REPORT

ON

AUDIT & ASSESSMENT OF QUALITY OF SERVICE OF CELLULAR MOBILE TELEPHONE SERVICE

FOR

WEST ZONE – GUJARAT CIRCLE

Report Period: APRIL 2012 – JUNE 2012

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NOT CONDUCTED

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NOT CONDUCTED

CHAPTER-1: INTRODUCTION

I. Background

TRAI's mission is to create and nurture conditions for growth of telecommunications in the country in a manner and at a pace, which will enable India to play a leading role in emerging global information society. One of the main objectives of Telecom Regulatory Authority of India (TRAI) is to provide a fair and transparent policy environment, which promotes a level playing field and facilitates fair competition.

In pursuance of above objective TRAI has issued from time to time a large number of regulations, orders and directives to deal with issues coming before it and provided the required direction to the evolution of Indian telecom market from a Government owned monopoly to a multi-operator multi service open competitive market.

The directions, orders and regulations issued cover a wide range of subjects including tariff, interconnection and quality of service as well as governance of the Authority.

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 has been carrying out regular reviews of the status of quality of service of the networks of all operators. In continuation to these efforts, TRAI has selected through bidding process TCIL as the Audit Agency to audit and assess the Quality of Service rendered by the service providers' namely Basic (Wireline) Services, Cellular Mobile Telephone (Wireless) Services and Broadband Services. The Audit for various telecom circles within the Zones has been distributed across four quarterly periods.

The parameters that need to be measured for Basic and Cellular Mobile Services have been specified in the TRAI notification on Quality of Service of Basic (Wireline) and Cellular Mobile (wireless) Services, 2009. The parameters for Broadband Services have been specified in the TRAI notification for Quality of Services of Broadband Service Regulation, 2006.

II. Objectives and Methodology

The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband services against the parameters notified by TRAI. The audit and assessment of Quality of Service is conducted for all the basic service providers, unified access service providers, cellular mobile service providers and ISPs (Internet Service Provider) for basic Wireline, Cellular Mobile Telephone Services and broadband service. TCIL has undertaken the following audit works as per the Terms of Reference (TOR):

i) Verification of the data submitted by the service providers to TRAI as part of QoS monitoring reports i.e. Quarterly Performance Monitoring Reports (PMRs) and monthly Point of Interconnection (POI) Congestion Reports with reference to the records maintained by the service provider.

ii) Verification of the performance of service providers against the Quality of Service benchmarks laid down by TRAI using live measurement for 3 days during the month in which the audit and assessment is carried out.

iii) Verification of the performance of service providers against the Quality of Service benchmarks laid down by TRAI using the data for the entire month during which the live measurement is carried out.

iv) Drive tests of the mobile networks both operators assisted and independent drive test (as and where required).

v) Billing and call center's data verification.

vi) Live testing of the efficiency of the call center / customer care help line.

vii) Emergency No. (Level 1) calling done.

To fulfill the above mentioned Scope of Work audit was performed on different Systems, Facilities and Field data collection.

Systems audited:-

1. Network Switching Centre (NSS)
2. Base Station Subsystem(BSS)
3. Billing Applications
4. Customer Care applications

Facilities audited:-

1. Billing documents.
2. Customer Care records.

Field data collections carried out:-

1. RF network coverage including KPIs (Key Performance Index)
2. Inter Operator Call Assessment
3. Checking of Customer Billing/Refund Complaints (Random sample)
4. Customer Care efficiency
5. The live calling was made to assess the quality of services for Inter Operator Call Assessment, Customer Billing/Refund Complaints and Customer Care efficiency.

In order to carry out the above scope of work:-

- ✓ TCIL auditors visited all the NSS (Network Sub System) and BSS (Base-station Sub System) to check data for all the operators in their respective service area.

- ✓ All the NSS and BSS data for the relevant details were collected either directly from the centralized NOC or through a remote access to the NOC.

- ✓ The Radio parameters were audited/ verified from the data collected from OMC-R (Operation and Maintenance Center – Radio, as part of BSS data).

- ✓ The Drive test was conducted in high, low and medium dense areas including highways, commercial complex and residential areas and special attention was paid for the areas for which TRAI has received complaints.

- ✓ The POI and other network related parameters were audited/ verified from the data collected from the OMC-S (Operation and Maintenance Center – Switch as part of NSS data).

- ✓ The data related to Billing and Customer care was checked for the previous month and verified with the customers by calling them on random basis. The process of registration and handling of the complaints was also studied for the various operators. Call centre number were called for measuring the efficiency of the call centre.

- ✓ The inter operator call assessment test was carried out during the time period as is specified in the tender document. TCBH (Time Consistent Busy Hour) is taken after observation of the traffic consistently for 3 days prior to the audit activity.

- ✓ Data has been collected for busy hour of network in case of live assessment & month of audit for all service providers & verified that service providers are providing busy hour data only for QoS service. We found that TCBH hour is matching with network busy hour as provided by service providers for Gujarat circle. But for parameters such as 'Worst affected cell exceeding 3% TCH drop' and 'BTSs accumulated down time' CBBH (Cell Bouncing Busy Hour) was taken instead of TCBH (Time Consistent Busy Hours) as per the TRAI new regulation 2009. This has resulted in high value for 'Cell exceeding 3% TCH drop' parameter for some of the service providers.

CHAPTER 2: EXECUTIVE SUMMARY

I. Preface

This report highlights the findings for the audit & assessment of Quality of Service of Cellular Mobile Services in Gujarat Circle in 2nd quarter (April – June 2012). The primary data collection and verification of records (PMR data verification – quarterly) maintained by various operators was undertaken during the period Oct – Dec 2011.

Following are the various operators covered in Gujarat circle (North Zone) for Cellular Mobile (Wireless) services QoS audit & assessment. The Month of audit & TCBH information is also given below:

Sl.	Name of Service Provider	Month of Audit	TCBH Hour
GSM Operators			
1	Aircel Ltd	May-2012	2000-2100 Hrs
2	Airtel Ltd	May-2012	1900-2000 Hrs
3	Idea	May-2012	1900-2000 Hrs
4	Uninor	May-2012	2000-2100 Hrs
5	BSNL	April-2012	1900-2000 Hrs
6	Reliance Communication	May-2012	2000-2100 Hrs
7	Tata Teleservices Ltd	May-2012	1900-2000 Hrs
8.	Videocon	May-2012	1900-2000 Hrs
9.	Vodafone	May-2012	1900-2000 Hrs
CDMA Operators			
10.	MTS	May-2012	2000-2100 Hrs
11.	Reliance Communication	May-2012	1900-2000 Hrs
12.	Tata Teleservices Ltd	May-2012	1900-2000 Hrs

All the NSS and BSS systems were considered for audit and assessment for the TCBH hours of individual operators.

NOTE:- Etisalat & Loop have closed its operation in Gujarat Circle.

II. Findings from Quality of Service Audit (Operator wise for each parameter)

(A) Cellular Mobile Telephone Services

3 days Live Data Audit		Bench-mark	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
S/N	Name of Parameter		GSM Operators									CDMA Operators		
(A)-1	**Network Service Quality Parameter**													
	BTS Accumulated Downtime	*<=2%*	0.04%	0%	1.00%	0%	0%	0%	0.00%	0.03%	0.22%	0%	0.07%	0.01%
	Worst affected BTS due to downtime	*<=2%*	0%	0.00%	0%	0%	0%	0%	0%	0%	0.18%	0%	0%	0%
1	**Connection Establishment (Accessibility)**													
	a) CSSR (Call Setup Success Rate)	*>=95%*	99.99%	99.60%	98.26%	99.55%	99.43%	99.98 %	99.89 %	99.92%	99.37%	99.00 %	99.99%	99.75%
	b) SDCCH/PAGING congestion	*<=1%*	0.01%	0.07%	0.27%	0.11%	0.16%	0.00%	0.01%	0.02%	0.35%	0.00%	0.00%	0.00%
	c) TCH congestion	*<=2%*	0.00%	0.33%	1.47%	0.34%	0.41%	0.02%	0.10%	0.06%	0.28%	0.01%	0.01%	0.25%
2	**Connection maintenance (retainability)**													
	a) CDR	*<=2%*	0.28%	1.05%	1.76%	1.01%	1.42%	0.31%	0.82%	0.50%	0.72%	0.66%	0.09%	0.76%
	b) Worst affected cells>3% TCH drop	*<=3%*	0.71%	1.27%	2.72%	1.60%	1.69%	0.00%	2.77%	0.45%	0.76%	2.60%	0.00%	2.14%
	c) Good voice quality	*>=95%*	96.47%	98.66%	97.00%	96.73%	95.69%	98.99 %	96.65 %	98.39%	96.40%	99.00 %	99.86%	NA
3	**No of POI having > 0.5% congestion**	*>=0.5%*	0	0	0	0	0	0	0	0	0	0	0	0
4	**Response time to customers for assistance**													
	a) Accessibility of call centre/Customer Care	*>=95%*	100%	96.33%	100%	100%	96%	99%	100%	100%	100%	99.92 %	98%	100%
	b) % call answered by operators(voice to voice) within 60 sec.	*>=90%*	100%	98.50%	100%	97.73%	96%	90.88 %	100%	96%	97.00%	98.29 %	97.89%	100%

NA: Not Applicable, NP: Data Not Provided

From the 3 days live data assessment, it is found that all the operators are meeting the benchmark in Network and Customer care Parameter.
NOTE: - Etisalat has closed its operation in Gujarat Circle.

