



REPORT
ON
AUDIT & ASSESSMENT OF QUALITY OF SERVICE
OF
CELLULAR MOBILE TELEPHONE SERVICE
FOR
TELECOM REGULATORY AUTHORITY OF INDIA
NORTH ZONE – JAMMU & KASHMIR SERVICE AREA
(APRIL 2014 – JUNE 2014)

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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 **J&K circle** against the QoS bench marks laid down by TRAI in the respective regulations.

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1. BACKGROUND



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



2. OBJECTIVES AND METHODOLOGY

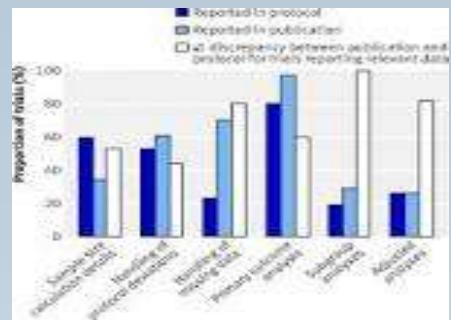
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

The audit and assessment of Quality of Service was 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, QoS audit for Basic (Wire line) and Broadband Services was also undertaken for Punjab, Rajasthan & Gujarat circles during the quarter April – June 2014.**

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. 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 J&K circle

Sl. No.	Name of Service Provider	Dates of live measurement Audit			Audit Location/Address
		April-14	May-14	June-14	
	GSM Operators				
1	AIRCEL	9 to 11 April-14	5 to 7 May-14	9 to 11 June-14	Dishnet Wireless Limited , 2nd floor North Block Bahu Plaza Jammu
2	AIRTEL	8 to 10 April-14	12 to 14 May-14	9 to 11 June-14	Bharti Airtel Campus, Plot No 21, Rajiv Gandhi Information and Technilogy Park, Chandigarh, 160101
3	BSNL	6 to 8 April-14	5 to 7 May-14	5 to 7 June-14	BSNL 4th floor, Rail Head Complex Jammu
4	IDEA	13 to 15 April-14	11 to 13 May-14	9 to 11 June-14	Idea Office Phase -7 Industrial Area, Mohali
5	RCOM GSM	11 to 13 April-14	16 to 18 May-14	12 to 14 June-14	Reliance Communication Limited Narwal KC Business Park Jammu
6	VODAFONE	13 to 15 April-14	14 to 16 May-14	16 to 18 June-14	Vodafone Spacetel Ltd. 4th floor (B) , North Block Bahu Plaza Complex Jammu-180004

For all the above operators, audit was conducted in all the three months of the Quarter ended June- 2014.

3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES

- The QoS audit for basic (wire line) 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 (wire line) service was not required to be done for Jammu & Kashmir Circle in the quarter ended June 2014.**

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 Jammu & Kashmir Circle in the quarter ended June 2014.**

4. EXECUTIVE SUMMARY



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 drive tests in three select SSAs per service provider per quarter.
- 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.

Essence of compliance report of service providers with respect to the QoS:

(i) From monthly PMR audit & 3 days live findings, it has been concluded that the performance of the service providers in the service area J&K is satisfactory for **Network Parameters** as all of them (except Aircel) were found meeting the benchmarks of all the parameters. Only **Aircel** failed to meet the benchmark of the parameter **‘Worst affected BTSs due to downtime’, Worst affected Cells and Voice Quality** in all the three months of the quarter with its average performance of **6.89%, 11.39% and 94.02%** respectively.

(ii) **Aircel** also failed to meet the benchmark of parameters **‘Worst affected Cells and Voice Quality** in 3 days live measurements with its performance of **9.10% and 94.01%** respectively. **This non-compliance is in sync with the Monthly audited PMR of Aircel**

(iii) With regard to the **Customer Service Quality Parameters**, it was revealed that all operators were largely in well compliance of most of the parameters on Metering and Billing Credibility, Response Time to Customers and Time taken for refunds. **Aircel** is non-complied with the Benchmark of **‘Termination/closure of service’** with their performance as **99.80%** and **BSNL and RCOM (GSM)** remained non-complied with the benchmark of **‘Calls answered by Operators (voice to voice) within 60 seconds’** with their performance as **11.79% (way below the benchmark of 90%) and 89.51%** respectively.

(iv) The results of **Drive Tests** revealed that most of the operators have performed fairly well within the benchmarks in all the three SSAs namely Srinagar, Jammu and Leh where drive tests were conducted during the quarter. **Only BSNL** remained under performed in respect of the parameters **Voice Quality and Call Drop rate** in these SSAs.

5. PMR AUDIT REPORT



5. PMR AUDIT REPORTS:

5.1 MONTHLY PMR:

5.1.1 BUSY HOUR OF VARIOUS SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	Month of Audit	Network TCBH Hour
GSM OPERATORS			
1	AIRCEL	June-14	21:00 - 22:00
2	AIRTEL	June-14	20:00 - 21:00
3	BSNL	June-14	19:00 - 20:00
4	IDEA	June-14	21:00 - 22:00
5	RCOM GSM	June-14	22:00 - 23:00
6	VODAFONE	June-14	20:00 - 21:00

The TCBH reported by all the service providers matched the network busy hour calculated by TUV auditors for the J&K circle.

5.1.2 SWITCHES/BSC/BTS DETAILS OF SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	No. of MSC + GMSC	No. of BSC	No. of BTS	NSS make	BSS make
GSM OPERATORS						
1	AIRCEL	6	22	2101	Ericsson	Ericsson
2	AIRTEL	11	30	2726	Ericsson	Ericsson
3	BSNL	8	22	1172	Ericsson	Ericsson, NSN & ZTE
4	IDEA	2	6	885	Ericsson	Ericsson
5	RCOM GSM	2	6	893	Huawei	Huawei
6	VODAFONE	4	16	1472	NSN	NSN

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – APRIL-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE- APRIL-14 MONTH									
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
Network Service Quality Parameter									
Network Availability									
1	a) BTS Accumulated Downtime	<=2%	Apr-14	0.54%	0.06%	1.24%	0.17%	0.25%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Apr-14	3.72%	0.07%	1.97%	0.79%	0.92%	0.07%
Connection Establishment (Accessibility)									
2	a) CSSR (Call Setup Success Rate)	>=95%	Apr-14	98.43%	98.93%	97.94%	99.12%	99.54%	98.60%
	b) SDCCH/PAGING Channel congestion	<=1%	Apr-14	0.31%	0.25%	0.64%	0.13%	0.03%	0.01%
	c) TCH congestion	<=2%	Apr-14	1.12%	0.20%	1.00%	0.51%	0.05%	0.27%
Connection maintenance (Retainability)									
3	a) CDR (Call Drop Rate)	<=2%	Apr-14	1.37%	0.49%	1.03%	1.43%	0.42%	0.56%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Apr-14	8.68%	1.14%	1.70%	2.32%	0.04%	2.62%
	c) Connections with good voice quality	>=95%	Apr-14	95.16%	98.34%	NP	96.22%	98.78%	98.43%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Apr-14	0	0	0	0	0	0

NP-Data not provided: BSNL has not provided data for the parameter "Connections with good voice quality "because OMCR does not support this parameter.

5.1.4 QOS PERFORMANCE OF MONTHLY PMR – MAY-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE- MAY-14 MONTH									
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
Network Service Quality Parameter									
Network Availability									
1	a) BTS Accumulated Downtime	<=2%	May-14	0.62%	0.07%	1.38%	0.27%	0.37%	0.04%
	b) Worst affected BTSs due to downtime	<=2%	May-14	4.06%	0.19%	1.96%	0.79%	1.44%	0.20%
Connection Establishment (Accessibility)									
2	a) CSSR (Call Setup Success Rate)	>=95%	May-14	98.02%	98.78%	97.55%	99.40%	99.48%	98.74%
	b) SDCCH/PAGING Channel congestion	<=1%	May-14	0.28%	0.29%	0.67%	0.12%	0.05%	0.03%
	c) TCH congestion	<=2%	May-14	1.53%	0.23%	1.15%	0.27%	0.06%	0.20%
Connection maintenance (Retainability)									
3	a) CDR (Call Drop Rate)	<=2%	May-14	1.38%	0.49%	0.78%	1.27%	0.49%	0.51%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	May-14	12.01%	1.15%	1.67%	2.35%	0.04%	2.58%
	c) Connections with good voice quality	>=95%	May-14	93.50%	98.29%	96.97%	95.90%	98.70%	98.39%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	May-14	0	0	0	0	0	0

5.1.5 QOS PERFORMANCE OF MONTHLY PMR – JUNE-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE- JUNE-14 MONTH									
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
Network Service Quality Parameter									
Network Availability									
1	a) BTS Accumulated Downtime	<=2%	Jun-14	2.01%	0.10%	1.58%	0.36%	0.34%	0.06%
	b) Worst affected BTSs due to downtime	<=2%	Jun-14	12.90%	0.15%	1.96%	1.92%	1.46%	0.20%
Connection Establishment (Accessibility)									
2	a) CSSR (Call Setup Success Rate)	>=95%	Jun-14	97.18%	98.40%	97.93%	99.26%	99.57%	98.60%
	b) SDCCH/PAGING Channel congestion	<=1%	Jun-14	0.85%	0.43%	0.77%	0.12%	0.01%	0.05%
	c) TCH congestion	<=2%	Jun-14	2.36%	0.35%	0.79%	0.39%	0.06%	0.39%
Connection maintenance (Retainability)									
3	a) CDR (Call Drop Rate)	<=2%	Jun-14	1.54%	0.49%	0.80%	1.46%	0.47%	0.50%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Jun-14	13.49%	1.07%	1.96%	2.15%	0.05%	2.46%
	c) Connections with good voice quality	>=95%	Jun-14	93.39%	98.25%	97.85%	96.05%	98.84%	98.41%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Jun-14	0	0	0	0	0	0

5.1.6 QOS PERFORMANCE OF QUARTERLY PMR –AVERAGE OF QE- JUNE-14 (APRIL TO JUNE MONTHS AUDITED DATA)

QUARTERLY QOS PERFORMANCE (AVERAGE OF QE –JUNE -14) OF J&K CIRCLE									
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
Network Service Quality Parameter									
Network Availability									
1	a) BTS Accumulated Downtime	<=2%	Quarterly	1.06%	0.08%	1.40%	0.27%	0.32%	0.04%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	6.89%	0.14%	1.96%	1.17%	1.27%	0.16%
Connection Establishment (Accessibility)									
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	97.88%	98.70%	97.81%	99.26%	99.53%	98.65%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.48%	0.32%	0.69%	0.12%	0.03%	0.03%
	c) TCH congestion	<=2%	Quarterly	1.67%	0.26%	0.98%	0.39%	0.06%	0.29%
Connection maintenance (Retainability)									
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	1.43%	0.49%	0.87%	1.39%	0.46%	0.52%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	11.39%	1.12%	1.78%	2.27%	0.04%	2.55%
	c) Connections with good voice quality	>=95%	Quarterly	94.02%	98.29%	97.41%	96.06%	98.77%	98.41%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Quarterly	0	0	0	0	0	0

5.1.7 KEY FINDINGS ON MONTHLY PMR AUDIT REPORTS:

The audit of network related parameters for cellular mobile service providers was conducted at their respective MSCs in the circles

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 J&K circle, all operators except **Aircel** were found meeting benchmark on the above parameters 'BTS accumulated downtime' and 'worst affected BTSs due to down time' in all the three months of the quarter. Only **Aircel** failed to meet the benchmark of the parameter '**Worst affected BTSs due to downtime**' in all the three months of the quarter with its average performance of **6.89%**.

