



**Audit & Assessment of Quality of Service
Of
Cellular Mobile Telephone Service
For
Telecom Regulatory Authority of India
North Zone – UP (West) Service Area
(January 2015 – March 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 (W) circle** against the QoS bench marks laid down by TRAI in the respective regulations.

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1. BACKGROUND



1. BACKGROUND

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

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

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

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

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

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

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

2. OBJECTIVES AND METHODOLOGY



2. OBJECTIVES AND METHODOLOGY

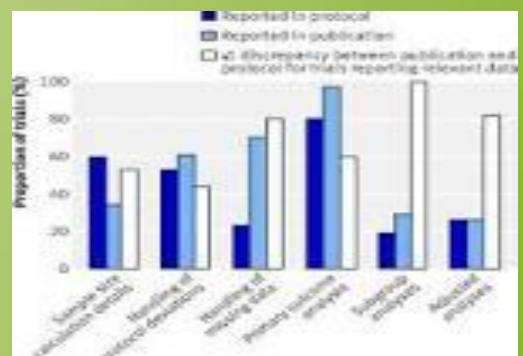
The primary objective is to audit and assess the Quality of Service being rendered by Basic, Cellular Mobile & Broadband service providers against the parameters notified by TRAI.

The audit and assessment of Quality of Service was carried out by **TUV SUD South Asia across all the Circles/Service areas of North and West Zones for Cellular Mobile Service. Apart from this, QoS audit for Basic (Wire line) and Broadband Services was also undertaken for Himanchal Pradesh, J&K and Maharashtra & Goa circles during the quarter January 2015 – March 2015.**

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

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

3. SAMPLE SIZE



3. SAMPLE SIZE

3.1 SAMPLING FOR CELLULAR MOBILE (WIRELESS) SERVICE PROVIDERS

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

Sl. No.	Name of Service Provider	Dates of live measurement Audit			Audit Location/Address
		January-15	February-15	March-15	
GSM Operators					
1	AIRCEL	5 to 7 Jan-15	3 to 5 Feb-15	11 to 13 Mar-15	325/1,Dishnet Wireless Ltd. Shikhar Tower,Mangal Pandey Nagar, Garh Road, Meerut
2	AIRTEL	15,16 & 19 Jan-5	5, 6 & 9 Feb-15	16 to 18 Mar-15	Bharti Airtel Ltd., Divider Chowk, Ganganagar, Mwana Road, Meerut
3	BSNL (UK)	15 to 17 Jan-15	19 to 21 Feb-15	10 to 12 Mar-15	BSNL Telephone Exchange, Patel Nagar Near Lal Pul, Dehradun UK.
5	BSNL (UPW)	10 to 12 Jan-15	10 to 12 Feb-15	20, 21 & 23 Mar-15	BSNL Telephone Exchange, Brahmampuri, Delhi Road, Meerut
4	IDEA	12 to 14 Jan-15	24 to 26 Feb-15	24 to 26 Mar-15	Idea Cellular Limited, First Floor A-68, Sector-64, Noida (UP)
6	RCOM GSM	14 to 16 Jan-15	6, 9 & 10 Feb-15	12, 13 & 16 Mar-15	Rcom Ltd.,Vill-Jatauli,Near Krishna Public School, Bypass Road Meerut
7	UNINOR	21 to 23 Jan-15	23 to 25 Feb-15	12, 13 & 16 Mar-15	Telewings Communications Services Pvt Ltd. (Uninor) Welldone Technology Park Sec-48 Sohna Road Gurgaon
8	TATA GSM	20 to 22 Jan-15	18 to 20 Feb-15	18 to 20 Mar-15	TTSL, Near CCS University, Meerut
9	VODAFONE	12 to 14 Jan-15	4 to 6 Feb-15	11 to 13 Mar-15	Vodafone South Ltd.,Nishyam Kunj Building,Near Kailash Prakash Stadium,Civil Lines,Meerut
CDMA Operators					
10	MTS	6 to 8 Jan-15	3 to 5 Feb-15	11 to 13 Mar-15	SSTL,Near Sri Ram Plaza,Opp.Ccs University, Meerut
11	RCOM CDMA	14 to 16 Jan-15	6, 9 & 10 Feb-15	12, 13 & 16 Mar-15	RCOM Ltd. ,Vill-Jatauli,Near Krishna Public School, Bypass Road Meerut
12	TATA CDMA	20 to 22 Jan-15	18 to 20 Feb-15	18 to 20 Mar-15	TTSL, Near CCS University, Meerut

NB: Videocon has re-started its services during the month of February 2015, so its audit is not done for QE March 2015.

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

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

3.2 SAMPLING FOR BASIC (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 March- 2015.**

3.3 SAMPLING FOR BROADBAND SERVICE PROVIDERS

- TUV–SUD South Asia has to conduct the audit and assessment of Quality of Service of Broadband Service only in respect of the service providers who are having broadband subscriber base of more than 10,000 subscribers in their licensed service area, for 5% of Point of Presence (PoPs) spread over in 10% SDCAs in specified Telecom Circle **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 March- 2015.**

4. EXECUTIVE SUMMARY



4. EXECUTIVE SUMMARY

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

- “Service provider performance report” for Cellular mobile, Basic (wire line) and Broadband services , which gives a foretaste of the performance of various operators against the benchmark specified by TRAI, during the months in which the Audit was carried out by TUV-SUD Auditors
- “Parameter wise critical findings” for Cellular mobile, Basic (wire line) and Broadband services: This indicates key observations and findings from different activities carried out during the Audit process
- TUV-SUD conducted audit involved a 3 stage verification process which consisted of auditing the records of the service providers and verifying the data submitted to TRAI. The second step involved a three day live measurement of all the network parameters. On the basis of the three days live measurement, the auditors checked the busy hour of the day for the service provider and collected the data for this busy hour for the month in which the audit was conducted. Finally, the performance of the service providers was also gauged by conducting drive tests in three select SSAs per service provider per quarter.
- The three stage audit / verification viz audit of the records, live measurements and drive tests of all the cellular mobile operators was repeated every month. In case of Basic (Wire line) and Broadband, this exercise is required to be carried out on quarterly basis.
- **Essence of compliance report of service providers with respect to the QoS:**

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), Tata (CDMA) and Vodafone** with their quarterly average performance as **5.27%** and **5.33%** and **3.28%** 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), Tata (CDMA) and Vodafone** in all the three months of the quarter with their average performance as **5.67%, 5.35% and 3.83%** respectively.

Further, **Idea** remained very marginally beyond the benchmark of **SDCCH / TCH Congestion** with its performance as **1.05% and 2.02%** 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, Aircel, Airtel and Tata GSM** have failed to meet the benchmark of **'Calls answered by Operators (voice to voice) within 90 seconds'**. Their achievement for this parameter was **90.93%, 83.47% and 91.76%** respectively.

During 3 days live measurement, all service providers were in compliance with respect to the parameter **'Response Time to Customers for Assistance'**.

(iv) **Drive Test** results revealed that the parameter **Voice Quality** remained the area of concern as the same could not be complied with by **RCOM (GSM), Idea, Uninor and RCOM CDMA** across the SSAs where the drive tests were conducted. **BSNL** remained non-complied for the parameters **Call drop rate** and **CSSR**. 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
GSM Operators			
1	AIRCEL	March-15	20:00 - 21:00
2	AIRTEL	March-15	19:00 - 20:00
3	BSNL (UP-W)	March-15	19:00 - 20:00
4	BSNL (UTTRAKHAND)	March-15	20:00 - 21:00
5	IDEA	March-15	20:00 - 21:00
6	RCOM GSM	March-15	19:00 - 20:00
7	TATA GSM	March-15	20:00 - 21:00
8	UNINOR	March-15	20:00 - 21:00
9	VODAFONE	March-15	20:00 - 21:00
CDMA Operators			
10	MTS	March-15	19:00 - 20:00
11	RCOM CDMA	March-15	19:00 - 20:00
12	TATA CDMA	March-15	19:00 - 20:00

- 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 January 2015 to March 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
GSM Operators						
1	AIRCEL	2	7	631	ZTE	ZTE
2	AIRTEL	19	69	6675	Ericsson	Ericsson
3	BSNL (UP-W)	12	32	2512	Ericsson, NSN & ZTE	Ericsson, NSN & ZTE
4	BSNL (UTTRAKHAND)	5	14	924	Ericsson & ZTE	Ericsson, NSN & ZTE
5	IDEA	18	56	7730	NSN	NSN
6	RCOM GSM	4	14	1676	Huawei	Huawei
7	TATA GSM	3	18	1789	NSN	NSN
8	UNINOR	12	28	3923	Ericsson	Ericsson
9	VODAFONE	11	88	6810	NSN	NSN
CDMA Operators						
10	MTS	1	1	338	Huawei	Huawei
11	RCOM CDMA	3	4	999	Huawei & Lucent	Huawei & Lucent
12	TATA CDMA	5	4	471	Huawei & Ericsson	Huawei & Motorola

5.1.3 QOS PERFORMANCE OF MONTHLY PMR – JANUARY 15 MONTH:

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

PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators	
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Jan-15	0.15%	0.97%	1.22%	0.56%	0.04%	0.34%	0.08%	0.14%	0.12%	0.02%	0.45%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Jan-15	1.11%	1.27%	1.88%	1.97%	0.05%	1.25%	0.11%	0.20%	0.49%	0.00%	1.80%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Jan-15	98.89%	97.99%	98.16%	97.21%	97.53%	99.63%	98.28%	98.47%	99.57%	99.60%	99.27%	99.21%
	b) SDCCH/PAGING Channel congestion	<=1%	Jan-15	0.27%	0.51%	0.61%	0.62%	0.85%	0.01%	0.14%	0.32%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Jan-15	0.58%	1.07%	1.36%	1.28%	1.91%	0.05%	0.53%	0.95%	0.43%	0.00%	0.00%	0.05%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Jan-15	0.31%	1.27%	1.22%	1.43%	0.95%	0.24%	0.85%	0.48%	0.79%	0.45%	0.18%	0.51%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Jan-15	1.85%	2.26%	1.68%	2.14%	1.87%	0.01%	5.21%	1.24%	2.98%	1.69%	0.96%	5.66%
	c) Connections with good voice quality	>=95%	Jan-15	97.09%	97.66%	96.86%	96.37%	96.58%	98.74%	97.16%	95.01%	97.49%	99.20%	99.79%	98.94%
4	No. of POI's having >=0.5% POI congestion		Jan-15	0	0	0	0	0	0	0	0	0	0	0	0

5.1.4 QOS PERFORMANCE OF MONTHLY PMR – FEBRUARY 15 MONTH:

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

PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators	
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Feb-15	0.14%	0.68%	1.15%	0.58%	0.04%	0.28%	0.11%	0.13%	0.16%	0.01%	0.53%	0.06%
	b) Worst affected BTSs due to downtime	<=2%	Feb-15	0.63%	1.74%	1.72%	1.96%	0.03%	0.84%	0.28%	0.08%	0.70%	0.00%	1.70%	0.17%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Feb-15	98.66%	97.76%	97.74%	97.39%	97.44%	99.62%	98.10%	98.57%	99.35%	99.63%	99.28%	99.20%
	b) SDCCH/PAGING Channel congestion	<=1%	Feb-15	0.15%	0.66%	0.47%	0.49%	0.86%	0.01%	0.15%	0.41%	0.22%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Feb-15	0.65%	1.10%	0.98%	1.43%	1.97%	0.05%	0.69%	0.94%	0.65%	0.00%	0.00%	0.04%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Feb-15	0.30%	1.17%	1.11%	1.39%	1.00%	0.21%	0.84%	0.51%	0.87%	0.40%	0.17%	0.43%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Feb-15	1.70%	2.42%	1.20%	2.16%	2.65%	0.08%	4.50%	1.02%	2.99%	1.59%	0.81%	5.34%
	c) Connections with good voice quality	>=95%	Feb-15	96.76%	97.89%	96.66%	96.23%	96.53%	98.71%	97.16%	95.18%	97.22%	99.22%	99.78%	98.95%
4	No. of POI's having >=0.5% POI congestion		Feb-15	0	0	0	0	0	0	0	0	0	0	0	0

5.1.5 QOS PERFORMANCE OF MONTHLY PMR – MARCH 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - UP(W) CIRCLE – MARCH 15 MONTH															
PMR Generation Data		Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Mar-15	0.14%	0.93%	1.11%	0.56%	0.03%	0.31%	0.13%	0.14%	0.25%	0.01%	0.49%	0.05%
	b) Worst affected BTSs due to downtime	<=2%	Mar-15	0.32%	1.81%	1.75%	1.62%	0.04%	1.07%	0.56%	0.03%	0.03%	0.00%	1.60%	0.21%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Mar-15	98.46%	97.70%	98.08%	97.46%	97.66%	99.62%	98.20%	98.62%	99.07%	99.62%	99.27%	98.71%
	b) SDCCH/PAGING Channel congestion	<=1%	Mar-15	0.29%	0.85%	0.48%	0.42%	0.86%	0.03%	0.12%	0.34%	0.33%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Mar-15	0.47%	0.93%	1.20%	1.16%	1.97%	0.06%	0.49%	0.86%	0.93%	0.00%	0.00%	0.04%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Mar-15	0.29%	1.10%	1.21%	1.33%	1.14%	0.21%	0.95%	0.44%	0.89%	0.41%	0.18%	0.46%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Mar-15	2.00%	2.52%	1.50%	1.91%	2.28%	0.01%	6.09%	1.03%	3.86%	1.73%	0.91%	5.00%
	c) Connections with good voice quality	>=95%	Mar-15	96.47%	97.75%	97.12%	96.13%	96.58%	98.70%	97.17%	95.99%	96.93%	99.22%	99.78%	98.89%
4	No. of POI's having >=0.5% POI congestion		Mar-15	0	0	0	0	0	0	0	0	0	0	0	0

5.1.6 QOS PERFORMANCE OF QUARTERLY PMR –AVERAGE OF QE- MARCH 15 (JANUARY TO MARCH 2015 MONTHS AUDITED DATA)

QUARTERLY QOS PERFORMANCE (AVERAGE OF QE-MARCH-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	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators	
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.14%	0.86%	1.16%	0.57%	0.04%	0.31%	0.11%	0.14%	0.18%	0.01%	0.49%	0.05%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.69%	1.61%	1.78%	1.85%	0.04%	1.05%	0.32%	0.10%	0.41%	0.00%	1.70%	0.13%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	98.67%	97.82%	97.99%	97.35%	97.54%	99.62%	98.19%	98.55%	99.33%	99.62%	99.27%	99.04%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.24%	0.67%	0.52%	0.51%	0.86%	0.02%	0.14%	0.36%	0.24%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.57%	1.03%	1.18%	1.29%	1.95%	0.05%	0.57%	0.92%	0.67%	0.00%	0.00%	0.04%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.30%	1.18%	1.18%	1.38%	1.03%	0.22%	0.88%	0.48%	0.85%	0.42%	0.18%	0.47%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	1.85%	2.40%	1.46%	2.07%	2.27%	0.03%	5.27%	1.10%	3.28%	1.67%	0.89%	5.33%
	c) Connections with good voice quality	>=95%	Quarterly	96.77%	97.77%	96.88%	96.24%	96.56%	98.72%	97.16%	95.39%	97.21%	99.21%	99.78%	98.93%
4	No. of POI's having >=0.5% POI congestion		Quarterly	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 pegging 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 0.18%) was for RCOM (CDMA) during the quarter.

