



**Audit & Assessment of Quality of Service
Of
Cellular Mobile Telephone Service
For
Telecom Regulatory Authority of India
West Zone – Gujarat Service Area
(July 2015 – September 2015)**

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PREFACE

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

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

TUV-SUD South Asia carried out QoS audit as per the norms of TRAI in all the eight circles / services areas of the North Zone and four circles of the West Zone. This report details the performance of the various service providers in **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.

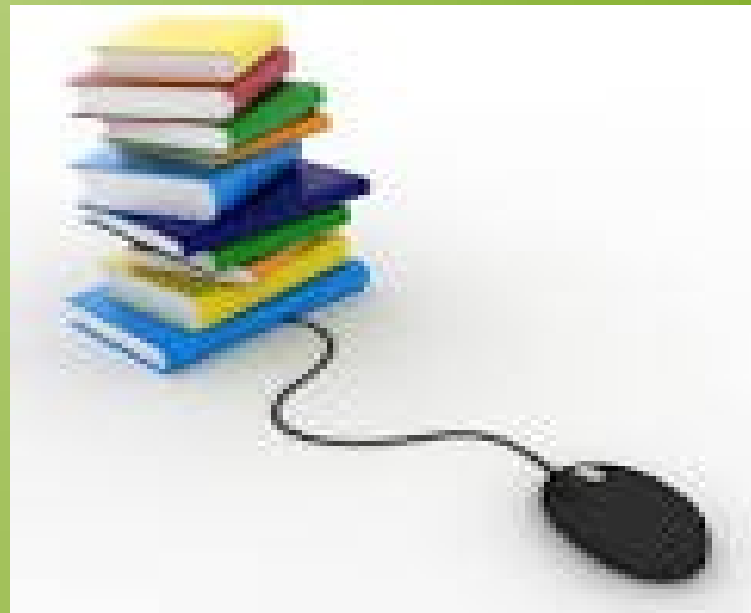
TRAI, the regulatory watch dog for the Quality of Service for the telecom services – Basic (Wire line), Cellular Mobile (Wireless) and Broadband has commissioned **M/s TUV-SUD South Asia Pvt. Ltd.** for conducting audit and assessment of quality of service of service providers, in terms of the benchmarks 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

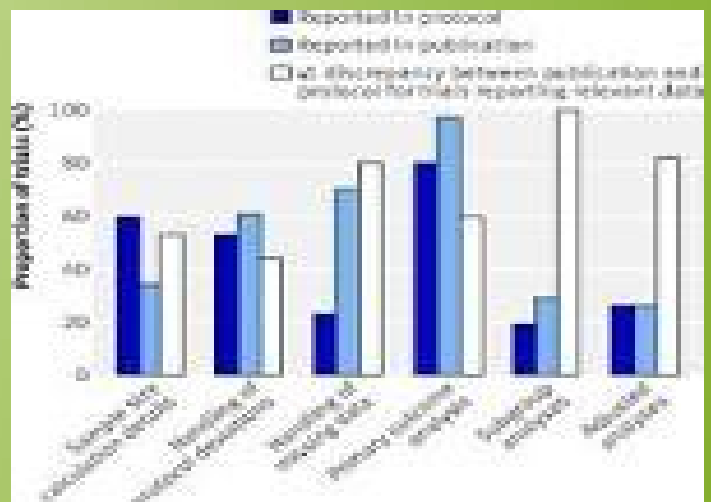
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

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 UP (E), UP (W), and MP&CG circles during the quarter July 2015 – September 2015.**

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

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

3. SAMPLE SIZE



3. SAMPLE SIZE

3.1 SAMPLING FOR CELLULAR MOBILE (WIRELESS) SERVICE PROVIDERS

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

Following are the various operators covered in Gujarat circle

Sl. No.	Name of Service Provider	Dates of live measurement Audit			Audit Location
		July -15	August -15	September -15	
GSM Operators					
1	AIRCEL	20th to 22nd July'15	24th to 26th Aug'15	14th To 16th Sept'15	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	13th to 15th July'15	26th to 28th Aug'15	15th To 17th Sept'15	Bharti Airtel Limited, 2nd Floor, Zodiac Square, Opposite Gurudwara, S.G Highway, Ahmedabad-380054
3	BSNL	14 to 16 July'15	12th to 14th Aug'15	15th To 17th Sept'15	BSNL, Vastrapur Telephone Exchange, Bima Nagar, Vastrapur, Ahmedabad.
4	VIDEOCON	15 to 17 July'15	26th to 28th Aug'15	14th To 16th Sept'15	Videocon Telecommunications Ltd, 4th floor, Campus Corner 2, Opp AUDA Garden, Prahladnagar Ahmedabad- 380 015, Gujarat
5	TATA GSM	14 to 16 July'15	17th To 19 Aug'15	14th To 16th Sept'15	Tata Teleservices Ltd, 2nd Floor- Citygold Building, Near Shyamal Cross Road, 132 Feet Ring Road, Ahmedabad
6	IDEA	15 to 17 July'15	24th to 26th Aug'15	15th To 17th Sept'15	Idea Cellular Ltd, Venus Atlantis, 2nd Floor, 100ft road, Prahlad Nagar, Ahmedabad-380015
7	RCOM GSM	13th to 15th July'15	26th to 28th Aug'15	16th To 18th Sept'15	Reliance Communications Limited, 103/106, Gate No: 6, Near Muthiyagaam Bus Stand, Naroda GIDC, Naroda, Ahmedabad- 382330
8	VODAFONE	20th to 22nd July'15	24th to 26th Aug'15	16th to 18th Sept'15	House A, Vodafone West Limited, Vodafone House Corporate Road, Prahladnagar , Off S. G. Highway, Ahmedabad -380051 Gujarat, India
9	UNINOR	21,22,23th July-2015	20,21,24th Aug-2015	20,21,24th Sep-2015	Telewings Communications Services Pvt Ltd. (Uninor), Welldone Technology Park Sec-48 Sohana Road Gurgaon
CDMA Operators					
10	MTS	22nd to 24th July'15	17th To 19 Aug'15	15th To 17th Sept'15	Sistema Shyam Teleservices Limited, C Block, Office No-2, 3rd Floor, 'The Acropolis Mall', Thaltej Cross Road, Ahmedabad- 380054
11	RCOM CDMA	13th to 15th July'15	26th to 28th Aug'15	16th To 18th Sept'15	Reliance Communications Limited, 103/106, Gate No: 6, Near Muthiyagaam Bus Stand, Naroda GIDC, Naroda, Ahmedabad- 382330
12	TATA CDMA	14 to 16 July'15	17th To 19 Aug'15	14th To 16th Sept'15	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 Sept. 2015.

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

3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES

- The QoS audit for basic (wire line) service is to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles only **once in a year**. **Based on this criterion, QoS audit for basic (wire line) service was not required to be done for Gujarat Circle in the quarter ended September- 2015, as the same has already been done during QE June 2015.**

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 **only once in a year**. **Based on this criterion, the QoS audit for Broadband service was not required to be done for Gujarat Circle in the quarter ended September- 2015, as the same has already been done during QE June 2015.**

4. EXECUTIVE SUMMARY



4. EXECUTIVE SUMMARY

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

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

1) Cellular Mobile Telephone Service:

(i) From analysis of monthly audit and 3 days live measurements results, it was concluded that performance of the operators in the Gujarat service area was 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) and 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 **5.29% and 7.60% respectively**. **Tata (CDMA)** also failed to meet the benchmark of Parameters **CSSR and TCH Congestion** with its performance as **92.07% and 6.97% respectively**.

In case of three days live assessment, it is found that the performance of all operators was satisfactory as they largely met the benchmarks except for the parameter **‘Worst affected cells> 3 % TCH drops’**, which could not be complied with by **Tata (GSM) and Tata (CDMA)** . The quarterly average performance of **Tata (GSM) and Tata (CDMA)** for this parameter was **5.45% and 7.07 % 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, **BSNL** could not meet the benchmark of **Metering and Billing credibility for pre-paid** with its performance level as **0.29%**.

Regarding parameters related to response time to customers for assistance, all service providers are in compliance with respect to the parameter Accessibility of call center. However, **Airtel, RCOM (GSM), Tata (GSM), RCOM (CDMA) and Tata (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 **84.97%, 79.65%, 82.52%, 80.34% and 93.41%** respectively, way below the benchmark of >95%.

The results for three days live measurements reveal that all operators have met the benchmarks for the parameters 'Accessibility to call center'. However, **Uninor, RCOM (GSM) and RCOM (CDMA)** failed to meet the benchmark of '**Call connection to operators (Voice to voice) within 90 seconds**' with their performance as **86.39%, 27.44% and 33.05%** respectively.

(iii) The drive test results suggest satisfactory working of the network of the service providers in all the SSAs where drive was conducted during the quarter. Only **BSNL** could not meet the benchmark of Parameters **Call drop rate** and **Voice Quality** with its performance level as **2.20%** and **94.84%** respectively in Jamnagar SSA.

Thus, taking cognizance on overall performance of the service providers, it was concluded that most of the service providers 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, CSSR and TCH Congestion** 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 **Calls answered by operators (Voice to Voice) and Billing complaint** 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	September-15	20 Hrs-21 Hrs
2	AIRCEL	September-15	20 Hrs-21 Hrs
3	TATA GSM	September-15	21 Hrs-22 Hrs
4	BSNL	September-15	21 Hrs-22 Hrs
5	IDEA	September-15	20 Hrs-21 Hrs
6	UNINOR	September-15	21 Hrs-22 Hrs
7	RCOM GSM	September-15	20 Hrs-21 Hrs
8	VIDEOCON	September-15	20 Hrs-21 Hrs
9	VODAFONE	September-15	20 Hrs-21 Hrs
CDMA Operators			
10	RCOM CDMA	September-15	19 Hrs-20 Hrs
11	MTS	September-15	19 Hrs-20 Hrs
12	TATA CDMA	September-15	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	15	115	7472	NSN	NSN
2	AIRCEL	1	6	828	ZTE	ZTE
3	TATA GSM	3	14	1920	Huawei	Huawei
4	BSNL	9	92	4441	Alcatel-Lucent	Alcatel-Lucent
5	IDEA	21	47	7023	Ericsson	Ericsson
6	UNINOR	8	20	3815	NSN	NSN+Huawei
7	RCOM GSM	5	18	2523	Huawei	Huawei
8	VIDEOCON	2	11	1950	Huawei	Huawei
9	VODAFONE	20	161	8254	NSN	NSN
CDMA Operators						
10	RCOM CDMA	7	3	1113	Lucent, ZTE, Ericsson, Huawei	Lucent, Huawei
11	MTS	1	3	577	ZTE	ZTE
12	TATA CDMA	5	6	578	Ericsson	Motorola, Huawei

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – JULY-15 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- JULY 15 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%	Jul-15	0.38%	0.06%	0.10%	2.15%	0.10%	0.23%	0.35%	0.13%	0.17%	0.40%	0.05%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Jul-15	1.83%	0.00%	0.00%	2.48%	0.26%	1.41%	0.44%	0.61%	0.00%	0.63%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Jul-15	99.41%	98.86%	98.23%	96.83%	98.63%	97.49%	99.42%	98.67%	99.24%	98.85%	99.85%	98.93%
	b) SDCCH/PAGING Channel congestion	<=1%	Jul-15	0.19%	0.08%	0.05%	0.15%	0.91%	0.49%	0.03%	0.39%	0.74%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Jul-15	1.55%	0.01%	0.06%	0.63%	1.00%	1.95%	0.25%	0.37%	0.76%	0.01%	0.00%	0.05%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Jul-15	0.73%	0.41%	0.85%	1.06%	1.08%	0.54%	0.27%	0.52%	0.78%	0.17%	0.01%	0.64%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Jul-15	1.23%	2.42%	5.29%	2.88%	1.44%	1.73%	0.01%	1.02%	2.14%	0.27%	0.49%	7.69%
	c) Connections with good voice quality	>=95%	Jul-15	97.07%	97.07%	98.76%	NP	96.29%	98.11%	98.71%	97.33%	97.44%	99.82%	99.05%	99.35%
4	No. of POI's having >=0.5% POI congestion		Jul-15	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 – AUGUST-15 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- AUGUST 15 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%	Aug-15	0.13%	0.02%	0.00%	1.83%	0.14%	0.23%	0.24%	0.10%	0.04%	0.24%	0.01%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Aug-15	0.66%	0.00%	0.05%	1.77%	0.86%	1.86%	0.40%	0.46%	0.00%	0.72%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Aug-15	99.52%	99.00%	98.28%	96.96%	98.84%	97.66%	99.39%	98.58%	99.53%	98.95%	96.82%	82.38%
	b) SDCCH/PAGING Channel congestion	<=1%	Aug-15	0.10%	0.04%	0.02%	0.13%	0.89%	0.35%	0.03%	0.40%	0.26%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Aug-15	1.01%	0.05%	0.04%	0.73%	0.76%	1.41%	0.21%	0.59%	0.47%	0.01%	0.00%	16.75%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Aug-15	0.75%	0.36%	0.81%	1.07%	0.98%	0.55%	0.31%	0.52%	0.74%	0.18%	0.06%	0.61%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Aug-15	1.19%	2.14%	5.12%	2.83%	1.30%	1.75%	0.03%	0.90%	1.85%	0.24%	0.45%	7.39%
	c) Connections with good voice quality	>=95%	Aug-15	97.04%	97.27%	98.80%	NP	96.36%	98.12%	98.66%	97.50%	97.48%	99.82%	99.15%	99.35%
4	No. of POI's having >=0.5% POI congestion		Aug-15	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 – SEPTEMBER- 15 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE - SEPTEMBER 15 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%	Sep-15	0.15%	0.03%	0.10%	1.88%	0.09%	0.17%	0.23%	0.09%	0.08%	0.29%	0.03%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Sep-15	0.50%	0.00%	0.05%	1.67%	0.36%	0.42%	0.24%	0.10%	0.24%	0.27%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Sep-15	98.89%	99.05%	98.14%	96.75%	98.72%	97.39%	99.39%	98.72%	99.56%	99.00%	99.80%	94.90%
	b) SDCCH/PAGING Channel congestion	<=1%	Sep-15	0.06%	0.07%	0.03%	0.16%	0.66%	0.47%	0.03%	0.41%	0.25%	0.00%	0.50%	0.00%
	c) TCH congestion	<=2%	Sep-15	0.66%	0.07%	0.06%	1.01%	0.78%	1.26%	0.21%	0.47%	0.44%	0.01%	0.01%	4.10%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Sep-15	0.80%	0.34%	0.88%	1.11%	1.08%	0.54%	0.25%	0.60%	0.85%	0.15%	0.01%	0.64%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Sep-15	1.36%	1.85%	5.46%	2.88%	1.26%	1.54%	0.01%	1.21%	2.58%	0.24%	0.00%	7.71%
	c) Connections with good voice quality	>=95%	Sep-15	96.73%	97.26%	98.75%	NP	95.82%	98.10%	98.57%	97.23%	97.23%	99.84%	99.11%	99.36%
4	No. of POI's having >=0.5% POI congestion		Sep-15	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- SEPTEMBER-15(JULY TO SEPTEMBER 2015 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	0.22%	0.04%	0.07%	1.95%	0.11%	0.21%	0.27%	0.11%	0.10%	0.31%	0.03%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	1.00%	0.00%	0.03%	1.97%	0.49%	1.23%	0.36%	0.39%	0.08%	0.54%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.27%	98.97%	98.22%	96.85%	98.73%	97.51%	99.40%	98.66%	99.44%	98.93%	98.82%	92.07%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.12%	0.06%	0.03%	0.15%	0.82%	0.44%	0.03%	0.40%	0.42%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	1.07%	0.04%	0.05%	0.79%	0.85%	1.54%	0.22%	0.48%	0.56%	0.01%	0.00%	6.97%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.76%	0.37%	0.85%	1.08%	1.05%	0.54%	0.28%	0.55%	0.79%	0.17%	0.03%	0.63%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	1.26%	2.14%	5.29%	2.86%	1.33%	1.67%	0.02%	1.04%	2.19%	0.25%	0.48%	7.60%
	c) Connections with good voice quality	>=95%	Quarterly	96.95%	97.20%	98.77%	NP	96.16%	98.11%	98.65%	97.35%	97.38%	99.83%	99.10%	99.35%
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 except Tata (CDMA), were comfortably meeting the benchmark of this parameter. Tata (CDMA) remained under performed by achieving the performance level as 92.07%.

