

REPORT
ON
AUDIT & ASSESSMENT OF QUALITY OF SERVICE
OF
CELLULAR MOBILE TELEPHONE SERVICE
WIRELINE BASIC SERVICE
&
BROADBAND SERVICE
FOR
NORTH ZONE – UP (EAST) CIRCLE

Report Period: Oct 2011 - Dec 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 (Level-1) call testing

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

Systems audited:-

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

Facilities audited:-

1. Billing documents.
2. Customer Care records.

Field data collections carried out:-

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

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

- ✓ TCIL auditors visited all the NSS (Network Sub System) and BSS (Base-station Sub System) to check data for all the operators in their respective service area.
- ✓ All the NSS and BSS data for the relevant details were collected either directly from the centralized NOC or through a remote access to the NOC.
- ✓ The Radio parameters were audited/verified from the data collected from OMC-R (Operation and Maintenance Center – Radio, as part of BSS data).
- ✓ The Drive test was conducted in high, low and medium dense areas including highways, commercial complex and residential areas and special attention was paid for the areas for which TRAI has received complaints.
- ✓ The POI and other network related parameters were audited/verified from the data collected from the OMC-S (Operation and Maintenance Center – Switch as part of NSS data).
- ✓ The data related to Billing and Customer care was checked for the previous month and verified with the customers by calling them on random basis. The process of registration and handling of the complaints was also studied for the various operators. Call centre number were called for measuring the efficiency of the call centre.
- ✓ The inter operator call assessment test was carried out during the time period as is specified in the tender document. TCBH (Time Consistent Busy Hour) is taken after observation of the traffic consistently for 3 days prior to the audit activity.
- ✓ Data has been collected for busy hour of network in case of live assessment & month of audit for all service providers & verified that service providers are providing busy hour data only for QoS service. We found that TCBH hour is matching with network busy hour as provided by service providers for UP (East) 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 for only operators who have a subscriber base of more than 10,000 in the circle. Audit data were collected from the centralized NOC or through a remote access to the NOC. Network parameters were also checked from the centralized NOC with relevant details. MRTG, Cacti 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/Wireline/Broadband Services in UP (East) Circle in 4th quarter (Oct – Dec 2011). The primary data collection and verification of records (PMR data verification – quarterly) maintained by various operators was undertaken during the period April - June 2011.

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

S/N	Name of Service Provider	Month of Audit	TCBH Hour
GSM Operators			
1	Aircel Ltd	Nov-2011	20 - 21 Hrs
2	Airtel Ltd	Nov-2011	20 - 21 Hrs
3	BSNL	Nov-2011	19 - 20 Hrs
4	Idea	Nov-2011	20 - 21 Hrs
5	Tata Communications (GSM)	Nov-2011	20 - 21 Hrs
6	Vodafone	Nov-2011	20 - 21 Hrs
7	Reliance Communication (GSM)	Nov-2011	19 - 20 Hrs
8	Uninor	Nov-2011	19 - 20 Hrs
9	Etisalat	Nov-2011	19 - 20 Hrs
10	Videocon	Nov-2011	19 - 20 Hrs
CDMA Operators			
11	MTS (CDMA)	Nov-2011	20 - 21 Hrs
12	Reliance Communication (CDMA)	Nov-2011	19 - 20 Hrs
13	Tata Communications (CDMA)	Nov-2011	19 - 20 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 GSM	Tata GSM	Uninor	Videocon	V-fone	MTS	Rcom CDMA	Tata CDMA
GSM Operators												CDMA Operators		
Network Availability														
a) BTS Accumulated Downtime	≤2%	0.28%	0.44%	0.74%	0.80%	0.26%	0.23%	0.07%	1.32%	1.62%	0.61%	0.12%	0.41%	0.06%
b) Worst affected BTSs due to downtime	≤2%	0.00%	0.28%	1.59%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%
a) CSSR (Call Setup Success Rate)	≥95%	98.45%	99.36%	97.52%	98.07%	97.10%	98.46%	97.18%	96.57%	98.39%	96.45%	99.42%	98.98%	98.30%
b) SDCCH/PAGING congestion	≤1%	0.00%	0.06%	0.63%	0.36%	0.60%	0.46%	0.16%	0.48%	0.01%	0.24%	0.00%	0.00%	0.00%
c) TCH congestion	≤2%	0.01%	0.25%	1.12%	0.30%	1.51%	0.98%	1.19%	2.04%	0.00%	0.99%	0.00%	0.33%	0.00%
Connection maintenance (retainability)														
a) CDR	≤2%	0.54%	1.23%	1.96%	0.45%	0.94%	0.77%	1.22%	1.58%	0.00%	1.35%	0.57%	0.99%	0.64%
b) Worst affected cells>3% TCH drop	≤3%	4.57%	2.88%	2.97%	2.02%	2.87%	2.40%	6.36%	3.47%	1.21%	2.71%	2.03%	0.33%	0.11%
c) Good voice quality	≤95%	96.56%	98.38%	96.00%	98.98%	95.88%	98.77%	96.64%	95.32%	98.08%	95.60%	99.99%	NA	NA
Number of POI having ≥0.5% POI congestion	≤0.5%	0	0	0	0	0	0	0	3	0	0	0	0	0
Response time to customers for assistance														
a) Accessibility of call centre/Customer Care	≤95%	100.0%	97.76%	96.53%	95.35%	100.0%	99.17%	100.0%	96.07%	100.0%	100.0%	99.83%	98.98%	100.0%
b) % call answered by operators(voice to voice) within 60 sec.	≤90%	84.67%	99.00%	97.03%	100.0%	96.78%	98.00%	98.01%	99.08%	100.0%	98.31%	98.28%	97.55%	96.44%

NA: Not Applicable, NP: Not Provided

From the above 3 days live data assessment table, it is found that the operators are meeting most the network parameter except for the parameter “TCH congestion” Uninor is not meeting the benchmark value & for parameter. For “Worst affected cells >3% TCH drop”, it is seen that Aircel, Tata (GSM) & Uninor are not satisfying the benchmark. Uninor is having > 0.5% congestion in 3 nos. of POIs.

In case of “Good voice quality” RCom (CDMA) & Tata (CDMA) reported that the data is not system generated data. Rest of the operators are satisfying the benchmark requirement.

In case of performance related to Customer Care data it is seen that for the parameter “% call answered by operators (voice to voice) within 60 sec”, Aircel’s performance is not satisfactory.

One Month Data Audit		B-mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	V-fone	MTS	Rcom CDMA	Tata CDMA
S/N	Name of Parameter		GSM Operators										CDMA Operators		
(A)	Network Service Quality Parameter														
1	Network Availability														
	a) BTS Accumulated Downtime	≤2%	0.40%	0.36%	0.79%	1.02%	0.29%	0.46%	0.05%	1.56%	0.89%	0.15%	0.14%	0.65%	0.04%
	b) Worst affected BTSs due to downtime	≤2%	1.82%	0.67%	2.30%	0.00%	0.87%	1.51%	0.00%	0.91%	0.00%	0.76%	0.00%	1.88%	0.00%
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	≥95%	98.46%	99.21%	97.00%	98.37%	97.43%	98.55%	96.77%	96.79%	99.24%	96.26%	99.47%	98.89%	98.37%
	b) SDCCH/PAGING congestion	≤1%	0.14%	0.12%	0.70%	0.66%	0.64%	0.20%	0.27%	0.73%	0.06%	0.22%	0.00%	0.01%	0.00%
	c) TCH congestion	≤2%	0.77%	0.34%	1.50%	0.20%	1.74%	0.94%	1.43%	2.08%	0.00%	1.10%	0.17%	0.47%	0.00%
3	Connection maintenance (retainability)														
	a) CDR	≤2%	0.55%	1.26%	1.60%	0.48%	1.10%	0.78%	1.24%	1.72%	1.20%	1.36%	0.53%	0.95%	0.63%
	b) Worst affected cells>3% TCH drop	≤3%	4.58%	2.89%	3.50%	1.28%	2.83%	2.40%	6.66%	3.78%	0.22%	2.94%	2.10%	0.30%	0.10%
	c) Good voice quality	≥95%	96.43%	98.37%	96.00%	98.94%	95.93%	98.68%	96.65%	95.34%	97.05%	95.80%	99.98%	NA	NA
4	Number of POI having ≥0.5% POI congestion		0	0	0	0	0	0	0	3	0	0	0	0	0
(B)	Customer Service Quality Parameters														
5	Metering/billing credibility- Post paid	≤0.1%	0.08%	0.02%	0.02%	NA	0.05%	0.06%	0.30%	NA	NA	0.03%	0.00%	0.003%	0.02%
6	Metering /billing credibility- Pre paid	≤0.1%	0.04%	0.004%	0.01%	0.00%	0.004%	0.10%	0.06%	0.004%	0.00%	0.01%	0.002%	0.10%	0.004%
7	Resolution of billing/ charging complaints(within 4 weeks)	100.0%	100.0%	99.99%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	a) Period of applying credit/waiver/adjustment to the customer's account from the date of resolutions of complaints (≤1week)	100.0%	100.0%	99.72%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	33.33%	100.0%	100.0%

One Month Data Audit		B-mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	V-fone	MTS	RCom CDMA	Tata CDMA
S/N	Name of Parameter		GSM Operators									CDMA Operators			
8	Response time to customers for assistance														
	a) Accessibility of call centre/Customer Care	≥95%	100.0%	97.04%	95.99%	97.93%	100.0%	99.18%	99.34%	96.66%	100.0%	100.0%	98.56%	98.96%	98.66%
	b) % call answered by operators(voice to voice) within 60 sec.	≥90%	93.41%	96.32%	96.11%	100.0%	79.53%	97.14%	97.30%	99.49%	98.15%	99.76%	95.55%	96.90%	97.19%
9	Termination/closure of service (≤7days)	100.0%	80.00%	100.0%	65.00%	NA	100.0%	100.0%	100.0%	NA	NA	100.0%	100.0%	100.0%	100.0%
10	Time taken for refunds of deposits after closures (within 60 days).	100.0%	100.0%	100.0%	100.0%	NA	100.0%	100.0%	100.0%	NA	NA	100.0%	100.0%	100.0%	100.0%

NA: Not Applicable, **NP:** Not Provided

From the above month data assessment table, under Network Parameters category it is found that significant no. of operators are not meeting the parameter “Worst affected cells>3% TCH drop”. Name of the operators for the same are Aircel, BSNL, Tata (GSM) & Uninor. For “TCH congestion” Uninor is not satisfying the benchmark. Uninor is also found to have 3 nos. of POI under congestion > 0.5%. In case of “Good voice quality” RCom (CDMA) & Tata (CDMA) have not provide system generated data. Rest of the operators are found satisfying the benchmark successfully. BSNL is having deviation in “worst affected BTs due to downtime”.

In case of performance related to Customer Care data, it is found that for the parameter “Metering/billing credibility-Post paid”, Tata-GSM is not satisfying the benchmark.

For parameters “calls answered by operators (voice-to-voice) within 60 sec”, it is found that Idea is not satisfying the benchmark.

In case of “Resolution of billing/ charging complaints (within 4 weeks)”, it is seen that the performance of Airtel is not satisfactory.

Similar poor performance is noticed in case of BSNL for & “Termination/closure of service”.

Operator-Assisted Drive Test

The Operator assisted Drive Test was conducted at UP (East) for all the operators. Route covered was about around 80-100 Km depending on city areas within the speed limit of 30-35Km/hr. The cities covered were Faizabad, Sahajanpur & Kanpur. In all the cities, zones were selected in order to cover different density areas (High, Medium & Low).

S/N	Parameter	City Name	Aircel	Airtel	BSNL	Idea	Rcom GSM	Tata GSM	Uninor	Vodafone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators								CDMA Operators		
1.1	Blocked Call Rate ($\leq 3\%$)	Faizabad	0.00%	1.31%	2.91%	1.26%	0.64%	0.00%	2.99%	1.40%	No Service	1.24%	0.00%
		Sahajanpur	1.01%	2.78%	8.38%	2.66%	1.04%	0.42%	3.85%	2.29%	No Service	3.81%	0.55%
		Kanpur	1.55%	0.00%	0.66%	2.79%	8.00%	1.47%	8.65%	4.10%	1.31%	5.24%	0.00%
1.2	Dropped Call Rate ($\leq 2\%$)	Faizabad	0.00%	0.00%	0.97%	0.63%	0.00%	0.00%	3.73%	0.70%	No Service	2.48%	0.61%
		Sahajanpur	0.00%	0.00%	0.00%	2.13%	1.04%	0.42%	2.56%	0.57%	No Service	2.12%	3.31%
		Kanpur	0.78%	0.00%	0.00%	0.56%	1.00%	0.00%	0.48%	0.51%	0.00%	2.38%	1.60%
1.3	% of connections with good voice quality ($\geq 95\%$)												
	(i) 0-4 (w/o frequency hopping)	Faizabad	NA								No Service	94.33%	99.50%
		Sahajanpur	NA								No Service	87.33%	85.80%
		Kanpur	NA								99.06%	98.33%	98.11%
	(ii) 0-5 (with frequency hopping)	Faizabad	92.04%	97.08%	95.20%	94.90%	85.77%	95.37%	93.51%	96.50%	NA		
		Sahajanpur	95.00%	96.61%	95.50%	96.80%	82.00%	95.23%	94.59%	96.20%	NA		
Kanpur		93.71%	97.81%	96.20%	95.26%	96.00%	96.27%	94.86%	93.93%	NA			
1.4	Call Setup Success Rate ($\geq 95\%$)	Faizabad	100.0%	98.69%	97.09%	98.74%	99.36%	100.0%	97.01%	98.60%	No Service	98.76%	100.0%
		Sahajanpur	98.99%	97.22%	91.62%	97.34%	98.96%	99.58%	96.15%	97.71%	No Service	96.19%	99.45%
		Kanpur	98.45%	100.0%	99.34%	97.21%	92.00%	98.53%	91.35%	95.90%	98.69%	94.76%	100.0%

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

- “Blocked Call Rate” benchmark is not met by BSNL (Sahajanpur), RCom-GSM (Kanpur), Uninor (Sahajanpur & Kanpur), Vodafone (Kanpur) & RCom-CDMA (Sahajanpur & Kanpur).
- “Dropped Call Rate” benchmark is not met by Idea (Sahajanpur), Uninor (Faizabad & Sahajanpur) & RCom-CDMA (Faizabad, Kanpur & Sahajanpur) & Tata-CDMA (Sahajanpur).
- “% of connections with good voice quality” benchmark is not met by Aircel, Idea, RCom (GSM&CDMA), Uninor, Vodafone & Tata-CDMA in most of the cities.
- “Call Setup Success Rate” benchmark is not met by BSNL (Sahajanpur), RCom-GSM (Kanpur), Uninor (Kanpur) & RCom-CDMA (Kanpur)

Note 1: Vodafone has reported that in Kanpur (Cantt Area) they are not allowed for any physical site installation. Hence “Good Vice quality” parameter is showing value below benchmark.

Note 2: MTS has no service (Spectrum) in Faizabad & Sahajanpur, similarly Videocon has no service in Faizabad, Sahajanpur & Kanpur cities. Hence in case of MTS & Videocon drive test is not applicable in these cities.

Independent Drive Test

The Independent Drive Test was conducted at UP (East) in Jaunpur, Ghazipur & Barabanki cities for the operators as shown on the table. Route covered was about around 50- 60 Km depending on city areas within the speed limit of 30-35Km/hr. Here again, zones were selected for covering different density areas (High, Medium & Low dense areas).

Operators Name	City	Blocked Call Rate (≤3%)	Dropped Call Rate (≤2%)	% of connections with good voice quality (≥95%)		Call Setup Success Rate (≥95%)
				(i) 0-4 (w/o frequency hopping)	(ii) 0-5 (with frequency hopping)	
Uninor	Jaunpur	0.64%	0.00%		92.40%	99.36%
RCom-GSM		2.00%	0.00%		94.00%	98.00%
RCom-CDMA		0.00%	0.00%	99.00%		100.0%
Aircel	Ghazipur	0.00%	0.00%		95.66%	100.0%
Vodafone	Barabanki	2.54%	0.00%		95.47%	97.46%

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

- In case of “Blocked Call Rate”, no deviation was found for any operator in Jaunpur, Ghazipur & Barabanki cities.
- In case of “Dropped Call Rate,” no deviation was found for any operator in Jaunpur, Ghazipur & Barabanki cities.
- “% of connection with good voice quality” benchmark is not met by Uninor & Rcom-GSM in Jaunpur city.
- “Call Setup Success Rate” is found to be met by all the operators in all the 3 cities.

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

S/N	Name of Parameter	Bench mark	BSNL	AIRTEL	RCOM	TTSL
1	Network Parameters					
a	Call Completion Rate	>= 55% (CCR) & >=75% (ASR)	82% (ASR)	62.14% (CCR)	92.91% (ASR)	NA
b	No of POI having > 0.5% Congestion	>= 0.5%	0	0	0	0
a	Accessibility of Call Centre/Customer Care					
	within 40 seconds	>= 95%	100%	100%	100%	100%
b	% age of calls answered by operator(voice to voice):					
	within 60 seconds	>= 90%	93.99%	96.85%	99.75%	100%

From the 3 days live data audit, it is observed that all the four basic telephone service providers are meeting the benchmarks for all the parameters. In POI there is no congestion found on any network and the call completion rate is also satisfactory. Since TTSL has no separate POI especially for wireline service, these POI are routed through wireless POI, so no provision of providing CCR or ASR.

