



**Audit & Assessment of Quality of Service  
Of  
Cellular Mobile Telephone Service  
For  
Telecom Regulatory Authority of India  
North Zone – Jammu & Kashmir Service Area  
(April 2015 – June 2015)**

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## PREFACE

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

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

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

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## 1. BACKGROUND



## 1. BACKGROUND

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

The purpose of laying down Quality of Service Parameters is to:

- i) Create conditions for consumer satisfaction by making known the quality of service, which the Service provider is required to provide, and the user has a right to expect.
- ii) Measure the Quality of Service provided by the Service Providers from time to time and to compare them with the norms so as to assess the level of performance.
- iii) Generally protect the interests of consumers of telecommunication services.

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

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

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

The Audit exercise would assess the Quality of Service of telecom operators providing Basic (Wire line), Cellular Mobile (Wireless) and Broadband services by auditing the relevant QoS records maintained by the operators, conducting drive tests as well as live measurements and comparing them with quality of service benchmarks stipulated by TRAI. The audit would be carried out by **TUV-SUD South Asia** every quarter across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. However, in respect of Basic telephone service (wire line) and Broadband service, a circle would be audited once in a year.

## **2. OBJECTIVES AND METHODOLOGY**





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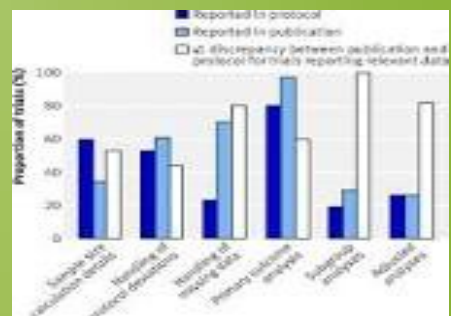
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

The audit and assessment of Quality of Service was carried out by **TUV SUD South Asia across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. Apart from this, QoS audit for Basic (Wire line) and Broadband Services was also undertaken for Punjab, Rajasthan and Gujarat circles during the quarter April 2015 – June 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



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#### 3.1 SAMPLING FOR CELLULAR MOBILE (WIRELESS) SERVICE PROVIDERS

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

Sl. No.	Name of Service Provider	Dates of live measurement Audit			Audit Location/Address
		April -15	May -15	June -15	
	<b>GSM Operators</b>	<b>April -15</b>	<b>May -15</b>	<b>June -15</b>	
1	<b>AIRCEL</b>	14 to 16 Apr-15	12 to 14 May-15	12, 13 & 15 Jun-15	Dishnet Wireless Limited , 2nd floor North Block Bahu Plaza Jammu
2	<b>AIRTEL</b>	16, 17 & 20 Apr-15	11 to 13 May-15	9 to 11 Jun-15	Bharti Airtel Campus, Plot No 21, Rajiv Gandhi Information and Technology Park, Chandigarh, 160101
3	<b>BSNL</b>	5 to 7 Apr-15	8, 9 & 11 May-15	17 to 19 Jun-15	BSNL 4th floor, Rail Head Complex Jammu
4	<b>IDEA</b>	13 to 15 Apr-15	11 to 13 May-15	3 to 5 Jun-15	Idea Office Phase -7 Industrial Area, Mohali
5	<b>RCOM GSM</b>	10 to 12 Apr-15	10 to 12 May-15	22 to 24 Jun-15	Reliance Communication Limited Narwal KC Business Park Jammu
6	<b>VODAFONE</b>	13 to 15 Apr-15	15, 16 & 18 May-15	15 to 17 Jun-15	Vodafone Spacetel Ltd. 4th floor (B) , North Block Bahu Plaza Complex Jammu-180004

For all the above operators, audit was conducted in all the three months of the Quarter ended June 2015.

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

### 3.2 SAMPLING FOR BASIC (WIRE LINE) SERVICES

- The QoS audit for basic (wire line) service is to be done for the number of exchanges spread over in about 10% of SDCAs with each service providers in specified circles only **once in a year**. **Based on this criterion, QoS audit for basic (wire line) service was not required to be done for J&K Circle in the quarter ended June- 2015, as the same has already been done during QE March 2015.**

### 3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS

- TUV–SUD South Asia has to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who are having broadband subscriber base of more than 10,000 subscribers in their licensed service area, for 5% of Point of Presence (PoPs) spread over in 10% SDCAs in specified Telecom Circle **only once in a year**. **Based on this criterion, the QoS audit for Broadband service was not required to be done for J&K Circle in the quarter ended June- 2015, as the same has already been done during QE March 2015.**

## **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 **‘BTS accumulated down time, ‘Worst affected BTSs due to downtime’, SDCCH Congestion, TCH Congestion and Worst affected Cells > 3% TCH drops and Voice Quality** with its average performance as **2.48%, 2.77%, 4.17%, 3.93%, 10.30% and 94.77%** respectively. **Vodafone and Airtel** also failed to meet the benchmark of parameters **‘Worst affected BTSs due to downtime’ and SDCCH Congestion** with their performance as **15.72%** (way beyond the benchmark) and **1.27%** respectively.

(ii) From live assessment, it was revealed that **only Aircel** failed to meet the benchmark of network parameters namely **TCH congestion and Worst Affected Cells > 3% TCH Drops and Connection with good voice quality**, with its performance as **3.30%, 9.44% and 94.87%** 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 However, **Vodafone** failed to meet the benchmark of the parameter billing complaints (for pre-paid) with its achieved level as **0.11%**.

Regarding the parameter '**Calls answered by Operators (voice to voice)**' within 90 seconds, **Airtel, BSNL and RCOM GSM** have failed to meet the benchmark of with their performance as **87.60%, 51.07% and 90.61%** 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'. However, in case of '**Call answered by operators (Voice to voice)**, **Airtel** could not meet the benchmark with its performance as **43.34%**.

(iv)The results of **Drive Tests** revealed that most of the operators have performed fairly well within the benchmarks in Srinagar, Jammu and Leh SSAs where drive tests were conducted during the quarter. Only **BSNL** could not performed up to the mark for Parameters **Voice quality and Blocked Call rate** in these SSAs.

## **5. PMR AUDIT REPORT**





## 5. PMR AUDIT REPORTS:

### 5.1 MONTHLY PMR:

#### 5.1.1 BUSY HOUR OF VARIOUS SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	Month of Audit	Network TCBH Hour
<b>GSM OPERATORS</b>			
1	AIRCEL	June -15	20:00 - 21:00
2	AIRTEL	June -15	19:00 - 20:00
3	BSNL	June -15	19:00 - 20:00
4	IDEA	June -15	19:00 - 20:00
5	RCOM GSM	June -15	22:00 - 23:00
6	VODAFONE	June -15	20:00 - 21:00

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

#### 5.1.2 SWITCHES/BSC/BTS DETAILS OF SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	No. of MSC + GMSC	No. of BSC	No. of BTS	NSS make	BSS make
<b>GSM OPERATORS</b>						
1	AIRCEL	6	22	2129	Ericsson	Ericsson
2	AIRTEL	12	33	2752	Ericsson	Ericsson
3	BSNL	8	21	1168	Ericsson	Ericsson, NSN & ZTE
4	IDEA	2	6	1055	Ericsson	Ericsson
5	RCOM GSM	1	4	831	Huawei	Huawei
6	VODAFONE	3	16	1530	NSN	NSN

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

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE- APRIL 15 MONTH									
PMR Generation Data		Bench- mark	Audit Period	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%	Apr-15	1.21%	0.13%	1.35%	0.57%	0.82%	0.15%
	b) Worst affected BTSs due to downtime	<=2%	Apr-15	8.32%	0.11%	1.89%	1.73%	0.00%	0.66%
2	Connection Establishment (Accessibility)								
	a) CSSR (Call Setup Success Rate)	>=95%	Apr-15	96.18%	98.69%	97.27%	98.24%	99.61%	98.01%
	b) SDCCH/PAGING Channel congestion	<=1%	Apr-15	5.38%	0.41%	0.64%	0.15%	0.01%	0.04%
	c) TCH congestion	<=2%	Apr-15	3.34%	0.22%	1.08%	1.39%	0.03%	0.66%
3	Connection maintenance (Retainability)								
	a) CDR (Call Drop Rate)	<=2%	Apr-15	1.39%	0.44%	1.35%	1.64%	0.42%	0.91%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Apr-15	9.67%	1.26%	2.10%	2.48%	0.10%	2.78%
	c) Connections with good voice quality	>=95%	Apr-15	95.21%	98.14%	96.99%	97.13%	98.85%	98.14%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Apr-15	0	0	0	0	0	0

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

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE - MAY 15 MONTH									
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) BTS Accumulated Downtime	<=2%	May-15	3.65%	0.15%	1.38%	0.53%	0.32%	1.49%
	b) Worst affected BTSs due to downtime	<=2%	May-15	0.00%	0.47%	1.88%	1.98%	0.59%	12.25%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	May-15	95.87%	97.83%	96.42%	98.49%	99.56%	97.74%
	b) SDCCH/PAGING Channel congestion	<=1%	May-15	2.60%	1.27%	0.55%	0.20%	0.03%	0.29%
	c) TCH congestion	<=2%	May-15	3.60%	0.26%	1.44%	1.10%	0.03%	0.89%
<b>Connection maintenance (Retainability)</b>									
3	a) CDR (Call Drop Rate)	<=2%	May-15	1.35%	0.48%	1.49%	1.67%	0.45%	0.71%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	May-15	10.22%	1.33%	2.12%	2.35%	0.01%	2.92%
	c) Connections with good voice quality	>=95%	May-15	94.63%	98.10%	98.28%	96.44%	98.81%	98.10%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	May-15	0	0	0	0	0	0

**5.1.5 QOS PERFORMANCE OF MONTHLY PMR – JUNE-15 MONTH:**

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE - JUNE 15 MONTH									
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/N	Name of Parameter			GSM Operators					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) BTS Accumulated Downtime	<=2%	Jun-15	2.57%	0.13%	1.60%	0.57%	0.62%	3.18%
	b) Worst affected BTSs due to downtime	<=2%	Jun-15	0.00%	0.40%	1.54%	1.90%	0.12%	34.25%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	Jun-15	94.51%	96.69%	96.22%	98.46%	99.51%	97.24%
	b) SDCCH/PAGING Channel congestion	<=1%	Jun-15	4.52%	2.13%	0.51%	0.23%	0.02%	0.59%
	c) TCH congestion	<=2%	Jun-15	4.84%	0.43%	1.58%	1.11%	0.03%	1.47%
<b>Connection maintenance (Retainability)</b>									
3	a) CDR (Call Drop Rate)	<=2%	Jun-15	1.46%	0.53%	1.64%	1.71%	0.46%	0.71%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Jun-15	11.00%	1.48%	2.00%	2.46%	0.00%	2.97%
	c) Connections with good voice quality	>=95%	Jun-15	94.46%	98.14%	98.24%	96.60%	98.76%	98.14%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Jun-15	0	0	0	0	0	0

**5.1.6 QOS PERFORMANCE OF QUARTERLY PMR – (AVERAGE OF APRIL-MAY-JUNE- 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					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) BTS Accumulated Downtime	<=2%	Quarterly	2.48%	0.14%	1.44%	0.56%	0.59%	1.61%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	2.77%	0.33%	1.77%	1.87%	0.24%	15.72%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	95.52%	97.74%	96.64%	98.40%	99.56%	97.66%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	4.17%	1.27%	0.57%	0.19%	0.02%	0.31%
	c) TCH congestion	<=2%	Quarterly	3.93%	0.30%	1.37%	1.20%	0.03%	1.01%
<b>Connection maintenance (Retainability)</b>									
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	1.40%	0.48%	1.49%	1.67%	0.44%	0.78%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	10.30%	1.36%	2.07%	2.43%	0.04%	2.89%
	c) Connections with good voice quality	>=95%	Quarterly	94.77%	98.13%	97.84%	96.72%	98.81%	98.13%
4	No. of POI's having >=0.5% POI congestion	<=0.5%	Quarterly	0	0	0	0	0	0

### 5.1.7 KEY FINDINGS ON MONTHLY PMR AUDIT REPORTS:

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

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

#### Network Service Quality Parameters:

- **Network Availability**

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

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

In J&K circle, all operators (except **Aircel and Vodafone**) were found meeting benchmark on the parameters 'BTS accumulated downtime' and 'worst affected BTSs due to down time'. **Aircel** failed to meet the benchmark of the parameter '**BTS Accumulated Downtime**' and '**Worst affected BTSs due to downtime**' with its average performance as **2.48% and 2.77%** respectively and **Vodafone** could not meet the benchmark of **Worst affected BTSs due to downtime**' with its achieved level as **15.72%**, way beyond the benchmark.

