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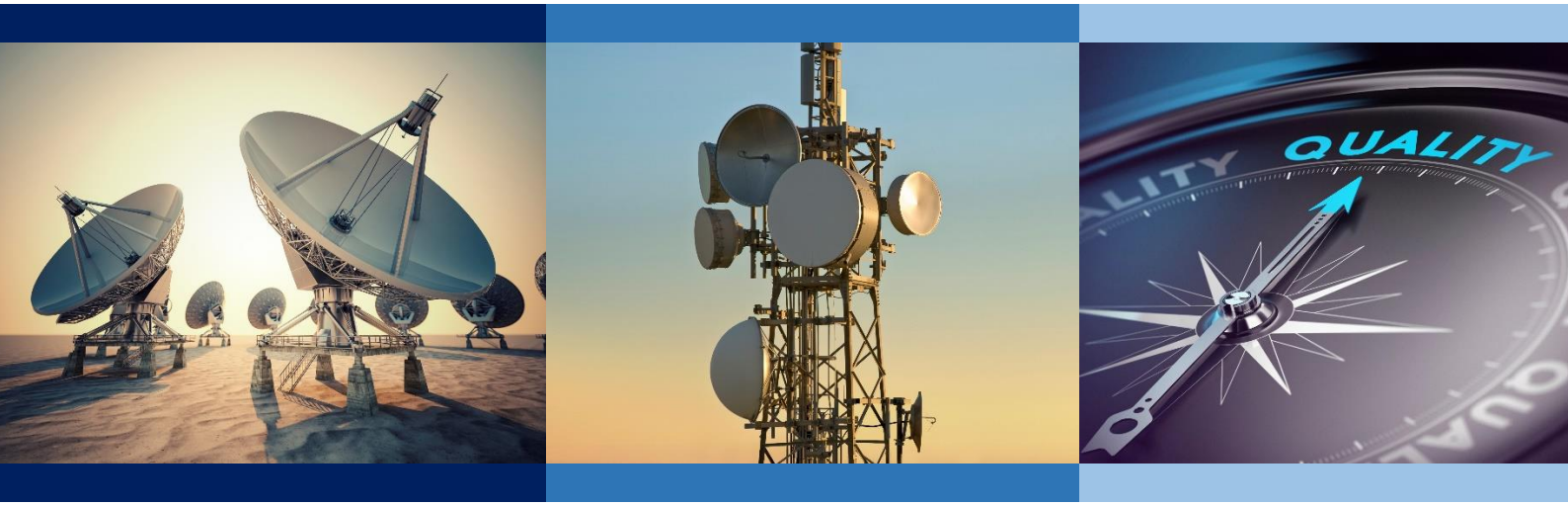
Telecom Regulatory Authority of India
(IS/ISO 9001-2008 Certified Organisation)



AUDIT & ASSESSMENT
OF
QUALITY OF SERVICE

NORTH ZONE – HARYANA CIRCLE
CELLULAR MOBILE TELEPHONE SERVICE
(CMTS)
(OCTOBER TO DECEMBER 2015)

PREPARED BY:

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1. INTRODUCTION

1.1. ABOUT TRAI

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

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

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

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

1.2. ABOUT PHISTREAM CONSULTING PRIVATE LIMITED

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

We have been helping our clients by determining the best solutions and enabling businesses to enjoy the benefits of top-notch support without distracting their team from the main business focus. Our business analysts have enough experience to get involved at the requirements 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 (Wireline), Cellular Mobile (Wireless), and Broadband 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 Haryana circle.

1.4. COVERAGE

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

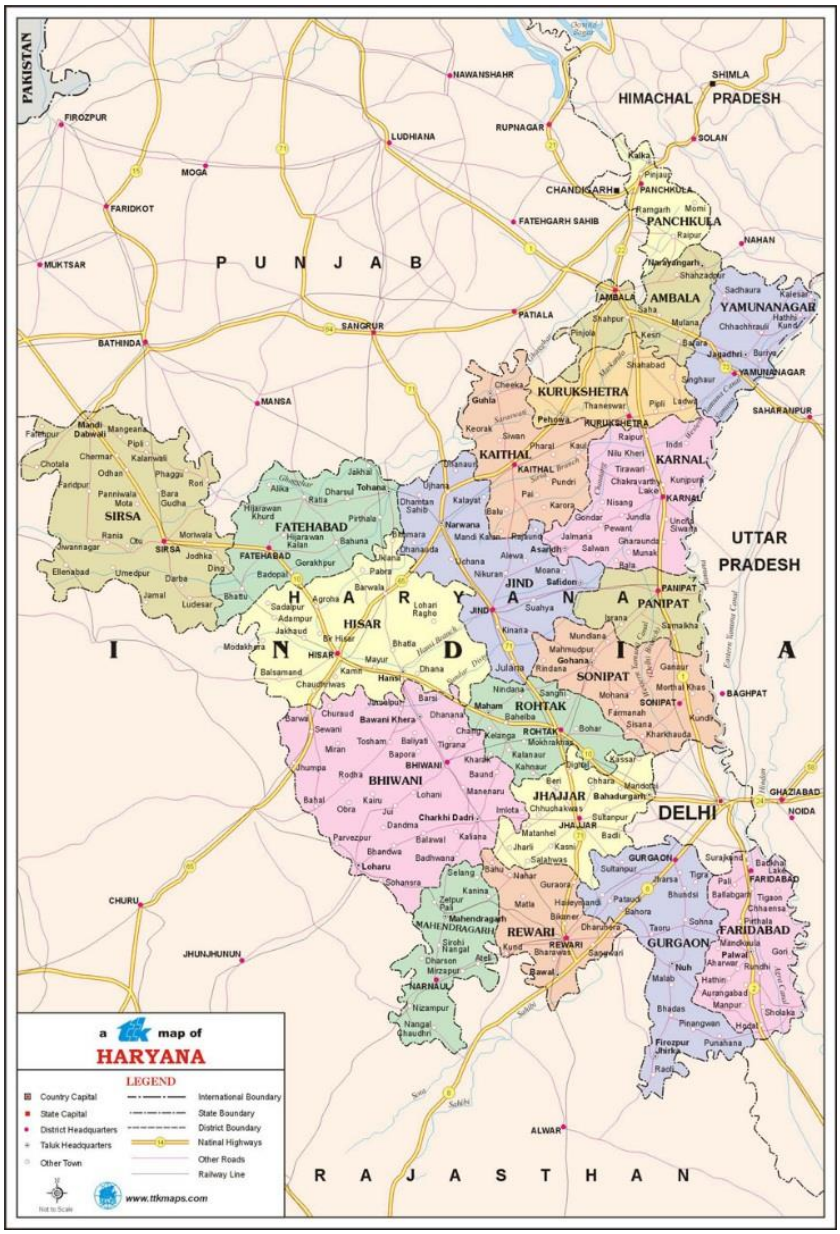


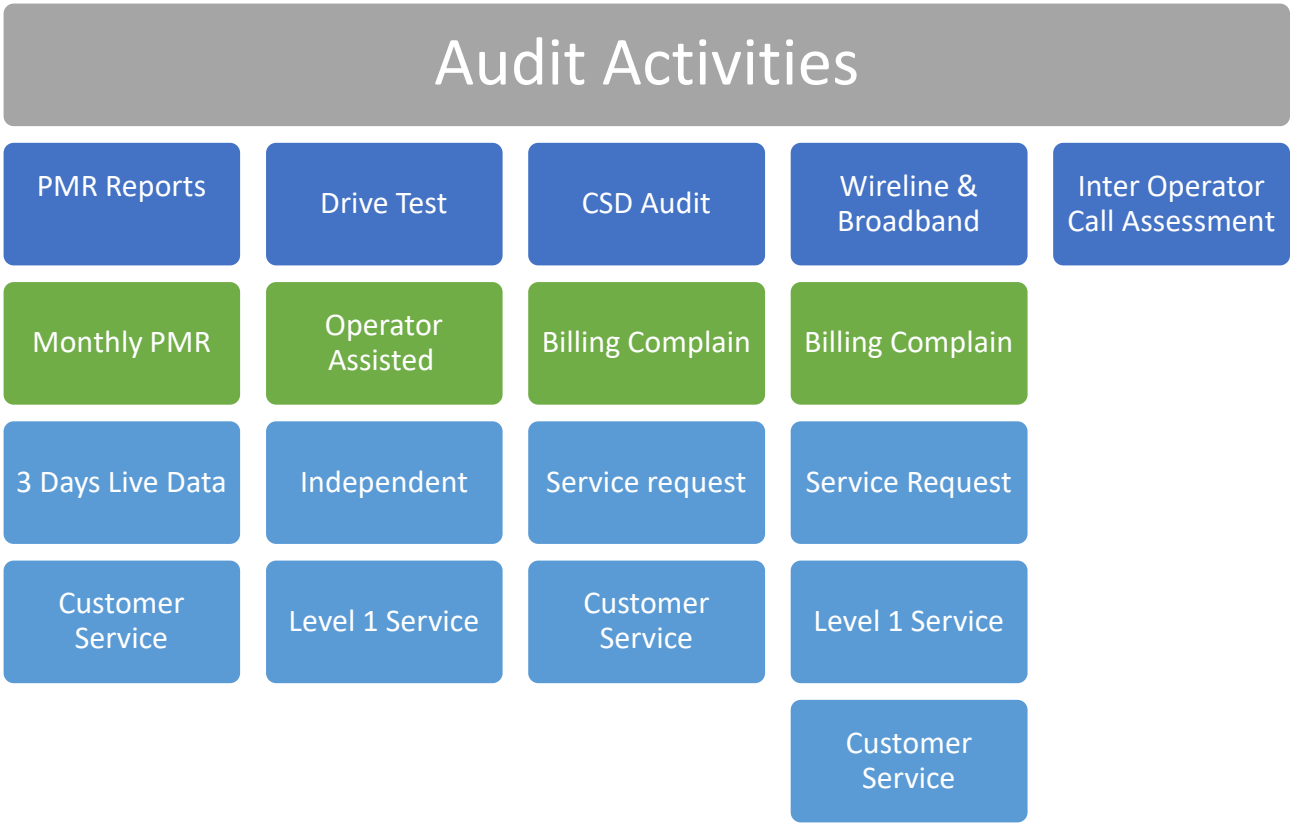
Image Source: TTK Maps

1.5. SSA LIST

S. No.	Circle	SSA Name	SDCA Name
1	HA	Ambala	Ambala
2	HA	Ambala	Barara
3	HA	Ambala	Chaaharauli
4	HA	Ambala	Jagadhari
5	HA	Ambala	Kalka
6	HA	Ambala	Naraingarh
7	HA	Gurgaon	Faridabad
8	HA	Gurgaon	Ferojpur
9	HA	Gurgaon	Gurgaon
10	HA	Gurgaon	Nuh
11	HA	Gurgaon	Palwal
12	HA	Hissar	Adampur mandi
13	HA	Hissar	Barwala
14	HA	Hissar	Dabwali
15	HA	Hissar	Ellenabad
16	HA	Hissar	Fatehabad
17	HA	Hissar	Hansi
18	HA	Hissar	Hissar
19	HA	Hissar	Kalanwali
20	HA	Hissar	Ratia
21	HA	Hissar	Sirsa
22	HA	Hissar	Tohana
23	HA	Jind	Jind
24	HA	Jind	Julana
25	HA	Jind	Narwana
26	HA	Jind	Safidon
27	HA	Karnal	Assandh
28	HA	Karnal	Cheeka
29	HA	Karnal	Gharaunda
30	HA	Karnal	Kaithal
31	HA	Karnal	Karnal
32	HA	Karnal	Kurukshetra
33	HA	Karnal	Nilokheri
34	HA	Karnal	Panipat
35	HA	Karnal	Pehowa
36	HA	Narnaul	Bawal
37	HA	Narnaul	Jatusana
38	HA	Narnaul	Kosli
39	HA	Narnaul	Mohindergarh
40	HA	Narnaul	Narnaul
41	HA	Narnaul	Rewari
42	HA	Rohtak	Bahadurgarh
43	HA	Rohtak	Bawanikhera
44	HA	Rohtak	Bhiwani
45	HA	Rohtak	Charkhidadri
46	HA	Rohtak	Jhajjar
47	HA	Rohtak	Kalanaur

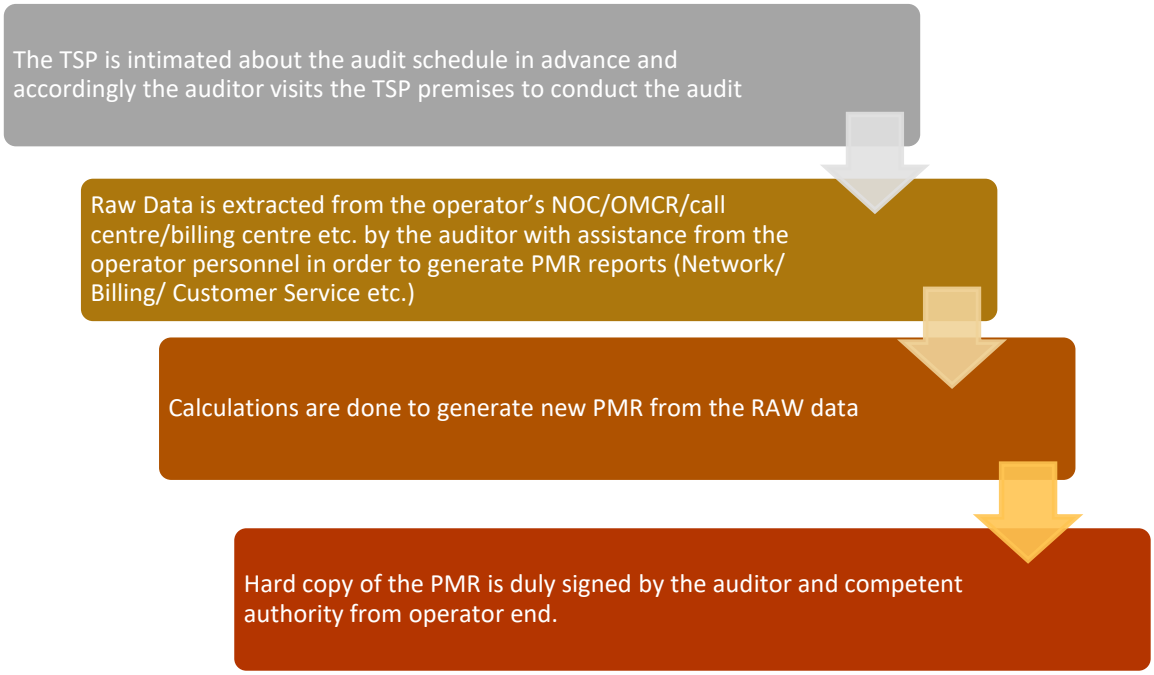
48	HA	Rohtak	Loharu
49	HA	Rohtak	Meham
50	HA	Rohtak	Rohtak
51	HA	Rohtak	Siwani
52	HA	Rohtak	Tohsham
53	HA	Sonipat	Gohana
54	HA	Sonipat	Sonipat

1.6. FRAMEWORK USED



2. PMR REPORTS

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



The PMR report for network parameters is taken for each month of the audit quarter and is extracted and verified in the first week of the subsequent month of the audit month. For example, October 2015 audit data was collected in the month of November 2015.

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 December 2015 was collected in the month of December 2015.

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

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

Let us understand these formats in details.

2.1. MONTHLY PMR

This involved calculation of the various Quality of Service network parameters through monthly Performance Monitoring Reports (PMR). The PMR reports were generated from the data extracted from operator's systems by the auditor with the assistance of the operator at the operator's premises for the month of October, November and December 2015. 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

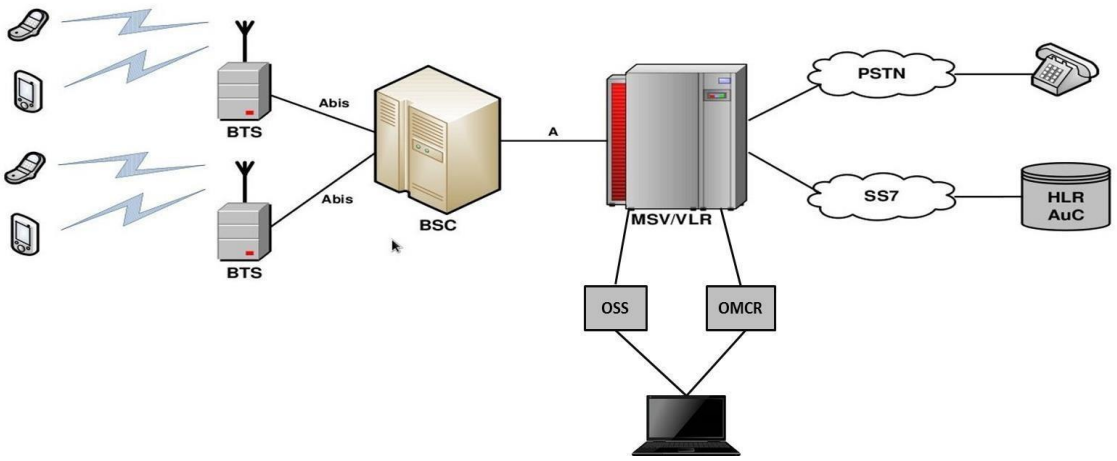
2.2. AUDIT PARAMETER: NETWORK

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

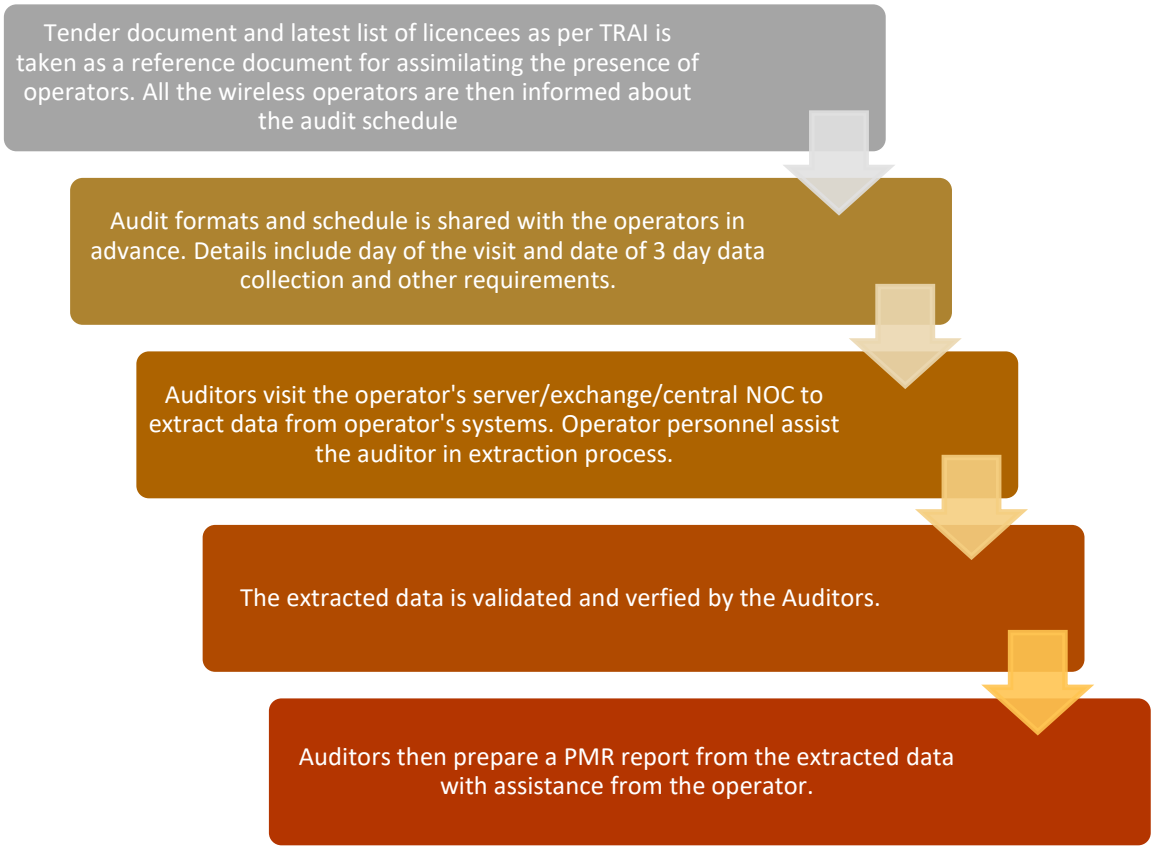
Network Availability	
BTSs Accumulated downtime (not available for service)	≤ 2%
Worst affected BTSs due to downtime	≤ 2%
Connection Establishment (Accessibility)	
Call Set-up Success Rate (within licensee's own network)	≥ 95%
SDCCH/ Paging Channel Congestion	≤ 1 %
TCH Congestion	≤ 2%
Connection Maintenance (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



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% TCH drop	Total number of cells having more than 3% TCH drop during CBBH/ Total number of cells in the LSA x 100
Connections with good voice quality	No. of voice samples with good voice quality / Total number of samples x 100

2.6. 3G VOICE

S. No.	Name of Parameter	Definition	Formula	Benchmark
1	Network Availability			
a.	Total no. of Node B's in LSA	Total no. of Node B's Licensed in LSA		
b.	Total downtime of all Node B's	When all the sector(s) of a Node B's are down for > 60 minutes at an instant in a whole day		
c.	No. of Worst Affected Node B's	Node B'ss having more than 24 hours of Downtime in 3 Days	No. of Node B's having accumulated downtime of >24 hours in a month ((No. of Node B's having Accumulated Downtime of > 24 hrs in a month) / Total no. of BTSs in the licensed service area)*100	*<=2%*
d.	Node B's accumulated downtime	Node B's downtime more than 24 hr in 3 days	Total no. of Node B's in the Licensed Service Area Sum of downtime of Node B's in a month in hours i.e. total outage time of all Node B's in hours in a month [(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%*
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 Total No. of Voice Call Establishment CSSR (Call Setup Success Rate = (Total No. of Voice Call Attempts/ Total No. of Voice Call Establishment)*100)	*>=95%*
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) RRC Failed (RRC Connection Access Failed) (B) RRC Congestion (%) [B/A]*100	*<=1%*
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) RAB Failed (RAB Setup Access Failed) (D) RAB Congestion (%) [D/C]*100	*<=2%*
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) Calls Dropped after Establishment (B) Call Drop Rate [B/A]*100	*<=2%*
b.			Total No. of Cells (Sector)	*<=3%*

	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	It is the % of total no. of Cells having > 3% Circuit Switched Voice drop to the total no. cells	Total No. of Cells exceeding 3% Circuit Switched Voice Drop Rate in CBBH (Cell Bouncing Busy Hour) % of cells having more than 3% Circuit Switched Voice Drop Rate [(No. of cells having Circuit Switched Voice Drop Rate > 3% during CBBH in 31 days*100) / Total no. of cells in the licensed service area]	
c.	Percentage of connections with Good Circuit Switched Voice Quality	It can be defined as the % of Good Voice Quality Samples to the total No. of Quality Samples	Percentage of connection with Good Circuit Switched Voice Quality	*>=95%*
4	Total No. of POI's in Month having >=0.5% POI congestion	Total no. Of POI's which are exceeding the POI congestion more than 0.5 %.	Total No. of call attempts on POI 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)	<=0.5%

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) Total Service Activations provided within 4 Hours (B) Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*
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) Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B) PDP Context Activation Success Rate =(B/A) *100	>=95%
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) RNC originated PS Domain Iu Connection Release (B) Drop Rate = (B/A) * 100	<=5%

3. 3 DAYS LIVE DATA

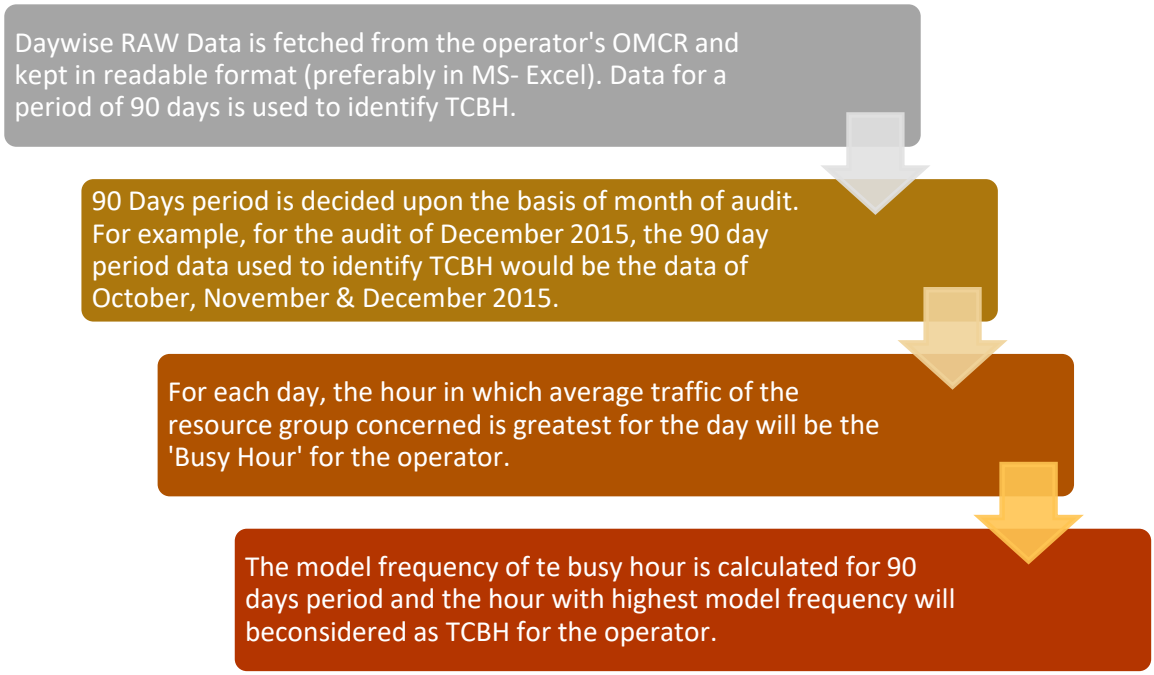
The main purpose of 3 day live measurement is to evaluate the network parameters on intraday basis. While the monthly PMR report provides an overall view of the performance of QoS parameters, the 3 day live data helps looking at intraday performance on the network parameters discussed earlier. All the 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 Q0S 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.



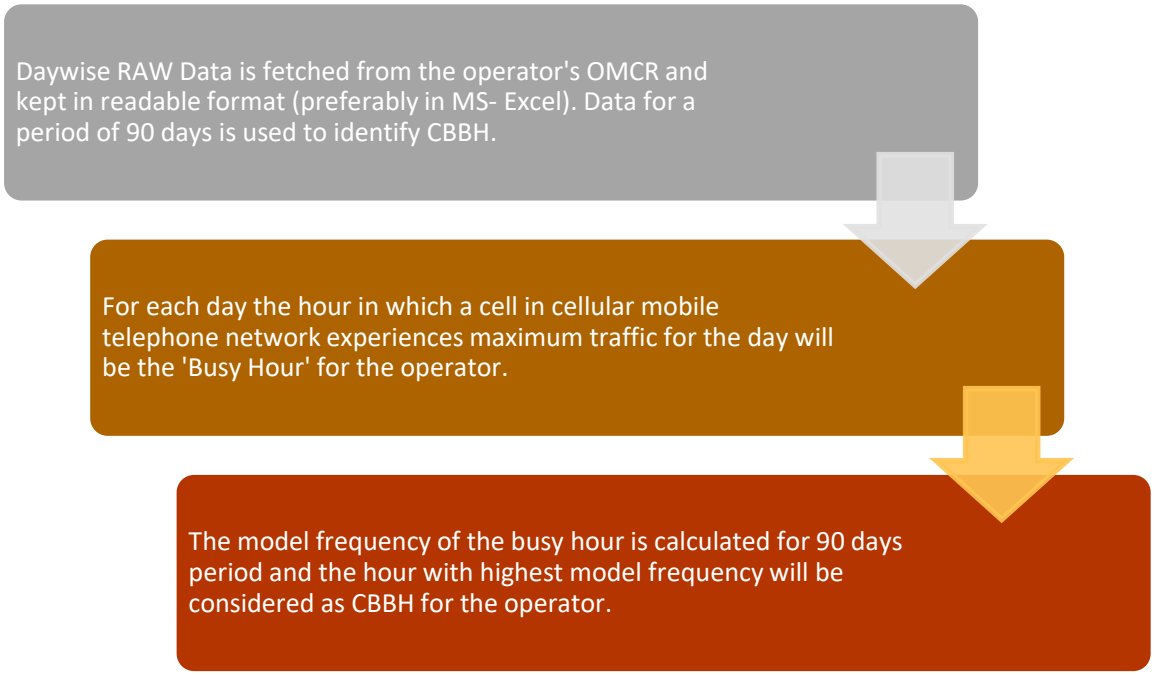
During audit, the auditors identified from the raw data that the TCBH for the operators in Oct – Nov – Dec 2015 was the time period as given below:

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

3.2. CBBH: Significance and Selection Methodology

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

Step by step procedure to identify CBBH for an operator:



4. CUSTOMER SERVICE PARAMETERS

The data to generate PMR report for customer service parameters is extracted at the operator premises and verified once every quarter in the subsequent month of the last month of the quarter. For example, data for quarter ending December 2015 was collected in the month of December 2015. 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.

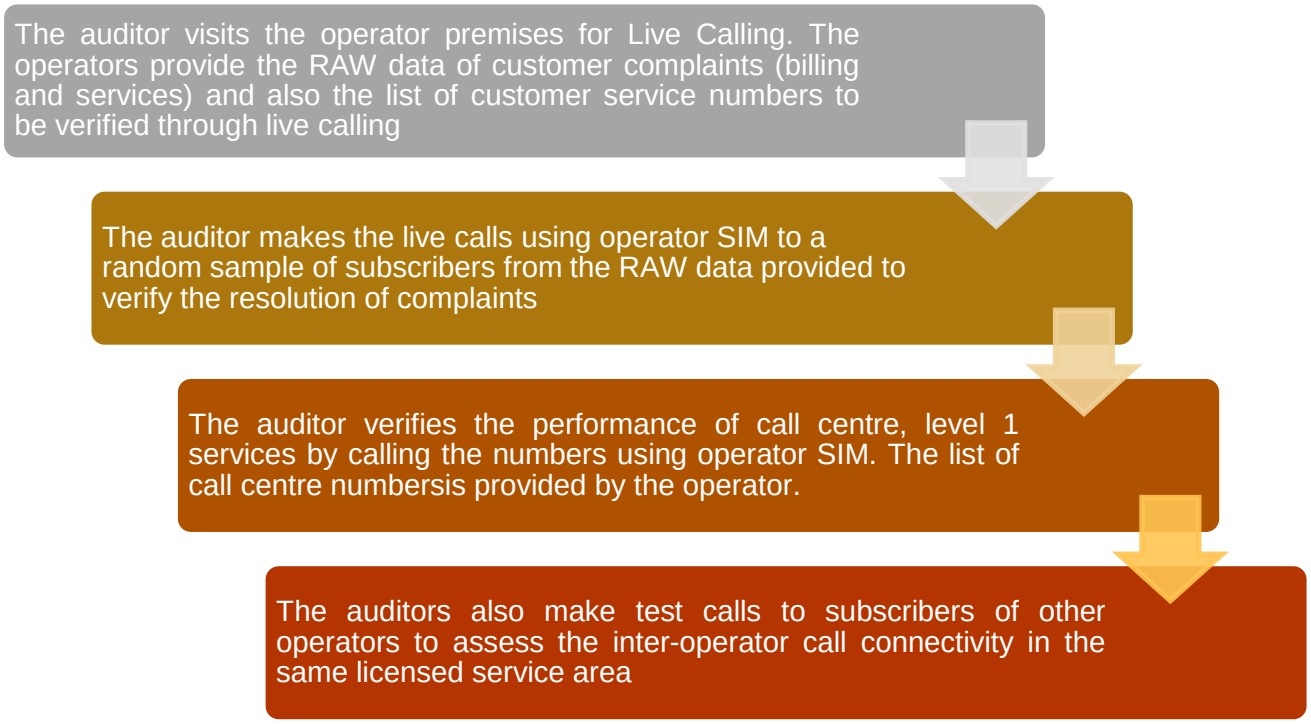
4.1. AUDIT PARAMETERS: CUSTOMER SERVICE

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



Live calling activity was carried out during the period of December 2015. 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 October 2015 was considered for live calling activity conducted in November 2015.
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.

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 October, November and December'15, auditor has tried contacting the list of Level 1 services provided by TRAI as per the NNP (National Numbering Plan).

4.6.1. PROCESS TO TEST LEVEL 1 SERVICE

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

L1 Number Details
100 Police
101 Fire
102 Ambulance
104 Health Information Helpline

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

4.7. 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.

4.8. 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	Reliance GSM	Reliance CDMA	TTSL CDMA	TTSL GSM	Videocon	Vodafone
Aircel	-	99%	99%	99%	99%	98%	99%	99%	99%	99%
Airtel	99%	-	98%	99%	98%	99%	98%	99%	100%	100%
BSNL	98%	100%	-	98%	100%	98%	97%	99%	100%	98%
Idea	100%	100%	100%	-	100%	98%	99%	99%	98%	100%
Reliance GSM	98%	97%	97%	98%	-	100%	99%	99%	98%	98%
Reliance CDMA	98%	98%	97%	99%	99%	-	100%	99%	98%	99%
TTSL CDMA	100%	99%	99%	100%	98%	99%	-	99%	97%	100%
TTSL GSM	97%	100%	99%	99%	98%	99%	99%	-	100%	100%
Videocon	100%	99%	99%	97%	100%	100%	97%	100%	-	99%
Vodafone	98%	96%	98%	98%	100%	99%	99%	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

Haryana circle consist of total 8 SSA's and each SSA needs to be audit in the span of 12 months. The methodology adopted for the drive test:

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

5.2. INDEPENDENT DRIVE TEST

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

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

5.3. PARAMETERS EVALUATED DURING DRIVE TEST

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

- Coverage-Signal strength (GSM)
  - Total calls made (A)
  - Number of calls with signal strength between 0 to -75 dBm
  - Number of calls with signal strength between 0 to -85 dBm
  - Number of calls with signal strength between 0 to -95 dBm
- Coverage-Signal strength (CDMA)
  - Total Ec/Io BINS (A)
  - Total Ec/Io BINS with less than –15 (B)
  - Low Interference = [1 - (B/A)] 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 objective assessment of Quality of Service (QoS) carried out gives an insight into the overall performance of various operators in the Haryana Circle, with a parameter wise performance evaluation as compared to TRAI benchmark.

6.1. OPERATORS COVERED

Name of Operator	Number of Subscriber (Up to December 31, 2015)
BSNL	3067868
Airtel	2529358
Aircel	3092
Idea	8775409
Reliance (CDMA & GSM)	2008447
Vodafone	5061184
Tata (CDMA & GSM)	2808972
Videocon	1839772

TSP	No. of Cells	BTS	BSC	MSC+GMSC	Node B	RNC
Aircel	84	28	1	DNA	NA	NA
Airtel	8779	2922	25	5	NA	NA
Idea	10157	3341	30	5+1	2156	3
TTSL GSM	5077	1679	12	2+1	1104	3
TTSL CDMA	1132	383	5	2+2	NA	NA
RCOM GSM	2687	897	NA	1	NA	NA
RCOM CDMA	1653	551	NA	2+1	NA	NA
Vodafone	9488	3132	45	5+2	1889	4
BSNL	6289	2102	29	7+2	455	8
Videocon	4367	1423	8	1	NA	NA

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

6.2. AUDIT SCHEDULE

Haryana Circle				
Operator	**3 Days Live (October 2015)**	**October 2015**	**November 2015**	**December 2015**
Airtel	29th Oct 2015	7th Nov 2015	15th Dec 2015	12th Jan 2016
Vodafone	27th Oct 2015	6th Nov 2015	7th Dec 2015	5th Jan 2016
Idea	19th Oct 2015	6th Nov 2015	14th Dec 2015	11th Jan 2016
Reliance	26th Oct 2015	5th Nov 2015	8th Dec 2015	6th Jan 2016
BSNL	31st Oct 2015	18th Nov 2015	10th Dec 2015	8th Jan 2016
Aircel	20th Oct 2015	9th Nov 2015	14th Dec 2015	13th Jan 2016
Tata Teleservices	28th Oct 2015	10th Nov 2015	8th Dec 2015	6th Jan 2016
Videocon	5th Nov 2015	16th Nov 2015	9th Dec 2015	7th Jan 2016

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
NA	Not Applicable
DNA	Data not available (at TSP premises)

6.3. 2G VOICE PMR DATA: OCTOBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of BTSs in a month in hrs. in the licensed service area	No. of BTSs having accumulated downtime of >24 hours in a month	Call Set-up Success Rate (Within License own network	SDDCH/Paging chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Worst Affected cell having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	0.19%	0.00%	99.31%	0.00%	0.00%	1.81%	3.57%	98.86%
Airtel	0.06%	0.03%	98.70%	0.45%	0.47%	0.57%	1.07%	98.69%
BSNL	1.06%	1.34%	97.78%	0.16%	0.96%	1.54%	2.23%	DNA
Idea	0.01%	0.00%	98.53%	0.50%	0.64%	0.64%	2.16%	97.86%
RCOM CDMA	0.21%	1.09%	97.55%	0.00%	1.16%	0.09%	0.56%	99.77%
RCOM GSM	0.08%	0.78%	97.38%	0.16%	0.08%	0.09%	0.48%	99.61%
TTSL CDMA	0.22%	0.00%	96.50%	0.00%	0.52%	0.71%	7.16%	DNA
TTSL GSM	0.35%	0.00%	98.88%	0.10%	1.13%	0.72%	2.97%	97.03%
Videocon	0.12%	0.00%	98.64%	0.19%	0.11%	0.54%	0.65%	97.12%
Vodafone	0.02%	0.00%	99.55%	0.18%	0.45%	0.64%	1.80%	97.66%

- AIRCEL has parameter value of **3.57%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.
- TTSL CDMA has parameter value of **7.16%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

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

6.4. 2G VOICE PMR DATA: NOVEMBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of BTSs in a month in hrs. in the licensed service area	No. of BTSs having accumulated downtime of >24 hours in a month	Call Set-up Success Rate (Within License own network	SDDCH/Paging chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Worst Affected cell having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	0.10%	0.00%	98.73%	0.00%	0.00%	1.00%	0.80%	99.18%
Airtel	0.07%	0.10%	98.73%	0.30%	0.41%	0.67%	1.33%	98.54%
BSNL	0.96%	1.29%	97.91%	0.24%	0.85%	1.38%	1.82%	DNA
Idea	0.01%	0.00%	98.51%	0.38%	0.61%	0.66%	2.10%	97.83%
RCOM CDMA	0.20%	0.73%	97.60%	0.00%	1.16%	0.07%	0.35%	99.81%
RCOM GSM	0.11%	1.11%	99.74%	0.11%	0.04%	0.06%	0.51%	99.62%
TTSL CDMA	0.09%	0.00%	96.29%	0.00%	1.39%	0.65%	5.40%	95.99%
TTSL GSM	0.13%	0.54%	98.32%	0.07%	0.72%	0.64%	2.80%	96.92%
Videocon	0.07%	0.00%	98.70%	0.10%	0.09%	0.54%	0.60%	97.34%
Vodafone	0.02%	0.00%	99.74%	0.12%	0.26%	0.64%	2.08%	97.74%

- TTSL CDMA has parameter value of **5.40%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

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

6.5. 2G VOICE PMR DATA: DECEMBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of BTSs in a month in hrs. in the licensed service area	No. of BTSs having accumulated downtime of >24 hours in a month	Call Set-up Success Rate (Within License own network	SDDCH/Paging chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Wost Affected cell having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	0.23%	0.00%	100.00%	0.00%	0.00%	0.00%	0.15%	99.40%
Airtel	0.06%	0.10%	98.77%	0.70%	0.50%	0.77%	1.20%	98.37%
BSNL	0.91%	1.28%	98.23%	0.38%	0.72%	1.11%	1.26%	DNA
Idea	0.00%	0.00%	98.55%	0.24%	0.45%	0.64%	1.95%	98.05%
RCOM CDMA	0.24%	1.63%	97.67%	0.00%	1.17%	0.08%	0.36%	99.71%
RCOM GSM	0.11%	1.00%	99.53%	0.23%	0.04%	0.07%	0.45%	99.51%
TTSL CDMA	0.13%	0.00%	95.31%	0.00%	1.09%	0.64%	5.53%	97.34%
TTSL GSM	0.11%	0.30%	98.93%	0.05%	0.22%	0.65%	2.76%	97.06%
Videocon	0.12%	0.14%	98.82%	0.08%	0.06%	0.47%	0.48%	97.52%
Vodafone	0.02%	0.00%	99.73%	0.14%	0.27%	0.64%	1.79%	97.82%

- TTSL CDMA has parameter value of **5.53%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

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

6.6. 2G VOICE PMR DATA: CONSOLIDATED

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of BTSs in a month in hrs. in the licensed service area	No. of BTSs having accumulated downtime of >24 hours in a month	Call Set-up Success Rate (Within License own network	SDDCH/Paging chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Wost Affected cell having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	0.17%	0.00%	99.35%	0.00%	0.00%	0.94%	1.51%	99.15%
Airtel	0.06%	0.08%	98.73%	0.48%	0.46%	0.67%	1.20%	98.53%
BSNL	0.98%	1.30%	97.96%	0.26%	0.95%	1.34%	1.77%	DNA
Idea	0.01%	0.00%	98.53%	0.38%	0.57%	0.64%	2.07%	97.91%
RCOM CDMA	0.22%	1.15%	97.61%	0.00%	1.16%	0.08%	0.42%	99.76%
RCOM GSM	0.10%	0.97%	98.89%	0.17%	0.05%	0.07%	0.48%	99.58%
TTSL CDMA	0.15%	0.00%	96.03%	0.00%	1.00%	0.67%	6.03%	96.82%
TTSL GSM	0.20%	0.28%	98.71%	0.07%	0.69%	0.67%	2.84%	97.00%
Videocon	0.10%	0.05%	98.72%	0.13%	0.09%	0.52%	0.57%	97.33%
Vodafone	0.02%	0.00%	99.67%	0.15%	0.33%	0.64%	1.89%	97.74%

- TTSL CDMA has parameter value of **6.03%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.
- **For each instance of “DNA (Data Not Available)”, please refer the respective hard copy of audit report(s).