One Month Data Audit		Bench-mark	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
S/N	Name of Parameter		GSM Operators									CDMA Operators		
(A)	**Network Service Quality Parameter**													
1	**Network Availability**													
	a) BTS Accumulated Downtime	*<=2%*	0.05%	0.07%	1.06%	0.04%	0.02%	0.10%	0.01%	0.05%	0.11%	0.25%	0.12%	0.00%
	b) Worst affected BTSs due to downtime	*<=2%*	0.00%	0.05%	1.47%	0.02%	0.00%	0.06%	0.00%	0.00%	0.37%	0.00%	0.00%	0.00%
2	**Connection Establishment (Accessibility)**													
	a) CSSR (Call Setup Success Rate)	*>=95%*	99.99%	99.62%	98.29%	99.58%	99%	99.97%	99.90%	99.93%	99.22%	99.99%	100%	99.68%
	b) SDCCH/PAGING congestion	*<=1%*	0.00%	0.08%	0.23%	0.14%	0.14%	0.01%	0.01%	0.02%	0.43%	0.00%	0.01%	0.00%
	c) TCH congestion	*<=2%*	0.01%	0.30%	1.48%	0.28%	0.43%	0.02%	0.09%	0.05%	0.35%	0.01%	0.00%	0.32%
3	**Connection maintenance (retainability)**													
	a) CDR	*<=2%*	0.29%	0.95%	1.73%	0.97%	1.41%	0.32%	0.84%	0.51%	0.75%	0.56%	0.10%	0.82%
	b) Worst affected cells>3% TCH drop	*<=3%*	0.71%	1.31%	2.41%	1.60%	1.82%	0.01%	1.55%	0.44%	0.65%	2.44%	0.00%	1.31%
	c) Good voice quality	*>=95%*	96.62%	98.60%	97.00%	96.74%	95.81%	99.00%	96.76%	98.08%	96.30%	99.98%	99.87%	NA
4	**No of POI having > 0.5% congestion**	*>=0.5%*	0	0	0	0	0	0	0	0	0	0	0	0
(B)	**Customer Service Quality Parameters**													
5	**Metering/billing credibility-Post paid**	*<= 0.1%*	0.12%	0.01%	0.02%	0.03%	NA	0.10%	0.30%	NA	0.07%	0.00%	0.10%	0.08%
6	**Metering /billing credibility-Pre paid**	*<= 0.1%*	0.04%	0.01%	0.08%	0.00%	0.02%	0.10%	0.04%	0.01%	0.01%	0.00%	0.10%	0.08%
7	**Resolution of billing/ charging complaints**	*100% within 4 weeks*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	a) Period of applying credit/waiver/adjustment to the customers account from the date of resolutions of complaints	*<=1 week*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
8	**Response time to customers for assistance**													
	a) Accessibility of call centre/Customer Care	*>=95%*	94%	100%	100%	98%	99%	99%	100%	96%	100%	100%	98%	100%
	b) % call answered by operators(voice to voice) within 60 sec.	*>=90%*	77.69%	91.97%	98%	99.32%	99%	92.87%	92.50%	96%	94.50%	96.42%	97.03%	92.87%
9	**Termination/closure of service**	*<=7days*	100%	100%	100%	100%	NA	100%	100%	NA	100%	100%	100%	100%
10	**Time taken for refunds of deposits after closures.**	*100% within 60 days*	100%	100%	100%	97.50%	NA	100%	100%	NA	100%	100%	100%	100%

Analysis:--

From the month data assessment, it is found that all the operators are meeting the Network parameters.

Performance related to customer service data is found to be satisfactory for most of the operators except for Aircel in “Accessibility to call centre “and percentage call answered by operators (voice to voice) within 60 sec. As far as Metering and billing for post paid service Aircel & TTSL (GSM) is not complying the benchmark. For “Time taken for refund of deposit after closure.” Only Idea is not meeting the benchmark set by TRAI.

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Operator-Assisted Drive Test

The Operator Assisted Drive Test was conducted at Gujarat Circle for all the operators. Route covered was about around 80-100 Km depending on city areas within the speed limit of 30Km/hr. The cities covered were Mehsana, Bharuch and Porbunder. In all the cities, zones were selected for covering different density areas (High, Medium & Low dense areas).

SN	Parameter	City Name	Airtel	BSNL	Idea	Uninor	Rcom GSM	Tata GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators								CDMA Operators		
1.1	Blocked Call Rate (<=3%)	Mehasana	0.00%	0.00%	0.00%	0.83%	0.00%	0.00%	0.83%	0.00%	0.00%	0.00%	0.00%
		Bharuch	0.00%	0.00%	0.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Porbunder	2.08%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	Dropped Call Rate (<=2%)	Mehasana	0.00%	1.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0%	0%	0.00%	0.00%
		Bharuch	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	0.00%	0%	0%	9.00%	0.00%
		Porbunder	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0%	0%	0.00%	0.00%
3	% of connections with good voice quality (=>95%)												
	(i) 0-4 (w/o frequency hopping)	Mehasana									100%	98.42%	98.78%
		Bharuch									99.88%	99.49%	97.58%
		Porbunder									99.05%	98.63%	99.05%
	(ii) 0-5 (with frequency hopping)	Mehasana	96.50%	97.10%	96.80%	95.60%	99.61%	97.16%	97.00 %	97.15%			
		Bharuch	94.76%	96.60%	95.80%	95.89%	98.80%	96.31%	96.54 %	97.66%			
		Porbunder	97.73%	96.40%	98.60%	96.89%	99.62%	98.49%	96.78 %	97.84%			
4	Call Setup Success Rate (>=95%)	Mehasana	100%	100%	100%	100%	100%	100%	98%	100%	100%	100%	100%
		Bharuch	100%	100%	99.20%	100%	100%	100%	100%	100%	100%	100%	100%
		Porbunder	98%	100%	99.30%	100%	100%	100%	100%	100%	100%	100%	100%
5	Handover Success Rate (HOSR)	Mehasana	100%	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%
		Bharuch	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100.00%
		Porbunder	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Key observations as could be derived from the table are as under:

• 'Dropped Call Rate' is not met by Rcom(CDMA) with a value of 9% only but 'Block call rate' benchmark is met by all the operators in all the three cities.

• For the parameter '%age of connections with good voice quality', it is found that all the operators are meeting the benchmark except Airtel (94.76%)

• Aircel is in ICR with Tata GSM in all the three cities i.e.Mehasana, Bharuch, and Porbunder, Similarly, MTS is in ICR with Tata in. Porbunder.

Independent Drive Test:--

SN	Parameter	Airtel (Amreli)	Uninor (Palanpur)
1.1	Call Attempts	77	88
1.2	Blocked Call Rate (<=3%)	0%	0%
1.3	Dropped Call Rate (<=2%)	0%	0%
1.4	Percentage of connections with good voice quality (=>95%)		
	(i) 0-4 (w/o frequency hopping)		
	(ii) 0-5 (with frequency hopping)	96.18%	95.39%
1.5	Service Coverage		
	In door (>= -75dBm)	79.30%	91.05%
	In-vehicle (>= -85dBm)	97.56%	99.15%
	Outdoor- in city (>= -95dBm)	99.78%	100%
1.6	Call Setup Success Rate (>=95%)	100%	100%
1.7	Handover Success Rate	100%	100%

Observation:-

All the parameters are met by Airtel and Uninor in Amreli & Palanpur.

CHAPTER-3: AUDIT-PMR VERIFICATION (Oct 2011—Dec 2011)
Cellular Mobile Service:--

PMR		Bench-mark	Audit	Aircel	Airtel	BSNL	Etisalat	Idea	Uninor	Loop	Rcom GSM	Tata GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
S/N	Name of Parameter			GSM Operators											CDMA operators		
(A)	**Network Service Quality Parameter**																
1	**Network Availability**																
	BTS Accumulated Downtime	*<=2%*	Reported	0.02%	0.07%	0.67%	0.04%	0.03%	0.01%	0.00%	0.09%	0.02%	0.04%	0.03%	0.07%	0.09%	0.00%
			Verified	0.02%	0.07%	0.67%	0.04%	0.03%	0.01%	0.00%	0.09%	0.02%	0.04%	0.03%	0.07%	0.09%	0.00%
	Worst affected BTSs due to downtime	*<=2%*	Reported	0.00%	0.06%	1.77%	0.00%	0.00%	0.00%	0.00%	0.05%	0.00%	0.00%	0.01%	0.00%	0.05%	0.00%
			Verified	0.00%	0.06%	1.77%	0.00%	0.00%	0.00%	0.00%	0.05%	0.00%	0.00%	0.01%	0.00%	0.05%	0.00%
2	**Connection Establishment (Accessibility)**																
	CSSR (Call Setup Success Rate)	*>=95%*	Reported	98.67%	99.21%	98.67%	99.50%	99.39%	96.96%	100%	99.25%	96.82%	99.22%	98.65%	99.39%	99.49%	98.90%
			Verified	98.67%	99.21%	98.67%	99.50%	99.39%	96.96%	100%	99.25%	96.82%	99.22%	98.65%	99.39%	99.49%	98.90%
	SDCCH/PAGING congestion	*<=1%*	Reported	0.01%	0.10%	0.17%	0.02%	0.24%	0.11%	0.00%	0.02%	0.11%	0.03%	0.57%	0.00%	0.00%	0.00%
			Verified	0.01%	0.10%	0.17%	0.02%	0.24%	0.11%	0.00%	0.02%	0.11%	0.03%	0.57%	0.00%	0.00%	0.00%
	TCH congestion	*<=2%*	Reported	0.18%	0.22%	1.47%	0.00%	0.16%	0.16%	0.00%	0.35%	0.48%	0.08%	0.30%	0.00%	0.15%	0.02%
			Verified	0.18%	0.22%	1.47%	0.00%	0.16%	0.16%	0.00%	0.35%	0.48%	0.08%	0.30%	0.00%	0.15%	0.02%
3	**Connection maintenance (retainability)**																
	CDR	*<=2%*	Reported	0.53%	1.41%	1.77%	1.02%	1.13%	1.52%	0.00%	0.69%	1.26%	0.54%	0.97%	0.33%	0.33%	0.58%
			Verified	0.53%	1.41%	1.77%	1.02%	1.13%	1.52%	0.00%	0.69%	1.26%	0.54%	0.97%	0.33%	0.33%	0.58%
	Worst affected cells>3% TCH drop	*<=3%*	Reported	1.63%	1.93%	2.27%	2.14%	2.74%	2.37%	0.00%	0.32%	5.49%	0.36%	2.10%	2.85%	0.23%	0.65%
			Verified	1.63%	1.93%	2.27%	2.14%	2.74%	2.37%	0.00%	0.32%	5.49%	0.36%	2.10%	2.85%	0.23%	0.65%
	Good voice quality	*>=95%*	Reported	97.79%	97.59%	100.00%	98.44%	95.63%	96.65%	100%	98.75%	98.26%	98.67%	97.03%	100%	98.63%	99.04%
			Verified	97.79%	97.59%	100.00%	98.44%	95.63%	96.65%	100%	98.75%	98.26%	98.67%	97.03%	100%	98.63%	99.04%
4	**POI congestion**	*<=0.5%*	Reported	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Verified	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(B)	**Customer Service Quality Parameters**																
5	**Metering/billing credibility-Post paid**	*<= 0.1%*	Reported	0.08%	0.02%	0.00%	0.00%	0.05%	0.00%	0.00%	0.10%	0.01%	0.00%	0.07%	0.00%	0.10%	0.00%
			Verified	0.08%	0.02%	0.00%	0.00%	0.05%	0.00%	0.00%	0.10%	0.01%	0.00%	0.07%	0.00%	0.10%	0.00%
6	**Metering /billing credibility-Pre paid**	*<= 0.1%*	Reported	0.02%	0.02%	0.00%	0.00%	0.01%	0.36%	0.00%	0.10%	0.00%	0.04%	0.03%	0.00%	0.10%	0.02%
			Verified	0.02%	0.02%	0.00%	0.00%	0.01%	0.36%	0.00%	0.10%	0.00%	0.04%	0.03%	0.00%	0.10%	0.02%
7	**Resolution of billing/ charging complaints**	*100% within 4 weeks*	Reported	100%	100%	100%	100%	100.0%	100.0%	0.0%	100.0%	100.0%	100.0%	100.00%	100%	100%	100%
			Verified	100%	100%	100%	100%	100.0%	100.0%	0.0%	100.0%	100.0%	100.0%	100.00%	100%	100%	100%

