



REPORT
ON
AUDIT & ASSESSMENT OF QUALITY OF SERVICE
OF
CELLULAR MOBILE TELEPHONE SERVICE
BASIC TELEPHONE SERVICE (WIRELINE)
&
BROADBAND SERVICE
FOR
TELECOM REGULATORY AUTHORITY OF INDIA
WEST ZONE – GUJARAT SERVICE AREA
(APRIL 2014 – JUNE 2014)

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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 **Gujarat 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 (wire line) and Broadband service, a circle would be audited once in a year.

2. OBJECTIVES AND METHODOLOGY



2. OBJECTIVES AND METHODOLOGY

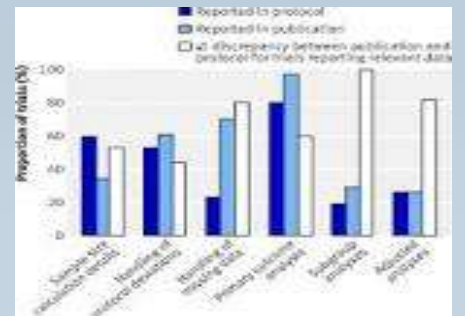
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

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 Punjab, Rajasthan & Gujarat circles during the quarter April – June 2014.**

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

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

3. SAMPLE SIZE



3. SAMPLE SIZE

3.1 SAMPLING FOR CELLULAR MOBILE (WIRELESS) SERVICE PROVIDERS

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

Following are the various operators covered in Gujarat circle

Sl. No.	Name of Service Provider	Dates of live measurement Audit			Audit Location
		April-14	May-14	June-14	
GSM Operators					
1	AIRCEL	9 to 11th April'14	5 to 7th May'14	15 to 17th June'14	Aircel limited, 204 , 2nd floor, c block, Ganesh meridian, opp. Amiraj farm, near new gujarat high court, s.g highway, Ahmedabad-380 060
2	AIRTEL	8 to 10th April'14	10 to 12th May'14	9 to 11th June'14	Bharti Airtel Limited, 2nd Floor, Zodiac Square, Opposite Gurudwara, S.G Highway, Ahmedabad-380054
3	BSNL	11 to 13th April'14	7 to 9th May'14	8 to 10th June'14	BSNL, Vastrapur Telephone Exchange, Bima Nagar, Vastrapur, Ahmedabad.
4	VIDEOCON	2 to 4th April'14	5 to 7th May'14	11 to 13th June'14	Videocon Telecommunications Ltd, 4th floor, Campus Corner 2, Opp AUDA Garden, Prahladnagar Ahmedabad- 380 015, Gujarat
5	TATA GSM	8 to 10th April'14	12 to 14th May'14	9 to 11th June'14	Tata Teleservices Ltd, 2nd Floor- Citygold Building, Near Shyamal Cross Road, 132 Feet Ring Road, Ahmedabad
6	IDEA	7 to 9th April'14	12 to 14th May'14	10 to 12th June'14	Idea Cellular Ltd, Venus Atlantis, 2nd Floor, 100ft road, Prahlad Nagar, Ahmedabad-380015
7	RCOM GSM	10 to 12th April'14	8 to 10th May'14	10 to 12th June'14	Reliance Communications Limited, 103/106, Gate No: 6, Near Muthiyagaam Bus Stand, Naroda GIDC, Naroda, Ahmedabad- 382330
8	VODAFONE	4 to 6th April'14	6 to 8th May'14	15 to 17th June'14	House A, Vodafone West Limited, Vodafone House Corporate Road, Prahladnagar , Off S. G. Highway, Ahmedabad -380051 Gujarat, India
9	UNINOR	21 to 23rd April'-14	15,16 & 19 th May'-14	9 to 11th June'-14	Telewings Communications Services Pvt Ltd. (Uninor), Welldone Technology Park Sec-48 Sohana Road Gurgaon
CDMA Operators					
10	MTS	13 to 15th April'14	8 to 10th May'14	11 to 13th June'14	Sistema Shyam Teleservices Limited, C Block, Office No-2, 3rd Floor, 'The Acropolis Mall', Thaltej Cross Road, Ahmedabad- 380054
11	RCOM CDMA	10 to 12th April'14	8 to 10th May'14	10 to 12th June'14	Reliance Communications Limited, 103/106, Gate No: 6, Near Muthiyagaam Bus Stand, Naroda GIDC, Naroda, Ahmedabad- 382330
12	TATA CDMA	8 to 10th April'14	12 to 14th May'14	9 to 11th June'14	Tata Teleservices Ltd, 2nd Floor- Citygold Building, Near Shyamal Cross Road, 132 Feet Ring Road, Ahmedabad

- For all the above operators, audit was conducted in all the three months of the Quarter ended June 2014.
- The data generated by monthly PMR and 3-days live measurements audit for the period April 2014 to June 2014 has been successfully uploaded to the server located at TRAI premises.

3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES

- The QoS audit for basic (wire line) service 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 June-2014. **Out of 2752 (present no. of BSNL exchanges), audit was done for 149 sampled (27-Urban and 122-Rural) BSNL exchanges** and one exchange each of **Bharti, RCL & TTL**. As Gujarat Circle is having 160 SDCAs, so 149 BSNL exchanges spread over 16 SDCAs (10% of total 160 SDCAs of BSNL exchanges) have been taken for audit. List of all exchanges taken for QoS audit is attached as **Annex-1**.

3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS

- TUV-SUD South Asia has to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who are having broadband subscriber base of more than 10,000 subscribers in their licensed service area, for 5% of Point of Presence (PoPs) spread over in 10% SDCAs in specified Telecom Circle. Based on this criterion, 133 no. of BSNL PoPs i.e. 5% of 2656 BSNL PoPs / Exchanges, spread over 10% SDCAs have been taken for QoS audit. Location of PoPs, covered for QoS audit is attached as **Annex-2**.

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

4. EXECUTIVE SUMMARY



4. EXECUTIVE SUMMARY

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

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

Essence of compliance report of service providers with respect to the QoS:

1. Cellular Mobile Telephone Service:

(i) From analysis of monthly audit and 3 days live measurements results, it was concluded that performance of the operators in the Gujarat service area is fairly satisfactory for **Network parameters** as all operators (except Aircel, Tata-GSM/Tata (CDMA)) were found to have met the benchmarks of all parameters. **Aircel, Tata (GSM) / Tata (CDMA)** were having non-compliance for parameter ‘ **Worst affected Cells > 3% TCH drops**’ in all the three months of the quarter with their average performance of **3.50% , 5.69% and 5.05%** respectively.

In case of 3 days live measurement also Aircel, Tata (GSM) and Tata (CDMA) remained non-complied of parameter ‘**Worst affected cells > 3 % TCH drops**’ in all the three months of the quarter with their average performance as 3.41%, 5.68% and 5.01 % respectively.

(ii) With regard to the **Customer Service Quality Parameters**, the performance of operators remained satisfactory as most of the service providers were found in compliance of most of the benchmarks. However, Tata(GSM) could not meet the benchmark for the parameter “Resolution of billing complaints” with its performance as **99.25%**. The compliance with respect to the parameter ‘**Calls answered by Operators (voice to voice) within 60 seconds**’ was not met by **RCOM (GSM) and RCOM (CDMA)** with their performance of **43.84% and 42.76%** respectively.

In case of the parameters ‘closure/termination within the benchmark of 7 days’ and ‘Time taken for refunds’ only **Airtel and Tata(CDMA)** failed to comply with their performance as **99.44%** .

(iii) With regard to the **Drive Tests**, all service providers were found meeting the benchmarks of network parameters. However, parameter ‘**Voice Quality**’ remained area of concern as **BSNL, RCOM (GSM), Vodafone** were under performed with respect to this parameter.

Thus, taking cognizance on overall performance of the service providers, it was concluded that service providers were doing fairly well in Gujarat Circle for most of the parameters. However, the performance with respect to the parameters **Worst affected cell having > 3 % TCH drop, Voice Quality and Calls answered by operator (voice to voice)** needs further improvement for those operators who could not meet the benchmarks of these parameters.

2. Basic (Wireline) Service:

The audit findings with regard to the Basic (wireline) service revealed that all service providers (except BSNL) were well within the benchmark. The performance of **BSNL** was not satisfactory in respect of the parameters **Fault incidence, Repairs/Restoration Time, MTTR and Termination/Closure**. The non-compliance of BSNL for parameter '**Fault incidence**' was **5.21%**, for parameter '**Fault repaired in Urban areas by next working day**' was **76.62%** and for **fault repaired within 3 days**, it was **93.25%** whereas their performance for the same parameters was **71.84% & 87.63%** respectively in rural areas. In case of parameters **MTTR and Termination/Closure**, the performance of **BSNL** remained as **16.43% and 80.86%** respectively.

Hence, **BSNL** needs to improve their services in respect of the above indicated parameters.

Broadband Service:

From the audit findings, the service providers were to have not complied with certain parameters as furnished below;

Service Provisioning / Activation Time: The audit of the service providers revealed that **GPTL, Hathway, You Broadband, & BSNL** could not meet the benchmark for the parameter "100% cases in 15 days (subject to technical feasibility)" with their achievement level of **99.81%, 97.42%, 95.91% and 88.79% respectively**.

Fault Repair/Restoration Time: With regards to the parameter 'faults repaired by next working day', the performance of the service providers namely, **Hathway, Pacenet, You Broadband, and BSNL** remained non-complied with their performance as **84.10%, 89.00%, 89.33% and 69.96%** respectively, against the benchmark of >90% whereas, for parameter 'faults repaired within 3 days', the non-compliance was recorded for **Hathway (85.07%), TCL (97.86%), You Broadband (98.87%) and BSNL (89.92%)**.

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 (except Tikon, TCL and TTSL) were found meeting the benchmark for this parameter. For parameter Call answered by operators within 60 seconds, **Tikona** could perform with **59.20%** and for Calls answered by operator within 90 seconds, **TCL and TTSL** could achieve **69.41% and 72.5 %**, short of benchmark >80%.

In case of 3 days live measurements, the performance of **GTPL, Tikona and TTSL** for parameter 'Call answered by operators within 60 Seconds' was **9.88%, 58.14% and 58.46%** respectively, whereas for the same parameter 'answered within 90 seconds' the performance of **Tikona, TCL, TTSL and You Broadband** was **78%, 78,30%, 65% and 79.75%** respectively.

Bandwidth Utilization/ Throughput: All the service providers were found using Multiple Router Traffic Grapher (MRTG) and also it was observed that all service providers were reporting combined bandwidth utilization for corporate customers and household customers.

The performance of service providers namely, **NSTPL, GTPL and Pacenet** with respect of the parameter '% **Bandwidth Utilisation**' was found short of the benchmark of <80% with their performance of **80.95%, 80.70% and 80.68%** respectively. **TTSL and SPiDiGO** could not meet the benchmark for the parameter "% **age International Bandwidth Utilisation during peak Hr**"; their achievement level was **96.8% and 81.61%** respectively.

In case of live measurements, the achievement of **NSTPL and GTPL** for parameter '**Band width Utilisation**' was recorded as **84.62% and 80.96%** respectively. Further, for the parameter "% **age International Bandwidth Utilisation during peak Hr**", the performance of **SPiDiGO** was **81.93%**.

Hence the **Broadband** service providers need to improve their networks with respect the above indicated parameters.

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	June-14	20:00 - 21:00
2	AIRCEL	June-14	20:00 - 21:00
3	TATA GSM	June-14	21:00 - 22:00
4	BSNL	June-14	21:00 - 22:00
5	IDEA	June-14	20:00 - 21:00
6	UNINOR	June-14	21:00 - 22:00
7	RCOM GSM	June-14	20:00 - 21:00
8	VIDEOCON	June-14	21:00 - 22:00
9	VODAFONE	June-14	20:00 - 21:00
CDMA Operators			
10	RCOM CDMA	June-14	19:00 - 20:00
11	MTS	June-14	11:00 - 12:00
12	TATA CDMA	June-14	11:00 - 12:00

The TCBH reported by all the service providers matched the network busy hour calculated by TUV auditors for the Gujarat 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	17	109	7337	NSN	NSN
2	AIRCEL	1	6	827	ZTE	ZTE
3	TATA GSM	3	14	2159	Huawei	Huawei
4	BSNL	9	91	4289	Alcatel-Lucent	Alcatel-Lucent
5	IDEA	21	44	6264	Ericsson	Ericsson
6	UNINOR	7	19	3422	NSN	NSN+Huawei
7	RCOM GSM	5	18	2543	Huawei	Huawei
8	VIDEOCON	2	11	1886	Huawei	Huawei
9	VODAFONE	20	146	7600	NSN	NSN
CDMA Operators						
10	RCOM CDMA	7	4	1681	Lucent,ZTE,Ericsson,Huawei	Lucent,Huawei
11	MTS	1	3	563	ZTE	ZTE
12	TATA CDMA	7	6	579	Ericsson	Motorola,Huawei

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – APRIL-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- APRIL-14 MONTH															
PMR Generation Data		Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Apr-14	0.07%	0.05%	0.00%	1.26%	0.04%	0.14%	0.13%	0.05%	0.03%	0.18%	0.03%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Apr-14	0.19%	0.00%	0.00%	1.66%	0.00%	0.47%	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Apr-14	99.70%	99.48%	98.14%	97.03%	99.08%	97.29%	99.64%	97.12%	99.00%	99.27%	99.70%	98.59%
	b) SDCCH/PAGING Channel congestion	<=1%	Apr-14	0.02%	0.04%	0.03%	0.06%	0.31%	0.46%	0.01%	0.10%	0.21%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Apr-14	0.18%	0.01%	0.04%	0.62%	0.52%	1.31%	0.07%	0.57%	0.50%	0.00%	0.06%	0.40%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Apr-14	0.67%	0.49%	0.77%	0.99%	0.98%	0.46%	0.29%	0.58%	0.75%	0.04%	0.15%	0.52%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Apr-14	0.98%	3.63%	5.84%	2.74%	0.73%	1.98%	0.01%	1.08%	2.01%	0.06%	2.11%	5.72%
	c) Connections with good voice quality	>=95%	Apr-14	97.18%	98.32%	98.23%	NP	96.33%	97.79%	98.86%	97.67%	97.51%	99.87%	99.21%	99.34%
4	No. of POI's having >=0.5% POI congestion		Apr-14	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

Note: 1. BSNL has not provided data for date 1,2 & 18 to 23 April 2014 due to some fault in their OMCR.

2. RCOM GSM not provided the data of any parameter except for 'BTS accumulated down time' for audit for period 18 April to 21 April due to some problem in their TTI Server.

3. RCOM CDMA not provided the data of any parameter except for 'BTS accumulated down time' for audit for period 19 April to 20 April due to some problem in their TTI Server

5.1.4 QOS PERFORMANCE OF MONTHLY PMR – MAY-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- MAY-14 MONTH															
PMR Generation Data		Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	May-14	0.09%	0.04%	0.00%	1.68%	0.04%	0.30%	0.24%	0.09%	0.02%	0.28%	0.04%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	May-14	0.27%	0.00%	0.00%	1.83%	0.00%	1.20%	0.00%	0.32%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	May-14	99.73%	99.56%	98.21%	96.64%	99.27%	97.83%	99.63%	98.13%	99.58%	99.08%	99.72%	98.47%
	b) SDCCH/PAGING Channel congestion	<=1%	May-14	0.02%	0.03%	0.03%	0.05%	0.27%	0.18%	0.02%	0.09%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	May-14	0.16%	0.01%	0.03%	0.72%	0.39%	0.93%	0.07%	0.35%	0.42%	0.01%	0.04%	0.47%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	May-14	0.60%	0.44%	0.75%	0.95%	0.86%	0.41%	0.31%	0.55%	0.70%	0.05%	0.15%	0.49%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	May-14	0.73%	3.43%	5.57%	2.77%	0.58%	2.28%	0.01%	1.07%	1.49%	0.10%	1.99%	4.69%
	c) Connections with good voice quality	>=95%	May-14	97.43%	98.46%	98.27%	NP	96.54%	98.00%	99.81%	97.91%	97.48%	99.87%	99.19%	99.35%
4	No. of POI's having >=0.5% POI congestion		May-14	0	0	0	0	0	0	0	0	0	0	0	0

1. NP: Data not provided, BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

2. RCOM GSM not provided the data of any parameter except for 'BTS accumulated down time' for audit for date 4th May-2014 due to some problem in their TTI Server.

3. RCOM CDMA not provided the data of any parameter except for 'BTS accumulated down time' for 1, 2 and 4th May 2014 due to some problem in their TTI Server

5.1.5 QOS PERFORMANCE OF MONTHLY PMR – JUNE-14 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- JUNE-14 MONTH

PMR Generation Data		Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators	
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Jun-14	0.09%	0.05%	0.00%	2.00%	0.05%	0.22%	0.31%	0.09%	0.03%	0.38%	0.03%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Jun-14	0.27%	0.00%	0.00%	1.47%	0.00%	1.20%	0.43%	0.32%	0.03%	0.54%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Jun-14	99.71%	99.46%	98.23%	96.20%	99.21%	97.74%	99.69%	98.02%	99.62%	98.95%	99.76%	98.55%
	b) SDCCH/PAGING Channel congestion	<=1%	Jun-14	0.03%	0.12%	0.00%	0.07%	0.26%	0.19%	0.01%	0.11%	0.11%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Jun-14	0.26%	0.20%	0.00%	0.77%	0.28%	1.11%	0.05%	0.40%	0.38%	0.01%	0.01%	0.37%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Jun-14	0.58%	0.51%	0.84%	0.91%	0.80%	0.38%	0.30%	0.56%	0.68%	0.07%	0.16%	0.49%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Jun-14	0.77%	3.43%	5.66%	2.74%	0.48%	1.94%	0.01%	1.09%	1.33%	0.33%	1.97%	4.74%
	c) Connections with good voice quality	>=95%	Jun-14	97.46%	98.22%	98.15%	NP	96.68%	98.04%	98.93%	97.79%	97.70%	99.86%	99.19%	99.34%
4	No. of POI's having >=0.5% POI congestion		Jun-14	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not Support this parameter.

5.1.6 QOS PERFORMANCE OF QUARTERLY PMR – QUARTERLY MONTHLY AVERAGE (APRIL TO JUNE MONTHS AUDITED DATA)

QUARTERLY QOS PERFORMANCE (AVERAGE OF THREE MONTHS) OF GUJARAT CIRCLE															
PMR Generation Data		Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.08%	0.05%	0.00%	1.65%	0.04%	0.22%	0.23%	0.08%	0.03%	0.28%	0.03%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.24%	0.00%	0.00%	1.65%	0.00%	0.96%	0.14%	0.25%	0.01%	0.18%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.71%	99.50%	98.19%	96.62%	99.19%	97.62%	99.65%	97.76%	99.40%	99.10%	99.73%	98.54%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.02%	0.06%	0.02%	0.06%	0.28%	0.28%	0.01%	0.10%	0.16%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.20%	0.07%	0.02%	0.70%	0.40%	1.12%	0.06%	0.44%	0.43%	0.01%	0.04%	0.41%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.62%	0.48%	0.79%	0.95%	0.88%	0.42%	0.30%	0.56%	0.71%	0.05%	0.15%	0.50%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	0.83%	3.50%	5.69%	2.75%	0.60%	2.07%	0.01%	1.08%	1.61%	0.16%	2.02%	5.05%
	c) Connections with good voice quality	>=95%	Quarterly	97.36%	98.33%	98.22%	NP	96.52%	97.94%	99.20%	97.79%	97.56%	99.87%	99.20%	99.34%
4	No. of POI's having >=0.5% POI congestion		Quarterly	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not Support 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 circle.

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

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 Gujarat circle, **all the operators were found meeting benchmark of the above parameters** 'BTS accumulated downtime' and 'worst affected BTSs due to down time' in all the three months of the quarter.

- **Connection Establishment (Accessibility)**

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

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

All the operators were comfortably meeting 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**. The lowest call drop rate (average 0.05 %) was for RCOM (CDMA) during the quarter.

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

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

The audit, with respect to this parameter revealed that **Aircel, Tata (GSM) and Tata (CDMA)** were non-compliant in the three months of the quarter with their average performance of **3.50%, 5.69% and 5.05%** respectively.

- iii. Connections with good voice quality:

Some of the Operators are measuring this parameter through the system generated data at their switches whereas some are measuring through their periodic drive tests. The audit results for this parameter indicates that **all operators have met the bench mark successfully 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) – APRIL-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- APRIL-14 MONTH															
Live measurement Data		Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	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	0.04%	0.05%	0.00%	0.73%	0.03%	0.39%	0.14%	0.03%	0.01%	0.12%	0.08%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.02%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.72%	99.49%	98.09%	96.84%	99.20%	97.17%	99.65%	97.20%	99.57%	99.36%	99.77%	98.51%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.01%	0.01%	0.02%	0.11%	0.12%	0.86%	0.01%	0.07%	0.38%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.09%	0.01%	0.02%	0.64%	0.41%	1.20%	0.07%	0.63%	0.43%	0.00%	0.01%	0.49%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.67%	0.47%	0.79%	0.90%	0.99%	0.48%	0.29%	0.57%	0.76%	0.03%	0.15%	0.55%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	1.01%	3.22%	6.17%	2.92%	0.80%	2.59%	0.01%	1.14%	2.16%	0.12%	2.34%	6.30%
	c) Connections with good voice quality	>=95%	Live data	97.08%	98.33%	98.21%	NP	96.30%	97.71%	98.85%	97.64%	97.52%	99.87%	99.21%	99.33%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not Support this parameter.

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

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- MAY-14 MONTH															
Live measurement Data		Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	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	0.09%	0.06%	0.00%	1.84%	0.05%	0.18%	0.42%	0.08%	0.02%	0.42%	0.03%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.03%	0.00%	0.00%	0.17%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.75%	99.52%	98.31%	97.55%	99.09%	97.97%	99.64%	98.20%	99.61%	99.22%	99.63%	98.59%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.02%	0.09%	0.03%	0.04%	0.69%	0.16%	0.02%	0.03%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.16%	0.00%	0.01%	0.64%	0.61%	0.96%	0.07%	0.38%	0.39%	0.00%	0.11%	0.35%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.55%	0.46%	0.71%	0.55%	0.82%	0.39%	0.29%	0.54%	0.76%	0.04%	0.17%	0.49%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	0.76%	3.43%	5.34%	2.79%	0.50%	2.24%	0.02%	1.25%	1.89%	0.10%	1.87%	4.63%
	c) Connections with good voice quality	>=95%	Live data	97.52%	98.42%	98.35%	NP	96.71%	98.00%	98.81%	97.91%	97.32%	99.86%	99.20%	99.35%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

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

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- JUNE -14 MONTH															
Live measurement Data		Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	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	0.07%	0.06%	0.00%	1.67%	0.05%	0.21%	0.36%	0.10%	0.09%	0.35%	0.03%	0.00%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.01%	0.00%	0.00%	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.79%	99.44%	98.27%	96.57%	99.50%	97.75%	99.73%	98.13%	99.63%	99.11%	99.75%	98.38%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.01%	0.96%	0.01%	0.03%	0.12%	0.07%	0.01%	0.06%	0.14%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.09%	0.18%	0.05%	0.77%	0.22%	1.01%	0.04%	0.27%	0.37%	0.01%	0.02%	0.61%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.58%	0.52%	0.81%	0.78%	0.76%	0.38%	0.57%	0.54%	0.72%	0.10%	0.16%	0.49%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	0.64%	3.59%	5.54%	2.73%	0.46%	1.94%	0.00%	1.09%	1.46%	0.20%	1.74%	4.10%
	c) Connections with good voice quality	>=95%	Live data	97.51%	98.17%	98.18%	NP	96.80%	98.05%	98.99%	97.84%	97.70%	99.87%	99.18%	99.34%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

5.2.4 QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT AUDITED DATA (AVERAGE OF APRIL TO JUNE)

QUARTERLY QOS PERFORMANCE BASED ON 3-DAYS LIVE MEASUREMENT (AVERAGE OF THREE MONTHS) – GUJARAT CIRCLE															
Live measurement Data		Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.07%	0.06%	0.00%	1.41%	0.04%	0.26%	0.31%	0.07%	0.04%	0.30%	0.05%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.01%	0.00%	0.00%	0.06%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.75%	99.48%	98.22%	96.99%	99.26%	97.63%	99.67%	97.84%	99.60%	99.23%	99.72%	98.49%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.01%	0.35%	0.02%	0.06%	0.31%	0.36%	0.01%	0.05%	0.23%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.11%	0.06%	0.03%	0.68%	0.41%	1.06%	0.06%	0.43%	0.40%	0.00%	0.05%	0.48%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.60%	0.48%	0.77%	0.74%	0.86%	0.42%	0.38%	0.55%	0.75%	0.06%	0.16%	0.51%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	0.80%	3.41%	5.68%	2.81%	0.59%	2.26%	0.01%	1.16%	1.84%	0.14%	1.98%	5.01%
	c) Connections with good voice quality	>=95%	Quarterly	97.37%	98.31%	98.25%	NP	96.60%	97.92%	98.88%	97.80%	97.51%	99.87%	99.20%	99.34%
4	No. of POI having >=0.5% congestion		Quarterly	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

5.2.5 KEY FINDING ON 3 DAYS LIVE MEASUREMENTS:

From three days live measurement assessment, it is found that the performance of all operators is satisfactory as they have largely met the benchmarks except the parameter '**Worst affected cells> 3 % TCH drops**', which could not be complied with by **Aircel, Tata (GSM) and Tata (CDMA)** in all the three months of the quarter. The performance of **Aircel, Tata (GSM) and Tata (CDMA)** for this parameter, on an average of three months was **3.41%, 5.68% and 5.01 %** respectively.

