PHISTREAM
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TRAI
सत्यमेव जयते
Telecom Regulatory Authority of India
(IS/ISO 9001-2008 Certified Organisation)



AUDIT & ASSESSMENT OF QUALITY OF SERVICE

NORTH ZONE – PUNJAB CIRCLE
CELLULAR MOBILE TELEPHONE SERVICE (CMTS)
(APRIL TO JUNE 2016)

PREPARED BY:

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1. INTRODUCTION

1.1. ABOUT TRAI

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

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

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

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

1.2. ABOUT PHISTREAM CONSULTING PRIVATE LIMITED

Phistream Consulting Private Limited is an ISO 9001:2008 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 Punjab circle.

1.4. COVERAGE

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

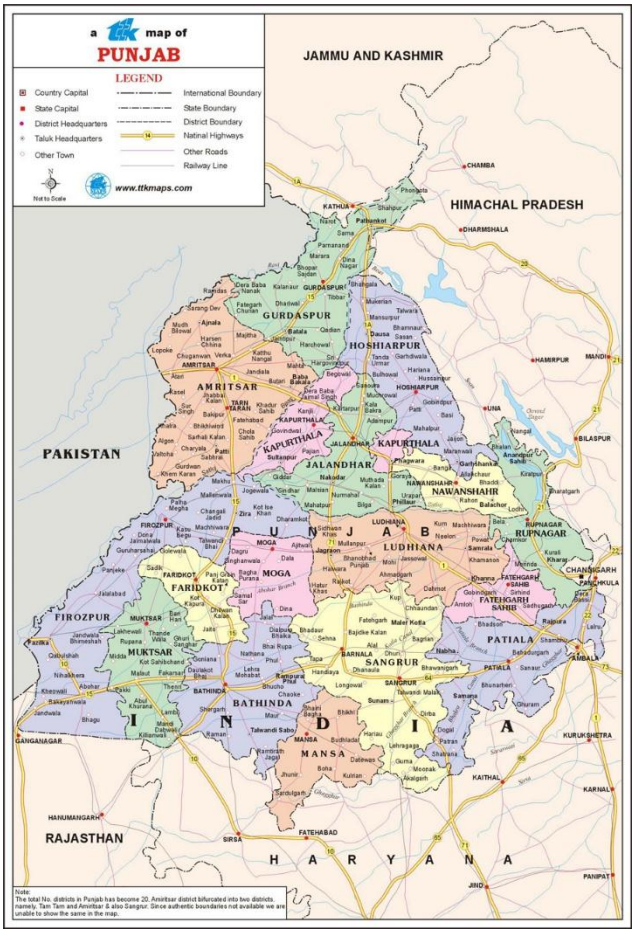
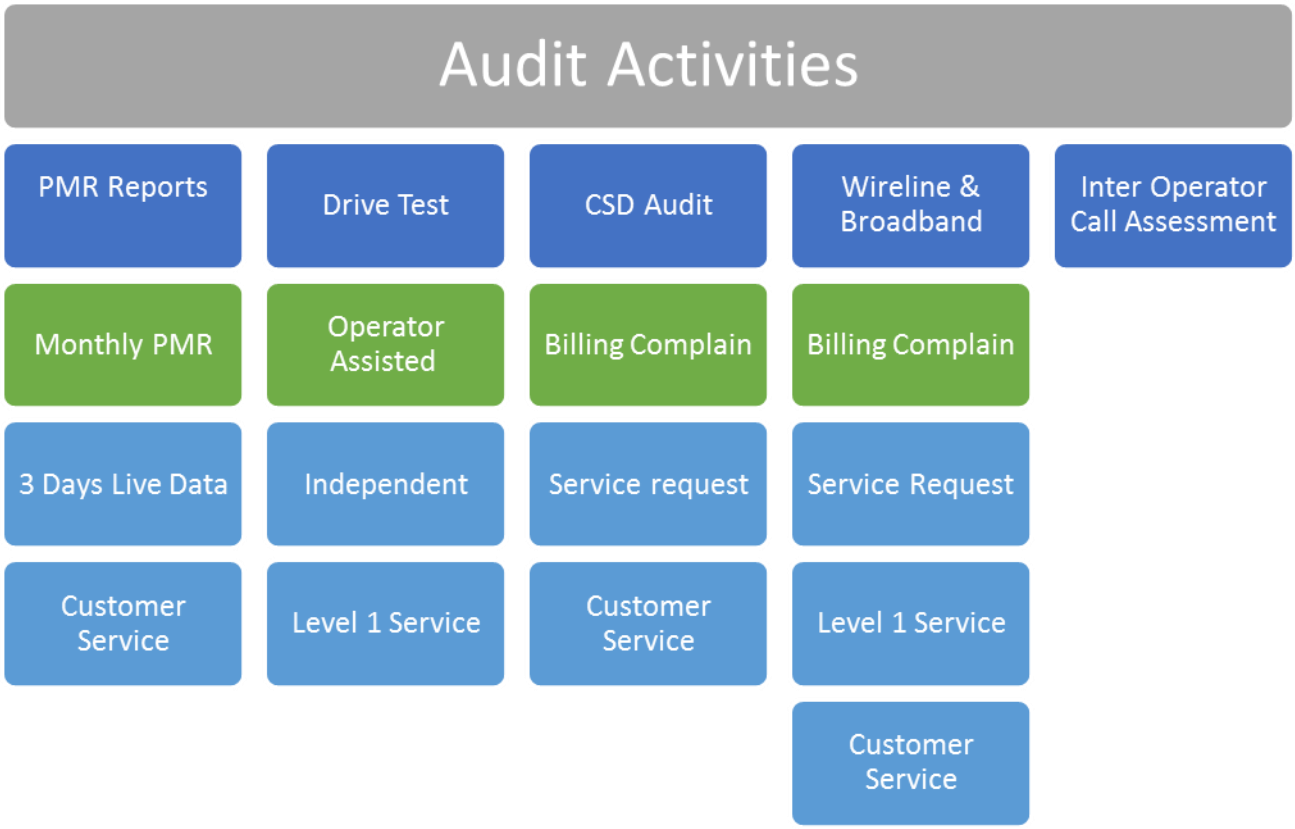


Image Source: TTK Maps

1.5. SSA LIST

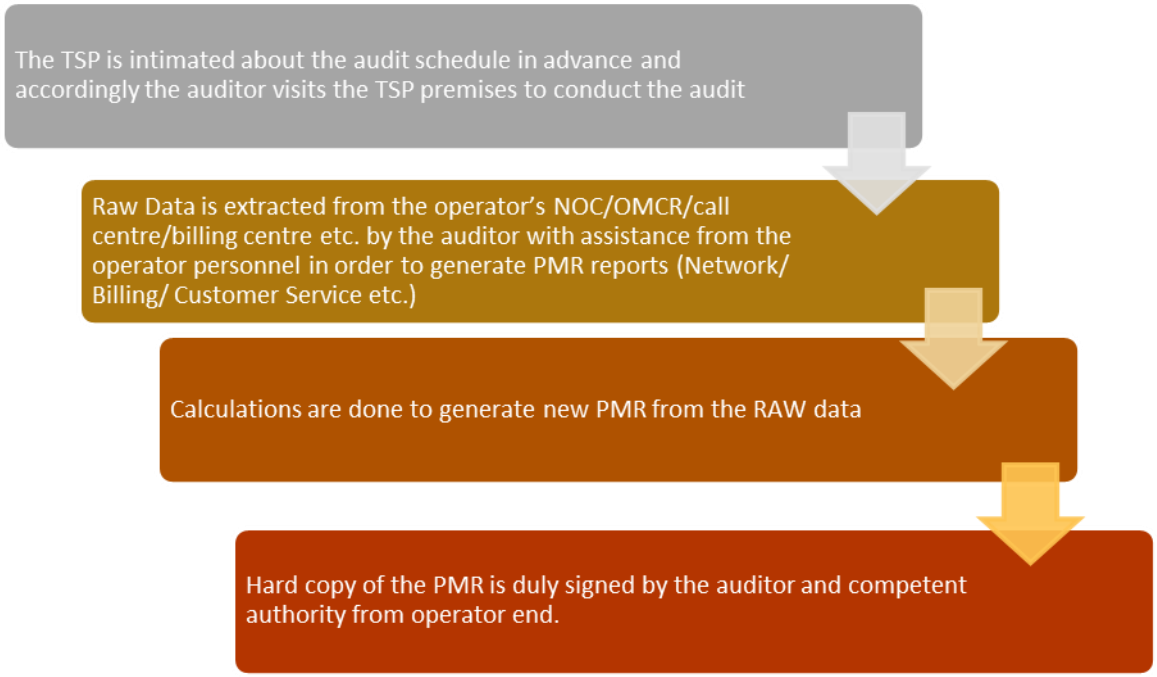
SSA	SDCA
Amritsar	Ajnala
Amritsar	Amritsar
Amritsar	Goindwal
Amritsar	Patti
Amritsar	Rayya
Amritsar	Tarantaran
Bhatinda	Bhatinda
Bhatinda	Mansa
Bhatinda	Phulmandi
Bhatinda	Raman
Bhatinda	Sardulgarh
Chandigarh	Chandigarh
Ferozepur	Abohar
Ferozepur	Faridakot
Ferozepur	Fazilka
Ferozepur	Ferozepur
Ferozepur	Guruharsahai
Ferozepur	Kotkapura
Ferozepur	Malaut
Ferozepur	Moga
Ferozepur	Muktasar
Ferozepur	Zira
Hosiarpur	Balachaur
Hosiarpur	Dasua
Hosiarpur	Garhashanker
Hosiarpur	Hoshiarpur
Hosiarpur	TandaurJun
Jalandhar	Jallandhar
Jalandhar	Kapurthala
Jalandhar	Nakodar
Jalandhar	Nawanshahar
Jalandhar	Phagwara
Jalandhar	Phillaur
Jalandhar	Sultanpurlodhi
Ludhiana	Jagraon
Ludhiana	Ludhiana
Ludhiana	Samrala
Pathankot	Batala
Pathankot	Dinanagar
Pathankot	Gurdaspur
Pathankot	Jugial
Pathankot	Pathankot
Pathankot	Quadian
Patiala	Nabha
Patiala	Patiala
Patiala	Rajpura
Patiala	Samana
Patiala	Sarhind
Ropar	Kharar
Ropar	Nangal
Ropar	Ropar
Sangrur	Barnala
Sangrur	Malerkotla
Sangrur	Sangrur
Sangrur	Sunam

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, April2016 audit data was collected in the month of May2016.

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 June2016 was collected in the month of June2016.

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

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

Let us understand these formats in details.

2.1. MONTHLY PMR

This involved calculation of the various Quality of Service network parameters through monthly Performance Monitoring Reports (PMR). The PMR reports were generated from the data extracted from operator's systems by the auditor with the assistance of the operator at the operator's premises for the month of April, May and June2016. 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

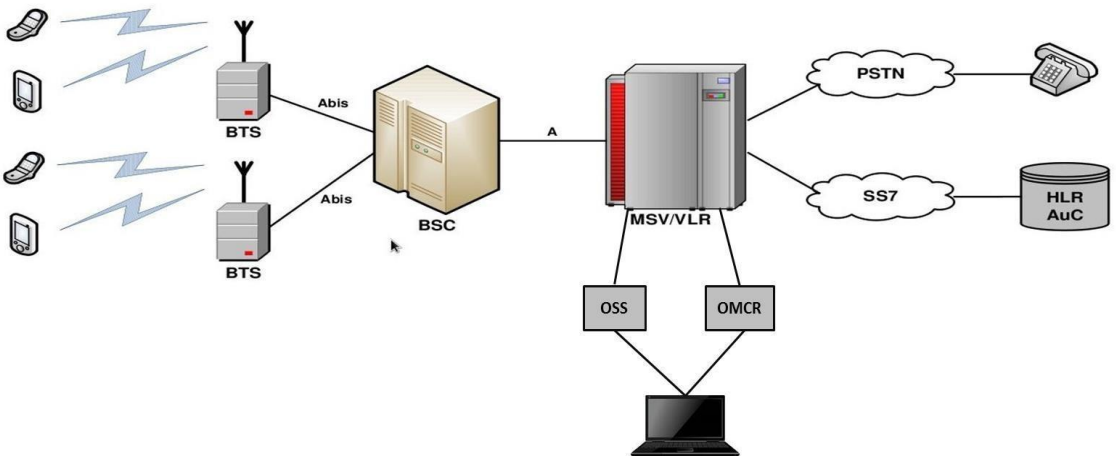
2.2. AUDIT PARAMETER: NETWORK

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

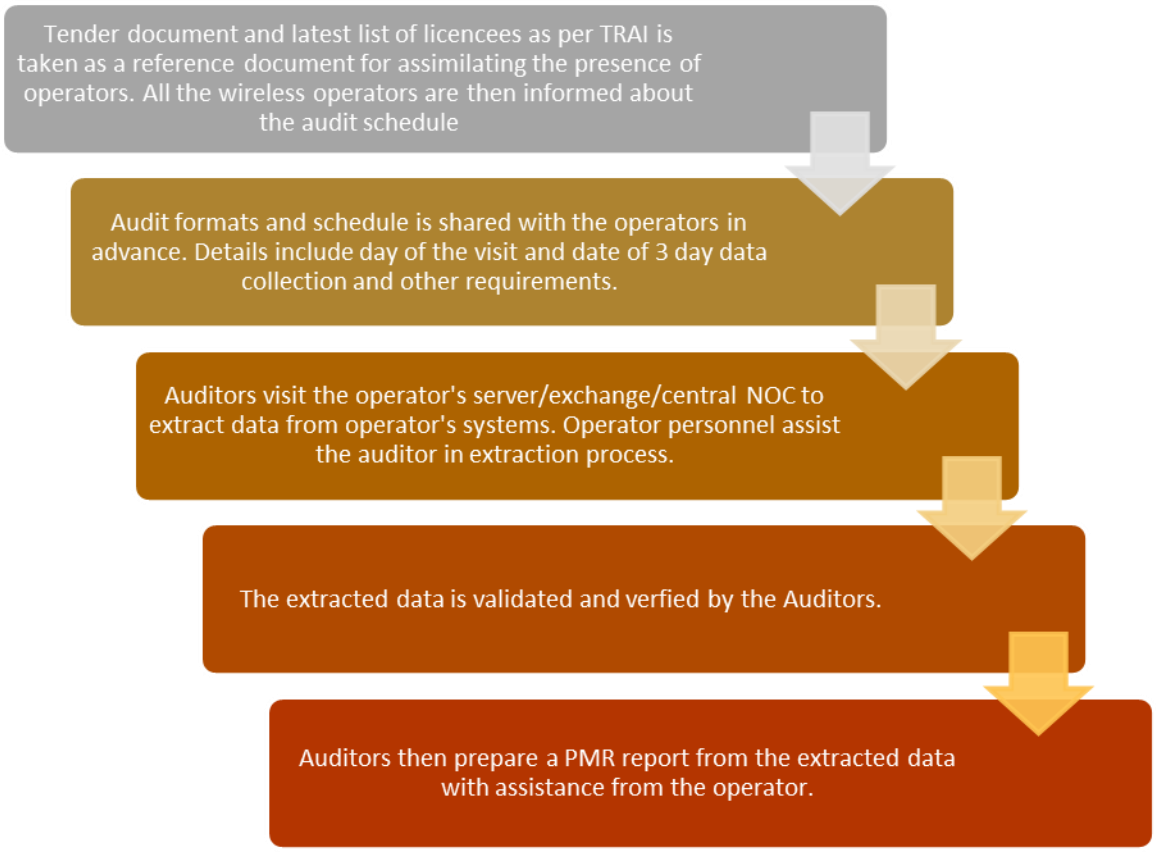
Network Availability	
BTSs Accumulated downtime (not available for service)	≤ 2%
Worst affected BTSs due to downtime	≤ 2%
Connection Establishment (Accessibility)	
Call Set-up Success Rate (within licensee's own network)	≥ 95%
SDCCH/ Paging Channel Congestion	≤ 1 %
TCH Congestion	≤ 2%
Connection Maintenance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

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.	Worst affected cells	It is the % of total no. of	Total No. of Cells (Sector)	*<=3%*

	having more than 3% Circuit Switched Voice Drop Rate:	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	<=0.5%
			Total traffic served on all POIs (Erlang)	
			Total No. of circuits on all individual POIs	
			Total number of working POI Service Area wise	
			Capacity of all POIs	
			No. of all POI's having >=0.5% POI congestion	
			Name of POI not meeting the benchmark (having >=0.5% POI congestion)	

2.7. 2G & 3G WIRELESS

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

3. 3 DAYS LIVE DATA

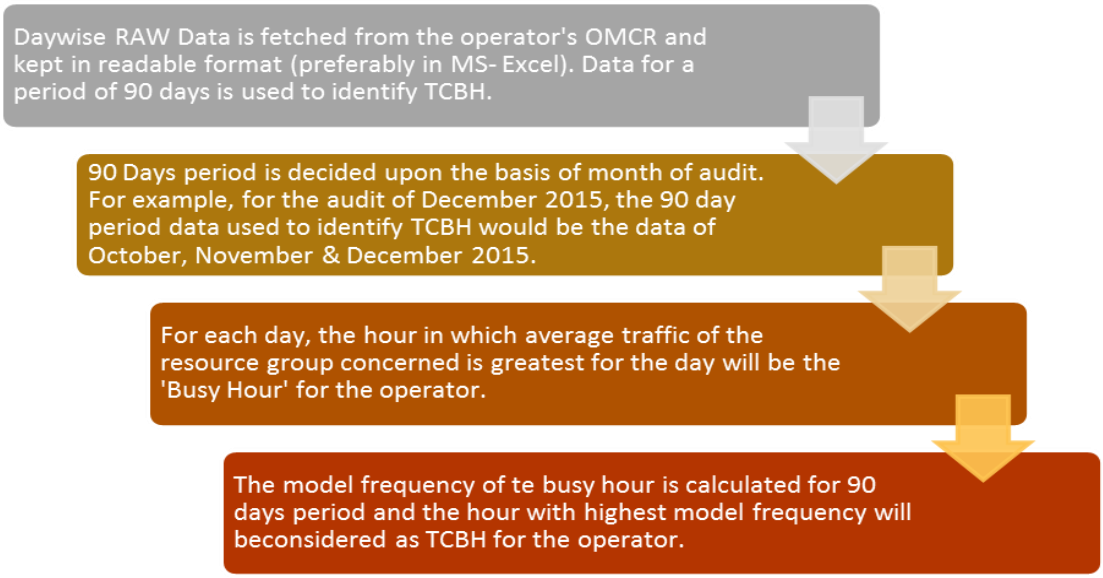
The main purpose of 3 day live measurement is to evaluate the network parameters on intraday basis. While the monthly PMR report provides an overall view of the performance of QoS parameters, the 3 day live data helps looking at intraday performance on the network parameters discussed earlier. All the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

The 3 day live data provides a sample of 9 days in a quarter (3 days each month of a quarter) with hourly performance, which enables the auditor to identify and validate intraday issues for an operator on the 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.



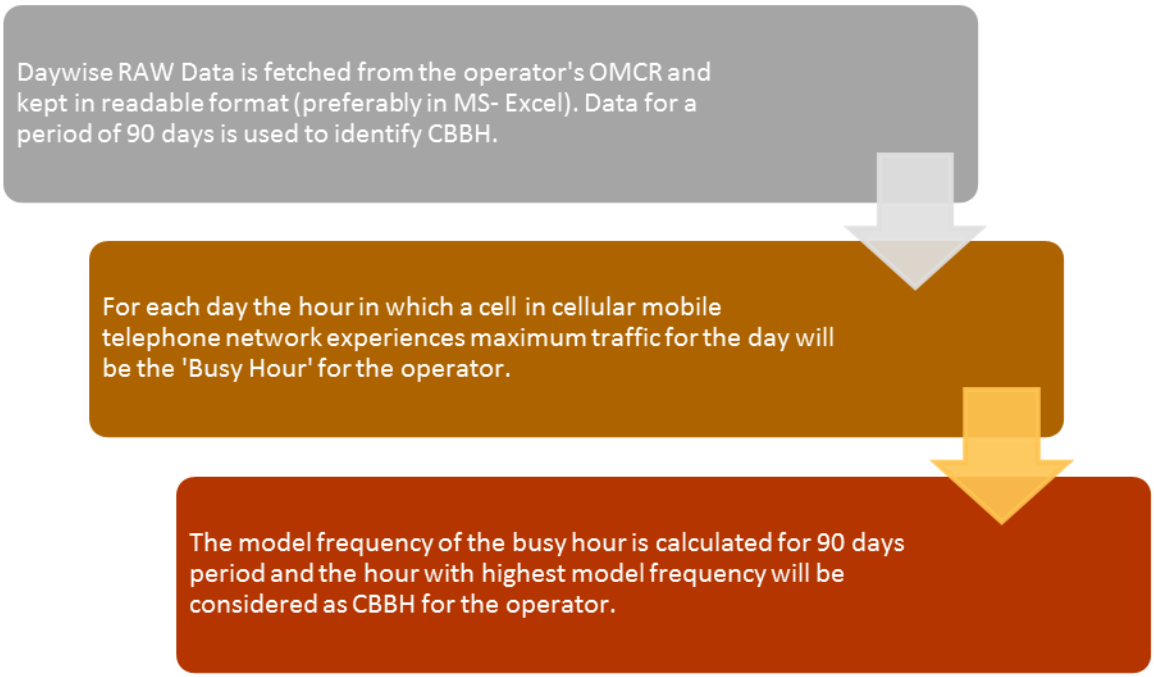
During audit, the auditors identified from the raw data that the TCBH for the operators in Apr – May – Jun 2016 was the time period as given below:

Aircel	Airtel	BSNL	Idea	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	Vodafone	Videocon
19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00	19:00-20:00	18:00-19:00	18:00-19:00	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. CUSTOMERSERVICE PARAMETERS

The data to generate PMR report for customer service parameters is extracted at the operator premises and verified once every quarter in the subsequent month of the last month of the quarter. For example, data for quarter ending June2016 was collected in the month of June2016. 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.

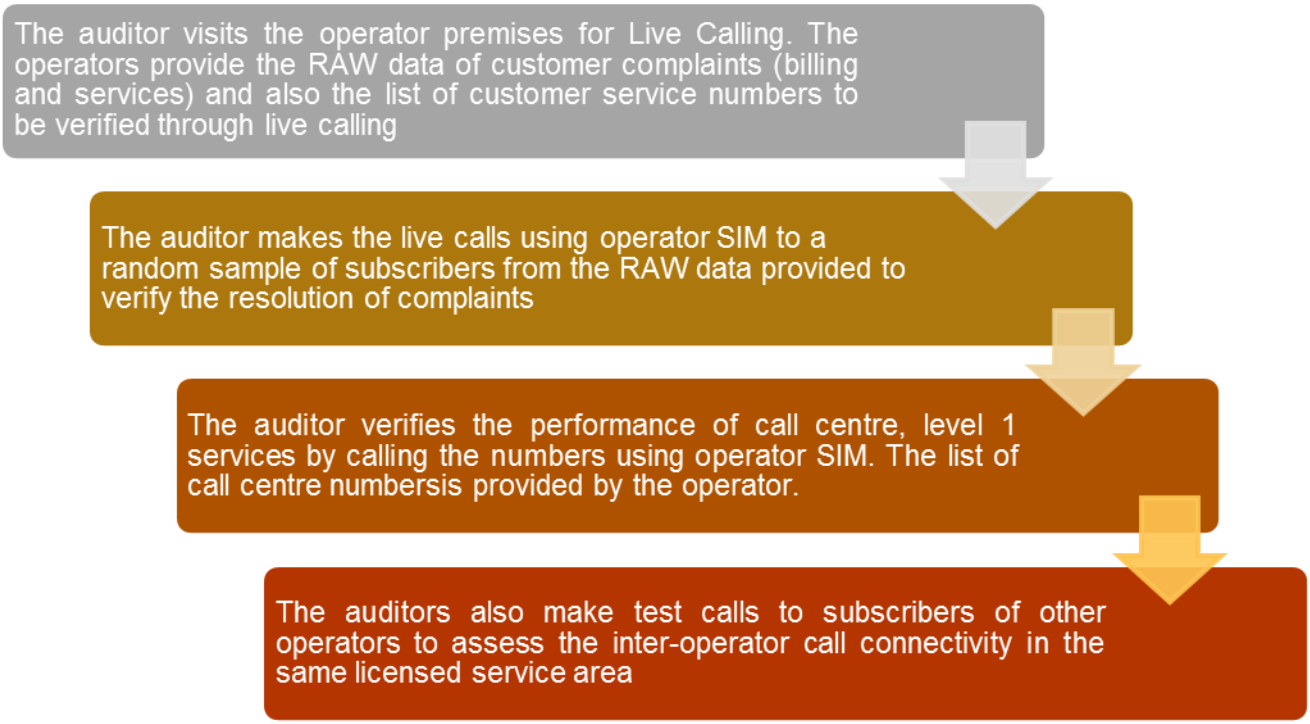
4.1. AUDIT PARAMETERS: CUSTOMER SERVICE

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 June2016. 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 April2016 was considered for live calling activity conducted in May2016.
A detailed explanation of each parameter is explained below:

4.4. BILLING COMPLAINTS

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

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

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

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

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

4.5. SERVICE COMPLAINTS REQUESTS

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

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

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

4.6. LEVEL 1

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

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

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

4.7. PROCESS TO TEST LEVEL 1 SERVICE

- During the operator assisted drive test, auditors ask the operator authorized personnel to make 5 calls in each SDCA on the Level 1 Service numbers provided by TRAI. The list contains a description of the numbers along with dialling code.

- Operators might also provide a list of L1 services. To identify emergency L1 service numbers, auditors check if there is any number that starts with code '10' in that list. If auditors find any emergency number in addition to the below list, that number is also tested during live calling.

- On receiving the list, auditors verify it if the below given list of numbers are active in the service provider's network.

- If there are any other additional numbers provided by the operator, auditors also do live calling on those numbers along with below list.

- If any of these numbers is not active, then we would write the same in our report, auditors write in the report.

- Post verifying the list, auditors do live calling by equally distributing the calls among the various numbers and update the results in the live calling sheet.

L1 Number Details
100 Police
101 Fire
102 Ambulance
104 Health Information Helpline
108 Emergency and Disaster Management Helpline
138 All India 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 Alert (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 SashastraSeemaBal (SSB)
1909 National Do Not Call Registry
1912 Complaint of Electricity
1916 Drinking Water Supply
1950 Election Commission of India

4.8. CUSTOMER CARE

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

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

The process for this parameter is stated below:

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

4.9. INTER OPERATOR CALL ASSESSMENT

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

Inter Operator Call Assessment	Aircel	Airtel	BSNL	Idea	Reliance GSM	Reliance CDMA	TTSL CDMA	TTSL GSM	Videocon	Vodafone
Aircel	-	100%	100%	100%	100%	100%	100%	100%	100%	100%
Airtel	100%	-	100%	100%	100%	100%	100%	100%	100%	100%
BSNL	100%	100%	-	98%	100%	100%	100%	100%	100%	100%
Idea	100%	100%	100%	-	100%	100%	100%	100%	100%	100%
Reliance GSM	100%	100%	100%	100%	-	100%	100%	100%	100%	100%
Reliance CDMA	100%	100%	100%	100%	100%	-	100%	100%	100%	100%
Tata CDMA	100%	100%	100%	100%	100%	100%	-	100%	100%	100%
Tata GSM	100%	100%	100%	100%	100%	100%	100%	-	100%	100%
Videocon	100%	100%	100%	100%	100%	100%	100%	100%	-	100%
Vodafone	100%	100%	100%	100%	100%	100%	100%	100%	100%	-

5. Drive Test: Significance and Methodology

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

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

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

There are two types of drive test as mentioned below.

