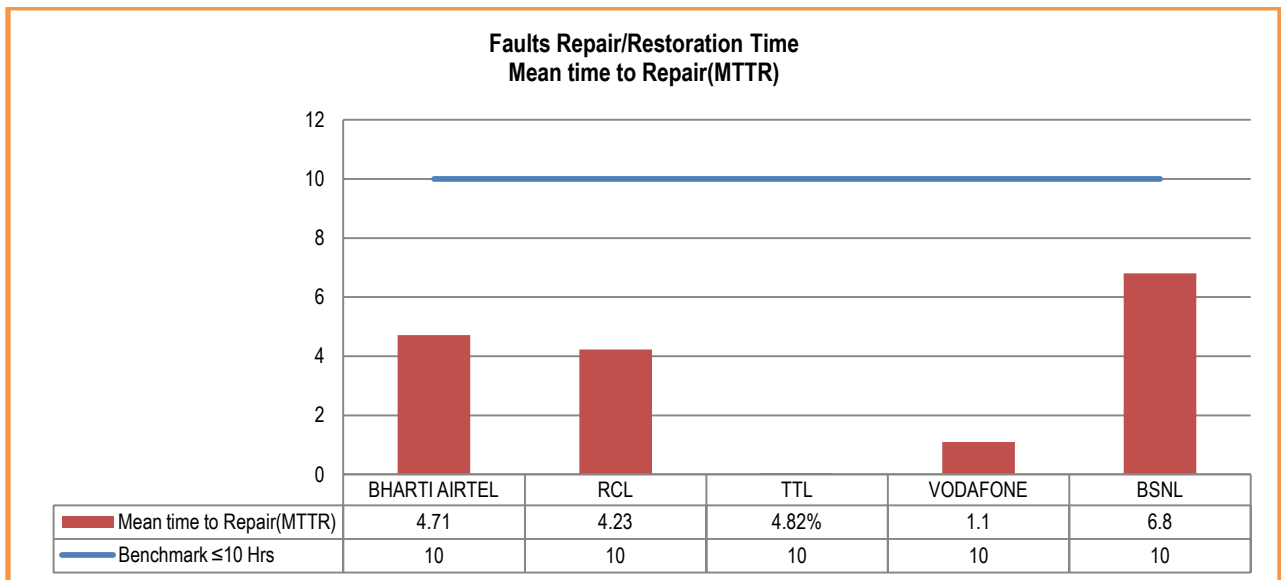
All Operators are meeting the benchmarks except BSNL.

3) FAULTS REPAIR/RESTORATION TIME WITHIN 5 DAYS:



All Operators are meeting the benchmarks except BSNL.

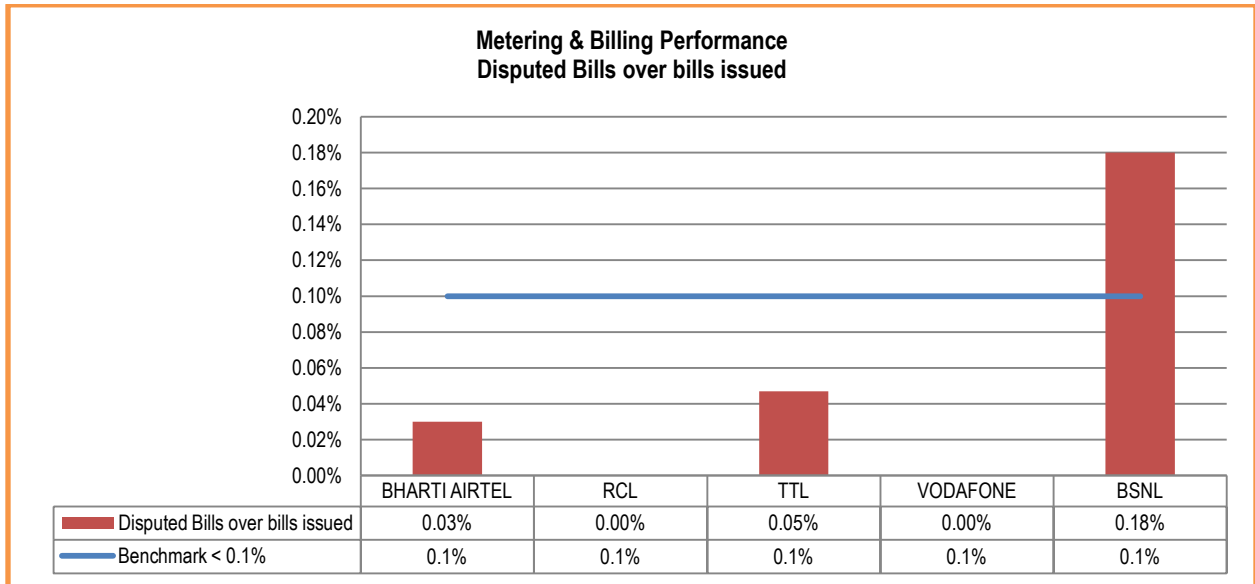
4) MEAN TIME TO REPAIR (MTTR):



All Operators are meeting the benchmarks.

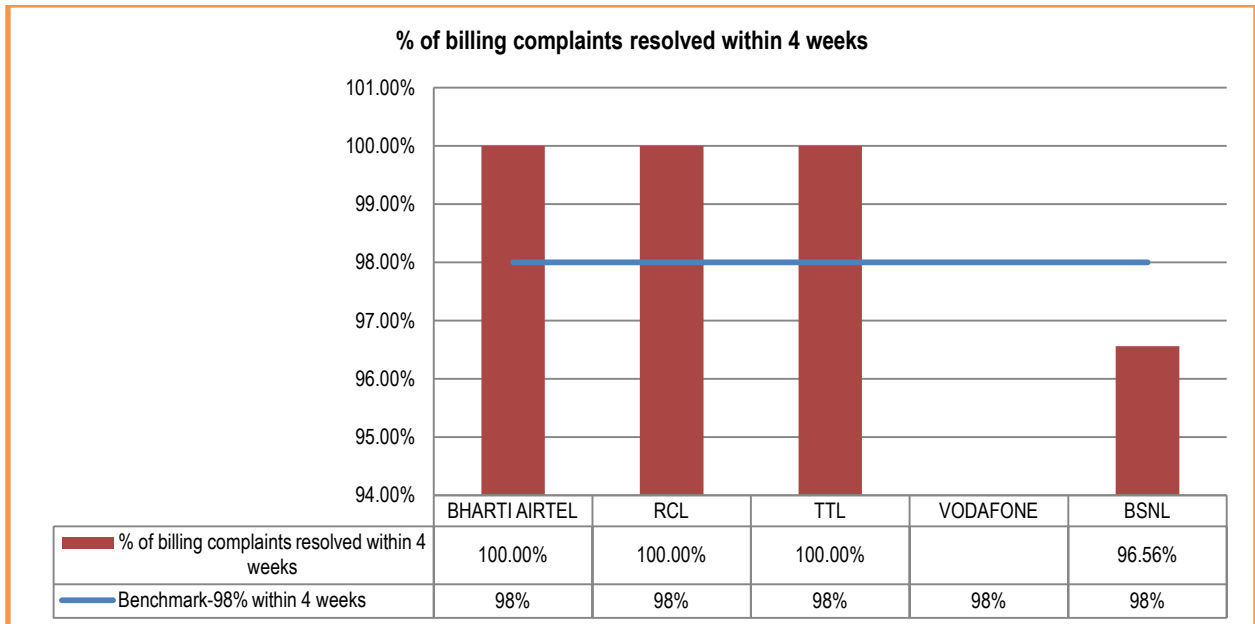
5) METERING & BILLING PERFORMANCE:

a) DISPUTED BILLS OVER BILL ISSUED :



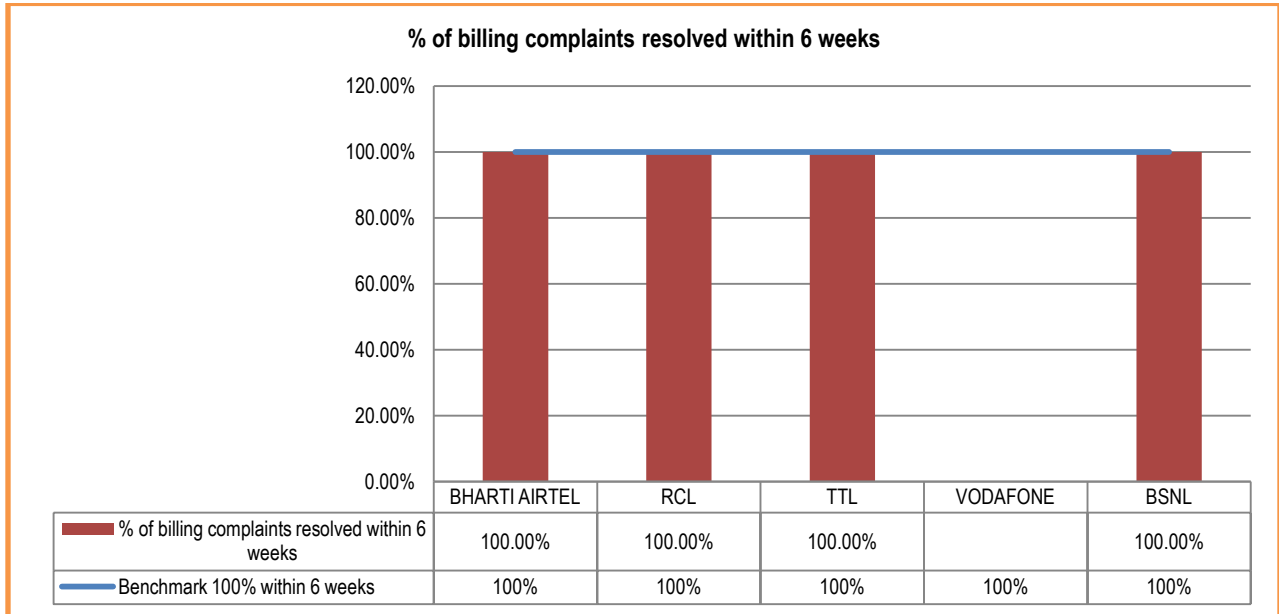
All Operators are meeting the benchmarks except BSNL.

b) BILLING COMPLAINT RESOLUTION WITHIN 4 WEEKS:



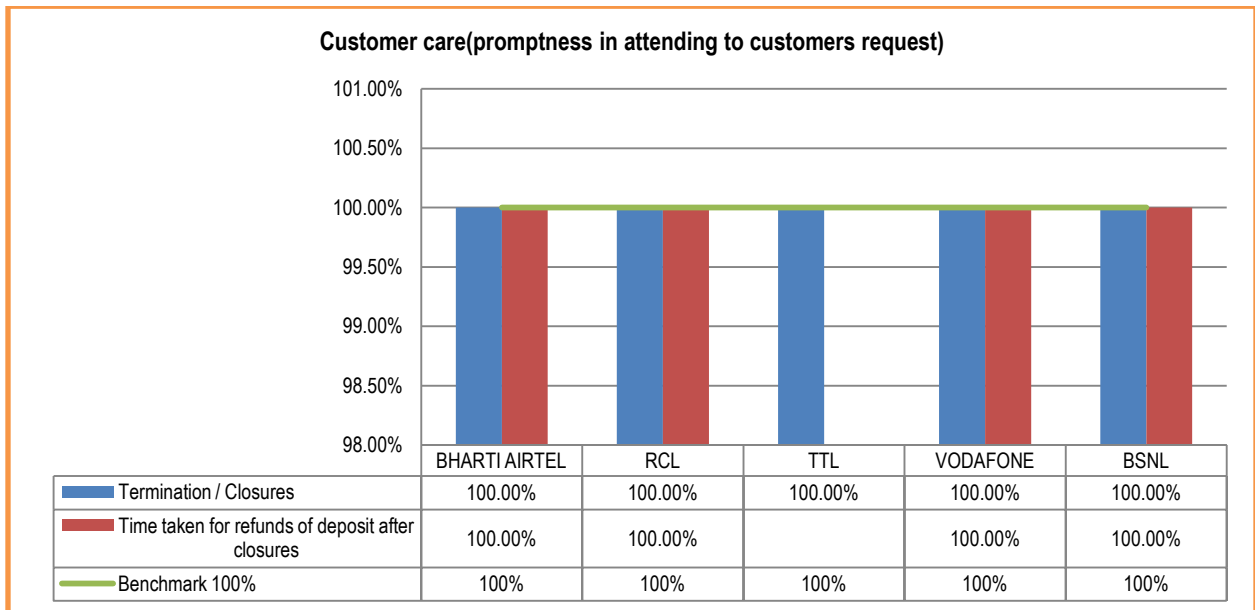
All Operators are meeting the benchmarks except BSNL.

c) BILLING COMPLAINT RESOLUTION WITHIN 6 WEEKS:



All Operators are meeting the benchmarks.