5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES:

TABLE: 1

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle- April 14 month															
S/N	Name of Parameter	Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	Tata CDMA
				GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) Total no. of BTSs in the licensed service area		Apr-14	7362	827	2160	4592	6257	3383	2931	1876	7530	1668	557	578
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Apr-14	3700	274	28	41697	1749	3481	2771	727	1464	2184	126	51
	c) BTS Accumulated Downtime	<=2%	Apr-14	0.07%	0.05%	0.00%	1.26%	0.04%	0.14%	0.13%	0.05%	0.03%	0.18%	0.03%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Apr-14	14	0	0	76	0	16	0	2	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Apr-14	0.19%	0.00%	0.00%	1.66%	0.00%	0.47%	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Apr-14	99.70%	99.48%	98.14%	97.03%	99.08%	97.29%	99.64%	97.12%	99.00%	99.27%	99.70%	98.59%
	b) SDCCH/PAGING Congestion	<=1%	Apr-14	0.02%	0.04%	0.03%	0.06%	0.31%	0.46%	0.01%	0.10%	0.21%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Apr-14	0.18%	0.01%	0.04%	0.62%	0.52%	1.31%	0.07%	0.57%	0.50%	0.00%	0.06%	0.40%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Apr-14	0.67%	0.49%	0.77%	0.99%	0.98%	0.46%	0.29%	0.58%	0.75%	0.04%	0.15%	0.52%
	b) Worst affected cells>3% TCH drop	<=3%	Apr-14	0.98%	3.63%	5.84%	2.74%	0.73%	1.98%	0.01%	1.08%	2.01%	0.06%	2.11%	5.72%

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle- April 14 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	Tata CDMA	
				GSM Operators									CDMA Operators			
	c) % of connections with good voice quality	>=95%	Apr-14	97.18%	98.32%	98.23%	NP	96.33%	97.79%	98.86%	97.67%	97.51%	99.87%	99.21%	99.34%	
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Apr-14	219	90	379	348	137	273	1	61	459	3	36	100	
	e) Total no. of cells (Sector) in the licensed service area		Apr-14	22456	2481	6487	12705	18683	13791	8652	5648	22794	5000	1704	1747	
4	No. of POI's having >=0.5% POI congestion															
	No. of POI's having >=0.5% POI congestion		Apr-14	0	0	0	0	0	0	0	0	0	0	0	0	
	Name of POI not meeting the benchmark		Apr-14	0	0	0	0	0	0	0	0	0	0	0	0	
5	Network Data															
	a) Equipped Capacity of Network in Erlang		Apr-14	244467	32118	117215	317000	265189	124536	144000	83533	423393	144000	21000	95735	
	b) Total traffic in TCBH in erlang (Avg.)		Apr-14	176890	7476	32906	91481	219503	156653	118014	25004	402135	34792	2627	18364	
	c) Total no. of customers served (as per VLR) on last day of the month		Apr-14	6856690	10310	1319816	2655901	9486286	3917021	4794809	867348	16131538	1316872	137414	298896	

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- Gujarat Circle- Apr-14 month															
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	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	7351	827	2160	4592	6222	3376	2937	1863	7525	1681	558	578
	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	218	31	1	2419	123	936	304	41	58	146	30	3
	c) BTS Accumulated Downtime	<=2%	Live data	0.04%	0.05%	0.00%	0.73%	0.03%	0.39%	0.14%	0.03%	0.01%	0.12%	0.08%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	0	1	0	2	0	0	0	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.02%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.72%	99.49%	98.09%	96.84%	99.20%	97.17%	99.65%	97.20%	99.57%	99.36%	99.77%	98.51%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.01%	0.01%	0.02%	0.11%	0.12%	0.86%	0.01%	0.07%	0.38%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Live data	0.09%	0.01%	0.02%	0.64%	0.41%	1.20%	0.07%	0.63%	0.43%	0.00%	0.01%	0.49%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Live data	0.67%	0.47%	0.79%	0.90%	0.99%	0.48%	0.29%	0.57%	0.76%	0.03%	0.15%	0.55%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	1.01%	3.22%	6.17%	2.92%	0.80%	2.59%	0.01%	1.14%	2.16%	0.12%	2.34%	6.30%
	c) % of connections with good voice quality	>=95%	Live data	97.08%	98.33%	98.21%	NP	96.30%	97.71%	98.85%	97.64%	97.52%	99.87%	99.21%	99.33%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	227	80	400	376	150	276	1	64	493	6	40	110
e) Total no. of cells (Sector) in the licensed service area		Live data	22439	2481	6487	12888	18682	10639	8670	5626	22778	5043	1706	1747	
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	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

TABLE: 3

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle- May-14 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	Tata CDMA
				GSM Operators									CDMA Operators		
Network Service Quality Parameter															
1	Network Availability														
	a) Total no. of BTSs in the licensed service area		May-14	7315	827	2159	4602	6263	3408	2894	1881	7540	1682	559	579
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		May-14	4719	260	66	57462	1712	7612	5172	1206	963	3490	159	46
	c) BTS Accumulated Downtime	<=2%	May-14	0.09%	0.04%	0.00%	1.68%	0.04%	0.30%	0.24%	0.09%	0.02%	0.28%	0.04%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		May-14	20	0	0	84	0	41	0	6	0	0	0	0
e) Worst affected BTSs due to downtime	<=2%	May-14	0.27%	0.00%	0.00%	1.83%	0.00%	1.20%	0.00%	0.32%	0.00%	0.00%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	May-14	99.73%	99.56%	98.21%	96.64%	99.27%	97.83%	99.63%	98.13%	99.58%	99.08%	99.72%	98.47%
	b) SDCCH/PAGING Congestion	<=1%	May-14	0.02%	0.03%	0.03%	0.05%	0.27%	0.18%	0.02%	0.09%	0.17%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	May-14	0.16%	0.01%	0.03%	0.72%	0.39%	0.93%	0.07%	0.35%	0.42%	0.01%	0.04%	0.47%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	May-14	0.60%	0.44%	0.75%	0.95%	0.86%	0.41%	0.31%	0.55%	0.70%	0.05%	0.15%	0.49%
	b) Worst affected cells>3% TCH drop	<=3%	May-14	0.73%	3.43%	5.57%	2.77%	0.58%	2.28%	0.01%	1.07%	1.49%	0.10%	1.99%	4.69%
	c) % of connections with good voice quality	>=95%	May-14	97.43%	98.46%	98.27%	NP	96.54%	98.00%	99.81%	97.91%	97.48%	99.87%	99.19%	99.35%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		May-14	164	85	361	353	109	244	1	61	341	5	34	82
e) Total no. of cells (Sector) in the licensed service area		May-14	22493	2481	6484	12737	18821	10714	8541	5675	22826	5046	1711	1750	

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle- May-14 month															
S/N	Name of Parameter	Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	Tata CDMA
				GSM Operators									CDMA Operators		
4	No. of POI's having >=0.5% POI congestion														
	No. of POI's having >=0.5% POI congestion		May-14	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		May-14	0	0	0	0	0	0	0	0	0	0	0	0
5	Network Data														
	a) Equipped Capacity of Network in Erlang		May-14	242146	32118	112901	317000	266091	126132	144000	83147	411542	144000	21000	95981
	b) Total traffic in TCBH in erlang (Avg.)		May-14	172050	6972	30667	88163	215856	147737	110929	23431	393409	42511	2548	17868
	c) Total no. of customers served (as per VLR) on last day of the month		May-14	6817095	12302	1302101	2596217	9633911	3910359	4612680	853599	16045957	1278578	139146	273341

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

TABLE: 4

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- Gujarat Circle- May-14 month															
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	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	7354	827	2159	4600	6258	3399	2894	1877	7530	1682	558	579
	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	455	36	2	6085	224	433	882	107	125	508	12	13
	c) BTS Accumulated Downtime	<=2%	Live data	0.09%	0.06%	0.00%	1.84%	0.05%	0.18%	0.42%	0.08%	0.02%	0.42%	0.03%	0.03%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	2	0	0	8	0	4	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.03%	0.00%	0.00%	0.17%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.75%	99.52%	98.31%	97.55%	99.09%	97.97%	99.64%	98.20%	99.61%	99.22%	99.63%	98.59%
	b) SDCCCH/PAGING Congestion	<=1%	Live data	0.02%	0.09%	0.03%	0.04%	0.69%	0.16%	0.02%	0.03%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.16%	0.00%	0.01%	0.64%	0.61%	0.96%	0.07%	0.38%	0.39%	0.00%	0.11%	0.35%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.55%	0.46%	0.71%	0.55%	0.82%	0.39%	0.29%	0.54%	0.76%	0.04%	0.17%	0.49%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	0.76%	3.43%	5.34%	2.79%	0.50%	2.24%	0.02%	1.25%	1.89%	0.10%	1.87%	4.63%
	c) % of connections with good voice quality	>=95%	Live data	97.52%	98.42%	98.35%	NP	96.71%	98.00%	98.81%	97.91%	97.32%	99.86%	99.20%	99.35%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	170	85	346	358	94	240	2	71	430	5	32	81
	e) Total no. of cells (Sector) in the licensed service area		Live data	22451	2481	6484	12823	18820	10716	8541	5669	22794	5046	1707	1750
No. of POI's having >=0.5% POI congestion															
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMC (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

TABLE: 5

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle- June-14 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	Tata CDMA
				GSM Operators									CDMA Operators		
Network Service Quality Parameter															
1	Network Availability														
	a) Total no. of BTSs in the licensed service area		Jun-14	7337	827	2159	4289	6264	3404	2543	1886	7600	1107	564	579
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Jun-14	4765	283	38	61629	2461	5464	5638	1239	1901	2998	141	95
	c) BTS Accumulated Downtime	<=2%	Jun-14	0.09%	0.05%	0.00%	2.00%	0.05%	0.22%	0.31%	0.09%	0.03%	0.38%	0.03%	0.02%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Jun-14	20	0	0	63	0	41	11	6	2	6	0	0
e) Worst affected BTSs due to downtime	<=2%	Jun-14	0.27%	0.00%	0.00%	1.47%	0.00%	1.20%	0.43%	0.32%	0.03%	0.54%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Jun-14	99.71%	99.46%	98.23%	96.20%	99.21%	97.74%	99.69%	98.02%	99.62%	98.95%	99.76%	98.55%
	b) SDCCH/PAGING Congestion	<=1%	Jun-14	0.03%	0.12%	0.00%	0.07%	0.26%	0.19%	0.01%	0.11%	0.11%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Jun-14	0.26%	0.20%	0.00%	0.77%	0.28%	1.11%	0.05%	0.40%	0.38%	0.01%	0.01%	0.37%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Jun-14	0.58%	0.51%	0.84%	0.91%	0.80%	0.38%	0.30%	0.56%	0.68%	0.07%	0.16%	0.49%
	b) Worst affected cells>3% TCH drop	<=3%	Jun-14	0.77%	3.43%	5.66%	2.74%	0.48%	1.94%	0.01%	1.09%	1.33%	0.33%	1.97%	4.74%
	c) % of connections with good voice quality	>=95%	Jun-14	97.46%	98.22%	98.15%	NP	96.68%	98.04%	98.93%	97.79%	97.70%	99.86%	99.19%	99.34%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Jun-14	173	85	367	350	91	209	1	62	305	11	34	83
e) Total no. of cells (Sector) in the licensed service area		Jun-14	22529	2481	6484	12784	18818	10756	7912	5697	22999	3321	1723	1750	

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle- June-14 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	Tata CDMA	
				GSM Operators									CDMA Operators			
4	No. of POI's having >=0.5% POI congestion															
	No. of POI's having >=0.5% POI congestion		Jun-14	0	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Jun-14	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Network Data															
	a) Equipped Capacity of Network in Erlang		Jun-14	237120	32118	113006	317000	266357	131836	144000	83537	411885	144000	21000	96473	
	b) Total traffic in TCBH in erlang (Avg.)		Jun-14	171359	7710	33798	88947	221994	156062	112784	25020	383596	42399.89	2505	17197	
	c) Total no. of customers served (as per VLR) on last day of the month		Jun-14	7030588	11020	1342337	2708676	9895697	4108836	4680082	913839	16336666	1277755	143032	289061	

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMCR (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

TABLE: 6

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- Gujarat Circle- June-14 month															
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	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	7327	827	2159	4289	6264	3412	2892	1885	7540	1682	563	579
	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	381	36	0	5164	236	524	744	131	476	429	10	0
	c) BTS Accumulated Downtime	<=2%	Live data	0.07%	0.06%	0.00%	1.67%	0.05%	0.21%	0.36%	0.10%	0.09%	0.35%	0.03%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	1	0	0	0	0	6	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.01%	0.00%	0.00%	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.79%	99.44%	98.27%	96.57%	99.50%	97.75%	99.73%	98.13%	99.63%	99.11%	99.75%	98.38%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.01%	0.96%	0.01%	0.03%	0.12%	0.07%	0.01%	0.06%	0.14%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.09%	0.18%	0.05%	0.77%	0.22%	1.01%	0.04%	0.27%	0.37%	0.01%	0.02%	0.61%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.58%	0.52%	0.81%	0.78%	0.76%	0.38%	0.57%	0.54%	0.72%	0.10%	0.16%	0.49%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	0.64%	3.59%	5.54%	2.73%	0.46%	1.94%	0.00%	1.09%	1.46%	0.20%	1.74%	4.10%
	c) % of connections with good voice quality	>=95%	Live data	97.51%	98.17%	98.18%	NP	96.80%	98.05%	98.99%	97.84%	97.70%	99.87%	99.18%	99.34%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	145	89	359	350	86	209	0	62	333	10	30	72
	e) Total no. of cells (Sector) in the licensed service area		Live data	22520	2481	6484	12830	18779	10758	8537	5698	22826	5046	1723	1756
No. of POI's having >=0.5% POI congestion															
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0	0

NP: Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality" because its OMC (ALCATEL LUCENT Technology being used by BSNL) does not support this parameter.

CUSTOMER SERVICE QUALITY (CSD) PARAMETERS



5.3 CUSTOMER SERVICE QUALITY PARAMETERS MEASUREMENT FOR CMTS:

5.3.1 CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (QUARTERLY MONTHLY AVERAGE):

CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES-QE JUNE-14 (AVERAGE OF THREE MONTHS)

Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM GSM	TATA GSM	VIDEOCON	VODA FONE	MTS	RCOM CDMA	TATA CDMA
S/ N	Name of Parameter			GSM Operators									CDMA Operators		
Customer Service Quality Parameters															
Metering & Billing Credibility -Post Paid															
1	A) No. of bills issued during the quarter		GUJ	46	399568	56238	276361	NA	61257	51792	NA	1547863	16126	187975	66404
	B) No. of bills disputed including billing complaints during the quarter		GUJ	0	18	10	229	NA	57	0	NA	1518	1	183	0
	C) % of billing complaints during the quarter	<= 0.1%	GUJ	NA	0.005%	0.01%	0.08%	NA	0.09%	NA	NA	0.10%	0.004%	0.10%	NA
Metering & Billing Credibility -Pre Paid															
2	A) Total No. of Pre-paid customers at the end of the quarter		GUJ	22935	6826700	3414143	9064458	5688980	4695317	2628791	1825665	15896508	173667	1099245	328988
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		GUJ	0	294	1017	511	247	4657	0	48	872	2	346	0
	C) % of Pre-paid Charging Complaints	<= 0.1%	GUJ	NA	0.004%	0.031%	0.01%	0.004%	0.10%	NA	0.003%	0.01%	0.001%	0.03%	NA
Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints															
3	A) No. of Billing/Charging/Credit/Validity Complaints received during the quarter		GUJ	NA	313	1020	2886	247	4714	446	48	2391	2	529	26
	B) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 4 weeks during the quarter		GUJ	NA	313	1020	2886	247	4714	443	48	2391	2	529	26
	C) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	100 % within 4 week	GUJ	NA	100%	100%	100%	100%	100%	99.25%	100%	100%	100%	100%	100%

CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES-QE JUNE-14 (AVERAGE OF THREE MONTHS)

<u>Quarterly CSD Audit Data</u>		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM GSM	TATA GSM	VIDEOCON	VODA FONE	MTS	RCOM CDMA	TATA CDMA
S/ N	Name of Parameter			GSM Operators									CDMA Operators		
	D) % of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week	GUJ	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Response time to customers for assistance															
4	A) Total no of calls attempted to customer care/Call center		GUJ	385	542350	98377	639273	497481	2787882	274101	88537	13940384	1281	406569	22642
	B) Total no. of calls successfully established to customer care/Call center		GUJ	366	542350	93615	633018	475970	2749252	271802	87129	13940373	1237.33	399493	22122
	C) % Accessibility of Call centre /customer Care (Total call successfully established *100/ Total call attempt)	>=95%	GUJ	95.23%	100%	95.15%	99.02%	95.68%	98.61%	99.16%	98.41%	99.99%	96.59%	98.26%	97.70%
	D) Total Calls reached to agent desk for Voice to Voice (Total call attempt)		GUJ	1411	1702021	554809	2639024	1277372	349068	453583	82325	3224051	16743	56275	34824
	E) Total number of calls answered by the operator (Voice to voice) within 60 seconds		GUJ	1365	1569082	543337	2612736	1198892	153014	426968	76812	3031753	16507	24066	33679
	F) % age of calls answered by operator (voice to voice) (Total call successfully established within 60 Sec. *100/ Total call attempt)	>=90%	GUJ	96.79%	92.19%	97.93%	99.00%	93.86%	43.84%	94.13%	93.30%	94.04%	98.59%	42.76%	96.71%
Termination/closure of service															
5	A) Total No. of requests for Termination / Closure of service received during the quarter		GUJ	NA	1259	2003	2272	NA	238	487	NA	7520	571	997	210
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		GUJ	NA	1252	2003	2272	NA	238	487	NA	7520	571	997	210

CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES-QE JUNE-14 (AVERAGE OF THREE MONTHS)

<u>Quarterly CSD Audit Data</u>		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM GSM	TATA GSM	VIDEOCON	VODA FONE	MTS	RCOM CDMA	TATA CDMA
S/ N	Name of Parameter			GSM Operators										CDMA Operators	
	C) % of Termination/ Closure of service within 7 days	<=7days	GUJ	NA	99.44%	100%	100%	NA	100%	100%	NA	100%	100%	100%	100%
Time taken for refunds of deposits after closures.															
6	A) No. of Payments/ Refunds due during the quarter		GUJ	NA	878	334	1767	NA	354	234	NA	1979	NA	463	177
	B) No. of Payments/ Refunds Cleared during the quarter		GUJ	NA	878	334	1767	NA	354	234	NA	1979	NA	463	176
	C) Time taken for refunds of deposits after closures.	100% within 60 days	GUJ	NA	100%	100%	100%	NA	100%	100%	NA	100%	NA	100%	99.44%

*NA.: Aircel, Uninor and Videocon have no post-paid customers, so data for parameters related to post-paid bills not applicable for them.

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

CSD 3 DAYS LIVE DATA FOR CELLULAR MOBILE TELEPHONE SERVICES-AVERAGE OF 3 DAYS															
3 days live CSD Audit Data		Bench-mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
S/N	Name of Parameter			GSM Operators										CDMA Operators	
Response time to customers for assistance															
1	Total no of calls attempted to customer care/Call center		GUJ	18	18194	3346	19878	18152	96834	9005	4026	460988	59	14699	668
	Total no. of calls successfully established to customer care/Call center		GUJ	18	18194	3193	19770	17377	95570	8917	4019	460988	57	14425	649
	% Accessibility of Call centre /customer Care (Total call successfully established*100 / Total call attempts)	>=95%	GUJ	100.00%	100.00%	95.43%	99.46%	95.73%	98.69%	99.02%	99.83%	100.00%	96.61%	98.14%	97.16%
	Total Calls reached to agent desk for Voice to Voice (Total call attempt)		GUJ	50	57126	17279	83015	45342	6887	14150	16268	105399	586	1363	1026
	Total number of calls answered by the operator (Voice to voice) within 60 seconds		GUJ	48	51419	17106	82234	36969	4769	13253	15996	104344	572	907	987
	% age of calls answered by operator(voice to voice) (Total call successfully established within 60 Sec.*100 / Total call attempts)	>=90%	GUJ	96.00%	90.01%	99.00%	99.06%	81.53%	69.25%	93.66%	98.33%	99.00%	97.61%	66.54%	96.20%

KEY FINDINGS: CUSTOMER SERVICE DELIVERY PARAMETERS

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

The performance of the service providers with respect to the parameter metering and billing credibility for both post-paid and pre-paid was well within the prescribed bench mark of $\leq 0.1\%$.

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 (except Tata-GSM) have 100 % resolved the billing complaints within stipulated period of 4 weeks. **Tata (GSM)** was short of benchmark with its achieved value as **99.25%**. Similarly, in all cases where customers were due for credit / adjustment, all the service providers have complied with the benchmark of 100 % refund in one week.

3. Response Time to the Customer for assistance

- i. Accessibility of call centre/customer care
- ii. Percentage of calls answered by Operators (Voice to Voice) within 60 seconds

All service providers are in compliance with respect to the parameter Accessibility of call center. However, **RCOM (GSM) and RCOM (CDMA)** have not met the benchmark of 'calls answered by Operators (voice to voice) within 60 seconds. They have achieved their performance as **43.84%**, and **42.76%** respectively.

4. Termination/Closure of Service

In case of this parameters also, all service providers have settled the closure/termination within the benchmark of 7 days except **Airtel** as they were short of benchmark achieving **99.44%**.

5. Time Taken for Refund of deposits after closures

All operators, except **Tata (CDMA)** were found to have complied with the benchmark of 100% refund of deposits within 60 days of closure. **Only Tata (CDMA)** remained short of benchmark with its performance as **99.44%**.

The results for three days live measurements reveal that all operators have met the benchmarks for the parameters 'Accessibility to call center. However **Uninor, RCOM (GSM) and RCOM (CDMA)** failed to meet the benchmark of 'Call connection to operators (Voice to voice) within 60 seconds' with their performance as **81.53%, 69.25% and 66.54%** 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 Gujarat service area during the time 1100 to 1400 Hrs and 1600 to 1900 was carried out by TUV auditors. The test calls were made from one operator to another within the same licensed area to judge the ease of connectivity amongst the operators. While doing this exercise, the radio part, the switch part and POI in between the two operators are involved. Congestion in any of these network elements could result in congestion in the network.

INTER OPERATOR CALL ASSESSMENT BASED ON LIVE MEASUREMENT													
Calling Operators	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM GSM	TATA GSM	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
AIRCEL	GUJ	--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AIRTEL	GUJ	100%	--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
BSNL	GUJ	100%	100%	--	100%	100%	100%	100%	100%	100%	100%	100%	100%
IDEA	GUJ	100%	100%	100%	--	100%	100%	100%	100%	100%	100%	100%	100%
UNINOR	GUJ	100%	100%	100%	100%	--	100%	100%	100%	100%	100%	100%	100%
RCOM GSM	GUJ	100%	100%	100%	100%	100%	--	100%	100%	100%	100%	100%	100%
TATA GSM	GUJ	100%	100%	100%	100%	100%	100%	--	100%	100%	100%	100%	100%
VIDEOCON	GUJ	100%	100%	100%	100%	100%	100%	100%	--	100%	100%	100%	100%
VODAFONE	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	--	100%	100%	100%
MTS	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	100%	--	100%	100%
RCOM CDMA	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	--	100%
TATA CDMA	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	--

The result of the testing revealed that the inter connection performance among the operators is quite satisfactory as there was hardly any problem in interconnection from one operator to other operators because of no congestion on individual POIs of the respective service providers.

6.2 CUSTOMER CARE / HELPLINE ASSESSMENT:

LIVE CALLING TO CALL CENTRE													
	CIRCLE NAME	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	GUJ	100	100	100	100	100	100	100	100	100	100	100	100
Total No. of calls connected to IVR	GUJ	100	100	100	100	100	100	100	100	100	100	100	100
Calls got connected to agent within 60 Sec	GUJ	92	100	91	100	100	92	100	94	100	100	93	100
%age of calls got answered	GUJ	92%	100%	91%	100%	100%	92%	100%	94%	100	100	93%	100%

In case of calls answered by operators (voice to voice) within 60 seconds when test calls were made to the call centers, Aircel, BSNL, RCOM (GSM), Videocon and RCOM (CDMA) could connect 92%, 91%, 92%, 94% and 93% of calls to the operator within 60 Seconds respectively.

6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLIANTS:

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS													
Parameter	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	Gujarat	100	100	100	100	100	100	100	100	100	6	100	75
Total No. of calls Answered	Gujarat	87	85	77	82	85	81	89	90	88	6	87	65
Resolution of Billing complaints	Gujarat	87	85	77	82	85	81	89	90	88	6	87	65
%age of cases resolved	Gujarat	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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 less due to fewer number of billing complaints. During live calling, some of the customers did not attend the calls while few others reported that their complaints have been resolved but not sure of duration of their resolution. However, most of the customers expressed their satisfaction on resolution of the billing complaints.

6.4 LEVEL -1 CALLING ASSESSMENT:

LEVEL 1 LIVE CALLING

Emergency no.	SSA Name	SDCA Name	No. of calls made	AIRCEL	AIRTEL	BSNL	UNINOR	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	RCOM (CDMA)	MTS	TATA (CDMA)
100, 108, 1091, 1098	Jamanagar SSA	Jamnagar, Dhrol, Jodiya	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100, 108, 1091, 1098		Kalawad, Bhanwad, Jamjodhpur, Lalpur	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NC	NC
100, 108, 1091, 1098		Khambalia, Jamkalyanpur, Okha	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100, 108, 1091, 1098	Rajkot SSA	Gondal, Dhoraji, Pavijetpur, Upleta	16	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100, 108, 1091, 1098		Rajkot, Kotda sangani, Jasdani	12	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100, 108, 1091, 1098		Morbi, Wankaner	16	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100, 108, 1091, 1098	Palanpur SSA	Palanpur, Danta, Vadgam	12	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100, 108, 1091, 1098		Deesa, Dhanera, Tharad, Vav	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100, 108, 1091, 1098		Radhanpur, Santalpur	16	NC	✓	✓	✓	✓	✓	NC	✓	✓	✓	NC	NC

NC: No Coverage

To assess the availability and efficiency of level 1 services such as police, fire, ambulance (emergency services) offered by various mobile service providers, the calls were made during drive tests from different SDCA in Jamnagar, Rajkot and Palanpur SSA. In Gujarat service area, these services were found functional in the networks of all the service providers except those operators who were not having their services in particular places.

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 **Jamnagar, Rajkot** and **Palanpur** in the months of April, May and June 2014 respectively. The total route Kms covered during drive tests in respective SSAs was **372 Kms, 333 Kms** and **355 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.

DRIVE TEST TABLE-1A

OPERATOR-ASSISTED DRIVE TEST AT JAMNAGAR SSA IN APRIL-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Days of drive test	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
1	Call Attempts	Day-1	154	10	178	11	153	10	230	10	250	11	236	12
		Day-2	109	10	100	11	109	10	183	10	155	10	193	12
		Day-3	15	10	85	11	41	11	25	10	117	10	69	12
		Overall SSA	278	30	363	33	303	31	438	30	522	31	498	36
2	Blocked Call Rate	Day-1	0.00%	0.00%	0.00%	0.00%	0.65%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Day-2	0.00%	0.00%	0.00%	0.00%	1.83%	0.00%	0.00%	0.00%	0.65%	0.00%	0.00%	0.00%
		Day-3	0.00%	0.00%	0.00%	0.00%	2.44%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	1.32%	3.23%	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Day-1	0.00%	0.00%	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Day-2	0.00%	0.00%	0.00%	0.00%	2.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Day-3	0.00%	0.00%	0.00%	0.00%	12.50%	10.00%	0.00%	0.00%	0.85%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	5.35%	3.33%	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%
4	Percentage connections with good voice quality (=>95%)													
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Day-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Day-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Day-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(b) 0-5 (with frequency hopping for GSM Operators)	Day-1	97.20%	99.65%	96.61%	98.93%	93.46%	96.22%	98.83%	99.52%	97.24%	99.00%	97.23%	95.03%
		Day-2	98.18%	99.84%	97.87%	99.75%	95.33%	95.90%	98.07%	99.84%	98.46%	99.46%	99.40%	100.00%
		Day-3	97.13%	99.26%	97.75%	99.75%	98.60%	94.08%	99.71%	99.35%	97.06%	97.78%	99.70%	100.00%
Overall SSA		97.57%	99.58%	97.22%	99.44%	94.82%	95.38%	98.56%	99.57%	97.57%	98.75%	98.38%	96.57%	
5	Service Coverage													
	In door (>= -75dBm)	Day-1	83.54%	100.00%	96.89%	100.00%	62.92%	61.80%	80.19%	23.20%	98.29%	99.85%	81.30%	100.00%
		Day-2	82.22%	100.00%	95.42%	100.00%	40.17%	55.90%	77.59%	63.38%	99.18%	99.18%	83.46%	100.00%
		Day-3	93.34%	54.18%	86.98%	98.90%	40.62%	7.30%	88.13%	63.72%	99.15%	93.78%	65.42%	98.40%
		Overall SSA	86.37%	84.73%	93.10%	99.44%	47.90%	41.67%	81.97%	50.10%	98.87%	97.60%	76.73%	99.47%

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014-GUJARAT CIRCLE



OPERATOR-ASSISTED DRIVE TEST AT JAMNAGAR SSA IN APRIL-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Days of drive test	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
	In-vehicle (>= -85dBm)	Day-1	97.48%	100.00%	99.77%	100.00%	96.13%	83.30%	99.55%	100.00%	99.95%	100.00%	97.42%	100.00%
		Day-2	95.82%	100.00%	99.80%	100.00%	88.45%	91.40%	92.61%	98.80%	99.74%	99.74%	98.41%	100.00%
		Day-3	100.00%	100.00%	98.02%	100.00%	89.11%	56.30%	99.93%	99.51%	99.98%	100.00%	87.87%	100.00%
		Overall SSA	97.77%	100.00%	99.20%	100.00%	91.23%	77.00%	97.36%	99.44%	99.89%	99.91%	94.57%	100.00%
	Outdoor- in city (>= -95dBm)	Day-1	99.88%	100.00%	99.94%	100.00%	99.87%	100.00%	99.06%	100.00%	100.00%	100.00%	99.97%	100.00%
		Day-2	99.78%	100.00%	100.00%	100.00%	99.69%	100.00%	99.22%	100.00%	100.00%	100.00%	99.89%	100.00%
		Day-3	100.00%	100.00%	99.81%	100.00%	99.37%	92.90%	100.00%	100.00%	100.00%	100.00%	99.13%	100.00%
		Overall SSA	99.89%	100.00%	99.92%	100.00%	99.64%	97.63%	99.43%	100.00%	100.00%	100.00%	99.66%	100.00%
6	Call Setup Success Rate (>=95%)	Day-1	100.00%	100.00%	100.00%	100.00%	99.35%	100.00%	100.00%	100.00%	99.60%	100.00%	100.00%	100.00%
		Day-2	100.00%	100.00%	100.00%	100.00%	98.17%	100.00%	99.45%	100.00%	97.42%	100.00%	100.00%	100.00%
		Day-3	100.00%	100.00%	100.00%	100.00%	97.56%	90.91%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	98.68%	96.77%	99.77%	100.00%	99.04%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Day-1	100.00%	100.00%	100.00%	100.00%	99.58%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Day-2	100.00%	100.00%	100.00%	100.00%	94.09%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Day-3	100.00%	100.00%	100.00%	100.00%	34.29%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	85.20%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NA: Not Applicable

DRIVE TEST TABLE-1B

OPERATOR-ASSISTED DRIVE TEST AT JAMNAGAR SSA IN APRIL-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Days of drive test	UNINOR		VIDEOCON		VODAFONE		MTS CDMA		TATA CDMA		RCOM CDMA	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
1	Call Attempts	Day-1	200	10	232	10	164	10	100	12	193	10	236	12
		Day-2	143	10	175	10	106	10	62	12	42	10	193	12
		Day-3	62	10	57	10	85	10	54	12	28	10	69	12
		Overall SSA	405	30	464	30	355	30	216	36	263	30	498	36
2	Blocked Call Rate	Day-1	0.00%	0.00%	0.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Day-2	0.00%	0.00%	1.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Day-3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Day-1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Day-2	0.00%	0.00%	0.58%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Day-3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.22%	0.00%	0.00%	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 Operators)	Day-1	NA	NA	NA	NA	NA	NA	99.87%	100.00%	99.88%	100.00%	99.71%	100.00%
		Day-2	NA	NA	NA	NA	NA	NA	99.99%	99.96%	99.66%	100.00%	99.50%	100.00%
		Day-3	NA	NA	NA	NA	NA	NA	99.81%	99.96%	100.00%	100.00%	99.98%	100.00%
		Overall SSA	NA	NA	NA	NA	NA	NA	99.89%	99.97%	99.86%	100.00%	99.67%	100.00%
	(b) 0-5 (with frequency hopping for GSM Operators)	Day-1	95.63%	99.59%	95.40%	99.75%	95.08%	99.61%	NA	NA	NA	NA	NA	NA
		Day-2	98.13%	98.13%	95.81%	99.73%	97.23%	95.66%	NA	NA	NA	NA	NA	NA
		Day-3	98.36%	98.36%	97.81%	99.55%	96.33%	98.90%	NA	NA	NA	NA	NA	NA
Overall SSA		96.88%	98.27%	95.82%	99.01%	96.00%	98.12%	NA	NA	NA	NA	NA	NA	
5	Service Coverage													
	In door (>= -75dBm)	Day-1	98.20%	98.54%	80.22%	99.33%	98.32%	100.00%	98.71%	100.00%	94.65%	100.00%	91.35%	100.00%
		Day-2	93.79%	93.18%	72.80%	92.45%	97.65%	100.00%	90.73%	100.00%	92.91%	100.00%	78.26%	96.49%
		Day-3	93.67%	96.76%	76.71%	26.25%	96.85%	100.00%	94.40%	91.38%	97.62%	100.00%	77.99%	94.38%
		Overall SSA	95.22%	99.51%	76.58%	72.68%	97.61%	100.00%	94.61%	97.13%	95.06%	100.00%	82.53%	96.96%

