PHISTREAM
EMPOWERING LEADERSHIP, TRANSFORMING BUSINESS

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



AUDIT & ASSESSMENT OF QUALITY OF SERVICE

NORTH ZONE – RAJASTHAN CIRCLE
CELLULAR MOBILE TELEPHONE SERVICE (CMTS)
(JANUARY TO MARCH2016)

PREPARED BY:

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1. INTRODUCTION

1.1. ABOUT TRAI

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

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

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

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

1.2. ABOUT PHISTREAM CONSULTING PRIVATE LIMITED

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

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

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

1.3. OBJECTIVES

The primary objective of the Audit module is to:

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

1.4. COVERAGE

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

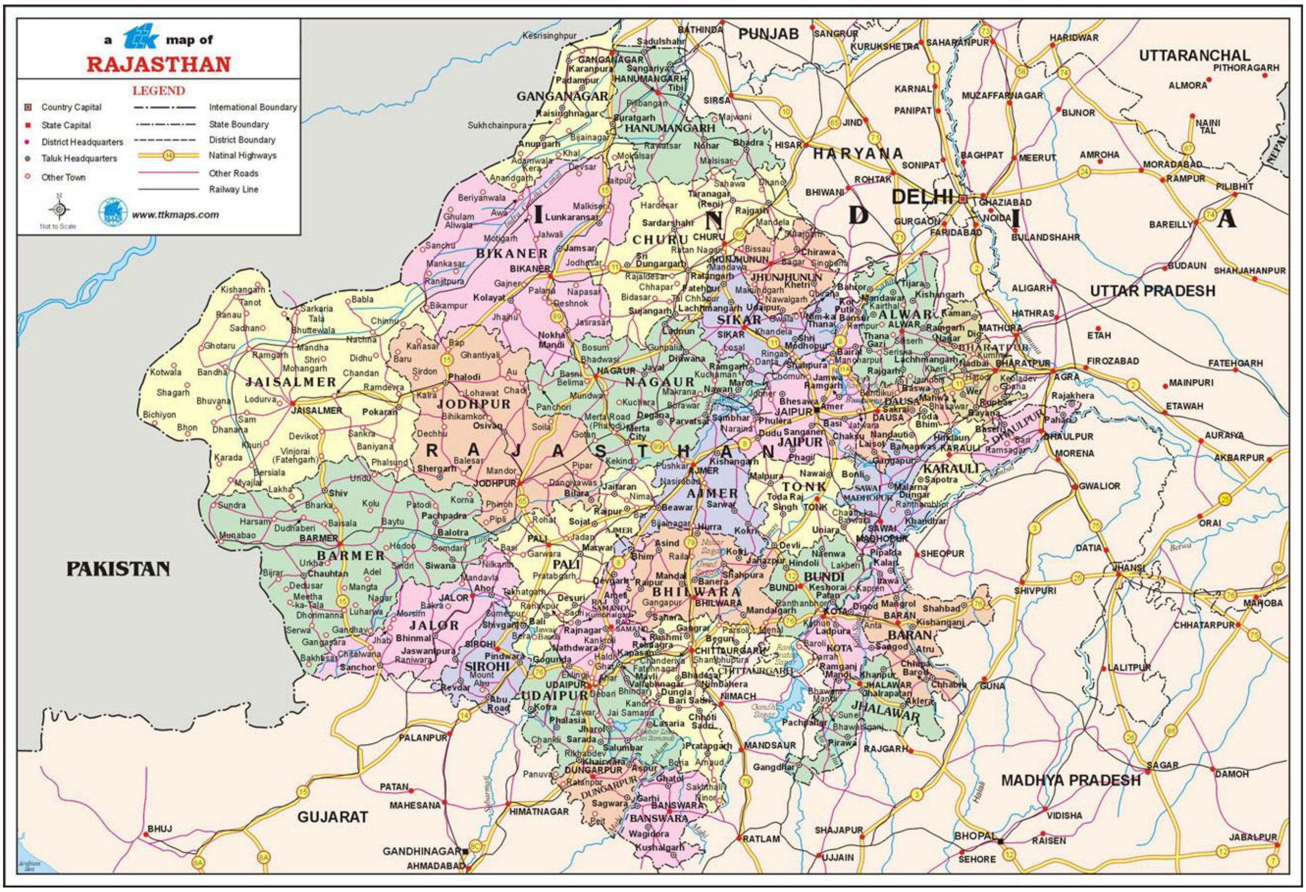


Image Source: TTK Maps

1.5. SSA List

S. No.	Circle	SSA Name	SDCA Name
1	RJ	Ajmer	Ajmer
2	RJ	Ajmer	Beawar
3	RJ	Ajmer	Kekri (e)
4	RJ	Ajmer	Kekri (w) (bhinai)
5	RJ	Ajmer	Kishangarh (n) (roopangarh)
6	RJ	Ajmer	Kishangarh (s)
7	RJ	Ajmer	Nasirabad
8	RJ	Ajmer	Sarwar
9	RJ	Alwar	Alwar
10	RJ	Alwar	Bansur
11	RJ	Alwar	Behror
12	RJ	Alwar	Kishangarhbas (khairthal)
13	RJ	Alwar	Laxmangarh (kherli)
14	RJ	Alwar	Mandawar
15	RJ	Alwar	Rajgarh
16	RJ	Alwar	Ramgarh
17	RJ	Alwar	Thanaghazi
18	RJ	Alwar	Tijara (n) (bhiwadi)
19	RJ	Alwar	Tijara (s)
20	RJ	Banswara	Aspur
21	RJ	Banswara	Bagidora
22	RJ	Banswara	Banswara
23	RJ	Banswara	Dungarpur
24	RJ	Banswara	Gerhi (partapur)
25	RJ	Banswara	Ghatol
26	RJ	Banswara	Kushalgarh
27	RJ	Banswara	Sagwara
28	RJ	Barmer	Barmer(c)
29	RJ	Barmer	Barmer (e) (gudda)
30	RJ	Barmer	Barmer (n) (kanot)
31	RJ	Barmer	Barmer (s) sindari
32	RJ	Barmer	Barmer (sw) (dhorimanna)
33	RJ	Barmer	Barmer (w) (ramsar)
34	RJ	Barmer	Chohtan (n)
35	RJ	Barmer	Chohtan (s) (gangasar)
36	RJ	Barmer	Pachpadra (e) (korna)
37	RJ	Barmer	Pachpadra (w) (balotra)
38	RJ	Barmer	Sheo (e)
39	RJ	Barmer	Sheo (w) (harsani)
40	RJ	Barmer	Siwana (e) (samdari)
41	RJ	Barmer	Siwana (w)
42	RJ	Bharatpur	Bari
43	RJ	Bharatpur	Baseri
44	RJ	Bharatpur	Bayana
45	RJ	Bharatpur	Bharatpur
46	RJ	Bharatpur	Deeg
47	RJ	Bharatpur	Dholpur
48	RJ	Bharatpur	Kaman
49	RJ	Bharatpur	Nadbai
50	RJ	Bharatpur	Rupbas