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

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

The audit with respect to this parameter revealed that all the operators met the benchmark for this parameter except **Tata (GSM), Tata (CDMA) and Vodafone**. These operators failed to meet the benchmark with their quarterly average performance as **5.27%, 5.33% and 3.28** 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) - JANUARY 15 MONTH:

CELLULAR MOBILE TELEPHONE SERVICES - UP(W) CIRCLE - JANUARY 15 MONTH															
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Live data	0.17%	0.72%	1.17%	1.09%	0.03%	0.42%	0.11%	0.11%	0.10%	0.00%	0.39%	0.03%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.17%	1.76%	0.00%	0.00%	0.06%	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.02%	98.26%	98.13%	97.32%	97.67%	99.67%	98.37%	99.15%	99.62%	99.57%	99.34%	99.13%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.28%	0.34%	0.49%	0.72%	1.37%	0.01%	0.15%	0.22%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.67%	0.97%	1.35%	1.20%	1.88%	0.04%	0.47%	0.88%	0.38%	0.00%	0.00%	0.19%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.40%	1.22%	1.26%	1.37%	1.03%	0.24%	0.80%	0.50%	0.78%	0.42%	0.18%	0.49%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	2.37%	2.27%	2.28%	2.30%	1.90%	0.01%	5.29%	1.38%	3.30%	1.68%	1.15%	5.54%
	c) Connections with good voice quality	>=95%	Live data	97.15%	97.73%	96.62%	96.39%	96.58%	98.74%	97.18%	95.14%	97.54%	99.22%	99.79%	98.95%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0

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

CELLULAR MOBILE TELEPHONE SERVICES UP(W) CIRCLE - FEBRUARY 15 MONTH															
Live measurement Data		Bench-mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators										CDMA Operators	
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Live data	0.23%	0.84%	1.23%	1.06%	0.10%	0.25%	0.10%	0.13%	0.21%	0.00%	0.37%	0.12%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.16%	0.26%	1.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.31%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.75%	97.70%	97.95%	97.85%	97.67%	99.61%	98.01%	98.16%	99.54%	99.64%	99.24%	99.22%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.04%	0.64%	0.90%	0.58%	0.97%	0.01%	0.16%	0.31%	0.11%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.64%	1.23%	1.16%	1.25%	2.08%	0.05%	0.75%	0.89%	0.46%	0.00%	0.00%	0.02%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.25%	1.18%	1.31%	1.42%	1.16%	0.20%	0.88%	0.50%	0.84%	0.40%	0.16%	0.43%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	1.79%	1.93%	2.38%	2.24%	2.83%	0.01%	4.86%	1.17%	3.31%	1.85%	0.81%	6.07%
	c) Connections with good voice quality	>=95%	Live data	96.97%	97.89%	97.14%	96.60%	96.52%	98.71%	97.11%	95.69%	97.32%	99.16%	99.78%	98.95%
4	No. of POI having >=0.5% congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0

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

CELLULAR MOBILE TELEPHONE SERVICES UP(W) CIRCLE - MARCH 15 MONTH															
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators								CDMA Operators			
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Live data	0.11%	0.48%	1.22%	1.13%	0.01%	0.21%	0.06%	0.11%	0.12%	0.01%	0.39%	0.02%
	b) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.14%	1.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.58%	98.12%	98.04%	97.50%	97.58%	99.60%	98.11%	98.72%	99.21%	99.58%	99.31%	98.30%
	b) SDCCH/PAGING Channel congestion	<=1%	Live data	0.33%	0.64%	0.42%	0.57%	0.80%	0.17%	0.13%	0.38%	0.37%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.64%	0.67%	1.12%	1.22%	2.11%	0.06%	0.51%	0.89%	0.79%	0.00%	0.00%	0.06%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Live data	0.25%	1.02%	1.29%	1.32%	1.23%	0.21%	1.08%	0.44%	1.03%	0.41%	0.16%	0.44%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Live data	1.65%	1.68%	2.49%	2.21%	2.93%	0.02%	6.86%	1.13%	4.88%	2.02%	0.82%	4.45%
	c) Connections with good voice quality	>=95%	Live data	96.51%	97.82%	97.44%	96.38%	96.34%	98.70%	97.17%	95.96%	96.78%	99.25%	99.79%	98.87%
4	No. of POI having >=0.5% congestion		Live data	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 JANUARY TO MARCH 2015)

QUARTERLY QOS PERFORMANCE OF 3-DAYS LIVE MEASUREMENT (AVERAGE OF QE -MARCH 15) – UP (W) CIRCLE															
Live measurement Data		Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UP-W)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S/N	Name of Parameter			GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) BTS Accumulated Downtime	<=2%	Quarterly	0.17%	0.68%	1.21%	1.09%	0.05%	0.29%	0.09%	0.12%	0.14%	0.00%	0.38%	0.06%
	b) Worst affected BTSs due to downtime	<=2%	Quarterly	0.05%	0.19%	1.79%	0.00%	0.00%	0.02%	0.00%	0.00%	0.12%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Quarterly	98.78%	98.03%	98.04%	97.56%	97.64%	99.63%	98.16%	98.68%	99.46%	99.60%	99.30%	98.88%
	b) SDCCH/PAGING Channel congestion	<=1%	Quarterly	0.22%	0.54%	0.60%	0.62%	1.05%	0.06%	0.15%	0.30%	0.22%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Quarterly	0.65%	0.96%	1.21%	1.22%	2.02%	0.05%	0.58%	0.89%	0.54%	0.00%	0.00%	0.09%
Connection maintenance (Retainability)															
3	a) CDR (Call Drop Rate)	<=2%	Quarterly	0.30%	1.14%	1.29%	1.37%	1.14%	0.22%	0.92%	0.48%	0.88%	0.41%	0.17%	0.45%
	b) Worst affected cells>3% TCH drop (Call drop) rate	<=3%	Quarterly	1.94%	1.96%	2.38%	2.25%	2.55%	0.01%	5.67%	1.23%	3.83%	1.85%	0.93%	5.35%
	c) Connections with good voice quality	>=95%	Quarterly	96.88%	97.81%	97.07%	96.46%	96.48%	98.72%	97.15%	95.60%	97.21%	99.21%	99.79%	98.92%
4	No. of POI having >=0.5% congestion		Quarterly	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), Tata (CDMA) and Vodafone** in all the three months of the quarter with their average performance as **5.67%, 5.35% and 3.83%** respectively. The similar non-compliance of Tata (GSM), Tata (CDMA) and Vodafone was also observed in the monthly audit.

Idea remained very marginally beyond the benchmark of **SDCCH / TCH Congestion** with its performance as **1.05% and 2.02%** respectively.

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 - January 15 month															
S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) Total no. of BTSs in the licensed service area		Jan-15	631	6601	2392	914	7676	1679	1831	3922	6595	337	1000	586
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Jan-15	715.15	47627.12	21762.00	3831.60	2003.42	4265.72	1090.83	4207.10	5972.13	55.10	3381.67	137.51
	c) BTS Accumulated Downtime	<=2%	Jan-15	0.15%	0.97%	1.22%	0.56%	0.04%	0.34%	0.08%	0.14%	0.12%	0.02%	0.45%	0.03%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Jan-15	7	84	45	18	4	21	2	8	32	0	18	0
	e) Worst affected BTSs due to downtime	<=2%	Jan-15	1.11%	1.27%	1.88%	1.97%	0.05%	1.25%	0.11%	0.20%	0.49%	0.00%	1.80%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Jan-15	98.89%	97.99%	98.16%	97.21%	97.53%	99.63%	98.28%	98.47%	99.57%	99.60%	99.27%	99.21%
	b) SDCCH/PAGING Congestion	<=1%	Jan-15	0.27%	0.51%	0.61%	0.62%	0.85%	0.01%	0.14%	0.32%	0.17%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Jan-15	0.58%	1.07%	1.36%	1.28%	1.91%	0.05%	0.53%	0.95%	0.43%	0.00%	0.00%	0.05%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Jan-15	0.31%	1.27%	1.22%	1.43%	0.95%	0.24%	0.85%	0.48%	0.79%	0.45%	0.18%	0.51%
	b) Worst affected cells>3% TCH drop	<=3%	Jan-15	1.85%	2.26%	1.68%	2.14%	1.87%	0.01%	5.21%	1.24%	2.98%	1.69%	0.96%	5.66%
	c) % of connections with good voice quality	>=95%	Jan-15	97.09%	97.66%	96.86%	96.37%	96.58%	98.74%	97.16%	95.01%	97.49%	99.20%	99.79%	98.94%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Jan-15	35	441	120	58	433	1	291	147	593	19	29	104
	e) Total no. of cells (Sector) in the licensed service area		Jan-15	1902	19527	7135	2699	23186	5040	5579	11818	19859	1137	2991	1841
No. of POI's having >=0.5% POI congestion															
4	No. of POI's having >=0.5% POI congestion		Jan-15	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the		Jan-15	0	0	0	0	0	0	0	0	0	0	0	0

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

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators								CDMA Operators			
	benchmark														
5	Network Data														
	a) Equipped Capacity of Network in Erlang		Jan-15	27491	187937	122343	118000	303711	122000	114529	197013	290484	21000	86000	101803
	b) Total traffic in TCBH in erlang (Avg.)		Jan-15	2763	158096	39269	256636	313891	96974	42879	215125	250938	1546	21566	19875
	c) Total no. of customers served (as per VLR) on last day of the month		Jan-15	129155	6748137	1568642	758956	11850664	3912223	1982234	5731489	9823090	98704	1170482	303247

TABLE: 2

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle – Jan 15 month															
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators		
Network Service Quality Parameter															
1	Network Availability														
	a) Total no. of BTSs in the licensed service area		Live data	631	6578	2385	895	7661	1679	1831	3918	6593	337	1000	586
	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	78.94	3425.60	2003.00	700.76	139.20	508.47	145.22	304.21	477.51	0.00	280.70	12.82
	c) BTS Accumulated Downtime	<=2%	Live data	0.17%	0.72%	1.17%	1.09%	0.03%	0.42%	0.11%	0.11%	0.10%	0.00%	0.39%	0.03%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	11	42	0	0	1	0	0	2	0	0	1
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.17%	1.76%	0.00%	0.00%	0.06%	0.00%	0.00%	0.03%	0.00%	0.00%	0.17%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	99.02%	98.26%	98.13%	97.32%	97.67%	99.67%	98.37%	99.15%	99.62%	99.57%	99.34%	99.13%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.28%	0.34%	0.49%	0.72%	1.37%	0.01%	0.15%	0.22%	0.17%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Live data	0.67%	0.97%	1.35%	1.20%	1.88%	0.04%	0.47%	0.88%	0.38%	0.00%	0.00%	0.19%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Live data	0.40%	1.22%	1.26%	1.37%	1.03%	0.24%	0.80%	0.50%	0.78%	0.42%	0.18%	0.49%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	2.37%	2.27%	2.28%	2.30%	1.90%	0.01%	5.29%	1.38%	3.30%	1.68%	1.15%	5.54%
	c) % of connections with good voice quality	>=95%	Live data	97.15%	97.73%	96.62%	96.39%	96.58%	98.74%	97.18%	95.14%	97.54%	99.22%	99.79%	98.95%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	45	443	164	62	440	1	295	163	656	19	34	102
e) Total no. of cells (Sector) in the licensed service area		Live data	1902	19468	7197	2687	23184	5040	5580	11822	19859	1131	2991	1841	
4	No. of POI's having >=0.5% POI congestion														
	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	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- February 15 month

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) Total no. of BTSs in the licensed service area		Feb-15	631	6648	2503	919	7696	1676	1790	3917	6698	338	998	586
	b) Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month		Feb-15	603.76	30185.04	19387.00	3583.55	2325.40	3161.53	1342.41	3481.80	7118.57	16.92	3557.05	224.00
	c) BTS Accumulated Downtime	<=2%	Feb-15	0.14%	0.68%	1.15%	0.58%	0.04%	0.28%	0.11%	0.13%	0.16%	0.01%	0.53%	0.06%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Feb-15	4	116	43	18	2	14	5	3	47	0	17	0
	e) Worst affected BTSs due to downtime	<=2%	Feb-15	0.63%	1.74%	1.72%	1.96%	0.03%	0.84%	0.28%	0.08%	0.70%	0.00%	1.70%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Feb-15	98.66%	97.76%	97.74%	97.39%	97.44%	99.62%	98.10%	98.57%	99.35%	99.63%	99.28%	99.20%
	b) SDCCH/PAGING Congestion	<=1%	Feb-15	0.15%	0.66%	0.47%	0.49%	0.86%	0.01%	0.15%	0.41%	0.22%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Feb-15	0.65%	1.10%	0.98%	1.43%	1.97%	0.05%	0.69%	0.94%	0.65%	0.00%	0.00%	0.04%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Feb-15	0.30%	1.17%	1.11%	1.39%	1.00%	0.21%	0.84%	0.51%	0.87%	0.40%	0.17%	0.43%
	b) Worst affected cells>3% TCH drop	<=3%	Feb-15	1.70%	2.42%	1.20%	2.16%	2.65%	0.08%	4.50%	1.02%	2.99%	1.59%	0.81%	5.34%
	c) % of connections with good voice quality	>=95%	Feb-15	96.76%	97.89%	96.66%	96.23%	96.53%	98.71%	97.16%	95.18%	97.22%	99.22%	99.78%	98.95%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Feb-15	32	473	87	59	615	4	247	121	593	18	24	98
	e) Total no. of cells (Sector) in the licensed service area		Feb-15	1902	19558	7209	2741	23259	5025	5483	11847	19859	1153	2985	1841
No. of POI's having >=0.5% POI congestion															
4	No. of POI's having >=0.5% POI		Feb-15	0	0	0	0	0	0	0	0	0	0	0	0

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

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA	
				GSM Operators									CDMA Operators			
	congestion															
	Name of POI not meeting the benchmark		Feb-15	0	0	0	0	0	0	0	0	0	0	0	0	0
Network Data																
5	a) Equipped Capacity of Network in Erlang		Feb-15	26151	185071	123185	118000	303634	122000	112574	198042	292909	21000	86000	101803	
	b) Total traffic in TCBH in erlang (Avg.)		Feb-15	3365	155420	41453	276159	329231	99308	47232	230254	272197	1653	22373	18240	
	c) Total no. of customers served (as per VLR) on last day of the month		Feb-15	153553	7045467	1562482	751009	12099260	4016820	1998910	5894953	10028020	111715	1155216	291249	

TABLE: 4

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle - Feb 15 month															
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators		
Network Service Quality Parameter															
Network Availability															
1	a) Total no. of BTSs in the licensed service area		Live data	631	6601	2503	916	7678	1679	1790	3915	6698	338	1000	586
	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	104.28	3983.56	2219.00	698.46	575.84	298.78	135.05	370.62	1009.15	0	269.95	49.48
	c) BTS Accumulated Downtime	<=2%	Live data	0.23%	0.84%	1.23%	1.06%	0.10%	0.25%	0.10%	0.13%	0.21%	0.00%	0.37%	0.12%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	1	17	46	0	0	0	0	0	21	0	0	0
	e) Worst affected BTSs due to downtime	<=2%	Live data	0.16%	0.26%	1.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.31%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)															
2	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.75%	97.70%	97.95%	97.85%	97.67%	99.61%	98.01%	98.16%	99.54%	99.64%	99.24%	99.22%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.04%	0.64%	0.90%	0.58%	0.97%	0.01%	0.16%	0.31%	0.11%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Live data	0.64%	1.23%	1.16%	1.25%	2.08%	0.05%	0.75%	0.89%	0.46%	0.00%	0.00%	0.02%
Connection Maintenance (Retainability)															
3	a) Call Drop Rate (CDR)	<=2%	Live data	0.25%	1.18%	1.31%	1.42%	1.16%	0.20%	0.88%	0.50%	0.84%	0.40%	0.16%	0.43%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	1.79%	1.93%	2.38%	2.24%	2.83%	0.01%	4.86%	1.17%	3.31%	1.85%	0.81%	6.07%
	c) % of connections with good voice quality	>=95%	Live data	96.97%	97.89%	97.14%	96.60%	96.52%	98.71%	97.11%	95.69%	97.32%	99.16%	99.78%	98.95%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	34	378	171	61	659	0	265	139	658	21	24	112
	e) Total no. of cells (Sector) in the licensed service area		Live data	1902	19572	7183	2734	23255	5036	5456	11826	19859	1153	2991	1841
No. of POI's having >=0.5% POI congestion															
4	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	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: 5

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

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators		
Network Service Quality Parameter															
1	Network Availability														
	a) Total no. of BTSs in the licensed service area		Mar-15	631	6675	2512	924	7730	1676	1789	3923	6810	338	999	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		Mar-15	639.24	46228.36	20769.00	3860.02	1591.51	3911.08	1665.46	4039.63	12893.98	29.33	3610.35	184.76
	c) BTS Accumulated Downtime	<=2%	Mar-15	0.14%	0.93%	1.11%	0.56%	0.03%	0.31%	0.13%	0.14%	0.25%	0.01%	0.49%	0.05%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Mar-15	2	121	44	15	3	18	10	1	2	0	16	1
	e) Worst affected BTSs due to downtime	<=2%	Mar-15	0.32%	1.81%	1.75%	1.62%	0.04%	1.07%	0.56%	0.03%	0.03%	0.00%	1.60%	0.21%
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Mar-15	98.46%	97.70%	98.08%	97.46%	97.66%	99.62%	98.20%	98.62%	99.07%	99.62%	99.27%	98.71%
	b) SDCCH/PAGING Congestion	<=1%	Mar-15	0.29%	0.85%	0.48%	0.42%	0.86%	0.03%	0.12%	0.34%	0.33%	0.00%	0.00%	0.00%
	c) TCH congestion	<=2%	Mar-15	0.47%	0.93%	1.20%	1.16%	1.97%	0.06%	0.49%	0.86%	0.93%	0.00%	0.00%	0.04%
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Mar-15	0.29%	1.10%	1.21%	1.33%	1.14%	0.21%	0.95%	0.44%	0.89%	0.41%	0.18%	0.46%
	b) Worst affected cells>3% TCH drop	<=3%	Mar-15	2.00%	2.52%	1.50%	1.91%	2.28%	0.01%	6.09%	1.03%	3.86%	1.73%	0.91%	5.00%
	c) % of connections with good voice quality	>=95%	Mar-15	96.47%	97.75%	97.12%	96.13%	96.58%	98.70%	97.17%	95.99%	96.93%	99.22%	99.78%	98.89%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Mar-15	38	496	102	53	532	1	332	122	805	20	27	75
	e) Total no. of cells (Sector) in the licensed service area		Mar-15	1902	19660	6824	2764	23338	5031	5455	11851	20856	1154	2985	1499
4	No. of POI's having >=0.5% POI congestion														
	No. of POI's having >=0.5% POI congestion		Mar-15	0	0	0	0	0	0	0	0	0	0	0	0