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014-GUJARAT CIRCLE



OPERATOR-ASSISTED DRIVE TEST AT JAMNAGAR SSA IN APRIL-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Days of drive test	UNINOR		VIDEOCON		VODAFONE		MTS CDMA		TATA CDMA		RCOM CDMA	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
	In-vehicle (>= -85dBm)	Day-1	99.49%	100.00%	97.04%	99.93%	99.79%	100.00%	100.00%	100.00%	99.85%	100.00%	99.51%	100.00%
		Day-2	99.41%	100.00%	92.12%	99.28%	99.92%	100.00%	99.83%	100.00%	99.68%	100.00%	95.93%	98.25%
		Day-3	99.86%	98.35%	95.77%	94.55%	99.65%	100.00%	99.98%	99.93%	100.00%	100.00%	96.06%	100.00%
		Overall SSA	99.59%	99.45%	94.98%	97.92%	99.79%	100.00%	99.94%	99.98%	99.84%	100.00%	97.17%	99.42%
	Outdoor- in city (>= -95dBm)	Day-1	99.78%	100.00%	99.79%	100.00%	99.93%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Day-2	100.00%	100.00%	98.87%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.95%	100.00%
		Day-3	100.00%	100.00%	99.72%	99.93%	99.84%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	99.93%	100.00%	99.46%	99.98%	99.92%	100.00%	100.00%	100.00%	100.00%	100.00%	99.98%	100.00%
6	Call Setup Success Rate (>=95%)	Day-1	100.00%	100.00%	97.41%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Day-2	100.00%	100.00%	98.29%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Day-3	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	98.06%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Day-1	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Day-2	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Day-3	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NA: Not Applicable

DRIVE TEST TABLE-2A

OPERATOR-ASSISTED DRIVE TEST AT RAJKOT SSA IN MAY-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
1	Call Attempts	Major Roads	NC	NC	133	12	165	11	153	10	134	11	151	12
		Highways	NC	NC	59	12	52	10	67	10	55	10	53	12
		Within City	NC	NC	124	12	186	10	185	10	171	10	190	12
		Overall SSA	NC	NC	316	36	403	31	405	30	360	31	394	36
2	Blocked Call Rate	Major Roads	NC	NC	0.00%	0.00%	1.21%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highways	NC	NC	0.00%	0.00%	1.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	0.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	NC	NC	0.00%	0.00%	0.99%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Major Roads	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highways	NC	NC	0.00%	0.00%	1.96%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	NC	NC	0.00%	0.00%	0.25%	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 Operators)	Major Roads	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Highways	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Within City	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Overall SSA	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Roads	NC	NC	96.86%	98.25%	95.24%	99.85%	97.42%	98.07%	98.19%	99.10%	99.09%	99.61%
		Highways	NC	NC	95.98%	97.80%	88.68%	99.90%	98.19%	100.00%	97.06%	99.10%	97.44%	83.76%
		Within City	NC	NC	96.28%	97.61%	92.37%	99.51%	96.85%	98.56%	96.72%	98.70%	97.80%	100.00%
Overall SSA		NC	NC	96.46%	97.88%	92.98%	99.78%	97.28%	98.88%	97.33%	98.97%	98.25%	94.54%	
5	Service Coverage													
	In door (>= -75dBm)	Major Roads	NC	NC	95.11%	99.76%	26.79%	96.45%	83.27%	50.72%	98.62%	95.50%	86.50%	92.98%
		Highways	NC	NC	97.21%	100.00%	59.37%	100.00%	93.27%	73.88%	99.91%	100.00%	94.05%	91.32%
		Within City	NC	NC	97.90%	100.00%	64.90%	99.62%	90.95%	93.10%	99.95%	98.70%	90.43%	100.00%
		Overall SSA	NC	NC	96.80%	99.92%	49.52%	98.69%	88.52%	72.57%	99.44%	98.07%	89.41%	94.77%

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014-GUJARAT CIRCLE



OPERATOR-ASSISTED DRIVE TEST AT RAJKOT SSA IN MAY-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
	In-vehicle (>= -85dBm)	Major Roads	NC	NC	99.47%	100.00%	80.09%	100.00%	98.60%	99.83%	99.95%	99.80%	98.36%	100.00%
		Highways	NC	NC	99.87%	100.00%	94.88%	100.00%	99.37%	100.00%	100.00%	100.00%	99.39%	100.00%
		Within City	NC	NC	99.70%	100.00%	94.93%	100.00%	99.77%	100.00%	100.00%	100.00%	99.76%	100.00%
		Overall SSA	NC	NC	99.65%	100.00%	89.22%	100.00%	99.27%	99.94%	99.98%	99.93%	99.16%	100.00%
	Outdoor- in city (>= -95dBm)	Major Roads	NC	NC	99.99%	100.00%	99.13%	100.00%	99.98%	100.00%	100.00%	100.00%	99.99%	100.00%
		Highways	NC	NC	99.98%	100.00%	99.88%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	NC	NC	99.93%	100.00%	99.95%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	NC	NC	99.96%	100.00%	99.63%	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%
6	Call Setup Success Rate (>=95%)	Major Roads	NC	NC	100.00%	100.00%	98.79%	100.00%	100.00%	100.00%	97.01%	90.91%	100.00%	100.00%
		Highways	NC	NC	100.00%	100.00%	98.08%	100.00%	100.00%	100.00%	98.18%	100.00%	100.00%	100.00%
		Within City	NC	NC	100.00%	100.00%	99.46%	100.00%	100.00%	100.00%	98.25%	100.00%	100.00%	100.00%
		Overall SSA	NC	NC	100.00%	100.00%	99.01%	100.00%	100.00%	100.00%	97.78%	96.77%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Major Roads	NC	NC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Highways	NC	NC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	NC	NC	100.00%	100.00%	99.25%	100.00%	100.00%	100.00%	99.70%	100.00%	100.00%	100.00%
		Overall SSA	NC	NC	100.00%	100.00%	99.60%	100.00%	100.00%	100.00%	99.84%	100.00%	100.00%	100.00%

NA: Not Applicable, NC: No Coverage

DRIVE TEST TABLE-2B

OPERATOR-ASSISTED DRIVE TEST AT RAJKOT SSA IN MAY-14 MONTH- GUJRAT CIRCLE															
S/N	Parameter	Classification of routes covered	UNINOR		VIDEOCON		VODAFONE		MTS CDMA		TATA CDMA		RCOM CDMA		
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	
1	Call Attempts	Major Roads	160	10	165	10	130	10	128	10	172	10	151	12	
		Highways	180	10	68	10	48	10	39	10	56	10	53	12	
		Within City	72	10	211	10	167	10	133	10	180	10	191	12	
		Overall SSA	412	30	444	30	345	30	300	30	408	30	395	36	
2	Blocked Call Rate	Major Roads	0.00%	0.00%	0.61%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Highways	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%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Overall SSA	0.00%	0.00%	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
3	Dropped Call Rate (<=2%)	Major Roads	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Highways	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%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Overall SSA	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	Percentage connections with good voice quality (=>95%)														
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Major Roads	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.84%	100.00%	99.97%	100.00%
		Highways	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.42%	100.00%	99.90%	100.00%
		Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.80%	100.00%	99.66%	100.00%
		Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.33%	100.00%	99.81%	100.00%
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Roads	95.53%	96.63%	96.32%	97.00%	95.21%	97.94%	99.61%	100.00%	NA	NA	NA	NA	
		Highways	96.23%	99.06%	96.94%	97.69%	94.46%	95.31%	99.94%	100.00%	NA	NA	NA	NA	
		Within City	96.11%	99.45%	96.37%	98.89%	93.81%	95.45%	99.87%	99.95%	NA	NA	NA	NA	
Overall SSA		95.96%	97.83%	96.46%	97.86%	94.44%	95.63%	99.76%	99.87%	NA	NA	NA	NA		
5	Service Coverage														
	In door (>= -75dBm)	Major Roads	87.84%	98.54%	78.94%	81.59%	98.08%	100.00%	90.78%	100.00%	90.34%	100.00%	82.07%	100.00%	
		Highways	96.56%	93.18%	76.51%	75.64%	98.69%	100.00%	89.54%	100.00%	95.80%	100.00%	80.49%	100.00%	
		Within City	95.13%	98.35%	88.50%	91.10%	98.76%	100.00%	93.44%	92.31%	89.80%	88.31%	96.60%	100.00%	
		Overall SSA	93.18%	96.69%	82.41%	82.78%	98.51%	100.00%	91.80%	97.44%	90.88%	96.10%	88.76%	100.00%	

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014-GUJARAT CIRCLE



OPERATOR-ASSISTED DRIVE TEST AT RAJKOT SSA IN MAY-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Classification of routes covered	UNINOR		VIDEOCON		VODAFONE		MTS CDMA		TATA CDMA		RCOM CDMA	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
	In-vehicle (>= - 85dBm)	Major Roads	98.07%	100.00%	94.09%	100.00%	99.84%	100.00%	99.78%	100.00%	99.97%	100.00%	97.94%	100.00%
		Highways	98.95%	100.00%	97.57%	99.39%	99.90%	100.00%	99.88%	100.00%	100.00%	100.00%	98.79%	100.00%
		Within City	99.18%	96.76%	98.68%	93.76%	99.77%	100.00%	99.97%	100.00%	99.74%	100.00%	99.99%	100.00%
		Overall SSA	98.74%	98.92%	96.63%	97.72%	99.82%	100.00%	99.88%	100.00%	99.87%	100.00%	99.03%	100.00%
	Outdoor- in city (>= - 95dBm)	Major Roads	99.97%	100.00%	99.29%	100.00%	99.95%	100.00%	99.98%	100.00%	100.00%	100.00%	99.99%	100.00%
		Highways	99.64%	100.00%	99.88%	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	99.86%	100.00%	99.84%	99.11%	99.92%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	99.83%	100.00%	99.63%	99.70%	99.94%	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%
6	Call Setup Success Rate (>=95%)	Major Roads	98.75%	100.00%	98.18%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Highways	99.44%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	100.00%	100.00%	99.05%	100.00%	100.00%	100.00%	100.00%	100.00%	96.11%	100.00%	100.00%	100.00%
		Overall SSA	99.27%	100.00%	98.87%	100.00%	100.00%	100.00%	100.00%	100.00%	98.18%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Major Roads	99.66%	100.00%	99.60%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Highways	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	99.86%	100.00%	99.86%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NA: Not Applicable

DRIVE TEST TABLE-3A

OPERATOR-ASSISTED DRIVE TEST AT PALANPUR SSA IN JUNE-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
1	Call Attempts	Major Roads	NA	NC	60	25	33	26	37	25	41	25	56	28
		Highways	6	26	121	25	112	26	31	25	119	26	98	26
		Within City	23	NC	277	25	320	26	139	NC	319	25	269	25
		Overall SSA	29	26	458	75	465	78	207	50	479	76	423	79
2	Blocked Call Rate	Major Roads	NA	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highways	0.00%	0.00%	0.00%	0.00%	0.89%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	0.00%	NC	0.00%	0.00%	1.25%	0.00%	0.00%	NC	0.31%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	1.08%	0.00%	0.00%	0.00%	0.21%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Major Roads	NA	NC	0.00%	0.00%	3.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highways	0.00%	0.00%	0.00%	0.00%	0.90%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	0.00%	NC	0.00%	0.00%	0.95%	0.00%	0.00%	NC	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	1.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percentage connections with good voice quality (=>95%)														
4	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Major Roads	NA	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Highways	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Within City	NA	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Roads	NA	NC	96.90%	99.61%	89.38%	96.29%	97.28%	97.22%	97.49%	99.53%	97.20%	98.84%
		Highways	99.73%	99.42%	96.82%	99.00%	93.23%	82.27%	95.90%	96.23%	97.93%	99.45%	97.36%	99.43%
		Within City	99.44%	NC	96.74%	97.39%	93.50%	99.97%	97.48%	NC	98.08%	99.33%	97.24%	99.52%
		Overall SSA	99.44%	99.42%	96.78%	98.67%	93.12%	97.87%	97.21%	96.73%	97.99%	99.44%	97.26%	99.34%
Service Coverage														
5	In door (>= -75dBm)	Major Roads	NA	NC	97.65%	100.00%	90.39%	36.33%	86.83%	99.82%	99.48%	85.87%	73.77%	100.00%
		Highways	71.73%	95.86%	95.50%	100.00%	77.46%	93.34%	77.40%	75.09%	99.42%	99.99%	76.37%	100.00%
		Within City	67.72%	NC	91.10%	100.00%	79.42%	100.00%	82.54%	NC	98.71%	90.41%	78.98%	58.24%
		Overall SSA	68.57%	95.86%	93.71%	100.00%	79.83%	87.44%	82.54%	87.59%	98.96%	92.12%	77.70%	77.12%

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014-GUJARAT CIRCLE



OPERATOR-ASSISTED DRIVE TEST AT PALANPUR SSA IN JUNE-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Classification of routes covered	AIRCEL		AIRTEL		BSNL		TATA GSM		IDEA		RCOM GSM	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
	In-vehicle (>= -85dBm)	Major Roads	NA	NC	99.93%	100.00%	99.89%	99.80%	99.18%	100.00%	100.00%	99.94%	97.31%	100.00%
		Highways	94.14%	100.00%	99.85%	100.00%	96.91%	99.18%	97.60%	99.94%	99.99%	100.00%	95.99%	100.00%
		Within City	97.42%	NC	98.96%	100.00%	98.01%	100.00%	95.05%	NC	99.98%	99.94%	96.73%	100.00%
		Overall SSA	96.72%	100.00%	99.32%	100.00%	97.92%	99.33%	96.17%	99.97%	99.99%	99.96%	96.64%	100.00%
	Outdoor- in city (>= -95dBm)	Major Roads	NA	NC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Highways	100.00%	100.00%	99.98%	100.00%	99.89%	100.00%	99.84%	100.00%	100.00%	100.00%	99.97%	100.00%
		Within City	100.00%	NC	99.97%	100.00%	99.86%	100.00%	99.68%	NC	100.00%	100.00%	99.82%	100.00%
		Overall SSA	100.00%	100.00%	99.97%	100.00%	99.88%	100.00%	99.76%	100.00%	100.00%	100.00%	99.88%	100.00%
6	Call Setup Success Rate (>=95%)	Major Roads	NA	NC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Highways	100.00%	100.00%	100.00%	100.00%	99.11%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	100.00%	NC	100.00%	100.00%	98.75%	100.00%	100.00%	NC	98.12%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	98.92%	100.00%	100.00%	100.00%	98.75%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Major Roads	NA	NC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Highways	100.00%	100.00%	100.00%	100.00%	98.15%	100.00%	100.00%	100.00%	99.32%	100.00%	100.00%	100.00%
		Within City	100.00%	NC	100.00%	100.00%	97.01%	100.00%	100.00%	NC	99.47%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	97.71%	100.00%	100.00%	100.00%	99.49%	100.00%	100.00%	100.00%

NA: Not Applicable, NC: No Coverage

N.B. - Aircel having coverage only in Tharad SDCA.

DRIVE TEST TABLE-3B

OPERATOR-ASSISTED DRIVE TEST AT PALANPUR SSA IN JUNE-14 MONTH- GUJRAT CIRCLE														
S/N	Parameter	Classification of routes covered	UNINOR		VIDEOCON		VODAFONE		MTS CDMA		TATA CDMA		RCOM CDMA	
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
1	Call Attempts	Major Roads	223	25	53	25	49	27	31	25	30	25	57	29
		Highways	196	25	53	25	100	27	34	25	28	25	97	26
		Within City	268	25	152	25	252	27	144	NC	126	NC	273	26
		Overall SSA	687	75	258	75	401	81	209	50	184	50	427	81
2	Blocked Call Rate	Major Roads	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highways	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%	0.00%	0.66%	0.00%	1.98%	0.00%	0.00%	NC	0.00%	NC	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.39%	0.00%	1.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Major Roads	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highways	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%	0.00%	0.67%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	NC	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.39%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percentage connections with good voice quality (=>95%)														
4	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Major Roads	NA	NA	NA	NA	NA	NA	NA	NA	98.75%	98.47%	99.15%	98.84%
		Highways	NA	NA	NA	NA	NA	NA	NA	NA	98.92%	100.00%	98.76%	100.00%
		Within City	NA	NA	NA	NA	NA	NA	NA	NC	99.09%	NS	97.35%	100.00%
		Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	99.02%	99.26%	97.91%	99.74%
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Roads	95.65%	94.86%	96.77%	97.02%	96.06%	97.79%	99.82%	99.43%	NA	NA	NA	NA
		Highways	95.24%	95.17%	97.02%	99.55%	95.77%	98.82%	99.52%	100.00%	NA	NA	NA	NA
		Within City	95.00%	98.62%	97.05%	99.79%	95.69%	99.05%	99.64%	NS	NA	NC	NA	NA
		Overall SSA	95.32%	96.12%	96.99%	98.78%	95.76%	98.55%	99.65%	99.72%	NA	NA	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Major Roads	70.36%	60.72%	80.47%	97.85%	90.24%	100.00%	65.32%	98.28%	69.17%	86.74%	62.72%	97.77%
		Highways	74.16%	84.34%	79.51%	100.00%	90.29%	100.00%	63.96%	96.16%	60.73%	100.00%	73.53%	100.00%
		Within City	62.56%	96.78%	81.93%	100.00%	90.50%	99.41%	60.27%	NC	63.85%	NC	79.28%	98.86%
		Overall SSA	71.29%	78.58%	80.97%	99.28%	90.41%	99.80%	61.62%	97.22%	64.36%	93.50%	75.82%	98.88%

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014-GUJARAT CIRCLE



OPERATOR-ASSISTED DRIVE TEST AT PALANPUR SSA IN JUNE-14 MONTH- GUJRAT CIRCLE															
S/N	Parameter	Classification of routes covered	UNINOR		VIDEOCON		VODAFONE		MTS CDMA		TATA CDMA		RCOM CDMA		
			Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	
	In-vehicle (>= -85dBm)	Major Roads	96.10%	98.41%	97.60%	99.62%	99.25%	100.00%	96.20%	99.98%	99.13%	99.95%	92.07%	100.00%	
		Highways	95.74%	98.66%	92.85%	100.00%	98.81%	100.00%	88.66%	100.00%	95.63%	100.00%	91.60%	100.00%	
		Within City	92.88%	99.90%	95.56%	100.00%	98.93%	100.00%	92.80%	NC	96.29%	NC	97.07%	100.00%	
		Overall SSA	95.49%	98.91%	95.41%	99.87%	98.94%	100.00%	92.64%	99.99%	96.69%	99.98%	95.16%	100.00%	
	Outdoor- in city (>= -95dBm)	Major Roads	99.94%	99.97%	99.74%	99.92%	99.96%	100.00%	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	
		Highways	99.82%	100.00%	98.53%	100.00%	99.63%	100.00%	99.11%	100.00%	100.00%	100.00%	99.69%	100.00%	
		Within City	99.44%	100.00%	99.57%	100.00%	99.89%	100.00%	99.05%	NC	99.90%	NC	100.00%	100.00%	
		Overall SSA	100.00%	100.00%	99.36%	99.98%	99.83%	100.00%	99.20%	100.00%	99.93%	100.00%	99.93%	100.00%	
	6	Call Setup Success Rate (>=95%)	Major Roads	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
			Highways	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
			Within City	100.00%	100.00%	98.68%	100.00%	98.02%	100.00%	100.00%	NC	100.00%	NC	100.00%	100.00%
			Overall SSA	100.00%	100.00%	99.22%	100.00%	98.75%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Major Roads	98.68%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
		Highways	98.97%	100.00%	99.21%	100.00%	99.11%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
		Within City	99.42%	100.00%	100.00%	100.00%	99.22%	100.00%	100.00%	NC	100.00%	NC	100.00%	100.00%	
		Overall SSA	99.05%	100.00%	99.83%	100.00%	99.30%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	

NA: Not Applicable, NC: No Coverage

7.1 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

DRIVE TEST ROUTE OF APRIL TO JUNE 14 – GUJARAT CIRCLE									
Name of SSA	Day 1			Day 2			Day 3		
	Name of SDCA Covered /Total KM covered	Outdoor Route Covered	Indoor Office/Complex Name	Name of SDCA Covered /Total KM covered	Outdoor Route Covered	Indoor Office/Complex Name	Name of SDCA Covered /Total KM covered	Outdoor Route Covered	Indoor Office/Complex Name
JAMNAGAR	Jamnagar, Dhrol, Jodiya, / 112 KM	Mayurnagar, Dhinchda road, Defence colony, Bedi Bhundar road, Indira Gandhi Road, kadiawad, Central bank road, Navtanpuri, Shankar tekri, Bedi road, Servoday Enginners, Guru Govind singh Hospital, St Xaviers School, Ranjitnagar, nanddham society, Elite Industries, Lalapur, Indira Marg, Gokulnagar.	Crystal Mall (Jamnagar)	Bhanwad, Jam Jodhpur, Kalawad, Lalpur, / 132 KM	Jodiya Road, Jamnagar-Rajkot Highway, Nehru Park, Darbargadh, Badalpar, Badalpar Road, Gitamandir road, Main Bazar Road, Bus stand, Jodiya.	Umiya cotton mill (Jam jodhpur)	Jam Kalyan, Khambaliya, Okha, / 128 KM	Salaya Road, Porbandar Road, Banglawadi, Nutan Nagar, Shaktinagar, Jamkhambaliya, Ghumali, Kansara, Railway Colony, Gandhinagari, Port Colony.	BSNL Exchange Okha

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<p align="center">RAJKOT</p>	<p>Gondal,Jetpur,Dhoraji, Upleta / 125 KM</p>	<p>Gondal (Within City):--Shidhdharth Nagar, Vardhman nagar, Bhagwatipara, Dev para, Patel Society, Gayatrinagar,Geet anagar, GEB Colony Atkot Highway // Upleta (Major Roads):-- Bypass Road, Jalaramnagar, Dhank ni gari, Vadchok, Upleta //Dhoraji (Highways):-- Vijaynagar, Old Dhoraji,New Dhoraji, Venkteshwarsnagar, Bhadarcolony, Kailashnagar, New Dhoraji.</p>	<p>Collegian Mall, Ranade hospital, Gondal</p>	<p>Rajkot,Jasdan, Kotda sangani / 107KM</p>	<p>Shashtrinagar,Bajrangwadi, Railway station Road, Railway Colony, Jamnagar Highway, Udhyognagar, Gondal Road, Viratnagar, Vavdi, Soni Bazar,Old City Area</p>	<p>Crystal mall, Rajkot</p>	<p>Morbi,Wankaner / 101KM</p>	<p>Mill Colony,Arunodaya Society,Pratap Chock,Chandrapur,Bhaktiya Society,Kumarpara,Government Quarter, Wankaner //Anandnagar, Amrutnagar, Sardarnagar,Gokulnagar, Ravapar, Anantnagar, Lalpar, mahendrapara.</p>	<p>Sky mall, Morbi</p>
<p align="center">PALANPUR</p>	<p>Palanpur, Danta, Vadgam /155 KM</p>	<p>Tirupati Rajnagar, Dhundhiyawadi, Moti Bagh, Pataliya, Vishnagar, Laxmipura, Virpur Modinagar, Akhipura, Dhalvas</p>	<p>Hello Point, Palanpur</p>	<p>Deesa, Dhanera, Tharad, Vav / 140 KM</p>	<p>NH-14, Tekara, Shivnagar, Joshi Marg, Dr. G D Marg, Gulbani Nagar, Sindhi Market, Soni Bazzar, Neminath Nagar, State Highway-7</p>	<p>Aditya Complex, Deesa</p>	<p>Radhanpur, Santalpur / 55 KM</p>	<p>Radhanpur, Masali Road, Vrindavan Society, Parkar Society, Sardarpura, Ravidham</p>	<p>Indraprastha Complex, Radhanpur</p>

7.2 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF JAMNAGAR SSA (APR-14)

S. No	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Jamnagar, Dhrol, Jodiya	--	Bhanwad, Jam Jodhpur, Kalawad, Lalpur	--	Jam Kalyan, Khambaliya, Okha	
2	AIRTEL BHARTI		Poor Rx Quality found in Railway station, Badeswar & Mayur nagar		--		--
3	BSNL		Poor Rx Quality found in all Jamnagar SDCA, Observed High Interference in Jamnagar SDCA		Poor Rx Quality In all Jam Jodhpur SDCA; In Khambali Chowk Khanbaliya SDCA		--
4	IDEA CELLULAR		NA		Poor Rx Quality In Jam khambaliya SDCA , Near Dwarika Highwa, Dwarika Bypass		Poor Rx Quality In Okha SDCA Near Navi Nagar Raghunath Road
5	UNINOR		Poor Rx Quality in Hanuman Tekri, Mall Road, Kodyar Road, sanker Tekri In Jamnagar SDCA; Darbargarh Road, Gondal Road(DHROL SDCA) ; Dhrol Highway (Jodia SDCA)		Poor Rx Level In all Jam khambaliya SDCA;		--
6	VIDEOCON		Poor Rx Quality Found in Bedi Road, Jogeshwar Park, Saru Section Road, Indira Marg Jamnagar SDCA		Poor Rx Quality In Patelwadi (KALAWAD SDCA), Mother Teresa School, Jingani Road (JamJodhpur SDCA); BSNL Office Road (LALPUR SDCA)		--
7	VODAFONE		--		--		--
8	MTS		--		--		--
9	TATA GSM		--		Poor Rx Level & Rx Quality Near Bajaj Cement Production Unit Jam Jodhpur		--
10	TATA CDMA		--		--		--
11	RCOM GSM		Poor RX Quality near Jodia Port Road, Badanpur Village, Kunad Village(JODIA SDCA)		--		--
12	RCOM CDMA		--		--		--

NC: No Coverage

DRIVE TEST TABLE: 6
DRIVE TEST OBSERVATION OF RAJKOT SSA (MAY-14)

S. No	Name of SP	SDCA Covered in Day 2	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Gondal, Jetpur, Dhoraji, Upleta	NC	Rajkot, Jasdan, Kotda sangani	NC	Morbi, Wankaner	NC
2	AIRTEL BHARTI		--		--		
3	BSNL		Poor Voice quality observed at Dhoraji		Poor Voice quality observed at Rajkot (Lotus residency, Milestone Apt, Monarch market, Voral comp, Jangleswar)		
4	IDEA CELLULAR		--		--		
5	UNINOR		Poor Voice quality observed at Jetpur road, Bhagwadpara road, Tapan chowk dhoraji, upleta		Poor Voice quality observed at Aji industry area, Race course area Rajkot, University road Rajkot, Jasden road		
6	VIDEOCON		Rabarika Road Jetpur, BYPASS Road, Jetpur		--		
7	VODAFONE		Poor Voice quality observed at Upleta		--		
8	MTS		--		--		
9	TATA GSM		Poor Voice quality observed near Rah barkat nagar Gondal, Near Dasi jeevan para Jetpur,		--		
10	TATA CDMA		--		Poor Voice quality observed at Rajkot Morbi road		
11	RCOM GSM		--		--		
12	RCOM CDMA		--		--		

NC: No Coverage

DRIVE TEST TABLE: 7

DRIVE TEST OBSERVATION OF PALANPUR SSA (JUNE-14)

S. No	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Palanpur, Danta, Vadgam	NC	Deesa, Dhanera, Tharad, Vav	NA (Services only in Tharad SDCA)	Radhanpur, Santalpur	NC
2	AIRTEL BHARTI		Palanpur: Poor Voice quality observed at NH14 near sardar patel nagar, Vish nagar.		--		--
3	BSNL		Palanpur: Poor Voice quality observed all over city mainly at NH14 near sardar patel nagar, Vish nagar., Mansarovar road, Tirpati rajnagar, Palanpur market.		Tharad: Poor Voice quality observed at Joshi marg, Dr GD marg// Deesa: Over NH-14 near pashu-chiktsalay, Raghubanshi hospital		--
4	IDEA CELLULAR		Palanpur : Poor Voice quality observed at Near Jagana.		Poor Voice quality observed at Deesa: Over SH-7.		--
5	UNINOR		Palanpur: Poor Voice quality observed at Dhundiya vadi, NH14 near sardar patel nagar, Vish nagar, Modinagar.		Poor Voice quality observed at NH-14 near pashu-chiktsalay, Raghubanshi hospital		--
6	VIDEOCON		Poor Voice quality and receiving level observed at NH14 near sardar patel nagar, Vish nagar., Mansarovar road, Tirpati rajnagar, Aligadh Chokdi, Songadh Road, Palanpur		Deesa : Near Akhol moti village, Old Deesa.		--
7	VODAFONE		--		Tharad: Poor Voice quality observed at Joshi marg, Dr GD marg, sivnagar.		--
8	MTS		--		--		NC
9	TATA GSM		Palanpur: Poor Voice quality observed at Laxmi Pura near highway		Deesa: Poor Voice quality observed at Rajpur		NC
10	TATA CDMA		--		--		NC
11	RCOM GSM		Palanpur: Poor Voice quality observed at NH14 near sardar patel nagar, Gatham, Laxmipur.		Deesa: Poor Voice quality observed at Rajpur		Poor Voice quality observed near SH-131, Maisali Road
12	RCOM CDMA		Palanpur: Poor Voice quality observed at Dhundiya vadi, NH14 near sardar patel nagar, Vish nagar, Modinagar.		--		--

NC: No Coverage

7.3 KEY FINDINGS ON DRIVE TEST:

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

1. April-14 : Jamnagar SSA

SDCAs covered: Jamnagar, Dhrol, Jodiya, Bhanwad, Jam Jodhpur, Kalawad, Lalpur, Jam Kalyan, Khambaliya, Okha

The results of the drive test, carried out across Jamnagar SSA for all service providers revealed that they were largely in compliance of benchmarks of all the parameters, except **BSNL** remained non-complied for parameters **Call Drop rate and Voice Quality** with their performance as **5.35% (outdoor) / 3.33% (Indoor) %** and **94.82% (outdoor)** respectively.