- Operator Assisted Drive Test
- Independent Drive Test

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

5.1. Operator Assisted Drive Test

Punjab Circle consists of total 11 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 divided on 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 SUMJUNY

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

6.1. OPERATORS COVERED

Name of Operator	Number of Subscriber (As On 30th June 2016)
AIRCEL	1105057
AIRTEL	8037799
BSNL	3810795
IDEA	6532044
RCOM CDMA	114756
RCOM GSM	1604548
TTSL CDMA	192726
TTSL GSM	2949002
VIDEOCON (QTL)	2932315
VODAFONE	5145704

TSP	No. of cells	BTS	BSC	MSC+GMSC	Node B	RNC
Aircel	1962	654	5	1	386	2
Airtel	17656	5825	56	25	NA	NA
BSNL	10137	3379	46	12	1540	11
IDEA	16315	5403	50	9	3501	8
RCOM GSM	4550	1528	8	2+1	866	2
RCOM CDMA	1856	619	3	2+2	NA	NA
TTSL CDMA	1247	390	4	2+1	NA	NA
TTSL GSM	4971	1629	12	2+1	933	3
VIDEOCON	7667	2394	14	1	NA	NA
VODAFONE	15917	5598	52	4+5	NA	NA

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

6.2. AUDIT SCHEDULE

Operator	3 Days Live Audit (April2016)	April2016	May2016	June2016
Airtel	12th Apr 2016	6thMay2016	15thJun2016	12thJul 2016
Vodafone	11th Apr 2016	16thMay2016	11thJun2016	11thJul 2016
Idea	14th Apr 2016	9thMay2016	14thJun2016	14thJul 2016
Reliance	5th Apr 2016	5thMay2016	7thJun2016	5thJul 2016
BSNL	8th Apr 2016	18thMay2016	8thJun2016	8thJul 2016
Aircel	6th Apr 2016	9thMay2016	14thJun2016	6thJul 2016
Tata Teleservices	7th Apr 2016	10thMay2016	9thJun2016	7thJul 2016
Videocon	8th Apr 2016	7thMay2016	10thJun2016	8thJul 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: APRIL

Network Parameters		Apr-16										
		Name of Service Provider										
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.12%	0.05%	0.65%	0.07%	0.11%	0.25%	0.02%	0.04%	0.10%	0.03%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.05%	1.95%	0.09%	0.81%	1.83%	0.00%	0.00%	0.13%	0.02%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	98.07%	99.12%	97.89%	98.80%	98.59%	98.74%	98.90%	98.67%	98.27%	99.86%
	SDDCH/Paging chl. Congestion	≤ 1%	0.23%	0.15%	0.33%	0.08%	DNA	0.14%	0.00%	0.03%	0.07%	0.04%
	TCH Congestion	≤ 2%	0.23%	0.13%	0.79%	0.19%	0.07%	0.08%	0.02%	0.16%	0.25%	0.14%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.68%	0.64%	0.21%	0.54%	0.09%	0.08%	0.19%	0.45%	0.74%	0.51%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.74%	0.86%	0.96%	1.37%	1.65%	0.44%	2.51%	1.92%	0.46%	2.63%
	%age of connection with good voice quality	≥ 95%	97.09%	98.51%	96.77%	96.91%	99.34%	99.50%	99.04%	97.36%	96.65%	98.13%

6.4. 2G VOICE PMR DATA: MAY

Network Parameters		May-16										
		Name of Service Provider										
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.22%	0.06%	0.75%	0.09%	0.07%	0.23%	0.07%	0.08%	0.20%	0.06%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.61%	0.07%	1.86%	0.11%	0.48%	1.90%	0.26%	0.00%	0.13%	0.02%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.91%	99.50%	97.30%	98.83%	98.01%	98.69%	98.53%	98.65%	98.19%	99.82%
	SDDCH/Paging chl. Congestion	≤ 1%	0.16%	0.22%	0.69%	0.15%	DNA	0.12%	0.00%	0.09%	0.10%	0.07%
	TCH Congestion	≤ 2%	0.37%	0.10%	1.08%	0.21%	0.17%	0.08%	0.10%	0.19%	0.30%	0.18%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.77%	0.57%	0.37%	0.54%	0.13%	0.09%	0.25%	0.45%	0.75%	0.49%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.91%	0.83%	0.92%	1.53%	1.20%	0.51%	2.30%	1.97%	0.43%	2.73%
	%age of connection with good voice quality	≥ 95%	96.83%	98.71%	96.73%	97.16%	99.45%	99.48%	98.98%	97.28%	96.52%	98.15%

6.5. 2G VOICE PMR DATA: JUNE

Network Parameters		Jun-16										
		Name of Service Provider										
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.15%	0.05%	0.79%	0.08%	NA	0.16%	0.07%	0.04%	0.22%	0.04%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.61%	0.02%	1.92%	0.00%	NA	1.31%	0.00%	0.00%	0.13%	0.02%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.86%	99.63%	96.85%	98.77%	NA	98.61%	98.70%	98.67%	97.96%	99.80%
	SDDCH/Paging chl. Congestion	≤ 1%	0.08%	0.11%	0.80%	0.19%	NA	0.25%	0.00%	0.04%	0.10%	0.05%
	TCH Congestion	≤ 2%	0.38%	0.05%	0.96%	0.21%	NA	0.10%	0.01%	0.22%	0.36%	0.20%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.77%	0.56%	0.36%	0.59%	NA	0.09%	0.18%	0.42%	0.83%	0.52%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.95%	0.88%	0.89%	1.88%	NA	0.68%	2.39%	1.85%	0.43%	2.89%
	%age of connection with good voice quality	≥ 95%	96.74%	98.79%	96.72%	96.91%	NA	99.34%	98.99%	97.03%	96.19%	98.08%

6.6. 2G VOICE PMR DATA: CONSOLIDATED

Consolidated											
Network Parameters		Name of Service Provider									
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.16%	0.05%	0.73%	0.08%	0.09%	0.21%	0.05%	0.05%	0.17%	0.04%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.41%	0.05%	1.91%	0.07%	0.65%	1.68%	0.09%	0.00%	0.13%	0.02%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.95%	99.41%	97.35%	98.80%	98.30%	98.68%	98.71%	98.66%	98.14%	99.82%
	SDDCH/Paging chl. Congestion	≤ 1%	0.16%	0.16%	0.61%	0.14%	DNA	0.17%	0.00%	0.05%	0.09%	0.06%
	TCH Congestion	≤ 2%	0.33%	0.10%	0.94%	0.20%	0.12%	0.09%	0.04%	0.19%	0.30%	0.18%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.74%	0.59%	0.31%	0.56%	0.11%	0.09%	0.21%	0.44%	0.77%	0.50%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.86%	0.86%	0.92%	1.59%	1.43%	0.55%	2.40%	1.91%	0.44%	2.75%
	%age of connection with good voice quality	≥ 95%	96.89%	98.67%	96.74%	96.99%	99.40%	99.44%	99.00%	97.22%	96.45%	98.12%

6.7. 2G VOICE 3 DAYS LIVE DATA: APRIL

Apr-16											
Network Parameters		Name of Service Provider									
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.12%	0.09%	0.59%	0.08%	0.11%	0.17%	0.04%	0.06%	0.16%	0.03%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.68%	0.00%	0.81%	1.83%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	98.03%	99.48%	98.19%	98.69%	98.88%	99.52%	99.00%	98.65%	98.27%	99.83%
	SDDCH/Paging chl. Congestion	≤ 1%	0.09%	0.11%	0.15%	0.13%	0.00%	0.10%	0.00%	0.04%	0.08%	0.03%
	TCH Congestion	≤ 2%	0.42%	0.08%	0.68%	0.26%	0.01%	0.09%	0.00%	0.18%	0.20%	0.17%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.74%	0.61%	0.19%	0.54%	0.07%	0.08%	0.18%	0.43%	0.77%	0.57%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	3.22%	0.76%	0.81%	1.39%	0.72%	0.44%	2.81%	1.71%	0.55%	2.90%
	%age of connection with good voice quality	≥ 95%	97.12%	98.55%	96.90%	96.90%	98.95%	99.50%	99.05%	97.31%	96.63%	97.94%

6.8. 2G VOICE 3 DAYS LIVE DATA: MAY

Network Parameters		May-16										
		Name of Service Provider										
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.13%	0.03%	1.28%	0.05%	0.20%	0.23%	0.07%	0.05%	0.11%	0.05%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.38%	0.00%	0.48%	1.90%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	98.16%	99.52%	97.49%	98.87%	98.13%	99.53%	98.66%	98.70%	98.30%	99.96%
	SDDCH/Paging chl. Congestion	≤ 1%	0.00%	0.15%	0.34%	0.20%	0.00%	0.06%	0.00%	0.06%	0.04%	0.03%
	TCH Congestion	≤ 2%	0.05%	0.08%	0.91%	0.17%	0.06%	0.06%	0.01%	0.15%	0.23%	0.04%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.66%	0.59%	0.37%	0.55%	0.13%	0.08%	0.28%	0.45%	0.75%	0.48%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.89%	0.74%	0.94%	1.46%	0.99%	0.40%	2.49%	1.96%	1.22%	2.49%
	%age of connection with good voice quality	≥ 95%	97.22%	98.67%	96.51%	96.94%	99.57%	99.52%	98.97%	97.39%	96.67%	98.22%

6.9. 2G VOICE 3 DAYS LIVE DATA: JUNE

Network Parameters		Jun-16										
		Name of Service Provider										
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.37%	0.03%	0.74%	0.08%	NA	0.15%	0.11%	0.03%	0.29%	0.03%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	0.00%	NA	1.31%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	98.00%	99.65%	97.43%	98.87%	NA	97.37%	98.54%	98.79%	98.13%	99.85%
	SDDCH/Paging chl. Congestion	≤ 1%	0.05%	0.19%	1.01%	0.12%	NA	0.43%	0.00%	0.09%	0.08%	0.04%
	TCH Congestion	≤ 2%	0.36%	0.04%	0.96%	0.19%	NA	0.07%	0.03%	0.13%	0.35%	0.15%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.69%	0.56%	0.37%	0.62%	NA	0.10%	0.15%	0.42%	0.77%	0.45%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.76%	0.80%	0.98%	2.23%	NA	0.71%	2.81%	1.50%	1.28%	2.87%
	%age of connection with good voice quality	≥ 95%	96.85%	98.80%	96.85%	96.26%	NA	99.28%	99.02%	97.22%	96.42%	98.10%

6.10. 2G VOICE 3 DAYS LIVE DATA: CONSOLIDATED

Network Parameters		Consolidated										
		Name of Service Provider										
		Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.21%	0.05%	0.87%	0.07%	0.15%	0.18%	0.07%	0.05%	0.19%	0.04%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.35%	0.00%	0.65%	1.68%	0.00%	0.00%	0.00%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	98.06%	99.55%	97.70%	98.81%	98.51%	98.81%	98.73%	98.71%	98.23%	99.88%
	SDDCH/Paging chl. Congestion	≤ 1%	0.05%	0.15%	0.50%	0.15%	0.00%	0.20%	0.00%	0.06%	0.07%	0.03%
	TCH Congestion	≤ 2%	0.28%	0.07%	0.85%	0.20%	0.04%	0.07%	0.01%	0.15%	0.26%	0.12%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.69%	0.59%	0.31%	0.57%	0.10%	0.09%	0.20%	0.43%	0.76%	0.50%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.96%	0.76%	0.91%	1.70%	0.85%	0.52%	2.70%	1.72%	1.02%	2.75%
	%age of connection with good voice quality	≥ 95%	97.07%	98.68%	96.75%	96.70%	99.26%	99.43%	99.01%	97.31%	96.57%	98.09%

6.10.1. 3G VOICE PMR: APRIL

Apr-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.29%	0.45%	0.07%	0.42%	0.03%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.30%	1.68%	0.09%	1.85%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.40%	99.24%	99.76%	99.49%	98.21%
	RRC Congestion:	≤ 1%	0.43%	0.63%	0.07%	0.06%	0.53%
	RAB Congestion:	≤ 2%	0.31%	0.26%	0.05%	0.17%	1.29%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.36%	0.42%	0.35%	0.04%	0.11%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	4.62%	0.60%	1.93%	0.27%	0.53%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.94%	97.60%	99.35%	99.77%	99.11%

6.11. 3G VOICE PMR: MAY

May-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.36%	0.54%	0.16%	0.52%	0.11%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.83%	1.48%	0.43%	1.73%	0.21%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.45%	99.21%	99.78%	99.88%	98.09%
	RRC Congestion:	≤ 1%	0.29%	0.68%	0.04%	0.03%	0.52%
	RAB Congestion:	≤ 2%	0.19%	0.27%	0.02%	0.09%	1.40%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.32%	0.43%	0.27%	0.04%	0.13%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	3.53%	0.73%	2.04%	0.26%	0.62%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	99.01%	97.82%	99.37%	99.78%	99.12%

6.12. 3G VOICE PMR: JUNE

Jun-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.27%	0.62%	0.11%	0.48%	0.07%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.83%	1.54%	0.20%	1.73%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.74%	99.26%	99.63%	99.92%	98.83%
	RRC Congestion:	≤ 1%	0.16%	0.62%	0.07%	0.01%	0.41%
	RAB Congestion:	≤ 2%	0.05%	0.24%	0.02%	0.06%	0.74%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.31%	0.38%	0.30%	0.03%	0.13%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	3.58%	0.79%	2.31%	0.22%	0.66%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	99.05%	98.02%	99.56%	99.78%	99.15%

6.13. 3G VOICE PMR: CONSOLIDATED

Consolidated							
Network Parameters		Name of Service Provider					
		Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.30%	0.53%	0.11%	0.47%	0.07%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.66%	1.57%	0.24%	1.77%	0.07%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.53%	99.23%	99.72%	99.76%	98.38%
	RRC Congestion:	≤ 1%	0.29%	0.65%	0.06%	0.04%	0.49%
	RAB Congestion:	≤ 2%	0.18%	0.26%	0.03%	0.11%	1.14%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.33%	0.41%	0.30%	0.04%	0.12%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	3.91%	0.71%	2.09%	0.25%	0.60%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	99.00%	97.82%	99.43%	99.78%	99.13%

- AIRCEL has parameter value of 3.91% and failed to meet the benchmark of ≤ 3% Worst affected cells having more than 3% Circuit Switched Voice Drop Rate

6.14. 3G VOICE 3 DAYS LIVE DATA: CONSOLIDATED

Consolidated							
Network Parameters		Name of Service Provider					
		Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.37%	0.38%	0.08%	0.84%	0.06%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	1.77%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.59%	99.23%	99.70%	99.77%	98.15%
	RRC Congestion:	≤ 1%	0.41%	0.64%	0.09%	0.04%	0.50%
	RAB Congestion:	≤ 2%	0.26%	0.25%	0.05%	0.13%	1.38%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.36%	0.41%	0.31%	0.03%	0.12%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	4.55%	0.79%	2.08%	0.24%	0.54%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	99.03%	97.90%	99.41%	99.78%	99.12%

- AIRCEL has parameter value of 4.55% and failed to meet the benchmark of ≤ 3% Worst affected cells having more than 3% Circuit Switched Voice Drop Rate

6.15. 3G VOICE 3 DAYS LIVE DATA: APRIL

Apr-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.42%	DNA	0.06%	0.85%	0.04%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	DNA	0.00%	1.85%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.46%	DNA	99.65%	99.61%	98.25%
	RRC Congestion:	≤ 1%	0.49%	DNA	0.16%	0.06%	0.40%
	RAB Congestion:	≤ 2%	0.31%	DNA	0.10%	0.19%	1.35%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.53%	DNA	0.32%	0.04%	0.10%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	5.99%	DNA	1.81%	0.17%	0.42%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.97%	DNA	99.36%	99.75%	99.11%

6.16. 3G VOICE 3 DAYS LIVE DATA: MAY

May-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.23%	0.31%	0.07%	1.15%	0.08%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	1.73%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.43%	99.21%	99.82%	99.80%	97.69%
	RRC Congestion:	≤ 1%	0.57%	0.67%	0.03%	0.05%	0.61%
	RAB Congestion:	≤ 2%	0.46%	0.26%	0.02%	0.14%	1.77%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.29%	0.43%	0.25%	0.03%	0.13%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	3.86%	0.74%	2.01%	0.35%	0.50%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	99.07%	97.84%	99.37%	99.79%	99.10%

6.17. 3G VOICE 3 DAYS LIVE DATA: JUNE

Jun-16							
Network Parameters		Name of Service Provider					
		Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.46%	0.46%	0.13%	0.51%	0.04%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	1.73%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.88%	99.25%	99.62%	99.91%	98.50%
	RRC Congestion:	≤ 1%	0.16%	0.61%	0.07%	0.01%	0.49%
	RAB Congestion:	≤ 2%	0.01%	0.25%	0.02%	0.07%	1.02%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.26%	0.40%	0.36%	0.03%	0.13%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	3.81%	0.85%	2.42%	0.21%	0.71%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	99.07%	97.95%	99.49%	99.79%	99.15%

6.18. POI CONGESTION: CONSOLIDATED

Consolidated										
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service										
Name of Parameter	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QT	VODAFONE
Network Service Quality Parameter										
Network Availability										
Total No. of POI's in Month having < = 0.5% POI congestion										
Total No. of call attempts on POI	635639.61	2988268.2	1967838.7	1654117.9	168204.85	484805.68	249566.77	31800.061	877566.48	3763251.8
Total traffic served on all POIs (Erlang)	14090.438	87320.484	37794.065	73505.981	3625.5451	10348.2	10370.053	592.25757	14594.804	81603.278
Total No. of circuits on all individual POIs	34219.315	195086.96	65001.111	126915.18	16872.717	44892.544	28645.944	1012.9038	25339.133	170578
Total number of working POI Service Area wise	53.333333	102.66667	53.044444	26	33	74.822222	123	14	39	150.06667
Capacity of all POIs	32663.29	193136.09	65001.111	123065.04	16487.575	44537.393	26276.007	966.97303	23449.598	167471.67
No. of all POI's having >=0.5% POI congestion	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.19. POI CONGESTION: APRIL

Apr-16											
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service											
S. No.	Name of Parameter	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter											
1	Network Availability										
1	Total No. of POI's in Month having < = 0.5% POI congestion										
	Total No. of call attempts on POI	569674	3282335	2064280	1607342	175915	441537	312389	30444	845222	3597191
	Total traffic served on all POIs (Erlang)	13349	97497	39276	73869	3784	9566	13530	582	14555	80731
	Total No. of circuits on all individual POIs	34061	188823	64938	126892	16833	35215	36528	1006	25227	169699
	Total number of working POI Service Area wise	53	102	53	26	33	57	123	14	39	150
	Capacity of all POIs	32517	186935	64938	122944	15962	33455	33702	962	23345	166603
	No. of all POI's having >=0.5% POI congestion	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
	Name of POI not meeting the benchmark (having >=0.5% POI congestion)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.20. POI CONGESTION: MAY

May-16											
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service											
Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter											
Network Availability											
Total No. of POI's in Month having < = 0.5% POI congestion											
Total No. of call attempts on POI		630739	2917907	1853484	1655431	160495	297012	280073	32118	878439	3754719
Total traffic served on all POIs (Erlang)		14065	85259	36482	74027	3467	6470	12090	605	14739	81976
Total No. of circuits on all individual POIs		34114	185757	64939	126449	16912	26549	32550	1023	25295	170735
Total number of working POI Service Area wise		52	103	53	26	33	46	123	14	39	150
Capacity of all POIs		32576	183900	64939	122659	17013	26688	29957	973	23409	167630
No. of all POI's having >=0.5% POI congestion		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Name of POI not meeting the benchmark (having >=0.5% POI congestion)		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.21. POI CONGESTION: JUNE

Jun-16											
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service											
Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL	VODAFONE
Network Service Quality Parameter											
Network Availability											
Total No. of POI's in Month having < = 0.5% POI congestion											
Total No. of call attempts on POI		706505	2764563	1985752	1699581	NA	715868	156238	32838	909038	3937846
Total traffic served on all POIs (Erlang)		14857	79205	37624	72621	NA	15009	5491	590	14490	82103
Total No. of circuits on all individual POIs		34483	210681	65126	127404	NA	72914	16861	1010	25495	171301
Total number of working POI Service Area wise		55	103	53	26	NA	122	123	14	39	151
Capacity of all POIs		32897	208574	65126	123593	NA	73469	15169	966	23594	168182
No. of all POI's having >=0.5% POI congestion		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Name of POI not meeting the benchmark (having >=0.5% POI congestion)		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.22. 2G WIRELESS DATA: APRIL

Apr-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		158359	DNA	85945	265193	146	4401.66667	DNA	DNA	DNA	8820
ii)	Total Service Activations provided within 4 Hours (B)		158206	DNA	85945	265172	146	4401.2	DNA	DNA	DNA	8298
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	99.90%	DNA	100.00%	99.99%	100.00%	99.99%	DNA	DNA	DNA	94.08%
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		34308482	52898122	88676766.5	372300736	DNA	DNA	7865175	4057836.00	165067144	672162774
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		33273107	52871761	84632393	370661467	DNA	DNA	7592060	4053327.00	161245986	668950307
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	96.98%	99.95%	95.44%	99.56%	98.32%	99.26	96.53%	99.89%	97.69%	99.52%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		1354361679	1093598114	DNA	5699240531	2706076	32843272.82	168109	945757936.00	218560821.00	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		13034233	9397140	DNA	111236835	14917	670390.07	1105	24239344.00	2922501.00	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.96%	0.86%	0.90%	1.95%	0.55%	2.04%	0.66%	2.56%	1.34%	DNA

6.23. 2G WIRELESS DATA: MAY

May-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		520897	DNA	DNA	313924	20	3777.566667	DNA	DNA	DNA	30836.00
ii)	Total Service Activations provided within 4 Hours (B)		520285	DNA	DNA	313912	20	3777.133333	DNA	DNA	DNA	30554.00
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	99.88%	DNA	DNA	100.00%	100.00%	99.99%	DNA	DNA	DNA	99.09%
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		18980968	52206699	DNA	328640724	DNA	DNA	8408074.00	4387938	173986950.00	643850446
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		18780438	52192507	DNA	328630671	DNA	DNA	8107240.00	4385702	171372068.00	640973002
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	98.94%	99.97%	DNA	100.00%	99.03%	99.19%	96.42%	99.95%	98.50%	99.55%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		1396842735	325405587542.00	DNA	5832273715	1511645.00	38297763.37	164652	953556699	222108514.00	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		13021124	405543706	DNA	110076405	7664.00	729993.33	1231	23767629	2926673.00	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.93%	0.12%	DNA	1.89%	0.51%	1.91%	0.75%	2.49%	1.32%	DNA

6.24. 2G WIRELESS DATA: JUNE

Jun-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		434017	DNA	DNA	384397	NA	3789.1	DNA	DNA	DNA	27316
ii)	Total Service Activations provided within 4 Hours (B)		433770	DNA	DNA	384391	NA	3788.666667	DNA	DNA	DNA	26934
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	99.94%	DNA	DNA	100.00%	NA	99.99%	DNA	DNA	DNA	98.60%
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		16687551	48581146	DNA	319604475	NA	DNA	8253534	144002.37	245668621.00	562871269.00
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		16532878	48570112	DNA	319585387	NA	DNA	7965149	143796.40	243709422.00	560279251.00
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.07%	99.98%	DNA	99.99%	NA	98.45%	96.51%	99.86%	99.20%	99.54
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		1320353727	3.04756E+11	DNA	5349361343	NA	43344630.97	151309.00	30238408.53	208064598.00	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		13267628	388431272.00	DNA	86292605	NA	833592.3667	1086.00	816822.20	2896994.00	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	1.00%	0.13%	DNA	1.61%	NA	1.92%	0.72%	2.70%	1.39%	DNA

6.25. 2G WIRELESS DATA: CONSOLIDATED

Consolidated												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		371091	DNA	85945	321171.3333	83	3989.444444	DNA	DNA	DNA	22324
ii)	Total Service Activations provided within 4 Hours (B)		370753.6667	DNA	85945	321158.3333	83	3989	DNA	DNA	DNA	21928.66667
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	0.999096614	DNA	1	0.999955659	1	0.999888301	DNA	DNA	DNA	0.972562231
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		23325667	51228655.67	88676766.46	340181978.3	DNA	DNA	8175594.333	2863258.789	194907571.7	626294829.7
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		22862141	51211460	84632393	339625841.7	DNA	DNA	7888149.667	2860941.8	192109158.7	623400853.3
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	0.983329348	0.999667566	0.954391961	0.998502203	0.986735952	33.74522615	0.964851812	0.998982979	0.984615579	33.84341744
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		1357186047	210418298335	DNA	5626958530	2108860.5	38161889.05	161356.6667	643184347.8	216244644.3	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		13107661.67	267790706	DNA	102535281.7	11290.5	744658.5905	1140.666667	16274598.4	2915389.333	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.009664753	0.003704567	0.008979303	0.018174296	0.005291192	0.019568172	0.007075619	0.02585584	0.013490624	DNA

6.26. 2G Wireless 3 Days Live Data: April

Apr-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	29709	29	3235.6667	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	29709	29	3235.6667	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	100.00%	100.00%	100.00%	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		3416150	5510186	DNA	37874950	DNA	DNA	796808	409322	5656347	63126677
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		3403529	5507558	DNA	36262364	DNA	DNA	769620	409195	5511548.3	62580325
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.63%	99.95%	DNA	95.74%	98.22%	99.17%	96.59%	99.97%	97.44%	99.13%
3	.											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		136486724	126334427	DNA	581154912	347512	33664035	15913	97652021	7555726	224598442
ii)	TBF originated PS Domain Iu Connection Release (B)		1330680	1022522	DNA	11101668	2203	730033.67	106	2547423	104486	3943162
iii)	Drop Rate = (B/A) * 100	<=5%	0.97%	0.81%	DNA	1.91%	0.63%	2.17%	0.67%	2.61%	1.38%	1.76%

6.27. 2G Wireless 3 Days Live Data: May

May-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	32688	8	2423.667	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	32688	8	2423.333	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	100.00%	100.00%	99.99%	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		1573234	5069412	DNA	30424605	DNA	DNA	837220	424121	16882406.00	**63701726**
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		1560097	5068289	DNA	30424547	DNA	DNA	806063	423879	16599293.00	63174716
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.16%	99.98%	DNA	100.00%	98.92%	99.53%	96.28%	99.94%	98.32%	99.17%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		134680202	31366879075	DNA	569090691	266620	31639920	15970	90644751	21861695.00	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		1158006	40267421	DNA	11144584	1514	634654	119	2237224	284481.00	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.86%	0.13%	DNA	1.96%	0.57%	2.01%	0.75%	2.47%	1.30%	DNA

6.28. 2G Wireless 3 Days Live Data: June

Jun-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	33048	NA	4485	DNA	DNA	DNA	27316
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	33048	NA	4484	DNA	DNA	DNA	26934
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	100.00%	NA	99.99%	DNA	DNA	DNA	98.60%
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		1677746	4742422	DNA	32222014	NA	DNA	875025	426899	23256830	562871269
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		1668664	4740668	DNA	32221385	NA	DNA	843752	426771	23055541	560279251
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.46%	99.96%	DNA	100.00%	NA	98.53%	96.43%	99.97%	99.13%	99.54%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		136962188	**30615772053**	DNA	524613093	NA	42930885	16583	96430408	21501315	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		1341739	40775373	DNA	8116850	NA	855553	146	2487379	286701	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.98%	0.13%	DNA	1.55%	NA	1.99%	0.88%	2.58%	1.33%	DNA

6.29. 2G Wireless 3 Days Live Data: Consolidated

CONSOLIDATED												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	31815	19	3381	DNA	DNA	DNA	27316
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	31815	19	3381	DNA	DNA	DNA	26934
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success*	DNA	DNA	DNA	1	1	1	DNA	DNA	DNA	1
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		2222377	5107340	DNA	33507190	#DIV/0!	#DIV/0!	836351	420114	15265194	229899891
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		2210763	5105505	DNA	32969432	#DIV/0!	#DIV/0!	806478	419948	15055461	228678097
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	1	1	DNA	1	1	1	1	1	1	1
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		136043038	20702995185	DNA	558286232	307066	36078280	16155	94909060	16972912	224598442
ii)	TBF originated PS Domain Iu Connection Release (B)		1276808	27355105	DNA	10121034	1859	740080	124	2424009	225223	3943162
iii)	Drop Rate = (B/A) * 100	<=5%	0	0	DNA	0	0	0	0	0	0	0

6.30. 3G WIRELESS DATA: APRIL

Apr-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		158359	85945	265193	4402	DNA
ii)	Total Service Activations provided within 4 Hours (B)		158206	85945	265172	4401.2	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	99.90%	100.00%	99.99%	99.99%	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		31673634	88676766.5	242133751	DNA	5401519
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		31107728	84632393	237469264	DNA	5401515
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	98.21%	95.44%	98.07%	99.23%	100.00%
3	Drop Rate						
i)	RNC originated PS Domain Iu Connection Setup Success (A)		26835901	DNA	6533976720.00	4776065.23	15647564
ii)	RNC originated PS Domain Iu Connection Release (B)		302453	DNA	74340392.00	21954.57	640082
iii)	Drop Rate = (B/A) * 100	<=5%	1.13%	0.90%	1.14%	0.46%	4.09%

6.31. 3G WIRELESS DATA: MAY

May-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		520897	DNA	313924	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		520285	DNA	313912	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	99.88%	DNA	100.00%	DNA	DNA
2	.						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		11035586	DNA	154209851	DNA	6789128.00
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		10869299	DNA	152017119	DNA	6789122.00
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	98.49%	DNA	98.58%	99.22%	100.00%
3	Drop Rate						
i)	RNC originated PS Domain Iu Connection Setup Success (A)		26746484	DNA	5498228698.00	4649356.30	14810786.00
ii)	RNC originated PS Domain Iu Connection Release (B)		315651	DNA	54965844.00	18308.13	296273.00
iii)	Drop Rate = (B/A) * 100	<=5%	1.18%	DNA	1.00%	0.39%	2.00%

6.32. 3G WIRELESS DATA: JUNE

Jun-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		434017	DNA	384397	3789	DNA
ii)	Total Service Activations provided within 4 Hours (B)		433770	DNA	384391	3789	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	99.94%	DNA	100.00%	99.99%	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		8614114	DNA	319604475	DNA	5506420
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		8484112	DNA	319585387	DNA	5506420
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	98.49%	DNA	99.99%	99.12%	100.00%
3	Drop Rate						
i)	RNC originated PS Domain Iu Connection Setup Success (A)		26795410	DNA	5349361343	17594864.63	13079401
ii)	RNC originated PS Domain Iu Connection Release (B)		420601	DNA	86292605	75374.13	141809
iii)	Drop Rate = (B/A) * 100	<=5%	1.57%	DNA	1.61%	0.43%	1.08%

6.33. 3G WIRELESS DATA: CONSOLIDATED

Consolidated							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		371091	85945	321171.3333	4095.383333	DNA
ii)	Total Service Activations provided within 4 Hours (B)		370753.6667	85945	321158.3333	4094.933333	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	0.999096614	1	0.999955659	0.999889808	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		17107778	88676766.46	238649359	DNA	5899022.333
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		16820379.67	84632393	236357256.7	DNA	5899019
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	0.983991073	0.954391961	0.988819013	0.991898235	0.999999459
3	Drop Rate						
i)	RNC originated PS Domain Iu Connection Setup Success (A)		26792598.33	DNA	5793855587	9006762.056	14512583.67
ii)	RNC originated PS Domain Iu Connection Release (B)		346235	DNA	71866280.33	38545.61111	359388
iii)	Drop Rate = (B/A) * 100	<=5%	0.012922935	0.008979303	0.012501968	0.004272813	0.023917402

6.34. 3G Wireless 3 Days Live Data: April

Apr-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	29709	DNA	DNA
ii)	Total Service Activations provided w ithin 4 Hours (B)		DNA	DNA	29709	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		3147034	DNA	25631811	DNA	422052
ii)	No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		3137912	DNA	24655461.00	DNA	422052
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.71%	DNA	96.19%	99.24%	100.00%
3	Drop Rate						
i)	RNC originated PS Domain Iu Connection Setup Success (A)		2838142	DNA	696743936	5072646	1580027
ii)	RNC originated PS Domain Iu Connection Release (B)		41944	DNA	7798337	24622	53213
iii)	Drop Rate = (B/A) * 100	<=5%	1.48%	DNA	1.12%	0.49%	3.37%

