



**Audit & Assessment of Quality of Service
Of
Cellular Mobile Telephone Service
For
Telecom Regulatory Authority of India
West Zone – Gujarat Service Area
(January 2015 – March 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.

Index of Contents

1. BACKGROUND.....	6
2. OBJECTIVES AND METHODOLOGY.....	9
3. SAMPLE SIZE.....	11
3.1 SAMPLING FOR CELLULAR MOBILE (WIRELESS) SERVICE PROVIDERS	11
3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES.....	12
3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS	12
4. EXECUTIVE SUMMARY	14
5. PMR AUDIT REPORTS:	17
5.1 MONTHLY PMR:.....	17
5.1.1 BUSY HOUR OF VARIOUS SERVICE PROVIDERS:	17
5.1.2 SWITCHES/BSC/BTS DETAILS OF SERVICE PROVIDERS:	18
5.1.3 QOS PERFORMANCE OF MONTHLY PMR – JANUARY-15 MONTH	19
5.1.4 QOS PERFORMANCE OF MONTHLY PMR – FEBRUARY-15 MONTH.....	20
5.1.5 QOS PERFORMANCE OF MONTHLY PMR – MARCH- 15 MONTH	21
5.1.6 QOS PERFORMANCE OF QUARTERLY PMR –AVERAGE OF QE- MARCH-15(JANUARY TO MARCH 2015 MONTHS AUDITED DATA)	22
5.1.7 KEY FINDINGS ON MONTHLY PMR AUDIT REPORTS:.....	23
5.2 LIVE MEASUREMENT DATA (3-DAYS) FOR CELLULAR MOBILE SERVICE PROVIDERS (NETWORK SERVICE QUALITY PARAMETER):.....	26
5.2.1 LIVE MEASUREMENT DATA (3-DAYS) – JANUARY- 15 MONTH:	26
5.2.2 LIVE MEASUREMENT DATA (3-DAYS) – FEBRUARY- 15 MONTH:.....	27
5.2.3 LIVE MEASUREMENT DATA (3-DAYS) – MARCH-15 MONTH:	28
5.2.4 QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT AUDITED DATA (AVERAGE OF JANUARY TO MARCH 2015 MONTHS).....	29
5.2.5 KEY FINDING ON 3 DAYS LIVE MEASUREMENTS:.....	29
5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES:.....	30
5.3 CUSTOMER SERVICE QUALITY PARAMETERS MEASUREMENT FOR CMTS:.....	40
5.3.1 QUARTERLY CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (JANUARY TO FEBRUARY 2015 MONTHS AUDITED DATA):	40
5.3.2 3 DAYS LIVE CSD AUDITED DATA FOR CELLULAR MOBILE SERVICES:.....	43
KEY FINDINGS: CUSTOMER SERVICE DELIVERY PARAMETERS.....	44
6. LIVE CALLING ASSESSMENT:.....	46
6.1 INTER OPERATOR CALLS ASSESSMENT:	46
6.2 CUSTOMER CARE / HELPLINE ASSESSMENT:	47
6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLIANTS:.....	47

6.4 LEVEL -1 CALLING ASSESSMENT:	48
7. OPERATOR ASSESTID DRIVE TEST	50
7.1 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:	63
7.2 SSA WISE DRIVE TEST OBSERVATION:	66
7.3 KEY FINDINGS ON DRIVE TEST:.....	71
8. GRAPHICAL REPRESENTATION (CMTS):.....	73



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

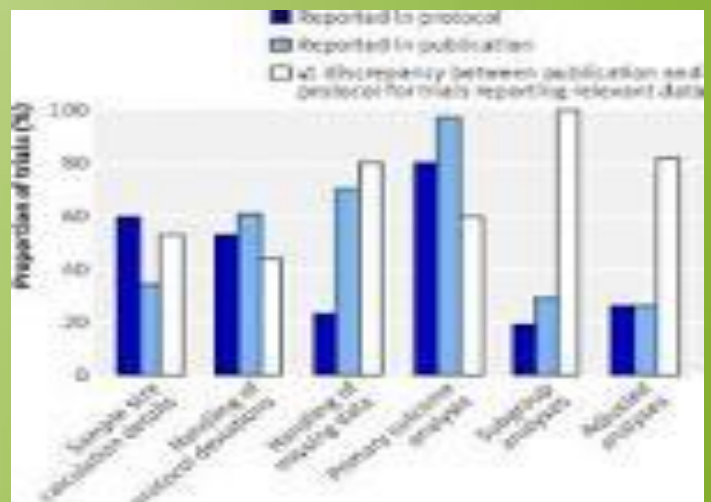
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

The audit and assessment of Quality of Service is carried out by **TUV SUD South Asia across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. Apart from this, QoS audit for Basic (Wire line) and Broadband Services is also undertaken for Himanchal Pradesh, J&K and Maharashtra & Goa circles during the quarter January 2015 – March 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
		January-15	February-15	March-15	
GSM Operators					
1	AIRCEL	13th to 15th Jan'15	11th to 13th Feb'15	24 To 26 Mar'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	12th to 14th Jan'15	10th to 12th Feb'15	16 To 18 Mar'15	Bharti Airtel Limited, 2nd Floor, Zodiac Square, Opposite Gurudwara, S.G Highway, Ahmedabad-380054
3	BSNL	6th to 8th Jan'15	9th to 11th Feb'15	18 To 20 Mar'15	BSNL, Vastrapur Telephone Exchange, Bima Nagar, Vastrapur, Ahmedabad.
4	VIDEOCON	19th to 21st Jan'15	11th to 13th Feb'15	16th to 18th Mar'15	Videocon Telecommunications Ltd, 4th floor, Campus Corner 2, Opp AUDA Garden, Prahladnagar Ahmedabad- 380 015, Gujarat
5	TATA GSM	21st to 23rd Jan'15	15th to 17th Feb'15	22nd to 24th Mar'15	Tata Teleservices Ltd, 2nd Floor- Citygold Building, Near Shyamal Cross Road, 132 Feet Ring Road, Ahmedabad
6	IDEA	7th to 9th Jan'15	23rd to 25th Feb'15	23rd to 25th Mar'15	Idea Cellular Ltd, Venus Atlantis, 2nd Floor, 100ft road, Prahlad Nagar, Ahmedabad-380015
7	RCOM GSM	5th to 7th Jan'15	7th to 9th Feb'15	2nd to 4th Mar'15	Reliance Communications Limited, 103/106, Gate No: 6, Near Muthiyagaam Bus Stand, Naroda GIDC, Naroda, Ahmedabad- 382330
8	VODAFONE	25th to 27th Jan'15	22nd to 24th Feb'15	18th to 20th Mar'15	House A, Vodafone West Limited, Vodafone House Corporate Road, Prahladnagar , Off S. G. Highway, Ahmedabad -380051 Gujarat, India
9	UNINOR	21st to 23rd Jan'15	23rd to 25th Feb'15	12, 13 & 16 Mar'15	Telewings Communications Services Pvt Ltd. (Uninor), Welldone Technology Park Sec-48 Sohana Road Gurgaon
CDMA Operators					
10	MTS	13th to 15th Jan'15	23th to 25th feb'15	17th To 19th Mar'15	Sistema Shyam Teleservices Limited, C Block, Office No-2, 3rd Floor, 'The Acropolis Mall', Thaltej Cross Road, Ahmedabad- 380054
11	RCOM CDMA	5th to 7th Jan'15	7th to 9th Feb'15	2nd to 4th Mar'15	Reliance Communications Limited, 103/106, Gate No: 6, Near Muthiyagaam Bus Stand, Naroda GIDC, Naroda, Ahmedabad- 382330
12	TATA CDMA	21st to 23rd Jan'15	15th to 17th Feb'15	22nd to 24th Mar'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 March 2015.

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

3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES

- The QoS audit for basic (wire line) service was to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles. As per the clause 17.3 of the tender document, the QoS audit of Basis Telephone Service (Wire line) in a service area / circle is to be done only **once in a year**. **Based on this criterion, QoS audit of Wire line service in Gujarat circle was not required to be done during QE March-15.**

3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS

- TUV–SUD South Asia has to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who are having broadband subscriber base of more than 10,000 subscribers in their licensed service area, for 5% of Point of Presence (PoPs) spread over in 10% SDCAs in specified Telecom Circle. As per the clause 17.3 of the tender document, the QoS audit of Broadband service in a service area / circle is to be done only **once in a year**. **Based on this criterion, QoS audit of broadband service in Gujarat circle was not required to be done during QE March-15.**

4. EXECUTIVE SUMMARY



4. EXECUTIVE SUMMARY

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

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

Cellular Mobile Telephone Service:

(i) From analysis of monthly audit and 3 days live measurements results, it was concluded that performance of the operators in the Gujarat service area is fairly satisfactory for **Network parameters** as all operators (except Tata-GSM/Tata-CDMA and MTS) were found to have met the benchmarks of all parameters. **Tata (GSM), Tata (CDMA) and MTS** were having non-compliance for parameter '**Worst affected Cells > 3% TCH drops**' in all the three months of the quarter with their average performance of **4.92%, 6.90% and 3.65%** respectively.

In case of three days live measurement assessment, it is found that the performance of all operators is satisfactory as they have largely met the benchmarks except the parameter '**Worst affected cells> 3 % TCH drops**', which could not be complied with by **Tata (GSM), Tata (CDMA) and MTS**. The quarterly average performance of **Tata (GSM), Tata (CDMA) and MTS** for this parameter was **5.06%, 7.14 % and 3.19 %** 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 **0.13%**.

The compliance with respect to the parameter '**Calls answered by Operators (voice to voice) within 90 seconds**' was not met by **Airtel, RCOM (GSM) and RCOM (CDMA)** with their performance of **94.63%, 64.05% and 85.65%** respectively.

In case of the parameters '**Time taken for refund of deposit after closure**', the performance of **Tata (GSM) & Tata (CDMA)** were **99.68% & 98.90%** against the benchmark of 100%.

Regarding parameter **Termination/Closure, all operators** settled 100% of cases within 7 days.

The results for three days live measurements reveal that all operators have met the benchmarks for the parameters 'Accessibility to call center'. However, **RCOM (GSM)** failed to meet the benchmark of '**Call answered by Operators (Voice to voice) within 90 seconds**' with its performance as **47.99%**. The performance of **RCOM (GSM)** was very poor with respect to this parameter.

(iii) The **Drive Tests** results suggest satisfactory working of the network of all the service providers in **Amreli, Bharuch and Godhara** SSAs where the drive tests were conducted.

Thus, taking cognizance on overall performance of the service providers, it was concluded that service providers were doing fairly well in Gujarat Circle for most of the parameters. However, the performance with respect to the parameters **worst affected cell having > 3 % TCH drop and Calls answered by operator (voice to voice)** need further improvement for those operators who could not meet the benchmarks of these parameters. In case of **Customer Service Quality Parameters**, the operators lagging behind the benchmark of parameter **Billing Complaint – Pre-paid and Calls answered by operators (Voice to Voice)** need improvements enough to meet the benchmarks.

5. PMR AUDIT REPORT



5. PMR AUDIT REPORTS:

5.1 MONTHLY PMR:

5.1.1 BUSY HOUR OF VARIOUS SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	Month of Audit	Network TCBH Hour
GSM Operators			
1	AIRTEL	March -15	19 Hrs-20 Hrs
2	AIRCEL	March -15	20 Hrs-21 Hrs
3	TATA GSM	March -15	20 Hrs-21 Hrs
4	BSNL	March -15	21 Hrs-22 Hrs
5	IDEA	March -15	20 Hrs-21 Hrs
6	UNINOR	March -15	21 Hrs-22 Hrs
7	RCOM GSM	March -15	20 Hrs-21 Hrs
8	VIDEOCON	March -15	20 Hrs-21 Hrs
9	VODAFONE	March -15	20 Hrs-21 Hrs
CDMA Operators			
10	RCOM CDMA	March -15	19 Hrs-20 Hrs
11	MTS	March -15	11 Hrs-12 Hrs
12	TATA CDMA	March -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	114	7452	NSN	NSN
2	AIRCEL	1	6	826	ZTE	ZTE
3	TATA GSM	3	14	2013	Huawei	Huawei
4	BSNL	9	93	4291	Alcatel-Lucent	Alcatel-Lucent
5	IDEA	21	45	6771	Ericsson	Ericsson
6	UNINOR	8	20	3824	NSN	NSN+Huawei
7	RCOM GSM	5	18	2530	Huawei	Huawei
8	VIDEOCON	2	11	1975	Huawei	Huawei
9	VODAFONE	20	145	8161	NSN	NSN
CDMA Operators						
10	RCOM CDMA	7	3	1116	Lucent, ZTE, Ericsson, Huawei	Lucent, Huawei
11	MTS	1	3	578	ZTE	ZTE
12	TATA CDMA	5	6	581	Ericsson	Motorola, Huawei

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – JANUARY-15 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- JANUARY 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%	Jan-15	0.05%	0.03%	0.04%	1.70%	0.03%	0.12%	0.22%	0.07%	0.02%	0.21%	0.03%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Jan-15	0.10%	0.00%	0.00%	1.77%	0.06%	0.47%	0.32%	0.15%	0.00%	0.45%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Jan-15	99.60%	99.18%	98.10%	98.83%	98.96%	97.79%	99.55%	99.06%	99.64%	99.06%	99.73%	98.72%
	b) SDCCH/PAGING Channel congestion	<=1%	Jan-15	0.09%	0.04%	0.02%	0.16%	0.37%	0.31%	0.01%	0.07%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Jan-15	0.55%	0.07%	0.04%	0.43%	0.51%	0.83%	0.14%	0.05%	0.36%	0.00%	0.01%	0.28%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Jan-15	0.66%	0.38%	0.75%	0.92%	1.03%	0.60%	0.33%	0.52%	0.74%	0.06%	0.14%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Jan-15	0.90%	2.02%	4.85%	2.75%	1.11%	2.19%	0.01%	0.99%	2.18%	0.14%	2.47%	7.24%
	c) Connections with good voice quality	>=95%	Jan-15	97.00%	97.68%	98.82%	NP	96.30%	98.09%	98.70%	97.53%	97.38%	99.84%	99.11%	99.36%
4	No. of POI's having >=0.5% POI congestion		Jan-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 – FEBRUARY-15 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- FEBRUARY 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%	Feb-15	0.07%	0.03%	0.06%	1.60%	0.03%	0.12%	0.27%	0.08%	0.02%	0.27%	0.04%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Feb-15	0.05%	0.00%	0.15%	1.89%	0.06%	0.37%	0.24%	0.00%	0.00%	0.18%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Feb-15	99.56%	99.03%	98.11%	98.65%	98.98%	97.78%	99.47%	98.76%	99.33%	99.06%	99.24%	98.85%
	b) SDCCH/PAGING Channel congestion	<=1%	Feb-15	0.12%	0.07%	0.05%	0.12%	0.46%	0.22%	0.02%	0.10%	0.16%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Feb-15	0.47%	0.10%	0.05%	0.40%	0.98%	0.89%	0.19%	0.04%	0.67%	0.01%	0.00%	0.15%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Feb-15	0.66%	0.40%	0.73%	0.92%	1.06%	0.59%	0.37%	0.54%	0.83%	0.07%	0.44%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Feb-15	1.00%	2.10%	5.01%	2.69%	1.14%	2.09%	0.05%	1.12%	2.46%	0.15%	6.35%	6.55%
	c) Connections with good voice quality	>=95%	Feb-15	96.88%	97.34%	98.83%	NP	96.11%	98.21%	98.61%	97.43%	97.19%	99.84%	99.01%	99.36%
4	No. of POI's having >=0.5% POI congestion		Feb-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 – MARCH- 15 MONTH

