AUDIT & ASSESSMENT OF QUALITY OF SERVICE CELLULAR MOBILE TELEPHONE SERVICE (CMTS)

(JULY TO SEPTEMBER 2016)

NORTH ZONE – RAJASTHAN CIRCLE

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 Junket 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 gather 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 Basic 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 Rajasthan circle.

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1.4. COVERAGE

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

1.5. SSA List

S. No.	Circle	SSA Name
1	RJ	Ajmer
2	RJ	Alwar
3	RJ	Banswara
4	RJ	Barmer
5	RJ	Bharatpur
6	RJ	Bhilwara
7	RJ	Bikaner
8	RJ	Bundi
9	RJ	Chittorgarh
10	RJ	Churu
11	RJ	Jaipur
12	RJ	Jaisalmer
13	RJ	Jhalawar
14	RJ	Jhunjhunu
15	RJ	Jodhpur
16	RJ	Kota
17	RJ	Nagaur
18	RJ	Pali (Junwar)
19	RJ	Sawaimadhopur
20	RJ	Sikar
21	RJ	Sirohi (abu road)
22	RJ	Sriganganagar
23	RJ	Tonk
24	RJ	Udaipur

Audit Activities

PMR Reports	Drive Test	CSD Audit (Quarterly)	Wireline & Broadband (Quarterly)	Inter Operator Call Assessment
Monthly PMR	Operator Assisted	Billing Complain	Billing Complain	
3 Days Live Data	Independent	Service request	Service Request	
	Level 1 Service	Customer Service	Level 1 Service/Inter Operator	
			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 TSP is intimated about the audit schedule in advance and accordingly the auditor visits the TSP premises to conduct the audit

Raw Data is extracted from the operator's NOC/OMCR/call centre/billing centre etc. by the auditor with assistance from the operator personnel in order to generate PMR reports (Network/ Billing/ Customer Service etc.)

Calculations are done to generate new PMR from the RAW data

Hard copy of the PMR is duly signed by the auditor and competent authority from operator end.

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, Sep 2016 audit data was collected in the month of Oct 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 Sep 2016 was collected in the month of Oct 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.

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 July, August and September 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)	≤ 2%
Worst affected BTSs due to downtime	≤ 2%
Connection Establishment (Accessibility)	
Call Set-up Success Rate (within licensee's own network)	≥ 95%
SDCCH/ Paging Channel Congestion	≤ 1%
TCH Congestion	≤ 2%
Connection Maintenance (Retainability)	
Call Drop Rate	≤ 2%
Worst affected cells having more than 3% TCH drop (call drop) rate	≤ 3%
Connections with good voice quality	≥ 95%
Point of Interconnection	
(POI) Congestion (on individual POI)	≤ 0.5%

2.3. DATA EXTRACTION POINTS

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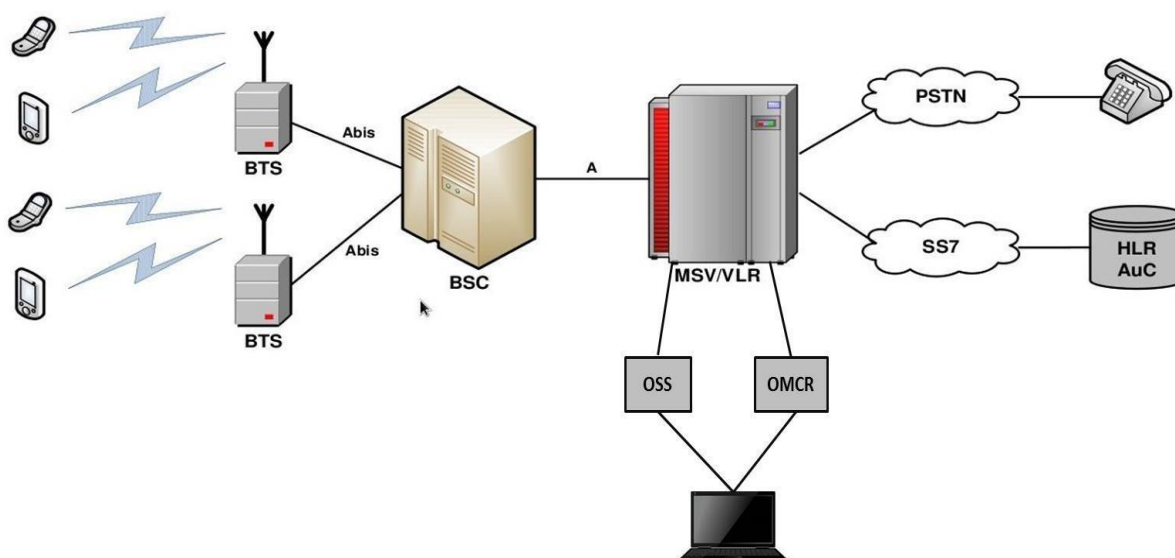
2.4.   AUDIT PROCEDURE

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 verfied 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	SDCCH / TCH Congestion% = [(A1 x C1) + (A2 x C2)
	+.......+ (An x Cn)] / (A1 + A2 +...+ 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	POI Congestion% = [(A1 x C1) + (A2 x C2) +.......+ (An x Cn)] / (A1 + A2 +...+ 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%	Total number of cells having more than 3% TCH drop during CBBH/ Total number of cells in the LSA x 100
TCH drop	
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	<=2%
			((No. of Node B's having Accumulated Downtime of > 24 hrs in a month) / Total no. of BTSs in the licensed service area)*100	
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	<=2%
			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	
			[(Sum of downtime of Node B's in a month in hrs)/(24* no. of days in the month*no. of Node B's in the licensed service area)]*100	
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 affectedcells 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	POI			
	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 Iu Connection Setup Success (A)	<=5%
			RNC originated PS Domain Iu 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 beconsidered as TCBH for the operator.

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. CUSTOMERSERVICE 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 September 2016 was collected in the month of October 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 numbersis 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 QE September 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 September 2016 was considered for live calling activity conducted in October 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, 2015 were considered as population for selection of samples.

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

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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 July, August and September 2016, 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.

Sr.No.	Level-1 (Emergency) Helpline Number Details
1	100 Police
2	101 Fire
3	102 Ambulance
4	104 Health Information Helpline
5	108 Emergency and Disaster Management Helpline
6	138 All India Helpine for Passangers
7	149 Public Road Transport Utility Service
8	181 Chief Minister Helpline
9	182 Indian Railway Security Helpline
10	1033 Road Accident Management Service
11	1037 Public Grievance Cell DoT HQ as 'Telecom Consumer Grievance Redressal Helpline'
12	1056 Emergency Medical Services
13	106X State of the Art Hospitals - AIIMS
14	1063 Public Grievance Cell DoT Hq
15	1064 Anti Corruption Helpline
16	1070 Relief Commission for Natural Calamities
17	1071 Air Accident Helpline
18	1072 Rail Accident Helpline
19	1073 Road Accident Helpline
20	1077 Control Room for District Collector
21	1090 Call Alart (Crime Branch)
22	1091 Women Helpline
23	1097 National AIDS Helpline to NACO
24	1099 Central Accident and Trauma Services (CATS)
25	10580 Educational& Vocational Guidance and Counselling
26	10589 Mother and Child Tracking (MCTH)
27	10740 Central Pollution Control Board
28	10741 Pollution Control Board
29	1511 Police Related Service for all Metro Railway Project
30	1512 Prevention of Crime in Railway
31	1514 National Career Service(NCS)
32	15100 Free Legal Service Helpline
33	155304 Municipal Corporations
34	155214 Labour Helpline
35	1903 Sashastra Seema Bal (SSB)
36	1909 National Do Not Call Registry
37	1912 Complaint of Electricity
38	1916 Drinking Water Supply
39	1950 Election Commission of India

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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	TTSL CDMA	TTSL GSM	Vodafone	MTS
Aircel	-	100%	100%	100%	100%	100%	100%	100%	100%
Airtel	100%	-	100%	100%	100%	100%	100%	100%	100%
BSNL	100%	100%	-	100%	100%	100%	100%	100%	100%
Idea	100%	100%	100%	-	100%	100%	100%	100%	100%
RCOM GSM	100%	100%	100%	100%	-	100%	100%	100%	100%
TTSL CDMA	100%	100%	100%	100%	100%	-	100%	100%	100%
TTSL GSM	100%	100%	100%	100%	100%	100%	-	100%	100%
VODAFONE	100%	100%	100%	100%	100%	100%	100%	-	100%
MTS	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

Rajasthan circle consist of total 24 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.

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)] x 100

- Voice quality (GSM)
  - Total RxQual Samples– A
  - RxQual samples with 0-5 value – B
  - %age samples with good voice quality = B/A x 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 x 100
  - %age samples with FER bins having 0-4 value (forward FER) = C/A x 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) x 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) x 100

6. EXECUTIVE SUMMARY

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

- *"Service provider performance report"* for Cellular mobile, Basic (wire line) and Broadband services , which gives a foretaste of the performance of various operators against the benchmark specified by TRAI, during the months in which the Audit was carried out by PhiStream Consulting Pvt. Ltd. Auditors.

- *"Parameter wise critical findings"* for Cellular mobile, Basic (wire line) and Broadband services: This indicates key observations and findings from different activities carried out during the Audit process.

- PhiStream conducted audit involved a 3 stage verification process which consisted of auditing the records of the service providers and verifying the data submitted to TRAI. The second step involved a three day live measurement of all the network parameters. On the basis of the three days live measurement, the auditors checked the busy hour of the day for the service provider and collected the data for this busy hour for the month in which the audit was conducted Finally, the performance of the service providers was also gauged by conducting drive tests in three select SSAs per service provider per quarter.

- The three stage audit / verification viz audit of the records, live measurements and drive tests of all the cellular mobile operators was repeated every month. In case of Basic (Wire line) and Broadband, this exercise is required to be carried out on quarterly basis.

6. GENERAL INFORMATION

6.1. OPERATORS COVERED & ACTIVE SUBSCRIBER BASE

Name of Operator	Number of Subscriber (Up to September 30, 2016)
AIRCEL	6521992
AIRTEL	19643122
BSNL	4361962
IDEA	7586197
MTS	1902826
RCOM GSM	5967544
TTSL CDMA	429531
TTSL GSM	798781
VODAFONE	11951704

6.2 . SWITCHES/BSC/BTS DETAILS OF SERVICE PROVIDERS:

SWITCHES/BSC/BTS DETAILS OF SERVICE PROVIDERS:								
Sr.No.	Name of Service Provider	No. of cells	BTS	BSC	MSC+GMSC	NSS make	BSS make	Node B	RNC
1	Aircel	7675	2567	18	4	Nokia	Nokia	NA	NA
2	Airtel	45142	8613	87	45	Ericsson	Ericsson	6169	17
3	BSNL	16571	4222	59	13+3	Ericsson+ZTE	ZTE+NSN+Ericsson	1531	23
4	IDEA	21336	6923	57	12+1	Ericsson	Ericsson	NA	NA
5	RCOM GSM	2022	NA	NA	3	Huawei	Huawei	679	3
6	TTSL CDMA	2227	689	6	2+2	Ericsson & Huawei	Huawai & Motorola	NA	NA
7	TTSL GSM	4175	1388	12	2	Huawei	Huawei	NA	NA
8	MTS	5110	1535	7	2	ZTE	ZTE	NA	NA
9	VODAFONE	23947	7810	89	9+4	Nokia & Ericsson	Nokia & Ericsson	2867	12

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.

DNA: Data not available

6.3. BUSY HOUR OF VARIOUS SERVICE PROVIDERS:

Sl. No.	Name of Service Provider	Month of Audit	Network TCBH Hour
GSM Operators			
1	Aircel	September-16	20:00 - 21:00
2	Airtel	September-16	20:00 - 21:00
3	BSNL	September-16	19:00 - 20:00
4	IDEA	September-16	20:00 - 21:00
5	RCOM GSM	September-16	20:00 - 21:00
6	TTSL CDMA	September-16	20:00 - 21:00
7	TTSL GSM	September-16	20:00 - 21:00
8	MTS	September-16	20:00 - 21:00
9	VODAFONE	September-16	20:00 - 21:00

The TCBH reported by all the service providers matched the network busy hour calculated by Phistream auditors for the Rajasthan circle.

6.4. AUDIT SCHEDULE

Sl. No.	Service Provider	Dates of live measurement Audit			
	GSM Operators	July-16	Aug-16	Sept-16	Audit Location
1	AIRCEL	4 to 6 July 2016	16 to 18 Aug 2016	10 to 12 Sept 2016	Aircel limited, 1st & 2nd Floor, Navajyoti, Amrapali Circle,C-Block,Vaishali Nagar, Jaipur-302021
2	AIRTEL	12 to 14 July 2016	17 to 19 Aug 2016	13 to 15 Sept 2016	Bharti Hexacom Limited, K-21, Malviya Marg, c-scheme , Jaipur-302001
3	BSNL	1 to 3 July 2016	3 to 5 Aug 2016	1 to 3 Sept 2016	Bharat Sanchar Nigam Ltd. (BSNL) Room no. 116, Bajaj Nagar MSC, First Floor, BSNL Bajaj Nagar, JLN Marg, Jaipur- 302015
4	IDEA	4 to 6 July 2016	15 to 17 Aug 2016	19 to 21 Sept 2016	Idea Cellular Ltd. Plot-C, Sahkar Marg, Jaipur- 302001
5	MTS	4 to 6 July 2016	1 to 3 Aug 2016	19 to 21 Sept 2016	Sistema Shyam Teleservices Ltd. 3, MTS Tower, Amrapali Circle Vaishali Nagar, Jaipur.
6	RCOM GSM	4 to 6 July 2016	17 to 19 Aug 2016	12 to 14 Sept 2016	Reliance Communications Ltd.F-161, E-170, Road No-12, VKIA, Jaipur-302013
7	TATA CDMA	4 to 6 July 2016	17 to 19 Aug 2016	1 to 3 Sept 2016	Tata Teleservices Limited, The Guman-1, Amrapali circle, Vaishali nagar, jaipur-302021
8	TATA GSM	4 to 6 July 2016	17 to 19 Aug 2016	1 to 3 Sept 2016	Tata Teleservices Limited, The Guman-1, Amrapali circle, Vaishali nagar, jaipur-302021
9	VODAFONE	6 to 8 July 2016	1 to 3 Aug 2016	1 to 3 Sept 2016	Vodafone Ltd.5th Floor,Gaurav Tower,Malviya Nagar jaipur,-302017

Note: Audit schedule mentioned above is for the PMR audit for the last month. 3 day live monitoring for the current month was carried along with the PMR audit.

Colour codes to read the report:

	Not meeting the benchmark
N/A	Not applicable
DNA	Data not available (At TSP premises)
NP	Not Provided by TSP

6.5. 2G VOICE QOS PERFORMANCE OF MONTHLY PMR – JULY 2016 MONTH

	Jul-16									
Network Parameters			Name of Service Provider							
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.22%	0.16%	1.28%	0.08%	0.13%	0.07%	0.13%	0.14%	0.14%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.20%	0.00%	1.37%	0.03%	0.00%	0.29%	0.58%	0.00%	0.57%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	96.12%	97.61%	98.29%	99.62%	98.85%	98.17%	98.35%	99.21%	99.53%
	SDDCH/Paging chl. Congestion	≤ 1%	0.42%	0.45%	0.70%	0.16%	NA	0.15%	NA	0.24%	0.24%
	TCH Congestion	≤ 2%	1.38%	1.27%	1.34%	0.12%	0.16%	0.27%	0.64%	0.21%	0.47%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	1.31%	0.72%	1.50%	0.62%	0.51%	0.18%	0.34%	0.62%	0.76%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	3.40%	1.11%	2.02%	2.04%	1.41%	0.90%	3.71%	2.81%	2.97%
	%age of connection with good voice quality	≥ 95%	96.05%	98.50%	97.94%	97.22%	99.16%	99.15%	98.76%	98.69%	96.83%

6.6. 2G VOICE QOS PERFORMANCE OF MONTHLY PMR – AUGUST 2016 MONTH

	Aug-16									
Network Parameters			Name of Service Provider							
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	DNA	0.19%	1.24%	0.09%	DNA	0.10%	0.13%	0.11%	0.15%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	DNA	0.00%	1.31%	0.06%	DNA	0.58%	0.29%	0.22%	0.89%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	DNA	97.18%	98.12%	99.52%	98.95%	98.41%	95.73%	99.27%	99.50%
	SDDCH/Paging chl. Congestion	≤ 1%	DNA	0.63%	0.64%	0.26%	NA	0.10%	NA	0.07%	0.17%
	TCH Congestion	≤ 2%	DNA	1.60%	1.54%	0.17%	0.10%	0.27%	3.06%	0.18%	0.50%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	DNA	0.84%	1.60%	0.67%	0.58%	0.19%	0.30%	0.68%	0.84%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	DNA	1.41%	2.13%	2.26%	1.70%	0.82%	2.85%	3.44%	2.98%
	%age of connection with good voice quality	≥ 95%	DNA	98.42%	98.03%	96.99%	99.15%	98.91%	98.70%	98.65%	96.43%

6.7. 2G VOICE QOS PERFORMANCE OF MONTHLY PMR – SEPTEMBER 2016 MONTH

	Sep-16									
Network Parameters			Name of Service Provider							
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.08%	0.09%	1.22%	0.04%	0.06%	0.04%	0.07%	0.04%	0.08%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	1.23%	0.01%	0.00%	0.00%	0.15%	0.22%	0.18%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.10%	97.05%	98.23%	99.48%	98.92%	97.06%	98.73%	99.12%	99.54%
	SDDCH/Paging chl. Congestion	≤ 1%	0.27%	0.83%	0.72%	0.28%	NA	0.08%	NA	0.06%	0.18%
	TCH Congestion	≤ 2%	1.99%	1.67%	1.67%	0.22%	0.14%	0.31%	0.22%	0.20%	0.46%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.93%	0.82%	1.62%	0.61%	0.57%	0.19%	0.29%	0.46%	0.75%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	3.63%	1.17%	2.22%	1.92%	NA	0.97%	2.31%	2.33%	0.00%
	%age of connection with good voice quality	≥ 95%	96.32%	98.49%	97.97%	97.18%	99.17%	98.75%	98.74%	98.78%	96.36%

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6.8.   2G VOICE QOS PERFORMANCE OF MONTHLY PMR QE – SEPTEMBER 2016

	Consolidated									
Network Parameters		**Name of Service Provider**								
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	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%	0.15%	1.25%	0.07%	0.10%	0.07%	0.11%	0.09%	0.12%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.10%	0.00%	1.31%	0.03%	0.00%	0.29%	0.34%	0.14%	0.54%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	96.61%	97.28%	98.21%	99.54%	98.91%	97.88%	97.61%	99.20%	99.52%
	SDDCH/Paging chl. Congestion	≤ 1%	0.35%	0.64%	0.69%	0.23%	NA	0.11%	NA	0.12%	0.19%
	TCH Congestion	≤ 2%	1.68%	1.51%	1.52%	0.17%	0.13%	0.28%	1.31%	0.20%	0.48%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	1.12%	0.79%	1.57%	0.63%	0.55%	0.19%	0.31%	0.59%	0.78%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	3.52%	1.23%	2.12%	2.07%	1.55%	0.90%	2.96%	2.86%	1.98%
	%age of connection with good voice quality	≥ 95%	96.18%	98.47%	97.98%	97.13%	99.16%	98.94%	98.73%	98.71%	96.54%

6.9. 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.

