



**Audit & Assessment of Quality of Service  
Of  
Cellular Mobile Telephone Service  
For  
Telecom Regulatory Authority of India  
North Zone – UP (West) 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 **UP (E) 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.

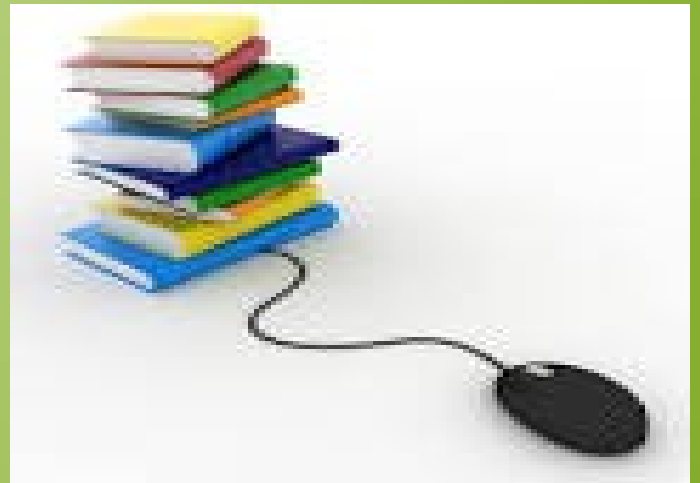
TRAI, the regulatory watch dog for the Quality of Service for the telecom services – Basic (Wire line), Cellular Mobile (Wireless) and Broadband has commissioned **M/s TUV-SUD South Asia Pvt. Ltd.** for conducting audit and assessment of quality of service of service providers, in terms of the benchmarks 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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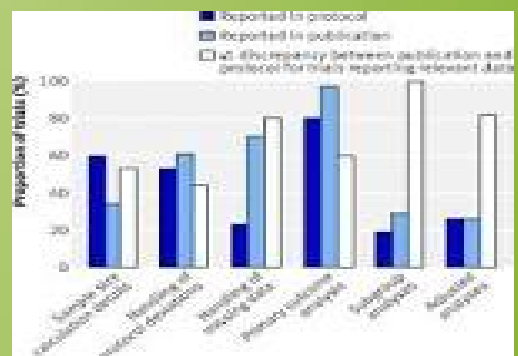
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

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



### 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 UP(W) 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>					
1	AIRCEL	15 to 17 Apr-15	11 to 13 May-15	4, 5 & 8 Jun-15	325/1,Dishnet Wireless Ltd. Shikhar Tower,Mangal Pandey Nagar, Garh Road, Meerut
2	AIRTEL	10, 13 & 14 Apr-15	13 to 15 May-15	5, 8 & 9 Jun-15	Bharti Airtel Ltd., Divider Chowk, Ganganagar, Mwana Road, Meerut
3	BSNL (UK)	15 to 17 Apr-15	11 to 13 May-15	18 to 20 Jun-15	BSNL Telephone Exchange, Patel Nagar Near Lal Pul, Dehradun UK.
5	BSNL (UPW)	7 to 9 Apr-15	12 to 14 May-15	22 to 24 Jun-15	BSNL Telephone Exchange, Brahampuri, Delhi Road, Meerut
4	IDEA	20 to 22 Apr-15	8, 11 & 12 May-15	9, 11 & 12 Jun-15	Idea Cellular Limited, First Floor A-68, Sector-64, Noida (UP)
6	RCOM GSM	15 to 17 Apr-15	20 to 22 May-15	10 to 12 Jun-15	Rcom Ltd., Vill-Jatauli,Near Krishna Public School, Bypass Road Meerut
7	UNINOR	20 to 22 Apr-15	13 to 15 May-15	17 to 19 Jun-15	Telewings Communications Services Pvt Ltd. (Uninor) Welldone Technology Park Sec-48 Sohna Road Gurgaon
8	TATA GSM	3, 6 & 7 Apr-15	8, 11 & 12 May-15	16, 18 & 19 Jun-15	TTSL, Near CCS University, Meerut
9	VIDEOCON	ND	20 to 22 May-15	17 to 19 Jun-15	Videocon Telecommunication limited, 2nd Floor,Tyagi Market, Tejgarhi, Meerut.
10	VODAFONE	13 to 15 Apr-15	6 to 8 May-15	4, 5 & 8 Jun-15	Vodafone South Ltd.,Nishyam Kunj Building,Near Kailash Prkash Stadium,Civil Lines,Meerut
<b>CDMA Operators</b>					
11	MTS	8 to 10 Apr-15	6 to 8 May-15	2 to 4 Jun-15	SSTL,Near Sri Ram Plaza,Opp.Ccs University, Meerut
12	RCOM CDMA	15 to 17 Apr-15	20 to 22 May-15	10 to 12 Jun-15	RCOM Ltd. ,Vill-Jatauli,Near Krishna Public School, Bypass Road Meerut
13	TATA CDMA	3, 6 & 7 Apr-15	8, 11 & 12 May-15	16, 18 & 19 Jun-15	TTSL, Near CCS University, Meerut

ND: Live measurements for Videocon could not be done on the month of April 2015 as its restarting of the service could be known, from the PMRs of QE March 2015, received from TRAI in the month of May 2015. They are operating with only 7 BTSs in the entire UP (W) service area.

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 UP (W) Circle in the quarter ended June- 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 **once in a year**. **Based on this criterion, the QoS audit for Broadband service was not required to be done for UP (W) Circle in the quarter ended June - 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:**

### Cellular Mobile Service:

(i) From monthly PMR audit it was concluded that on an average, performance of the operators in the UP (W) service area was satisfactory for **Network Parameters** as most of the parameters were found to be in compliance with the benchmarks of all the parameters except for parameter namely **‘Worst affected cells having > 3% TCH drop’** which could not be complied with by **Tata (GSM) and Tata (CDMA)** with their quarterly average performance as **5.25%** and **4.89%** respectively.

(ii) The live assessment revealed that the performance of the operators was largely in compliance for most of the parameters except for the parameter **‘Worst affected cells> 3 % TCH drops’** which could not be met by **Tata (GSM) and Tata (CDMA)** in all the three months of the quarter with their average performance as **5.46%** and **4.59%** respectively.

(iii) With regard to the **Customer Service Quality Parameters**, all service providers were found to have complied with the most of the parameters. **However, Vodafone** have failed to meet the benchmark of Billing complaints ( for pre-paid) with its performance as **0.104%** .

Regarding '**Calls answered by Operators (voice to voice) within 90 seconds**', only **RCOM GSM** remained short of benchmark with its performance as **93.29%**.

In case of the parameter, refund of deposit, only **Vodafone** lagged behind the benchmark with its achieved level as **50.01%**, way below the benchmark of 100%.

During 3 days live measurement, **Airtel, RCOM (GSM) and RCOM (CDMA)** could not meet the benchmark for parameter '**Calls answered by Operators (voice to voice) within 90 seconds**' with their performance as **94.81%, 94.40% and 93.72% respectively**

(iv) **Drive Test** results revealed that *the* parameter **Voice Quality** remained the area of concern as the same could not be complied with by **BSNL, RCOM (GSM), Idea, RCOM CDMA and Uninor** across the SSAs where the drive tests were conducted. Further, **RCOM (CDMA) and RCOM (GSM)** could not meet the benchmark of parameters **Call Drop rate and CSSR** respectively in Rampur SSA. **BSNL** also remained non-complied for the parameters **Call drop rate in** the same SSA. The service providers need to improve their network quality with respect to these parameters.

## **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 (UP-W)	June -15	19:00 - 20:00
4	BSNL (UTTRAKHAND)	June -15	20:00 - 21:00
5	IDEA	June -15	20:00 - 21:00
6	RCOM GSM	June -15	19:00 - 20:00
7	TATA GSM	June -15	20:00 - 21:00
8	UNINOR	June -15	20:00 - 21:00
9	VIDEOCON	June -15	20:00 - 21:00
10	VODAFONE	June -15	20:00 - 21:00
<b>CDMA Operators</b>			
11	MTS	June -15	20:00 - 21:00
12	RCOM CDMA	June -15	19:00 - 20:00
13	TATA CDMA	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 UP (W) circle.
- 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.

**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	2	7	654	ZTE	ZTE
2	AIRTEL	19	69	6698	Ericsson	Ericsson
3	BSNL (UPW)	12	33	2600	Ericsson, NSN & ZTE	Ericsson, NSN & ZTE
4	BSNL (UK)	5	14	956	Ericsson & ZTE	Ericsson, NSN & ZTE
5	IDEA	18	59	7803	NSN	NSN
6	RCOM GSM	4	14	1655	Huawei	Huawei
7	TATA GSM	3	18	1774	NSN	NSN
8	UNINOR	12	29	3912	Ericsson	Ericsson
9	VIDEOCON	1	1	7	Huawei	Huawei
10	VODAFONE	11	88	6891	NSN	NSN
<b>CDMA Operators</b>						
11	MTS	1	1	340	Huawei	Huawei
12	RCOM CDMA	3	4	981	Huawei & Lucent	Huawei & Lucent
13	TATA CDMA	5	4	471	Huawei & Ericsson	Huawei & Motorola

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – APRIL 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - UP(W) CIRCLE - APRIL 15 MONTH																
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) BTS Accumulated Downtime	<=2%	Apr-15	0.13%	0.72%	1.29%	0.56%	0.04%	0.29%	0.11%	0.16%	0.21%	0.21%	0.03%	0.45%	0.04%
	b) Worst affected BTSs due to downtime	<=2%	Apr-15	0.61%	1.38%	1.79%	1.91%	0.04%	0.60%	0.34%	0.00%	0.00%	0.76%	0.00%	1.40%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	Apr-15	98.47%	97.99%	98.40%	97.37%	98.02%	99.60%	98.27%	98.75%	99.84%	99.29%	99.63%	99.16%	98.73%
	b) SDCCH/PAGING Channel congestion	<=1%	Apr-15	0.22%	0.66%	0.53%	0.60%	0.96%	0.02%	0.16%	0.38%	0.07%	0.27%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Apr-15	0.95%	0.85%	1.30%	1.27%	1.64%	0.06%	0.51%	0.80%	0.25%	0.71%	0.00%	0.01%	0.14%
<b>Connection maintenance (Retainability)</b>																
3	a) CDR (Call Drop Rate)	<=2%	Apr-15	0.29%	0.92%	1.23%	1.37%	1.13%	0.20%	0.84%	0.45%	0.72%	0.73%	0.35%	0.18%	0.49%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Apr-15	2.37%	2.59%	2.05%	2.10%	2.49%	0.07%	5.32%	1.08%	0.00%	2.67%	1.60%	1.01%	4.77%
	c) Connections with good voice quality	>=95%	Apr-15	96.26%	97.97%	97.08%	96.05%	96.90%	98.72%	97.25%	95.92%	99.35%	96.77%	99.22%	99.79%	98.87%
4	No. of POI's having >=0.5% POI congestion		Apr-15	0	0	0	0	0	0	0	0	0	0	0	0	0

5.1.4 QOS PERFORMANCE OF MONTHLY PMR – MAY 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - UP(W) CIRCLE - MAY 15 MONTH																
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) BTS Accumulated Downtime	<=2%	May-15	0.31%	1.50%	1.11%	0.58%	0.08%	0.31%	0.20%	0.29%	0.17%	0.32%	0.03%	0.54%	0.09%
	b) Worst affected BTSs due to downtime	<=2%	May-15	1.22%	1.89%	1.77%	1.79%	0.06%	0.48%	0.90%	0.46%	0.00%	1.24%	0.00%	1.52%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	May-15	98.13%	98.10%	97.91%	97.63%	97.28%	99.57%	97.86%	98.41%	99.43%	99.11%	99.62%	98.93%	98.91%
	b) SDCCH/PAGING Channel congestion	<=1%	May-15	0.18%	0.60%	0.50%	0.65%	0.99%	0.03%	0.31%	0.64%	0.04%	0.49%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	May-15	0.88%	0.76%	1.30%	1.36%	1.99%	0.06%	0.82%	1.04%	0.06%	0.89%	0.00%	0.01%	0.04%
<b>Connection maintenance (Retainability)</b>																
3	a) CDR (Call Drop Rate)	<=2%	May-15	0.35%	0.95%	1.15%	1.35%	1.30%	0.19%	0.87%	0.54%	0.62%	0.66%	0.43%	0.29%	0.46%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	May-15	2.76%	2.44%	1.54%	2.12%	2.30%	0.07%	5.25%	1.60%	0.00%	2.62%	1.87%	1.64%	4.75%
	c) Connections with good voice quality	>=95%	May-15	95.90%	98.09%	97.16%	96.00%	96.62%	98.72%	97.17%	95.83%	99.43%	96.55%	99.24%	99.78%	98.88%
4	No. of POI's having >=0.5% POI congestion		May-15	0	0	0	0	0	0	0	0	0	0	0	0	0

5.1.5 QOS PERFORMANCE OF MONTHLY PMR – JUNE 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - UP(W) CIRCLE - JUNE 15 MONTH																
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) BTS Accumulated Downtime	<=2%	Jun-15	0.14%	0.96%	1.20%	0.62%	0.08%	0.36%	0.26%	0.38%	0.31%	0.35%	0.02%	0.67%	0.07%
	b) Worst affected BTSs due to downtime	<=2%	Jun-15	0.61%	1.28%	1.81%	1.78%	0.09%	1.03%	1.18%	0.72%	0.00%	1.36%	0.00%	1.43%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	Jun-15	97.97%	99.15%	97.71%	97.26%	97.83%	99.56%	97.43%	97.95%	99.44%	98.94%	99.63%	99.04%	98.84%
	b) SDCCH/PAGING Channel congestion	<=1%	Jun-15	0.26%	0.52%	0.52%	0.62%	0.99%	0.02%	0.32%	0.74%	0.02%	0.52%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Jun-15	0.82%	0.61%	1.30%	1.41%	1.92%	0.07%	1.20%	1.34%	0.02%	1.06%	0.00%	0.01%	0.11%
<b>Connection maintenance (Retainability)</b>																
3	a) CDR (Call Drop Rate)	<=2%	Jun-15	0.36%	0.93%	1.16%	1.35%	1.09%	0.19%	0.84%	0.52%	0.84%	0.69%	0.44%	0.21%	0.48%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Jun-15	2.80%	2.38%	1.75%	2.16%	2.40%	0.05%	5.17%	1.42%	1.43%	2.82%	1.97%	1.10%	5.14%
	c) Connections with good voice quality	>=95%	Jun-15	95.73%	96.08%	97.10%	95.96%	96.97%	98.89%	97.06%	95.89%	99.44%	96.88%	99.11%	99.78%	98.88%
4	No. of POI's having >=0.5% POI congestion		Jun-15	0	0	0	0	0	0	0	0	0	0	0	0	0

**5.1.6 QOS PERFORMANCE OF QUARTERLY PMR –AVERAGE OF QE- JUNE 15 (APRIL TO JUNE 2015 MONTHS AUDITED DATA)**

**QUARTERLY QOS PERFORMANCE (AVERAGE OF QE-JUNE-15) OF UP (W) CIRCLE**

PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.19%	1.06%	1.20%	0.59%	0.07%	0.32%	0.19%	0.28%	0.23%	0.29%	0.03%	0.55%	0.07%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.81%	1.52%	1.79%	1.83%	0.06%	0.70%	0.81%	0.39%	0.00%	1.12%	0.00%	1.45%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	98.19%	98.41%	98.01%	97.42%	97.71%	99.58%	97.85%	98.37%	99.57%	99.11%	99.63%	99.04%	98.83%
	b) SDCCH / PAGING Channel congestion	<=1%	Quarterly	0.22%	0.59%	0.52%	0.62%	0.98%	0.02%	0.26%	0.59%	0.04%	0.43%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.88%	0.74%	1.30%	1.35%	1.85%	0.06%	0.84%	1.06%	0.11%	0.89%	0.00%	0.01%	0.10%
<b>Connection maintenance (Retainability)</b>																
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.33%	0.93%	1.18%	1.36%	1.17%	0.19%	0.85%	0.50%	0.73%	0.69%	0.41%	0.23%	0.48%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	2.64%	2.47%	1.78%	2.13%	2.40%	0.06%	<b>5.25%</b>	1.37%	0.48%	2.70%	1.81%	1.25%	<b>4.89%</b>
	c) Connections with good voice quality	>=95%	Quarterly	95.96%	97.38%	97.11%	96.00%	96.83%	98.78%	97.16%	95.88%	99.41%	96.73%	99.19%	99.78%	98.88%
4	No. of POI's having >=0.5% POI congestion		Quarterly	0	0	0	0	0	0	0	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-SUD 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 UP(W) circle, **all the operators were found meeting benchmark of the above parameters** 'BTS accumulated downtime' and 'worst affected BTSs due to down time' in all the three months of the quarter.