PMR		Bench-mark	Audit	Aircel	Airtel	BSNL	Etisalat	Idea	Uninor	Loop	Rcom GSM	Tata GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
S/N	Name of Parameter																
	Period of applying credit/waiver/adjustment to the customers account from the date of resolutions of complaints	*<=1 week*	Reported	100%	100%	100%	0%	100%	0%	0%	100%	100%	100%	100%	100%	100%	100%
			Verified	100%	100%	100%	0%	100%	0%	0%	100%	100%	100%	100%	100%	100%	100%
8	**Response time to customers for assistance**																
	Accessibility of call centre/Customer Care	*>=95%*	Reported	100%	97.90%	99.00%	98.82%	99.17%	96.59%	100%	98.81%	98%	98.29%	100%	95.21%	97.96%	97.00%
			Verified	100%	97.90%	99.00%	98.82%	99.17%	96.59%	100%	98.81%	98%	98.29%	100%	95.21%	97.96%	97.00%
	% call answered by operators(voice to voice) within 60 sec.	*>=90%*	Reported	65.74%	90.91%	92.00%	99.23%	96.93%	81.00%	100%	80.75%	92.00%	97.39%	91.57%	90.30%	95.61%	93.00%
			Verified	65.74%	90.91%	92.00%	99.23%	96.93%	81.00%	100%	80.75%	92.00%	97.39%	91.57%	90.30%	95.61%	93.00%
9	**Termination/closure of service**																
	No.of requests for Termination / Closure of service complied within 7 days during the quarter	*<=7days*	Reported	100%	100.00%	100%	0.00%	100.00%	0.00%	0.00%	100%	100%	0.00%	100%	100%	100%	100.00%
			Verified	100%	100.00%	100%	0.00%	100.00%	0.00%	0.00%	100%	100%	0.00%	100%	0.00%	100%	100.00%
10	**Time taken for refunds of deposits after closures.**	*100% within 60 days*	Reported	100%	100%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	100%	100%
			Verified	100%	100%	100%	0%	100%	0%	0%	100%	100%	0%	100%	0%	100%	100%

CHAPTER-4: DETAILED FINDINGS & ANALYSIS

I. Cellular Mobile Telephone Service

(A) MSC Audit

(1) 3 Days Live Data Assessment & Summarized Findings

S/N	Name of Parameter	Bench mark	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators									CDMA Operators		
(A) -1	**Network Service Quality Parameter**													
	BTS Accumulated Downtime	*<=2%*	0.04%	0%	1.00%	0%	0%	0.10%	0.00%	0.03%	0.22%	0%	0.07%	0.01%
	Worst affected BTS due to downtime	*<=2%*	0%	0.00%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		26.67	2177	3194	191	9.73	216	4.93	36.45	1165	15.1	83	3.44
	No. of BTSs having accumulated downtime of >24 hours in a month		0	0	3	0	0	0	0	0	13	0	0	0
2	**Connection Establishment (Accessibility)**													
	a) CSSR	*>=95 %*	99.99%	99.60%	98.26%	99.55%	99%	99.98 %	99.89%	99.92%	99.37%	99.00 %	99.99 %	99.75%
	b) SDCCH/PAGING congestion	*<=1%*	0.01%	0.07%	0.27%	0.11%	0.16%	0.00%	0.01%	0.02%	0.35%	0.00%	0.00%	0.00%
	c) TCH congestion	*<=2%*	0.00%	0.33%	1.47%	0.34%	0.41%	0.02%	0.10%	0.06%	0.28%	0.01%	0.01%	0.25%
3	**Connection maintenance**													
	a) CDR	*<=2%*	0.28%	1.05%	1.76%	1.01%	1.42%	0.31%	0.82%	0.50%	0.72%	0.66%	0.09%	0.76%
	b) Cells having > 3% TCH drop	*<=3%*	0.71%	1.27%	2.72%	1.60%	1.69%	0.00%	2.77%	0.45%	0.76%	2.60%	0.00%	2.14%
	c) Good voice quality	*>=95 %*	96.47%	98.66%	97.00%	96.73%	95.69%	98.99 %	96.65%	98.39%	96.40%	99.00 %	99.86 %	NA
	d) No. of cells > 3% TCH drop		19	252	352	265	120	0	191	24	165	32	0	54

S/N	Name of Parameter	Bench mark	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators									CDMA Operators		
	e) Total no. of cells in the network		2,687	19,915	12,948	16,523	7,101	9,264	6,895	5,275	21,805	1,232	5,283	2,528
4	**No of POI having > 0.5% congestion**	*>=0.5 %*	0	0	0	0	0	0	0	0	0	0	0	0
	a) Name of POI not meeting the benchmark		Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	b) Total No. of circuits on POI		14,280	137,941	41,215	120,707	47,879	64,651	29,154	8,780	133,361	12006	33,317	45,913
	c) Avg No. of call attempts on POI		252,031	3,778,051	797,659	3,404,693	1,327,204	481,570	350,612	154,551	3,163,534	18368	425,130	614,488
	d) Avg traffic served on POI (Erlang)		8,031	96,136	27,798	74,253	27,870	12,289	11,941	3,518	51,795	3795	11,915	15,522
	e) Total number of working POI Service Area wise		49	178	33	163	63	0	21	26	61	49	0	170
	f) Equipped Capacity of Network in respect of Traffic in erlang		34,572	254,532	311,000	233,812	91,233	144,000	110,992	74,887	513,920	21,000	144,000	241,080
	g) Total traffic handled in TCBH in erlang		62546	426918	275,760	157002	163265	128362	65304	1	419198	6920	44445	32760
(B)	**Customer Service Quality Parameters**													
5	**Response time to customers for assistance**													
	a) Accessibility of call centre	*>=95 %*	100%	100.00%	100%	100%	96%	99%	100%	100%	100%	99.92 %	98%	100%
	b) % of call answered by operators(voice to voice) within 60 sec	*>=90 %*	100.00 %	98.50%	100.00 %	97.73%	96%	90.88 %	100.00 %	96%	97.00%	98.29 %	97.89 %	100.00 %
	c) No. of call attempts to call centre / customer care nos. during TCBH (Avg)		200	200	200	200	100	58,030	200	100	200	10,310	19,859	200
	d) No. of calls connected and answered successfully to call centre / customer care nos. during TCBH (Avg)		200	197	200	200	96	52,740	200	96	194	10,134	19,439	200

Parameter-wise Findings (Live Data Assessment):

The parameter wise key takeouts for the Cellular Mobile Telephone Services providers in Gujarat Circle Service Area are as given below:-

- **BTS accumulated downtime (benchmark <=2%):** All operators are meeting the benchmark with values lying between 0.00% and 0.22%.
- **Worst affected BTSs due to downtime (benchmark <= 2%):** All operators are meeting the benchmark with values lying between 0% and 1.0%.
- **Call setup success rate (benchmark >= 95%):** All operators are meeting the benchmark with values lying between 97.22% and 99.54%.
- **SDCCH/PAGING Channel congestion (benchmark <= 1%):** All operators are meeting the benchmark with values lying between 0.1% and 0.35%.
  Note: CDMA operators have provided the data for Paging Channel congestion and GSM operators provided SDCCH Channel congestion.
- **TCH congestion (benchmark <= 2%):** All operators are meeting the benchmark with values lying between 0% to 1.47%.
- **Call drop rate (benchmark <= 2%):** All operators, are meeting the benchmark with values lying between 0.23 % and 1.76%.
- **Cell exceeding 3% TCH drop (benchmark <= 3%):** All the operators are meeting the benchmark.
- **Connections with good voice quality (benchmark >= 95%):** All operators are meeting the benchmark with values lying between 97.02% and 99.53%. CDMA operators & BSNL have declared that this parameter is not system generated.
- **POI Congestion (benchmark <= 0.5%):** All the operators are meeting the benchmark. There was no congestion found overall on the POI, but cases were found where individual POIs are showing high utilization/usage, causing no traffic failure due to overflow technique i.e. the extra traffic is carried over by some other operating POI as has been designed to do so.
- **%age of call answered by operator (electronically) (benchmark >95%):** All operators are meeting the benchmark in the range of 96% to 100%.
- **%age of call answered by operator (Voice to voice) (benchmark >90%):** All the Operators are meeting the benchmark with values lying between 96.0% and 100%.