One Month Data Audit (Basic Service):

S/N	Name of Parameter	Bench mark	BSNL	AIRTEL	RCOM	TTSL
1	(No. of faults/100 subscribers /month)	< 5%	3.34%	1.18%	0.91%	0.54%
2	Fault repair by next working day(Urban Area)					
a	<i>By next working day</i>	>90%	95.49%	96.74%	100%	100%
b	<i>Within 3 days</i>	100%	98.90%	100%	100%	100%
3	Fault repair by next working day(Rural & hilly Area)					
a	<i>By next working day</i>	>90%	94.02%	NA	NA	NA
b	<i>Within 5 days</i>	100%	99.67%	NA	NA	NA
4	Rent rebate					
a	<i>Fault pending > 3 days & <7 days</i>	Rebate for 7 days	1320	0	0	0
b	<i>Fault Pending > 7 days & < 15 days</i>	Rebate for 15 days	5	0	0	0
c	<i>Fault pending > 15 days</i>	Rebate for one month	92	0	0	0
5	Mean time to Repair(MTTR)	<= 8 Hrs	6.41	5.19	2.23	1.54
6	Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)	>= 55%(CCR) & > =75%(ASR)	87.0% (ASR)	63.33% (CCR)	92.29% (ASR)	NA
7	Mtering and billing credibility(post paid)					
a	Disputed Bills over bills issued	< 0.1%	0.02%	0.1%	0.06%	0%
8	% of billing complaints resolved within 4 weeks	Within 4 weeks	100%	100%	100%	NA
a	<i>Period of refunds after resolution of complaints within 1 weeks</i>	Within 1 weeks	100%	90.38%	100%	NA
9	No of POI having > 0.5% Congestion	>= 0.5%	0	0	0	0
a	<i>Accessibility of Call centre within 40 sec.</i>	>= 95%	100%	100%	97.90%	96.87%
b	<i>% age of calls answered by operator(voice to voice) within 60 sec.</i>	>= 90%	92.22%	90.58%	93.87%	97%
11	Customer care(promptness in attending to customers request)					
a	<i>Termination / Closures</i>	<= 7 Days	100%	76.94%	100%	NA
b	<i>Time taken refunds deposit after closures</i>	100% within 60 days	100%	NA	100%	NA

From the Month data table, it can be observed that most of the operators are meeting the parameters except BSNL which is not meeting the benchmark for fault repair within 5 days and Airtel which is not meeting in Period of refunds & termination /Clousure. Since TTSL has no separate POI especially for wireline service, these POI are routed through wireless POI, so no provision of providing CCR or ASR.

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	AIRTEL	BSNL	RCOM
1	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)				
a	<i>Within 60 seconds</i>	>=60%	99.00%	70.00%	99.00%
b	<i>Within 90 seconds</i>	>=80%	98.88%	82.00%	98.98%
2	Bandwidth Utilization/ Throughput:	>=80%			
a	<i>i) POP to ISP Gateway Node [Intra-network] Link(s)</i>		48.00%	46.12%	55.00%
b	<i>ii) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity</i>		NA	75.92%	NA
c	<i>Broadband Connection Speed (download)</i>	>=80%	100.0%	94.20%	100.0%
d	<i>Packet Loss</i>	<=1%	0.00%	0.00%	0.00%
3	Network Latency (for wired broadband access)				
a	<i>Network Latency at POP / ISP Gateway Node to International Gateway (IGSP/NIXI)</i>	<=120 ms	16 ms	2 ms	NP
b	<i>Network Latency at ISP Gateway Node to International nearest NAP port abroad</i>	<=350 ms	3 ms	231 ms	164 ms
4	User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)	<=800 ms	NA	NA	NA

NOTE: -- (a) In UP (East) Airtel, BSNL & RCom have subscriber base greater than 10,000 as per criteria prescribed by TRAI.
(b) RCOM has declared that network latency data of 3 days cannot be captured from NIXI due to security reasons.

One Month Data Audit (Broadband):

S/N	Name of Parameter	Benchmark	AIRTEL	BSNL	RCOM
1	Service Provisioning /Activation Time				
	100% cases in 15 days (subject to technical feasibility)	<15 days	84.64%	100.00%	100%
2	Fault Repair / Restoration Time				
	By next working day:	>90%	98.97%	94.80%	100%
	within 3 working days:	≥99%	99.79%	100.00%	100%
3	Rebate:				
	Faults Pending for > 3 working days and < 7 working days:		0	16	0
	Faults Pending for > 7 working days and < 15 working days:		0	11	0
	Faults Pending for > 15 working days:		0	47	0
4	Billing Performance				
	Billing complaints per 100 bills issued		0.00%	0.14%	0.15%
	%age of Billing Complaints resolved		NA	100%	100%
	Time taken for refund of deposits after closure:		NA	100%	100%
5	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)				
	Within 60 seconds	≥60%	90.85%	86.40%	96%
	Within 90 seconds	≥80%	93.03%	94.10%	97%
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).				
	i) POP to ISP Gateway Node [Intra-network] Link(s)	< 80%	47.00%	54.17%	14.74%
	ii) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity	< 80%	NA	74.37%	NA
7	Broadband Connection Speed	≥80%	100.0%	96%	100%
8	Service Availability / Uptime (for all users)				
	Service Availability / Uptime	100% within	99.99%	99.70%	99.99%

S/N	Name of Parameter	Benchmark	AIRTEL	BSNL	RCOM
		60 days			
9	Packet Loss	<=1%	0.00%	0%	0.13%
10	Network Latency (for wired broadband access)				
	User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI)	<=120ms	15ms	21ms	80.3ms
	User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial)	<=350ms	2ms	227 ms	305ms
	User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)	<=800ms	NA	NA	NA

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

NOTE:--

- a) Airtel is not meeting the Service Provisioning Parameters.
- b) Airtel & RCOM has no case of rebate in that month..
- c) Airtel & Rcom have no link for “ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity”.
- d) None of the operators are having satellite connectivity.

CHAPTER-3: AUDIT-PMR VERIFICATION

I. Cellular Mobile Telephone Service

PMR		Bench- mark	Audit	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA	
S/N	Name of Parameter			GSM Operators									CDMA Operators				
(A)	Network Service Quality Parameter																
1	Network Availability																
	BTS Accumulated Downtime	≤2%	Reported	0.28%	0.29%	0.65%	0.41%	0.21%	0.01%	0.19%	1.98%	1.39%	0.18%	0.18%	0%	0.04%	
			Verified	0.28%	0.29%	0.65%	0.41%	0.21%	0.01%	0.19%	1.98%	1.39%	0.18%	0.18%	0%	0.04%	
	Worst affected BTSs due to downtime	≤2%	Reported	1.24%	0.50%	2.70%	0%	0.34%	0.02%	0.33%	1.76%	1.34%	0.99%	0%	0.01%	0%	
			Verified	1.24%	0.50%	2.70%	0%	0.34%	0.02%	0.33%	1.76%	1.34%	0.99%	0%	0.01%	0%	
2	Connection Establishment (Accessibility)																
	CSSR (Call Setup Success Rate)	≥95%	Reported	98%	99%	96%	99%	100%	100%	97%	95%	98%	98%	99%	99%	100%	
			Verified	98%	99%	96%	99%	100%	100%	97%	95%	98%	98%	99%	99%	100%	
	SDCCH/PAGING congestion	≤1%	Reported	0.12%	0.12%	0.67%	0%	0.93%	0%	0.20%	0.81%	0.78%	0%	0%	0%	0%	
			Verified	0.12%	0.12%	0.67%	0%	0.93%	0%	0.20%	0.81%	0.78%	0%	0%	0%	0%	
TCH congestion	≤2%	Reported	0.59%	0.31%	1.67%	0%	1.93%	0.01%	1.29%	2%	0.37%	0.01%	0%	0.01%	0%		
		Verified	0.59%	0.31%	1.67%	0%	1.93%	0.01%	1.29%	2%	0.37%	0.01%	0%	0.01%	0%		
3	Connection maintenance (retainability)																
	CDR	≤2%	Reported	0.74%	1.09%	1.67%	0.01%	1.08%	0%	1.37%	1.91%	1.57%	0.02%	0.23%	0.01%	0.20%	
			Verified	0.74%	1.09%	1.67%	0.01%	1.08%	0%	1.37%	1.91%	1.57%	0.02%	0.23%	0.01%	0.20%	
	Worst affected cells>3% TCH drop	≤3%	Reported	0.02%	0.03%	4.50%	1.37%	2.77%	0%	5.11%	4.83%	0.45%	0.05%	0%	0.02%	0.51%	
			Verified	0.02%	0.03%	4.50%	1.37%	2.77%	0%	5.11%	4.83%	0.45%	0.05%	0%	0.02%	0.51%	
Good voice quality	≥95%	Reported	96%	98%	96%	99%	96%	100%	97%	96%	97%	96%	99%	98%	100%		
		Verified	96%	98%	96%	99%	96%	100%	97%	96%	97%	96%	99%	98%	100%		
4	Number of POI having ≥ 0.5% POI congestion	Reported	0	0	0	0	0	0	0	0	4	0	0	0	0		
		Verified	0	0	0	0	0	0	0	0	4	0	0	0	0		
(B)	Customer Service Quality Parameters																
5	Metering/billing credibility-Post paid	≤0.1%	Reported	0%	0%	0.07%	NA	0%	0%	0%	NA	NA	0%	0%	0%	0%	
			Verified	0%	0%	0.07%	NA	0%	0%	0%	NA	NA	0%	0%	0%	0%	
6	Metering /billing credibility-Pre paid	≤0.1%	Reported	0.05%	0%	0.06%	0%	0%	0%	0%	0%	0%	0%	0.01%	0%	0%	
			Verified	0.05%	0%	0.06%	0%	0%	0%	0%	0%	0%	0%	0.01%	0%	0%	

PMR		Bench- mark	Audit	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA	
S/N	Name of Parameter			GSM Operators										CDMA Operators			
7	Resolution of billing/ charging complaints (within 4 weeks)	100%	Reported	100%	100%	100%	NR	100%	100%	100%	NR	100%	100%	100%	100%	100%	
			Verified	100%	100%	100%	NR	100%	100%	100%	NR	100%	100%	100%	100%	100%	
	Period of applying credit/waiver/adjustment to the customer's A/C from the date of resolutions of complaints	≤1 week	Reported	100%	100%	100%	NR	100%	100%	100%	NR	100%	100%	100%	100%	100%	
			Verified	100%	100%	100%	NR	100%	100%	100%	NR	100%	100%	100%	100%		
8	Response time to customers for assistance																
	Accessibility of call centre/Customer Care	≥95%	Reported	100%	99%	98%	NR	100%	72%	99%	97%	97%	100%	99%	100%	96%	
			Verified	100%	99%	98%	NR	100%	72%	99%	97%	97%	100%	99%	100%	96%	
	% call answered by operators(voice to voice) within 60 sec.	≥90%	Reported	82%	82%	94%	NR	95%	91%	80%	95%	95%	87%	93%	90%	78%	
Verified			82%	82%	94%	NR	95%	91%	80%	95%	95%	87%	93%	90%	78%		
9	Termination/closure of service																
	No. of requests for Termination / Closure of service complied within 7 days during the quarter	≤7days	Reported	100%	100%	100%	NA	100%	100%	100%	NA	NA	99%	NA	100%	100%	
			Verified	100%	100%	100%		100%	100%	99%			NA	100%	100%		
	Time taken for refunds of deposits after closures.(within 60 days)	100%	Reported	100%	100%	100%		100%	100%	100%			100%	100%	100%	NA	100%
Verified			100%	100%	100%	100%		100%	100%	100%			100%	100%	NA	100%	100%

NA – Not Applicable, NR – Not Reported

The figures provided by all the operators in PMR match the figures obtained on data verification.

II. Basic Service (Wire Line) Service (PMR Period : April 2011 - June 2011)

S/N	Parameters	Bench-marks	Audit	BSNL	AIRTEL	RCOM	TTSL
1	Fault incidences						
	(No. of faults/100 subscribers /month)	< 5%	Reported	3.34%	1.71%	1.28%	3.52%
			Verified	3.34%	1.71%	1.28%	3.52%
2	Faults Repair/Restoraion Time						
	Fault repair by next working day(Urban Area)	>90%	Reported	94.04%	99.58%	100%	98.47%
			Verified	94.04%	99.58%	100%	98.47%
	Within 3 days	100%	Reported	99.29%	100%	100%	100%
			Verified	99.29%	100%	100%	100%
	Within 5 days (Hilly & Rural Area)	100%	Reported	99.41%	NA	NA	100%
			Verified	99.41%	NA	NA	100%
	Mean time to Repair(MTTR)	≤8 Hrs	Reported	6.65	4.08	2.01	5.16
			Verified	6.65	4.08	2.01	5.16
3	Rent Rebate						
	Rent Rebate		Reported	NIL	56	NIL	NIL
			Verified	NIL	56	NIL	NIL
4	Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)						
	CCR & ASR	> 55%(CCR) & > 75%(ASR)	Reported	71.00%	99.70%	91.94%	100%
			Verified	71.00%	99.70%	91.94%	100%
5	Metering & Billing Performance						
	Metering & Billing Credibility-Post paid	< 0.1%	Reported	0.02%	0.07%	0.04%	0.09%
			Verified	0.02%	0.07%	0.04%	0.09%
	Metering & Billing Credibility-Pre paid	100%	Reported	NR	NA	NR	NA
			Verified	NR	NA	NR	NA
	Resolution of billing charging/validity/Complaints within 4 weeks	100%	Reported	NR	100%	100%	100%
			Verified	NR	100%	100%	100%
	Period of all refunds/payments from the date of resolution of complaints within 1 weeks	100%	Reported	NR	99.28%	100%	NR
			Verified	NR	99.28%	100%	NR
6	POI Congestion						
	POI Congestion (%)	≤ 0.5%	Reported	NR	NIL	NIL	NIL
			Verified	NR	NIL	NIL	NIL
7	Response Time to customer for assistance						
	Accessibility of Call centre/customer Care within 40 seconds	≥95%	Reported	92.28%	99.42%	96.00%	98.01%
			Verified	92.28%	99.42%	96.00%	98.01%
	% age of calls answered by operator(voice to voice) within 60 seconds	≥90%	Reported	90.00%	93.92%	91.00%	94.85%
			Verified	90.00%	93.92%	91.00%	94.85%
8	Customer care(promptness in attending to customers request						
	Termination / Closures	100%	Reported	100%	NR	100%	NR
			Verified	100%	NR	100%	NR
	Time taken for refunds of deposit after closures	100%	Reported	100%	100%	100%	NIL
			Verified	100%	100%	100%	NIL

NA – Not Applicable NR – Data Not Reported

The figures provided by all the operators in PMR match the figures obtained on data verification.

III. Broadband Service (PMR Period Verification April 2011 - June 2011)

S/N	Parameters	B-marks	Audit	AIRTEL	BSNL	RCOM
1	Service Provisioning/Activation Time					
	100% cases in 15 days (subject to technical feasibility)	<15 days	Month	84.64%	100%	100%
	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%	100%	100%
2	Faults Repair/Restoraion Time					
	By next working day	>90%	Month	98.97%	94.80%	100%
	within 3 working day	≥99%		99.79%	100%	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	16	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	11	0
	Faults Pending for > 15 working days:(Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)			0	47	0
3	Billing Performance					
	Billing complaints per 100 bills issued	<2%	Month	0.00%	0.14%	0.15%
	%age of complaints resolved within 4 weeks	100%		NA	100%	100%
	Time taken for refund of deposits after closure (within 60 days)	100%		NA	100%	100%
4	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)					
	within 60 sec	>60%	Live	99.00%	70%	99%
			Month	90.85%	86.40%	96%
	within 90 sec	>80%	Live	98.88%	82%	99.98%
			Month	93.03%	94.10%	97%
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	48.00%	46.12%	55.00%
			Month	47.00%	54.17%	14.74%
5.2	ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity	< 80%	Live	NA	75.92%	NA
			Month	NA	74.37%	NA
5.3	Broadband Connection Speed (download) - from ISP Node to User	> 80%	Live	100%	94.20%	100%
			Month	100.0%	96%	100%
6	Service Availability/Uptime (for all users)					
	Service Availability(%)	>98%	Month	99.99%	99.70%	99.99%
7	Packet loss					

S/N	Parameters	B-marks	Audit	AIRTEL	BSNL	RCOM
	% of Packet loss	<1%	Live	0.00%	0%	0%
			Month	0.00%	0%	0.13%
8	<i>Network latency (for wired broadband access)</i>					
8.1	User reference point at POP/ISP Gateway node to IGSP/NIXI	<120 ms	Live	16ms	2ms	NP
			Month	15ms	21ms	80.3ms
8.2	User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)	<350 ms	Live	3ms	231 ms	164ms
			Month	2ms	227 ms	305ms
8.3	User reference point at ISP Gateway node to International nearest NAP port abroad (satellite)** See note below	<800 ms	Month	NA		

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

DNF-- Data not as per format.

The figures provided by all the operators in PMR match the figures obtained on data verification.

