



**Audit & Assessment of Quality of Service
Of
Cellular Mobile Telephone Service
For
Telecom Regulatory Authority of India
West Zone – Gujarat Service Area
(October 2014 – December 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

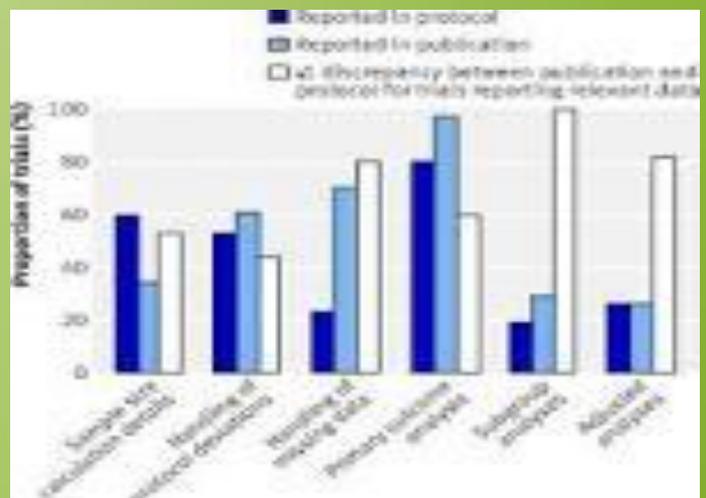
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

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 Delhi, Haryana and Mumbai circles during the quarter October – December 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
		October-14	November-14	December-14	
GSM Operators					
1	AIRCEL	8th to 10th Oct'14	10th to 12th Nov'14	22nd to 24th Dec'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	20th to 22nd Oct'14	17th to 19th Nov'14	8th to 10th Dec'14	Bharti Airtel Limited, 2nd Floor, Zodiac Square, Opposite Gurudwara, S.G Highway, Ahmedabad-380054
3	BSNL	7th to 9th Oct'14	12th to 14th Nov'14	10th to 12th Dec'14	BSNL, Vastrapur Telephone Exchange, Bima Nagar, Vastrapur, Ahmedabad.
4	VIDEOCON	20th to 22nd Oct'14	20th to 22nd Nov'14	21st to 23rd Dec'14	Videcon Telecommunications Ltd, 4th floor, Campus Corner 2, Opp AUDA Garden, Prahladnagar Ahmedabad- 380 015, Gujarat
5	TATA GSM	15th to 17th Oct'14	17th to 19th Nov'14	22nd to 24th Dec'14	Tata Teleservices Ltd, 2nd Floor- Citygold Building, Near Shyamal Cross Road, 132 Feet Ring Road, Ahmedabad
6	IDEA	15th to 17th Oct'14	18th to 20th Nov'14	9th to 11th Dec'14	Idea Cellular Ltd, Venus Atlantis, 2nd Floor, 100ft road, Prahlad Nagar, Ahmedabad-380015
7	RCOM GSM	14th to 16th Oct'14	12th to 14th Nov'14	8th to 10th Dec'14	Reliance Communications Limited, 103/106, Gate No: 6, Near Muthiyagaam Bus Stand, Naroda GIDC, Naroda, Ahmedabad- 382330
8	VODAFONE	15th to 17th Oct'14	19th to 21st Nov'14	14th to 16th Dec'14	House A, Vodafone West Limited, Vodafone House Corporate Road, Prahladnagar , Off S. G. Highway, Ahmedabad -380051 Gujarat, India
9	UNINOR	22th to 24th Oct'14	13th,14th & 17th Nov'14	05nd,08th & 9th Dec'14	Telewings Communications Services Pvt Ltd. (Uninor), Welldone Technology Park Sec-48 Sohana Road Gurgaon
CDMA Operators					
10	MTS	6th to 8th Oct'14	11th to 13th Nov'14	17th to 19th Dec'14	Sistema Shyam Teleservices Limited, C Block, Office No-2, 3rd Floor, 'The Acropolis Mall', Thaltej Cross Road, Ahmedabad- 380054
11	RCOM CDMA	14th to 16th	12th to 14th Nov'14	8th to 10th Dec'14	Reliance Communications Limited, 103/106, Gate No: 6, Near Muthiyagaam Bus Stand, Naroda GIDC, Naroda, Ahmedabad- 382330
12	TATA CDMA	15th to 17th Oct'14	17th to 19th Nov'14	22nd to 24th Dec'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 Dec- 2014.
- The data generated by monthly PMR and 3-days live measurements audit for the period October 2014 to December 2014 has been successfully uploaded to the server located at TRAI premises.

3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES

- The QoS audit for basic (wire line) service was to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles. As per the clause 17.3 of the tender document, the QoS audit of Basis Telephone Service (Wireline) in a service area / circle is to be done only **once in a year**. **Based on this criterion, QoS audit of Wireline service in Gujarat circle was not required to be done during QE December-14.**

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. As per the clause 17.3 of the tender document, the QoS audit of Broadband service in a service area / circle is to be done only **once in a year**. **Based on this criterion, QoS audit of broadband service in Gujarat circle was not required to be done during QE December-14.**

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:**

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 Tata-GSM/Tata (CDMA)) were found to have met the benchmarks of all parameters. **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 **4.82% and 7.33%** respectively.

In case of 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 **Tata (GSM) and Tata (CDMA)** in all the three months of the quarter. The quarterly average performance of **Tata (GSM) and Tata (CDMA)** for this parameter was **5.08% and 7.15 %** 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, **Idea** could not meet the benchmark of Metering and **Billing credibility for post-paid** with its performance level as **0.12%**.

The compliance with respect to the parameter '**Calls answered by Operators (voice to voice) within 90 seconds**' was not met by **RCOM (GSM) and RCOM (CDMA)** with their performance of **73.12% and 89.03%** respectively.

In case of the parameters '**Time taken for refund of deposit after closure**', the performance of **Tata (CDMA)** was **98.84%** against the benchmark of 100%. Regarding parameter **Termination/Closure** also, only BSNL could settle **only 81.44%** against the benchmark of 100% within 7 days.

The results for three days live measurements reveal that all operators have met the benchmarks for the parameters '**Accessibility to call center**'. However, **RCOM (GSM) and RCOM (CDMA)** failed to meet the benchmark of '**Call connection to operators (Voice to voice) within 90 seconds**' with their performance as **14.34% and 45.65%** respectively. The performance of **RCOM (GSM)/RCOM (CDMA)** was very poor with respect to this parameter.

(iii) The **Drive Tests** results suggest satisfactory working of the network of the service providers except **BSNL** having non-compliance with regard to **Voice Quality** in **Junagarh and Himmatnagar** SSAs.

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 and Calls answered by operator (voice to voice)** need further improvement for those operators who could not meet the benchmarks of these parameters. In case of **Customer Service Quality Parameters**, the operators lagging behind the benchmark of parameter **Billing Complaint - Postpaid and Calls answered by operators (Voice to Voice)** need improvements enough to meet the benchmarks.

5. PMR AUDIT REPORT



5. PMR AUDIT REPORTS:

5.1 MONTHLY PMR:

5.1.1 BUSY HOUR OF VARIOUS SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	Month of Audit	Network TCBH Hour
GSM Operators			
1	AIRTEL	Dec-14	20 Hrs-21 Hrs
2	AIRCEL	Dec-14	20 Hrs-21 Hrs
3	TATA GSM	Dec-14	20 Hrs-21 Hrs
4	BSNL	Dec-14	21 Hrs-22 Hrs
5	IDEA	Dec-14	20 Hrs-21 Hrs
6	UNINOR	Dec-14	20 Hrs-21 Hrs
7	RCOM GSM	Dec-14	20 Hrs-21 Hrs
8	VIDEOCON	Dec-14	20 Hrs-21 Hrs
9	VODAFONE	Dec-14	19 Hrs-20 Hrs
CDMA Operators			
10	RCOM CDMA	Dec-14	19 Hrs-20 Hrs
11	MTS	Dec-14	11 Hrs-12 Hrs
12	TATA CDMA	Dec-14	11 Hrs-12 Hrs

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	16	108	7349	NSN	NSN
2	AIRCEL	1	6	826	ZTE	ZTE
3	TATA GSM	3	14	2157	Huawei	Huawei
4	BSNL	9	90	4290	Alcatel-Lucent	Alcatel-Lucent
5	IDEA	21	45	6584	Ericsson	Ericsson
6	UNINOR	7	20	3833	NSN	NSN+Huawei
7	RCOM GSM	5	18	2534	Huawei	Huawei
8	VIDEOCON	2	11	1960	Huawei	Huawei
9	VODAFONE	20	149	7937	NSN	NSN
CDMA Operators						
10	RCOM CDMA	7	3	1109	Lucent, ZTE, Ericsson, Huawei	Lucent, Huawei
11	MTS	1	3	576	ZTE	ZTE
12	TATA CDMA	5	6	581	Ericsson	Motorola, Huawei

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – OCTOBER-14 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- OCTOBER 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%	Oct-14	0.06%	0.01%	0.00%	1.20%	0.04%	0.12%	0.14%	0.04%	0.03%	0.14%	0.02%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Oct-14	0.15%	0.00%	0.00%	1.70%	0.16%	0.34%	0.12%	0.00%	0.00%	0.18%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Oct-14	99.66%	99.27%	98.10%	96.33%	98.96%	97.71%	99.59%	98.82%	99.64%	99.10%	99.71%	98.70%
	b) SDCCH/PAGING Channel congestion	<=1%	Oct-14	0.04%	0.03%	0.02%	0.03%	0.52%	0.19%	0.01%	0.24%	0.19%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Oct-14	0.52%	0.18%	0.07%	0.92%	0.58%	0.79%	0.07%	0.14%	0.36%	0.08%	0.04%	0.14%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Oct-14	0.77%	0.38%	0.72%	0.98%	1.40%	0.47%	0.34%	0.57%	1.04%	0.05%	0.19%	0.68%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Oct-14	1.28%	2.37%	4.80%	2.76%	1.09%	2.62%	0.03%	1.24%	2.85%	0.18%	2.36%	7.69%
	c) Connections with good voice quality	>=95%	Oct-14	96.95%	98.02%	98.25%	NP	95.31%	97.99%	98.73%	97.72%	96.80%	99.84%	99.20%	99.35%
4	No. of POI's having >=0.5% POI congestion		Oct-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.

5.1.4 QOS PERFORMANCE OF MONTHLY PMR – NOVEMBER-14 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- NOV 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%	Nov-14	0.05%	0.02%	0.08%	1.24%	0.04%	0.14%	0.19%	0.04%	0.03%	0.19%	0.03%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Nov-14	0.11%	0.00%	0.00%	1.70%	0.08%	0.53%	0.12%	0.05%	0.00%	0.18%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Nov-14	99.72%	99.23%	98.14%	96.33%	99.08%	97.86%	99.61%	98.93%	99.74%	99.10%	99.75%	97.85%
	b) SDCCH/PAGING Channel congestion	<=1%	Nov-14	0.03%	0.13%	0.02%	0.06%	0.58%	0.48%	0.01%	0.09%	0.14%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Nov-14	0.36%	0.07%	0.03%	0.92%	0.50%	0.69%	0.05%	0.11%	0.26%	0.06%	0.01%	1.06%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Nov-14	0.73%	0.39%	0.71%	0.98%	1.27%	0.46%	0.32%	0.52%	0.91%	0.05%	0.15%	0.62%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Nov-14	1.03%	2.40%	4.85%	2.76%	0.90%	2.47%	0.03%	1.02%	2.76%	0.18%	2.45%	7.63%
	c) Connections with good voice quality	>=95%	Nov-14	96.93%	97.89%	98.38%	NP	95.70%	98.03%	98.75%	97.75%	97.11%	99.84%	99.19%	99.36%
4	No. of POI's having >=0.5% POI congestion		Nov-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.