- **Connection Establishment (Accessibility)**

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

CSSR includes complete signaling in the call set up process and does not aim to measure the performance of the called exchange or that of the Point of Interconnection (POI). CSSR was established as the ratio of total number of successful call attempts (establishment) to the total number of call attempts made.

All the operators were meeting the benchmark successfully of this parameter.

- **Parameters related to Network Congestion:**

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

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

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

▪ **Connection Maintenance (Retainability)**

i. Call Drop Rate:

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

The audit of this parameter revealed that all the service providers were measuring this parameter as per the TRAI guidelines. Also, **all the service providers were found to be meeting the TRAI specified benchmark**. The lowest call drop rate (average 0.19%) was for RCOM (GSM) during the quarter.

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

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

The audit with respect to this parameter revealed that all the operators met the benchmark for this parameter except **Tata (GSM) and Tata (CDMA)**. These operators failed to meet the benchmark with their quarterly average performance as **5.25% and 4.89%** respectively.

iii. Connections with good voice quality:

The audit results for this parameter indicates that **all operators have met the bench mark** during the quarter.



**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 - UP(W) CIRCLE - APRIL 15 MONTH																
Live Measurement Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) BTS Accumulated Downtime	<=2%	Live data	0.23%	0.85%	1.18%	1.04%	0.05%	0.23%	0.17%	0.17%	**--	0.24%	0.03%	0.36%	0.06%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.61%	0.06%	1.71%	0.00%	0.00%	0.00%	0.00%	0.00%	--	0.06%	0.00%	0.00%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.43%	98.07%	98.03%	97.65%	98.35%	99.59%	98.21%	98.75%	--	99.53%	99.62%	98.95%	98.66%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.27%	0.60%	0.49%	0.56%	0.74%	0.01%	0.14%	0.48%	--	0.16%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.85%	0.85%	1.18%	1.21%	1.36%	0.06%	0.47%	0.76%	--	0.47%	0.00%	0.01%	0.22%
<b>Connection maintenance (Retainability)</b>																
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.29%	0.92%	1.29%	1.39%	1.17%	0.18%	0.99%	0.47%	--	0.74%	0.36%	0.18%	0.48%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	2.23%	2.89%	2.28%	2.23%	2.55%	0.01%	<b>6.33%</b>	1.13%	--	2.66%	1.87%	0.98%	<b>4.60%</b>
	c) Connections with good voice quality	>=95%	Live data	96.24%	97.97%	97.63%	95.99%	96.95%	98.72%	97.19%	95.91%	--	96.71%	99.24%	99.78%	98.89%
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	--	0	0	0	0

\*\* Live measurements for Videocon could not be done on the month of April 2015 as its restarting of the service could be known, from the PMRs of QE March 2015, received from TRAI in the month of May 2015. They are operating with only 7 BTSs in the entire UP(W) service area.

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

CELLULAR MOBILE TELEPHONE SERVICES - UP(W) CIRCLE - MAY 15 MONTH

Live Measurement Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) BTS Accumulated Downtime	<=2%	Live data	0.38%	1.66%	1.24%	1.04%	0.08%	0.24%	0.19%	0.31%	0.00%	0.25%	0.01%	0.57%	0.09%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.46%	0.36%	1.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.14%	98.28%	98.16%	96.89%	97.56%	99.54%	98.16%	98.69%	99.25%	99.06%	99.63%	98.71%	98.98%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.21%	0.53%	0.86%	0.63%	1.12%	0.02%	0.23%	0.53%	0.12%	0.48%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	1.19%	0.63%	1.37%	1.42%	2.07%	0.06%	0.66%	0.89%	0.06%	0.94%	0.00%	0.02%	0.02%
<b>Connection maintenance (Retainability)</b>																
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.41%	0.95%	1.12%	1.31%	1.32%	0.21%	0.79%	0.50%	0.62%	0.69%	0.51%	0.28%	0.45%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	2.75%	2.70%	1.75%	2.04%	2.62%	0.01%	4.96%	1.29%	0.00%	2.91%	2.15%	1.43%	4.38%
	c) Connections with good voice quality	>=95%	Live data	95.97%	98.04%	97.85%	96.00%	96.70%	98.67%	97.24%	95.86%	99.46%	96.38%	99.25%	99.77%	98.88%
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0	0

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

CELLULAR MOBILE TELEPHONE SERVICES - UP(W) CIRCLE - JUNE 15 MONTH																
Live Measurement Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) BTS Accumulated Downtime	<=2%	Live data	0.20%	0.81%	1.20%	1.16%	0.12%	0.47%	0.17%	0.30%	0.00%	0.38%	0.00%	0.66%	0.07%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.31%	0.07%	1.67%	0.00%	0.01%	0.00%	0.06%	0.00%	0.00%	0.25%	0.00%	0.10%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	97.81%	98.00%	97.71%	97.64%	98.10%	99.63%	97.48%	98.07%	99.52%	99.09%	99.65%	99.11%	98.27%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.13%	0.49%	0.49%	0.56%	0.93%	0.02%	0.39%	0.87%	0.00%	0.51%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.84%	1.16%	1.22%	1.42%	1.75%	0.06%	1.16%	1.27%	0.00%	0.91%	0.00%	0.01%	0.71%
<b>Connection maintenance (Retainability)</b>																
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.41%	1.02%	1.22%	1.42%	0.99%	0.19%	0.84%	0.54%	1.17%	0.58%	0.44%	0.21%	0.47%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	2.88%	2.19%	2.03%	2.31%	2.31%	0.01%	5.10%	1.37%	3.17%	2.25%	1.86%	1.04%	4.78%
	c) Connections with good voice quality	>=95%	Live data	95.84%	98.11%	98.41%	95.83%	97.17%	98.92%	97.16%	95.87%	99.46%	96.73%	99.21%	99.77%	98.88%
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0	0

**5.2.4 QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT AUDITED DATA (AVERAGE OF APRIL TO JUNE 2015)**

**QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT (AVERAGE OF QE - JUNE 15) – UP (W) CIRCLE**

Live Measurement Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.27%	1.11%	1.21%	1.08%	0.08%	0.31%	0.18%	0.26%	0.00%	0.29%	0.01%	0.53%	0.07%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.46%	0.16%	1.69%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.13%	0.00%	0.03%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	98.13%	98.12%	97.97%	97.39%	98.00%	99.59%	97.95%	98.50%	99.39%	99.23%	99.63%	98.92%	98.64%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.20%	0.54%	0.61%	0.58%	0.93%	0.02%	0.25%	0.63%	0.06%	0.38%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.96%	0.88%	1.26%	1.35%	1.73%	0.06%	0.76%	0.97%	0.03%	0.77%	0.00%	0.01%	0.32%
<b>Connection maintenance (Retainability)</b>																
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.37%	0.96%	1.21%	1.37%	1.16%	0.19%	0.87%	0.50%	0.90%	0.67%	0.44%	0.22%	0.47%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	2.62%	2.59%	2.02%	2.19%	2.49%	0.01%	<b>5.46%</b>	1.26%	1.59%	2.61%	1.96%	1.15%	<b>4.59%</b>
	c) Connections with good voice quality	>=95%	Quarterly	96.02%	98.04%	97.96%	95.94%	96.94%	98.77%	97.20%	95.88%	99.46%	96.61%	99.23%	99.77%	98.88%
4	No. of POI's having >=0.5% POI congestion		Quarterly	0	0	0	0	0	0	0	0	0	0	0	0	0

**5.2.5 KEY FINDING ON 3 DAYS LIVE MEASUREMENTS:**

The live assessment revealed that the performance of the operators was largely in compliance for most of the parameters except for the parameter '**Worst affected cells> 3 % TCH drops**' which could not be met by **Tata (GSM) and Tata (CDMA)** in all the three months of the quarter with their average performance as **5.46% and 4.59%** respectively.

The similar non-compliance of Tata (GSM) and Tata (CDMA) was also observed in the monthly audit.

5.2.6 DETAILED NETWORK DATA ASSESSMENT OF CELLULAR MOBILE TELEPHONE SERVICES:

TABLE: 1

Detailed Network Data Assessment of Cellular Mobile Telephone Services - UP(W) Circle - April 15 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators			
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) Total no. of BTSs in the licensed service area		Apr-15	655	6677	2512	940	7782	1673	1787	3920	7	6876	340	998	471
	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	615	34737	23398	3773	2041	3494	1439	4618	11	10492	65	3198	143
	c) BTS Accumulated Downtime	<=2%	Apr-15	0.13%	0.72%	1.29%	0.56%	0.04%	0.29%	0.11%	0.16%	0.21%	0.21%	0.03%	0.45%	0.04%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Apr-15	4	92	45	18	3	10	6	0	0	52	0	14	0
	e) Worst affected BTSs due to downtime	<=2%	Apr-15	0.61%	1.38%	1.79%	1.91%	0.04%	0.60%	0.34%	0.00%	0.00%	0.76%	0.00%	1.40%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	Apr-15	98.47%	97.99%	98.40%	97.37%	98.02%	99.60%	98.27%	98.75%	99.84%	99.29%	99.63%	99.16%	98.73%
	b) SDCCH/PAGING Congestion	<=1%	Apr-15	0.22%	0.66%	0.53%	0.60%	0.96%	0.02%	0.16%	0.38%	0.07%	0.27%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Apr-15	0.95%	0.85%	1.30%	1.27%	1.64%	0.06%	0.51%	0.80%	0.25%	0.71%	0.00%	0.01%	0.14%
<b>Connection Maintenance (Retainability)</b>																
3	a) Call Drop Rate (CDR)	<=2%	Apr-15	0.29%	0.92%	1.23%	1.37%	1.13%	0.20%	0.84%	0.45%	0.72%	0.73%	0.35%	0.18%	0.49%
	b) Worst affected cells>3% TCH drop	<=3%	Apr-15	2.37%	2.59%	2.05%	2.10%	2.49%	0.07%	5.32%	1.08%	0.00%	2.67%	1.60%	1.01%	4.77%
	c) % of connections with good voice quality	>=95%	Apr-15	96.26%	97.97%	97.08%	96.05%	96.90%	98.72%	97.25%	95.92%	99.35%	96.77%	99.22%	99.79%	98.87%

**Detailed Network Data Assessment of Cellular Mobile Telephone Services - UP(W) Circle - April 15 month**

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators		
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Apr-15	47	511	150	59	586	3	290	128	0	560	19	30	71
	e) Total no. of cells (Sector) in the licensed service area		Apr-15	1974	19745	7341	2796	23503	5022	5446	11870	21	20926	1160	2982	1498
4	<b>No. of POI's having &gt;=0.5% POI congestion</b>															
	No. of POI's having >=0.5% POI congestion		Apr-15	0	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Apr-15	0	0	0	0	0	0	0	0	0	0	0	0	0
5	<b>Network Data</b>															
	a) Equipped Capacity of Network in Erlang		Apr-15	27830	185789	124412	118000	316280	122000	111776	202112	222	295850	21000	86000	82656
	b) Total traffic in TCBH in erlang (Avg.)		Apr-15	4479	157695	39347	274328	340885	106281	48103	236322	37	286799	1513	22679	17171
	c) Total no. of customers served (as per VLR) on last day of the month		Apr-15	204184	7028458	1560668	764813	13536081	4176094	2000033	6020076	6380	10300139	112250	1167864	270014

TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle – April 15 month																
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
1	<b>Network Availability</b>															
	a) Total no. of BTSs in the licensed service area		Live data	655	6675	2512	930	7737	1673	1787	3925	--	6876	340	998	471
	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	109	4097	2139	697	284	271	215	473	--	1198	7	257	22
	c) BTS Accumulated Downtime	<=2%	Live data	0.23%	0.85%	1.18%	1.04%	0.05%	0.23%	0.17%	0.17%	--	0.24%	0.03%	0.36%	0.06%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	4	4	43	0	0	0	0	0	--	4	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.61%	0.06%	1.71%	0.00%	0.00%	0.00%	0.00%	0.00%	--	0.06%	0.00%	0.00%	0.00%	
2	<b>Connection Establishment (Accessibility)</b>															
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.43%	98.07%	98.03%	97.65%	98.35%	99.59%	98.21%	98.75%	--	99.53%	99.62%	98.95%	98.66%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.27%	0.60%	0.49%	0.56%	0.74%	0.01%	0.14%	0.48%	--	0.16%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Live data	0.85%	0.85%	1.18%	1.21%	1.36%	0.06%	0.47%	0.76%	--	0.47%	0.00%	0.01%	0.22%	
3	<b>Connection Maintenance (Retainability)</b>															
	a) Call Drop Rate (CDR)	<=2%	Live data	0.29%	0.92%	1.29%	1.39%	1.17%	0.18%	0.99%	0.47%	--	0.74%	0.36%	0.18%	0.48%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	2.23%	2.89%	2.28%	2.23%	2.55%	0.01%	<b>6.33%</b>	1.13%	--	2.66%	1.87%	0.98%	<b>4.60%</b>
	c) % of connections with good voice quality	>=95%	Live data	96.24%	97.97%	97.63%	95.99%	96.95%	98.72%	97.19%	95.91%	--	96.71%	99.24%	99.78%	98.89%
d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	44	571	167	62	599	0	345	134	--	556	22	29	69	



Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle – April 15 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA	
				GSM Operators										CDMA Operators			
	e) Total no. of cells (Sector) in the licensed service area		Live data	1974	19736	7315	2786	23518	5022	5447	11869	--	20926	1160	2985	1499	
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	0	0	--	0	0	0	0	
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	--	0	0	0	0	

**TABLE: 3**

**Detailed Network Data Assessment of Cellular Mobile Telephone Services - UP(W) Circle - May 15 month**

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
1	<b>Network Availability</b>															
	a) Total no. of BTSs in the licensed service area		May-15	654	6681	2543	951	7803	1665	1780	3914	7	6878	340	989	471
	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	1499	74780	21044	4079	4498	3829	2686	8346	9	16487	63	3971	318
	c) BTS Accumulated Downtime	<=2%	May-15	0.31%	1.50%	1.11%	0.58%	0.08%	0.31%	0.20%	0.29%	0.17%	0.32%	0.03%	0.54%	0.09%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		May-15	8	126	45	17	5	8	16	18	0	85	0	15	0
e) Worst affected BTSs due to downtime	<=2%	May-15	1.22%	1.89%	1.77%	1.79%	0.06%	0.48%	0.90%	0.46%	0.00%	1.24%	0.00%	1.52%	0.00%	
2	<b>Connection Establishment (Accessibility)</b>															
	a) CSSR (Call Setup Success Rate)	>=95%	May-15	98.13%	98.10%	97.91%	97.63%	97.28%	99.57%	97.86%	98.41%	99.43%	99.11%	99.62%	98.93%	98.91%
	b) SDCCH/PAGING Congestion	<=1%	May-15	0.18%	0.60%	0.50%	0.65%	0.99%	0.03%	0.31%	0.64%	0.04%	0.49%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	May-15	0.88%	0.76%	1.30%	1.36%	1.99%	0.06%	0.82%	1.04%	0.06%	0.89%	0.00%	0.01%	0.04%
3	<b>Connection Maintenance (Retainability)</b>															
	a) Call Drop Rate (CDR)	<=2%	May-15	0.35%	0.95%	1.15%	1.35%	1.30%	0.19%	0.87%	0.54%	0.62%	0.66%	0.43%	0.29%	0.46%
	b) Worst affected cells>3% TCH drop	<=3%	May-15	2.76%	2.44%	1.54%	2.12%	2.30%	0.07%	<b>5.25%</b>	1.60%	0.00%	2.62%	1.87%	1.64%	<b>4.75%</b>
	c) % of connections with good voice quality	>=95%	May-15	95.90%	98.09%	97.16%	96.00%	96.62%	98.72%	97.17%	95.83%	99.43%	96.55%	99.24%	99.78%	98.88%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		May-15	54	482	105	60	543	3	285	189	0	543	22	48	71

