

**REPORT
ON
AUDIT & ASSESSMENT OF QUALITY OF SERVICE
OF**

**BASIC (WIRELINER) SERVICE,
CELLULAR MOBILE TELEPHONE SERVICE**

&

BROADBAND SERVICE

FOR

NORTH ZONE – HARYANA CIRCLE

Report Period: Jan 2011 – March 2011

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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.

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 Haryana 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.
- ✓ For Basic Wireline Service, the Network parameter of the QoS TRAI regulations is observed / verified for the 3 days for nearly 5% of the telephone exchanges covering 10% of the SDCA in a Service area.
- ✓ Also, for Broadband Services, 5% of the POPs (Point Of Presence) in 10% of the SDCA were audited for the relevant details from the centralized NOC or through a remote access to the NOC. The network parameter was also checked from the centralized NOC. MRTG, Cactii and Sandvine software were used for monitoring link utilization. Smoke Ping and Ping Test were used for monitoring Network Latency.

CHAPTER-2: EXECUTIVE SUMMARY

I. Preface

This report highlights the findings for the audit & assessment of Quality of Service of Cellular Mobile Services in Haryana Circle in 1st quarter (January – March 2011). The primary data collection and verification of records (PMR data verification – quarterly) maintained by various operators was undertaken for the period July – September 2010.

Following are the various operators covered in Haryana 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	Feb-2011	1900-2000 Hrs
2	Airtel Ltd	Feb-2011	1900-2000 Hrs
3	BSNL	Feb-2011	1900-2000 Hrs
4	Etisalat	Feb-2011	1900-2000 Hrs
5	Idea	Feb-2011	1900-2000 Hrs
6	Reliance Communication	Jan-2011	1900-2000 Hrs
7	Tata Communications	Feb-2011	1900-2000 Hrs
8	Videocon	Feb-2011	1900-2000 Hrs
9	Vodafone	Mar-2011	2000-2100 Hrs
10	Loop Telecom	Mar-2011	1900-2000 Hrs
CDMA Operators			
11	Reliance Communication	Jan-2011	1900-2000 Hrs
12	Tata Communications	Feb-2011	1900-2000 Hrs
13	MTS	Feb-2011	2000-2100 Hrs

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	Etisalat	Idea	Rcom	Tata	Videocon	Vodafone	Loop	Rcom	Tata	MTS	
S/N	Name of Parameter		GSM Operators										CDMA Operators			
1	Connection Establishment (Accessibility)															
	a) CSSR (Call Setup Success Rate)	>=95%	98.71%	99.28%	97.30%	99.80%	99.93%	99.62%	98.20%	97.34%	98.07%	66.67%	99.48%	100.0%	99.05%	
	b) SDCCH/PAGING congestion	<=1%	0.00%	0.14%	0.25%	0.01%	0.42%	0.10%	0.12%	0.07%	0.17%	0.03%	0.00%	0.00%	0.00%	
	c) TCH congestion	<=2%	0.01%	0.24%	0.96%	0.19%	0.54%	0.05%	0.36%	1.19%	1.31%	0.00%	0.21%	0.00%	0.00%	
2	Connection maintenance (retain ability)															
	a) CDR	<=2%	0.81%	0.64%	1.97%	1.29%	0.90%	0.38%	0.98%	1.29%	1.27%	25.00%	0.76%	0.06%	0.28%	
	b) Worst affected cells>3% TCH drop	<=5%	0.57%	0.78%	4.76%	11.64%	3.49%	1.79%	7.64%	4.78%	7.06%	0.00%	0.52%	0.00%	2.22%	
	c) Good voice quality	>=95%	98.50%	99.19%	96.42%	98.88%	96.80%	97.50%	96.90%	97.77%	96.62%	98.97%	NA	NA	100.00%	
3	No of POIs not meeting benchmark	>=0.5%	3	0	1	0	3	3	2	3	2	0	3	2	0	
4	Response time to customers for assistance															
	a) Accessibility of call centre/Customer Care	>=95%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	97.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
	b) % call answered by operators(voice to voice) within 60 sec.	>=90%	100.00%	97.04%	98.01%	96.00%	100.00%	96.38%	99.00%	98.00%	94.00%	100.00%	95.62%	94.00%	91.00%	

NA: Not Applicable, NR: Not Received

From the 3 days live data assessment, it is found that all the operators are meeting the network parameters by and large, except for Loop not meeting the benchmark for "Call setup success rate" & "CDR" and Etisalat, Tata GSM & Vodafone not meeting "Worst affected cells>3% TCH drop".

Month data assessment

One Month Data Audit		Bench- mark	Airce l	Airtel	BSNL	Etisal at	Idea	Rcom	Tata	Videoco n	Vodafon e	Loop	Rcom	Tata	MTS
S/ N	Name of Parameter		GSM Operators										CDMA Operators		
(A)	Network Service Quality Parameter														
1	Network Availability														
	a) BTS Accumulated Downtime	<=2%	0.92%	0.05%	1.44%	0.89%	0.09%	0.23%	0.02%	0.07%	0.12%	0.00%	0.26%	0.01%	0.18%
	b) Worst affected BTSs due to downtime	<=2%	0.00%	0.08%	1.77%	0.00%	0.00%	0.26%	0.00%	0.17%	0.85%	0.00%	0.11%	0.00%	0.00%
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	98.51 %	99.28 %	97.50%	99.78 %	99.90 %	99.62 %	98.60%	97.44%	98.13%	96.34%	99.28%	100.0%	99.03%
	b) SDCCH/PAGING congestion	<=1%	0.01%	0.14%	0.23%	0.11%	0.47%	0.16%	0.02%	0.04%	0.26%	0.05%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	0.05%	0.23%	1.03%	0.21%	0.67%	0.13%	0.31%	1.02%	1.18%	0.00%	0.39%	0.00%	0.00%
3	Connection maintenance (retainability)														
	a) CDR	<=2%	1.05%	0.61%	1.97%	1.58%	0.96%	0.38%	1.02%	1.27%	1.20%	1.27%	0.80%	0.27%	0.26%
	b) Worst affected cells>3% TCH drop	<=5%	0.42%	0.76%	4.80%	15.65 %	4.70%	2.04%	8.33%	1.54%	6.27%	0.00%	0.49%	0.01%	1.99%
	c) Good voice quality	>=95%	98.37 %	99.23 %	96.42%	98.61 %	96.66 %	98.75 %	96.85%	97.73%	96.67%	99.26%	NA	NA	100.00%
4	No of POIs not meeting benchmark	>=0.5%	3	0	1	0	3	3	2	3	2	0	3	2	0
(B)	Customer Service Quality Parameters														
5	Metering/billing credibility-Post paid	<= 0.1%	NA	0.05%	0.00%	NA	0.22%	0.10%	0.75%	NA	0.02%	NA	0.06%	0.33%	0.00%
6	Metering /billing credibility-Pre paid	<= 0.1%	0.02%	0.04%	0.00%	0.04%	0.02%	0.01%	0.12%	0.06%	0.00%	0.00%	0.01%	0.18%	0.03%

One Month Data Audit		Bench- mark	Airce l	Airtel	BSNL	Etisal at	Idea	Rcom	Tata	Videoco n	Vodafon e	Loop	Rcom	Tata	MTS
S/ N	Name of Parameter		GSM Operators										CDMA Operators		
7	Resolution of billing/ charging complaints	100% within 4 weeks	100%	100%	100%	100%	98%	100%	100%	100%	100%	100%	100%	100%	100%
	a) Period of applying credit/waiver/adjustment to the customer's account from the date of resolutions of complaints	<=1 week	100%	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%	99%	98.70 %	100%	99.00 %	94.77 %	100%	87.26%	97.00%	100.00%	100%	100%	98%	100%
	b) % call answered by operators(voice to voice) within 60 sec.	>=90%	98.01 %	85.20 %	97.04%	94.00 %	99.30 %	83.34 %	97.80%	98.00%	92.47%	100.00 %	92.10%	98%	95.00%
9	Termination/closure of service	<=7days	NA	100%	100%	NA	100%	100%	100%	NA	100%	NA	100%	100%	NA
10	Time taken for refunds of deposits after closures.	100% within 60 days	NA	100%	100%	NA	100%	100%	NR	NA	100%	NA	100%	97%	NA

NA: Not Applicable, NR: Not Received

From the month data assessment, it is found that all the operators are meeting the network parameters by and large, except for Etisalat, Tata GSM & Vodafone are not meeting the benchmark for "Worst affected cells>3% TCH drop" with the value of 15.65%, 8.33% & 6.27% respectively.

Performance related to customer care data is not found to be satisfactory for most of the operators especially for the parameter "metering/billing credibility for post paid & prepaid" not meeting the benchmark by Idea, Tata GSM & Tata CDMA. "Calls answered by operators (voice-to-voice)" is not met by Airtel, RCom GSM & Tata CDMA. A below benchmark performance is observed in case of Idea (94.77%) & Tata GSM (87.26%) for "accessibility of call centre" parameter. Tata CDMA is not meeting the benchmark for "Time taken for refunds of deposits after closures" and Idea for "resolution of complaints within 4 weeks".

Operator-Assisted Drive Test

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

SN	Parameter	City Name	Airtel	BSNL	Idea	Rcom	Tata	Videocon	Vodafo ne	Rcom	Tata	MTS	
			GSM Operators						CDMA Operators				
1.1	Blocked Call Rate (<=3%)	Karnal	1.42%	11.33%	1.69%	0.00%	1.66%	1.47%	0.00%	1.61%	1.66%	0.00%	
		Ambala	0.00%	3.48%	1.23%	0.00%	1.08%	0.00%	2.30%	0.00%	2.27%	0.00%	
		Panipat	1.86%	3.20%	3.60%	0.00%	0.76%	0.72%	3.17%	0.89%	2.04%	0.00%	
1.2	Dropped Call Rate (<=2%)	Karnal	0.00%	0.00%	0.00%	1.54%	1.69%	0.00%	1.38%	1.45%	0.00%	0.00%	
		Ambala	0.00%	2.00%	0.00%	0.00%	0.00%	0.00%	1.20%	1.04%	0.00%	0.00%	
		Panipat	0.00%	0.00%	1.85%	0.00%	0.00%	4.30%	2.50%	1.80%	0.00%	1.00%	
1.3	Percentage of connections with good voice quality (=>95%)												
	(i) 0-4 (w/o frequency hopping)	Karnal									99.00%	96.21%	97.09%
		Ambala									99.00%	96.30%	96.13%
		Panipat									89.00%	96.55%	96.76%
	(ii) 0-5 (with frequency hopping)	Karnal	92.70%	92.13%	95.00%	95.00%	94.37%	90.20%	96.40%				
		Ambala	95.20%	89.90%	95.00%	96.00%	95.03%	94.71%	93.60%				
Panipat		95.60%	92.37%	93.00%	97.00%	92.98%	90.00%	94.30%					
1.4	Call Setup Success Rate (>=95%)	Karnal	98.57%	89.00%	98.00%	100%	96.67%	98.53%	100.00%	98.38%	98.33%	100%	
		Ambala	100%	96.00%	96%	100%	98.91%	100%	96%	100%	97.73%	100%	
		Panipat	100%	96.85%	97%	100%	99.23%	99%	94.7%	99.10%	97.96%	100%	

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

- Blocked Call Rate benchmark is not met by BSNL in all 3 cities, Idea & Vodafone in Panipat respectively.
- Vodafone & Videocon are not meeting benchmark for Dropped Call Rate for Panipat.
- Percentage of good voice quality is not met by BSNL & Videocon for all 3 cities. For Panipat city, Idea, Tata GSM & Vodafone are not meeting the benchmark. Tata GSM & Vodafone are not meeting in Karnal & Ambala respectively.
- BSNL & Vodafone are not meeting benchmark for Call setup success rate for Karnal & Panipat respectively.

Independent Drive Test: Not done for this quarter

**(B) Basic Telephone Service (Wireline) Providers
3 days Live Data Audit**

Sl No.	Parameters	Benchmarks	BSNL	Airtel	T'TSL	Rcom
1	<i>Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)</i>					
	CCR & ASR	> 55%(CCR) & > 75%(ASR)	75.81%	95.14%	98.50%	86.24%
2	<i>POI Congestion</i>					
	POI Congestion (%)	≤ 0.5%	1	0	0	0
3	<i>Response Time to customer for assistance</i>					
	Accessibility of Call centre/customer Care within 40 seconds	≥95%	97.60%	100.00%	97.50%	99.00%
	% age of calls answered by operator(voice to voice) within 60 seconds	≥90%	88.69%	100.00%	93.70%	98.00%
<p>NA – Not Applicable, NP – Not Provided. Note: BSNL is not meeting the benchmark of %age of calls answered by operators(voice to voice) within 60 sec with value of 88.69%.Rest of operators are meeting all benchmark.</p>						

One Month Data Audit

S/N	Parameters	Benchmarks	BSNL	Airtel	TTSL	Rcom
1	Fault incidences					
	(No. of faults/100 subscribers /month)	< 5%	4.70%	2.20%	0.10%	0.00%
2	Faults Repair/Restoration Time					
	Fault repair by next working day(Urban Area)	>90%	95.26%	100.00%	100.00%	100.00%
	Within 3 days	100%	100.00%	100.00%	100.00%	100.00%
	Fault repair by next working day(Rural & hilly Area)	>90%	95.96%	NA	NA	NA
	Within 5 days	100%	100%	NA	NA	NA
	Mean time to Repair(MTTR)	≤8 Hrs	6.67 Hrs	3.41 Hrs	7.68 Hrs	0.46 Hrs
3	Rent Rebate					
	Fault pending > 3 days & <7 days	Rebate for 7 days	0	7	0	0
	Fault Pending > 7 days & < 15 days	Rebate for 15 days	9	1	0	0
	Fault pending > 15 days	Rebate for 1 month	135	1	0	0
4	Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)					
	CCR & ASR		75.81%	94.88%	98.60%	86.02%
5	Metering & Billing Performance					
	Disputed Bills over bills issued	< 0.1%	0%	0.10%	0.02%	0%
	% of billing complaints resolved within 4 weeks	100%	90.00%	100%	100%	100%
	Period of all refunds/payments from the date of resolution of complaints within 1 weeks	100%	NIL	8%	100%	100%
6	POI Congestion					
	POI Congestion (%)		0	0	0	0
7	Response Time to customer for assistance					
	Accessibility of Call centre/customer Care within 40 sec.		96.1%	95.21%	96.66%	99%
	% age of calls answered by operator(voice to voice) within 60 seconds		83%	91.94%	89.87%	98%
8	Customer care(promptness in attending to customers request)					
	Termination / Closures	100%	100%	100%	100%	100%
	Time taken for refunds of deposit after closures	100%	100%	11.73%	100%	100%

NA – Not Applicable, NP – Not Provided.

Note:

a) BSNL is not meeting the benchmark for "%age of billing complaints resolved within 4weeks"& %age of call answered by operator(voice to voice)within 60 seconds

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

(C) Broadband Service Providers

3 days Live Data Audit

S/N	Parameters	Benchmarks	BSNL	Airtel	TCISL	RCom	Hathway	You Tele	Sify
1	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)								
	within 60 sec	>60%	83%	75.00%	75.00%	100.00%	100.00%	89.00%	100.00%
	within 90 sec	>80%	90%	100.00%	100.00%	100.00%	100.00%	96.00%	100.00%
2	Bandwidth Utilization/ Throughput: (If on any link(s) / route bandwidth utilization exceeds 90%, then network is considered to have congestion. For this additional provisioning of Bandwidth on immediate basis, but not later than one month, is mandated.)								
2.1	POP to ISP Gateway Node [Intra-network] Link(s)	< 80%	43.00%	63.99%	31.20%	34.55%	69.68%	1.61%	35.00%
2.2	ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity	< 80%	82.63%	NA	46.91%	NA	55.51%	NA	67.00%
2.3	Broadband Connection Speed (download) - from ISP Node to User	> 80%	97.46%	90.42%	96.35%	100.00%	93.23%	34.70%	59.17%
3	Packet loss								
	% of Packet loss	<1%	0.2%	0%	0%	0.07%	0%	0%	0%
4	Network latency (for wired broadband access)								
4.1	User reference point at POP/ISP Gateway node to IGSP/NIXI	<120 ms	17.57ms	35 ms	22 ms	NA	11.6 ms	2 ms	66 ms
4.2	User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)	<350 ms	211.5 ms	321 ms	286 ms	56.06 ms	287.7 ms	274 ms	335 ms
4.3	User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)** See note below	<800 ms	NA	NA	NA	NA	NA	NA	NA

NA – Not Applicable, NP – Not Provided.

Note:

- For "User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)", none of the operators having satellite connectivity.
- You telecom & Sify are not meeting the benchmark for broadband connection speed from ISP Node to User.
- Only BSNL is not meeting the benchmark for " ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity".