6.7. 2G VOICE 3 DAYS LIVE DATA

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

6.8. 2G VOICE 3 DAYS LIVE DATA: OCTOBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of BTSs in a month in hrs. in the licensed service area	No. of BTSs having accumulated downtime of >24 hours in a month	Call Set-up Success Rate (Within License own network	SDDCH/Paging chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Worst Affected cell having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	0.00%	0.00%	99.07%	0.00%	0.00%	0.47%	1.98%	99.52%
Airtel	0.03%	0.00%	98.86%	0.33%	0.38%	0.55%	0.82%	98.69%
BSNL	1.61%	0.15%	98.29%	0.16%	0.80%	1.59%	2.10%	DNA
Idea	0.01%	0.00%	98.51%	0.21%	0.68%	0.65%	1.95%	97.84%
RCOM CDMA	0.22%	0.00%	97.50%	0.00%	1.14%	0.08%	0.30%	99.44%
RCOM GSM	0.09%	0.00%	99.86%	0.11%	0.01%	0.06%	0.52%	99.42%
TTSL CDMA	0.45%	0.00%	95.96%	0.00%	0.05%	0.67%	6.41%	DNA
TTSL GSM	0.16%	0.00%	98.07%	0.04%	0.85%	0.56%	2.77%	96.88%
Videocon	0.06%	0.00%	98.65%	0.15%	0.10%	0.65%	0.87%	97.08%
Vodafone	0.02%	0.00%	99.66%	0.16%	0.34%	0.58%	1.47%	97.64%

- TTSL CDMA has parameter value of **6.41%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.
- **For each instance of "DNA (Data Not Available)", please refer the respective hard copy of audit report(s).

6.9. 2G VOICE 3 DAYS LIVE DATA: NOVEMBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of BTSs in a month in hrs. in the licensed service area	No. of BTSs having accumulated downtime of >24 hours in a month	Call Set-up Success Rate (Within License own network	SDDCH/Paging chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Worst Affected cell having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	0.00%	0.00%	99.55%	0.00%	0.00%	2.73%	2.78%	98.66%
Airtel	0.05%	0.00%	98.65%	0.32%	0.44%	0.63%	1.37%	98.69%
BSNL	1.41%	0.49%	98.55%	0.04%	0.10%	0.58%	1.52%	DNA
Idea	0.00%	0.00%	98.52%	0.49%	0.42%	0.62%	2.18%	97.87%
RCOM CDMA	0.24%	0.00%	97.60%	0.00%	1.15%	0.07%	0.50%	99.55%
RCOM GSM	0.10%	0.00%	99.62%	0.12%	0.03%	0.06%	0.36%	99.36%
TTSL CDMA	0.10%	0.00%	96.68%	0.00%	0.89%	0.62%	6.57%	DNA
TTSL GSM	0.12%	0.00%	98.33%	0.04%	0.66%	0.60%	2.77%	96.79%
Videocon	0.06%	0.00%	98.65%	0.15%	0.10%	0.65%	0.90%	97.08%
Vodafone	0.01%	0.00%	99.78%	0.09%	0.22%	0.65%	2.14%	97.58%

- TTSL CDMA has parameter value of **6.57%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.
- Aircel has parameter value of **2.73%** and failed to meet the benchmark for Call Drop Rate (%age) as it is predefined at ≤ 2%.
- **For each instance of “DNA (Data Not Available)”, please refer the respective hard copy of audit report(s).

6.10. 2G VOICE 3 DAYS LIVE DATA: DECEMBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of BTSs in a month in hrs. in the licensed service area	No. of BTSs having accumulated downtime of >24 hours in a month	Call Set-up Success Rate (Within License own network	SDDCH/Paging chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Worst Affected cell having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	0.45%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	92.88%
Airtel	0.02%	0.00%	98.65%	0.61%	0.56%	0.75%	1.20%	98.39%
BSNL	2.09%	0.48%	98.20%	0.24%	0.75%	1.17%	1.67%	DNA
Idea	0.00%	0.00%	98.59%	0.32%	0.50%	0.71%	1.60%	98.13%
RCOM CDMA	0.34%	0.00%	97.59%	NA	1.16%	0.12%	0.42%	99.68%
RCOM GSM	0.11%	0.00%	99.96%	0.05%	0.02%	0.06%	0.46%	99.53%
TTSL CDMA	0.10%	0.00%	95.45%	NA	1.15%	0.74%	4.80%	DNA
TTSL GSM	0.07%	0.00%	99.01%	0.05%	0.30%	0.74%	2.78%	97.08%
Videocon	0.14%	0.00%	98.74%	0.17%	0.06%	0.49%	0.53%	97.56%
Vodafone	0.02%	0.00%	99.81%	0.07%	0.19%	0.62%	1.80%	97.79%

- Aircel has parameter value of **92.88%** and failed to meet the benchmark for %age of connection with good voice quality as it is pre-defined at ≥95%.
- BSNL has parameter value of **2.09%** and failed to meet the benchmark for Sum of downtime of BTSs in a month in hrs. in the licensed service area as it is predefined at ≤ 2%.
- TTSL CDMA has parameter value of **4.80%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is predefined at ≤ 2%.
- **For each instance of “DNA (Data Not Available)”, please refer the respective hard copy of audit report(s).

6.11. 3 DAYS LIVE DATA: CONSOLIDATED

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of BTSs in a month in hrs. in the licensed service area	No. of BTSs having accumulated downtime of >24 hours in a month	Call Set-up Success Rate (Within License own network	SDDCH/Paging chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Wost Affected cell having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	0.15%	0.00%	99.54%	0.00%	0.00%	1.07%	1.59%	97.02%
Airtel	0.03%	0.00%	98.72%	0.42%	0.46%	0.64%	1.13%	98.59%
BSNL	1.70%	0.37%	98.35%	0.15%	0.55%	1.11%	1.76%	DNA
Idea	0.00%	0.00%	98.54%	0.34%	0.54%	0.66%	1.91%	97.94%
RCOM CDMA	0.27%	0.00%	97.56%	0.00%	1.15%	0.09%	0.41%	99.56%
RCOM GSM	0.10%	0.00%	99.81%	0.09%	0.02%	0.06%	0.45%	99.44%
TTSL CDMA	0.22%	0.00%	96.03%	0.00%	0.70%	0.68%	5.92%	DNA
TTSL GSM	0.12%	0.00%	98.47%	0.04%	0.60%	0.63%	2.77%	96.92%
Videocon	0.09%	0.00%	98.68%	0.15%	0.09%	0.60%	0.77%	97.24%
Vodafone	0.01%	0.00%	99.75%	0.11%	0.25%	0.62%	1.80%	97.67%

- TTSL CDMA has parameter value of **5.92%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is predefined at ≤ 3%.

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

6.12. 3G VOICE PMR: OCTOBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of Node B's in a month in hrs	No. of Node B's having Accumulated Downtime of > 24 hrs in a month	Call Set-up Success Rate (Within Licensee own network	RRC Congestion	RAB Congestion	Circuit Switched Voice Drop Rate	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate	%age of connections with Good Circuit Switched Voice Quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	NA	NA	NA	NA	NA	NA	NA	NA
Airtel	NA	NA	NA	NA	NA	NA	NA	NA
BSNL	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
Idea	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
VIDEOCON	NA	NA	NA	NA	NA	NA	NA	NA
RCOM CDMA	NA	NA	NA	NA	NA	NA	NA	NA
RCOM GSM	NA	NA	NA	NA	NA	NA	NA	NA
TATA GSM	0.25%	0.00%	99.57%	0.29%	0.51%	0.19%	1.22%	98.01%
TATA CDMA	NA	NA	NA	NA	NA	NA	NA	NA
Vodafone	0.08%	0.21%	99.75%	0.06%	0.03%	0.31%	3.00%	98.93%

- VODAFONE has a parameter value of **3.00%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.
- **For each instance of "DNA (Data Not Available)", please refer the respective hard copy of audit report(s).

6.13. 3G VOICE PMR: NOVEMBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of Node B's in a month in hrs	No. of Node B's having Accumulated Downtime of > 24 hrs in a month	Call Set-up Success Rate (Within Licensee own network	RRC Congestion	RAB Congestion	Circuit Switched Voice Drop Rate	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate	%age of connections with Good Circuit Switched Voice Quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	NA	NA	NA	NA	NA	NA	NA	NA
Airtel	NA	NA	NA	NA	NA	NA	NA	NA
BSNL	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
Idea	0.00%	0.00%	99.39%	0.44%	0.01%	0.30%	1.40%	99.01%

VIDEOCON	NA	NA	NA	NA	NA	NA	NA	NA
RCOM CDMA	NA	NA	NA	NA	NA	NA	NA	NA
RCOM GSM	NA	NA	NA	NA	NA	NA	NA	NA
TATA GSM	0.07%	0.10%	99.84%	0.41%	0.24%	0.19%	1.17%	99.15%
TATA CDMA	NA	NA	NA	NA	NA	NA	NA	NA
Vodafone	0.04%	0.00%	99.77%	0.02%	0.00%	0.27%	2.59%	98.08%

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

6.14. 3G VOICE PMR: DECEMBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of Node B's in a month in hrs	No. of Node B's having Accumulated Downtime of > 24 hrs in a month	Call Set-up Success Rate (Within License own network	RRC Congestion	RAB Congestion	Circuit Switched Voice Drop Rate	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate	%age of connections with Good Circuit Switched Voice Quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	NA	NA	NA	NA	NA	NA	NA	NA
Airtel	NA	NA	NA	NA	NA	NA	NA	NA
BSNL	1.17%	1.54%	99.25%	0.65%	0.52%	0.63%	2.28%	DNA
Idea	1.31%	0.00%	99.51%	0.28%	0.11%	0.26%	2.00%	98.87%
VIDEOCON	NA	NA	NA	NA	NA	NA	NA	NA
RCOM CDMA	NA	NA	NA	NA	NA	NA	NA	NA
RCOM GSM	NA	NA	NA	NA	NA	NA	NA	NA
TATA GSM	0.09%	0.27%	99.85%	0.42%	0.79%	0.19%	1.25%	99.14%
TATA CDMA	NA	NA	NA	NA	NA	NA	NA	NA
Vodafone	0.04%	0.00%	99.78%	0.01%	0.00%	0.27%	2.31%	98.08%

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

6.15. 3G VOICE PMR: CONSOLIDATED

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of Node B's in a month in hrs	No. of Node B's having Accumulated Downtime of > 24 hrs in a month	Call Set-up Success Rate (Within License own network	RRC Congestion	RAB Congestion	Circuit Switched Voice Drop Rate	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate	%age of connections with Good Circuit Switched Voice Quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	NA	NA	NA	NA	NA	NA	NA	NA
Airtel	NA	NA	NA	NA	NA	NA	NA	NA
BSNL	1.17%	1.54%	99.25%	0.65%	0.52%	0.63%	2.28%	DNA

Idea	0.66%	0.00%	99.45%	0.36%	0.06%	0.28%	1.70%	98.94%
VIDEOCON	NA	NA	NA	NA	NA	NA	NA	NA
RCOM CDMA	NA	NA	NA	NA	NA	NA	NA	NA
RCOM GSM	NA	NA	NA	NA	NA	NA	NA	NA
TATA GSM	0.14%	0.12%	99.75%	0.37%	0.55%	0.19%	1.21%	98.77%
TATA CDMA	NA	NA	NA	NA	NA	NA	NA	NA
Vodafone	0.05%	0.07%	99.77%	0.03%	0.01%	0.28%	2.63%	98.36%

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

6.16. 3G VOICE 3 DAYS LIVE DATA: OCTOBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of Node B's in a month in hrs	No. of Node B's having Accumulated Downtime of > 24 hrs in a month	Call Set-up Success Rate (Within License own network	RRC Congestion	RAB Congestion	Circuit Switched Voice Drop Rate	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate	%age of connections with Good Circuit Switched Voice Quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	NA	NA	NA	NA	NA	NA	NA	NA
Airtel	NA	NA	NA	NA	NA	NA	NA	NA
BSNL	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
Idea	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
VIDEOCON	NA	NA	NA	NA	NA	NA	NA	NA
RCOM CDMA	NA	NA	NA	NA	NA	NA	NA	NA
RCOM GSM	NA	NA	NA	NA	NA	NA	NA	NA
TATA GSM	0.14%	0.00%	99.41%	0.00%	0.71%	0.19%	1.23%	98.15%
TATA CDMA	NA	NA	NA	NA	NA	NA	NA	NA
Vodafone	0.03%	0.00%	99.72%	0.04%	0.04%	0.29%	2.59%	98.10%

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

6.17. 3G VOICE 3 DAYS LIVE DATA: NOVEMBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of Node B's in a month in hrs	No. of Node B's having Accumulated Downtime of > 24 hrs in a month	Call Set-up Success Rate (Within License own network	RRC Congestion	RAB Congestion	Circuit Switched Voice Drop Rate	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate	%age of connections with Good Circuit Switched Voice Quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	NA	NA	NA	NA	NA	NA	NA	NA
Airtel	NA	NA	NA	NA	NA	NA	NA	NA
BSNL	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
Idea	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
VIDEOCON	NA	NA	NA	NA	NA	NA	NA	NA
RCOM CDMA	NA	NA	NA	NA	NA	NA	NA	NA
RCOM GSM	NA	NA	NA	NA	NA	NA	NA	NA
TATA GSM	0.06%	0.00%	99.87%	0.30%	0.22%	0.18%	1.32%	99.15%
TATA CDMA	NA	NA	NA	NA	NA	NA	NA	NA
Vodafone	0.02%	0.00%	99.76%	0.01%	0.00%	0.26%	2.87%	98.16%

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

6.18. 3G VOICE 3 DAYS LIVE DATA: DECEMBER

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of Node B's in a month in hrs	No. of Node B's having Accumulated Downtime of > 24 hrs in a month	Call Set-up Success Rate (Within License own network	RRC Congestion	RAB Congestion	Circuit Switched Voice Drop Rate	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate	%age of connections with Good Circuit Switched Voice Quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	NA	NA	NA	NA	NA	NA	NA	NA
Airtel	NA	NA	NA	NA	NA	NA	NA	NA
BSNL	1.25%	0.56%	99.32%	0.91%	1.37%	0.77%	2.14%	DNA
Idea	0.00%	0.00%	99.66%	0.23%	0.10%	0.24%	2.25%	98.86%
VIDEOCON	NA	NA	NA	NA	NA	NA	NA	NA
RCOM CDMA	NA	NA	NA	NA	NA	NA	NA	NA
RCOM GSM	NA	NA	NA	NA	NA	NA	NA	NA
TATA GSM	0.03%	0.00%	99.89%	0.28%	0.54%	0.17%	0.85%	99.15%
TATA CDMA	NA	NA	NA	NA	NA	NA	NA	NA
Vodafone	0.03%	0.00%	99.82%	0.00%	0.00%	0.24%	2.33%	98.15%

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

6.19. 3G VOICE 3 DAYS LIVE DATA: CONSOLIDATED

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of Node B's in a month in hrs	No. of Node B's having Accumulated Downtime of > 24 hrs in a month	Call Set-up Success Rate (Within License own network	RRC Congestion	RAB Congestion	Circuit Switched Voice Drop Rate	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate	%age of connections with Good Circuit Switched Voice Quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	NA	NA	NA	NA	NA	NA	NA	NA
Airtel	NA	NA	NA	NA	NA	NA	NA	NA
BSNL	1.25%	0.56%	99.32%	0.91%	1.37%	0.77%	2.14%	DNA
Idea	0.00%	0.00%	99.66%	0.23%	0.10%	0.24%	2.25%	98.86%
VIDEOCON	NA	NA	NA	NA	NA	NA	NA	NA
RCOM CDMA	NA	NA	NA	NA	NA	NA	NA	NA
RCOM GSM	NA	NA	NA	NA	NA	NA	NA	NA
TATA GSM	0.08%	0.00%	99.72%	0.19%	0.49%	0.18%	1.13%	98.82%
TATA CDMA	NA	NA	NA	NA	NA	NA	NA	NA
Vodafone	0.03%	0.00%	99.77%	0.02%	0.01%	0.26%	2.60%	98.14%

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

7. CUSTOMER SERVICE DELIVERY

7.1. BILLING AND CUSTOMER CARE

Name of Service Provider	Metering and Billing credibility		Billing Complaints			Termination & Closures	Time taken for refund of deposits after closures	Customer Care	
	Postpaid Subscribers	Prepaid Subscribers	%age complaints resolved within 4 weeks	%age complaints resolved within 6 weeks	%age of credit/waiver is received within one week	% of Termination/ Closure of service within 7 days (100 %)	Cleared over a period of <60 days	%age of calls answered by the IVR	%age of call answered by the operators (voice to voice) within 90 seconds
Benchmark	**≤ 0.1%**	**≤ 0.1%**	**≥ 98%**	**=100%**	**=100%**	**=100%**	**=100%**	**≥ 95%**	**≥ 95%**
Aircel	0.00%	0.00%	100%	100%	100%	100%	100%	96.85%	99.81%
Airtel	0.03%	0.01%	100%	100%	100%	100%	100%	87.47%	95.40%
BSNL	0.09%	0.01%	100%	100%	100%	100%	100%	100%	91.22%
Idea	0.06%	0.13%	100%	100%	100%	100%	100%	98.71%	99.47%
RCOM CDMA	0.09%	0.09%	100%	100%	100%	100%	100%	98.32%	95.63%
RCOM GSM	0.09%	0.09%	100%	100%	100%	100%	100%	98.26%	91.20%
TTSL CDMA	0.00%	0.00%	100%	100%	100%	100%	100%	97.34%	99.81%
TTSL GSM	0.00%	0.00%	100%	100%	100%	100%	100%	99.06%	97.23%
VIDEOCON	NA	0.00%	100%	100%	100%	NA	100%	100%	95.85%
Vodafone	0.11%	0.10%	100%	100%	100%	100%	100%	100%	97.21%

- Airtel has parameter value of **87.47%** and failed to meet the benchmark for %age of calls answered by the IVR as it is predefined at ≥ 95%.
- BSNL has parameter value of **91.22%** and failed to meet the benchmark for %age of call answered by the operators (voice to voice) within 90 seconds as it is predefined at ≥ 95%.
- Idea has parameter value of **0.13%** and failed to meet the benchmark for Metering and Billing credibility (Pre-paid) as it is predefined at ≤ 0.1%
- RCOM GSM has parameter value of **91.20%** and failed to meet the benchmark for %age of call answered by the operators (voice to voice) within 90 seconds as it is predefined at ≥ 95%.
- Vodafone has parameter value of **0.11%** and failed to meet the benchmark for Metering and Billing credibility (Post-paid) as it is predefined at ≤ 0.1%.

Name of Service Provider	Customer Care & Grievances Redressal	
	% of complaints addressed at call center level.	% of complaints addressed by Appellate authority.
Aircel	100%	100%
Airtel	99.71%	100%
BSNL	97.85%	NIL
Idea	27.33%	100%
RCOM CDMA	100%	100%
RCOM GSM	100%	100%
TTSL CDMA	99.93%	100%
TTSL GSM	99.48%	100%
VIDEOCON	100%	100%
Vodafone	100%	100%

7.2. LIVE CALLING DATA: CONSOLIDATED

Name of Service Provider	Metering and Billing (Service Request)				Response time to customer for Assistanse	
	Total Calls Attempted	No. of Subscribers reached	Compalints/ Request attended to satisfaction	% of Compalints/ Request attended to satisfaction	Accessibility of call centre / Customer care	%age of call answered by the operators (voice to voice) within 90 seconds
Benchmark					**≥ 95%**	**≥ 95%**
Aircel	0	0	0	0%	100.00%	100.00%
Airtel	76	41	30	73%	100.00%	98.00%
BSNL	179	76	52	68%	100.00%	96.00%
Idea	300	118	118	100%	100.00%	99.00%
RCOM CDMA	234	162	116	72%	100.00%	98.00%
RCOM GSM	261	147	103	70%	100.00%	96.00%
TTSL CDMA	0	0	NA	100%	100.00%	100.00%
TTSL GSM	0	0	NA	100%	100.00%	100.00%
VIDEOCON	53	53	53	100%	100.00%	98.00%
Vodafone	263	202	202	100%	100.00%	99.00%

- Live calling data has been conducted by the auditor from the operator call centre(s).

7.3. 3 DAYS LIVE CALL CENTRE DATA

	Response time to customer assistance							
	% age of Accessibility of Call centre	% age calls answered by the operator within 90 seconds	% age of Accessibility of Call centre	% age calls answered by the operator within 90 seconds	% age of Accessibility of Call centre	% age calls answered by the operator within 90 seconds	% age of Accessibility of Call centre	% age calls answered by the operator within 90 seconds
	Day 1		Day 2		Day 3		Averaged Quarterly	
TSP Name	>=95%	>=95%	>=95%	>=95%	>=95%	>=95%	>=95%	>=95%
AIRCEL	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
AIRTEL	100.00%	97.23%	100.00%	96.49%	100.00%	74.60%	100.00%	89.14%
IDEA	99.91%	99.60%	99.83%	99.44%	99.78%	99.81%	99.84%	99.62%
RCOM CDMA	97.00%	99.00%	97.00%	97.00%	97.00%	99.00%	97.00%	98.00%
RCOM GSM	97.00%	100.00%	98.00%	99.00%	97.00%	99.00%	97.00%	99.00%
TTSL CDMA	100.00%	100.00%	100.00%	99.70%	100.00%	99.70%	100.00%	99.80%
TTSL GSM	98.44%	99.10%	98.85%	89.20%	98.37%	99.20%	98.60%	95.70%
VIDEOCON	100.00%	96.70%	100.00%	97.90%	100.00%	96.20%	100.00%	96.90%
VODAFONE	100.00%	99.39%	100.00%	99.54%	100.00%	99.60%	100.00%	99.51%
BSNL	100.00%	1.89%	100.00%	0.00%	100.00%	52.85%	100.00%	18.25%

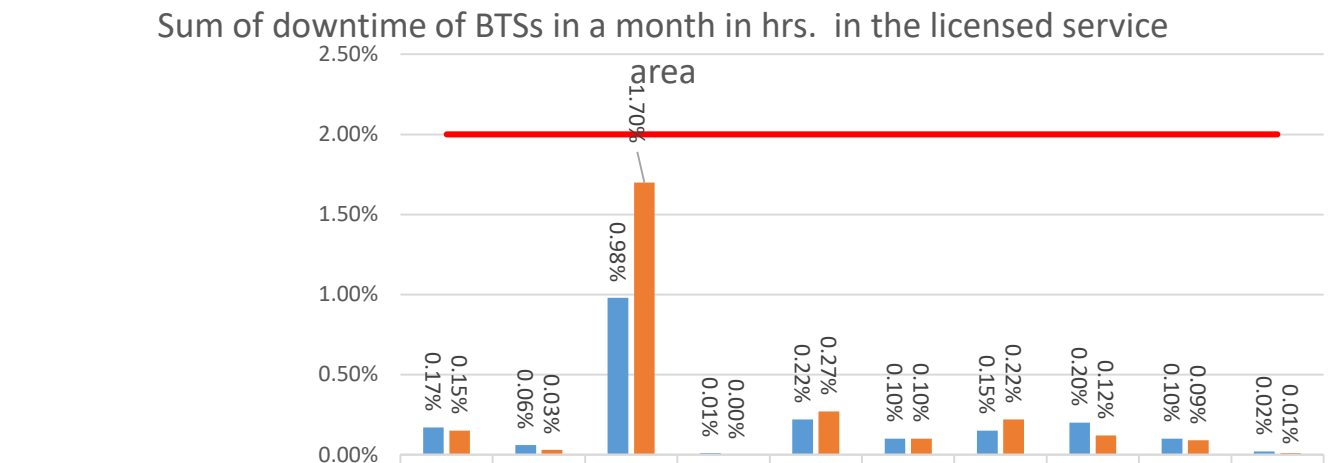
- Airtel has parameter value of **89.14%** and failed to meet the benchmark for % age calls answered by the operator within 90 seconds as it is predefined at ≥ 95%.
- BSNL has parameter value of **18.25%** and failed to meet the benchmark for % age calls answered by the operator within 90 seconds as it is predefined at ≥ 95%.
- For RCOM CDMA, refer the page no. 13 of the hard copy
- For RCOM GSM, refer the page no. 12 of the hard copy

8. NETWORK PARAMETER: DESCRIPTION AND DETAILED FINDINGS

8.1. BTS ACCUMULATED DOWNTIME

- Parameter Description:
    - The parameter of network availability would be measured from following sub-parameters:
        - BTSs Accumulated Downtime (not available for service)
        - Worst effected BTSs due to downtime
- Definition: BTSs (Base Transceiver Station) accumulated downtime (not available for service) shall basically measure the downtime of the BTSs, including its transmission links/circuits during the period of a month, but excludes all planned service downtime for any maintenance or software up gradation. For measuring the performance against the benchmark for this parameter the downtime of each BTS lasting more than 1 hour at a time in a day during the period of a month were considered.
    - Computation Methodology:
        - BTS accumulated downtime (not available for service) = $\frac{\text{Sum of downtime of BTSs in a month in hours i.e.total outage time of all BTSs in hours during a month}}{\text{24 x Number of days in a month x Number of BTSs in the network in licensed service area}} * 100$
- TRAI Benchmark: BTSs Accumulated downtime (not available for service) ≤ 2%
- Audit Procedure:
    - The fault alarm details at the OMC (MSC) for the network outages (due to own network elements and infrastructure service provider end outages) was audited.
    - All the BTS in service area were considered. Planned outages due to network up gradation, routine maintenance were not considered.
    - Any outage as a result of force majeure were not considered at the time of calculation.
    - Data is extracted from system log of the server of the operator. This data is in raw format which is further processed to arrive at the cumulative values.
    - List of operating sites with cell details and ids are taken from the operator.
    - When there is any outage a performance report gets generated in line with that cell resulting and master base of the Accumulated downtime and worst affected BTS due to downtime.

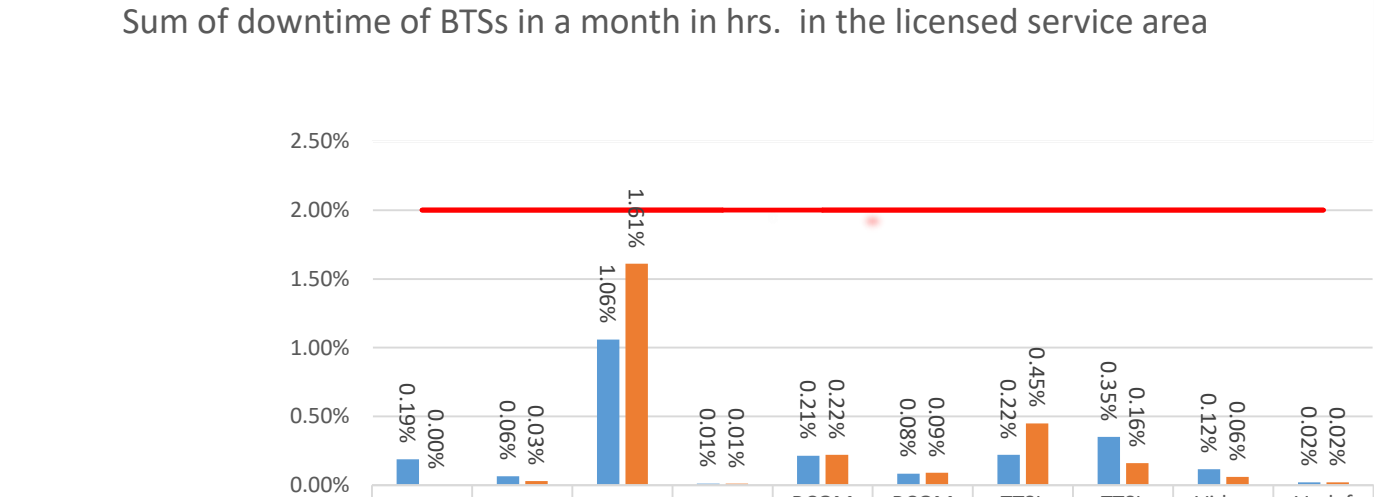
8.1.1. KEY FINDINGS: SUM OF DOWNTIME OF BTSS: CONSOLIDATED



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data 3 Month Consolidated	0.17%	0.06%	0.98%	0.01%	0.22%	0.10%	0.15%	0.20%	0.10%	0.02%
3 Day Live 3 Month Consolidated	0.15%	0.03%	1.70%	0.00%	0.27%	0.10%	0.22%	0.12%	0.09%	0.01%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

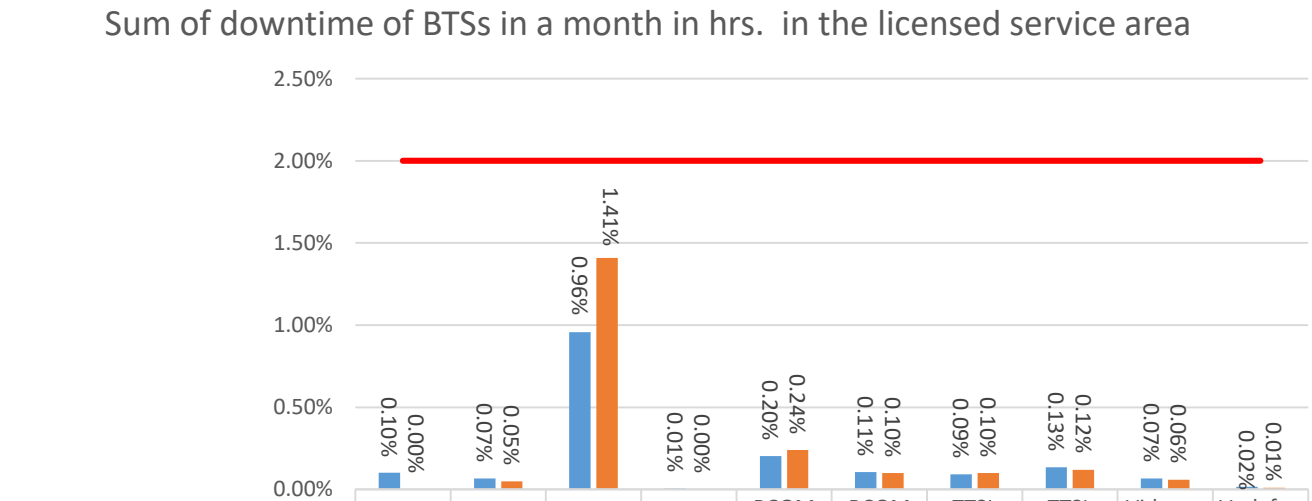
8.1.2. KEY FINDINGS: SUM OF DOWNTIME OF BTSS: OCTOBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR October Month	0.19%	0.06%	1.06%	0.01%	0.21%	0.08%	0.22%	0.35%	0.12%	0.02%
3 Day Live October Month	0.00%	0.03%	1.61%	0.01%	0.22%	0.09%	0.45%	0.16%	0.06%	0.02%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

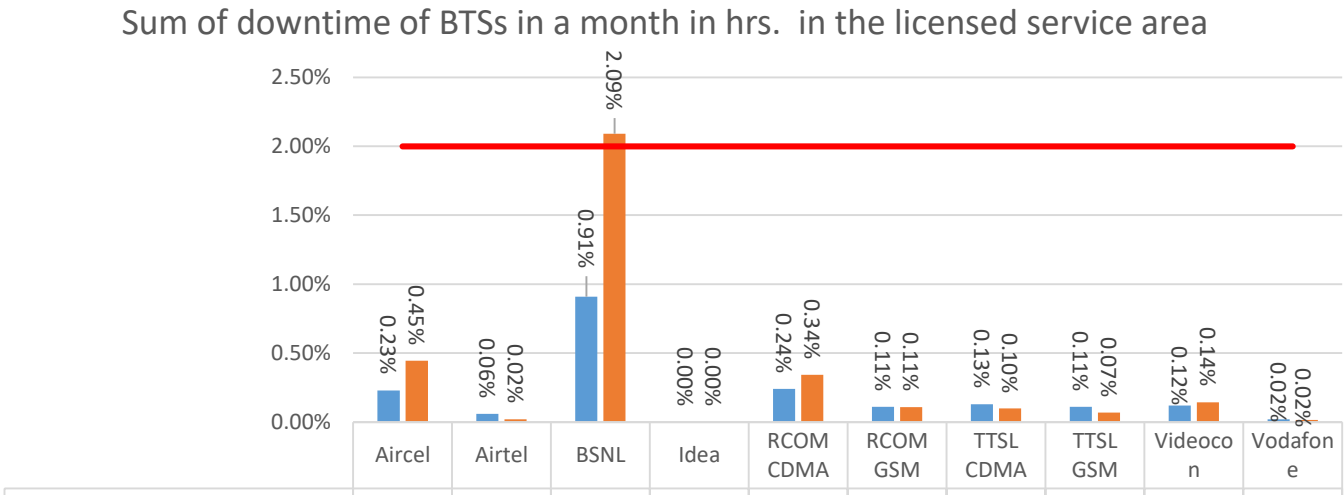
8.1.3. KEY FINDINGS: SUM OF DOWNTIME OF BTSS: NOVEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR November Month	0.10%	0.07%	0.96%	0.01%	0.20%	0.11%	0.09%	0.13%	0.07%	0.02%
3 Day Live November Month	0.00%	0.05%	1.41%	0.00%	0.24%	0.10%	0.10%	0.12%	0.06%	0.01%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

8.1.4. KEY FINDINGS: SUM OF DOWNTIME OF BTSS: DECEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR December Month	0.23%	0.06%	0.91%	0.00%	0.24%	0.11%	0.13%	0.11%	0.12%	0.02%
3 Day Live December Month	0.45%	0.02%	2.09%	0.00%	0.34%	0.11%	0.10%	0.07%	0.14%	0.02%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- BSNL has parameter value of **2.09%** and failed to meet the benchmark for Sum of downtime of BTSs in a month in hrs. in the licensed service area as it is predefined at ≤ 2%.

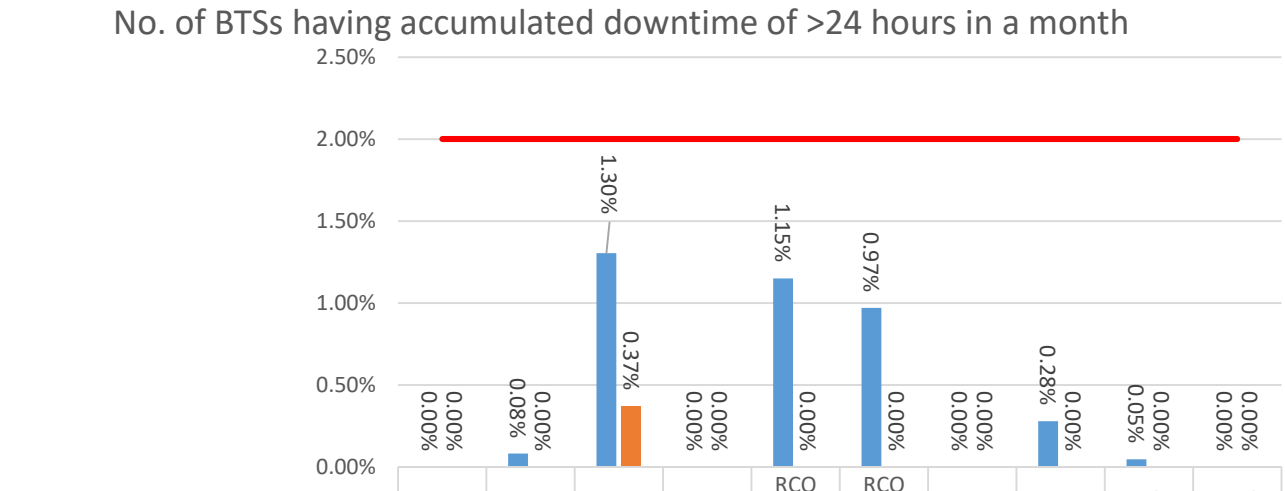
8.2. WORST AFFECTED BTS DUE TO DOWNTIME

- Definition: Worst Affected BTS due to downtime shall basically measure percentage of BTS having downtime greater than 24 hours in a month. Planned outages were not considered as part while computing.

For measuring the parameter "Percentage of worst affected BTSs due to downtime" the downtime of each BTS lasting for more than 1 hour at a time in a day during the period of a month was considered.

- Computation Methodology: Worst affected BTSs due to downtime = $\frac{\text{Number of BTSs having accumulated downtime greater than 24 hours in a month}}{\text{Number of BTS in Licensed Service Area}} * 100$
- TRAI Benchmark: Worst affected BTSs due to downtime ≤ 2%
- Audit Procedure:
  - The fault alarm details at the OMC (MSC) for the network outages (due to own network elements and infrastructure service provider end outages) was audited.
  - All the BTS in service area were considered. Planned outages due to network up gradation, routine maintenance were not considered.
  - Data is extracted from system log of the server of the operator. This data is in raw format which is further processed to arrive at the cumulative values.
  - Any outage as a result of force majeure was not considered at the time of calculation.
  - List of operating sites with cell details and ids are taken from the operator.
  - All the BTS having down time greater than 24 hours is assessed and values of BTS accumulated downtime is computed in accordance.

