Audit & Assessment of Quality of Service

Of

Cellular Mobile Telephone Service

Basic Telephone (Wire line) Service

&

Broadband Service

For

Telecom Regulatory Authority of India

North Zone – Jammu & Kashmir Service Area

(January 2015 – March 2015)

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 6thOctober, 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 (wire line) 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 Himanchal Pradesh, J&K and Maharashtra & Goa circles during the quarter January 2015 – March 2015.**

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
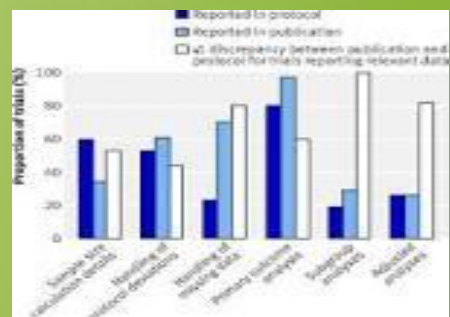
3. SAMPLE SIZE

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
GSM Operators		**January-15**	**February-15**	**March-15**	
1	**AIRCEL**	10, 12 & 13 Jan-15	5 to 7 Feb-15	11 to 13 Mar-15	Dishnet Wireless Limited , 2nd floor North Block Bahu Plaza Jammu
2	**AIRTEL**	13 to 15 Jan-15	9 to 11 Feb-15	16 to 18 Mar-15	Bharti Airtel Campus, Plot No 21, Rajiv Gandhi Information and Technilogy Park, Chandigarh, 160101
3	**BSNL**	5 to 7 Jan-15	4 to 6 Feb-15	4, 5 & 7 Mar-15	BSNL 4th floor, Rail Head Complex Jammu
4	**IDEA**	15, 16 & 19 Jan-15	5, 6 & 9 Feb-15	16 to 18 Mar-15	Idea Office Phase -7 Industrial Area,Mohali
5	**RCOM GSM**	ND	16 to 18 Feb-15	19 to 21 Mar-15	Reliance Communication Limited Narwal KC Business Park Jammu
6	**VODAFONE**	8 to 10 Jan-15	9 to 11 Feb-15	6, 7 & 9 Mar-15	Vodafone Spacetel Ltd. 4th floor (B) , North Block Bahu Plaza Complex Jammu-180004

NB: The audit of TTSL was not done as TTSL is not providing its services of Cellular Mobile / Basic Wireline / Broadband services in J&K service area as informed by its regulatory unit.

For all the above operators, audit was conducted in all the three months of the Quarter ended March 2015 except RCOM (GSM). RCOM (GSM) was not available for QoS audit in the month of January 2015 saying that their network damaged due to heavy floods was still under renovation.

The data generated by monthly PMR and 3-days live measurements audit for the period January 2015 to March 2015 has been successfully uploaded to the server located at TRAI premises.

3.2 SAMPLING FOR BASIC (WIRELINE) SERVICES

- The QoS audit for basic (wireline) service was to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles. **In J&K Circle, only BSNL is providing Basic (Wireline)** service and the same has been audited for its quality of service assessment.

Sl. No.	Name of Basic (Wireline) Service Provider
1	BSNL

3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS

- TUV–SUD South Asia was to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who were having broadband subscriber base of more than 10,000 subscribers in their licensed service area. **In J&K Circle, BSNL, Broadband Pacenet and RCL are providing Broadband** service and the same have been audited for their quality of service assessment.

Sl. No.	Name of Broadband Service Provider
1	BSNL
2	BROADBAND PACENET INDIA PVT. LTD
3	RELIANCE COMMUNICATION LIMITED (RCL)

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:**

(1) Cellular Mobile

(i) From monthly PMR audit it has been concluded that the performance of **Aircel** in J&K service area was not satisfactory as they could not comply with the benchmarks of **Network Parameters. Aircel** failed to meet the benchmark of the parameters '**Worst affected BTSs due to downtime', SDCCH Congestion, TCH Congestion and Worst affected Cells> 3% TCH drops** with its average performance of **8.94%, 1.21%, 4.45% and 10.60%** respectively**.**

(ii) From live assessment, it was revealed that **only Aircel** failed to meet the benchmark of network parameters namely **CSSR, TCH congestion and Worst Affected Cells > 3% TCH Drops,** with its performance as **93.85%, 5.56% and 10.46%** respectively.

(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. However, **Airtel, BSNL and RCOM GSM** have failed to meet the benchmark of **'calls answered by Operators (voice to voice)' within 90 seconds** with their performance as **89.44%, 68.17% and 81.00%** respectively**. The performance of BSNL was way below the benchmark of > 95%.**

The results for three days live measurements revealed that all operators have met the benchmarks for the parameters 'Accessibility to call center' except **Airtel (90.37%).** In case of the parameter **'Call answered by operators (Voice to voice)** also the operators namely **Airtel, BSNL and RCOM GSM** could not meet the benchmark with their performance as **61.38%, 41.22% and 93.92% respectively.** In live testing also the performance **Airtel and BSNL** remained way below the benchmark**.**

(iv)The results of **Drive Tests** revealed that most of the operators have performed fairly well within the benchmarks in the SSAs where drive tests were conducted during the quarter. **Only BSNL** remained under performed in respect of the parameters **Voice Quality** in Jammu SSA**.**

(2) Basic (Wireline) service:

From the audit of Basic Service providers, it was concluded that the performance of **BSNL** was not satisfactory in respect of the parameters **Fault Repairs/Restoration** and **Response time to customer for assistance**. Hence, BSNL need to improve their services in respect of these parameters.

(3) Broadband service:

The audit of Broadband Service providers revealed that the performance of all Broadband service providers was found well within the benchmarks.

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	March -15	21:00 - 22:00
2	AIRTEL	March -15	19:00 - 20:00
3	BSNL	March -15	19:00 - 20:00
4	IDEA	March -15	22:00 -23:00
5	RCOM GSM	March -15	22:00 -23:00
6	VODAFONE	March -15	22:00 -23:00

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	2121	Ericsson	Ericsson
2	AIRTEL	12	33	2801	Ericsson	Ericsson
3	BSNL	8	21	1198	Ericsson	Ericsson, NSN & ZTE
4	IDEA	2	6	940	Ericsson	Ericsson
5	RCOM GSM	1	3	825	Huawei	Huawei
6	VODAFONE	3	16	1515	NSN	NSN

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – JANUARY- 15 MONTH:

	CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE- JANUARY 15 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%	Jan-15	1.40%	0.12%	1.40%	0.65%	ND	0.19%
	b) Worst affected BTSs due to downtime	<=2%	Jan-15	9.35%	0.04%	1.85%	1.97%	ND	1.19%
	Connection Establishment (Accessibility)								
2	a) CSSR (Call Setup Success Rate)	>=95%	Jan-15	94.12%	98.72%	96.90%	98.19%	ND	98.03%
	b) SDCCH/PAGING Channel congestion	<=1%	Jan-15	0.17%	0.27%	0.82%	0.08%	ND	0.03%
	c) TCH congestion	<=2%	Jan-15	5.39%	0.26%	1.54%	1.46%	ND	0.65%
	Connection maintenance (Retainability)								
3	a) CDR (Call Drop Rate)	<=2%	Jan-15	1.28%	0.45%	1.59%	1.60%	ND	0.77%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Jan-15	10.68%	1.01%	1.69%	2.64%	ND	2.92%
	c) Connections with good voice quality	>=95%	Jan-15	95.03%	98.22%	97.88%	97.91%	ND	98.42%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Jan-15	0	0	0	0	ND	0

ND: - Not Done: RCOM (GSM) was not available for QoS audit in the month of January 2015 saying that their network damaged due to heavy floods was still under renovation.

5.1.4 QOS PERFORMANCE OF MONTHLY PMR – FEBRUARY-15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE - FEBRUARY 15 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%	Feb-15	0.89%	0.12%	1.39%	0.51%	0.67%	0.29%
	b) Worst affected BTSs due to downtime	<=2%	Feb-15	5.34%	0.07%	1.77%	1.41%	1.47%	0.46%
	Connection Establishment (Accessibility)								
2	a) CSSR (Call Setup Success Rate)	>=95%	Feb-15	95.28%	98.66%	96.82%	98.69%	99.57%	97.95%
	b) SDCCH/PAGING Channel congestion	<=1%	Feb-15	0.24%	0.28%	0.62%	0.10%	0.00%	0.17%
	c) TCH congestion	<=2%	Feb-15	4.15%	0.29%	1.57%	0.99%	0.04%	0.75%
	Connection maintenance (Retainability)								
3	a) CDR (Call Drop Rate)	<=2%	Feb-15	1.24%	0.50%	1.62%	1.46%	0.41%	0.82%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Feb-15	10.54%	1.24%	2.29%	2.50%	0.11%	2.87%
	c) Connections with good voice quality	>=95%	Feb-15	95.03%	98.21%	98.27%	97.75%	98.83%	98.20%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Feb-15	0	0	0	0	0	0

5.1.5 QOS PERFORMANCE OF MONTHLY PMR – MARCH-15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE - MARCH 15 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%	Mar-15	1.63%	0.11%	1.27%	0.62%	0.78%	0.40%
	b) Worst affected BTSs due to downtime	<=2%	Mar-15	**12.14%**	0.04%	1.84%	1.91%	1.33%	**2.97%**
	Connection Establishment (Accessibility)								
2	a) CSSR (Call Setup Success Rate)	>=95%	Mar-15	95.71%	98.32%	97.18%	98.04%	99.55%	97.47%
	b) SDCCH/PAGING Channel congestion	<=1%	Mar-15	**3.22%**	0.43%	0.84%	0.28%	0.01%	0.05%
	c) TCH congestion	<=2%	Mar-15	**3.82%**	0.44%	1.65%	1.54%	0.05%	1.06%
	Connection maintenance (Retainability)								
3	a) CDR (Call Drop Rate)	<=2%	Mar-15	1.44%	0.46%	1.70%	1.69%	0.43%	0.91%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Mar-15	**10.58%**	1.22%	2.35%	2.44%	0.07%	2.88%
	c) Connections with good voice quality	>=95%	Mar-15	95.41%	98.21%	97.46%	97.61%	98.79%	98.11%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Mar-15	0	0	0	0	0	0

5.1.6 QOS PERFORMANCE OF QUARTERLY PMR – (AVERAGE OF JAN-FEB-MAR- 2015 MONTHS AUDITED DATA)

	QUARTERLY QOS PERFORMANCE (AVERAGE OF THREE MONTHS DATA) 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	1.31%	0.12%	1.35%	0.59%	0.73%	0.29%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	8.94%	0.05%	1.82%	1.76%	1.40%	1.54%
	Connection Establishment (Accessibility)								
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	95.04%	98.57%	96.97%	98.31%	99.56%	97.82%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	1.21%	0.33%	0.76%	0.15%	0.01%	0.08%
	c) TCH congestion	<=2%	Quarterly	4.45%	0.33%	1.59%	1.33%	0.05%	0.82%
	Connection maintenance (Retainability)								
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	1.32%	0.47%	1.64%	1.58%	0.42%	0.83%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	10.60%	1.16%	2.11%	2.53%	0.09%	2.89%
	c) Connections with good voice quality	>=95%	Quarterly	95.16%	98.21%	97.87%	97.76%	98.81%	98.24%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Quarterly	0	0	0	0	0	0

NB: For RCOM GSM, Calculation is based on average of two months data i.e. February & March 2015.

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.**
For RCOM GSM, Calculation is based on average of two months data i.e. February & March 2015 as they did not provide the data for audit.

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**' with its average performance of **8.94%.**

- **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 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 pegging channel in CDMA system.

With respect to this parameter, **the performance of the operators is quite satisfactory as all operators (Except Aircel) met the TRAI specified benchmarks on the congestion parameters. Aircel** failed to meet the benchmark of **SDCCH Congestion and 'TCH Congestion'** with its average performance as **1.21%** and **4.45%** respectively**.**

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**.

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.

Only Aircel failed to meet the benchmark of the parameter '**Worst affected cells having more than 3% TCH drops**' with its average performance of **10.60 %.**

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 for this parameter**.

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 MEASURMENT DATA (3-DAYS) – JANUARY- 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE – JANUARY 15 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	1.46%	0.11%	1.72%	0.46%	ND	0.13%	
	b) Worst affected BTSs due to downtime	**<=2%**	Live data	0.00%	0.00%	0.25%	0.11%	ND	0.00%	
	Connection Establishment (Accessibility)									
2	a) CSSR (Call Setup Success Rate)	**>=95%**	Live data	89.86%	98.49%	99.27%	98.13%	ND	98.36%	
	b) SDCCH/PAGING Channel congestion	**<=1%**	Live data	0.34%	0.49%	0.80%	0.10%	ND	0.03%	
	c) TCH congestion	**<=2%**	Live data	9.60%	0.30%	0.57%	1.48%	ND	0.45%	
	Connection maintenance (Retainability)									
3	a) CDR (Call Drop Rate)	**<=2%**	Live data	1.29%	0.44%	0.57%	1.37%	ND	0.78%	
	b) Worst affected cells>3% TCH drop (Call drop) rate	**<=3%**	Live data	10.68%	0.92%	1.65%	2.90%	ND	2.83%	
	c) Connections with good voice quality	**>=95%**	Live data	95.13%	98.22%	97.70%	97.89%	ND	98.43%	
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	ND	0	

5.2.2 LIVE MEASURMENT DATA (3-DAYS) – FEBRUARY-15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE - FEBRUARY 15 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								
1	**Network Availability**								
	a) BTS Accumulated Downtime	**<=2%**	Live data	0.85%	0.05%	1.55%	0.55%	0.41%	0.19%
	b) Worst affected BTSs due to downtime	**<=2%**	Live data	0.00%	0.00%	0.25%	0.22%	0.00%	0.07%
2	**Connection Establishment (Accessibility)**								
	a) CSSR (Call Setup Success Rate)	**>=95%**	Live data	95.45%	98.68%	96.51%	98.13%	99.61%	98.16%
	b) SDCCH/PAGING Channel congestion	**<=1%**	Live data	0.11%	0.27%	0.79%	0.02%	0.00%	0.00%
	c) TCH congestion	**<=2%**	Live data	**4.03%**	0.30%	1.46%	1.52%	0.03%	0.66%
3	**Connection maintenance (Retainability)**								
	a) CDR (Call Drop Rate)	**<=2%**	Live data	1.26%	0.47%	1.52%	1.48%	0.38%	0.78%
	b) Worst affected cells>3% TCH drop (Call drop) rate	**<=3%**	Live data	**10.24%**	1.14%	1.69%	2.30%	0.01%	2.83%
	c) Connections with good voice quality	**>=95%**	Live data	95.01%	98.21%	98.24%	97.90%	98.82%	98.21%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0

5.2.3 LIVE MEASURMENT DATA (3-DAYS) – MARCH-15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE - MARCH 15 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								
1	**Network Availability**								
	a) BTS Accumulated Downtime	**<=2%**	Live data	1.18%	0.26%	1.40%	1.46%	0.41%	0.70%
	b) Worst affected BTSs due to downtime	**<=2%**	Live data	0.90%	0.00%	0.17%	0.22%	0.00%	0.00%
2	**Connection Establishment (Accessibility)**								
	a) CSSR (Call Setup Success Rate)	**>=95%**	Live data	96.23%	98.75%	96.41%	97.80%	99.63%	97.97%
	b) SDCCH/PAGING Channel congestion	**<=1%**	Live data	0.13%	0.25%	0.56%	0.45%	0.01%	0.07%
	c) TCH congestion	**<=2%**	Live data	**3.34%**	0.29%	1.50%	1.46%	0.03%	0.77%
3	**Connection maintenance (Retainability)**								
	a) CDR (Call Drop Rate)	**<=2%**	Live data	1.35%	0.43%	1.56%	1.57%	0.38%	0.86%
	b) Worst affected cells>3% TCH drop (Call drop) rate	**<=3%**	Live data	**10.47%**	1.18%	2.11%	2.60%	0.03%	2.81%
	c) Connections with good voice quality	**>=95%**	Live data	95.39%	98.24%	98.20%	97.35%	98.82%	98.11%
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 JANUARY-FEBRUARY-MARCH 2015 MONTHS DATA)

QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT (AVERAGE OF THREE MONTHS) – J&K CIRCLE										
Live measurement Data		**Bench- mark**	**Average of 3 Days**	**AIRCEL**	**AIRTEL**	**BSNL**	**IDEA**	**RCOM GSM**	**VODAFONE**
S/N	**Name of Parameter**			**GSM Operators**					
1	**Network Service Quality Parameter**									
	Network Availability									
	a) BTS Accumulated Downtime	<=2%	Quarterly	1.16%	0.14%	1.56%	0.82%	0.41%	0.34%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.30%	0.00%	0.22%	0.18%	0.00%	0.02%
2	**Connection Establishment (Accessibility)**									
	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	**93.85%**	98.64%	97.40%	98.02%	99.62%	98.16%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.19%	0.34%	0.72%	0.19%	0.01%	0.03%
	c) TCH congestion	<=2%	Quarterly	**5.66%**	0.30%	1.18%	1.49%	0.03%	0.63%
3	**Connection maintenance (Retainability)**									
	a) CDR (Call Drop Rate)	<=2%	Quarterly	1.30%	0.45%	1.22%	1.47%	0.38%	0.81%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	**10.46%**	1.08%	1.82%	2.60%	0.02%	2.82%
	c) Connections with good voice quality	>=95%	Quarterly	95.18%	98.22%	98.05%	97.71%	98.82%	98.25%
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 live assessment, it was revealed that **only Aircel** failed to meet the benchmark of network parameters namely **CSSR, TCH congestion and Worst Affected Cells > 3% TCH Drops,** with its performance as **93.85%, 5.66% and 10.46%** respectively.

5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES:

TABLE: 1

S/N	Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
	Detailed Network Data Assessment of Cellular Mobile Telephone Services- J&K Circle - January 15 month								
						GSM Operators			
Network Service Quality Parameter									
	Network Availability								
1	a) Total no. of BTSs in the licensed service area		Jan-15	2108	2767	1187	912	ND	1511
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Jan-15	21900.01	2509.14	12397.00	4384.56	ND	2158.43
	c) BTS Accumulated Downtime	<=2%	Jan-15	1.40%	0.12%	1.40%	0.65%	ND	0.19%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Jan-15	197	1	22	18	ND	18
	e) Worst affected BTSs due to downtime	<=2%	Jan-15	**9.35%**	0.04%	1.85%	1.97%	ND	1.19%
2	**Connection Establishment (Accessibility)**								
	a) CSSR (Call Setup Success Rate)	>=95%	Jan-15	**94.12%**	98.72%	96.90%	98.19%	ND	98.03%
	b) SDCCH/PAGING Congestion	<=1%	Jan-15	0.17%	0.27%	0.82%	0.08%	ND	0.03%
	c) TCH congestion	<=2%	Jan-15	**5.39%**	0.26%	1.54%	1.46%	ND	0.65%
3	**Connection Maintenance (Retainability)**								
	a) Call Drop Rate (CDR)	<=2%	Jan-15	1.28%	0.45%	1.59%	1.60%	ND	0.77%
	b) Worst affected cells>3% TCH drop	<=3%	Jan-15	**10.68%**	1.01%	1.69%	2.64%	ND	2.92%
	c) % of connections with good voice quality	>=95%	Jan-15	95.03%	98.22%	97.88%	97.91%	ND	98.42%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Jan-15	672	82	60	72	ND	133
	e) Total no. of cells (Sector) in the licensed service area		Jan-15	6288	8113	3528	2719	ND	4548
4	**No. of POI's having >=0.5% POI congestion**								
	No. of POI's having >=0.5% POI congestion		Jan-15	0	0	0	0	ND	0
	Name of POI not meeting the benchmark		Jan-15	0	0	0	0	ND	0
5	**Network Data**								
	a) Equipped Capacity of Network in Erlang		Jan-15	116640	110010	72000	26288	ND	36725
	b) Total traffic in TCBH in erlang (Avg.)		Jan-15	75135	86175	21557	14108	ND	28010
	c) Total no. of customers served (as per VLR) on last day of the month		Jan-15	2056451	2764732	867205	447784	ND	749794

ND: Audit not done

TABLE: 2

S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
**Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - J&K Circle – January 15 month**									
				**GSM Operators**					
**Network Service Quality Parameter**									
**Network Availability**									
1	a) Total no. of BTSs in the licensed service area		Live data	2107	2756	1187	907	ND	1505
	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	2221.38	210.20	1474.00	300.61	ND	144.04
	c) BTS Accumulated Downtime	<=2%	Live data	1.46%	0.11%	1.72%	0.46%	ND	0.13%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	3	1	ND	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.25%	0.11%	ND	0.00%
2	**Connection Establishment (Accessibility)**								
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	**89.86%**	98.49%	99.27%	98.13%	ND	98.36%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.34%	0.49%	0.80%	0.10%	ND	0.03%
	c) TCH congestion	<=2%	Live data	**9.60%**	0.30%	0.57%	1.48%	ND	0.45%
3	**Connection Maintenance (Retainability)**								
	a) Call Drop Rate (CDR)	<=2%	Live data	1.29%	0.44%	0.57%	1.37%	ND	0.78%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	**10.68%**	0.92%	1.65%	2.90%	ND	2.83%
	c) % of connections with good voice quality	>=95%	Live data	95.13%	98.22%	97.70%	97.89%	ND	98.43%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	672	75	58	79	ND	129
	e) Total no. of cells (Sector) in the licensed service area		Live data	6292	8185	3528	2716	ND	4540
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	ND	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	ND	0

ND: Audit not done

TABLE: 3

S/N	Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
	Detailed Network Data Assessment of Cellular Mobile Telephone Services- J&K Circle - February 15 month								
						GSM Operators			
Network Service Quality Parameter									
1	**Network Availability**								
	a) Total no. of BTSs in the licensed service area		Feb-15	2118	2786	1187	922	816	1515
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Feb-15	12602.22	2246.62	11124.00	3155.72	3663.63	2905.85
	c) BTS Accumulated Downtime	<=2%	Feb-15	0.89%	0.12%	1.39%	0.51%	0.67%	0.29%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Feb-15	113	2	21	13	12	7
	e) Worst affected BTSs due to downtime	<=2%	Feb-15	**5.34%**	0.07%	1.77%	1.41%	1.47%	0.46%
2	**Connection Establishment (Accessibility)**								
	a) CSSR (Call Setup Success Rate)	>=95%	Feb-15	95.28%	98.66%	96.82%	98.69%	99.57%	97.95%
	b) SDCCH/PAGING Congestion	<=1%	Feb-15	0.24%	0.28%	0.62%	0.10%	0.00%	0.17%
	c) TCH congestion	<=2%	Feb-15	**4.15%**	0.29%	1.57%	0.99%	0.04%	0.75%
3	**Connection Maintenance (Retainability)**								
	a) Call Drop Rate (CDR)	<=2%	Feb-15	1.24%	0.50%	1.62%	1.46%	0.41%	0.82%
	b) Worst affected cells>3% TCH drop	<=3%	Feb-15	**10.54%**	1.24%	2.29%	2.50%	0.11%	2.87%
	c) % of connections with good voice quality	>=95%	Feb-15	95.03%	98.21%	98.27%	97.75%	98.83%	98.20%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Feb-15	666	101	81	69	3	131
	e) Total no. of cells (Sector) in the licensed service area		Feb-15	6320	8150	3528	2736	2447	4564
4	**No. of POI's having >=0.5% POI congestion**								
	No. of POI's having >=0.5% POI congestion		Feb-15	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Feb-15	0	0	0	0	0	0
5	**Network Data**								
	a) Equipped Capacity of Network in Erlang		Feb-15	119560	111081	108000	27199	40000	38717
	b) Total traffic in TCBH in erlang (Avg.)		Feb-15	75516	90092	32705	14821	11825	29546
	c) Total no. of customers served (as per VLR) on last day of the month		Feb-15	2086745	2997994	868048	472452	362689	777655