**Detailed Network Data Assessment of Cellular Mobile Telephone Services - UP(W) Circle - May 15 month**

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators			
	e) Total no. of cells (Sector) in the licensed service area		May-15	1973	19800	6834	2834	23563	4998	5439	11869	21	20719	1158	2958	1488
4	<b>No. of POI's having &gt;=0.5% POI congestion</b>															
	No. of POI's having >=0.5% POI congestion		May-15	0	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		May-15	0	0	0	0	0	0	0	0	0	0	0	0	0
5	<b>Network Data</b>															
	a) Equipped Capacity of Network in Erlang		May-15	28021	185630	124724	118000	317894	122000	111562	204689	222	292600	21000	86000	82656
	b) Total traffic in TCBH in erlang (Avg.)		May-15	5263	162929	32854	276705	347857	108297	48857	240698	35	294874	1639	22143	16046
	c) Total no. of customers served (as per VLR) on last day of the month		May-15	229272	7156262	1519598	785466	13319972	4129792	2040889	6023173	5090	10184922	110243	1140394	263379

TABLE: 4

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle – May 15 month																
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
<b>Network Availability</b>																
1	a) Total no. of BTSs in the licensed service area		Live data	655	6677	2537	948	7782	1665	1787	3914	7	6876	340	989	471
	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	179	7960	2266	707	460	290	238	877	0	1215	3	404	31
	c) BTS Accumulated Downtime	<=2%	Live data	0.38%	1.66%	1.24%	1.04%	0.08%	0.24%	0.19%	0.31%	0.00%	0.25%	0.01%	0.57%	0.09%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	3	24	43	0	0	0	0	0	0	6	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.46%	0.36%	1.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%
<b>Connection Establishment (Accessibility)</b>																
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.14%	98.28%	98.16%	96.89%	97.56%	99.54%	98.16%	98.69%	99.25%	99.06%	99.63%	98.71%	98.98%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.21%	0.53%	0.86%	0.63%	1.12%	0.02%	0.23%	0.53%	0.12%	0.48%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	1.19%	0.63%	1.37%	1.42%	2.07%	0.06%	0.66%	0.89%	0.06%	0.94%	0.00%	0.02%	0.02%
<b>Connection Maintenance (Retainability)</b>																
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.41%	0.95%	1.12%	1.31%	1.32%	0.21%	0.79%	0.50%	0.62%	0.69%	0.51%	0.28%	0.45%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	2.75%	2.70%	1.75%	2.04%	2.62%	0.01%	4.96%	1.29%	0.00%	2.91%	2.15%	1.43%	4.38%
	c) % of connections with good voice quality	>=95%	Live data	95.97%	98.04%	97.85%	96.00%	96.70%	98.67%	97.24%	95.86%	99.46%	96.38%	99.25%	99.77%	98.88%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	54	534	129	58	616	1	270	153	0	603	25	43	66

**Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle – May 15 month**

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators		
	e) Total no. of cells (Sector) in the licensed service area		Live data	1974	19800	7387	2828	23534	5022	5447	11861	21	20719	1161	2985	1499
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	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0	0	0

**TABLE: 5**

**Detailed Network Data Assessment of Cellular Mobile Telephone Services - UP(W) Circle - June 15 month**

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
1	<b>Network Availability</b>															
	a) Total no. of BTSs in the licensed service area		Jun-15	654	6698	2600	954	7803	1655	1774	3912	7	6891	340	981	471
	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	671	46225	22387	4232	4674	4269	3273	10671	16	17143	61	4737	253
	c) BTS Accumulated Downtime	<=2%	Jun-15	0.14%	0.96%	1.20%	0.62%	0.08%	0.36%	0.26%	0.38%	0.31%	0.35%	0.02%	0.67%	0.07%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Jun-15	4	86	47	17	7	17	21	28	0	94	0	14	0
e) Worst affected BTSs due to downtime	<=2%	Jun-15	0.61%	1.28%	1.81%	1.78%	0.09%	1.03%	1.18%	0.72%	0.00%	1.36%	0.00%	1.43%	0.00%	
2	<b>Connection Establishment (Accessibility)</b>															
	a) CSSR (Call Setup Success Rate)	>=95%	Jun-15	97.97%	99.15%	97.71%	97.26%	97.83%	99.56%	97.43%	97.95%	99.44%	98.94%	99.63%	99.04%	98.84%
	b) SDCCH/PAGING Congestion	<=1%	Jun-15	0.26%	0.52%	0.52%	0.62%	0.99%	0.02%	0.32%	0.74%	0.02%	0.52%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Jun-15	0.82%	0.61%	1.30%	1.41%	1.92%	0.07%	1.20%	1.34%	0.02%	1.06%	0.00%	0.01%	0.11%
3	<b>Connection Maintenance (Retainability)</b>															
	a) Call Drop Rate (CDR)	<=2%	Jun-15	0.36%	0.93%	1.16%	1.35%	1.09%	0.19%	0.84%	0.52%	0.84%	0.69%	0.44%	0.21%	0.48%
	b) Worst affected cells>3% TCH drop	<=3%	Jun-15	2.80%	2.38%	1.75%	2.16%	2.40%	0.05%	5.17%	1.42%	1.43%	2.82%	1.97%	1.10%	5.14%
	c) % of connections with good voice quality	>=95%	Jun-15	95.73%	96.08%	97.10%	95.96%	96.97%	98.89%	97.06%	95.89%	99.44%	96.88%	99.11%	99.78%	98.88%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Jun-15	55	472	124	62	566	3	280	168	0	585	13	32	77

**Detailed Network Data Assessment of Cellular Mobile Telephone Services - UP(W) Circle - June 15 month**

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators		
	e) Total no. of cells (Sector) in the licensed service area		Jun-15	1970	19827	7108	2852	23615	4968	5420	11859	21	20757	644	2937	1499
4	<b>No. of POI's having &gt;=0.5% POI congestion</b>															
	No. of POI's having >=0.5% POI congestion		Jun-15	0	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Jun-15	0	0	0	0	0	0	0	0	0	0	0	0	0
5	<b>Network Data</b>															
	a) Equipped Capacity of Network in Erlang		Jun-15	28224	191824	121608	118000	320162	122000	111080	204506	222	290236	21000	86000	82656
	b) Total traffic in TCBH in erlang (Avg.)		Jun-15	5804	152604	32930	266163	343642	110877	48394	238689	27	287464	1356	23363	15124
	c) Total no. of customers served (as per VLR) on last day of the month		Jun-15	257569	6966803	1556333	766224	13433556	3998600	1978523	6041624	5090	10043208	90861	1189257	251207

TABLE: 6

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle – June 15 month																
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators		
<b>Network Service Quality Parameter</b>																
1	<b>Network Availability</b>															
	a) Total no. of BTSs in the licensed service area		Live data	654	6681	2578	956	7803	1655	1777	3920	7	6891	340	981	471
	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	96	3881	2236	801	656	562	217	852	0	1903	0	466	23
	c) BTS Accumulated Downtime	<=2%	Live data	0.20%	0.81%	1.20%	1.16%	0.12%	0.47%	0.17%	0.30%	0.00%	0.38%	0.00%	0.66%	0.07%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	2	5	43	0	1	0	1	0	0	17	0	1	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.31%	0.07%	1.67%	0.00%	0.01%	0.00%	0.06%	0.00%	0.00%	0.25%	0.00%	0.10%	0.00%	
2	<b>Connection Establishment (Accessibility)</b>															
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	97.81%	98.00%	97.71%	97.64%	98.10%	99.63%	97.48%	98.07%	99.52%	99.09%	99.65%	99.11%	98.27%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.13%	0.49%	0.49%	0.56%	0.93%	0.02%	0.39%	0.87%	0.00%	0.51%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Live data	0.84%	1.16%	1.22%	1.42%	1.75%	0.06%	1.16%	1.27%	0.00%	0.91%	0.00%	0.01%	0.71%	
3	<b>Connection Maintenance (Retainability)</b>															



<b>Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle – June 15 month</b>																
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators										CDMA Operators		
	a) Call Drop Rate (CDR)	<=2%	Live data	0.41%	1.02%	1.22%	1.42%	0.99%	0.19%	0.84%	0.54%	1.17%	0.58%	0.44%	0.21%	0.47%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	2.88%	2.19%	2.03%	2.31%	2.31%	0.01%	<b>5.10%</b>	1.37%	<b>3.17%</b>	2.25%	1.86%	1.04%	<b>4.78%</b>
	c) % of connections with good voice quality	>=95%	Live data	95.84%	98.11%	98.41%	95.83%	97.17%	98.92%	97.16%	95.87%	99.46%	96.73%	99.21%	99.77%	98.88%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	57	433	147	66	545	1	276	162	1	466	21	31	72
	e) Total no. of cells (Sector) in the licensed service area		Live data	1971	19809	7227	2862	23616	4979	5417	11852	21	20719	1109	2944	1499
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	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	0	0	0	0	0	0	0	0	0	0	0	0	0

## **CUSTOMER SERVICE QUALITY (CSD) PARAMETERS**



**5.3 CUSTOMER SERVICE QUALITY PARAMETERS MEASUREMENT FOR CMTS - QE JUNE-15:**

**5.3.1 QUARTERLY CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (QE - JUNE 2015):**

**QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES- QE JUNE- 15**

Quarterly CSD Audit Data		Bench- mark	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UP-W)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/ N	Name of Parameter		GSM Operators										CDMA Operators		
<b>Customer Service Quality Parameters</b>															
<b>Metering &amp; Billing Credibility -Post Paid</b>															
1	A) No. of bills issued during the quarter		49	448360	65177	102890	1216137	43458	126480	NA	NA	710065	106850	114210	53011
	B) No. of bills disputed including billing complaints during the quarter		0	89	0	15	1100	41	0	NA	NA	651	40	105	1
	C)% of billing complaints during the quarter	<= 0.1%	0.00%	0.02%	0.00%	0.01%	0.09%	0.09%	0.00%	NA	NA	0.09%	0.04%	0.09%	0.002%
<b>Metering &amp; Billing Credibility -Pre Paid</b>															
2	A) Total No. of Pre-paid customers at the end of the quarter		315648	7245198	842163	2435395	12877789	4176520	3829368	8351314	26360	10478802	145418	1167559	455846
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		0	414	49	84	423	3759	1	569	0	10891	53	939	0
	C) % of Pre-paid Charging Complaints	<= 0.1%	0.00%	0.01%	0.01%	0.003%	0.003%	0.09%	0.00%	0.01%	0.00%	0.104%	0.04%	0.08%	0.00%
<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		0	503	49	99	28353	3800	1	569	0	11542	93	1044	1
	B) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 4 weeks during the quarter		0	503	49	99	28353	3800	1	569	0	11542	93	1044	1

**AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2015-UP (WEST) CIRCLE**



**QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES- QE JUNE- 15**

<b>Quarterly CSD Audit Data</b>		<b>Bench- mark</b>	<b>AIRCEL</b>	<b>AIRTEL</b>	<b>BSNL (UK)</b>	<b>BSNL (UP-W)</b>	<b>IDEA</b>	<b>RCOM GSM</b>	<b>TATA GSM</b>	<b>UNINOR</b>	<b>VIDEOCON</b>	<b>VODAFONE</b>	<b>MTS</b>	<b>RCOM CDMA</b>	<b>TATA CDMA</b>
<b>S/ N</b>	<b>Name of Parameter</b>		<b>GSM Operators</b>									<b>CDMA Operators</b>			
	C) No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers resolved within 6 weeks during the quarter		0	503	49	99	28353	3800	1	569	0	11542	93	1044	1
	D) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	<i>&gt;=98% within 4 weeks</i>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	E) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 6 weeks	<i>100% within 6 weeks</i>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	F) % of Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints	<i>&lt;=1 week</i>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Response time to customers for assistance</b>															
4	A) Total no of calls attempted to customer care/Call center		869019	3090906	1336950	3515324	35344058	3537686	2679563	22574890	2345	29499916	442875	1033906	66153
	B) Total no. of calls successfully established to customer care/Call center.		855273	3090872	1336950	3515324	34988940	3457225	2652435	22339173	2345	29499916	433145	1008027	65675
	C) % Accessibility of Call centre /customer Care (Total calls successfully established *100/ Total call attempts)	<i>&gt;=95%</i>	98.42%	100%	100%	100%	99.00%	97.73%	98.99%	98.96%	100%	100%	97.80%	97.50%	99.28%
	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		156971	3841294	525977	1560338	8539701	730580	1216888	6306742	30382	8326508	140895	139192	60124

**AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2015-UP (WEST) CIRCLE**



**QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES- QE JUNE- 15**

<u>Quarterly CSD Audit Data</u>		Bench- mark	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UP-W)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/ N	Name of Parameter		GSM Operators								CDMA Operators				
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		155432	3652813	506668	1502799	8477117	681530	1203982	6255897	29248	8149611	137699	133090	59585
	F) % age of calls answered by operator (voice to voice) (Total calls successfully established within 90 Sec.*100 / Total call attempts )	>=95%	97.77%	95.09%	96.33%	96.31%	99.27%	93.29%	98.94%	99.19%	96.27%	97.88%	97.73%	95.62%	99.10%
<b>Termination/closure of service</b>															
5	A) Total No. of requests for Termination / Closure of service received during the quarter		0	2137	200	408	5001	25	1863	NA	NA	2306	626	194	611
	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter.		0	2137	200	408	5001	25	1863	NA	NA	2306	626	194	611
	C) % of Termination/ Closure of service within 7 days	<=7days	100%	100%	100%	100%	100%	100%	100%	NA	NA	100%	100%	100%	100%
<b>Time taken for refunds of deposits after closures.</b>															
6	A) No. of Payments/ Refunds due during the quarter		0	386	161	203	5031	288	644	NA	NA	15296	0	361	460
	B) No. of Payments/ Refunds Cleared during the quarter		0	386	161	203	5031	288	644	NA	NA	7650	0	361	460
	C) Time taken for refunds of deposits after closures.	100% within 60 days	100%	100%	100%	100%	100%	100%	100%	NA	NA	50.01%	100%	100%	100%

NA: Uninor & Videocon has no post-paid customers, so data for parameters related to post-paid bills not applicable for them.

NB: Accessibility of call center / Customer care data of RCOM (GSM & CDMA) are based on average of two months' data i.e. April & May 15 as June-15 month data was not provided by RCOM (GSM & CDMA) due to TTI server issue.

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	AIRCEL	AIRTEL	BSNL (JK)	BSNL (UPW)	IDEA	RCOM GSM	TATA (GSM)	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
S/ N	Name of Parameter		GSM Operators							CDMA Operators					
<b>RESPONSE TIME TO CUSTOMERS FOR ASSISTANCE</b>															
1	A) Total no of calls attempted to customer care/Call center		35021	88570	43515	126569	1353174	NP	25820	817211	105	1053371	14671	NP	2117
	B) Total no. of calls successfully established to customer care/Call center.		34501	88570	43515	126569	1340810	NP	25614	808493	105	1053371	14520	NP	2103
	C) % Accessibility of Call centre /customer Care (Total calls successfully established *100/ Total call attempts)	>=95%	98.52%	100.00%	100.00%	100.00%	99.09%	NP	99.20%	98.93%	100.00%	100.00%	98.97%	NP	99.34%
2	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		5393	128185	18241	57865	306842	27381	37109	218657	920	276273	967	5334	1776
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		5233	121529	17716	56333	303115	25849	36297	217370	875	271955	951	4999	1719
	F) % age of calls answered by operator (voice to voice) (Total calls successfully established within 90 Sec.*100 / Total call attempts )	>=95%	97.03%	94.81%	97.12%	97.35%	98.79%	94.40%	97.81%	99.41%	95.11%	98.44%	98.35%	93.72%	96.79%

NP: RCOM (GSM & CDMA) has not provided data for the parameter "Accessibility of call center / Customer care" due to TTI server issue.

### 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 was well within the prescribed bench mark of  $\leq 0.1\%$ . Billing credibility (Pre-paid) for **Vodafone** was very marginally out of benchmark (**0.104%**)

#### 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 were in compliance with respect to the parameter 'Accessibility of call center'. However, only **RCOM (GSM)** have failed to meet the benchmark of '**Calls answered by Operators (voice to voice) within 90 seconds**' with its performance as **93.29%**.