- **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 **4.17%** and **3.93%** respectively, whereas **Airtel** could not meet benchmark for parameter **SDCCH Congestion** with its achieved level as **1.27%**.

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 **10.30 %**.

- 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 only **Aircel** has failed to meet the benchmark with its performance as **94.77%**.

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





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

### 5.2.1 LIVE MEASUREMENT DATA (3-DAYS) – APRIL- 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE – APRIL 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					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) BTS Accumulated Downtime	<=2%	Live data	0.81%	0.13%	1.44%	0.42%	0.49%	0.06%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.26%	0.00%	0.17%	0.21%	0.00%	0.13%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	96.44%	98.94%	98.03%	98.82%	99.52%	97.94%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.19%	0.29%	0.93%	0.24%	0.00%	0.03%
	c) TCH congestion	<=2%	Live data	3.10%	0.14%	0.01%	0.86%	0.02%	0.69%
<b>Connection maintenance (Retainability)</b>									
3	a) CDR (Call Drop Rate)	<=2%	Live data	1.11%	0.45%	1.43%	1.44%	0.38%	1.11%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	8.51%	1.15%	2.72%	2.70%	0.00%	2.83%
	c) Connections with good voice quality	>=95%	Live data	95.27%	98.16%	98.17%	96.57%	99.06%	98.20%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0

**5.2.2 LIVE MEASUREMENT DATA (3-DAYS) – MAY-15 MONTH:**

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE - MAY 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					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) BTS Accumulated Downtime	<=2%	Live data	1.11%	0.08%	1.37%	0.54%	0.24%	0.28%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.38%	0.00%	0.17%	0.10%	0.00%	0.20%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	96.74%	99.09%	97.21%	98.56%	99.31%	98.00%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.17%	0.16%	0.61%	0.11%	0.16%	0.01%
	c) TCH congestion	<=2%	Live data	2.76%	0.15%	1.33%	1.06%	0.05%	0.58%
<b>Connection maintenance (Retainability)</b>									
3	a) CDR (Call Drop Rate)	<=2%	Live data	1.28%	0.45%	1.37%	1.57%	0.42%	0.72%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	9.08%	1.27%	1.85%	2.52%	0.00%	2.80%
	c) Connections with good voice quality	>=95%	Live data	94.82%	98.11%	98.25%	97.00%	98.83%	98.08%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0

5.2.3 LIVE MEASUREMENT DATA (3-DAYS) – JUNE-15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES J&K CIRCLE - JUNE 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					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) BTS Accumulated Downtime	<=2%	Live data	1.21%	0.11%	1.51%	0.34%	0.90%	0.30%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.52%	0.00%	0.19%	0.10%	0.00%	0.20%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	95.37%	98.62%	96.05%	98.56%	99.57%	98.56%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.60%	0.25%	0.46%	0.25%	0.01%	0.01%
	c) TCH congestion	<=2%	Live data	4.05%	0.38%	1.73%	1.03%	0.04%	0.20%
<b>Connection maintenance (Retainability)</b>									
3	a) CDR (Call Drop Rate)	<=2%	Live data	1.28%	0.48%	1.80%	1.75%	0.43%	0.58%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	10.74%	1.21%	2.46%	2.67%	0.00%	2.80%
	c) Connections with good voice quality	>=95%	Live data	94.53%	98.13%	98.31%	96.90%	98.75%	98.16%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0

**5.2.4 QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT AUDITED DATA (AVERAGE OF APRIL-MAY-JUNE 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					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) BTS Accumulated Downtime	<=2%	Quarterly	1.04%	0.11%	1.44%	0.43%	0.54%	0.21%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.39%	0.00%	0.18%	0.14%	0.00%	0.18%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	96.18%	98.88%	97.10%	98.65%	99.47%	98.17%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.32%	0.23%	0.67%	0.20%	0.06%	0.02%
	c) TCH congestion	<=2%	Quarterly	3.30%	0.22%	1.02%	0.98%	0.04%	0.49%
<b>Connection maintenance (Retainability)</b>									
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	1.22%	0.46%	1.53%	1.59%	0.41%	0.80%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	9.44%	1.21%	2.34%	2.63%	0.00%	2.81%
	c) Connections with good voice quality	>=95%	Quarterly	94.87%	98.13%	98.24%	96.82%	98.88%	98.15%
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 **TCH congestion and Worst Affected Cells > 3% TCH Drops and Connection with good voice quality**, with its performance as **3.30%, 9.44% and 94.87%** respectively.

**5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES:**

**TABLE: 1**

Detailed Network Data Assessment of Cellular Mobile Telephone Services- J&K Circle - April 15 month									
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) Total no. of BTSs in the licensed service area		Apr-15	2127	2772	1166	985	825	1516
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Apr-15	18505	2658	11336	4017	4891	1594
	c) BTS Accumulated Downtime	<=2%	Apr-15	1.21%	0.13%	1.35%	0.57%	0.82%	0.15%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Apr-15	177	3	22	17	0	10
	e) Worst affected BTSs due to downtime	<=2%	Apr-15	<b>8.32%</b>	0.11%	1.89%	1.73%	0.00%	0.66%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	Apr-15	96.18%	98.69%	97.27%	98.24%	99.61%	98.01%
	b) SDCCH/PAGING Congestion	<=1%	Apr-15	<b>5.38%</b>	0.41%	0.64%	0.15%	0.01%	0.04%
	c) TCH congestion	<=2%	Apr-15	<b>3.34%</b>	0.22%	1.08%	1.39%	0.03%	0.66%
<b>Connection Maintenance (Retainability)</b>									
3	a) Call Drop Rate (CDR)	<=2%	Apr-15	1.39%	0.44%	1.35%	1.64%	0.42%	0.91%
	b) Worst affected cells>3% TCH drop	<=3%	Apr-15	<b>9.67%</b>	1.26%	2.10%	2.48%	0.10%	2.78%
	c) % of connections with good voice quality	>=95%	Apr-15	95.21%	98.14%	96.99%	97.13%	98.85%	98.14%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Apr-15	613	104	73	70	2	127
	e) Total no. of cells (Sector) in the licensed service area		Apr-15	6336	8256	3485	2836	2471	4573
<b>No. of POI's having &gt;=0.5% POI congestion</b>									
4	No. of POI's having >=0.5% POI congestion		Apr-15	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Apr-15	0	0	0	0	0	0
<b>Network Data</b>									
5	a) Equipped Capacity of Network in Erlang		Apr-15	118859	113600	108000	29633	40000	38299
	b) Total traffic in TCBH in erlang (Avg.)		Apr-15	73184	94148	36293	16330	11269	31578
	c) Total no. of customers served (as per VLR) on last day of the month		Apr-15	2155156	2899076	872121	504456	370859	774790

TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - J&K Circle – April 15 month									
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
<b>Network Service Quality Parameter</b>									
1	<b>Network Availability</b>								
	a) Total no. of BTSs in the licensed service area		Live data	2126	2779	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		Live data	1246	258	1239	286	293	64
	c) BTS Accumulated Downtime	<=2%	Live data	0.81%	0.13%	1.44%	0.42%	0.49%	0.06%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	6	0	2	2	0	2
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.26%	0.00%	0.17%	0.21%	0.00%	0.13%
2	<b>Connection Establishment (Accessibility)</b>								
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	96.44%	98.94%	98.03%	98.82%	99.52%	97.94%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.19%	0.29%	0.93%	0.24%	0.00%	0.03%
	c) TCH congestion	<=2%	Live data	3.10%	0.14%	0.01%	0.86%	0.02%	0.69%
3	<b>Connection Maintenance (Retainability)</b>								
	a) Call Drop Rate (CDR)	<=2%	Live data	1.11%	0.45%	1.43%	1.44%	0.38%	1.11%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	8.51%	1.15%	2.72%	2.70%	0.00%	2.83%
	c) % of connections with good voice quality	>=95%	Live data	95.27%	98.16%	98.17%	96.57%	99.06%	98.20%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	540	96	97	76	0	129
	e) Total no. of cells (Sector) in the licensed service area		Live data	6352	8325	3558	2818	2471	4572
4	<b>No. of POI's having &gt;=0.5% POI congestion</b>								
	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: 3**

Detailed Network Data Assessment of Cellular Mobile Telephone Services- J&K Circle - May 15 month									
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) Total no. of BTSs in the licensed service area		May-15	1861	2328	1168	860	847	1526
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		May-15	50556	2593	12020	3374	2026	16903
	c) BTS Accumulated Downtime	<=2%	May-15	3.65%	0.15%	1.38%	0.53%	0.32%	1.49%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		May-15	0	11	22	17	5	187
	e) Worst affected BTSs due to downtime	<=2%	May-15	0.00%	0.47%	1.88%	1.98%	0.59%	12.25%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	May-15	95.87%	97.83%	96.42%	98.49%	99.56%	97.74%
	b) SDCCH/PAGING Congestion	<=1%	May-15	2.60%	1.27%	0.55%	0.20%	0.03%	0.29%
	c) TCH congestion	<=2%	May-15	3.60%	0.26%	1.44%	1.10%	0.03%	0.89%
<b>Connection Maintenance (Retainability)</b>									
3	a) Call Drop Rate (CDR)	<=2%	May-15	1.35%	0.48%	1.49%	1.67%	0.45%	0.71%
	b) Worst affected cells>3% TCH drop	<=3%	May-15	10.22%	1.33%	2.12%	2.35%	0.01%	2.92%
	c) % of connections with good voice quality	>=95%	May-15	94.63%	98.10%	98.28%	96.44%	98.81%	98.10%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		May-15	637	109	74	69	0	134
	e) Total no. of cells (Sector) in the licensed service area		May-15	6234	8180	3471	2920	2549	4583
<b>No. of POI's having &gt;=0.5% POI congestion</b>									
4	No. of POI's having >=0.5% POI congestion		May-15	0	0	0	0	0	0
	Name of POI not meeting the benchmark		May-15	0	0	0	0	0	0
<b>Network Data</b>									
5	a) Equipped Capacity of Network in Erlang		May-15	121103	94881	108000	28505	40000	38691
	b) Total traffic in TCBH in erlang (Avg.)		May-15	80376	96083	34749	15824	10149	30763
	c) Total no. of customers served (as per VLR) on last day of the month		May-15	2174134	2936488	889004	513493	391495	850420