2. May-14 (Rajkot SSA):

SDCA covered: Gondal, Jetpur, Dhoraji, Upleta, Rajkot, Jasdan, Kotda sangani , Morbi, Wankaner

No Service:

- i. Aircel: Have no coverage in Rajkot SSA.

The results of the drive test, carried out across Rajkot SSA for all service providers revealed that they were largely in compliance of benchmarks for all the parameters, except **BSNL**, **RCOM(GSM)** and **Vodafone** not met the benchmark for parameter '**Good Voice Quality**' with their performance as **92.98% (outdoor)**, **94.54% (Indoor)** and **94.44% (outdoor)** respectively.

3. June-14 (Palanpur SSA):

No Service: Aircel has no coverage in Palanpur SSA except in Tharad.

The results of the drive test, carried out in Palanpur SSA revealed that the operators were largely doing well as per the TRAI norms. However, only **BSNL** failed to meet the benchmark of parameter '**Voice Quality**' with its performance as **93.12%**.

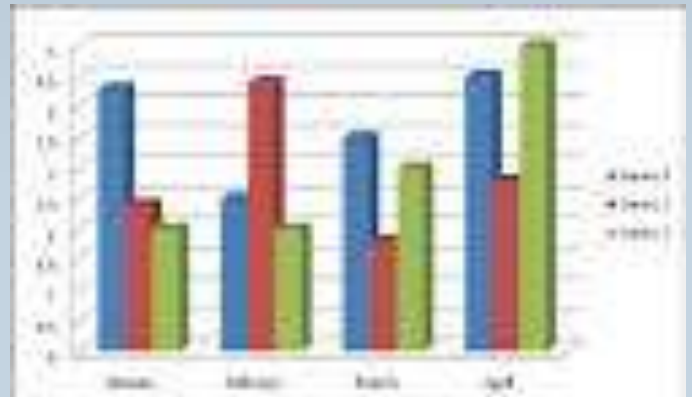
Though the drive test results suggest satisfactory working of the network of the service providers, yet the deficiencies with respect to adequate coverage and voice quality, encountered by different Service providers at the various places as shown in the drive tests plots, are detailed in the above table.-5, table-6 and table-7 for Jamnagar, Rajkot and Palanpur SSAs respectively.

8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

AVERAGED QUARTERLY PMR

V/S

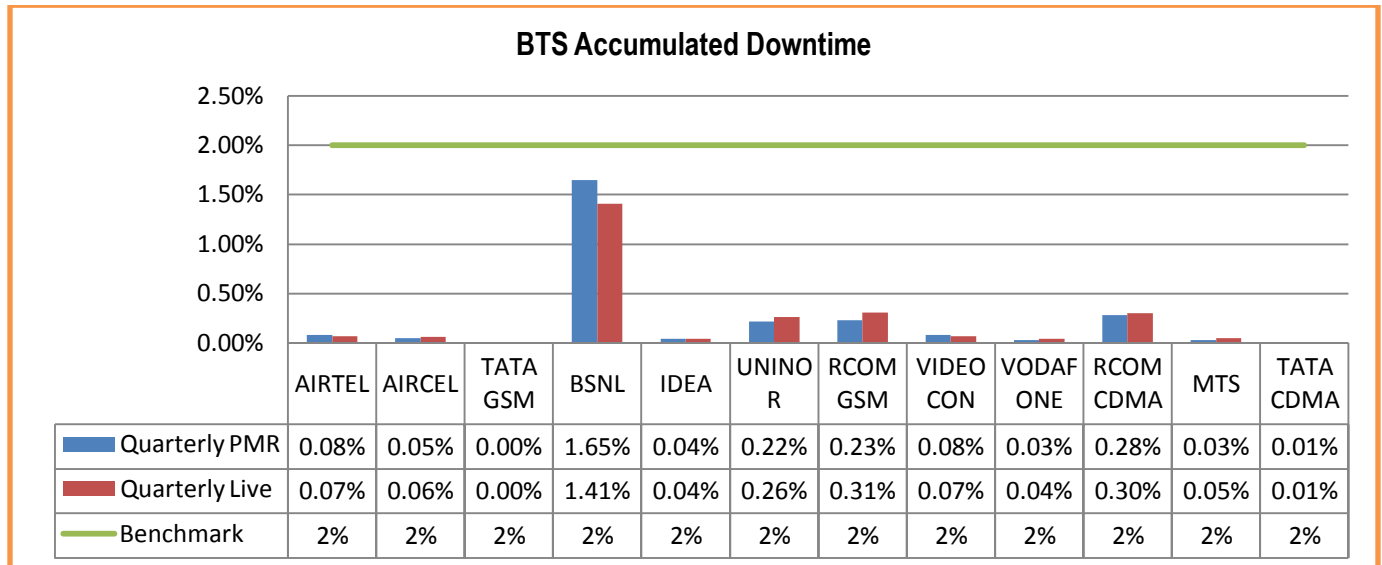
AVERAGED QUARTERLY 3-DAYS LIVE MEASUREMENT



8. GRAPHICAL REPRESENTATION (CMTS):

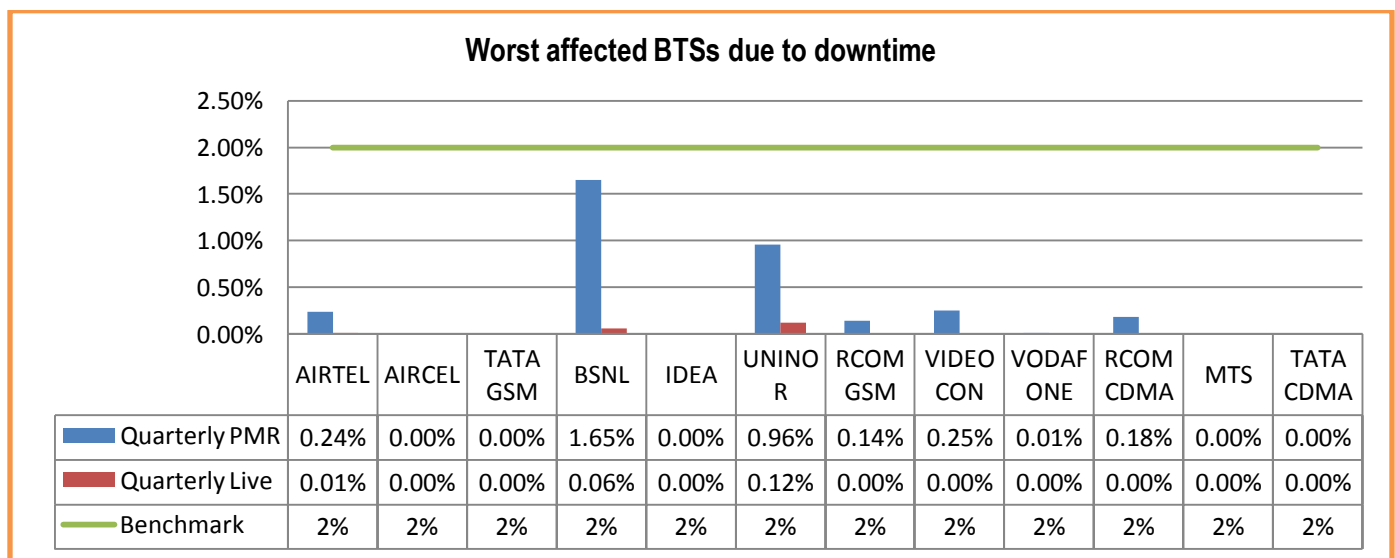
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

1. BTS ACCUMULATED DOWNTIME



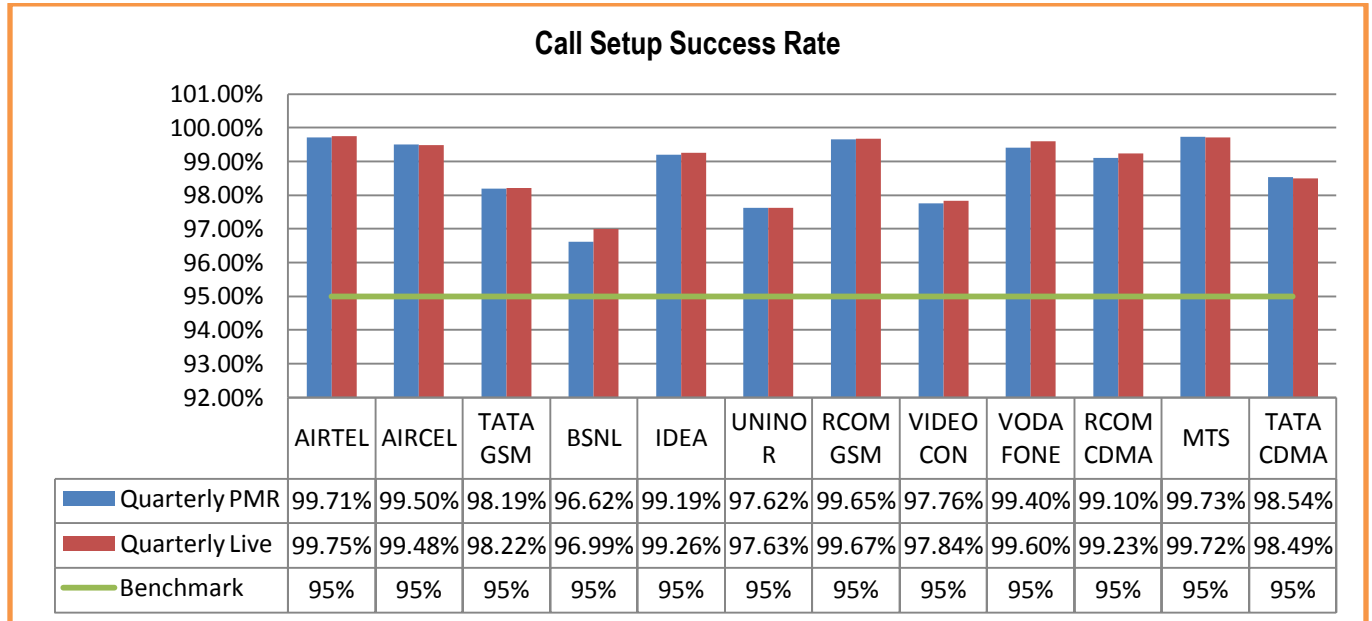
All operators are meeting the benchmarks.

2. WORST AFFECTED BTSs DUE TO DOWNTIME:



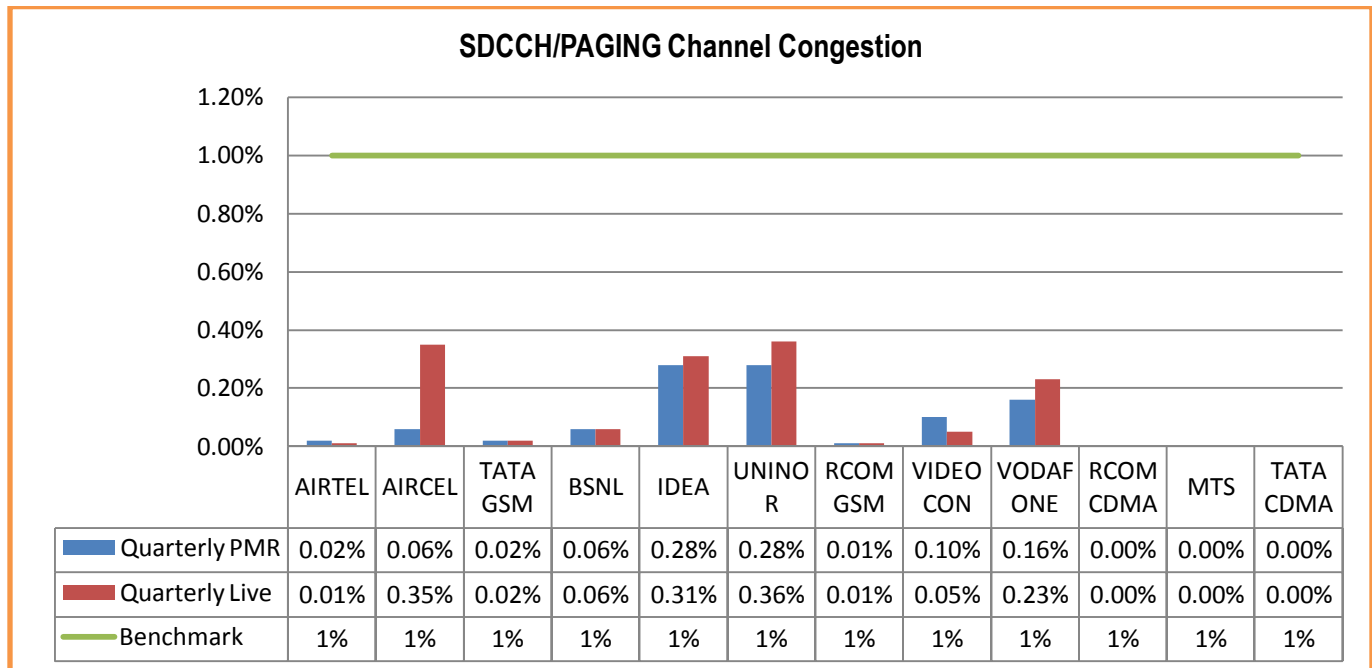
All operators are meeting the benchmarks.

3. CALL SETUP SUCCESS RATE



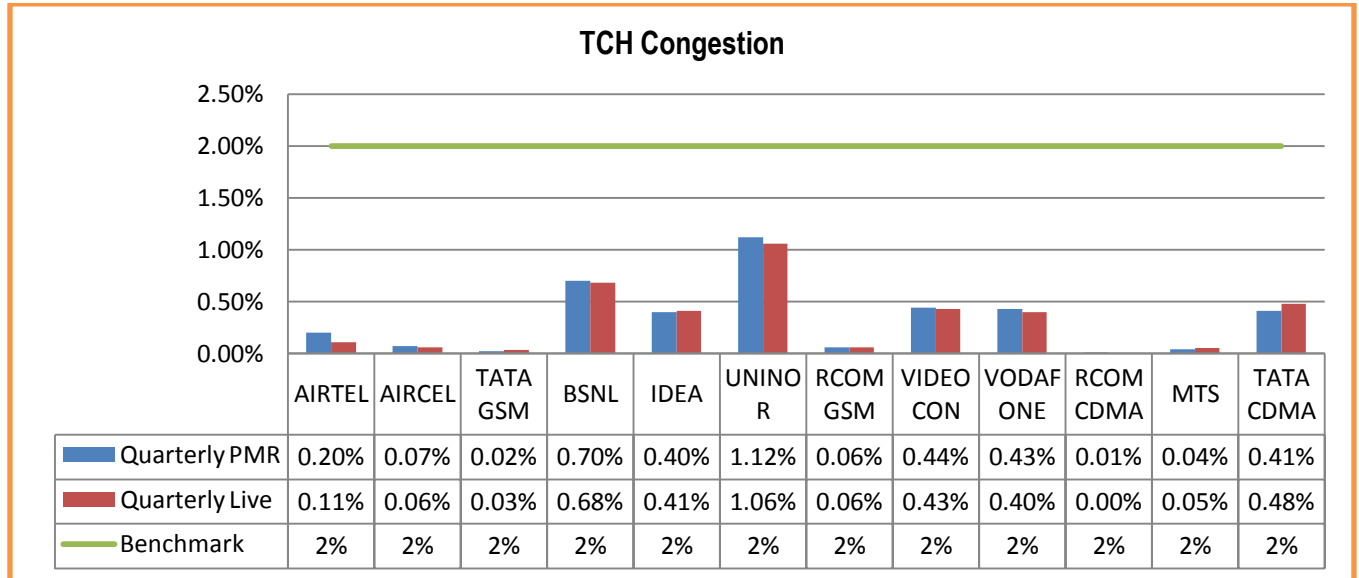
All operators are meeting the benchmarks.

4. SDCCH/PAGING CHANNEL CONGESTION:



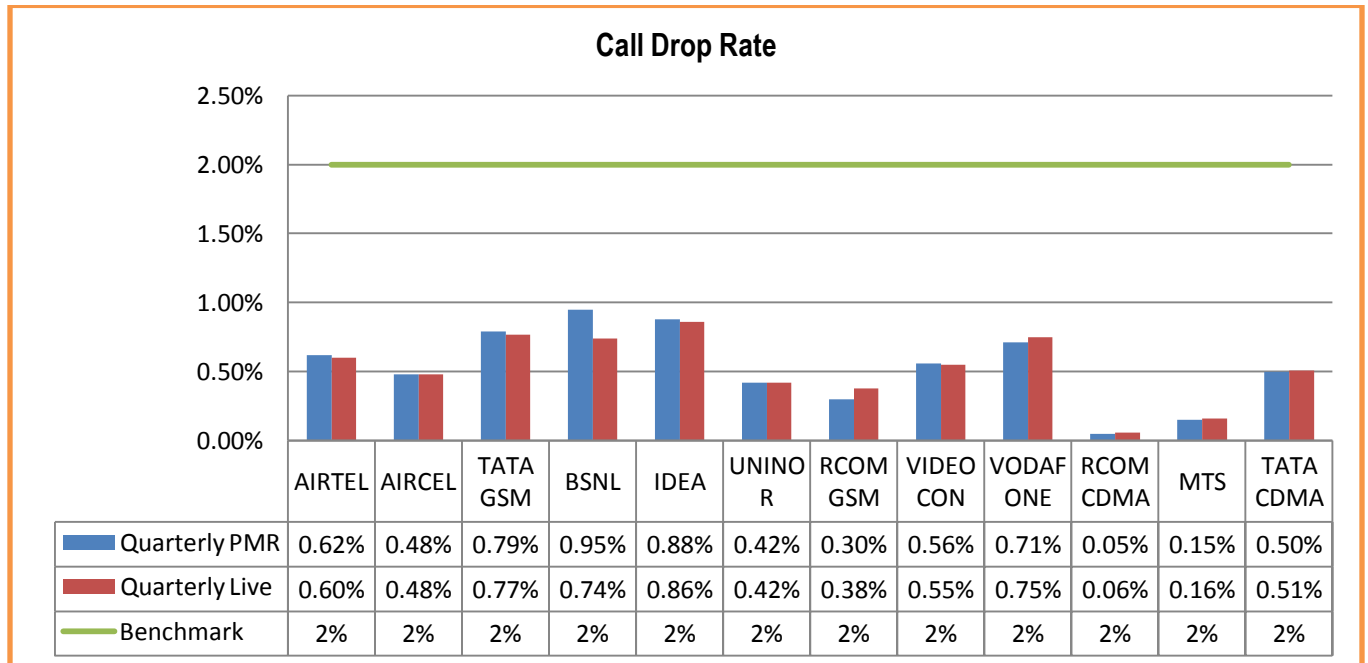
All operators are meeting the benchmarks.

5. TCH CONGESTION:



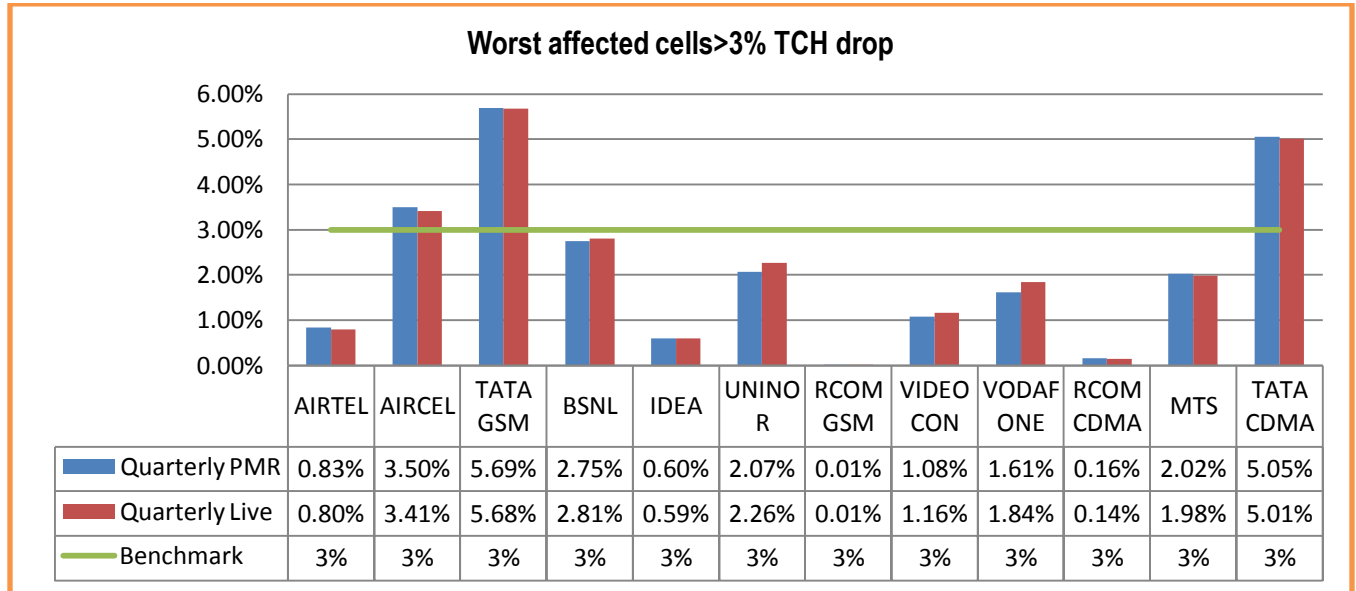
All operators are meeting the benchmarks.

6. CALL DROP RATE:



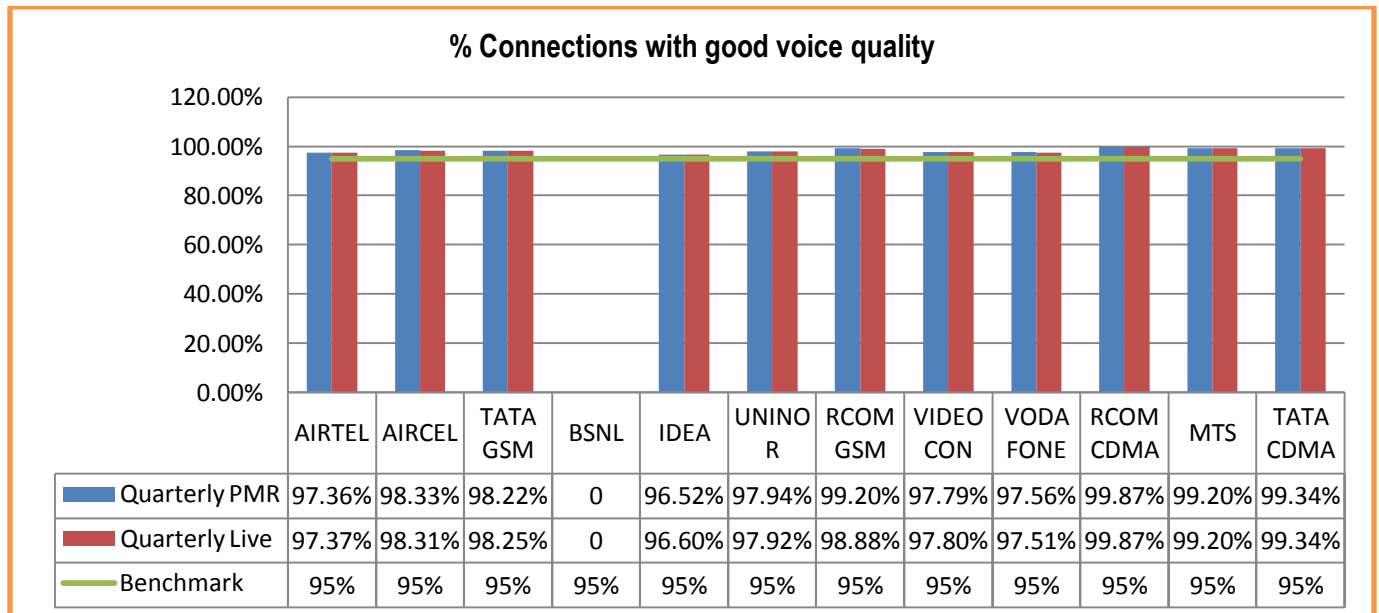
All operators are meeting the benchmarks.

7. WORST AFFECTED CELLS>3% TCH DROP:



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

8. PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY:



All operators are meeting the benchmarks. BSNL has not provided the data for Voice Quality.



9. QOS AUDIT OF BASIC (WIRELINE) SERVICE PROVIDERS



9. QOS AUDIT OF BASIC TELEPHONE SERVICE (WIRELIN)

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 June-2014. **Out of 2752 (present no. of BSNL exchanges), audit was done for 149 sampled (27-Urban and 122-Rural) exchanges**, and one exchange each of Bharti, RCL & TTL. As Gujarat Circle is having 160 SDCAs, so 148 BSNL exchanges spread over 16 SDCAs (10% of total 160 SDCAs) have been taken for audit. List of all exchanges taken for QoS audit is attached as **Annex-1**.

Sr. No	Service Provider	Urban Exchange in Gujarat	Rural Exchange Gujarat	Total Exchange Gujarat	No. of Urban Exchanges Covered	No. of Rural Exchanges Covered
1	BSNL	474	2278	2752	27	122
2	Bharti-Airtel	1	0	1	1	0
3	RCL	2	0	2	1	0
4	TTL	3	0	3	1	0
Total Exchanges		480	2278	2758	30	122

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 (WIRELIN) PROVIDERS:

QUARTERLY AVERAGED (APRIL TO JUNE 14) AUDITED DATA FOR WIRELIN (BASIC) SERVICES- GUJ-CIRCLE							
Wireline Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	RCL	TTL	BSNL
S/ N	Name of Parameter			WIRELIN (BASIC) SERVICE PROVIDERS			
1	Fault incidences						
	% of (No. of faults/100 subscribers /month)	< 5%	Gujarat	0.93%	0.01%	0.93%	5.21%
2	Faults Repair/Restoration Time						
	% of fault repair by next working day(Urban Area)	>90%	Gujarat	96.99%	100.00%	93.94%	76.62%
	% of fault repair Within 3 days (Urban Area)	100%	Gujarat	100.00%	100.00%	100.00%	93.25%
	% of fault repair by next working day(Rural & hilly Area)	>90%	Gujarat	Not Applicable	Not Applicable	Not Applicable	71.84%
	% of fault repair Within 5 days(Rural & hilly Area)	100%	Gujarat	Not Applicable	Not Applicable	Not Applicable	87.63%
	Mean time to Repair(MTTR)	≤8 Hrs	Gujarat	3.99 hrs	4.06 hrs	4.75 hrs	16.43 hrs
3	Rent Rebate						
	Fault pending > 3 days & <7 days	Rebate for 7 days	Gujarat	Nil	Nil	Nil	2
	Fault Pending > 7 days & < 15 days	Rebate for 15 days	Gujarat	Nil	Nil	Nil	0
	Fault pending > 15 days	Rebate for 1 month	Gujarat	Nil	Nil	Nil	0
4	Call Completion Ratio (CCR) & Answer to seizure Ratio(ASR)						
	CCR & ASR	> 55%(CCR) & > 75%(ASR)	Gujarat	CCR=94.8%	ASR=86.30	CCR= 89.84%	CCR = 63.95%
5	Metering & Billing Credibility						
	% of disputed Bills over bills issued (Post Paid)	< 0.1%	Gujarat	0.01%	0.02%	0.02%	0.03%
	% of Pre-paid Charging Complaints	< 0.1%	Gujarat	No Prepaid Service	No Prepaid Service	No Prepaid Service	No Prepaid Service
	% of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	100% within 4 weeks	Gujarat	100.00%	100.00%	100.00%	100.00%
	Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week	Gujarat	<=1 week	<=1 week	<=1 week	<=1 week
6	POI Congestion						
	No. of POI's having congestion >0.5%		Gujarat	0	0	0	0
7	Response Time to customer for assistance						

QUARTERLY AVERAGED (APRIL TO JUNE 14) AUDITED DATA FOR WIRELINE (BASIC) SERVICES- GUJ-CIRCLE							
Wireline Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	RCL	TTL	BSNL
S/ N	Name of Parameter			WIRELINE (BASIC) SERVICE PROVIDERS			
	A) Total no of calls attempted to customer care/Call center		Gujarat	25817	45594	1268	7373
	B) Total no. of calls successfully established to customer care/Call center		Gujarat	25809	44363	1268	7088
	C) % Accessibility of Call centre /customer Care (Total call successfully established *100/ Total call attempt)	>=95%	Gujarat	99.96%	97.33%	99.96%	96.13%
	D) Total Calls reached to agent desk for Voice to Voice (Total call attempt)		Gujarat	5036	44080.00	1214	8052
	E) Total number of calls answered by the operator (Voice to voice) within 60 seconds		Gujarat	4738	43492.00	1093	7868
	F) % age of calls answered by operator (voice to voice) (Total call successfully established within 60 Sec. *100 / Total call attempt)	>=90%	Gujarat	94.00%	98.66%	90.03%	97.70%
	Customer care(promptness in attending to customers request)						
8	Termination / Closures	100%	Gujarat	100.00%	100.00%	NIL	80.86%
	Time taken for refunds of deposit after closures.	100%	Gujarat	100.00%	100.00%	NIL	100.00%

- NA-Not Applicable

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

3 DAYS LIVE DATA FOR BASIC (WIRELINE) SERVICES - GUJ CIRCLE							
3 days live Wireline Audit Data		Bench- mark	Circle Name	BHARTI AIRTEL	RCL	TTL	BSNL
S/ N	Name of Parameter			WIRELINE (BASIC) SERVICE PROVIDERS			
Call Completion Ratio (CCR) & Answer to seizure Ratio(ASR)							
1	CCR & ASR	> 55%(CCR) & > 75%(ASR)	Gujarat	CCR=95.41	ASR = 86.22	CCR= 92.61%	CCR = 65.97%
POI Congestion							
2	No. of POI's having congestion >0.5%		Gujarat	0	0	0	0
Response Time to customer for assistance							
3	Total no of calls attempted to customer care/Call center		Gujarat	892	2094	57	209
	Total no. of calls successfully established to customer care/Call center		Gujarat	892	2087	57	203
	% Accessibility of Call centre /customer Care (Total call successfully established *100/ Total call attempt)	>=95%	Gujarat	100.00%	99.67%	99.60%	96.85%
	Total Calls reached to agent desk for Voice to Voice (Total call attempt)		Gujarat	129	2094	57	210
	Total number of calls answered by the operator (Voice to voice) within 60 seconds		Gujarat	121	2087	49	208
	% age of calls answered by operator (voice to voice) (Total call successfully established within 60 Sec. *100/ Total call attempt)	>=90%	Gujarat	93.80%	99.67%	85.96%	98.87%

9.3 KEY FINDINGS: BASIC TELEPHONE SERVICES (WIRELINE)

Fault Incidences: The audit of the service providers revealed that the performance of all service providers (except BSNL) was well within the benchmark. **BSNL** could not meet the benchmark with its performance level as **5.21%** against the benchmark of <5%.

