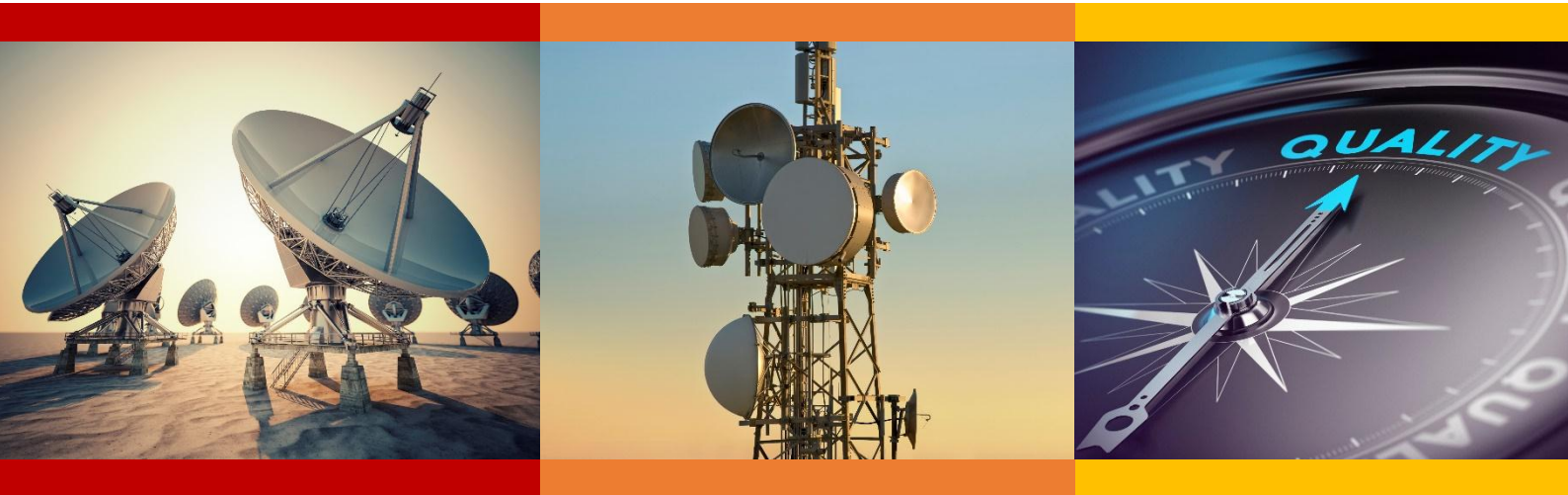




AUDIT & ASSESSMENT OF QUALITY OF SERVICE

**NORTH ZONE – UP WEST CIRCLE
CELLULAR MOBILE TELEPHONE SERVICE
(CMTS)
(APRIL TO JUNE 2016)**

PREPARED BY:

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1. INTRODUCTION

1.1. ABOUT TRAI

TRAI's mission is to create and nurture conditions for growth of telecommunications in the country in a manner and at a pace that will enable India to play a leading role in the emerging global information society. One of the main objectives of TRAI is to provide a fair and transparent policy environment which promotes a level playing field and facilitates fair competition.

In pursuance of above objective, TRAI has been issuing regulations, order and directives to deal with the issues or complaints raised by the operators as well as the consumers. These regulations, order and directives have helped to nurture the growth of multi operator multi service - an open competitive market from a government owned monopoly. Also, the directions, orders and regulations issued cover a wide range of subjects including tariff, interconnection and quality of service as well as governance of the Authority.

TRAI initiated a regulation - The Standard of Quality of Service of Basic Telephone Service (Wireline) and Cellular Mobile Telephone Service regulations, 2009 (7 of 2009) dated June 20, 2009 and Quality of Service of Broadband Service Regulations, 2006 (11 of 2006) dated April 6, 2006 that provide the benchmarks for the parameters on customer perception of service to be achieved by service provider.

In order to assess the above regulations, TRAI has commissioned a third party agency to conduct the audit of the service providers and check the performance of the operators on the various benchmarks set by Telecom Regulatory Authority of India (TRAI).

1.2. ABOUT PHISTREAM CONSULTING PRIVATE LIMITED

Phistream Consulting Private Limited is an ISO:9001 certified company who are one of the pioneers in the field of technical audit, quality assurance and third party inspection services. Established more than a Decade ago in 2004, we aspire to provide longer term savings based on year-on-year productivity. With our size, we are nimble and aspire to being a full service partner for providing consultancy services.

We have been helping our clients by determining the best solutions and enabling businesses to enjoy the benefits of top-notch support without distracting their team from the main business focus. Our business analysts have enough experience to get involved at the requirements gathering stage through consulting work handing off a detailed requirements document to our operations staff who in turn can train our support and maintenance resources for ongoing engagement.

In keeping with our goal of being a one stop quality assurance and consulting partner, our specialists employ a strategy and consulting-based implementation methodology and capitalize on strong program governance to offer a wide range of services for various industry verticals.

1.3. OBJECTIVES

The primary objective of the Audit module is to:

- Audit and Assess the Quality of Services being rendered by Cellular Mobile (Wireless) service against the parameters notified by TRAI. (The parameters of Quality of Services (QoS) have been specified by in the respective regulations published by TRAI).
- This report covers the audit results of the audit conducted for Cellular Mobile (Wireless) services in UP West Circle.

1.4. COVERAGE

The audit was conducted in UP West Circle covering all SSAs (Secondary Switching Areas).

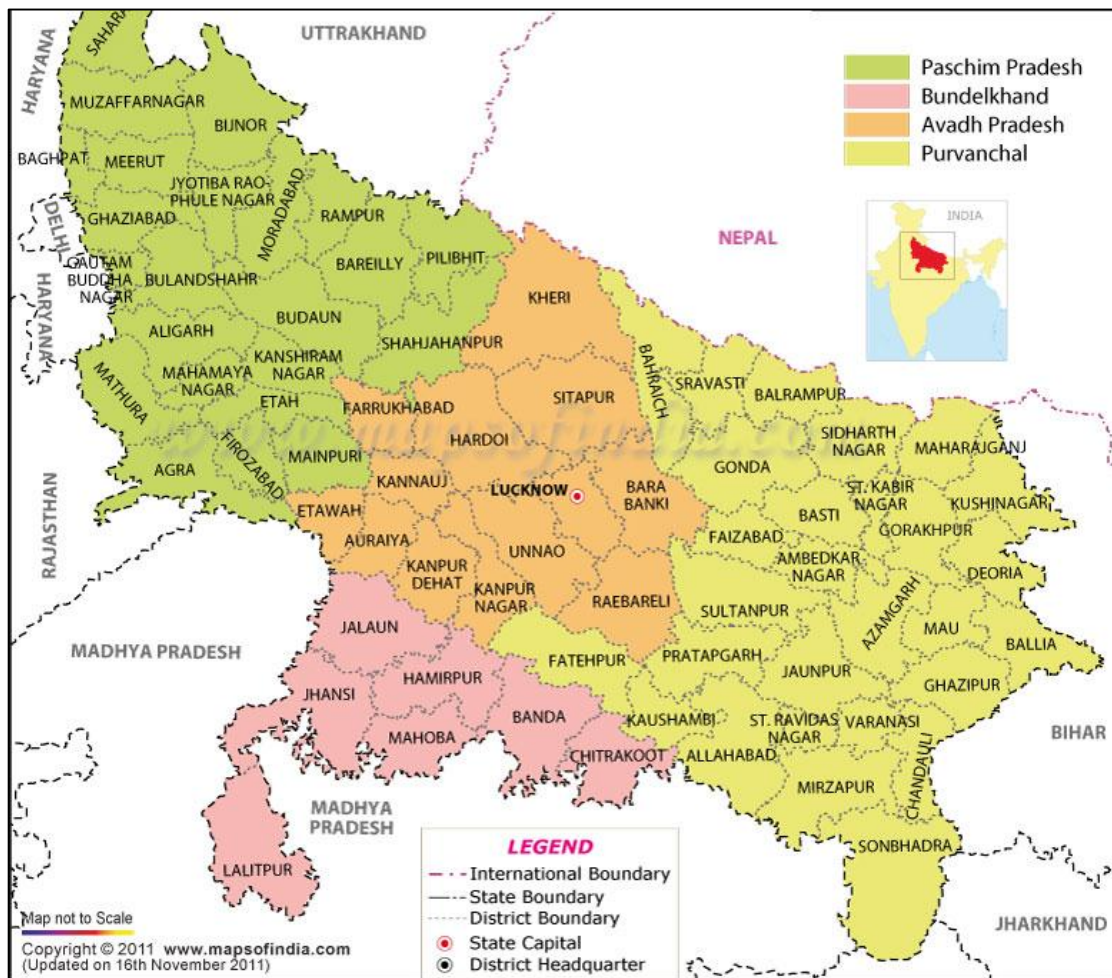


Image Source: Maps of India

1.5. SSA LIST:

S. No.	Circle	SSA Name	SDCA Name
1	UPW	Agra	Achhnera
2	UPW	Agra	Agra
3	UPW	Agra	Ferozabad
4	UPW	Agra	Jarar
5	UPW	Aligarh	Aligarh
6	UPW	Aligarh	Atrauli
7	UPW	Aligarh	Hathras
8	UPW	Aligarh	Khair
9	UPW	Aligarh	Sikandra rao
10	UPW	Badaun	Badaun
11	UPW	Badaun	Bisauli
12	UPW	Badaun	Dataganj
13	UPW	Badaun	Gunnaur
14	UPW	Badaun	Sahaswan
15	UPW	Bareilly	Aonla -i
16	UPW	Bareilly	Aonla-ii (ramnagar)
17	UPW	Bareilly	Baheri
18	UPW	Bareilly	Bareilly
19	UPW	Bareilly	Nawabganj
20	UPW	Bareilly	Pitamberpur
21	UPW	Bijnore	Bijnore-i
22	UPW	Bijnore	Bijnore-ii (chandpur)
23	UPW	Bijnore	Dhampur
24	UPW	Bijnore	Nagina
25	UPW	Bijnore	Najibabad
26	UPW	Etah	Aliganj (ganjdundwara)
27	UPW	Etah	Etah
28	UPW	Etah	Jalesar
29	UPW	Etah	Kasganj
30	UPW	Ghaziabad	Bulandshahr
31	UPW	Ghaziabad	Debai
32	UPW	Ghaziabad	Garhmukteshwar
33	UPW	Ghaziabad	Ghaziabad+dadri
34	UPW	Ghaziabad	Hapur
35	UPW	Ghaziabad	Khurja
36	UPW	Ghaziabad	Modinagar
37	UPW	Ghaziabad	Pahasu
38	UPW	Ghaziabad	Sikandrabad
39	UPW	Ghaziabad	Siyana

40	UPW	Mathura	Chhata (kosikalan)
41	UPW	Mathura	Mant (vrindavan)
42	UPW	Mathura	Mathura
43	UPW	Mathura	Sadabad
44	UPW	Meerut	Baghpat-ii (baraut)
45	UPW	Meerut	Mawana
46	UPW	Meerut	Meerut
47	UPW	Meerut	Sardhana
48	UPW	Moradabad	Amroha
49	UPW	Moradabad	Bilari
50	UPW	Moradabad	Hasanpur
51	UPW	Moradabad	Moradabad
52	UPW	Moradabad	Sambhal
53	UPW	Muzaffarnagar	Budhana
54	UPW	Muzaffarnagar	Aprsath (khatauli)
55	UPW	Muzaffarnagar	Kairana (shamli)
56	UPW	Muzaffarnagar	Muzaffar nagar
57	UPW	Pilibhit	Bisalpur
58	UPW	Pilibhit	Pilibhit
59	UPW	Pilibhit	Puranpur
60	UPW	Rampur	Rampur
61	UPW	Rampur	Shahabad
62	UPW	Saharanpur	Deoband
63	UPW	Saharanpur	Nakur (gangoh)
64	UPW	Saharanpur	Saharanpur
65	UPW	Almora	Almora
66	UPW	Almora	Bageshwar
67	UPW	Almora	Champawat
68	UPW	Almora	Dharchula
69	UPW	Almora	Munsiari
70	UPW	Almora	Pithoragarh
71	UPW	Almora	Ranikhet
72	UPW	Dehradun	Chakrata (dakpathar)
73	UPW	Dehradun	Dehradun
74	UPW	Kotdwara	Chamoli
75	UPW	Kotdwara	Joshimath-i
76	UPW	Kotdwara	Joshimath-ii (badrinath)
77	UPW	Kotdwara	Karan prayag
78	UPW	Kotdwara	Lansdown-i
79	UPW	Kotdwara	Lansdown-ii (kotdwara)
80	UPW	Kotdwara	Lansdown-iii (syunsi)
81	UPW	Kotdwara	Pauri-i
82	UPW	Kotdwara	Pauri-ii (bubakhal)

83	UPW	Kotdwara	Ukhimath (guptkashi)
84	UPW	Nainital	Haldwani-i
85	UPW	Nainital	Haldwani-ii (chorgalian)
86	UPW	Nainital	Kashipur
87	UPW	Nainital	Khatima
88	UPW	Nainital	Khatima-ii (sitarganj)
89	UPW	Nainital	Kichha-i (rudrapur)
90	UPW	Nainital	Kichha-ii (bazpur)
91	UPW	Nainital	Nainital
92	UPW	Saharanpur	Roorkee-i
93	UPW	Saharanpur	Roorkee-ii (hardwar)
94	UPW	Uttarkashi	Bhatwari-i (uttarkashi)
95	UPW	Uttarkashi	Bhatwari-i (gangotri)
96	UPW	Uttarkashi	Deoprayag-i
97	UPW	Uttarkashi	Deoprayag-ii (jakholi)
98	UPW	Uttarkashi	Dunda
99	UPW	Uttarkashi	Partapnagar
100	UPW	Uttarkashi	Purola
101	UPW	Uttarkashi	Rajgarhi
102	UPW	Uttarkashi	Tehri

1.6. FRAMEWORK USED

Audit Activities

PMR Reports

Drive Test

CSD Audit

Wireline &
Broadband

Inter Operator
Call Assessment

Monthly PMR

Operator
Assisted

Billing Complain

Billing Complain

3 Days Live Data

Independent

Service request

Service Request

Customer
Service

Level 1 Service

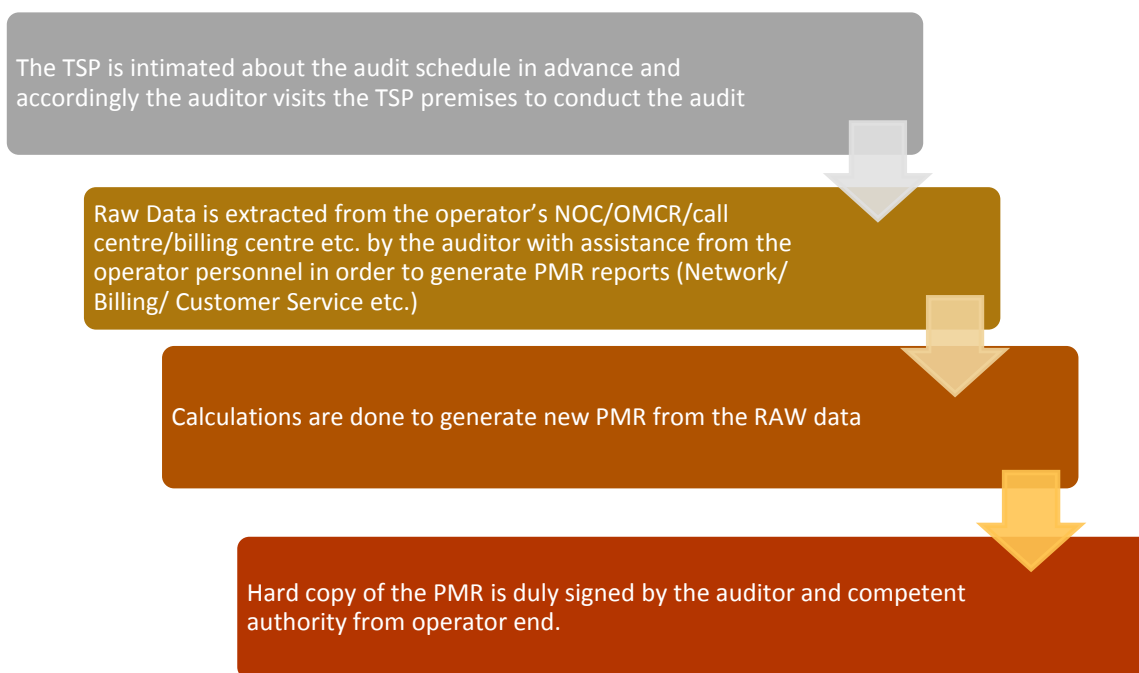
Customer
Service

Level 1 Service

Customer
Service

2. PMR REPORTS

Significance and methodology: PMR or Performance Monitoring Reports are generated to assess the various Quality of Service parameters involved in the mobile telephony service, which indicate the overall health of service for an operator.



The PMR report for network parameters is taken for each month of the audit quarter and is extracted and verified in the first week of the subsequent month of the audit month. For example, April 2016 audit data was collected in the month of May 2016.

The PMR report for customer service parameters is extracted from Customer Service Centre and verified once every quarter in the subsequent month of the last month of the quarter. For example, data for quarter ending June 2016 was collected in the month of June 2016.

The raw data extracted from operator's systems is used to create PMR in the following three formats:

- Monthly PMR (Network Parameters)
- 3 Day Live Measurement Data (Network Parameters)
- Customer Service Data

Let us understand these formats in details.

2.1. MONTHLY PMR

This involved calculation of the various Quality of Service network parameters through monthly Performance Monitoring Reports (PMR). The PMR reports were generated from the data extracted from operator's systems by the auditor with the assistance of the operator at the operator's premises for the month of April, May and June 2016. The performance of operators on various parameters was assessed against the benchmarks.

Parameters includes:

Network Availability

- BTS accumulated downtime
- Worst affected BTS due to downtime

Connection Establishment (Accessibility)

- Call Set Up success Rate (CSSR)

Network Congestion Parameters

- SDCCH/Paging Channel Congestion
- TCH Congestion
- Point of Interconnection

Connection Maintenance

- Call Drop rate
- Worst affected cells having more than 3% TCH drop

Voice Quality

- % Connections with good voice quality

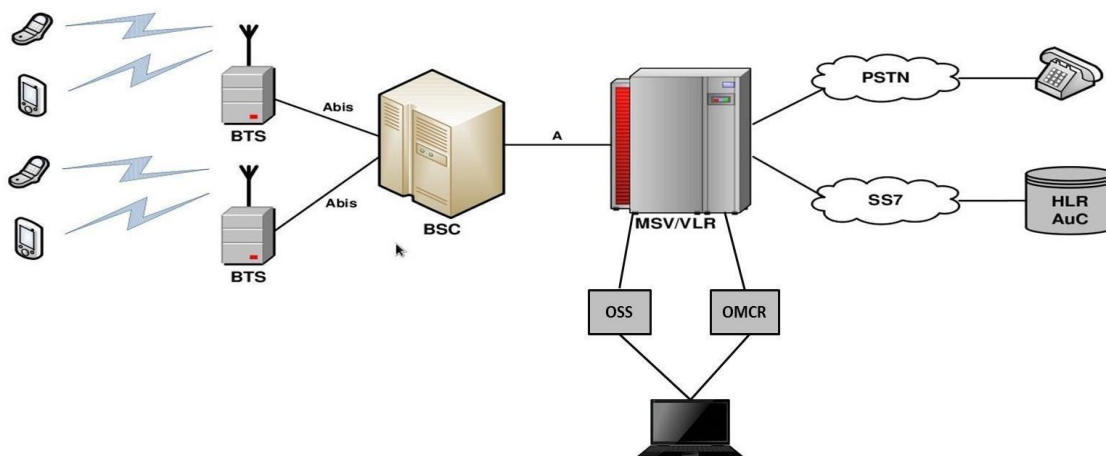
2.2. AUDIT PARAMETER: NETWORK

Let us now look at the various parameters involved in the audit reports.

Network Availability	
BTSs Accumulated downtime (not available for service)	$\leq 2\%$
Worst affected BTSs due to downtime	$\leq 2\%$
Connection Establishment (Accessibility)	
Call Set-up Success Rate (within licensee's own network)	$\geq 95\%$
SDCCH/ Paging Channel Congestion	$\leq 1\%$
TCH Congestion	$\leq 2\%$
Connection Maintenance (Retainability)	
Call Drop Rate	$\leq 2\%$
Worst affected cells having more than 3% TCH drop (call drop) rate	$\leq 3\%$
Connections with good voice quality	$\geq 95\%$
Point of Interconnection	
(POI) Congestion (on individual POI)	$\leq 0.5\%$

2.3. DATA EXTRACTION POINTS

The data is extracted from a terminal/computer connected to OMCR & OSS on the operator network.



2.4. AUDIT PROCEDURE

Tender document and latest list of licencees as per TRAI is taken as a reference document for assimilating the presence of operators. All the wireless operators are then informed about the audit schedule

Audit formats and schedule is shared with the operators in advance. Details include day of the visit and date of 3 day data collection and other requirements.

Auditors visit the operator's server/exchange/central NOC to extract data from operator's systems. Operator personnel assist the auditor in extraction process.

The extracted data is validated and verified by the Auditors.

Auditors then prepare a PMR report from the extracted data with assistance from the operator.

Extracted data is calculated as per the counter details provided by the operators. The details of counters have been provided in the report. The calculation methodology for each parameter has been stated in the table given below:

2.5. NETWORK CALCULATION METHODOLOGY

Parameter	Calculation Methodology
BTS Accumulated Downtime	Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month / (24 x Number of days in a month x Number of BTSs in the network in licensed service area) x 100
Worst Affected BTS Due to Downtime	(Number of BTSs having accumulated downtime greater than 24 hours in a month / Number of BTS in Licensed Service Area) * 100
Call Setup Success Rate	(Calls Established / Total Call Attempts) * 100

SDCCH/ Paging Channel Congestion	$\text{SDCCH / TCH Congestion\%} = [(A1 \times C1) + (A2 \times C2) + \dots + (An \times Cn)] / (A1 + A2 + \dots + An)$ Where: A1 = Number of attempts to establish SDCCH / TCH made on day 1 C1 = Average SDCCH / TCH Congestion % on day 1 A2 = Number of attempts to establish SDCCH / TCH made on day 2
TCH Congestion	C2 = Average SDCCH / TCH Congestion % on day 2 An = Number of attempts to establish SDCCH / TCH made on day n Cn = Average SDCCH / TCH Congestion % on day n
POI Congestion	$\text{POI Congestion\%} = [(A1 \times C1) + (A2 \times C2) + \dots + (An \times Cn)] / (A1 + A2 + \dots + An)$ Where: A1 = POI traffic offered on all POIs (no. of calls) on day 1 C1 = Average POI Congestion % on day 1 A2 = POI traffic offered on all POIs (no. of calls) on day 2 C2 = Average POI Congestion % on day 2 An = POI traffic offered on all POIs (no. of calls) on day n Cn = Average POI Congestion % on day n
Call Drop Rate	Total Calls Dropped / Total Calls Established x 100
Worst Affected Cells having more than 3% TCH drop	Total number of cells having more than 3% TCH drop during CBBH/ Total number of cells in the LSA x 100
Connections with good voice quality	No. of voice samples with good voice quality / Total number of samples x 100

2.6. 3G VOICE

S. No.	Name of Parameter	Definition	Formula	Benchmark
1	Network Availability			
a.	Total no. of Node B's in LSA	Total no. of Node B's Licensed in LSA		
b.	Total downtime of all Node B's	When all the sector(s) of a Node B's are down for > 60 minutes at an instant in a whole day		
c.	No. of Worst Affected Node B's	Node B'ss having more than 24 hours of Downtime in 3 Days	No. of Node B's having accumulated downtime of >24 hours in a month $((\text{No. of Node B's having Accumulated Downtime of } > 24 \text{ hrs in a month}) / \text{Total no. of BTSS in the licensed service area}) \times 100$	<=2%
d.	Node B's accumulated downtime	Node B's downtime more than 24 hr in 3 days	Total no. of Node B's in the Licensed Service Area Sum of downtime of Node B's in a month in hours i.e. total outage time of all Node B's in hours in a month $[(\text{Sum of downtime of Node B's in a month in hrs}) / (24 \times \text{no. of days in the month} \times \text{no. of Node B's in the licensed service area})] \times 100$	<=2%

2	Connection Establishment (Accessibility)			
a.	Call Setup Success Rate:	It is the % of total no. of call established to the total no. of call attempt	Total No. of Voice Call Attempts	>=95%
			Total No. of Voice Call Establishment	
			CSSR (Call Setup Success Rate = (Total No. of Voice Call Attempts/ Total No. of Voice Call Establishment)*100)	
b.	RRC Congestion:	RRC Congestion rate is the % of Total No. of RRC Failed Calls to the Total no. of RRC Assigned Calls	RRC Attempts (RRC Connection Access) (A)	<=1%
			RRC Failed (RRC Connection Access Failed) (B)	
			RRC Congestion (%) [B/A]*100	
c.	RAB Congestion:	RAB Congestion rate is the % of Total No. of RAB Failed Calls to the Total no. of RAB Assigned Calls	RAB Attempts (RAB Setup Access) (C)	<=2%
			RAB Failed (RAB Setup Access Failed) (D)	
			RAB Congestion (%) [D/C]*100	
3	Connection Maintenance (Retainability)			
a.	Circuit Switched Voice Drop Rate	It is the % of total no. of Dropped Calls to the total no. of Calls Established	Total Established Calls (A)	<=2%
			Calls Dropped after Establishment (B)	
			Call Drop Rate [B/A]*100	
b.	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	It is the % of total no. of Cells having > 3% Circuit Switched Voice drop to the total no. cells	Total No. of Cells (Sector)	<=3%
			Total No. of Cells exceeding 3% Circuit Switched Voice Drop Rate in CBBH (Cell Bouncing Busy Hour)	
			% of cells having more than 3% Circuit Switched Voice Drop Rate [(No. of cells having Circuit Switched Voice Drop Rate > 3% during CBBH in 31 days*100) / Total no. of cells in the licensed service area]	
c.	Percentage of connections with Good Circuit Switched Voice Quality	It can be defined as the % of Good Voice Quality Samples to the total No. of Quality Samples	Percentage of connection with Good Circuit Switched Voice Quality	>=95%
4	Total No. of POI's in Month having >=0.5% POI congestion	Total no. Of POI's which are exceeding the POI congestion more than 0.5 %.	Total No. of call attempts on POI	<=0.5%
			Total traffic served on all POIs (Erlang)	
			Total No. of circuits on all individual POIs	
			Total number of working POI Service Area wise	
			Capacity of all POIs	
			No. of all POI's having >=0.5% POI congestion	
			Name of POI not meeting the benchmark (having >=0.5% POI congestion)	

2.7. 2G & 3G WIRELESS

S. No.	Name of Parameter	Definition	Formula	Benchmark
1	Service Activation/ Provisioning	This refers to the activation of services after activation of the SIM. This involves programming the various databases with the customer's information and any gateways to standard Internet chat or mail services or any data services.	Total No. of Subscribers for Service Activation (A)	Within 4 Hours with 95% Success Rate
			Total Service Activations provided within 4 Hours (B)	
			Service Activation / Provisioning = $(B/A) * 100$	
2	PDP Context Activation Success Rate	PDP Context Activation Success Rate is the ratio of total number of successfully completed PDP context activations to the total attempts of context activation	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)	>=95%
			Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)	
			PDP Context Activation Success Rate = $(B/A) * 100$	
3	Drop Rate	It measures the inability of Network to maintain a connection and is defined as the ratio of abnormal disconnects w.r.t. all disconnects.	RNC originated PS Domain lu Connection Setup Success (A)	<=5%
			RNC originated PS Domain lu Connection Release (B)	
			Drop Rate = $(B/A) * 100$	

3. 3 DAYS LIVE DATA

The main purpose of 3 day live measurement is to evaluate the network parameters on intraday basis. While the monthly PMR report provides an overall view of the performance of QoS parameters, the 3 day live data helps looking at intraday performance on the network parameters discussed earlier. All the calculations are done on the basis of that raw data of 3 days.

The 3 day live data provides a sample of 9 days in a quarter (3 days each month of a quarter) with hourly performance, which enables the auditor to identify and validate intraday issues for an operator on the QoS network parameters. For example, network congestion being faced by an operator during busy/peak hours.

Network related parameters were evaluated for a period of 3 days in each month. 3 day live audit was conducted for 3 consecutive weekdays for each month. The data was extracted from each operator's server/ NOC etc. at the end of the 3rd day. The extracted data is then used to create a report (similar to PMR report) to assess the various QoS parameters.

3.1. TCBH: SIGNIFICANCE AND SELECTION METHODOLOGY

As per QoS regulations 2009 (7 of 2009), Time Consistent Busy Hour" or "TCBH" means the one hour period starting at the same time each day for which the average traffic of the resource group concerned is greatest over the days under consideration and such Time Consistent Busy Hour shall be established on the basis of analysis of traffic data for a period of ninety days.

Daywise RAW Data is fetched from the operator's OMCR and kept in readable format (preferably in MS- Excel). Data for a period of 90 days is used to identify TCBH.

90 Days period is Junided upon the basis of month of audit. For example, for the audit of June 2016, the 90 day period data used to identify TCBH would be the data of April, May & June 2016.

For each day, the hour in which average traffic of the resource group concerned is greatest for the day will be the 'Busy Hour' for the operator.

The model frequency of te busy hour is calculated for 90 days period and the hour with highest model frequency will be considered as TCBH for the operator.

During audit, the auditors identified from the raw data that the TCBH for the operators in Apr – May – Jun 2016 was the time period as given below:

Aircel	Airtel	BSNL	Idea	RCOM GSM	RCOM CDMA	MTS	TTSL CDMA	TTSL GSM	Vodafone
19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00

3.2. CBBH: SIGNIFICANCE AND SELECTION METHODOLOGY

As per QoS regulations 2009 (7 of 2009), Cell Bouncing Busy Hour (CBBH) means the one hour period in a day during which a cell in cellular mobile telephone network experiences the maximum traffic.

Step by step procedure to identify CBBH for an operator:

Daywise RAW Data is fetched from the operator's OMCR and kept in readable format (preferably in MS- Excel). Data for a period of 90 days is used to identify CBBH.

For each day the hour in which a cell in cellular mobile telephone network experiences maximum traffic for the day will be the 'Busy Hour' for the operator.

The model frequency of the busy hour is calculated for 90 days period and the hour with highest model frequency will be considered as CBBH for the operator.

4. CUSTOMER SERVICE PARAMETERS

The data to generate PMR report for customer service parameters is extracted at the operator premises and verified once every quarter in the subsequent month of the last month of the quarter. For example, data for quarter ending June 2016 was collected in the month of June 2016. To extract the data for customer service parameters for the purpose of audit, auditors primarily visit the following locations/ departments/ offices at the operator's end.

- Central Billing Center
- Central Customer Service Center

The operators are duly informed in advance about the audit schedule.

The Customer Service Quality Parameters include the following:

- Metering and billing credibility (post-paid and prepaid)
- Resolution of billing/charging complaints
- Period of applying credit/waiver/adjustment to customer's account
- Response time to the customer for assistance
- Termination/closure of service
- Time taken for refund of security deposit after closures.

Most of the customer service parameters were calculated by averaging over the quarter; however billing parameters were calculated by averaging over one billing cycle for a quarter. All the parameters have been described in detail along with key findings of the parameter in the report.

The benchmark values for each parameter have been given in the table below.

4.1. AUDIT PARAMETERS: CUSTOMER SERVICE

Metering and Billing Credibility	Benchmark
No of billing complaints received - Post paid	≤ 0.1%
No. of billing complaints received- Prepaid	≤ 0.1%
Resolution of billing/ charging complaints within 4 weeks	98%
Resolution of billing/ charging complaints within 6 weeks	100%
Period of applying credit/ waiver within 1 week of resolution of complaint	100%
Response Time to the Customer form Assistance	
Accessibility of call centre/customer care	≥ 95%
Percentage of calls answered by the operators (voice to voice) within 90 seconds	≥ 95%
Termination/ closure of service	≤ 7 days
Time taken for refund of deposits after closures within 60 days	100%

4.2. CALCULATION METHODOLOGY: CUSTOMER SERVICE PARAMETER

Parameter	Calculation Methodology
Metering and billing credibility : Post-paid	Total billing complaints received during the relevant billing cycle / Total bills generated during the relevant billing cycle * 100
Metering and billing credibility : Pre-paid	Total charging complaints received during the quarter / Total number of subscribers reported by the operator at the end of the quarter * 100
Resolution of billing/ charging complaints (Post-paid + Pre-paid)	There are two benchmarks involved here: Billing or Charging Complaints resolved in 4 weeks from date of receipt / Total billing or charging complaints received during the quarter) x 100 Billing or Charging Complaints resolved in 6 weeks from date of receipt / Total billing or charging complaints received during the quarter) x 100
Period of applying credit waiver	Number of cases where credit waiver is applied within 7 days/ total number of cases eligible for credit waiver * 100
Call centre performance IVR (Calling getting connected and answered by IVR)	Number of calls connected and answered by IVR/ All calls attempted to IVR * 100
Call centre performance (Voice to Voice)	Call centre performance Voice to Voice = (Number of calls answered by operator within 90 seconds/ All calls attempted to connect to the operator) * 100 The calculation excludes the calls dropped before 90 seconds
Time taken for termination/ closure of service	Number of closures done within 7 days/ total number of closure requests * 100
Time taken for refund for deposit after closures	Number of cases of refund after closure done within 60 days/ total number of cases of refund after closure * 100

4.3. LIVE CALLING: SIGNIFICANCE AND METHODOLOGY

The auditor visits the operator premises for Live Calling. The operators provide the RAW data of customer complaints (billing and services) and also the list of customer service numbers to be verified through live calling

The auditor makes the live calls using operator SIM to a random sample of subscribers from the RAW data provided to verify the resolution of complaints

The auditor verifies the performance of call centre, level 1 services by calling the numbers using operator SIM. The list of call centre numbers is provided by the operator.

The auditors also make test calls to subscribers of other operators to assess the inter-operator call connectivity in the same licensed service area

Live calling activity was carried out during the period of June 2016. The data considered for live calling was for the month prior to the month in which the live calling activity was being conducted. In this case, data of April 2016 was considered for live calling activity conducted in May 2016.

A detailed explanation of each parameter is explained below:

4.4. BILLING COMPLAINTS

Live calling is done to verify Resolution of billing complaints within stipulated time. The process for this parameter is stated below:

- Auditors request the operator provided the database of all the subscribers who reported billing complaints in one month prior to the auditor visit. In case of BSNL, data for the complaints from the subscribers belonging to the sample exchanges is requested specifically.
- A sample of 10% or 100 complainants, whichever is less, is selected randomly from the list provided by operator.

Calls are made by auditors to the sample of subscribers to check and record whether the complaint was resolved within the timeframes as mentioned in the benchmark.

All the complaints related to billing as per clause 3.7.2 of QoS regulation of 20th June, 2016 were considered as population for selection of samples.

TRAI Benchmark: Resolution of billing/ charging complaints: 98% within 4 weeks, 100% within 6 weeks.

4.5. SERVICE COMPLAINTS REQUESTS

“Service request” means a request made to a service provider by its consumer pertaining to his account, and includes:

- A request for change of tariff plan
- A request for activation or deactivation of a value added service or a supplementary service or a special pack
- A request for activation of any service available on the service provider’s network
- A request for shift or closure or termination of service or for billing details

All the complaints other than billing were covered. A total of 100 calls per service provider for each service in licensed service area were done by the auditors.

4.6. LEVEL 1

Level 1 is used for accessing special services like emergency services, supplementary services, inquiry and operator-assisted services.

Level 1 Services include services such as police, fire, ambulance (Emergency services). Test calls were made from operator SIMs. A total of 150 test calls were made per service provider in the quarter.

While most of the Level 1 services are toll free, it has been observed that some Level 1 services may not be toll free. In April, May and June’15, auditor has tried contacting the list of Level 1 services provided by TRAI as per the NNP (National Numbering Plan).

4.7. PROCESS TO TEST LEVEL 1 SERVICE

- During the operator assisted drive test, auditors ask the operator authorized personnel to make 5 calls in each SDCA on the Level 1 Service numbers provided by TRAI. The list contains a description of the numbers along with dialling code.
- Operators might also provide a list of L1 services. To identify emergency L1 service numbers, auditors check if there is any number that starts with code ‘10’ in that list. If auditors find any emergency number in addition to the below list, that number is also tested during live calling.
- On receiving the list, auditors verify it if the below given list of numbers are active in the service provider’s network.
- If there are any other additional numbers provided by the operator, auditors also do live calling on those numbers along with below list.
- If any of these numbers is not active, then we would write the same in our report, auditors write in the report.
- Post verifying the list, auditors do live calling by equally distributing the calls among the various numbers and update the results in the live calling sheet.