- **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 found to have met 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 0.46 %) was for RCOM (GSM) 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.

All Service Providers have met the benchmark except **Aircel**. **Aircel** failed to meet the benchmark of the parameter '**Worst affected cells having more than 3% TCH drops**' in all the three months of the quarter with its average performance of **11.39%**.

- iii. Connections with good voice quality:

The Operators are measuring this parameter through the system generated data at their switches. The audit results for this parameter indicates that all operators have met the bench mark **except Aircel** during the quarter. **Aircel** failed to meet the benchmark for this parameter in the month of **May (93.50%)** and **June (93.39%)**, however its average performance of the quarter was also below the benchmark i.e. **94.01%**.

BSNL has not provided data for this parameter in the month of April 2014, so data have been averaged of two months (May and June -14) and found meeting the benchmark.

**3-DAYS LIVE MEASUREMENT DATA VERIFICATION FOR
CELLULAR MOBILE SERVICE PROVIDERS
(NETWORK SERVICE QUALITY PARAMETER)**



5.2 LIVE MEASUREMENT DATA (3-DAYS) FOR CELLULAR MOBILE SERVICE PROVIDERS (NETWORK SERVICE QUALITY PARAMETER):

5.2.1 LIVE MEASUREMENT DATA (3-DAYS) – APRIL-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE- APRIL-14 MONTH									
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
Network Service Quality Parameter									
Network Availability									
1	a) BTS Accumulated Downtime	<=2%	Live data	0.50%	0.04%	0.97%	0.26%	0.19%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)									
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.26%	99.06%	98.21%	99.31%	99.56%	98.58%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.64%	0.14%	0.86%	0.16%	0.01%	0.01%
	c) TCH congestion	<=2%	Live data	1.28%	0.17%	1.38%	0.32%	0.05%	0.23%
Connection maintenance (Retainability)									
3	a) CDR (Call Drop Rate)	<=2%	Live data	1.38%	0.51%	1.41%	1.43%	0.40%	0.52%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	2.97%	1.17%	2.02%	2.68%	0.00%	2.68%
	c) Connections with good voice quality	>=95%	Live data	95.11%	98.33%	NP	95.23%	98.84%	98.39%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0

*NP-Not Provided

5.2.2 LIVE MEASUREMENT DATA (3-DAYS) – MAY-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE- MAY-14 MONTH									
Live measurement Data		Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
Network Service Quality Parameter									
Network Availability									
1	a) BTS Accumulated Downtime	<=2%	Live data	0.65%	0.04%	0.99%	0.19%	0.22%	0.09%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.17%	0.00%	0.00%	0.14%
Connection Establishment (Accessibility)									
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.26%	98.72%	97.97%	99.45%	99.45%	98.71%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.13%	0.24%	0.63%	0.08%	0.01%	0.01%
	c) TCH congestion	<=2%	Live data	1.27%	0.26%	1.18%	0.20%	0.05%	0.17%
Connection maintenance (Retainability)									
3	a) CDR (Call Drop Rate)	<=2%	Live data	1.35%	0.49%	1.20%	1.25%	0.50%	0.53%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	11.30%	1.20%	1.88%	2.38%	0.00%	2.68%
	c) Connections with good voice quality	>=95%	Live data	93.49%	98.30%	NP	95.24%	98.69%	98.39%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0

*NP-Not Provided

5.2.3 LIVE MEASUREMENT DATA (3-DAYS) – JUNE-14 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE- JUNE-14 MONTH									
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
Network Service Quality Parameter									
Network Availability									
1	a) BTS Accumulated Downtime	<=2%	Live data	0.77%	0.04%	1.80%	0.41%	0.42%	0.08%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.43%	0.11%	0.00%	0.00%
Connection Establishment (Accessibility)									
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.02%	98.56%	98.35%	99.34%	99.56%	98.66%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.52%	0.35%	0.74%	0.06%	0.01%	0.02%
	c) TCH congestion	<=2%	Live data	1.53%	0.32%	0.70%	0.33%	0.04%	0.31%
Connection maintenance (Retainability)									
3	a) CDR (Call Drop Rate)	<=2%	Live data	1.52%	0.47%	0.71%	1.33%	0.47%	0.51%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	13.03%	0.96%	1.89%	2.34%	0.07%	2.79%
	c) Connections with good voice quality	>=95%	Live data	93.42%	98.29%	98.64%	95.90%	98.86%	98.37%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0

5.2.4 QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT AUDITED DATA (AVERAGE OF APRIL TO JUNE)

QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT (AVERAGE OF QE-JUNE-14) – J&K CIRCLE									
<u>Live measurement Data</u>		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
Network Service Quality Parameter									
Network Availability									
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.64%	0.04%	1.25%	0.29%	0.28%	0.07%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.00%	0.00%	0.12%	0.04%	0.00%	0.05%
Connection Establishment (Accessibility)									
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	98.18%	98.78%	98.18%	99.37%	99.52%	98.65%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.43%	0.24%	0.74%	0.10%	0.01%	0.01%
	c) TCH congestion	<=2%	Quarterly	1.36%	0.25%	1.09%	0.28%	0.05%	0.24%
Connection maintenance (Retainability)									
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	1.42%	0.49%	1.11%	1.34%	0.46%	0.52%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	9.10%	1.11%	1.93%	2.47%	0.02%	2.72%
	c) Connections with good voice quality	>=95%	Quarterly	94.01%	98.31%	98.64%	95.46%	98.80%	98.38%
4	No. of POI having >=0.5% congestion		Quarterly	0	0	0	0	0	0

5.2.5 KEY FINDING ON 3 DAYS LIVE MEASUREMENTS:

From three days live measurement assessment, it is found that the performance of all operators is satisfactory as they have largely met the benchmarks except the parameters **‘Worst affected cells> 3 % TCH drops’** and **‘% Connections with good voice quality’**, which could not be complied with by **Aircel**. The performance of **Aircel** for these parameters, calculated taking average of three months was **9.10%** (way beyond the benchmark of <=3%) and **94.01%** respectively.

5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES:

TABLE: 1

Detailed Network Data Assessment of Cellular Mobile Telephone Services- J&K Circle- April-14 month									
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
Network Service Quality Parameter									
1	Network Availability								
	a) Total no. of BTSs in the licensed service area		Apr-14	2096	2702	1172	885	982	1465
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Apr-14	8092	1141	10472	1094	1783	335
	c) BTS Accumulated Downtime	<=2%	Apr-14	0.54%	0.06%	1.24%	0.17%	0.25%	0.03%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Apr-14	78	2	23	7	9	1
	e) Worst affected BTSs due to downtime	<=2%	Apr-14	3.72%	0.07%	1.97%	0.79%	0.92%	0.07%
2	Connection Establishment (Accessibility)								
	a) CSSR (Call Setup Success Rate)	>=95%	Apr-14	98.43%	98.93%	97.94%	99.12%	99.54%	98.60%
	b) SDCCH/PAGING Congestion	<=1%	Apr-14	0.31%	0.25%	0.64%	0.13%	0.03%	0.01%
	c) TCH congestion	<=2%	Apr-14	1.12%	0.20%	1.00%	0.51%	0.05%	0.27%
3	Connection Maintenance (Retainability)								
	a) Call Drop Rate (CDR)	<=2%	Apr-14	1.37%	0.49%	1.03%	1.43%	0.42%	0.56%
	b) Worst affected cells>3% TCH drop	<=3%	Apr-14	8.68%	1.14%	1.70%	2.32%	0.04%	2.62%
	c) % of connections with good voice quality	>=95%	Apr-14	95.16%	98.34%	NP	96.22%	98.78%	98.43%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Apr-14	544	90	49	62	1	116
	e) Total no. of cells (Sector) in the licensed service area		Apr-14	6267	7916	2884	2653	2938	4415
4	No. of POI's having >=0.5% POI congestion								
	No. of POI's having >=0.5% POI congestion		Apr-14	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Apr-14	0	0	0	0	0	0
5	Network Data								
	a) Equipped Capacity of Network in Erlang		Apr-14	127107	116558	72000	24577	40000	30711
	b) Total traffic in TCBH in erlang (Avg.)		Apr-14	73577.17	89038.58	1124146.5	11728	16496.94	23510.54
	c) Total no. of customers served (as per VLR) on last day of the month		Apr-14	1823781	2598853	901520	340703	404285	690273

*NP-Not Provided

TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- J&K Circle- April-14 month									
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
Network Service Quality Parameter									
1	Network Availability								
	a) Total no. of BTSs in the licensed service area		Live data	2093	2694	1164	835	982	1465
	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	756	77	813	154	136	28
	c) BTS Accumulated Downtime	<=2%	Live data	0.50%	0.04%	0.97%	0.26%	0.19%	0.03%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	1	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	
2	Connection Establishment (Accessibility)								
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.26%	99.06%	98.21%	99.31%	99.56%	98.58%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.64%	0.14%	0.86%	0.16%	0.01%	0.01%
c) TCH congestion	<=2%	Live data	1.28%	0.17%	1.38%	0.32%	0.05%	0.23%	
3	Connection Maintenance (Retainability)								
	a) Call Drop Rate (CDR)	<=2%	Live data	1.38%	0.51%	1.41%	1.43%	0.40%	0.52%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	2.97%	1.17%	2.02%	2.68%	0.00%	2.68%
	c) % of connections with good voice quality	>=95%	Live data	95.11%	98.33%	NP	95.23%	98.84%	98.39%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	186	92	59	71	0	118
e) Total no. of cells (Sector) in the licensed service area		Live data	6259	7893	2910	2653	2938	4415	
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
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0

*NP-Not Provided

TABLE: 3

Detailed Network Data Assessment of Cellular Mobile Telephone Services- J&K Circle- May-14 month									
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
Network Service Quality Parameter									
1	Network Availability								
	a) Total no. of BTSs in the licensed service area		May-14	2093	2672	1172	885	971	1465
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		May-14	9602	1402	12014	1781	2637	474
	c) BTS Accumulated Downtime	<=2%	May-14	0.62%	0.07%	1.38%	0.27%	0.37%	0.04%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		May-14	85	5	23	7	14	3
	e) Worst affected BTSs due to downtime	<=2%	May-14	4.06%	0.19%	1.96%	0.79%	1.44%	0.20%
2	Connection Establishment (Accessibility)								
	a) CSSR (Call Setup Success Rate)	>=95%	May-14	98.02%	98.78%	97.55%	99.40%	99.48%	98.74%
	b) SDCCH/PAGING Congestion	<=1%	May-14	0.28%	0.29%	0.67%	0.12%	0.05%	0.03%
	c) TCH congestion	<=2%	May-14	1.53%	0.23%	1.15%	0.27%	0.06%	0.20%
3	Connection Maintenance (Retainability)								
	a) Call Drop Rate (CDR)	<=2%	May-14	1.38%	0.49%	0.78%	1.27%	0.49%	0.51%
	b) Worst affected cells>3% TCH drop	<=3%	May-14	12.01%	1.15%	1.67%	2.35%	0.04%	2.58%
	c) % of connections with good voice quality	>=95%	May-14	93.50%	98.29%	96.97%	95.90%	98.70%	98.39%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		May-14	750	90	59	62	1	114
	e) Total no. of cells (Sector) in the licensed service area		May-14	6245	7833	3498	2652	2905	4415
4	No. of POI's having >=0.5% POI congestion								
	No. of POI's having >=0.5% POI congestion		May-14	0	0	0	0	0	0
	Name of POI not meeting the benchmark		May-14	0	0	0	0	0	0
5	Network Data								
	a) Equipped Capacity of Network in Erlang		May-14	126914	112359	72000	24549	40000	31019
	b) Total traffic in TCBH in erlang (Avg.)		May-14	79149.89	93836.43	35580.04	12250	14681.27	25061.59
	c) Total no. of customers served (as per VLR) on last day of the month		May-14	1846201	2251803	902915	352235	401411	701409