Fault Repair/Restoration Time: For this parameter, **Only BSNL failed to meet the benchmark of fault repair by next working day and restoration time both in urban & rural areas**. The performance of **BSNL** was **76.62%** for 'Fault repaired by next working day' and **93.25%** for fault repaired within 3 days in urban areas whereas their performance for the same parameters was **71.84%** & **87.63%** respectively in rural areas.

Mean Time to Repair: **BSNL** was also failed to meet the benchmark for **MTTR** with their performance as **16.43%** against the benchmark of ≤ 8 Hrs.

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

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

Response Time to Customer for assistance: For percentage of calls getting connected to call center and answered, all operators managed to meet the TRAI benchmark.

With respect to the parameter of calls answered by operator (voice to voice) also, all operators met the benchmark of $\geq 90\%$. However, in case of 3 days live measurements for TTL, the call answered by operators was 85.96%.

Termination/Closures: All operators (except BSNL) were found meeting the benchmark for this parameter. Only **BSNL** failed to meet the benchmark with its performance of **80.86%** against the benchmark of 100%

*Thus, from the above findings that, it was concluded that the performance of **BSNL** was not satisfactory in respect of the parameters **Fault Repairs/Restoration Time, MTTR and Termination/Closure**. Hence, **BSNL** needs to improve their services in respect of these parameters.*

9.4 INTER OPERATOR CALL ASSESSMENT (WIRELINER SERVICES)

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

INTER OPERATOR CALL ASSESSMENT BASED ON LIVE MEASUREMENT						
Calling Operators	Circle Name	Total No. of calls Made	BHARTI AIRTEL	RCL	TTL	BSNL
BHARTI AIRTEL	Guj	100	--	100.00%	100.00%	100.00%
RCL	Guj	100	100.00%	--	100.00%	96.00%
TTL	Guj	100	100.00%	100.00%	--	100.00%
BSNL	Guj	100	100.00%	92.00%	100.00%	--

The result of the testing revealed that the inter connection performance among the operators was quite satisfactory. However, in case where calls attempted from RCL to BSNL successful interconnection was 96.0% and BSNL to RCL was 92%. Thus there was no remarkable problem in interconnection from one operator to other operators.

9.5 LEVEL-1 LIVE CALLING (WIRELINER SERVICES)

LEVEL 1 LIVE CALLING						
Emergency no.	Circle Name	No. of calls made	BHARTI AIRTEL	RCL	TTL	BSNL (Urban & Rural)
100	Gujarat	30	100%	100%	100%	100%
108	Gujarat	30	100%	100%	100%	100%
1098	Gujarat	30	100%	100%	100%	100%
1091	Gujarat	30	100%	100%	100%	100%
1095	Gujarat	30	100%	100%	100%	100%

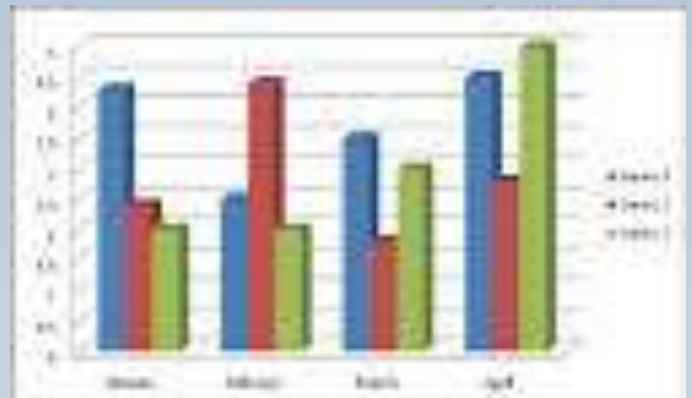
To assess the availability and efficiency of level 1 services such as police, fire, ambulance (emergency services) offered by various service providers, the calls were made from telephone provided by the service providers. In Gujarat circle, these services were found functional in the networks of all the service providers.

9.6 CUSTOMER CARE / HELPLINE ASSESSMENT (WIRESERVICE)

LIVE CALLING TO CALL CENTRE									
Parameter.	Circle Name	BSNL-Ahmadabad SSA	BSNL-Vadodara SSA	BSNL-Himatnagar SSA	BSNL-Godhra SSA	BSNL-Nadiad SSA	Bharti Airtel	RCL	TTL
Total No. of calls Attempted	Gujarat	100	100	100	100	100	100	100	100
Total No. of calls connected to IVR	Gujarat	100	100	100	100	100	100	100	100
Calls got connected to agent within 60 Sec	Gujarat	97	95	94	95	93	100	100	95
%age of calls got answered	Gujarat	97.00%	95.00%	94.00%	95.00%	93.00%	100.00%	100.00%	95.00%

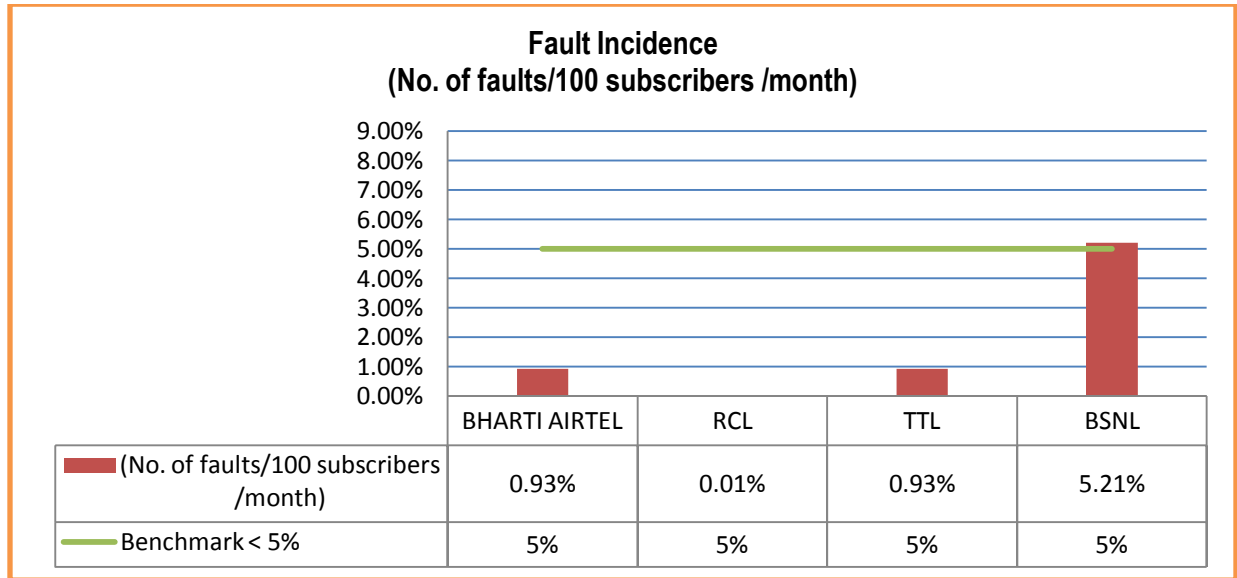
In case of calls answered by operators (voice to voice), when test calls were made to the call centers, BSNL in different SSAs could connect 97.00% (Ahmadabad SSA), 95.00% (Vadodara SSA), 94.00% (Himatnagar SSA), 95.00% (Godhra SSA) and 93.00% (Nadiad SSA) calls within 60 seconds. In Case of TTL, 95% of calls were connected to the call center within 60 seconds.

GRAPHICAL REPRESENTATION OF BASIC (WIRELINE) SERVICES



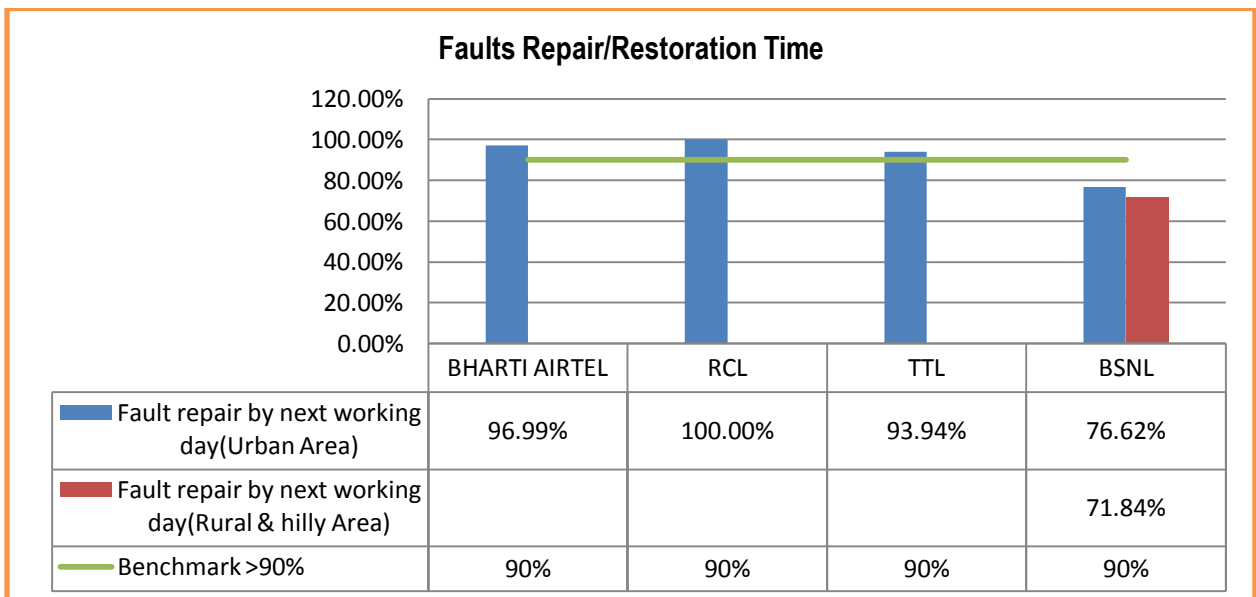
9.7 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:

1) FAULT INCIDENCE:



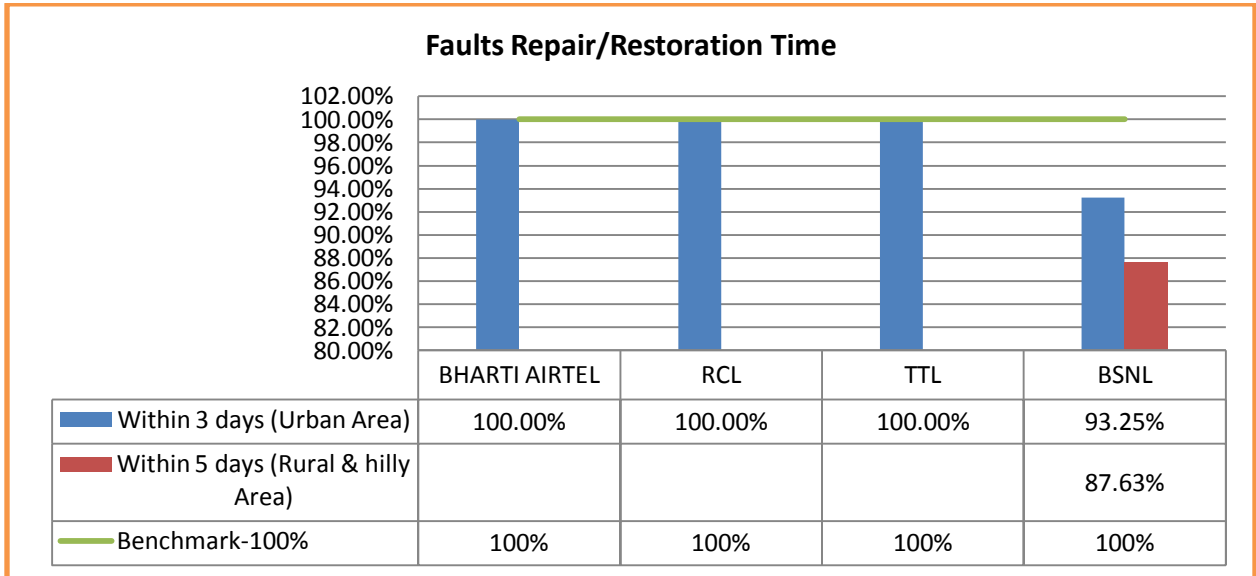
All Operators are meeting the benchmarks except BSNL.

2) FAULTS REPAIR/RESTORATION TIME:



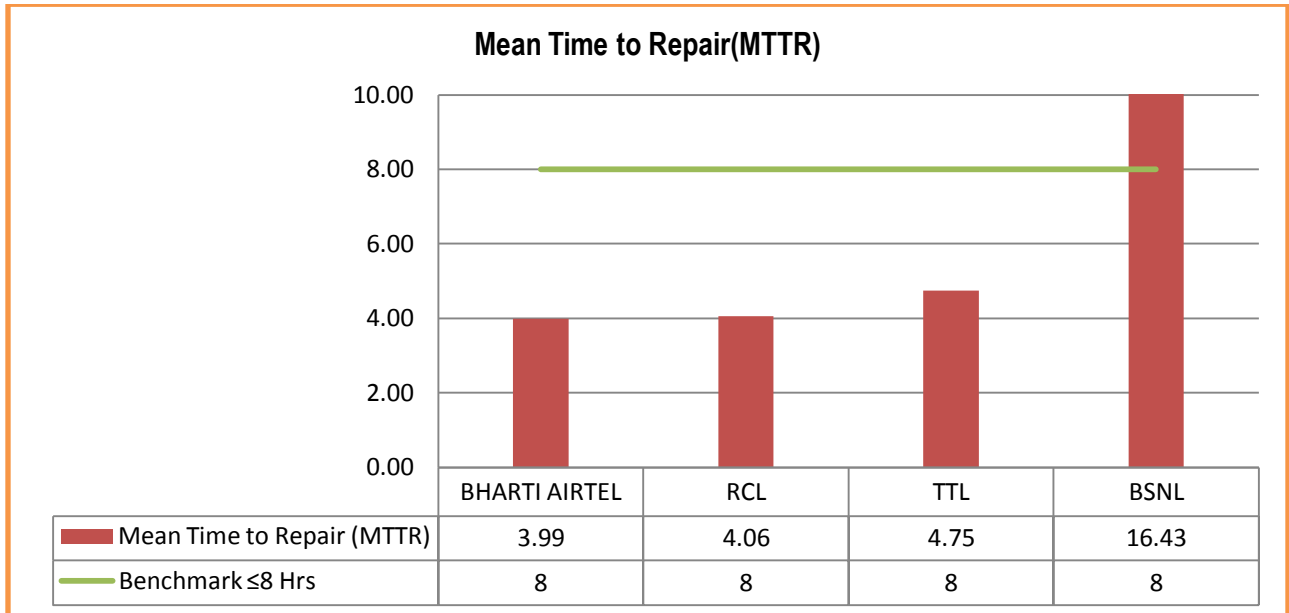
All Operators are meeting the benchmarks except BSNL.

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



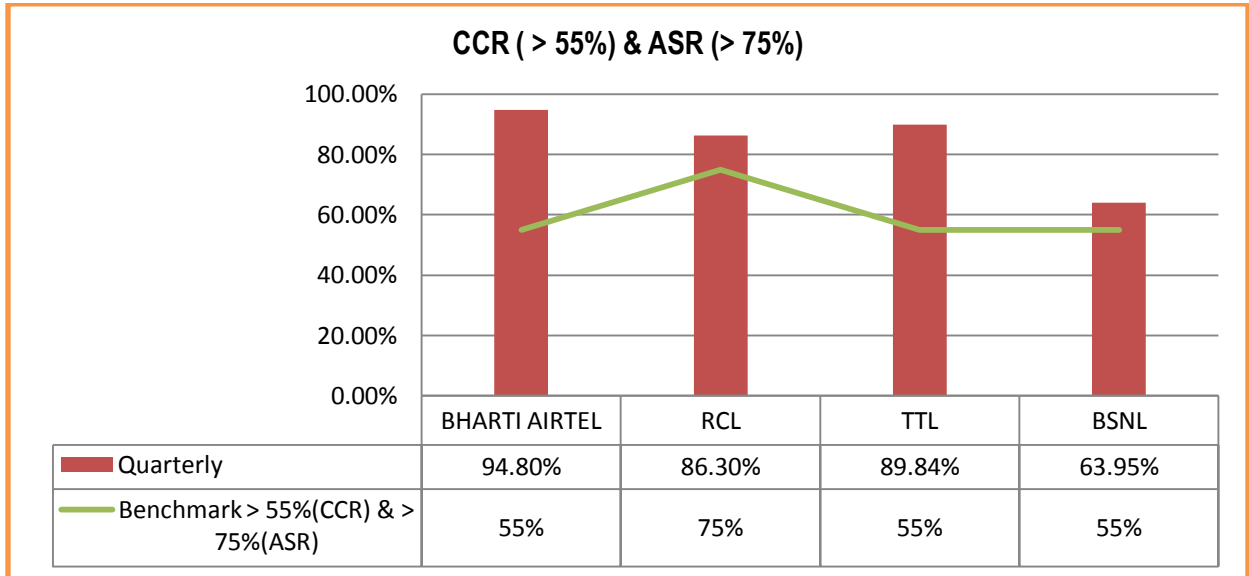
All Operators are meeting the benchmarks except BSNL.

4) MEAN TIME TO REPAIR (MTTR):



All Operators are meeting the benchmarks except BSNL.

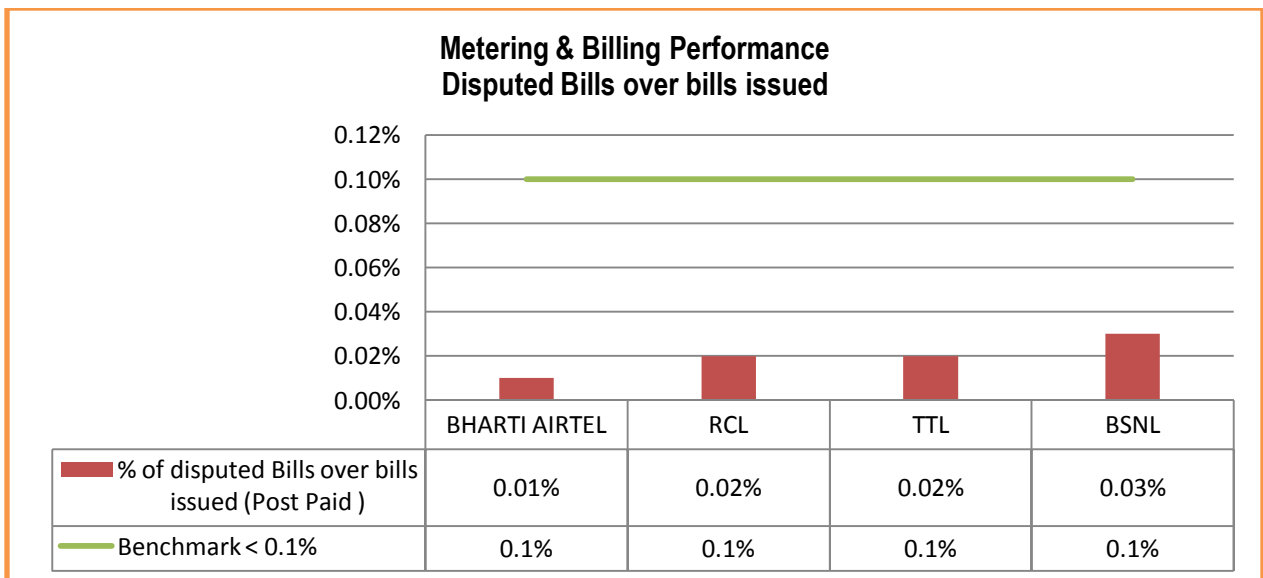
5) CALL COMPLETION RATIO (CCR) & ANSWER TO SEIZURE RATIO(ASR):



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

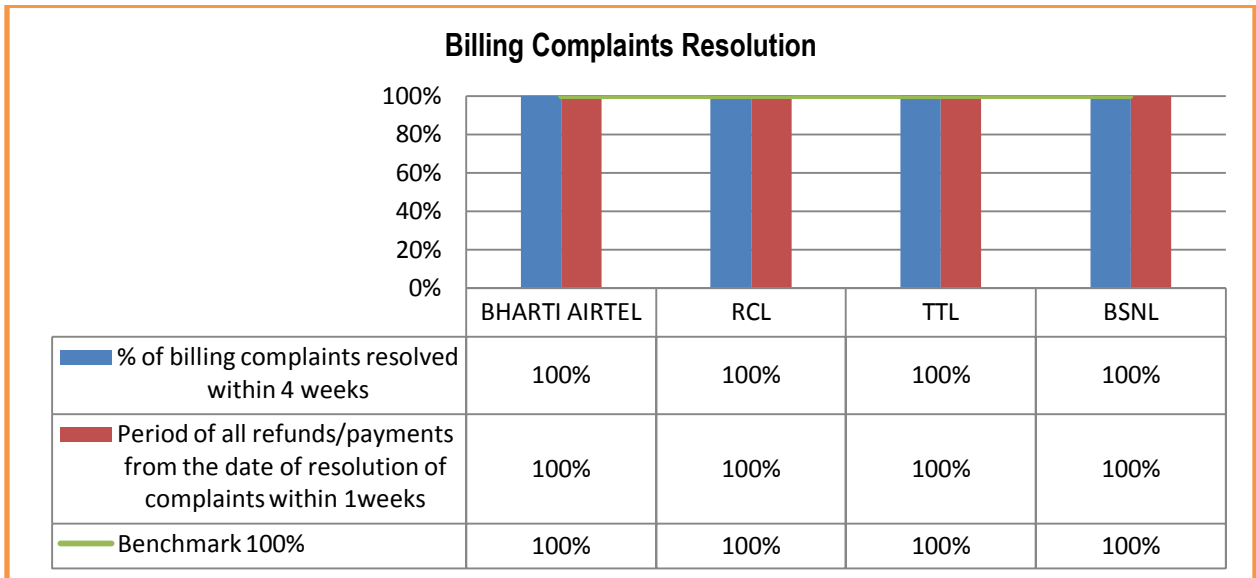
6) METERING & BILLING PERFORMANCE:

a) DISPUTED BILLS OVER BILL ISSUED :



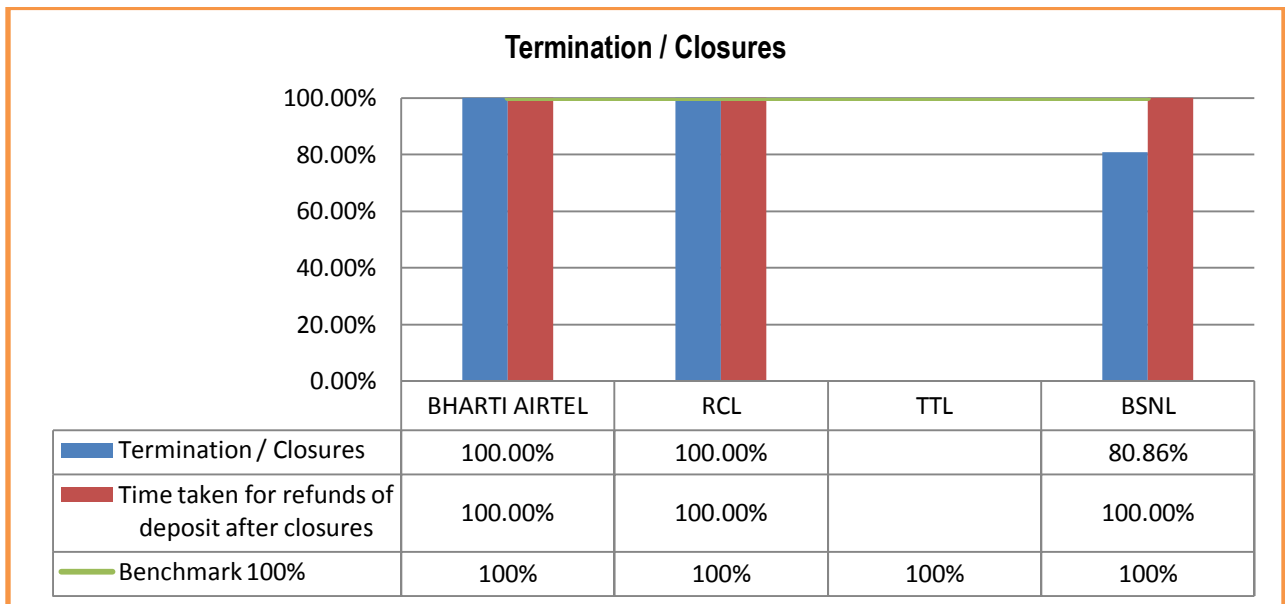
All Operators are meeting the benchmarks.

b) BILLING COMPLAINT RESOLUTION:



All Operators are meeting the benchmarks.

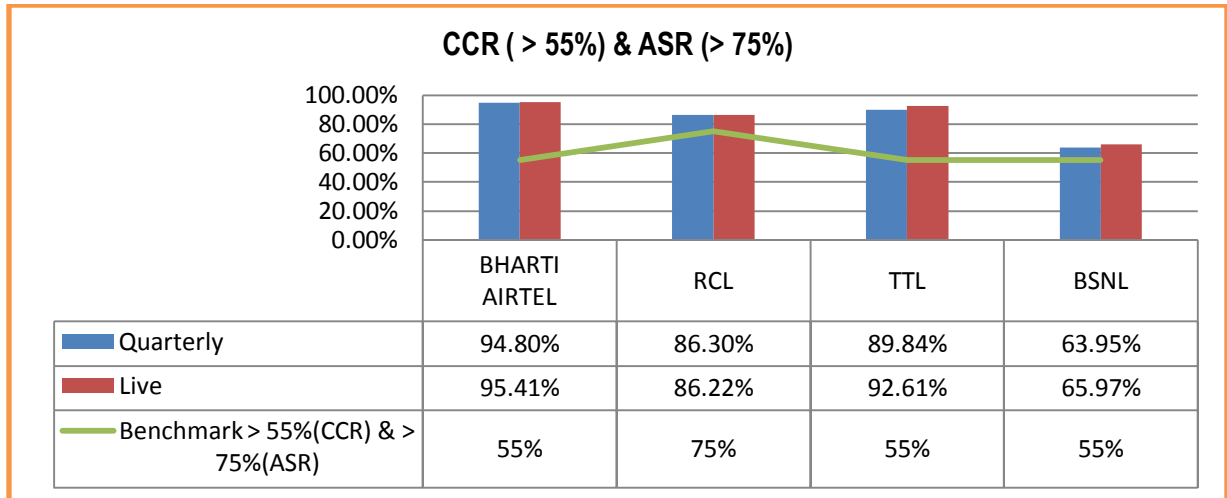
7) TERMINATION & CLOSURES:



All Operators are meeting the benchmarks except BSNL for the parameter "Termination/ Closures".