6.10. 2G VOICE 3 DAYS LIVE DATA: JULY

Network Parameters		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
						Jul-16					
						Name of Service Provider					
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.08%	0.14%	1.30%	0.04%	0.10%	0.02%	0.09%	0.14%	0.10%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.10%	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%	96.31%	97.82%	98.68%	99.70%	98.95%	96.31%	97.59%	99.32%	99.59%
	SDDCH/Paging chl. Congestion	≤ 1%	0.35%	0.38%	0.82%	0.11%	NA	0.06%	NA	0.83%	0.48%
	TCH Congestion	≤ 2%	1.25%	1.09%	1.26%	0.06%	0.12%	0.33%	1.43%	0.15%	0.41%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	1.19%	0.70%	1.47%	0.58%	0.45%	0.18%	0.31%	0.54%	0.70%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	6.74%	0.96%	2.52%	1.77%	NA	0.92%	3.40%	2.09%	2.95%
	%age of connection with good voice quality	≥ 95%	96.17%	98.51%	97.67%	97.32%	99.16%	98.78%	98.84%	98.75%	96.99%

6.11. 2G VOICE 3 DAYS LIVE DATA: AUGUST

Network Parameters		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
						Aug-16					
						Name of Service Provider					
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.10%	0.10%	1.25%	0.04%	0.08%	0.08%	0.07%	0.10%	0.13%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.10%	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%	96.76%	97.21%	98.43%	99.61%	98.80%	98.67%	93.02%	99.38%	99.50%
	SDDCH/Paging chl. Congestion	≤ 1%	0.19%	0.72%	0.65%	0.11%	NA	0.00%	NA	0.04%	0.13%
	TCH Congestion	≤ 2%	1.39%	1.60%	1.46%	0.09%	0.17%	0.20%	5.97%	0.11%	0.50%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	1.00%	0.82%	1.59%	0.61%	0.64%	0.19%	0.21%	0.57%	0.88%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	3.11%	1.29%	2.77%	1.83%	1.88%	0.82%	2.09%	2.80%	2.95%
	%age of connection with good voice quality	≥ 95%	95.98%	98.41%	98.00%	97.03%	99.15%	98.79%	98.73%	98.73%	96.47%

6.12. 2G VOICE 3 DAYS LIVE DATA: SEPTEMBER

						Sep-16					
Network Parameters							Name of Service Provider				
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.05%	0.07%	1.24%	0.07%	0.06%	0.04%	0.06%	0.05%	0.07%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.12%	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%	97.27%	97.15%	98.43%	99.55%	99.03%	99.62%	98.76%	99.31%	9938.95%
	SDDCH/Paging chl. Congestion	≤ 1%	0.15%	0.56%	0.77%	0.15%	NA	0.09%	NA	0.06%	0.59%
	TCH Congestion	≤ 2%	1.80%	1.51%	1.77%	0.17%	0.11%	0.16%	0.12%	0.18%	0.61%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.86%	0.80%	1.66%	0.59%	0.54%	0.15%	0.36%	0.55%	0.79%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	3.22%	1.04%	2.67%	1.83%	1.77%	1.00%	2.80%	3.13%	2.98%
	%age of connection with good voice quality	≥ 95%	96.28%	98.48%	98.33%	97.25%	99.18%	99.27%	129.25%	98.70%	96.38%

6.13. 2G 3 DAYS LIVE DATA: CONSOLIDATED

						Consolidated					
Network Parameters							Name of Service Provider				
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.07%	0.10%	1.26%	0.05%	0.08%	0.05%	0.07%	0.10%	0.10%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.10%	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%	96.78%	97.39%	98.51%	99.62%	98.93%	98.20%	96.46%	99.33%	3379.35%
	SDDCH/Paging chl. Congestion	≤ 1%	0.23%	0.56%	0.75%	0.12%	NA	0.05%	NA	0.31%	0.40%
	TCH Congestion	≤ 2%	1.48%	1.40%	1.50%	0.11%	0.13%	0.23%	2.51%	0.15%	0.51%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	1.02%	0.77%	1.57%	0.59%	0.54%	0.17%	0.30%	0.56%	0.79%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	4.36%	1.09%	2.65%	1.81%	1.83%	0.91%	2.76%	2.68%	2.96%
	%age of connection with good voice quality	≥ 95%	96.15%	98.47%	98.00%	97.20%	99.16%	98.95%	108.94%	98.73%	96.61%

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6.14. 3G VOICE PMR: JULY

<table>
<tr><td colspan="7" align="center">Jul-16</td></tr>
<tr><td colspan="3" rowspan="2" align="center">Network Parameters</td><td colspan="5" align="center">Name of Service Provider</td></tr>
<tr><td>Benchmark</td><td>AIRTEL</td><td>BSNL</td><td>RCOM</td><td>VODAFONE</td></tr>
<tr><td rowspan="2">Network Availability</td><td colspan="2">Sum of downtime of BTSs in a month in hrs. in the licensed service area</td><td>≤ 2%</td><td>0.24%</td><td>1.43%</td><td>0.31%</td><td>0.29%</td></tr>
<tr><td colspan="2">No. of BTSs having accumulated downtime of >24 hours in a month</td><td>≤ 2%</td><td>0.38%</td><td>1.88%</td><td>0.00%</td><td>1.23%</td></tr>
<tr><td rowspan="3">Connection Establishment (Accessibility)</td><td colspan="2">Call Set-up Success Rate (Within Licensee own network</td><td>≥ 95%</td><td>99.58%</td><td>97.84%</td><td>98.97%</td><td>99.91%</td></tr>
<tr><td colspan="2">RRC Congestion:</td><td>≤ 1%</td><td>0.04%</td><td>0.49%</td><td>0.10%</td><td>0.00%</td></tr>
<tr><td colspan="2">RAB Congestion:</td><td>≤ 2%</td><td>0.03%</td><td>0.64%</td><td>0.09%</td><td>0.00%</td></tr>
<tr><td rowspan="3">Connection Maintenance (Retainability)</td><td colspan="2">Circuit Switched Voice Drop Rate</td><td>≤ 2%</td><td>0.59%</td><td>1.82%</td><td>0.10%</td><td>0.24%</td></tr>
<tr><td colspan="2">Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:</td><td>≤ 3%</td><td>1.35%</td><td>2.54%</td><td>0.29%</td><td>2.94%</td></tr>
<tr><td colspan="2">Percentage of connections with Good Circuit Switched Voice Quality</td><td>≥ 95%</td><td>98.88%</td><td>97.32%</td><td>99.88%</td><td>98.91%</td></tr>
</table>

6.15. 3G VOICE PMR: AUGUST

<table>
<tr><td colspan="7" align="center">Aug-16</td></tr>
<tr><td colspan="3" rowspan="2" align="center">Network Parameters</td><td colspan="5" align="center">Name of Service Provider</td></tr>
<tr><td>Benchmark</td><td>AIRTEL</td><td>BSNL</td><td>RCOM</td><td>VODAFONE</td></tr>
<tr><td rowspan="2">Network Availability</td><td colspan="2">Sum of downtime of BTSs in a month in hrs. in the licensed service area</td><td>≤ 2%</td><td>0.30%</td><td>1.35%</td><td>0.19%</td><td>0.24%</td></tr>
<tr><td colspan="2">No. of BTSs having accumulated downtime of >24 hours in a month</td><td>≤ 2%</td><td>0.48%</td><td>1.71%</td><td>0.00%</td><td>0.91%</td></tr>
<tr><td rowspan="3">Connection Establishment (Accessibility)</td><td colspan="2">Call Set-up Success Rate (Within Licensee own network</td><td>≥ 95%</td><td>99.64%</td><td>98.98%</td><td>99.46%</td><td>99.89%</td></tr>
<tr><td colspan="2">RRC Congestion:</td><td>≤ 1%</td><td>0.04%</td><td>0.43%</td><td>0.12%</td><td>0.01%</td></tr>
<tr><td colspan="2">RAB Congestion:</td><td>≤ 2%</td><td>0.04%</td><td>0.26%</td><td>0.07%</td><td>0.02%</td></tr>
<tr><td rowspan="3">Connection Maintenance (Retainability)</td><td colspan="2">Circuit Switched Voice Drop Rate</td><td>≤ 2%</td><td>0.58%</td><td>0.66%</td><td>0.08%</td><td>0.26%</td></tr>
<tr><td colspan="2">Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:</td><td>≤ 3%</td><td>1.48%</td><td>2.44%</td><td>0.27%</td><td>2.74%</td></tr>
<tr><td colspan="2">Percentage of connections with Good Circuit Switched Voice Quality</td><td>≥ 95%</td><td>98.86%</td><td>97.55%</td><td>99.91%</td><td>98.90%</td></tr>
</table>

6.16. 3G VOICE PMR: SEPTEMBER

<table>
<tr><td colspan="7" align="center">Sep-16</td></tr>
<tr><td colspan="3" rowspan="2" align="center">Network Parameters</td><td colspan="5" align="center">Name of Service Provider</td></tr>
<tr><td>Benchmark</td><td>AIRTEL</td><td>BSNL</td><td>RCOM</td><td>VODAFONE</td></tr>
<tr><td rowspan="2">Network Availability</td><td colspan="2">Sum of downtime of BTSs in a month in hrs. in the licensed service area</td><td>≤ 2%</td><td>0.15%</td><td>1.27%</td><td>0.62%</td><td>0.13%</td></tr>
<tr><td colspan="2">No. of BTSs having accumulated downtime of >24 hours in a month</td><td>≤ 2%</td><td>0.16%</td><td>1.70%</td><td>0.00%</td><td>0.24%</td></tr>
<tr><td rowspan="3">Connection Establishment (Accessibility)</td><td colspan="2">Call Set-up Success Rate (Within Licensee own network</td><td>≥ 95%</td><td>99.63%</td><td>98.07%</td><td>99.83%</td><td>99.91%</td></tr>
<tr><td colspan="2">RRC Congestion:</td><td>≤ 1%</td><td>0.04%</td><td>0.52%</td><td>0.01%</td><td>0.00%</td></tr>
<tr><td colspan="2">RAB Congestion:</td><td>≤ 2%</td><td>0.05%</td><td>0.46%</td><td>0.01%</td><td>0.00%</td></tr>
<tr><td rowspan="3">Connection Maintenance (Retainability)</td><td colspan="2">Circuit Switched Voice Drop Rate</td><td>≤ 2%</td><td>0.67%</td><td>1.31%</td><td>0.10%</td><td>0.24%</td></tr>
<tr><td colspan="2">Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:</td><td>≤ 3%</td><td>1.28%</td><td>2.32%</td><td>0.54%</td><td>2.95%</td></tr>
<tr><td colspan="2">Percentage of connections with Good Circuit Switched Voice Quality</td><td>≥ 95%</td><td>98.86%</td><td>97.37%</td><td>99.76%</td><td>98.90%</td></tr>
</table>

July to September 2016 – Rajasthan Circle

6.17. 3G Voice PMR: Consolidated

Consolidated						
Network Parameters		**Name of Service Provider**				
		Benchmark	**AIRTEL**	**BSNL**	**RCOM**	**VODAFONE**
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.23%	1.35%	0.37%	0.22%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.34%	1.76%	0.00%	0.80%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.62%	98.30%	99.42%	99.90%
	RRC Congestion:	≤ 1%	0.04%	0.48%	0.08%	0.00%
	RAB Congestion:	≤ 2%	0.04%	0.46%	0.06%	0.01%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.61%	1.26%	0.10%	0.24%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.37%	2.44%	0.37%	2.87%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.87%	97.41%	99.85%	98.90%

6.18. 3G VOICE 3 DAYS LIVE DATA: JULY

Jul-16						
Network Parameters		**Name of Service Provider**				
		Benchmark	**AIRTEL**	**BSNL**	**RCOM**	**VODAFONE**
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.22%	1.42%	0.57%	0.24%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.15%	0.00%	0.04%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.64%	97.73%	99.93%	99.91%
	RRC Congestion:	≤ 1%	0.01%	0.57%	0.00%	0.00%
	RAB Congestion:	≤ 2%	0.01%	0.71%	0.00%	0.00%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.55%	1.77%	0.05%	0.24%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.25%	2.68%	0.26%	2.51%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.87%	97.00%	99.75%	98.91%

6.19. 3G VOICE 3 DAYS LIVE DATA: AUGUST

Aug-16						
Network Parameters		**Name of Service Provider**				
		Benchmark	**AIRTEL**	**BSNL**	**RCOM**	**VODAFONE**
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.19%	1.37%	0.38%	0.25%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.14%	0.00%	0.04%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.64%	98.04%	99.85%	99.91%
	RRC Congestion:	≤ 1%	0.02%	0.37%	0.01%	0.01%
	RAB Congestion:	≤ 2%	0.02%	0.70%	0.00%	0.01%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.57%	1.86%	0.06%	0.27%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.39%	2.59%	0.34%	2.91%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.84%	97.00%	99.94%	98.91%

6.20. 3G VOICE 3 DAYS LIVE DATA: SEPTEMBER

Sep-16						
Network Parameters		**Name of Service Provider**				
		Benchmark	**AIRTEL**	**BSNL**	**RCOM**	**VODAFONE**
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.07%	1.31%	0.20%	0.14%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.14%	0.00%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.59%	98.09%	99.87%	99.91%
	RRC Congestion:	≤ 1%	0.03%	0.81%	0.01%	0.00%
	RAB Congestion:	≤ 2%	0.03%	0.46%	0.01%	0.00%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	1.64%	1.35%	0.08%	0.22%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.61%	2.42%	0.34%	2.78%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.85%	96.67%	99.92%	98.89%

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6.21. 3G VOICE 3 DAYS LIVE DATA: CONSOLIDATED

Consolidated						
Network Parameters		**Name of Service Provider**				
		Benchmark	**AIRTEL**	**BSNL**	**RCOM**	**VODAFONE**
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.16%	1.37%	0.38%	0.21%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.14%	0.00%	0.02%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.62%	97.95%	99.88%	99.91%
	RRC Congestion:	≤ 1%	0.02%	0.59%	0.01%	0.00%
	RAB Congestion:	≤ 2%	0.02%	0.63%	0.01%	0.00%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.92%	1.66%	0.06%	0.25%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.42%	2.56%	0.31%	2.73%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.85%	96.89%	99.87%	98.91%

6.22. 2G Wireless Data: July

S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Jul-16
Cellular Mobile Telephone Services
Network Service Quality Parameter
1	**Service Activation/ Provisioning**										
i)	Total No. of Subscribers for Service Activation (A)		2158847	DNA	DNA	464333	DNA	201274	11627	36198	DNA
ii)	Total Service Activations provided within 4 Hours (B)		2158317	DNA	DNA	464330	DNA	201274	11627	36198	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.98%	DNA	DNA	100.00%	DNA	100.00%	100.00%	100.00%	DNA
2	**PDP Context Activation Success Rate**										
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		157582021	DNA	56369458	62711690	4088192	DNA	7734119	1774166	408487673
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		156574896	DNA	56217316.9	62443648	4051116	DNA	7501942	1771726	407844407
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.36%	99.87%	99.73%	99.57%	99.09%	92.76%	97.00%	99.86%	99.84%
3	**Drop Rate**										
i)	TBF originated PS Domain Iu Connection Setup Success (A)		227407512	DNA	DNA	35462649057	150445137	1910280122	5365786	498423901	2518708865
ii)	TBF originated PS Domain Iu Connection Release (B)		2691468.42	DNA	DNA	48485970	2925292	47708219	78183	10706493	100721438
iii)	Drop Rate = (B/A) * 100	<=5%	1.18%	1.32%	DNA	0.14%	1.94%	2.50%	1.46%	2.15%	4.00%

6.23. 2G Wireless Data: August

S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Aug-16
Cellular Mobile Telephone Services
Network Service Quality Parameter
1	**Service Activation/ Provisioning**										
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	456621	DNA	216610	11480	29109	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	456447	DNA	216604	11480	29109	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	99.96%	DNA	100.00%	100.00%	100.00%	DNA
2	**PDP Context Activation Success Rate**										
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	53155720	62828872	DNA	DNA	7173013	1577579	408400925
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	52989710.2	62594538	DNA	DNA	6938908	1574462	407789319
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	DNA	99.94%	99.69%	99.63%	DNA	93.77%	96.74%	99.80%	99.85%
3	**Drop Rate**										
i)	TBF originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	DNA	34918154965	132490644	1729728913	3615948	492521124	2655323158
ii)	TBF originated PS Domain Iu Connection Release (B)		DNA	DNA	DNA	55914845	2262215	46463800	70600	8531380	117198258
iii)	Drop Rate = (B/A) * 100	<=5%	DNA	1.44%	DNA	0.16%	1.71%	2.69%	1.95%	1.73%	4.41%

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6.24. 2G WIRELESS DATA: SEPTEMBER

S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
						Sep-16					
					Cellular Mobile Telephone Services						
Network Service Quality Parameter											
1	**Service Activation/ Provisioning**										
i)	Total No. of Subscribers for Service Activation (A)		1991717	DNA	DNA	DNA	3023	213403	7886	24786	DNA
ii)	Total Service Activations provided within 4 Hours (B)		1990534	DNA	DNA	DNA	DNA	213401	7886	24786	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.94%	DNA	DNA	DNA	DNA	100.00%	100.00%	100.00%	DNA
2	**PDP Context Activation Success Rate**										
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		142825448	DNA	49430086	59225498	2997190	DNA	4791634	1428252	383458262
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		138683418	DNA	49280502.4	59030461	2983161	DNA	4636405	1425180	381965266
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	97.10%	99.93%	99.70%	99.67%	99.53%	94.29%	96.76%	99.78%	99.61%
3	**Drop Rate**										
i)	TBF originated PS Domain Iu Connection Setup Success (A)		6393751442	DNA	DNA	31423088786	105934761	1679119665	2759224	458922700	2463953910
ii)	TBF originated PS Domain Iu Connection Release (B)		70262152	DNA	DNA	46986383	1417372	45115335	57657	6517539	104718656
iii)	Drop Rate = (B/A) * 100	<=5%	1.10%	1.35%	DNA	0.15%	1.34%	2.69%	2.09%	1.42%	4.25%

6.25. 2G WIRELESS DATA: CONSOLIDATED

S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
					Consolidated						
					Cellular Mobile Telephone Services						
Network Service Quality Parameter											
1	**Service Activation/ Provisioning**										
i)	Total No. of Subscribers for Service Activation (A)		2075282	DNA	DNA	460477	3023	210429	10331	30031	DNA
ii)	Total Service Activations provided within 4 Hours (B)		2074426	DNA	DNA	460389	DNA	210426	10331	30031	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.96%	DNA	DNA	99.98%	DNA	100.00%	100.00%	100.00%	DNA
2	**PDP Context Activation Success Rate**										
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		150203735	DNA	52985088	61588687	3542691	DNA	6566255	1593332	400115620
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		147629157	DNA	52829176	61356216	3517139	DNA	6359085	1590456	399199664
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	98.23%	99.92%	99.71%	99.62%	99.31%	93.61%	96.83%	99.82%	99.77%
3	**Drop Rate**										
i)	TBF originated PS Domain Iu Connection Setup Success (A)		3310579477	DNA	DNA	33934630936	129623514	1773042900	3913653	483289242	2545995311
ii)	TBF originated PS Domain Iu Connection Release (B)		36476810	DNA	DNA	50462399	2201626	46429118	68813	8585137	107546117
iii)	Drop Rate = (B/A) * 100	<=5%	1.14%	1.37%	DNA	0.15%	1.66%	2.62%	1.83%	1.77%	4.22%

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6.26. 2G WIRELESS 3 DAYS LIVE DATA: JULY

S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
					Jul-16						
					Cellular Mobile Telephone Services						
Network Service Quality Parameter											
1	**Service Activation/ Provisioning**										
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	7792	24116	984	4320	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA	24115	984	4320	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	DNA	DNA	100.00%	100.00%	100.00%	DNA
2	**PDP Context Activation Success Rate**										
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	5793618	DNA	456843	DNA	776040	159125	1454098
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	5782379.47	DNA	461402	DNA	752534	158777	1452762
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	DNA	99.57%	99.81%	DNA	99.01%	97.66%	96.97%	99.78%	99.91%
3	**Drop Rate**										
i)	TBF originated PS Domain Iu Connection Setup Success (A)		692691663	DNA	DNA	DNA	15089796	163416398	526006	50540806	237852286
ii)	TBF originated PS Domain Iu Connection Release (B)		8175073	DNA	DNA	DNA	317368	4400194	7456	1114158	9355886
	Drop Rate = (B/A) * 100	<=5%	1.18%	1.33%	DNA	DNA	2.10%	2.69%	1.42%	2.20%	3.93%

6.27. 2G WIRELESS 3 DAYS LIVE DATA: AUGUST

S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
					Aug-16						
					Cellular Mobile Telephone Services						
Network Service Quality Parameter											
1	**Service Activation/ Provisioning**										
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	363	18074	1262	2986	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA	18074	1262	2986	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	DNA	DNA	100%	100%	100%	DNA
2	**PDP Context Activation Success Rate**										
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	4911453	DNA	336136	DNA	676077	144349	38841573
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	4894342.13	DNA	338767	DNA	653904	144078	38822055
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	DNA	99.97%	99.65%	DNA	99.22%	97.86%	96.72%	99.81%	99.95%
3	**Drop Rate**										
i)	TBF originated PS Domain Iu Connection Setup Success (A)		681344846	DNA	DNA	DNA	14091390	155118556	322604	46171550	249507898
ii)	TBF originated PS Domain Iu Connection Release (B)		7515336	DNA	DNA	DNA	261164	3951720	6757	776879	10361232
iii)	Drop Rate = (B/A) * 100	<=5%	1.10%	1.49%	DNA	DNA	1.85%	2.55%	2.09%	1.68%	4.15%

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6.28. 2G Wireless 3 Days Live Data: September

S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
					Sep-16						
					Cellular Mobile Telephone Services						
Network Service Quality Parameter											
1	Service Activation/ Provisioning										
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	518	14045	887	2627	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA	14045	887	2627	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	DNA	DNA	100.00%	100.00%	100.00%	DNA
2	PDP Context Activation Success Rate										
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	5056118	DNA	282236	DNA	694283	147568	38345191
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	5042352.68	DNA	281245	DNA	671642	147166	38295138
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	DNA	99.96%	99.73%	DNA	99.65%	99.59%	96.74%	99.73%	99.87%
3	Drop Rate										
i)	TBF originated PS Domain Iu Connection Setup Success (A)		632926808	DNA	DNA	DNA	10617666	166213049	291733	46865094	250245464
ii)	TBF originated PS Domain Iu Connection Release (B)		7034047	DNA	DNA	DNA	137795	3651960	6008	779736	11227955
iii)	Drop Rate = (B/A) * 100	<=5%	1.11%	1.34%	DNA	DNA	1.30%	2.20%	2.06%	1.66%	4.49%

6.29. 2G Wireless 3 Days Live Data: Consolidated

S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
					CONSOLIDATED						
					Cellular Mobile Telephone Services						
Network Service Quality Parameter											
1	Service Activation/ Provisioning										
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	2891	18745	1044	3311	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA	18745	1044	3311	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	DNA	DNA	DNA	100.00%	100.00%	100.00%	DNA
2	PDP Context Activation Success Rate										
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	5253730	DNA	358405	DNA	715467	150347	26213621
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	5239691	DNA	360471	DNA	692693	150007	26189985
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	DNA	99.84%	99.73%	DNA	99.29%	98.37%	96.81%	99.77%	99.91%
3	Drop Rate										
i)	TBF originated PS Domain Iu Connection Setup Success (A)		668987772.3	DNA	DNA	DNA	13266284	161582668	380114	47859150	245868549
ii)	TBF originated PS Domain Iu Connection Release (B)		7574818.667	DNA	DNA	DNA	238776	4001291	6740	890258	10315024
iii)	Drop Rate = (B/A) * 100	<=5%	1.13%	1.39%	DNA	DNA	1.75%	2.48%	1.86%	1.85%	4.19%

6.30. 3G WIRELESS DATA: JULY

S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	RCOM	VODAFONE
Jul-16
Cellular Mobile Telephone Services
Network Service Quality Parameter
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	201274	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	201274	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	100.00%	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	3666915	DNA	3406808
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	3528562.89	DNA	3376828
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.99%	96.23%	95.27%	99.12%
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	127551263	4797709689
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	1216110	17854910
iii)	Drop Rate = (B/A) * 100	<=5%	0.51%	DNA	0.95%	0.37%

6.31. 3G WIRELESS DATA: AUGUST

S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	RCOM	VODAFONE
Aug-16
Cellular Mobile Telephone Services
Network Service Quality Parameter
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	216610	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	216604	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	DNA	DNA	100.00%	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	DNA	3462853
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	DNA	3428285
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	100.00%	DNA	92.85%	99.00%
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	118670280	4944514359
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	1074682	20495297
iii)	Drop Rate = (B/A) * 100	<=5%	0.55%	DNA	0.91%	0.41%

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6.32. 3G WIRELESS DATA: SEPTEMBER

S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	RCOM	VODAFONE
		Sep-16				
		Cellular Mobile Telephone Services				
Network Service Quality Parameter						
1	**Service Activation/ Provisioning**					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	213403	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	213401	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA
2	**PDP Context Activation Success Rate**					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	DNA	3790423
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	DNA	3727622
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	100.00%	DNA	93.42%	98.34%
3	**Drop Rate**					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	110909343	4789542585
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	829722	5742502497
iii)	Drop Rate = (B/A) * 100	<=5%	0.52%	DNA	0.75%	1.20%