L1 Number Details
100 Police
101 Fire
102 Ambulance
104 Health Information Helpline
108 Emergency and Disaster Management Helpline
138 All India Helpline for Passangers
149 Public Road Transport Utility Service
181 Chief Minister Helpline
182 Indian Railway Security Helpline
1033 Road Accident Management Service
1037 Public Grievance Cell DoT HQ as 'Telecom Consumer Grievance Redressal Helpline'
1056 Emergency Medical Services
106X State of the Art Hospitals - AIIMS
1063 Public Grievance Cell DoT Hq
1064 Anti Corruption Helpline
1070 Relief Commission for Natural Calamities
1071 Air Accident Helpline
1072 Rail Accident Helpline
1073 Road Accident Helpline
1077 Control Room for District Collector
1090 Call Alart (Crime Branch)
1091 Women Helpline
1097 National AIDS Helpline to NACO
1099 Central Accident and Trauma Services (CATS)
10580 Educational& Vocational Guidance and Counselling
10589 Mother and Child Tracking (MCTH)
10740 Central Pollution Control Board
10741 Pollution Control Board
1511 Police Related Service for all Metro Railway Project
1512 Prevention of Crime in Railway
1514 National Career Service(NCS)
15100 Free Legal Service Helpline
155304 Municipal Corporations
155214 Labour Helpline
1903 Sashastra Seema Bal (SSB)
1909 National Do Not Call Registry
1912 Complaint of Electricity
1916 Drinking Water Supply
1950 Election Commission of India

4.8. CUSTOMER CARE

Live calling is done to verify response time for customer assistance is done to verify the performance of call centre in terms of:

- Calls getting connected and answered by operator's IVR.
- % age of calls answered by operator / voice to voice) within 90 seconds: In 95% of the cases or more

The process for this parameter is stated below:

- Overall sample size is 100 calls per service provider per circle at different points of time, evenly distributed across the selected exchanges – 50 calls between 1100 HRS to 1400 HRS and 50 calls between 1600 HRS to 1900 HRS.
- Time to answer the call by the operator was assessed from the time interviewer pressed the requisite button for being assisted by the operator.
- All the supplementary services that have any kind of human intervention are to be covered here. It also includes the IVR assisted services.

4.9. INTER OPERATOR CALL ASSESSMENT

A total of 100 calls per service provider to all the other service providers in a licensed service area were done for the purpose of audit.

Inter Operator Call Assessment	Aircel	Airtel	BSNL	Idea	RCOM GSM	RCOM CDMA	TTSL CDMA	TTSL GSM	TELENOR	Vodafone	MTS
Aircel	-	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Airtel	100%	-	100%	100%	100%	100%	100%	100%	100%	100%	100%
BSNL	100%	100%	-	100%	100%	100%	100%	100%	100%	100%	100%
Idea	100%	100%	100%	-	100%	100%	100%	100%	100%	100%	100%
RCOM GSM	100%	100%	100%	100%	-	100%	100%	100%	100%	100%	100%
RCOM CDMA	100%	100%	100%	100%	100%	-	100%	100%	100%	100%	100%
TTSL CDMA	100%	100%	100%	100%	100%	100%	-	100%	100%	100%	100%
TTSL GSM	100%	100%	100%	100%	100%	100%	100%	-	100%	100%	100%
TELENOR	100%	100%	100%	100%	100%	100%	100%	100%	-	100%	100%
Vodafone	100%	100%	100%	100%	100%	100%	100%	100%	100%	-	100%
MTS	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	-

5. DRIVE TEST: SIGNIFICANCE AND METHODOLOGY

Drive test, as the name suggests, is conducted to measure the outdoor coverage in a moving vehicle in a specified network coverage area.

The main purpose of the drive test is to check the health of the mobile network of various operators in the area in terms of coverage (signal strength), voice quality, call drop rate, call set up success rate etc.

To assess the indoor coverage, the test is also conducted at two static indoor locations in each SSA, such as Malls, office buildings, shopping complexes, government buildings etc.

There are two types of drive test as mentioned below.

- Operator Assisted Drive Test
- Independent Drive Test

The main difference between the two is that in the operator assisted, operators participate in the drive test along with their hardware, software, phones etc. while in the independent drive test PhiStream conducts the drive test on solitary basis and uses its own hardware. Operators generally do not have any knowledge of the independent drive test being conducted.

5.1. OPERATOR ASSISTED DRIVE TEST

UP West Circle consist of total 19 SSA's and each SSA needs to be audit in the span of 12 months.

The methodology adopted for the drive test:

- 3 consecutive days drive test in each SSA. SSA would be defined as per DOT guidelines and month wise SSA list is finalized by regional TRAI office.
- On an average, a minimum of 80 kilometres are covered each day
- Route map was designed in such a way that all the major roads, highways and all the important towns and villages were covered as part of audit.
- Special emphasis was given to those areas where the number of complaints received were on the higher side, if provided by TRAI.
- The route is defined in a way that we cover maximum area in the SSA and try to cover maximum villages and cities within the SSA. The route is designed such that there is no overlap of roads and we can start from the point from where we had left last day (if possible).
- The route was classified as – Within City, Major Roads, Highways, Shopping complex/ Mall and Office Complex/ Government Building
- There were no fixed calls which we need to do for within city, major roads and highways, but a minimum of 30 calls in each route, i.e., within city, major roads and highways on each day. For indoors, 20 calls each for shopping and office complex each day preferably in relatively bigger city.
- The drive test covered selected cities and adjoining towns/rural areas where the service provider has commenced service, including congested areas and indoor sites.
- The drive test of each mobile network was conducted between 10 am and 8 pm on weekdays.
- The Vehicle used in the drive tests was equipped with the test tool that automatically generates calls on the mobile telephone networks.
- The speed of the vehicle was kept at around 30 km/hr.
- The holding period of each test call was 120 seconds.
- A test call was generated 10 seconds after the previous test call is completed.

- Height of the antenna was kept uniform in case of all service providers.

5.2. INDEPENDENT DRIVE TEST

The number of independent drive tests to be conducted and their locations are Decided basis TRAI recommendation.

- A minimum of 80 kilometres was traversed during the independent drive test in a SSA. The SSA would be defined as per BSNL and SSA list will be finalized by regional TRAI office.
- Route map was designed in such a way that all the major roads, highways and all the important towns and villages were covered as part of audit.
- Special emphasis was given to those areas where the number of complaints received were on the higher side, if provided by TRAI.
- The route is defined in a way that we cover maximum area in the SSA and try to cover maximum villages and cities within the SSA. The route is designed such that there is no overlap of roads (if possible).
- The route was classified as – Within city, Major Roads, Highways, Shopping complex / Mall and Office Complex/ Government Building
- There were no fixed calls which we need to do for within city, major roads and highways, but a minimum of 30 calls in each route, i.e., within city, major roads and highways on each day. For indoors, 20 calls each for shopping and office complex each day preferably in relatively bigger city.
- The drive test covered selected cities and adjoining towns/rural areas where the service provider has commenced service, including congested areas and indoor sites.
- The drive test of each mobile network was conducted between 10 am and 8 pm on weekdays.
- The Vehicle used in the drive tests was equipped with the test tool that automatically generates calls on the mobile telephone networks.
- The speed of the vehicle was kept at around 30 km/hr.
- The holding period of each test call was 120 seconds.
- A test call was generated 10 seconds after the previous test call is completed.
- Height of the antenna was kept uniform in case of all service providers.

5.3. PARAMETERS EVALUATED DURING DRIVE TEST

The parameters which were captured during the drive test include. Below are the parameters which are captured for the GSM and CDMA operators.

- Coverage-Signal strength (GSM)
 - Total calls made (A)
 - Number of calls with signal strength between 0 to -75 dBm
 - Number of calls with signal strength between 0 to -85 dBm
 - Number of calls with signal strength between 0 to -95 dBm
- Coverage-Signal strength (CDMA)
 - Total Ec/Io BINS (A)
 - Total Ec/Io BINS with less than -15 (B)
 - Low Interference = $[1 - (B/A)] \times 100$
- Voice quality (GSM)
 - Total RxQual Samples – A
 - RxQual samples with 0-5 value – B
 - %age samples with good voice quality = $B/A \times 100$
- Voice quality (CDMA)
 - Total FER BINS (forward FER) – A
 - FER BINS with 0-2 value (forward FER) – B
 - FER BINS with 0-4 value (forward FER) – C
 - %age samples with FER bins having 0-2 value (forward FER) = $B/A \times 100$
 - %age samples with FER bins having 0-4 value (forward FER) = $C/A \times 100$
 - No. of FER samples with value > 4 = $[A-C]$
- Call setup success rate
 - Total number of call attempts – A
 - Total Calls successfully established – B
 - Call success rate (%age) = $(B/A) \times 100$
- Blocked calls
 - 100% - Call Set up Rate
- Call drop rate
 - Total Calls successfully established – A
 - Total calls dropped after being established – B
 - Call Drop Rate (%age) = $(B/A) \times 100$

6. EXECUTIVE SUMMARY

The objective assessment of Quality of Service (QoS) carried out gives an insight into the overall performance of various operators in the UP West Circle, with a parameter wise performance evaluation as compared to TRAI benchmark.

6.1. OPERATORS COVERED

Name of Operator	Number of Subscriber (Upto June 31, 2016)
Aircel	791989
Airtel	8320764
BSNL	3521386
Idea	14500123
MTS	146707
RCOM CDMA	940838
RCOM GSM	4752022
TTSL 2G	355253
TTSL 3G	3942155
Telenor	8799952
Vodafone	11444537

TSP	No. of Cells	BTS	BSC	MSC+GMSC	Node B	RNC
Aircel	2026	671	8	1+1	NA	NA
Airtel	20522	6916	70	4+6	4162	13
Idea	25092	8928	59	19	4114	8
TTSL GSM	5376	1765	18	3	904	4
TTSL CDMA	1483	466	4	3+2	NA	NA
RCOM GSM	4939	1646	14	3+1	NA	NA
RCOM CDMA	2946	983	4	3	NA	NA
Vodafone	21448	7116	78	7+4		
BSNL	7715	2642	33	13	1250	9
BSNL Uttarakhand	3022	1009	14	5	480	6
Telenor	12151	4023	31	13	NA	NA
MTS	1228	339	1	1	NA	NA
Aircel	2026	671	8	1+1	NA	NA

Note: Node B & RNC is marked as Not Applicable (N.A.) for the services providers who do not have 3G services licence in the circle.

6.2. AUDIT SCHEDULE

Operator	(3 Days Live) April 2016	April 2016	May 2016	June 2016
Airtel	12 th Apr 2016	18 th May 2016	14 th Jun 2016	12 th Apr 2016
Vodafone	6 th Apr 2016	13 th May 2016	10 th Jun 2016	6 th Apr 2016
Idea	11 th Apr 2016	9 th May 2016	11 th Jun 2016	11 th Apr 2016
Reliance	13 th Apr 2016	16 th May 2016	15 th Jun 2016	13 th Apr 2016
BSNL	14 th Apr 2016	24 th May 2016	16 th Jun 2016	14 th Apr 2016
Aircel	8 th Apr 2016	6 th May 2016	8 th Jun 2016	8 th Apr 2016
Tata Teleservices	7 th Apr 2016	9 th May 2016	9 th Jun 2016	7 th Apr 2016
Videocon	20 th Apr 2016	17 th May 2016	11 th Jun 2016	20 th Apr 2016
Telenor	12 th Apr 2016	16 th May 2016	14 th Jun 2016	12 th Apr 2016
MTS	11 th Apr 2016	5 th May 2016	7 th Jun 2016	11 th Apr 2016

Colour codes to read the report:

	Not meeting the benchmark
NA	Not Applicable
DNA	Data not available (at TSP Premises)

6.3. 2G VOICE PMR DATA: APRIL

Apr-16													
Network Parameters		Name of Service Provider											
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSI CDMA	TTSI GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.07%	1.11%	1.49%	0.08%	0.04%	0.02%	0.02%	0.30%	0.10%	0.18%	0.38%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.15%	1.07%	1.69%	0.14%	0.00%	0.00%	0.00%	0.42%	0.00%	0.57%	1.48%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	94.67%	98.44%	97.76%	98.09%	99.70%	99.12%	98.45%	97.74%	98.94%	98.28%	99.13%
	SDDCH/Paging chl. Congestion	≤ 1%	0.30%	0.52%	0.68%	0.98%	0.00%	NA	0.35%	0.82%	0.00%	0.32%	0.40%
	TCH Congestion	≤ 2%	0.52%	1.23%	1.24%	1.20%	0.00%	0.10%	0.35%	1.92%	0.08%	0.37%	0.87%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.30%	1.02%	1.30%	1.13%	0.18%	0.15%	0.09%	0.82%	0.22%	0.48%	0.78%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	1.80%	1.76%	2.46%	2.54%	1.98%	1.05%	0.24%	5.10%	2.09%	2.12%	2.87%
	%age of connection with good voice quality	≥ 95%	96.46%	96.25%	96.35%	96.31%	98.75%	99.07%	99.11%	97.16%	98.92%	97.20%	96.79%

6.4. 2G VOICE PMR DATA: MAY

May-16													
Network Parameters		Name of Service Provider											
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSI CDMA	TTSI GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.22%	1.32%	1.48%	0.23%	0.05%	0.04%	0.03%	0.35%	0.30%	0.41%	0.56%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.49%	1.20%	1.68%	0.46%	0.00%	0.20%	0.18%	0.81%	0.85%	1.93%	1.47%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	97.92%	97.94%	97.50%	97.79%	99.45%	98.87%	98.47%	97.55%	99.13%	97.99%	98.99%
	SDDCH/Paging chl. Congestion	≤ 1%	0.53%	0.89%	0.69%	0.98%	0.00%	NA	0.33%	1.08%	0.00%	0.51%	0.46%
	TCH Congestion	≤ 2%	0.88%	1.64%	1.11%	1.99%	0.00%	0.14%	0.41%	2.01%	0.04%	0.41%	1.01%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.35%	1.17%	1.30%	1.20%	0.27%	0.17%	0.10%	0.89%	0.26%	0.59%	0.91%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.10%	1.97%	2.47%	2.60%	2.92%	1.07%	0.28%	5.47%	2.41%	2.83%	2.93%
	%age of connection with good voice quality	≥ 95%	96.50%	96.97%	97.07%	95.97%	98.15%	99.13%	99.00%	97.37%	98.90%	97.09%	96.51%

6.5. 2G VOICE PMR DATA: JUNE

Jun-16													
Network Parameters		Name of Service Provider											
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.17%	1.29%	1.53%	0.14%	0.06%	NA	0.01%	0.55%	0.45%	0.38%	0.41%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.04%	1.57%	1.86%	0.24%	0.00%	NA	0.00%	0.96%	1.07%	0.91%	1.40%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	97.81%	97.99%	98.69%	97.62%	99.68%	NA	95.80%	97.82%	99.05%	97.52%	98.93%
	SDDCH/Paging chl. Congestion	≤ 1%	0.38%	0.61%	0.50%	0.80%	0.00%	NA	0.55%	0.94%	0.00%	0.49%	51.55%
	TCH Congestion	≤ 2%	1.13%	1.64%	1.31%	1.65%	0.00%	NA	1.28%	1.62%	0.12%	0.76%	1.07%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.65%	1.20%	1.13%	0.94%	0.26%	NA	0.13%	0.87%	0.30%	0.60%	0.91%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	3.04%	2.06%	2.05%	2.59%	2.91%	NA	0.30%	5.19%	2.70%	2.99%	2.94%
	%age of connection with good voice quality	≥ 95%	96.51%	96.96%	95.48%	96.05%	98.69%	NA	98.69%	97.50%	98.86%	96.92%	96.67%

6.6. 2G VOICE PMR DATA: CONSOLIDATED

Consolidated													
Network Parameters		Name of Service Provider											
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.15%	1.24%	1.50%	0.15%	0.05%	0.03%	0.02%	0.40%	0.29%	0.32%	0.45%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.90%	1.28%	1.74%	0.28%	0.00%	0.10%	0.06%	0.73%	0.64%	1.14%	1.45%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	96.80%	98.12%	97.99%	97.83%	99.61%	99.00%	97.57%	97.70%	99.04%	97.93%	99.02%
	SDDCH/Paging chl. Congestion	≤ 1%	0.40%	0.67%	0.63%	0.92%	0.00%	DNA	0.41%	0.95%	0.00%	0.44%	17.47%
	TCH Congestion	≤ 2%	0.84%	1.51%	1.22%	1.61%	0.00%	0.12%	0.68%	1.85%	0.08%	0.51%	0.98%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.43%	1.13%	1.24%	1.09%	0.23%	0.16%	0.11%	0.86%	0.26%	0.56%	0.87%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.31%	1.93%	2.32%	2.58%	2.61%	1.06%	0.27%	5.26%	2.40%	2.65%	2.91%
	%age of connection with good voice quality	≥ 95%	96.49%	96.73%	96.30%	96.11%	98.53%	99.10%	98.93%	97.35%	98.89%	97.07%	96.66%

6.7. 2G VOICE 3 DAYS LIVE DATA

A three day live measurement was conducted to measure the QoS provided by the operators. It was seen from the live data collected, that the performance of the operators across all parameters more or less corroborated with the audit data collected.

6.8. 2G VOICE 3 DAYS LIVE DATA: APRIL

Apr-16													
Network Parameters		Name of Service Provider											
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	COM CDM	COM GSM	TELENOR	TSL CDM	TSL GSM	ODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.04%	1.03%	1.00%	0.07%	0.05%	0.02%	0.00%	0.41%	0.05%	0.14%	0.45%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	98.11%	98.45%	97.69%	96.89%	99.83%	99.13%	98.40%	97.99%	98.31%	98.38%	99.32%
	SDDCH/Paging chl. Congestion	≤ 1%	0.32%	0.37%	0.76%	0.00%	0.00%	0.00%	0.22%	1.29%	0.00%	0.21%	0.44%
	TCH Congestion	≤ 2%	0.72%	1.22%	1.10%	0.00%	0.00%	0.03%	0.28%	1.64%	0.01%	0.35%	0.68%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.34%	1.03%	1.22%	0.00%	0.19%	0.16%	0.06%	0.84%	0.23%	0.48%	0.73%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	1.99%	1.86%	2.33%	2.82%	2.00%	1.14%	0.25%	4.44%	2.00%	2.17%	2.40%
	%age of connection with good voice quality	≥ 95%	96.24%	96.16%	96.34%	96.35%	98.98%	99.10%	99.17%	97.26%	98.95%	97.22%	96.86%

6.9. 2G VOICE 3 DAYS LIVE DATA: MAY

May-16													
Network Parameters		Name of Service Provider											
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.35%	1.19%	1.50%	0.08%	0.03%	0.01%	0.02%	0.23%	0.23%	0.38%	0.52%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.15%	0.00%	1.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	98.08%	98.12%	97.26%	98.17%	99.57%	99.21%	98.87%	97.34%	99.29%	98.35%	99.06%
	SDDCH/Paging chl. Congestion	≤ 1%	0.41%	0.57%	0.69%	0.59%	0.00%	0.00%	0.27%	0.65%	0.00%	0.32%	0.38%
	TCH Congestion	≤ 2%	0.81%	1.43%	0.91%	1.44%	0.00%	0.04%	0.32%	2.28%	0.02%	0.30%	0.94%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.32%	1.12%	1.23%	1.32%	0.28%	0.16%	0.09%	0.85%	0.24%	0.55%	0.81%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.21%	1.98%	2.48%	2.92%	3.33%	0.00%	0.23%	5.45%	2.69%	2.59%	2.91%
	%age of connection with good voice quality	≥ 95%	96.58%	96.96%	97.29%	95.92%	98.62%	99.07%	99.07%	97.31%	98.91%	97.19%	96.80%

6.10. 2G VOICE 3 DAYS LIVE DATA: JUNE

Jun-16													
Network Parameters		Name of Service Provider											
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	COM CDM	COM GSM	TELENOR	TSL CDM	TSL GSM	ODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.57%	1.27%	1.58%	0.13%	0.03%	NA	0.00%	0.02%	0.43%	0.45%	0.28%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	0.01%	0.00%	NA	0.00%	0.00%	0.00%	0.06%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	97.84%	98.03%	98.66%	97.42%	99.62%	NA	98.02%	97.79%	99.13%	97.87%	99.07%
	SDDCH/Paging chl. Congestion	≤ 1%	0.13%	0.54%	0.70%	0.91%	0.00%	NA	0.27%	0.81%	0.00%	0.51%	0.26%
	TCH Congestion	≤ 2%	0.62%	1.60%	1.34%	1.74%	0.00%	NA	0.66%	1.71%	0.02%	0.46%	0.93%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.32%	1.20%	1.28%	0.96%	0.20%	NA	0.11%	0.85%	0.26%	0.57%	0.94%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	1.60%	2.10%	1.99%	2.69%	2.54%	NA	0.30%	5.25%	2.69%	2.88%	3.01%
	%age of connection with good voice quality	≥ 95%	96.43%	96.96%	95.68%	95.83%	98.79%	NA	98.84%	97.47%	98.87%	97.05%	96.53%

6.11. 2G VOICE 3 DAYS LIVE DATA: CONSOLIDATE

Consolidated													
Network Parameters		Name of Service Provider											
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	COM CDM	COM GSM	TELENOR	TSL CDM	TSL GSM	ODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.32%	1.16%	1.36%	0.10%	0.04%	0.02%	0.01%	0.22%	0.24%	0.33%	0.41%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.05%	0.00%	0.42%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	98.01%	98.20%	97.87%	97.49%	99.67%	99.17%	98.43%	97.71%	98.91%	98.20%	99.15%
	SDDCH/Paging chl. Congestion	≤ 1%	0.29%	0.49%	0.71%	0.50%	0.00%	0.00%	0.25%	0.92%	0.00%	0.35%	0.36%
	TCH Congestion	≤ 2%	0.72%	1.42%	1.12%	1.06%	0.00%	0.03%	0.42%	1.88%	0.02%	0.37%	0.85%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.33%	1.11%	1.25%	0.76%	0.22%	0.16%	0.09%	0.85%	0.24%	0.53%	0.83%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	1.93%	1.98%	2.26%	2.81%	2.62%	0.57%	0.26%	5.05%	2.46%	2.55%	2.77%
	%age of connection with good voice quality	≥ 95%	96.42%	96.69%	96.44%	96.03%	98.80%	99.08%	99.03%	97.35%	98.91%	97.15%	96.73%

6.12. 3G VOICE PMR: CONSOLIDATED

Consolidated						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	BSNL	IDEA	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	1.24%	1.51%	0.46%	0.38%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.31%	1.36%	1.63%	1.65%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	98.46%	96.98%	99.25%	98.70%
	RRC Congestion:	≤ 1%	0.07%	0.85%	0.95%	0.01%
	RAB Congestion:	≤ 2%	0.00%	1.38%	0.48%	0.04%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.59%	1.06%	0.30%	0.45%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.49%	2.42%	2.65%	1.39%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.90%	DNA	99.03%	98.46%

6.13. 3G VOICE PMR: APRIL

Apr-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	1.11%	1.36%	0.41%	0.20%	0.20%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.98%	1.24%	1.60%	0.66%	1.14%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	99.80%	96.74%	99.34%	99.00%	100.00%
	RRC Congestion:	≤ 1%	0.07%	0.81%	0.93%	0.44%	0.00%
	RAB Congestion:	≤ 2%	0.00%	1.45%	0.39%	0.66%	0.01%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.52%	0.91%	0.28%	0.16%	0.37%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.44%	2.35%	2.49%	1.34%	2.88%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.91%	DNA	DNA	99.15%	98.15%

6.14. 3G VOICE PMR: MAY

May-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	1.19%	1.58%	0.57%	0.39%	0.52%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.04%	1.83%	1.91%	1.74%	1.85%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	98.96%	98.25%	99.22%	98.66%	100.00%
	RRC Congestion:	≤ 1%	0.04%	0.88%	0.96%	0.43%	0.01%
	RAB Congestion:	≤ 2%	0.00%	1.08%	0.52%	0.97%	0.01%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.59%	1.39%	0.29%	0.19%	0.48%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.51%	2.69%	2.68%	1.31%	2.92%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.92%	DNA	99.07%	99.13%	98.18%

6.15. 3G VOICE PMR: JUNE

Jun-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	1.41%	1.59%	0.41%	0.53%	0.43%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.92%	1.02%	1.39%	1.94%	1.97%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	96.62%	95.97%	99.19%	98.44%	100.00%
	RRC Congestion:	≤ 1%	0.10%	0.85%	0.97%	0.49%	0.01%
	RAB Congestion:	≤ 2%	0.00%	1.63%	0.53%	1.13%	0.09%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.65%	0.89%	0.33%	0.22%	0.49%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.53%	2.21%	2.78%	1.52%	2.93%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.88%	DNA	98.99%	99.11%	98.73%

6.16. 3G VOICE 3 DAYS LIVE DATA: CONSOLIDATED

Consolidated							
Network Parameters		Name of Service Provider					
		Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	1.17%	1.54%	0.38%	0.41%	0.34%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.13%	0.02%	0.04%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	99.29%	98.07%	99.25%	98.95%	100.00%
	RRC Congestion:	≤ 1%	0.06%	0.84%	0.97%	0.34%	0.00%
	RAB Congestion:	≤ 2%	0.00%	1.17%	0.49%	0.74%	0.00%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.54%	1.14%	0.33%	0.17%	0.40%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.52%	2.61%	2.72%	1.37%	2.82%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.91%	DNA	99.05%	99.13%	98.34%

6.17. 3G VOICE 3 DAYS LIVE DATA: APRIL

Apr-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.99%	1.41%	0.35%	0.14%	0.24%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.21%	0.02%	0.00%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	99.81%	96.65%	99.25%	99.02%	100.00%
	RRC Congestion:	≤ 1%	0.01%	0.89%	0.93%	0.33%	0.01%
	RAB Congestion:	≤ 2%	0.00%	1.52%	0.50%	0.68%	0.00%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.51%	0.91%	0.32%	0.16%	0.35%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.57%	2.31%	2.68%	1.69%	2.81%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.91%	DNA	NA	99.14%	98.17%

6.18. 3G VOICE 3 DAYS LIVE DATA: MAY

May-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	1.04%	1.60%	0.46%	0.58%	0.45%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.18%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	99.35%	98.78%	99.28%	98.57%	100.00%
	RRC Congestion:	≤ 1%	0.02%	0.82%	1.01%	0.36%	0.00%
	RAB Congestion:	≤ 2%	0.00%	0.99%	0.46%	1.10%	0.00%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.50%	1.26%	0.32%	0.17%	0.43%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.37%	2.76%	2.75%	1.15%	2.73%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.94%	DNA	99.09%	99.12%	98.14%

6.19. 3G VOICE 3 DAYS LIVE DATA: JUNE

Jun-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	1.49%	1.60%	0.32%	0.50%	0.32%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.02%	0.11%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	98.70%	98.78%	99.24%	99.28%	100.00%
	RRC Congestion:	≤ 1%	0.14%	0.82%	0.97%	0.32%	0.00%
	RAB Congestion:	≤ 2%	0.00%	0.99%	0.50%	0.44%	0.01%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.61%	1.26%	0.34%	0.18%	0.42%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.63%	2.76%	2.72%	1.26%	2.91%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.89%	DNA	99.01%	99.12%	98.72%

6.20. POI CONGESTION: CONSOLIDATED

Consolidated													
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Total No. of POI's in Month having $\leq 0.5\%$ POI congestion												
	Total No. of call attempts on POI		370290	2673508	19911	26648	6139	340380	833676	2924617	1059828	735920	3213153
	Total traffic served on all POIs (Erlang)		6508	114357	19897	573	116	6474	17003	68529	20723	12550	56379
	Total No. of circuits on all individual POIs		11754	184881	60978	1311	2297	22043	39461	144340	51095	20614	144051
	Total number of working POI Service Area wise		45	45	37	157	48	74	56	36	150	32	115
	Capacity of all POIs		10273	178026	45734	1264	2029	19907	36968	140016	46993	18968	142314
	No. of all POI's having $\geq 0.5\%$ POI congestion		0	1	0	0	0	0	0	0	0	0	0
	Name of POI not meeting the benchmark (having $\geq 0.5\%$ POI congestion)		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.21. POI CONGESTION: APRIL

Apr-16													
Monthly TRAI Network Performance Report of Cellular Mobile													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Total No. of POI's in Month having $\leq 0.5\%$ POI congestion												
	Total No. of call attempts on POI		335800	2603613	19592	27708	13142	424853	812481	2628722	1086789	739966	3098376
	Total traffic served on all POIs (Erlang)		5903	111886	19579	733	229	7981	16521	64280	19358	12519	55230
	Total No. of circuits on all individual POIs		10842	185083	61395	1277	6581	27047	40164	146429	51827	20659	144243
	Total number of working POI Service Area wise		44	45	37	161	43	103	53	36	151	32	115
	Capacity of all POIs		9502	178237	46046	1231	5815	24225	37713	140065	47700	18998	141633
	No. of all POI's having $\geq 0.5\%$ POI congestion		0	0	0	0	NIL	NIL	0	0	0	0	0
	Name of POI not meeting the benchmark (having $\geq 0.5\%$ POI congestion)		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.22. POI CONGESTION: MAY

May-16													
Monthly TRAI Network Performance Report of Cellular Mobile													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Total No. of POI's in Month having $\leq 0.5\%$ POI congestion												
	Total No. of call attempts on POI		335800	2689294	20231	26730	1510	255906	801876	2639456	1050858	756526	3232594
	Total traffic served on all POIs (Erlang)		5903	115023	20215	484	31	4968	16133	64431	21323	12612	56489
	Total No. of circuits on all individual POIs		10842	184637	60562	1310	155	17039	37951	134298	50855	20652	144071
	Total number of working POI Service Area wise		44	45	37	150	50	45	58	33	151	32	115
	Capacity of all POIs		9502	177772	45421	1264	136	15589	35496	140554	46744	18997	141469
	No. of all POI's having $\geq 0.5\%$ POI congestion		0	0	0	0	NIL	0	0	0	0	0	0
	Name of POI not meeting the benchmark (having $\geq 0.5\%$ POI congestion)		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.23. POI CONGESTION: JUNE

Jun-16													
Monthly TRAI Network Performance Report of Cellular Mobile													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Total No. of POI's in Month having $\leq 0.5\%$ POI congestion												
	Total No. of call attempts on POI		439271	2727616	dna	25506	3764	DNA	886670	3505672	1041836	711268	3308489
	Total traffic served on all POIs (Erlang)		7717	116163	dna	501	88	DNA	18356	76876	21489	12518	57418
	Total No. of circuits on all individual POIs		13578	184923	dna	1345	155	DNA	40269	152292	50604	20532	143839
	Total number of working POI Service Area wise		48	45	dna	159	50	DNA	56	39	149	31	115
	Capacity of all POIs		11815	178069	dna	1298	136	DNA	37694	139429	46534	18910	143839
	No. of all POIs having $\geq 0.5\%$ POI congestion		0	2	dna	0	NIL	DNA	0	0	0	0	0
	Name of POI not meeting the benchmark (having $\geq 0.5\%$ POI congestion)		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.24. 2G WIRELESS DATA: APRIL

Apr-16													
Cellular Mobile Telephone Services													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Service Activation/ Provisioning												
i)	Total No. of Subscribers for Service Activation (A)		153998	DNA	DNA	312821	DNA	DNA	DNA	142341	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		153972	DNA	DNA	312816	DNA	DNA	DNA	122973	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.98%	DNA	DNA	10000%	DNA	DNA	DNA	86.39%	DNA	DNA	DNA
2	PDP Context Activation Success Rate												
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		73280415	18417604	DNA	39561940	2684354	NA	DNA	1141173243	7865175	2998443	6915791
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		71164491	18397896	DNA	38965580	2645859	NA	DNA	1134019069	7592060	2996207	6911831
iii)	PDP Context Activation Success Rate = (B/A) * 100	$\geq 95\%$	97.11%	99.89%	DNA	98.49%	98.57%	97.53%	99.26%	99.37%	96.53%	99.93%	99.94%
3	RNC originated PS Domain lu Connection Setup Success (A)												
i)	RNC originated PS Domain lu Connection Setup Success (A)		469541009	3962524517	DNA	14525733805	831908	7436586	1338247139	3370468601	DNA	3661809467	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		3142085	27069598	DNA	142338010	6868	7376349	25501442	26549178	DNA	31960579	DNA
iii)	Drop Rate = (B/A) * 100	$\leq 5\%$	0.67%	0.68%	DNA	0.98%	0.83%	0.81%	1.91%	0.79%	DNA	0.87%	DNA

6.25. 2G WIRELESS DATA: MAY

May-16													
Cellular Mobile Telephone Services													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Service Activation/ Provisioning												
i)	Total No. of Subscribers for Service Activation (A)		186374	DNA	DNA	553445	DNA	DNA	DNA	365699	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		186334	DNA	DNA	553442	DNA	DNA	DNA	347018	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.98%	DNA	DNA	100.00%	DNA	DNA	DNA	94.89%	DNA	DNA	DNA
2	PDP Context Activation Success Rate												
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		27381819	20697650	DNA	47576600.00	2770604	NA	NA	1021657684	8408074.00	3224320	8980129
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		26656715	20686031	DNA	47554116.00	2704114	NA	NA	1017723136	8107240.00	3222975	8971202
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	97.35%	99.94%	DNA	99.95%	97.60%	97.15%	99.20%	99.61%	96.42%	99.96%	99.90%
3	Drop Rate												
i)	RNC originated PS Domain lu Connection Setup Success (A)		512622850	5253717840	DNA	16478748264	26258922	5812990	1824045112	3451799350	DNA	736073830	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		3376306	41798821	DNA	170535992	317553	5758881.00	37155024	30218732	DNA	16829498	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.66%	0.80%	DNA	1.03%	1.21%	0.93%	2.04%	0.88%	DNA	2.29%	DNA

6.26. 2G WIRELESS DATA: JUNE

Jun-16													
Cellular Mobile Telephone Services													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Service Activation/ Provisioning												
i)	Total No. of Subscribers for Service Activation (A)		151763	DNA	DNA	655022	DNA	NA	DNA	358219	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		151728	DNA	DNA	655017	DNA	NA	DNA	336451	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.98%	DNA	DNA	100.00%	DNA	NA	DNA	93.92%	DNA	DNA	DNA
2	PDP Context Activation Success Rate												
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		21593825	19313761	DNA	46319750	2523388	NA	NA	805700660	8253534	3105343	DNA
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		21062191	19293261	DNA	46286562	2498352	NA	NA	795820759	7965149	3097884	DNA
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	97.54%	99.89%	DNA	99.93%	99.01%	NA	98.45%	98.77%	96.51%	99.76%	DNA
3	Drop Rate												
i)	RNC originated PS Domain lu Connection Setup Success (A)		3474617	5230565990	DNA	16099046611	24084937	NA	1827464345	2842992608	DNA	674009710	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		484961469	43531116	DNA	175294446	313108	NA	42398751	22853182	DNA	16245081	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.72%	0.83%	DNA	1.09%	1.30%	NA	2.32%	0.80%	DNA	2.41%	DNA

6.27. 2G WIRELESS DATA: CONSOLIDATED

Consolidated													
Cellular Mobile Telephone Services													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL UK	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Service Activation/ Provisioning												
i)	Total No. of Subscribers for Service Activation (A)		164045	DNA	DNA	507096	DNA	DNA	DNA	288753	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		164011	DNA	DNA	507092	DNA	DNA	DNA	268814	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.98%	DNA	DNA	3400.04%	DNA	DNA	DNA	91.74%	DNA	DNA	DNA
2	PDP Context Activation Success Rate												
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		40752020	19476338	DNA	44486097	2659449	DNA	DNA	989510529	8175594	3109369	7947960
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		39627799	19459063	DNA	44268753	2616108	DNA	DNA	982520988	7888150	3105689	7941517
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	97.33%	99.91%	DNA	99.46%	98.39%	97.34%	98.97%	99.25%	96.49%	99.88%	99.92%
3	Drop Rate												
i)	RNC originated PS Domain lu Connection Setup Success (A)		328546159	4815602782	DNA	15701176227	17058589	6624788	1663252199	3221753520	DNA	1690631002	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		163826620	37466512	DNA	162722816	212510	6567615	35018406	26540364	DNA	21678386	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.68%	0.77%	DNA	1.03%	1.11%	0.87%	2.09%	0.82%	DNA	1.86%	DNA

6.28. 2G WIRELESS 3 DAYS LIVE DATA: APRIL

Apr-16													
Cellular Mobile Telephone Services													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Service Activation/ Provisioning												
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	19256	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	12603	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	DNA	DNA	DNA	DNA	65.45%	DNA	DNA	DNA
2	PDP Context Activation Success Rate												
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		7471585	1793957	DNA	4041100	2537084	DNA	DNA	113413212	798761	320828	658313
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		7289126	1792957	DNA	4014398	2462923	DNA	DNA	111870033	770534	320707	657940
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	97.56%	99.94%	DNA	99.34%	97.08%	98.18%	99.14%	98.64%	96.47%	99.96%	99.94%
3	RNC originated PS Domain lu Connection Setup Success (A)												
i)	RNC originated PS Domain lu Connection Setup Success (A)		310201	382563622	DNA	1563006593	2462923	535722	166209965	339130520	DNA	363867141	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		48045249	2595196	DNA	15382893	23937	531798	3180791	2769548	DNA	3564756	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.65%	0.68%	DNA	0.98%	0.97%	0.73%	1.91%	0.82%	DNA	0.98%	DNA