- **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 except Tata (CDMA) met the TRAI specified benchmarks** on the congestion parameters. The performance of **Tata (CDMA)** was **6.97%** against the benchmark of <= 2%. 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 .03 %) was for MTS 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 **5.29% and 7.60%** 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.

- iv. POI congestion.

There was no congestion on individual POI links between a service provider vis-à-vis other service providers.

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



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

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

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE - JULY 15 MONTH															
Live measurement Data		Bench- mark	Average of 3 Days	AIRTEL	AIRCEL	TATA GSM	BSNL	IDEA	UNINOR	RCOM GSM	VIDEOCON	VODAFONE	RCOM CDMA	MTS	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Live data	0.09%	0.04%	0.08%	1.78%	0.07%	0.28%	0.42%	0.07%	0.05%	0.52%	0.03%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.04%	0.00%	0.00%	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.65%	98.86%	98.26%	97.92%	98.55%	97.53%	99.45%	98.81%	99.57%	98.96%	99.93%	99.05%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.07%	0.02%	0.01%	0.08%	0.40%	0.30%	0.03%	0.37%	0.31%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.61%	0.01%	0.04%	0.51%	1.10%	1.42%	0.23%	0.28%	0.43%	0.00%	0.00%	0.03%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.64%	0.43%	0.81%	1.10%	0.96%	0.62%	0.27%	0.50%	0.79%	0.71%	0.00%	0.57%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	0.83%	2.50%	5.37%	2.80%	0.94%	2.11%	0.00%	0.85%	2.11%	0.30%	0.38%	7.48%
	c) Connections with good voice quality	>=95%	Live data	97.24%	97.22%	98.80%	NP	96.45%	98.08%	98.76%	97.31%	97.32%	99.83%	99.27%	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.

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

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- AUGUST 15 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%	0.04%	0.00%	1.56%	0.06%	0.09%	0.31%	0.08%	0.03%	0.31%	0.03%	0.00%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.03%	0.00%	0.00%	0.00%	0.01%	0.00%	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	99.21%	99.06%	98.26%	97.21%	99.14%	97.60%	99.51%	98.75%	99.58%	98.75%	99.83%	98.93%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.13%	0.25%	0.01%	0.16%	0.22%	0.23%	0.02%	0.44%	0.29%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.48%	0.04%	0.03%	0.82%	0.51%	1.44%	0.22%	0.63%	0.42%	0.01%	0.00%	0.07%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.63%	0.34%	0.89%	1.06%	0.88%	0.57%	0.25%	0.51%	0.72%	0.75%	0.12%	0.63%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	1.05%	2.06%	5.80%	2.85%	1.11%	1.86%	0.00%	0.87%	1.76%	0.18%	0.38%	6.74%
	c) Connections with good voice quality	>=95%	Live data	97.75%	97.33%	98.73%	NP	96.71%	98.09%	98.90%	98.40%	97.64%	99.82%	99.05%	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) – SEPTEMBER-15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- SEPTEMBER 15 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	0.11%	0.01%	0.12%	1.71%	0.07%	0.25%	0.32%	0.05%	0.06%	0.38%	0.03%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.04%	0.00%	0.00%	0.00%	0.01%	0.00%	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	98.83%	99.06%	98.17%	96.80%	98.75%	97.77%	99.38%	98.54%	99.47%	99.21%	99.86%	98.99%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.07%	0.02%	0.02%	0.15%	0.34%	0.29%	0.03%	0.28%	0.40%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.91%	0.01%	0.04%	0.99%	0.76%	1.16%	0.23%	0.36%	0.53%	0.00%	0.00%	0.03%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.79%	0.33%	0.87%	1.10%	0.99%	0.57%	0.22%	0.61%	0.82%	0.56%	0.00%	0.57%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	1.19%	1.85%	5.17%	2.81%	0.95%	1.43%	0.01%	1.13%	2.19%	0.12%	0.38%	7.00%
	c) Connections with good voice quality	>=95%	Live data	96.69%	97.26%	98.74%	NP	95.93%	98.15%	98.58%	97.24%	97.33%	99.84%	98.97%	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.

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

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	0.09%	0.03%	0.07%	1.68%	0.07%	0.21%	0.35%	0.07%	0.05%	0.40%	0.03%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.04%	0.00%	0.00%	0.00%	0.01%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.23%	98.99%	98.23%	97.31%	98.81%	97.63%	99.45%	98.70%	99.54%	98.97%	99.87%	98.99%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.09%	0.10%	0.01%	0.13%	0.32%	0.27%	0.03%	0.36%	0.33%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.67%	0.02%	0.04%	0.77%	0.79%	1.34%	0.23%	0.42%	0.46%	0.00%	0.00%	0.04%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.69%	0.37%	0.86%	1.09%	0.94%	0.59%	0.25%	0.54%	0.78%	0.67%	0.04%	0.59%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	1.02%	2.14%	5.45%	2.82%	1.00%	1.80%	0.00%	0.95%	2.02%	0.20%	0.38%	7.07%
	c) Connections with good voice quality	>=95%	Quarterly	97.23%	97.27%	98.76%	NP	96.36%	98.11%	98.75%	97.65%	97.43%	99.83%	99.10%	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)**. The quarterly average performance of **Tata (GSM)** and **Tata (CDMA)** for this parameter was **5.45% and 7.07 %** 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- July 15 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		July-15	7252	826	1919	4399	6946	3821	2523	1971	8239	1113	578	580
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		July-15	20097	371	1413	68223	4895	6433	6302	1820	10192	3183	200	87
	c) BTS Accumulated Downtime	<=2%	July-15	0.38%	0.06%	0.10%	2.15%	0.10%	0.23%	0.35%	0.13%	0.17%	0.40%	0.05%	0.02%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		July-15	133	0	0	109	18	54	11	12	0	7	0	0
	e) Worst affected BTSs due to downtime	<=2%	July-15	1.83%	0.00%	0.00%	2.48%	0.26%	1.41%	0.44%	0.61%	0.00%	0.63%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	July-15	99.41%	98.86%	98.23%	96.83%	98.63%	97.49%	99.42%	98.67%	99.24%	98.85%	99.85%	98.93%
	b) SDCCH/PAGING Congestion	<=1%	July-15	0.19%	0.08%	0.05%	0.15%	0.91%	0.49%	0.03%	0.39%	0.74%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	July-15	1.55%	0.01%	0.06%	0.63%	1.00%	1.95%	0.25%	0.37%	0.76%	0.01%	0.00%	0.05%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	July-15	0.73%	0.41%	0.85%	1.06%	1.08%	0.54%	0.27%	0.52%	0.78%	0.17%	0.01%	0.64%
	b) Worst affected cells>3% TCH drop	<=3%	July-15	1.23%	2.42%	5.29%	2.88%	1.44%	1.73%	0.01%	1.02%	2.14%	0.27%	0.49%	7.69%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle- July 15 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%	July-15	97.07%	97.07%	98.76%	NP	96.29%	98.11%	98.71%	97.33%	97.44%	99.82%	99.05%	99.35%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		July-15	284	60	306	377	300	208	1	61	537	9	0	135
	e) Total no. of cells (Sector) in the licensed service area		July-15	23174	2478	5781	13097	20861	12049	7433	5987	25045	3339	86	1756
4	No. of POI's having >=0.5% POI congestion														
	No. of POI's having >=0.5% POI congestion		July-15	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		July-15	0	0	0	0	0	0	0	0	0	0	0	0
5	Network Data														
	a) Equipped Capacity of Network in Erlang		July-15	226056	31288	106357	317000	300111	149412	144000	85741	473472	144000	21000	96556
	b) Total traffic in TCBH in erlang (Avg.)		July-15	173391	8774	29912	85744	218566	181370	138587	29063	355450	32746	1181	12785
	c) Total no. of customers served (as per VLR) on last day of the month		July-15	7318684	9336	1322503	2553695	11641070	5114031	3476057	1123216	17706055	1187847	88264	233787

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

TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- Gujarat Circle- July-15 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	7468	826	1921	4390	6940	3822	2587	1971	8218	1115	578	580
	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	490	22	109	5614	333	767	787	99	284	415	14	5
	c) BTS Accumulated Downtime	<=2%	Live data	0.09%	0.04%	0.08%	1.78%	0.07%	0.28%	0.42%	0.07%	0.05%	0.52%	0.03%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	3	0	0	0	0	7	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.04%	0.00%	0.00%	0.00%	0.00%	0.18%	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	99.65%	98.86%	98.26%	97.92%	98.55%	97.53%	99.45%	98.81%	99.57%	98.96%	99.93%	99.05%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.07%	0.02%	0.01%	0.08%	0.40%	0.30%	0.03%	0.37%	0.31%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.61%	0.01%	0.04%	0.51%	1.10%	1.42%	0.23%	0.28%	0.43%	0.00%	0.00%	0.03%
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Live data	0.64%	0.43%	0.81%	1.10%	0.96%	0.62%	0.27%	0.50%	0.79%	0.71%	0.00%	0.57%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	0.83%	2.50%	5.37%	2.80%	0.94%	2.11%	0.00%	0.85%	2.11%	0.30%	0.38%	7.48%
	c) % of connections with good voice quality	>=95%	Live data	97.24%	97.22%	98.80%	NP	96.45%	98.08%	98.76%	97.31%	97.32%	99.83%	99.27%	99.36%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	193	62	310	368	587	254	0	51	527	10	0	131
	e) Total no. of cells (Sector) in the licensed service area		Live data	23302	2478	5768	13159	62608	12047	7445	5987	24967	3345	86	1752
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 - August 15 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		Aug-15	7469	827	1918	4418	6955	3813	2522	1971	8249	1113	577	580
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Aug-15	7312	121	44	60026	7019	6505	4558	1481	2305	1977	62	56
	c) BTS Accumulated Downtime	<=2%	Aug-15	0.13%	0.02%	0.00%	1.83%	0.14%	0.23%	0.24%	0.10%	0.04%	0.24%	0.01%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Aug-15	49	0	1	78	60	71	10	9	0	8	0	0
e) Worst affected BTSs due to downtime	<=2%	Aug-15	0.66%	0.00%	0.05%	1.77%	0.86%	1.86%	0.40%	0.46%	0.00%	0.72%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Aug-15	99.52%	99.00%	98.28%	96.96%	98.84%	97.66%	99.39%	98.58%	99.53%	98.95%	96.82%	82.38%
	b) SDCCH/PAGING Congestion	<=1%	Aug-15	0.10%	0.04%	0.02%	0.13%	0.89%	0.35%	0.03%	0.40%	0.26%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Aug-15	1.01%	0.05%	0.04%	0.73%	0.76%	1.41%	0.21%	0.59%	0.47%	0.01%	0.00%	16.75%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Aug-15	0.75%	0.36%	0.81%	1.07%	0.98%	0.55%	0.31%	0.52%	0.74%	0.18%	0.06%	0.61%
	b) Worst affected cells>3% TCH drop	<=3%	Aug-15	1.19%	2.14%	5.12%	2.83%	1.30%	1.75%	0.03%	0.90%	1.85%	0.24%	0.45%	7.39%
	c) % of connections with good voice quality	>=95%	Aug-15	97.04%	97.27%	98.80%	NP	96.36%	98.12%	98.66%	97.50%	97.48%	99.82%	99.15%	99.35%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Aug-15	277	53	295	363	271	210	2	54	465	8	0	124
e) Total no. of cells (Sector) in the licensed service area		Aug-15	23240	2479	5765	12817	20890	12022	7433	5987	25079	3339	86	1677	