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	B-mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	V-fone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators										CDMA Operators		
A	Network Service Quality Parameter														
	a) BTS Accumulated Downtime		0.28%	0.44%	0.74%	0.80%	0.26%	0.23%	0.07%	1.32%	1.62%	0.61%	0.12%	0.41%	0.06%
	b) Worst affected BTSs due to downtime		0.00%	0.28%	1.59%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%
	c) Total no. of BTSs in the licensed service area		2584	8181	6090	33	5390	3252	2449	3295	55	8449	335	1968	800
	d) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		528	2591	3227	19	1005	536	115	3136	64	3735	29	581	34
	e) No. of BTSs having accumulated downtime of >24 hours in a month		0.00	23	97	0.00	2	0.00	0.00	0.00	0.00	14	0	0.00	0.00
	Connection Establishment (Accessibility)														
	a) CSSR	≥95%	98.45%	99.36%	97.52%	98.07%	97.10%	98.46%	97.18%	96.57%	98.39%	96.45%	99.42%	98.98%	98.30%
	b) SDCCH/PAGING congestion	≤1%	0.00%	0.06%	0.63%	0.36%	0.60%	0.46%	0.16%	0.48%	0.01%	0.24%	0.00%	0.00%	0.00%
	c) TCH congestion	≤2%	0.01%	0.25%	1.12%	0.30%	1.51%	0.98%	1.19%	2.04%	0.00%	0.99%	0.00%	0.33%	0.00%
2	Connection maintenance														
	a) CDR	≤2%	0.54%	1.23%	1.96%	0.45%	0.94%	0.77%	1.22%	1.58%	0.00%	1.35%	0.57%	0.99%	0.64%
	b) Cells having > 3% TCH drop	≤3%	4.57%	2.88%	2.97%	2.02%	2.87%	2.40%	6.36%	3.47%	1.21%	2.71%	2.03%	0.33%	0.11%
	c) Good voice quality	≥95%	96.56%	98.38%	96.00%	98.98%	95.88%	98.77%	96.64%	95.32%	98.08%	95.60%	99.99%	NA	NA
	d) No. of cells > 3% TCH drop		1,067	2,109	1,629	6	1,377	701	1,399	1,012	6	2,051	61	58	8
	e) Total no. of cells in the network		7774	24437	18270	99	16010	9756	7335	9723	165	25265	1001	5904	2412
3	Number of POI having ≥0.5% POI congestion	≤0.5%	0	0	0	0	0	0	0	3	0	0	0	0	0
	a) Name of POI not meeting the benchmark		Nil	Nil	Nil	Nil	Nil	Nil	Nil	BSNL, Airtel, Vodafone	Nil	Nil	Nil	Nil	Nil
	b) Total No. of circuits on POI		48039	185032	118172	1609	189239	40257	586	94613	67	231843	11198	48882	72732
	c) Avg No. of call attempts on POI		892460	5280107	1580631	3660	5591400	499536	21535	1407296	29	4581393	171698	429716	30132
	d) Avg traffic served on POI (Erlang)		28327	162387	26426	105	105770	20912	522	41156	18	120511	3476	19073	900

S/N	Name of Parameter	B-mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	V-fone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators										CDMA Operators		
	e) Total number of working POI Service Area wise		125	149	84	24	254	105	9	21	29	314	53	98	226
	f) Equipped Capacity of Network in respect of Traffic in erlang		82059	483194	410800	64	219462	140000	124611	123582	1689	468991	10500	348000	103514
	g) Total traffic handled in TCBH in erlang		38336	375633	255338	116	138721	135424	40891	121909	14	348371	3092	116073	19642
(B)	Customer Service Quality Parameters														
4	Response time to customers for assistance														
	a) Accessibility of call centre	≥95%	100.0%	97.76%	96.53%	95.35%	100.0%	99.17%	100.0%	96.07%	100.0%	100.0%	99.83%	98.98%	100.0%
	b) % of call answered by operators(voice to voice) within 60 sec	≥90%	84.67%	99.00%	97.03%	100.0%	96.78%	98.00%	98.01%	99.08%	100.0%	98.31%	98.28%	97.55%	96.44%
	c) No. of call attempts to call centre / customer care nos. during TCBH (Avg)		42405	463725	5625	22	232133	80983	117617	191912	7	307128	10324	44249	18498
	d) No. of calls connected and answered successfully to call centre / customer care nos. during TCBH (Avg)		35904	459094	5458	22	224647	79363	115272	190143	7	301950	10146	43164	17840

NA: Not Applicable, **NP:** Not Provided

Parameter wise Findings (Live Data Assessment):

The parameter wise key takeouts for the Cellular Mobile Telephone Services providers in UP (East) Service Area is as given below:-

- ***BTS accumulated downtime (benchmark $\leq 2\%$):***
All operators are satisfying the benchmark with values lying between 0.06% and 1.62%.
- ***Worst affected BTSs due to downtime (benchmark $\leq 2\%$):***
All operators are satisfying the benchmark with values lying between 0% and 1.59%.
- ***Call setup success rate (benchmark $\geq 95\%$):*** All operators are satisfying the benchmark with values lying between 96.45% and 99.42%.
- ***SDCCH/PAGING Channel congestion (benchmark $\leq 1\%$):*** All operators are satisfying the benchmark with values lying between 0% and 0.63%.
Note: CDMA operators have provided the data for Paging Channel congestion and GSM operators provided SDCCH Channel congestion.
- ***TCH congestion (benchmark $\leq 2\%$):*** Except Uninor, all the operators are satisfying the benchmark with values lying between 0% and 1.51%.
- ***Call drop rate (benchmark $\leq 2\%$):*** All the operators are satisfying the benchmark with values lying between 0.00% and 1.96%.
- ***Cell exceeding 3% TCH drop (benchmark $\leq 3\%$):*** Except for Aircel, Tata (GSM) & Uninor, rest of the operators are satisfying the benchmark with value in between 0.11% and 2.97%.
- ***Connections with good voice quality (benchmark $\geq 95\%$):*** RCom CDMA & Tata (CDMA) service providers have declared that the parameter is not system generated. Rest of operators are satisfying the benchmark with values lying between 95.32% and 99.99%.
- ***Number of POI having $\geq 0.5\%$ POI congestion:*** All the operators are satisfying the benchmark except Uninor showing high POI congestion in 3 nos. of POIs.
- ***%age of call answered by operator (electronically) (benchmark $>95\%$):*** All the operators are satisfying the benchmark with values lying between 95.35% to 100%.
- ***%age of call answered by operator (Voice to voice) (benchmark $>90\%$):*** All the operators are satisfying the benchmark except for Aircel.

(2) Month Data Assessment & Summarized Findings

S/N	Name of Parameter	Bench mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	V-fone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators										CDMA Operators		
(A)	Network Service Quality Parameter														
1	Network Availability														
	a) BTS Accumulated Downtime	≤2%	0.40%	0.36%	0.79%	1.02%	0.29%	0.46%	0.05%	1.56%	0.89%	0.15%	0.14%	0.65%	0.04%
	b) Worst affected BTSs due to downtime	≤2%	1.82%	0.67%	2.30%	0.00%	0.87%	1.51%	0.00%	0.91%	0.00%	0.76%	0.00%	1.88%	0.00%
	c) Total no. of BTSs in the licensed service area		2584	8181	6090	33	5390	3252	2449	3295	55	8449	335	1968	800
	d) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		7355	21134	34460	242	11419	10793	812	36893	354	9009	333	9240	231
	e) No. of BTSs having accumulated downtime of >24 hours in a month		47	55	140	0.00	47	49	0.00	30	0.00	64	0	37	0.00
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	≥95%	98.46%	99.21%	97.00%	98.37%	97.43%	98.55%	96.77%	96.79%	99.24%	96.26%	99.47%	98.89%	98.37%
	b) SDCCH/PAGING congestion	≤1%	0.14%	0.12%	0.70%	0.66%	0.64%	0.20%	0.27%	0.73%	0.06%	0.22%	0.00%	0.01%	0.00%
	c) TCH congestion	≤2%	0.77%	0.34%	1.50%	0.20%	1.74%	0.94%	1.43%	2.08%	0.00%	1.10%	0.17%	0.47%	0.00%
3	Connection maintenance (retainability)														
	a) CDR	≤2%	0.55%	1.26%	1.60%	0.48%	1.10%	0.78%	1.24%	1.72%	1.20%	1.36%	0.53%	0.95%	0.63%
	b) Worst affected cells>3% TCH drop	≤3%	4.58%	2.89%	3.50%	1.28%	2.83%	2.40%	6.66%	3.78%	0.22%	2.94%	2.10%	0.30%	0.10%
	c) Good voice quality	≤95%	96.43%	98.37%	96.00%	98.94%	95.93%	98.68%	96.65%	95.34%	97.05%	95.80%	99.98%	NA	NA
	d) Total No. of cells exceeding 3% TCH drop (call drop)		10,676	21,180	19,200	38	13,600	7,023	14,657	11,034	11	22,274	631	540	75
	e) Total no. of cells in the network		7774	24437	18270	99	16010	9756	7335	9723	165	25265	1001	5904	2412
4	Number of POI having ≥0.5% POI congestion		0	0	0	0	0	0	0	3	0	0	0	0	0
	a) Name of POI not meeting the benchmark		Nil	Nil	Nil	Nil	Nil	Nil	Nil	BSNL, Airtel, Vodafone	Nil	Nil	Nil	Nil	Nil
	b) Total No. of call attempts on POI (Avg.)		895173	5334959	1581720	3620	5581323	534663	21272	1529657	29	4520114	167633	418673	30012
	c) Total traffic served on POI (Erlang) (Avg.)		27858	157375	26808	106	106384	19903	524	46472	19	122999	3382	18442	895
	d) Total No. of circuits on POI		48039	185032	118172	1609	189239	40257	586	94613	67	231843	11198	48882	72732
	e) Total number of working POI Service Area wise		125	149	84	24	254	105	9	21	29	314	53	98	226
	f) Capacity of POI		47366	185788	NP	1284	180684	38189	555	46602	53	214980	10812	44801	58920

S/N	Name of Parameter	Bench mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	V-fone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators									CDMA Operators			
5	Network Data														
	a) Equipped Capacity of Network Erlang		82059	483194	410800	64	219462	140000	124611	123582	1689	468991	10500	348000	103514
	b) Total traffic in TCBH in erlang (Avg.)		38336	375633	255338	116	138721	135424	40891	121909	14	348371	3092	116073	19642
	c) Total no. of customers served (as per VLR) on last day of the month		1501672	12831269	4371818	8174	6435094	5056049	1791036	2973606	387	12440189	200589	3019386	516669
(B)	Customer Service Quality Parameters														
5	Metering/billing credibility-Post paid	≤0.1%	0.08%	0.02%	0.02%	NA	0.05%	0.06%	0.30%	NA	NA	0.03%	0.00%	0.003%	0.02%
	a) No. of bills issued during the period		2615	59391	106295	NA	40172	6372	13004	NA	NA	217376	1415	114372	51651
	b) No. of bills disputed including billing complaints during the period		2	10	25	NA	20	4	39	NA	NA	66	0	3	10
6	Metering /billing credibility-Pre paid	≤0.1%	0.04%	0.004%	0.01%	0.00%	0.004%	0.10%	0.06%	0.004%	0.00%	0.01%	0.002%	0.10%	0.004%
	a) No. of charging / credit / validity complaints during the quarter		885	697	570	0	240	7088	2,118	232	0.00	1,384	6	5003	44
	b) Total no. of pre-paid customers at the end of the quarter		2150094	16617423	9586197	43130	6608526	7088560	3361227	5507380	19732	14105310	344576	5003453	1014732
7	Resolution of billing/ charging complaints(within 4 weeks)	100%	100%	99.99%	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		887	7459	595	1	907	7094	2157	31749	0	1753	6	5117	1131
	b) Total no. of billing (post paid) and charging, credit / validity (pre paid) complaints received during the quarter		887	7460	595	1	907	7094	2157	31749	0	1753	6	5117	1131
	c) No. of billing complaints (post paid) and charging, credit/ validity complaints (pre paid) resolved in favour of the customer during the quarter		887	706	595	0	260	7092	2157	232	0	1450	6	5006	54
	d) No. of complaints disposed on account of not considered as valid complaints during the quarter		0	6753	0	1	647	2	0	31517	0	303	0	111	1077
	e) Period of applying credit/waiver/adjustment to the customer's account from the date of resolutions of complaints (≤1week)	100%	100%	99.72%	100%	100%	100%	100%	100%	100%	100%	100%	100%	33.33%	100%

S/N	Name of Parameter	Bench mark	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
			GSM Operators										CDMA Operators		
(B)	Customer Service Quality Parameters														
8	Response time to customers for assistance														
	a) Accessibility of call centre/Customer Care	≥95%	100%	97.04%	95.99%	97.93%	100%	99.18%	99.34%	96.66%	100%	100%	98.56%	98.96%	98.66%
	b) % call answered by operators(voice to voice) within 60 sec.	≥90%	93.41%	96.32%	96.11%	100.00%	79.53%	97.14%	97.30%	99.49%	98.15%	99.76%	95.55%	96.90%	97.19%
	c) Total no. of call attempts to call centre & customer care nos. during TCBH (Avg.).		1017523	4783329	73990	292	2092544	805585	1228417	1826462	54	3727943	9015	437118	195401
	d) No. of calls connected and answered successfully to call centre & customer care nos. during TCBH (Avg.).		950488	4607180	71114	292	1664216	782554	1195196	1817079	53	3719066	8614	423566	189902
9	Termination/closure of service	≤7days	80.00%	100%	65.00%	NA	100%	100%	100%	NA	NA	100%	100%	100%	100%
	a) Total No. of requests for Termination / Closure of service received during the quarter		15	382	520		104	12	133			2074	12	227	623
	b) No.of requests for Termination / Closure of service complied within 7 days during the quarter		12	382	338		104	12	133			2074	12	227	623
10	Time taken for refunds of deposits after closures.(within 60 days)	100%	100%	100%	100%		100%	100%	100%			100%	100%	100%	100%

NA: Not Applicable, NP: Not Provided

Parameter-wise Findings (Month Data Assessment):

The parameter wise key takeouts for the Cellular Mobile Telephone Services providers in UP (East) Service Area is as given below:-

- ***BTS accumulated downtime (benchmark $\leq 2\%$):*** All operators are satisfying the benchmark with values lying between 0.04% and 1.56%.
- ***Worst affected BTSs due to downtime (benchmark $\leq 2\%$):*** Except BSNL, rest of the operators are satisfying the benchmark with values lying between 0% and 1.88%.
- ***Call setup success rate (benchmark $\geq 95\%$):*** All operators are satisfying the benchmark with values lying between 96.26% and 99.47%.
- ***SDCCH/PAGING Channel congestion (benchmark $\leq 1\%$):*** All operators are satisfying the benchmark with values lying between 0% and 0.73%.
Note: CDMA operators have provided the data for Paging Channel congestion and GSM operators provided SDCCH Channel congestion.
- ***TCH congestion (benchmark $\leq 2\%$):*** Except Uninor, all operators are satisfying the benchmark with values lying between 0% and 1.74%.
- ***Call drop rate (benchmark $\leq 2\%$):*** All operators are satisfying the benchmark with values lying between 0.48% and 1.72%.
- ***Cell exceeding 3% TCH drop (benchmark $\leq 5\%$):*** Except Aircel, BSNL, Tata (GSM) & Uninor, rest of the operators are satisfying the benchmark with value in between 0.10% and 2.94%.
- ***Connections with good voice quality (benchmark $\geq 95\%$):*** RCom (CDMA) & Tata (CDMA) service providers have declared that the parameter is not system generated. Rest of operators are satisfying the benchmark with values lying between 95.34% and 99.98%.
- ***Number of POI having $\geq 0.5\%$ POI congestion:*** All the operators satisfying the benchmark except Uninor show high POI congestion in 3 nos. of POIs.
- ***%age of call answered by operator (electronically) (benchmark $>95\%$):*** All the operators are satisfying the benchmark with values lying between 95.99% and 100%.
- ***%age of call answered by operator (Voice to voice) (benchmark $>90\%$):*** Except Idea, all operators are satisfying the benchmark with values lying between 93.41% & 100%.
- ***Metering and billing credibility-Post paid (benchmark $\leq 0.1\%$):*** Except Tata (GSM), all the operators are satisfying the benchmark.
- ***Metering and billing credibility-Pre paid (benchmark $\leq 0.1\%$):*** All the operators are satisfying the benchmark.
- ***Resolution of billing/ charging complaints (benchmark 100% within 4 weeks):*** Except Airtel, all the operators are satisfying the benchmark.

- **Termination/Closure of service (Benchmark ≤ 7 days):** Except Aircel & BSNL, rest of the operators are satisfying the benchmark.
- **Time taken for refunds of deposits after closures (benchmark 100% within ≤ 60 days):** All the operators are satisfying the benchmark.

(3) Sample Coverage

Switches/BSC/BTS details of operators:

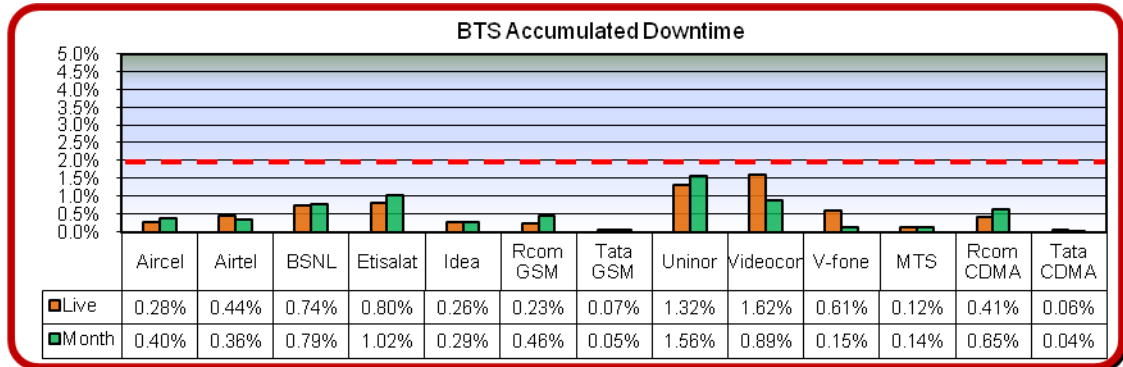
S/N	Name of Service Provider	No. of MSC	No. of BSC	No. of BTS
GSM Operators				
1	Aircel Ltd	2	22	2584
2	Airtel Ltd	41	95	8181
3	BSNL	25	101	6090
4	Etisalat	1	1	33
5	Idea	7	39	5390
6	Reliance Communication (GSM)	4	19	3252
7	Tata Communications (GSM)	4	22	2449
8	Vodafone	24	132	8449
9	Videocon	1	2	55
10	Uninor	7	22	3295
CDMA Operators				
11	MTS (CDMA)	1	1	335
12	Reliance Communication (CDMA)	13	12	1968
13	Tata Communications (CDMA)	5	10	800

(4) Performance (Graphical Representation)

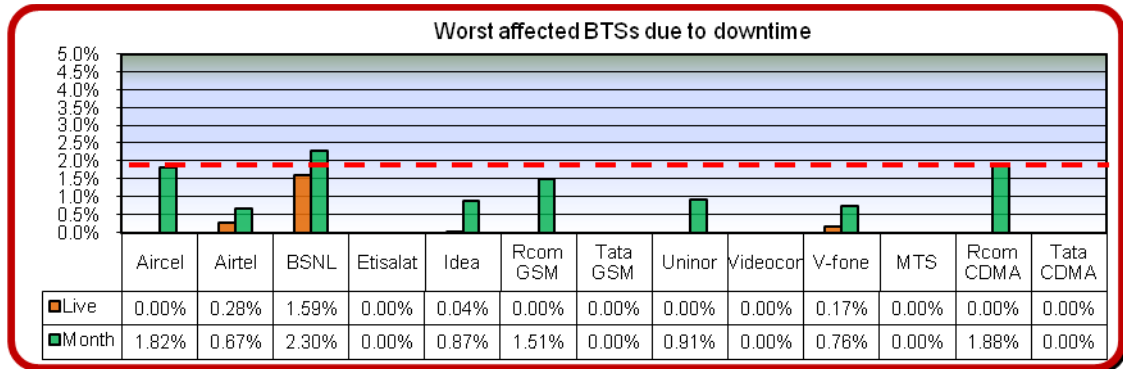
Comparison between Live measurements and One month data Audit – Cellular Mobile Telephone Services

A) NETWORK PERFORMANCE

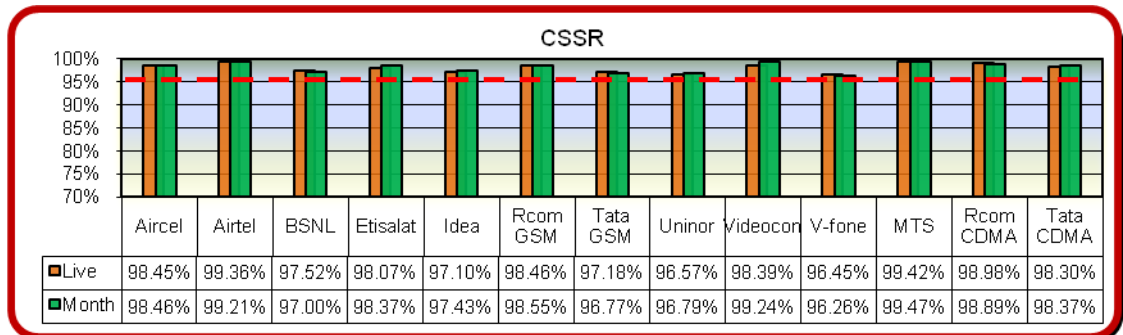
BTS accumulated downtime (benchmark ≤2%): All operators are satisfying the TRAI benchmarks (≥95 %) in both live & month of audit.