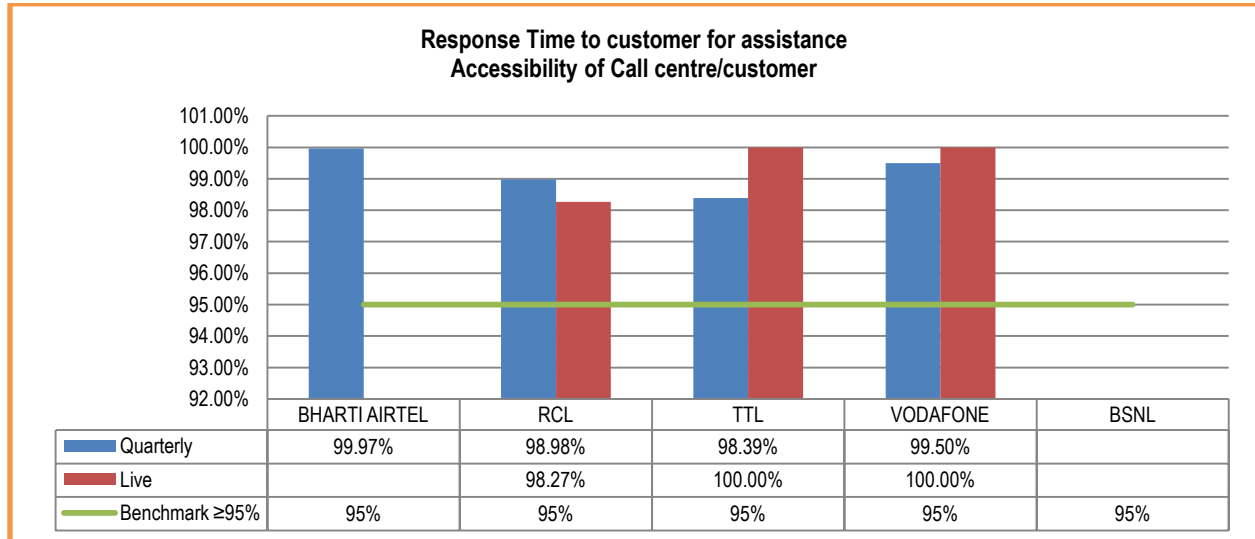
6) TERMINATION & CLOSURES:



All Operators are meeting the benchmarks.

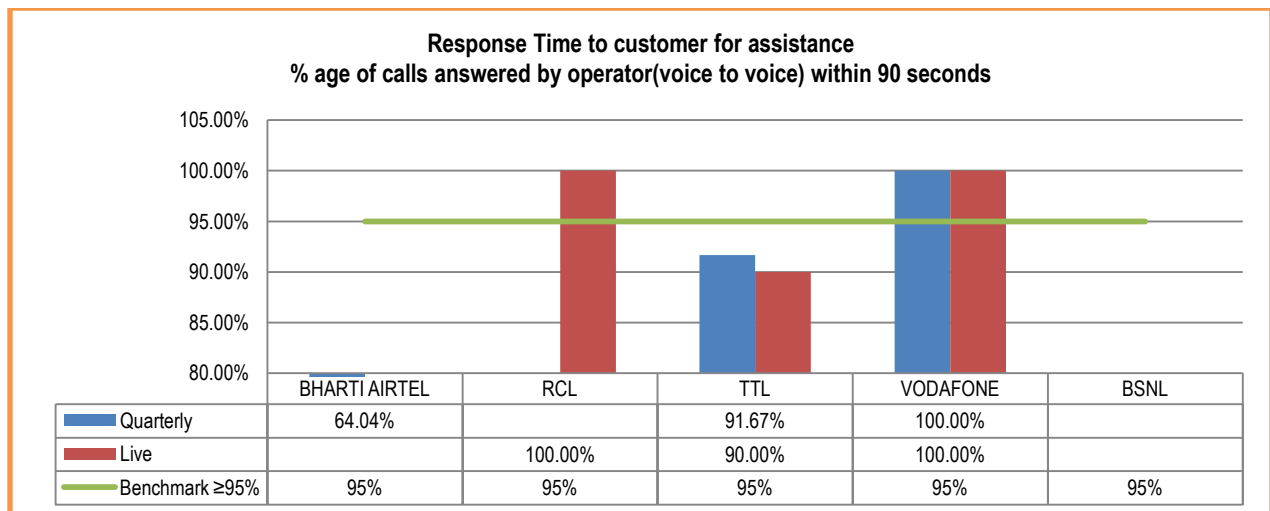
9.8 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINER) PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:

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



All Operators are meeting the benchmarks. BSNL (3 days live & Quarterly data) and Bharti Airtel (3 days live data) have not provided for this parameter.

2) RESPONSE TIME TO CUSTOMER FOR ASSISTANCE (CALL ANSWERED BY OPERATOR):



All Operators are meeting the benchmarks except TTL. BSNL (3 days live & Quarterly data), Bharti Airtel (3 days live data) and RCL (Quarterly data) have not provided for this parameter.

10. QOS AUDIT OF BROADBAND SERVICE PROVIDERS



10. QOS AUDIT OF BROADBAND SERVICE PROVIDERS

TUV-SUD South Asia was required to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who were 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. Location of PoPs, covered for QoS audit is attached below.

Discussion with the broadband service providers revealed that they are maintaining their networks data on centralized basis so audit has been done for the centralized data. The following Broadband service providers were covered for QoS audit --

SL. NO.	NAME OF BROADBAND SERVICE PROVIDERS	LOCATION OF AUDIT / POP
1	Broadband Pacenet (I) Pvt. Ltd.	Shanivar Darpan Building 27, press complex A B road Indore
2	Ortal Communication	Ortel Communications Limited, Bhalla House, Meera Dutar Road, Near Bottle House, Shankar Nagar, Raipur - 492007, CG.
3	Airtel Bharti	47 to 49 Electronics Complex, Pardeshipura, Indore(M.P.) 452010
4	Reliance (RCL)	Ai8, Reliance Infrastructure bldg, A-wing, MBP, Mahape, Navi Mumbai
5	TATA Tele Limited (TTL)	Tata Teleservices Ltd. Chinaar Fortune City, Hoshangabad Road, Near Vrindavan Bhaba, Bhopal (M.P.)
6	Noida Software Technology Park Limited (NSTPL)	Alaknanda Complex, MP Nagar Bhopal
7	Tikona Digital Networks Pvt Ltd	Tikona Digital Networks Pvt. Ltd., 107-108, 1st floor, Industry House, A. B. Road, Indore (M.P) – 452001
8	BSNL (MP)	All selected exchange/POP in Madhya Pradesh Circle (Given in separate sheet)
9	BSNL (CG)	All selected exchange/POP in Chhattisgarh Circle (Given in separate sheet)

10.1 QUARTERLY MEASUREMENT DATA FOR BROADBAND SERVICE PROVIDERS:

AVERAGED QUARTERLY (JULY TO SEPTEMBER-15) AUDIT DATA FOR BROADBAND SERVICES											
Broadband Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	NSTPL	TIKONA	TTSL	BROADBAND PACENET	RELIANCE	ORTAL COMMUNICAT ION	BSNL
S/ N	Name of Parameter			BROADBAND SERVICE PROVIDERS							
Service Provisioning/Activation Time											
1	A) No of connections registered during the period		MP & CG	19768	19	5017	36	316	275	437	995
	B) Total number of connections provided within 15 days of registration on demand during the period		MP & CG	19768	19	5017	36	316	275	437	995
	C) % age of connections provided within 15 days of registration on demand (subject to technical feasibility)	<15 days	MP & CG	100%	100%	100%	100%	100%	100%	100%	100%
	D) Total number of connections provided after 15 days of registration on demand		MP & CG	NA	NA	NA	NA	NA	NA	NA	NA
	E) %age of connections provided after 15 days of registration on demand		MP & CG	NA	NA	NA	NA	NA	NA	NA	NA
	F) In all cases where payment towards installation charge & SD is taken and the Broadband connection is not provided within 15 working days	Credit @ Rs.10/ per day.	MP & CG	NA	NA	NA	NA	NA	NA	NA	NA
Fault Repair/Restoration Time											
2	A) Total number of faults registered during the period		MP & CG	19144	10	12694	196	23	779	5806	3480
	B) Total number of faults repaired by next working day		MP & CG	17451	10	11472	189	22	779	5378	2098
	C) % age of faults repaired by next working day	>90%	MP & CG	91.16%	100%	90.37%	96.43%	95.65%	100%	92.63%	60.29%
	D) Total number of faults repaired within three working days		MP & CG	19040	10	12607	195	23	779	5767	3357
	E) % age of faults repaired within three working days	≥99%	MP & CG	99.46%	100%	99.31%	99.49%	100%	100%	99.33%	96.47%
3	Rent Rebate										

AVERAGED QUARTERLY (JULY TO SEPTEMBER-15) AUDIT DATA FOR BROADBAND SERVICES

Broadband Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	NSTPL	TIKONA	TTSL	BROADBAND PACENET	RELIANCE	ORTAL COMMUNICATION	BSNL
S/ N	Name of Parameter			BROADBAND SERVICE PROVIDERS							
	A) Faults Pending for > 3 working days and < 7 working days: (Rebate equivalent to 7 days of minimum monthly charge or equivalent usage allowance)		MP & CG	NP	NA	772	NP	NA	NP	NA	17
	B) Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)		MP & CG	NP	NA	179	NP	NA	NP	NA	NP
	C) Faults Pending for > 15 working days:(Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)		MP & CG	NP	NA	321	NP	NA	NP	NA	NP
Billing Performance											
	A) Total bills generated during period		MP & CG	448621	NA	NA	1440	NA	14768	NA	127484
	B) Total complaints received from customers/ Bills disputed		MP & CG	45	NA	NA	0	NA	47	NA	748
	C) Billing complaints per 100 bills issued	<2%	MP & CG	0.01%	NA	NA	0.00%	NA	0.32%	NA	0.59%
	D) Total number of complaints resolved in 4 weeks from date of receipt		MP & CG	45	NA	NA	N/A	NA	47	NA	706
4	E) %age billing complaints resolved in 4 weeks	100%	MP & CG	100.00%	NA	NA	N/A	NA	100%	NA	94.39%
	F) Total number of cases requiring refund of deposits after closure		MP & CG	169	NA	NA	0	NA	4	NA	2279
	G) Total number of cases where refund was made in <60 days		MP & CG	169	NA	NA	N/A	NA	4	NA	1855
	H) Percentage cases in which refund received within 60 days	100%	MP & CG	100.00%	NA	NA	N/A	NA	100%	NA	81.40%
Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)											
5	A) Total number of calls received by the operator		MP & CG	267974	NA	133668	288	23	100752	5806	NP
	B) Total number of calls answered by the operator within 60 seconds		MP & CG	146924	NA	86385	236	22	99083	5806	NP