6.33. 3G WIRELESS DATA: CONSOLIDATED

S. No.	Name of Parameter	Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
		Consolidated				
		Cellular Mobile Telephone Services				
Network Service Quality Parameter						
1	**Service Activation/ Provisioning**					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	210429	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	210426	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA
2	**PDP Context Activation Success Rate**					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	3666915	DNA	3553361
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	3528563	DNA	3510912
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.99%	96.23%	93.85%	98.82%
3	**Drop Rate**					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	119043629	4843922211
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	1040171	1926950901
iii)	Drop Rate = (B/A) * 100	<=5%	0.53%	DNA	0.87%	0.66%

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6.34. 3G Wireless 3 Days Live Data: July

Jul-16						
Cellular Mobile Telephone Services						
S. No.	**Name of Parameter**	**Benchmark**	**AIRTEL**	**BSNL**	**RCOM**	**VODAFONE**
Network Service Quality Parameter						
1	**Service Activation/ Provisioning**					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	18954	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	18954	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA
2	**PDP Context Activation Success Rate**					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	5793618	DNA	321536
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	5782379.467	DNA	317723
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.98%	99.81%	98.41%	98.81%
3	**Drop Rate**					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	10602702	472416273
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	68549	1663777
iii)	Drop Rate = (B/A) * 100	<=5%	0.51%	DNA	0.65%	0.35%

6.35. 3G Wireless 3 Days Live Data: August

Aug-16						
Cellular Mobile Telephone Services						
S. No.	**Name of Parameter**	**Benchmark**	**AIRTEL**	**BSNL**	**RCOM**	**VODAFONE**
Network Service Quality Parameter						
1	**Service Activation/ Provisioning**					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	18954	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	18954	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA
2	**PDP Context Activation Success Rate**					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	333961	DNA	313568
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	319192.1261	DNA	310073
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	100.00%	95.58%	99.27%	98.89%
3	**Drop Rate**					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	10030511	546035043
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	60857	2223767
iii)	Drop Rate = (B/A) * 100	<=5%	0.56%	DNA	0.61%	0.41%

6.36. 3G Wireless 3 Days Live Data: September

S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	RCOM	VODAFONE
		Sep-16				
	Cellular Mobile Telephone Services					
Network Service Quality Parameter						
1	**Service Activation/ Provisioning**					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	18954	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	18954	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA
2	\					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	5056118	DNA	347420
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	5042353	DNA	344261
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	100.00%	99.73%	95.73%	99.09%
3	**Drop Rate**					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	12857777	473253292
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	103270	2048661
iii)	Drop Rate = (B/A) * 100	<=5%	0.52%	DNA	0.80%	0.43%

6.37. 3G Wireless 3 Days Live Data: Consolidated

S. No.	Name of Parameter	Benchmark	AIRTEL	BSNL	RCOM	VODAFONE
		CONSOLIDATED				
	Cellular Mobile Telephone Services					
Network Service Quality Parameter						
1	**Service Activation/ Provisioning**					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	18954	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	18954	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA
2	**PDP Context Activation Success Rate**					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	3727899	DNA	327508
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	3714641	DNA	324019
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.99%	98.37%	97.80%	98.93%
3	**Drop Rate**					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	11163663	497234869
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	77559	1978735
iii)	Drop Rate = (B/A) * 100	<=5%	0.53%	DNA	0.69%	0.40%

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6.38. POI CONGESTION: JULY

Name of Parameter	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
						Jul-16			
			Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service						
Total No. of POI's in Month having < =									
Total No. of call attempts on POI	5000497	5710229	682293	3451052	26539933	1103155	548250	499928	3764074
Total traffic served on all POIs (Erlang)	107958	131407	12579	76762	643399	22334	10369	10055	64788
Total No. of circuits on all individual POIs	185724	221405	34602	137441	1525820	40164	37864	28093	144614
Total number of working POI Service Area wise	37	123	137	137	65	32	226	30	65
Capacity of all POIs	181619	216037	30884	132396	1533292	33960	34314	27970	145980
No. of all POI's having >=0.5% POI congestion	0	0	0	0	0	0	0	0	1
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	0	NA	0	0	0	0	N/A	N/A	Reliance JIO

6.39. POI CONGESTION: AUGUST

Name of Parameter	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
						Aug-16			
			Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service						
Total No. of POI's in Month having < = 0.5%									
Total No. of call attempts on POI	DNA	5549208	694688	3317824	DNA	942335	509956	466934	3410072
Total traffic served on all POIs (Erlang)	DNA	133369	12744	76678	DNA	19480	12650	9967	61458
Total No. of circuits on all individual POIs	DNA	231781	34602	138389	DNA	40164	40060	28279	144769
Total number of working POI Service Area wise	DNA	125	137	133	DNA	32	226	30	65
Capacity of all POIs	DNA	226247	30884	133373	DNA	33967	36436	28152	146137
No. of all POI's having >=0.5% POI congestion	DNA	0	0	0	DNA	0	0	0	1
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	DNA	NA	0	NA	NA	0	N/A	N/A	Reliance JIO

6.40. POI CONGESTION: SEPTEMBER

Name of Parameter	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
						Sep-16			
			Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service						
Total No. of POI's in Month having < = 0.5% POI									
Total No. of call attempts on POI	4731301	5800114	767048	3507993	706999	968149	518705	466633	3426370
Total traffic served on all POIs (Erlang)	113313	141434	14191	82887	19071	20730	10794	10564	64069
Total No. of circuits on all individual POIs	187912	233391	34602	140243	49770	41075	40275	28279	144987
Total number of working POI Service Area wise	37	126	137	138	65	32	226	30	65
Capacity of all POIs	183858	227815	30884	135079	49875	38543	38621	28152	146357
No. of all POI's having >=0.5% POI congestion	NA	0	N.A.	0	NIL	0	0	1	1
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	NA	NA	N.A.	REL_JIO_BCVK001_Local, REL_JIO_GMSVK01	NIL	0	N/A	Reliance JIO Local	Reliance JIO

6.41. POI CONGESTION: CONSOLIDATED

Consolidated									
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service									
Name of Parameter	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Total No. of POI's in Month having < = 0.5% POI congestion									
Total No. of call attempts on POI	4865899	5686517	714676	3425623	13623466	1004546	525637	477832	3533505
Total traffic served on all POIs (Erlang)	110636	135403	13171	78776	331235	20848	11271	10195	63439
Total No. of circuits on all individual POIs	186818	228859	34602	138691	787795	40468	39400	28217	144790
Total number of working POI Service Area wise	37	125	137	136	65	32	226	30	65
Capacity of all POIs	182738	223366	30884	133616	791584	35490	36457	28091	146158
No. of all POI's having >=0.5% POI congestion	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

CUSTOMER SERVICE QUALITY (CSD) PARAMETERS

7. CUSTOMER SERVICE DELIVERY

7.1. QUARTERLY CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (JULY TO SEPTEMBER - 2016 MONTHS AUDITED DATA)

S.No	PARAMETERS	SUB-PARAMETERS	CUSTOMER SERVICE DELIVERY AUDITS								
			AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
1	Metering and Billing Credibility (Post Paid) – Benchmark (Not more than 0.1% of bills issued should be disputed over a billing cycle)	No. of bills issued during the period (A)	DNA	DNA	DNA	448719	185549	266591	76332	0	1747528
		No. of bills disputed including billing complaints over a billing cycle (B)	DNA	DNA	DNA	272	86	236	0	0	1363
		Billing Compliant (%) = B/A*100	DNA	DNA	DNA	0.06%	0.05%	0.09%	0.00%	NA	0.08%
2	Metering and Billing Credibility (Pre- Paid) – Benchmark (Not more than 1 complaint per 1000 customers i.e. 0.1% complaints for metering, charging, credit, and validity)	Total No. of Pre-paid customers at the end of the month (A)	DNA	DNA	DNA	7322602	2035815	5325942	437736	811434	11387416
		a month (B)	DNA	DNA	DNA	13203	724	5084	0	1	9595
		Pre-paid Charging Complaints (%) = B/A*100	DNA	DNA	DNA	0.18%	0.04%	0.10%	0.00%	0.00%	0.08%
3	Resolution of Billing/Charging Complaints and Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints Benchmark: (Resolution ≥ 98% within 4 weeks & 100% within 6 weeks and Credit/Waiver within one week of resolution of complaints)	month	DNA	DNA	DNA	33130	810	5320	0	1	10958
		No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers	DNA	DNA	DNA	33130	810	5320	0	1	10958
		No. of billing complaints for Post paid customers/Charging/Credit/Validity complaints for pre-paid customers	DNA	DNA	DNA	33130	810	5320	0	1	10958
		Charging/Credit/Validity (for Pre paid customer) resolved within 4 weeks	DNA	DNA	DNA	100.00%	100.00%	100.00%	NA	100.00%	100.00%
		Charging/Credit/Validity (for Pre paid customer) resolved within 6 weeks	DNA	DNA	DNA	100.00%	100.00%	100.00%	NA	100.00%	100.00%
		Period of applying credit/Waiver/Adjustment to customers account from the date of resolution of complaints (In DAYS)	DNA	DNA	DNA	7	7	7	NA	7	7
4	Termination / Closures (Customer care promptness in attending to customers request)	No. of Requests for Termination/ Closure of service (A)	DNA	DNA	DNA	3408	5871	752	967	0	9667
		No. of requested handled within 7 days (B)	DNA	DNA	DNA	3200	5871	752	967	0	9667
		% of Termination/ Closure of service within 7 days (B*100/A)	DNA	DNA	DNA	93.90%	100.00%	100.00%	100.00%	NA	100.00%
5	Time taken for refund of deposits after closures: Benchmark (100% within 60 days)	No. of Payments/ Refunds due (A)	DNA	DNA	DNA	2451	1136	2400	95	0	10663
		Cleared over a period of <60 days (B)	DNA	DNA	DNA	2451	1136	2279	95	0	10660
		Refunds Successfull Completion (B/A)*100	DNA	DNA	DNA	100.00%	100.00%	94.96%	100.00%	NA	99.97%
6	Response time to customer assistance Benchmark: (Accessibility of call center >=95% and Calls answered by operator within 90 seconds i.e. Voice to Voice >=95%)	Total no of calls attempted to customer care/Call center(A)	DNA	DNA	DNA	30878477	4351516	6278546	0	155273	16324208
		Total no. of calls successfully established to customer care/Call center (B)	DNA	DNA	DNA	30616269	4349417	6243104	0	148180	16324208
		% Accessibility of Call centre /customer Care (B *100/ A)	DNA	DNA	DNA	99.15%	99.95%	99.44%	NA	95.43%	100.00%
		Total Calls reached to operator for Voice to Voice (C)	DNA	DNA	DNA	8002776	1193365	1514380	62092	154497	6870033
		Total number of calls answered by the operator (Voice to voice) within 90 seconds (D)	DNA	DNA	DNA	7725917	1158506	1448296	61864	151749	6785683
		% age of calls answered by the operators (voice to voice) within 90 seconds (D *100/ C)	DNA	DNA	DNA	96.54%	97.08%	95.64%	99.63%	98.22%	98.77%
7	Customer Care & Grievances Redressal	Total no of complaints received in the call centre (Tech+ Non Tech)	DNA	DNA	DNA	131591	16303	6946	1807	591	72962
		Total no of complaints addressed at call center level	DNA	DNA	DNA	111263	16303	6946	1802	591	6449
		% of complaints addressed at call center level	DNA	DNA	DNA	84.55%	100.00%	100.00%	99.72%	100.00%	8.84%
		Total no of appeals received by the appellate authority	DNA	DNA	DNA	0	15	182	5	0	0
		Total no of complaints addressed by Appellate authority	DNA	DNA	DNA	0	15	182	5	0	0
		% of complaints addressed by Appellate authority	DNA	DNA	DNA	NA	100.00%	100.00%	100.00%	NA	NA
8	Subscribers Base	POSTPAID	DNA	DNA	DNA	145177	48939	99427	34706	NA	11353884
		PREPAID	DNA	DNA	DNA	7441020	1853887	5868117	429531	898781	597820

7.2. 3 DAY LIVE CUSTOMER SERVICE DELIVERY (CSD) AUDITED DATA FOR CELLULAR MOBILE SERVICES (JULY TO SEPTEMBER - 2016 MONTHS AUDITED 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
DAYS			AVERAGE			
OPERATOR			>=95%			>=95%
AIRCEL	702820	693518	98.68%	149385	143124	95.81%
AIRTEL	DNA	DNA	DNA	DNA	DNA	DNA
BSNL	10730	10730	100.00%	7198	7196	99.97%
IDEA	569106	566735	99.58%	236443	225197	95.24%
MTS	62421	62399	99.96%	18163	17258	95.02%
RCOM GSM	79639	79168	99.41%	14126	13191	93.38%
TTSL CDMA	1921	1920	99.95%	1912	1912	100.00%
TTSL GSM	4534	4524	99.78%	4482	4461	99.53%
VODAFONE	448879	448879	100.00%	187748	186099	99.12%

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8. CUSTOMER SERVICE DELIVERY (SUMMARY)

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	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
AIRTEL	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
BSNL	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
IDEA	0.06%	0.18%	100.00%	100.00%	100.00%	93.90%	100.00%	99.15%	96.54%
MTS	0.05%	0.04%	100.00%	100.00%	100.00%	100.00%	100.00%	99.95%	97.08%
RCOM GSM	0.09%	0.10%	100.00%	100.00%	100.00%	100.00%	94.96%	99.44%	95.64%
TTSL CDMA	0.00%	0.00%	NA	NA	100.00%	100.00%	100.00%	NA	99.63%
TTSL GSM	0.00%	0.00%	NA	NA	100.00%	100.00%	NA	95.43%	98.22%
VODAFONE	0.08%	0.08%	100.00%	100.00%	100.00%	100.00%	99.97%	100.00%	98.77%

Name of Service Provider	Customer Care & Grievances Redressal	
	% of Complaints addressed at call center level	% of Complaints addressed by Appellate Authority
AIRCEL	DNA	DNA
AIRTEL	DNA	DNA
BSNL	DNA	DNA
IDEA	84.55%	NIL
MTS	100.00%	100.00%
RCOM GSM	100.00%	100.00%
TTSL CDMA	99.72%	100.00%
TTSL GSM	100.00%	NIL
VODAFONE	8.84%	NA

LIVE CALLING ASSESSMENT

9. LIVE CALLING ASSESSMENT:

9.1. INTER OPERATOR CALLS ASSESSMENT:

Inter operator call assessment with a sample of 2x50 test calls for each Service provider operating in Rajasthan service area during the time 1100 to 1400 Hrs and 1600 to 1900 was carried out by Phistream auditors. The test calls were made from one operator to another within the same licensed area to judge the ease of connectivity amongst the operators. While doing this exercise, the radio part, the switch part and POI in between the two operators are involved. Congestion in any of these network elements could result in congestion in the network.

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

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

10. CUSTOMER CARE / HELPLINE ASSESSMENT & BILLING COMPLAINTS:

LIVE CALLING TO CALL CENTRE										
Parameter	Circle Name	Aircel	Airtel	BSNL	IDEA	RCOM GSM	MTS	TTSL CDMA	TTSL GSM	Vodafone
Total No. of calls Attempted	100	100	100	100	100	100	100	100	100	100
Total no of calls attempted to customer care/Call center	100	100	100	100	100	100	100	100	100	100
Total no. of calls successfully established to customer care/Call center	100	100	100	100	100	100	100	100	100	100
% Accessibility of Call centre /customer Care (Total call successfully established *100 / Total call attempt)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Total Calls reached to agent desk for Voice to Voice (Total call attempt)	100	100	100	100	100	100	100	100	100	100
Total number of calls answered by the operator (Voice to voice) within 90 seconds	100	100	100	100	100	100	100	100	100	100
% age of calls answered by operator(voice to voice) (Total call successfully established within 90 Sec.*100 / Total call attempt)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

In case of calls answered by operators (voice to voice) within 90 seconds when test calls were made to the call centers, 100% calls were connected to the Operator within 90 seconds.

TELEPHONIC INTERVIEW FOR BILLING COMPLAINTS									
Parameter	Aircel	Airtel	BSNL	IDEA	RCOM GSM	TTSL CDMA	TTSL GSM	MTS	VODAFONE
Total No. of calls Attempted	DNA	DNA	DNA	100	71	0	NA	33	100
Total No. of calls Answered	DNA	DNA	DNA	89	58	0	NA	19	85
Cases resolved within 4 weeks	DNA	DNA	DNA	89	58	0	NA	19	85
%age of cases resolved	DNA	DNA	DNA	100%	100%	100%	NA	100%	100%

To test the Service Providers performance on billing related complaints and their resolutions, PhiStream auditors conducted a customer feedback calling for about random 100 nos. of customers. However, in some cases, the number of customers contacted for verification was very less due to less number of billing complaints. During live calling, some of the customers did not attend the calls, so shortfall was made good by taking other complaints to make verification of 100 Complaints. However, most of the customers reported their satisfaction on resolution of the billing complaints.

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11. LEVEL -1 CALLING ASSESSMENT:

Level 1 Live Calling										
DATE:	4 to 6 July 2016									
CIRCLE:	**Rajasthan**									
TYPE:	**CELLULAR/BASIC SERVICE PROVIDER**									
PUT x FOR UNSUCCESSFUL CALL AND TICK FOR SUCCESSFUL CALL										
S. NO.	L1 Service Number	SSA: Alwar								
	Details	Aircel	Airtel	BSNL	Idea	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	Vodafone
1	100 Police	√	√	DNA	√	√	√	√	√	√
2	101 Fire	√	×		√	√	√	√	√	√
3	102 Ambulance	√	√		√	√	√	√	√	√
4	104 Health Information Helpline	√	√		√	√	√	√	√	√
5	108 Emergency and Disaster Management Helpline	√	√		√	√	√	√	√	√
6	138 All India Helpine for Passangers	×	√		√	√	√	√	×	√
7	149 Public Road Transport Utility Service	×	×		×	×	×	×	×	×
8	181 Chief Minister Helpline	×	×		√	√	√	√	√	√
9	182 Indian Railway Security Helpline	√	√		√	√	√	√	√	√
10	1033 Road Accident Management Service	√	√		×	√	√	×	√	×
11	1037 Public Grievance Cell DoT HQ as 'Telecom Consumer Grievance Redressal Helpline'	×	×		×	×	×	×	×	×
12	1056 Emergency Medical Services	×	×		×	×	×	×	√	×
13	106X State of the Art Hospitals	×	×		×	×	×	×	×	×
14	1063 Public Grievance Cell DoT Hq	×	×		×	×	×	×	×	×
15	1064 Anti Corruption Helpline	×	×		×	×	×	×	×	×
16	1070 Relief Commission for Natural Calamities	√	√		×	×	×	√	√	√
17	1071 Air Accident Helpline	√	×		√	×	×	√	×	√
18	1072 Rail Accident Helpline	√	√		√	×	√	√	×	√
19	1073 Road Accident Helpline	√	×		×	×	×	×	×	×
20	1077 Control Room for District Collector	√	×		√	×	×	×	×	×
21	1090 Call Alart (Crime Branch)	√	×		√	×	×	√	√	√
22	1091 Women Helpline	×	×		×	√	×	×	×	×
23	1097 National AIDS Helpline to NACO	√	√		√	√	√	√	√	√
24	1099 Central Accident and Trauma Services (CATS)	×	×		×	×	×	×	×	×
25	10580 Educational& Vocational Guidance and Counselling	×	×		×	×	×	×	×	×
26	10589 Mother and Child Tracking (MCTH)	×	×		×	×	×	×	×	×
27	10740 Central Pollution Control Board	×	×		×	×	×	×	×	×
28	10741 Pollution Control Board	×	×		×	×	×	×	×	×

29	1511 Police Related Service for all Metro Railway Project	×	×		×	√	×	×	×	×
30	1512 Prevention of Crime in Railway	×	×		√	√	×	√	√	√
31	1514 National Career Service(NCS)	×	×		×	×	×	×	×	×
32	15100 Free Legal Service Helpline	×	√		√	√	√	√	×	√
33	155304 Municipal Corporations	×	×		×	×	×	×	×	×
34	155214 Labour Helpline	×	×		×	×	×	×	×	×
35	1903 Sashastra Seema Bal (SSB)	√	×		√	×	√	√	×	√
36	1909 National Do Not Call Registry	√	√		√	×	√	√	√	√
37	1912 Complaint of Electricity	×	√		√	×	√	√	√	√
38	1916 Drinking Water Supply	×	×		×	×	×	×	×	×
39	1950 Election Commission of India	√	×		√	×	√	√	√	√

Level 1 Live Calling

DATE:	20 to 22 July 2016
CIRCLE:	Rajasthan
TYPE:	CELLULAR/BASIC SERVICE PROVIDER

PUT x FOR UNSUCCESSFUL CALL AND TICK FOR SUCCESSFUL CALL

S. NO.	L1 Service Number	SSA: Tonk								
	Details	Aircel	Airtel	BSNL	Idea	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	Vodafone
1	100 Police	√	√	DNA	√	×	√	√	√	√
2	101 Fire	√	×		×	√	√	√	√	√
3	102 Ambulance	√	×		×	√	√	√	√	√
4	104 Health Information Helpline	√	√		√	√	√	√	√	√
5	108 Emergency and Disaster Management Helpline	√	√		√	√	√	√	√	√
6	138 All India Helpine for Passangers	×	√		√	√	√	√	×	√
7	149 Public Road Transport Utility Service	×	×		×	×	×	×	×	×
8	181 Chief Minister Helpline	×	√		√	√	√	√	√	√
9	182 Indian Railway Security Helpline	√	√		√	√	√	√	√	√
10	1033 Road Accident Management Service	√	√		√	√	√	×	×	√
11	1037 Public Grievance Cell DoT HQ as 'Telecom Consumer Grievance Redressal Helpline'	×	×		×	×	×	×	×	×
12	1056 Emergency Medical Services	×	×		×	×	×	×	√	×
13	106X State of the Art Hospitals	×	×		×	×	×	×	×	×
14	1063 Public Grievance Cell DoT Hq	×	×		×	×	×	×	×	×
15	1064 Anti Corruption Helpline	×	×		×	×	×	×	×	×
16	1070 Relief Commission for Natural Calamities	√	×		×	×	×	√	√	×
17	1071 Air Accident Helpline	√	√		√	×	×	√	√	×
18	1072 Rail Accident Helpline	√	√		√	×	√	√	√	√
19	1073 Road Accident Helpline	√	X		X	×	×	×	√	×
20	1077 Control Room for District Collector	√	×		×	×	×	×	√	×
21	1090 Call Alart (Crime Branch)	√	√		√	×	×	√	√	×
22	1091 Women Helpline	×	×		×	√	×	×	×	×
23	1097 National AIDS Helpline to NACO	√	√		√	√	√	√	√	√
24	1099 Central Accident and Trauma Services (CATS)	×	×		×	×	×	×	×	×
25	10580 Educational& Vocational Guidance and Counselling	×	×		×	×	×	×	×	×
26	10589 Mother and Child Tracking (MCTH)	×	×		×	×	×	×	×	×
27	10740 Central Pollution Control Board	×	×		×	×	×	×	×	×
28	10741 Pollution Control Board	×	×		×	×	×	×	×	×
29	1511 Police Related Service for all Metro Railway Project	×	×		×	√	×	×	×	×
30	1512 Prevention of Crime in Railway	×	√		√	√	×	√	√	×