TABLE: 4

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - J&K Circle – May 15 month									
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
<b>Network Service Quality Parameter</b>									
1	<b>Network Availability</b>								
	a) Total no. of BTSs in the licensed service area		Live data	2123	2790	1168	994	846	1516
	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	1697	168	1150	388	146	307
	c) BTS Accumulated Downtime	<=2%	Live data	1.11%	0.08%	1.37%	0.54%	0.24%	0.28%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	8	0	2	1	0	3
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.38%	0.00%	0.17%	0.10%	0.00%	0.20%
2	<b>Connection Establishment (Accessibility)</b>								
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	96.74%	99.09%	97.21%	98.56%	99.31%	98.00%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.17%	0.16%	0.61%	0.11%	0.16%	0.01%
	c) TCH congestion	<=2%	Live data	2.76%	0.15%	1.33%	1.06%	0.05%	0.58%
3	<b>Connection Maintenance (Retainability)</b>								
	a) Call Drop Rate (CDR)	<=2%	Live data	1.28%	0.45%	1.37%	1.57%	0.42%	0.72%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	9.08%	1.27%	1.85%	2.52%	0.00%	2.80%
	c) % of connections with good voice quality	>=95%	Live data	94.82%	98.11%	98.25%	97.00%	98.83%	98.08%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	576	106	64	75	0	128
	e) Total no. of cells (Sector) in the licensed service area		Live data	6349	8350	3471	2980	1892	4575
4	<b>No. of POI's having &gt;=0.5% POI congestion</b>								
	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

Detailed Network Data Assessment of Cellular Mobile Telephone Services- J&K Circle - June 15 month									
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
<b>Network Service Quality Parameter</b>									
<b>Network Availability</b>									
1	a) Total no. of BTSs in the licensed service area		Jun-15	2119	2752	1168	1055	831	1530
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Jun-15	39234	2555	13474	4356	3685	35071
	c) BTS Accumulated Downtime	<=2%	Jun-15	2.57%	0.13%	1.60%	0.57%	0.62%	3.18%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Jun-15	0	11	18	20	1	524
	e) Worst affected BTSs due to downtime	<=2%	Jun-15	0.00%	0.40%	1.54%	1.90%	0.12%	34.25%
<b>Connection Establishment (Accessibility)</b>									
2	a) CSSR (Call Setup Success Rate)	>=95%	Jun-15	94.51%	96.69%	96.22%	98.46%	99.51%	97.24%
	b) SDCCH/PAGING Congestion	<=1%	Jun-15	4.52%	2.13%	0.51%	0.23%	0.02%	0.59%
	c) TCH congestion	<=2%	Jun-15	4.84%	0.43%	1.58%	1.11%	0.03%	1.47%
<b>Connection Maintenance (Retainability)</b>									
3	a) Call Drop Rate (CDR)	<=2%	Jun-15	1.46%	0.53%	1.64%	1.71%	0.46%	0.71%
	b) Worst affected cells>3% TCH drop	<=3%	Jun-15	11.00%	1.48%	2.00%	2.46%	0.00%	2.97%
	c) % of connections with good voice quality	>=95%	Jun-15	94.46%	98.14%	98.24%	96.60%	98.76%	98.14%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Jun-15	690	120	69	75	0	137
	e) Total no. of cells (Sector) in the licensed service area		Jun-15	6270	8137	3437	3043	2489	4608
<b>No. of POI's having &gt;=0.5% POI congestion</b>									
4	No. of POI's having >=0.5% POI congestion		Jun-15	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Jun-15	0	0	0	0	0	0
<b>Network Data</b>									
5	a) Equipped Capacity of Network in Erlang		Jun-15	123760	110826	108000	30914	NP	39588
	b) Total traffic in TCBH in erlang (Avg.)		Jun-15	76751	90682	29393	15308	NP	29898
	c) Total no. of customers served (as per VLR) on last day of the month		Jun-15	2174290	2955988	895725	524756	NP	842885

TABLE: 6

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - J&K Circle – June 15 month									
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
				GSM Operators					
<b>Network Service Quality Parameter</b>									
1	<b>Network Availability</b>								
	a) Total no. of BTSs in the licensed service area		Live data	2121	2798	1051	1005	831	1526
	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	1844	223	1146	245	540	332
	c) BTS Accumulated Downtime	<=2%	Live data	1.21%	0.11%	1.51%	0.34%	0.90%	0.30%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	11	0	2	1	0	3
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.52%	0.00%	0.19%	0.10%	0.00%	0.20%
2	<b>Connection Establishment (Accessibility)</b>								
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	95.37%	98.62%	96.05%	98.56%	99.57%	98.56%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.60%	0.25%	0.46%	0.25%	0.01%	0.01%
	c) TCH congestion	<=2%	Live data	4.05%	0.38%	1.73%	1.03%	0.04%	0.20%
3	<b>Connection Maintenance (Retainability)</b>								
	a) Call Drop Rate (CDR)	<=2%	Live data	1.28%	0.48%	1.80%	1.75%	0.43%	0.58%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	10.74%	1.21%	2.46%	2.67%	0.00%	2.80%
	c) % of connections with good voice quality	>=95%	Live data	94.53%	98.13%	98.31%	96.90%	98.75%	98.16%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	680	101	77	80	0	129
	e) Total no. of cells (Sector) in the licensed service area		Live data	6333	8364	3129	3013	2489	4605
4	<b>No. of POI's having &gt;=0.5% POI congestion</b>								
	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 JUNE15:

#### 5.3.1 QUARTERLY CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (APRIL TO JUNE MONTHS AUDITED DATA):

QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES - QE JUNE 2015									
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/ N	Name of Parameter			GSM Operators					
<b>Customer Service Quality Parameters</b>									
<b>Metering &amp; Billing Credibility -Post Paid</b>									
1	A) No. of bills issued during the quarter		J&K	354742	349225	805662	88557	65655	156932
	B) No. of bills disputed including billing complaints during the quarter		J&K	3	45	280	34	58	69
	C)% of billing complaints during the quarter	<= 0.1%	J&K	0.001%	0.01%	0.03%	0.04%	0.09%	0.04%
<b>Metering &amp; Billing Credibility -Pre Paid</b>									
2	A) Total No. of Pre-paid customers at the end of the quarter		J&K	2582165	2945397	889162	516413	810682	1136977
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		J&K	36	82	274	252	720	1240
	C) % of Pre-paid Charging Complaints	<= 0.1%	J&K	0.001%	0.003%	0.03%	0.05%	0.09%	0.11%
<b>Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints</b>									
3	A) No. of Billing/Charging/Credit/Validity Complaints received during the quarter		J&K	39	127	554	1065	778	1309
	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	39	127	554	1065	778	1309
	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	39	127	554	1065	778	1309
	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%
	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%

QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES - QE JUNE 2015									
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE
S/ N	Name of Parameter			GSM Operators					
<b>Response time to customers for assistance</b>									
4	A) Total no of calls attempted to customer care/Call center		J&K	15285569	1923098	185259	1868503	1339542	3604940
	B) Total no. of calls successfully established to customer care/Call center.		J&K	14548591	1900203	185259	1828842	1322978	3604940
	C) % Accessibility of Call centre /customer Care (Total calls successfully established *100/ Total call attempts)	>=95%	J&K	<b>95.18%</b>	<b>98.81%</b>	<b>100.00%</b>	<b>97.88%</b>	<b>98.76%</b>	<b>100.00%</b>
	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		J&K	2362073	2295991	481833	466921	362450	847719
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		J&K	2276643	2011325	246057	460660	328408	843953
	F) % age of calls answered by operator (voice to voice) (Total calls successfully established within 90 Sec.*100 / Total call attempts )	>=95%	J&K	<b>96.38%</b>	<b>87.60%</b>	<b>51.07%</b>	<b>98.66%</b>	<b>90.61%</b>	<b>99.56%</b>
<b>Termination/closure of service</b>									
5	A) Total No. of requests for Termination / Closure of service received during the quarter		J&K	3248	1843	1386	823	787	813
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		J&K	3248	1843	1386	823	787	813
	C) % of Termination/ Closure of service within 7 days	<=7days	J&K	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>
<b>Time taken for refunds of deposits after closures.</b>									
6	A) No. of Payments/ Refunds due during the quarter		J&K	1371	203	1386	271	837	477
	B) No. of Payments/ Refunds Cleared during the quarter		J&K	1371	203	1386	271	837	477
	C) Time taken for refunds of deposits after closures.	100% within 60 days	J&K	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

**5.3.2 3 DAYS LIVE CSD AUDITED DATA FOR CELLULAR MOBILE SERVICES (QE - JUNE 2015):**

CSD 3 DAYS LIVE DATA FOR CELLULAR MOBILE TELEPHONE SERVICES – QE – JUNE 15									
3 days live CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	VODAFONE
S/ N	Name of Parameter			GSM Operators					
<b>RESPONSE TIME TO CUSTOMERS FOR ASSISTANCE</b>									
1	A) Total no of calls attempted to customer care/Call center		J&K	503559	34248	7168	64645	80638	103894
	B) Total no. of calls successfully established to customer care/Call center.		J&K	490055	34248	7168	63346	79618	103894
	C) % Accessibility of Call centre /customer Care (Total calls successfully established *100/ Total call attempts)	>=95%	J&K	97.32%	100.00%	100.00%	97.99%	98.74%	100.00%
2	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		J&K	77112	69504	21441	15393	10390	25650
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		J&K	74751	67451	9292	15192	10071	25619
	F) % age of calls answered by operator (voice to voice) (Total calls successfully established within 90 Sec.*100 / Total call attempts )	>=95%	J&K	96.94%	97.05%	43.34%	98.69%	96.93%	99.88%

### 5.3.3 KEY FINDINGS ON CUSTOMER SERVICE DELIVERY (CSD) PARAMETERS

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

The performance of the service providers with respect to the parameter metering and billing credibility for both post-paid and pre-paid is well within the prescribed bench mark of  $\leq 0.1\%$  for all the operators. Only **Vodafone** has failed to meet the benchmark of the parameter Billing Complaints (for Pre-paid) with its performance as **0.11%**.

#### 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 **87.60%, 51.07% and 90.61%** 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'. However, in case of '**Call answered by operators (Voice to voice)**', **Airtel** could not meet the benchmark with its performance as **43.34%**.

## **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	100	100	100	100	100	100
% Accessibility of Call centre /customer Care (Total calls successfully established * 100 / Total call attempts)	J&K	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Total Calls reached to agent desk for Voice to Voice (Total call attempt)	J&K	100	100	100	100	100	100
Total number of calls answered by the operator (Voice to voice) within 90 seconds	J&K	95	100	65	100	92	97
% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100 / Total calls attempts)	J&K	95.00%	100.00%	65.00%	100.00%	92.00%	97.00%

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, Idea, RCOM (GSM) & Vodafone could connect 95.00%, 100.00%, **65.00%**, 100.00%, **92.00%** and 97.00% of calls respectively to the operator within 90 Seconds.

