

REPORT
ON
AUDIT & ASSESSMENT OF QUALITY OF SERVICE
OF
CELLULAR MOBILE TELEPHONE SERVICE
FOR
RAJASTHAN CIRCLE
(NORTH ZONE)

Report Period: April 2012 – June 2012

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- II. Basic Telephone Service (Wireline) Providers
- *Not conducted for this quarter*
- III. Broadband Service Providers
- *Not conducted for this quarter*

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 lay 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 (level 1) calls testing.

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 Rajasthan 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 Rajasthan 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 for the period October – December 2011.

Following are the various operators covered in Rajasthan 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	BSNL	May-2012	1900-2000 Hrs
4	Idea	May-2012	2000-2100 Hrs
5	Reliance Communication	May-2012	2000-2100 Hrs
6	TATA	May-2012	2000-2100 Hrs
7	Videocon	May-2012	2100-2200 Hrs
8	Vodafone	May-2012	1900-2000 Hrs
CDMA Operators			
9	MTS	May-2012	2000-2100 Hrs
10	Reliance Communication	May-2012	1900-2000 Hrs
11	TATA	May-2012	1900-2000 Hrs

Note: During Audit & Drive Test, it was found that:

1. *Aircel is on ICR with Tata GSM in Churu & Dungarpur Town.*
2. *Tata GSM is on ICR with Vodafone in Bharatpur Town.*
3. *Loop telecom has closed their services in Rajasthan 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	Rcom GSM	Tata GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
S/N	Name of Parameter		GSM Operators								CDMA Operators		
1	Network Availability												
	a) BTS Accumulated Downtime	<=2%	0.04%	0.10%	1.78%	0.12%	0.36%	0.01%	0.39%	0.11%	0.06%	0.51%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	0.00%	0.01%	1.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Connection Establishment (Accessibility)												
	a) CSSR (Call Setup Success Rate)	>=95%	96.61%	99.34%	98.03%	98.46%	99.72%	98.19%	98.96%	98.80%	99.19%	97.79%	98.91%
	b) SDCCH/PAGING congestion	<=1%	0.05%	0.22%	0.22%	0.36%	0.01%	0.03%	0.21%	0.53%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	0.11%	0.26%	0.80%	0.74%	0.04%	0.06%	0.00%	0.27%	0.31%	0.00%	0.02%
2	Connection maintenance (Retainability)												
	a) CDR	<=2%	0.74%	1.08%	1.41%	1.31%	0.34%	0.78%	0.76%	0.80%	0.52%	0.06%	0.57%
	b) Worst affected cells>3% TCH drop	<=3%	1.87%	2.60%	2.97%	2.82%	0.04%	2.50%	0.00%	2.71%	1.24%	0.02%	2.95%
	c) Good voice quality	>=95%	97.00%	98.64%	98.07%	96.22%	99.17%	98.07%	99.07%	97.57%	98.26%	99.73%	NA
3	No. of POI's having congestion >0.5%		0	0	0	1	0	0	0	0	0	0	0
4	Response time to customers for assistance												
	a) Accessibility of call centre/Customer Care	>=95%	96%	100%	98.50%	99.48%	98.71%	78.04%	100%	100%	95.01%	99.20%	64.28%
	b) % call answered by operators(voice to voice) within 60 sec.	>=90%	88.21%	63.20%	94.38%	99.41%	94.45%	92.00%	100%	99.26%	95.82%	96.23%	92.43%

NA: Not Applicable, NR: Not Received

From the 3 days live data assessment, it is found that all the operators are meeting all the network parameters.

Performance related to customer care data is found to be satisfactory for most of the operators for the parameter “calls answered by operators (voice-to-voice)” except for Aircel & Airtel. Similarly, Tata GSM, Tata CDMA & Idea are showing a below benchmark value for the parameter “accessibility of call centre”.

One Month Data Audit		Bench- mark	Aircel	Airtel	BSNL	Idea	Rcom GSM	Tata GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
S/N	Name of Parameter												
(A)	Network Service Quality Parameter												
1	Network Availability												
	a) BTS Accumulated Downtime	<=2%	0.08%	0.10%	1.85%	0.12%	0.41%	0.01%	0.54%	0.17%	0.10%	0.58%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	0.09%	0.30%	1.99%	0.00%	0.83%	0.00%	0.00%	1.10%	0.00%	1.46%	0.00%
2	Connection Establishment (Accessibility)												
	a) CSSR (Call Setup Success Rate)	>=95%	96.80%	99.32%	98.60%	98.55%	99.72%	97.86%	99.18%	98.88%	98.94%	98.34%	98.85%
	b) SDCCH/PAGING congestion	<=1%	0.49%	0.22%	0.19%	0.33%	0.01%	0.04%	0.55%	0.44%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	0.39%	0.34%	0.79%	0.73%	0.03%	0.05%	0.16%	0.28%	0.50%	0.01%	0.18%
3	Connection maintenance (retainability)												
	a) CDR	<=2%	0.68%	1.15%	1.40%	1.35%	0.34%	0.84%	0.65%	0.84%	0.54%	0.06%	0.60%
	b) Worst affected cells>3% TCH drop	<=3%	0.70%	2.23%	2.99%	2.57%	0.01%	1.45%	0.00%	1.43%	1.26%	0.02%	2.64%
	c) Good voice quality	>=95%	96.97%	98.93%	98.47%	96.20%	99.18%	97.97%	99.22%	97.50%	98.26%	99.72%	NA
4	No. of POI's having congestion >0.5%		0	0	0	4	0	0	0	0	0	0	0
(B)	Customer Service Quality Parameters												
5	Metering/billing credibility-Post paid	<= 0.1%	0.03%	0.01%	0.09%	0.05%	0.10%	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%
6	Metering /billing credibility-Pre paid	<= 0.1%	0.03%	0.01%	0.10%	0.02%	0.10%	0.00%	0.00%	0.03%	0.00%	0.10%	0.00%
7	Resolution of billing/ charging complaints	100% within 4 weeks	100%	100%	100%	100%	100%	100%	0%	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%	0%	100%	100%	100%	100%
8	Response time to customers for assistance												
	a) Accessibility of call centre/Customer Care	>=95%	95%	100.00%	99.19%	99.48%	98.70%	99.40%	100%	100%	95.21%	99%	98.24%
	b) % call answered by operators(voice to voice) within 60 sec.	>=90%	52.29%	60.74%	91.71%	99.42%	94.80%	94.60%	97.26%	99.15%	95.98%	95.13%	91.29%
9	Termination/closure of service	<=7days	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%
10	Time taken for refunds of deposits after closures.	100% within 60 days	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%

NA: Not Applicable, NR: Not Received

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

- ✚ BSNL is not meeting the benchmark for the parameter “Blocked Call Rate” in Bharatpur & Churu Town.
- ✚ BSNL is not meeting the benchmark for the parameter “Good Voice Quality” in Bharatpur & Dungarpur Town.
- ✚ BSNL is not meeting the benchmark for the parameter “Dropped Call Rate”& “CSSR” in Bharatpur Town.

Independent Drive Test

SN	Parameter	MTS	RCOM GSM	RCOM CDMA
		Sirohi	Churu	
1.1	Blocked Call Rate (<=3%)	0.00	0.00	0.00
1.2	Dropped Call Rate (<=2%)	0.00	0.00	0.00
1.3	Percentage of connections with good voice quality (=>95%)			
	(i) 0-4 (w/o frequency hopping)	98.08		97.98
	(ii) 0-5 (with frequency hopping)		99.11	
1.4	Call Setup Success Rate (>=95%)	100	100	100.00

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

- ✚ All Operators are meeting the TRAI benchmark.