TABLE: 4

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- J&K Circle- May-14 month									
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
Network Service Quality Parameter									
1	Network Availability								
	a) Total no. of BTSs in the licensed service area		Live data	2083	2702	1172	885	971	1465
	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	974	82	838	119	153	91
	c) BTS Accumulated Downtime	<=2%	Live data	0.65%	0.04%	0.99%	0.19%	0.22%	0.09%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	2	0	0	2
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.17%	0.00%	0.00%	0.14%	
2	Connection Establishment (Accessibility)								
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.26%	98.72%	97.97%	99.45%	99.45%	98.71%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.13%	0.24%	0.63%	0.08%	0.01%	0.01%
c) TCH congestion	<=2%	Live data	1.27%	0.26%	1.18%	0.20%	0.05%	0.17%	
3	Connection Maintenance (Retainability)								
	a) Call Drop Rate (CDR)	<=2%	Live data	1.35%	0.49%	1.20%	1.25%	0.50%	0.53%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	11.30%	1.20%	1.88%	2.38%	0.00%	2.68%
	c) % of connections with good voice quality	>=95%	Live data	93.49%	98.30%	NP	95.24%	98.69%	98.39%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	706	95	57	63	0	118
e) Total no. of cells (Sector) in the licensed service area		Live data	6246	7916	3051	2646	2905	4415	
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
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0

*NP-Not Provided

TABLE: 5

Detailed Network Data Assessment of Cellular Mobile Telephone Services- J&K Circle- June-14 month									
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
Network Service Quality Parameter									
1	Network Availability								
	a) Total no. of BTSs in the licensed service area		Jun-14	2101	2726	1172	885	893	1472
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Jun-14	30342	1884	13365	2270	2183	649
	c) BTS Accumulated Downtime	<=2%	Jun-14	2.01%	0.10%	1.58%	0.36%	0.34%	0.06%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Jun-14	271	4	23	17	13	3
	e) Worst affected BTSs due to downtime	<=2%	Jun-14	12.90%	0.15%	1.96%	1.92%	1.46%	0.20%
2	Connection Establishment (Accessibility)								
	a) CSSR (Call Setup Success Rate)	>=95%	Jun-14	97.18%	98.40%	97.93%	99.26%	99.57%	98.60%
	b) SDCCH/PAGING Congestion	<=1%	Jun-14	0.85%	0.43%	0.77%	0.12%	0.01%	0.05%
	c) TCH congestion	<=2%	Jun-14	2.36%	0.35%	0.79%	0.39%	0.06%	0.39%
3	Connection Maintenance (Retainability)								
	a) Call Drop Rate (CDR)	<=2%	Jun-14	1.54%	0.49%	0.80%	1.46%	0.47%	0.50%
	b) Worst affected cells>3% TCH drop	<=3%	Jun-14	13.49%	1.07%	1.96%	2.15%	0.05%	2.46%
	c) % of connections with good voice quality	>=95%	Jun-14	93.39%	98.25%	97.85%	96.05%	98.84%	98.41%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Jun-14	844	85	68	57	1	109
	e) Total no. of cells (Sector) in the licensed service area		Jun-14	6261	7989	3498	2653	2678	4423
4	No. of POI's having >=0.5% POI congestion								
	No. of POI's having >=0.5% POI congestion		Jun-14	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Jun-14	0	0	0	0	0	0
5	Network Data								
	a) Equipped Capacity of Network in Erlang		Jun-14	126727	110970	72000	25196	40000	31319
	b) Total traffic in TCBH in erlang (Avg.)		Jun-14	82188	96837	36501	12758	13636	25531
	c) Total no. of customers served (as per VLR) on last day of the month		Jun-14	1857947	2276290	905754	362725	404007	700269

TABLE: 6

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live- J&K Circle- June-14 month									
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
Network Service Quality Parameter									
1	Network Availability								
	a) Total no. of BTSs in the licensed service area		Live data	2091	2672	1172	885	919	1465
	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	1162	72	1518	261	278	79
	c) BTS Accumulated Downtime	<=2%	Live data	0.77%	0.04%	1.80%	0.41%	0.42%	0.08%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	5	1	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.43%	0.11%	0.00%	0.00%	
2	Connection Establishment (Accessibility)								
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.02%	98.56%	98.35%	99.34%	99.56%	98.66%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.52%	0.35%	0.74%	0.06%	0.01%	0.02%
c) TCH congestion	<=2%	Live data	1.53%	0.32%	0.70%	0.33%	0.04%	0.31%	
3	Connection Maintenance (Retainability)								
	a) Call Drop Rate (CDR)	<=2%	Live data	1.52%	0.47%	0.71%	1.33%	0.47%	0.51%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	13.03%	0.96%	1.89%	2.34%	0.07%	2.79%
	c) % of connections with good voice quality	>=95%	Live data	93.42%	98.29%	98.64%	95.90%	98.86%	98.37%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	815	75	66	62	2	123
e) Total no. of cells (Sector) in the licensed service area		Live data	6251	7833	3498	2653	2769	4415	
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
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0

CUSTOMER SERVICE DELIVERY (CSD) PARAMETERS



5.3 CUSTOMER SERVICE QUALITY PARAMETERS MEASUREMENT FOR CMTS-QE JUNE-14:

5.3.1 CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (QE-JUNE 2014):

CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES -QE JUNE-14									
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/ N	Name of Parameter			GSM Operators					
Customer Service Quality Parameters									
1	Metering & Billing Credibility -Post Paid								
	A) No. of bills issued during the quarter		Jammu & Kashmir	115635	91068	273738	24018	23629	39117
	B) No. of bills disputed including billing complaints during the quarter		Jammu & Kashmir	3	28	127	2	19	13
	C)% of billing complaints during the quarter	<= 0.1%	Jammu & Kashmir	0.00%	0.03%	0.05%	0.01%	0.08%	0.03%
2	Metering & Billing Credibility -Pre Paid								
	A) Total No. of Pre-paid customers at the end of the quarter		Jammu & Kashmir	2008069	2608389	942937	364908	746434	781981
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		Jammu & Kashmir	8	87	52	16	742	85
	C) % of Pre-paid Charging Complaints	<= 0.1%	Jammu & Kashmir	0.00%	0.00%	0.01%	0.00%	0.10%	0.01%
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		Jammu & Kashmir	11	115	179	276	761	98
	B) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 4 weeks during the quarter		Jammu & Kashmir	11	115	179	276	761	98
	C) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	100 % within 4 week	Jammu & Kashmir	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	Jammu & Kashmir	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
4	Response time to customers for assistance								
	A) Total no of calls attempted to customer care/Call center		Jammu & Kashmir	5707005	387400	53305	33120	1834256	914612

CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES -QE JUNE-14									
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/ N	Name of Parameter			GSM Operators					
	B) Total no. of calls successfully established to customer care/Call center		Jammu & Kashmir	5090220	387400	53305	32446	1812501	914612
	C) % Accessibility of Call centre /customer Care (Total call successfully established *100/ Total call attempt)	>=95%		89.19%	100.00%	100.00%	97.96%	98.81%	100.00%
	D) Total Calls reached to agent desk for Voice to Voice (Total call attempt)			920733	931514	3215	137647	31677	205176
	E) Total number of calls answered by the operator (Voice to voice) within 60 seconds			830708	851903	379	133155	28353	202994
	F) % age of calls answered by operator (voice to voice) (Total call successfully established within 60 Sec *100/ Total call attempt.)	>=90%		90.22%	91.45%	11.79%	96.74%	89.51%	98.94%
5	Termination/closure of service								
	A) Total No. of requests for Termination / Closure of service received during the quarter		Jammu & Kashmir	1304	518	525	220	176	176
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		Jammu & Kashmir	1301	518	525	220	176	176
	C) % of Termination/ Closure of service within 7 days	<=7days	Jammu & Kashmir	99.80%	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		Jammu & Kashmir	389	89	525	71	90	74
	B) No. of Payments/ Refunds Cleared during the quarter		Jammu & Kashmir	389	89	525	71	90	74
	C) Time taken for refunds of deposits after closures.	100% within 60 days	Jammu & Kashmir	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

5.3.2 3 DAYS LIVE CSD AUDITED DATA FOR CELLULAR MOBILE SERVICES (QE-JUNE 2014):

CSD 3 DAYS LIVE DATA FOR CELLULAR MOBILE TELEPHONE SERVICES-QE-JUNE-14									
3 days live CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	VODAFONE
S/ N	Name of Parameter			GSM Operators					
RESPONSE TIME TO CUSTOMERS FOR ASSISTANCE									
1	Total no of calls attempted to customer care/Call center		J & K	161824	11381	1906	933	49757	29919
	Total no. of calls successfully established to customer care/Call center		J & K	159762	11381	1906	914	49179	29919
	% Accessibility of Call centre /customer Care (Total calls successfully established*100/ Total call attempt)	>=95%	J & K	98.73%	100.00%	100.00%	97.89%	98.84%	100.00%
2	Total Calls reached to agent desk for Voice to Voice (Total call attempt)		J & K	27776	32543	3397	4600	767	6925
	Total number of calls answered by the operator (Voice to voice) within 60 seconds		J & K	26601	30074	1075	4498	745	6891
	% age of calls answered by operator(voice to voice) (Total calls successfully established within 60 Sec.*100/ Total call attempt)	>=90%	J & K	95.77%	92.42%	31.66%	97.77%	97.13%	99.50%

5.3.3 KEY FINDINGS ON CUSTOMER SERVICE DELIVERY (CSD) PARAMETERS

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 $\leq 0.1\%$ for all the operators.

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 met the benchmarks for the above parameters.

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' against the benchmark of 95%. Whereas **BSNL** and **RCOM (GSM)** have not met the benchmark of '**calls answered by Operators (voice to voice) within 60 seconds**'. Their achieved level was **11.79%** (way below the benchmark of 90%) and **89.51%** respectively.

4. Termination/Closure of Service

In case of this parameters also, all service providers have settled 100% closures within 7 days except **Aircel** which could achieve **99.80%**, very marginally below the benchmark of 100 %.