One Month Data Audit

S/N	Parameters	Benchmarks	BSNL	Airtel	TCISL	RCom	Hathway	You Tele	Sify
1	Service Provisioning/Activation Time								
1.1	100% cases in 15 days (subject to technical feasibility)	<15 days	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
1.2	In all cases where payment towards installation charge & SD is taken and the Broadband connection is not provided within 15 working days	credit @ Rs.10/ per day.	100%	100%	100%	100%	100%	100%	100%
2	Faults Repair/Restoraion Time								
	By next working day	>90%	95.41%	99.56%	95.03%	100.00%	No Fault	97.14%	81.82%
	within 3 working day	≥99%	100.00%	100.00%	99.29%	100.00%	No Fault	99.29%	100.00%
2.1	Rebate								
	Faults Pending for > 3 working days and < 7 working days: (Rebate equivalent to 7 days of minimum monthly charge or equivalent usage allowance)		0	14	284	0	0	3	2
	Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)		0	14	22	0	0	1	0
	Faults Pending for > 15 working days:(Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)		0	0	7	0	0	0	0
3	Billing Performance								
	Billing complaints per 100 bills issued	<2%	0.002%	0.28%	0.57%	0%	0%	0.61%	Prepaid Module
	%age of complaints resolved within 4 weeks	100%	100%	100%	100%	100%	100%	100%	
	Time taken for refund of deposits after closure (within 60 days)	100%	100%	100%	100%	100%	100%	100%	
4	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)								
	within 60 sec		86.00%	67.99%	97.94%	96.26%	90.67%	76.00%	90.63%
	within 90 sec		92.00%	72.95%	98.79%	97.23%	93.67%	81.00%	100.00%
5	Bandwidth Utilization/ Throughput: (If on any link(s) / route bandwidth utilization exceeds 90%, then network is considered to have congestion. For this additional provisioning of Bandwidth on immediate basis, but not later than one month, is mandated.)								
5.1	POP to ISP Gateway Node [Intra-network] Link(s)		NP	65.37%	30.90%	14.64%	65.20%	0.89%	35.00%
5.2	ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity		81.1%	NA	43.0%	NA	85.0%	NA	67.0%
5.3	Broadband Connection Speed (download) - from ISP Node to User		97.46%	99.06%	93.75%	NP	83.00%	76.00%	58.54%

S/N	Parameters	Benchmarks	BSNL	Airtel	TCISL	RCom	Hathway	You Tele	Sify
6	Service Availability/Uptime (for all users) in %age								
	Service Availability(%)	>98%	99.62%	99.99%	100.00%	99.99%	98.37%	97.00%	100.00%
7	Packet loss								
	% of Packet loss		0.16%	0.00%	0.00%	0.11%	0.00%	0.00%	0.00%
8	Network latency (for wired broadband access)								
8.1	User reference point at POP/ISP Gateway node to IGSP/NIXI		19 ms	35 ms	23.28 ms	98.6 ms	8.7 ms	17 ms	62 ms
8.2	User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)		231 ms	309 ms	284.9 ms	84.8 ms	296 ms	264 ms	285 ms
8.3	User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)** See note below	<800 ms	NA	NA	NA	NA	NA	NA	NA

NA – Not Applicable, NP – Not Provided.

Note:

- For "User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)", none of the operators having satellite connectivity
- You telecom is not meeting the benchmark for service availability.
- You tele & Sify are not meeting benchmark for " Broadband Connection Speed (download) - from ISP Node to User" in month audit.
- BSNL & Hathway are not meeting benchmark"ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity" in month audit.
- BSNL did not provide data for "POP to ISP Gateway Node [Intra-network] Link(s)".
- Airtel is not meeting the benchmark for "Response time to the customer for assistance % age of calls answered by operator (Voice to Voice) with in 90 sec".
- Sify is not meeting the benchmark for faults repair/restoration time (by next working day).

CHAPTER-3: AUDIT- PMR Verification**(A) Cellular Mobile Services**

PMR		Bench -mark	Audit	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom	Tata	Videoc on	Vodafo ne	Loop	Rcom	Tata	MTS
S/ N	Name of Parameter			GSM Operators										CDMA Operators		
(A)	Network Service Quality Parameter															
1	Network Availability															
	BTS Accumulated Downtime	<=2%	Reported	NA	0.10%	1.53%	2.31%	0.09%	0.28%	0.03%	0.14%	0.06%	0.00%	0.44%	0.01%	0.14%
			Verified	NA	0.10%	1.53%	2.31%	0.09%	0.28%	0.03%	0.14%	0.06%	0.00%	0.44%	0.01%	0.14%
	Worst affected BTSs due to downtime	<=2%	Reported	NA	0.09%	1.90%	21.71%	0.10%	0.12%	0.00%	0.26%	0.20%	0.00%	0.12%	0.00%	0.00%
Verified			NA	0.09%	1.90%	21.71%	0.10%	0.12%	0.00%	0.26%	0.20%	0.00%	0.12%	0.00%	0.00%	
2	Connection Establishment (Accessibility)															
	CSSR (Call Setup Success Rate)	>=95%	Reported	NA	99.30%	95.54%	98.60%	99.94%	99.52%	99.30%	97.75%	98.72%	98.05%	99.29%	99.72%	98.62%
			Verified	NA	99.30%	95.54%	98.60%	99.94%	99.52%	99.30%	97.75%	98.72%	98.05%	99.29%	99.72%	98.62%
	SDCCH/PAGING congestion	<=1%	Reported	NA	0.12%	0.70%	0.02%	0.24%	0.23%	0.00%	0.05%	0.29%	0.02%	0.00%	0.00%	0.00%
			Verified	NA	0.12%	0.70%	0.02%	0.24%	0.23%	0.00%	0.05%	0.29%	0.02%	0.00%	0.00%	0.00%
	TCH congestion	<=2%	Reported	NA	0.23%	1.38%	0.01%	0.88%	0.17%	0.03%	0.14%	0.64%	0.00%	0.37%	0.02%	0.00%
			Verified	NA	0.23%	1.38%	0.01%	0.88%	0.17%	0.03%	0.14%	0.64%	0.00%	0.37%	0.02%	0.00%
	3	Connection maintenance (retainability)														
CDR		<=2%	Reported	NA	0.58%	1.94%	2.06%	1.03%	0.47%	1.20%	0.76%	1.26%	0.00%	0.89%	0.43%	0.81%
			Verified	NA	0.58%	1.94%	2.06%	1.03%	0.47%	1.20%	0.76%	1.26%	0.00%	0.89%	0.43%	0.81%
Worst affected cells>3% TCH drop		<=5%	Reported	NA	0.81%	4.37%	0.12%	4.78%	3.15%	4.57%	6.49%	4.15%	0.00%	0.60%	0.31%	3.78%
	Verified		NA	0.81%	4.37%	0.12%	4.78%	3.15%	4.57%	6.49%	4.15%	0.00%	0.60%	0.31%	3.78%	

PMR		Bench-mark	Audit	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom	Tata	Videoc on	Vodafo ne	Loop	Rcom	Tata	MTS
S/ N	Name of Parameter			GSM Operators										CDMA Operators		
	Good voice quality	>=95 %	Reported	NA	98.69%	96.07%	97.93 %	96.88%	98.78 %	96.00%	98.46%	96.76%	97.50%	98.05%	99.58%	99.30%
			Verified	NA	98.69%	96.07%	97.93 %	96.88%	98.78 %	96.00%	98.46%	96.76%	97.50%	98.05%	99.58%	99.30%
4	No. of POI having congestion	>=0.5 %	Reported	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
(B)	Customer Service Quality Parameters															
5	Metering/billing credibility-Post paid	<= 0.1%	Reported	NA	0.02%	0.05%	NA	0.05%	0.07%	0.04%	NA	0.000%	NA	0.08%	0.05%	NA
			Verified	NA	0.02%	0.05%	NA	0.05%	0.07%	0.04%	NA	0.000%	NA	0.08%	0.05%	NA
6	Metering /billing credibility-Pre paid	<= 0.1%	Reported	0.08%	0.01%	0.02%	0.06%	0.01%	0.05%	0.003%	0.00%	0.007%	0.00%	0.04%	0.02%	0.43%
			Verified	0.08%	0.01%	0.02%	0.06%	0.01%	0.05%	0.003%	0.00%	0.007%	0.00%	0.04%	0.02%	0.43%
7	Resolution of billing/ charging complaints	100% within 4 weeks	Reported	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%
			Verified	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%
	Period of applying credit/waiver/adjust ment to the customer's account from the date of resolutions of complaints	<=1 week	Reported	100%	100%	NA	NA	100%	100%	100%	100%	100%	NA	100%	100%	100%
			Verified	100%	100%	NA	NA	100%	100%	100%	100%	100%	NA	100%	100%	100%
8	Response time to customers for assistance															
	Accessibility of call centre/Customer Care	>=95 %	Reported	100.00%	100.00 %	100.00 %	98.94 %	99.00 %	100%	100.00 %	98.00%	100%	100%	100%	98.00%	96.00%
			Verified	100.00%	100.00 %	100.00 %	98.94 %	99.00 %	100%	100.00 %	98.00%	100%	100%	100%	98.00%	96.00%
	% call answered by operators(voice to	>=90 %	Reported	87.17 %	93.60%	90.00 %	99.28 %	87.39 %	87.00 %	87.72 %	100.00 %	98.65 %	100%	89%	91.42%	94.95%

PMR		Bench-mark	Audit	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom	Tata	Videocon	Vodafone	Loop	Rcom	Tata	MTS
S/N	Name of Parameter			GSM Operators										CDMA Operators		
	voice) within 60 sec.		Verified	87.17%	93.60%	90.00%	99.28%	87.39%	87.00%	87.72%	100.00%	98.65%	100%	89%	91.42%	94.95%
9	Termination/closure of service															
	No. of requests for Termination / Closure of service complied within 7 days during the quarter	<=7days	Reported	NA	100%	NA	NA	100%	100%	100%	NA	100%	NA	100%	100%	100%
			Verified	NA	100%	NA	NA	100%	100%	100%	NA	100%	NA	100%	100%	100%
10	Time taken for refunds of deposits after closures.	100% within 60 days	Reported	NA	100%	NA	NA	100%	100%	NA	NA	100%	NA	100%	94.00%	100%
			Verified	NA	100%	NA	NA	100%	100%	NA	NA	100%	NA	100%	94.00%	100%

Critical Analysis (PMR Verification):

- The figures proved by all the operators match the figures obtained on verification.
- Etisalat is not meeting the benchmark for the parameter "Network Availability"& "Call drop rate".
- In case of "worst affected cells having more than 3% TCH drop", Videocon (6.49%) is not meeting the benchmark.
- MTS is not meeting the benchmark for "Metering/Billing Credibility-Prepaid".
- "% call answered by operators (voice to voice) within 60 sec." benchmark is not met by Aircel, Idea, Tata-GSM, RCom GSM, & RCom CDMA.
- Tata-CDMA is not meeting the 60 days' benchmark for "Refund of deposits after closure of connection".

II. Basic Service (Wire Line) Service (PMR Period : July2010 - Sep 2010)

S/N	Parameters	Benchmarks	Audit Period	BSNL	Airtel	TTSL	Rcom
1	Fault incidences						
	(No. of faults/100 subscribers /month)	< 5%	Reported	4.72%	5.49%	0.08%	0%
			Verified	4.72%	5.49%	0.08%	0%
2	Faults Repair/Restoraion Time						
	Fault repair by next working day(Urban Area)	>90%	Reported	95.91%	94.69%	100%	NA
			Verified	95.91%	94.69%	100%	
	Within 3 daysday	100%	Reported	99.93%	99.91%	100%	
			Verified	99.93%	99.91%	100%	
	Within 5 days (Hilly & Rural Area)	100%	Reported	100%	NA	100%	
			Verified	100%	NA	100%	
	Mean time to Repair(MTTR)	≤8 Hrs	Reported	6.96 Hrs	8.75 Hrs	7.68 Hrs	0 Hrs
			Verified	6.96 Hrs	8.75 Hrs	7.68 Hrs	0 Hrs
3	Rent Rebate						
	Rent Rebate		Reported	619	45	0	NA
			Verified	619	45	0	NA
4	Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)						
	CCR & ASR	> 55%(CCR) & > 75%(ASR)	Reported	76.12%	96.79%	98.58%	85.83%
			Verified	76.12%	96.79%	98.58%	85.83%
5	Metering & Billing Performance						
	Metering & Billing Credibility-Post paid	< 0.1%	Reported	0.01%	0.03%	0.02%	NA
			Verified	0.01%	0.03%	0.02%	
	Metering & Billing Credibility-Pre paid	100%	Reported	NA	NA	NA	
			Verified	NA	NA	NA	
	Resolution of billing charging/validity/Complaints within 4 weeks	100%	Reported	91.38%	100%	100%	
			Verified	91.38%	100%	100%	
	Period of all refunds/payments from the date of resolution of complaints within 1 weeks	100%	Reported	NP	100%	100%	100%
			Verified	NP	100%	100%	100%

S/N	Parameters	Benchmarks	Audit Period	BSNL	Airtel	TTSL	Rcom
6	<i>POI Congestion</i>						
	POI Congestion (%)	≤ 0.5%	Reported	NP	0%	0%	0%
			Verified	NP	0%	0%	0%
7	<i>Response Time to customer for assistance</i>						
	Accessibility of Call centre/customer Care within 40 seconds	≥95%	Reported	NP	96.15%	96.66%	96%
			Verified	NP	96.15%	96.66%	96%
	% age of calls answered by operator(voice to voice) within 60 seconds	≥90%	Reported	NP	84.68%	89.87%	92%
			Verified	NP	84.68%	89.87%	92%
8	<i>Customer care(promptness in attending to customers request</i>						
	Termination / Closures	100%	Reported	NP	100%	100%	100%
			Verified	NP	100%	100%	100%
	Time taken for refunds of deposit after closures	100%	Reported	100%	100%	100%	100%
			Verified	100%	100%	100%	100%

NA – Not Applicable, NP – Not Provided.

A) BSNL is not meeting the benchmark for fault repair/restoration time with in 3 days" & "resolution of billing charging/validity complaints within 4 weeks" with values of 99.93% & 91.38%.

B) Airtel is not meeting the benchmark for "fault incidences", "fault repair within 3 days for urban areas", MTTR and "%age of calls answered by operators".

III. Broadband Service (PMR Period : July2010 - Sep 2010)

S/N	Parameters	Benchmarks	Audit Period	BSNL	Airtel	TCISL	RCom	Hathway	Yutele	Sify
1	Service Provisioning/Activation Time									
1.2	%age of connections provided within 15 days of registration of demand	100%	Reported	100%	100%	NR	100%	100%	100%	100%
			Verified	100%	100%	NR	100%	100%	100%	100%
2	Faults Repair/Restoraion Time									
2.2	% of faults repaired by next working day	>90%	Reported	94.90%	98.47%	92%	100%	100%	94%	90%
			Verified	94.90%	98.47%	92%	100%	100%	94%	90%
2.3	% of faults repaired within 3 working day	≥99%	Reported	100%	99.97%	98%	100%	100%	99%	100%
			Verified	100%	99.97%	98%	100%	100%	99%	100%
3	Rent Rebate									
3.1	Rent Rebate		Reported	0	11	3365	0	0	19	223
			Verified	0	11	3365	0	0	19	223
4	Billing Performance									
4.1	%age of bills disputed	<2%	Reported	0.10%	0.02%	0.95%	1.12%	NA	0.42%	0%
			Verified	0.10%	0.02%	0.95%	1.12%	NA	0.42%	0%
4.2	%age of complaints resolved within 4 weeks	100%	Reported	100%	100%	100%	100%	NA	100%	Prepaid
			Verified	100%	100%	100%	100%	NA	100%	Prepaid
4.3	%age of cases to whom refund of deposits is made within 60 days of closures	100%	Reported	100%	100%	NR	100%	NA	100%	Prepaid
			Verified	100%	100%	NR	100%	NA	100%	Prepaid
5	Response Time to the Customer for assistance									
5.1	%age of calls answered by operator (Voice to voice) within 60 sec	>60%	Reported	84.30%	87.31%	97.88%	74%	DNF	42%	99%
			Verified	84.30%	87.31%	97.88%	74%	DNF	42%	99%
5.2	%age of calls answered by operator (Voice to voice) within 90 sec	>80%	Reported	93.70%	92.47%	97.97%	82%	DNF	48%	100%
			Verified	93.70%	92.47%	97.97%	82%	DNF	48%	100%
6	Bandwidth utilisation/throughput									
6.1	No. of Intra network links having Bandwidth utilisation >90% during peak hours (TCBH)		Reported	0	0	0	0	NR	NA	0
			Verified	0	0	0	0	NR	NA	0
6.2	No. of Upstream links for International connectivity having BW utilisation >90% Peak Hrs.(TCBH)		Reported	5	NA	0	0	DNF	0	0
			Verified	5	NA	0	0	DNF	0	0
6.3	% International bandwidth utilization during peak hours (TCBH) (Enclose MRTG)	<90%	Reported	82.90%	NA	51.42%	38.03%	NA	75.76%	85%
			Verified	82.90%	NA	51.42%	38.03%	NA	75.76%	85%

S/N	Parameters	Benchmarks	Audit Period	BSNL	Airtel	TCISL	RCom	Hathway	Youtele	Sify
6.4	Broadband Connection Speed available (download) from ISP node to user	>80%	Reported	92.10%	100%	DNF	NP	85%	85.09%	95%
			Verified	92.10%	100%	DNF	NP	85%	85.09%	95%
7	<i>Service Availability/Uptime (for all users) in %age</i>									
7.1	Service availability /uptime (for all users) in %age	>98%	Reported	99.70%	99.71%	NR	99.70%	100%	98.89%	100%
			Verified	99.70%	99.71%	NR	99.70%	100%	98.89%	100%
8	<i>Packet loss</i>									
8.1	% of Packet loss	<1%	Reported	0%	0%	0%	DNF	0.98%	0%	DNF
			Verified	0%	0%	0%	DNF	0.98%	0%	DNF
9	<i>Network latency (for wired broadband access)</i>									
9.1	User reference point at POP/ISP Gateway node to IGSP/NIXI	<120 ms	Reported	18.3 ms	40 ms	DNF	DNF	100 ms	19 ms	DNF
			Verified	18.3 ms	40 ms	DNF	DNF	100 ms	19 ms	DNF
9.2	User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)	<350 ms	Reported	237.3 ms	2 ms	DNF	DNF	320 ms	266 ms	DNF
			Verified	237.3 ms	2 ms	DNF	DNF	320 ms	266 ms	DNF
9.3	User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)	<800 ms	Reported	NA						
			Verified	NA						

NA – Not Applicable, NP – Not Provided.