- (B) Basic Telephone Service (Wireline) Providers.
- Not conducted for this quarter
- (C) Broadband Service Providers
- Not conducted for this quarter

			Verified	1	0	0	0	0	0	0	0	0	0	0
(B)	Customer Service Quality Parameters													
5	Metering/billing credibility-Post paid	<= 0.1%	Reported	0.01%	0.03%	0.10%	0.02%	0.10%	0.00%	NA	0.16%	0.00%	0.10%	0.00%
			Verified	0.01%	0.03%	0.10%	0.02%	0.10%	0.00%		0.16%	0.00%	0.10%	0.00%
6	Metering /billing credibility-Pre paid	<= 0.1%	Reported	0.05%	0.00%	0.10%	0.05%	0.10%	0.01%	0.00%	0.07%	0.00%	0.10%	0.04%
			Verified	0.05%	0.00%	0.10%	0.05%	0.10%	0.01%	0.00%	0.07%	0.00%	0.10%	0.04%
7	Resolution of billing/ charging complaints	100% within 4 weeks	Reported	100%	100%	100%	100%	100%	100%	100%	98.25%	100%	100%	100%
			Verified	100%	100%	100%	100%	100%	100%	100%	98.25%	100%	100%	100%
	Period of applying credit/waiver/adjustment to the customers account from the date of resolutions of complaints	<=1 week	Reported	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
			Verified	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
8	Response time to customers for assistance													
	Accessibility of call centre/Customer Care	>=95%	Reported	100%	99.31%	97.00%	87.33%	98.91%	99.00%	99.20%	100%	97.69%	98.46%	98.00%
			Verified	100%	99.31%	97.00%	87.33%	98.91%	99.00%	99.20%	100%	97.69%	98.46%	98.00%
	% call answered by operators(voice to voice) within 60 sec.	>=90%	Reported	92.62%	88.00%	91.00%	62.36%	95.55%	93.00%	98.08%	74.77%	92.00%	97.88%	97.00%
Verified			92.62%	88.00%	91.00%	62.36%	95.55%	93.00%	98.08%	74.77%	92.00%	97.88%	97.00%	
9	Termination/closure of service													
	No.of requests for Termination / Closure of service complied within 7 days during the quarter	<=7days	Reported	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%
			Verified	100%	100%	100%	100%	100%	100%		100%	100%	100%	100%
10	Time taken for refunds of deposits after closures.	100% within 60 days	Reported	100%	100%	100%	100%	100%	100%		100%	100%	100%	100%
			Verified	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

✚ No Deviation is found when compared with Operator reported data.

II. Basic Service (Wireline) Service

-Not conducted for this quarter

III. Broadband Service

-Not conducted for this quarter

CHAPTER-4: DETAILED FINDINGS & ANALYSIS

I. Cellular Mobile Telephone Service

(A) MSC Audit

(1) 3 Days Live measurement Data assessment & Summarized Findings

S/N	Name of Parameter	Benchmark	Aircel	Airtel	BSNL	Idea	Rcom GSM	Tata GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators							CDMA Operators			
A	Network Service Quality Parameter												
1	Network Availability												
	a) BTS Accumulated Downtime	<=2%	0.04%	0.10%	1.78%	0.12%	0.36%	0.01%	0.39%	0.11%	0.06%	0.51%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	0.00%	0.01%	1.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	c) Total no. of BTSs in the licensed service area		1148	7244	3610	3580	2525	1499	13	6353	1611	1441	924
	d) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		37	510	4634	298	651	7	4	525	71	529	11
	e) No. of BTSs having accumulated downtime of >24 hours in a month		0	1	46	0	0	0	0	0	0	0	0
	c) CSSR	>=95%	96.61%	99.34%	98.03%	98.46%	99.72%	98.19%	98.96%	98.80%	99.19%	97.79%	98.91%
	d) SDCCH/PAGING congestion	<=1%	0.05%	0.22%	0.22%	0.36%	0.01%	0.03%	0.21%	0.53%	0.00%	0.00%	0.00%
	e) TCH congestion	<=2%	0.11%	0.26%	0.80%	0.74%	0.04%	0.06%	0.00%	0.27%	0.31%	0.00%	0.02%
2	Connection maintenance												
	a) CDR	<=2%	0.74%	1.08%	1.41%	1.31%	0.34%	0.78%	0.76%	0.80%	0.52%	0.06%	0.57%
	b) Cells having > 3% TCH drop	<=3%	1.87%	2.60%	2.97%	2.82%	0.04%	2.50%	0.00%	2.71%	1.24%	0.02%	2.95%

	c) Good voice quality	>=95%	97.00%	98.64%	98.07%	96.22%	99.17%	98.07%	99.07%	97.57%	98.26%	99.73%	NA
	d) No. of cells > 3% TCH drop		64	563	316	303	3	112	0	518	62	1	84
	e) Total no. of cells in the network		3422	21640	10640	10755	7575	4482	42	19111	4985	4323	2843
3	No. of POI's having congestion >0.5%		0	0	0	1	0	0	0	0	0	0	0
	a) Name of POI not meeting the benchmark		Nil	Nil	Nil	IDEA_NLD_ZTE_NGN_MGWJOD3_O/G	Nil	Nil	Nil	0.00	Nil	Nil	Nil
	b) Total No. of circuits on POI		53,939	151,483	33,066	87,005	9,596	42,568	407	-	37,539	20,002	47,511
	c) Avg No. of call attempts on POI		1,262,083	5,029,149	569,680	2,356,782	137,768	587,697	42	-	692,345	177,139	599,475
	d) Avg traffic served on POI (Erlang)		39,221	104,087	19,728	55,346	3,505	24,200	26	-	12,474	5,786	19,316
	e) Total number of working POI Service Area wise		23	92	12	92	34	37	12	0	68	34	0
	f) Capacity of POI		52337	148522	30152	83743	9042	41237	269	0	35657	18158	42673
	g) Equipped Capacity of Network in respect of Traffic in erlang		58251	448669	265400	132417	102000	71306	5000	282000	97000	116000	265106
	h) Total traffic handled in TCBH in erlang		37444	357012	122700	129405	90233	34643	2	222856	46154	17654	51377
(B)	Customer Service Quality Parameters												
4	Response time to customers for assistance												
	a) Accessibility of call centre	>=95%	96%	100.00%	98.50%	99.48%	98.71%	78.04%	100%	100%	95.01%	99.20%	64.28%
	b) % of call answered by operators(voice to voice) within 60 sec	>=90%	88.21%	63.20%	94.38%	99.41%	94.45%	92.00%	100%	99.26%	95.82%	96.23%	92.43%
	c) No. of call attempts to call centre / customer care nos. during TCBH (Avg)		17,478	181,886	200	257,342	619,118	112,661	2	1,206,430	99,930	105,076	30,168
	d) No. of calls connected and answered successfully to call centre / customer care nos. during TCBH (Avg)		17,478	180,716	200	241,684	612,104	79,062	2	1,206,430	98,385	103,476	19,972

NA; Not Applicable, NR: Not Received

Parameter-wise Findings (Live Data Assessment):

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

- **BTS accumulated downtime (benchmark <=2%)**: All the operators are meeting benchmark with values lying between 0.01% and 1.78%.
- **Worst affected BTSs due to downtime (benchmark <= 2%)**: All the operators are meeting benchmark with values lying between 0% and 1.33%.
- **Call setup success rate (benchmark >= 95%)**: All operators are meeting the benchmark with values lying between 96.61% and 99.72%.
- **SDCCH/PAGING Channel congestion (benchmark <= 1%)**: All operators are meeting the benchmark with values lying between 0% and 0.53%.
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 0.80%.
- **Call drop rate (benchmark <= 2%)**: All other operators are meeting the benchmark with values lying between 0.06% and 1.41%.
- **Cell exceeding 3% TCH drop (benchmark <= 3%)**: All the operators are satisfying the benchmark with value in between 0% and 2.97%.
- **Connections with good voice quality (benchmark >= 95%)**: All operators are meeting the benchmark with values lying between 96.22 and 99.73%. For this parameter, Tata CDMA values are not system generated.
- **No. of POI's having Congestion >0.5%**: For this parameter, mostly Operators found overall no congestion, However few cases are observed for some operators like Idea with 1 POI having calls failures >0.5%. It was also observed that some are in the range of over 100% though 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)**: Except for Tata GSM & Tata CDMA, rest of the operators is meeting the benchmark with values lying between 95.01% and 100%.
- **%age of call answered by operator (Voice to voice) (benchmark >90%): %**: Except for Aircel & Airtel, rest of the operator are meeting the benchmark with value in between 92% and 100%.