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE - MARCH 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%	Mar-15	0.05%	0.02%	0.06%	1.45%	0.04%	0.12%	0.22%	0.06%	0.02%	0.21%	0.04%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Mar-15	0.08%	0.00%	0.00%	1.81%	0.07%	0.50%	0.32%	0.05%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Mar-15	99.65%	99.06%	98.14%	97.11%	98.99%	97.85%	99.41%	99.13%	99.14%	99.11%	99.57%	98.26%
	b) SDCCH/PAGING Channel congestion	<=1%	Mar-15	0.06%	0.04%	0.04%	0.12%	0.42%	0.21%	0.02%	0.07%	0.22%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Mar-15	0.41%	0.09%	0.05%	0.48%	0.59%	0.94%	0.27%	0.05%	0.86%	0.00%	0.00%	0.70%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Mar-15	0.62%	0.38%	0.69%	0.92%	1.02%	0.53%	0.36%	0.50%	0.77%	0.12%	0.18%	0.55%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Mar-15	0.98%	2.22%	4.91%	2.77%	1.13%	1.92%	0.01%	0.92%	2.22%	0.21%	2.14%	6.90%
	c) Connections with good voice quality	>=95%	Mar-15	97.03%	97.46%	98.88%	NP	96.27%	98.20%	98.61%	97.52%	97.25%	99.83%	99.10%	99.36%
4	No. of POI's having >=0.5% POI congestion		Mar-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- MARCH-15(JANUARY TO MARCH 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	0.06%	0.03%	0.05%	1.58%	0.03%	0.12%	0.24%	0.07%	0.02%	0.23%	0.04%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.08%	0.00%	0.05%	1.82%	0.06%	0.45%	0.29%	0.07%	0.00%	0.21%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.60%	99.09%	98.12%	98.20%	98.98%	97.81%	99.48%	98.98%	99.37%	99.08%	99.51%	98.61%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.09%	0.05%	0.04%	0.13%	0.42%	0.25%	0.02%	0.08%	0.18%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.48%	0.09%	0.05%	0.44%	0.69%	0.89%	0.20%	0.05%	0.63%	0.00%	0.00%	0.38%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.65%	0.39%	0.72%	0.92%	1.04%	0.57%	0.35%	0.52%	0.78%	0.08%	0.25%	0.54%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	0.96%	2.11%	4.92%	2.74%	1.13%	2.07%	0.02%	1.01%	2.29%	0.17%	3.65%	6.90%
	c) Connections with good voice quality	>=95%	Quarterly	96.97%	97.49%	98.84%	NP	96.23%	98.17%	98.64%	97.49%	97.27%	99.84%	99.07%	99.36%
4	No. of POI's having >=0.5% POI congestion		Quarterly	0	0	0	0	0	0	0	0	0	0	0	0

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

5.1.7 KEY FINDINGS ON MONTHLY PMR AUDIT REPORTS:

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

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

Network Service Quality Parameters:

- **Network Availability**

- i. BTS Accumulated Downtime (Not Available for Service):
- ii. Worst affected BTSs due to downtime

For measuring the performance against the benchmark for this parameter, down time of each BTS lasting for more than 1 hour at a time in a day during the period of a month has been taken for computation.

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

- **Connection Establishment (Accessibility)**

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

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

All the operators were comfortably meeting the benchmark of this parameter.

- **Parameters related to Network Congestion:**

The parameters namely SDCCH / Paging Channel Congestion, TCH and POI are prescribed with the aim of measuring the congestion in the network.

In CDMA system, there is no direct counter defined for reporting Paging Channel Congestion as reported by Tata Teleservices. However, they have a defined counter for Paging Channel Occupancy Ratio (**PCH Average Using Ratio**) which is used to determine the Paging Channel Occupancy which on an average is < 50% on all sites in the network. When the value of this parameter is less than 100%, it is counted as 0% congestion. Thus, there is no congestion on the paging channel in CDMA system.

With respect to this parameter, the performance of the operators is quite satisfactory as **all operators met the TRAI specified benchmarks** on the congestion parameters. There was no congestion on individual POI links between a service provider vis-à-vis other service providers.

- **Connection Maintenance (Retainability)**

- i. Call Drop Rate:

This parameter gives a reliable measurement of the mobile network used by the service provider for maintaining a call once it has been correctly established. Failures in coverage, network congestion and network failures have important impact on this parameter.

The audit of this parameter revealed that all the service providers were measuring this parameter as per the TRAI guidelines. Also, **all the service providers were found to be meeting the TRAI specified benchmark**. The lowest call drop rate (average 0.08 %) was for RCOM (CDMA) during the quarter.

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

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

The audit, with respect to this parameter revealed that **Tata (GSM), MTS and Tata (CDMA)** were non-compliants in the three months of the quarter with their average performance of **4.92%, 3.65% and 6.90%** 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) – JANUARY- 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- JANUARY 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%	0.06%	0.04%	1.51%	0.03%	0.27%	0.20%	0.10%	0.01%	0.22%	0.02%	0.00%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.14%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.51%	99.14%	98.13%	99.15%	99.21%	97.71%	99.58%	99.00%	99.54%	98.86%	99.74%	98.89%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.11%	0.04%	0.03%	0.14%	0.22%	0.40%	0.01%	0.04%	0.20%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.82%	0.10%	0.03%	0.39%	0.41%	0.71%	0.07%	0.01%	0.46%	0.01%	0.02%	0.08%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.69%	0.40%	0.75%	0.91%	1.05%	0.64%	0.31%	0.52%	0.71%	0.08%	0.16%	0.51%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	0.91%	2.34%	4.93%	2.69%	1.12%	2.16%	0.01%	0.98%	1.87%	0.12%	2.58%	6.34%
	c) Connections with good voice quality	>=95%	Live data	96.91%	97.68%	98.82%	NP	96.22%	97.79%	98.74%	97.54%	97.41%	99.84%	99.09%	99.37%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0

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

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

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- FEBRUARY 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	0.05%	0.01%	0.05%	1.54%	0.03%	0.16%	0.19%	0.09%	0.02%	0.20%	0.06%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.07%	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.71%	99.05%	97.97%	99.04%	99.01%	97.61%	99.47%	98.93%	99.23%	99.04%	99.30%	98.85%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.02%	0.03%	0.30%	0.10%	0.32%	0.20%	0.02%	0.05%	0.16%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.15%	0.00%	0.11%	0.32%	0.57%	1.03%	0.18%	0.04%	0.77%	0.01%	0.00%	0.13%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.66%	0.40%	0.78%	0.92%	1.02%	0.58%	0.36%	0.54%	0.86%	0.07%	0.29%	0.55%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	0.96%	2.22%	5.08%	2.67%	1.01%	2.18%	0.03%	1.09%	2.67%	0.09%	6.20%	7.47%
	c) Connections with good voice quality	>=95%	Live data	96.98%	97.34%	98.79%	NP	96.21%	98.22%	98.61%	97.42%	97.09%	99.83%	98.96%	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) – MARCH-15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES GUJARAT CIRCLE- MARCH 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	0.04%	0.01%	0.09%	1.47%	0.04%	0.15%	0.36%	0.04%	0.02%	0.39%	0.14%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.01%	0.00%	0.00%	0.28%	0.01%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.75%	99.04%	98.15%	97.10%	98.98%	97.88%	99.23%	99.11%	98.74%	99.10%	99.68%	98.76%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.01%	0.02%	0.04%	0.15%	0.29%	0.28%	0.02%	0.05%	0.43%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.08%	0.01%	0.08%	0.49%	0.54%	1.04%	0.22%	0.03%	1.26%	0.00%	0.00%	0.23%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.57%	0.39%	0.71%	0.93%	1.09%	0.52%	0.37%	0.50%	0.77%	0.47%	0.06%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	0.90%	2.22%	5.17%	2.84%	1.40%	1.67%	0.00%	0.93%	2.36%	0.12%	0.78%	7.61%
	c) Connections with good voice quality	>=95%	Live data	97.13%	97.48%	98.87%	NP	95.96%	98.23%	98.61%	97.24%	97.25%	99.84%	99.15%	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 JANUARY TO MARCH 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	0.05%	0.03%	0.06%	1.51%	0.03%	0.19%	0.25%	0.08%	0.02%	0.27%	0.07%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.00%	0.00%	0.00%	0.16%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	99.66%	99.08%	98.08%	98.43%	99.07%	97.73%	99.43%	99.01%	99.17%	99.00%	99.57%	98.83%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.05%	0.03%	0.12%	0.13%	0.28%	0.29%	0.02%	0.05%	0.26%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.35%	0.04%	0.07%	0.40%	0.51%	0.93%	0.16%	0.03%	0.83%	0.01%	0.01%	0.15%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.64%	0.40%	0.75%	0.92%	1.05%	0.58%	0.35%	0.52%	0.78%	0.21%	0.17%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	0.92%	2.26%	5.06%	2.73%	1.18%	2.00%	0.01%	1.00%	2.30%	0.11%	3.19%	7.14%
	c) Connections with good voice quality	>=95%	Quarterly	97.01%	97.50%	98.83%	NP	96.13%	98.08%	98.65%	97.40%	97.25%	99.84%	99.07%	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, Tata (CDMA) and MTS**. The quarterly average performance of **Tata (GSM), Tata (CDMA) and MTS** for this parameter was **5.06%, 7.14 % and 3.19 %** 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- Jan 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		Jan-15	7358	827	2156	4290	6625	3838	2532	1964	8007	1109	577	581
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Jan-15	2661	168	693	54231	1623	3291	4190	970	1108	1762	146	59
	c) BTS Accumulated Downtime	<=2%	Jan-15	0.05%	0.03%	0.04%	1.70%	0.03%	0.12%	0.22%	0.07%	0.02%	0.21%	0.03%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Jan-15	7	0	0	76	4	18	8	3	0	5	0	0
	e) Worst affected BTSs due to downtime	<=2%	Jan-15	0.10%	0.00%	0.00%	1.77%	0.06%	0.47%	0.32%	0.15%	0.00%	0.45%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Jan-15	99.60%	99.18%	98.10%	98.83%	98.96%	97.79%	99.55%	99.06%	99.64%	99.06%	99.73%	98.72%
	b) SDCCH/PAGING Congestion	<=1%	Jan-15	0.09%	0.04%	0.02%	0.16%	0.37%	0.31%	0.01%	0.07%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Jan-15	0.55%	0.07%	0.04%	0.43%	0.51%	0.83%	0.14%	0.05%	0.36%	0.00%	0.01%	0.28%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Jan-15	0.66%	0.38%	0.75%	0.92%	1.03%	0.60%	0.33%	0.52%	0.74%	0.06%	0.14%	0.53%
	b) Worst affected cells>3% TCH drop	<=3%	Jan-15	0.90%	2.02%	4.85%	2.75%	1.11%	2.19%	0.01%	0.99%	2.18%	0.14%	2.47%	7.24%

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle- Jan 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%	Jan-15	97.00%	97.68%	98.82%	NP	96.30%	98.09%	98.70%	97.53%	97.38%	99.84%	99.11%	99.36%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Jan-15	204	50	314	343	220	264	1	59	530	5	46	123
	e) Total no. of cells (Sector) in the licensed service area		Jan-15	22768	2481	6476	12492	19835	12077	7457	5947	24290	3326	1866	1693
4	No. of POI's having >=0.5% POI congestion														
	No. of POI's having >=0.5% POI congestion		Jan-15	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Jan-15	0	0	0	0	0	0	0	0	0	0	0	0
5	Network Data														
	a) Equipped Capacity of Network in Erlang		Jan-15	223657	32118	114597	317000	277381	144756	144000	87738	429130	144000	21000	92987
	b) Total traffic in TCBH in erlang (Avg.)		Jan-15	173432	8925	31688	82285	224731	157365	129752	25507	358823	40318	1352	14673
	c) Total no. of customers served (as per VLR) on last day of the month		Jan-15	7462953	9220	1411975	2670540	11282513	4774999	3151221	1145114	17420536	1201258	105820	257958