#### 4. Termination/Closure of Service

In case of this parameters also, all service providers have settled the closure within the benchmark of 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 except **Vodafone** with its achieved level as **50.01%**, way below the benchmark of **100%**.

#### Live Measurement

The results of three days live measurements revealed that **Airtel, RCOM (GSM) and RCOM (CDMA)** have failed to meet the benchmark of '**Calls answered by Operators (voice to voice) within 90 seconds**' with their performance as **94.81%, 94.40 and 93.72%** 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 UP(W) 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	RCOM CDMA	TATA GSM	TATA CDMA	MTS	VODAFONE	UNINOR	VIDEOCON
AIRCEL	UPW	---	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AIRTEL	UPW	100%	---	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
BSNL	UPW	100%	100%	---	100%	100%	100%	100%	100%	100%	100%	100%	100%
IDEA	UPW	100%	100%	100%	---	100%	100%	100%	100%	100%	100%	100%	100%
RCOM GSM	UPW	100%	100%	100%	100%	---	100%	100%	100%	100%	100%	100%	100%
RCOM CDMA	UPW	100%	100%	100%	100%	100%	---	100%	100%	100%	100%	100%	100%
TATA GSM	UPW	100%	100%	100%	100%	100%	100%	---	100%	100%	100%	100%	100%
TATA CDMA	UPW	100%	100%	100%	100%	100%	100%	100%	---	100%	100%	100%	100%
MTS	UPW	100%	100%	100%	100%	100%	100%	100%	100%	---	100%	100%	100%
VODAFONE	UPW	100%	100%	100%	100%	100%	100%	100%	100%	100%	---	100%	100%
UNINOR	UPW	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	---	100%
VIDEOCON	UPW	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	---

The result of the testing revealed that the inter connection performance among the operators was quite satisfactory. Thus there was no remarkable problem in interconnection from one operator to other operators.

**6.2 CUSTOMER CARE / HELPLINE ASSESSMENT:**

LIVE CALLING TO CALL CENTRE													
Parameter	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UP-W)	IDEA	RCOM GSM	TATA GSM	UNINOR	VIDEOCON	VODAFONE	MTS	RCOM CDMA	TATA CDMA
Total No. of calls Attempted	100	100	100	100	100	100	100	100	100	100	100	100	100
Total no of calls attempted to customer care/Call center	100	100	100	100	100	100	100	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	100	100	100	100	100	99	100	100	100	100	100	100	100
% Accessibility of Call centre /customer Care (Total calls successfully established*100/ Total call attempt)	100.00%	100.00%	100.00%	100.00%	100.00%	99.00%	100.00%	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)	100	100	100	100	100	99	100	100	100	100	100	100	100
Total number of calls answered by the operator (Voice to voice) within 90 seconds	100	99	99	100	100	97	99	100	100	100	100	96	100
% age of calls answered by operator(voice to voice) (Total calls successfully established within 90 Sec.*100/ Total call attempt)	100.00%	99.00%	99.00%	100.00%	100.00%	97.98%	99.00%	100.00%	100.00%	100.00%	100.00%	96.00%	100.00%

In case of calls answered by operators (voice to voice) within 90 seconds when test calls were made to the call centers, all operators were able to connect the calls with their call center operators/agents successfully. However, Airtel, BSNL (UK), RCOM (GSM), Tata GSM and RCOM (CDMA) could connect 99%, 99%, 97.98%, 99% and 96% respectively of call to call center operator.

**6.3 LIVE CALLING ASSESSMENT FOR BILLING COMPLAINTS:**

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS														
Parameter	Circle Name	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UPW)	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VIDEOCON	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	UPW	0	150	49	94	119	151	191	1	0	129	93	215	1
Total No. of calls Answered	UPW	0	129	23	60	100	117	116	1	0	100	26	116	1
Cases resolved within 4 weeks	UPW	0	129	23	60	100	113	116	1	0	100	26	116	1
%age of cases resolved	UPW	100%	100%	100%	100%	100%	97%	100%	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 where the complaints were more than 100.

Some of the complainants reported that they didn't exactly remember about the duration of resolution of complaints. However, the customers reported that the billing complaints were resolved to their satisfaction.

6.4 LEVEL -1 CALLING ASSESSMENT:

LEVEL 1 LIVE CALLING																		
Month	SSA Name	Name of SDCA	Emergency No.	No. of calls made	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	MTS	VODAFONE	UNINOR	VIDEOCON		
April'15	PILIBHIT	PILIBHIT	100	3	NC	√	√	√	√	√	√	√	√	√	√	NC		
			101	3	NC	√	√	√	√	√	√	√	√	√	√	√	NC	
			108	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1090	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1098	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
		BISALPUR	100	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			101	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			108	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1090	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1098	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
		PURANPUR	100	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			101	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			108	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1090	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1098	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
May'15	RAMPUR	RAMPUR	100	3	NC	√	√	√	√	√	√	√	√	√	√	√	NC	
			101	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			108	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1090	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1098	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
		SHAHBAD	100	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			101	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			108	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1090	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
			1098	3	NC	√	√	√	√	√	√	√	√	√	√	√	√	NC
June'15	UTTARKASHI	UTTARKASHI	100	2	NC	√	√	√	NC	NC	NC	NC	NC	√	√	NC		
			101	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC	
			102	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC	
			108	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC	
			1090	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC	
			1098	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC	
			1070	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC	
		GANGOTRI	100	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
			101	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
			102	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
			108	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
			1090	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
				2	NC	√	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
				2	NC	√	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
				2	NC	√	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

LEVEL 1 LIVE CALLING																	
Month	SSA Name	Name of SDCA	Emergency No.	No. of calls made	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	MTS	VODAFONE	UNINOR	VIDEOCON	
			1098	2	NC	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	
			1070	2	NC	√	√	NC	NC	NC	NC	NC	NC	NC	NC	NC	
		DUNDA	100	2	NC	√	√	√	NC	NC	NC	NC	NC	√	√	NC	
			101	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			102	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			108	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			1090	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			1098	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			1070	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			100	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
		TEHRI	101	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			102	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			108	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			1090	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			1098	2	NC	√	√	√	NC	NC	NC	NC	NC	NC	√	√	NC
			1070	2	NC	√	√	√	NC	NC	NC	NC	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 in the SDCAs where drive tests were conducted, the calls were made from mobile phones provided by the service providers. In these SDCAs of UP (West) service areas, the emergency services as mentioned in the above table were found functional in the networks of all the service providers. **Aircel & Videocon are not having coverage in all the three SSAs.**

## 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 **Pilibhit, Rampur and Uttarkashi** in the months of April, May and June 2015 respectively. The total route Kms covered during the drive tests in respective SSAs was **360 Kms, 385 Kms and 358 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 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: PILIBHIT SSA (APRIL-15)

DRIVE TEST TABLE – 1

S/N	Parameter	Classification of routes covered	AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA			
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR		
1	Call Attempts	Major Road	65	25	60	25	99	27	60	25	36	25	57	25	66	25	53	25	38	25	38	25		
		Highway	301	25	367	25	345	25	180	25	107	25	167	25	376	28	209	25	188	25	129	25		
		Within City	83	25	74	25	99	25	92	25	84	25	90	25	110	25	90	25	80	25	94	25		
		Overall SSA	449	75	501	75	543	77	332	75	227	75	314	75	552	78	352	75	306	75	261	75		
2	Blocked Call Rate	Major Road	0.00%	0.00%	5.00%	0.00%	1.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
		Highway	0.33%	0.00%	2.45%	0.00%	0.00%	0.00%	0.00%	0.00%	2.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.19%	0.00%	0.00%	0.00%		
		Within City	0.00%	0.00%	1.35%	0.00%	0.00%	0.00%	0.00%	0.00%	1.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.25%	0.00%	0.00%	0.00%		
		Overall SSA	0.22%	0.00%	2.59%	0.00%	0.18%	0.00%	0.00%	0.00%	1.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.29%	0.00%	0.00%	0.00%		
3	Dropped Call Rate (<=2%)	Major Road	0.00%	0.00%	0.00%	0.00%	1.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
		Highway	0.00%	0.00%	1.40%	0.00%	0.29%	0.00%	0.00%	0.00%	0.96%	0.00%	0.63%	0.00%	0.00%	0.00%	0.00%	0.00%	1.65%	0.00%	0.00%	0.00%		
		Within City	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.41%	0.00%	1.12%	0.00%	0.00%	0.00%	0.00%	0.00%	2.53%	0.00%	0.00%	0.00%		
		Overall SSA	0.00%	0.00%	1.03%	0.00%	0.37%	0.00%	0.00%	0.00%	1.35%	0.00%	0.66%	0.00%	0.00%	0.00%	0.00%	0.00%	1.67%	0.00%	0.00%	0.00%		
4	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Percentage connections with good voice quality (=>95%)																						
		Major Road	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.07%	98.64%	99.71%	99.94%	98.03%	98.14%	
		Highway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.32%	99.80%	81.39%	100%	98.31%	99.77%	
		Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.60%	96.48%	99.31%	99.67%	97.96%	98.08%	
Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.35%	98.31%	88.10%	99.89%	98.14%	98.66%			



**AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2015-UP (WEST) CIRCLE**

S/N	Parameter	Classification of routes covered	AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
(b) 0-5 (with frequency hopping for GSM Operators)	Major Road		99.04%	99.65%	96.30%	99.86%	97.53%	97.60%	96.84%	99.61%	92.10%	99.62%	93.10%	98.94%	97.39%	97.63%	NA	NA	NA	NA	NA	NA
	Highway		95.78%	99.66%	92.43%	99.35%	97.21%	99.52%	97.50%	95.27%	86.11%	94.11%	96.02%	96.50%	95.69%	98.07%	NA	NA	NA	NA	NA	NA
	Within City		98.30%	99.80%	96.21%	99.21%	97.15%	98.97%	95.74%	98.34%	92.96%	99.01%	93.82%	94.74%	97.20%	97.63%	NA	NA	NA	NA	NA	NA
	Overall SSA		96.77%	99.70%	93.40%	99.47%	97.26%	98.67%	96.90%	97.79%	89.33%	97.73%	94.93%	96.55%	96.33%	97.78%	NA	NA	NA	NA	NA	NA
<b>Service Coverage</b>																						
5	In door (>= - 75dBm)	Major Road	75.54%	88.81%	65.62%	99.77%	98.64%	98.50%	42.44%	8.70%	48.19%	99.37%	51.71%	30.33%	79.04%	93.10%	65.52%	95.37%	59.83%	99.92%	67.09%	82.30%
		Highway	40.17%	92.96%	44.60%	92.81%	93.83%	98.80%	40.32%	1.70%	33.59%	2.16%	42.40%	94.22%	52.07%	93.80%	53.32%	95.57%	27.21%	34.77%	63.75%	92.70%
		Within City	73.26%	99.74%	79.05%	97.33%	97.51%	99.00%	55.09%	60.60%	48.69%	76.93%	77.26%	26.70%	72.13%	46.90%	78.06%	46.64%	59.06%	13.47%	68.39%	62.50%
		Overall SSA	51.47%	93.84%	51.96%	96.58%	95.08%	98.76%	44.92%	24.18%	39.13%	47.12%	53.40%	52.58%	61.23%	79.69%	61.54%	79.28%	38.95%	60.97%	65.97%	79.08%
	In-vehicle (>= - 85dBm)	Major Road	92.56%	99.68%	90.90%	100%	99.87%	100%	92.51%	96.80%	74.70%	100%	84.58%	94.71%	94.75%	99.80%	93.06%	99.03%	94.54%	100%	92.34%	99.86%
		Highway	67.17%	99.58%	74.10%	100%	99.48%	100%	87.43%	66.90%	56.85%	23.30%	76.65%	99.94%	81.33%	99.80%	89.52%	98.37%	62.87%	99.92%	92.72%	97.12%
		Within City	94.10%	100%	96.82%	99.97%	99.76%	100%	95.55%	96.80%	73.34%	76.93%	96.92%	93.71%	91.94%	89.00%	97.42%	98.93%	92.86%	85.23%	94.32%	95.54%
		Overall SSA	75.88%	99.75%	79.29%	99.99%	99.58%	100%	90.67%	87.25%	63.19%	57.59%	83.46%	96.27%	86.04%	96.61%	92.09%	98.78%	74.05%	96.83%	93.25%	97.48%
	Outdoor-in city (>= - 95dBm)	Major Road	99.54%	100%	97.77%	100%	99.96%	100%	99.15%	99.20%	89.18%	100%	98.72%	100%	99.66%	100%	99.01%	99.50%	100%	100%	98.45%	100%
		Highway	91.99%	99.98%	96.42%	100%	99.94%	100%	98.80%	98.90%	80.78%	86.90%	97.73%	100%	98.40%	100%	99.05%	99.29%	98.51%	100%	99.22%	99.33%
		Within City	99.49%	100%	100%	100%	100%	100%	99.44%	99.30%	93.08%	100%	99.77%	99.97%	99.23%	99.80%	99.04%	98.99%	99.90%	100%	98.02%	99.03%
		Overall SSA	94.49%	99.99%	97.09%	100%	99.95%	100%	99.05%	99.14%	84.75%	93.62%	98.45%	99.99%	98.80%	99.94%	99.04%	99.26%	99.03%	100%	98.66%	99.45%
6	Call Setup Success Rate (>=95%)	Major Road	100%	100%	95.00%	100%	97.98%	100%	100%	100%	100%	100%	94.74%	96.00%	100%	100%	100%	100%	100%	100%	100%	100%
		Highway	99.00%	100%	97.28%	100%	99.71%	100%	100%	100%	100%	100%	97.20%	100%	100%	100%	100%	100%	96.81%	100%	100%	100%

**AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2015-UP (WEST) CIRCLE**

S/N	Parameter	Classification of routes covered	AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			Within City	Overall SSA	Within City	Overall SSA	Within City	Overall SSA	Within City	Overall SSA	Within City	Overall SSA	Within City	Overall SSA	Within City	Overall SSA	Within City	Overall SSA	Within City	Overall SSA	Within City	Overall SSA
7	Hand Over Success Rate (HOSR)	Major Road	100%	100%	97.33%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98.25%	100%	100%	100%	100%	100%	100%	100%
		Highway	97.23%	100%	95.72%	100%	99.53%	100%	100%	100%	98.77%	100%	99.47%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	99.04%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98.29%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	98.14%	100%	96.72%	100%	99.68%	100%	100%	100%	99.48%	100%	99.19%	100%	99.78%	100%	100%	100%	100%	100%	100%	100%

- NA: Not Applicable
- Aircel and Videocon are not having their coverage in entire Pilibhit SSA, hence not included in the above table.
- The service Providers having block call rate more than 3% have been shaded in yellow colour.