(2) One month audit Data report & Summarized Findings

S/N	Name of Parameter	Benchmark	Aircel	Airtel	BSNL	Idea	Rcom GSM	Tata GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators							CDMA Operators			
(A)	Network Service Quality Parameter												
1	Network Availability												
	a) BTS Accumulated Downtime	<=2%	0.08%	0.10%	1.85%	0.12%	0.41%	0.01%	0.54%	0.17%	0.10%	0.58%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	0.09%	0.30%	1.99%	0.00%	0.83%	0.00%	0.00%	1.10%	0.00%	1.46%	0.00%
	c) Total no. of BTSs in the licensed service area		1,148	7,244	3,610	3,580	2,525	1,499	13	6,353	1,611	1,441	924
	d) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		644.70	5512.23	49688	3196	7720	132.25	51.82	7835.95	1214	6191	233.93
	e) No. of BTSs having accumulated downtime of >24 hours in a month		1	22	72	0	21	0	0	70	0	21	0
2	Connection Establishment (Accessibility)												
	a) CSSR (Call Setup Success Rate)	>=95%	96.80%	99.32%	98.60%	98.55%	99.72%	97.86%	99.18%	98.88%	98.94%	98.34%	98.85%
	b) SDCCH/PAGING congestion	<=1%	0.49%	0.22%	0.19%	0.33%	0.01%	0.04%	0.55%	0.44%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	0.39%	0.34%	0.79%	0.73%	0.03%	0.05%	0.16%	0.28%	0.50%	0.01%	0.18%
3	Connection maintenance (retainability)												
	a) CDR	<=2%	0.68%	1.15%	1.40%	1.35%	0.34%	0.84%	0.65%	0.84%	0.54%	0.06%	0.60%
	b) Worst affected cells>3% TCH drop	<=3%	0.70%	2.23%	2.99%	2.57%	0.01%	1.45%	0.00%	1.43%	1.26%	0.02%	2.64%

	c) Good voice quality	>=95%	96.97%	98.93%	98.47%	96.20%	99.18%	97.97%	99.22%	97.50%	98.26%	99.72%	NA
	d) Total No. of cells exceeding 3% TCH drop (call drop)		24	482	318	275	1	65	0	275	63	1	75
	e) Total no. of cells in the network		3422	21643	10640	10703	7575	4488	42	19207	4985	4323	2843
4	No. of POI's having congestion >0.5%	<=0.5%	0	0	0	4	0	0	0	0	0	0	0
	a) Name of POI not meeting the benchmark		Nil	Nil	Nil	AIRTEL_GMSSJP1_JPR_GM GWJP1_O/G, BSNL_CELL ONE 1_JPR_M SC1, IDEA_NL D_HUA WEI_NG N_MGWJ OD3_O/G , TATACO MM_NL D_GMG WJP1	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	b) Total No. of call attempts on POI (Avg.)		1,135,967	5,077,832	611,168	2,399,614	142,277	652,405	36	3,817,877	8,906,374	175,813	598,764
	c) Total traffic served on POI (Erlang) (Avg.)		40,394	104,402	19,949	55,372	3,773	24,249	25	72,826	194,698	5,776	26,072
	d) Total No. of circuits on POI		53,939	151,483	33,066	83,314	9,573	42,568	407	125,494	37,539	20,016	47,511
	e) Total number of working POI Service Area wise		23	92	12	92	34	37	12	178	68	34	0
	f) Capacity of POI		52,337	148,522	30,152	80,126	9,023	41,237	269	121,115	35,657	18,165	42,673
5	Network Data												
	a) Equipped Capacity of Network Erlang		58251	448669	265400	132417	102000	71306	5000	282000	97000	116000	265106

	b) Total traffic in TCBH in erlang (Avg.)		37537	370643	124967	129860	91331	36173	2	223763	53351	18887	59142
	c) Total no. of customers served (as per VLR) on last day of the month		1118210	13243874	2764274	4544802	3334404	1259641	200	7317099	1083050	1244794	722741
(B)	Customer Service Quality Parameters												
5	Metering/billing credibility-Post paid	<i><= 0.1%</i>	0.03%	0.01%	0.09%	0.05%	0.10%	0.00%	NA	0.08%	0.00%	0.00%	0.00%
	a) No. of bills issued during the period		12577	207966	253879	47614	17668	21181	0	193803	44799	103497	74490
	b) No. of bills disputed including billing complaints during the period		4	19	220	23	17	0	0	149	0	0	0
6	Metering /billing credibility-Pre paid	<i><= 0.1%</i>	0.03%	0.01%	0.10%	0.02%	0.10%	0.00%	0.00%	0.03%	0.00%	0.10%	0.00%
	a) No. of charging / credit / validity complaints during the quarter		484	2419	5867	955	5351	1	0	2914	0	2227	7
	b) Total no. of pre-paid customers at the end of the quarter		1,841,767	16,625,435	6,029,527	4,215,909	5,351,406	2,072,429	9,105	8,970,083	2,378,576	2,227,969	1,249,825
7	Resolution of billing/ charging complaints	<i>100% within 4 weeks</i>	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%
	a) No. of billing/(post paid) and charging, credit/validity (pre paid) complaints resolved within 4 weeks during the quarter		488	6777	6087	978	5368	258	0	4135	136	2330	349
	b) Total no. of billing (post paid) and charging, credit / validity (pre paid) complaints received during the quarter		488	6777	6087	978	5368	258	0	4135	136	2330	349

	c) No. of billing complaints (post paid) and charging, credit/ validity complaints (pre paid) resolved in favour of the customer during the quarter		488	2438	6087	978	5358	1	0	3063	0	2227	7
	d) No. of complaints disposed on account of not considered as valid complaints during the quarter		0	4339	0	0	10	257	0	1072	136	103	342
	e) 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%	NA	100%	100%	100%	100%
8	Response time to customers for assistance												
	a) Accessibility of call centre/Customer Care	$\geq 95\%$	95%	100.00%	99.19%	99.48%	98.70%	99.40%	100%	100%	95.21%	99.36%	98.24%
	b) % call answered by operators(voice to voice) within 60 sec.	$\geq 90\%$	52.29%	60.74%	91.71%	99.42%	94.80%	94.60%	97.26%	99.15%	95.98%	95.13%	91.29%
	c) Total no. of call attempts to call centre & customer care nos. during TCBH (Avg.).		176,252	1,630,803	5,046	718,346	4,848,224	291,119	95	10,595,339	2,644,590	1,937,066	84,030
	d) No. of calls connected and answered successfully to call centre & customer care nos. during TCBH (Avg.).		167,534	1,630,803	5,005	714,592	4,785,146	289,359	95	10,595,339	2,517,938	1,924,698	82,547
9	Termination/closure of service	≤ 7 days	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%
	a) Total No. of requests for Termination / Closure of service received during the quarter		385	465	414	606	117	807	NA	1,254	450	445	1,239

	b) No.of requests for Termination / Closure of service complied within 7 days during the quarter		385	465	414	606	117	807	NA	1,254	450	445	1,239
10	Time taken for refunds of deposits after closures.	<i>100% within 60 days</i>	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%