Note:

- a) For "User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)", none of the operators having satellite connectivity.
- b) For "Response Time to the Customer for assistance", Youtel is not meeting benchmark for both parameters in PMR data.

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	Benc hmar k	Aircel	Airtel	BSNL	Etisal at	Idea	Rcom	Tata	Videoc on	Vodafone	Loop	Rcom	Tata	MTS	
			GSM Operators										CDMA Operators			
A	Network Service Quality Parameter															
1	Connection Establishment (Accessibility)															
	a) CSSR	>=9 5%	98.71%	99.28%	97.30%	99.80 %	99.93%	99.62%	98.20%	97.34%	98.07%	66.67%	99.48%	100.00%	99.05%	
	b) SDCCH/PAGING congestion	<=1 %	0.00%	0.14%	0.25%	0.01%	0.42%	0.10%	0.12%	0.07%	0.17%	0.03%	0.00%	0.00%	0.00%	
	c) TCH congestion	<=2 %	0.01%	0.24%	0.96%	0.19%	0.54%	0.05%	0.36%	1.19%	1.31%	0.00%	0.21%	0.00%	0.00%	
2	Connection maintenance															
	a) CDR	<=2 %	0.81%	0.64%	1.97%	1.29%	0.90%	0.38%	0.98%	1.29%	1.27%	25.00%	0.76%	0.06%	0.28%	
	b) Cells having > 3% TCH drop	<=5 %	0.57%	0.78%	4.76%	11.64 %	3.49%	1.79%	7.64%	4.78%	7.06%	0.00%	0.52%	0.00%	2.22%	
	c) Good voice quality	>=9 5%	98.50%	99.19%	96.42%	98.88 %	96.80%	97.50%	96.90%	97.77%	96.62%	98.97%	NA	NA	100.00 %	
	d) No. of cells > 3% TCH drop		2	59	217	7	216	63	325	157	528	0	5	0	9	
	e) Total no. of cells in the network		348	7,695	4,572	63	6,185	3,543	4,260	3,277	7,490	18	894	1,583	390	
3	No of POIs not meeting benchmark	>=0.5 %	3	0	1	0	3	3	2	3	2	0	3	2	0	
	a) Name of POI not meeting the benchmark		VSNL, Tata cdma, Vodafone	NIL	GMSC Ambala	NIL	BSNL,I dea,Vod afone,	Cellone,Ta ta,Vodafo ne	AAMAYLG 1,AAMAYM G1	BSLB0 9,BSLB 01,VD NB01	Reliance NLD,Ambala OCB	0.00	Cellone, Tata,Vod afone	Airtel, Idea	0.00	
	b) Total No. of circuits on POI		8,956	30,199	33,757	1,067	50,997	16,701	2,836	16,278	55,751	387	16,701	35,671	3,549	

S/ N	Name of Parameter	Benc hmar k	Aircel	Airtel	BSNL	Etisal at	Idea	Rcom	Tata	Videoc on	Vodafone	Loop	Rcom	Tata	MTS
			GSM Operators										CDMA Operators		
	c) Avg No. of call attempts on POI		130,030	728,375	660,230	756	905,259	296,356	47,431	392,806	1,719,459	3	296,356	568,479	10,981
	d) Avg traffic served on POI (Erlang)		4,824	11,067	10,404	27	32,077	9,149	1,002	6,345	32,655	0	9,149	17,045	449
	e) Total number of working POI Service Area wise		30	30	32	13	59	24	10	46	26	12	24	104	35
	f) Equipped Capacity of Network in respect of Traffic in erlang		4,807	77,699	126,464	400	78,707	31,056	80,959	42,954	109,529	4,000	87,756	89,179	12,600
	g) Total traffic handled in TCBH in erlang		179	53,822	68,763	21	73,512	12,107	24,314	12,852	111,424	1	25,215	24,733	155
(B)	Customer Service Quality Parameters														
4	Response time to customers for assistance														
	a) Accessibility of call centre	>=95%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	97.00%	100.00%	100.00%	100.00%	100.00%	100.00%
	b) % of call answered by operators(voice to voice) within 60 sec	>=90%	100.00%	97.04%	98.01%	96.00%	100.00%	96.38%	99.00%	98.00%	94.00%	100.00%	95.62%	94.00%	91.00%
	c) No. of call attempts to call centre / customer care nos. during TCBH (Avg)		100	100	100	100	100	100	100	100	100	100	100	100	100
	d) No. of calls connected and answered successfully to call centre / customer care nos. during TCBH (Avg)		100	100	100	100	100	100	100	97	100	100	100	100	100

Parameter-wise Findings (Live Data Assessment):

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

- **Call setup success rate (benchmark $\geq 95\%$):** All operators are meeting the benchmark with values lying between 97.30% and 100% except for Loop Telecom with a value of 66.67% hence deviating for the benchmark.
- **SDCCH/PAGING Channel congestion (benchmark $\leq 1\%$):** All operators are meeting the benchmark with values lying between 0% and 0.42%.
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% and 1.31%.
- **Call drop rate (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0.06% and 1.97% except for Loop telecom with value of 25% thus deviating from the benchmark.
- **Cell exceeding 3% TCH drop (benchmark $\leq 5\%$):** Except for Etisalat, Tata GSM & Vodafone with a value of 11.64%, 7.64% & 7.06% respectively, rest of the operators are satisfying the benchmark with value in between 0% and 4.78%.
- **Connections with good voice quality (benchmark $\geq 95\%$):** RCom and TATA being CDMA, have declared that the parameter is not system generated. Rest of the operators are meeting the benchmark with values lying between 96.35% and 100%.
- **No. of POI having Congestion (benchmark $\geq 0.5\%$):** There was congestion found on the POI of many operators & also cases were found where individual POIs are showing high utilization/usage. 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):** All operators are meeting the benchmark with values lying between 97% & 100%.
- **%age of call answered by operator (Voice to voice) (benchmark $>90\%$):** All operators are satisfying the benchmark with value lying between 91% and 100%.

(2) Month Data Assessment & Summarized Findings

S/N	Name of Parameter	Bench- mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom	Tata	Videoc on	Voda fone	Loop	Rcom	Tata	MTS	
			GSM Operators										CDMA Operators			
(A)	Network Service Quality Parameter															
1	Network Availability															
	a) BTS Accumulated Downtime	<=2%	0.92%	0.05%	1.44%	0.89%	0.09%	0.23%	0.02%	0.07%	0.12%	0.00%	0.26%	0.01%	0.18%	
	b) Worst affected BTSs due to downtime	<=2%	0.00%	0.08%	1.77%	0.00%	0.00%	0.26%	0.00%	0.17%	0.85%	0.00%	0.11%	0.00%	0.00%	
	c) Total no. of BTSs in the licensed service area		116	2,565	1,528	21	2,073	1,181	1,421	1,194	2,475	6	894	532	130	
	d) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		722	941	14,754	127	1,459	2,014	172	577	2,206	0	1,795	46	162	
	e) No. of BTSs having accumulated downtime of >24 hours in a month		0	2	27	0	0	3	0	2	21	0	1	0	0	
2	Connection Establishment (Accessibility)															
	a) CSSR (Call Setup Success Rate)	>=95%	98.51%	99.28%	97.50%	99.78%	99.90%	99.62%	98.60%	97.44%	98.13%	96.34%	99.28%	100.00%	100.00%	
	b) SDCCH/PAGING congestion	<=1%	0.01%	0.14%	0.23%	0.11%	0.47%	0.16%	0.02%	0.04%	0.26%	0.05%	0.00%	0.00%	0.00%	
	c) TCH congestion	<=2%	0.05%	0.23%	1.03%	0.21%	0.67%	0.13%	0.31%	1.02%	1.18%	0.00%	0.39%	0.00%	0.00%	
3	Connection maintenance (retainability)															
	a) CDR	<=2%	1.05%	0.61%	1.97%	1.58%	0.96%	0.38%	1.02%	1.27%	1.20%	1.27%	0.80%	0.27%	0.26%	
	b) Worst affected cells>3% TCH drop	<=5%	0.42%	0.76%	4.80%	15.65%	4.70%	2.04%	8.33%	1.54%	6.27%	0.00%	0.49%	0.01%	1.99%	
	c) Good voice quality	>=95%	98.37%	99.23%	96.42%	98.61%	96.66%	98.75%	96.85%	97.73%	96.67%	99.26%	NA	NA	100.00%	
	d) Total No. of cells exceeding 3% TCH drop (call drop)		2	58	220	10	294	72	355	55	470	0	4	3	8	
	e) Total no. of cells in the network		348	7,695	4,572	63	6,185	3,543	4,260	3,277	7,490	18	894	1,583	390	

S/N	Name of Parameter	Bench- mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom	Tata	Videoc on	Voda fone	Loop	Rcom	Tata	MTS
			GSM Operators									CDMA Operators			
4	No. of POI having congestion	$\geq 0.5\%$	3	0	1	0	3	3	2	3	2	0	3	2	0
	a) Name of POI not meeting the benchmark		VSNL, Tata cdma, Vodafo ne	NIL	GMSC Ambala	NIL	BSNL Idea, Vodaf one,	Cellone, Tata, Vodafon e	AAMA YLG1, AAMA YMG1	BSLB0 9,BSL B01	Relia nce NLD, Amba la OCB	NIL	Cellone Tata, Vodafo ne	Airtel, Idea	NIL
	b) Total No. of call attempts on POI (Avg.)		119,629	763,306	656,301	670	1,683, 206	285,886	44,712	389,05 5	1,763, 288	7	285,88 6	532,42 6	11,272
	c) Total traffic served on POI (Erlang) (Avg.)		4,656	11,325	11,015	25	31,863	8,867	883	7,937	33,68 0	0	8,867	15,847	452
	d) Total No. of circuits on POI		8,956	30,199	33,757	1,067	50,997	16,701	2,836	16,278	55,75 1	387	16,701	35,671	3,549
	e) Total number of working POI Service Area wise		30	30	32	13	59	24	10	46	26	12	24	104	35
	f) Capacity of POI		8,509	28,408	23,630	854	50,606	15,630	2,517	15,252	55,37 4	233	15,630	32,918	3,139
5	Network Data														
	a) Equipped Capacity of Network Erlang		4,807	77,699	126,464	400	78,707	31,056	80,959	42,954	109,5 29	4,000	87,756	89,179	12,600
	b) Total traffic in TCBH in erlang (Avg.)		179	53,822	68,763	21	73,512	12,107	24,314	12,852	111,4 24	1	25,215	24,733	155
	c) Total no. of customers served (as per VLR) on last day of the month		319,775	1,857,793	1,500,244	1,284	2,643, 976	NP	1,023,3 19	348,50 1	3,453, 034	10	NP	604,28 2	21,873
(B) Customer Service Quality Parameters															
5	Metering/billing credibility-Post paid	$\leq 0.1\%$	NA	0.05%	0.00%	NA	0.22%	0.10%	0.75%	NA	0.02%	NA	0.06%	0.33%	0.00%
	a) No. of bills issued during the period		NA	46,984	21,566	NA	58,592	7,699	7,220	NA	46,75 9	NA	85,133	113,46 7	14
	b) No. of bills disputed including billing complaints during the period		NA	174	0	NA	132	8	54	NA	8	NA	53	369	0

S/N	Name of Parameter	Bench- mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom	Tata	Videoc on	Voda fone	Loop	Rcom	Tata	MTS
			GSM Operators									CDMA Operators			
6	Metering /billing credibility-Pre paid	$\leq 0.1\%$	0.02%	0.04%	0.00%	0.04%	0.02%	0.01%	0.12%	0.06%	0.00%	0.00%	0.01%	0.18%	0.03%
	a) No. of charging / credit / validity complaints during the quarter		87	6,862	0	2	681	213	2,215	625	157	0	112	2,439	30
	b) Total no. of pre-paid customers at the end of the quarter		360,000	2,488,081	2,946,049	5,054	2,929,180	2,338,072	1,860,545	927,578	3,559,107	113	1,064,762	1,353,346	111,952
7	Resolution of billing/ charging complaints	100% within 4 weeks	100%	100%	100%	100%	98%	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		87	174	NIL	2	797	221	2,269	625	165	NIL	165	2,808	30
	b) Total no. of billing (post paid) and charging, credit / validity (pre paid) complaints received during the quarter		87	174	NIL	2	813	2	2,269	625	165	NIL	165	2,808	30
	c) No. of billing complaints (post paid) and charging, credit/ validity complaints (pre paid) resolved in favour of the customer during the quarter		30	921	NIL	NIL	813	57	71	159	103	NIL	119	2,368	26
	d) No. of complaints disposed on account of not considered as valid complaints during the quarter		57	6,115	NIL	2	2,850	164	2,252	466	62	NIL	46	147	4
	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%	100%	100%	100%	100%	100%	100%	100%
8	Response time to customers for assistance														
	a) Accessibility of call centre/Customer Care	$\geq 95\%$	99%	98.70%	100.00%	99.00%	94.77%	100.00%	87.26%	97.00%	100.00%	100.00%	100.00%	98%	100.00%
	b) % call answered by operators(voice to voice) within 60 sec.	$\geq 90\%$	98.01%	85.20%	97.04%	94.00%	99.30%	83.34%	97.80%	98.00%	92.47%	100.00%	92.10%	98%	95.00%

S/N	Name of Parameter	Bench- mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom	Tata	Videocon	Vodafone	Loop	Rcom	Tata	MTS
			GSM Operators										CDMA Operators		
	c) Total no. of call attempts to call centre & customer care nos. during TCBH (Avg.).		152662	5,035,738	44,057	853	232,412	352,729	580,927	673,734	6,107,487	10	25,106	240105	14,608
	d) No. of calls connected and answered successfully to call centre & customer care nos. during TCBH (Avg.).		149609	4,972,708	42,756	845	231,001	293,980	506,946	648,776	6,107,487	10	22,522	235303	14,608
9	Termination/closure of service	<i><=7days</i>		100%	100%		100%	100%	100%		100%		100%	100%	
	a) Total No. of requests for Termination / Closure of service received during the quarter		NA	506	6	NA	569	461	148	NA	525	NA	461	927	NA
	b) No.of requests for Termination / Closure of service complied within 7 days during the quarter			506	6		569	461	148		525		461	927	
10	Time taken for refunds of deposits after closures.	<i>100% within 60 days</i>		100%	100%		100%	100%	NA		100%		100%	97%	

NA: Not Applicable, NR: Not Received

Note: It is found that Aircel, Etisalat, Loop, Videocon & MTS have low customer database and Aircel, Videocon and MTS is on ICR in most of the Cities in Haryana Circle.

