



REPORT
ON
AUDIT & ASSESSMENT OF QUALITY OF SERVICE
OF
CELLULAR MOBILE TELEPHONE SERVICE
FOR
TELECOM REGULATORY AUTHORITY OF INDIA
NORTH ZONE – HIMACHAL PRADESH SERVICE AREA
(OCTOBER 2013 – DECEMBER 2013)

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PREFACE

The Telecom Regulatory Authority of India (TRAI), was established in 1997 by an Act of Parliament, called the Telecom Regulatory Authority of India Act, 1997, to regulate telecom services. The Authority's mission is to ensure that the interest of consumers are protected and at the same time to nurture conditions for growth of telecommunications, broadcasting and cable services in a manner and at a pace which will enable India to play a leading role in emerging global information society.

The Authority, in exercise of its functions as per the provisions in the TRAI Act, has been entrusted to measure the Quality of Service provided by the Service Providers from time to time and to compare them with the benchmarks so as to assess the level of performance. In pursuance of this, TRAI has appointed **M/s TUV-SUD South Asia Pvt. Ltd.** to carry out "Audit and Assessment of Quality of Service" provided by Basic (Wire line), Cellular Mobile and Broadband service providers in terms of the benchmarks specified in the respective regulations, in North and West Zones.

TUV-SUD South Asia carried out QoS audit as per the norms of TRAI in all the eight circles / services areas of the North Zone and four circles of the West Zone. This report details the performance of the various service providers in **Himachal Pradesh circle** against the QoS bench marks laid down by TRAI in the respective regulations.



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1. BACKGROUND

Telecom Regulatory Authority of India has been entrusted to “lay down the standards of quality of service to be provided by the service providers and ensure the quality of service and conduct the periodical survey of such service provided by the service providers so as to protect interest of the consumers of telecommunication services” vide sub-clause (v) of clause (b) of sub-section (1) of section 11 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997).

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, the regulatory watch dog for the Quality of Service for the telecom services – Basic (Wire line), Cellular Mobile (Wireless) and Broadband has commissioned **M/s TUV-SUD South Asia Pvt. Ltd.** for conducting audit and assessment of quality of service of service providers, in terms of the benchmarks specified in the “The Standards of Quality of Service of Basic Telephone Service (Wire line) and Cellular Mobile Telephone Service Regulations, 2009 (7 of 2009) dated 20th March, 2009 and the Quality of Service of Broadband Service Regulations, 2006 (11 of 2006) dated 6th October, 2006 on zonal basis for **North Zone and West Zone** comprising of the following Telecom Circles/Metro Service Areas:

North Zone: Delhi, Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Rajasthan, Uttar Pradesh-East and Uttar Pradesh-West (including Uttarakhand). For the cellular mobile telephone service the service area of Delhi includes Ghaziabad, Faridabad, Noida and Gurgaon.

West Zone: Mumbai, Maharashtra (including Goa and excluding Mumbai), Gujarat and Madhya Pradesh (including Chhattisgarh).

The Audit exercise would assess the Quality of Service of telecom operators providing Basic (Wire line), Cellular Mobile (Wireless) and Broadband services by auditing the relevant QoS records maintained by the



operators, conducting drive tests as well as live measurements and comparing them with quality of service benchmarks stipulated by TRAI. The audit would be carried out by **TUV-SUD South Asia** every quarter across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. However, in respect of Basic telephone service (wireline) and Broadband service, a circle would be audited once in a year.

2. OBJECTIVES AND METHODOLOGY

The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

The audit and assessment of Quality of Service is carried out by **TUV SUD South Asia across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. Apart from this, Delhi, Haryana & Maharashtra Circles also include audit for Basic (Wire line) and Broadband services as mandated by TRAI, during the quarter October- December 2013.**

The Scope of work as per the Terms of Reference (TOR) includes the following:

- i) Preparation of Performance Monitoring reports (PMRs) and uploading in the system.
- ii) Live measurements of the performance of Service Providers (SPs) against the benchmarks for three days during each audit.
- iii) Monthly audit based on one month data of the SPs.
- iv) Drive test of the RF networks.
- v) Audit of the performance of call centers with respect to their accessibility and percentage of calls answered by the operators and random customer feedback by calling the customers to get feedback of the services provided by the service providers.
- vi) Transfer of data generated by the RF drive test/Live measurements / PMR/ monthly audit to the server located at TRAI premises on real time basis.



3. SAMPLE SIZE

3.1 SAMPLING FOR CELLULAR MOBILE (WIRELESS) SERVICE PROVIDERS

- 100% of the Gateway MSC's (GMSC's) and Mobile Switching Centers (MSC's) of all the Cellular Mobile Service Providers or Unified Access Service Providers (UASP) were covered for audit in specified circles/service areas. Following are the various operators covered in Himachal Pradesh circle

Sl. No.	Name of Service Provider
GSM Operators	
1	AIRCEL
2	AIRTEL
3	BSNL
4	IDEA
5	VODAFONE
6	RCOM GSM
7	TATA GSM
CDMA Operators	
8	RCOM CDMA
9	TATA CDMA

For all the above operators, audit was conducted in all the three months of the Quarter ended December 2013.

3.2 SAMPLING FOR BASIC (WIRELIN) SERVICES

- The QoS audit for basic (wireline) service is to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles. **However, QoS audit for basic (wireline) service was not required to be done for Himachal Pradesh Circle in the quarter ended December 2013.**



3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS

- TUV–SUD South Asia has to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who are having broadband subscriber base of more than 10,000 subscribers in their licensed service area, for 5% of Point of Presence (PoPs) spread over in 10% SDCAs in specified Telecom Circle. However, **the QoS audit for Broadband service was not required to be done for Himachal Pradesh Circle in the quarter ended December 2013.**

4. EXECUTIVE SUMMARY

The executive summary put in a nutshell the key findings of the Audit by providing: -

- “Service provider performance report” for Cellular mobile, Basic (wire line) and Broadband services , which gives a foretaste of the performance of various operators against the benchmark specified by TRAI, during the months in which the Audit was carried out by TUV-SUD Auditors
- “Parameter wise critical findings” for Cellular mobile, Basic (wire line) and Broadband services: This indicates key observations and findings from different activities carried out during the Audit process
- TUV-SUD conducted audit involved a 3 stage verification process which consisted of auditing the records of the service providers and verifying the data submitted to TRAI. The second step involved a three day live measurement of all the network parameters. On the basis of the three days live measurement, the auditors checked the busy hour of the day for the service provider and collected the data for this busy hour for the month in which the audit was conducted. Finally, the performance of the service providers was also gauged by conducting 3 drive tests in different cities of a circle/service area per service provider per month. Thus total 81 (3x9x3) drive tests in three months of quarter ended December 2013 were carried out in **Himachal Pradesh circle.**

The three stage audit / verification viz audit of the records, live measurements and drive tests of all the cellular mobile operators was repeated every month. In case of Basic (Wire line) and Broadband, this exercise is required to be carried out on quarterly basis.



4.1 SERVICE PROVIDER PERFORMANCE REPORT BASED ON MONTHLY DATA VERIFICATION: NETWORK SERVICE QUALITY PARAMETER- CELLULAR MOBILE SERVICES.

BUSY HOUR OF VARIOUS SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	Month of Audit	Network TCBH Hour
GSM Operators			
1	AIRCEL	Dec-13	20:00 - 21:00
2	AIRTEL	Dec-13	20:00 - 21:00
3	BSNL	Dec-13	19:00 - 20:00
4	IDEA	Dec-13	19:00 - 20:00
5	VODAFONE	Dec-13	19:00 - 20:00
6	RCOM GSM	Dec-13	19:00 - 20:00
7	TATA GSM	Dec-13	19:00 - 20:00
CDMA Operators			
8	RCOM CDMA	Dec-13	20:00 - 21:00
9	TATA CDMA	Dec-13	12:00 - 13:00

The TCBH reported by all the service providers matched the network busy hour calculated by TUV auditors for the Himachal Pradesh circle.

SWITCHES/BSC/BTS DETAILS OF OPERATORS:

Sl. No.	Name of Service Provider	No. of MSC + GMSC	No. of BSC	No. of BTS	NSS make	BSS make
GSM Operators						
1	AIRCEL	1	8	662	Ericsson	Ericsson
2	AIRTEL	5	16	1371	Ericsson	Ericsson
3	BSNL	5	18	1053	Ericsson	Ericsson, NSN & ZTE
4	VODAFONE	1	9	730	NSN	NSN
5	IDEA	2	6	803	Ericsson	Ericsson
6	RCOM GSM	3	12	895	Huawei & Ericsson	ZTE
7	TATA GSM	1	1	5	NSN	NSN
CDMA Operators						
8	RCOM CDMA	1	NA	397	Lucent	Lucent
9	TATA CDMA	1	1	133	Ericsson	ZTE



TABLES OF MONTHLY QOS PERFORMANCE:

TABLE: 1

CELLULAR MOBILE TELEPHONE SERVICES HIMACHAL PRADESH CIRCLE- OCT-13 MONTH												
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators						CDMA Operators		
Network Service Quality Parameter												
1	Network Availability											
	a) BTS Accumulated Downtime	<=2%	Oct-13	0.35%	0.01%	1.98%	0.02%	0.28%	0.19%	0.00%	0.05%	0.00%
	b) Worst affected BTSs due to downtime	<=2%	Oct-13	1.21%	0.00%	1.83%	0.00%	0.00%	0.45%	0.00%	0.00%	0.00%
2	Connection Establishment (Accessibility)											
	a) CSSR (Call Setup Success Rate)	>=95%	Oct-13	99.37%	99.08%	98.00%	98.06%	98.82%	98.59%	98.77%	99.20%	98.95%
	b) SDCCH/PAGING Channel congestion	<=1%	Oct-13	0.07%	0.06%	0.60%	0.01%	0.04%	0.11%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Oct-13	0.31%	0.20%	1.96%	0.12%	0.59%	0.17%	0.00%	0.00%	0.14%
3	Connection maintenance (Retainability)											
	a) CDR (Call Drop Rate)	<=2%	Oct-13	0.67%	0.71%	2.00%	0.62%	1.08%	0.67%	1.41%	0.10%	0.17%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Oct-13	1.07%	2.41%	2.83%	1.91%	2.42%	0.06%	0.00%	0.42%	0.00%
	c) Connections with good voice quality	>=95%	Oct-13	95.03%	98.89%	NP	98.21%	95.47%	98.12%	98.22%	99.77%	98.67%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Oct-13	0	0	0	0	0	0	0	0	0

*NP: Data not provided



TABLE: 2

CELLULAR MOBILE TELEPHONE SERVICES HIMACHAL PRADESH CIRCLE- NOV-13 MONTH												
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators						CDMA Operators		
Network Service Quality Parameter												
1	Network Availability											
	a) BTS Accumulated Downtime	<=2%	Nov-13	0.42%	0.01%	1.99%	0.08%	0.36%	0.16%	0.00%	0.05%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Nov-13	1.51%	0.00%	1.91%	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%
2	Connection Establishment (Accessibility)											
	a) CSSR (Call Setup Success Rate)	>=95%	Nov-13	99.60%	99.12%	98.16%	98.18%	98.85%	98.64%	98.98%	99.28%	98.73%
	b) SDCCH/PAGING Channel congestion	<=1%	Nov-13	0.01%	0.08%	0.99%	0.00%	0.08%	0.03%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Nov-13	0.16%	0.18%	1.84%	0.06%	0.71%	0.15%	0.00%	0.00%	0.18%
3	Connection maintenance (Retainability)											
	a) CDR (Call Drop Rate)	<=2%	Nov-13	0.58%	0.65%	1.56%	0.61%	1.04%	0.65%	1.71%	0.08%	0.14%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Nov-13	0.81%	2.19%	2.89%	1.86%	2.43%	0.05%	0.00%	0.17%	0.23%
	c) Connections with good voice quality	>=95%	Nov-13	95.11%	98.99%	NP	98.22%	95.54%	98.07%	98.19%	99.78%	98.23%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Nov-13	0	0	0	0	0	0	0	0	0

*NP: Data not provided



TABLE: 3

CELLULAR MOBILE TELEPHONE SERVICES HIMACHAL PRADESH CIRCLE- DEC-13 MONTH												
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators						CDMA Operators		
Network Service Quality Parameter												
1	Network Availability											
	a) BTS Accumulated Downtime	<=2%	Dec-13	0.45%	0.02%	1.93%	0.10%	0.40%	0.21%	0.08%	0.08%	0.01%
	b) Worst affected BTSs due to downtime	<=2%	Dec-13	1.66%	0.00%	0.42%	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%
2	Connection Establishment (Accessibility)											
	a) CSSR (Call Setup Success Rate)	>=95%	Dec-13	99.41%	99.20%	98.12%	98.19%	98.91%	98.54%	98.63%	99.25%	98.76%
	b) SDCCH/PAGING Channel congestion	<=1%	Dec-13	0.01%	0.07%	0.77%	0.01%	0.07%	0.05%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Dec-13	0.31%	0.15%	1.89%	0.09%	0.53%	0.15%	0.00%	0.00%	0.15%
3	Connection maintenance (Retainability)											
	a) CDR (Call Drop Rate)	<=2%	Dec-13	0.60%	0.63%	1.32%	0.63%	1.04%	0.64%	1.86%	0.06%	0.14%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Dec-13	0.61%	2.30%	2.79%	2.00%	2.02%	0.04%	0.00%	0.17%	0.00%
	c) Connections with good voice quality	>=95%	Dec-13	95.04%	98.97%	NP	98.17%	95.59%	98.05%	98.41%	98.78%	98.23%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Dec-13	0	0	0	0	0	0	0	0	0

KEY FINDINGS: CELLULAR MOBILE SERVICES

The audit of network related parameters for cellular mobile service providers was conducted at their respective MSCs in the circle. However, in case of Reliance Communication, the audit of Customer service related parameters was conducted at their central NOC at DAKC Mumbai.