## 6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLIANTS:

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS							
Parameter	Circle Name	AIRCEL	AIRTEL	BSNL	IDEA	RCOM (GSM)	VODAFONE
Total No. of calls Attempted	J&K	3	127	105	142	58	69
Total No. of calls Answered	J&K	3	120	100	100	50	31
Cases resolved within 4 weeks	J&K	3	120	100	100	50	31
%age of cases resolved	J&K	100%	100%	100%	100%	100%	100%

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:**

LEVEL 1 LIVE CALLING												
Month	Circle Name	SSA Name	Name of SDCA	Emergency No.	No. of calls made	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	VODAFONE	
April'15	J&K	Srinagar	Srinagar	100 101 102	10	√	√	√	√	√	√	
			Phalgam	100 101 102	10	√	√	√	√	√	√	√
			Anantnag	100 101 102	10	√	√	√	√	√	√	√
			Baramulla	100 101 102	10	√	√	√	√	√	√	√
			Sopore	100 101 102	5	√	√	√	√	√	√	√
			Budgam	100 101 102	5	√	√	√	√	√	√	√
May'15	J&K	Jammu	Jammu	100 101 102	10	√	√	√	√	√	√	
			Akhnoor	100 101 102	10	√	√	√	√	√	√	√
			Samba	100 101 102	10	√	√	√	√	√	√	√
			Kathua	100 101 102	10	√	√	√	√	√	√	√
			Basholi	100 101 102	10	√	√	√	NC	√	√	√
June'15	J&K	Leh	Kargil	100 101 102	10	NC	√	√	NC	NC	NC	
			Leh	100 101 102	10	√	√	√	NC	NC	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 Basholi, Kargil and Leh SDCAs; **Vodafone** has no coverage in Kargil and Leh SDCAs, **RCOM GSM** has no coverage in Kargil and Leh SDCAs and **Aircel** has no coverage in Kargil SDCA as mentioned in the above table. .

## 7. DRIVE TEST



## **7. OPERATOR ASSISTED DRIVE TEST**

In terms of TRAI's letter dated 21<sup>st</sup> January, 2014, the drive tests were conducted for three consecutive days in one select SSA each month in each service area. Thus, the drive tests were carried out in three SSA's namely **Srinagar, Jammu and Leh** in the months of April, May and June 2015 respectively. The total route Kms covered during the drive tests in respective SSAs was **306 KMs, 340 KMs and 350 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  $\geq -75$  dBm for in-door coverage and  $\geq -85$  dBm for in-vehicle.

7.1 OPERATOR ASSISTED DRIVE TEST: SRINAGAR SSA (APRIL-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	BSNL Office, Srinagar	156	30	158	30	127	30	132	30	154	30	72	30
		Highway	J&K Bank Channakhan Sopore	150	30	160	30	134	30	154	30	124	30	147	30
		Within City	HDFC Bank KP Road Anantnag	145	30	179	30	144	30	177	30	187	30	70	30
		<b>Overall SSA</b>		<b>451</b>	<b>90</b>	<b>497</b>	<b>90</b>	<b>405</b>	<b>90</b>	<b>463</b>	<b>90</b>	<b>465</b>	<b>90</b>	<b>289</b>	<b>90</b>
2	Blocked Call Rate	Major Road	BSNL Office, Srinagar	0.00%	0.00%	0.63%	0.00%	3.15%	0.00%	0.00%	0.00%	1.30%	0.00%	0.00%	0.00%
		Highway	J&K Bank Channakhan Sopore	0.67%	0.00%	0.00%	0.00%	3.73%	0.00%	0.00%	0.00%	0.81%	0.00%	0.00%	0.00%
		Within City	HDFC Bank KP Road Anantnag	0.00%	0.00%	0.56%	0.00%	4.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		<b>Overall SSA</b>		<b>0.22%</b>	<b>0.00%</b>	<b>0.40%</b>	<b>0.00%</b>	<b>3.95%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.65%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>
3	Dropped Call Rate (<=2%)	Major Road	BSNL Office, Srinagar	0.00%	0.00%	0.00%	0.00%	1.63%	0.00%	0.00%	0.00%	1.32%	0.00%	0.00%	0.00%
		Highway	J&K Bank Channakhan Sopore	0.00%	0.00%	0.63%	0.00%	1.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.68%	0.00%
		Within City	HDFC Bank KP Road Anantnag	0.00%	0.00%	0.00%	0.00%	1.46%	0.00%	0.00%	0.00%	0.53%	0.00%	0.00%	0.00%
		<b>Overall SSA</b>		<b>0.00%</b>	<b>0.00%</b>	<b>0.20%</b>	<b>0.00%</b>	<b>1.54%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.65%</b>	<b>0.00%</b>	<b>0.35%</b>	<b>0.00%</b>
4	<b>Percentage connections with good voice quality (=&gt;95%)</b>														
	(a) 0-4 (w/o)	Major Road	BSNL Office, Srinagar	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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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	
5	frequency hopping for CDMA Operators)	Highway	J&K Bank Channakhan Sopore	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		Within City	HDFC Bank KP Road Anantnag	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		<b>Overall SSA</b>		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
		(b) 0-5 ( with frequency hopping for GSM Operators)	Major Road	BSNL Office, Srinagar	97.95%	95.75%	98.67%	95.93%	<b>87.53%</b>	<b>88.95%</b>	96.97%	97.24%	97.21%	99.38%	97.03%	98.30%
		Highway	J&K Bank Channakhan Sopore	96.78%	95.93%	<b>94.71%</b>	95.75%	<b>93.41%</b>	<b>93.92%</b>	96.96%	97.14%	96.77%	<b>94.30%</b>	97.14%	97.78%	
		Within City	HDFC Bank KP Road Anantnag	96.74%	99.52%	98.09%	96.28%	<b>85.15%</b>	<b>86.77%</b>	96.97%	99.59%	97.18%	99.35%	96.93%	98.96%	
		<b>Overall SSA</b>		<b>97.15%</b>	<b>97.80%</b>	<b>97.19%</b>	<b>95.96%</b>	<b>88.56%</b>	<b>90.07%</b>	<b>96.96%</b>	<b>98.18%</b>	<b>97.06%</b>	<b>97.99%</b>	<b>97.05%</b>	<b>98.35%</b>	
	<b>Service Coverage</b>															
		In door (>= - 75dBm)	Major Road	BSNL Office, Srinagar	93.34%	84.83%	87.88%	99.85%	58.36%	100.00%	77.43%	4.90%	46.11%	12.62%	65.35%	87.14%
			Highway	J&K Bank Channakhan Sopore	91.74%	87.24%	87.58%	89.62%	54.84%	90.30%	78.15%	5.10%	59.91%	37.53%	62.02%	56.95%
			Within City	HDFC Bank KP Road Anantnag	94.29%	94.32%	90.86%	93.78%	56.38%	110.74%	78.86%	25.66%	80.07%	89.60%	68.40%	25.37%
			<b>Overall SSA</b>		<b>93.07%</b>	<b>90.36%</b>	<b>88.82%</b>	<b>95.38%</b>	<b>56.59%</b>	<b>100.05%</b>	<b>78.25%</b>	<b>13.78%</b>	<b>61.83%</b>	<b>49.83%</b>	<b>64.74%</b>	<b>55.70%</b>
	In-vehicle (>= - 85dBm)	Major Road	BSNL Office, Srinagar	96.70%	95.76%	97.05%	100.00%	88.49%	100.00%	88.97%	39.60%	82.66%	81.91%	90.74%	99.78%	
		Highway	J&K Bank Channakhan Sopore	91.21%	95.67%	97.91%	98.94%	88.05%	97.60%	89.29%	37.90%	84.85%	86.22%	90.29%	88.83%	
		Within City	HDFC Bank KP Road Anantnag	99.37%	99.58%	97.44%	99.30%	85.54%	102.46%	93.85%	96.60%	94.27%	99.59%	94.75%	92.62%	
		<b>Overall SSA</b>		<b>95.59%</b>	<b>97.67%</b>	<b>97.47%</b>	<b>99.52%</b>	<b>87.30%</b>	<b>99.95%</b>	<b>91.26%</b>	<b>63.33%</b>	<b>87.23%</b>	<b>90.01%</b>	<b>91.68%</b>	<b>93.66%</b>	
	Outdoor- in city (>= - 95dBm)	Major Road	BSNL Office, Srinagar	97.68%	99.73%	99.19%	100.00%	98.67%	100.00%	97.08%	96.80%	95.25%	99.96%	97.89%	100.00%	
		Highway	J&K Bank Channakhan Sopore	98.40%	99.70%	99.89%	100.00%	97.65%	100.00%	98.18%	96.76%	95.92%	96.37%	99.46%	98.44%	

S/N	Parameter	Classification of route covered	Indoor location	AIRCEL		AIRTEL		BSNL		IDEA		RCOM GSM		VODAFONE	
				Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
6	Call Setup Success Rate (>=95%)	Within City	HDFC Bank KP Road Anantnag	100.00%	99.97%	99.98%	100.00%	96.74%	100.00%	99.55%	99.90%	97.36%	100.00%	99.71%	99.93%
		Overall SSA		<b>98.66%</b>	<b>99.84%</b>	<b>99.70%</b>	<b>100.00%</b>	<b>97.67%</b>	<b>100.00%</b>	<b>98.46%</b>	<b>98.11%</b>	<b>96.16%</b>	<b>98.84%</b>	<b>99.11%</b>	<b>99.46%</b>
		Major Road	BSNL Office, Srinagar	100.00%	100.00%	99.37%	100.00%	96.85%	100.00%	100.00%	100.00%	98.05%	100.00%	100.00%	100.00%
		Highway	J&K Bank Channakhan Sopore	99.33%	100.00%	100.00%	100.00%	96.27%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
7	Hand Over Success Rate (HOSR)	Within City	HDFC Bank KP Road Anantnag	100.00%	100.00%	99.44%	100.00%	95.14%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Overall SSA		<b>99.78%</b>	<b>100.00%</b>	<b>99.60%</b>	<b>100.00%</b>	<b>96.05%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>99.35%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>
		Major Road	BSNL Office, Srinagar	100.00%	100.00%	99.56%	100.00%	91.97%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Highway	J&K Bank Channakhan Sopore	99.57%	100.00%	99.54%	100.00%	91.76%	100.00%	100.00%	100.00%	100.00%	100.00%	99.44%	100.00%
		Overall SSA		<b>99.69%</b>	<b>100.00%</b>	<b>99.53%</b>	<b>100.00%</b>	<b>91.44%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>99.75%</b>	<b>100.00%</b>