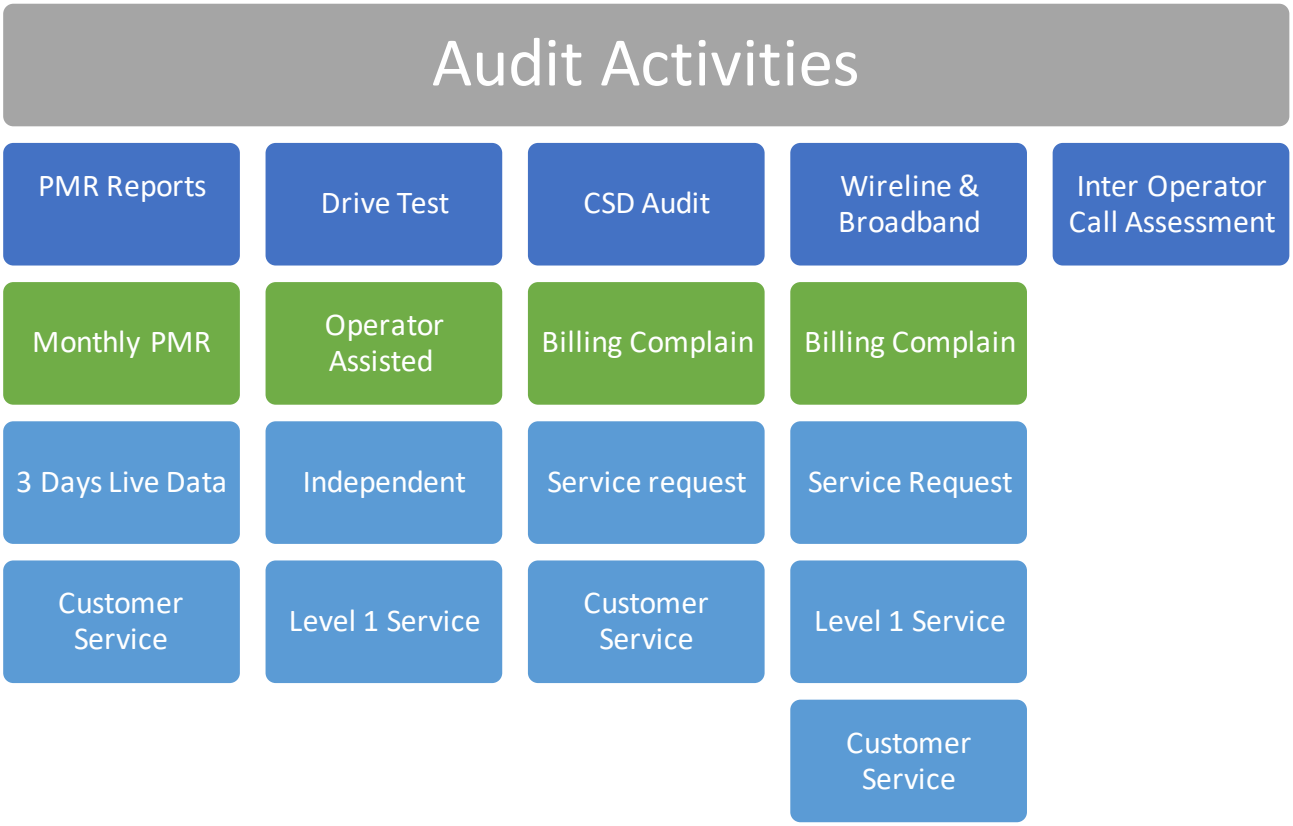
51	RJ	Bhilwara	Asind
52	RJ	Bhilwara	Banera
53	RJ	Bhilwara	Bhilwara
54	RJ	Bhilwara	Hurda (gulabpura)
55	RJ	Bhilwara	Jahazpur
56	RJ	Bhilwara	Kotri
57	RJ	Bhilwara	Mandal
58	RJ	Bhilwara	Mandalgarh
59	RJ	Bhilwara	Raipur
60	RJ	Bhilwara	Shahapura
61	RJ	Bikaner	Bikaner(c) (jaimalsar)
62	RJ	Bikaner	Bikaner (e) (jamsar)
63	RJ	Bikaner	Bikaner (n) (chhatargarh)
64	RJ	Bikaner	Bikaner (s)
65	RJ	Bikaner	Bikaner (w) (poogal)
66	RJ	Bikaner	Kolayat-i (goddo)
67	RJ	Bikaner	Kolayat-ii
68	RJ	Bikaner	Kolayat-iii (bajju)
69	RJ	Bikaner	Kolayat-iv (daitra)
70	RJ	Bikaner	Lunkaransar-i (kanholi)
71	RJ	Bikaner	Lunkaransar-iii (rajasarb)
72	RJ	Bikaner	Lunkaransar-ii (mahajan)
73	RJ	Bikaner	Lunkaransar-iv
74	RJ	Bikaner	Nokha (e)
75	RJ	Bikaner	Nokha (w) (nathusar)
76	RJ	Bundi	Bundi
77	RJ	Bundi	Hindoli
78	RJ	Bundi	Keshoraipatan (patan)
79	RJ	Bundi	Nainwa
80	RJ	Chittorgarh	Barisadri
81	RJ	Chittorgarh	Begun(n)
82	RJ	Chittorgarh	Begun(s) (rawatbhata)
83	RJ	Chittorgarh	Chittorgarh
84	RJ	Chittorgarh	Dungla
85	RJ	Chittorgarh	Kapasan
86	RJ	Chittorgarh	Nimbahera
87	RJ	Chittorgarh	Pratapgarh (n)
88	RJ	Chittorgarh	Pratapgarh (s) (arnod)
89	RJ	Chittorgarh	Rashmi
90	RJ	Churu	Churu
91	RJ	Churu	Rajgarh
92	RJ	Churu	Ratangarh
93	RJ	Churu	Sardarshahar (s)
94	RJ	Churu	Sardarshahar (n) - jaitsisar
95	RJ	Churu	Sridungargarh (n)- dungargh
96	RJ	Churu	Sridungargarh (s) (sudsar)
97	RJ	Churu	Sujangarh(c) (bidasar)
98	RJ	Churu	Sujangarh (e)
99	RJ	Churu	Sujangarh (w) (lalgarh)
100	RJ	Churu	Taranagar
101	RJ	Jaipur	Amber (chomu)
102	RJ	Jaipur	Bassi
103	RJ	Jaipur	Baswa (bandikui)