TUV conducted audit for cellular mobile operators based on **three stage audit / verification viz audit of the records, live measurements and drive tests. This exercise has been repeated every month for CMSPs.**



Network Service Quality Parameters:

- **Network Availability**

- i. BTS Accumulated Downtime (Not Available for Service):
- ii. Worst affected BTSs due to downtime

For measuring the performance against the benchmark for this parameter, down time of each BTS lasting for more than 1 hour at a time in a day during the period of a month has been taken for computation.

In Himachal Pradesh circle, all the operators were found meeting benchmarks of the above parameters 'BTS accumulated downtime' and 'worst affected BTSs due to down time' in all the three months of the quarter.

- **Connection Establishment (Accessibility)**

- i. Call Set-up Success Rate(CSSR)

CSSR includes complete signaling in the call set up process and does not aim to measure the performance of the called exchange or that of the Point of Interconnection (POI). CSSR was established as the ratio of total number of successful call attempts (establishment) to the total number of call attempts made. All the operators were found to be calculating the parameter as per the TRAI's specified norms.

All the operators were comfortably meeting the benchmark on this parameter.

- **Parameters related to Network Congestion:**

The parameters namely SDCCH / Paging Channel Congestion, TCH and POI are prescribed with the aim of measuring the congestion in the network.

In CDMA system, there is no direct counter defined for reporting Paging Channel Congestion as reported by Tata Teleservices. However, they have a defined counter for Paging Channel Occupancy Ratio (**PCH Average Using Ratio**) which is used to determine the Paging Channel Occupancy which on an average is < 50% on all sites in the network. When the value of this parameter is less than 100%, it is counted as 0% congestion. Thus, there is no congestion on the paging channel in CDMA system.

With respect to this parameter, the performance of the operators is quite satisfactory as all operators met the TRAI specified benchmarks on the congestion parameters. There was no congestion on individual POI links between a service provider vis-à-vis other service providers.

- **Connection Maintenance (Retainability)**

- i. Call Drop Rate:

This parameter gives a reliable measurement of the mobile network used by the service provider for maintaining a call once it has been correctly established. Failures in coverage, network congestion and network failures have important impact on this parameter.



The audit of this parameter revealed that all the service providers were measuring this parameter as per the TRAI guidelines. Also, all the service providers were found to be meeting the TRAI specified benchmark. The lowest call drop rate (average 0.08 %) was for RCOM (CDMA) during the quarter.

ii. Worst affected cells having more than 3% TCH drops

Worst affected cells are defined as cells in which the call drop rate exceeds 3% during cell Bouncing Busy Hour (CBBH) or at any other hour of a day.

The audit with respect to this parameter revealed that all the operators met the benchmark for this parameter in all the three months of the quarter.

(iii) Connections with good voice quality:

Some of the Operators are measuring this parameter through the system generated data at their switches whereas some are measuring through their periodic drive tests. The audit results for this parameter indicates that all operators have met the bench mark successfully during the quarter. BSNL has not provided the data for this parameter as they are not able to fetch the system generated data.



4.2 CUSTOMER SERVICE QUALITY PARAMETERS MEASUREMENT-QE DEC-13:

CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES-QE DEC-13												
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VODAFONE	RCOM (CDMA)	TATA (CDMA)
S/ N	Name of Parameter			GSM Operators						CDMA Operators		
Customer Service Quality Parameters												
1	Metering & Billing Credibility -Post Paid											
	A) No. of bills issued during the quarter		HP	2086	50692	49236	1342	6402	2522	5938	5882	8526
	B) No. of bills disputed including billing complaints during the quarter		HP	1	20	3	0	4	0	1	4	0
	C)% of billing complaints during the quarter	<= 0.1%	HP	0.05%	0.04%	0.01%	0.00%	0.07%	0.00%	0.02%	0.07%	0.00%
2	Metering & Billing Credibility -Pre Paid											
	A) Total No. of Pre-paid customers at the end of the quarter		HP	775432	2060279	1427287	505444	1277680	72509	521114	192061	70111
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		HP	0	85	78	46	1270	0	8	188	0
	C) % of Pre-paid Charging Complaints	<= 0.1%	HP	0.00%	0.00%	0.01%	0.01%	0.10%	0.00%	0.00%	0.10%	0.00%
3	Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints											
	A) No. of Billing/Charging/Credit/Validity Complaints received during the quarter		HP	1	105	81	46	1274	0	9	192	0
	B) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 4 weeks during the quarter		HP	1	105	81	46	1274	0	9	192	0
	C) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	100 % within 4 week	HP	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
	D) % of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week	HP	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
4	Response time to customers for assistance											
	A) Accessibility of call centre/Customer Care	>=95%	HP	97.28%	98.87%	100.00%	100.00%	98.97%	99.28%	100.00%	98.97%	97.45%
	B) % call answered by operators(voice to voice) within 60 sec.	>=90%	HP	93.31%	95.00%	66.64%	99.00%	63.60%	99.28%	99.28%	94.38%	97.20%



5 Termination/closure of service											
A) Total No. of requests for Termination / Closure of service received during the quarter		HP	5	290	248	35	5	10	20	7	92
B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		HP	5	290	248	35	5	10	20	7	92
C) % of Termination/ Closure of service within 7 days	<=7days	HP	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
6 Time taken for refunds of deposits after closures.											
A) No. of Payments/ Refunds due during the quarter		HP	1	23	432	5	13	15	0	11	17
B) No. of Payments/ Refunds Cleared during the quarter		HP	1	23	306	5	13	15	0	11	17
C) Time taken for refunds of deposits after closures.	100% within 60 days	HP	100.00%	100.00%	70.88%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

KEY FINDINGS:

1. Metering and billing credibility-(Post paid & Pre-paid)

The performance of the service providers with respect to the parameter metering and billing credibility for both post-paid and pre-paid is well within the prescribed bench mark of <=0.1 %.

2. Resolution of Billing complaints and applying credits

- i. Resolution of billing /charging complaints
- ii. Period of applying credit/waiver/adjustment to customer's account from the date of resolution of complaints

All operators were found to have 100 % resolved the billing complaints within stipulated period of 4 weeks. Also, where customers were due for credit / adjustment, in all such cases, all the service providers have met the benchmark of 100 % refund in one week.

3. Response Time to the Customer for assistance

- i. Accessibility of call centre/customer care
- ii. Percentage of calls answered by Operators (Voice to Voice)

All service providers are in compliance with respect to the parameter accessibility of call center. However, **BSNL and RCOM (GSM)** have not met the benchmark of calls answered by Operators (voice to voice). They have achieved their performance as **66.64% and 63.60%** respectively.



4. Termination/Closure of Service

In case of this parameters also, all service providers have settled the closure/termination within the benchmark of 7 days.

5. Time Taken for Refund of deposits after closures

All operators, except **BSNL** were found to have complied with the benchmark of '100% refund of deposits within 60 days of closure'. Only **BSNL** failed to comply with the TRAI norms as its achievement was **70.88%** only.



4.3 SERVICE PROVIDER PERFORMANCE REPORT BASED ON 3-DAYS LIVE MEASUREMENT DATA VERIFICATION CONDUCTED IN EACH MONTH OF THE QUARTER:

A) NETWORK SERVICE QUALITY PARAMETER- CELLULAR MOBILE SERVICES

TABLE: 1

CELLULAR MOBILE TELEPHONE SERVICES HIMACHAL PRADESH CIRCLE- OCT-13 MONTH												
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators						CDMA Operators		
Network Service Quality Parameter												
Network Availability												
1	a) BTS Accumulated Downtime	<=2%	Live data	0.35%	0.00%	1.94%	0.01%	0.16%	0.18%	0.00%	0.07%	0.00%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	1.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)												
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.48%	99.24%	98.10%	98.30%	98.84%	98.62%	98.40%	99.22%	98.34%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.04%	0.04%	0.80%	0.00%	0.02%	0.31%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.22%	0.14%	2.32%	0.00%	0.62%	0.18%	0.00%	0.00%	0.33%
Connection maintenance (Retainability)												
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.66%	0.62%	1.92%	0.60%	1.06%	0.65%	1.15%	0.10%	0.20%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	2.49%	1.97%	2.96%	1.96%	2.56%	0.01%	0.00%	0.25%	0.00%
	c) Connections with good voice quality	>=95%	Live data	95.10%	99.02%	NP	98.31%	95.54%	98.08%	98.39%	99.77%	98.67%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0

*NP: Data not provided



TABLE: 2

CELLULAR MOBILE TELEPHONE SERVICES HIMACHAL PRADESH CIRCLE- NOV-13 MONTH												
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators						CDMA Operators		
Network Service Quality Parameter												
Network Availability												
1	a) BTS Accumulated Downtime	<=2%	Live data	0.27%	0.00%	1.97%	0.03%	0.32%	0.27%	0.00%	0.03%	0.00%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	1.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)												
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.43%	98.94%	97.93%	98.28%	98.78%	98.68%	99.12%	99.33%	99.21%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.03%	0.19%	1.24%	0.00%	0.03%	0.05%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.32%	0.23%	2.07%	0.05%	0.66%	0.15%	0.00%	0.00%	0.05%
Connection maintenance (retainability)												
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.61%	0.65%	2.18%	0.60%	1.03%	0.65%	1.77%	0.08%	0.08%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	2.64%	2.28%	2.84%	1.99%	2.43%	0.01%	0.00%	0.14%	0.00%
	c) Connections with good voice quality	>=95%	Live data	95.02%	99.00%	NP	98.24%	95.47%	98.10%	98.84%	99.78%	98.22%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0

*NP: Data not provided



TABLE: 3

CELLULAR MOBILE TELEPHONE SERVICES HIMACHAL PRADESH CIRCLE- DEC-13 MONTH												
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators						CDMA Operators		
Network Service Quality Parameter												
Network Availability												
1	a) BTS Accumulated Downtime	<=2%	Live data	0.30%	0.01%	1.95%	0.25%	0.16%	0.02%	0.00%	0.04%	0.00%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)												
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.57%	99.21%	97.92%	98.58%	98.50%	98.20%	98.53%	99.33%	99.16%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.02%	0.05%	0.84%	0.17%	0.01%	0.00%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.19%	0.16%	1.90%	0.87%	0.14%	0.06%	0.00%	0.01%	0.02%
Connection maintenance (Retainability)												
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.58%	0.63%	1.05%	1.06%	0.65%	0.63%	2.29%	0.06%	0.08%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	2.69%	2.50%	2.75%	1.95%	0.01%	1.89%	13.33%	0.14%	0.00%
	c) Connections with good voice quality	>=95%	Live data	95.18%	99.00%	NP	95.63%	98.08%	98.23%	97.87%	99.77%	98.82%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0

*NP: Data not provided

KEY FINDING ON 3 DAYS LIVE MEASUREMENTS:

The three days live measurement assessment, exposed that the performance of all operators except BSNL and Tata (GSM) was within the benchmarks. BSNL failed to meet the benchmarks of the parameters 'TCH congestion', 'SDCCH congestion' and 'Call drop rate', whereas Tata (GSM) could not meet the benchmarks of the parameters 'Call Drop Rate' and 'Worst affected cells> 3 % TCH drops' in one or the other month. The performance of BSNL for parameter 'TCH congestion' was 2.32% and 2.07% in October and November months respectively and for the parameter SDDCH congestion, its performance was 1.24 % in the month of November.-13. With respect to parameter 'Call Drop Rate', the performance of BSNL and Tata (GSM) remained 2.18% and 2.29% in the month of November and December-13 respectively. Further, in respect of parameter 'Worst affected cells> 3 % TCH drops', performance of Tata (GSM) was 13.33%, way beyond the benchmark of 3% in month of December 13.



INTER OPERATOR CALLS ASSESSMENT

Inter operator call assessment with a sample of 2x50 test calls for each Service provider operating in Himachal Pradesh service area during the time 1100 to 1400 Hrs and 1600 to 1900 was carried out by TUV auditors. The test calls were made from one operator to another within the same licensed area to judge the ease of connectivity amongst the operators. While doing this exercise, the radio part, the switch part and POI in between the two operators are involved. Congestion in any of these network elements could result in congestion in the network.

INTER OPERATOR CALL ASSESSMENT BASED ON LIVE MEASUREMENT										
CALLING OPERATORS	CIRCLE NAME	AIRCEL	AIRTEL	BSNL	IDEA	VODAFONE	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
AIRCEL	HP	--	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
AIRTEL	HP	100.00%	--	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
BSNL	HP	100.00%	100.00%	--	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
IDEA	HP	100.00%	100.00%	100.00%	--	100.00%	100.00%	100.00%	100.00%	100.00%
VODAFONE	HP	100.00%	100.00%	100.00%	100.00%	--	100.00%	100.00%	100.00%	100.00%
RCOM GSM	HP	100.00%	100.00%	100.00%	100.00%	100.00%	--	100.00%	100.00%	100.00%
TATA GSM	HP	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	--	100.00%	100.00%
RCOM CDMA	HP	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	--	100.00%
TATA CDMA	HP	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	--

The result of the testing revealed that the inter connection performance among the operators were comfortably meeting the benchmark.