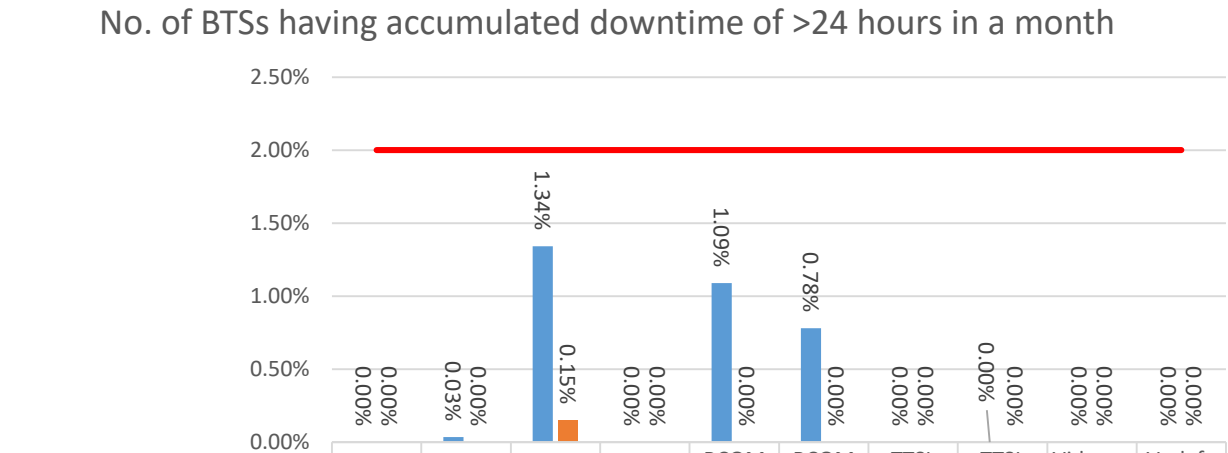
8.2.1. KEY FINDINGS: NO. OF BTSS HAVING ACCUMULATED DOWNTIME OF >24 HRS: CONSOLIDATED



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data 3 Month Consolidated	0.00%	0.08%	1.30%	0.00%	1.15%	0.97%	0.00%	0.28%	0.05%	0.00%
3 Day Live 3 Month Consolidated	0.00%	0.00%	0.37%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

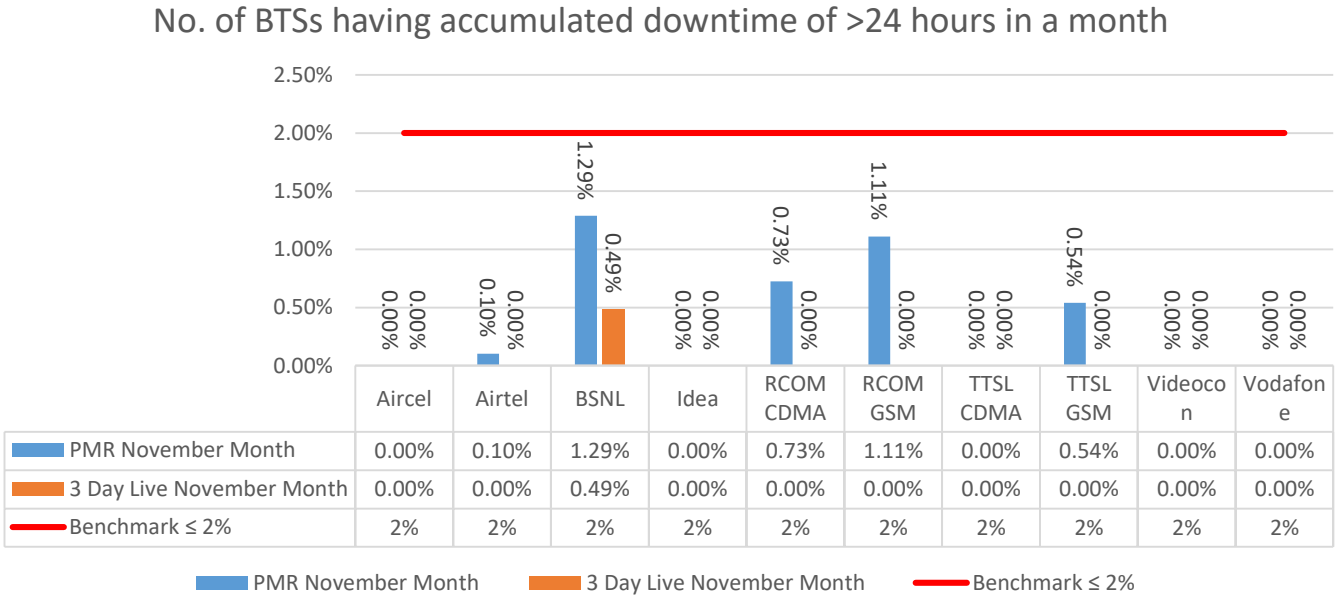
8.2.2. KEY FINDINGS: NO. OF BTSS HAVING ACCUMULATED DOWNTIME OF > 24 HRS: OCTOBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR October Month	0.00%	0.03%	1.34%	0.00%	1.09%	0.78%	0.00%	0.00%	0.00%	0.00%
3 Day Live October Month	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

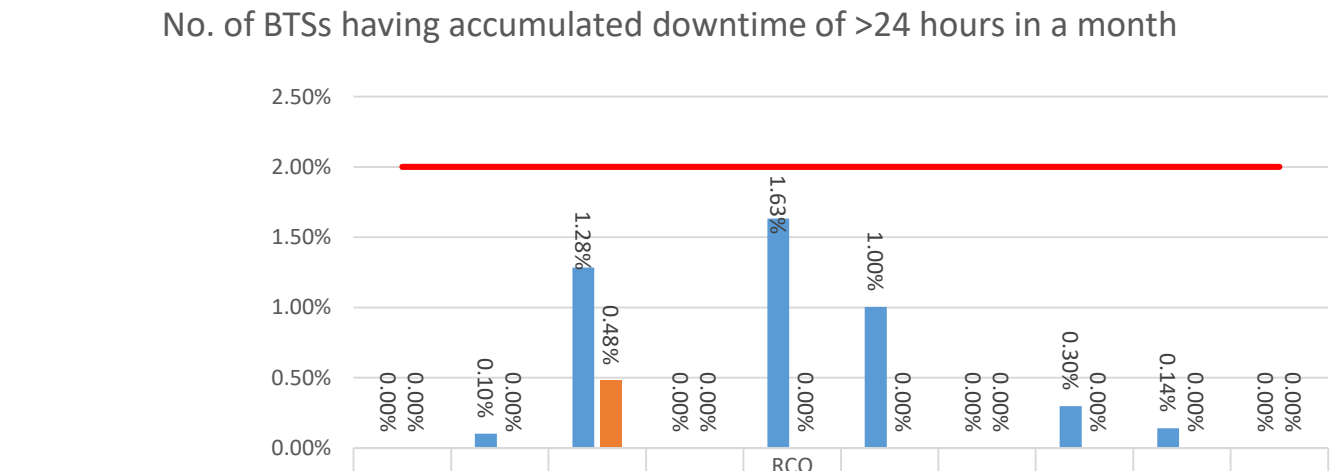
8.2.3. KEY FINDINGS: NO. OF BTSS HAVING ACCUMULATED DOWNTIME OF > 24 HRS: NOVEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR November Month	0.00%	0.10%	1.29%	0.00%	0.73%	1.11%	0.00%	0.54%	0.00%	0.00%
3 Day Live November Month	0.00%	0.00%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

8.2.4. KEY FINDINGS: NO. OF BTSS HAVING ACCUMULATED DOWNTIME OF > 24 HRS: DECEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR December Month	0.00%	0.10%	1.28%	0.00%	1.63%	1.00%	0.00%	0.30%	0.14%	0.00%
3 Day Live December Month	0.00%	0.00%	0.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

8.3. CALL SETUP SUCCESS RATE

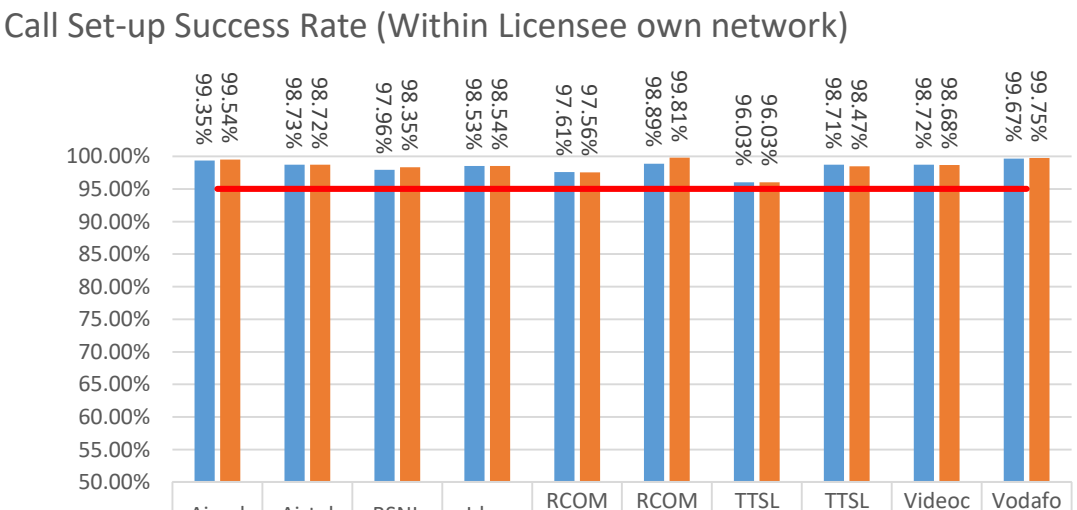
- Definition: The ratio of successful calls established to total calls is known as Call Set-Up Success Rate (CSSR).
- Computational Methodology: $\frac{Calls\ Established}{(Total\ call\ attempts)} * 100$

  Calls established means the following events happened in call setup:
  - Call attempt is made.
  - The TCH is allocated.
  - The call is routed to the outward path of the concerned MSC.

- TRAI Benchmark ≥ 95%
- Audit Procedure:
  - The cell-wise data generated through counters/ MMC available in the switch for traffic measurements.
  - CSSR calculation should be measured using OMC generated data only.
  - Measurement should be only in Time Consistent Busy Hour (CBBH) period for all days of the week.
  - Counter data is extracted from the NOC of the operators.
  - Total calls established include all calls established excluding Signaling blocking, TCH Drop and TCH blocking.

The numerator and denominator values are derived from adding the counter values from the MSC.

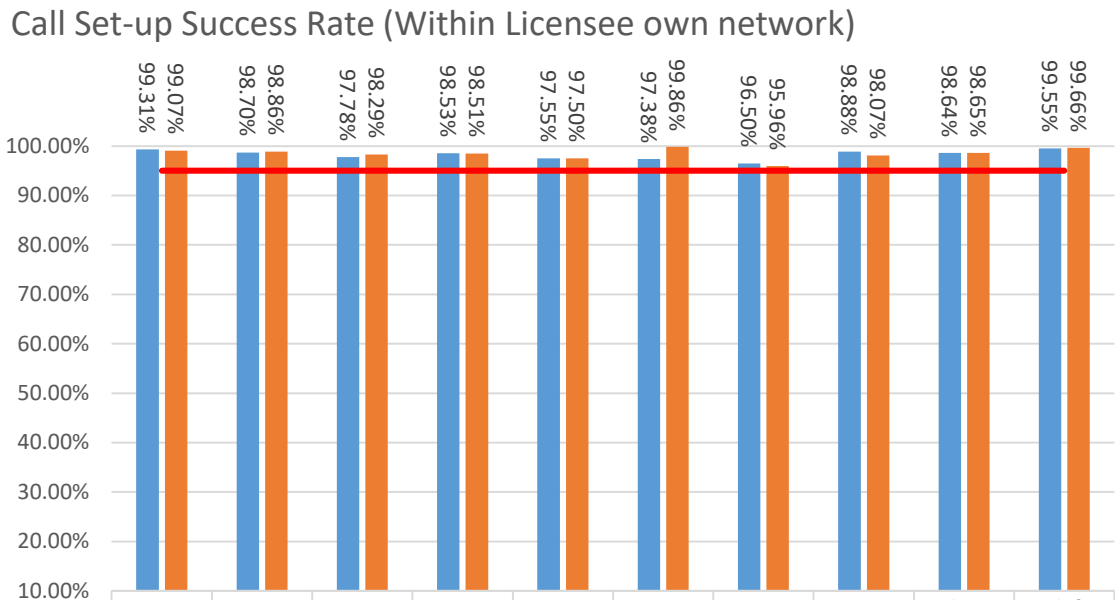
8.3.1. KEY FINDINGS: CALL SETUP SUCCESS RATE: CONSOLIDATED



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data 3 Month Consolidated	99.35%	98.73%	97.96%	98.53%	97.61%	98.89%	96.03%	98.71%	98.72%	99.67%
3 Day Live 3 Month Consolidated	99.54%	98.72%	98.35%	98.54%	97.56%	99.81%	96.03%	98.47%	98.68%	99.75%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

- It is clear from the analysis that all the operators are within benchmark.

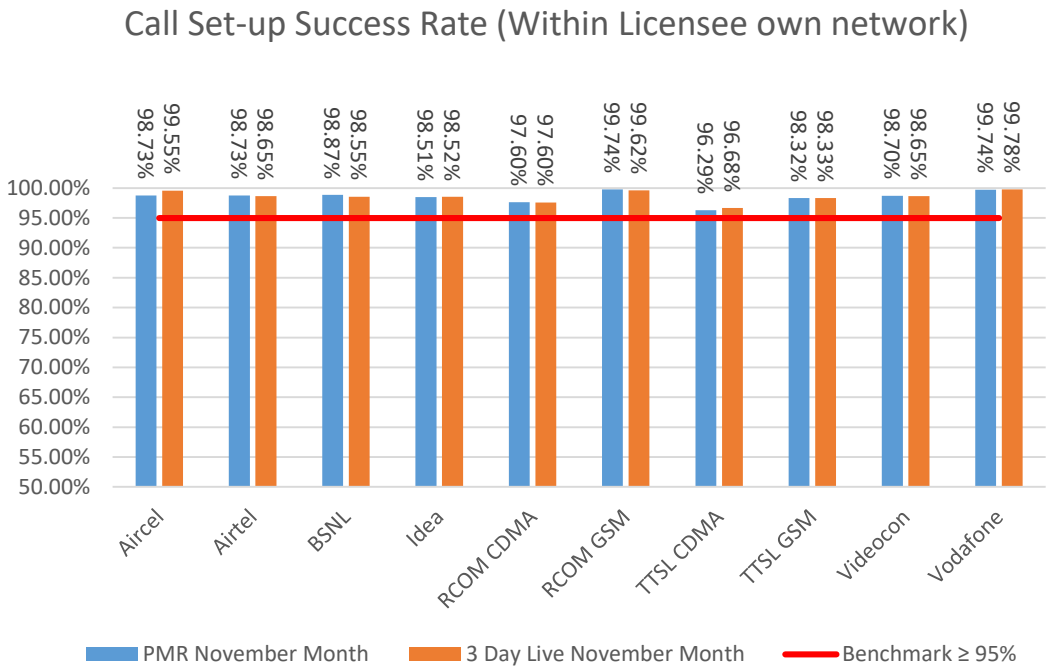
8.3.2. KEY FINDINGS: CALL SETUP SUCCESS RATE: OCTOBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR October Month	99.31%	98.70%	97.78%	98.53%	97.55%	97.38%	96.50%	98.88%	98.64%	99.55%
3 Day Live October Month	99.07%	98.86%	98.29%	98.51%	97.50%	99.86%	95.96%	98.07%	98.65%	99.66%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

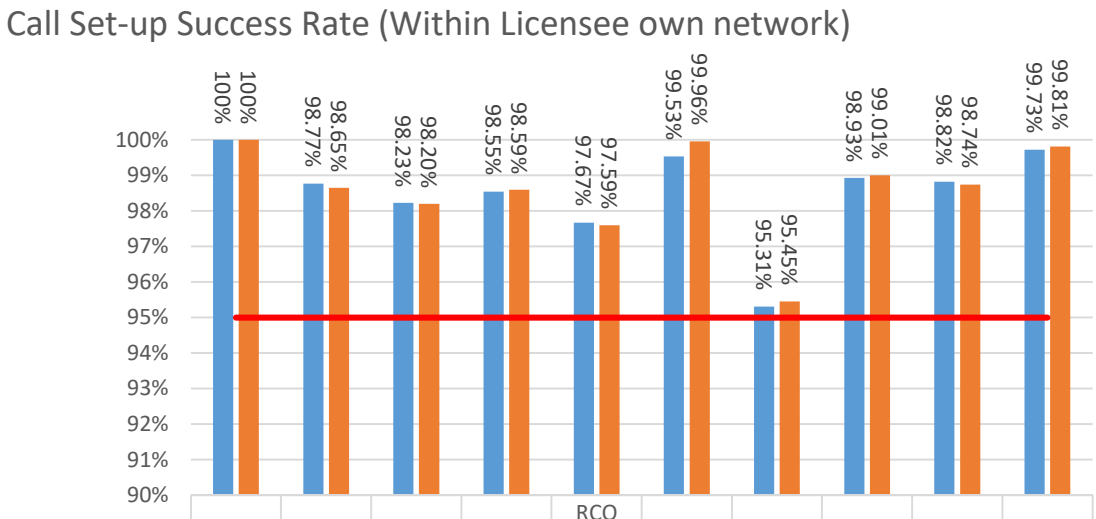
- It is clear from the analysis that all the operators are within benchmark.

8.3.3. KEY FINDINGS: CALL SETUP SUCCESS RATE: NOVEMBER



- It is clear from the analysis that all the operators are within benchmark.

8.3.4. KEY FINDINGS: CALL SETUP SUCCESS RATE: DECEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR December Month	100%	98.77%	98.23%	98.55%	97.67%	99.53%	95.31%	98.93%	98.82%	99.73%
3 Day Live December Month	100%	98.65%	98.20%	98.59%	97.59%	99.96%	95.45%	99.01%	98.74%	99.81%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

- It is clear from the analysis that all the operators are within benchmark.

8.4. NETWORK CHANNEL CONGESTION: PAGING CHANNEL/ TCH CONGESTION/ POI

- Definition: It means a call is not connected because there is no free channel to serve the call attempt. This parameter represents congestion in the network. It happens at three levels:
  - SDCCH Level: Stand-alone dedicated control channel
  - TCH Level: Traffic Channel
  - POI Level: Point of Interconnect.

- Computational Methodology:

  SDCCH / TCH Congestion% = $\frac{(A1 \times C1) + (A2 \times C2) + \cdots\ldots + (An \times Cn)}{(A1 + A2 + \cdots + An)}$

  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
  - 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

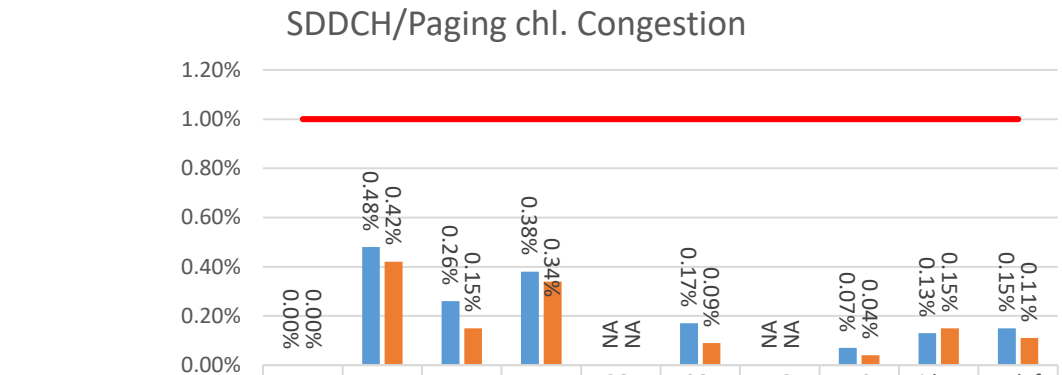
  POI Congestion% = $\frac{[(A1 \times C1) + (A2 \times C2) + \cdots\ldots + (An \times Cn)}{(A1 + A2 + \cdots + An}$

  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

- Benchmark: SDCCH Congestion: ≤ 1%, TCH Congestion: ≤ 2%, POI Congestion: ≤ 0.5%

- Audit Procedure –
  - Audit of the details of SDCCH and TCH congestion percentages computed by the operator (using OMC–Switch data only) would be conducted.
  - The operator should be measuring this parameter during Time consistent busy hour (TCBH) only SDCCH.

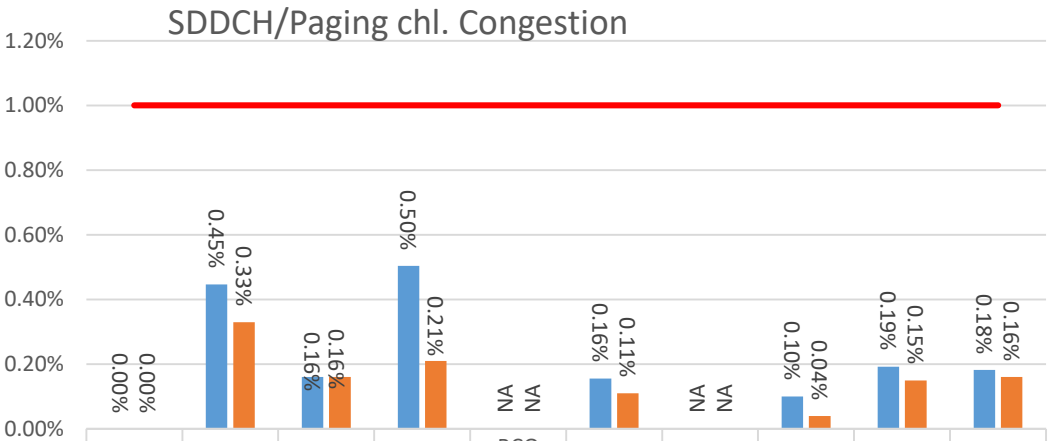
8.4.1. KEY FINDINGS: SDCC/ PAGING CHANNEL CONGESTION: CONSOLIDATED



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data 3 Month Consolidated	0.00%	0.48%	0.26%	0.38%	0.00%	0.17%	0.00%	0.07%	0.13%	0.15%
3 Day Live 3 Month Consolidated	0.00%	0.42%	0.15%	0.34%	0.00%	0.09%	0.00%	0.04%	0.15%	0.11%
Benchmark ≤ 1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

- It is clear from the analysis that all the operators deviate from the benchmark.

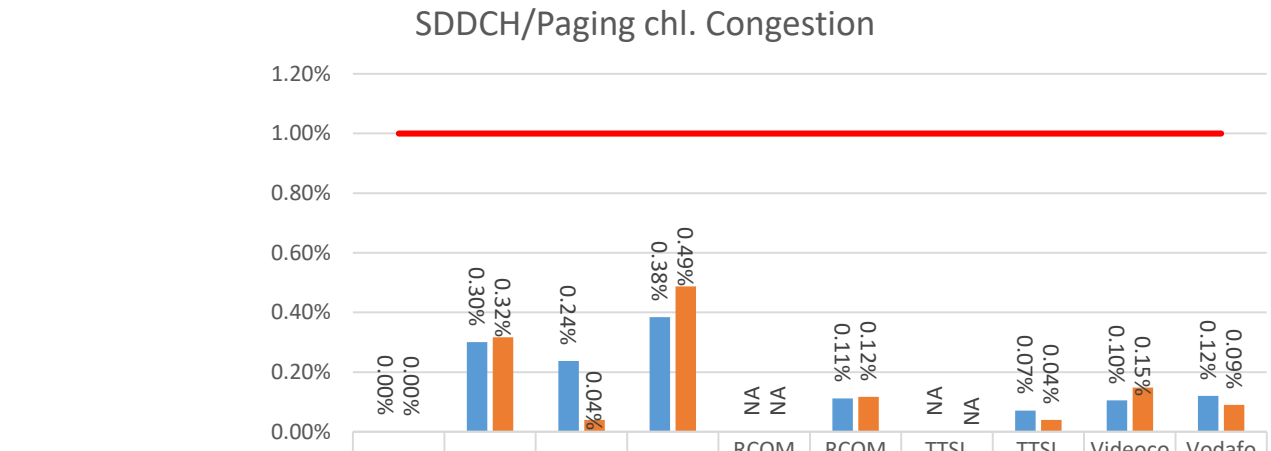
8.4.2. KEY FINDINGS: SDCC/ PAGING CHANNEL CONGESTION: OCTOBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR October Month	0.00%	0.45%	0.16%	0.50%	0.00%	0.16%	0.00%	0.10%	0.19%	0.18%
3 Day Live October Month	0.00%	0.33%	0.16%	0.21%	0.00%	0.11%	0.00%	0.04%	0.15%	0.16%
Benchmark ≤ 1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

- It is clear from the analysis that all operators deviates from the benchmark.

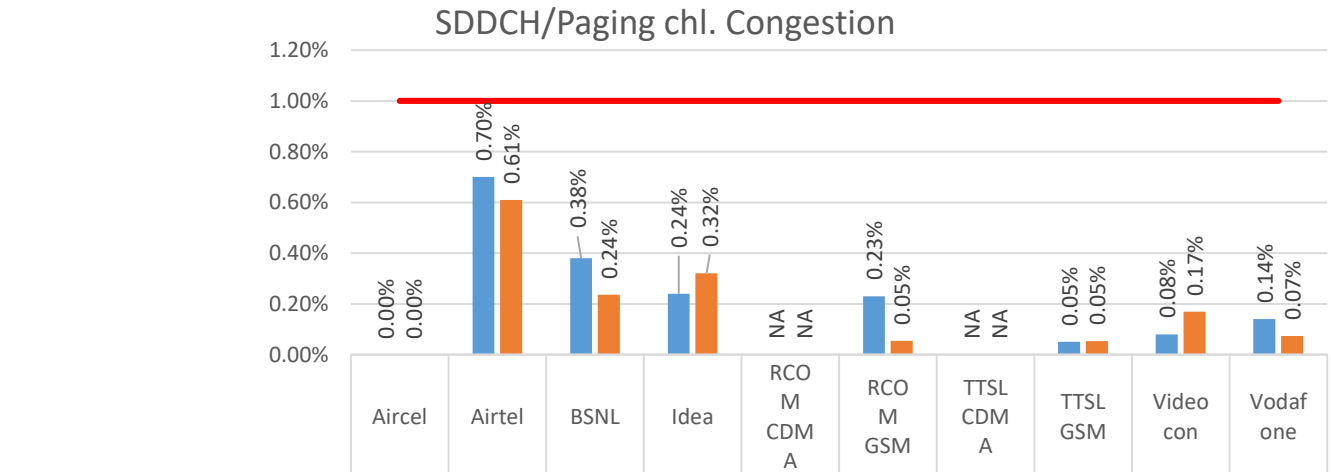
8.4.3. KEY FINDINGS: SDCC/ PAGING CHANNEL CONGESTION: NOVEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR November Month	0.00%	0.30%	0.24%	0.38%	0.00%	0.11%	0.00%	0.07%	0.10%	0.12%
3 Day Live November Month	0.00%	0.32%	0.04%	0.49%	0.00%	0.12%	0.00%	0.04%	0.15%	0.09%
Benchmark ≤ 1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

- It is clear from the analysis that all operators deviates from the benchmark.

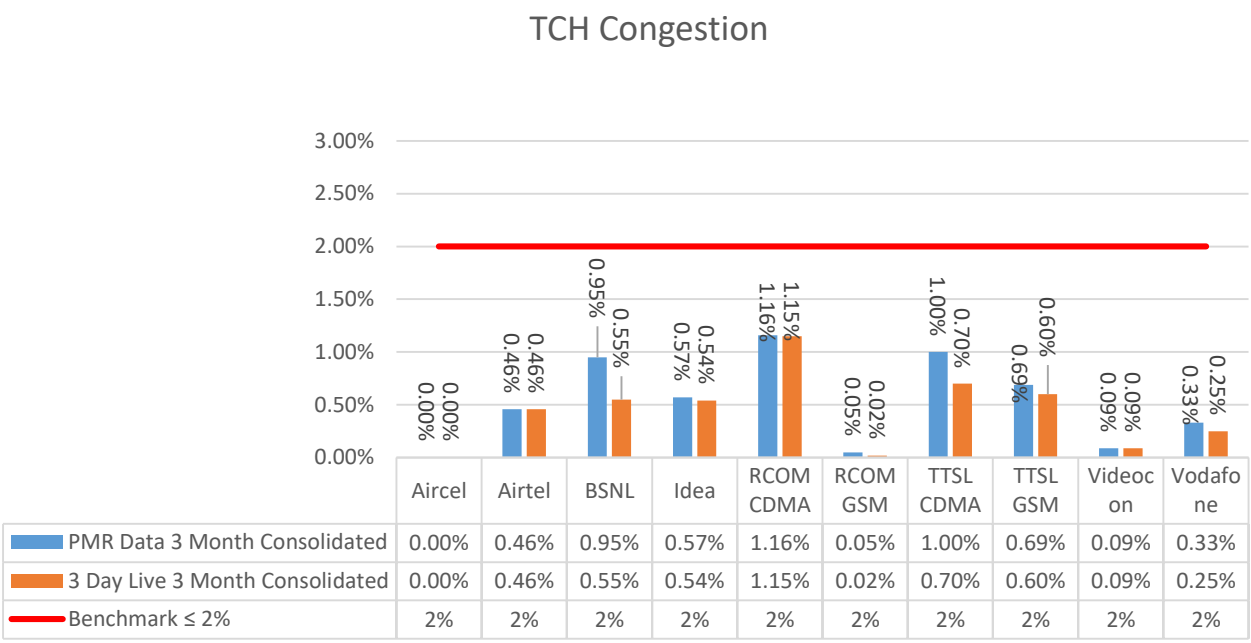
8.4.4. KEY FINDINGS: SDCC/ PAGING CHANNEL CONGESTION: DECEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR December Month	0.00%	0.70%	0.38%	0.24%	0.00%	0.23%	0.00%	0.05%	0.08%	0.14%
3 Day Live December Month	0.00%	0.61%	0.24%	0.32%	0.00%	0.05%	0.00%	0.05%	0.17%	0.07%
Benchmark ≤ 1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

- It is clear from the analysis that all the operators are within benchmark.

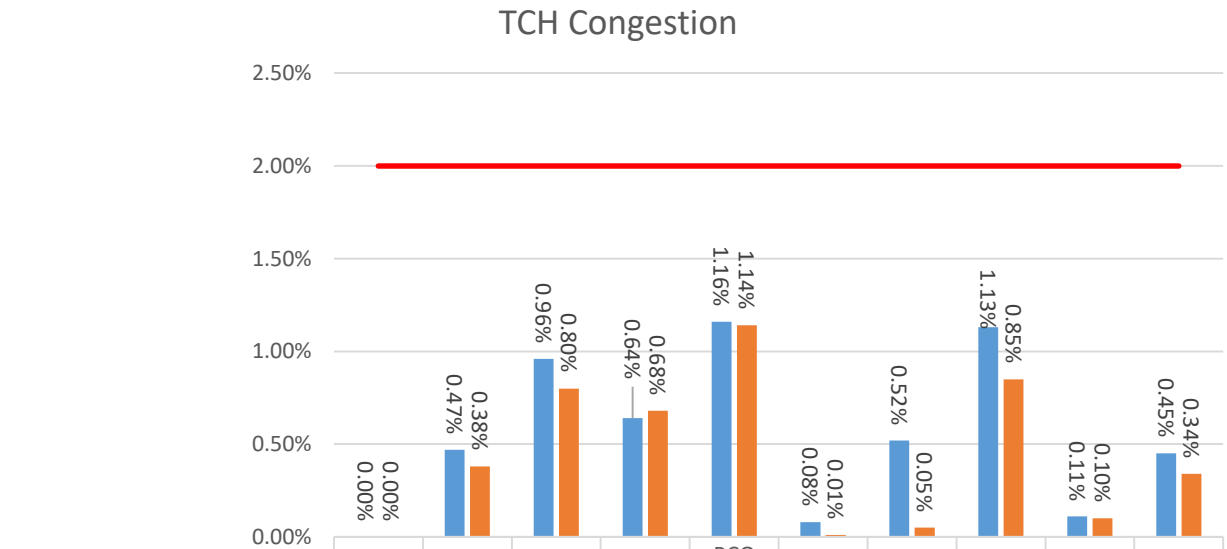
8.4.5. KEY FINDINGS: TCH CONGESTION: CONSOLIDATED



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data 3 Month Consolidated	0.00%	0.46%	0.95%	0.57%	1.16%	0.05%	1.00%	0.69%	0.09%	0.33%
3 Day Live 3 Month Consolidated	0.00%	0.46%	0.55%	0.54%	1.15%	0.02%	0.70%	0.60%	0.09%	0.25%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

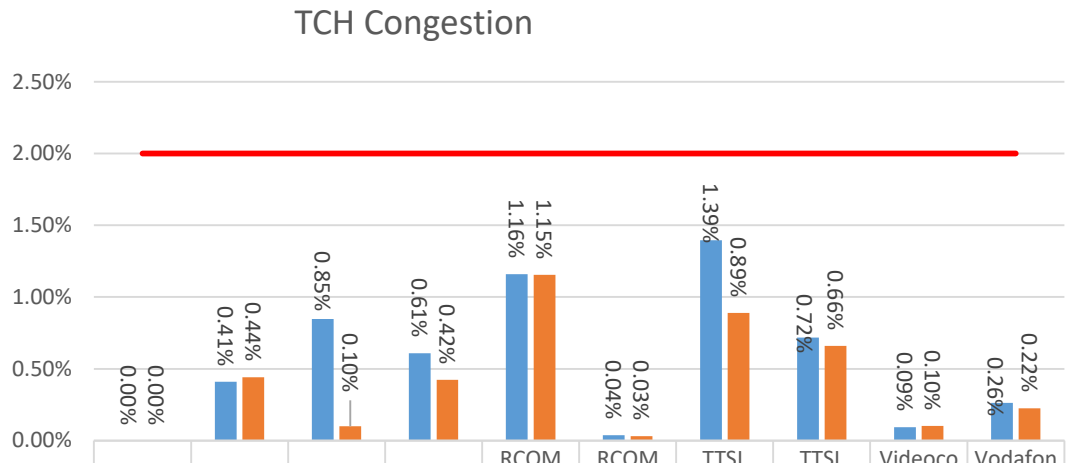
8.4.6. KEY FINDINGS: TCH CONGESTION: OCTOBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR October Month	0.00%	0.47%	0.96%	0.64%	1.16%	0.08%	0.52%	1.13%	0.11%	0.45%
3 Day Live October Month	0.00%	0.38%	0.80%	0.68%	1.14%	0.01%	0.05%	0.85%	0.10%	0.34%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

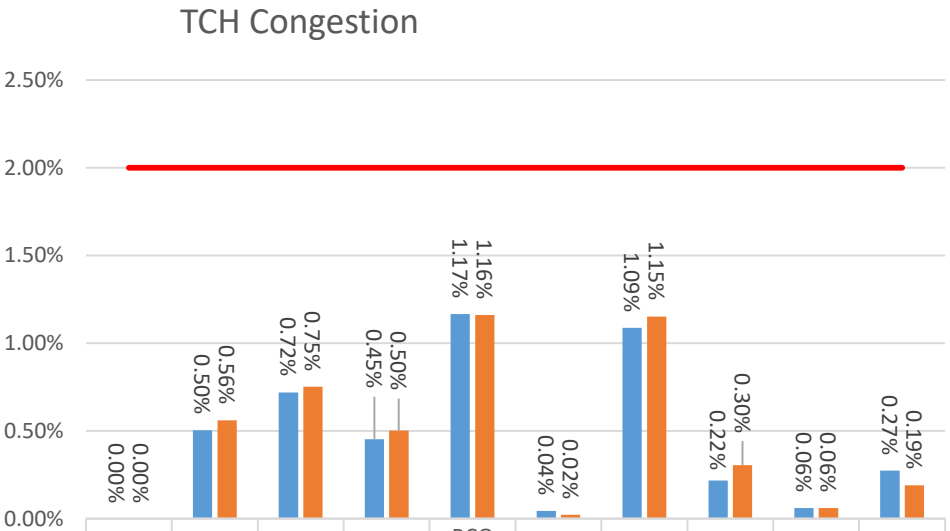
8.4.7. KEY FINDINGS: TCH CONGESTION: NOVEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR November Month	0.00%	0.41%	0.85%	0.61%	1.16%	0.04%	1.39%	0.72%	0.09%	0.26%
3 Day Live November Month	0.00%	0.44%	0.10%	0.42%	1.15%	0.03%	0.89%	0.66%	0.10%	0.22%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

8.4.8. KEY FINDINGS: TCH CONGESTION: DECEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR December Month	0.00%	0.50%	0.72%	0.45%	1.17%	0.04%	1.09%	0.22%	0.06%	0.27%
3 Day Live December Month	0.00%	0.56%	0.75%	0.50%	1.16%	0.02%	1.15%	0.30%	0.06%	0.19%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

8.5. CALL DROP RATE

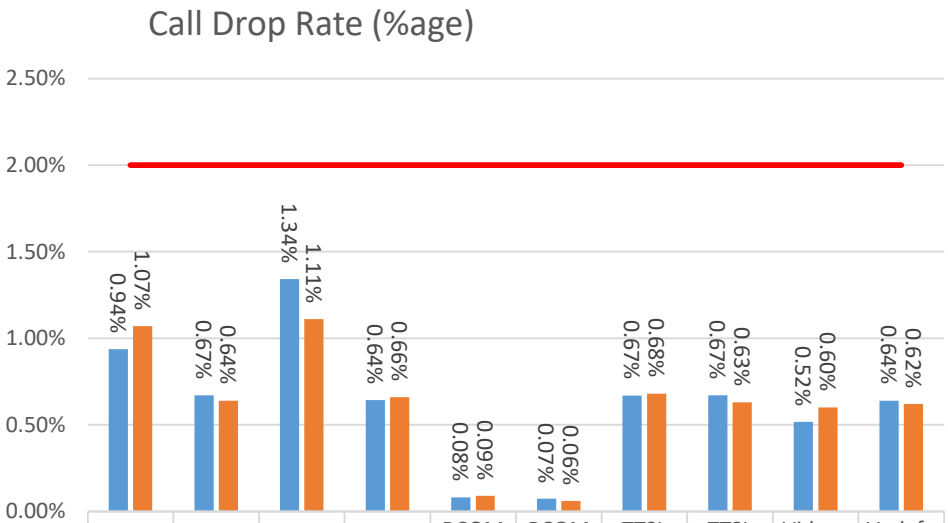
- Definition - The dropped call rate is the ratio of successfully originated calls that were found to drop to the total number of successfully originated calls that were correctly released.
  - Total calls dropped = All calls ceasing unnaturally i.e. due to handover or due to radio loss
  - Total calls established = All calls that have TCH allocation during busy hour

- Computational Methodology: $\frac{\text{Total Calls Dropped}}{\text{Total Calls Established}} * 100$

- TRAI Benchmark: Call drop rate ≤ 2%
- Audit Procedure:
  - Audit of traffic data of the relevant quarter kept in OMC-R at MSCs and used for arriving at CDR was used.

The operator should only be considering those calls which are dropped during Time consistent busy hour (TCBH) for all days of the relevant quarter.

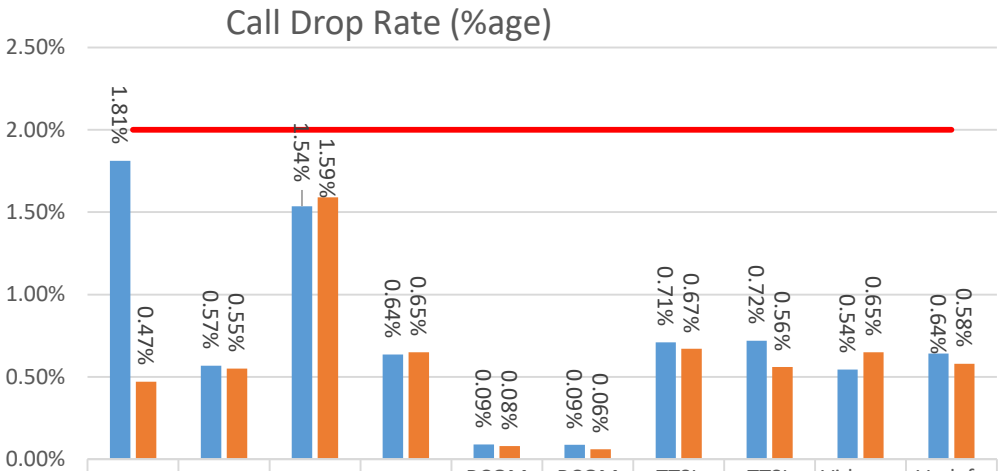
8.5.1. KEY FINDINGS: CALL DROP RATE: CONSOLIDATED



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data 3 Month Consolidated	0.94%	0.67%	1.34%	0.64%	0.08%	0.07%	0.67%	0.67%	0.52%	0.64%
3 Day Live 3 Month Consolidated	1.07%	0.64%	1.11%	0.66%	0.09%	0.06%	0.68%	0.63%	0.60%	0.62%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

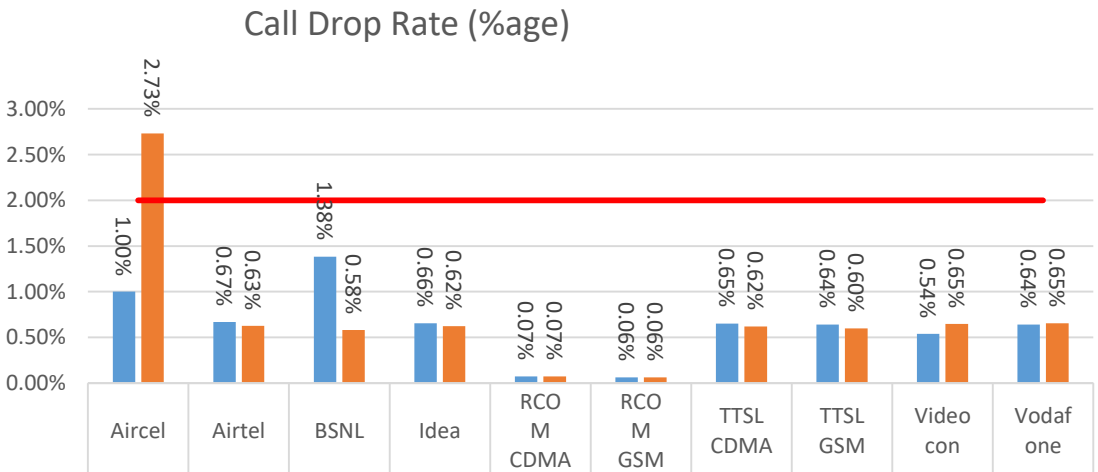
8.5.2. KEY FINDINGS: CALL DROP RATE: OCTOBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR October Month	1.81%	0.57%	1.54%	0.64%	0.09%	0.09%	0.71%	0.72%	0.54%	0.64%
3 Day Live October Month	0.47%	0.55%	1.59%	0.65%	0.08%	0.06%	0.67%	0.56%	0.65%	0.58%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

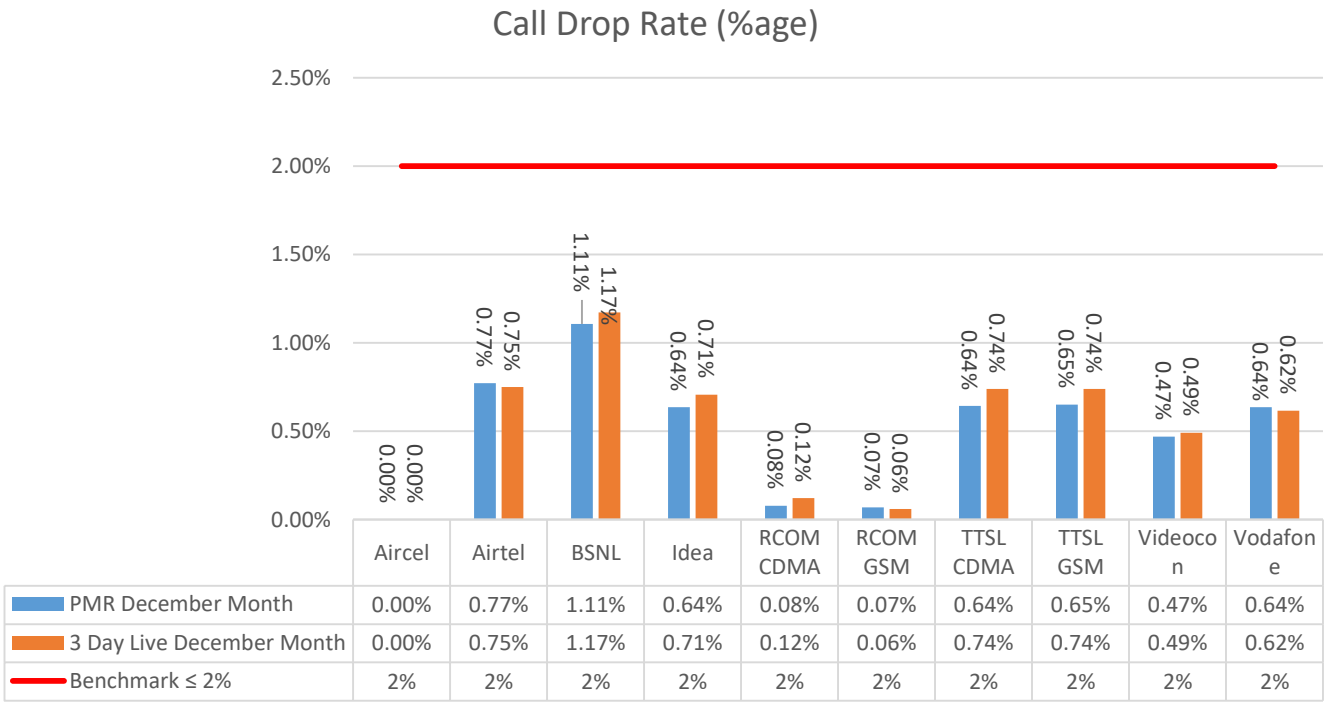
8.5.3. KEY FINDINGS: CALL DROP RATE: NOVEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR November Month	1.00%	0.67%	1.38%	0.66%	0.07%	0.06%	0.65%	0.64%	0.54%	0.64%
3 Day Live November Month	2.73%	0.63%	0.58%	0.62%	0.07%	0.06%	0.62%	0.60%	0.65%	0.65%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- Aircel has parameter value of **2.73%** and failed to meet the benchmark for Call Drop Rate (%age) as it is predefined at ≤ 2%.

8.5.4. KEY FINDINGS: CALL DROP RATE: DECEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR December Month	0.00%	0.77%	1.11%	0.64%	0.08%	0.07%	0.64%	0.65%	0.47%	0.64%
3 Day Live December Month	0.00%	0.75%	1.17%	0.71%	0.12%	0.06%	0.74%	0.74%	0.49%	0.62%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

- It is clear from the analysis that all the operators are within benchmark.