- NA-Not Applicable



7.2 OPERATOR ASSISTED DRIVE TEST: JAMMU SSA (MAY-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	HDFC Bank Kalibari	172	30	174	30	167	30	78	30	92	30	142	30
		Highway	Karan Nagar Complex	152	30	169	30	172	30	63	30	98	30	131	30
		Within City	Sai Cafeteria Mahanpur	96	30	93	30	75	30	39	30	87	30	64	30
		<b>Overall SSA</b>		<b>420</b>	<b>90</b>	<b>436</b>	<b>90</b>	<b>414</b>	<b>90</b>	<b>180</b>	<b>90</b>	<b>277</b>	<b>90</b>	<b>337</b>	<b>90</b>
2	Blocked Call Rate	Major Road	HDFC Bank Kalibari	0.58%	0.00%	1.15%	0.00%	1.80%	0.00%	0.00%	0.00%	1.09%	0.00%	0.70%	0.00%
		Highway	Karan Nagar Complex	0.00%	0.00%	0.00%	0.00%	2.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	Sai Cafeteria Mahanpur	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		<b>Overall SSA</b>		<b>0.24%</b>	<b>0.00%</b>	<b>0.46%</b>	<b>0.00%</b>	<b>1.69%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.36%</b>	<b>0.00%</b>	<b>0.30%</b>	<b>0.00%</b>
3	Dropped Call Rate (<=2%)	Major Road	HDFC Bank Kalibari	0.58%	0.00%	0.00%	0.00%	1.83%	0.00%	0.00%	0.00%	0.00%	0.00%	0.71%	0.00%
		Highway	Karan Nagar Complex	0.00%	0.00%	0.59%	0.00%	1.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Within City	Sai Cafeteria Mahanpur	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		<b>Overall SSA</b>		<b>0.24%</b>	<b>0.00%</b>	<b>0.23%</b>	<b>0.00%</b>	<b>1.23%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.30%</b>	<b>0.00%</b>
4	<b>Percentage connections with good voice quality (=&gt;95%)</b>														
	(a) 0-4 (w/o frequency hopping for CDMA)	Major Road	HDFC Bank Kalibari	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Highway	Karan Nagar Complex	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	Sai Cafeteria Mahanpur	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		<b>Overall SSA</b>		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
	(b) 0-5 ( with frequency hopping for GSM Operators)	Major Road	HDFC Bank Kalibari	95.59%	99.81%	97.83%	99.22%	<b>92.87%</b>	97.45%	97.29%	96.62%	97.47%	99.71%	96.11%	99.14%
		Highway	Karan Nagar Complex	96.27%	99.04%	97.12%	99.54%	<b>91.92%</b>	<b>89.20%</b>	98.38%	100.00%	97.37%	98.61%	96.05%	98.39%
	Operators)	Within City	Sai Cafeteria Mahanpur	96.20%	99.61%	98.09%	100.00%	<b>93.05%</b>	99.31%	97.30%	99.60%	97.32%	99.66%	96.60%	98.20%
		<b>Overall SSA</b>		<b>96.01%</b>	<b>99.48%</b>	<b>97.60%</b>	<b>99.59%</b>	<b>92.53%</b>	<b>95.06%</b>	<b>97.71%</b>	<b>98.73%</b>	<b>97.39%</b>	<b>99.25%</b>	<b>96.21%</b>	<b>98.57%</b>
<b>Service Coverage</b>															
5	In door (>= - 75dBm)	Major Road	HDFC Bank Kalibari	81.98%	61.77%	84.45%	99.64%	54.34%	99.90%	14.14%	96.77%	40.24%	94.46%	54.17%	97.87%
		Highway	Karan Nagar Complex	90.72%	100.00%	89.75%	100.00%	57.56%	99.90%	31.67%	98.50%	42.88%	95.14%	58.48%	100.00%
		Within City	Sai Cafeteria Mahanpur	92.32%	100.00%	95.19%	100.00%	67.85%	54.70%	12.61%	99.64%	57.29%	75.13%	76.49%	10.55%
		<b>Overall SSA</b>		<b>88.00%</b>	<b>86.67%</b>	<b>89.63%</b>	<b>99.87%</b>	<b>58.09%</b>	<b>85.85%</b>	<b>20.30%</b>	<b>98.25%</b>	<b>45.85%</b>	<b>89.23%</b>	<b>61.25%</b>	<b>69.57%</b>
	In-vehicle (>= - 85dBm)	Major Road	HDFC Bank Kalibari	95.91%	99.93%	94.69%	100.00%	84.62%	100.00%	29.46%	100.00%	71.30%	99.52%	81.30%	99.96%
		Highway	Karan Nagar Complex	98.62%	100.00%	97.68%	100.00%	82.89%	100.00%	42.93%	100.00%	78.00%	100.00%	87.38%	100.00%
		Within City	Sai Cafeteria Mahanpur	99.20%	100.00%	99.21%	100.00%	85.52%	97.60%	23.79%	100.00%	83.99%	99.66%	94.62%	85.07%
		<b>Overall SSA</b>		<b>97.80%</b>	<b>99.98%</b>	<b>97.19%</b>	<b>100.00%</b>	<b>84.09%</b>	<b>99.25%</b>	<b>32.94%</b>	<b>100.00%</b>	<b>77.14%</b>	<b>99.79%</b>	<b>86.75%</b>	<b>95.03%</b>
	Outdoor- in city (>= - 95dBm)	Major Road	HDFC Bank Kalibari	100.00%	100.00%	99.10%	100.00%	97.51%	100.00%	86.21%	100.00%	90.33%	100.00%	96.47%	100.00%
		Highway	Karan Nagar Complex	100.00%	100.00%	99.80%	100.00%	94.63%	100.00%	90.03%	100.00%	95.51%	100.00%	98.60%	100.00%
		Within City	Sai Cafeteria Mahanpur	100.00%	100.00%	99.95%	100.00%	95.10%	100.00%	84.52%	100.00%	96.96%	100.00%	99.84%	100.00%
		<b>Overall SSA</b>		<b>100.00%</b>	<b>100.00%</b>	<b>99.63%</b>	<b>100.00%</b>	<b>95.91%</b>	<b>100.00%</b>	<b>87.17%</b>	<b>100.00%</b>	<b>93.97%</b>	<b>100.00%</b>	<b>98.06%</b>	<b>100.00%</b>
6	Call Setup	Major Road	HDFC Bank Kalibari	99.42%	100.00%	100.00%	100.00%	98.20%	100.00%	100.00%	100.00%	98.91%	100.00%	99.30%	100.00%

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	Karan Nagar Complex	100.00%	100.00%	100.00%	100.00%	97.67%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Within City	Sai Cafeteria Mahanpur	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		<b>Overall SSA</b>		<b>99.76%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>98.31%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>99.64%</b>	<b>100.00%</b>	<b>99.70%</b>	<b>100.00%</b>
7	Hand Over Success Rate (HOSR)	Major Road	HDFC Bank Kalibari	100.00%	100.00%	100.00%	100.00%	98.34%	98.46%	99.14%	100.00%	100.00%	100.00%	100.00%	100.00%
		Highway	Karan Nagar Complex	100.00%	100.00%	100.00%	100.00%	97.86%	98.85%	99.12%	100.00%	100.00%	100.00%	99.71%	100.00%
		Within City	Sai Cafeteria Mahanpur	100.00%	100.00%	99.25%	100.00%	98.62%	98.25%	100.00%	100.00%	100.00%	100.00%	99.52%	100.00%
		<b>Overall SSA</b>		<b>100.00%</b>	<b>100.00%</b>	<b>99.83%</b>	<b>100.00%</b>	<b>98.21%</b>	<b>98.56%</b>	<b>99.42%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>99.78%</b>	<b>100.00%</b>

- NA-Not Applicable

7.3 OPERATOR ASSISTED DRIVE TEST: LEH SSA (JUNE-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	International Guest House	66	NC	91	30	58	30	NC	NC	NC	NC	NC	NC
		Highway	BSNL Exchange	62	30	97	30	57	30	NC	NC	NC	NC	NC	NC
		Within City	Moon Land Guest House	78	30	100	30	65	30	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>		<b>206</b>	<b>60</b>	<b>288</b>	<b>90</b>	<b>180</b>	<b>90</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>
2	Blocked Call Rate	Major Road	International Guest House	0.00%	NC	0.00%	0.00%	3.45%	0.00%	NC	NC	NC	NC	NC	NC
		Highway	BSNL Exchange	1.61%	0.00%	1.03%	0.00%	7.02%	0.00%	NC	NC	NC	NC	NC	NC
		Within City	Moon Land Guest House	0.00%	0.00%	1.00%	0.00%	0.00%	0.00%	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>		<b>0.49%</b>	<b>0.00%</b>	<b>0.69%</b>	<b>0.00%</b>	<b>3.33%</b>	<b>0.00%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>
3	Dropped Call Rate (<=2%)	Major Road	International Guest House	0.00%	NC	1.10%	0.00%	1.79%	0.00%	NC	NC	NC	NC	NC	NC
		Highway	BSNL Exchange	0.00%	0.00%	1.04%	0.00%	3.77%	0.00%	NC	NC	NC	NC	NC	NC
		Within City	Moon Land Guest House	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>		<b>0.00%</b>	<b>0.00%</b>	<b>0.70%</b>	<b>0.00%</b>	<b>1.72%</b>	<b>0.00%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>
4	<b>Percentage connections with good voice quality (=&gt;95%)</b>														
	(a) 0-4 (w/o frequency hopping for CDMA)	Major Road	International Guest House	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Highway	BSNL Exchange	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	Moon Land Guest House	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		<b>Overall SSA</b>		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
	(b) 0-5 ( with frequency hopping for GSM Operators)	Major Road	International Guest House	95.74%	NC	98.10%	99.73%	96.90%	<b>93.81%</b>	NC	NC	NC	NC	NC	NC	
		Highway	BSNL Exchange	95.70%	96.13%	97.78%	99.90%	95.78%	<b>92.30%</b>	NC	NC	NC	NC	NC	NC	
		Within City	Moon Land Guest House	95.61%	99.48%	96.12%	99.78%	95.92%	<b>92.52%</b>	NC	NC	NC	NC	NC	NC	
		<b>Overall SSA</b>		<b>95.68%</b>	<b>97.71%</b>	<b>97.38%</b>	<b>99.80%</b>	<b>96.26%</b>	<b>92.87%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	
	<b>Service Coverage</b>															
	5	In door (>= - 75dBm)	Major Road	International Guest House	57.20%	NC	64.58%	97.15%	76.61%	91.54%	NC	NC	NC	NC	NC	NC
Highway			BSNL Exchange	53.93%	90.88%	41.37%	79.60%	71.84%	97.24%	NC	NC	NC	NC	NC	NC	
Within City			Moon Land Guest House	55.76%	91.73%	78.71%	99.72%	90.70%	96.34%	NC	NC	NC	NC	NC	NC	
<b>Overall SSA</b>				<b>55.75%</b>	<b>91.28%</b>	<b>61.38%</b>	<b>93.38%</b>	<b>79.63%</b>	<b>95.07%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	
In-vehicle (>= - 85dBm)		Major Road	International Guest House	86.92%	NC	92.86%	99.78%	96.08%	99.19%	NC	NC	NC	NC	NC	NC	
		Highway	BSNL Exchange	86.33%	100.00%	82.46%	99.37%	93.88%	100.00%	NC	NC	NC	NC	NC	NC	
		Within City	Moon Land Guest House	86.96%	100.00%	97.43%	100.00%	98.67%	99.21%	NC	NC	NC	NC	NC	NC	
		<b>Overall SSA</b>		<b>86.77%</b>	<b>100.00%</b>	<b>90.88%</b>	<b>99.75%</b>	<b>96.24%</b>	<b>99.47%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	
Outdoor- in city (>= - 95dBm)		Major Road	International Guest House	97.46%	NC	99.22%	99.96%	99.99%	100.00%	NC	NC	NC	NC	NC	NC	
		Highway	BSNL Exchange	97.82%	100.00%	97.05%	99.95%	99.79%	100.00%	NC	NC	NC	NC	NC	NC	
		Within City	Moon Land Guest House	97.98%	100.00%	99.18%	100.00%	100.00%	100.00%	NC	NC	NC	NC	NC	NC	
		<b>Overall SSA</b>		<b>97.76%</b>	<b>100.00%</b>	<b>98.50%</b>	<b>99.97%</b>	<b>99.93%</b>	<b>100.00%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	
6	Call Setup	Major Road	International Guest House	100.00%	NC	100.00%	100.00%	96.55%	100.00%	NC	NC	NC	NC	NC	NC	