AVERAGED QUARTERLY (JULY TO SEPTEMBER-15) AUDIT DATA FOR BROADBAND SERVICES											
Broadband Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	NSTPL	TIKONA	TISL	BROADBAND PACENET	RELIANCE	ORTAL COMMUNICAT ION	BSNL
S/ N	Name of Parameter			BROADBAND SERVICE PROVIDERS							
	C) % age calls answered by the operator in 60 seconds	>60%	MP & CG	54.83%	NA	64.63%	81.94%	95.65%	98.34%	100.00%	NP
	D) Total number of calls answered by the operator within 90 seconds		MP & CG	175238	NA	111125	246	23	99382	NA	NP
	E) % age calls answered by the operator within 90 seconds	>80%	MP & CG	65.39%	NA	83.14%	85.42%	100.00%	98.64%	NA	NP
6	Bandwidth Utilization/ Throughput:										
	POP to ISP Gateway Node [Intra-network] Link(s)										
6.1	A) Total Bandwidth Available at the link for the period days		MP & CG	286928	300	9820	6144	837	9000	135	32000
	B) Total Bandwidth utilized during the period during TCBH (In Mbps)		MP & CG	56985	215	7736	4137	623	2051	99.7	17627
	C) % age Bandwidth utilized during the period	<80%	MP & CG	19.86%	71.67%	78.78%	67.33%	74.43%	22.79%	73.85%	55.08%
	A) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity										
6.2	A) Total number of upstream links for International connectivity		MP & CG	3	NA	8	1	NA	11	NA	NP
	B) Number of Links having Bandwidth utilization > 90% during TCBH		MP & CG	0	NA	0	0	NA	0	NA	NP
	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		MP & CG	60000	NA	6675	56940	NA	318000	NA	NP
	D) Total international bandwidth utilization during peak hours (TCBH) in Mbps		MP & CG	47910	NA	5195.34	44200	NA	184521	NA	NP
	E) %age International Bandwidth utilization during peak hours (TCBH)	<80%	MP & CG	79.85%	NA	77.83%	77.63%	NA	58.0%	NA	NP
	Broadband Connection Speed (download) - from ISP Node to User										
6.3	A) Total committed download speed to the sample subscribers (In mpbs)		MP & CG	6	3	12	6.25	6	250	2.5	NP
	B) Total average download speed observed for the sample subscribers during TCBH (In Mpbs)		MP & CG	6	2.82	11.25	5.3	5.91	235.88	2.39	NP
	C) % age subscribed speed available to the subscriber during TCBH	>80%	MP & CG	100.00%	94.00%	93.75%	84.80%	98.50%	94.35%	93.42%	NP
7	Service Availability/Uptime										

AVERAGED QUARTERLY (JULY TO SEPTEMBER-15) AUDIT DATA FOR BROADBAND SERVICES											
Broadband Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	NSTPL	TIKONA	TTSL	BROADBAND PACENET	RELIANCE	ORTAL COMMUNICATION	BSNL
S/ N	Name of Parameter			BROADBAND SERVICE PROVIDERS							
	A) Total operational Hours		MP & CG	330086976	2208	2208	44160	2208	2208	2208	264960
	B) Total downtime (In hours)		MP & CG	79275	0	0.2976	103	6	9.86	2.2	1045
	C) Total time when the service was available (In Hrs)		MP & CG	330007701	2208	2208	44057	2202	2198	2204	263915
	D) % age of Service availability uptime	>98%	MP & CG	99.98%	100.00%	99.99%	99.77%	99.73%	99.6%	99.92%	99.61%
Packet Loss											
8	A) Total number of ping packets transmitted		MP & CG	92000	NA	3000	3000	NA	92000	3000	NP
	B) Total number of ping packets lost		MP & CG	0	NA	0.00	3	NA	481	0	NP
	C) % age packet loss	<1%	MP & CG	0.00%	NA	0.00%	0.10%	NA	0.52%	0.00%	NP
9	Network latency (for wired broadband access)										
Network Latency from User reference point at POP/ISP Node to IGSP/NIXI gateway											
9.1	A) Total number of ping packets transmitted		MP & CG	92000	NA	NA	3000	NA	3000	3000	NP
	C) Average round trip time for all the ping packets transmitted	<120 ms	MP & CG	67.30	NA	NA	106.20	NA	34.00	79.33	NP
9.2	Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)			67.30	NA	NA	106.20	NA	34	79.33	NP
	A) Total number of ping packets transmitted		MP & CG	66000	NA	NA	3000	NA	3000	3000	NP
	C) Average round trip time for all the ping packets transmitted	<350 ms	MP & CG	70.95	NA	NA	63.70	NA	25.00	201.00	NP
Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)											
9.3	A) Total number of ping packets transmitted		MP & CG	No Satellite Connectivity							
	B) Total round trip time for all the ping packets transmitted during the period		MP & CG								
	C) Average round trip time for all the ping packets transmitted	<800 ms	MP & CG								

NA: Not applicable

NP: Data not provided

NSTPL, Tikona, Broadband Pacenet and Ortal Communication, do not have postpaid services.

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

3 DAYS LIVE DATA FOR BROADBAND SERVICES										
3 days live Broadband Audit Data		Bench- mark	BHARTI AIRTEL	NSTPL	TIKONA	TTSL	BROADBAND PACENET	RELIANCE	ORTAL COMMUNICATION	BSNL
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS							
Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)										
1	A) Total number of calls received by the operator		NP	NA	5115	15	1	2693	168	NP
	B) Total number of calls answered by the operator within 60 seconds		NP	NA	3010	15	1	2645	168	NP
	C) % age calls answered by the operator in 60 seconds	>60%	NP	NA	58.85%	100%	100%	98.22%	100.00%	NP
	D) Total number of calls answered by the operator within 90 seconds		NP	NA	4102	15	1	2645	NA	NP
	E) % age calls answered by the operator within 90 seconds	>80%	NP	NA	80.20%	100%	100%	100%	NA	NP
2	Bandwidth Utilization/ Throughput:									
POP to ISP Gateway Node [Intra-network] Link(s)										
2.1	A) Total Bandwidth Available at the link for the period days		109159	300	3595	6000	289	2000	135	16180
	B) Total Bandwidth utilized during the period during TCBH (In Mbps)		21708	66	2810	4203	245	1356.33	97.85	6872
	C) % age Bandwidth utilized during the period	<80%	19.89%	22.00%	78.16%	70.05%	84.78%	67.8%	72.48%	42.47%
A) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity										
2.2	A) Total number of upstream links for International connectivity		3	NA	8	1	NA	11	NA	NP
	B) Number of Links having Bandwidth utilization > 90% during TCBH		0	NA	0	0	NA	0	NA	NP
	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		22500	NA	2225	19958	NA	106000	NA	NP
	D) Total international bandwidth utilization during peak hours (TCBH) in Mbps		17757	NA	1721	14867	NA	70269	NA	NP
	E) %age International Bandwidth utilization during peak hours (TCBH)	<80%	78.92%	NA	77.35%	74.49%	NA	66.29%	NA	NP
Broadband Connection Speed (download) - from ISP Node to User										
2.3	A) Total committed download speed to the sample subscribers (In mpbs)		14	3	12	3	3	1	14.50	296.00

3 DAYS LIVE DATA FOR BROADBAND SERVICES										
3 days live Broadband Audit Data		Bench- mark	BHARTI AIRTEL	NSTPL	TIKONA	TTSL	BROADBAND PACENET	RELIANCE	ORTAL COMMUNICATION	BSNL
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS							
	B) Total average download speed observed for the sample subscribers during TCBH (In Mbps)		13.47	3	11	2.64	2.94	0.93	14.01	277.96
	C) % age subscribed speed available to the subscriber during TCBH	>80%	96.21%	100.00%	92.33%	87.93%	98.00%	93.00%	96.62%	93.91%
Packet Loss										
3	A) Total number of ping packets transmitted		3000	3000	3000	3000	3000	1000	3000	174000
	B) Total number of ping packets lost		1	57	0	3	7	0	0	118
	C) % age packet loss	<1%	0.03%	1.90%	0.00%	0.10%	0.23%	0.00%	0.00%	0.07%
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		3000	3000	NA	3000	NA	3000	1000	9000
	C) Average round trip tip time for all the ping transmitted	<120 ms	46.67	39.00	NA	96.00	NA	1.54	16.00	61.56
Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)										
4.2	A) Total number of ping packets transmitted		3000	3000	3000	3000	3000	3000	1000	9000
	C) Average round trip tip time for all the ping transmitted	<350 ms	64.33	57.30	105.30	69.70	223.00	1.24	43.00	198.94
Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)										
4.3	A) Total number of ping packets transmitted		No satellite Connectivity							
	B) Total round trip time for all the ping packets transmitted during the period									
	C) Average round trip tip time for all the ping transmitted	<800 ms								
Service Availability/Uptime										
5	A) Total operational Hours		11061144	72	72	1296	72	72	72	4776
	B) Total downtime (In hours)		1779	0	0	2	0	0	0	0
	C) Total time when the service was available (In Hrs)		11059365	72	72	1294	72	72	72	4776
	D) % age of Service availability uptime	>98%	99.98%	100%	100%	99.85%	100%	100%	100%	100%

NA: Not applicable

NP: Data not provided by service providers despite our best efforts.

10.3 KEY FINDINGS: BROADBAND SERVICES

Service Provisioning / Activation Time: The audit of the service providers revealed that all **operators** met the benchmark of the parameter **Connection within 15 days**.

Fault Repair/Restoration Time: With regards to the fault related parameters, the performance of the service providers was within TRAI norms except for **BSNL**. **BSNL** failed to meet the benchmark of parameter **Fault repaired by next working day and within 3 days** with their performance as **60.29% and 96.47% respectively**.

Billing Performance: For this parameter the performance of the service providers was found well within the compliance benchmarks. However, in case of parameter **Billing Complaints resolved within 4 weeks**, **BSNL** could not meet the benchmark with their performance level as **94.39%** against the benchmark of 100%.

Regarding the parameter of **Refunds**, **BSNL** could not settle 100 % of cases within 60 days with its performance as **81.40%**.

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 **Airtel**. **Airtel** could not meet the benchmark for the parameter “**% age calls answered by the operator within 60 seconds**”; and “**% age calls answered by the operator within 90 seconds**”; its achievement level was **54.83%** and **65.39%** respectively.

Live measurement: **Airtel** also failed to meet the benchmark for the same parameter during 3 days live measurement and its achievement level was **58.85% (Within 60 Sec.)**.

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 except **Broadband Packnet** could not meet the benchmark during live measurement for the parameter **%age Bandwidth utilization during the period (84.78%)**.

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. All operators found meeting the benchmark.