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- Jan-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	7345	827	2156	4290	6592	3848	2532	1964	7937	1108	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	364	37	67	4676	154	740	370	136	40	173	8	0
	c) BTS Accumulated Downtime	<=2%	Live data	0.07%	0.06%	0.04%	1.51%	0.03%	0.27%	0.20%	0.10%	0.01%	0.22%	0.02%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	0	6	0	1	0	0	0	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.14%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.51%	99.14%	98.13%	99.15%	99.21%	97.71%	99.58%	99.00%	99.54%	98.86%	99.74%	98.89%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.11%	0.04%	0.03%	0.14%	0.22%	0.40%	0.01%	0.04%	0.20%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Live data	0.82%	0.10%	0.03%	0.39%	0.41%	0.71%	0.07%	0.01%	0.46%	0.01%	0.02%	0.08%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Live data	0.69%	0.40%	0.75%	0.91%	1.05%	0.64%	0.31%	0.52%	0.71%	0.08%	0.16%	0.51%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	0.91%	2.34%	4.93%	2.69%	1.12%	2.16%	0.01%	0.98%	1.87%	0.12%	2.58%	6.34%
	c) % of connections with good voice quality	>=95%	Live data	96.91%	97.68%	98.82%	NP	96.22%	97.79%	98.74%	97.54%	97.41%	99.84%	99.09%	99.37%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	206	58	319	339	222	261	1	58	449	4	49	112
e) Total no. of cells (Sector) in the licensed service area		Live data	22748	2481	6475	12613	19814	12080	7457	5948	24064	3324	1902	1766	
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 - Feb 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		Feb-15	7410	826	2012	4291	6684	3823	2530	1969	8084	1108	578	581
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Feb-15	3449	164	845	46216	1418	3026	4583	1006	1012	2035	157	109
	c) BTS Accumulated Downtime	<=2%	Feb-15	0.07%	0.03%	0.06%	1.60%	0.03%	0.12%	0.27%	0.08%	0.02%	0.27%	0.04%	0.03%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Feb-15	4	0	3	81	4	14	6	0	0	2	0	0
e) Worst affected BTSs due to downtime	<=2%	Feb-15	0.05%	0.00%	0.15%	1.89%	0.06%	0.37%	0.24%	0.00%	0.00%	0.18%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Feb-15	99.56%	99.03%	98.11%	98.65%	98.98%	97.78%	99.47%	98.76%	99.33%	99.06%	99.24%	98.85%
	b) SDCCH/PAGING Congestion	<=1%	Feb-15	0.12%	0.07%	0.05%	0.12%	0.46%	0.22%	0.02%	0.10%	0.16%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Feb-15	0.47%	0.10%	0.05%	0.40%	0.98%	0.89%	0.19%	0.04%	0.67%	0.01%	0.00%	0.15%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Feb-15	0.66%	0.40%	0.73%	0.92%	1.06%	0.59%	0.37%	0.54%	0.83%	0.07%	0.44%	0.53%
	b) Worst affected cells>3% TCH drop	<=3%	Feb-15	1.00%	2.10%	5.01%	2.69%	1.14%	2.09%	0.05%	1.12%	2.46%	0.15%	6.35%	6.55%
	c) % of connections with good voice quality	>=95%	Feb-15	96.88%	97.34%	98.83%	NP	96.11%	98.21%	98.61%	97.43%	97.19%	99.84%	99.01%	99.36%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Feb-15	228	52	323	340	227	252	4	67	604	5	5	211
e) Total no. of cells (Sector) in the licensed service area		Feb-15	22843	2478	6444	12659	19997	12040	7454	5963	24538	3327	86	3221	

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle - Feb 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		Feb-15	0	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Feb-15	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Network Data															
	a) Equipped Capacity of Network in Erlang		Feb-15	227841	30980	114375	317000	283859	144029	144000	87602	435779	144000	21000	96110	
	b) Total traffic in TCBH in erlang (Avg.)		Feb-15	176505	9437	33298	84459	240622	169620	133528	27461	391284	42848	1743	15469	
	c) Total no. of customers served (as per VLR) on last day of the month		Feb-15	7485704	8649	1371501	2665552	11423493	4845915	3309699	1153322	17485467	1209505	74580	258362	

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 - Feb 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	7360	826	2156	4290	6665	3823	2531	1968	8007	1109	577	581
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Live data	263	4	77	4766	125	440	340	129	119	161	24	9
	c) BTS Accumulated Downtime	<=2%	Live data	0.05%	0.01%	0.05%	1.54%	0.03%	0.16%	0.19%	0.09%	0.02%	0.20%	0.06%	0.02%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	0	3	0	2	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.00%	0.07%	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.71%	99.05%	97.97%	99.04%	99.01%	97.61%	99.47%	98.93%	99.23%	99.04%	99.30%	98.85%
	b) SDCCCH/PAGING Congestion	<=1%	Live data	0.02%	0.03%	0.30%	0.10%	0.32%	0.20%	0.02%	0.05%	0.16%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.15%	0.00%	0.11%	0.32%	0.57%	1.03%	0.18%	0.04%	0.77%	0.01%	0.00%	0.13%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.66%	0.40%	0.78%	0.92%	1.02%	0.58%	0.36%	0.54%	0.86%	0.07%	0.29%	0.55%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	0.96%	2.22%	5.08%	2.67%	1.01%	2.18%	0.03%	1.09%	2.67%	0.09%	6.20%	7.47%
	c) % of connections with good voice quality	>=95%	Live data	96.98%	97.34%	98.79%	NP	96.21%	98.22%	98.61%	97.42%	97.09%	99.83%	98.96%	99.36%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	218	55	329	341	202	262	2	65	648	3	5	132
	e) Total no. of cells (Sector) in the licensed service area		Live data	22818	2478	6475	12794	20032	12038	7454	5960	24290	3327	86	1768
No. of POI's having >=0.5% POI congestion															
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0	0

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

TABLE: 5

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle - Mar 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		Mar-15	7452	826	2014	4302	6771	3824	2530	1975	8161	1116	578	581
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Mar-15	2703	151	863	46431	1955	3460	4122	861	1304	1760	152	53
	c) BTS Accumulated Downtime	<=2%	Mar-15	0.05%	0.02%	0.06%	1.45%	0.04%	0.12%	0.22%	0.06%	0.02%	0.21%	0.04%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Mar-15	6	0	0	78	5	19	8	1	0	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Mar-15	0.08%	0.00%	0.00%	1.81%	0.07%	0.50%	0.32%	0.05%	0.00%	0.00%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Mar-15	99.65%	99.06%	98.14%	97.11%	98.99%	97.85%	99.41%	99.13%	99.14%	99.11%	99.57%	98.26%
	b) SDCCH/PAGING Congestion	<=1%	Mar-15	0.06%	0.04%	0.04%	0.12%	0.42%	0.21%	0.02%	0.07%	0.22%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Mar-15	0.41%	0.09%	0.05%	0.48%	0.59%	0.94%	0.27%	0.05%	0.86%	0.00%	0.00%	0.70%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Mar-15	0.62%	0.38%	0.69%	0.92%	1.02%	0.53%	0.36%	0.50%	0.77%	0.12%	0.18%	0.55%

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



Detailed Network Data Assessment of Cellular Mobile Telephone Services- Gujarat Circle - Mar 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%	Mar-15	0.98%	2.22%	4.91%	2.77%	1.13%	1.92%	0.01%	0.92%	2.22%	0.21%	2.14%	6.90%
	c) % of connections with good voice quality	>=95%	Mar-15	97.03%	97.46%	98.88%	NP	96.27%	98.20%	98.61%	97.52%	97.25%	99.83%	99.10%	99.36%
	d)Total No. of cells exceeding 3% TCH drop (call drop)		Mar-15	225	55	297	352	229	231	1	55	551	7	2	122
	e) Total no. of cells (Sector) in the licensed service area		Mar-15	22997	2478	6047	12699	20189	12041	7451	5990	24777	3331	86	1769
No. of POI's having >=0.5% POI congestion															
4	No. of POI's having >=0.5% POI congestion		Mar-15	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Mar-15	0	0	0	0	0	0	0	0	0	0	0	0
Network Data															
5	a) Equipped Capacity of Network in Erlang		Mar-15	230336	30893	109417	317000	289376	126185	144000	87517	454193	144000	21000	95416
	b) Total traffic in TCBH in erlang (Avg.)		Mar-15	165700	8945	31431	83244	240988	175754	137071	26528	385086	42566	1636	14868
	c) Total no. of customers served (as per VLR) on last day of the month		Mar-15	7494090	9042	1301792	2488746	11616376	4490045	3499378	1143810	17530351	1215870	82097	254091

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- Mar 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	7398	826	2014	4294	6731	3824	2530	1974	8084	1108	578	581
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Live data	229.45	3.72	134.35	4550.00	209	401	658	60.64	119.07	312	59.92	6.533
	c) BTS Accumulated Downtime	<=2%	Live data	0.04%	0.01%	0.09%	1.47%	0.04%	0.15%	0.36%	0.04%	0.02%	0.39%	0.14%	0.02%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	1	0	0	12	1	1	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.01%	0.00%	0.00%	0.28%	0.01%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.75%	99.04%	98.15%	97.10%	98.98%	97.88%	99.23%	99.11%	98.74%	99.10%	99.68%	98.76%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.01%	0.02%	0.04%	0.15%	0.29%	0.28%	0.02%	0.05%	0.43%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.08%	0.01%	0.08%	0.49%	0.54%	1.04%	0.22%	0.03%	1.26%	0.00%	0.00%	0.23%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.57%	0.39%	0.71%	0.93%	1.09%	0.52%	0.37%	0.50%	0.77%	0.47%	0.06%	0.53%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	0.90%	2.22%	5.17%	2.84%	1.40%	1.67%	0.00%	0.93%	2.36%	0.12%	0.78%	7.61%
	c) % of connections with good voice quality	>=95%	Live data	97.13%	97.48%	98.87%	NP	95.96%	98.23%	98.61%	97.24%	97.25%	99.84%	99.15%	99.36%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	206	55	313	357	283	201	0	56	580	4	1	135
	e) Total no. of cells (Sector) in the licensed service area		Live data	22948	2478	6049	12588	20227	12042	7451	5993	24538	3325	86	1769
No. of POI's having >=0.5% POI congestion															
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0	0

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

CUSTOMER SERVICE QUALITY (CSD) PARAMETERS



5.3 CUSTOMER SERVICE QUALITY PARAMETERS MEASUREMENT FOR CMTS:

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

QUARTERLY CSD AUDITED DATA FOR CELLULAR MOBILE TELEPHONE SERVICES

S/ N	Name of Parameter	Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	UNINOR	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
				GSM Operators									CDMA Operators		
Customer Service Quality Parameters															
Metering & Billing Credibility -Post Paid															
1	A) No. of bills issued during the quarter		GUJ	NA	1323491	155129	NA	1414526	172344	168928	NA	5098513	132969	451420	49651
	B) No. of bills disputed including billing complaints during the quarter		GUJ	NA	96	47	NA	1351	137	0	NA	4756	94	389	0
	C)% of billing complaints during the quarter	<= 0.1%	GUJ	NA	0.01%	0.03%	NA	0.10%	0.08%	0.00%	NA	0.09%	0.07%	0.09%	0.00%
Metering & Billing Credibility -Pre Paid															
2	A) Total No. of Pre-paid customers at the end of the quarter		GUJ	16935	7606953	2966735	7357556	10505417	3594508	3216788	2339057	17058904	203370	1063001	255243
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		GUJ	0	129	3901	514	5846	3041	0	10	4738	23	406	0
	C) % of Pre-paid Charging Complaints	<= 0.1%	GUJ	0.00%	0.00%	0.13%	0.01%	0.06%	0.08%	0.00%	0.00%	0.03%	0.01%	0.04%	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	225	3948	514	16367	3178	3591	10	9494	117	795	98
	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	225	3948	514	16367	3178	3591	10	9494	117	795	98

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	225	3948	514	16367	3178	3591	10	9494	117	795	98
	D) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	>=98% within 4 weeks	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	E) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 6 weeks	100% within 6 weeks		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	F) % of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Response time to customers for assistance															
4	A) Total no of calls attempted to customer care/Call center		GUJ	14104	1873802	294983	15081684	20839483	11663770	662009	233073	36787086	4703	846771	52285
	B) Total no. of calls successfully established to customer care/Call center		GUJ	13578	1858064	286779	15019251	20709397	11516174	650202	233073	36787086	4490	831004	51358
	C) % Accessibility of Call centre /customer Care (Total call successfully established *100/ Total call attempt)	>=95%	GUJ	96.27%	99.16%	97.22%	99.59%	99.38%	98.73%	98.22%	100%	100%	95.47%	98.14%	98.23%
	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		GUJ	6111	3524253	1705331	4254429	7795382	970850	1347698	762631	9309612	64212	179943	78074

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	5921	3335001	1659660	4205452	7758172	621856	1298977	747437	9055428	61313	154125	76614
	F) % age of calls answered by operator(voice to voice) (Total call successfully established within 90 sec.*100 / Total call attempts)	>=95%	GUJ	96.89%	94.63%	97.32%	98.85%	99.52%	64.05%	96.38%	98.01%	97.27%	95.49%	85.65%	98.13%
Termination/closure of service															
5	A) Total No. of requests for Termination / Closure of service received during the quarter		GUJ	NA	2747	3299	NA	9265	625	3004	NA	20904	4094	3320	2078
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		GUJ	NA	2747	3299	NA	9265	625	3004	NA	20904	4094	3320	2078
	C) % of Termination/ Closure of service within 7 days	<=7days	GUJ	NA	100%	100%	NA	100%	100%	100%	NA	100%	100%	100%	100%
Time taken for refunds of deposits after closures.															
6	A) No. of Payments/ Refunds due during the quarter		GUJ	NA	1445	1482	NA	2679	1949	627	NA	7805	0	2260	545
	B) No. of Payments/ Refunds Cleared during the quarter		GUJ	NA	1445	1482	NA	2679	1949	625	NA	7805	0	2260	539
	C) Time taken for refunds of deposits after closures.	100% within 60 days	GUJ	NA	100%	100%	NA	100%	100%	99.68%	NA	100%	100%	100%	98.90%

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

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

CSD 3 DAYS LIVE DATA FOR CELLULAR MOBILE TELEPHONE SERVICES – QE MARCH 2015

S/ N	Name of Parameter	Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	UNINOR	IDEA	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
				GSM Operators									CDMA Operators		
Response time to customers for assistance															
1	Total no of calls attempted to customer care/Call center		GUJ	540	64891	12938	483870	792397	255396	20924	10677	1299886	289	27551	2940
	Total no. of calls successfully established to customer care/Call center		GUJ	540	64891	12710	481796	786051	251746	20747	10677	1299886	287	27025	2912
	% Accessibility of Call centre /customer Care (Total call successfully established*100 / Total call attempts)	>=95%	GUJ	100%	100%	98.24%	99.57%	99.20%	98.57%	99.15%	100%	100%	99.31%	98.09%	99.05%
	Total Calls reached to operator for Voice to Voice (Total call attempts)		GUJ	252	120351	61600	139056	258003	31659	39247	21908	338646	3481	3600	2602
	Total number of calls answered by the operator (Voice to voice) within 90 seconds		GUJ	241	109817	60363	138683	256201	15193	38939	21493	329797	3382	3477	2575
	% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100 / Total call attempts)	>=95%	GUJ	95.63%	91.25%	97.99%	99.73%	99.30%	47.99%	99.22%	98.11%	97.39%	97.16%	96.58%	98.96%

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 **0.13%**.