Parameter-wise Findings (Month Data Assessment):

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

- **BTS accumulated downtime (benchmark <=2%):** All operators are meeting the benchmark with values lying between 0% and 1.44%.
- **Worst affected BTSs due to downtime (benchmark <= 2%):** All operators are meeting the benchmark with values lying between 0% and 1.77%.
- **Call setup success rate (benchmark >= 95%):** All operators are meeting the benchmark with values lying between 96.34% and 100%.
- **SDCCH/PAGING Channel congestion (benchmark <= 1%):** All operators are meeting the benchmark with values lying between 0% and 0.47%.
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 1.18%.
- **Call drop rate (benchmark <= 2%):** All operators are meeting the benchmark with values lying between 0.26% and 1.97%.
- **Cell exceeding 3% TCH drop (benchmark <= 5%):** Except Etisalat, Tata GSM & Vodafone with values 15.65%, 8.33% & 6.27% respectively, rest of the operators are satisfying the benchmark with value in-between 0% and 4.86%.
- **Connections with good voice quality (benchmark >= 95%):** Rcom and TATA being CDMA operators have declared that the parameter is not system generated. Rest of the operators are meeting the benchmark with values lying between 96.42% and 100%.
- **No. of POI having Congestion (benchmark >= 0.5%):** There was congestion found on the POI of many operators & also cases were found where individual POIs are showing high utilization/usage. 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 Idea & Tata GSM, rests of the operators are meeting the benchmark with values lying between 97% & 100%.
- **%age of call answered by operator (Voice to voice) (benchmark >90%):** Except for Airtel, Rcom GSM & Tata CDMA, rests of the operators are meeting the benchmark with values lying between 92.1% & 100%.
- **Metering and billing credibility-Post paid (benchmark <= 0.1%):** Except for Idea , Tata-GSM & Tata CDMA with values of 0.22%, 0.75% & 0.33% respectively, rests of the operators are meeting the benchmark.
- **Metering and billing credibility-Pre paid (benchmark <= 0.1%):** Except for Tata GSM & Tata CDMA with value of 0.12% & 0.18% respectively, rests of the operators are meeting the benchmark with values lying between 0% and 0.06%.
- **Resolution of billing/ charging complaints (benchmark 100% within 4 weeks):** All operators are meeting the benchmark except to Idea with value of 98%.
- **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 for Tata CDMA, rests of the operators are satisfied the benchmark.

(3) Sample Coverage**Switches/BSC/BTS details of operators:**

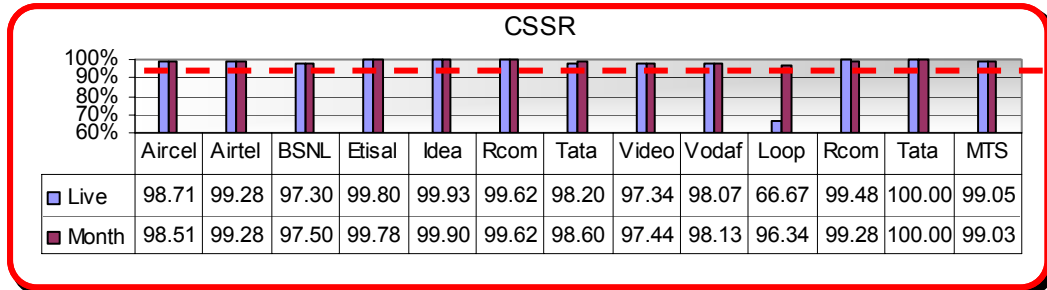
Sl.	Name of Service Provider	No. of MSC	No. of BSC	No. of BTS
GSM Operators				
1	Aircel Ltd	1	1	116
2	Airtel Ltd	7	22	2565
3	BSNL	5	24	1528
4	Etisalat	1	2	21
5	Idea	3	25	2073
6	Reliance Communication (GSM)	1	8	1181
7	Tata Communications (GSM)	2	12	1421
8	Videocon	1	3	1194
9	Vodafone	12	46	2475
10	Loop telecom	1	1	6
CDMA Operators				
11	Reliance Communication (CDMA)	2	NA	894
12	Tata Communications (CDMA)	4	13	527
13	MTS (CDMA)	1	1	130

(4) Performance (Graphical Representation)

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

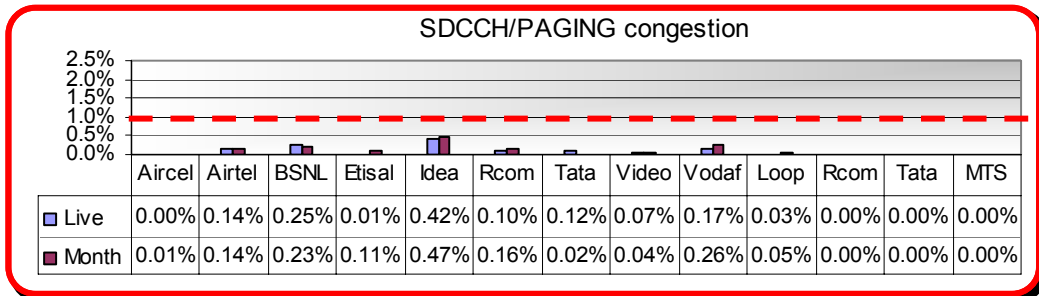
A) NETWORK PERFORMANCE

I. Call setup success rate: 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. Only Loop is found not meeting the benchmark for live audit.

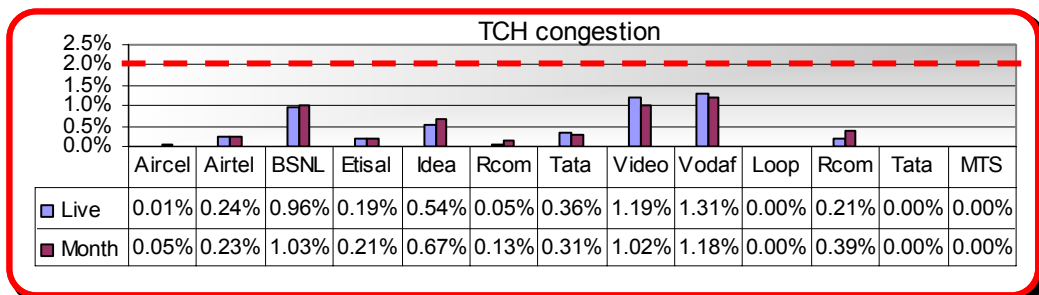


II. Blocked call rate:

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

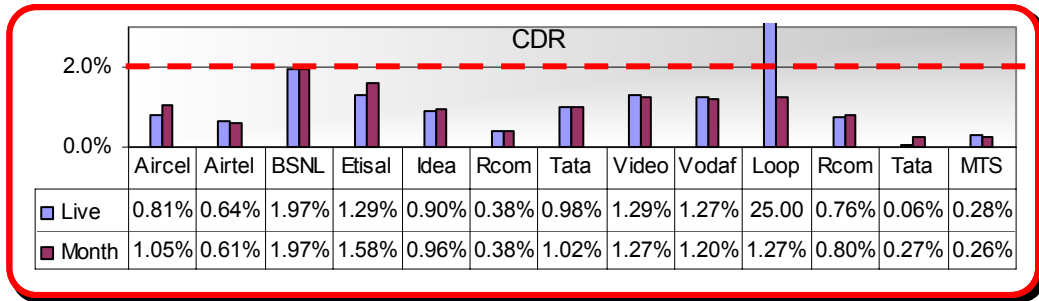


TCH congestion (%): All operators are meeting the TRAI benchmarks ($\leq 2\%$) for both one month data and 3 days live data taken in the month of audit.

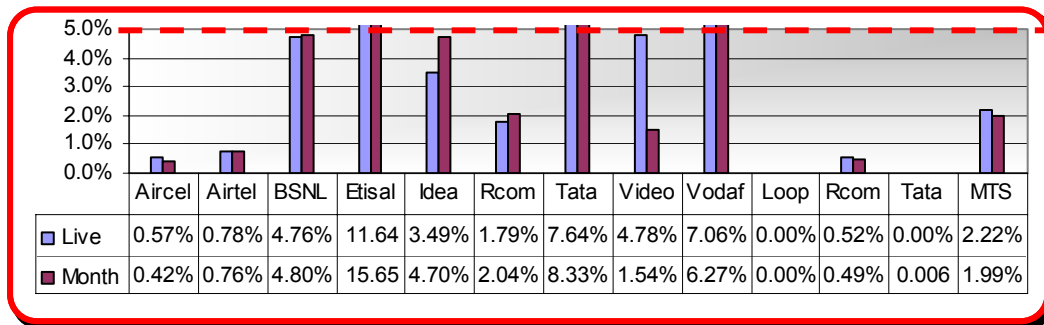


III. Connection Maintainability (Retainability):

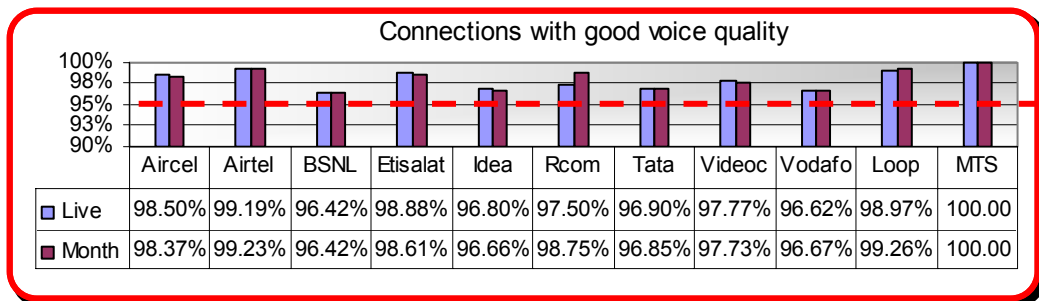
Call drop rate (%): Except Loop telecom for 3 days live, rest of the operators are meeting the TRAI benchmark ($\leq 2\%$) for both one month data and 3 days live data taken in the month of audit.



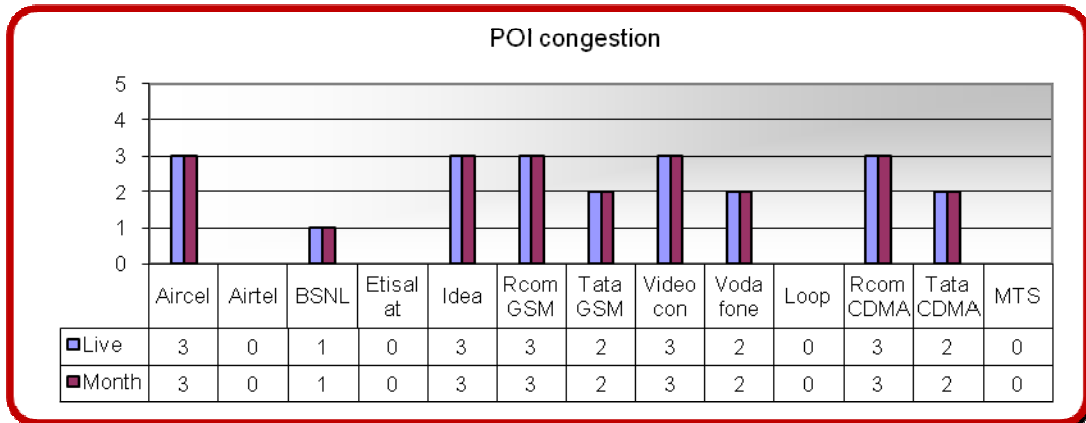
Worst affected Cell exceeding 3% TCH Drop: Etisalat, Tata GSM & Vodafone are not meeting the benchmark for live & month audits, rest of the operators are meeting the benchmark in both the cases.



Percentage of connections with good voice quality (benchmark $\geq 95\%$): All operators are meeting the TRAI benchmarks ($\geq 95\%$) for both one month data and live data.



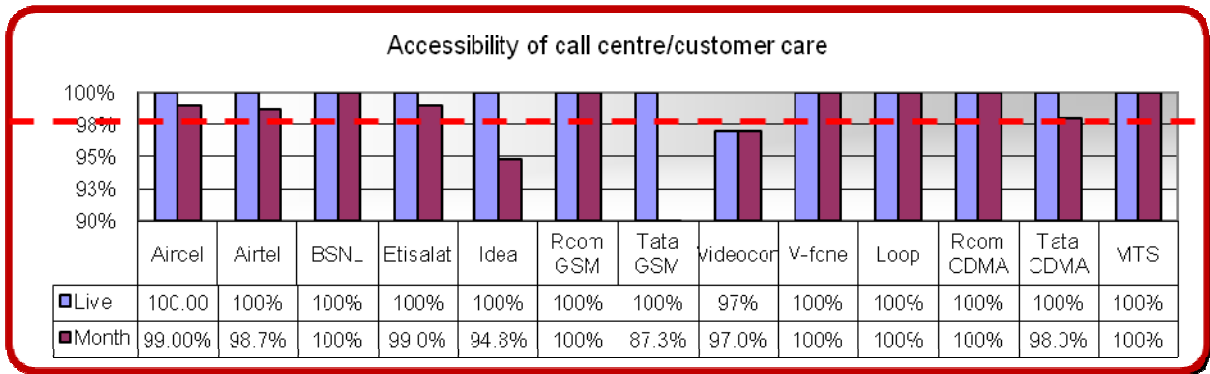
No. of POI having Congestion: Most of the operators have POIs with more than 0.5% congestion as shown below.



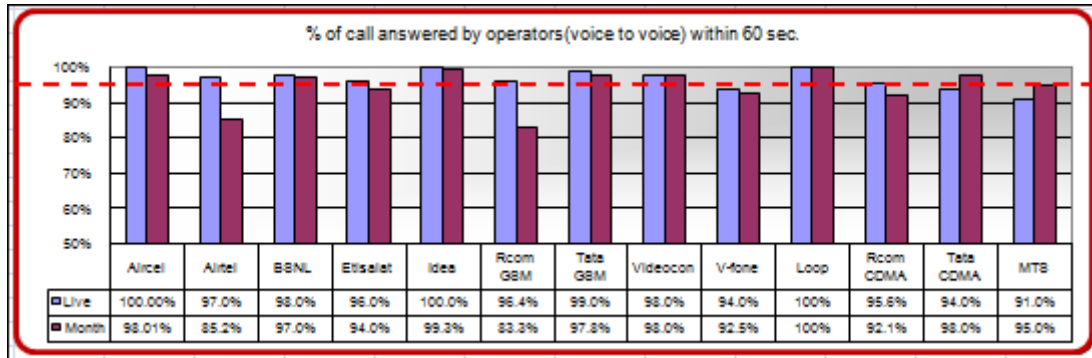
B) CUSTOMER SERVICE QUALITY PARAMETERS

Response time to the customer for assistance:

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



Percentage of call answered by operators (Voice to voice) within 60 sec: For the month of audit Airtel, Rcom GSM & Tata CDMA is not meeting the benchmark. Rest of the operators are meeting the benchmark.



(3) Critical Analysis

The above comparative study between live data & month data shows similar trends in both the cases. However, inconsistency in live & month data was found for parameters like “Call setup success rate”(Loop telecom), Call drop rate(Loop telecom), “worst affected cells >3% TCH drop” (Etisalat, Tata GSM & Vodafone, accessibility of call centre(Idea & Tata GSM), “%age of calls answered by operator” (Airtel, RCom GSM & Tata CDMA).

(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 (live calling for billing complaints)

Calling Operator	Airtel	Idea	Reliance (GSM)	Tata (GSM)	Vodafone	Reliance (CDMA)	Tata (CDMA)
Total No. of calls	7	3	5	5	6	5	4
Cases resolved with 4 weeks	7	3	5	5	6	5	4
%age of cases resolved	100%	100%	100%	100%	100%	100%	100%

(3) Live calling to Call centre: Fifty nos. of calls were made at Ambala in each half and below given no. of calls got connected to the call centre within 60 Secs.

CALL CENTRE CALLING STATISTICS

	OPERATORS NAME											Rcom	Tata	MTS
	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom	Tata	Videocon	Vodafone	Loop				
	GSM										CDMA			
1ST HALF (10AM TO 01 PM)	48	48	47	48	48	47	47	46	47	48	47	47	46	
2ND HALF (04PM TO 07 PM)	44	43	44	44	47	42	49	43	44	43	41	39	38	
In % age	92.00	91.00	91.00	92.00	95.00	89.00	96.00	89.00	91.00	91.00	88.00	86.00	84.00	

(4) Level 1 Calling: Level 1 calling such as calling at emergency no. (Police, Fire, Hospital), Railway enquiry system etc were made so as to check the service of such short codes. In Ambala it was found to be functional.

(5) Critical Analysis:

Random numbers were selected (to whom refund were made) 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. It is found that Airtel, Etisalat, Loop, Videocon & MTS have low customer database and Airtel, Videocon and MTS is on ICR in most of the cities in Haryana Circle.