NA: Not applicable, NR: Not Received

Parameter-wise Findings (Month Data Assessment):

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

- **BTS accumulated downtime (benchmark $\leq 2\%$):** All the operators are meeting the benchmark with values lying between 0.01% and 1.85%.
- **Worst affected BTSs due to downtime (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0.00% and 1.99%.
- **Call setup success rate (benchmark $\geq 95\%$):** All operators are meeting the benchmark with values lying between 96.80% and 99.72%.
- **SDCCH/PAGING Channel congestion (benchmark $\leq 1\%$):** All operators are meeting the benchmark with values lying between 0% and 0.55%.
Note: CDMA operators have provided the data for Paging Channel congestion and GSM operators provided SDCCH Channel congestion.
- **TCH congestion (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0.01% and 0.79%.
- **Call drop rate (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0.06% and 1.40%.
- **Cell exceeding 3% TCH drop (benchmark $\leq 3\%$):** All operators are satisfying the benchmark with value in between 0% and 2.99%.
- **Connections with good voice quality (benchmark $\geq 95\%$):** All the GSM operators are meeting the benchmark with values lying between 96.20% and 99.72%. For this parameter, Tata CDMA values are not system generated.
- **No. of POI's having Congestion $>0.5\%$:** For this parameter, mostly Operators found overall no congestion, However few cases are observed for some operators like Idea with 4 POI's were having call failures >0.5 It was also observed that some operators are in the range of over 100% though 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 the operators are meeting the benchmark with values lying between 95.05% and 100%.
- **%age of call answered by operator (Voice to voice) (benchmark $>90\%$):** Except for Aircel & Airtel, rests of the operators are meeting the benchmark with values lying between 91.29% and 99.42%.
- **Metering and billing credibility-Postpaid (benchmark $\leq 0.1\%$):** All the operators are meeting the benchmark.
- **Metering and billing credibility-Pre paid (benchmark $\leq 0.1\%$):** All the operators are meeting the benchmark with values lying between 0% and 0.10%.
- **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):** All operators have satisfied the benchmark.

3) Sample Coverage

Switches/BSC/BTS details of operators:

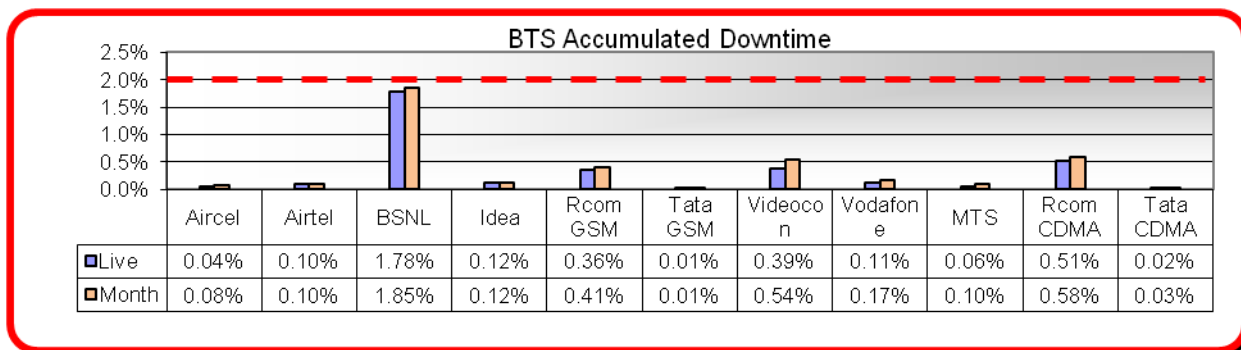
Sl.	Name of Service Provider	No. of MSC/GMSC	No. of BSC	No. of BTS
GSM Operators				
1	Aircel Ltd	1	10	1148
2	Airtel Ltd	42	79	7246
3	BSNL	15	50	3610
4	Idea	10	25	3580
5	Reliance Communication	4	15	2525
6	Tata	3	12	1499
7	Videocon	1	1	13
8	Vodafone	25	75	6373
CDMA Operators				
9	MTS	2	6	1611
10	Reliance Communication	6	6	1441
11	Tata	7	10	924

4) Performance (Graphical Representation)

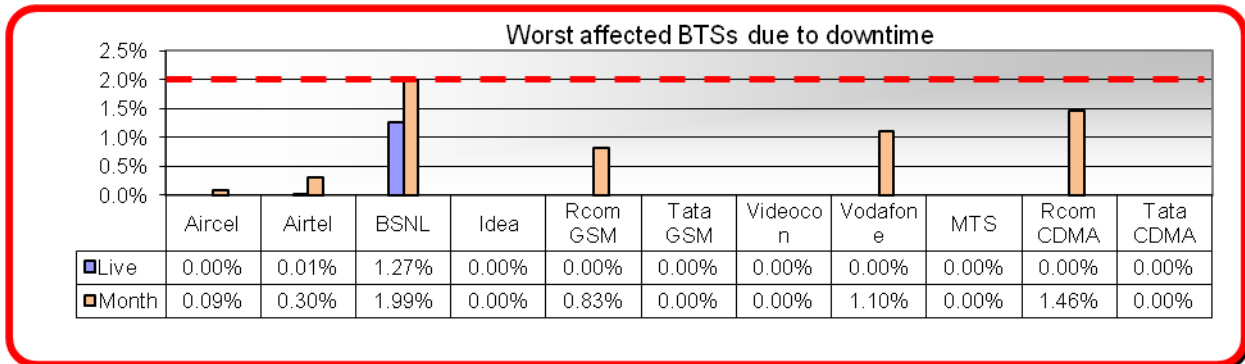
Comparison between Live measurements and One month data Audit – Cellular Mobile Telephone Services

A) NETWORK PERFORMANCE

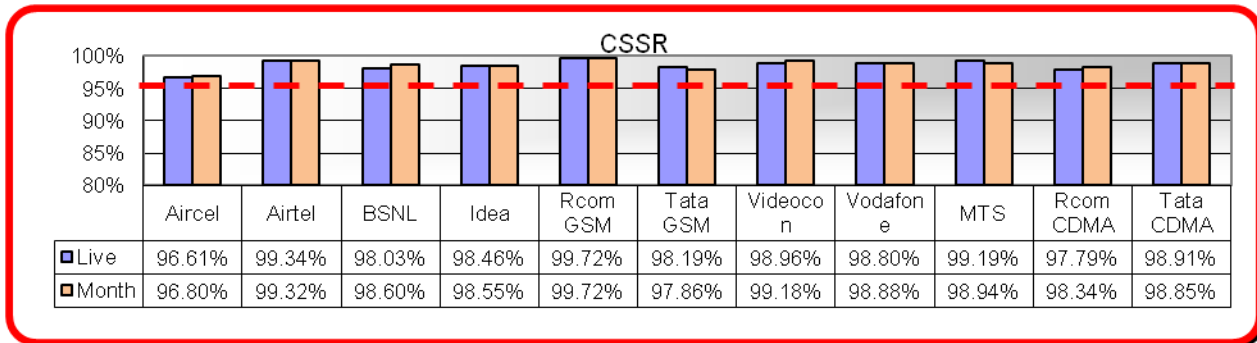
BTS accumulated downtime: All the operators are meeting the TRAI benchmarks ($\geq 2\%$) for both one month data and 3 days live data taken in the month of audit.