5.1.5 QOS PERFORMANCE OF MONTHLY PMR – DECEMBER- 14 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE - DEC 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%	Dec-14	0.04%	0.02%	0.08%	1.50%	0.03%	0.13%	0.28%	0.04%	0.02%	0.23%	0.05%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Dec-14	0.10%	0.00%	0.00%	1.89%	0.05%	0.42%	0.39%	0.00%	0.00%	0.90%	0.00%	0.17%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Dec-14	99.71%	99.24%	98.02%	97.51%	98.98%	98.19%	99.60%	98.99%	99.71%	99.03%	98.26%	98.65%
	b) SDCCH/PAGING Channel congestion	<=1%	Dec-14	0.04%	0.07%	0.03%	0.13%	0.45%	0.50%	0.01%	0.10%	0.15%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Dec-14	0.35%	0.04%	0.04%	0.75%	0.63%	0.66%	0.06%	0.12%	0.29%	0.01%	0.02%	0.36%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Dec-14	0.74%	0.37%	0.76%	0.93%	1.14%	0.51%	0.32%	0.51%	0.79%	0.05%	0.15%	0.55%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Dec-14	0.97%	1.86%	4.80%	2.79%	1.09%	1.81%	0.03%	0.92%	2.45%	0.21%	2.30%	6.68%
	c) Connections with good voice quality	>=95%	Dec-14	96.95%	97.73%	98.48%	NP	96.04%	98.08%	98.72%	97.62%	97.28%	99.84%	99.13%	99.36%
4	No. of POI's having >=0.5% POI congestion		Dec-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 –AVERAGE OF QE- DECEMBER-14(OCT. TO DEC. 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	0.05%	0.02%	0.05%	1.31%	0.04%	0.13%	0.20%	0.04%	0.03%	0.19%	0.03%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.12%	0.00%	0.00%	1.76%	0.10%	0.43%	0.21%	0.02%	0.00%	0.42%	0.00%	0.06%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.70%	99.25%	98.09%	96.72%	99.01%	97.92%	99.60%	98.91%	99.70%	99.08%	99.24%	98.40%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.04%	0.08%	0.02%	0.07%	0.52%	0.39%	0.01%	0.14%	0.16%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.41%	0.10%	0.05%	0.86%	0.57%	0.71%	0.06%	0.12%	0.30%	0.05%	0.02%	0.52%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.75%	0.38%	0.73%	0.96%	1.27%	0.48%	0.33%	0.53%	0.91%	0.05%	0.16%	0.62%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	1.09%	2.21%	4.82%	2.77%	1.03%	2.30%	0.03%	1.06%	2.69%	0.19%	2.37%	7.33%
	c) Connections with good voice quality	>=95%	Quarterly	96.94%	97.88%	98.37%	NP	95.68%	98.03%	98.73%	97.70%	97.06%	99.84%	99.17%	99.36%
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 **Tata (GSM) and Tata (CDMA)** were non-compliant in the three months of the quarter with their average performance of **4.82% and 7.33%** 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) – OCTOBER- 14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- OCT 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%	0.03%	0.00%	1.54%	0.07%	0.10%	0.28%	0.07%	0.03%	0.25%	0.01%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.03%	0.00%	0.00%	0.05%	0.02%	0.05%	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%	99.19%	98.09%	96.34%	99.15%	97.63%	99.59%	98.88%	99.74%	99.08%	99.39%	98.87%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.02%	0.01%	0.02%	0.03%	0.37%	0.30%	0.01%	0.16%	0.10%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.14%	0.05%	0.05%	1.02%	0.39%	0.97%	0.06%	0.13%	0.26%	0.18%	0.33%	0.12%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.74%	0.42%	0.75%	0.99%	1.40%	0.38%	0.34%	0.56%	1.07%	0.05%	0.18%	0.60%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	1.26%	2.65%	5.30%	2.62%	1.21%	1.98%	0.03%	1.32%	2.95%	0.16%	1.88%	6.75%
	c) Connections with good voice quality	>=95%	Live data	97.03%	97.92%	98.20%	NP	95.38%	97.91%	98.72%	97.68%	96.80%	99.84%	99.22%	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.

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

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- NOV 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	0.05%	0.05%	0.13%	1.38%	0.04%	0.10%	0.21%	0.06%	0.04%	0.17%	0.02%	0.04%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.05%	0.00%	0.03%	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	99.76%	99.21%	98.15%	96.58%	99.09%	97.90%	99.62%	99.06%	99.83%	99.09%	99.77%	98.69%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.01%	0.15%	0.01%	0.07%	0.15%	0.73%	0.01%	0.10%	0.11%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.15%	0.04%	0.02%	1.01%	0.45%	0.60%	0.05%	0.08%	0.17%	0.06%	0.01%	0.27%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.73%	0.40%	0.72%	0.97%	1.37%	0.46%	0.32%	0.49%	0.94%	0.04%	0.13%	0.61%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	1.10%	2.41%	5.05%	2.71%	0.98%	2.52%	0.02%	0.95%	2.88%	0.10%	2.15%	8.55%
	c) Connections with good voice quality	>=95%	Live data	96.93%	97.85%	98.26%	NP	95.49%	97.68%	98.77%	97.67%	97.13%	99.85%	99.20%	99.36%
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) - DECEMBER-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- DEC -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	0.03%	0.01%	0.16%	1.63%	0.04%	0.11%	0.23%	0.09%	0.04%	0.20%	0.04%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.14%	0.00%	0.05%	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%	99.21%	97.99%	97.05%	99.13%	97.96%	99.61%	98.97%	99.77%	99.15%	99.76%	98.91%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.01%	0.02%	0.02%	0.13%	0.29%	0.20%	0.01%	0.11%	0.10%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.14%	0.01%	0.09%	0.85%	0.41%	0.53%	0.04%	0.10%	0.23%	0.00%	0.00%	0.13%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.71%	0.38%	0.79%	0.94%	1.29%	0.43%	0.33%	0.56%	0.75%	0.04%	0.15%	0.51%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	0.93%	2.11%	4.88%	2.80%	1.36%	2.19%	0.04%	1.14%	1.90%	0.28%	2.21%	6.14%
	c) Connections with good voice quality	>=95%	Live data	96.89%	97.67%	98.70%	NP	95.66%	98.03%	98.69%	97.51%	97.48%	99.84%	99.11%	99.37%
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 OCTOBER TO DECEMBER 2014)**

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	0.05%	0.03%	0.10%	1.52%	0.05%	0.10%	0.24%	0.07%	0.04%	0.21%	0.02%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.01%	0.00%	0.00%	0.08%	0.01%	0.04%	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%	99.20%	98.08%	96.66%	99.12%	97.83%	99.61%	98.97%	99.78%	99.11%	99.64%	98.82%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.01%	0.06%	0.02%	0.08%	0.27%	0.41%	0.01%	0.12%	0.10%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.14%	0.03%	0.05%	0.96%	0.42%	0.70%	0.05%	0.10%	0.22%	0.08%	0.11%	0.17%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.73%	0.40%	0.75%	0.97%	1.35%	0.42%	0.33%	0.54%	0.92%	0.04%	0.15%	0.57%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	1.10%	2.39%	5.08%	2.71%	1.18%	2.23%	0.03%	1.14%	2.58%	0.18%	2.08%	7.15%
	c) Connections with good voice quality	>=95%	Quarterly	96.95%	97.81%	98.39%	NP	95.51%	97.87%	98.73%	97.62%	97.14%	99.84%	99.18%	99.36%
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 **Tata (GSM) and Tata (CDMA)** in all the three months of the quarter. The quarterly average performance of **Tata (GSM) and Tata (CDMA)** for this parameter was **5.08% and 7.15 %** 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- Oct 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		Oct-14	7345	824	2159	4289	6425	3779	2531	1885	7823	1106	567	581
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Oct-14	3304	79.71	2.867	38388.5	2138	3423	2692	571.73	1525.34	1164	85	52.58
	c) BTS Accumulated Downtime	<=2%	Oct-14	0.06%	0.01%	0.00%	1.20%	0.04%	0.12%	0.14%	0.04%	0.03%	0.14%	0.02%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Oct-14	11	0	0	73	10	13	3	0	0	2	0	0
	e) Worst affected BTSs due to downtime	<=2%	Oct-14	0.15%	0.00%	0.00%	1.70%	0.16%	0.34%	0.12%	0.00%	0.00%	0.18%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Oct-14	99.66%	99.27%	98.10%	96.33%	98.96%	97.71%	99.59%	98.82%	99.64%	99.10%	99.71%	98.70%
	b) SDCCH/PAGING Congestion	<=1%	Oct-14	0.04%	0.03%	0.02%	0.03%	0.52%	0.19%	0.01%	0.24%	0.19%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Oct-14	0.52%	0.18%	0.07%	0.92%	0.58%	0.79%	0.07%	0.14%	0.36%	0.08%	0.04%	0.14%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Oct-14	0.77%	0.38%	0.72%	0.98%	1.40%	0.47%	0.34%	0.57%	1.04%	0.05%	0.19%	0.68%
	b) Worst affected cells>3% TCH drop	<=3%	Oct-14	1.28%	2.37%	4.80%	2.76%	1.09%	2.62%	0.03%	1.24%	2.85%	0.18%	2.36%	7.69%

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle- Oct 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%	Oct-14	96.95%	98.02%	98.25%	NP	95.31%	97.99%	98.73%	97.72%	96.80%	99.84%	99.20%	99.35%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Oct-14	290	58	311	350	209	309	2	71	676	6	42	136
	e) Total no. of cells (Sector) in the licensed service area		Oct-14	22664	2469	6484	12658	19143	11824	7456	5698	23715	3318	1782	1769
4	No. of POI's having >=0.5% POI congestion														
	No. of POI's having >=0.5% POI congestion		Oct-14	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Oct-14	0	0	0	0	0	0	0	0	0	0	0	0
5	Network Data														
	a) Equipped Capacity of Network in Erlang		Oct-14	224678	31978	114386	317000	268666	141747	NP	84693	423466	NP	21000	96756
	b) Total traffic in TCBH in erlang (Avg.)		Oct-14	170226	7889	32223	83153	216137	149735	NP	23537	354978	NP	1909	14225
	c) Total no. of customers served (as per VLR) on last day of the month		Oct-14	6800992	8439	1315720	2699915	10323620	4165645	NP	915085	16554388	NP	123656	253517

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.

NP: RCOM GSM & CDMA has not provided data related to network data due to TTI server issue.

TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- Gujarat Circle- Oct-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	7335	823	2159	4289	6368	3759	2532	1883	7778	1106	567	581
	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	367.55	18.21	0	4758.35	300	278	515	97.37	187.84	197	3.93	6.5
	c) BTS Accumulated Downtime	<=2%	Live data	0.07%	0.03%	0.00%	1.54%	0.07%	0.10%	0.28%	0.07%	0.03%	0.25%	0.01%	0.02%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	2	0	0	2	1	2	0	0	0	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.03%	0.00%	0.00%	0.05%	0.02%	0.05%	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	99.75%	99.19%	98.09%	96.34%	99.15%	97.63%	99.59%	98.88%	99.74%	99.08%	99.39%	98.87%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.02%	0.01%	0.02%	0.03%	0.37%	0.30%	0.01%	0.16%	0.10%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.14%	0.05%	0.05%	1.02%	0.39%	0.97%	0.06%	0.13%	0.26%	0.18%	0.33%	0.12%
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Live data	0.74%	0.42%	0.75%	0.99%	1.40%	0.38%	0.34%	0.56%	1.07%	0.05%	0.18%	0.60%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	1.26%	2.65%	5.30%	2.62%	1.21%	1.98%	0.03%	1.32%	2.95%	0.16%	1.88%	6.75%
	c) % of connections with good voice quality	>=95%	Live data	97.03%	97.92%	98.20%	NP	95.38%	97.91%	98.72%	97.68%	96.80%	99.84%	99.22%	99.35%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	284	65	344	331	232	234	2	75	667	5	33	119
e) Total no. of cells (Sector) in the licensed service area		Live data	22632	2469	6484	12625	19126	11831	7457	5699	22569	3318	1754	1769	
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 - Nov 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		Nov-14	7341	825	2157	4289	6479	3806	2532	1910	7874	1107	567	581
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Nov-14	2834.52	114.08	1200.34	38388.5	1992	3727	3528	541.96	1632.79	1476	122.37	60.07
	c) BTS Accumulated Downtime	<=2%	Nov-14	0.05%	0.02%	0.08%	1.24%	0.04%	0.14%	0.19%	0.04%	0.03%	0.19%	0.03%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Nov-14	8	0	0	73	5	20	3	1	0	2	0	0
e) Worst affected BTSs due to downtime	<=2%	Nov-14	0.11%	0.00%	0.00%	1.70%	0.08%	0.53%	0.12%	0.05%	0.00%	0.18%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Nov-14	99.72%	99.23%	98.14%	96.33%	99.08%	97.86%	99.61%	98.93%	99.74%	99.10%	99.75%	97.85%
	b) SDCCH/PAGING Congestion	<=1%	Nov-14	0.03%	0.13%	0.02%	0.06%	0.58%	0.48%	0.01%	0.09%	0.14%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Nov-14	0.36%	0.07%	0.03%	0.92%	0.50%	0.69%	0.05%	0.11%	0.26%	0.06%	0.01%	1.06%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Nov-14	0.73%	0.39%	0.71%	0.98%	1.27%	0.46%	0.32%	0.52%	0.91%	0.05%	0.15%	0.62%
	b) Worst affected cells>3% TCH drop	<=3%	Nov-14	1.03%	2.40%	4.85%	2.76%	0.90%	2.47%	0.03%	1.02%	2.76%	0.18%	2.45%	7.63%
	c) % of connections with good voice quality	>=95%	Nov-14	96.93%	97.89%	98.38%	NP	95.70%	98.03%	98.75%	97.75%	97.11%	99.84%	99.19%	99.36%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Nov-14	234	59	314	350	174	295	2	59	658	6	45	116
e) Total no. of cells (Sector) in the licensed service area		Nov-14	22663	2473	6474	12658	19351	11924	7457	5730	23865	3321	1846	1521	

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Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle - Nov 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		Nov-14	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Nov-14	0	0	0	0	0	0	0	0	0	0	0	0
5	Network Data														
	a) Equipped Capacity of Network in Erlang		Nov-14	223664	32038	114892	317000	270466	143031	144000	85561	425877	144000	21000	96772
	b) Total traffic in TCBH in erlang (Avg.)		Nov-14	169833	8400	33758	83153	219194	154499	116685	22844	352166	38664	1743	11297
	c) Total no. of customers served (as per VLR) on last day of the month		Nov-14	7336476	9466	1389598	2699915	10819966	4552867	3114318	1044222	17122673	1197777	145564	269760