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) and RCOM (CDMA)** have not met the benchmark of **'calls answered by Operators (voice to voice) within 90 seconds'**. They remained short of benchmark with their performance as **94.63%, 64.05% and 85.65%** respectively.

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.

5. Time Taken for Refund of deposits after closures

All operators, except **Tata (GSM) & Tata (CDMA)** were found to have complied with the benchmark of 100% refund of deposits within 60 days of closure. **Tata (GSM) & Tata (CDMA)** remained short of benchmark with their performance as **99.68% & 98.90%** respectively.

Live Measurements:

The results for three days live measurements reveal that all operators have met the benchmarks for the parameters 'Accessibility to call center'. However, **RCOM (GSM)** failed to meet the benchmark of **'Call connection to operators (Voice to voice) within 90 seconds'** with its performance as **47.99%** respectively. The performance of **RCOM (GSM)** was very poor with respect to this parameter.

6. LIVE CALLING ASSESSMENT



6. LIVE CALLING ASSESSMENT:

6.1 INTER OPERATOR CALLS ASSESSMENT:

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

INTER OPERATOR CALL ASSESSMENT BASED ON LIVE MEASUREMENT													
Calling Operators	Circle Name	AIRCEL	AIRTEL	UNINOR	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	VIDEOCON	MTS	VODAFONE
AIRCEL	Gujarat	-	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AIRTEL	Gujarat	100%	-	100%	100%	100%	100%	100%	99%	99%	100%	100%	97%
UNINOR	Gujarat	100%	100%	-	100%	100%	98%	99%	100%	100%	99%	97%	100%
BSNL	Gujarat	99%	100%	97%	-	99%	100%	100%	100%	98%	100%	100%	99%
IDEA	Gujarat	100%	97%	100%	100%	-	100%	100%	100%	100%	98%	98%	100%
RCOM GSM	Gujarat	100%	100%	100%	98%	100%	-	99%	99%	100%	100%	100%	100%
RCOM CDMA	Gujarat	100%	100%	100%	100%	100%	100%	-	100%	98%	97%	100%	100%
TATA GSM	Gujarat	100%	100%	100%	100%	99%	99%	100%	-	100%	100%	99%	98%
TATA CDMA	Gujarat	98%	100%	99%	100%	100%	100%	100%	100%	-	100%	100%	100%
VIDEOCON	Gujarat	100%	99%	100%	98%	100%	98%	98%	97%	100%	-	100%	100%
MTS	Gujarat	100%	100%	100%	100%	100%	100%	100%	100%	98%	100%	-	99%
VODAFONE	Gujarat	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	-

The result of the testing revealed that the inter connection performance among the operators was satisfactory. However, in some cases where calls attempted from one operator to other, successful calls interconnection were in variation of 97% to 100% respectively. 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	100	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	GUJ	100	100	100	100	100	100	100	100	100	100	100	100
% Accessibility of Call centre /customer Care (Total call successfully established *100 /Total call attempts)	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total Calls reached to agent desk for Voice to Voice (Total call attempts)	GUJ	100	100	100	100	100	100	100	100	100	100	100	100
Total number of calls answered by the operator (Voice to voice) within 90 seconds	GUJ	100	100	100	100	100	100	100	100	100	100	100	100
% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100/Total call attempts)	GUJ	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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

6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLAINTS:

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	NA	100	100	100	100	100	100	10	100	100	100	98
Total No. of calls Answered	Gujarat	NA	97	95	91	99	95	94	9	98	89	94	90
Resolution of Billing complaints	Gujarat	NA	96	92	90	97	94	93	9	97	88	93	89
%age of cases resolved	Gujarat	NA	98.97%	96.84%	98.90%	97.98%	98.95%	98.94%	100.00%	98.98%	98.88%	98.94%	98.89%

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. During live calling, some of the customers did not attend the calls while some others reported that there complaints have been resolved but not sure of duration of their resolution. %age of resolution of billing complaints was 96.84% to 100%.

6.4 LEVEL -1 CALLING ASSESSMENT:

LEVEL 1 LIVE CALLING																			
Emergency no.	Circle Name	Month of Drive Test	SSA Name	Name of SDCA	No. of calls made	AIRCEL	AIRTEL	UNINOR	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	VIDEOCON	MTS	VODAFONE		
100, 108, 1091, 1098,1095	Gujarat	JAN'15	Amreli SSA	Amreli	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
				Dhari	5	NC	✓	✓	✓	✓	✓	✓	NC	✓	NC	✓	NC	✓	
				Kunkavav	5	NC	✓	✓	✓	✓	✓	✓	NC	NC	NC	✓	NC	✓	
				Savarkundla	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓	
				Rajula	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
				Babra	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓
				Damnagar	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓
		FEB'15	Bharuch SSA	Bharuch	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
				Jhagadiya	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓	
				Valia	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓	
				Ankleshwar	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
				Amod	5	NC	✓	✓	✓	✓	✓	✓	✓	NC	✓	NC	✓	NC	✓
				Jambhusar	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓
				Rajpipla	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	NC	✓	✓	✓
		Dediapada	5	NC	✓	NC	✓	✓	✓	NC	NC	NC	NC	NC	NC	NC	NC	✓	
		MAR'15	Godhra SSA	Godhra	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
				Shehera	5	NC	✓	✓	✓	✓	✓	✓	NC	✓	NC	✓	NC	✓	✓
				Dahod	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
				Devgadh baria	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	NC	NC	NC	✓	✓
				Limkheda	5	NC	✓	✓	✓	✓	✓	NC	NC	NC	NC	NC	NC	NC	✓
				Halol	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lunawada	5	NC	✓	✓	✓	✓	✓	✓	✓	✓	✓	NC	NC	NC	✓	✓			

NC: No Coverage

To assess the availability and efficiency of level 1 services such as police, fire, ambulance (emergency services) offered by various mobile service providers, the calls were made during drive tests from different SDCA in Amreli, Bharuch and Godhra 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 **Amreli, Bharuch and Godhra** in the months of January, February and March 2015 respectively. The total route Kms covered during drive tests in respective SSAs was **329 Kms, 327 Kms and 315 Kms**. The performance of the operators has been highlighted below in the tables. The drive test was conducted simultaneously for all the operators following the same route of drive tests. The holding period for all test calls was 120 seconds. The drive test vehicle across all routes plied at a speed of about 30-50 km per hour

For measuring voice quality, Rx Qual samples on a scale from 0 to 7 for GSM operators and Frame Error Rate (FERs) for CDMA service providers were measured. As per the QoS norms, Rx Qual between 0- 5 for GSM operators and between 0-4 % FER value for CDMA operators is considered to be good, where as Rx Qual beyond this benchmark is considered to be bad. Call drops were measured by the number of calls that were dropped to the total number of calls established during the drive test. Similarly CSSR was measured as the ratio of total calls established to the total call attempts made. Signal strength was measured in dBm at street level with strength ≥ -75 dBm for in-door coverage and ≥ -85 dBm for in-vehicle.

DRIVE TEST TABLE-1A

OPERATOR ASSISTED DRIVE TEST AT AMRELI SSA IN JANUARY 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	NC	NC	147	26	115	25	142	25	131	25	141	25
		Major Roads	NC	NC	152	25	133	25	154	25	159	25	143	26
		Within City	NC	NC	181	25	166	25	195	25	180	25	183	25
		Overall SSA	NC	NC	480	76	414	75	491	75	470	75	467	76
2	Blocked Call Rate	Highways	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%
		Overall SSA	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	NC	NC	0.00%	0.00%	0.87%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	NC	NC	0.00%	0.00%	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	0.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	NC	NC	0.00%	0.00%	0.97%	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	NC	NC	98.20%	97.06%	96.95%	100%	97.38%	99.92%	98.75%	99.02%	98.85%	100%
		Major Roads	NC	NC	98.24%	99.85%	96.56%	99.15%	97.42%	99.45%	98.86%	99.08%	99.18%	100%
		Within City	NC	NC	98.86%	99.71%	97.23%	100%	97.96%	99.62%	98.76%	99.39%	99.17%	100%
Overall SSA		NC	NC	98.46%	98.84%	96.95%	99.17%	97.62%	99.67%	98.79%	99.16%	99.08%	100%	
5	Service Coverage													
	In door (>= -75dBm)	Highways	NC	NC	93.51%	91.48%	68.07%	100%	59.77%	84.26%	98.39%	100%	91.98%	100%
		Major Roads	NC	NC	94.47%	100%	66.40%	90.00%	63.60%	99.75%	99.23%	99.93%	89.07%	100%
		Within City	NC	NC	93.82%	100%	72.98%	100%	52.39%	2.94%	97.61%	99.93%	92.49%	100%
		Overall SSA	NC	NC	93.94%	94.24%	69.52%	90.18%	58.59%	62.32%	98.38%	99.95%	91.29%	100%

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



OPERATOR ASSISTED DRIVE TEST AT AMRELI SSA IN JANUARY 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	NC	NC	99.44%	98.80%	95.12%	100%	92.30%	99.91%	99.95%	100%	98.76%	100%
		Major Roads	NC	NC	99.56%	100%	93.91%	99.67%	93.33%	100%	99.97%	100%	98.66%	100%
		Within City	NC	NC	99.32%	100%	97.56%	100%	90.07%	69.39%	99.92%	99.97%	99.79%	100%
		Overall SSA	NC	NC	99.43%	99.19%	95.73%	98.04%	91.90%	89.77%	99.95%	99.99%	99.13%	100%
	Outdoor- in city (>= - 95dBm)	Highways	NC	NC	99.80%	100%	99.86%	100%	99.46%	100%	100%	100%	99.96%	100%
		Major Roads	NC	NC	99.94%	100%	99.91%	100%	99.51%	100%	100%	100%	100%	100%
		Within City	NC	NC	99.94%	100%	99.97%	100%	99.32%	99.87%	99.99%	100%	100%	100%
		Overall SSA	NC	NC	99.90%	100%	99.92%	100%	99.43%	99.96%	100%	100%	99.99%	100%
6	Call Setup Success Rate (>=95%)	Highways	NC	NC	100%	100%	100%	100%	100%	100%	99.24%	100%	100%	100%
		Major Roads	NC	NC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	NC	NC	100%	100%	100%	100%	100%	100%	98.89%	100%	100%	100%
		Overall SSA	NC	NC	100%	100%	100%	100%	100%	100%	99.36%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Highways	NC	NC	100%	100%	99.41%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	NC	NC	100%	100%	92.25%	100%	99.07%	100%	100%	100%	100%	100%
		Within City	NC	NC	100%	100%	100%	100%	99.60%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	100%	100%	97.78%	100%	99.56%	100%	100%	100%	100%	100%

NA: Not Applicable

NC: No Coverage

DRIVE TEST TABLE-1B

OPERATOR ASSISTED DRIVE TEST AT AMRELI SSA IN JANUARY 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	142	25	151	25	115	25	115	25	49	25	127	25
		Major Roads	174	25	167	25	124	25	110	25	78	25	128	26
		Within City	188	25	164	25	175	26	129	25	89	NC	148	25
		Overall SSA	504	75	482	75	414	76	354	75	216	50	403	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%	0.00%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC	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	99.99%	100%	99.87%	100%	99.98%	100%
		Major Roads	NA	NA	NA	NA	NA	NA	99.97%	100%	99.70%	99.97%	99.97%	100%
		Within City	NA	NA	NA	NA	NA	NA	99.89%	100%	99.95%	NC	99.96%	100%
		Overall SSA	NA	NA	NA	NA	NA	NA	99.95%	100%	99.84%	99.98%	99.97%	100%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	95.83%	99.50%	98.26%	100%	97.28%	98.59%	NA	NA	NA	NA	NA	NA
		Major Roads	95.60%	97.22%	98.13%	99.42%	96.94%	99.76%	NA	NA	NA	NA	NA	NA
		Within City	96.07%	99.10%	98.06%	99.43%	97.02%	99.02%	NA	NA	NA	NA	NA	NA
		Overall SSA	95.84%	98.61%	98.15%	99.62%	97.07%	99.17%	NA	NA	NA	NA	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Highways	76.06%	100%	61.33%	99.98%	95.46%	100%	86.50%	100%	70.54%	100%	72.79%	100%
		Major Roads	78.86%	97.20%	66.91%	38.87%	97.59%	100%	87.66%	100%	67.20%	98.29%	78.50%	100%
		Within City	74.54%	96.40%	48.76%	93.42%	95.52%	100%	81.37%	99.52%	54.44%	NC	72.34%	47.07%
		Overall SSA	76.44%	97.87%	60.00%	77.42%	96.19%	100%	85.09%	99.84%	61.99%	99.15%	74.42%	88.13%

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



OPERATOR ASSISTED DRIVE TEST AT AMRELI SSA IN JANUARY 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	95.69%	100%	92.81%	100%	99.63%	100%	99.19%	100%	97.34%	100%	92.14%	100%
		Major Roads	97.03%	100%	91.44%	98.54%	99.68%	100%	99.66%	100%	95.63%	100%	96.54%	100%
		Within City	96.38%	100%	86.81%	100%	99.65%	100%	99.04%	100%	86.95%	NC	93.73%	100%
		Overall SSA	96.39%	100%	90.45%	99.51%	99.65%	100%	99.29%	100%	91.47%	100%	94.10%	100%
	Outdoor- in city (>= - 95dBm)	Highways	100%	100%	99.41%	100%	99.81%	100%	100%	100%	99.73%	100%	98.96%	100%
		Major Roads	100%	100%	99.45%	100%	99.93%	100%	99.99%	100%	99.11%	100%	99.93%	100%
		Within City	100%	100%	98.80%	100%	100%	100%	100%	100%	97.52%	NC	99.93%	100%
		Overall SSA	100%	100%	99.23%	100%	99.91%	100%	100%	100%	98.30%	100%	99.62%	100%
6	Call Setup Success Rate (>=95%)	Highways	98.59%	100%	99.34%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	98.85%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	98.94%	100%	98.78%	100%	100%	100%	100%	100%	100%	NC	100%	100%
		Overall SSA	98.81%	100%	99.38%	100%	100%	100%	100%	100%	100%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Highways	100%	100%	99.25%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	98.31%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	100%	100%	100%	100%	100%	100%	100%	100%	100%	NC	100%	100%
		Overall SSA	99.50%	100%	99.79%	100%	100%	100%	100%	100%	100%	100%	100%	100%