TABLE: 4

S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
	Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - J&K Circle – February 15 month						GSM Operators		
	Network Service Quality Parameter								
1	**Network Availability**								
	a) Total no. of BTSs in the licensed service area		Live data	2115	2800	1187	912	866	1511
	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	1287.02	102.16	1325.00	358.12	254.00	208.47
	c) BTS Accumulated Downtime	<=2%	Live data	0.85%	0.05%	1.55%	0.55%	0.41%	0.19%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	0	3	2	0	1
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.00%	0.25%	0.22%	0.00%	0.07%
2	**Connection Establishment (Accessibility)**								
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	95.45%	98.68%	96.51%	98.13%	99.61%	98.16%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.11%	0.27%	0.79%	0.02%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	**4.03%**	0.30%	1.46%	1.52%	0.03%	0.66%
3	**Connection Maintenance (Retainability)**								
	a) Call Drop Rate (CDR)	<=2%	Live data	1.26%	0.47%	1.52%	1.48%	0.38%	0.78%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	**10.24%**	1.14%	1.69%	2.30%	0.01%	2.83%
	c) % of connections with good voice quality	>=95%	Live data	95.01%	98.21%	98.24%	97.90%	98.82%	98.21%
	d)Total No. of cells exceeding 3% TCH drop (call drop)		Live data	647	93	60	63	0	129
	e) Total no. of cells (Sector) in the licensed service area		Live data	6318	8210	3528	2734	2472	4558
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

TABLE: 5

S/N	Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
						GSM Operators			

Detailed Network Data Assessment of Cellular Mobile Telephone Services- J&K Circle - March 15 month

S/N	Name of Parameter	Bench-mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
Network Service Quality Parameter									
1	**Network Availability**								
	a) Total no. of BTSs in the licensed service area		Mar-15	2125	2801	1198	940	825	1515
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Mar-15	25831.30	2263.27	11347.00	4304.66	4771.00	4495.54
	c) BTS Accumulated Downtime	<=2%	Mar-15	1.63%	0.11%	1.27%	0.62%	0.78%	0.40%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Mar-15	258	1	22	18	11	45
	e) Worst affected BTSs due to downtime	<=2%	Mar-15	**12.14%**	0.04%	1.84%	1.91%	1.33%	**2.97%**
2	**Connection Establishment (Accessibility)**								
	a) CSSR (Call Setup Success Rate)	>=95%	Mar-15	95.71%	98.32%	97.18%	98.04%	99.55%	97.47%
	b) SDCCH/PAGING Congestion	<=1%	Mar-15	**3.22%**	0.43%	0.84%	0.28%	0.01%	0.05%
	c) TCH congestion	<=2%	Mar-15	**3.82%**	0.44%	1.65%	1.54%	0.05%	1.06%
3	**Connection Maintenance (Retainability)**								
	a) Call Drop Rate (CDR)	<=2%	Mar-15	1.44%	0.46%	1.70%	1.69%	0.43%	0.91%
	b) Worst affected cells>3% TCH drop	<=3%	Mar-15	**10.58%**	1.22%	2.35%	2.44%	0.07%	2.88%
	c) % of connections with good voice quality	>=95%	Mar-15	95.41%	98.21%	97.46%	97.61%	98.79%	98.11%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Mar-15	670	100	84	68	2	132
	e) Total no. of cells (Sector) in the licensed service area		Mar-15	6339	8189	3551	2780	2471	4572
4	**No. of POI's having >=0.5% POI congestion**								
	No. of POI's having >=0.5% POI congestion		Mar-15	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Mar-15	0	0	0	0	0	0
5	**Network Data**								
	a) Equipped Capacity of Network in Erlang		Mar-15	118789	111789	108000	28635	40000	39506
	b) Total traffic in TCBH in erlang (Avg.)		Mar-15	73869	88563	34685	15252	12003	30793
	c) Total no. of customers served (as per VLR) on last day of the month		Mar-15	2132987	2855169	858683	498723	370600	809933

TABLE: 6

S/N	Name of Parameter	Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
	Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - J&K Circle – March 15 month								
						GSM Operators			
Network Service Quality Parameter									
1	**Network Availability**								
	a) Total no. of BTSs in the licensed service area		Live data	2120	2816	1187	924	825	1515
	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	1795.74	519.15	1196.00	970.07	242.00	762.16
	c) BTS Accumulated Downtime	<=2%	Live data	1.18%	0.26%	1.40%	1.46%	0.41%	0.70%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	19	0	2	2	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.90%	0.00%	0.17%	0.22%	0.00%	0.00%
2	**Connection Establishment (Accessibility)**								
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	96.23%	98.75%	96.41%	97.80%	99.63%	97.97%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.13%	0.25%	0.56%	0.45%	0.01%	0.07%
	c) TCH congestion	<=2%	Live data	**3.34%**	0.29%	1.50%	1.46%	0.03%	0.77%
3	**Connection Maintenance (Retainability)**								
	a) Call Drop Rate (CDR)	<=2%	Live data	1.35%	0.43%	1.56%	1.57%	0.38%	0.86%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	**10.47%**	1.18%	2.11%	2.60%	0.03%	2.81%
	c) % of connections with good voice quality	>=95%	Live data	95.39%	98.24%	98.20%	97.35%	98.82%	98.11%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	663	97	74	72	1	129
	e) Total no. of cells (Sector) in the licensed service area		Live data	6333	8255	3528	2770	2471	4572
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 MAR.15:

5.3.1 QUARTERLY CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (JANUARY TO MARCH MONTHS AUDITED DATA):

	QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES - QE MARCH 2015								
	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								
	Metering & Billing Credibility -Post Paid								
1	A) No. of bills issued during the quarter		J&K	369777	329471	811839	82410	61107	148196
	B) No. of bills disputed including billing complaints during the quarter		J&K	4	67	451	26	47	72
	C)% of billing complaints during the quarter	<= 0.1%	J&K	**0.001%**	**0.02%**	**0.06%**	**0.03%**	**0.08%**	**0.05%**
	Metering & Billing Credibility -Pre Paid								
2	A) Total No. of Pre-paid customers at the end of the quarter		J&K	2470873	2808196	887713	486898	750389	1133719
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		J&K	8	61	206	139	528	959
	C) % of Pre-paid Charging Complaints	<= 0.1%	J&K	**0.00%**	**0.002%**	**0.02%**	**0.03%**	**0.07%**	**0.08%**
	Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints								
3	A) No. of Billing/Charging/Credit/Validity Complaints received during the quarter		J&K	12	128	657	745	575	1031
	B) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 4 weeks during the quarter		J&K	12	128	657	745	575	1031
	C) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 6 weeks during the quarter		J&K	12	128	657	745	575	1031
	D) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	>=98% within 4 weeks	J&K	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
	E) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 6 weeks	100% within 6 weeks	J&K	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES - QE MARCH 2015								
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/ N	Name of Parameter			GSM Operators					
	F) % of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week	J&K	**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		J&K	16049980	1839801	248518	1958793	3742559	3860079
	B) Total no. of calls successfully established to customer care/Call center.		J&K	15341277	1827005	248518	1922590	3701949	3860079
	C) % Accessibility of Call centre /customer Care (Total calls successfully established *100/ Total call attempts)	>=95%	J&K	**95.58%**	**99.30%**	**100.00%**	**98.15%**	**98.91%**	**100.00%**
	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		J&K	2556216	2630328	425433	501197	199933	927214
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		J&K	2460301	2352490	290025	480308	161945	920337
	F) % age of calls answered by operator (voice to voice) (Total calls successfully established within 90 Sec.*100 / Total call attempts)	>=95%	J&K	**96.25%**	**89.44%**	**68.17%**	**95.83%**	**81.00%**	**99.26%**
5	**Termination/closure of service**								
	A) Total No. of requests for Termination / Closure of service received during the quarter		J&K	3528	1161	1336	1241	638	628
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		J&K	3528	1161	1336	1241	638	628
	C) % of Termination/ Closure of service within 7 days	<=7days	J&K	**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		J&K	1119	213	1336	230	580	473
	B) No. of Payments/ Refunds Cleared during the quarter		J&K	1119	213	1336	230	580	473
	C) Time taken for refunds of deposits after closures.	100% within 60 days	J&K	**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 - MARCH 2015):

CSD 3 DAYS LIVE DATA FOR CELLULAR MOBILE TELEPHONE SERVICES – QE – DECEMBER 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	A) Total no of calls attempted to customer care/Call center		J&K	527790	95837	9342	64023	87385	135453
	B) Total no. of calls successfully established to customer care/Call center.		J&K	512030	86607	9342	62925	86070	135453
	C) % Accessibility of Call centre /customer Care (Total calls successfully established *100/ Total call attempts)	>=95%	J&K	97.01%	90.37%	100.00%	98.28%	98.50%	100.00%
2	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		J&K	86769	90933	13946	14559	10322	35928
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		J&K	84267	55816	5749	14502	9694	35867
	F) % age of calls answered by operator (voice to voice) (Total calls successfully established within 90 Sec.*100 / Total call attempts)	>=95%	J&K	97.12%	61.38%	41.22%	99.61%	93.92%	99.83%

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 <=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%. However, **Airtel, BSNL and RCOM GSM** have failed to meet the benchmark of **'calls answered by Operators (voice to voice)' within 90 seconds** with their performance as **89.44%, 68.17% and 81.00%** respectively. **The performance of BSNL was way below the benchmark of > 95%.**

4. Termination/Closure of Service

In case of this parameters also, all service providers have settled 100% closures within 7 days.

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.

Live Measurements:

The results for three days live measurements revealed that all operators have met the benchmarks for the parameters 'Accessibility to call center' except **Airtel (90.37%).** However, in case of **'Call answered by operators (Voice to voice)** also the operators namely **Airtel, BSNL and RCOM GSM** could not meet the benchmark with their performance as **61.38%, 41.22% and 93.92% respectively.**

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%	100%	100%	100%	100%
AIRTEL	J&K	100%	----	100%	100%	100%	100%
BSNL	J&K	100%	100%	----	100%	100%	100%
IDEA	J&K	100%	100%	100%	----	100%	100%
RCOM GSM	J&K	100%	100%	100%	100%	----	100%
VODAFONE	J&K	100%	100%	100%	100%	100%	----

The result of the testing revealed that the inter connection performance among the operators was quite satisfactory. as there was no 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	96	92	100	100	100	100
% Accessibility of Call centre /customer Care (Total calls successfully established * 100 / Total call attempts)	J&K	96.00%	92.00%	100.00%	100.00%	100.00%	100.00%
Total Calls reached to agent desk for Voice to Voice (Total call attempt)	J&K	96	92	100	100	100	100
Total number of calls answered by the operator (Voice to voice) within 90 seconds	J&K	90	84	70	100	90	96
% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100 / Total calls attempts)	J&K	93.75%	91.30%	70.00%	100.00%	90.00%	96.00%

In case of calls answered by operators (voice to voice) within 90 seconds when test calls were made to the call centers, Aircel, Airtel, BSNL, RCOM (GSM) & Vodafone could connect 93.75%, 91.30%, 70.00%, 90.00 and 96% of calls respectively to the operator within 90 Seconds.

6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLIANTS:

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS							
	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	VODAFONE
Total No. of calls Attempted	J&K	12	128	157	145	175	131
Total No. of calls Answered	J&K	10	100	100	100	100	100
Cases resolved within 4 weeks	J&K	10	100	100	100	100	100
%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. However, in some cases, the number of customers contacted for verification was very less due to less number of billing complaints. During live calling, some of the customers did not attend the calls, so shortfall was made good by taking other complaints to make verification of 100 Complaints. However, most of the customers reported their satisfaction on resolution of the billing complaints

6.4 LEVEL -1 CALLING ASSESSMENT:

Emergency no.	Circle Name	SSA Name	Name of SDCA	No. of calls made	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
			LEVEL 1 LIVE CALLING							
100,101,102	J&K	Udhampur	REASI	9	√	√	√	√	√	√
			RAMNAGAR	9	√	√	√	√	√	√
			MAHORE	9	√	√	√	NC	√	NC
			UDHAMPUR	9	√	√	√	√	√	√
100,101,102	J&K	Rajouri	KALAKOT	9	√	√	√	NC	√	NC
			NOWSHERA	9	√	√	√	√	√	√
			RAJOURI	9	√	√	√	√	√	√
			POONCH	9	√	√	√	√	√	√
			SURENKOT	9	√	√	√	√	√	√
100, 101, 102	J&K	Jammu	JAMMU	9	√	√	√	√	√	√
			AKHNOOR	9	√	√	√	√	√	√
			SAMBA	9	√	√	√	√	√	√
			KATHUA	9	√	√	√	√	√	√
			BASHOLI	9	√	√	√	NC	√	√

NC: No Coverage

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, **Idea** has no coverage in Mahore, Kalakot and Basholi SDCAs and **Vodafone** has no coverage in Mahore and Kalakot SDCAs as mentioned in the above table.
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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 **Rajouri, Jammu and Udhampur** in the months of January, February and March 2015 respectively. The total route Kms covered during the drive tests in respective SSAs was **395 Kms, 530 Kms and 410 Kms**. 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: RAJOURI SSA (JANUARY-15)

DRIVE TEST TABLE – 1

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 Kings, Nowshera	112	30	120	30	77	30	67	30	80	30	61	30
		Highway	AK Guest House Rajouri	216	30	181	30	211	30	122	30	89	30	189	30
		Within City	Khan Plaza Surankote	57	30	69	30	54	30	53	30	65	30	55	30
		Overall SSA		**385**	**90**	**370**	**90**	**342**	**90**	**242**	**90**	**234**	**90**	**305**	**90**
2	Blocked Call Rate	Major Road	Hotel Kings, Nowshera	0.00%	0.00%	0.00%	0.00%	1.30%	0.00%	0.00%	0.00%	0.00%	0.00%	1.64%	0.00%
		Highway	AK Guest House Rajouri	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	Khan Plaza Surankote	1.75%	0.00%	0.00%	0.00%	1.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA		**0.26%**	**0.00%**	**0.00%**	**0.00%**	**1.75%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.33%**	**0.00%**
3	Dropped Call Rate (<=2%)	Major Road	Hotel Kings, Nowshera	0.00%	0.00%	0.83%	0.00%	1.32%	0.00%	1.49%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highway	AK Guest House Rajouri	0.00%	0.00%	0.00%	0.00%	0.97%	0.00%	0.00%	0.00%	0.00%	0.00%	0.53%	0.00%
		Within City	Khan Plaza Surankote	1.79%	0.00%	0.00%	0.00%	0.00%	0.00%	1.89%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA		**0.26%**	**0.00%**	**0.27%**	**0.00%**	**0.89%**	**0.00%**	**0.83%**	**0.00%**	**0.00%**	**0.00%**	**0.33%**	**0.00%**
4	**Percentage connections with good voice quality (=>95%)**														
	(a) 0-4 (w/o frequency hopping for CDMA	Major Road	Hotel Kings, Nowshera	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Highway	AK Guest House Rajouri	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

S/N	Parameter Operators)	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
		Within City	Khan Plaza Surankote	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 Kings, Nowshera	95.47%	99.62%	96.70%	97.52%	96.07%	**94.48%**	97.88%	100%	97.56%	99.16%	98.80%	98.92%
		Highway	AK Guest House Rajouri	95.37%	96.90%	96.63%	99.61%	96.27%	**94.03%**	98.35%	96.62%	97.64%	99.51%	97.90%	98.96%
		Within City	Khan Plaza Surankote	95.45%	98.09%	96.15%	99.23%	95.37%	95.17%	98.40%	99.57%	97.46%	99.63%	98.78%	99.00%
		Overall SSA		**95.41%**	**98.21%**	**96.53%**	**98.80%**	**96.08%**	**94.54%**	**98.25%**	**98.69%**	**97.57%**	**99.43%**	**98.27%**	**98.96%**
5	**Service Coverage**														
	In door (>= -75dBm)	Major Road	Hotel Kings, Nowshera	89.29%	100%	76.34%	99.96%	69.50%	98.50%	19.50%	0.00%	33.58%	24.90%	70.76%	97.82%
		Highway	AK Guest House Rajouri	81.82%	100%	54.55%	81.82%	59.72%	53.86%	14.80%	96.77%	33.33%	98.12%	51.21%	96.24%
		Within City	Khan Plaza Surankote	96.92%	100%	85.87%	96.78%	94.12%	99.13%	9.17%	40.08%	33.30%	52.34%	81.63%	100%
		Overall SSA		**86.41%**	**100%**	**68.81%**	**91.66%**	**67.52%**	**83.25%**	**14.09%**	**48.53%**	**33.43%**	**55.35%**	**61.25%**	**98.03%**
	In-vehicle (>= -85dBm)	Major Road	Hotel Kings, Nowshera	98.41%	100%	93.38%	100%	89.99%	100%	42.75%	3.80%	73.64%	94.50%	91.93%	99.95%
		Highway	AK Guest House Rajouri	97.65%	100%	79.10%	92.61%	86.26%	99.88%	37.52%	100%	65.14%	99.83%	80.42%	99.86%
		Within City	Khan Plaza Surankote	99.95%	100%	97.19%	100%	99.79%	99.95%	26.67%	83.88%	75.53%	94.10%	97.25%	100%
		Overall SSA		**98.23%**	**100%**	**87.82%**	**97.01%**	**89.30%**	**99.94%**	**35.26%**	**64.03%**	**70.37%**	**95.90%**	**86.12%**	**99.94%**
	Outdoor- in city (>= -95dBm)	Major Road	Hotel Kings, Nowshera	99.80%	100%	98.33%	100%	98.34%	100%	89.02%	97.71%	92.83%	99.90%	99.40%	100%
		Highway	AK Guest House Rajouri	99.82%	100%	95.86%	100%	98.27%	100%	84.31%	100%	91.81%	100%	96.25%	100%
		Within City	Khan Plaza Surankote	99.99%	100%	99.77%	100%	100%	100%	85.65%	99.58%	95.87%	99.96%	99.91%	100%
		Overall SSA		**99.84%**	**100%**	**97.57%**	**100%**	**98.57%**	**100%**	**85.82%**	**99.13%**	**92.95%**	**99.95%**	**97.63%**	**100%**
6	**Call Setup**	Major Road	Hotel Kings, Nowshera	100%	100%	100%	100%	98.70%	100%	100%	100%	100%	100%	98.36%	100%

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
	Success Rate (>=95%)	Highway	AK Guest House Rajouri	100%	100%	100%	100%	98.10%	100%	100%	100%	100%	100%	100%	100%
		Within City	Khan Plaza Surankote	98.25%	100%	100%	100%	98.15%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA		**99.74%**	**100%**	**100%**	**100%**	**98.25%**	**100%**	**100%**	**100%**	**100%**	**100%**	**99.67%**	**100%**
7	**Hand Over Success Rate (HOSR)**	Major Road	Hotel Kings, Nowshera	100%	100%	100%	100%	98.04%	100%	100%	100%	100%	100%	100%	100%
		Highway	AK Guest House Rajouri	99.31%	100%	99.05%	100%	97.94%	100%	100%	100%	98.39%	100%	99.20%	100%
		Within City	Khan Plaza Surankote	100%	100%	100%	100%	99.17%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA		**99.64%**	**100%**	**99.62%**	**100%**	**98.25%**	**100%**	**100%**	**100%**	**99.48%**	**100%**	**99.57%**	**100%**

- **NA-Not Applicable**

7.2 OPERATOR ASSISTED DRIVE TEST: JAMMU SSA (FEBRUARY-15)

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	Karan Nagar, Complex	172	30	204	30	197	31	140	30	110	30	161	30
		Highway	Bhargava College, Shamba	183	30	175	30	167	30	54	30	67	30	131	30
		Within City	Hill View honda, Sidra	78	30	76	30	64	32	51	30	68	30	83	30
		Overall SSA		**433**	**90**	**455**	**90**	**428**	**93**	**245**	**90**	**245**	**90**	**375**	**90**
2	Blocked Call Rate	Major Road	Karan Nagar, Complex	0.00%	0.00%	0.00%	0.00%	0.51%	0.00%	0.71%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highway	Bhargava College, Shamba	0.55%	0.00%	0.00%	0.00%	1.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	Hill View honda, Sidra	1.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA		**0.46%**	**0.00%**	**0.00%**	**0.00%**	**0.70%**	**0.00%**	**0.41%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**
3	Dropped Call Rate (<=2%)	Major Road	Karan Nagar, Complex	0.58%	0.00%	0.49%	0.00%	0.51%	0.00%	0.72%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highway	Bhargava College, Shamba	0.00%	0.00%	0.00%	0.00%	0.61%	0.00%	0.00%	0.00%	1.49%	0.00%	0.00%	0.00%
		Within City	Hill View honda, Sidra	0.00%	0.00%	1.32%	0.00%	0.00%	0.00%	1.96%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA		**0.23%**	**0.00%**	**0.44%**	**0.00%**	**0.47%**	**0.00%**	**0.82%**	**0.00%**	**0.41%**	**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	Karan Nagar, Complex	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Highway	Bhargava College, Shamba	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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	Hill View honda, Sidra	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	Karan Nagar, Complex	95.40%	99.81%	97.91%	100%	**88.58%**	96.47%	95.76%	99.60%	97.23%	97.90%	96.57%	99.75%
		Highway	Bhargava College, Shamba	96.32%	99.04%	98.66%	100%	**93.05%**	97.21%	96.58%	100%	97.19%	96.20%	95.90%	99.38%
		Within City	Hill View honda, Sidra	95.80%	99.61%	98.52%	100%	**93.53%**	97.88%	97.25%	99.23%	97.93%	99.63%	96.38%	99.74%
		Overall SSA		**95.89%**	**99.48%**	**98.29%**	**100%**	**91.06%**	**97.21%**	**96.24%**	**99.61%**	**97.41%**	**97.65%**	**96.28%**	**99.62%**
5	**Service Coverage**														
	In door (>= -75dBm)	Major Road	Karan Nagar, Complex	96.53%	61.77%	88.18%	97.15%	66.93%	100%	25.88%	82.63%	23.75%	21.37%	71.66%	98.38%
		Highway	Bhargava College, Shamba	91.86%	100%	83.67%	99.03%	51.99%	100%	30.10%	100%	20.47%	34.81%	62.41%	100%
		Within City	Hill View honda, Sidra	95.42%	100%	92.46%	100%	61.53%	99.90%	17.74%	97.85%	26.94%	52.34%	57.85%	98.67%
		Overall SSA		**94.19%**	**86.67%**	**87.87%**	**98.69%**	**60.17%**	**99.96%**	**24.91%**	**93.78%**	**23.53%**	**34.12%**	**65.48%**	**99.02%**
	In-vehicle (>= -85dBm)	Major Road	Karan Nagar, Complex	99.47%	99.93%	97.28%	100%	93.08%	100%	45.53%	99.23%	65.79%	93.76%	90.01%	99.96%
		Highway	Bhargava College, Shamba	98.39%	100%	93.87%	100%	88.15%	100%	52.54%	100%	56.89%	98.12%	86.94%	100%
		Within City	Hill View honda, Sidra	99.09%	100%	98.43%	100%	91.03%	100%	41.00%	99.64%	69.35%	94.50%	87.32%	99.87%
		Overall SSA		**98.91%**	**99.98%**	**96.53%**	**100%**	**90.81%**	**100%**	**45.88%**	**99.63%**	**63.98%**	**95.75%**	**88.34%**	**99.95%**
	Outdoor- in city (>= -95dBm)	Major Road	Karan Nagar, Complex	99.94%	100%	99.77%	100%	99.44%	100%	89.56%	100%	92.54%	99.95%	98.54%	100%
		Highway	Bhargava College, Shamba	99.94%	100%	99.03%	100%	98.53%	100%	91.43%	100%	83.80%	99.92%	98.30%	100%
		Within City	Hill View honda, Sidra	99.88%	100%	99.93%	100%	98.98%	100%	90.15%	100%	94.03%	100%	98.33%	100%
		Overall SSA		**99.93%**	**100%**	**99.59%**	**100%**	**99.01%**	**100%**	**90.04%**	**100%**	**90.29%**	**99.95%**	**98.41%**	**100%**
6	**Call Setup**	Major Road	Karan Nagar, Complex	100%	100%	100%	100%	99.49%	100%	99.29%	100%	100%	100%	100%	100%