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- Nov 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	7330	824	2157	4289	6443	3787	2532	1894	7823	1107	568	581
	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	289.83	31.75	207.6	4264.08	190	269	389.00	84.4	206.55	135	9.9	15.82
	c) BTS Accumulated Downtime	<=2%	Live data	0.05%	0.05%	0.13%	1.38%	0.04%	0.10%	0.21%	0.06%	0.04%	0.17%	0.02%	0.04%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	0	2	0	1	0	0	0	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.05%	0.00%	0.03%	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	99.76%	99.21%	98.15%	96.58%	99.09%	97.90%	99.62%	99.06%	99.83%	99.09%	99.77%	98.69%
	b) SDCCCH/PAGING Congestion	<=1%	Live data	0.01%	0.15%	0.01%	0.07%	0.15%	0.73%	0.01%	0.10%	0.11%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Live data	0.15%	0.04%	0.02%	1.01%	0.45%	0.60%	0.05%	0.08%	0.17%	0.06%	0.01%	0.27%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Live data	0.73%	0.40%	0.72%	0.97%	1.37%	0.46%	0.32%	0.49%	0.94%	0.04%	0.13%	0.61%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	1.10%	2.41%	5.05%	2.71%	0.98%	2.52%	0.02%	0.95%	2.88%	0.10%	2.15%	8.55%
	c) % of connections with good voice quality	>=95%	Live data	96.93%	97.85%	98.26%	NP	95.49%	97.68%	98.77%	97.67%	97.13%	99.85%	99.20%	99.36%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	250	60	327	335	187	301	2	55	682	3	40	151
e) Total no. of cells (Sector) in the licensed service area		Live data	22634	2472	6478	12338	19154	11910	7457	5737	23715	3321	1843	1769	
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	

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 - Dec 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		Dec-14	7349	826	2157	4290	6584	3833	2534	1960	7937	1109	578	581
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Dec-14	2164.54	92.51	1339.68	47905.4	1384	3744	5213	653.84	1418.4	1880	201.45	134.14
	c) BTS Accumulated Downtime	<=2%	Dec-14	0.04%	0.02%	0.08%	1.50%	0.03%	0.13%	0.28%	0.04%	0.02%	0.23%	0.05%	0.03%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Dec-14	7	0	0	81	3	16	10	0	0	10	0	1
e) Worst affected BTSs due to downtime	<=2%	Dec-14	0.10%	0.00%	0.00%	1.89%	0.05%	0.42%	0.39%	0.00%	0.00%	0.90%	0.00%	0.17%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Dec-14	99.71%	99.24%	98.02%	97.51%	98.98%	98.19%	99.60%	98.99%	99.71%	99.03%	98.26%	98.65%
	b) SDCCH/PAGING Congestion	<=1%	Dec-14	0.04%	0.07%	0.03%	0.13%	0.45%	0.50%	0.01%	0.10%	0.15%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Dec-14	0.35%	0.04%	0.04%	0.75%	0.63%	0.66%	0.06%	0.12%	0.29%	0.01%	0.02%	0.36%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Dec-14	0.74%	0.37%	0.76%	0.93%	1.14%	0.51%	0.32%	0.51%	0.79%	0.05%	0.15%	0.55%

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle - Dec 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		
	b) Worst affected cells>3% TCH drop	<=3%	Dec-14	0.97%	1.86%	4.80%	2.79%	1.09%	1.81%	0.03%	0.92%	2.45%	0.21%	2.30%	6.68%
	c) % of connections with good voice quality	>=95%	Dec-14	96.95%	97.73%	98.48%	NP	96.04%	98.08%	98.72%	97.62%	97.28%	99.84%	99.13%	99.36%
	d)Total No. of cells exceeding 3% TCH drop (call drop)		Dec-14	219	46	311	352	214	280	2	54	589	7	44	110
	e) Total no. of cells (Sector) in the licensed service area		Dec-14	22704	2477	6478	12629	19550	15470	7457	5868	24064	3326.03	1897	1646
No. of POI's having >=0.5% POI congestion															
4	No. of POI's having >=0.5% POI congestion		Dec-14	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Dec-14	0	0	0	0	0	0	0	0	0	0	0	0
Network Data															
5	a) Equipped Capacity of Network in Erlang		Dec-14	222814	32105	114576	317000	273945	143829	144000	87664	428417	144000	21000	94057
	b) Total traffic in TCBH in erlang (Avg.)		Dec-14	170214	8917	31649	83379	216923	154541	118060	24372	364046	40767	1515	14733
	c) Total no. of customers served (as per VLR) on last day of the month		Dec-14	7555977	10044	1434858	2677810	11162760	4731748	3129539	1121453	17432912	1215215	106865	261834

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- Dec 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	7338	826	2157	4289	6501	3820	2532	1948	7874	1109	578	581
	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	152.06	7.65	249.7	5034.06	185	314	412	123.65	208.04	161	18.67	12.44
	c) BTS Accumulated Downtime	<=2%	Live data	0.03%	0.01%	0.16%	1.63%	0.04%	0.11%	0.23%	0.09%	0.04%	0.20%	0.04%	0.03%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	0	6	0	2	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.14%	0.00%	0.05%	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%	99.21%	97.99%	97.05%	99.13%	97.96%	99.61%	98.97%	99.77%	99.15%	99.76%	98.91%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.01%	0.02%	0.02%	0.13%	0.29%	0.20%	0.01%	0.11%	0.10%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.14%	0.01%	0.09%	0.85%	0.41%	0.53%	0.04%	0.10%	0.23%	0.00%	0.00%	0.13%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.71%	0.38%	0.79%	0.94%	1.29%	0.43%	0.33%	0.56%	0.75%	0.04%	0.15%	0.51%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	0.93%	2.11%	4.88%	2.80%	1.36%	2.19%	0.04%	1.14%	1.90%	0.28%	2.21%	6.14%
	c) % of connections with good voice quality	>=95%	Live data	96.89%	97.67%	98.70%	NP	95.66%	98.03%	98.69%	97.51%	97.48%	99.84%	99.11%	99.37%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	211	52	316	355	267	263	3	67	453	9	42	109
	e) Total no. of cells (Sector) in the licensed service area		Live data	22703	2478	6478	12662	19549	12022	7457	5897	23865	3327	1903	1769
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 QUARTERLY CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (OCTOBER to DECEMBER 2014 MONTHS AUDITED DATA):

QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES															
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	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	NA	1296011	160665	868619	NA	174182	165017	NA	4968829	94131	479647	53943
	B) No. of bills disputed including billing complaints during the quarter		GUJ	NA	61	24	1029	NA	114	0	NA	4685	6	379	0
	C)% of billing complaints during the quarter	<= 0.1%	GUJ	NA	0.00%	0.01%	0.12%	NA	0.07%	0.00%	NA	0.09%	0.01%	0.08%	0.00%
Metering & Billing Credibility -Pre Paid															
2	A) Total No. of Pre-paid customers at the end of the quarter		GUJ	18435	7189228	3003853	10147444	6762644	3102563	3239980	2185886	16896341	195748	1048958	264038
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		GUJ	0	201	2898	8549	574	3053	0	5	3811	11	448	0
	C) % of Pre-paid Charging Complaints	<= 0.1%	GUJ	0.000%	0.003%	0.096%	0.084%	0.008%	0.098%	0.000%	0.000%	0.023%	0.006%	0.043%	0.000%
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	0	262	2898	17304	574	3197	5007	5	8496	17	827	92
	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	0	262	2898	17304	574	3197	5007	5	8496	17	827	92

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QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES															
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	
	C) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 6 weeks during the quarter.		GUJ	0	262	2898	17304	574	3197	5007	5	8496	17	827	92
	D) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	>=98% within 4 weeks	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	E) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 6 weeks	100% within 6 weeks		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	F) % of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Response time to customers for assistance															
	A) Total no of calls attempted to customer care/Call center		GUJ	14580	1975902	335866	20488969	2187055	9965601	895858	227516	39872607	4607	966522	83905
	B) Total no. of calls successfully established to customer care/Call center		GUJ	14013	1974693	325193	20351056	2097538	9851249	878789	227516	39872582	4414	948768	82352
	C) % Accessibility of Call centre /customer Care (Total call successfully established *100/ Total call attempt)	>=95%	GUJ	96.11%	99.94%	96.82%	99.33%	95.91%	98.85%	98.09%	100%	100%	95.81%	98.16%	98.15%
	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		GUJ	5100	4120317	1886093	7760683	4873336	1124037	1661905	867552	10240611	53701	217892	92380

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

QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES															
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	
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds.		GUJ	4894	4001984	1827784	7724327	4404323	821870	1544378	851257	9896845	51431	193999	90148
	F) % age of calls answered by operator(voice to voice) (Total call successfully established within 90 sec.*100 / Total call attempts)	>=95%	GUJ	95.96%	97.13%	96.91%	99.53%	90.38%	73.12%	92.93%	98.12%	96.64%	95.77%	89.03%	97.58%
Termination/closure of service															
5	A) Total No. of requests for Termination / Closure of service received during the quarter		GUJ	NA	3139	4877	11163	NA	644	2640	NA	19874	2956	3272	862
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		GUJ	NA	3139	3972	11163	NA	644	2640	NA	19874	2956	3272	862
	C) % of Termination/ Closure of service within 7 days	<=7days	GUJ	NA	100%	81.44%	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	1800	1214	2738	NA	1943	240	NA	8967	0	2807	282
	B) No. of Payments/ Refunds Cleared during the quarter		GUJ	NA	1800	1214	2738	NA	1943	240	NA	8967	0	2807	279
	C) Time taken for refunds of deposits after closures.	100% within 60 days	GUJ	NA	100%	100%	100%	NA	100%	100%	NA	100%	100%	100%	98.94%

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 – QE DECEMBER 2014															
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		<i>GUJ</i>	339	65612	12421	617048	693120	232602	303870	11248	1216280	191	29426	15834
	Total no. of calls successfully established to customer care/Call center		<i>GUJ</i>	339	65612	12044	613827	663261	229420	300098	11248	1216280	186	28946	15514
	% Accessibility of Call centre /customer Care (Total call successfully established*100 / Total call attempts)	>=95%	<i>GUJ</i>	100.00%	100.00%	96.96%	99.48%	95.69%	98.63%	98.76%	100.00%	100.00%	97.38%	98.37%	97.98%
	Total Calls reached to operator for Voice to Voice (Total call attempts)		<i>GUJ</i>	135	131790	66856	247537	179241	25574	24007	23936	331866	2327	7466	1742
	Total number of calls answered by the operator (Voice to voice) within 90 seconds		<i>GUJ</i>	132	129928	65230	247034	174212	3668	23687	23293	328337	2239	3408	1726
	% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100 / Total call attempts)	>=95%	<i>GUJ</i>	97.78%	98.59%	97.57%	99.80%	97.19%	14.34%	98.67%	97.31%	98.94%	96.22%	45.65%	99.08%

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 $\leq 0.1\%$. However, **Idea** could not meet the benchmark of Metering and **Billing credibility for post-paid** with its performance level as **0.12%**.

2. Resolution of Billing complaints and applying credits -

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

All operators have 100 % resolved the billing complaints within stipulated period of 4/6 weeks. 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 90 seconds**'. They remained short of benchmark with their performance as **73.12%% and 89.03%** respectively, way below the benchmark of >95%.

4. Termination/Closure of Service

In case of this parameters also, all service providers except BSNL have settled the closure/termination within the benchmark of 7 days. **BSNL** could settle **only 81.44%** against the benchmark of 100% within 7 days.

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 **98.94%**.

Live Measurements:

The results for three days live measurements reveal that all operators have met the benchmarks for the parameters 'Accessibility to call center'. However, **RCOM (GSM) and RCOM (CDMA)** failed to meet the benchmark of '**Call connection to operators (Voice to voice) within 90 seconds**' with their performance as **14.34% and 45.65%** respectively. The performance of **RCOM (GSM)/RCOM (CDMA)** was very poor with respect to this parameter.

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	UNINOR	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	VIDEOCON	MTS	VODAFONE
AIRCEL	Gujarat	-	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AIRTEL	Gujarat	100%	-	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
UNINOR	Gujarat	100%	100%	-	100%	100%	100%	100%	100%	100%	100%	100%	100%
BSNL	Gujarat	100%	100%	100%	-	100%	100%	100%	100%	100%	100%	100%	100%
IDEA	Gujarat	100%	100%	100%	100%	-	100%	100%	100%	100%	100%	100%	100%
RCOM GSM	Gujarat	100%	100%	100%	100%	100%	-	100%	100%	100%	100%	100%	100%
RCOM CDMA	Gujarat	100%	100%	100%	100%	100%	100%	-	100%	100%	100%	100%	100%
TATA GSM	Gujarat	100%	100%	100%	100%	100%	100%	100%	-	100%	100%	100%	100%
TATA CDMA	Gujarat	100%	100%	100%	100%	100%	100%	100%	100%	-	100%	100%	100%
VIDEOCON	Gujarat	100%	100%	100%	100%	100%	100%	100%	100%	100%	-	100%	100%
MTS	Gujarat	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	-	100%
VODAFONE	Gujarat	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													
Parameter	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
Total no. of calls attempted to customer care/Call center	GUJ	100	100	100	100	100	100	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	GUJ	100	100	100	100	100	100	100	100	100	100	100	100
% Accessibility of Call centre /customer Care (Total call successfully established *100 /Total call attempts)	GUJ	100	100	100	100	100	100	100	100	100	100	100	100
Total Calls reached to agent desk for Voice to Voice (Total call attempts)	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total number of calls answered by the operator (Voice to voice) within 90 seconds	GUJ	100	100	100	100	100	100	100	100	100	100	100	100
% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100/Total call attempts)	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

In case of calls answered by operators (voice to voice) within 90 seconds when test calls were made to the call centers, the performance of all the operators with respect to call connections to the customer care was very satisfactory.