NA: Not Applicable

NC: No Coverage

DRIVE TEST TABLE-2A

OPERATOR ASSISTED DRIVE TEST AT BHARUCH SSA IN FEBRUARY 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	NC	NC	84	25	37	24	52	25	62	27	52	25
		Major Roads	NC	NC	158	25	94	25	102	25	140	25	122	25
		Within City	NC	NC	127	25	102	25	87	25	104	25	91	25
		Overall SSA	NC	NC	369	75	233	74	241	75	306	77	265	75
2	Blocked Call Rate	Highways	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	NC	NC	0.00%	0.00%	1.06%	0.00%	1.96%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	1.96%	4.00%	1.15%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	NC	NC	0.00%	0.00%	1.29%	1.35%	1.24%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	NC	NC	0.00%	0.00%	1.09%	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	NC	NC	0.00%	0.00%	1.31%	1.35%	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	NC	NC	96.58%	98.90%	94.46%	100%	96.89%	99.85%	97.90%	99.44%	97.45%	100%
		Major Roads	NC	NC	97.41%	98.02%	94.64%	99.09%	96.42%	99.95%	97.07%	99.52%	97.57%	97.60%
		Within City	NC	NC	98.09%	99.19%	95.53%	98.68%	98.21%	99.98%	98.72%	99.46%	98.40%	100%
Overall SSA		NC	NC	97.45%	98.73%	95.01%	99.27%	97.15%	99.93%	97.75%	99.47%	97.84%	99.43%	
5	Service Coverage													
	In door (>= -75dBm)	Highways	NC	NC	99.17%	100%	78.41%	100%	86.94%	58.79%	99.66%	65.55%	95.05%	100%
		Major Roads	NC	NC	97.26%	100%	71.75%	99.11%	75.74%	63.76%	98.18%	99.97%	92.85%	89.68%
		Within City	NC	NC	96.82%	99.77%	71.81%	96.77%	68.42%	59.69%	97.23%	82.58%	92.01%	100%
		Overall SSA	NC	NC	97.54%	99.92%	72.98%	98.58%	68.42%	60.74%	98.17%	82.90%	92.98%	97.57%

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



OPERATOR ASSISTED DRIVE TEST AT BHARUCH SSA IN FEBRUARY 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	NC	NC	99.92%	100%	96.16%	100%	98.16%	98.39%	100%	99.37%	100%	100%
		Major Roads	NC	NC	99.84%	100%	95.77%	99.11%	93.36%	98.37%	99.90%	100%	99.54%	100%
		Within City	NC	NC	99.82%	100%	94.00%	99.35%	93.41%	97.92%	99.94%	99.87%	99.95%	100%
		Overall SSA	NC	NC	99.85%	100%	95.06%	99.53%	93.41%	98.22%	99.93%	99.75%	99.77%	100%
	Outdoor- in city (>= - 95dBm)	Highways	NC	NC	99.96%	100%	99.82%	100%	99.88%	99.96%	100%	99.98%	100%	100%
		Major Roads	NC	NC	99.94%	100%	99.88%	100%	98.59%	99.96%	100%	100%	100%	100%
		Within City	NC	NC	99.95%	100%	99.70%	100%	99.05%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	99.95%	100%	99.79%	100%	99.05%	99.97%	100%	99.99%	100%	100%
6	Call Setup Success Rate (>=95%)	Highways	NC	NC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	NC	NC	100%	100%	97.87%	100%	98.04%	100%	100%	100%	100%	100%
		Within City	NC	NC	100%	100%	98.04%	100%	98.85%	100%	99.04%	100%	100%	100%
		Overall SSA	NC	NC	100%	100%	98.28%	100%	98.76%	100%	99.67%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Highways	NC	NC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	NC	NC	100%	100%	97.32%	100%	99.54%	100%	99.50%	100%	100%	100%
		Within City	NC	NC	100%	100%	99.45%	100%	99.38%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	100%	100%	98.99%	100%	99.61%	100%	99.75%	100%	100%	100%

NA: Not Applicable

NC: No Coverage

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

DRIVE TEST TABLE-2B

OPERATOR ASSISTED DRIVE TEST AT BHARUCH SSA IN FEBRUARY 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	50	25	59	25	82	25	45	25	37	25	52	25
		Major Roads	127	25	125	25	125	26	114	25	54	25	118	25
		Within City	110	25	96	25	101	25	73	25	50	NC	81	25
		Overall SSA	287	75	405	75	308	76	232	75	141	50	251	75
2	Blocked Call Rate	Highways	0.00%	0.00%	0.00%	0.00%	1.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	2.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	0.00%
		Overall SSA	1.39%	0.00%	0.00%	0.00%	0.32%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	0.00%
		Overall SSA	1.10%	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	99.98%	100%	97.96%	99.91%	99.45%	100%
		Major Roads	NA	NA	NA	NA	NA	NA	99.94%	100%	99.10%	99.92%	98.94%	97.59%
		Within City	NA	NA	NA	NA	NA	NA	99.86%	100%	99.50%	NC	99.54%	100%
		Overall SSA	NA	NA	NA	NA	NA	NA	99.92%	100%	98.97%	99.91%	99.25%	99.43%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	96.23%	98.81%	98.21%	99.92%	96.65%	99.74%	NA	NA	NA	NA	NA	NA
		Major Roads	94.99%	97.54%	97.59%	99.30%	95.62%	99.02%	NA	NA	NA	NA	NA	NA
		Within City	96.55%	99.59%	99.15%	99.95%	95.78%	99.06%	NA	NA	NA	NA	NA	NA
		Overall SSA	95.82%	98.65%	98.04%	99.73%	96.01%	99.26%	NA	NA	NA	NA	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Highways	76.06%	97.32%	87.26%	100%	99.43%	100%	87.16%	99.28%	78.39%	99.44%	93.47%	100%
		Major Roads	78.86%	99.68%	81.48%	100%	98.13%	100%	90.12%	94.57%	66.77%	100%	88.36%	64.94%
		Within City	74.54%	30.90%	68.21%	78.84%	98.46%	100%	83.67%	3.87%	77.17%	NC	86.93%	99.61%
		Overall SSA	76.49%	75.97%	78.99%	92.95%	98.67%	100%	87.47%	65.90%	73.37%	99.73%	88.93%	88.18%

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



OPERATOR ASSISTED DRIVE TEST AT BHARUCH SSA IN FEBRUARY 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	95.69%	100%	98.77%	100%	99.90%	100%	99.55%	99.74%	99.30%	100%	99.96%	100%
		Major Roads	97.03%	100%	96.61%	100%	99.68%	100%	99.66%	100%	96.74%	100%	99.64%	100%
		Within City	96.38%	93.31%	94.97%	97.68%	99.88%	100%	97.52%	99.92%	98.41%	NC	98.74%	100%
		Overall SSA	96.37%	97.77%	96.79%	99.23%	99.82%	100%	98.95%	99.89%	97.97%	100%	99.40%	100%
	Outdoor- in city (>= - 95dBm)	Highways	100%	100%	99.76%	100%	99.96%	100%	99.96%	99.98%	99.99%	100%	100%	100%
		Major Roads	100%	100%	99.74%	100%	99.96%	100%	99.95%	100%	100%	100%	100%	100%
		Within City	100%	100%	99.81%	99.45%	99.94%	100%	99.32%	100%	99.64%	NC	100%	100%
		Overall SSA	100%	100%	99.77%	99.82%	99.95%	100%	99.75%	99.99%	99.86%	100%	100%	100%
6	Call Setup Success Rate (>=95%)	Highways	100%	100%	100%	100%	98.78%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	99.21%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	97.27%	100%	100%	100%	100%	100%	100%	100%	100%	NC	100%	100%
		Overall SSA	98.61%	100%	100%	100%	99.68%	100%	100%	100%	100%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Highways	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	96.91%	100%	99.51%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	100%	100%	99.21%	100%	100%	100%	100%	100%	100%	NC	100%	100%
		Overall SSA	98.49%	100%	99.55%	100%	100%	100%	100%	100%	100%	100%	100%	100%

NA: Not Applicable

NC: No Coverage

DRIVE TEST TABLE-3A

OPERATOR ASSISTED DRIVE TEST AT GODHRA SSA IN MARCH 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	NC	NC	76	25	38	16	38	25	61	25	48	25
		Major Roads	NC	NC	122	25	63	25	61	25	85	25	82	25
		Within City	NC	NC	142	25	79	25	73	25	111	25	107	25
		Overall SSA	NC	NC	340	75	180	66	172	75	257	75	237	75
2	Blocked Call Rate	Highways	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	NC	NC	0.00%	0.00%	0.00%	0.00%	3.28%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	0.00%	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	NC	NC	0.00%	0.00%	0.00%	1.52%	1.16%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	NC	NC	0.00%	0.00%	0.00%	4.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	NC	NC	0.00%	0.00%	0.00%	1.54%	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	NC	NC	98.26%	97.55%	98.46%	99.77%	98.95%	99.95%	97.46%	99.26%	99.17%	100%
		Major Roads	NC	NC	98.06%	99.36%	98.72%	99.70%	99.21%	99.98%	98.53%	99.43%	99.26%	100%
		Within City	NC	NC	98.10%	99.70%	99.10%	100%	99.37%	99.97%	98.49%	98.52%	99.38%	100%
		Overall SSA	NC	NC	98.12%	98.95%	98.84%	99.84%	99.22%	99.97%	98.24%	99.07%	99.29%	100%
Service Coverage														
5	In door (>= -75dBm)	Highways	NC	NC	87.16%	100%	81.86%	100%	76.17%	98.22%	97.95%	99.67%	72.53%	100%
		Major Roads	NC	NC	84.13%	100%	87.40%	99.89%	68.57%	77.29%	97.73%	99.98%	76.64%	100%
		Within City	NC	NC	79.82%	100%	81.66%	100%	65.18%	99.62%	99.06%	99.87%	73.08%	100%
		Overall SSA	NC	NC	82.90%	100%	83.71%	100%	68.72%	91.69%	98.25%	99.84%	74.18%	100%

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OPERATOR ASSISTED DRIVE TEST AT GODHRA SSA IN MARCH 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	NC	NC	97.82%	100%	97.02%	100%	93.53%	99.99%	99.95%	100%	92.83%	100%
		Major Roads	NC	NC	96.82%	100%	98.88%	100%	92.70%	98.95%	99.93%	100%	92.99%	100%
		Within City	NC	NC	96.40%	100%	97.43%	100%	93.90%	99.99%	99.98%	100%	95.16%	100%
		Overall SSA	NC	NC	96.84%	100%	97.85%	100%	93.40%	99.64%	99.95%	100%	93.96%	100%
	Outdoor- in city (>= -95dBm)	Highways	NC	NC	99.88%	100%	99.95%	100%	98.44%	100%	100%	100%	99.15%	100%
		Major Roads	NC	NC	99.92%	100%	99.99%	100%	98.88%	99.94%	100%	100%	99.52%	100%
		Within City	NC	NC	99.85%	100%	99.87%	100%	99.12%	100%	100%	100%	99.29%	100%
		Overall SSA	NC	NC	99.88%	100%	99.93%	100%	98.89%	99.98%	100%	100%	99.34%	100%
6	Call Setup Success Rate (>=95%)	Highways	NC	NC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	NC	NC	100%	100%	100%	100%	96.72%	100%	98.82%	100%	100%	100%
		Within City	NC	NC	100%	100%	100%	96.00%	100%	100%	99.10%	100%	100%	100%
		Overall SSA	NC	NC	100%	100%	100%	98.48%	98.84%	100%	99.22%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Highways	NC	NC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	NC	NC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	NC	NC	100%	100%	94.70%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	100%	100%	97.68%	100%	100%	100%	100%	100%	100%	100%

NA: Not Applicable

NC: No Coverage

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

DRIVE TEST TABLE-3B

OPERATOR ASSISTED DRIVE TEST AT GODHRA SSA IN MARCH 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	77	24	66	25	90	19	41	25	40	25	43	26
		Major Roads	85	32	46	25	99	25	68	25	58	26	79	25
		Within City	104	27	86	25	117	28	95	25	80	25	108	25
		Overall SSA	266	83	198	75	306	72	204	75	178	76	230	76
2	Blocked Call Rate	Highways	1.30%	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	0.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Highways	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Major Roads	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percentage connections with good voice quality (=>95%)														
4	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Highways	NA	NA	NA	NA	NA	NA	89.92%	100%	98.27%	98.47%	99.06%	100%
		Major Roads	NA	NA	NA	NA	NA	NA	99.97%	100%	98.23%	98.90%	99.03%	100%
		Within City	NA	NA	NA	NA	NA	NA	99.99%	100%	98.58%	100%	99.35%	100%
		Overall SSA	NA	NA	NA	NA	NA	NA	97.96%	100%	98.39%	99.12%	99.18%	100%
	(b) 0-5 (with frequency hopping for GSM Operators)	Highways	96.64%	98.50%	98.58%	99.97%	95.85%	99.10%	NA	NA	NA	NA	NA	NA
		Major Roads	96.68%	98.99%	98.42%	99.39%	96.29%	99.26%	NA	NA	NA	NA	NA	NA
		Within City	96.77%	97.61%	99.37%	99.86%	96.50%	97.18%	NA	NA	NA	NA	NA	NA
		Overall SSA	96.71%	98.28%	98.90%	99.74%	96.27%	98.41%	NA	NA	NA	NA	NA	NA
Service Coverage														
5	In door (>= -75dBm)	Highways	84.80%	95.93%	65.19%	98.11%	96.61%	100%	60.85%	99.93%	62.33%	100%	66.74%	100%
		Major Roads	75.16%	92.59%	66.28%	99.81%	94.10%	100%	67.31%	100%	70.44%	77.39%	71.97%	100%
		Within City	71.99%	97.40%	68.26%	98.52%	97.98%	99.80%	80.57%	99.97%	81.56%	100%	74.08%	100%
		Overall SSA	76.35%	95.18%	66.58%	98.81%	96.23%	99.92%	72.19%	99.97%	74.72%	93.29%	71.97%	100%