(C) Inter operator call assessment**(1) Sample coverage**

A sample of 2x50 test calls per Service Providers within the licensed service area (Haryana Circle) were made between 1900 to 2100 hrs so that TCBH hours for all the operators were covered.

(2) Performance based on live measurement

Calling Operator	Aircel	Airtel	BSNL	Etisalat	Idea	Reliance (GSM)	Tata (GSM)	Videocon	Vodafone	Loop	Reliance (CDMA)	Tata (CDMA)	MTS
Aircel	-	100%	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Airtel	100%	-	99%	100%	98%	98%	97%	100%	98%	99%	100%	100%	99%
BSNL	98%	99%	-	100%	99%	98%	100%	98%	99%	100%	100%	97%	98%
Etisalat	100%	100%	100%	-	100%	100%	100%	100%	100%	100%	99%	100%	100%
Idea	100%	98%	100%	100%	-	100%	99%	99%	100%	100%	100%	100%	100%
Reliance (GSM)	99%	100%	100%	100%	100%	-	100%	100%	100%	100%	100%	100%	99%
Tata (GSM)	100%	99%	100%	100%	100%	99%	-	100%	100%	100%	100%	100%	100%
Videocon	100%	100%	100%	100%	100%	100%	100%	-	100%	100%	100%	100%	100%
Vodafone	99%	98%	97%	100%	98%	100%	99%	100%	-	99%	100%	99%	99%
Loop	99%	100%	100%	100%	100%	100%	100%	100%	100%	-	100%	100%	100%
Reliance (CDMA)	100%	100%	100%	100%	100%	100%	100%	98%	99%	100%	-	100%	100%
Tata (CDMA)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	-	100%
MTS	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%	99%	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 not much congestion on the operator networks.

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

(1) Sample Coverage

The Operator Assisted Drive Test was conducted at Haryana 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

KARNAL

Dense : ITI Chowk, Ram Nagar, Prem Nagar

Medium Dense 1: Sector 6, Sector 8, Phusgarh, Bus stand

Low Dense: NH 1, Sector 14, Sector 3

AMBALA

Dense : Sadar Bazaar, Mall Road, and Capital Chowk

Medium Dense 1: Sector 9, Model Town, Kalka Chowk

Low Dense: Baldev nagar, Baldev nagar to Mohra

PANIPAT

Dense : Bus stand, Gudmandi, Mastana chowk, NHBC

Medium Dense 1: Model town, Ramlal chowk, Railway station, Geeta colony, Adarsh colony

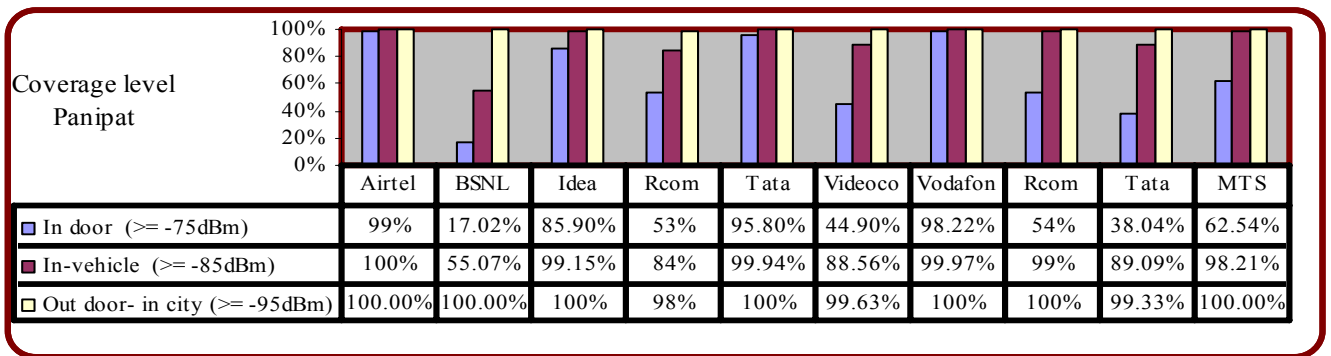
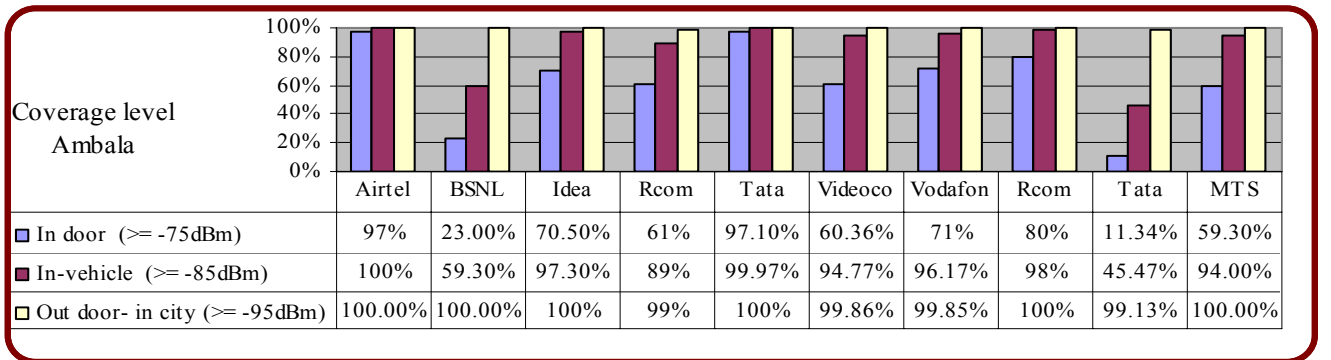
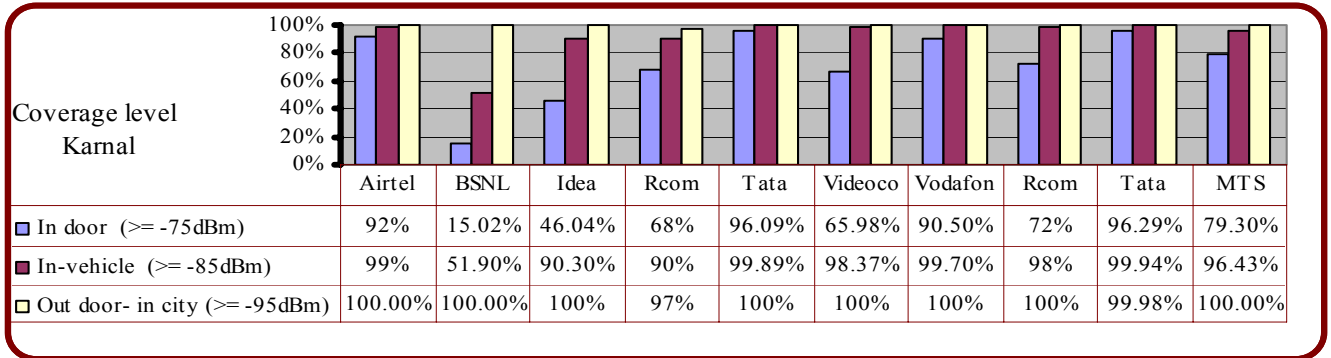
Low Dense: NHI, Amarbhawan, Samalkha, Siwah, Khadiashram

Operator-Assisted Drive Test

SN	Parameter	City Name	Airtel	BSNL	Idea	Rcom GSM	Tata GSM	Videocon	Vodafone	Rcom CDMA	Tata CDMA	MTS	
			GSM Operators						CDMA Operators				
1.1	Call Attempts	Karnal	70	69	59	65	60	68	72	62	60	49	
		Ambala	81	84	81	89	92	76	84	96	88	58	
		Panipat	107	98	111	112	130	139	126	112	98	71	
1.2	Blocked Call Rate (<=3%)	Karnal	1.42%	11.33%	1.69%	0%	1.66%	1.47%	0%	1.61%	1.66%	0.00%	
		Ambala	0.00%	3%	1.23%	0%	1.08%	0%	2.30%	0%	2.27%	0.00%	
		Panipat	1.86%	3.20%	3.60%	0%	0.76%	0.72%	3.17%	0.89%	2.04%	0.00%	
1.3	Dropped Call Rate (<=2%)	Karnal	0.00%	0%	0%	1.54%	1.69%	0%	1.38%	1.45%	0%	0%	
		Ambala	0.00%	2%	0%	0%	0%	0%	1.20%	1.04%	0%	0%	
		Panipat	0.00%	0.00%	1.85%	0%	0%	4.30%	2.50%	1.80%	0%	1%	
1.4	Percentage of connections with good voice quality (>=95%)												
		(i) 0-4 (w/o frequency hopping)	Karnal								99%	96.21%	97.09%
			Ambala								99%	96.30%	96.13%
	Panipat									89%	96.55%	96.76%	
	(ii) 0-5 (with frequency hopping)	Karnal	92.70%	92%	95%	95%	94.37%	90.20%	96.40%				
		Ambala	95.20%	89.90%	95%	96%	95.03%	94.71%	93.60%				
Panipat		95.60%	92.37%	93%	97%	92.98%	90%	94.30%					
1.5	Service Coverage												
	In door (>= -75dBm)	Karnal	92%	15.02%	46.04%	68%	96.09%	65.98%	90.50%	72%	96.29%	79.30%	
		Ambala	97%	23.00%	70.50%	61%	97.10%	60.36%	71%	80%	11.34%	59.30%	
		Panipat	99%	17.02%	85.90%	53%	95.80%	44.90%	98.22%	54%	38.04%	62.54%	
	In-vehicle (>= -85dBm)	Karnal	99%	51.90%	90.30%	90%	99.89%	98.37%	99.70%	98%	99.94%	96.43%	
		Ambala	100%	59.30%	97.30%	89%	99.97%	94.77%	96.17%	98%	45.47%	94.00%	
		Panipat	100%	55.07%	99.15%	84%	99.94%	88.56%	99.97%	99%	89.09%	98.21%	
	Outdoor- in city (>= -95dBm)	Karnal	100%	100%	100%	97%	100%	100%	100%	100%	99.98%	100%	
		Ambala	100%	100%	100%	99%	100%	99.86%	99.85%	100%	99.13%	100%	
Panipat		100%	100%	100%	98%	100%	99.63%	100%	100%	99.33%	100%		
2	Call Setup Success Rate (>=95%)	Karnal	98.57%	89%	98%	100%	96.67%	98.53%	100%	98.38%	98.33%	100%	
		Ambala	100%	96.00%	96%	100%	98.91%	100%	96%	100%	97.73%	100%	
		Panipat	100%	96.85%	97%	100%	99.23%	99%	94.70%	99.10%	97.96%	100%	

Graphical Representation

Radio coverage as was found during the drive test:



(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 showing deviation in block call rate for Karnal & Panipat, percentage of connections with good voice quality for all 3 cities & Call setup success rate for Panipat only.
- Aircel is showing deviation in percentage of connections with good voice quality (92.7%) in Karnal.
- Idea is showing deviation in Block call rate & percentage of connections with good voice quality for Panipat city.
- Tata GSM is showing deviation in percentage of connections with good voice quality for Karnal & Panipat.
- Videocon is showing deviation in drop call rate for Panipat city & percentage of connections with good voice quality for all 3 cities.
- Vodafone is showing deviation in all parameters for Panipat city & Connections with good quality not met in Ambala also.
- RCOM CDMA is not meeting benchmark for percentage of connections with good voice quality for Panipat city only.

(E) Independent Drive Test

- Not done for this quarter

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

From live, month, PMR and Drive Tests findings, it can be concluded that on an average, performance of the operators in the service area (Haryana) is by and large satisfactory for **Network Parameters**. However, the benchmark of $\leq 5\%$ for “worst affected cells $> 3\%$ TCH drop” is not met by Etisalat, Tata GSM & Vodafone.

Under **Customer Service Quality Parameter** “operator answered calls (voice-to-voice) within 60 seconds” parameter it is found that Airtel & RCom GSM are not fulfilling TRAI benchmark of $\geq 90\%$.

Regarding **Metering/Billing Credibility** issues, Idea, Tata GSM & Tata CDMA shows below benchmark value for Post-paid connections. Similar results are found for Tata GSM & CDMA for pre-paid connections.

Regarding **Time taken for refund of deposits after closures** issues, Tata CDMA shows below benchmark value.

It is found that Aircel, Etisalat, Loop, Videocon & MTS have low customer database and Aircel, Videocon and MTS is on ICR in most of the Cities in Haryana Circle.

During **Drive Tests**, high Blocked Call Rates were found in case of BSNL (Karnal & Panipat), Idea & Vodafone (Panipat). Similarly, dropped call rate benchmark was not met by Videocon & Vodafone for Panipat city. Most of the GSM operators have below benchmark %age of connections with good voice quality. For Karnal city, Airtel, BSNL, Tata GSM & Videocon are not meeting the benchmark. For Ambala city, BSNL, Videocon & Vodafone are not meeting the benchmark. For Panipat city, BSNL, Idea, Tata GSM, Videocon, Vodafone & RCom CDMA is not meeting the benchmark.

II. Basic Telephone Service (Wireline) Providers

(A) Exchange Audit

1. 3 days live data & One month audit comparative table (Jan 2011 - March 2011).

S/N	Parameters	Benchmarks	Audit Period	BSNL	Airtel	TTSL	RCom
1	Fault incidences						
	(No. of faults/100 subscribers /month)	< 5%	Month	4.70%	2.20%	0.1%	0%
2	Faults Repair/Restoration Time						
	Fault repair by next working day(Urban Area)	>90%	Month	95.26%	100%	100%	100%
	Within 3 days day	100%		100%	100%	100%	100%
	Fault repair by next working day(Rural & hilly Area)	>90%		95.96%	NA	NA	NA
	Within 5 days	100%		100%	NA	NA	NA
	Mean time to Repair(MTTR)	≤8 Hrs		6.67 Hrs	3.41 Hrs	7.68 Hrs	0.46 Hrs
3	Rent Rebate						
	Fault pending > 3 days & <7 days	Rebate for 7 days	Month	0	7	0	0
	Fault Pending > 7 days & < 15 days	Rebate for 15 days		9	1	0	0
	Fault pending > 15 days	Rebate for 1 month		135	1	0	0
4	Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)						
	CCR & ASR	> 55%(CCR) & > 75%(ASR)	Live	75.81%	95.14%	98.50%	86.24%
			Month	75.81%	94.88%	98.60%	86.02%
5	Metering & Billing Performance						
	Disputed Bills over bills issued	< 0.1%	Month	0%	0.1%	0.02%	0%
	% of billing complaints resolved within 4 weeks	100%		90%	100%	100%	100%
	Period of all refunds/payments from the date of resolution of complaints within 1weeks	100%		Nil	8%	100%	100%
6	POI Congestion						
	No of POIs not meeting benchmark	≤0.5%	Live	1	0	0	0
			Month	0	0	0	0
7	Response Time to customer for assistance						
	Accessibility of Call centre/customer Care within 40 seconds	≥95%	Live	97.6%	100%	97.50%	99%
			Month	96.1%	95.21%	96.66%	99%
	% age of calls answered by operator(voice to voice) within 60 seconds	≥90%	Live	88.69%	100%	93.70%	98%
			Month	83%	91.94%	89.87%	98%
8	Customer care(promptness in attending to customers request						
	Termination / Closures	100%	Month	100%	100%	100%	100%
	Time taken for refunds of deposit after closures	100%		100%	11.73%	100%	100%

NA – Not Applicable, NP – Not Provided.

A) BSNL is not meeting the benchmark for "Faults Repair/Restoration Time within 3 days", % of billing complaints resolved within 4 weeks", "POI Congestion"(live data) & "% age of calls answered by operator(voice to voice)(Live & month data) within 60 seconds" with values of 99.82%, 90%, 1.31%, 88.69% & 83%.

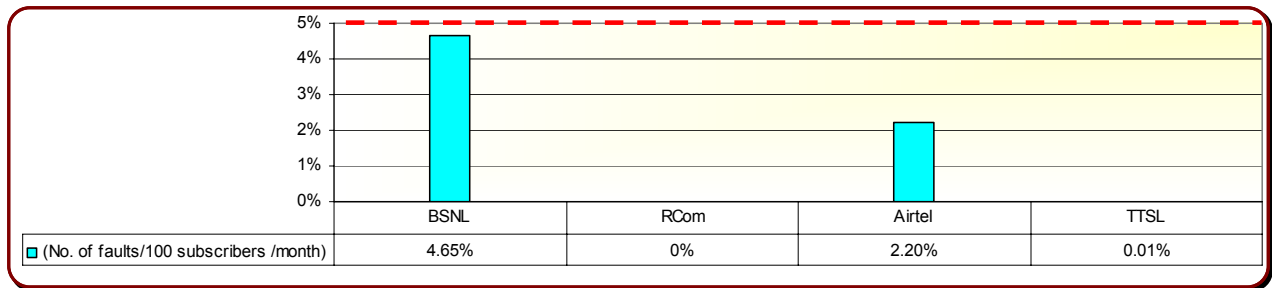
b) Airtel is not meeting the benchmark for "Disputed Bills over bills issued", "Period of all refunds/payments from the date of resolution of complaints within 1weeks" & "Time taken for refunds of deposit after closures" with values of 0.1%, 8% & 11.73%.

c) TTSL is not meeting the benchmark only for "% age of calls answered by operator (voice to voice) within 60 seconds" with value of 89.87%.