104	RJ	Jaipur	Dausa
105	RJ	Jaipur	Dudu
106	RJ	Jaipur	Jaipur
107	RJ	Jaipur	Jamwa-ramgarh (achrol)
108	RJ	Jaipur	Kotputli
109	RJ	Jaipur	Lalsot
110	RJ	Jaipur	Phagi
111	RJ	Jaipur	Phulera (e) (renwal)
112	RJ	Jaipur	Phulera (w) (sambhar)
113	RJ	Jaipur	Viratnagar (shahpura)
114	RJ	Jaisalmer	Jaisalmer-1 (ramgarh)
115	RJ	Jaisalmer	Jaisalmer-10 (khuri)
116	RJ	Jaisalmer	Jaisalmer-11 (jaisalmer)
117	RJ	Jaisalmer	Jaisalmer-12 (devikot)
118	RJ	Jaisalmer	Jaisalmer-13 (myajlar)
119	RJ	Jaisalmer	Jaisalmer-14 (jheenjaniyali)
120	RJ	Jaisalmer	Jaisalmer-2 (sadhna)
121	RJ	Jaisalmer	Jaisalmer-3 (nehdai)
122	RJ	Jaisalmer	Jaisalmer-4 (shahgarh)
123	RJ	Jaisalmer	Jaisalmer-5 (khuiyals)
124	RJ	Jaisalmer	Jaisalmer-6 (pasewar)
125	RJ	Jaisalmer	Jaisalmer-7 (mohargarh)
126	RJ	Jaisalmer	Jaisalmer-8 (mehsana)
127	RJ	Jaisalmer	Jaisalmer-9 (dhanaua)
128	RJ	Jaisalmer	Pokran-1 (nachna)
129	RJ	Jaisalmer	Pokran-2 (madasar)
130	RJ	Jaisalmer	Pokran-3 (loharki)
131	RJ	Jaisalmer	Pokran-4 (pokran)
132	RJ	Jaisalmer	Pokran-5 (phalsoond)
133	RJ	Jhalawar	Aklera
134	RJ	Jhalawar	Gangdhar
135	RJ	Jhalawar	Jhalawar
136	RJ	Jhalawar	Khanpur
137	RJ	Jhalawar	Pachpahar (bhawanimandi)
138	RJ	Jhalawar	Pirawa (raipur)
139	RJ	Jhunjhunu	Chirawa
140	RJ	Jhunjhunu	Jhunjhunu (n) (bissau)
141	RJ	Jhunjhunu	Jhunjhunu (s)
142	RJ	Jhunjhunu	Khetri
143	RJ	Jhunjhunu	Udaipurwati
144	RJ	Jodhpur	Bilara (n) (bhopalgarh)
145	RJ	Jodhpur	Bilara (s) (piparcity)
146	RJ	Jodhpur	Jodhpur (e)
147	RJ	Jodhpur	Jodhpur (w) (jhanwar)
148	RJ	Jodhpur	Osian (e) (dhanwara)
149	RJ	Jodhpur	Osian (n)
150	RJ	Jodhpur	Osian (s) (mathania)
151	RJ	Jodhpur	Phalodi (e) (lohawat)
152	RJ	Jodhpur	Phalodi (n) (bap)
153	RJ	Jodhpur	Phalodi (s)
154	RJ	Jodhpur	Phalodi (w) (baroo)
155	RJ	Jodhpur	Shergarh (n) (balesar)
156	RJ	Jodhpur	Shergarh (n) (deechu)

157	RJ	Kota	Atru
158	RJ	Kota	Baran
159	RJ	Kota	Chhabra
160	RJ	Kota	Chhipaborad
161	RJ	Kota	Digod (sultanpur)
162	RJ	Kota	Kishanganj (bhanwargarh)
163	RJ	Kota	Ladpura (kota)
164	RJ	Kota	Mangrol
165	RJ	Kota	Pipalda (sumerganj mandi)
166	RJ	Kota	Ramganj mandi
167	RJ	Kota	Sahabad
168	RJ	Kota	Sangod
169	RJ	Nagaur	Deedwana
170	RJ	Nagaur	Degana
171	RJ	Nagaur	Jayal
172	RJ	Nagaur	Ladnun
173	RJ	Nagaur	Merta (e) (merta-city)
174	RJ	Nagaur	Merta (w) (gotan)
175	RJ	Nagaur	Nagaur (e) (mundwa marwar)
176	RJ	Nagaur	Nagaur (n)
177	RJ	Nagaur	Nagaur (w) (khinwsar)
178	RJ	Nagaur	Nawa (kuchamancity)
179	RJ	Nagaur	Parbatsar (n) (makrana)
180	RJ	Nagaur	Parbatsar (s)
181	RJ	Pali (marwar)	Bali (n) (sumerpur)
182	RJ	Pali (marwar)	Bali (s)
183	RJ	Pali (marwar)	Desuri (rani)
184	RJ	Pali (marwar)	Jaitaran
185	RJ	Pali (marwar)	Marwar-jn
186	RJ	Pali (marwar)	Pali (n) (rohat)
187	RJ	Pali (marwar)	Pali (s)
188	RJ	Pali (marwar)	Raipur
189	RJ	Pali (marwar)	Sojat (sojat-city)
190	RJ	Sawaimadhopur	Bamanwas
191	RJ	Sawaimadhopur	Bonli
192	RJ	Sawaimadhopur	Gangapur
193	RJ	Sawaimadhopur	Hindaun
194	RJ	Sawaimadhopur	Karauli
195	RJ	Sawaimadhopur	Khandar
196	RJ	Sawaimadhopur	Mahuwa
197	RJ	Sawaimadhopur	Sapotra
198	RJ	Sawaimadhopur	Sawaimadhopur
199	RJ	Sikar	Dantaramgarh (e) (shyamji)
200	RJ	Sikar	Dantaramgarh (w)
201	RJ	Sikar	Fatehpur
202	RJ	Sikar	Laxmangarh (e)
203	RJ	Sikar	Laxmangarh (w) (nechwa)
204	RJ	Sikar	Neem ka thana
205	RJ	Sikar	Sikar
206	RJ	Sikar	Srimadhopur
207	RJ	Sirohi (abu road)	Abu road
208	RJ	Sirohi (abu road)	Ahore
209	RJ	Sirohi (abu road)	Bhinmal (n)