B) CUSTOMER SERVICE QUALITY PARAMETER- CELLULAR MOBILE SERVICES

CSD 3 days live data for Cellular Mobile Telephone Services-QE-Dec-13												
3 days live CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VODAFONE	RCOM (CDMA)	TATA (CDMA)
S/ N	Name of Parameter			GSM Operators							CDMA Operators	
Response time to customers for assistance												
1	A) Accessibility of call centre/Customer Care	>=95%	HP	99.23%	100.00%	100.00%	100.00%	99.00%	99.31%	99.72%	100.00%	99.88%
	B) % call answered by operators(voice to voice) within 60 sec.	>=90%	HP	93.60%	95.00%	32.97%	100.00%	89.91%	100.00%	99.73%	94.66%	97.90%

CUSTOMER CARE / HELPLINE ASSESSMENT

LIVE CALLING TO CALL CENTRE										
	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VODAFONE	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	HP	100	100	100	100	100	100	100	100	100
Total No. of calls connected to IVR	HP	100	100	100	100	100	100	100	100	100
Calls got connected to agent within 60 Sec	HP	100	100	100	100	100	100	100	100	100
%age of calls got answered	HP	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

KEY FINDINGS: The results for three days live measurements reveal that all operators have met the benchmarks for the parameters 'Accessibility to call center and call connection to operators (Voice to voice) except BSNL and RCOM (GSM) which could perform with 32.97% and 89.91% of calls connected to operator within 60 seconds.

In case of calls answered by operators (voice to voice) within 60 seconds when test calls were made to the call centers, all operators were able to connect the calls with their call center operators/agents successfully.



LEVEL-1 LIVE CALLING

LEVEL 1 LIVE CALLING											
Emergency no.	Circle Name	No. of calls made	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	TATA (GSM)	VODAFONE	RCOM (CDMA)	TATA (CDMA)
100	HP	30	30	30	30	30	30	30	30	30	30
101	HP	40	40	40	40	40	40	40	40	40	40
102	HP	40	40	40	40	40	40	40	40	40	40
108	HP	40	40	40	40	40	40	40	40	40	40

To assess the availability and efficiency of level 1 services such as police, fire, ambulance (emergency services) offered by various mobile service providers, the calls were made from mobile phones provided by the service providers. In Himachal Pradesh service area, these services were found functional in the networks of all the service providers.

5. DRIVE TEST

5.1 OPERATOR ASSISTED DRIVE TEST:

In Himachal Pradesh Service area, total 81 drive tests in three months of the quarter ended December 2013 @ of 3 drive tests per operator per month (total 3x9x3=81 drive tests) were conducted covering Simla, Dharamshala and Hamirpur during the month of October-13, Una, Bilaspur and Solan during November -13 and Kangra, Kullu and Mandi cities during December-2013. The performance of the operators has been highlighted below in the Tables. The drive test was conducted simultaneously for all the operators following the same route of drive tests. A sample of about 75- 150 test calls were made during a drive test covering about a distance of 100 K.M. The holding period for all test calls was 120 seconds. The drive test vehicle across all routes plied at a speed of about 20-25 km per hour. The routs were so selected that the drive test could cover the congested areas/commercial areas of the above 09 cities in Himachal Pradesh circle.

For measuring voice quality, Rx Qual samples on a scale from 0 to 7 for GSM operators and Frame Error Rate (FERs) for CDMA service providers were measured. As per the QoS norms, Rx Qual between 0- 5 for GSM operators and between 0-4% FER value for CDMA operators FERs is considered to be good, where as Rx Qual beyond this benchmark is considered to be bad. Call drops were measured by the number of calls that were dropped to the total number of calls established during the drive test. Similarly CSSR was measured as the ratio of total calls established to the total call attempts made. Signal strength was measured in dBm at street level with strength \geq -75 dBm for in-door coverage and \geq -85 dBm for in-vehicle.



DRIVE TEST TABLE: 1

OPERATOR-ASSISTED DRIVE TEST-HIMACHAL PRADESH CIRCLE-OCT-13 MONTH												
S/N	Parameter	City Name	Drive Test Period	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
				GSM Operators						CDMA Operators		
1	Blocked Call Rate (<=3%)	Shimla	Oct-13	0.00%	0.00%	ND	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Dharamshala	Oct-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Hamirpur	Oct-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
2	Dropped Call Rate (<=2%)	Shimla	Oct-13	0.00%	0.00%	ND	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Dharamshala	Oct-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Hamirpur	Oct-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
3	Percentage connections with good voice quality (=>95%)											
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Shimla	Oct-13	NA	NA	NA	NA	NA	NA	ICR	99.51%	98.68%
		Dharamshala	Oct-13	NA	NA	NA	NA	NA	NA	ICR	98.99%	99.28%
		Hamirpur	Oct-13	NA	NA	NA	NA	NA	NA	ICR	98.43%	99.82%
	(b) 0-5 (with frequency hopping for GSM Operators)	Shimla	Oct-13	97.51%	97.33%	ND	97.95%	98.98%	100.00%	ICR	NA	NA
		Dharamshala	Oct-13	93.34%	97.30%	100.00%	98.32%	98.66%	100.00%	ICR	NA	NA
Hamirpur		Oct-13	99.19%	96.36%	100.98%	98.82%	99.31%	100.00%	ICR	NA	NA	
4	Service Coverage											
	In door (>= - 75dBm)	Shimla	Oct-13	64.19%	87.20%	ND	78.89%	64.98%	66.14%	ICR	77.10%	94.37%
		Dharamshala	Oct-13	42.13%	86.73%	77.71%	74.55%	80.25%	42.87%	ICR	85.69%	99.21%
		Hamirpur	Oct-13	52.03%	70.90%	40.60%	87.02%	77.89%	61.31%	ICR	50.13%	90.59%
	In-vehicle (>= - 85dBm)	Shimla	Oct-13	88.31%	98.71%	ND	96.66%	96.41%	81.20%	ICR	95.06%	99.54%
		Dharamshala	Oct-13	96.68%	99.11%	95.55%	97.64%	98.97%	96.13%	ICR	96.98%	100.00%
		Hamirpur	Oct-13	95.75%	98.49%	99.23%	99.28%	97.26%	97.19%	ICR	63.27%	97.29%
	Outdoor- in city (>= - 95dBm)	Shimla	Oct-13	98.30%	99.96%	ND	100.00%	99.88%	92.98%	ICR	100.00%	99.98%
		Dharamshala	Oct-13	99.88%	99.95%	99.45%	100.00%	99.99%	100.00%	ICR	100.00%	100.00%
Hamirpur		Oct-13	99.24%	99.98%	99.99%	100.00%	100.00%	100.00%	ICR	100.00%	100.00%	
5	Call Setup Success Rate (>=95%)	Shimla	Oct-13	100.00%	100.00%	ND	100.00%	100.00%	100.00%	ICR	100.00%	100.00%
		Dharamshala	Oct-13	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	ICR	100.00%	100.00%
		Hamirpur	Oct-13	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	ICR	100.00%	100.00%

*ND: Not Done, ICR: Intra Circle Roaming



DRIVE TEST TABLE: 2

OPERATOR-ASSISTED DRIVE TEST-HIMACHAL PRADESH CIRCLE-NOV-13 MONTH												
S/N	Parameter	City Name	Drive Test Period	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
				GSM Operators						CDMA Operators		
1	Blocked Call Rate (<=3%)	Una	Nov-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Bilaspur	Nov-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Solan	Nov-13	1.65%	1.05%	0.00%	0.00%	0.91%	0.00%	ICR	0.00%	0.00%
2	Dropped Call Rate (<=2%)	Una	Nov-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Bilaspur	Nov-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Solan	Nov-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
Percentage connections with good voice quality (=>95%)												
3	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Una	Nov-13	NA	NA	NA	NA	NA	NA	ICR	99.72%	99.42%
		Bilaspur	Nov-13	NA	NA	NA	NA	NA	NA	ICR	99.66%	99.80%
		Solan	Nov-13	NA	NA	NA	NA	NA	NA	ICR	99.48%	99.77%
	(b) 0-5 (with frequency hopping for GSM Operators)	Una	Nov-13	98.18%	97.44%	100.00%	99.12%	98.03%	98.92%	ICR	NA	NA
		Bilaspur	Nov-13	96.48%	97.35%	100.00%	99.22%	98.08%	98.05%	ICR	NA	NA
		Solan	Nov-13	97.18%	96.39%	100.00%	99.20%	96.90%	98.28%	ICR	NA	NA
Service Coverage												
4	In door (>= -75dBm)	Una	Nov-13	43.47%	81.74%	68.99%	85.91%	55.10%	57.64%	ICR	30.38%	94.48%
		Bilaspur	Nov-13	69.99%	70.28%	56.60%	90.95%	52.64%	48.87%	ICR	79.18%	99.11%
		Solan	Nov-13	85.00%	73.24%	71.39%	88.51%	67.95%	57.50%	ICR	93.62%	96.74%
	In-vehicle (>= -85dBm)	Una	Nov-13	85.43%	98.91%	99.03%	99.39%	97.89%	97.06%	ICR	70.62%	99.42%
		Bilaspur	Nov-13	95.49%	97.28%	96.75%	99.40%	91.60%	94.11%	ICR	99.19%	100.00%
		Solan	Nov-13	96.26%	95.27%	97.03%	98.06%	92.46%	98.17%	ICR	99.92%	100.00%
	Outdoor- in city (>= -95dBm)	Una	Nov-13	99.84%	99.96%	99.99%	99.99%	99.92%	99.89%	ICR	97.54%	100.00%
		Bilaspur	Nov-13	99.99%	99.96%	100.00%	100.00%	100.00%	100.00%	ICR	100.00%	100.00%
		Solan	Nov-13	99.89%	99.87%	99.85%	99.93%	100.00%	100.00%	ICR	100.00%	100.00%
5	Call Setup Success Rate (>=95%)	Una	Nov-13	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	ICR	100.00%	100.00%
		Bilaspur	Nov-13	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	ICR	100.00%	100.00%
		Solan	Nov-13	98.35%	99.87%	100.00%	100.00%	99.09%	100.00%	ICR	100.00%	100.00%



DRIVE TEST TABLE: 3

OPERATOR-ASSISTED DRIVE TEST-HIMACHAL PRADESH CIRCLE-DEC-13 MONTH												
S/N	Parameter	City Name	Drive Test Period	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
				GSM Operators						CDMA Operators		
1	Blocked Call Rate (<=3%)	Kangra	Dec-13	1.39%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Kullu	Dec-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Mandi	Dec-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
2	Dropped Call Rate (<=2%)	Kangra	Dec-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	1.04%
		Kullu	Dec-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
		Mandi	Dec-13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	ICR	0.00%	0.00%
3	Percentage connections with good voice quality (=>95%)											
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Kangra	Dec-13	NA	NA	NA	NA	NA	NA	ICR	99.60%	98.66%
		Kullu	Dec-13	NA	NA	NA	NA	NA	NA	ICR	99.44%	99.67%
		Mandi	Dec-13	NA	NA	NA	NA	NA	NA	ICR	99.83%	99.81%
	(b) 0-5 (with frequency hopping for GSM Operators)	Kangra	Dec-13	98.94%	96.09%	100.00%	98.54%	96.79%	98.76%	ICR	NA	NA
		Kullu	Dec-13	97.53%	97.15%	99.99%	97.52%	98.01%	99.09%	ICR	NA	NA
Mandi		Dec-13	92.33%	98.17%	100.00%	99.23%	98.21%	98.94%	ICR	NA	NA	
4	Service Coverage											
	In door (>= - 75dBm)	Kangra	Dec-13	48.97%	69.22%	38.48%	71.75%	68.77%	84.04%	ICR	53.39%	76.11%
		Kullu	Dec-13	67.86%	94.39%	92.11%	72.92%	45.63%	98.53%	ICR	56.53%	99.38%
		Mandi	Dec-13	72.29%	86.96%	89.80%	95.20%	49.66%	97.85%	ICR	77.60%	96.23%
	In-vehicle (>= - 85dBm)	Kangra	Dec-13	82.55%	85.69%	76.42%	95.11%	87.44%	99.15%	ICR	87.73%	96.54%
		Kullu	Dec-13	95.49%	99.71%	99.90%	97.43%	77.77%	100.00%	ICR	89.69%	100.00%
		Mandi	Dec-13	95.19%	98.59%	99.49%	99.75%	86.79%	99.99%	ICR	92.58%	99.90%
	Outdoor- in city (>= - 95dBm)	Kangra	Dec-13	98.85%	99.60%	100.00%	99.78%	97.69%	100.00%	ICR	95.44%	100.00%
		Kullu	Dec-13	99.97%	100.00%	100.00%	100.00%	97.55%	100.00%	ICR	100.00%	100.00%
Mandi		Dec-13	99.86%	99.99%	100.00%	100.00%	99.05%	100.00%	ICR	100.00%	100.00%	
5	Call Setup Success Rate (>=95%)	Kangra	Dec-13	98.61%	100.00%	100.00%	100.00%	100.00%	100.00%	ICR	100.00%	97.96%
		Kullu	Dec-13	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	ICR	100.00%	100.00%
		Mandi	Dec-13	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	ICR	100.00%	100.00%



DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

Drive Test HP Circle Oct-13 to Dec-13					
Month/Year	City	P1	P2	Across	Congested
Oct-13	Shimla	ISBT shimla,victory tunnel,lakkar bazar,sanzoli,dhali chownk, bhdda khuffar, shanan, malana, mehli, kasumpati, bcs,khalini,tollrent, old bustand, new bus stand,	ISBT shimla,victory tunnel,lakkar bazar,sanzoli,dhali chownk, bhdda khuffar, shanan, malana, mehli, kasumpati, BCS,khalini,tollrent, old bustand, new bus stand,	Victory tunnel, old bus stand, chotta shimla	Bus stand to tollrent, And kasumpti market
	Dharmshala	Shahidi smark, kotwali bazar, dari, HPCA stadium,shahidi smark	Shahidi smark, kotwali bazar, dari, HPCA stadium,shahidi smark	Dharmshala Cant Road to shaheed smark road	Dharmkot,Naddi,Bhagsunath,Macklodganj
	Hamirpur	Paka paroh,gandhi chowk,annu, Heeranagar, Pakka paroh	paka paroh ,gandhi chowk,annu ,heeranagar, Pakka paroh	Heera nagar to gandhi chownk	Gandhi market to bhotta chownk
Nov-13	Solan	new bus stand,dc office mall road chamba ghat ,bypass, bus stand	New bus stand, DC office mall road chamba ghat ,bypass, bus stand	Chandigarh bypass mallroad chamba ghat,	DC office to civil hospital
	Bilaspur	ITI chowk,Roura Sector,college chowk,DC office, Bus stand	ITI chowk,Roura Sector,college chowk,DC office, Bus stand	Lakhanpur,Bus stand,college chowk,HRTC workshop,ITI chowk,Bampta	Bus stand,changar sector,meat mandi,champa park,Roura sector
	Una	Una Bus stand,Rakkad caloni,to newyork hotel	Una Bus stand,Rakkad caloni,to newyork hotel	Una market to una- hamirpur hghway via railwayy station	Una market to dharmantri road, santokgarh road, una market
Dec-13	Kangra	Old Kangra, Tehsil chownk, Kangra fort	Old Kangra, Tehsil chownk, Kangra fort	Birta,tehsil chownk gupt ganga	College road , main market NIFT
	Kullu	Bhunther, byepass gamman bridge, shastri nagar	Bhunther, Byepass gamman bridge, shastri nagar	Kullu manali highway, Puid, Gamman bridge	Bus stand , akhara bazar, central hospital road
	Mandi	Pulghrat,bus stand, Bheuli, Khalyar.	Pulghrat,bus stand, Bheuli, Khalyar.	Ramnagar Market, Jail Road	Hospital Road, Indra Market, Chobata Bazaar, Purani Mandi



KEY FINDINGS: The key observations that could be derived from the results of the drive tests are as under –

- (i) Tata (GSM), is operating its services with its own 05 no. of BTSs only, however is on ICR with Reliance (GSM) in most of the HP licensed service area.
- (ii) The Drive test of BSNL could not be conducted because of their test kit gone defective during the drive test.
- (iii) Drive test results revealed that performance of the service providers was by and large satisfactory as all the service providers were found meeting the benchmarks of most of the parameters during the drive tests in all the cities covered in the quarter ended December-2013. Only Aircel could not meet the benchmark of parameter '% connection with Good Voice Quality' with its performance as 93.34% and 92.33% in the months of October and December-13 respectively.
- (iv) In the above drive test tables, NA means not applicable for voice quality (0-4) without frequency hopping for GSM operators and Voice quality (0-5) with frequency hopping for CDMA operators.

5.2 INDEPENDENT DRIVE TEST:

The independent drive tests are to be carried out by M/s TUV for any service provider on receiving advice from TRAI, based on any complaint from subscribers, relating to poor network coverage in certain areas of the cities. As TUV was not advised by TRAI to conduct the drive test independently on the basis of Subscribers complaint or otherwise, the independent drive tests were not conducted by TUV in this quarter.



6. ESSENCE OF COMPLIANCE REPORT OF SERVICE PROVIDERS WITH RESPECT TO THE QOS

From month audit & 3 days live findings, it can be concluded that on an average, performance of the operators in the Himachal Pradesh service is satisfactory for Network related Parameters, audited for monthly PMR data. However, in case of 3 days live measurements, the performance of BSNL for parameter 'TCH congestion' was 2.32% and 2.07% in October and November months respectively and for the parameter SDDCH congestion, its performance was 1.24 % in the month of November.-13. With respect to parameter 'Call Drop Rate', the performance of BSNL and Tata (GSM) remained 2.18% and 2.29% in the month of November and December-13 respectively. Further, in respect of parameter 'Worst affected cells > 3 % TCH drops', performance of Tata (GSM) was 13.33%, way beyond the benchmark of 3% in month of December 13.

With regard to the **Customer Service Quality Parameters**, all service providers were in compliance with most of the parameters. However, BSNL and RCOM (GSM) have not met the benchmark of calls answered by Operators (voice to voice). They have achieved their performance as 66.64% and 63.60% respectively. Similarly, in case of parameter '100% refund of deposits within 60 days of closure', BSNL could perform with 70.88% only.

The performance of the service providers with regard to the **drive test**, Aircel is the only operator which could not meet the benchmark of '% connection with good voice quality'. Its performance remained 93.34% and 92.33% in the months of October and December -13.

Thus taking cognizance of overall performance in HP Service area, the performance of most of the service providers is satisfactory for all parameters except for BSNL, Tata (GSM), RCOM (GSM) and Aircel which could not meet the benchmarks of a few parameters during live measurements



7. DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES HIMACHAL PRADESH CIRCLE:

TABLE: 1

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Himachal Pradesh Circle- Oct-13 month												
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	VODAFONE	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
				GSM Operators							CDMA Operators	
Network Service Quality Parameter												
1	Network Availability											
	a) Total no. of BTSs in the licensed service area		Oct-13	661	1353	1039	774	730	896	5	397	100
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Oct-13	1714.38	72.33	14812	1596.27	352.97	1242	0	147	0
	c) BTS Accumulated Downtime	<=2%	Oct-13	0.35%	0.01%	1.98%	0.28%	0.02%	0.19%	0.00%	0.05%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Oct-13	8	0	19	0	0	4	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Oct-13	1.21%	0.00%	1.83%	0.00%	0.00%	0.45%	0.00%	0.00%	0.00%	
2	Connection Establishment (Accessibility)											
	a) CSSR (Call Setup Success Rate)	>=95%	Oct-13	99.37%	99.08%	98.15%	98.82%	98.06%	98.59%	98.77%	99.20%	98.95%
	b) SDCCH/PAGING Congestion	<=1%	Oct-13	0.07%	0.06%	0.96%	0.04%	0.01%	0.11%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Oct-13	0.31%	0.20%	1.94%	0.59%	0.12%	0.17%	0.00%	0.00%	0.14%	
3	Connection Maintenance (Retainability)											
	a) Call Drop Rate (CDR)	<=2%	Oct-13	0.67%	0.71%	1.89%	1.08%	0.62%	0.67%	1.41%	0.10%	0.17%
	b) Worst affected cells>3% TCH drop	<=3%	Oct-13	1.07%	2.41%	2.92%	2.42%	1.91%	0.06%	0.00%	0.42%	0.00%
c) % of connections with good voice quality	>=95%	Oct-13	95.03%	98.89%	NP	95.47%	98.21%	98.12%	98.22%	99.77%	98.67%	

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	d) Total No. of cells exceeding 3% TCH drop (call drop)		Oct-13	21	95	90	54	42	1	0	5	0
	e) Total no. of cells (Sector) in the licensed service area		Oct-13	1968	3939	3070	2246	2198	2684	15	1191	436
No. of POI's having >=0.5% POI congestion												
4	No. of POI's having >=0.5% POI congestion		Oct-13	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Oct-13	0	0	0	0	0	0	0	0	0
Network Data												
5	a) Equipped Capacity of Network in Erlang		Oct-13	33701	70014.23	74000	26669	19007.52	40000	165	28000	17712
	b) Total traffic in TCBH in erlang (Avg.)		Oct-13	12260	57709.55	38694	13288.2	12946	30474.01	10.04	3168.61	2609
	c) Total no. of customers served (as per VLR) on last day of the month		Oct-13	403674	1999106	1075868	515925	498175	1183401	752	132425	33282



TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- Himachal Pradesh Circle- Oct-13 month												
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	VODAFONE	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
				GSM Operators						CDMA Operators		
Network Service Quality Parameter												
1	Network Availability											
	a) Total no. of BTSs in the licensed service area		Live data	661	1353	1039	774	730	895	5	397	133
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Live data	164.88	0	1453	105.74	19.94	0.18	0	21	0
	c) BTS Accumulated Downtime	<=2%	Live data	0.35%	0.00%	1.94%	0.16%	0.01%	0.01%	0.00%	0.07%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	19	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	1.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	Connection Establishment (Accessibility)											
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.48%	99.24%	98.10%	98.84%	98.30%	98.62%	98.40%	99.22%	98.34%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.04%	0.04%	0.80%	0.02%	0.00%	0.31%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.22%	0.14%	2.32%	0.62%	0.00%	0.18%	0.00%	0.00%	0.33%
3	Connection Maintenance (Retainability)											
	a) Call Drop Rate (CDR)	<=2%	Live data	0.66%	0.62%	1.92%	1.06%	0.60%	0.65%	1.15%	0.10%	0.20%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	2.49%	1.97%	2.96%	2.56%	1.96%	0.01%	0.00%	0.25%	0.00%
	c) % of connections with good voice quality	>=95%	Live data	95.10%	99.02%	NP	95.54%	98.31%	98.08%	98.39%	99.77%	98.67%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	49	78	91	59	43	1	0	3	0
	e) Total no. of cells (Sector) in the licensed service area		Live data	1968	3939	3070	2307	2198	2679	15	1190	432
4	No. of POI's having >=0.5% POI congestion											
	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0



TABLE: 3

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Himachal Pradesh Circle- Nov-13 month												
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	VODAFONE	IDEA	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
				GSM Operators						CDMA Operators		
Network Service Quality Parameter												
1	Network Availability											
	a) Total no. of BTSs in the licensed service area		Nov-13	661	1355	1046	730	783	895	5	397	133
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Nov-13	2008.32	141.1	14980	423.44	2032.52	1004	0	138	0.01
	c) BTS Accumulated Downtime	<=2%	Nov-13	0.42%	0.01%	1.99%	0.08%	0.36%	0.16%	0.00%	0.05%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Nov-13	10	0	20	0	0	5	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Nov-13	1.51%	0.00%	1.91%	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%	
Connection Establishment (Accessibility)												
2	a) CSSR (Call Setup Success Rate)	>=95%	Nov-13	99.60%	99.12%	98.16%	98.18%	98.85%	98.64%	98.98%	99.28%	98.73%
	b) SDCCH/PAGING Congestion	<=1%	Nov-13	0.01%	0.08%	0.99%	0.00%	0.08%	0.03%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Nov-13	0.16%	0.18%	1.84%	0.06%	0.71%	0.15%	0.00%	0.00%	0.18%
Connection Maintenance (Retainability)												
3	a) Call Drop Rate (CDR)	<=2%	Nov-13	0.58%	0.65%	1.56%	0.61%	1.04%	0.65%	1.71%	0.08%	0.14%
	b) Worst affected cells>3% TCH drop	<=3%	Nov-13	0.81%	2.19%	2.89%	1.86%	2.43%	0.05%	0.00%	0.17%	0.23%
	c) % of connections with good voice quality	>=95%	Nov-13	95.11%	98.99%	NP	98.22%	95.54%	98.07%	98.19%	99.78%	98.23%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Nov-13	16	86	89	41	56	1	0	2	1
	e) Total no. of cells (Sector) in the licensed service area		Nov-13	1971	3942	3093	2199	2320	2685	15	1191	432
No. of POI's having >=0.5% POI congestion												
4	No. of POI's having >=0.5% POI congestion		Nov-13	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Nov-13	0	0	0	0	0	0	0	0	0
Network Data												
5	a) Equipped Capacity of Network in Erlang		Nov-13	32770.87	70008.12	74000	27581.43	19476.09	40000	165	28000	17712
	b) Total traffic in TCBH in erlang (Avg.)		Nov-13	11778.96	56914.63	40110	13486.19	12089.95	30474.01	8.91	3168.61	2295.90
	c) Total no. of customers served (as per VLR) on last day of the month		Nov-13	411752	2008845	1073098	506171	491224	1183401	651	132425	32804



TABLE: 4

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- Himachal Pradesh Circle- Nov-13 month												
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	VODAFONE	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
				GSM Operators						CDMA Operators		
Network Service Quality Parameter												
1	Network Availability											
	a) Total no. of BTSs in the licensed service area		Live data	661	1353	1039	775	730	896	5	397	133
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Live data	128.06	0	1475	179.84	44.85	174	0	9	0
	c) BTS Accumulated Downtime	<=2%	Live data	0.27%	0.00%	1.97%	0.32%	0.03%	0.27%	0.00%	0.03%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	19	0	0	0	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	1.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Connection Establishment (Accessibility)												
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.43%	98.94%	97.93%	98.78%	98.28%	98.68%	99.12%	99.33%	99.21%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.03%	0.19%	1.24%	0.03%	0.00%	0.05%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.32%	0.23%	2.07%	0.66%	0.05%	0.15%	0.00%	0.00%	0.05%
Connection Maintenance (Retainability)												
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.61%	0.65%	2.18%	1.03%	0.60%	0.65%	1.77%	0.08%	0.08%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	2.64%	2.28%	2.84%	2.43%	1.99%	0.01%	0.00%	0.14%	0.00%
	c) % of connections with good voice quality	>=95%	Live data	95.02%	99.00%	NP	95.47%	98.24%	98.10%	98.84%	99.78%	98.22%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	52	90	88	56	44	1	0	2	0
	e) Total no. of cells (Sector) in the licensed service area		Live data	1971	3939	3070	2316	2199	2684	15	1190	432
No. of POI's having >=0.5% POI congestion												
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0