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
	Success Rate (>=95%)	Highway	Bhargava College, Shamba	99.45%	100%	100%	100%	98.80%	100%	100%	100%	100%	100%	100%	100%
		Within City	Hill View honda, Sidra	98.72%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA		99.54%	100%	100%	100%	99.30%	100%	99.59%	100%	100%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Major Road	Karan Nagar, Complex	99.70%	100%	99.17%	100%	98.59%	100%	99.59%	100%	100%	100%	99.42%	100%
		Highway	Bhargava College, Shamba	100%	100%	100%	100%	99.06%	100%	100%	100%	100%	100%	99.73%	100%
		Within City	Hill View honda, Sidra	98.92%	100%	100%	100%	100%	100%	98.25%	100%	100%	100%	98.97%	100%
		Overall SSA		99.62%	100%	99.59%	100%	98.88%	100%	99.46%	100%	100%	100%	99.45%	100%

- **NA-Not Applicable**

7.3 OPERATOR ASSISTED DRIVE TEST: UDHAMPUR SSA (MARCH-15)

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	Haveli Domel	108	30	121	30	97	30	51	30	97	30	58	30
		Highway	Ashok Punjabi Dhaba	126	30	151	30	123	30	100	30	99	30	126	30
		Within City	Ram Nagar Fort	65	30	41	30	55	30	53	30	53	30	43	30
		Overall SSA		299	90	313	90	275	90	204	90	249	90	227	90
2	Blocked Call Rate	Major Road	Haveli Domel	0.00%	0.00%	0.00%	0.00%	2.06%	0.00%	0.00%	0.00%	1.03%	0.00%	0.00%	0.00%
		Highway	Ashok Punjabi Dhaba	0.00%	0.00%	0.00%	0.00%	1.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	Ram Nagar Fort	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA		0.00%	0.00%	0.00%	0.00%	1.45%	0.00%	0.00%	0.00%	0.40%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Major Road	Haveli Domel	0.00%	0.00%	0.83%	0.00%	1.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Highway	Ashok Punjabi Dhaba	0.79%	0.00%	0.00%	0.00%	2.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	Ram Nagar Fort	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA		0.33%	0.00%	0.32%	0.00%	1.48%	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	Haveli Domel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Highway	Ashok Punjabi Dhaba	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

S/N	Parameter (Operators)	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
		Within City	Ram Nagar Fort	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	Haveli Domel	95.52%	97.13%	97.00%	99.19%	95.32%	94.97%	98.63%	99.61%	98.46%	99.71%	97.86%	99.43%
		Highway	Ashok Punjabi Dhaba	96.49%	99.61%	96.99%	99.58%	95.56%	94.44%	97.19%	99.69%	97.35%	99.64%	98.18%	99.13%
		Within City	Ram Nagar Fort	95.85%	99.60%	98.86%	100%	93.55%	97.07%	96.07%	100%	98.25%	99.65%	98.06%	99.52%
		Overall SSA		95.99%	98.78%	97.51%	99.60%	95.05%	95.46%	97.48%	99.76%	97.88%	99.67%	98.08%	99.36%
	Service Coverage														
	In door (>= -75dBm)	Major Road	Haveli Domel	79.88%	100%	85.12%	98.45%	50.44%	90.58%	9.79%	89.05%	30.71%	94.46%	56.82%	99.94%
		Highway	Ashok Punjabi Dhaba	91.20%	100%	92.93%	100%	62.73%	94.88%	20.84%	71.79%	37.58%	17.24%	63.09%	99.71%
		Within City	Ram Nagar Fort	91.59%	99.64%	99.37%	100%	78.26%	93.31%	32.51%	28.14%	48.54%	52.45%	72.04%	99.92%
		Overall SSA		86.62%	99.88%	91.81%	99.48%	61.91%	92.88%	19.31%	63.75%	37.26%	50.31%	63.24%	99.86%
5	In-vehicle (>= -85dBm)	Major Road	Haveli Domel	93.72%	100%	96.09%	100%	80.96%	99.30%	27.35%	100%	61.79%	99.52%	85.82%	99.99%
		Highway	Ashok Punjabi Dhaba	98.67%	100%	99.04%	100%	88.43%	99.90%	49.14%	98.02%	75.94%	99.66%	87.32%	100%
		Within City	Ram Nagar Fort	97.89%	100%	99.97%	100%	96.20%	99.91%	72.21%	100%	83.97%	98.03%	95.55%	99.95%
		Overall SSA		96.49%	100%	98.21%	100%	87.57%	99.69%	46.13%	99.34%	72.51%	99.01%	88.53%	99.98%
	Outdoor- in city (>= -95dBm)	Major Road	Haveli Domel	99.42%	100%	99.88%	100%	98.42%	100%	85.24%	100%	87.35%	100%	97.75%	100%
		Highway	Ashok Punjabi Dhaba	99.97%	100%	99.93%	100%	98.88%	100%	90.88%	100%	94.45%	100%	98.18%	100%
		Within City	Ram Nagar Fort	99.93%	100%	99.98%	100%	99.92%	100%	98.36%	100%	96.42%	100%	99.88%	100%
		Overall SSA		99.74%	100%	99.93%	100%	98.95%	100%	90.37%	100%	92.33%	100%	98.40%	100%
6	Call Setup	Major Road	Haveli Domel	100%	100%	100%	100%	97.94%	100%	100%	100%	98.97%	100%	100%	100%

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
	Success Rate (>=95%)	Highway	Ashok Punjabi Dhaba	100%	100%	100%	100%	98.37%	100%	100%	100%	100%	100%	100%	100%
		Within City	Ram Nagar Fort	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA		**100%**	**100%**	**100%**	**100%**	**98.55%**	**100%**	**100%**	**100%**	**99.60%**	**100%**	**100%**	**100%**
7	**Hand Over Success Rate (HOSR)**	Major Road	Haveli Domel	99.38%	100%	100%	100%	96.92%	100%	100%	100%	100%	100%	99.00%	100%
		Highway	Ashok Punjabi Dhaba	100%	100%	100%	100%	94.51%	100%	100%	100%	100%	100%	100%	100%
		Within City	Ram Nagar Fort	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA		**99.79%**	**100%**	**100%**	**100%**	**96.88%**	**100%**	**100%**	**100%**	**100%**	**100%**	**99.74%**	**100%**

- **NA-Not Applicable**

7.4 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

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
RAJOURI	JAN-15	**Nowshera , Kalakot 120KM**	Major Road: Bhamla, sunderbani, thanda pani, soit morh. Highway; limberi Dandesar, rajal, nowshera, rajdhan, sial, dhangri Within city ; Rajal , nowshera city **Indoor:** Hotel kings Nowshera	**Rajouri/ 135KM**	Major Road: Rajouri, ffatehpur , dodasanbala, saaj, barote. Highway: Rajhdani shadra shrief, Deri, DKG, Buffliaz, Drava, fazal, Bad, surenkot. Within city: Rajouri city, thanna mandi, rajouri bus stand. **Indoor:** AK guest house Rajouri	**Poonch/ 140KM**	Major Road; Abinch, Kalai, jerawali, gali, kallar, kattal, sanjoit, BG top Highway: Deri, Relayote, Manjakote, Gambhir Bhramna, dhangri, Kallar, chityar,Nariytan, Within city; poonch city,surenkotr city **Indoor:** khan plaza surenkot
JAMMU	FEB-15	**Jammu , Akhnoori/ 150KM**	Major Road:karan nagar, gujjar nagar, Bahufort, bahu plza, trikuta nagar,bikram chowk Highway: Akhnoor highway, chiddi, missiriwala, akhnoor ,Kotbhawal, bantalab, muthi, Sarwal, rehari Within city ; Akhnoor city **Indoor:** Karan nagar complex	**Samba ,Kathua/ 190KM**	Major road:Karan nagar ,Bus stand, jewel, Stwari , gamgyal, Brai brahmna, Highway: Vijay pur. Samba, ghagwal, chadwal,kathua highway Within city : kali bari , kathua city **Indoor:** Bhargava college Samba	**Basholi/ 190KM**	Major road: panjthirthi, sidhra, Angrota, bun village, nandni Highway : Bajlata, surinsar, sagoon, Mansar, ramkot, gujroo, gurah kalyal,Mandli,Bhadoo, Billawar Within city : billawar city ,Pinter **Indoor:** Hill view Honda showroom
UDHAMPUR	MAR-15	**Reasi, Mahore /200 KM**	Major road : Reasi highway, dhansal road, siyad baba, reasi city High way ; Reasi, jyoti puram, afsar, kanthan, mahore highway , mahore city Within city : Reasi city **Indoor:** Havel domail complex	**Udhampur/ 107KM**	Major road : Domail, udhampur High way,Tikri, Garhi, MH , Udhampur city , chopra market Highway: Udhampur ,tikri, doamil Within city : Udhampur city, Dhar road **Indoor:** Ashok punjabi dhaba	**Ramnagar /103KM**	Major road : Udhampur high way, airforce cantt, roundmail,riti Highway: ramnagar highway, dhardar ,batta walia Within city: Ramnagar city **Indoor:** Ram nagar fort

7.5 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF RAJOURI SSA – JAN 15

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	Nowshera, Kalakot	Poor Level & Quality near Sui, Kalakote, Bhrevi	Rajouri	Poor Level & Quality near Der, Poor Quality near Shadra Sharif, Rajouri outer	Poonch	Poor Quality near Kalai, Jerawali Galli, Nariyan, Manjakote
2	AIRTEL		Poor Level & Quality near Sui, Nowshera, Kalakote, Bakhar, Dharamsal		Poor Level near Bafliaz, Dera, Thanamandi, Fatehpur, Poor Quality at Rajouri outer, Thanamandi		Poor Level near Muradpur, Nowshera
3	BSNL		Poor Level & Quality near Dandesar, Sui, Kalakote, Siot		Poor Level near Bafliaz, Dera, Thanamandi, Fatehpur, Poor Quality at Rajouri outer, Thanamandi		Poor Level & Quality near Surankot, Muradpur
4	IDEA		No coverage between Siot to Kotha Raj, Poor Level & Quality near Dandesar, Siot, Bhakar, Sunderbani		Poor Level near Fazalabad, Dera, Sharda Sharif, Thana Mandi, Saaj, Farehpur		Poor Level & Quality near Poonch outer, Lassana, Manja Kote, Gambhir Bharmna
5	RCOM GSM		Poor Level near Rajouri outer, Sui, Tatta Pani, Bhrevi, Siot, Bhakar, Sunderbani, Nowshera, Lamberi		Poor Level near Bafliaz, Dera, Saaj, Rajouri outer, Poor Quality near Bafliaz		Poor Level near Surankote, Gambhir Bharmna, Manja Kote, Chityar, Nariyan
6	VODAFONE		---		No coverage between Bafliaz to Thana Mandi, Poor Level at Thana Mandi outer		Poor Level near Surankote, Manja Kote

DRIVE TEST TABLE: 6

DRIVE TEST OBSERVATION OF JAMMU SSA – FEB 15

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	Jammu, Akhnoor	Poor Level & Quality near Jhiri, Poor Quality at Akhnoor city	Samba ,Kathua	Poor Quality near Satwari, Bari Brahmna, Dayala Chowk	Basholi	Poor Level near Mandi, Poor Quality near Battal, Phinter, Jagti, Bajalta, Mansar, Ramkot
2	AIRTEL		Poor Level & Quality near Akhnoor, Kotbhalwal, Trikuta Nagar		Poor Level & Quality near Vijaypur, Bari Brahmna, Ghagwal		Poor Level near Nandini, Nagrota outer, Phinter
3	BSNL		Poor Level & Quality near Akhnoor, Kotbhalwal, Jammu outer		Poor Quality near Bari Brahmna, Dayala Chowk, Ghagwal		Poor Level near Nandini, Nagrota outer, Phinter
4	IDEA		Poor Level & Quality near Jhiri, Poor Quality at Akhnoor City, No coverage between Akhnoor to Jhiri & Agore, Thatar Morh, Jammu city		Poor Level & Quality near Vijaypur, Bari Brahmna, Ghagwal		Poor Level & Quality near Jagti, Pangrai, Ban, Nagrota
5	RCOM GSM		Poor Level near city, Bikram Chowk, Trikuta Nagar, Mishriwala, Agore, Domana, Akhnoor city, Jhiri, Ambh		Poor Level near Bari Brahmna, Vijaypur, Dayala Chowk, Samba, Jatwal		Poor Level near Sidhra, Bajalta, Ban, Mandli, Phinter, Bilawar, Gujru Nagrota, Mansar, Battal
6	VODAFONE		Poor Level at Akhnoor city		Poor Level near Dayla Chowk		No coverage between Bajalta to Sunisar, Sunisar HW, Battal

DRIVE TEST TABLE: 7

DRIVE TEST OBSERVATION OF UDHAMPUR SSA – MAR 15

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	Reasi, Mahore	Poor Level & Quality near Arnas, Reasi outer, Mahore outer	Udhampur	Poor Level & Quality near Rembal	Ramnagar	Poor Level & Quality near Ghagote, Dhardan
2	AIRTEL		Poor Level near Darmari, Salal, Poor Quality near Katra, Domel, Reasi outer		Poor Level & Quality near Domel, Poor Quality Tikri, Udhampur outer, Rembal		Poor Level & Quality near Ramnagar, Roundomel, Poor Quality at Udhampur outer
3	BSNL		Poor Level & Quality near Darmari, Salal, Katra		Poor Level & Quality near Mand, Rembal		Poor Level & Quality near Garnai, Roundomel
4	IDEA		Poor Level & Quality near Jyotipuram, Reasi outer, Baba Jitto Rd, Katra, Reasi HW, Nomain Chowk, Domel		Poor Level & Quality near Manthal, Rembal, Mand, Tikri, Jahjar Kotli		Poor Level & Quality near Battal Walia, Dhardan, Ram Nagar outer, Riti, Ghagote
5	RCOM GSM		Poor Level & Quality near Jyotipuram, Katra, Mahore, Arnas		Poor Level & Quality near Tikri, Udhampur outer, Airforce, Rembal, Mand		Poor Level near Jhakheni, Dhar Rd, Dhardan, Ram Nagar outer, Riti, Ghagote
6	VODAFONE		Poor Level near Reasi outer, Katra		---		Poor Level near Udhampur outer, No coverage at New Dhar Rd, Ganghot

DRIVE TEST TABLE: 8

NO NETWORK COVERAGE STATUS OF DRIVE TEST – JANUARY TO MARCH 15

Sr. No	Month of Drive Test	Circle	Name of Operators	SSA	SDCA Covered	Status of no network coverage area	ICR Status
1	Jan'15	J&K	AIRCEL	Rajouri	Rajouri, Nowshera, Kalakot, Poonch	No Coverage Issue	NO
			AIRTEL			No Coverage Issue	NO
			IDEA			Idea has no coverage in Kalakot SDCA	NO
			RCOM (GSM)			No Coverage Issue	NO
			VODAFONE			Vodafone has no coverage in Kalakot SDCA	NO
			BSNL			No Coverage Issue	NO
2	Feb '15	J&K	AIRCEL	Jammu	Jammu, Akhnoor, Basholi, Samba ,Kathua	No Coverage Issue	NO
			AIRTEL			No Coverage Issue	NO
			IDEA			Idea no coverage in Misriwala to Chidi, Agor to Kot BhalwalNo coverage in Bhasholi SDCA	ICR with Aircel in Mad Town
			RCOM (GSM)			No Coverage Issue	NO
			VODAFONE			No Coverage Issue	ICR with Aircel in Bhasholi SDCA
			BSNL			No Coverage Issue	NO
3	Mar '15	J&K	AIRCEL	Udhampur	Udhampur, Reasi, Mahore, Ramnagar	No Coverage Issue	NO
			AIRTEL			No Coverage Issue	NO
			IDEA			Idea no coverage in Agar Jitto , Mahore SDCA	NO
			RCOM (GSM)			No Coverage Issue	NO
			VODAFONE			Vodafone has no coverage in Mahore SDCA	NO
			BSNL			No Coverage Issue	NO

7.6 KEY FINDINGS ON DRIVE TEST:

The key observations derived from the results of the drive tests were as under –

(i) **In the Month of January-15**, drive tests were conducted across **Rajouri SSA** covering Nowshera, Kalakot, Rajouri, Poonch SDCAs. The performance of all service providers was found satisfactory as they were in well compliance of all the benchmarks, except **BSNL** could not meet the benchmark of '**Voice quality'** in Indoor drive test with its performance as **94.54%** on SSA basis.

(ii) **In the Month of February-15**, drive tests were conducted across **Jammu SSA** covering Jammu, Akhnoor, Samba, Kathua and Basholi SDCAs. In this SSA also, the performance of the service providers was well within the norms except **BSNL** remained under performed for parameter **Voice Quality** with its achieved value as **91.06%.**

In the month of March-15, drive tests were conducted across **Udhampur SSA** covering Reasi, Mahore, Udhampur and Ramnagar SDCAs. The service providers met the benchmarks of all the parameters on overall SSA level.

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 and 7 for respective SSAs.

The detail of Network coverage and Intra Circle Roaming (ICR) status of different service providers at various locations in the three SSAs is given in table-8.
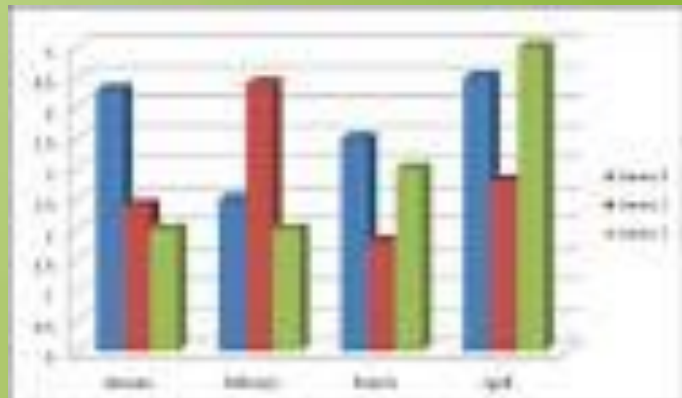
Thus the results of drive tests indicate that most of the operators have performed fairly well within the benchmarks in the above SSAs except BSNL could not meet the benchmark of Parameter **Voice quality** *in Jammu SSAs.*

8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

AVERAGED QUARTERLY PMR

V/S

AVERAGED QUARTERLY 3-DAYs LIVE MEASURMENT

8. GRAPHICAL REPRESENTATION (CMTS):

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

1) BTS ACCUMULATED DOWNTIME :

BTS Accumulated Downtime

	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
Quarterly PMR	1.31%	0.12%	1.35%	0.59%	0.73%	0.29%
Quarterly Live	1.16%	0.14%	1.56%	0.82%	0.41%	0.34%
Benchmark	2%	2%	2%	2%	2%	2%
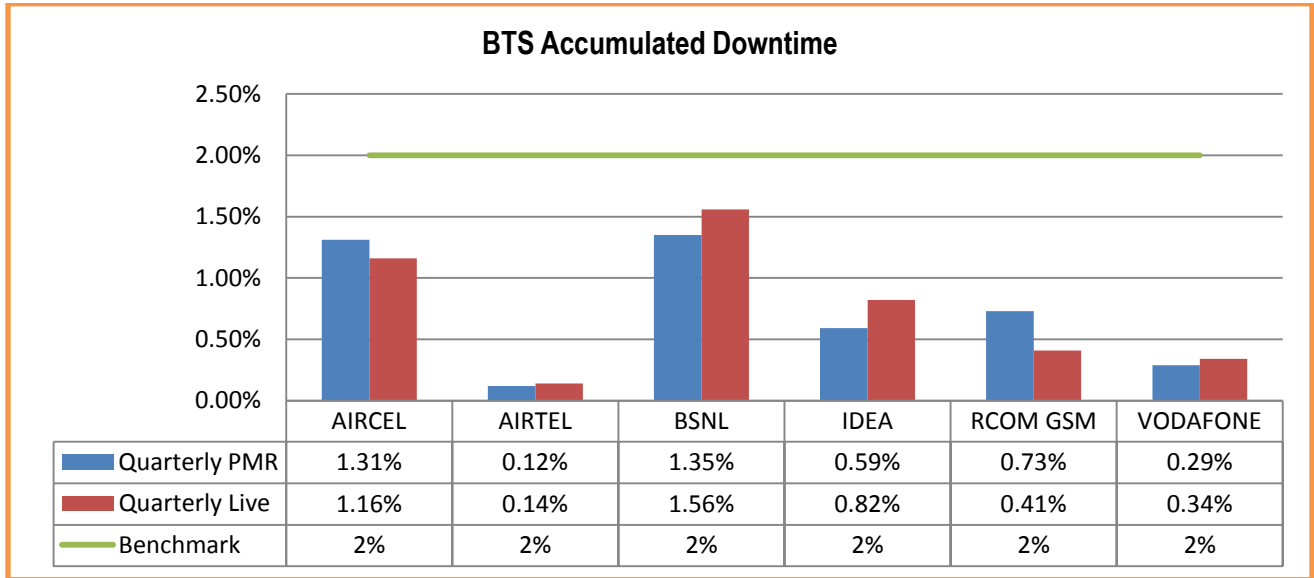
All operators are meeting the benchmarks.