Worst affected BTSs due to downtime (benchmark ≤2%): Except BSNL, rest of the operators are satisfying the TRAI benchmark (≥95 %) in both live & month of audit.

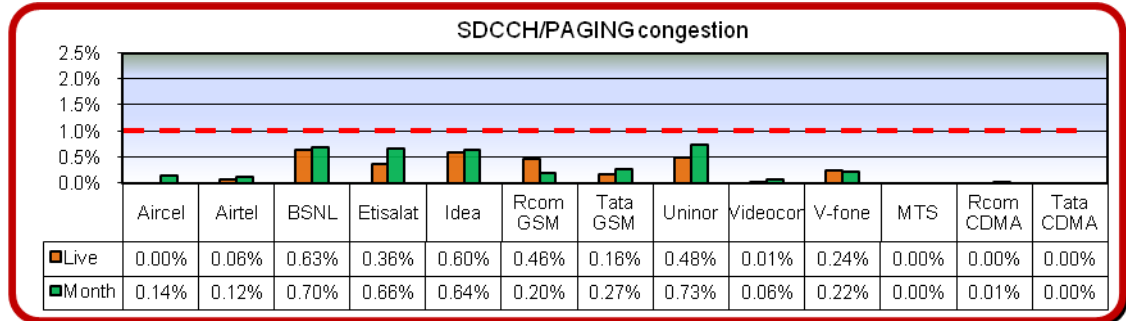


Call setup success rate: All operators are satisfying the TRAI benchmark (≥95 %) in both live & month of audit.

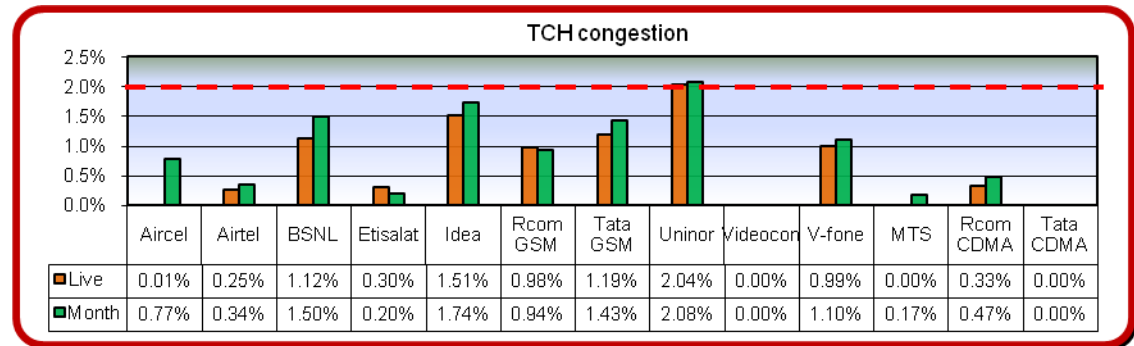


Blocked call rate:

SDCCH congestion: All operators are satisfying the TRAI benchmarks ($\leq 1\%$) in both live & month of audit.

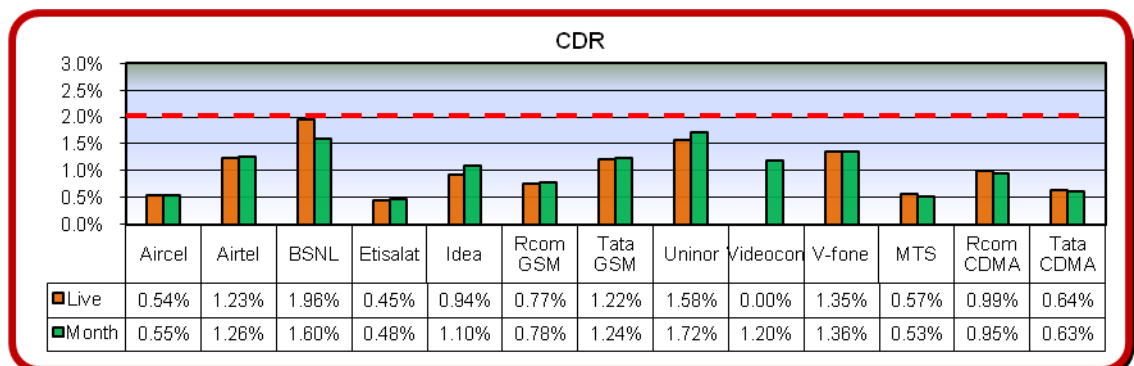


TCH congestion: Except for Uninor in both live & one-month of audit, rest of the operators are satisfying the TRAI benchmarks ($\leq 2\%$) in both live & month of audit

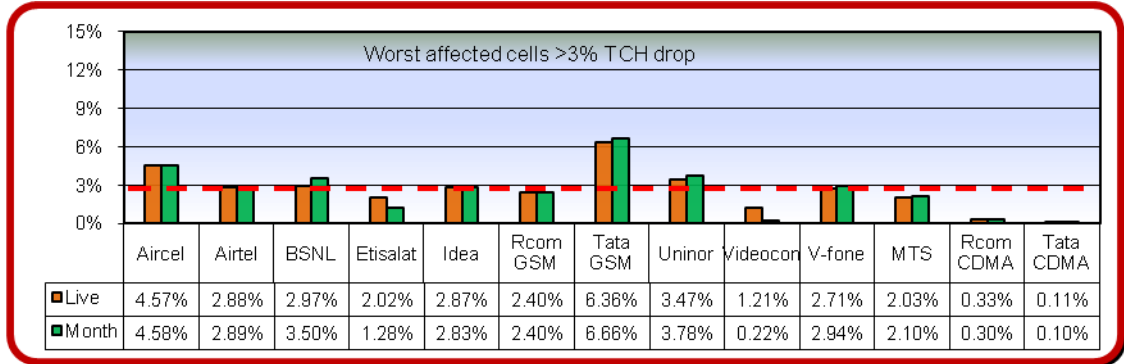


Connection Maintainability (Retainability):

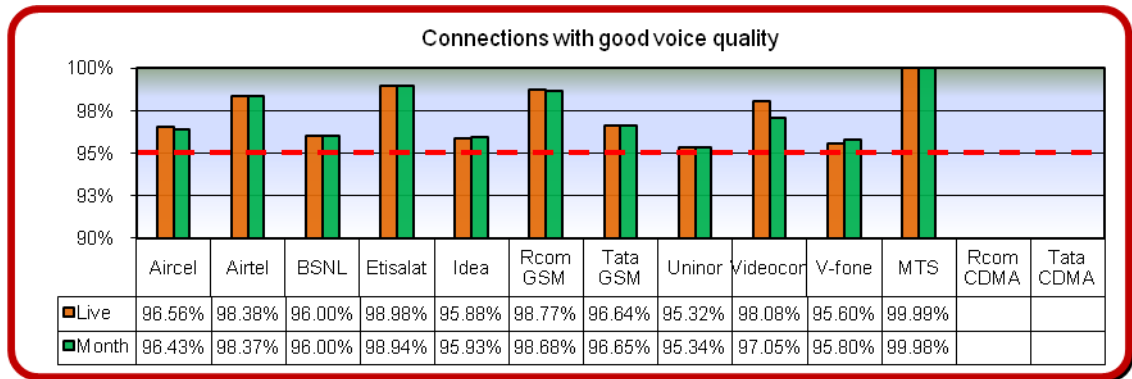
Call drop rate: Except for BSNL in live audit, rest of the operators are satisfying the TRAI benchmarks ($\leq 2\%$) in both live & month of audit.



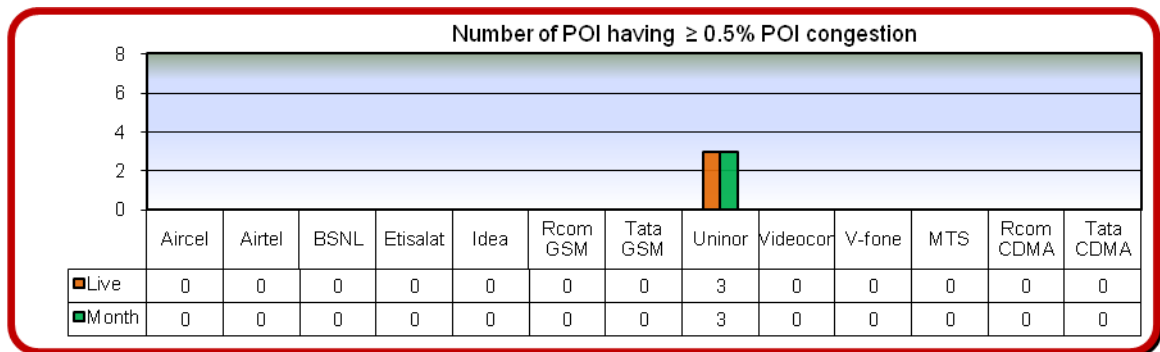
Worst affected Cell exceeding 3% TCH Drop: Aircel, BSNL, Tata (GSM) & Uninor are found not satisfying the benchmark of $\leq 3\%$. Rests of the operators are satisfying the benchmark for both cases.



Percentage of connections with good voice quality: All operators are satisfying the TRAI benchmarks ($\geq 95\%$) in both live & month of audit. RCom (CDMA) & Tata (CDMA) have not provided the system generated data.



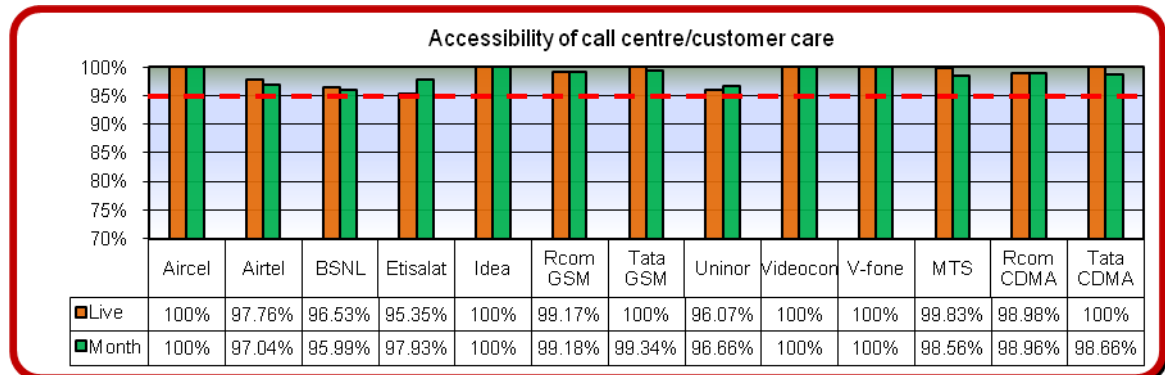
POI Congestion: For both live and month data, 3 nos. of POIs for Uninor is found not satisfying the benchmark $\geq 0.5\%$. Rest of the operators are satisfying the benchmark for both month & live cases.



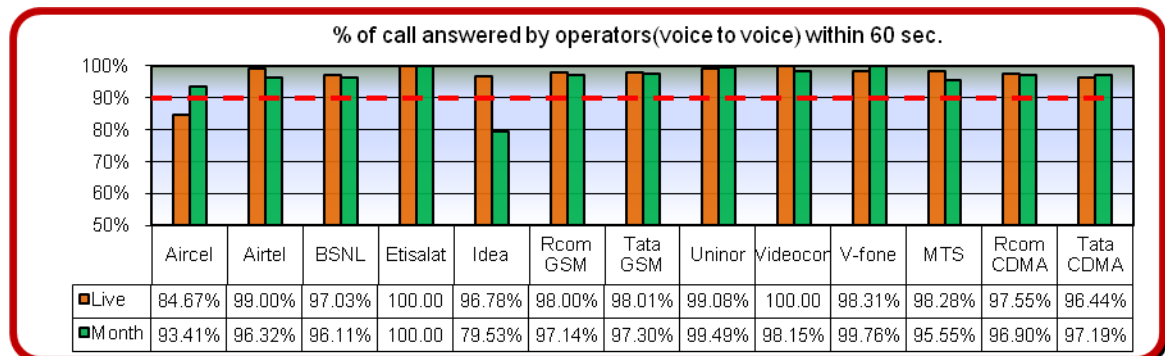
B) CUSTOMER SERVICE QUALITY PARAMETERS

Response time to the customer for assistance:

Percentage of call answered (Electronically): All the operators are satisfying the TRAI benchmarks ($\geq 95\%$) in both live & month of audit.



Percentage of call answered by operators (Voice to voice) within 60 sec: Except Aircel & Idea in live & one-month audit respectively, rest of the operators satisfying the TRAI benchmarks ($\geq 90\%$) in both live & month of audit.



(5) Critical Analysis

The above comparative study between live data & month data shows similar trends & consistency in both the cases. However, inconsistency in live & month data was found for parameter “%age of calls answered by operator” for Idea.

Under network parameter “Worst affected cells > 3% TCH drop” it is found that Aircel, BSNL, TATA (GSM) & Uninor performance are not satisfactory.

In case of “Number of POI having $\geq 0.5\%$ POI congestion” it is found that only Uninor shows 3 nos. of POI congestion for both live & month audit. Congestion was found in BSNL, Airtel & Vodafone POIs.

(B) Redressal**(1) Sample coverage:**

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

(2) Performance based on live calling for billing complaints

Calling Operator	Aircel	Airtel	BSNL	Idea	Rcom GSM	Tata GSM	Uninor	Vodafone	MTS	Rcom CDMA	Tata CDMA
Total No. of Calls Attempted	88	70	59	26	100	100	23	100	4	100	5
Total No. of calls Answered	20	20	2	9	14	16	4	9	1	19	2
Cases resolved with 4 weeks	20	20	2	9	14	16	4	9	1	19	2
%age of cases resolved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: The difference between call attempts and call answer is because of either Number busy, No response, or out of reach in the Network.

(3) Live calling to Call Center

Calling Operator	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA	
Call Centre No.	121	121	1503	No service in Lucknow	198/12345	333	121	198	No service in Lucknow	111	155	*333	121	
Total No. of Calls Attempted	100	100	100		100	100	100	100		100	100	100	100	100
Total No. of calls connected to IVR	100	100	100		100	100	100	100		100	100	100	100	100
Calls got connected to agent within 60 Sec	81	77	37		80	84	97	92		99	100	84	97	
%age of calls got answered	81.00%	77.00%	37.00%		80.00%	84.00%	97.00%	92.00%		99.00%	100%	84.00%	97.00%	

(4) Level 1 calling

	Emergency no.	No. of calls made	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA	
	UP(East) Circle	Lucknow														
100		1	2	2	2	No service in Lucknow	2	2	2	2	No service in Lucknow	2	2	2	2	
101		1	2	2	2		2	2	2	2		2	2	2	2	2
102		1	2	2	2		2	2	2	2		2	2	2	2	2
139		2	5	5	5		5	5	5	5		5	5	5	5	5
Kanpur																
100		1	2	2	2	No service in Kanpur	2	2	2	2	No service in Kanpur	2	2	2	2	
101		1	2	2	2		2	2	2	2		2	2	2	2	2
102		1	2	2	2		2	2	2	2		2	2	2	2	2
139		2	5	5	5		5	5	5	5		5	5	5	5	5
Faizabad																
100		1	2	2	2	No service in Faizabad	2	2	2	2	No service in Faizabad	2	2	2	2	
101		1	2	2	2		2	2	2	2		2	2	2	2	2
102		1	0	0	0		0	0	0	0		0	0	0	0	0
139		2	5	5	5		5	5	5	5		5	5	5	5	5
Sahjanpur																
100	1	2	2	2	No service in Sahjanpur	2	2	2	2	No service in Sahjanpur	2	2	2	2		
101	1	2	2	2		2	2	2	2		2	2	2	2	2	
102	1	0	0	0		0	0	0	0		0	0	0	0	0	
139	2	5	5	5		5	5	5	5		5	5	5	5	5	

(5) Critical Analysis

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

As per test result of operator's Call Center it was found that Aircel, Airtel, BSNL, Idea, RCom (GSM & CDMA) performance are below benchmark level. In UP (East) a conclusion may be derived that call center calls are only getting failed after IVR call gets mature whereas for IVR call there are no failure for any of the operators.