TABLE: 5

Detailed Network Data Assessment of Cellular Mobile Telephone Services- Himachal Pradesh Circle- Dec-13 month												
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	VODAFONE	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
				GSM Operators						CDMA Operators		
Network Service Quality Parameter												
1	Network Availability											
	a) Total no. of BTSs in the licensed service area		Dec-13	661	1371	1053	2408	730	895	5	397	133
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Dec-13	2214.78	158.14	15103	0.40	563.32	1388	2.99	248	5
	c) BTS Accumulated Downtime	<=2%	Dec-13	0.45%	0.02%	1.93%	0.00%	0.10%	0.21%	0.08%	0.08%	0.01%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Dec-13	11	0	137	0	0	5	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Dec-13	1.66%	0.00%	0.42%	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%	
Connection Establishment (Accessibility)												
2	a) CSSR (Call Setup Success Rate)	>=95%	Dec-13	99.41%	99.20%	98.12%	98.91%	98.19%	98.54%	98.63%	99.25%	98.76%
	b) SDCCH/PAGING Congestion	<=1%	Dec-13	0.01%	0.07%	0.77%	0.07%	0.01%	0.05%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Dec-13	0.31%	0.15%	1.89%	0.53%	0.09%	0.15%	0.00%	0.00%	0.15%
Connection Maintenance (Retainability)												
3	a) Call Drop Rate (CDR)	<=2%	Dec-13	0.60%	0.63%	1.32%	1.04%	0.63%	0.64%	1.86%	0.06%	0.14%
	b) Worst affected cells>3% TCH drop	<=3%	Dec-13	0.61%	2.30%	2.79%	2.02%	2.00%	0.04%	0.00%	0.17%	0.00%
	c) % of connections with good voice quality	>=95%	Dec-13	95.04%	98.97%	NP	95.59%	98.17%	98.05%	98.41%	98.78%	98.23%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Dec-13	12	92	87	48	44	1	0	2	0
	e) Total no. of cells (Sector) in the licensed service area		Dec-13	1974	3988	3130	2351	2199	2685	15	1191	432
No. of POI's having >=0.5% POI congestion												
4	No. of POI's having >=0.5% POI congestion		Dec-13	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Dec-13	0	0	0	0	0	0	0	0	0
Network Data												
5	a) Equipped Capacity of Network in Erlang		Dec-13	32039	68314.81	74000	28062	19385.42	40000	165	28000	17712
	b) Total traffic in TCBH in erlang (Avg.)		Dec-13	11767.86	56307.07	33233	12192	11685.61	31561	8.44	3112	2345.54
	c) Total no. of customers served (as per VLR) on last day of the month		Dec-13	429438	2056999	1077975	546261	539028	1237729	686	128901	42239



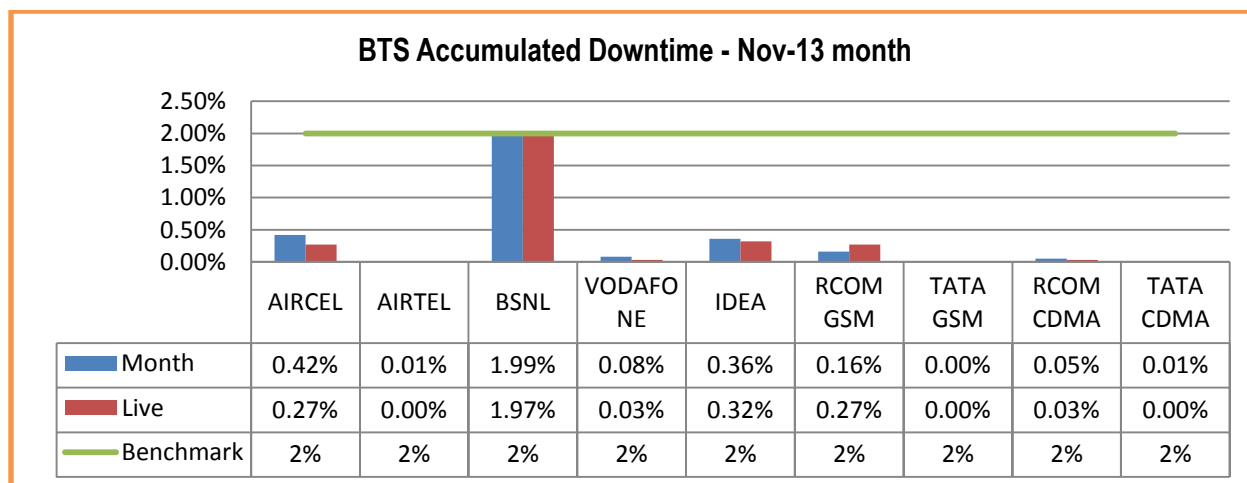
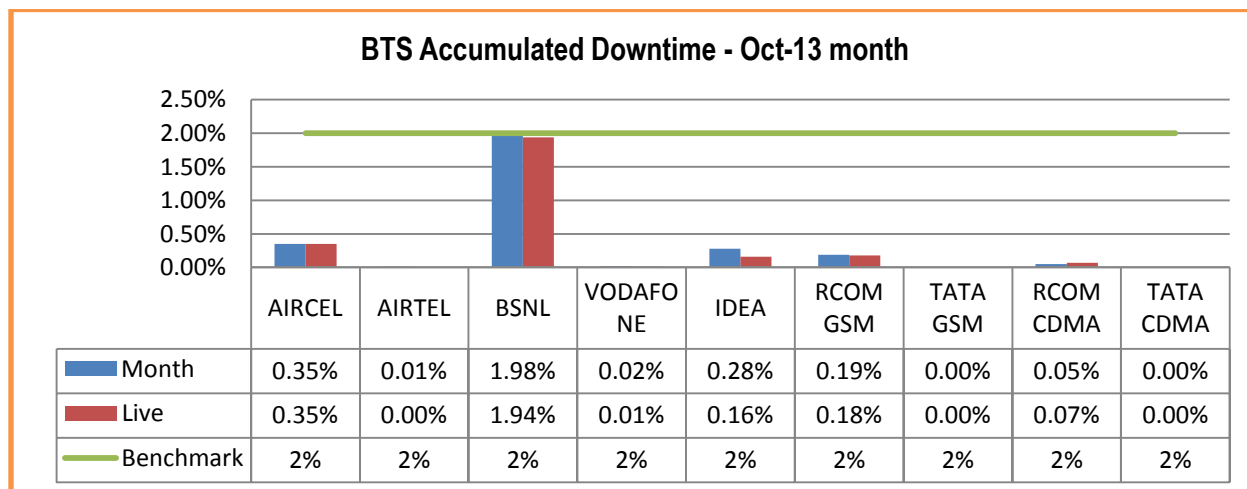
TABLE: 6

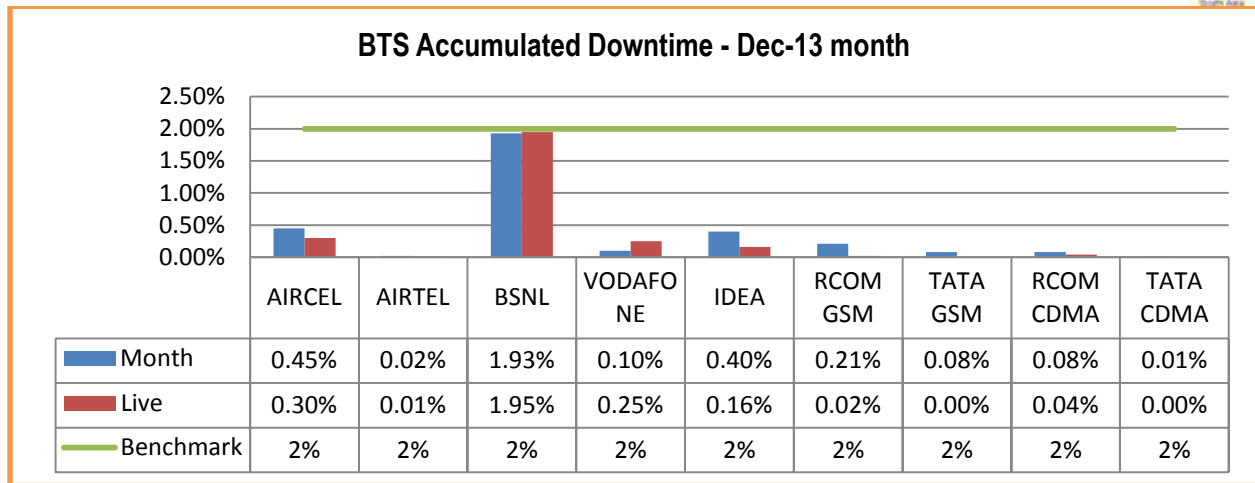
Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- Himachal Pradesh Circle- Dec-13 month												
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	VODAFONE	RCOM GSM	TATA GSM	RCOM CDMA	TATA CDMA
				GSM Operators						CDMA Operators		
Network Service Quality Parameter												
1	Network Availability											
	a) Total no. of BTSs in the licensed service area		Live data	661	1355	1046	783	730	895	5	397	133
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Live data	141.55	8.12	1469	142.09	35.74	102	0	11	0.9
	c) BTS Accumulated Downtime	<=2%	Live data	0.30%	0.01%	1.95%	0.25%	0.02%	0.16%	0.00%	0.04%	0.00%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	8	0	0	0	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	Connection Establishment (Accessibility)											
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.57%	99.21%	97.92%	98.58%	98.20%	98.50%	98.53%	99.33%	99.16%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.02%	0.05%	0.84%	0.17%	0.00%	0.01%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.19%	0.16%	1.90%	0.87%	0.06%	0.14%	0.00%	0.01%	0.02%
3	Connection Maintenance (Retainability)											
	a) Call Drop Rate (CDR)	<=2%	Live data	0.58%	0.63%	1.05%	1.06%	0.63%	0.65%	2.29%	0.06%	0.08%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	2.69%	2.50%	2.75%	1.95%	1.89%	0.01%	13.13%	0.14%	0.00%
	c) % of connections with good voice quality	>=95%	Live data	95.18%	99.00%	Not Provided	95.63%	98.23%	98.08%	97.87%	99.77%	98.82%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	53	99	85	46	42	1	2	2	0
	e) Total no. of cells (Sector) in the licensed service area		Live data	1971	3942	3093	2340	2199	2682	15	1190	432
4	No. of POI's having >=0.5% POI congestion											
	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0



8. GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE CELLULAR MOBILE SERVICE PROVIDERS-MONTHLY V/S 3-DAYS LIVE MEASUREMENT:

1) BTS ACCUMULATED DOWNTIME :

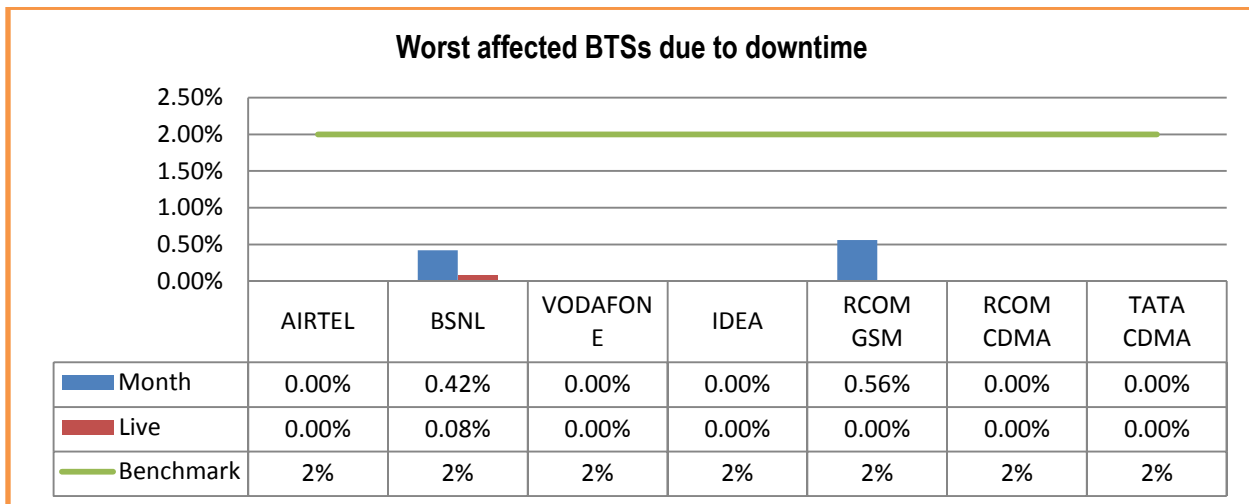
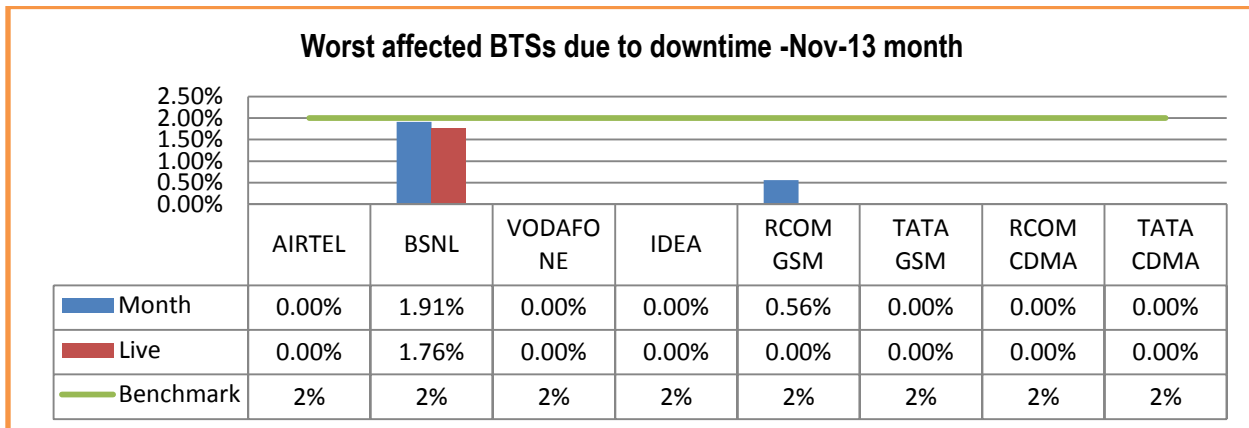
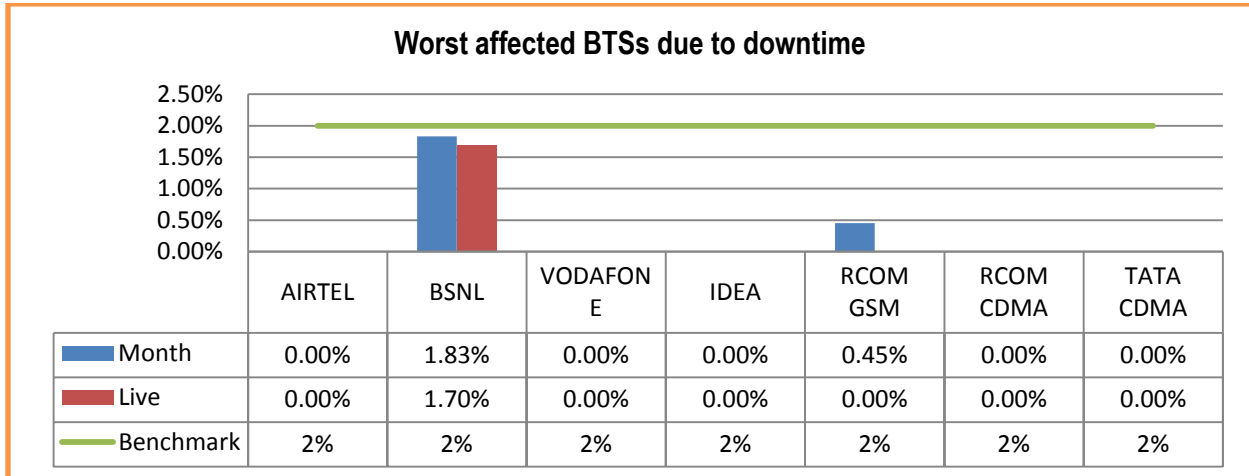




All operators are meeting the benchmarks.