2) WORST AFFECTED BTSS DUE TO DOWNTIME :

Worst affected BTSs due to downtime

	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
Quarterly PMR	8.94%	0.05%	1.82%	1.76%	1.40%	1.54%
Quarterly Live	0.30%	0.00%	0.22%	0.18%	0.00%	0.02%
Benchmark	2%	2%	2%	2%	2%	2%
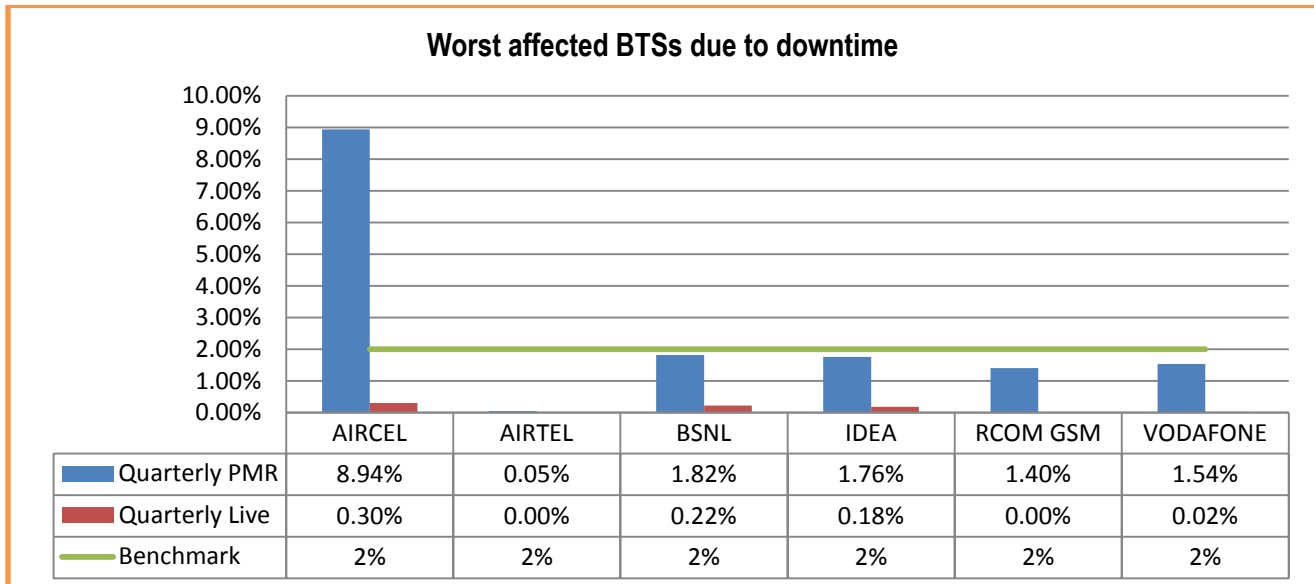
All operators are meeting the benchmarks except Aircel (during monthly PMR).

3) CALL SETUP SUCCESS RATE :

Call Setup Success Rate

	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
Quarterly PMR	95.04%	98.57%	96.97%	98.31%	99.56%	97.82%
Quarterly Live	93.85%	98.64%	97.40%	98.02%	99.62%	98.16%
Benchmark	95%	95%	95%	95%	95%	95%
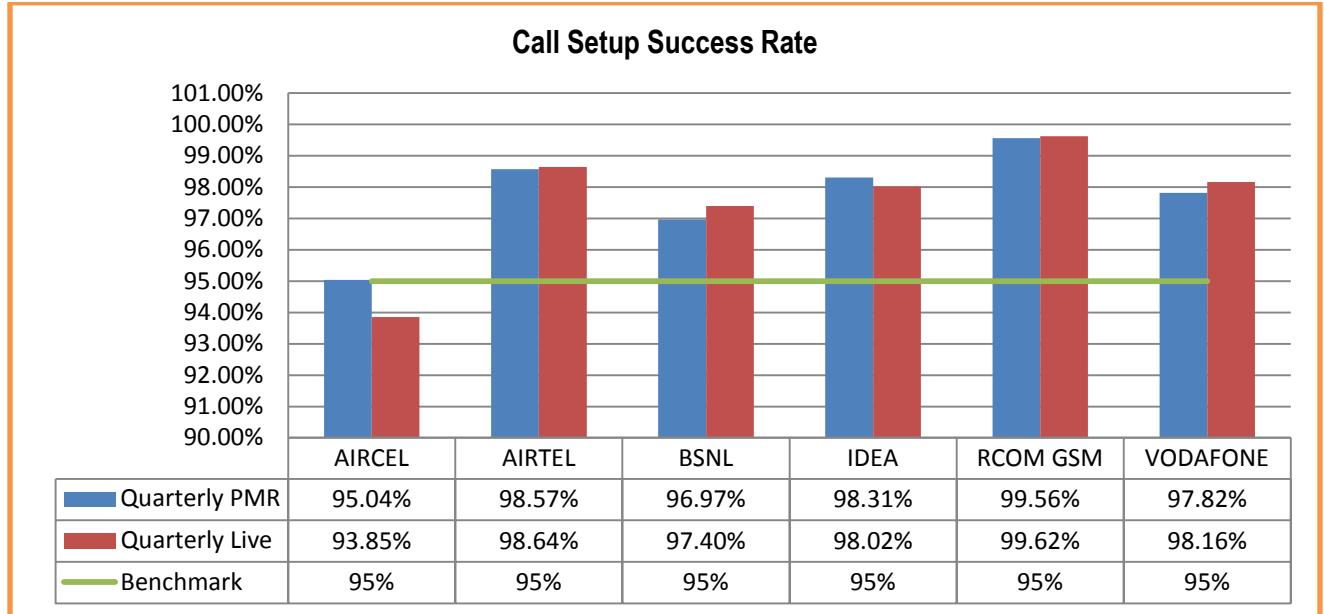
All operators are meeting the benchmarks except Aircel (during the 3 day live measurement).

4) SDCCH/PAGING CHANNEL CONGESTION :

SDCCH/PAGING Channel Congestion

	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
Quarterly PMR	1.21%	0.33%	0.76%	0.15%	0.01%	0.08%
Quarterly Live	0.19%	0.34%	0.72%	0.19%	0.01%	0.03%
Benchmark	1%	1%	1%	1%	1%	1%
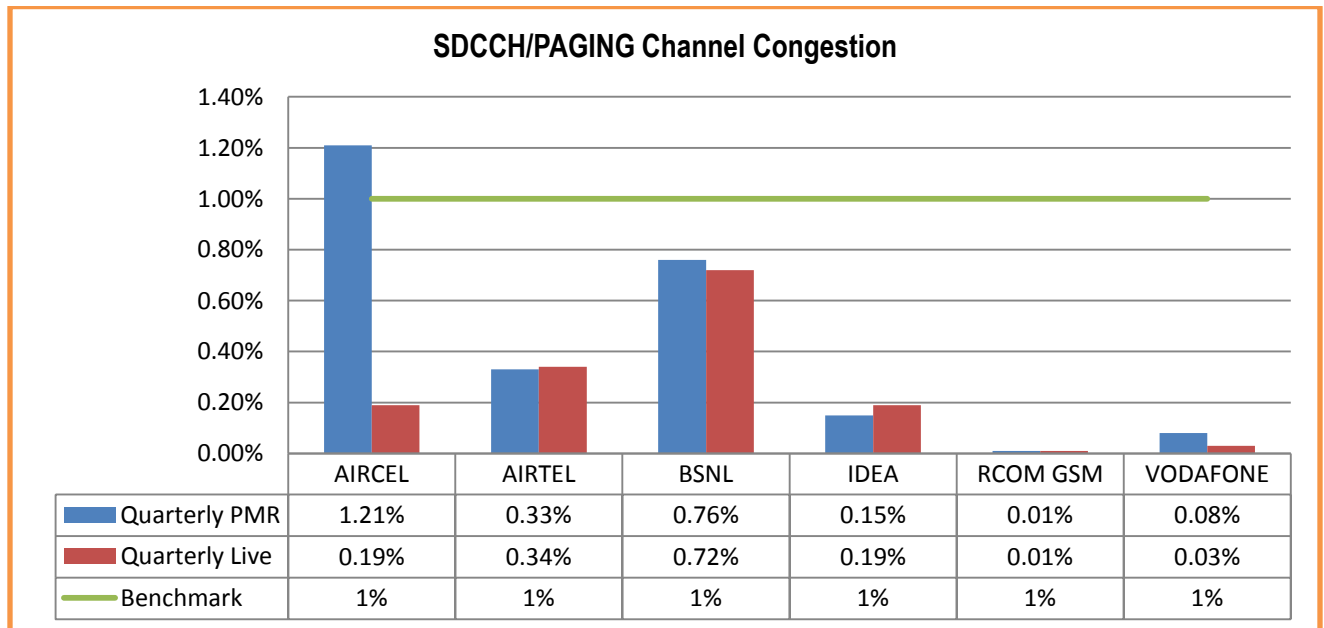
All operators are meeting the benchmarks except Aircel (during monthly PMR).

5) TCH CONGESTION :

TCH Congestion

	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
Quarterly PMR	4.45%	0.33%	1.59%	1.33%	0.05%	0.82%
Quarterly Live	5.66%	0.30%	1.18%	1.49%	0.03%	0.63%
Benchmark	2%	2%	2%	2%	2%	2%
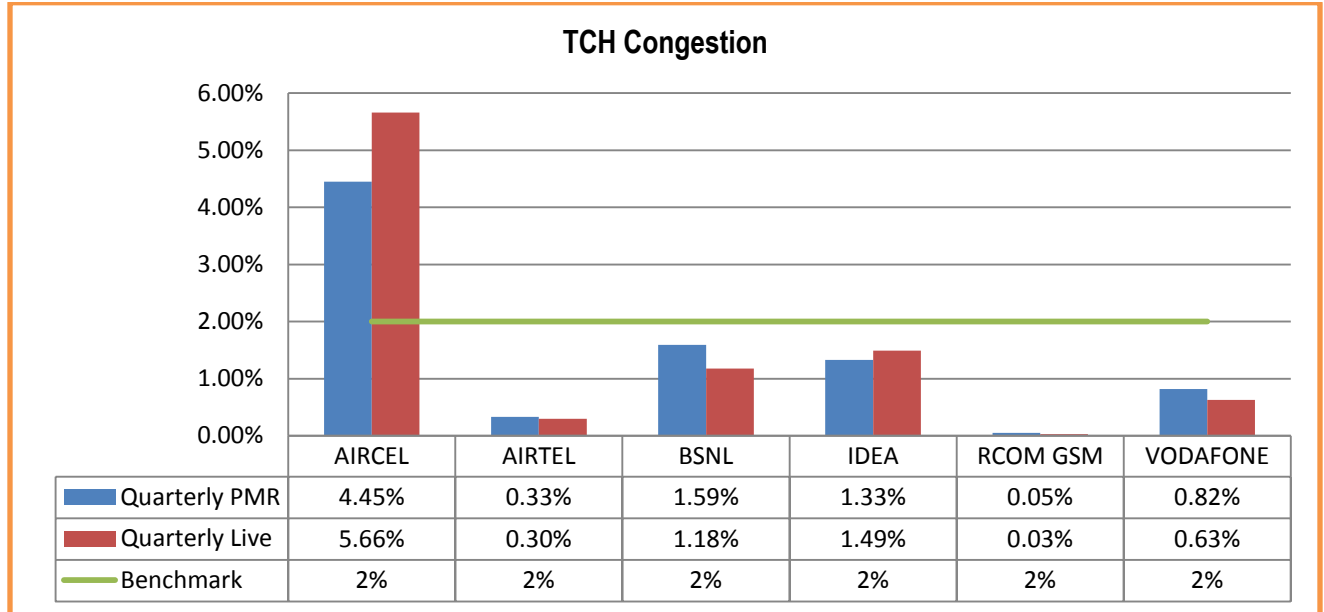
All operators are meeting the benchmarks except Aircel.

6) CALL DROP RATE :

Call Drop Rate

	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
Quarterly PMR	1.32%	0.47%	1.64%	1.58%	0.42%	0.83%
Quarterly Live	1.30%	0.45%	1.22%	1.47%	0.38%	0.81%
Benchmark	2%	2%	2%	2%	2%	2%
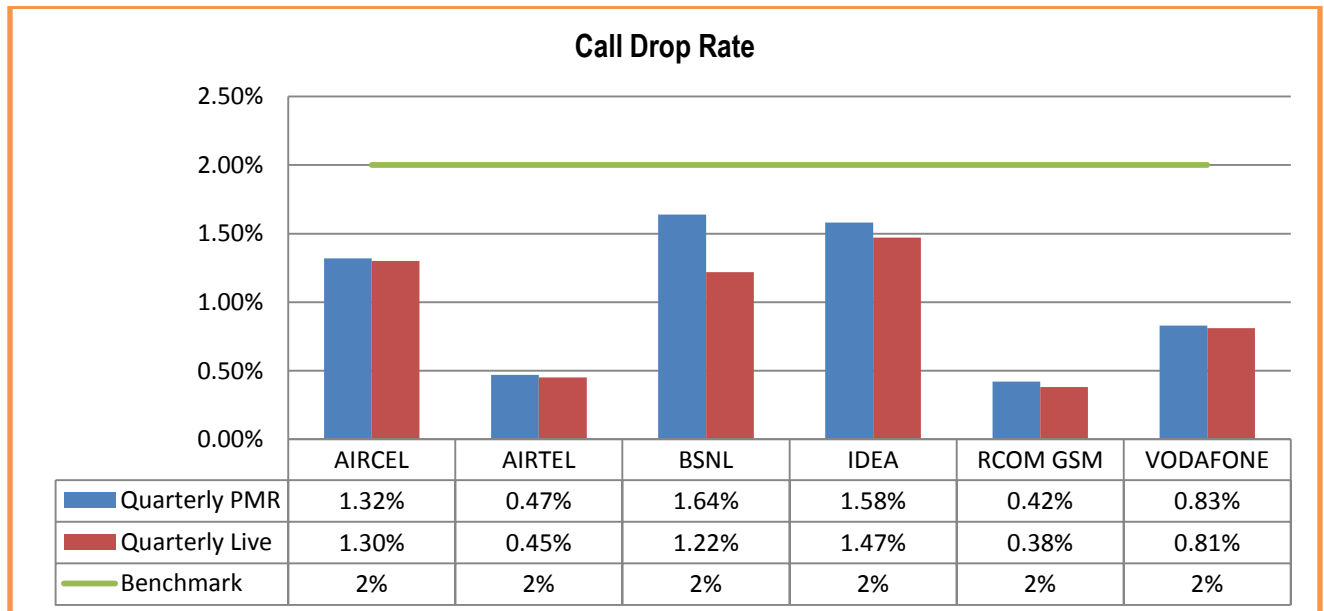
All operators are meeting the benchmarks.

7) WORST AFFECTED CELLS>3% TCH DROP :

Worst affected cells>3% TCH drop

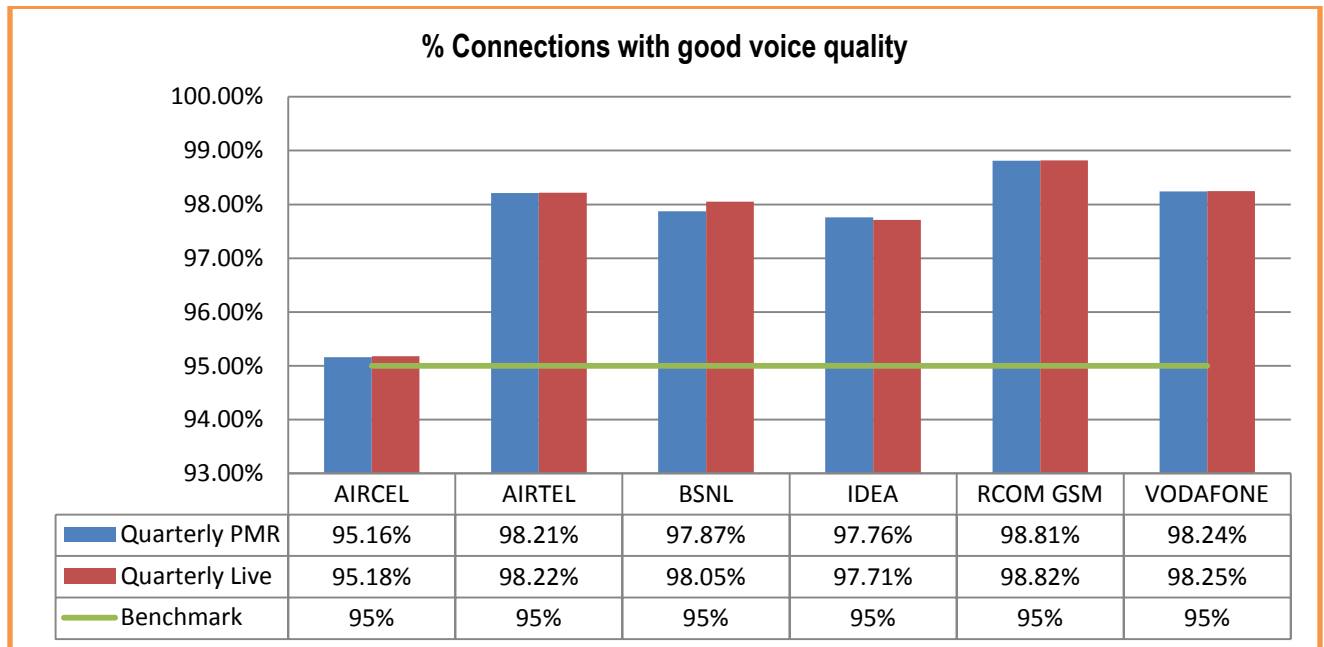|	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
Quarterly PMR	10.60%	1.16%	2.11%	2.53%	0.09%	2.89%
Quarterly Live	10.46%	1.08%	1.82%	2.60%	0.02%	2.82%
Benchmark	3%	3%	3%	3%	3%	3%
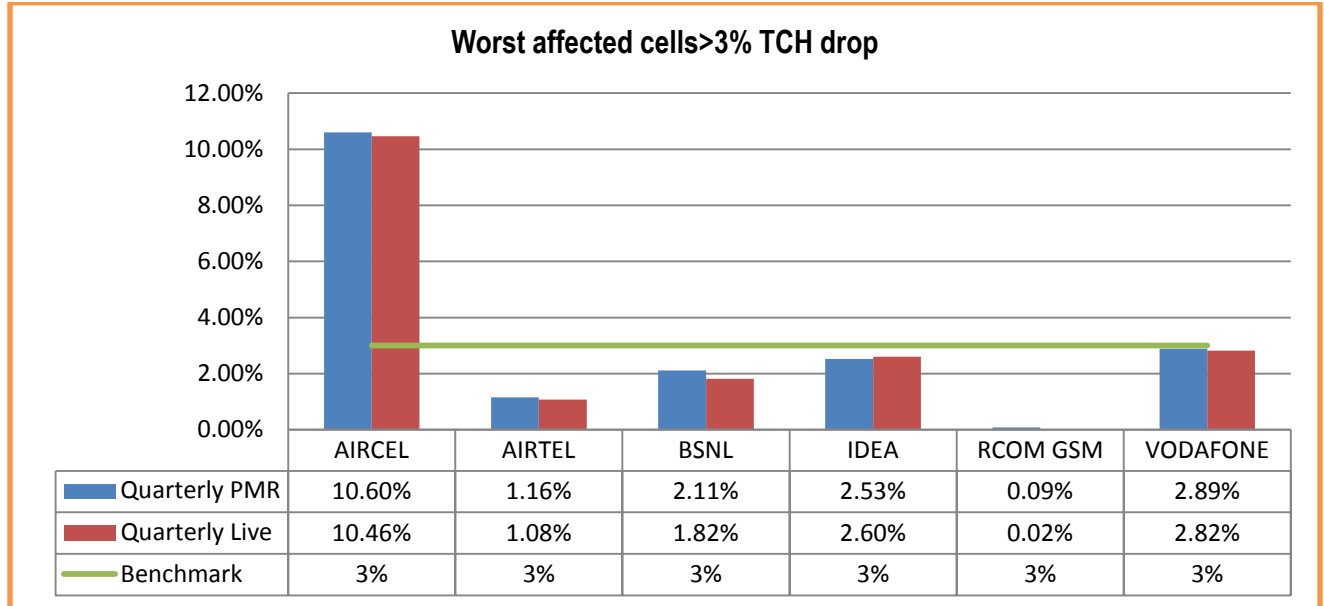
All operators are meeting the benchmarks except Aircel.

8) PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY :

% Connections with good voice quality

	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
Quarterly PMR	95.16%	98.21%	97.87%	97.76%	98.81%	98.24%
Quarterly Live	95.18%	98.22%	98.05%	97.71%	98.82%	98.25%
Benchmark	95%	95%	95%	95%	95%	95%

All operators are meeting the benchmarks.

9. QOS AUDIT OF BASIC (WIRELINE) SERVICE PROVIDERS

9. QOS AUDIT OF BASIC TELEPHONE SERVICE (WIRELINE)

The QoS audit for basic (wire line) service was undertaken for assessment of quarterly performance of the service providers for quarter ended March-2015. As per the current list of the exchanges provided by BSNL, there are total 363 exchanges in J&K Circle. Out of 363, **audit was done for sampled 6 (Urban) and 13 (Rural) exchanges** of BSNL (List of BSNL exchanges undertaken for QoS audit attached as Annex-1). The performance of the Service providers against each parameter has been evaluated by taking average of performance value of each parameter for all the exchanges of the respective service providers. In J&K circle only one service provider i.e. BSNL is operating their services, TTL has given in writing that they don't have their subscriber in J&K circle.

Sr. No	Service Provider	Circle	Urban Exchange	Rural Exchange	Total Exchange	No. of Urban Exchanges Covered for audit	No. of Rural Exchanges Covered for audit
1	BSNL	J&K	112	251	363	6	13
Total Exchanges at present			**112**	**251**	**363**	**6**	**13**

9.1 SERVICE PROVIDER PERFORMANCE REPORT BASED ON QUARTERLY MEASUREMENT DATA VERIFICATION FOR BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:

S/ N	Wireline Audit Data / Name of Parameter	Benchmark	Audit Period	Circle Name	BSNL
	AVERAGED AUDITED DATA FOR WIRELINE (BASIC) SERVICES – J&K CIRCLE				
1	**Fault incidences**				
	% of (No. of faults/100 subscribers /month)	< 7%	Quarterly	J&K	**9.22%**
2	**Faults Repair/Restoration Time**				
	% of fault repair by next working day(Urban Area)	>85%	Quarterly	J&K	90.45%
	% of fault repair Within 5 days (Urban Area)	100%	Quarterly	J&K	**99.15%**
	% of fault repair by next working day(Rural & hilly Area)	>75%	Quarterly	J&K	92.31%
	% of fault repair Within 7 days(Rural & hilly Area)	100%	Quarterly	J&K	100.00%
	Mean time to Repair(MTTR)	≤10 Hrs	Quarterly	J&K	5.93 Hrs
3	**Rent Rebate**				
	Fault pending > 3 days & <7 days	Rebate for 7 days	Quarterly	J&K	0
	Fault Pending > 7 days & < 15 days	Rebate for 15 days	Quarterly	J&K	0
	Fault pending > 15 days	Rebate for 1 month	Quarterly	J&K	0
4	**Metering & Billing Credibility**				
	% of disputed Bills over bills issued (Post Paid)	< 0.1%	Quarterly	J&K	0.02%
	% of Pre-paid Charging Complaints	< 0.1%	Quarterly	J&K	NA
	% of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	98% within 4 weeks	Quarterly	J&K	100.00%
	% of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 6 weeks	100% within 6 weeks	Quarterly	J&K	100.00%
	Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<=1 week	Quarterly	J&K	1 week
5	**POI Congestion**				
	No. of POI's having congestion >0.5%		Quarterly	J&K	0
6	**Response Time to customer for assistance**				
	% age of Accessibility of Call centre/customer Care	>=95%	Quarterly	J&K	**88.85%**
	% age of calls answered by perator(voice to voice) within 90 seconds	>=95%	Quarterly	J&K	**83.31%**
7	**Customer care(promptness in attending to customers request)**				
	Termination / Closures	100%	Quarterly	J&K	100.00%
	Time taken for refunds of deposit after closure	100%	Quarterly	J&K	100.00%

- **NA-Not Applicable**

9.2. SERVICE PROVIDER PERFORMANCE REPORT BASED ON 3 DAYS LIVE MEASUREMENT DATA VERIFICATION FOR BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:

S/ N	3 DAYS LIVE MEASUREMENT DATA FOR WIRELINE (BASIC) SERVICES - J&K CIRCLE				
	3 days live Wireline Audit Data	**Benchmark**	**Audit Period**	**Circle Name**	**BSNL**
	Name of Parameter				
1	**POI Congestion**				
	No. of POI's having congestion >0.5%		*Live*	*J&K*	0
2	**Response Time to customer for assistance**				
	Accessibility of Call centre/customer Care	>=95%	*Live*	*J&K*	**78.23%**
	% age of calls answered by operator(voice to voice) within 90 seconds	>=95%	*Live*	*J&K*	**80.31%**

9.3 KEY FINDINGS: BASIC TELEPHONE SERVICES (WIRELINE)

Fault Incidences: The audit of the service providers revealed that the performance of BSNL was beyond the benchmark of < 7 % with its achieved level as **9.22%**.