8.6. CELLS HAVING GREATER THAN 3% TCH DROP

- Definition- Worst Affected Cells having more than 3% TCH drop shall measure the ratio of total number of cells in the network to the ratio of cells having more than 3% TCH drop.

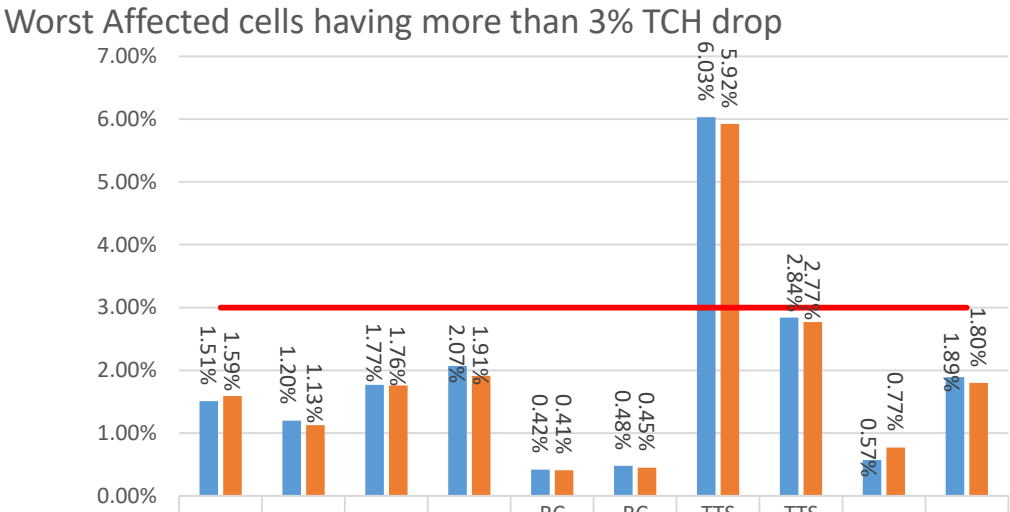
- Computational Methodology: $\frac{\textbf{Total number of cells having more than 3\% TCH drop during CBBH}}{\textbf{Total number of cells in the network}} * 100$

- TRAI Benchmark: Worst affected cells having more than 3% TCH drop rate ≤ 3%

- Audit Procedure:
  - Audit of traffic data of the relevant quarter kept in OMC-R at MSCs and used for arriving at CDR would be conducted.

The operator should only be considering those calls which are dropped during Cell Bouncing Busy hour (CBBH) for all days of the relevant quarter.

8.6.1. KEY FINDINGS: CELLS HAVING MORE THAN 3% TCH DROP: CONSOLIDATED

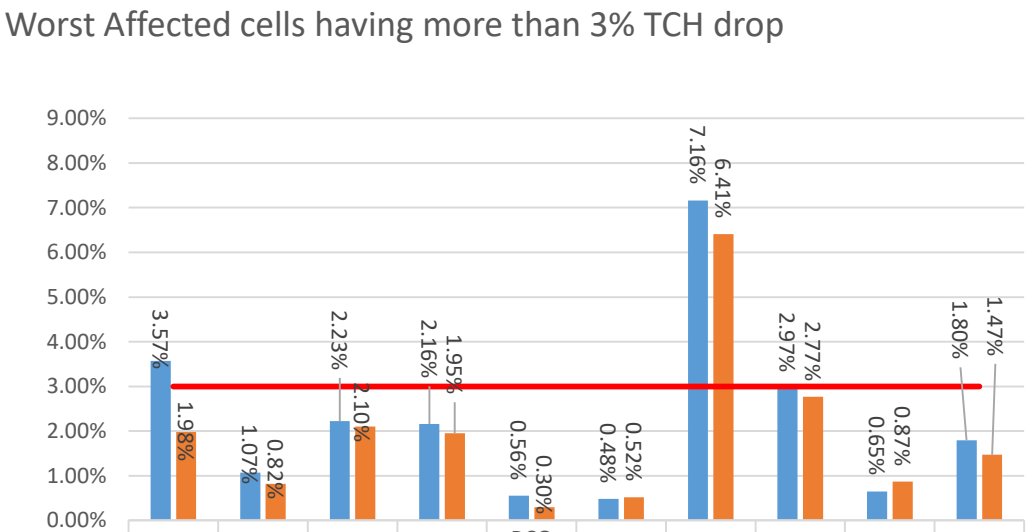


	Airc el	Airt el	BSN L	Ide a	RC OM CD MA	RC OM GS M	TTS L CD MA	TTS L GS M	Vid eoc on	Vod afo ne
PMR Data 3 Month Consolidated	1.51%	1.20%	1.77%	2.07%	0.42%	0.48%	6.03%	2.84%	0.57%	1.89%
3 Day Live 3 Month Consolidated	1.59%	1.13%	1.76%	1.91%	0.41%	0.45%	5.92%	2.77%	0.77%	1.80%
Benchmark ≤ 3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%

- TTSL CDMA has parameter value of **6.03%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

- TTSL CDMA has parameter value of **5.92%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is predefined at ≤ 3%.

8.6.2. KEY FINDINGS: CELLS HAVING MORE THAN 3% TCH DROP: OCTOBER



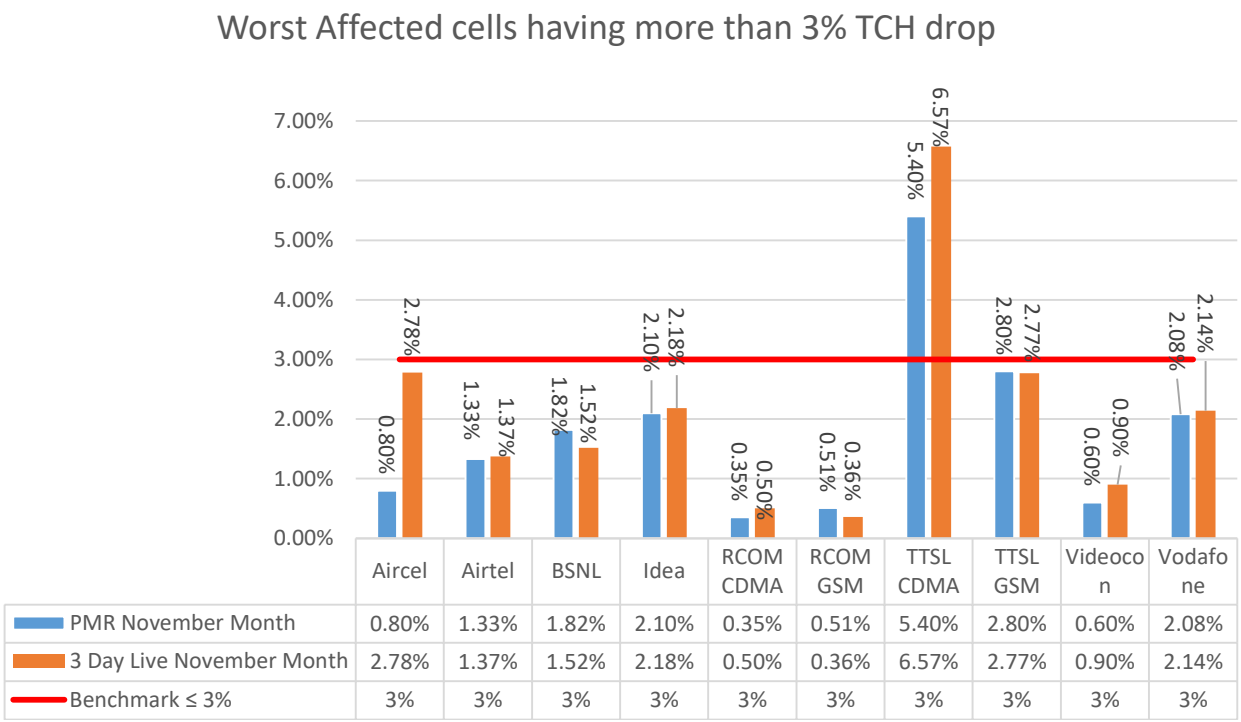
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR October Month	3.57%	1.07%	2.23%	2.16%	0.56%	0.48%	7.16%	2.97%	0.65%	1.80%
3 Day Live October Month	1.98%	0.82%	2.10%	1.95%	0.30%	0.52%	6.41%	2.77%	0.87%	1.47%
Benchmark ≤ 3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%

- TTSL CDMA has parameter value of **7.16%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

- TTSL CDMA has parameter value of **6.41%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

- AIRCEL has parameter value of **3.57%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

8.6.3. KEY FINDINGS: CELLS HAVING MORE THAN 3% TCH DROP: NOVEMBER

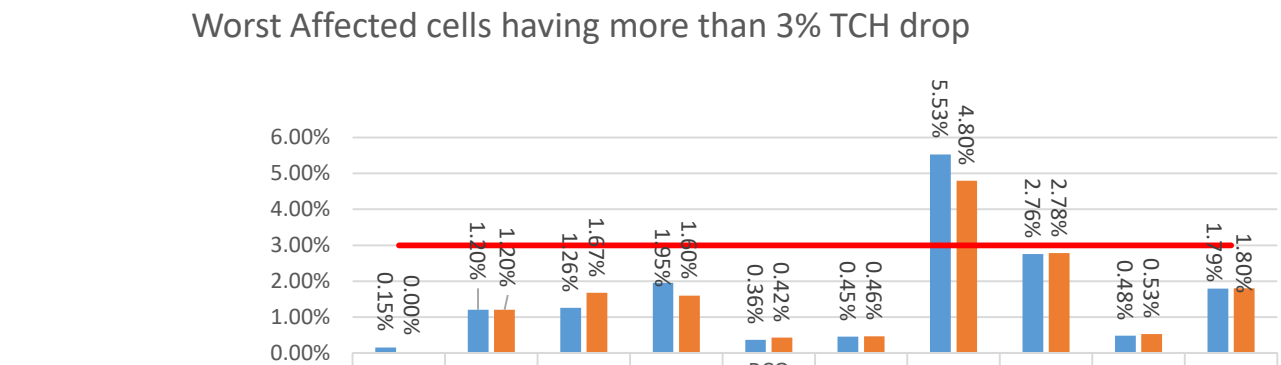


	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR November Month	0.80%	1.33%	1.82%	2.10%	0.35%	0.51%	5.40%	2.80%	0.60%	2.08%
3 Day Live November Month	2.78%	1.37%	1.52%	2.18%	0.50%	0.36%	6.57%	2.77%	0.90%	2.14%
Benchmark ≤ 3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%

- TTSL CDMA has parameter value of **5.40%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

- TTSL CDMA has parameter value of **6.57%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

8.6.4. KEY FINDINGS: CELLS HAVING MORE THAN 3% TCH DROP: DECEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR December Month	0.15%	1.20%	1.26%	1.95%	0.36%	0.45%	5.53%	2.76%	0.48%	1.79%
3 Day Live December Month	0.00%	1.20%	1.67%	1.60%	0.42%	0.46%	4.80%	2.78%	0.53%	1.80%
Benchmark ≤ 3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%

- TTSL CDMA has parameter value of **5.53%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%

- TTSL CDMA has parameter value of **4.80%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is predefined at ≤ 2%.

8.7. VOICE QUALITY

- Definition:
  - For GSM service providers the calls having a value of 0 –5 are considered to be of good quality (on a seven point scale)
  - For CDMA the measure of voice quality is Frame Error Rate (FER). FER is the probability that a transmitted frame will be received incorrectly. Good voice quality of a call is considered when it FER value lies between 0 – 4 %

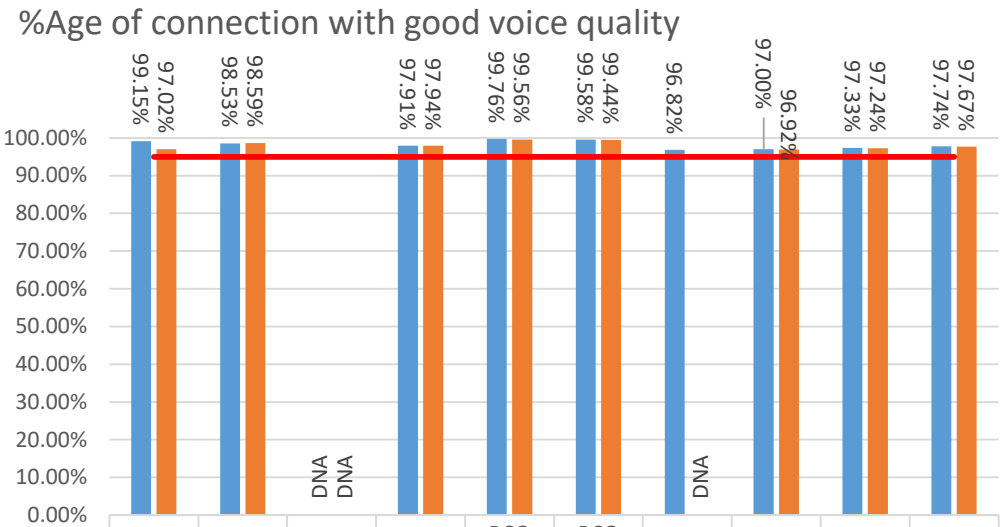
- Computational Methodology:

  % Connections with good voice quality = $\frac{\text{No.of voice samples with good voice quality}}{\text{Total number of samples}} * 100$

- TRAI Benchmark: ≥ 95%

- Audit Procedure –
  - A sample of calls would be taken randomly from the total calls established.
  - The operator should only be considering those calls which are meeting the desired benchmark of good voice quality.

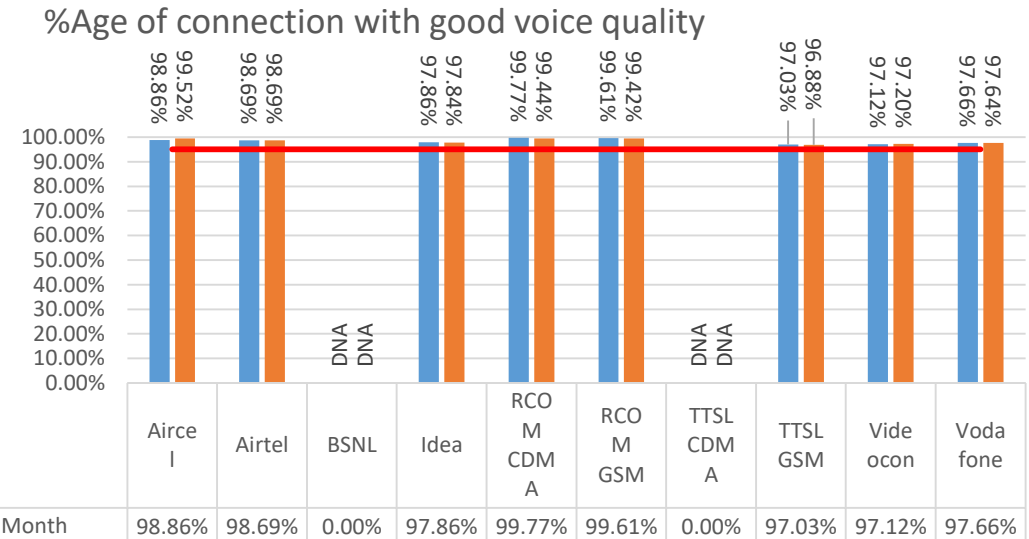
8.7.1. KEY FINDINGS: VOICE QUALITY: CONSOLIDATED



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data 3 Month Consolidated	99.15%	98.53%	0.00%	97.91%	99.76%	99.58%	96.82%	97.00%	97.33%	97.74%
3 Day Live 3 Month Consolidated	97.02%	98.59%	0.00%	97.94%	99.56%	99.44%	0.00%	96.92%	97.24%	97.67%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

- It is clear from the analysis that all the operators are within benchmark.

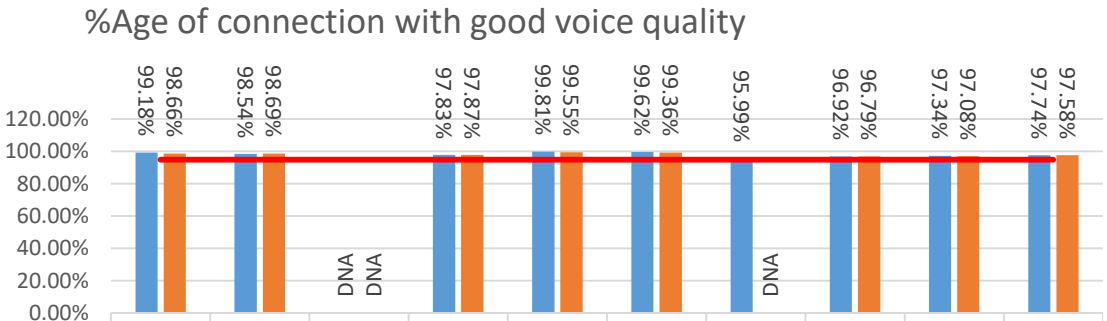
8.7.2. KEY FINDINGS: VOICE QUALITY: OCTOBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR October Month	98.86%	98.69%	0.00%	97.86%	99.77%	99.61%	0.00%	97.03%	97.12%	97.66%
3 Day Live October Month	99.52%	98.69%	0.00%	97.84%	99.44%	99.42%	0.00%	96.88%	97.20%	97.64%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

- It is clear from the analysis that all the operators are within benchmark.

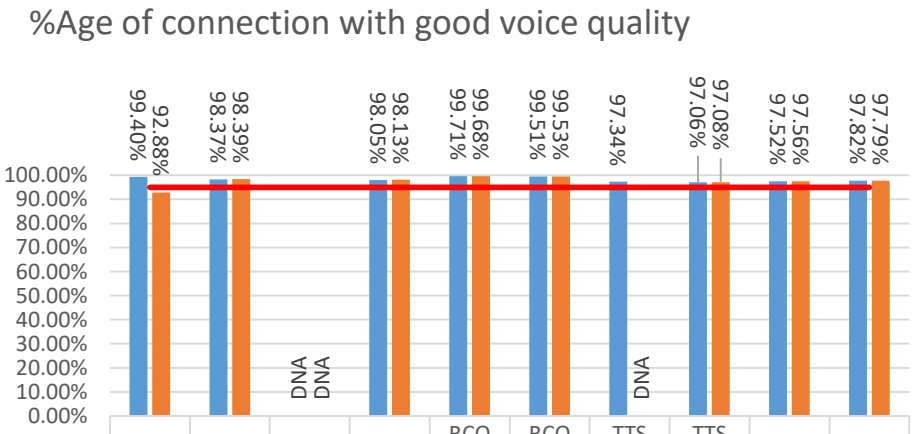
8.7.3. KEY FINDINGS: VOICE QUALITY: NOVEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR November Month	99.18%	98.54%	0.00%	97.83%	99.81%	99.62%	95.99%	96.92%	97.34%	97.74%
3 Day Live November Month	98.66%	98.69%	0.00%	97.87%	99.55%	99.36%	0.00%	96.79%	97.08%	97.58%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

- It is clear from the analysis that all the operators are within benchmark.

8.7.4. KEY FINDINGS: VOICE QUALITY: DECEMBER



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR December Month	99.40%	98.37%	0.00%	98.05%	99.71%	99.51%	97.34%	97.06%	97.52%	97.82%
3 Day Live December Month	92.88%	98.39%	0.00%	98.13%	99.68%	99.53%	0.00%	97.08%	97.56%	97.79%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

- Aircel has parameter value of **92.88%** and failed to meet the benchmark for %age of connection with good voice quality as it is pre-defined at ≥95%

8.8. POI CONGESTION: CONSOLIDATED

POI Congestion	Aircel	Airtel	BSNL	Idea	VIDEOCON	RCOM CDMA	RCOM GSM	TATA CDMA	TATA GSM	Vodafone
	2G & 3G	2G	2G & 3G	2G & 3G	2G	2G	2G	2G	2G & 3G	2G & 3G
Total No. of call attempts on POI	870	1178716	1773301	29869	165307	141043	9778	427807	127981	1670192
Total traffic served on all POIs (Erlang)	3	39183	35438	1135	4643	2717	162	11537	2602	32347
Total No. of circuits on all individual POIs	6911	56746	49230	69430	7275	9502	1666	32520	9232	53507
Total number of working POI Service Area wise	35	41	99	57	20	18	9	89	16	21
Capacity of all POIs	6343	56179	34461	68883	6865	8545	1390	30275	8540	52446
No. of all POI's having >=0.5% POI congestion	0	0	0	0	0	Nil	Nil	0	Nil	0
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	0	0	0	0	Nil	Nil	Nil	0	Nil	0

8.9. POI CONGESTION: OCTOBER

POI Congestion	Aircel	Airtel	BSNL	Idea	VIDEOCON	RCOM CDMA	RCOM GSM	TATA CDMA	TATA GSM	Vodafone
	2G & 3G	2G	2G & 3G	2G & 3G	2G	2G	2G	2G	2G & 3G	2G & 3G
Total No. of call attempts on POI	923	2132217	1778697	32529.667	238829.67	1359780	9391	437223	130216	2486209
Total traffic served on all POIs (Erlang)	4.19	38342.18	34413.658	1216	6657.5967	2516.78	157.07	11181	2640.4967	46681.63
Total No. of circuits on all individual POIs	6911	52879.57	49238	111690	10641	9502	1666	33564	9291	78236
Total number of working POI Service Area wise	35	41	62	57	20	18	9	89	16	21
Capacity of all POIs	6342.5388	52350.774	34466.7	110767.67	10040.508	8585.33	1394.93	31295.333	8724.3977	76491.547
No. of all POI's having >=0.5% POI congestion	0	0	0	0	0	Nil	Nil	0	NIL	0
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	0	0	0	0	NIL	Nil	Nil	0	NIL	0

8.10. POI CONGESTION: NOVEMBER

POI Congestion	Aircel	Airtel	BSNL	Idea	VIDEOCON	RCOM CDMA	RCOM GSM	TATA CDMA	TATA GSM	Vodafone
	2G & 3G	2G	2G & 3G	2G & 3G	2G	2G	2G	2G	2G & 3G	2G & 3G
Total No. of call attempts on POI	861	1341374	1749269	29765	1375	139201	9644	415871	130005	108770
Total traffic served on all POIs (Erlang)	2.917931	38618.993	34372.673	1117.9862	333	2710.1327	161.97496	10226	2598.31	2155.0059
Total No. of circuits on all individual POIs	6911	57455.25	49238	108579.53	544	9502	1666	32001	9125.8077	3740.2857
Total number of working POI Service Area wise	35	41	62	57	20	18	9	89	16	21
Capacity of all POIs	6342.5388	56880.697	34466.6	107695.65	514	8547.7092	1390.0613	29763	8447.3209	3672.1593
No. of all POI's having >=0.5% POI congestion	0	0	0	0	0	Nil	Nil	NIL	NIL	0
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	0	NA	0	nil	nil	Nil	Nil	NIL	NIL	na

8.11. POI CONGESTION: DECEMBER

POI Congestion	Aircel	Airtel	BSNL	Idea	VIDEOCON	RCOM CDMA	RCOM GSM	TATA CDMA	TATA GSM	Vodafone
	2G & 3G	2G	2G & 3G	2G & 3G	2G	2G	2G	2G	2G & 3G	2G & 3G
Total No. of call attempts on POI	768	31638	1818638	32060	11421	144123	9010	421054	123975	2409693
Total traffic served on all POIs (Erlang)	2.2933333	39031.667	35955	1176.8131	322.32183	2843.5205	160.5289	12769.742	2509.7033	48087.847
Total No. of circuits on all individual POIs	6911	60170	49223	1982.7135	544.45	9502	1666	31983	9115.2433	78546
Total number of working POI Service Area wise	35	42	62	57	20	18	9	89	16	21
Capacity of all POIs	6342.5388	59568.333	34456	1966.9804	514.08221	8525.1659	1380.7669	29752.643	8447.3209	77173.995
No. of all POI's having >=0.5% POI congestion	0	0	0	0	0	Nil	Nil	NIL	NIL	0
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	0	0	0	nil	NIL	Nil	Nil	NIL	NIL	0

9. L1 CALLING DATA

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

- Ambala: 25th Nov to 27th Nov 2015
- Narnaul: 2nd Dec 2015 to 4th Dec 2015

9.1. Airtel

SR. NO.	EMERGENCY NUMBER	BARARA	CHHCHRAULI	NARAINGARH	KALKA	REWARI	NARNAUL	MAHENDERGARH	KOSLI	BAWAL	JATUSANA
1	100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	101	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	102	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	104	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
5	108	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
6	138	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7	149	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
8	181	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
9	182	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
10	1033	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	1037	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
12	1056	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
13	1060	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
14	1063	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
15	1064	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
16	1070	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
17	1071	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
18	1072	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19	1073	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20	1077	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
21	1090	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
22	1091	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
23	1097	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
24	1099	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
25	1511	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
26	1512	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
27	1514	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
28	1903	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
29	1909	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
30	1912	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
31	1916	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
32	1950	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
33	10580	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒

34	10589	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
35	10740	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
36	10741	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
37	15100	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
38	155214	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
39	155304	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒

9.2. BSNL

SR. NO.	EMERGENCY NUMBER	Ambala	Barara	Jagadhari	Chhachhrauli	Naraingarh	Kalka	REWARI	NARNAUL	MAHENDERGARH	KOSLI
1	100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	101	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	102	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	104	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
5	108	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
6	138	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7	149	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
8	181	✓	✓	✓	✓	✓	✓	☒	✓	✓	✓
9	182	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
10	1033	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	1037	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
12	1056	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
13	1060	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
14	1063	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
15	1064	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
16	1070	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
17	1071	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
18	1072	✓	✓	✓	✓	✓	✓	☒	☒	✓	✓
19	1073	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20	1077	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
21	1090	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
22	1091	✓	✓	✓	✓	✓	✓	☒	✓	✓	☒
23	1097	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
24	1099	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
25	1511	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
26	1512	✓	✓	✓	✓	✓	✓	☒	☒	✓	✓
27	1514	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
28	1903	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
29	1909	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
30	1912	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
31	1916	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
32	1950	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒

33	10580	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
34	10589	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
35	10740	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
36	10741	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
37	15100	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
38	155214	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒
39	155304	✓	✓	✓	✓	✓	✓	☒	☒	☒	☒

9.3. Idea

SR. NO.	EMERGENCY NUMBER	AMBALA	JAGADHARI	NARAINGARH	KOSLI	JATUSANA	REWARI	MAHENDERGARH	BAWAL	NARNAUL
1	100	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	101	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	102	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	104	☒	☒	☒	☒	☒	☒	☒	☒	☒
5	108	☒	☒	☒	☒	☒	☒	☒	☒	☒
6	138	✓	✓	✓	☒	☒	✓	☒	☒	☒
7	149	☒	☒	☒	☒	☒	☒	☒	☒	☒
8	181	✓	✓	✓	✓	✓	✓	✓	✓	✓
9	182	☒	☒	☒	✓	✓	✓	✓	✓	✓
10	1033	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	1037	☒	☒	☒	☒	☒	☒	☒	☒	☒
12	1056	☒	☒	☒	☒	☒	☒	☒	☒	☒
13	1060	☒	☒	☒	☒	☒	☒	☒	☒	☒
14	1063	✓	✓	✓	✓	✓	✓	✓	✓	✓
15	1064	✓	✓	✓	☒	☒	☒	☒	☒	☒
16	1070	✓	✓	✓	☒	☒	☒	☒	☒	☒
17	1071	☒	☒	☒	☒	☒	☒	☒	☒	☒
18	1072	✓	✓	✓	✓	✓	✓	✓	✓	✓
19	1073	✓	✓	✓	✓	✓	✓	✓	✓	✓
20	1077	✓	✓	✓	☒	☒	☒	☒	☒	☒
21	1090	☒	☒	☒	☒	☒	☒	☒	☒	☒
22	1091	✓	✓	✓	✓	✓	✓	✓	✓	✓
23	1097	☒	☒	☒	✓	✓	✓	✓	✓	✓
24	1099	☒	☒	☒	☒	☒	☒	☒	☒	☒
25	1511	☒	☒	☒	☒	☒	☒	☒	☒	☒
26	1512	✓	✓	✓	✓	✓	✓	✓	✓	✓
27	1514	☒	☒	☒	☒	☒	☒	☒	☒	☒
28	1903	✓	✓	✓	✓	☒	✓	☒	☒	☒
29	1909	✓	✓	✓	✓	✓	✓	✓	✓	✓
30	1912	✓	✓	✓	☒	☒	☒	☒	☒	☒

31	1916	☒	☒	☒	☒	☒	☒	☒	☒	☒
32	1950	✓	✓	✓	☒	☒	☒	☒	☒	☒
33	10580	✓	✓	✓	☒	☒	☒	☒	☒	☒
34	10589	☒	☒	☒	☒	☒	☒	☒	☒	☒
35	10740	☒	☒	☒	☒	☒	☒	☒	☒	☒
36	10741	☒	☒	☒	☒	☒	☒	☒	☒	☒
37	15100	✓	✓	✓	☒	☒	☒	☒	☒	☒
38	155214	☒	☒	☒	☒	☒	☒	☒	☒	☒
39	155304	☒	☒	☒	☒	☒	☒	☒	☒	☒

9.4. RCOM CDMA

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

9.5. RCOM GSM

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

38	155214	☒	☒	☒	☒	☒	☒
39	155304	✓	✓	✓	✓	✓	✓

9.6. TTSL CDMA

SR. NO.	EMERGENCY NUMBER	Narnaul	Mahendergarh	Jatusana	Kosli	Rewari	Bawal
1	100	✓	✓	✓	✓	✓	✓
2	101	✓	✓	✓	✓	✓	✓
3	102	✓	✓	✓	✓	✓	✓
4	104	☒	☒	☒	☒	☒	☒
5	108	☒	☒	☒	☒	☒	☒
6	138	☒	☒	☒	☒	☒	☒
7	149	☒	☒	☒	☒	☒	☒
8	181	☒	☒	☒	☒	☒	☒
9	182	☒	☒	☒	☒	☒	☒
10	1033	☒	☒	☒	☒	☒	☒
11	1037	☒	☒	☒	☒	☒	☒
12	1056	☒	☒	☒	☒	☒	☒
13	1060	☒	☒	☒	☒	☒	☒
14	1063	☒	☒	☒	☒	☒	☒
15	1064	☒	☒	☒	☒	☒	☒
16	1070	☒	☒	☒	☒	☒	☒
17	1071	☒	☒	☒	☒	☒	☒
18	1072	☒	☒	☒	☒	☒	☒
19	1073	✓	✓	✓	✓	✓	✓
20	1077	☒	☒	☒	☒	☒	☒
21	1090	☒	☒	☒	☒	☒	☒
22	1091	✓	✓	✓	✓	✓	✓
23	1097	☒	☒	☒	☒	☒	☒
24	1098	✓	✓	✓	✓	✓	✓
25	1511	☒	☒	☒	☒	☒	☒
26	1512	☒	☒	☒	☒	☒	☒
27	1514	☒	☒	☒	☒	☒	☒
28	1903	☒	☒	☒	☒	☒	☒
29	1909	☒	☒	☒	☒	☒	☒
30	1912	☒	☒	☒	☒	☒	☒
31	1916	☒	☒	☒	☒	☒	☒
32	1950	☒	☒	☒	☒	☒	☒
33	10580	☒	☒	☒	☒	☒	☒
34	10589	☒	☒	☒	☒	☒	☒
35	10740	☒	☒	☒	☒	☒	☒
36	10741	✓	✓	✓	✓	✓	✓
37	15100	☒	☒	☒	☒	☒	☒

38	155214	☒	☒	☒	☒	☒	☒
39	155304	☒	☒	☒	☒	☒	☒

9.7. TTSL GSM

SR. NO.	EMERGENCY NUMBER	Narnaul	Mahendergarh	Jatusana	Kosli	Rewari	Bawal
1	100	✓	✓	✓	✓	✓	✓
2	101	✓	✓	✓	✓	✓	✓
3	102	✓	✓	✓	✓	✓	✓
4	104	☒	☒	☒	☒	☒	☒
5	108	☒	☒	☒	☒	☒	☒
6	138	☒	☒	☒	☒	☒	☒
7	149	☒	☒	☒	☒	☒	☒
8	181	☒	☒	☒	☒	☒	☒
9	182	☒	☒	☒	☒	☒	☒
10	1033	☒	☒	☒	☒	☒	☒
11	1037	☒	☒	☒	☒	☒	☒
12	1056	☒	☒	☒	☒	☒	☒
13	1060	☒	☒	☒	☒	☒	☒
14	1063	☒	☒	☒	☒	☒	☒
15	1064	☒	☒	☒	☒	☒	☒
16	1070	☒	☒	☒	☒	☒	☒
17	1071	☒	☒	☒	☒	☒	☒
18	1072	☒	☒	☒	☒	☒	☒
19	1073	✓	✓	✓	✓	✓	✓
20	1077	☒	☒	☒	☒	☒	☒
21	1090	☒	☒	☒	☒	☒	☒
22	1091	✓	✓	✓	✓	✓	✓
23	1097	☒	☒	☒	☒	☒	☒
24	1098	✓	✓	✓	✓	✓	✓
25	1511	☒	☒	☒	☒	☒	☒
26	1512	☒	☒	☒	☒	☒	☒
27	1514	☒	☒	☒	☒	☒	☒
28	1903	☒	☒	☒	☒	☒	☒
29	1909	✓	✓	✓	✓	✓	✓
30	1912	☒	☒	☒	☒	☒	☒
31	1916	☒	☒	☒	☒	☒	☒
32	1950	☒	☒	☒	☒	☒	☒
33	10580	☒	☒	☒	☒	☒	☒
34	10589	☒	☒	☒	☒	☒	☒
35	10740	☒	☒	☒	☒	☒	☒
36	10741	☒	☒	☒	☒	☒	☒
37	15100	☒	☒	☒	☒	☒	☒

38	155214	☒	☒	☒	☒	☒	☒
39	155304	☒	☒	☒	☒	☒	☒

9.8. Videocon

SR. NO.	EMERGENCY NUMBER	Narnaul	Mahendergarh	Jatusana	Kosli	Rewari	Bawal
1	100	✓	✓	✓	✓	✓	✓
2	101	✓	✓	✓	✓	✓	✓
3	102	✓	✓	✓	✓	✓	✓
4	104	☒	☒	☒	☒	☒	☒
5	108	☒	☒	☒	☒	☒	☒
6	138	☒	☒	☒	☒	☒	☒
7	149	☒	☒	☒	☒	☒	☒
8	181	☒	☒	☒	☒	☒	☒
9	182	☒	☒	☒	☒	☒	☒
10	1033	☒	☒	☒	☒	☒	☒
11	1037	☒	☒	☒	☒	☒	☒
12	1056	☒	☒	☒	☒	☒	☒
13	1060	☒	☒	☒	☒	☒	☒
14	1063	☒	☒	☒	☒	☒	☒
15	1064	☒	☒	☒	☒	☒	☒
16	1070	☒	☒	☒	☒	☒	☒
17	1071	☒	☒	☒	☒	☒	☒
18	1072	☒	☒	☒	☒	☒	☒
19	1073	✓	✓	✓	✓	✓	✓
20	1077	☒	☒	☒	☒	☒	☒
21	1090	☒	☒	☒	☒	☒	☒
22	1091	✓	✓	✓	✓	✓	✓
23	1097	☒	☒	☒	☒	☒	☒
24	1098	✓	✓	✓	✓	✓	✓
25	1511	☒	☒	☒	☒	☒	☒
26	1512	☒	☒	☒	☒	☒	☒
27	1514	☒	☒	☒	☒	☒	☒
28	1903	☒	☒	☒	☒	☒	☒
29	1909	✓	✓	✓	✓	✓	✓
30	1912	☒	☒	☒	☒	☒	☒
31	1916	☒	☒	☒	☒	☒	☒
32	1950	☒	☒	☒	☒	☒	☒
33	10580	☒	☒	☒	☒	☒	☒
34	10589	☒	☒	☒	☒	☒	☒
35	10740	☒	☒	☒	☒	☒	☒
36	10741	☒	☒	☒	☒	☒	☒
37	15100	☒	☒	☒	☒	☒	☒

38	155214	☒	☒	☒	☒	☒	☒
39	155304	☒	☒	☒	☒	☒	☒

10. Non Network Parameters: Description and Detailed Findings

10.1. Metering and Billing Credibility

The billing complaints for post-paid are calculated by averaging over one billing cycle in a quarter. For example, there are three billing cycles in a quarter, the data for each billing cycle is calculated separately and then averaged over.

The charging complaints for prepaid are calculated by taking all complaints in a quarter.

Parameter Description

All the complaints related to billing/ charging as per clause 3.7.2 of QoS regulation of 20th June, 2009 were covered. The types of billing complaints covered are listed below.

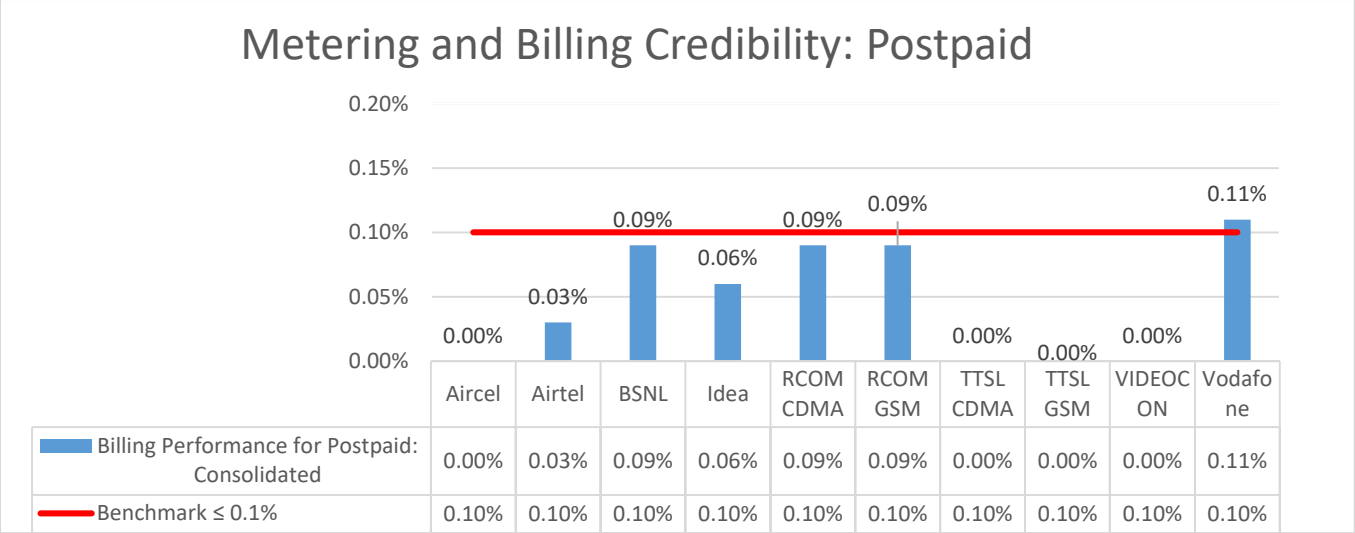
1. Payments made and not credited to the subscriber account
2. Payment made on time but late payment charge levied wrongly
3. Wrong roaming charges
4. Double charges
5. Charging for toll free services
6. Local calls charged/billed as STD/ISD or vice versa
7. Calls or messages made disputed
8. Validity related complaints
9. Credit agreed to be given in resolution of complaint, but not accounted in the bill
10. Charging for services provided without consent
11. Charging not as per tariff plans or top up vouchers/ special packs etc.
12. Overcharging or undercharging

In addition to the above, any billing complaint which leads to billing error, waiver, refund, credit, or any adjustment is also considered as valid billing complaint for calculating the number of disputed bills.

- Computational Methodology:
  - Metering and billing credibility (Post-paid)
    $$= \frac{\text{Total billing complaints} * \text{received during the relevant billing cycle}}{\text{Total bills generated} * \text{during the relevant billing cycle}} * 100$$
  - Operator to include all types of bills generated for customers. This would include printed bills, online bills and any other forms of bills generated
  - Billing complaints here shall include only dispute related issues (including those that may arise because of a lack of awareness at the subscribers' end). It does not include any provisional issues (such as delayed dispatch of billing statements, etc.) in which the operator has opened a ticket internally.
  - Metering and billing credibility (Prepaid)
    $$= \frac{\text{Total charging complaints received during the quarter}}{\text{Total number of subscribers reported by the operator at the end of the quarter}} * 100$$
- TRAI Benchmark: <= 0.1%
- Audit Procedure:

- Audit of billing complaint details for the complaints received during the quarter and used for arriving at the benchmark reported to TRAI would be conducted
- For Post-paid, the total billing complaints would be audited by averaging over billing cycles in a quarter.
- For Prepaid, the data of total charging complaints in a quarter would be taken for the purpose of audit.