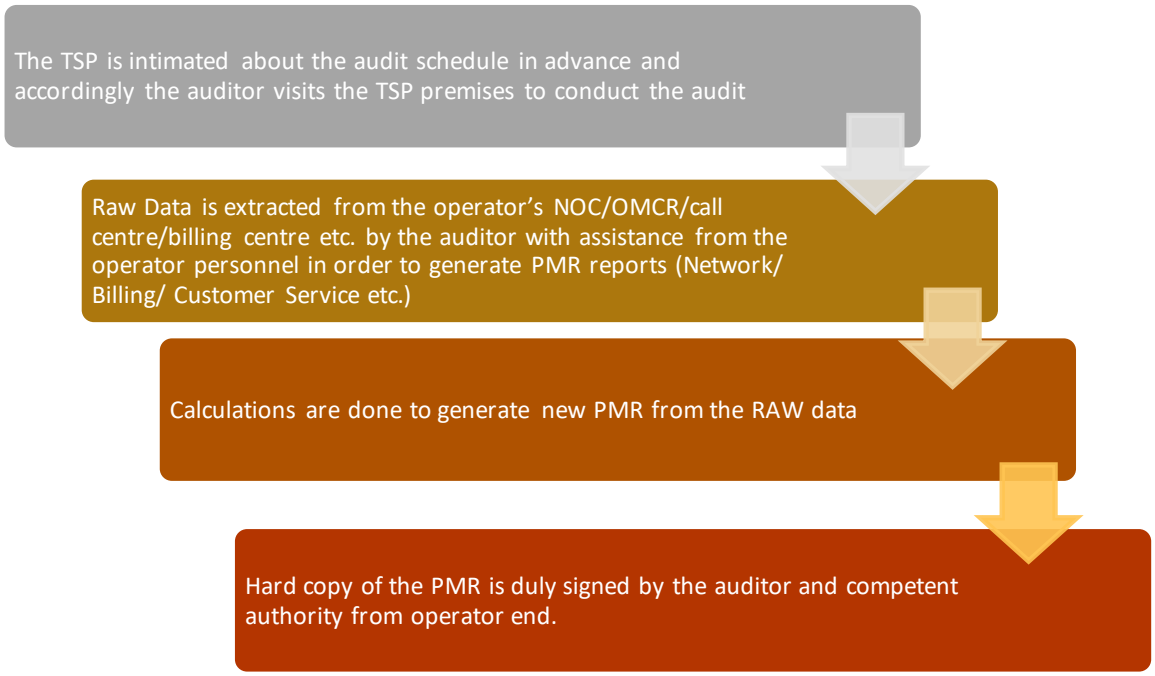
210	RJ	Sirohi (abu road)	Bhinmal (s) (jasawantpura)
211	RJ	Sirohi (abu road)	Jalore
212	RJ	Sirohi (abu road)	Jalore (w) (sayla)
213	RJ	Sirohi (abu road)	Pindwara
214	RJ	Sirohi (abu road)	Reodar
215	RJ	Sirohi (abu road)	Sanchore (e)
216	RJ	Sirohi (abu road)	Sanchore (w) (haMarha)
217	RJ	Sirohi (abu road)	Sheoganj (posaliyan)
218	RJ	Sirohi (abu road)	Sirohi
219	RJ	Sriganganagar	Anupgarh (e)
220	RJ	Sriganganagar	Anupgarh (w) (gharsana)
221	RJ	Sriganganagar	Bhadra
222	RJ	Sriganganagar	Hanumangarh
223	RJ	Sriganganagar	Nohar(c) (rawatsar)
224	RJ	Sriganganagar	Nohar (e)
225	RJ	Sriganganagar	Nohar (w) (jedasar)
226	RJ	Sriganganagar	Padampur
227	RJ	Sriganganagar	Raisinghnagar
228	RJ	Sriganganagar	Sadulshahar
229	RJ	Sriganganagar	Sangaria
230	RJ	Sriganganagar	Sriganganagar
231	RJ	Sriganganagar	Srikaranpur
232	RJ	Sriganganagar	Suratgarh (n) (goluwala)
233	RJ	Sriganganagar	Suratgarh (s)
234	RJ	Sriganganagar	Tibbi
235	RJ	Tonk	Deoli
236	RJ	Tonk	Malpura
237	RJ	Tonk	Newai
238	RJ	Tonk	Todaraisingh
239	RJ	Tonk	Tonk (n) (piploo)
240	RJ	Tonk	Tonk (s)
241	RJ	Tonk	Uniayara
242	RJ	Udaipur	Amet
243	RJ	Udaipur	Bhim (n)
244	RJ	Udaipur	Bhim (s) (dawer)
245	RJ	Udaipur	Deogarh
246	RJ	Udaipur	Dhariawad
247	RJ	Udaipur	Girwa (udaipur)
248	RJ	Udaipur	Gogunda
249	RJ	Udaipur	Jhadol
250	RJ	Udaipur	Kherwara
251	RJ	Udaipur	Kotra
252	RJ	Udaipur	Kumbalgarh (charbhujaji)
253	RJ	Udaipur	Malvi (fatehnagar)
254	RJ	Udaipur	Nathdwara
255	RJ	Udaipur	Rajsamand (kankorli)
256	RJ	Udaipur	Salumber
257	RJ	Udaipur	Sarada (chawand)
258	RJ	Udaipur	Vallabhnagar

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, January2016 audit data was collected in the month of February2016.