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



OPERATOR ASSISTED DRIVE TEST AT GODHRA SSA IN MARCH 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	96.14%	97.80%	91.38%	98.35%	99.45%	100%	89.46%	100%	91.64%	100%	92.80%	100%
		Major Roads	92.54%	96.02%	91.65%	100%	98.84%	100%	88.33%	100%	95.91%	100%	93.47%	100%
		Within City	90.74%	98.26%	93.27%	98.81%	99.73%	100%	98.29%	99.97%	97.69%	100%	96.42%	100%
		Overall SSA	92.72%	97.29%	92.10%	99.05%	99.34%	100%	93.20%	99.99%	96.08%	100%	94.71%	100%
	Outdoor- in city (>= -95dBm)	Highways	100%	100%	99.37%	99.23%	99.81%	100%	98.54%	100%	99.41%	100%	99.45%	100%
		Major Roads	100%	100%	98.63%	100%	99.71%	100%	98.41%	100%	99.57%	100%	99.29%	100%
		Within City	100%	100%	98.84%	99.30%	99.99%	100%	99.93%	99.98%	99.69%	100%	99.97%	100%
		Overall SSA	100%	100%	98.95%	99.51%	99.83%	100%	99.14%	99.99%	99.60%	100%	99.64%	100%
6	Call Setup Success Rate (>=95%)	Highways	93.51%	91.67%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	97.65%	96.88%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	100%	96.30%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	97.37%	95.18%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Highways	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Roads	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

NA: Not Applicable

7.1 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

DRIVE TEST ROUTE OF JANUARY TO MARCH 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
AMRELI	Amreli, Dhari & Kunkavav / 120 KM	<p>Amreli:- Ghanshyamnagar, Jesingpara, Gajerapara, Panihari Society, Bhatarwadi, Satadharnagar, Manekpara, DLB Society, Bhojalpara, Sukhniwas Colony, Yamunapark, Madhuvan Park, KK Park, Yoginagar.</p> <p>Dhari:- Navapara, Prempara, Vekariya Paraa, Vrindavan Society, Main Bazaar, Shiv Nagar, Station Road, Sardar Patel Society.</p> <p>Kunkavav:- Kunkavav Amreli Highway, Kunkavav Gondal Highway, GSFC Depot.</p>	Meera Arcade, Amreli	Savarkundla, Rajula / 108 KM	<p>Savarkundla:- Shivajinagar, Gokula society, Khodiyarnagar, Piparwadi, Friends Society, Ambika society, Shreenagar, Panchwati Society, Manibhai Chock, Greenpark Society, Jalaram Society.</p> <p>Rajula:- Nana Ringaliyana, Durlabh Nagar, Ghanshyamnagar, Govt Colony, Anandnagar Society.</p>	Narayan Mall, Rajula	Babra, Damnagar / 101 KM	<p>Damnagar:- Damnagar Town, Ingorala Road, Station Road, Lathi Road, Thasa Road.</p> <p>Babra:- Babra Town Area, Amreli Road, Bhavnagar-Rajkot Highway, Khathariya, Amarapara.</p>	Neelkanth Complex, Babra

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DRIVE TEST ROUTE OF JANUARY TO MARCH 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
BHARUCH	Bharuch, Jhagadiya & Valiya / 120 KM	<p>Bharuch:- Jadeshwar, Meghdut colony, Sidhdharth Bunglow, Nandelav, Bholav, Alkanandapark, Ganeshpuri Society, Avdhutnagar, Maktampur, Shriji Kripa, Railway Colony, Arbudanagar, Govt. Colony, Khursid park, Abadnagar, Sobanpark, Soneri mahal, Old town Area.</p> <p>Jhagadiya:- Sultanpura, Jhagadiya Town, Primary school & sabzi mandi area.</p> <p>Valia:- Harinagar, Ankleshwar Rd, Valia Town, Gall mandi area, Panchayat Bhawan.</p>	Hotel Ashish, Bharuch	Ankleshwar, Jambusar & Amod / 127 KM	<p>Ankleshwar:- Happynagar, Chikuwadi, Shyamnagar, Taibahnagar, Boidara, Ramnagar, Jalaramnagar, Yogeshwarnagar, Andada, Gadkholpark, Padmavatinagar, Ankleshwar GIDC, Bhadkodra, Kapodra, Sanjoli.</p> <p>Jambusar:- Jambusar Town, Uplivat, Kalak, Lilotribazar, Limaj, Mahadevnagar society, Swayambhu society, Shivnagar society, Patalganga, Rehmatnagar, Balanagar..</p> <p>Amod: Amod market area, SS School, Bhagat singh choraha, Jambusar road.</p>	Hotel Sunplaza, Ankleshwar	Rajpipla & Dediapada / 80 KM	<p>Rajpipla:- Rajpipla Town, Kachiwad, Rajendranagar Society, Bhattsheri, Ganji fadia, Jalaram Society, Vadia, Ambikanagar society.</p> <p>Dediapada : Community health center, Auto stand, MS janaral store, School.</p>	Aditya complex, Rajpipla

DRIVE TEST ROUTE OF JANUARY TO MARCH 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
GODHRA	Godhra & Shehera / 92 KM	<p>Godhra- Kotiyark Society, soniwada, Bhagol, Navrang Society, Kabrastan Road, Near Navkaar Apartment, Anandnagar, surya Nagar, Bapunagar Society, Kanelav- Damavav rd, Chikodra Rd, Saatpul Rd, Godhra Railway Station, Chunnadi Rd, Lunawada Rd.</p> <p>Shehara- Gujarat State Highway, Near Petrol Pump, Lunawada Rd, Godhra Rd, Talaav Rd, Police Station, Seva Sadan</p>	Jayjala ram Plaza, Godhra	Dahod, Devgadha baria, Limkheda / 105 KM	<p>Dahod- Parsi Colony, Sindhi Society, Omkar Nagar, Sangam Park Society, Govindnagar, Shakar Nagar, Meghdoot Society, Talaav Rd, Railway Station Rd, Bus Stand Rd, Railway Colony, Godhra highway, alirajpur-Dahod Highway, Jerawada Rd, Govt Engg College, Mandav Rd.</p> <p>Devgarh Baria- Samdi Circle, Tower Road, Bazaar Rd, Nagar Seva Sadan, Near indian oil petrol pump, Police Station, Sports Training Grnd, Talaav Rd, Godhra Highway, Shukravari Market, Devgadha baria- Piploda Highway.</p> <p>Limkheda- Jhalod Highway, Shri Harihar School, Limkheda Rd, Taluka Panchayat kachahari, GENCO, Godhra Highway, Traffic Police Station, Godhra- Indore Highway</p>	Hotel Laxmi inn, Dahod	Halol, Lunawada / 118 KM	<p>Halol- Ghyanshyam Nagar, Meghdoot Co.op Housing Society, Station Road, Araad Road, Talaav Road, Main Market Area, Kalahari Duplex, Zaapa Bazaar, Area of Bus Stand Circle, Panchmahal circle, Giriraj Nagar, Shantivan Road, Amrapali Society, Vegetable Market area, Opp Narmada Colony, Kanjari Road, Halol bypass Rd.</p> <p>Lunawada- Vikas path, Kubernagar, Kabristan Road, Hidayat Nagar, Kanka Rd, Market area, Madni primary school, Char koshiya Nakaa, Bus Stand Lunawada, Hatdiya Bazaar, Near Vaibhav Nagar, Narayan Nagar, Opp. Jawahar Baug, Godhra Highway, Santramur Highway, Gujarat State Highway, Ahmedabad- Jhalod highway.</p>	Chintamani Complex, Halol

7.2 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF AMRELI SSA (JAN-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	Amreli, Dhari, Kunkavav	No Coverage	Rajula, Savarkundla	No Coverage	Babra, Damnagar	No Coverage
2	AIRTEL		Amareli SDCA : Poor voice quality observed at Amreli bypass road		--		Damnagar : Poor voice quality observed at Limda Damnagar Road
3	BSNL		Amareli SDCA : Poor voice quality observed at Amreli-Kunkavav Highway		--		--
4	IDEA CELLULAR		Amareli SDCA : Poor voice quality observed at Amreli bypass road		Rajula SDCA : Poor voice quality observed at Near Dam area		--
5	UNINOR		Amareli SDCA : Poor voice quality observed all over SDCA bur maximum worst at Amreli Bypass Road , Amreli-Kunkavav highway./ Dhari SDCA : Near prempara area		--		--
6	VIDEOCON		Amareli SDCA : Poor voice quality observed at Amreli-Kunkavav Highway		Rajula SDCA : Poor voice quality observed at Ghansham Nagar area, Hindirne chowkde and Near APMC Road		--
7	VODAFONE		Amareli SDCA : Poor voice quality observed at Amreli-Kunkavav Highway		Rajula SDCA : Poor voice quality observed at Near APMC Road & Savarkundla SDCA : Chawala Highway		--
8	MTS		--		--		--
9	TATA GSM		Amareli SDCA : Poor voice quality observed at Amreli bypass road and Amreli-Kunkavav Highway		--		--
10	TATA CDMA		--		Rajula SDCA : Poor Rx Level observed around Dwarkadhsh ni haweli, Toer Road		No Coverage
11	RCOM GSM		--		--		--
12	RCOM CDMA		--		--		--

Common observation Area: Amreli SDCA: Amreli bypass road, Amreli-Kunkavav Highway and **Rajula SDCA:** APMC Road.

DRIVE TEST TABLE: 6

DRIVE TEST OBSERVATION OF BHARUCH SSA (FEB-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	Bharuch, valia, Jhaghadiya	No Coverage	Ankleshwar, Amod, Jambusar	No Coverage	Rajpipla, Dediapada	No Coverage
2	AIRTEL		Bharuch SDCA : Poor voice quality observed at Sherpura, GNFC Bypass area / Valia SDCA: Poor voice quality observed at Karsa-Desad Road		Ankleshwar SDCA : "Poor voice quality observed at Reliance Petrol Pump, SH-175 ,Ankleshwar- valia Road		---
3	BSNL		Bharuch SDCA : Poor voice quality & Level observed at : Bharuch-Vadodara Highway		Ankleshwar SDCA : Poor voice quality & Level observed at : GIDC Area		---
4	IDEA CELLULAR		Bharuch SDCA : 'Poor voice quality observed at Dahej Bypass, golden Bridge area		Ankleshwar SDCA : "Poor voice quality observed at:- SH-175 Ankleshwar- valia Road		Rajpipla SDCA : Poor voice quality observed at Around Lal tower Road
5	UNINOR		Bharuch SDCA : 'Poor voice quality observed at Zadeswar road market area / Valia SDCA : Poor Rx Level observed at SH-175 Ankleshwar- valia road		---		Rajpipla SDCA : Poor voice quality observed at Around Lal tower Road & collage road area
6	VIDEOCON		---		Ankleshwar SDCA : "Poor voice quality observed at:- SH-175 Ankleshwar- valia Road, valia Char rasta		---
7	VODAFONE		Bharuch SDCA : 'Poor voice quality observed at : GNFC Bypass, Edgaah masjid area, Near Muslim Society Bypass Road Valia SDCA : Voice quality observed at SH-175 Ankleshwar- valia road		Ankleshwar SDCA : 'Poor voice quality observed at Near United Phosphorus		---
8	MTS		---		---		---
9	TATA GSM		Bharuch SDCA : Poor Rx Level & Quality observed at Edgaah masjid, GNFC Bypass , Station road , Zadeswar road.		Ankleshwar SDCA : Poor voice quality & Level observed at : SH-175 Ankleshwar- valia Road , Gadkhol part, INA, Ramnagar		---
10	TATA CDMA		---		---		---
11	RCOM GSM		---		---		---
12	RCOM CDMA		---		---		---

Common observation Area: Bharuch SDCA: GNFC Bypass, Edgaah masjid and Ankleshwar SDCA: APMC Road SH-175 Ankleshwar-valia road.

DRIVE TEST TABLE: 7

DRIVE TEST OBSERVATION OF GODHRA SSA (MAR-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	Godhara, Shehara	NC	Dahod, Devgarh, Limkheda	NC	Halol, Lunawada	NC
2	AIRTEL		Godhara SDCA : 'Poor voice quality observed at Lunawada Raod, Chakodhara / Shehara SDCA : Poor voice quality observed at Soniwad		Limkheda SDCA : 'Poor voice quality observed at Limkheda Bypass Road		Halol SDCA : 'Poor voice quality observed at : halol Bypass Road / Lunawada SDCA : Near Masjid e-ibrahim, Masjid e-ishak
3	BSNL		Godhara SDCA : 'Poor Level & voice quality observed at Godhara-Vadodara Highway		---		---
4	IDEA CELLULAR		Godhara SDCA : 'Poor voice quality observed at : Godhara-Vadodara Highway		---		Halol SDCA : 'Poor voice quality observed at : Halol Bypass Road
5	UNINOR		Godhara SDCA : 'Poor Level & voice quality observed at Chakodhara, Poor level observed at Agriculture Engg Collage		Devgarh Bariya SDCA : 'Poor Level & voice quality observed at : Nimbahera Dahod Rd (Dahod), Poor level:- Bariya Bet Pond / Limkheda SDCA : Poor level:- Ahmdabad-Indore Highway		Lunawada SDCA : 'Poor Level & voice quality observed at :-Gaytri Socity, Kishan-Sagar Road), / Halol SDCA : Poor RX Quality:- Umargaon-Shamlagi Road
6	VIDEOCON		Godhara SDCA : 'Poor Level observed at Godhara Highway, Chakodhara lake		---		---
7	VODAFONE		Godhara SDCA : 'Poor voice quality observed at Lunawada Raod, Chakodhara / Shehara SDCA : Soniwad		Limkheda SDCA : 'Poor voice quality observed at Limkheda Bypass Road		Halol SDCA : 'Poor voice quality observed at : halol Bypass Road / Lunawada SDCA : Near Masjid e-ibrahim, Masjid e-ishak
8	MTS		---		Dahod SDCA : 'Poor RX Level Dahao-Zalod Highway		Lunawada SDCA : 'Poor RX Level : Ahmedabad-Zalod Highway
9	TATA GSM		Godhara SDCA : 'Poor Level;- panchamrut dairy, chakodhara lake, Eng. College, Poor Rx Quality :- panchamrut dairy, chakodhara lake, Collector office		Dahod SDC'Poor RX Level PT ground		Halol SDCA : 'Poor RX Level : Kinjari Road
10	TATA CDMA		--		Dahod SDCA : 'Poor RX Level : Dahao-Zalod Highway, Ukardi road, Anaj Market		--
11	RCOM GSM		Godhara SDCA : Poor Rx level:- Lunawada road, ICICI Bank		Dahod SDCA : Poor Rx level:- SV patel road		Halol SDCA : Poor Rx level:- : halol Bypass Road / Lunawada SDCA : Near Masjid e-ibrahim, Masjid e-ishak
12	RCOM CDMA		--		Dahod SDCA : 'Poor RX Level : Dahao-Zalod Highway		Lunawada SDCA : 'Poor RX Level : Ahmedabad-Zalod Highway

Common observation Area: Godhara SDCA: Lunawada Raod, Chakodhara Lake, Agriculture Engg College; **Shehara SDCA:** Soniwad Area; **Dahod SDCA:** Dahao-Zalod Highway; **Halol SDCA:** halol Bypass Road; **Lunawada SDCA:** Near Masjid e-ibrahim, Masjid e-ishak.

