

REPORT

ON

AUDIT & ASSESSMENT OF QUALITY OF SERVICE

OF

CELLULAR MOBILE TELEPHONE SERVICE

WIRELINE BASIC SERVICE

&

BROADBAND SERVICE

FOR

NORTH ZONE – HIMACHAL PRADESH CIRCLE

Report Period: July 2011 – Sept 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.
- vii) Emergency No. (Level 1) calling done.

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

Systems audited:-

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

Facilities audited:-

1. Billing documents.
2. Customer Care records.

Field data collections carried out:-

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

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

- ✓ TCIL auditors visited all the NSS (Network Sub System) and BSS (Base-station Sub System) to check data for all the operators in their respective service area.
- ✓ All the NSS and BSS data for the relevant details were collected either directly from the centralized NOC or through a remote access to the NOC.
- ✓ The Radio parameters were audited/ verified from the data collected from OMC-R (Operation and Maintenance Center – Radio, as part of BSS data).
- ✓ The Drive test was conducted in high, low and medium dense areas including highways, commercial complex and residential areas and special attention was paid for the areas for which TRAI has received complaints.
- ✓ The POI and other network related parameters were audited/ verified from the data collected from the OMC-S (Operation and Maintenance Center – Switch as part of NSS data).
- ✓ The data related to Billing and Customer care was checked for the previous month and verified with the customers by calling them on random basis. The process of registration and handling of the complaints was also studied for the various operators. Call centre number were called for measuring the efficiency of the call centre.
- ✓ The inter operator call assessment test was carried out during the time period as is specified in the tender document. TCBH (Time Consistent Busy Hour) is taken after observation of the traffic consistently for 3 days prior to the audit activity.
- ✓ Data has been collected for busy hour of network in case of live assessment & month of audit for all service providers & verified that service providers are providing busy hour data only for QoS service. We found that TCBH hour is matching with network busy hour as provided by service providers for HP 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.
- ✓ For Broadband Services audit was conducted and relevant details from the centralized NOC or through a remote access to the NOC were collected. Network parameters were 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 HP Circle in 3rd quarter (July – Sept 2011). The primary data collection and verification of records (PMR data verification – quarterly) maintained by various operators was undertaken during the period Jan – Mar 2011.

Following are the various operators covered in HP 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	July	21 Hrs - 22 Hrs
2	Airtel Ltd	July	20 Hrs - 21 Hrs
3	Idea	July	20 Hrs - 21 Hrs
4	Stel	July	21 Hrs - 22 Hrs
5	BSNL	July	20 Hrs – 21 Hrs
6	RTL	July	19 Hrs - 20 Hrs
7	TTSL	July	19 Hrs- 20Hrs
8	Videocon	July	21 Hrs- 22Hrs
9	Vodafone	July	21 Hrs - 22 Hrs
CDMA Operators			
10	Reliance Communication	July	20 Hrs - 21 Hrs
11	TTSL	July	19 Hrs - 20 Hrs

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

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	Idea	Stel	BSNL	Rcom GSM	TTSL GSM	Videoc on	Vodafon e	Rcom CDMA	Tata CDMA
S/N	Name of Parameter		GSM Operators							CDMA Operators			
(A)-1	Network Service Quality Parameter												
	BTS Accumulated Downtime	<=2%	0.00%	0%	0%	0.01%	0.03%	0%	ICR WITH AIRCEL	0.00%	0.00%	0.11%	0.0%
	Worst affected BTS due to downtime	<=2%	0%	0.00%	0%	0%	0.21%	0%		0%	0%	0%	0%
1	Connection Establishment (Accessibility)												
	a) CSSR (Call Setup Success Rate)	>=95%	99.68%	99.66%	99.24%	99.93%	97.40%	99.56%		100.00%	99.55%	99.98%	99.25%
	b) SDCCH/PAGING congestion	<=1%	0.19%	0.10%	0.03%	0.01%	0.80%	0.01%		0.00%	0.06%	0.01%	0.00%
	c) TCH congestion	<=2%	0.13%	0.24%	0.73%	0.06%	1.80%	0.43%		0.00%	0.39%	0.02%	0.75%
2	Connection maintenance (retainability)												
	a) CDR	<=2%	1.19%	1.05%	1.78%	0.82%	1.89%	0.42%		0.60%	0.94%	0.34%	0.34%
	b) Worst affected cells>3% TCH drop	<=3%	17.05%	2.83%	2.50%	4.76%	4.17%	0.50%		0.00%	2.72%	0.44%	1.73%
	c) Good voice quality	>=95%	94.4%	98.5%	95.7%	96.19%	96.3%	97.61%		96.89%	97.21%	NA	NA
3	No of POI having > 0.5% congestion	>=0.5%	0	0	0	0	1	0	0	0	0	0	
4	Response time to customers for assistance												
	a) Accessibility of call centre/Customer Care	>=95%	100%	NP	100%	100%	100%	95%	100%	100.0%	100%	100%	100%
	b) % call answered by operators(voice to voice) within 60 sec.	>=90%	97.03%	81.25%	96.65%	100%	95.67%	99.43%	96.37%	96.48%	98.49%	94.05%	99.38%

NA: Not Applicable, NP: Data Not Provided,
ICR: INTER CIRCLE ROAMING, NOTE: TTSL
(GSM) is having ICR agreement with AIRCEL

From the 3 days live data assessment, it is found that all the operators are meeting the network parameters, except for Aircel, Stel & BSNL, for "Worst affected cells>3% TCH drop". Good voice quality is not met by Aircel. As far as POI is concerned, only BSNL is having 1 no of POI, which is beyond 0.5% congestion. Performance related to customer care data is found to be satisfactory for most of the operators. For "calls answered by operators (voice-to-voice)" Airtel is not meeting the parameter. In "accessibility of call centre" Parameter Airtel, has not provided the data. TTSL GSM is having an ICR agreement with Aircel.

One Month Data Audit		Bench- mark	Aircel	Airtel	Idea	Stel	BSNL	Rcom GSM	TTSL GSM	Videocon	Vodafone	Rcom CDMA	Tata CDMA
S/N	Name of Parameter		GSM Operators								CDMA Operators		
(A)	Network Service Quality Parameter												
1	Network Availability												
	a) BTS Accumulated Downtime	<=2%	0.04%	0.08%	0.23%	0.02%	1.86%	0.00%	ICR WITH AIRCEL	0.00%	0.00%	0.11%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	0.32%	0.44%	0.00%	1.33%	1.79%	0.00%		0.00%	0.00%	0.00%	0.00%
2	Connection Establishment (Accessibility)												
	a) CSSR (Call Setup Success Rate)	>=95%	99.68%	99.66%	98.04%	99.83%	97.30%	99.76%		100%	99.38%	99.98%	99.88%
	b) SDCCH/PAGING congestion	<=1%	0.08%	0.10%	0.59%	0.03%	0.80%	0.01%		0.00%	0.13%	0.00%	0.00%
	c) TCH congestion	<=2%	0.24%	0.24%	1.37%	0.14%	1.90%	0.23%		0.00%	0.49%	0.02%	0.12%
3	Connection maintenance (retain ability)												
	a) CDR	<=2%	1.11%	1.05%	1.92%	0.74%	1.90%	0.42%		0.12%	0.96%	0.38%	0.31%
	b) Worst affected cells>3% TCH drop	<=3%	15.09%	2.83%	2.88%	4.57%	4.80%	0.50%		0.00%	2.76%	0.44%	1.56%
	c) Good voice quality	>=95%	94.65%	98.61%	95.74%	96.37%	96.44%	97.62%		98.93%	97.23%	NA	NA
4	No of POI having > 0.5% congestion	>=0.5%	0	0	0	0	2	0	0	0	0	0	
(B)	Customer Service Quality Parameters												
5	Metering/billing credibility-Post paid	<= 0.1%	0.00%	0.01%	0.00%	NA	0.07%	0.05%	0.09%	NA	0.00%	0.07%	0.19%
6	Metering /billing credibility-Pre paid	<= 0.1%	0.02%	0.00%	0.00%	0.03%	0.01%	0.03%	0.02%	0.02%	0.02%	0.01%	0.07%
7	Resolution of billing/ charging complaints	100% within 4 weeks	100%	100%	100%	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%
8	Response time to customers for assistance												
	a) Accessibility of call centre/Customer Care	>=95%	100%	NP	100%	96%	100%	98%	100%	100%	100%	99.42%	100%
	b) % call answered by operators(voice to voice) within 60 sec.	>=90%	91.42%	64.44%	88.06%	86.00%	92.38%	96.41%	99.15%	100%	94.75%	95.78%	97.83%
9	Termination/closure of service	<=7days	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%
10	Time taken for refunds of deposits after closures.	100% within 60 days	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%

NA: Not Applicable, NP: Data Not Provided ;

Analysis:--

- From the month data assessment, it is found that most of the operators are meeting the network parameters, except Aircel(15.09%) , STel (4.57%) , BSNL(4.80%) which are not meeting the benchmark for “Worst affected cells>3% TCH drop”.
- For Good voice quality parameter only Aircel (94.65%) is not meeting the benchmark In POI, only BSNL is having 2 nos of POI, which is having greater then 0.5% congestion.
- Under Metering & Billing Section for Post-Paid services, all operators are meeting the benchmark, except TTSL CDMA (0.19%).
- Performance related to customer care data is found to be satisfactory for most of the operators, except Airtel (64.44%), Idea (88.06%) & Stel (86%) for “Calls answered by operators (voice-to-voice)”parameter.

Operator-Assisted Drive Test

The Operator Assisted Drive Test was conducted at HP Circle for all the operators. Route covered was about around 35-50Km depending on city areas within the speed limit of 30Km/hr. The cities covered were Shimla, Solan and Manali. In all the cities, zones were selected for covering different density areas (High, Medium & Low dense areas).

SN	Parameter	City Name	Aircel	Airtel	Idea	BSNL	Rcom GSM	Stel	Vodafone	Rcom CDMA	Tata CDMA
			GSM Operators						CDMA OPERATORS		
1	Call Attempts	Shimla	74	65	72	55	66	65	75	64	72
		Solan	48	35	38	66	36	31	32	34	33
		Manali	31	37	32	41	32	32	32	31	31
2	Blocked Call Rate (<=3%)	Shimla	4.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Solan	0.00%	0.00%	0.00%	4.54%	0.00%	0.00%	0.00%	0.00%	0.00%
		Manali	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Shimla	0.00%	0.00%	0.00%	3.63%	0.00%	0.00%	0.00%	0.00%	0.00%
		Solan	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Manali	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
4	Percentage of connections with good voice quality (>=95%) (i) 0-4 (w/o frequency hopping)	Shimla								99%	99.28%
		Solan								98%	99.64%
		Manali								100%	100%
	(ii) 0-5 (with frequency hopping)	Shimla	96.90%	96%	98.20%	95.00%	97.00%	97.10%	98.80%		
		Solan	95%	96%	96.20%	95.10%	96.00%	96.90%	98.20%		
	Manali	99%	98%	98.80%	95.10%	100%	99.20%	98.20%			
5	Service Coverage In door (>= -75dBm)	Shimla	91%	85%	44%	94%	84%	94%	69%	75%	99%
		Solan	92%	87%	64%	94%	89%	88%	88%	64%	100%
		Manali	95%	94%	30%	95%	71%	85%	75%	64%	98%
	In-vehicle (>= -85dBm)	Shimla	98%	93%	89%	100%	98%	99.70%	96%	95%	100%
		Solan	98%	99%	94%	100%	100%	98%	99%	96%	100%
		Manali	100%	100%	95%	100%	97%	98.72%	97%	97%	100%
	Outdoor- in city (>= -95dBm)	Shimla	100%	100%	100%	100%	99%	100%	100%	100%	100%
		Solan	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Manali	100%	100%	100%	100%	100%	100%	100%	100%	100%	
6	Call Setup Success Rate (>=95%)	Shimla	95.95%	100%	100%	100%	100%	100%	100%	100%	100%
		Solan	100%	100%	100%	95.46%	100%	100%	100%	100%	100%
		Manali	100%	100%	100%	100%	100%	100%	100%	100%	100%

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

- Blocked Call Rate benchmark is not met by Aircel in Shimla and BSNL in Solan.
- Drop Call Rate is not met by BSNL in Shimla only, rest all are satisfying the benchmark .

NOTE:TTSL (GSM) & VIDEOCON IS ICR WITH AIRCEL

Independent Drive Test----- submitted as separate report.

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

S/N	Name of Parameter	Bench mark	BSNL	RCOM
1	Network Parameters			
a	Call Completion Rate	>= 55% (CCR) & >=75% (ASR)	49.62%(CCR)	81.5%(ASR)
b	No of POI having >=0.5%	>= 0.5%	0	0
2	Response Time to the customer for assistance			
a	Accessibility of Call Centre/Customer Care			
	within 40 seconds	>= 95%	39.88%	96.31%
b	% age of calls answered by operator(voice to voice):			
	within 60 seconds	>= 90%	84.57%	92.87%
<p>There is Only 2 Operators in the HP circle, and it was observed that Rcom is meeting all the benchmarks for all the parameters, but BSNL is not meeting in this regards except for No of PoI parameter. Where there is no congestion found on any network. For customer care parameters, accessibility of call centre of BSNL is not meeting the benchmark.</p>				

One Month Data Audit (Basic Service):

S/N	Name of Parameter	Bench mark	BSNL	RCOM
1	(No. of faults/100 subscribers /month)	< 5%	4.94%	0%
2	Fault repair by next working day(Urban Area)			
a	By next working day	>90%	96%	0%
b	Within 3 days	100%	100%	0%
3	Fault repair by next working day(Rural & hilly Area)			
a	By next working day	>90%	95.95%	NA
b	Within 5 days	100%	100%	NA
4	Rent rebate			
a	Fault pending > 3 days & <7 days	Rebate for 7 days	0	0
b	Fault Pending > 7 days & < 15 days	Rebate for 15 days	0	0
c	Fault pending > 15 days	Rebate for one month	0	0
5	Mean time to Repair(MTTR)	<= 8 Hrs	6.82	0
6	Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)	> 55%(CCR) & > 75%(ASR)	49.06% (CCR)	80.3%(ASR)
7	Metering and billing credibility(post paid)			
a	Disputed Bills over bills issued	< 0.1%	0.08%	NA
8	% of billing complaints resolved within 4 weeks	Within 4 weeks	100%	NA
a	Period of refunds after resolution of complaints within 1 weeks	Within 1 weeks	100%	NA
9	No of POI having >0.5%	>= 0.5%	0	0
10	Response Time to customer for assistance			
a	Accessibility of Call centre within 40 sec.	>= 95%	86.22%	96.00%
b	% age of calls answered by operator(voice to voice) within 60 sec.	>= 90%	85.80%	90.00%
11	Customer care(promptness in attending to customers request)			
a	Termination / Closures	<= 7 Days	100%	No cases
b	Time taken refunds deposit after closures	100% within 60 days	100%	No cases

From the Month data table, it can be observed that both the (Basic service)operators are meeting the benchmark, except for some BM were BSNL is not meeting the benchmark in CCR, Customer care part. For customer /closures cases, Rcom has not reported any Termination cases.

II. Findings from Quality of Service Audit (Operator wise for each parameter)**(C) Broadband Service Providers****3 days Live Data Audit:**

S/N	Name of Parameter	Bench mark	BSNL	TCISL	RCOM
1	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)				
	Within 60 seconds	>=60%	93%	95%	93%
	Within 90 seconds	>=80%	95%	100%	94%
2.	Bandwidth Utilization/ Throughput:	>=80%			
	i) POP to ISP Gateway Node [Intra-network] Link(s)	<80%	75.00%	28.00%	29.00%
	ii) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity		76.00%	31.00%	NA
3.	Broadband Connection Speed (download)	>=80%	83.50%	90%	98%
4.	Packet Loss	<=1%	0%	0%	0%
5.	Network Latency (for wired broadband access)				
	Network Latency at POP / ISP Gateway Node to International Gateway (IGSP/NIXI)	<=120ms	4	21.33	87
	Network Latency at ISP Gateway Node to International nearest NAP port abroad	<=350ms	231	276.33	176
	User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)	<=800ms	NA	NA	NA

NOTE: -- Only 3 operators are there in the broadband services in HP circle.