Fault Repair/Restoration Time: For this parameter, **BSNL have met the benchmark of fault repair by next working day but remained short of benchmark of 100% for faults repaired within 5 days (urban) by achieving 99.15%.**

Mean Time to Repair: BSNL have met the benchmark for this parameter.

Metering and Billing performance: For this parameter, the performance of the service provider was found well within the compliance benchmarks.

Period of refund/adjustment from date of resolution of complaints: The performance of the service provider was within the benchmark of <=1 week.

Response Time to Customer for assistance: For parameters '% age of Accessibility of Call and Call answered by operator, **BSNL** failed to meet the benchmark of both the parameters as it could perform to the level of **88.85% and 83.31%** respectively, against the benchmark of >= 95%.

Termination/Closures: **BSNL** has met the benchmark.

Live Measurement:

In live measurement also, **BSNL** could not meet the benchmark of parameter Accessibility of Call center and call answered by operator with their performance as **78.23% and 80.31%** respectively.

Thus, from the above findings that, it was concluded that the performance of BSNL was not satisfactory in respect of the parameters Fault Repairs/Restoration and Response time to customer for assistance .Hence, BSNL needs to improve their services in respect of these parameters.

9.4 INTER OPERATOR CALL ASSESSMENT (WIRELINE)

As there is only one basic (wireline) operator i.e. BSNL,   so inter operator Call assessment is not done.

9.5 LEVEL-1 LIVE CALLING (WIRELINE)

| LEVEL 1 LIVE CALLING			
Emergency no.	Circle Name	No. of calls made	BSNL
100	J&K	10	√
101	J&K	10	√
102	J&K	10	√

To assess the availability and efficiency of level 1 services such as police, fire, ambulance (emergency services) offered by the service provider, the calls were made from telephone provided by the service providers. In J&K circle, these services were found functional in the networks of both the service providers.

9.6 CUSTOMER CARE / HELPLINE ASSESSMENT (WIRELINE SERVICES)

LIVE CALLING TO CALL CENTRE		
Parameters	Benchmark	BSNL
A) Total no of calls attempted to customer care/Call center		100
B) Total no. of calls successfully established to customer care/Call center		100
C) % Accessibility of Call centre /customer Care (Total call attempt*100/ Total call successfully established)	>=95%	**100.00%**
D) Total Calls reached to agent desk for Voice to Voice (Total call attempt)		100
E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		90
F) % age of calls answered by the operators (voice to voice) within 90 seconds	>=95%	**90.00%**

In case of calls answered by operators (voice to voice), when test calls were made to the call centers, **90%** of calls were answered by the call center operators of BSNL.

GRAPHICAL REPRESENTATION OF BASIC (WIRELINE) SERVICES
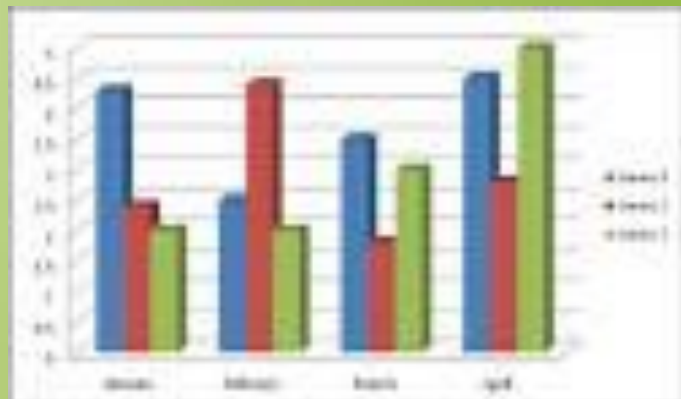
9.7 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS:

1) FAULT INCIDENCE:

Fault Incidence
(No. of faults/100 subscribers /month)

	BSNL
(No. of faults/100 subscribers /month)	9.22%
Benchmark < 7%	7%
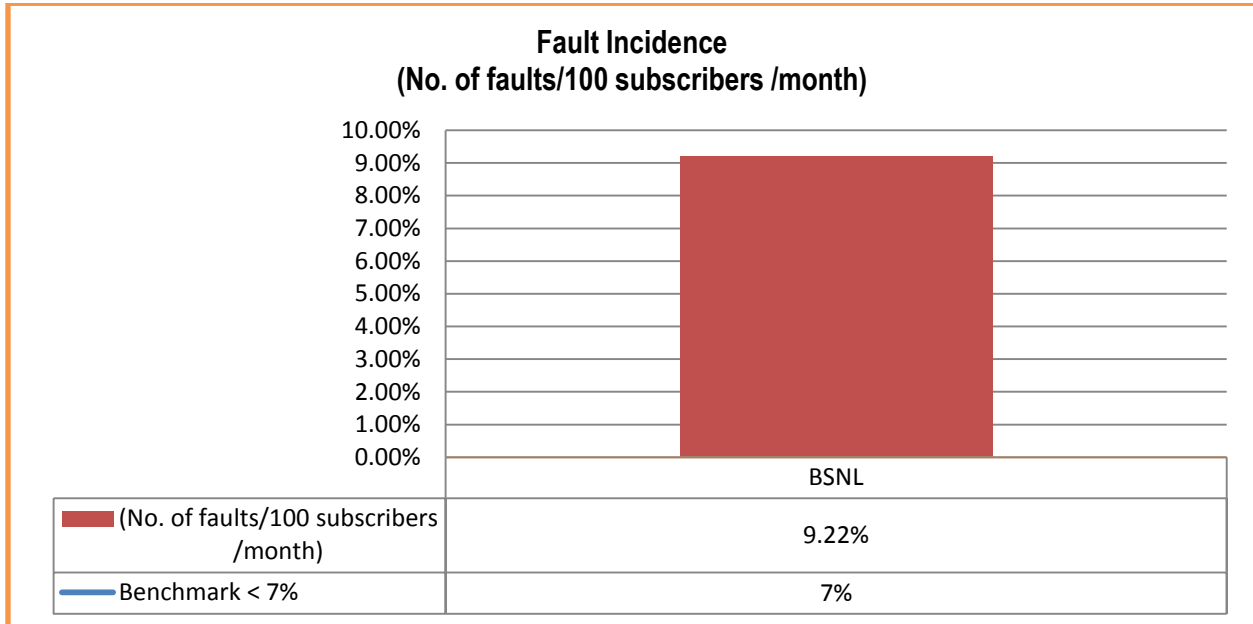
BSNL is not meeting the benchmark.

2) FAULTS REPAIR/RESTORATION TIME:

Faults Repair/Restoration Time
Fault repair by next working day(Urban Area)

	BSNL
Fault repair by next working day(Urban Area)	90.45%
Benchmark >85%	85%
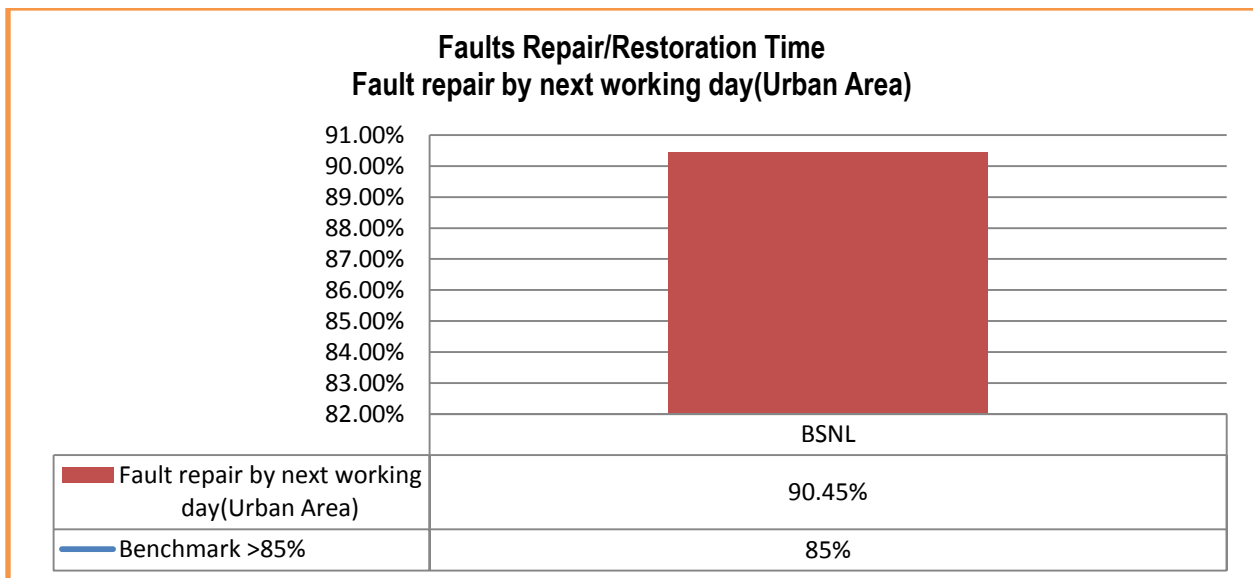
BSNL is meeting the benchmark.

3) FAULTS REPAIR/RESTORATION TIME WITHIN 5 DAYS:

**Faults Repair/Restoration Time
Within 5 days day**

	BSNL
Within 5 days	99.15%
Benchmark-100%	100%
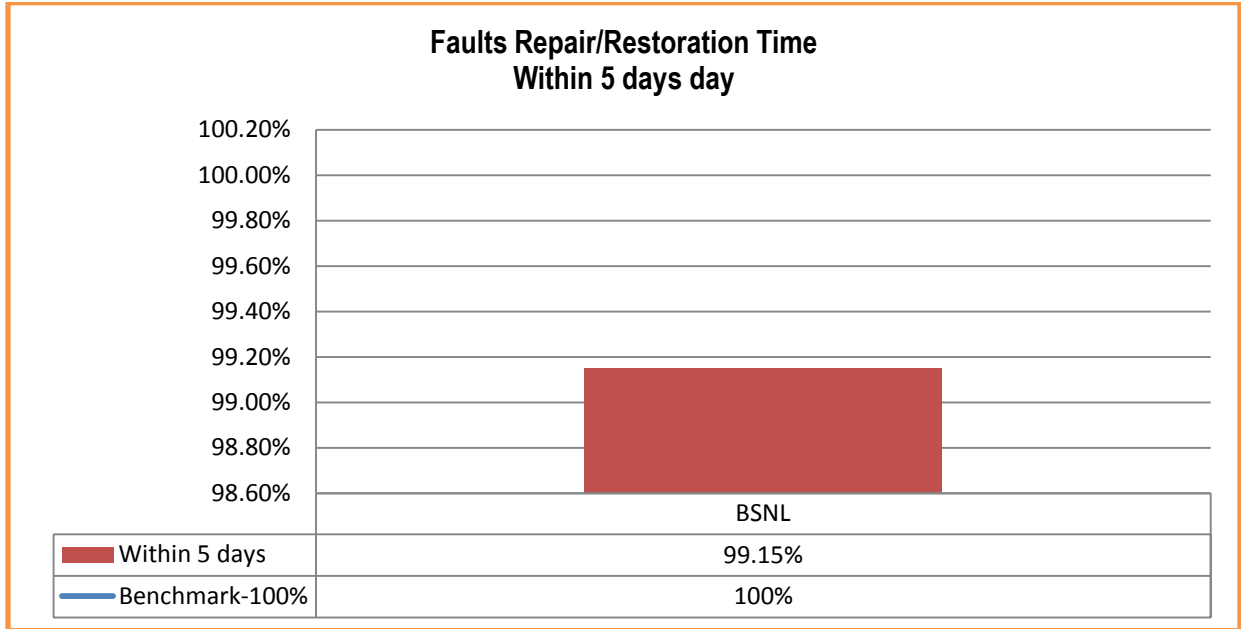
BSNL is not meeting the benchmark.

4) MEAN TIME TO REPAIR (MTTR):

**Faults Repair/Restoration Time
Mean time to Repair(MTTR)**

	BSNL
Mean time to Repair(MTTR)	5.93
Benchmark ≤10 Hrs	10
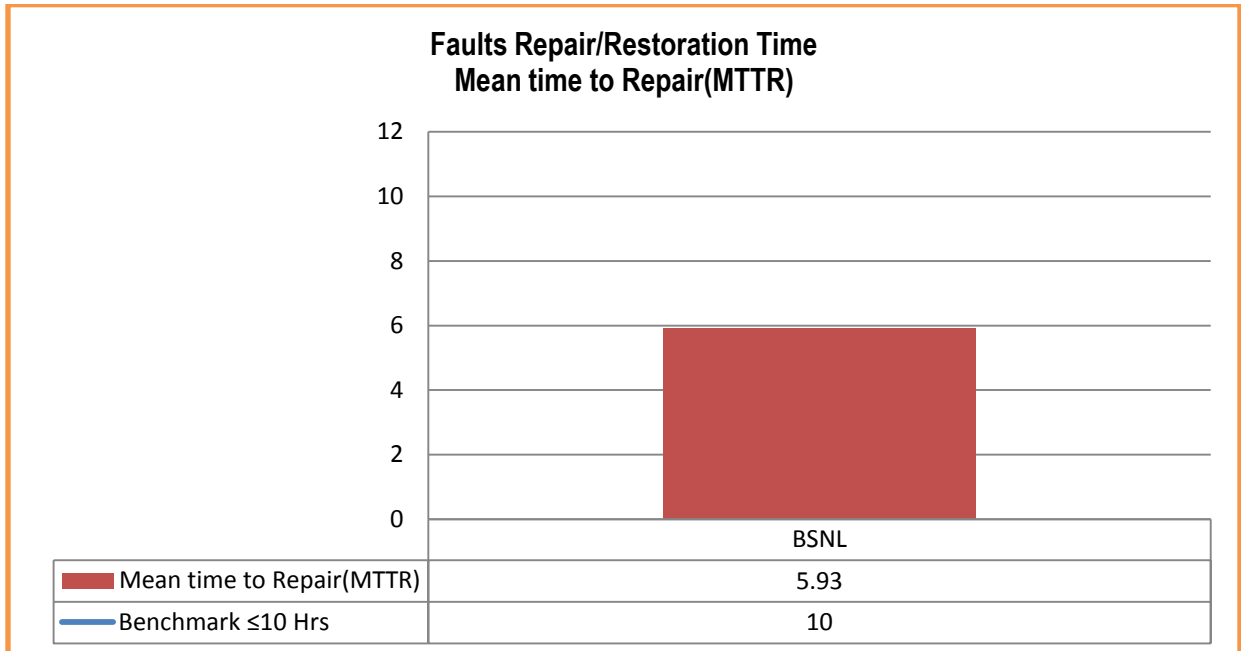
BSNL is meeting the benchmark.

5) METERING & BILLING PERFORMANCE:

    a) DISPUTED BILLS OVER BILL ISSUED :

Metering & Billing Performance
Disputed Bills over bills issued

	BSNL
Disputed Bills over bills issued	0.02%
Benchmark < 0.1%	0.1%
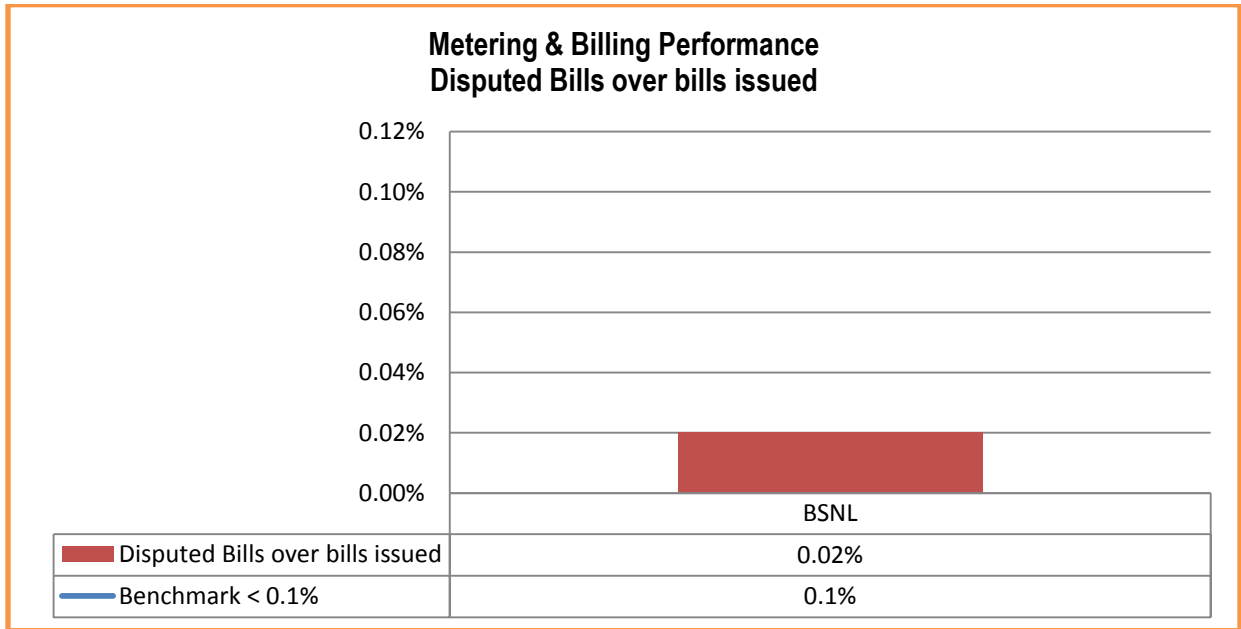
BSNL is meeting the benchmark.

    b) BILLING COMPLAINT RESOLUTION WITHIN 4 WEEKS:

% of billing complaints resolved within 4 weeks

	BSNL
% of billing complaints resolved within 4 weeks	100.00%
Benchmark-98% within 4 weeks	98%
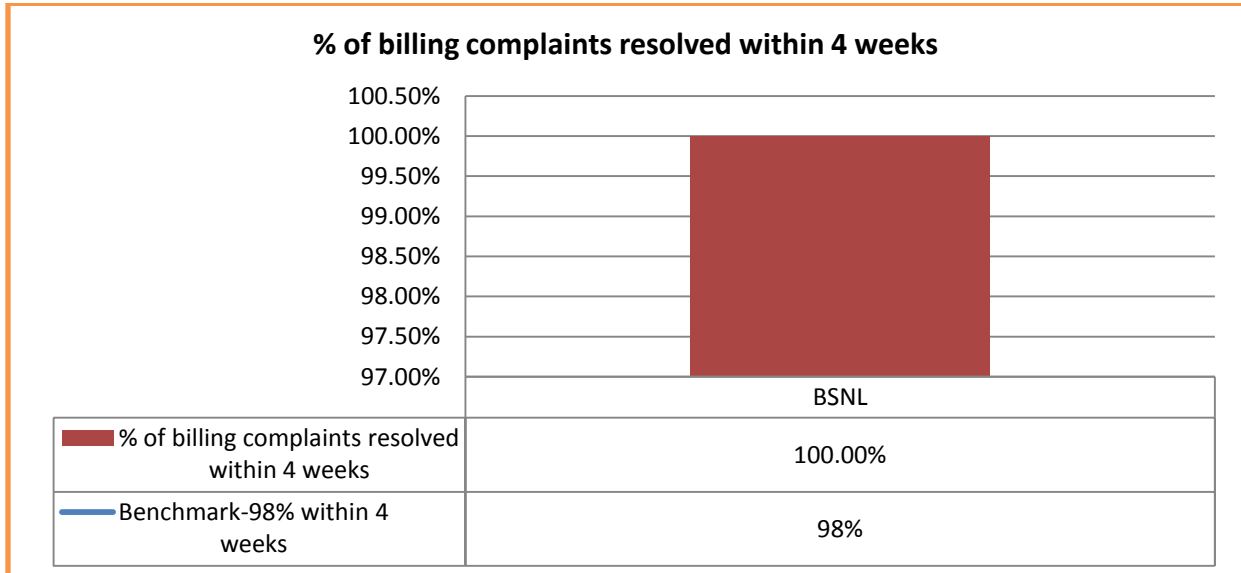
BSNL is meeting the benchmark.

c) **BILLING COMPLAINT RESOLUTION WITHIN 6 WEEKS:**

% of billing complaints resolved within 6 weeks

	BSNL
% of billing complaints resolved within 6 weeks	100.00%
Benchmark 100% within 6 weeks	100%
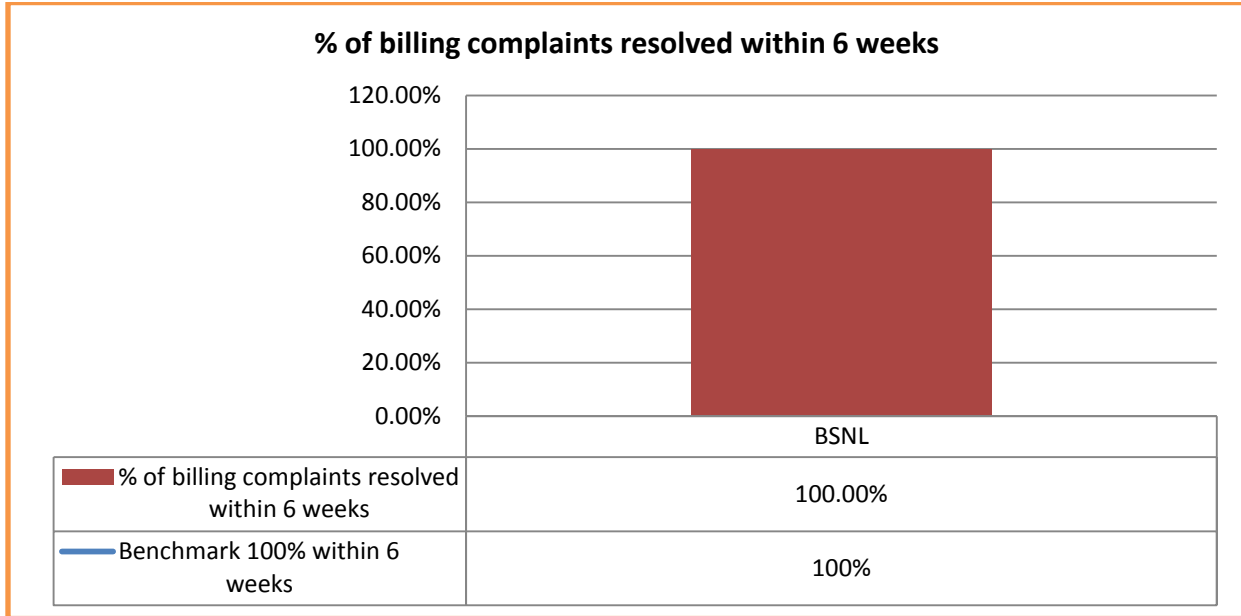
BSNL is meeting the benchmark.