DRIVE TEST TABLE: 8

NO NETWORK COVERAGE STATUS OF DRIVE TEST – JANUARY TO MARCH 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	Jan-15	Aircel	Amreli	Amreli, Dhari, Kunkavav, savarkundla, Rajula, Babra, Damnagar	No Coverage in all over SSA/SDCA	No
		Airtel			No Coverage Issue	No
		BSNL			No Coverage Issue	No
		TATA GSM			Kunkavav	No
		IDEA			No Coverage Issue	No
		RCOM GSM			No Coverage Issue	No
		UNINOR			No Coverage Issue	No
		Videocon			No Coverage Issue	Videocon is on ICR with TATA GSM in Dhari , Rajula, Saverkundla, Babra and Damnagar SDCAs.
		Vodafone			No Coverage Issue	No
		MTS			Kunkavav, Dhari	MTS is on ICR with RCOM CDMA in Amreli, Savarkundla,Rajula, Damnagar and Babra SDCAs.
TATA CDMA	Kunkavav, Dhari, Savarkundla, Babra & Damnagar	No				
RCOM CDMA	Kunkavav, Dhari	No				
2	Feb-15	Aircel	Bharuch	Bharuch, Valia, Jhagadia, Ankleshwar, Amod, Jambusar, Rajpipla & Dediapada	No Coverage all over SSA/SDCA	Not Applicable
		Airtel			No Coverage Issue	No
		BSNL			No Coverage Issue	No
		TATA GSM			Dediapada	No
		IDEA			No Coverage Issue	No
		RCOM GSM			Dediapada	No
		UNINOR			Dediapada	No
		Videocon			Dediapada	Videocon is on ICR with TATA GSM in Valia, Jhagadia, Amod, Jambusar & Rajpipla SDCAs.
		Vodafone			No Coverage Issue	NO
		MTS			Amod & Dediapada	MTS is on ICR with RCOM CDMA in Bharuch, Jhagadiya,Valia, Ankleshwar & Rajpipla SDCAs.
TATA CDMA	Valia, Jhagadia, Amod,	NO				

S No	Month of Drive Test	Operator	SSA	Total SDCA Covered	Status of no network coverage area (SDCA Name)	ICR Status (SDCA Name)
					Jambusar, Rajpipla & Dediapada	
		RCOM CDMA			Amod & Dediapada	No
3	Mar-15	Aircel	Godhra	Godhra, Shehera, Dahod, Limkheda, Devgadha baria, Halol, Lunawada	All SDCA's of Godhra SSA includes Godhra, Shehera, Dahod, Limkheda, Devgadha baria, Halol, Lunawada	No
		Airtel			No Coverage Issue	No
		BSNL			No Coverage Issue	No
		TATA GSM			Limkheda, Devgadha baria, Lunawada	No
		IDEA			No Coverage Issue	No
		RCOM GSM			Limkheda	No
		UNINOR			No Coverage Issue	No
		Videocon			Limkheda, Devgadha baria, Lunawada	Videocon is on ICR with TATA GSM at Godhra, Shehera, Dahod, Halol
		Vodafone			No Coverage Issue	No
		MTS			Shehera, Limkheda	MTS is on ICR with RCOM CDMA at Godhra, Dahod, Devgadha baria, Halol, Lunawada
		TATA CDMA			Shehera, Limkheda, Devgadha baria, Lunawada	No
		RCOM CDMA			Shehera, Limkheda	No

7.3 KEY FINDINGS ON DRIVE TEST:

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

1. January-15 : Amreli SSA

SDCAs covered: Amreli, Dhari, Kunkavav, savarkunda, Rajula, Babra and Damnagar SDCAs (329 Kms).

No Coverage: Aircel has no any coverage in Amreli SDCA.

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

2. February-15: Bharuch SSA

SDCA covered: Bharuch, Jhagadiya, Valiya, Ankleshwar, Jambusar, Amod, Rajpipla and Dediapada SDCAs (327 Kms).

No Coverage: Aircel has no any coverage in Bharuch SDCA

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

March-15: Godhara SSA

SDCA Covered: Godhara, Shehara, Dahod, Devgadbaria, Limkheda, Halol and Lunawal (315 Kms).

No coverage: Aircel has no any coverage in Godhara SSA.

The results of the drive test, carried out in Godhara SSA also revealed that the operators were doing well with regard to compliance of the TRAI norms as all operators met the benchmarks of network parameters.

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. 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.

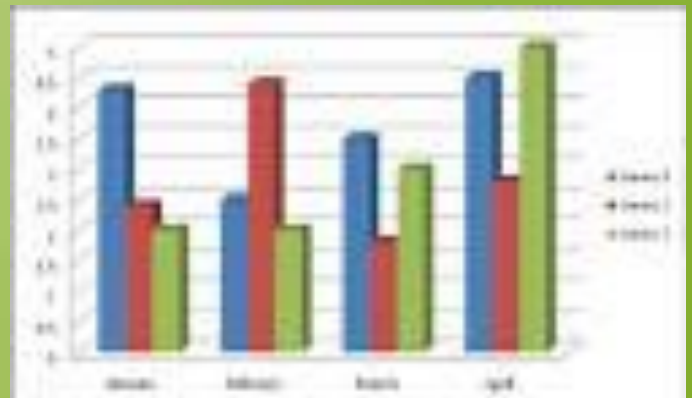
The detail of Network coverage and Intra Circle Roaming (ICR) status of different service providers at various locations in the three SSAs is given in table-8.

8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

AVERAGED QUARTERLY PMR

V/S

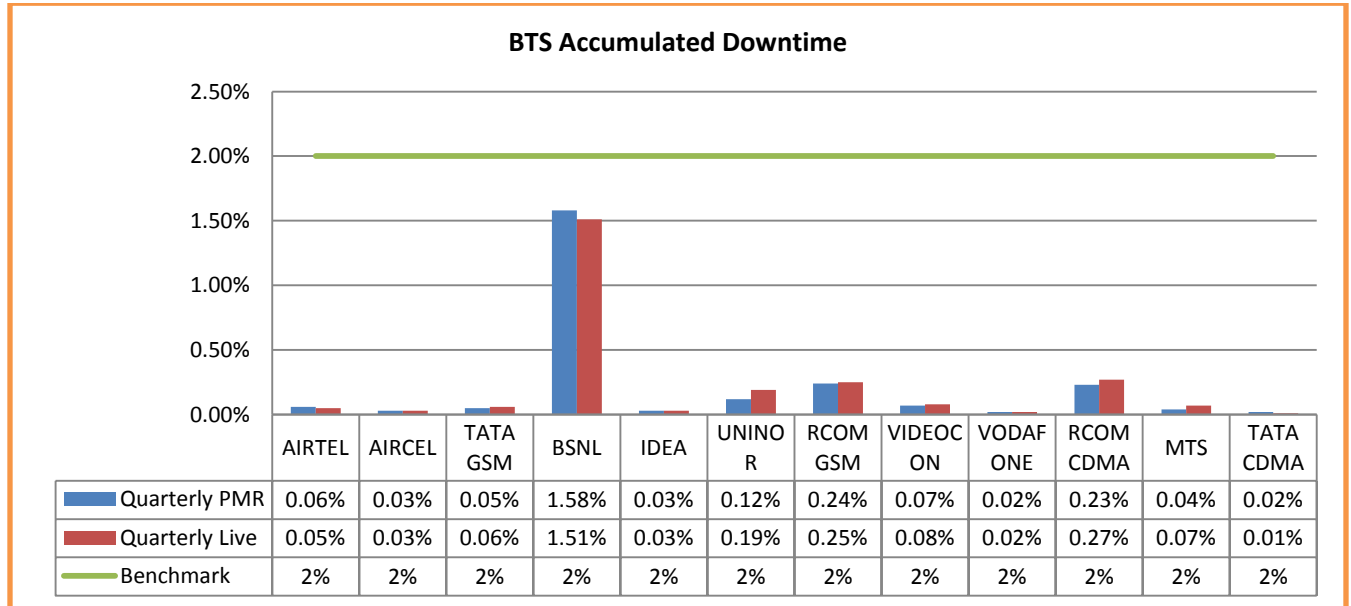
AVERAGED QUARTERLY 3-DAYS LIVE MEASUREMENT



8. GRAPHICAL REPRESENTATION (CMTS):

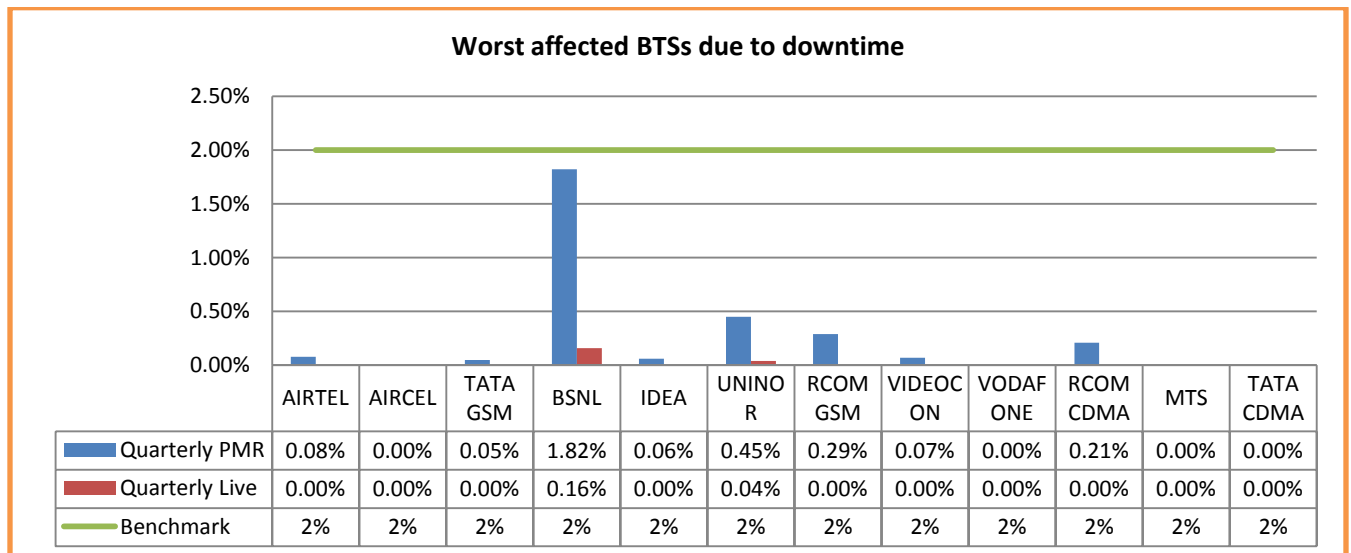
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

1. BTS ACCUMULATED DOWNTIME:



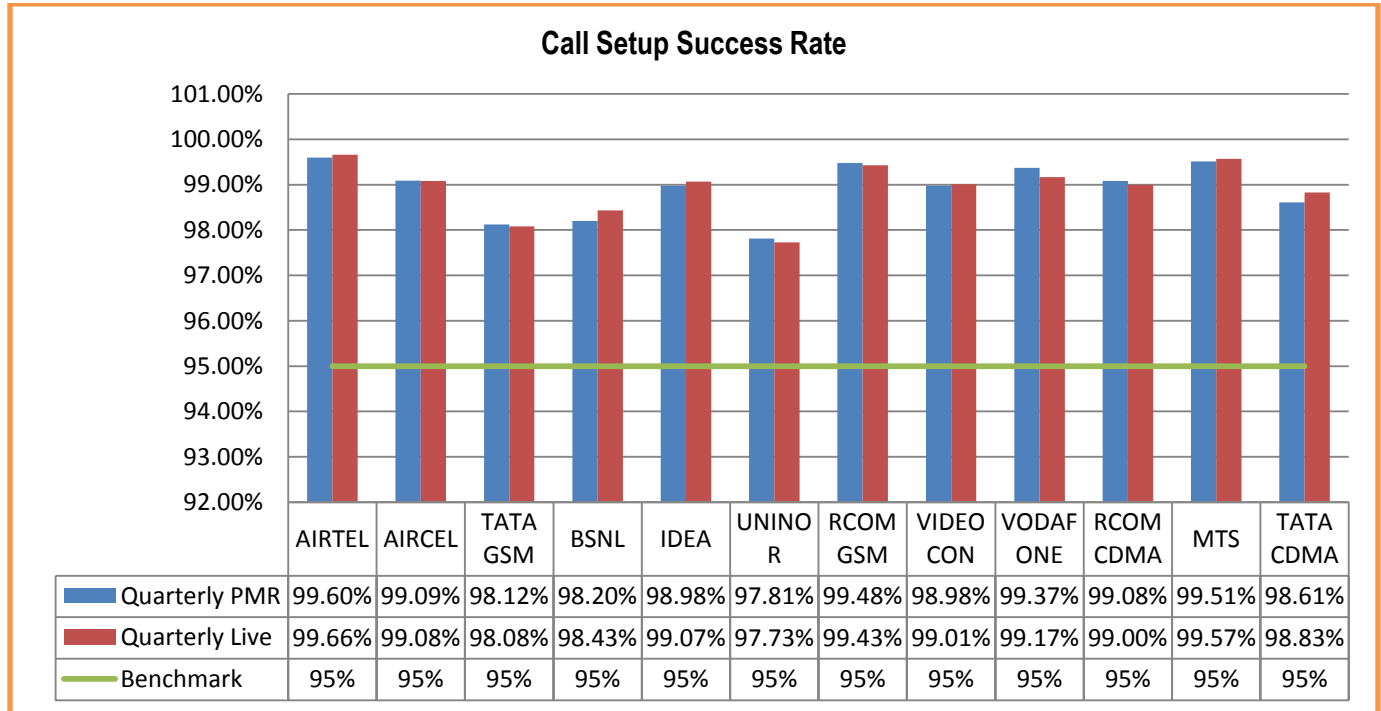
All operators are meeting the benchmarks.