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	BSNL Exchange	98.39%	100.00%	98.97%	100.00%	92.98%	100.00%	NC	NC	NC	NC	NC	NC
		Within City	Moon Land Guest House	100.00%	100.00%	99.00%	100.00%	100.00%	100.00%	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>		<b>99.51%</b>	<b>100.00%</b>	<b>99.31%</b>	<b>100.00%</b>	<b>96.67%</b>	<b>100.00%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>
7	Hand Over Success Rate (HOSR)	Major Road	International Guest House	100.00%	NC	98.81%	100.00%	98.72%	100.00%	NC	NC	NC	NC	NC	NC
		Highway	BSNL Exchange	100.00%	100.00%	100.00%	100.00%	98.57%	100.00%	NC	NC	NC	NC	NC	NC
		Within City	Moon Land Guest House	100.00%	100.00%	100.00%	100.00%	96.84%	100.00%	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>		<b>100.00%</b>	<b>100.00%</b>	<b>99.60%</b>	<b>100.00%</b>	<b>97.94%</b>	<b>100.00%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>

- NA-Not Applicable
- NC: No Coverage

**7.4 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:**

**DRIVE TEST TABLE: 4**

DRIVE TEST ROUTE OF APRIL TO JUNE 2015 – J&K CIRCLE							
Name of SSA	Drive test Period	Day 1		Day 2		Day 3	
		Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered	Name of SDCA Covered	Route Covered
<b>Srinagar</b>	April-15	<b>Srinagar, Budgam /100 Kms</b>	(A) Major Road : Gpo, Lal Chowk, Dalgate, Khanyar, NIIT College, Rainawari  (B) Highway :Habak, Zakura , Pandesh, Ganderbal, Soura , Eidgah, Hyderpora, Sonwar  (C) Within City : Srinagra City , Kashmir University, Budgam , Ompora	<b>Baramulla, Sopore/ 101 Kms</b>	(A) Major Road: Shalteng, Lawaypora, Narbal, Parihaspora, Pattan.  (B) Highway: Sangrama, Delina, Baramulla, Amargad, Sopore Main Bazaar.  (C) Within City :Sopore Bus Stand , Sopore City, Palhalan, Pattan	<b>Anantnag, Pahalgam/ 105 Kms</b>	(A) Major Road ; Pantha Chowk, Pampor, Lethora, Awantipora, Sangam , Beijbhera  (B) Highway :Anantnag, Kp Road, Kringsoo, Mattan, Dc Office,Old Town, Harnag  (C) Within City: Anantnag City , Pahalgam Road
<b>Jammu</b>	May-15	<b>Samba, Kathua /150 Kms</b>	(A) Major Road : Bari Brahmna , Sarore , Vijaypur, Ghagwal, Dingaamb, Dyalachak  (B) Highway; Barnoti, Kathua, Lakhanpur, Hatli,Kathua Railway Station, Kali Bar.  (C) Within City ; Kathua Bus Stand, Hatli More , Kathua City	<b>Jammu, Akhnoor /100 Kms</b>	(A) Major Road; Mubarak Mandi, Circular Road, Ascoms Hospital, Panthirathi , Medical College. (B) Highway ; Bakshi Nagar, Muthi , Misriwala Road, Akhnoor, Sohal Road, Kothbhalwalk, Miet College, Janipur ,Karan Nagar.  (C) Within City: Roop Nagar , Janipur Matador Stand ,Amphlla	<b>Basholi / 90 Kms</b>	(A) Major Road; Sidhra, Bajlata, Surinsar ,Sagoon, Ramkot, Mandi, Gurah Kalyal.  (B) Highway: Phinter , Billawar, Mahnapur,Bus Stand Billawar,Basholi.  (C) Within City ; Basholi Bus stand , Basholi City
<b>Leh</b>	June-15	<b>Kargil/ 130 Kms</b>	(A) Major Road: Drass To Kubrathan,Chuthuk , Minji ,Tomail Colony.  (B) Highway: Baghaikhumani, Balti Bazar, Lankoor.  (C) Within City Kargil City , Bus Stand	<b>Leh /120 Kms</b>	(A) Major Road: Kargil Highway To Changapa Road, Gompa, Tukcha, Stampari, Ford Road.  (B) Highway; Chglamsae, Sarakara Road, Stock Road, Stakmo.  (C) Within City Ladakh City, Bus Stand, Saklzanglinf Road	<b>Leh /100 Kms</b>	(A) Major Road; Chglamsae, Palm Road, Spituk.  (B) Highway Stock Roads Stamko, Kharu  (C) Wthin City ; Chuchat , Leh City

**7.5 SSA WISE DRIVE TEST OBSERVATION:**

**DRIVE TEST TABLE: 5**

**DRIVE TEST OBSERVATION OF SRINAGAR SSA – APRIL 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	Srinagar /Budgam	Overall Good Coverage And Quality In Sdca Covered On Day 1.	Baramulla / sopore	Baramulla Sdca: Aircel Has Poor Rx Quality At Baramulla Highway.	Anantnag / Pahalgam	Anantnag SDCA Aircel Has Poor Quality In Mattan Road.
2	AIRTEL		Poor Rx Quality Observed Near Chattabal.		Poor Rx Quality Observed Near Baramula And Sangrama.		Pahalgam SDCA: Airtel Has Poor Coverage At Pahalgam Highway.
3	BSNL		Srinagar SDCA: Bsnl Has Poor Coverage At Dal Lake Gate Road.		Poor Rx Quality Observed Near Devar.		Poor Rx Quality Near Sethar Sangam.
4	IDEA		Budgam SDCA ; Idea Has Poor Coverage In Sonawar Road		Sopore SDCA : Idea Has Poor Coverage at Sopore Highway		Pahalgam SDCA; Idea Has Poor Quality In Pahalgam Road
5	RCOM GSM		Srinagar SDCA: Reliance Has Poor Quality In Pampore Road		Baramulla SDCA; Reliance Has Poor Quality at Pattan Road.		Overall Good Coverage And Quality In Sdca Covered On Day 3.
6	VODAFONE		Overall Good Coverage And Quality In Sdca Covered On Day 1.		Overall Good Coverage And Quality In Sdca Covered On Day 2.		Pahalgam SDCA: Vodafone Has Poor Quality In Pahalgam Road



**DRIVE TEST TABLE: 6**  
**DRIVE TEST OBSERVATION OF JAMMU SSA – MAY 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	Samba /Kathua	Poor Rx Quality Near Kathua Highway.	Akhnoor /Jammu	Aircel Has Poor Quality In Jammu Sdca From Kot Bhalawl To Roop Nagar	Basholi	Poor Rx Quality Near Basholi SDCA.
2	AIRTEL		Airtel Has Poor Quality at Kathua Highway.		Airtel Has Poor Quality In Jammu SDCA From Kot Bhalawl To Roop Nagar.		Poor Rx Quality Near Surinsar.
3	BSNL		Poor Rx Quality in Kathua SDCA.		Bsnl Has Poor Quality In Jammu SDCA From Kot Bhalawl To Roop Nagar		Poor Rx Level and Rx Quality In Basholi SDCA.
4	IDEA		Poor Rx Quality in Kathua SDCA.		Idea has Poor Quality In Jammu Sdca From Kot Bhalawl To Roop Nagar.		No Coverage
5	RCOM GSM		Reliance Has Poor Quality at Samba Highway,From Hiranagar To Chadwal.		Reliance Has Poor Quality In Jammu Sdca From Kot Bhalawl To Roop Nagar.		Reliance Has Poor Quality In Basholi Sdca From Bajlata To Billawar.
6	VODAFONE		Vodafone Has Poor Quality at Samba Highway		Vodafone Has Poor Quality In Jammu SDCA From Kot Bhalawl To Roop Nagar		Vodafone Has Poor Quality In Basholi SDCA From Surinsar Ro Billawarhighway

**DRIVE TEST TABLE: 7**  
**DRIVE TEST OBSERVATION OF LEH SSA – JUNE 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	Kargil	No Coverage	Leh	Aircel has Poor Quality at Tukcha,Gompa Road.	Leh	Aircel has Poor Quality In Kharu.
2	AIRTEL		Airtel has Poor Quality at Balti Bazar,Lankoor.		Airtel has Poor Quality at Tukcha,Stamko, Stock Road.		Airtel has Poor Quality at Chuchat Road.
3	BSNL		Bsnl has Poor Quality From Drass To Kargil Highway.		Bsnl has Poor Quality at Ford Road,Gompa Road.		BsnL has Poor Quality In Kharu.
4	IDEA		No Coverage		No Coverage		No Coverage
5	RCOM GSM		No Coverage		No Coverage		No Coverage
6	VODAFONE		No Coverage		No Coverage		No Coverage

**DRIVE TEST TABLE: 8**

**NO NETWORK COVERAGE STATUS OF DRIVE TEST – APRIL TO JUNE 15**

Sr. No	Month of Drive Test	Circle	Name of Operators	SSA	SDCA Covered	Status of no network coverage area	ICR Status
1	Apr'15	J&K	AIRCEL	Srinagar	Srinagar, Budgam, Anantnag, Pahalgam, Baramulla, Sopore.	No coverage Issue	No
			AIRTEL			No coverage Issue	No
			IDEA			No coverage Issue	No
			RCOM (GSM)			No coverage Issue	No
			VODAFONE			No coverage Issue	No
			BSNL			No coverage Issue	No
2	May '15	J&K	AIRCEL	Jammu	Jammu, Akhnoor, Kathua, Samba, Basholi,	No coverage Issue	No
			AIRTEL			No coverage Issue	No
			IDEA			Basholi SDCA- Idea has no coverage in Basholi SDCA. Jammu SDCA: Idea has no coverage from misriwala akhnoor.	No
			RCOM (GSM)			Samba SDCA idea.has no coverage from Dyala chak to dingaam.	No
			VODAFONE			Samba SDCA: Reliance has no coverage from Dyala chak to dingaamb. Basholi SDCA; Vodafone has no coverage in Bajalta to Sunisar, Mansar Highway, Battal to Gujjaro Nagrota.	Vodafone is on ICR with Aircel in Basholi SDCA from Ramkot to Basholi town
			BSNL			No coverage Issue	No
3	June '15	J&K	AIRCEL	Leh	Kargil, Leh	Aircel has no network in kargil SDCA.	No
			AIRTEL			Airtel has no network from drass to kargil highway	No
			IDEA			Idea has no network in Leh ssa	No
			RCOM (GSM)			Reliance has no network in Leh ssa	No
			VODAFONE			Vodafone has no network in Leh ssa	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 April-15**, drive tests were conducted across **Srinagar SSA** covering **Srinagar, Budgam Baramulla, Sopore, Anantnag and Pahalgam 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**' and **Blocked Call rate** with its performance as **88.56% (outdoor) / 90.07% (indoor) and 3.95%** respectively on SSA basis.
- (ii) **In the Month of May-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 **92.53% (outdoor)**.
- (iii) **In the month of June -15**, drive tests were conducted across **Leh SSA** covering Kargil and Leh SDCAs. **In Leh SSA, only Aircel, Airtel and BSNL are having their coverage.** The service providers met the benchmarks of all the parameters on overall SSA level except BSNL failed to meet the benchmark of **Voice Quality** and **Blocked Call rate** with its performance as **92.87% (indoor) and 3.33% (outdoor)** respectively. .