(2) Month Data Assessment & Summarized Findings

S/N	Name of Parameter	Bench mark	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators									CDMA Operators		
(A)	**Network Service Quality Parameter**													
1	**Network Availability**													
	a) BTS Accumulated Downtime	*<=2%*	0.05%	0.07%	1.06%	0.04%	0.02%	0.10%	0.01%	0.05%	0.11%	0.25%	0.12%	0.00%
	b) Worst affected BTSs due to downtime	*<=2%*	0.00%	0.05%	1.47%	0.02%	0.00%	0.06%	0.00%	0.00%	0.37%	0.00%	0.00%	0.00%
	c) Total no. of BTSs in the licensed service area		896	6,531	4,431	5,524	2,370	3,088	2,304	1,753	7,238	383	1,761	836
	d) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		330	3,283	34,788	1,490	346	2,209	112	649	6,041	720	1,623	14
	e) No. of BTSs having accumulated downtime of >24 hours in a month		0	3	65	1	0	2	0	0	27	0	0	0
2	**Connection Establishment (Accessibility)**													
	a) CSSR (Call Setup Success Rate)	*>=95%*	99.99%	99.62%	98.29%	99.58%	99.43%	99.97%	99.90%	99.93%	99.22%	99.99%	100.00%	99.68%
	b) SDCCH/PAGING congestion	*<=1%*	0.00%	0.08%	0.23%	0.14%	0.14%	0.01%	0.01%	0.02%	0.43%	0.00%	0.01%	0.00%
	c) TCH congestion	*<=2%*	0.01%	0.30%	1.48%	0.28%	0.43%	0.02%	0.09%	0.05%	0.35%	0.01%	0.00%	0.32%
3	**Connection maintenance (retainability)**													
	a) CDR	*<=2%*	0.29%	0.95%	1.73%	0.97%	1.41%	0.32%	0.84%	0.51%	0.75%	0.56%	0.10%	0.82%
	b) Worst affected cells>3% TCH drop	*<=3%*	0.71%	1.31%	2.41%	1.60%	1.82%	0.01%	1.55%	0.44%	0.65%	2.44%	0.00%	1.31%
	c) Good voice quality	*>=95%*	96.62%	98.60%	97.00%	96.74%	95.81%	99.00%	96.76%	98.08%	96.30%	99.98%	99.87%	NA
	d) Total No. of cells exceeding 3% TCH drop (call drop)		19	261	312	264	129	1	107	23	141	30	0	33
	e) Total no. of cells in the network		2,687	19,915	12,948	16,523	7,101	9,264	6,895	5,275	21,805	1232	5,283	2,528
4	**No of POI having > 0.5% congestion**	*>=0.5%*	0	0	0	0	0	0	0	0	0	0	0	0
	a) Name of POI not meeting the benchmark		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
	b) Total No. of call attempts on POI (Avg.)		251,359	3,798,288	772,729	3,369,032	1,185,386	465,053	360,209	158,947	3,536,730	177610	387,189	611,853
	c) Total traffic served on POI (Erlang) (Avg.)		8,129	95,647	27,226	73,567	26,176	11,685	12,299	3,582	53,584	3689	11,024	15,481
	d) Total No. of circuits on POI		14,280	137,941	41,215	120,707	47,879	64,651	29,154	8,780	133,361	12006	33,317	45,913

S/N	Name of Parameter	Bench mark	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators									CDMA Operators		
	e) Total number of working POI Service Area wise		49	178	33	163	63	27	21	26	61	49	27	170
	f) Capacity of POI		12,749	132,165	38,551	116,898	44,630	59,809	28,306	8,145	132,081	11705	30,062	41,977
5	**Network Data**													
	a) Equipped Capacity of Network Erlang		34,572	254,532	311,000	233,812	91,233	144,000	110,992	74,887	513,920	21000	144,000	241,080
	b) Total traffic in TCBH in erlang (Avg.)		9,573	172,374	56,277	192,311	76,782	123,741	37,300	17,908	403,923	6920.00	25,134	51,775
	c) Total no. of customers served (as per VLR) on last day of the month		545,446	6,350,430	2,390,131	7,552,132	2,159,248	3,586,248	1,527,122	547,564	14,240,827	218237	1,759,582	566,986
(B)	**Customer Service Quality Parameters**													
5	**Metering/billing credibility-Post paid**	*<= 0.1%*	0.12%	0.01%	0.02%	0.03%	NA	0.10%	0.30%	NA	0.07%	0.00%	0.10%	0.08%
	a) No. of bills issued during the period		3,409	333,385	73,246	342,727	NA	46,822	47,315	NA	1,120,592	332	294,941	287,451
	b) No. of bills disputed including billing complaints during the period		4	36	17	108	NA	46	142	NA	813	0	294	225
6	**Metering /billing credibility-Pre paid**	*<= 0.1%*	0.04%	0.01%	0.08%	0.00%	0.02%	0.10%	0.04%	0.01%	0.01%	0.00%	0.10%	0.08%
	a) No. of charging / credit / validity complaints during the quarter		285	495	3,001	248	711	5,414	1,151	143	2,141	1	2,642	684
	b) Total no. of pre-paid customers at the end of the quarter		739,000	7,184,537	3,900,223	7,991,407	4,008,642	5,414,889	2,870,133	1,310,663	14,922,491	514,104	2,642,326	854,469
7	**Resolution of billing/ charging complaints**	*100% within 4 weeks*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	a) No. of billing/(post paid) and charging, credit/validity (pre paid) complaints resolved within 4 weeks during the quarter		289	531	3018	356	711	5460	1293	143	2954	1	2936	909
	b) Total no. of billing (post paid) and charging, credit / validity (pre paid) complaints received during the quarter		289	531	3,018	356	711	5,460	1,293	143	2,954	1	2,936	909

S/N	Name of Parameter	Bench mark	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators									CDMA Operators		
	c) No. of billing complaints (post paid) and charging, credit/ validity complaints (pre paid) resolved in favour of the customer during the quarter		96	531	126	356	348	5,439	8	143	1,131	1	2,652	47
	d) No. of complaints disposed on account of not considered as valid complaints during the quarter		193	0	2,892	0	363	21	1,285	0	1,823	0	284	862
	e) Period of applying credit/waiver/adjustment to the customers account from the date of resolutions of complaints	*<=1 week*	100%	100%	1	100%	1	100%	100%	100%	100%	100%	100%	100%
8	**Response time to customers for assistance**													
	a) Accessibility of call centre/Customer Care	*>=95%*	93.50%	100.00%	100%	98%	99%	99%	100%	95.79%	100%	100%	98%	100%
	b) % call answered by operators(voice to voice) within 60 sec.	*>=90%*	77.69%	91.97%	98%	99.32%	99%	92.87%	92.50%	95.83%	94.50%	96.42%	97.03%	92.87%
	c) Total no. of call attempts to call centre & customer care nos. during TCBH (Avg.).		522,904	200	200	200	100	58,030	200	100	2,595,516	13,870	19,859	200
	d) No. of calls connected and answered successfully to call centre & customer care nos. during TCBH (Avg.).		406,237	129,473	38,204	3,535,940	136,765	547,251	1,255,719	33,674	3,733,112	13,374	205,072	180,840
9	**Termination/closure of service**	*<=7days*	100%	100%	100%	100%	NA	100%	100%	NA	100%	100%	100%	100%
	a) Total No. of requests for Termination / Closure of service received during the quarter		69	2,409	2,220	2,643	NA	483	1,293	NA	5,447	109	1,171	909
	b) No.of requests for Termination / Closure of service complied within 7 days during the quarter		69	2,409	2,220	2,643	NA	483	1,293	NA	5,447	109	1,171	909
10	**Time taken for refunds of deposits after closures.**	*100% within 60 days*	100%	100%	100%	97.50%	NA	100%	100%	NA	100%	100%	100%	100%

Parameter-wise Findings (Month Data Assessment):

The parameter wise key takeouts for the Cellular Mobile Telephone Services providers in Gujarat Circle Service Area are as given below:-

- **BTS accumulated downtime (benchmark <=2%):** All operators are meeting the benchmark with values lying between 0% and 1.060%.
- **Worst affected BTSs due to downtime (benchmark <= 2%):** All operators are meeting the benchmark with values lying between 0% and 1.47%.
- **Call setup success rate (benchmark >= 95%):** All operators are meeting the benchmark with values lying between 97.10% and 99.70%.
- **SDCCH/PAGING Channel congestion (benchmark <= 1%):** All operators are meeting the benchmark with values lying between 0% and 0.23 %.
  Note: CDMA operators have provided the data for Paging Channel congestion and GSM operators provided SDCCH Channel congestion.
- **TCH congestion (benchmark <= 2%):** All operators, are meeting the benchmark with values lying between 0% and 1.48%..
- **Call drop rate (benchmark <= 2%):** All operators are meeting the benchmark with values lying between 0.23 % and 1.41%.
- **Cell exceeding 3% TCH drop (benchmark <= 3%):** All the operators are meeting the benchmark with values lying between 0.10 % to 2.41 %
- **Connections with good voice quality (benchmark >= 95%):** All operators are meeting the benchmark with values lying between 95.73% and 99.00%. CDMA operators & BSNL have declared that this KPI is not system generated.
- **POI Congestion (benchmark <= 0.5%):** All the operators are meeting the benchmark having . There was no congestion found overall on the POI, but cases were found where individual POIs are showing high utilization/usage, causing no traffic failure due to overflow technique i.e. the extra traffic is carried over by some other operating POI as has been designed to do so.
- **%age of call answered by operator (electronically) (benchmark >95%):** All operators, except Aircel are meeting the benchmark in the range of 96% to 100%.
- **%age of call answered by operator (Voice to voice) (benchmark >90%):** Except for Aircel, all other operators are meeting the benchmark with values lying between 93% and 100%.
- **Metering and billing credibility-Post paid (benchmark <= 0.1%):** All operators, are meeting the benchmark. Except Tata GSM (0.3%)
- **Metering and billing credibility-Pre paid (benchmark <= 0.1%):** All operators are meeting the benchmark.
- **Resolution of billing/ charging complaints (benchmark 100% within 4 weeks):** All operators are meeting the benchmark
- **Termination/Closure of service (Benchmark <= 7 days):** All operators have satisfied the benchmark.
- **Time taken for refunds of deposits after closures (benchmark 100% within <=60 days):** Except Idea (97.5%), rest of the operators have satisfied the benchmark.