6.29. 2G WIRELESS 3 DAYS LIVE DATA: MAY

May-16													
Cellular Mobile Telephone Services													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Service Activation/ Provisioning												
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	42739	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	41583	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	DNA	DNA	DNA	DNA	97.30%	DNA	DNA	DNA
2	PDP Context Activation Success Rate												
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	1986195	DNA	4302012	DNA	DNA	DNA	98225047	829596	291012	828028
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	1984539	DNA	4299706	DNA	DNA	DNA	97877590	799683	290712	825706
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	DNA	99.92%	DNA	99.95%	DNA	96.71%	99.55%	99.65%	96.39%	99.90%	99.72%
3	RNC originated PS Domain lu Connection Setup Success (A)												
i)	RNC originated PS Domain lu Connection Setup Success (A)		49283232	508769085	DNA	1585899417	2715362	518709	170238015	363418518	DNA	71867814	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		323675	3871786	DNA	17441231	28931	513829	3294158	3576172	DNA	1559461	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.66%	0.76%	DNA	1.10%	1.07%	0.94%	1.94%	0.98%	DNA	2.17%	DNA

6.30. 2G WIRELESS 3 DAYS LIVE DATA: JUNE

Jun-16													
Cellular Mobile Telephone Services													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Service Activation/ Provisioning												
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	60443	DNA	DNA	DNA	40045	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	60443	DNA	DNA	DNA	39056	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	100.00%	DNA	DNA	DNA	97.53%	DNA	DNA	DNA
2	PDP Context Activation Success Rate												
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	1902087	DNA	4528986	263043	DNA	DNA	90081712	875025	301711	828028
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	1900511	DNA	4526570	258827	DNA	DNA	88051756	843752	301598	825706
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	DNA	99.92%	DNA	99.95%	98.40%	DNA	98.16%	97.75%	96.43%	99.96%	99.72%
3	Drop Rate												
i)	RNC originated PS Domain lu Connection Setup Success (A)		328392	512722597	DNA	1571593945	2439882	DNA	187790073	277574292	DNA	68145589	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		48240742	4183309	DNA	15994203	33465	DNA	3991875	1974497	DNA	1650835	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.68%	0.82%	DNA	1.02%	1.37%	DNA	2.13%	0.71%	DNA	2.42%	DNA

6.31. 2G WIRELESS 3 DAYS LIVE DATA: CONSOLIDATED

Consolidated													
Cellular Mobile Telephone Services													
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Service Quality Parameter													
1	Service Activation/ Provisioning												
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	60443	DNA	DNA	DNA	34013	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	60443	DNA	DNA	DNA	31081	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	100.00%	DNA	DNA	DNA	86.76%	DNA	DNA	DNA
2	PDP Context Activation Success Rate												
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		7471585	1894080	DNA	4290699	1400064	DNA	DNA	100573324	834461	304517	771456
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		7289126	1892669	DNA	4280225	1360875	DNA	DNA	99266460	804656	304339	769784
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	97.56%	99.93%	DNA	99.74%	97.74%	97.44%	98.95%	98.68%	96.43%	99.94%	99.79%
3	Drop Rate												
i)	RNC originated PS Domain lu Connection Setup Success (A)		16640608	468018435	DNA	1573499985	2539389	527216	174746018	326707777	DNA	167960181	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		32203222	3550097	DNA	16272776	28778	522814	3488941	2773406	DNA	2258351	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.66%	0.75%	DNA	1.03%	1.14%	0.84%	1.99%	0.84%	DNA	1.86%	DNA

6.32. 3G WIRELESS DATA: APRIL

Apr-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	312821	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	312816	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		9500854	DNA	33778838	DNA	1752531
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		9499802	DNA	32883750	DNA	1736572
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	99.99%	DNA	97.35%	DNA	99.09%
3	Drop Rate						
i)	RNC originated PS Domain lu Connection Setup Success (A)		677360418	DNA	728450394	DNA	77527969
ii)	RNC originated PS Domain lu Connection Release (B)		3145013	DNA	7137501	DNA	77294099
iii)	Drop Rate = (B/A) * 100	<=5%	0.46%	DNA	0.98%	DNA	0.30%

6.33. 3G WIRELESS DATA: MAY

May-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	1262	553445	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	553442	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		9280732	DNA	36548254	DNA	8980129
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		9279645	DNA	36295910	DNA	8971202
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	99.99%	DNA	99.31%	DNA	99.90%
3	Drop Rate						
i)	RNC originated PS Domain lu Connection Setup Success (A)		633584795	DNA	902026028	DNA	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		2915372	DNA	8903744	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.46%	DNA	0.99%	DNA	DNA

6.34. 3G WIRELESS DATA: JUNE

Jun-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	655022	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	655017	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		7720317	DNA	36018094	2759646	DNA
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		7719157	DNA	35680162	2759646	DNA
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	99.98%	DNA	99.06%	100.00%	DNA
3	Drop Rate						
i)	RNC originated PS Domain lu Connection Setup Success (A)		565101128	DNA	1029476447	9166722	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		3077891	DNA	9626951	103048	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.54%	DNA	0.94%	1.12%	DNA

6.35. 3G WIRELESS DATA: CONSOLIDATED

Consolidated							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	1262	507096	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	507091.6667	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		8833967.667	DNA	35448395.33	2759646	5366330
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		8832868	DNA	34953274	2759646	5353887
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	99.99%	DNA	98.57%	100.00%	99.49%
3	Drop Rate						
i)	RNC originated PS Domain lu Connection Setup Success (A)		625348780.3	DNA	886650956.3	9166722	77527969
ii)	RNC originated PS Domain lu Connection Release (B)		3046092	DNA	8556065.333	103048	77294099
iii)	Drop Rate = (B/A) * 100	<=5%	0.49%	DNA	0.97%	1.12%	0.30%

6.36. 3G WIRELESS 3 DAYS LIVE DATA: APRIL

Apr-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		946377	DNA	3260156	DNA	158126
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		946294	DNA	3235284	DNA	156716
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	99.99%	DNA	99.24%	DNA	99.11%
3	Drop Rate						
i)	RNC originated PS Domain lu Connection Setup Success (A)		66497128	DNA	77945456	DNA	7086977
ii)	RNC originated PS Domain lu Connection Release (B)		313066	DNA	765702	DNA	7062991
iii)	Drop Rate = (B/A) * 100	<=5%	0.47%	DNA	0.98%	DNA	99.66%

6.37. 3G WIRELESS 3 DAYS LIVE DATA: MAY

May-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	60443	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	60443	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		815579	DNA	3557060	320191	DNA
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		815515	DNA	3528596	320191	DNA
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	99.99%	DNA	99.20%	100.00%	DNA
3	Drop Rate						
i)	RNC originated PS Domain lu Connection Setup Success (A)		63039368	DNA	84668858	957075	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		273328	DNA	880346	25974	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.43%	DNA	1.04%	2.71%	DNA

6.38. 3G WIRELESS 3 DAYS LIVE DATA: JUNE

Jun-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		797003	DNA	DNA	273740	DNA
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		796943	DNA	DNA	273740	DNA
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	99.99%	DNA	DNA	100.00%	DNA
3	Drop Rate						
i)	RNC originated PS Domain lu Connection Setup Success (A)		57336155	DNA	107568534	956512	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		312887	DNA	1012060	10531	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.55%	DNA	0.94%	1.10%	DNA

6.39. 3G WIRELESS 3 DAYS LIVE DATA: CONSOLIDATED

Consolidated								
Cellular Mobile Telephone Services								
S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE	0
Network Service Quality Parameter								
1	Service Activation/ Provisioning							
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	60443	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	60443	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	100.00%	DNA	DNA	DNA
2	PDP Context Activation Success Rate							
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		852986	DNA	3408608	296966	158126	DNA
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		852917	DNA	3381940	296966	156716	DNA
iii)	PDP Context Activation Success Rate = (B/A) * 100	>=95%	99.99%	DNA	99.22%	100.00%	99.11%	DNA
3	Drop Rate							
i)	RNC originated PS Domain lu Connection Setup Success (A)		62290884	DNA	90060949	956794	7086977	DNA
ii)	RNC originated PS Domain lu Connection Release (B)		299760	DNA	886036	18253	7062991	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.48%	DNA	0.99%	1.91%	99.66%	DNA

7. CUSTOMER SERVICE DELIVERY

7.1. BILLING AND CUSTOMER CARE

Name of Service Provider	Metering and Billing credibility		Billing Complaints			Termination & Closures	Time taken for refund of deposits after closures: Benchmark	Response time to customer for assistance	
	Postpaid Subscribers	Prepaid Subscribers	%age complaints resolved within 4 weeks	%age complaints resolved within 6 weeks	%age of where credit/waiver is received within one week	% of Termination/ Closure of service within 7 days (100 %)	Cleared over a period of <60 days (100%)	%age of calls answered by the IVR	%age of call answered by the operators (voice to voice) within 90 seconds
Benchmark	≤ 0.1%	≤ 0.1%	≥ 98%	= 100%	= 100%	= 100%	= 100%	≥ 95%	≥ 95%
AIRCEL	0.00%	0.00%	NA	NA	100.00%	100.00%	NA	98.19%	98.86%
AIRTEL	0.01%	0.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	93.05%
BSNL	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.28%
IDEA	0.09%	0.00%	99.99%	100.00%	100.00%	100.00%	99.41%	99.41%	99.46%
MTS	0.07%	0.04%	100.00%	100.00%	100.00%	100.00%	100.00%	98.95%	95.08%
RCOM CDMA	0.09%	0.04%	100.00%	100.00%	100.00%	100.00%	86.78%	98.68%	89.08%
RCOM GSM	0.08%	0.09%	100.00%	100.00%	100.00%	100.00%	75.62%	99.45%	94.28%
TELENOR	NA	0.01%	100.00%	100.00%	100.00%	NA	NA	99.01%	98.24%
TTSL CDMA	0.00%	0.00%	NA	NA	100.00%	100.00%	100.00%	NA	98.42%
TTSL GSM	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.55%	98.09%
VODAFONE	0.13%	0.14%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.05%

Name of Service Provider	Customer Care & Grievances Redressal	
	% of Complaints addressed at call center level	% of Complaints addressed by Appellate Authority
Benchmark		
AIRCEL	100.00%	NIL
AIRTEL	97.95%	60.00%
BSNL	60.67%	NIL
IDEA	40.14%	NIL
MTS	19.50%	100.00%
RCOM CDMA	100.00%	100.00%
RCOM GSM	100.00%	100.00%
TELENOR	0.00%	NIL
TTSL CDMA	99.11%	77.78%
TTSL GSM	98.76%	87.97%
VODAFONE	100.00%	100.00%

7.2. LIVE CALLING DATA: CONSOLIDATED

Name of Service Provider	Metering and Billing (Service Request)				Response time to customer for Assistance	
	Total Calls Attempted	No. of Subscribers reached	Complaints/ Request attended to satisfaction	% of Complaints/ Request attended to satisfaction	Accessibility of call centre / Customer care	%age of call answered by the operators (voice to voice) within 90 seconds
Benchmark					≥ 95%	≥ 95%
AIRCEL	80	49	45	91.84%	100.00%	96.00%
AIRTEL	211	119	115	96.64%	100.00%	100.00%
BSNL	357	250	227	90.80%	100.00%	100.00%
IDEA	345	200	198	99.00%	100.00%	100.00%
MTS	35	14	14	100.00%	100.00%	100.00%
RCOM CDMA	NA	NA	NA	NA	NA	NA
RCOM GSM	329	200	193	96.50%	97.00%	97.00%
TELENOR	3	3	3	100.00%	100.00%	100.00%
TTSL CDMA	60	49	44	89.80%	100.00%	100.00%
TTSL GSM	65	53	47	88.68%	100.00%	99.00%
VODAFONE	300	122	119	97.54%	100.00%	100.00%

7.3. 3 DAYS LIVE CALL CENTRE DATA

Response time to customer assistance						
OPERATOR	Total no of calls attempted to customer care/Call center	Total no. of calls successfully established to customer care/Call center	% age of Accessibility of Call centre	Total Calls reached to operator for (Voice to Voice)	Total number of calls answered by the operator (Voice to voice) within 90 seconds	% age calls answered by the operator within 90 seconds
	AVERAGE					
OPERATOR			>=95%			>=95%
AIRCEL	45354	44686	98.53%	6797	6770	99.60%
AIRTEL	55524	55524	100.00%	123899	120905	97.58%
BSNL	117317	117317	100.00%	52044	51719	99.38%
IDEA	984662	980859	99.61%	293658	293037	99.79%
MTS	15463	15297	98.93%	473	454	95.98%
RCOM CDMA	25793	25477	98.77%	5321	5088	95.62%
RCOM GSM	143660	142926	99.49%	26429	25925	98.09%
TELENOR	707463	699566	98.88%	163859	163177	99.58%
TTSL CDMA	DNA	DNA	DNA	1117	1114	99.73%
TTSL GSM	20851	20435	98.00%	35527	34844	98.08%
VODAFONE	673887	673887	100.00%	258850	254452	98.30%

8. L1 CALLING DATA

L1 Calling data covers all the SDCA covered across the two operator assisted drive tests:

- Moradabad: 4th May to 6th May 2016
- Ghaziabad: 25th May to 27th May 2016
- Mathura: 1st June to 3rd June
- Kotdwar: 22nd June to 24th June

8.1. MORADABAD SSA

Airtel							
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Moradabad	Bilari	Hasanpur	Sambhal	Amroha
1	100	5	√	√	√	√	√
2	101	5	√	√	√	√	√
3	102	5	√	√	√	√	√
4	104	5	x	x	x	x	x
5	108	5	√	√	√	√	√
6	138	5	√	√	√	√	√
7	149	5	√	√	√	√	√
8	181	5	√	√	√	√	√
9	182	5	√	√	√	√	√
10	1033	5	√	√	√	√	√
11	1037	5	x	x	x	x	x
12	1056	5	x	x	x	x	x
13	1060	5	x	x	x	x	x
14	1063	5	√	√	√	√	√
15	1064	5	x	x	x	x	x
16	1070	5	√	√	√	√	√
17	1071	5	x	x	x	x	x
18	1072	5	x	x	x	x	x
19	1073	5	x	x	x	x	x
20	1077	5	√	√	√	√	√
21	1090	5	√	√	√	√	√
22	1091	5	x	x	x	x	x
23	1097	5	x	x	x	x	x
24	1099	5	x	x	x	x	x
25	10580	5	x	x	x	x	x
26	10589	5	x	x	x	x	x
27	10740	5	x	x	x	x	x
28	10741	5	x	x	x	x	x
29	1511	5	x	x	x	x	x
30	1512	5	x	x	x	x	x
31	1514	5	x	x	x	x	x
32	15100	5	√	√	√	√	√
33	155304	5	x	x	x	x	x
34	155214	5	x	x	x	x	x
35	1903	5	√	√	√	√	√
36	1909	5	√	√	√	√	√
37	1912	5	√	√	√	√	√
38	1916	5	x	x	x	x	x
39	1950	5	x	x	x	x	x

Idea						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Moradabad	Sambhal	Hasanpur	Amroha
1	100	5	√	√	√	√
2	101	5	√	×	×	×
3	102	5	√	√	√	√
4	104	5	×	×	×	×
5	108	5	√	√	√	√
6	138	5	×	×	√	√
7	149	5	×	×	×	×
8	181	5	×	×	√	√
9	182	5	√	√	√	√
10	1033	5	√	√	√	√
11	1037	5	×	×	×	×
12	1056	5	×	×	×	×
13	1060	5	×	×	×	×
14	1063	5	×	√	√	√
15	1064	5	×	×	×	×
16	1070	5	×	×	×	×
17	1071	5	×	×	×	×
18	1072	5	×	√	√	√
19	1073	5	×	×	×	√
20	1077	5	×	×	×	×
21	1090	5	√	√	√	√
22	1091	5	×	×	×	√
23	1097	5	×	×	×	×
24	1099	5	×	×	×	×
25	10580	5	×	×	×	×
26	10589	5	×	×	×	×
27	10740	5	×	×	×	×
28	10741	5	×	×	×	×
29	1511	5	×	×	×	×
30	1512	5	×	×	√	×
31	1514	5	×	×	√	×
32	15100	5	√	√	√	×
33	155304	5	×	×	×	×
34	155214	5	×	×	×	×
35	1903	5	√	×	√	×
36	1909	5	√	√	×	√
37	1912	5	×	×	×	√
38	1916	5	×	×	×	×
39	1950	5	×	×	×	×

Telenor							
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Shambhal	Moradabad	Bilari	Hasanpur	Amroha
1	100	5	√	√	√	√	√
2	101	5	√	√	√	√	√
3	102	5	√	√	√	√	√
4	104	5	x	x	x	x	x
5	108	5	√	√	√	√	√
6	138	5	√	√	√	√	√
7	149	5	x	x	x	x	x
8	181	5	√	√	√	√	√
9	182	5	√	√	√	√	√
10	1033	5	x	x	x	x	x
11	1037	5	x	x	x	x	x
12	1056	5	x	x	x	x	x
13	1060	5	x	x	x	x	x
14	1063	5	√	√	√	√	√
15	1064	5	x	x	x	x	x
16	1070	5	√	√	√	x	x
17	1071	5	x	x	x	x	x
18	1072	5	√	√	√	√	√
19	1073	5	x	x	x	x	x
20	1077	5	√	√	√	√	√
21	1090	5	√	√	√	√	√
22	1091	5	x	x	x	x	x
23	1097	5	x	x	x	x	x
24	1099	5	x	x	x	x	x
25	10580	5	x	x	x	x	x
26	10589	5	x	x	x	x	x
27	10740	5	x	x	x	x	x
28	10741	5	x	x	x	x	x
29	1511	5	x	x	x	x	x
30	1512	5	x	x	x	x	x
31	1514	5	x	x	x	x	x
32	15100	5	x	x	x	x	x
33	155304	5	x	x	x	x	x
34	155214	5	x	x	x	x	x
35	1903	5	x	x	x	x	x
36	1909	5	√	√	√	√	√
37	1912	5	x	x	x	x	x
38	1916	5	x	x	x	x	x
39	1950	5	x	x	x	x	x

TTSL CDMA							
SR. NO.	EMERGENCY NUMBER	CALLS MADE	MRD	SAMBHAL	HASANPUR	AMROHA	Bilari
1	100	5	√	√	√	√	√
2	101	5	√	√	√	√	√
3	102	5	√	√	√	√	√
4	104	5	x	x	x	x	x
5	108	5	√	√	√	√	√
6	138	5	√	√	√	√	√
7	149	5	x	x	√	√	√
8	181	5	x	x	x	x	x
9	182	5	√	√	√	√	√
10	1033	5	√	√	√	√	√
11	1037	5	x	x	x	x	x
12	1056	5	x	x	x	x	x
13	1060	5	x	x	x	x	x
14	1063	5	x	x	x	x	x
15	1064	5	x	x	x	x	x
16	1070	5	√	√	√	√	√
17	1071	5	√	√	√	√	√
18	1072	5	√	√	√	√	√
19	1073	5	x	x	x	x	x
20	1077	5	x	x	x	x	x
21	1090	5	√	√	√	√	√
22	1091	5	x	x	x	x	x
23	1097	5	√	√	√	√	√
24	1099	5	x	x	x	x	x
29	1511	5	x	x	x	x	x
30	1512	5	x	x	x	x	x
31	1514	5	x	x	x	x	x
35	1903	5	x	x	x	x	x
36	1909	5	√	√	√	√	√
37	1912	5	x	x	x	x	x
38	1916	5	x	x	x	x	x
39	1950	5	x	x	x	x	x
25	10580	5	x	x	x	x	x
26	10589	5	x	x	x	x	x
27	10740	5	x	x	x	x	x
28	10741	5	x	x	x	x	x
32	15100	5	√	√	√	√	√
34	155214	5	x	x	x	x	x
33	155304	5	x	x	x	x	x

TTSL GSM							
SR. NO.	EMERGENCY NUMBER	CALLS MADE	MRD	SAMBHAL	HASANPUR	AMROHA	Bilari
1	100	5	√	√	√	√	√
2	101	5	√	√	√	√	√
3	102	5	√	√	√	√	√
4	104	5	×	×	×	×	×
5	108	5	√	√	√	√	√
6	138	5	√	√	√	√	√
7	149	5	×	×	√	√	√
8	181	5	×	×	×	×	×
9	182	5	√	√	√	√	√
10	1033	5	√	√	√	√	√
11	1037	5	×	×	×	×	×
12	1056	5	×	×	×	×	×
13	1060	5	×	×	×	×	×
14	1063	5	×	×	×	×	×
15	1064	5	×	×	×	×	×
16	1070	5	√	√	√	√	√
17	1071	5	√	√	√	√	√
18	1072	5	√	√	√	√	√
19	1073	5	×	×	×	×	×
20	1077	5	×	×	×	×	×
21	1090	5	√	√	√	√	√
22	1091	5	×	×	×	×	×
23	1097	5	√	√	√	√	√
24	1099	5	×	×	×	×	×
29	1511	5	×	×	×	×	×
30	1512	5	×	×	×	×	×
31	1514	5	×	×	×	×	×
35	1903	5	×	×	×	×	×
36	1909	5	√	√	√	√	√
37	1912	5	×	×	×	×	×
38	1916	5	×	×	×	×	×
39	1950	5	×	×	×	×	×
25	10580	5	×	×	×	×	×
26	10589	5	×	×	×	×	×
27	10740	5	×	×	×	×	×
28	10741	5	×	×	×	×	×
32	15100	5	√	√	√	√	√
34	155214	5	×	×	×	×	×
33	155304	5	×	×	×	×	×

Vodafone							
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Muradabad	Bilari	Sambhal	Amroha	Hasanpur
1	100	5	√	√	√	√	√
2	101	5	x	√	√	√	√
3	102	5	√	√	√	√	√
4	104	5	x	x	x	x	x
5	108	5	√	√	√	√	√
6	138	5	x	x	x	x	x
7	149	5	x	x	x	x	x
8	181	5	√	√	√	√	√
9	182	5	√	√	√	√	√
10	1033	5	x	x	x	x	x
11	1037	5	x	x	x	x	x
12	1056	5	x	x	x	x	x
13	1060	5	x	x	x	x	x
14	1063	5	√	√	√	√	√
15	1064	5	x	x	x	x	x
16	1070	5	x	x	x	x	x
17	1071	5	x	x	x	x	x
18	1072	5	√	√	√	√	√
19	1073	5	x	x	x	√	√
20	1077	5	√	√	√	x	√
21	1090	5	√	√	√	√	√
22	1091	5	x	x	x	x	x
23	1097	5	√	√	√	√	√
24	1099	5	x	x	x	x	x
25	10580	5	x	x	x	x	x
26	10589	5	x	x	x	x	x
27	10740	5	x	x	x	x	x
28	10741	5	x	x	x	x	x
29	1511	5	x	x	x	x	x
30	1512	5	x	x	x	x	x
31	1514	5	x	x	x	x	x
32	15100	5	√	√	√	√	√
33	155304	5	x	x	x	x	x
34	155214	5	√	√	√	√	√
35	1903	5	√	√	√	√	√
36	1909	5	√	√	√	√	√
37	1912	5	√	√	√	√	√
38	1916	5	x	x	x	x	x
39	1950	5	x	√	√	x	√

MTS									
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Haldwani	Chor Gali	Baazpur	Kashipur	Rudrpur	Sitarganj	Khatima
1	100	5	√	√	√	√	√	√	√
2	101	5	√	√	√	√	√	√	√
3	102	5	√	x	x	x	√	√	√
4	104	5	√	x	x	x	√	x	x
5	108	5	√	√	√	√	√	√	√
6	138	5	x	x	x	x	x	x	x
7	149	5	x	x	x	x	x	x	x
8	181	5	x	x	x	x	x	x	x
9	182	5	x	x	x	x	x	x	x
10	1033	5	√	√	x	x	√	x	x
11	1037	5	x	x	x	x	x	x	x
12	1056	5	√	√	√	√	√	x	x
13	1060	5	x	x	x	x	x	x	x
14	1063	5	x	x	x	x	x	x	x
15	1064	5	x	x	x	x	x	x	x
16	1070	5	√	√	x	x	√	x	x
17	1071	5	x	x	x	x	x	x	x
18	1072	5	x	x	x	x	x	x	x
19	1073	5	x	x	x	x	x	x	x
20	1077	5	x	x	x	x	x	x	x
21	1090	5	x	x	√	√	x	√	√
22	1091	5	√	√	x	x	√	√	√
23	1097	5	x	x	x	x	x	x	x
24	1099	5	x	x	x	x	x	x	x
25	10580	5	x	x	x	x	x	x	x
26	10589	5	x	x	x	x	x	x	x
27	10740	5	x	x	x	x	x	x	x
28	10741	5	x	x	x	x	x	x	x
29	1511	5	x	x	x	x	x	x	x
30	1512	5	x	x	x	x	x	x	x
31	1514	5	x	x	x	x	x	x	x
32	15100	5	x	x	x	x	x	x	x
33	155304	5	x	x	x	x	x	x	x
34	155214	5	x	x	x	x	x	x	x
35	1903	5	x	x	x	x	x	x	x
36	1909	5	x	x	x	x	x	x	x
37	1912	5	x	x	x	x	x	x	x
38	1916	5	x	x	x	x	x	x	x
39	1950	5	√	√	√	√	√	√	√

RCOM CDMA						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Moradabad	Shambhal /Hasanpur	Amroha	Chandosī
1	100	5	√	√	√	√
2	101	5	√	√	√	√
3	102	5	√	√	√	√
4	104	5	x	x	x	x
5	108	5	√	√	√	√
6	138	5	x	x	√	x
7	149	5	√	√	√	√
8	181	5	√	√	√	√
9	182	5	√	x	√	x
10	1033	5	√	√	√	√
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	√	x	√
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	x	x	x	x
17	1071	5	x	x	x	x
18	1072	5	x	x	x	x
19	1073	5	x	√	√	√
20	1077	5	x	x	x	x
21	1090	5	√	x	√	x
22	1091	5	x	x	x	x
23	1097	5	√	√	√	√
24	1099	5	x	x	x	x
25	10580	5	x	x	x	x
26	10589	5	x	x	x	x
27	10740	5	x	x	x	x
28	10741	5	x	x	x	x
29	1511	5	x	x	x	x
30	1512	5	x	x	x	x
31	1514	5	x	x	x	x
32	15100	5	x	√	√	√
33	155304	5	x	x	x	x
34	155214	5	x	x	x	x
35	1903	5	√	√	√	√
36	1909	5	√	√	√	√
37	1912	5	x	√	√	√
38	1916	5	x	x	x	x
39	1950	5	x	x	x	x

RCOM GSM						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Moradabad	Shambhal/hasanpur	Amroha	Chandosi
1	100	5	√	√	√	√
2	101	5	√	√	√	√
3	102	5	√	√	√	√
4	104	5	x	x	x	x
5	108	5	√	√	√	√
6	138	5	x	x	x	x
7	149	5	√	√	√	√
8	181	5	√	√	√	√
9	182	5	√	√	√	√
10	1033	5	√	√	√	√
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	x	x	x
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	x	x	x	x
17	1071	5	x	x	x	x
18	1072	5	√	√	√	√
19	1073	5	x	x	x	x
20	1077	5	x	x	x	x
21	1090	5	√	√	√	√
22	1091	5	x	x	x	x
23	1097	5	√	√	√	√
24	1099	5	x	x	x	x
25	10580	5	x	x	x	x
26	10589	5	x	x	x	x
27	10740	5	x	x	x	x
28	10741	5	x	x	x	x
29	1511	5	x	x	x	x
30	1512	5	x	x	x	x
31	1514	5	x	x	x	x
32	15100	5	x	x	x	x
33	155304	5	x	x	x	x
34	155214	5	x	x	x	x
35	1903	5	√	√	√	√
36	1909	5	√	√	√	√
37	1912	5	√	√	√	√
38	1916	5	x	x	x	x
39	1950	5	x	x	x	x

8.2 GHAZIABAD SSA

Airtel									
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Buland Shahar	Hapur	ModiNagar	Garh	Sikandrabad	Khurja	Dibai
1	100	5	√	√	√	√	√	x	x
2	101	5	√	√	√	√	√	x	x
3	102	5	√	√	√	√	√	√	√
4	104	5	x	x	x	x	x	x	x
5	108	5	√	√	√	√	√	√	√
6	138	5	√	√	√	√	√	√	√
7	149	5	√	√	√	√	√	√	√
8	181	5	√	√	√	√	√	√	√
9	182	5	√	√	√	√	√	√	√
10	1033	5	√	√	√	√	√	√	√
11	1037	5	x	x	x	x	x	x	x
12	1056	5	x	x	x	x	x	x	x
13	1060	5	x	x	x	x	x	x	x
14	1063	5	√	√	√	√	√	√	√
15	1064	5	x	x	x	x	x	x	x
16	1070	5	√	√	√	√	√	√	√
17	1071	5	x	x	x	x	x	x	x
18	1072	5	x	x	x	x	x	x	x
19	1073	5	x	x	x	x	x	x	x
20	1077	5	√	√	√	√	√	√	√
21	1090	5	√	√	√	√	√	√	√
22	1091	5	x	x	x	x	x	x	x
23	1097	5	x	x	x	x	x	x	x
24	1099	5	x	x	x	x	x	x	x
25	10580	5	x	x	x	x	x	x	x
26	10589	5	x	x	x	x	x	x	x
27	10740	5	x	x	x	x	x	x	x
28	10741	5	x	x	x	x	x	x	x
29	1511	5	x	x	x	x	x	x	x
30	1512	5	x	x	x	x	x	x	x
31	1514	5	x	x	x	x	x	x	x
32	15100	5	x	x	x	x	x	x	x
33	155304	5	x	x	x	x	x	x	x
34	155214	5	x	x	x	x	x	x	x
35	1903	5	√	√	√	√	√	√	√
36	1909	5	√	√	√	√	√	√	√
37	1912	5	√	√	√	√	√	√	√
38	1916	5	x	x	x	x	x	x	x
39	1950	5	x	x	x	x	x	x	x

RCOM CDMA						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	BULANDSHAR/HAPUR	MODINAGAR/GARH	SIKANDRABAD/KHURJA	Pahasu/Debai
1	100	5	√	√	x	x
2	101	5	√	√	x	x
3	102	5	√	√	√	√
4	104	5	x	x	√	x
5	108	5	√	√	√	x
6	138	5	x	x	√	x
7	149	5	√	√	x	√
8	181	5	√	√	x	√
9	182	5	√	x	x	x
10	1033	5	√	√	x	x
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	√	x	x
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	x	x	x	x
17	1071	5	x	x	x	x
18	1072	5	x	x	x	x
19	1073	5	x	√	x	x
20	1077	5	x	x	x	x
21	1090	5	√	√	√	√
22	1091	5	x	x	x	x
23	1097	5	√	√	x	x
24	1099	5	x	x	x	x
25	10580	5	x	x	x	x
26	10589	5	x	x	x	x
27	10740	5	x	x	x	x
28	10741	5	x	x	x	x
29	1511	5	x	x	x	x
30	1512	5	x	x	x	x
31	1514	5	x	x	x	x
32	15100	5	x	√	x	x
33	155304	5	x	x	x	x
34	155214	5	x	x	x	x
35	1903	5	√	√	√	√
36	1909	5	√	√	√	√
37	1912	5	x	√	x	x
38	1916	5	x	x	x	x
39	1950	5	x	x	x	x

RCOM GSM						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Moradabad	Shambhal/hasanpur	Amroha	Chandosi
1	100	5	√	√	√	√
2	101	5	√	√	√	√
3	102	5	√	√	√	√
4	104	5	x	x	x	x
5	108	5	√	√	√	√
6	138	5	x	x	x	x
7	149	5	√	√	√	√
8	181	5	√	√	√	√
9	182	5	√	√	√	√
10	1033	5	√	√	√	√
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	x	x	x
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	x	x	x	x
17	1071	5	x	x	x	x
18	1072	5	√	√	√	√
19	1073	5	x	x	x	x
20	1077	5	x	x	x	x
21	1090	5	√	√	√	√
22	1091	5	x	x	x	x
23	1097	5	√	√	√	√
24	1099	5	x	x	x	x
25	10580	5	x	x	x	x
26	10589	5	x	x	x	x
27	10740	5	x	x	x	x
28	10741	5	x	x	x	x
29	1511	5	x	x	x	x
30	1512	5	x	x	x	x
31	1514	5	x	x	x	x
32	15100	5	x	x	x	x
33	155304	5	x	x	x	x
34	155214	5	x	x	x	x
35	1903	5	√	√	√	√
36	1909	5	√	√	√	√
37	1912	5	√	√	√	√
38	1916	5	x	x	x	x
39	1950	5	x	x	x	x

Telenor											
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Bulandshar	Hapur	Modinagar	Garh	Siayana	ikandraba	Khurja	Pahasu	Deabai
1	100	5	√	√	√	√	√	√	√	x	x
2	101	5	√	√	√	√	√	√	√	x	x
3	102	5	√	√	√	√	√	√	√	√	√
4	104	5	x	x	x	x	x	x	x	x	x
5	108	5	√	√	√	√	√	√	√	√	√
6	138	5	√	√	√	√	√	√	√	√	√
7	149	5	√	√	√	√	√	√	√	√	√
8	181	5	√	√	√	√	√	√	√	√	√
9	182	5	x	x	x	x	x	x	x	x	x
10	1033	5	x	x	x	x	x	x	x	x	x
11	1037	5	x	x	x	x	x	x	x	x	x
12	1056	5	x	x	x	x	x	x	x	x	x
13	1060	5	x	x	x	x	x	x	x	x	x
14	1063	5	x	x	x	x	x	x	x	x	x
15	1064	5	x	x	x	x	x	x	x	x	x
16	1070	5	x	x	x	x	x	x	x	x	x
17	1071	5	√	√	√	√	√	√	√	√	√
18	1072	5	√	√	√	√	√	√	√	√	√
19	1073	5	x	x	x	x	x	x	x	x	x
20	1077	5	√	√	√	√	√	√	√	√	√
21	1090	5	√	√	√	√	√	√	√	√	√
22	1091	5	x	x	x	x	x	x	x	x	x
23	1097	5	√	√	√	√	√	√	√	√	√
24	1099	5	x	x	x	x	x	x	x	x	x
25	10580	5	x	x	x	x	x	x	x	x	x
26	10589	5	x	x	x	x	x	x	x	x	x
27	10740	5	x	x	x	x	x	x	x	x	x
28	10741	5	x	x	x	x	x	x	x	x	x
29	1511	5	x	x	x	x	x	x	x	x	x
30	1512	5	x	x	x	x	x	x	x	x	x
31	1514	5	x	x	x	x	x	x	x	x	x
32	15100	5	x	x	x	x	x	x	x	x	x
33	155304	5	x	x	x	x	x	x	x	x	x
34	155214	5	x	x	x	x	x	x	x	x	x
35	1903	5	√	√	√	√	√	√	√	√	√
36	1909	5	√	√	√	√	√	√	√	√	√
37	1912	5	x	x	x	x	x	x	x	x	x
38	1916	5	x	x	x	x	x	x	x	x	x
39	1950	5	x	x	x	x	x	x	x	x	x

TTSL GSM											
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Bulandshar	HAPUR	MODINAGAR	GARH	siyana	sikanderabad	KHURJA	PHASU	DIBAI
1	100	5	√	√	√	√	√	√	√	x	x
2	101	5	√	√	√	√	√	√	√	x	x
3	102	5	√	√	√	√	√	√	√	√	√
4	104	5	x	x	x	x	x	x	x	x	x
5	108	5	√	√	√	√	√	√	√	√	√
6	138	5	√	√	√	√	√	√	√	√	√
7	149	5	√	√	√	√	√	√	√	√	√
8	181	5	√	√	√	√	√	√	√	√	√
9	182	5	x	x	x	x	x	x	x	x	x
10	1033	5	√	√	√	√	√	√	√	√	√
11	1037	5	x	x	x	x	x	x	x	x	x
12	1056	5	x	x	x	x	x	x	x	x	x
13	1060	5	x	x	x	x	x	x	x	x	x
14	1063	5	x	x	x	x	x	x	x	x	x
15	1064	5	x	x	x	x	x	x	x	x	x
16	1070	5	x	√	√	√	√	√	√	√	x
17	1071	5	√	√	√	x	√	√	√	√	√
18	1072	5	√	√	√	√	√	√	√	√	√
19	1073	5	x	x	x	x	x	x	x	x	x
20	1077	5	√	√	√	√	√	√	√	√	√
21	1090	5	√	√	√	√	√	√	√	√	√
22	1091	5	x	x	x	x	x	x	x	x	x
23	1097	5	√	√	√	√	√	√	√	√	√
24	1099	5	√	√	√	√	√	√	√	√	√
25	10580	5	x	x	x	x	x	x	x	x	x
26	10589	5	√	√	√	√	√	√	√	√	√
27	10740	5	x	x	x	x	x	x	x	x	x
28	10741	5	√	√	√	√	√	√	√	√	√
29	1511	5	√	√	√	√	√	√	√	√	√
30	1512	5	x	x	x	x	x	x	x	x	x
31	1514	5	x	x	x	x	x	x	x	x	x
32	15100	5	√	√	√	√	√	√	√	√	√
33	155304	5	x	x	x	x	x	x	x	x	x
34	155214	5	x	x	x	x	x	x	x	x	x
35	1903	5	x	x	x	x	x	x	x	x	x
36	1909	5	x	x	x	x	x	x	x	x	x
37	1912	5	x	x	x	x	x	x	x	x	x
38	1916	5	x	x	x	x	x	x	x	x	x
39	1950	5	x	x	x	x	x	x	x	x	x