6.35. 3G Wireless 3 Days Live Data: May

May-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	No. of Subscribers for Service Activation (A)		DNA	DNA	32688	DNA	DNA
ii)	ervice Activations provided w ithin 4 Hours (B)		DNA	DNA	32688	DNA	DNA
iii)	vice Activation / Provisioning = (B/A) *	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Context Activation Requests (from SGSN to GGSN)		874098	DNA	18063303.00		223163
ii)	t Activation Success (path created b/w SGSN and		860828	DNA	17817101.00		223163
iii)	ontext Activation Success Rate =(B/A)	>=95%	98.48%	DNA	98.64%	99.13%	100.00%
3	Drop Rate						
i)	ated PS Domain Iu Connection Setup Success (A)		3127020	DNA	552383238.00	4856796.7	486401
ii)	iginated PS Domain Iu Connection Release (B)		32065	DNA	5488645.00	20734.333	11150.667
iii)	Drop Rate = (B/A) * 100	<=5%	1.03%	DNA	0.99%	0.43%	2.29%

6.36. 3G WIRELESS 3 DAYS LIVE DATA: JUNE

Jun-16							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	33048	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	33048	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		835802	DNA	10665005.00	DNA	564807
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		823939	DNA	10493523.00	DNA	564807
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	98.58%	DNA	98.39%	99.12%	100.00%
3	Drop Rate						
i)	RNC originated PS Domain Iu Connection Setup Success (A)		2695917	DNA	568495875.00	17273040	1207520
ii)	RNC originated PS Domain Iu Connection Release (B)		35659	DNA	7087272.00	80105.6667	18315
iii)	Drop Rate = (B/A) * 100	<=5%	1.32%	DNA	1.25%	46.39%	1.52%

6.37. 3G WIRELESS 3 DAYS LIVE DATA: CONSOLIDATED

CONSOLIDATED							
Cellular Mobile Telephone Services							
S. No.	Name of Parameter	Benchmark	AIRCEL	BSNL	IDEA	RCOM	TATA
Network Service Quality Parameter							
1	Service Activation/ Provisioning						
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	31815	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	31815	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	1	DNA	DNA
2	PDP Context Activation Success Rate						
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		1618978	DNA	18120039.7	DNA	403340.667
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		1607559.67	DNA	17655361.7	DNA	403340.667
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	0.98924216	DNA	0.97739992	0.9916367	1
3	Drop Rate						
i)	RNC originated PS Domain Iu Connection Setup Success (A)		2887026.33	DNA	605874350	9067494.2	1091316
ii)	RNC originated PS Domain Iu Connection Release (B)		36556	DNA	6791418	41820.778	27559.5556
iii)	Drop Rate = (B/A) * 100	<=5%	0.0127533	DNA	0.01119852	0.1576728	0.02392361

7. CUSTOMER SERVICE DELIVERY

7.1. BILLING AND CUSTOMER CARE

Name of Service Provider	Metering and Billing credibility		Billing Complaints			Termination & Closures	Time taken for refund of deposits after closures: Benchmark	Response time to customer for assistance	
	Postpaid Subscribers	Prepaid Subscribers	%age complaints resolved within 4 weeks	%age complaints resolved within 6 weeks	%age of where credit/waiver is received within one week	% of Termination/ Closure of service within 7 days (100 %)	Cleared over a period of <60 days (100%)	%age of calls answered by the IVR	%age of call answered by the operators (voice to voice) within 90 seconds
Benchmark	≤ 0.1%	≤ 0.1%	≥ 98%	= 100%	= 100%	= 100%	= 100%	≥ 95%	≥ 95%
AIRCEL	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	97.81%	95.97%
AIRTEL	0.01%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	77.02%
BSNL	0.03%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	96.65%
IDEA	0.05%	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%	99.81%	99.10%
RCOM CDMA	0.09%	0.03%	100.00%	100.00%	100.00%	100.00%	69.02%	95.93%	97.24%
RCOM GSM	0.09%	0.09%	100.00%	100.00%	100.00%	100.00%	77.84%	99.18%	93.88%
TTSL CDMA	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	DNA	99.80%
TTSL GSM	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.47%	98.02%
VIDEOCON (QTL)	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	96.44%
VODAFONE	0.14%	0.03%	100.00%	100.00%	100.00%	100.00%	DNA	100.00%	98.10%

Name of Service Provider	Customer Care & Grievances Redressal	
	% of Complaints addressed at call center level	% of Complaints addressed by Appellate Authority
Benchmark		
AIRCEL	77.02%	100.00%
AIRTEL	100.00%	100.00%
BSNL	98.63%	0.00%
IDEA	31.96%	0.00%
RCOM CDMA	100.00%	100.00%
RCOM GSM	100.00%	100.00%
TTSL CDMA	99.19%	100.00%
TTSL GSM	98.58%	95.63%
VIDEOCON (QTL)	100.00%	0.00%
VODAFONE	18.37%	0.00%

7.2. LIVE CALLING DATA: CONSOLIDATED

Name of Service Provider	Metering and Billing (Service Request)				Response time to customer for Assistance	
	Total Calls Attempted	No. of Subscribers reached	Complaints/ Request attended to satisfaction	% of Complaints/ Request attended to satisfaction	Accessibility of call centre / Customer care	%age of call answered by the operators (voice to voice) within 90 seconds
Benchmark					**≥ 95%**	**≥ 95%**
AIRCEL	400	223	217	97.31%	100.00%	100.00%
AIRTEL	192	47	46	97.87%	100.00%	94.00%
BSNL	150	130	126	96.92%	100.00%	96.00%
IDEA	189	135	132	97.78%	100.00%	100.00%
RCOM CDMA	NA	NA	NA	NA	NA	NA
RCOM GSM	254	184	179	97.28%	100.00%	98.00%
TTSL CDMA	0	0	0	NA	NA	NA
TTSL GSM	0	0	0	NA	NA	NA
VIDEOCON (QTL)	50	23	22	95.65%	100.00%	98.00%
VODAFONE	165	98	93	94.9%	100.00%	100.00%

7.3. 3 DAYS LIVE CALL CENTRE DATA

Response time to customer assistance						
OPERATOR	**Total no of calls attempted to customer care/Call center**	**Total no. of calls successfully established to customer care/Call center**	**% age of Accessibility of Call centre**	**Total Calls reached to operator for (Voice to Voice)**	**Total number of calls answered by the operator (Voice to voice) within 90 seconds**	**% age calls answered by the operator within 90 seconds**
	AVERAGE					
OPERATOR			>=95%			>=95%
AIRCEL	155109	152555	98.35%	19436	19022	97.87%
AIRTEL	48489	48489	100.00%	111130	108916	98.01%
BSNL	2524	2524	100.00%	3795	3795	100.00%
IDEA	611171	610460	99.88%	120375	117099	97.28%
RCOM CDMA	NA	NA	NA	NA	NA	NA
RCOM GSM	119345	118871	99.60%	28528	27605	96.76%
TTSL CDMA	DNA	DNA	DNA	805	801	99.50%
TTSL GSM	DNA	DNA	DNA	31004	30155	97.26%
VIDEOCON (QTL)	17733	17733	100.00%	3375	3353	99.35%
VODAFONE	242217	242217	100.00%	96995	95695	98.66%

8. L1 CALLING DATA

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

- Jalandhar: 4th May to 6th May 2016
- Ludhiana: 18th May to 20th May 2016
- Hoshiarpur: 25th May to 27th May 2016
- Firozpur: 22nd June to 24th June 2016

8.1. JALANDHAR

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

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

IDEA									
SR. NO.	EMERGENCY NUMBER	CALLS MADE	JALANDHAR	NAKODAR	PHAGWARA	PHILLAUR	NAWANSHAHR	KAPURTHALA	SULTANPUR LODHI
1	100	5	√	√	√	√	√	√	√
2	1903	5	×	×	√	√	√	√	√
3	15100	5	√	√	√	√	√	√	√
4	155304	5	×	×	×	×	×	×	×
5	155214	5	×	×	×	×	×	×	×
6	1091	5	√	√	√	√	√	√	×
7	1097	5	√	√	√	√	√	√	√
8	101	5	√	√	√	√	√	√	√
9	104	5	×	×	×	×	×	×	×
10	108	5	√	√	√	√	√	√	√
11	181	5	√	√	√	√	√	√	√
12	182	5	×	×	×	√	√	√	×
13	1033	5	×	×	√	√	√	×	×
14	1909	5	×	√	√	√	√	√	√
15	1912	5	√	√	√	√	√	√	√
16	1950	5	×	×	√	√	√	√	√
17	1063	5	×	×	×	×	×	×	×
18	138(1322)	5	√	√	√	√	√	√	√
19	1512	5	×	×	√	√	√	√	√
20	1070	5	×	×	×	√	×	×	×
21	1072	5	×	×	√	√	√	√	√
22	1077	5	×	×	√	√	√	×	×
23	102	5	×	×	×	×	×	×	×
24	149	5	×	×	×	×	×	×	×
25	1037	5	×	×	×	×	×	×	×
26	1056	5	×	×	×	×	×	×	×
27	1060	5	×	×	×	×	×	×	×
28	1064	5	×	×	×	×	×	×	×
29	1071	5	×	×	×	×	×	×	×
30	1073	5	×	×	×	×	×	×	×
31	1090	5	×	×	×	×	×	×	×
32	1099	5	×	×	×	×	×	×	×
33	10580	5	×	×	×	×	×	×	×
34	10589	5	×	×	×	×	×	×	×
35	10740	5	×	×	×	×	×	×	×
36	10741	5	×	×	×	×	×	×	×
37	1511	5	×	×	×	×	×	×	×
38	1514	5	×	×	×	×	×	×	×
39	1916	5	×	×	×	×	×	×	×

RCOM GSM									
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Jalandhar	Nakoder	Phagwara	Phillaur	Nawanshahr	Kapurthala	Sultanpur Loadhi
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	10580	×	×	×	×	×	×	×	×
26	10589	×	×	×	×	×	×	×	×
27	10740	×	×	×	×	×	×	×	×
28	10741	×	×	×	×	×	×	×	×
29	1511	×	×	×	×	×	×	×	×
30	1512	√	√	√	√	√	√	√	√
31	1514	×	×	×	×	×	×	×	×
32	15100	√	√	√	√	√	√	√	√
33	155304	√	×	×	×	×	×	×	×
34	155214	√	×	×	×	×	×	×	×
35	1903	√	√	√	√	√	√	√	√
36	1909	√	√	√	√	√	√	√	√
37	1912	√	√	√	√	√	√	√	√
38	1916	×	×	×	×	×	×	×	×
39	1950	√	√	√	√	√	√	√	√

RCOM CDMA									
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Jalandhar	Nakoder	Phagwara	Phillaur	Nawanshahr	Kapurthala	Sultanpur Loadhi
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	10580	×	×	×	×	×	×	×	×
26	10589	×	×	×	×	×	×	×	×
27	10740	×	×	×	×	×	×	×	×
28	10741	×	×	×	×	×	×	×	×
29	1511	×	×	×	×	×	×	×	×
30	1512	√	√	×	√	√	√	√	√
31	1514	×	×	×	×	×	×	×	×
32	15100	√	√	√	√	√	√	√	√
33	155304	√	×	×	×	×	×	×	×
34	155214	√	×	×	×	×	×	×	×
35	1903	√	√	√	√	√	√	√	√
36	1909	√	√	√	√	√	√	√	√
37	1912	√	√	√	√	√	√	√	√
38	1916	×	×	×	×	×	×	×	×
39	1950	√	√	√	√	√	√	√	√

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

VODAFONE									
SR. NO.	EMERGENCY NUMBER	CALLS MADE	Jalandhar	Nakoder	Phagwara	Phillour	Nawashahar	Kapurthala	Sultanpur Lodhi
1	100	5	√	√	√	√	√	√	√
2	101	5	√	√	√	×	√	√	√
3	104	5	√	√	√	√	√	√	√
4	108	5	√	√	√	√	√	√	√
5	181	5	√	√	√	√	√	√	√
6	182	5	√	√	√	√	√	√	√
7	1033	5	√	√	√	√	√	√	√
8	1063	5	×	×	×	×	×	×	×
9	1091	5	√	√	√	√	√	√	√
10	1097	5	√	√	√	√	√	√	√
11	155304	5	√	√	√	√	×	√	√
12	155214	5	√	√	√	√	√	√	√
13	1903	5	√	√	√	√	√	√	√
14	1909	5	√	√	√	√	√	√	√
15	1912	5	√	√	√	√	√	√	√
16	1950	5	√	√	√	√	√	√	√
17	15100	5	√	√	√	√	√	√	√
18	1070	5	√	√	×	×	×	×	√
19	1512	5	√	√	√	√	√	√	√
20	138	5	√	√	√	√	√	√	√
21	1072	5	×	×	√	×	×	×	×
22	1077	5	×	×	×	×	×	×	×
23	149	5	×	×	×	×	×	×	×
24	1037	5	×	×	×	×	×	×	×
25	1056	5	×	×	×	×	×	×	×
26	106X	5	×	×	×	×	×	×	×
27	1064	5	×	×	×	×	×	×	×
28	1071	5	×	×	×	×	×	×	×
29	1073	5	×	×	×	×	×	×	×
30	1090	5	×	×	×	×	×	×	×
31	1099	5	×	×	×	×	×	×	×
32	10580	5	×	×	×	×	×	×	×
33	10589	5	×	×	×	×	×	×	×
34	10740	5	×	×	×	×	×	×	×
35	10741	5	×	×	×	×	×	×	×
36	1511	5	×	×	×	×	×	×	×
37	1514	5	×	×	×	×	×	×	×
38	1916	5	×	×	×	×	×	×	×
39	102	5	×	×	×	×	×	×	×

8.2. LUDHIANA

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

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

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

IDEA					
SR. NO.	**EMERGENCY NUMBER**	**CALLS MADE**	**Ludhiana**	**Jagraon**	**Samrala**
1	100	5	√	√	√
2	1903	5	√	√	√
3	15100	5	×	×	×
4	155304	5	×	×	×
5	155214	5	×	×	×
6	1091	5	√	√	×
7	1097	5	√	√	√
8	101	5	×	√	√
9	104	5	√	√	√
10	108	5	√	√	√
11	181	5	√	√	√
12	182	5	×	×	×
13	1033	5	√	√	√
14	1909	5	√	√	√
15	1912	5	√	√	√
16	1950	5	√	√	√
17	1063	5	×	×	×
18	138(1322)	5	×	×	×
19	1512	5	√	√	√
20	1070	5	×	×	×
21	1072	5	√	√	√
22	1077	5	√	√	√
23	1097	5	×	×	×
24	1099	5	×	×	×
25	10580	5	×	×	×
26	10589	5	×	×	×
27	10740	5	×	×	×
28	10741	5	×	×	×
29	1511	5	×	×	×
30	1512	5	×	×	×
31	1514	5	×	×	×
32	15100	5	×	×	×
33	155304	5	×	×	×
34	155214	5	×	×	×
35	1903	5	×	×	×
36	1909	5	×	×	×
37	1912	5	×	×	×
38	1916	5	×	×	×
39	1950	5	×	×	×

RCOM GSM					
SR. NO.	**EMERGENCY NUMBER**	**CALLS MADE**	**Ludhiana**	**Jagraon**	**Samrala**
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	10580	×	×	×	×
26	10589	×	×	×	×
27	10740	×	×	×	×
28	10741	×	×	×	×
29	1511	×	×	×	×
30	1512	√	√	√	√
31	1514	×	×	×	×
32	15100	√	√	√	√
33	155304	√	×	×	×
34	155214	√	×	×	×
35	1903	√	√	√	√
36	1909	√	√	√	√
37	1912	√	√	√	√
38	1916	×	×	×	×
39	1950	√	√	√	√

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

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

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

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

8.3. HOSHIARPUR

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

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

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

IDEA

Sr. No.	EMERGENCY NUMBER	Calls Made	Tanda	Dasuya
1	100	5	√	√
2	1903	5	√	√
3	15100	5	√	√
4	155304	5	×	×
5	155214	5	×	×
6	1091	5	√	√
7	1097	5	√	√
8	101	5	√	√
9	104	5	√	√
10	108	5	√	√
11	181	5	√	√
12	182	5	×	×
13	1033	5	√	√
14	1909	5	√	√
15	1072	5	√	√
16	1950	5	√	√
17	1063	5	√	√
18	138(1322)	5	√	√
19	1512	5	√	√
20	1070	5	×	×
21	1077	5	√	√
22	1072	5	×	×
23	102	5	×	×
24	149	5	×	×
25	1037	5	×	×
26	1056	5	×	×
27	1060	5	×	×
28	1064	5	×	×
29	1071	5	×	×
30	1073	5	×	×
31	1090	5	×	×
32	1099	5	×	×
33	10580	5	×	×
34	10589	5	×	×
35	10740	5	×	×
36	10741	5	×	×
37	1511	5	×	×
38	1514	5	×	×
39	1916	5	×	×

RCOM GSM							
SR. NO.	**EMERGENCY NUMBER**	**CALLS MADE**	**Hoshiarpur**	**Garhshankar**	**Balachaur**	**Tanda**	**Dasuya**
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	10580	×	×	×	×	×	×
26	10589	×	×	×	×	×	×
27	10740	×	×	×	×	×	×
28	10741	×	×	×	×	×	×
29	1511	×	×	×	×	×	×
30	1512	√	√	√	√	√	√
31	1514	×	×	×	×	×	×
32	15100	√	√	√	√	√	√
33	155304	√	×	×	×	×	×
34	155214	√	×	×	×	×	×
35	1903	√	√	√	√	√	√
36	1909	√	√	√	√	√	√
37	1912	√	√	√	√	√	√
38	1916	×	×	×	×	×	×
39	1950	√	√	√	√	√	√

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

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

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

VODAFONE							
SR. NO.	**EMERGENCY NUMBER**	**CALLS MADE**	**Hoshiarpur**	Garhashanker	**Balachaur**	**Tanda**	**Dasuya**
1	100	5	√	√	√	√	√
2	101	5	√	√	√	√	√
3	104	5	√	√	√	√	√
4	108	5	√	√	√	√	√
5	181	5	√	√	√	√	√
6	182	5	√	√	√	√	√
7	1033	5	√	√	√	√	√
8	1063	5	×	×	×	×	×
9	1091	5	√	√	√	√	√
10	1097	5	√	√	√	√	√
11	155304	5	√	√	√	√	√
12	155214	5	√	√	√	√	√
13	1903	5	√	√	√	√	√
14	1909	5	√	√	√	√	√
15	1912	5	√	√	√	√	√
16	1950	5	√	√	√	√	√
17	15100	5	√	√	√	√	√
18	1070	5	√	√	√	×	√
19	1512	5	√	√	√	√	√
20	138	5	√	√	×	√	√
21	1072	5	√	√	×	√	√
22	1077	5	×	√	×	×	×
23	149	5	×	×	×	×	×
24	1037	5	×	×	×	×	×
25	1056	5	×	×	×	×	×
26	106X	5	×	×	×	×	×
27	1064	5	×	×	×	×	×
28	1071	5	×	×	×	×	×
29	1073	5	×	×	×	×	×
30	1090	5	×	×	×	×	×
31	1099	5	×	×	×	×	×
32	10580	5	×	×	×	×	×
33	10589	5	×	×	×	×	×
34	10740	5	×	×	×	×	×
35	10741	5	×	×	×	×	×
36	1511	5	×	×	×	×	×
37	1514	5	×	×	×	×	×
38	1916	5	×	×	×	×	×
39	102	5	×	×	×	×	×

8.4. FIROZPUR

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

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

BSNL												
SR. NO.	EMERGENCY NUMBER	CALLS MADE	FEROZEPUR	ZIRA	MOGA	GURUHARSAHAI	FAZILKA	ABOHAR	MALOUT	MUKTSAR	KOTKAPURA	FARIDKOT
1	100	5	x	√	√	x	√	x	x	√	√	√
2	1903	5	x	x	x	x	x	x	x	x	√	x
4	15100	5	x	x	√	√	√	√	√	√	√	√
5	155214	5	x	x	x	x	x	x	x	√	x	x
8	155304	5	x	x	x	x	x	x	x	x	x	x
9	1091	5	√	x	√	√	√	√	√	√	x	√
10	1097	5	x	x	x	x	x	x	x	x	x	x
14	101	5	√	√	√	x	√	√	√	√	√	√
16	104	5	x	x	√	√	√	√	√	√	√	√
20	108	5	x	x	√	√	x	x	x	√	√	√
22	181	5	√	√	√	√	√	√	√	√	√	√
23	182	5	x	x	√	x	x	x	x	x	x	x
24	1033	5	√	x	x	√	√	√	√	√	√	√
25	1909	5	√	√	√	√	√	√	√	√	√	√
26	1912	5	x	√	√	√	√	√	√	√	√	√
27	1950	5	√	√	√	√	√	√	√	√	√	√
28	1063	5	x	x	x	x	x	x	x	x	x	x
29	1070	5	x	x	x	x	x	x	x	x	x	x
30	1512	5	x	x	x	x	x	x	x	x	x	x
31	138	5	√	√	x	√	x	√	√	x	x	√
32	1077	5	x	x	x	x	x	x	x	x	x	x
33	1072	5	√	√	√	√	√	√	√	√	√	√
34	102	5	x	x	x	x	x	x	x	x	x	x
35	149	5	x	x	x	x	x	x	x	x	x	x
36	1037	5	x	x	x	x	x	x	x	x	x	x
37	1056	5	x	x	x	x	x	x	x	x	x	x
38	1060	5	x	x	x	x	x	x	x	x	x	x
39	1064	5	x	x	x	x	x	x	x	x	x	x
40	1071	5	x	x	x	x	x	x	x	x	x	x
41	1073	5	x	x	x	x	x	x	x	x	x	x
42	1090	5	x	x	x	x	x	x	x	x	x	x
43	1099	5	x	x	x	x	x	x	x	x	x	x
44	10580	5	x	x	x	x	x	x	x	x	x	x
45	10589	5	x	x	x	x	x	x	x	x	x	x
46	10740	5	x	x	x	x	x	x	x	x	x	x
47	10741	5	x	x	x	x	x	x	x	x	x	x
48	1511	5	x	x	x	x	x	x	x	x	x	x
49	1514	5	x	x	x	x	x	x	x	x	x	x
50	1916	5	x	x	x	x	x	x	x	x	x	x

IDEA					
SR. NO.	**EMERGENCY NUMBER**	**CALLS MADE**	**Muktsar**	**Kot kapura**	**Faridkot**
1	100	5	×	×	×
2	1903	5	×	×	×
3	15100	5	×	×	×
4	155304	5	×	×	×
5	155214	5	√	√	√
6	1091	5	×	×	×
7	1097	5	×	×	×
8	101	5	×	×	×
9	104	5	×	×	×
10	108	5	×	×	×
11	181	5	×	×	×
12	182	5	√	√	√
13	1033	5	×	×	×
14	1909	5	×	×	×
15	1912	5	×	×	×
16	1950	5	×	×	×
17	1063	5	√	√	√
18	1070	5	√	√	√
19	1512	5	×	×	×
20	1072	5	×	×	×
20	1077	5	×	×	×
20	138	5	×	×	×
×	102	5	×	×	×
×	149	5	×	×	×
×	1037	5	×	×	×
×	1056	5	×	×	×
×	1060	5	×	×	×
×	1064	5	×	×	×
×	1071	5	×	×	×
×	1073	5	×	×	×
×	1090	5	×	×	×
×	1099	5	×	×	×
×	10580	5	×	×	×
×	10589	5	×	×	×
×	10740	5	×	×	×
×	10741	5	×	×	×
×	1511	5	×	×	×
×	1514	5	×	×	×
×	1916	5	×	×	×

RCOM GSM												
SR. NO.	EMERGENCY NUMBER	CALLS MADE	FEROZPUR	ZIRA	MOGA	GURU HAR SAHAI	FAZILKA	ABOHAR	MALOUT	MUKSTAR	KOTKAPURA	FARIDKOT
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	10580	×	×	×	×	×	×	×	×	×	×	×
26	10589	×	×	×	×	×	×	×	×	×	×	×
27	10740	×	×	×	×	×	×	×	×	×	×	×
28	10741	×	×	×	×	×	×	×	×	×	×	×
29	1511	×	×	×	×	×	×	×	×	×	×	×
30	1512	√	√	√	√	√	√	√	√	√	√	√
31	1514	×	×	×	×	×	×	×	×	×	×	×
32	15100	√	√	√	√	√	√	√	√	√	√	√
33	155304	√	×	×	×	×	×	×	×	×	×	×
34	155214	√	×	×	×	×	×	×	×	×	×	×
35	1903	√	√	√	√	√	√	√	√	√	√	√
36	1909	√	√	√	√	√	√	√	√	√	√	√
37	1912	√	√	√	√	√	√	√	√	√	√	√
38	1916	×	×	×	×	×	×	×	×	×	×	×
39	1950	√	√	√	√	√	√	√	√	√	√	√

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

SR. NO.	EMERGENCY NUMBER	CALLS MADE	Ferozepur	Moga	Zira	Guruharshai	Abohar	Malout	Kotakpura
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	10580	√	×	×	×	×	×	×	×
26	10589	√	×	×	×	×	×	×	×
27	10740	√	×	×	×	×	×	×	×
28	10741	√	×	×	×	×	×	×	×
29	1511	√	×	×	×	×	×	×	×
30	1512	√	×	×	×	×	√	√	√
31	1514	√	×	×	×	×	×	×	×
32	15100	√	×	×	×	×	×	×	×
33	155304	√	×	×	×	×	×	×	×
34	155214	√	×	×	×	×	×	×	×
35	1903	√	√	√	√	√	√	√	√
36	1909	√	√	√	√	√	√	√	√
37	1912	√	×	×	×	×	×	×	×
38	1916	√	×	×	×	×	×	×	×
39	1950	√	×	×	×	×	√	√	√

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

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

9. OPERATOR ASSISTED DRIVE TEST

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

For measuring voice quality RxQual samples for GSM operators and Frame Error Rate (FERs) for CDMA service providers were measured. RxQual greater than 5 meant that the sample was not of appropriate voice quality and for CDMA operators FERs of more than 4 were considered bad. Call drops were measured by the number of calls that were dropped to the total number of calls established during the drive test. Similarly CSSR was measured as the ratio of total calls established to the total call attempts made. Signal strength was measured in Dbm with strength > -75dbm for indoor, -85 dbm for in-vehicle and > -95 dbm outdoor routes. Below is the schedule and operators involved in the drive test for thePunjab circle.