(3) Sample Coverage

Switches/BSC/BTS details of operators:

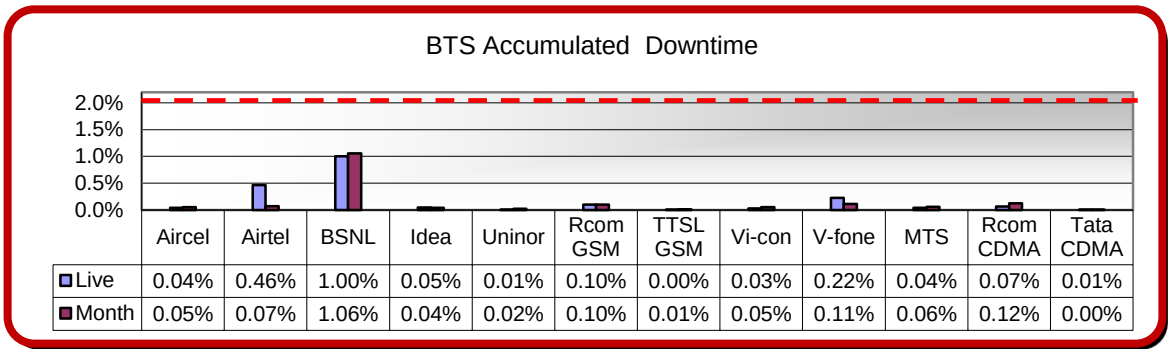
Sl.	Name of Service Provider	No. of MSC	No. of BSC	No. of BTS
GSM Operators				
1	Aircel Ltd	1	6	896
2	Airtel Ltd	14	102	6452
3	BSNL	9	102	4431
4	Idea	22	35	5524
5	Uninor	3	15	2370
6	Reliance Communication	5	18	3088
7	Tata Teleservices Ltd.	3	18	2304
8	Videocon	2	11	1753
9	Vodafone	21	140	7238
CDMA Operators				
10.	MTS	1	2	570
11	Reliance Communication	4	7	1761
12.	Tata Teleservices Ltd.	7	9	836

(4) Performance (Graphical Representation)

Comparison between Live measurements and One month data Audit – Cellular Mobile Telephone Services

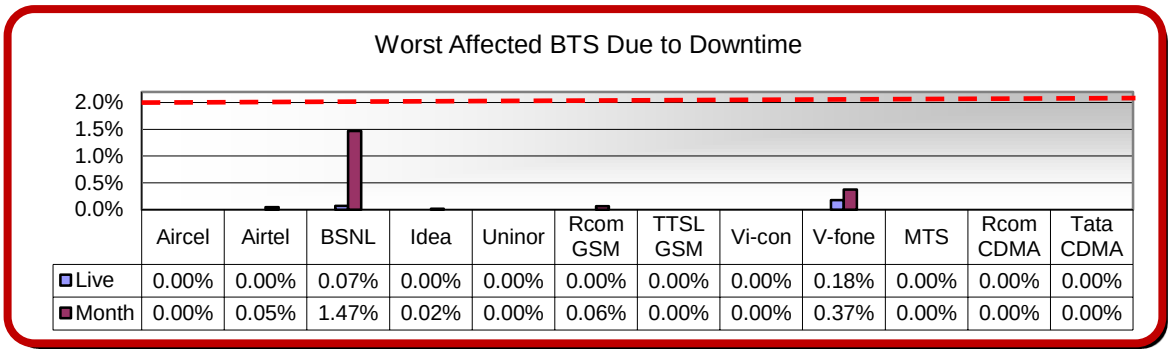
A) NETWORK PERFORMANCE

BTS Accumulated Downtime: All operators are meeting the TRAI benchmarks (<= 2 %) for both one month data and 3 days live data taken in the month of audit.



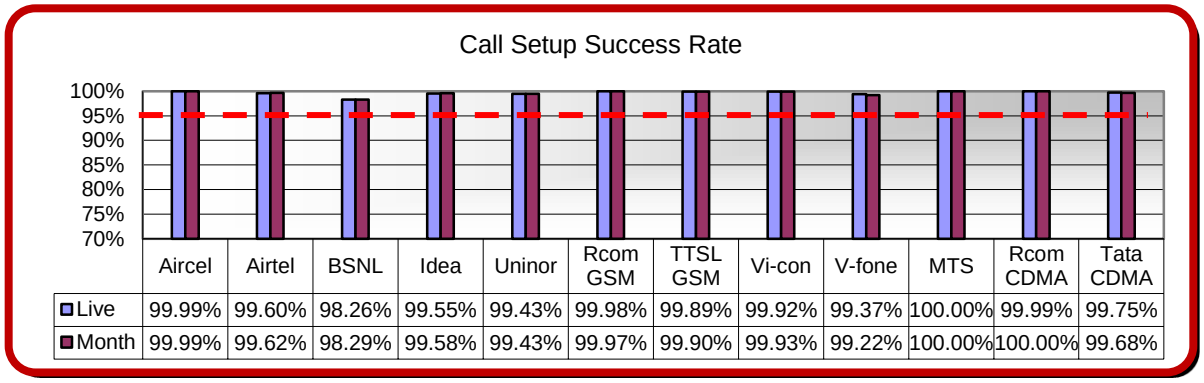
	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	0.04%	0.46%	1.00%	0.05%	0.01%	0.10%	0.00%	0.03%	0.22%	0.04%	0.07%	0.01%
Month	0.05%	0.07%	1.06%	0.04%	0.02%	0.10%	0.01%	0.05%	0.11%	0.06%	0.12%	0.00%

Worst Affected BTS Due to Downtime: All operators are meeting the TRAI benchmarks (<= 2 %) for both one month data and 3 days live data taken in the month of audit.



	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	0.00%	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%
Month	0.00%	0.05%	1.47%	0.02%	0.00%	0.06%	0.00%	0.00%	0.37%	0.00%	0.00%	0.00%

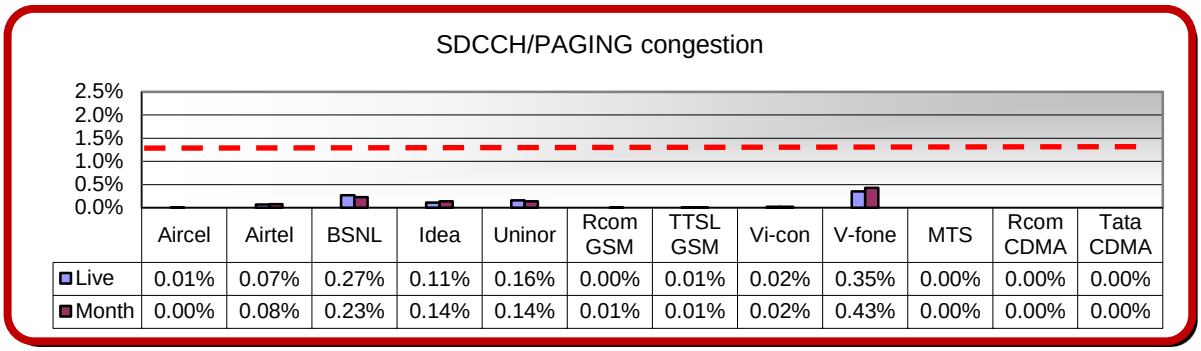
Call Setup Success Rate (CSSR): All operators are meeting the TRAI benchmarks (>= 95 %) for both one month data and 3 days live data taken in the month of audit



	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	99.99%	99.60%	98.26%	99.55%	99.43%	99.98%	99.89%	99.92%	99.37%	100.00%	99.99%	99.75%
Month	99.99%	99.62%	98.29%	99.58%	99.43%	99.97%	99.90%	99.93%	99.22%	100.00%	100.00%	99.68%

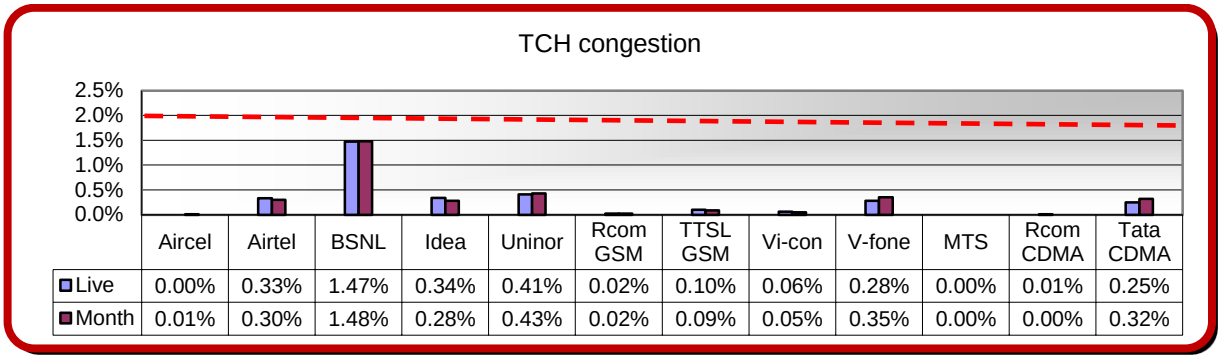
Blocked call rate:

SDCCH congestion (%): All operators are meeting the TRAI benchmarks (<= 1 %) for both one month data and 3 days live data taken in the audit.