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.**

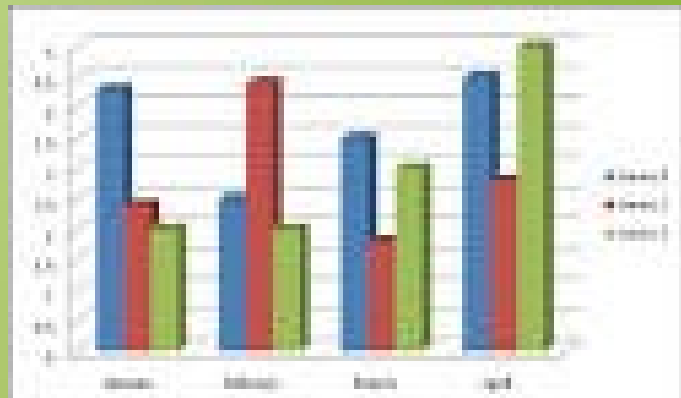
*Thus the results of drive tests indicate that most of the operators have performed fairly well within the benchmarks in the above SSAs except BSNL could not performed up to the mark for Parameters **Voice quality and Blocked Call rate** in the these SSAs.*

## 8. GRAPHICAL REPRESENTATION (CELLULAR MOBILE SERVICE PROVIDERS)

### AVERAGED QUARTERLY PMR

V/S

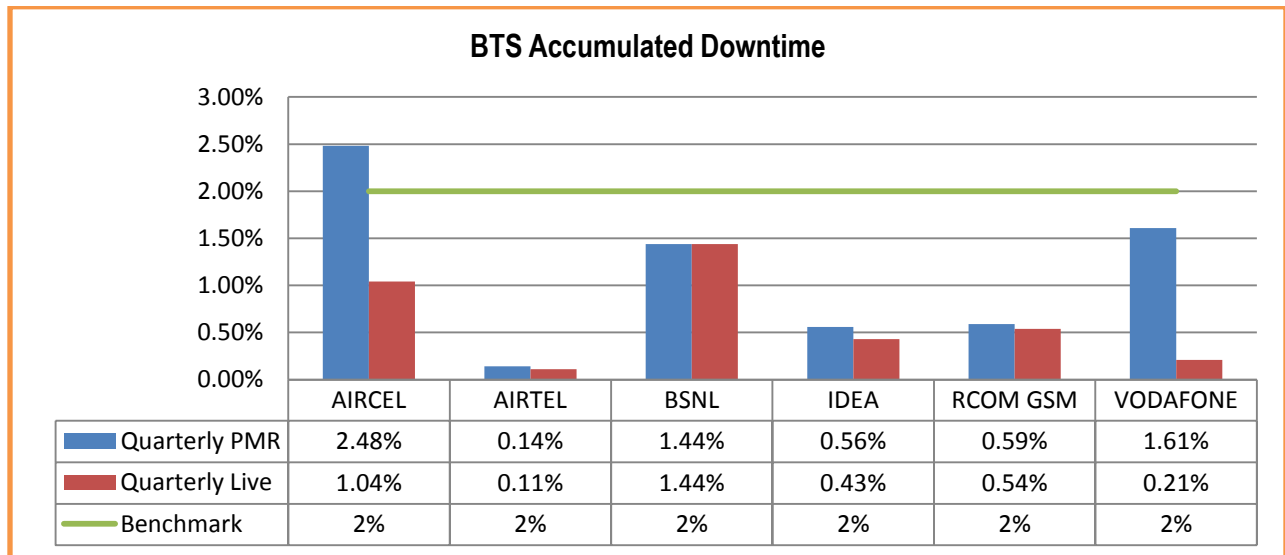
### AVERAGED QUARTERLY 3-DAYS LIVE MEASUREMENT



## 8. GRAPHICAL REPRESENTATION (CMTS):

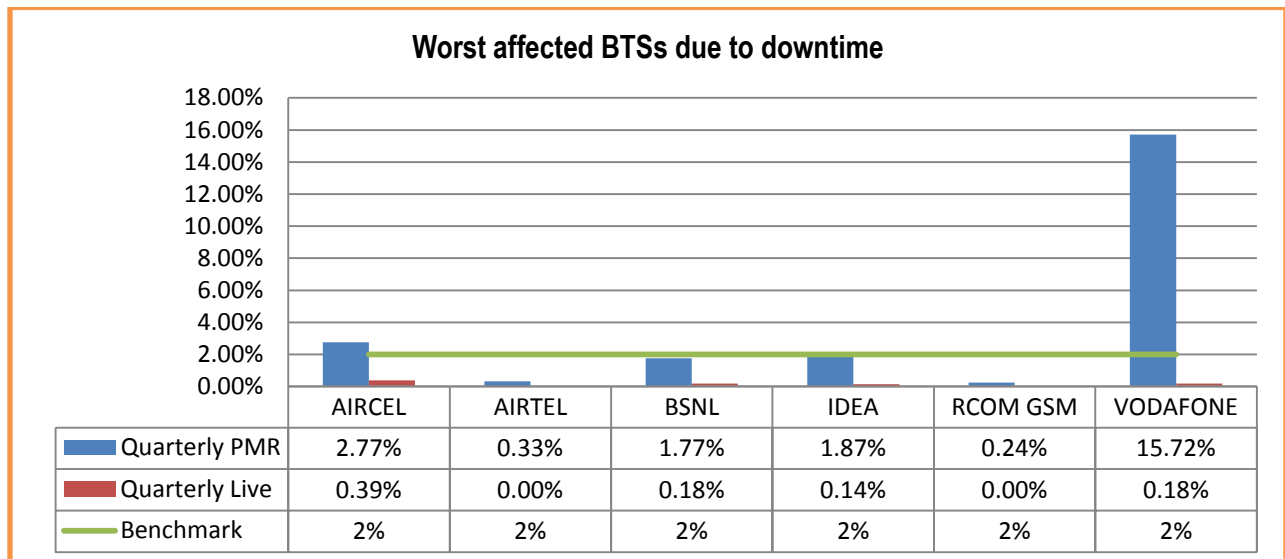
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

### 1) BTS ACCUMULATED DOWNTIME :



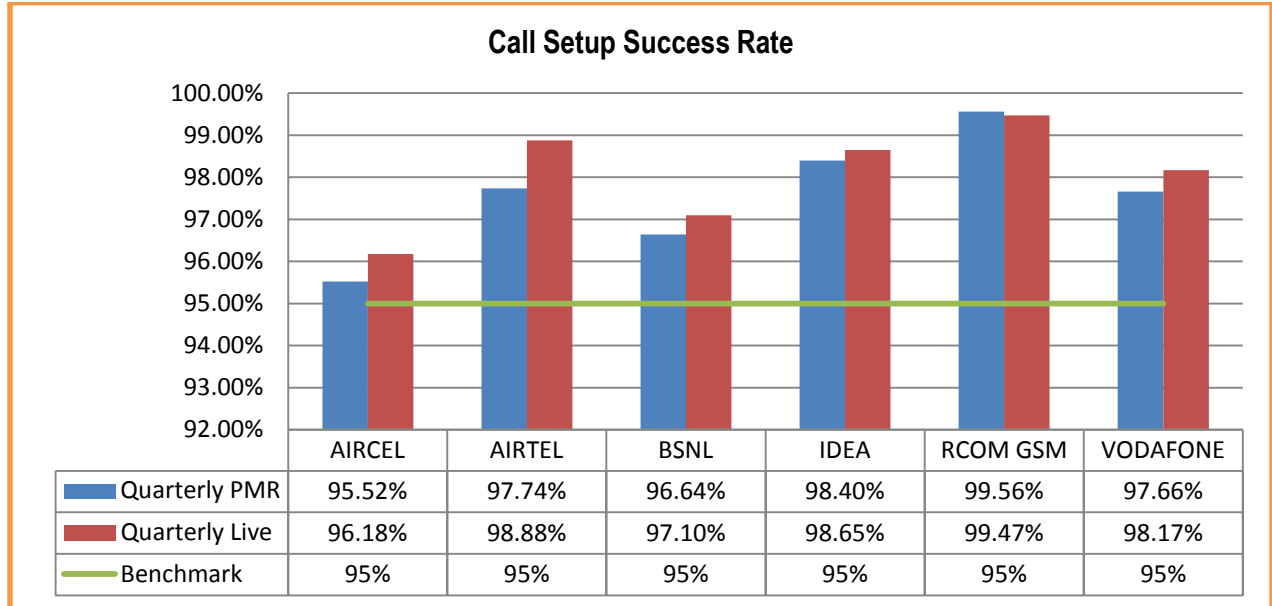
All operators are meeting the benchmarks except Aircel during monthly PMR audit.

### 2) WORST AFFECTED BTSS DUE TO DOWNTIME :



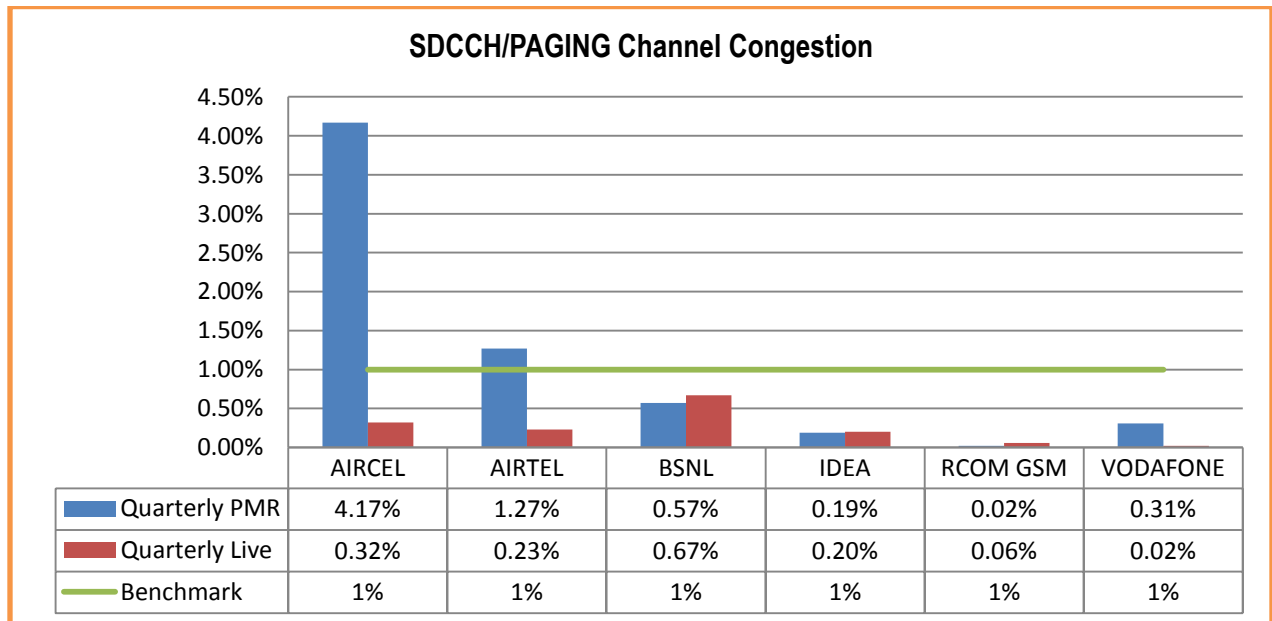
All operators are meeting the benchmarks except Aircel & Vodafone (during monthly PMR).