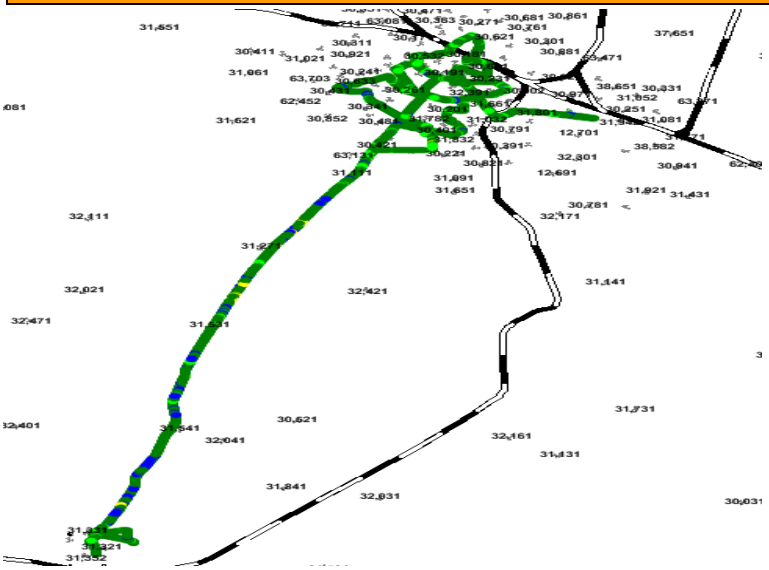
9.1. JALANDHAR SSA

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

9.2. DISTANCE COVERED: JALANDHAR SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
JALANDHAR SSA	110 km	135 km	125 km

9.3. ROUTE MAP: JALANDHAR SSA: DAY 1



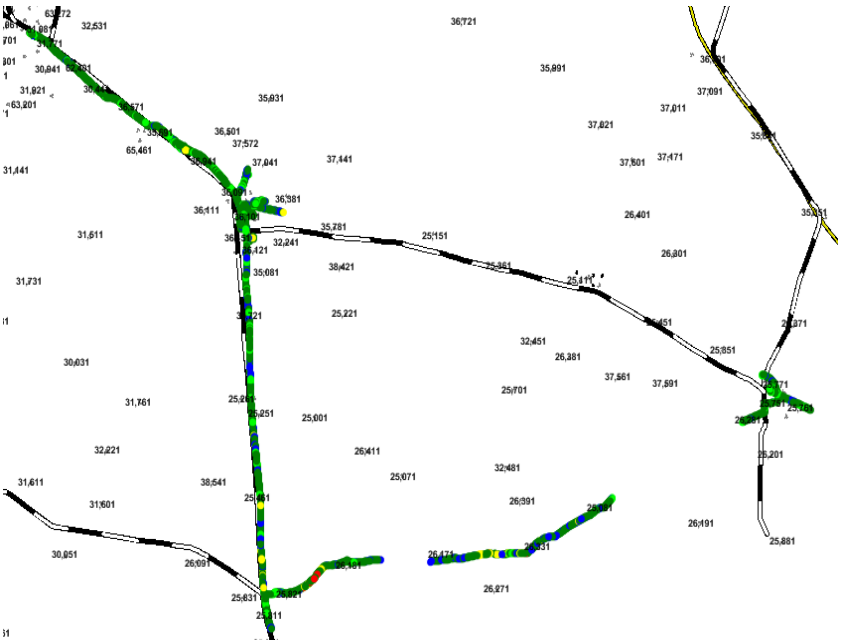
Route Covered- Day 1

PAP chownk, rama mandi, bus stand, mithapurchownk, nakodar ambedkar chownk

GTB naga, khurla kingra colony, basti sheikh chownk, raddison hotel, partap bagh, Rly stn, talab devi temple, heera gate

Jalandhar - Nakodar

9.4. ROUTE MAP: JALANDHAR SSA: DAY 2



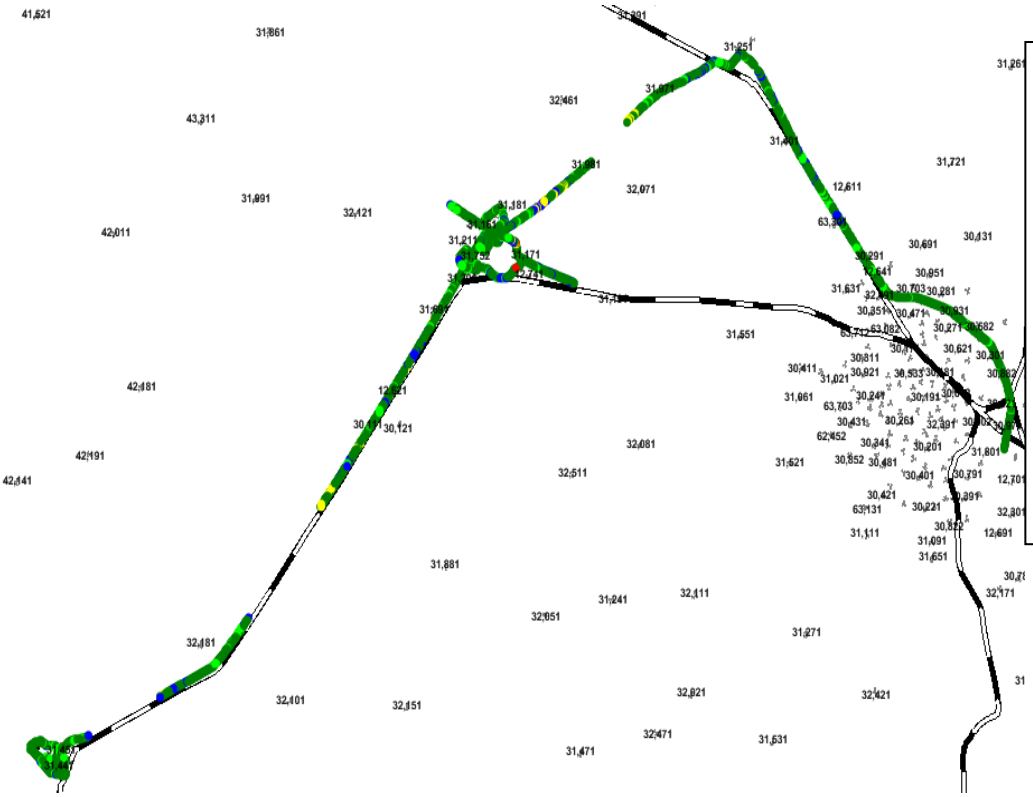
Route Covered- Day 2

Hargobind ngr, vermani park, income tax office, subhash nagar, BSNL exch, DC office,

Bus stnd, Hoshiarpur bypass, ambedkar chownk, phillaur, police academy phillaur, model town

Jalandhar cantt, phagwara, phillaur, nawanshahr

9.5. ROUTE MAP: JALANDHAR SSA: DAY 3



Route Covered- Day 3

Bus stand , Asr bypass , model town, saink school, Army area, London hotel, mall rd, easy day, science city, gopal palace,

Arya smaj chonk, PO rd, Court complex

Jalandhar - kapurthala - sultanpur lodhi

9.6. DRIVE TEST OUTCOME

	Aircel	Airtel	Idea	BSNL	VIDEOCON	RCOM GSM	RCOM CDMA	Vodafone	Tata CDMA	Tata GSM
Total Calls Attempt (A)	618	598	664	620	615	648	636	629	592	679
Total Calls Blocked (B)	2	0	2	0	13	5	5	0	0	10
Blocked Call Rate in % (B*100/A)	0.32%	0.00%	0.30%	0.00%	2.11%	0.77%	0.79%	0.00%	0.00%	1.47%
Total Calls Established ('C)	608	598	660	612	600	643	631	622	592	669
Total Calls Drop (D)	4	0	0	4	2	1	0	1	0	0
Dropped Calls Rate in % (D*100/C)	0.66%	0.00%	0.00%	0.65%	0.33%	0.16%	0.00%	0.32%	0.00%	0.00%
Call Setup Success Rate in % (C*100/A)	99.38%	100%	99.40%	98.70	97.56%	99.23%	99.21%	100%	100%	98.53%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100%	98.05%	99.65%	98.4%	97.65%	99.32%	100.00%	99.5%	100%	97.88%

9.7. LUDHIANA SSA

Month	Name of SSA covered	Drive Test Schedule
MAY 2016	LUDHIANA	MAY 18, 2016 to MAY 20, 2016

9.8. DISTANCE COVERED: LUDHIANA SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
LUDHIANA SSA	113 km	140 km	135 km

9.9. ROUTE MAP: LUDHIANA SSA: DAY 1

Route Covered- Day 1

Bharat nagar chownk, bus stand , sham nagar, mall road, model town, preet palace, krishna mandir, gol mandi

Pakhowal rd, bhaiwala chownk, PAU, BRS ngr, SBS ngr, Kochar mkt, feroz gandhi mkt

Ludhiana-dhandra-alamgir-gill-ladowal

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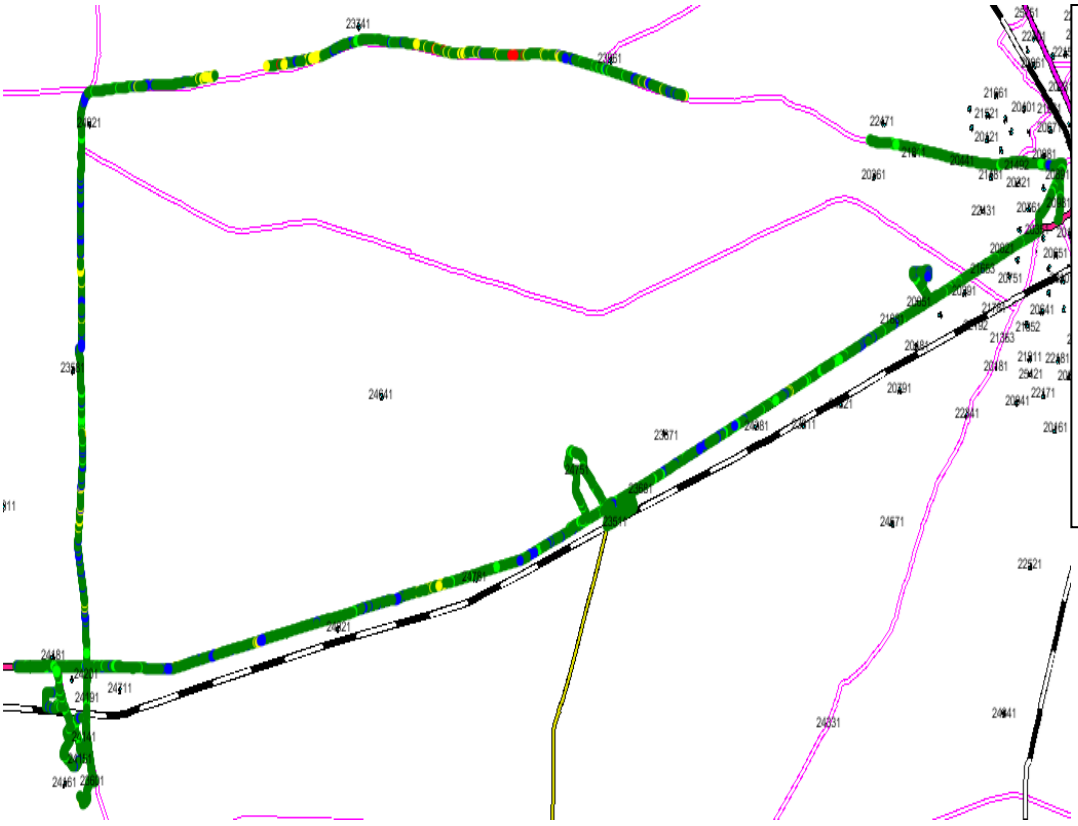
9.10. ROUTE MAP: LUDHIANA SSA: DAY 2



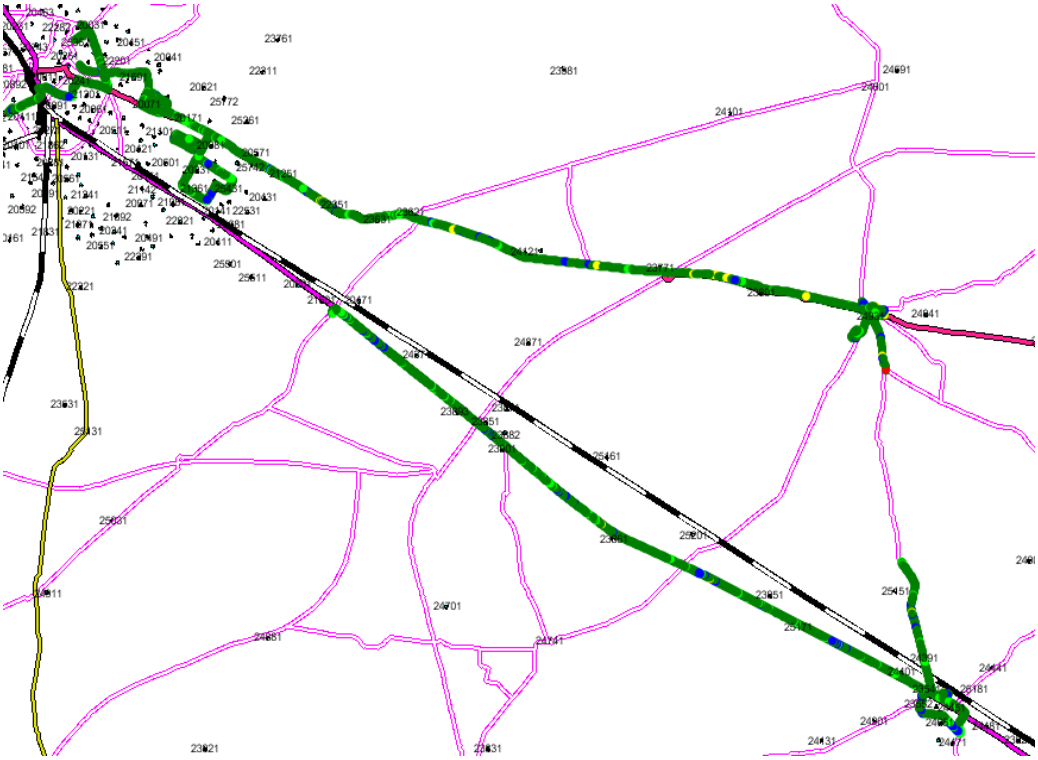
Route Covered- Day 2

Fountain chownk, ghumar mandi, aarti chownk, grand walk, professor colony, agar nagar, raikot rd, kamal chownk,BSNL exchng,

Mullanpur, grain mkt, mullanpur village, jagraon-sidhwa bet, humbra, DMC-Pavllion mall, mall rd

Ludhiana-mullanpur

9.11. Route Map: LUDHIANA SSA: Day 3



Route Covered- Day 3

Metro rd, jmalapur, focal pt, machiwara rd, grain market,

Lakkar bazar,machpura bazar, CMC, 3no division, sundar nagar, sect 32, khanna rly stn, prem dhaba, cheema chownk, bus stand

LUDHIANA-SAMRALA-UTALA-KHANNA-DORAHA-SAHNEWAL

9.12. Drive Test Outcome

	Aircel	Airtel	Idea	BSNL	VIDEOCON	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
Total Calls Attempt (A)	675	698	721	707	596	685	676	573	664
Total Calls Blocked (B)	2	1	2	8	0	3	11	0	1
Blocked Call Rate in % (B*100/A)	0.30%	0.14%	0.28%	1.13%	0.00%	0.44%	1.63%	0.00%	0.15%
Total Calls Established ('C)	672	697	716	692	596	682	665	573	663
Total Calls Drop (D)	3	1	0	7	0	4	8	2	0
Dropped Calls Rate in % (D*100/C)	0.45%	0.14%	0.00%	1.01%	0.00%	0.59%	1.20%	0.35%	0.00%
Call Setup Success Rate in % (C*100/A)	99.56%	99.86%	99.31%	97.88%	100%	99.56%	98.37%	100.00%	99.85%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.20%	99.83%	99.05%	97.3%	96.81%	99.42%	96.67%	100.00%	99.8%

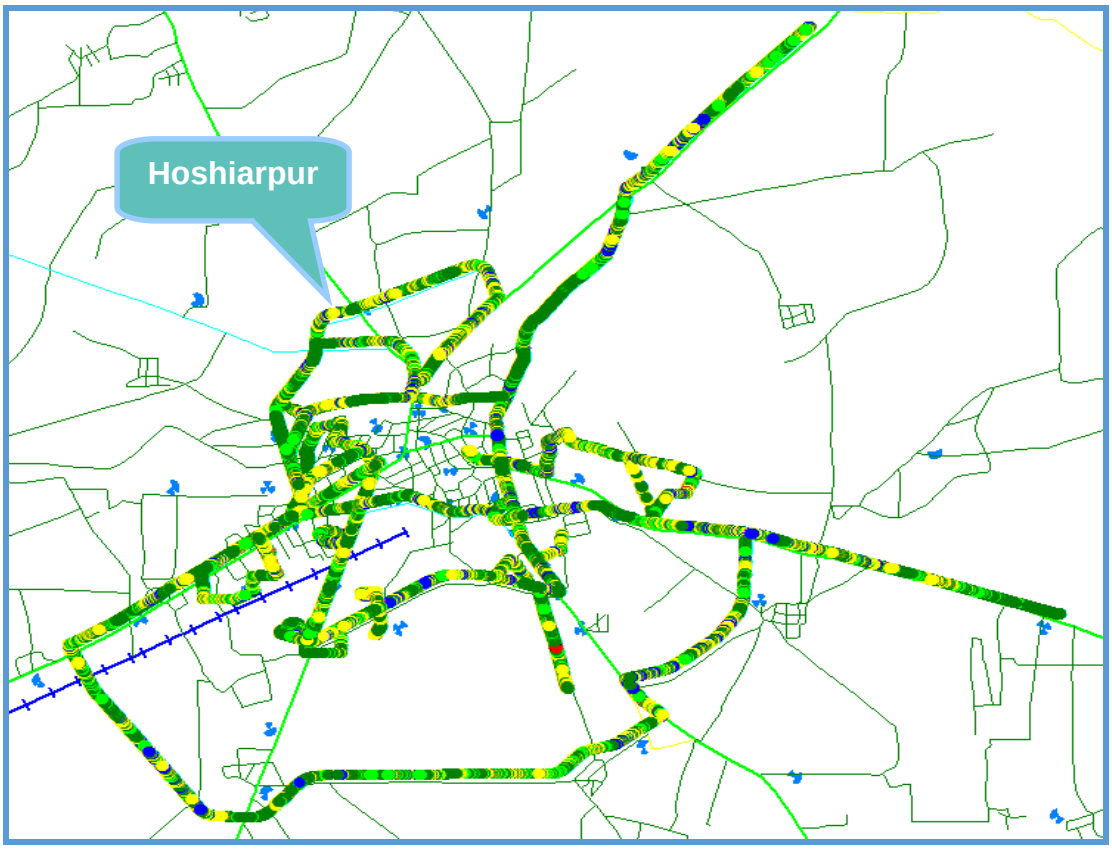
9.13. HOSHIARPUR SSA

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

9.14. DISTANCE COVERED: HOSHIARPUR SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
HOSHIARPUR SSA	107 km	123 km	109 km

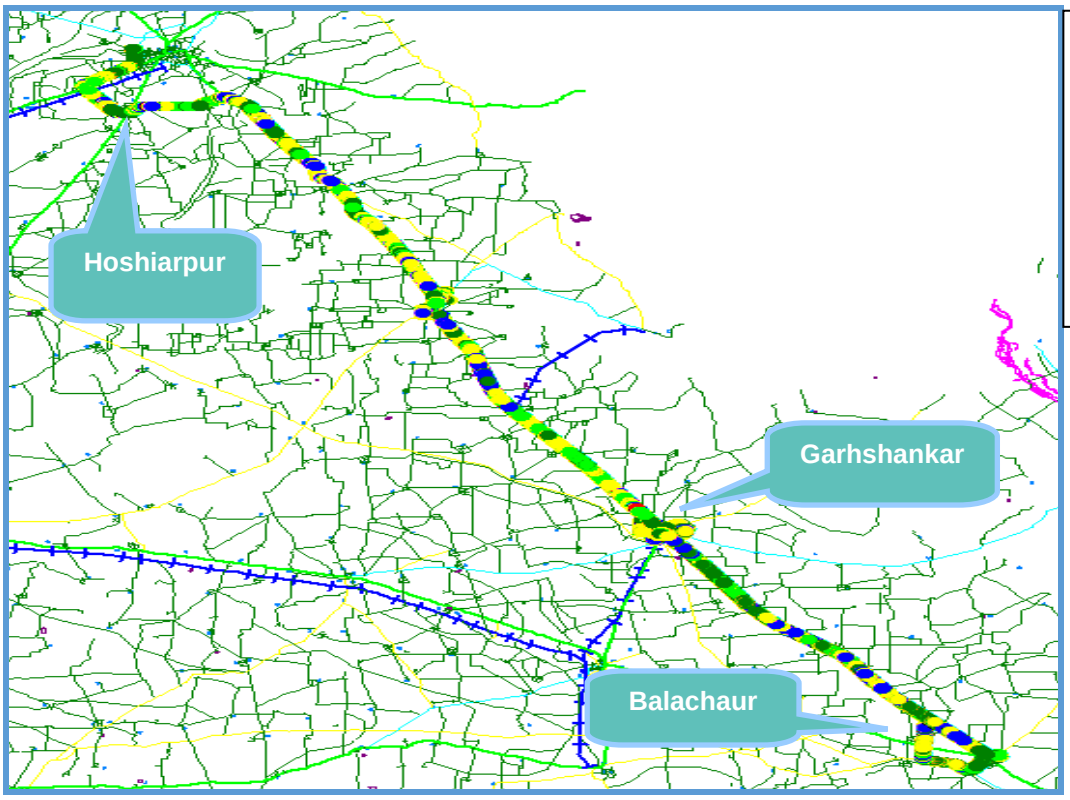
9.15. ROUTE MAP: HOSHIARPUR SSA: DAY 1



SSA- Route Covered- Day1

1 Hoshiarpur

9.16. ROUTE MAP: HOSHIARPUR SSA: DAY 2



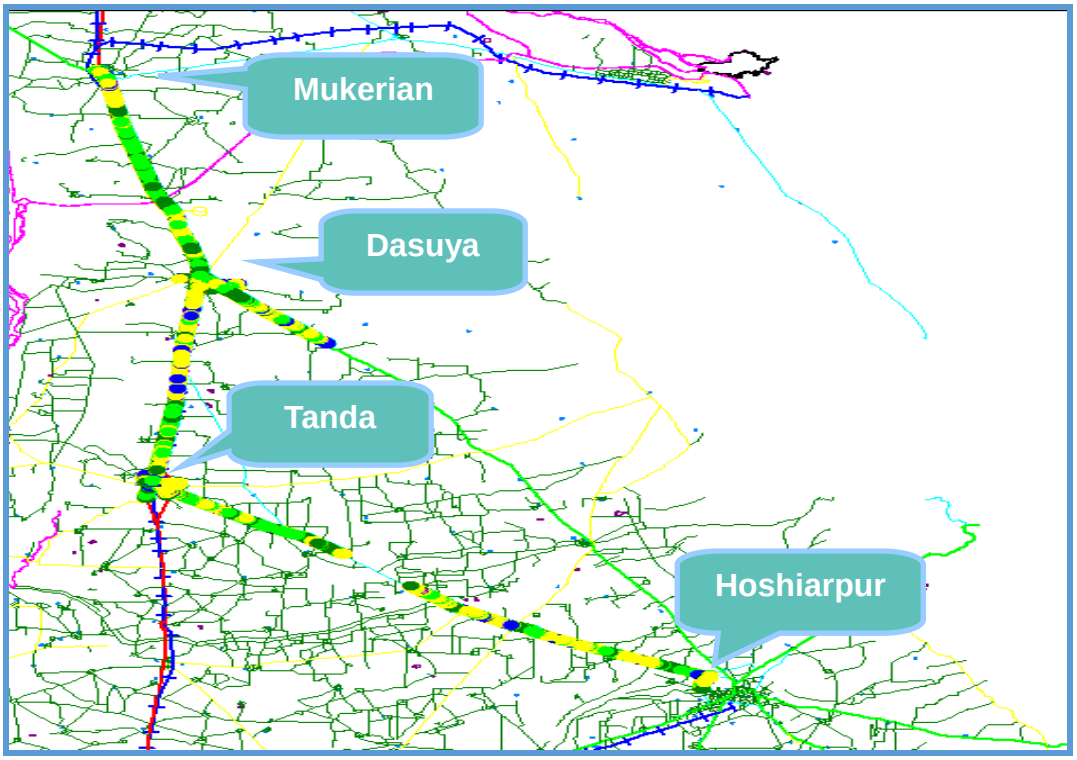
SSA- Route Covered- Day2

1 Hoshiarpur

2 Garhshankar

3 Balachaur

9.17. Route Map: HOSHIARPUR SSA: Day 3



9.18. Drive Test Outcome

	Aircel	Airtel	Idea	BSNL	VIDEOCON	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
Total Calls Attempt (A)	598	658	671	743	542	595	648	493	654
Total Calls Blocked (B)	3	0	1	18	0	2	1	0	1
Blocked Call Rate in % (B*100/A)	0.50%	0.00%	0.15%	2.42%	0.00%	0.34%	0.15%	0.00%	0.15%
Total Calls Established ('C)	595	658	670	722	542	593	647	493	648
Total Calls Drop (D)	0	0	0	5	0	2	4	0	0
Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	0.00%	0.69%	0.00%	0.34%	0.62%	0.00%	0.00%
Call Setup Success Rate in % (C*100/A)	99.50%	100%	99.85%	97.17%	100%	99.66%	99.85%	100.00%	99.10%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.6%	99.07%	99.39%	98.29%	98.16%	99.83%	98.81%	100.00%	99.73%

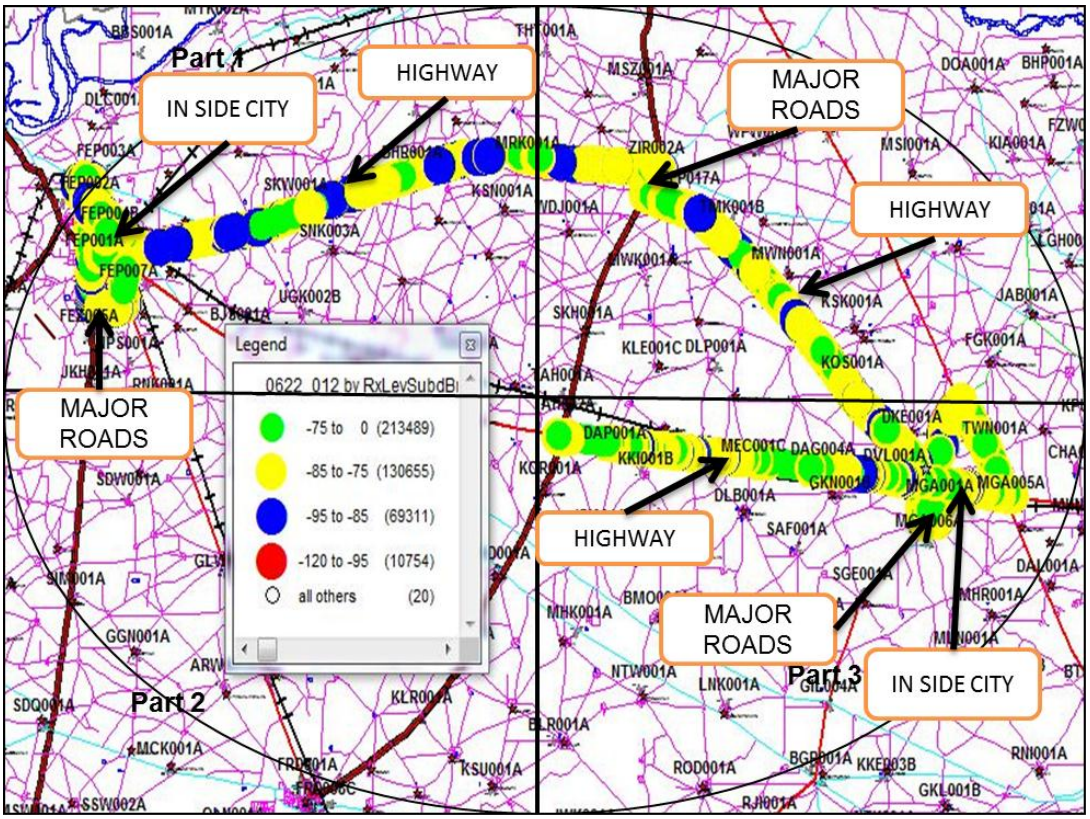
9.19. FEROZPUR SSA

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

9.20. DISTANCE COVERED: FEROZPUR SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
FEROZPUR SSA	185 km	220 km	180 km

9.21. ROUTE MAP: FEROZPUR SSA: DAY 1



Route Covered- day 1

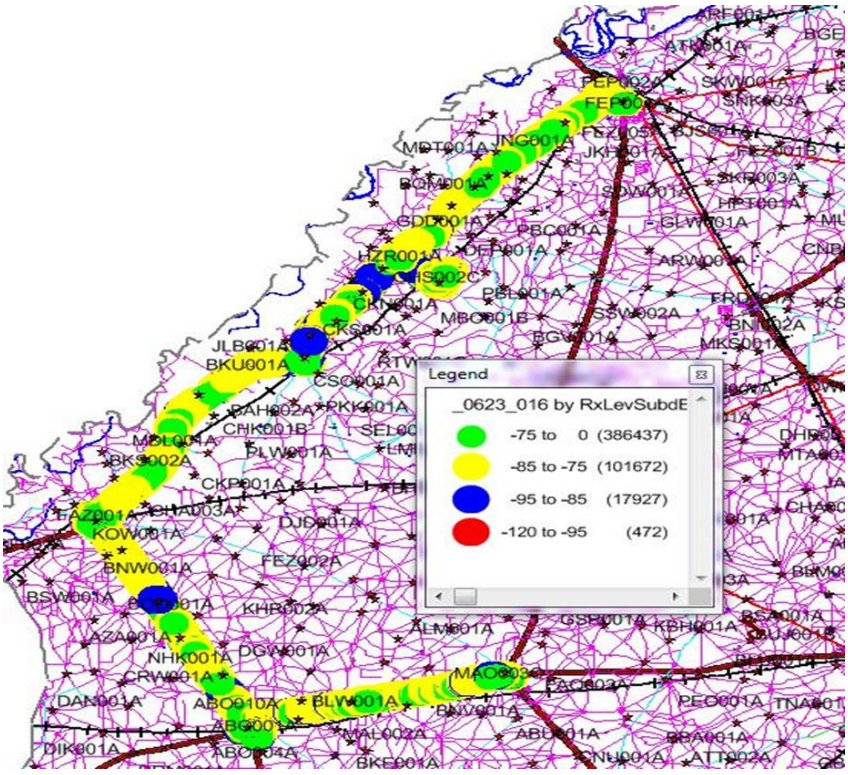
1- FEROZEPUR MAJOR ROADS, INSIDE CITY, INDOOR

2- FEROZEPUR TO ZIRA HIGHWAY

3- ZIRA MAJOR ROADS
4- ZIRA TO MOGA HIGHWAY
5- MOGA INSIDE CITY, MAJOR ROADS

6- MOGA TO TALWANDI BHAI HIGHWAY

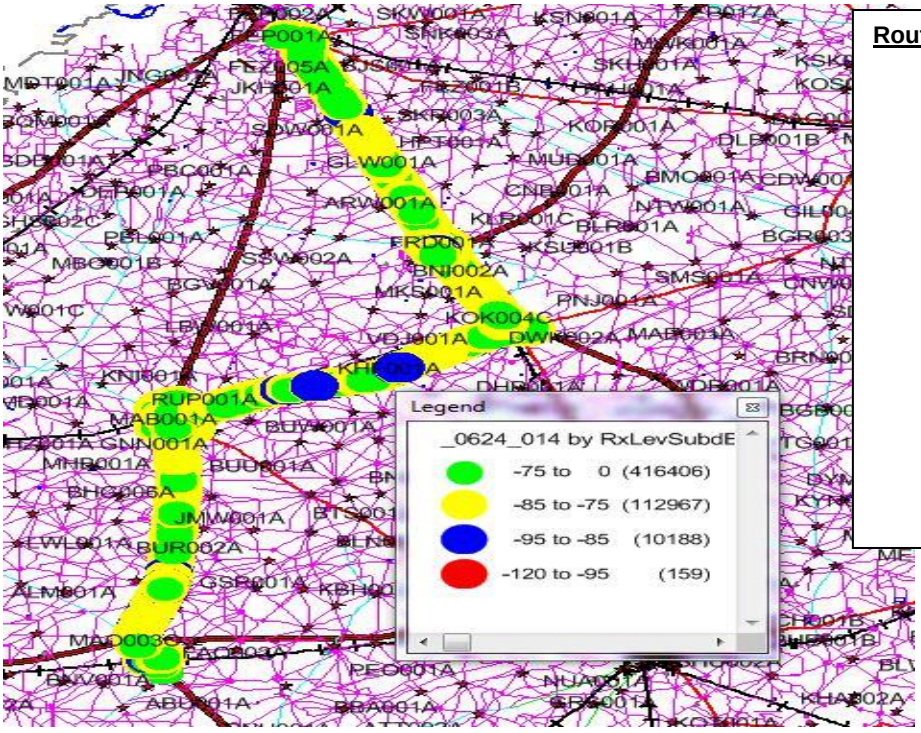
9.22. ROUTE MAP: FEROZPUR SSA: DAY 2



Route Covered- day 2

1. FEROZEPUR TO GURUHARSHAI HIGHWAY
2. GURUHARSAHAI INSIDE CITY
3. GURUHARSAHAI TO JALALABAD HIGHWAY
4. JALALABAD TO FAZILKA HIGHWAY
5. FAZILKA INSIDE CITY, INDOOR AND MAJOR ROADS
6. FAZILKA TO ABOHAR HIGHWAY
7. ABOHAR INSIDE CITY
8. ABOHAR TO MALOUT HIGHWAY