	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	0.01%	0.07%	0.27%	0.11%	0.16%	0.00%	0.01%	0.02%	0.35%	0.00%	0.00%	0.00%
Month	0.00%	0.08%	0.23%	0.14%	0.14%	0.01%	0.01%	0.02%	0.43%	0.00%	0.00%	0.00%

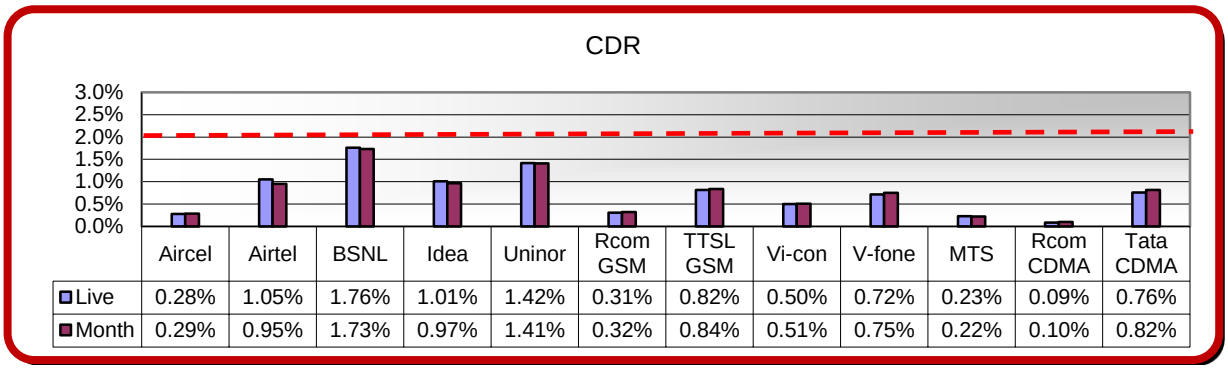
TCH congestion (%): All operators are meeting the TRAI benchmarks (<= 2%) for both one month data and 3 days live data.



	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	0.00%	0.33%	1.47%	0.34%	0.41%	0.02%	0.10%	0.06%	0.28%	0.00%	0.01%	0.25%
Month	0.01%	0.30%	1.48%	0.28%	0.43%	0.02%	0.09%	0.05%	0.35%	0.00%	0.00%	0.32%

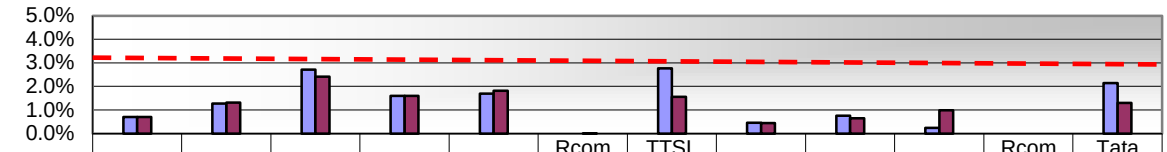
Connection Maintainability (Retain ability):

Call Drop Rate (CDR) (%): All the operators are meeting the TRAI benchmarks (<=2%) for both one month data and 3 days live data taken in the month of audit.



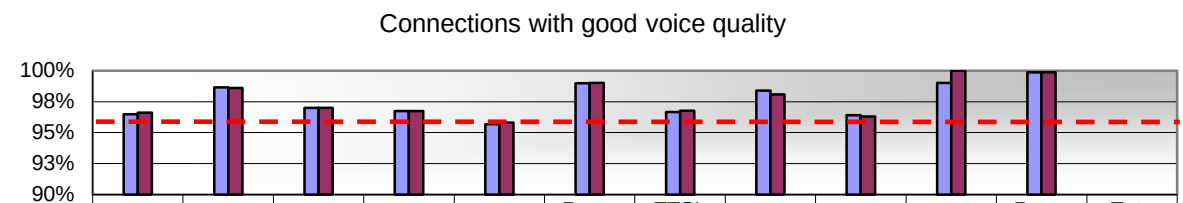
	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	0.28%	1.05%	1.76%	1.01%	1.42%	0.31%	0.82%	0.50%	0.72%	0.23%	0.09%	0.76%
Month	0.29%	0.95%	1.73%	0.97%	1.41%	0.32%	0.84%	0.51%	0.75%	0.22%	0.10%	0.82%

Worst affected Cell exceeding 3% TCH Drop: All the operators are meeting the TRAI benchmarks (<= 3%) for both one month data and 3 days live data.



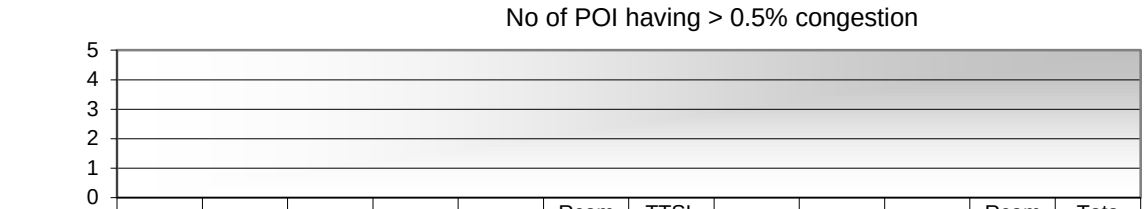
	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	0.71%	1.27%	2.72%	1.60%	1.69%	0.00%	2.77%	0.45%	0.76%	0.23%	0.00%	2.14%
Month	0.71%	1.31%	2.41%	1.60%	1.82%	0.01%	1.55%	0.44%	0.65%	0.99%	0.00%	1.31%

Percentage of connections with good voice quality (benchmark >= 95%): All the operators are meeting the TRAI benchmarks (=> 95%) for both one month data and 3 days live data. TTSL CDMA has not provided the data as data is not generated from the system.



	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	96.47%	98.66%	97.00%	96.73%	95.69%	98.99%	96.65%	98.39%	96.40%	99.00%	99.86%	
Month	96.62%	98.60%	97.00%	96.74%	95.81%	99.00%	96.76%	98.08%	96.30%	99.98%	99.87%	

No of POI having > 0.5% Congestion: None of the operators are having POIs above 0.5% congestion (>= 0.5%) for both one month data and 3 days live data.

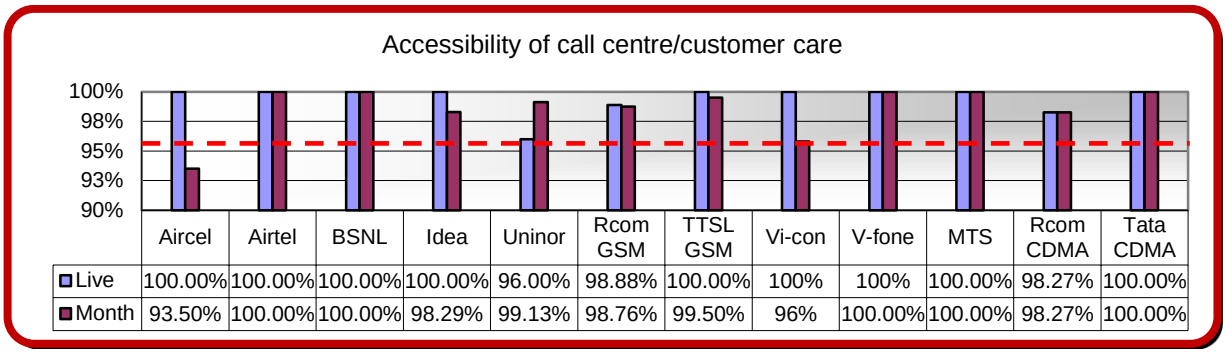


	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	0	0	0	0	0	0	0	0	0	0	0	0
Month	0	0	0	0	0	0	0	0	0	0	0	0

CUSTOMER SERVICE QUALITY PARAMETERS

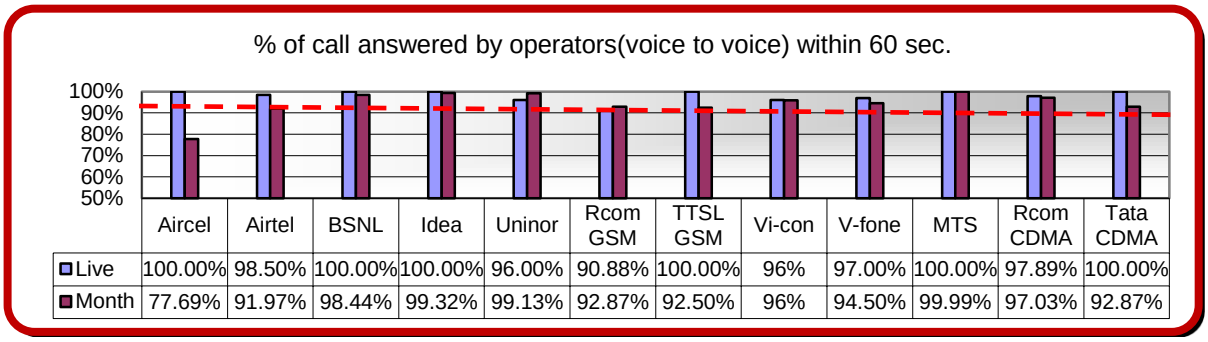
Response time to the customer for assistance:

Percentage of call answered (Electronically): All operators are meeting the TRAI benchmarks (>= 95%) for both one month data and 3 days live data.



	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	100.00%	100.00%	100.00%	100.00%	96.00%	98.88%	100.00%	100%	100%	100.00%	98.27%	100.00%
Month	93.50%	100.00%	100.00%	98.29%	99.13%	98.76%	99.50%	96%	100.00%	100.00%	98.27%	100.00%

Percentage of call answered by operators (Voice to voice) within 60 sec: All the operators are meeting the benchmark in both Month & Live cases .Except Aircel in Month part respectively.