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31	1514 National Career Service(NCS)	×	×		×	×	×	×	×	×
32	15100 Free Legal Service Helpline	×	√		√	√	√	√	√	√
33	155304 Municipal Corporations	×	×		×	×	×	×	×	×
34	155214 Labour Helpline	×	×		×	×	×	×	×	×
35	1903 Sashastra Seema Bal (SSB)	√	√		√	×	√	√	×	√
36	1909 National Do Not Call Registry	√	√		√	×	√	√	√	√
37	1912 Complaint of Electricity	×	√		√	×	√	√	√	√
38	1916 Drinking Water Supply	×	×		×	×	×	×	×	×
39	1950 Election Commission of India	√	√		√	×	√	√	√	√

Level 1 Live Calling										
DATE:	29 to 31 August 2016									
CIRCLE:	Rajasthan									
TYPE:	CELLULAR/BASIC SERVICE PROVIDER									
PUT x FOR UNSUCCESSFUL CALL AND TICK FOR SUCCESSFUL CALL										
S. NO.	L1 Service Number	SSA: Kota								
	Details	Aircel	Airtel	BSNL	Idea	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	Vodafone
1	100 Police	√	√	DNA	√	×	√	√	√	√
2	101 Fire	√	√		√	√	√	√	√	√
3	102 Ambulance	√	√		√	√	√	√	√	√
4	104 Health Information Helpline	√	√		√	√	√	√	√	√
5	108 Emergency and Disaster Management Helpline	√	√		√	√	√	√	√	√
6	138 All India Helpine for Passangers	×	√		√	√	√	√	×	√
7	149 Public Road Transport Utility Service	×	×		×	×	×	×	×	×
8	181 Chief Minister Helpline	×	√		√	√	√	√	√	√
9	182 Indian Railway Security Helpline	√	×		×	√	√	√	√	√
10	1033 Road Accident Management Service	√	×		×	√	√	×	×	√
11	1037 Public Grievance Cell DoT HQ as 'Telecom Consumer Grievance Redressal Helpline'	×	×		×	×	×	×	×	×
12	1056 Emergency Medical Services	×	×		×	×	×	×	√	×
13	106X State of the Art Hospitals	×	×		×	×	×	×	×	×
14	1063 Public Grievance Cell DoT Hq	×	×		×	×	×	×	×	×
15	1064 Anti Corruption Helpline	×	×		×	×	×	×	×	×
16	1070 Relief Commission for Natural Calamities	√	×		×	×	×	√	√	×
17	1071 Air Accident Helpline	√	√		√	×	×	√	√	×
18	1072 Rail Accident Helpline	√	×		×	×	√	√	√	√
19	1073 Road Accident Helpline	√	×		×	×	×	×	√	×
20	1077 Control Room for District Collector	√	×		×	×	×	×	√	×
21	1090 Call Alart (Crime Branch)	√	√		√	×	×	√	√	×
22	1091 Women Helpline	×	×		×	√	×	×	×	×
23	1097 National AIDS Helpline to NACO	√	√		√	√	√	√	√	√
24	1099 Central Accident and Trauma Services (CATS)	×	×		×	×	×	×	×	×
25	10580 Educational& Vocational Guidance and Counselling	×	×		×	×	×	×	×	×
26	10589 Mother and Child Tracking (MCTH)	×	×		×	×	×	×	×	×
27	10740 Central Pollution Control Board	×	×		×	×	×	×	×	×
28	10741 Pollution Control Board	×	×		×	×	×	×	×	×
29	1511 Police Related Service for all Metro Railway Project	×	×		×	√	×	×	×	×
30	1512 Prevention of Crime in Railway	×	√		√	√	×	√	√	×

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31	1514 National Career Service(NCS)	×	×		×	×	×	×	×	×
32	15100 Free Legal Service Helpline	×	√		√	√	√	√	√	√
33	155304 Municipal Corporations	×	×		×	×	×	×	×	×
34	155214 Labour Helpline	×	×		×	×	×	×	×	×
35	1903 Sashastra Seema Bal (SSB)	√	√		√	×	√	√	×	√
36	1909 National Do Not Call Registry	√	√		√	×	√	√	√	√
37	1912 Complaint of Electricity	×	√		√	×	√	√	√	√
38	1916 Drinking Water Supply	×	×		×	×	×	×	×	×
39	1950 Election Commission of India	√	√		√	×	√	√	√	√

Level 1 Live Calling										
DATE:	1 to3 September 2016									
CIRCLE:	Rajasthan									
TYPE:	CELLULAR/BASIC SERVICE PROVIDER									
PUT x FOR UNSUCCESSFUL CALL AND TICK FOR SUCCESSFUL CALL										
S. NO.	L1 Service Number	SSA: Jaipur								
	Details	Aircel	Airtel	BSNL	Idea	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	Vodafone
1	100 Police	√	√	DNA	√	×	√	√	√	√
2	101 Fire	√	√		√	√	√	√	√	√
3	102 Ambulance	√	×		×	√	√	√	√	√
4	104 Health Information Helpline	√	√		√	√	√	√	√	√
5	108 Emergency and Disaster Management Helpline	√	√		√	√	√	√	√	√
6	138 All India Helpine for Passangers	×	√		√	√	√	√	×	√
7	149 Public Road Transport Utility Service	×	×		×	×	×	×	×	×
8	181 Chief Minister Helpline	×	√		√	√	√	√	×	√
9	182 Indian Railway Security Helpline	√	√		√	√	√	√	√	√
10	1033 Road Accident Management Service	√	×		×	√	√	×	√	√
11	1037 Public Grievance Cell DoT HQ as 'Telecom Consumer Grievance Redressal Helpline'	×	×		×	×	×	×	×	×
12	1056 Emergency Medical Services	×	×		×	×	×	×	√	×
13	106X State of the Art Hospitals	×	×		×	×	×	×	×	×
14	1063 Public Grievance Cell DoT Hq	×	×		×	×	×	×	×	×
15	1064 Anti Corruption Helpline	×	×		×	×	×	×	×	×
16	1070 Relief Commission for Natural Calamities	√	×		×	×	×	√	√	×
17	1071 Air Accident Helpline	√	√		√	×	×	√	√	×
18	1072 Rail Accident Helpline	√	×		×	×	√	√	√	√
19	1073 Road Accident Helpline	√	×		×	×	×	×	√	×
20	1077 Control Room for District Collector	√	√		√	×	×	×	√	×
21	1090 Call Alart (Crime Branch)	√	√		√	×	×	√	√	×
22	1091 Women Helpline	×	×		×	√	×	×	×	×
23	1097 National AIDS Helpline to NACO	√	√		√	√	√	√	√	√
24	1099 Central Accident and Trauma Services (CATS)	×	×		×	×	×	×	×	×
25	10580 Educational& Vocational Guidance and Counselling	×	×		×	×	×	×	×	×
26	10589 Mother and Child Tracking (MCTH)	×	×		×	×	×	×	×	×
27	10740 Central Pollution Control Board	×	×		×	×	×	×	×	×
28	10741 Pollution Control Board	×	×		×	×	×	×	×	×
29	1511 Police Related Service for all Metro Railway Project	×	×		×	√	×	×	×	×
30	1512 Prevention of Crime in Railway	×	√		√	√	×	√	×	×

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31	1514 National Career Service(NCS)	×	×		×	×	×	×	×	×
32	15100 Free Legal Service Helpline	×	√		√	√	√	√	√	√
33	155304 Municipal Corporations	×	×		×	×	×	×	×	×
34	155214 Labour Helpline	×	×		×	×	×	×	×	×
35	1903 Sashastra Seema Bal (SSB)	√	√		√	×	√	√	√	√
36	1909 National Do Not Call Registry	√	√		√	×	√	√	√	√
37	1912 Complaint of Electricity	×	√		√	×	√	√	×	√
38	1916 Drinking Water Supply	×	×		×	×	×	×	×	×
39	1950 Election Commission of India	√	√		√	×	√	√	√	√

Level 1 Live Calling										
DATE:	14 to 16 September 2016									
CIRCLE:	Rajasthan									
TYPE:	CELLULAR/BASIC SERVICE PROVIDER									
PUT x FOR UNSUCCESSFUL CALL AND TICK FOR SUCCESSFUL CALL										
S. NO.	**L1 Service Number**	**SSA: Chittorgarh**								
	Details	**Aircel**	**Airtel**	**BSNL**	**Idea**	**MTS**	**RCOM GSM**	**TTSL CDMA**	**TTSL GSM**	**Vodafone**
1	100 Police	√	√	DNA	√	×	√	√	√	√
2	101 Fire	√	×		×	√	√	√	√	√
3	102 Ambulance	√	×		×	√	√	√	√	√
4	104 Health Information Helpline	√	√		√	√	√	√	√	√
5	108 Emergency and Disaster Management Helpline	√	√		√	√	√	√	√	√
6	138 All India Helpine for Passangers	×	√		√	√	√	√	×	√
7	149 Public Road Transport Utility Service	×	×		×	×	×	×	×	×
8	181 Chief Minister Helpline	×	√		√	√	√	√	√	√
9	182 Indian Railway Security Helpline	√	√		√	√	√	√	√	√
10	1033 Road Accident Management Service	√	×		×	√	√	×	×	√
11	1037 Public Grievance Cell DoT HQ as 'Telecom Consumer Grievance Redressal Helpline'	×	×		×	×	×	×	×	×
12	1056 Emergency Medical Services	×	×		×	×	×	×	√	×
13	106X State of the Art Hospitals	×	×		×	×	×	×	×	×
14	1063 Public Grievance Cell DoT Hq	×	×		×	×	×	×	×	×
15	1064 Anti Corruption Helpline	×	×		×	×	×	×	×	×
16	1070 Relief Commission for Natural Calamities	√	×		×	×	×	√	√	×
17	1071 Air Accident Helpline	√	√		√	×	×	√	√	×
18	1072 Rail Accident Helpline	√	×		×	×	√	√	√	√
19	1073 Road Accident Helpline	√	Χ		Χ	×	×	×	√	×
20	1077 Control Room for District Collector	√	×		×	×	×	×	√	×
21	1090 Call Alart (Crime Branch)	√	√		√	×	×	√	√	×
22	1091 Women Helpline	×	×		×	√	×	×	×	×
23	1097 National AIDS Helpline to NACO	√	√		√	√	√	√	√	√
24	1099 Central Accident and Trauma Services (CATS)	×	×		×	×	×	×	×	×
25	10580 Educational& Vocational Guidance and Counselling	×	×		×	×	×	×	×	×
26	10589 Mother and Child Tracking (MCTH)	×	×		×	×	×	×	×	×
27	10740 Central Pollution Control Board	×	×		×	×	×	×	×	×
28	10741 Pollution Control Board	×	×		×	×	×	×	×	×
29	1511 Police Related Service for all Metro Railway Project	×	×		×	√	×	×	×	×

July to September 2016 – Rajasthan Circle

30	1512 Prevention of Crime in Railway	×	√		√	√	×	√	√	×
31	1514 National Career Service(NCS)	×	×		×	×	×	×	×	×
32	15100 Free Legal Service Helpline	×	√		√	√	√	√	√	√
33	155304 Municipal Corporations	×	×		×	×	×	×	×	×
34	155214 Labour Helpline	×	×		×	×	×	×	×	×
35	1903 Sashastra Seema Bal (SSB)	√	√		√	×	√	√	×	√
36	1909 National Do Not Call Registry	√	√		√	×	√	√	√	√
37	1912 Complaint of Electricity	×	√		√	×	√	√	√	√
38	1916 Drinking Water Supply	×	×		×	×	×	×	×	×
39	1950 Election Commission of India	√	√		√	×	√	√	√	√

Level 1 Live Calling										
DATE:	19 to 21 September 2016									
CIRCLE:	Rajasthan									
TYPE:	CELLULAR/BASIC SERVICE PROVIDER									
PUT x FOR UNSUCCESSFUL CALL AND TICK FOR SUCCESSFUL CALL										
S. NO.	**L1 Service Number**	**SSA: Udaipur**								
	Details	**Aircel**	**Airtel**	**BSNL**	**Idea**	**MTS**	**RCOM GSM**	**TTSL CDMA**	**TTSL GSM**	**Vodafone**
1	100 Police	√	√	DNA	√	×	√	√	√	√
2	101 Fire	√	√		√	√	√	√	√	√
3	102 Ambulance	√	√		√	√	√	√	√	√
4	104 Health Information Helpline	√	√		√	√	√	√	√	√
5	108 Emergency and Disaster Management Helpline	√	√		√	√	√	√	√	√
6	138 All India Helpine for Passangers	×	√		√	√	√	√	×	√
7	149 Public Road Transport Utility Service	×	×		×	×	×	×	×	×
8	181 Chief Minister Helpline	×	√		√	√	√	√	√	√
9	182 Indian Railway Security Helpline	√	√		√	√	√	√	√	√
10	1033 Road Accident Management Service	√	×		×	√	√	×	×	√
11	1037 Public Grievance Cell DoT HQ as 'Telecom Consumer Grievance Redressal Helpline'	×	×		×	×	×	×	×	×
12	1056 Emergency Medical Services	×	×		×	×	×	×	√	×
13	106X State of the Art Hospitals	×	×		×	×	×	×	×	×
14	1063 Public Grievance Cell DoT Hq	×	×		×	×	×	×	×	×
15	1064 Anti Corruption Helpline	×	×		×	×	×	×	×	×
16	1070 Relief Commission for Natural Calamities	√	×		×	×	×	√	√	×
17	1071 Air Accident Helpline	√	√		√	×	×	√	√	×
18	1072 Rail Accident Helpline	√	×		×	×	√	√	√	√
19	1073 Road Accident Helpline	√	×		×	×	×	×	√	×
20	1077 Control Room for District Collector	√	×		×	×	×	×	√	×
21	1090 Call Alart (Crime Branch)	√	√		√	×	×	√	√	×
22	1091 Women Helpline	×	×		×	√	×	×	×	×
23	1097 National AIDS Helpline to NACO	√	√		√	√	√	√	√	√
24	1099 Central Accident and Trauma Services (CATS)	×	×		×	×	×	×	×	×
25	10580 Educational& Vocational Guidance and Counselling	×	×		×	×	×	×	×	×
26	10589 Mother and Child Tracking (MCTH)	×	×		×	×	×	×	×	×
27	10740 Central Pollution Control Board	×	×		×	×	×	×	×	×
28	10741 Pollution Control Board	×	×		×	×	×	×	×	×
29	1511 Police Related Service for all Metro Railway Project	×	×		×	√	×	×	×	×

July to September 2016 – Rajasthan Circle

30	1512 Prevention of Crime in Railway	×	√		√	√	×	√	√	×
31	1514 National Career Service(NCS)	×	×		×	×	×	×	×	×
32	15100 Free Legal Service Helpline	×	√		√	√	√	√	√	√
33	155304 Municipal Corporations	×	×		×	×	×	×	×	×
34	155214 Labour Helpline	×	×		×	×	×	×	×	×
35	1903 Sashastra Seema Bal (SSB)	√	√		√	×	√	√	×	√
36	1909 National Do Not Call Registry	√	√		√	×	√	√	√	√
37	1912 Complaint of Electricity	×	√		√	×	√	√	√	√
38	1916 Drinking Water Supply	×	×		×	×	×	×	×	×
39	1950 Election Commission of India	√	√		√	×	√	√	√	√

DRIVE TEST

The drive test was conducted simultaneously for all the operators present in the Rajasthan circle. As per the new directive given by TRAI headquarters, drive test for the month of July, August, September 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 Rajasthan circle.

Drive Test		
Sr.No.	**Date**	**Name of SSA**
1	4 TO 6 JULY	Alwar
2	20 TO 22 JULY	Tonk
3	29 TO 31 AUGUST	Kota
4	1 TO 3 SEPTEMBER	Jaipur
5	14 TO 16 SEPTEMBER	Chittorgarh
6	19 TO 21 SEPTEMBER	Udaipur

Date	Name of SSA	Day 1		Day 2		Day 3	
		Name of SDCA & KM Covered	Route Covered (Outdoor/Indoor)	Name of SDCA & KM Covered	Route Covered (Outdoor/Indoor)	Name of SDCA & KM Covered	Route Covered (Outdoor/Indoor)
4 TO 6 JULY	Alwar	Kishangarh, Khairthal, Tijara - 135 KM	Outdoor: Major road- Kishangarh to kheirthal, Kishangarh to Tijara

Highway- Alwar to kishangarh, Tijara to Bhiwadi

With in city- Bhiwadi, Tijara, Kishangarh (Govt hospital, Tehsil, Central Jail, Electricity transmission), Kheirthal

Indoor: BSNL Exchange, Ashok Nagar, Alwar | Alwar, Rajgarh, Silised - 100 KM | Outdoor: Major road- Rajgarh railway station, PHED, Govt hospital, Universal public help kine

Highway- Alwar to Rajgarh, Rajgarh to Silised

With in city- Alwar (ashok circle, bhagat singh circle, ambedker circle, RTO, NCG, Jail Marg, Alwar junction, jay marg, mangal marg, vinay marg, raj rishi college, nehru marg, aerodrom road)

Indoor: Ashok Circle | Bansur, Behror - 90 KM | Outdoor: Major road- Bansur to Behror

Highway- Alwar to Bansur

With in city- Bansur PG college, fort, SMS, Kotputli road, grah mohlla, tilak nagar, nangal koriya, midway

Indoor: Railway station |
| 20 TO 22 JULY | Tonk | Deoli, Uniara, Aligarh - 155 KM | Outdoor: Major road: Uniara to Aligarh, Aligarh Market, Aligarh Thana

Highway: Tonk to Deoli, Tonk to Uniara, Uniara to Aligarh

Within City : Tonk Bus Stand, BSNL Office, Chhan, Dakhiya, Deoli Govt. School, Uniara Bsnl

Indoor: BSNL Office Uniara | Tonk, Newai - 100 KM | Outdoor: Major road: Newai City Bus Stand, BSNL Office Newai, Tonk Highway, Newai pyau, Newai Mandi

Highway: Newai to Tonk

Within City: Bus Stand Tonk, Hotel jitendra, Sheetal Midway

Indoor: Bus Stand Tonk | Toda Raisingh, Malpura - 90 KM | Outdoor: Major Road: Pratap nagar, Malpura Bus stand, Toda rai Singh to Malpura

Highway: Tonk to Toda rai Singh

Within City: Toda Raisingh Market, Subjimandi, School, Industrial area

Indoor: Bsnl Office Tonk |
| 29 TO 31 August | Kota | Kota, Antah, Baran, Sangod, Khathoon, Kota - 210 KM | Outdoor: Major road: Sangod to Khaithoon, Kota

Highway: Kota to Baran, Baran to Sangod

Within City : Baran

Indoor: Aerodrome circle kota | Kota, digod, sultanpura, itawa, mugena - 125 KM | Outdoor: Major road: Digod to Sultanpur

Highway: Kota to digod & Sultanpur to itawa

Within City: Sultanpur, Itawa

Indoor: BSNL exchange | Kota City - 120 KM | Outdoor: Major Road: City Mall, Indraprastha, University, ipia, Srinathpura industrial Area, Allen

Within City: Vivekanandnagar, Balaji Park, Bus stand, fire brigade, polish station, hotel kota

Indoor: City Mall |

1 TO 3 September	Jaipur	Jaipur city - 138 KM	Outdoor: Within City : Bajaj Nagar,Gandhi Nagar,JLN marg,Malviya Nagar,Airport,Pratap Nagar,Sanganer,Sitapura,Madhyam marg,Mansarovar,Sodala,Khatipura,SindhiCamp, Railway Station,collectrat,MI road,Johari Bazar,Jal mahal,Ramnagar,Transport nagar,rajapark, Indoor: Central apine jaipur	Jaipur,Dausa,Bagru,Dudu - 145 KM	Outdoor: Highway: Jaipur to Dausa & Japur to Dudu Within City: Dausa & Dudu Indoor: Govt college Dausa	Jaipur to chandwaji,shahpura,kotputli - 135 KM	Outdoor: Highway: Jaipur to Kotputli Within City: Shahpura,Kotputli Indoor: Highway king kotputli
14 TO 16 Septembe	Chittorgarh	Chittorgarh,Mangalwar,Dungla,Badisadri,Nimbahera, - 165 KM	Outdoor: Major road: Dungla to Badi Sadri Highway: Chittorgarh to Mangalwar,Dungla,Nimbahera to chittorgarh Within City : Nimbahera,Dungla Indoor: BSNL Exchange	Chittorgarh,singhpur,kapasan,Dindoli,rasmi,bheemgarh,narela, - 110 KM	Outdoor: Major road: kapasan to dindoli,rasmi,bheemgarh,narela Highway: Chittorgarh to Singhpur,kapasan Within City: kapasan Indoor: colectrate circle	chittorgarh city - 135 KM	Outdoor: Major Road: Begun Highway: chittorgarh to bassi,begun Within City: chittorgarh city-bsnal exchange,pannadhay colony,kunbha nagar,aanad villa,sethi colony,hotel meera,bus stand,railway station,gandhi nagar,sector-5,fort area, Indoor: Railway Station
19 TO 21 Septembe	Udaipur	udaipur to chittorgarh road - 104 KM	Outdoor: Highway: udaipur to chittorgarh road Within City : court circle,bapu bazar,shevaashram circle,cng college,sukhariya Indoor: BSNL Exchange	udaipur,nathwara,Rajsamand - 164 KM	Outdoor: Major road: udaipur to nathdwara Highway: udaipur to rajsamand Within City: rajsamand(kankroli,mahadev colony,kelwara,bus stand)nathdwara Indoor: sukhariya circle	Udaipur, Kherwada - 172 KM	Outdoor: Highway: udaipur to kherwada(karanpur,bharpal,tidhi,paduna,prasahad,peepli,rishabhdev) Within City: kherwada(old bus stand,new bus stand,sadar bazar) Indoor: Hotel amantra udaipur