5. Time Taken for Refund of deposits after closures

All operators were found to have complied with the benchmark of 100% refund of deposits within 60 days of closure.

The results for three days live measurements revealed that all operators have met the benchmarks for the parameters 'Accessibility to call center'. However, in case of '**Call connection to operators (Voice to voice) within 60 seconds**' only one operator namely **BSNL** could not meet the benchmark with its performance as **31.66%**. Thus the performance of **BSNL** was very poor and way below the benchmark.

6. LIVE CALLING ASSESSMENT



6. LIVE CALLING ASSESSMENT:

6.1 INTER OPERATOR CALLS ASSESSMENT:

Inter operator call assessment with a sample of 2x50 test calls for each Service provider operating in J&K 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	RCOM GSM	VODAFONE
AIRCEL	J&K	--	100.00%	96.00%	100.00%	100.00%	100.00%
AIRTEL	J&K	100.00%	--	100.00%	100.00%	100.00%	100.00%
BSNL	J&K	95.00%	100.00%	--	100.00%	100.00%	100.00%
IDEA	J&K	100.00%	100.00%	100.00%	--	100.00%	100.00%
RCOM GSM	J&K	97.00%	100.00%	100.00%	100.00%	--	100.00%
VODAFONE	J&K	100.00%	100.00%	100.00%	100.00%	100.00%	--

The result of the testing revealed that the inter connection performance among the operators was quite satisfactory. However, in case where Calls attempted from Aircel to BSNL successful interconnection was 96.0%, BSNL to Aircel was 95% and RCOM GSM to Aircel was 97%. Thus there was no remarkable problem in interconnection from one operator to other operators.

6.2 CUSTOMER CARE / HELPLINE ASSESSMENT:

LIVE CALLING TO CALL CENTRE							
Parameter	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	VODAFONE
Total No. of calls Attempted	J & K	100	100	100	100	100	100
Total no of calls attempted to customer care/Call center	J & K	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	J & K	98	100	100	100	96	100
% Accessibility of Call centre /customer Care (Total calls successfully established * 100 / Total call attempts)	J & K	98.00%	100.00%	100.00%	100.00%	96.00%	100.00%
Total Calls reached to agent desk for Voice to Voice (Total call attempt)	J & K	98	100	90	100	96	100
Total number of calls answered by the operator (Voice to voice) within 60 seconds	J & K	96	100	90	100	94	98
% age of calls answered by operator(voice to voice) (Total call successfully established within 60 Sec.*100 / Total calls attempts)	J & K	96.00%	100.00%	90.00%	100.00%	94.00%	98.00%

In case of calls answered by operators (voice to voice) within 60 seconds when test calls were made to the call centers, Aircel, BSNL, RCOM (GSM) and Vodafone could connect 96%, 90%, 94% and 98% of calls respectively to the operator within 60 Seconds.

6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLIANTS:

LIVE CALLING FOR BILLING COMPLIANTS:

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS							
	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	VODAFONE
Total No. of calls Attempted	J & K	32	100	100	100	100	100
Total No. of calls Answered	J & K	32	76	68	82	85	81
Cases resolved within 4 weeks	J & K	32	76	68	82	85	81
%age of cases resolved	J & K	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

To test the Service Providers performance on billing related complaints and their resolutions, TUV-SUD auditors conducted a customer feedback calling for about random 100 nos. of customers. During live calling, some of the customers did not attend the calls while few others reported that they don't exactly remember about the resolution of complaints. However, Majority of the customers reported that the billing complaints were resolved to their satisfaction.

6.4 LEVEL -1 CALLING ASSESSMENT:

LEVEL 1 LIVE CALLING										
Emergency no.	Circle Name	SSA Name	Name of SDCA	No. of calls made	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
100, 101, 102	J&K	Leh	Kargil	5	No Coverage	√	√	No Coverage	No Coverage	No Coverage
100, 101, 102	J&K	Leh	Leh	5	√	√	√	No Coverage	√	No Coverage
100, 101, 102	J&K	Simagar	Srinagar	5	√	√	√	√	√	√
100, 101, 102	J&K	Simagar	Pahalgaon	5	√	√	√	√	√	√
100, 101, 102	J&K	Simagar	Annatnag	5	√	√	√	√	√	√
100, 101, 102	J&K	Simagar	Pulwana	5	√	√	√	√	√	√
100, 101, 102	J&K	Jammu	Jammu	5	√	√	√	√	√	√
100, 101, 102	J&K	Jammu	Samba	5	√	√	√	√	√	√
100, 101, 102	J&K	Jammu	Kathua	5	√	√	√	√	√	√
100, 101, 102	J&K	Jammu	Akhnoor	5	√	√	√	√	√	√

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 each SSA. In these SSA of J&K service areas, the emergency services as mentioned in the above table were found functional in the networks of all the service providers. However, Aircel, Idea, RCOM (GSM) and Vodafone have no coverage in Kargil SDCA. Whereas, Idea and Vodafone have no coverage in Leh SDCA.

7. DRIVE TEST



7. OPERATOR ASSISTED DRIVE TEST

In terms of TRAI's letter dated 21st January, 2014, the drive tests were conducted for three consecutive days in one select SSA each month in each service area. Thus, the drive tests were carried out in three SSA's namely **Srinagar, Jammu and Leh** in the months of April, May and June 2014 respectively. The total route Kms covered during the drive tests in the respective SSAs was **312 Kms, 392 Kms** and **190 Kms** respectively. 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. The holding period for all test calls was 120 seconds. The drive test vehicle across all routes plied at a speed of about 30-50 km per hour.

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 ≥ -75 dBm for in-door coverage and ≥ -85 dBm for in-vehicle.

7.1 OPERATOR ASSISTED DRIVE TEST: SRINAGAR SSA (APRIL-14)

DRIVE TEST TABLE – 1

S/N	Parameter	Days of drive test	Indoor locations	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE	
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
1	Call Attempts	Day 1	Pahalgam J&K Bank	107	10	96	10	80	20	88	10	97	10	101	10
		Day 2	Hotel Kinslay Gulmarg	94	10	88	10	80	22	63	10	85	10	71	10
		Day 3	D.C office Pulwama	94	10	98	10	83	21	93	10	106	10	87	10
		Overall SSA		295	30	282	30	243	63	244	30	288	30	259	30
2	Blocked Call Rate	Day 1	Pahalgam J&K Bank	0.93%	0.00%	0.00%	0.00%	2.50%	0.00%	1.14%	0.00%	0.00%	0.00%	1.98%	0.00%
		Day 2	Hotel Kinslay Gulmarg	1.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.18%	0.00%	1.41%	0.00%
		Day 3	D.C office Pulwama	1.06%	0.00%	0.00%	0.00%	2.41%	0.00%	1.08%	0.00%	0.94%	0.00%	0.00%	0.00%
		Overall SSA		1.02%	0.00%	0.00%	0.00%	1.65%	0.00%	0.82%	0.00%	0.69%	0.00%	1.16%	0.00%
3	Dropped Call Rate (<=2%)	Day 1	Pahalgam J&K Bank	0.00%	0.00%	1.04%	0.00%	2.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Day 2	Hotel Kinslay Gulmarg	0.00%	0.00%	1.14%	0.00%	0.00%	0.00%	0.00%	0.00%	1.19%	0.00%	0.00%	0.00%
		Day 3	D.C office Pulwama	1.06%	0.00%	0.00%	0.00%	1.23%	0.00%	0.00%	0.00%	0.95%	0.00%	0.00%	0.00%
		Overall SSA		0.34%	0.00%	0.71%	0.00%	1.26%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%
4	Percentage connections with good voice quality (=>95%)														
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Day 1	Pahalgam J&K Bank	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Day 2	Hotel Kinslay Gulmarg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Day 3	D.C office Pulwama	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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S/N	Parameter	Days of drive test	Indoor locations	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE	
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
				Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(b) 0-5 (with frequency hopping for GSM Operators)	Day 1	Pahalgam J&K Bank	95.52%	98.57%	96.07%	98.05%	87.48%	90.91%	95.43%	99.65%	98.62%	99.73%	96.99%	98.29%
		Day 2	Hotel Kinslay Gulmarg	95.28%	96.03%	96.23%	97.59%	82.58%	93.92%	96.71%	99.73%	97.53%	99.90%	96.94%	98.80%
		Day 3	D.C office Pulwama	95.29%	95.06%	96.12%	95.93%	82.84%	96.09%	95.33%	99.08%	96.02%	99.78%	95.06%	99.43%
		Overall SSA		95.34%	96.51%	96.15%	97.02%	84.59%	93.66%	95.65%	99.49%	97.38%	99.80%	96.43%	99.06%
Service Coverage															
5	In door (>= - 75dBm)	Day 1	Pahalgam J&K Bank	71.30%	20.24%	72.73%	49.61%	62.38%	53.20%	26.46%	55.75%	53.32%	97.15%	46.71%	100.00%
		Day 2	Hotel Kinslay Gulmarg	88.13%	99.96%	91.08%	43.98%	68.19%	72.15%	31.55%	89.55%	53.22%	79.60%	52.63%	72.63%
		Day 3	D.C office Pulwama	98.36%	100.00%	92.46%	99.85%	99.93%	48.91%	61.16%	26.25%	75.90%	99.72%	76.23%	100.00%
		Overall SSA		89.49%	74.18%	86.73%	69.01%	79.62%	58.39%	42.80%	57.55%	61.38%	93.38%	57.86%	88.02%
	In-vehicle (>= - 85dBm)	Day 1	Pahalgam J&K Bank	95.08%	75.73%	97.70%	99.46%	89.24%	88.93%	66.09%	93.29%	90.32%	99.78%	82.11%	100.00%
		Day 2	Hotel Kinslay Gulmarg	98.80%	100.00%	99.33%	95.06%	93.10%	97.13%	66.42%	100.00%	85.37%	99.37%	85.71%	98.77%
		Day 3	D.C office Pulwama	99.82%	100.00%	98.87%	100.00%	98.28%	99.17%	89.38%	94.39%	95.73%	100.00%	95.54%	100.00%
		Overall SSA		98.48%	92.15%	98.75%	98.27%	93.84%	95.15%	76.39%	95.88%	90.88%	99.75%	87.45%	99.46%
	Outdoor- in city (>= - 95dBm)	Day 1	Pahalgam J&K Bank	99.98%	99.06%	100.00%	100.00%	98.87%	98.50%	96.29%	99.93%	98.47%	99.96%	96.92%	100.00%
		Day 2	Hotel Kinslay Gulmarg	99.97%	100.00%	99.98%	100.00%	99.25%	99.88%	96.66%	100.00%	97.31%	99.95%	98.92%	100.00%
		Day 3	D.C office Pulwama	99.99%	100.00%	99.96%	100.00%	86.70%	100.00%	99.40%	97.55%	99.45%	100.00%	99.70%	100.00%
		Overall SSA		99.98%	99.70%	99.98%	100.00%	93.69%	99.47%	97.74%	99.16%	98.50%	99.97%	98.40%	100.00%
6	Call Setup Success Rate	Day 1	Pahalgam J&K Bank	99.07%	100.00%	100.00%	100.00%	95.00%	100.00%	98.86%	100.00%	100.00%	100.00%	98.02%	100.00%