	Aircel	Airtel	BSNL	Idea	Uninor	Rcom GSM	TTSL GSM	Vi-con	V-fone	MTS	Rcom CDMA	Tata CDMA
Live	100.00%	98.50%	100.00%	100.00%	96.00%	90.88%	100.00%	96%	97.00%	100.00%	97.89%	100.00%
Month	77.69%	91.97%	98.44%	99.32%	99.13%	92.87%	92.50%	96%	94.50%	99.99%	97.03%	92.87%

(5) Critical Analysis

From the data tables it is found that all the operators are meeting the network parameters
Aircel, performance is not satisfactory in case of "response time to customers for assistance parameters". "Calls answered voice to voice
.

(B) Redressal

(1) Sample coverage

A sample of billing complaints was taken for each operator and calls were made for assessing the resolution of billing/charging complaints within 4 weeks as claimed by the respective operators.

(2) Performance based on Live calling for Billing Complaints

Calling Operator	Aircel	Airtel	Idea	Uninor	BSNL	TTSL GSM	Videocon	Vodafone	MTS	Rcom(CDMA)	TTSL CDMA
Total No. of calls attempted	100	100	100	100	100	100	100	100	1	100	100
Total No. of calls answered	76	67	54	60	72	77	44	73	1	45	71
Cases resolved with 4 weeks	76	67	54	60	72	77	44	73	1	45	71
%age of cases resolved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

(3) Live calling to call centre (Ahmadabad)

Calling Operator	Aircel	Airtel	Idea	BSNL	Uninor	Tata GSM	Rcom GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
Call Centre No.	121/198	121/198	198/12345	1500	121/198	121	*222/*333	121	111/198	155	*222/*333	121
Total No. of Calls Attempted	100	100	100	100	100	100	100	100	100	100	100	100
Total No. of calls connected to IVR	100	100	100	100	100	100	100	100	100	100	100	100
Calls got connected to agent within 60 Sec	90	94	98	93	88	94	80	96	96	98	98	98
%age of calls got answered	90%	94%	98%	93%	88%	94%	80%	96%	96%	98%	98%	98%

(4)Level 1 live calling (Mehasana)

Emergency No.	No. of calls made	Airtel	Aircel	Idea	Tata (GSM)	Videocon	V-fone	Tata (CDMA)	BSNL	Room (GSM)	Room (CDMA)	Uninor	MTS
100	2	2	2	2	2	2	2	2	2	2	2	2	2
101	2	2	2	2	2	2	2	2	2	2	2	2	2
102/108	2	2	2	2	2	2	2	2	2	2	2	2	2
139	2	2	2	2	2	2	2	2	2	2	2	2	2

Level 1 live calling (Bharuch)

Emergency No.	No. of calls made	Airtel	Aircel	Idea	Tata (GSM)	Videocon	V-fone	Tata (CDMA)	BSNL	Room (GSM)	Room (CDMA)	Uninor	MTS
100	2	2	2	2	2	2	2	2	2	2	2	2	2
101	2	2	2	2	2	2	2	2	2	2	2	2	2
102/108	2	2	2	2	2	2	2	2	2	2	2	2	2
139	2	2	2	2	2	2	2	2	2	2	2	2	2

Level 1 live calling (Porbunder)

Emergency No.	No. of calls made	Airtel	Aircel	Idea	Tata (GSM)	Videocon	V-fone	Tata (CDMA)	BSNL	Room (GSM)	Room (CDMA)	Uninor	MTS
100	2	2	2	2	2	2	2	2	2	2	2	2	2
101	2	2	2	2	2	2	2	2	2	2	2	2	2
102/108	2	2	2	2	2	2	2	2	2	2	2	2	2
139	2	2	2	2	2	2	2	2	2	2	2	2	2

(5)Critical Analysis :

Random numbers were selected from the operators' available database of billing/metering complaints and calls were made to the customers to get their feedback for complaint redressal. Majority of the calls were not successful for various reasons such as customer not reachable, number busy or switched off etc. Among the successful calls, it was found that the operators had made refunds in 100% cases as claimed by their records..

Good results were found for all the operators during live calling to their respective call centres. Similar result was found in case of Level-1 calling for emergency nos. 100, 101,102, 108. and 139.

For 108 Medical assistance for all the operators the call was connected to Centralised medical Control room at Naroda (Ahmedabad.) who in turn conveys the emergency message to respective city.

(C) Inter operator call assessment

(1) Sample coverage

A sample of 2x50 test calls per Service Providers with in the licensed service area Gujarat Circle were made between 1900 to 2000 hrs and between 2000 to 2100 hrs so that TCBH hours for all the operators were covered.

(2) Performance based on live Calling (Ahmedabad)

Calling Operator	Aircel	Airtel	Idea	Uninor	BSNL	TTSL(GSM)	RTL GSM	Vi-cone	V-Fone	MTS	TATA CDMA	RCom CDMA
Aircel	-	96%	95%	100%	100%	100%	100%	99%	100%	100%	100%	100%
Airtel	100%	-	100%	98%	100%	100%	99%	100%	100%	98%	98%	100%
Idea	100%	100%	-	100%	95%	100%	100%	100%	99%	100%	100%	98%
Uninor	100%	100%	100%	-	100%	96%	96%	100%	100%	100%	97%	100%
BSNL	100%	100%	100%	99%	-	97%	100%	99%	100%	98%	100%	100%
RTL GSM	100%	100%	100%	100%	100%	100%	-	99%	95%	96%	100%	96%
TTSL GSM	100%	100%	100%	98%	100%	-	100%	100%	100%	94%	95%	100%
Vi-cone	100%	99%	100%	98%	100%	97%	100%	-	97%	98%	99%	100%
V- Fone	100%	100%	96%	100%	100%	99%	100%	99%	-	96%	100%	100%
MTS	100%	100%	99%	95%	90%	93%	95%	99%	97%	-		
TATA CDMA	97%	100%	100%	97%	100%	100%	97%	100%	98%	92%	-	97%
RCom CDMA	100%	100%	100%	100%	100%	100%	100%	100%	96%	95%	100%	-

(3)Critical Analysis:

In the inter-operator call assessment test, calls were made from one operator to other operators so as to check congestion on both the operators' network. In such cases, the radio part, switch part & the POI in-between the operators are involved and hence if any congestion is found in the network, it may be due to any of these parts. The result shows that there is no congestion on the operator networks

(D) Drive Test of the Mobile Network of Service Providers:

SN	Parameter	City Name	Airtel	BSNL	Idea	Uninor	Rcom (GSM)	TTSL (GSM)	Videocon	Vodafone	MTS	Rcom (CDMA)	TTSL (CDMA)
			GSM Operators								CDMA Operators		
1.1	Call Attempts	Mehasana	73	93	79	120	81	92	120	95	92	83	88
		Bharuch	70	81	121	117	102	103	79	85	100	97	95
		Porbunder	96	108	129	113	109	119	81	102	114	112	114
1.2	Blocked Call Rate (<=3%)		0.00%	0.00%	0.00%	0.83%	0.00%	0.00%	0.83%	0.00%	0.00%	0.00%	0.00%
		Bharuch	0.00%	0.00%	0.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Porbunder	2.08%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1.3	Dropped Call Rate (<=2%)	Mehasana	0.00%	1.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0%	0%	0.00%	0.00%
		Bharuch	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	0.00%	0%	0%	9.00%	0.00%
		Porbunder	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0%	0%	0.00%	0.00%
1.4	Percentage of connections with good voice quality (=>95%)												
	(i) 0-4 (w/o frequency hopping)	Mehasana									100%	98.42%	98.78%
		Bharuch									99.88%	99.49%	97.58%
		Porbunder									99.05%	98.63%	99.05%
	(ii) 0-5 (with frequency hopping)	Mehasana	96.50%	97.10%	96.80%	95.60%	99.61%	97.16%	97.00%	97.15%			
		Bharuch	94.76%	96.60%	95.80%	95.89%	98.80%	96.31%	96.54%	97.66%			
		Porbunder	97.73%	96.40%	98.60%	96.89%	99.62%	98.49%	96.78%	97.84%			
1,5	Service Coverage												
	In door (>= -75dBm)	Mehasana	65.70%	31.80%	98.95%	94.86%	91.81%	92.54%	65.60%	100%	97.95%	98.51%	89.12%
		Bharuch	73.89%	54.82%	99.50%	75.98%	87.50%	83.55%	66.00%	36.87%	85.96%	89.84%	79.32%
		Porbunder	81.25%	35.34%	97.89%	89.05%	91.39%	83.86%	62.80%	98.33%	92.61%	76.06%	92.61%
	In-vehicle (>= -85dBm)	Mehasana	95.06%	88.82%	100%	99.66%	99.54%	99.90%	95.60%	100%	100%	100%	100.00%
		Bharuch	98.13%	95.04%	100%	96.85%	98.80%	99.55%	94.70%	82.52%	99.35%	99.85%	98.00%
		Porbunder	97.79%	91.39%	99.70%	97.16%	99%	98.40%	95.50%	99.93%	99.10%	95.93%	99.00%
	Out door- in city (>= -95dBm)	Mehasana	100%	99.76%	100%	99.20%	99.99%	99.96%	100%	100%	100%	100%	100%
		Bharuch	100%	100%	100%	99.80%	100%	100%	100%	98.11%	100%	100%	100%
		Porbunder	100%	99.89%	99.90%	99.00%	100%	99.96%	100%	100%	100%	100%	100%
1.6	Call Setup Success Rate (>=95%)	Mehasana	100%	100%	100%	100%	100%	100%	98%	100%	100%	100%	100%
		Bharuch	100%	100%	99.20%	100%	100%	100%	100%	100%	100%	100%	100%
		Porbunder	98%	100%	99.30%	100%	100%	100%	100%	100%	100%	100%	100%
1.7	Handover Success Rate (HOSR)	Mehasana	100%	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%
		Bharuch	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100.00%
		Porbunder	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Key observations as could be derived from the table are as under:

- Drop Call Rate parameter is not met by Rcom(CDMA) in Bharuch.