2. Performance (Graphical representation)

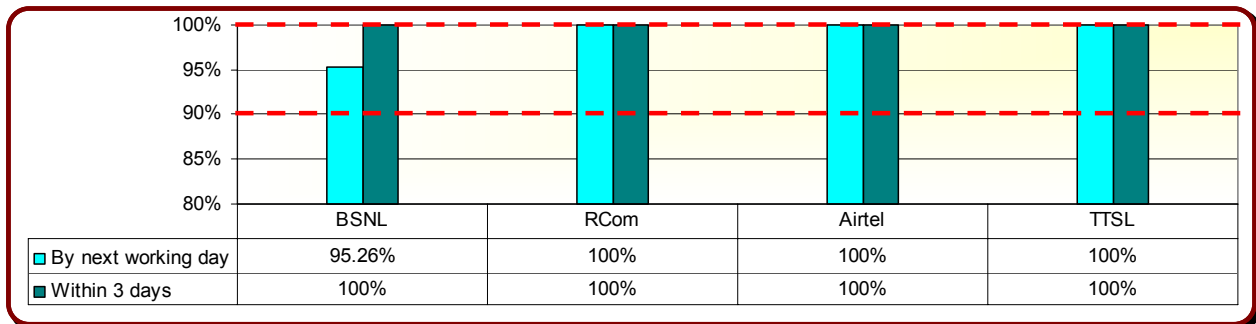
Parameter wise Data Analysis & Graphical Representations – Basic Service (Wireline)

Fault incidences (No of faults/100 subscribers/month (≤5): All the operator are meeting the benchmark set by TRAI.



Fault Repair (Urban Area):

- **By next working day (>90%):** All the operators comply with the TRAI benchmark of 90%.
- **Within 3 days (100%):** All the operators comply with the TRAI benchmark of 100%.

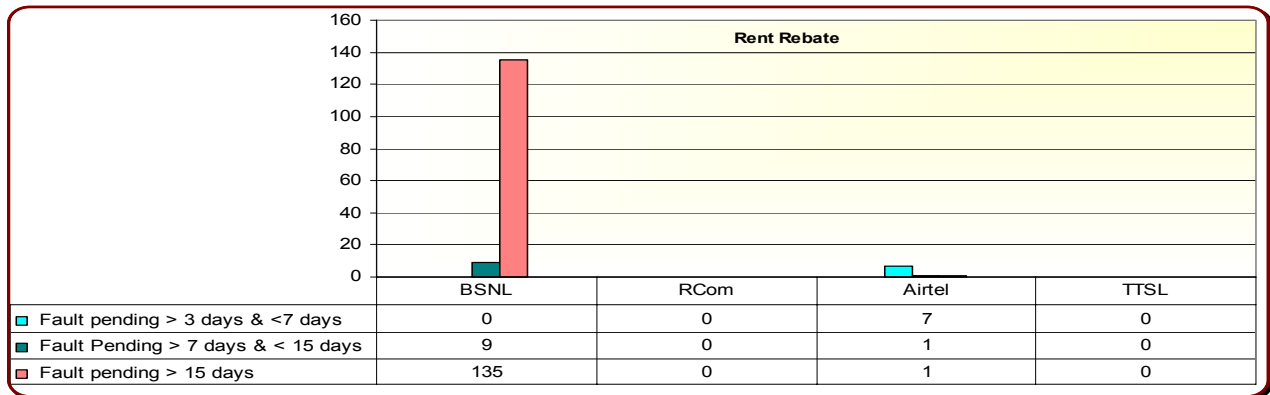


Fault Repair (Rural & Hilly Area):

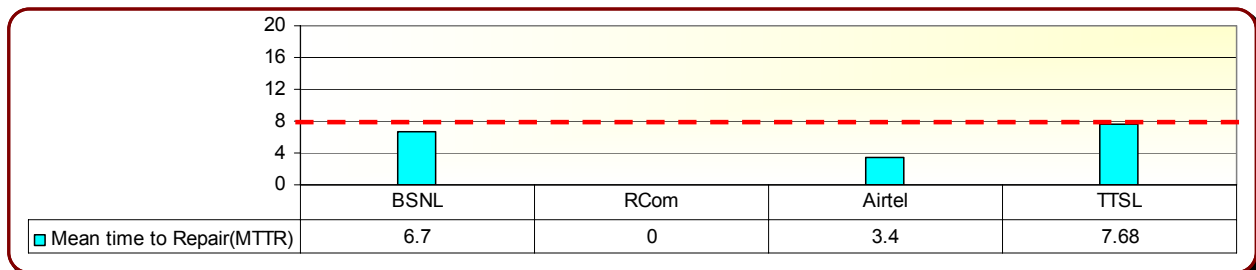
- **By next working day (>90%):** All the operators comply with the TRAI benchmark of 90%.
- **Within 5 days (100%):** All the operators comply with the TRAI benchmark of 100%.

Rent Rebate

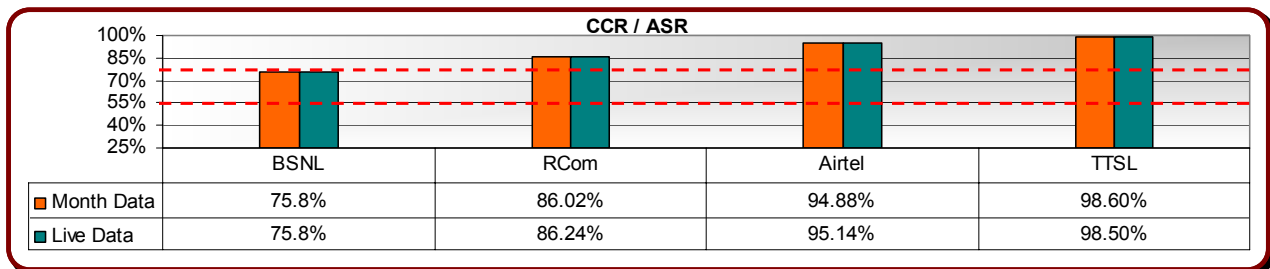
- a) Faults pending for > 3 days & < 7 days (Rebate 7 days)—As far as rebate is concerned Airtel and BSNL has given rebate of 0 & 7 respectively. RCom. and TTSL do not have any rebate case.
- b) Faults pending for > 7 days & < 15 days (Rebate 15 days) — As far as rebate is concerned Airtel and BSNL has given rebate of 9 & 1 respectively. RCom. and TTSL do not have any rebate case.
- c) Faults pending for > 15 days (Rebate one month)--. As far as rebate is concerned Airtel and BSNL has given rebate of 135 & 1 respectively. RCom and TTSL do not have any rebate case.



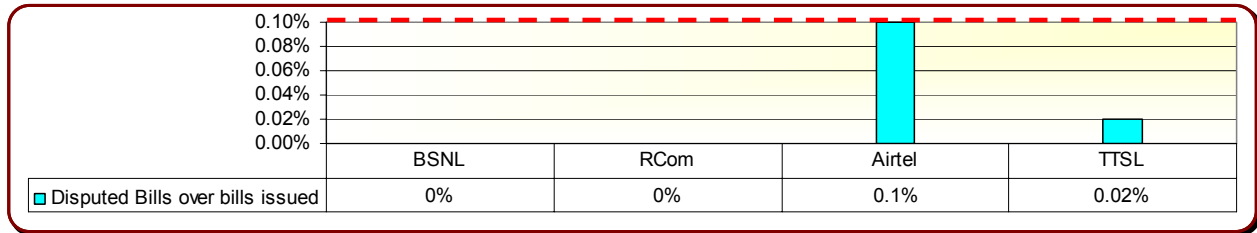
Mean Time to Repair (MTTR) (<= 8 Hrs): All the operators comply with the TRAI benchmarks.



Call Completion Rate (CCR)/ Answer to Seizure Ratio (ASR) (>55% & > 75%): All the operators comply with the TRAI standards in both live and one-month data verification. Other than RCom, which have given ASR rest of the operators, gave CCR value.

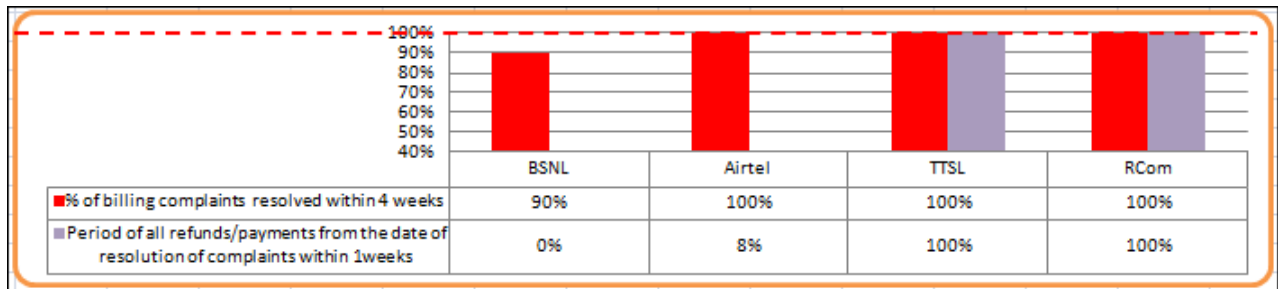


Metering and Billing Credibility (< 0.1%): Disputed Bills over Bills issued: - All the operators comply with the TRAI standards except Airtel with the value of 0.1% in one-month data verification.

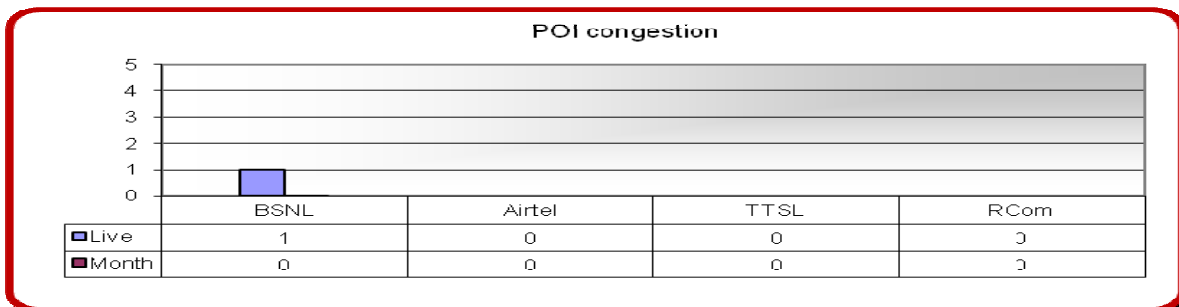


% of Billing Complaints resolved within 4 Weeks: All the operators have resolved billing complaints 100% (benchmark) within 4 weeks except for, BSNL with the value of 90% in one-month data verification.

Period of All refunds / Payments from the date of Complaints Within 1 week: As far as period of refunds from the date of complaints within 1 week, all the operators are meeting the benchmark of 100% except for Airtel with the value of 8% in one-month data verification.



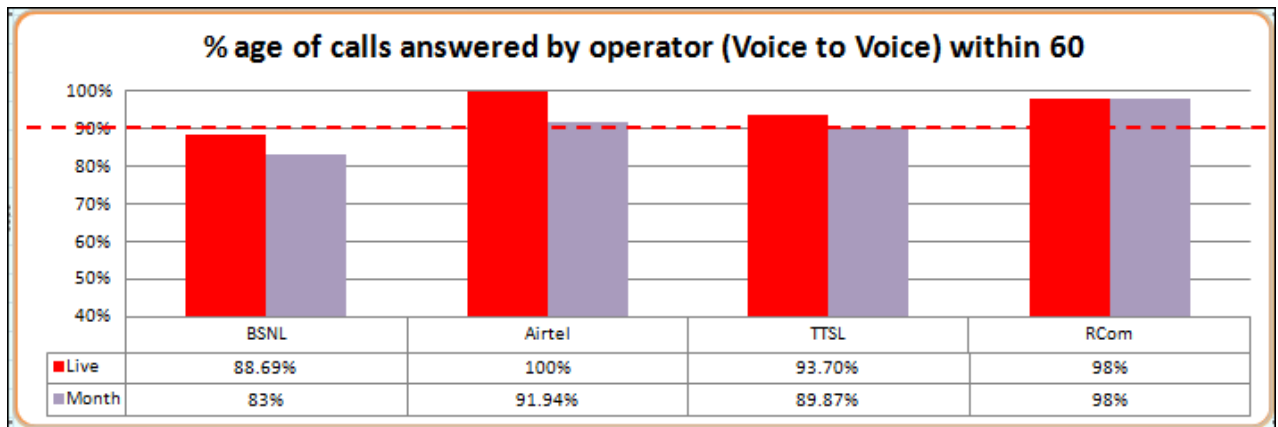
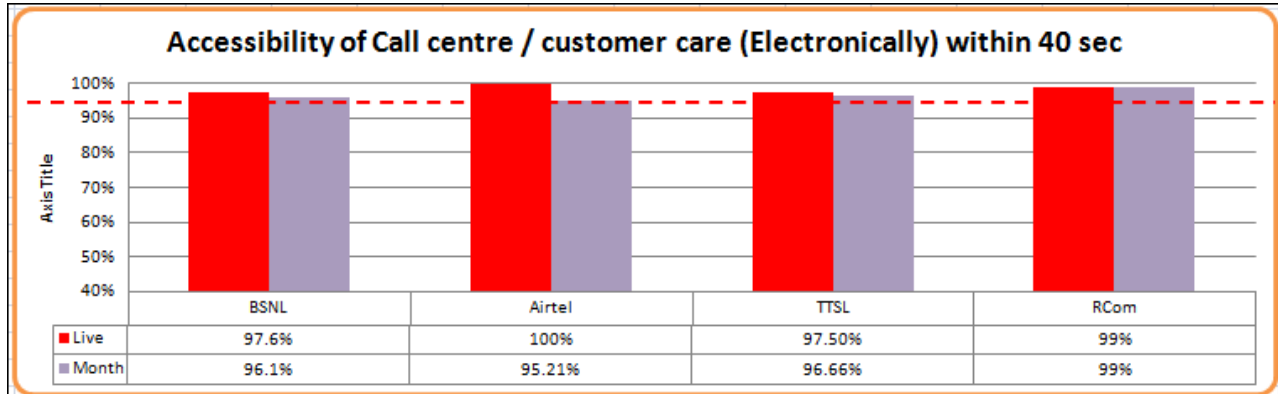
POI Congestion: All the operators are complying with the TRAI benchmark (<= 0.5%) by having 0% Congestion in both live and one-month data verification except for BSNL with the value 1.31% in live data verification.



Response Time to Customer for Assistance:

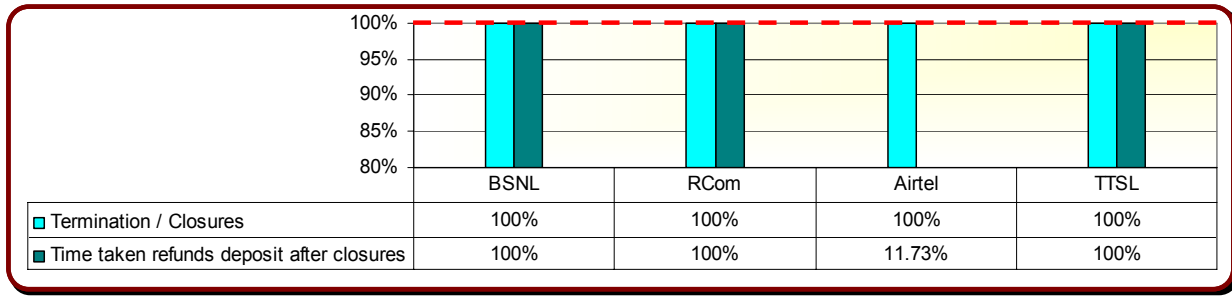
- **Accessibility of Call centre / customer care (Electronically) within 40 sec (>95%):** All the operators meeting the benchmark set by TRAI in both live and one-month data verification.

- **% age of calls answered by operator (Voice to Voice) within 60 sec (>90%):** All the operators meet the TRAI benchmark except BSNL and TTSL with the value of 83% and 89.57% respectively in both live and one- month data verification.