TTSL CDMA											
SR. NO.	EMERGE NCY NUMBER	CALLS MADE	Bulandsh ar	HAPUR	MODINA GAR	GARH	siyana	sikander abad	KHURJA	PHASU	DIBNAI
1	100	5	√	√	√	√	√	√	√	x	No Coverage
2	101	5	√	√	√	√	√	√	√	x	
3	102	5	√	√	√	√	√	√	√	√	
4	104	5	x	x	x	x	x	x	x	x	
5	108	5	√	√	√	√	√	√	√	√	
6	138	5	√	√	√	√	√	√	√	√	
7	149	5	√	√	√	√	√	√	√	√	
8	181	5	√	√	√	√	√	√	√	√	
9	182	5	x	x	x	x	x	x	x	x	
10	1033	5	√	√	√	√	√	√	√	√	
11	1037	5	x	x	x	x	x	x	x	x	
12	1056	5	x	x	x	x	x	x	x	x	
13	1060	5	x	x	x	x	x	x	x	x	
14	1063	5	x	x	x	x	x	x	x	x	
15	1064	5	x	x	x	x	x	x	x	x	
16	1070	5	x	√	√	√	√	√	√	√	
17	1071	5	√	√	√	x	√	√	√	√	
18	1072	5	√	√	√	√	√	√	√	√	
19	1073	5	x	x	x	x	x	x	x	x	
20	1077	5	√	√	√	√	√	√	√	√	
21	1090	5	√	√	√	√	√	√	√	√	
22	1091	5	x	x	x	x	x	x	x	x	
23	1097	5	√	√	√	√	√	√	√	√	
24	1099	5	√	√	√	√	√	√	√	√	
25	1511	5	x	x	x	x	x	x	x	x	
26	1512	5	√	√	√	√	√	√	√	√	
27	1514	5	x	x	x	x	x	x	x	x	
28	1903	5	√	√	√	√	√	√	√	√	
29	1909	5	√	√	√	√	√	√	√	√	
30	1912	5	x	x	x	x	x	x	x	x	
31	1916	5	x	x	x	x	x	x	x	x	
32	1950	5	√	√	√	√	√	√	√	√	
33	10580	5	x	x	x	x	x	x	x	x	
34	10589	5	x	x	x	x	x	x	x	x	
35	10740	5	x	x	x	x	x	x	x	x	
36	10741	5	x	x	x	x	x	x	x	x	
37	15100	5	x	x	x	x	x	x	x	x	
38	155214	5	x	x	x	x	x	x	x	x	
39	155304	5	x	x	x	x	x	x	x	x	

Vodafone											
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Bulandsahar	Hapur	Modinagar	Garh	Siyana	Sikandrabad	Khurja	Pahasu	Dibaz
1	100	5	√	√	√	√	√	x	x	x	x
2	101	5	√	√	√	√	√	√	x	x	x
3	102	5	√	√	√	√	√	√	√	√	√
4	104	5	x	x	x	x	x	x	x	x	x
5	108	5	√	√	√	√	√	√	√	√	√
6	138	5	x	x	x	√	√	√	x	x	x
7	149	5	x	x	x	x	x	x	x	x	x
8	181	5	√	√	√	√	√	√	√	√	√
9	182	5	x	√	x	√	√	x	x	x	x
10	1033	5	x	x	x	x	x	x	x	x	x
11	1037	5	x	x	x	x	x	x	x	x	x
12	1056	5	x	x	x	x	x	x	x	x	x
13	1060	5	x	x	x	x	x	x	x	x	x
14	1063	5	x	√	√	√	√	√	√	√	√
15	1064	5	x	x	x	x	x	x	x	x	x
16	1070	5	x	x	x	x	x	x	x	x	x
17	1071	5	x	x	x	x	x	x	x	x	x
18	1072	5	√	x	x	√	√	√	√	√	√
19	1073	5	x	√	x	x	x	x	x	x	x
20	1077	5	√	√	√	√	√	√	√	√	√
21	1090	5	√	√	√	√	√	√	√	√	√
22	1091	5	x	x	x	x	x	x	x	x	x
23	1097	5	√	√	√	√	√	√	√	x	x
24	1099	5	x	x	x	x	x	x	x	x	x
25	10580	5	x	x	x	x	x	x	x	x	x
26	10589	5	x	x	x	x	x	x	x	x	x
27	10740	5	x	x	x	x	x	x	x	x	x
28	10741	5	x	x	x	x	x	x	x	x	x
29	1511	5	x	x	x	x	x	x	x	x	x
30	1512	5	x	x	x	x	x	x	x	x	x
31	1514	5	x	x	x	x	x	x	x	x	x
32	15100	5	x	x	x	x	x	x	x	x	x
33	155304	5	x	x	x	x	x	x	x	x	x
34	155214	5	√	√	√	√	√	√	√	√	√
35	1903	5	√	√	√	√	√	√	x	x	x
36	1909	5	√	√	√	√	√	√	√	√	√
37	1912	5	x	√	√	√	√	√	x	x	x
38	1916	5	x	x	x	x	x	x	x	x	x
39	1950	5	√	√	x	x	x	x	x	√	x

8.3. MATHURA SSA

Airtel							
SR. NO.	EMERGENCY NUMBER	CALLS MADE	MATHURA	VRINDAVAN	KOSHI KALAN HW	HOLI GATE	SADABAD
1	100	5	√	√	√	√	√
2	101	5	√	√	√	√	√
3	102	5	√	√	√	√	√
4	104	5	x	x	x	x	x
5	108	5	√	√	√	√	√
6	138	5	√	√	√	√	√
7	149	5	√	√	√	√	√
8	181	5	√	√	√	√	√
9	182	5	x	x	x	x	x
10	1033	5	√	√	√	√	√
11	1037	5	x	x	x	x	x
12	1056	5	x	x	x	x	x
13	1060	5	x	x	x	x	x
14	1063	5	√	√	√	√	√
15	1064	5	x	x	x	x	x
16	1070	5	x	x	x	x	x
17	1071	5	x	x	x	x	x
18	1072	5	√	√	√	√	√
19	1073	5	x	x	x	x	x
20	1077	5	√	√	√	√	√
21	1090	5	√	√	√	√	√
22	1091	5	x	x	x	x	x
23	1097	5	√	√	√	√	√
24	1099	5	x	x	x	x	x
25	10580	5	x	x	x	x	x
26	10589	5	x	x	x	x	x
27	10740	5	x	x	x	x	x
28	10741	5	x	x	x	x	x
29	1511	5	x	x	x	x	x
30	1512	5	x	x	x	x	x
31	1514	5	x	x	x	x	x
32	15100	5	√	√	√	√	√
33	155304	5	x	x	x	x	x
34	155214	5	x	x	x	x	x
35	1903	5	√	√	√	√	√
36	1909	5	√	√	√	√	√
37	1912	5	x	x	x	x	x
38	1916	5	x	x	x	x	x
39	1950	5	√	√	√	√	√

SR. NO.	EMERGENCY NUMBER	MTS				
		CALLS MADE	Mathura	Vrindavan	Chhata	Sadabad
1	100	5	√	√	√	√
2	101	5	√	√	√	√
3	102	5	√	x	x	x
4	104	5	x	x	x	x
5	108	5	√	√	√	√
6	138	5	x	x	x	x
7	149	5	x	x	x	x
8	181	5	x	x	x	x
9	182	5	x	x	x	x
10	1033	5	x	x	x	x
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	x	x	x
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	√	√	√	√
17	1071	5	x	x	x	x
18	1072	5	x	x	x	x
19	1073	5	x	x	x	x
20	1077	5	x	x	x	x
21	1090	5	√	√	√	√
22	1091	5	x	x	x	x
23	1097	5	x	x	x	x
24	1099	5	x	x	x	x
25	10580	5	x	x	x	x
26	10589	5	x	x	x	x
27	10740	5	x	x	x	x
28	10741	5	x	x	x	x
29	1511	5	x	x	x	x
30	1512	5	x	x	x	x
31	1514	5	x	x	x	x
32	15100	5	x	x	x	x
33	155304	5	x	x	x	x
34	155214	5	x	x	x	x
35	1903	5	x	x	x	x
36	1909	5	x	x	x	x
37	1912	5	x	x	x	x
38	1916	5	x	x	x	x
39	1950	5	x	x	x	x

RCOM GSM						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	MATHURA	SADABAD	VRINDAVAN	CHHATA
1	100	5	√	√	√	√
2	101	5	√	√	√	√
3	102	5	x	x	x	x
4	104	5	√	√	√	√
5	108	5	√	√	√	√
6	138	5	x	x	x	x
7	149	5	√	√	√	√
8	181	5	x	x	x	x
9	182	5	x	x	x	x
10	1033	5	x	x	x	x
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	x	x	x
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	x	x	x	√
17	1071	5	√	√	√	√
18	1072	5	√	√	√	√
19	1073	5	x	x	x	x
20	1077	5	√	√	√	√
21	1090	5	√	√	√	√
22	1091	5	√	√	√	√
23	1097	5	x	x	x	x
24	1099	5	x	x	x	x
25	10580	5	x	x	x	x
26	10589	5	x	x	x	x
27	10740	5	x	x	x	x
28	10741	5	x	x	x	x
29	1511	5	x	x	x	x
30	1512	5	x	x	x	x
31	1514	5	x	x	x	x
32	15100	5	x	x	x	x
33	155304	5	x	x	x	x
34	155214	5	x	x	x	x
35	1903	5	√	√	√	√
36	1909	5	√	√	√	√
37	1912	5	x	x	x	x
38	1916	5	x	x	x	x
39	1950	5	x	x	x	x

Telenor						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Mathura	Vrindavan	Koshi	Sadabad
1	100	5	√	√	√	√
2	101	5	√	√	√	√
3	102	5	√	√	√	√
4	104	5	x	x	x	x
5	108	5	√	√	√	√
6	138	5	x	x	x	x
7	149	5	x	x	x	x
8	181	5	√	√	√	√
9	182	5	x	x	x	x
10	1033	5	x	x	x	x
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	x	x	x
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	x	x	x	x
17	1071	5	√	√	√	√
18	1072	5	√	√	√	√
19	1073	5	x	x	x	x
20	1077	5	√	√	√	√
21	1090	5	√	√	√	√
22	1091	5	√	√	√	√
23	1097	5	x	x	x	x
24	1099	5	x	x	x	x
25	10580	5	x	x	x	x
26	10589	5	x	x	x	x
27	10740	5	x	x	x	x
28	10741	5	x	x	x	x
29	1511	5	x	x	x	x
30	1512	5	x	x	x	x
31	1514	5	x	x	x	x
32	15100	5	x	x	x	x
33	155304	5	x	x	x	x
34	155214	5	x	x	x	x
35	1903	5	√	√	√	√
36	1909	5	√	√	√	√
37	1912	5	x	x	x	x
38	1916	5	x	x	x	x
39	1950	5	x	x	x	x

TTSL CDMA						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	KOSHI	VRANDAVAN	mathura	SHADABAD
1	100	5	√	√	√	√
2	101	5	√	√	√	√
3	102	5	√	√	√	√
4	104	5	x	x	x	x
5	108	5	√	√	√	√
6	138	5	x	x	x	x
7	149	5	x	x	x	x
8	181	5	√	√	√	√
9	182	5	x	x	x	x
10	1033	5	√	√	√	√
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	x	x	x
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	√	√	√	√
17	1071	5	x	x	x	x
18	1072	5	x	√	√	√
19	1073	5	x	x	x	x
20	1077	5	x	√	√	√
21	1090	5	√	√	√	√
22	1091	5	x	x	x	x
23	1097	5	√	√	√	√
24	1099	5	x	x	x	x
25	1511	5	x	x	x	x
26	1512	5	√	√	√	√
27	1514	5	x	x	x	x
28	1903	5	√	√	√	√
29	1909	5	√	√	√	√
30	1912	5	x	x	x	x
31	1916	5	x	x	x	x
32	1950	5	√	√	√	√
33	10580	5	x	x	x	x
34	10589	5	x	x	x	x
35	10740	5	x	x	x	x
36	10741	5	x	x	x	x
37	15100	5	x	x	x	x
38	155214	5	x	x	x	x
39	155304	5	x	x	x	x

TTSL GSM						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	KOSHI	VRANDAVAN	Mathura	SHADABAD
1	100	5	√	√	√	√
2	101	5	√	√	√	√
3	102	5	√	√	√	√
4	104	5	x	x	x	x
5	108	5	√	√	√	√
6	138	5	x	x	x	x
7	149	5	x	x	x	x
8	181	5	√	√	√	√
9	182	5	x	x	x	x
10	1033	5	√	√	√	√
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	x	x	x
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	√	√	√	√
17	1071	5	x	x	x	x
18	1072	5	x	√	√	√
19	1073	5	x	x	x	x
20	1077	5	x	√	√	√
21	1090	5	√	√	√	√
22	1091	5	x	x	x	x
23	1097	5	√	√	√	√
24	1099	5	x	x	x	x
25	1511	5	x	x	x	x
26	1512	5	√	√	√	√
27	1514	5	x	x	x	x
28	1903	5	√	√	√	√
29	1909	5	√	√	√	√
30	1912	5	x	x	x	x
31	1916	5	x	x	x	x
32	1950	5	√	√	√	√
33	10580	5	x	x	x	x
34	10589	5	x	x	x	x
35	10740	5	x	x	x	x
36	10741	5	x	x	x	x
37	15100	5	x	x	x	x
38	155214	5	x	x	x	x
39	155304	5	x	x	x	x

Vodafone						
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Mathura	Vrandabwan	Chatta	Sadabad
1	100	5	√	√	√	√
2	101	5	x	x	x	x
3	102	5	√	√	√	√
4	104	5	x	x	x	x
5	108	5	√	√	√	√
6	138	5	x	x	√	√
7	149	5	x	x	x	x
8	181	5	√	√	√	√
9	182	5	x	√	√	x
10	1033	5	x	x	x	x
11	1037	5	x	x	x	x
12	1056	5	x	x	x	x
13	1060	5	x	x	x	x
14	1063	5	x	x	x	x
15	1064	5	x	x	x	x
16	1070	5	x	x	x	x
17	1071	5	x	x	x	x
18	1072	5	x	x	x	x
19	1073	5	x	x	x	x
20	1077	5	x	√	√	√
21	1090	5	√	√	√	√
22	1091	5	x	x	x	x
23	1097	5	√	√	√	√
24	1099	5	x	x	x	x
25	10580	5	x	x	x	x
26	10589	5	x	x	x	x
27	10740	5	x	x	x	x
28	10741	5	x	x	x	x
29	1511	5	x	x	x	x
30	1512	5	x	x	x	x
31	1514	5	x	x	x	x
32	15100	5	x	x	x	x
33	155304	5	x	x	x	x
34	155214	5	√	√	√	√
35	1903	5	√	√	√	√
36	1909	5	√	√	√	√
37	1912	5	√	x	√	√
38	1916	5	x	x	x	x
39	1950	5	√	√	x	x

8.4. KOTDWAR SSA

Airtel									
SR. NO.	EMERGENCY NUMBER	CALLS MADE	S Nagar	KarnPrayag	Joshimath	Gopeshwar	Badrinath	Pauri	Rudraprayag
1	100	5	√	√	√	√	√	√	√
2	101	5	√	√	√	√	√	√	√
3	102	5	√	√	√	√	√	√	√
4	104	5	x	x	x	x	x	x	x
5	108	5	√	√	√	√	√	√	√
6	138	5	√	√	√	√	√	√	√
7	149	5	√	√	√	√	√	√	√
8	181	5	√	√	√	√	√	√	√
9	182	5	x	x	x	x	x	x	x
10	1033	5	√	√	√	√	√	√	√
11	1037	5	x	x	x	x	x	x	x
12	1056	5	x	x	x	x	x	x	x
13	1060	5	x	x	x	x	x	x	x
14	1063	5	√	√	√	√	√	√	√
15	1064	5	x	x	x	x	x	x	x
16	1070	5	x	x	x	x	x	x	x
17	1071	5	x	x	x	x	x	x	x
18	1072	5	√	√	√	√	√	√	√
19	1073	5	x	x	x	x	x	x	x
20	1077	5	√	√	√	√	√	√	√
21	1090	5	√	√	√	√	√	√	√
22	1091	5	x	x	x	x	x	x	x
23	1097	5	√	√	√	√	√	√	√
24	1099	5	x	x	x	x	x	x	x
25	10580	5	x	x	x	x	x	x	x
26	10589	5	x	x	x	x	x	x	x
27	10740	5	x	x	x	x	x	x	x
28	10741	5	x	x	x	x	x	x	x
29	1511	5	x	x	x	x	x	x	x
30	1512	5	x	x	x	x	x	x	x
31	1514	5	x	x	x	x	x	x	x
32	15100	5	√	√	√	√	√	√	√
33	155304	5	x	x	x	x	x	x	x
34	155214	5	x	x	x	x	x	x	x
35	1903	5	√	√	√	√	√	√	√
36	1909	5	√	√	√	√	√	√	√
37	1912	5	x	x	x	x	x	x	x
38	1916	5	x	x	x	x	x	x	x
39	1950	5	√	√	√	√	√	√	√

SR. NO.	EMERGENCY NUMBER	Idea			
		CALLS MADE	Srinagar	Gopeshwer	Chamoli
1	100	5	√	√	√
2	101	5	√	√	√
3	102	5	√	√	√
4	104	5	×	×	×
5	108	5	√	√	√
6	138	5	√	√	√
7	149	5	×	×	×
8	181	5	√	√	√
9	182	5	×	×	×
10	1033	5	√	√	√
11	1037	5	×	×	×
12	1056	5	×	×	×
13	1060	5	×	×	×
14	1063	5	×	×	×
15	1064	5	×	×	×
16	1070	5	×	×	×
17	1071	5	√	√	√
18	1072	5	√	√	√
19	1073	5	√	√	√
20	1077	5	×	×	×
21	1090	5	√	√	√
22	1091	5	×	×	×
23	1097	5	√	√	√
24	1099	5	×	×	×
25	10580	5	×	×	×
26	10589	5	×	×	×
27	10740	5	×	×	×
28	10741	5	×	×	×
29	1511	5	×	×	×
30	1512	5	×	×	×
31	1514	5	×	×	×
32	15100	5	×	×	×
33	155304	5	×	×	×
34	155214	5	×	×	×
35	1903	5	√	√	√
36	1909	5	√	√	√
37	1912	5	√	√	√
38	1916	5	×	×	×
39	1950	5	×	×	×

Telenor				
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Srinagar	Pauri
1	100	5	√	√
2	101	5	√	√
3	102	5	√	√
4	104	5	×	×
5	108	5	√	√
6	138	5	√	√
7	149	5	×	×
8	181	5	√	√
9	182	5	×	×
10	1033	5	√	√
11	1037	5	×	×
12	1056	5	×	×
13	1060	5	×	×
14	1063	5	×	×
15	1064	5	×	×
16	1070	5	×	×
17	1071	5	√	√
18	1072	5	√	√
19	1073	5	√	√
20	1077	5	×	×
21	1090	5	√	√
22	1091	5	√	√
23	1097	5	×	×
24	1099	5	×	×
25	10580	5	×	×
26	10589	5	×	×
27	10740	5	×	×
28	10741	5	×	×
29	1511	5	×	×
30	1512	5	×	×
31	1514	5	×	×
32	15100	5	×	×
33	155304	5	×	×
34	155214	5	×	×
35	1903	5	√	√
36	1909	5	√	√
37	1912	5	×	×
38	1916	5	×	×
39	1950	5	×	×

TTSL GSM				
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Shrinagar	Gopeshwar
1	100	5	√	√
2	101	5	√	√
3	102	5	√	√
4	104	5	x	x
5	108	5	√	√
6	138	5	√	√
7	149	5	x	x
8	181	5	√	√
9	182	5	x	x
10	1033	5	x	x
11	1037	5	x	x
12	1056	5	x	x
13	1060	5	x	x
14	1063	5	x	x
15	1064	5	x	x
16	1070	5	x	x
17	1071	5	x	x
18	1072	5	x	x
19	1073	5	√	√
20	1077	5	x	x
21	1090	5	√	√
22	1091	5	x	x
23	1097	5	√	√
24	1099	5	x	x
25	10580	5	x	x
26	10589	5	x	x
27	10740	5	x	x
28	10741	5	x	x
29	1511	5	x	x
30	1512	5	x	x
31	1514	5	x	x
32	15100	5	√	√
33	155304	5	x	x
34	155214	5	x	x
35	1903	5	√	√
36	1909	5	x	x
37	1912	5	√	√
38	1916	5	x	x
39	1950	5	x	x

Vodafone								
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Srinagar	Gopeshwar	Joshimath	Chamauli	Karanprayag	pauri
1	100	5	√	√	√	√	√	√
2	101	5	√	√	√	√	√	√
3	102	5	√	√	√	√	√	√
4	104	5	x	x	x	x	x	x
5	108	5	√	√	√	√	√	√
6	138	5	√	√	√	√	√	√
7	149	5	x	x	x	x	x	x
8	181	5	√	√	√	√	√	√
9	182	5	x	x	x	x	x	x
10	1033	5	x	x	x	x	x	x
11	1037	5	x	x	x	x	x	x
12	1056	5	x	x	x	x	x	x
13	1060	5	x	x	x	x	x	x
14	1063	5	x	x	x	x	x	x
15	1064	5	x	x	x	x	x	x
16	1070	5	x	x	x	x	x	x
17	1071	5	x	x	x	x	x	x
18	1072	5	x	x	x	x	x	x
19	1073	5	√	√	√	√	√	√
20	1077	5	x	x	x	x	x	x
21	1090	5	√	√	√	√	√	√
22	1091	5	x	x	x	x	x	x
23	1097	5	√	√	√	√	√	√
24	1099	5	x	x	x	x	x	x
25	10580	5	x	x	x	x	x	x
26	10589	5	x	x	x	x	x	x
27	10740	5	x	x	x	x	x	x
28	10741	5	x	x	x	x	x	x
29	1511	5	x	x	x	x	x	x
30	1512	5	x	x	x	x	x	x
31	1514	5	x	x	x	x	x	x
32	15100	5	√	√	√	√	√	√
33	155304	5	x	x	x	x	x	x
34	155214	5	x	x	x	x	x	x
35	1903	5	√	√	√	√	√	√
36	1909	5	x	x	x	x	x	x
37	1912	5	√	√	√	√	√	√
38	1916	5	x	x	x	x	x	x
39	1950	5	x	x	x	x	x	x

9. OPERATOR ASSISTED DRIVE TEST

The drive test was conducted simultaneously for all the operators present in the UP West circle. As per the new directive given by TRAI headquarters, drive test for the month of April, May and June, 2016 were conducted at a SSA level. Drive test was conducted for three days in each SSA and the selection of routes ensured that the maximum towns, villages, highways are covered as part of drive test. The routes were selected on basis of the complaints received from the customers. The auditors were present in vehicles of every operator. The holding period for all test calls was 120 seconds and the gap between calls was 10 seconds.

For measuring voice quality RxQual samples for GSM operators and Frame Error Rate (FERs) for CDMA service providers were measured. RxQual greater than 5 meant that the sample was not of appropriate voice quality and for CDMA operators FERs of more than 4 were considered 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 with strength > -75dbm for indoor, -85 dbm for in-vehicle and > -95 dbm outdoor routes. Below is the schedule and operators involved in the drive test for the UP West circle.

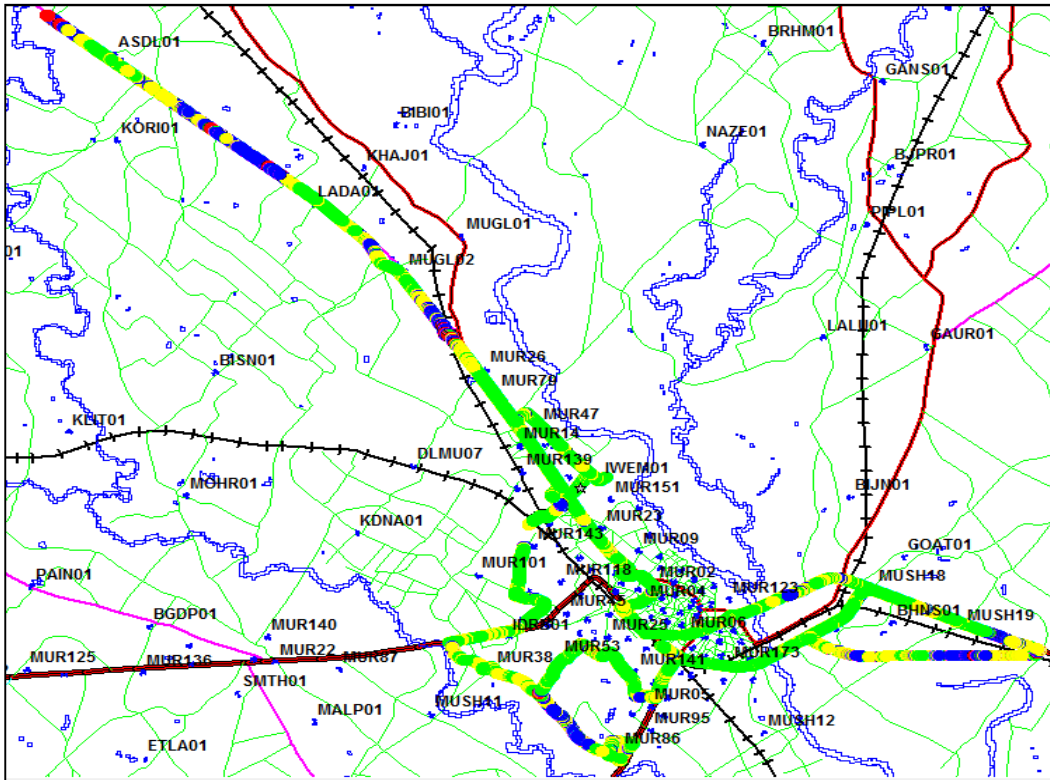
9.3. MORADABAD SSA

Month	Name of SSA covered	Drive Test Schedule
MAY 2016	MORADABAD	MAY 4,2016 to MAY 6, 2016

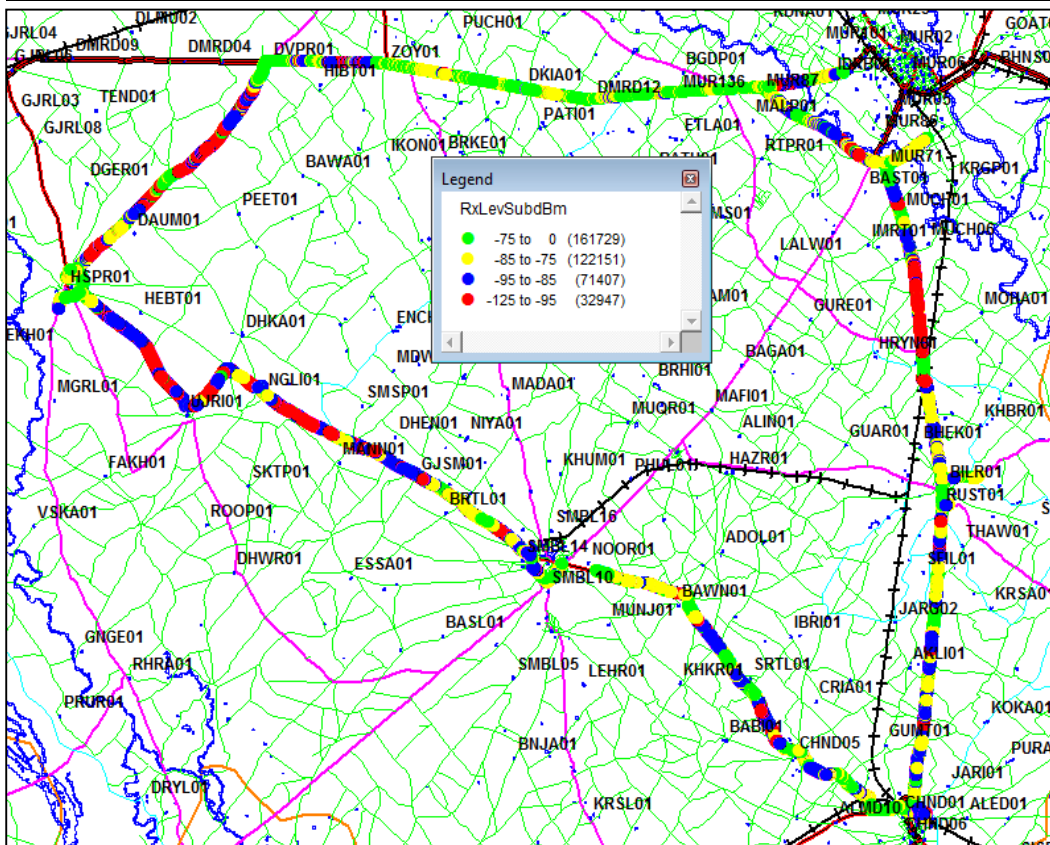
9.4. DISTANCE COVERED: MORADABAD SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
MORADABAD SSA	170 km	200 km	130 km

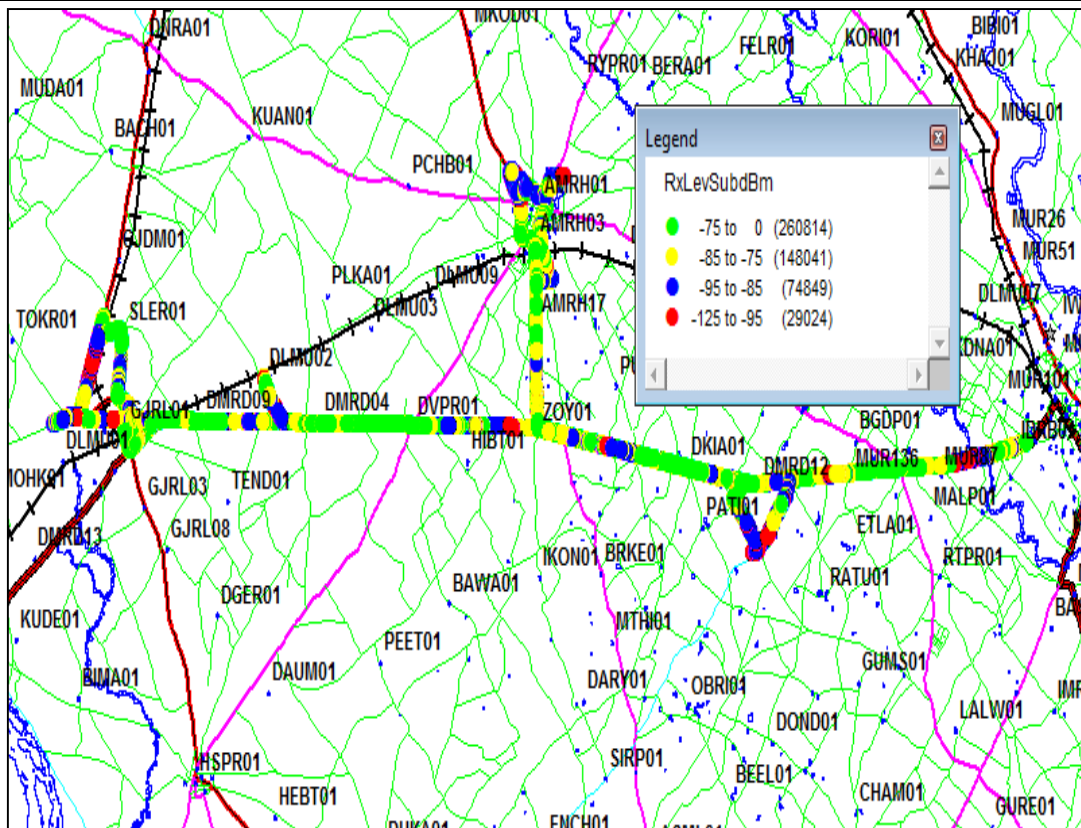
9.5. ROUTE MAP: MORADABAD SSA: DAY 1



9.6. ROUTE MAP: MORADABAD SSA: DAY 2



9.7. ROUTE MAP: MORADABAD SSA: DAY 3



9.8. DRIVE TEST OUTCOME

	TELENOR	Airtel	MTS	IDEA	RCOM GSM	RCOM CDMA	TTSL CDMA	Vodafone
Total Calls Attempt (A)	633	737	555	744	493	693	669	681
Total Calls Blocked (B)	5	5	0	3	7	7	0	5
Blocked Call Rate in % (B*100/A)	0.79%	0.68%	0.00%	0.40%	1.42%	1.01%	0.00%	0.73%
Total Calls Established (C)	624	728	555	732	486	686	669	678
Total Calls Drop (D)	0	4	0	0	0	5	0	3
Dropped Calls Rate in % (D*100/C)	0.00%	0.55%	0.00%	0.00%	0.00%	0.73%	0.00%	0.44%
Call Setup Success Rate in % (C*100/A)	98.58%	98.78%	100.00%	98.39%	98.58%	98.99%	100.00%	99.56%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	98.93%	98.84%	100.00%	99.75%	96.99%	100.00%	100.00%	98.43%

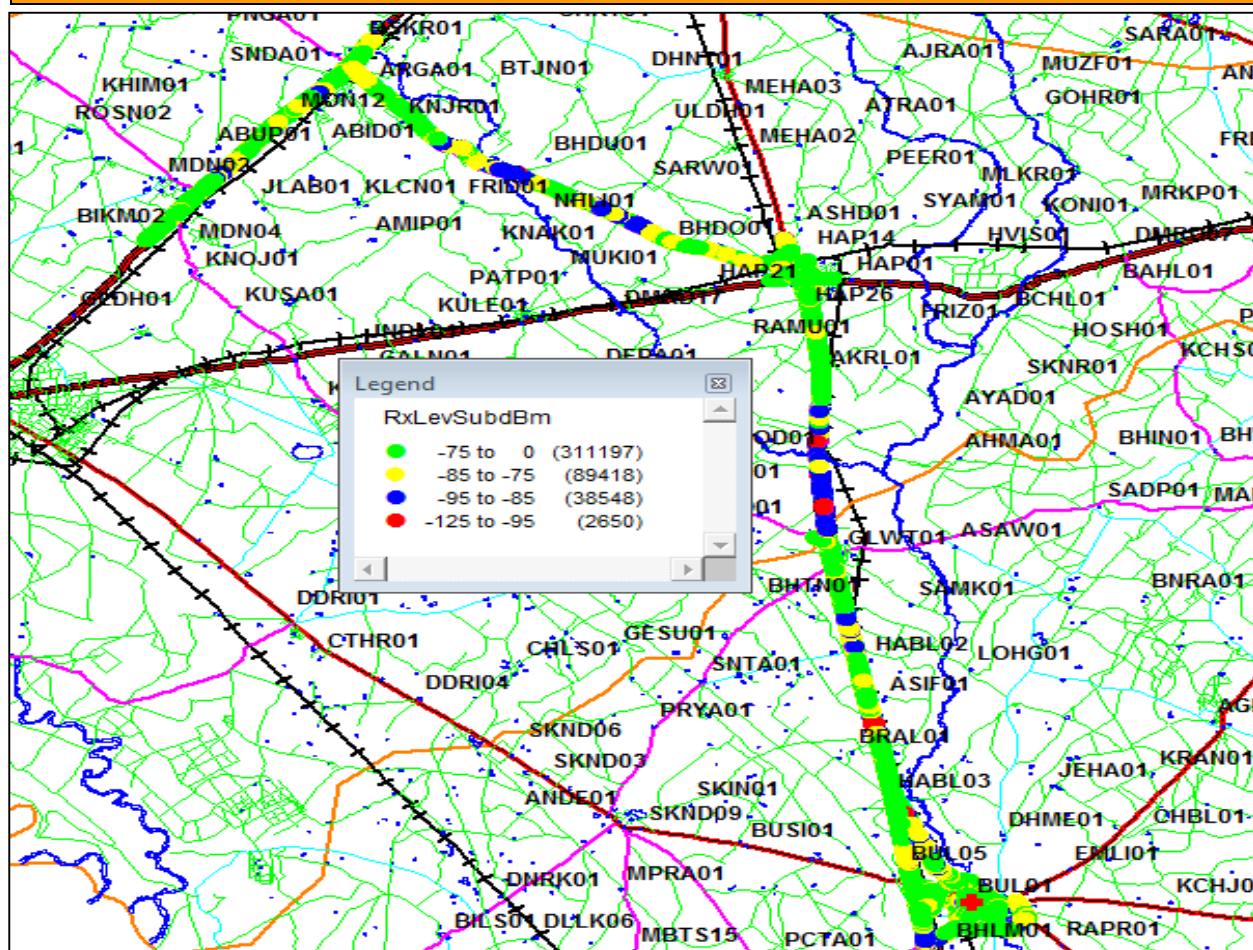
9.9. GHAZIABAD SSA

Month	Name of SSA covered	Drive Test Schedule
MAY 2016	GHAZIABAD	MAY 25,2016 to MAY 27, 2016

9.10. DISTANCE COVERED: GHAZIABAD SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
GHAZIABAD SSA	154 km	203 km	130 km