NOTE:- Aircel is in ICR with TTSL in Gujarat and Etisalat has closed its operation.

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(1) Sample Coverage

The Operator Assisted Drive Test was conducted at Gujarat Circle for all the operators. Route covered was about around 80- 100Km depending on city areas within the speed limit of 30Km/hr.

DRIVE TEST LOCATIONS

MEHASANA

LOW DENSE: Modhera cirdle, GIDC, College road, Dediyasan..
MEDIUM DENSE: Palanpur highjway, Radhanpur road,sardar Patel market,Rajmahal road, Rotary Bhavan marg,General hospital,
HIGH DENSE: .Bus stand, Ambaji mandir, Patidarnagar, Visnagar azad chowk.

BHARUCH

LOW DENSE: RTO Office, Parth Society, Circuit house.
MEDIUM DENSE: Shantinekatan Society, Nidhi vidya bhavan road, GIDC.
HIGH DENSE: Kasak Favara, Railway Station, ASC ball bearing, Narayan Vidya vihar,
.

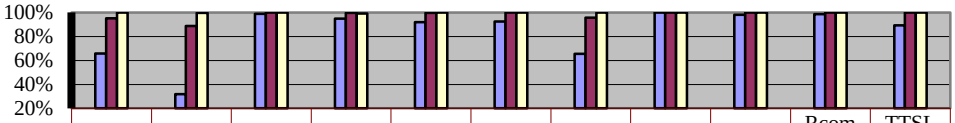
PORBUNDER

LOW DENSE: Narsingh Tekdi, GIDC, Udyognagar, Naval Air Enclave.
MEDIUM DENSE: .Kadia plot, wadi plot,Bird sanctuary,Chowpati beach, Circuit house,
HIGH DENSE: MG Road, Kharva Vaas, Port, Meman wada, Sudama Chowk,limda chowk, Milkmarket, Police lines...

(2) Graphical Representation

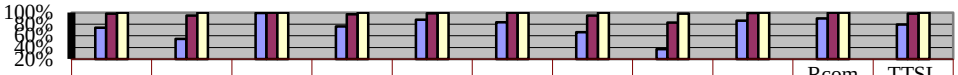
The Radio coverage level as was found in the operator assisted drive test result is shown graphical below:

Coverage level
Mehsana



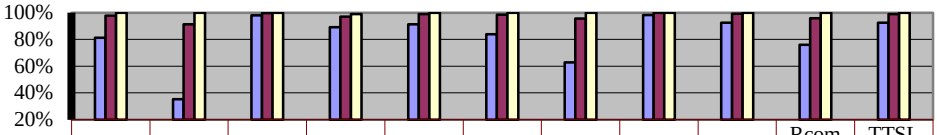
	Airtel	BSNL	Idea	Uninor	Rcom (GSM)	TTSL (GSM)	Vi-Cone	V-Fone	MTS	Rcom (CDMA)	TTSL (CDMA)
In door (>= -75dBm)	65.70%	31.80%	98.95%	94.86%	91.81%	92.54%	65.60%	100%	97.95%	98.51%	89.12%
In-vehicle (>= -85dBm)	95.06%	88.82%	100%	99.66%	99.54%	99.90%	95.60%	100%	100%	100%	100.00%
Out door- in city (>= -95dBm)	100%	99.76%	100%	99.20%	99.99%	99.96%	100%	100%	100%	100%	100%

Coverage level
Bharuch



	Airtel	BSNL	Idea	Uninor	Rcom (GSM)	TTSL (GSM)	Vi-Cone	V-Fone	MTS	Rcom (CDMA)	TTSL (CDMA)
In door (>= -75dBm)	73.89%	54.82%	99.50%	75.98%	87.50%	83.55%	66.00%	36.87%	85.96%	89.84%	79.32%
In-vehicle (>= -85dBm)	98.13%	95.04%	100%	96.85%	98.80%	99.55%	94.70%	82.52%	99.35%	99.85%	98.00%
Out door- in city (>= -95dBm)	100%	100%	100%	99.80%	100%	100%	100%	98.11%	100%	100%	100%

Coverage level
Porebunder



	Airtel	BSNL	Idea	Uninor	Rcom (GSM)	TTSL (GSM)	Vi-Cone	V-Fone	MTS	Rcom (CDMA)	TTSL (CDMA)
In door (>= -75dBm)	81.25%	35.34%	97.89%	89.05%	91.39%	83.86%	62.80%	98.33%	92.61%	76.06%	92.61%
In-vehicle (>= -85dBm)	97.79%	91.39%	99.70%	97.16%	99%	98.40%	95.50%	99.93%	99.10%	95.93%	99.00%
Out door- in city (>= -95dBm)	100%	99.89%	99.90%	99.00%	100%	99.96%	100%	100%	100%	100%	100%

(3) Critical Analysis

The drive test data was found to be satisfactory for most of the parameters. However, a few deviations found are listed below:
, Idea, and Airtel observed 1nos of " Blocked Call " in Bharuch and Porbunder, But they could achieve the 'Bench mark Set by TRAI for 'Blocked call'<=3%..
BSNL observed drop call each at Mehasana and Bharuch rerespectively but could achieve the bench mark.

Airtel couldnot achieve the benchmark for"connection with good voice quality at Bharuch.With Value of 94,76%

(E) Independent Drive Test:-

1.) Sample Coverage

The Operator Assisted Drive Test was conducted at UP(E) Circle for all the operators. Route covered was about around 60- 80Km depending on city areas within the speed limit of 30Km/hr.
DRIVE TEST LOCATIONS:

AMRELI

Low Dense :.Shyam real estate,Ambedkar road,Harivihar Soc, Dwarkesh nagar,Bhujal para.
Medium Dense: Aroma institute,Sardar circle,Police colony,Forum school, Sub jail,
High dense: Vegetable market,Pani darwaja,Chakkargadh road,Post office.

PALANPUR

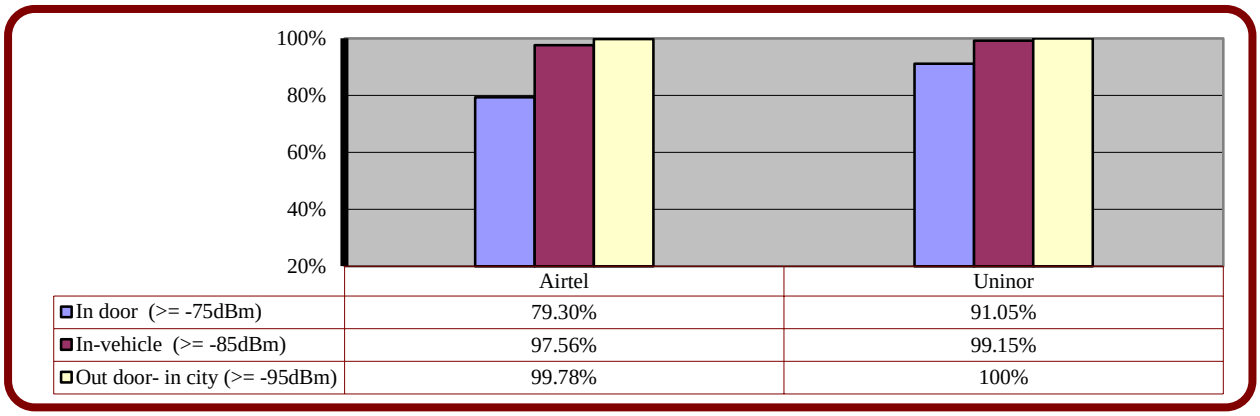
Low Dense :Vidyamandir Trust, Police head Qtrs,Banaskantha School, ITI, Ganj bazaar,
Medium Dense: Tulsipark Soc, Jerawar Park,Neelkanth park.
High dense: Vegetable market,Vivekanand chowk .Parikh hospital,Nani bazaar

(2) Performance Respective Drive Test

SN	Parameter	Airtel (Amreli)	Uninor (Palanpur)
1.1	Call Attempts	77	88
1.2	Blocked Call Rate (<=3%)	0%	0%
1.3	Dropped Call Rate (<=2%)	0%	0%
1.4	Percentage of connections with good voice quality (=>95%)		
	(i) 0-4 (w/o frequency hopping)		
	(ii) 0-5 (with frequency hopping)	96.18%	95.39%
1.5	Service Coverage		
	In door (>= -75dBm)	79.30%	91.05%
	In-vehicle (>= -85dBm)	97.56%	99.15%
	Outdoor- in city (>= -95dBm)	99.78%	100%
1.6	Call Setup Success Rate (>=95%)	100%	100%
1.7	Handover Success Rate	100%	100%

Graphical Representation

The Radio coverage level as was found in the operator assisted drive test result is shown graphical below



(3)Critical Analysis

The independent Drive tests were conducted at different cities/towns for different operators,

Maximum possible area of the city/town was covered during Drive tests. Both the operators Airtel and Uninor could achieve the benchmark. Set for all the parameters.

(F) Compliance report (Status of service providers with respect to the QoS)

From live, month and PMR findings, it can be concluded that on an average, performance of the operators in the service area (Gujarat) is by and large satisfactory for **Network Parameters**.

POI congestion is found to be satisfying for all the operators for both month and live measurement. Under **Customer Service Quality** section, benchmark for the parameter "operator answered calls (voice-to-voice) within 60 seconds" is found not satisfying for Aircel,. The performance of Aircel is not up to the mark in terms of calls answered

Regarding **Metering/Billing Credibility** issues all the operators could achieve the benchmark. Idea could not achieve the benchmark for "Time taken to refund the Deposits after closure within 60 days.

NOTE—Aircel is having an ICR agreement with TTSL in Gujarat.
Etisalat has closed its operation in Gujarat Circle.