Worst affected BTSs due to downtime: All the operators are meeting the TRAI benchmarks ($\geq 2\%$) for both one month data and 3 days live data taken in the month of audit.

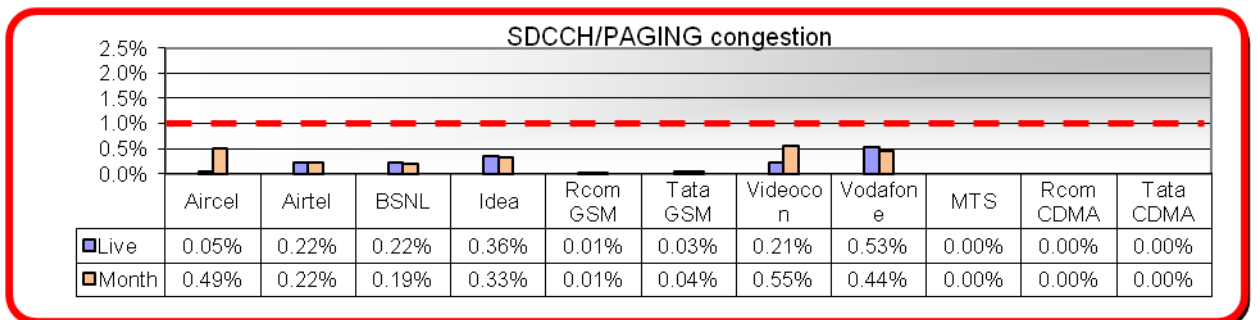


Call Setup Success Rate (CSSR): All operators are meeting the TRAI benchmarks ($\geq 95\%$) for both one month data and 3 days live data taken in the month of audit.

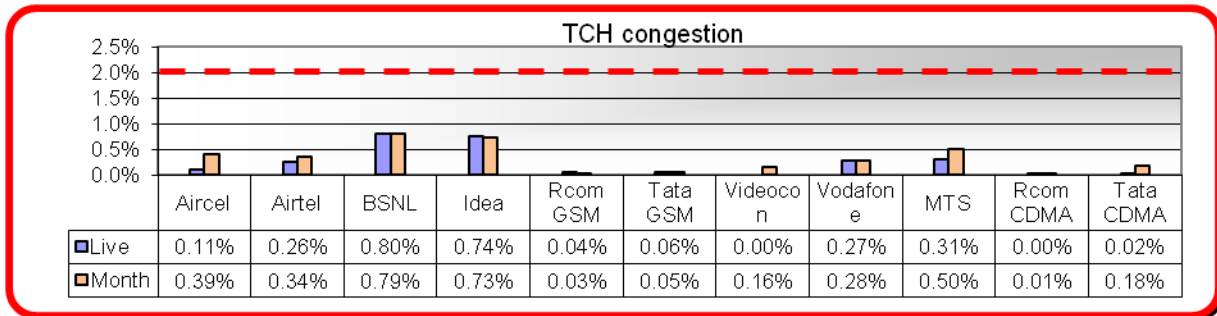


Blocked call rate:

SDCCH congestion (%): All operators are meeting the TRAI benchmarks ($\leq 1\%$) for both one month data and 3 days live data.

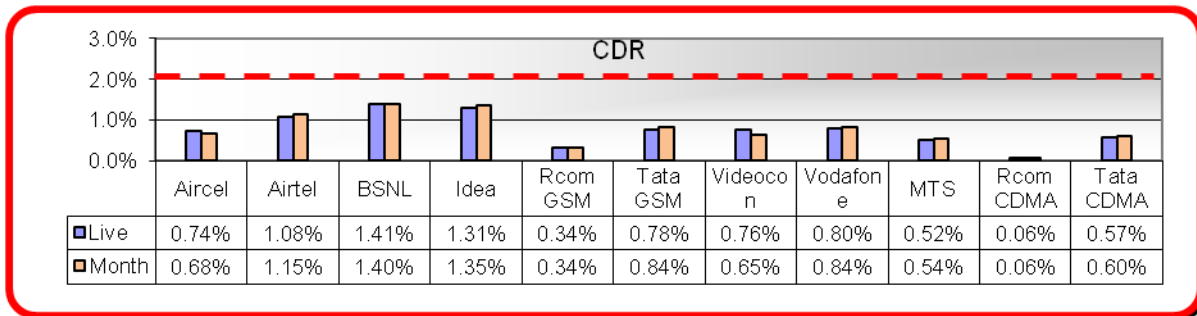


TCH congestion (%): All operators are meeting the TRAI benchmarks ($\leq 2\%$) for both one month data and 3 days live data.

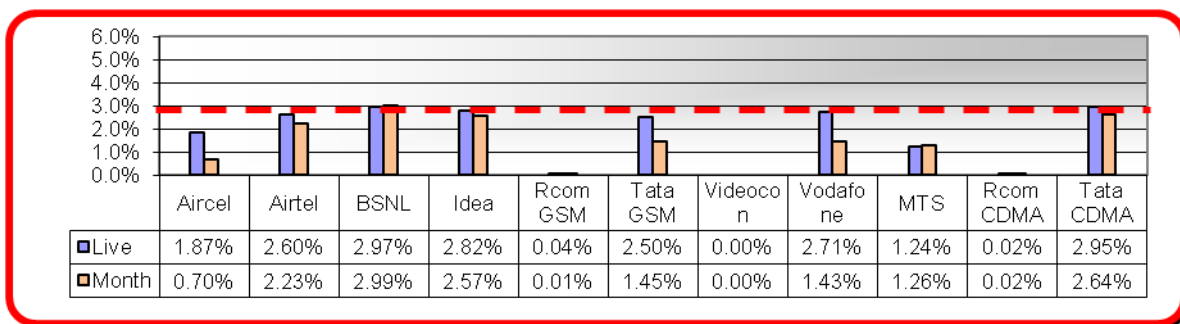


Connection Maintainability (Retainability):

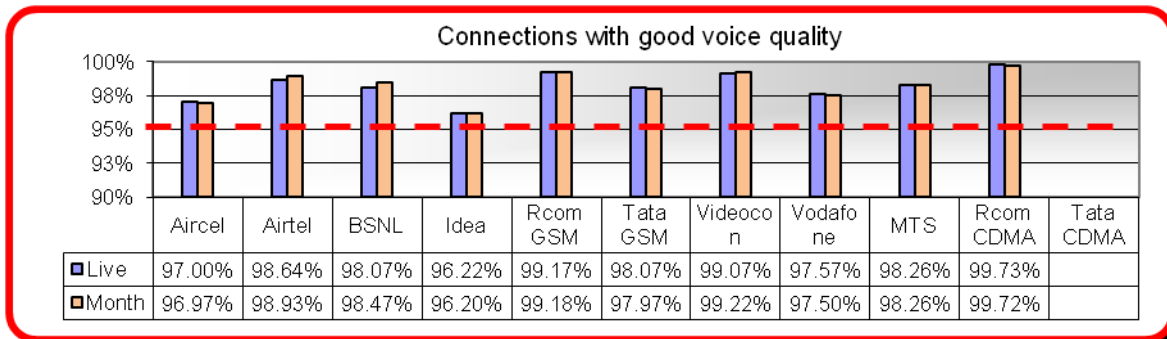
Call Drop Rate (CDR) (%): All the operators are meeting the TRAI benchmarks ($\leq 2\%$) for both one month data and 3 days live data.