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	60	100	100	100	100	100	100	5	100	60	100	100
Total No. of calls Answered	Gujarat	55	97	95	99	91	94	93	5	98	58	94	92
Resolution of Billing complaints	Gujarat	55	97	95	99	91	94	93	5	98	58	94	92
%age of cases resolved	Gujarat	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100%	100.00%	100.00%

To test the Service Providers performance on billing related complaints and their resolutions, TUV-SUD auditors conducted a customer feedback calling for about random 100 nos. of customers. 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.	Month of Drive Test	SSA Name	Name of SDCA	No. of calls made	AIRCEL	AIRTEL	UNINOR	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	VIDEOCON	MTS	VODAFONE	
100-108-1091-1098-1095	OCT'14	Junagadh SSA	Junagarh	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Vanthali	10	NC	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓
			Keshod	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Porbandar	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Ranavav	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Kutiyana	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Veraval	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Talala	10	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓	✓
			Kodinaar	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100-108-1091-1098-1095	NOV'14	Bhuj SSA	Gandhidham	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Anjar	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Bachau	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Mundra	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Mandvi	22	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Bhuj	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Sumrasar	8	NC	✓	NC	✓	✓	NC	NC	NC	NC	NC	NC	NC	✓
			Khavda	8	NC	✓	NC	✓	✓	NC	NC	NC	NC	NC	NC	NC	✓
100-108-1091-1098-1095	DEC'14	Himmatnagar SSA	Himmatnagar	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Prantij	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Bhiloda	8	NC	✓	✓	✓	✓	✓	NC	✓	NC	✓	NC	✓	
			Idar	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Khedbrahma	9	NC	✓	✓	✓	✓	✓	✓	NC	NC	✓	✓	✓	
			Malpur	8	NC	✓	✓	✓	✓	✓	✓	NC	NC	NC	✓	✓	
			Modasa	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
			Bayad	9	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 Junagarh, Bhuj and Himmatnagar SSAs. In Gujarat service area, these services were found functional in the networks of all the service providers except for those operators who were not having their coverage in particular SDCAs as indicated above.

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 **Junagarh, Bhuj** and **Himmatnagar** in the months of October, November and December 2014 respectively. The total route Kms covered during drive tests in respective SSAs was **409 Kms, 360 Kms** and **361 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.

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DRIVE TEST TABLE-1A

OPERATOR ASSISTED DRIVE TEST AT JUNAGARH SSA IN OCTOBER 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	Highways	NA	NC	90	25	65	25	76	25	83	25	92	25
		Major Roads	24	25	126	25	129	25	137	25	118	25	151	25
		Within City	NA	NC	219	25	186	25	230	25	270	25	237	25
		Overall SSA	24	25	435	75	380	75	443	75	471	75	480	75
2	Blocked Call Rate	Highways	NA	NC	0.00%	0.00%	1.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	0.00%	0.00%	0.00%	3.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NA	NC	0.00%	0.00%	2.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	2.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	NA	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NA	NC	0.00%	0.00%	1.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	0.55%	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)	Highways	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Major Roads	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Within City	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)	Highways	NA	NC	99.10%	99.30%	90.47%	70.10%	98.70%	99.89%	98.72%	99.18%	99.44%	100.00%
		Major Roads	98.91%	99.60%	98.52%	97.09%	86.84%	81.82%	98.07%	99.86%	98.84%	99.37%	99.17%	99.41%
		Within City	NA	NC	97.18%	99.76%	84.44%	72.86%	98.23%	97.12%	97.78%	99.43%	98.97%	100.00%
Overall SSA		98.91%	99.60%	97.97%	98.72%	86.27%	74.90%	98.26%	98.96%	98.22%	99.33%	99.11%	99.83%	
5	Service Coverage													
	In door (>= -75dBm)	Highways	NA	NC	92.04%	100.00%	59.45%	95.07%	90.34%	85.75%	98.05%	99.95%	74.62%	100.00%
		Major Roads	69.51%	100.00%	89.26%	99.83%	64.66%	95.91%	90.23%	85.71%	97.98%	100.00%	80.61%	98.29%
		Within City	NA	NC	95.61%	100.00%	75.93%	58.53%	92.73%	96.70%	99.57%	100.00%	90.58%	99.79%
		Overall SSA	69.51%	100.00%	93.02%	99.94%	69.21%	83.07%	91.63%	89.41%	98.89%	99.99%	84.58%	99.45%

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OPERATOR ASSISTED DRIVE TEST AT JUNAGARH SSA IN OCTOBER 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)	Highways	NA	NC	99.70%	100.00%	94.02%	99.92%	97.90%	99.47%	99.97%	100.00%	95.32%	100.00%
		Major Roads	97.78%	100.00%	99.53%	99.89%	94.50%	99.77%	98.31%	99.69%	99.88%	100.00%	98.55%	100.00%
		Within City	NA	NC	99.71%	100.00%	98.16%	99.29%	98.95%	99.93%	99.99%	100.00%	98.26%	100.00%
		Overall SSA	97.78%	100.00%	99.66%	99.96%	96.19%	99.66%	98.60%	99.70%	99.96%	100.00%	97.82%	100.00%
	Outdoor- in city (>= - 95dBm)	Highways	NA	NC	100.00%	100.00%	99.78%	100.00%	99.75%	99.97%	100.00%	100.00%	99.97%	100.00%
		Major Roads	100.00%	100.00%	100.00%	99.97%	99.85%	99.95%	99.97%	99.96%	100.00%	100.00%	100.00%	100.00%
		Within City	NA	NC	99.92%	100.00%	99.89%	99.85%	99.87%	100.00%	100.00%	100.00%	99.87%	100.00%
		Overall SSA	100.00%	100.00%	99.96%	99.99%	99.86%	99.93%	99.89%	99.98%	100.00%	100.00%	99.93%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	NA	NC	100.00%	100.00%	96.92%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	100.00%	100.00%	100.00%	100.00%	94.57%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	NA	NC	100.00%	100.00%	97.31%	100.00%	100.00%	100.00%	99.26%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	96.32%	100.00%	100.00%	100.00%	99.58%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Highways	NA	NC	100.00%	100.00%	73.56%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	100.00%	100.00%	100.00%	100.00%	99.22%	100.00%	99.47%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	NA	NC	100.00%	100.00%	99.30%	100.00%	98.88%	100.00%	99.75%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	94.81%	100.00%	99.20%	100.00%	99.84%	100.00%	100.00%	100.00%

NA: Not Applicable

NC: No Coverage

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

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

DRIVE TEST TABLE-1B

OPERATOR ASSISTED DRIVE TEST AT JUNAGARH SSA IN OCTOBER 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	Highways	70	25	146	25	73	25	67	25	65	25	64	25
		Major Roads	142	24	102	25	121	25	111	25	132	25	151	25
		Within City	257	26	226	25	240	25	201	25	254	25	239	25
		Overall SSA	469	75	474	75	434	75	379	75	451	75	454	75
2	Blocked Call Rate	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%
		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%
		Within City	0.78%	0.00%	0.00%	0.00%	0.42%	0.00%	0.00%	0.00%	0.39%	0.00%	0.00%	0.00%
		Overall SSA	0.43%	0.00%	0.00%	0.00%	0.23%	0.00%	0.00%	0.00%	0.22%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	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%
		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%
		Within City	0.00%	0.00%	0.00%	0.00%	0.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	0.46%	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)	Highways	NA	NA	NA	NA	NA	NA	99.99%	99.98%	99.92%	99.69%	99.97%	99.76%
		Major Roads	NA	NA	NA	NA	NA	NA	99.94%	99.98%	99.58%	100.00%	99.36%	100.00%
		Within City	NA	NA	NA	NA	NA	NA	99.91%	99.89%	99.51%	100.00%	99.09%	98.70%
		Overall SSA	NA	NA	NA	NA	NA	NA	99.93%	99.95%	99.60%	99.90%	99.29%	99.43%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	96.45%	97.54%	97.72%	99.54%	97.53%	96.47%	NA	NA	NA	NA	NA	NA
		Major Roads	96.73%	99.33%	98.83%	98.98%	96.56%	99.42%	NA	NA	NA	NA	NA	NA
		Within City	94.67%	99.54%	96.96%	99.48%	95.99%	97.14%	NA	NA	NA	NA	NA	NA
		Overall SSA	95.46%	98.77%	97.48%	99.34%	96.39%	97.62%	NA	NA	NA	NA	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Highways	58.54%	95.51%	79.97%	99.95%	93.09%	100.00%	77.36%	99.82%	71.10%	100.00%	84.55%	96.81%
		Major Roads	63.69%	99.93%	67.21%	83.40%	87.01%	100.00%	91.24%	99.16%	85.59%	95.70%	78.47%	100.00%
		Within City	74.71%	96.94%	81.28%	99.97%	96.41%	99.73%	94.78%	100.00%	90.21%	100.00%	86.27%	99.58%
		Overall SSA	91.21%	97.46%	78.06%	94.49%	93.26%	99.90%	90.67%	99.67%	84.72%	98.55%	83.48%	98.74%

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



OPERATOR ASSISTED DRIVE TEST AT JUNAGARH SSA IN OCTOBER 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)	Highways	88.74%	99.95%	96.57%	100.00%	99.48%	100.00%	98.98%	100.00%	94.64%	100.00%	93.15%	100.00%
		Major Roads	92.25%	100.00%	88.31%	99.81%	98.61%	100.00%	99.66%	100.00%	98.06%	100.00%	96.51%	100.00%
		Within City	94.52%	100.00%	95.31%	100.00%	99.66%	99.93%	99.80%	100.00%	98.72%	100.00%	97.96%	100.00%
		Overall SSA	97.95%	99.98%	94.28%	99.94%	99.34%	99.97%	99.61%	100.00%	97.61%	100.00%	96.85%	100.00%
	Outdoor- in city (>= -95dBm)	Highways	100.00%	100.00%	99.97%	100.00%	99.80%	100.00%	99.99%	100.00%	99.90%	100.00%	99.51%	100.00%
		Major Roads	100.00%	100.00%	98.72%	99.89%	99.82%	100.00%	100.00%	100.00%	99.91%	100.00%	99.90%	100.00%
		Within City	100.00%	100.00%	99.16%	100.00%	99.94%	100.00%	100.00%	100.00%	99.99%	100.00%	99.67%	100.00%
		Overall SSA	100.00%	100.00%	99.31%	99.96%	99.89%	100.00%	100.00%	100.00%	99.93%	100.00%	99.72%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	97.14%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	97.89%	100.00%	94.12%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	98.44%	100.00%	100.00%	100.00%	99.58%	100.00%	100.00%	100.00%	99.61%	100.00%	100.00%	100.00%
		Overall SSA	98.08%	100.00%	98.73%	100.00%	99.77%	100.00%	100.00%	100.00%	99.78%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Highways	98.46%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	98.08%	100.00%	100.00%	100.00%	99.54%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	96.59%	100.00%	100.00%	100.00%	99.81%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	97.06%	100.00%	100.00%	100.00%	99.76%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

NA: Not Applicable

NC: No Coverage

DRIVE TEST TABLE-2A

OPERATOR ASSISTED DRIVE TEST AT BHUJ SSA IN NOVEMBER 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	Highways	NC	NC	145	25	115	25	159	25	131	25	131	25	
		Major Roads	NC	NC	165	25	145	25	179	25	163	25	171	25	
		Within City	NC	NC	137	25	124	26	153	25	145	25	144	25	
		Overall SSA	NC	NC	447	75	384	76	491	75	439	75	446	75	
2	Blocked Call Rate	Highways	NC	NC	0.00%	0.00%	2.61%	0.00%	1.26%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Major Roads	NC	NC	0.00%	0.00%	3.45%	0.00%	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Within City	NC	NC	0.00%	0.00%	0.81%	3.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Overall SSA	NC	NC	0.00%	0.00%	2.34%	1.32%	0.61%	0.00%	0.00%	0.00%	0.00%	0.00%	
3	Dropped Call Rate (<=2%)	Highways	NC	NC	0.00%	0.00%	0.89%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Major Roads	NC	NC	0.00%	0.00%	2.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Within City	NC	NC	0.00%	0.00%	0.81%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Overall SSA	NC	NC	0.00%	0.00%	1.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
4	Percentage connections with good voice quality (=>95%)														
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Highways	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Major Roads	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Within City	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Overall SSA	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	NC	NC	96.97%	99.81%	97.10%	100.00%	98.18%	100.00%	98.07%	99.11%	97.93%	100.00%	
		Major Roads	NC	NC	96.97%	99.59%	95.91%	100.00%	98.36%	100.00%	97.79%	99.11%	96.94%	100.00%	
		Within City	NC	NC	97.19%	99.50%	98.07%	99.44%	98.99%	99.70%	98.54%	99.04%	98.81%	100.00%	
Overall SSA		NC	NC	97.04%	99.64%	96.94%	99.51%	98.48%	99.90%	98.12%	99.08%	97.83%	100.00%		
5	Service Coverage														
	In door (>= -75dBm)	Highways	NC	NC	96.14%	100.00%	79.26%	100.00%	81.04%	100.00%	94.89%	100.00%	60.51%	100.00%	
		Major Roads	NC	NC	97.32%	100.00%	76.59%	100.00%	83.34%	99.67%	96.89%	99.98%	60.82%	99.29%	
		Within City	NC	NC	96.89%	100.00%	83.64%	50.28%	82.33%	33.07%	98.01%	99.95%	76.49%	100.00%	
		Overall SSA	NC	NC	96.81%	100.00%	79.57%	56.41%	82.24%	77.58%	96.67%	99.98%	65.78%	99.88%	