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 March2016 was collected in the month of March2016.

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 January, February and March2016. The performance of operators on various parameters was assessed against the benchmarks.

Parameters includes:

Network Availability

- BTS accumulated downtime
- Worst affected BTS due to downtime

Connection Establishment (Accessibility)

- Call Set Up success Rate (CSSR)

Network Congestion Parameters

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

Connection Maintenance

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

Voice Quality

- % Connections with good voice quality

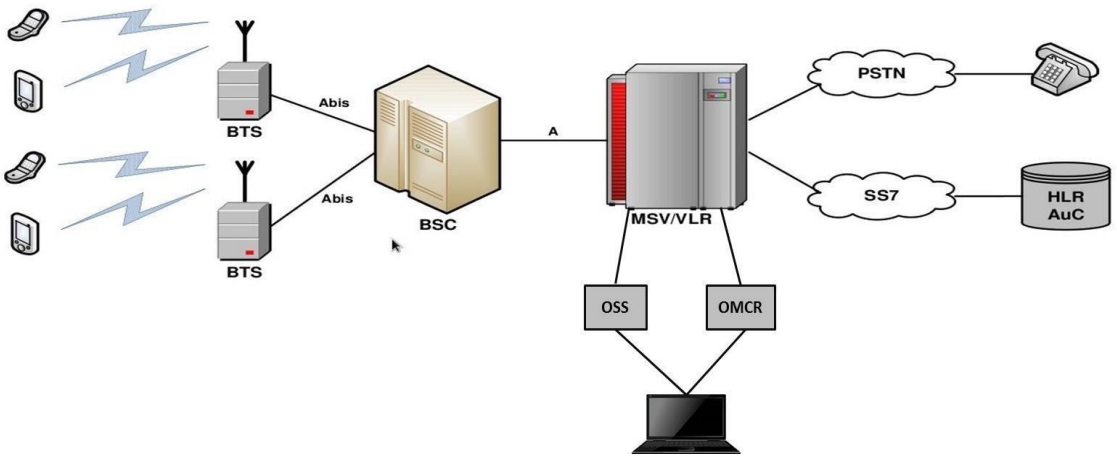
2.2. AUDIT PARAMETER: NETWORK

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

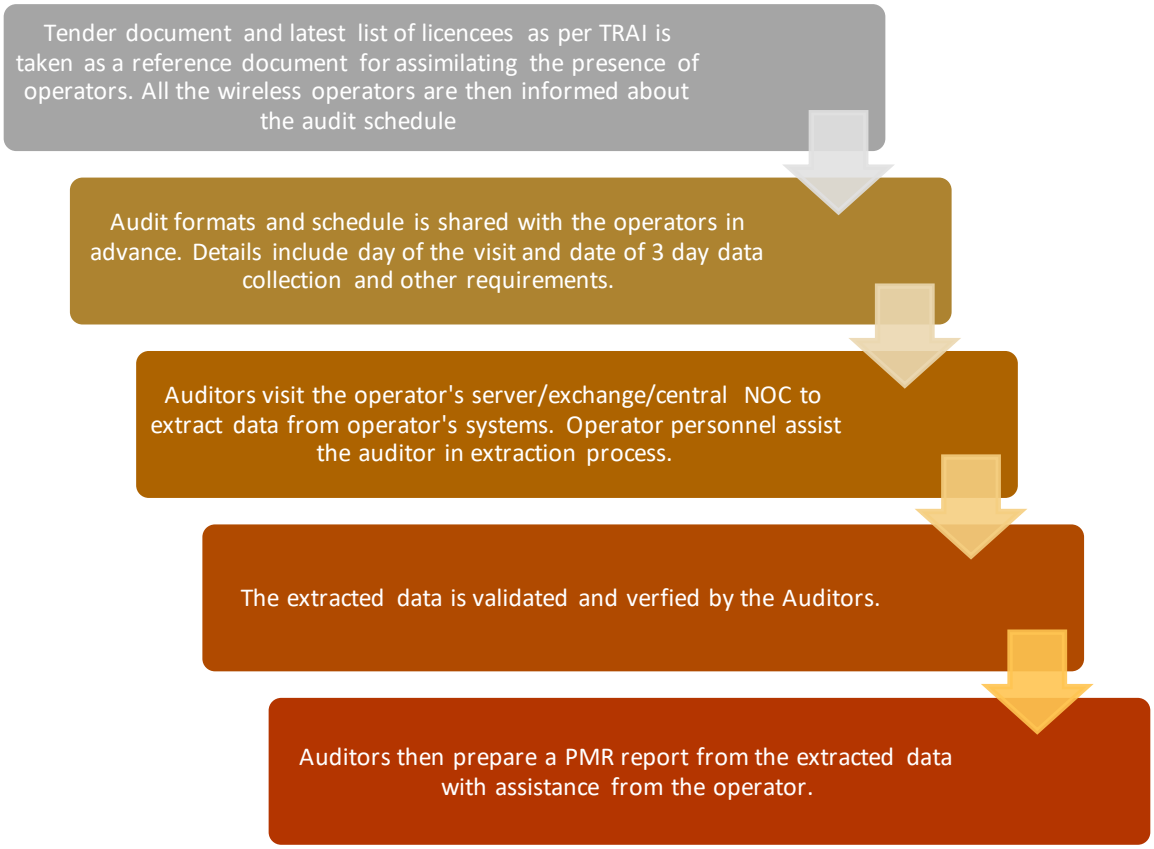
Network Availability	
BTSs Accumulated downtime (not available for service)	≤ 2%
Worst affected BTSs due to downtime	≤ 2%
Connection Establishment (Accessibility)	
Call Set-up Success Rate (within licensee's own network)	≥ 95%
SDCCH/ Paging Channel Congestion	≤ 1 %
TCH Congestion	≤ 2%
Connection Maintenance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