2. WORST AFFECTED BTSs DUE TO DOWNTIME:



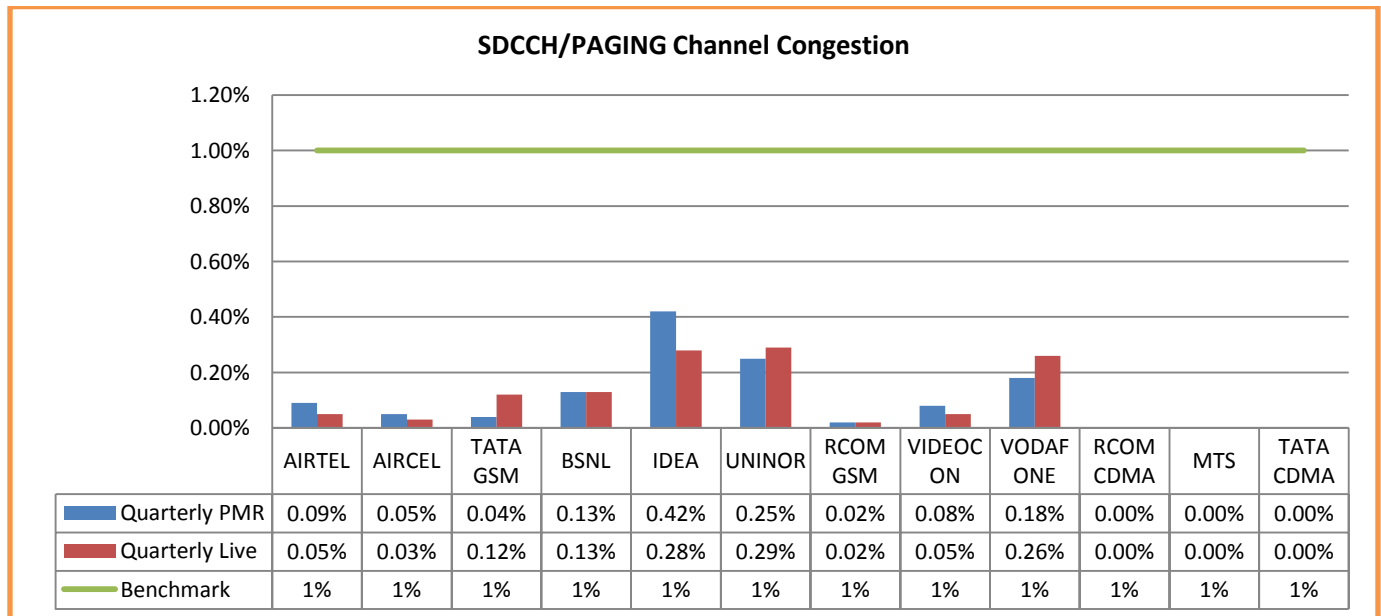
All operators are meeting the benchmarks.

3. CALL SETUP SUCCESS RATE:



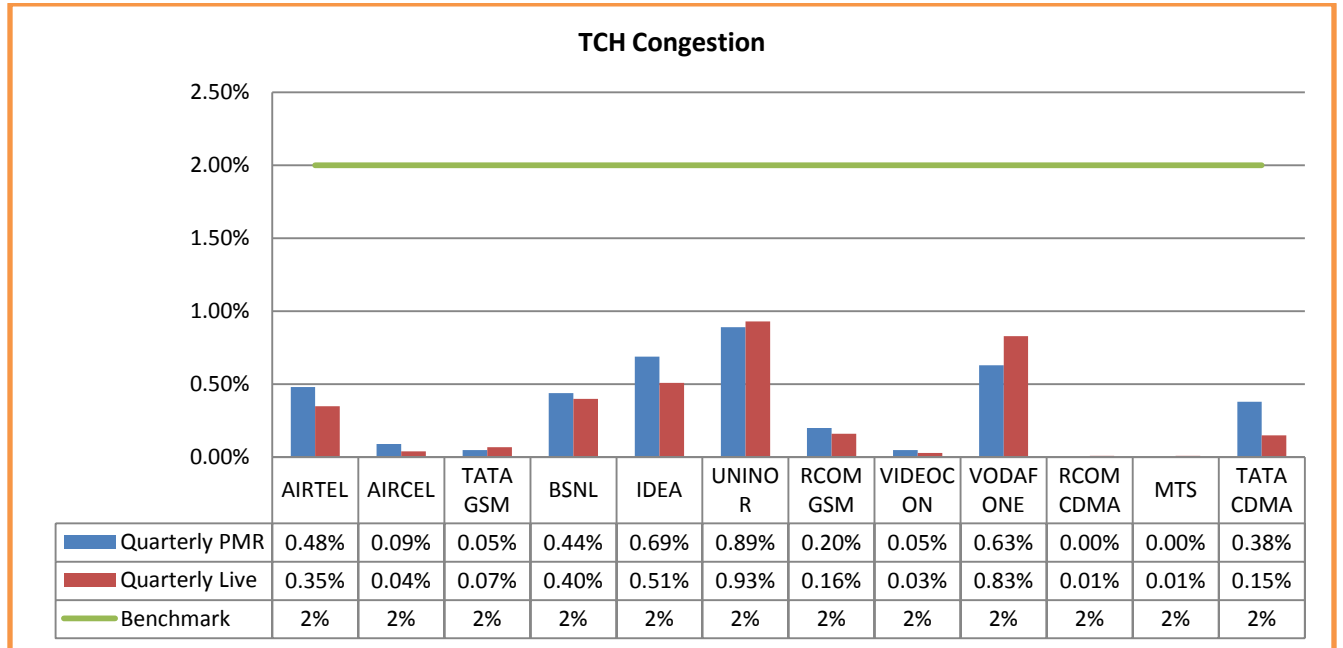
All operators are meeting the benchmarks.

4. SDCCH/PAGING CHANNEL CONGESTION:



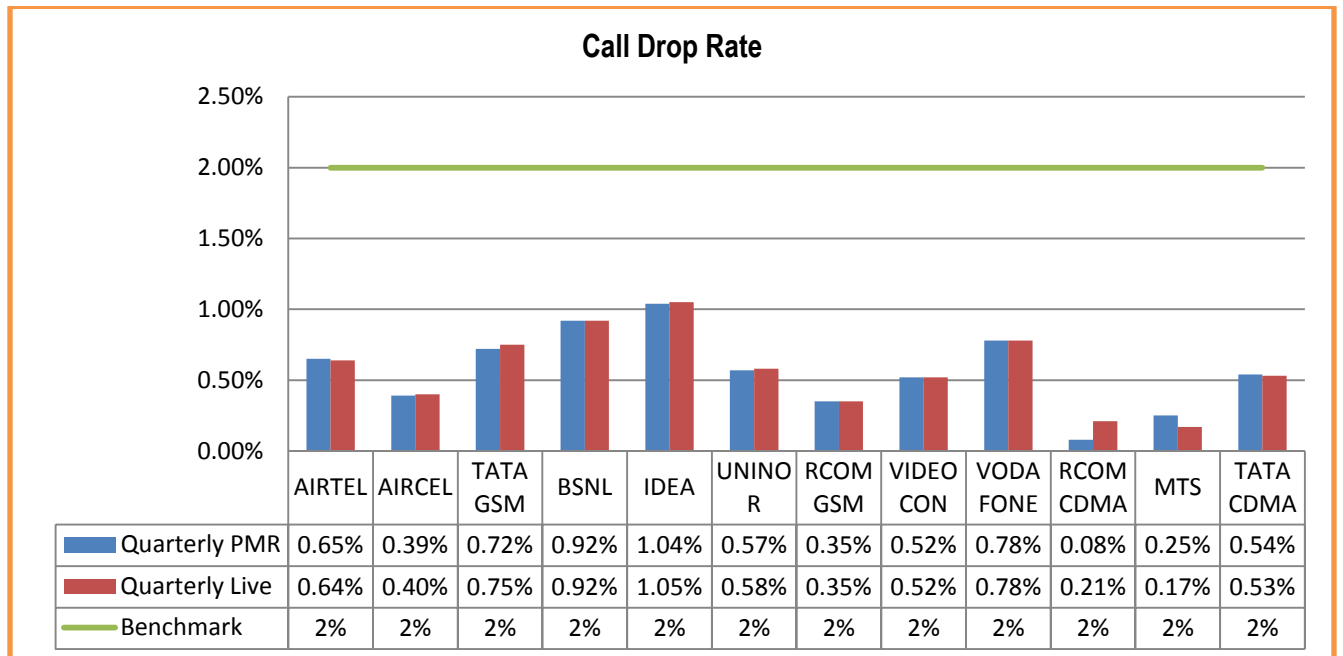
All operators are meeting the benchmarks.

5. TCH CONGESTION:



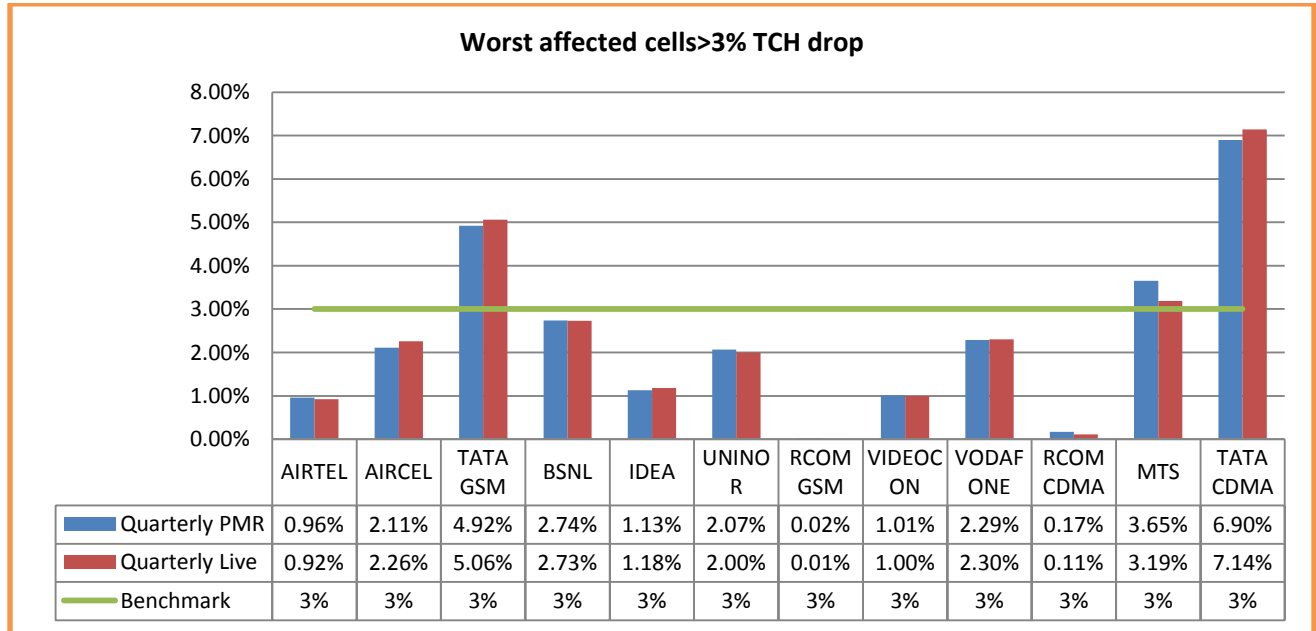
All operators are meeting the benchmarks.

6. CALL DROP RATE:



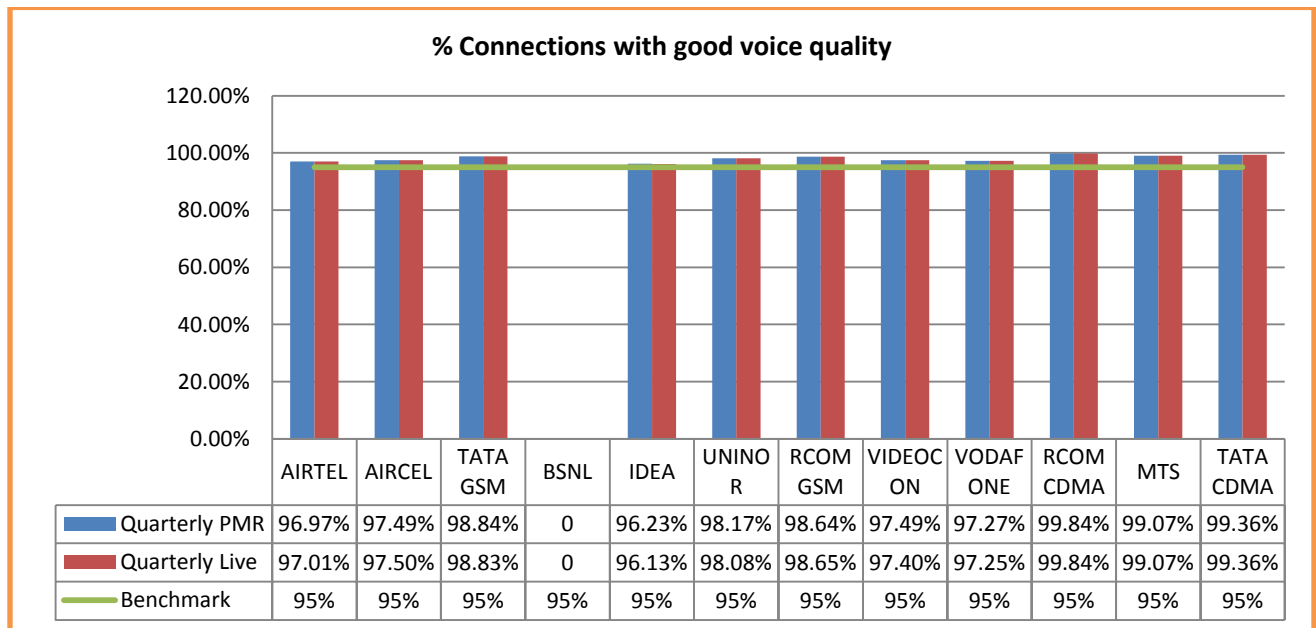
All operators are meeting the benchmarks.

7. WORST AFFECTED CELLS>3% TCH DROP:



All operators are meeting the benchmarks except Tata GSM, MTS 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.