9.23. ROUTE MAP: FEROZPUR SSA: DAY 3



Route Covered- day 3

1. MALOUT INSIDE CITY, MAJOR ROADS
2. MALOUT TO MUKTSAR HIGHWAY
3. MUKTSAR INDOOR, MAJOR ROADS, INSIDE CITY
4. MUKTSAR TO KOTKAPURA HIGHWAY
5. KOTKAPURA MAJOR ROADS
6. KOTKAPURA TO FARIDKOT HIGHWAY
7. FARIDKOT INSIDE CITY
8. FARIDKOT TO FEROZEPUR HIGHWAY

9.24. DRIVE TEST OUTCOME

	Aircel	Airtel	Idea	BSNL	VIDEOCON	RCOM GSM	TTSL GSM	TTSL CDMA	Vodafone
Total Calls Attempt (A)	760	861	909	1044	685	823	726	521	829
Total Calls Blocked (B)	4	1	4	32	6	6	3	0	2
Blocked Call Rate in % (B*100/A)	0.53%	0.12%	0.44%	3.07%	0.88%	0.73%	0.41%	0.00%	0.24%
Total Calls Established ('C)	756	860	904	835	679	817	723	521	817
Total Calls Drop (D)	5	2	0	7	0	11	0	0	1
Dropped Calls Rate in % (D*100/C)	0.66%	0.23%	0.00%	0.84%	0.00%	1.35%	0.00%	0.00%	0.12%
Call Setup Success Rate in % (C*100/A)	99.47%	99.88%	99.45%	79.98%	99.12%	99.27%	99.59%	100.00%	98.55%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	99.73%	98.33%	100.00%	96.28%	97.18%	99.39%	99.78%	100.00%	99.23%

10. 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))**

10.1. ERICSSON

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

Ericsson Counters

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

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

10.2. NSN (NOKIA SIEMENS NETWORK)

S No.	KPI	NSN
1	CSSR= (No of established Calls / No of Attempted Calls)%	CSSR= 100-100*((SDCCH_BUSY_ATT)-(TCH_SEIZ_DUE_SDCCH_CON) + (SDCCH_RADIO_FAIL)+(SDCCH_RF_OLD_HO)+(SDCCH_USER_ACT)+(SDCCH_BCSU_RESET)+(SDCCH_NETW_ACT)+(SDCCH_BTS_FAIL)+(SDCCH_LAPD_FAIL)+ (BLCK_8I_NOM)/ {(CH_REQ_MSG_REC)+(PACKET_CH_REQ)}-{(GHOST_CCCH_RES)-(REJ_SEIZ_ATT_DUE_DIST)}
2	SDCCH congestion= (SDCCH Failure/SDCCH attempts)%	SDCCH congestion = (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)

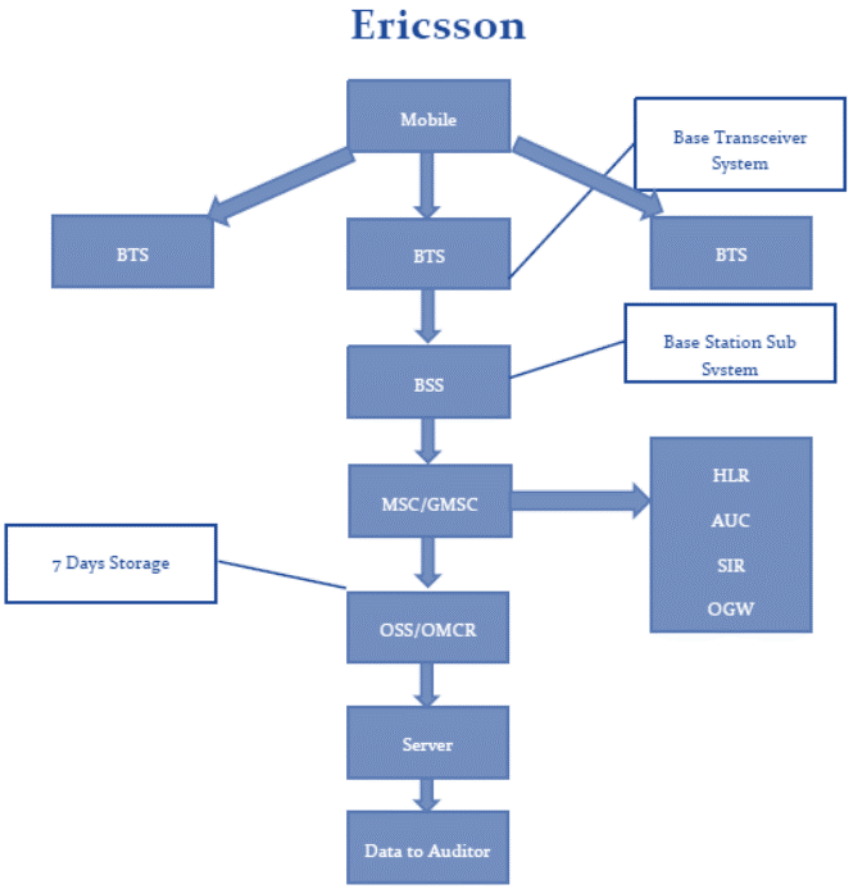
10.3. HUAWEI

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

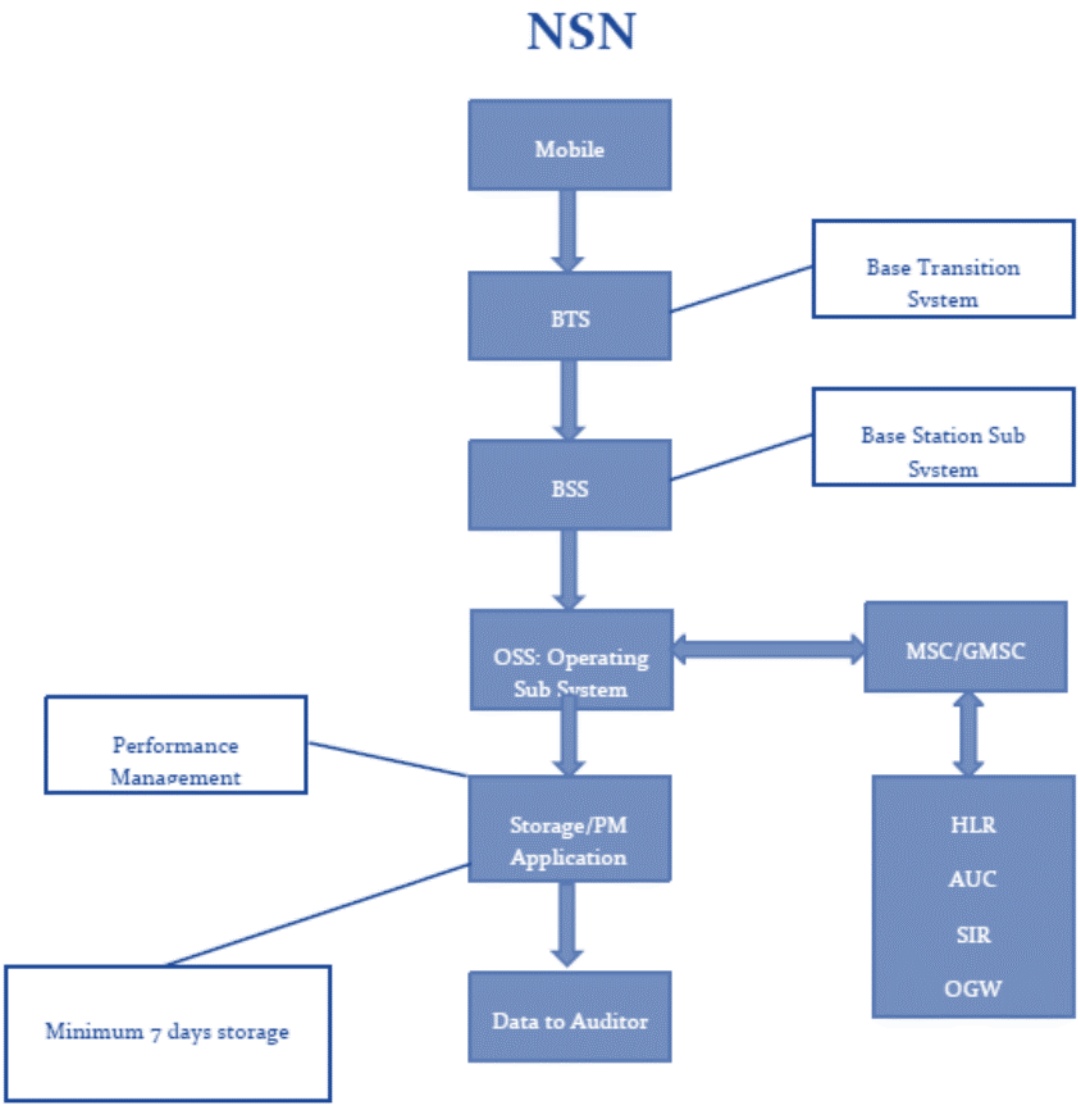
		IS2000[Times])] {[(1157628621 + 1157628628 + 1157628635+ 1157628642)
8	RF BLOCK RATE (DEN)	[((TCH Assignment Requests-CS Orig-IS95[Times] + TCH Assignment Requests-CS Orig-IS2000[Times] + TCH Assignment Requests-CS Term-IS95[Times] + TCH Assignment Requests-CS Term-IS2000[Times]))]} [(1157628621 + 1157628628 + 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[%

11. BLOCK SCHEMATIC DIAGRAM

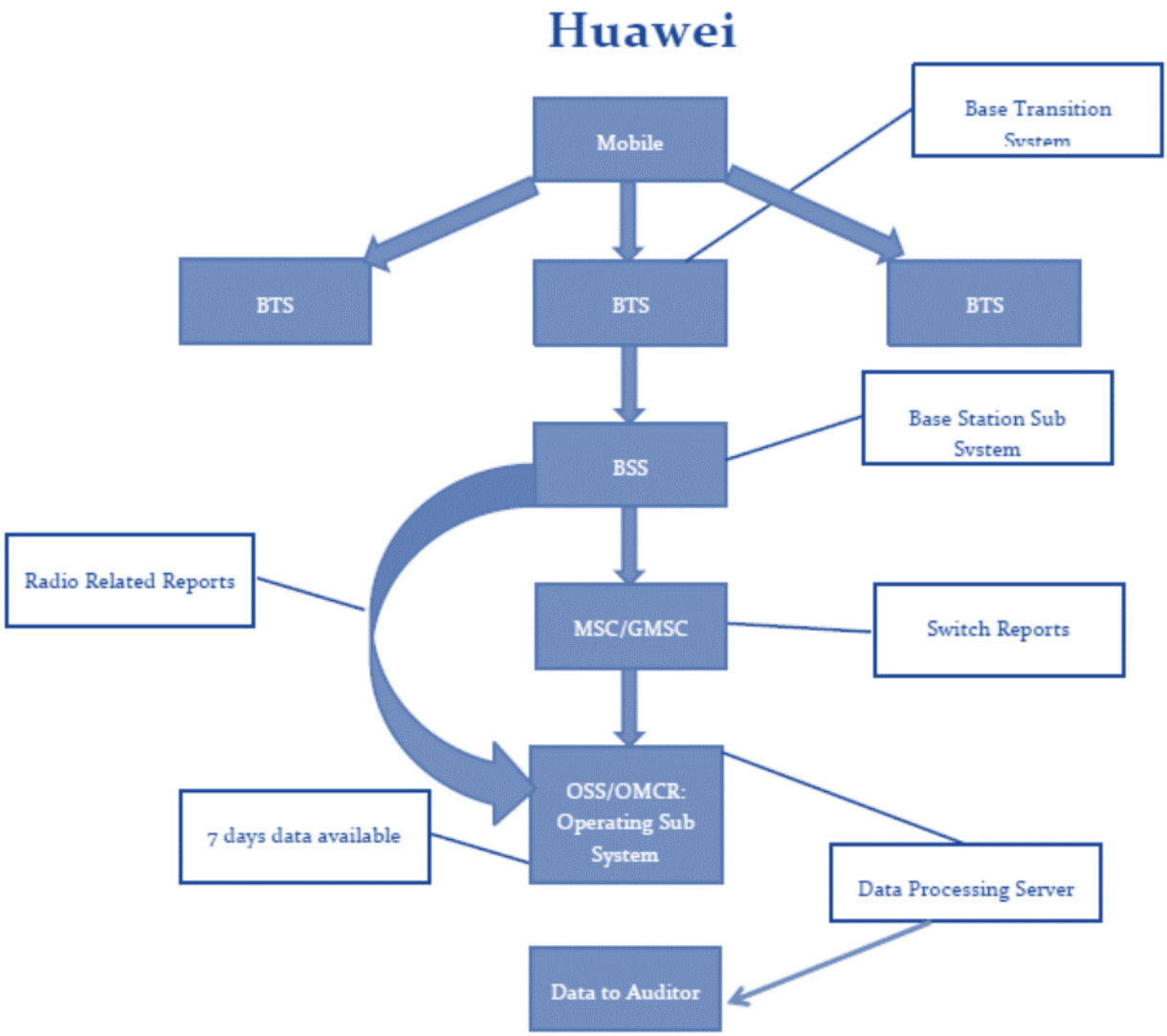
11.1. ERICSSON



11.2. 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

11.3. 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

12. ABBREVIATIONS

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

- TRAI – Telecom Regulatory Authority of India
- QoS – Quality of Service
- PCPL – Phistream Consulting Private Limited
- AMJ'16 – Refers to the quarter of April, May and June2016
- 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

13 ANNEXURE

13.1. 2G VOICE PMR DATA: CONSOLIDATED

Consolidated											
Network Parameters		Name of Service Provider									
		Benchmark	Videocon(QTL)	AIRTEL	VODAFONE	IDEA	AIRCEL	BSNL	RCOM-GSM	TATA-GSM	RCOM-CDMA	TATA-CDMA
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.17%	0.05%	0.02%	0.05%	0.16%	0.61%	0.10%	0.03%	0.08%	0.05%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.48%	0.02%	0.02%	0.02%	0.31%	1.94%	0.76%	0.02%	0.75%	0.00%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	98.23%	99.28%	99.83%	98.56%	97.99%	97.12%	98.98%	98.62%	98.08%	98.57%
	SDDCH/Paging chl. Congestion	≤ 1%	0.11%	0.30%	0.03%	0.07%	0.12%	0.54%	0.05%	0.11%	0.00%	0.00%
	TCH Congestion	≤ 2%	0.21%	0.19%	0.17%	0.22%	0.16%	0.97%	0.10%	0.16%	0.76%	0.09%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.79%	0.69%	0.55%	0.51%	0.73%	0.24%	0.06%	0.56%	0.06%	0.29%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	0.54%	0.94%	2.83%	1.28%	2.65%	1.23%	0.34%	3.06%	0.40%	3.24%
	%age of connection with good voice quality	≥ 95%	96.72%	98.33%	97.96%	97.75%	97.04%	96.32%	99.16%	97.24%	98.22%	99.05%

- TTSL GSM has a parameter value of 3.06% and failed to meet the benchmark of ≤ 3% connection maintenance worst affected cell with TCH drop.
- TTSL CDMA has a parameter value of 3.24% and failed to meet the benchmark of ≤ 3% connection maintenance worst affected cell with TCH drop

13.2. 3G Voice PMR: Consolidated

Consolidated							
Network Parameters		Name of Service Provider					
		Benchmark	IDEA	AIRCEL	BSNL	RCOM-GSM	TATA-GSM
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.02%	0.27%	0.44%	0.36%	0.04%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.05%	0.69%	1.70%	0.99%	0.07%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.50%	99.11%	99.02%	99.38%	98.14%
	RRC Congestion:	≤ 1%	0.17%	0.49%	0.86%	0.05%	0.54%
	RAB Congestion:	≤ 2%	0.12%	0.07%	0.29%	0.06%	0.95%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.68%	0.47%	0.36%	0.20%	0.18%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	2.06%	5.98%	0.70%	1.85%	0.57%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	99.34%	99.08%	97.71%	99.57%	99.12%

- AIRCEL has a parameter value of 5.98% and failed to meet the benchmark of ≤ 3% connection maintenance worst affected cell with Circuit switched voice.

13.3. Billing and Customer Care

Name of Service Provider	Metering and Billing credibility		Billing Complaints			Termination & Closures	Time taken for refund of deposits after closures: Benchmark	Response time to customer for assistance	
	Postpaid Subscribers	Prepaid Subscribers	%age complaints resolved within 4 weeks	%age complaints resolved within 6 weeks	%age of where credit/waiver is received within one week	% of Termination/ Closure of service within 7 days (100 %)	Cleared over a period of <60 days (100%)	%age of calls answered by the IVR	%age of call answered by the operators (voice to voice) within 90 seconds
Benchmark	≤ 0.1%	≤ 0.1%	≥ 98%	= 100%	= 100%	= 100%	= 100%	≥ 95%	≥ 95%
AIRCEL	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	97.92%	97.08%
AIRTEL	0.02%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	93.63%
BSNL	0.04%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	96.25%
IDEA	0.07%	0.04%	100.00%	100.00%	100.00%	100.00%	100.00%	99.88%	99.24%
QTL (VIDEOCON)	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	96.64%
RCOM-CDMA	0.09%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	97.42%	96.89%
RCOM-GSM	0.09%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	99.43%	94.51%
TTSL-CDMA	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.81%	99.18%
TTSL-GSM	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.63%	94.88%
VODAFONE	0.17%	0.06%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.99%

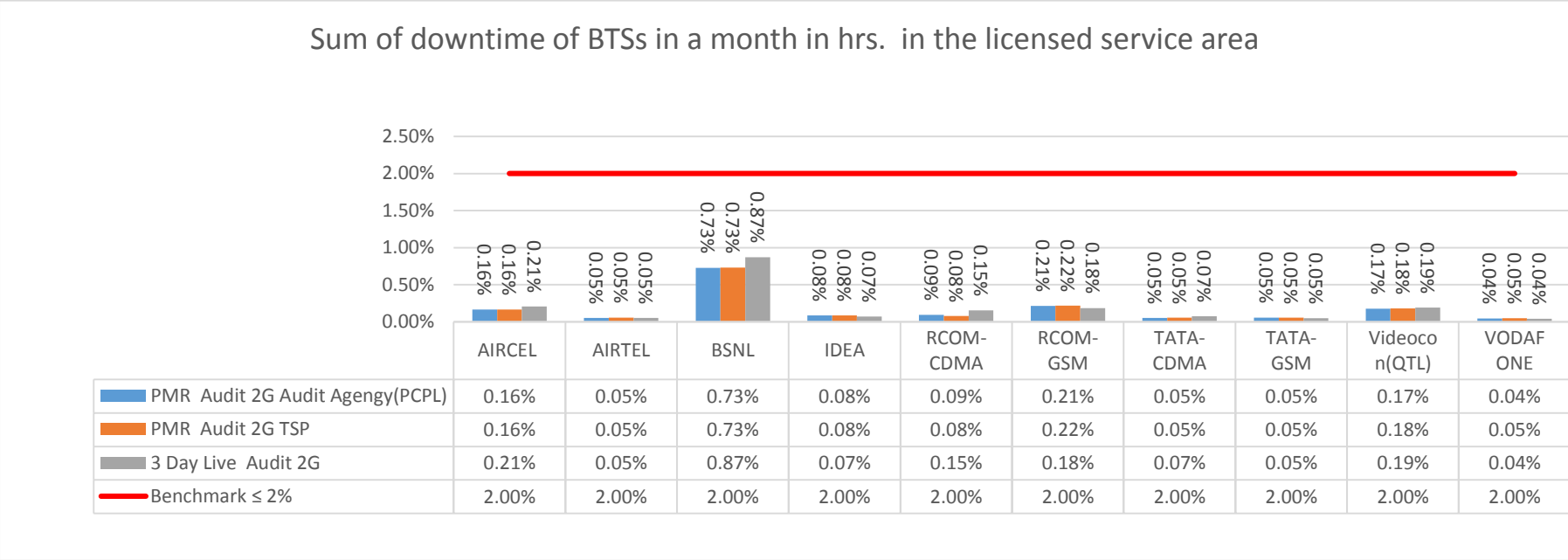
- AIRTEL has a parameter value of 93.63% and failed to meet the benchmark of ≥95% for Response time to customer for assistance %age of call answered by the operators (voice to voice) within 90 seconds.
- RCOM GSM has a parameter value of 94.51% and failed to meet the benchmark of ≥95% for Response time to customer for assistance %age of call answered by the operators (voice to voice) within 90 seconds.
- TTSL GSM has a parameter value of 94.88% and failed to meet the benchmark of ≥95% for Response time to customer for assistance %age of call answered by the operators (voice to voice) within 90 seconds.
- VODAFONE has a parameter value of 0.17% and failed to meet the benchmark of≤0.1% metering and billing creditibility for postpaid subscribers.

Name of Service Provider	Customer Care & Grievances Redressal	
	% of Complaints addressed at call center level	% of Complaints addressed by Appellate Authority
AIRCEL	100.00%	NIL
AIRTEL	100.00%	100.00%
BSNL	98.73%	100.00%
IDEA	24.11%	100.00%
QTL (VIDEOCON)	100.00%	NIL
RCOM-CDMA	100.00%	100.00%
RCOM-GSM	100.00%	100.00%
TTSL-CDMA	99.43%	77.78%
TTSL-GSM	98.52%	96.11%
VODAFONE	11.28%	NIL

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

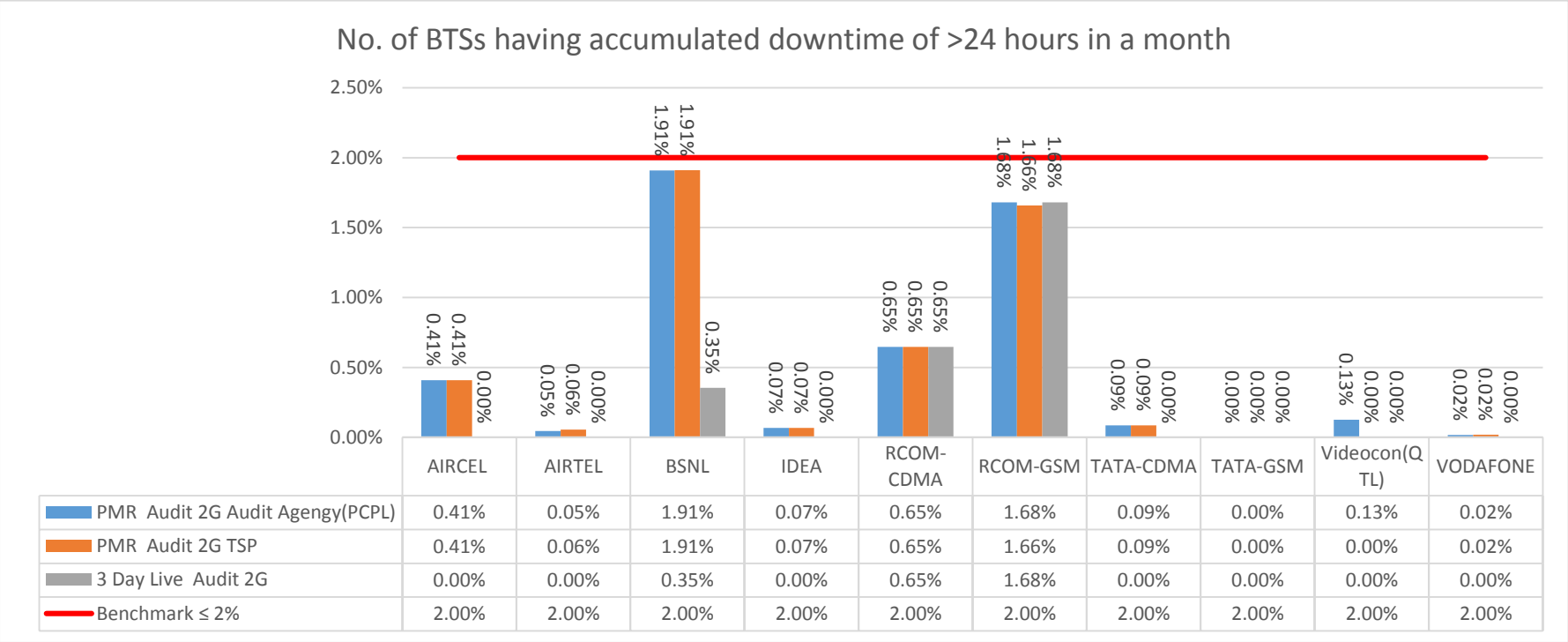
PMR Report Comparison between Audit Agency and TSP												
Network Parameters		Name of Service Provider										
		Benchmark		AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon (QTL)	VODAFONE
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	Agency	0.16%	0.05%	0.73%	0.08%	0.09%	0.21%	0.05%	0.05%	0.17%	0.04%
			TSP	0.16%	0.05%	0.73%	0.08%	0.08%	0.22%	0.05%	0.05%	0.18%	0.05%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	Agency	0.41%	0.05%	1.91%	0.07%	0.65%	1.68%	0.09%	0.00%	0.13%	0.02%
			TSP	0.41%	0.06%	1.91%	0.07%	0.65%	1.66%	0.09%	0.00%	0.00%	0.02%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	Agency	97.95%	99.41%	97.35%	98.80%	98.30%	98.68%	98.71%	98.66%	98.14%	99.82%
			TSP	97.95%	99.34%	97.35%	98.80%	97.74%	98.76%	98.71%	98.66%	98.14%	99.83%
	SDDCH/Paging chl. Congestion	≤ 1%	Agency	0.16%	0.16%	0.61%	0.14%	0.00%	0.17%	0.00%	0.05%	0.09%	0.06%
			TSP	0.16%	0.18%	0.61%	0.14%	0.00%	0.16%	0.00%	0.05%	0.09%	0.05%
	TCH Congestion	≤ 2%	Agency	0.33%	0.10%	0.94%	0.20%	0.12%	0.09%	0.04%	0.19%	0.30%	0.18%
			TSP	0.33%	0.11%	0.94%	0.20%	0.66%	0.08%	0.04%	0.19%	0.30%	0.17%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	Agency	0.74%	0.59%	0.31%	0.56%	0.11%	0.09%	0.21%	0.44%	0.77%	0.50%
			TSP	0.74%	0.60%	0.31%	0.56%	0.11%	0.09%	0.21%	0.44%	0.77%	0.51%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	Agency	2.86%	0.86%	0.92%	1.59%	1.43%	0.55%	2.40%	1.91%	0.44%	2.75%
			TSP	2.87%	0.85%	0.93%	1.59%	1.13%	0.56%	2.40%	1.91%	0.44%	2.73%
	%age of connection with good voice quality	≥ 95%	Agency	96.89%	98.67%	96.74%	96.99%	99.40%	99.44%	99.00%	97.22%	96.45%	98.12%
			TSP	96.89%	98.63%	96.74%	96.99%	99.51%	99.44%	99.00%	97.22%	96.45%	98.12%

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



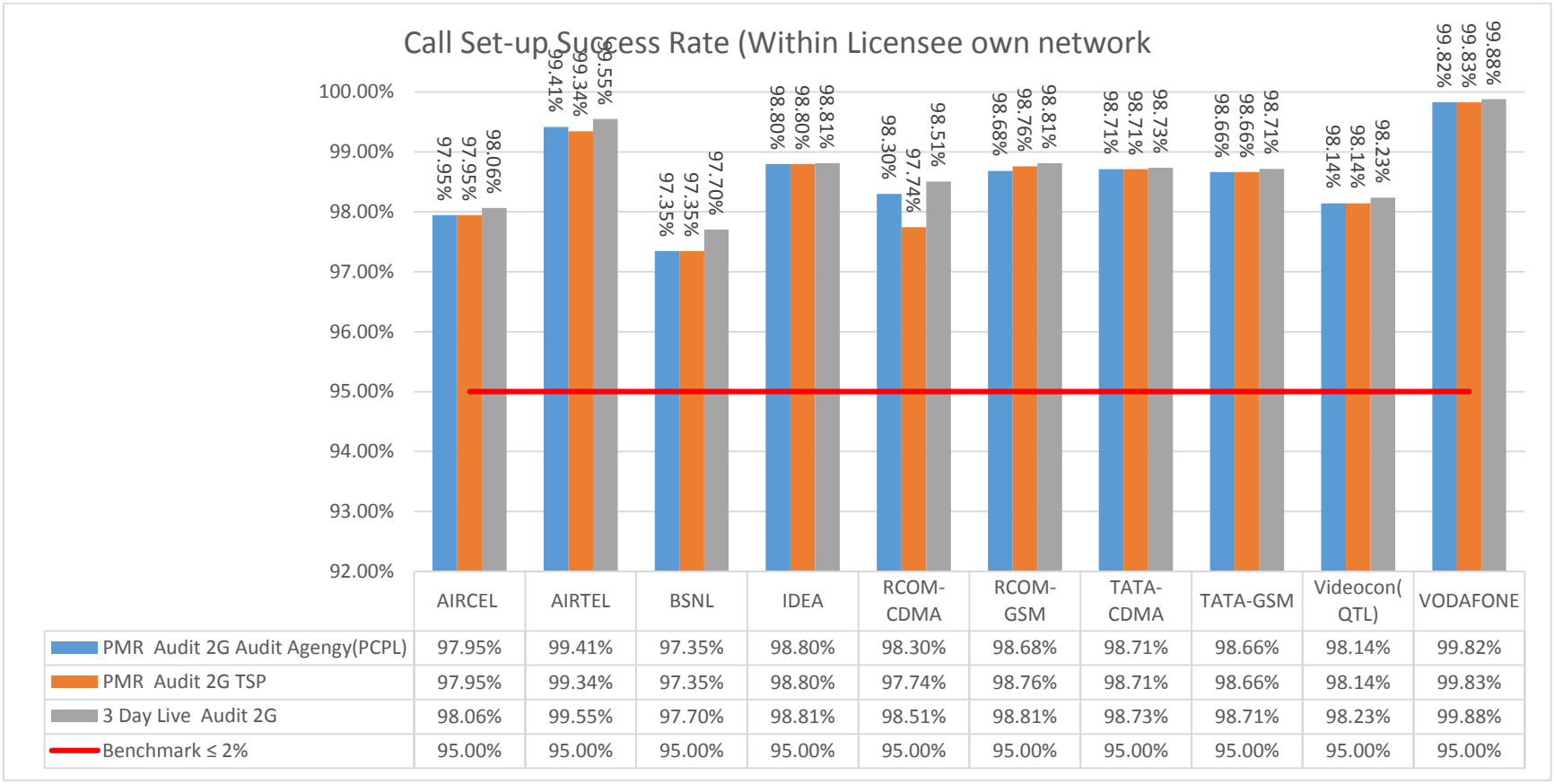
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
PMR Audit 2G Audit Agengy(PCPL)	0.16%	0.05%	0.73%	0.08%	0.09%	0.21%	0.05%	0.05%	0.17%	0.04%
PMR Audit 2G TSP	0.16%	0.05%	0.73%	0.08%	0.08%	0.22%	0.05%	0.05%	0.18%	0.05%
3 Day Live Audit 2G	0.21%	0.05%	0.87%	0.07%	0.15%	0.18%	0.07%	0.05%	0.19%	0.04%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