Level 1 calling i.e. emergency call are getting connected in UP (East) circle, in Lucknow, Kanpur, Faizabad & Sahjanpur cities but in case of 102 service in faizabad & Sahjanpur call are getting disconnected most of time, when we try to give ring on that particular number. In Kanpur, call through on 102 service number but no one pick the phone.

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

A sample of 2x50 test calls per Service Providers with in the licensed service area (UP (East) Circle) were made between 1100 to 1400 hrs and between 1600 to 1900 hrs.

(2) Performance based on live measurement

Calling Operator	Aircel	Airtel	BSNL	Etisalat	Idea	Rcom GSM	Tata GSM	Uninor	Videocon	Vodafone	MTS	Rcom CDMA	Tata CDMA
Aircel	-	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Airtel	100%	-	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
BSNL	100%	97%	-	96%	98%	98%	96%	96%	100%	100%	100%	97%	95%
Etisalat	97%	96%	98%	-	96%	96%	98%	97%	97%	100%	100%	98%	100%
Idea	100%	100%	100%	100%	-	100%	100%	100%	100%	100%	100%	100%	100%
Reliance (GSM)	96%	92%	97%	100%	100%	-	96%	96%	100%	100%	100%	100%	100%
Tata (GSM)	99%	100%	100%	100%	100%	100%	-	100%	100%	100%	100%	100%	100%
Uninor	97%	95%	96%	97%	100%	94%	90%	-	98%	96%	100%	97%	100%
Videocon	98%	100%	100%	98%	100%	97%	100%	100%	-	100%	100%	100%	97%
Vodafone	100%	100%	100%	100%	100%	100%	100%	100%	100%	-	100%	100%	100%
MTS	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	-	100%	100%
Reliance (CDMA)	97%	100%	98%	98%	100%	100%	98%	96%	97%	100%	100%	-	98%
Tata (CDMA)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	-

(3) Critical Analysis

In the inter-operator call assessment test, calls were made from one operator to other operators so as to check congestion on both the operators' network. In such cases, the radio part, switch part & the POI in-between the operators are involved and hence if any congestion is found in the network, it may be due to any of these parts. The 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 UP (East) for all the operators. Route covered was about around 80-100 Km depending on city areas within the speed limit of 30Km/hr.

Drive Test Locations**Faizabad**

HIGH DENSE: Rikabgunj1, Niyawan, Sahabganj, Civil Line-1, Civil Line-2, Nakka, Avas Vikas, Subhas Nagar, Rikabgunj 2, Luvkush Nagar, Awadh University, Civil Lines

MEDIUM DENSE: Kudhakeshavpur, Rikabgunj1, Ranukali

LOW DENSE: Ram Nagar, Badharsa, Ranopali

Sahajanpur

HIGH DENSE: Parzai-1, Bus Stand, Gigiyani, Mohalla, Tola, Ram Nagar Colony, Sabji mandi, Dalil Ganj, Quaji Khel, Baradari, Jalal Nagar2, Sadar Bazar, Bagikhar, Shahganj-1, Shahganj-2, Taran Tickiy, Jalal Nagar Puspendrapura, Chinor, Shankargarh, Shahbad, Chaudhera, Roza Lodhipur, Chinor2, Civil Line, Bijalipura

MEDIUM DENSE: Uslari Mishripur, South City, Roza Thana, Dilaghar, Ramganji, Shahganj

LOW DENSE: Shahapur, Shah, Shamsabad, Shankargarh, Sahjadpur, Umarganj, Dhanela, Kantapur, Kairbad, Sahwaj Nagar

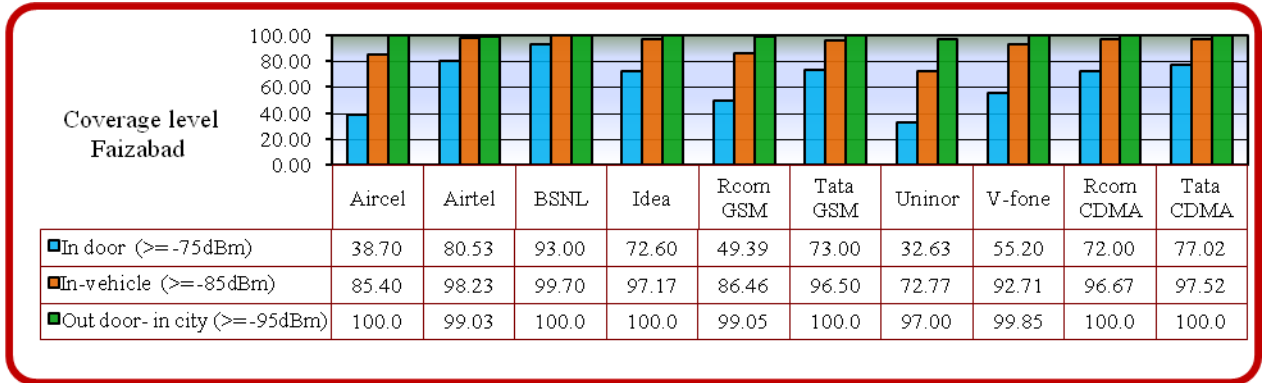
Kanpur

- HIGH DENSE:** Naka,Hospital Road1,Shastri Nagar,Collector Gunj,Birhan Road, Fazal Ganj,mulganj,Swaroop Nagar-1,Koper Ganj,Bagahi baba kuti,Swaroop Nagar-3,Civil Line - 2,Chawk,Meerpur,Gudariyagunj Purva,Vinova nagar,Transport nagar-KNP,Kidwai Nagar,hulla gunj,Padriya Mal,Ashok Nagar,Iftikarabad,Bangali Mohaal,Swaroop Nagar-2,O Block Kidvai nagar,Bekan Ganj,Colonalganj,ram narayan bazar, Haiesh Ganj,City Club,Kanpur,Shirshamau,Nai Sadak,Hiraman Purwa,Chawal Mandi,Cooli Bazar,Coollector Ganj,Azad Park,t.p nagar,basanti nagar,juhi baburarhiya, Kidwai nagar,swaroop nagar,begum purwa,murrey company, Civil Line,Birana Road
- MEDIUM DENSE:** Nagar,pashupati Nagar,S Block,Yashoda nagar,Rajeev Nagar,Shuzaz Ganj,Neta ji nagar,Defence colony,Herjendra nagar,Jajmau,Rajeev Nagar_ Vinayak Pur,Shyam Nagar,Perdevanpur,Harsh Nagar,GAWAL TOLI,Makbara, E Block,Namak Factory,Ram puram,Tandri,Govind Narar,Ratan Lal Nagar, Barra Bagh,Neelkantheswer Dham,Mainariya,New Azad Nagar,Barra By Pass,Lawkush Vihar,Chand Nagar,Vijay nagar2,Option Estate,Dada Nagar 2,Sujanpur,dasu purva churaha, ,Faitful Ganj,Ram Krishna nagar,saket nagar,purn chandra vn/ barra-3,berra-6, Berra -8,Barra_4,Barra,,Jarauli,Sarada Nagar,Awas Vikas,Sahkar Nagar,Panki,Panki Power House,Kar Puram,Vithur Road,Pandunagar,Tilak Nagar,Company Bagh,Nawabganj,Azad Nagar,Sujat Ganj,Netaji Nagar,Pokharpur,Tiwaripur,Hanspuram,Yashoda Nagar,Swarn Jayanti Vihar,Gujaini,Tatya Tope Nagar,Sootarganj,Na,Rooma,Radhapuram,Railbazar,Kakadev Kanpur,kda colony,yashoda nagar ,nobasta,yogender vihar,naubasta, Girja Nagar,Mangla Vihar,Gautam Vihar,Vikas Nagar(Near Lakhanpur),Hanspuram,Gajju Purwa
- LOW DENSE:** Puram,Kalyanpur Village,Shuklaganj,Ambikapur,Shuklaganj,Bawa Nagar,Harjinder Nagar,Patel Nagar,Bahadur Nagar,Panki Kanpur,Kanpur,Motipur,B Block, Panki,Panki,Hanuman campus,Ratanpur colony,Saraimeta,Ispat Nagar,Gujayani,Balika Purva,Avas Vikas Hans Puram,Charsi gate,Indra nagar1,Mandhana,Ahirva,Barra2,Panki C Block,Avas vikas-2,Khadepur,Citra Inter College,Sajaini,Rajapur,Bhauti,hathipur

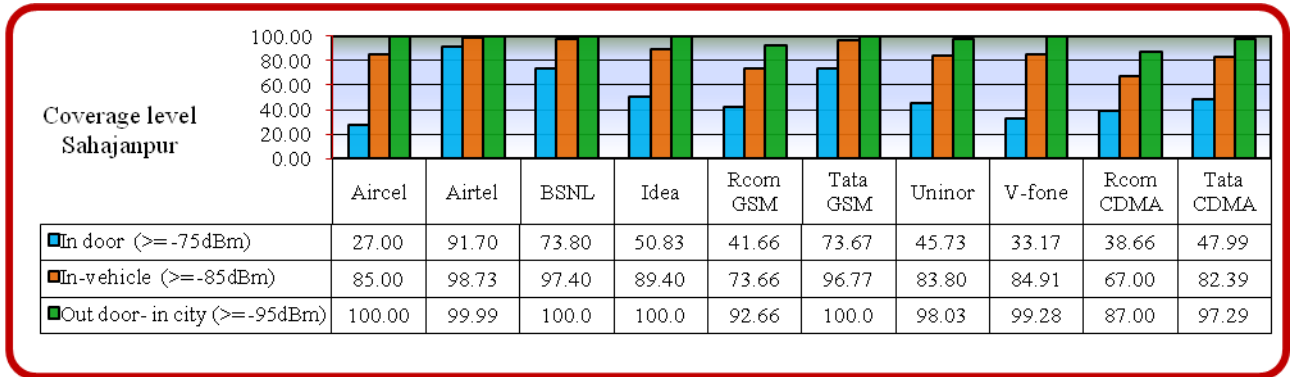
(2) Performance (for the respective cities)

S/N	Parameter	City Name	Aircel	Airtel	BSNL	Idea	Rcom GSM	Tata GSM	Uninor	V-fone	MTS	Rcom CDMA	Tata CDMA	
			GSM Operators									CDMA Operators		
1.1	Call Attempts	Faizabad	145	229	103	159	157	171	134	143	No Service	161	163	
		Sahajanpur	198	108	179	188	193	236	156	175	No Service	236	181	
		Kanpur	129	150	151	179	100	204	208	195	153	210	187	
1.2	Blocked Call Rate (≤3%)	Faizabad	0.00%	1.31%	2.91%	1.26%	0.64%	0.00%	2.99%	1.40%	No Service	1.24%	0.00%	
		Sahajanpur	1.01%	2.78%	8.38%	2.66%	1.04%	0.42%	3.85%	2.29%	No Service	3.81%	0.55%	
		Kanpur	1.55%	0.00%	0.66%	2.79%	8.00%	1.47%	8.65%	4.10%	1.31%	5.24%	0.00%	
1.3	Dropped Call Rate (≤2%)	Faizabad	0.00%	0.00%	0.97%	0.63%	0.00%	0.00%	3.73%	0.70%	No Service	2.48%	0.61%	
		Sahajanpur	0.00%	0.00%	0.00%	2.13%	1.04%	0.42%	2.56%	0.57%	No Service	2.12%	3.31%	
		Kanpur	0.78%	0.00%	0.00%	0.56%	1.00%	0.00%	0.48%	0.51%	0.00%	2.38%	1.60%	
1.4	% of connections with good voice quality (≥95%)													
	(i) 0-4 (w/o frequency hopping)	Faizabad	NA									No Service	94.33%	99.50%
		Sahajanpur	NA									No Service	87.33%	85.80%
		Kanpur	NA									99.06%	98.33%	98.11%
	(ii) 0-5 (with frequency hopping)	Faizabad	92.04%	97.08%	95.20%	94.90%	85.77%	95.37%	93.51%	96.50%	NA			
		Sahajanpur	95.00%	96.61%	95.50%	96.80%	82.00%	95.23%	94.59%	96.20%	NA			
Kanpur		93.71%	97.81%	96.20%	95.26%	96.00%	96.27%	94.86%	93.93%	NA				
1.5	Service Coverage													
	In door (≥ -75dBm)	Faizabad	38.70	80.53	93.00	72.60	49.39	73.00	32.63	55.20	No Service	72.00	77.02	
		Sahajanpur	27.00	91.70	73.80	50.83	41.66	73.67	45.73	33.17	No Service	38.66	47.99	
		Kanpur	54.20	95.33	73.70	87.93	64.33	58.26	78.97	77.94	89.79	89.66	92.64	
	In-vehicle (≥ -85dBm)	Faizabad	85.40	98.23	99.70	97.17	86.46	96.50	72.77	92.71	No Service	96.67	97.52	
		Sahajanpur	85.00	98.73	97.40	89.40	73.66	96.77	83.80	84.91	No Service	67.00	82.39	
		Kanpur	93.10	99.76	97.26	99.33	92.00	90.37	97.20	97.56	99.30	99.00	99.99	
	Outdoor- in city (≥ -95dBm)	Faizabad	100.0	99.03	100.0	100.0	99.05	100.0	97.00	99.85	No Service	100.0	100.0	
		Sahajanpur	100.0	99.99	100.0	100.0	92.66	100.0	98.03	99.28	No Service	87.00	97.29	
Kanpur		100.0	99.99	99.41	100.0	98.33	100.0	99.93	99.92	100.0	100.0	100.0		
1.6	CSSR (≥95%)	Faizabad	100.0%	98.69%	97.09%	98.74%	99.36%	100.0%	97.01%	98.60%	No Service	98.76%	100.0%	
		Sahajanpur	98.99%	97.22%	91.62%	97.34%	98.96%	99.58%	96.15%	97.71%	No Service	96.19%	99.45%	
		Kanpur	98.45%	100.0%	99.34%	97.21%	92.00%	98.53%	91.35%	95.90%	98.69%	94.76%	100.0%	

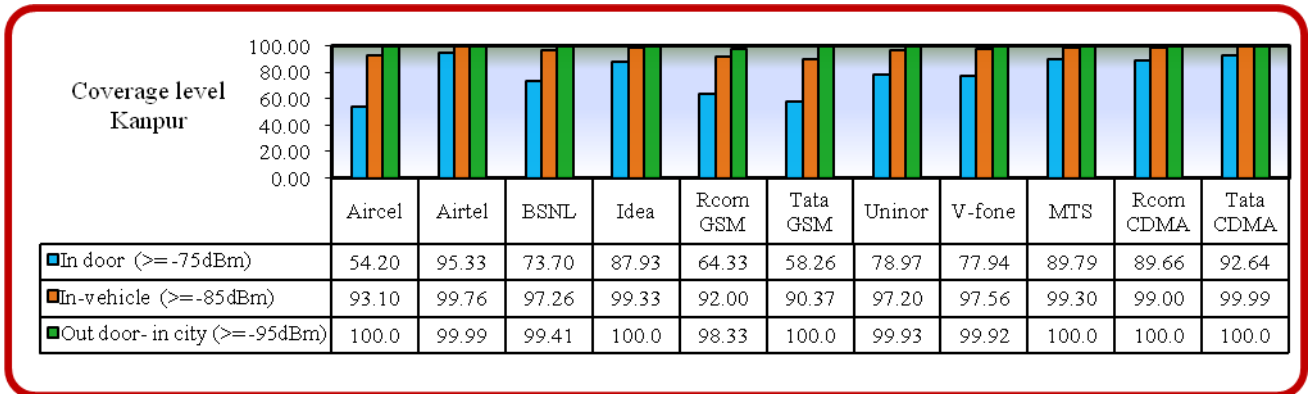
Graphical Representation (Faizabad):



Graphical Representation (Sahajanpur):



Graphical Representation (Kanpur):



(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:

Faizabad

- For parameter “Dropped Call Rate” Uninor & RCom-CDMA are not satisfying the benchmark.
- For parameter “Percentage of connections with good voice quality” Aircel, Idea, RCom (GSM&CDMA) & Uninor are not satisfying the benchmark.

Sahajanpur

- For parameter “Blocked Call Rate” BSNL, Uninor & RCom (CDMA) are not satisfying the benchmark.
- For parameter “Dropped Call Rate” Idea, Uninor, RCom (CDMA) & Tata (CDMA) are not satisfying benchmark.
- For parameter “Percentage of connections with good voice quality” RCom (GSM&CDMA), Uninor & Tata-CDMA are not satisfying benchmark.
- For parameter “CSSR” BSNL is not satisfying the benchmark.

Kanpur

- For parameter “Blocked Call Rate” RCom (GSM&CDMA), Uninor & Vodafone are not satisfying the benchmark.
- For parameter “Dropped Call Rate” RCom (CDMA) is not satisfying benchmark.
- For parameter “Percentage of connections with good voice quality” Aircel, Uninor & Vodafone are not satisfying the benchmark.
- For parameter “CSSR” RCom (GSM&CDMA) & Uninor are not satisfying the benchmark.

***Note 1:** Vodafone has reported that in Kanpur (Cantt. Area) they are not allowed for any physical site installation. Hence “Good Vice quality” parameter is showing value below benchmark.*

***Note 2:** MTS has no service (Spectrum) in Faizabad & Sahajanpur, similarly Videocon has no service in Faizabad, Sahajanpur & Kanpur cities. Hence in case of MTS & Videocon drive test is not applicable in these cities.*

(E) Independent Drive Test**1. Sample Coverage**

The Independent Drive Test was conducted at UP (East) in Jaunpur, Ghazipur & Barabanki cities. Route cover was about around 50-60 Km depending on city areas within the speed limit of 30Km/hr.