6) **TERMINATION & CLOSURES:**

Customer care(promptness in attending to customers request)

	BSNL
Termination / Closures	100.00%
Time taken for refunds of deposit after closures	100.00%
Benchmark 100%	100%
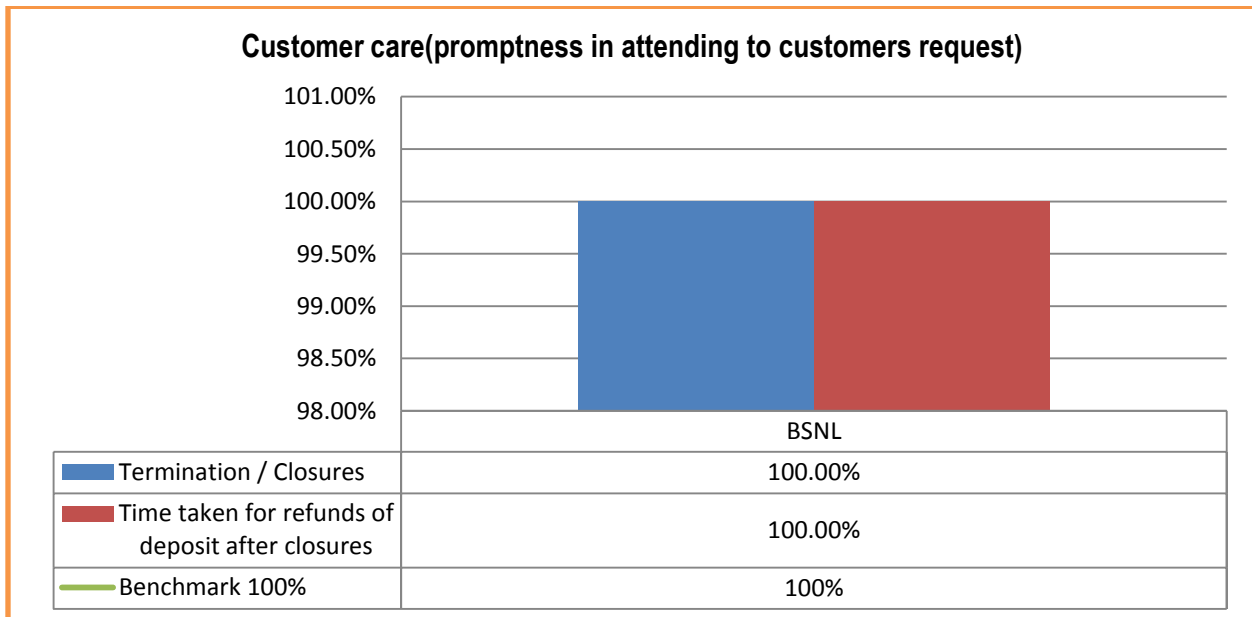
BSNL is meeting the benchmark.

9.8 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BASIC TELEPHONE SERVICE (WIRELINE) PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:

1) **RESPONSE TIME TO CUSTOMER FOR ASSISTANCE ACCESSIBILITY OF CALL CENTRE/CUSTOMER CARE:**

Response Time to customer for assistance Accessibility of Call centre/customer

	BSNL
Quarterly	88.85%
Live	78.23%
Benchmark ≥95%	95%
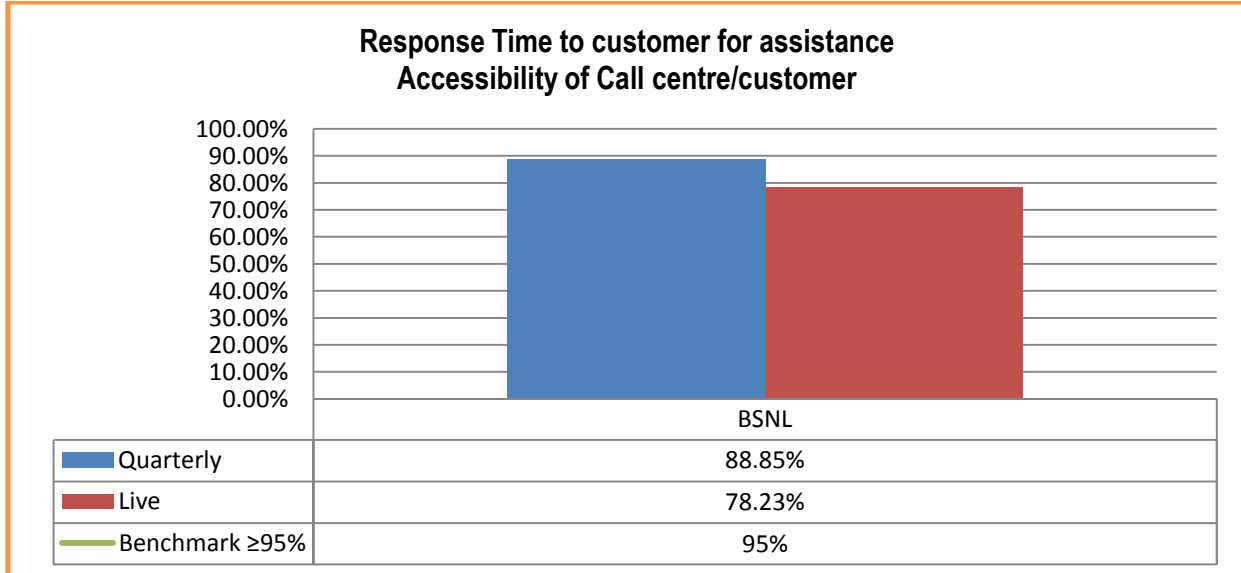
BSNL is not meeting the benchmark.

2) **RESPONSE TIME TO CUSTOMER FOR ASSISTANCE CALL ANSWERED BY OPERATORS :**

Response Time to customer for assistance % age of calls answered by operator(voice to voice) within 90 seconds

	BSNL
Quarterly	83.31%
Live	80.31%
Benchmark ≥95%	95%
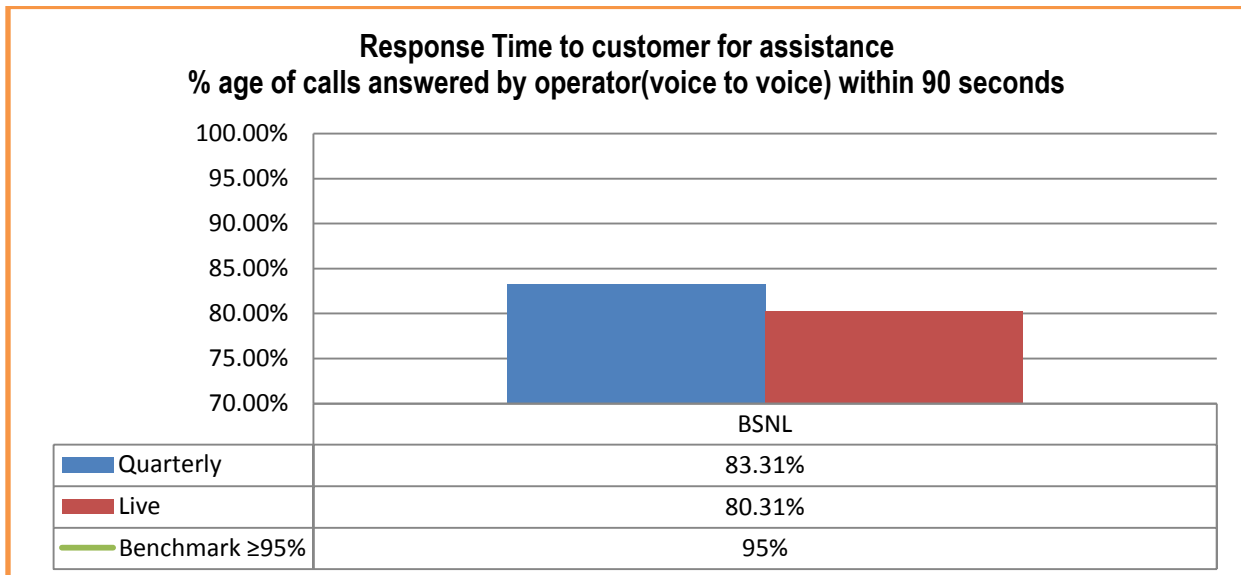
BSNL is not meeting the benchmarks.

10. QOS AUDIT OF BROADBAND SERVICE PROVIDERS

10. QUALITY OF SERVICE AUDIT OF BROADBAND SERVICE PROVIDERS

Audit was done for BSNL, Broadband Pacenet India and RCL broadband service providers, providing their service in J&K circle. Pacenet and RCL are having their subscribers in single digit. Location of PoPs of BSNL, covered for QoS audit is attached as **Annex-2**. M/s Tata communications (TCL) is not having its subscriber base in J&K circle; hence its audit is not done.

Discussion with the private broadband service providers reveal that there is no concept of their PoPs on SDCA basis; they are maintaining their entire data on centralized basis, so audit has been done for the centralized data.

Audit was done for the following Broadband Service Providers in J&K Circle.

S. NO.	NAME OF BROADBAND SERVICE PROVIDER	LOCATION OF AUDIT
1	BSNL	BSNL OFFICE JAMMU, UDHAMPUR
2	BROADBAND PACENET INDIA PVT. LTD	BROADBAND PACNET INDIA PVT LTD, SUBHASH NAGAR, NEW DELHI
3	RELIANCE COMMUNICATION LIMITED (RCL)	DAKC, MUMBAI

10.1 QUARTERLY MEASURMENT DATA FOR BROADBAND SERVICE PROVIDERS

AVERAGED QUARTERLY (JAN to MAR 15) AUDIT DATA FOR BROADBAND SERVICES – J&K CIRCLE						
Broadband Audit Data		**Bench- mark**	**Circle Name**	**BSNL**	**RCL**	**PACENET**
S/ N	**Name of Parameter**			**BROADBAND SERVICE PROVIDERS**		
1	Service Provisioning/Activation Time					
	A) No of connections registered during the period		J&K	1913	1	0
	B) Total number of connections provided within 15 days of registration on demand during the period		J&K	1913	1	0
	C) % age of connections provided within 15 days of registration on demand (subject to technical feasibility)	*<15 days*	J&K	**100.00%**	**100.00%**	**100.00%**
	D)Total number of connections provided after 15 days of registration on demand		J&K	0	0	0
	E) %age of connections provided after 15 days of registration on demand		J&K	**0.00%**	**0.00%**	**0.00%**
	F) In all cases where payment towards installation charge & SD is taken and the Broadband connection is not provided within 15 working days	*Credit @ Rs.10/ per day.*	J&K	0	0	0
2	Fault Repair/Restoration Time					
	A) Total number of faults registered during the period		J&K	3768	0	3
	B) Total number of faults repaired by next working day		J&K	3573	0	3
	C) % age of faults repaired by next working day	*>90%*	J&K	**94.82%**	**100.00%**	**100.00%**
	D) Total number of faults repaired within three working days		J&K	3756	0	3
	E)% age of faults repaired within three working days	*≥99%*	J&K	**99.68%**	**100.00%**	**100.00%**
3	Rent Rebate					
	A) Faults Pending for > 3 working days and < 7 working days: (Rebate equivalent to 7 days of minimum monthly charge or equivalent usage allowance)		J&K	12	0	0
	B) Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)		J&K	0	0	0
	C) Faults Pending for > 15 working days:(Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)		J&K	0	0	0
4	Billing Performance					
	A) Total bills generated during period		J&K	88515	25	0

AVERAGED QUARTERLY (JAN to MAR 15) AUDIT DATA FOR BROADBAND SERVICES – J&K CIRCLE						
Broadband Audit Data		**Bench- mark**	**Circle Name**	**BSNL**	**RCL**	**PACENET**
S/ N	**Name of Parameter**			**BROADBAND SERVICE PROVIDERS**		
	B) Total complaints received from customers/ Bills disputed		*J&K*	12	0	0
	C) Billing complaints per 100 bills issued	*<2%*	*J&K*	**0.01%**	**0.00%**	**0.00%**
	D) Total number of complaints resolved in 4 weeks from date of receipt		*J&K*	12	0	0
	E) %age billing complaints resolved in 4 weeks	*100%*	*J&K*	**100.00%**	**100.00%**	**100.00%**
	F) Total number of cases requiring refund of deposits after closure		*J&K*	1428	0	0
	G) Total number of cases where refund was made in <60 days		*J&K*	1428	0	0
	H) Percentage cases in which refund received within 60 days	*100%*	*J&K*	**100.00%**	**100.00%**	**100.00%**
5	**Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)**					
	A) Total number of calls received by the operator		*J&K*	30078	90305	3
	B) Total number of calls answered by the operator within 60 seconds		*J&K*	26473	81386	3
	C) % age calls answered by the operator in 60 seconds	*>60%*	*J&K*	**88.01%**	**90.12%**	**100.00%**
	D) Total number of calls answered by the operator within 90 seconds		*J&K*	28040	82412	3
	E) % age calls answered by the operator within 90 seconds	*>80%*	*J&K*	**93.22%**	**91.26%**	**100.00%**
6	**Bandwidth Utilization/ Throughput:**					
6.1	**POP to ISP Gateway Node [Intra-network] Link(s)**					
	A) Total Bandwidth Available at the link for the peak hours of the day		*J&K*	4500	27000	60
	B) Total Bandwidth utilized during the peak hours i.e. TCBH (In Mpbs)		*J&K*	2461	4153	46
	C) % age Bandwidth utilized during the peak hour	*<80%*	*J&K*	**54.69%**	**15.38%**	**76.66%**
6.2	**A) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity**					
	A) Total number of upstream links for International connectivity		*J&K*	NA	11	NP
	B) Number of Links having Bandwidth utilization > 90% during TCBH		*J&K*	NA	0	NP
	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		*J&K*	NA	314000	NP
	D) Total international bandwidth utilization during peak hours (TCBH) in Mpbs		*J&K*	NA	176041	NP

AVERAGED QUARTERLY (JAN to MAR 15) AUDIT DATA FOR BROADBAND SERVICES – J&K CIRCLE						
Broadband Audit Data		**Bench- mark**	**Circle Name**	**BSNL**	**RCL**	**PACENET**
S/ N	**Name of Parameter**			**BROADBAND SERVICE PROVIDERS**		
	E) %age International Bandwidth utilization during peak hours (TCBH)	<80%	J&K	**NA**	**56.06%**	**NP**
6.3	**Broadband Connection Speed (download) - from ISP Node to User**					
	A) Total committed download speed to the sample subscribers (In mpbs)		J&K	6	12	NP
	B) Total average download speed observed for the sample subscribers during TCBH (In Mpbs)		J&K	5.37	10.34	NP
	C) % age subscribed speed available to the subscriber during TCBH	>80%	J&K	**89.42%**	**86.17%**	**NP**
7	**Service Availability/Uptime**					
	A) Total operational Hours		J&K	2160	2160	2160
	B) Total downtime (In hours)		J&K	3.50	0	0
	C) Total time when the service was available (In Hrs)		J&K	2156.50	2160	2160
	D) % age of Service availability uptime	>98%	J&K	**99.84%**	**100.00%**	**100.00%**
8	**Packet Loss**					
	A) Total number of ping packets transmitted		J&K	NP	90000	NP
	B) Total number of ping packets lost		J&K	NP	467	NP
	C) % age packet loss	<1%	J&K	**NP**	**0.52%**	**NP**
9	**Network latency (for wired broadband access)**					
9.1	**Network Latency from User reference point at POP/ISP Node to IGSP/NIXI gateway**					
	A) Total number of ping packets transmitted		J&K	NP	3000	NP
	B) Total round trip time for all the ping packets transmitted during the period		J&K	NP	36	NP
	C) Average round trip tip time for all the ping transmitted	<120 ms	J&K	**34**	**36**	**NP**
9.2	**Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)**					
	A) Total number of ping packets transmitted		J&K	NP	3000	NP
	B) Total round trip time for all the ping packets transmitted during the period		J&K	NP	37	NP
	C) Average round trip tip time for all the ping transmitted	<350 ms	J&K	**217.33**	**37**	**NP**
9.3	**Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)**					
	A) Total number of ping packets transmitted		J&K	NA	NA	NA
	B) Total round trip time for all the ping packets transmitted during the period		J&K	NA	NA	NA
	C) Average round trip tip time for all the ping transmitted	<800 ms	J&K	**NA**	**NA**	**NA**

- NA- Not Applicable
- NP-Not Provided- Monthly Data Not Monitored by ISPs.

10.2 SERVICE PROVIDER PERFORMANCE REPORT BASED ON 3 DAYS MEASUREMENT DATA VERIFICATION FOR BROADBAND SERVICE PROVIDERS:

3 DAYS LIVE DATA FOR BROADBAND SERVICES – J&K CIRCLE						
3 days live Broadband Audit Data		**Bench- mark**	**Circle Name**	**BSNL**	**RCL**	**PACENET**
S/ N	**Name of Parameter**			**BROADBAND SERVICE PROVIDERS**		
1	Response time to the customer for assistance % age of calls answered by operator (Voice to Voice)					
	A) Total number of calls received by the operator		J&K	839	3649	1
	B) Total number of calls answered by the operator within 60 seconds		J&K	507	3460	1
	C) % age calls answered by the operator in 60 seconds	>60%	J&K	**60.43%**	**95.00%**	**100.00%**
	D) Total number of calls answered by the operator within 90 seconds		J&K	573	3477	1
	E) % age calls answered by the operator within 90 seconds	>80%	J&K	**68.30%**	**95.29%**	**100.00%**
2	**Bandwidth Utilization/ Throughput:**					
2.1	POP to ISP Gateway Node [Intra-network] Link(s)					
	A) Total Bandwidth Available at the link for the period days		J&K	4500	9000	60
	B) Total Bandwidth utilized during the period during TCBH (In Mpbs)		J&K	2479.82	4803.30	45
	C) % age Bandwidth utilized during the period	<80%	J&K	**55.11%**	**53.37%**	**75.00%**
2.2	A) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity					
	A) Total number of upstream links for International connectivity		J&K	NA	10	NA
	B) Number of Links having Bandwidth utilization > 90% during TCBH		J&K	NA	0	NA
	C) Total international bandwidth available from ISP Node to IGSP/NIXI/NAP		J&K	NA	288000	NA
	D) Total international bandwidth utilization during peak hours (TCBH) in Mpbs		J&K	NA	201459	NA
	E) %age International Bandwidth utilization during peak hours (TCBH)	<80%	J&K	**NA**	**70.00%**	**NA**
2.3	Broadband Connection Speed (download) - from ISP Node to User					
	A) Total committed download speed to the sample subscribers (In mpbs)		J&K	6	1	7
	B) Total average download speed observed for the sample subscribers during TCBH (In Mpbs)		J&K	5.20	0.96	6.93
	C) % age subscribed speed available to the subscriber during TCBH	>80%	J&K	**86.58%**	**96.00%**	**99.00%**

	3 DAYS LIVE DATA FOR BROADBAND SERVICES – J&K CIRCLE				BSNL	RCL	PACENET
	3 days live Broadband Audit Data		**Bench- mark**	**Circle Name**	**BROADBAND SERVICE PROVIDERS**		
S/ N	**Name of Parameter**						
3	**Packet Loss**						
	A) Total number of ping packets transmitted			J&K	1500	3000	3000
	B) Total number of ping packets lost			J&K	0	0	0
	C) % age packet loss		<1%	J&K	**0.00%**	**0.00%**	**0.00%**
4	**Network latency (for wired broadband access)**						
4.1	**Network Latency from User reference point at POP/ISP Node to IGSP/NIXI gateway**						
	A) Total number of ping packets transmitted			J&K	300	3000	3000
	B) Total round trip time for all the ping packets transmitted during the period			J&K	300	5.42	132
	C) Average round trip tip time for all the ping transmitted		<120 ms	J&K	**25.67**	**1.80**	**44**
4.2	**Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Terrestrial)**						
	A) Total number of ping packets transmitted			J&K	1000	3000	3000
	B) Total round trip time for all the ping packets transmitted during the period			J&K	1000	2.27	212.67
	C) Average round trip tip time for all the ping transmitted		<350 ms	J&K	**27.20**	**0.75**	**70.89**
4.3	**Network Latency from User reference point at ISP Node to nearest NAP Port abroad (Satellite)**						
	A) Total number of ping packets transmitted			J&K	NA	NA	NA
	B) Total round trip time for all the ping packets transmitted during the period			J&K	NA	NA	NA
	C) Average round trip tip time for all the ping transmitted		<800 ms	J&K	**NA**	**NA**	**NA**
5	**Service Availability/Uptime**						
	A) Total operational Hours			J&K	72	72	72
	B) Total downtime (In hours)			J&K	0	0	0
	C) Total time when the service was available (In Hrs)			J&K	72	72	72
	D) % age of Service availability uptime		>98%	J&K	**100.00%**	**100.00%**	**100.00%**

NA: Not Applicable
NP: Data not provided:

10.3 KEY FINDINGS: BROADBAND SERVICES

Service Provisioning / Activation Time: The audit of the service providers revealed that all Broadband service providers were well within the benchmark for this parameter.

Fault Repair/Restoration Time: With regards to this parameter the performance of the service providers was within TRAI norms for all the three service providers

Billing Performance: For this parameter also the performance of the service providers was found well within the compliance benchmarks.

Response Time to Customer for assistance by operator (Voice to Voice): For percentage of calls getting connected to call center and answered, all service providers were found meeting the benchmark for this parameter except **BSNL during 3 days live as achieved value is 68.30%.**

Bandwidth Utilization/ Throughput: All the service providers were found using Multiple Router Traffic Grapher (MRTG) and also it was observed that all service providers were reporting combined bandwidth utilization for corporate customers and household customers.
The performance of service providers with respect of these parameters was found satisfactory i.e. within benchmark during quarterly audit as well as 3 days live measurement. However, BSNL and Pacenet don't measurement the benchmark on monthly as well as quarterly basis and hence not provided the data for audit..

Service Availability/Uptime: All service providers were found meeting the benchmark for this parameter.