S/N	Parameter	Days of drive test	Indoor locations	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE	
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
	(>=95%)	Day 2	Hotel Kinslay Gulmarg	98.94%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.82%	100.00%	98.59%	100.00%
		Day 3	D.C office Pulwama	98.94%	100.00%	100.00%	100.00%	97.59%	100.00%	98.92%	100.00%	99.06%	100.00%	100.00%	100.00%
		Overall SSA		98.98%	100.00%	100.00%	100.00%	97.53%	100.00%	99.18%	100.00%	99.31%	100.00%	98.84%	100.00%
		Day 1	Pahalgam J&K Bank	100.00%	100.00%	100.00%	100.00%	92.41%	87.50%	100.00%	100.00%	99.09%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Day 2	Hotel Kinslay Gulmarg	99.27%	99.21%	99.21%	100.00%	93.24%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Day 3	D.C office Pulwama	99.28%	99.46%	99.46%	100.00%	97.93%	96.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA		99.50%	99.54%	99.54%	100.00%	95.30%	94.29%	100.00%	100.00%	99.71%	100.00%	100.00%	100.00%

- NA-Not Applicable

7.2 OPERATOR ASSISTED DRIVE TEST: JAMMU SSA (MAY-14)

DRIVE TEST TABLE – 2

S/N	Parameter	Classification of route covered	Indoor location	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE	
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
1	Call Attempts	Major Road	Mubarak Mandi Complex	87	30	59	30	106	30	76	30	92	30	98	30
		Highway	Sunny Square Kunjwani	199	30	267	30	210	30	163	30	198	30	162	30
		Within City	State Time Office complex	94	30	94	30	116	31	116	30	89	30	107	30
		Overall SSA		380	90	420	90	432	91	355	90	379	90	367	90
2	Blocked Call Rate	Major Road	Mubarak Mandi Complex	0.00%	0.00%	0.00%	0.00%	4.72%	0.00%	1.32%	0.00%	0.00%	0.00%	1.02%	0.00%
		Highway	Sunny Square Kunjwani	0.00%	0.00%	0.37%	0.00%	3.81%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	State Time Office complex	0.00%	0.00%	0.00%	0.00%	1.72%	0.00%	0.00%	0.00%	0.00%	0.00%	0.93%	0.00%
		Overall SSA		0.00%	0.00%	0.24%	0.00%	3.47%	0.00%	0.28%	0.00%	0.00%	0.00%	0.54%	0.00%
3	Dropped Call Rate (<=2%)	Major Road	Mubarak Mandi Complex	0.00%	0.00%	3.39%	0.00%	3.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highway	Sunny Square Kunjwani	0.50%	0.00%	0.00%	0.00%	2.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	State Time Office complex	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA		0.26%	0.00%	0.48%	0.00%	3.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
4	Percentage connections with good voice quality (=>95%)														
	(a) 0-4 (w/o frequency hopping for CDMA)	Major Road	Mubarak Mandi Complex	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Highway	Sunny Square Kunjwani	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014- JAMMU & KASHMIR CIRCLE



S/N	Parameter	Classification of route covered	Indoor location	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE	
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
	Operators)	Within City	State Time Office complex	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Overall SSA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	Mubarak Mandi Complex	95.89%	96.90%	97.36%	99.61%	90.42%	99.35%	97.78%	96.90%	97.07%	99.63%	96.26%	97.92%
		Highway	Sunny Square Kunjwani	95.87%	97.27%	96.51%	97.52%	89.94%	92.77%	96.41%	96.74%	97.71%	99.48%	97.31%	99.31%
		Within City	State Time Office complex	95.72%	98.09%	96.35%	99.22%	91.13%	95.43%	96.40%	98.09%	98.18%	99.59%	97.09%	99.28%
Overall SSA		95.83%	97.42%	96.68%	98.71%	90.37%	95.86%	96.79%	97.28%	97.63%	99.56%	96.99%	98.83%		
Service Coverage															
5	In door (>= - 75dBm)	Major Road	Mubarak Mandi Complex	89.47%	100.00%	95.57%	81.82%	66.15%	99.38%	32.46%	100.00%	49.72%	76.10%	68.62%	93.28%
		Highway	Sunny Square Kunjwani	91.88%	100.00%	94.19%	99.96%	69.35%	98.59%	69.31%	83.48%	46.86%	40.80%	65.45%	96.58%
		Within City	State Time Office complex	86.05%	100.00%	91.24%	100.00%	68.85%	96.30%	37.44%	100.00%	59.20%	99.80%	72.38%	99.68%
		Overall SSA		89.38%	100.00%	93.68%	91.40%	68.48%	98.16%	50.01%	95.16%	51.04%	70.71%	68.29%	96.50%
	In-vehicle (>= - 85dBm)	Major Road	Mubarak Mandi Complex	98.31%	100.00%	99.16%	92.61%	93.95%	100.00%	51.40%	100.00%	86.22%	99.70%	89.99%	99.89%
		Highway	Sunny Square Kunjwani	99.54%	100.00%	99.62%	100.00%	94.06%	100.00%	85.96%	100.00%	80.42%	99.50%	89.77%	99.96%
		Within City	State Time Office complex	97.56%	100.00%	98.21%	100.00%	92.81%	100.00%	56.72%	100.00%	87.75%	100.00%	90.74%	100.00%
		Overall SSA		98.58%	100.00%	99.08%	96.51%	93.71%	100.00%	68.06%	100.00%	84.19%	99.72%	90.11%	99.95%
	Outdoor- in city (>= - 95dBm)	Major Road	Mubarak Mandi Complex	100.00%	100.00%	100.00%	100.00%	99.53%	100.00%	100.00%	100.00%	98.94%	100.00%	98.09%	100.00%
		Highway	Sunny Square Kunjwani	100.00%	100.00%	99.97%	100.00%	99.88%	100.00%	100.00%	100.00%	98.53%	100.00%	98.91%	100.00%
		Within City	State Time Office complex	100.00%	100.00%	100.00%	100.00%	99.45%	100.00%	100.00%	100.00%	98.27%	100.00%	98.42%	100.00%
		Overall SSA		100.00%	100.00%	99.99%	100.00%	99.69%	100.00%	100.00%	100.00%	98.59%	100.00%	98.55%	100.00%

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014- JAMMU & KASHMIR CIRCLE



S/N	Parameter	Classification of route covered	Indoor location	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE		
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	
6	Call Setup Success Rate (>=95%)	Major Road	Mubarak Mandi Complex	100.00%	100.00%	100.00%	100.00%	93.40%	100.00%	98.68%	100.00%	100.00%	100.00%	98.98%	100.00%	
		Highway	Sunny Square Kunjwani	100.00%	100.00%	99.63%	100.00%	95.71%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
		Within City	State Time Office complex	100.00%	100.00%	100.00%	100.00%	95.69%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.07%	100.00%
		Overall SSA		100.00%	100.00%	99.76%	100.00%	95.14%	100.00%	99.72%	100.00%	100.00%	100.00%	100.00%	99.46%	100.00%
7	Hand Over Success Rate (HOSR)	Major Road	Mubarak Mandi Complex	99.00%	100.00%	100.00%	100.00%	97.99%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
		Highway	Sunny Square Kunjwani	99.56%	100.00%	100.00%	100.00%	97.03%	100.00%	99.33%	100.00%	100.00%	100.00%	100.00%	100.00%	
		Within City	State Time Office complex	100.00%	100.00%	100.00%	100.00%	98.58%	100.00%	100.00%	100.00%	98.00%	100.00%	100.00%	100.00%	
		Overall SSA		99.55%	100.00%	100.00%	100.00%	97.69%	100.00%	99.69%	100.00%	99.53%	100.00%	100.00%	100.00%	

7.3 OPERATOR ASSISTED DRIVE TEST: LEH SSA (JUNE-14)

DRIVE TEST TABLE – 3

S/N	Parameter	Classification of route covered	Indoor location	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE	
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
1	Call Attempts	Major Road	Hotel Zaika	30	30	34	30	62	30	NS	NS	38	30	NS	NS
		Highway	Hotel Lonchey Residency	35	30	69	30	59	30	NS	NS	29	30	NS	NS
		Within City	Hotel Zal	29	NS	38	30	58	30	NS	NS	35	NS	NS	NS
		Overall SSA		94	60	141	90	179	90	NS	NS	102	60	NS	NS
2	Blocked Call Rate	Major Road	Hotel Zaika	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NS	NS	0.00%	0.00%	NS	NS
		Highway	Hotel Lonchey Residency	0.00%	0.00%	0.00%	0.00%	3.39%	0.00%	NS	NS	3.45%	0.00%	NS	NS
		Within City	Hotel Zal	0.00%	NS	0.00%	0.00%	1.72%	3.33%	NS	NS	0.00%	NS	NS	NS
		Overall SSA		0.00%	0.00%	0.00%	0.00%	1.68%	1.11%	NS	NS	0.98%	0.00%	NS	NS
3	Dropped Call Rate (<=2%)	Major Road	Hotel Zaika	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NS	NS	0.00%	0.00%	NS	NS
		Highway	Hotel Lonchey Residency	0.00%	0.00%	0.00%	0.00%	1.79%	0.00%	NS	NS	0.00%	0.00%	NS	NS
		Within City	Hotel Zal	0.00%	NS	0.00%	0.00%	0.00%	3.45%	NS	NS	0.00%	NS	NS	NS
		Overall SSA		0.00%	0.00%	0.00%	0.00%	0.57%	1.12%	NS	NS	0.00%	0.00%	NS	NS
4	Percentage connections with good voice quality (=>95%)														
	(a) 0-4 (w/o frequency hopping for CDMA)	Major Road	Hotel Zaika	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Highway	Hotel Lonchey Residency	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014- JAMMU & KASHMIR CIRCLE



S/N	Parameter	Classification of route covered	Indoor location	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE		
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	
	Operators)	Within City	Hotel Zal	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		Overall SSA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	Hotel Zaika	97.44%	96.13%	97.33%	97.65%	93.96%	97.04%	NS	NS	95.85%	96.13%	NS	NS
			Highway	Hotel Lonchey Residency	97.28%	99.41%	95.93%	97.52%	93.18%	99.18%	NS	NS	95.99%	99.48%	NS	NS
			Within City	Hotel Zal	97.34%	NS	96.14%	97.56%	93.89%	94.47%	NS	NS	95.58%	NS	NS	NS
			Overall SSA		97.35%	97.89%	96.43%	97.57%	93.70%	96.97%	NS	NS	95.81%	97.71%	NS	NS
	Service Coverage															
	5	In door (>= - 75dBm)	Major Road	Hotel Zaika	91.80%	98.50%	56.30%	88.26%	88.13%	97.20%	NS	NS	57.84%	90.88%	NS	NS
Highway			Hotel Lonchey Residency	92.57%	99.70%	60.23%	73.99%	71.38%	99.94%	NS	NS	55.07%	91.73%	NS	NS	
Within City			Hotel Zal	85.89%	NS	60.73%	80.70%	89.91%	99.73%	NS	NS	56.88%	NS	NS	NS	
Overall SSA				90.60%	99.14%	58.90%	81.68%	83.64%	98.98%	NS	NS	56.66%	91.28%	NS	NS	
In-vehicle (>= - 85dBm)		Major Road	Hotel Zaika	97.33%	100.00%	91.36%	97.62%	98.79%	99.69%	NS	NS	86.59%	100.00%	NS	NS	
		Highway	Hotel Lonchey Residency	98.89%	100.00%	91.41%	88.88%	95.08%	100.00%	NS	NS	85.51%	100.00%	NS	NS	
		Within City	Hotel Zal	97.11%	100.00%	94.40%	97.50%	99.19%	99.91%	NS	NS	86.68%	NS	NS	NS	
		Overall SSA		97.94%	100.00%	92.05%	95.35%	97.80%	99.87%	NS	NS	86.29%	100.00%	NS	NS	
Outdoor- in city (>= - 95dBm)		Major Road	Hotel Zaika	100.00%	100.00%	100.00%	100.00%	99.99%	100.00%	NS	NS	98.63%	100.00%	NS	NS	
		Highway	Hotel Lonchey Residency	100.00%	100.00%	98.84%	100.00%	99.87%	100.00%	NS	NS	98.22%	100.00%	NS	NS	
		Within City	Hotel Zal	100.00%	NS	100.00%	100.00%	100.00%	100.00%	NS	NS	98.05%	NS	NS	NS	

AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2014- JAMMU & KASHMIR CIRCLE



S/N	Parameter	Classification of route covered	Indoor location	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE	
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
		Overall SSA		100.00%	100.00%	99.52%	100.00%	99.96%	100.00%	NS	NS	98.30%	100.00%	NS	NS
6	Call Setup Success Rate (>=95%)	Major Road	Hotel Zaika	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NS	NS	100.00%	100.00%	NS	NS
		Highway	Hotel Lonchey Residency	100.00%	100.00%	100.00%	100.00%	94.92%	100.00%	NS	NS	96.55%	100.00%	NS	NS
		Within City	Hotel Zal	100.00%	NS	100.00%	100.00%	98.28%	96.67%	NS	NS	100.00%	NS	NS	NS
		Overall SSA		100.00%	100.00%	100.00%	100.00%	97.77%	98.89%	NS	NS	99.02%	100.00%	NS	NS
7	Hand Over Success Rate (HOSR)	Major Road	Hotel Zaika	100.00%	100.00%	100.00%	100.00%	99.24%	99.03%	NS	NS	100.00%	100.00%	NS	NS
		Highway	Hotel Lonchey Residency	100.00%	100.00%	98.73%	100.00%	98.84%	100.00%	NS	NS	100.00%	100.00%	NS	NS
		Within City	Hotel Zal	100.00%	NS	100.00%	100.00%	97.81%	96.30%	NS	NS	100.00%	NS	NS	NS
		Overall SSA		100.00%	100.00%	99.46%	100.00%	98.59%	98.47%	NS	NS	100.00%	100.00%	NS	NS

7.4 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

DRIVE TEST ROUTE OF APRIL TO JUNE - 14 – J&K CIRCLE							
Name of SSA	Drive test Period	Day 1		Day 2		Day 3	
		Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered
SRINAGAR	Apr-14	ANANTNAG, PAHALGAM /100KM	GPO, LAL CHOWK, PANTHA CHOWK, ANANTNAG, PAHALGAM, KHANBAL, SEER, PAMPORE, AWANTIPORA, BIJBEHERA, MATTAN	BARMULLA, TANGMARG / 109KM	SHALTENG, LAWAYPORA, NARBAL, MAGAM, KUNZUR, TANGMARG, GULMARG, BARAMULLA, SANGARAM, PALHALAN PATTAN, MIRGUND	SRINAGAR ,PULWAMA / 103KM	RAJBAGH, REGAL CHOWK, BAKSHI STADIUM, AMIRA KADAL, JAWAHNAGAR, RAMBAGH, SANAT NAGAR, PULWAMA ,HYDERPORA, BATMALO, BEMINA UNIVERSITY, BULAND
JAMMU	May-14	SAMBA, BARIBRAHMNA / 122KM	(1) MAJOR ROAD :PANJTHIRTI, BIKRAM CHOWK, KACHI CHOWNI SATWARI (2) HIGHWAY: SATWARI, BARIHMNA, SAMBA (3) WITH IN CITY : NUD , MANSAR, SAMBA ESTATE	NAGROTA, SIDDHRA, KATHUA/ 135KM	(1) MAJOR ROAD: SIDDHRA BYPASS, NAGROTA FLYOVERB (2) HIGHWAY: JAGTI QUTERS, NAGROTA MARKET, BATRA HOSPITAL, KUNJWANI, SAMBA CITY KATHUA HEER NAGAR ,KALI BARI (3) WITH IN CITY : KATHUA CITY	JAMMU, AKHNOOR /135KM	(1) MAJOR ROAD :AMBPHALLA, KACHICHOWNI, JEWEL ,CANAL ROAD ,BAKSHINAGAR ,MUTHI, NAGBANI, MISHIWALA, KANACHAK (2) WITH IN CITY: AKNOOR CITY (3) HIGHWAY: AKHNOOR ,KOTBALWAL, GANHINAGAR, TRIKUTA NAGAR
LEH	June-14	KARGIL/60KM	1) MAJOR ROAD--> KURBATHAN, CHUTUK, MINGEL, BAROO 2) HIGHWAY--> TOMAIL COLONY, BAGHI KHOMANI, BALTI BAZAR LANKOUR, PASHKUNA 3) WITH IN CITY--> KARGIL CITY	LEH/60KM	1) MAJOR ROAD--> CHANGAPA ROAD ,FORD ROAD, SARKARA ROAD 2) HIGHWAY --> SAKLZANGLING ,TUKCHA, SKAMPARI GOMPA 3) WITH IN CITY--> MAIN MARKET LEH	LEH/70KM	1) MAJOR ROAD--> SPITUK PALM ROAD 2) HIGHWAY --> STOK ROAD, CHOGLAMSAR CHUCHAT 3) WITHIN CITY--> STAKMO, KHARU.

7.5 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF SRINAGAR SSA - APRIL-14

S. No	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Anantnag & Pahalgam	Poor Level at Pahalgaoon Town outer, Poor quality near Awantipora	Barmulla & Tangmarg	Poor Level & Quality near Gulmarg	Srinagar & Pulwama	Poor Quality near Hyderpora Chowk
2	AIRTEL		Poor Quality near Awantipora		Poor Quality near Magam Town		Poor Quality near Qamarwari Chowk, Pantha Chowk, Jahagir Chowk
3	BSNL		---		---		---
4	IDEA		No coverage at Rajdar, Laddi, Seer, Poor Level & Quality near Awantipora, Seer outer		No coverage between Tanmarg to Gulmarg, Mirgund, Poor Level & Quality near Magam Town, Narbal Chowk, Pattan, Sangrama Chowk		No coverage at Ratnipora, Poor Level & Quality near Pantha Chowk, Qamarwari
5	RCOM GSM		Poor Level & Quality near Awantipora, Khanbal Chowk		Poor Level near Sangrama Chowk, Pattan		Poor Level & Quality near Galander, Pantha Chowk, Hyderpora Chowk, Qamarwari Chowk
6	VODAFONE		Poor Level near Awantipora, Khanbal Chowk, Pahalgaoon Town		Poor Level & Quality near Sangrama Chwok, Poor Level near Narbal Chowk, Pattan		Poor Level near Pantha Chowk

DRIVE TEST TABLE: 6
DRIVE TEST OBSERVATION OF JAMMU SSA - MAY-14

S. No	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Samba, Baribrahmna	Poor Level near Gangyal ,Bari Bhamna, Vijaypur, Poor Quality near Gangyal	Nagrota, Siddhra, Kathua	Poor Level near Kachi Chhawani, Nagrota	Jammu, Akhnoor	Poor Level near Karannagar, Akhnoor, Jewel and Poor Quality near Paloura
2	AIRTEL		Poor Quality near Baribrahamna, Vijay nagar, Samba Industrial Area		Poor Level near Sidra Bypass, Poor Quality near Nagrota		Poor Quality near Akhnoor Outer, Canal RD, Gandhi Nagar
3	BSNL		Poor Level & Quality near Baribrahamna, Vijay nagar, Samba Industrial Area		Poor Level & Quality near Chandal, Sidra Bypass		Poor Quality near Akhnoor Outer, Canal RD, Gandhi Nagar
4	IDEA		Poor Quality near Vikram Chowk, Satwari		Poor Quality & Level near Nagrota, Sidra RD, Kathua Outer		Poor Level & Quality at Akhnoor Outer
5	RCOM GSM		Poor Level near Mansar, Baribrahamna		Poor Level near Sidra Bypass, Poor Quality near Nagrota, Amry Area		Poor Level at Akhnoor Outer
6	VODAFONE		Poor coverage near Mansar		Poor Level near Sidra Bypass, Poor Quality near Nagrota, Amry Area		Poor Level at Akhnoor Outer

DRIVE TEST TABLE: 7
DRIVE TEST OBSERVATION OF LEH SSA - JUNE-14

S. No	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Kargil	No Coverage	Leh	Poor Level & Quality near Gompa, Poor Quality near Sarkara, Army Node	Leh	Poor Level & Quality near Phyang, Spituk, Airport RD
2	AIRTEL		Poor Quality & Level near Baroo to NHPC Kargil, Poor Level between NHPC to Grantug RD		Poor Quality patches near Gompa, Poor Quality near Sarkara, Army Node		Poor Level near Stakmo, Kharu
3	BSNL		Poor Quality KURBATHAN, chutuk, mingel, Baroo, Tomail colony, baghi khomai, Balti bazar, lankour		----		Poor Level near Stakmo, Kharu
4	IDEA		No Coverage		No Coverage		No Coverage
5	RCOM GSM		No Coverage		Poor level & Quality near Sarkara to Airport RD		Poor Level & Quality near Phyang, Spituk, Palm RD
6	VODAFONE		No Coverage		No Coverage		No Coverage

7.6 KEY FINDINGS ON DRIVE TEST:

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

- (i) **In the Month of April -14**, drive tests were conducted across **Srinagar SSA** covering Anantnag, Pahalgaoon, Baramulla, Tangmarg, Srinagar and Pulwama SDCAs. The performance of all service providers was found satisfactory as they were largely meeting all the benchmarks, except **BSNL** could not meet the benchmark of **'Voice quality'** with its performance as **84.59%(outdoor) / 93.66% (Indoor)** on SSA basis. **BSNL** also could not do well for parameter **Call drop rate (2.56%)** in the drive test conducted on day 1 across Anantnag/Pahalgaoon SDCAs, though it was within norms on SSA level.
- (ii) **In the Month of May-14**, drive tests were conducted across **Jammu SSA** covering Samba, Baribrahmana, Nagrota, Siddhara, Kathua, Jammu and SDCAs. In this SSA also, the performance of all service providers was satisfactory as they were mostly meeting QoS norms, except **BSNL** remained non-compliant for parameters **Call Drop rate (3.16%), Voice Quality (90.37%)** and **Blocked call rate (3.47%)**.
- (iii) **In the month of June -14**, drive tests were conducted across **Leh SSA** covering Kargil and Leh SDCAs. In Leh SSA also, the performance of all service providers was in compliance of the QoS norms. Only **BSNL** could not meet the benchmark of **'Voice Quality'** with its achieved value on SSA level as **93.70%**.