July to September 2016 – Rajasthan Circle

12.1. ROUTE COVER MAP: ALWAR SSA: DAY 1
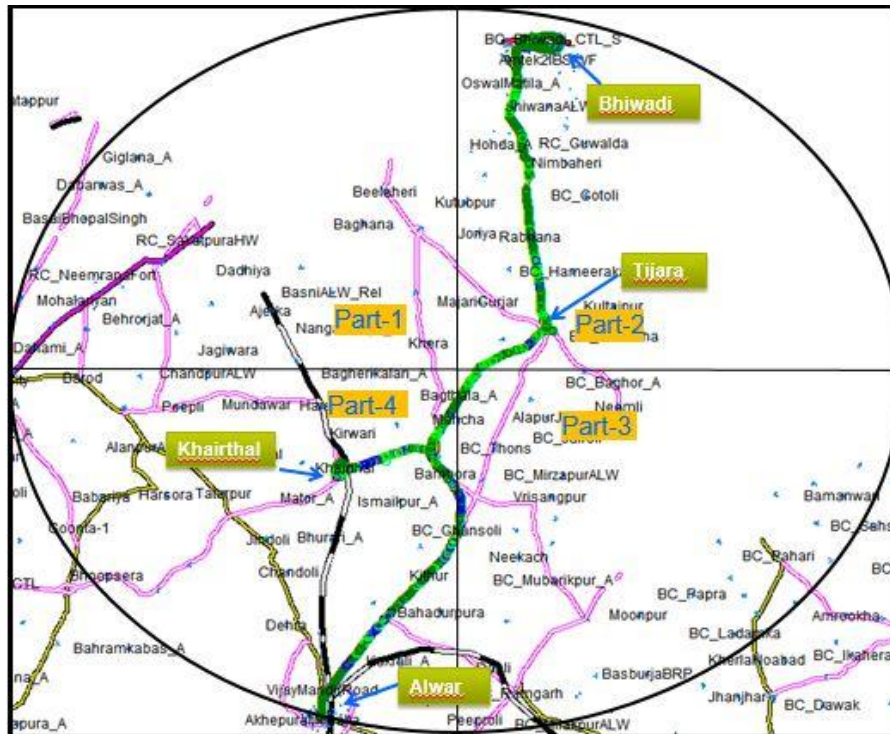
12.2. ROUTE MAP: ALWAR SSA: DAY 2
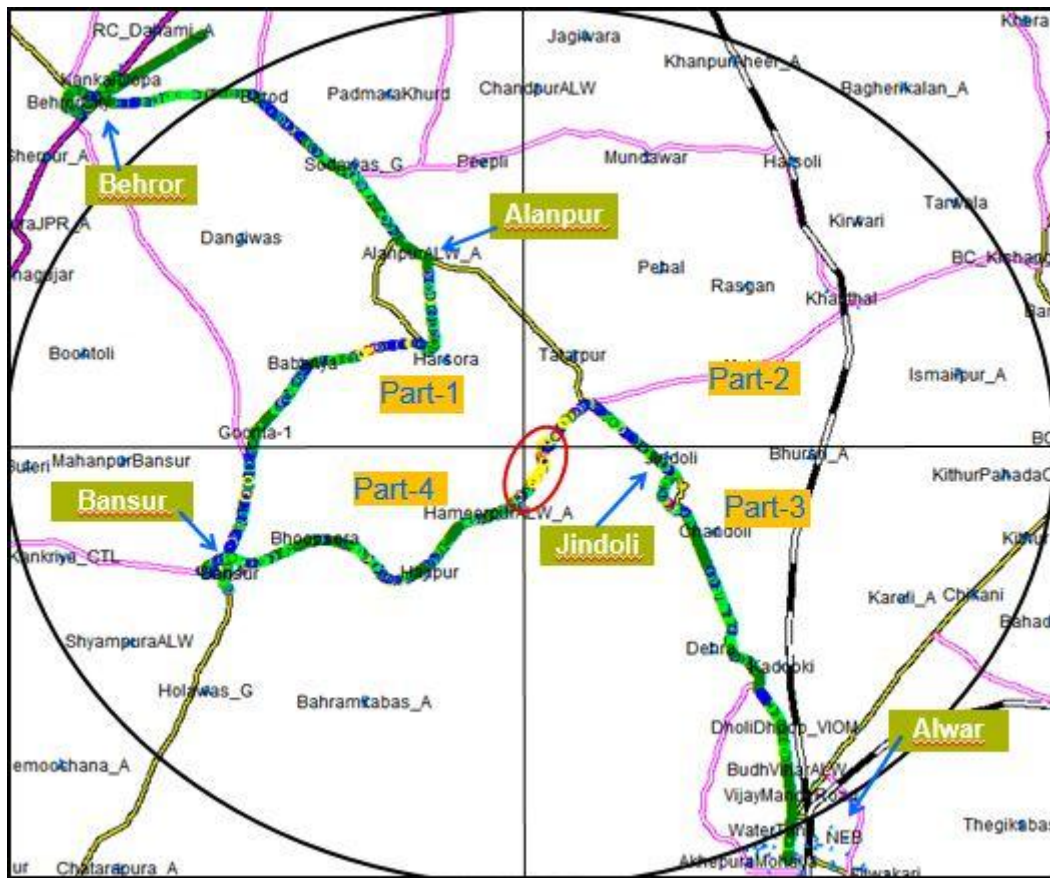
12.4. DRIVE TEST OUTCOME

Sr.No.	Parameter	Aircel	Airtel	Idea	BSNL	MTS	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
1	Total Calls Attempt (A)	292	454	381	DNA	404	326	320	388	550
2	Total Calls Blocked (B)	0	0	0	DNA	0	2	0	0	0
3	Blocked Call Rate in % (B*100/A)	0.00%	0.00%	0.00%	DNA	0.00%	0.61%	0.00%	0.00%	0.00%
4	Total Calls Established ('C)	292	454	380	DNA	404	324	320	388	550
5	Total Calls Drop (D)	0	0	0	DNA	0	0	0	0	0
6	Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	0.00%	DNA	0.00%	0.00%	0.00%	0.00%	0.00%
7	Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	99.74%	DNA	100.00%	99.39%	100.00%	100.00%	100.00%
8	Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	99.34%	DNA	99.93%	99.21%	100.00%	99.92%	100.00%

July to September 2016 – Rajasthan Circle

12.5. ROUTE COVER MAP: TONK SSA: DAY 1
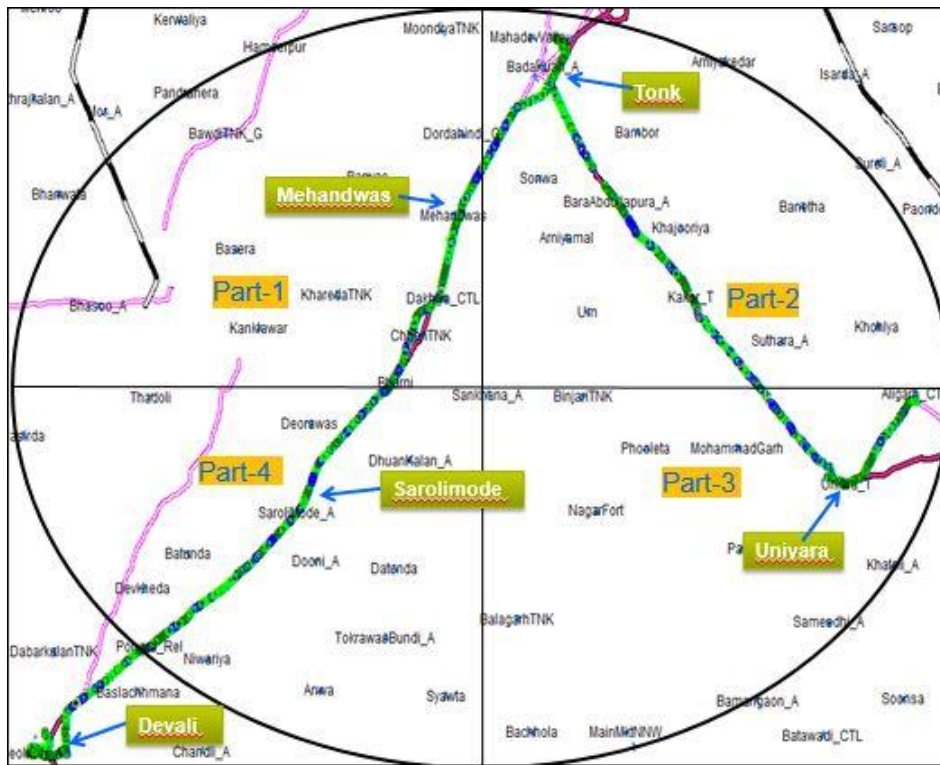
12.6. ROUTE MAP: TONK SSA: DAY 2
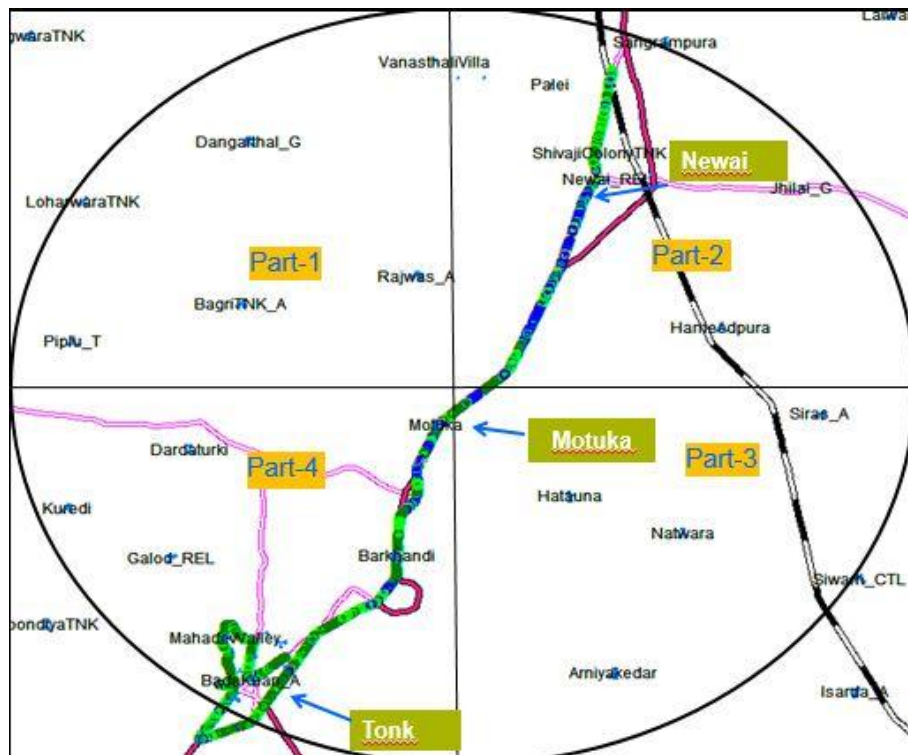
12.7. ROUTE MAP: TONK SSA: DAY 3
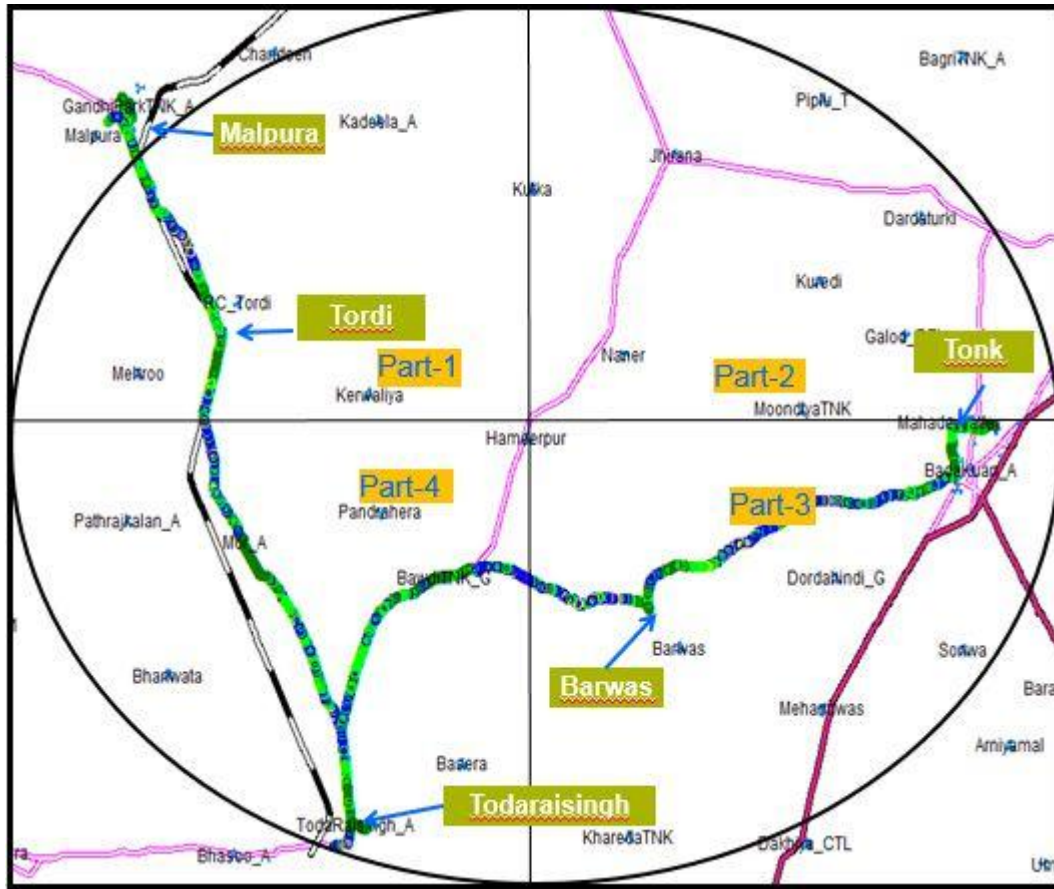
12.8. DRIVE TEST OUTCOME

Sr.No.	Parameter	Aircel	Airtel	Idea	BSNL	MTS	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
1	Total Calls Attempt (A)	381	400	324	DNA	373	340	318	408	505
2	Total Calls Blocked (B)	0	0	0	DNA	0	0	0	0	0
3	Blocked Call Rate in % (B*100/A)	0.00%	0.00%	0.00%	DNA	0.00%	0.00%	0.00%	0.00%	0.00%
4	Total Calls Established ('C)	381	400	324	DNA	373	340	318	408	505
5	Total Calls Drop (D)	0	0	0	DNA	0	0	0	0	0
6	Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	0.00%	DNA	0.00%	0.00%	0.00%	0.00%	0.00%
7	Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	100.00%	DNA	100.00%	100.00%	100.00%	100.00%	100.00%
8	Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	100.00%	DNA	99.93%	99.72%	100.00%	99.94%	100.00%

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12.9. ROUTE COVER MAP: KOTA SSA: DAY 1
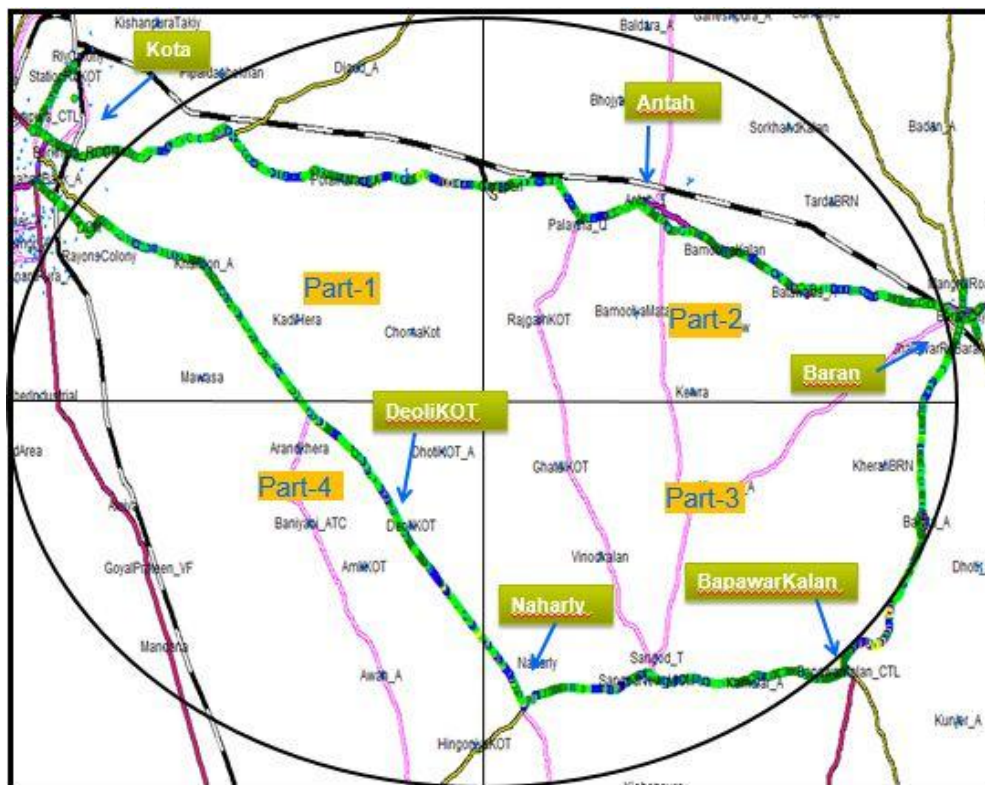
12.10. ROUTE MAP: KOTA SSA: DAY 2
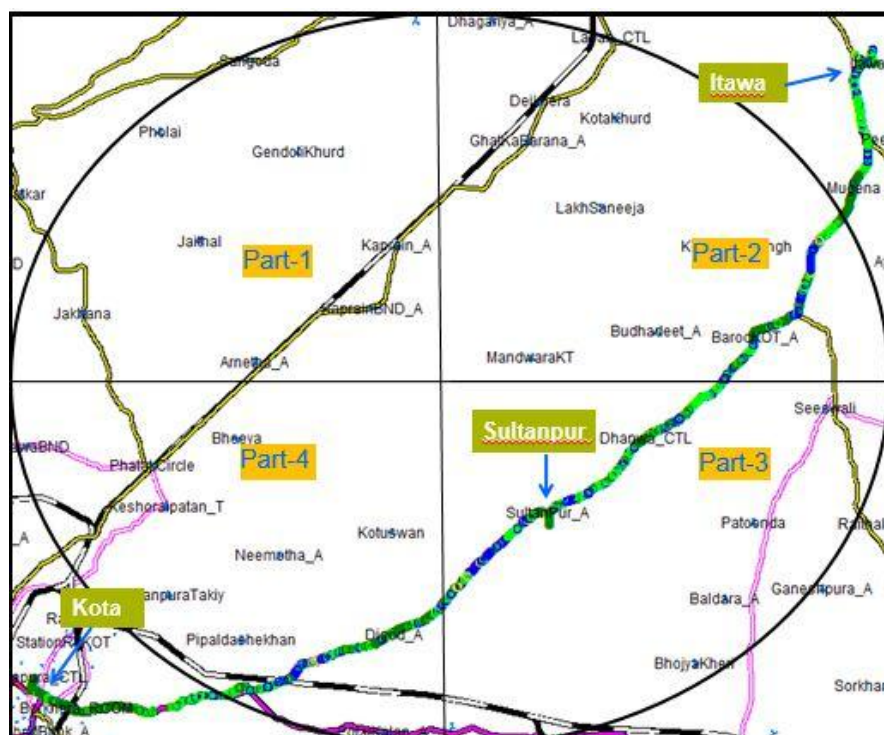
12.11. ROUTE MAP: KOTA SSA: DAY 3

12.12. DRIVE TEST OUTCOME

Sr.No.	Parameter	Aircel	Airtel	Idea	BSNL	MTS	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
1	Total Calls Attempt (A)	424	472	491	709	449	384	367	380	541
2	Total Calls Blocked (B)	0	0	2	5	0	0	0	0	0
3	Blocked Call Rate in % (B*100/A)	0.00%	0.00%	0.41%	0.71%	0.00%	0.00%	0.00%	0.00%	0.00%
4	Total Calls Established ('C)	424	472	491	704	449	384	367	380	541
5	Total Calls Drop (D)	0	0	0	1	0	1	0	0	0
6	Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	0.00%	0.14%	0.00%	0.26%	0.00%	0.00%	0.00%
7	Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	100.00%	99.29%	100.00%	100.00%	100.00%	100.00%	100.00%
8	Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	99.05%	98.20%	100.00%	98.93%	100.00%	100.00%	99.87%

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12.13. ROUTE COVER MAP: JAIPUR SSA: DAY 1

12.14. ROUTE MAP: JAIPUR SSA: DAY 2

July to September 2016 – Rajasthan Circle
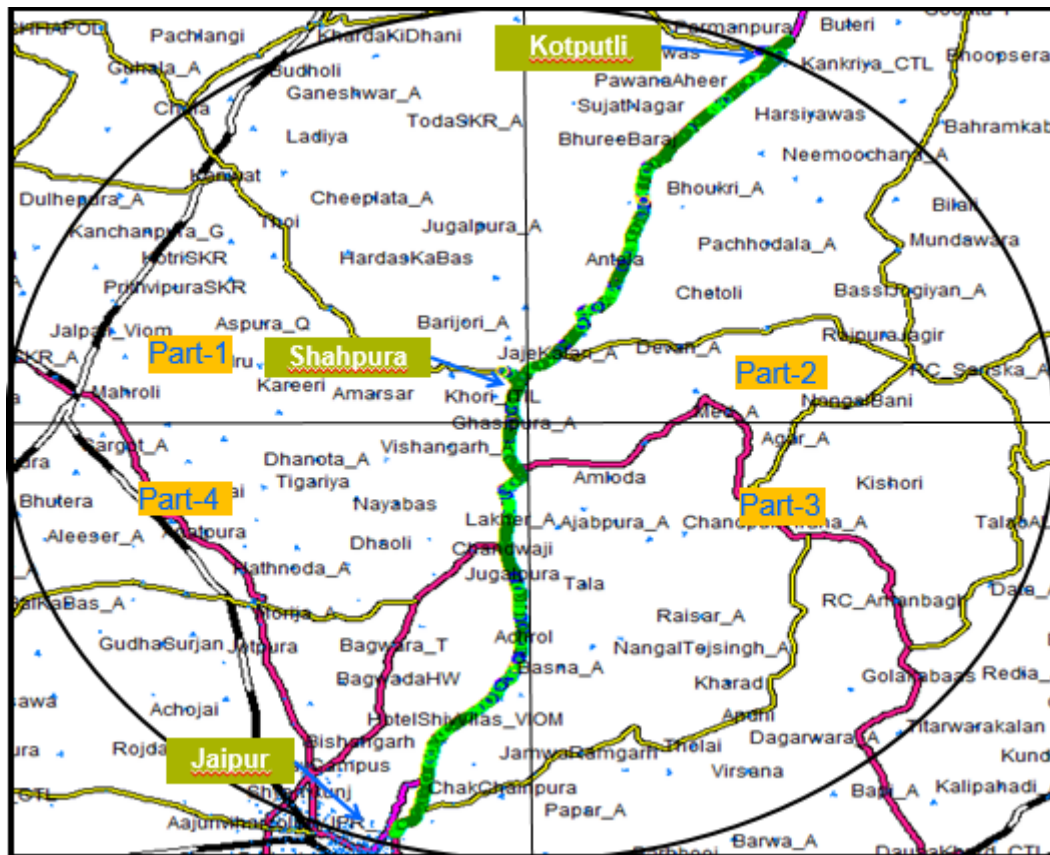
12.16. DRIVE TEST OUTCOME