Packet Loss and Network Latency: It was observed that most of the operators were measuring packet loss and latency by conducting ping test on random basis for their internal assessment and didn't maintain the data of the parameter.

Thus the performance of the service providers was well within the benchmark.

10.4 CUSTOMER CARE / HELPLINE ASSESSMENT

| LIVE CALLING TO CALL CENTRE FOR BROADBAND SERVICES				
	Circle Name	BSNL	RCL	PACENET
Total No. of calls Attempted	J&K	100	100	100
Total number of calls answered by the operator within 60 seconds	J&K	80	100	100
% age calls answered by the operator in 60 seconds	J&K	80.00%	100.00%	100.00%
Total number of calls answered by the operator within 90 seconds	J&K	87	100	100
% age calls answered by the operator within 90 seconds	J&K	87.00%	100.00%	100.00%

In case of calls answered by operators (voice to voice) within 60 seconds and 90 seconds, when test calls were made to the call centers, all broadband service providers were found meeting the TRAI prescribed benchmark.

10.5 LIVE CALLING FOR BILLING COMPLIANTS

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS				
	Circle Name	BSNL	RCL	PACENET
Total No. of calls Attempted	J&K	12	0	0
Total No. of calls Answered	J&K	12	0	0
Cases resolved within 4 weeks	J&K	12	0	0
%age of cases resolved	J&K	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 the effected customers. However, in one case, the number of customers contacted for verification was very less due to less number of billing complaints and in other cases the billing complaints were Zero. In case of the operators having billing complaints, the customers reported their satisfaction on resolution of the billing complaints.

GRAPHICAL REPRESENTATION OF BROADBAND SERVICES
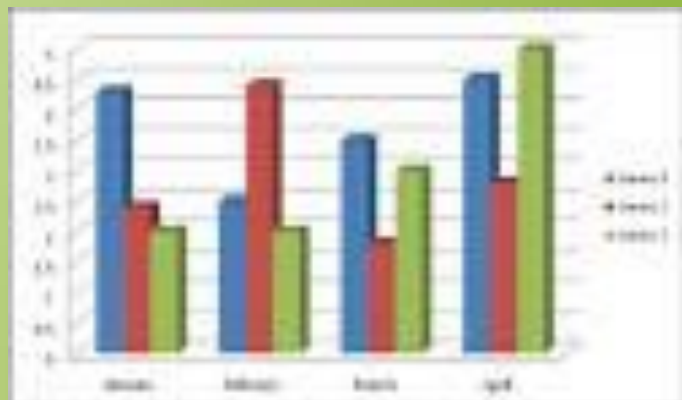
10.6 GRAPHICAL REPRESENTATION OF QUARTERLY PERFORMANCE OF BROADBAND SERVICE PROVIDERS:

1. SERVICE PROVISIONING/ACTIVATION TIME:

Service Provisioning/Activation Time

	BSNL	RCL	PACENET
100% cases in 15 days (subject to technical feasibility)	100.00%	100.00%	100.00%
Benchmark <15 days	100%	100%	100%
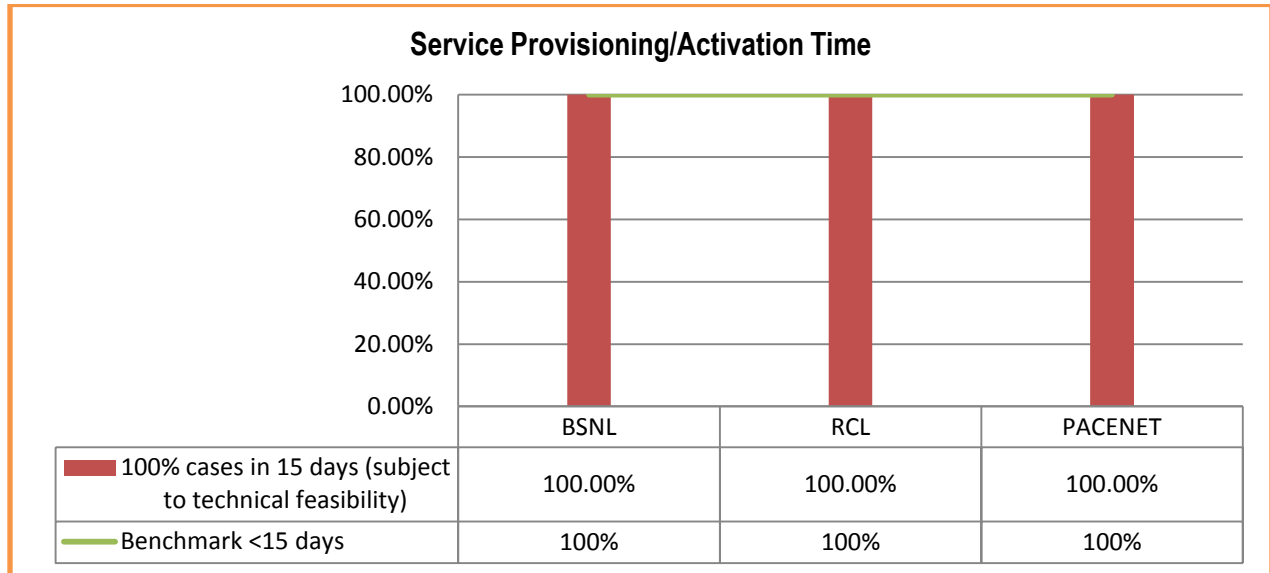
All Operators are meeting the benchmarks. In case of Pacenet, no new connections and Installations were registered during this quarter.

2. BILLING PERFORMANCE:

Billing Performance

	BSNL	RCL	PACENET
Billing complaints per 100 bills issued	0.01%	0.00%	0.00%
Benchmark <2%	2%	2%	2%
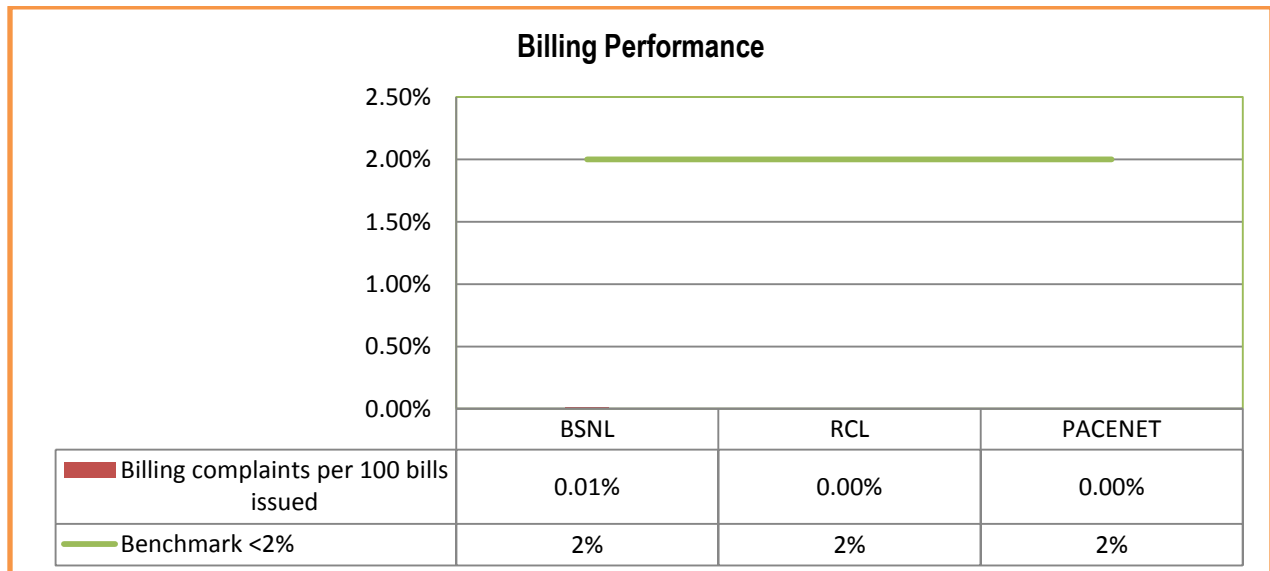
All Operators are meeting the benchmarks.

3. FAULTS REPAIR/RESTORATION TIME:

Faults Repair/Restoration Time

	BSNL	RCL	PACENET
Faults Repair/Restoration Time within 3 working day	99.68%	100.00%	100.00%
Benchmark ≥99%	99%	99%	99%
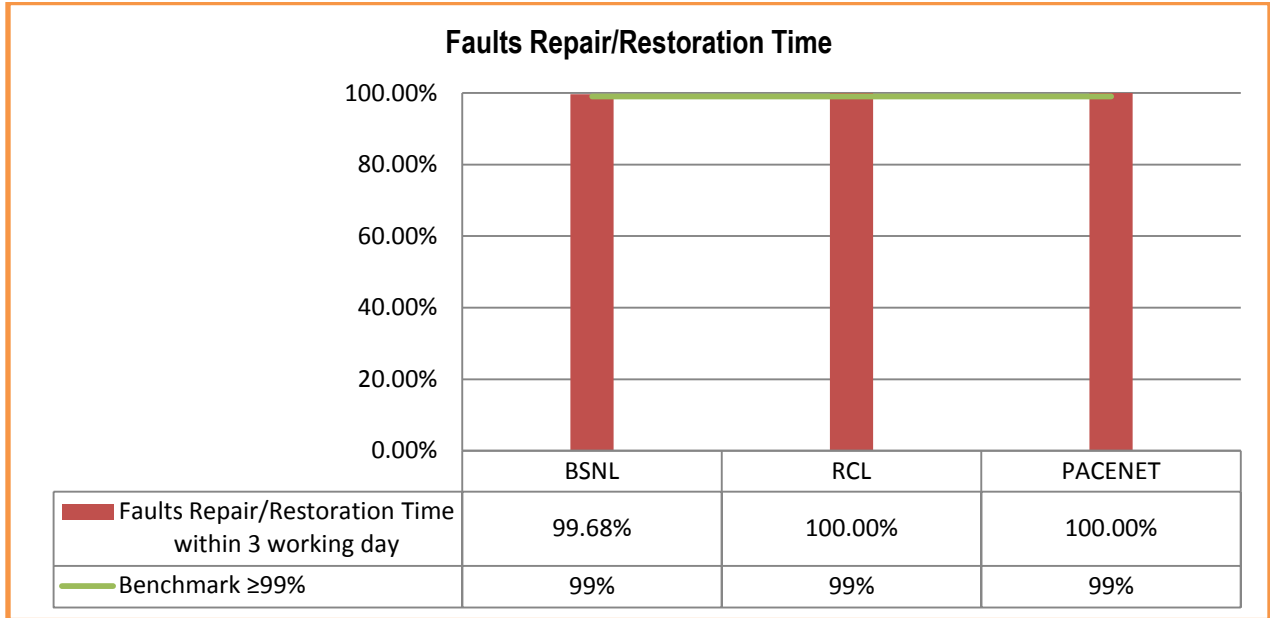
All Operators are meeting the benchmarks.

4. COMPLAINT RESOLUTION:

Complaint Resolution

	BSNL	RCL	PACENET
%age of complaints resolved within 4 weeks	100.00%	100.00%	100.00%
Benchmark 100%	100%	100%	100%
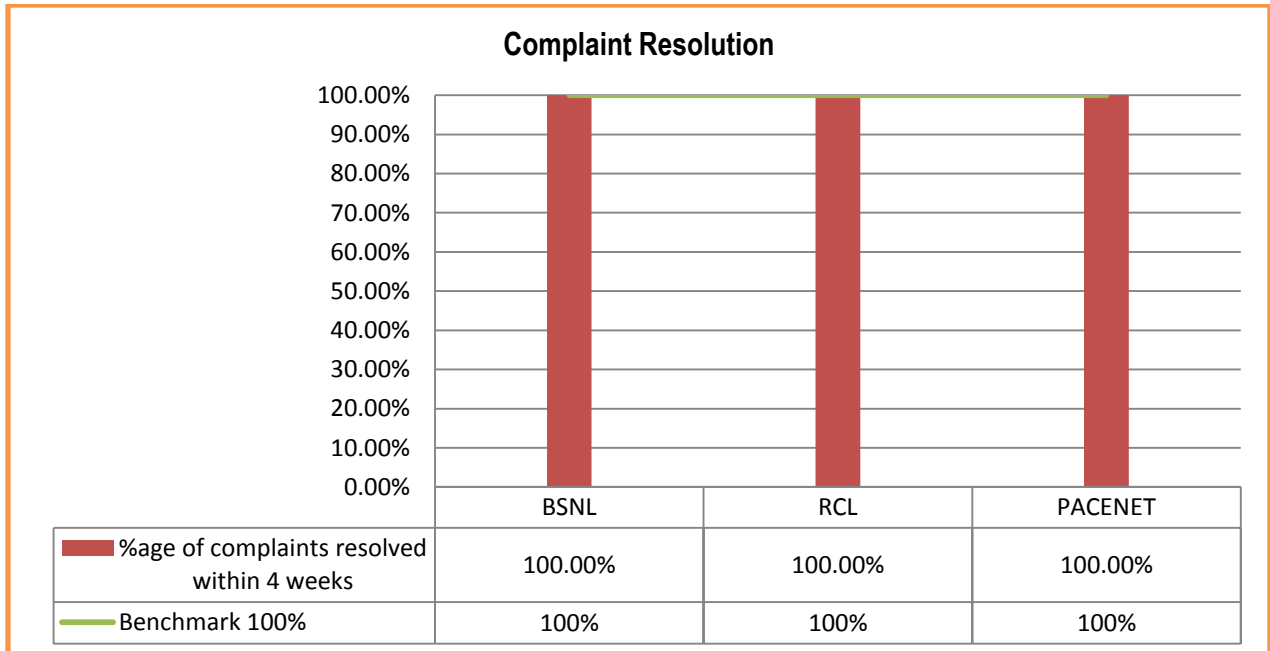
All Operators are meeting the benchmarks.

5. REFUND:

Time taken for refund of deposits after closure (within 60 days)

	BSNL	RCL	PACENET
Time taken for refund of deposits after closure (within 60 days)	100.00%	100.00%	100.00%
Benchmark 100% (within 60 days)	100%	100%	100%
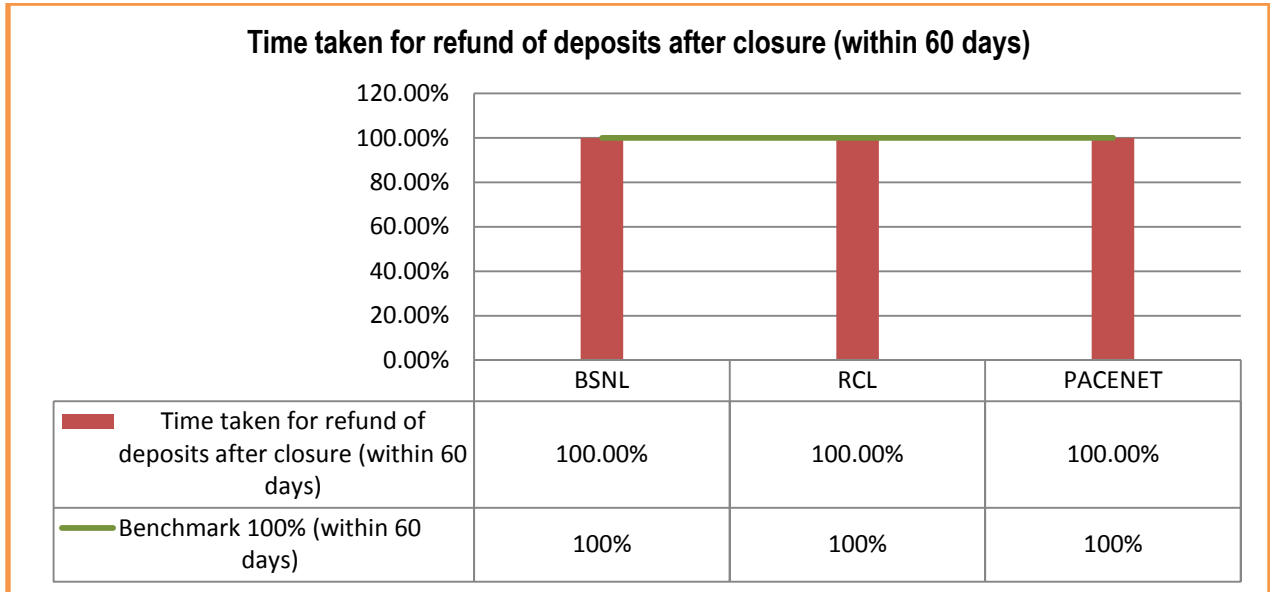
All Operators are meeting the benchmarks.

6. SERVICE AVAILABILITY/UPTIME:

Service Availability/Uptime (for all users) in %age

	BSNL	RCL	PACENET
Service Availability/Uptime (for all users) in %age	99.84%	100.00%	100.00%
Benchmark >98%	98%	98%	98%
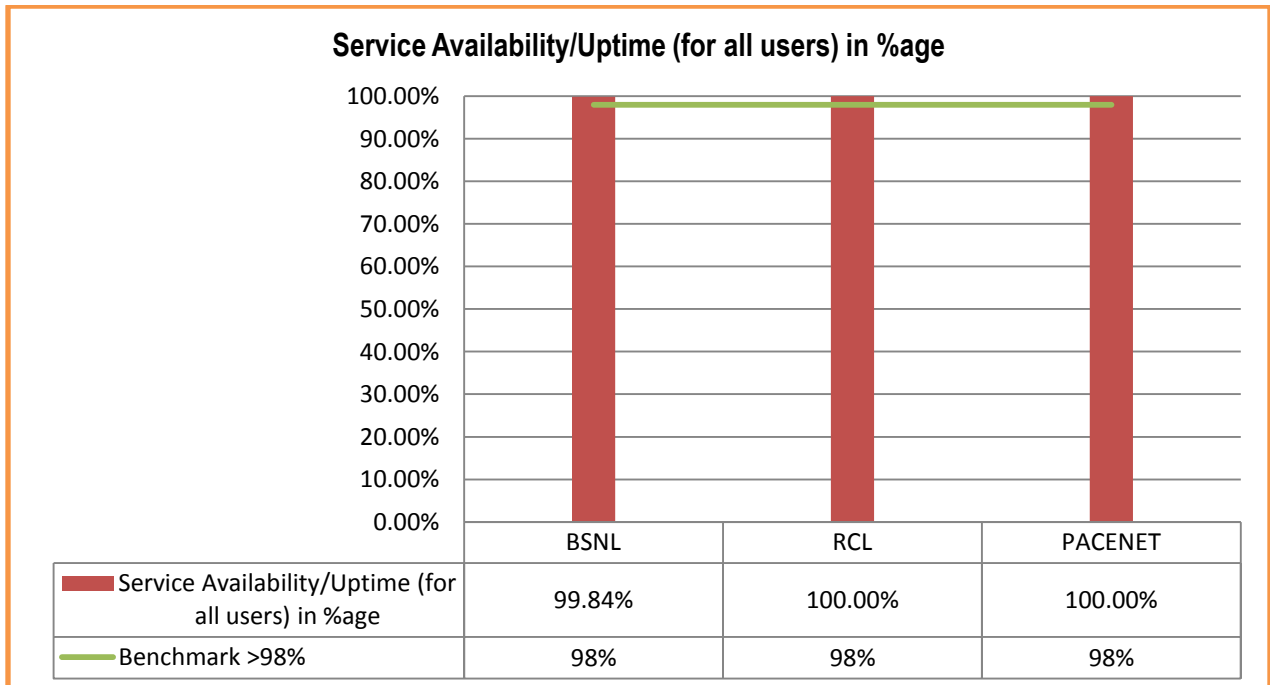
All Operators are meeting the benchmarks.

10.7 GRAPHICAL REPRESENTATION OF PERFORMANCE OF THE BROADBAND SERVICE PROVIDERS V/S 3-DAYS LIVE MEASUREMENT:

1. BROADBAND UTILIZATION/THROUGHPUT POP TO ISP GATEWAY NODE:

**Bandwidth Utilization/ Throughput
POP to ISP Gateway Node [Intra-network] Link(s)**

	BSNL	RCL	PACENET
Quarterly	54.69%	15.38%	76.66%
Live	55.11%	53.37%	75.00%
Benchmark <80%	80%	80%	80%
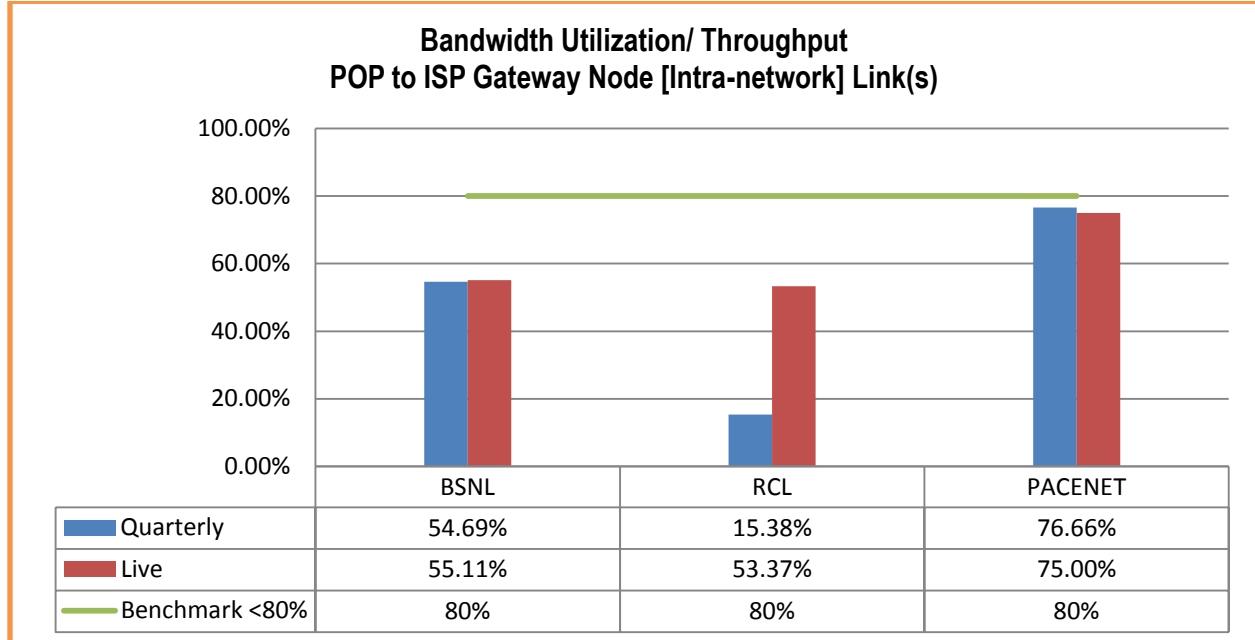
All Operators are meeting the benchmarks.