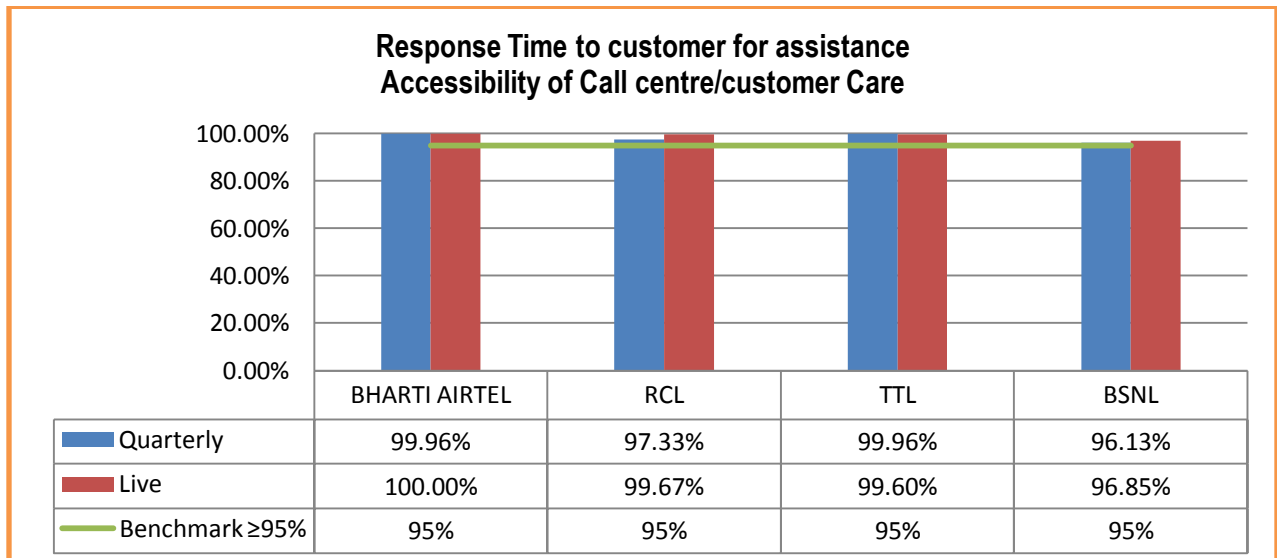
9.8 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINER) PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:

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



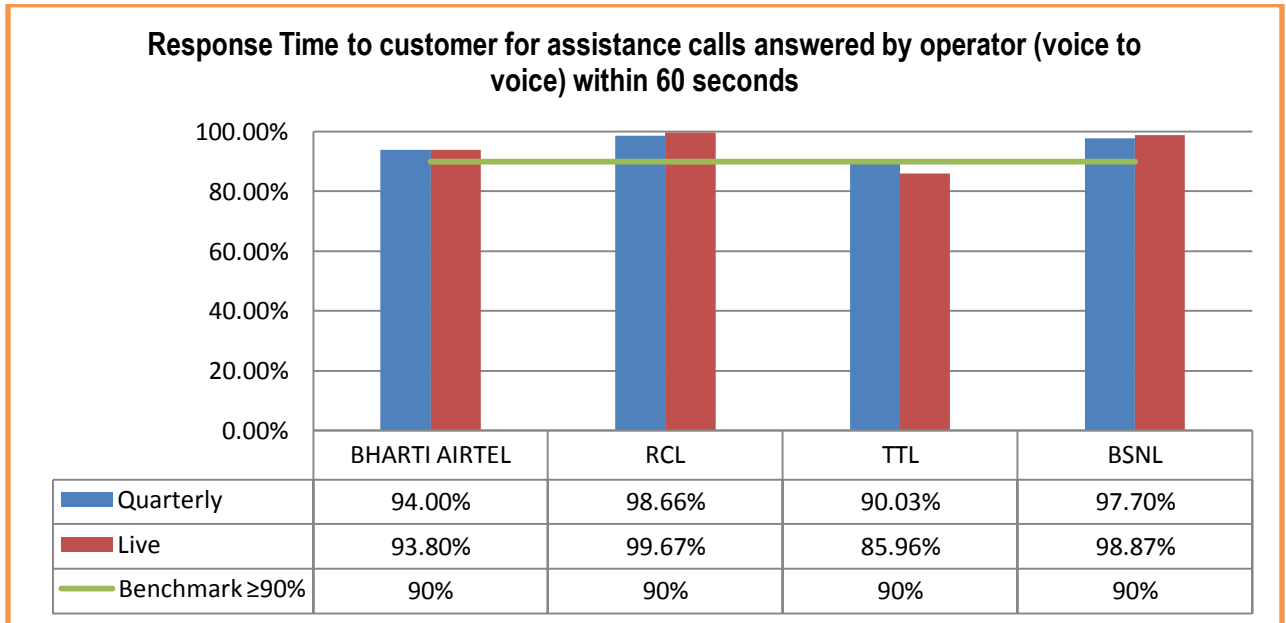
All Operators are meeting the benchmarks.

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



All Operators are meeting the benchmarks.

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



All Operators are meeting the benchmarks except TTL during 3 days live measurement.

10. QOS AUDIT OF BROADBAND SERVICE PROVIDERS



10. QUALITY OF SERVICE AUDIT OF BROADBAND SERVICE PROVIDERS

TUV-SUD South Asia has to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who are having broadband subscriber base of more than 10,000 subscribers in their licensed service area, for 5% of Point of Presence (PoPs) spread over in 10% SDCAs in specified Telecom Circle. Based on this criterion, 133 no. of PoPs i.e. 5% of 2656 PoPs / Exchanges, spread over 10% SDCAs have been taken for QoS audit. Location of PoPs, covered for QoS audit is attached as **Annex-2**.

The following Broadband Service providers in Gujarat Circle were audited for their quality of service assessment.

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

Sl. No.	Name of Broadband Service Providers
1	BHARTI AIRTEL LIMITED
2	BSNL
3	GUJARAT TELELINK PVT. LTD (GTPL)
4	SPiDiGO (CHANDARANET)
5	NOIDA SOFTWARE TECHNOLOGY PARK LIMITED (NSTPL)
6	BROADBAND PACENET INDIA PVT. LTD
7	RELIANCE COMMUNICATION LIMITED (RCL)
8	TATA COMMUNICATION LIMITED (TCL)
9	TATA TELESERVICES LIMITED (TTL)
10	YOU BROADBAND
11	INDUS MEDIA
12	TIKONA
13	HATHWAY

10.1 SERVICE PROVIDER PERFORMANCE REPORT BASED ON QUARTERLY MEASUREMENT DATA VERIFICATION FOR BROADBAND SERVICE PROVIDERS:

QUARTERLY MONTHLY AVERAGE (APRIL TO JUNE 14) AUDIT DATA FOR BROADBAND SERVICES - GUJARAT CIRCLE															
Broadband Audit Data		Bench- mark	BHARTI	NSTPL	GTPL	TIKONA	HATHWAY	TCL	TTSL	RCL	INDUS	PACENET	YOU BROADBAND	SPIDIGO	BSNL
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS												
Service Provisioning/Activation Time															
1	A) No of connections registered during the period		729	240	3108	849	619	0	261	377	10	32	1099	781	651
	B) Total number of connections provided within 15 days of registration on demand during the period		729	240	3102	849	603	0	261	377	10	32	1054	781	578
	C) % age of connections provided within 15 days of registration on demand (subject to technical feasibility)	100% in <15 days	100%	100%	99.81%	100%	97.42%	NA	100%	100%	100%	100%	95.91%	100%	88.79%
	D) Total number of connections provided after 15 days of registration on demand		0	0	6	0	13	NA	0	0	0	0	45	0	73
	E) %age of connections provided after 15 days of registration on demand		NA	NA	0.19%	NA	2.10%	NA	NA	NA	NA	NA	4.09%	NA	11.18%
	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.	NIL	NIL	6	NIL	NIL	NA	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Fault Repair/Restoration Time															
2	A) Total number of faults registered during the period		1071	42	21794	3226	10907	2194	493	879	323	2110	19911	22823	3592
	B) Total number of faults repaired by next working day		1022	42	21140	3057	9173	2000	463	879	323	1878	17787	21244	2541

QUARTERLY MONTHLY AVERAGE (APRIL TO JUNE 14) AUDIT DATA FOR BROADBAND SERVICES - GUJARAT CIRCLE

Broadband Audit Data		Bench- mark	BHARTI	NSTPL	GTPL	TIKONA	HATHWAY	TCL	TTSL	RCL	INDUS	PACENET	YOU BROADBAND	SPIDIGO	BSNL
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS												
	C) % age of faults repaired by next working day	>90%	95.42%	100.0%	97.00%	94.76%	84.10%	91.16%	93.9%	100.0%	100.0%	89.00%	89.33%	93.08%	70.74%
	D) Total number of faults repaired within three working days		43	NA	436	149	106	147	30	NA	NA	232	1900	1495	3230
	E) % age of faults repaired within three working days	≥99%	99.44%	NA	99.00%	99.38%	85.07%	97.86%	100%	NA	NA	100.0%	98.87%	99.63%	89.92%
Rent Rebate															
3	A) Faults Pending for > 3 working days and < 7 working days: (Rebate equivalent to 7 days of minimum monthly charge or equivalent usage allowance)		0	NA	62	11	0	0	NA	NA	NA	NA	181	10	0
	B) Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)		0	NA	21	25	0	0	NA	NA	NA	NA	40	65	0
	C) Faults Pending for > 15 working days: (Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)		0	NA	2	18	0	0	NA	NA	NA	NA	3	9	0
Billing Performance															
4	A) Total bills generated during period		26016	NA*	NA*	7263	NA*	3918	2379	71642	NA*	NA*	NA*	NA*	40215
	B) Total complaints received from customers/ Bills disputed		3	NA*	NA*	36	NA*	3	21	99	NA*	NA*	NA*	NA*	21
	C) Billing complaints per 100 bills issued	<2%	0.01%	NA*	NA*	0.50%	NA*	0.08%	0.88%	0.14%	NA*	NA*	NA*	NA*	0.05%

QUARTERLY MONTHLY AVERAGE (APRIL TO JUNE 14) AUDIT DATA FOR BROADBAND SERVICES - GUJARAT CIRCLE

Broadband Audit Data		Bench- mark	BHARTI	NSTPL	GTPL	TIKONA	HATHWAY	TCL	TTSL	RCL	INDUS	PACENET	YOU BROADBAND	SPIDIGO	BSNL
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS												
	D) Total number of complaints resolved in 4 weeks from date of receipt		3	NA*	NA*	36	NA*	3	21	99	NA*	NA*	NA*	NA*	21
	E) %age billing complaints resolved in 4 weeks	100%	100%	NA*	NA*	100%	NA*	100%	100%	100%	NA*	NA*	NA*	NA*	100.00%
	F) Total number of cases requiring refund of deposits after closure		5	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	303
	G) Total number of cases where refund was made in <60 days		5	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	303
	H) Percentage cases in which refund received within 60 days	100%	100%	NA	NA	100%	NA	NA	NA	NA	NA	NA	NA	NA	100.00%
Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)															
	A) Total number of calls received by the operator		10324	42	22401	21959	21023	80830	1201	30396	325	2170	76155	29814	45182
	B) Total number of calls answered by the operator within 60 seconds		9547	37	21729	12999	20987	53246	815	28995	325	2074	58878	29814	38115
5	C) % age calls answered by the operator in 60 seconds	>60%	92.47%	88%	97.00%	59.20%	99.83%	65.87%	67.9%	95%	100%	95.58%	77.31%	100%	84.36%
	D) Total number of calls answered by the operator within 90 seconds		222	5	448	4726	36	2856	56	646	0	39	4540	0	NP
	E) % age calls answered by the operator within 90 seconds	>80%	94.62%	100.0%	99.00%	80.72%	100.0%	69.41%	72.5%	97.52%	100.0%	97.37%	83.27%	100.0%	NP
6	Bandwidth Utilization/ Throughput:														
	POP to ISP Gateway Node [Intra-network] Link(s)														
	A) Total Bandwidth Available at the link for the period days	Mbps	6171.66	126	6286	1148.7	5120	40960	10240	7000	34	383	NA	3141	8927
6.1	B) Total Bandwidth utilized during the period during TCBH (In Mbps)		4217.70	102	5073	852.74	1587	9198.93	4594	2481	27	309	NA	1889	2951
	C) % age Bandwidth utilized during the period	<80%	68.34%	80.95%	80.70%	74.24%	31.00%	22.46%	44.9%	35.44%	79.41%	80.68%	NA	60.14%	33.05%
6.2	ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity														

QUARTERLY MONTHLY AVERAGE (APRIL TO JUNE 14) AUDIT DATA FOR BROADBAND SERVICES - GUJARAT CIRCLE

Broadband Audit Data		Bench- mark	BHARTI	NSTPL	GTPL	TIKONA	HATHWAY	TCL	TTSL	RCL	INDUS	PACENET	YOU BROADBAND	SPIDIGO	BSNL	
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS													
	A) Total number of upstream links for International connectivity		NA	NA	NA	NA	NA	6	1	8	NA	NA	10	4	NA	
	B) Number of Links having Bandwidth utilization > 90% during TCBH		NA	NA	NA	NA	NA	0	1	0	NA	NA	NA	0	NA	
	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		NA	NA	NA	NA	NA	300032	9900	74000	NA	NA	1849	2322	NA	
	D) Total international bandwidth utilization during peak hours (TCBH) in Mpbs		NA	NA	NA	NA	NA	168960	9583	28503	NA	NA	1330	1895	NA	
	E) %age International Bandwidth utilization during peak hours (TCBH)	<80%	NA	NA	NA	NA	NA	56.31%	96.8%	38.52%	NA	NA	71.93%	81.61%	NA	
Broadband Connection Speed (download) - from ISP Node to User																
6.3	A) Total committed download speed to the sample subscribers (In mpbs)		2.69	2	4	2.16	2	1.67	NP	2	NP	2	2	2	16	
	B) Total average download speed observed for the sample subscribers during TCBH (In Mpbs)		2.70	1.93	3.5	2.06	1.98	1.43	NP	1.74	NP	1.83	1.75	1.95	13.62	
	C) % age subscribed speed available to the subscriber during TCBH	>80%	103.72%	96.50%	87.50%	95.37%	99.0%	85.63%	NP	87.0%	NP	91.50%	87.50%	97.50%	84.23%	
Service Availability/Uptime																
7	A) Total operational Hours		728	728	728	728	728	728	728	728	728	728	728	728	728	

QUARTERLY MONTHLY AVERAGE (APRIL TO JUNE 14) AUDIT DATA FOR BROADBAND SERVICES - GUJARAT CIRCLE

Broadband Audit Data		Bench- mark	BHARTI	NSTPL	GTPL	TIKONA	HATHWAY	TCL	TTSL	RCL	INDUS	PACENET	YOU BROADBAND	SPIDIGO	BSNL
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS												
	B) Total downtime (In hours)		0	2	12	1	1	13	2	3	0	0	10	0	0
	C) Total time when the service was available (In Hrs)		728	726	716	727	727	715	726	725	728	728	718	728	728
	D) % age of Service availability uptime	>98%	100.00%	99.73%	98.33%	99.86%	99.86%	98.29%	99.8%	99.59%	100.0%	100.0%	98.28%	100.0%	100.0%
Packet Loss															
8	A) Total number of ping packets transmitted		1000	1000	1000	1000	1000	1000	1000	NP	NP	NP	1000	NP	14543
	B) Total number of ping packets lost		0	0	3	1	0	0	0	NP	NP	NP	0	NP	20
	C) % age packet loss	<1%	0.00%	0.00%	0.30%	0.10%	0.00%	0.00%	0.00%	0.00%	NP	NP	0.00%	NP	0.14%
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		1000	NP	NP	NP	1000	1000	1000	1000	NP	NP	1000	NP	23750
	B) Total round trip time for all the ping packets transmitted during the period		899	NP	NP	NP	971	323	2089	473	NP	NP	253	NP	7652
	C) Average round trip time for all the ping transmitted	<120 ms	29.61	NP	NP	NP	32	11	69	15.66	NP	NP	8.35	NP	27
Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)															
9.2	A) Total number of ping packets transmitted		1000	NP	NP	NP	1000	1000	1000	1000	NP	NP	1000	NP	23250
	B) Total round trip time for all the ping packets transmitted during the period		1568	NP	NP	NP	4317	8312	3974	434	NP	NP	8094	NP	8310
	C) Average round trip time for all the ping transmitted	<350 ms	61	NP	NP	NP	142	274	131	14.33	NP	NP	266.85	NP	277



QUARTERLY MONTHLY AVERAGE (APRIL TO JUNE 14) AUDIT DATA FOR BROADBAND SERVICES - GUJARAT CIRCLE															
Broadband Audit Data		Bench- mark	BHARTI	NSTPL	GTPL	TIKONA	HATHWAY	TCL	TTSL	RCL	INDUS	PACENET	YOU BROADBAND	SPIDIGO	BSNL
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS												
	Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)														
9.3	A) Total number of ping packets transmitted		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	B) Total round trip time for all the ping packets transmitted during the period		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	C) Average round trip time for all the ping transmitted	<800 ms	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

- NA- Not Applicable
- NP-Not Provided- Monthly Data Not Monitored by ISPs

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

3 DAYS LIVE DATA FOR BROADBAND SERVICES - GUJARAT CIRCLE															
3 days live Broadband Audit Data		Bench- mark	BHARTI AIRTEL	NSTPL	GTPL	TIKONA	HATHWAY	TCL	TTSL	RCL	INDUS	PACENET	YOU BROADBAND	SPIDIGO	BSNL
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS												
1	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)														
	A) Total number of calls received by the operator		217	1	3179	762	703	2949	65	2236	11	114	2760	1807	823
	B) Total number of calls answered by the operator within 60 seconds		192	1	314	443	683	2169	38	2171	11	86	2100	1807	778
	C) % age calls answered by the operator in 60 seconds	>60%	88.48%	100.00%	9.88%	58.14%	97.16%	73.55%	58.46%	97.09%	100.00%	75.44%	76.09%	100.00%	94.45%
	D) Total number of calls answered by the operator within 90 seconds		192	0	2864	149	20	140	4	2236	0	24	101	0	NP
	E) % age calls answered by the operator within 90 seconds	>80%	88.48%	100%	100%	78%	100%	78.30%	65%	100%	100%	96.49%	79.75%	100%	NP
2	Bandwidth Utilization/ Throughput:														
	POP to ISP Gateway Node [Intra-network] Link(s)														
	A) Total Bandwidth Available at the link for the period days		50	130	6445	1172	5120	40960	10240	7000	34	430	NA	3275	19953
2.1	B) Total Bandwidth utilized during the period during TCBH (In Mpbs)		26	110	5218	793.45	1587	10022	4594	3821.96	20	342	NA	2126	7422
	C) % age Bandwidth utilized during the period	<80%	51.88%	84.62%	80.96%	67.70%	31.00%	24.47%	44.86%	54.60%	58.82%	79.53%	NA	64.92%	37.20%
	ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity														
	A) Total number of upstream links for International connectivity		NA	NA	NA	NA	NA	6	NP	8.00	NA	NA	10	4	NA
	B) Number of Links having Bandwidth utilization > 90% during TCBH		NA	NA	NA	NA	NA	0	NP	No	NA	NA	0	0	NA
2.2	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		NA	NA	NA	NA	NA	300032	NP	74000	NA	NA	1875	2595	NA
	D) Total international bandwidth utilization during peak hours (TCBH) in Mpbs		NA	NA	NA	NA	NA	172373	NP	39140	NA	NA	1372	2126	NA
	E) %age International Bandwidth utilization during peak hours (TCBH)	<80%	NA	NA	NA	NA	NA	57.45	NP	52.89	NA	NA	73.17	81.93	NA
2.3	Broadband Connection Speed (download) - from ISP Node to User														
	A) Total committed download speed to the sample subscribers (In mpbs)		2.69	2.33	3.33	2.05	2.33	2	2	1.5	2	2	2	2	2.23

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014-GUJARAT CIRCLE



3 DAYS LIVE DATA FOR BROADBAND SERVICES - GUJARAT CIRCLE

3 days live Broadband Audit Data		Bench- mark	BHARTI AIRTEL	NSTPL	GTPL	TIKONA	HATHWAY	TCL	TTSL	RCL	INDUS	PACENET	YOU BROADBAND	SPIDIGO	BSNL
S/ N	Name of Parameter		BROADBAND SERVICE PROVIDERS												
	B) Total average download speed observed for the sample subscribers during TCBH (In Mbps)		2.78	2.29	3.04	2.11	2.28	2	1.88	1.40	1.71	1.83	1.96	1.98	2.12
	C) % age subscribed speed available to the subscriber during TCBH	>80%	103.35%	98.28%	91.29%	103.03%	97.85%	100.0%	94.0%	93.33%	85.50%	91.50%	98.00%	99.00%	95.20%
3 Packet Loss															
	A) Total number of ping packets transmitted		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	B) Total number of ping packets lost		2	0	3	2	1	0	0	0	1	5	0	3	0
	C) % age packet loss	<1%	0.2%	0%	0.3%	0.2%	0.1%	0%	0%	0%	0.1%	0.5%	0%	0.3%	0.00%
4 Network latency (for wired broadband access)															
Network Latency from User reference point at POP/ISP Node to IGSP/NIXI gateway															
4.1	A) Total number of ping packets transmitted		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	B) Average round trip time for all the ping transmitted (ms)	<120 ms	28.66	22.3	113	63.66	31	10.33	98.67	8.46	29.33	23	8	1.3	44
Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)															
4.2	A) Total number of ping packets transmitted		1000	NA	1000	NA	1000	1000	1000	1000	NA	1000	1000	1000	1000
	B) Average round trip time for all the ping transmitted	<350 ms	64.95	NA	300	NA	141	130.6	100	2.35	NA	73	33.33	109	246
Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)															
4.3	A) Total number of ping packets transmitted		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	B) Average round trip time for all the ping transmitted	<800 ms	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5 Service Availability/Uptime															
	A) Total operational Hours		24	24	24	24	24	24	24	24	24	24	24	24	24
	B) Total downtime (In hours)		0	0	0	0	0	0	0	0	0	0	0	0	0
	C) Total time when the service was available (In Hrs)		624024	24	24	24	24	24	24	24	24	24	24	24	24
	D) % age of Service availability uptime	>98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100.00%

NA: Not Applicable
NP: Data not provided

10.3 KEY FINDINGS: BROADBAND SERVICES

The non-compliance of the service providers with respect to various Parameters as given below:

Service Provisioning / Activation Time: The audit of the service providers revealed that GPTL, Hathway, You Broadband, & BSNL could not meet the benchmark for the parameter “100% cases in 15 days (subject to technical feasibility)” with their achievement level of **99.81%, 97.42%, 95.91% and 88.79% respectively**.

Fault Repair/Restoration Time: With regards to the parameter ‘faults repaired by next working day’, the performance of the service providers namely, **Hathway, Pacenet, You Broadband, and BSNL** remained non-complied with their performance as **84.10%, 89.00%, 89.33% and 69.96%** respectively, against the benchmark of >90% whereas, for parameter ‘faults repaired within 3 days’, the non-compliance was recorded for **Hathway (85.07%), TCL (97.86%), You Broadband (98.87%) and BSNL (89.92%)**.

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

Response Time to Customer for assistance by operator (Voice to Voice): For percentage of calls getting connected to call center and answered, all service providers (except Tikona, TCL and TTSL) were found meeting the benchmark for this parameter. For parameter Call answered by operators within 60 seconds, **Tikona** could perform with **59.20%** and for Calls answered by operator within 90 seconds, **TCL and TTSL** could achieve **69.41% and 72.5%**, short of benchmark >80%.

In case of 3 days live measurements, the performance of **GPTL, Tikona and TTSL** for parameter ‘Call answered by operators within 60 Seconds’ was **9.88%, 58.14% and 58.46%** respectively, whereas for the same parameter ‘answered within 90 seconds’ the performance of **Tikona, TCL, TTSL and You Broadband** was **78%, 78.30%, 65% and 79.75%** respectively.

Bandwidth Utilization/ Throughput: All the service providers were found using Multiple Router Traffic Grapher (MRTG) and also it was observed that all service providers were reporting combined bandwidth utilization for corporate customers and household customers.

The performance of service providers namely, **NSTPL, GPTL and Pacenet** with respect of the parameter ‘% Bandwidth Utilisation’ was found short of the benchmark of <80% with their performance of **80.95%, 80.70% and 80.68%** respectively. **TTSL and SPiDiGO** could not meet the benchmark for the parameter “% age International Bandwidth Utilization during peak Hr”; their achievement level was **96.8% and 81.61% respectively**.

In case of live measurements, the achievement of **NSTPL and GPTL** for parameter ‘Band width Utilization’ was recorded as **84.62% and 80.96%** respectively. Further, for the parameter “% age International Bandwidth Utilization during peak Hr”, the performance of **SPiDiGO** was **81.93%**.

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.

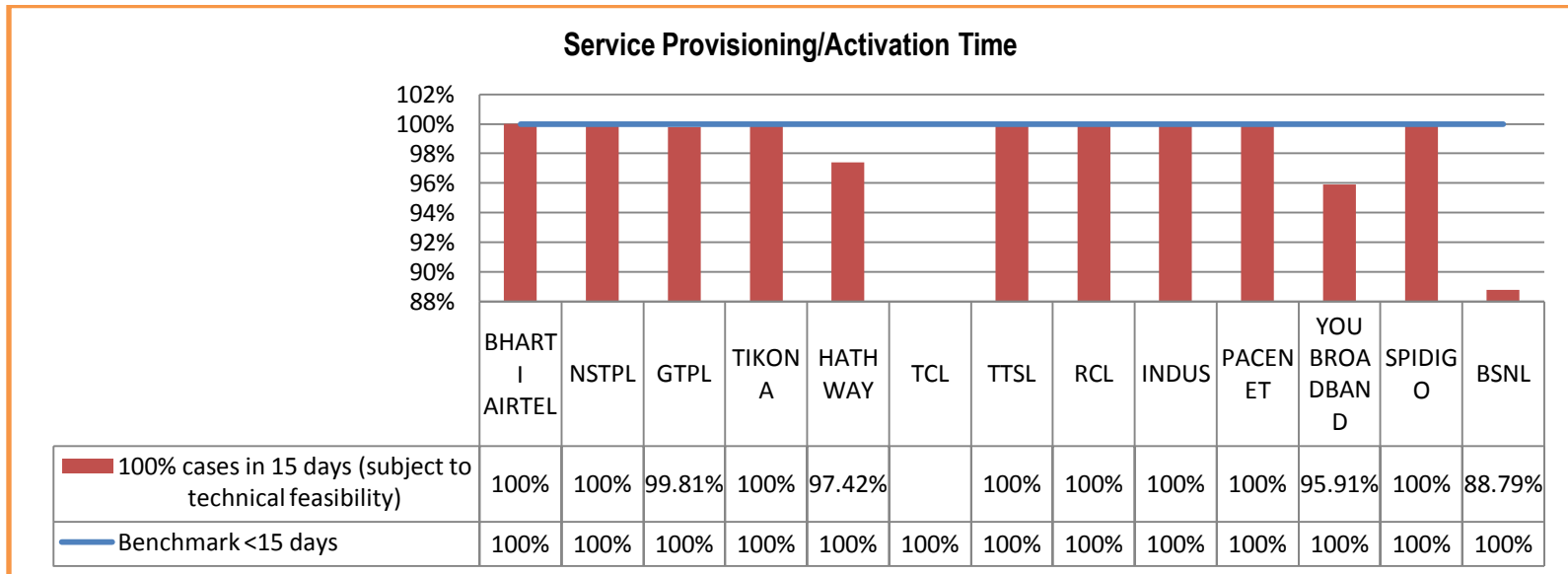
10.4 CUSTOMER CARE / HELPLINE ASSESSMENT

LIVE CALLING TO CALL CENTRE FOR BROADBAND SERVICES														
Parameter	Circle Name	BHARTI AIRTEL	NSTPL	GTPL	TIKONA	HATHWAY	TCL	TTSL	RCL	INDUS MEDIA	PACENET	YOU BROADBAND	SPIDIGO	BSNL
Total No. of calls Attempted (Voice to Voice response)	Guj	100	100	100	100	100	100	100	100	100	100	100	100	91
Total number of calls answered by the operator within 60 seconds	Guj	100	0	80	50	100	100	100	100	100	100	100	100	88
% age calls answered by the operator in 60 seconds	Guj	100%	0%	80%	50%	100%	100%	100%	100%	100%	100%	100%	100%	96.57%
Total number of calls answered by the operator within 90 seconds	Guj	100	0	100	50	100	100	100	100	100	100	100	100	90
% age calls answered by the operator within 90 seconds	Guj	100%	0%	100%	50%	100%	100%	100%	100%	100%	100%	100%	100%	98.48%

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 except **NSTPL and Tikona**. **NSTPL and Tikona** could connect **0% and 50%** calls respectively within 60 seconds as well as in 90 seconds against the benchmark of >60% (Within 60 seconds) and >80% (Within 90 seconds).