One Month Data Audit (Broadband):

S/N	Name of Parameter	Benchmark	BSNL	TCISL	RCOM
1	Service Provisioning /Activation Time				
	100% cases in 15 days (subject to technical feasibility)	< 15 days	100%	No Cases	No Cases
2.	Fault Repair / Restoration Time				
	By next working day:	>90%	95%	No Cases	No Cases
	within 3 working days:	>= 90%	99.50%	No Cases	No Cases
3..	Rebate:				
	Faults Pending for > 3 working days and < 7 working days:		0	0	0
	Faults Pending for > 7 working days and < 15 working days:		0	0	0
	Faults Pending for > 15 working days:		0	0	0
4..	Billing Performance				
	Billing complaints per 100 bills issued	<2%	0.01%	No Cases	No Cases
	%age of Billing Complaints resolved	100%	100%	No Cases	No Cases
	Time taken for refund of deposits after closure:	100%	100%	No Cases	No Cases
5.	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)				
	Within 60 seconds	>=60%	83%	83%	84%
	Within 90 seconds	>=80%	87%	85%	87%
6.	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).	>=80%			
	i) POP to ISP Gateway Node [Intra-network] Link(s)	<=80%	73%	29%	15%
	ii) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity	<=80%	74.37%	32%	NP
7..	Broadband Connection Speed	>=80%	85.5%	90.24%	99%
8..	Service Availability / Uptime (for all users)				
	Service Availability / Uptime	100% within 60 days	100%	100%	99.99%
9.	Packet Loss	<=1%	0%	0%	0%

S/N	Name of Parameter	Benchmark	BSNL	TCISL	RCOM
10..	Network Latency (for wired broadband access)				
	User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI)	<=120ms	21	22.7	88
	User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial)	<=350ms	227	273.03	216
	User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)	<=800ms	NA	NA	NA

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

- a) TCISL & RCOM has no cases of provisioning , fault & Billing in that month.
- b). None of the operators are having satellite connectivity

CHAPTER-3: AUDIT-PMR VERIFICATION (Jan 2011—Mar 2011)

I. Cellular Mobile Telephone Service

PMR		Bench- mark	Audit	Aircel	Airtel	Idea	Rcom GSM	STel	BSNL	Videocon	Vodafone	Rcom CDMA	Tata CDMA
S/ N	Name of Parameter												
(A)	Network Service Quality Parameter												
1	Network Availability												
	BTS Accumulated Downtime	<=2%	Reported	0.03%	0.03%	0.11%	0.16%	0.37%	1.94%	0.31%	0.02%	0.22%	0.00%
			Verified	0.03%	0.03%	0.11%	0.16%	0.37%	1.94%	0.31%	0.02%	0.22%	0.00%
	Worst affected BTSs due to downtime	<=2%	Reported	0.00%	0.00%	0.00%	1.04%	0.63%	1.87%	0.00%	0.00%	0.00%	0.00%
			Verified	0.00%	0.00%	0.00%	1.04%	0.63%	1.87%	0.00%	0.00%	0.00%	0.00%
2	Connection Establishment (Accessibility)												
	CSSR (Call Setup Success Rate)	>=95%	Reported	99.15%	99.12%	98.56%	97.40%	98.28%	95.30%	97.30%	99.50%	99.81%	99.84%
			Verified	99.15%	99.12%	98.56%	97.40%	98.28%	95.30%	97.30%	99.50%	99.81%	99.84%
	SDCCH/PAGING congestion	<=1%	Reported	0.41%	0.14%	0.26%	0.29%	0.04%	0.73%	0.00%	0.08%	0.00%	0.00%
			Verified	0.41%	0.14%	0.26%	0.29%	0.04%	0.73%	0.00%	0.08%	0.00%	0.00%
	TCH congestion	<=2%	Reported	0.49%	0.25%	0.82%	0.43%	0.16%	1.83%	1.51%	0.14%	0.27%	0.01%
			Verified	0.49%	0.25%	0.82%	0.43%	0.16%	1.83%	1.51%	0.14%	0.27%	0.01%
3	Connection maintenance (retain ability)												
	CDR	<=2%	Reported	1.11%	1.01%	1.65%	1.36%	0.75%	1.87%	0.31%	1.05%	0.84%	0.17%
			Verified	1.11%	1.01%	1.65%	1.36%	0.75%	1.87%	0.31%	1.05%	0.84%	0.17%
	Worst affected cells>3% TCH drop	<=5%	Reported	14.65%	3.42%	15.84%	1.56%	4.85%	4.83%	0.00%	3.55%	2.05%	0.18%
			Verified	14.65%	3.42%	15.84%	1.56%	4.85%	4.83%	0.00%	3.55%	2.05%	0.18%

PMR		Bench- mark	Audit	Aircel	Airtel	Idea	Recom GSM	STel	BSNL	Videocon	Vodafone	Recom CDMA	Tata CDMA
S/N	Name of Parameter			GSM Operators									
	Good voice quality	>=95%	Reported	95.24%	98.65%	96.69%	96.45%	96.48%	95.50%	99.38%	98.00%	98.53%	99.87%
			Verified	95.24%	98.65%	96.69%	96.45%	96.48%	95.50%	99.38%	98.00%	98.53%	99.87%
4	No of POI having >=0.5%	>=0.5%	Reported	0	0	0	0	0	2	2	0	0	0
			Verified	0	0	0	0	0	2	2	0	0	0
(B)	Customer Service Quality Parameters												
5	Metering/billing credibility-Post paid	<= 0.1%	Reported	0.00%	0.01%	NR	0.00%	0.00%	0.02%	NA	0.00%	0.00%	0.04%
			Verified	0.00%	0.01%	NR	0.00%	0.00%	0.02%	NA	0.00%	0.00%	0.04%
6	Metering /billing credibility-Pre paid	<= 0.1%	Reported	0.04%	0.00%	NR	0.05%	0.10%	0.10%	0.06%	0.00%	0.09%	0.06%
			Verified	0.04%	0.00%	NR	0.05%	0.10%	0.10%	0.06%	0.00%	0.09%	0.06%
7	Resolution of billing/ charging complaints	100% within 4 weeks	Reported	100%	100%	NR	100.0%	100%	95.0%	100.0%	100%	100%	100%
			Verified	100%	100%	NR	100.0%	100%	95.0%	100.0%	100%	100%	100%
	Period of applying credit/waiver/adjustment to the customers account from the date of resolutions of complaints	<=1 week	Reported	100%	100%	NR	100%	100%	100%	100%	100%	100%	100%
			Verified	100%	100%	NR	100%	100%	100%	100%	100%	100%	100%
8	Response time to customers for assistance												
	Accessibility of call centre/Customer Care	>=95%	Reported	100%	96%	NR	81%	95%	100%	98%	100%	100%	95%
			Verified	100%	96%	NR	81%	95%	100%	98%	100%	100%	95%
	% call answered by operators(voice to voice) within 60 sec.	>=90%	Reported	61.11%	72%	NR	89%	95%	97%	95%	98%	95%	88%
			Verified	61.11%	72%	NR	89%	95%	97%	95%	98%	95%	88%
9	Termination/closure of service												
	No.of requests for Termination / Closure of service complied within 7 days during the quarter	<=7days	Reported	100%	100%	NR	100%	0%	100%	NA	100%	100%	100%
			Verified	100%	100%	NR	100%	0%	100%	NA	100%	100%	100%
10	Time taken for refunds of deposits after closures.	100% within 60 days	Reported	100%	100%	NR	100%	0%	100%	NA	100%	100%	89%
			Verified	100%	100%	NR	100%	0%	100%	NA	100%	100%	89%

Critical Analysis (PMR Verification):

- The figures proved by all the operators match the figures obtained on verification hence there is no discrepancy found.
- Under Network Parameter Section only Aircel & Idea are found not meeting the benchmark for 'Worst affected cell having > 3%TCH Drop.
- BSNL and Videocon are found 2. Nos of POI having > 0.5% congestion.
- Accessibility of Reliance GSM to Accessibility of call centre/Customer Care parameter do not meet the benchmark.
- "% call answered by operators (voice to voice) within 60 sec." benchmark is not met by Aircel, Airtel, Tata (CDMA) and RTL (GSM).
- Tata (CDMA) is found not meeting the 60 days' benchmark for "Refund of deposits after closure of connection".

II. Basic Service (Wire Line) Service (PMR Period : Jan 2011 - Mar 2011)

S/N	Parameters	Benchmarks	Audit	BSNL	RCOM	TTSL
1	Fault incidences					
	(No. of faults/100 subscribers /month)	< 5%	Reported	6.77%	0.00%	0.00%
			Verified	6.77%	0.00%	0.00%
2	Faults Repair/Restoration Time					
	Fault repair by next working day(Urban Area)	>90%	Reported	87.86%	NIL	NIL
			Verified	87.86%	NIL	NIL
	Within 3 days	100%	Reported	97.74%	NIL	NIL
			Verified	97.74%	NIL	NIL
	Within 5 days (Hilly & Rural Area)	100%	Reported	98.01%	NA	NIL
			Verified	98.01%	NA	NIL
	Mean time to Repair(MTTR)	≤8 Hrs	Reported	7.25 Hrs	0.00 Hrs	0.49Hrs
			Verified	7.25 Hrs	0.00 Hrs	0.49Hrs
3	Rent Rebate					
	Rent Rebate		Reported	NIL	NIL	NIL
			Verified	NIL	NIL	NIL
4	Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)					
	CCR & ASR	> 55%(CCR) & > 75%(ASR)	Reported	66.07%(CCR)	81.98%(ASR)	NA
			Verified	66.07%(CCR)	81.98%(ASR)	NA
5	Metering & Billing Performance					
	Metering & Billing Credibility-Post paid	< 0.1%	Reported	NR	NIL	0.00%
			Verified	NR	NIL	0.00%
	Metering & Billing Credibility-Pre paid	100%	Reported	NR	NIL	NA
			Verified	NR	NIL	NA
	Resolution of billing charging/validity/Complaints within 4 weeks	100%	Reported	NR	NA	NR
			Verified	NR	NA	NR
	Period of all refunds/payments from the date of resolution of complaints	100%	Reported	NR	100%	100%

S/N	Parameters	Benchmarks	Audit	BSNL	RCOM	TTSL
	within 1 weeks		Verified	NR	100%	100%
6	<i>POI Congestion</i>					
	No of POI having $\geq 0.5\%$	$\geq 0.5\%$	Reported	NIL	0.00%	NA
			Verified	NIL	0.00%	NA
7	<i>Response Time to customer for assistance</i>					
	Accessibility of Call centre/customer Care within 40 Sec.	$\geq 95\%$	Reported	92.55%	97.99%	96.79%
			Verified	92.55%	97.99%	96.79%
	% age of calls answered by operator(voice to voice) within 60 seconds	$\geq 90\%$	Reported	90.00%	95.99%	98.38%
			Verified	90.00%	95.99%	98.38%
8	<i>Customer care(promptness in attending to customers request</i>					
	Termination / Closures	100%	Reported	99.89%	No Termination request	100%
			Verified	99.89%	No Termination request	100%
	Time taken for refunds of deposit after closures	100%	Reported	NR	100%	100%
			Verified	NR	100%	100%

Critical Analysis:

From the PMR table above it is found that for the parameter 'No of Faults/100subscriber/Month, all the operators are meeting the benchmark , except BSNL with a value 6.77%. In Fault Repair / Restoration Time, only BSNL is not meeting the benchmark in next working days, 3 days, and 5 days respectively.

TTSL has not reported many parameters in HP circle.

III. Broadband Service (PMR Period Verification Jan 2011 - Mar 2011)

S/N	Parameters	Benchmarks	Audit Period	BSNL	TCISL	RCOM
1	<i>Service Provisioning/Activation Time</i>					
1.2	%age of connections provided within 15 days of registration of demand	100%	Reported	100.00%	NA	100%
			Verified	100.00%	NA	100%
2	<i>Faults Repair/Restoration Time</i>					
2.2	% of faults repaired by next working day	>90%	Reported	95.80%	NA	100.0%
			Verified	95.80%	NA	100%
2.3	% of faults repaired within 3 working day	≥99%	Reported	100%	NA	100%
			Verified	100%	NA	100%
3	<i>Rent Rebate</i>					
3.1	Rent Rebate		Reported	0	741	0
			Verified	0	741	0
4	<i>Billing Performance</i>					
4.1	%age of bills disputed	<2%	Reported	0.00%	NA	0.09%
			Verified	0.00%	NA	0.09%
4.2	%age of complaints resolved within 4 weeks	100%	Reported	100.00%	NA	100%
			Verified	100.00%	NA	100%
4.3	%age of cases to whom refund of deposits is made within 60 days of closures	100%	Reported	100%	NA	100%
			Verified	100%	NA	100%
5	<i>Response Time to the Customer for assistance</i>					
5.1	%age of calls answered by operator (Voice to voice) within 60 sec	>60%	Reported	83.00%	93.65%	96%
			Verified	83.00%	93.65%	96%
5.2	%age of calls answered by operator (Voice to voice) within 90 sec	>80%	Reported	93.80%	94.77%	98%
			Verified	93.80%	94.77%	98%
6	<i>Bandwidth utilization/throughput</i>					
6.1	No. of Intra network links having Bandwidth utilization >90% during peak hours (TCBH)		Reported	NR	0	0
			Verified	NR	0	0
6.2	No. of Upstream links for International connectivity having BW utilization >90% Peak Hrs.(TCBH)		Reported	NR	0	0
			Verified	NR	0	0
6.3	% International bandwidth utilization during peak hours (TCBH) (Enclose MRTG)	<90%	Reported	NR	39.51%	43.34%
			Verified	NR	39.51%	43.34%

S/N	Parameters	Benchmarks	Audit Period	BSNL	TCISL	RCOM
6.4	Broadband Connection Speed available (download) from ISP node to user	>80%	Reported	86%	91%	92%
			Verified	86%	91%	92%
7.	Service Availability/Uptime (for all users) in %age					
7.1	Service availability /uptime (for all users) in %age	>98%	Reported	99.40%	NA	99.71%
			Verified	99.40%	NA	99.71%
8.	Packet Loss					
8.1	% of Packet loss	<1%	Reported	NR	0.49%	C/DNF
			Verified	NR	0.49%	C/DNF
4	Network latency (for wired broadband access)					
4.1	User reference point at POP/ISP Gateway node to IGSP/NIXI	<120 ms	Reported	NR	50	DNF
			Verified	NR	50	DNF
4.2	User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)	<350 ms	Reported	NR	267	DNF
			Verified	NR	267	DNF
4.3	User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)	<800 ms	Reported	NA	NA	NA
			Verified	NA	NA	NA

C/DNF—Complied the Parameter but data is not in required format

DNF-- Data not as per format.

Critical Analysis:

From the PMR table above it is found that for the parameter '%age of connections provided within 15 days of registration of demand', all the operators are meeting the benchmark.

For the parameters '% of faults repaired by next working day' and '% of faults repaired within next 3 working days' all the operators are meeting the benchmark.

NOTE—TCISL has submitted some parameters in PMR like- Rent rebate, call centre data, bandwidth utilization, Download speed, service availability, Packet Loss & network Latency parameters on All India Basis.