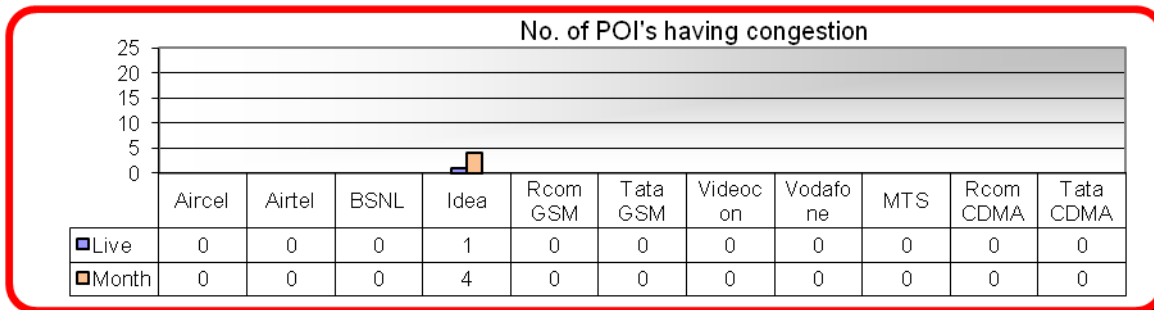
Worst affected Cell exceeding 3% TCH Drop: All the operators are meeting the benchmark for both cases.



Percentage of connections with good voice quality (benchmark $\geq 95\%$): All operators are meeting the TRAI benchmarks ($\Rightarrow 95\%$) for both one month data and 3 days live data taken in the month of audit. For Tata CDMA values are not system generated.



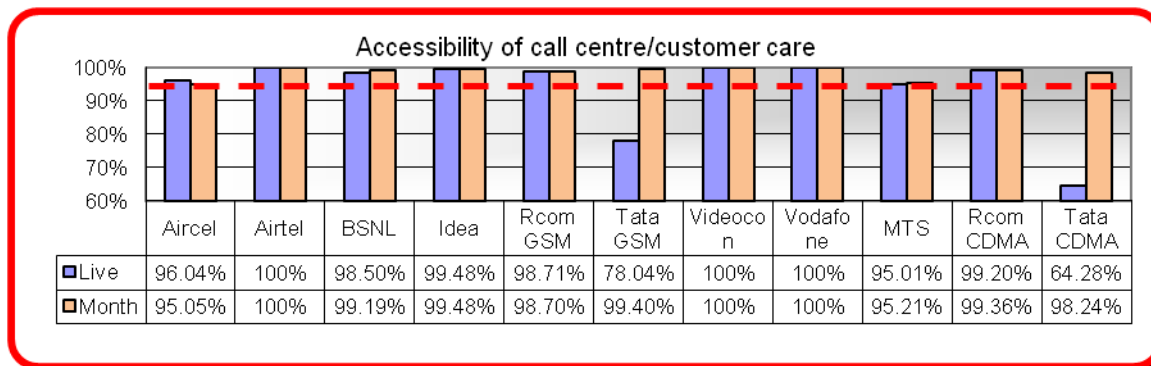
No of POI's having Congestion $>0.5\%$: For both Live and month audit, only Idea is not meeting the benchmark.



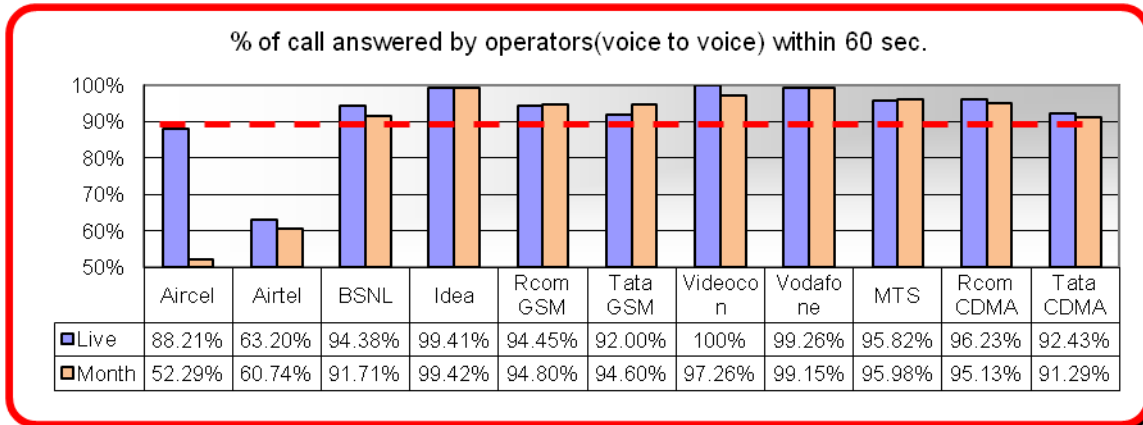
B) CUSTOMER SERVICE QUALITY PARAMETERS

Response time to the customer for assistance:

Percentage of call answered (Electronically): All operators are meeting the TRAI benchmarks ($\geq 95\%$) for both one month data and 3 days live data except for Tata GSM & Tata CDMA in live data audit.



Percentage of call answered by operators (Voice to voice) within 60 sec: Only Aircel & Airtel were not meeting the benchmark for both cases.



5) Critical Analysis

From the data table it can be seen that all operators are meeting the TRAI benchmark.

Regarding %age of connections with good voice quality all the operators are found to be performing quite well in terms of meeting the benchmark ($\leq 95\%$).

In case of POI congestion, except for Idea, rest of the operators are found to be performing quite well in terms of meeting the benchmark ($\leq 0.5\%$). It is noticed that most of the operators are having individual POI satisfying the benchmark. But in some case overflows on individual POI are noticed causing traffic diversions to obtain the net result for POI congestion.

In case of response time to customer assistance, Tata GSM & Tata CDMA not meeting benchmark for parameter "Accessibility of call centre" while Aircel & Airtel not meeting in for the parameter "% call answered by voice-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	BSNL	Idea	Rcom GSM	Tata GSM	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
Total No. of Calls Attempted	100	100	100	100	100	1	No Valid complaints	100	No Valid complaints	100	7
Total No. of calls Answered	94	91	85	87	94	1		84		89	7
Cases resolved with 4 weeks	94	91	85	87	94	1		84		89	7
%age of cases resolved	100%	100%	100%	100%	100%	100%		100%		100%	100%

Note: The difference shows between the attempted and answered calls is because of the possibility of not reachable, switched off etc.

3) Live calling to call center:

Fifty nos. of calls were made in each half and below given no. of calls got connected to the call center within 60 sec.

Calling Operator	Aircel	Airtel	BSNL	Idea	Rcom GSM	Tata GSM	Vodafone	MTS	Rcom CDMA	Tata CDMA
Total No. of Calls Attempted	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
Calls got connected to agent within 60 Sec	90	91	95	97	199	97	98	97	98	99
%age of calls got answered	90%	91%	95%	97%	99%	97%	98%	97%	98%	99%

(4) Level 1 Calling: Level 1 calling such as calling at emergency no. (Police, Fire, and Hospital), Railway enquiry systems etc were made as shown in table below so as to check the service of such short codes. In all 3 cities, it was found to be functional for respective providers.