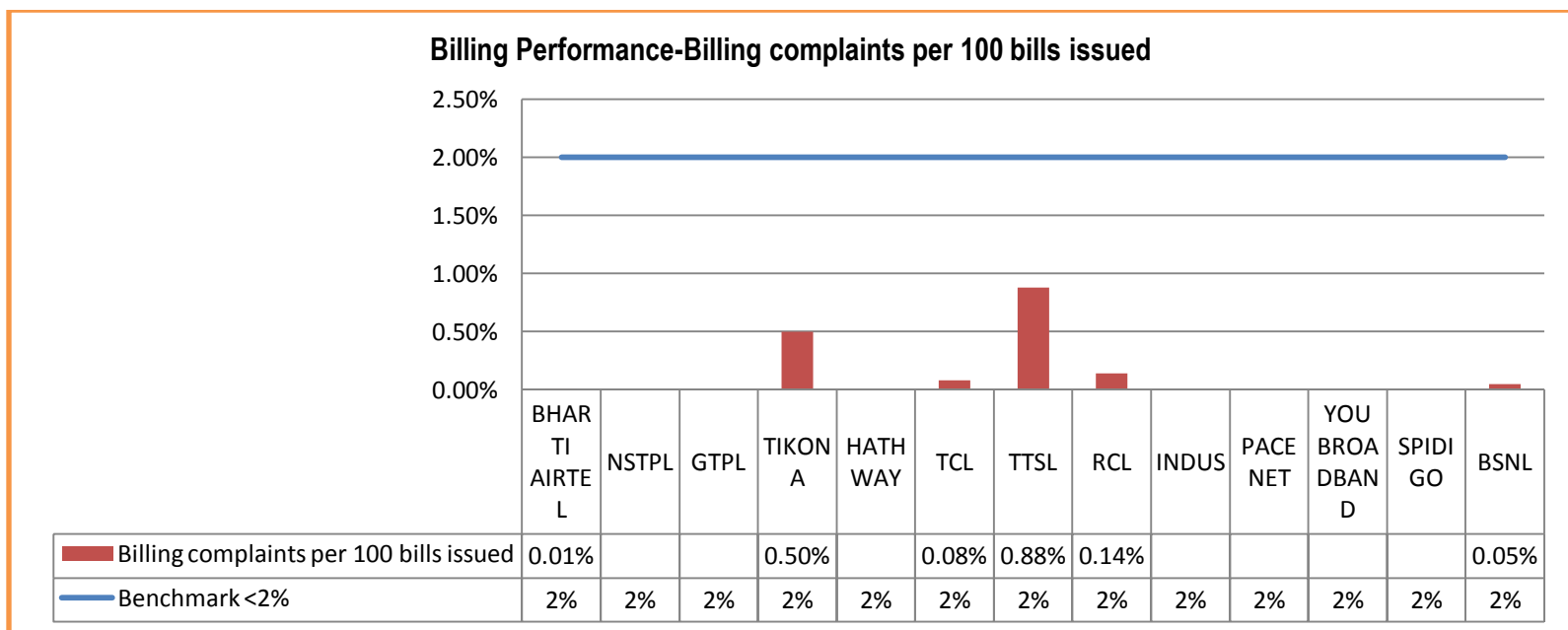
10.5 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF BROADBAND SERVICE PROVIDERS:

1. SERVICE PROVISIONING/ACTIVATION TIME:



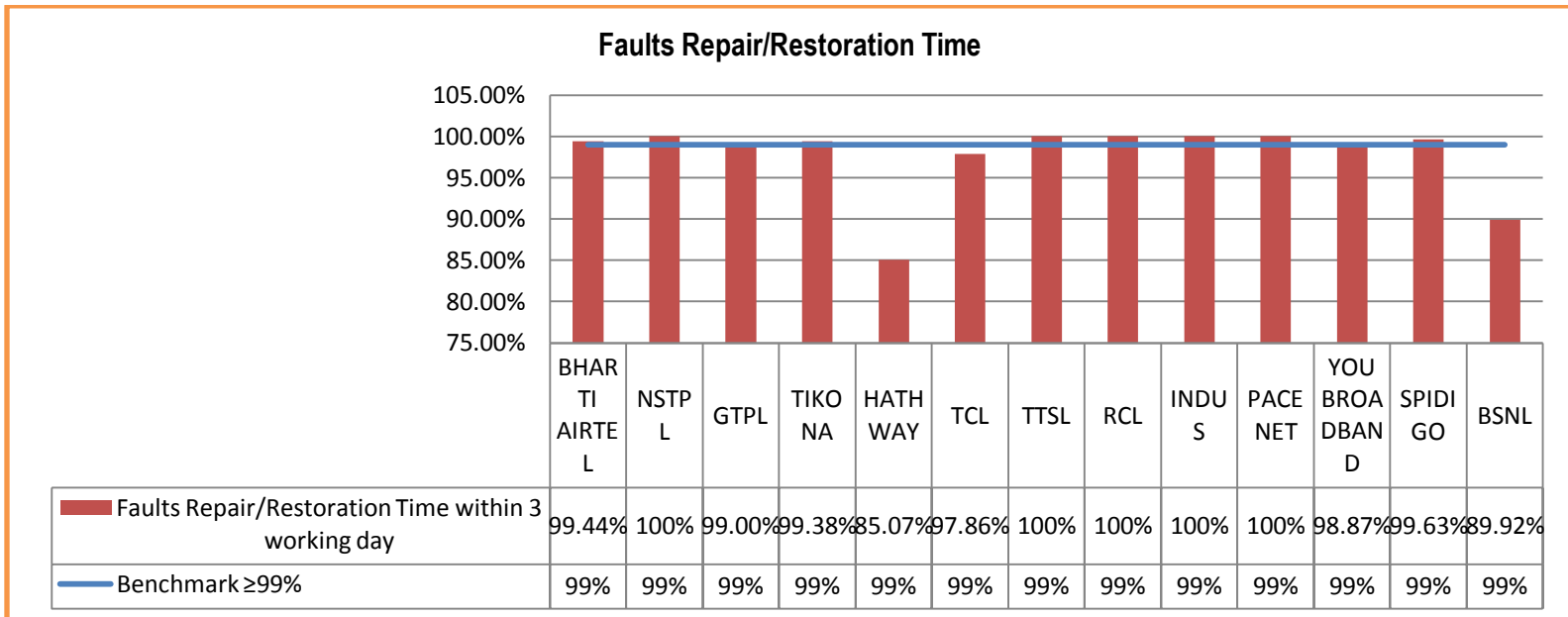
All Operators are meeting the benchmarks except GTPL, Hathway, You Broadband and BSNL.

2. BILLING PERFORMANCE:



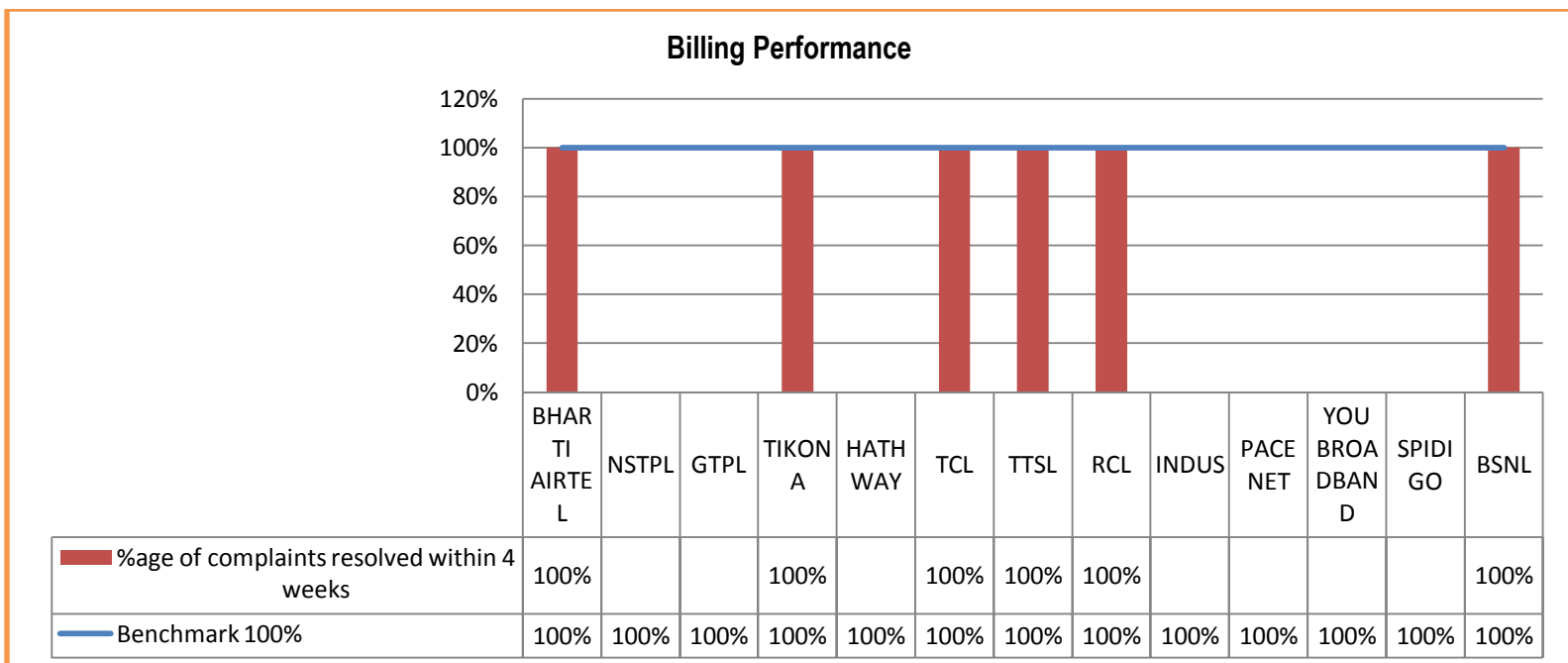
All Operators are meeting the benchmarks.

3. FAULTS REPAIR/RESTORATION TIME:



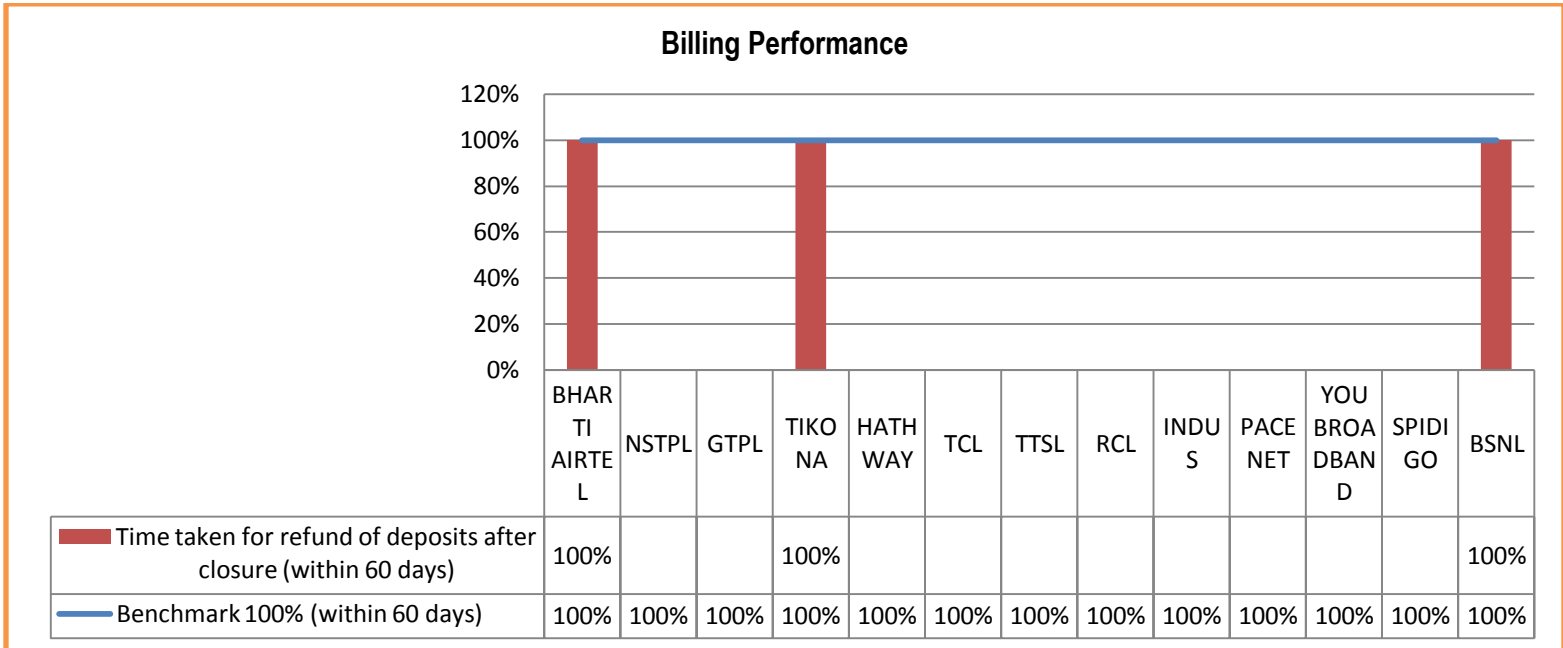
All Operators are meeting the benchmarks Hathway, TCL, You broadband and BSNL.

4. COMPLAINT RESOLUTION:



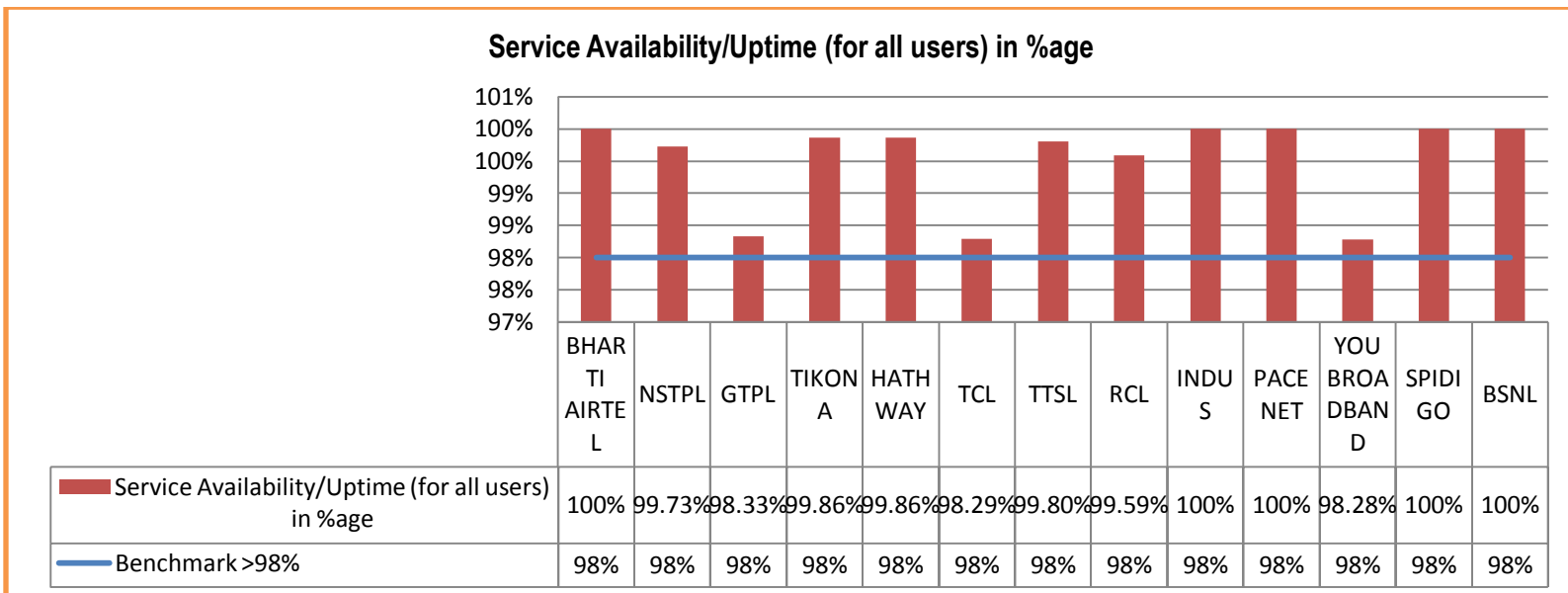
All Operators are meeting the benchmarks.

5. REFUND:



All Operators are meeting the benchmarks.

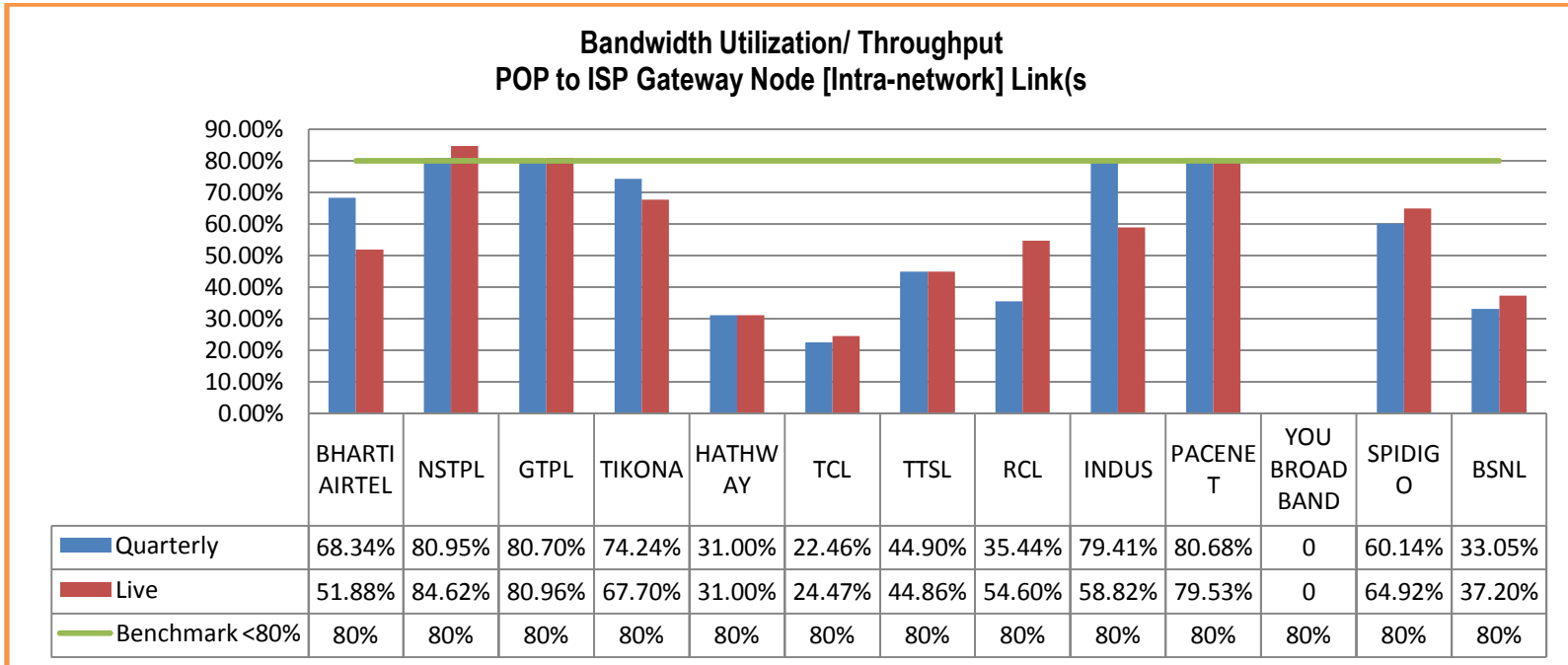
6. SERVICE AVAILABILITY/UPTIME:



All Operators are meeting the benchmarks.

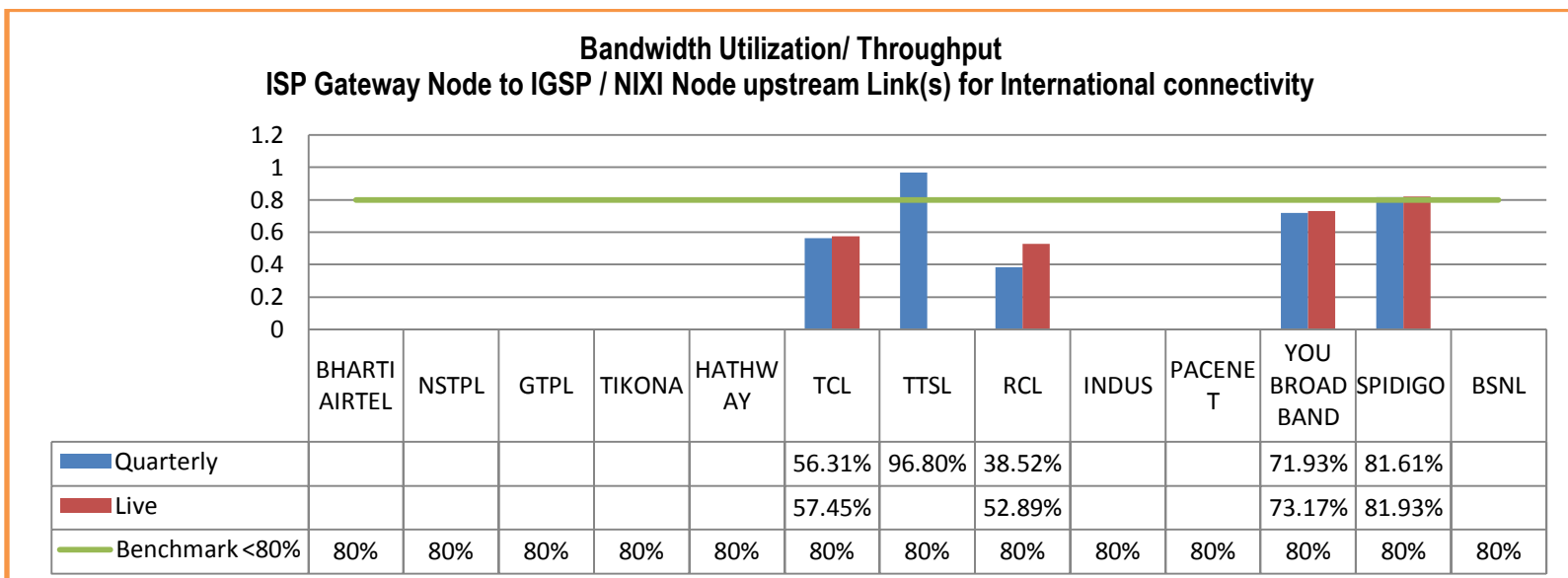
10.6 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BROADBAND SERVICE PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:

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



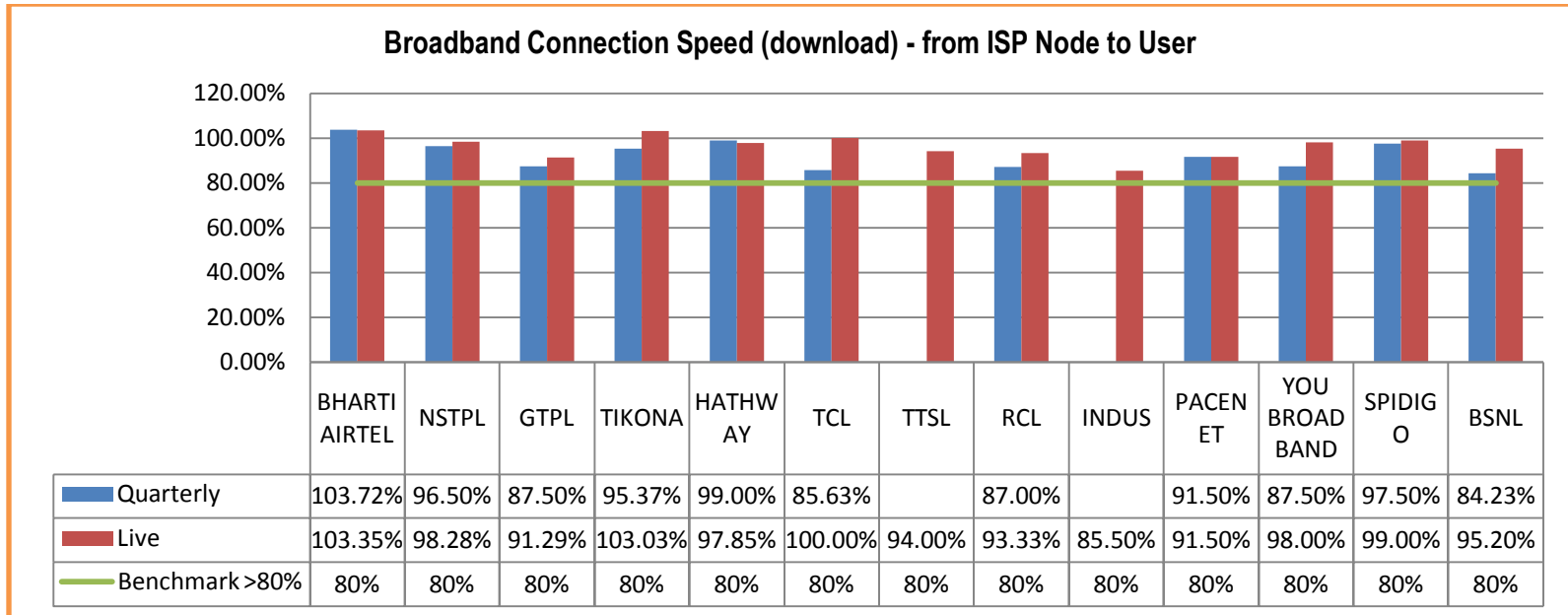
All Operators are meeting the benchmarks except NSTPL, GTPL and Pacenet.

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



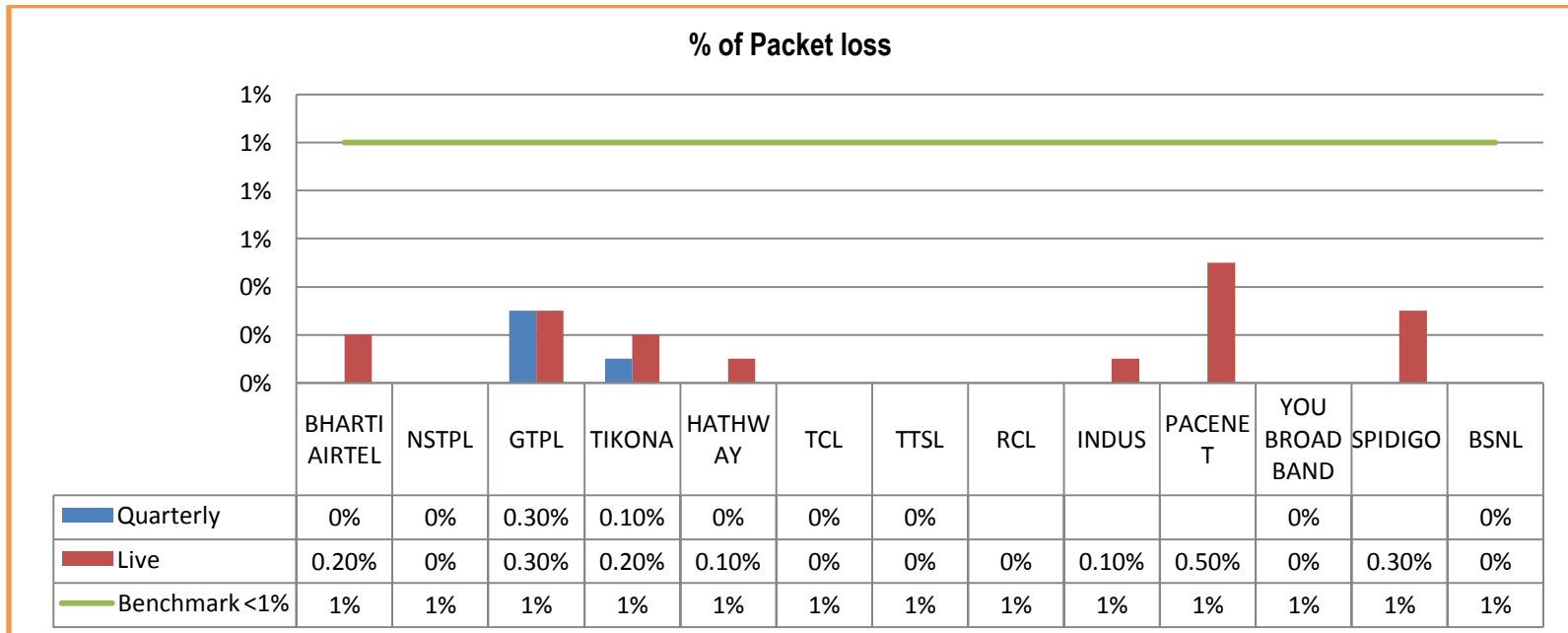
All Operators are meeting the benchmarks except TTSL and SPIDI GO.

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



All Operators are meeting the benchmarks.

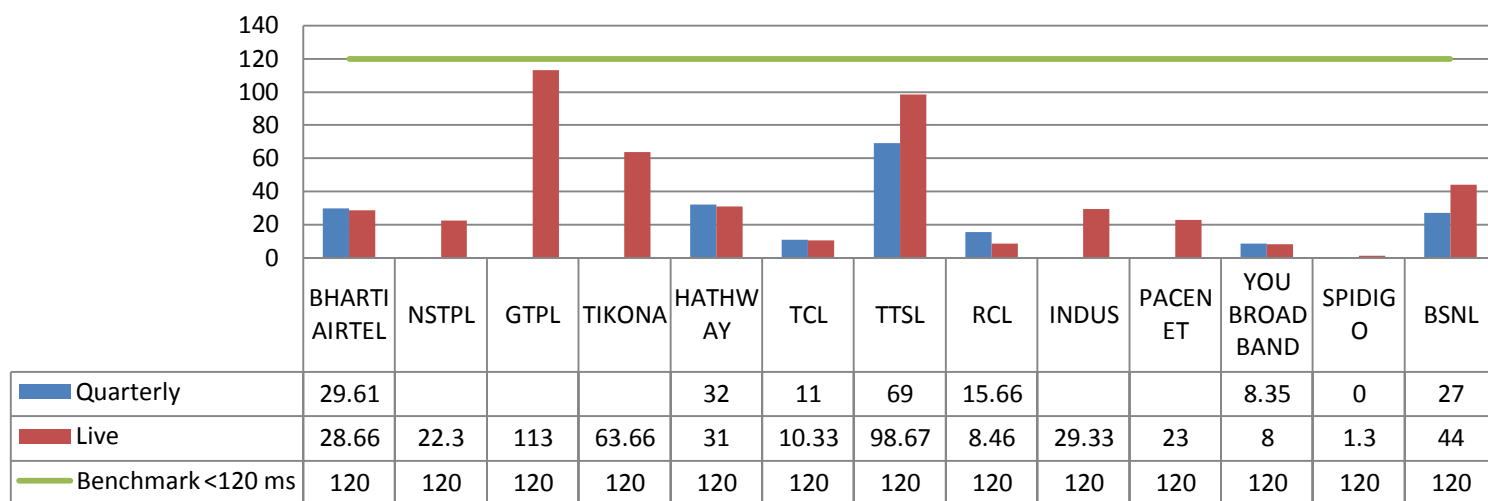
4. PACKET LOSS:



All Operators are meeting the benchmarks.