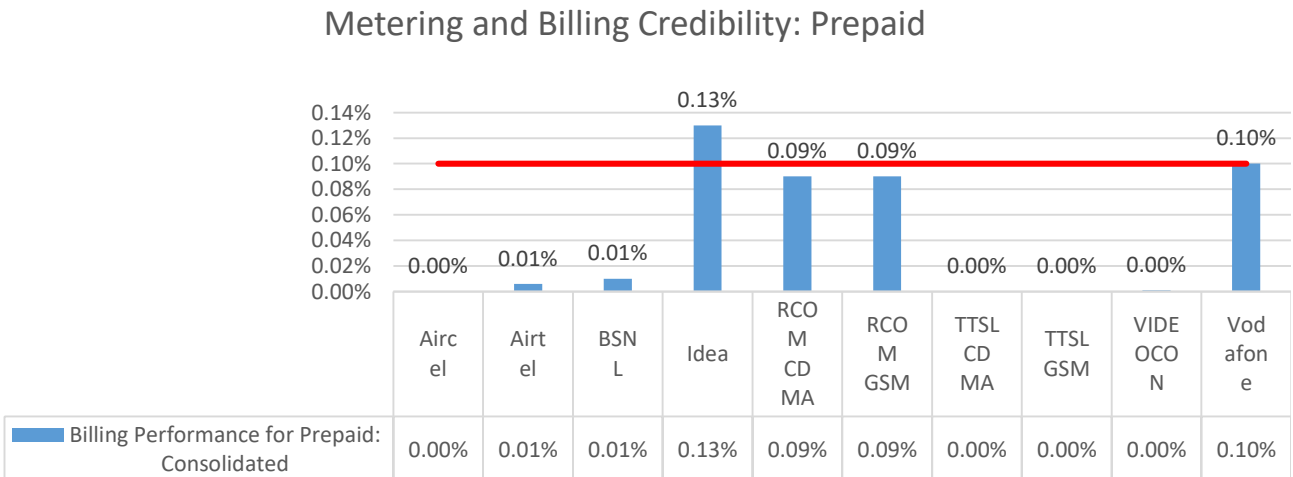
10.1.1. KEY FINDINGS: METERING AND BILLING CREDIBILITY: POST – PAID



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON	Vodafone
Billing Performance for Postpaid: Consolidated	0.00%	0.03%	0.09%	0.06%	0.09%	0.09%	0.00%	0.00%	0.00%	0.11%
Benchmark ≤ 0.1%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%

- Vodafone has parameter value of **0.11%** and failed to meet the benchmark for Metering and Billing credibility (Post-paid) as it is predefined at ≤ 0.1%

10.1.2. KEY FINDINGS: METERING AND BILLING CREDIBILITY: PREPAID



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON	Vodafone
Billing Performance for Prepaid: Consolidated	0.00%	0.01%	0.01%	0.13%	0.09%	0.09%	0.00%	0.00%	0.00%	0.10%

- Idea has parameter value of **0.13%** and failed to meet the benchmark for Metering and Billing credibility (Pre-paid) as it is predefined at ≤ 0.1%

10.2. RESOLUTION OF BILLING COMPLAINTS

Calculation of Percentage resolution of billing complaints: The calculation methodology (given below) as per QoS regulations 2009 (7 of 2009) was followed to calculate resolution of billing complaints.

Resolution of billing complaints within 4 weeks:

%age of billing complaints (for post-paid customers)/ charging, credit & validity (for pre-paid customers) resolved within 4 weeks =

$$\frac{\text{number of billing complaints for post-paid customers/charging, credit/ validity complaints for pre-paid customers resolved within 4 weeks during the quarter}}{\text{number of billing/charging, credit / validity complaints received during the quarter}} \times 100$$

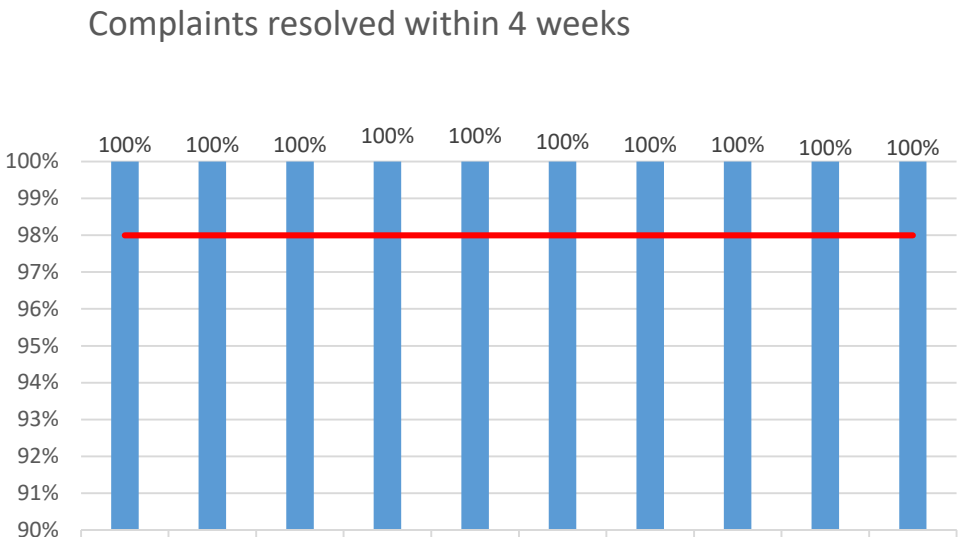
Resolution of billing complaints within 6 weeks:

%age of billing complaints (for post-paid customers)/ charging, credit & validity (for pre-paid customers) resolved within 6 weeks =

$$\frac{\text{number of billing complaints for post-paid customers/charging, credit/ validity complaints for pre-paid customers resolved within 6 weeks during the quarter}}{\text{number of billing/charging, credit / validity complaints received during the quarter}} \times 100$$

- Billing complaints here shall include only dispute related issues (including those that may arise because of a lack of awareness at the subscribers' end). It does not include any provisional issues (such as delayed dispatch of billing statements, etc.) in which the operator has opened a ticket internally. Complaints raised by the consumers to operator are only considered as part of the calculation.
- Date of resolution in this case would refer to the date when a communication has taken place from the operator's end to inform the complainant about the final resolution of the issue / dispute.
- Benchmark: 98% complaints resolved within 4 weeks, 100% within 6 weeks.

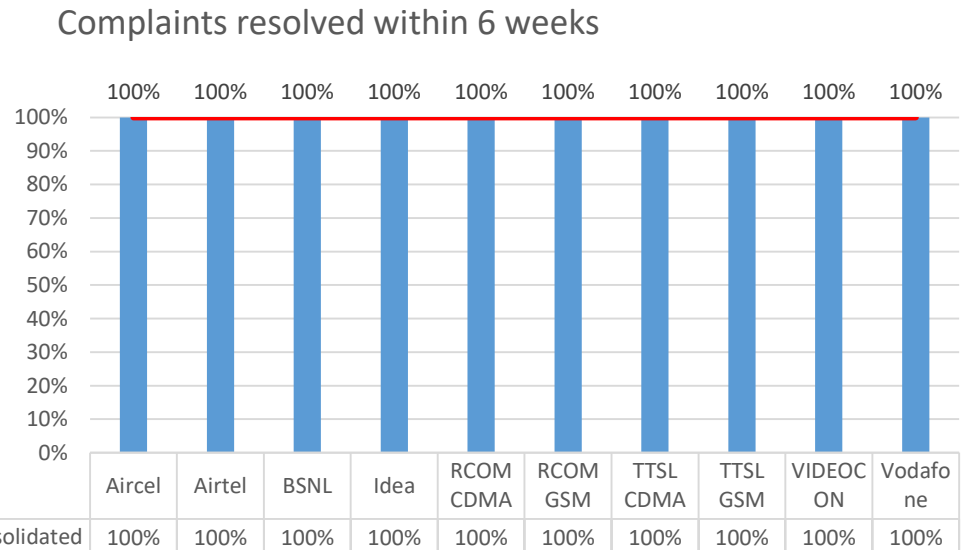
10.2.1. KEY FINDINGS: BILLING COMPLAINTS RESOLUTION WITHIN 4 WEEKS



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON	Vodafone
Billing Complaints: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark ≥ 98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%

- It is clear from the analysis that all the operators are within benchmark.

10.2.2. KEY FINDINGS: BILLING COMPLAINTS RESOLUTION WITHIN 6 WEEKS



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON	Vodafone
Billing Complaints: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark =100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

It is clear from the analysis that all the operators are within benchmark.

10.3. Period of Applying Credit / Waver

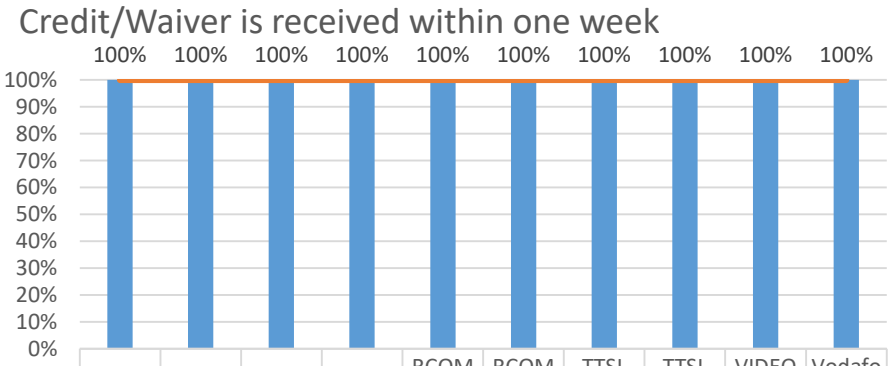
- Computational Methodology:

  Period of applying credit waiver = $\frac{\text{number of cases where credit waiver is applied within 7 days}}{\text{total number of cases eligible for credit waiver}} * 100$

- TRAI Benchmark: Period of applying credit waiver within 7 days: 100%

- Audit Procedure:
  - Operator to provide details of:-
  - List of all eligible cases along with
  - Date of applying credit waiver to all the eligible cases
  - Date of resolution of complaint for all eligible cases

10.3.1. Key Findings



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEO CON	Vodafone
%Age of Credit/weiver is received within one week	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark =100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

- It is clear from the analysis that all the operators are within benchmark.

10.4. Call Centre Performance: IVR

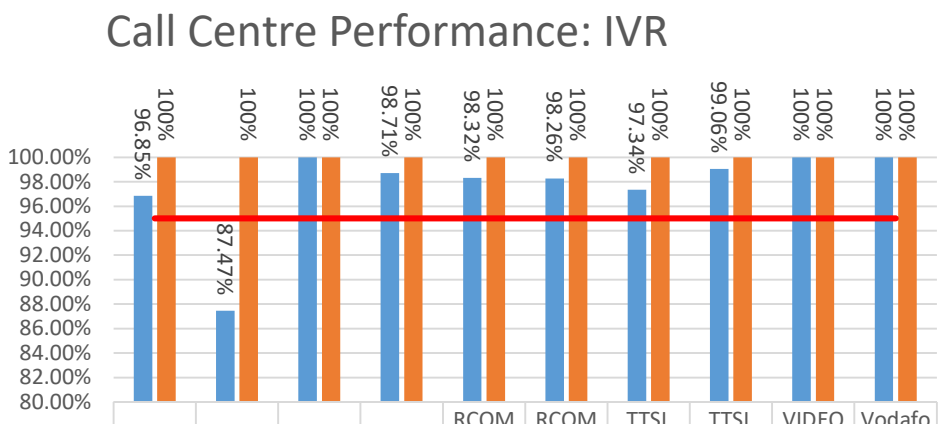
- Computational Methodology:

  Call centre performance IVR = $\frac{\text{Number of calls connected and answered by IVR}}{\text{All calls attempted to IVR}} * 100$

- TRAI Benchmark: >= 95%

- Audit Procedure:
  - Operators provide details of the following from their central call centre/ customer service database:
  - Total calls connected and answered by IVR
  - Total calls attempted to IVR
  - Also live calling is done to test the calls connected and answered by IVR

10.4.1. KEY FINDINGS



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON	Vodafone
Percentage of calls connected and answered : Consolidated	96.85%	87.47%	100%	98.71%	98.32%	98.26%	97.34%	99.06%	100%	100%
Percentage of calls connected and answered : Live Calling	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

- Airtel has parameter value of **87.46%** and failed to meet the benchmark for %age of calls answered by the IVR as it is predefined at **≥** 95%

10.5. CALL CENTRE PERFORMANCE: VOICE TO VOICE

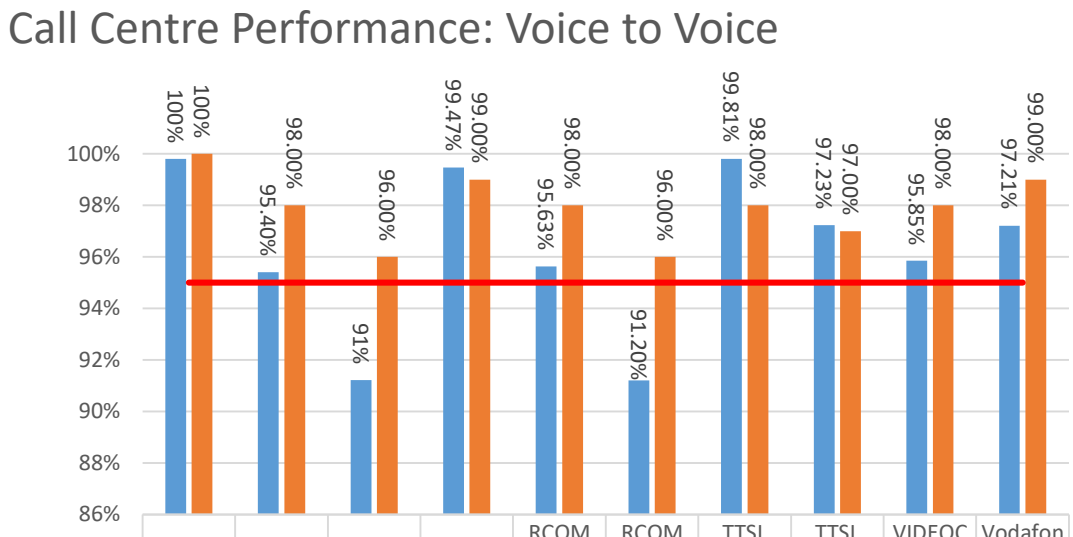
- Computational Methodology:

  Call centre performance Voice to Voice = $\frac{\text{Number of calls answered by operator within 90 seconds}}{\text{All calls attempted to connect to the operator}} * 100$

- Audit Procedure:
  - Operators provide details of the following from their central call centre/ customer service database:
  - Total calls connected and answered by operator within 90 seconds
  - Total calls attempted to connect to the operator
  - Also live calling was done to test the calls answered within 90 seconds by the operator

- Benchmark: 95% calls to be answered within 90 seconds.

10.5.1. KEY FINDINGS



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON	Vodafone
Percentage of calls connected and answered : 3 Month Data	100%	95.40%	91%	99.47%	95.63%	91.20%	99.81%	97.23%	95.85%	97.21%
Percentage of calls connected and answered : Live Calling	100%	98.00%	96.00%	99.00%	98.00%	96.00%	98.00%	97.00%	98.00%	99.00%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

- RCOM GSM has parameter value of **91.20%** and failed to meet the benchmark for %age of call answered by the operators (voice to voice) within 90 seconds as it is predefined at ≥ 95%
- BSNL has parameter value of **91%** and failed to meet the benchmark for %age of call answered by the operators (voice to voice) within 90 seconds as it is predefined at ≥ 95%

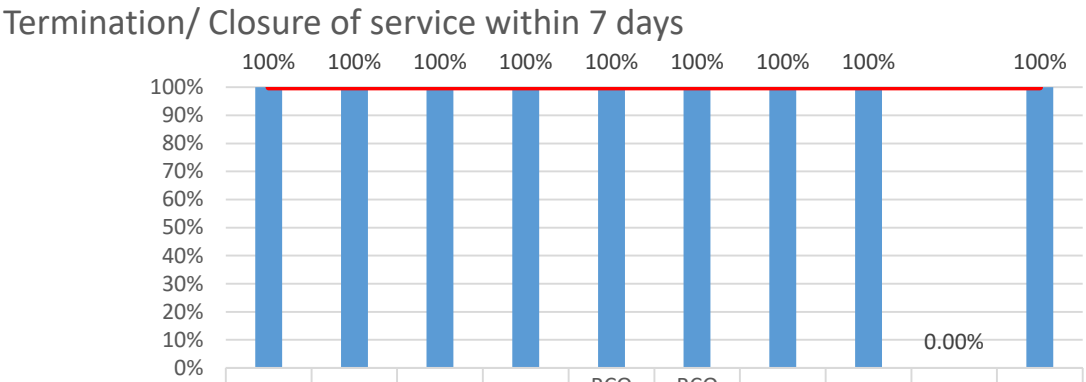
10.6. TERMINATION OR CLOSURE OF SERVICE

- Computational Methodology:

  Time taken for closure of service $= \frac{\text{number of closures done within 7 days}}{\text{total number of closure requests}} * 100$

- TRAI Benchmark: Termination/Closure of Service: <=7 days
- Audit Procedure:
  - Operator provide details of the following from their central billing/CS database:
  - Date of lodging the closure request (all requests in given period)
  - Date of closure of service

10.6.1. KEY FINDINGS



It is clear from the analysis that all the operators are within benchmark.

10.7. REFUND OF DEPOSIT AFTER CLOSURE

- Computational Methodology:

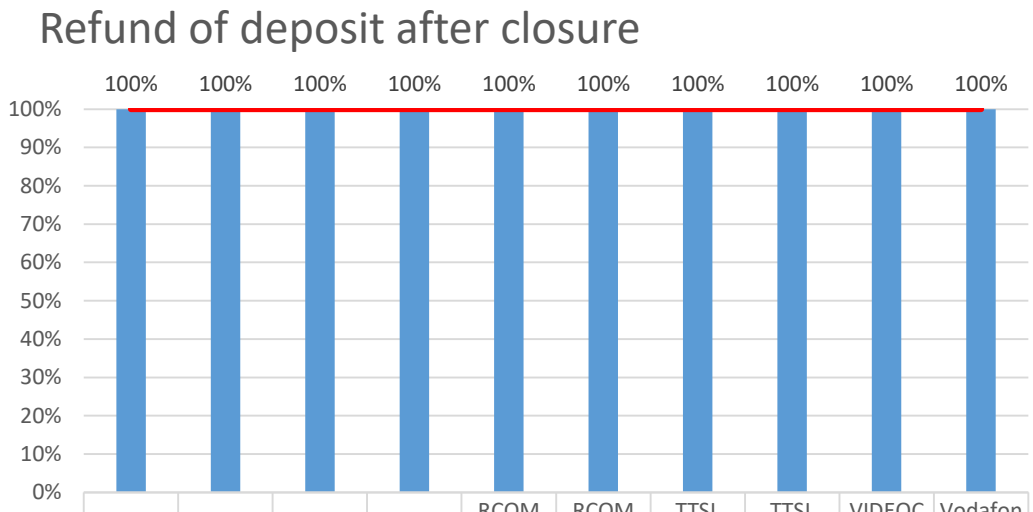
  Time taken for refund for deposit after closures = $\frac{\text{number of cases of refund after closure done within 60 days}}{\text{total number of cases of refund after closure}} * 100$

  - Any case where the operators need to return the amount back to consumers post closure of service in form of cheque/cash is considered to be refund.

- TRAI Benchmark: Time taken for refund for deposit after closures: 100% within 60 days

- Audit Procedure:
  - Operator provide details of the following from their central billing/refund database:
  - Dates of completion of all 'closure requests' resulting in requirement of a refund by the operator.
  - Dates of refund pertaining to all closure request received during relevant quarter

10.7.1. KEY FINDINGS



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON	Vodafone
Percentage refund of deposits after closures: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark =100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

It is clear from the analysis that all the operators are within benchmark.

11. CRITICAL FINDINGS

2G VOICE PMR DATA: OCTOBER

- AIRCEL has parameter value of **3.57%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.
- TTSL CDMA has parameter value of **7.16%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

2G VOICE PMR DATA: NOVEMBER

- TTSL CDMA has parameter value of 5.40% and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

2G VOICE PMR DATA: DECEMBER

- TTSL CDMA has parameter value of 5.53% and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

2G VOICE PMR DATA: CONSOLIDATED

- TTSL CDMA has parameter value of 6.03% and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

2G VOICE 3 DAYS LIVE DATA: OCTOBER

- TTSL CDMA has parameter value of 6.41% and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

2G VOICE 3 DAYS LIVE DATA: NOVEMBER

- TTSL CDMA has parameter value of 6.57% and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.
- Aircel has parameter value of **2.73%** and failed to meet the benchmark for Call Drop Rate (%age) as it is predefined at ≤ 2%.

2G VOICE 3 DAYS LIVE DATA: DECEMBER

- Aircel has parameter value of 92.88% and failed to meet the benchmark for %age of connection with good voice quality as it is pre-defined at ≥95%.
- BSNL has parameter value of 2.09% and failed to meet the benchmark for Sum of downtime of BTSs in a month in hrs. in the licensed service area as it is predefined at ≤ 2%.
- TTSL CDMA has parameter value of 4.80% and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is predefined at ≤ 2%.

3 DAYS LIVE DATA: CONSOLIDATED

- TTSL CDMA has parameter value of 5.92% and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is predefined at ≤ 3%.

3G VOICE PMR: OCTOBER

- VODAFONE has a parameter value of **3.00%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.

BILLING AND CUSTOMER CARE

- Airtel has parameter value of 87.47% and failed to meet the benchmark for %age of calls answered by the IVR as it is predefined at ≥ 95%.
- BSNL has parameter value of 91.22% and failed to meet the benchmark for %age of call answered by the operators (voice to voice) within 90 seconds as it is predefined at ≥ 95%.
- Idea has parameter value of 0.13% and failed to meet the benchmark for Metering and Billing credibility (Pre-paid) as it is predefined at ≤ 0.1%
- RCOM GSM has parameter value of 91.20% and failed to meet the benchmark for %age of call answered by the operators (voice to voice) within 90 seconds as it is predefined at ≥ 95%.
- Vodafone has parameter value of 0.11% and failed to meet the benchmark for Metering and Billing credibility (Post-paid) as it is predefined at ≤ 0.1%.

3 DAYS LIVE CALL CENTRE DATA

- Airtel has parameter value of 89.14% and failed to meet the benchmark for % age calls answered by the operator within 90 seconds as it is predefined at ≥ 95%.
- BSNL has parameter value of 18.25% and failed to meet the benchmark for % age calls answered by the operator within 90 seconds as it is predefined at ≥ 95%.

12. PMR COMPARISON (AGENCY VS TSP)

12.1. Network Parameters

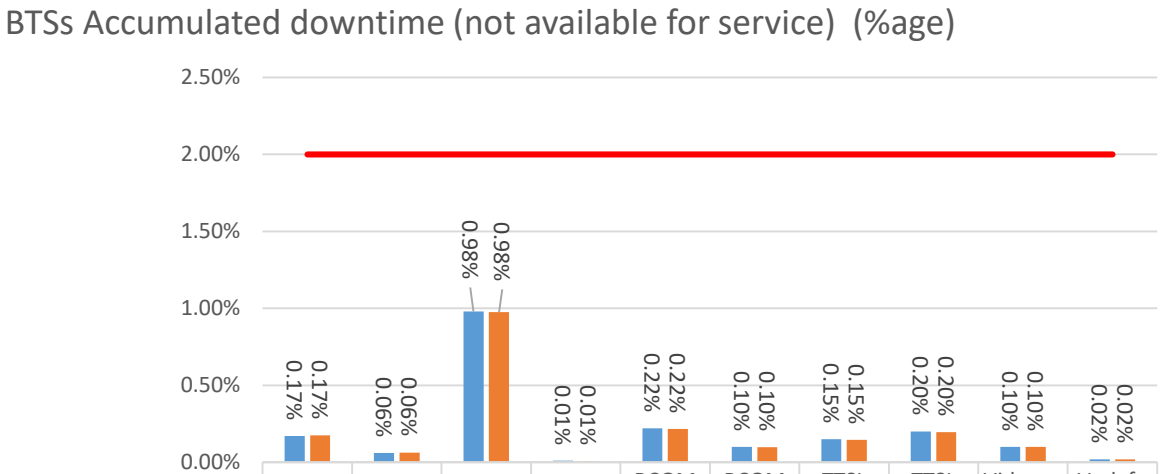
Name of Service Provider	Network Availability				Connection Establishment (Accessibility)						Connection Maintenance (Retainability)					
	Sum of downtime of BTSs in a month in hrs. in the licensed service area		No. of BTSs having accumulated downtime of >24 hours in a month		Call Set-up Success Rate (Within Licensee own network		SDDCH/Paging chl. Congestion		TCH Congestion		Call Drop Rate (%age)		Wost Affected cell having more than 3% TCH drop		%age of connection with good voice quality	
Benchmark	≤ 2%		≤ 2%		≥ 95%		≤ 1%		≤ 2%		≤ 2%		≤ 3%		≥ 95%	
	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP
Aircel	0.17%	0.17%	0.00%	0.00%	99.35%	99.35%	0.00%	0.00%	0.00%	0.00%	0.94%	0.94%	1.51%	1.22%	99.15%	99.15%
Airtel	0.06%	0.06%	0.08%	0.08%	98.73%	98.73%	0.48%	0.48%	0.46%	0.46%	0.67%	0.67%	1.20%	1.20%	98.53%	98.53%
BSNL	0.98%	0.98%	1.30%	1.30%	97.96%	97.98%	0.26%	0.26%	0.95%	0.83%	1.34%	1.34%	1.77%	1.77%	DNA	97.05%
Idea	0.01%	0.01%	0.00%	0.00%	98.53%	98.53%	0.38%	0.38%	0.57%	0.57%	0.64%	0.64%	2.07%	2.07%	97.91%	97.91%
RCOM CDMA	0.22%	0.22%	1.15%	1.15%	97.61%	97.61%	0.00%	0.00%	1.16%	1.16%	0.08%	0.08%	0.42%	0.43%	99.76%	99.77%
RCOM GSM	0.10%	0.10%	0.97%	0.97%	98.89%	98.89%	0.17%	0.16%	0.05%	0.05%	0.07%	0.07%	0.48%	0.51%	99.58%	99.63%
TTSL CDMA	0.15%	0.15%	0.00%	0.00%	96.03%	96.03%	0.00%	0.00%	1.00%	1.00%	0.67%	0.67%	6.03%	6.01%	96.82%	97.27%
TTSL GSM	0.20%	0.20%	0.28%	0.28%	98.71%	98.71%	0.07%	0.07%	0.69%	0.69%	0.67%	0.67%	2.84%	2.85%	97.00%	97.00%
Videocon	0.10%	0.10%	0.05%	0.05%	98.72%	98.72%	0.13%	0.13%	0.09%	0.09%	0.52%	0.52%	0.57%	0.57%	97.33%	97.33%
Vodafone	0.02%	0.02%	0.00%	0.00%	99.67%	99.67%	0.15%	0.15%	0.33%	0.33%	0.64%	0.64%	1.89%	1.89%	97.74%	97.74%

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

12.2. CSD Parameters

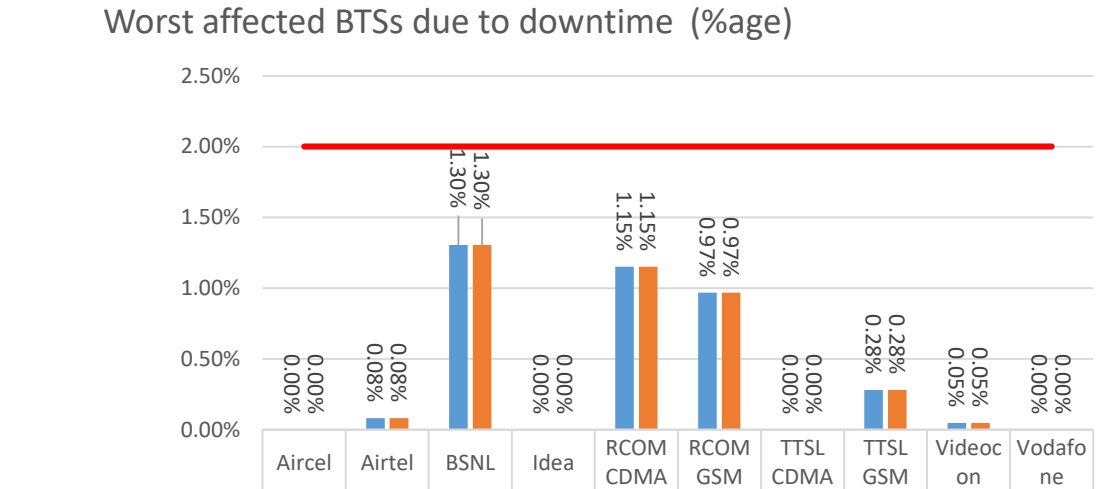
Name of Service Provider	Metering and Billing credibility				Billing Complaints						Termination & Closures		Time taken for refund of deposits after closures: Benchmark		Customer Care			
	Postpaid Subscribers		Prepaid Subscribers		%age complaints resolved within 4 weeks		%age complaints resolved within 6 weeks		%age of credit/weiver is received within one week		% of Termination/ Closure of service within 7 days (100 %)		Cleared over a period of <60 days (100%)		%age of calls answered by the IVR		%age of call answered by the operators (voice to voice) within 90 seconds	
Benchmark	≤ 0.1%		≤ 0.1%		≥ 98%		=100%		=100%		=100%		=100%		≥ 95%		≥ 95%	
	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP
Aircel	0.00%	0.00%	0.00%	0.00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	96.85%	96.85%	99.81%	99.81%
Airtel	0.03%	0.03%	0.01%	0.00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	87.47%	95.99%	95.40%	95.53%
BSNL	0.10%	0.10%	0.01%	0.01%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	91.22%	96.01%
Idea	0.06%	0.06%	0.13%	0.13%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98.71%	98.71%	99.47%	99.47%
RCOM CDMA	0.00%	0.00%	0.09%	0.09%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98.32%	98.32%	95.63%	95.63%
RCOM GSM	0.09%	0.09%	0.09%	0.09%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98.26%	98.26%	91.20%	91.20%
TTSL CDMA	0.00%	0.00%	0.00%	0.00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	97.34%	97.34%	99.81%	99.81%
TTSL GSM	0.00%	0.00%	0.00%	0.00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99.06%	99.06%	97.23%	97.23%
Videocon	0.00%	NA	0.00%	0.01%	100%	100%	100%	100%	100%	100%	NA	NA	100%	100%	100%	100%	95.85%	95.85%
Vodafone	0.11%	0.11%	0.10%	0.01%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	97.21%	97.21%

12.3. Key Findings: BTSs Accumulated Downtime



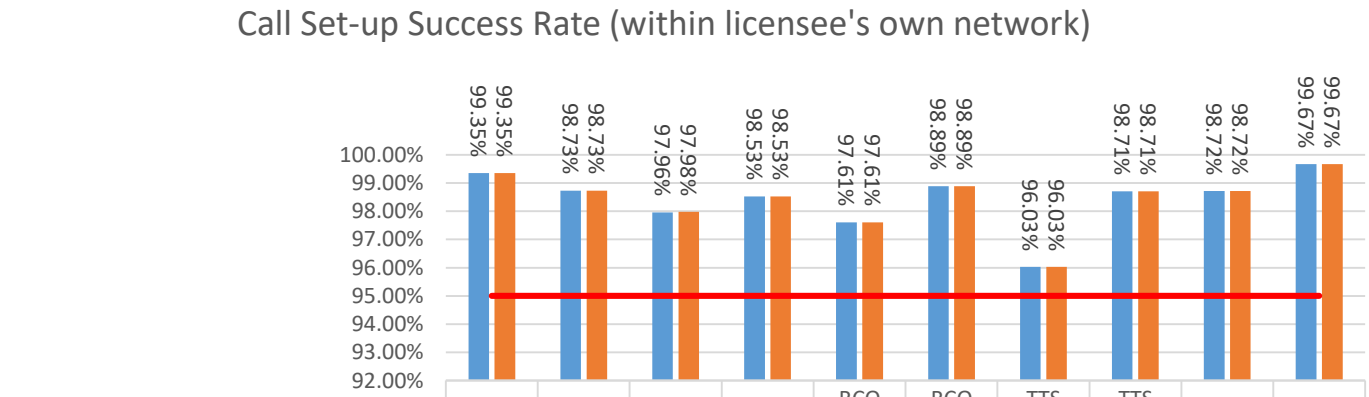
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	0.17%	0.06%	0.98%	0.01%	0.22%	0.10%	0.15%	0.20%	0.10%	0.02%
PMR Data TSP: Consolidated	0.17%	0.06%	0.98%	0.01%	0.22%	0.10%	0.15%	0.20%	0.10%	0.02%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

12.4. Key Findings: Worst affected BTSs due to downtime



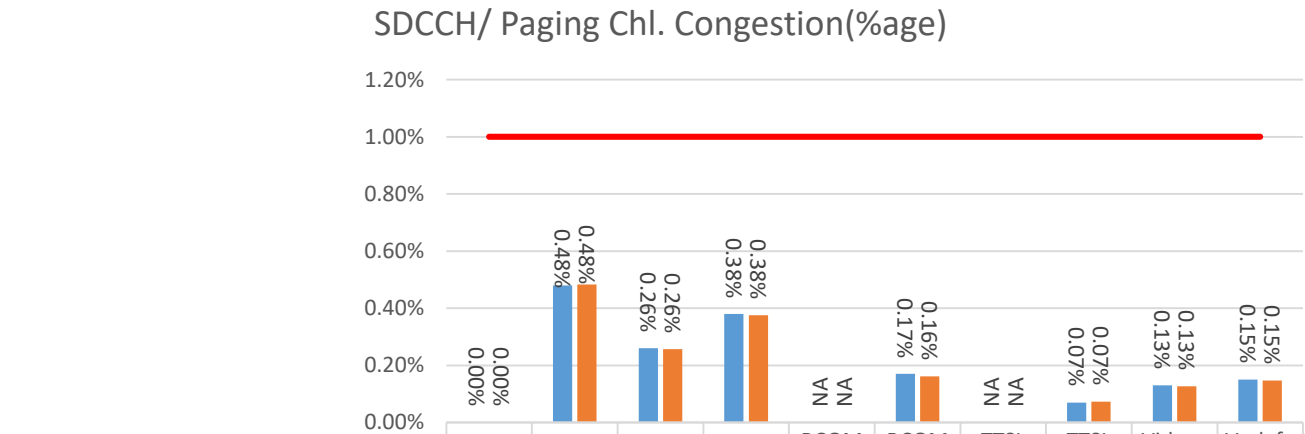
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	0.00%	0.08%	1.30%	0.00%	1.15%	0.97%	0.00%	0.28%	0.05%	0.00%
PMR Data TSP: Consolidated	0.00%	0.08%	1.30%	0.00%	1.15%	0.97%	0.00%	0.28%	0.05%	0.00%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

12.5. Key Findings: Call Setup Success Rate



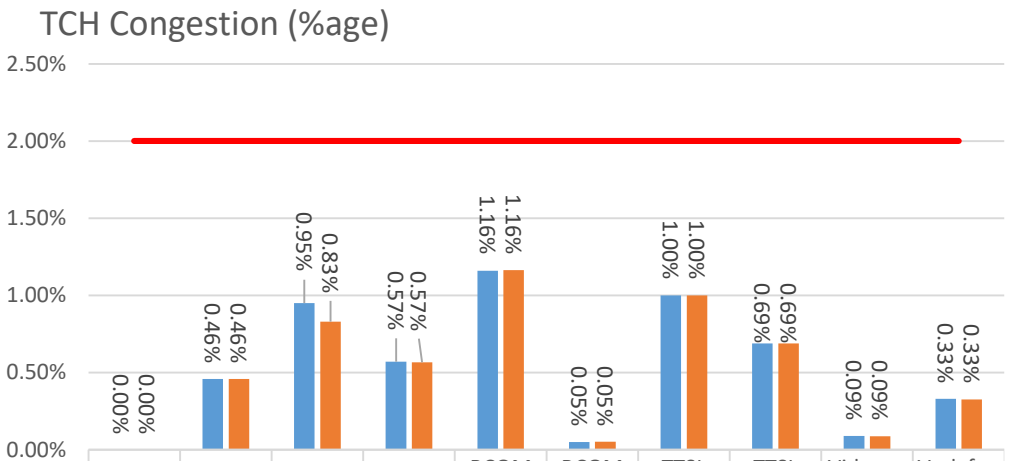
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	99.35%	98.73%	97.96%	98.53%	97.61%	98.89%	96.03%	98.71%	98.72%	99.67%
PMR Data TSP: Consolidated	99.35%	98.73%	97.98%	98.53%	97.61%	98.89%	96.03%	98.71%	98.72%	99.67%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

12.6. Key Findings: SDCCH/Paging Channel Congestion



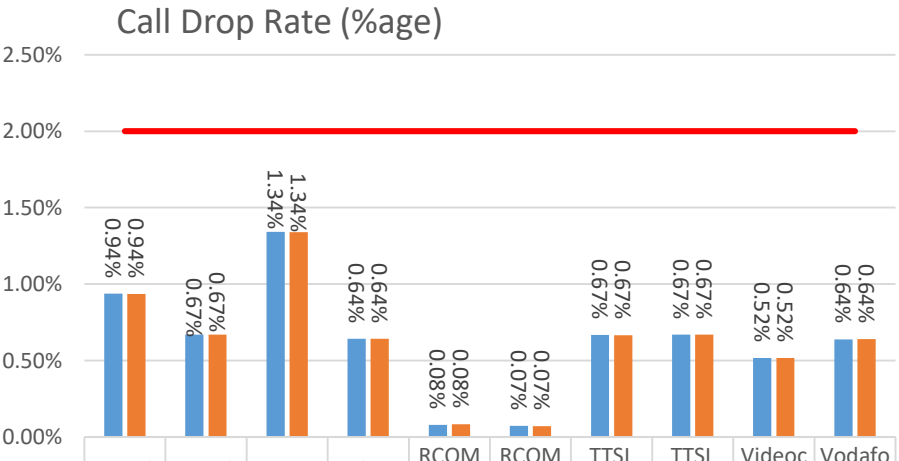
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	0.00%	0.48%	0.26%	0.38%	0.00%	0.17%	0.00%	0.07%	0.13%	0.15%
PMR Data TSP: Consolidated	0.00%	0.48%	0.26%	0.38%	0.00%	0.16%	0.00%	0.07%	0.13%	0.15%
Benchmark ≤ 1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

12.7. Key Findings: TCH Congestion



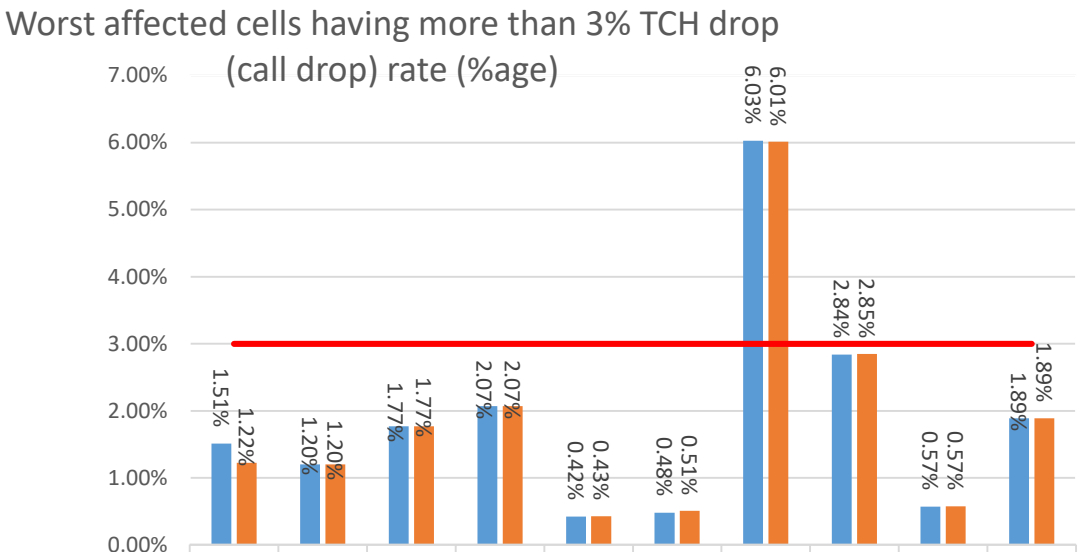
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	0.00%	0.46%	0.95%	0.57%	1.16%	0.05%	1.00%	0.69%	0.09%	0.33%
PMR Data TSP: Consolidated	0.00%	0.46%	0.83%	0.57%	1.16%	0.05%	1.00%	0.69%	0.09%	0.33%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

12.8. Key Findings: Call Drop Rate



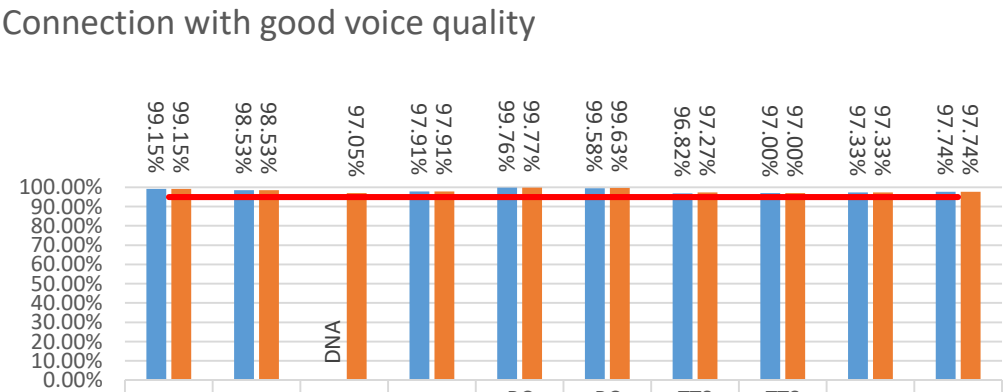
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	0.94%	0.67%	1.34%	0.64%	0.08%	0.07%	0.67%	0.67%	0.52%	0.64%
PMR Data TSP: Consolidated	0.94%	0.67%	1.34%	0.64%	0.08%	0.07%	0.67%	0.67%	0.52%	0.64%
Benchmark ≤ 2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

12.9. Key Findings: Worst Affected call having more than 3% TCH drop



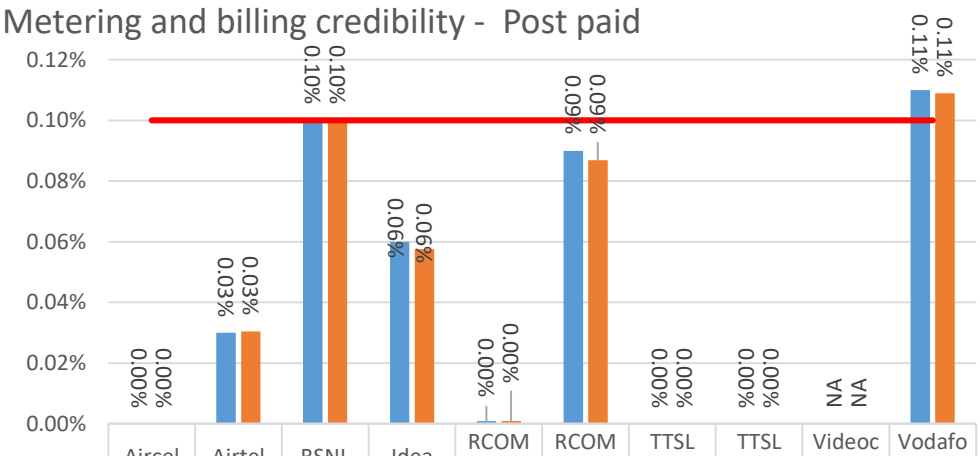
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	1.51%	1.20%	1.77%	2.07%	0.42%	0.48%	6.03%	2.84%	0.57%	1.89%
PMR Data TSP: Consolidated	1.22%	1.20%	1.77%	2.07%	0.43%	0.51%	6.01%	2.85%	0.57%	1.89%
Benchmark ≤ 3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%