9.11. ROUTE MAP: : GHAZIABAD SSA: DAY 1



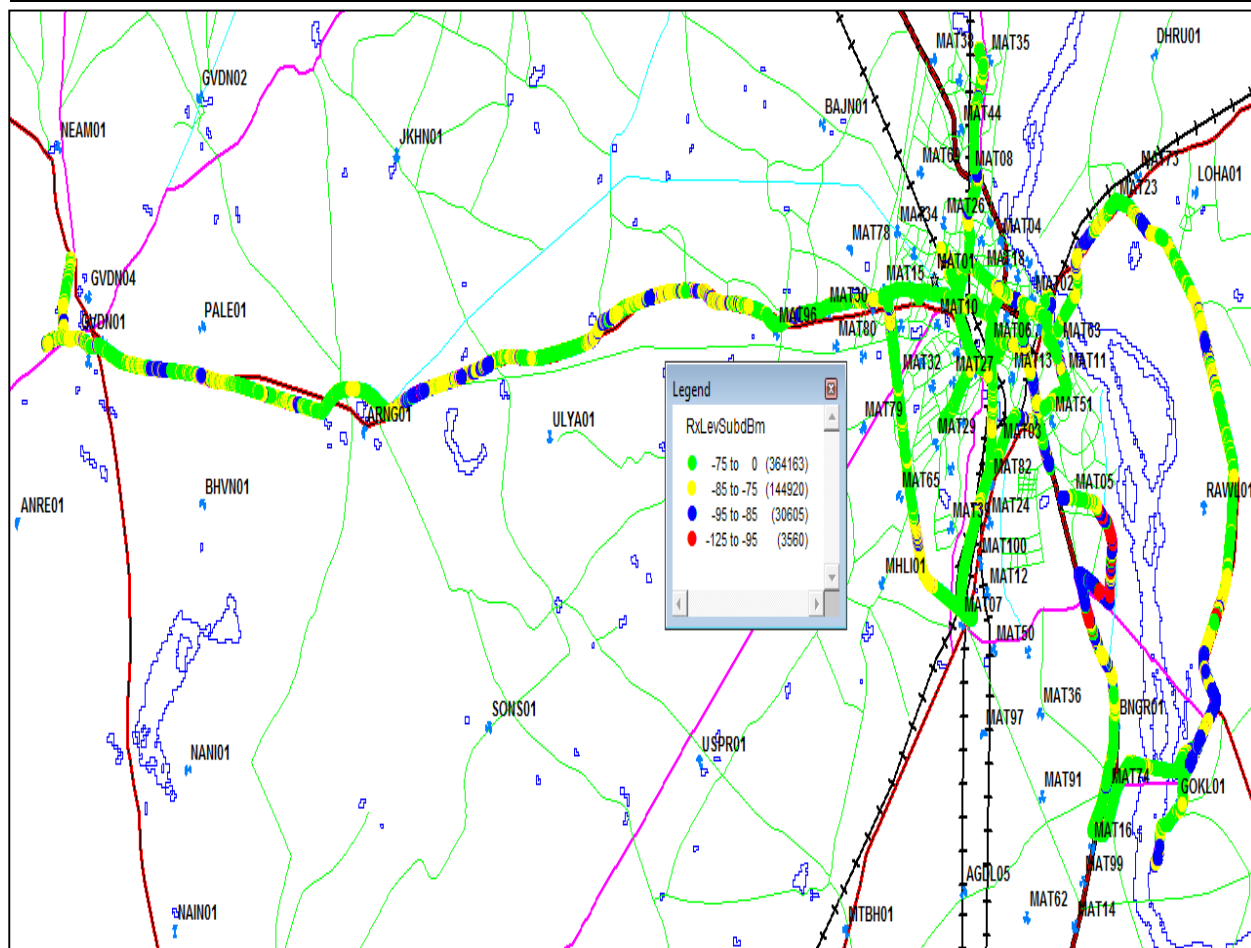
9.15. SSA MATHURA

Month	Name of SSA covered	Drive Test Schedule
JUNE 2016	MATHURA	JUNE 1,2016 to JUNE 3, 2016

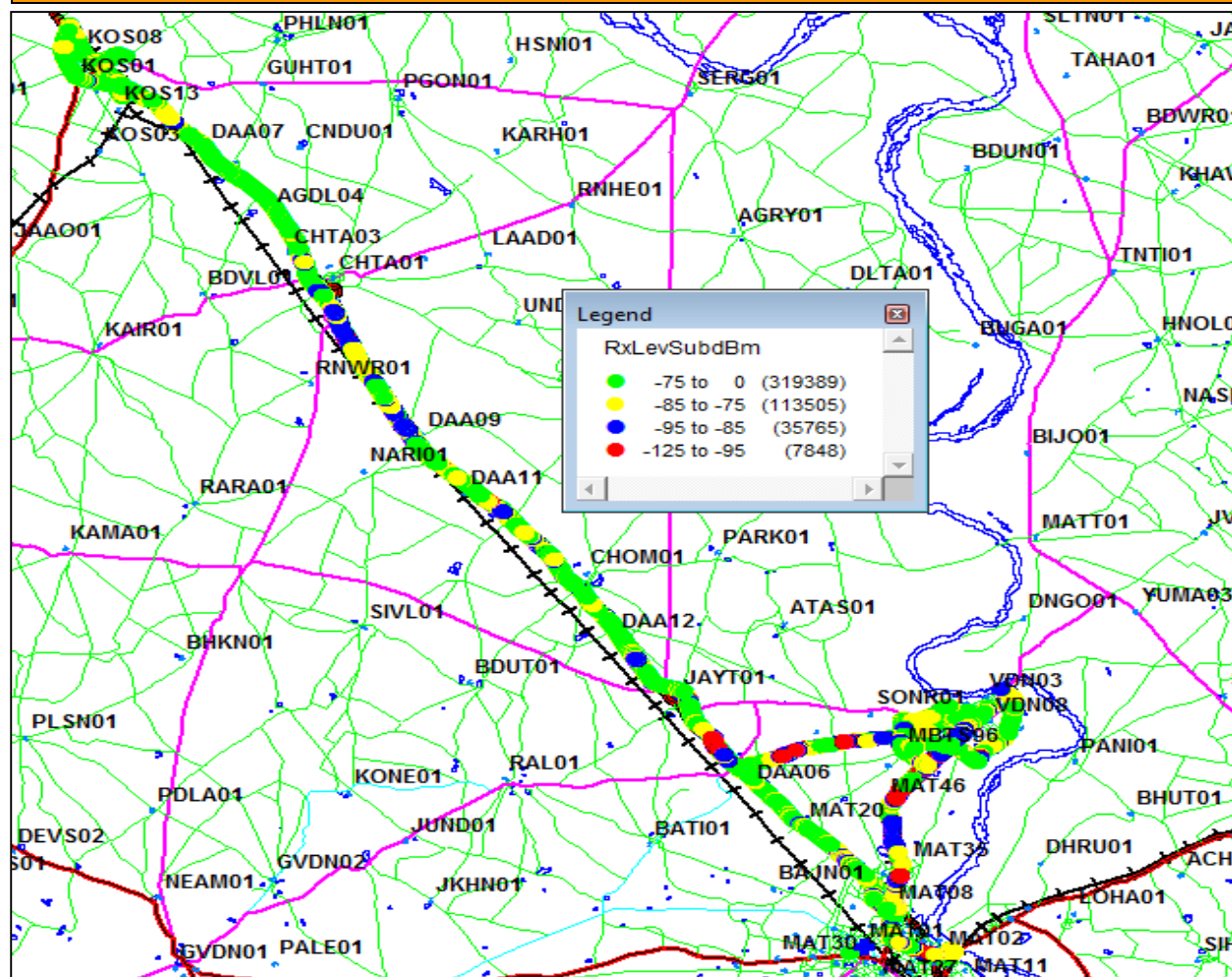
9.16. DISTANCE COVERED: MATHURA SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
MATHURA SSA	170 km	200 km	130 km

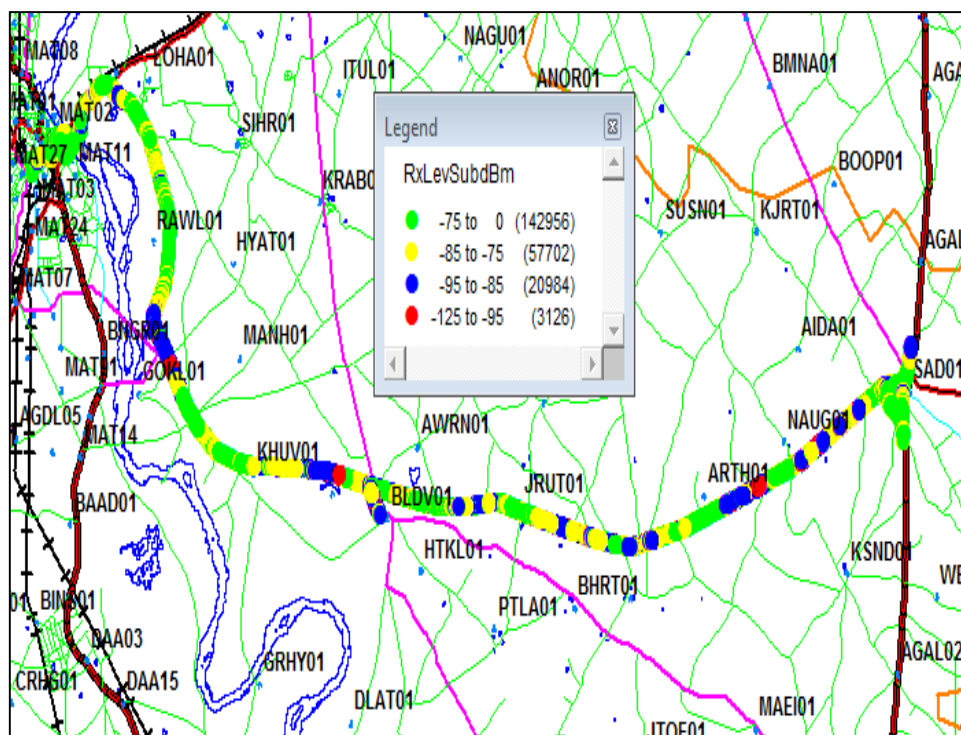
9.17. ROUTE MAP: MATHURA SSA: DAY 1



9.18. ROUTE MAP: MATHURA SSA: DAY 2



9.19. ROUTE MAP: MATHURA SSA: DAY 3



9.20. DRIVE TEST OUTCOME

	AIRTEL	IDEA	MTS	TELENOR	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
Total Calls Attempt (A)	656	583	322	474	445	524	528	621
Total Calls Blocked (B)	2	4	0	1	4	0	0	4
Blocked Call Rate in % (B*100/A)	0.30%	0.69	0.00%	0.21%	0.90%	0.00	0.00%	0.64%
Total Calls Established (C)	651	574	322	472	441	524	528	619
Total Calls Drop (D)	5	2	0	0	0	0	0	2
Dropped Calls Rate in % (D*100/C)	0.77%	0.35	0.00%	0.00	0.00%	0.00%	0.00%	0.32%
Call Setup Success Rate in % (C*100/A)	99.24%	98.46	100.00%	99.58%	99.10%	100.00%	100.00%	99.68%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.58%	97.97	100.00%	97.84%	99.62%	99.00%	100.0%	98.92

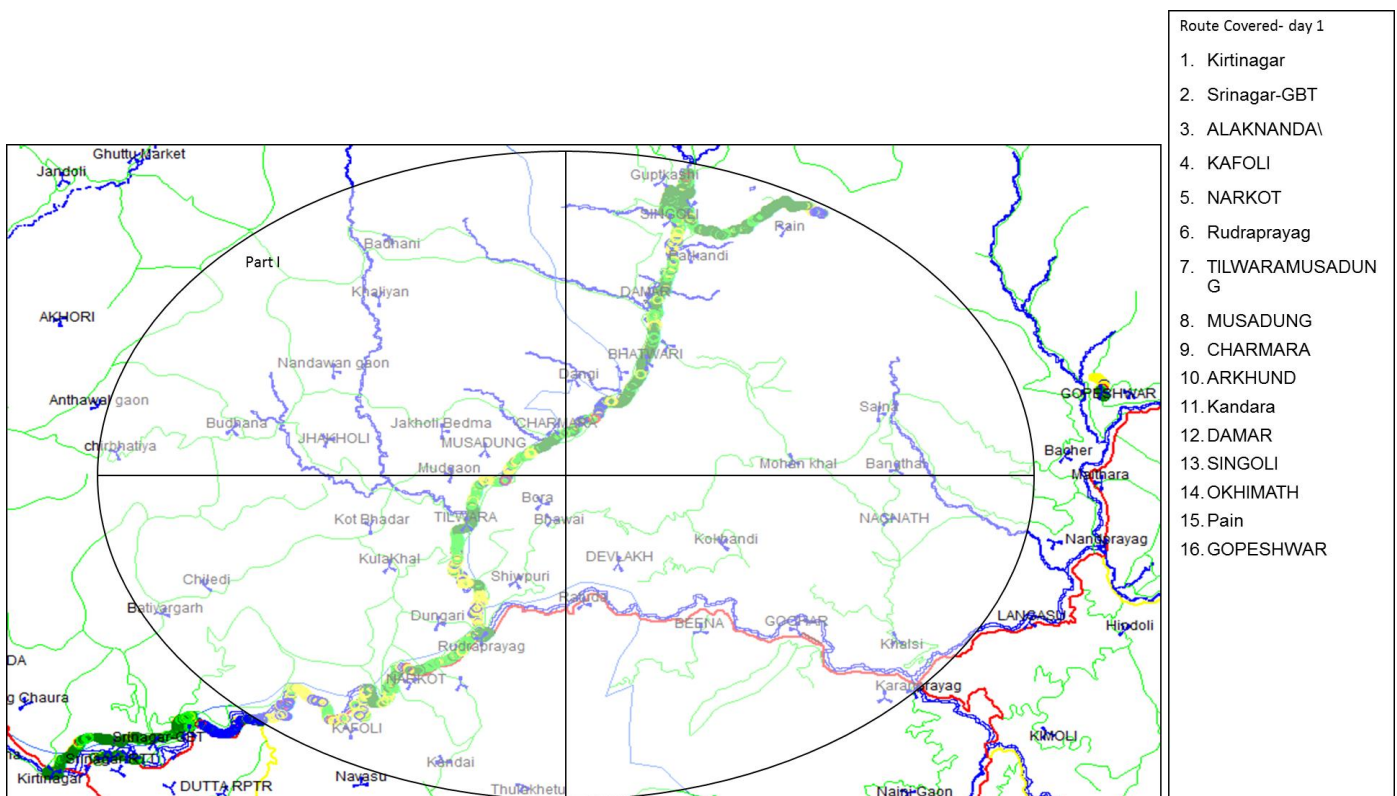
9.21. KOTDWAR SSA

Month	Name of SSA covered	Drive Test Schedule
JUNE 2016	KOTDWAR	JUNE 22 ,2016 to JUNE 24, 2016

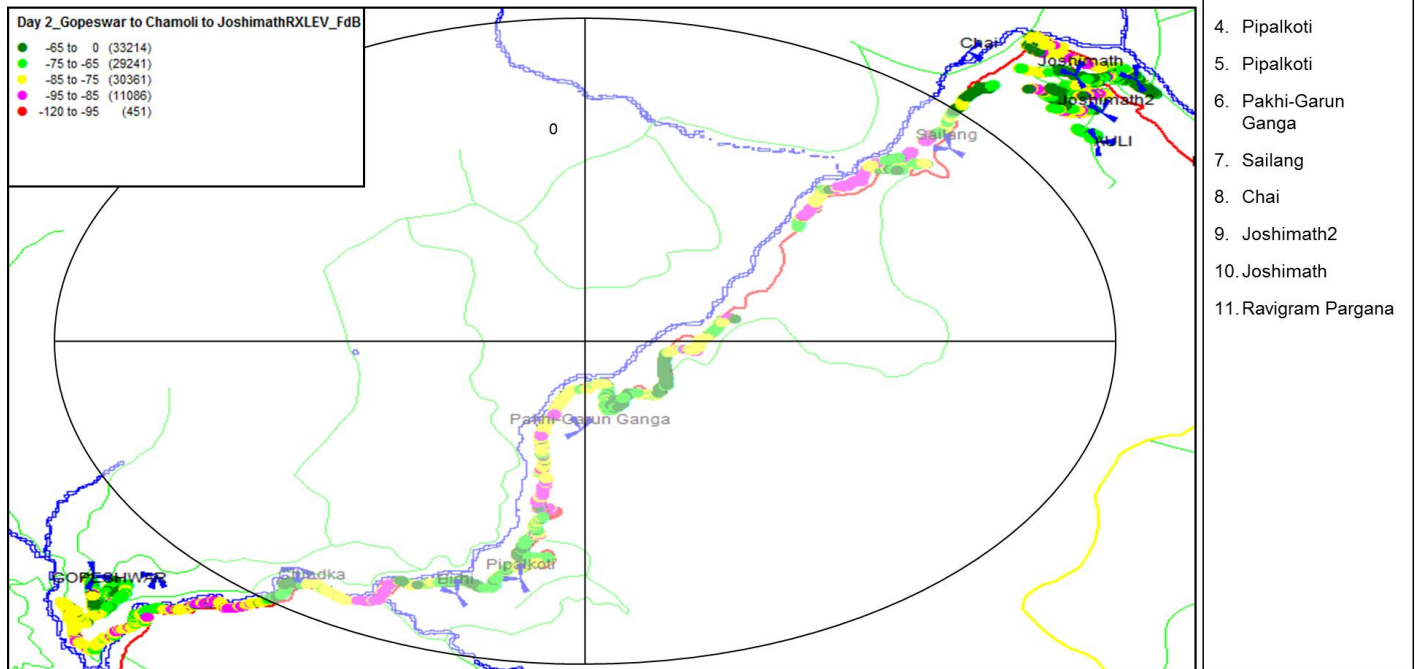
9.22. DISTANCE COVERED: KOTDWAR SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
KOTDWAR SSA	168 km	196 km	143KM

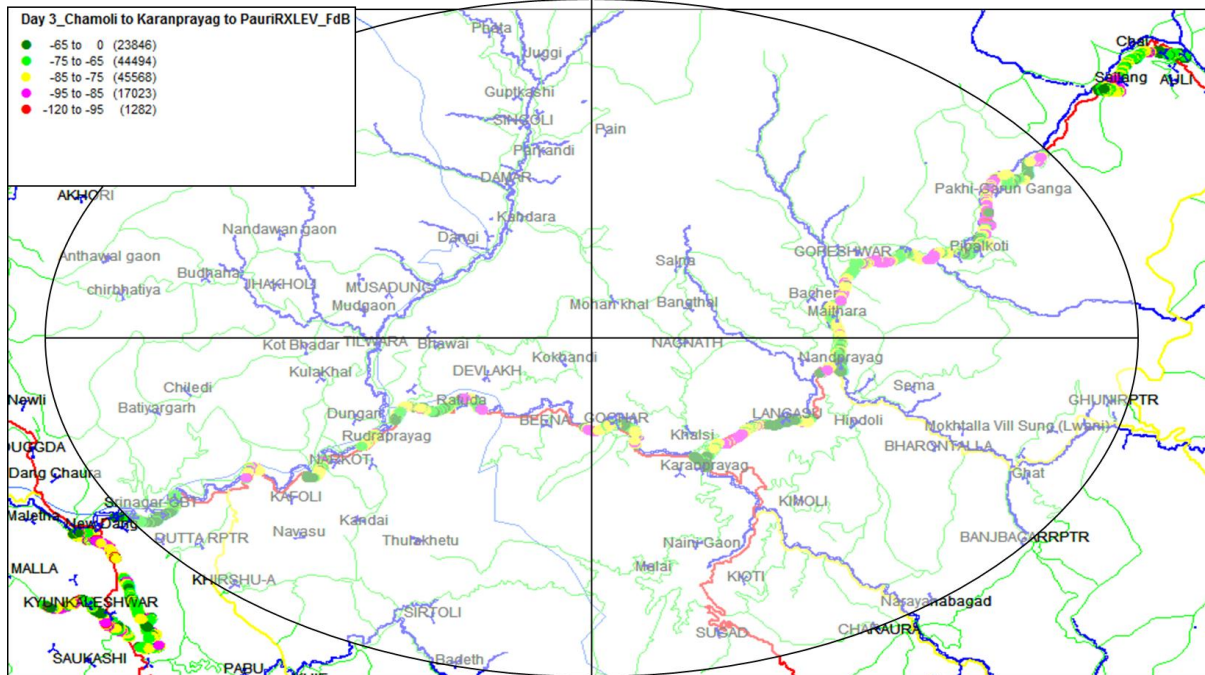
9.23. ROUTE MAP: KOTDWAR SSA: DAY 1



9.24. ROUTE MAP: KOTDWAR SSA: DAY 2



9.25. ROUTE MAP: KOTDWAR SSA: DAY 3



- Route Covered- day 3
1. KYUNKALESHWAR
 2. Kirtinagar
 3. ALAKNANDA
 4. NARKOT
 5. BIRON RPT
 6. MAHABAN
 7. Nagla Khubi
 8. Hataura
 9. Awarani
 10. Karanprayag
 11. LANGASU
 12. Nandprayag
 13. Bacher
 14. GOPESHWAR
 15. Pakhi-Garun Ganga
 16. Sailang
 17. Joshimath

9.26. DRIVE TEST OUTCOME

	TELENOR	TTSL CDMA	Vodafone	Idea	Airtel
Total Calls Attempt (A)	140	136	522	408	551
Total Calls Blocked (B)	0	0	1	6	1
Blocked Call Rate in % (B*100/A)	0	0	0.19%	1.47%	0.18%
Total Calls Established (C)	140	136	520	396	549
Total Calls Drop (D)	1	0	2	2	4
Dropped Calls Rate in % (D*100/C)	0.71	0	0.38%	0.50%	0.73%
Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	99.62%	97.08%	99.64%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.45%	100.00%	98.63	97.70%	99.19%

10. COUNTER DETAILS

S. No.	KPI	Formula with Counter Description
1	CSSR= (No of established Calls / No of Attempted Calls)%	$\text{No of established Calls} = ([\text{Assignment Requests}] - ([\text{Failed Assignments (Signaling Channel)}] + [\text{Failed Assignments during MOC on the A Interface (Including Directed Retry)}] + [\text{Failed Assignments during MTC on the A Interface (Including Directed Retry)}] + [\text{Failed Assignments during Emergency Call on the A Interface (Including Directed Retry)}] + [\text{Failed Assignments during Call Re-establishment on the A Interface (Including Directed Retry)}] + [\text{Failed Mode Modify Attempts (MOC) (TCHF)}] + [\text{Failed Mode Modify Attempts (MTC) (TCHF)}] + [\text{Failed Mode Modify Attempts (Emergency Call) (TCHF)}] + [\text{Failed Mode Modify Attempts (Call Re-establishment) (TCHF)}] + [\text{Failed Mode Modify Attempts (MOC) (TCHH)}] + [\text{Failed Mode Modify Attempts (MTC) (TCHH)}] + [\text{Failed Mode Modify Attempts (Call Re-establishment) (TCHH)}])) / \text{No of Attempted Calls} = ([\text{Assignment Requests (Signaling Channel) (TCH)}] + [\text{Assignment Requests (Signaling Channel) (SDCCH)}] + [\text{Assignment Requests (TCHF Only)}] + [\text{Assignment Requests (TCHH Only)}] + [\text{Assignment Requests (TCHF Preferred, Channel Type Unchangeable)}] + [\text{Assignment Requests (TCHH Preferred, Channel Type Unchangeable)}] + [\text{Assignment Requests (TCHF or TCHH, Channel Type Unchangeable)}] + [\text{Assignment Requests (TCHF Preferred, Channel Type Changeable)}] + [\text{Assignment Requests (TCHH Preferred, Channel Type Changeable)}] + [\text{Assignment Requests (TCHF or TCHH, Channel Type Changeable)}])$
2	SDCCH congestion= (SDCCH Failure/SDCCH attempts)%	$\text{SDCCH Failure} = ([\text{Channel Assignment Failures (All Channels Busy or Channels Unconfigured) in Immediate Assignment Procedure (SDCCH)}] + [\text{Failed Internal Intra-Cell Handovers (No Channel Available) (SDCCH)}] + [\text{Number of Unsuccessful Incoming Internal Inter-Cell Handovers (No Channel Available) (SDCCH)}] + [\text{Failed Incoming External Inter-Cell Handovers (No Channel Available) (SDCCH)}]) / \text{SDCCH attempts} = ([\text{Channel Assignment Requests in Immediate Assignment Procedure (SDCCH)}] + [\text{Internal Intra-Cell Handover Requests (SDCCH)}] + [\text{Number of Incoming Internal Inter-Cell Handover Requests (SDCCH) (900/850/810-900/850/810)}] + [\text{Number of Incoming Internal Inter-Cell Handover Requests (SDCCH) (1800/1900-1800/1900)}] + [\text{Number of Incoming Internal Inter-Cell Handover Requests (SDCCH) (900/850/810-1800/1900)}] + [\text{Number of Incoming Internal Inter-Cell Handover Requests (SDCCH) (1800/1900-900/850/810)}] + [\text{Incoming External Inter-Cell Handover Requests (SDCCH) (900/850/810-900/850/810)}] + [\text{Incoming External Inter-Cell Handover Requests (SDCCH) (1800/1900-1800/1900)}] + [\text{Incoming External Inter-Cell Handover Requests (SDCCH) (900/850/810-1800/1900)}] + [\text{Incoming External Inter-Cell Handover Requests (SDCCH) (1800/1900-900/850/810)}])$
3	TCH congestion= (TCH Failures /TCH Attempts)%	$\text{TCH Failures} = ([\text{Failed TCH Seizures due to Busy TCH (Signaling Channel)}] + [\text{Failed Assignments (First Assignment, No Channel Available in Assignment Procedure)}] + [\text{Failed Assignments (First Assignment, No Channel Available in Directed Retry Procedure)}] + [\text{Failed Assignments (Reconnection to Old Channels, No Channel Available in Assignment)}] + [\text{Failed Assignments (Reconnection to Old Channels, No Channel Available in Directed Retry)}]) / \text{TCH Attempts} = ([\text{Assignment Requests (Signaling Channel) (TCH)}] + [\text{Assignment Requests (Signaling Channel) (SDCCH)}] + [\text{Assignment Requests (TCHF Only)}] + [\text{Assignment Requests (TCHH Only)}] + [\text{Assignment Requests (TCHF Preferred, Channel Type Unchangeable)}] + [\text{Assignment Requests (TCHH Preferred, Channel Type Unchangeable)}] + [\text{Assignment Requests (TCHF or TCHH, Channel Type Unchangeable)}] + [\text{Assignment Requests (TCHF Preferred, Channel Type Changeable)}] + [\text{Assignment Requests (TCHH Preferred, Channel Type Changeable)}] + [\text{Assignment Requests (TCHF or TCHH, Channel Type Changeable)}])$
4	Call Drop Rate= (The total no of dropped calls*100)/Total no of calls successfully established (where traffic channel is allotted)	$\text{The total no of dropped calls} = ([\text{Call Drops on Radio Interface in Stable State (Traffic Channel)}] + [\text{Call Drops on Radio Interface in Handover State (Traffic Channel)}] + [\text{Call Drops Due to No MR from MS for a Long Time (Traffic Channel)}] + [\text{Call Drops due to Abis Terrestrial Link Failure (Traffic Channel)}] + [\text{Call Drops due to Equipment Failure (Traffic Channel)}] + [\text{Call Drops due to Forced Handover (Traffic Channel)}] + [\text{Call Drops due to local switching Start Failure}] + [\text{Call Drops due to Failures to Return to Normal Call from local switching}]) / \text{Total no of calls successfully established (where traffic channel is allotted)} = ([\text{Assignment Requests}] - ([\text{Failed Assignments (Signaling Channel)}] + [\text{Failed Assignments during MOC on the A Interface (Including Directed Retry)}] + [\text{Failed Assignments during MTC on the A Interface (Including Directed Retry)}] + [\text{Failed Assignments during Emergency Call on the A Interface (Including Directed Retry)}] + [\text{Failed Assignments during Call Re-establishment on the A Interface (Including Directed Retry)}] + [\text{Failed Mode Modify Attempts (MOC) (TCHF)}] + [\text{Failed Mode Modify Attempts (MTC) (TCHF)}] + [\text{Failed Mode Modify Attempts (Emergency Call) (TCHF)}] + [\text{Failed Mode Modify Attempts (Call Re-establishment) (TCHF)}] + [\text{Failed Mode Modify Attempts (MOC) (TCHH)}] + [\text{Failed Mode Modify Attempts (MTC) (TCHH)}] + [\text{Failed Mode Modify Attempts (Call Re-establishment) (TCHH)}]))$

		Attempts (MTC) (TCHH)]+[Failed Mode Modify Attempts (Call Re-establishment) (TCHH)]
5	Call Drop Rate= (No of cells having call drop rate >3% during CBBH in a month*100)/Total no of cells in the licensed service area	Above formula with counters being used in CBBH.
6	Connection with good quality voice= (Connection with good quality voice/Total voice samples)%	$\text{Connection with good quality voice} = \frac{(\text{Number of MRs on Downlink TCHF (Receive Quality Rank 0)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 1)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 2)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 3)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 4)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 5)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 0)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 1)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 2)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 3)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 4)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 5)})}{\text{Total voice samples}}$ $\text{Total voice samples} = (\text{Number of MRs on Downlink TCHF (Receive Quality Rank 0)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 1)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 2)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 3)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 4)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 5)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 6)} + \text{Number of MRs on Downlink TCHF (Receive Quality Rank 7)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 0)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 1)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 2)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 3)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 4)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 5)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 6)} + \text{Number of MRs on Downlink TCHH (Receive Quality Rank 7)})$

10.3. ERICSSON

S. No.	KPI	Ericsson
1	CSSR= (No of established Calls / No of Attempted Calls)%	CSSR (No of established Calls / No of Attempted Calls)=(TCASSALL/TASSALL)*100
2	SDCCH congestion= (SDCCH Failure/SDCCH attempts)%	SDCCH congestion (SDCCH Failure/SDCCH attempts)% = (CCONGS/CCALLS)*100
3	TCH congestion= (TCH Failures /TCH Attempts)%	TCH congestion (TCH Failures /TCH Attempts)%=(CNRELCONG+TNRELCONG)/TASSALL)*100
4	Call Drop Rate= (The total no of dropped calls*100)/Total no of calls successfully established (where traffic channel is allotted)	Call Drop Rate (Total no dropped calls/No of established calls)%=(TNDROP)/TCASSALL*100
5	Call Drop Rate= (No of cells having call drop rate >3% during CBBH in a month*100)/Total no of cells in the licensed service area	Above formula with counters being used in CBBH.
6	Connection with good quality voice= (Connection with good quality voice/Total voice samples)%	Connection with good quality voice (Connection with good quality voice samples 0-5 /Total voice samples)= 100 * (QUAL50DL + QUAL40DL + QUAL30DL + QUAL20DL + QUAL10DL + QUAL00DL) / (QUAL70DL + QUAL60DL + QUAL50DL + QUAL40DL + QUAL30DL + QUAL20DL + QUAL10DL + QUAL00DL)

Ericsson Counters

Counter	Counter Description
TCASSALL	Number of assignment complete messages on TCH for all MS classes
TASSALL	Number of first assignment attempts on TCH for all MS classes.
CNRELCONG	Number of released connections on SDCCH due to TCH or Transcoder (TRA) congestion.
TNRELCONG	Number of released TCH signalling connections due to transcoder resource congestion during immediate assignment on TCH
CCONGS	Congestion counter for SDCCH. Stepped per congested allocation attempt.
CCALLS	Channel allocation attempt counter on SDCCH.
TNDROP	The total number of dropped TCH Connections.
QUAL00DL	Number of quality 0 reported on downlink.
QUAL10DL	Number of quality 1 reported on downlink.
QUAL20DL	Number of quality 2 reported on downlink.
QUAL30DL	Number of quality 3 reported on downlink.
QUAL40DL	Number of quality 4 reported on downlink.
QUAL50DL	Number of quality 5 reported on downlink.
QUAL60DL	Number of quality 6 reported on downlink.
QUAL70DL	Number of quality 7 reported on downlink

10.4. NSN (NOKIA SIEMENS NETWORK)

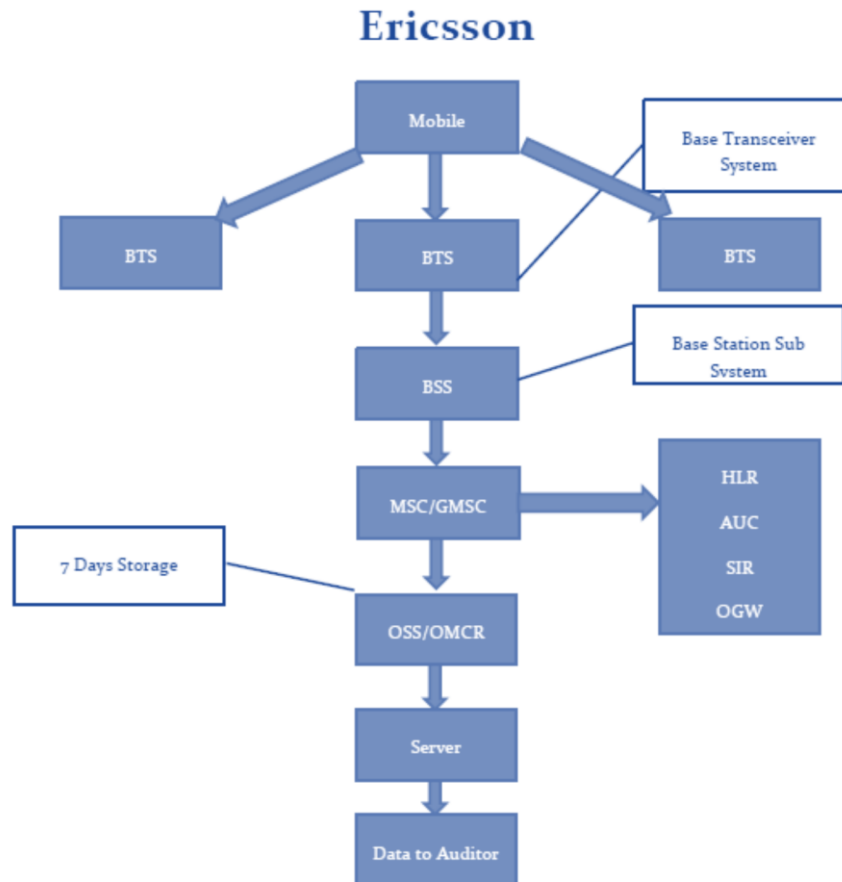
S. No.	KPI	NSN
1	CSSR= (No of established Calls / No of Attempted Calls)%	CSSR= 100-100*((SDCCH_BUSY_ATT)-(TCH_SEIZ_DUE_SDCCH_CON) + (SDCCH_RADIO_FAIL)+(SDCCH_RF_OLD_HO)+(SDCCH_USER_ACT)+(SDCCH_BCSU_RESET)+(SDCCH_NETW_ACT)+(SDCCH_BTS_FAIL)+(SDCCH_LAPD_FAIL) + (BLCK_8I_NOM)/ ((CH_REQ_MSG_REC)+(PACKET_CH_REQ))- ((GHOST_CCCH_RES)-(REJ_SEIZ_ATT_DUE_DIST))
2	SDCCH congestion= (SDCCH Failure/SDCCH attempts)%	SDCCH congestion = (sdccch_busy_att - .tch_seiz_due_sdcch_con)/((CH_REQ_MSG_REC)+(PACKET_CH_REQ))- ((GHOST_CCCH_RES)-(REJ_SEIZ_ATT_DUE_DIST))
3	TCH congestion= (TCH Failures /TCH Attempts)%	TCH congestion = BLCK_8I_NOM / ((TCH_NORM_SEIZ)+(MSC_I_SDCCH_TCH_AT)+(BSC_I_SDCCH_TCH_AT))
4	Call Drop Rate= (The total no of dropped calls*100)/Total no of calls successfully established (where traffic channel is allotted)	TCH Drop = (drop_after_tch_assign)-(tch_re_est_release) / ((TCH_NORM_SEIZ)+(MSC_I_SDCCH_TCH_AT)+(BSC_I_SDCCH_TCH_AT))
5	Call Drop Rate= (No of cells having call drop rate >3% during CBBH in a month*100)/Total no of cells in the licensed service area	Above formula with counters being used in CBBH.
6	Connection with good quality voice= (Connection with good quality voice/Total voice samples)%	Connection with good quality voice= (FREQ_DL_QUAL0+FREQ_DL_QUAL1+FREQ_DL_QUAL2+FREQ_DL_QUAL3+FR EQ_DL_QUAL4+FREQ_DL_QUAL5) / (FREQ_DL_QUAL0+FREQ_DL_QUAL1+FREQ_DL_QUAL2+FREQ_DL_QUAL3+FR EQ_DL_QUAL4+FREQ_DL_QUAL5+FREQ_DL_QUAL6+FREQ_DL_QUAL7)