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

S/N	Name of Parameter	Bench- mark	Audit Period	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators								CDMA Operators			
	Name of POI not meeting the benchmark		Mar-15	0	0	0	0	0	0	0	0	0	0	0	0
5	Network Data														
	a) Equipped Capacity of Network in Erlang		Mar-15	27101	189267	120513	118000	312822	122000	112003	199899	296633	21000	86000	82656
	b) Total traffic in TCBH in erlang (Avg.)		Mar-15	3743	160400	36597	274123	335449	104470	46332	233278	285367	1585	21958	16115
	c) Total no. of customers served (as per VLR) on last day of the month		Mar-15	174711	6947576	1562187	761431	12304169	4115605	1985802	6002859	10184125	112735	1161953	278780

TABLE: 6

Detailed Network Data Assessment of Cellular Mobile Telephone Services-3 days live - UP(W) Circle - March 15 month															
S/N	Name of Parameter	Bench- mark	Average of 3 Days	AIRCEL	AIRTEL	BSNL (UPW)	BSNL (UK)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
				GSM Operators									CDMA Operators		
Network Service Quality Parameter															
1	Network Availability														
	a) Total no. of BTSs in the licensed service area		Live data	631	6648	2503	924	7697	1676	1789	3897	6810	338	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	48.78	2298.93	2199.00	754.46	50.22	256.05	78.82	298.64	579.39	2.48	278.03	7.01
	c) BTS Accumulated Downtime	<=2%	Live data	0.11%	0.48%	1.22%	1.13%	0.01%	0.21%	0.06%	0.11%	0.12%	0.01%	0.39%	0.02%
	d) No. of BTSs having accumulated downtime of >24 hours in a month		Live data	0	9	44	0	0	0	0	0	2	0	0	0
e) Worst affected BTSs due to downtime	<=2%	Live data	0.00%	0.14%	1.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%	
2	Connection Establishment (Accessibility)														
	a) CSSR (Call Setup Success Rate)	>=95%	Live data	98.58%	98.12%	98.04%	97.50%	97.58%	99.60%	98.11%	98.72%	99.21%	99.58%	99.31%	98.30%
	b) SDCCH/PAGING Congestion	<=1%	Live data	0.33%	0.64%	0.42%	0.57%	0.80%	0.17%	0.13%	0.38%	0.37%	0.00%	0.00%	0.00%
c) TCH congestion	<=2%	Live data	0.64%	0.67%	1.12%	1.22%	2.11%	0.06%	0.51%	0.89%	0.79%	0.00%	0.00%	0.06%	
3	Connection Maintenance (Retainability)														
	a) Call Drop Rate (CDR)	<=2%	Live data	0.25%	1.02%	1.29%	1.32%	1.23%	0.21%	1.08%	0.44%	1.03%	0.41%	0.16%	0.44%
	b) Worst affected cells>3% TCH drop	<=3%	Live data	1.65%	1.68%	2.49%	2.21%	2.93%	0.02%	6.86%	1.13%	4.88%	2.02%	0.82%	4.45%
	c) % of connections with good voice quality	>=95%	Live data	96.51%	97.82%	97.44%	96.38%	96.34%	98.70%	97.17%	95.96%	96.78%	99.25%	99.79%	98.87%
	d) Total No. of cells exceeding 3% TCH drop (call drop)		Live data	31	331	181	61	683	1	374	134	1018	23	24	67
e) Total no. of cells (Sector) in the licensed service area		Live data	1902	19668	7258	2758	23326	5031	5455	11824	20874	1154	2985	1499	
4	No. of POI's having >=0.5% POI congestion														
	No. of POI's having >=0.5% POI congestion		Live data	0	0	0	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark		Live data	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 MAR-15:

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

QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES- QE MARCH 15															
Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UP-W)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S / N	Name of Parameter			GSM Operators									CDMA Operators		
Customer Service Quality Parameters															
Metering & Billing Credibility -Post Paid															
1	A) No. of bills issued during the quarter		UPW	47	439532	65817	103447	1139115	44306	123354	NA	710065	80681	121744	54860
	B) No. of bills disputed including billing complaints during the quarter		UPW	0	77	0	7	918	35	0	NA	651	37	108	0
	C) % of billing complaints during the quarter	<= 0.1%	UPW	0.00%	0.02%	0.00%	0.01%	0.08%	0.08%	0.00%	NA	0.09%	0.05%	0.09%	0.000%
Metering & Billing Credibility -Pre Paid															
2	A) Total No. of Pre-paid customers at the end of the quarter		UPW	228440	7020089	854065	2363020	12267956	4139148	3690727	7795403	10478802	162666	1206981	475965
	B) Total No. of complaints relating to charging, Credit and Validity during the quarter		UPW	0	325	43	134	465	3623	1	1950	10891	42	1069	0
	C) % of Pre-paid Charging Complaints	<= 0.1%	UPW	0.00%	0.005%	0.01%	0.01%	0.004%	0.09%	0.00%	0.03%	0.104%	0.03%	0.09%	0.00%
Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints															
3	A) No. of Billing/Charging/Credit/Validity Complaints received during the quarter		UPW	0	402	43	141	32381	3658	2550	1950	11542	181	1177	51
	B) No. of billing complaints for Post paid customers/Charging /Credit/Validity complaints for pre-paid customers resolved within 4 weeks during the quarter		UPW	0	402	43	141	32381	3658	2550	1950	11542	181	1177	51

QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES- QE MARCH 15

Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UP-W)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S / N	Name of Parameter			GSM Operators										CDMA Operators	
	C) No. of billing complaints for Post paid customers/Charging /Credit/Validity complaints for pre-paid customers resolved within 6 weeks during the quarter		UPW	0	402	43	141	32381	3658	2550	1950	11542	181	1177	51
	D) % of billing complaints (for post paid customer) / Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	>=98 % within 4 weeks	UPW	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	100 % within 6 weeks	UPW	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	<=1 week	UPW	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Response time to customers for assistance															
4	A) Total no of calls attempted to customer care/Call center		UPW	586794	4219523	1045795	2975730	32358830	7230661	4795729	24671834	29499916	446020	2990521	77472
	B) Total no. of calls successfully established to customer care/Call center.		UPW	577508	4219469	1045795	2975730	32018559	7143469	4743374	24425117	29499916	430682	2954795	76847
	C) % Accessibility of Call centre /customer Care (Total calls successfully established *100/ Total call attempts)	>=95 %	UPW	98.42%	100%	100%	100%	98.95%	98.79%	98.91%	99.00%	100%	96.56%	98.81%	99.19%

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



QUARTERLY CSD DATA FOR CELLULAR MOBILE TELEPHONE SERVICES- QE MARCH 15

Quarterly CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UP-W)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
S / N	Name of Parameter			GSM Operators										CDMA Operators	
	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		UPW	125184	4073312	366388	1131311	8557337	636539	1583985	6249324	8326508	156069	149778	79654
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		UPW	113830	3400105	359862	1104985	8495164	607505	1453425	6177289	8149611	151271	143838	76523
	F) % age of calls answered by operator (voice to voice) (Total calls successfully established within 90 Sec.*100 / Total call attempts)	>=95 %	UPW	90.93%	83.47%	98.22%	97.67%	99.27%	95.44%	91.76%	98.85%	97.88%	96.93%	96.03%	96.07%
Termination/closure of service															
	A) Total No. of requests for Termination / Closure of service received during the quarter		UPW	0	1541	36	348	3821	44	1697	NA	2306	936	286	550
5	B) No. of requests for Termination / Closure of service complied within 7 days during the quarter		UPW	0	1541	36	348	3821	44	1697	NA	2306	936	286	550
	C) % of Termination/ Closure of service within 7 days	<=7d ays	UPW	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%
Time taken for refunds of deposits after closures.															
	A) No. of Payments/ Refunds due during the quarter		UPW	0	441	80	156	5293	559	428	NA	7650	0	874	272
6	B) No. of Payments/ Refunds Cleared during the quarter		UPW	0	441	80	156	5293	559	428	NA	7650	0	874	272
	C) Time taken for refunds of deposits after closures.	100 % with in 60 days	UPW	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%

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

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

CSD 3 DAYS LIVE DATA FOR CELLULAR MOBILE TELEPHONE SERVICES – QE – MARCH 15

3 days live CSD Audit Data		Bench- mark	Circle Name	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UPW)	IDEA	RCOM GSM	TATA (GSM)	UNINOR	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
S/ N	Name of Parameter			GSM Operators										CDMA Operators	
RESPONSE TIME TO CUSTOMERS FOR ASSISTANCE															
1	A) Total no of calls attempted to customer care/Call center		UP West	26014	207042	34557	80835	1071384	214855	262446	820527	1053371	16600	72854	2546
	B) Total no. of calls successfully established to customer care/Call center.		UP West	25649	207038	34557	80835	1050503	212342	259563	812676	1053371	16202	71962	2523
	C) % Accessibility of Call centre /customer Care (Total calls successfully established *100/ Total call attempts)	>=95%	UP West	98.60%	100%	100%	100%	98.05%	98.83%	98.90%	99.04%	100%	97.60%	98.78%	99.10%
2	D) Total Calls reached to operator for Voice to Voice (Total call attempts)		UP West	5084	132390	10979	36792	265336	22173	44909	183310	276273	1392	3962	2284
	E) Total number of calls answered by the operator (Voice to voice) within 90 seconds		UP West	4926	128749	10957	36737	264887	21493	44476	183009	271955	1376	3821	2274
	F) % age of calls answered by operator (voice to voice) (Total calls successfully established within 90 Sec.*100 / Total call attempts)	>=95%	UP West	96.89%	97.25%	99.80%	99.85%	99.83%	96.93%	99.04%	99.84%	98.44%	98.85%	96.44%	99.56%

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, Aircel, Airtel and Tata GSM** have failed to meet the benchmark of 'Calls answered by Operators (voice to voice) within 90 seconds'. Their achievement for this parameter was **90.93%, 83.47% and 91.76%** respectively.

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.

Live Measurement

The results of three days live measurements revealed that all service providers were in compliance with respect to the parameter "Response Time to Customers for Assistance".

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 (UK)	BSNL (UP-W)	IDEA	RCOM GSM	TATA GSM	UNINOR	VODAFONE	MTS	RCOM CDMA	TATA CDMA
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 (UK)	UPW	100%	100%	--	100%	100%	100%	100%	100%	100%	100%	100%	100%
BSNL (UP-W)	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%
TATA GSM	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%
VODAFONE	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%
RCOM CDMA	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%	--

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	Circle Name	AIRCEL	AIRTEL	BSNL (UK)	BSNL (UPW)	IDEA	UNINOR	RCOM (GSM)	TATA (GSM)	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	UP West	100	100	100	100	100	100	100	100	100	100	100	100
Total no of calls attempted to customer care/Call center	UP West	100	100	100	100	100	100	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	UP West	100	100	100	100	100	100	100	98	100	100	100	99
% Accessibility of Call centre /customer Care (Total calls successfully established*100/ Total call attempt)	UP West	100%	100%	100%	100%	100%	100%	100%	98.00%	100%	100%	100%	99.00%
Total Calls reached to agent desk for Voice to Voice (Total call attempt)	UP West	100	100	100	100	100	100	100	98	100	100	100	99
Total number of calls answered by the operator (Voice to voice) within 90 seconds	UP West	100	100	100	100	100	100	99	97	100	100	98	98
% age of calls answered by operator(voice to voice) (Total calls successfully established within 90 Sec.*100/ Total call attempt)	UP West	100%	100%	100%	100%	100%	100%	99.00%	98.98%	100%	100%	98.00%	98.99%

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, RCOM (GSM), Tata GSM, RCOM (CDMA) and Tata CDMA could connect 99%, 98.98%, 98%, and 98.99% 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)	VODAFONE	MTS	RCOM (CDMA)	TATA (CDMA)
Total No. of calls Attempted	UPW	0	112	43	141	132	195	158	150	142	181	177	51
Total No. of calls Answered	UPW	0	100	29	100	100	100	100	100	100	100	100	38
Cases resolved within 4 weeks	UPW	0	100	29	100	100	100	100	100	100	100	100	38
%age of cases resolved	UPW	100%	100%	100%	100%	100%	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																	
Emergency no.	Circle Name	SSA Name	Name of SDCA	No. of calls made	AIRCEL	AIRTEL	BSNL	IDEA	RCOM GSM	RCOM CDMA	TATA GSM	TATA CDMA	MTS	VODAFONE	UNINOR		
100,101, 102 / 108 , 1090, 1098	UPW	BADAUN	BADAUN	10	NC	√	√	√	√	√	√	√	√	√	√		
			BISAULI	10	NC	√	√	√	√	√	√	√	√	√	√	√	
			DATAGANJ	10	NC	√	√	√	√	√	√	√	√	√	√	√	√
			GUNNAUR	10	NC	√	√	√	√	√	√	√	√	√	√	√	√
			SAHASWAN	10	NC	√	√	√	√	√	√	√	√	√	√	√	√
			GUNNAUR	10	NC	√	√	√	√	√	√	√	√	√	√	√	√
			SAHASWAN	10	NC	√	√	√	√	√	√	√	√	√	√	√	√
100,101, 102 / 108 , 1090, 1098	UPW	KOTDWARA	SRINAGAR	10	NC	√	√	√	NC	√	√	NC	NC	√	√		
			PAURI-I	10	NC	√	√	√	NC	NC	NC	NC	NC	√	√		
			PAURI-II	10	NC	√	√	√	NC	NC	NC	NC	NC	√	√		
			LANSDOWNE-I	10	NC	√	√	√	√	√	√	√	NC	√	√	NC	
			LANSDOWNE-II(KOTDWARA)	10	NC	√	√	√	√	√	√	√	√	√	√	√	
100,101, 102 / 108 , 1090, 1098	UPW	ETAH	ETAH	15	NC	√	√	√	√	√	√	√	√	√	√		
			JALESAR	15	NC	√	√	√	√	√	√	√	√	√	√		
			KASGANJ	15	NC	√	√	√	√	√	√	√	√	√	√	√	
			ALIGANJ(GANJDUNDWARA)	15	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 except in some SDCAs of **Kotdwar** SSA, where the emergency calls were not matured on the networks of **RCOM (GSM)/CDMA, Tata (GSM)/Tata (CDMA), MTS and Uninor** due to no coverage of the service providers marked 'NC'. **Aircel is not having coverage in all the three SSAs.**

7. DRIVE TEST



7. OPERATOR ASSISTED DRIVE TEST

In terms of TRAI's letter dated 21st January, 2014, the drive tests were conducted for three consecutive days in one select SSA each month in each service area. Thus, the drive tests were carried out in three SSA's namely **Badaun, Kotdwara and Etah** in the months of January, February and March 2015 respectively. The total route Kms covered during the drive tests in respective SSAs was **390 Kms, 335 Kms and 425 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 ≥ -75 dBm for in-door coverage and ≥ -85 dBm for in-vehicle.