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Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle - August 15 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		Aug-15	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Aug-15	0	0	0	0	0	0	0	0	0	0	0	0
5	Network Data														
	a) Equipped Capacity of Network in Erlang		Aug-15	268691	31324	106033	317000	298534	150269	144000	85986	475085	144000	21000	90115
	b) Total traffic in TCBH in erlang (Avg.)		Aug-15	173738	8786	28872	83410	229129	189294	138660	30100	354779	38745	1074	11424
	c) Total no. of customers served (as per VLR) on last day of the month		Aug-15	7417749	9143	1240223	2542358	11651587	5178136	3530809	1122997	17597693	1112164	79877	192483

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 - August 15 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	7469	827	1918	4400	6950	3814	2523	1971	8239	1113	577	580
	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	386	22	6	4948	302	254	571	115	182	246	11	2
	c) BTS Accumulated Downtime	<=2%	Live data	0.07%	0.04%	0.00%	1.56%	0.06%	0.09%	0.31%	0.08%	0.03%	0.31%	0.03%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	2	0	0	0	1	0	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.03%	0.00%	0.00%	0.00%	0.01%	0.00%	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	99.21%	99.06%	98.26%	97.21%	99.14%	97.60%	99.51%	98.75%	99.58%	98.75%	99.83%	98.93%
	b) SDCCCH/PAGING Congestion	<=1%	Live data	0.13%	0.25%	0.01%	0.16%	0.22%	0.23%	0.02%	0.44%	0.29%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.48%	0.04%	0.03%	0.82%	0.51%	1.44%	0.22%	0.63%	0.42%	0.01%	0.00%	0.07%
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Live data	0.63%	0.34%	0.89%	1.06%	0.88%	0.57%	0.25%	0.51%	0.72%	0.75%	0.12%	0.63%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	1.05%	2.06%	5.80%	2.85%	1.11%	1.86%	0.00%	0.87%	1.76%	0.18%	0.38%	6.74%
	c) % of connections with good voice quality	>=95%	Live data	97.75%	97.33%	98.73%	NP	96.71%	98.09%	98.90%	98.40%	97.64%	99.82%	99.05%	99.36%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	245	51	334	368	231	223	0	52	442	6	0	118
	e) Total no. of cells (Sector) in the licensed service area		Live data	23322	2481	5762	12916	20901	12019	7433	5988	25045	3339	86	1752
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: 5

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle – September 15 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		Sep-15	7472	828	1918	4441	7023	3815	2523	1950	8254	1113	577	578
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Sep-15	7814	193	1436	60251	4768	4590	4169	1205	4965	2293	138	114
	c) BTS Accumulated Downtime	<=2%	Sep-15	0.15%	0.03%	0.10%	1.88%	0.09%	0.17%	0.23%	0.09%	0.08%	0.29%	0.03%	0.03%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Sep-15	37	0	1	74	25	16	6	2	20.00	3	0	0
e) Worst affected BTSs due to downtime	<=2%	Sep-15	0.50%	0.00%	0.05%	1.67%	0.36%	0.42%	0.24%	0.10%	0.24%	0.27%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Sep-15	98.89%	99.05%	98.14%	96.75%	98.72%	97.39%	99.39%	98.72%	99.56%	99.00%	99.80%	94.90%
	b) SDCCH/PAGING Congestion	<=1%	Sep-15	0.06%	0.07%	0.03%	0.16%	0.66%	0.47%	0.03%	0.41%	0.25%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Sep-15	0.66%	0.07%	0.06%	1.01%	0.78%	1.26%	0.21%	0.47%	0.44%	0.01%	0.01%	4.10%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Sep-15	0.80%	0.34%	0.88%	1.11%	1.08%	0.54%	0.25%	0.60%	0.85%	0.15%	0.01%	0.64%

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Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle – September 15 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%	Sep-15	1.36%	1.85%	5.46%	2.88%	1.26%	1.54%	0.01%	1.21%	2.58%	0.24%	0.50%	7.71%	
	c) % of connections with good voice quality	>=95%	Sep-15	96.73%	97.26%	98.75%	NP	95.82%	98.10%	98.57%	97.23%	97.23%	99.84%	99.11%	99.36%	
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Sep-15	316	46	315	376	264	185	1	72	648	8	0	135	
	e) Total no. of cells (Sector) in the licensed service area		Sep-15	23303	2484	5764	13048	20969	12019	7434	5930	25094	3339	86	1751	
4	No. of POI's having >=0.5% POI congestion															
	No. of POI's having >=0.5% POI congestion		Sep-15	0	0	0	0	0	0	0	0	0	0	0	0	
	Name of POI not meeting the benchmark		Sep-15	0	0	0	0	0	0	0	0	0	0	0	0	
5	Network Data															
	a) Equipped Capacity of Network in Erlang		Sep-15	233792	31290	106080	317000	298281	150535	144000	84230	478950	144000	21000	95497	
	b) Total traffic in TCBH in erlang (Avg.)		Sep-15	170900	8693	30380	85914	236166	184455	117582	31224	352782	38102	1101	11863	
	c) Total no. of customers served (as per VLR) on last day of the month		Sep-15	7570158	8843	1254695	2532833	11948021	5235868	3142003	1139955	17707911	1143390	85845	222152	

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- September 15 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	7466	827	1918	4425	6975	3814	2523	1949	8249	1113	577	578
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Live data	583	7	172	5434	339	674	589	69	357	304	12	7
	c) BTS Accumulated Downtime	<=2%	Live data	0.11%	0.01%	0.12%	1.71%	0.07%	0.25%	0.32%	0.05%	0.06%	0.38%	0.03%	0.02%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	3	0	0	0	1	0	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.04%	0.00%	0.00%	0.00%	0.01%	0.00%	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	98.83%	99.06%	98.17%	96.80%	98.75%	97.77%	99.38%	98.54%	99.47%	99.21%	99.86%	98.99%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.07%	0.02%	0.02%	0.15%	0.34%	0.29%	0.03%	0.28%	0.40%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.91%	0.01%	0.04%	0.99%	0.76%	1.16%	0.23%	0.36%	0.53%	0.00%	0.00%	0.03%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.79%	0.33%	0.87%	1.10%	0.99%	0.57%	0.22%	0.61%	0.82%	0.56%	0.00%	0.57%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	1.19%	1.85%	5.17%	2.81%	0.95%	1.43%	0.01%	1.13%	2.19%	0.12%	0.38%	7.00%
	c) % of connections with good voice quality	>=95%	Live data	96.69%	97.26%	98.74%	NP	95.93%	98.15%	98.58%	97.24%	97.33%	99.84%	98.97%	99.36%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	277	46	298	366	199	172	1	67	548	4	0	122
	e) Total no. of cells (Sector) in the licensed service area		Live data	23307	2481	5765	13047	20983	12020	7434	5929	25079	3339	86	1744
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 OMCR (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 (JULY TO SEPTEMBER 2015 MONTHS AUDITED DATA):

QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES															
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	UNINOR	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
S/ N	Name of Parameter			GSM Operators							CDMA Operators				
Customer Service Quality Parameters															
Metering & Billing Credibility -Post Paid															
1	A) No. of bills issued during the quarter		GUJ	101	1360133	175668	NA	1588560	188664	191338	NA	5446751	185411	430661	41974
	B) No. of bills disputed including billing complaints during the quarter		GUJ	0	32	37	NA	768	165	5	NA	5354	52	398	4
	C)% of billing complaints during the quarter	<= 0.1%	GUJ	0.00%	0.00%	0.02%	NA	0.05%	0.09%	0.00%	NA	0.098%	0.03%	0.09%	0.01%
Metering & Billing Credibility -Pre Paid															
2	A) Total No. of Pre-paid customers at the end of the quarter		GUJ	16935	7260090	3063361	7082301	11063762	3573899	3233280	2438014	16985383	160601	1040861	252148
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		GUJ	0	62	8756	78	7586	3147	0	8	2803	28	337	0
	C) % of Pre-paid Charging Complaints	<= 0.1%	GUJ	0.00%	0.00%	0.29%	0.00%	0.07%	0.09%	0.00%	0.00%	0.02%	0.02%	0.03%	0.00%
Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints															
3	A) No. of Billing/Charging/Credit/Validity Complaints received during the quarter		GUJ	0	94	8793	78	21631	3312	5	8	8157	80	735	4
	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	94	8793	78	21627	3312	5	8	8157	80	735	4

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QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES

Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	UNINOR	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	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	94	8793	78	21631	3312	5	8	8157	80	735	4
	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%	99.98%	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	5356	1893396	347842	17423728	25962689	4695440	640304	198242	42136172	2603	295526	47273
	B) Total no. of calls successfully established to customer care/Call center		GUJ	5093	1893396	340025	17365286	25376244	4644545	629102	198242	42136172	2528	289956	46305
4	C) % Accessibility of Call centre /customer Care (Total call successfully established *100/ Total call attempt)	>=95%	GUJ	95.09%	100%	97.75%	99.66%	97.74%	98.92%	98.25%	100%	100%	97.12%	98.12%	97.95%
	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		GUJ	1667	3822110	2103830	3951743	7996976	1867205	1220872	785425	10353900	66886	182440	65673

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE

QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES															
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	UNINOR	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	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	1632	3247558	2012757	3812302	7933168	1487317	1007497	777906	10121742	64662	146581	61348
	F) % age of calls answered by operator(voice to voice) (Total call successfully established within 90 sec.*100 / Total call attempts)	>=95%	GUJ	97.90%	84.97%	95.67%	96.47%	99.20%	79.65%	82.52%	99.04%	97.76%	96.67%	80.34%	93.41%
Termination/closure of service															
5	A) Total No. of requests for Termination / Closure of service received during the quarter		GUJ	0	3853	10776	NA	12280	616	4053	NA	19064	6852	3003	1542
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		GUJ	0	3853	10776	NA	12278	616	4053	NA	19064	6852	3003	1542
	C) % of Termination/ Closure of service within 7 days	<=7days	GUJ	100%	100%	100%	NA	99.98%	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	0	1323	1302	NA	2450	1435	730	NA	6507	NA	1210	557
	B) No. of Payments/ Refunds Cleared during the quarter		GUJ	0	1323	1302	NA	2450	1435	730	NA	6507	NA	1210	557
	C) Time taken for refunds of deposits after closures.	100% within 60 days	GUJ	100%	100%	100%	NA	100%	100%	100%	NA	100%	NA	100%	100%

NA: Uninor and Videocon have no post-paid customers, so data for parameters related to post-paid bills not applicable for them. In case of Aircel, Post paid connections are being used for internal use only.

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

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

CSD 3 DAYS LIVE DATA FOR CELLULAR MOBILE TELEPHONE SERVICES – QE SEPTEMBER 2015															
3 days live CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	UNINOR	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
S/ N	Name of Parameter			GSM Operators									CDMA Operators		
Response time to customers for assistance															
1	Total no of calls attempted to customer care/Call center		GUJ	183	69853	10831	623538	779435	26245	19921	9700	1221501	179	3223	1360
	Total no. of calls successfully established to customer care/Call center		GUJ	174	69853	10704	621923	771848	25951	19749	9700	1221501	176	3159	1328
	% Accessibility of Call centre /customer Care (Total call successfully established*100 / Total call attempts)	>=95%	GUJ	95.08%	100.00%	98.83%	99.74%	99.03%	98.88%	99.14%	100.00%	100.00%	98.32%	98.01%	97.65%
	Total Calls reached to operator for Voice to Voice (Total call attempts)		GUJ	78	120668	75681	167744	268725	30820	34210	23119	335379	2161	4378	1941
	Total number of calls answered by the operator (Voice to voice) within 90 seconds		GUJ	77	118305	74009	144920	267718	8456	32982	23086	322084	2100	1447	1931
% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100 / Total call attempts)	>=95%	GUJ	98.72%	98.04%	97.79%	86.39%	99.63%	27.44%	96.4%	99.86%	96.04%	97.18%	33.05%	99.48%	

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, **BSNL** could not meet the benchmark of Metering and **Billing credibility for pre-paid** with its performance level as **0.29%**.

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, **Airtel, RCOM (GSM), Tata (GSM), RCOM (CDMA) and Tata (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 **84.97%, 79.65%, 82.52%, 80.34% and 93.41%** respectively, way below the benchmark of $>95\%$.

4. Termination/Closure of Service

In case of this parameters also, all service providers have settled the closure/termination within the benchmark of 100% in 7 days except Idea with marginally below the benchmark (99.98%).

5. Time Taken for Refund of deposits after closures

All operators, were found to have complied with the benchmark of 100% refund of deposits within 60 days of closure.

Live Measurements:

The results for three days live measurements reveal that all operators have met the benchmarks for the parameters 'Accessibility to call center'. However, **Uninor, 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 **86.39%, 27.44% and 33.05%** respectively.

6. LIVE CALLING ASSESSMENT



6. LIVE CALLING ASSESSMENT:

6.1 INTER OPERATOR CALLS ASSESSMENT:

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

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

The result of the testing revealed that the inter connection performance among the operators was satisfactory. Thus there was no remarkable problem in interconnection from one operator to other operators.

6.2 CUSTOMER CARE / HELPLINE ASSESSMENT:

LIVE CALLING TO CALL CENTRE													
Parameter	Circle Name	AIRCEL	AIRTEL	BSNL	UNINOR	IDEA	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	90	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	GUJ	100	100	100	100	100	90	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	60	100	100	100	100	50	100
Total number of calls answered by the operator (Voice to voice) within 90 seconds	GUJ	100	100	100	100	100	48	100	100	100	100	40	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%	80%	100%	100%	100%	100%	80%	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 satisfactory except RCOM (GSM & CDMA).

6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLIANTS:

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS													
Parameter	Circle Name	AIRCEL	AIRTEL	BSNL	UNINOR	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	Gujarat	0	32	37	NA	100	100	5	NA	100	52	100	4
Total No. of calls Answered	Gujarat	0	25	35	NA	100	100	5	NA	100	42	100	4
Resolution of Billing complaints	Gujarat	0	25	35	NA	100	100	5	NA	100	42	100	4
%age of cases resolved	Gujarat	100%	100%	100%	NA	100%	100%	100%	NA	100%	100%	100%	100%

To test the Service Providers performance on billing related complaints and their resolutions, TUV-SUD auditors conducted a customer feedback calling for about random 100 nos. of customers. However, in some cases, the number of customers contacted for verification was very less due to less number of billing complaints. During live calling, some of the customers did not attend the calls, so shortfall was made good by taking other complaints to make verification of 100 Complaints. Some of the complainants reported that they didn't exactly remember about the resolution of complaints. However, majority of the customers reported that the billing complaints were resolved to their satisfaction.