Customer Care Promptness in Attending Customer Request:

- Termination/Closure: - All the operators are meeting the TRAI benchmarks of 100% within ≤ 7 days for closure requests in one-month data verification.
- Time taken for refund of deposits after closure: The audit finding on ‘time taken for refund of deposit after closure’ is that all the operators are providing the refund to the customers within the benchmark.



3) Customer Care & Grievances Redressal

S.N.	Parameters	Airtel	BSNL	TTSL	RCom.
1	Total no of complaints received in the call centre (Tech+ Non Tech)	2825	960	72	0
3	Nodal Officer				
3.1	Total no of complaints received by the nodal officers	35	804	0	0
3.2	Percentage of complaints with reference to total no of complaints received at the call centre	1%	83.75%	0%	0%
4	Appellate Authority				
4.1	Total no of appeals received by the appellate authority	0	1	0	0
4.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	0%	0.10%	0%	0%

Note: It is found that there are many instances where customers directly approach to Nodal Officer without approaching to Call Center for redressal. Similarly there are many instances where customers directly approach to Appellate Authority without approaching to Nodal Officer for their grievances redressal.

- (4) **Live calling to Call centre:** Fifty nos. of calls were made in Ambala in each half and below given no. of calls got connected to the call centre within 60 Secs (Voice to Voice).

	OPERATORS NAME			
	BSNL	Airtel	TTSL	RCom
1ST HALF (10AM TO 01 PM)	47	47	44	46
2ND HALF (04PM TO 07 PM)	35.00	43.00	39.00	40.00
In % age	82.00	90.00	83.00	86.00

(5) Level 1 Calling:

Level 1 calling such as calling at emergency no. (Police, Fire, Hospital), Railway enquiry system etc were made in few nos. so as to check the service of such short codes. In Ambala it was found to be functional.

6. Critical Analysis

The parameter wise key takeouts for the Basic (Wireline) Service providers for the Haryana Circle are as under:-

Fault incidence: All operators are meeting the benchmark.

Fault Repair (Urban Area): All the operators are meeting the benchmarks set by TRAI for the parameter faults repair by the next working day, fault repair within 3 working days. For the parameter Fault repair by next working day and within 5 working days (Rural & Hilly Area) all the operators are meeting the benchmark. For the parameter Mean time to Repair (MTTR) all the operators are meeting the benchmark.

Rent Rebate: All the operators are providing Rebate except for TTSL and RCOM. having no rebate cases in the month of audit. Airtel is having only 7 rebate cases for 7 days and 1 case for 15 days in one month data category. For BSNL rebate cases are 0, 9 and 135 respectively for each type of rebate cases.

Call Completion Rate (CCR): All the service providers are found to be meeting TRAI benchmark of $\geq 55\%$ for the parameters Call Completion Rate (CCR) and $\geq 75\%$ and Answer to Seizure Ratio in both live and one-month data verification.

Metering and billing credibility: All the operators are complying the benchmark of less than 0.1% billing complaints over the total number of bills issued except Airtel is just meet the benchmark with the value of 0.1%.

% of Billing complaints Resolved Within 4 Weeks: As per the findings for one-month data audit, all the operators were found 100% resolution of complain within 4 weeks except BSNL with the value of 90%.

Period of All refunds/Payments from the date of resolution within 1 Week: As per the findings for one-month data audit, all the operators were found 100% refunds from the date of resolution within 1 week except Airtel with the value of 8%.

POI Congestion: All the operators are meeting the benchmarks in POI Congestion set by TRAI ($< 0.5\%$) in both live and one- month data verification except BSNL with the value of 1.31% in live data verification.

Response Time to Customer for Assistance:

(i) Accessibility of Call Centre/ Customer care within 40 seconds (Electronically): For accessibility of call centre i.e. call answered electronic through IVR menu parameter all the operators are meeting the benchmarks of $\geq 95\%$ in both live and one- month data verification.

(ii) % of Call answered by operators within 60 seconds (Voice to Voice): For %age of calls answered by operators within 60 Seconds parameters, all the operators are meeting the benchmark of 90% fixed by TRAI except BSNL and TTSL with the value of 83% and 89.57% respectively in both live and one- month data verification.

Customer care (Promptness of attending customer request):

(i) Termination/Closure: - All the operators are meeting the TRAI benchmarks of 100% within ≤ 7 days for closure requests.

(ii) Time taken for refund of deposits after closure: The audit finding on 'time taken for refund of deposit after closure' is that all the operators are providing the refund to the customers within the benchmark.

B) Compliance Report (Status of service providers with respect to the QoS)

It can be seen from the table and graphical method that in both cases of live performance and month data verification there is consistency in the parameters. Also for each parameter trend's can be analysis comparing both type of data. This may help out the operators in making decision in view of their network performance so as to give customer satisfaction to its highest level, thus helping out TRAI to achieve its goal.

Observation & Findings for the Live and One-Month data measurement for Basic Service (Wireline) are as given below:

AIRTEL

Under the Network Section, both the network parameters of Airtel are meeting the benchmark in both live and one-month data verification for Call Completion Ratio and POI congestion respectively within the local network.

Airtel is also meeting all the benchmark except for parameters Disputed Bills over bills issued, Period of all refunds/payments from the date of "resolution of complaints within one week's" and "Time taken for refunds of deposit after closures within 60 days" with the value of 0.01%, 8% & 11.73% respectively.

BSNL

BSNL is also meeting the benchmark except for parameters "% of billing complaints resolved within 4 weeks" and "% age of calls answered by operator (voice to voice) within 60 seconds" with the value of 90% & 83% respectively.

Under the Network Section, it is found that BSNL is not meeting the benchmark for the parameter POI Congestion with the value of 1.31% in live data verification.

TTSL

In the Network Section, both of the network parameters of TTSL are meeting the benchmark in both live and one-month data verification for Call Completion Ratio and POI congestion respectively within the local network.

TTSL is also meeting the benchmarks except for parameter "%age Calls answered Voice to Voice within 60 Seconds" with the value of 89.87% in one-month data verification.

RCom

Reliance is meeting the benchmark in both live and one-month data verification

In the Network Section, both of the network parameters of Reliance are meeting the benchmark in both live and one-month data verification for Call Completion Ratio and POI congestion respectively within the local network. Please note that Reliance has provided ASR (Answer to Seizure ratio) value instead of CCR (call completion ratio).

III. Broadband Service Providers

1. 3 days live and One month audit comparative table (Jan 2011 – March 2011)

S/N	Parameters	Benchm arks	Audit	BSNL	Airtel	TCISL	RCom	Hathway	Yutele	Sify
1	Service Provisioning/Activation Time									
1.1	100% cases in 15 days (subject to technical feasibility)	<15 days	Month	100%	100%	100%	100%	100%	100%	100%
1.2	In all cases where payment towards installation charge & SD is taken and the Broadband connection is not provided within 15 working days	credit @ Rs.10/ per day.		100%	100%	100%	100%	100%	100%	100%
2	Faults Repair/Restoraion Time									
	By next working day	>90%	Month	95.41%	99.56%	95.03%	100%	No Fault	97.14%	81.82%
	within 3 working day	≥99%		100%	100%	99.29%	100%	No Fault	99.29%	100%
2.1	Rebate									
	Faults Pending for > 3 working days and < 7 working days: (Rebate equivalent to 7 days of minimum monthly charge or equivalent usage allowance)		Month	0	14	284	0	0	3	2
	Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)			0	14	22	0	0	1	0
	Faults Pending for > 15 working days:(Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)			0	0	7	0	0	0	0

S/N	Parameters	Benchm arks	Audit	BSNL	Airtel	TCISL	RCom	Hathway	Yutele	Sify
3	Billing Performance									
	Billing complaints per 100 bills issued	<2%	Month	0.002%	0.28%	0.57%	0%	0%	0.61%	Prepaid Module
	%age of complaints resolved within 4 weeks	100%		100%	100%	100%	100%	100%	100%	
	Time taken for refund of deposits after closure (within 60 days)	100%		100%	100%	100%	100%	100%	100%	
4	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)									
	within 60 sec	>60%	Live	83%	75%	75%	100%	100%	89%	100%
			Month	86%	67.99%	97.94%	96.26%	90.67%	76%	90.63%
	within 90 sec	>80%	Live	90%	100%	100%	100%	100%	96%	100%
			Month	92%	72.95%	98.79%	97.23%	93.67%	81%	100%
5	Bandwidth Utilization/ Throughput: (If on any link(s) / route bandwidth utilization exceeds 90%, then network is considered to have congestion. For this additional provisioning of Bandwidth on immediate basis, but not later than one month, is mandated.) < 80% link(s) / route bandwidth utilization during peak hours (TCBH).									
5.1	POP to ISP Gateway Node [Intra-network] Link(s)	< 80%	Live	43%	63.99%	31.20%	34.55%	69.68%	1.61%	35.00%
			Month	NP	65.37%	30.90%	14.64%	65.2%	0.89%	35.00%
5.2	ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity	< 80%	Live	82.63%	NA	46.91%	NA	55.51%	NA	67%
			Month	81.09%	NA	43.03%	NA	85%	NA	67%
5.3	Broadband Connection Speed (download) - from ISP Node to User	> 80%	Live	97.46%	90.42%	96.35%	100%	93.23%	34.7%	59.17%
			Month	97.46%	99.06%	93.75%	NP	83%	76%	58.54%
6	Service Availability/Uptime (for all users)									
	Service Availability(%)	>98%	Month	99.62%	99.99%	100%	99.99%	98.37%	97%	100%

S/N	Parameters	Benchm arks	Audit	BSNL	Airtel	TCISL	RCom	Hathway	Yutele	Sify
7	Packet loss									
	% of Packet loss	<1%	Live	0.2%	0%	0%	0.07%	0%	0%	0%
			Month	0.16%	0%	0%	0.11%	0%	0%	0%
8	Network latency (for wired broadband access)									
8.1	User reference point at POP/ISP Gateway node to IGSP/NIXI	<120 ms	Live	17.57ms	35 ms	22 ms	NA	11.6 ms	2 ms	66 ms
			Month	19 ms	35 ms	23.28 ms	98.6 ms	8.7 ms	17 ms	62 ms
8.2	User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)	<350 ms	Live	211.5 ms	321 ms	286 ms	56.06 ms	287.7 ms	274 ms	335 ms
			Month	231 ms	309 ms	284.9 ms	84.8 ms	296 ms	264 ms	285 ms
8.3	User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)** See note below	<800 ms		NA	NA	NA	NA	NA	NA	NA

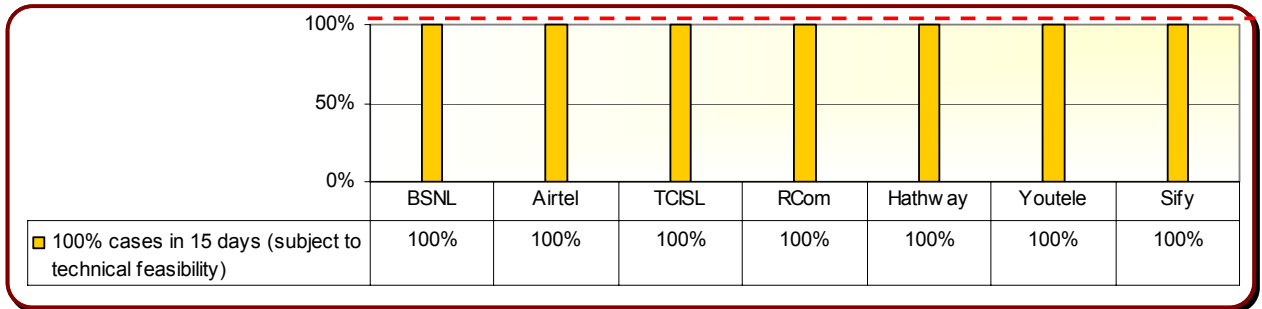
NA – Not Applicable, **NP** – Not Provided.

Note:

- For "User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)", none of the operators having satellite connectivity.
- For "Broadband Connection Speed (download) - from ISP Node to User", You tele & Sify are not meeting benchmark in live & month audit.
- For "ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity", BSNL is not meeting benchmark in live & month audit both and Hathway not meeting in month audit.
- BSNL has not provided data for the benchmark of "POP to ISP Gateway Node [Intra-network] Link(s)" in case of month audit.
- For "Response time to the customer for assistance % age of calls answered by operator (Voice to Voice) ",BSNL did not provide data for live audit in both parameters & Airtel not meeting the benchmark for month audit in parameter of with in 90 sec
- Sify is not meeting the benchmark for faults repair/restoration time (by next working day).

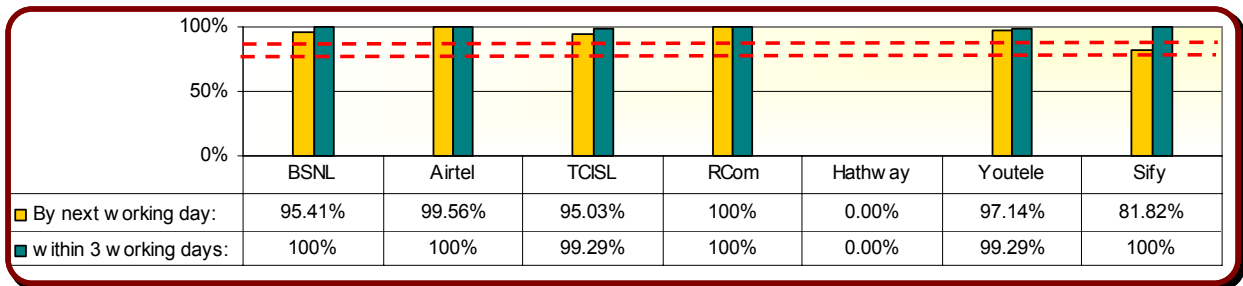
2. Performance (Graphical representation)

Service Provisioning /Activation Time: (Should be 100%): All the operators are complying with the TRAI benchmark of 100%

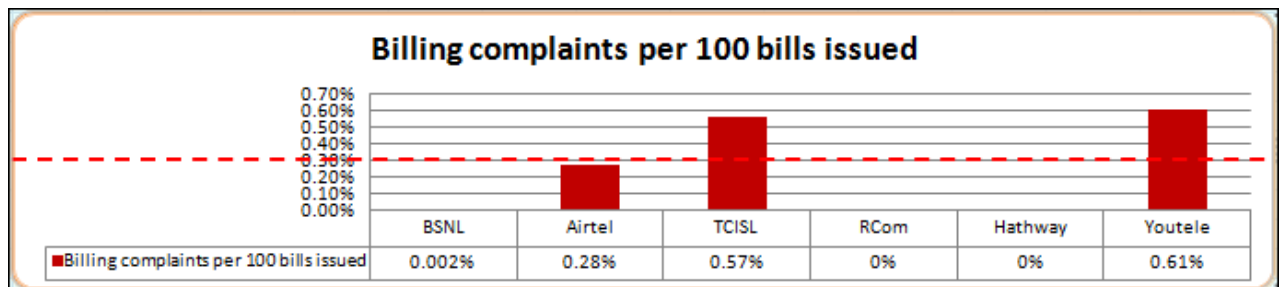


Fault Repair / Restoration Time:

- **By next working day (>90%):** All the operators are complying with the TRAI benchmark of 90% except Sify for parameter by next working day with the value of 81.82% in one-month data verification
- **Within 3 working days (>99%):** All the operators are complying with the TRAI benchmark of 99%.
- **Rebate:** All the operators are giving rebate to the eligible customers.