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

OPERATOR ASSISTED DRIVE TEST AT BHUJ SSA IN NOVEMBER 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)	Highways	NC	NC	99.66%	100.00%	97.86%	100.00%	95.50%	100.00%	99.17%	100.00%	90.39%	100.00%
		Major Roads	NC	NC	99.84%	100.00%	96.15%	100.00%	96.75%	99.91%	99.72%	100.00%	88.62%	100.00%
		Within City	NC	NC	99.77%	100.00%	98.82%	97.93%	98.02%	95.32%	99.90%	100.00%	96.81%	100.00%
		Overall SSA	NC	NC	99.76%	100.00%	97.49%	98.19%	96.76%	98.41%	99.62%	100.00%	91.78%	100.00%
	Outdoor- in city (>= -95dBm)	Highways	NC	NC	99.97%	100.00%	99.96%	100.00%	99.72%	100.00%	99.99%	100.00%	99.40%	100.00%
		Major Roads	NC	NC	99.95%	100.00%	99.49%	100.00%	99.66%	100.00%	100.00%	100.00%	99.20%	100.00%
		Within City	NC	NC	99.98%	100.00%	100.00%	100.00%	99.95%	99.84%	100.00%	100.00%	99.96%	100.00%
		Overall SSA	NC	NC	99.97%	100.00%	99.79%	100.00%	99.78%	99.95%	100.00%	100.00%	99.50%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	NC	NC	100.00%	100.00%	97.39%	100.00%	98.74%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	NC	NC	100.00%	100.00%	96.55%	100.00%	98.32%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	NC	NC	100.00%	100.00%	99.19%	96.15%	98.69%	100.00%	99.31%	100.00%	100.00%	100.00%
		Overall SSA	NC	NC	100.00%	100.00%	97.66%	98.68%	98.57%	100.00%	99.77%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Highways	NC	NC	100.00%	100.00%	100.00%	100.00%	98.66%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	NC	NC	100.00%	100.00%	99.56%	100.00%	98.77%	100.00%	99.71%	100.00%	100.00%	100.00%
		Within City	NC	NC	100.00%	100.00%	100.00%	100.00%	99.52%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	NC	NC	100.00%	100.00%	99.82%	100.00%	98.92%	100.00%	99.88%	100.00%	100.00%	100.00%

NA: Not Applicable

NC: No Coverage

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

DRIVE TEST TABLE-2B

OPERATOR ASSISTED DRIVE TEST AT BHUJ SSA IN NOVEMBER 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	Highways	106	25	129	25	125	25	96	25	131	25	131	25
		Major Roads	152	25	162	25	171	25	137	25	206	25	173	25
		Within City	115	25	129	25	139	25	111	25	154	25	144	25
		Overall SSA	373	75	420	75	435	75	344	75	491	75	448	75
2	Blocked Call Rate	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%
		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%
		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%
3	Dropped Call Rate (<=2%)	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%
		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%
		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%
Percentage connections with good voice quality (=>95%)														
4	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Highways	NA	NA	NA	NA	NA	NA	99.91%	99.80%	99.72%	99.85%	99.81%	100.00%
		Major Roads	NA	NA	NA	NA	NA	NA	99.96%	100.00%	99.98%	100.00%	99.80%	100.00%
		Within City	NA	NA	NA	NA	NA	NA	99.90%	99.93%	99.88%	100.00%	99.79%	100.00%
		Overall SSA	NA	NA	NA	NA	NA	NA	99.93%	99.91%	99.88%	99.95%	99.80%	100.00%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	95.38%	99.76%	96.13%	99.12%	95.61%	97.26%	NA	NA	NA	NA	NA	NA
		Major Roads	95.30%	95.98%	96.35%	99.02%	95.56%	96.14%	NA	NA	NA	NA	NA	NA
		Within City	96.27%	99.62%	96.87%	99.94%	95.49%	97.43%	NA	NA	NA	NA	NA	NA
		Overall SSA	95.64%	98.47%	96.44%	99.36%	95.55%	96.94%	NA	NA	NA	NA	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Highways	93.36%	97.10%	72.40%	93.73%	97.53%	100.00%	80.27%	100.00%	86.15%	98.65%	79.11%	100.00%
		Major Roads	94.24%	99.76%	74.30%	100.00%	96.20%	100.00%	83.47%	99.74%	85.64%	100.00%	76.25%	100.00%
		Within City	97.10%	98.61%	83.05%	32.78%	96.45%	100.00%	91.05%	87.83%	89.15%	100.00%	85.36%	91.75%
		Overall SSA	94.85%	98.53%	76.58%	75.50%	96.67%	100.00%	85.02%	95.90%	85.23%	99.55%	80.02%	95.92%

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



OPERATOR ASSISTED DRIVE TEST AT BHUJ SSA IN NOVEMBER 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)	Highways	98.92%	100.00%	94.86%	100.00%	99.54%	100.00%	99.37%	100.00%	98.85%	100.00%	97.52%	100.00%
		Major Roads	99.02%	100.00%	96.52%	100.00%	99.70%	100.00%	97.96%	100.00%	97.90%	100.00%	95.66%	100.00%
		Within City	99.82%	100.00%	98.67%	96.82%	99.72%	100.00%	99.69%	100.00%	97.54%	100.00%	96.13%	100.00%
		Overall SSA	99.19%	100.00%	96.68%	98.94%	99.66%	100.00%	98.91%	100.00%	97.62%	100.00%	96.35%	100.00%
	Outdoor- in city (>= - 95dBm)	Highways	100.00%	100.00%	99.48%	100.00%	99.95%	100.00%	100.00%	100.00%	99.98%	100.00%	99.95%	100.00%
		Major Roads	100.00%	100.00%	99.75%	100.00%	99.93%	100.00%	100.00%	100.00%	99.76%	100.00%	99.79%	100.00%
		Within City	100.00%	100.00%	99.89%	100.00%	99.89%	100.00%	100.00%	100.00%	99.75%	100.00%	99.70%	100.00%
		Overall SSA	100.00%	100.00%	99.71%	100.00%	99.93%	100.00%	100.00%	100.00%	99.79%	100.00%	99.81%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	98.11%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		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%
		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	99.46%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Highways	98.24%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	98.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	97.75%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	97.99%	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

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

DRIVE TEST TABLE-3A

OPERATOR ASSISTED DRIVE TEST AT HIMMATNAGAR SSA IN DECEMBER 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	Highways	15	25	89	25	74	23	82	25	90	26	92	27
		Major Roads	23	NC	190	25	211	25	152	25	204	27	184	27
		Within City	21	NC	172	25	164	25	135	25	208	26	197	27
		Overall SSA	59	25	451	75	449	73	369	75	502	79	473	81
2	Blocked Call Rate	Highways	0.00%	0.00%	0.00%	0.00%	1.35%	0.00%	0.00%	0.00%	0.00%	0.00%	3.26%	0.00%
		Major Roads	0.00%	NC	0.00%	0.00%	0.47%	0.00%	1.32%	0.00%	0.00%	0.00%	1.63%	0.00%
		Within City	0.00%	NC	0.00%	0.00%	2.44%	0.00%	1.48%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	1.34%	0.00%	1.08%	0.00%	0.00%	0.00%	1.27%	0.00%
3	Dropped Call Rate (<=2%)	Highways	0.00%	0.00%	0.00%	0.00%	0.00%	4.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	NC	0.00%	0.00%	0.96%	0.00%	0.00%	0.00%	0.00%	0.00%	0.55%	0.00%
		Within City	0.00%	NC	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%	0.45%	1.37%	0.00%	0.00%	0.00%	0.00%	0.21%	0.00%
Percentage connections with good voice quality (=>95%)														
4	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Highways	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Major Roads	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Within City	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)	Highways	99.19%	99.64%	96.45%	99.04%	91.00%	88.41%	98.36%	99.94%	97.82%	99.45%	96.12%	90.26%
		Major Roads	99.23%	NC	97.22%	98.05%	95.10%	83.21%	97.63%	99.84%	98.54%	99.53%	97.48%	97.74%
		Within City	99.33%	NC	97.53%	99.49%	93.49%	92.92%	97.94%	99.95%	98.82%	99.48%	98.27%	99.60%
		Overall SSA	99.26%	99.64%	97.19%	98.87%	93.82%	88.25%	97.90%	99.91%	98.53%	99.49%	97.56%	95.14%
Service Coverage														
5	In door (>= -75dBm)	Highways	53.00%	99.43%	90.76%	100.00%	46.35%	19.55%	71.59%	100.00%	98.55%	100.00%	77.80%	0.16%
		Major Roads	49.81%	NC	84.74%	100.00%	31.91%	86.37%	49.91%	92.74%	97.81%	99.92%	72.77%	99.88%
		Within City	65.17%	NC	88.64%	100.00%	31.08%	66.49%	57.14%	98.85%	95.54%	99.93%	75.28%	50.19%
		Overall SSA	56.09%	99.43%	87.36%	100.00%	34.09%	58.88%	56.89%	97.68%	97.00%	99.95%	74.69%	47.68%

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

OPERATOR ASSISTED DRIVE TEST AT HIMMATNAGAR SSA IN DECEMBER 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)	Highways	87.29%	100.00%	99.31%	100.00%	94.65%	98.32%	92.43%	100.00%	100.00%	100.00%	96.16%	89.84%
		Major Roads	87.41%	NC	98.22%	100.00%	89.65%	99.96%	84.00%	99.76%	99.89%	99.99%	92.98%	100.00%
		Within City	97.99%	NC	99.31%	100.00%	91.09%	99.62%	86.85%	100.00%	99.67%	100.00%	95.95%	99.44%
		Overall SSA	91.18%	100.00%	98.84%	100.00%	91.02%	99.34%	86.73%	99.51%	99.82%	100.00%	94.75%	95.73%
	Outdoor- in city (>= -95dBm)	Highways	96.81%	100.00%	99.97%	100.00%	100.00%	100.00%	98.83%	100.00%	100.00%	100.00%	99.31%	100.00%
		Major Roads	96.29%	NC	99.94%	100.00%	100.00%	100.00%	98.62%	100.00%	100.00%	100.00%	99.18%	100.00%
		Within City	100.00%	NC	99.98%	100.00%	100.00%	100.00%	98.21%	100.00%	99.99%	100.00%	99.83%	100.00%
		Overall SSA	97.75%	100.00%	99.96%	100.00%	100.00%	100.00%	98.49%	100.00%	99.99%	100.00%	99.47%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	100.00%	100.00%	100.00%	100.00%	98.65%	100.00%	100.00%	100.00%	100.00%	100.00%	96.74%	100.00%
		Major Roads	100.00%	NC	100.00%	100.00%	99.05%	100.00%	98.68%	100.00%	100.00%	100.00%	98.37%	100.00%
		Within City	100.00%	NC	100.00%	100.00%	97.56%	100.00%	98.52%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	98.44%	100.00%	98.92%	100.00%	100.00%	100.00%	98.73%	100.00%
7	Hand Over Success Rate (HOSR)	Highways	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.02%	100.00%	100.00%	100.00%
		Major Roads	100.00%	NC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	100.00%	NC	100.00%	100.00%	100.00%	100.00%	99.48%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.83%	100.00%	99.83%	100.00%	100.00%	100.00%

NA: Not Applicable

NC: No Coverage

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

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

DRIVE TEST TABLE-3B

OPERATOR ASSISTED DRIVE TEST AT HIMMATNAGAR SSA IN DECEMBER 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	Highways	121	25	204	25	94	25	71	25	49	25	80	27
		Major Roads	215	25	92	25	237	25	189	25	127	25	172	27
		Within City	143	25	231	25	219	25	174	25	134	25	175	28
		Overall SSA	479	75	527	75	550	75	434	75	310	75	427	82
2	Blocked Call Rate	Highways	0.83%	8.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.25%	0.00%
		Major Roads	4.65%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.16%	0.00%
		Within City	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	2.51%	2.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%
3	Dropped Call Rate (<=2%)	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%
		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%
		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	0.42%	0.00%	0.00%	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)	Highways	NA	NA	NA	NA	NA	NA	99.99%	100.00%	98.94%	98.98%	98.56%	99.11%
		Major Roads	NA	NA	NA	NA	NA	NA	99.99%	100.00%	99.61%	99.95%	97.92%	99.75%
		Within City	NA	NA	NA	NA	NA	NA	99.97%	100.00%	99.67%	100.00%	98.47%	99.03%
		Overall SSA	NA	NA	NA	NA	NA	NA	99.98%	100.00%	99.54%	99.64%	98.26%	99.32%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	95.50%	96.18%	97.08%	99.82%	96.05%	99.17%	NA	NA	NA	NA	NA	NA
		Major Roads	96.37%	94.71%	98.07%	99.98%	96.92%	99.23%	NA	NA	NA	NA	NA	NA
		Within City	95.98%	99.39%	97.96%	100.00%	97.17%	97.70%	NA	NA	NA	NA	NA	NA
		Overall SSA	96.01%	96.70%	97.63%	99.93%	96.88%	98.72%	NA	NA	NA	NA	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Highways	52.84%	94.93%	83.34%	100.00%	84.50%	100.00%	84.73%	78.20%	83.77%	92.67%	88.03%	100.00%
		Major Roads	35.93%	96.54%	87.95%	100.00%	77.11%	100.00%	81.04%	89.81%	71.82%	99.04%	88.90%	100.00%
		Within City	43.09%	95.15%	81.52%	100.00%	75.91%	100.00%	77.42%	83.58%	62.06%	100.00%	79.20%	92.53%
		Overall SSA	42.61%	98.53%	83.36%	100.00%	77.85%	100.00%	80.17%	83.84%	69.13%	97.23%	84.77%	98.27%