CHAPTER-4: DETAILED FINDINGS & ANALYSIS

I. Cellular Mobile Telephone Service

(A) MSC Audit

(1) 3 Days Live Data Assessment & Summarized Findings

S/N	Name of Parameter	Bench mark	Aircel	Airtel	Idea	Stel	BSNL	Rcom GSM	TTSL GSM	Videocon	Vodafone	Rcom CDMA	Tata CDMA	
			GSM Operators								CDMA Operators			
(A)-1	Network Service Quality Parameter													
	BTS Accumulated Downtime	<=2%	0.00%	0%	0%	0.01%	0.03%	0.00%	ICR WITH AIRCEL	0.00%	0.00%	0.11%	0.0%	
	Worst affected BTS due to downtime	<=2%	0%	0.00%	0%	0%	0.21%	0%		0%	0%	0%	0%	0%
	Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		10	26	0	37	230	0		0	3	384	1	
	No. of BTSs having accumulated downtime of >24 hours in a month		0	0	0	0	2	0		0	0	0	0	
2	Connection Establishment (Accessibility)													
	a) CSSR	>=95%	99.68%	99.66%	99.24%	100%	97.40%	99.56%		100.00%	99.55%	99.98%	99.25%	
	b) SDCCCH/PAGING congestion	<=1%	0.19%	0.10%	0.03%	0.01%	0.80%	0.01%		0.00%	0.06%	0.01%	0.00%	
	c) TCH congestion	<=2%	0.13%	0.24%	0.73%	0.06%	1.80%	0.43%		0.00%	0.39%	0.02%	0.75%	
3	Connection maintenance													
	a) CDR	<=2%	1.19%	1.05%	1.78%	0.82%	1.89%	0.42%		0.60%	0.94%	0.34%	0.34%	
	b) Cells having > 3% TCH drop	<=3%	17.05%	2.83%	2.50%	4.76%	4.17%	0.50%	0.00%	2.72%	0.44%	1.73%		
	c) Good voice quality	>=95%	94.45%	98.59%	95.70%	96.19%	96.38%	97.61%	96.89%	97.21%	NA	NA		
	d) No. of cells > 3% TCH drop		313	93	39	75	113	9	0	57	2	10		
	e) Total no. of cells in the network		1,836	3,285	1,560	1,574	2,710	1,806	9	2,099	456	577		
4	No of POI having > 0.5% congestion	>=0.5%	0	0	0	0	1	0	0	0	0	0		
	a) Name of POI not meeting the benchmark		Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	
	b) Total No. of circuits on POI		10,926	25,761	12,904	6,973	14,723	11,741	8,516	64	13,051	2,960	8,516	
	c) Avg No. of call attempts on POI		1,837,469	14,834	217,849	115,594	6,811	130,545	95,009	93	171,573	24,184	95,009	
	d) Avg traffic served on POI (Erlang)		4,461	432	6,618	2,818	259	4,858	1,811	3	5,592	752	1,811	
	e) Total number of working POI Service Area wise		40	28	31	20	39	NP	61	16	40	NP	61	
	f) Equipped Capacity of Network in respect of Traffic in erlang		33,950	68,681	16,089	11,757	42,000	NP	68,681	99	15,565	NP	24,518	
	g) Total traffic handled in TCBH in erlang		3010	220728	124228	6	81951	NP	25288	15108	115057	NP	23782	

S/N	Name of Parameter	Bench mark	Aircel	Airtel	Idea	Stel	BSNL	Rcom GSM	TTSL GSM	Videocon	Vodafone	Rcom CDMA	Tata CDMA
			GSM Operators										CDMA Operators
(B)	Customer Service Quality Parameters												
5	Response time to customers for assistance												
	a) Accessibility of call centre	>=95%	100%	NP	100%	100%	100%	95%	100%	100.00%	100%	99.92%	100%
	b) % of call answered by operators(voice to voice) within 60 sec	>=90%	97.03%	81.25%	96.65%	100%	95.67%	99.43%	96.37%	96.48%	98.49%	94.05%	99.38%
	c) No. of call attempts to call centre / customer care nos. during TCBH (Avg)		21,047	73,687	12,075	50	44,756	72,194	2,504	568	991	2,302	1,772
	d) No. of calls connected and answered successfully to call centre / customer care nos. during TCBH (Avg)		20,421	59,874	11,671	50	42,817	71,784	2,413	548	976	2,165	1,761

NA: Not Applicable, NP: Data Not Provided

Parameter-wise Findings (Live Data Assessment):

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

- **Worst affected BTSs due to downtime (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0% and 0.11%.
- **Worst affected BTSs due to downtime (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0% and 0.21%.
- **Call Setup Success Rate (CSSR) (benchmark $\geq 95\%$):** All operators are meeting the benchmark with values lying between 97.40% and 100%.
- **SDCCH/PAGING Channel congestion (benchmark $\leq 1\%$):** All operators, are meeting the benchmark with values lying between 0% and 0.80%
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 1.80%.
- **Call Drop Rate (CDR) (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0.34% and 1.89%.
- **Cell exceeding 3% TCH drop (benchmark $\leq 3\%$):** Aircel, STel, & BSNL, these operators are not satisfying the benchmark, rest all the operators are meeting the benchmark respectively.
- **Connections with good voice quality (benchmark $\geq 95\%$):** CDMA service providers have declared that the parameter is not system generated. Rest of the operators are meeting the benchmark except Aircel (94.45%) which is deviating from the benchmark..
- **No of POI > 0.5% Congestion (benchmark $\geq 0.5\%$):** None of the operators are having POIs more than 0.5% congestion, except BSNL which is having 1 no's of POIs above 0.5% congestion. There was congestion found on the POIs in general, but was under the benchmark of 0.5%. Cases were found where individual POIs were showing high utilization/usage and some were in the range of over 100%, though causing no traffic failure due to overflow technique i.e. the extra traffic is carried over by some other operating POI as has been designed to do so.
- **%age of call answered by operator (electronically) (benchmark >95):** All the operators are meeting the benchmark with values lying between 95.33% to 100%.
- **%age of call answered by operator (Voice to voice) (benchmark $>90\%$): %):** All operators are meeting the benchmarks except Airtel (81.25%) respectively.

(2) Month Data Assessment & Summarized Findings

S/N	Name of Parameter	Bench mark	Aircel	Airtel	Idea	Stel	BSNL	Rcom GSM	TTSL GSM	Vi-cone	V-fone	Rcom CDMA	Tata CDMA	
			GSM Operators								CDMA Operator			
(A)	Network Service Quality Parameter													
1	Network Availability								ICR WITH AIRCEL					
	a) BTS Accumulated Downtime	<=2%	0.04%	0.08%	0.23%	0.02%	1.86%	0.00%		0.00%	0.00%	0.11%	0.01%	
	b) Worst affected BTSs due to downtime	<=2%	0.32%	0.44%	0.00%	1.33%	1.79%	0.00%		0.00%	0.00%	0.00%	0.00%	
	c) Total no. of BTSs in the licensed service area		616	1,143	525	525	949	602		3	697	456	190	
	d) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		167	672	890	91	13,151	0		0	3	384	8	
	e) No. of BTSs having accumulated downtime of >24 hours in a month		2	5	0	7	17	0		0	0	0	0	
2	Connection Establishment (Accessibility)													
	a) CSSR (Call Setup Success Rate)	>=95%	99.68%	99.66%	98.04%	99.83%	97.30%	99.76%		100.00%	99.38%	99.98%	99.88%	
	b) SDCCH/PAGING congestion	<=1%	0.08%	0.10%	0.59%	0.03%	0.80%	0.01`%		0.00%	0.13%	0.00%	0.00%	
	c) TCH congestion	<=2%	0.24%	0.24%	1.37%	0.14%	1.90%	0.23%		0.00%	0.49%	0.02%	0.12%	
3	Connection maintenance (retain ability)													
	a) CDR	<=2%	1.11%	1.05%	1.92%	0.74%	1.90%	0.42%		0.12%	0.96%	0.38%	0.31%	
	b) Worst affected cells>3% TCH drop	<=3%	15.09%	2.83%	2.88%	4.57%	4.80%	0.50%		0.00%	2.76%	0.44%	1.56%	
	c) Good voice quality	>=95%	94.65%	98.61%	95.74%	96.37%	96.44%	97.62%		98.93%	97.23%	NA	NA	

S/N	Name of Parameter	Bench mark	Aircel	Airtel	Idea	Stel	BSNL	Rcom GSM	TTSL GSM	Vi-cone	V-fone	Rcom CDMA	Tata CDMA
			GSM Operators									CDMA Operator	
	d) Total No. of cells exceeding 3% TCH drop (call drop)		277	93	45	72	130	9	ICR WITH AIRCEL	0	58	2	9
	e) Total no. of cells in the network		1,836	3,285	1,560	1,574	2,710	1,806		9	2,099	456	577
4	No of POI having > 0.5% congestion	>=0.5%	0	0	0	0	2	0	0	0	0	0	0
	a) Name of POI not meeting the benchmark		NIL	NIL	NIL	NIL	MSC-1, XRT G1	NIL	NIL	NIL	NIL	NIL	NIL
	b) Total No. of call attempts on POI (Avg.)		1,868,604	15,261	228,154	123,987	6,660	143,719	98,868	239	167,950	24,598	98,868
	c) Total traffic served on POI (Erlang) (Avg.)		4,580	442	6,656	2,928	251	5,325	1,866	7	3,094	761	1,866
	d) Total No. of circuits on POI		10,926	25,761	12,904	6,973	14,723	11,741	8,516	64	13,051	2,960	8,516
	e) Total number of working POI Service Area wise		40	28	31	20	39	NP	61	16	40	NP	61
	f) Capacity of POI		8,811	882	12,123	0	13,250	10,670	8,408	50	12,379	2,614	8,408
5	Network Data												
	a) Equipped Capacity of Network Erlang		33,950	68,681	16,089	11,757	42,000	NP	68,681	99	15,565	NP	24,518
	b) Total traffic in TCBH in erlang (Avg.)		10,866	59,029	9,613	5,959	32,777	NP	59,029	1	9,447	NP	3,739
	c) Total no. of customers served (as per VLR) on last day of the month		405,008	1,572,536	344,511	210,943	971,383	NP	62,342	68	324,249	NP	62,342
(B)	Customer Service Quality Parameters												
5	Metering/billing credibility-Post paid	<= 0.1%	0.00%	0.01%	0.00%	NA	0.07%	0.05%	0.09%	NA	0.00%	0.07%	0.19%
	a) No. of bills issued during the period		2,183	36,175	255	NA	35,029	1,959	1,148	NA	2,217	8,404	12,809

S/N	Name of Parameter	Bench mark	Aircel	Airtel	Idea	Stel	BSNL	Rcom GSM	TTSL GSM	Vi-cone	V-fone	Rcom CDMA	Tata CDMA
			GSM Operators										CDMA Operator
	b) No. of bills disputed including billing complaints during the period		0	4	0	NA	24	1	1	NA	0	6	24
6	Metering /billing credibility-Pre paid	<i><= 0.1%</i>	0.02%	0.00%	0.00%	0.03%	0.01%	0.03%	0.02%	0.02%	0.02%	0.01%	0.07%
	a) No. of charging / credit / validity complaints during the quarter		160	0	10	122	372	357	31	17	83	19	30
	b) Total no. of pre-paid customers at the end of the quarter		692,760	2,028,859	366,358	430,570	4,590,350	1,350,351	205,679	83,556	367,511	342,451	44,396
7	Resolution of billing/ charging complaints	<i>100% within 4 weeks</i>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	a) No. of billing/(post paid) and charging, credit/validity (pre paid) complaints resolved within 4 weeks during the quarter		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	b) Total no. of billing (post paid) and charging, credit / validity (pre paid) complaints received during the quarter		160	1,714	425	122	396	358	32	17	83	25	54
	c) No. of billing complaints (post paid) and charging, credit/ validity complaints (pre paid) resolved in favour of the customer during the quarter		160	37	219	7	396	21	0	0	35	7	2
	d) No. of complaints disposed on account of not considered as valid complaints during the quarter		0	1,677	206	115	0	337	32	17	48	18	52
	e) Period of applying credit/waiver/adjustment to the customers account from the date of resolutions of complaints	<i><=1 week</i>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

S/N	Name of Parameter	Bench mark	Aircel	Airtel	Idea	Stel	BSNL	Recom GSM	TTSL GSM	Vi-cone	V-fone	Recom CDMA	Tata CDMA
			GSM Operators									CDMA Operator	
8	Response time to customers for assistance												
	a) Accessibility of call centre/Customer Care	>=95%	100.00%	NP	100%	96%	100%	98%	100%	100.00%	100%	99.42%	100%
	b) % call answered by operators(voice to voice) within 60 sec.	>=90%	91.42%	64.44%	88.06%	86.00%	92.38%	96.41%	99.15%	100.00%	94.75%	95.78%	97.83%
	c) Total no. of call attempts to call centre & customer care nos. during TCBH (Avg.).		239,658	73,687	12,075	50	44,756	72,194	2,504	568	991	2,302	1,772
	d) No. of calls connected and answered successfully to call centre & customer care nos. during TCBH (Avg.).		219,089	481,521	116,023	57,378	429,531	687,456	17,858	75	11,196	23,509	6,956
9	Termination/closure of service	<=7days	100%	100%	100%	NA	100%	100%	100%	NA	100%	100%	100%
	a) Total No. of requests for Termination / Closure of service received during the quarter		34	295	8	NA	274	5	6	NA	58	23	255
	b) No.of requests for Termination / Closure of service complied within 7 days during the quarter		34	295	8	NA	274	5	6	NA	58	23	255
10	Time taken for refunds of deposits after closures.	100% within 60 days	100%	100%	100%	NA	100%	100%	100%	NA	100.00%	100%	100.00%

NA: Not Applicable, NP: Data Not Provided

Parameter-wise Findings (Month Data Assessment):

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

- **BTS accumulated downtime (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0% and 1.86%.
- **Worst affected BTSs due to downtime (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0% and 1.79%.
- **Call setup success rate (benchmark $\geq 95\%$):** All operators are meeting the benchmark with values lying between 97.30% and 100%.
- **SDCCH/PAGING Channel congestion (benchmark $\leq 1\%$):** All operators are meeting the benchmark with values lying between 0% and 0.80%.
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 1.90%.
- **Call drop rate (benchmark $\leq 2\%$):** All operators are meeting the benchmark with values lying between 0.21% and 1.92%.
- **Cell exceeding 3% TCH drop (benchmark $\leq 3\%$):** All operators are meeting the benchmark, except Aircel (15.09%), Stel (4.57%) & BSNL (4.80%) respectively.
- **Connections with good voice quality (benchmark $\geq 95\%$):** Aircel (94.45%) is not meeting the benchmark, rest of the GSM operators are meeting the benchmark. CDMA service Provider has declared that the parameter is not system generated.
- **No of POI > 0.5% Congestion (benchmark $\geq 0.5\%$):** None of the operators are not having POIs more than 0.5% congestion, except BSNL which is having 2 no's of POIs above 0.5% congestion. There was congestion found on the POIs in general, but was under the benchmark of 0.5%. Cases were found where individual POIs were showing high utilization/usage and some were 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 except Airtel which has not provided the data respectively.
- **%age of call answered by operator (Voice to voice) (benchmark $>90\%$):** Except Airtel, Idea & STel, rest of the operators are meeting the benchmark.
- **Metering and billing credibility-Post paid (benchmark $\leq 0.1\%$):** All operators are meeting the benchmark. except TTSL CDMA deviating with a value of 0.19%.
- **Metering and billing credibility-Pre paid (benchmark $\leq 0.1\%$):** All operators are meeting the benchmark.
- **Resolution of billing/ charging complaints (benchmark 100% within 4 weeks):** All operators are meeting the benchmark.
- **Termination/Closure of service (Benchmark ≤ 7 days):** All operators have satisfied the benchmark respectively.
- **Time taken for refunds of deposits after closures (benchmark 100% within ≤ 60 days):** All operators have satisfied the benchmark