12.10. Key Findings: Connection with Good Voice Quality



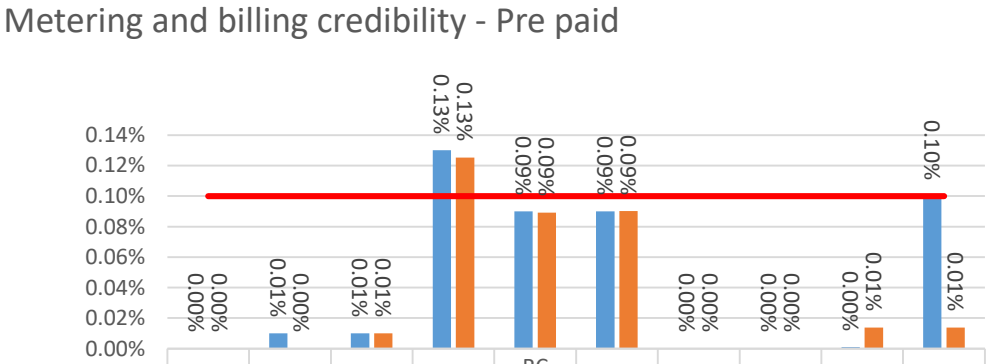
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	99.15%	98.53%	0.00%	97.91%	99.76%	99.58%	96.82%	97.00%	97.33%	97.74%
PMR Data TSP: Consolidated	99.15%	98.53%	97.05%	97.91%	99.77%	99.63%	97.27%	97.00%	97.33%	97.74%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

12.11. Key Findings: Metering and Billing Credibility: Postpaid



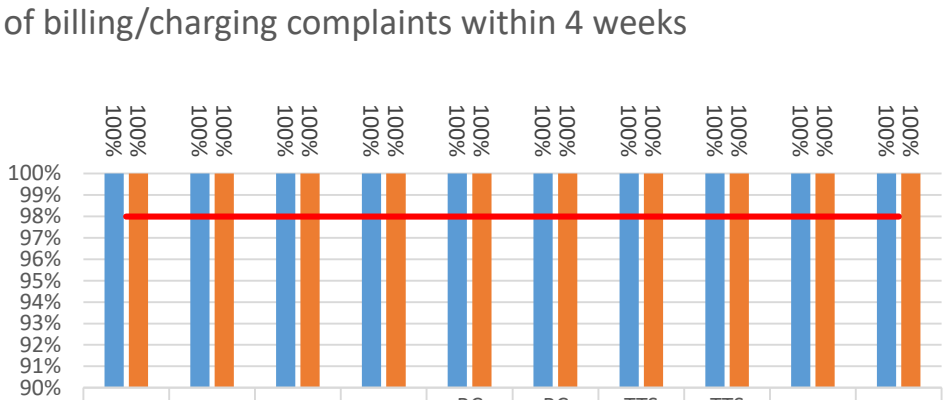
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	0.00%	0.03%	0.10%	0.06%	0.00%	0.09%	0.00%	0.00%	0.00%	0.11%
PMR Data TSP: Consolidated	0.00%	0.03%	0.10%	0.06%	0.00%	0.09%	0.00%	0.00%	0.00%	0.11%
Benchmark ≤ 0.1%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%

12.12. Key Findings: Metering and Billing Credibility: Prepaid



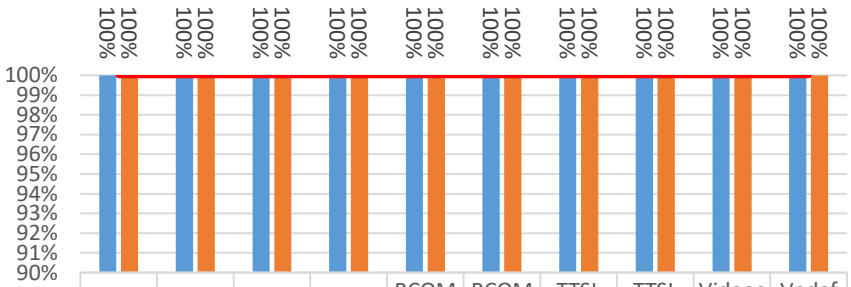
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	0.00%	0.01%	0.01%	0.13%	0.09%	0.09%	0.00%	0.00%	0.00%	0.10%
PMR Data TSP: Consolidated	0.00%	0.00%	0.01%	0.13%	0.09%	0.09%	0.00%	0.00%	0.01%	0.01%
Benchmark ≤ 0.1%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%

12.13. Key Findings: Resolution of billing/charging complaints within 4 weeks



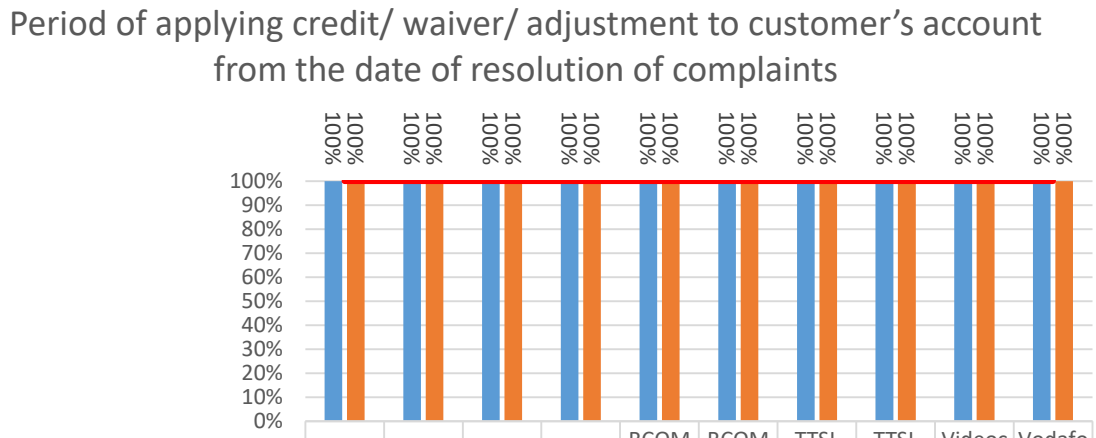
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
PMR Data TSP: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark ≥ 98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%

12.14. Key Findings: Resolution of billing/charging complaints within 6 weeks



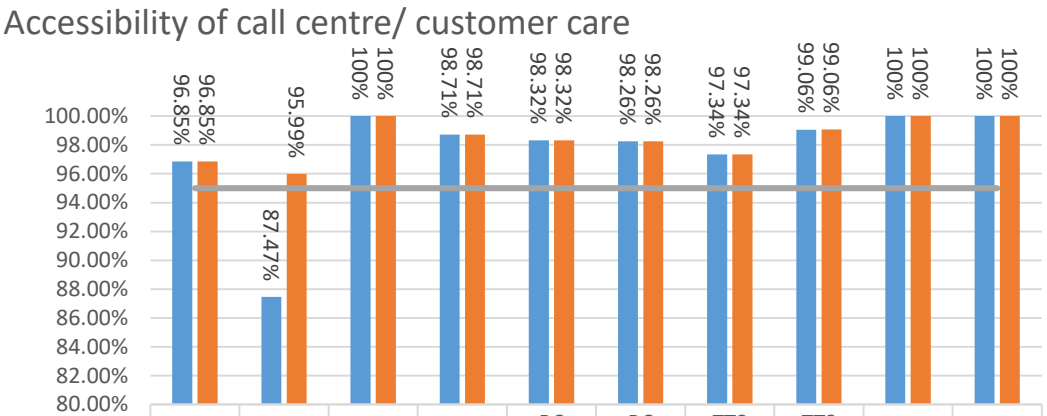
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
PMR Data TSP: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark =100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

12.15. Key Findings: Period of applying credit/ waiver/ adjustment to customer's account from the date of resolution of complaints



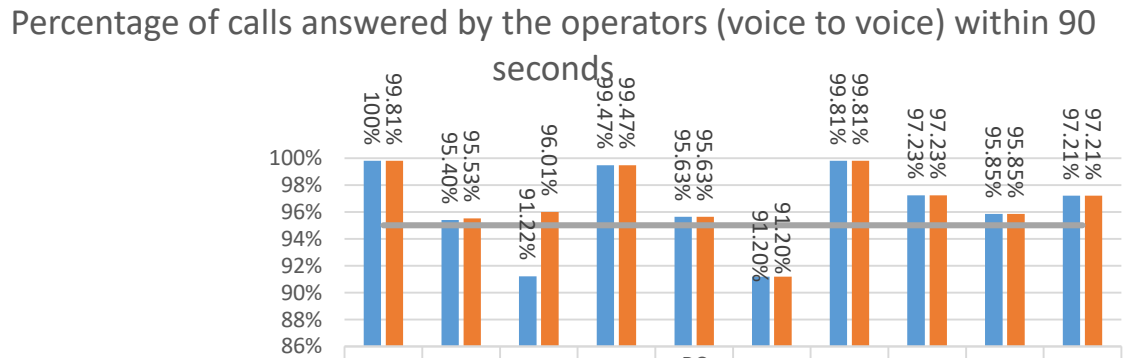
	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
PMR Data TSP: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark =100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

12.16. Key Findings: Accessibility of call centre/ customer care



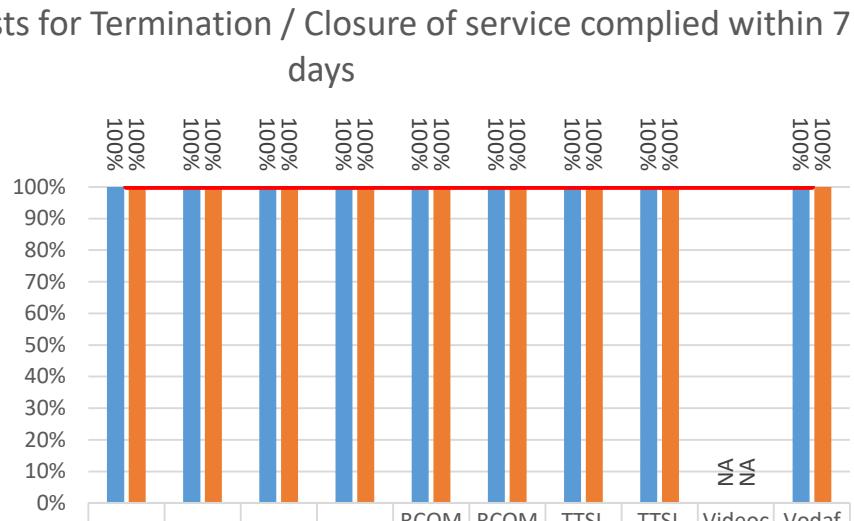
	Aircel	Airtel	BSNL	Idea	RCOMCDMA	RCOMGSM	TTSLCDMA	TTSLGSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	96.85%	87.47%	100%	98.71%	98.32%	98.26%	97.34%	99.06%	100%	100%
PMR Data TSP: Consolidated	96.85%	95.99%	100%	98.71%	98.32%	98.26%	97.34%	99.06%	100%	100%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

12.17. Key Findings: Percentage of calls answered by the operators (voice to voice) within 90 seconds



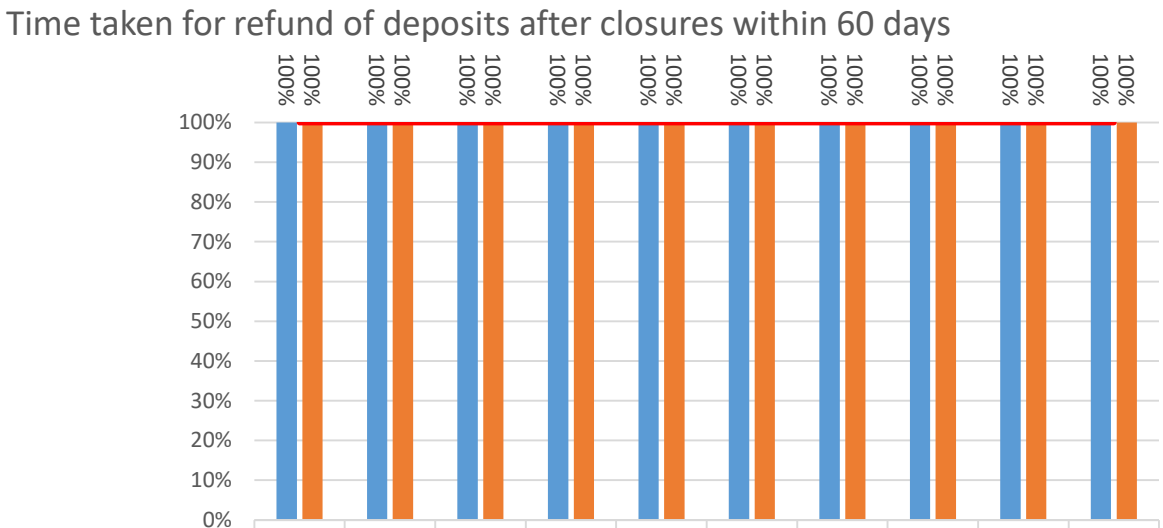
	Aircel	Airtel	BSNL	Idea	RCOMCDMA	RCOMGSM	TTSLCDMA	TTSLGSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	100%	95.40%	91.22%	99.47%	95.63%	91.20%	99.81%	97.23%	95.85%	97.21%
PMR Data TSP: Consolidated	99.81%	95.53%	96.01%	99.47%	95.63%	91.20%	99.81%	97.23%	95.85%	97.21%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

12.18. Key Findings: Percentage requests for Termination / Closure of service complied within 7 days



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%
PMR Data TSP: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%
Benchmark =100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

12.20. Key Findings: Time taken for refund of deposits after closures within 60 days



	Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Videocon	Vodafone
PMR Data Audit Agency: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
PMR Data TSP: Consolidated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark =100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

13. Operator Assisted Drive Test

The drive test was conducted simultaneously for all the operators present in the Haryana circle. As per the new directive given by TRAI headquarters, drive test for the month of October, November and December, 2015 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 Haryana circle.

13.1. November: Ambala SSA

Month	Name of SSA covered	Drive Test Schedule
November 2015	Ambala	November 27, 2015 to November 29, 2015

Note: RCOM GSM & CDMA has not provided the drive test log files and reports within the speculated time and hence their respective reports are not included in the below mentioned drive test report.

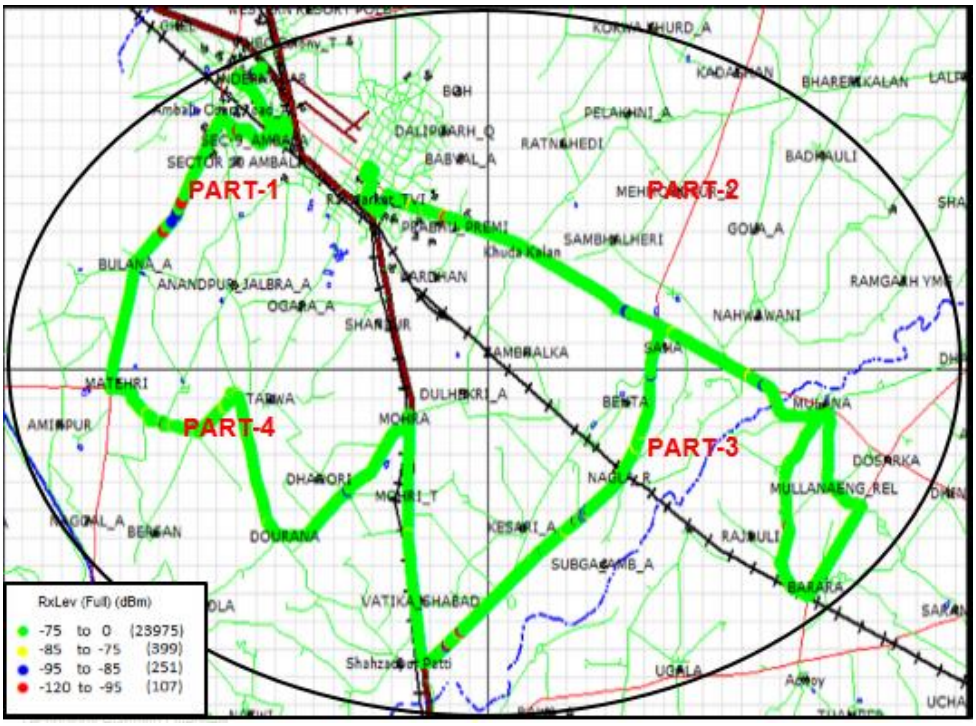
13.2. Distance Covered: Ambala SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
Ambala SSA	121 km	162 km	162 km

13.3. Route Map: Ambala SSA: Day 1

Route Name
Kalka Chowk, Manav Chowk, Sector-9, Model Town. manji sahib, Adarsh nagar
Prem Nagar, Sector-7, Dhukia, Matheri, Jansui, Mohra, Kesari.
Saha, Mulana, Barara, Sarakpur, Mithapur,
Brahmkumari Chowk, SD College, Sadar Bazar, Sigri Mohala,

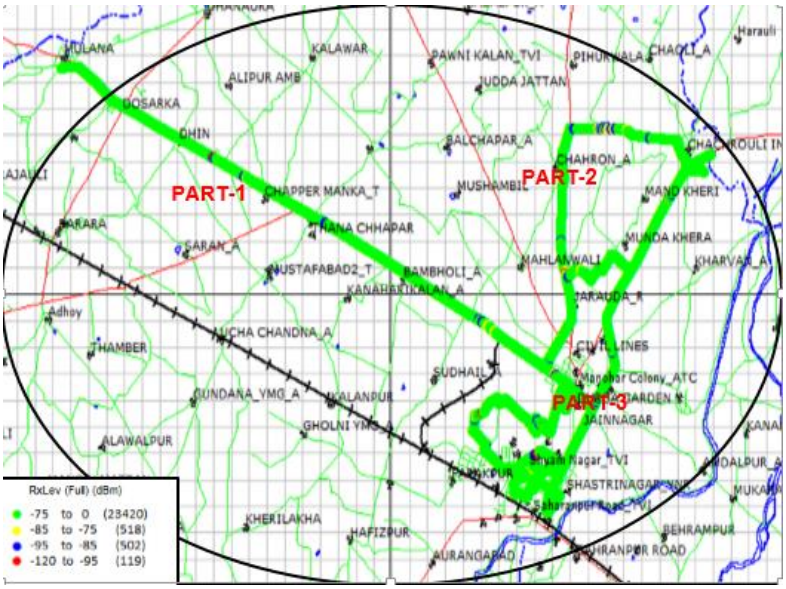
In Building / Office Complex SSA (Urban/Rural)
AMAN RESTAURANT(NH-1)



13.4. ROUTE MAP: AMBALA SSA: DAY 2

Route Name
Jagadhari Bus Stand, Bheetal,Ledi, Khazirabad, Chachrauli.
Manakpur, Chachrauli Road, Buriya Chowk,Agarsen Chowk, Sector18,Kanhiya Chowk
Fountain Chowk, Vishkarma Chowk, Saharanpur Road, Sugar Mill, Kamani Chowk.
Sector-18, Sector-17, Durga Garden, Professor Colony, Thana Chappar, Mustafabad.

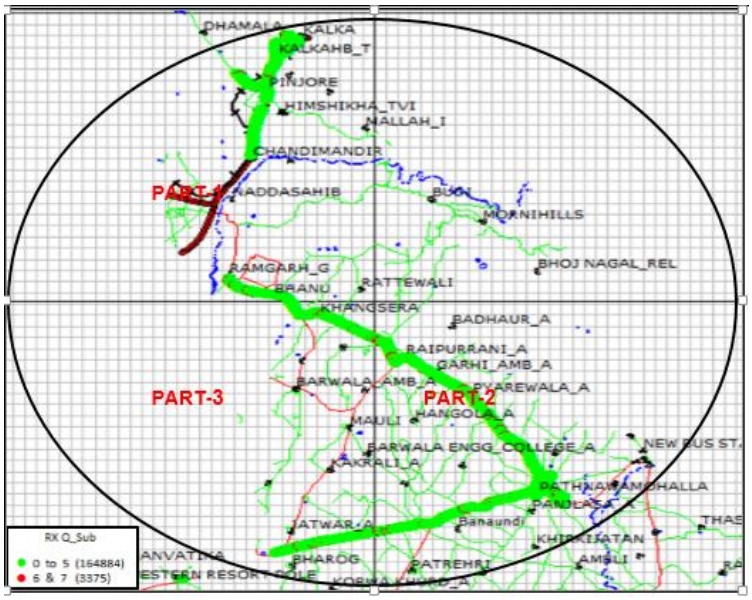
In Building / Office Complex SSA (Urban/Rural)
GANPATI COMPLEX, JAGADHARI



13.5. ROUTE MAP: HARYANA SSA: DAY 3

Route Name
Chajumajra, Bharog, Patvi, Dhanana, Shahazadpur, Chotti Bassi, Nariyangarh.
Bus Stand, Nariyangarh, Sector-4,Grain Market,Lachha, Burewala, Raipur Rani.
Tabar, Barwala, Sultanpur, Naggal, ITBP Bhanu, Ramgarh, HMT, Lower Bazar.
Gandhi Chowk, Railway Road, Model Town, Lohgarh , Jangipur, Kona.

In Building / Office Complex
Pinjore garden



13.6. DRIVE REPORT ANALYSIS

13.6.1. VODAFONE DAY 1:

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	77697	97108	80.01	
1 < S ≤ 2	4034	97108	4.15	
2 < S ≤ 3	4676	97108	4.82	
3 < S ≤ 4	4509	97108	4.64	
4 < S ≤ 5	2571	97108	2.65	
> 5	3621	97108	3.73	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	23975	24732	96.94	
0 to > = -85	24374	24732	98.55	
0 to > = -95	24625	24732	99.57	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	16501	17484	94.38	
1 < S ≤ 2	225	17484	1.29	
2 < S ≤ 3	203	17484	1.16	
3 < S ≤ 4	144	17484	0.82	
4 < S ≤ 5	47	17484	0.27	

> 5	364	17484	2.08	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	4203	4203	100.00	
0 to > = -85	4203	4203	100.00	
0 to > = -95	4203	4203	100.00	

Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	110607	114592	96.52	
Total Call Attempt	157			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0.00			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	28178	28935	97.38	
0 to > = -85	28577	28935	98.76	
0 to > = -95	28828	28935	99.63	

13.6.2. VODAFONE DAY 2:

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	73586	93688	78.54	
1 < S ≤ 2	3968	93688	4.24	
2 < S ≤ 3	4996	93688	5.33	
3 < S ≤ 4	4743	93688	5.06	
4 < S ≤ 5	2882	93688	3.08	

> 5	3513	93688	3.75	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	23420	24559	95.36	
0 to > = -85	23938	24559	97.47	
0 to > = -95	24440	24559	99.52	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	18793	21009	89.45	
1 < S ≤ 2	518	21009	2.47	
2 < S ≤ 3	561	21009	2.67	
3 < S ≤ 4	276	21009	1.31	
4 < S ≤ 5	97	21009	0.46	
> 5	764	21009	3.64	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	4748	4837	98.16	
0 to > = -85	4818	4837	99.61	
0 to > = -95	4828	4837	99.81	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	110420	114697	96.27	
Total Call Attempt	161			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0.00			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	98.16%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	28168	29396	95.82	

0 to > = -85	28756	29396	97.82	
0 to > = -95	29268	29396	99.56	

13.6.3. VODAFONE DAY 3:

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	152630	168259	90.71	
1 < S ≤ 2	3398	168259	2.02	
2 < S ≤ 3	3770	168259	2.24	
3 < S ≤ 4	3163	168259	1.88	
4 < S ≤ 5	1923	168259	1.14	
> 5	3375	168259	2.01	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	18988	20161	94.18	
0 to > = -85	19292	20161	95.69	
0 to > = -95	19832	20161	98.37	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	20395	20435	99.80	
1 < S ≤ 2	3	20435	0.01	
2 < S ≤ 3	6	20435	0.03	
3 < S ≤ 4	11	20435	0.05	
4 < S ≤ 5	14	20435	0.07	
> 5	6	20435	0.03	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	4293	4293	100.00	
0 to > = -85	4293	4293	100.00	
0 to > = -95	4293	4293	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				

0-5 (with frequency hopping	185313	188694	98.21	
Total Call Attempt	139			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0.00			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	98.51%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	23281	24454	95.20	
0 to > = -85	23585	24454	96.45	
0 to > = -95	24125	24454	98.65	

13.6.4. VODAFONE OVERALL

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	359602	417983	86.03	
1 < S ≤ 2	12146	417983	2.91	
2 < S ≤ 3	14212	417983	3.40	
3 < S ≤ 4	12846	417983	3.07	
4 < S ≤ 5	7534	417983	1.80	
> 5	11643	417983	2.79	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75 dbm	79627	82785	96.19	
0 to > = -85 dbm	80918	82785	97.74	
0 to > = -95 dbm	82221	82785	99.32	
Total Calls Attempt (A)	457			
Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00			
Total Calls Established ('C)	457			
Total Calls Drop (D)	0			

Dropped Calls Rate in % (D*100/C)	0.00	
Call Setup Success Rate in % (C*100/A)	100.00	
Handover Success Rate % (total HO Success * 100/Total HO attempt)	98.89	

13.6.5. IDEA: DAY 1

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	255891	289156	88.50	
1 ≤ S < 2	4759	289156	1.65	
2 ≤ S < 3	4909	289156	1.70	
3 ≤ S < 4	5973	289156	2.07	
4 ≤ S < 5	6242	289156	2.16	
5 ≤ S < 6	6925	289156	2.39	
6 ≤ S	4457	289156	1.54	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	296242	300405	98.61	
0 to > = -85	299617	300405	99.74	
0 to > = -95	300299	300405	99.96	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	52723	61818	85.29	
1 ≤ S < 2	2036	61818	3.29	
2 ≤ S < 3	1986	61818	3.21	
3 ≤ S < 4	2111	61818	3.41	
4 ≤ S < 5	1759	61818	2.85	
5 ≤ S < 6	1203	61818	1.95	
6 ≤ S	0	61818	0.00	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	62261	63396	98.21	
0 to > = -85	63337	63396	99.91	
0 to > = -95	63396	63396	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	338389	350974	96.41	
Total Call Attempt	167			

Blocked Call Rate (<=3%)	0			
Dropped Call Rate (<=2%)	0			
Call Setup Success Rate (>=95%)	100			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	98.4			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	358503	363801	98.54	
0 to > = -85	362954	363801	99.77	
0 to > = -95	363695	363801	99.97	

13.6.6. IDEA: DAY 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	255891	289156	88.50	
1 ≤ S < 2	4759	289156	1.65	
2 ≤ S < 3	4909	289156	1.70	
3 ≤ S < 4	5973	289156	2.07	
4 ≤ S < 5	6242	289156	2.16	
5 ≤ S < 6	6925	289156	2.39	
6 ≤ S	4457	289156	1.54	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	296242	300405	98.61	
0 to > = -85	299617	300405	99.74	
0 to > = -95	300299	300405	99.96	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	52723	61818	85.29	
1 ≤ S < 2	2036	61818	3.29	
2 ≤ S < 3	1986	61818	3.21	
3 ≤ S < 4	2111	61818	3.41	
4 ≤ S < 5	1759	61818	2.85	
5 ≤ S < 6	1203	61818	1.95	
6 ≤ S	0	61818	0.00	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	62261	63396	98.21	
0 to > = -85	63337	63396	99.91	
0 to > = -95	63396	63396	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**

0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	338389	350974	96.41	
Total Call Attempt	167			
Blocked Call Rate (<=3%)	0			
Dropped Call Rate (<=2%)	0			
Call Setup Success Rate (>=95%)	100			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	98.4			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	358503	363801	98.54	
0 to > = -85	362954	363801	99.77	
0 to > = -95	363695	363801	99.97	

13.6.7. IDEA: DAY 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	198920	224127	88.75	
1 ≤ S < 2	4197	224127	1.87	
2 ≤ S < 3	4248	224127	1.90	
3 ≤ S < 4	4467	224127	1.99	
4 ≤ S < 5	4387	224127	1.96	
5 ≤ S < 6	4600	224127	2.05	
6 ≤ S	3308	224127	1.48	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	232392	234141	99.25	
0 to > = -85	233781	234141	99.85	
0 to > = -95	234074	234141	99.97	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	52798	53759	98.21	
1 ≤ S < 2	256	53759	0.48	
2 ≤ S < 3	183	53759	0.34	
3 ≤ S < 4	195	53759	0.36	
4 ≤ S < 5	35	53759	0.07	
5 ≤ S < 6	292	53759	0.54	
6 ≤ S	0	53759	0.00	
RxLev	**Samples**	**Total**	**%**	

0 to > = -75	55762	55762	100.00	
0 to > = -85	55762	55762	100.00	
0 to > = -95	55762	55762	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	269686	277886	97.05	
Total Call Attempt	150			
Blocked Call Rate (<=3%)	0			
Dropped Call Rate (<=2%)	0			
Call Setup Success Rate (>=95%)	100			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	288154	289903	99.40	
0 to > = -85	289543	289903	99.88	
0 to > = -95	289836	289903	99.98	

13.6.8. IDEA: OVERALL

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	865954	970837	89.20	
1 ≤ S < 2	17011	970837	1.75	
2 ≤ S < 3	17200	970837	1.77	
3 ≤ S < 4	19024	970837	1.96	
4 ≤ S < 5	18366	970837	1.89	
5 ≤ S < 6	20141	970837	2.07	
6 ≤ S	13141	970837	1.35	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	986120	1005736	98.05	
0 to > = -85	1002786	1005736	99.71	
0 to > = -95	1005106	1005736	99.94	
Total Calls Attempt (A)	487			
Total Calls Blocked (B)	2			
Blocked Call Rate in % (B*100/A)	0.41			
Total Calls Established ('C)	485			
Total Calls Drop (D)	1			
Dropped Calls Rate in % (D*100/C)	0.21			

Call Setup Success Rate in % (C*100/A)	99.59
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.02

13.6.9. BSNL: DAY 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	10225	17988	56.84	
1 ≤ S < 2	1206	17988	6.70	
2 ≤ S < 3	1252	17988	6.96	
3 ≤ S < 4	1459	17988	8.11	
4 ≤ S < 5	1437	17988	7.99	
5 ≤ S < 6	2111	17988	11.74	
6 ≤ S	298	17988	1.66	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	30632	56565	54.15	
0 to > = -85	18872	56565	33.36	
0 to > = -95	7061	56565	12.48	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	1706	5875	29.04	
1 ≤ S < 2	530	5875	9.02	
2 ≤ S < 3	590	5875	10.04	
3 ≤ S < 4	724	5875	12.32	
4 ≤ S < 5	777	5875	13.23	
5 ≤ S < 6	1340	5875	22.81	
6 ≤ S	208	5875	3.54	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	842	10793	7.80	
0 to > = -85	6824	10793	63.23	
0 to > = -95	3127	10793	28.97	
Over All SSA Drive Test Details Day-1				

RxQual	Samples (S)	Total	%	Summary
0-4 (w/o frequency hopping)/CDMA	2183	23863	9.15	
0-5 (with frequency hopping	2214	23863	9.28	
Total Call Attempt	154			
Blocked Call Rate (<=3%)	0.65%			
Dropped Call Rate (<=2%)	0.65%			
Call Setup Success Rate (>=95%)	99.35%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.48%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	31474	67358	46.73	
0 to > = -85	25696	67358	38.15	
0 to > = -95	10188	67358	15.13	

13.6.10. BSNL: DAY 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	10937	19728	55.44	
1 ≤ S < 2	1223	19728	6.20	
2 ≤ S < 3	1391	19728	7.05	
3 ≤ S < 4	1525	19728	7.73	
4 ≤ S < 5	1560	19728	7.91	
5 ≤ S < 6	2665	19728	13.51	
6 ≤ S	427	19728	2.16	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	13917	44889	36.97	
0 to > = -85	21137	44889	39.43	
0 to > = -95	9836	44889	23.54	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	522	1192	43.79	
1 ≤ S < 2	101	1192	8.47	
2 ≤ S < 3	89	1192	7.47	
3 ≤ S < 4	118	1192	9.90	
4 ≤ S < 5	112	1192	9.40	
5 ≤ S < 6	214	1192	17.95	
6 ≤ S	36	1192	3.02	

RxLev	Samples	Total	%	
0 to > = -75	565	2774	20.37	
0 to > = -85	1240	2774	44.70	
0 to > = -95	969	2774	34.93	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	1643	20920	7.85	
0-5 (with frequency hopping	1672	20920	7.99	
Total Call Attempt	130			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.77%			
Call Setup Success Rate (>=95%)	98.46%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.79%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	14536	47663	30.50	
0 to > = -85	22377	47663	46.95	
0 to > = -95	10805	47663	22.67	

13.6.11. BSNL: DAY 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	10166	19279	52.73	
1 ≤ S < 2	1037	19279	5.38	
2 ≤ S < 3	1137	19279	5.90	
3 ≤ S < 4	1379	19279	7.15	
4 ≤ S < 5	1482	19279	7.69	
5 ≤ S < 6	3273	19279	16.98	
6 ≤ S	805	19279	4.18	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	62144	149051	41.69	
0 to > = -85	58805	149051	39.45	
0 to > = -95	28103	149051	18.85	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**

0 ≤ S < 1	2064	3311	62.34	
1 ≤ S < 2	212	3311	6.40	
2 ≤ S < 3	237	3311	7.16	
3 ≤ S < 4	249	3311	7.52	
4 ≤ S < 5	252	3311	7.61	
5 ≤ S < 6	273	3311	8.25	
6 ≤ S	24	3311	0.72	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	7929	9899	80.10	
0 to > = -85	1933	9899	19.53	
0 to > = -95	37	9899	0.37	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	1628	29178	5.58	
0-5 (with frequency hopping	1734	29178	5.94	
Total Call Attempt	127			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	99.21%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.78%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	70073	158950	44.08	
0 to > = -85	60738	158950	38.21	
0 to > = -95	28140	158950	17.70	

13.6.12. BSNL: OVERALL

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	35620	67373	52.87	
1 ≤ S < 2	4309	67373	6.40	
2 ≤ S < 3	4696	67373	6.97	
3 ≤ S < 4	5454	67373	8.10	
4 ≤ S < 5	5620	67373	8.34	
5 ≤ S < 6	9876	67373	14.66	
6 ≤ S	1798	67373	2.67	

RxLev	Samples	Total	%	
0 to > = -75	116029	271971	42.7%	
0 to > = -85	108811	271971	40.0%	
0 to > = -95	49133	271971	18.1%	
Total Calls Attempt (A)	411			
Total Calls Blocked (B)	1			
Blocked Call Rate in % (B*100/A)	0.24%			
Total Calls Established ('C)	407			
Total Calls Drop (D)	2			
Dropped Calls Rate in % (D*100/C)	0.49%			
Call Setup Success Rate in % (C*100/A)	99.03%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.7%			

13.6.13. TATA CDMA: DAY 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	1266	3477	36.41	95.25
1 < S ≤ 2	1066	3477	30.66	
2 < S ≤ 3	586	3477	16.85	
3 < S ≤ 4	394	3477	11.33	
4 < S ≤ 5	133	3477	3.83	
> 5	32	3477	0.92	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	5543	13366	41.47	
0 to > = -85	9659	13366	72.27	
0 to > = -95	12795	13366	95.73	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	633	1263	50.12	96.44
1 < S ≤ 2	354	1263	28.03	
2 < S ≤ 3	160	1263	12.67	
3 < S ≤ 4	71	1263	5.62	
4 < S ≤ 5	21	1263	1.66	

> 5	24	1263	1.90	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	49	3387	1.45	
0 to > = -85	2188	3387	64.60	
0 to > = -95	3355	3387	99.06	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	4530	4740	95.57	
0-5 (with frequency hopping	NA	NA	NA	
Total Call Attempt	139			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.71%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	5592	16753	33.3790963	
0 to > = -85	11847	16753	70.7156927	
0 to > = -95	16150	16753	96.4006447	

13.6.14. TATA CDMA: DAY 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	1064	2888	36.84	
1 < S ≤ 2	696	2888	24.10	
2 < S ≤ 3	449	2888	15.55	95.53
3 < S ≤ 4	550	2888	19.04	
4 < S ≤ 5	150	2888	5.19	

> 5	4	2888	0.14	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	6805	9934	68.50	
0 to > = -85	9847	9934	99.12	
0 to > = -95	9877	9934	99.43	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	441	1082	40.76	98.15
1 < S ≤ 2	385	1082	35.58	
2 < S ≤ 3	192	1082	17.74	
3 < S ≤ 4	44	1082	4.07	
4 < S ≤ 5	16	1082	1.48	
> 5	4	1082	0.37	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	2433	2459	98.94	
0 to > = -85	2459	2459	100.00	
0 to > = -95	2459	2459	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	3821	3970	96.25	
0-5 (with frequency hopping	NA	NA	NA	
Total Call Attempt	101			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	9238	12393	74.54208	
0 to > = -85	12306	12393	99.297991	

0 to > = -95	12336	12393	99.540063	

13.6.15. TATA CDMA: DAY 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	1031	2673	38.57	95.66
1 < S ≤ 2	772	2673	28.88	
2 < S ≤ 3	474	2673	17.73	
3 < S ≤ 4	280	2673	10.48	
4 < S ≤ 5	81	2673	3.03	
> 5	35	2673	1.31	
RxLev	**Samples**	**Total**		
0 to > = -75	7818	9957	78.52	
0 to > = -85	9897	9957	99.40	
0 to > = -95	9951	9957	99.94	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	449	1136	39.52	97.62
1 < S ≤ 2	371	1136	32.66	
2 < S ≤ 3	209	1136	18.40	
3 < S ≤ 4	80	1136	7.04	
4 < S ≤ 5	19	1136	1.67	
> 5	8	1136	0.70	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	2522	2522	100.00	
0 to > = -85	2522	2522	100.00	
0 to > = -95	2522	2522	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	3666	3809	96.25	
0-5 (with frequency hopping	NA	NA	NA	

Total Call Attempt	113			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	10340	12479	82.8592035	
0 to > = -85	12419	12479	99.5191922	
0 to > = -95	12473	12479	99.9519192	

13.6.16. TATA CDMA: OVERALL

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	4884	12519.00	39.01	95.99
1 < S ≤ 2	3644	12519.00	29.11	
2 < S ≤ 3	2070	12519.00	16.53	
3 < S ≤ 4	1419	12519.00	11.33	
4 < S ≤ 5	420	12519.00	3.35	
> 5	107	12519.00	0.85	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75 dbm	25170	41625	60.47	
0 to > = -85 dbm	36572	41625	87.86	
0 to > = -95 dbm	40959	41625	98.40	
Total Calls Attempt (A)	353			
Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00%			
Total Calls Established ('C)	337			
Total Calls Drop (D)	1			
Dropped Calls Rate in % (D*100/C)	0.30%			
Call Setup Success Rate in % (C*100/A)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	

0 to > = -75 dbm	5004	8368	59.80	
0 to > = -85 dbm	7169	8368	85.67	
0 to > = -95 dbm	8336	8368	99.62	

13.6.17. TATA GSM: DAY 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	305678	351290	87.02	96.55
1 < S ≤ 2	9597	351290	2.73	
2 < S ≤ 3	9194	351290	2.62	
3 < S ≤ 4	7336	351290	2.09	
4 < S ≤ 5	7349	351290	2.09	
> 5	12136	351290	3.45	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	261371	305863	85.45	
0 to > = -85	298519	305863	97.60	
0 to > = -95	305600	305863	99.91	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	113922	114263	99.70	96.74
1 < S ≤ 2	22	114263	0.02	
2 < S ≤ 3	57	114263	0.05	
3 < S ≤ 4	63	114263	0.06	
4 < S ≤ 5	36	114263	0.03	
> 5	163	114263	0.14	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	114168	114263	99.92	
0 to > = -85	114263	114263	100.00	
0 to > = -95	114263	114263	100.00	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**

0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	453254	465553.00	97.36	
Total Call Attempt	159			
Blocked Call Rate (<=3%)	0.62%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	375539	420126	89.3872314	
0 to > = -85	412782	420126	98.251953	
0 to > = -95	419863	420126	99.9373997	

13.6.18. TATA GSM: DAY 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	513899	538599	95.41	97.67
1 < S ≤ 2	2448	538599	0.45	
2 < S ≤ 3	3019	538599	0.56	
3 < S ≤ 4	3540	538599	0.66	
4 < S ≤ 5	3154	538599	0.59	
> 5	12539	538599	2.33	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	496329	538599	92.15	
0 to > = -85	530516	538599	98.50	
0 to > = -95	538281	538599	99.94	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	114411	114913	99.56	99.61
1 < S ≤ 2	36	114913	0.03	
2 < S ≤ 3	56	114913	0.05	

3 < S ≤ 4	28	114913	0.02	
4 < S ≤ 5	86	114913	0.07	
> 5	296	114913	0.26	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	114913	114913	100.00	
0 to > = -85	114913	114913	100.00	
0 to > = -95	114913	114913	100.00	

Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	640677	653512.00	98.04	
Total Call Attempt	132			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	611242	653512	93.531871	
0 to > = -85	645429	653512	98.763144	
0 to > = -95	653194	653512	99.95134	

13.6.19. TATA GSM: DAY 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	330375	353150	93.55	97.17
1 < S ≤ 2	2939	353150	0.83	

2 < S ≤ 3	3283	353150	0.93	
3 < S ≤ 4	3237	353150	0.92	
4 < S ≤ 5	3313	353150	0.94	
> 5	10003	353150	2.83	
RxLev	**Samples**	**Total**		
0 to > = -75	291393	324207	89.8786886	
0 to > = -85	315918	324207	97.4433001	
0 to > = -95	323511	324207	99.7853223	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	22422	24400	91.89	99.61
1 < S ≤ 2	269	24400	1.10	
2 < S ≤ 3	239	24400	0.98	
3 < S ≤ 4	306	24400	1.25	
4 < S ≤ 5	345	24400	1.41	
> 5	819	24400	3.36	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	53343	53343	100.00	
0 to > = -85	53343	53343	100.00	
0 to > = -95	53343	53343	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	366728	377550.00	97.13	
Total Call Attempt	120			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.83%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100%			