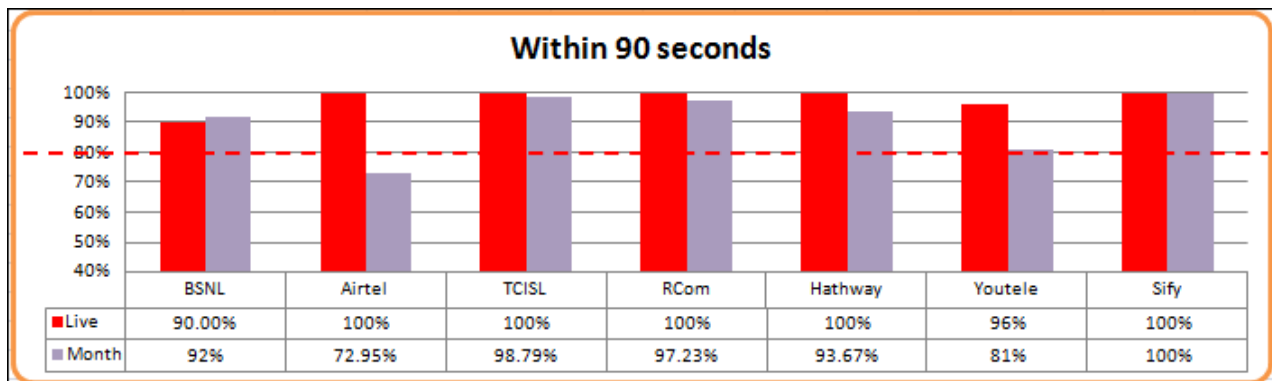
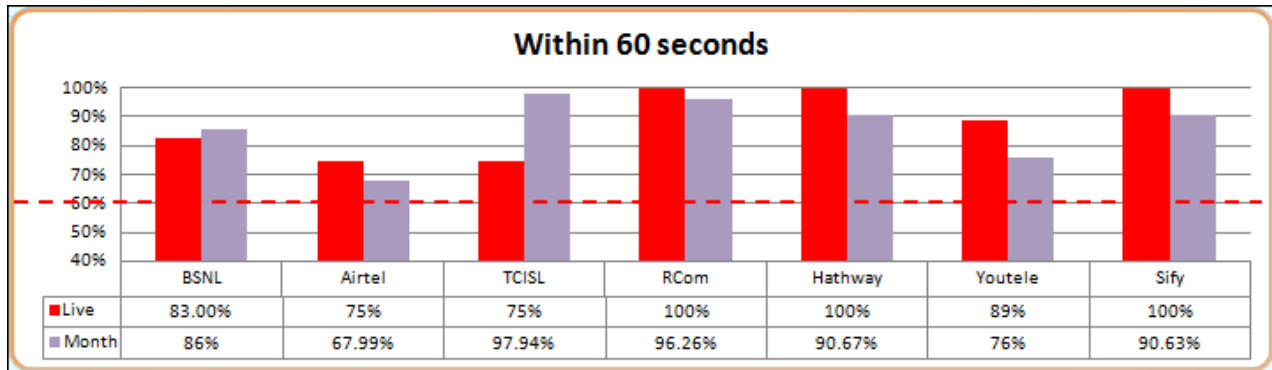
Billing Performance: (Benchmark <2%): All the operators are complying with the TRAI standards, Except Sify which has only prepaid module.



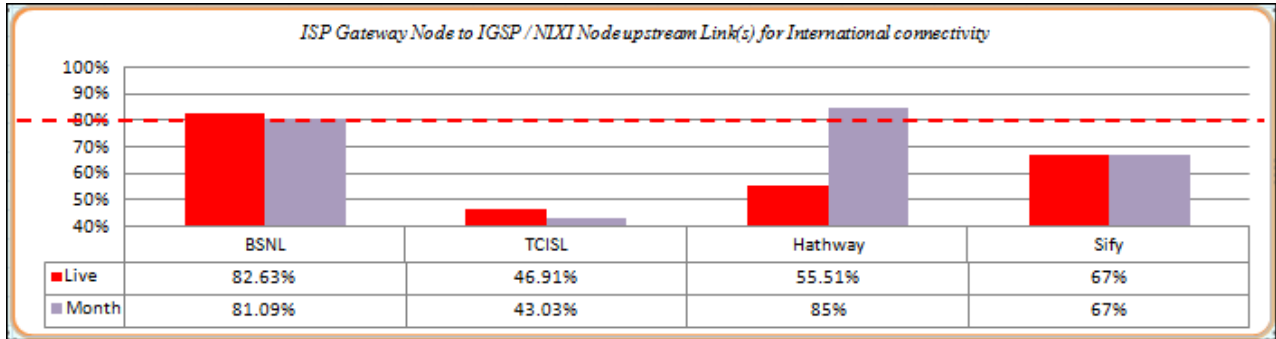
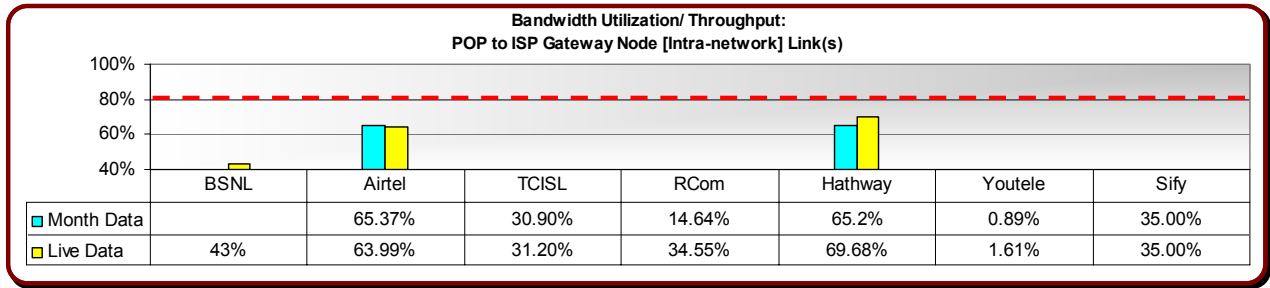
Response time to the customer for assistance:

% age of calls answered by operator (Voice to Voice)

- **Within 60 seconds (>60%):** All the operators are meeting the benchmark in both live and one-month data verification.
- **Within 90 seconds (>80%):** All the operators are meeting the benchmark except Airtel with the value of 72.95% in one-month data verification.

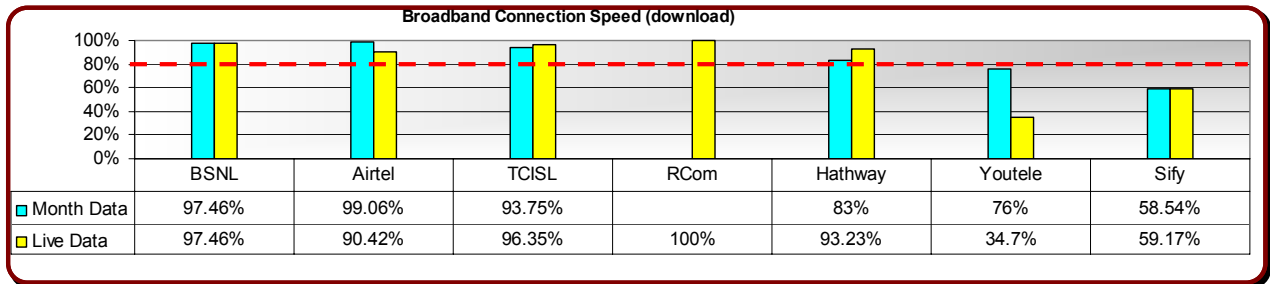
**Bandwidth Utilization/ Throughput:**

- **POP to ISP Gateway Node [Intra-network] Link(s): (Benchmark <80%):** All the operators are meeting the benchmarks in both live and one-month data verification.
- **ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity: (Benchmark <80%):** All the operators are meeting the benchmarks in both live and one-month data verification except for BSNL with the value of 82.63% and 81.09% in both live and one-month data verification respectively and for Hathway with the value of 85% in one-month data verification .

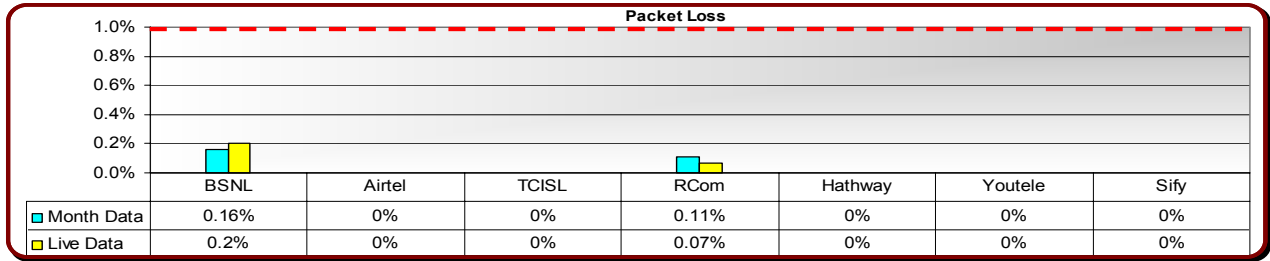


Broadband Connection Speed (download) (>80%): All the operators are meeting the TRAI benchmark of greater than 80% connection in both live and one-month data verification except SIFY with the value of 59.17% and 58.54% in both live and one-month data verifications respectively.

Service Availability / Uptime (for all users) (better than 98%): All the operators are meeting the TRAI benchmark of greater than 98% during one-month data verification except You Telecom with the value of 97%.

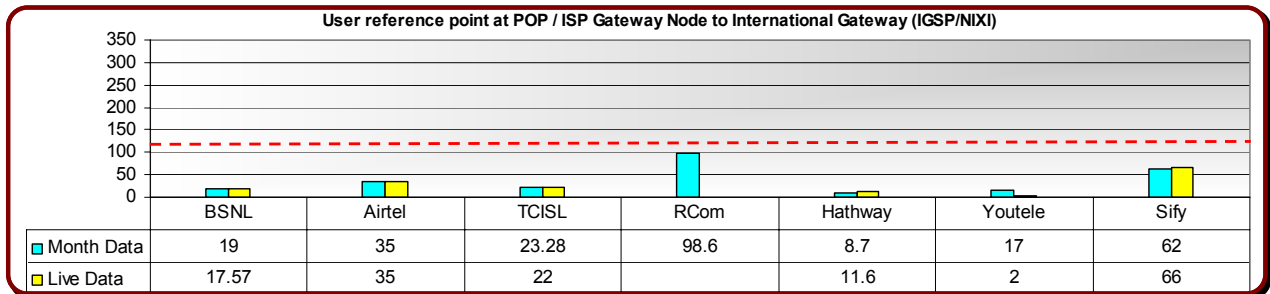


Packet Loss (Should be less than 1%): All operators are meeting the benchmark in both live and one-month data verification.

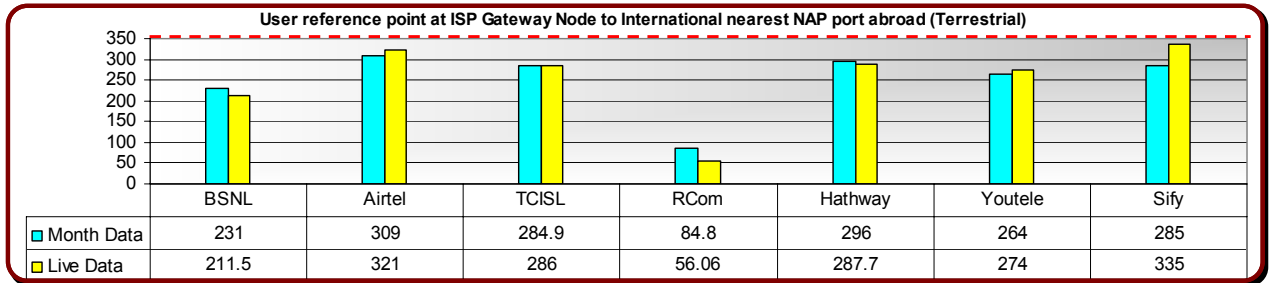


Network Latency:

- **User reference point at POP/ISP gateway node to international gateway (IGSP/NIXI) <120 ms:** All operators are meeting the benchmark in both live and one-month data verification.



- **User reference point at ISP gateway node to international nearest NAP Port abroad (Terrestrial) <350 ms:** All operators are meeting the benchmark in both live and one-month data verification.



- **User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite) <850 ms:**
The Satellite link does not exist with any of the operator, hence the parameter “User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)” is not applicable to the operators.

(5) Customer Care & Grievances Redressal

S.N.	Parameters	BSNL	Hathway	Yutele	Sify	Airtel	TCISL	RCom.
1	Call Centre							
1.1	Total no of complaints received in the call centre	3003	7234	560	2303	9693	146	0
1.2	Complaints per 100 customers per months	0.00%	0%	0.61%	0%	0.28%	0.57%	0%
2	Nodal Officer							
2.1	Total no of complaints received by the nodal officers	0	5	9	4	0	1	0
2.2	Percentage of complaints with reference to total no of complaints received at the call centre	0%	0.06%	1.61%	0%	0%	0.01%	0%
3	Appellate Authority							
3.1	Total no of appeals received by the appellate authority	0	17	5	2	13	0	0
3.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	0%	0.23%	0.89%	0.09%	0.13%	0%	0%

Note:

It is found that there are many instances where customers directly approach to Nodal Officer without approaching to Call Center for redressal. Similarly there are many instances where customers directly approach to Appellate Authority without approaching to Nodal Officer for their grievances redressal.

(2) Live calling to Call centre:

Fifty nos. of calls were made in Ambala in each half and below given no. of calls got connected to the call centre within 60 Secs (Voice to Voice).

	OPERATORS NAME						
	BSNL	Airtel	TCISL	RCom	Hathway	You Tele	Sify
1ST HALF (10AM TO 01 PM)	35	34	32	44	43	37	47
2ND HALF (04PM TO 07 PM)	40	47	44	40	46	40	45
In % age	75.00	81.00	76.00	84.00	89.00	77.00	92.00

3. Critical Analysis

Critical findings and Key take outs for Broadband service are as follows:

- ◆ Reliance and Sify are submitting the PMR on all India bases; hence data is verified on All India basis not for particularly for Haryana Circle.
- ◆ The Satellite link do not exist with any of the Operators, hence the parameter “User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)” is not applicable to the Operator.

The key conclusions (Parameter wise) emerging out from the Audit exercise of Broadband service providers are mentioned below

Service provisioning/Activation time:

All the service providers are performing well and meeting the benchmarks for service provisioning/Activation time.

Fault Repair/Restoration time & Rebate:

All the operators are meeting benchmark of more than 90% except Sify for parameter “by next working day” with the value of 81.82% in one-month data verification. All the service providers are found to provide Rebate as per the guide lines set by TRAI.

Billing performance:

All the operators are meeting the benchmark of Less than 2% for billing complaints. Also all the operators are meeting the benchmark of “100% cases 4 weeks” for billing complaint resolution for on-month data verifications. Also all the operators are providing the refund of deposits after closure as per the benchmark of “100% cases within 60 days” .Sify claims that all its broadband customers are under in prepaid module and hence there are no bills issued.

Customer Care/Helpline Assessment:

All the service providers are meeting the benchmark for the parameters response time to the customer for assistance (Voice to Voice) within 60 and 90 seconds in both live and one-month data verifications except Airtel with the value of 72.95% (within 90 sec) in one-month data Verification.

Bandwidth Utilization:

POP to ISP Gateway Node (intra-network) links: All the operators are meeting all the benchmark during measurements of both live & one-month data Verification.

ISP Gateway Node to IGSP/ NIXI Node upstream links for International connectivity: All the operators are meeting all the benchmark during measurements of both live & one-month data Verification except BSNL with the value of 82.63% and 81.09% in both live and one-month data verifications respectively.

Broadband Connection speed:

All the operators are meeting the TRAI benchmark of greater than 80% connection speed during measurements of both live & one-month data Verification except SIFY with the value of 59.17% and 58.54% in both live and one-month data verifications respectively.

Service Availability/Uptime:

All the operators are meeting the TRAI benchmark of greater than 98% during one-month data verification except You Telecom with the value of 97%.

Packet Loss:

All the operators are meeting the TRAI benchmark of less than 1% during measurements of both live and one-month data verification.

Network Latency:

User reference point at POP/ISP gateway node to international gateway (IGSP/NIXI) <120 ms: All operators are meeting the benchmark in both live and one-month data verification

User reference point at ISP gateway node to international nearest NAP Port abroad (Terrestrial) <350 ms: All operators are meeting the benchmark in both live and one-month data verification.

User reference point at ISP gateway node to international nearest NAP Port abroad (Terrestrial) <850 ms: The Satellite link does not exist with any of the operators, hence the parameter "User reference point at ISP gateway Node to International nearest NAP port abroad (Satellite)" is not applicable to all the operators.

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

BSNL

BSNL is meeting the benchmarks for all the parameters in both live and one-month data verification except for parameter "ISP Gateway nodes to IGSP/NIXI node upstream links for international connectivity" with a value of 84.15% and 81.09% respectively in both live and one-month data verification.

AIRTEL

Airtel is meeting all the benchmark in both live and one-month data verification except for parameter Response time to the customer for assistance "% age of calls answered by operator (Voice to Voice) within 90 sec" with a value of 72.95% in one-data verification.

TCISL

TCISL is meeting the benchmarks for all the parameters in both live and one-month data verification.

RCom

Reliance is meeting the benchmarks for all the parameters in both live and one-month data verification.

HATHWAY

Hathway is meeting the benchmarks for all the parameters in both live and one-month data verification.

YOU TELECOM

You telecom is meeting the benchmarks for all the parameters in both live and one-month data verification.

SIFY

Sify is meeting benchmarks for all the parameters except for parameter "Broadband Connection Speed (download) - from ISP Node to User" with the value of 59.17% and 58.54% in both live and one-month data verification respectively.

Note:

For all the operators the parameter User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite) is not applicable because they do not have any NAP (Satellite) connectivity.