6.4 LEVEL -1 CALLING ASSESSMENT:

LEVEL 1 LIVE CALLING																	
Emergency no.	Month of Drive Test	SSA Name	Name of SDCA	No. of calls made	AIRCEL	AIRTEL	UNINOR	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	VIDEOCON	MTS	VODAFONE	
100	July-15	Surat SSA	Sayan	10	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓	
108			Surat	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1091			Bardoli	11	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1098			Mandvi	10	NC	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓
1095			Songadh	10	✓	✓	NC	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓
100	Aug-15	Vadodara SSA	Padra	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
108			Vadodara	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1091			Pavi jetpur	5	NC	✓	✓	✓	✓	✓	NC	NC	NC	NC	NC	NC	✓
1098			Chota Udaipur	8	NC	✓	✓	✓	✓	✓	✓	✓	NC	NC	NC	✓	✓
1095			Dabhoi	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100	Sep-15	Jamnagar SSA	Dhrol	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
108			Jamnagar	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1091			Jam Jodhpur	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓
1098			Bhanwad	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓
1095			lalpur	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	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 Surat, Vadodara and Jamnagar 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 **Surat, Vadodara** and **Jamnagar** in the months of July, August and September 2015 respectively. The total route Kms covered during drive tests in respective SSAs was **338 Kms, 400 Kms** and **400 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 SURAT SSA IN JULY 15 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	6	NC	90	25	94	24	128	25	116	25	99	25
		Major Roads	9	NC	101	25	102	27	130	25	111	25	105	25
		Within City	10	25	90	25	90	25	106	25	123	25	119	25
		Overall SSA	25	25	281	75	286	76	364	75	350	75	323	75
2	Blocked Call Rate	Highways	0.00%	NC	0.00%	0.00%	1.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	NC	0.00%	0.00%	0.98%	0.00%	0.00%	0.00%	0.90%	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%	0.70%	0.00%	0.00%	0.00%	0.29%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	0.00%	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%	NC	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%	2.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	0.70%	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	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	98.89%	NC	96.69%	96.36%	97.35%	97.67%	96.70%	99.51%	96.94%	99.05%	97.09%	99.20%
		Major Roads	99.17%	NC	96.89%	99.10%	98.25%	99.06%	98.39%	100.00%	97.72%	98.57%	98.26%	100.00%
		Within City	99.42%	99.50%	97.33%	99.57%	96.39%	98.90%	98.41%	99.33%	98.61%	99.20%	98.34%	100.00%
		Overall SSA	99.20%	99.50%	96.94%	98.50%	97.38%	98.46%	97.77%	99.60%	97.78%	98.94%	97.92%	99.69%
Service Coverage														
5	In door (>= -75dBm)	Highways	34.52%	NC	96.72%	96.22%	72.40%	95.10%	70.11%	100.00%	99.21%	99.93%	87.52%	92.42%
		Major Roads	39.21%	NC	95.11%	99.83%	71.89%	97.78%	80.73%	100.00%	98.79%	82.26%	82.85%	100.00%
		Within City	44.81%	100.00%	94.20%	92.87%	77.35%	97.62%	80.53%	99.61%	96.38%	99.84%	89.25%	99.73%
		Overall SSA	0.40%	100.00%	95.42%	96.10%	73.75%	96.68%	77.12%	99.87%	98.06%	94.08%	86.59%	96.89%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE

OPERATOR ASSISTED DRIVE TEST AT SURAT SSA IN JULY 15 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	84.03%	NC	99.73%	99.88%	94.26%	99.88%	93.26%	100.00%	99.94%	100.00%	97.83%	100.00%
		Major Roads	95.36%	NC	99.32%	100.00%	94.17%	99.54%	94.88%	100.00%	99.98%	99.79%	98.23%	100.00%
		Within City	81.74%	100.00%	99.57%	99.94%	96.79%	99.61%	94.98%	100.00%	98.98%	100.00%	98.74%	100.00%
		Overall SSA	0.88%	100.00%	99.54%	99.94%	95.01%	99.69%	94.37%	100.00%	99.61%	99.93%	98.27%	100.00%
	Outdoor- in city (>= -95dBm)	Highways	99.51%	NC	99.98%	100.00%	99.49%	100.00%	99.22%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	100.00%	NC	99.93%	100.00%	99.53%	100.00%	98.45%	100.00%	100.00%	99.98%	99.89%	100.00%
		Within City	99.32%	100.00%	99.91%	100.00%	99.90%	99.83%	98.99%	100.00%	99.89%	100.00%	99.98%	100.00%
		Overall SSA	1.00%	100.00%	99.94%	100.00%	99.63%	99.95%	98.89%	100.00%	99.96%	100.00%	99.96%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	100.00%	NC	100.00%	100.00%	98.94%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	100.00%	NC	100.00%	100.00%	99.02%	100.00%	100.00%	100.00%	99.10%	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	100.00%	100.00%	100.00%	100.00%	99.30%	100.00%	100.00%	100.00%	99.71%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Highways	100.00%	NC	100.00%	100.00%	98.96%	100.00%	100.00%	100.00%	99.59%	100.00%	100.00%	100.00%
		Major Roads	100.00%	NC	100.00%	100.00%	98.75%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	100.00%	100.00%	100.00%	100.00%	99.15%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	98.98%	100.00%	100.00%	100.00%	99.85%	100.00%	100.00%	100.00%

NA: Not Applicable

NC: No Coverage

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE

DRIVE TEST TABLE-1B

OPERATOR ASSISTED DRIVE TEST AT SURAT SSA IN JULY 15 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	137	25	117	25	82	25	88	25	74	25	114	31
		Major Roads	165	25	121	25	83	25	90	25	74	25	107	30
		Within City	140	25	121	25	72	25	93	25	65	25	120	26
		Overall SSA	442	75	359	75	237	75	271	75	213	75	341	87
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%	0.88%	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%	0.29%	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	99.63%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	NA	NA	NA	NA	NA	NA	99.93%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	NA	NA	NA	NA	NA	NA	99.89%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	NA	NA	NA	NA	NA	NA	99.82%	100.00%	100.00%	100.00%	100.00%	100.00%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	94.94%	98.27%	98.00%	99.98%	95.26%	98.09%	NA	NA	NA	NA	NA	NA
		Major Roads	96.09%	97.09%	96.66%	99.95%	95.25%	99.03%	NA	NA	NA	NA	NA	NA
		Within City	95.27%	96.53%	98.13%	99.00%	95.77%	99.84%	NA	NA	NA	NA	NA	NA
		Overall SSA	95.48%	97.37%	97.55%	99.65%	95.43%	98.98%	NA	NA	NA	NA	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Highways	84.99%	100.00%	62.22%	99.49%	97.18%	100.00%	76.39%	99.82%	85.51%	100.00%	81.65%	100.00%
		Major Roads	90.07%	99.89%	62.17%	98.22%	97.35%	99.98%	80.18%	100.00%	85.03%	100.00%	84.42%	100.00%
		Within City	91.14%	65.78%	68.55%	34.73%	98.78%	100.00%	83.78%	100.00%	84.34%	47.58%	85.00%	100.00%
		Overall SSA	88.81%	82.01%	64.31%	77.48%	97.77%	99.99%	80.25%	99.94%	84.96%	82.53%	83.67%	100.00%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE

OPERATOR ASSISTED DRIVE TEST AT SURAT SSA IN JULY 15 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	97.77%	100.00%	88.54%	100.00%	99.64%	100.00%	97.48%	99.89%	97.35%	100.00%	95.51%	100.00%
		Major Roads	99.24%	100.00%	90.02%	100.00%	99.65%	100.00%	97.82%	100.00%	96.47%	100.00%	94.87%	100.00%
		Within City	99.05%	98.12%	93.00%	95.33%	99.87%	100.00%	98.61%	100.00%	99.71%	99.35%	96.53%	100.00%
		Overall SSA	98.72%	99.02%	90.52%	98.44%	99.72%	100.00%	97.99%	99.96%	97.84%	99.78%	95.65%	100.00%
	Outdoor- in city (>= - 95dBm)	Highways	100.00%	100.00%	98.52%	100.00%	99.92%	100.00%	99.77%	99.94%	99.80%	100.00%	99.93%	100.00%
		Major Roads	100.00%	100.00%	99.37%	100.00%	99.94%	100.00%	99.75%	100.00%	99.34%	100.00%	99.82%	100.00%
		Within City	100.00%	100.00%	99.22%	99.97%	99.98%	100.00%	99.83%	100.00%	100.00%	100.00%	99.97%	100.00%
		Overall SSA	100.00%	100.00%	99.03%	99.99%	99.95%	100.00%	99.78%	99.98%	99.71%	100.00%	99.91%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		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	100.00%	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	99.18%	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	99.18%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	99.42%	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-SEPTEMBER- 2015-GUJARAT CIRCLE

DRIVE TEST TABLE-2A

OPERATOR ASSISTED DRIVE TEST AT VADODARA SSA IN AUGUST 15 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	67	25	103	25	86	27	89	25	86	25	72	25
		Major Roads	126	25	185	25	162	26	140	25	153	25	139	26
		Within City	128	25	185	25	166	26	131	25	156	25	153	25
		Overall SSA	321	75	473	75	414	79	360	75	395	75	364	76
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%	1.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	0.48%	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%	1.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	0.00%	0.00%	0.00%	0.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	0.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	0.72%	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	97.54%	98.57%	97.30%	98.90%	97.72%	99.82%	97.39%	98.38%	97.57%	99.39%	97.54%	98.57%
		Major Roads	98.06%	99.43%	97.39%	99.61%	96.97%	98.81%	97.88%	99.44%	98.41%	99.31%	97.84%	100.00%
		Within City	98.49%	99.64%	97.89%	99.52%	99.40%	99.85%	98.16%	99.35%	98.60%	99.46%	98.76%	100.00%
Overall SSA		98.12%	99.19%	97.57%	99.37%	97.92%	99.51%	97.86%	99.06%	98.30%	99.39%	98.18%	99.47%	
5	Service Coverage													
	In door (>= -75dBm)	Highways	75.04%	89.02%	95.56%	99.86%	91.16%	94.50%	82.18%	42.15%	98.82%	99.99%	81.70%	100.00%
		Major Roads	76.11%	92.94%	95.45%	100.00%	79.43%	91.61%	83.79%	50.65%	97.87%	99.94%	76.65%	100.00%
		Within City	76.12%	80.62%	95.11%	96.94%	85.48%	88.20%	80.88%	14.49%	98.23%	99.51%	93.98%	90.00%
		Overall SSA	75.88%	87.56%	95.34%	99.33%	84.04%	91.33%	82.35%	35.78%	98.22%	99.81%	85.39%	97.13%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE



OPERATOR ASSISTED DRIVE TEST AT VADODARA SSA IN AUGUST 15 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	95.27%	99.55%	99.78%	100.00%	99.46%	100.00%	96.81%	98.80%	99.97%	100.00%	97.17%	100.00%
		Major Roads	97.34%	99.86%	99.66%	100.00%	97.51%	99.15%	98.03%	99.39%	99.93%	100.00%	97.33%	100.00%
		Within City	96.01%	99.92%	99.59%	100.00%	98.41%	99.87%	97.10%	89.99%	99.95%	99.94%	99.82%	100.00%
		Overall SSA	96.38%	99.78%	99.66%	100.00%	98.45%	99.68%	97.39%	96.06%	99.95%	99.98%	98.40%	100.00%
	Outdoor- in city (>= -95dBm)	Highways	99.81%	100.00%	99.94%	100.00%	99.93%	100.00%	99.86%	99.98%	100.00%	100.00%	100.00%	100.00%
		Major Roads	99.78%	100.00%	99.95%	100.00%	99.94%	100.00%	99.83%	100.00%	100.00%	100.00%	99.98%	100.00%
		Within City	99.70%	100.00%	99.93%	100.00%	99.89%	100.00%	99.77%	99.83%	99.99%	100.00%	100.00%	100.00%
		Overall SSA	99.76%	100.00%	99.94%	100.00%	99.95%	100.00%	99.82%	99.94%	100.00%	100.00%	99.99%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		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	100.00%	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	100.00%	100.00%	100.00%	100.00%	99.33%	100.00%	100.00%	100.00%	100.00%	100.00%	99.28%	100.00%
		Major Roads	100.00%	100.00%	100.00%	100.00%	96.46%	100.00%	98.57%	100.00%	100.00%	100.00%	99.45%	100.00%
		Within City	100.00%	100.00%	100.00%	100.00%	97.57%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	97.54%	100.00%	99.40%	100.00%	100.00%	100.00%	99.63%	100.00%