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OPERATOR ASSISTED DRIVE TEST AT HIMMATNAGAR SSA IN DECEMBER 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)	Highways	86.97%	99.94%	95.47%	100.00%	98.19%	100.00%	97.63%	98.70%	98.75%	100.00%	98.86%	100.00%	
		Major Roads	82.70%	99.94%	96.41%	100.00%	97.41%	100.00%	98.01%	99.93%	96.48%	100.00%	97.66%	100.00%	
		Within City	88.49%	99.90%	97.88%	100.00%	96.95%	100.00%	92.43%	100.00%	91.03%	100.00%	94.78%	99.63%	
		Overall SSA	85.82%	100.00%	96.62%	100.00%	97.35%	100.00%	95.68%	99.54%	94.36%	100.00%	96.69%	99.91%	
	Outdoor- in city (>= -95dBm)	Highways	100.00%	100.00%	98.28%	100.00%	99.41%	100.00%	99.53%	99.36%	99.75%	100.00%	100.00%	100.00%	
		Major Roads	100.00%	100.00%	98.27%	100.00%	99.73%	100.00%	99.95%	100.00%	99.94%	100.00%	99.98%	100.00%	
		Within City	100.00%	100.00%	99.86%	100.00%	99.83%	100.00%	99.05%	100.00%	99.18%	100.00%	99.61%	100.00%	
		Overall SSA	100.00%	100.00%	98.92%	100.00%	99.72%	100.00%	99.51%	99.78%	99.57%	100.00%	99.83%	100.00%	
6	Call Setup Success Rate (>=95%)	Highways	99.17%	92.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.75%	100.00%	
		Major Roads	95.35%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.84%	100.00%
		Within City	99.30%	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	97.49%	97.33%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.30%	100.00%
7	Hand Over Success Rate (HOSR)	Highways	100.00%	100.00%	99.68%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
		Major Roads	96.43%	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	98.71%	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

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

7.1 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

DRIVE TEST ROUTE OF OCTOBER TO DECEMBER 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
JUNAGARH	Porbandar, Kutiyana, Ranavav/ 109 KM	<p>Ranavav: - Ranavav City Area, Pareshnagar, Gopalpara.</p> <p>Kutiyana: - Kutiyana Village, School, Porbander Highway.</p> <p>Porbandar:- Bapunagar, Kubernagar, Airport, Rajivnagar, Shreejinagar, New Porbandar, Kadiya Plot, Panch hatdi, Bhatia Bazar, New Kumbharwado, GEB Colony, Rameshwarnagar, Tulsinagar, Marutinagar.</p>	Bhavay Tower, Nr. Hotel Harmony, Porbandar	Junagadh, Keshod, Vanthali / 149 KM	<p>Vanthali: - Vanthali town, Junagadh-Somnath Highway.</p> <p>Keshod:- Pipaliyanagar, Chavdanagar, Dhareshwar society, Jagdishpark, Karmat colony, Amrutnagar, Madhusudan colony, Aalap colony. Keshod town.</p> <p>Junagadh:- Vraj vihar, gandhi Gram, Kadiyawad, Kalva chock, Pramukhnagar, Moti palace township, Green city, Monalisa township, Oghadnagar, Vishnu colony, Joshipura, Mullawada, Khajanagar, Dolpatra, GIDC.</p>	Sanket India Mall, Junagadh	Verawal, Kodinar, Talala / 151 KM	<p>Talala:-Talala Town, Galiyawad Road, Jetpur, Ramrechi.</p> <p>Kodinar:-Sardarnagar, Amrutnagar, Jin plot Area, Rajmoti, Industrial Area, Selinity Colony, Panchwati society</p> <p>Verawal:-Vidhyutnagar, Kirmaninagar, Veraval village, Somnath, Bhalka, Mathasuya, Bhalka, Dal Colony, Teacher's Colony, Biharinagar.</p>	Ananddham Complex, Nr. Bus Stand, Veraval

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<p align="center">BHUJ</p>	<p align="center">Gandhidham , Anjar, Bhachau / 150 KM</p>	<p>Gandhidham:- Adipur, Meghpar, Nakodanagar, Vidhyanagar, Maheshwarinagar, Sunderpuri Slum Area, Apnanagar, Shaktinagar, Sapnanagar, Ganeshnagar</p> <p>Anjar:-Bhaktinagar, Yogeshwarnagar, Koteshwarnagar, Mahadevnagar, Kamdhenunagar, GangaNaka, Housing Board, Bhagatsinghnagar</p> <p>Bhachau:- Bhavanipur, Ramdevnagar, Ramwadi, Anandpur, Himmatpura, Gamivas.</p>	<p align="center">Golden Arcade, Gandhidham</p>	<p align="center">Mundra, Mandvi / 103 KM</p>	<p>Mandavi:- Umiyanagar, Vohra Hajira, Polis Quarter, Madhavnagar, Megmangalnagar, Rameshwar Colony, Mota Salaya, Mukhdani, Galanagar, Ashapura, Nilkanthnagar, Poonamnagar .</p> <p>Mundra:-Umyanagar, Maheshnagar, Baroi, Shreejinagar, Rushbhanagar, Bramhapuri, Sukhpar, Surajnagar, Vardhmannagar.</p>	<p align="center">Kalyan Complex, Ma ndavi</p>	<p align="center">Bhuj, khavda, Sumrasar/ 107 KM</p>	<p>Bhuj:-Ghanshyamnagar, Laltekre, RTO Relocation, Nirmalsingh wadi, Shivkrupanagar, Sanskarnagar, Aiyannagar, Umanagar, Madhapara, Anjani Nagar, APMC, Industrial Area, Junavas, Vardhmannagar.</p> <p>Khavda :Khavda market, kala dungar road, Sabzi mandi area, Govt high school</p> <p>Samsur: sumrasar police chauki, sadar bazar, gallamandi, Shah chauk.</p>	<p align="center">Reliance Mall, Bhuj</p>
<p align="center">HIMMATNAGAR</p>	<p align="center">Himmatnaga r & Prantij / 151 KM</p>	<p>Himmatnagar:- Ganotri Society, Alkapuri, Parabada, Ashrafnagar, Anantvihar society, Pipalikampa, Motipura, Mahavirnagar, Balavantpura, Kanknol, Rangpura, Mehtapura.</p> <p>Prantij:-Prantij Town, Vohravad, Kamalpur, Bakarapur, Station Road.</p>	<p align="center">Dwarkesh Complex, Himmatnagar</p>	<p align="center">Idar, Khedbramha & Bhiloda / 104 KM</p>	<p>Idar:- Shrinagar, Nayaknagar, Mahavirnagar, Dhebbhol, Ghati road, Ambaji Road, Himmatnagar Road .</p> <p>Khedbramha:-Station Road, Saradr road, Champalpur road, New vasna, Patel Society, Brahmaji Chock, Ramnagar.</p> <p>Bhiloda: School, main market , Subhas circle & Mandi area.</p>	<p align="center">Hotel Citylight, Idar</p>	<p align="center">Modasa, Malpur, Bay ad / 106 KM</p>	<p>Modasa:-Modasa Town, Mazumpark society, Lakshmi society, OM Nagar Society, Khalikpur, Basera Society, Ganeshpur. Sanjar Society. Dungari.</p> <p>Malpur:-Malpur town, Modasa-Malpur road.</p> <p>Bayad:-Shivam Society, Swaminarayan Society, Vivekanand society, Vraj Garen Society, Anand Ghanshyam Society, Shivdarshan Society, Khodiyarnagar.</p>	<p align="center">Pawan city Complex, Mo dasa</p>

7.2 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF JUNAGARH SSA (OCTOBER-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	Porbandar, Kutiyana, Ranavav	---	Junagadh, Keshod, Vanthali	No Coverage	Verawal, Kodinar, Talala	No Coverage
2	AIRTEL BHARTI		---		---		
3	BSNL		Poor Level & voice quality observed at all over SSA/SDCA		Poor Level & voice quality observed at all over SSA/SDCA		
4	IDEA CELLULAR		Poor voice quality observed at : Porbandar : Chowpati area,Rani baug		Poor voice quality observed at : Junagadh: Manganth road		
5	UNINOR		Poor voice quality observed at : Porbandar : GEB Colony		---		
6	VIDEOCON		Poor voice quality observed at : Airport Road, Porbandar		Poor voice quality observed at : bhalika tirth Road, Veraval/By pass Road,Kodinar		
7	VODAFONE		---		---		
8	MTS		---		---		
9	TATA GSM		---		---		
10	TATA CDMA		---		---		
11	RCOM GSM		---		Poor voice quality observed at : Junagadh : Bhavnath Road		
12	RCOM CDMA		---		---		

DRIVE TEST TABLE: 6

DRIVE TEST OBSERVATION OF BHUJ SSA (NOVEMBER-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	Gandhidham, Anjar, Bhachau	No Coverage	Mundra, Mandvi	No Coverage	Bhuj, khavda, Sumrasar	No Coverage
2	AIRTEL BHARTI		---				
3	BSNL		Poor voice quality observed at :Sundarpur area gandhi dham		Poor Rx Level voice quality observed at : baroi village (Mundra) / Market area & Sivparas building (Mandvi)		Poor voice quality observed at :Pramukh swami nagar (Bhuj)
4	IDEA CELLULAR		Poor voice quality observed at :Ward no 9 and Kandala Sez flyover (Gandhidham)		---		Poor voice quality observed at :Desalsar lake & Atmaram marg (Bhuj)
5	UNINOR		Poor voice quality observed at :Rambag hospital road,Gurukul road,Subesh nagar		---		---
6	VIDEOCON		---		---		---
7	VODAFONE		Poor voice quality observed at :Gurukul Road (Gandhidham)		---		---
8	MTS		---		---		---
9	TATA GSM		---		---		---
10	TATA CDMA		---		---		---
11	RCOM GSM		---		---		Poor voice quality observed at :Rabindra nath tagore road (Bhuj)
12	RCOM CDMA		---		---		---

DRIVE TEST TABLE: 7

DRIVE TEST OBSERVATION OF HIMMATNAGAR SSA (DECEMBER-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	Himmatnagar & Prantij	---	Bhiloda , Idar, Khedbrahma	No Coverage	Bayad, Malpur, Modasa	No Coverage
2	AIRTEL BHARTI		---		Modasa : Mazum Nagar,Bajkot		
3	BSNL		Poor voice quality observed at Himmatnagar : CN Shah road , Alkapuri , NH 76 A		Poor voice quality observed at Bhiloda : Market area & SH 10		Poor voice quality observed at Modasa : Modasa aniyor road & Gitanjali society
4	IDEA CELLULAR		Poor voice quality observed at Himat nagar: Near Mahavir nagar & Motipura / Prantij : Kamal pur		Poor voice quality observed at Idar : Near ghati road		Poor voice quality observed at Modasa: Deep road , Modasa mail market , Viveknand society & shrinagar society
5	UNINOR		Poor voice quality observed at Himmatnagar : Near NH-76 A		---		Poor voice quality observed at Modasa :Dargah road & Maneqwa society
6	VIDEOCON		Poor voice quality observed at Himmatnagar Apna cinema area & Panchdev society area		Poor voice quality observed at Khedbrahma : CK Chospital area & Govt collage area		Poor voice quality observed at Modasa : Ganesh nagar area
7	VODAFONE		---		Poor voice quality observed at Idar : Ghati Rd		---
8	MTS		---		---		---
9	TATA GSM		Poor voice quality observed at NH-76A,Berna Road(Mahavir nagar)		Poor Rx Level observed at Idar :Idar-Udaipur Road (NH 76A) / Bhiloda: Akshar International School, Heliport Road		Poor voice quality observed at Modasa : Modasa by pass road
10	TATA CDMA		Poor voice quality observed at Himmatnagar : Old Pole Area		---		---
11	RCOM GSM		Poor voice quality observed at Himmatnagar : Near NH-76 A		Poor voice quality observed at Idar : Ghati Rd		Poor voice quality observed at Modasa : Modasa by pass road
12	RCOM CDMA		---		---		---

Common observation Area: Himmatnagar: NH-76A, Idar: Ghato road, Modasa : Modasa by pass road.