RxLev	Samples	Total	%	
0 to > = -75	344736	377550	91.3087008	
0 to > = -85	369261	377550	97.8045292	
0 to > = -95	376854	377550	99.8156536	

13.6.20. TATA GSM: OVERALL

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	1400707	1496615.00	93.59	97.60
1 < S ≤ 2	15311	1496615.00	1.02	
2 < S ≤ 3	15848	1496615.00	1.06	
3 < S ≤ 4	14510	1496615.00	0.97	
4 < S ≤ 5	14283	1496615.00	0.95	
> 5	35956	1496615.00	2.40	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75 dbm	1331517	1451188	91.75	
0 to > = -85 dbm	1427472	1451188	98.37	
0 to > = -95 dbm	1449911	1451188	99.91	
Total Calls Attempt (A)	411			
Total Calls Blocked (B)	1			
Blocked Call Rate in % (B*100/A)	0.24%			
Total Calls Established ('C)	410			
Total Calls Drop (D)	1			
Dropped Calls Rate in % (D*100/C)	0.24%			
Call Setup Success Rate in % (C*100/A)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75 dbm	282424	282519	99.97	
0 to > = -85 dbm	282519	282519	100.00	
0 to > = -95 dbm	282519	282519	100.00	

13.6.21. Airtel: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	50501	58500	86.33	96.03
1 ≤ S < 2	898	58500	1.54	
2 ≤ S < 3	945	58500	1.62	
3 ≤ S < 4	1103	58500	1.89	
4 ≤ S < 5	1145	58500	1.96	
5 ≤ S < 6	1583	58500	2.71	
6 ≤ S	2325	58500	3.97	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	56061	60156	93.19	
0 to > = -85	59739	60156	99.31	
0 to > = -95	60151	60156	99.99	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	5923	6282	94.29	99.30
1 ≤ S < 2	71	6282	1.13	
2 ≤ S < 3	66	6282	1.05	
3 ≤ S < 4	68	6282	1.08	
4 ≤ S < 5	55	6282	0.88	
5 ≤ S < 6	55	6282	0.88	
6 ≤ S	44	6282	0.70	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	6086	6459	94.23	
0 to > = -85	6457	6459	99.97	
0 to > = -95	6459	6459	100.00	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	62413	64782	96.34	
Total Call Attempt	172			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.38%			

RxLev	Samples	Total	%	
0 to > = -75	62147	66615	93.29	
0 to > = -85	66196	66615	99.37	
0 to > = -95	66610	66615	99.99	

13.6.22. Airtel: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	49286	56759	86.83	96.23
1 ≤ S < 2	841	56759	1.48	
2 ≤ S < 3	913	56759	1.61	
3 ≤ S < 4	1044	56759	1.84	
4 ≤ S < 5	1114	56759	1.96	
5 ≤ S < 6	1421	56759	2.50	
6 ≤ S	2140	56759	3.77	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	50599	58005	86.03	
0 to > = -85	56295	58005	97.00	
0 to > = -95	57913	58005	99.87	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	6022	6152	97.89	99.61
1 ≤ S < 2	33	6152	0.54	
2 ≤ S < 3	28	6152	0.46	
3 ≤ S < 4	26	6152	0.42	
4 ≤ S < 5	11	6152	0.18	
5 ≤ S < 6	8	6152	0.13	
6 ≤ S	24	6152	0.39	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	6373	6373	100.00	
0 to > = -85	6373	6373	100.00	
0 to > = -95	6373	6373	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	60747	62911	96.56	
Total Call Attempt	154			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			

Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.65%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	56972	64378	88.50	
0 to > = -85	62668	64378	97.34	
0 to > = -95	64286	64378	99.86	

13.6.23. Airtel: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	51199	60137	85.14	95.47
1 ≤ S < 2	992	60137	1.65	
2 ≤ S < 3	1054	60137	1.75	
3 ≤ S < 4	1180	60137	1.96	
4 ≤ S < 5	1335	60137	2.22	
5 ≤ S < 6	1654	60137	2.75	
6 ≤ S	2723	60137	4.53	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	54150	61437	88.14	
0 to > = -85	60657	61437	98.73	
0 to > = -95	61409	61437	99.95	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	7681	9083	84.56	96.62
1 ≤ S < 2	166	9083	1.83	
2 ≤ S < 3	200	9083	2.20	
3 ≤ S < 4	247	9083	2.72	
4 ≤ S < 5	226	9083	2.49	
5 ≤ S < 6	256	9083	2.82	
6 ≤ S	307	9083	3.38	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	9311	9335	99.70	
0 to > = -85	9335	9335	100.00	
0 to > = -95	9335	9335	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	

0-5 (with frequency hopping	66190	69220	95.60	
Total Call Attempt	155			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.46%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	63461	70772	89.60	
0 to > = -85	69992	70772	98.80	
0 to > = -95	70744	70772	99.90	

13.6.24. Airtel: Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	170612	196913	86.64	96.16
1 ≤ S < 2	3001	196913	1.52	
2 ≤ S < 3	3206	196913	1.63	
3 ≤ S < 4	3668	196913	1.86	
4 ≤ S < 5	3886	196913	1.97	
5 ≤ S < 6	4977	196913	2.53	
6 ≤ S	7563	196913	3.84	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	182580	201765	90.49%	
0 to > = -85	198856	201765	98.56%	
0 to > = -95	201640	201765	99.94%	
Total Calls Attempt (A)	481			
Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00%			
Total Calls Established ('C)	481			
Total Calls Drop (D)	0			
Dropped Calls Rate in % (D*100/C)	0.00%			
Call Setup Success Rate in % (C*100/A)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.50%			

13.6.25. Videocon: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	113166	134996	83.83	
1 ≤ S < 2	3290	134996	2.44	
2 ≤ S < 3	4303	134996	3.19	
3 ≤ S < 4	3907	134996	2.89	
4 ≤ S < 5	4697	134996	3.48	
5 ≤ S < 6	4049	134996	3.00	
6 ≤ S	1584	134996	1.17	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	62120	91143	68.16	
0 to > = -85	82306	91143	90.30	
0 to > = -95	90264	91143	99.04	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	91309	105167	86.82	
1 ≤ S < 2	1586	105167	1.51	
2 ≤ S < 3	2092	105167	1.99	
3 ≤ S < 4	2168	105167	2.06	
4 ≤ S < 5	2932	105167	2.79	
5 ≤ S < 6	3680	105167	3.50	
6 ≤ S	1400	105167	1.33	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	57939	58083	99.75	
0 to > = -85	58083	58083	100	
0 to > = -95	58083	58083	100	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	229450	240163	95.54	
Total Call Attempt	121			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.33%			

RxLev	Samples	Total	%	
0 to > = -75	120059	149226	80.45	
0 to > = -85	140389	149226	94.08	
0 to > = -95	148347	149226	99.41	

13.6.26. Videocon:: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	128219	149688	85.66	
1 ≤ S < 2	3650	149688	2.44	
2 ≤ S < 3	3990	149688	2.67	
3 ≤ S < 4	3652	149688	2.44	
4 ≤ S < 5	4349	149688	2.91	
5 ≤ S < 6	4206	149688	2.81	
6 ≤ S	1622	149688	1.08	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	91218	118709	76.84	
0 to > = -85	109047	118709	91.86	
0 to > = -95	117868	118709	99.29	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	49012	61665	79.48	
1 ≤ S < 2	2493	61665	4.04	
2 ≤ S < 3	2665	61665	4.32	
3 ≤ S < 4	2304	61665	3.74	
4 ≤ S < 5	2616	61665	4.24	
5 ≤ S < 6	1787	61665	2.90	
6 ≤ S	788	61665	1.28	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	59682	61665	96.78	
0 to > = -85	61665	61665	100.00	
0 to > = -95	61665	61665	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	202950	211353	96.02	
Total Call Attempt	120			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			

Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	150900	180374	83.66	
0 to > = -85	170712	180374	94.64	
0 to > = -95	179533	180374	99.53	

13.6.27. Videocon:: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	143086	167261	85.55	
1 ≤ S < 2	3750	167261	2.24	
2 ≤ S < 3	4483	167261	2.68	
3 ≤ S < 4	4527	167261	2.71	
4 ≤ S < 5	5383	167261	3.22	
5 ≤ S < 6	4497	167261	2.69	
6 ≤ S	1535	167261	0.92	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	38404	77852	49.33	
0 to > = -85	60648	77852	77.90	
0 to > = -95	75120	77852	96.49	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	38220	39214	97.47	
1 ≤ S < 2	269	39214	0.69	
2 ≤ S < 3	184	39214	0.47	
3 ≤ S < 4	136	39214	0.35	
4 ≤ S < 5	255	39214	0.65	
5 ≤ S < 6	145	39214	0.37	
6 ≤ S	5	39214	0.01	
RxLev	**5**	**Total**	**%**	
0 to > = -75	17371	18832	92.24	
0 to > = -85	18832	18832	100	
0 to > = -95	18832	18832	100	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				

0-5 (with frequency hopping	200293	206475	97.01	
Total Call Attempt	139			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.41%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	55775	96684	57.69	
0 to > = -85	79480	96684	82.21	
0 to > = -95	93952	96684	97.17	

13.6.28. Videocon: Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	563012	657991	85.57	
1 ≤ S < 2	15038	657991	2.29	
2 ≤ S < 3	17717	657991	2.69	
3 ≤ S < 4	16694	657991	2.54	
4 ≤ S < 5	20232	657991	3.07	
5 ≤ S < 6	18364	657991	2.79	
6 ≤ S	6934	657991	1.05	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	326734	426284	76.65	
0 to > = -85	390581	426284	91.62	
0 to > = -95	421832	426284	98.96	
Total Calls Attempt (A)	380			
Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00%			
Total Calls Established ('C)	380			
Total Calls Drop (D)	0			
Dropped Calls Rate in % (D*100/C)	0.00%			
Call Setup Success Rate in % (C*100/A)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.4%			

13.7. Drive Test Outcome Summary

Call Events	Vodafone	Idea	BSNL	TATA CDMA	TATA GSM	Airtel	Videocon
Total Calls Attempt (A)	457	487	411	353	411	481	380
Total Calls Blocked (B)	0	2	1	0	1	0	0
Blocked Call Rate in % (B*100/A)	0%	0%	0.24 %	0.00%	0.24%	0.00%	0.00%
Total Calls Established ('C)	457	485	407	337	410	481	380
Total Calls Drop (D)	0	1	2	1	1	0	0
Dropped Calls Rate in % (D*100/C)	0	0.21	0.49 %	0.30%	0.24%	0.00%	0.00%
Call Setup Success Rate in % (C*100/A)	100	99.59	99.03 %	100.00%	100.00%	100.00 %	100.00 %
Handover Success Rate % (total HO Success * 100/Total HO attempt)	98.89	99.02	99.70 %	100.00%	100.00%	99.50 %	99.40 %

13.8. December:Rewari SSA

Month	Name of SSA covered	Drive Test Schedule
December 2015	Delhi	December 02, 2015 to December 04, 2015

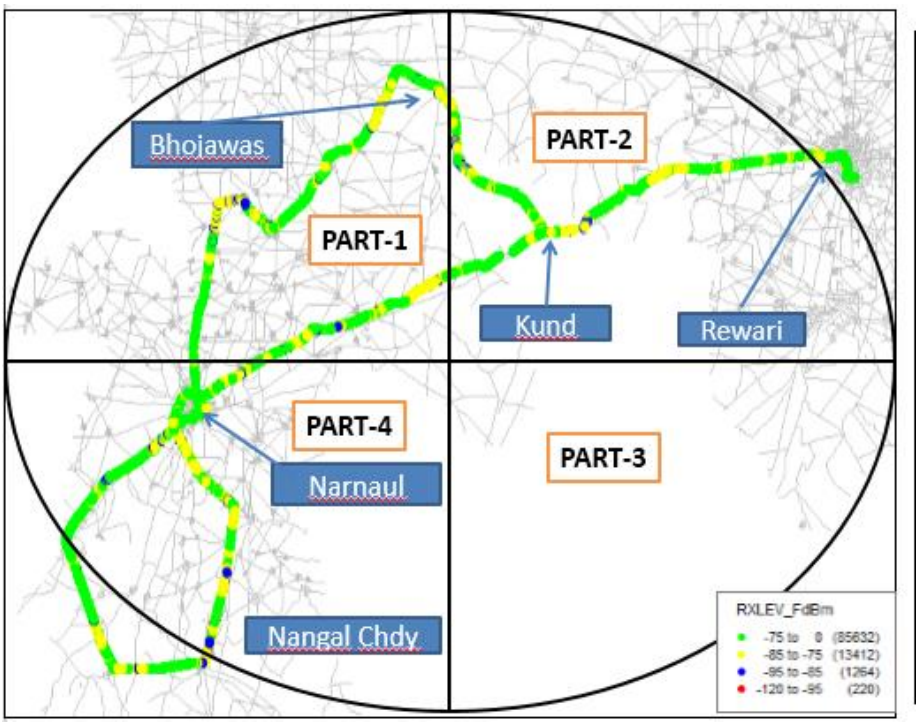
13.9. Rewari SSA: Distance Covered

Drive Test Distance Covered	Day 1	Day 2	Day 3
Rewari SSA	196 km	147 km	117 km

13.10. Route Map: Rewari SSA: Day 1

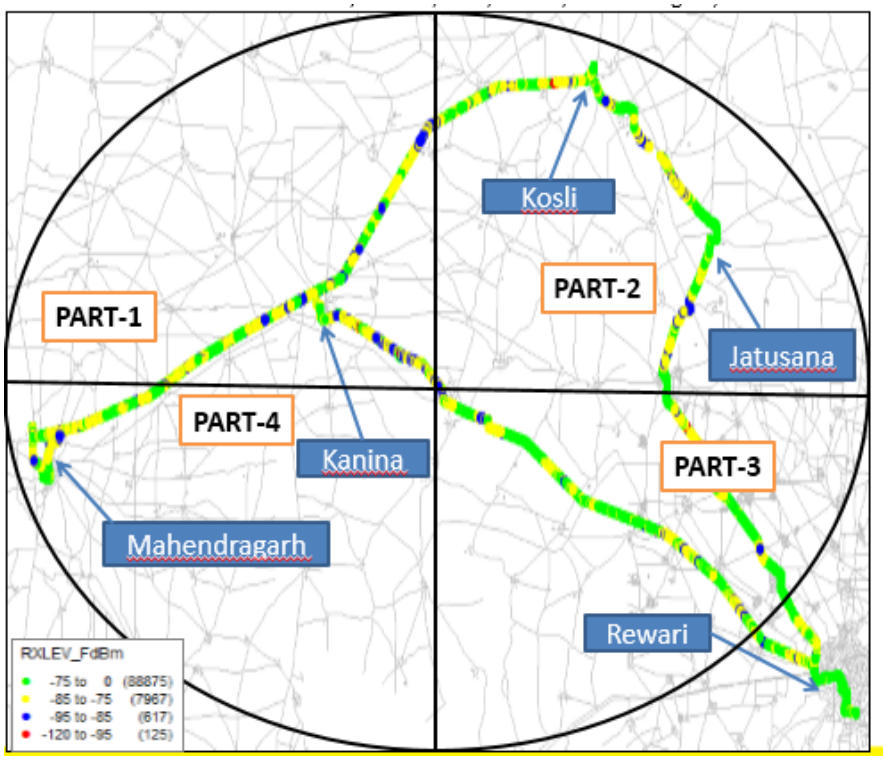
Route Name
Rewari-Khori-Kund
Kund-Ateli-Narnaul
Narnaul--NangalChaudhari-Nijampur
Neejampur-Narnaul-Naseebpur-DongraChowk-Bewal -Nanagal Jamalpur-Kund

Route Name
Civil Hospital, Narnaul



13.11. Route Map: Rewari SSA: Day 2

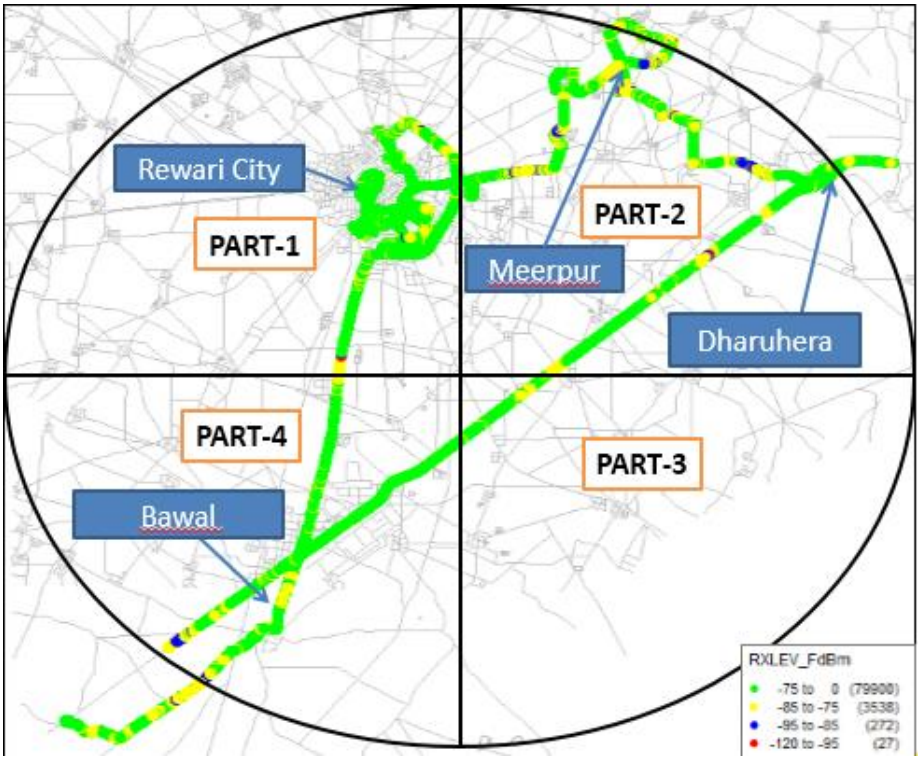
Route Name
Rewari-Berli-Jatusana-Gudiyanai
Gudiyani-Kosli-Kanina
Kanina-Mahendragarh-Kanina
Kanina-Dahina-Nangalmundi-Saharanwas-Rewari
Route Name
Civil Hospital, Mahendhargarh



13.12. Route Map: Rewari SSA: Day 3

Route Name
Rewari-Ramgarh
Ramgarh-Mirpur
Mirpur-Jonawas
Jonawas-Nikhri-NH-8-Bawal-Rewari

Route Name
GYM KHANA CLUB, Rewari.



13.13. Drive Report Analysis

13.13.1. Airtel: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	53908	65446	82.37	95.28
1 ≤ S < 2	1405	65446	2.15	
2 ≤ S < 3	1514	65446	2.31	
3 ≤ S < 4	1721	65446	2.63	
4 ≤ S < 5	1761	65446	2.69	
5 ≤ S < 6	2047	65446	3.13	
6 ≤ S	3090	65446	4.72	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	40708	67126	60.64	
0 to > = -85	56191	67126	83.71	
0 to > = -95	65923	67126	98.21	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	6352	6401	99.23	99.95
1 ≤ S < 2	4	6401	0.06	
2 ≤ S < 3	15	6401	0.23	
3 ≤ S < 4	9	6401	0.14	
4 ≤ S < 5	11	6401	0.17	

5 ≤ S < 6	7	6401	0.11	
6 ≤ S	3	6401	0.05	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	6366	6576	96.81	
0 to > = -85	6549	6576	99.59	
0 to > = -95	6576	6576	100.00	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	68754	71847	95.70	
Total Call Attempt	216			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.93%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.38%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	47074	73702	63.87	
0 to > = -85	62740	73702	85.13	
0 to > = -95	72499	73702	98.37	

13.13.2. Airtel:: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	34082	44303	76.93	
1 ≤ S < 2	1511	44303	3.41	
2 ≤ S < 3	1543	44303	3.48	95.33
3 ≤ S < 4	1704	44303	3.85	
4 ≤ S < 5	1631	44303	3.68	
5 ≤ S < 6	1762	44303	3.98	
6 ≤ S	2070	44303	4.67	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	27047	37403	72.31	
0 to > = -85	35891	37403	95.96	
0 to > = -95	37361	37403	99.89	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**

0 ≤ S < 1	5776	6187	93.36	99.27
1 ≤ S < 2	90	6187	1.45	
2 ≤ S < 3	73	6187	1.18	
3 ≤ S < 4	80	6187	1.29	
4 ≤ S < 5	62	6187	1.00	
5 ≤ S < 6	61	6187	0.99	
6 ≤ S	45	6187	0.73	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	2574	3638	70.75	
0 to > = -85	3624	3638	99.62	
0 to > = -95	3638	3638	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	48375	50490	95.81	
Total Call Attempt	202			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.59%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	29621	41041	72.17	
0 to > = -85	39515	41041	96.28	
0 to > = -95	40999	41041	99.90	

13.13.3. Airtel:: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	45175	54101	83.50	95.32
1 ≤ S < 2	1008	54101	1.86	
2 ≤ S < 3	1092	54101	2.02	
3 ≤ S < 4	1287	54101	2.38	
4 ≤ S < 5	1341	54101	2.48	
5 ≤ S < 6	1667	54101	3.08	
6 ≤ S	2531	54101	4.68	
RxLev	**Samples**	**Total**	**%**	

0 to > = -75	34111	39553	86.24	
0 to > = -85	39142	39553	98.96	
0 to > = -95	39545	39553	99.98	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	6259	6493	96.40	98.88
1 ≤ S < 2	35	6493	0.54	
2 ≤ S < 3	33	6493	0.51	
3 ≤ S < 4	33	6493	0.51	
4 ≤ S < 5	31	6493	0.48	
5 ≤ S < 6	29	6493	0.45	
6 ≤ S	73	6493	1.12	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	4463	4525	98.63	
0 to > = -85	4525	4525	100.00	
0 to > = -95	4525	4525	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	57990	60594	95.70	
Total Call Attempt	185			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.64%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	38574	44078	87.51	
0 to > = -85	43667	44078	99.07	
0 to > = -95	44070	44078	99.98	

13.13.4. Airtel:: Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	151552	182931	82.85	95.73
1 ≤ S < 2	4053	182931	2.22	
2 ≤ S < 3	4270	182931	2.33	
3 ≤ S < 4	4834	182931	2.64	

4 ≤ S < 5	4837	182931	2.64	
5 ≤ S < 6	5573	182931	3.05	
6 ≤ S	7812	182931	4.27	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	115269	158821	72.58%	
0 to > = -85	145922	158821	91.88%	
0 to > = -95	157568	158821	99.21%	
Total Calls Attempt (A)	603			
Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00%			
Total Calls Established ('C)	603			
Total Calls Drop (D)	2			
Dropped Calls Rate in % (D*100/C)	0.33%			
Call Setup Success Rate in % (C*100/A)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.56%			

13.13.5. BSNL: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	25519	44449	57.41	89.52
1 ≤ S < 2	2008	44449	4.52	
2 ≤ S < 3	2417	44449	5.44	
3 ≤ S < 4	2871	44449	6.46	
4 ≤ S < 5	3401	44449	7.65	
5 ≤ S < 6	3576	44449	8.05	
6 ≤ S	4657	44449	10.48	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	31004	47225	65.65	
0 to > = -85	44793	47225	94.85	
0 to > = -95	47105	47225	99.75	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	5516	6422	85.89	97.48
1 ≤ S < 2	136	6422	2.12	
2 ≤ S < 3	145	6422	2.26	
3 ≤ S < 4	177	6422	2.76	
4 ≤ S < 5	153	6422	2.38	
5 ≤ S < 6	133	6422	2.07	
6 ≤ S	162	6422	2.52	
RxLev	**Samples**	**Total**	**%**	

0 to > = -75	6613	6726	98.32	
0 to > = -85	6661	6726	99.03	
0 to > = -95	6661	6726	99.03	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	46052	50871	90.53	
Total Call Attempt	279			
Blocked Call Rate (<=3%)	25.45%			
Dropped Call Rate (<=2%)	2.91%			
Call Setup Success Rate (>=95%)	73.84%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	95.62%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	37617	53951	69.72	
0 to > = -85	51454	53951	95.37	
0 to > = -95	53766	53951	99.66	

13.13.6. BSNL: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	29462	44984	65.49	92.30
1 ≤ S < 2	1781	44984	3.96	
2 ≤ S < 3	2095	44984	4.66	
3 ≤ S < 4	2549	44984	5.67	
4 ≤ S < 5	2836	44984	6.30	
5 ≤ S < 6	2798	44984	6.22	
6 ≤ S	3463	44984	7.70	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	31349	46953	66.77	
0 to > = -85	45641	46953	97.21	
0 to > = -95	46907	46953	99.90	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	4134	6362	64.98	94.84
1 ≤ S < 2	271	6362	4.26	
2 ≤ S < 3	359	6362	5.64	
3 ≤ S < 4	399	6362	6.27	
4 ≤ S < 5	408	6362	6.41	

5 ≤ S < 6	463	6362	7.28	
6 ≤ S	328	6362	5.16	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	6622	6660	99.43	
0 to > = -85	6660	6660	100.00	
0 to > = -95	6660	6660	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	47555	51346	92.62	
Total Call Attempt	216			
Blocked Call Rate (<=3%)	2.78%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	96.76%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	96.70%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	37971	53613	70.82	
0 to > = -85	52301	53613	97.55	
0 to > = -95	53567	53613	99.91	

13.13.7. BSNL: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	23738	35214	67.41	93.76
1 ≤ S < 2	1552	35214	4.41	
2 ≤ S < 3	1654	35214	4.70	
3 ≤ S < 4	1884	35214	5.35	
4 ≤ S < 5	2166	35214	6.15	
5 ≤ S < 6	2022	35214	5.74	
6 ≤ S	2198	35214	6.24	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	27159	36828	73.75	
0 to > = -85	36245	36828	98.42	
0 to > = -95	36827	36828	100.00	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	5489	6392	85.87	96.35

1 ≤ S < 2	111	6392	1.74	
2 ≤ S < 3	112	6392	1.75	
3 ≤ S < 4	118	6392	1.85	
4 ≤ S < 5	138	6392	2.16	
5 ≤ S < 6	191	6392	2.99	
6 ≤ S	233	6392	3.65	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	3521	6685	99.70	
0 to > = -85	6530	6685	100.00	
0 to > = -95	6675	6685	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	39175	41606	94.16	
Total Call Attempt	169			
Blocked Call Rate (<=3%)	2.37%			
Dropped Call Rate (<=2%)	0.61%			
Call Setup Success Rate (>=95%)	97.63%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	96.06%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	30680	43513	70.51	
0 to > = -85	42775	43513	98.30	
0 to > = -95	43502	43513	99.97	

13.13.8. BSNL: Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	93858	143823	65.26	
1 ≤ S < 2	5859	143823	4.07	
2 ≤ S < 3	6782	143823	4.72	
3 ≤ S < 4	7998	143823	5.56	
4 ≤ S < 5	9102	143823	6.33	92.32
5 ≤ S < 6	9183	143823	6.38	
6 ≤ S	11041	143823	7.68	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	106268	151077	70.34%	

0 to > = -85	146530	151077	96.99%	
0 to > = -95	150835	151077	99.84%	
Total Calls Attempt (A)	664			
Total Calls Blocked (B)	81			
Blocked Call Rate in % (B*100/A)	12.20%			
Total Calls Established ('C)	580			
Total Calls Drop (D)	7			
Dropped Calls Rate in % (D*100/C)	1.20%			
Call Setup Success Rate in % (C*100/A)	87.35%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	96.47%			

13.13.9. Idea: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	223864	284710	78.63	
1 < S ≤ 2	8328	284710	2.93	
2 < S ≤ 3	8903	284710	3.13	
3 < S ≤ 4	9187	284710	3.23	
4 < S ≤ 5	9223	284710	3.24	
5 ≤ S < 6	10038	284710	3.53	
6 ≤ S	15167	284710	5.33	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	73971	88867	83.24	
0 to > = -85	87383	88867	98.33	
0 to > = -95	88647	88867	99.75	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	33356	39458	84.54	
1 ≤ S < 2	1330	39458	3.37	
2 ≤ S < 3	1249	39458	3.17	
3 ≤ S < 4	1298	39458	3.29	
4 ≤ S < 5	743	39458	1.88	
5 ≤ S < 6	831	39458	2.11	
6 ≤ S	651	39458	1.65	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	11659	11659	100.00	
0 to > = -85	11659	11659	100.00	
0 to > = -95	11659	11659	100.00	
Over All SSA Drive Test Details Day-1				

RxQual	Samples (S)	Total	%	Summary
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	308350	324168	95.12	
Total Call Attempt	207			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0			
Call Setup Success Rate (>=95%)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.46%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	85630	100526	85.18	
0 to > = -85	99042	100526	98.52	
0 to > = -95	100306	100526	99.78	

13.13.10. Idea: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	235356	291829	80.65	
1 ≤ S < 2	8617	291829	2.95	
2 ≤ S < 3	8669	291829	2.97	
3 ≤ S < 4	9392	291829	3.22	
4 ≤ S < 5	8284	291829	2.84	
5 ≤ S < 6	9357	291829	3.21	
6 ≤ S	12154	291829	4.16	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	77338	86047	89.88	
0 to > = -85	85305	86047	99.14	
0 to > = -95	85922	86047	99.85	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	38501	40043	96.15	
1 ≤ S < 2	405	40043	1.01	
2 ≤ S < 3	308	40043	0.77	
3 ≤ S < 4	322	40043	0.80	
4 ≤ S < 5	165	40043	0.41	
5 ≤ S < 6	156	40043	0.39	
6 ≤ S	186	40043	0.46	
RxLev	**Samples**	**Total**	**%**	

0 to > = -75	11534	11534	100.00	
0 to > = -85	11534	11534	100.00	
0 to > = -95	11534	11534	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	319532	331872	96.28	
Total Call Attempt	211			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0			
Call Setup Success Rate (>=95%)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	88872	97581	91.08	
0 to > = -85	96839	97581	99.24	
0 to > = -95	97456	97581	99.87	

13.13.11. Idea: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	197210	240758	81.91	
1 ≤ S < 2	5979	240758	2.48	
2 ≤ S < 3	6376	240758	2.65	
3 ≤ S < 4	6780	240758	2.82	
4 ≤ S < 5	6477	240758	2.69	
5 ≤ S < 6	7238	240758	3.01	
6 ≤ S	10698	240758	4.44	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	69054	72895	94.73	
0 to > = -85	72592	72895	99.58	
0 to > = -95	72864	72895	99.96	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	38276	38984	98.18	
1 ≤ S < 2	200	38984	0.51	
2 ≤ S < 3	118	38984	0.30	
3 ≤ S < 4	59	38984	0.15	

4 ≤ S < 5	73	38984	0.19	
5 ≤ S < 6	69	38984	0.18	
6 ≤ S	189	38984	0.48	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	10846	10846	100.00	
0 to > = -85	10846	10846	100.00	
0 to > = -95	10846	10846	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	268855	279742	96.11	
Total Call Attempt	182			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0			
Call Setup Success Rate (>=95%)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	97.86%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	79900	83741	95.41	
0 to > = -85	83438	83741	99.64	
0 to > = -95	83710	83741	99.96	

13.13.12. Idea Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	766563	935782	81.92	
1 ≤ S < 2	24859	935782	2.66	
2 ≤ S < 3	25623	935782	2.74	
3 ≤ S < 4	27038	935782	2.89	
4 ≤ S < 5	24965	935782	2.67	
5 ≤ S < 6	27689	935782	2.96	
6 ≤ S	39045	935782	4.17	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	254402	281848	90.26	
0 to > = -85	279319	281848	99.10	
0 to > = -95	281472	281848	99.87	
Total Calls Attempt (A)	600			

Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00			
Total Calls Established ('C)	600			
Total Calls Drop (D)	0			
Dropped Calls Rate in % (D*100/C)	0.00			
Call Setup Success Rate in % (C*100/A)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.12			

13.13.13. Rcom CDMA: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	55394	55497	99.81	
1 ≤ S < 2	7	55497	0.01	
2 ≤ S < 3	67	55497	0.12	
3 ≤ S < 4	3	55497	0.01	
4 ≤ S < 5	13	55497	0.02	
5 ≤ S < 6	0	55497	0.00	
6 ≤ S	13	55497	0.02	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	45799	48531	94.37	
0 to > = -85	46918	48531	96.68	
0 to > = -95	48332	48531	99.59	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	5347	5347	100.00	
1 ≤ S < 2	0	5347	0.00	
2 ≤ S < 3	0	5347	0.00	
3 ≤ S < 4	0	5347	0.00	
4 ≤ S < 5	0	5347	0.00	
5 ≤ S < 6	0	5347	0.00	
6 ≤ S	0	5347	0.00	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	4396	5008	87.78	
0 to > = -85	5008	5008	100.00	
0 to > = -95	5008	5008	100.00	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	60818	60844	99.96	
0-5 (with frequency hopping	NA	NA	NA	
Total Call Attempt	93			
Blocked Call Rate (<=3%)	0.00			

Dropped Call Rate (<=2%)	0.00			
Call Setup Success Rate (>=95%)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	50195	53539	93.75	
0 to > = -85	51926	53539	96.99	
0 to > = -95	53340	53539	99.63	

13.13.14. Rcom CDMA: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	226292	226613	99.86	
1 ≤ S < 2	20	226613	0.01	
2 ≤ S < 3	157	226613	0.07	
3 ≤ S < 4	19	226613	0.01	
4 ≤ S < 5	24	226613	0.01	
5 ≤ S < 6	10	226613	0.00	
6 ≤ S	91	226613	0.04	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	173690	177351	97.94	
0 to > = -85	175822	177351	99.14	
0 to > = -95	177327	177351	99.99	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	30586	30586	100.00	
1 ≤ S < 2	0	30586	0.00	
2 ≤ S < 3	0	30586	0.00	
3 ≤ S < 4	0	30586	0.00	
4 ≤ S < 5	0	30586	0.00	
5 ≤ S < 6	0	30586	0.00	
6 ≤ S	0	30586	0.00	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	27764	27764	100.00	
0 to > = -85	27764	27764	100.00	
0 to > = -95	27764	27764	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**

0-4 (w/o frequency hopping)/CDMA	257074	257199	99.95	
0-5 (with frequency hopping	NA	NA	NA	
Total Call Attempt	173			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0.00			
Call Setup Success Rate (>=95%)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	201454	205115	98.22	
0 to > = -85	203586	205115	99.25	
0 to > = -95	205091	205115	99.99	

13.13.15. Rcom CDMA: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	239806	240160	99.85	
1 ≤ S < 2	27	240160	0.01	
2 ≤ S < 3	240	240160	0.10	
3 ≤ S < 4	25	240160	0.01	
4 ≤ S < 5	30	240160	0.01	
5 ≤ S < 6	6	240160	0.00	
6 ≤ S	26	240160	0.01	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	193579	196603	98.46	
0 to > = -85	196209	196603	99.80	
0 to > = -95	196603	196603	100.00	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	35907	35907	100.00	
1 ≤ S < 2	0	35907	0.00	
2 ≤ S < 3	0	35907	0.00	
3 ≤ S < 4	0	35907	0.00	
4 ≤ S < 5	0	35907	0.00	
5 ≤ S < 6	0	35907	0.00	
6 ≤ S	0	35907	0.00	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	35792	35792	100.00	
0 to > = -85	35792	35792	100.00	

0 to > = -95	35792	35792	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	276005	276067	99.98	
0-5 (with frequency hopping	NA	NA	NA	
Total Call Attempt	155			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0.00			
Call Setup Success Rate (>=95%)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	229371	232395	98.70	
0 to > = -85	232001	232395	99.83	
0 to > = -95	232395	232395	100.00	

13.13.16. Rcom CDMA: Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	593332	594110	99.87	
1 ≤ S < 2	54	594110	0.01	
2 ≤ S < 3	464	594110	0.08	
3 ≤ S < 4	47	594110	0.01	
4 ≤ S < 5	67	594110	0.01	
5 ≤ S < 6	16	594110	0.00	
6 ≤ S	130	594110	0.02	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	481020	491049	97.96	
0 to > = -85	487513	491049	99.28	
0 to > = -95	490826	491049	99.95	
Total Calls Attempt (A)	421			
Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00			
Total Calls Established ('C)	421			
Total Calls Drop (D)	0			
Dropped Calls Rate in % (D*100/C)	0.00			
Call Setup Success Rate in % (C*100/A)	100.00			

Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00	

13.13.17. RCOM GSM: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	5054	5565	90.82	
1 ≤ S < 2	103	5565	1.85	
2 ≤ S < 3	112	5565	2.01	
3 ≤ S < 4	87	5565	1.56	
4 ≤ S < 5	90	5565	1.62	
5 ≤ S < 6	77	5565	1.38	
6 ≤ S	42	5565	0.75	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	3184	5563	57.24	
0 to > = -85	4488	5563	80.68	
0 to > = -95	5359	5563	96.33	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	606	614	98.70	
1 ≤ S < 2	0	614	0.00	
2 ≤ S < 3	2	614	0.33	
3 ≤ S < 4	3	614	0.49	
4 ≤ S < 5	1	614	0.16	
5 ≤ S < 6	2	614	0.33	
6 ≤ S	0	614	0.00	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	614	614	100.00	
0 to > = -85	614	614	100.00	
0 to > = -95	614	614	100.00	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	6137	6179	99.32	
Total Call Attempt	93			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0.00			

Call Setup Success Rate (>=95%)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	3798	6177	61.49	
0 to > = -85	5102	6177	82.60	
0 to > = -95	5973	6177	96.70	

13.13.18. RCOM GSM: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	14085	15492	90.92	
1 ≤ S < 2	285	15492	1.84	
2 ≤ S < 3	281	15492	1.81	
3 ≤ S < 4	267	15492	1.72	
4 ≤ S < 5	181	15492	1.17	
5 ≤ S < 6	196	15492	1.27	
6 ≤ S	197	15492	1.27	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	7333	15483	47.36	
0 to > = -85	12706	15483	82.06	
0 to > = -95	15312	15483	98.90	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	2640	2675	98.69	
1 ≤ S < 2	4	2675	0.15	
2 ≤ S < 3	8	2675	0.30	
3 ≤ S < 4	3	2675	0.11	
4 ≤ S < 5	4	2675	0.15	
5 ≤ S < 6	7	2675	0.26	
6 ≤ S	9	2675	0.34	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	2667	2674	99.74	
0 to > = -85	2674	2674	100.00	
0 to > = -95	2674	2674	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	17961	18167	98.87	

Total Call Attempt	173			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	0.00			
Call Setup Success Rate (>=95%)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.54			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	10000	18157	55.08	
0 to > = -85	15380	18157	84.71	
0 to > = -95	17986	18157	99.06	

13.13.19. RCOM GSM: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	13806	15420	89.53	
1 ≤ S < 2	279	15420	1.81	
2 ≤ S < 3	288	15420	1.87	
3 ≤ S < 4	264	15420	1.71	
4 ≤ S < 5	270	15420	1.75	
5 ≤ S < 6	269	15420	1.74	
6 ≤ S	244	15420	1.58	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	11546	15416	74.90	
0 to > = -85	14510	15416	94.12	
0 to > = -95	15391	15416	99.84	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	2739	2756	99.38	
1 ≤ S < 2	4	2756	0.15	
2 ≤ S < 3	1	2756	0.04	
3 ≤ S < 4	4	2756	0.15	
4 ≤ S < 5	4	2756	0.15	
5 ≤ S < 6	3	2756	0.11	
6 ≤ S	1	2756	0.04	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	2756	2756	100.00	
0 to > = -85	2756	2756	100.00	
0 to > = -95	2756	2756	100.00	

Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	17931	18176	98.65	
Total Call Attempt	154			
Blocked Call Rate (<=3%)	0.00			
Dropped Call Rate (<=2%)	1.30			
Call Setup Success Rate (>=95%)	100.00			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	14302	18172	78.70	
0 to > = -85	17266	18172	95.01	
0 to > = -95	18147	18172	99.86	

13.13.20. RCOM GSM: Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	38930	42522	91.55	
1 ≤ S < 2	675	42522	1.59	
2 ≤ S < 3	692	42522	1.63	
3 ≤ S < 4	628	42522	1.48	
4 ≤ S < 5	550	42522	1.29	
5 ≤ S < 6	554	42522	1.30	
6 ≤ S	493	42522	1.16	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	28100	42506	66.11	
0 to > = -85	37748	42506	88.81	
0 to > = -95	42106	42506	99.06	
Total Calls Attempt (A)	420			
Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00			
Total Calls Established ('C)	420			
Total Calls Drop (D)	2			
Dropped Calls Rate in % (D*100/C)	0.48			
Call Setup Success Rate in % (C*100/A)	100.00			

Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.76	

13.13.21. TATA GSM: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	116199	132483	87.71	95.61
1 < S ≤ 2	2497	132483	1.88	
2 < S ≤ 3	2294	132483	1.73	
3 < S ≤ 4	3312	132483	2.50	
4 < S ≤ 5	2364	132483	1.78	
> 5	5817	132483	4.39	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	23031	59556	38.67	
0 to > = -85	45078	59556	75.69	
0 to > = -95	57790	59556	97.03	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	37129	39059	95.06	96.74
1 < S ≤ 2	401	39059	1.03	
2 < S ≤ 3	389	39059	1.00	
3 < S ≤ 4	342	39059	0.88	
4 < S ≤ 5	264	39059	0.68	
> 5	534	39059	1.37	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	3932	16554	23.75	
0 to > = -85	14766	16554	89.20	
0 to > = -95	16554	16554	100.00	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	

0-5 (with frequency hopping	165191	171542.00	96.30	
Total Call Attempt	116			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	97.14%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	26963	76110	35.4263566	
0 to > = -85	59844	76110	78.6283011	
0 to > = -95	74344	76110	97.6796742	