Drive Test Locations**Jaunpur**

HIGH DENSE:	Olanganj, Badi Masjid, Lain Bazar, Jaunpur Chaurah
MEDIUM DENSE:	Husaenabad, T.D. College road area, Vishwaswar pur, Nayi Ganj
LOW DENSE:	Varanasi-Lucknow Highway, Sipah, Varanasi-Azamgarh Road

Ghazipur

HIGH DENSE:	Ghatia Ghat, Teachers Colony, Basantvihar Colony, Ghatampur, Saklainabad, Paraspura, Shastrinagar2, Serwashar Nagar, Mahubabad, Mohalla Piranganj, Navab Ganj2, Miisroliya, Sarai Pukhta/Eeshnath
MEDIUM DENSE:	Khajuriya, Preetam Nagar2, Mohalla Gorabazar
LOW DENSE:	Mau Road

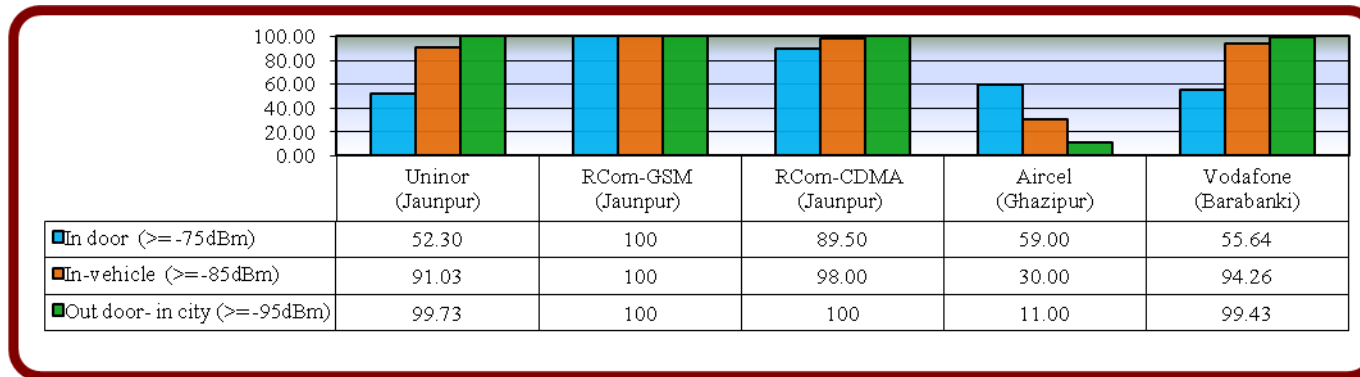
Barabanki

HIGH DENSE:	Chowk area, peerbatawan, Railway station, begamganj, vijaynagar, industrial area, incom tax office, bus stand, Kotwali, police line.
MEDIUM DENSE:	Transport nagar ,Naka chauraha ,Mahalaxmi college, Distric hospital, Lakhpeda bagh and lakhpeda colony,
LOW DENSE:	Lucknow to Barabanki highways, Barabanki to faizabad rd, Gonda chedanagar highways

2. Performance (for the Independent respective city)

Operators Name	City	Call Attempts	Blocked Call Rate ($\leq 3\%$)	Dropped Call Rate ($\leq 2\%$)	% of connections with good voice quality ($\geq 95\%$)		Service Coverage			Call Setup Success Rate ($\geq 95\%$)
					(i) 0-4 (w/o frequency hopping)	(ii) 0-5 (with frequency hopping)	In door ($\geq -75\text{dBm}$)	In-vehicle ($\geq -85\text{dBm}$)	Outdoor- in city ($\geq -95\text{dBm}$)	
Uninor	Jaunpur	156	0.64%	0.00%		92.40%	52.30	91.03	99.73	99.36%
RCom-GSM		200	2.00%	0.00%		94.00%	100.0	100.0	100.0	98.00%
RCom-CDMA		206	0.00%	0.00%	99.00%			89.50	98.00	100.0
Aircel	Ghazipur	89	0.00%	0.00%		95.66%	59.00	30.00	11.00	100.0%
Vodafone	Barabanki	118	2.54%	0.00%		95.47%	55.64	94.26	99.43	97.46%

Graphical Representation



3. Critical Analysis

The drive test data was found to be satisfactory for most of the parameters. However, for parameter “Percentage of connections with good voice quality” Uninor & RCom-GSM are not satisfying the benchmark.

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

From live, month & Drive test findings, it can be concluded that on an average, performance of the operators in the service area (UP (East)) is satisfactory for the **Network Parameters**. However only for the parameter "*Worst affected cells > 3% TCH drop*" it is found that Aircel, BSNL, TATA (GSM) & Uninor performance are not satisfactory.

In case of "*Number of POI having $\geq 0.5\%$ POI congestion*" it is found that only Uninor is showing more than 0.5% congestion in 3 nos. of POIs.

Under **Customer Service Quality Parameter** "*operator answered calls (voice-to-voice) within 60 sec*" parameter Idea is not fulfilling TRAI benchmark of $\geq 90\%$.

Regarding "*Resolution of billing/ charging complaints*" issues, Airtel is not fulfilling TRAI benchmark of $\geq 100\%$ with a small margin.

During Drive Tests

High "*Blocked Call Rates*" were found in case of BSNL, Uninor, RCom (GSM&CDMA) & Vodafone.

High "*Dropped Call Rates*" were found in case of Idea, Uninor, RCom (CDMA) & Tata (CDMA).

"*Percentage of connections with good voice quality*" parameter is not met by Aircel, Idea, RCom (GSM&CDMA), Uninor, Tata (CDMA) & Vodafone.

"*CSSR*" parameter is not satisfying by BSNL, RCom (GSM&CDMA) & Uninor.

II Basic Telephone Service (Wire line) Providers

(A) Exchange Audit

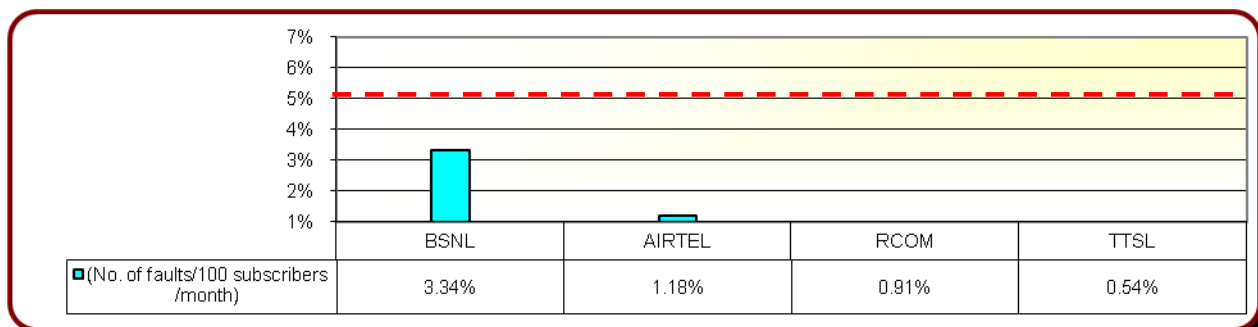
1. 3 days live data & One month audit comparative table:

S/N	Name of Parameter	Bench mark	Audit	BSNL	AIRTEL	RCOM	TTSL
1	(No. of faults/100 subscribers /month)	< 5%	Month	3.34%	1.18%	0.91%	0.54%
2	Fault repair by next working day(Urban Area)		Month				
a	By next working day	>90%	Month	95.49%	96.74%	100.00%	100.00%
b	Within 3 days	100%	Month	98.90%	100.00%	100.00%	100.00%
3	Fault repair by next working day(Rural & hilly Area)		Month				
a	By next working day	>90%	Month	94.02%	NA	NA	NA
b	Within 5 days	100%	Month	99.67%	NA	NA	NA
4	Rent rebate		Month				
a	Fault pending > 3 days & <7 days	Rebate for 7 days	Month	1320	0	0	0
b	Fault Pending > 7 days & < 15 days	Rebate for 15 days	Month	5	0	0	0
c	Fault pending > 15 days	Rebate for one month	Month	92	0	0	0
5	Mean time to Repair(MTTR)	<= 8 Hrs	Month	6.41Hrs	5.19Hrs	2.23Hrs	1.54Hrs
6	Call Completion Ratio(CCR) & Answer to seizure Ratio(ASR)	> 55%(CCR) & > 75%(ASR)	Live	82.00%	62.14%	92.91%(ASR)	NA
			Month	87.00%	63.33%	92.29%(ASR)	NA
7	Metering and billing credibility(post paid)		Month				
a	Disputed Bills over bills issued	< 0.1%	Month	0.02%	0.10%	0.06%	0.00%
8	% of billing complaints resolved within 4 weeks	Within 4 weeks	Month	100.00%	100%	100%	NA
a	Period of refunds after resolution of complaints within 1 weeks	Within 1 weeks	Month	100%	90.38%	100%	NA
9	No of POI having > 0.5% Congestion	>=0.5%	Live	0	0	0	0
			Month	0	0	0	0
10	Response Time to customer for assistance		Month				
a	Accessibility of Call centre within 40 sec.	>= 95%	Live	99.99%	100%	98.00%	100.00%
			Month	100.00%	100%	97.90%	96.87%
b	% age of calls answered by operator(voice to voice) within 60 sec.	>= 90%	Live	93.99%	96.85%	99.75%	100.00%
			Month	92.22%	90.58%	93.87%	97.00%
11	Customer care(promptness in attending to customers request)		Month				
a	Termination / Closures	<= 7 Days	Month	100%	76.94%	100%	NA
b	Time taken refunds deposit after closures	100% within 60 days	Month	100%	100%	100%	NA

2. Performance (Graphical representation)

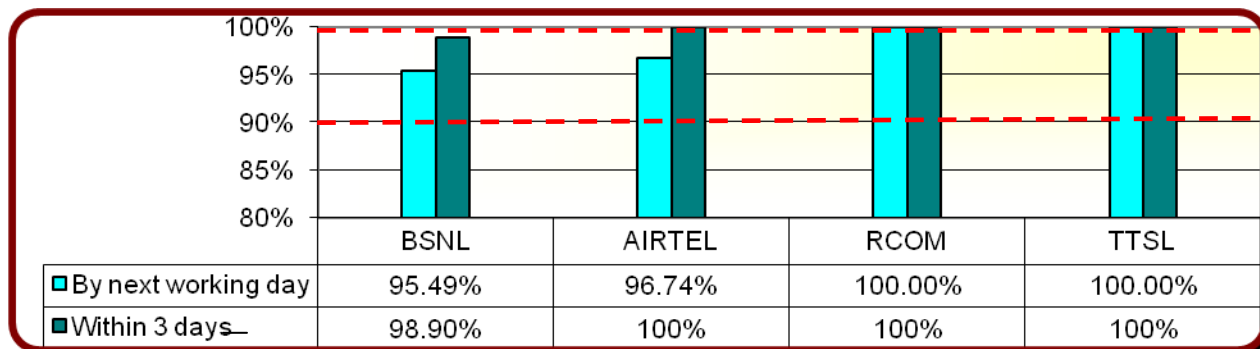
Parameter wise Data Analysis & Graphical Representations – Basic Service (Wireline)

Fault incidences (No of faults/100 subscribers/month (≤ 5): All the operators are meeting the Benchmark.

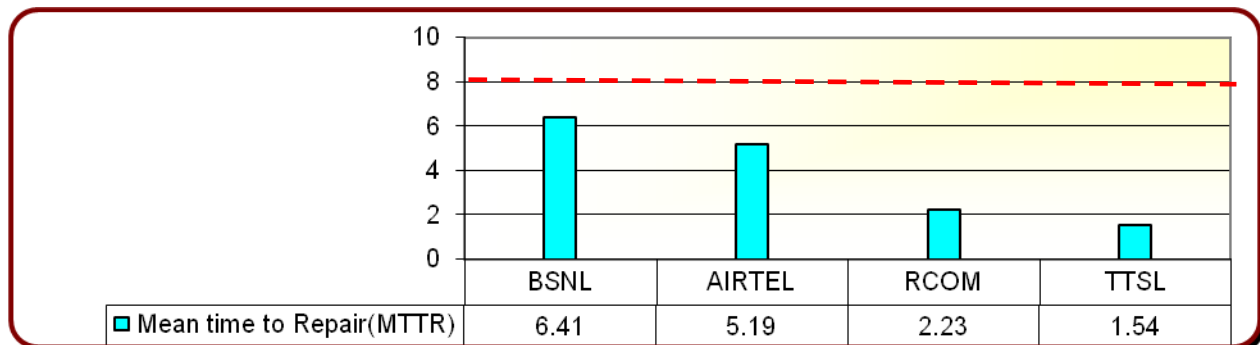


Fault Repair (Urban Area):

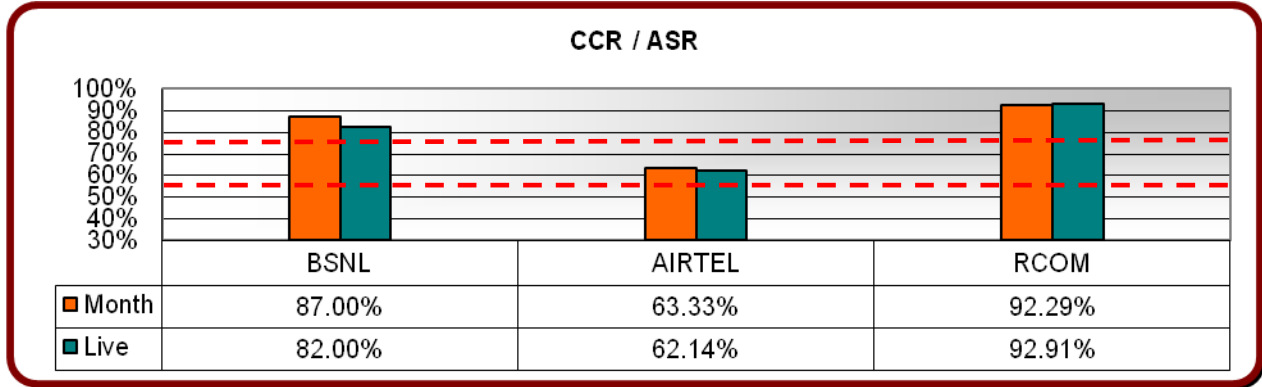
- **By next working day (>90%):** All the operators are complying the TRAI benchmark.
- **Within 3 days (100%):** Except BSNL, all the operators are complying TRAI Benchmark.
- **Rent Rebate** – Only BSNL is having eligible rebate cases.



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

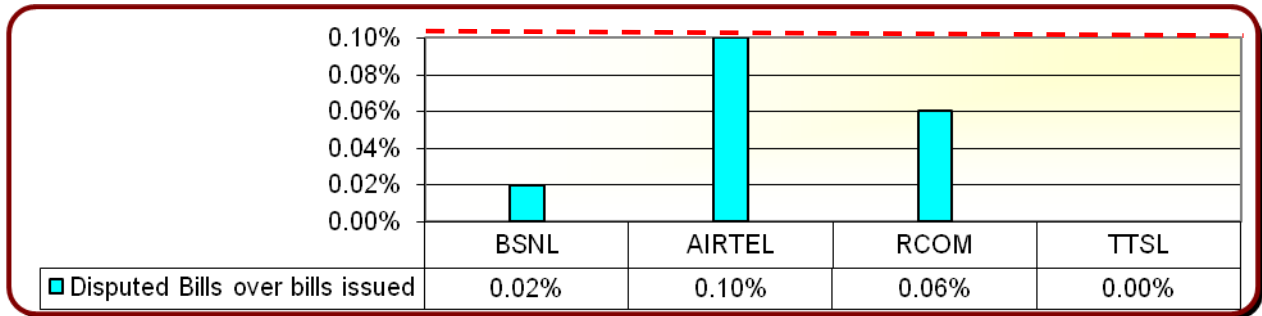


Call Completion Rate (CCR)/ Answer to Seizure Ratio (ASR) (>55% & > 75%): All the operators are complying the benchmark for both Live & month data. RCOM provides ASR value . TTSL has no provision of providing CCR or ASR due to unavailability of separate POI for wireline service.



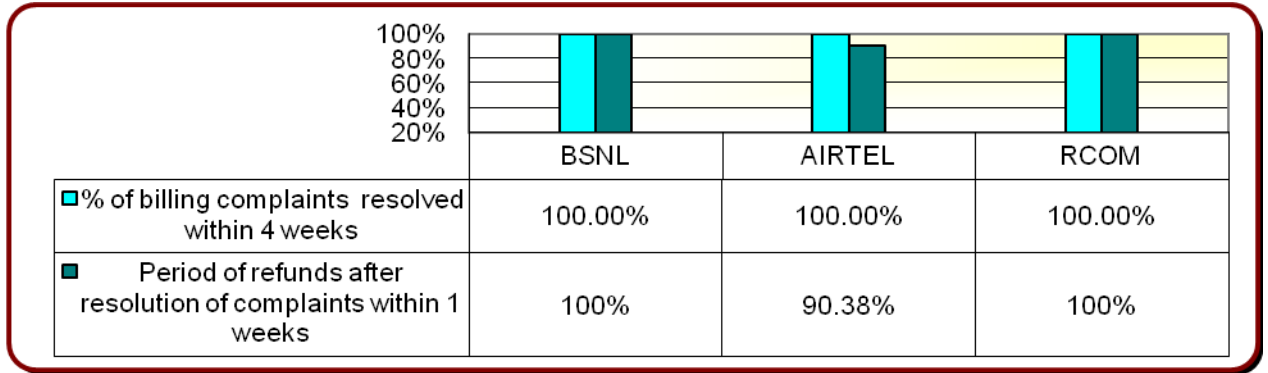
Metering and Billing Credibility (< 0.1%):

Disputed Bills over Bills issued: - All the operators comply with the TRAI standards for one-month data verification. TTSL had no disputed bills in the month.