(3) **Sample Coverage**

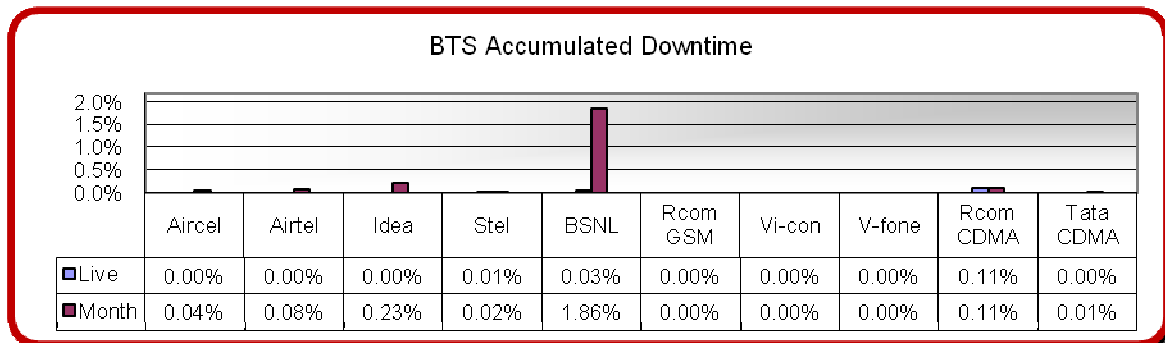
Switches/BSC/BTS details of operators:

Sl.	Name of Service Provider	No. of MSC/GMSC	No. of BSC	No. of BTS
GSM Operators				
1	Aircel	1	7	616
2	Airtel Ltd	5	15	1143
3	Idea	1	4	525
4	Stel	1	4	525
5	BSNL	3	14	949
6	RTL(GSM)	6	12	602
7	TTSL (GSM)	1	ICR WITH AIRCEL	
8	Videocon	1	1	3
9	Vodafone	1	8	697
CDMA Operators				
10	Reliance Communication (CDMA)	2	0	456
11	TTSL(CDMA)	1	1	190

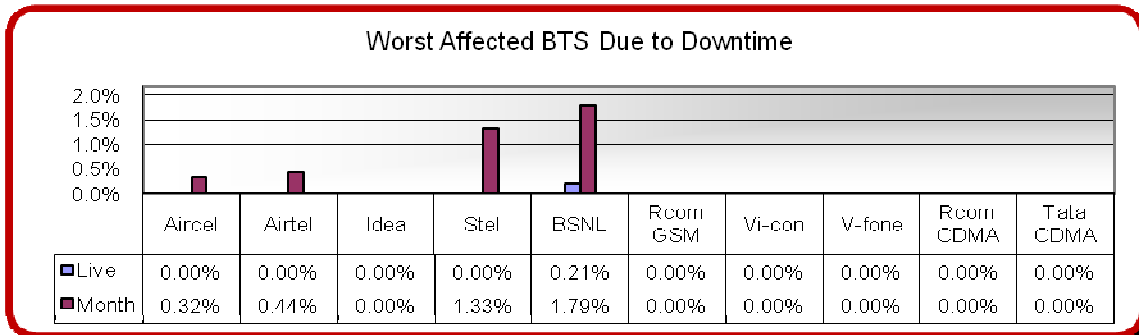
(4) **Performance (Graphical Representation)****Comparison between Live measurements and One month data Audit – Cellular Mobile Telephone Services**

A) NETWORK PERFORMANCE

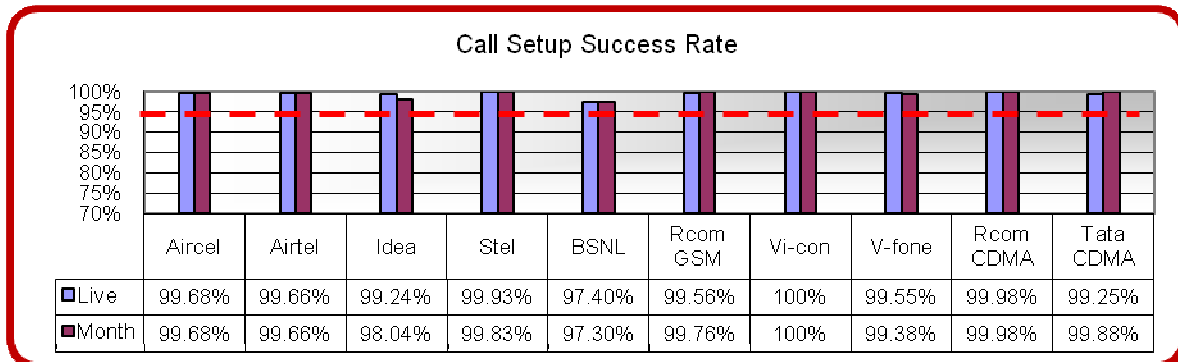
BTS Accumulated Downtime: All operators are meeting the TRAI benchmarks ($\leq 2\%$) for both one month data and 3 days live data taken in the month of audit.



Worst Affected BTS Due to Downtime: 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.

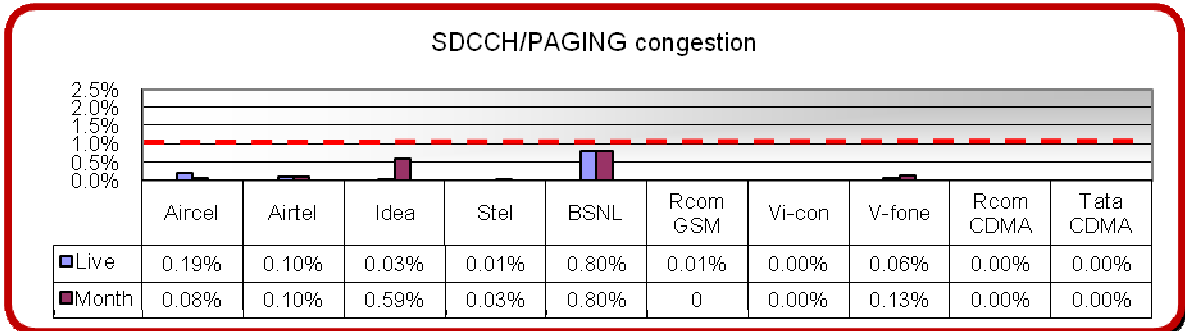


Call Setup Success Rate (CSSR): All operators are meeting the TRAI benchmarks ($\geq 95\%$) for both one month data and 3 days live data taken in the month of audit

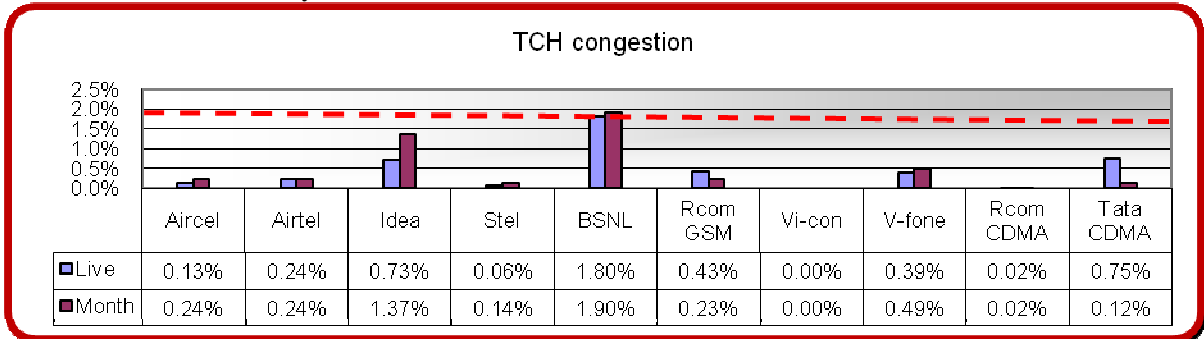


Blocked call rate:

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

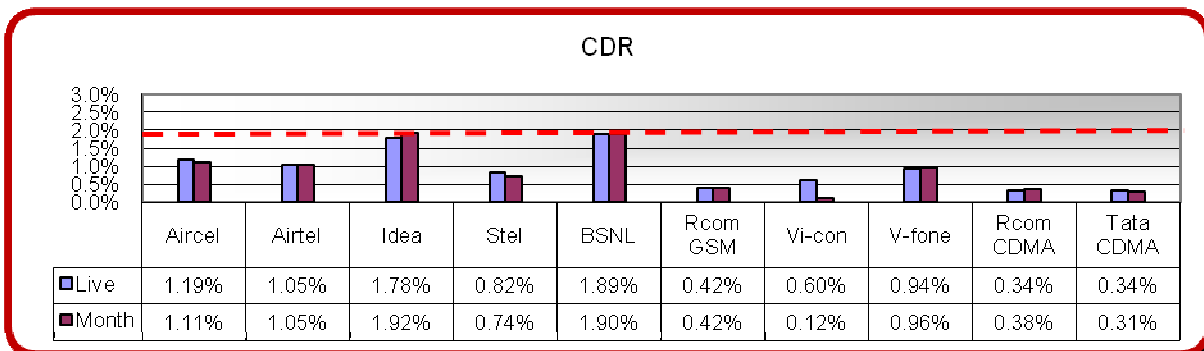


TCH congestion (%): All operators are meeting the TRAI benchmarks ($\leq 2\%$) for both one month data and 3 days live data.

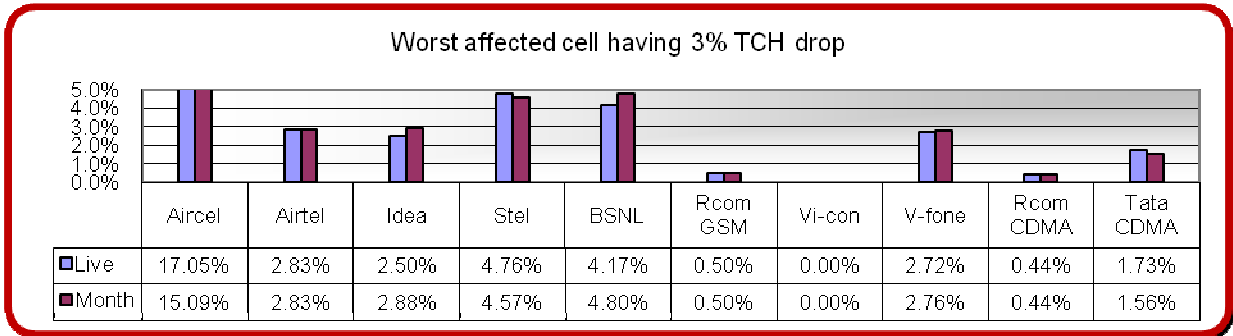


Connection Maintainability (Retainability):

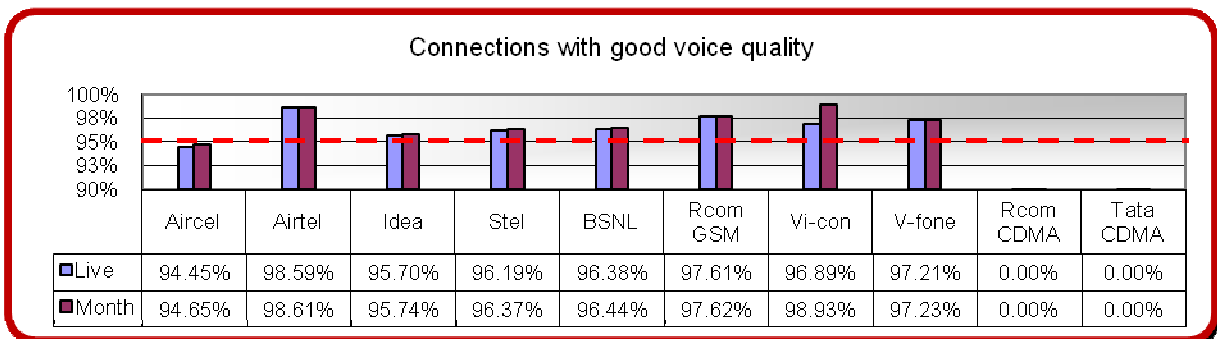
Call Drop Rate (CDR) (%): All operators are meeting the TRAI benchmarks ($\leq 2\%$) for both one month data and 3 days live data taken in the month of audit.



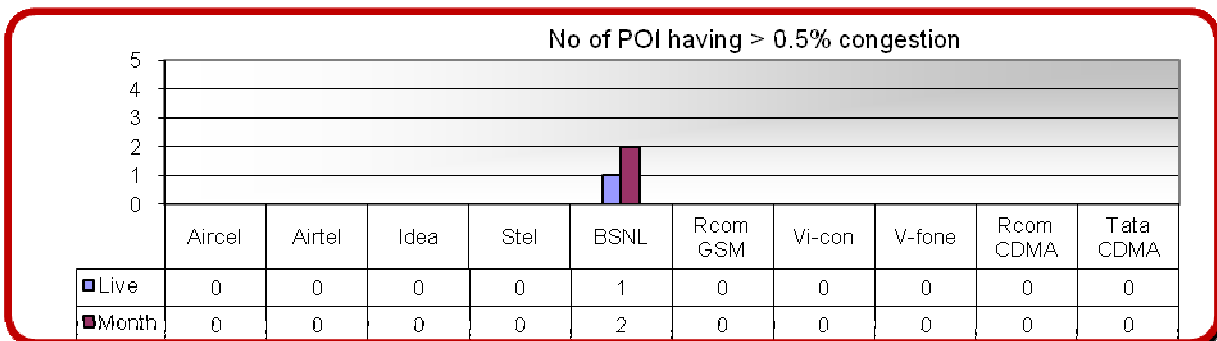
Worst affected Cell exceeding 3% TCH Drop: For both live and month data, Aircel, STel , BSNL & TTSL GSM are found not meeting the benchmark of $\leq 3\%$. Rest of the operators is meeting the benchmark for both cases.



Percentage of connections with good voice quality (benchmark $\geq 95\%$): Except for Aircel & Tata GSM, rest of the operators are meeting the TRAI benchmarks ($\Rightarrow 95\%$) for both one month data and 3 days live data. CDMA Service provided has not provided the data as data is not generated from the system.



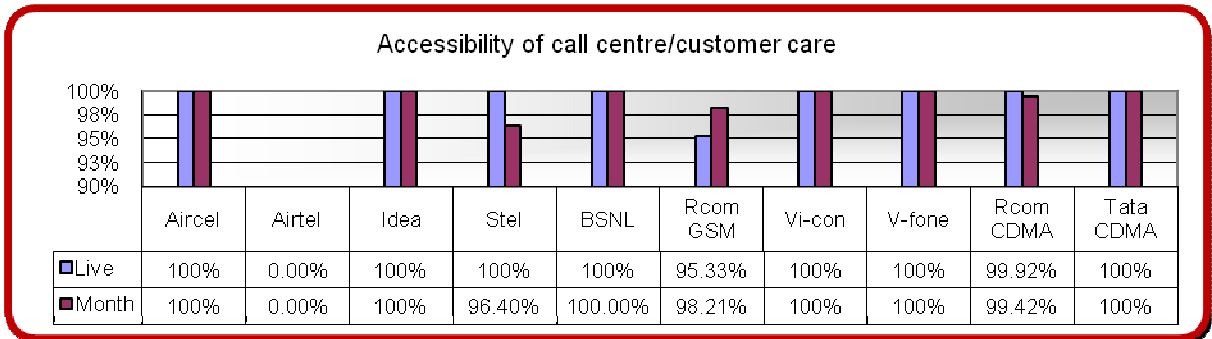
No of POI having $> 0.5\%$ Congestion: All operators are not having POIs above 0.5% congestion ($\geq 0.5\%$) for both one month data and 3 days live data except BSNL in both Live & Month data.