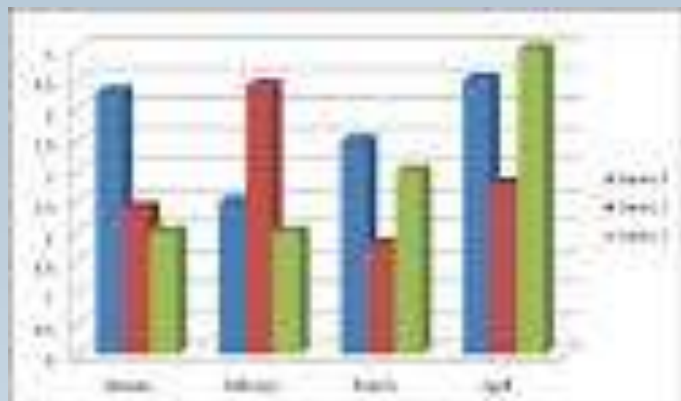
*Thus the results of drive tests indicate that most of the operators have performed fairly well within the benchmarks in all the three SSAs where drive tests were conducted during the quarter. Only BSNL remained under performed in respect of the parameters **Voice Quality** and **Call Drop rate** in these SSAs. Further, the deficiencies with respect to adequate coverage and voice quality, encountered by different Service providers at the various places as shown in the drive tests plots, are detailed in the above tables- 5, 6 & 7 for respective SSAs.*

8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

AVERAGED QUARTERLY PMR

V/S

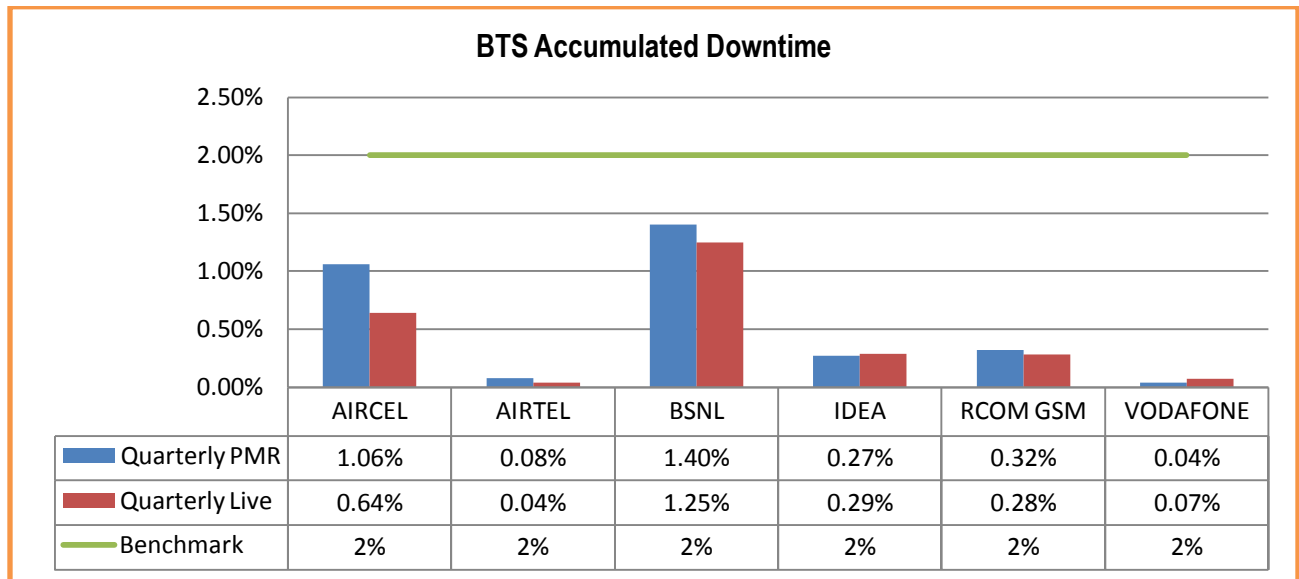
AVERAGED QUARTERLY 3-DAYs LIVE MEASURMENT



8. GRAPHICAL REPRESENTATION:

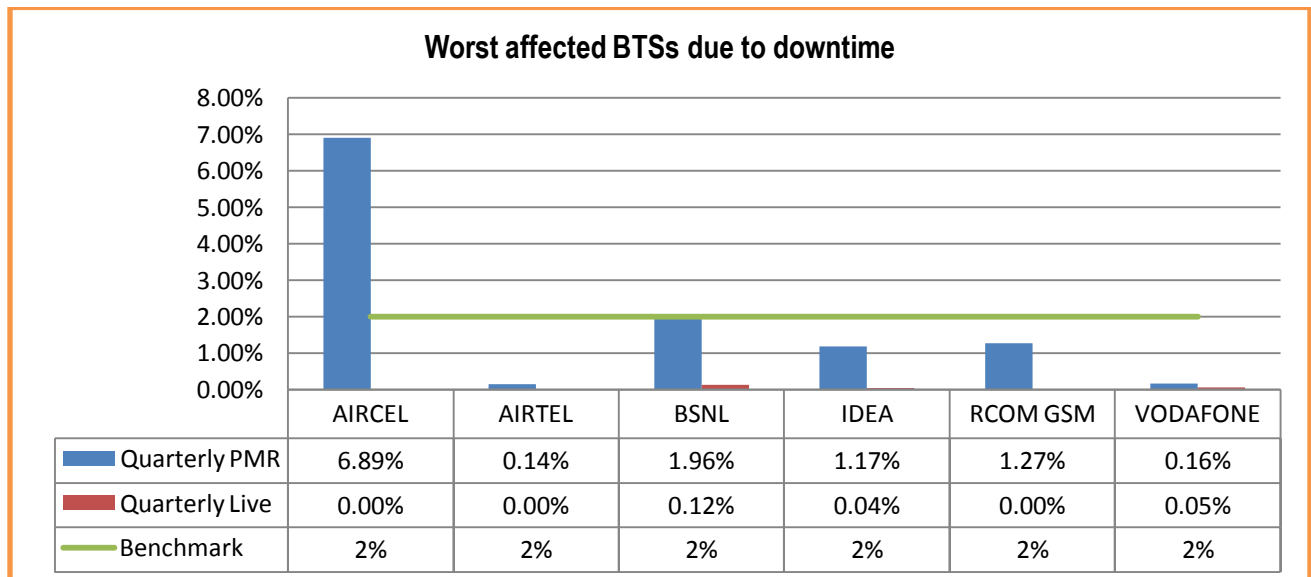
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

1) BTS ACCUMULATED DOWNTIME :



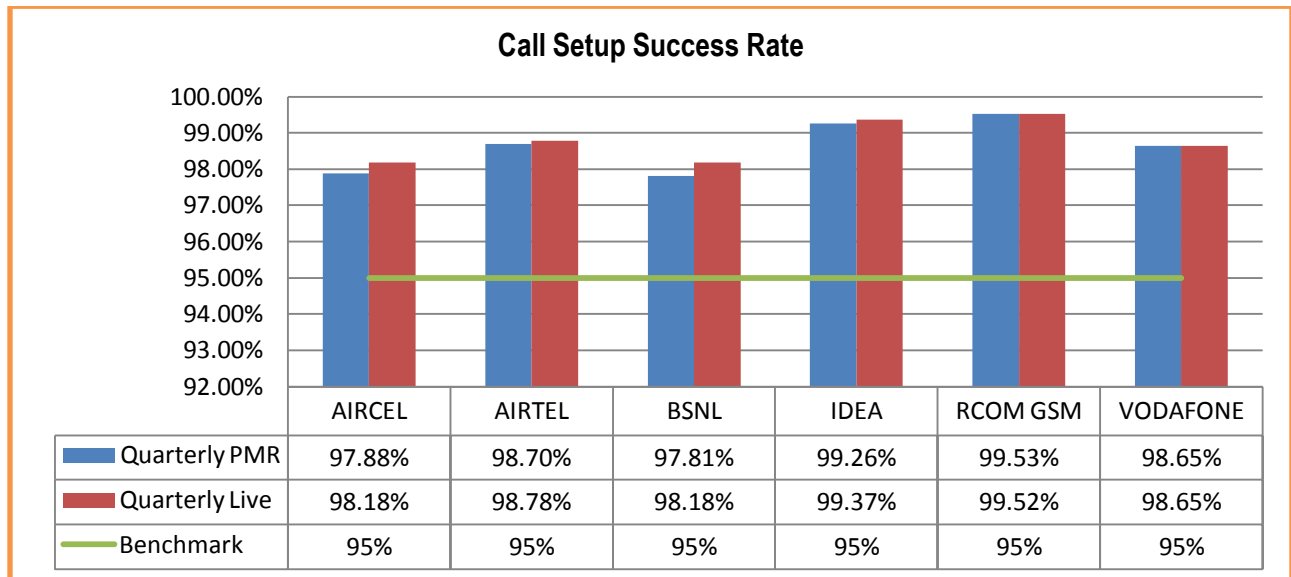
All operators are meeting the benchmarks.

2) WORST AFFECTED BTSS DUE TO DOWNTIME :



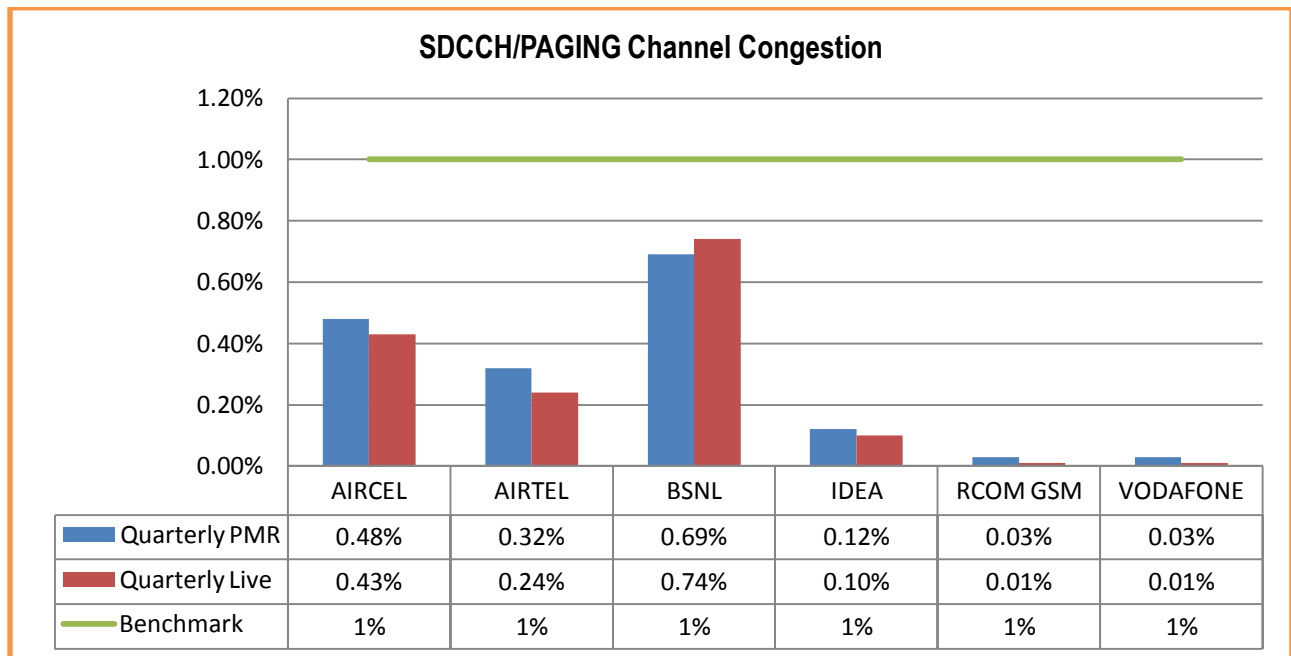
All operators are meeting the benchmarks except Aircel.