DRIVE TEST TABLE: 8

NO NETWORK COVERAGE STATUS OF DRIVE TEST – OCTOBER TO DECEMBER 14

S No	Month of Drive Test	Operator	SSA	Total SDCA Covered	Status of no network coverage area (SDCA Name)	ICR Status (SDCA Name)
1	Oct-14	Aircel	Junagadh	Junagadh, Porbandar, Kutiyana, Ranavav, Keshod, Vanthali ,Verawal, Kodinar & Talala	Junagarh, Porbandar, Ranavav, Keshod,Vanthali, Veraval, Kodinaar, Talala	No
		Airtel			--	No
		BSNL			--	No
		TATA GSM			--	No
		IDEA			--	No
		RCOM GSM			--	On ICR with TATA GSM at Talala Town
		UNINOR			--	No
		Videocon			--	On ICR with TATA GSM in Ranavav, Kutiyana, Vanthali, Keshod, Talala, Kodinaar
		Vodafone			--	No
		MTS			--	On ICR with TATA CDMA at Porbandar, Ranavav, Kutiyana, Talala & In ICR with RCOM CDMA at Junagarh, Vanthali, Keshod
		TATA CDMA			Talala	No
RCOM CDMA	Talala	No				
2	Nov-14	Aircel	Bhuj	Bhuj, khavda, Sumrasar, Mundra, Mandvi, Gandhidham, Anjar & Bhachau	All SSA includes Bhuj, khavda, Sumrasar, Mundra, Mandvi, Gandhidham, anjar, Bhachau	No
		Airtel			--	No
		BSNL			--	No
		TATA GSM			khavda & Sumrasar	No
		IDEA			--	No
		RCOM GSM			khavda & Sumrasar	No
		UNINOR			khavda & Sumrasar	No
		Videocon			khavda & Sumrasar	No
		Vodafone			--	No
		MTS			khavda & Sumrasar	MTS is on ICR with RCOM CDMA at Anjar, Bhachau, Mundra, mandvi SDCA
		TATA CDMA			khavda & Sumrasar	No
		RCOM CDMA			khavda & Sumrasar	No

S No	Month of Drive Test	Operator	SSA	Total SDCA Covered	Status of no network coverage area (SDCA Name)	ICR Status (SDCA Name)
3	Dec-14	Aircel	Himmatnagar	Himatnagar, Prantij, Idar, Khedbrmha, Bhiloda, Modasa, Malpur & Bayad	Himatnagar, Idar, Khedbrmha, Bhiloda, Modasa, Malpur, Bayad	No
		Airtel			--	No
		BSNL			--	No
		TATA GSM			Khedbrahma, Malpur & Bayad	No
		IDEA			--	No
		RCOM GSM			--	No
		UNINOR			--	No
		Videocon			Malpur	Videocon is on ICR with TATA GSM at Himmatnagar, prantij ,Bhiloda, Idar , khedbrahma & Modasa
		Vodafone			--	No
		MTS			Bhiloda	MTS is on ICR with RCOM CDMA at Himmatnagar,Prantij,Khedbrahma,Modasa, Malpur and Bayad SDCA
TATA CDMA	Khedbrahma, Bhiloda. Malpur & Bayad	No				
RCOM CDMA	Bhiloda	No				

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. October-14 : Junagarh SSA

SDCAs covered: Porbandar, Kutiyana, Ranavav Junagadh, Keshod, Vanthali Verawal, Kodinar and Talala SDCAs (409 Kms)

The results of the drive test, carried out across **Junagarh** SSA for all service providers revealed that they were largely in compliance of benchmarks of all the parameters, except **BSNL** was having non-compliance for parameter **Voice Quality** with its performance as **86.27% (Outdoor) / 74.90% (Indoor)**.

2. November-14: Bhuj SSA

SDCA covered: Gandhidham, Anjar, Bhachau Mundra, Mandvi Bhuj, khavda, Sumrasar SDCAs (360 Kms).

No Coverage: Aircel has no any coverage in Bhuj SDCA

The results of the drive test, carried out across Bhuj SSA for all service providers revealed that they were largely in compliance of benchmarks for all the parameters on over all SSA level.

December-14: Himmatnagar SSA

The results of the drive test, carried out in Himmatnagar SSA revealed that the operators were doing well with regard to compliance of the TRAI norms. However, BSNL was having non-compliance for parameter **Voice Quality** with its performance as **93.82% (Outdoor) / 88.25% (Indoor)**.

The drive test results suggest satisfactory working of the network of the service providers except **BSNL** having non-compliance with regard to **Voice Quality** in **Junagarh and Himmatnagar** SSAs. 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 Junagarh, Bhuj and Himmatnagar SSAs respectively.

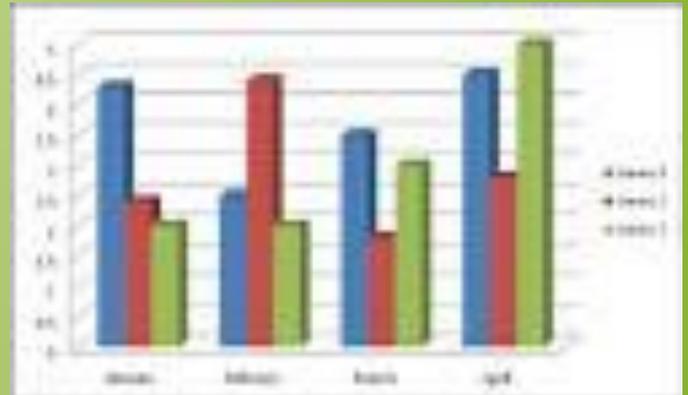
The detail of Network coverage and Intra Circle Roaming (ICR) status of different service providers at various locations in the three SSAs is given in table-8.

8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

AVERAGED QUARTERLY PMR

V/S

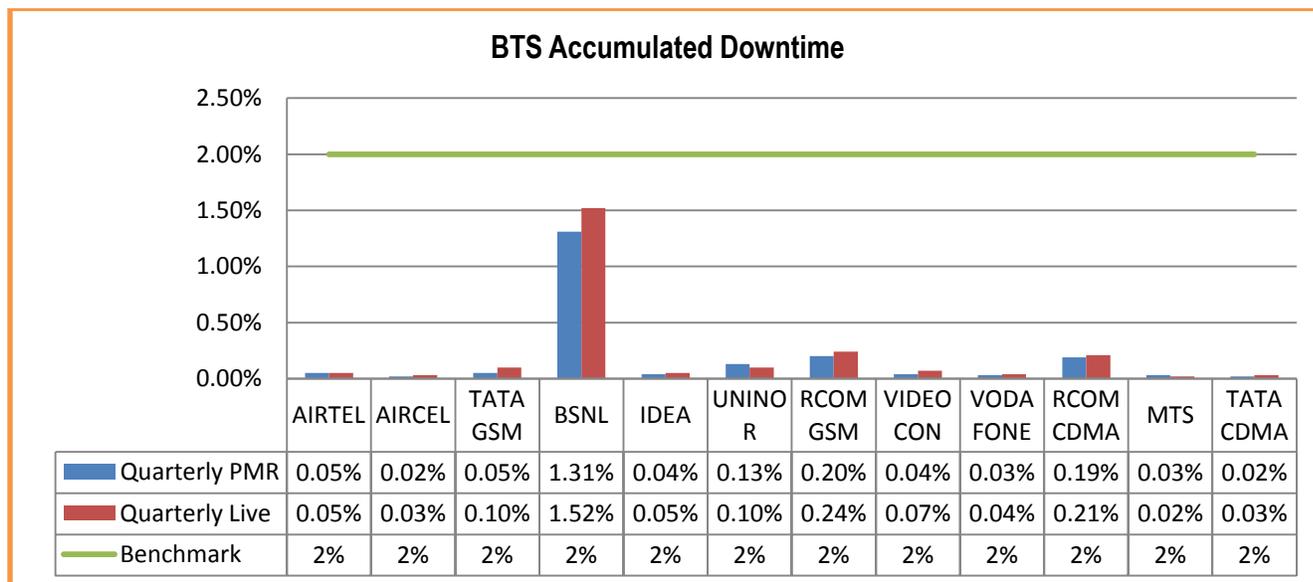
AVERAGED QUARTERLY 3-DAYs LIVE MEASUREMENT



8. GRAPHICAL REPRESENTATION (CMTS):

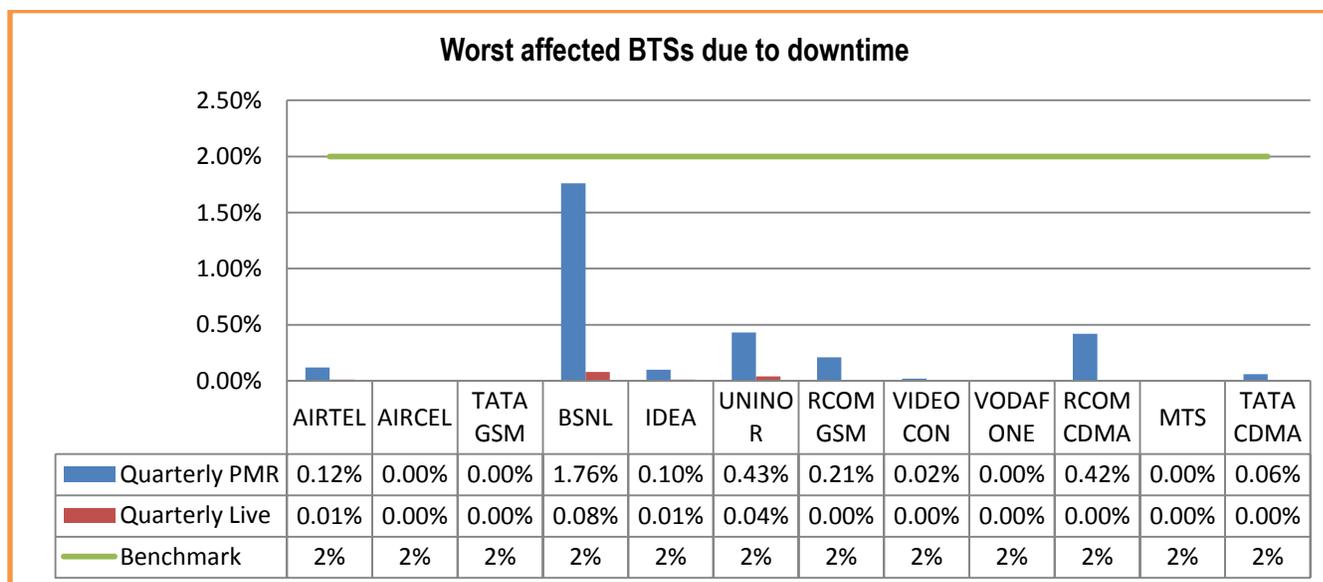
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

1. BTS ACCUMULATED DOWNTIME:



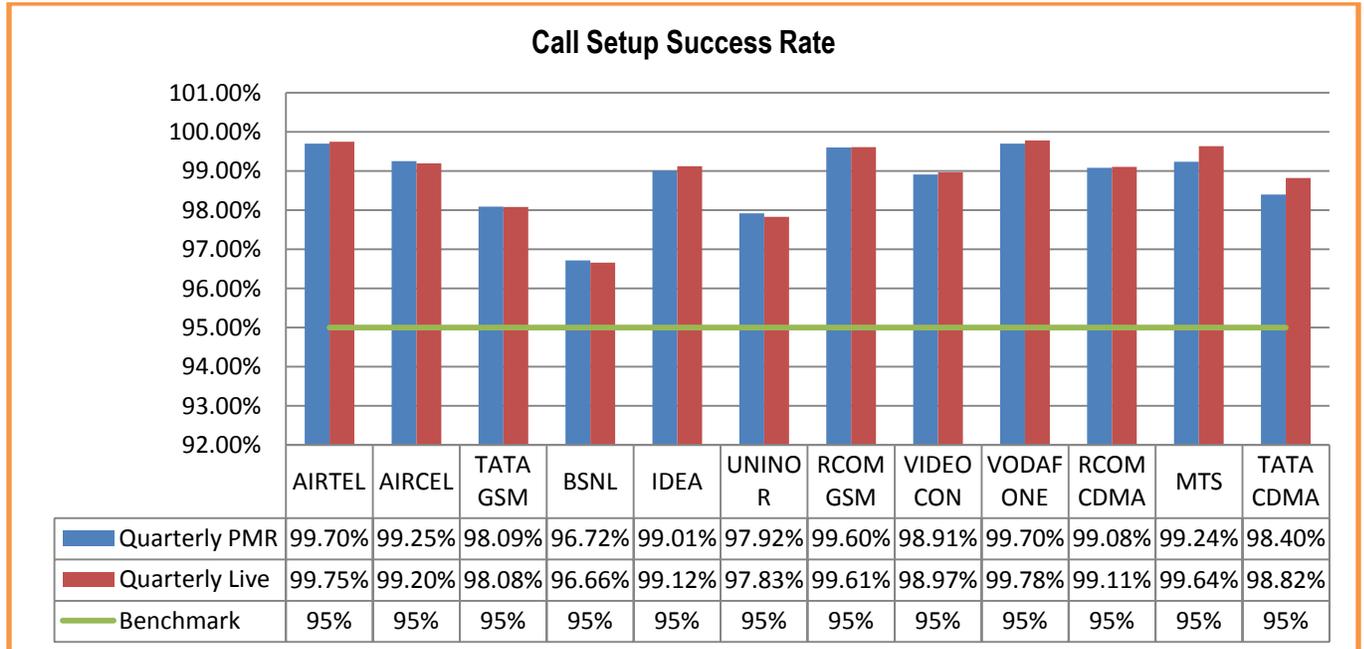
All operators are meeting the benchmarks.