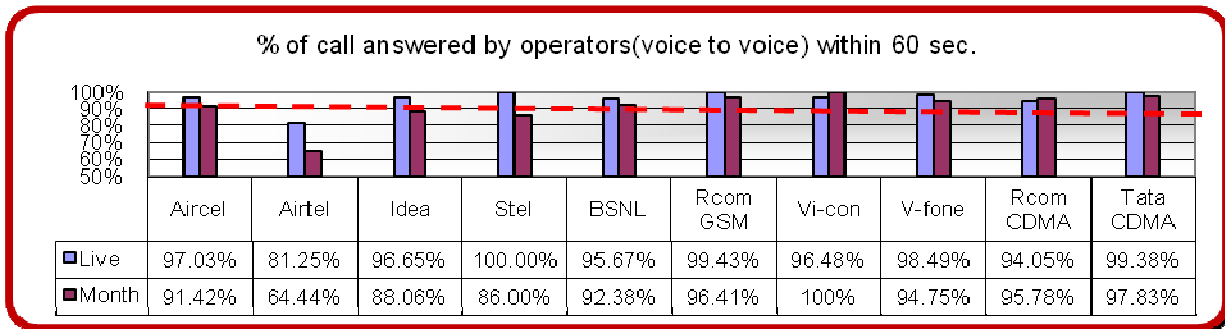
B) CUSTOMER SERVICE QUALITY PARAMETERS

(A) **Response time to the customer for assistance:**

Percentage of call answered (Electronically): All operators are meeting the TRAI benchmarks ($\geq 95\%$) for both one month data and 3 days live data. Airtel has not provided the data.



Percentage of call answered by operators (Voice to voice) within 60 sec: Except for Airtel in both Month & Live cases and Idea & Stel are only in live cases, not meeting the benchmarks. Rest all operators are meeting the TRAI benchmarks ($\geq 90\%$) for both one month data and 3 days live data taken in the month of audit.



(5) Critical Analysis

From the data table it can be seen that only Aircel, Stel, BSNL & Tata GSM are not meeting the benchmark for the parameter of 'Worst affected cells have more than 3% TCH drop rate' with high margins. This may have happened due to mainly in the change adopted for calculating the parameter considering CBBH instead of TCBH, which reflects more practical way of calculating TCH drop keeping in view customer satisfaction. Regarding %age of connections with good voice quality all the operators are found to be performing quite well in terms of meeting the benchmark ($\leq 95\%$), except Aircel which is slightly deviating from the benchmark. TTSL GSM is having an ICR agreement with Aircel in HP.

In case of POI congestion all the operators except BSNL is found to be performing quite well in terms of meeting the benchmark ($\leq 0.5\%$). It is noticed that most of the operators are having individual POI satisfying the benchmark. But in some case overflows on individual POI are noticed causing traffic diversions to obtain the net result for POI congestion. For the parameter % call answered by operator (voice to voice) are not met by Airtel, Idea & Stel in month cases and Airtel is only in live cases, not complying the benchmark with respect to other operators respectively.

(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	Aircel	Airtel	Idea	BSNL	Stel	TTSL	Rcom GSM	Videocon	Vodafone	Rcom CDMA	TTSL
Total No. of calls attempted	100	100	100	100	100	32	100	17	83	25	54
Total No. of calls answered	97	95	95	96	95	32	94	17	15	25	54
Cases resolved with 4 weeks	97	95	94	95	94	32	93	17	15	25	54
%age of cases resolved	100%	100%	99%	99%	99%	100%	99%	100%	100%	100%	100%

(3) Live calling to call centre

Calling Operator	Aircel	Airtel	Idea	Stel	BSNL	Tata GSM	Rcom GSM	Videocon	Vodafone	Rcom CDMA	Tata CDMA
Call Centre No.	121/198	121/198	198/12347	1212	1500	121	*222/*333	121/198	111/198	*222/*333	121
Total No. of Calls Attempted	100	100	100	100	100	100	100	100	100	100	100
Total No. of calls connected to IVR	100	100	100	100	100	100	100	100	100	100	100
Calls got connected to agent within 60 Sec	93	95	93	94	92	94	95	93	92	95	95
%age of calls got answered	93%	95%	93%	94%	92%	94%	95%	93%	92%	95%	95%

(4) Live 1 live calling

Emergency no.	No. of calls made	Aircel	Airtel	Idea	BSNL	Stel	TTSL	Rcom GSM	Videocon	Vodafone	Rcom CDMA	TTSL
		Shimla										
100	Police	2	2	2	2	2	2	2	2	2	2	2
101	Fire	2	2	2	2	2	2	2	2	2	2	2
102	Ambulance	2	2	2	2	2	2	2	2	2	2	2
139	Railway	2	2	2	2	2	2	2	2	2	2	2
		Sonal										
100	Police	2	2	2	2	2	2	2	2	2	2	2
101	Fire	2	2	2	2	2	2	2	2	2	2	2
102	Ambulance	2	2	2	2	2	2	2	2	2	2	2
139	Railway	2	2	2	2	2	2	2	2	2	2	2
		Manali										
100	Police	2	2	2	2	2	2	2	2	2	2	2
101	Fire	2	2	2	2	2	2	2	2	2	2	2
102	Ambulance	2	2	2	2	2	2	2	2	2	2	2
139	Railway	2	2	2	2	2	2	2	2	2	2	2

(5) Critical Analysis

Random numbers were selected (for whom refund were given) 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. All the Emergency no's were got connected from every operator.

Most of the Live calls made to call centers were got connected.

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

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

(2) Performance based on live measurement

Calling Operator	Aircel	Airtel	Idea	Stel	BSNL	TTSL(GSM)	RTL GSM	Videocon	V- Fone	TATA CDMA	RCom CDMA
Aircel	-	96%	95%	100%	100%	100%	100%	100%	100%	100%	100%
Airtel	100%	-	100%	98%	100%	100%	99%	100%	100%	98%	100%
Idea	100%	100%	-	100%	95%	100%	100%	97%	99%	100%	98%
Stel	100%	100%	100%	-	100%	96%	96%	100%	100%	97%	100%
BSNL	100%	100%	100%	99%	-	97%	100%	100%	100%	100%	100%
RTL GSM	100%	100%	100%	100%	100%	100%	-	96%	95%	100%	96%
TTSL GSM	100%	100%	100%	98%	100%	-	100%	100%	100%	95%	100%
Videocon	100%	98%	100%	100%	97%	100%	98%	-	100%	100%	100%
V- Fone	100%	100%	96%	100%	100%	99%	100%	100%	-	100%	100%
TATA CDMA	97%	100%	100%	97%	100%	100%	97%	100%	98%	-	97%
RCom CDMA	100%	100%	100%	100%	100%	100%	100%	98%	96%	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.

Operators Assisted Drive Test Performance (for respective cities)

SN	Parameter	City Name	Aircel	Airtel	Idea	BSNL	Rcom GSM	Stel	Vodafone	Rcom CDMA	Tata CDMA
			GSM Operators							CDMA	
1.1	Call Attempts	Shimla	74	65	72	55	66	65	75	64	72
		Solan	48	35	38	66	36	31	32	34	33
		Manali	31	37	32	41	32	32	32	31	31
1.2	Blocked Call Rate (<=3%)	Shimla	4.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Solan	0.00%	0.00%	0.00%	4.54%	0.00%	0.00%	0.00%	0.00%	0.00%
		Manali	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1.3	Dropped Call Rate (<=2%)	Shimla	0.00%	0.00%	0.00%	3.63%	0.00%	0.00%	0.00%	0.00%	0.00%
		Solan	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Manali	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1.4	Percentage of connections with good voice quality (=>95%)										
	(i) 0-4 (w/o frequency hopping)	Shimla								99%	99.28%
		Solan								98%	99.64%
		Manali								100%	100%
	(ii) 0-5 (with frequency hopping)	Shimla	96.90%	96%	98.20%	95.00%	97.00%	97.10%	98.80%		
	Solan	95%	96%	96.20%	95.10%	96.00%	96.90%	98.20%			
	Manali	99%	98%	98.80%	95.10%	100%	99.20%	98.20%			
1.5	Service Coverage										
	In door (>= -75dBm)	Shimla	91%	85%	44%	94%	84%	94%	69%	75%	99%
		Solan	92%	87%	64%	94%	89%	88%	88%	64%	100%
		Manali	95%	94%	30%	95%	71%	85%	75%	64%	98%
	In-vehicle (>= -85dBm)	Shimla	98%	93%	89%	100%	98%	99.70%	96%	95%	100%
		Solan	98%	99%	94%	100%	100%	98%	99%	96%	100%
		Manali	100%	100%	95%	100%	97%	98.72%	97%	97%	100%
Out door- in city (>= -95dBm)	Shimla	100%	100%	100%	100%	99%	100%	100%	100%	100%	
	Solan	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	Manali	100%	100%	100%	100%	100%	100%	100%	100%	100%	
1.6	Call Setup Success Rate (>=95%)	Shimla	95.95%	98%	100%	100%	100%	100%	100%	100%	100%
		Solan	100%	100%	100%	95.46%	100%	100%	100%	100%	100%
		Manali	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: Tata GSM & Videocon are on ICR with Aircel in HP Circle.

Drive test of the mobile network of service providers

(1) Sample Coverage

The Operator Assisted Drive Test was conducted at HP Circle for all the operators. Route covered was about around 35- 50Km depending on city areas within the speed limit of 30Km/hr.

DRIVE TEST LOCATIONS

SHIMLA

HIGH DENSE	Khalini, Pantha ghati, Nehli, Dhali, Sanjauli.
MEDIUM DENSE:	Victory tonnel, lakkar bazaar, Toll end, chota shimla.
LOW DENSE:	BCS chowk, new shimla, Kusumti bazaar, bus stand.

SOLAN

HIGH DENSE:	Shanti Rajgarh Road, Reborn Solan Bypass, Sarita vihar.
MEDIUM DENSE:	Dhobi ghat, New bus stand, Govt hospital, Tank road.
LOW DENSE:	Chandaghat, Mall road, DC office, old bus stand.

MANALI

HIGH DENSE:	Parini, Main highway manali, Toll plaza kalth
MEDIUM DENSE	Vashist, main bazaar, bus stand.
LOW DENSE:	Mall road, Manali main bazaar, Old Manali.

(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:

- Blocked Call Rate is not met by Aircel in Shimla as well as BSNL also not meeting the benchmark in Solan.
- Drop call rate parameter is not met by BSNL in Shimla (3.63%).
-

(E)Independent Drive test-

----- Submitted as separate report

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

From live, month and PMR findings, it can be concluded that on an average, performance of the operators in the service area HP is satisfactory for **Network Parameters**. However, It is found to be below benchmark standard for 2 nos of parameters namely 'worst affected cells >3% TCH drop' in which operators like Aircel, Stel, & BSNL are not meeting the benchmark values prescribed by TRAI. As far as Good voice quality Aircel is not complying the benchmark. TTSL GSM is an ICR Agreement with Aircel in HP.

POI congestion is found to be satisfying for all the operators except BSNL for both month and live measurement.

Under **Customer Service Quality** section, benchmark for the parameter "operator answered calls (voice-to-voice) within 60 seconds" it is found that Airtel, Idea and Stel are not satisfying the prescribed benchmark .

Regarding **Metering/Billing Credibility** issues, all the operators are meeting the benchmark for Pre-paid services, but for post-paid services only TTSL CDMA is not meeting the benchmark set by TRAI For 'Resolution of billing/ charging complaints' parameters all the operators are meeting 100% benchmark within 4 weeks. Also for the parameter 'Time taken for refunds of deposits after closures' all operators are meeting the benchmark of 100% within 60 days.

During **Drive Tests**,

- Blocked Call Rate is not met by Aircel (4.05%) in Shimla as well as BSNL in Solan.
- Drop call rate parameter is not met by BSNL in Shimla (3.63%).
- For "%age of connections with good voice quality" is met by all operators in HP circle.
- IN HP, Videocon & TTSL (GSM) are having an ICR agreement with Aircel.

II Basic Telephone Service (Wireline) Providers

(A) Exchange Audit

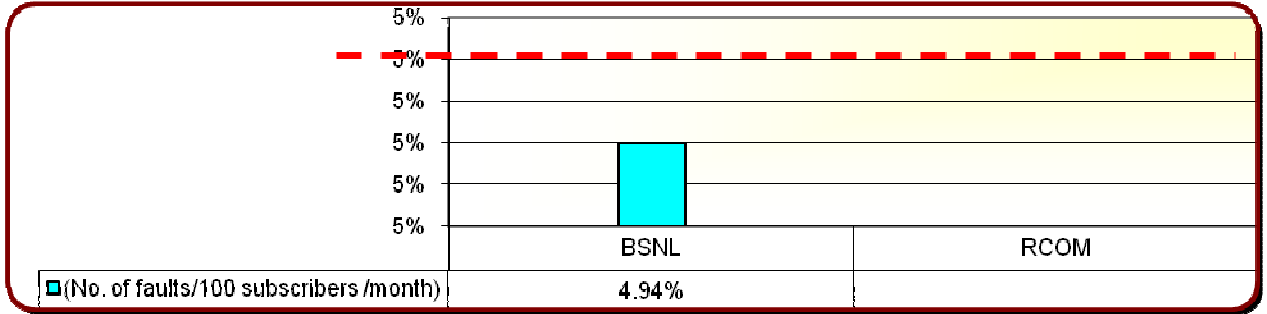
1. 3 days live data & One month audit comparative table

S/N	Parameters	Benchmarks	Audit Period	BSNL	RCom
1	Fault incidences				
	(No. of faults/100 subscribers /month)	< 5%	Month	4.94%	NA
2	Faults Repair/Restoration Time				
	Fault repair by next working day(Urban Area)	>90%	Month	96%	NA
	Within 3 daysday	100%		100%	NA
	Fault repair by next working day(Rural & hilly Area)	>90%		95%	NA
	Within 5 days	100%		100%	NA
	Mean time to Repair(MTTR)	≤8 Hrs		6.82Hrs.	0 Hrs
3	Rent Rebate				
	Fault pending > 3 days & <7 days	Rebate for 7 days	Month	0	NIL
	Fault Pending > 7 days & < 15 days	Rebate for 15 days		0	NIL
	Fault pending > 15 days	Rebate for 1 month		0	NIL
4	Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)				
	CCR & ASR	> 55%(CCR) & > 75%(ASR)	Live	49.62%	81.5%
			Month	49.06%	80.3%
5	Metering & Billing Performance				
	Disputed Bills over bills issued	< 0.1%	Month	0.08%	NA
	% of billing complaints resolved within 4 weeks	100%		100%	NA
	Period of all refunds/payments from the date of resolution of complaints within 1weeks	100%		100.0%	NA
6	POI Congestion				
	No of POI having >=0.5%.	>= 0.5%	Live	0	0
			Month	0	0
7	Response Time to customer for assistance				
	Accessibility of Call centre/customer Care within 40 seconds	≥95%	Live	39.88%	96.31%
			Month	86.22%	96.00%
	% age of calls answered by operator(voice to voice) within 60 seconds	≥90%	Live	84.57%	92.87%
			Month	85.80%	90.00%
8	Customer care(promptness in attending to customers request				
	Termination / Closures	100%	Month	100%	NA
	Time taken for refunds of deposit after closures	100%		100%	NA
<p>NA – Not Applicable, NP – Not Provided.</p> <p>Note:</p> <p>a) Reliance filed ASR instead of CCR rest of operators filed CCR.</p> <p>b) RCOM has no cases of Fault, Billing, Rent rebate and closures cases in that month.</p> <p>c) BSNL is not meeting CCR parameter and call centre part.</p>					

2. Performance (Graphical representation)

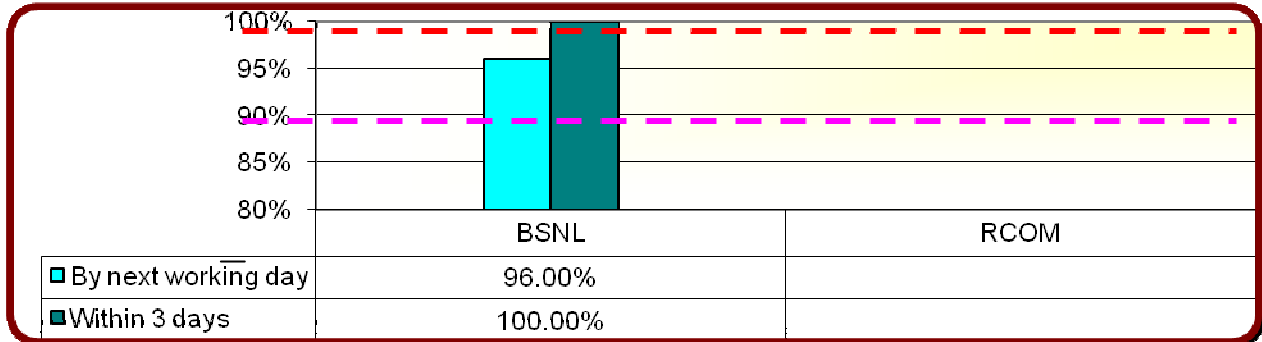
Parameter wise Data Analysis & Graphical Representations – Basic Service (Wireline)

Fault incidences (No of faults/100 subscribers/month (≤5): BSNL is meeting the benchmark whereas RCOM has no fault cases on that month.