10.4 CUSTOMER CARE / HELPLINE ASSESSMENT

LIVE CALLING TO CALL CENTRE FOR BROADBAND SERVICES									
Parameter	Circle Name	BHARTI AIRTEL	NSTPL	TIKONA	TTSL	BROADBAND PACENET	RELIANCE	ORTAL COMMUNICATION	BSNL
Total No. of calls Attempted	MP & CG	100	NA	100	100	100	100	100	100
Total number of calls answered by the operator within 60 seconds		100	NA	100	100	100	100	100	100
% age calls answered by the operator in 60 seconds		100%	NA	100%	100%	100%	100%	100%	100%
Total number of calls answered by the operator within 90 seconds		100	NA	NA	100	100	100	NA	NA
% age calls answered by the operator within 90 seconds		100%	NA	NA	100%	100%	100%	NA	NA

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. In case of NSTPL, there are no call centers and complaints handle manually.

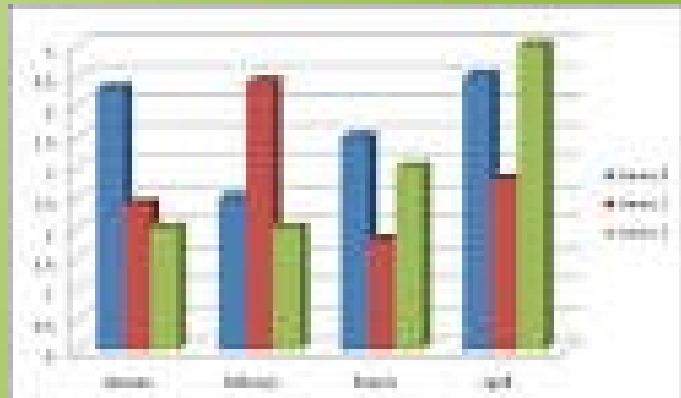
10.5 LIVE CALLING FOR BILLING COMPLIANTS

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS								
Parameter	BHARTI AIRTEL	NSTPL	TIKONA	TTSL	BROADBAND PACENET	RELIANCE	ORTAL COMMUNICATION	BSNL
Total No. of calls Attempted	45	NA	NA	NA	NA	47	NA	238
Total No. of calls Answered	42	NA	NA	NA	NA	36	NA	182
Cases resolved within 4 weeks	42	NA	NA	NA	NA	36	NA	176
%age of cases resolved	100%	NA	NA	NA	NA	100%	NA	96.70%

NA: Not applicable due to Pre-Paid model.

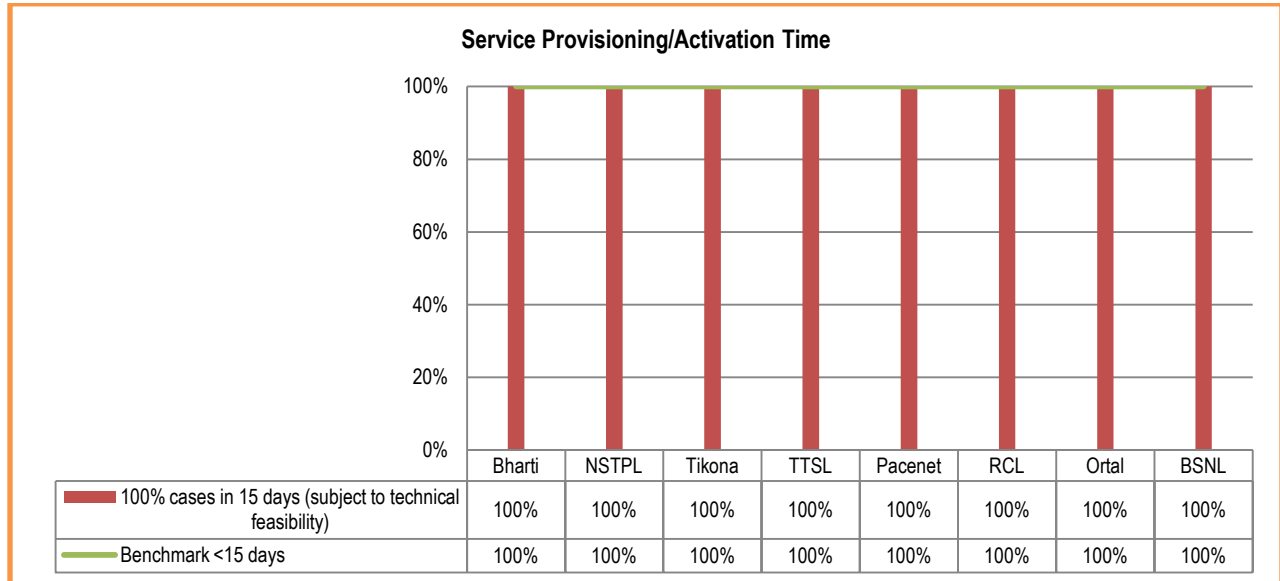
To test the Service Providers performance on billing related complaints and their resolutions, TUV-SUD auditors conducted a customer feedback calling for about random 100 nos. of customers. However, in some cases, the number of customers contacted for verification was very less due to less number of 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 did not remember about the duration of their resolution. However, most of the customers reported their satisfaction on resolution of the billing complaints.

GRAPHICAL REPRESENTATION OF BROADBAND SERVICES



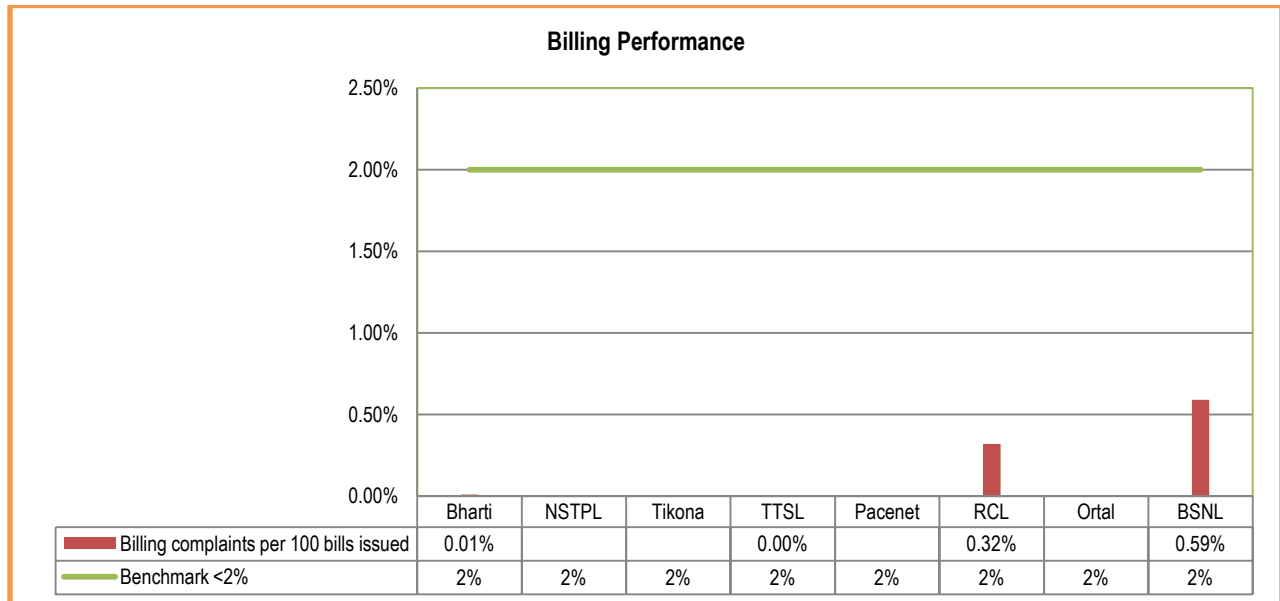
10.6 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF BROADBAND SERVICE PROVIDERS:

1. SERVICE PROVISIONING/ACTIVATION TIME:



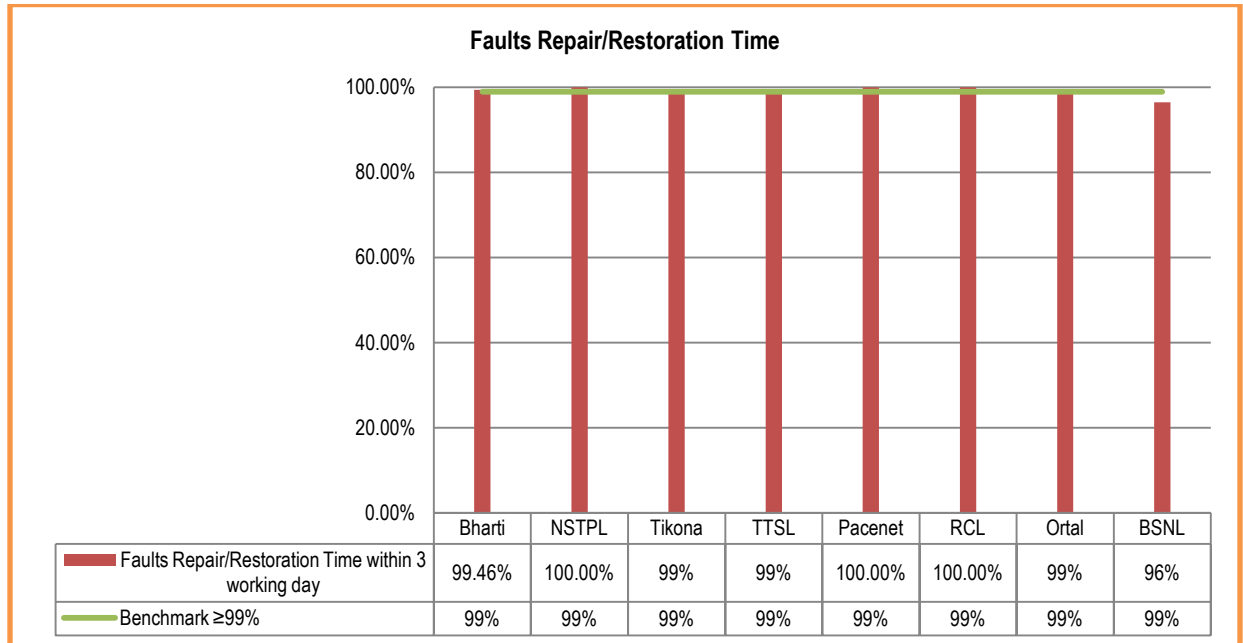
All Operators are meeting the benchmarks.