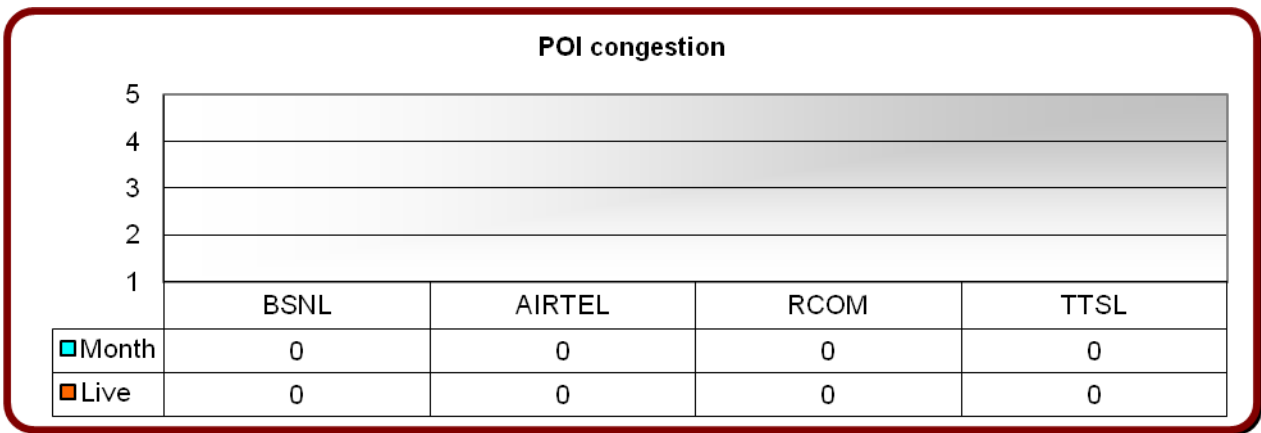


% of Billing Complaints resolved within 4 Weeks: All the operators have resolved 100% billing complaints within 4 weeks. TTSL had no cases against this parameter.

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 & Rcom are satisfying the benchmark set by TRAI except Airtel. TTSL had no cases against this parameter.

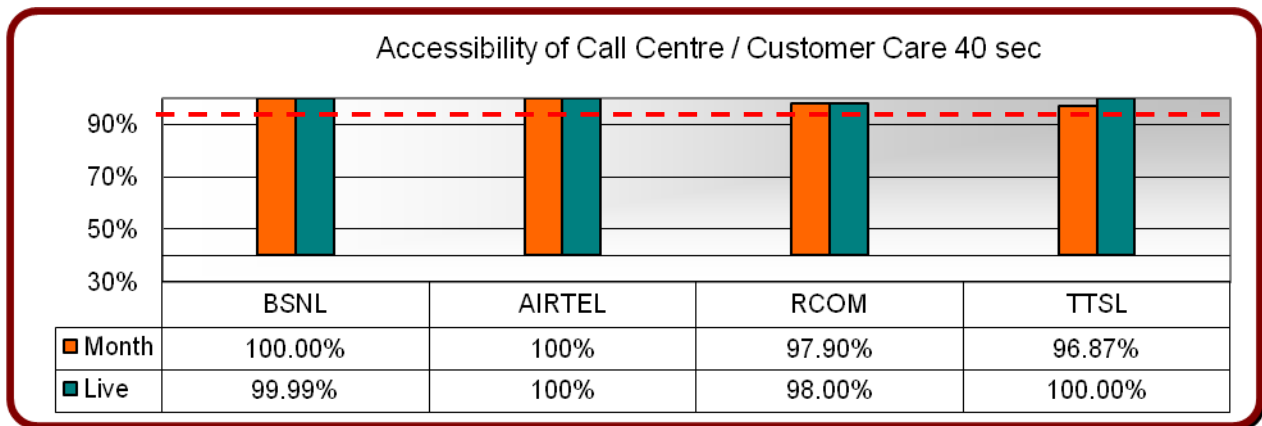


No of POI having > 0.5% Congestion: No operator has any POI with congestion $\geq 0.5\%$.

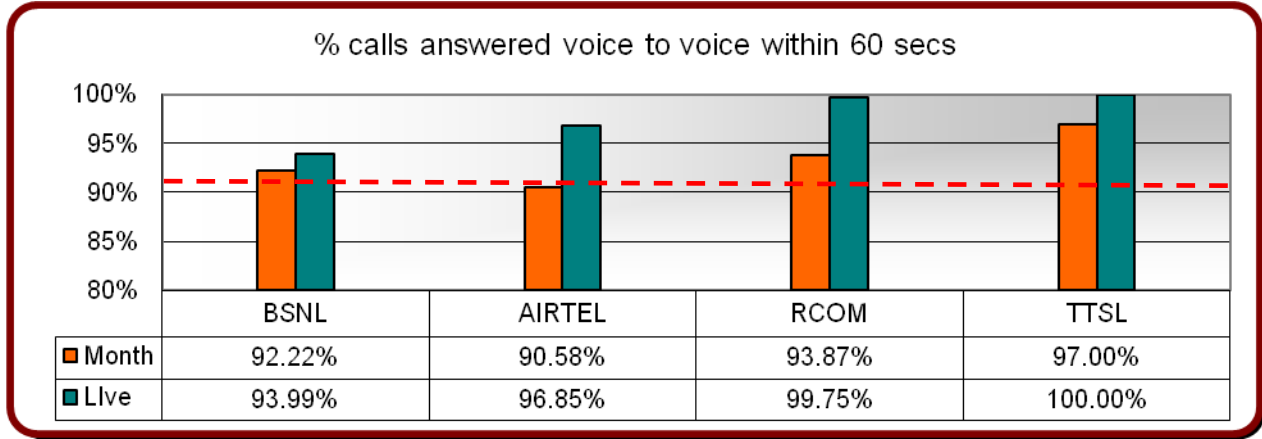


Response Time to Customer for Assistance:

Accessibility of Call centre / customer care (Electronically) within 40 sec (>95%): All the operators are meeting the benchmark set by TRAI in month & live data.



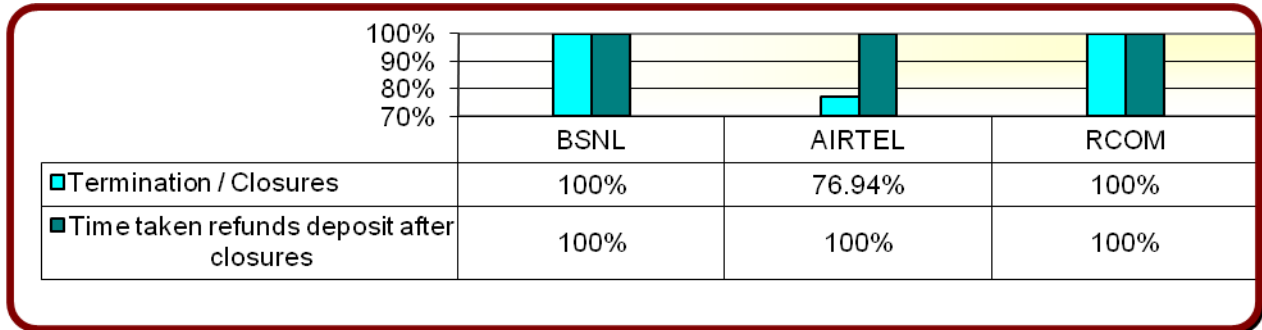
% age of calls answered by operator (Voice to Voice) within 60 sec (>90%): All the Operators are meeting the benchmark set by TRAI in month & live data.



Customer Care Promptness in Attending Customer Request:

(i) Termination/Closure: Only Airtel is having closure of service cases and it is having deviation in termination of service within 7 days’ time. Rcom has no Termination cases.

ii) Time taken for refund of deposits after closure: Only Airtel has eligible refunds cases and it has made refunds within time in all such cases. Rcom has no refunds deposit cases.



3. Customer Care & Grievances Redressal

S.N	Parameters	BSNL	AIRTEL	RCOM	TTSL
1	Total no of complaints received in the call centre (Tech+ Non Tech)	2300	5546	374	0
3	Nodal Officer				
3.1	Total no of complaints received by the nodal officers	0	61	0	0
3.2	Percentage of complaints with reference to total no of complaints received at the call centre	0%	1.09%	0%	0%
4	Appellate Authority				
4.1	Total no of appeals received by the appellate authority	0	44	0	0
4.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	0%	72.13%	0%	0%

Note:

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

4. Live calling to call centre

Calling Operator	BSNL	AIRTEL	TTSL	RCOM
Call Centre No.	1500	121/198	1515	*377
Total No. of Calls Attempted	100	100	100	100
Total No. of calls connected to IVR	100	100	100	100
Calls got connected to agent within 60 Sec	96	98	95	97
%age of calls got answered	96%	98%	95%	97%

5. Performance based on live calling for fault repair

	AIRTEL	BSNL	RCOM	TATA
Total No. of Calls Attempted	100	100	100	61
Total No. of calls Answered	92	85	90	55
Cases resolved within 3 days	92	84	90	55
%age of complain resolved	100%	98%	100%	100%

NOTE:-- The difference between calls attempted and calls answered are due to line busy and no reply..

6. Performance based on live calling for billing complaints

	AIRTEL	BSNL	RCOM
Total No. of Calls Attempted	52	18	13
Total No. of calls Answered	45	14	11
Cases resolved with 4 weeks	45	14	11
%age of cases resolved	100%	100%	100%

Note: The difference between call attempts and call answer is because of either Number busy or No response.

7. Level 1 live calling

Emergency no.	No. of calls made	Airtel	BSNL(SSA)		TTSL	RCOM
		Lucknow	Lakhimpur	Basti	Lucknow	Lucknow
100	1	1	1	1	1	1
101	1	1	1	1	1	1
102/108	1	1	1	1	1	1
139	2	2	2	2	2	2

NOTE:- For Level 1 services calling in 2 SSA covering 15 SDCA of Lakhimpur and Basti in UP (East) circle.

8. Critical Analysis

The parameter wise key takeouts for the Basic (Wire line) Service providers for the UP (E) Circle are as under:-

Fault incidence:

All the operator are meeting the benchmark for fault incidence cases in that month.

Fault Repair (Urban/Rural Area):

All operators are meeting the benchmarks set by TRAI for the parameters “faults repair by the next working day” but as far as “fault repair within 3 working days” and within 5 days (rural area) is concerned it is not met by BSNL.

Rent Rebate:

In this, only BSNL is having Rebate cases in that month of audit.

CCR / ASR:

All the operators are found to be meeting TRAI benchmark of $\geq 55\%$ for the parameters Call Completion Rate (CCR). RCom is providing ASR while BSNL & Airtel are provide CCR value.

TTSL has no provision of capturing this parameter because of unavailability of separate POI for wireline services.

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 during month. TTSL has no disputed bills in the month.

% of Billing complaints Resolved Within 4 Weeks:

As per the findings for one-month data audit, all the operators are found to provide 100% resolution of complaints within 4 weeks. This parameter is not applicable to TTSL since there were no billing complaints.

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

As per the findings for one-month data audit, BSNL & Rcom are found to provide 100% account adjustments within 1 week. Airtel is not meeting the benchmark. This parameter is not applicable to TTSL since there were no billing complaints.

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, all the operators are complying in both Live & Month audit.

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

For the parameter “%age of calls answered by operators within 60 Seconds”, all the operators are complying the benchmarks of $\geq 90\%$ in Live & month audit.

Customer care (Promptness of attending customer request):

(i) Termination/Closure:

Only Airtel is having termination cases in the month and it had terminated only 76.94% cases within 1 week.

ii) Time taken for refund of deposits after closure:

Only Airtel is having eligible refund cases in the month and it had provided refunds in 100% cases within the time period set by TRAI.

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

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

- Under the Network Section, for parameters like Faults repair by next working days and within 3 days, it has been observed that all the operators are complying the benchmark for Live & one-month data verifications. As far as faults registered in Hilly areas and Rural area are concerned, BSNL is not meeting the benchmark.
- For Rent Rebate, only BSNL has eligible cases for rent rebate.
- In POI congestion parameter, no POI is having more than 0.5% congestion within the local network.
- “% of billing complaints resolved within 4 weeks” is met by all operators. However, adjustments in customer’s account within 1 week are not done by Airtel.
- For Response Time to customer parameters, all operators are satisfying the benchmark set by TRAI for both Live & one month data.
- For Termination & Closures cases, Airtel is not meeting the benchmark with a value of 76.94%.

II. Broadband Service Providers

3 days live and One month audit comparative table

S/N	Parameters	B-marks	Audit	AIRTEL	BSNL	RCOM
1	<i>Service Provisioning/Activation Time</i>					
	100% cases in 15 days (subject to technical feasibility)	<15 days	Month	84.64%	100%	100%
	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%	100%	100%
2	<i>Faults Repair/Restoration Time</i>					
	By next working day	>90%	Month	98.97%	94.80%	100%
	within 3 working day	≥99%		99.79%	100%	100%
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	16	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	11	0
	Faults Pending for > 15 working days:(Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)			0	47	0
3	<i>Billing Performance</i>					
	Billing complaints per 100 bills issued	<2%	Month	0.00%	0.14%	0.15%
	%age of complaints resolved within 4 weeks	100%		NA	100%	100%
	Time taken for refund of deposits after closure (within 60 days)	100%		NA	100%	100%
4	<i>Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)</i>					
	within 60 sec	>60%	Live	99.00%	70%	99%
			Month	90.85%	86.40%	96%
	within 90 sec	>80%	Live	98.88%	82%	99.98%
			Month	93.03%	94.10%	97%
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	48.00%	46.12%	55.00%
			Month	47.00%	54.17%	14.74%

S/N	Parameters	B-marks	Audit	AIRTEL	BSNL	RCOM
5.2	ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity	< 80%	Live	NA	75.92%	NA
			Month	NA	74.37%	NA
5.3	Broadband Connection Speed (download) - from ISP Node to User	> 80%	Live	100%	94.20%	100%
			Month	100.0%	96%	100%
6	<i>Service Availability/Uptime (for all users)</i>					
	Service Availability	>98%	Month	99.99%	99.70%	99.99%
7	<i>Packet loss</i>					
	% of Packet loss	<1%	Live	0.00%	0%	0%
			Month	0.00%	0%	0.13%
8	<i>Network latency (for wired broadband access)</i>					
8.1	User reference point at POP/ISP Gateway node to IGSP/NIXI	<120 ms	Live	16ms	2ms	NP
			Month	15ms	21ms	80.3ms
8.2	User reference point at ISP Gateway node to International nearest NAP port abroad (terrestrial)	<350 ms	Live	3ms	231 ms	164ms
			Month	2ms	227 ms	305ms
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.

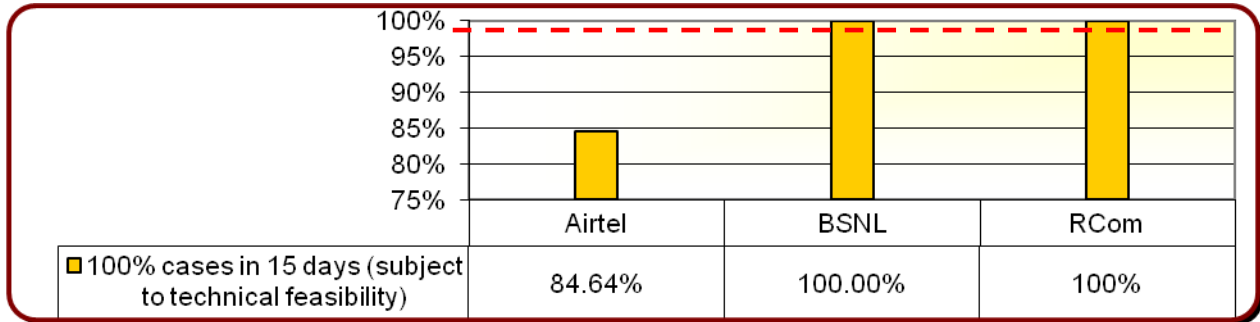
Note:--

a) None of the operators are having satellite connectivity.

2. Performance (Graphical representation)

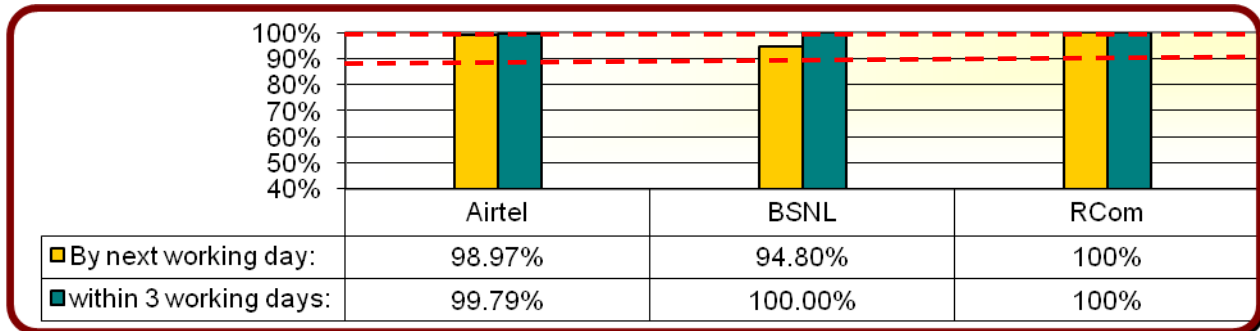
Service Provisioning /Activation Time: (Benchmark 100%)

Except Airtel, rest of the operators are complying with the TRAI benchmark of 100% in the month of audit.