2. WORST AFFECTED BTSs DUE TO DOWNTIME:



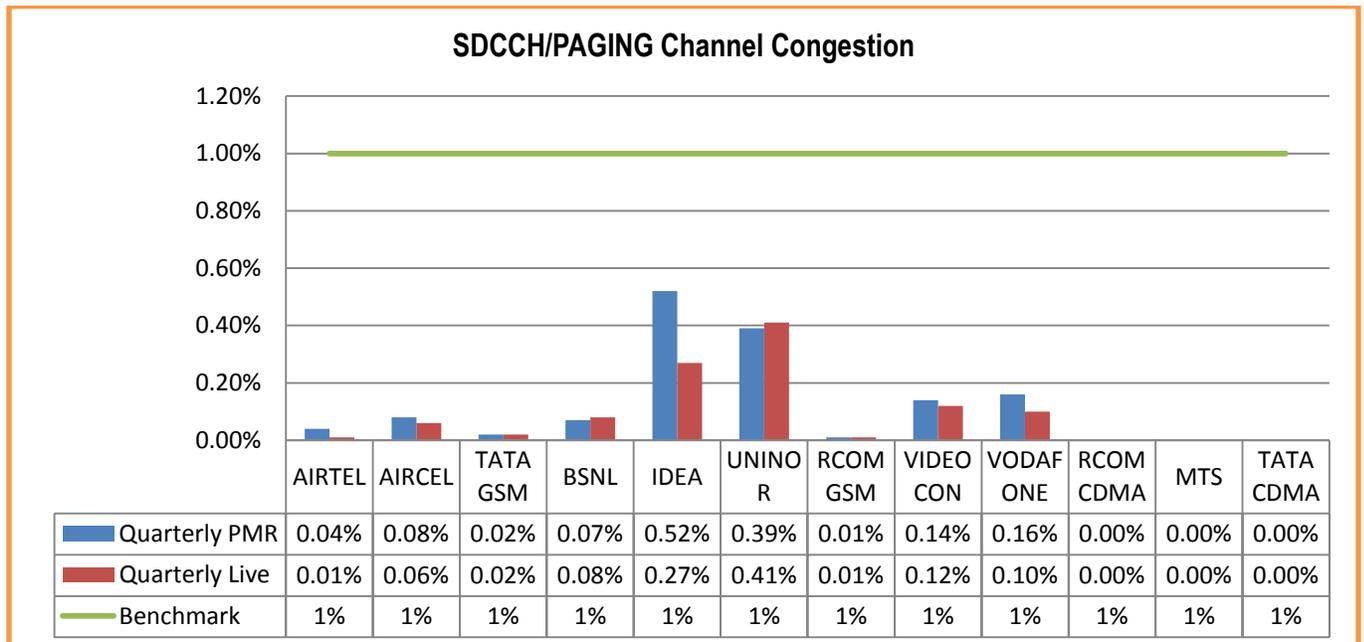
All operators are meeting the benchmarks.

3. CALL SETUP SUCCESS RATE:



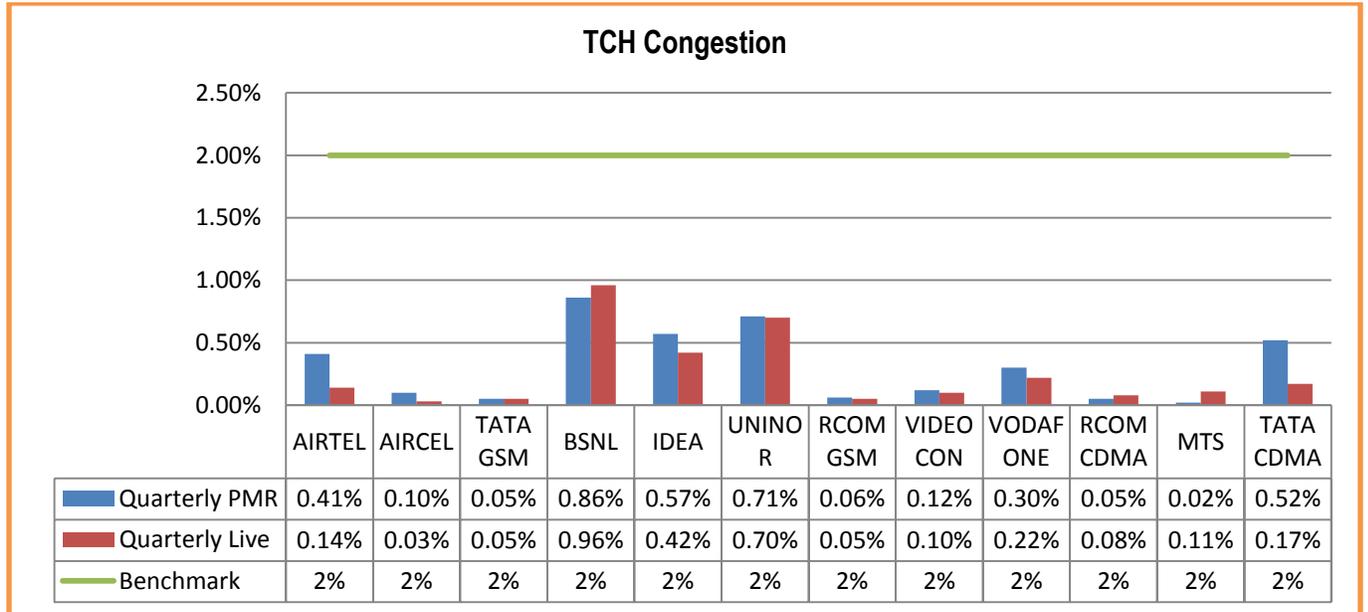
All operators are meeting the benchmarks.

4. SDCCH/PAGING CHANNEL CONGESTION:



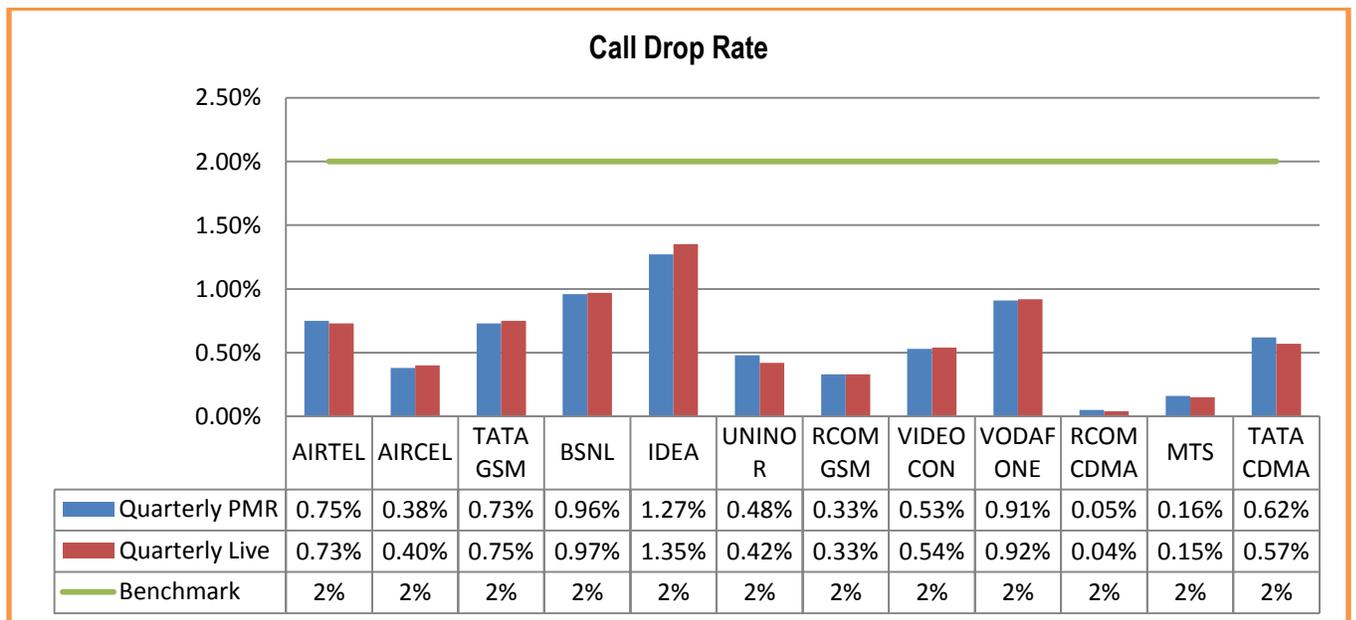
All operators are meeting the benchmarks.

5. TCH CONGESTION:



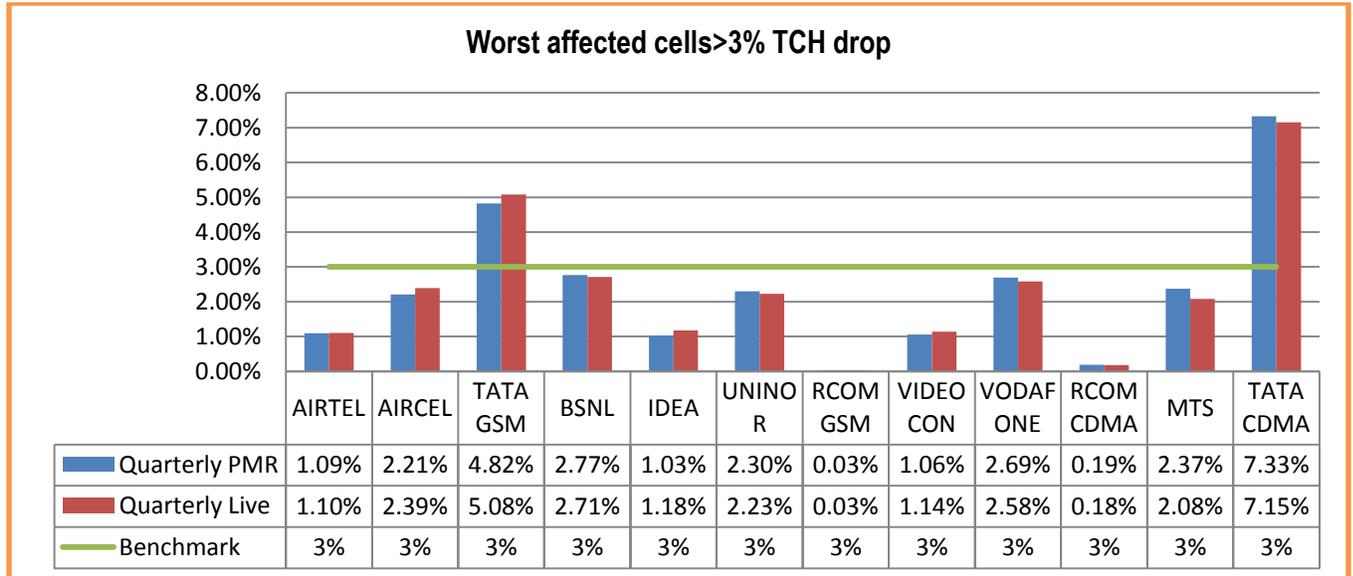
All operators are meeting the benchmarks.

6. CALL DROP RATE:



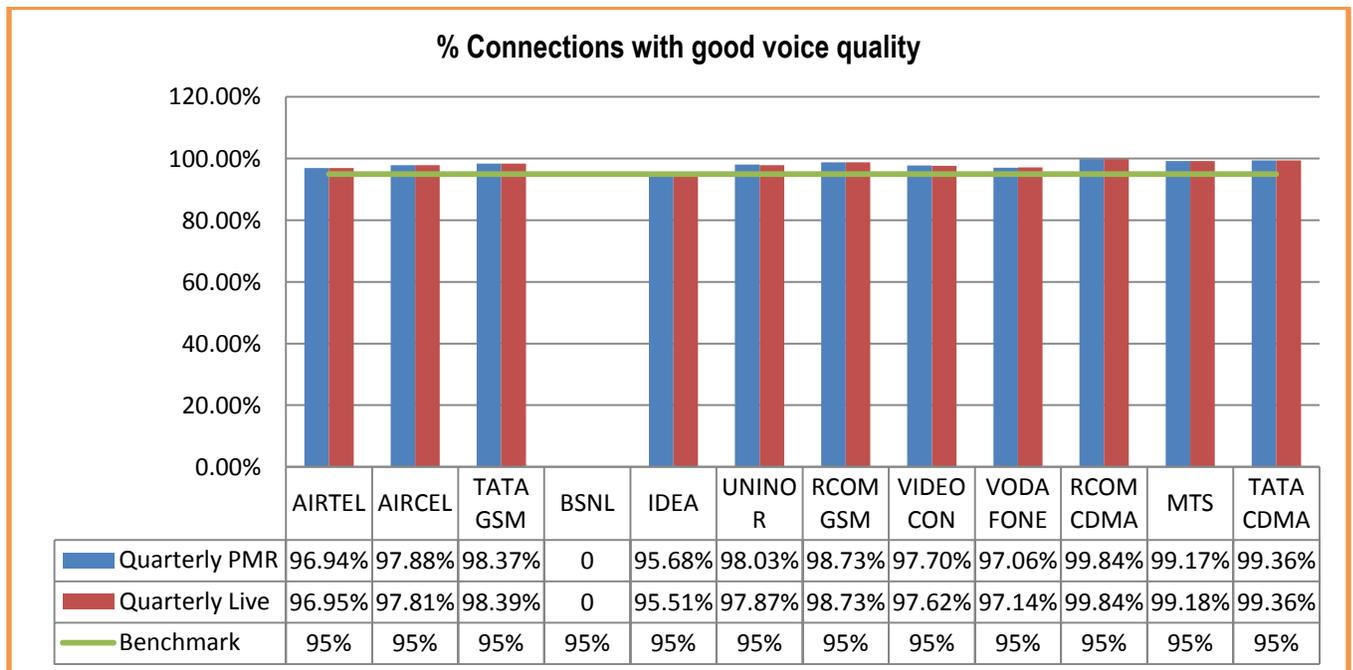
All operators are meeting the benchmarks.

7. WORST AFFECTED CELLS>3% TCH DROP:



All operators are meeting the benchmarks except 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.