13.13.22. TATA GSM: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	178167	199147	89.47	95.67
1 < S ≤ 2	3062	199147	1.54	
2 < S ≤ 3	3079	199147	1.55	
3 < S ≤ 4	3152	199147	1.58	
4 < S ≤ 5	3072	199147	1.54	
> 5	8615	199147	4.33	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	42899	95728	44.81	
0 to > = -85	76676	95728	80.10	
0 to > = -95	93752	95728	97.94	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	37113	37325	99.43	99.61
1 < S ≤ 2	20	37325	0.05	
2 < S ≤ 3	37	37325	0.10	
3 < S ≤ 4	66	37325	0.18	
4 < S ≤ 5	33	37325	0.09	

> 5	56	37325	0.15	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	9603	16383	58.62	
0 to > = -85	15936	16383	97.27	
0 to > = -95	16375	16383	99.95	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	227801	236472.00	96.33	
Total Call Attempt	165			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	52502	112111	46.830373	
0 to > = -85	92612	112111	82.607416	
0 to > = -95	110127	112111	98.230325	

13.13.23. TATA GSM: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	148767	179278	82.98	
1 < S ≤ 2	5046	179278	2.81	
2 < S ≤ 3	5191	179278	2.90	95.15
3 < S ≤ 4	5883	179278	3.28	
4 < S ≤ 5	5696	179278	3.18	

> 5	8695	179278	4.85	
RxLev	**Samples**	**Total**		
0 to > = -75	50630	89675	56.4594369	
0 to > = -85	72250	89675	80.5687204	
0 to > = -95	87698	89675	97.7953722	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	37004	37166	99.56	99.61
1 < S ≤ 2	5	37166	0.01	
2 < S ≤ 3	0	37166	0.00	
3 < S ≤ 4	6	37166	0.02	
4 < S ≤ 5	0	37166	0.00	
> 5	151	37166	0.41	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	15312	15312	100.00	
0 to > = -85	15312	15312	100.00	
0 to > = -95	15312	15312	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	NA	NA	NA	
0-5 (with frequency hopping	207598	216444.00	95.91	
Total Call Attempt	158			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	98%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	65942	104987	62.8096812	
0 to > = -85	87562	104987	83.402707	

0 to > = -95	103010	104987	98.1169097	

13.13.24. TATA GSM :Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	554379	624458.00	88.78	96.18
1 < S ≤ 2	11031	624458.00	1.77	
2 < S ≤ 3	10990	624458.00	1.76	
3 < S ≤ 4	12761	624458.00	2.04	
4 < S ≤ 5	11429	624458.00	1.83	
> 5	23868	624458.00	3.82	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75 dbm	145407	293208	49.59	
0 to > = -85 dbm	240018	293208	81.86	
0 to > = -95 dbm	287481	293208	98.05	
Total Calls Attempt (A)	439			
Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00%			
Total Calls Established ('C)	439			
Total Calls Drop (D)	0			
Dropped Calls Rate in % (D*100/C)	0.00%			
Call Setup Success Rate in % (C*100/A)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	98.09%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75 dbm	28847	48249	59.79	
0 to > = -85 dbm	46014	48249	95.37	
0 to > = -95 dbm	48241	48249	99.98	

13.13.25. TATA CDMA: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	1598	4409	36.24	97.10
1 < S ≤ 2	1640	4409	37.20	

2 < S ≤ 3	789	4409	17.90	
3 < S ≤ 4	254	4409	5.76	
4 < S ≤ 5	62	4409	1.41	
> 5	66	4409	1.50	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	6554	12777	51.30	
0 to > = -85	10309	12777	80.68	
0 to > = -95	12535	12777	98.11	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	488	1389	35.13	99.57
1 < S ≤ 2	600	1389	43.20	
2 < S ≤ 3	238	1389	17.13	
3 < S ≤ 4	57	1389	4.10	
4 < S ≤ 5	5	1389	0.36	
> 5	1	1389	0.07	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	51	3079	1.66	
0 to > = -85	3028	3079	98.34	
0 to > = -95	3079	3079	100.00	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	5664	5798	97.69	
0-5 (with frequency hopping	NA	NA	NA	
Total Call Attempt	104			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.96%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			

RxLev	Samples	Total	%	
0 to > = -75	6605	15856	41.6561554	
0 to > = -85	13337	15856	84.1132694	
0 to > = -95	15614	15856	98.4737639	

13.13.26. TATA CDMA: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	2408	6226	38.68	97.24
1 < S ≤ 2	2158	6226	34.66	
2 < S ≤ 3	1086	6226	17.44	
3 < S ≤ 4	402	6226	6.46	
4 < S ≤ 5	116	6226	1.86	
> 5	56	6226	0.90	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	10344	16651	62.12	
0 to > = -85	13839	16651	83.11	
0 to > = -95	16321	16651	98.02	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	506	1510	33.51	99.47
1 < S ≤ 2	612	1510	40.53	
2 < S ≤ 3	321	1510	21.26	
3 < S ≤ 4	63	1510	4.17	
4 < S ≤ 5	8	1510	0.53	
> 5	0	1510	0.00	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	3341	3341	100.00	
0 to > = -85	3341	3341	100.00	
0 to > = -95	3341	3341	100.00	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	7556	7736	97.67	

0-5 (with frequency hopping	NA	NA	NA	
Total Call Attempt	121			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	13685	19992	68.452381	
0 to > = -85	17180	19992	85.934374	
0 to > = -95	19662	19992	98.34934	

13.13.27. TATA CDMA: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	1865	5173	36.05	96.17
1 < S ≤ 2	1676	5173	32.40	
2 < S ≤ 3	982	5173	18.98	
3 < S ≤ 4	452	5173	8.74	
4 < S ≤ 5	154	5173	2.98	
> 5	44	5173	0.85	
RxLev	**Samples**	**Total**		
0 to > = -75	8853	17304	51.16	
0 to > = -85	13208	17304	76.33	
0 to > = -95	16883	17304	97.57	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	521	1353	38.51	98.45
1 < S ≤ 2	509	1353	37.62	
2 < S ≤ 3	243	1353	17.96	
3 < S ≤ 4	59	1353	4.36	

4 < S ≤ 5	14	1353	1.03	
> 5	7	1353	0.52	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	3045	3069	99.22	
0 to > = -85	3069	3069	100.00	
0 to > = -95	3069	3069	100.00	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA	6307	6526	96.64	
0-5 (with frequency hopping	NA	NA	NA	
Total Call Attempt	134			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	11898	20373	58.4008246	
0 to > = -85	16277	20373	79.894959	
0 to > = -95	19952	20373	97.9335395	

13.13.28. TATA CDMA: Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	7386	20060.00	36.82	
1 < S ≤ 2	7195	20060.00	35.87	
2 < S ≤ 3	3659	20060.00	18.24	97.34
3 < S ≤ 4	1287	20060.00	6.42	
4 < S ≤ 5	359	20060.00	1.79	

> 5	174	20060.00	0.87	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75 dbm	32188	56221	57.25	
0 to > = -85 dbm	46794	56221	83.23	
0 to > = -95 dbm	55228	56221	98.23	
Total Calls Attempt (A)	359			
Total Calls Blocked (B)	0			
Blocked Call Rate in % (B*100/A)	0.00%			
Total Calls Established ('C)	359			
Total Calls Drop (D)	1			
Dropped Calls Rate in % (D*100/C)	0.28%			
Call Setup Success Rate in % (C*100/A)	100.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75 dbm	6437	9489	67.84	
0 to > = -85 dbm	9438	9489	99.46	
0 to > = -95 dbm	9489	9489	100.00	

13.13.29. Vodafone: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	100542	120096	83.72%	
1 < S ≤ 2	4257	120096	3.54%	
2 < S ≤ 3	4232	120096	3.52%	
3 < S ≤ 4	4708	120096	3.92%	
4 < S ≤ 5	2030	120096	1.69%	
> 5	4327	120096	3.60%	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	31613	32655	96.81%	
0 to > = -85	32090	32655	98.27%	
0 to > = -95	32464	32655	99.42%	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	16627	17081	97.34%	

1 < S ≤ 2	128	17081	0.75%	
2 < S ≤ 3	97	17081	0.57%	
3 < S ≤ 4	100	17081	0.59%	
4 < S ≤ 5	54	17081	0.32%	
> 5	75	17081	0.44%	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	4321	4321	100.00%	
0 to > = -85	4321	4321	100.00%	
0 to > = -95	4321	4321	100.00%	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	132775	137177	96.79%	
Total Call Attempt	214			
Blocked Call Rate (<=3%)	1.87%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	98.13%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.02%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	35934	36976	97.18%	
0 to > = -85	36411	36976	98.47%	
0 to > = -95	36785	36976	99.48%	

13.13.30. Vodafone: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	99041	113205	87.49%	

1 < S ≤ 2	3374	113205	2.98%	
2 < S ≤ 3	3403	113205	3.01%	
3 < S ≤ 4	3443	113205	3.04%	
4 < S ≤ 5	1237	113205	1.09%	
> 5	2707	113205	2.39%	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	29472	29709	99.20%	
0 to > = -85	29574	29709	99.55%	
0 to > = -95	29666	29709	99.86%	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	13357	13878	96.25%	
1 < S ≤ 2	147	13878	1.06%	
2 < S ≤ 3	120	13878	0.86%	
3 < S ≤ 4	128	13878	0.92%	
4 < S ≤ 5	30	13878	0.22%	
> 5	96	13878	0.69%	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	4028	4028	100.00%	
0 to > = -85	4028	4028	100.00%	
0 to > = -95	4028	4028	100.00%	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	124280	127083	97.79%	
Total Call Attempt	220			
Blocked Call Rate (<=3%)	0.91%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	99.09%			

Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.04%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	33500	33737	99.30%	
0 to > = -85	33602	33737	99.60%	
0 to > = -95	33694	33737	99.87%	

13.13.31. Vodafone: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	87044	99135	87.80%	
1 < S ≤ 2	2791	99135	2.82%	
2 < S ≤ 3	2723	99135	2.75%	
3 < S ≤ 4	2848	99135	2.87%	
4 < S ≤ 5	1357	99135	1.37%	
> 5	2372	99135	2.39%	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	25409	25854	98.28%	
0 to > = -85	25602	25854	99.03%	
0 to > = -95	25767	25854	99.66%	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	16625	16803	98.94%	
1 < S ≤ 2	74	16803	0.44%	
2 < S ≤ 3	40	16803	0.24%	
3 < S ≤ 4	16	16803	0.10%	
4 < S ≤ 5	33	16803	0.20%	
> 5	15	16803	0.09%	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	4137	4137	100.00%	
0 to > = -85	4137	4137	100.00%	
0 to > = -95	4137	4137	100.00%	

Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	113551	115938	97.94%	
Total Call Attempt	214			
Blocked Call Rate (<=3%)	1.87%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	98.13%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.02%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	29546	29991	98.52%	
0 to > = -85	29739	29991	99.16%	
0 to > = -95	29904	29991	99.71%	

13.13.32. Vodafone: Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S ≤ 1	333236	380198	87.65%	
1 < S ≤ 2	10771	380198	2.83%	
2 < S ≤ 3	10615	380198	2.79%	
3 < S ≤ 4	11243	380198	2.96%	
4 < S ≤ 5	4741	380198	1.25%	
> 5	9592	380198	2.52%	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75 dbm	98980	100704	98.29%	
0 to > = -85 dbm	99752	100704	99.05%	
0 to > = -95 dbm	100383	100704	99.68%	
Total Calls Attempt (A)	648			
Total Calls Blocked (B)	10			

Blocked Call Rate in % (B*100/A)	1.54%	
Total Calls Established ('C)	638	
Total Calls Drop (D)	0	
Dropped Calls Rate in % (D*100/C)	0.00	
Call Setup Success Rate in % (C*100/A)	98.46	
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.03%	

13.13.33. Videocon: Day 1

SSA (Urban/Rural)-Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	136048	154082	88.30	
1 ≤ S < 2	2736	154082	1.78	
2 ≤ S < 3	3109	154082	2.02	
3 ≤ S < 4	3265	154082	2.12	
4 ≤ S < 5	3476	154082	2.26	
5 ≤ S < 6	3312	154082	2.15	
6 ≤ S	2136	154082	1.39	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	23964	59556	40.24	
0 to > = -85	46011	59556	77.26	
0 to > = -95	57523	59556	96.59	
Office Complex SSA (Urban/Rural)- Day 1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	37546	39075	96.09	
1 ≤ S < 2	389	39075	1.00	
2 ≤ S < 3	342	39075	0.88	
3 ≤ S < 4	264	39075	0.68	
4 ≤ S < 5	222	39075	0.57	
5 ≤ S < 6	201	39075	0.51	
6 ≤ S	111	39075	0.28	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	3932	16554	23.75	
0 to > = -85	14766	16554	89.199	
0 to > = -95	16554	16554	100	
Over All SSA Drive Test Details Day-1				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				

0-5 (with frequency hopping	187397	193157	97.02	
Total Call Attempt	92			
Blocked Call Rate (<=3%)	1.00%			
Dropped Call Rate (<=2%)	1.00%			
Call Setup Success Rate (>=95%)	97.00%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	27896	76110	36.65	
0 to > = -85	60777	76110	79.85	
0 to > = -95	74077	76110	97.33	

13.13.34. Videocon:: Day 2

SSA (Urban/Rural)-Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	217130	233950	92.81	
1 ≤ S < 2	2823	233950	1.21	
2 ≤ S < 3	2907	233950	1.24	
3 ≤ S < 4	2757	233950	1.18	
4 ≤ S < 5	3229	233950	1.38	
5 ≤ S < 6	2619	233950	1.12	
6 ≤ S	2485	233950	1.06	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	55582	82496	67.38	
0 to > = -85	74575	82496	90.40	
0 to > = -95	81712	82496	99.05	
Office Complex SSA (Urban/Rural)- Day 2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	48114	49829	96.56	
1 ≤ S < 2	383	49829	0.77	
2 ≤ S < 3	256	49829	0.51	
3 ≤ S < 4	269	49829	0.54	
4 ≤ S < 5	380	49829	0.76	
5 ≤ S < 6	213	49829	0.43	
6 ≤ S	214	49829	0.43	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	4389	18724	23.44	
0 to > = -85	14925	18724	79.71	

0 to > = -95	18545	18724	99.04	
Over All SSA Drive Test Details Day-2				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	278248	283739	98.06	
Total Call Attempt	131			
Blocked Call Rate (<=3%)	0.76%			
Dropped Call Rate (<=2%)	0.00%			
Call Setup Success Rate (>=95%)	99.24%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	59971	101220	59.25	
0 to > = -85	89500	101220	88.42	
0 to > = -95	100257	101220	99.05	

13.13.35. Videocon: Day 3

SSA (Urban/Rural)-Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	188621	216334	87.19	
1 ≤ S < 2	4290	216334	1.98	
2 ≤ S < 3	4954	216334	2.29	
3 ≤ S < 4	4922	216334	2.28	
4 ≤ S < 5	5403	216334	2.50	
5 ≤ S < 6	4847	216334	2.24	
6 ≤ S	3297	216334	1.52	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	58354	73848	79.02	
0 to > = -85	70768	73848	95.83	
0 to > = -95	73537	73848	99.58	
Office Complex SSA (Urban/Rural)- Day 3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	46905	47055	99.68	
1 ≤ S < 2	0	47055	0.00	
2 ≤ S < 3	0	47055	0.00	
3 ≤ S < 4	0	47055	0.00	
4 ≤ S < 5	0	47055	0.00	

5 ≤ S < 6	24	47055	0.05	
6 ≤ S	126	47055	0.27	
RxLev	**5**	**Total**	**%**	
0 to > = -75	15368	15368	100.00	
0 to > = -85	15368	15368	100	
0 to > = -95	15368	15368	100	
Over All SSA Drive Test Details Day-3				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0-4 (w/o frequency hopping)/CDMA				
0-5 (with frequency hopping	254195	263389	96.51	
Total Call Attempt	146			
Blocked Call Rate (<=3%)	0.00%			
Dropped Call Rate (<=2%)	0.68%			
Call Setup Success Rate (>=95%)	99.32%			
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%			
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	73722	89216	82.63	
0 to > = -85	86136	89216	96.55	
0 to > = -95	88905	89216	99.65	

13.13.36. Videocon: Overall

Over All SSA Details				
RxQual	**Samples (S)**	**Total**	**%**	**Summary**
0 ≤ S < 1	674364	740325	91.09	
1 ≤ S < 2	10621	740325	1.43	
2 ≤ S < 3	11568	740325	1.56	
3 ≤ S < 4	11477	740325	1.55	
4 ≤ S < 5	12710	740325	1.72	
5 ≤ S < 6	11216	740325	1.52	
6 ≤ S	8369	740325	1.13	
RxLev	**Samples**	**Total**	**%**	
0 to > = -75	161589	266546	60.62	
0 to > = -85	236413	266546	88.70	
0 to > = -95	263239	266546	98.76	

Total Calls Attempt (A)	369	
Total Calls Blocked (B)	2	
Blocked Call Rate in % (B*100/A)	0.54%	
Total Calls Established ('C)	367	
Total Calls Drop (D)	2	
Dropped Calls Rate in % (D*100/C)	0.54%	
Call Setup Success Rate in % (C*100/A)	99.46%	
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.0%	

13.14. DRIVE TEST OUTCOME SUMMARY

Call Events	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TATA GSM	TATA CDMA	Vodafone	Videocon
Total Calls Attempt (A)	603	664	600	421	420	439	359	648	369
Total Calls Blocked (B)	0	81	0	0	0	0	0	10	2
Blocked Call Rate in % (B*100/A)	0.00 %	12.20%	0	0	0	0.00%	0.00%	1.54 %	0.54%
Total Calls Established ('C)	603	580	600	421	420	439	359	638	367
Total Calls Drop (D)	2	7	0	0	2	0	1	0	2
Dropped Calls Rate in % (D*100/C)	0.33 %	1.20 %	0	0	0.48	0.00%	0.28%	0	0.54%
Call Setup Success Rate in % (C*100/A)	100.00%	87.35%	100 %	100%	100%	100.00%	100.00 %	98.46 %	99.46 %
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.56 %	96.47%	99.12	100	99.76	98.09 %	100.00 %	99.03 %	100.00%

14. COUNTER DETAILS

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

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

14.1. Ericsson

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

Ericsson Counters

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

QUAL30DL Number of quality 3 reported on downlink.
QUAL40DL Number of quality 4 reported on downlink.
QUAL50DL Number of quality 5 reported on downlink.
QUAL60DL Number of quality 6 reported on downlink.
QUAL70DL Number of quality 7 reported on downlink

14.2. NSN (Nokia Siemens Network)

Sl No.	KPI	NSN
1	CSSR= (No of established Calls / No of Attempted Calls)%	CSSR= 100-100*((SDCCH_BUSY_ATT)-(TCH_SEIZ_DUE_SDCCH_CON) + (SDCCH_RADIO_FAIL)+(SDCCH_RF_OLD_HO)+(SDCCH_USER_ACT)+(SDCCH_BCSU_RESET)+(SDCCH_NETW_ACT)+(SDCCH_BTS_FAIL)+(SDCCH_LAPD_FAIL)+ (BLCK_8I_NOM)/ {(CH_REQ_MSG_REC)+(PACKET_CH_REQ)}-{(GHOST_CCCH_RES)-(REJ_SEIZ_ATT_DUE_DIST)}
2	SDCCH congestion= (SDCCH Failure/SDCCH attempts)%	SDCCH congestion = (sdcch_busy_att - .tch_seiz_due_sdcch_con)/{(CH_REQ_MSG_REC)+(PACKET_CH_REQ)}-{(GHOST_CCCH_RES)-(REJ_SEIZ_ATT_DUE_DIST)}
3	TCH congestion= (TCH Failures /TCH Attempts)%	TCH congestion = BLCK_8I_NOM / {(TCH_NORM_SEIZ)+(MSC_I_SDCCH_TCH_AT)+(BSC_I_SDCCH_TCH_AT)}
4	Call Drop Rate= (The total no of dropped calls*100)/Total no of calls successfully established (where traffic channel is allotted)	TCH Drop = (drop_after_tch_assign)-(tch_re_est_release) / {(TCH_NORM_SEIZ)+(MSC_I_SDCCH_TCH_AT)+(BSC_I_SDCCH_TCH_AT)}
5	Call Drop Rate= (No of cells having call drop rate >3% during CBBH in a month*100)/Total no of cells in the licensed service area	Above formula with counters being used in CBBH.
6	Connection with good quality voice= (Connection with good quality voice/Total voice samples)%	Connection with good quality voice= (FREQ_DL_QUAL0+FREQ_DL_QUAL1+FREQ_DL_QUAL2+FREQ_DL_QUAL3+FREQ_DL_QUAL4+FREQ_DL_QUAL5) / (FREQ_DL_QUAL0+FREQ_DL_QUAL1+FREQ_DL_QUAL2+FREQ_DL_QUAL3+FREQ_DL_QUAL4+FREQ_DL_QUAL5+FREQ_DL_QUAL6+FREQ_DL_QUAL7)

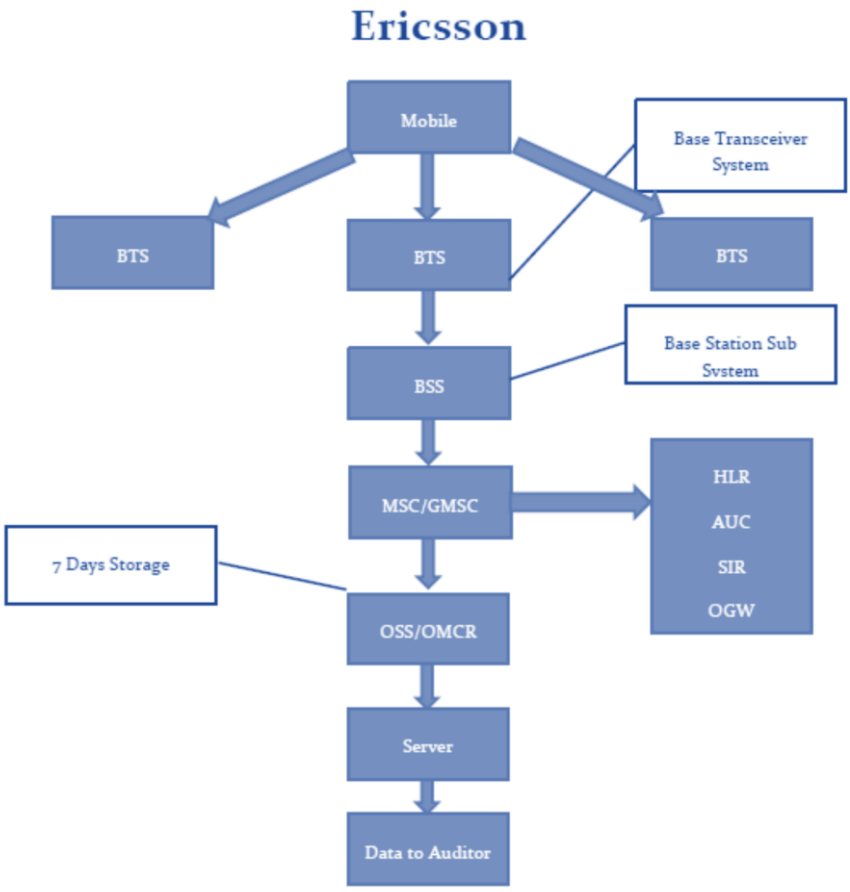
14.3. Huawei

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

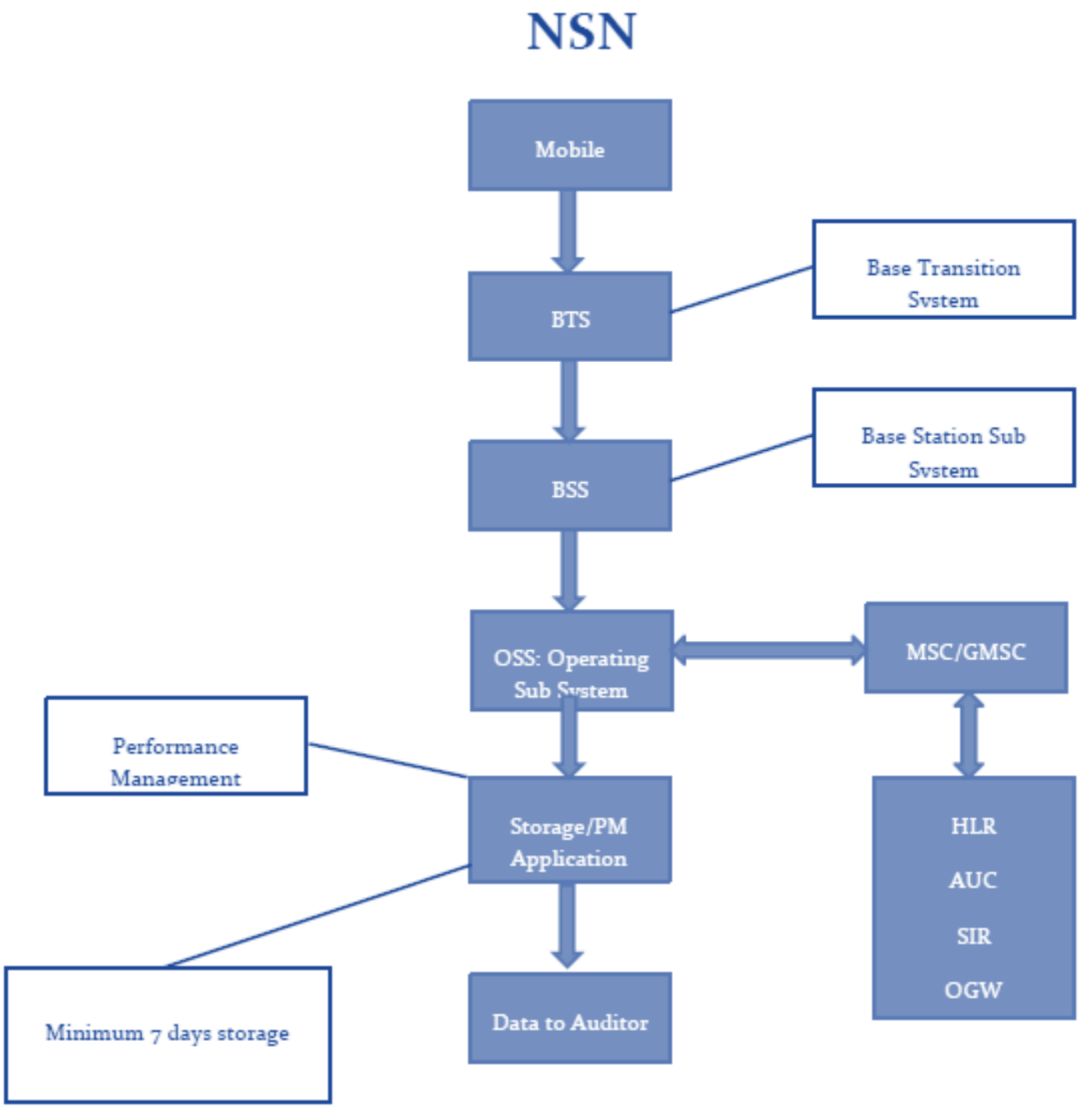
		Orig-IS2000[Times] + Successful TCH Assignments-CS Term-IS95[Times] + Successful TCH Assignments-CS Term-IS2000[Times])] {[(1157628621 + 1157628628 + 1157628635+ 1157628642)
8	RF BLOCK RATE (DEN)	[((TCH Assignment Requests-CS Orig-IS95[Times] + TCH Assignment Requests-CS Orig-IS2000[Times] + TCH Assignment Requests-CS Term-IS95[Times] + TCH Assignment Requests-CS Term-IS2000[Times]))]} [(1157628621 + 1157628628 + 1157628635+ 1157628642)]}
9	RF BLOCK RATE	RF BLOCK RATE (NUM) / RF BLOCK RATE (DEN) *100
10	Call Quality (RFER)	CS Reverse Link Average FER of Carrier[%

15. BLOCK SCHEMATIC DIAGRAM

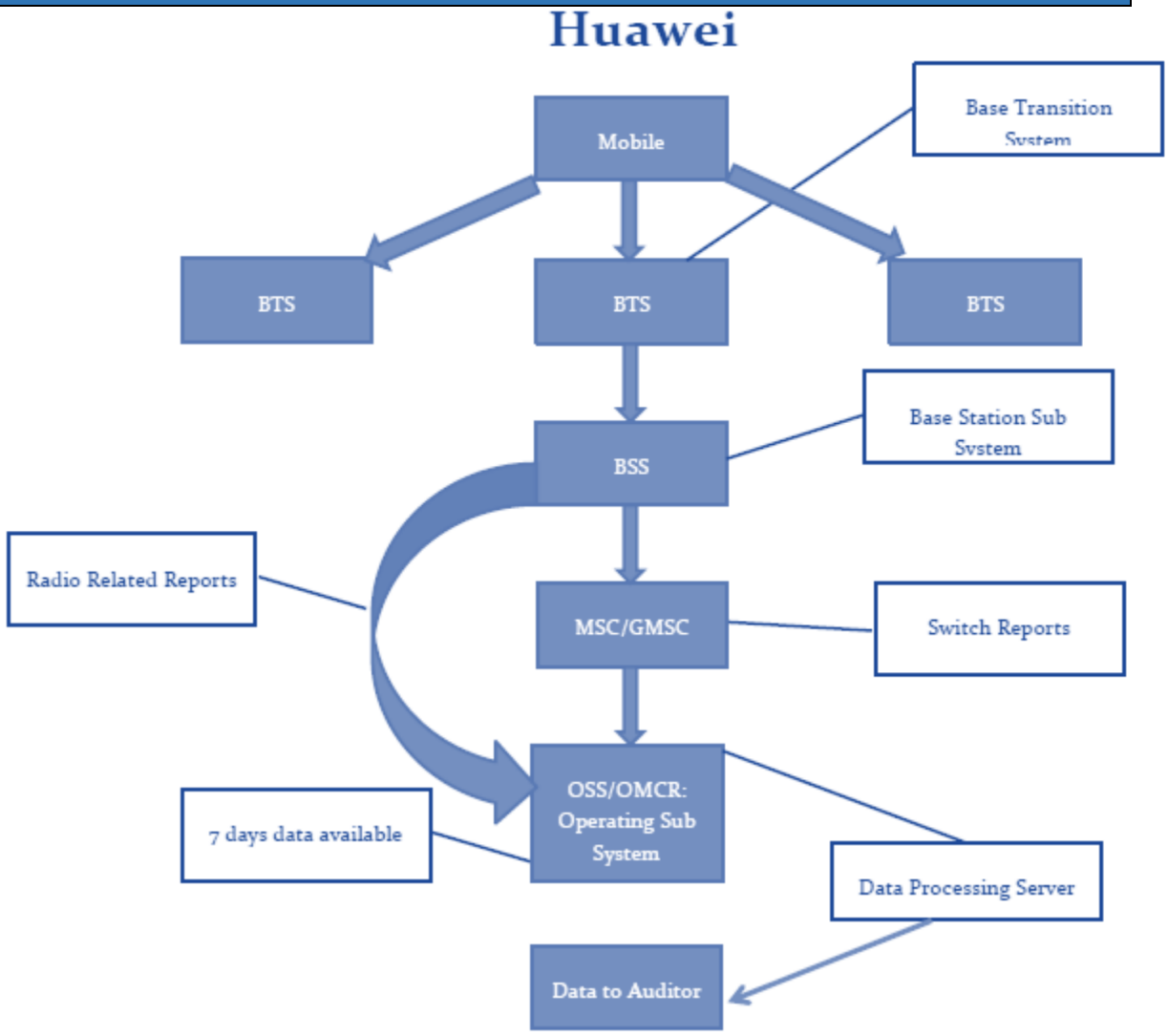
15.1. Ericsson



15.2. NSN


NSN
Mobile
BTS
Base Transition Svstem
BSS
Base Station Sub Svstem
OSS: Operating Sub System
MSC/GMSC
Performance Management
Storage/PM Application
HLR
AUC
SIR
OGW
Minimum 7 days storage
Data to Auditor

15.3. Huawei


Huawei
Mobile
Base Transition System
BTS
BTS
BTS
Base Station Sub System
BSS
Radio Related Reports
MSC/GMSC
Switch Reports
OSS/OMCR: Operating Sub System
7 days data available
Data Processing Server
Data to Auditor

16 ABBREVIATIONS

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

- TRAI – Telecom Regulatory Authority of India
- QoS – Quality of Service
- QND'15 – Refers to the quarter of October, November and December 2015
- 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 Dialing
- ISD – International Subscriber Dialing

17 ANNEXURE

17.1. 2G Voice PMR Data: Consolidated

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of BTSs in a month in hrs. in the licensed service area	No. of BTSs having accumulated downtime of >24 hours in a month	Call Set-up Success Rate (Within Licensee own network	SDDCH/Paging chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Wost Affected cell having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	0.17%	0.00%	99.35%	0.00%	0.00%	0.94%	1.51%	99.15%
Airtel	0.06%	0.08%	98.73%	0.48%	0.46%	0.67%	1.20%	98.53%
BSNL	0.98%	1.30%	97.96%	0.26%	0.95%	1.34%	1.77%	DNA
Idea	0.01%	0.00%	98.53%	0.38%	0.57%	0.64%	2.07%	97.91%
RCOM CDMA	0.22%	1.15%	97.61%	0.00%	1.16%	0.08%	0.42%	99.76%
RCOM GSM	0.10%	0.97%	98.89%	0.17%	0.05%	0.07%	0.48%	99.58%
TTSL CDMA	0.15%	0.00%	96.03%	0.00%	1.00%	0.67%	6.03%	96.82%
TTSL GSM	0.20%	0.28%	98.71%	0.07%	0.69%	0.67%	2.84%	97.00%
Videocon	0.10%	0.05%	98.72%	0.13%	0.09%	0.52%	0.57%	97.33%
Vodafone	0.02%	0.00%	99.67%	0.15%	0.33%	0.64%	1.89%	97.74%

- TTSL CDMA has parameter value of **6.09%** and failed to meet the benchmark for Worst Affected cell having more than 3% TCH drop as it is pre-defined at ≤ 3%.
- **For each instance of “DNA (Data Not Available)”, please refer the respective hard copy of audit report(s).

17.2. 3G Voice PMR: Consolidated

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	Sum of downtime of Node B's in a month in hrs	No. of Node B's having Accumulated Downtime of > 24 hrs in a month	Call Set-up Success Rate (Within Licensee own network	RRC Congestion	RAB Congestion	Circuit Switched Voice Drop Rate	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate	%age of connections with Good Circuit Switched Voice Quality
Benchmark	**≤ 2%**	**≤ 2%**	**≥ 95%**	**≤ 1%**	**≤ 2%**	**≤ 2%**	**≤ 3%**	**≥ 95%**
Aircel	NA	NA	NA	NA	NA	NA	NA	NA
Airtel	NA	NA	NA	NA	NA	NA	NA	NA
BSNL	1.17%	1.54%	99.25%	0.65%	0.52%	0.63%	2.28%	DNA
Idea	0.66%	0.00%	99.45%	0.36%	0.06%	0.28%	1.70%	98.94%
VIDEOCON	NA	NA	NA	NA	NA	NA	NA	NA
RCOM CDMA	NA	NA	NA	NA	NA	NA	NA	NA
RCOM GSM	NA	NA	NA	NA	NA	NA	NA	NA
TATA GSM	0.14%	0.12%	99.75%	0.37%	0.55%	0.19%	1.21%	98.77%
TATA CDMA	NA	NA	NA	NA	NA	NA	NA	NA
Vodafone	0.05%	0.07%	99.77%	0.03%	0.01%	0.28%	2.63%	98.36%

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

17.3. Billing and Customer Care

Name of Service Provider	Metering and Billing credibility		Billing Complaints			Termination & Closures	Time taken for refund of deposits after closures	Customer Care	
	Postpaid Subscribers	Prepaid Subscribers	%age complaints resolved within 4 weeks	%age complaints resolved within 6 weeks	%age of credit/waiver is received within one week	% of Termination/ Closure of service within 7 days (100 %)	Cleared over a period of <60 days	%age of calls answered by the IVR	%age of call answered by the operators (voice to voice) within 90 seconds
Benchmark	**≤ 0.1%**	**≤ 0.1%**	**≥ 98%**	**= 100%**	**= 100%**	**= 100%**	**= 100%**	**≥ 95%**	**≥ 95%**
Aircel	0.00%	0.00%	100%	100%	100%	100%	100%	96.85%	99.81%
Airtel	0.03%	0.01%	100%	100%	100%	100%	100%	87.47%	95.40%
BSNL	0.09%	0.01%	100%	100%	100%	100%	100%	100%	91.22%
Idea	0.06%	0.13%	100%	100%	100%	100%	100%	98.71%	99.47%
RCOM CDMA	0.09%	0.09%	100%	100%	100%	100%	100%	98.32%	95.63%
RCOM GSM	0.09%	0.09%	100%	100%	100%	100%	100%	98.26%	91.20%
TTSL CDMA	0.00%	0.00%	100%	100%	100%	100%	100%	97.34%	99.81%
TTSL GSM	0.00%	0.00%	100%	100%	100%	100%	100%	99.06%	97.23%
VIDEOCON	NA	0.00%	100%	100%	100%	NA	100%	100%	95.85%
Vodafone	0.11%	0.10%	100%	100%	100%	100%	100%	100%	97.21%

- Airtel has parameter value of **87.46%** and failed to meet the benchmark for %age of calls answered by the IVR as it is predefined at ≥ 95%.

- BSNL has parameter value of **91%** and failed to meet the benchmark for %age of call answered by the operators (voice to voice) within 90 seconds as it is predefined at ≥ 95%.

- Idea has parameter value of **0.13%** and failed to meet the benchmark for Metering and Billing credibility (Pre-paid) as it is predefined at ≤ 0.1%

- RCOM GSM has parameter value of **91%** and failed to meet the benchmark for %age of call answered by the operators (voice to voice) within 90 seconds as it is predefined at ≥ 95%.
- Vodafone has parameter value of **0.11%** and failed to meet the benchmark for Metering and Billing credibility (Post-paid) as it is predefined at ≤ 0.1%.

17.4. PMR Comparison (TSP vs. Audit Agency): Network Parameters

Name of Service Provider	Network Availability				Connection Establishment (Accessibility)						Connection Maintenance (Retainability)					
	Sum of downtime of BTSs in a month in hrs. in the licensed service area		No. of BTSs having accumulated downtime of >24 hours in a month		Call Set-up Success Rate (Within Licensee own network		SDDCH/Paging chl. Congestion		TCH Congestion		Call Drop Rate (%age)		Wost Affected cell having more than 3% TCH drop		%age of connection with good voice quality	
Benchmark	≤ 2%		≤ 2%		≥ 95%		≤ 1%		≤ 2%		≤ 2%		≤ 3%		≥ 95%	
	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP
Aircel	0.17%	0.17%	0.00%	0.00%	99.35%	99.35%	0.00%	0.00%	0.00%	0.00%	0.94%	0.94%	1.51%	1.22%	99.15%	99.15%
Airtel	0.06%	0.06%	0.08%	0.08%	98.73%	98.73%	0.48%	0.48%	0.46%	0.46%	0.67%	0.67%	1.20%	1.20%	98.53%	98.53%
BSNL	0.98%	0.98%	1.30%	1.30%	97.96%	97.98%	0.26%	0.26%	0.95%	0.83%	1.34%	1.34%	1.77%	1.77%	DNA	97.05%
Idea	0.01%	0.01%	0.00%	0.00%	98.53%	98.53%	0.38%	0.38%	0.57%	0.57%	0.64%	0.64%	2.07%	2.07%	97.91%	97.91%
RCOM CDMA	0.22%	0.22%	1.15%	1.15%	97.61%	97.61%	0.00%	0.00%	1.16%	1.16%	0.08%	0.08%	0.42%	0.43%	99.76%	99.77%
RCOM GSM	0.10%	0.10%	0.97%	0.97%	98.89%	98.89%	0.17%	0.16%	0.05%	0.05%	0.07%	0.07%	0.48%	0.51%	99.58%	99.63%
TTSL CDMA	0.15%	0.15%	0.00%	0.00%	96.03%	96.03%	0.00%	0.00%	1.00%	1.00%	0.67%	0.67%	6.03%	6.01%	96.82%	97.27%
TTSL GSM	0.20%	0.20%	0.28%	0.28%	98.71%	98.71%	0.07%	0.07%	0.69%	0.69%	0.67%	0.67%	2.84%	2.85%	97.00%	97.00%
Videocon	0.10%	0.10%	0.05%	0.05%	98.72%	98.72%	0.13%	0.13%	0.09%	0.09%	0.52%	0.52%	0.57%	0.57%	97.33%	97.33%
Vodafone	0.02%	0.02%	0.00%	0.00%	99.67%	99.67%	0.15%	0.15%	0.33%	0.33%	0.64%	0.64%	1.89%	1.89%	97.74%	97.74%

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

17.5. 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		Customer Care			
	Postpaid Subscribers		Prepaid Subscribers		%age complaints resolved within 4 weeks		%age complaints resolved within 6 weeks		%age of credit/weiver is received within one week		% of Termination/ Closure of service within 7 days (100 %)		Cleared over a period of <60 days (100%)		%age of calls answered by the IVR		%age of call answered by the operators (voice to voice) within 90 seconds	
Benchmark	≤ 0.1%		≤ 0.1%		≥ 98%		=100%		=100%		=100%		=100%		≥ 95%		≥ 95%	
	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP
Aircel	0.00%	0.00%	0.00%	0.00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	96.85%	96.85%	99.81%	99.81%
Airtel	0.03%	0.03%	0.01%	0.00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	87.47%	95.99%	95.40%	95.53%
BSNL	0.10%	0.10%	0.01%	0.01%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	91.22%	96.01%
Idea	0.06%	0.06%	0.13%	0.13%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98.71%	98.71%	99.47%	99.47%
RCOM CDMA	0.00%	0.00%	0.09%	0.09%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98.32%	98.32%	95.63%	95.63%
RCOM GSM	0.09%	0.09%	0.09%	0.09%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98.26%	98.26%	91.20%	91.20%
TTSL CDMA	0.00%	0.00%	0.00%	0.00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	97.34%	97.34%	99.81%	99.81%
TTSL GSM	0.00%	0.00%	0.00%	0.00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99.06%	99.06%	97.23%	97.23%
Videocon	0.00%	NA	0.00%	0.01%	100%	100%	100%	100%	100%	100%	NA	NA	100%	100%	100%	100%	95.85%	95.85%
Vodafone	0.11%	0.11%	0.10%	0.01%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	97.21%	97.21%