Sr.No.	Parameter	Aircel	Airtel	Idea	BSNL	MTS	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
1	Total Calls Attempt (A)	538	449	465	DNA	456	499	365	407	527
2	Total Calls Blocked (B)	0	0	2	DNA	1	1	0	0	0
3	Blocked Call Rate in % (B*100/A)	0.00%	0.00%	0.43%	DNA	21.93%	0.20%	0.00%	0.00%	0.00%
4	Total Calls Established ('C)	538	449	463	DNA	456	498	365	407	527
5	Total Calls Drop (D)	0	0	3	DNA	0	2	0	0	0
6	Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	0.65%	DNA	0.00%	0.40%	0.00%	0.00%	0.00%
7	Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	99.57%	DNA	100.00%	99.80%	100.00%	100.00%	100.00%
8	Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	98.13%	DNA	99.95%	98.50%	100.00%	100.00%	100.00%

12.17. ROUTE COVER MAP: CHITTORGARH SSA: DAY 1

12.18. ROUTE MAP: CHITTORGARH SSA: DAY 2

July to September 2016 – Rajasthan Circle
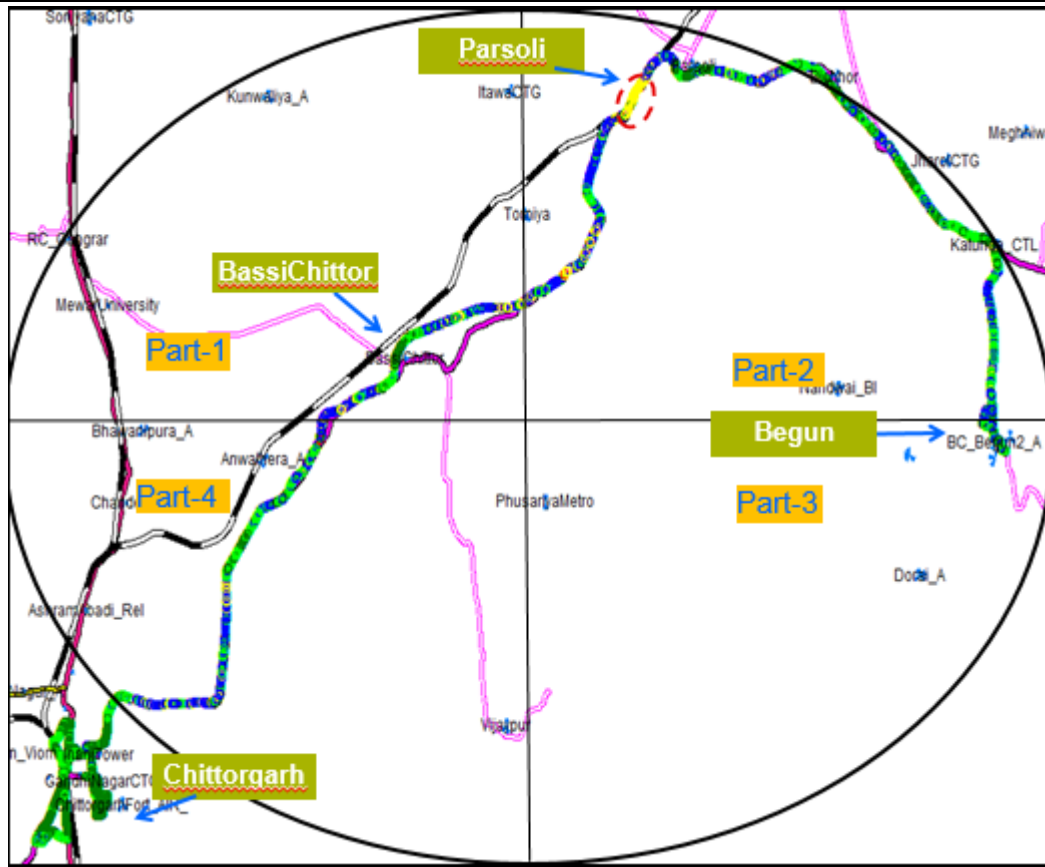
12.20. DRIVE TEST OUTCOME

Sr.No.	Parameter	Aircel	Airtel	Idea	BSNL	MTS	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
1	Total Calls Attempt (A)	355	504	410	DNA	354	269	340	332	546
2	Total Calls Blocked (B)	0	0	1	DNA	0	0	0	0	0
3	Blocked Call Rate in % (B*100/A)	0.00%	0.00%	0.24%	DNA	0.00%	0.00%	0.00%	0.00%	0.00%
4	Total Calls Established ('C)	355	504	409	DNA	354	269	340	332	546
5	Total Calls Drop (D)	0	0	0	DNA	0	0	0	0	0
6	Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	0.00%	DNA	0.00%	0.00%	0.00%	0.00%	0.00%
7	Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	99.76%	DNA	100.00%	100.00%	100.00%	100.00%	100.00%
8	Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	100.00%	DNA	100.00%	100.00%	100.00%	99.96%	100.00%

12.21. ROUTE COVER MAP: UDAIPUR SSA: DAY 1

12.22. ROUTE MAP: UDAIPUR SSA: DAY 2

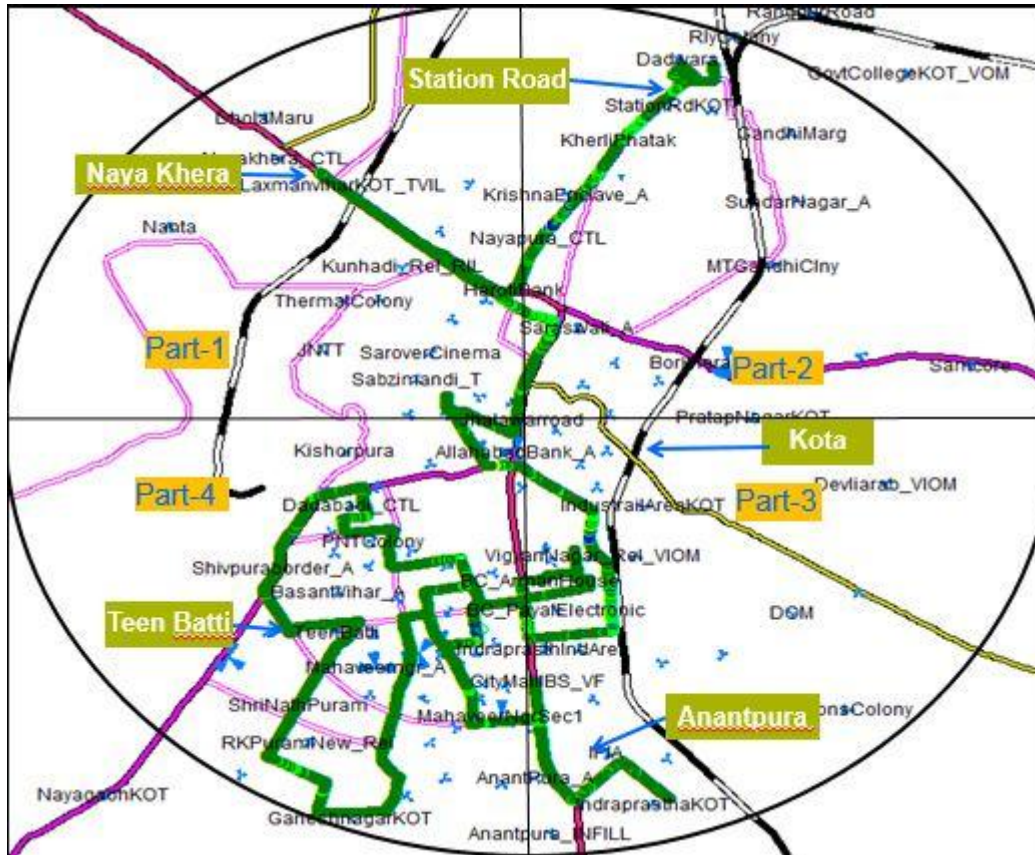**July to September 2016 – Rajasthan Circle**
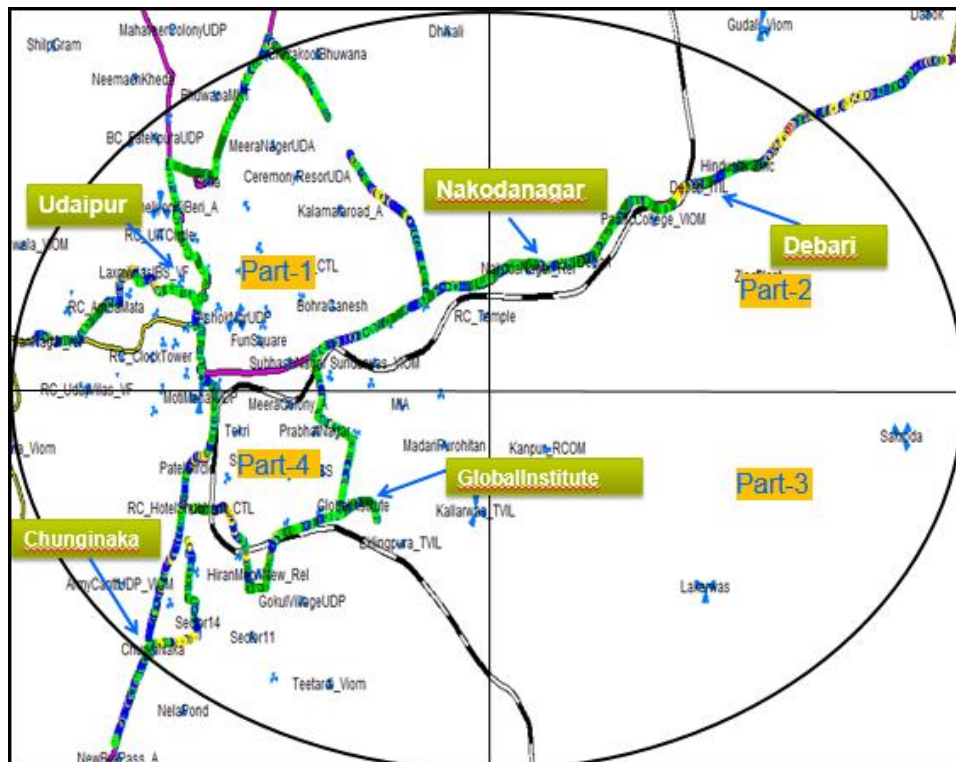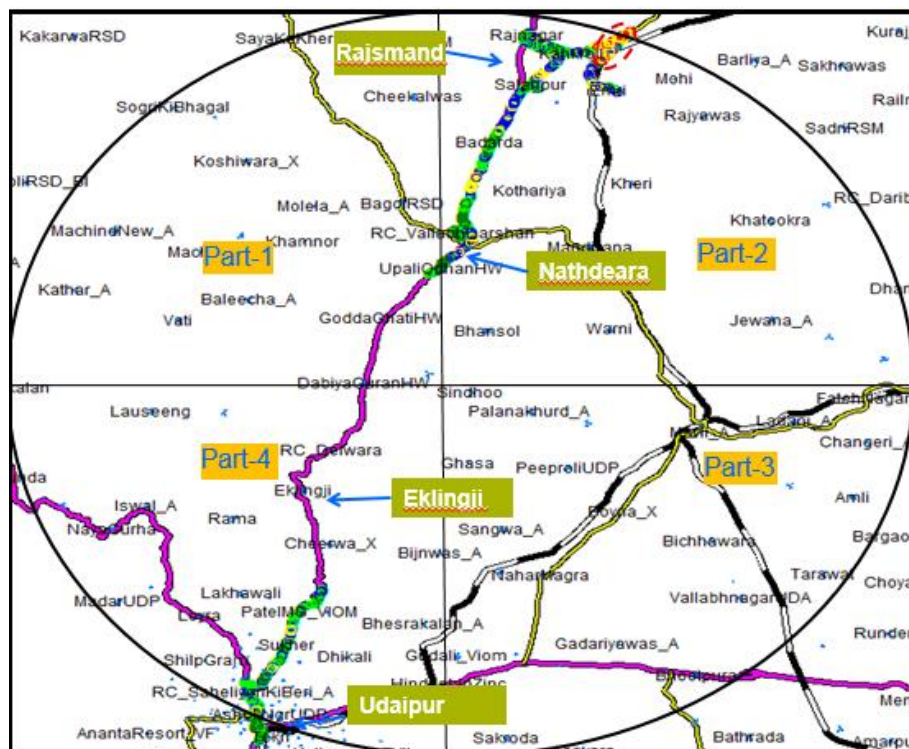
12.23. Route Map: Udaipur SSA: Day 3
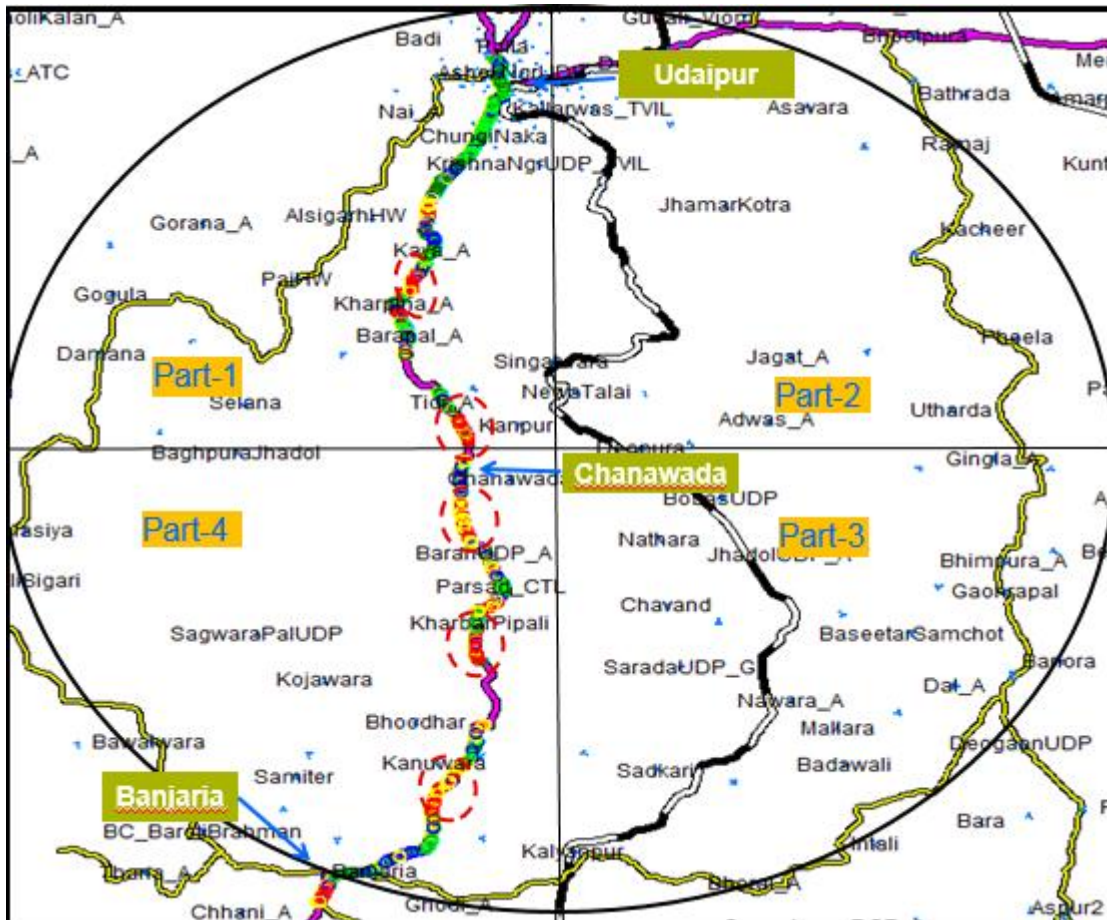
12.24. Drive Test Outcome

Sr.No.	Parameter	Aircel	Airtel	Idea	BSNL	MTS	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
1	Total Calls Attempt (A)	337	390	414	DNA	334	305	312	331	335
2	Total Calls Blocked (B)	0	0	0	DNA	0	0	0	0	0
3	Blocked Call Rate in % (B*100/A)	0.00%	0.00%	0.00%	DNA	0.00%	0.00%	0.00%	0.00%	0.00%
4	Total Calls Established ('C)	337	390	414	DNA	334	305	312	331	334
5	Total Calls Drop (D)	0	0	0	DNA	0	0	0	0	0
6	Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	0.00%	DNA	0.00%	0.00%	0.00%	0.00%	0.00%
7	Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	100.00%	DNA	100.00%	100.00%	100.00%	100.00%	99.70%
8	Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	99.63%	DNA	100.00%	100.00%	100.00%	100.00%	100.00%

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13. BLOCK SCHEMATIC DIAGRAM

13.1. ERICSSON

Ericsson

NSN
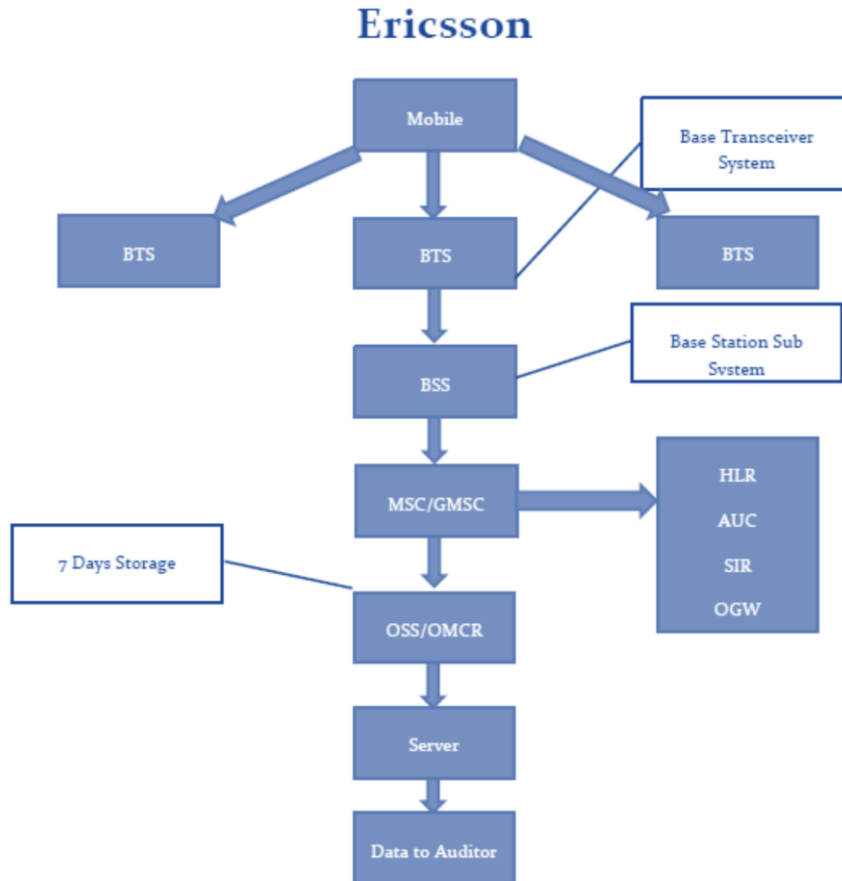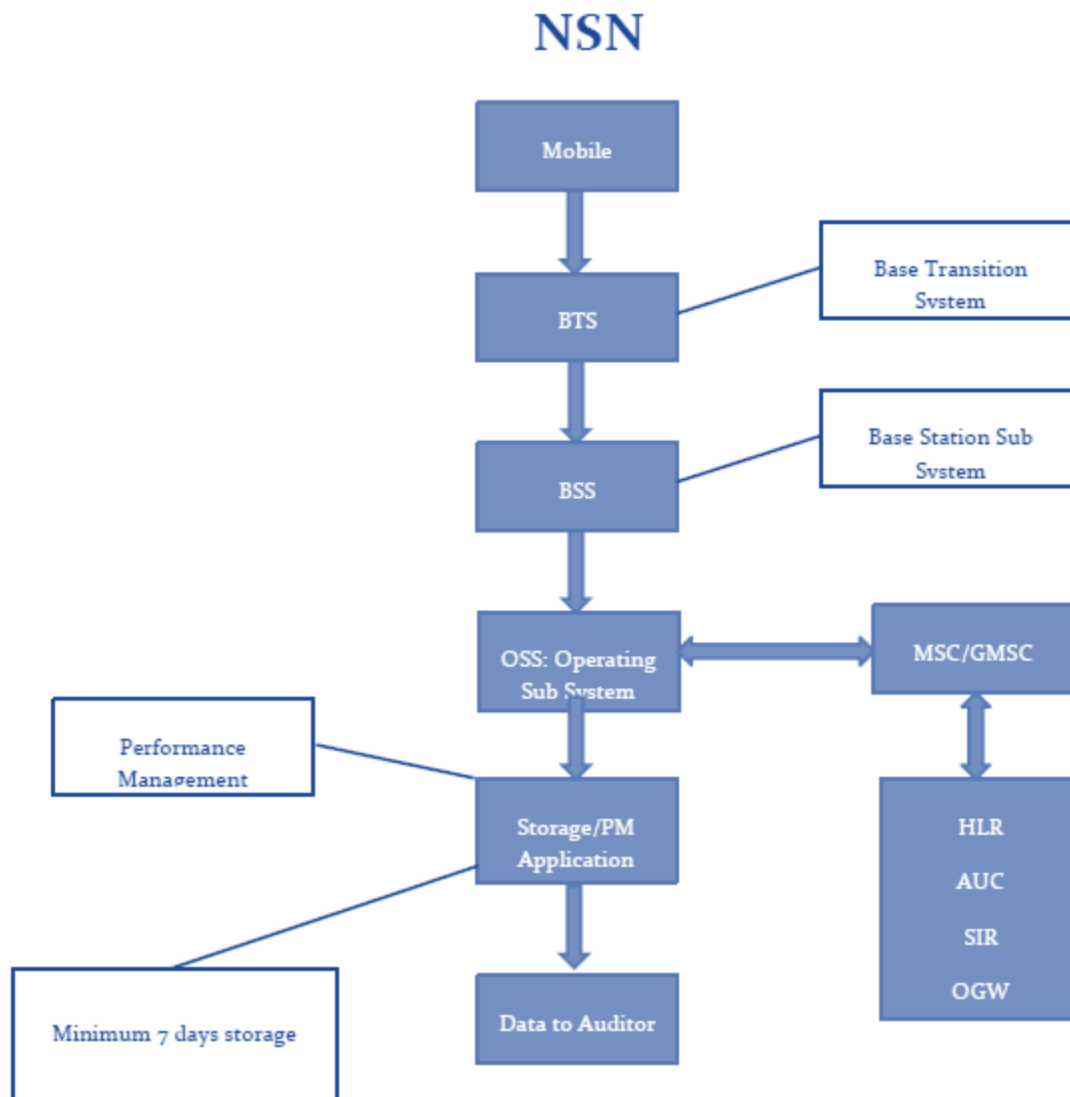
13.3. HUAWEI