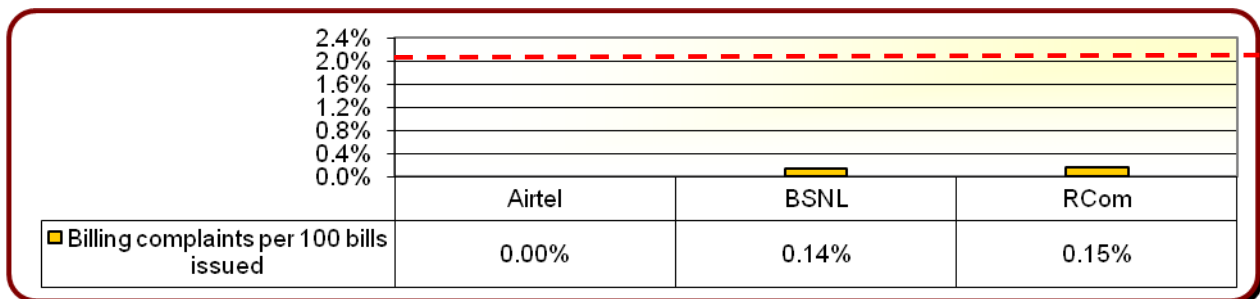
Fault Repair / Restoration Time:

- **By next working day (>90%):** All operators are complying with the TRAI benchmark of 90% in one-month data verification.
- **Within 3 working days (>99%):** All operators are complying with the TRAI benchmark of 99% in one-month data verification.
- **Rent Rebate** – Only BSNL has eligible cases for rebate.



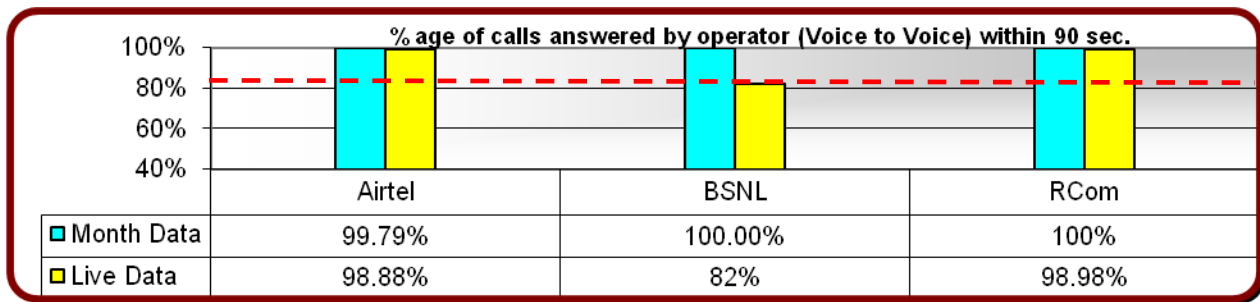
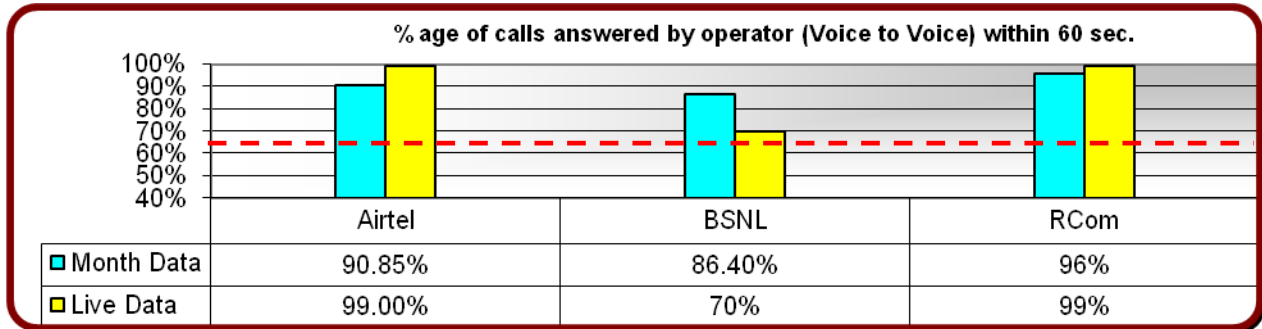
Billing Performance: (Benchmark <2%)

All operators are complying with the TRAI standards for the parameter “Billing complaints per 100 bills issued” in one-month data audit. Airtel had no disputed bills in the month.



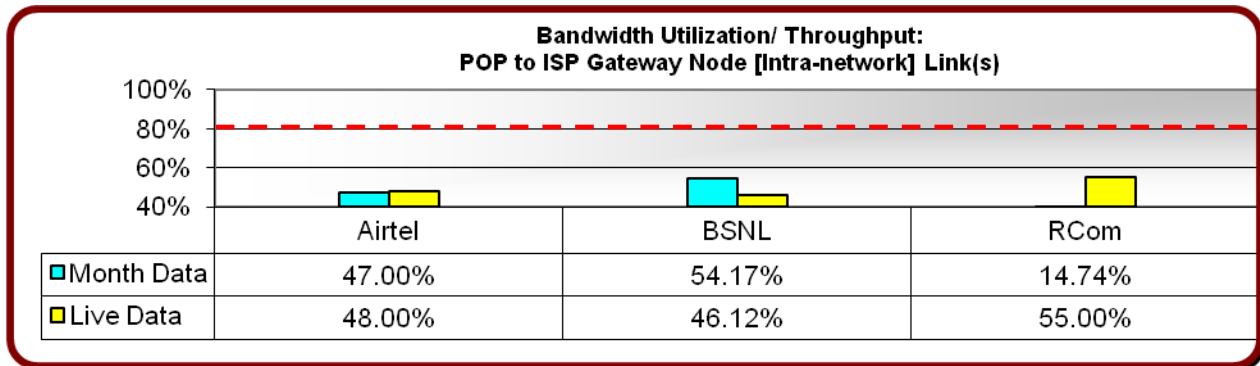
Response time to the customer for assistance: % age of calls answered by operator (Voice to Voice)

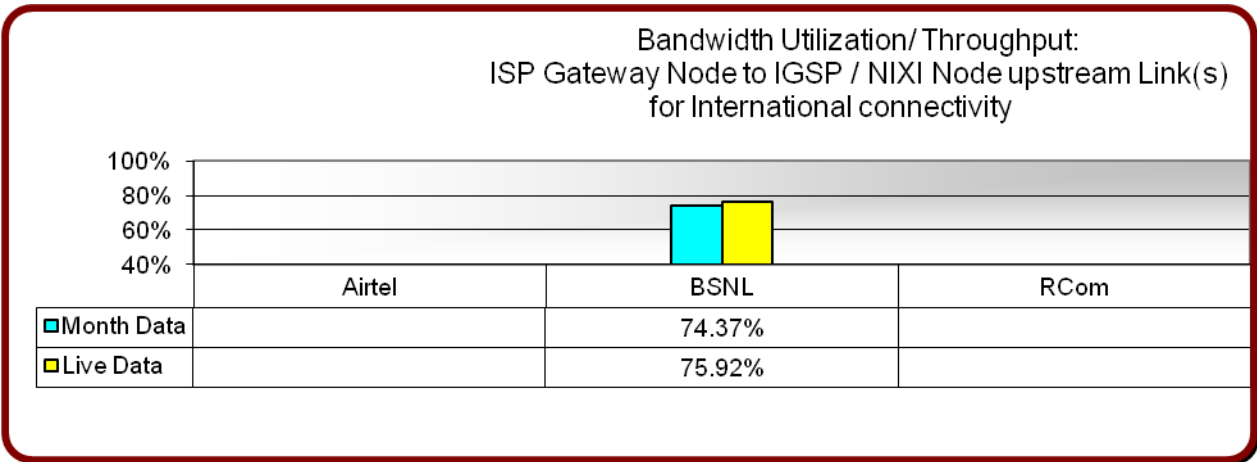
- **Within 60 seconds (>60%):** All the operators are meeting the benchmark in both live and one- month data verification.
- **Within 90 seconds (>80%):** All the operators are meeting the benchmark in both live and one- month data verification.



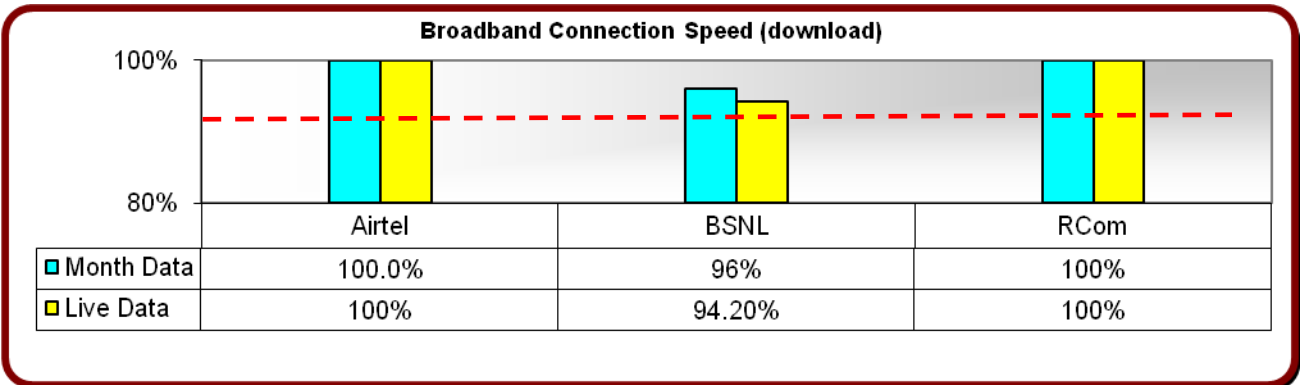
Bandwidth Utilization/ Throughput:

- **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%):** BSNL is complying the parameter. Airtel & RCOM has no provision of generating due to no upstream link in UP(e) circle.

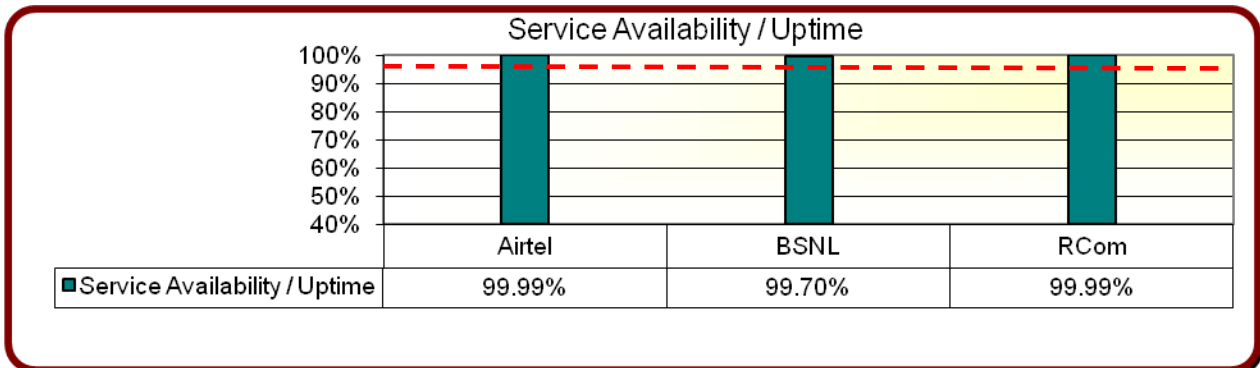




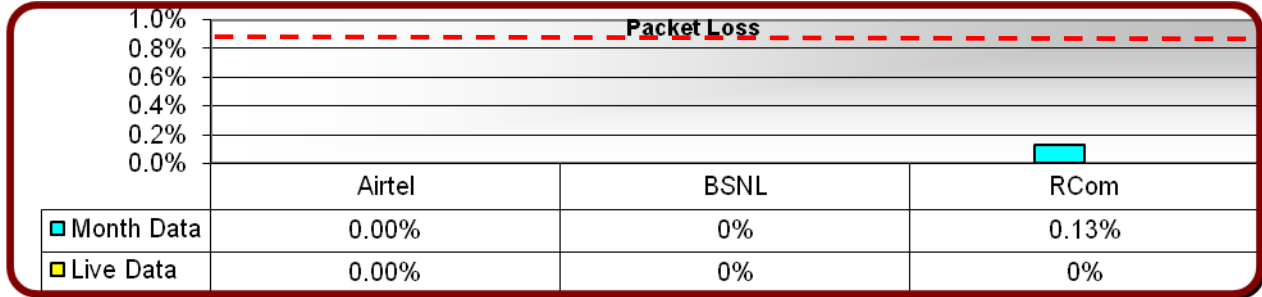
Broadband Connection Speed (download) (>80%): All the operators are meeting the TRAI benchmark of greater than 80% connection in both live and one-month data verification.



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.

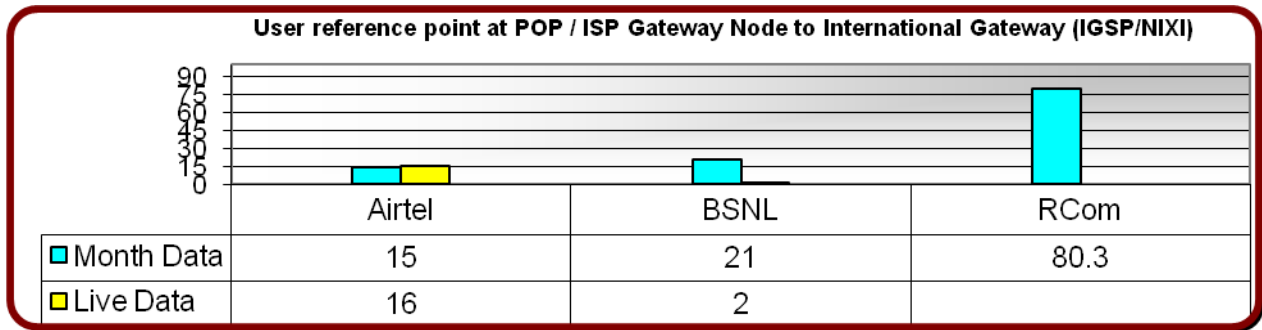


Packet Loss (Should be less than 1%): All operators are meeting the benchmark in both live and one-month data verification.

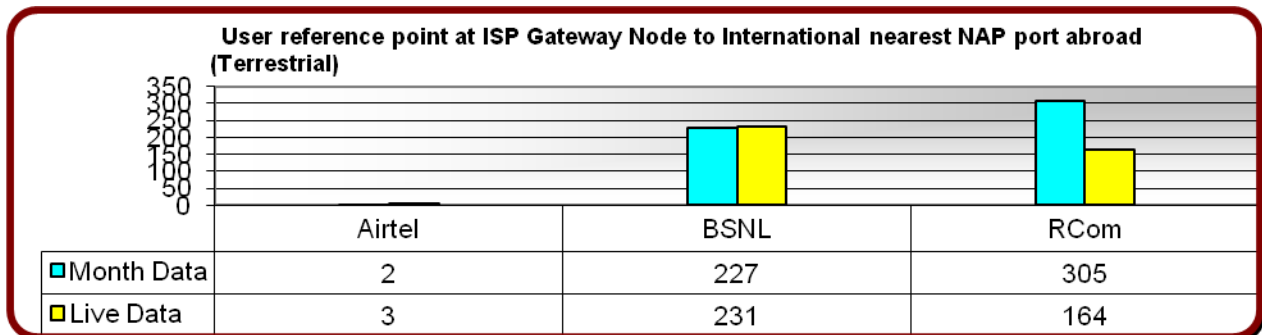


Network Latency:

- **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. RCOM has no provision of capturing 3 days Latency in system due to some security reasons.



- **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.

3. Customer Care & Grievances Redressal

S.N.	Parameters	BSNL	AIRTEL	RCOM
1	Call Centre			
1.1	Total no of complaints received in the call centre	2300	3769	174
1.2	Complaints per 100 customers per months	0%	0%	0%
2	Nodal Officer			
2.1	Total no of complaints received by the nodal officers	0	31	0
2.2	Percentage of complaints with reference to total no of complaints received at the call centre	0%	0.82%	0%
3	Appellate Authority			
3.1	Total no of appeals received by the appellate authority	0	9	0
3.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	0%	29.03%	0%

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

4. Live calling to call centre

Calling Operator	BSNL	RCOM	AIRTEL
Call Centre No.	1500	*377	121/198
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	98
%age of calls got answered	95%	97%	98%

5. Performance based on live calling for new connections

	AIRTEL	RCOM
Total No. of Calls Attempted	100	100
Total No. of calls Answered	90	85
Connection provided within 15 days	90	85
%age of successful connection	100%	100%

NOTE-- 100% compliance was found in new connections registered within 15 days for all the Operators as claimed by them.

6. Performance based on live calling for fault repair

	AIRTEL	RCOM	BSNL
Total No. of Calls Attempted	100	100	100
Total No. of calls Answered	92	90	88
Cases resolved within 3 days	92	90	88
%age of complain resolved	100%	100%	100%

NOTE-- 100% compliance was found fault repair within 3 days. The difference between call Attempted and calls answered is due to line busy and no reply.

7. Performance based on live calling for billing complaints

	RCOM	BSNL
Total No. of Calls Attempted	17	50
Total No. of calls Answered	16	38
Cases resolved with 4 weeks	16	38
%age of cases resolved	100%	100%

NOTE—Airtel has no billing complaints.

8. Critical Analysis

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

Service provisioning/Activation time:

All operators are complying the benchmark set by TRAI except Airtel which is deviating from benchmark in that month of audit.

Fault Repair/Restoration time & Rebate:

All operators are meeting the benchmark of more than 90% in one-month data verification. As far as Rebate is concerned, only BSNL is having rebate cases in that period.

Billing performance:

All operators are satisfying with the benchmark set by TRAI. Airtel has no billing complaints in that month. Rest all the operators are meeting the benchmark of “100% complaints resolved within 4 weeks” for billing complaint resolution as well as 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:** Airtel & RCom has not provided the data for this parameter as the same is not generated in their system.

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. Rcom has no provision of capturing Latency of 3 days from the system.
- **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.
- **User reference point at ISP gateway node to international nearest NAP Port abroad (Terrestrial) <850 ms:** The Satellite link does not exist for any operator and hence this parameter is not applicable.

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

BSNL

BSNL is meeting service provisioning as well as Fault repair parameters. Only BSNL is having some rebate cases in that month. As far as response time to customer for assistance & Service availability parameters are concerned, it is complying with the respective benchmarks. For Technical parameters like Bandwidth Utilization, Network Latency etc, have been met by BSNL.

RCOM

Reliance is meeting all the QoS parameters. However, Network Latency is not provided by them since their system has no provision for generating the same.

AIRTEL

Meets all the QoS parameters except service activation.