13.4.2. NO. OF BTSS HAVING ACCUMULATED DOWNTIME OF >24 HOURS IN A MONTH



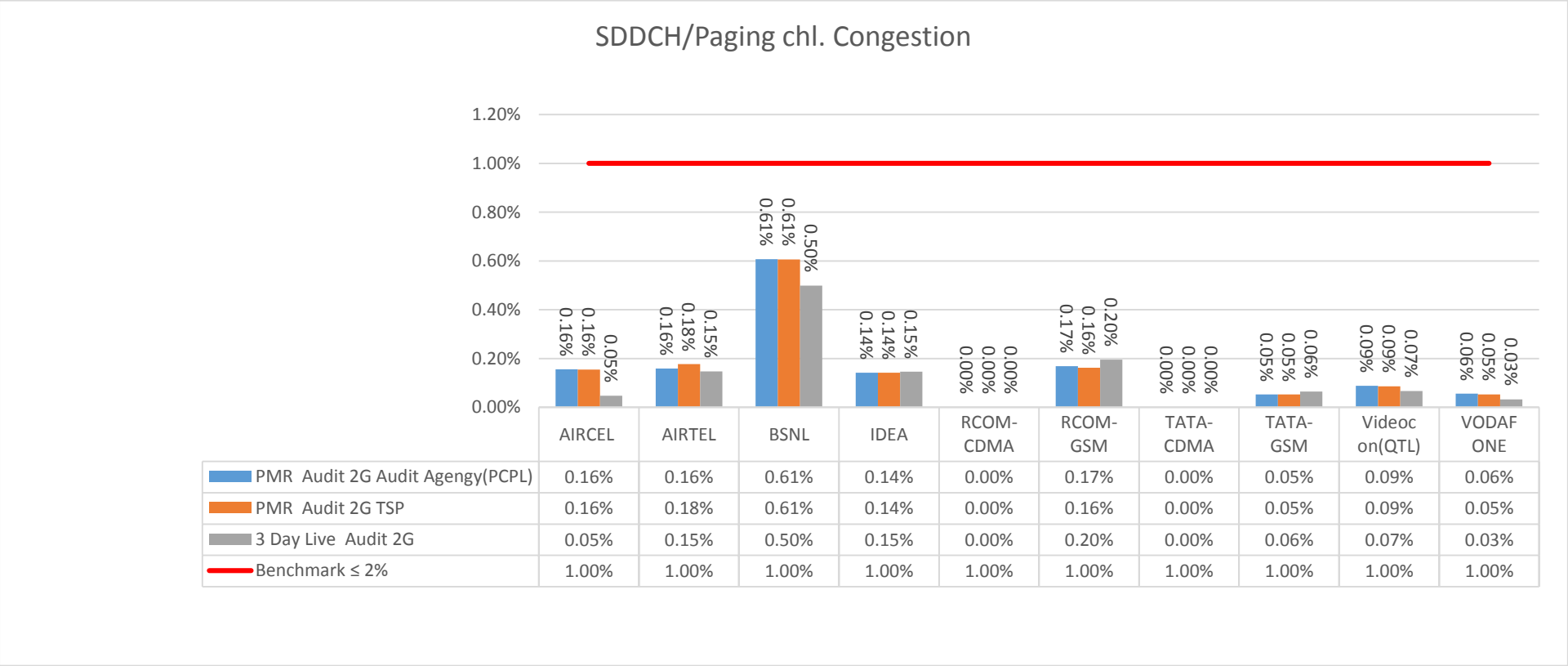
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
PMR Audit 2G Audit Agengy(PCPL)	0.41%	0.05%	1.91%	0.07%	0.65%	1.68%	0.09%	0.00%	0.13%	0.02%
PMR Audit 2G TSP	0.41%	0.06%	1.91%	0.07%	0.65%	1.66%	0.09%	0.00%	0.00%	0.02%
3 Day Live Audit 2G	0.00%	0.00%	0.35%	0.00%	0.65%	1.68%	0.00%	0.00%	0.00%	0.00%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

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



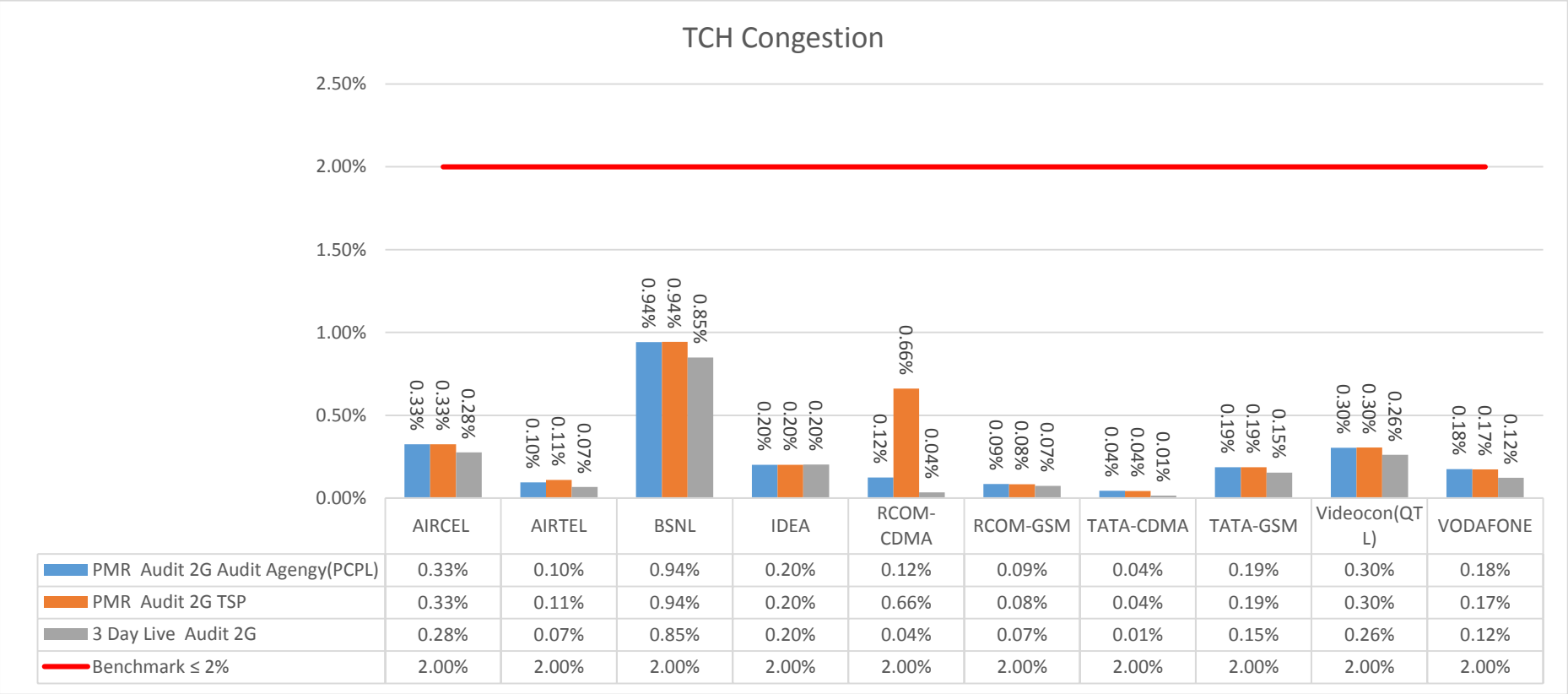
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
PMR Audit 2G Audit Agengy(PCPL)	97.95%	99.41%	97.35%	98.80%	98.30%	98.68%	98.71%	98.66%	98.14%	99.82%
PMR Audit 2G TSP	97.95%	99.34%	97.35%	98.80%	97.74%	98.76%	98.71%	98.66%	98.14%	99.83%
3 Day Live Audit 2G	98.06%	99.55%	97.70%	98.81%	98.51%	98.81%	98.73%	98.71%	98.23%	99.88%
Benchmark ≤ 2%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%

13.4.4. SDDCH/PAGING CHL. CONGESTION



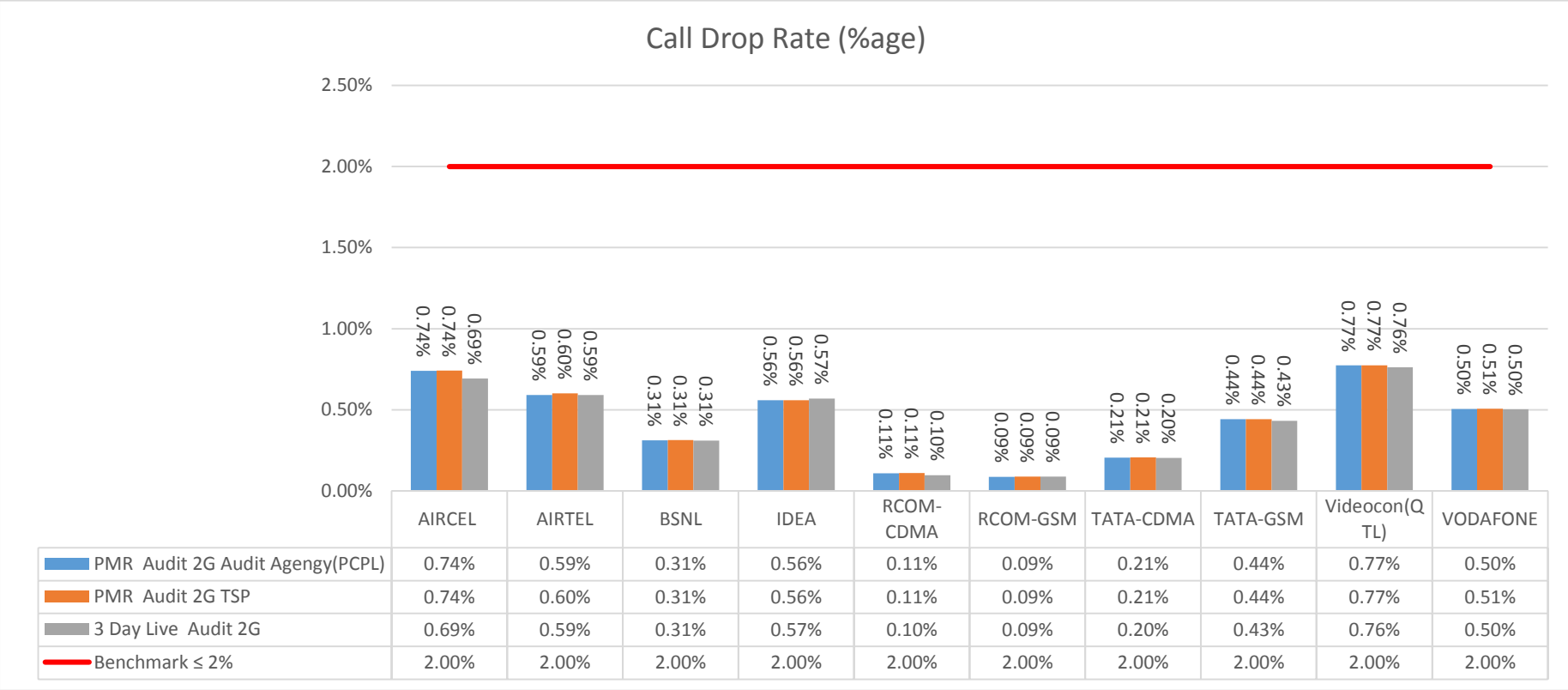
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
PMR Audit 2G Audit Agengy(PCPL)	0.16%	0.16%	0.61%	0.14%	0.00%	0.17%	0.00%	0.05%	0.09%	0.06%
PMR Audit 2G TSP	0.16%	0.18%	0.61%	0.14%	0.00%	0.16%	0.00%	0.05%	0.09%	0.05%
3 Day Live Audit 2G	0.05%	0.15%	0.50%	0.15%	0.00%	0.20%	0.00%	0.06%	0.07%	0.03%
Benchmark ≤ 2%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%

13.4.5. TCH CONGESTION



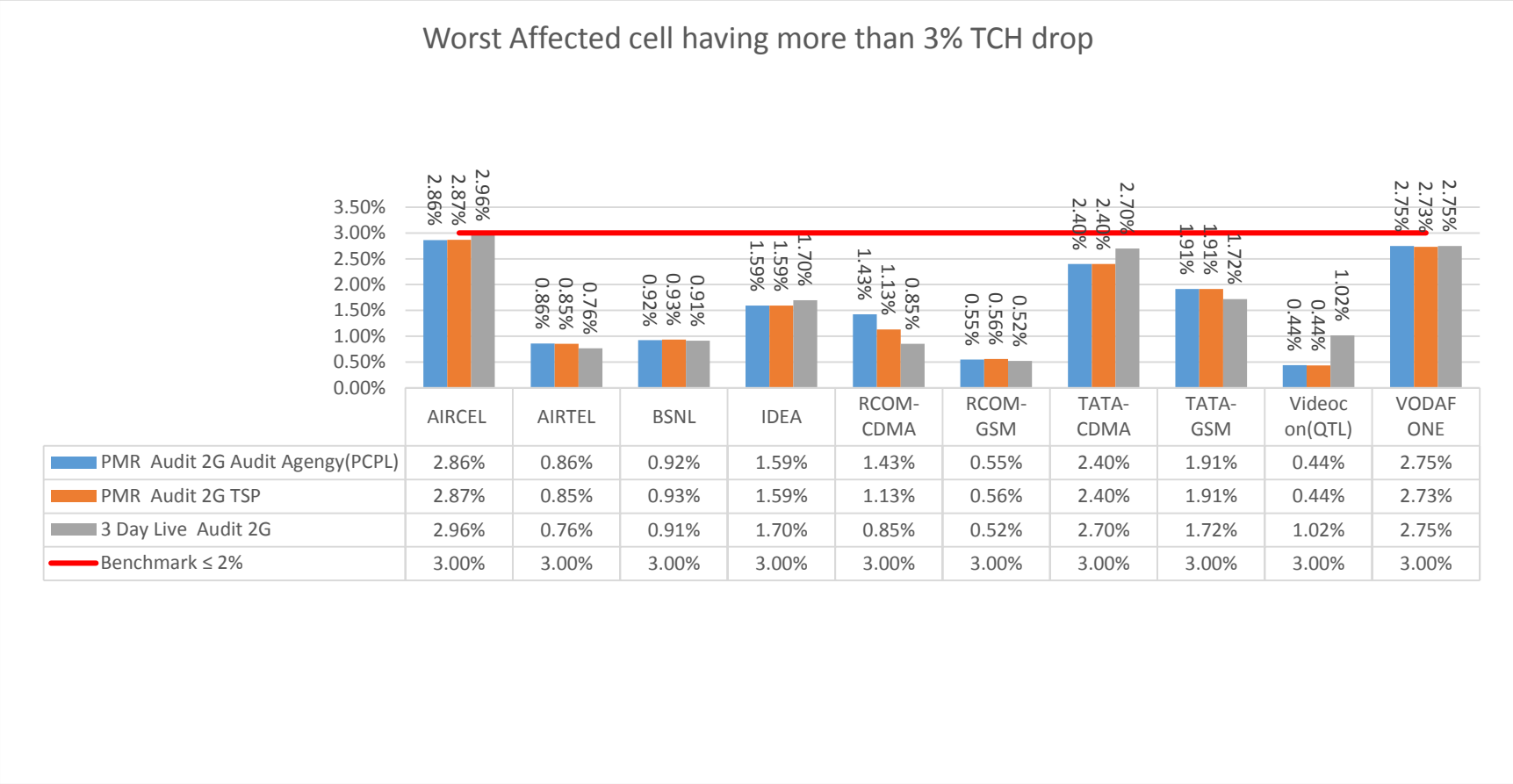
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
PMR Audit 2G Audit Agengy(PCPL)	0.33%	0.10%	0.94%	0.20%	0.12%	0.09%	0.04%	0.19%	0.30%	0.18%
PMR Audit 2G TSP	0.33%	0.11%	0.94%	0.20%	0.66%	0.08%	0.04%	0.19%	0.30%	0.17%
3 Day Live Audit 2G	0.28%	0.07%	0.85%	0.20%	0.04%	0.07%	0.01%	0.15%	0.26%	0.12%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

13.4.6. CALL DROP RATE (%AGE)



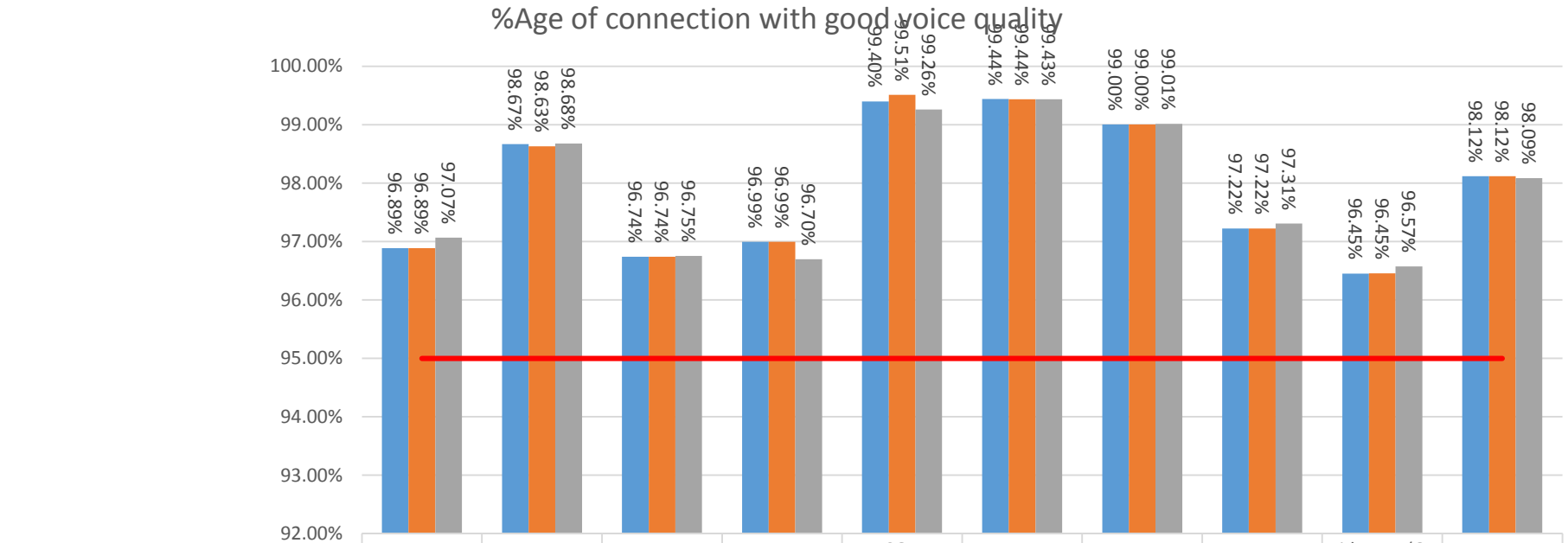
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
PMR Audit 2G Audit Agengy(PCPL)	0.74%	0.59%	0.31%	0.56%	0.11%	0.09%	0.21%	0.44%	0.77%	0.50%
PMR Audit 2G TSP	0.74%	0.60%	0.31%	0.56%	0.11%	0.09%	0.21%	0.44%	0.77%	0.51%
3 Day Live Audit 2G	0.69%	0.59%	0.31%	0.57%	0.10%	0.09%	0.20%	0.43%	0.76%	0.50%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

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



	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
PMR Audit 2G Audit Agengy(PCPL)	2.86%	0.86%	0.92%	1.59%	1.43%	0.55%	2.40%	1.91%	0.44%	2.75%
PMR Audit 2G TSP	2.87%	0.85%	0.93%	1.59%	1.13%	0.56%	2.40%	1.91%	0.44%	2.73%
3 Day Live Audit 2G	2.96%	0.76%	0.91%	1.70%	0.85%	0.52%	2.70%	1.72%	1.02%	2.75%
Benchmark ≤ 2%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%

13.4.8. %AGE OF CONNECTION WITH GOOD VOICE QUALITY

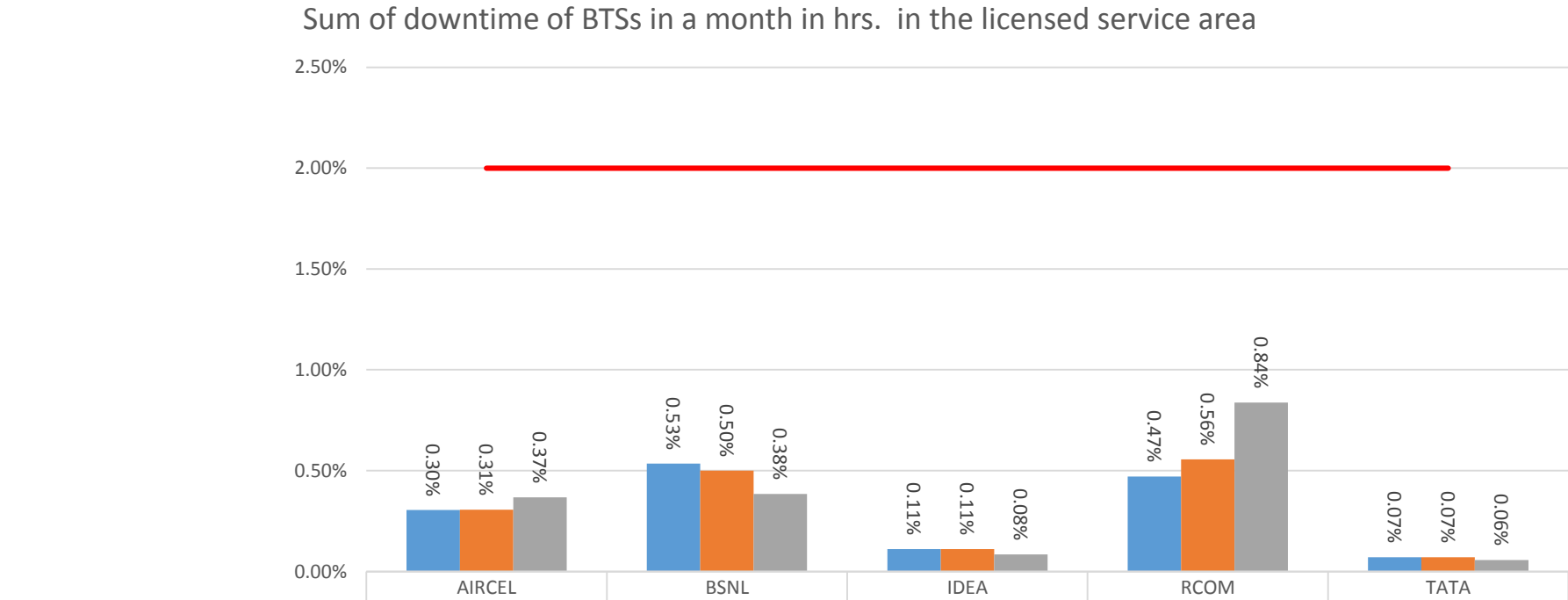


	AIRCEL	AIRTEL	BSNL	IDEA	RCOM-CDMA	RCOM-GSM	TATA-CDMA	TATA-GSM	Videocon(QTL)	VODAFONE
PMR Audit 2G Audit Agengy(PCPL)	96.89%	98.67%	96.74%	96.99%	99.40%	99.44%	99.00%	97.22%	96.45%	98.12%
PMR Audit 2G TSP	96.89%	98.63%	96.74%	96.99%	99.51%	99.44%	99.00%	97.22%	96.45%	98.12%
3 Day Live Audit 2G	97.07%	98.68%	96.75%	96.70%	99.26%	99.43%	99.01%	97.31%	96.57%	98.09%
Benchmark ≤ 2%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%

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

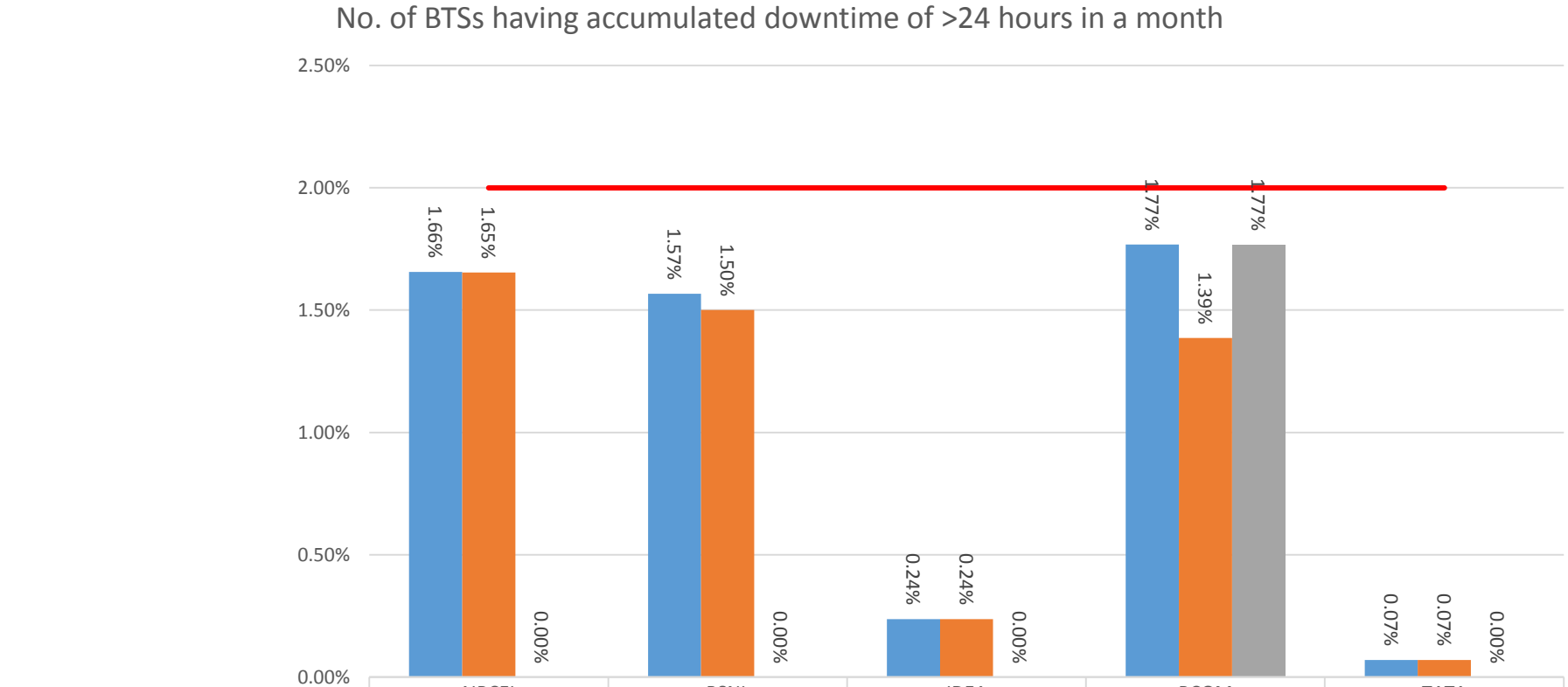
PMR Report Comparison between Audit Agency and TSP								
Network Parameters		Name of Service Provider						
		Benchmark		IDEA	AIRCEL	BSNL	RCOM-GSM	TATA-GSM
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	Agency	0.30%	0.53%	0.11%	0.47%	0.07%
			TSP	0.31%	0.50%	0.11%	0.56%	0.07%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	Agency	1.66%	1.57%	0.24%	1.77%	0.07%
			TSP	1.65%	1.50%	0.24%	1.39%	0.07%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	Agency	99.53%	99.23%	99.72%	99.76%	98.38%
			TSP	99.53%	99.00%	99.72%	99.74%	98.38%
	RRC Congestion:	≤ 1%	Agency	0.29%	0.65%	0.06%	0.04%	0.49%
			TSP	0.29%	0.60%	0.06%	0.07%	0.49%
	RAB Congestion:	≤ 2%	Agency	0.18%	0.26%	0.03%	0.11%	1.14%
			TSP	0.18%	0.20%	0.03%	0.07%	1.14%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	Agency	0.33%	0.41%	0.30%	0.04%	0.12%
			TSP	0.33%	0.37%	0.30%	0.04%	0.12%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	Agency	3.91%	0.71%	2.09%	0.25%	0.60%
			TSP	3.91%	0.67%	2.09%	0.31%	0.60%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	Agency	99.00%	97.82%	99.43%	99.78%	99.13%
			TSP	99.01%	97.80%	99.43%	99.89%	99.13%