2. BILLING PERFORMANCE:



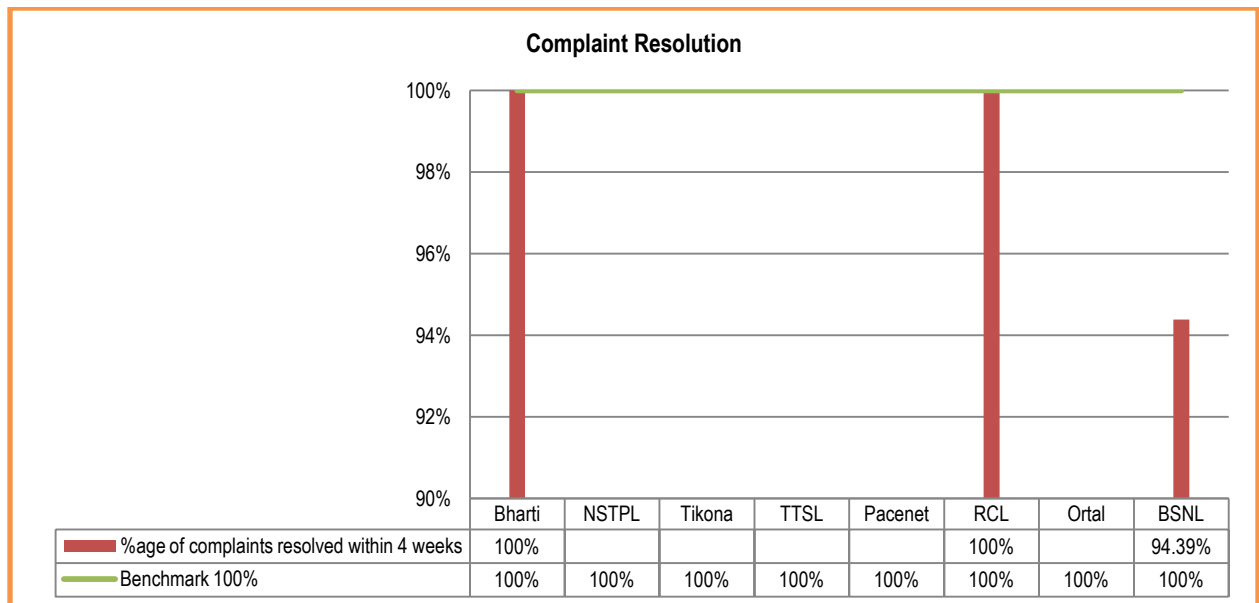
All Operators are meeting the benchmarks. In case of NSTPL, Tikona, Pacenet and Ortal, they do not have postpaid services.

3. FAULTS REPAIR/RESTORATION TIME:



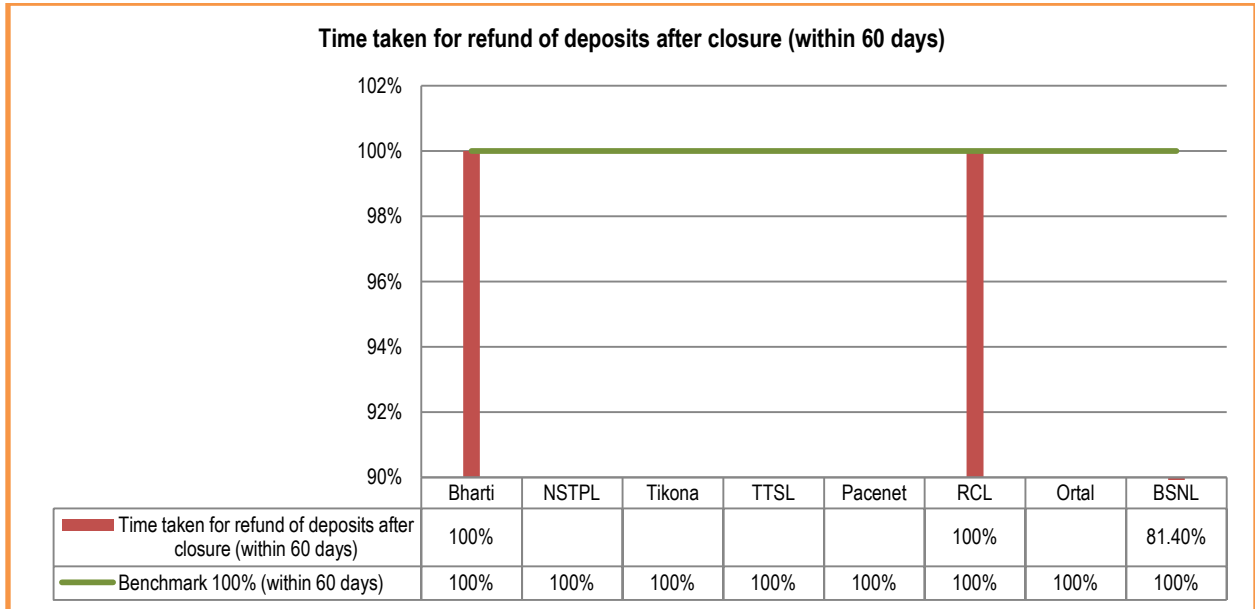
All Operators are meeting the benchmarks except BSNL.

4. COMPLAINT RESOLUTION:



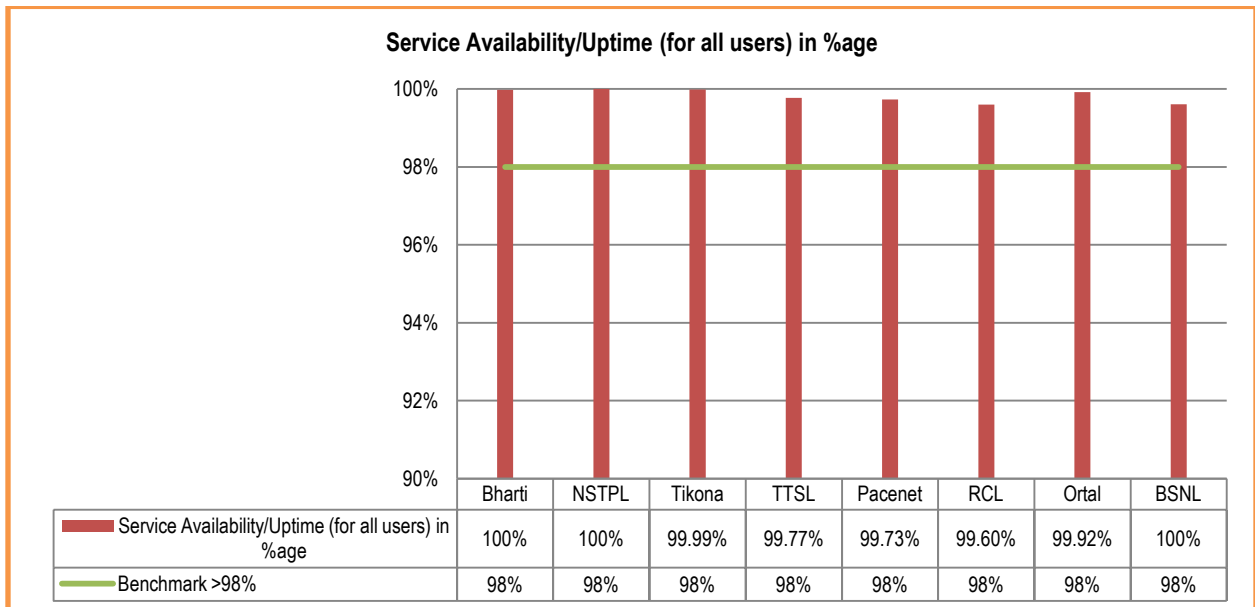
All Operators are meeting the benchmarks except BSNL. In case of NSTPL, Tikona, Pacenet and Ortal, they do not have postpaid services.

5. REFUND:



All Operators are meeting the benchmarks except BSNL. In case of NSTPL, Tikona, Pacenet and Ortal, they do not have postpaid services.

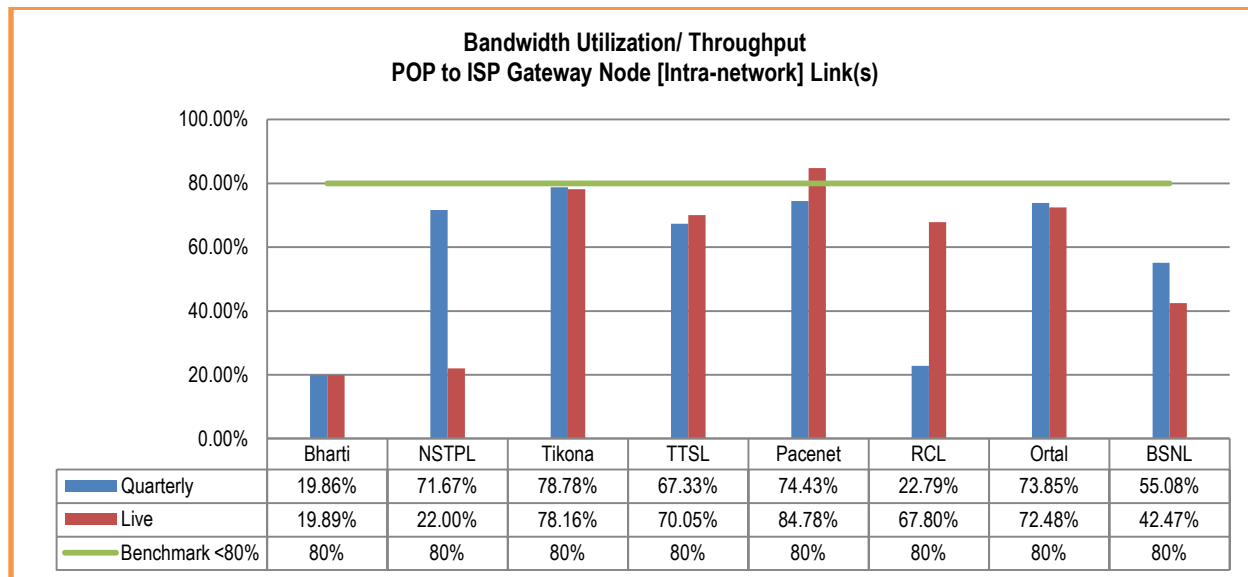
6. SERVICE AVAILABILITY/UPTIME:



All Operators are meeting the benchmarks.

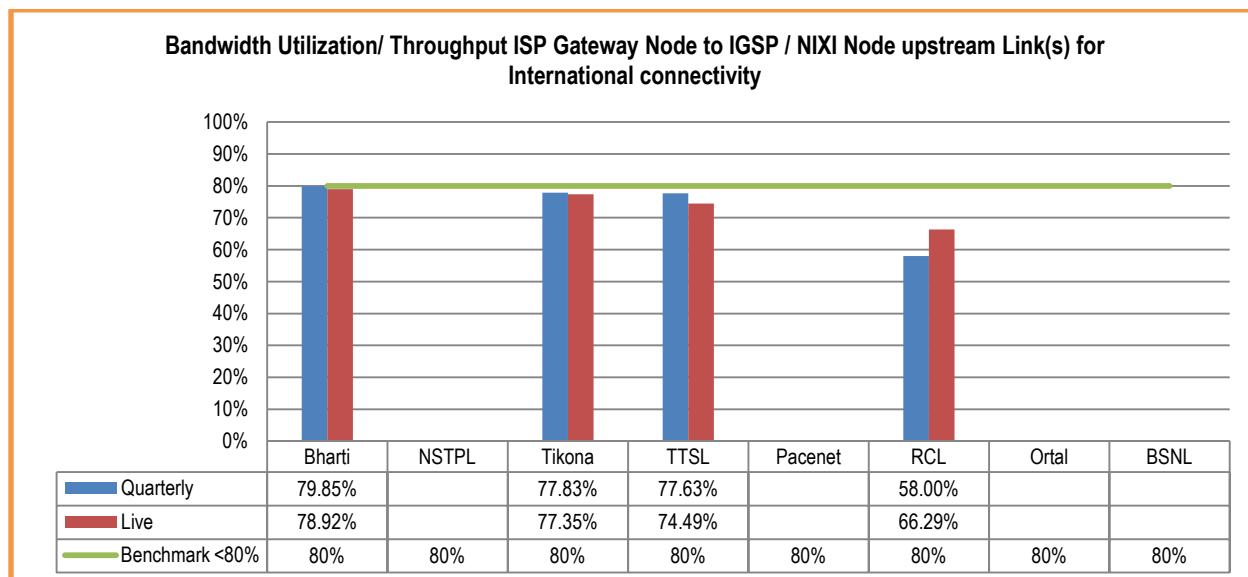
10.7 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BROADBAND SERVICE PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:

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



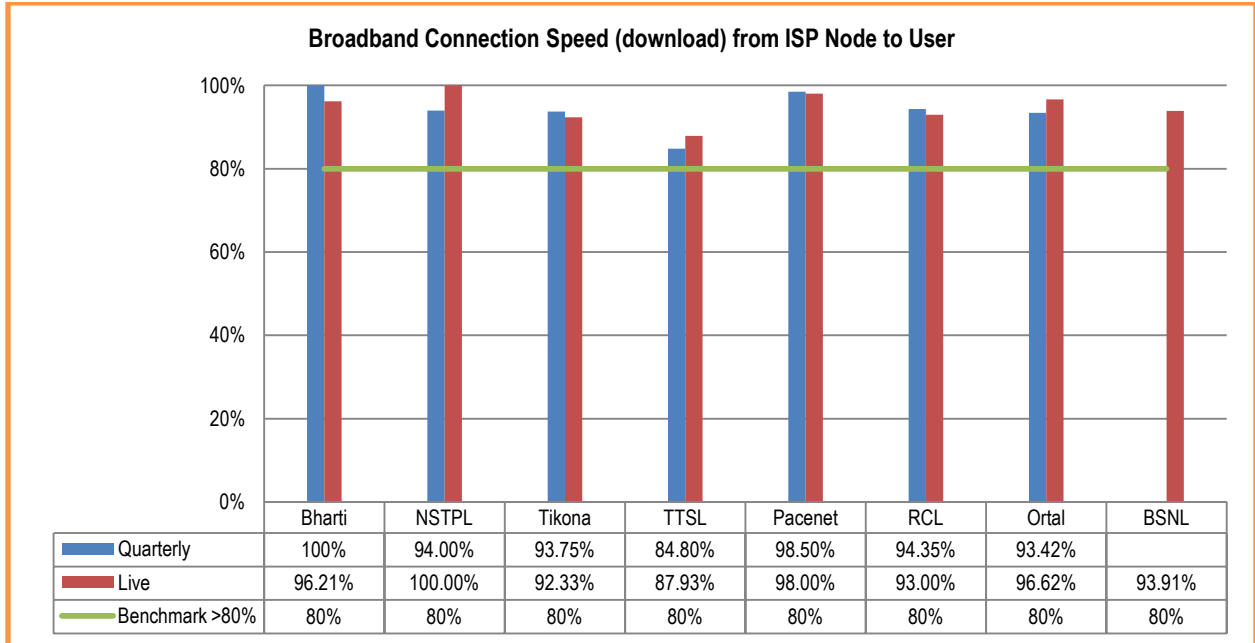
All Operators are meeting the benchmarks except Pacenet during live audit.

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



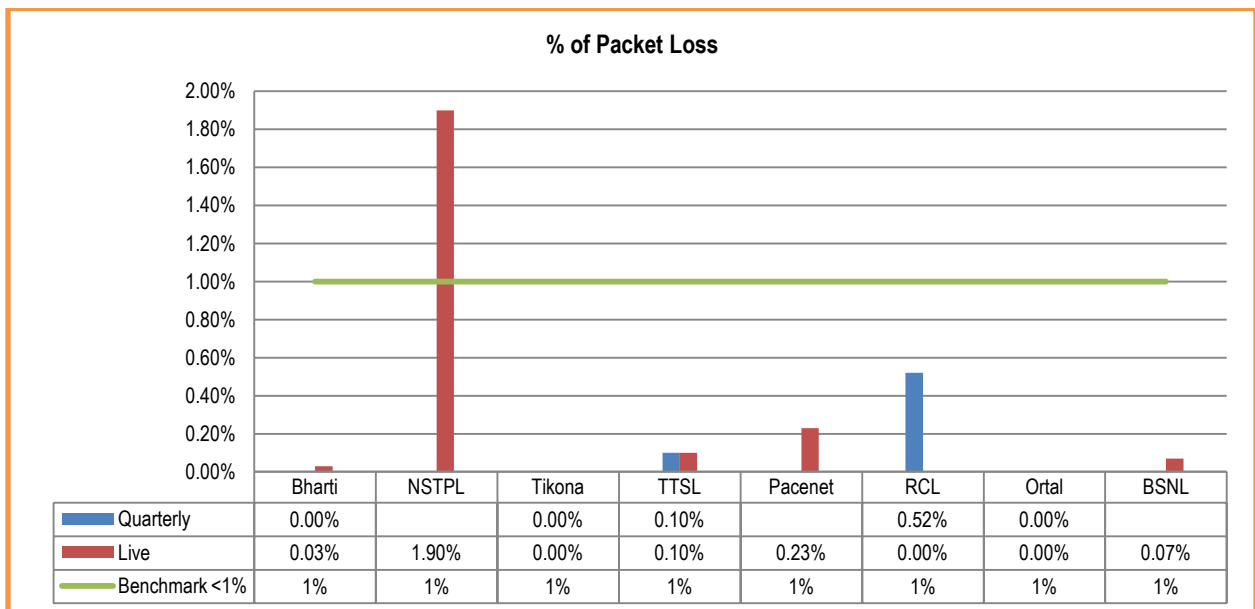
All Operators are meeting the benchmarks.

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



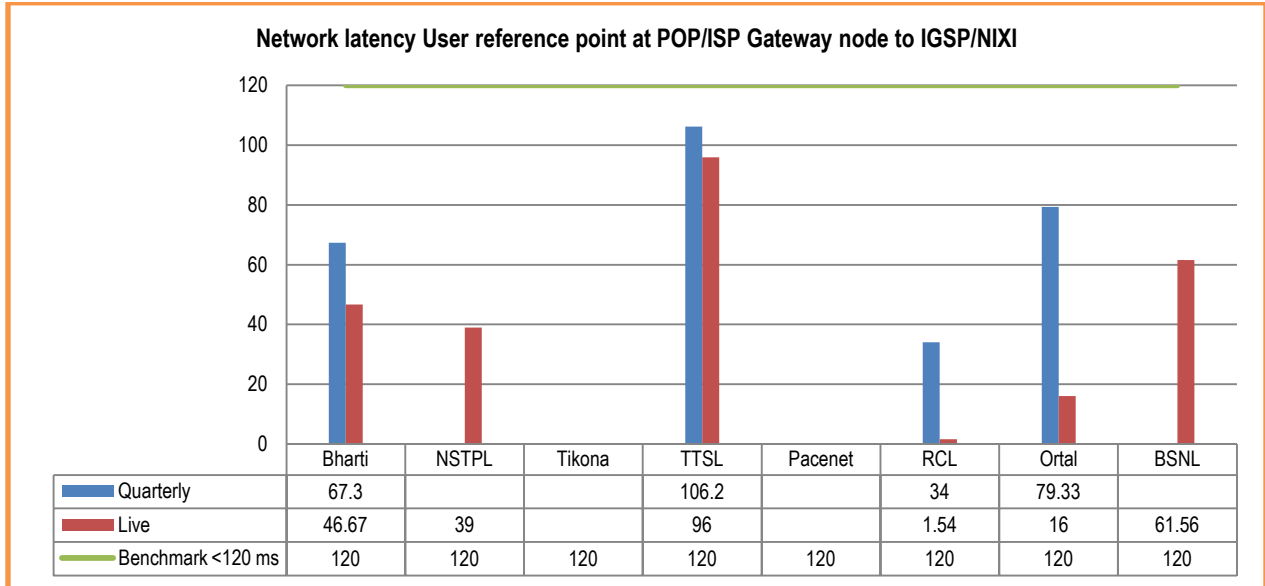
All Operators are meeting the benchmarks.

4. PACKET LOSS:



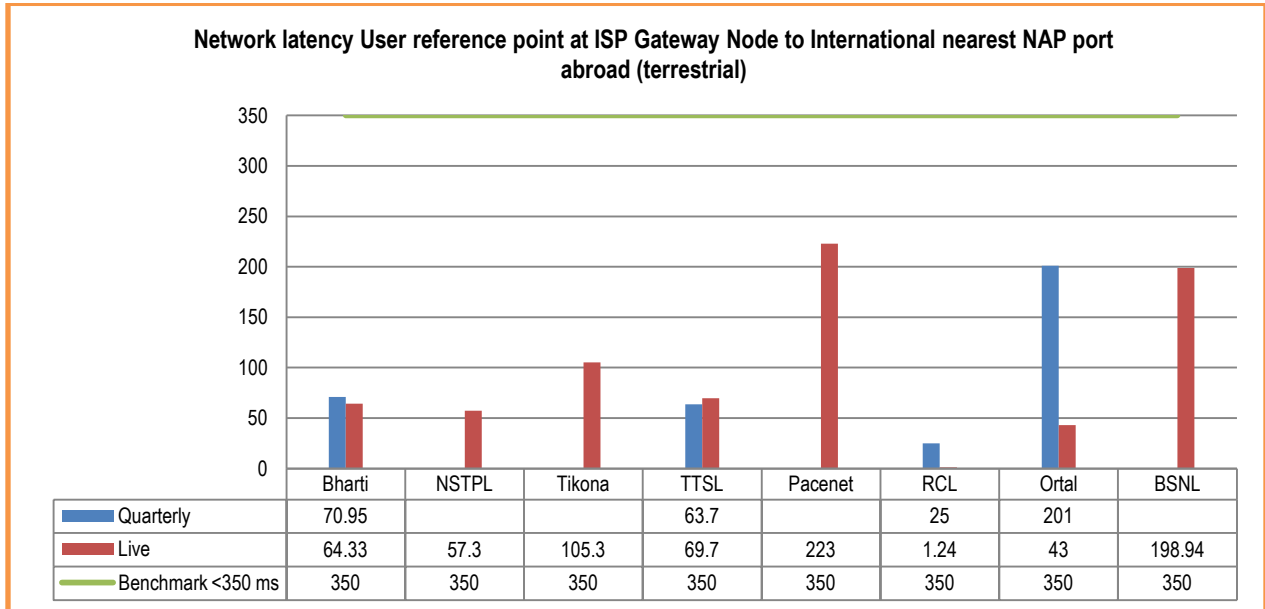
All Operators are meeting the benchmarks except NSTPL (during 3 days live audit).

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



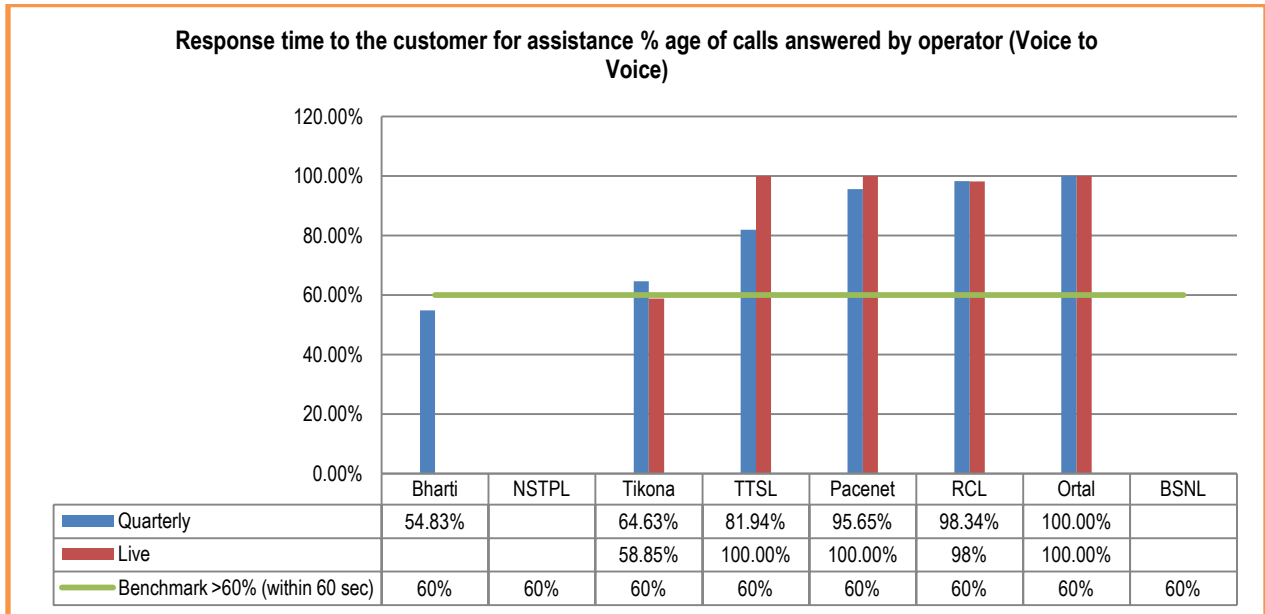
All Operators are meeting the benchmarks.