NA: Not Applicable

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE

DRIVE TEST TABLE-2B

OPERATOR ASSISTED DRIVE TEST AT VADODARA SSA IN AUGUST 15 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	27	155	25	76	26	71	25	88	25	66	25
		Major Roads	150	26	94	25	181	25	171	25	114	25	134	26
		Within City	129	26	143	25	191	26	149	25	118	25	140	27
		Overall SSA	349	79	392	75	448	77	391	75	320	75	340	78
2	Blocked Call Rate	Highways	1.43%	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	0.29%	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%	0.55%	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%	0.22%	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	99.92%	100.00%	99.83%	100.00%	99.69%	100.00%
		Major Roads	NA	NA	NA	NA	NA	NA	99.89%	100.00%	99.93%	99.97%	99.79%	100.00%
		Within City	NA	NA	NA	NA	NA	NA	99.93%	100.00%	99.77%	100.00%	99.87%	100.00%
		Overall SSA	NA	NA	NA	NA	NA	NA	99.91%	100.00%	99.84%	99.99%	99.80%	100.00%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	96.95%	97.32%	98.48%	99.98%	95.55%	98.80%	NA	NA	NA	NA	NA	NA
		Major Roads	96.49%	99.65%	98.80%	99.67%	96.96%	99.75%	NA	NA	NA	NA	NA	NA
		Within City	96.86%	99.70%	98.40%	100.00%	97.35%	99.82%	NA	NA	NA	NA	NA	NA
		Overall SSA	96.73%	98.92%	98.53%	99.88%	96.94%	99.44%	NA	NA	NA	NA	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Highways	83.04%	68.52%	86.60%	100.00%	98.46%	99.49%	85.92%	99.77%	82.99%	100.00%	83.61%	100.00%
		Major Roads	81.98%	99.90%	80.12%	100.00%	99.25%	100.00%	74.44%	97.32%	65.21%	72.29%	78.08%	95.01%
		Within City	81.62%	100.00%	85.81%	97.37%	99.18%	28.23%	90.94%	96.52%	39.42%	100.00%	89.39%	76.42%
		Overall SSA	82.01%	89.76%	84.18%	99.12%	99.08%	52.73%	82.97%	97.78%	56.36%	97.23%	83.99%	91.59%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE

OPERATOR ASSISTED DRIVE TEST AT VADODARA SSA IN AUGUST 15 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	97.45%	99.35%	98.33%	100.00%	99.78%	99.70%	99.35%	99.85%	95.03%	100.00%	97.10%	100.00%
		Major Roads	96.45%	100.00%	97.37%	100.00%	99.89%	100.00%	94.40%	98.62%	88.52%	99.50%	95.84%	100.00%
		Within City	97.11%	100.00%	98.46%	100.00%	99.94%	96.30%	99.61%	98.58%	94.97%	100.00%	99.40%	99.71%
		Overall SSA	96.92%	99.79%	98.05%	100.00%	99.89%	98.27%	97.35%	98.98%	93.27%	99.83%	97.60%	99.92%
	Outdoor- in city (>= - 95dBm)	Highways	100.00%	100.00%	99.84%	100.00%	99.96%	100.00%	99.92%	99.94%	99.89%	100.00%	100.00%	100.00%
		Major Roads	100.00%	100.00%	99.91%	100.00%	99.98%	100.00%	99.78%	99.52%	97.93%	100.00%	99.97%	100.00%
		Within City	100.00%	100.00%	99.87%	100.00%	99.99%	100.00%	99.88%	99.54%	99.86%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	99.87%	100.00%	99.98%	100.00%	99.85%	99.66%	99.36%	100.00%	99.99%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	98.57%	100.00%	100.00%	100.00%	100.00%	96.15%	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%	96.15%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	99.71%	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	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	99.18%	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	99.68%	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-SEPTEMBER- 2015-GUJARAT CIRCLE

DRIVE TEST TABLE-3A

OPERATOR ASSISTED DRIVE TEST AT JAMNAGAR SSA IN SEPTEMBER 15 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	48	25	155	25	64	25	73	25	62	25	68	25
		Major Roads	81	25	97	25	123	25	106	25	104	25	129	25
		Within City	121	25	137	25	131	25	120	25	160	25	159	25
		Overall SSA	250	75	389	75	318	75	299	75	326	75	356	75
2	Blocked Call Rate	Highways	0.00%	0.00%	0.00%	0.00%	3.13%	0.00%	1.37%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	0.00%	0.00%	0.00%	2.44%	0.00%	0.94%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	0.00%	0.00%	0.00%	0.00%	2.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	2.52%	0.00%	0.67%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	0.00%	0.00%	0.00%	0.00%	1.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	0.00%	0.00%	0.00%	2.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	0.00%	0.00%	0.00%	0.00%	2.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	2.20%	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	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	97.60%	99.63%	97.64%	98.17%	95.95%	98.33%	96.57%	99.37%	98.21%	99.14%	97.71%	99.09%
		Major Roads	98.23%	99.66%	97.42%	99.70%	94.83%	99.33%	96.92%	99.72%	98.29%	99.14%	97.96%	100.00%
		Within City	98.23%	98.16%	97.89%	96.65%	94.34%	96.45%	97.94%	97.80%	97.41%	96.74%	97.87%	99.26%
		Overall SSA	98.11%	99.15%	97.68%	98.25%	94.84%	98.01%	97.27%	98.76%	97.84%	98.34%	97.87%	99.28%
Service Coverage														
5	In door (>= -75dBm)	Highways	72.09%	98.63%	82.61%	99.81%	49.31%	99.76%	60.04%	99.30%	96.96%	99.97%	74.50%	100.00%
		Major Roads	75.28%	84.56%	83.40%	99.75%	69.88%	62.04%	56.86%	29.63%	95.28%	99.58%	81.44%	98.21%
		Within City	73.19%	79.54%	79.83%	99.47%	44.64%	84.02%	53.95%	76.94%	98.24%	99.47%	84.58%	100.00%
		Overall SSA	73.65%	87.77%	81.67%	99.68%	54.77%	82.04%	56.95%	68.62%	97.06%	99.68%	81.51%	99.70%

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE

OPERATOR ASSISTED DRIVE TEST AT JAMNAGAR SSA IN SEPTEMBER 15 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	93.02%	100.00%	98.60%	100.00%	90.59%	100.00%	94.57%	100.00%	99.93%	100.00%	92.16%	100.00%
		Major Roads	95.62%	100.00%	98.68%	100.00%	93.27%	100.00%	92.06%	96.16%	99.91%	99.97%	96.74%	100.00%
		Within City	94.96%	99.76%	98.20%	100.00%	89.47%	100.00%	92.22%	99.52%	99.95%	99.98%	97.72%	100.00%
		Overall SSA	94.80%	99.92%	98.46%	100.00%	91.08%	100.00%	92.95%	98.56%	99.93%	99.99%	96.30%	100.00%
	Outdoor- in city (>= -95dBm)	Highways	98.97%	100.00%	99.94%	100.00%	100.00%	100.00%	99.47%	100.00%	100.00%	100.00%	98.55%	100.00%
		Major Roads	99.63%	100.00%	99.98%	100.00%	100.00%	100.00%	99.63%	100.00%	100.00%	100.00%	99.63%	100.00%
		Within City	99.64%	100.00%	99.84%	100.00%	100.00%	100.00%	99.74%	100.00%	100.00%	100.00%	99.86%	100.00%
		Overall SSA	99.51%	100.00%	99.91%	100.00%	100.00%	100.00%	99.61%	100.00%	100.00%	100.00%	99.53%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.63%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.06%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	100.00%	100.00%	100.00%	100.00%	98.47%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	99.37%	100.00%	99.33%	100.00%	100.00%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Highways	100.00%	100.00%	100.00%	100.00%	100.00%	93.33%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	100.00%	100.00%	100.00%	100.00%	99.56%	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%	98.99%	100.00%	100.00%	100.00%
		Overall SSA	100.00%	100.00%	100.00%	100.00%	99.80%	94.12%	100.00%	100.00%	99.50%	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.

AUDIT & ASSESSMENT OF QOS FOR QE-SEPTEMBER- 2015-GUJARAT CIRCLE

DRIVE TEST TABLE-3B

OPERATOR ASSISTED DRIVE TEST AT JAMNAGAR SSA IN SEPTEMBER 15 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	60	25	99	25	89	25	43	25	44	25	57	25
		Major Roads	101	25	72	25	117	25	85	25	88	NC	115	25
		Within City	139	25	138	25	145	25	116	25	101	25	146	25
		Overall SSA	300	75	309	75	351	75	244	75	233	50	318	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%	NC	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%	NC	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	99.94%	100.00%	NA	NA	100.00%	100.00%
		Major Roads	NA	NA	NA	NA	NA	NA	99.98%	100.00%	NA	NA	100.00%	100.00%
		Within City	NA	NA	NA	NA	NA	NA	100.00%	99.87%	NA	NA	100.00%	100.00%
		Overall SSA	NA	NA	NA	NA	NA	NA	99.98%	99.96%	NA	NA	100.00%	100.00%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	98.35%	99.09%	97.10%	97.74%	96.64%	96.09%	NA	NA	99.17%	99.93%	NA	NA
		Major Roads	98.02%	99.57%	96.53%	97.50%	96.31%	99.74%	NA	NA	97.06%	NC	NA	NA
		Within City	96.73%	98.36%	96.76%	99.59%	97.26%	98.24%	NA	NA	98.43%	99.86%	NA	NA
		Overall SSA	97.59%	99.01%	96.81%	98.28%	96.79%	98.00%	NA	NA	98.08%	99.90%	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Highways	91.34%	99.47%	80.44%	99.70%	97.04%	97.85%	82.94%	99.55%	94.12%	100.00%	86.28%	100.00%
		Major Roads	91.65%	99.95%	74.40%	92.93%	96.83%	100.00%	95.53%	99.26%	89.08%	NC	89.28%	100.00%
		Within City	91.06%	66.50%	75.02%	96.35%	99.36%	100.00%	91.09%	94.75%	83.09%	75.32%	84.84%	37.59%
		Overall SSA	91.35%	76.41%	76.62%	96.33%	97.93%	99.27%	91.20%	97.79%	88.76%	87.66%	86.70%	86.58%

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OPERATOR ASSISTED DRIVE TEST AT JAMNAGAR SSA IN SEPTEMBER 15 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	98.60%	100.00%	96.59%	100.00%	99.33%	99.11%	98.65%	99.96%	99.98%	100.00%	97.55%	100.00%
		Major Roads	98.68%	100.00%	95.49%	100.00%	99.86%	100.00%	99.74%	99.85%	99.47%	NC	98.48%	100.00%
		Within City	98.50%	99.77%	94.98%	100.00%	99.94%	100.00%	99.55%	100.00%	98.90%	98.97%	98.28%	99.65%
		Overall SSA	98.59%	97.96%	95.69%	100.00%	99.76%	99.70%	99.46%	99.94%	99.45%	99.49%	98.22%	99.92%
	Outdoor- in city (>= -95dBm)	Highways	99.87%	100.00%	99.70%	100.00%	99.77%	100.00%	99.90%	100.00%	100.00%	100.00%	99.98%	100.00%
		Major Roads	99.84%	100.00%	99.68%	100.00%	100.00%	100.00%	99.90%	99.87%	100.00%	NC	99.97%	100.00%
		Within City	99.80%	100.00%	99.69%	100.00%	99.97%	100.00%	99.88%	100.00%	100.00%	100.00%	99.99%	100.00%
		Overall SSA	99.84%	99.76%	99.69%	100.00%	99.93%	100.00%	99.89%	99.95%	100.00%	100.00%	99.98%	100.00%
6	Call Setup Success Rate (>=95%)	Highways	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Major Roads	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NC	100.00%	100.00%
		Within City	98.56%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	99.33%	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	98.97%	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%	NC	100.00%	100.00%
		Within City	99.47%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA	99.51%	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

7.1 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

DRIVE TEST ROUTE OF JULY TO SEPTEMBER 15 – 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
Surat	Surat & Sayan / 120 KM	Surat:-Adajan ,Dabhoi road ,karargam ,gidc katargam ,Varacha road ,Simdagam ,Punagam ,Parvat patia ,Limbayat ,Aass pass ,Godadara bridge ,Railway station ,Textile market ,Navsari bazar ,Khatodara ,Bhatar Road ,Udhna ,Tadwadi ,Palanpur jakatnaka ,Rander road. Sayan:-Sayan-kathor road ,sayan-shekhpor road ,Railway station ,Janta nagar ,DRGD High school ,Deled Patia ,Hazirz-sayan road ,Parya ,jeevan prakash hospital ,	Imperial square Mall/Star bazaar , Surat	Bardoli & Mandvi / 118 KM	Bardoli :-Bardoli sugar factory ,Ram nagar ,PRB Arts college ,Mahatma gandhi road , PTC College ,Police line ,Upli bazar ,shaahtri road , suthar faliya road ,Station road ,Railway station ,Baben village road ,Bardoil varad road ,Mindhola bridge. Mandvi:-Rameshwer Road ,DC Shah college ,Soni faliya road ,High school road ,Police line road , B B Arts college ,Zankhuuav mandvi road , Bus stand mandvi	Sardar Arcade Mall Bardoli	Valod ,Vyara & Sogandh / 100 KM	Vyara:-Kanpura ,Main bazar road Vyara ,Vyara fort ,Girdhar nagar ,Gov.Polytechni Vyara ,Agricultural Univercity ,Panvadi ,Unai Naka ,Naw dhodiyauaad st , Bhatpur road ,Ukai Road , Railway station Songadh:-Bapa sitaram nagar road ,Junagam main road ,Hathi faliya road ,Jaya kaka nagar marg ,Keshriya chwok ,SBI Road ,Ukai road ,Shivaji nagar	SAI Mall Vyara
Vadodara	Vadodara & Padara / 150 KM	Vadodara:- Amit Nagar , New Sama ,Gorva Road , Akota , Makarpura , Waghodia , Vrajpark ,Ajwa Road ,Channi Road Padara:- Ambawadi Socity , Navaghari , Jaspur Road , Industrial Area , Sokhda rd	Centre Square Mall , Vadodara	Pavi jetpur , Chhota Udaipur & Daboi / 130 KM	Chota Udaipur:- Gurukrupa Society ,Maniyar faliya , Nirmal society , Natvarpura , Rahwa Colony , Royal Palace , Sardar Nagar society , Shastri Bag garden Dabhoi:- Shinor chokdi , Sarita nagar Society , Mohan	Radhe Complex , Dabhoi	Saavli , Waghghodia & Karjan / 120 KM	Waghghodia:- Waghghodia dabhoi rd , Madodhar , Apollo Tyres Ltd , Hero Cycle Ltd , Shankar Packagings Limited , L & T Techno Park , Parul Group Of Institutes Karjan:- Santosh Nagar ,	Krishna complex ,vaghghodia