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



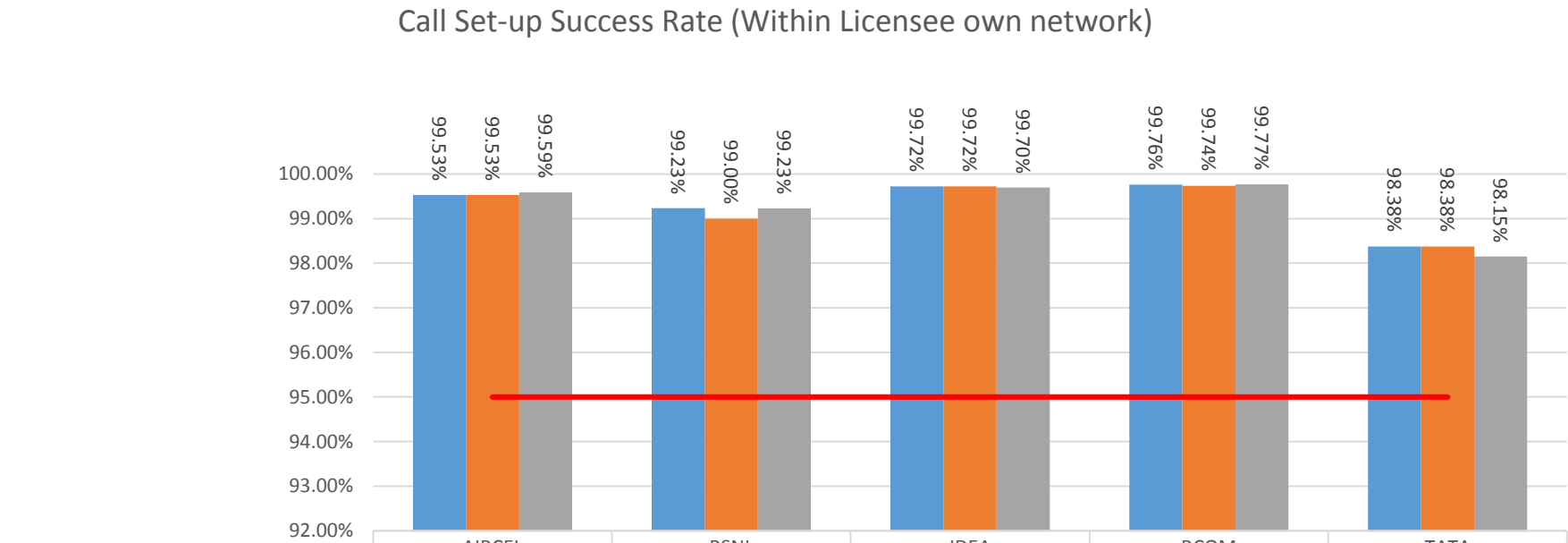
	AIRCEL	BSNL	IDEA	RCOM	TATA
PMR Audit 3G Audit Agency(PCPL)	0.30%	0.53%	0.11%	0.47%	0.07%
PMR Audit 3G TSP	0.31%	0.50%	0.11%	0.56%	0.07%
3 Day Live Audit 3G	0.37%	0.38%	0.08%	0.84%	0.06%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%

13.5.2. NO. OF BTSS HAVING ACCUMULATED DOWNTIME OF >24 HOURS IN A MONTH



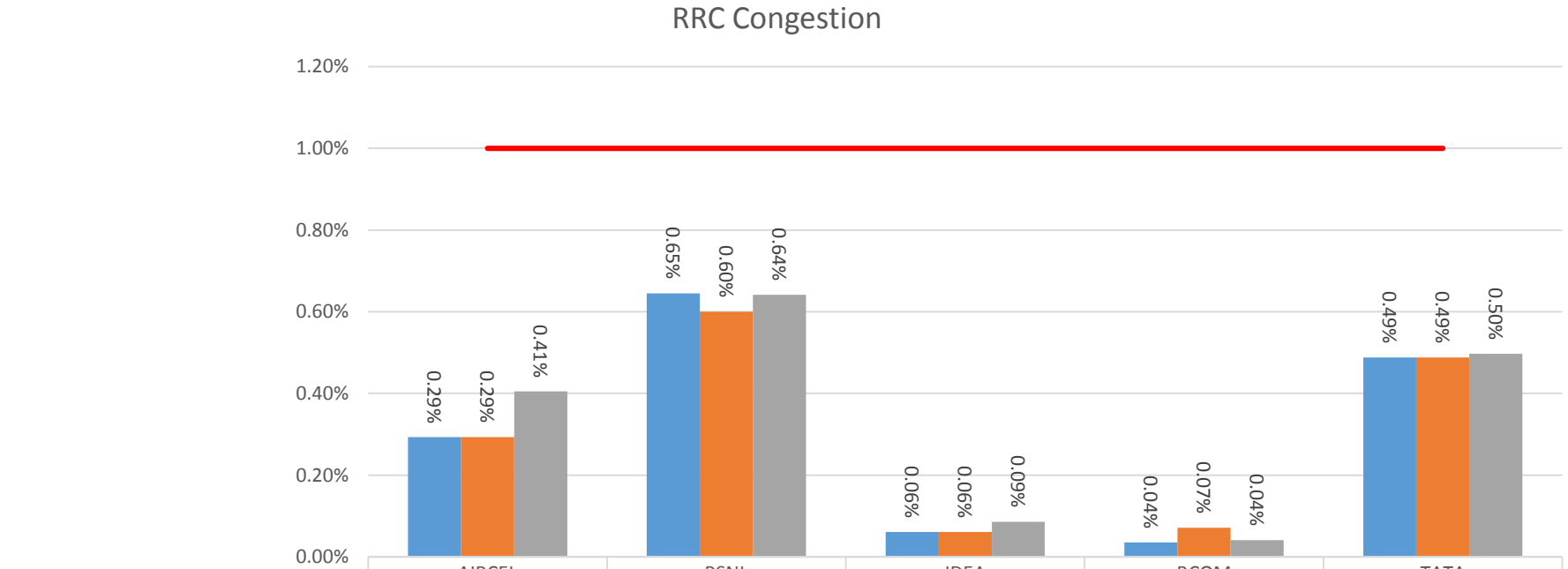
	AIRCEL	BSNL	IDEA	RCOM	TATA
PMR Audit 3G Audit Agency(PCPL)	1.66%	1.57%	0.24%	1.77%	0.07%
PMR Audit 3G TSP	1.65%	1.50%	0.24%	1.39%	0.07%
3 Day Live Audit 3G	0.00%	0.00%	0.00%	1.77%	0.00%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%

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



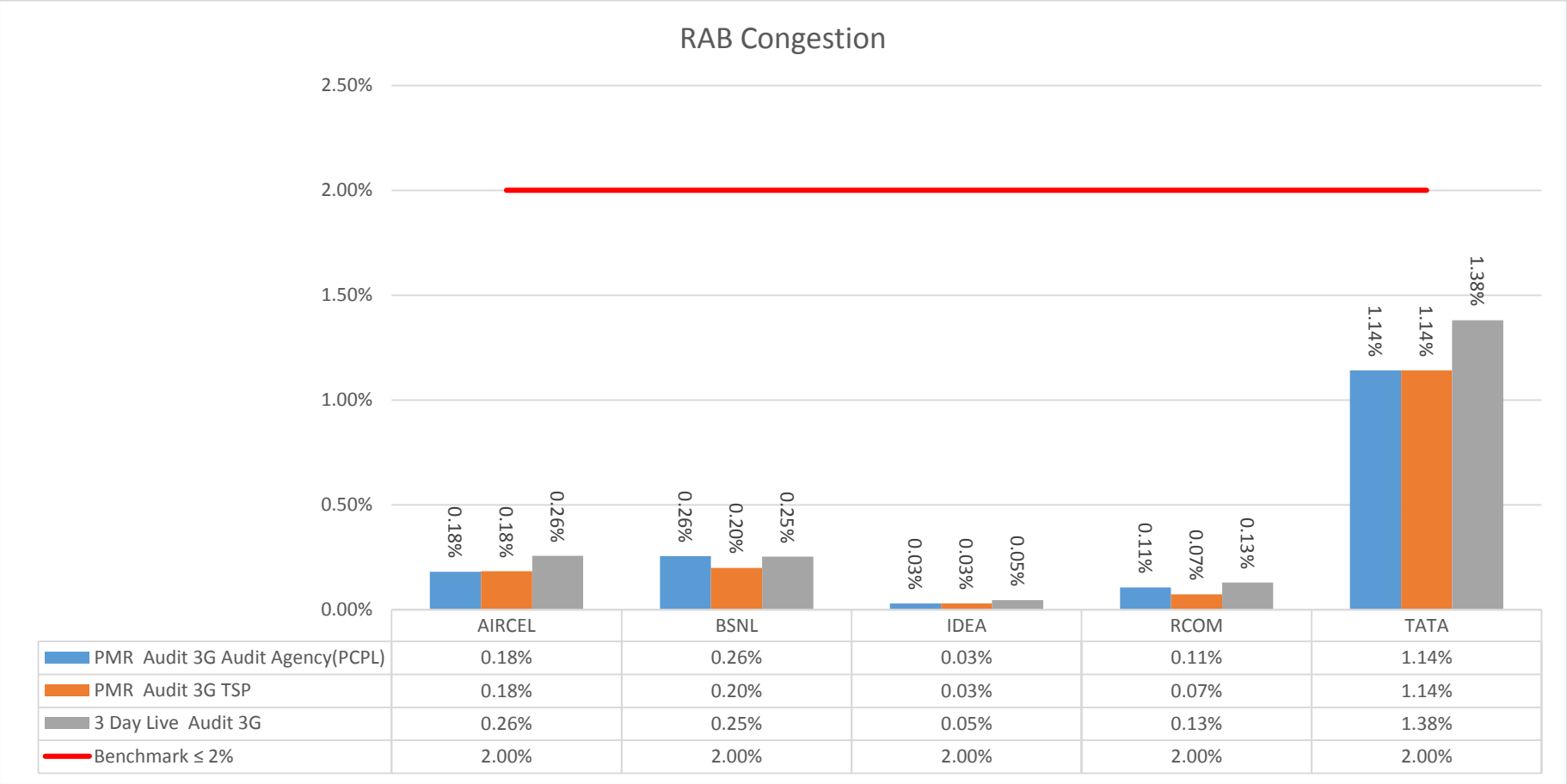
	AIRCEL	BSNL	IDEA	RCOM	TATA
PMR Audit 3G Audit Agency(PCPL)	99.53%	99.23%	99.72%	99.76%	98.38%
PMR Audit 3G TSP	99.53%	99.00%	99.72%	99.74%	98.38%
3 Day Live Audit 3G	99.59%	99.23%	99.70%	99.77%	98.15%
Benchmark ≤ 2%	95.00%	95.00%	95.00%	95.00%	95.00%

13.5.4. RRC CONGESTION



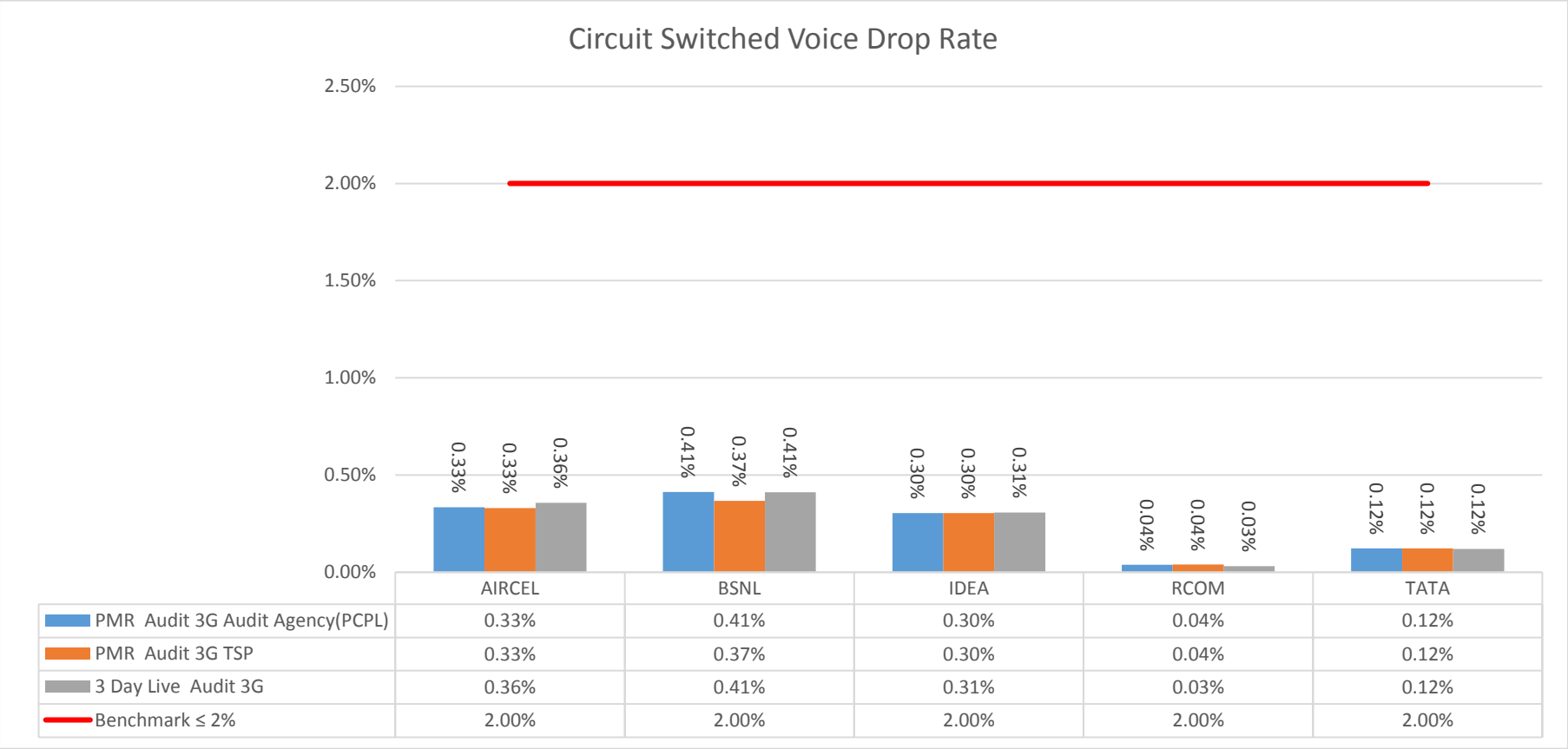
	AIRCEL	BSNL	IDEA	RCOM	TATA
PMR Audit 3G Audit Agency(PCPL)	0.29%	0.65%	0.06%	0.04%	0.49%
PMR Audit 3G TSP	0.29%	0.60%	0.06%	0.07%	0.49%
3 Day Live Audit 3G	0.41%	0.64%	0.09%	0.04%	0.50%
Benchmark ≤ 2%	1.00%	1.00%	1.00%	1.00%	1.00%

13.5.5. RAB CONGESTION



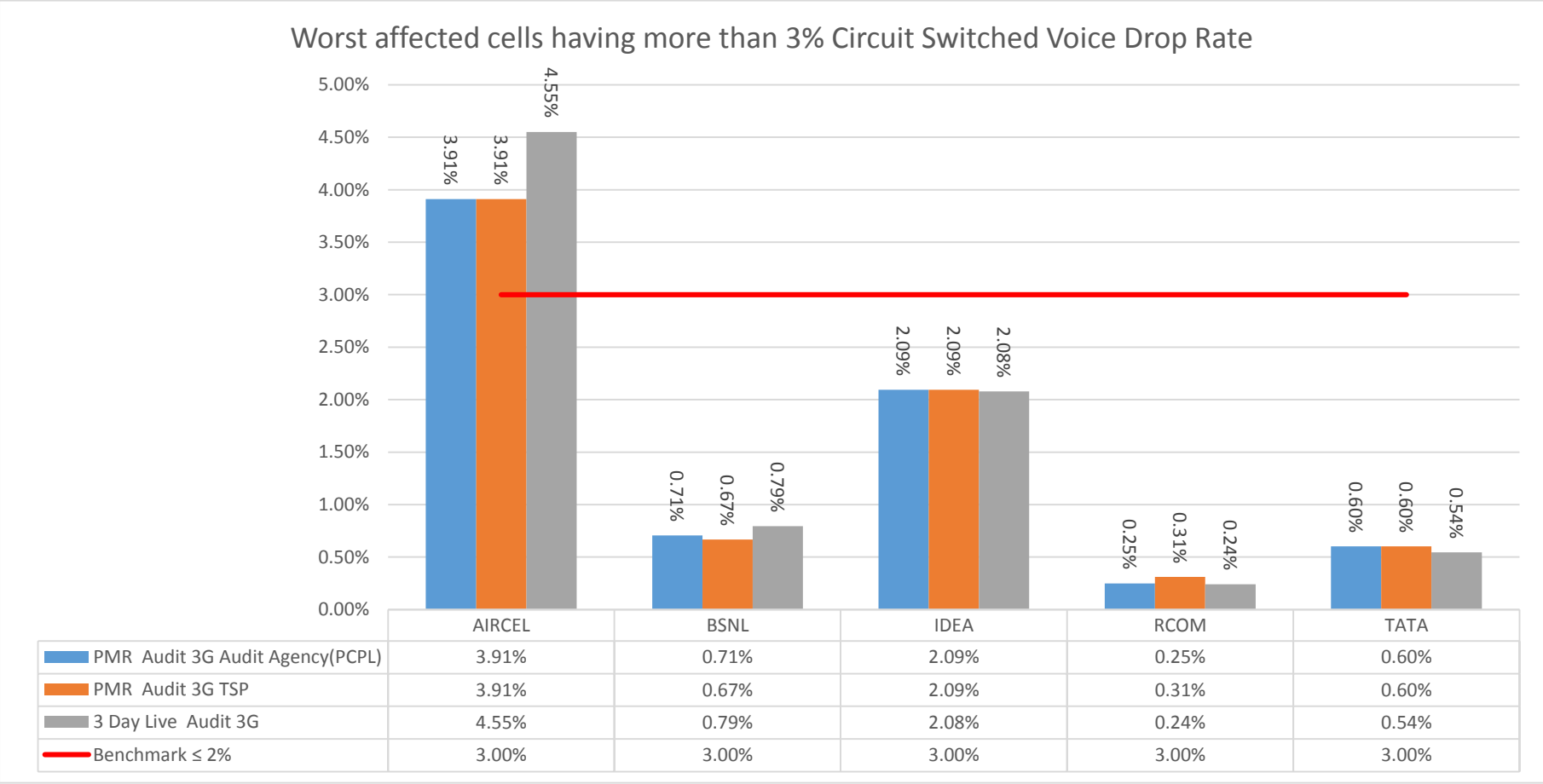
	AIRCEL	BSNL	IDEA	RCOM	TATA
PMR Audit 3G Audit Agency(PCPL)	0.18%	0.26%	0.03%	0.11%	1.14%
PMR Audit 3G TSP	0.18%	0.20%	0.03%	0.07%	1.14%
3 Day Live Audit 3G	0.26%	0.25%	0.05%	0.13%	1.38%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%

13.5.6. CIRCUIT SWITCHED VOICE DROP RATE



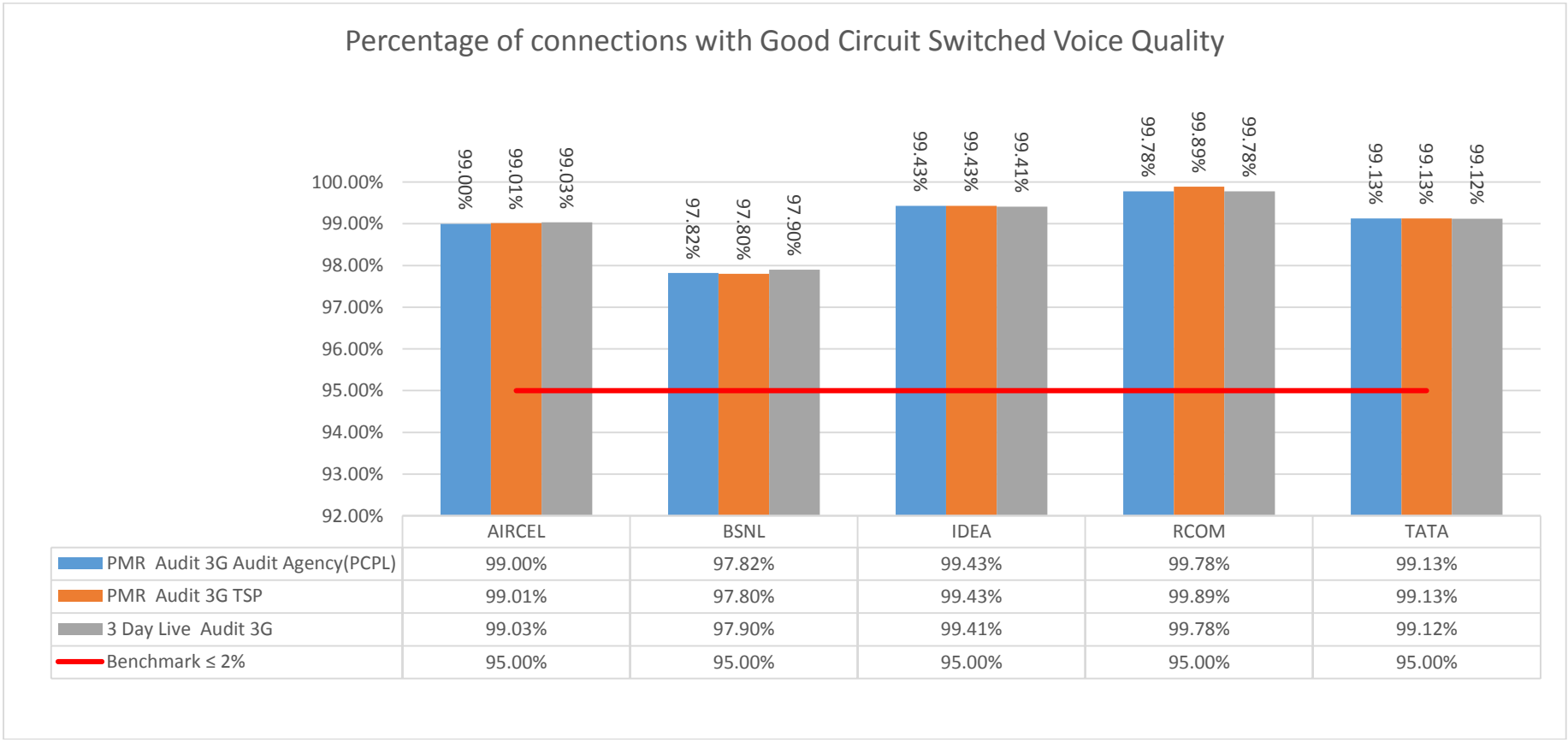
	AIRCEL	BSNL	IDEA	RCOM	TATA
PMR Audit 3G Audit Agency(PCPL)	0.33%	0.41%	0.30%	0.04%	0.12%
PMR Audit 3G TSP	0.33%	0.37%	0.30%	0.04%	0.12%
3 Day Live Audit 3G	0.36%	0.41%	0.31%	0.03%	0.12%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%	2.00%

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



	AIRCEL	BSNL	IDEA	RCOM	TATA
PMR Audit 3G Audit Agency(PCPL)	3.91%	0.71%	2.09%	0.25%	0.60%
PMR Audit 3G TSP	3.91%	0.67%	2.09%	0.31%	0.60%
3 Day Live Audit 3G	4.55%	0.79%	2.08%	0.24%	0.54%
Benchmark ≤ 2%	3.00%	3.00%	3.00%	3.00%	3.00%

13.5.8. PERCENTAGE OF CONNECTIONS WITH GOOD CIRCUIT SWITCHED VOICE QUALITY

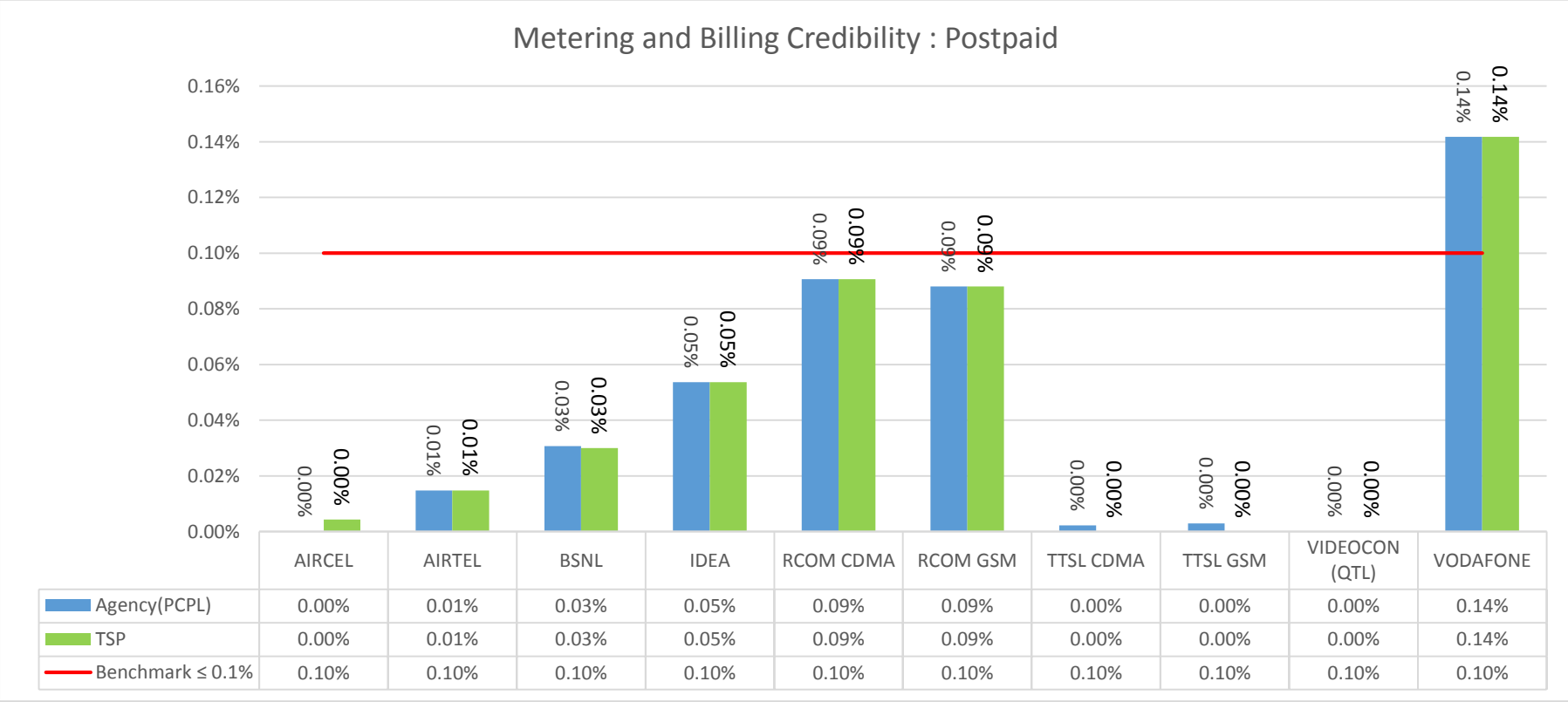


	AIRCEL	BSNL	IDEA	RCOM	TATA
PMR Audit 3G Audit Agency(PCPL)	99.00%	97.82%	99.43%	99.78%	99.13%
PMR Audit 3G TSP	99.01%	97.80%	99.43%	99.89%	99.13%
3 Day Live Audit 3G	99.03%	97.90%	99.41%	99.78%	99.12%
Benchmark ≤ 2%	95.00%	95.00%	95.00%	95.00%	95.00%

13.6. PMR Comparison (TSP vs. Audit Agency): CSD Parameters

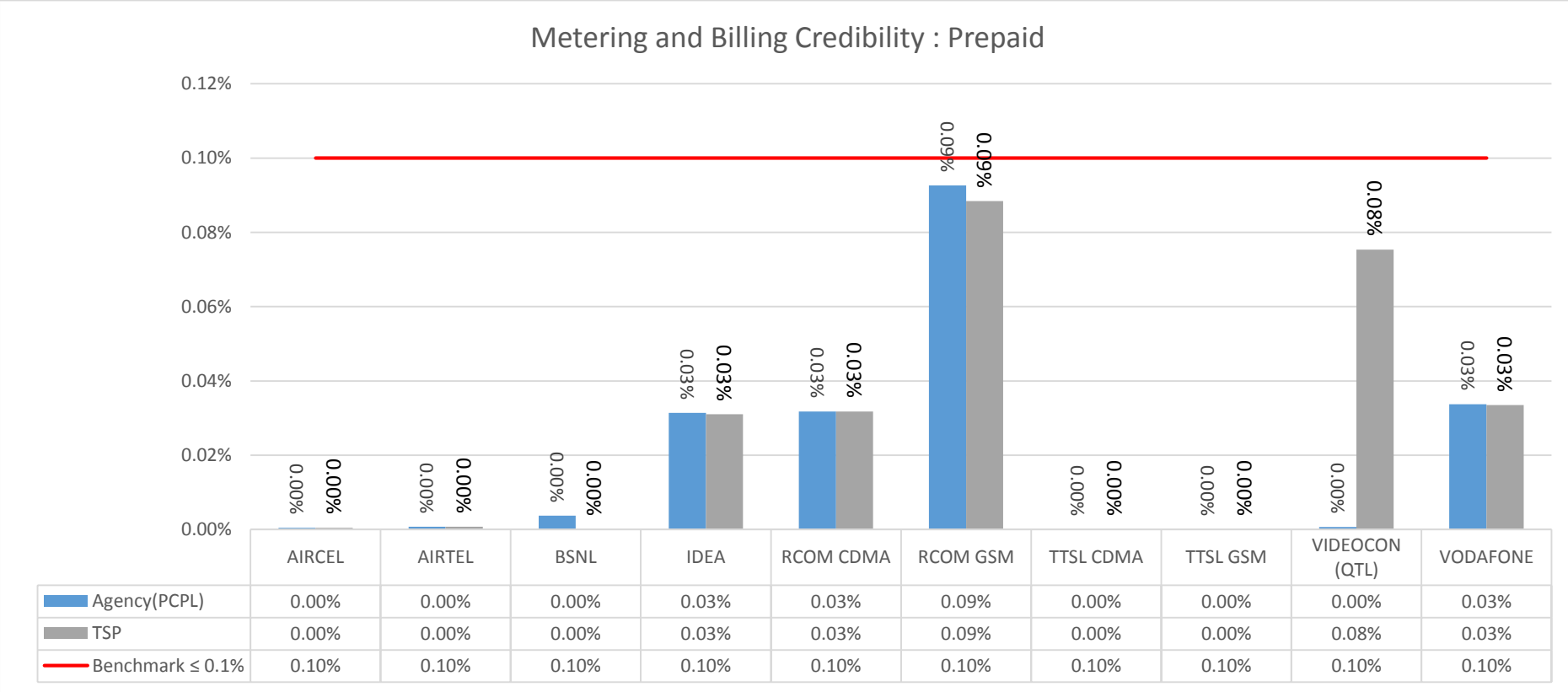
Name of Service Provider	Metering and Billing credibility				Billing Complaints						Termination & Closures		Time taken for refund of deposits after closures: Benchmark		Response time to customer for assistance			
	Postpaid Subscribers		Prepaid Subscribers		%age complaints resolved within 4 weeks		%age complaints resolved within 6 weeks		%age of where credit/waiver is received within one week		% of Termination/ Closure of service within 7 days (100 %)		Cleared over a period of <60 days (100%)		%age of calls answered by the IVR		%age of call answered by the operators (voice to voice) within 90 seconds	
Benchmark	≤ 0.1%		≤ 0.1%		≥ 98%		= 100%		= 100%		= 100%		= 100%		≥ 95%		≥ 95%	
	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP	Agency	TSP
AIRCEL	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	97.81%	97.81%	95.97%	95.97%
AIRTEL	0.01%	0.01%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	77.02%	77.02%
BSNL	0.03%	0.03%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	96.65%	100.00%
IDEA	0.05%	0.05%	0.03%	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.81%	99.81%	99.10%	99.10%
RCOM CDMA	0.09%	0.09%	0.03%	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	69.02%	89.14%	95.93%	95.93%	97.24%	97.24%
RCOM GSM	0.09%	0.09%	0.09%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	77.84%	77.84%	99.18%	99.18%	93.88%	93.88%
TTSL CDMA	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	DNA	100.00%	99.80%	99.80%
TTSL GSM	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.47%	98.47%	98.02%	98.02%
VIDEOCON (QTL)	0.00%	0.00%	0.00%	0.08%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	96.44%	96.44%
VODAFONE	0.14%	0.14%	0.03%	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	DNA	100.00%	100.00%	100.00%	98.10%	98.90%