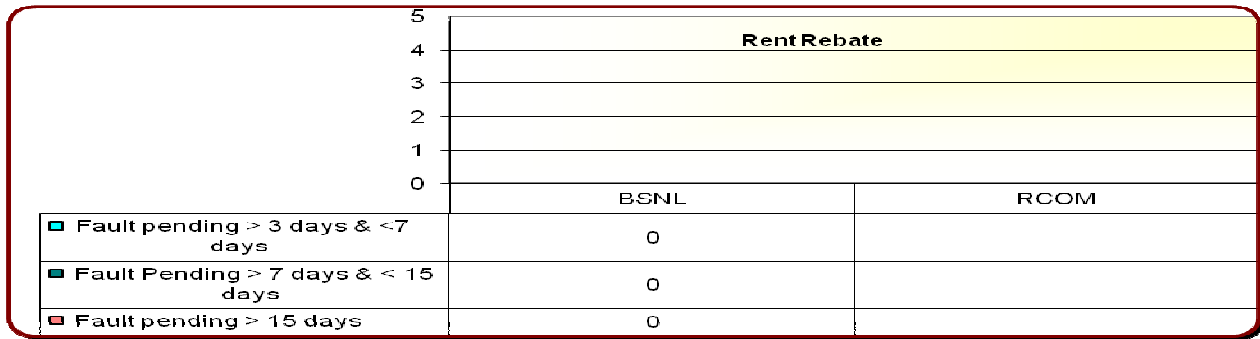
Fault Repair (Urban Area):

- **By next working day (>90%):** BSNL comply with the TRAI benchmark of 90%. Rcom has no cases of faults. TTSL has not proved the data.
- **Within 3 days (100%):** BSNL comply with the TRAI benchmark of 100%. Rcom has no cases of faults. TTSL has not provided the data.

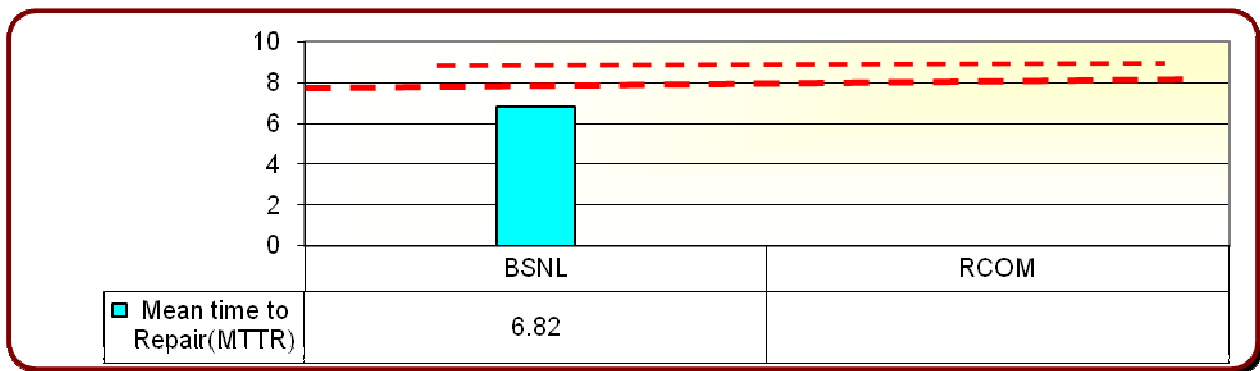


Rent Rebate

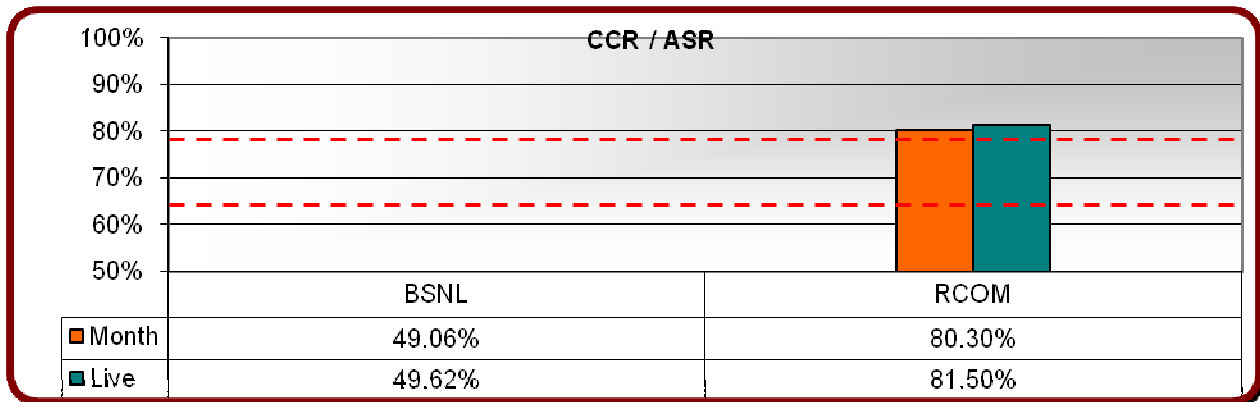
- Faults pending for > 3 days & < 7 days (Rebate 7 days)—As far as rebate is concerned BSNL has no rebate cases . RCom. & TTSL do not have any rebate case.
- Faults pending for > 7 days & < 15 days (Rebate 15 days) — As far as rebate is concerned BSNL has no rebate . RCom. & TTSL do not have any rebate case.
- Faults pending for > 15 days (Rebate one month)--. BSNL has no rebate cases . RCom. do not have any rebate case.



Mean Time to Repair (MTTR) (<= 8 Hrs): BSNL comply with the TRAI benchmarks except for RCOM , which has no MTTR.

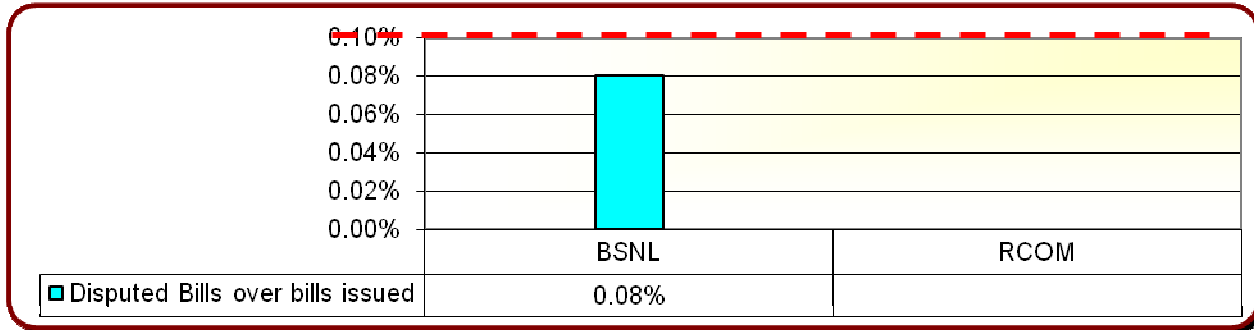


Call Completion Rate (CCR)/ Answer to Seizure Ratio (ASR) (>55% & > 75%): BSNL is not complying the benchmark in both Live & month in comparison with RCom, which have given ASR and BSNL, gave CCR data.



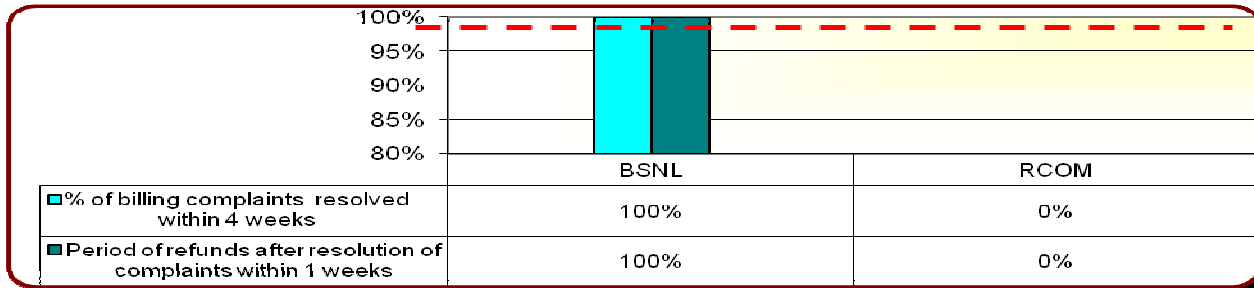
Metering and Billing Credibility (< 0.1%):

Disputed Bills over Bills issued: - BSNL comply with the TRAI standards for one-month data verification. Rcom has no Bills issued.

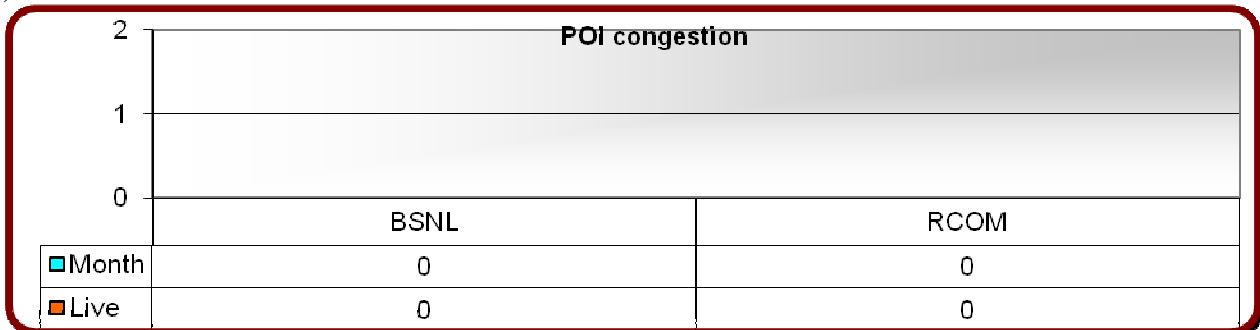


% of Billing Complaints resolved within 4 Weeks: BSNL have resolved billing complaints 100% (benchmark) within 4 weeks except RCOM which has no cases in one-month data verification.

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, BSNL is meeting the benchmark of 100% except RCOM with no cases of refunds in one-month data verification.

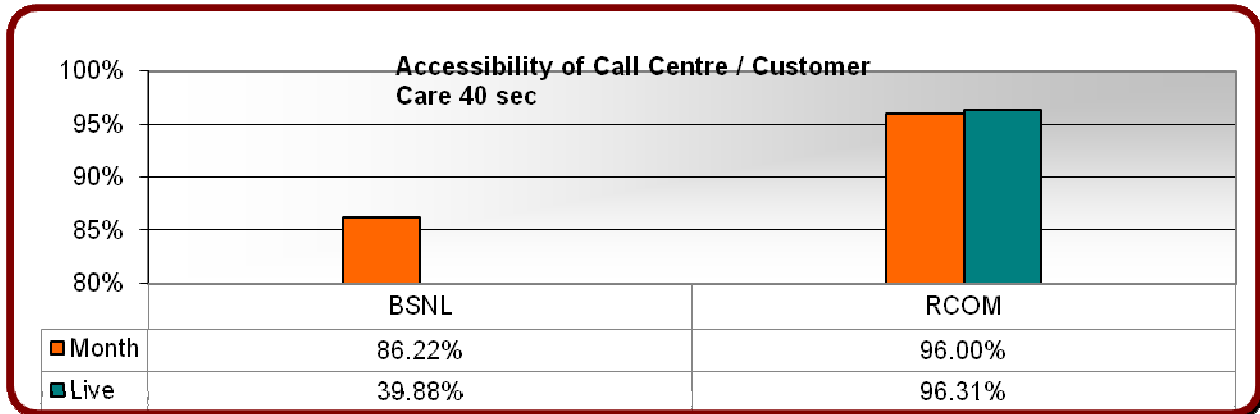


No of POI having > 0.5% Congestion: All the operators are having POIs below 0.5% congestion complying with the TRAI benchmark ($\geq 0.5\%$).

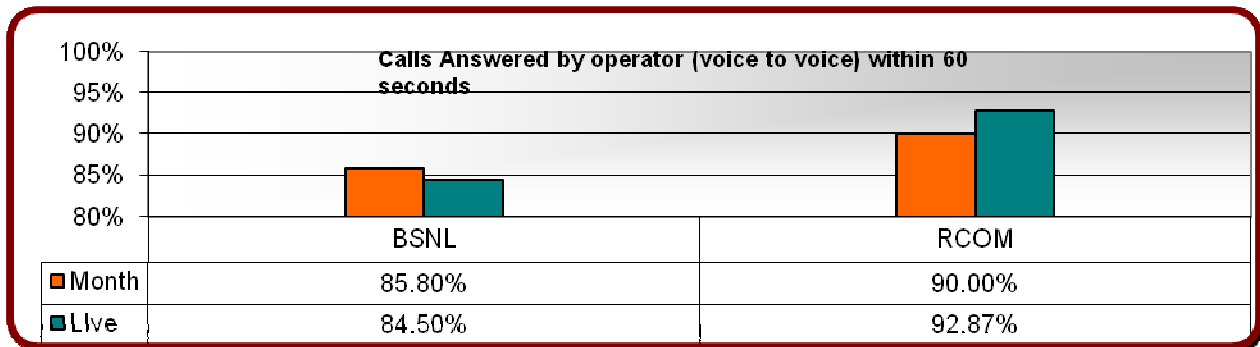


Response Time to Customer for Assistance:

Accessibility of Call centre / customer care (Electronically) within 40 sec (>95%): BSNL is not meeting the benchmark set by TRAI in both live and one-month data verification.