7.2 OPERATOR ASSISTED DRIVE TEST: RAMPUR SSA (MAY-15)

DRIVE TEST TABLE – 2

S/N	Parameter	Classification of routes covered	AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA			
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR		
			1	Call Attempts	Major Road	54	25	48	25	52	25	51	25	43	26	49	25	47	25	40	25	43	25	32
Highway	293	25			272	25	390	25	125	25	156	25	95	25	321	26	105	25	187	25	132	10		
Within City	140	25			158	25	135	25	131	25	117	25	129	26	115	25	93	25	108	25	125	25		
Overall SSA	487	75			478	75	577	75	307	75	316	76	273	76	483	76	238	75	338	75	289	60		
2	Blocked Call Rate	Major Road	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.65%	4.00%	0.00%	0.00%		
		Highway	0.34%	0.00%	1.10%	0.00%	0.77%	0.00%	0.00%	0.00%	0.64%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.14%	0.00%	0.00%	0.00%		
		Within City	0.00%	0.00%	0.63%	0.00%	2.22%	0.00%	0.00%	0.00%	0.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.93%	0.00%	0.00%	0.00%		
		Overall SSA	0.21%	0.00%	0.84%	0.00%	1.04%	0.00%	0.00%	0.00%	0.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.07%	1.33%	0.00%	0.00%		
3	Dropped Call Rate (<=2%)	Major Road	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
		Highway	0.00%	0.00%	2.23%	0.00%	0.26%	0.00%	0.00%	0.00%	1.47%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.37%	0.00%	0.00%	0.00%		
		Within City	0.00%	0.00%	2.55%	0.00%	0.77%	0.00%	0.00%	0.00%	0.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.87%	0.00%	0.00%	0.00%		
		Overall SSA	0.00%	0.00%	2.11%	0.00%	0.35%	0.00%	0.00%	0.00%	1.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.02%	0.00%	0.00%	0.00%		
4	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Percentage connections with good voice quality (=>95%)																						
		Major Road	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.92%	97.77%	98.42%	97.71%	97.74%	96.85%	
		Highway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.83%	99.30%	80.68%	100%	97.77%	98.84%	
		Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.99%	98.49%	95.14%	99.88%	98.14%	99.00%	

**AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2015-UP (WEST) CIRCLE**

S/N	Parameter	Classification of routes covered	AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
			Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.91%	98.52%	88.11%	99.05%
(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	98.44%	99.14%	<b>94.30%</b>	97.70%	<b>94.98%</b>	98.26%	97.30%	98.55%	<b>82.56%</b>	<b>64.97%</b>	96.26%	98.94%	98.11%	96.89%	NA	NA	NA	NA	NA	NA	NA
	Highway	95.95%	99.23%	<b>87.14%</b>	98.93%	<b>94.81%</b>	96.11%	97.58%	99.73%	<b>81.23%</b>	99.60%	96.86%	96.42%	95.78%	97.50%	NA	NA	NA	NA	NA	NA	NA
	Within City	97.57%	99.78%	95.52%	100%	<b>94.97%</b>	98.70%	95.82%	99.75%	<b>78.46%</b>	99.55%	<b>94.62%</b>	99.24%	97.75%	98.16%	NA	NA	NA	NA	NA	NA	NA
	Overall SSA	<b>96.73%</b>	<b>99.38%</b>	<b>90.10%</b>	<b>98.01%</b>	<b>94.86%</b>	<b>97.69%</b>	<b>96.72%</b>	<b>99.34%</b>	<b>80.28%</b>	<b>87.10%</b>	<b>95.70%</b>	<b>98.24%</b>	<b>96.75%</b>	<b>97.52%</b>	NA	NA	NA	NA	NA	NA	NA
<b>Service Coverage</b>																						
5	In door (>= -75dBm)	Major Road	69.08%	97.91%	76.64%	94.95%	94.03%	100%	46.59%	94.90%	42.14%	9.43%	33.84%	95.79%	76.63%	17.70%	74.67%	87.13%	75.64%	6.69%	76.63%	99.83%
		Highway	44.77%	61.43%	35.89%	99.72%	90.36%	76.70%	28.44%	44.10%	24.83%	96.47%	25.99%	44.17%	41.01%	62.90%	52.91%	97.63%	19.05%	95.54%	68.65%	95.22%
		Within City	67.50%	70.19%	80.43%	99.97%	95.62%	99.90%	43.45%	39.80%	42.52%	95.74%	46.31%	0.70%	70.59%	33.10%	79.11%	75.03%	66.41%	72.15%	78.18%	90.88%
		Overall SSA	<b>54.32%</b>	<b>76.57%</b>	<b>54.59%</b>	<b>98.16%</b>	<b>91.94%</b>	<b>92.28%</b>	<b>38.88%</b>	<b>59.54%</b>	<b>34.21%</b>	<b>63.75%</b>	<b>35.45%</b>	<b>43.80%</b>	<b>55.64%</b>	<b>38.30%</b>	<b>66.74%</b>	<b>86.25%</b>	<b>42.20%</b>	<b>53.26%</b>	<b>73.64%</b>	<b>95.35%</b>
	In-vehicle (>= -85dBm)	Major Road	92.61%	99.98%	96.93%	99.81%	99.96%	100%	92.65%	99.80%	69.68%	48.69%	77.62%	98.78%	93.15%	62.70%	94.40%	97.93%	96.12%	98.17%	94.95%	100%
		Highway	73.14%	93.41%	63.42%	100%	99.57%	99.20%	79.11%	96.50%	44.81%	100%	59.99%	91.70%	67.07%	87.50%	82.61%	97.75%	39.55%	100%	91.54%	97.47%
		Within City	88.58%	90.80%	92.19%	100%	99.79%	100%	93.55%	93.80%	72.33%	95.74%	81.55%	32.94%	92.18%	82.70%	95.05%	98.24%	89.12%	99.53%	97.62%	99.74%
		Overall SSA	<b>79.95%</b>	<b>94.73%</b>	<b>76.15%</b>	<b>99.94%</b>	<b>99.66%</b>	<b>99.74%</b>	<b>88.37%</b>	<b>96.70%</b>	<b>59.22%</b>	<b>79.61%</b>	<b>71.64%</b>	<b>71.50%</b>	<b>78.75%</b>	<b>77.83%</b>	<b>89.42%</b>	<b>97.98%</b>	<b>63.46%</b>	<b>99.13%</b>	<b>94.54%</b>	<b>99.46%</b>
	Outdoor-in city (>= -95dBm)	Major Road	99.77%	100%	100%	100%	100%	100%	98.72%	100%	92.94%	99.15%	97.80%	99.55%	98.74%	94.60%	98.37%	98.95%	99.99%	100%	99.71%	100%
		Highway	95.84%	99.94%	94.47%	100%	99.96%	100%	98.32%	99.20%	70.82%	100%	92.85%	99.78%	94.22%	97.90%	98.24%	98.76%	88.77%	100%	99.78%	98.24%
		Within City	98.73%	99.74%	99.74%	100%	99.93%	100%	99.28%	99.20%	91.36%	100%	98.18%	94.48%	99.41%	99.80%	98.90%	98.70%	99.86%	100%	99.61%	100%
		Overall SSA	<b>97.14%</b>	<b>99.89%</b>	<b>96.75%</b>	<b>100%</b>	<b>99.95%</b>	<b>100%</b>	<b>98.84%</b>	<b>99.47%</b>	<b>81.90%</b>	<b>99.68%</b>	<b>95.83%</b>	<b>97.68%</b>	<b>96.48%</b>	<b>97.45%</b>	<b>98.52%</b>	<b>98.80%</b>	<b>93.95%</b>	<b>100%</b>	<b>99.70%</b>	<b>99.70%</b>
6	Call Setup Success	Major Road	100%	100%	100%	100%	100%	100%	100%	<b>88.37%</b>	96.15%	97.96%	100%	100%	100%	100%	100%	95.35%	96.00%	100%	100%	

**AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2015-UP (WEST) CIRCLE**

S/N	Parameter	Classification of routes covered	AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
	Rate (>=95%)	Highway	98.29%	100%	98.90%	100%	97.95%	100%	100%	100%	87.18%	100%	95.79%	100%	100%	100%	100%	100%	97.86%	100%	100%	100%
		Within City	99.29%	100%	99.37%	100%	96.30%	100%	100%	100%	97.44%	96.00%	94.57%	96.15%	100%	100%	100%	100%	99.07%	100%	100%	100%
		Overall SSA	98.77%	100%	99.16%	100%	97.75%	100%	100%	100%	91.14%	97.37%	95.60%	98.68%	100%	100%	100%	100%	97.93%	98.67%	100%	100%
		Major Road	97.26%	100%	96.94%	100%	100%	100%	100%	100%	96.97%	97.56%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Highway	99.13%	100%	95.65%	100%	99.58%	100%	100%	100%	98.68%	100%	100%	100%	99.47%	100%	100%	100%	100%	100%	100%	100%
		Within City	100%	100%	95.83%	100%	100%	100%	100%	100%	94.74%	100%	98.73%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	99.23%	100%	95.86%	100%	99.71%	100%	100%	100%	96.28%	98.57%	99.26%	100%	99.71%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	99.23%	100%	95.86%	100%	99.71%	100%	100%	100%	96.28%	98.57%	99.26%	100%	99.71%	100%	100%	100%	100%	100%	100%	100%

- NA: Not Applicable
- Aircel and Videocon are not having their coverage in entire Rampur SSA, hence not included in the above table.
- The service Providers having block call rate more than 3% have been shaded in yellow colour.

7.3 OPERATOR ASSISTED DRIVE TEST: UTTARKASHI SSA (JUNE-15)

DRIVE TEST TABLE – 3

S/N	Parameter	Classification of routes covered	AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA		
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	
1	Call Attempts	Major Road	28	25	42	25	45	25	NC	NC	NC	NC	42	26	39	24	NC	NC	NC	NC	NC	NC	NC
		Highway	134	25	175	25	149	25	NC	NC	NC	NC	35	26	206	25	NC	NC	NC	NC	NC	NC	NC
		Within City	74	26	85	25	69	25	NC	NC	NC	NC	53	25	61	26	NC	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>	<b>236</b>	<b>76</b>	<b>302</b>	<b>75</b>	<b>263</b>	<b>75</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>130</b>	<b>77</b>	<b>306</b>	<b>75</b>	<b>NC</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	0.00%	0.00%	2.38%	0.00%	0.00%	0.00%	NC	NC	NC	NC	0.00%	0.00%	2.56%	0.00%	NC	NC	NC	NC	NC	NC	NC
		Highway	0.00%	0.00%	1.14%	0.00%	0.00%	0.00%	NC	NC	NC	NC	0.00%	<b>3.85%</b>	0.97%	0.00%	NC	NC	NC	NC	NC	NC	NC
		Within City	0.00%	0.00%	0.00%	0.00%	1.45%	0.00%	NC	NC	NC	NC	1.89%	0.00%	0.00%	0.00%	NC	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.99%</b>	<b>0.00%</b>	<b>0.38%</b>	<b>0.00%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>0.77%</b>	<b>1.30%</b>	<b>0.98%</b>	<b>0.00%</b>	<b>NC</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	<b>3.57%</b>	0.00%	0.00%	0.00%	0.00%	0.00%	NC	NC	NC	NC	0.00%	0.00%	0.00%	0.00%	NC	NC	NC	NC	NC	NC	NC
		Highway	0.00%	0.00%	1.16%	0.00%	0.00%	0.00%	NC	NC	NC	NC	0.00%	0.00%	0.00%	0.00%	NC	NC	NC	NC	NC	NC	NC
		Within City	0.00%	0.00%	<b>3.53%</b>	0.00%	0.00%	0.00%	NC	NC	NC	NC	0.00%	0.00%	0.00%	0.00%	NC	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>	<b>0.42%</b>	<b>0.00%</b>	<b>1.67%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>
4	Percentage connections with good voice quality (=>95%)																						
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Major Road	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC	NC	NC	NC
		Highway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC	NC	NC	NC
		Within City	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC	NC	NC	NC

**AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2015-UP (WEST) CIRCLE**

S/N	Parameter	Classification of routes covered	AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA		
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	
			Overall SSA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC	NC	NC
(b) 0-5 (with frequency hopping for GSM Operators)	Major Road		96.37%	96.05%	95.23%	95.44%	<b>93.38%</b>	95.63%	NC	NC	NC	NC	95.55%	<b>93.09%</b>	98.07%	98.32%	NA	NA	NA	NA	NA	NA	
	Highway		97.48%	99.81%	96.37%	97.34%	<b>88.50%</b>	99.59%	NC	NC	NC	NC	95.54%	99.75%	95.90%	98.83%	NA	NA	NA	NA	NA	NA	
	Within City		<b>94.95%</b>	99.24%	98.45%	<b>92.94%</b>	<b>87.41%</b>	98.00%	NC	NC	NC	NC	95.85%	97.61%	<b>94.18%</b>	97.87%	NA	NA	NA	NA	NA	NA	
	Overall SSA		<b>96.57%</b>	<b>98.37%</b>	<b>96.80%</b>	<b>95.60%</b>	<b>89.05%</b>	<b>97.65%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>95.67%</b>	<b>96.80%</b>	<b>95.91%</b>	<b>98.33%</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
5	Service Coverage																						
	In door (>= - 75dBm)	Major Road	65.16%	99.71%	37.08%	30.48%	69.29%	97.69%	NC	NC	NC	NC	26.98%	41.54%	24.77%	50.40%	NC	NC	NC	NC	NC	NC	
		Highway	48.09%	100%	31.13%	45.82%	43.19%	99.94%	NC	NC	NC	NC	36.23%	93.83%	41.37%	39.00%	NC	NC	NC	NC	NC	NC	
		Within City	77.32%	98.30%	51.13%	34.22%	74.76%	98.13%	NC	NC	NC	NC	42.62%	22.50%	38.49%	100%	NC	NC	NC	NC	NC	NC	
		Overall SSA	<b>59.27%</b>	<b>99.19%</b>	<b>36.98%</b>	<b>36.82%</b>	<b>55.87%</b>	<b>98.59%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>35.13%</b>	<b>41.55%</b>	<b>38.24%</b>	<b>63.55%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	
	In-vehicle (>= - 85dBm)	Major Road	81.61%	100%	74.45%	78.32%	90.94%	99.97%	NC	NC	NC	NC	65.06%	98.03%	74.44%	95.90%	NC	NC	NC	NC	NC	NC	
		Highway	79.16%	100%	72.16%	96.61%	78.68%	99.94%	NC	NC	NC	NC	73.34%	99.84%	81.14%	63.20%	NC	NC	NC	NC	NC	NC	
		Within City	94.16%	99.97%	81.11%	57.63%	95.82%	99.95%	NC	NC	NC	NC	80.61%	86.42%	83.68%	100%	NC	NC	NC	NC	NC	NC	
		Overall SSA	<b>84.03%</b>	<b>99.99%</b>	<b>74.73%</b>	<b>80.63%</b>	<b>85.23%</b>	<b>99.95%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>72.89%</b>	<b>93.42%</b>	<b>80.58%</b>	<b>86.73%</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	98.23%	100%	92.04%	99.35%	99.87%	100%	NC	NC	NC	NC	98.32%	100%	98.18%	100%	NC	NC	NC	NC	NC	NC	
		Highway	96.45%	100%	96.50%	99.69%	99.31%	100%	NC	NC	NC	NC	95.81%	100%	98.82%	98.10%	NC	NC	NC	NC	NC	NC	
		Within City	99.22%	100%	96.78%	96.54%	99.72%	100%	NC	NC	NC	NC	97.83%	99.87%	98.54%	100%	NC	NC	NC	NC	NC	NC	
		Overall SSA	<b>97.53%</b>	<b>100%</b>	<b>96.01%</b>	<b>98.89%</b>	<b>99.51%</b>	<b>100%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>97.42%</b>	<b>99.95%</b>	<b>98.66%</b>	<b>99.39%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	
	6	Call Setup Success	Major Road	100%	100%	97.62%	100%	100%	100%	NC	NC	NC	NC	100%	100%	97.44%	100%	NC	NC	NC	NC	NC	NC

**AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2015-UP (WEST) CIRCLE**

S/N	Parameter	Classification of routes covered	AIRTEL		BSNL		IDEA		TATA GSM		RCOM GSM		UNINOR		VODAFONE		MTS CDMA		RCOM CDMA		TATA CDMA	
			OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR	OUTDOOR	INDOOR
	Rate (>=95%)	Highway	100%	100%	98.86%	100%	99.33%	100%	NC	NC	NC	NC	100%	96.15%	99.03%	100%	NC	NC	NC	NC	NC	NC
		Within City	100%	100%	100%	100%	97.10%	100%	NC	NC	NC	NC	98.11%	100%	100%	100%	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>	<b>100%</b>	<b>100%</b>	<b>99.01%</b>	<b>100%</b>	<b>98.86%</b>	<b>100%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>99.23%</b>	<b>98.70%</b>	<b>99.02%</b>	<b>100%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>
		Major Road	100%	100%	100%	100%	88.89%	100%	NC	NC	NC	NC	93.18%	100%	100%	100%	NC	NC	NC	NC	NC	NC
7	Hand Over Success Rate (HOSR)	Highway	100%	100%	100%	100%	96.97%	100%	NC	NC	NC	NC	100%	100%	99.38%	100%	NC	NC	NC	NC	NC	NC
		Within City	100%	100%	100%	100%	98.41%	100%	NC	NC	NC	NC	100%	100%	100%	#DIV/0!	NC	NC	NC	NC	NC	NC
		<b>Overall SSA</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>96.30%</b>	<b>100%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>98.51%</b>	<b>100%</b>	<b>99.55%</b>	<b>100%</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>
		Major Road	100%	100%	100%	100%	88.89%	100%	NC	NC	NC	NC	93.18%	100%	100%	100%	NC	NC	NC	NC	NC	NC

- NA: Not Applicable
- Aircel, Videocon, Tata (GSM), RCOM (GSM), MTS, Tata (CDMA) and RCOM (CDMA) have no coverage in the entire Uttarkashi SSA.
- The service Providers having block call rate more than 3% have been shaded in yellow colour.