10.5. HUAWEI

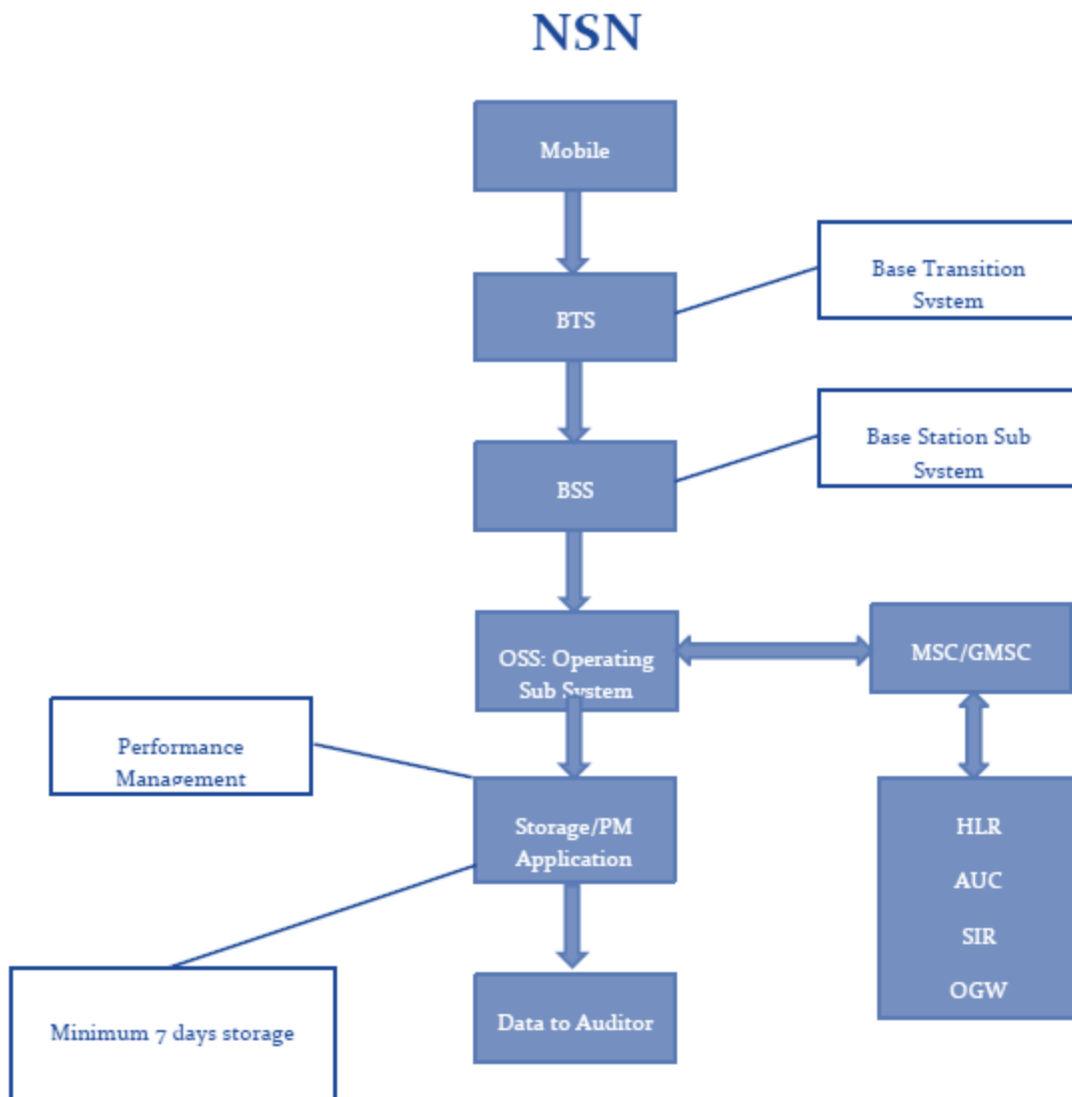
S.NO	KPI	HUAWEI FORMULA
1	CALL SETUP SUCCES (NUM)	[Successful CS IS-95 Orig Call Setups + Successful CS IS-2000 Orig Call Setups + Successful CS IS-95 Term Call Setups + Successful CS IS-2000 Term Call Setups] ([1157628567] + [1157628587] + [1157628568] + [1157628588])
2	CALL SETUP SUCCES (DEN)	[CS IS-95 Orig Attempts + CS IS-2000 Orig Attempts + CS IS-95 Term Attempts + CS IS-2000 Term Attempts] ([1157628553] + [1157628573] + [1157628554] + [1157628574])
3	CALL SETUP SUCCESS RATE (%)	CALL SETUP SUCCES (NUM) / CALL SETUP SUCCES (DEN) * 100\
4	CALL DROP RATE (NUM)	[CS IS-95 Call Drops (Too many Erasure frames) + CS IS-2000 Call Drops (Too many Erasure frames) + CS IS-95 Call Drops (No reverse frame received) + CS IS-2000 Call Drops (No reverse frame received) + CS IS-95 Call Drops (Abis interface abnormal) + CS IS-2000 Call Drops (Abis interface abnormal) + CS IS-95 Call Drops (A2 interface abnormal) + CS IS-2000 Call Drops (A2 interface abnormal) + CS IS-95 Call Drops (HHO fail) + CS IS-2000 Call Drops (HHO fail) + CS IS-95 Call Drops (Other causes) + CS IS-2000 Call Drops (Other causes)] ([1157628608] + [1157628614] + [1157628609] + [1157628615] + [1157628610] + [1157628616] + [1157628611] + [1157628617] + [1157628612] + [1157628618] + [1157628613] + [1157628619])
5	CALL DROP RATE(DEN)	[Successful CS IS-95 Orig Call Setups + Successful CS IS-2000 Orig Call Setups + Successful CS IS-95 Term Call Setups + Successful CS IS-2000 Term Call Setups + CS IS-95 Successful Incoming Hard HO's + CS IS-2000 Successful Incoming Hard HO's] [1157628619] x 100/([1157628567] + [1157628587] + [1157628568] + [1157628588] + [1157628569] + [1157628589])]
6	Call DROP Rate	CALL DROP RATE (NUM) / CALL DROP RATE(DEN) * 100\
7	RF BLOCK RATE (NUM)	{[(TCH Assignment Requests-CS Orig-IS95[Times] + TCH Assignment Requests-CS Orig-IS2000[Times] + TCH Assignment Requests-CS Term-IS95[Times] + TCH Assignment Requests-CS Term-IS2000[Times]) - (Successful TCH Assignments-CS Orig-IS95[Times] + Successful TCH Assignments-CS Orig-IS2000[Times] + Successful TCH Assignments-CS Term-IS95[Times] + Successful TCH Assignments-CS Term-IS2000[Times])] } / ([1157628621 + 1157628628 + 1157628635+ 1157628642)
8	RF BLOCK RATE (DEN)	{[(TCH Assignment Requests-CS Orig-IS95[Times] + TCH Assignment Requests-CS Orig-IS2000[Times] + TCH Assignment Requests-CS Term-IS95[Times] + TCH Assignment Requests-CS Term-IS2000[Times])]} / ([1157628621 + 1157628628 + 1157628635+ 1157628642)]}
9	RF BLOCK RATE	RF BLOCK RATE (NUM) / RF BLOCK RATE (DEN) *100
10	Call Quality (RFER)	CS Reverse Link Average FER of Carrier[%

11. BLOCK SCHEMATIC DIAGRAM

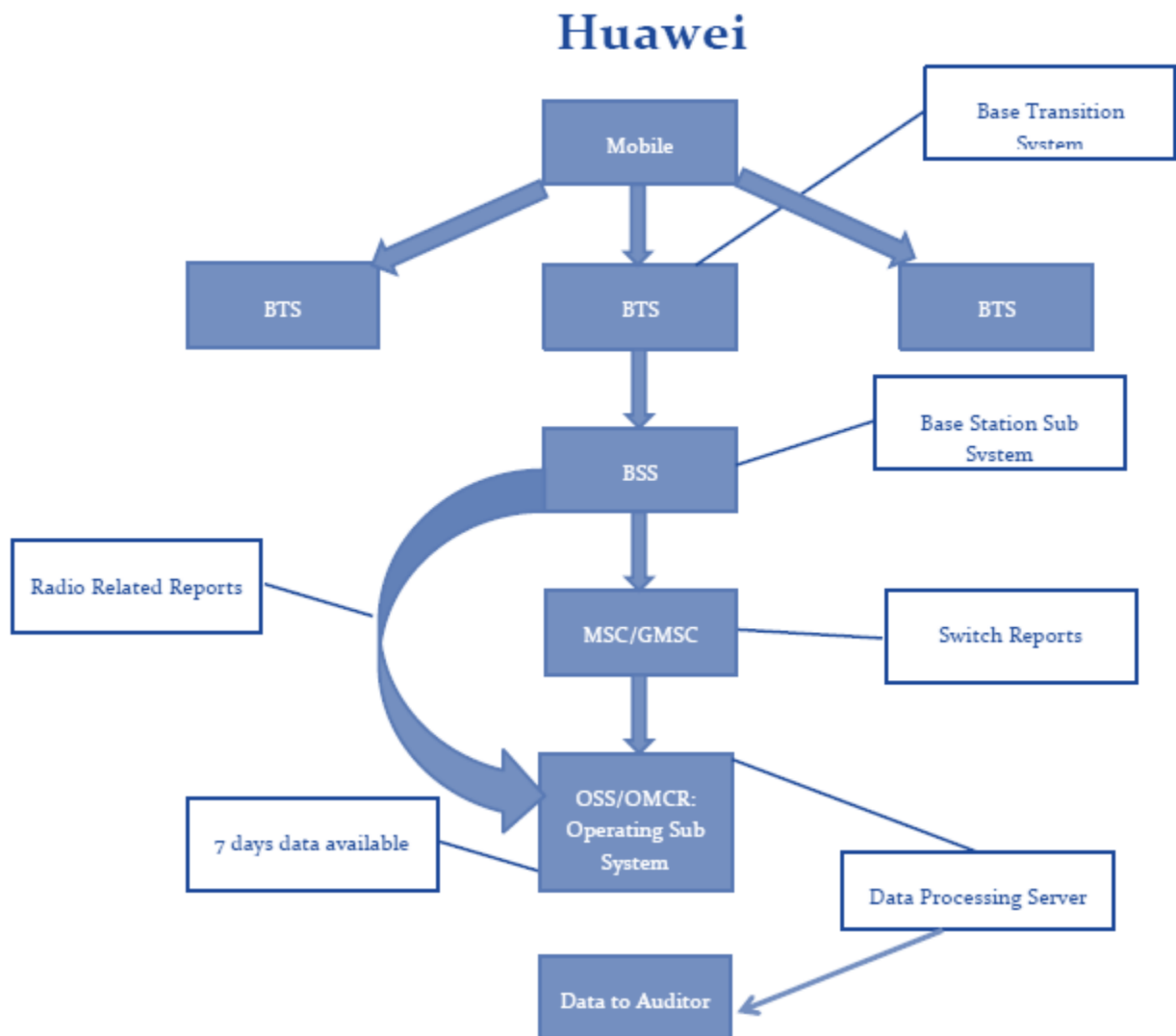
11.3. ERICSSON



11.4. NSN



11.5. HUAWEI



12. ABBREVIATIONS

Following terms/abbreviations have been used in this report. This section provides meaning of the abbreviations used in the report.

- TRAI – Telecom Regulatory Authority of India
- QoS – Quality of Service
- PCPL – Phistream Consulting Private Limited
- JFM'16 – Refers to the quarter of April, May and June 2016
- SSA – Secondary Switching Area
- NOC – Network Operation Center
- OMC – Operations and Maintenance Center
- MSC – Mobile Switching Center
- PMR – Performance Monitoring Reports
- TCBH – Time Consistent Busy Hour
- CBBH - Cell Bouncing Busy Hour
- BTS – Base Transceiver Station
- CSSR – Call Setup Success Rate
- TCH – Traffic Channel
- SDCCH – Standalone Dedicated Control Channel
- CDR – Call Drop Rate
- FER – Frame Error Rate
- SIM – Subscriber Identity Module
- GSM – Global System for Mobile
- CDMA – Code Division Multiple Access
- NA – Not Applicable
- NC – Non Compliance
- POI – Point of Interconnection
- IVR – Interactive Voice Response
- STD – Standard Trunk Dialling
- ISD – International Subscriber Dialling

13 ANNEXURE

13.1. 2G VOICE PMR DATA: CONSOLIDATED

Consolidated													
Network Parameters		Name of Service Provider											
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSS in a month in hrs. in the licensed service area	≤ 2%	0.15%	1.24%	1.50%	0.15%	0.05%	0.03%	0.02%	0.40%	0.29%	0.32%	0.45%
	No. of BTSS having accumulated downtime of >24 hours in a month	≤ 2%	0.90%	1.28%	1.74%	0.28%	0.00%	0.10%	0.06%	0.73%	0.64%	1.14%	1.45%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	96.80%	98.12%	97.99%	97.83%	99.61%	99.00%	97.57%	97.70%	99.04%	97.93%	99.02%
	SDDCH/Paging chl. Congestion	≤ 1%	0.40%	0.67%	0.63%	0.92%	0.00%	DNA	0.41%	0.95%	0.00%	0.44%	17.47%
	TCH Congestion	≤ 2%	0.84%	1.51%	1.22%	1.61%	0.00%	0.12%	0.68%	1.85%	0.08%	0.51%	0.98%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.43%	1.13%	1.24%	1.09%	0.23%	0.16%	0.11%	0.86%	0.26%	0.56%	0.87%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.31%	1.93%	2.32%	2.58%	2.61%	1.06%	0.27%	5.26%	2.40%	2.65%	2.91%
	%age of connection with good voice quality	≥ 95%	96.49%	96.73%	96.30%	96.11%	98.53%	99.10%	98.93%	97.35%	98.89%	97.07%	96.66%

13.2. 3G VOICE PMR: CONSOLIDATED

Consolidated							
Network Parameters		Name of Service Provider					
		Benchmark	AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	1.24%	1.51%	0.46%	0.38%	0.38%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.31%	1.36%	1.63%	1.45%	1.65%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	98.46%	96.98%	99.25%	98.70%	100.00%
	RRC Congestion:	≤ 1%	0.07%	0.85%	0.95%	0.45%	0.01%
	RAB Congestion:	≤ 2%	0.00%	1.38%	0.48%	0.92%	0.04%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.59%	1.06%	0.30%	0.19%	0.45%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.49%	2.42%	2.65%	1.39%	2.91%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.90%	DNA	99.03%	99.13%	98.46%

13.3. BILLING AND CUSTOMER CARE

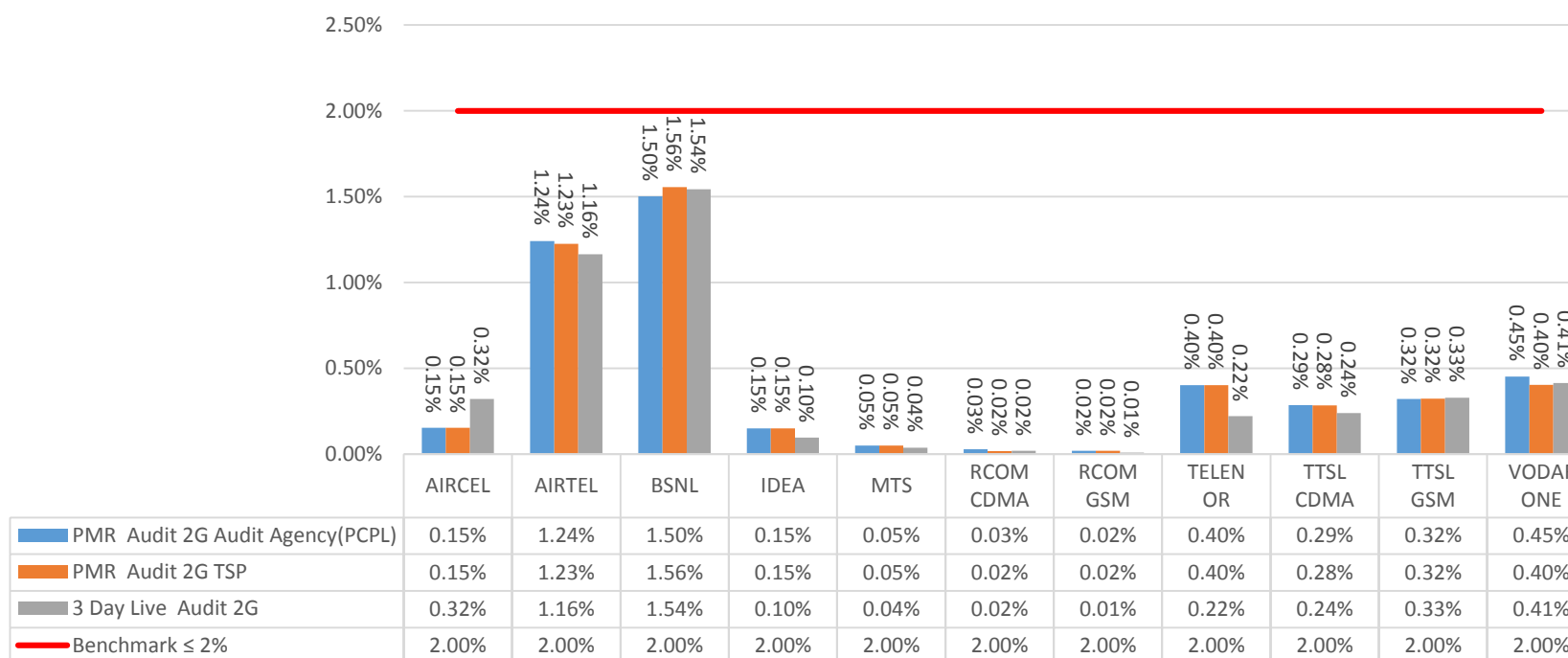
Name of Service Provider	Metering and Billing credibility		Billing Complaints			Termination & Closures	Time taken for refund of deposits after closures: Benchmark	Response time to customer for assistance	
	Postpaid Subscribers	Prepaid Subscribers	%age complaints resolved within 4 weeks	%age complaints resolved within 6 weeks	%age of where credit/waiver is received within one week	% of Termination/ Closure of service within 7 days (100 %)	Cleared over a period of <60 days (100%)	%age of calls answered by the IVR	%age of call answered by the operators (voice to voice) within 90 seconds
Benchmark	≤ 0.1%	≤ 0.1%	≥ 98%	= 100%	= 100%	= 100%	= 100%	≥ 95%	≥ 95%
AIRCEL	0.00%	0.00%	NA	NA	100.00%	100.00%	NA	98.19%	98.86%
AIRTEL	0.01%	0.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	93.05%
BSNL	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.28%
IDEA	0.09%	0.00%	99.99%	100.00%	100.00%	100.00%	99.41%	99.41%	99.46%
MTS	0.07%	0.04%	100.00%	100.00%	100.00%	100.00%	100.00%	98.95%	95.08%
RCOM CDMA	0.09%	0.04%	100.00%	100.00%	100.00%	100.00%	86.78%	98.68%	89.08%
RCOM GSM	0.08%	0.09%	100.00%	100.00%	100.00%	100.00%	75.62%	99.45%	94.28%
TELENOR	NA	0.01%	100.00%	100.00%	100.00%	NA	NA	99.01%	98.24%
TTSL CDMA	0.00%	0.00%	NA	NA	100.00%	100.00%	100.00%	NA	98.42%
TTSL GSM	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.55%	98.09%
VODAFONE	0.13%	0.14%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.05%

13.4. PMR COMPARISON (TSP VS. AUDIT AGENCY): NETWORK PARAMETERS

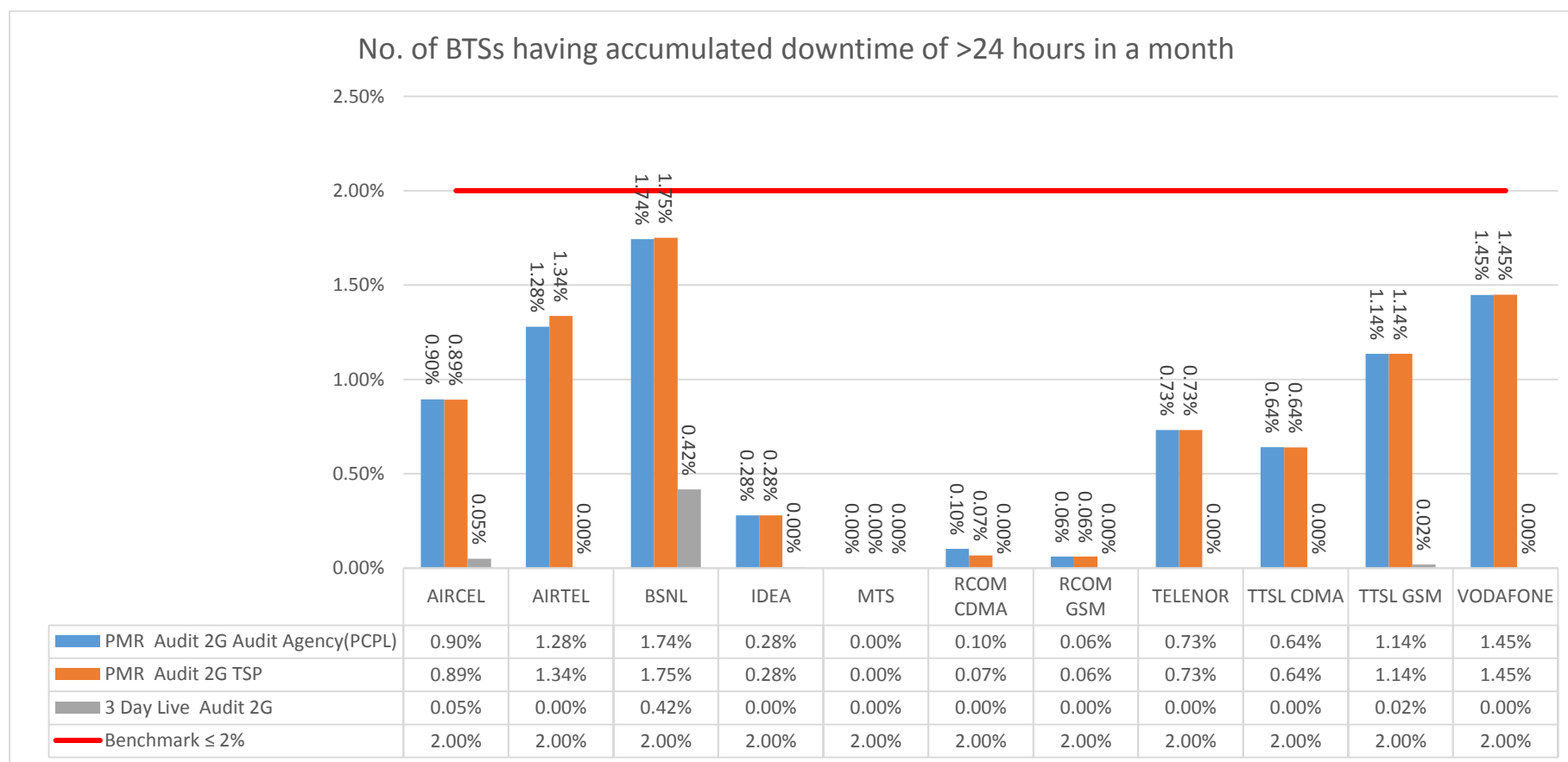
PMR Report Comparison between Audit Agency and TSP														
Network Parameters		Benchmark	Name of Service Provider											
				AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	TELENOR	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	Agency	0.15%	1.24%	1.50%	0.15%	0.05%	0.03%	0.02%	0.40%	0.29%	0.32%	0.45%
			TSP	0.15%	1.23%	1.56%	0.15%	0.05%	0.02%	0.02%	0.40%	0.28%	0.32%	0.40%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	Agency	0.90%	1.28%	1.74%	0.28%	0.00%	0.10%	0.06%	0.73%	0.64%	1.14%	1.45%
			TSP	0.89%	1.34%	1.75%	0.28%	0.00%	0.07%	0.06%	0.73%	0.64%	1.14%	1.45%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	Agency	96.80%	98.12%	97.99%	97.83%	99.61%	99.00%	97.57%	97.70%	99.04%	97.93%	99.02%
			TSP	97.91%	98.17%	98.12%	97.94%	99.61%	97.78%	97.57%	97.70%	99.04%	97.93%	99.02%
	SDDCH/Paging chl. Congestion	≤ 1%	Agency	0.40%	0.67%	0.63%	0.92%	0.00%	NA	0.41%	0.95%	0.00%	0.44%	0.46%
			TSP	0.40%	0.69%	0.62%	0.92%	0.00%	0.00%	0.41%	0.95%	0.00%	0.44%	0.46%
	TCH Congestion	≤ 2%	Agency	0.84%	1.51%	1.22%	1.61%	0.00%	0.12%	0.68%	1.85%	0.08%	0.51%	0.98%
			TSP	0.84%	1.46%	1.25%	1.61%	0.00%	0.48%	0.68%	1.85%	0.08%	0.51%	0.98%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	Agency	0.43%	1.13%	1.24%	1.09%	0.23%	0.16%	0.11%	0.86%	0.26%	0.56%	0.87%
			TSP	0.43%	1.11%	1.24%	1.09%	0.24%	0.51%	0.11%	0.86%	0.26%	0.56%	0.87%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	Agency	2.31%	1.93%	2.32%	2.58%	2.61%	1.06%	0.27%	5.26%	2.40%	2.65%	2.91%
			TSP	2.31%	1.88%	2.26%	2.58%	2.32%	0.71%	0.28%	5.22%	2.39%	2.65%	2.92%
	%age of connection with good voice quality	≥ 95%	Agency	96.49%	96.73%	96.30%	96.11%	98.53%	99.10%	98.93%	97.35%	98.89%	97.07%	96.66%
			TSP	96.49%	96.65%	96.28%	96.11%	98.53%	99.40%	98.93%	97.35%	98.89%	97.07%	96.66%

13.4.1. SUM OF DOWNTIME OF BTSs IN A MONTH IN HRS. IN THE LICENSED SERVICE

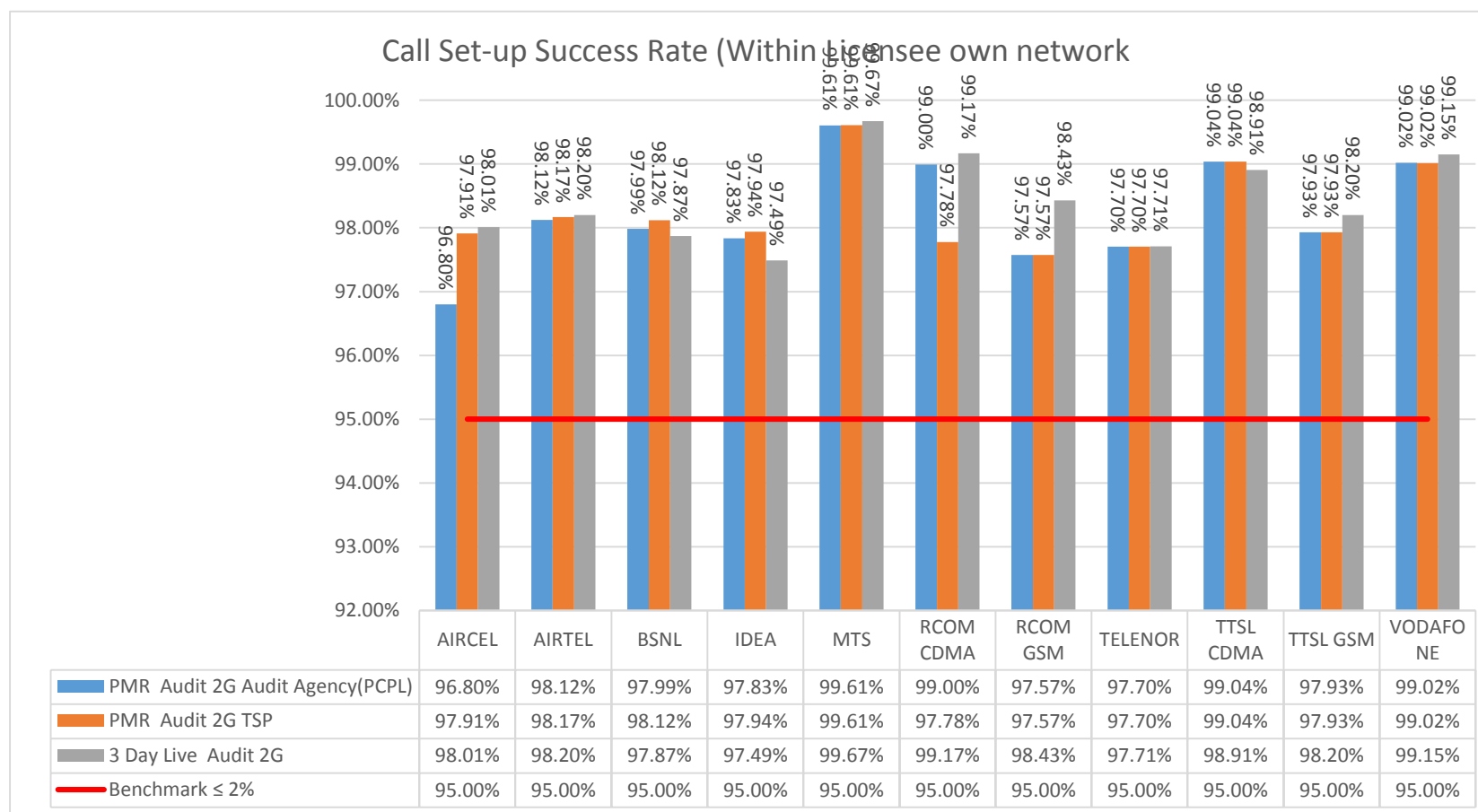
Sum of downtime of BTSs in a month in hrs. in the licensed service area



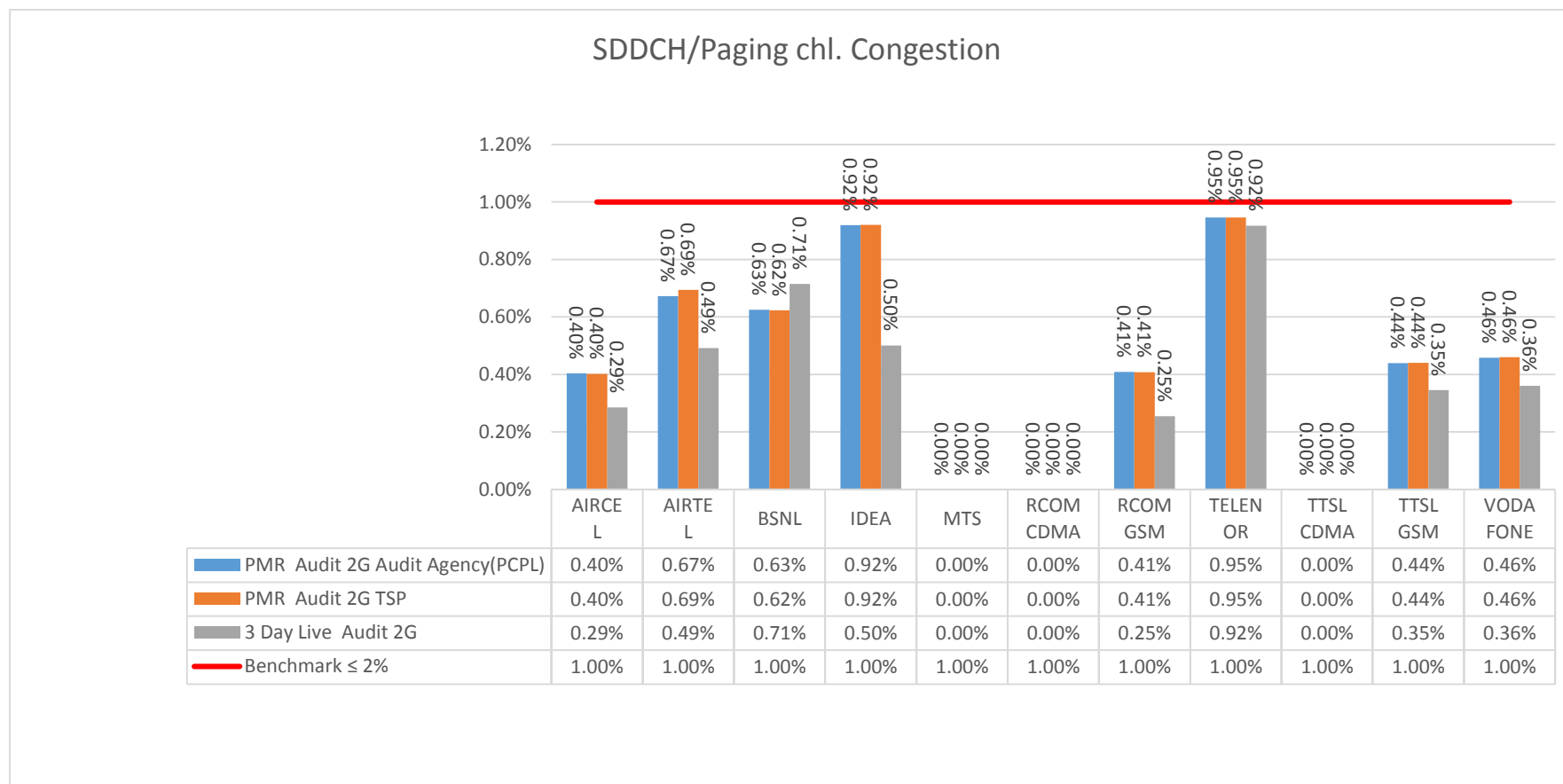
13.4.2. No. of BTSS Having Accumulated Downtime of >24 Hours in a Month



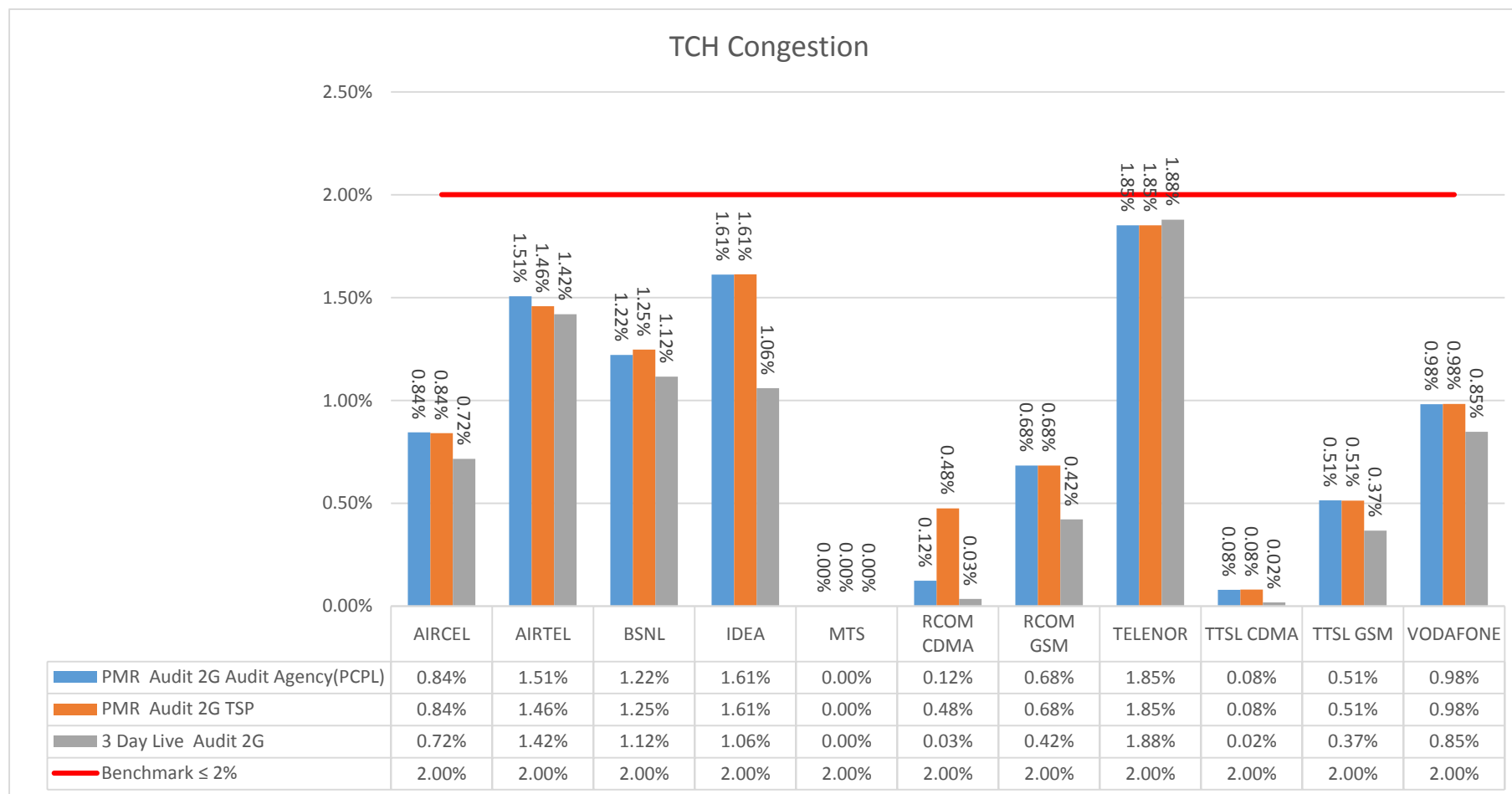
13.4.3. CALL SET-UP SUCCESS RATE (WITHIN LICENSEE OWN NETWORK)