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DRIVE TEST ROUTE OF JULY TO SEPTEMBER 15 – 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
		, Padra road , Suvarnapuri , voda colony			park society , Jainawaga , Taiwaga , Vishalad waga , Waghodia Dabhoi ring road , Vega road			Jalaramnagar Talav , Nava Bajar , Juna Bajar , Karjan nu Talav , Sushil Nagar ,Bodana , Over Brigh Joent , Dharmanagar Society , Jalaram Nagar bus stop	
Jamnagar	Jamnagar ,dhrol / 170Km	Jamnagar:- Mayurnagar ,Patel colony ,Gautam buddha community hall ,Patrakar colony ,Lakhota palace and museum ,Krishnanagar ,Ranjitnagar ,Oswal colony ,Maheshwari nagar Dhrol:-Nagar naku ,Fulvadi road ,Jodiya ,Fatehpura , Kamala nehru park ,Kharva rd	Crystal Mall , Jamnagar	JamJodhpur , Bhanwad , Lalpur / 130 Km	Jamjodhpur:-Makadiyawadi ,Kharavad , Meera park ,Master colony , Vrundavan nagar ,Railway station , Lalpur:-Marketing yard ,Sahkar park ,umiyadham ,Dara nagar ,Chor colony ,Indraprasth complex Bhanvad:-Verad naka ,Bhikhubhai chowk ,Sonavadi ,Jalaram road ,Bhanvadiya colony ,shivam park ,Devdi society ,Butvad rd	Iscon Plaza , jamjodhpur	Jamkhamb halia , JamKalyan pur / 100 KM	Khambaliya:-Navapara ,Yogeshwar nagar ,Zavari Bazar ,Bhagvati hall ,Darbar gadh ,GIDC Jamkalyanpur	Shri Dwarkadash ,Baraye Shoping Center , Jamkhamb alia

7.2 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF SURAT SSA (JULY-15)

S. No	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	Aircel	Surat & Sayan	NC	Bardoli & Mandvi	NC	Valod, vyara, Songadh	NC in Valod, Vyara SDCA
2	Airtel Bharti		Surat SDCA : Poor Rx Quality near Kim-sayan road, olpan-sayan road, Sayan. Near madhuvan park, canal road, surat-kamreh highway, Surat		Bardoli SDCA : Poor rx quality at civil court,railway station, Bardoli. Mandvi SDCA: Near poli line road, bazar road, rameshwar mandir road, Mandvi.		Songadh SDCA : Poor rx quality near Flyover, Songadh. Vyara SDCA : Nr. Gandhi vidhyapith, Valod. Near saritanagar society, vyara.
3	Uninor		Sayan SDCA : Poor Rx Quality near-sayan road, Sayan. Surat SDCA : Near canal road, surat-kamreh highway, Surat		Mandvi SDCA: Poor rx quality at bazar road,Mandvi.		NC in Songadh SDCA
4	BSNL		Sayan SDCA : Poor Rx Level At Outside of village & Remote area location, Sayan.		--		--
5	Idea Cellular		--		--		--
6	Vodafone		Sayan SDCA : Poor Rx Quality near Kim-sayan road, olpan-sayan road, Sayan. Surat SDCA : Near madhuvan park, canal road, surat-kamreh highway, Surat.		Bardoli SDCA : poor rx quality at civil court,railway station, Bardoli. Mandvi SDCA : Near poli line road, bazar road, rameshwar mandir road, Mandvi.		Songadh SDCA : Poor rx quality Near Flyover, Songadh. Valod SDCA : Nr. Gandhi vidhyapith, Valod. Vyara SDCA : Near saritanagar society, vyara.
7	MTS		--		--		NC At valod SDCA
8	Videocon		Surat SDCA : Poor Rx level At highway area, Surat		--		Songadh SDCA : Poor rx level at major road area, Songadh, NC At Valod
9	TATA GSM		--		--		NC At valod SDCA
10	TATA CDMA		NC At Sayan SDCA		NC At Mandvi SDCA		NC At Songadh, valod SDCA
11	RCOM GSM		--		--		NC At valod SDCA
12	RCOM CDMA		--		--		NC At valod SDCA

NC: No Coverage

DRIVE TEST TABLE: 6

DRIVE TEST OBSERVATION OF VADODARA SSA (AUGUST-15)

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	vadodara, padra	Vadodara SDCA : Poor Rx Quality At Sussain circle, vadodara	Pavi jetpur, chota udaipur, dabhoi	NC At Chota Udaipur & pavi jetpur SDCA	Savli, waghodiya, karjan	Savli SDCA : Poor rx level At kasiba farm, Savli. Waghodiya SDCA : Waghodiya road, waghodiya.
2	Airtel Bharti		Parda SDCA : Poor rx qual at maruti nagar, SH 160, Padra. Vadodara SDCA : Gohwa road, ahwa road,tagore road,Vadodara.		Pavi jetpur SDCA : Poor Rx Qual At Shankar tekri, pavi jetpur. Dabhoi SDCA : SH 87, tarsana chokdi, sarita nagar, dabhoi. Chota udaipur SDCA : Cirket house road, SH 67.Chota udaipur.		Poor Rx Qual Nr GIDC, waghodiya. Nr. Railway station, SH 161, Juna bazar, Miyagam karjan.
3	BSNL		Vadodara SDCA : Poor Rx Quality at vasana, Vadodara.		--		--
4	Uninor		Vadodara SDCA : poor rx quality at chakli circle, makarpura, madalpur bridge, Vadodara		Dabhoi SDCA : Poor rx level at market area, Dabhoi.		--
5	Idea Cellular		--		--		--
6	Videocon		--		NC At Chota Udaipur & pavi jetpur SDCA		--
7	Vodafone		Parda SDCA : Poor rx qual at maruti nagar, SH 160, Padra. Vadodara SDCA : Gohwa road, ahwa road,tagore road,Vadodara.		Pavi jetpur SDCA : Poor Rx Qual At Shankar tekri, pavi jetpur. Dabhoi SDCA : SH 87, tarsana chokdi, sarita nagar, dabhoi.		Waghodiya SDCA : Poor Rx Qual Nr GIDC, waghodiya. Karjan SDCA : Nr. Railway station, SH 161, Juna bazar, Miyagam karjan.
8	MTS		--		NC At pavi jetpur SDCA		NC At Savli SDCA
9	TATA GSM		--		NC At Chota Udaipur, pavi jetpur SDCA		--
10	TATA CDMA		--		NC At Chota Udaipur, pavi jetpur SDCA		NC At Savli SDCA
11	RCOM GSM		--		NC At pavi jetpur SDCA		--
12	RCOM CDMA		--		NC At pavi jetpur SDCA		NC At Savli SDCA

NC: No Coverage

DRIVE TEST TABLE: 7

DRIVE TEST OBSERVATION OF JAMNAGAR SSA (SEPTEMBER-15)

S. No	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	Aircel	Jamnagar, Dhrol	Jamnagar SDCA : Poor Rx level at Patel colony, jamnagar. Dhrol SDCA : Poor rx Quality At dhrol-jamnagar highway, Dhrol.	Jamjodhpur, Bhanwad, lalpur	--	khambhaliya, jamkalyanpur	NC At Jamkalyanpur SDCA
2	Airtel Bharti		Dhrol SDCA : Poor rx quality at Shivam Society, dhroal road, jodiya road, Dhrol. Jamnagar SDCA : Hazipur road, SH 95, jamnagar.		Bhanwad SDCA : Poor rx Qual at Shivam park, bus station, javahar road, Bhanwad. Jamjodhpur SDCA : Railway Station, NH 94, jamjodhpur. Lalpur SDCA : NH 27, SH 23, lalpur.		khambhaliya SDCA : Poor rx qual at porbandar road, khambhalia. Jamkalyanpur SDCA : Kalyanpur road, jamkalyanpur.
3	BSNL		Dhrol SDCA : Poor Quality At outer area of dhrol		--		khambhaliya SDCA : Poor rx quality at outer area, khambhalia
4	Idea Cellular		--		--		--
5	Uninor		Dhrol & Jamnagar SDCA : Poor Quality At outer area of dhrol & jamnagar		Lalpur SDCA : Poor Quality At outer area of lalpur		Jamkalyanpur SDCA : Poor Quality At outer area of kalyanpur
6	Videocon		--		--		--
7	Vodafone		Dhrol SDCA : Poor rx quality at Shivam Society, dhroal road, jodiya road, Dhrol. Jamnagar SDCA : Hazipur road, SH 95, jamnagar.		Jamjodhpur SDCA : Railway Station, NH 94, jamjodhpur. Lalpur SDCA : NH 27, SH 23, lalpur.		khambhaliya SDCA : Poor rx qual at porbandar road, khambhalia. Jamkalyanpur SDCA : Kalyanpur road, jamkalyanpur.
8	MTS		--		--		NC At Jamkalyanpur SDCA
9	TATA GSM		--		--		NC At Jamkalyanpur SDCA
10	TATA CDMA		--		NC Jamjodhpur, bhanwad, lalpur SDCA		NC At Jamkalyanpur SDCA
11	RCOM GSM		--		--		--
12	RCOM CDMA		--		--		NC At Jamkalyanpur SDCA

NC: No Coverage

DRIVE TEST TABLE: 8

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

S No	Month of Drive Test	Operator	SSA	Total SDCA Covered	Status of no network coverage area (SDCA Name)	ICR Status (SDCA Name)
1	Jul-15	Aircel	Surat	Sayan ,Surat ,Bardoli ,Mandvi ,Vyara ,valod	Sayan ,Surat ,Bardoli ,Mandvi ,Vyara ,valod	NO
		Airtel			--	NO
		BSNL			--	NO
		TATA GSM			Valod	NO
		Idea			--	NO
		RCOM GSM			Valod	NO
		Uninor			Songadh	NO
		Videocon			Valod	Videocon is on ICR with TATA GSM at Sayan ,vyara ,Songadh ,Bardoli ,mandvi SDCA
		Vodafone			--	NO
		MTS			Valod	MTS is on ICR with RCOM CDMA at Surat ,Sayan ,Mandvi ,vyara ,Songadh ,bardoli SDCA
TATA CDMA	Mandvi ,Sayan ,Songadh ,valod	NO				
RCOM CDMA	valod	NO				
2	Aug-15	Aircel	vadodara	Vadodara ,padra ,chota Udaipur ,Pavi jetpur ,Dabhoi ,Savli ,Waghodiya ,karjan	Chota udaipur , Pavi Jetpur	NO
		Airtel			--	NO
		BSNL			--	NO
		TATA GSM			Chota udaipur , Pavi Jetpur	TATA GSM is on ICR with Aircel at Vadodara ,Padra ,dabhoi ,Savli ,Waghodiya ,Karjan SDCA
		Idea			--	NO
		RCOM GSM			Pavi Jetpur	NO
		Uninor			--	NO
		Videocon			Chota udaipur , Pavi Jetpur	No
		Vodafone			--	NO
		MTS			Savli , Pavi Jetpur	Mts is on ICR with RCOM CDMA at Vadodara , chota Udaipur , Dabhoi , Waghodiya , karjan SDCA
TATA CDMA	Pavi jetpur , Chota udaipur ,	NO				

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S No	Month of Drive Test	Operator	SSA	Total SDCA Covered	Status of no network coverage area (SDCA Name)	ICR Status (SDCA Name)
					Savli	
		RCOM CDMA			Savli , Pavi Jetpur	NO
3	Sep-15	Aircel	Jamnagar	Jamnagar ,Dhrol ,Jamjodhpur ,Bhanwad ,lalpur ,Khambhalia ,jamkalyanpur	Jam kalyanpur	No
		Airtel			--	No
		BSNL			--	No
		TATA GSM			Jam kalyanpur	TATA GSM is on ICR With Aircel at Jamnagar ,Dhrol ,Jamjodhpur ,Bhanwad ,lalpur , Khambhalia SDCA
		Idea			--	No
		RCOM GSM			---	No
		Uninor			--	No
		Videocon			---	NO
		Vodafone			--	No
		MTS			Jam kalyanpur	MTS is on ICR with RCOM CDMA at jamnagar ,jamjodhpur ,Bhanwad ,lalpur ,Khambhalia SDCA
		TATA CDMA			jam Jodhpur ,Bhanwad ,lalpur ,Jam kalyanpur	No
		RCOM CDMA			Jam kalyanpur	No

7.3 KEY FINDINGS ON DRIVE TEST:

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

1. July -15 : Surat SSA

SDCAs covered: Sayan ,Surat ,Bardoli ,Mandvi ,Vyara ,Songadh and Valod

The results of the drive test, carried out across **Surat SSA** for all service providers revealed that they were in compliance of benchmarks of all the parameters.

2. August -15: Vadodara SSA

SDCAs covered: Vadodara ,Padra ,Chota Udaipur ,Pavi Jetpur ,Dabhoi ,Savli ,Waghodiya and Karjan

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

3. September -15: Jamnagar SSA

SDCA Covered: Jamnagar, Dhrol, Jamjodhpur, Bhanwad, Lalpur, Khambhalia and Jamkalyanpur

The results of the drive test, carried out in Jamnagar SSA also revealed that the operators were doing well with regard to compliance of the TRAI norms as all operators except BSNL, met the benchmarks of network parameters. Only **BSNL** could not meet the benchmark of Parameters **Call drop rate** and **Voice Quality** with its performance level as **2.20%** and **94.84%** respectively.

The drive test results suggest satisfactory working of the network of the service providers in all the SSAs where drive was conducted during the quarter. Only **BSNL** could not meet the benchmark of Parameters **Call drop rate** and **Voice Quality** with its performance level as **2.20%** and **94.84%** respectively in Jamnagar SSA.

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

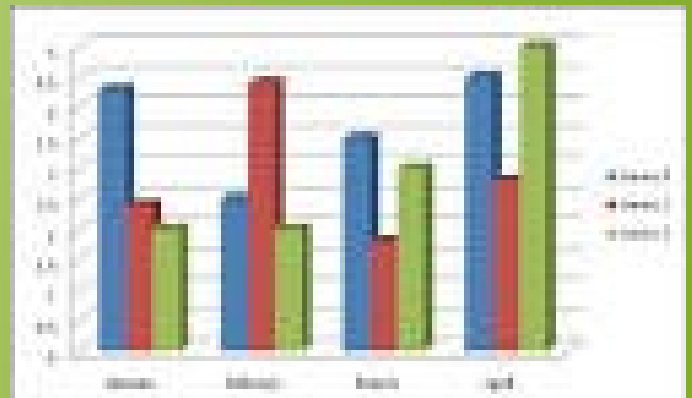
The detail of Network coverage and Intra Circle Roaming (ICR) status of different service providers at various locations in the three SSAs is given in table-8.