7.4 DETAIL OF THE ROUTES COVERED DURING THE DRIVE TESTS:

DRIVE TEST TABLE: 4

Name of SSA	Month	Day 1		Day 2		Day 3	
		Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered
PILIBHIT	April-15	PILIBHIT / 115KM	<p><b>WITHIN CITY:-</b> HOTEL SILVER LEAF PILIBHIT, CHATRI CHOWK, BSNL T/E, NAKTA DANA, KHAKRA, J.P.ROAD, CHOWK, PUNJABIYAN, LOHA MANDI, RAMA COLLEGE, UPADHI COLLEGE, OCCASION BANQUET HALL, KACHEHARI.</p> <p><b>MAJOR ROADS:-</b>STATION ROAD PILIBHIT, NAGAR PALIKA, MAIN ROAD PILIBHIT, MANDI SAMITI, IDGAH RD, NEW BSNL T/E.</p> <p><b>HIGHWAYS:-</b>KACHEHARI PILIBHIT, TANAKPUR ROAD, NEWRIA, MAJHOLA, AMARIYA, JAHANABAD, BAREILLY RD, JATIPUR, KHAMARIYA PUL.</p> <p><b>INDOOR:-</b> VAISHALI RESTAURANT, PILIBHIT</p>	PURANPUR /120 KM	<p><b>HIGHWAYS:-</b>HOTEL SILVER LEAF, PILIBHIT-PURANPUR RD, BITHORA, GAJROLA, PURANPUR, KADERA CHORA, SHERPUR KALAN, MADHO TANDA, T/E PILIBHIT.</p> <p><b>MAJOR ROADS:-</b>PRASAD TALKIZ, MAIN RD PURANPUR, LIC, ASSAM CHOWK, PURANPUR.</p> <p><b>WITHIN CITY:-</b>PURANPUR-ASSAM RD, KOTWALI RD, POST OFFICE, STATION RD, PURANPUR RAILWAY STATION, SHERPUR ROAD.</p> <p><b>INDOOR:-</b> PRASAD TALKIZ, PURANPUR</p>	BISALPUR/ 125KM	<p><b>HIGHWAYS:-</b>HOTEL SILVER LEAF, BISALPUR RD, POTA KALAN, BAJAJ ENERGY PVT LTD., BARKHERA TIKRI, BISALPUR RD, BILSANDA, BANDA CHOWK, BISALPUR, BAMROLI, T/E PILIBHIT.</p> <p><b>WITHIN CITY:-</b>BISALPUR, KKS SCHOOL, LIC, PATEL NAGAR, SHAHJAHANPUR RD, BLOCK OFFICE, RAILWAY STATION BISALPUR.</p> <p><b>MAJOR ROADS:-</b>KACHEHARI, MAIN RD BISALPUR, KOTWALI RD, GOVT. HOSPITAL.</p> <p><b>INDOOR:-</b> KACHEHARI, BISALPUR</p>
RAMPUR	May-15	RAMPUR /115 KM	<p><b>WITH IN CITY:-</b>T/E BSNL RAMPUR, INCOME TAX DEPTT. OFFICE, CANARA BANK, SHOKAT ALI ROAD, SHIV TALKIZ, SHABAD GATE, HATHI KHANA, NAINITAL ROAD, DEGREE COLLEGE, JAIL ROAD, TOPKHANA ROAD, DIST. HOSPITAL, SBI, AKASWANI, AVAS VIKASH COLONY, BUS STAND RAMPUR, BILASPUR CITY.</p> <p><b>HIGHWAY:-</b>D.M. HOUSE, BILASPUR ROAD, THUNAPUR, BHUT MULLA KHEDA, BILASPUR, KAMERI, T/E BSNL RAMPUR..</p> <p><b>MAJOR ROAD:-</b> D.M.HOUSE, BOMBAY HOTEL, KOTHI KHAS BAGH, GANDHI SMADHI, MAIN ROAD RAMPUR.</p> <p><b>INDOOR:-</b> MOOD FOOD RESTAURANT opp.(D.M. HOUSE) RAMPUR</p>	SAHABAD /165KM	<p><b>HIGHWAY:-</b>T/E RAMPUR, NARAYANPUR, PATWAI, SAHABAD, MANGLI, RANA SUGARS LTD., BADAGAON, KHALSOL, SAIFNI, SIROHI ROAD, SAHABAD, MILAK, NH-24, RAMPUR BYPASS, T/E RAMPUR.</p> <p><b>WITH IN CITY:-</b> RAMPUR-SAHABAD ROAD, CITY HOSPITAL SAHABAD, GIC,BILARI ROAD, SAHABAD, MILAK RAILWAY STATION.</p> <p><b>MAJOR ROAD:-</b> MAIN ROAD SAHABAD, NAVEEN MANDI SAHABAD, MAIN ROAD MILAK.</p> <p><b>INDOOR:-</b> 1.JAI BHOLE BHOJNALAYA, SAHABAD 2.ARYA VIDYALAYA INTER COLLEGE, MILAK</p>	SWAR(RAMPUR) /105KM	<p><b>HIGHWAY :-</b> T/E RAMPUR, ALI JAUHAR UNIVERSITY, TANDA ROAD, LALPUR KALAN, TANDA, SEEKAMPUR, DADIYAL, SWAR, BAJPUR RD, SWAR, NARPAT NAGAR, BIZAR KHATA, KHEMPUR, KHOD, T/E RAMPUR.</p> <p><b>WITH IN CITY :-</b> POWER CORPORATION TANDA, TEHSIL TANDA, MORADABAD ROAD, SADAR BAZAR TANDA, ANAJ MANDI, SWAR CITY, SDM OFFICE SWAR.</p> <p><b>MAJOR ROAD:-</b>MAIN ROAD SWAR, BILASPUR ROAD, SWAR.</p> <p><b>INDOOR:-</b> .TEHSIL, SWAR</p>

**AUDIT & ASSESSMENT OF QOS FOR QE-JUNE-2015-UP (WEST) CIRCLE**

Name of SSA	Month	Day 1		Day 2		Day 3	
		Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered	Name of SDCA & KM Covered	Route Covered
UTTARKASHI	June-15	UTTARKASHI & GANGOTRI /130 KM	<p><b>WITHIN CITY:-</b> ROADWAYS BUS STAND UTTARKASHI,MAIN MARKET GYANSU, MATLI-ITBP, JOSHIYARA,GANGOTRI .</p> <p><b>MAJOR ROADS:-</b>ITBP-MATLI, BARETHI,MAIN ROAD UTTARKASHI.</p> <p><b>HIGHWAYS:-</b>RAMLEELA GROUND UTTARKASHI,NETALA,MANERI,BHATWARI,HARSHIL,GANGOTRI</p> <p><b>INDOOR:</b> HOTEL HILL VIEW UTTARKASHI</p>	DUNDA /120KM	<p><b>HIGHWAYS:-</b>TBP-MATLI, BHARAT GAS, DUNDA, NALUPANI, DHARASU, CHINYALISAUR, KANDISAUR, KAMATH, KANDIKHAL, CHAMBA, NEW TEHRI.</p> <p><b>MAJOR ROADS:-</b>BHARAT GAS DUNDA,MAJOR ROAD DUNDA</p> <p><b>WITHIN CITY:-</b>DUNDA TOWN, MAIN MARKET DUNDA</p> <p><b>INDOOR:</b> SHRI MANGALAM HOTEL DUNDA</p>	NEW TEHRI /108 KM	<p><b>HIGHWAYS:-</b>SHIV MURTI CHOWK NEW TEHRI,PRICELIVE CHAMBA,MAIN MARKET CHAMBA,DUN ROAD CHAMBA, KHADI, FAKOT,AGRAKHAL,N. NAGAR, BSNL RISHIKESH.</p> <p><b>WITHIN CITY:-</b>HANUMAN MURTI NEW TEHRI,KOTWALI,TEHRI,BAURARI,B-PURAM,OPEN MARKET BAURARI,KRISHNA MURTI</p> <p><b>MAJOR ROADS:-</b>HANUMAN MURTI NEW TEHRI,POST OFFICE,BSNL EXCHANGE,SHIV MURTI,SVM INTER COLLEGE TEHRI.</p> <p><b>INDOOR:</b> GOOD LUCK RESTAURANT NEW TEHRI</p>

**7.5 SSA WISE DRIVE TEST OBSERVATION:**

**DRIVE TEST TABLE: 5**

**DRIVE TEST OBSERVATION OF PILIBHIT 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	PILIBHIT	No Coverage	Puranpur	No Coverage	Bisalpur	No Coverage
2	AIRTEL		Poor Rx Level and Rx Quality Near Haraiya, Lalauri Khera, Neoria Husainpur, Majhara.		Poor Rx Level and Rx Quality Near Sirasardha, Kalinagar, Bithaura Kalan, Gajraula Kalan.		poor Rx Level and Rx Quality Near Bamroli, Entgoan.
3	BSNL		Poor Rx Level and Rx Quality Near Amariya, Jhanabad, Haraiya.		Poor Rx Level and Rx Quality Near Lodhipur, Bithaura Kalan.		Poor Rx Level and Rx Quality Near Jalhora.
4	TATA GSM		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
5	TATA CDMA		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
6	IDEA		Poor Rx Quality Near Amariya, Rasula, Haraiya, Pakriyan Naugwan.		Poor Rx Level and Rx Quality Near Mala Forest Range.		Poor Rx Level and Rx Quality Near Bamroli.
7	RCOM GSM		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
8	RCOM CDMA		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
9	MTS		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
10	UNINOR		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
11	VODAFONE		Poor Rx Level and Rx Quality Near Abhairajpur Urf Noorpur Village, Fardia, Fulaiya, Saidpur, Jagipur Chhitaunia, Kunwarpur.		Poor Rx Level and Rx Quality Near Mala forest, Navdia Sultanpur, Pachpera Garha, Mundela Kalan Mustqil.		Poor Rx Level and Rx Quality Near Bamroli.
12	VIDEOCON		No Coverage		No Coverage		No Coverage

**DRIVE TEST TABLE: 6**  
**DRIVE TEST OBSERVATION OF RAMPUR 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	Rampur	No Coverage	Shahbad	No Coverage	Swar (Rampur)	No Coverage
2	AIRTEL		Poor Rx Level and Rx Quality Near Mankararam, Dhawni Hasanpur.		Poor Rx Level and Rx Quality Near Ajeetpur, Pipla Shivnagar, Dholsarmatawali.		Poor Rx Level and Rx Quality Near Ahrola, khempur.
3	BSNL		Poor Rx Level and Rx Quality Near Gazipur, Siroaria.		Poor Rx Level and Rx Quality Near Dholsarmatawali.		Poor Rx Level and Rx Quality Near Main Market Swar.
4	TATA GSM		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
5	TATA CDMA		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
6	IDEA		--		--		--
7	RCOM GSM		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
8	RCOM CDMA		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
9	MTS		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
10	UNINOR		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
11	VODAFONE		Poor Rx Level and Rx Quality Near Patther Khera, Sankara, Kotha Jagir, Tal Mahawar, Pahari, Shaadi Pur.		Poor Rx Level and Rx Quality Near Mandaiyan Shadi, Miak Sadi Nagar, CRPF Camp due to Cant Area.		Poor Rx Level and Rx Quality Near shivpur.
12	VIDEOCON		No Coverage		No Coverage		No Coverage

DRIVE TEST TABLE: 7

**DRIVE TEST OBSERVATION OF UTTARKASHI 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	Uttarkashi, Gangotri	No Coverage	Dunda	No Coverage	Tehri	No Coverage
2	AIRTEL		Poor Rx Quality Observed in Uttarkashi SDCA.		Poor Rx Level and Rx Quality In Patar.		Poor Rx Level and Rx Quality Near Katkot.
3	BSNL		Poor Rx Level and Rx Quality Near Hanuman Chowk.		Poor Rx Level and Rx Quality Near Kamand, Thauldhar.		Poor Rx Level and Quality Near Nagini.
4	TATA GSM		No Coverage		No Coverage		No Coverage
5	TATA CDMA		No Coverage		No Coverage		No Coverage
6	IDEA		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
7	RCOM GSM		No Coverage		No Coverage		No Coverage
8	RCOM CDMA		No Coverage		No Coverage		No Coverage
9	MTS		No Coverage		No Coverage		No Coverage
10	UNINOR		Poor Rx Level and Rx Quality Near Dilsaur.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.		They have coverage Only In SDCA's & Major Towns with Poor Level and Quality at Outers.
11	VODAFONE		Poor Rx Level and Rx Quality Between Siyanpur and Hina, Maneri Dam, Bhatwari.		Poor Rx Level and Rx Quality Near Navdia Sultanpur, Between Chamba & Lagga Selur.		Poor Rx Level and Rx Quality Near Chamba, Katkot, Hotel Cosmic Narender Nagar, Borari, Bhatkhem.
12	VIDEOCON		No Coverage		No Coverage		No Coverage

DRIVE TEST TABLE: 8

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

Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
1	APR'2015	Tata GSM	PILIBHIT	Pilibhit, Puranpur, Bisalpur	<p><b>Pilibhit:-</b> Majhilato Amariya , Amariya To Jahanabad</p> <p><b>Puranpur:-</b> (1) Pilibhit To Puranpur (2) Madhotanda To Pilibhit (3) Puranpur To Madhotanda,</p> <p><b>Bisalpur:-</b>(1) Pilibhit To Barkheda (2) Barkheda To Bisalpur (3) Bisalpur To Bilsanda</p>	No
		Tata CDMA		Pilibhit, Puranpur, Bisalpur	<p><b>Pilibhit:-</b>Tanakpur Rd., Bareilley Rd, Amariya Rd Highways</p> <p><b>Puranpur:-</b> Puranpur-Pilibhit Rd. , Pratappur To Obc-Puranpur Rd. , After Hp Petrol Puml On Lucknow Road, Madhotanda , Madho Tanda-Pilibhit Rd.</p> <p><b>Bisalpur:-</b> After Rup Pur Kalan In Bisalpur-Pilibhit Rd., Bilsanda Rd, Shahjahanpur Rd, Bilsanda, Bamrauli Rd.</p>	<p><b>Puranpur:-</b> Puranpur (Reliance Cdma)</p> <p><b>Bisalpur:-</b> Bisalpur ( Reliance Cdma)</p>
		Reliance GSM		Pilibhit, Puranpur, Bisalpur	<p><b>Pilibhit:-</b>Tanakpur Rd,Nuriya,Majhola,Amariya</p> <p><b>Puranpur:-</b> Pilibhit Puranpur Highway,Gola Highway,Sherpur -Puranpur Rd</p> <p><b>Bisalpur:-</b> Pilibhit Bisalpur Highway,Inthgaon,Bambroli</p>	<b>Puranpur:-</b> Puranpur, Sherpur (Tata Gsm)
		Reliance CDMA		Pilibhit, Puranpur, Bisalpur	<p><b>Pilibhit:-</b>Tanakpur Rd,Nuriya,Majhola,Amariya</p> <p><b>Puranpur:-</b> Pilibhit Puranpur Highway,Gola Highway,Sherpur -Puranpur Rd ,</p> <p><b>Bisalpur:-</b> Pilibhit Bisalpur Highway,Inthgaon,Bambroli,</p>	<b>Puranpur:-</b> Puranpur, Sherpur (Tata Cdma)
		BSNL		Pilibhit, Puranpur, Bisalpur	<p><b>Pilibhit:-</b>Piperia Agroo To Janakpur</p> <p><b>Puranpur:-</b> Meerapur Goutia To Bithora,Sidh Baba To Kaliyanpur (Forest),</p> <p><b>Bisalpur:-</b>Jyora Kaliyanpur To Machwakhera</p>	No
		MTS		Pilibhit, Puranpur, Bisalpur	<p><b>Pilibhit:-</b>Tanakpur Road To Newria To Majhola To Amauya To Jhambel.</p> <p><b>Puranpur:-</b> Bithora- Gajrola- Puranpur Road- Kadera Chora</p> <p><b>Bisalpur:-</b> Bisalpur Road- Potkla- Bajaj Energy Pvt. Ltd.</p>	<p><b>Pilibhit:-</b>All N/W On ICR With Rcom Cdma</p> <p><b>Puranpur:-</b> All N/W On Icr With Rcom Cdma</p> <p><b>Bisalpur:-</b> All N/W On Icr With Rcom Cdma Except Bilsanda</p>
		Airtel		Pilibhit Bisalpur	<p><b>Pilibhit:-</b>Pilibhit-Khatima Hw.</p> <p><b>Bisalpur:-</b> Barkhera- Sumra</p>	<p><b>Pilibhit:-</b>Majhola - Amariya Road (Vodafone)</p> <p><b>Bisalpur:-</b> Panta Kalan- Barkhera Rd, Itgaon-Bilsanda Rd( Vodafone)</p>

Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
		Vodafone		Pilibhit, Puranpur, Bisalpur	----	No
		Idea			----	No
		UNINOR		Pilibhit, Puranpur, Bisalpur	<b>Pilibhit:-</b> Majhola -Amariya Road <b>Puranpur:-</b> Pilibhit To Bhorakalan,Gajrola To Jarrakothi,Puranpur To Sherpur,Puranpur To Moohdonda,Jamni To Puranpur <b>Bisalpur:-</b> Bilsanda To Bamroli,Bamroli To Entgaon,Barkhuda To Potakalan,Tikri To Barhuda	No
		VIDEOCON		Pilibhit,Puranpur, Bisalpur	No Coverage At Whole <u>Pilibhit Ssa</u>	No
		Aircel		Pilibhit,Puranpur Bisalpur	No Coverage At Whole <u>Pilibhit Ssa</u>	No
2	MAY'2015	Tata GSM	RAMPUR	Rampur, Shahbad	<b>Rampur:-</b> Rampur To Thanapur, Lalwala Bagh To Mallah Khela, Bilaghpur To Lala Nagla, Kemri To Chamarwa, Chamarwa To Rampur, Hamsafar Chowk To Tanada, Mohanpura To Pattawala, Dadiyal To Swar Road, Madhupur To Rampur <b>Shahbad:-</b> Indrawati To Patwai, Patwai To Sahabad, Mangoli To Dhanora, Sahabad To Rampur, Patwai To Milak, Sankarpur To Panwaliya Rampur By Pass	No
		Tata CDMA		Rampur, Shahbad	<b>Rampur:-</b> Nanital Rd. After Vill. Koila, After Bilaspur Rd. Railway Stn., Kemri Town., Highway After Gram Pahadion On Kemri Rd, Tanda Rd. , Tanda Village, Tanda Swar Rd., Swar Rampur Rd. <b>Shahbad:-</b> Shahbad Rd. After Faiznagar, Aonala Rd., Milak Rd., Shahbad- Moradabad Highway, Shahbad Town , Patwai To Milak, Milak Rampur Highway,	<b>Rampur:-</b> Bilaspur Town(Reliance) <b>Shahbad:-</b> Milak Town(Reliance)
		Reliance GSM		Rampur, Shahbad	<b>Rampur:-</b> Rampur To Bilaspur, Blaspur To Kemri, Kemri To Rampur, Swar To Rampur <b>Shahbad:-</b> Rampurto Shahbad, Shahbad To Siroli Road, Patwai To Milak	<b>Rampur:-</b> Bhot,Mahesh Pura, Rampur To Tanda, Tanda To Dadiyal, Dadiyal, To Swar, Swar City(Tata Gsm) <b>Shahbad:-</b> Shahbad To

Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
						Safini, Shahbad To Patwai, Milak To Rampur(Tata Gsm)
		Reliance CDMA		Rampur, Shahbad	<b>Rampur:-</b> Kemri To Rampur, Highway From Swar To Rampur <b>Shahbad:-</b> Patwai To Milak, Milak To Rampur	No
		BSNL		Rampur, Shahbad	<b>Shahbad:-</b> Patwai Jungle To Param, Nasrat Nagar	No
		MTS		Rampur, Shahbad	<b>Rampur:-</b> Ajeetpur To Sadabad Road(Ajeetpur) & Bilaspur To Rampur, Rampur Outer To Suar & Suar Outer To Bizarkhata Outer & Suar Outer To Rampur Outer. <b>Shahbad:-</b> Rampur Outer To Patwai To Shahabad Outer & Milak Outer To Rampur Outer.	<b>Rampur:-</b> All N/W On ICR Except Bilaspur With Rcom <b>Shahbad:-</b> All N/W On ICR With Rcom
		Airtel		Rampur, Shahbad	<b>Shahbad:-</b> Rampur-Kheda Kalan Rd, Patwai-Kundanpur Rd,	<b>Rampur:-</b> Tanda-Swar Road (Vodafone) <b>Shahbad:-</b> Kheda Kalan-Sahabad Rd, Sahabad-Rampur Rd (Vodafone)
		Vodafone		Rampur, Shahbad	<b>Shahbad:-</b> Mala Forest Area	No
		Idea		Rampur, Shahbad	Na	No
		UNINOR		Rampur, Shahbad	<b>Rampur:-</b> Koila To Bhot,Bhot To Mulla Kheda,Mulla Kheda To Bilaspur,Bilaspur To Kemri,Kemri To Rampur.Rampur To Tanda,Tanda To Darita,Dariyal To Swar,Swar To Harpat Nagar,Swar To Khanpur,Musrain To Rampur. <b>Shahbad:-</b> Rampur To Potwai,Potwai To Shahbad,Shahbad To Satini,Putwai To Milak,Nh-24.	No
		VIDEOCON		Rampur, Shahbad	No Coverage At Whole Rampur SSA	No
		Aircel		Rampur, Shahbad	No Coverage At Whole Rampur SSA	No



Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
3	JUN'2015	Tata GSM	UTTARKASHI	Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	No Network In Whole Uttarkashi SSA	No
		Tata CDMA		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	No Network In Whole Uttarkashi SSA	No
		Reliance GSM		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	No Network In Whole Uttarkashi SSA	No
		Reliance CDMA		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	No Network In Whole Uttarkashi SSA	No
		MTS		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	No Network In Whole Uttarkashi SSA	No
		BSNL		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	<b>Bhatwari-li(Gangotri):-</b> Lohari Nagpala Project Site, Lanka <b>Dunda:-</b> Matli Site (Ofc Cut), B/W Dhrasu & Dunda	No
		Airtel		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	<b>Bhatwari-I(Uttarkashi):-</b> Netala <b>Bhatwari-li(Gangotri):-</b> Harshil, Gangori <b>Dunda:-</b> Dharkoat, Kirgani <b>Tehri :-</b> Agrakhal, Fakot, Khadi	No
		Vodafone		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	<b>Bhatwari-li(Gangotri):-</b> No Coverage In This SDCA.	No
		Idea		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	<b>Bhatwari-li(Gangotri):-</b> No Coverage In This SDCA <b>Dunda:-</b> Nalupani, Dharsu Highway , Near By Highway Due Blockage By Hill <b>Tehri :-</b> Timli Sera , Neailchaura, Khadi , Vermunda, Some Highway Have No Coverage Due To Blocked By Hill	No

Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
		UNINOR		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	<b>Bhatwari-I(Uttarkashi):-</b> Matli, Netala, Maneri, Bhatwari <b>Bhatwari-li(Gangotri):-</b> No Coverage In This SDCA <b>Dunda:-</b> Matli,Bharatgas,Kamand,Kandikhal <b>Tehri :-</b> B Puram,Svm Intercollege, Khadi, Fakot, Agrakhal	No
		VIDEOCON		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	No Network In Whole Uttarkashi SSA	No
		Aircel		Bhatwari-I(Uttarkashi), Bhatwari-li(Gangotri), Dunda, Tehri	No Network In Whole Uttarkashi SSA.	No

## 7.6 KEY FINDINGS ON DRIVE TEST:

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

Aircel and Videocon were not having their coverage across 3 SSAs namely Pilibhit, Rampur and Uttarkashi SSAs where drive tests were conducted during the QE June 2015. Whereas, Tata (GSM), RCOM (GSM), MTS, Tata (CDMA) and RCOM (CDMA) were not having their coverage in Uttarkashi SSA.

- (i) **In the Month of April -15**, drive tests were conducted across **Pilibhit** SSA covering Pilibhit, Puranpur and Bisalpur SDCAs. The performance of some of the Service providers with respect to the parameter **Voice Quality** was not satisfactory. On SSA level, **BSNL, RCOM (GSM), RCOM (CDMA)** and **Uninor** failed to meet the benchmark of the parameter **Voice Quality** with their performance as **93.40%, 89.33%, 88.10% and 94.93%** respectively. However, the performance of the service providers in respect of other parameters was satisfactory.
- (ii) **In the Month of May -15**, drive test was conducted across **Rampur** SSA covering Rampur, Shahabad and Swar SDCAs. The results of the drive tests revealed that **BSNL** could not meet the benchmark of parameters **Call Drop rate (2.11%) and Voice Quality (90.10%)**. Whereas, **Idea, RCOM (GSM) and RCOM (CDMA)** remained underperformed for parameter **Voice Quality** with their performance as **94.86%, 80.28% and 88.11%** respectively. Further, **RCOM (CDMA) and RCOM (GSM)** also remained non-complied in respect of parameters **Call Drop rate (3.02%) and CSSR (91.14%)** respectively.
- (iii) **In the month of June -14**, drive test was conducted across **Uttarkashi** SSA covering Uttarkashi, Gangotri, Dunda and New Tehri SDCAs. The drive test results exposed that only **Idea** failed to meet the benchmark of parameter **Voice Quality (89.05%)**. Tata (GSM), RCOM (GSM), MTS, Tata (CDMA) and RCOM (CDMA) were not having their coverage in Uttarkashi SSA.

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 table-5, table-6 and table-7.

**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.**

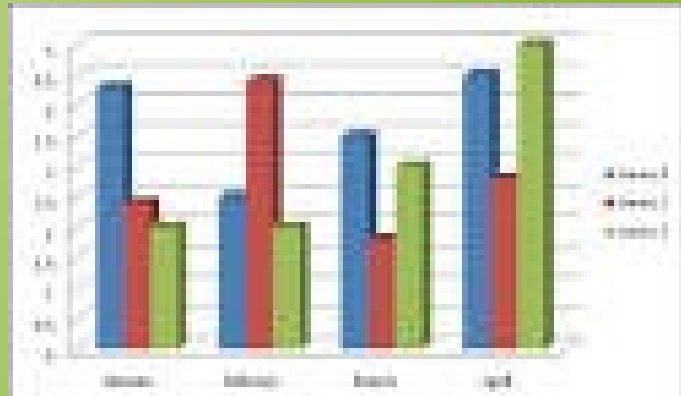
*Thus, the parameter **Voice Quality** remained the area of concern as the same could not be complied with by **BSNL, RCOM (GSM), Idea, RCOM CDMA and Uninor** across the SSAs where the drive tests were conducted. Further, **RCOM (CDMA) and RCOM (CDMA)** could not meet the benchmark of parameters **Call Drop rate and CSSR** respectively in Rampur SSA. **BSNL** also remained non-complied for the parameters **Call drop rate** in the same SSA. The service providers need to improve their network quality with respect to these parameters.*

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

**AVERAGED QUARTERLY PMR**

**V/S**

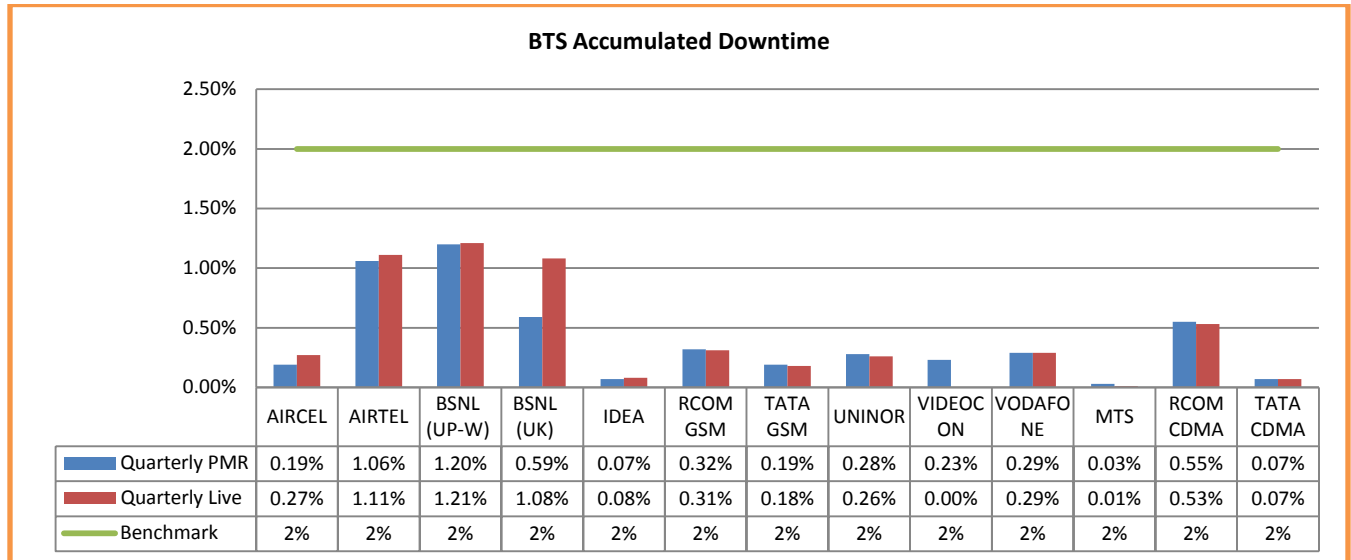
**AVERAGED QUARTERLY 3-DAYs LIVE MEASURMENT**



**8. GRAPHICAL REPRESENTATION (CMTS):**

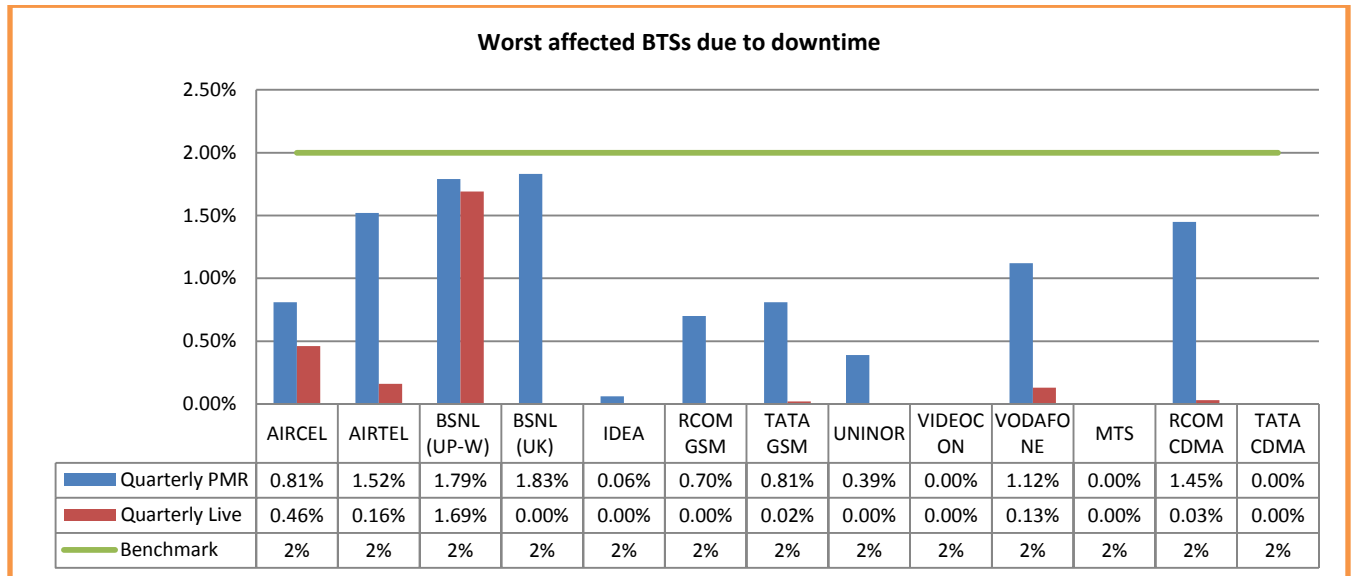
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