Emergency no.		Aircel	Airtel	BSNL	Idea	RCOM GSM	Tata GSM	Vodafone	MTS	RCOM CDMA	Tata CDMA
Bharatpur											
100	Police	1	1	1	1	1	ICR (Vodafone)	1	1	1	1
101	Fire	1	1	1	1	1		1	1	1	1
102	Ambulance	1	1	1	1	1		1	1	1	1
139	Railway	2	2	2	2	2		2	2	2	2
Churu											
100	Police	ICR (Tata GSM)	1	1	1	1	1	1	1	1	1
101	Fire		1	1	1	1	1	1	1	1	1
102	Ambulance		1	1	1	1	1	1	1	1	1
139	Railway		2	2	2	2	2	2	2	2	2
Dungarpur											
100	Police	ICR (Tata GSM)	1	1	1	1	1	1	1	1	1
101	Fire		1	1	1	1	1	1	1	1	1
102	Ambulance		1	1	1	1	1	1	1	1	1
139	Railway		2	2	2	2	2	2	2	2	2

5) Critical Analysis

Random numbers were selected from the operators' database of billing/metering complaints and calls were made to the customers to get their feedback for complaint Redressal. It was found that the operators had made refunds in 100% cases as claimed by their records.

Similarly, 50-50 live calls were made to call center in each half i.e. 11 to 1pm and 4 to 7pm and it was found that all the operators are meeting the 90% benchmark. The values were lying between 90% and 100%.

Level 1 call testing was done in all the listed Drive test locations (Bharatpur, Churu & Dungarpur) to the nos. (100, 101, 108 & 139) emergency calls were connecting to their local canterers. Overall result was satisfactory for all service providers.

(C) Inter operator call assessment

(1) Sample coverage

A sample of 2x50 test calls per Service Providers with in the licensed service area (Rajasthan 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

Calling Operator	Aircel	Airtel	BSNL	Idea	Reliance (GSM)	Tata (GSM)	Vodafone	MTS	Reliance (CDMA)	Tata (CDMA)
	Jaipur									
Aircel	-	100%	99%	100%	99%	100%	100%	100%	100%	100%
Airtel	100%	-	100%	100%	100%	100%	99%	100%	100%	100%
BSNL	100%	99%	-	98%	100%	100%	100%	100%	100%	100%
Idea	100%	99%	99%	-	100%	100%	100%	99%	100%	100%
Reliance (GSM)	100%	100%	100%	100%	-	100%	100%	100%	100%	100%
Tata (GSM)	100%	100%	100%	100%	100%	-	100%	100%	100%	100%
Vodafone	100%	100%	100%	100%	100%	100%	-	100%	100%	100%
MTS	100%	100%	100%	100%	100%	100%	100%	-	100%	100%
Reliance (CDMA)	100%	99%	100%	100%	100%	100%	100%	100%	-	100%
Tata (CDMA)	99%	100%	100%	99%	100%	100%	100%	100%	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 results are shown satisfactory.

(D) Drive test of the mobile network of service providers

1. Sample Coverage

The Operator Assisted Drive Test was conducted at Rajasthan for all the operators. Route covered was about around 50-100Km depending on city areas within the speed limit of 30Km/hr.

DRIVE TEST LOCATIONS

BHARATPUR

LOW DENSE: Sanjay Nagar, RIICO Ind Area, New Civil Lines.
MEDIUM DENSE: Krishna Nagar, Kumher gate, Jawahar Nagar, Udyog Nagar.
HIGH DENSE: Saras Chowk, New Mandi Road, Railway Station, Bus Stand.

CHURU

LOW DENSE: Modern Public Scholl, Van Vihar, Shekhawat Colony.
MEDIUM DENSE: Gandhi Nagar, Agrasen Nagar, Loco Colony.
HIGH DENSE: Churu Fort, Railway Station, Bus Stand.

DUNGARPUR

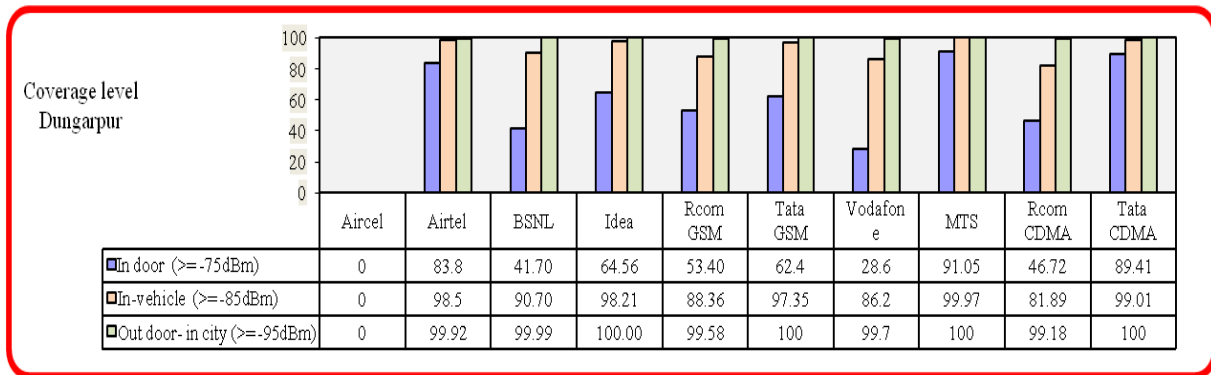
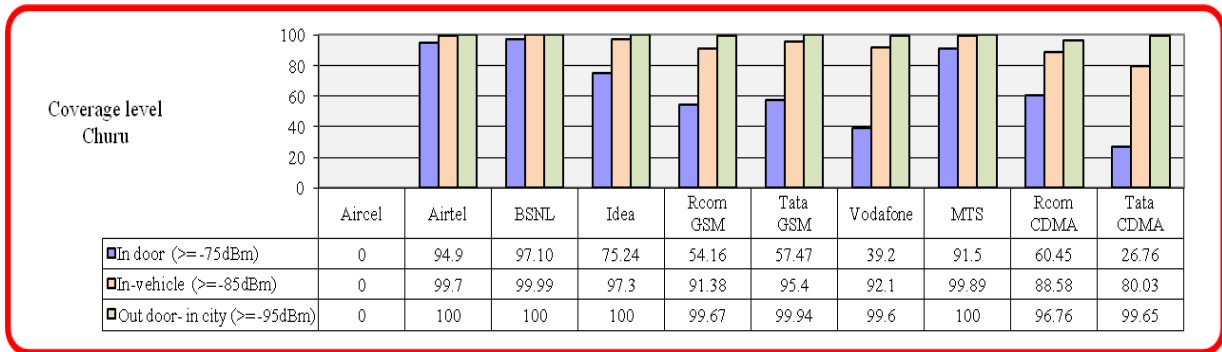
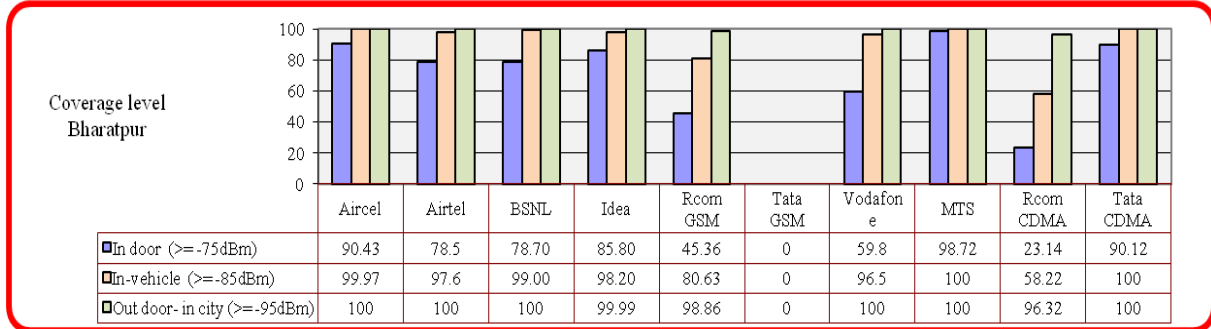
LOW DENSE: Ashok Nagar, RIICO Ind. Area, Shivagi Nagar.
MEDIUM DENSE: Adarsh Nagar, Shastri Marg, Police Line Colony, Garib Nawaz Colony.
HIGH DENSE: Bus Stand, Govt. Circuit House, Jama Masjid, Govt. Middle School.