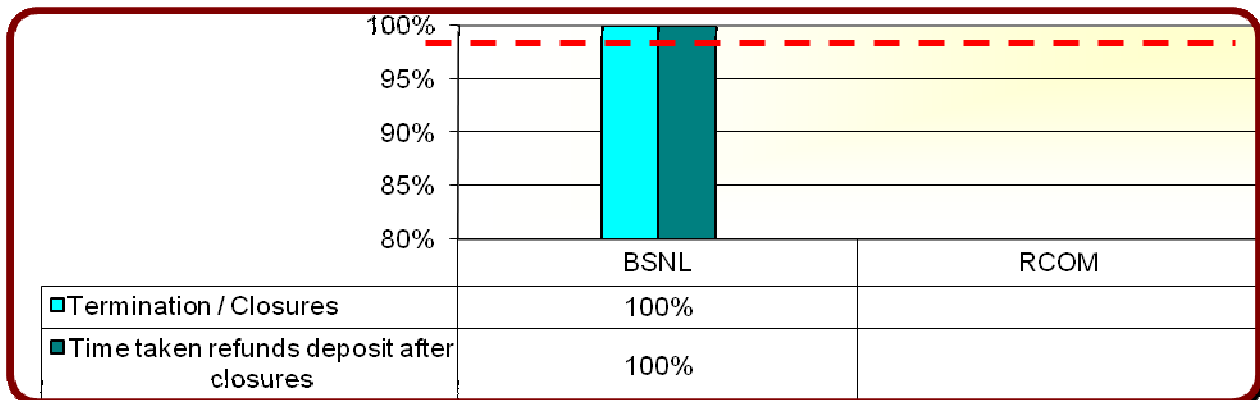
% age of calls answered by operator (Voice to Voice) within 60 sec (>90%): BSNL is not meeting the benchmark while as Rcom meet in both Live & Month data verification.



Customer Care Promptness in Attending Customer Request:

(i)Termination/Closure: In Termination only BSNL is having cases, while as Rcom has no termination cases in the month of audit.

ii) Time taken for refund of deposits after closure: The audit finding on ‘time taken for refund of deposit after closure’ RCOM is not having any cases of refunds respectively.



3. Customer Care & Grievances Redressal

Basic Service (Wireline)

S.N.	Parameters	BSNL	RCOM
1	Total no of complaints received in the call centre (Tech+ Non Tech)	4	0
3	Nodal Officer		
3.1	Total no of complaints received by the nodal officers	3	0
3.2	Percentage of complaints with reference to total no of complaints received at the call centre	75%	0%
4	Appellate Authority		
4.1	Total no of appeals received by the appellate authority	0	0
4.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	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. RCOM has no complaints on call centre, Nodal & Appellate authority respectively.

4. Live calling to call centre

Calling Operator	BSNL	RCOM
Call Centre No.	1500	*377
Total No. of Calls Attempted	100	100
Total No. of calls connected to IVR	100	100
Calls got connected to agent within 60 Sec	95	96
%age of calls got answered	95%	96%

5. Level 1 live calling

Emergency no.	No. of calls made	BSNL			RCOM
		SHIMLA(SDCA)	THEOG(SDCA)	RAMPUR(SDCA)	SHIMLA
100	1	1	1	1	1
101	1	1	1	1	1
102/108	1	1	1	1	1

6. Critical Analysis

Critical findings and Key take outs for Basic service (Wireline) are as follows:

- ◆ The Basic service (Wireline) audit for HP Circle broadly indicates that almost all the service providers are meeting the benchmarks fixed by Telecom Regulatory Authority of India (TRAI) with exceptions in some areas as described in the report. Not applicable for HP.
- ◆ The live calling results of call center for response time to the customer for assistance are found to be somehow similar for the one month data audited and three-days live measurement for the operators.
- ◆ In the live measurements conducted to assess Call Completion Rate (CCR), it is found that whereas RCOM is meeting both in Live & Month. The results of three-day live measurement and one month data audited are found to be almost similar.
- ◆ For testing the Service Providers performance on Technical (Network related complains) & Non-Technical (Provisioning, Billing, Refund etc.) complaint TCIL auditors have make some random basis calls to customer to cross verify about refund cases. In most of the cases positive feedback were received regarding complaint attendance.

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

Fault incidence:

BSNL is meeting the benchmark and RCOM has no fault cases in that month.

Fault Repair (Urban Area):

BSNL is meeting the benchmarks set by TRAI for the parameters “faults repair by the next working day” and “fault repair within 3 working days” respectively, RCOM has no cases in these area.

For the parameter Mean time to Repair (MTTR), BSNL & RCOM is meeting the benchmark.

Rent Rebate:

In this, operators have no rebate cases registered in that month of audit.

Call Completion Rate (CCR):

BSNL is found not meeting TRAI benchmark of $\geq 55\%$ for the parameters Call Completion Rate (CCR) while as RCOM is meeting the benchmark for the parameter, Rcom provides ASR while BSNL provides CCR Answer to Seizure Ratio in both live and one- month data verification.

Metering and billing credibility:

BSNL is complying the benchmark of less than 0.1% billing complaints over the total number of bills issued. RCOM has no cases for this parameter.

% of Billing complaints Resolved Within 4 Weeks:

As per the findings for one-month data audit, BSNL is found 100% resolution of complain within 4 weeks. RCOM has no billing cases.

Period of All refunds/Payments from the date of resolution within 1 Week:

As per the findings for one-month data audit, BSNL found 100% refunds from the date of resolution within 1 week, whereas RCOM has no cases of refunds.

POI Congestion:

All the operators are meeting the benchmarks having POI below 0.5% congestion set by TRAI ($\geq 0.5\%$) for both live and one-month 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 BSNL is not complying the benchmarks of $\geq 95\%$ in both live and one-month data verification, whereas RCOM is meeting in both Live & month data verification.

(ii) % of Call answered by operators within 60 seconds (Voice to Voice):

For the parameter “%age of calls answered by operators within 60 Seconds” BSNL is not complying the benchmarks of $\geq 90\%$ in both live and one-month data verification, whereas RCOM is meeting the benchmark fixed by TRAI in both Live & month data verification.

Customer care (Promptness of attending customer request):

(i) Termination/Closure: -

Only BSNL is having 100% cases for this parameter. RCOM is not having termination cases..

ii) Time taken for refund of deposits after closure:

The audit finding on ‘time taken for refund of deposit after closure’ is that BSNL is having 100% cases of refunds, whereas RCOM has no refund cases.

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 deviation in values of the parameters.

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

BSNL

Under the Network Section, parameters of BSNL is not meeting the benchmark for both live and one-month data verification for Call Completion Ratio but as far as POI congestion is concerned, no POI is having more than 0.5% congestion within the local network.

BSNL is also not meeting the benchmark in one month data verification & Accessibility of call centre parameter.

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 is meeting the benchmark in both live and one-month data verification for Answer to Seizure ratio. Please note that Reliance has provide ASR (Answer to Seizure ratio) value instead of CCR (call completion ratio) in POI congestion no POI is having more than 0.5% congestion within the local network. Rcom has no cases in fault incidences, fault repair, rent rebate, termination & closure cases respectively.

II. Broadband Service Providers

3 days live and One month audit comparative table

S/N	Parameters	B-marks	Audit	BSNL	TCISL	Rcom
1	<i>Service Provisioning/Activation Time</i>					
	100% cases in 15 days (subject to technical feasibility)	<15 days	Month	100%	No cases	No cases
	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/day.		100%	No cases	No cases
2	<i>Faults Repair/Restoration Time</i>					
	By next working day	>90%	Month	95%	No cases	No cases
	within 3 working day	≥99%		99.50%	No cases	No cases
2.1	<i>Rebate</i>					
	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	0	0
	Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)			0	0	0
	Faults Pending for > 15 working days:(Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)			0	0	0
3	<i>Billing Performance</i>					
	Billing complaints per 100 bills issued	<2%	Month	1.72%	No cases	No cases
	%age of complaints resolved within 4 weeks	100%		100%	No cases	No cases
	Time taken for refund of deposits after closure (within 60 days)	100%		100%	No cases	No cases
4	<i>Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)</i>					
	within 60 sec	>60%	Live	93%	95%	93%
			Month	83%	83%	84%
	within 90 sec	>80%	Live	95%	100%	94%
			Month	87%	85%	87%
5	<i>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).</i>					
5.1	POP to ISP Gateway Node [Intra-network] Link(s)	< 80%	Live	75.00%	28.00%	29.00%
			Month	73.00%	29.00%	15.00%
5.2	ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity	< 80%	Live	76.00%	31.00%	NA
			Month	74.37%	32.00%	NA
5.3	Broadband Connection Speed (download) - from ISP Node to User	> 80%	Live	83.50%	90%	98%
			Month	85.50%	90.24%	99.00%
6	<i>Service Availability/Uptime (for all users)</i>					
	Service Availability(%)	>98%	Month	100%	100.00%	99.99%

S/N	Parameters	B-marks	Audit	BSNL	TCISL	RCom
7	Packet loss					
	% of Packet loss	<1%	Live	0.00%	0%	0.00%
			Month	0.00%	0%	0.00%
8	Network latency (for wired broadband access)					
8.1	User reference point at POP/ISP Gateway node to IGSP/NIXI	<120 ms	Live	4ms	21.33ms	87ms
			Month	21ms	22.70ms	88ms
8.2	User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)	<350 ms	Live	231ms	276.33ms	176ms
			Month	227ms	273.03ms	216ms
8.3	User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)** See note below	<800 ms	Month	NA		

NA – Not Applicable, NP – Not Provided.

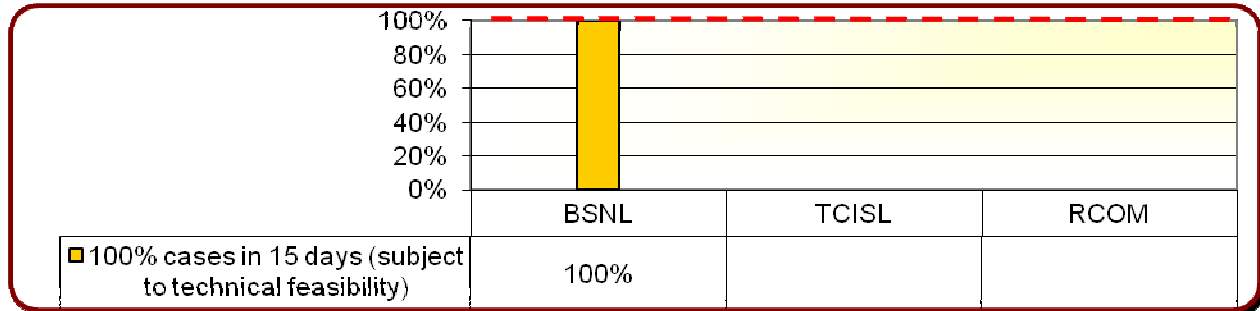
Note:

- There is no cases in the month of audit for the parameters like Service Provisioning, Faults Repair, Rebate, for TCISL & RCOM.
- None of the operators are having satellite connectivity.

1. Performance (Graphical representation)

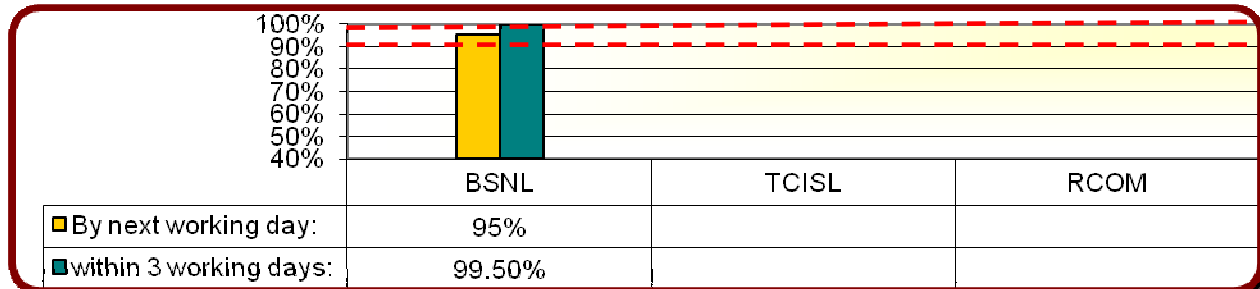
Service Provisioning /Activation Time: (Benchmark 100%)

BSNL is complying with the TRAI benchmark of 100% except TCISL & Rcom which has no Service Activation in that month.



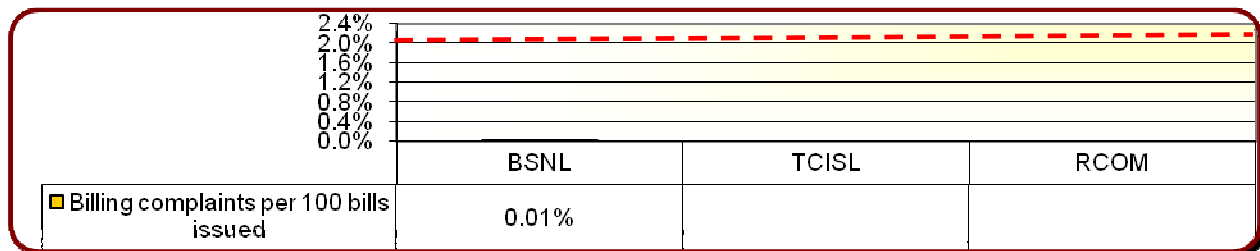
Fault Repair / Restoration Time:

- **By next working day (>90%):** BSNL is complying with the TRAI benchmark of 90% in one-month data verification Rcom & TCISL has no fault cases
- **Within 3 working days (>99%):** BSNL is complying with the TRAI benchmark of 99% in one-month data verification. **TCISL & Rcom** has no fault cases.
- **Rebate:** None of the operators had given rebate to the customers.



Billing Performance: (Benchmark <2%)

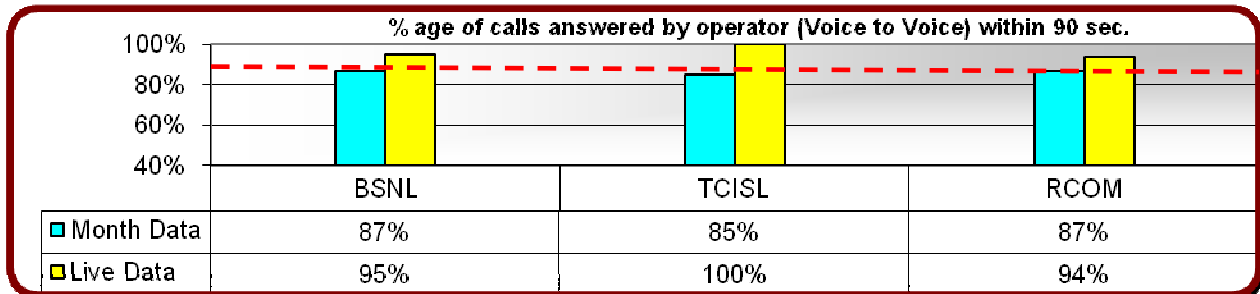
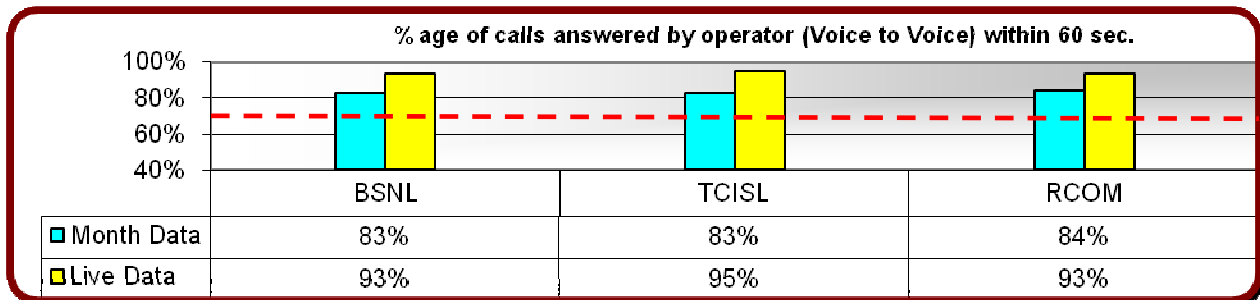
BSNL is complying with the TRAI standards for the parameter “ Billing complaints per 100 bills issued” in one-month data verification. TCISL & Rcom has no billing complaints in that month..