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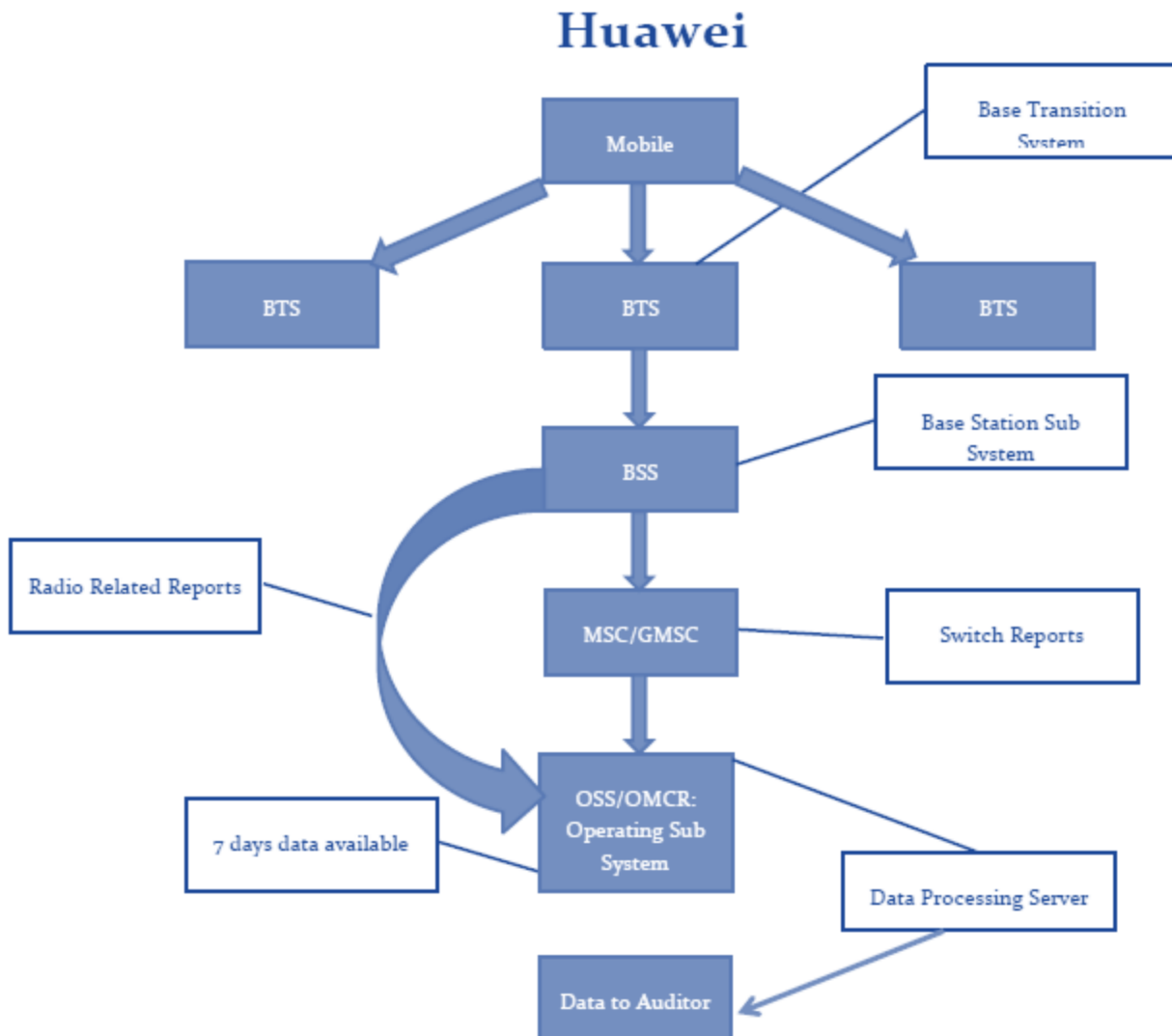
Following terms/abbreviations have been used in this report. This section provides meaning of the abbreviations used in the report.

- TRAI – Telecom Regulatory Authority of India

- QoS – Quality of Service

- 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

15.1   ANNEXURE

15.2.   2G VOICE PMR DATA: CONSOLIDATED

Consolidated											
Network Parameters		Name of Service Provider									
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	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%	0.15%	1.25%	0.07%	0.10%	0.07%	0.11%	0.09%	0.12%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.10%	0.00%	1.31%	0.03%	0.00%	0.29%	0.34%	0.14%	0.54%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	96.61%	97.28%	98.21%	99.54%	98.91%	97.88%	97.61%	99.20%	99.52%
	SDDCH/Paging chl. Congestion	≤ 1%	0.35%	0.64%	0.69%	0.23%	NA	0.11%	NA	0.12%	0.19%
	TCH Congestion	≤ 2%	1.68%	1.51%	1.52%	0.17%	0.13%	0.28%	1.31%	0.20%	0.48%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	1.12%	0.79%	1.57%	0.63%	0.55%	0.19%	0.31%	0.59%	0.78%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	3.52%	1.23%	2.12%	2.07%	1.55%	0.90%	2.96%	2.86%	1.98%
	%age of connection with good voice quality	≥ 95%	96.18%	98.47%	97.98%	97.13%	99.16%	98.94%	98.73%	98.71%	96.54%

- AIRCEL has parameter value of 3.52% and failed to meet the benchmark of ≤ 3% Connection Maintenance (Retainability) Worst Affected cell having more than 3% TCH drop.

15.3.   3G VOICE PMR: CONSOLIDATED

Consolidated						
Network Parameters		**Name of Service Provider**				
		Benchmark	**AIRTEL**	**BSNL**	**RCOM**	**VODAFONE**
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.23%	1.35%	0.37%	0.22%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.34%	1.76%	0.00%	0.80%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.62%	98.30%	99.42%	99.90%
	RRC Congestion:	≤ 1%	0.04%	0.48%	0.08%	0.00%
	RAB Congestion:	≤ 2%	0.04%	0.46%	0.06%	0.01%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.61%	1.26%	0.10%	0.24%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.37%	2.44%	0.37%	2.87%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.87%	97.41%	99.85%	98.90%

- **For each instance of "DNA (Data Not Available)", please refer the respective hard copy of audit report(s).

15.4. 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	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
AIRTEL	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
BSNL	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
IDEA	0.06%	0.18%	100.00%	100.00%	100.00%	93.90%	100.00%	99.15%	96.54%
MTS	0.05%	0.04%	100.00%	100.00%	100.00%	100.00%	100.00%	99.95%	97.08%
RCOM GSM	0.09%	0.10%	100.00%	100.00%	100.00%	100.00%	94.96%	99.44%	95.64%
TTSL CDMA	0.00%	0.00%	NA	NA	100.00%	100.00%	100.00%	NA	99.63%
TTSL GSM	0.00%	0.00%	NA	NA	100.00%	100.00%	NA	95.43%	98.22%
VODAFONE	0.08%	0.08%	100.00%	100.00%	100.00%	100.00%	99.97%	100.00%	98.77%

- IDEA has parameter value of 77.59% and failed to meet the benchmark of =100% Metering and Billing credibility Prepaid Subscribers.
- IDEA has parameter value of 93.90% and failed to meet the benchmark of =100% % of Termination/ Closure of service within 7 days (100 %)

- RCOM has parameter value of 94.96% and failed to meet the benchmark of =100% Time taken for refund of deposits after closures: Benchmark Cleared over a period of <60 days (100%).
- RCOM has parameter value of 99.97% and failed to meet the benchmark of =100% Time taken for refund of deposits after closures: Benchmark Cleared over a period of <60 days (100%).

Name of Service Provider	Customer Care & Grievances Redressal	
	% of Complaints addressed at call center level	% of Complaints addressed by Appellate Authority
Benchmark		
AIRCEL	DNA	DNA
AIRTEL	DNA	DNA
BSNL	DNA	DNA
IDEA	84.55%	NIL
MTS	100.00%	100.00%
RCOM GSM	100.00%	100.00%
TTSL CDMA	99.72%	100.00%
TTSL GSM	100.00%	NIL
VODAFONE	8.84%	NA

15.5. 2G-PMR COMPARISON (TSP VS. AUDIT AGENCY): NETWORK PARAMETERS

2G-PMR Report Comparison between Audit Agency and TSP											
Network Parameters			**Name of Service Provider**								
				AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
		Benchmark										
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	Agency	0.15%	0.15%	1.25%	0.07%	0.10%	0.07%	0.11%	0.09%	0.12%
			TSP	0.16%	0.17%	1.27%	0.07%	0.11%	0.07%	0.00%	0.00%	0.12%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	Agency	0.10%	0.00%	1.31%	0.03%	0.00%	0.29%	0.34%	0.14%	0.54%
			TSP	0.25%	0.25%	1.31%	0.03%	0.00%	0.36%	0.00%	0.00%	0.50%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	Agency	96.61%	97.28%	98.21%	99.54%	98.91%	97.88%	97.61%	99.20%	99.52%
			TSP	96.58%	97.36%	98.22%	99.54%	98.90%	97.88%	97.60%	99.20%	99.52%
	SDDCH/Paging chl. Congestion	≤ 1%	Agency	0.35%	0.64%	0.69%	0.23%	NA	0.11%	NA	0.12%	0.19%
			TSP	0.36%	0.57%	0.69%	0.23%	NA	0.11%	NA	0.12%	0.20%
	TCH Congestion	≤ 2%	Agency	1.68%	1.51%	1.52%	0.17%	0.13%	0.28%	1.31%	0.20%	0.48%
			TSP	1.62%	1.46%	1.52%	0.17%	0.13%	0.28%	1.31%	0.20%	0.48%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	Agency	1.12%	0.79%	1.57%	0.63%	0.55%	0.19%	0.31%	0.59%	0.78%
			TSP	1.12%	0.78%	1.57%	0.63%	0.55%	0.19%	0.31%	0.59%	0.78%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	Agency	3.52%	1.23%	2.12%	2.07%	1.55%	0.90%	2.96%	2.86%	1.98%
			TSP	4.22%	1.25%	2.12%	2.07%	1.56%	0.93%	2.96%	2.86%	2.98%
	%age of connection with good voice quality	≥ 95%	Agency	96.18%	98.47%	97.98%	97.13%	99.16%	98.94%	98.73%	98.71%	96.54%
			TSP	96.10%	98.46%	97.99%	97.13%	99.16%	98.94%	98.73%	98.71%	96.54%

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

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAF ONE
PMR Audit 2G Audit Agency (PCPL)	0.15%	0.15%	1.25%	0.07%	0.10%	0.07%	0.11%	0.09%	0.12%
PMR Audit 2G TSP	0.16%	0.17%	1.27%	0.07%	0.11%	0.07%	0.00%	0.00%	0.12%
3 Day Live Audit 2G	0.07%	0.10%	1.26%	0.05%	0.08%	0.05%	0.07%	0.10%	0.10%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

No. of BTSs having accumulated downtime of >24 hours in a month

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
PMR Audit 2G Audit Agency (PCPL)	0.10%	0.00%	1.31%	0.03%	0.00%	0.29%	0.34%	0.14%	0.54%
PMR Audit 2G TSP	0.25%	0.25%	1.31%	0.03%	0.00%	0.36%	0.00%	0.00%	0.50%
3 Day Live Audit 2G	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

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

Call Set-up Success Rate (Within Licensee own network

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAF ONE
PMR Audit 2G Audit Agency (PCPL)	96.61%	97.28%	98.21%	99.54%	98.91%	97.88%	97.61%	99.20%	99.52%
PMR Audit 2G TSP	96.58%	97.36%	98.22%	99.54%	98.90%	97.88%	97.60%	99.20%	99.52%
3 Day Live Audit 2G	96.78%	97.39%	98.51%	99.62%	98.93%	98.20%	96.46%	99.33%	3379.35%
Benchmark ≥ 95%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%

SDDCH/Paging chl. Congestion

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
PMR Audit 2G Audit Agency (PCPL)	0.35%	0.64%	0.69%	0.23%	0.00%	0.11%	0.00%	0.12%	0.19%
PMR Audit 2G TSP	0.36%	0.57%	0.69%	0.23%	0.00%	0.11%	0.00%	0.12%	0.20%
3 Day Live Audit 2G	0.23%	0.56%	0.75%	0.12%	0.00%	0.05%	0.00%	0.31%	0.40%
Benchmark ≤ 1%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%

15.5.5. TCH CONGESTION

TCH Congestion

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
PMR Audit 2G Audit Agency (PCPL)	1.68%	1.51%	1.52%	0.17%	0.13%	0.28%	1.31%	0.20%	0.48%
PMR Audit 2G TSP	1.62%	1.46%	1.52%	0.17%	0.13%	0.28%	1.31%	0.20%	0.48%
3 Day Live Audit 2G	1.48%	1.40%	1.50%	0.11%	0.13%	0.23%	2.51%	0.15%	0.51%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

Call Drop Rate (%age)

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
PMR Audit 2G Audit Agency (PCPL)	1.12%	0.79%	1.57%	0.63%	0.55%	0.19%	0.31%	0.59%	0.78%
PMR Audit 2G TSP	1.12%	0.78%	1.57%	0.63%	0.55%	0.19%	0.31%	0.59%	0.78%
3 Day Live Audit 2G	1.02%	0.77%	1.57%	0.59%	0.54%	0.17%	0.30%	0.56%	0.79%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

Worst Affected cell having more than 3% TCH drop

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
PMR Audit 2G Audit Agency (PCPL)	3.52%	1.23%	2.12%	2.07%	1.55%	0.90%	2.96%	2.86%	1.98%
PMR Audit 2G TSP	4.22%	1.25%	2.12%	2.07%	1.56%	0.93%	2.96%	2.86%	2.98%
3 Day Live Audit 2G	4.36%	1.09%	2.65%	1.81%	1.83%	0.91%	2.76%	2.68%	2.96%
Benchmark ≤ 3%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%

%Age of connection with good voice quality

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
PMR Audit 2G Audit Agency (PCPL)	96.18%	98.47%	97.98%	97.13%	99.16%	98.94%	98.73%	98.71%	96.54%
PMR Audit 2G TSP	96.10%	98.46%	97.99%	97.13%	99.16%	98.94%	98.73%	98.71%	96.54%
3 Day Live Audit 2G	96.15%	98.47%	98.00%	97.20%	99.16%	98.95%	108.94%	98.73%	96.61%
Benchmark ≥ 95%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%

Values above bars: 96.18% 96.10% 96.15% | 98.47% 98.46% 98.47% | 97.98% 97.99% 98.00% | 97.13% 97.13% 97.20% | 99.16% 99.16% 99.16% | 98.94% 98.94% 98.95% | 98.73% 98.73% 98.73% | 98.71% 98.71% 98.73% | 96.54% 96.54% 96.61%

15.6. 3G-PMR COMPARISON (TSP VS. AUDIT AGENCY): NETWORK PARAMETERS

3G-PMR Report Comparison between Audit Agency and TSP							
Network Parameters		**Name of Service Provider**					
		Benchmark		**AIRTEL**	**BSNL**	**RCOM**	**VODAFONE**
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	Agency	0.23%	1.35%	0.37%	0.22%
			TSP	0.25%	1.30%	0.37%	0.22%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	Agency	0.34%	1.76%	0.00%	0.80%
			TSP	0.22%	1.73%	1.11%	0.79%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	Agency	99.62%	98.30%	99.42%	99.90%
			TSP	99.61%	98.33%	99.42%	99.90%
	RRC Congestion:	≤ 1%	Agency	0.04%	0.48%	0.08%	0.00%
			TSP	0.04%	0.43%	0.08%	0.00%
	RAB Congestion:	≤ 2%	Agency	0.04%	0.46%	0.06%	0.01%
			TSP	0.04%	0.40%	0.06%	0.01%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	Agency	0.61%	1.26%	0.10%	0.24%
			TSP	0.59%	1.23%	0.10%	0.24%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	Agency	1.37%	2.44%	0.37%	2.87%
			TSP	1.40%	2.40%	0.37%	2.85%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	Agency	98.87%	97.41%	99.85%	98.90%
			TSP	98.87%	97.17%	99.85%	98.90%

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

	AIRTEL	BSNL	RCOM	VODAFONE
PMR Audit 3G Audit Agency	0.23%	1.35%	0.37%	0.22%
PMR Audit 3G TSP	0.25%	1.30%	0.37%	0.22%
3 Day Live Audit 3G	0.16%	1.37%	0.38%	0.21%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%

No. of BTSs having accumulated downtime of >24 hours in a month

	AIRTEL	BSNL	RCOM	VODAFONE
PMR Audit 3G Audit Agency	0.34%	1.76%	0.00%	0.80%
PMR Audit 3G TSP	0.22%	1.73%	1.11%	0.79%
3 Day Live Audit 3G	0.00%	0.14%	0.00%	0.02%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%

Call Set-up Success Rate (Within Licensee own network)

	AIRTEL	BSNL	RCOM	VODAFONE
PMR Audit 3G Audit Agency	99.62%	98.30%	99.42%	99.90%
PMR Audit 3G TSP	99.61%	98.33%	99.42%	99.90%
3 Day Live Audit 3G	99.62%	97.95%	99.88%	99.91%
Benchmark ≥ 95%	95.00%	95.00%	95.00%	95.00%

15.6.4. RRC CONGESTION

RRC Congestion

	AIRTEL	BSNL	RCOM	VODAFONE
PMR Audit 3G Audit Agency	0.04%	0.48%	0.08%	0.00%
PMR Audit 3G TSP	0.04%	0.43%	0.08%	0.00%
3 Day Live Audit 3G	0.02%	0.59%	0.01%	0.00%
Benchmark ≤ 1%	1.00%	1.00%	1.00%	1.00%

15.6.5. RAB CONGESTION

RAB Congestion

	AIRTEL	BSNL	RCOM	VODAFONE
PMR Audit 3G Audit Agency	0.04%	0.46%	0.06%	0.01%
PMR Audit 3G TSP	0.04%	0.40%	0.06%	0.01%
3 Day Live Audit 3G	0.02%	0.63%	0.01%	0.00%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%

15.6.6.   CIRCUIT SWITCHED VOICE DROP RATE

Circuit Switched Voice Drop Rate

	AIRTEL	BSNL	RCOM	VODAFONE
PMR Audit 3G Audit Agency	0.61%	1.26%	0.10%	0.24%
PMR Audit 3G TSP	0.59%	1.23%	0.10%	0.24%
3 Day Live Audit 3G	0.92%	1.66%	0.06%	0.25%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%

15.6.7.   WORST AFFECTED CELLS HAVING MORE THAN 3% CIRCUIT SWITCHED VOICE DROP RATE

Worst affected cells having more than 3% Circuit Switched Voice Drop Rate

	AIRTEL	BSNL	RCOM	VODAFONE
PMR Audit 3G Audit Agency	1.37%	2.44%	0.37%	2.87%
PMR Audit 3G TSP	1.40%	2.40%	0.37%	2.85%
3 Day Live Audit 3G	1.42%	2.56%	0.31%	2.73%
Benchmark ≤ 3%	3.00%	3.00%	3.00%	3.00%
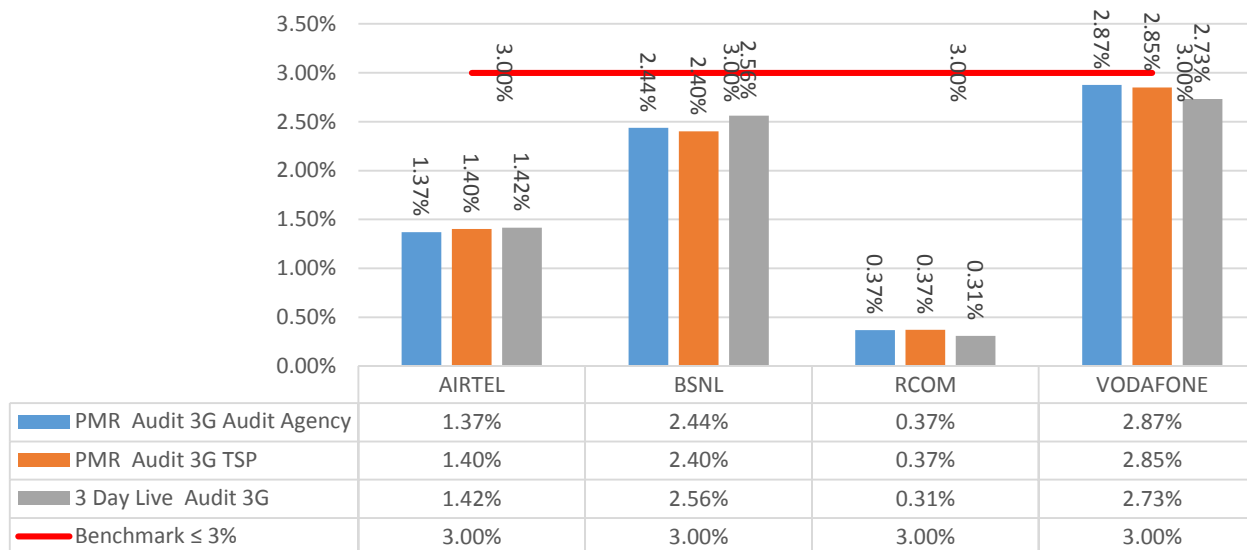
15.6.8.   PERCENTAGE OF CONNECTIONS WITH GOOD CIRCUIT SWITCHED VOICE QUALITY