2.3. DATA EXTRACTION POINTS

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



2.4. AUDIT PROCEDURE



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

2.5. NETWORK CALCULATION METHODOLOGY

Parameter	Calculation Methodology
BTS Accumulated Dow ntime	Sum of dow ntime 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 netw ork in licensed service area) x 100
Worst Affected BTS Due to Dow ntime	(Number of BTSs having accumulated dow ntime 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	Node B's downtime more than 24 hr in 3 days	Total no. of Node B's in the Licensed Service Area	<=2%

	dow ntime		Sum of dow ntime 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 dow ntime of Node B's in a month in hrs)/(24* no. of days in the month*no. of Node B's in the licensed service area)]*100	
2	Connection Establishment (Accessibility)			
a.	Call Setup Success Rate:	It is the % of total no. of call established to the total no. of call attempt	Total No. of Voice Call Attempts 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 Sw itched 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 having more than 3% Circuit Sw itched Voice Drop Rate:	It is the % of total no. of Cells having > 3% Circuit Sw itched Voice drop to the total no. cells	Total No. of Cells (Sector) Total No. of Cells exceeding 3% Circuit Sw itched Voice Drop Rate in CBBH (Cell Bouncing Busy Hour) % of cells having more than 3% Circuit Sw itched Voice Drop Rate [(No. of cells having Circuit Sw itched Voice Drop Rate > 3% during CBBH in 31 days*100) / Total no. of cells in the licensed service area]	*<=3%*
c.	Percentage of connections w ith Good Circuit Sw itched Voice Quality	It can be defined as the % of Good Voice Quality Samples to the total No. of Quality Samples	Percentage of connection w ith Good Circuit Sw itched Voice Quality	*>=95%*
4	Total No. of POI's in Month having >=0.5% POI congestion	Total no. Of POI's w hich are exceeding the POI congestion more than 0.5 %.	Total No. of call attempts on POI Total traffic served on all POIs (Erlang) Total No. of circuits on all individual POIs	<=0.5%

			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) Total Service Activations provided within 4 Hours (B) Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*
2	PDP Context Activation Success Rate	PDP Context Activation Success Rate is the ratio of total number of successfully completed PDP context activations to the total attempts of context activation	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A) Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B) PDP Context Activation Success Rate =(B/A) *100	>=95%
3	Drop Rate	It measures the inability of Network to maintain a connection and is defined as the ratio of abnormal disconnects w.r.t. all disconnects.	RNC originated PS Domain Iu Connection Setup Success (A) RNC originated PS Domain Iu Connection Release (B) Drop Rate = (B/A) * 100	<=5%

3. 3 DAYS LIVE DATA

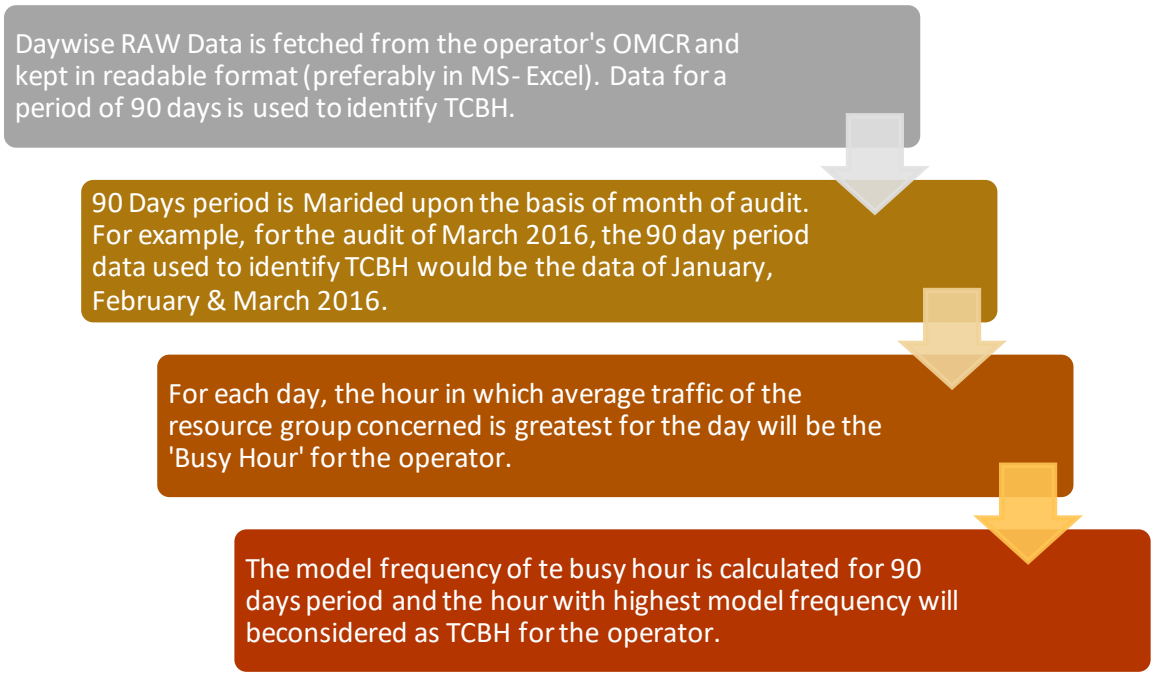
The main purpose of 3 day live measurement is to evaluate the network parameters on intraday basis. While the monthly PMR report provides an overall view of the performance of QoS parameters, the 3 day live data helps looking at intraday performance on the network parameters discussed earlier. All the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