8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

AVERAGED QUARTERLY PMR

V/S

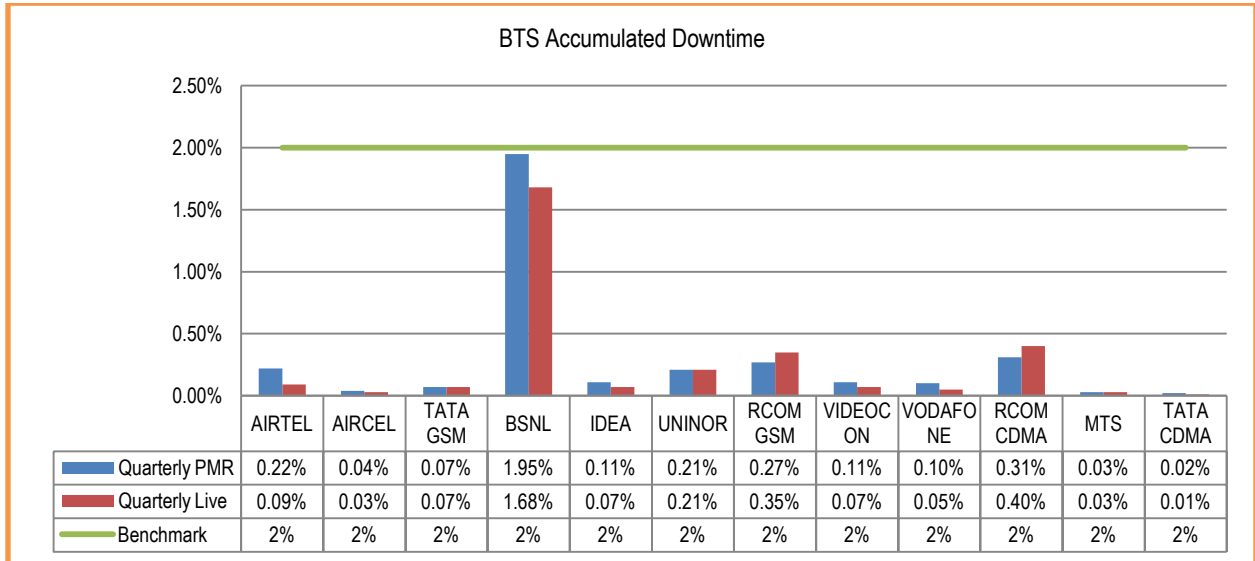
AVERAGED QUARTERLY 3-DAYs LIVE MEASUREMENT



8. GRAPHICAL REPRESENTATION (CMTS):

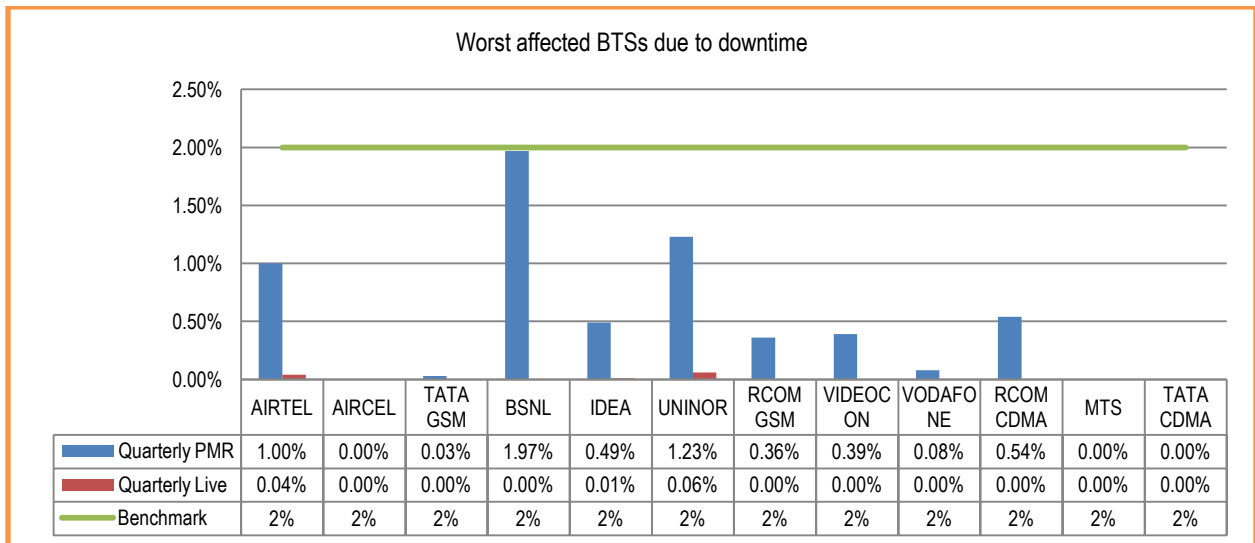
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

1. BTS ACCUMULATED DOWNTIME:



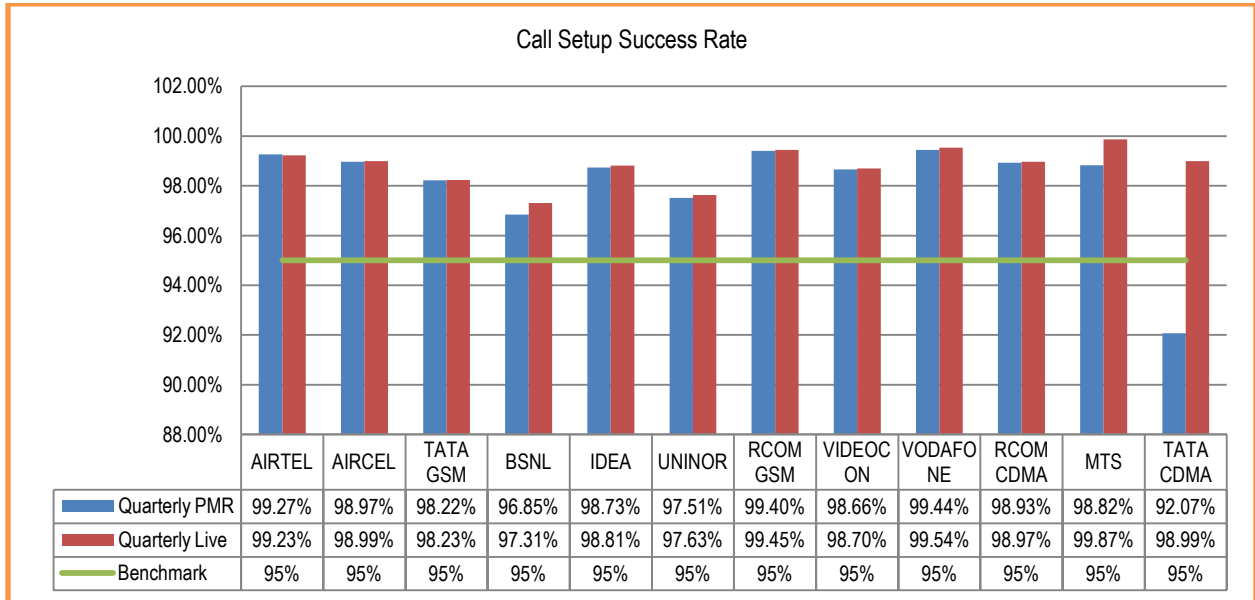
All operators are meeting the benchmarks.

2. WORST AFFECTED BTSs DUE TO DOWNTIME:



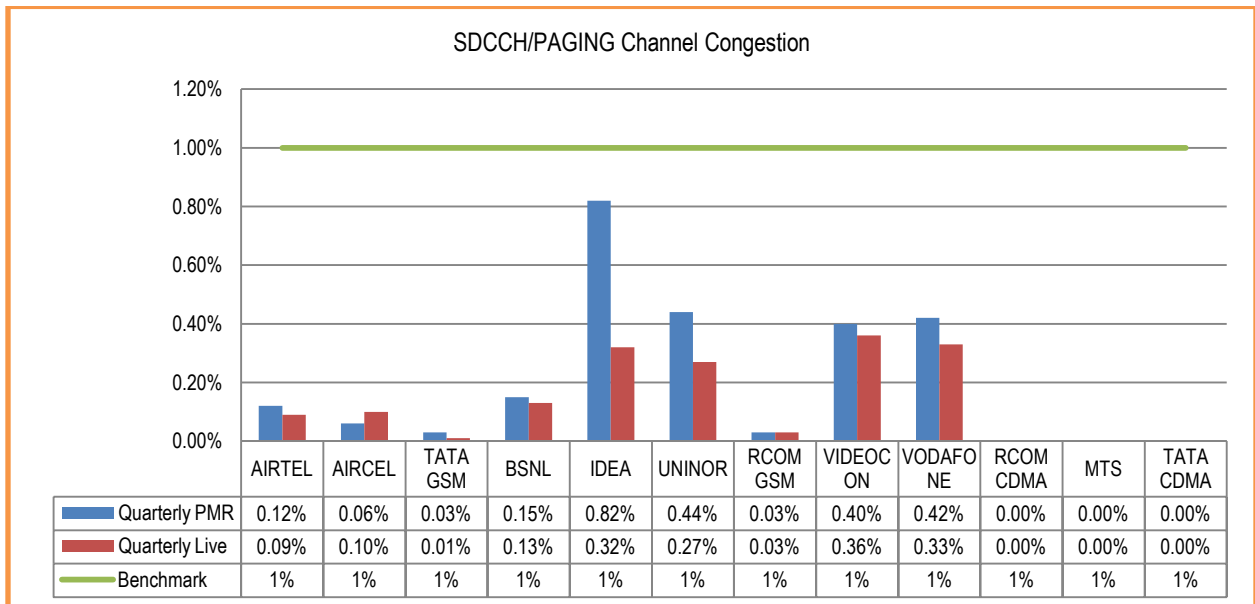
All operators are meeting the benchmarks.

3. CALL SETUP SUCCESS RATE:



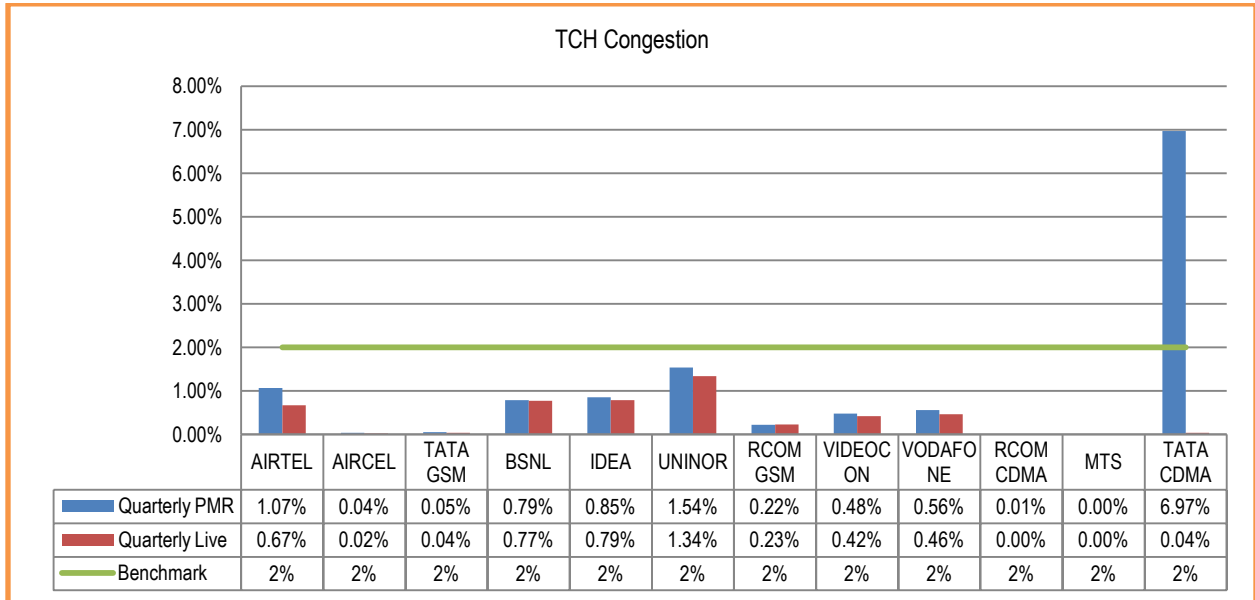
All operators are meeting the benchmarks except Tata CDMA (during monthly PMR).