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



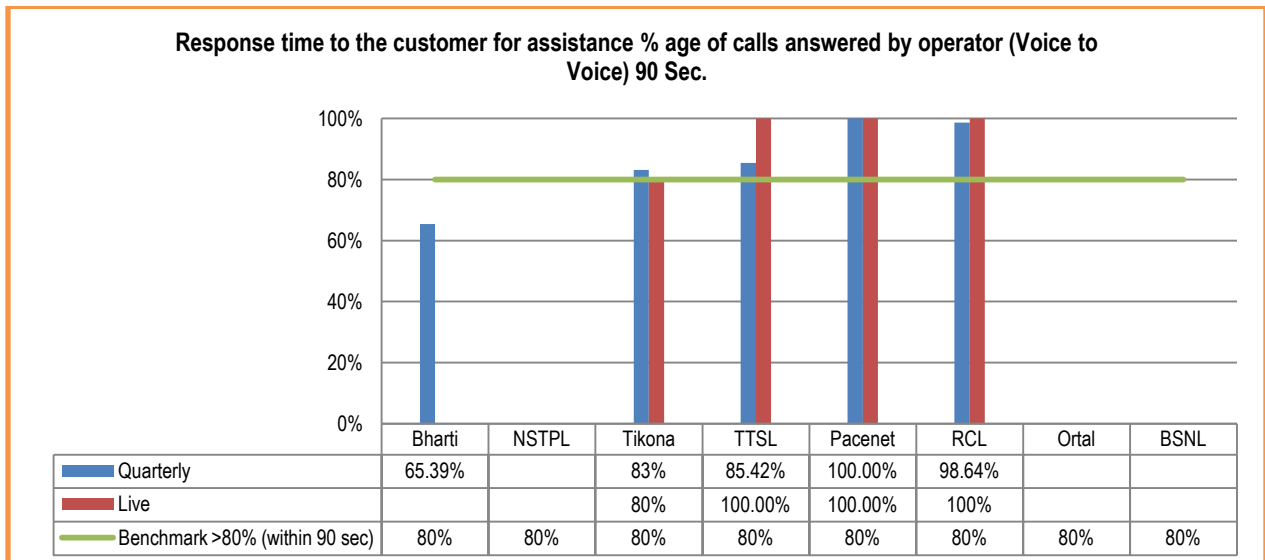
All Operators are meeting the benchmarks.

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



All Operators are meeting the benchmarks except Bharti Airtel and Tikona (3 days live).

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



All Operators are meeting the benchmarks except Bharti Airtel. In case of NSTPL, there are no call centers and complaints handle manually.

11. PMR VERIFICATION TABLE:

(i) NETWORK RELATED PARAMETERS:

Name of Service Provider	Parameter	BTS Accumulated Downtime	Worst affected BTSs due to downtime	CSSR (Call Setup Success Rate)	SDCCH / PAGING Channel congestion	TCH congestion	CDR (Call Drop Rate)	Worst affected cells>3% TCH drop (Call drop) rate	Connections with good voice quality	No. of POI's having >=0.5% POI congestion
Benchmark		≤ 2%	≤ 2%	≥ 95%	≤ 1%	≤ 2%	≤ 2%	≤ 3%	≥ 95%	≤ 0.5%
AIRCEL	Reported	0.27	0.00	98.15	0.37	0.01	0.99	1.04	99.44	0
	Verified	0.27%	0.00%	98.15%	0.37%	0.01%	0.99%	1.04%	99.44%	0
AIRTEL	Reported	0.14	0.10	99.11	0.04	0.44	0.82	1.96	97.05	0
	Verified	0.13%	0.08%	99.04%	0.04%	0.42%	0.83%	1.97%	97.04%	0
TATA GSM	Reported	0.05	0.02	98.58	0.05	0.04	0.69	3.63	98.70	0
	Verified	0.05%	0.00%	98.58%	0.05%	0.04%	0.69%	3.63%	98.71%	0
BSNL	Reported	1.81	1.67	96.37	0.61	1.52	1.53	2.58	97.01	0
	Verified	1.80%	1.67%	96.38%	0.62%	1.50%	1.53%	2.59%	NP	0
IDEA	Reported	0.43	1.50	97.60	0.44	1.27	0.84	2.10	96.88	0
	Verified	0.43%	1.50%	97.60%	0.44%	1.27%	0.84%	2.10%	96.88%	0
RCOM GSM	Reported	0.23	0.19	98.80	0.06	0.20	0.50	0.04	97.86	0
	Verified	0.23%	0.19%	98.80%	0.06%	0.20%	0.49%	0.03%	97.86%	0
VIDEOCON	Reported	0.21	0.80	98.70	0.20	0.38	0.67	2.55	98.14	0
	Verified	0.21%	0.80%	98.70%	0.20%	0.38%	0.67%	2.56%	98.14%	0
VODAFONE	Reported	0.25	1.17	99.56	0.11	0.44	0.84	4.30	98.78	0
	Verified	0.25%	1.17%	99.56%	0.11%	0.44%	0.84%	4.30%	98.78%	0
RCOM CDMA	Reported	0.42	0.77	99.15	0.00	0.00	0.14	0.58	99.81	0
	Verified	0.42%	0.77%	99.15%	0.00%	0.01%	0.14%	0.57%	99.81%	0
TATA CDMA	Reported	0.05	0.16	98.73	0.00	0.36	0.59	7.70	99.17	0
	Verified	0.04%	0.08%	98.71%	0.00%	0.39%	0.59%	7.69%	99.17%	0

- The above data is averaged for three months of the quarter ending September-2015.
- The PMR data provided by the service providers is largely matching with verified (audited) data. However the variation in data has been indicated by yellow colour.
- Vodafone, Tata GSM and Tata CDMA have not met the benchmark for the parameter "Worst affected cells>3% TCH drop".
- BSNL has not provided data for the parameter "Connections with good voice quality" because OMCR does not support this parameter.

(ii) CUSTOMER SERVICE DELIVERY (CSD) RELATED PARAMETER:

Name of Service Provider	Parameter	Metering and billing credibility - post paid	Metering and billing credibility - pre paid	Resolution of billing / charging / validity complaints	Resolution of billing / charging / validity complaints	Period of applying credit/ waiver/ adjustment to customer's account from the date of resolution of complaints	Accessibility of call centre/ customer care	Percentage of calls answered by the operators (voice to voice) within 90 seconds	%age requests for Termination / Closure of service	Time taken for refund of deposits after closures
Benchmark		<= 0.1%	<= 0.1%	98% within 4 weeks	100% within 6 weeks	<=1 week	≥ 95%	≥ 95%	100% within <=7days	100% within 60 days
AIRCEL	Reported	0.00	0.00	100.00	100.00	100.00	96.82	98.58	100.00	100.00
	Verified	0.00%	0.00%	100.00%	100.00%	100.00%	96.82%	98.58%	100.00%	100.00%
AIRTEL	Reported	0.01	0.00	100.00	100.00	100.00	100.00	97.43	100.00	100.00
	Verified	0.01%	0.00%	100.00%	100.00%	100.00%	100.00%	97.43%	100.00%	100.00%
BSNL	Reported	0.02	0.04	100.00	100.00	100.00	98.00	98.81	100.00	100.00
	Verified	0.01%	0.02%	100.00%	100.00%	100.00%	99.16%	95.38%	100.00%	100.00%
IDEA	Reported	0.03	0.03	100.00	100.00	100.00	98.50	99.08	97.38	100.00
	Verified	0.03%	0.03%	100.00%	100.00%	100.00%	98.50%	99.08%	99.42%	100.00%
RCOM (GSM)	Reported	0.09	0.08	100.00	100.00	100.00	97.68	87.89	100.00	100.00
	Verified	0.09%	0.08%	100.00%	100.00%	100.00%	97.76%	87.89%	100.00%	100.00%
TATA (GSM)	Reported	0.00	0.00	100.00	100.00	100.00	96.61	93.53	100.00	100.00
	Verified	0.00%	0.00%	100.00%	100.00%	100.00%	96.61%	93.53%	100.00%	100.00%
VIDEOCON	Reported	NA	0.05	100.00	100.00	100.00	100.00	95.94	NA	100.00
	Verified	NA	0.00%	100.00%	100.00%	100.00%	100.00%	95.94%	NA	100.00%
VODAFONE	Reported	0.00	0.00	99.26	99.99	99.93	100.00	99.28	100.00	100.00
	Verified	0.16%	0.16%	99.26%	100.00%	100.00%	100.00%	99.28%	100.00%	100.00%
RCOM (CDMA)	Reported	0.10	0.09	100.00	100.00	100.00	98.71	93.37	100.00	100.00
	Verified	0.10%	0.09%	100.00%	100.00%	100.00%	98.86%	93.37%	100.00%	100.00%
TATA (CDMA)	Reported	0.00	0.00	100.00	100.00	100.00	97.73	98.21	100.00	100.00
	Verified	0.00%	0.00%	100.00%	100.00%	100.00%	97.73%	98.21%	100.00%	100.00%

- The above data is average for three months of the quarter ending September-2015.
- The PMR data provided by the service providers is largely matching with verified (audited) data. However the variation in data has been indicated by yellow colour.
- Vodafone has not met the benchmark for the parameters "Metering and billing credibility - Pre Paid & Post Paid"
- Tata GSM and RCOM (GSM & CDMA) have not met the benchmark for the parameter "Percentage of calls answered by the operators (voice to voice) within 90 seconds"
- Idea has not met the benchmark for the parameters "%age requests for Termination / Closure of service"
- NA: Not applicable, as no post paid connections.