13.6.1. METERING AND BILLING CREDIBILITY : POSTPAID



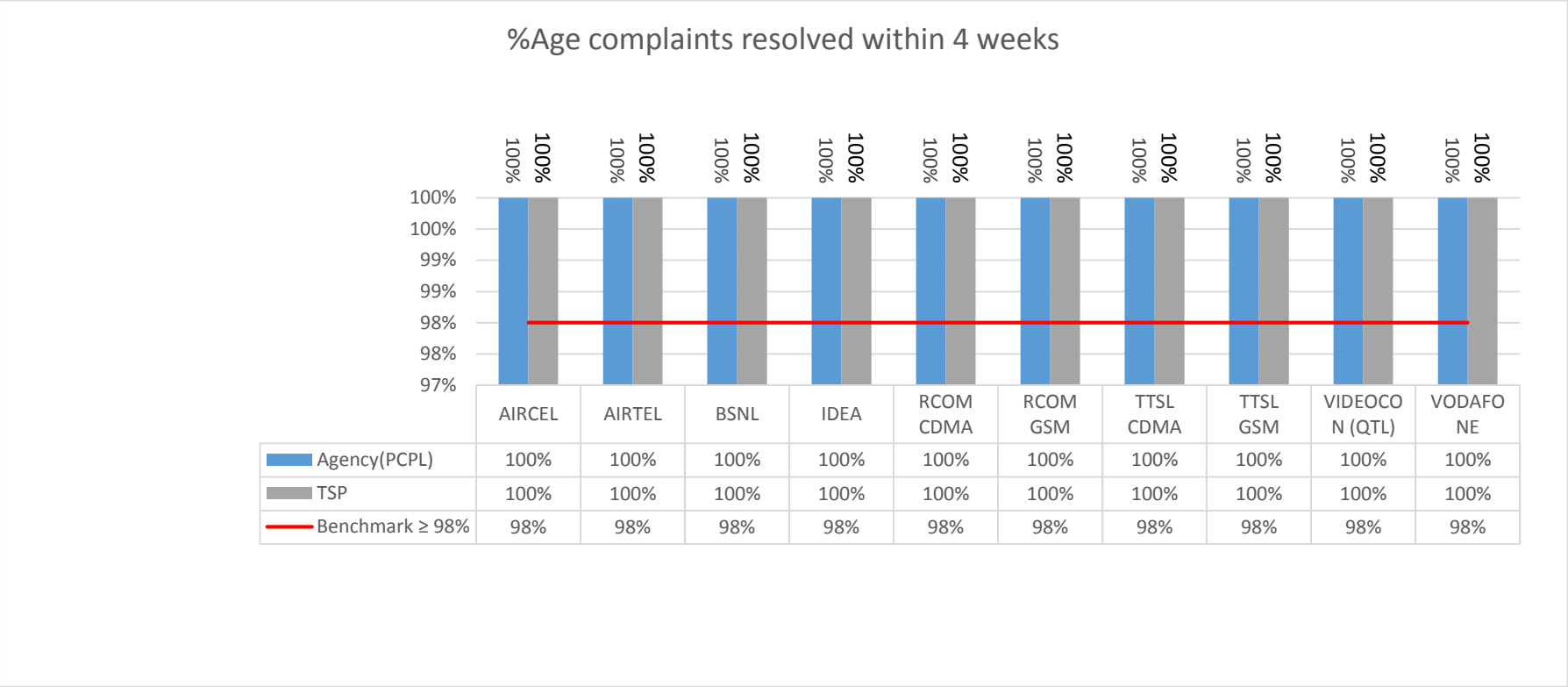
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON (QTL)	VODAFONE
Agency(PCPL)	0.00%	0.01%	0.03%	0.05%	0.09%	0.09%	0.00%	0.00%	0.00%	0.14%
TSP	0.00%	0.01%	0.03%	0.05%	0.09%	0.09%	0.00%	0.00%	0.00%	0.14%
Benchmark ≤ 0.1%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%

13.6.2. METERING AND BILLING CREDIBILITY : PREPAID



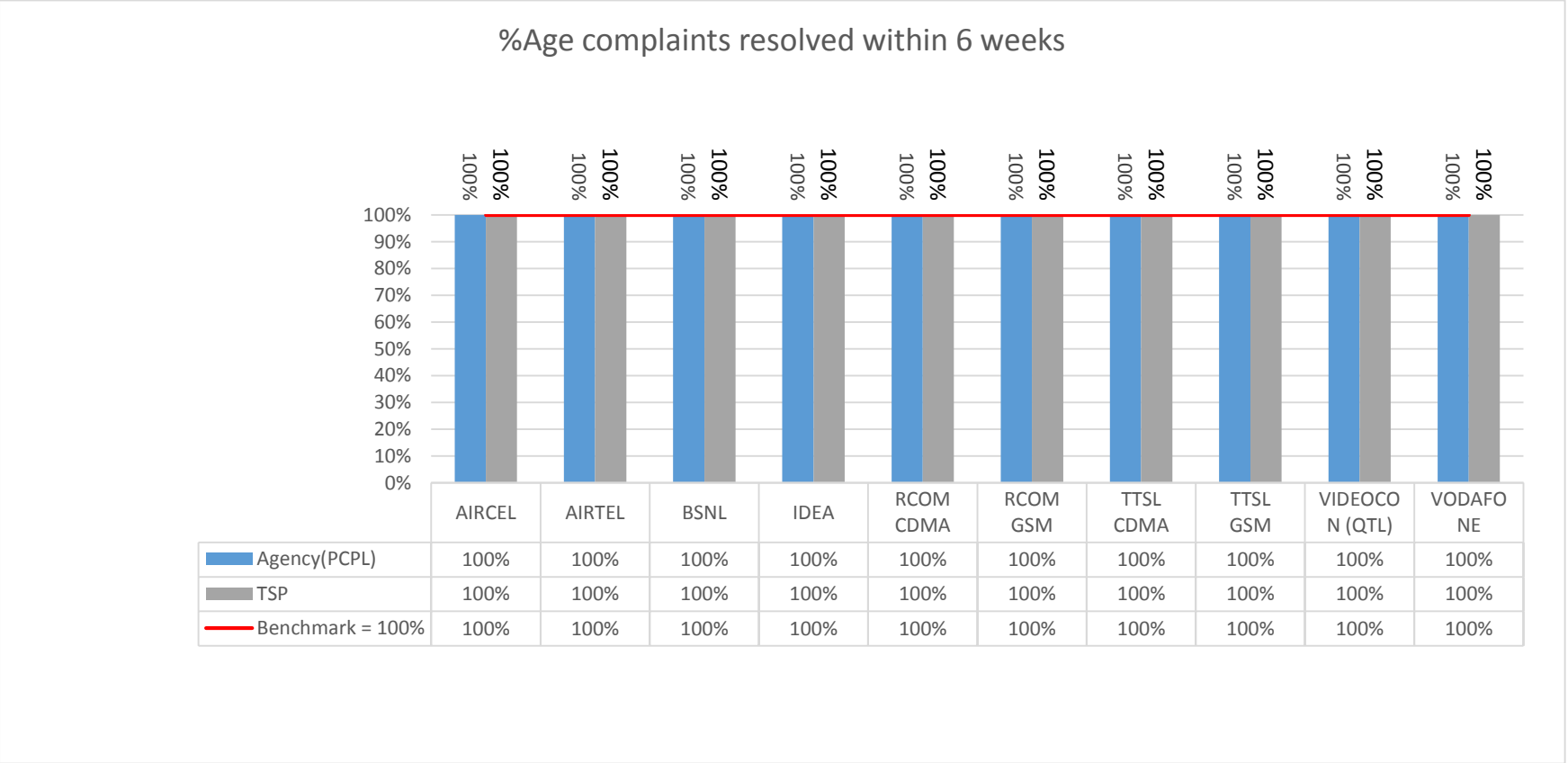
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON (QTL)	VODAFONE
Agency(PCPL)	0.00%	0.00%	0.00%	0.03%	0.03%	0.09%	0.00%	0.00%	0.00%	0.03%
TSP	0.00%	0.00%	0.00%	0.03%	0.03%	0.09%	0.00%	0.00%	0.08%	0.03%
Benchmark ≤ 0.1%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%

13.6.3. %AGE COMPLAINT RESOLVED WITHIN 4 WEEKS



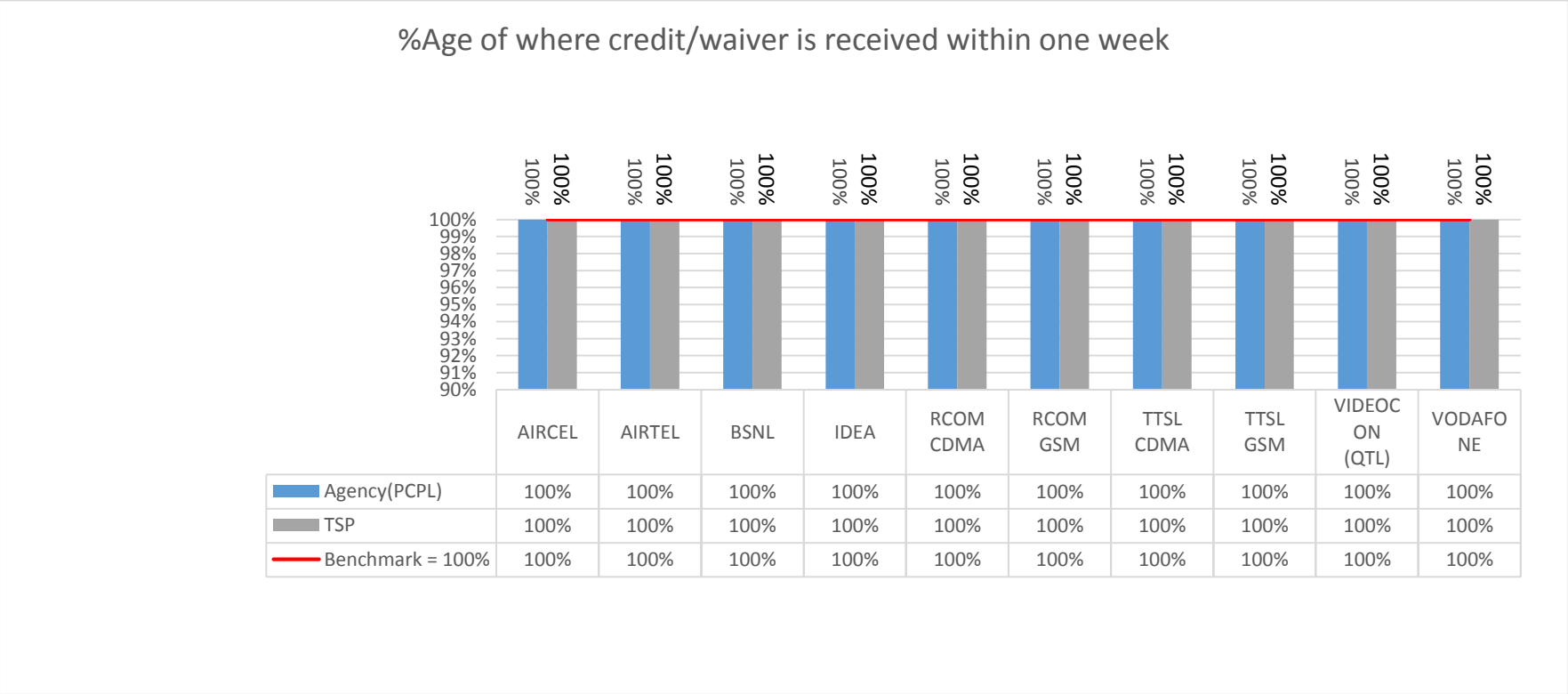
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON (QTL)	VODAFONE
Agency(PCPL)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TSP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark ≥ 98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%

13.6.4. %AGE COMPLAINTS RESOLVED WITHIN 6 WEEKS



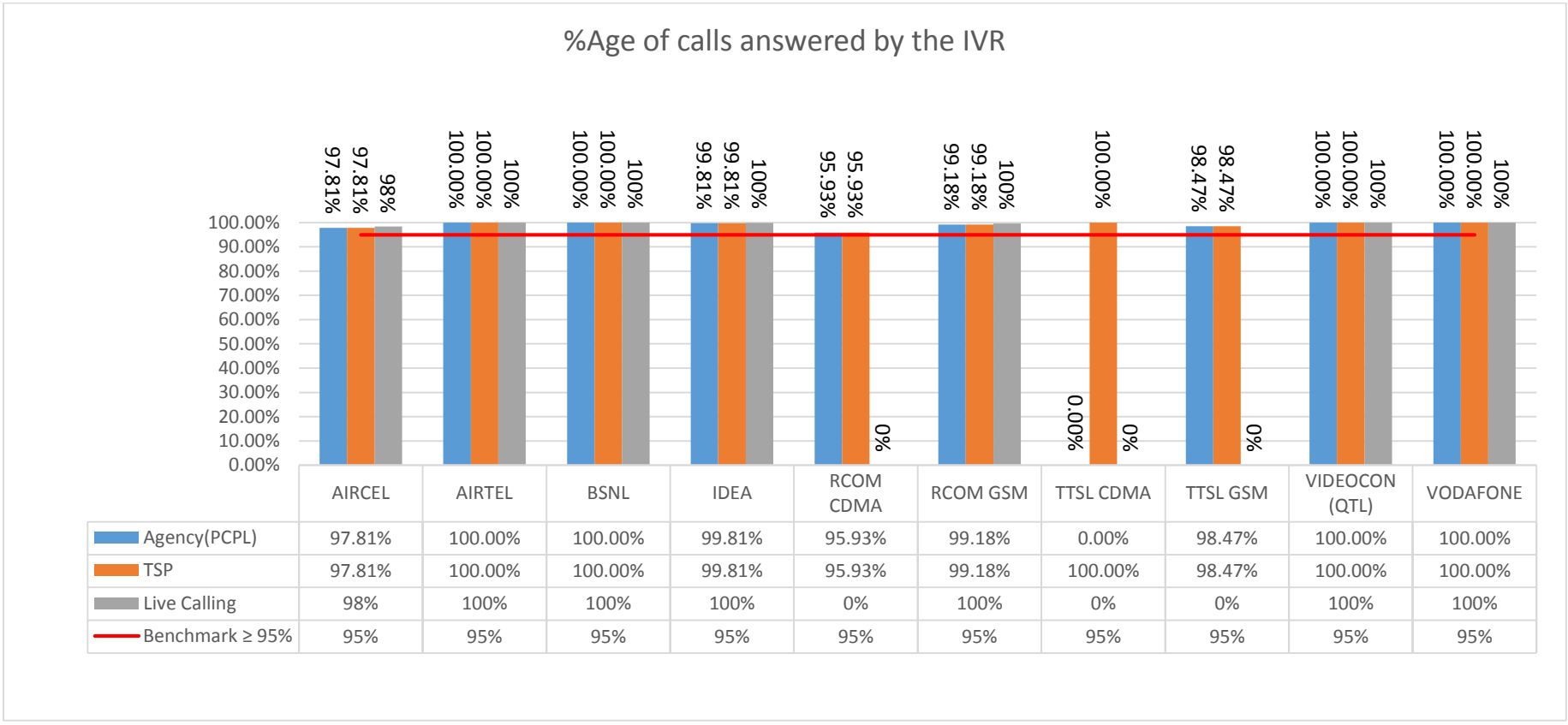
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON (QTL)	VODAFONE
Agency(PCPL)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TSP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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



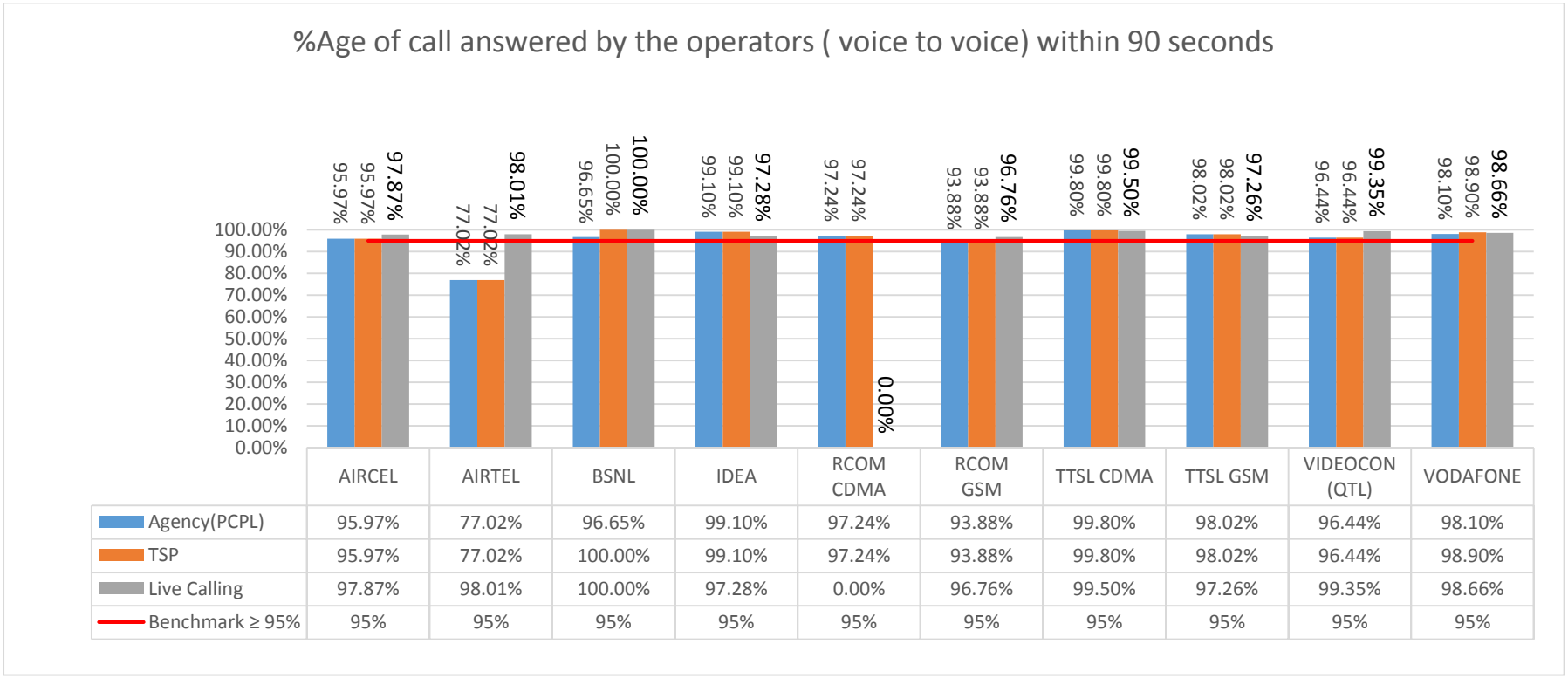
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON (QTL)	VODAFONE
Agency(PCPL)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TSP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

13.6.6. %AGE OF CALLS ANSWERED BY THE IVR



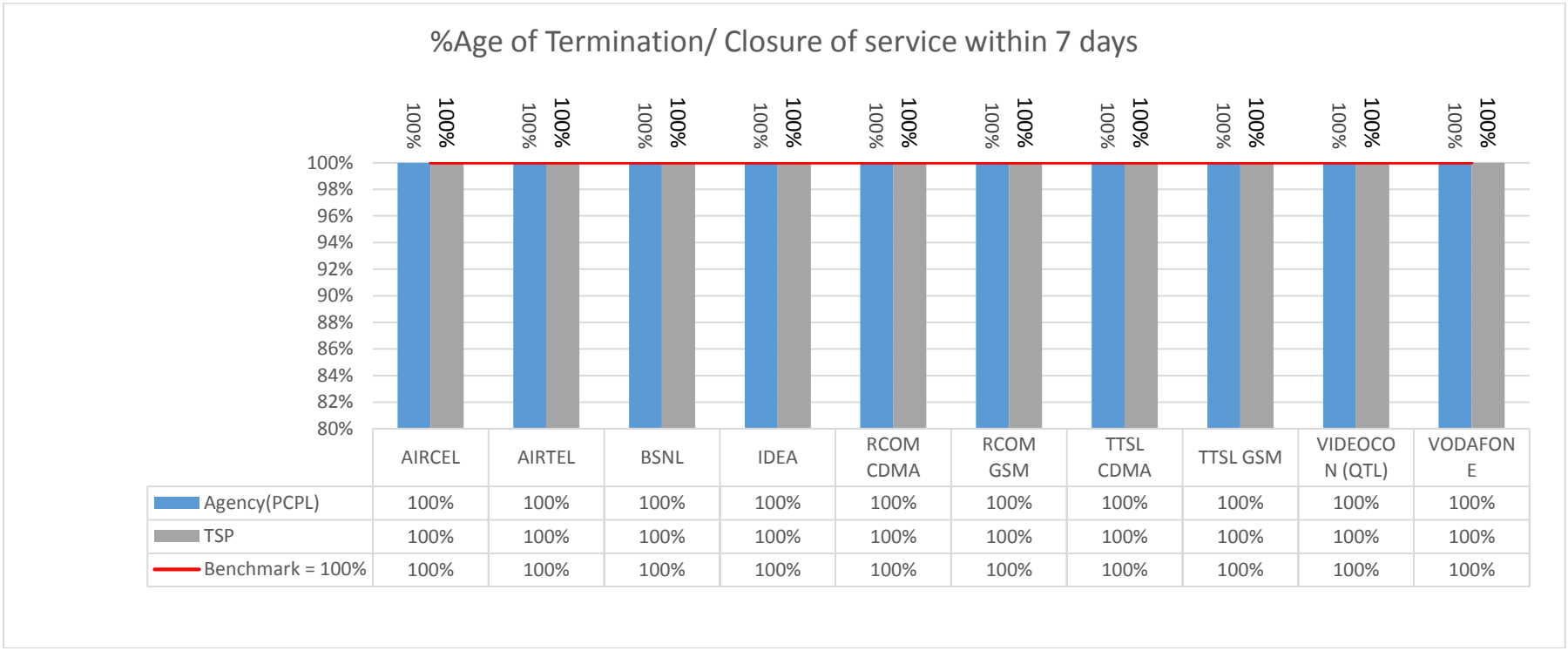
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON (QTL)	VODAFONE
Agency(PCPL)	97.81%	100.00%	100.00%	99.81%	95.93%	99.18%	0.00%	98.47%	100.00%	100.00%
TSP	97.81%	100.00%	100.00%	99.81%	95.93%	99.18%	100.00%	98.47%	100.00%	100.00%
Live Calling	98%	100%	100%	100%	0%	100%	0%	0%	100%	100%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

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



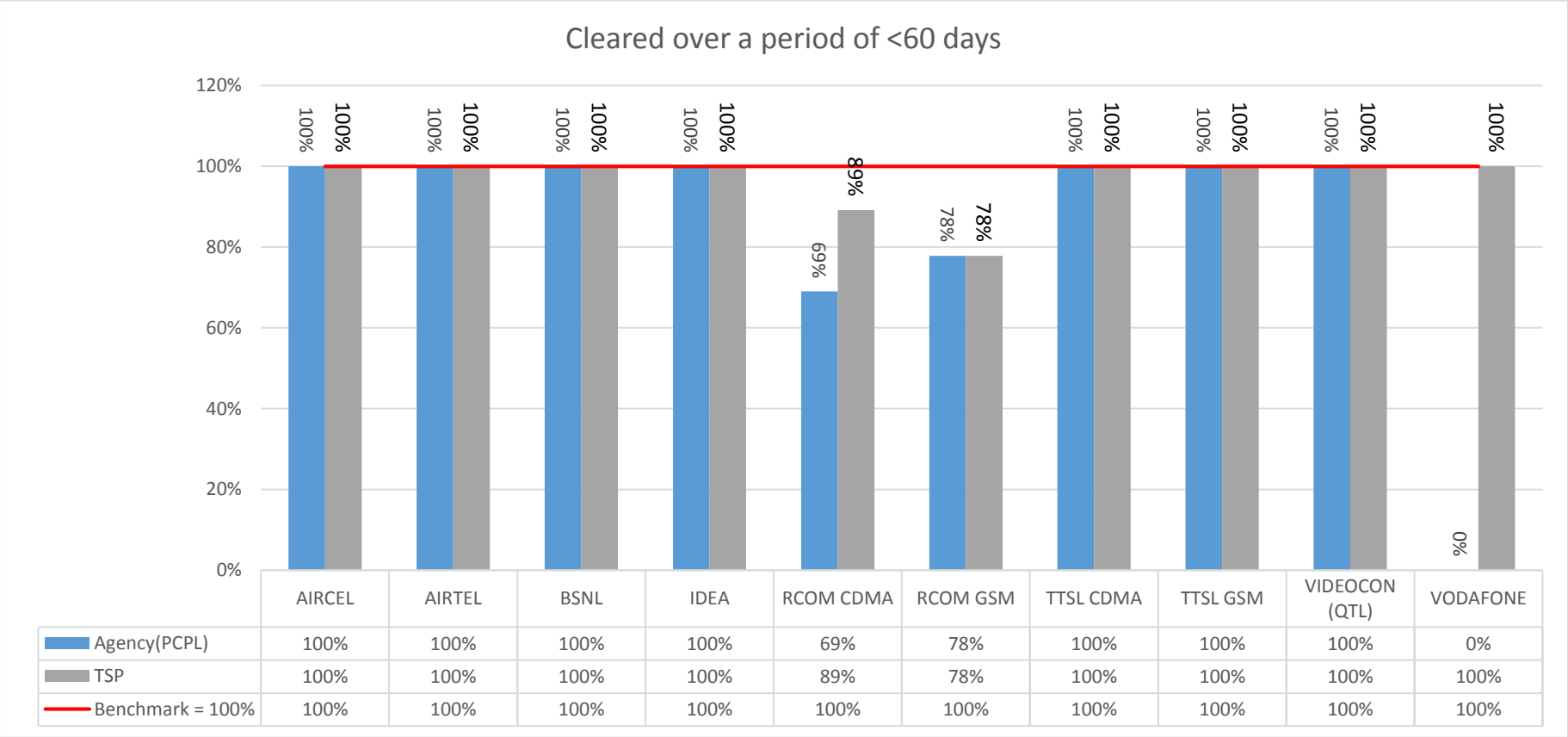
	AIRCEL	AIRTEL	BSNL	IDEA	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON (QTL)	VODAFONE
Agency(PCPL)	95.97%	77.02%	96.65%	99.10%	97.24%	93.88%	99.80%	98.02%	96.44%	98.10%
TSP	95.97%	77.02%	100.00%	99.10%	97.24%	93.88%	99.80%	98.02%	96.44%	98.90%
Live Calling	97.87%	98.01%	100.00%	97.28%	0.00%	96.76%	99.50%	97.26%	99.35%	98.66%
Benchmark ≥ 95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%

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



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

13.6.9. CLEARED OVER A PERIOD OF <60 DAYS



	AIRCEL	AIRTEL	BSNL	IDEA	RCOM CDMA	RCOM GSM	TTSL CDMA	TTSL GSM	VIDEOCON (QTL)	VODAFONE
Agency(PCPL)	100%	100%	100%	100%	69%	78%	100%	100%	100%	0%
TSP	100%	100%	100%	100%	89%	78%	100%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

14 KEY FINDINGS

NETWORK FINDINGS (3G):

- IDEA has parameter value of 3.91% and has failed to meet the benchmark of ≤ 3% for Worst affected cells having more than 3% Circuit Switched Voice Drop Rate

CUSTOMER SERVICE DELIVERY:

- AIRTEL has parameter value of 77.02% and has failed to meet the benchmark of ≥ 95% for Percentage of call answered by the operators (voice to voice) within 90 seconds

- RCOM GSM has parameter value of 93.88% and has failed to meet the benchmark of ≥ 95% for Percentage of call answered by the operators (voice to voice) within 90 seconds

- RCOM CDMA has parameter value of 69.02% and has failed to meet the benchmark of = 100% for refund of deposits after closure Cleared over a period of <60 days

- RCOM GSM has parameter value of 77.84% and has failed to meet the benchmark of = 100% for refund of deposits after closure Cleared over a period of <60 days