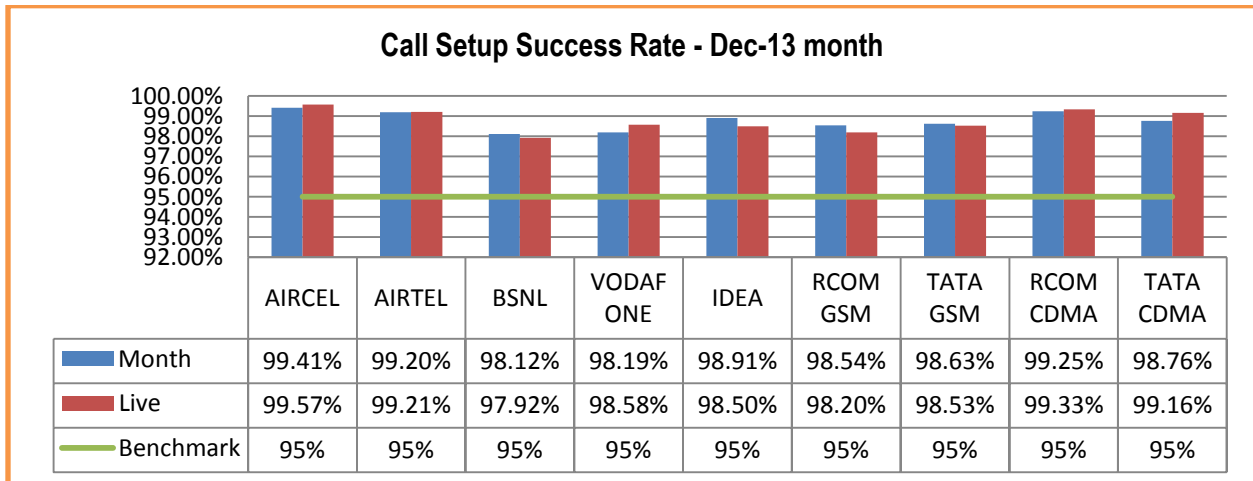
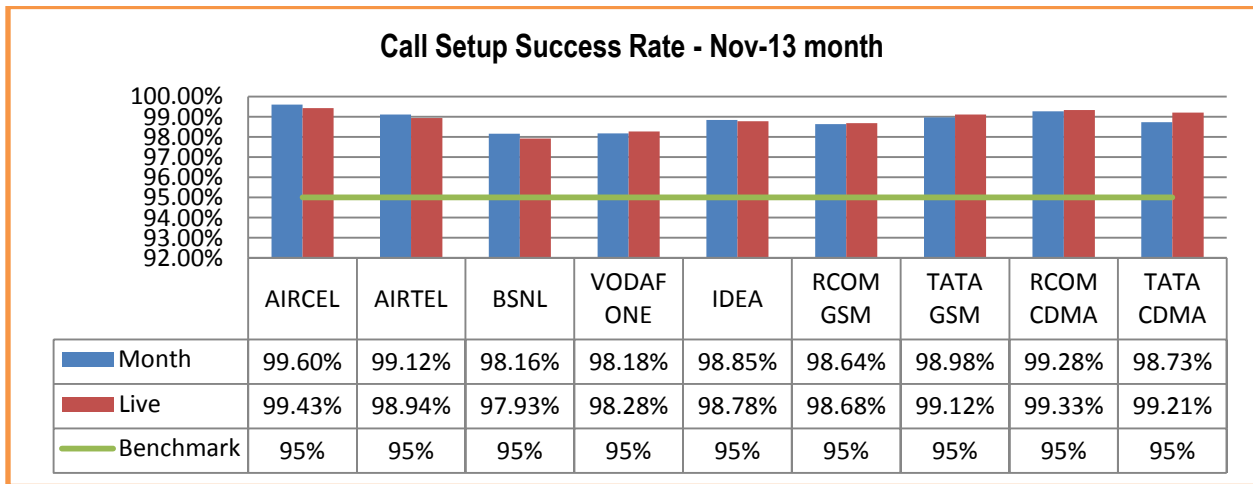
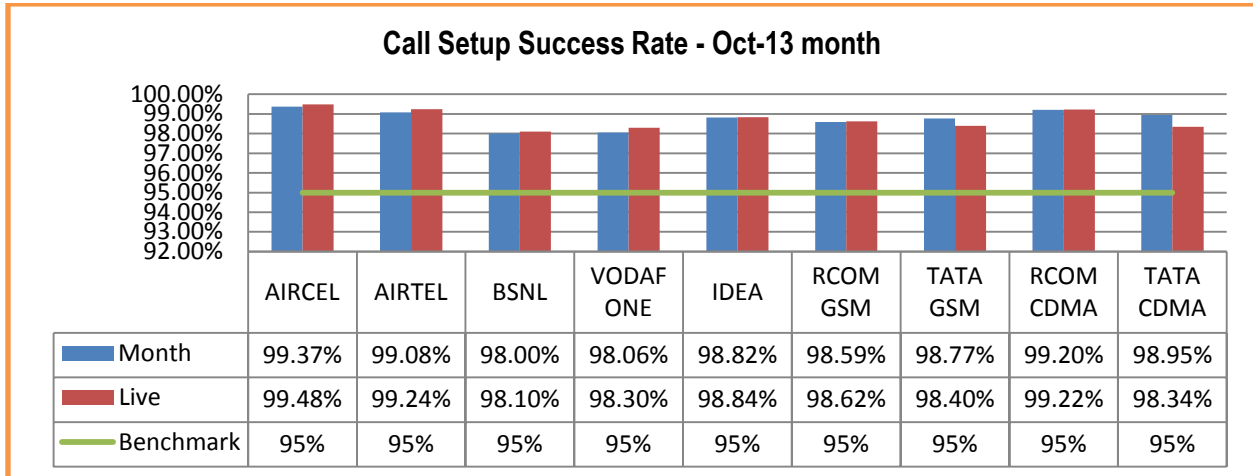
2) WORST AFFECTED BTSS DUE TO DOWNTIME :



All operators are meeting the benchmarks.



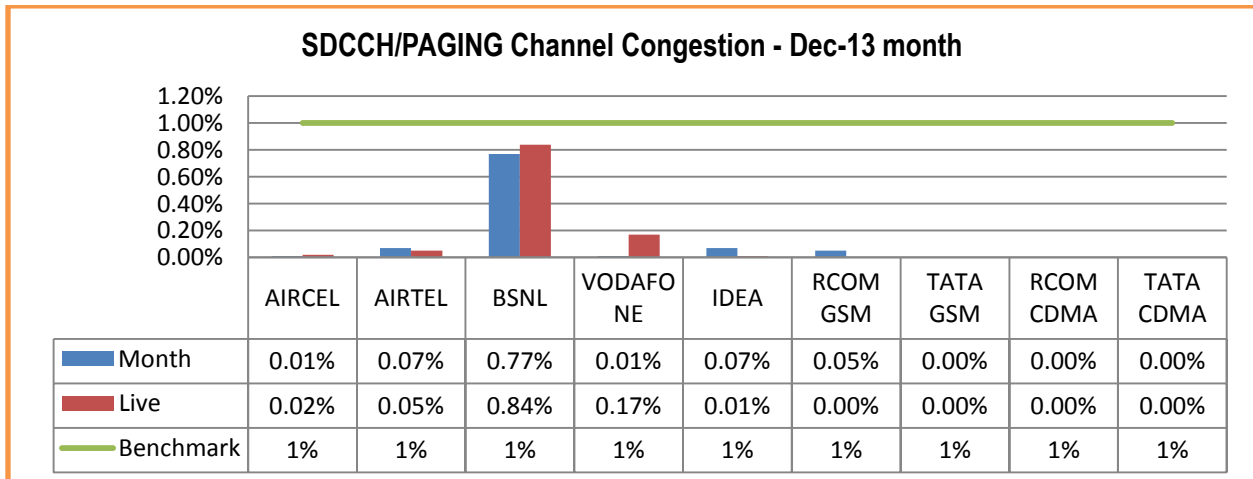
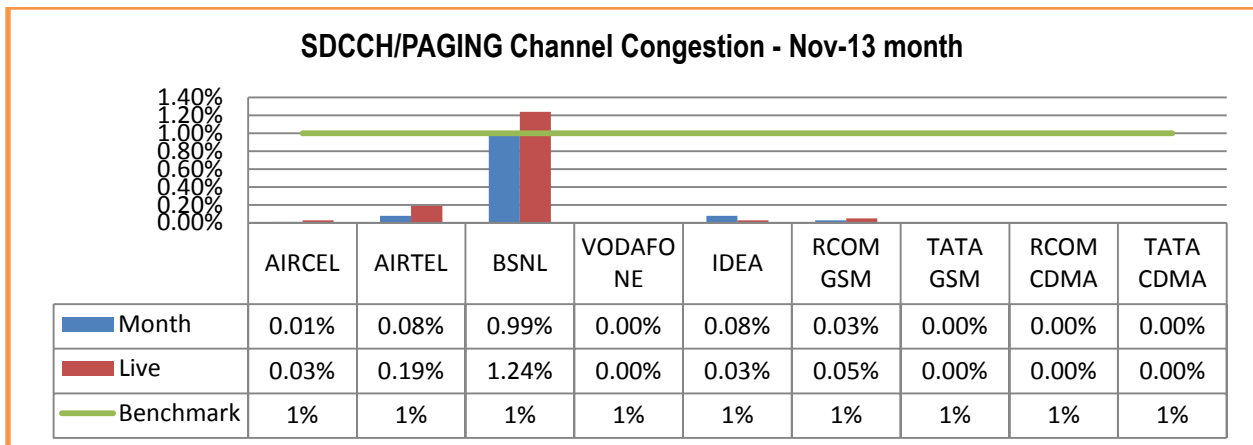
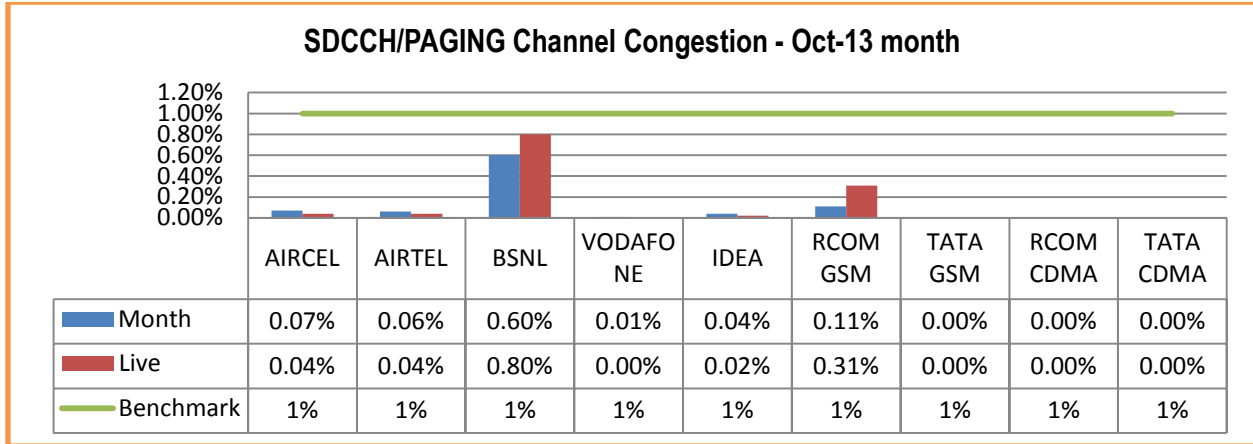
3) CALL SETUP SUCCESS RATE :



All operators are meeting the benchmarks.