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

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

3.1. TCBH: SIGNIFICANCE AND SELECTION METHODOLOGY

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



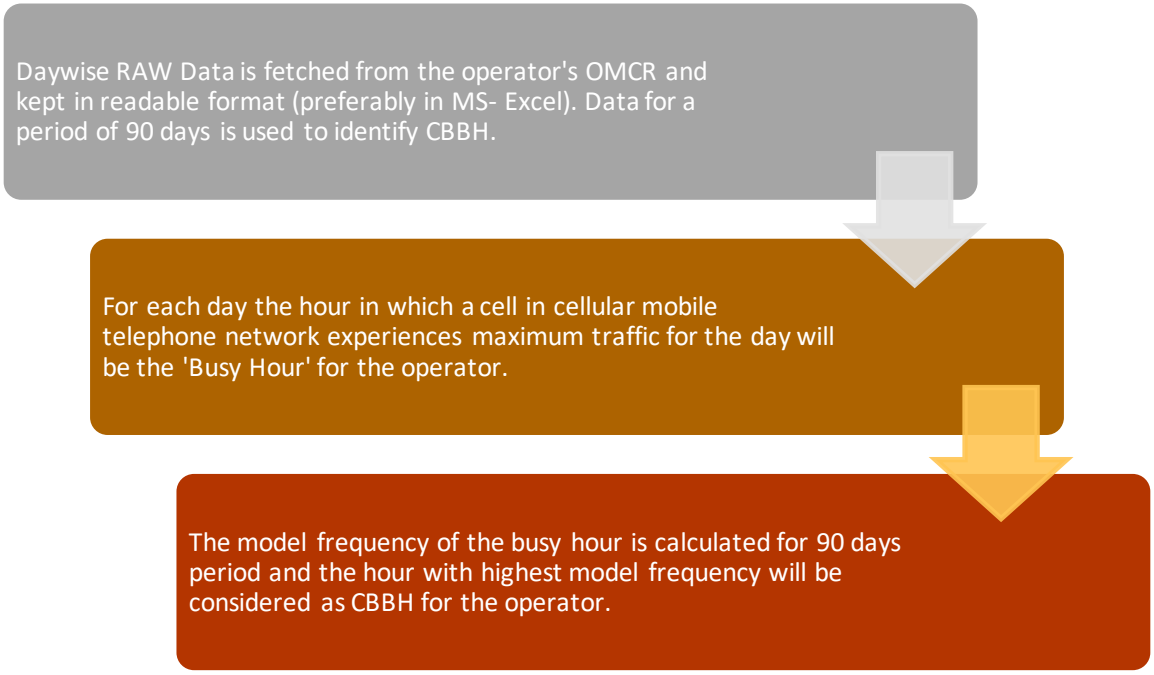
During audit, the auditors identified from the raw data that the TCBH for the operators in Jan – Feb – Mar2016 was the time period as given below:

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

3.2. CBBH: SIGNIFICANCE AND SELECTION METHODOLOGY

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

Step by step procedure to identify CBBH for an operator:



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 March2016 was collected in the month of March2016. 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.

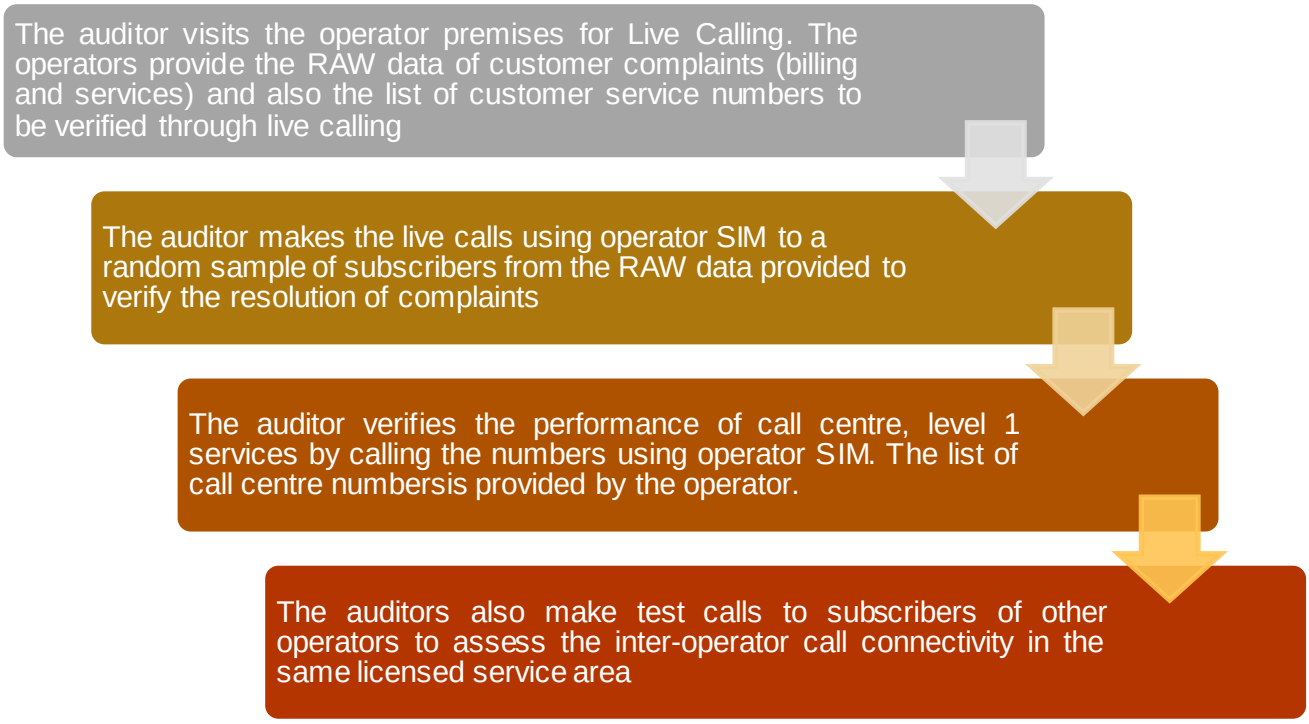
4.1. AUDIT PARAMETERS: CUSTOMER SERVICE

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: SIGNIFCANCE AND METHODOLOGY



Live calling activity was carried out during the period of March2016. 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 January2016 was considered for live calling activity conducted in February2016.
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 January, February and March'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 Alart (Crime Branch)
1091 Women Helpline
1097 National AIDS Helpline to NACO
1099 Central Accident and Trauma Services (CATS)
10580 Educational& Vocational Guidance and Counselling
10589 Mother and Child Tracking (MCTH)
10740 Central Pollution Control Board
10741 Pollution Control Board
1511 Police Related Service for all Metro Railway Project
1512 Prevention of Crime in Railway
1514 National Career Service(NCS)
15100 Free Legal Service Helpline
155304 Municipal Corporations
155214 Labour Helpline
1903 Sashastra Seema Bal (SSB)
1909 National Do Not Call Registry
1912 Complaint of Electricity
1916 Drinking Water Supply
1950 Election Commission of India

4.8. CUSTOMER CARE

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

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

The process for this parameter is stated below:

- Overall sample size is 100 calls per service provider per circle at different points of time, evenly distributed across the selected exchanges – 50 calls between 1100 HRS to 1400 HRS and 50 calls between 1600 HRS to 1900 HRS.