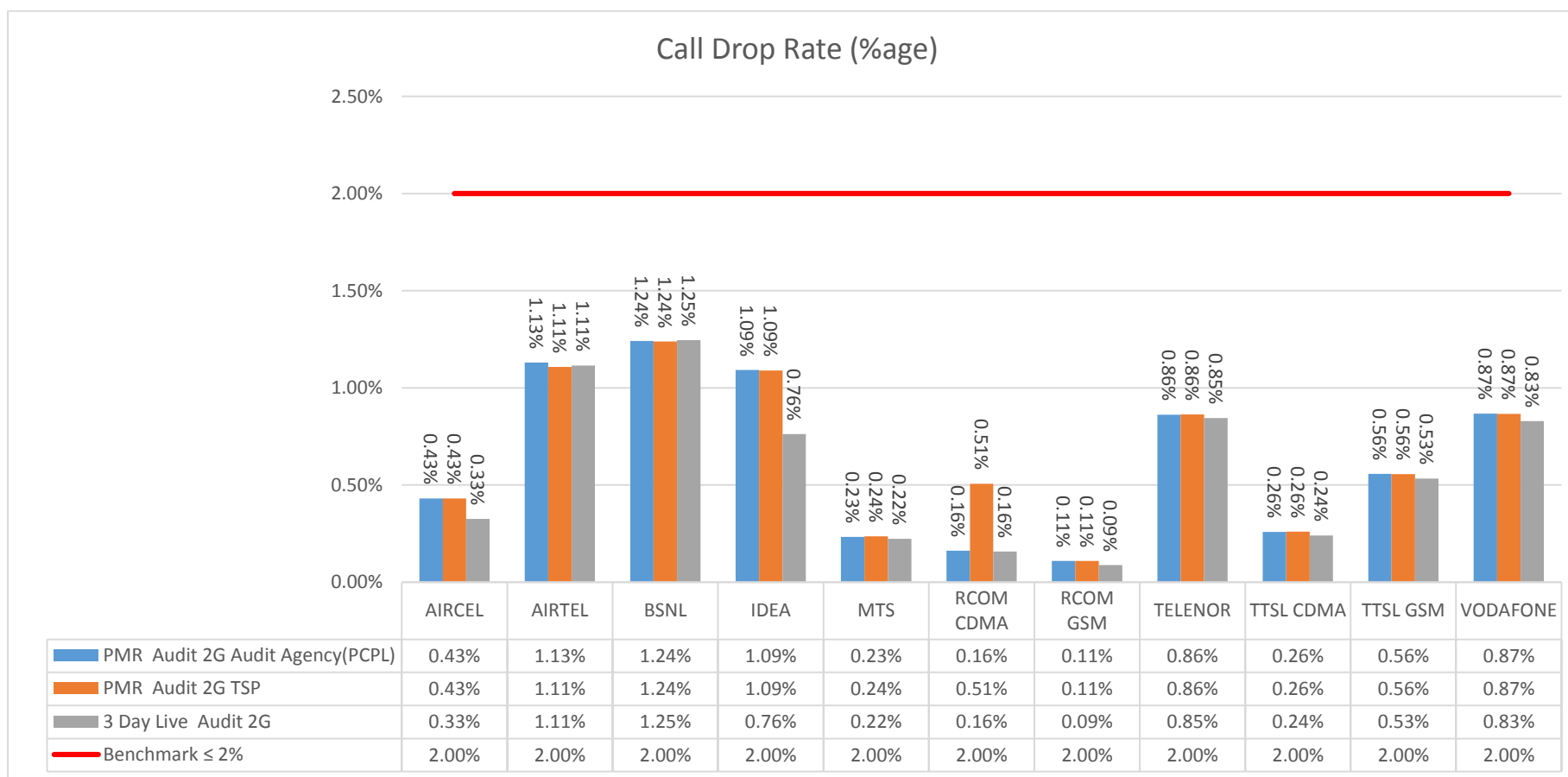
13.4.4. SDDCH/PAGING CHL. CONGESTION



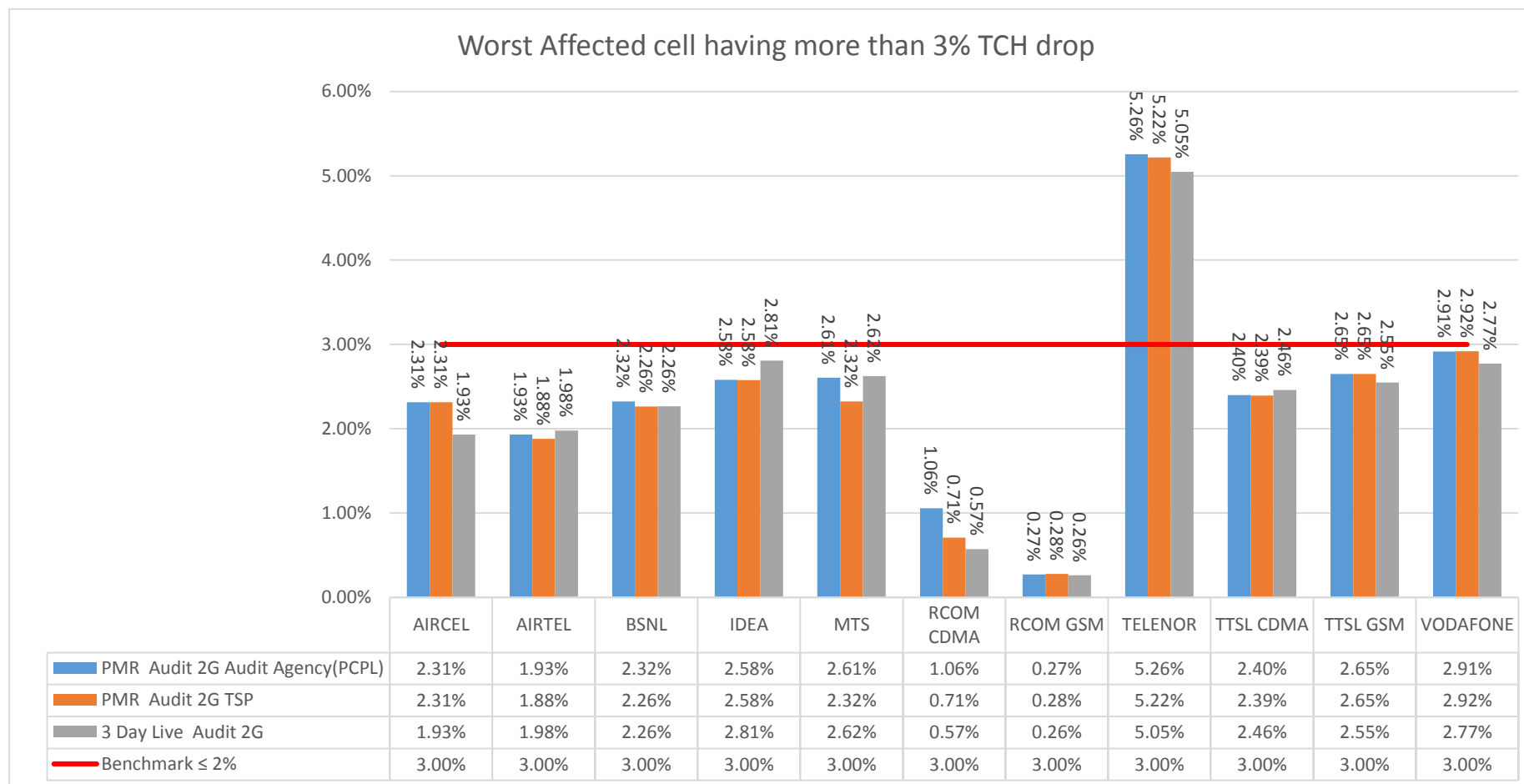
13.4.5. TCH CONGESTION



13.4.6. CALL DROP RATE (%AGE)



13.4.7. WORST AFFECTED CELL HAVING MORE THAN 3% TCH DROP



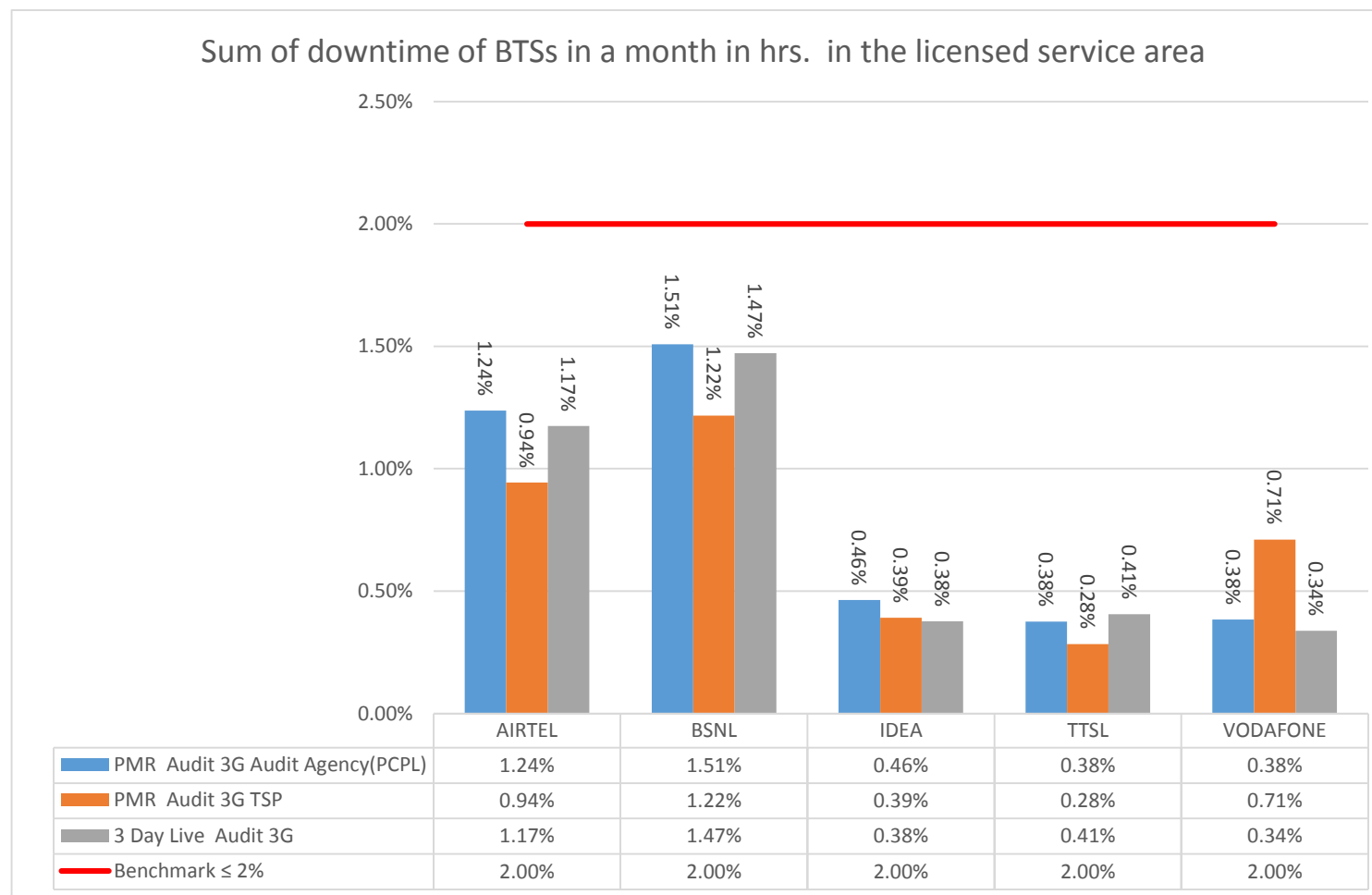
13.4.8. %AGE OF CONNECTION WITH GOOD VOICE QUALITY



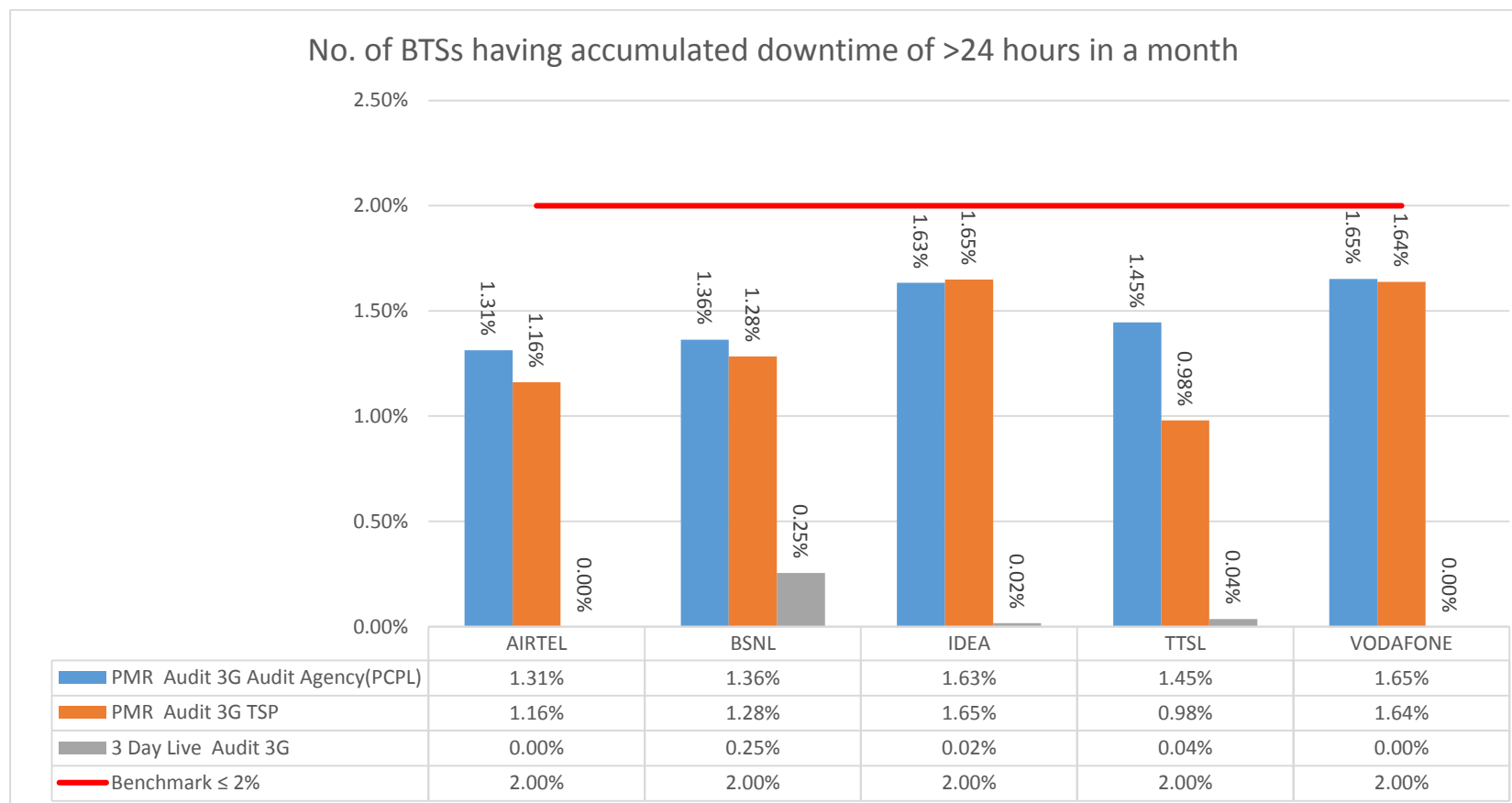
13.5. PMR COMPARISON (TSP VS. AUDIT AGENCY): NETWORK PARAMETERS

PMR Report Comparison between Audit Agency and TSP								
Network Parameters		Benchmark	Name of Service Provider					
				AIRTEL	BSNL	IDEA	TTSL	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	Agency	1.24%	1.51%	0.46%	0.38%	0.38%
			TSP	0.94%	1.22%	0.39%	0.28%	0.71%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	Agency	1.31%	1.36%	1.63%	1.45%	1.65%
			TSP	1.16%	1.28%	1.65%	0.98%	1.64%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network)	≥ 95%	Agency	98.46%	96.98%	99.25%	98.70%	100.00%
			TSP	99.76%	96.67%	99.19%	97.75%	66.43%
	RRC Congestion:	≤ 1%	Agency	0.07%	0.85%	0.95%	0.45%	0.01%
			TSP	0.09%	0.72%	0.96%	0.46%	0.01%
	RAB Congestion:	≤ 2%	Agency	0.00%	1.38%	0.48%	0.92%	0.04%
			TSP	0.00%	1.30%	0.46%	1.49%	0.02%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	Agency	0.59%	1.06%	0.30%	0.19%	0.45%
			TSP	0.47%	1.15%	0.27%	0.30%	0.39%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	Agency	1.49%	2.42%	2.65%	1.39%	2.91%
			TSP	1.14%	2.13%	2.50%	2.26%	4.48%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	Agency	98.90%	DNA	99.03%	99.13%	98.46%
			TSP	98.92%	96.70%	99.17%	99.12%	98.46%

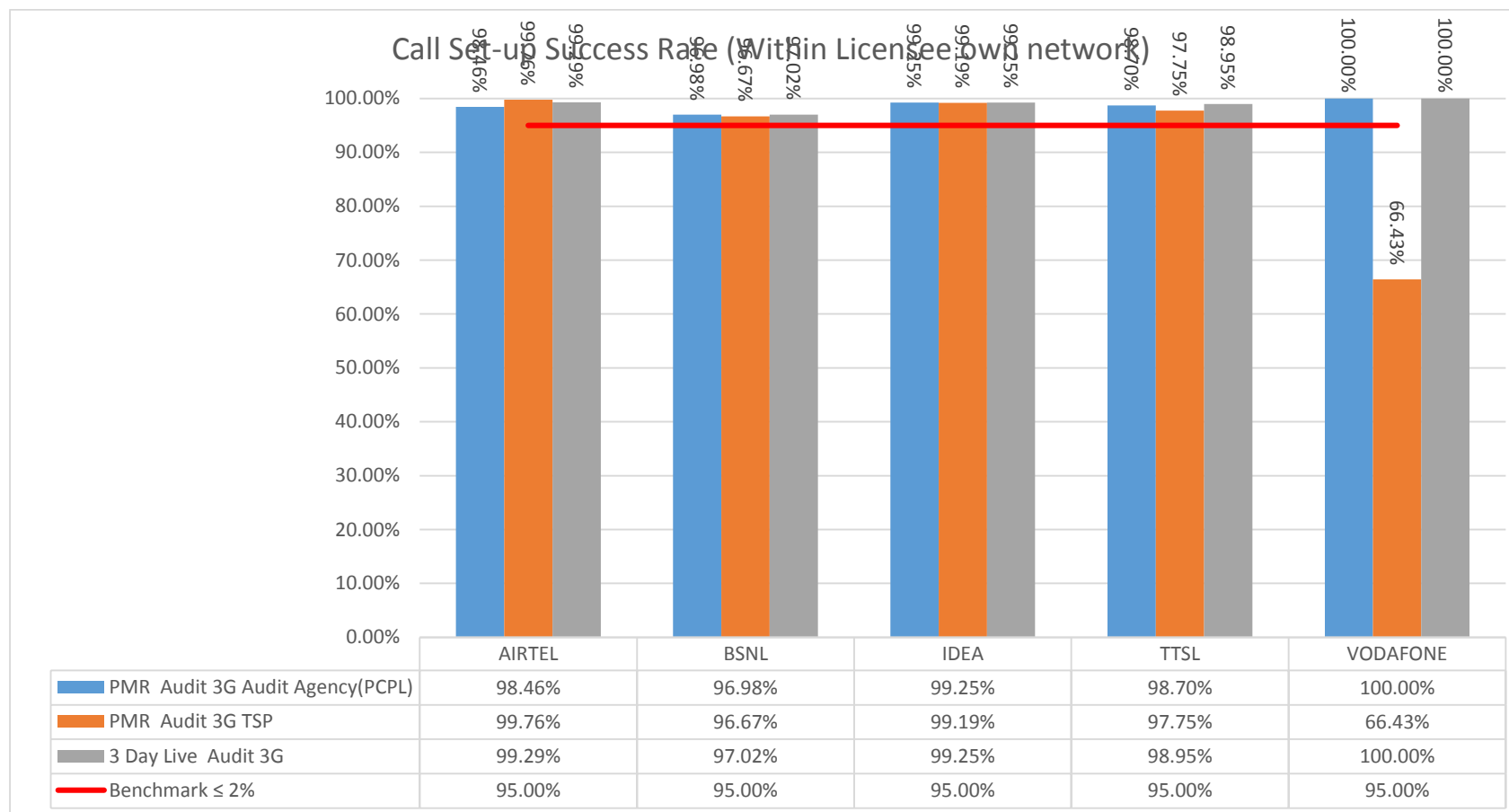
13.5.1. SUM OF DOWNTIME OF BTSs IN A MONTH IN HRS. IN THE LICENSED SERVICE AREA



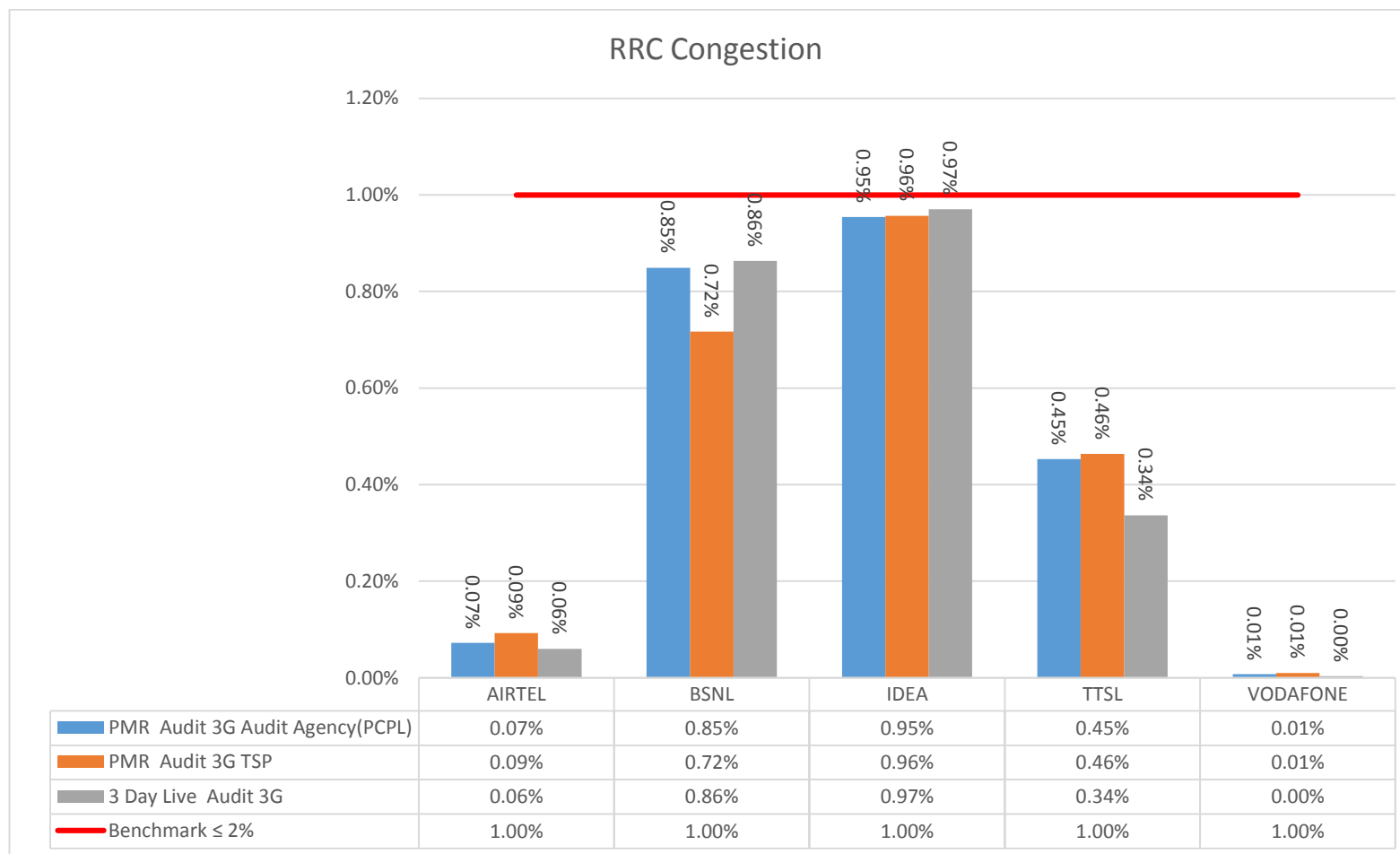
13.5.2. No. of BTSs Having Accumulated Downtime of >24 Hours in a Month



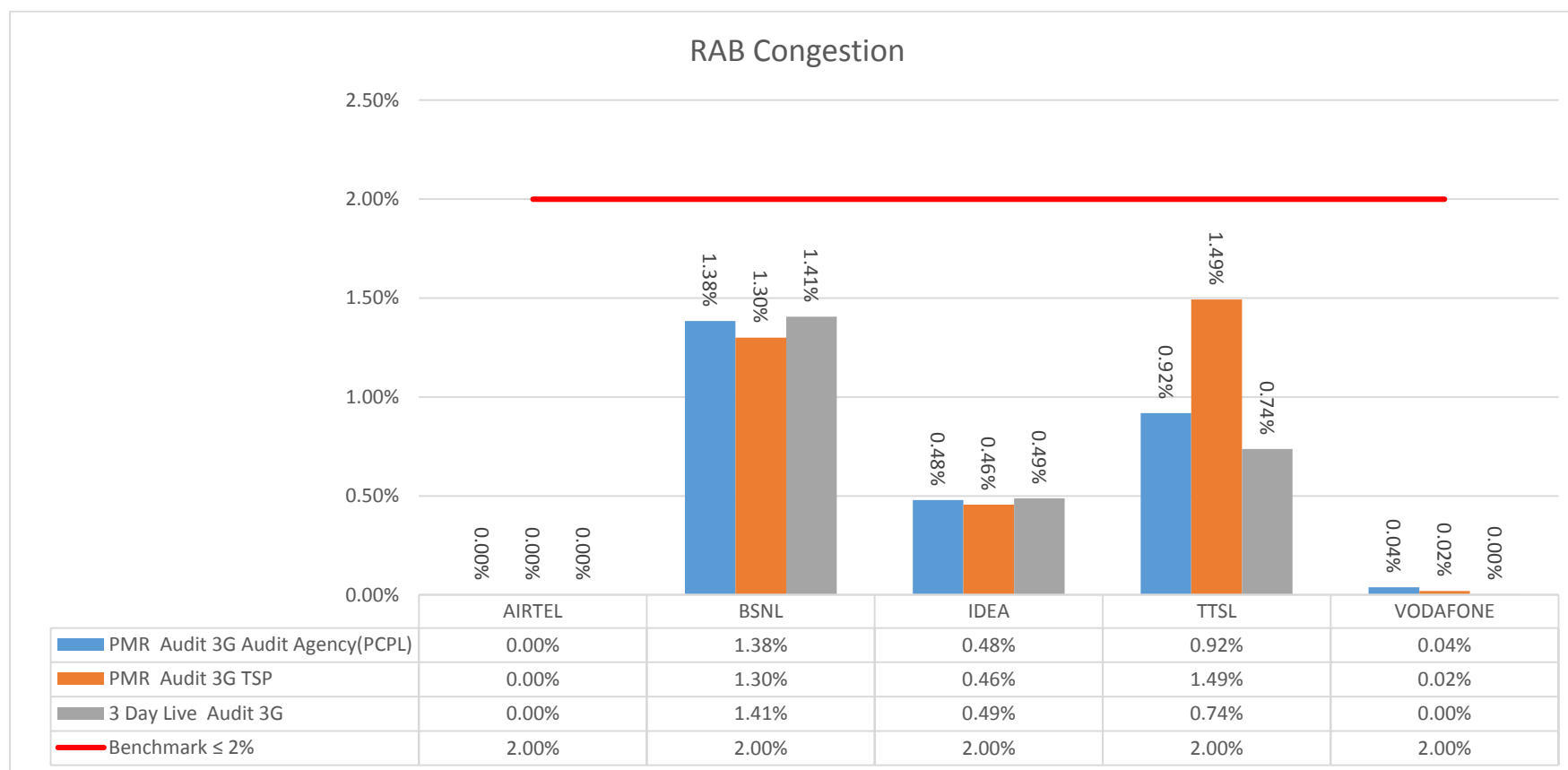
13.5.3. CALL SET-UP SUCCESS RATE (WITHIN LICENSEE OWN NETWORK)



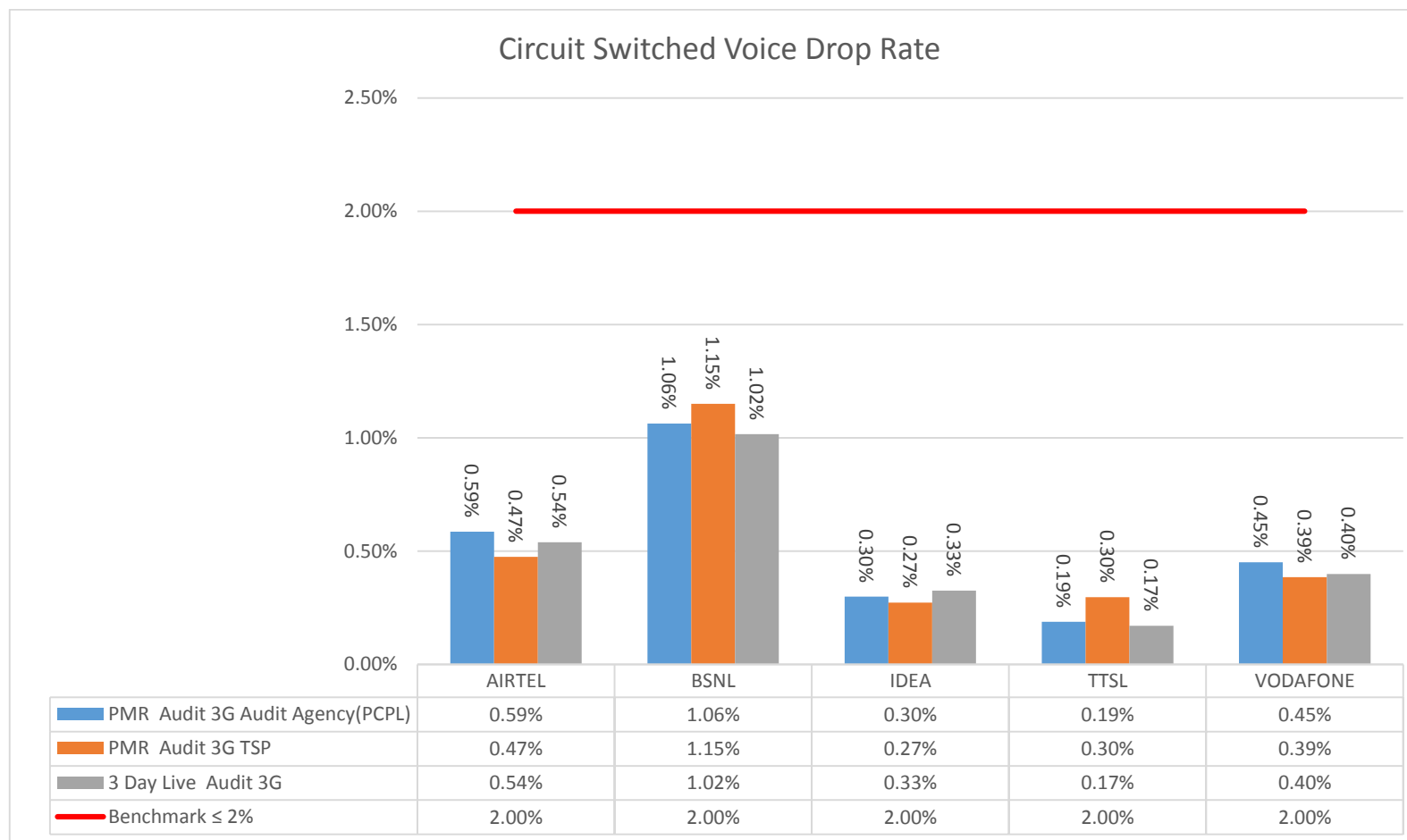
13.5.4. RRC CONGESTION



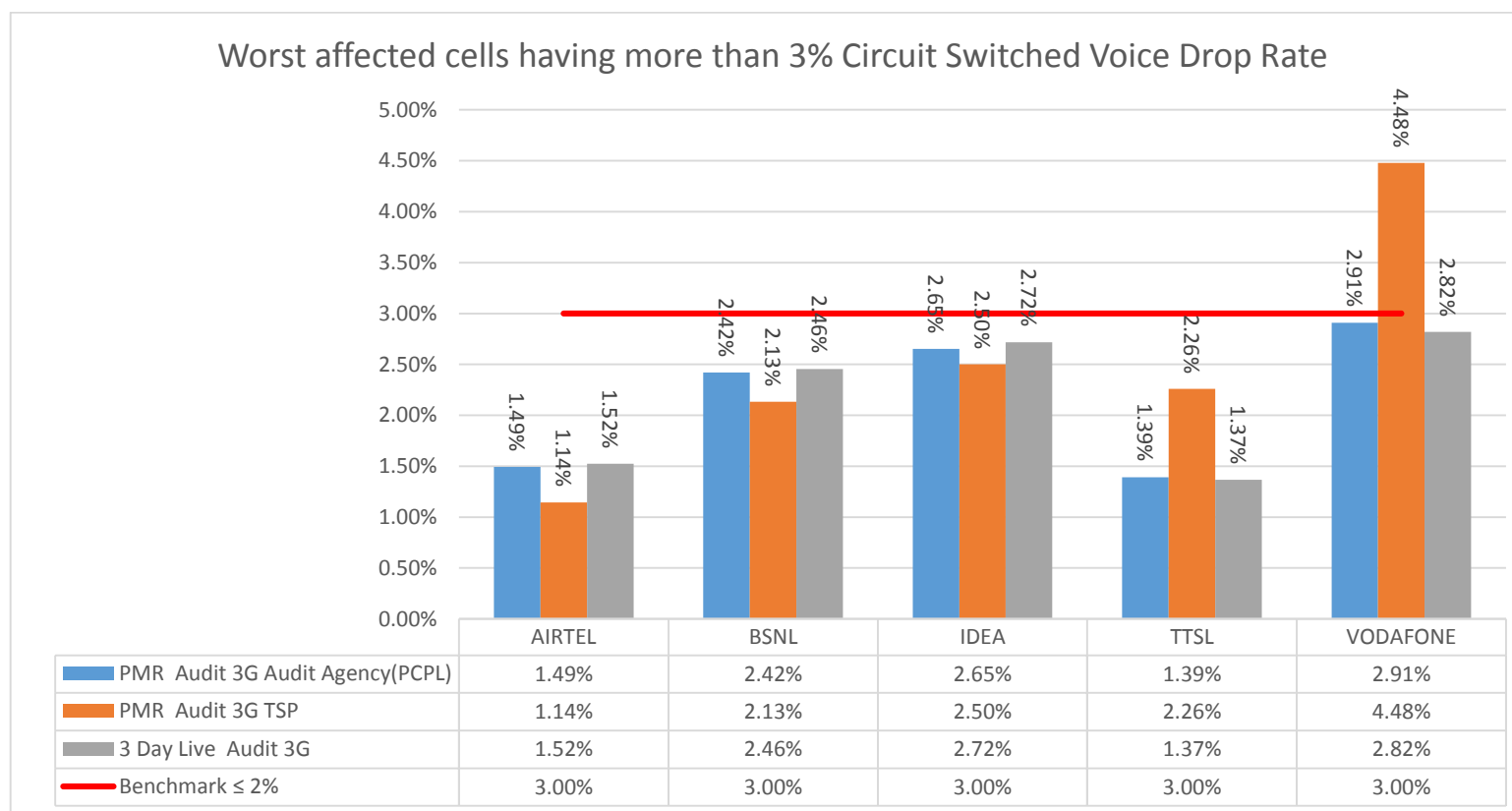
13.5.5. RAB CONGESTION



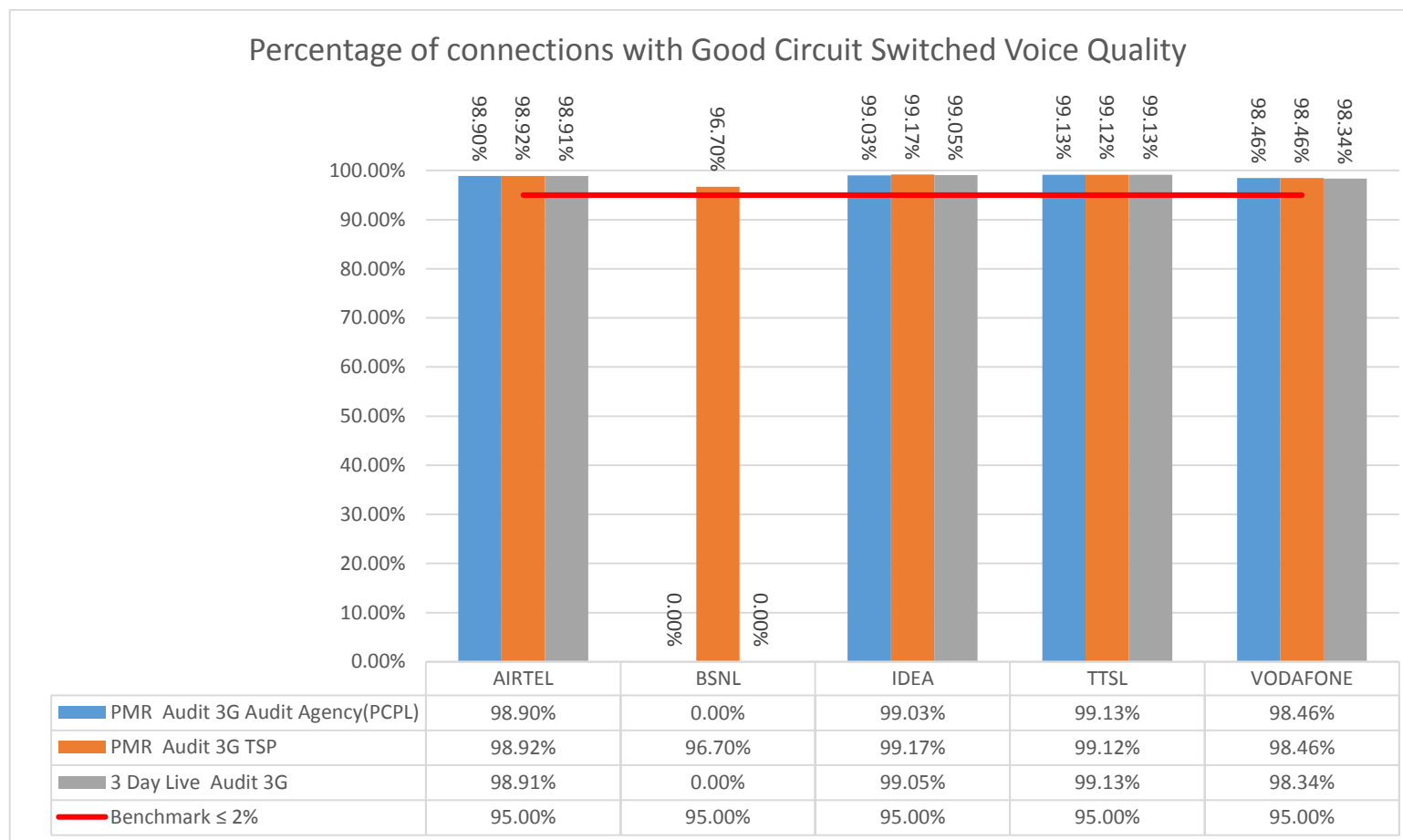
13.5.6. CIRCUIT SWITCHED VOICE DROP RATE