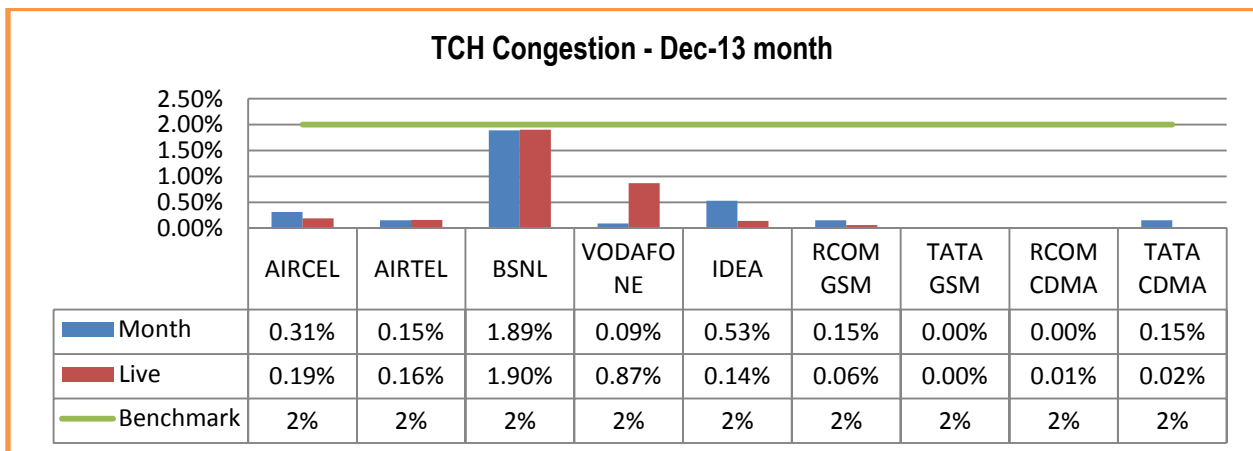
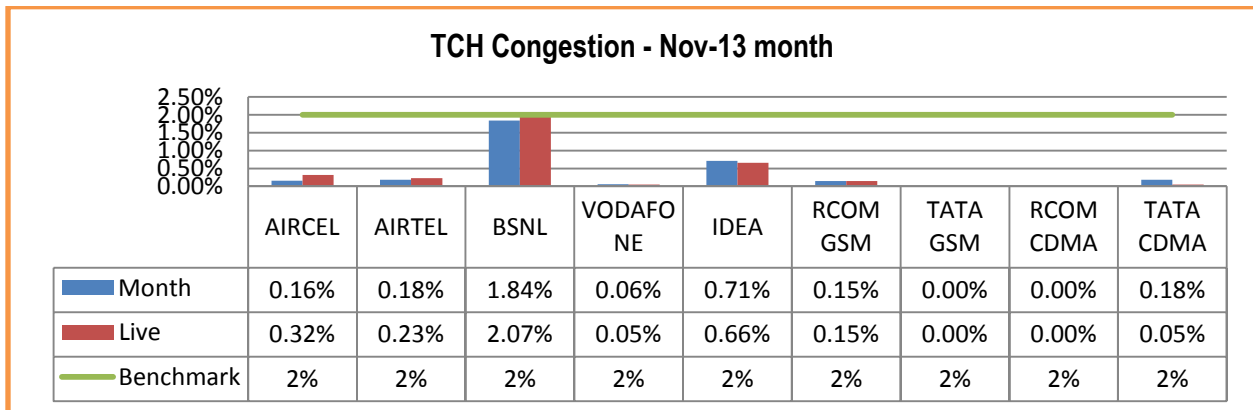
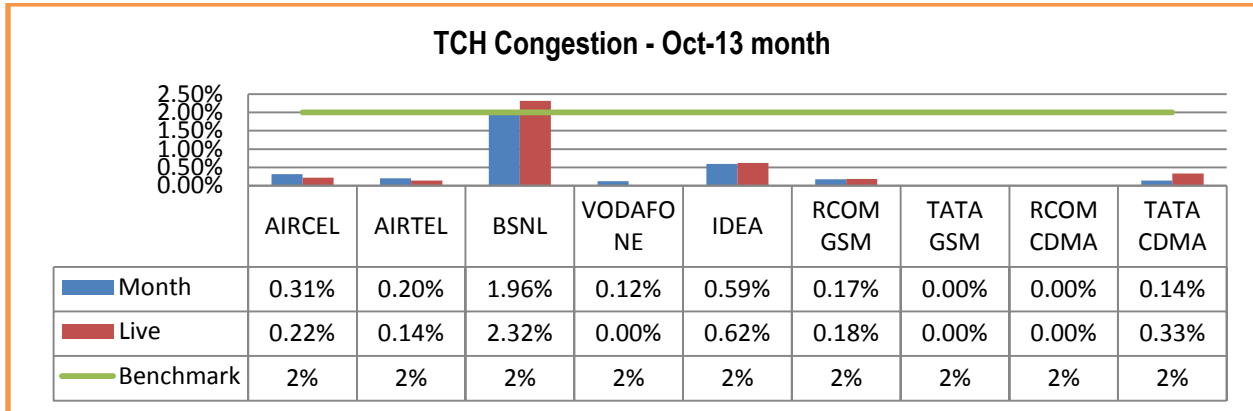
4) SDCCH/PAGING CHANNEL CONGESTION :



All operators are meeting the benchmarks except BSNL (3 days live) in the month of Nov-13.



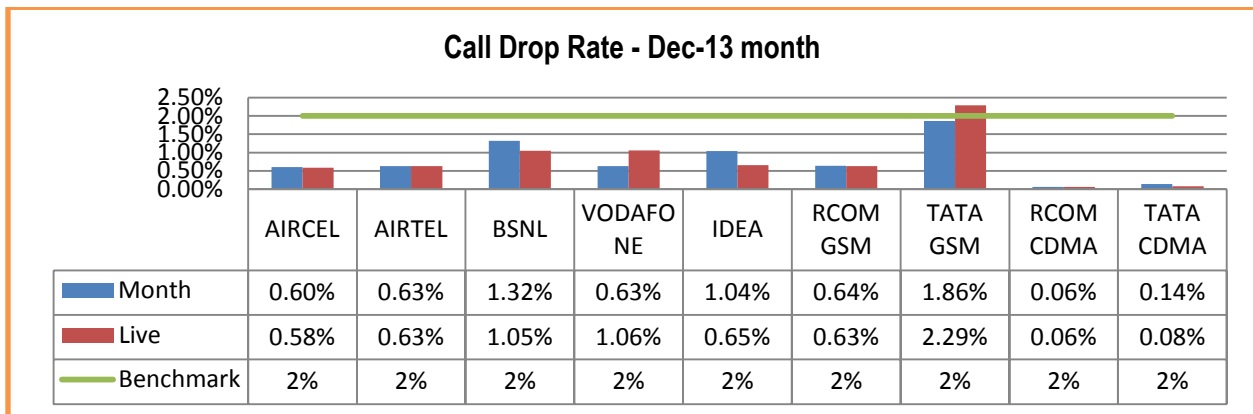
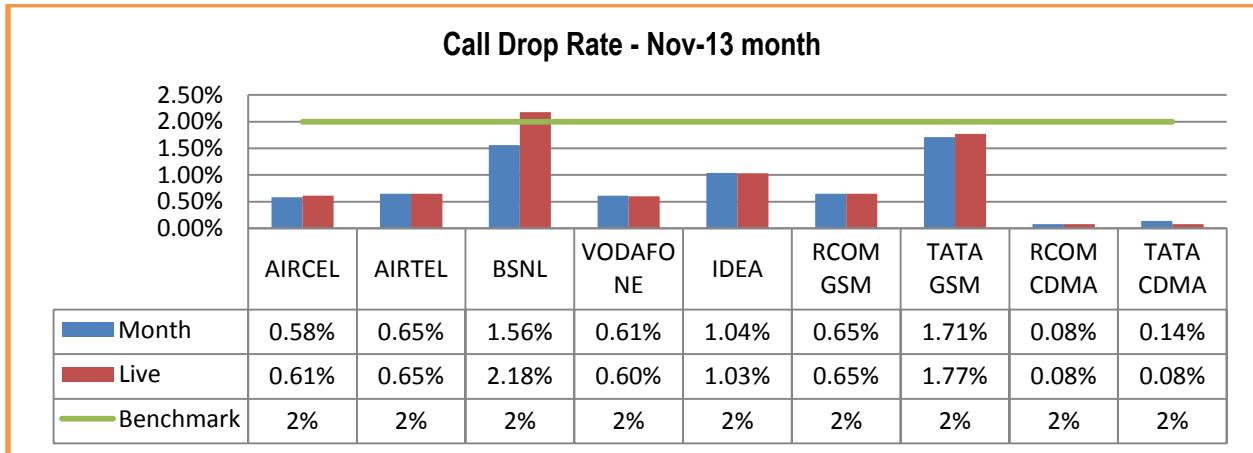
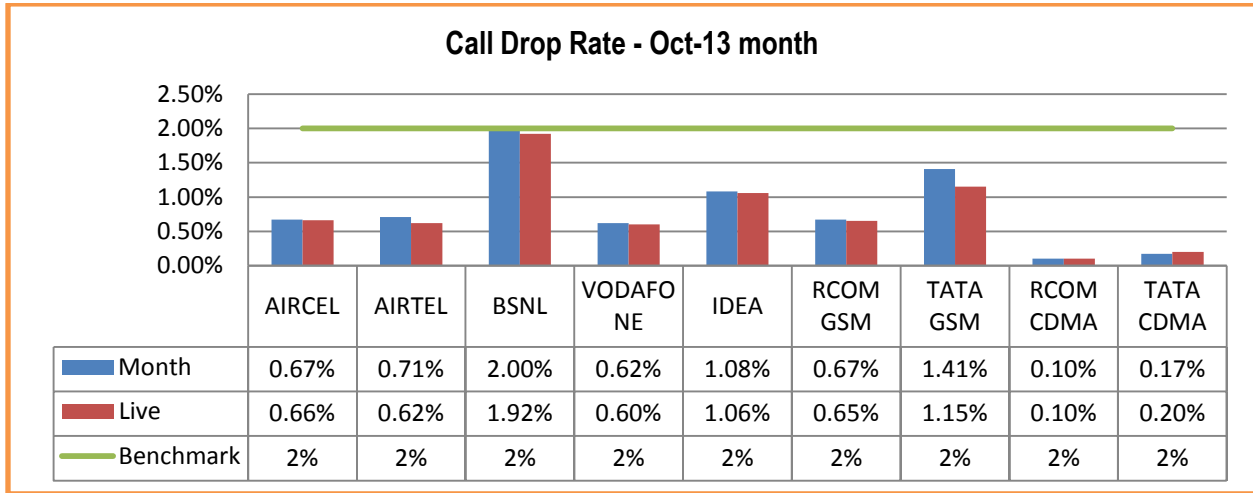
5) TCH CONGESTION :



All operators are meeting the benchmarks except BSNL (3 days live data) in the month of October and November 2013.



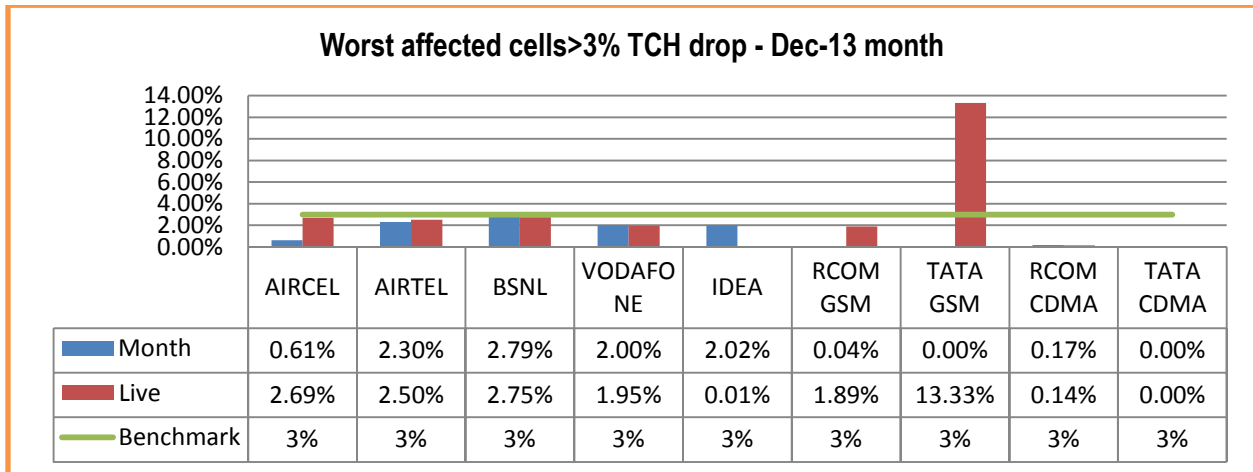
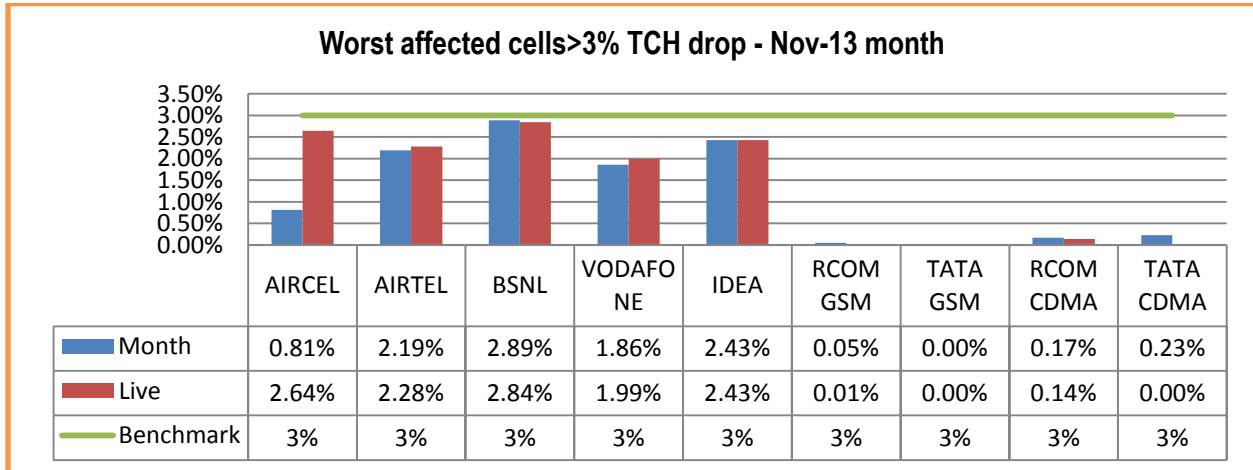
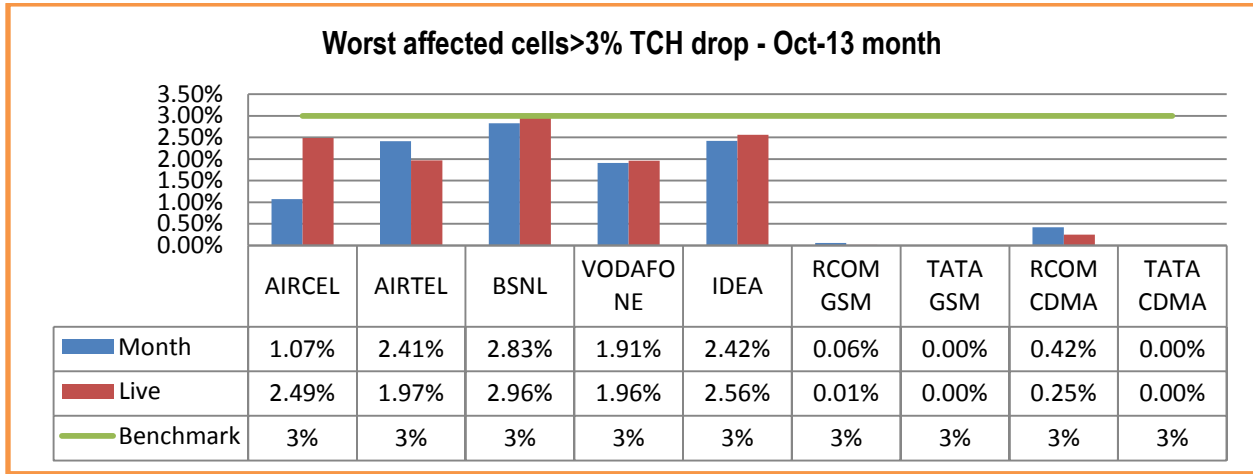
6) CALL DROP RATE :



All operators are meeting the benchmarks except BSNL and TATA (GSM) in 3 days live measurement in the month of November and December-13 respectively.