**1) BTS ACCUMULATED DOWNTIME:**



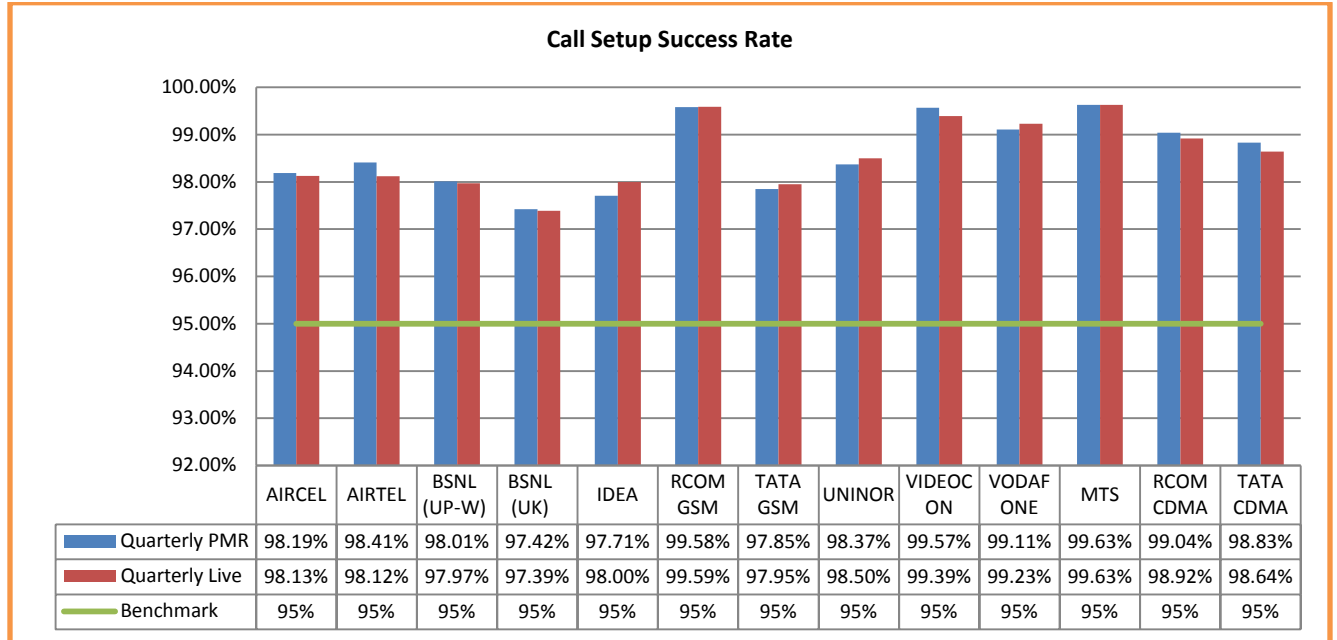
All operators are meeting the benchmarks.

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



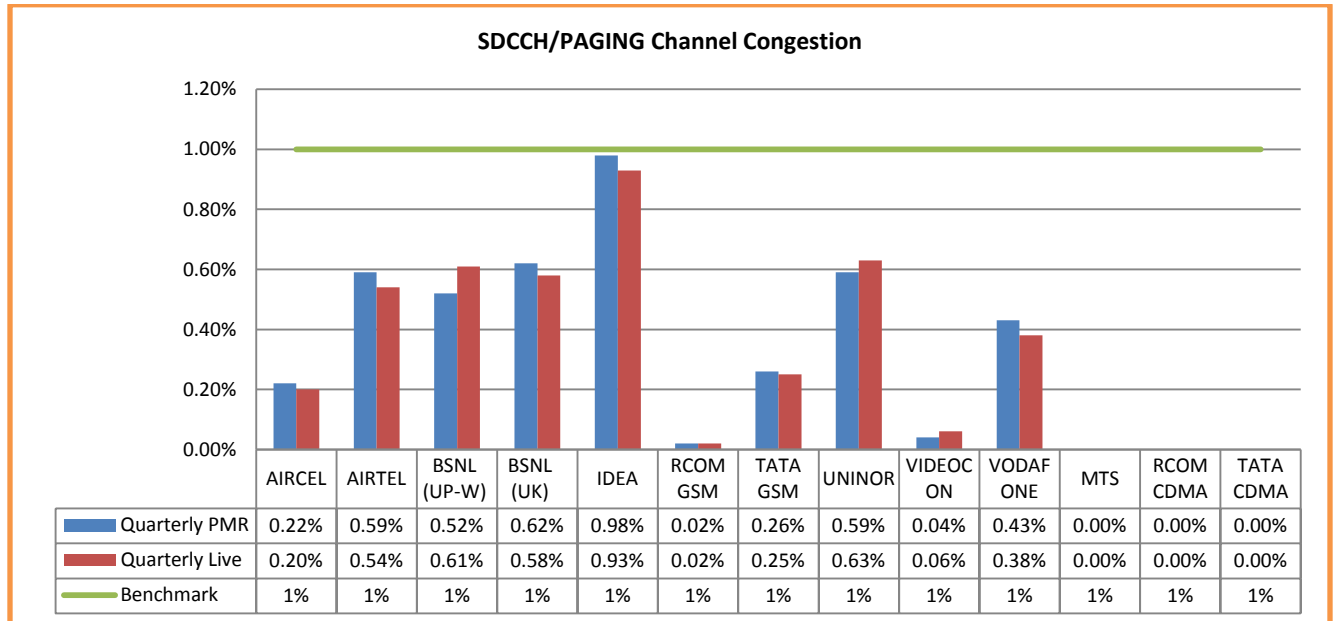
All operators are meeting the benchmarks.

3) CALL SETUP SUCCESS RATE:



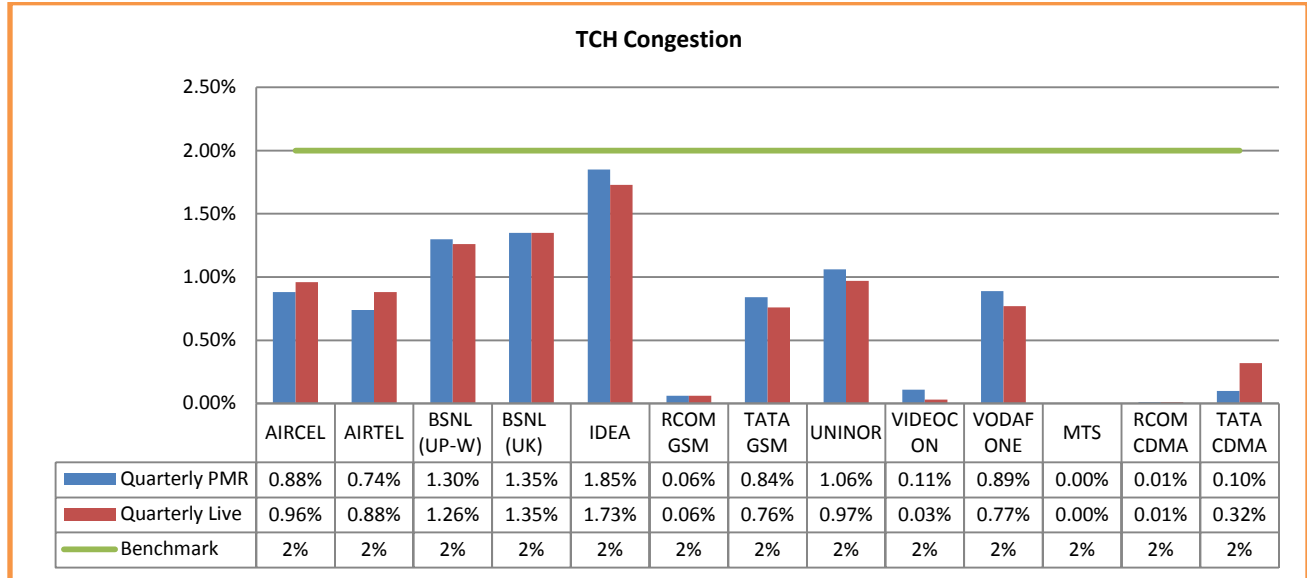
All operators are meeting the benchmarks.

4) SDCCH/PAGING CHANNEL CONGESTION:



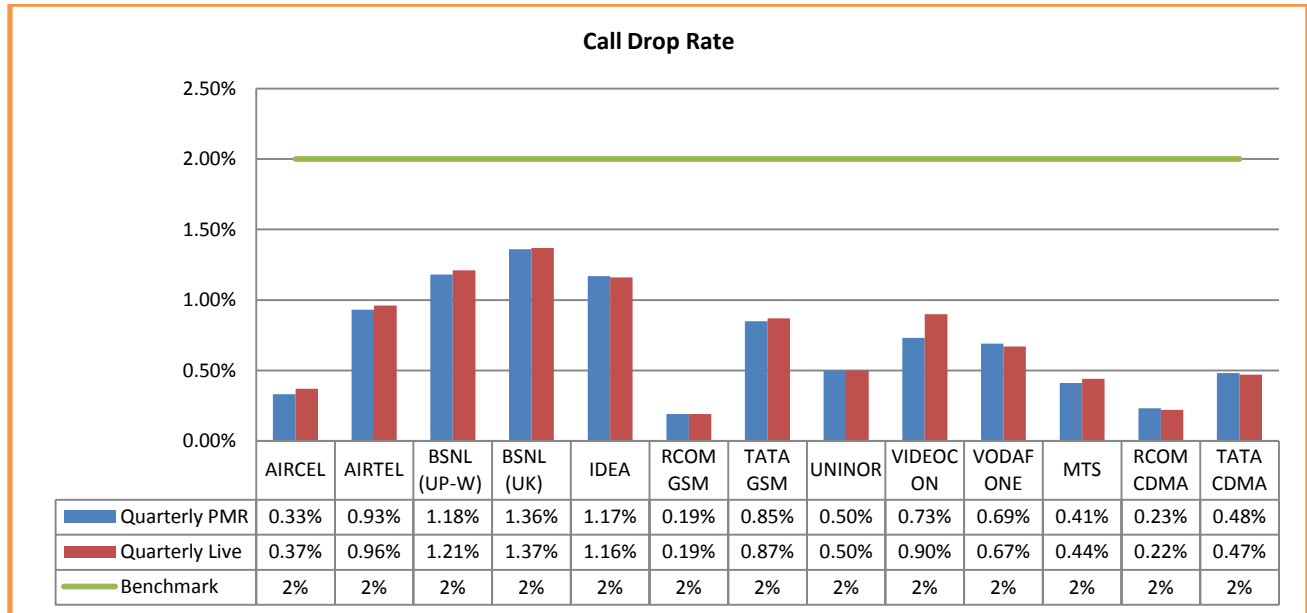
All operators are meeting the benchmarks.

5) TCH CONGESTION:



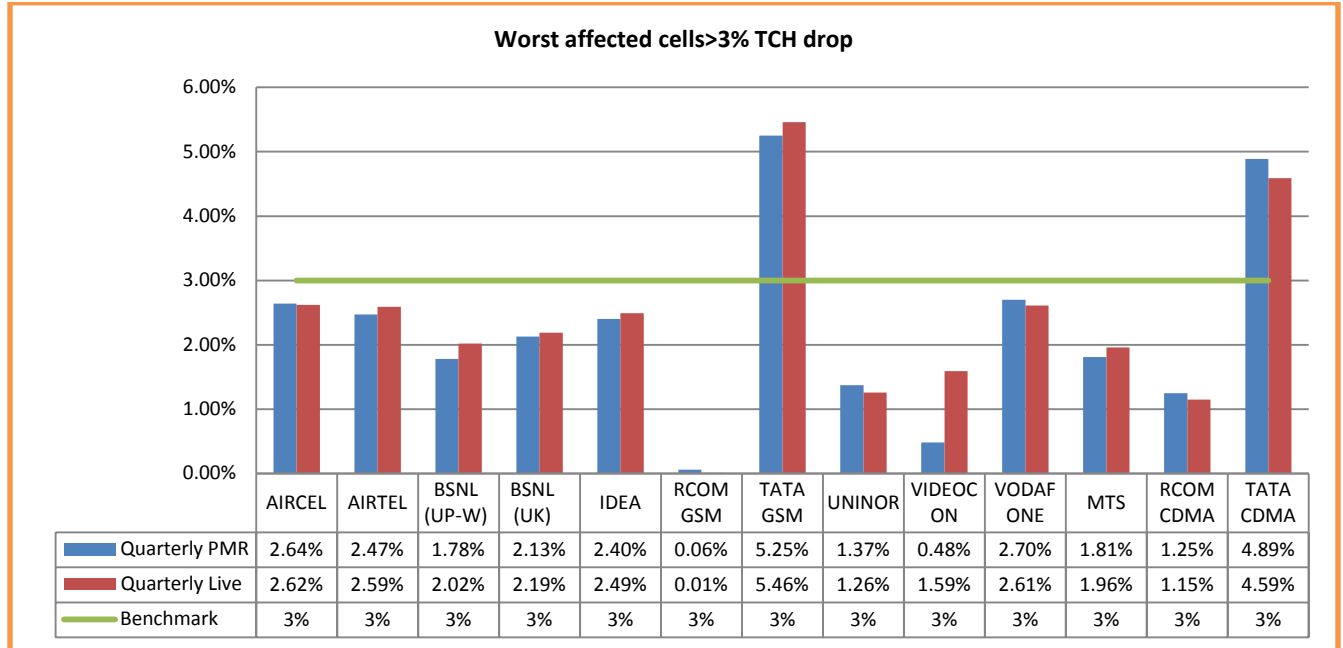
All operators are meeting the benchmarks.

6) CALL DROP RATE:



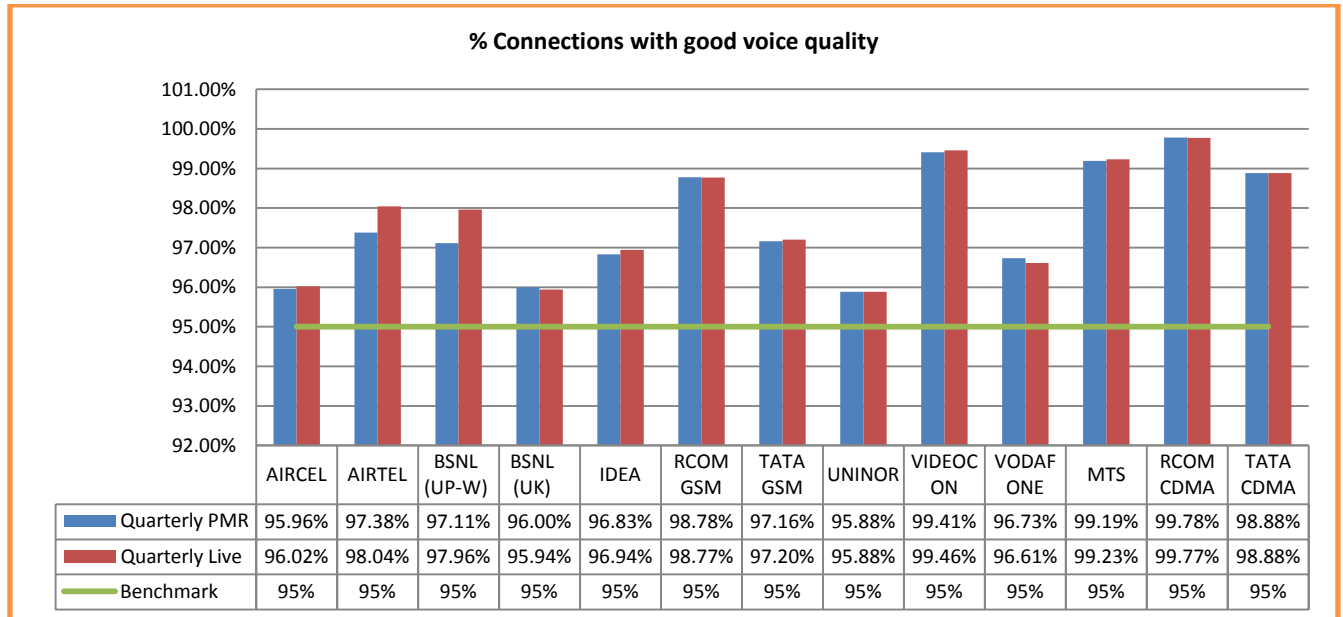
All operators are meeting the benchmarks.

7) WORST AFFECTED CELLS>3% TCH DROP:



All operators are meeting the benchmarks except Tata GSM & Tata CDMA.

8) PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY:



All operators are meeting the benchmarks.