7.1 OPERATOR ASSISTED DRIVE TEST: BADAUN SSA (JANUARY-15)

DRIVE TEST TABLE - 1

S/N	Parameter	Classification of routes covered	AIRCEL		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	OUTDOOR	INDOOR	
1	Call Attempts	Major Road	NC	NC	43	25	51	25	50	25	49	25	38	25	45	25	42	26	41	25	37	25	56	25	
		Highway	NC	NC	312	25	270	25	332	25	142	25	117	25	183	25	322	27	97	25	125	15	169	25	
		Within City	NC	NC	119	25	111	25	94	25	106	26	93	25	99	25	142	25	97	25	93	25	117	25	
		Overall SSA	NC	NC	474	75	432	75	476	75	297	76	248	75	327	75	506	78	235	75	255	65	342	75	
2	Blocked Call Rate	Major Road	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.38%	0.00%	0.00%	0.00%	0.00%	4.00%	0.00%	0.00%	
		Highway	NC	NC	0.32%	0.00%	2.59%	0.00%	0.00%	0.00%	0.00%	0.00%	4.27%	0.00%	1.09%	4.00%	0.31%	0.00%	0.00%	0.00%	1.60%	0.00%	0.00%	0.00%	
		Within City	NC	NC	0.00%	0.00%	1.80%	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%	1.08%	0.00%	0.00%	0.00%	
		Overall SSA	NC	NC	0.21%	0.00%	2.08%	0.00%	0.00%	0.00%	0.00%	0.00%	2.02%	0.00%	0.61%	1.33%	0.40%	0.00%	0.00%	0.00%	1.18%	1.54%	0.00%	0.00%	
3	Dropped Call Rate (<=2%)	Major Road	NC	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	0.00%	0.00%	
		Highway	NC	NC	0.00%	0.00%	0.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.11%	0.00%	0.00%	0.00%	0.00%	0.00%	2.44%	0.00%	0.00%	0.00%	
		Within City	NC	NC	0.00%	0.00%	0.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.41%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Overall SSA	NC	NC	0.00%	0.00%	0.71%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.93%	0.00%	0.40%	0.00%	0.00%	0.00%	1.19%	3.13%	0.00%	0.00%	
4	Percentage connections with good voice quality (=>95%)																								

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

S/N	Parameter	Classification of routes covered	AIRCEL		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	OUTDOOR	INDOOR		
			(a) 0-4 (w/o frequency hopping for CDMA Operators)	Major Road	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.76%	99.92%	99.84%	93.86%	98.86%
Highway	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.94%	99.73%	79.92%	100%	98.21%	99.80%		
Within City	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.44%	99.97%	98.10%	99.88%	98.79%	99.25%		
Overall SSA	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.29%	99.87%	89.32%	97.40%	98.52%	99.34%		
(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	NC	NC	98.69%	99.72%	99.09%	99.83%	96.52%	98.68%	96.56%	96.36%	89.63%	99.79%	94.64%	92.31%	98.23%	95.81%	NA	NA	NA	NA	NA	NA	NA		
	Highway	NC	NC	96.62%	99.78%	98.57%	99.78%	96.26%	98.51%	96.58%	99.44%	81.12%	97.19%	95.54%	96.81%	94.73%	98.23%	NA	NA	NA	NA	NA	NA	NA		
	Within City	NC	NC	98.76%	99.33%	98.91%	99.88%	96.72%	98.76%	95.71%	99.21%	89.27%	95.61%	94.07%	90.47%	97.14%	96.04%	NA	NA	NA	NA	NA	NA	NA		
	Overall SSA	NC	NC	97.36%	99.60%	98.73%	99.83%	96.35%	98.65%	96.23%	98.35%	85.46%	97.64%	94.97%	94.08%	96.20%	96.71%	NA	NA	NA	NA	NA	NA	NA		
5	Service Coverage																									
	In door (>= - 75dBm)	Major Road	NC	NC	90.59%	100%	83.48%	91.74%	94.82%	97.70%	17.85%	96.40%	50.10%	99.78%	78.14%	97.12%	79.09%	72.50%	79.52%	97.56%	74.31%	86.52%	85.92%	100%		
		Highway	NC	NC	76.73%	87.90%	83.16%	91.24%	95.01%	96.10%	33.31%	8.50%	36.98%	70.57%	56.49%	83.16%	65.21%	62.50%	55.17%	83.13%	22.26%	97.91%	74.83%	94.74%		
		Within City	NC	NC	67.51%	99.29%	84.76%	92.27%	93.40%	93.30%	40.36%	23.60%	49.77%	95.00%	90.79%	2.05%	79.29%	74.70%	69.63%	47.34%	55.08%	42.47%	93.13%	98.95%		
		Overall SSA	NC	NC	74.87%	95.92%	83.60%	91.74%	94.73%	95.69%	33.20%	42.81%	43.06%	88.65%	67.63%	72.42%	72.39%	69.84%	65.36%	77.05%	40.92%	71.82%	82.89%	97.90%		
	In-vehicle (>= - 85dBm)	Major Road	NC	NC	99.01%	100%	95.08%	99.64%	99.72%	100%	79.97%	99.60%	85.79%	100%	96.03%	99.74%	92.80%	95.50%	94.71%	98.76%	97.28%	100%	98.96%	100%		
		Highway	NC	NC	96.34%	100%	94.83%	99.04%	99.77%	99.90%	83.82%	73.20%	65.10%	99.12%	86.89%	99.46%	82.51%	81.30%	86.72%	89.41%	57.60%	100%	93.18%	99.98%		
		Within City	NC	NC	92.71%	100%	97.02%	99.93%	99.77%	99.60%	85.33%	76.40%	87.06%	95.00%	98.30%	94.70%	93.59%	98.50%	94.06%	97.72%	90.81%	94.29%	99.20%	100%		

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

S/N	Parameter	Classification of routes covered	AIRCEL		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	OUTDOOR	INDOOR	
			Overall SSA	NC	NC	95.39%	100%	95.40%	99.53%	99.76%	99.83%	83.69%	83.07%	75.27%	98.11%	90.82%	98.69%	88.03%	91.69%	91.13%	95.36%	74.58%	97.79%	96.18%	99.99%
	Outdoor-in city (>= 95dBm)	Major Road	NC	NC	100%	100%	98.63%	100%	100%	100%	98.91%	100%	98.65%	100%	99.75%	99.84%	97.84%	99.40%	98.48%	99.38%	100%	100%	99.99%	100%	
		Highway	NC	NC	99.58%	100%	99.41%	99.98%	99.96%	100%	98.22%	97.40%	88.72%	99.50%	99.46%	99.95%	92.24%	98.40%	97.91%	98.70%	98.39%	100%	99.89%	100%	
		Within City	NC	NC	99.53%	100%	99.86%	99.98%	100%	100%	97.69%	98.50%	98.21%	100%	99.94%	99.95%	98.00%	100%	98.04%	98.31%	99.56%	100%	100%	100%	
		Overall SSA	NC	NC	99.60%	100%	99.41%	99.99%	99.97%	100%	98.14%	98.63%	93.26%	99.84%	99.61%	99.93%	95.16%	99.26%	98.06%	98.76%	99.02%	100%	99.94%	100%	
		Major Road	NC	NC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	97.78%	100%	97.62%	100%	100%	100%	100%	96.00%	100%	100%
6	Call Setup Success Rate (>=95%)	Highway	NC	NC	99.68%	100%	97.41%	100%	99.70%	100%	100%	100%	95.73%	100%	98.36%	96.00%	99.69%	100%	100%	100%	100%	98.40%	100%	100%	100%
		Within City	NC	NC	98.32%	100%	98.20%	100%	98.94%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98.92%	100%	100%	100%
		Overall SSA	NC	NC	99.37%	100%	97.92%	100%	99.58%	100%	100%	100%	97.98%	100%	98.78%	98.67%	99.60%	100%	100%	100%	98.82%	98.46%	100%	100%	
		Major Road	NC	NC	100%	100%	96.67%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Highway	NC	NC	99.59%	100%	97.28%	100%	99.57%	100%	100%	100%	100%	100%	98.55%	96.30%	99.66%	100%	100%	100%	100%	100%	100%	100%	100%
		Within City	NC	NC	100%	100%	99.29%	100%	98.41%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	99.73%	100%	97.78%	100%	99.41%	100%	100%	100%	100%	100%	99.27%	98.51%	99.77%	100%	100%	100%	100%	100%	100%	100%	100%
		Major Road	NC	NC	100%	100%	96.67%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

- NA: Not Applicable
- NC: No Coverage
- The service Providers having block call rate more than 3% have been shaded in yellow colour.

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

DRIVE TEST TABLE – 2

S/N	Parameter	Classification of routes covered	AIRCEL		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	OUTDOOR	INDOOR
1	Call Attempts	Major Road	NC	NC	106	32	77	28	92	25	40	15	53	15	69	25	73	24	43	NC	46	NC	17	NC
		Highway	NC	NC	195	24	158	25	137	26	25	NC	31	25	42	NC	138	26	30	25	19	25	8	NC
		Within City	NC	NC	178	25	129	25	136	25	89	25	105	25	108	25	147	25	55	25	58	25	20	25
		Overall SSA	NC	NC	479	81	364	78	365	76	154	40	189	65	219	50	358	75	128	50	123	50	45	25
2	Blocked Call Rate	Major Road	NC	NC	0.94%	0.00%	6.49%	3.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.45%	0.00%	1.37%	0.00%	0.00%	NC	0.00%	NC	0.00%	NC
		Highway	NC	NC	1.03%	0.00%	11.39%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	0.00%	2.38%	NC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC
		Within City	NC	NC	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.85%	0.00%	1.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		Overall SSA	NC	NC	0.84%	0.00%	6.32%	1.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.83%	0.00%	0.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	Dropped Call Rate (<=2%)	Major Road	NC	NC	0.00%	0.00%	2.78%	3.70%	1.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC	0.00%	NC	0.00%	NC
		Highway	NC	NC	0.00%	0.00%	5.04%	0.00%	0.00%	0.00%	0.00%	NC	6.45%	0.00%	0.00%	NC	1.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NC
		Within City	NC	NC	0.00%	0.00%	3.17%	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%
		Overall SSA	NC	NC	0.00%	0.00%	3.86%	1.30%	0.28%	0.00%	0.00%	0.00%	1.06%	0.00%	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

S/N	Parameter	Classification of routes covered	AIRCEL		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	OUTDOOR	INDOOR	
			Percentage connections with good voice quality (=>95%)																						
4	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Major Road	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97.18%	NC	100%	NC	98.19%	NC	
		Highway	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	96.15%	100%	100%	100%	98.02%	NC	
		Within City	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	96.71%	95.95%	99.72%	99.93%	98.80%	99.26%	
		Overall SSA	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	96.74%	97.96%	99.86%	99.97%	98.43%	99.26%	
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	NC	NC	97.13%	95.75%	98.25%	98.86%	93.23%	99.61%	98.62%	99.77%	96.33%	99.95%	95.22%	95.80%	96.33%	93.99%	NA	NA	NA	NA	NA	NA	
		Highway	NC	NC	96.11%	99.87%	95.59%	99.83%	95.08%	98.87%	98.57%	NC	98.40%	99.77%	91.88%	NC	94.40%	97.72%	NA	NA	NA	NA	NA	NA	
		Within City	NC	NC	95.67%	97.59%	97.72%	99.36%	94.33%	88.12%	98.65%	99.64%	95.58%	99.75%	93.84%	98.03%	95.57%	94.08%	NA	NA	NA	NA	NA	NA	
		Overall SSA	NC	NC	96.21%	98.40%	96.98%	99.34%	94.33%	95.56%	98.63%	99.69%	96.26%	99.81%	93.85%	96.91%	95.29%	95.29%	NA	NA	NA	NA	NA	NA	
5	Service Coverage	In door (>= -75dBm)	Major Road	NC	NC	81.96%	99.65%	35.69%	51.13%	93.09%	94.20%	15.85%	13.30%	50.42%	14.81%	46.41%	59.13%	92.27%	93.40%	69.49%	NC	98.60%	NC	40.44%	NC
			Highway	NC	NC	66.23%	99.94%	27.52%	30.11%	77.73%	99.60%	11.78%	NC	55.07%	98.81%	49.27%	NC	74.78%	69.10%	80.54%	96.22%	90.41%	99.95%	57.27%	NC
			Within City	NC	NC	77.89%	95.57%	32.21%	31.59%	92.95%	99.90%	14.87%	47.20%	44.72%	100%	56.28%	89.45%	88.60%	91.20%	56.43%	84.40%	78.99%	100%	46.78%	99.97%
			Overall SSA	NC	NC	74.43%	97.88%	31.07%	38.11%	87.44%	97.90%	14.63%	34.47%	47.99%	79.59%	51.89%	68.63%	84.01%	84.01%	67.49%	90.29%	86.73%	99.98%	46.25%	99.97%
	In-vehicle (>= -85dBm)	Major Road	NC	NC	93.39%	99.88%	90.16%	98.40%	99.10%	100%	73.82%	94.30%	80.24%	97.36%	79.95%	98.96%	97.52%	99.90%	95.61%	NC	99.98%	0.00%	70.94%	NC	
		Highway	NC	NC	87.26%	100%	72.38%	97.81%	94.41%	100%	61.43%	NC	84.60%	99.02%	85.27%	NC	91.44%	91.40%	97.71%	96.95%	99.85%	100%	91.74%	NC	

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

S/N	Parameter	Classification of routes covered	AIRCEL		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	OUTDOOR	INDOOR
			Within City	NC	NC	93.13%	99.86%	80.66%	97.99%	99.63%	100%	67.88%	95.10%	78.07%	100%	86.27%	99.90%	97.54%	95.20%	88.11%	97.89%	94.41%	100%	77.99%
		Overall SSA	NC	NC	90.97%	99.92%	79.38%	98.08%	97.60%	100%	68.44%	94.80%	79.73%	99.00%	84.25%	99.26%	95.15%	95.26%	93.16%	97.42%	96.99%	100%	77.77%	100%
	Outdoor-in city (>= 95dBm)	Major Road	NC	NC	98.96%	100%	100%	100%	100%	100%	96.59%	99.10%	97.47%	100%	96.93%	99.98%	99.12%	100%	99.16%	NC	99.98%	NC	99.20%	NC
		Highway	NC	NC	98.21%	100%	100%	100%	99.65%	100%	92.02%	NC	97.60%	99.02%	95.50%	NC	98.45%	99.40%	99.68%	99.56%	99.85%	100%	100%	NC
		Within City	NC	NC	99.45%	100%	100%	100%	100%	100%	94.87%	99.30%	97.02%	100%	98.39%	100%	99.55%	98.40%	98.48%	99.86%	94.41%	100%	99.31%	100%
		Overall SSA	NC	NC	98.87%	100%	100%	100%	99.87%	100%	94.87%	99.22%	97.24%	99.62%	97.32%	99.99%	99.02%	99.24%	99.04%	99.71%	96.99%	100%	99.39%	100%
			Major Road	NC	NC	99.06%	100%	93.51%	96.43%	97.83%	100%	100%	100%	100%	100%	98.55%	100%	98.63%	100%	100%	NC	100%	NC	100%
	6	Highway	NC	NC	96.41%	100%	87.97%	100%	99.27%	96.15%	100%	NC	100%	100%	100%	NC	100%	100%	100%	100%	100%	100%	100%	NC
		Within City	NC	NC	99.44%	100%	97.67%	100%	100%	100%	100%	100%	100%	100%	97.22%	100%	98.64%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	98.12%	100%	92.58%	98.72%	99.18%	98.68%	100%	100%	100%	100%	98.17%	100%	99.16%	100%	100%	100%	100%	100%	100%	100%
			Major Road	NC	NC	98.62%	100%	99.76%	100%	98.84%	100%	100%	100%	96.30%	100%	100%	100%	98.70%	100%	100%	NC	100%	NC	100%
	7	Highway	NC	NC	97.79%	100%	100%	100%	97.62%	100%	100%	NC	100%	100%	100%	NC	97.37%	100%	100%	100%	100%	100%	100%	NC
		Within City	NC	NC	96.35%	100%	99.21%	100%	98.96%	100%	100%	100%	100%	100%	99.29%	100%	98.73%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	97.46%	100%	99.65%	100%	98.50%	100%	100%	100%	98.86%	100%	99.69%	100%	98.28%	100%	100%	100%	100%	100%	100%	100%
			Major Road	NC	NC	98.62%	100%	99.76%	100%	98.84%	100%	100%	100%	96.30%	100%	100%	100%	98.70%	100%	100%	NC	100%	NC	100%

- NA: Not Applicable
- NC: No Coverage
- The service Providers having block call rate more than 3% have been shaded in yellow colour.