Annex-1

List of BSNL exchanges covered for Wireline & Broadband audit:-

BSNL Madhya Pradesh exchanges details:-

SI.NO.	SDCA	SSA	Name of Exchange	Area	Tech Type
1	Astha	Bhopal	Ashta	Urban	CDOT-RSU
2	Astha	Bhopal	Maina	Rural	AN-RAX
3	Astha	Bhopal	Sewda	Rural	AN-RAX
4	Astha	Bhopal	Siddiquaganj	Rural	AN-RAX
5	Bersia	Bhopal	Berasia	Urban	AN-RAX
6	Bersia	Bhopal	Nazirabad	Rural	AN-RAX
7	Bersia	Bhopal	Sohaya	Rural	AN-RAX
8	Bersia	Bhopal	Tarawali	Rural	AN-RAX
9	Bhopal	Bhopal	AIIMS-Bpl	Urban	OCB-RSU
10	Bhopal	Bhopal	Ashok vihar-Bpl	Urban	OCB-RSU
11	Bhopal	Bhopal	Atx-Bpl	Urban	EWSD-M
12	Bhopal	Bhopal	Ayodhya Nagar G-sect	Urban	OCB-RSU
13	Bhopal	Bhopal	Ayodhya nagar-Bpl	Urban	DLC-RT
14	Bhopal	Bhopal	Bag mugalia-Bpl	Urban	EWSD-RSU
15	Bhopal	Bhopal	Nipaniajat	Rural	AN-RAX
16	Bhopal	Bhopal	Parwalia sadak	Rural	AN-RAX
17	Bhopal	Bhopal	Ratibad	Rural	AN-RAX
18	Bhopal	Bhopal	Sukhisevnia	Rural	AN-RAX
19	Budhani	Bhopal	Rehati	Urban	AN-RAX
20	Budhani	Bhopal	Bayan	Rural	AN-RAX
21	Budhani	Bhopal	Dobi	Rural	AN-RAX
22	Budhani	Bhopal	Shahganj	Rural	AN-RAX
23	Guharganj	Bhopal	Mandideep	Urban	OCB-RSU
24	Guharganj	Bhopal	Chiklod kalan	Rural	AN-RAX
25	Guharganj	Bhopal	Gauharganj	Rural	AN-RAX
26	Guharganj	Bhopal	Khasrod	Rural	AN-RAX
27	Guharganj	Bhopal	Thana	Rural	AN-RAX
28	lcchawer	Bhopal	lcchawer	Urban	CDOT-RSU
29	lcchawer	Bhopal	Bordi kalan	Rural	AN-RAX
30	lcchawer	Bhopal	Divadia	Rural	AN-RAX
31	Nasrullaganj	Bhopal	Nasrullaganj	Urban	AN-RAX
32	Nasrullaganj	Bhopal	Chakaldi	Rural	AN-RAX
33	Sehore	Bhopal	Sehore P&t col	Urban	CDOT-RSU
34	Sehore	Bhopal	Khandwa	Rural	AN-RAX
35	Sehore	Bhopal	Lasudia parihar	Rural	AN-RAX
36	Sehore	Bhopal	Naplakhedi	Rural	AN-RAX
37	Sehore	Bhopal	Nipania	Rural	AN-RAX
38	Sehore	Bhopal	Padyala	Rural	AN-RAX
39	Sehore	Bhopal	Semradangi	Rural	AN-RAX
40	Sehore	Bhopal	Shyampur	Rural	CDOT-RSU

SI.NO.	SDCA	SSA	Name of Exchange	Area	Tech Type
41	Sehore	Bhopal	Sonkatch	Rural	AN-RAX
42	Sehore	Bhopal	Toomda	Rural	AN-RAX
43	Timarani	Hoshangabad	Timarni	Urban	CDOT-RSU
44	Timarani	Hoshangabad	Pokharni	Rural	AN-RAX
45	Timarani	Hoshangabad	Rehatgaon	Rural	CDOT-RSU
46	Timarani	Hoshangabad	Sanyasa	Rural	AN-RAX
47	Timarani	Hoshangabad	Sodalpur	Rural	AN-RAX
48	Timarani	Hoshangabad	Temagaon	Rural	AN-RAX
49	Sohagpur	Hoshangabad	Sohagpur	Urban	CDOT-RSU
50	Sohagpur	Hoshangabad	Semriharchand	Rural	AN-RAX
51	Sohagpur	Hoshangabad	Shobhapur	Rural	AN-RAX
52	Seonimalwa	Hoshangabad	Banapura	Urban	CDOT-RSU
53	Seonimalwa	Hoshangabad	Babadiabhau	Rural	AN-RAX
54	Seonimalwa	Hoshangabad	Baghwada	Rural	AN-RAX
55	Seonimalwa	Hoshangabad	Kotra	Rural	AN-RAX
56	Seonimalwa	Hoshangabad	Naharkola	Rural	AN-RAX
57	Seonimalwa	Hoshangabad	Shivpurkala	Rural	CDOT-RSU
58	Seonimalwa	Hoshangabad	Somal wada	Rural	AN-RAX
59	Seonimalwa	Hoshangabad	Thua	Rural	AN-RAX
60	Piparia	Hoshangabad	Hatwas (RSU)-Pipariya	Urban	CDOT-RSU
61	Piparia	Hoshangabad	Khaparkheda	Rural	AN-RAX
62	Piparia	Hoshangabad	Paliya Pipariya	Rural	AN-RAX
63	Piparia	Hoshangabad	Rampur-PPA	Rural	AN-RAX
64	Piparia	Hoshangabad	Sandiya RSU Pipariya	Rural	AN-RAX
65	Piparia	Hoshangabad	Umardha	Rural	AN-RAX
66	Pachamari	Hoshangabad	Pachmarhi RSU	Urban	CDOT-RSU
67	Pachamari	Hoshangabad	Matkuli	Rural	AN-RAX
68	Khirkiya	Hoshangabad	Khirkiya	Urban	CDOT-RSU
69	Khirkiya	Hoshangabad	Sirali	Rural	CDOT-RSU
70	Itarsi	Hoshangabad	Tawa Colony(RSU)-Itarsi	Urban	CDOT-RSU
71	Itarsi	Hoshangabad	Ranipur	Rural	AN-RAX
72	Itarsi	Hoshangabad	Sankheda	Rural	AN-RAX
73	Itarsi	Hoshangabad	Sukhtawa	Rural	AN-RAX
74	Itarsi	Hoshangabad	Taku	Rural	AN-RAX
75	Hoshangabad	Hoshangabad	Babai RSU Hoshangabad	Urban	CDOT-RSU
76	Hoshangabad	Hoshangabad	Achalkheda	Rural	AN-RAX
77	Hoshangabad	Hoshangabad	Ari	Rural	AN-RAX
78	Hoshangabad	Hoshangabad	Bagratawa	Rural	AN-RAX
79	Harda	Hoshangabad	Harda	Urban	CDOT-MBM
80	Harda	Hoshangabad	Masangaon	Rural	AN-RAX
81	Harda	Hoshangabad	Ranhaikala	Rural	AN-RAX
82	Harda	Hoshangabad	Sirkamba	Rural	AN-RAX
83	Gadarwara	Narsingpur	Gadarwara	Urban	CDOT-MBM
84	Gadarwara	Narsingpur	SAINKHEDA	Rural	CDOT-RSU
85	Gadarwara	Narsingpur	SALICHOUKA	Rural	CDOT-RSU

SI.NO.	SDCA	SSA	Name of Exchange	Area	Tech Type
86	Gadarwara	Narsingpur	SIHORA	Rural	CDOT-RSU
87	Gadarwara	Narsingpur	SIMARIYA	Rural	AN-RAX
88	Chichali	Narsingpur	CHICHLI	Urban	CDOT-RSU
89	Chichali	Narsingpur	BARHETA (Chichli)	Rural	AN-RAX
90	Chichali	Narsingpur	GOTITORIYA	Rural	AN-RAX
91	Chichali	Narsingpur	KALYANPUR	Rural	AN-RAX
92	Chichali	Narsingpur	MALANWADA	Rural	AN-RAX
93	Chhapara	Sioni	Bhimgrah	Rural	AN-RAX
94	Chhapara	Sioni	Chamarikhurd	Rural	AN-RAX
95	Chhapara	Sioni	Chhapara	Rural	E-10B-RSU
96	Chhapara	Sioni	Kekda	Rural	AN-RAX
97	Ghansore	Sioni	Ghansore	Urban	CDOT-RSU
98	Ghansore	Sioni	Dhanora	Rural	AN-RAX
99	Ghansore	Sioni	Kahani	Rural	AN-RAX
100	Ghansore	Sioni	Mehata	Rural	AN-RAX
101	Ghansore	Sioni	Sikara	Rural	AN-RAX
102	Gopalganj	Sioni	Mohagaon	Rural	AN-RAX
103	Gopalganj	Sioni	Piperwani	Rural	AN-RAX
104	Gopalganj	Sioni	Turiya	Rural	AN-RAX
105	Keolari	Sioni	Palari	Rural	CDOT-RSU
106	Keolari	Sioni	Pandiya Chapara	Rural	AN-RAX
107	Keolari	Sioni	Sunwara	Rural	AN-RAX
108	Lakhnadon	Sioni	Lakhnadon	Urban	CDOT-RSU
109	Lakhnadon	Sioni	Dhuma	Rural	CDOT-RSU
110	Lakhnadon	Sioni	Ganeshganj	Rural	AN-RAX
111	Lakhnadon	Sioni	Madhi	Rural	AN-RAX
112	Sioni	Sioni	Barapathar	Urban	CDOT-RSU
113	Sioni	Sioni	Barghat	Urban	CDOT-RSU
114	Sioni	Sioni	Seoni Main	Urban	CDOT-MBM
115	Sioni	Sioni	Ari	Rural	AN-RAX
116	Sioni	Sioni	Asta	Rural	AN-RAX
117	Sioni	Sioni	Bakhari	Rural	AN-RAX
118	Sioni	Sioni	Bandol	Rural	AN-RAX
119	Sioni	Sioni	Bhoma	Rural	AN-RAX

BSNL Chhattisgarh exchanges details:-

SI.NO.	SDCA	SSA	Name of Exchange	Area	Tech Type
1	Bhatapara	Raipur	Hirmi	Rural	AN RAX
2	Bhatapara	Raipur	Hatband	Rural	AN RAX
3	Bhatapara	Raipur	Bhatapara	Urban	MBM-XL
4	Neora	Raipur	Dharasiwa	Rural	AN RAX
5	Neora	Raipur	Silyari	Rural	AN RAX
6	Neora	Raipur	Neora	Urban	RSU
7	Dhamatri	Raipur	Dmt-Jodhpur	Urban	CDOT MBM
8	Dhamatri	Raipur	Dmt-Bathena	Urban	RSU-1K
9	Dhamatri	Raipur	Dmt-Sadar Bazar	Urban	RSU-2K
10	Dhamatri	Raipur	Kukrel	Rural	CDOT-256
11	Dhamatri	Raipur	Sambalpur	Rural	CDOT-256
12	Kurud	Raipur	Bhakhara	Rural	CDOT-256
13	Kurud	Raipur	Hasda	Rural	CDOT-256
14	Nagri	Raipur	Sankara	Rural	CDOT-256
15	Nagri	Raipur	Semra(N)	Rural	CDOT-256
16	Durg	Durg	Baniyapara DLC	Urban	DLC
17	Durg	Durg	Borsi	Urban	E10BR
18	Durg	Durg	Chouhan Plaza Bhilai	Urban	DLC
19	Durg	Durg	Civic Centre	Urban	OCBR
20	Durg	Durg	Durg	Urban	E10B
21	Durg	Durg	Arjunda	Rural	AN RAX
22	Rajnandgaon	Durg	Arjuni	Rural	AN RAX
23	Rajnandgaon	Durg	Ghumka	Rural	AN RAX
24	Dongergarh	Durg	Lalbahadur Nagar	Rural	AN RAX
25	Dongergarh	Durg	Musra	Rural	AN RAX
26	Patan	Durg	Gadadih	Rural	AN RAX
27	Patan	Durg	Jamgaon (M)	Rural	AN RAX
28	DHAMDHA	Durg	Murmunda	Rural	AN RAX