4. SDCCH/PAGING CHANNEL CONGESTION:



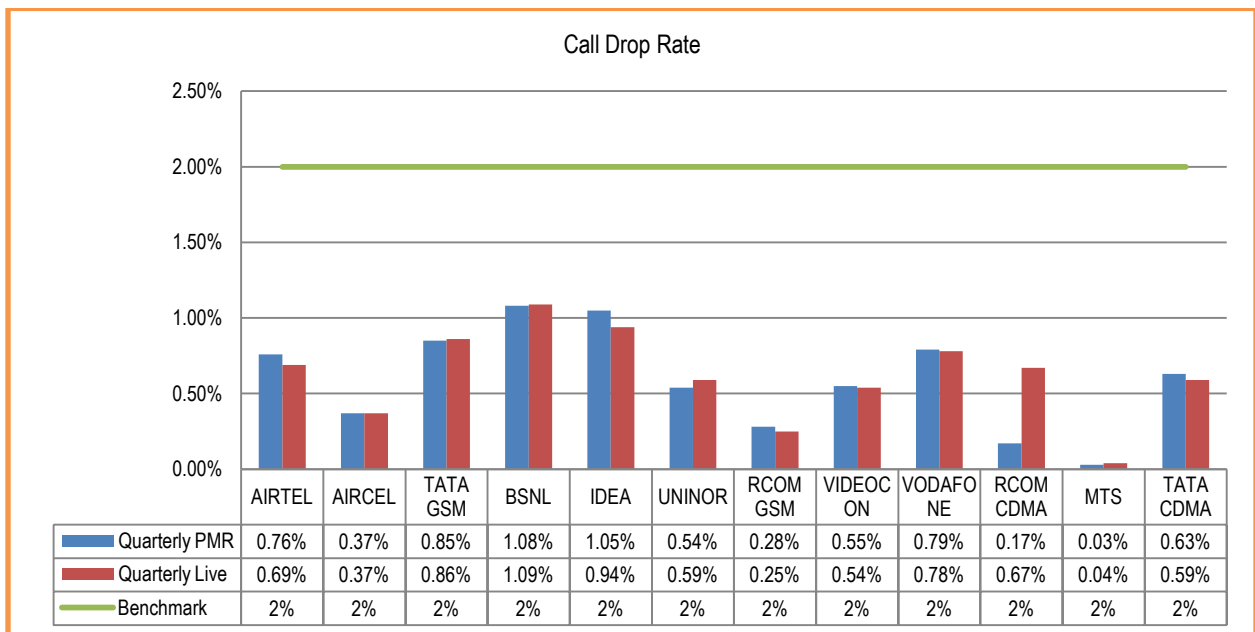
All operators are meeting the benchmarks.

5. TCH CONGESTION:



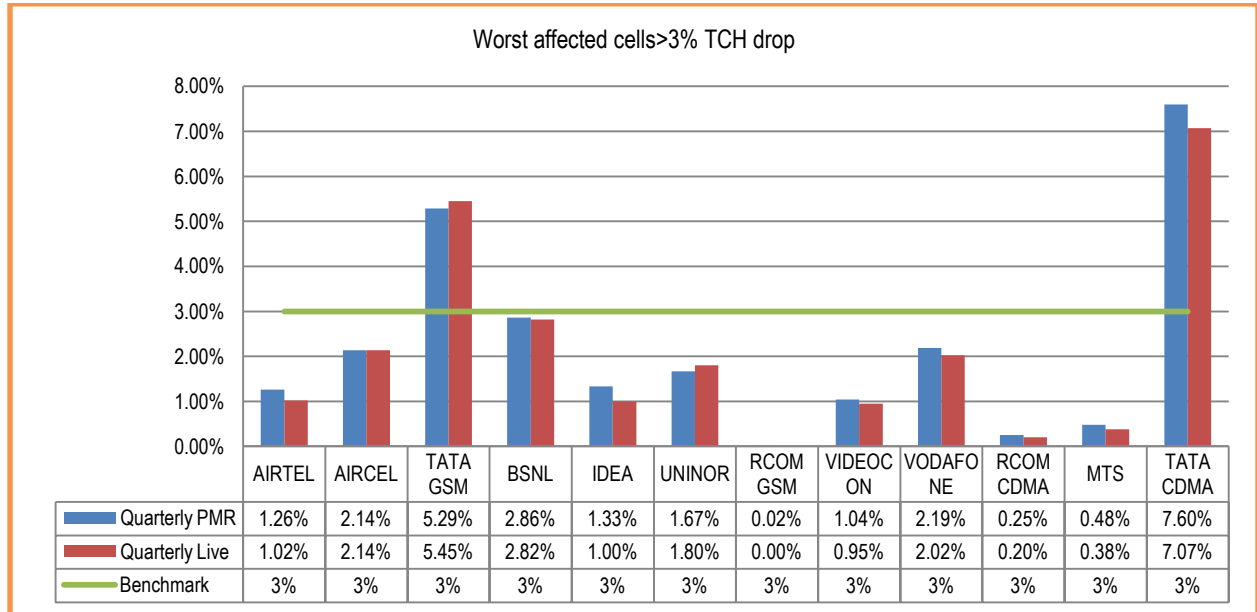
All operators are meeting the benchmarks except Tata CDMA.

6. CALL DROP RATE:



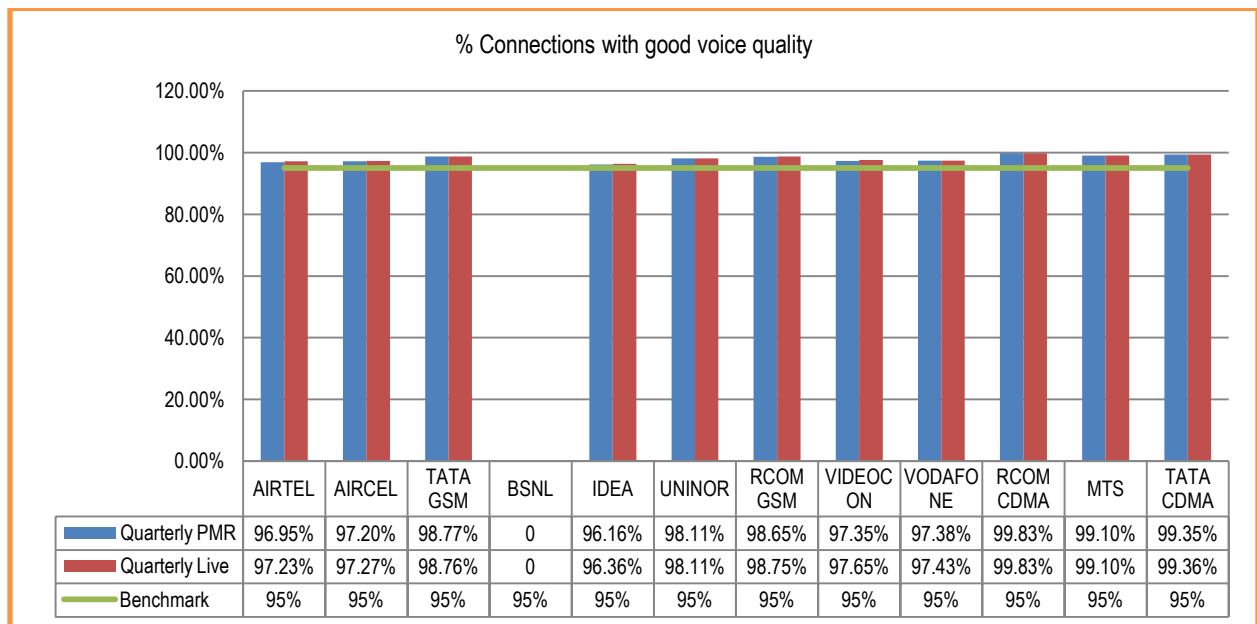
All operators are meeting the benchmarks.

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.

9. PMR VERIFICATION TABLE:

(i) NETWORK RELATED PARAMETERS:

Name of Service Provider	Parameter	BTS Accumulated Downtime	Worst affected BTSs due to downtime	CSSR (Call Setup Success Rate)	SDCCH / PAGING Channel congestion	TCH congestion	CDR (Call Drop Rate)	Worst affected cells>3% TCH drop (Call drop) rate	Connections with good voice quality	No. of POI's having >=0.5% POI congestion
Benchmark		≤ 2%	≤ 2%	≥ 95%	≤ 1%	≤ 2%	≤ 2%	≤ 3%	≥ 95%	≤ 0.5%
AIRCEL	Reported	0.04	0.00	98.97	0.07	0.04	0.37	2.14	97.20	0
	Verified	0.04%	0.00%	98.97%	0.06%	0.04%	0.37%	2.14%	97.20%	0
AIRTEL	Reported	0.24	1.18	99.47	0.14	1.25	0.74	1.21	97.05	0
	Verified	0.22%	1.00%	99.27%	0.12%	1.07%	0.76%	1.26%	96.95%	0
TATA GSM	Reported	0.09	0.07	98.22	0.03	0.05	0.84	5.30	98.77	0
	Verified	0.07%	0.03%	98.22%	0.03%	0.05%	0.85%	5.29%	98.77%	0
BSNL	Reported	1.94	1.97	96.85	0.14	0.79	1.08	2.86	100.00	0
	Verified	1.95%	1.97%	96.85%	0.15%	0.79%	1.08%	2.86%	NP	0
IDEA	Reported	0.11	0.49	98.74	0.79	0.84	1.05	1.33	96.15	0
	Verified	0.11%	0.49%	98.73%	0.82%	0.85%	1.05%	1.33%	96.16%	0
UNINOR	Reported	0.21	1.23	97.52	0.44	1.54	0.54	1.67	98.11	0
	Verified	0.21%	1.23%	97.51%	0.44%	1.54%	0.54%	1.67%	98.11%	0
RCOM GSM	Reported	0.27	0.36	99.40	0.03	0.22	0.28	0.02	98.65	0
	Verified	0.27%	0.36%	99.40%	0.03%	0.22%	0.28%	0.02%	98.65%	0
VIDEOCON	Reported	0.10	0.41	98.66	0.40	0.48	0.55	1.05	97.35	0
	Verified	0.11%	0.39%	98.66%	0.40%	0.48%	0.55%	1.04%	97.35%	0
VODAFONE	Reported	0.10	0.25	99.44	0.41	0.56	0.79	1.36	97.39	0
	Verified	0.10%	0.08%	99.44%	0.42%	0.56%	0.79%	2.19%	97.38%	0
RCOM CDMA	Reported	0.30	0.54	98.93	0.00	0.01	0.17	0.25	99.83	0
	Verified	0.31%	0.54%	98.93%	0.00%	0.01%	0.17%	0.25%	99.83%	0
MTS	Reported	0.03	0.00	98.84	0.00	0.00	0.03	0.49	99.16	0
	Verified	0.03%	0.00%	98.82%	0.00%	0.00%	0.03%	0.48%	99.10%	0
TATA CDMA	Reported	0.02	0.00	98.79	0.00	0.19	0.63	7.70	99.36	0
	Verified	0.02%	0.00%	92.07%	0.00%	6.97%	0.63%	7.60%	99.35%	0

- The above data is averaged for three months of the quarter ending September-2015.
- The PMR data provided by the service providers is largely matching with verified (audited) data. However the variation in data has been indicated by yellow colour.
- Tata GSM and Tata CDMA have not met the benchmark for the parameter “Worst affected cells>3% TCH drop”.
- Tata CDMA has not met the benchmark for the parameters “CSSR (Call Setup Success Rate)” and “TCH Congestion”.
- 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.

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

Name of Service Provider	Parameter	Metering and billing credibility - post paid	Metering and billing credibility - pre paid	Resolution of billing / charging complaints	Resolution of billing / charging complaints	Period of applying credit/ waiver/ adjustment to customer's account from the date of resolution of complaints	Accessibility of call centre/ customer care	Percentage of calls answered by the operators (voice to voice) within 90 seconds	%age requests for Termination / Closure of service complied within 7 days	Time taken for refund of deposits after closures
Benchmark		<= 0.1%	<= 0.1%	98% within 4 weeks	100% within 6 weeks	<=1 week	>=95%	>=95%	100% within <=7days	100% within 60 days
AIRCEL	Reported	0.00	0.00	100.00	100.00	100.00	95.09	97.90	100.00	100.00
	Verified	0.00%	0.00%	100%	100%	100%	95.09%	97.90%	100%	100%
AIRTEL	Reported	0.00	0.00	100.00	100.00	100.00	100.00	84.97	100.00	100.00
	Verified	0.00%	0.00%	100%	100%	100%	100%	84.97%	100%	100%
BSNL	Reported	0.02	0.00	100.00	100.00	100.00	100.00	95.67	100.00	100.00
	Verified	0.02%	0.29%	100%	100%	100%	97.75%	95.67%	100%	100%
IDEA	Reported	0.05	0.07	99.98	100.00	100.00	97.74	99.20	99.99	100.00
	Verified	0.05%	0.07%	99.98%	100%	100%	97.74%	99.20%	99.98%	100%
UNINOR	Reported	NA	0.00	100.00	100.00	NA	99.66	96.47	NA	NA
	Verified	NA	0.00%	100%	100%	100%	99.66%	96.47%	NA	NA
RCOM (GSM)	Reported	0.09	0.09	100.00	100.00	100.00	98.92	79.65	100.00	100.00
	Verified	0.09%	0.09%	100%	100%	100%	98.92%	79.65%	100%	100%
TATA (GSM)	Reported	0.00	0.00	100.00	100.00	100.00	98.25	82.52	100.00	100.00
	Verified	0.00%	0.00%	100%	100%	100%	98.25%	82.52%	100%	100%
TATA (CDMA)	Reported	0.01	0.00	100.00	100.00	100.00	97.95	93.41	100.00	100.00
	Verified	0.01%	0.00%	100%	100%	100%	97.95%	93.41%	100%	100%
VIDEOCON	Reported	NA	0.03	100.00	100.00	100.00	100.00	96.04	NA	100.00
	Verified	NA	0.00%	100%	100%	100%	100%	99.04%	NA	100%
VODAFONE	Reported	0.00	0.00	100.00	100.00	100.00	100.00	97.76	100.00	100.00
	Verified	0.10%	0.02%	100%	100%	100%	100%	97.76%	100%	100%
MTS	Reported	0.00	0.00	100.00	100.00	100.00	95.67	97.07	100.00	100.00
	Verified	0.03%	0.02%	100%	100%	100%	97.12%	96.67%	100%	100%
RCOM (CDMA)	Reported	0.09	0.03	100.00	100.00	100.00	98.11	80.34	100.00	99.92
	Verified	0.09%	0.03%	100%	100%	100%	98.12%	80.34%	100%	100%

- The above data is average for three months of the quarter ending September-2015.
- The PMR data provided by the service providers is largely matching with verified (audited) data. However the variation in data has been indicated by yellow colour.
- BSNL has not met the benchmark for the parameter "Metering and billing credibility - Pre paid".
- Airtel, Tata (GSM & CDMA) and RCOM (GSM & CDMA) have not met the benchmark for the parameter "% call answered by operators (voice to voice) within 90 sec".
- Idea has not met the benchmark for the parameter "%age requests for Termination / Closure of service complied within 7 days".
- NA: Not applicable as no post paid connections.