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

DRIVE TEST TABLE - 3

S/N	Parameter	Classification of routes covered	AIRCEL		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	OUTDOOR	INDOOR	
1	Call Attempts	Major Road	NC	NC	65	25	59	25	72	25	110	25	66	25	82	25	54	25	61	25	66	25	97	25	
		Highway	NC	NC	309	25	172	25	319	25	127	25	108	26	167	25	280	25	105	21	174	25	121	25	
		Within City	NC	NC	168	25	92	MPBN Fault	114	25	146	25	129	25	129	25	139	25	79	25	133	25	98	25	
		Overall SSA	NC	NC	542	75	323	50	505	75	383	75	303	76	378	75	473	75	245	71	373	75	316	75	
2	Blocked Call Rate	Major Road	NC	NC	0.00%	0.00%	1.69%	0.00%	0.00%	0.00%	0.00%	0.00%	3.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
		Highway	NC	NC	0.00%	0.00%	1.16%	0.00%	0.00%	0.00%	0.00%	0.00%	2.78%	0.00%	0.60%	0.00%	1.07%	0.00%	0.00%	0.00%	0.57%	0.00%	0.00%	0.00%	
		Within City	NC	NC	0.60%	0.00%	2.17%	MPBN Fault	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.75%	0.00%	0.00%	0.00%	
		Overall SSA	NC	NC	0.18%	0.00%	1.55%	0.00%	0.00%	0.00%	0.00%	0.00%	1.65%	0.00%	0.26%	0.00%	0.63%	0.00%	0.00%	0.00%	0.54%	0.00%	0.00%	0.00%	
3	Dropped Call Rate (<=2%)	Major Road	NC	NC	0.00%	0.00%	3.45%	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	NC	NC	0.00%	0.00%	2.98%	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%	
		Within City	NC	NC	0.00%	0.00%	2.22%	MPBN Fault	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.27%	0.00%	0.00%	0.00%	
		Overall SSA	NC	NC	0.00%	0.00%	2.85%	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%	0.81%	0.00%	0.00%	0.00%	
4	Percentage connections with good voice quality (=>95%)																								

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

S/N	Parameter	Classification of routes covered	AIRCEL		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	OUTDOOR	INDOOR	
	(a) 0-4 (w/o frequency hopping for CDMA Operators)	Major Road	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.72%	99.93%	99.97%	100%	98.76%	99.93%	
		Highway	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.47%	98.81%	96.80%	99.94%	98.46%	98.57%
		Within City	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.66%	99.87%	99.12%	100%	98.55%	99.90%
		Overall SSA	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99.59%	99.58%	98.22%	99.98%	98.58%	99.38%
	(b) 0-5 (with frequency hopping for GSM Operators)	Major Road	NC	NC	97.59%	99.69%	99.32%	99.47%	98.27%	99.18%	96.74%	97.58%	90.77%	90.25%	95.54%	95.48%	97.29%	97.65%	NA	NA	NA	NA	NA	NA	
		Highway	NC	NC	93.41%	99.64%	98.64%	99.91%	97.11%	98.40%	96.93%	97.00%	89.41%	90.51%	95.79%	95.99%	94.70%	97.40%	NA	NA	NA	NA	NA	NA	
		Within City	NC	NC	97.46%	99.72%	98.43%	MPBN Fault	96.93%	98.73%	96.80%	99.53%	85.10%	99.99%	94.85%	98.52%	96.40%	97.70%	NA	NA	NA	NA	NA	NA	
		Overall SSA	NC	NC	95.23%	99.68%	98.68%	99.68%	97.38%	98.77%	96.82%	98.04%	87.91%	93.49%	95.41%	96.67%	95.54%	97.58%	NA	NA	NA	NA	NA	NA	
5	Service Coverage																								
	In door (>= -75dBm)	Major Road	NC	NC	78.58%	100%	84.00%	98.86%	98.14%	100%	45.44%	78.20%	33.84%	98.92%	52.19%	99.96%	89.59%	100%	43.59%	96.06%	59.45%	99.98%	61.38%	80.45%	
		Highway	NC	NC	66.64%	88.58%	77.26%	91.72%	96.33%	100%	37.49%	75.90%	36.65%	51.56%	53.79%	64.78%	85.03%	100%	33.34%	68.29%	39.16%	99.52%	57.71%	92.09%	
		Within City	NC	NC	86.27%	99.75%	79.56%	MPBN Fault	94.09%	100%	38.97%	51.80%	58.54%	100%	60.24%	99.47%	97.99%	100%	50.55%	28.40%	69.74%	49.37%	69.70%	97.67%	
		Overall SSA	NC	NC	74.38%	95.43%	79.00%	95.42%	96.42%	100%	40.42%	68.64%	43.95%	82.51%	55.58%	87.93%	88.80%	100%	41.31%	64.39%	54.06%	84.99%	62.50%	90.14%	
	In-vehicle (>= -85dBm)	Major Road	NC	NC	99.52%	100%	97.10%	100%	99.85%	100%	86.69%	99.20%	65.78%	99.69%	88.36%	100%	99.70%	100%	84.69%	97.93%	87.96%	100%	99.44%	100%	
		Highway	NC	NC	93.19%	100%	90.49%	99.95%	99.53%	100%	82.39%	98.50%	53.59%	97.07%	82.43%	99.02%	97.90%	100%	62.37%	99.16%	65.95%	100%	96.35%	99.94%	
		Within City	NC	NC	98.21%	100%	93.61%	MPBN Fault	99.38%	100%	91.40%	99.00%	83.72%	100%	94.25%	100%	99.88%	100%	91.65%	90.60%	90.89%	99.78%	94.85%	100%	

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

S/N	Parameter	Classification of routes covered	AIRCEL		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	OUTDOOR	INDOOR
			Overall SSA	NC	NC	95.57%	100%	92.45%	99.98%	99.59%	100%	87.15%	98.89%	66.37%	98.86%	87.82%	99.67%	98.61%	100%	77.07%	95.73%	79.07%	99.93%	96.85%
	Outdoor-in city (>= 95dBm)	Major Road	NC	NC	99.95%	100%	99.85%	100%	99.93%	100%	99.29%	99.80%	95.07%	99.88%	99.76%	100%	99.91%	100%	95.74%	98.16%	100%	100%	100%	100%
		Highway	NC	NC	99.53%	100%	98.57%	100%	99.96%	100%	98.19%	99.90%	79.04%	100%	98.54%	100%	99.77%	100%	94.21%	99.44%	97.62%	100%	99.95%	100%
		Within City	NC	NC	99.85%	100%	99.52%	MPBN Fault	99.99%	100%	99.06%	99.60%	96.73%	100%	99.73%	100%	100%	100%	98.11%	99.36%	100%	100%	99.85%	100%
		Overall SSA	NC	NC	99.68%	100%	99.05%	100%	99.96%	100%	98.85%	99.77%	88.05%	99.96%	99.23%	100%	99.84%	100%	95.83%	98.95%	98.92%	100%	99.94%	100%
		Overall SSA	NC	NC	99.68%	100%	99.05%	100%	99.96%	100%	98.85%	99.77%	88.05%	99.96%	99.23%	100%	99.84%	100%	95.83%	98.95%	98.92%	100%	99.94%	100%
6	Call Setup Success Rate (>=95%)	Major Road	NC	NC	100%	100%	98.31%	100%	100%	100%	100%	100%	96.97%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Highway	NC	NC	99.68%	100%	97.67%	100%	100%	100%	100%	100%	97.22%	100%	96.41%	100%	98.93%	100%	100%	100%	99.43%	100%	100%	100%
		Within City	NC	NC	99.40%	100%	97.83%	MPBN Fault	100%	100%	100%	100%	100%	100%	99.22%	100%	100%	100%	100%	100%	99.25%	100%	100%	100%
		Overall SSA	NC	NC	99.63%	100%	97.83%	100%	100%	100%	100%	100%	98.35%	100%	98.15%	100%	99.37%	100%	100%	100%	99.46%	100%	100%	100%
7	Hand Over Success Rate (HOSR)	Major Road	NC	NC	100%	100%	98.57%	100%	100%	100%	100%	100%	98.61%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Highway	NC	NC	99.45%	100%	96.92%	100%	99.64%	100%	100%	100%	100%	100%	98.42%	100%	97.56%	100%	100%	100%	100%	100%	100%	100%
		Within City	NC	NC	99.47%	100%	96.09%	MPBN Fault	98.82%	100%	100%	100%	99.55%	100%	98.45%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		Overall SSA	NC	NC	99.55%	100%	96.79%	100%	99.53%	100%	100%	100%	99.46%	100%	98.77%	100%	98.34%	100%	100%	100%	100%	100%	100%	100%

- NA: Not Applicable
- The service Providers having block call rate more than 3% have been shaded in yellow colour.
- MPBN Fault - Due to fault in Mobile packet backbone network (MPBN) Agra on day 3 drive test, there was an issue of latching the calls.

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
BADAUN	Jan-15	BADAUN/125KM	<p>WITHIN CITY:- MAIN T/E BADAUN, NAWADA CHOWK, CIVIL LINES, CLOCK TOWER, KABULPURA, LALPUL, JOGIPURA, LABELA CHOWK, CITY HOSPITAL, COLLECTRATE, DM RESIDENCE, DIET, POLICE LINES, INDRA CHOWK, RAILWAY STATION, RAJI CHOWK, SALARPUR.</p> <p>MAJOR ROADS:-MAIN ROAD UJHANI, RAILWAY ROAD UJHANI, BADIZYARAT, ISLAMIA COLLEGE, CACHEHARI, INDRA CHOWK, T/E BADAUN.</p> <p>HIGHWAYS:-SALARPUR, AONLA ROAD, DUGRAIYA, KUNWARGAON, FAKIRABAD, BINAWAR, GHATPURI, CHANDAN NAGAR, LALPUL, ALIGARH ROAD, UJHANI BYPASS RD, KACHALA, UJHANI.</p> <p>INDOOR: HOTEL RAJ MAHAL, BADAUN</p>	DATAGANJ, BISAULI/155 Km	<p>HIGHWAYS:-T/E BADAUN, DATAGANJ CHUNGI, MUSHAJHAG, DHAHARPUR, PAPAD, SAINJNI, MIAUN, ALAPUR, SAKHANU, BADAUN-BISAULI RD, SOI, WAZIRGANJ, SAIDPUR, BISAULI, ASAFPUR RD, BISAULI-BADAUN RD</p> <p>MAJOR ROADS:-SANTOSH KUMARI INTER COLLEGE DATAGANJ, MAIN RD DATAGANJ, BAREILLY-DATAGANJ RD, ASAFPUR RD BISAULI, TEHSIL BISAULI, CHANDAUSE RD.</p> <p>WITHIN CITY:-BAREILLY RD TIRAHA DATAGANJ, SDM HOUSE, ARJUN NAGAR, BELA DADI RD, KOTWALI, BDO OFFICE DATAGANJ, CIVIL COURT BISAULI, DEVTORI RD.</p> <p>INDOOR: BDO OFFICE, DATAGANJ AND TEHSIL, BISAULI</p>	SAHASWAN, GUNNAUR/110KM	<p>HIGHWAYS:-T/E BADAUN, BAHERI, BILSI RD, ARTO OFFICE, BADARPUR, BASANT NAGAR, BRAYAMKHEDA, NIJAMPUR, BILSI, SAHASWAN RD, BADAUN-DELHI RD, KOLHAI, AL-HAFEEZ ACADEMY USMANPUR, TEHGMA, BARBALA T/E, TCL BARBALA, T/E BARBALA.</p> <p>WITHIN CITY:-SAHASWAN CITY, PRAMOD INTER COLLEGE, SBI, KOTWALI, SAHASWAN, GUNNAUR CITY, BDO OFFICE, GUNNAUR CHOWK, BARBALA T/E.</p> <p>MAJOR ROADS:-MAJOR RD BILSI, WAZIRGANJ RD, ISLAM NAGAR RD BILSI, BILSI THANA, KHERI RD, MANDI SAMITI BILSI.</p> <p>INDOOR: H.P. PETROL PUMP, SAHASWAN AND BARBALA TELEPHONE EXCHANGE</p>

AUDIT & ASSESSMENT OF QOS FOR QE-MARCH-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
KOTDWARA	Feb-15	SRINAGAR, PAURI-I, PAURI-II/110 Km	<p>WITH IN CITY:- HOTEL VALLEY INN SRIKOT, SRINAGAR MARKET, SBI MARKET, HNB UNIVERSITY, SSB ACADEMY, TATA MOTORS, MAIN MARKET KIRTI NAGAR..</p> <p>HIGHWAY:-SRINAGAR NH-58, NIT, KIRTI NAGAR BRIDGE, TEHSIL SRINAGAR, SRINAGAR-PAURI ROAD PAURI, CIRCUIT HOUSE PAURI, DEVPRAYAG RD PAURI, KHANDUSIAN, G.B. PANT ENGG. COLLEGE GHUDAUDI.</p> <p>MAJOR ROAD:- DAM SINGH SRIKOT, UPPER BAZAR, GOLA MARKET, MAIN ROAD PAURI, BUS STAND PAURI, DEV PRAYAG ROAD PAURI, KANDOLIA RD PAURI, DM RESIDENCE, VIKAS BHAWAN PAURI, RTO PAURI, MAIN MARKET PAURI.</p> <p>INDOOR: TEHSIL, SRINAGAR AND PNB BANK, PAURI</p>	LANSDOWNE-I/110KM	<p>HIGHWAY:-BUBAKHAL NH-119, PARSUNDAKHAL, AGRODA, PATISEN, BHOSAL, SATPULI, GUMKHAL, JYHARIKHAL, LANSDOWNE CANTT.</p> <p>WITH IN CITY:- GANDHI CHOWK LANSDOWNE, TEHSIL ROAD, BHULATAL, ST. JOHN'S CHURCH, TIP-IN-TOP, WAR MEMORIAL LANSDOWNE, BSNL OFFICE, MILITARY HOSPITAL, GANDHI UDYAN.</p> <p>MAJOR ROAD:- MAIN ROAD LANSDOWNE.</p> <p>INDOOR: ZYKA RESTAURANT, LANSDOWNE</p>	LANSDOWNE-II(KOTDWARA)/115KM	<p>HIGHWAY :- LANSDOWNE-KOTDWAR ROAD, BLUE PINE RESORT PALKOT, FATEHPUR, NH-119 .WITH IN CITY :- SIDDHBALI TEMPLE, SALEH, LALPANI, BISANPUR, STADIUM ROAD KOTDWAR, BSNL T/E, STATION KOTDWAR, ROADWAYS KOTDWAR, NAJIBABAD ROAD, BEL KOTDWAR, FCI DEVRAMPUR, KISHANPURI, KANWA GHATI, DURGAPURI.</p> <p>MAJOR ROAD:-ORCADLE PUBLIC SCHOOL NIMBUCHOD, DEVI ROAD, JHANDA CHOWK, SIDDHBALI WEDDING POINT, PADAMPUR, TEHSIL, BEL RD, RATANPUR, LALPUR, INDRA NAGAR.</p> <p>INDOOR: AANGAN RESTAURANT, KOTDWAR</p>

AUDIT & ASSESSMENT OF QOS FOR QE-MARCH-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
ETAH	Mar-15	ETAH/125 Km	<p>WITHIN CITY:- T/E ETAH, KACHEHARI ROAD, JAIL ROAD, AGRA ROAD CHUNGI, AGRA ROAD ETAH, KOTWALI DEHAT, HDFC BANK, NIDHAULI ROAD, ST. PAUL SCHOOL, NH-91, ALIGARH ROAD, HINDUSTAN UNILIVER LTD. KASGANJ ROAD, ASROLI, ITI ETAH, RAILWAY STATION ETAH, SHANTI NAGAR, MEHTA PARK, PEEPAL ADDA.</p> <p>MAJOR ROADS:-HP GAS GODAM, SHAVAR ROAD, ALIGARH ROAD, G T ROAD, MANDI SAMITI ETAH, SHIKOHABAD ROAD, BUS STAND ETAH.</p> <p>HIGHWAYS:-NH-91, ETAH-PILUA, MALAWAN, BSNL T/E ETAH.</p> <p>INDOOR: NIRANKARI RESTAURANT, ETAH</p>	JALESAR, KASGANJ/160KM	<p>HIGHWAYS:-BSNL T/E ETAH, NIDHAULI ROAD, MUKHRANA-NIDHAULI, JALESAR, AAWAGARH, BASUNDHRA, BAWSA, MIRAHCHI, KASGANJ, ETAH.</p> <p>MAJOR ROADS:-POWER HOUSE JALESAR, MAIN MARKET JALESAR, MAHAVEERGANJ, JAWAHARGANJ.</p> <p>WITHIN CITY:-NADRAI GATE, KASGANJ, PAYAL TALKIES, ROADWAYS BUS STAND, KASGANJ, CIRCULAR ROAD, SORO GATE, DM RESIDENCE, BILRAM GATE, NADRAI GATE.</p> <p>INDOOR: SBI, JALESAR AND ROSHANLAL RESTAURANT, KASGANJ.</p>	ALIGANJ(GANJDUNDWARA)/140 Km	<p>HIGHWAYS:-BSNL T/E ETAH, ALIGANJ ROAD, SHEETALPUR, BAGWALA, DHUMRI, JAITHRA, ALIGANJ, DARIYAGANJ, PATIYALI, SIDPURA, BSNL T/E ETAH.</p> <p>WITHIN CITY:-CENTRAL BANK OF INDIA ALIGANJ, GANJDUNDWARA, HOSPITAL ROAD ALIGANJ, KAYAMGANJ ROAD GANJDUNDWARA</p> <p>MAJOR ROADS:-ALIGANJ ROAD GANJDUNDWARA, SUDAMAPURI, RAILWAY ROAD GANJDUNDWARA, GHANDHI PARK, SAHAWAR ROAD.</p> <p>INDOOR: BLOCK DEVLOPMENT OFFICE GANJDUNDWARA</p>