Percentage of connections with Good Circuit Switched Voice Quality

	AIRTEL	BSNL	RCOM	VODAFONE
PMR Audit 3G Audit Agency	98.87%	97.41%	99.85%	98.90%
PMR Audit 3G TSP	98.87%	97.17%	99.85%	98.90%
3 Day Live Audit 3G	98.85%	96.89%	99.87%	98.91%
Benchmark ≥ 95%	95.00%	95.00%	95.00%	95.00%
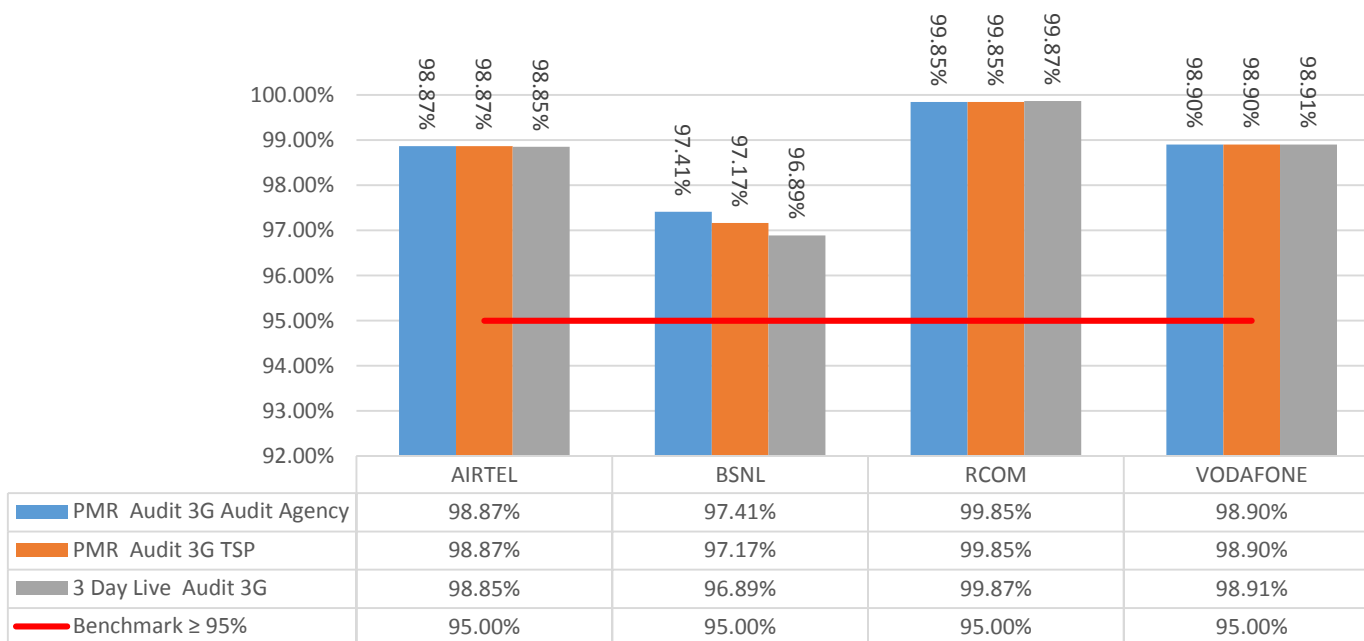
15.7. PMR COMPARISON (TSP VS. AUDIT AGENCY): CSD PARAMETERS

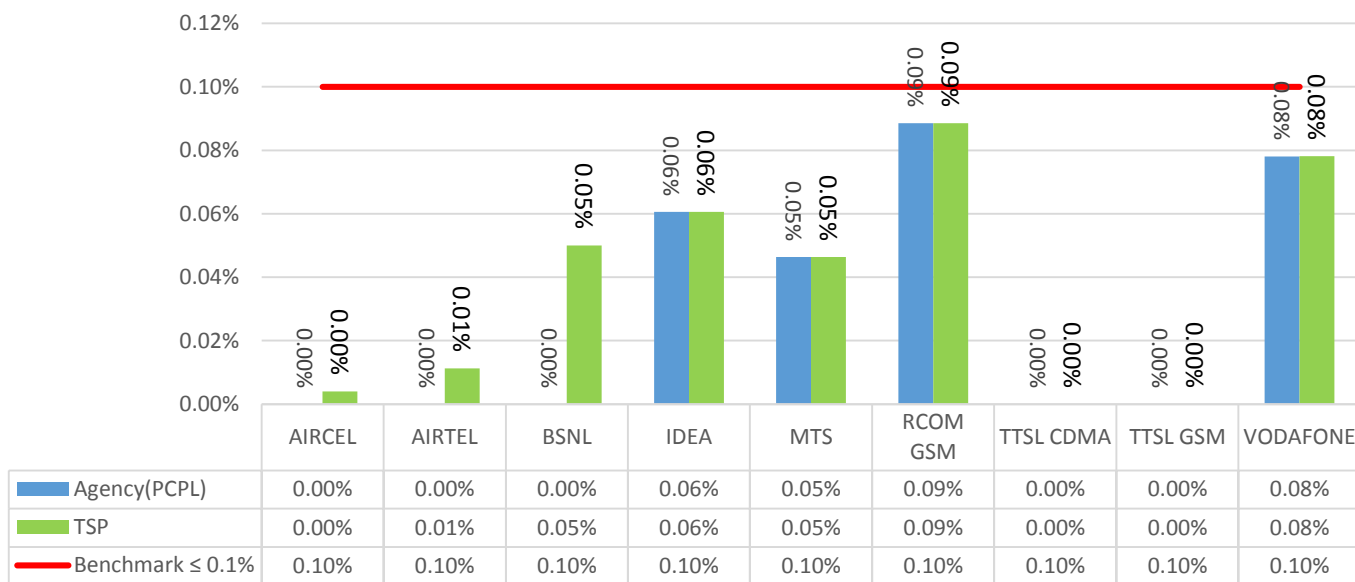| Name of Service Provider	Metering and Billing credibility				Billing Complaints						Termination & Closures		Time taken for refund of deposits after closures: Benchmark		Response time to customer for assistance			
	Postpaid Subscribers		Prepaid Subscribers		%age complaints resolved within 4 weeks		%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	DNA	0.00%	DNA	0.00%	DNA	100.00%	DNA	100.00%	DNA	100.00%	DNA	100.00%	DNA	100.00%	DNA	98.50%	DNA	95.96%
AIRTEL	DNA	0.01%	DNA	0.02%	DNA	100.00%	DNA	100.00%	DNA	100.00%	DNA	100.00%	DNA	100.00%	DNA	99.52%	DNA	97.37%
BSNL	DNA	0.05%	DNA	0.08%	DNA	99.87%	DNA	100.00%	DNA	100.00%	DNA	100.00%	DNA	100.00%	DNA	96.00%	DNA	99.75%
IDEA	0.06%	0.06%	0.18%	0.18%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	93.90%	100.00%	100.00%	100.00%	99.15%	99.15%	96.54%	99.71%
MTS	0.05%	0.05%	0.04%	0.04%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.95%	99.95%	97.08%	97.08%
RCOM GSM	0.09%	0.09%	0.10%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	94.96%	94.96%	99.44%	99.44%	95.64%	95.64%
TTSL CDMA	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%	NA	100.00%	99.63%	99.63%
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%	95.43%	95.43%	98.22%	98.22%
VODAFON	0.08%	0.08%	0.08%	0.08%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.97%	100.00%	100.00%	100.00%	98.77%	98.76%

15.7.1. METERING AND BILLING CREDIBILITY : POSTPAID

Metering and Billing Credibility : Postpaid

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Agency(PCPL)	0.00%	0.00%	0.00%	0.06%	0.05%	0.09%	0.00%	0.00%	0.08%
TSP	0.00%	0.01%	0.05%	0.06%	0.05%	0.09%	0.00%	0.00%	0.08%
Benchmark ≤ 0.1%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%

15.7.2. METERING AND BILLING CREDIBILITY : PREPAID

Metering and Billing Credibility : Prepaid

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Agency(PCPL)	0.00%	0.00%	0.00%	0.18%	0.04%	0.10%	0.00%	0.00%	0.08%
TSP	0.00%	0.02%	0.08%	0.18%	0.04%	0.09%	0.00%	0.00%	0.08%
Benchmark ≤ 0.1%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%
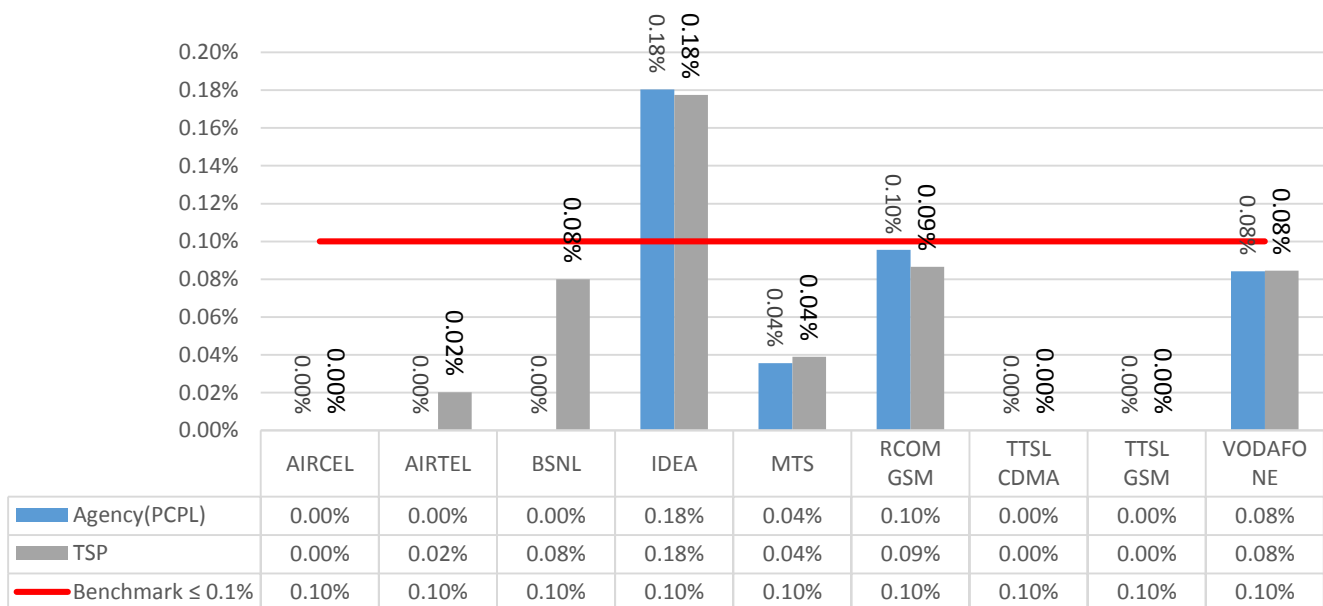
15.7.3. %AGE COMPLAINT RESOLVED WITHIN 4 WEEKS

%Age complaints resolved within 4 weeks

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAF ONE
Agency(PCPL)	0%	0%	0%	100%	100%	100%	100%	100%	100%
TSP	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark ≥ 98%	98%	98%	98%	98%	98%	98%	98%	98%	98%

15.7.4. %AGE COMPLAINTS RESOLVED WITHIN 6 WEEKS

%Age complaints resolved within 6 weeks

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Agency(PCPL)	0%	0%	0%	100%	100%	100%	100%	100%	100%
TSP	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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

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

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Agency(PCPL)	0%	0%	0%	100%	100%	100%	100%	100%	100%
TSP	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

15.7.6. %AGE OF CALLS ANSWERED BY THE IVR

%Age of calls answered by the IVR

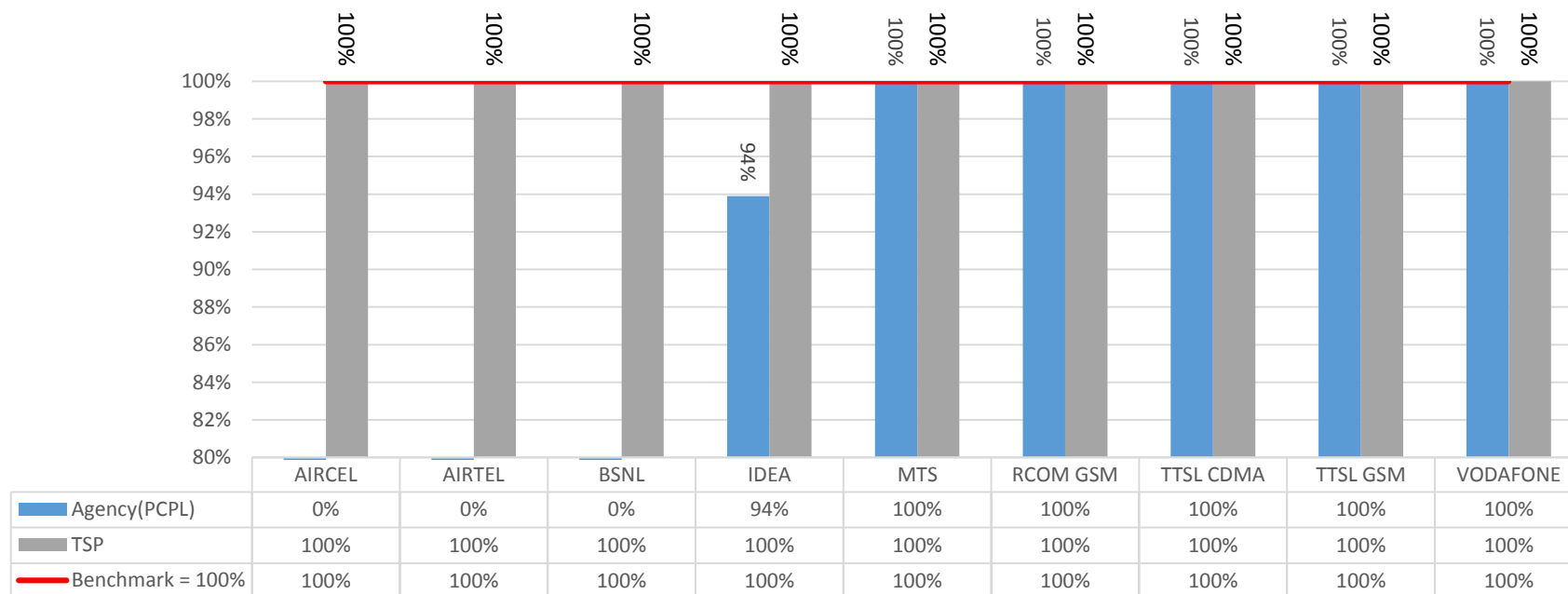|	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Agency(PCPL)	0.00%	0.00%	0.00%	99.15%	99.95%	99.44%	0.00%	95.43%	100%
TSP	98.50%	99.52%	96.00%	99.15%	99.95%	99.44%	100%	95.43%	100%
Live Calling	99%	0%	100%	100%	100%	99%	100%	100%	100%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

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

%Age of call answered by the operators (voice to voice) within 90 seconds

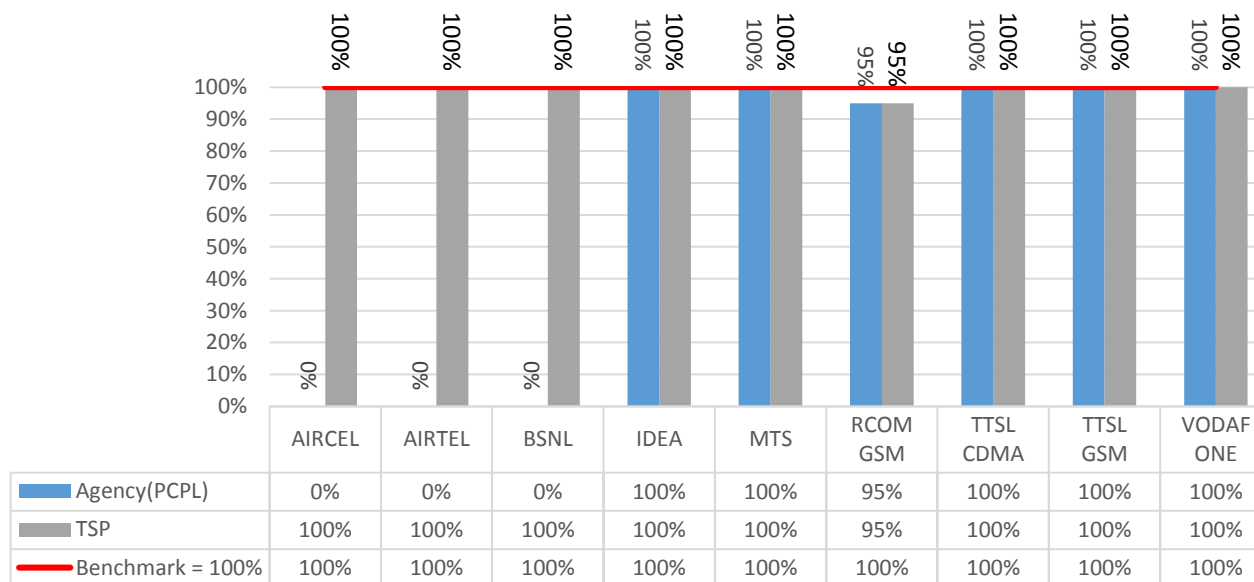|	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Agency(PCPL)	0.00%	0.00%	0.00%	96.54%	97.08%	95.64%	99.63%	98.22%	98.77%
TSP	95.96%	97.37%	99.75%	99.71%	97.08%	95.64%	99.63%	98.22%	98.76%
Live Calling	95.81%	0.00%	99.97%	95.24%	95.02%	93.38%	100%	99.53%	99.12%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
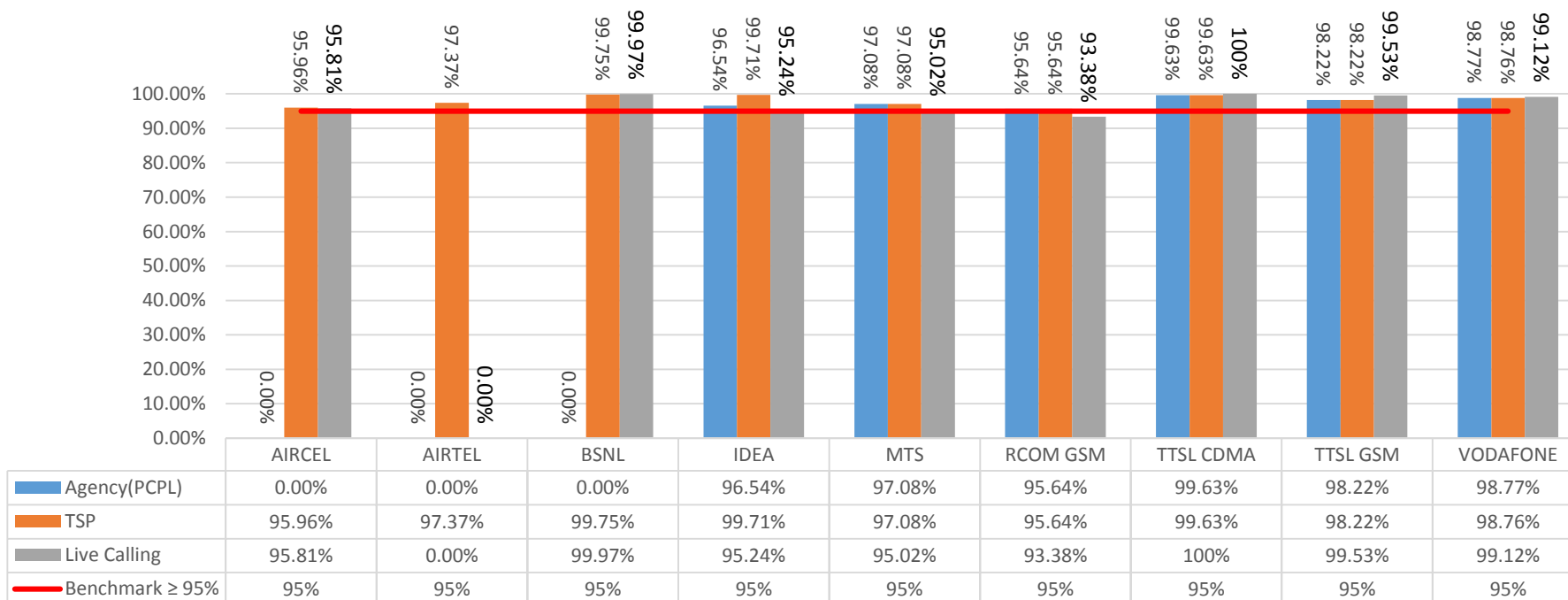
15.7.8. %AGE OF TERMINATION/CLOSURE OF SERVICE WITHIN 7 DAYS

%Age of Termination/ Closure of service within 7 days

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAFONE
Agency(PCPL)	0%	0%	0%	94%	100%	100%	100%	100%	100%
TSP	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

15.7.9. CLEARED OVER A PERIOD OF <60 DAYS

Cleared over a period of <60 days

	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM GSM	TTSL CDMA	TTSL GSM	VODAF ONE
Agency(PCPL)	0%	0%	0%	100%	100%	95%	100%	100%	100%
TSP	100%	100%	100%	100%	100%	95%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

16.2. 2G VOICE PMR - CONSOLIDATED

- No operator out of benchmark for any QoS parameter

16.3. 3G VOICE PMR - CONSOLIDATED

- No operator out of benchmark for any QoS parameter

16.4. BILLING AND CUSTOMER CARE

- AIRCEL has parameter value of 77.59% and failed to meet the benchmark of =100% time taken to refund after closure which should be cleared over <60 days.
- AIRCEL has parameter value of 92.28% and failed to meet the benchmark of ≥95% response time to customer assistance with %age of call answered by the operators (voice to voice) within 90 seconds
- AIRTEL has parameter value of 94.25% and failed to meet the benchmark of ≥95% response time to customer assistance with %age of call answered by the operators (voice to voice) within 90 seconds.
- BSNL has parameter value of 92.03% and failed to meet the benchmark of ≥95% response time to customer assistance with %age of call answered by the IVR.
- RCOM CDMA has parameter value of 91.22% and failed to meet the benchmark of ≥95% response time to customer assistance with %age of call answered by the operators (voice to voice) within 90 seconds.
- TTSL GSM has parameter value of 90.15% and failed to meet the benchmark of ≥95% response time to customer assistance with %age of call answered by the operators (voice to voice) within 90 seconds.