13.5.7. WORST AFFECTED CELL HAVING MORE THAN 3% CIRCUIT SWITCHED VOICE DROP RATE



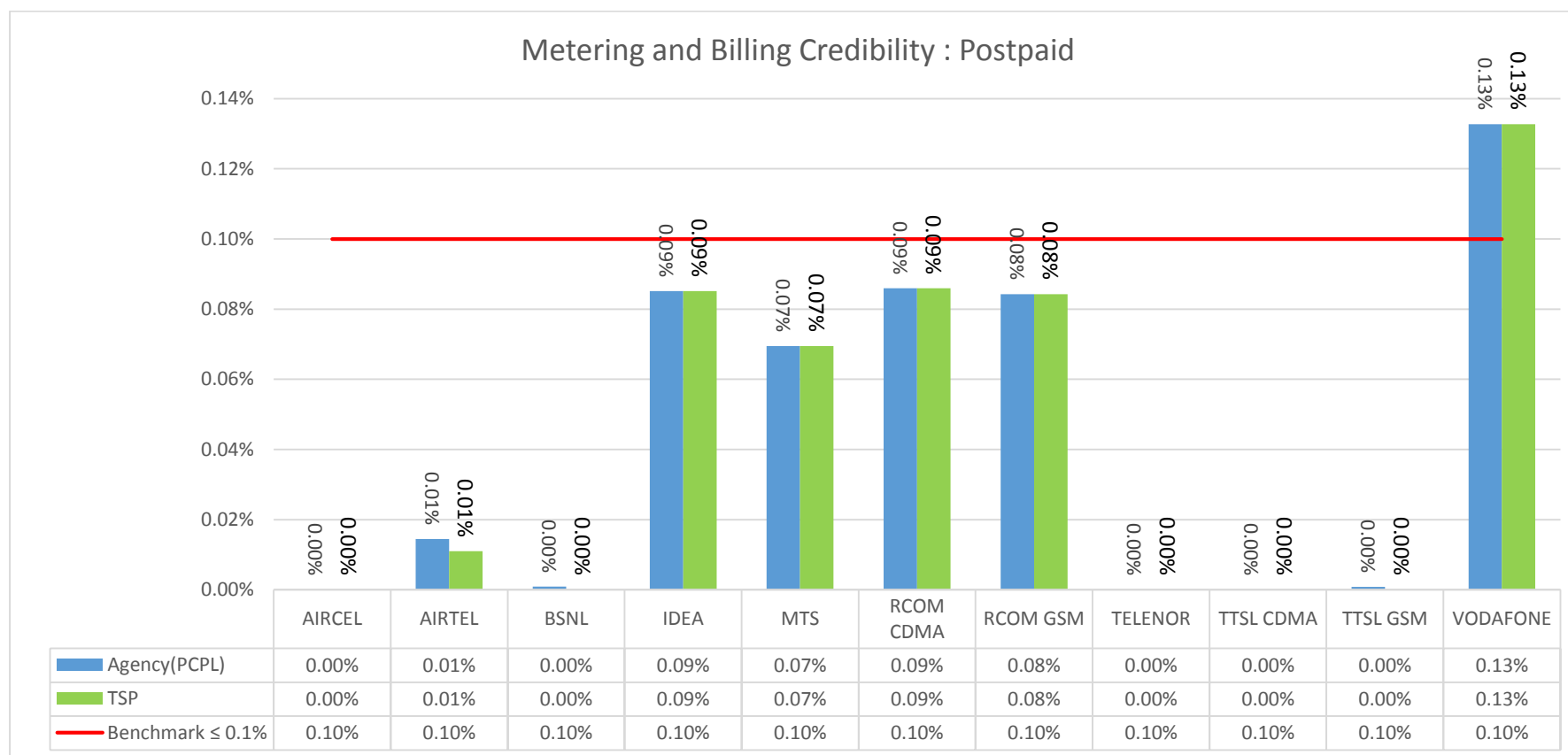
13.5.8. PERCENTAGE OF CONNECTIONS WITH GOOD CIRCUIT SWITCHED VOICE QUALITY



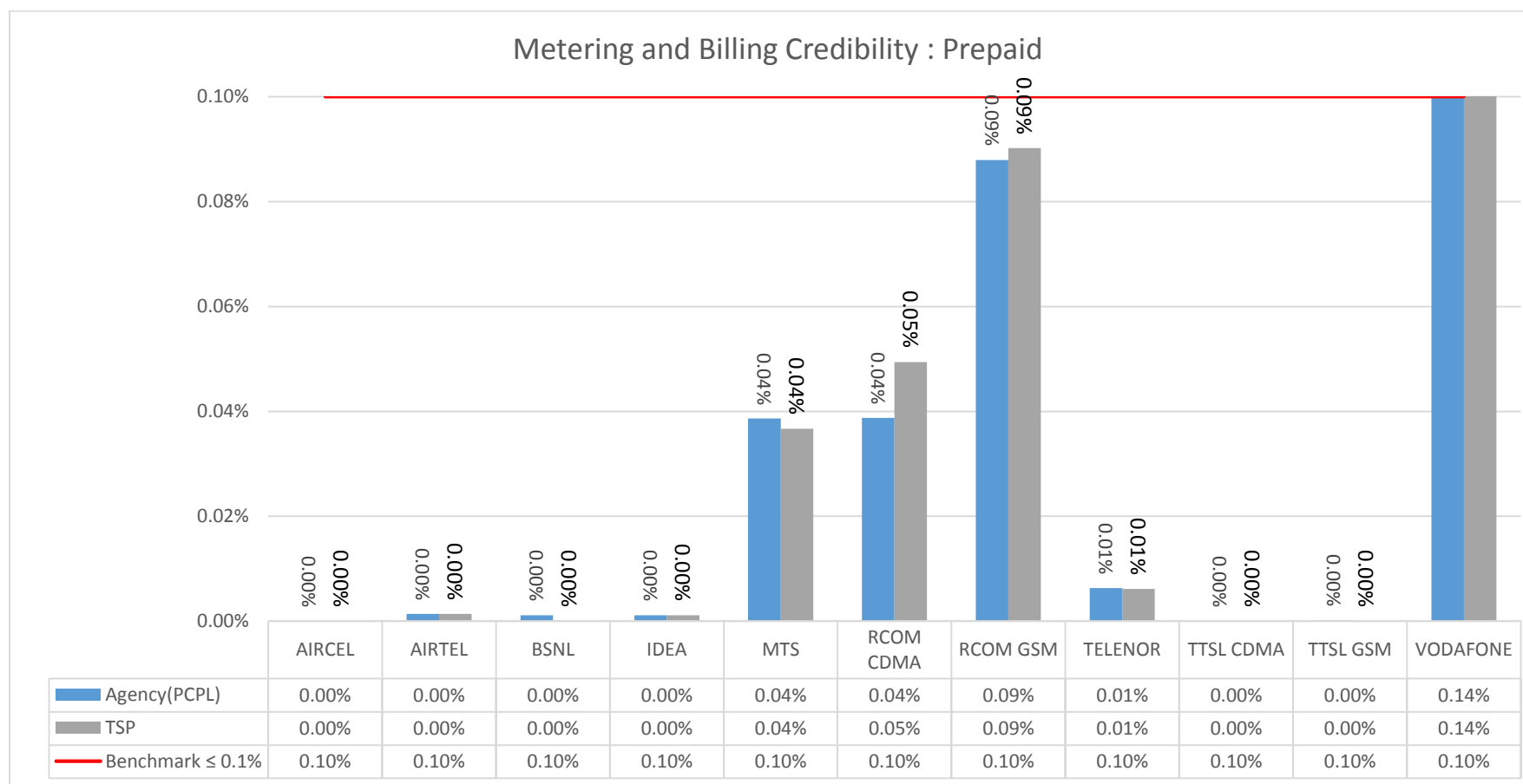
13.6. PMR COMPARISON (TSP vs. AUDIT AGENCY): CSD PARAMETERS

Name of Service Provider	Metering and Billing credibility				Billing Complaints						Termination & Closures		Time taken for refund of deposits after closures: Benchmark		Response time to customer for assistance			
	Postpaid Subscribers		Prepaid Subscribers		%age complaints resolved within 4 weeks		%age complaints resolved within 6 weeks		%age of where credit/waiver is received within one week		% of Termination/ Closure of service within 7 days (100 %)		Cleared over a period of <60 days (100%)		%age of calls answered by the IVR		%age of call answered by the operators (voice to voice) within 90 seconds	
Benchmark	≤ 0.1%		≤ 0.1%		≥ 98%		= 100%		= 100%		= 100%		= 100%		≥ 95%		≥ 95%	
	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP
AIRCEL	0.00%	0.00%	0.00%	0.00%	NA	100.00%	NA	100.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	98.19%	98.19%	98.86%	98.86%
AIRTEL	0.01%	0.01%	0.00%	0.00%	100.00%	99.50%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	100.00%	100.00%	93.05%	93.10%
BSNL	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.00%	98.28%	99.14%
IDEA	0.09%	0.09%	0.00%	0.00%	99.99%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.41%	99.41%	99.41%	99.41%	99.46%	99.46%
MTS	0.07%	0.07%	0.04%	0.04%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.95%	98.95%	95.08%	95.08%
RCOM CDMA	0.09%	0.09%	0.04%	0.05%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	86.78%	86.78%	98.68%	98.68%	89.08%	89.08%
RCOM GSM	0.08%	0.08%	0.09%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	75.62%	75.62%	99.45%	99.45%	94.28%	94.28%
TELENOR	NA	NA	0.01%	0.01%	100.00%	100.00%	100.00%	100.00%	100.00%	NA	NA	NA	NA	NA	99.01%	99.01%	98.24%	98.24%
TTSL CDMA	0.00%	0.00%	0.00%	0.00%	NA	100.00%	NA	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	98.42%	98.42%
TTSL GSM	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.55%	99.55%	98.09%	98.09%
VODAFONE	0.13%	0.13%	0.14%	0.14%	100.00%	100.00%	100.00%	100.00%	100.00%	99.98%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.05%	98.06%

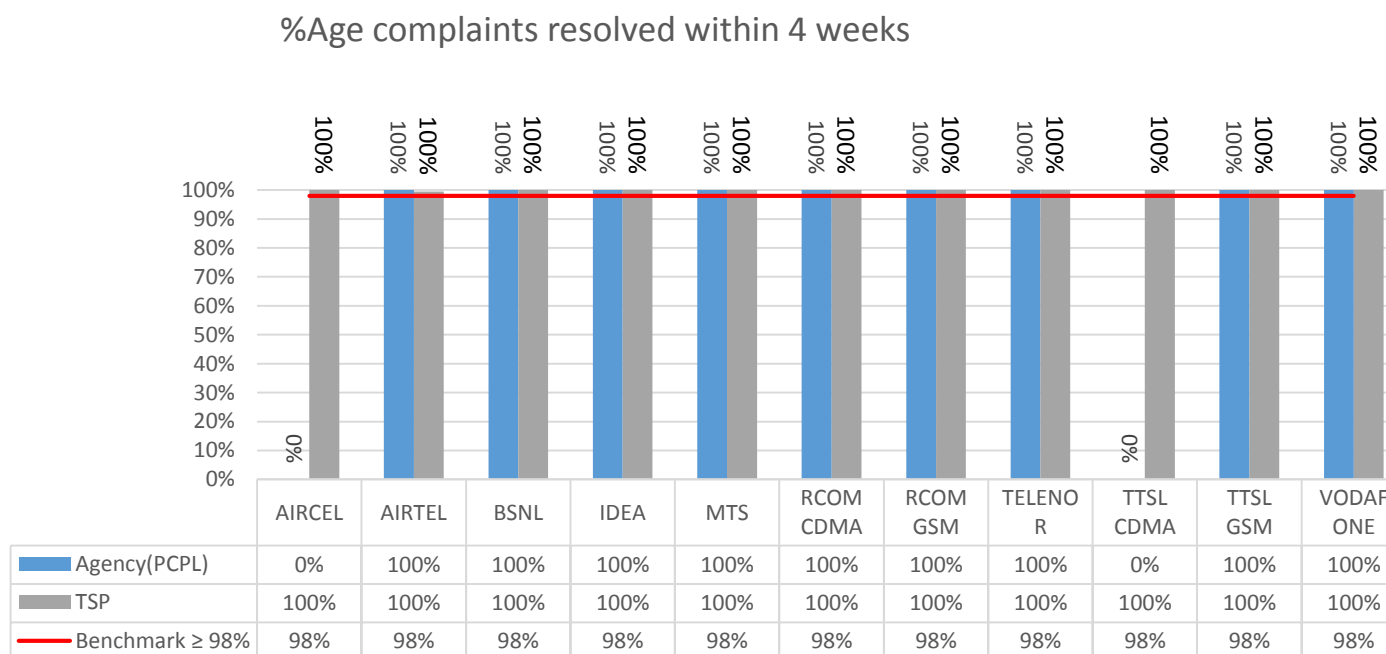
13.6.1. METERING AND BILLING CREDIBILITY : POSTPAID



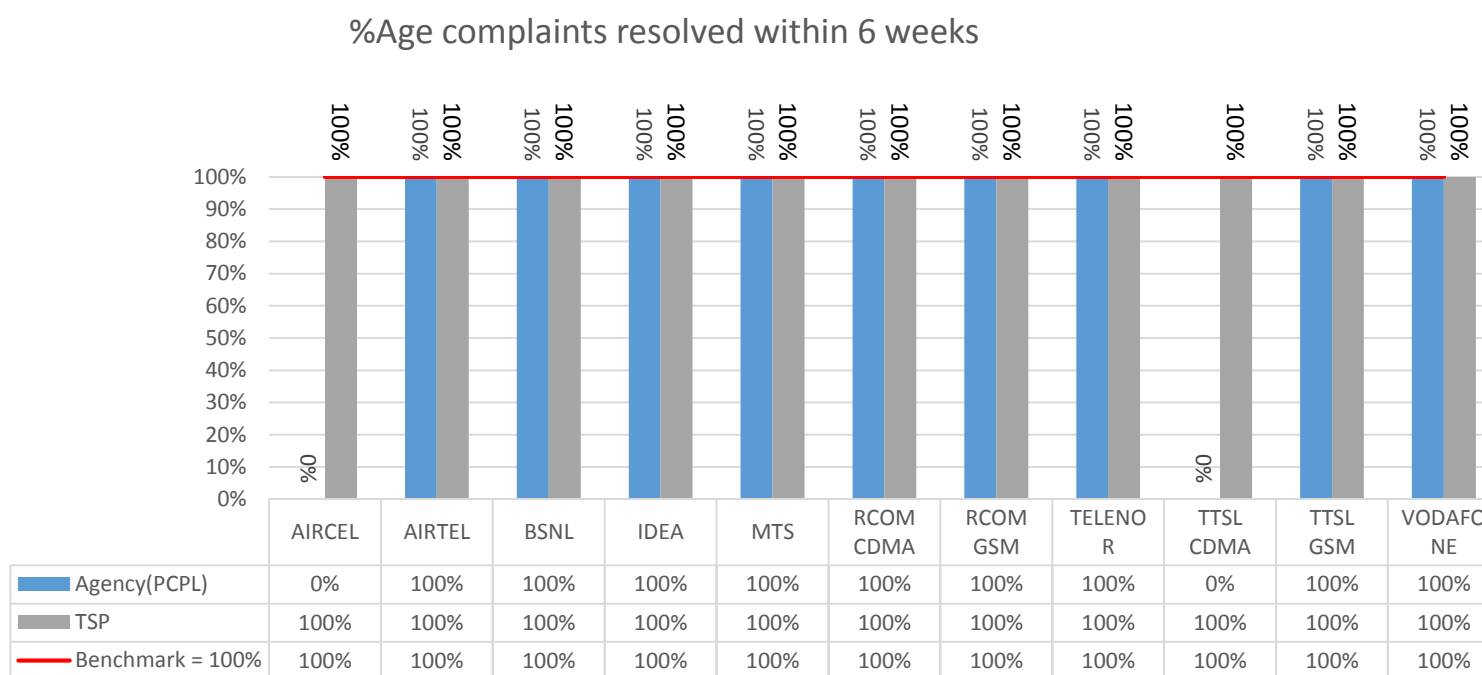
13.6.2. METERING AND BILLING CREDIBILITY : PREPAID



13.6.3. %AGE COMPLAINT RESOLVED WITHIN 4 WEEKS

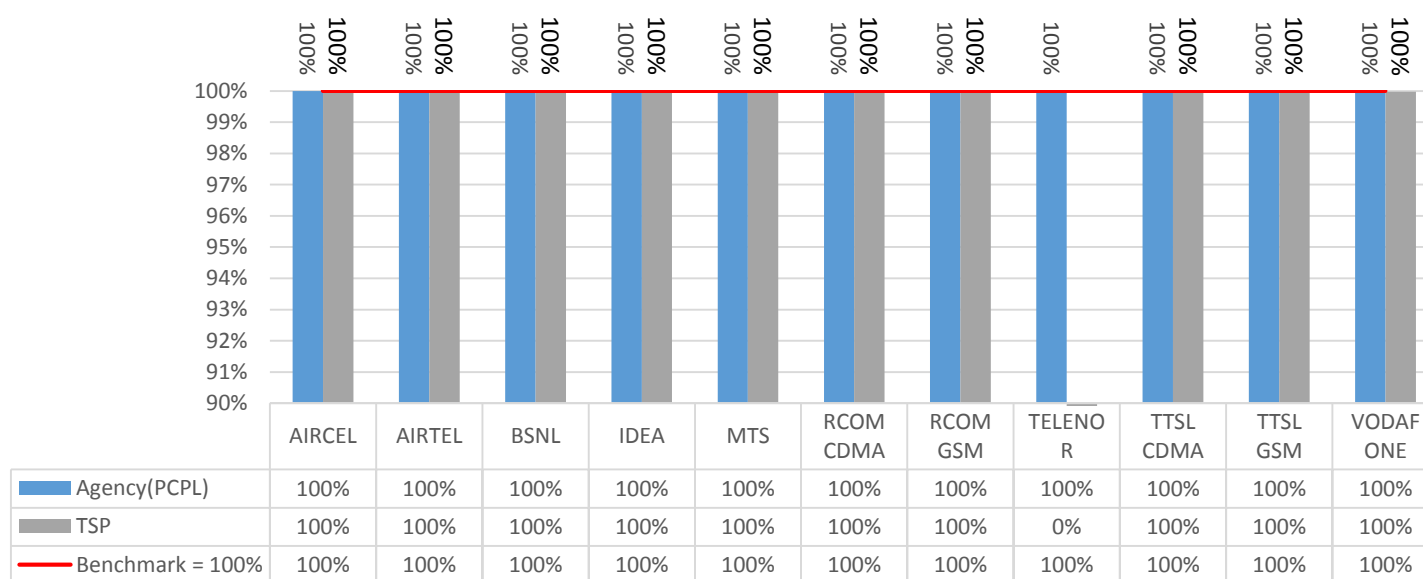


13.6.4. %AGE COMPLAINTS RESOLVED WITHIN 6 WEEKS

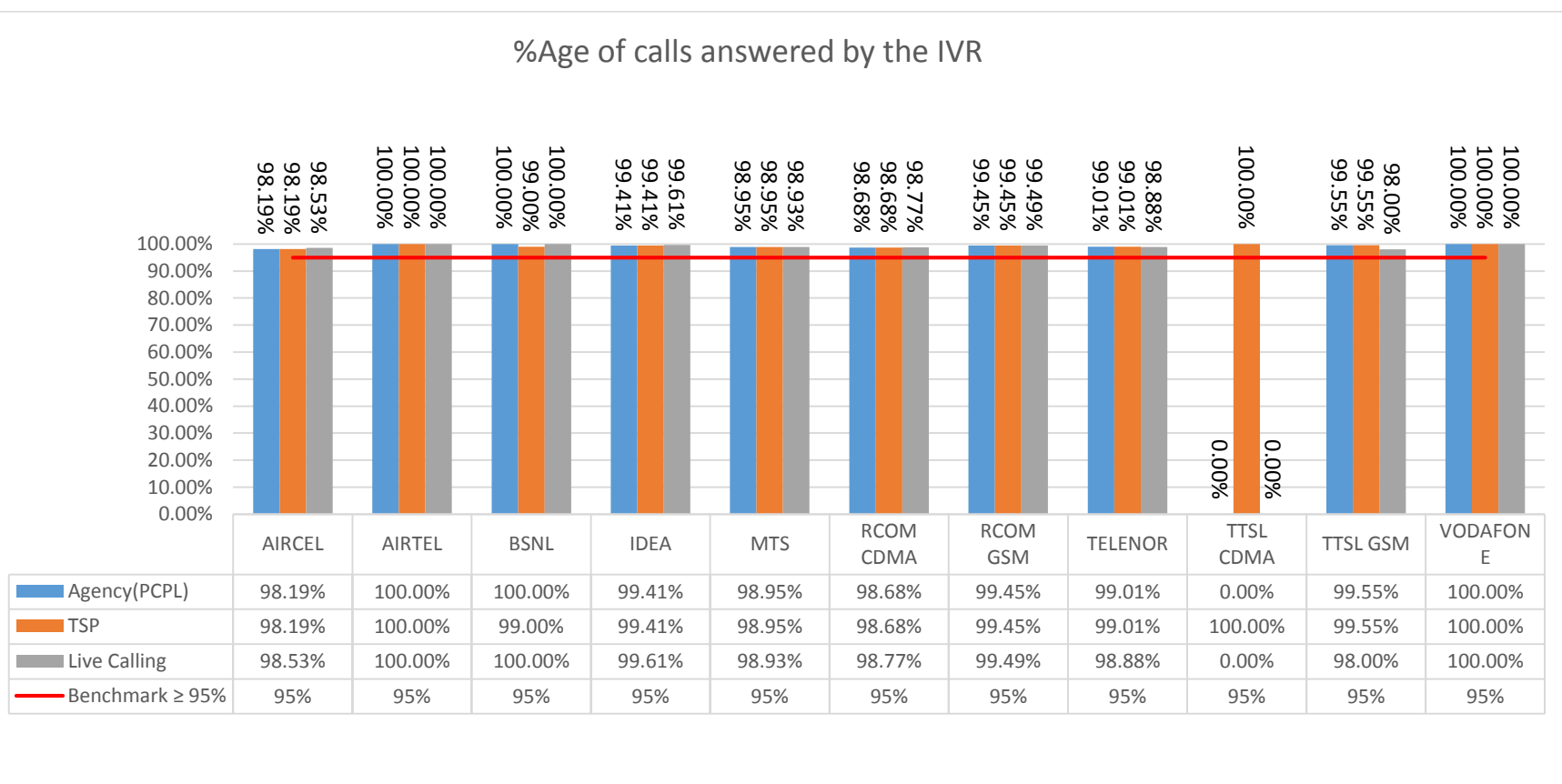


13.6.5. %AGE OF WHERE CREDIT/WAIVER IS RECEIVED WITHIN ONE WEEK

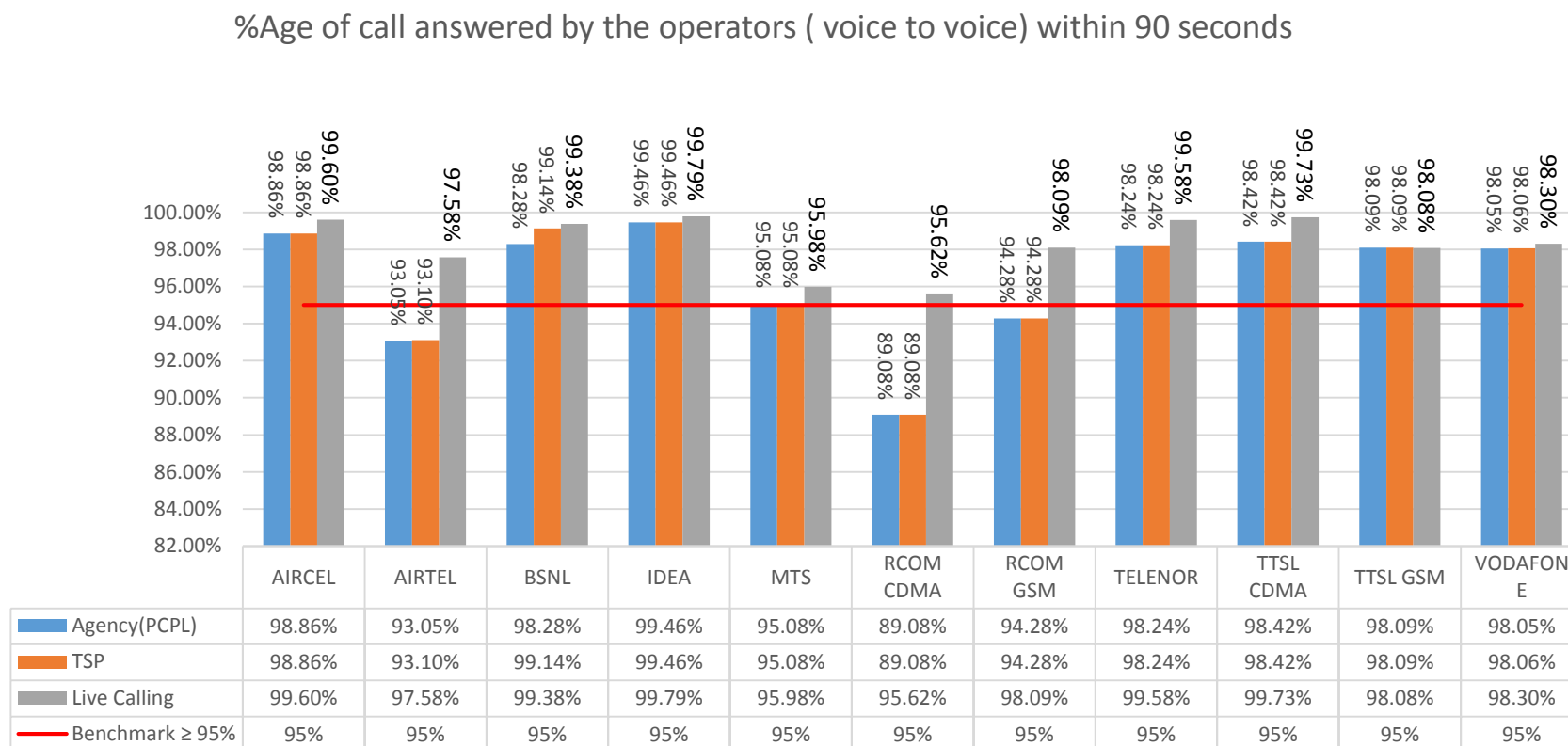
%Age of where credit/waiver is received within one week



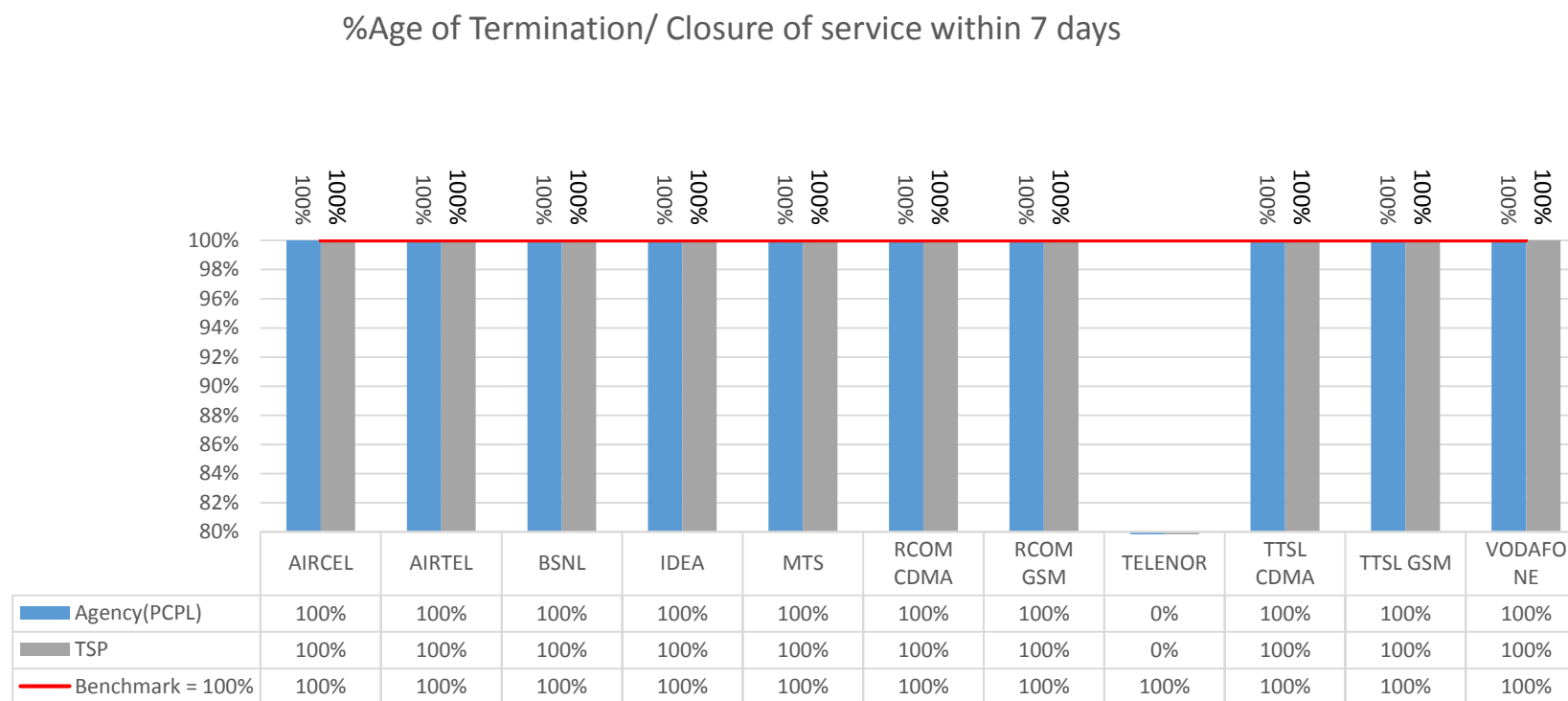
13.6.6. %AGE OF CALLS ANSWERED BY THE IVR



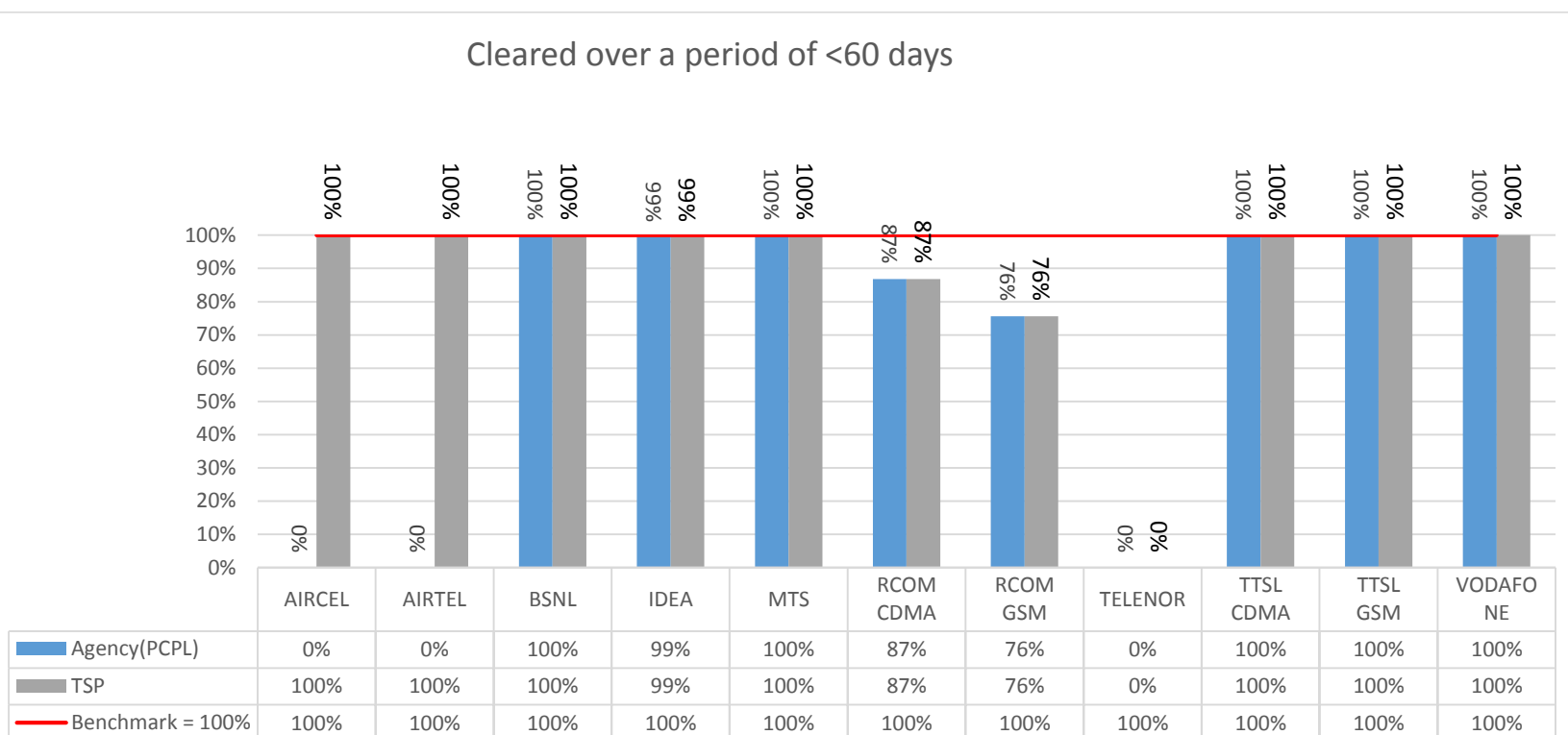
13.6.7. %AGE OF CALLS ANSWERED BY THE OPERATORS (VOICE TO VOICE) WITHIN 90 SECONDS



13.6.8. %AGE OF TERMINATION/CLOSURE OF SERVICE WITHIN 7 DAYS



13.6.9. CLEARED OVER A PERIOD OF <60 DAYS



14 KEY FINDINGS

NETWORK FINDINGS (2G):

- TELENOR has parameter value 5.26% and has failed to meet the benchmark of $\leq 3\%$ for worst affected cell having more than 3% TCH drop.

NETWORK FINDINGS (3G):

- VODAFONE has parameter value of 66.43% and has failed to meet the benchmark of $\geq 95\%$ for call set-up success rate (Within licensee own network)
- VODAFONE has parameter value of 4.48% and has failed to meet the benchmark of $\leq 3\%$ for worst affected cell having more than 3% TCH drop.

CUSTOMER SERVICE DELIVERY:

- IDEA has parameter value of 99.41% and has failed to meet the benchmark of = 100% for refund of deposits after closure cleared over a period of >60 days
- RCOM CDMA has parameter value of 86.78% and has failed to meet the benchmark of = 100% for refund of deposits after closure cleared over a period of >60 days
- RCOM GSM has parameter value of 75.62% and has failed to meet the benchmark of = 100% for refund of deposits after closure cleared over a period of >60 days
- AIRTEL has parameter value of 93.05% and has failed to meet the benchmark of $\geq 95\%$ for percentage of call answered by the operators (voice to voice) within 90 seconds
- RCOM CDMA has parameter value of 89.08% and has failed to meet the benchmark of $\geq 95\%$ for percentage of call answered by the operators (voice to voice) within 90 seconds
- RCOM GSM has parameter value of 94.28% and has failed to meet the benchmark of $\geq 95\%$ for percentage of call answered by the operators (voice to voice) within 90 seconds