7.5 SSA WISE DRIVE TEST OBSERVATION:

DRIVE TEST TABLE: 5

DRIVE TEST OBSERVATION OF BADUAN SSA – JANUARY 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	Badaun & Ujhani	No Coverage	Dataganj & Bisholi	No Coverage	Sahaswan & Gunnaur	No Coverage
2	AIRTEL		Poor Level & Quality near Dugraiya, Naushera, Bashoma, Girdharpur		Poor Level & Quality near Bankota, Sakhanu, Myaun, Daharpur Kalan		Poor Level & Quality near Dwarikhurd, Rafi Nagar, Sateti Patti Inchha, Kurau
3	BSNL		No coverage between Kuwargaon to Salarpur, Salarpur to Binabar, Ujhani to Bahedi, Ujhani to Kachla, Poor Quality near Kuwargaon, Baheli		No coverage between Badaun to Gulariya, Dataganj to Sainjani		No coverage between Badaun to Pusgawan, Poor Quality near Banai, Bilsa
4	TATA GSM		Poor Level at Ujhani outer, Hissainpur, No coverage at Kuwargaon		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
5	TATA CDMA		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
6	IDEA		Poor Quality at Badaun outer		Poor Quality near Silhari, No coverage between Badaun to Dataganj		Poor Level & Quality near Gunoor, Jaunvih
7	RCOM GSM		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
8	RCOM CDMA		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
9	MTS		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
10	UNINOR		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		No Coverage		No Coverage
11	VODAFONE		Poor Level & Quality near Mogar, Narkhurd, Poor Quality near Dugraiya, Binawar, Abdullahganj, Kachhla		Poor Level & Quality near Bhajpura, Narkhurd, Abhingo, Poor Quality near Wazirganj, Bankota, Silhari, Nai Sadak, Sakhanu		Poor Level & Quality near Kolhai, Baramay Khera, Rafi Nagar, Khandak, Aliganj, Silhari

DRIVE TEST TABLE: 6

DRIVE TEST OBSERVATION OF KOTDWARA SSA – FEBRUARY 15

S NO	Name of SP	SDCA Covered in Day 1	Day 1 Observation	SDCA Covered in Day 2	Day 2 Observation	SDCA Covered in Day 3	Day 3 Observation
1	AIRCEL	Srinagar & Pauri	No Coverage	Lansdown	No Coverage	Kotdwar	No Coverage
2	AIRTEL		Poor Coverage and Quality Near Pauri. Poor Quality Near Kotdwar.		Poor Coverage and Quality Near Lansdown.		Poor Coverage and Quality Near Lansdown.
3	BSNL		Poor Coverage and Quality Near Khadusain.		Poor Coverage and Quality Near Gumkhal to Jaherikhal.		Poor Coverage and Quality Near Farsula to Duggada.
4	TATA GSM		Poor Coverage and Quality Near Godi Malli.		No Coverage		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
5	TATA CDMA		No Coverage		No Coverage		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
6	IDEA		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
7	RCOM GSM		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
8	RCOM CDMA		No Coverage		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers
9	MTS		No Coverage		They Have No Coverage in Pauri, Pauri to Lansdown.		Poor Coverage and Quality Near Durgapuri, Telipara.
10	UNINOR		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers		No Coverage		Poor Coverage and Quality Near Purohit, Khera, Bankota.
11	VODAFONE		Poor Coverage and Quality Near GIC Khanda (Srikot), Pauri Road Near HNB University.		Poor Coverage and Quality Near Ghiri Village, Between Pawan Gaon and Mailta Kund, Kulhar.		Poor Coverage and Quality Near NH-119 Near Jadla Reserved Forest, Telipur.

DRIVE TEST TABLE: 7

DRIVE TEST OBSERVATION OF ETAH SSA – MARCH 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	Etah, Piluwa & Malawan	No Coverage	Jalessar & Kasganj	No Coverage	Aliganj & Ganjdundwara	No Coverage
2	AIRTEL		Poor Quality Near Girora, Asrauli, Neelam Chowk, Kotwal, Etah New Chungi, Senthari, Madhupur.		Poor Quality Near Nadrai, Girora, Devi Nagar, Barai Kalyanpur.		Poor Coverage and Quality Near Nagla Jairam. Poor Quality Near Barauli Suhagpur, Pawans, Patiyali.
3	BSNL		Poor Coverage and Quality Kakrawali. Poor Quality Near Asruli.		Poor Coverage and Quality Near Awagarh,		Drive Not Completed Due to Agra MPBN Down.
4	TATA GSM		Poor Coverage and Quality Near Virampur, Manpur. Poor Quality Near Holi Gate, Aruna Nagar, Aliganj Chungi.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.
5	TATA CDMA		Poor Coverage and Quality Near Kasganj. Poor Quality Near Neelam Chowk, Senthari.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.
6	IDEA		Poor Quality Near Asrauli, Kakrawali, Neelam Chowk.		Poor Coverage and Quality Near Jalesar. Poor Quality Near Girora, Asrauli, Kotwali.		Poor Quality Near Aliganj, Barauli Suhagpur.
7	RCOM GSM		Poor Coverage and Quality Near Girora, Senthani, Chechana, Kakarwali. Poor Quality Near Neelam Chowk, Transport Nagar.		They Have Poor Coverage and Quality in almost complete SDCA's.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.
8	RCOM CDMA		Poor Coverage and Quality Near Chechana, Senthari. Poor Quality Near Asarauli.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.
9	MTS		Poor Coverage and Quality Near Kasqani Road, Awagarh Road, Chamkari, Shikohabad.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.
10	UNINOR		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.		They have coverage only in SDCA's & Major Towns with Poor Level & Quality at outers.
11	VODAFONE		Poor Quality Near Neelam Chowk, Ashok Nagar, Holigate.		Poor Quality Near Shanowa Road, Kotwali, Jalesar, Nadrai.		Poor Coverage and Quality Near Rajpur Phatak, Nagla Chinna Villages, Ganjdundwara- Aliganj, Between Dhumri, Barauli Suhagpur, Jaithra.

DRIVE TEST TABLE: 8

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

Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
1	JAN'2015	Tata GSM	BADAUN	BADAUN, BISAULI, DATAGANJ, GUNNAUR and SAHASWAN	<p>BADAUN:-RAJI CHOWK TO AONLA ROAD, TO KUNWARGAON TO BINAWAR TO BADAUN, BADAUN TO UJHANI, UJHANI TO KACHLA</p> <p>DATAGANJ:- HP INTERNATIONAL COLLEGE TO GANGOLA, DHARPUR KALAN TO MIYAUN,</p> <p>BISAULI:- BHAGWATIPUR TO WAZIRPUR,</p> <p>SAHASWAN:- LALPUL TO NIZAMPUR TO BILSI, MAKAIYA TO KOLHAI TO SALIK NAGAR,</p> <p>GUNNAUR:-MICHAU TO JUNABAI TO GUNNAUR, ETUIYAA TO BABRALA</p>	NO
		Tata CDMA		BADAUN, BISAULI, DATAGANJ, GUNNAUR and SAHASWAN	<p>BADAUN:-HUSSAINPUR PRIMARY SCHOOL TO KUNWARGAON, GHATPURA, HIGHWAY BAREILLY TO BADAUN, UJHANI TO KACHLA</p> <p>DATAGANJ:- HUSSAINPUR PRIMARY SCHOOL TO KUNWARGAON, GHATPURA, HIGHWAY BAREILLY TO BADAUN, UJHANI TO KACHLA,</p> <p>BISAULI:- BHAGWATI TO BANKOTWA, DISAULIGANJ TO KADUPUR,</p> <p>SAHASWAN:- BHARKUIYAAN TO NIZAMPUR, BILSI TO KHANDAK,</p> <p>GUNNAUR:-KHAIRPUR TO BAGHWALA, KADRABAD TO JAGGANATHPUR</p>	NO
		Reliance GSM		BADAUN, BISAULI, DATAGANJ, GUNNAUR and SAHASWAN	<p>BADAUN:- KUNWARGAON, BINAWAR, GHATPURI, FAKRABAD,</p> <p>DATAGANJ:-BUDAUN TO DATAGANJ ROAD, DAHARPURKALAN</p> <p>BISAULI:- SAKHANU .</p> <p>SAHASWAN:- BADARPUR, BILSI ROAD, BARANAKHERA, NIJAMPUR,</p> <p>GUNNAUR:-MUZARIA, KOLHAI, KHANDAK, DEHGAWAN, JUNAWAI.</p>	NO
		Reliance CDMA		BADAUN, BISAULI, DATAGANJ, GUNNAUR and SAHASWAN	<p>BADAUN:-KUNWARGAON, BINAWAR, GHATPURI, FAKRABAD,</p> <p>DATAGANJ:-BUDAUN TO DATAGANJ ROAD, DAHARPURKALAN, DATAGANJ</p> <p>BISAULI:- SAKHANU .MAIUN, SAKHANU, ALLAHAPUR.</p> <p>SAHASWAN:- BADARPUR, BILSI ROAD, BARANAKHERA, NIJAMPUR,</p> <p>GUNNAUR:-MUZARIA, KOLHAI, KHANDAK, DEHGAWAN, JUNAWAI.</p>	NO

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Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
		BSNL		BADAUN, BISAULI, DATAGANJ, and SAHASWAN	<p>BADAUN:-IKRAMNAGAR(BTW BUDAUN BINAWAR),JAJPURA(BTW KUNWARGAON BINAWAR),BUTLA(BTW KUNWARGAON BINAWAR). DATAGANJ:-LAKHANPUR(BTW BUDAUN DATAGANJ),PAPAD(BTW SAIJNI MIAON) BISAULI:- SOI (BTW BUDAUN WAZIRGANJ) SAHASWAN:- BASANT NAGAR(BTW BUDAUN BILSI),BARAI MAI KHERA(BTW BUDAUN BILSI)</p>	NO
		MTS		BADAUN, BISAULI, DATAGANJ, GUNNAUR and SAHASWAN	<p>BADAUN:- KUNWARGAON,BINAWAR,GHATPURI,FAKRABAD, DATAGANJ:-DATAGANJ TO CENDELA TO MUSAJHAG TO MIAUN BISAULI:- WAJIRGANJ TO BISAULI & BADAUN OUTER TO WAJIRGANJ. SAHASWAN:- BADAUN TO BILSI HIGHWAY & BILSI TO SAHSWAN HIGHWAY GUNNAUR:-SAHSWAN TO GUNNAUR HIGHWAY.</p>	BADAUN SSA:- TOTAL N/W ON ICR WITH RCOM (CDMA) (EXCEPT UJJHANI).
		Airtel		BADAUN, BISAULI, DATAGANJ, GUNNAUR and SAHASWAN	No Coverage Issue	BISAULI:- SAINJNI-MIAUN RD(VODAFONE)
		Vodafone		BADAUN, BISAULI, DATAGANJ, GUNNAUR and SAHASWAN	No Coverage Issue	NO
		Idea		BADAUN, BISAULI, DATAGANJ, GUNNAUR and SAHASWAN	No Coverage Issue	NO
		UNINOR		BADAUN, BISAULI, DATAGANJ, GUNNAUR and SAHASWAN	<p>BADAUN:-BHASMAI ,KHIVALI, BUTLA KHANJAN DATAGANJ:- GULANIA TO DAHARPUR,DAHARPUR TO SAINJANI,MARURA TO MAAON,MAAON TO SAKAUN , BISAULI:- SAIDPUR TO BISAULI, BADAUN TO WAZIRGANJ SAHASWAN:-BADAUN TO BILSI,BISLIMUJANQU,KOTHI TO DCHGAWAN GUNNAUR:-TUNAVTAI TO GUNNAUR</p>	NO
		Aircel			NO COVERAGE AT WHOLE BADAUN SSA	NO

Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
2	FEB'2015	Tata GSM	KOTDWARA	SRINAGAR, PAURI-I, PAURI-II, LANSDOWNE-I, LANSDOWNE-II(KOTDWARA).	SRINAGAR:- SIRKOT, CHAURAS, RISHIKORT ROAD, MAIN BAZAR SRINAGR. PAURI-I:- NO COVERAGE IN PAURI-I SDCA, PAURI-II:- NO COVERAGE IN PAURI-II SDCA LANSDOWNE-I:- NO COVERAGE IN LANSDOWNE-I SDCA LANSDOWNE-II(KOTDWARA):- SNEH, KURABHICHAND, LALPAM, LACHAMPUR	NO
		Tata CDMA		SRINAGAR, PAURI-I, PAURI-II, LANSDOWNE-I, LANSDOWNE-II(KOTDWARA).	SRINAGAR:- NO COVERAGE IN SRINAGAR SDCA PAURI-I:- NO COVERAGE IN PAURI-I SDCA, PAURI-II:- NO COVERAGE IN PAURI-II SDCA LANSDOWNE-I:- NO COVERAGE IN LANSDOWNE-I SDCA LANSDOWNE-II(KOTDWARA):- LANDSDOWN TO SIDHBALI TEMPLE KOTDWAR ROAD, SNEHPATTI TO LAAL PANI	NO
		Reliance GSM		SRINAGAR, PAURI-I, PAURI-II, LANSDOWNE-I, LANSDOWNE-II(KOTDWARA).	SRINAGAR:- SIRKOT, CHAURAS, RISHIKORT ROAD, MAIN BAZAR SRINAGR. PAURI-I:- NO COVERAGE IN PAURI-I SDCA, PAURI-II:- NO COVERAGE IN PAURI-II SDCA LANSDOWNE-I:- PAURI TO LANSDOWNE HIGHWAYS LANSDOWNE-II(KOTDWARA):- LANDSDOWN TO KOTDWAR ROAD, BLUE PINE RESOTE FATHEPUR, NH 119, DUGGADA	SRINAGAR:- ICR WITH TATA GSM
		Reliance CDMA		SRINAGAR, PAURI-I, PAURI-II, LANSDOWNE-I, LANSDOWNE-II(KOTDWARA).	SRINAGAR:- NO COVERAGE IN SRINAGAR SDCA PAURI-I:- NO COVERAGE IN PAURI-I SDCA, PAURI-II:- NO COVERAGE IN PAURI-II SDCA LANSDOWNE-I:- PAURI TO LANSDOWNE HIGHWAYS LANSDOWNE-II(KOTDWARA):- KRISHNAPURI, DEVRAMPUR, KANWA GHATI, MOTADHAK, DURGAPURI	NO
		BSNL		PAURI-I, LANSDOWNE-I.	PAURI-I:- CIRCUIT HOUSE PAURI TO KHANDUSAIN LANSDOWNE-I:- NEAR ACCOUNT DEPARTMENT ARMY CAMP.	NO
		MTS		SRINAGAR, PAURI-I, PAURI-II, LANSDOWNE-I, LANSDOWNE-II(KOTDWARA).	SRINAGAR:- NO COVERAGE IN SRINAGAR SDCA PAURI-I:- NO COVERAGE IN PAURI-I SDCA, PAURI-II:- NO COVERAGE IN PAURI-II SDCA LANSDOWNE-I:- PAURI TO LANSDOWNE HIGHWAYS LANSDOWNE-II(KOTDWARA):- KISHANPUR TO DURGAPUR CHOWK	ALL N/W ON ICR WITH RCOM CDMA
		Airtel		SRINAGAR, PAURI-I, LANSDOWNE-I, LANSDOWNE-II(KOTDWARA).	SRINAGAR:- SRINAGAR TO DEVPRAYAG RD, KIRTI NAGAR TO PAURI, PAURI TO GHURDAURI. PAURI-I:- PAURI TO GHURDAURI. LANSDOWNE-I:- BUAKHAL TO LANSDOWNE, OUTER ZONE OF LANSDOWNE LANSDOWNE-II(KOTDWARA):- OUTER ZONE OF LANSDOWNE TO OUTER ZONE OF KOTDWAR.	NO