3) CALL SETUP SUCCESS RATE :



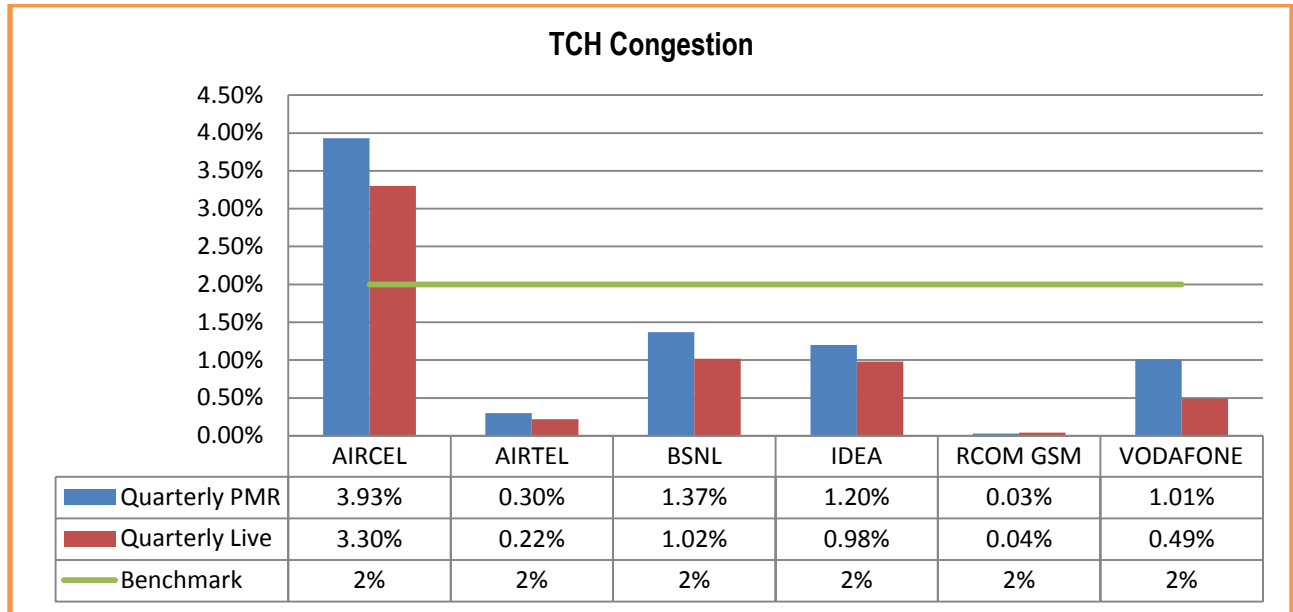
All operators are meeting the benchmarks.

4) SDCCH/PAGING CHANNEL CONGESTION :



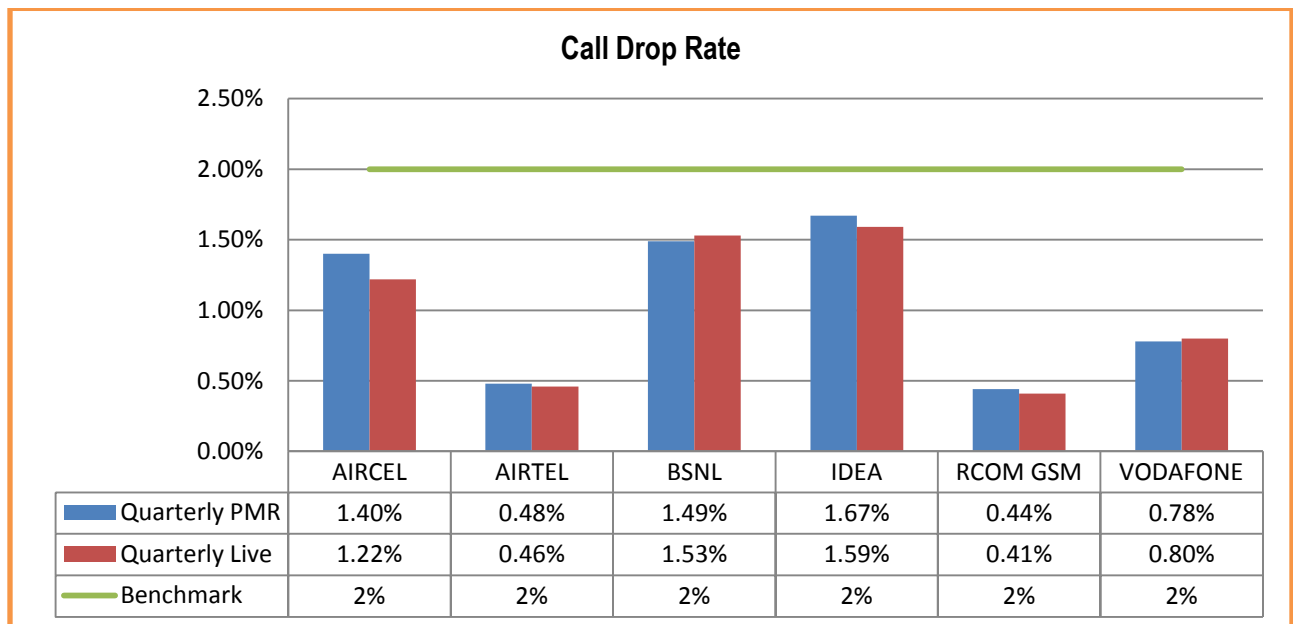
All operators are meeting the benchmarks except Aircel & Airtel (during monthly PMR).

5) TCH CONGESTION :



All operators are meeting the benchmarks except Aircel.

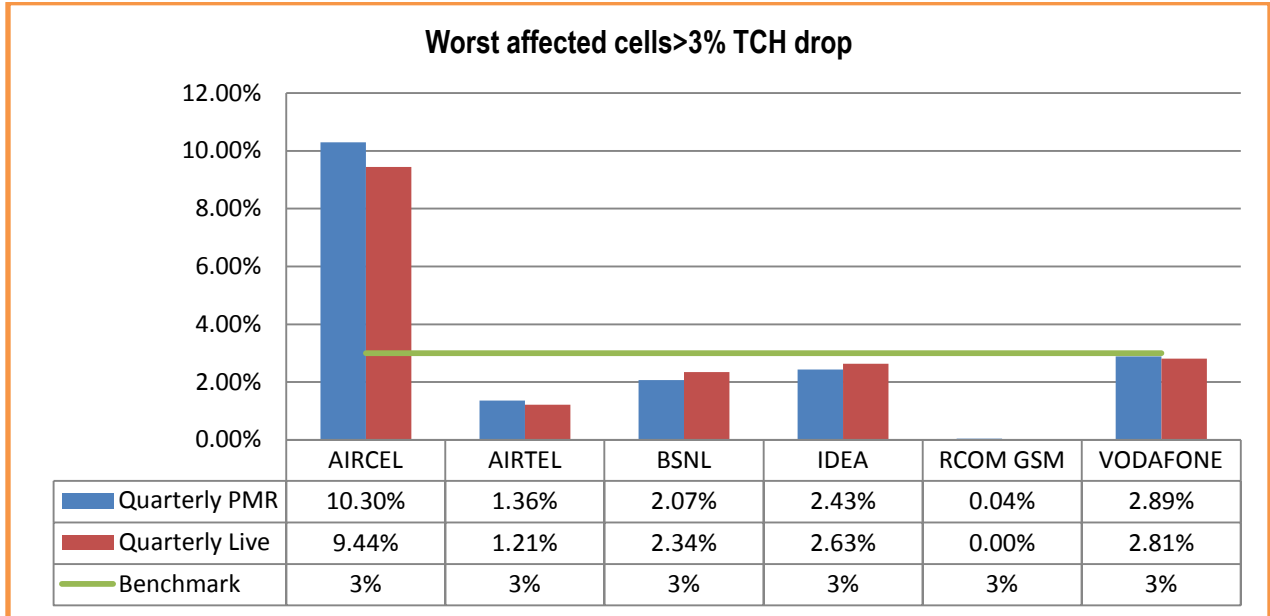
6) CALL DROP RATE :



All operators are meeting the benchmarks.

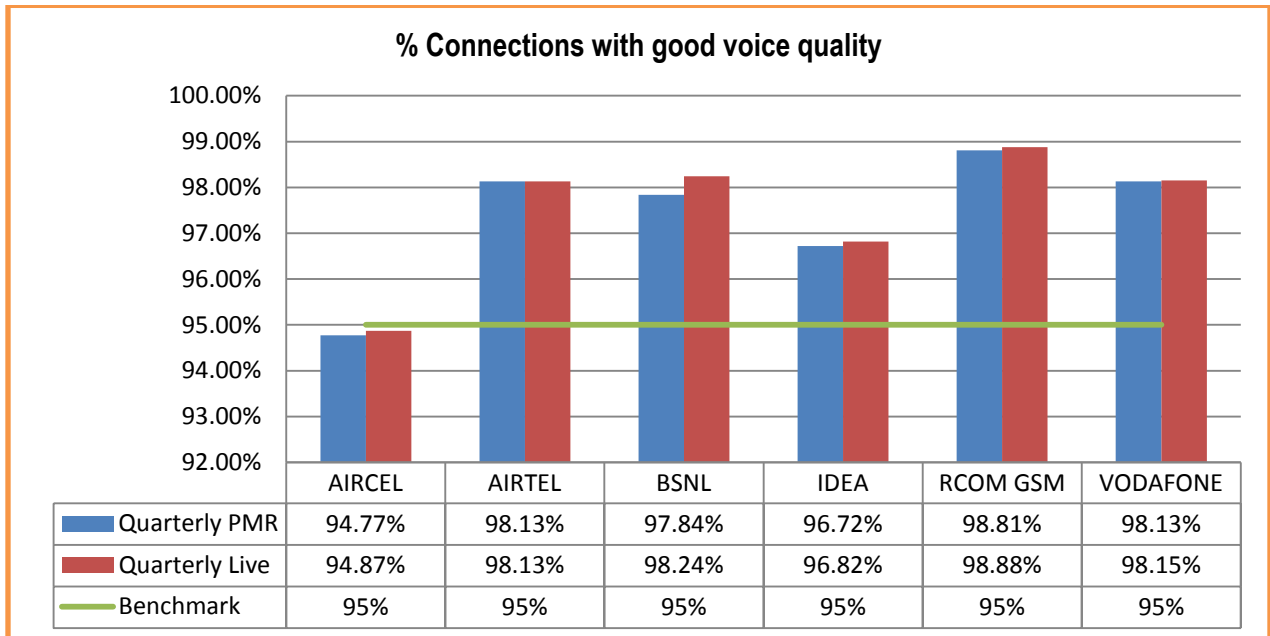


7) WORST AFFECTED CELLS>3% TCH DROP :



All operators are meeting the benchmarks except Aircel.

8) PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY :



All operators are meeting the benchmarks expect Aircel.