3) CALL SETUP SUCCESS RATE :



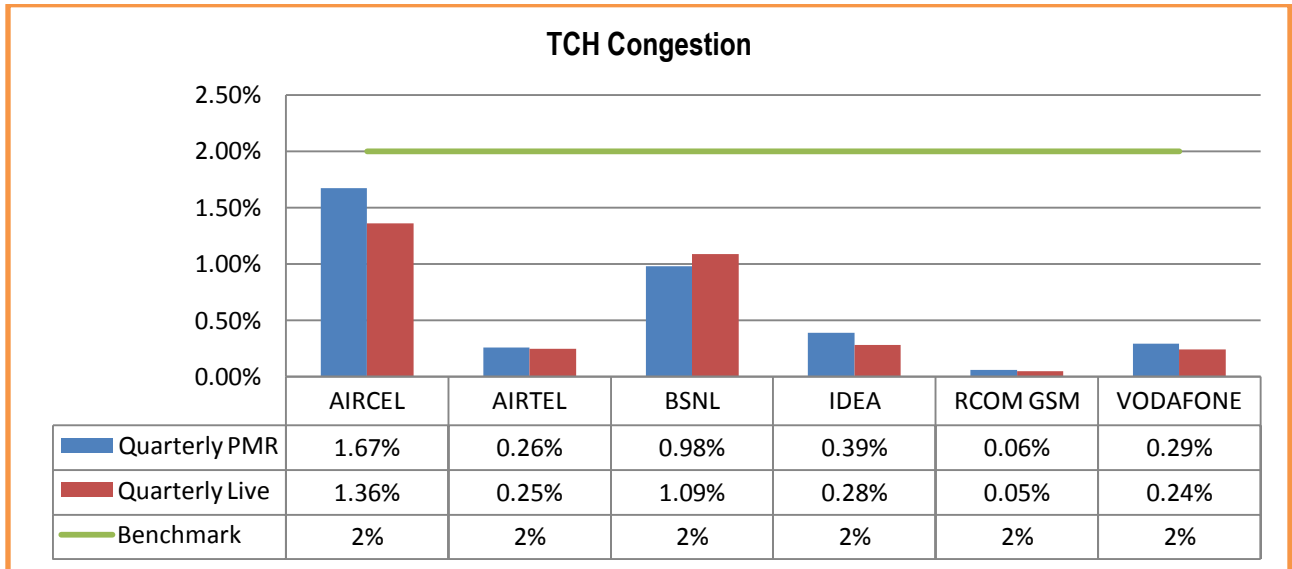
All operators are meeting the benchmarks.

4) SDCCH/PAGING CHANNEL CONGESTION :



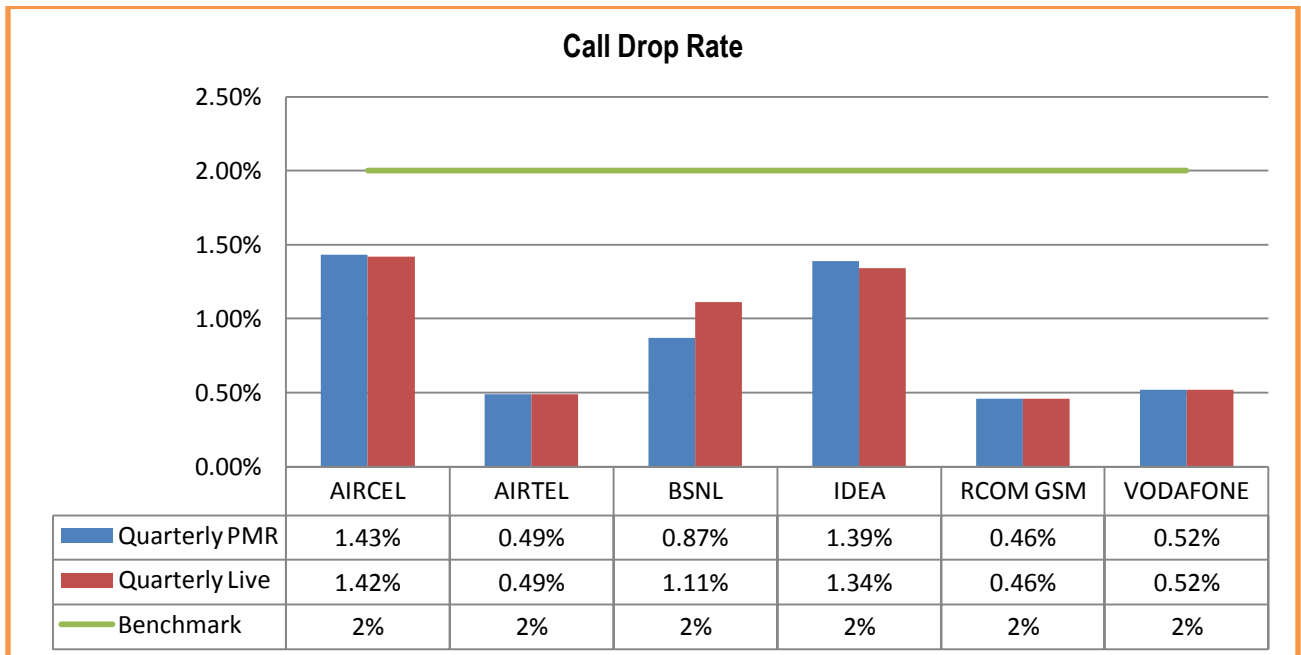
All operators are meeting the benchmarks.

5) TCH CONGESTION :



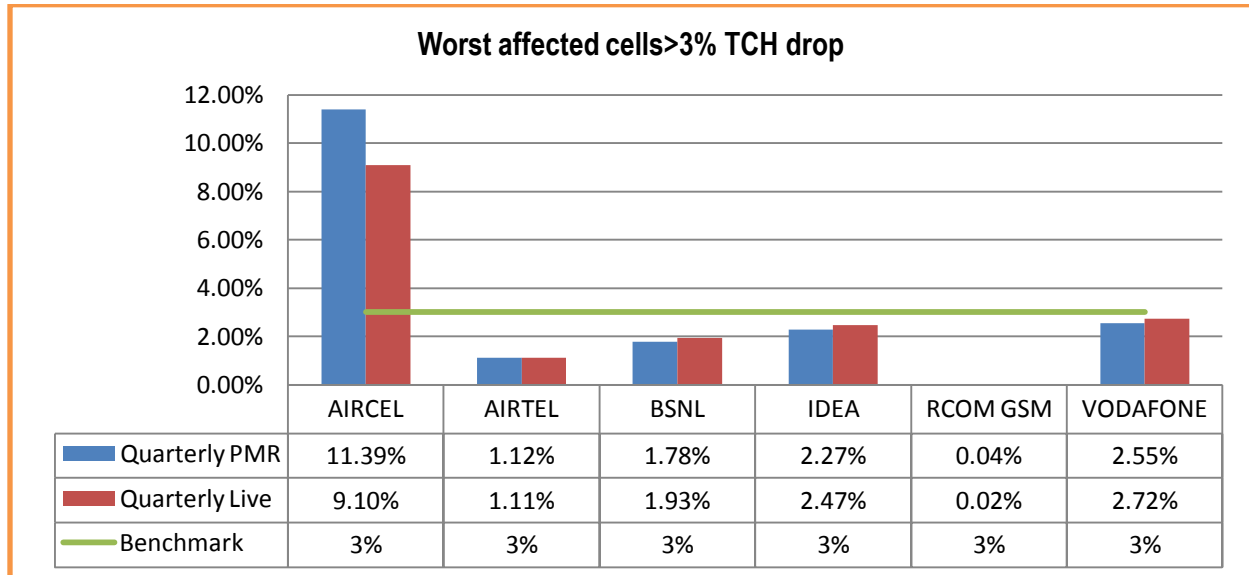
All operators are meeting the benchmarks.

6) CALL DROP RATE :



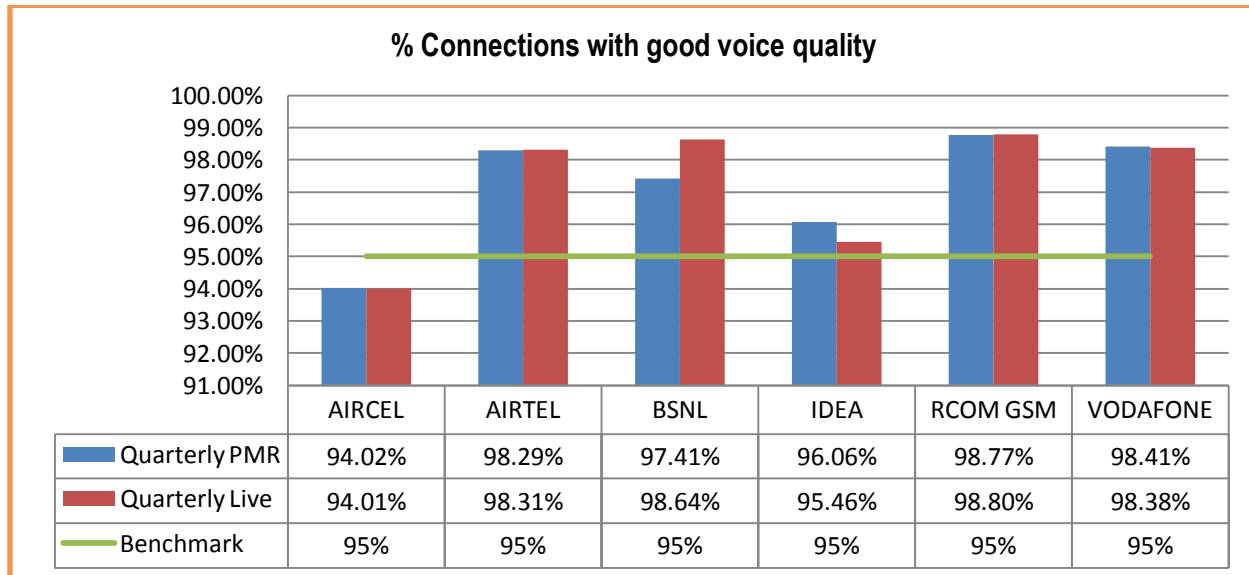
All operators are meeting the benchmarks.

7) WORST AFFECTED CELLS>3% TCH DROP :



All operators are meeting the benchmarks except Aircel.

8) PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY :



All operators are meeting the benchmarks except Aircel.