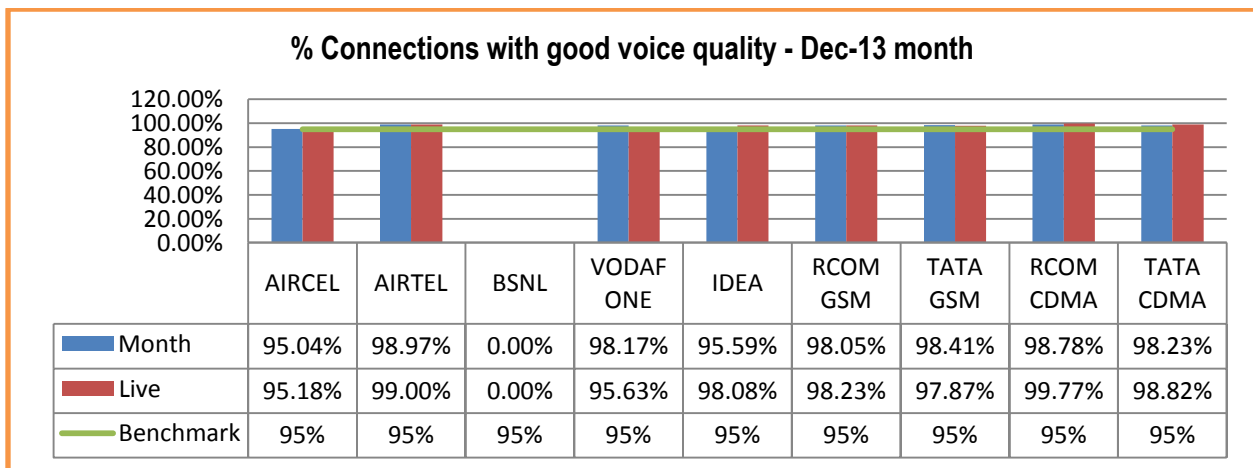
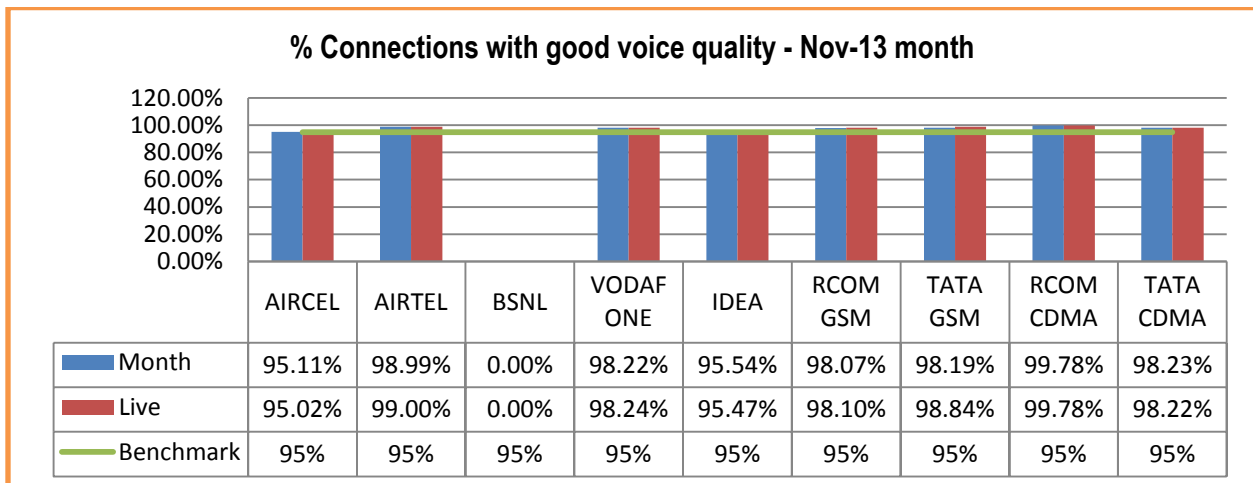
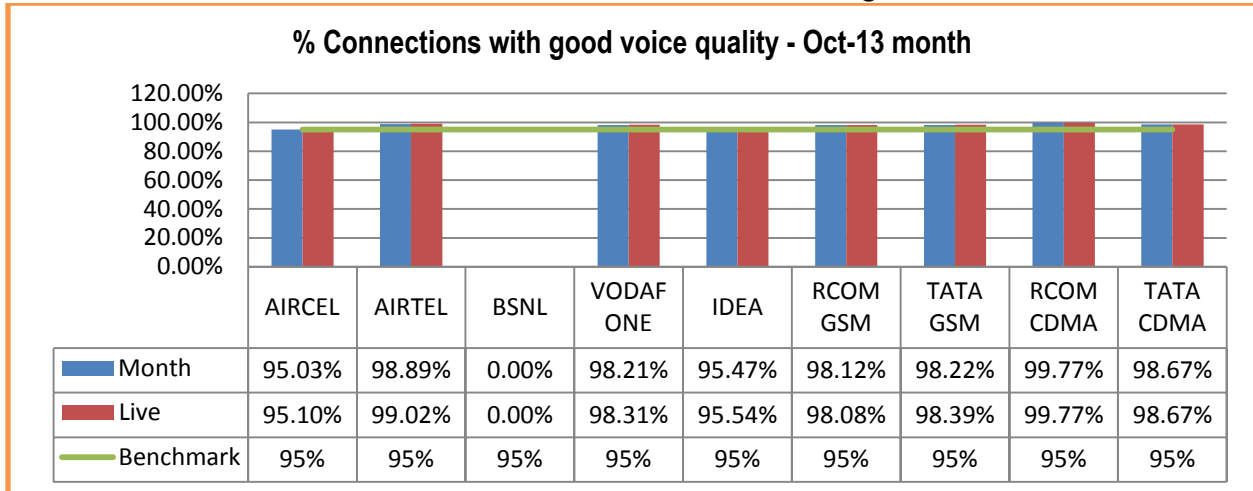
7) WORST AFFECTED CELLS>3% TCH DROP :



All operators are meeting the benchmarks except TATA (GSM) in 3 days live measurement in the month of December-13.



8) PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY :



All operators are meeting the benchmarks. BSNL has not provided the data as they are not able to fetch the system generated data.



9. PMR VERIFICATION SHEET:

a) NETWORK RELATED PARAMETERS

Himachal Pradesh Circle		BTS Accumulated Downtime	Worst affected BTSs due to downtime	CSSR (Call Setup Success Rate)	SDCCH/PAGING Channel congestion	TCH congestion	CDR (Call Drop Rate)	Worst affected cells>3% TCH drop (Call drop) rate	Connections with good voice quality	No. of POI's having >=0.5% POI congestion
Benchmark		≤ 2%	≤ 2%	≥ 95%	≤ 1%	≤ 2%	≤ 2%	≤ 3%	≥ 95%	≤ 0.5%
AIRCEL	Reported	0.41	1.46	98.63	0.03	0.26	0.62	0.83	95.06	0
	Verified	0.41%	1.46%	99.46%	0.03%	0.26%	0.62%	0.83%	95.06%	0
AIRTEL	Reported	0.01	0.00	99.13	0.07	0.18	0.66	2.30	98.95	0
	Verified	0.01%	0.00%	99.13%	0.07%	0.18%	0.66%	2.30%	98.95%	0
BSNL	Reported	1.90	1.90	96.00	0.80	1.83	1.60	2.90	96.33	0
	Verified	1.97%	1.39%	98.09%	0.79%	1.90%	1.63%	2.84%	NP	0
VODAFONE	Reported	0.03	0.00	98.14	0.01	0.09	0.62	1.92	98.20	0
	Verified	0.07%	0.00%	98.14%	0.01%	0.09%	0.62%	1.92%	98.20%	0
IDEA	Reported	0.35	0.00	98.86	0.06	0.61	1.05	2.29	95.54	0
	Verified	0.35%	0.00%	98.86%	0.06%	0.61%	1.05%	2.29%	95.53%	0
RCOM GSM	Reported	0.18	0.52	98.59	0.06	0.16	0.66	0.04	98.08	0
	Verified	0.19%	0.52%	98.59%	0.06%	0.16%	0.65%	0.05%	98.08%	0
TATA GSM	Reported	0.03	0.00	98.79	0.00	0.00	1.66	0.00	98.24	0
	Verified	0.03%	0.00%	98.79%	0.00%	0.00%	1.66%	0.00%	98.27%	0
RCOM CDMA	Reported	0.06	0.00	99.25	0.00	0.00	0.08	0.25	99.78	0
	Verified	0.06%	0.00%	99.24%	0.00%	0.00%	0.08%	0.25%	99.44%	0
TATA CDMA	Reported	0.00	0.00	98.81	0.00	0.16	0.15	0.08	98.38	0
	Verified	0.01%	0.00%	98.81%	0.00%	0.16%	0.15%	0.08%	98.38%	0

- I. The above data is averaged for three months of the quarter ending December-2013.
- II. The PMR data provided by the service providers is matching with verified (audited) data. Hence there is no discrepancy between reported and verified data.



b) CUSTOMER SERVICE DELIVERY (CSD) RELATED PARAMETER:

Himachal Pradesh Circle		% of billing complaints during the quarter	% of Pre-paid Charging Complaints	% of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	% of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	Accessibility of call centre/Customer Care	% call answered by operators(voice to voice) within 60 sec.	% of Termination/ Closure of service within 7 days	Time taken for refunds of deposits after closures.
Benchmark		<= 0.1%	<= 0.1%	100 % within 4 week	<=1 week	>=95%	>=90%	100% within <=7days	100% within 60 days
AIRCEL	Reported	0.02	0.00	100.00	100.00	97.69	93.26	100.00	100.00
	Verified	0.05%	0.00%	100.00%	100.00%	97.28%	93.31%	100.00%	100.00%
AIRTEL	Reported	0.04	0.00	100.00	100.00	100.00	95.00	100.00	100.00
	Verified	0.04%	0.00%	100.00%	100.00%	98.87%	95.00%	100.00%	100.00%
BSNL	Reported	0.00	0.00	100.00	100.00	100.00	97.90	100.00	100.00
	Verified	0.01%	0.01%	100.00%	100.00%	100.00%	66.64%	100.00%	70.88%
IDEA	Reported	0.00	0.01	100.00	100.00	99.76	99.42	100.00	100.00
	Verified	0.00%	0.01%	100.00%	100.00%	100.00%	99.00%	100.00%	100.00%
RCOM (GSM)	Reported	0.07	0.10	100.00	100.00	98.98	63.60	100.00	100.00
	Verified	0.07%	0.10%	100.00%	100.00%	98.97%	63.60%	100.00%	100.00%
TATA (GSM)	Reported	0.00	0.00	100.00	100.00	99.29	97.36	100.00	100.00
	Verified	0.00%	0.00%	100.00%	100.00%	99.28%	99.28%	100.00%	100.00%
VODAFONE	Reported	0.01	0.00	100.00	100.00	100.00	99.96	100.00	100.00
	Verified	0.02%	0.00%	100.00%	100.00%	100.00%	99.28%	100.00%	100.00%
RCOM (CDMA)	Reported	0.07	0.10	100.00	100.00	99.00	94.39	100.00	100.00
	Verified	0.07%	0.10%	100.00%	100.00%	98.97%	94.38%	100.00%	100.00%
TATA (CDMA)	Reported	0.00	0.00	100.00	100.00	96.85	96.23	100.00	100.00
	Verified	0.00%	0.00%	100.00%	100.00%	97.45%	97.20%	100.00%	100.00%

- i. The above data is averaged for three months of the quarter ending December-2013.
- ii. The PMR data provided by the service providers is largely matching with verified (audited) data.
- iii. BSNL and RCOM GSM have not met the benchmark for the parameter “% call answered by operators (voice to voice) within 60 sec.”.
- iv. BSNL has not met the benchmark for the parameter “Time taken for refunds of deposits after closures.”.