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

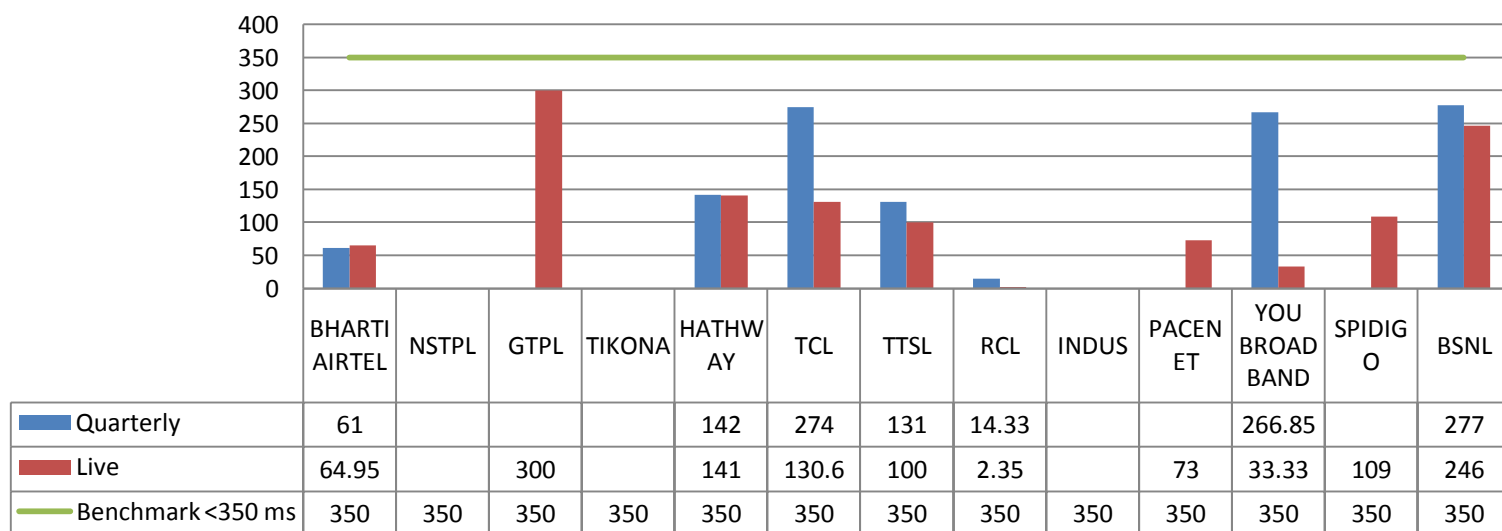
**Network latency (for wired broadband access)
User reference point at POP/ISP Gateway node to IGSP/NIXI**



All Operators are meeting the benchmarks.

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

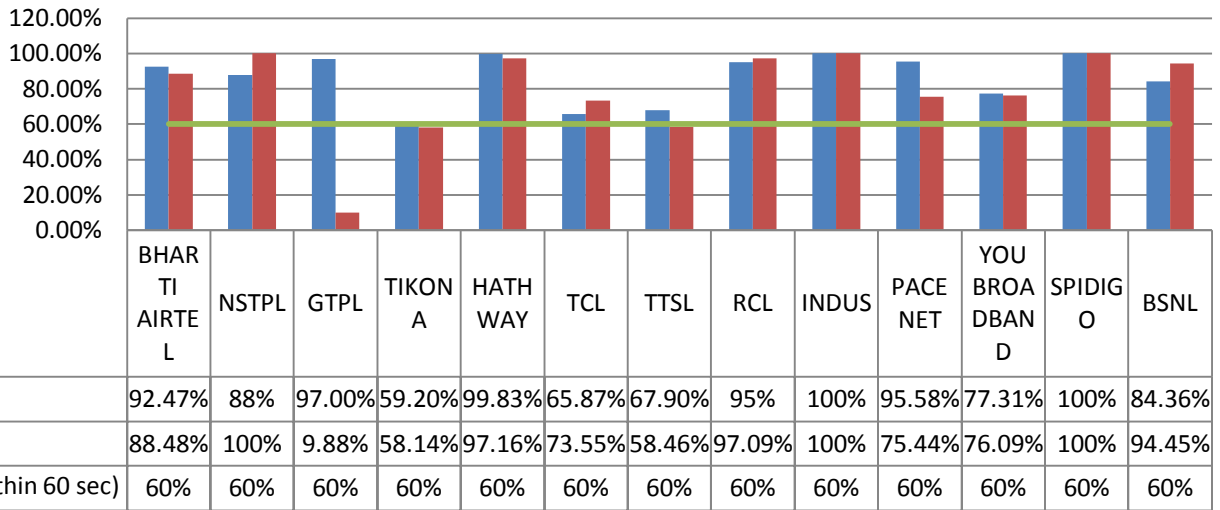
Network latency (for wired broadband access) User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)



All Operators are meeting the benchmarks.

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

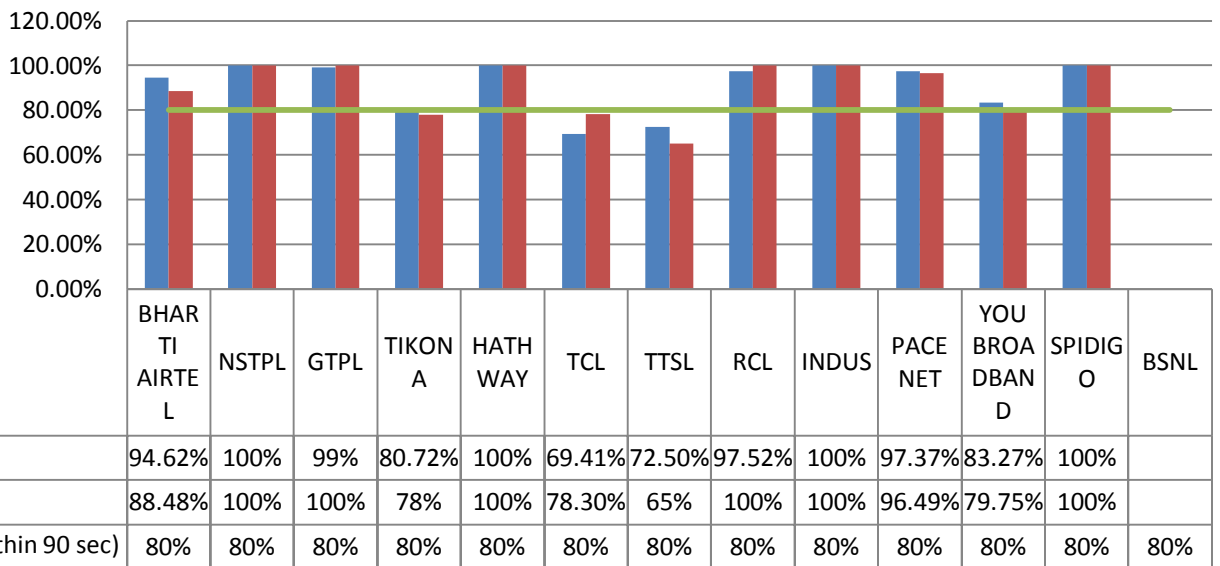
Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)



All Operators are meeting the benchmarks except Tikona, GTPL (3 days live) and TTSL (3 days live)

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

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



All Operators are meeting the benchmarks except TCL, TTSL, TIKONA (3 days live) and You Broadband (3 days live).

Annex-1

LIST OF THE EXCHANGER COVERED FOR QOS AUDIT FOR QE-JUNE 2014:

SR.NO.	SERVICE PROVIDER	SSA	URBAN EXCHANGE NAME	URBAN EXCHANGE CODE	EXCHANGE TYPE
1	BSNL	AHMEDABAD	ASHRAM ROAD	ASM ROAD	Urban
2	BSNL	AHMEDABAD	NAVRANGPURA	NVP	Urban
3	BSNL	AHMEDABAD	ELLISBRIDGE	ELB	Urban
4	BSNL	AHMEDABAD	NARODA	NAR	Urban
5	BSNL	AHMEDABAD	INFO TOWER URBAN	INFO	Urban
6	BSNL	AHMEDABAD	THALTEJ URBAN	TLJ	Urban
7	BSNL	AHMEDABAD	NANDEJ	AHDNDJ	Urban
8	BSNL	AHMEDABAD	BOPAL (E10B RSU)	AHDBPL	Urban
9	BSNL	AHMEDABAD	OGNEJ	AHDOGN	Urban
10	BSNL	AHMEDABAD	DEHGAM (CDOT)	AHDdgm	Urban
11	BSNL	AHMEDABAD	Jagatpur	AHDJGP	Rural
12	BSNL	AHMEDABAD	Chekhala	AHDCKL	Rural
13	BSNL	AHMEDABAD	Chharodi	AHDCRD	Rural
14	BSNL	AHMEDABAD	Charal	AHDCRL	Rural
15	BSNL	AHMEDABAD	Modasar	AHDMDS	Rural
16	BSNL	AHMEDABAD	Rethal	AHDRTL	Rural
17	BSNL	AHMEDABAD	Vinchhiya	AHDVCH	Rural
18	BSNL	AHMEDABAD	Vasna-Iyava	AHDVIY	Rural
19	BSNL	AHMEDABAD	Bareja	AHDBRJ	Rural
20	BSNL	AHMEDABAD	Miroli	AHDMRL	Rural
21	BSNL	AHMEDABAD	Kuha	AHDKUH	Rural
22	BSNL	AHMEDABAD	kathwada	AHDKWD	Rural
23	BSNL	AHMEDABAD	Kujad	AHDKJD	Rural
24	BSNL	AHMEDABAD	Bahial	AHDBHL	Rural
25	BSNL	AHMEDABAD	Jalu-mota	AHDJLU	Rural
26	BSNL	AHMEDABAD	Lihoda	AHDLIH	Rural
27	BSNL	AHMEDABAD	Rakhial	AHDRKH	Rural
28	BSNL	AHMEDABAD	Jindva	AHDJIN	Rural
29	BSNL	AHMEDABAD	Halisha	AHDHAL	Rural
30	BSNL	AHMEDABAD	Chandrala	AHDCND	Rural
31	BSNL	NADIAD	ANAND(NDDAND)	NDDAND	Urban
32	BSNL	NADIAD	BORSAD(NDDBSD)	NDDBSD	Urban
33	BSNL	NADIAD	NADIAD PIJROAD(NDDNPR)	NDDNPR	Urban
34	BSNL	NADIAD	NADIAD CIVILROAD(NDDNCR)	NDDNCR	Urban
35	BSNL	NADIAD	ADAS(NDDADS)	NDDADS	Rural

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014-GUJARAT CIRCLE



SR.NO.	SERVICE PROVIDER	SSA	URBAN EXCHANGE NAME	URBAN EXCHANGE CODE	EXCHANGE TYPE
36	BSNL	NADIAD	LINGDA(NDDLGD)	NDDLGD	Rural
37	BSNL	NADIAD	SUNDALPURA(NDDSDP)	NDDSDP	Rural
38	BSNL	NADIAD	BHALEJ(NDDBLJ)	NDDBLJ	Rural
39	BSNL	NADIAD	SURELI(NDDSUR)	NDDSUR	Rural
40	BSNL	NADIAD	VADOD(NDDVDO)	NDDVDO	Rural
41	BSNL	NADIAD	ALARSA(NDDALR)	NDDALR	Rural
42	BSNL	NADIAD	BHADLAN(NDDBDR)	NDDBDR	Rural
43	BSNL	NADIAD	BAMANGAM(NDDBMG)	NDDBMG	Rural
44	BSNL	NADIAD	KATHANA(NDDKTN)	NDDKTN	Rural
45	BSNL	NADIAD	PAMOL(NDDPML)	NDDPML	Rural
46	BSNL	NADIAD	RAS(NDDRAS)	NDDRAS	Rural
47	BSNL	NADIAD	ALINDRA(NDDADR)	NDDADR	Rural
48	BSNL	NADIAD	ALINA(NDDALN)	NDDALN	Rural
49	BSNL	NADIAD	CHUNEL(NDDCHL)	NDDCHL	Rural
50	BSNL	NADIAD	KERIAVI(NDDKER)	NDDKER	Rural
51	BSNL	NADIAD	MAHISA(NDDMHS)	NDDMHS	Rural
52	BSNL	NADIAD	VADTHAL(NDDVDT)	NDDVDT	Rural
53	BSNL	NADIAD	KANJARI(NDDKJR)	NDDKJR	Rural
54	BSNL	NADIAD	MOHLEL(NDDMLL)	NDDMLL	Rural
55	BSNL	NADIAD	NARANPURALAT(NDDNPL)	NDDNPL	Rural
56	BSNL	NADIAD	SALUN(NDDSLN)	NDDSLN	Rural
57	BSNL	NADIAD	SASTAPUR(NDDSTP)	NDDSTP	Rural
58	BSNL	NADIAD	VINA(NDDVNA)	NDDVNA	Rural
59	BSNL	GODHARA	Godhara GDH(E10B-Main)/OCB 283 RSU	GDRGDH	Urban
60	BSNL	GODHARA	GODHARA(Bhuravav) (GDRBSU)	GDRBSU	Urban
61	BSNL	GODHARA	Lunawada (GDRLVR)	GDRLVR	Urban
62	BSNL	GODHARA	Halol (GDRHOL)	GDRHOL	Urban
63	BSNL	GODHARA	CHANHELAV	GDRCLV	Rural
64	BSNL	GODHARA	KAKANPUR	GDRKPP	Rural
65	BSNL	GODHARA	MEHLOL	GDRMHL	Rural
66	BSNL	GODHARA	MANIPUR	GDRMNP	Rural
67	BSNL	GODHARA	MORA	GDRMRA	Rural
68	BSNL	GODHARA	MORVA(Hadaf)	GDRMRF	Rural
69	BSNL	GODHARA	NADISAR	GDRNDR	Rural
70	BSNL	GODHARA	SAMPA	GDRSMP	Rural
71	BSNL	GODHARA	SANTROAD	GDRSTR	Rural
72	BSNL	GODHARA	TIMBAROAD	GDRTMR	Rural
73	BSNL	GODHARA	CHHAKADIYA	GDRCKD	Rural

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SR.NO.	SERVICE PROVIDER	SSA	URBAN EXCHANGE NAME	URBAN EXCHANGE CODE	EXCHANGE TYPE
74	BSNL	GODHARA	KOTHAMBA	GDRKTB	Rural
75	BSNL	GODHARA	PADEDI	GDRPDI	Rural
76	BSNL	GODHARA	PANCHMAHUDIA	GDRPMD	Rural
77	BSNL	GODHARA	UNTADI	GDRUTD	Rural
78	BSNL	GODHARA	VARDHARI	GDRVRD	Rural
79	BSNL	GODHARA	VIRANIA	GDRVRN	Rural
80	BSNL	GODHARA	DUMA	GDRDMA	Rural
81	BSNL	GODHARA	GHOUGHAMBA	GDRGGB	Rural
82	BSNL	GODHARA	JAMBUGHODA	GDRJBG	Rural
83	BSNL	GODHARA	PAVAGADH	GDRPVG	Rural
84	BSNL	GODHARA	RANJITNAGAR	GDRRJN	Rural
85	BSNL	GODHARA	SHIVRAJPUR	GDRSVM	Rural
86	BSNL	GODHARA	MANIPUR	GDRMNP	Rural
87	BSNL	VADODARA	VADODARA CITY	VDACTY	Urban
88	BSNL	VADODARA	FATEHGUNJ	VDAFTG	Urban
89	BSNL	VADODARA	CHANKYAPURI	VDACHP	Urban
90	BSNL	VADODARA	SAVLI	VDASVL	Urban
91	BSNL	VADODARA	WAGHODIA	VDWAGD	Urban
92	BSNL	VADODARA	POR	VDAPOR	Rural
93	BSNL	VADODARA	NANDESARI	VDANDS	Rural
94	BSNL	VADODARA	VARNAMA	VDAVNM	Rural
95	BSNL	VADODARA	AMPAD	VDAAMP	Rural
96	BSNL	VADODARA	KELANPUR	VDAKLP	Rural
97	BSNL	VADODARA	SOKHADA	VDASOK	Rural
98	BSNL	VADODARA	DHANYAVI	VDADHN	Rural
99	BSNL	VADODARA	SALAD	VDASLD	Rural
100	BSNL	VADODARA	CROMPTON GRIEVES	VDACGS	Rural
101	BSNL	VADODARA	DABAKA	VDADBK	Rural
102	BSNL	VADODARA	DABHASA	VDADBS	Rural
103	BSNL	VADODARA	KARAKHADI	VDAKHD	Rural
104	BSNL	VADODARA	MASAR ROAD	VDAMSR	Rural
105	BSNL	VADODARA	MOBHA ROAD	VDAMBR	Rural
106	BSNL	VADODARA	PADRA	VDAPDR	Rural
107	BSNL	VADODARA	SADHI	VDASDI	Rural
108	BSNL	VADODARA	SARSAWNI	VDASWI	Rural
109	BSNL	VADODARA	VADU	VDAVDU	Rural
110	BSNL	VADODARA	DESAR	VDADSR	Rural
111	BSNL	VADODARA	KHAKHARIA	VDAKKH	Rural

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SR.NO.	SERVICE PROVIDER	SSA	URBAN EXCHANGE NAME	URBAN EXCHANGE CODE	EXCHANGE TYPE
112	BSNL	VADODARA	WANKANER	VDWKR	Rural
113	BSNL	VADODARA	MANJUSAR	VDAMJS	Rural
114	BSNL	VADODARA	SAMLAYA	VDASMY	Rural
115	BSNL	VADODARA	TUNDAV	VDATDV	Rural
116	BSNL	VADODARA	ASOJ	VDAASJ	Rural
117	BSNL	VADODARA	GORAJ	VDAGRJ	Rural
118	BSNL	VADODARA	GUTAL	VDAGUT	Rural
119	BSNL	VADODARA	JAROD	VDAJRD	Rural
120	BSNL	VADODARA	KARMALIYAPURA	VDKAP	Rural
121	BSNL	VADODARA	RUSTAMPURA	VDARSP	Rural
122	BSNL	HIMAT NAGAR	HIMATNAGAR	HMR-HMR	Urban
123	BSNL	HIMAT NAGAR	MAHAVIRNAGAR	HMR-HMV	Urban
124	BSNL	HIMAT NAGAR	PRANTIJ	HMR-PNJ	Urban
125	BSNL	HIMAT NAGAR	IDAR	HMR-IDA	Urban
126	BSNL	HIMAT NAGAR	AGIOL	HMRAGL	Rural
127	BSNL	HIMAT NAGAR	GAMBHOI	HMRGMH	Rural
128	BSNL	HIMAT NAGAR	RAIGADH	HMRRGD	Rural
129	BSNL	HIMAT NAGAR	SATNAGAR	HMRSTN	Rural
130	BSNL	HIMAT NAGAR	VIRAWADA	HMRVRD	Rural
131	BSNL	HIMAT NAGAR	NAVANAGAR	HMRNVA	Rural
132	BSNL	HIMAT NAGAR	GADHA	HMRGDH	Rural
133	BSNL	HIMAT NAGAR	PREMPUR	HMRPMP	Rural
134	BSNL	HIMAT NAGAR	GADHODA	HMRGOD	Rural
135	BSNL	HIMAT NAGAR	ILOL	HMRILL	Rural
136	BSNL	HIMAT NAGAR	NAVA	HMRNAV	Rural
137	BSNL	HIMAT NAGAR	HAJIPUR	HMRHJA	Rural
138	BSNL	HIMAT NAGAR	ORAN	HMRORN	Rural
139	BSNL	HIMAT NAGAR	GADHI	HMRGAD	Rural
140	BSNL	HIMAT NAGAR	RAMPURA CHAR RASTA	HMRPMC	Rural
141	BSNL	HIMAT NAGAR	SAGPUR	HMRSGP	Rural
142	BSNL	HIMAT NAGAR	RANASAN	HMRRNS	Rural
143	BSNL	HIMAT NAGAR	PUNSARI	HMRPNS	Rural
144	BSNL	HIMAT NAGAR	DESHOTAR	HMRDST	Rural
145	BSNL	HIMAT NAGAR	EKLARA	HMRACL	Rural
146	BSNL	HIMAT NAGAR	UMEDGADH	HMRUMD	Rural
147	BSNL	HIMAT NAGAR	DAVAD	HMRDVD	Rural
148	BSNL	HIMAT NAGAR	BHADRESAR	HMRBDS	Rural
149	BSNL	HIMAT NAGAR	MUDETI	HMRMDT	Rural

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SR.NO.	SERVICE PROVIDER	SSA	URBAN EXCHANGE NAME	URBAN EXCHANGE CODE	EXCHANGE TYPE
150	BHARTI-AIRTEL	NA	AHAMDABAD	ADI	Urban
151	RELIANCE	NA	AHAMDABAD	ILT AXE 10 ERICSSON SWITCH	Urban
152	TTL	NA	AHAMDABAD	ADI	Urban

Annex-2**LOCATION OF POP's COVERED FOR QOS AUDIT FOR QE-JUNE 2014:**

SR. NO	SERVICE PROVIDER	LOCATION OF POP'S	ACTIVITY
1	BSNL	ASHRAM ROAD	BB AUDIT
2	BSNL	NAVRANGPURA	BB AUDIT
3	BSNL	ELLISBRIDGE	BB AUDIT
4	BSNL	NARODA	BB AUDIT
5	BSNL	INFO TOWER URBAN	BB AUDIT
6	BSNL	THALTEJ URBAN	BB AUDIT
7	BSNL	NANDEJ	BB AUDIT
8	BSNL	BOPAL (E10B RSU)	BB AUDIT
9	BSNL	OGNEJ	BB AUDIT
10	BSNL	DEHGAM (CDOT)	BB AUDIT
11	BSNL	JAGATPUR	BB AUDIT
12	BSNL	CHEKHALA	BB AUDIT
13	BSNL	CHHARODI	BB AUDIT
14	BSNL	CHARAL	BB AUDIT
15	BSNL	MODASAR	BB AUDIT
16	BSNL	RETHAL	BB AUDIT
17	BSNL	VINCHHIYA	BB AUDIT
18	BSNL	VASNA-IYAVA	BB AUDIT
19	BSNL	BAREJA	BB AUDIT
20	BSNL	MIROLI	BB AUDIT
21	BSNL	KUHA	BB AUDIT
22	BSNL	KATHWADA	BB AUDIT
23	BSNL	KUJAD	BB AUDIT
24	BSNL	BAHIAL	BB AUDIT
25	BSNL	JALU-MOTA	BB AUDIT
26	BSNL	LIHODA	BB AUDIT
27	BSNL	RAKHIAL	BB AUDIT
28	BSNL	JINDVA	BB AUDIT
29	BSNL	HALISHA	BB AUDIT
30	BSNL	CHANDRALA	BB AUDIT
31	BSNL	ANAND(NDDAND)	BB AUDIT
32	BSNL	BORSAD(NDDBSD)	BB AUDIT
33	BSNL	NADIAD PIJROAD(NDDNPR)	BB AUDIT
34	BSNL	NADIAD CIVILROAD(NDDNCR)	BB AUDIT
35	BSNL	ADAS(NDDADS)	BB AUDIT

SR. NO	SERVICE PROVIDER	LOCATION OF POP'S	ACTIVITY
36	BSNL	LINGDA(NDDLGD)	BB AUDIT
37	BSNL	SUNDALPURA(NDDSDP)	BB AUDIT
38	BSNL	BHALEJ(NDDBLJ)	BB AUDIT
39	BSNL	SURELI(NDDSUR)	BB AUDIT
40	BSNL	VADOD(NDDVDO)	BB AUDIT
41	BSNL	ALARSA(NDDALR)	BB AUDIT
42	BSNL	BHADRAN(NDDBDR)	BB AUDIT
43	BSNL	BAMANGAM(NDDBMG)	BB AUDIT
44	BSNL	KATHANA(NDDKTN)	BB AUDIT
45	BSNL	PAMOL(NDDPML)	BB AUDIT
46	BSNL	RAS(NDDRAS)	BB AUDIT
47	BSNL	ALINDRA(NDDADR)	BB AUDIT
48	BSNL	ALINA(NDDALN)	BB AUDIT
49	BSNL	CHUNEL(NDDCHL)	BB AUDIT
50	BSNL	KERIAVI(NDDKER)	BB AUDIT
51	BSNL	MAHISA(NDDMHS)	BB AUDIT
52	BSNL	VADTHAL(NDDVDT)	BB AUDIT
53	BSNL	KANJARI(NDDKJR)	BB AUDIT
54	BSNL	MOHLEL(NDDMLL)	BB AUDIT
55	BSNL	NARANPURALAT(NDDNPL)	BB AUDIT
56	BSNL	SALUN(NDDSLN)	BB AUDIT
57	BSNL	SASTAPUR(NDDSTP)	BB AUDIT
58	BSNL	VINA(NDDVNA)	BB AUDIT
59	BSNL	GODHARA GDH(E10B-MAIN)/OCB 283 RSU	BB AUDIT
60	BSNL	GODHRA(BHURAVAV) (GDRBSU)	BB AUDIT
61	BSNL	LUNAWADA (GDRLVR)	BB AUDIT
62	BSNL	HALOL (GDRHOL)	BB AUDIT
63	BSNL	CHACHELAV	BB AUDIT
64	BSNL	KAKANPUR	BB AUDIT
65	BSNL	MEHLOL	BB AUDIT
66	BSNL	MANIPUR	BB AUDIT
67	BSNL	MORA	BB AUDIT
68	BSNL	MORVA(HADAF)	BB AUDIT
69	BSNL	NADISAR	BB AUDIT
70	BSNL	SAMPA	BB AUDIT
71	BSNL	SANTROAD	BB AUDIT
72	BSNL	TIMBAROAD	BB AUDIT
73	BSNL	CHHAKADIYA	BB AUDIT

SR. NO	SERVICE PROVIDER	LOCATION OF POP'S	ACTIVITY
74	BSNL	KOTHAMBA	BB AUDIT
75	BSNL	PADEDI	BB AUDIT
76	BSNL	PANCHMAHUDIA	BB AUDIT
77	BSNL	UNTADI	BB AUDIT
78	BSNL	VARDHARI	BB AUDIT
79	BSNL	VIRANIA	BB AUDIT
80	BSNL	DUMA	BB AUDIT
81	BSNL	GHOGHAMBA	BB AUDIT
82	BSNL	JAMBUGHODA	BB AUDIT
83	BSNL	PAVAGADH	BB AUDIT
84	BSNL	RANJITNAGAR	BB AUDIT
85	BSNL	SHIVRAJPUR	BB AUDIT
86	BSNL	MANIPUR	BB AUDIT
87	BSNL	VADODARA CITY	BB AUDIT
88	BSNL	FATEHGUNJ	BB AUDIT
89	BSNL	CHANKYAPURI	BB AUDIT
90	BSNL	SAVLI	BB AUDIT
91	BSNL	WAGHODIA	BB AUDIT
92	BSNL	POR	BB AUDIT
93	BSNL	NANDESARI	BB AUDIT
94	BSNL	VARNAMA	BB AUDIT
95	BSNL	AMPAD	BB AUDIT
96	BSNL	KELANPUR	BB AUDIT
97	BSNL	SOKHADA	BB AUDIT
98	BSNL	DHANYAVI	BB AUDIT
99	BSNL	SALAD	BB AUDIT
100	BSNL	CROMPTON GRIEVES	BB AUDIT
101	BSNL	DABAKA	BB AUDIT
102	BSNL	DABHASA	BB AUDIT
103	BSNL	KARAKHADI	BB AUDIT
104	BSNL	MASAR ROAD	BB AUDIT
105	BSNL	MOBHA ROAD	BB AUDIT
106	BSNL	PADRA	BB AUDIT
107	BSNL	SADHI	BB AUDIT
108	BSNL	SARSAWNI	BB AUDIT
109	BSNL	VADU	BB AUDIT
110	BSNL	DESAR	BB AUDIT
111	BSNL	KHAKHARIA	BB AUDIT

SR. NO	SERVICE PROVIDER	LOCATION OF POP'S	ACTIVITY
112	BSNL	WANKANER	BB AUDIT
113	BSNL	MANJUSAR	BB AUDIT
114	BSNL	SAMLAYA	BB AUDIT
115	BSNL	TUNDAV	BB AUDIT
116	BSNL	ASOJ	BB AUDIT
117	BSNL	GORAJ	BB AUDIT
118	BSNL	GUTAL	BB AUDIT
119	BSNL	JAROD	BB AUDIT
120	BSNL	KARMALIYAPURA	BB AUDIT
121	BSNL	RUSTAMPURA	BB AUDIT
122	BSNL	HIMATNAGAR	BB AUDIT
123	BSNL	MAHAVIRNAGAR	BB AUDIT
124	BSNL	PRANTIJ	BB AUDIT
125	BSNL	IDAR	BB AUDIT
126	BSNL	AGIOL	BB AUDIT
127	BSNL	GAMBHOI	BB AUDIT
128	BSNL	RAIGADH	BB AUDIT
129	BSNL	SATNAGAR	BB AUDIT
130	BSNL	VIRAWADA	BB AUDIT
131	BSNL	NAVANAGAR	BB AUDIT
132	BSNL	GADHA	BB AUDIT
133	BSNL	PREMPUR	BB AUDIT
134	BSNL	GADHODA	BB AUDIT
135	BSNL	ILOL	BB AUDIT
136	BSNL	NAVA	BB AUDIT
137	BSNL	HAJIPUR	BB AUDIT
138	BSNL	ORAN	BB AUDIT
139	BSNL	GADHI	BB AUDIT
140	BSNL	RAMPURA CHAR RASTA	BB AUDIT
141	BSNL	SAGPUR	BB AUDIT
142	BSNL	RANASAN	BB AUDIT
143	BSNL	PUNSARI	BB AUDIT
144	BSNL	DESHOTAR	BB AUDIT
145	BSNL	EKLARA	BB AUDIT
146	BSNL	UMEDGADH	BB AUDIT
147	BSNL	DAVAD	BB AUDIT
148	BSNL	BHADRESAR	BB AUDIT
149	BSNL	MUDETI	BB AUDIT

SR. NO	SERVICE PROVIDER	LOCATION OF POP'S	ACTIVITY
150	BHARTI AIRTEL LIMITED	AHMEDABAD	BB AUDIT
151	GTPL	AHMEDABAD	BB AUDIT
152	SPIDIGO (CHANDARANET)	AHMEDABAD	BB AUDIT
153	RCL	DAKC KOPARKHERNE MUMBAI	BB AUDIT
154	TCL	AHMEDABAD	BB AUDIT
155	TTL	AHMEDABAD	BB AUDIT
156	YOU BROADBAND	AHMEDABAD	BB AUDIT
157	INDUS MEDIA	BARODA	BB AUDIT
158	TIKONA	AHMEDABAD	BB AUDIT
159	HATHWAY	SURAT	BB AUDIT