2. BROADBAND UTILIZATION/THROUGHPUT ISP GATEWAY NODE TO IGSP/NIXI NODE:

**Bandwidth Utilization/ Throughput ISP Gateway Node to IGSP / NIXI Node
upstream Link(s) for International connectivity**

	BSNL	RCL	PACENET
Quarterly		56.06%	
Live		70.00%	
Benchmark <80%	80%	80%	80%
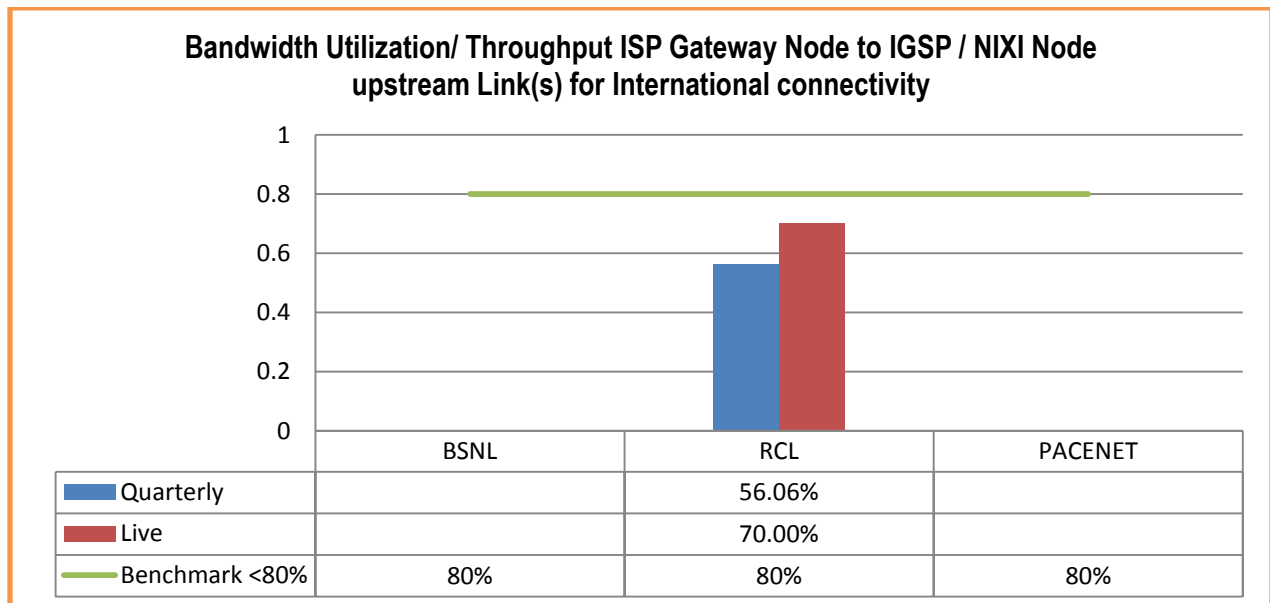
All Operators are meeting the benchmarks.

3. BROADBAND CONNECTION SPEED (DOWNLOAD) FROM ISP NODE TO USER:

Broadband Connection Speed (download) from ISP Node to User

	BSNL	RCL	PACENET
Quarterly	89.42%	86.17%	
Live	86.58%	96.00%	99.00%
Benchmark >80%	80%	80%	80%
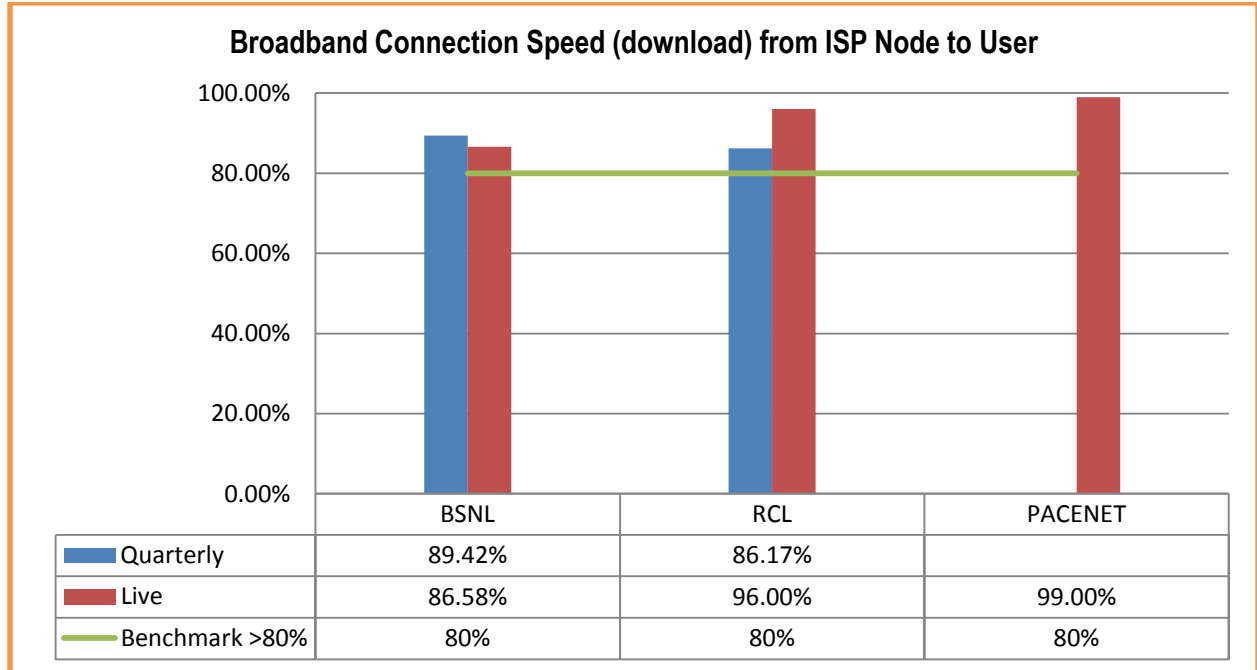
All Operators are meeting the benchmarks.

4. PACKET LOSS:

% of Packet Loss

	BSNL	RCL	PACENET
Quarterly		0.52%	
Live	0.00%	0.00%	0.00%
Benchmark <1%	1%	1%	1%
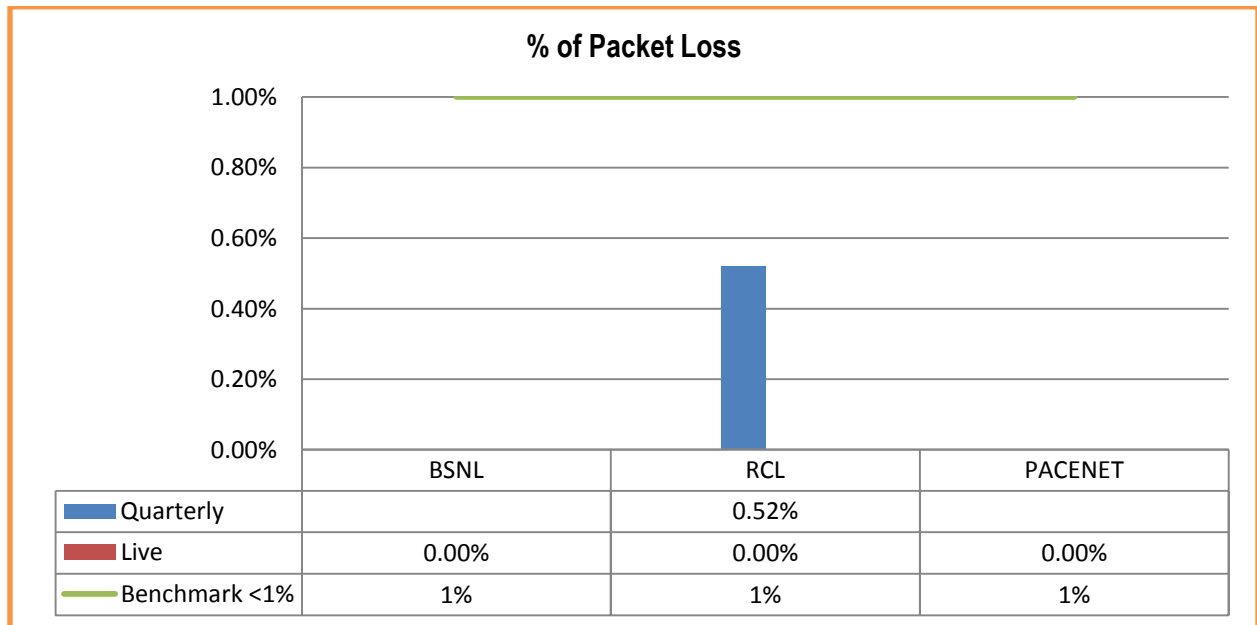
All Operators are meeting the benchmarks.

5. **NETWORK LATENCY USER REFERENCE POINT AT POP/ISP GATEWAY NODE TO IGSP/NIXI:**

Network latency User reference point at POP/ISP Gateway node to IGSP/NIXI

	BSNL	RCL	PACENET
Quarterly	34	36	
Live	25.67	1.80	44
Benchmark <120 ms	120	120	120
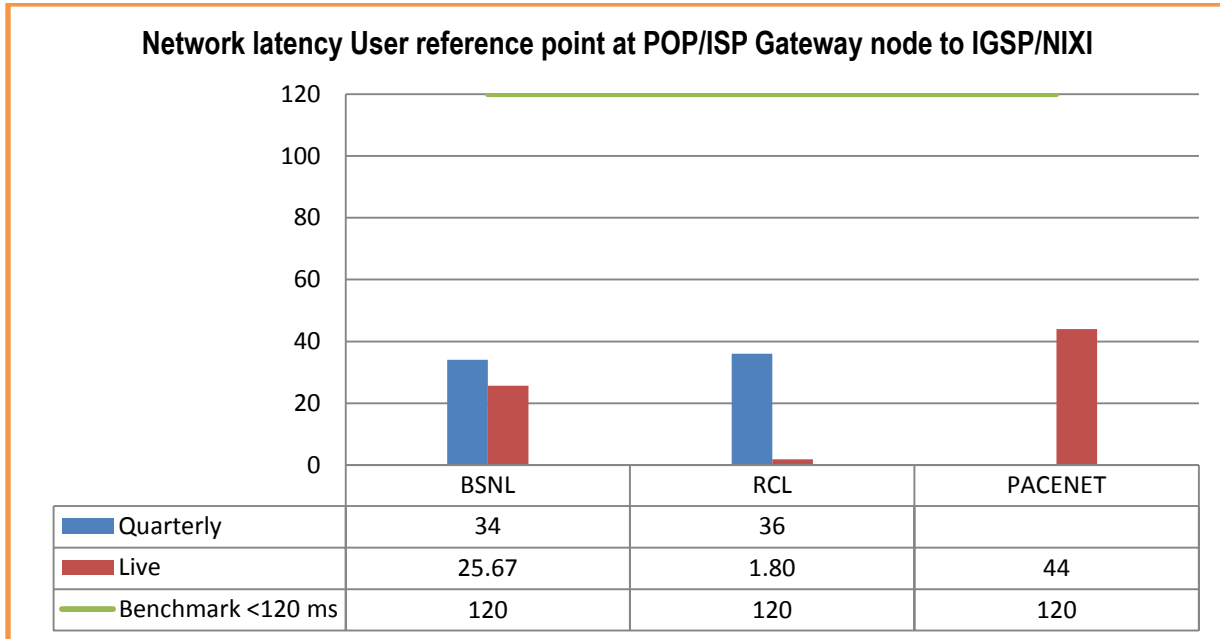
All Operators are meeting the benchmarks.

6. **NETWORK LATENCY USER REFERENCE POINT AT ISP GATEWAY NODE TO INTERNATIONAL NEAREST NAP PORT ABROAD (TERRESTRIAL):**

Network latency User reference point at ISP Gateway Node to International nearest NAP port abroad (terrestrial)

	BSNL	RCL	PACENET
Quarterly	217.33	37	
Live	27.20	0.75	70.89
Benchmark <350 ms	350	350	350
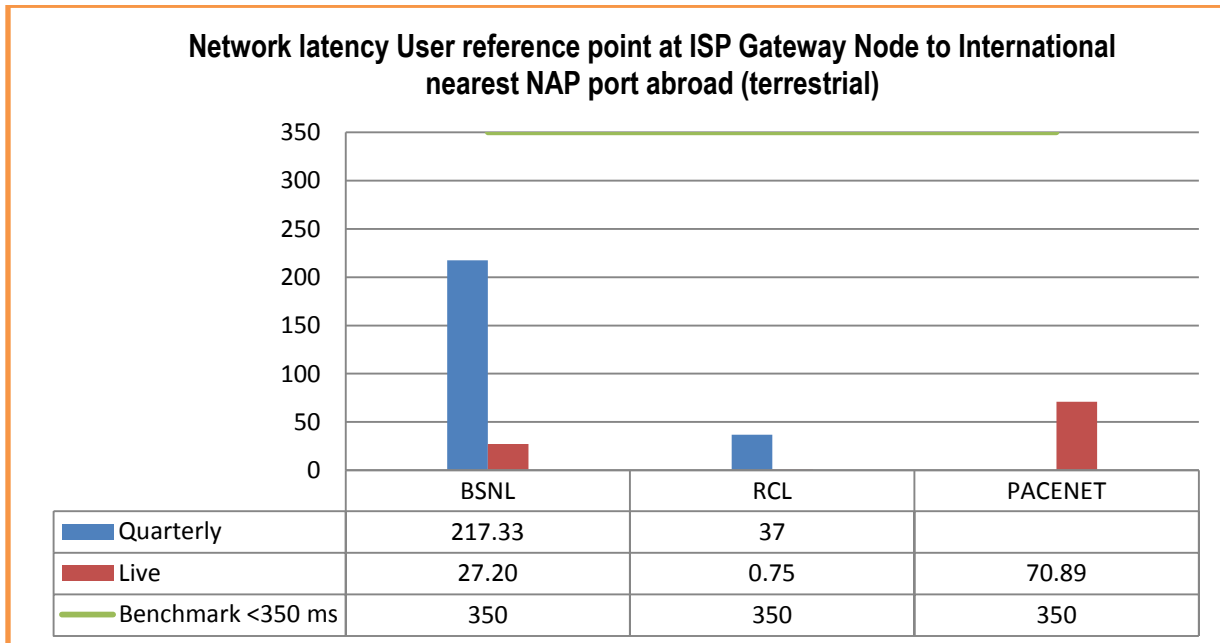
All Operators are meeting the benchmarks.

7. RESPONSE TIME TO THE CUSTOMER FOR ASSISTANCE ACCESSIBILITY BY OPERATOR WITHIN 60 SECONDS:

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

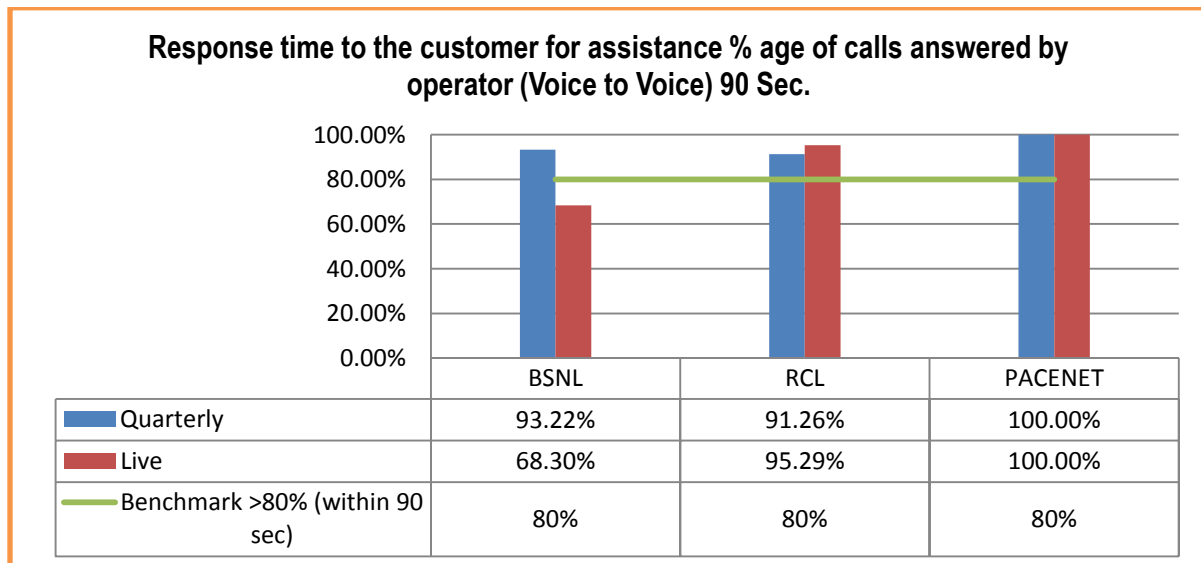|	BSNL	RCL	PACENET
Quarterly	88.01%	90.12%	100.00%
Live	60.43%	95.00%	100.00%
Benchmark >60% (within 60 sec)	60%	60%	60%
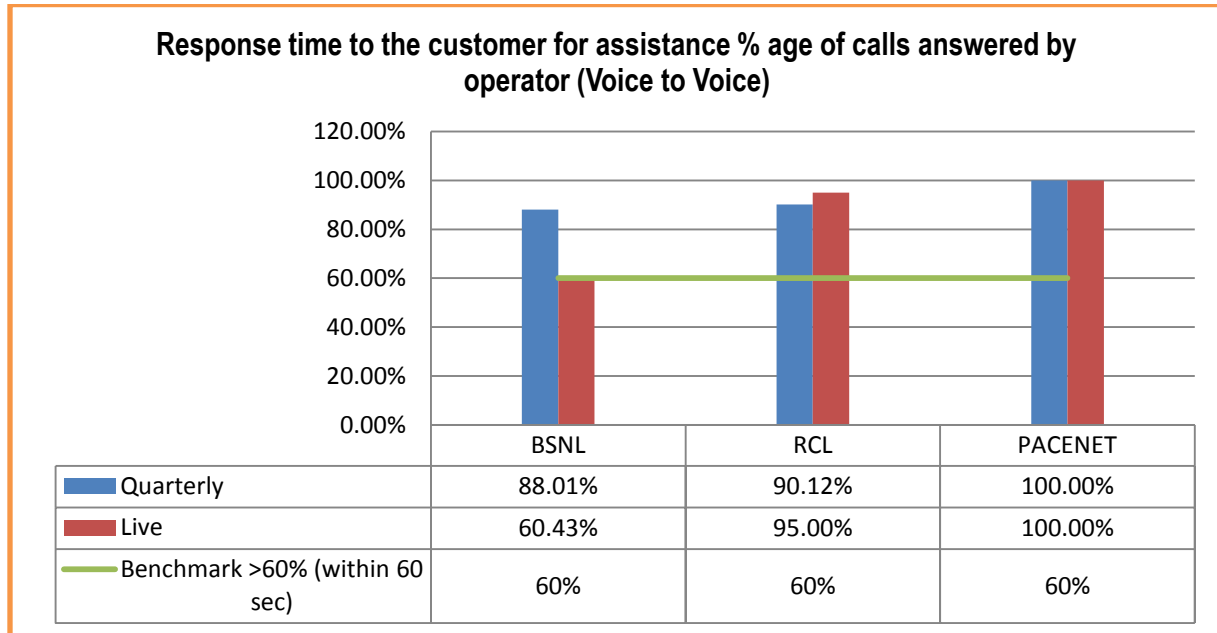
All Operators are meeting the benchmarks.

8. RESPONSE TIME TO THE CUSTOMER FOR ASSISTANCE ACCESSIBILITY BY OPERATOR WITHIN 90 SECONDS:

Response time to the customer for assistance % age of calls answered by operator (Voice to Voice) 90 Sec.

	BSNL	RCL	PACENET
Quarterly	93.22%	91.26%	100.00%
Live	68.30%	95.29%	100.00%
Benchmark >80% (within 90 sec)	80%	80%	80%

All Operators are meeting the benchmarks except BSNL (during live measurement).

Annex-1

S NO	CIRCLE	SERVICE PROVIDER	SSA	SDCA	EXCHANGE TYPE	EXCHANGE	EXCHANGE LEVEL
1	J&K	BSNL	JAMMU	JAMMU	URBAN	GANDHINAGAR	0191-243
2	J&K	BSNL	JAMMU	JAMMU	URBAN	TALAB TILLO	0191-250
3	J&K	BSNL	JAMMU	JAMMU	RURAL	DABLIAR	0191-274
4	J&K	BSNL	JAMMU	JAMMU	RURAL	DANSAL	0191-2669
5	J&K	BSNL	JAMMU	JAMMU	RURAL	GO BRAHMNA-I	01923-245
6	J&K	BSNL	JAMMU	JAMMU	RURAL	GUJRU NAGROTA-I	01921-224
7	J&K	BSNL	JAMMU	JAMMU	RURAL	GAJANSOO-II	0191-2664
8	J&K	BSNL	JAMMU	JAMMU	RURAL	GHAGWAL	01922-230
9	J&K	BSNL	JAMMU	KATHUA	URBAN	GANGYAL	0191-248
10	J&K	BSNL	JAMMU	KATHUA	RURAL	BARNOTI	01922-231
11	J&K	BSNL	JAMMU	KATHUA	RURAL	BARWAL	01922-284
12	J&K	BSNL	JAMMU	KATHUA	RURAL	CHADWAL	01922-255
13	J&K	BSNL	JAMMU	SAMBA	URBAN	TRIKUTA NAGAR	0191-246
14	J&K	BSNL	JAMMU	SAMBA	RURAL	BIRPUR-II	01923-249
15	J&K	BSNL	JAMMU	SAMBA	RURAL	CHAKROI-I	0191-279
16	J&K	BSNL	UDHAMPUR	UDHAMPUR	URBAN	GARHI	01992-242
17	J&K	BSNL	UDHAMPUR	UDHAMPUR	RURAL	CHIRYAYI	01922-249
18	J&K	BSNL	UDHAMPUR	UDHAMPUR	URBAN	ROUNDML	01922-244
19	J&K	BSNL	UDHAMPUR	UDHAMPUR	RURAL	LATTI	01922-283

Annex-2

S NO	CIRCLE	SERVICE PROVIDER	POPS LOCATION	ACTIVITY
1	J&K	BSNL	GANDHINAGAR	BB AUDIT
2	J&K	BSNL	TALAB TILLO	BB AUDIT
3	J&K	BSNL	DABLIAR	BB AUDIT
4	J&K	BSNL	DANSAL	BB AUDIT
5	J&K	BSNL	GO BRAHMNA-I	BB AUDIT
6	J&K	BSNL	GUJRU NAGROTA-I	BB AUDIT
7	J&K	BSNL	GAJANSOO-II	BB AUDIT
8	J&K	BSNL	GHAGWAL	BB AUDIT
9	J&K	BSNL	GANGYAL	BB AUDIT
10	J&K	BSNL	BARNOTI	BB AUDIT
11	J&K	BSNL	BARWAL	BB AUDIT
12	J&K	BSNL	CHADWAL	BB AUDIT
13	J&K	BSNL	TRIKUTA NAGAR	BB AUDIT
14	J&K	BSNL	BIRPUR-II	BB AUDIT
15	J&K	BSNL	CHAKROI-I	BB AUDIT
16	J&K	BSNL	GARHI	BB AUDIT
17	J&K	BSNL	CHIRYAYI	BB AUDIT
18	J&K	BSNL	ROUNDML	BB AUDIT
19	J&K	BSNL	LATTI	BB AUDIT
20	J&K	PACENET	JAMMU	BB AUDIT
21	J&K	RCL	JAMMU	BB AUDIT