Response time to the customer for assistance:

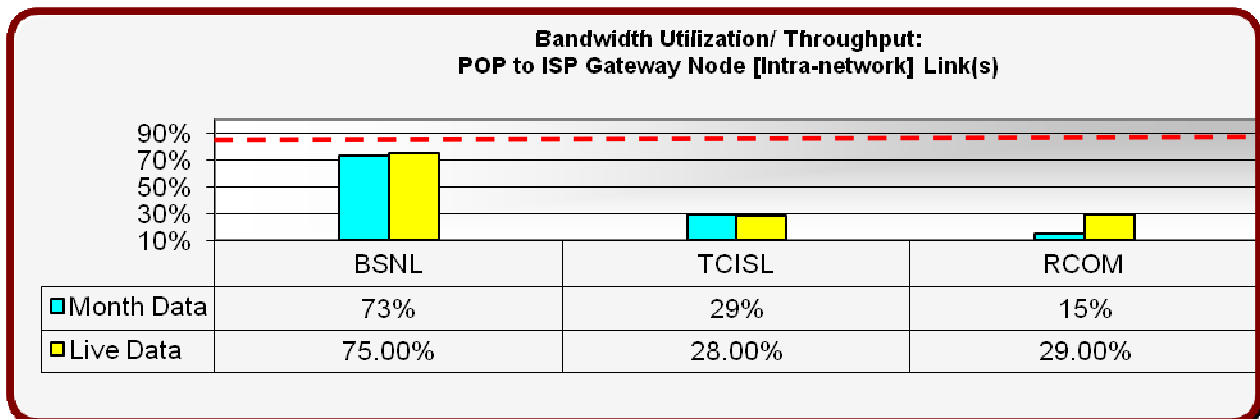
% age of calls answered by operator (Voice to Voice)

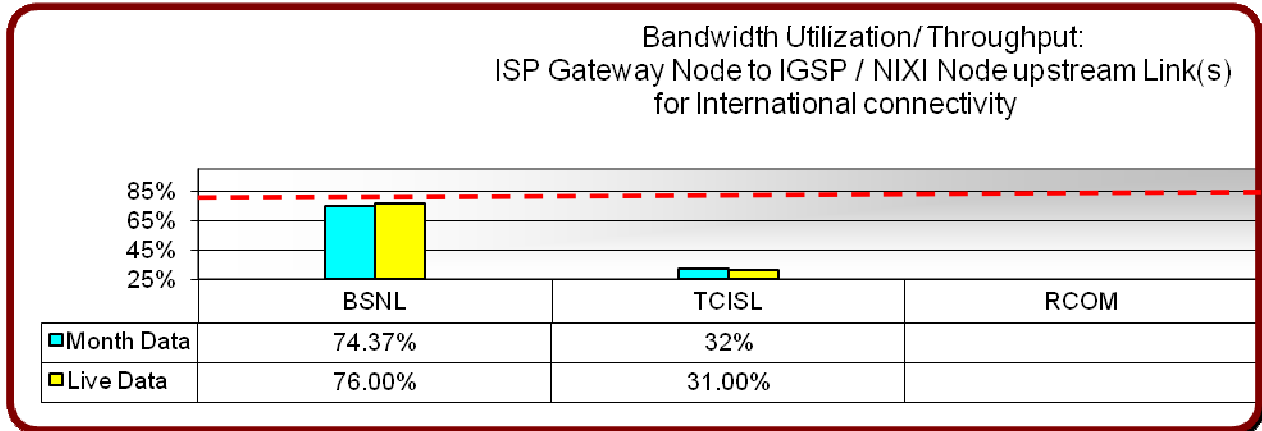
- **Within 60 seconds (>60%):** All the operators are meeting the benchmark in both live and one- month data verification.
- **Within 90 seconds (>80%):** All the operators are meeting the benchmark in both live and one- month data verification.



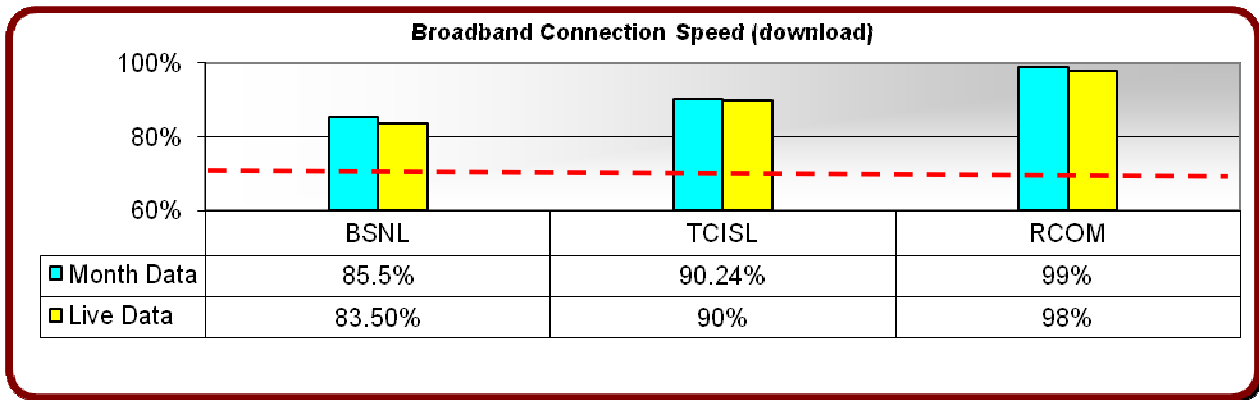
Bandwidth Utilization/ Throughput:

- **POP to ISP Gateway Node [Intra-network] Link(s): (Benchmark <80%):** All the 3 operators are meeting the Trai benchmarks.
- **ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity: (Benchmark <80%):** RCOM has not provided data for this parameter.

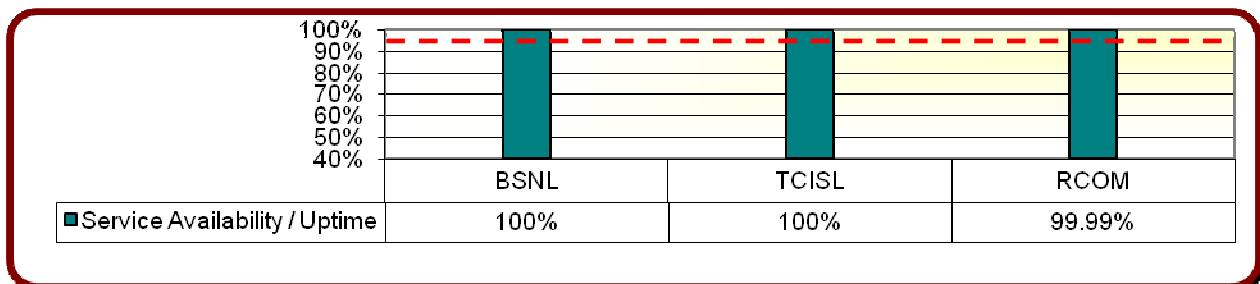




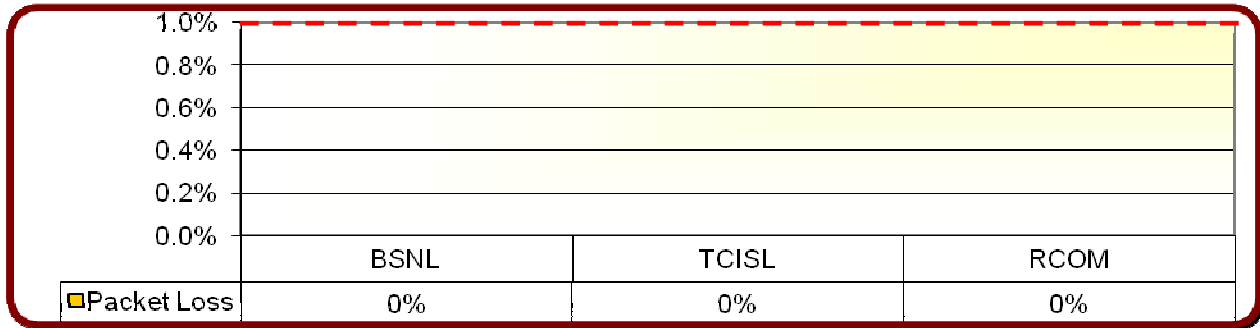
Broadband Connection Speed (download) (>80%): All the operators are meeting the TRAI benchmark of greater than 80% connection in both live and one-month data verification.



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.

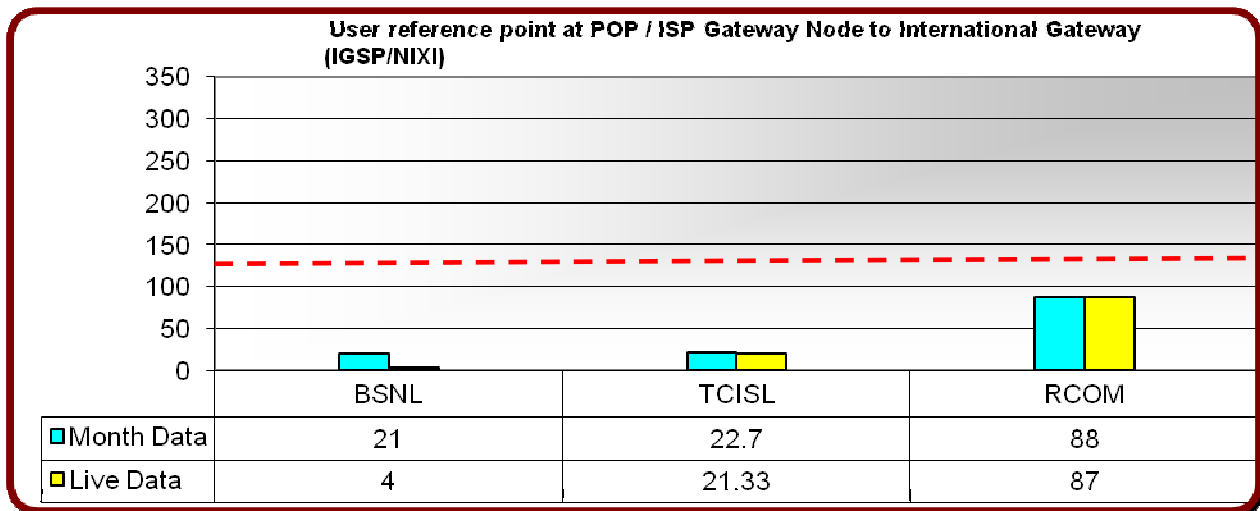


Packet Loss (Should be less than 1%): All operators are meeting the benchmark in both live and one-month data verification.

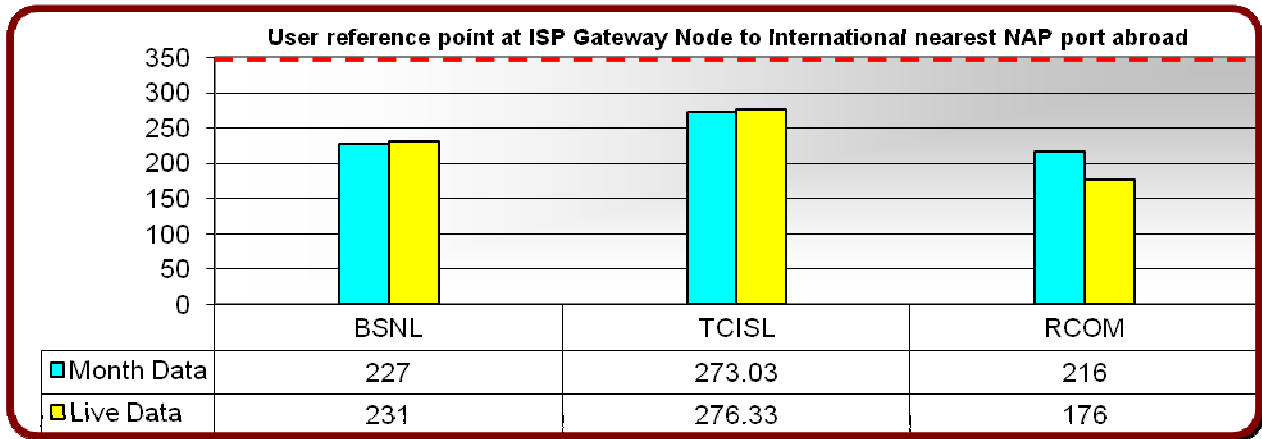


Network Latency:

- **User reference point at POP/ISP gateway node to international gateway (IGSP/NIXI) <120 ms:** All the operators are satisfying the benchmark in live & month part both respectively.



- **User reference point at ISP gateway node to international nearest NAP Port abroad (Terrestrial) <350 ms:** All the operators are meeting the benchmarks in Live & Month data audit .



- 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

2. Customer Care & Grievances Redressal

S.N.	Parameters	BSNL	TCISL	RCOM.
1	Call Centre			
1.1	Total no of complaints received in the call centre	177	0	0
1.2	Complaints per 100 customers per months	1.72%	0%	0%
2	Nodal Officer			
2.1	Total no of complaints received by the nodal officers	7	0	0
2.2	Percentage of complaints with reference to total no of complaints received at the call centre	3.95%	0%	0%
3	Appellate Authority			
3.1	Total no of appeals received by the appellate authority	0	0	0
3.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	0%	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.

3. Live calling to call centre

Calling Operator	BSNL	RCOM	TCISL
Call Centre No.	1500	*377	60607070
Total No. of Calls Attempted	100	100	100
Total No. of calls connected to IVR	100	100	100
Calls got connected to agent within 60 Sec	95	97	97
%age of calls got answered	95%	97%	97%

3. Critical Analysis

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

Service provisioning/Activation time:

BSNL's performance is up to the mark and meeting the benchmarks for service provisioning/Activation time, except for some operators like Rcom & TCISL which has no Activation in one-month data verification.

Fault Repair/Restoration time & Rebate:

BSNL is meeting benchmark of more than 90% in one-month data verification, where as Rcom & TCISL has no fault repair in month data. As far as Rebate is concerned BSNL, TCISL & RCOM has no rebate cases.

Billing performance:

TCISL & RCOM has no billing cases. Also BSNL is meeting the benchmark of "100% cases 4 weeks" for billing complaint resolution except for Rcom & TCISL which has no complaints resolved cases and for providing the refund of deposits after closure only BSNL comply for this part as per the benchmark of "100% cases within 60 days".

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.

Bandwidth Utilization:

POP to ISP Gateway Node (intra-network) links:

All the service providers are meeting the benchmarks for both live & one-month data Verification.

ISP Gateway Node to IGSP/ NIXI Node upstream links for International connectivity:

RCOM has not provided the data for this parameter .

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.

Service Availability/Uptime:

All the operators are meeting the TRAI benchmark of greater than 98% during one-month data verification.

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 the operators are meeting the benchmarks in both Live & Month data respectively.

User reference point at ISP gateway node to international nearest NAP Port abroad (Terrestrial) <350 ms:

All the operators are meeting the benchmarks in both Live & Month data respectively.

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 service provisioning, Fault repair, response time to customer for assistance & Service availability. For Technical parameters like Bandwidth Utilization , Network Latency etc, however packet loss, download speed and Service availability parameters has met by BSNL in live & Month data respectively.

RCOM

Reliance has no cases in Service provisioning, fault repair, rebate in the month of audit, rest all parameter has met by RCOM in both live and one-month data verification.

TCISL

TCISL has no cases in Service provisioning, fault repair, rebate in the month of audit, rest all parameter has met by TCISL in both live and one-month data verification.

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.