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



Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
		Vodafone		SRINAGAR, PAURI-I, LANSDOWNE-I, LANSDOWNE-II(KOTDWARA).	SRINAGAR:- CHHATKOT TO MAISON MALLA(NH58) PAURI-I:- KHAND SAI TO 0.5 BEHIND GB PANT. ENGG. COLLEGE. LANSDOWNE-I:- ANETHI,MALETH,NEAR LANSDOWN COLLEGE. LANSDOWNE-II(KOTDWARA):- PAYKONT TO VILLAGE DHOBIGHAT,FATEHPUR.	NO
		Idea		PAURI-I, LANSDOWNE-I	PAURI-I:- PAURI TO SRINAGR (SOME AREA IN JUNGLE ,PAURI TO GB PANT NAGR UNIVERSITY , GHURDAURI LANSDOWNE-I:- SOME AREA ARE BLOCKED BY HILL LANS DOWN	NO
		UNINOR		PAURI-I, LANSDOWNE-I, LANSDOWNE-II(KOTDWARA).	PAURI-I:- KHANDASAM,GBPANT ENGG COLLEGE,DEVPRYAG RD LANSDOWNE-I:- NO COVERAGE IN LANSDOWN-I SDCA LANSDOWNE-II(KOTDWARA):- LANSDOWNE TO SIDDHABALI TEMPLE	NO
		Aircel		SRINAGAR, PAURI-I, PAURI-II, LANSDOWNE-I, LANSDOWNE-II(KOTDWARA).	NO COVERAGE AT WHOLE KOTDWARA SSA	NO
3	MAR'2015	Tata GSM	ETAH	ETAH, JALESAR, KASGANJ, ALIGANJ (GANJDUNDWARA).	ETAH:- MANPUR TO CHHCHERA, VIRAMPUR TO PILUA JALESAR:- ETAH TO JALESAR, JALESAR TO AWAGARH, AWAGARH TO ETAH KASGANJ:- MIRAHACHI TO NADRAI, PAC TO MIRAHACHI ALIGANJ(GANJDUNDWARA):- KASODI TO SARRA, PATIYALI TO GANJDUNDWARA, GANESHPUR TO SIDHPURA, SIDHPURA TO ETAH, JAITHRA TO ALIGANJ, ALIGANJ TO PATIYALI, JAITHRA TO ALIGANJ	NO
		Tata CDMA		ETAH, JALESAR, KASGANJ, ALIGANJ (GANJDUNDWARA).	ETAH:- AREA):AHEAD MADHU GATE ON KASGANJ ROAD, FCI TO PILUA ROAD, RADHASWAMI CAMPUS TO MANPURA-KORAWALI ROAD JALESAR:- GOVINDPURI TO ITI JALESAR ON NIDHAULI ROAD,JALESAR TO HIMMATPUR ON ETAH ROAD KASGANJ:- BETWEEN ETAH AND KASGANJ ALIGANJ(GANJDUNDWARA):- ETAH -ALIGANJ ROAD, ALIGANJ TO THANADARIYAGANJ TO PATIYALI, GANJDUDWAR TO ETAH.	NO

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



Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
		Reliance GSM		ETAH, JALESAR, KASGANJ, ALIGANJ (GANJDUNDWARA).	ETAH:- ALIGARH ROAD, G T ROAD JALESAR:- NIDHAULI RD, NIDHAULI, KHAIRA, KASGANJ:- ETAH-KASGANJ ROAD ALIGANJ(GANJDUNDWARA):- SHAHPUR, DARIYAGANJ, MOJHOLA, DHUMRI, JAITHRA, PARAULI SUHAGPUR, JAITHRA	NO
		Reliance CDMA		ALIGANJ (GANJDUNDWARA).	ALIGANJ(GANJDUNDWARA):- DARIYAGANJ, MOJHOLA, PATIYALI, DHUMRI, PARAULI SUHAGPUR, JAITHRA	NO
		MTS		ETAH, JALESAR, KASGANJ, ALIGANJ (GANJDUNDWARA).	ETAH:- MALWAN- ETAH HIGHWAY JALESAR:- HIGHWAY FOR ETAH TO JALESAR KASGANJ:- ETAH TO KASGANJ ALIGANJ(GANJDUNDWARA):- HIGHWAY FOR ETAH TO ALIGANJ, ALIGANJ TO GANJDUNDWARA	WHOLE ETAH SSA IS ON ICR WITH RCOM CDMA
		BSNL			ETAH:- FCI GT ROAD-HAZARA CANAL, IND AREA- ASHPUR JALESAR:- INDANE AGENCY NIDHOLI RD- HAZARA CANAL, BABASA- JAWADA POLICE CHAUKI KASGANJ:- MIRHACHI PAITH- NADARAI BRIDGE ALIGANJ(GANJDUNDWARA):- PAWAS CANAL- BAGWALA, PEHERA CANAL- DARIAVGANJ RAILWAY STATION, GANESHPUR CANAL- KILONI VILLAGE	NO
		Airtel		ETAH, JALESAR, KASGANJ, ALIGANJ (GANJDUNDWARA).	No Coverage Issue	ETAH:- ETAH-AGRA ROAD, JALESAR:- AAWAGARH-ETAH ROAD, ALIGANJ (GANJDUNDWARA):- JAITHRA-ALIGANJ RD, G.DUNDWARA- PATIYALI RD WITH VODAFONE
		Vodafone			No Coverage Issue	NO
		Idea			No Coverage Issue	NO

Sr. No	Month	Name of Operator	SSA	SDCA Covered	Status of no network coverage area	ICR Status
		UNINOR		ETAH, JALESAR, KASGANJ, ALIGANJ (GANJDUNDWARA).	<p>ETAH:- HINDUSTAN UNILIVER,NH91(OUTER TO ETAH)</p> <p>JALESAR:- 1.ST. PAUL SCHOOL 2.REДУA(NIDHAULI TO JALESAR ROAD) 3.MIRACHI(2KM FROM NIDHAULI-ETAH KASGANJ ROAD)</p> <p>KASGANJ:- 4.SIRSA TAPPU(KASGANJ-ETAH ROAD) 5.GINORA(ETAH-KASGANJ ROAD)</p> <p>ALIGANJ(GANJDUNDWARA):-1.KHUSARI 2.CHANDPUR 3.BAGHWALA 4.PAWLI SUHAGPUR 5.ANGRAYA 6.ALIPUR DAIDA 7.SIKHARA 8.RAHANPUR 9.KATHOLI</p>	NO
		Aircel		ETAH, JALESAR, KASGANJ, ALIGANJ (GANJDUNDWARA).	NO NETWORK IN WHOLE ETAH 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 was not having its coverage across 3 SSAs namely Badaun, Kotdwara and Etah SSAs where drive tests were conducted during the QE March 2015.

- (i) **In the Month of January-15**, drive tests were conducted across **Badaun** SSA covering Badaun, Data Ganj, Bisauli, Sahaswan and Gunnaur SDCAs. The performance of some of the Service providers with respect to the parameter **Voice Quality** was not satisfactory. On SSA level, **RCOM (GSM)**, **RCOM (CDMA)** and **Uninor** failed to meet the benchmark of the parameter **Voice Quality** with their performance as **85.46% (Outdoor)**, **89.32% (Outdoor)** and **94.97% (Outdoor) / 94.08% (Indoor)** respectively. **RCOM (CDMA)** also failed to meet the benchmark of **Call drop rate** in indoor drive tests with its achieved level as **3.13%**. However, in general, the performance of the service providers in respect of other parameters was satisfactory.
- (ii) **In the Month of February-15**, drive test was conducted across **Kotdwara** SSA covering Srinagar, Pauri I, Pauri II, Lansdowne I, Lansdowne II and Kotdwara SDCAs. The results of the drive tests revealed that **BSNL** could not meet the benchmark of parameters **Call Drop rate (3.86%)**, **Call setup success rate (92.58%)** and **Blocked call rate (6.32%)**. **Idea** and **Uninor** remained under performed for parameter **Voice Quality** with their performance as **94.33% (Outdoor)** and **93.85% (Outdoor)** respectively. The performance of other service providers was satisfactory.
- (iii) **In the month of March -14**, drive test was conducted across **Etah** SSA covering Etah, Jalesar, Kasganj, Aliganj (Ganjdundwara) SDCAs. The drive test results exposed that **BSNL** failed to meet the benchmark of parameter **Call drop rate (2.85%)** whereas **RCOM(GSM)** lagged behind the benchmark of **Voice Quality (87.91%-Outdoor/ 93.49%- Indoor)**.

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.

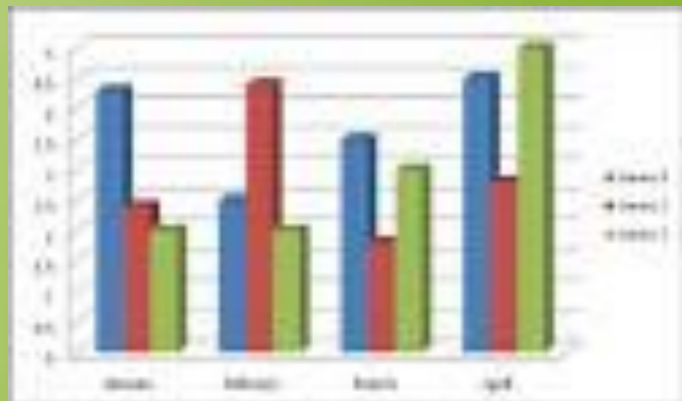
*Thus, the parameter **Voice Quality** remained the area of concern as the same could not be complied with by **RCOM (GSM)**, **Idea**, **Uninor** and **RCOM CDMA** across SSAs where the drive tests were conducted. **BSNL** remained non-complied for the parameters **Call drop rate** and **CSSR**. The 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

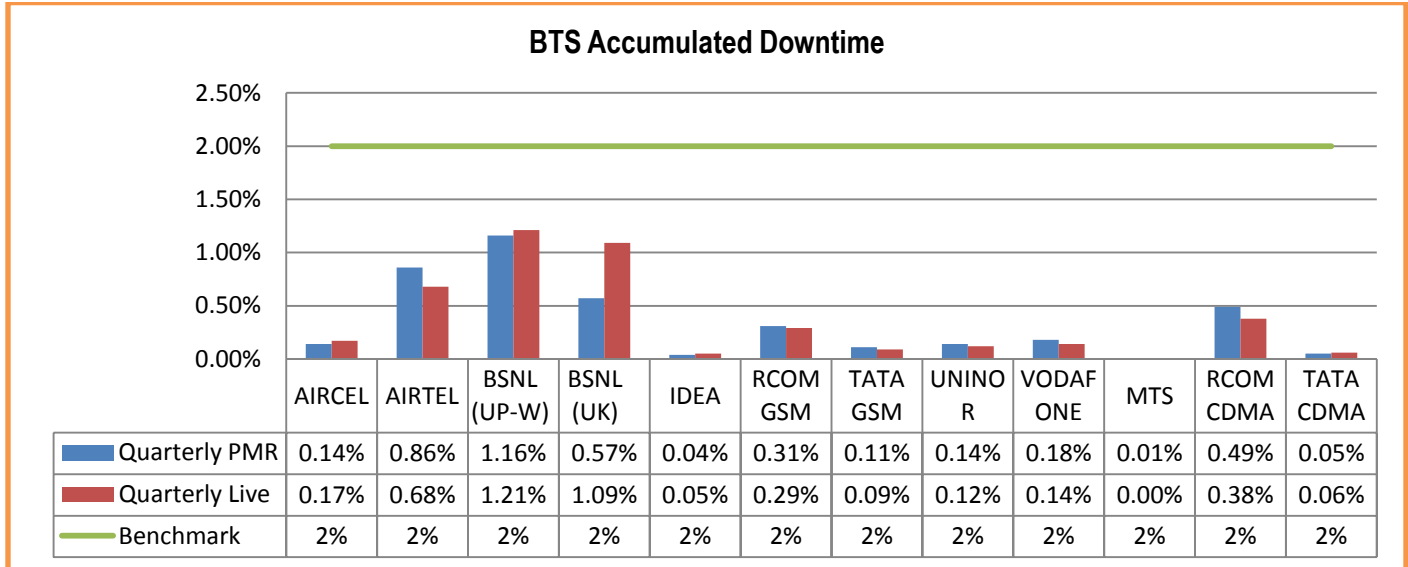
AVERAGED QUARTERLY 3-DAYs LIVE MEASURMENT



8. GRAPHICAL REPRESENTATION (CMTS):

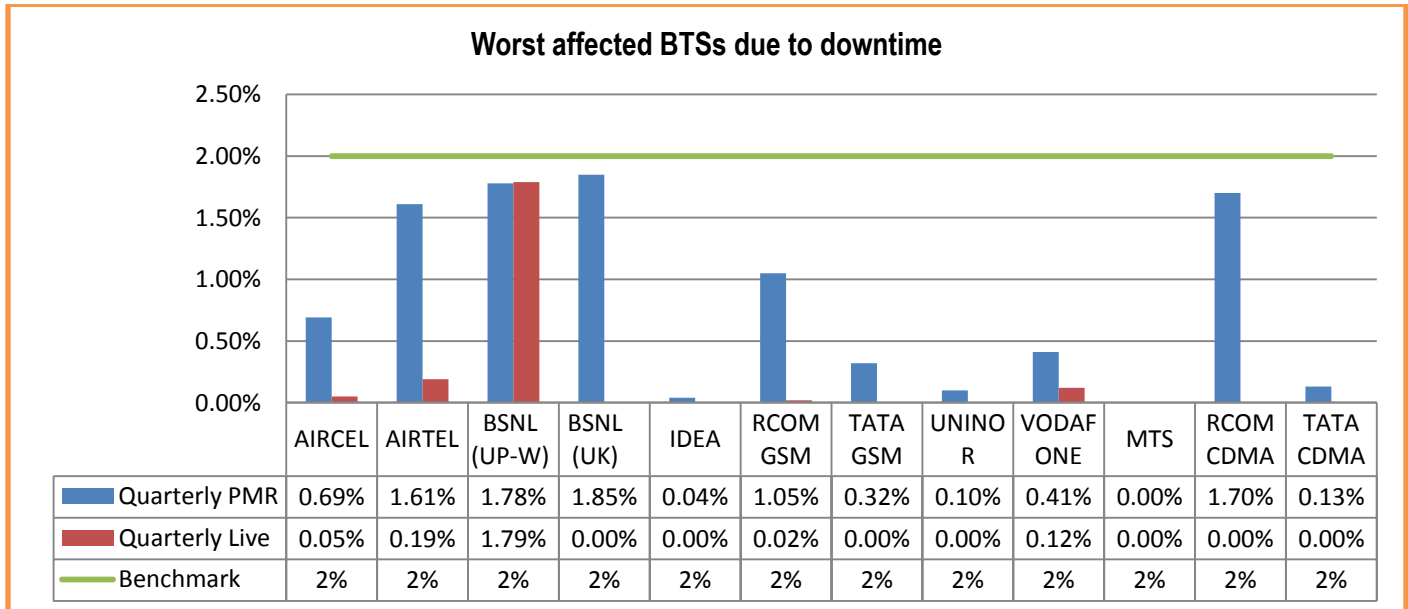
Graphical Representation of Performance of the Cellular Mobile Service Providers (PMR) V/S 3-Days Live Measurement (Quarterly Average Data):

1) BTS ACCUMULATED DOWNTIME :



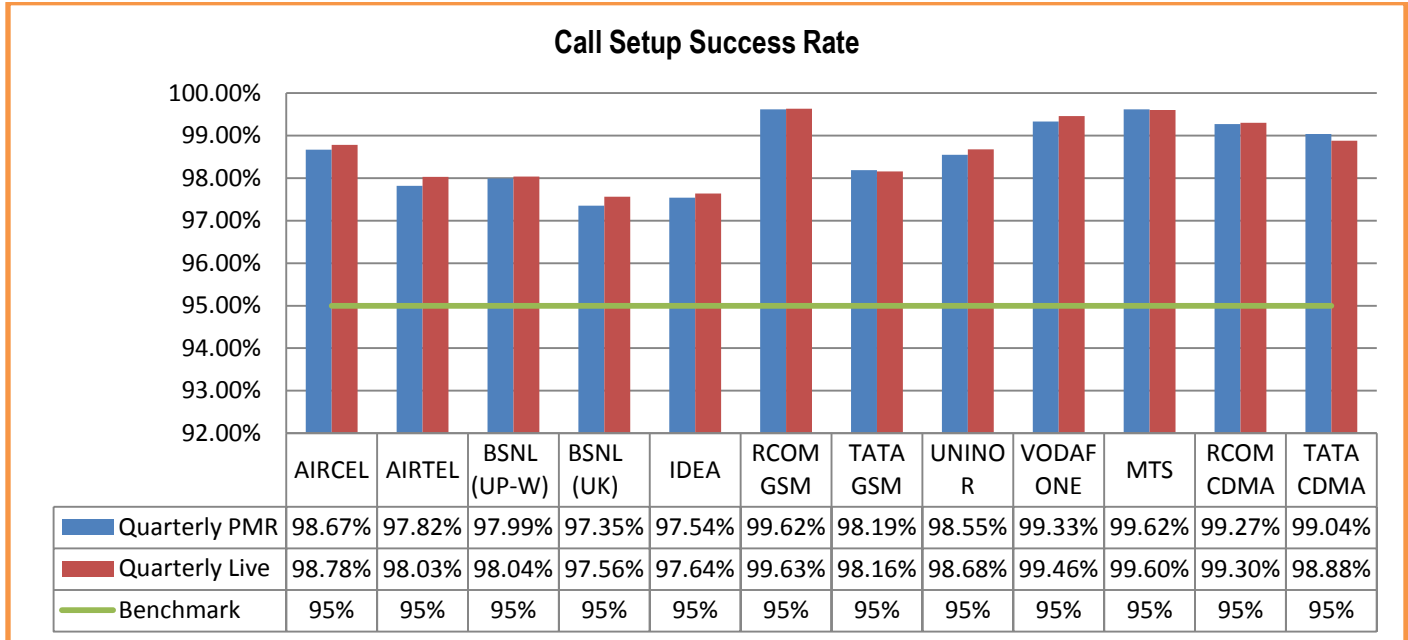
All operators are meeting the benchmarks.