2) Performance (for the respective cities for Rajasthan Circle)

SN	Parameter	City Name	Aircel	Airtel	BSNL	Idea	Rcom GSM	Tata GSM	Vodafone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators							CDMA Operators		
1.1	Call Attempts	Bharatpur	143	138	174	113	121	ICR (Vodafone)	99	158	124	179
		Churu	ICR (TATA GSM)	91	108	85	87	90	102	118	86	141
		Dungarpur	ICR (TATA GSM)	93	61	52	62	59	106	79	63	81
1.2	Blocked Call Rate (<=3%)	Bharatpur	0	0	18.97	0	0.83	ICR (Vodafone)	1.02	0	0.81	0
		Churu	ICR (Tata GSM)	2.2	4.63	0	0	0	0	0	0	0
		Dungarpur	ICR (Tata GSM)	0	0	0	0	0	0	0	0	0
1.3	Dropped Call Rate (<=2%)	Bharatpur	0	0	3.55	0	0	ICR (Vodafone)	0	0	0	0
		Churu	ICR (Tata GSM)	0	0	0	0	0	0	0	0	0
		Dungarpur	ICR (Tata GSM)	0	0	0	0	0	0	0	0	1.2
1.4	Percentage of connections with good voice quality (=>95%)											
	(i) 0-4 (w/o frequency hopping)	Bharatpur								99.28	98.79	98.18
		Churu								99.9	96.76	99.88
		Dungarpur								99.78	99.86	99.75
	(ii) 0-5 (with frequency hopping)	Bharatpur	96.1	96.1	92.2	95.3	95.19	ICR (Vodafone)	96.7			
Churu		ICR (Tata GSM)	95.4	95.1	97.56	99.06	97.29	97.3				

Graphical Representation

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



(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:

- ✚ BSNL is not meeting the benchmark for the parameter “Blocked Call Rate” in Bharatpur & Churu Town.
- ✚ BSNL is not meeting the benchmark for the parameter “Good Voice Quality” in Bharatpur & Dungarpur Town.
- ✚ BSNL is not meeting the benchmark for the parameter “Dropped Call Rate”& “CSSR” in Bharatpur Town.

(E) Independent Drive test

1. Sample Coverage

The independent drive test activity was conducted in Rajasthan Circle for various service providers in three different cities namely “**Sirohi & Churu**”. For testing the service provider performance on ground level, TCIL auditors carried out Drive Test and check the radio coverage along with different KPI parameters by making test calls of 120 sec. in different areas on different days. During Drive test, Route was covered about between 30 to 60 Km for both cities depending upon the city areas within the speed limit of 30-40Km/hr.

Drive Test Locations and Service Provider’s name:

1. *Sirohi* - *MTS (2 BTS)*
2. *Churu* - *Reliance GSM (8 BTS), Reliance CDMA (3 BTS)*

Area Coverage Details:

1) Sirohi

Government College, Mahakal Nagar, Bus Stand, Sirohi Road, Abu road H/W, Hotel Baba Ramdev, Choudhary Hospital, Adarsh vidya Mandir School.

2) Churu

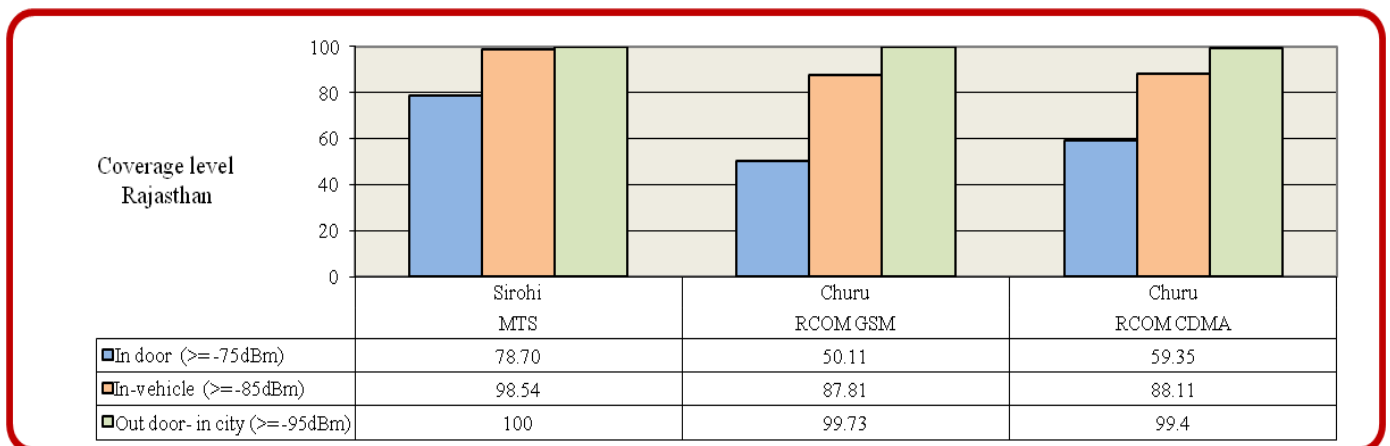
Churu fort, Bus Stand, Bhawani Resorts, Modern Public School, Railway Station, Gandhi Nagar, Agrasen Nagar, Loco Colony, Shekhawat Colony, Poonia Colony, Van Vihar.

2) Performance (for the respective cities for Rajasthan Circle)

SN	Parameter	MTS	RCOM GSM	RCOM CDMA
		Sirohi	Churu	Churu
1.1	Call Attempts	35	77	80
1.2	Blocked Call Rate (<=3%)	0.00	0.00	0.00
1.3	Dropped Call Rate (<=2%)	0.00	0.00	0.00
1.4	Percentage of connections with good voice quality (=>95%)			
	(i) 0-4 (w/o frequency hopping)	98.08		97.98
	(i) 0-5 (with frequency hopping)		99.11	
1.5	Service Coverage (%)			
	In door (>= -75dBm)	78.70	50.11	59.35
	In-vehicle (>= -85dBm)	98.54	87.81	88.11
	Out door- in city (>= -95dBm)	100	99.73	99.4
1.6	Call Setup Success Rate (>=95%)	100	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 drive test data was found to be satisfactory for all the parameters.

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

From live, month and Drive Tests findings, it can be concluded that on an average, performance of the operators in the service area (Rajasthan) is satisfactory for most of the **Network Parameters**.

Under Drive Test section, BSNL failed to meet benchmark for “Blocked Call rate”, “Dropped Call rate”, “Good Voice quality” & “CSSR” in Bharatpur Town.

Under **Customer Service Quality Parameter** “operator answered calls (voice-to-voice) within 60 seconds” parameter it is found that most of the operators are fulfilling TRAI benchmark of $\geq 90\%$. Apart from this, the “accessibility of call centre” parameter benchmark is not met by Tata GSM & Tata CDMA.

Regarding **Metering/Billing Credibility** issues, all operators are meeting the benchmark.

II. Basic Telephone Service (Wireline) Providers

- Not conducted for this quarter

III. Broadband Service Providers

- Not conducted for this quarter