2) WORST AFFECTED BTSs DUE TO DOWNTIME :



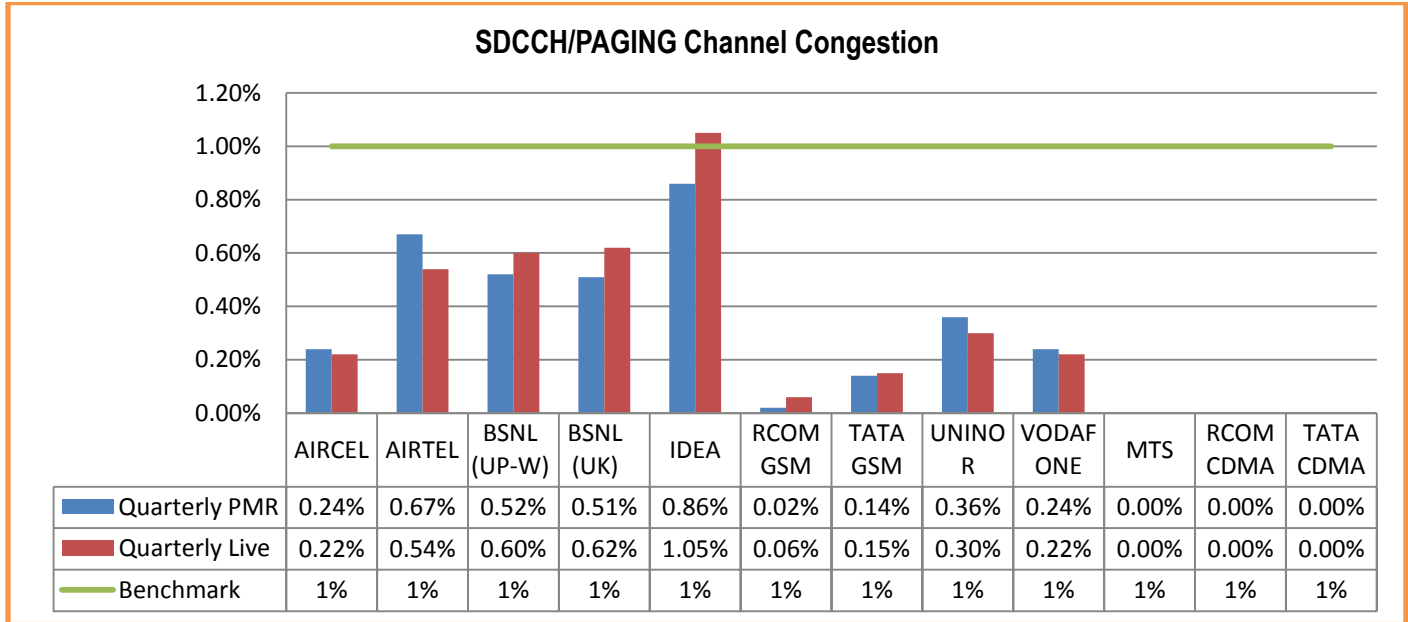
All operators are meeting the benchmarks.

3) CALL SETUP SUCCESS RATE :



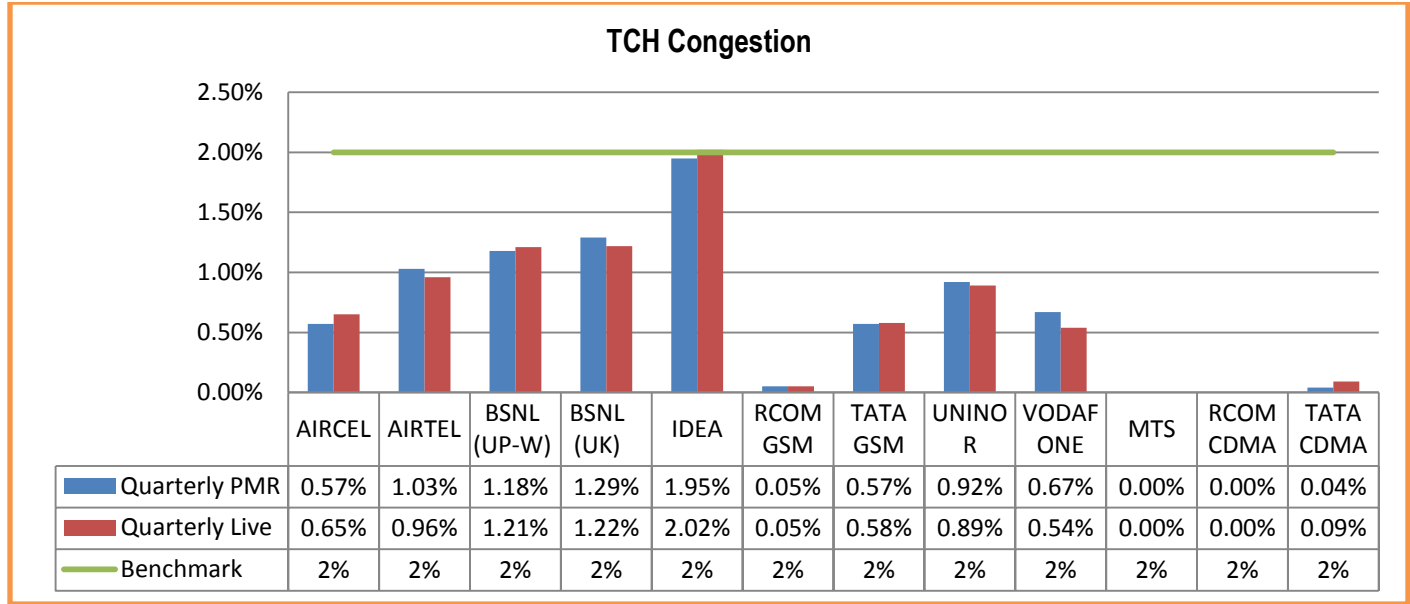
All operators are meeting the benchmarks.

4) SDCCH/PAGING CHANNEL CONGESTION :



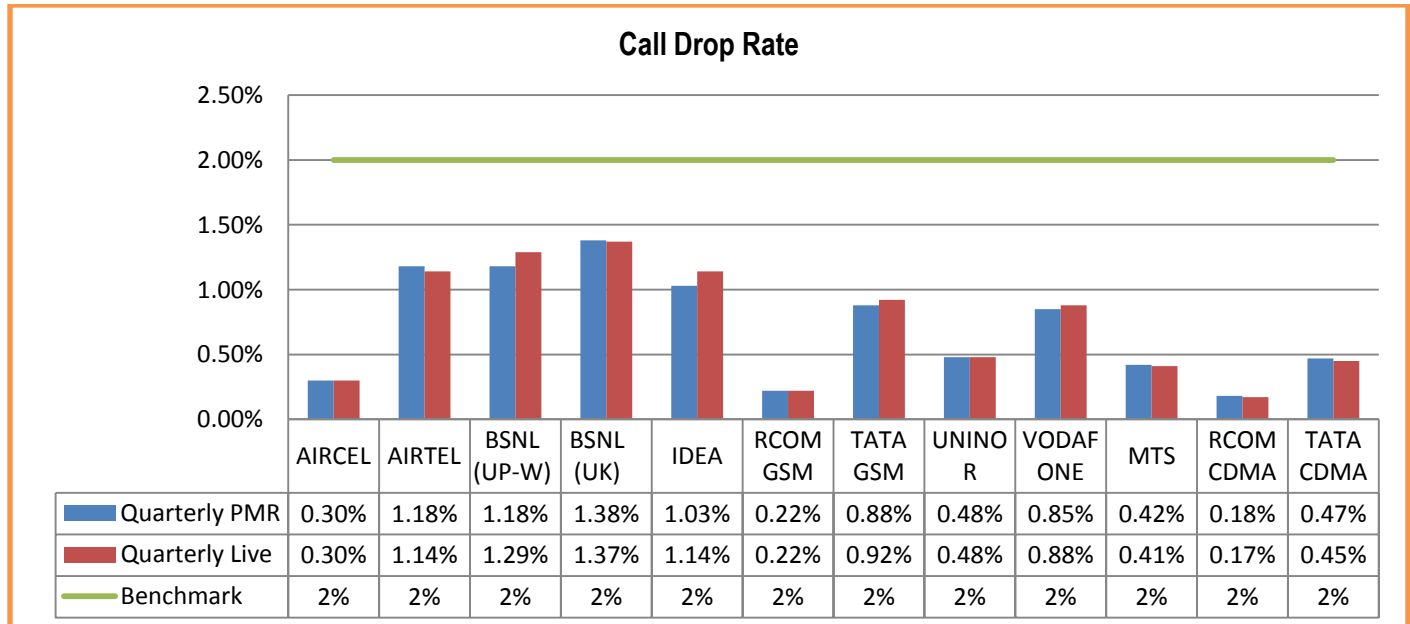
All operators are meeting the benchmarks except Idea (during 3 day live measurement).

5) TCH CONGESTION:



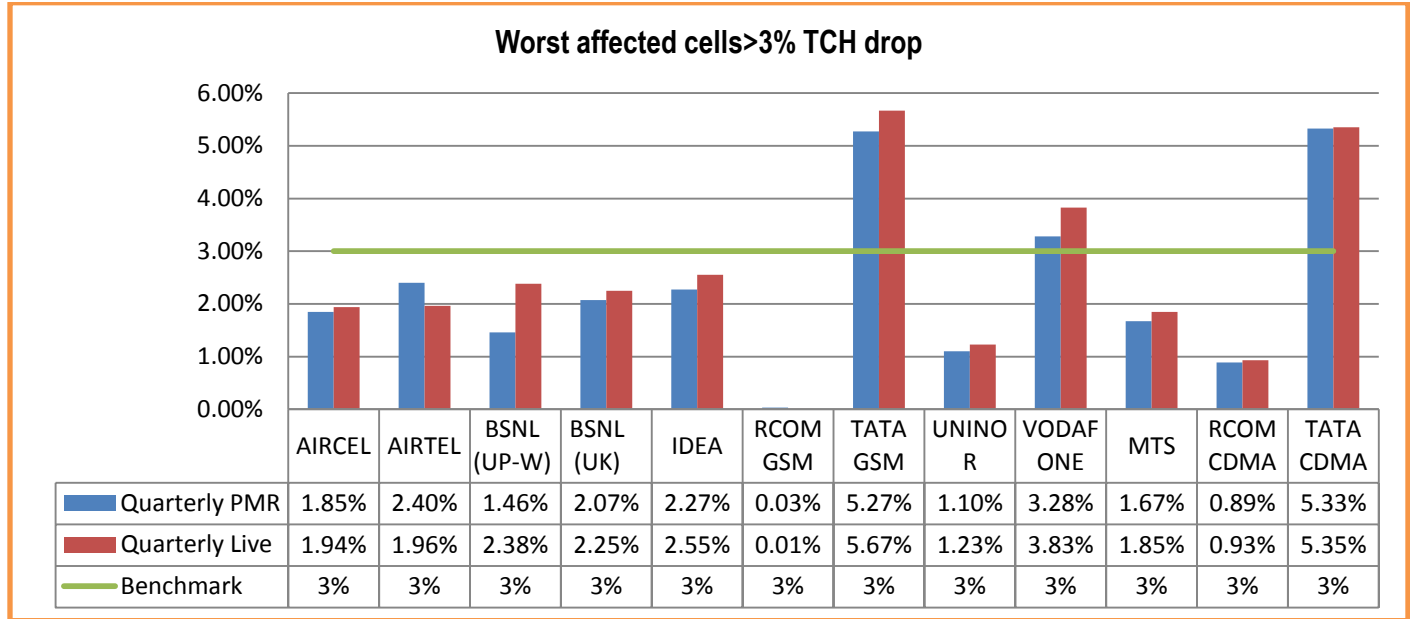
All operators are meeting the benchmarks except Idea (3 days live measurement)

6) CALL DROP RATE :



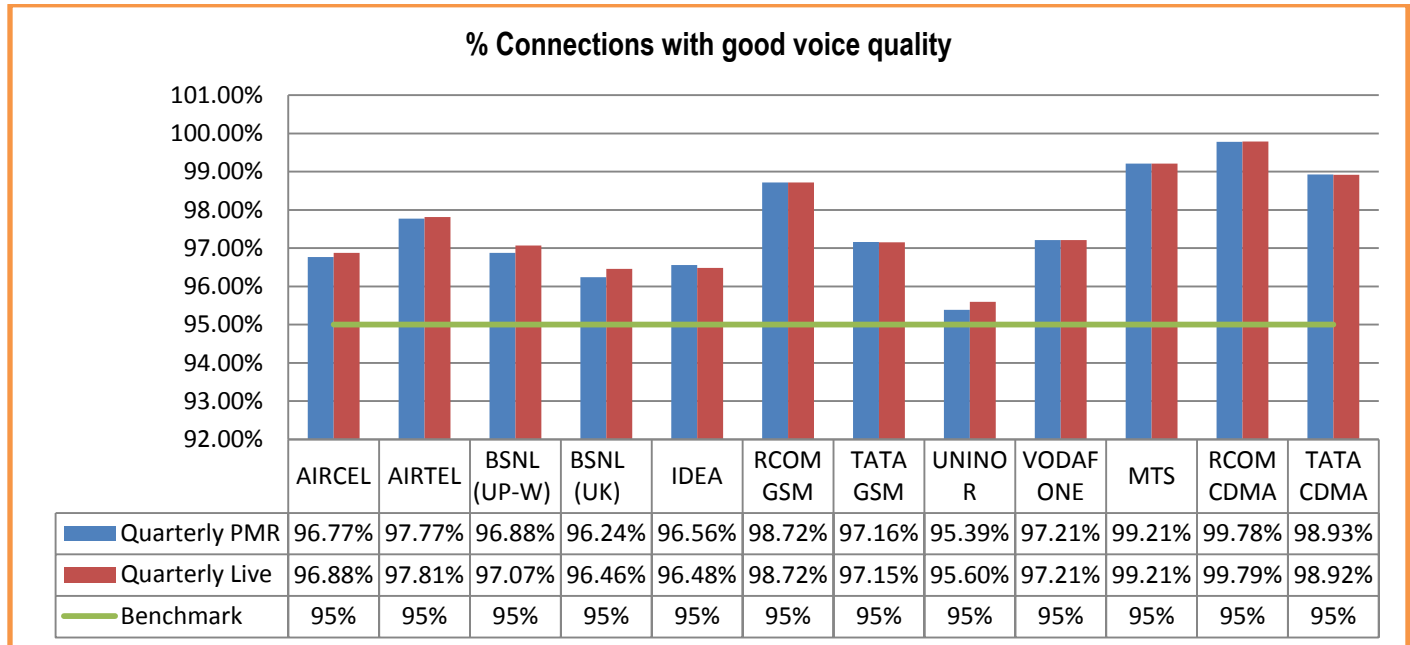
All operators are meeting the benchmarks.

7) **WORST AFFECTED CELLS>3% TCH DROP :**



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

8) **PERCENTAGE OF CONNECTIONS WITH GOOD VOICE QUALITY :**



All operators are meeting the benchmarks.