- Time to answer the call by the operator was assessed from the time interviewer pressed the requisite button for being assisted by the operator.
- All the supplementary services that have any kind of human intervention are to be covered here. It also includes the IVR assisted services.

4.9. INTER OPERATOR CALL ASSESSMENT

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

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

Rajasthan circle consist of total 24 SSA's and each SSA needs to be audit in the span of 12 months.

The methodology adopted for the drive test:

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

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

5.2. INDEPENDENT DRIVE TEST

The number of independent drive tests to be conducted and their locations are Marided 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.
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- The Vehicle used in the drive tests was equipped with the test tool that automatically generates calls on the mobile telephone networks.
- The speed of the vehicle was kept at around 30 km/hr.
- The holding period of each test call was 120 seconds.
- A test call was generated 10 seconds after the previous test call is completed.
- Height of the antenna was kept uniform in case of all service providers.

5.3. PARAMETERS EVALUATED DURING DRIVE TEST

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

- Coverage-Signal strength (GSM)
  - Total calls made (A)
  - Number of calls with signal strength between 0 to -75 dBm
  - Number of calls with signal strength between 0 to -85 dBm
  - Number of calls with signal strength between 0 to -95 dBm
- Coverage-Signal strength (CDMA)
  - Total Ec/Io BINS (A)
  - Total Ec/Io BINS with less than –15 (B)
  - Low Interference = [1 - (B/A)] x 100
- Voice quality (GSM)
  - Total RxQual Samples– A

- RxQual samples with 0-5 value – B
- %age samples with good voice quality = B/A x 100

- Voice quality (CDMA)
  - Total FER BINs (forward FER) – A
  - FER BINs with 0-2 value (forward FER) – B
  - FER BINs with 0-4 value (forward FER) – C
  - %age samples with FER bins having 0-2 value (forward FER) = B/A x 100
  - %age samples with FER bins having 0-4 value (forward FER) = C/A x 100
  - No. of FER samples with value > 4 = [A-C]
- Call setup success rate
  - Total number of call attempts – A
  - Total Calls successfully established – B
  - Call success rate (%age) = (B/A) x 100
- Blocked calls
  - 100% - Call Set up Rate
- Call drop rate
  - Total Calls successfully established – A
  - Total calls dropped after being established – B
  - Call Drop Rate (%age) = (B/A) x 100

6. EXECUTIVE SUMMARY

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

6.1. OPERATORS COVERED

Name of Operator	Number of Subscriber (Up to March 31, 2016)
Aircel	6441508
Airtel	19375697
BSNL	3899673
Idea	7795738
MTS	2107751
RCOM CDMA	939914
RCOM GSM	5742368
TTSL CDMA	1255874
TTSL GSM	1255874
Vodafone	12178639

TSP	No. of cells	BTS	BSC	MSC+GMSC	Node B	RNC
Aircel	7599	2542	17	3	NA	NA
Airtel	41608	8398	82	45	5225	17
BSNL	15856	4113	55	13+3	1298	16
IDEA	21106	6833	57	12+1	NA	NA
RCOM GSM	6166	2058	15	3+1	NA	NA
RCOM CDMA	2791	931	6	4+2	NA	NA
TTSL CDMA	2227	689	6	3+2	NA	NA
TTSL GSM	4175	1388	12	2	NA	NA
MTS	5224	1582	7	2	NA	NA
VODAFONE	22926	7481	91	8+4	2296	10

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

DNA: Data not available

6.2. AUDIT SCHEDULE

Operator	(3 Days Live audit) January2016	January2016	February2016	March2016
Airtel	11th Jan 2016	10thFeb2016	11thMar2016	11thApr 2016
Vodafone	8th Jan 2016	9thFeb2016	10thMar2016	8thApr 2016
Idea	14th Jan 2016	17thFeb2016	14thMar2016	14thApr 2016
Reliance	13th Jan 2016	16thFeb2016	15thMar 2016	13thApr 2016
BSNL	12th Jan 2016	22ndFeb2016	16thMar 2016	12thApr 2016
Aircel	6th Jan 2016	5thFeb2016	8thMar2016	6thApr 2016
Tata Teleservices	5th Jan 2016	7thFeb2016	7thMar2016	5thApr 2016
MTS	7th Jan 2016	6thFeb2016	9thMar2016	7thApr 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: JANUARY

Jan-16											
Network Parameters		Name of Service Provider									
		Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.08%	0.07%	0.10%	0.08%	0.10%	0.03%	0.06%	0.02%	0.10%	1.39%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.08%	0.00%	0.22%	0.15%	0.18%	0.01%	0.34%	0.00%	0.51%	1.66%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.12%	99.22%	98.39%	98.70%	97.88%	99.48%	98.41%	97.48%	99.50%	98.72%
	SDDCH/Paging chl. Congestion	≤ 1%	0.20%	0.00%	0.04%	0.00%	0.20%	0.19%	0.10%	0.00%	0.25%	0.35%
	TCH Congestion	≤ 2%	0.70%	0.05%	0.10%	0.54%	1.22%	0.23%	0.47%	1.16%	0.50%	1.44%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.75%	0.35%	0.50%	0.32%	0.68%	0.69%	0.11%	0.12%	0.70%	1.41%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.97%	0.61%	2.85%	3.38%	0.65%	2.08%	0.62%	1.03%	2.65%	1.66%
	%age of connection with good voice quality	≥ 95%	96.79%	99.23%	98.93%	98.95%	99.22%	96.81%	99.18%	98.51%	96.55%	98.55%

6.4. 2G VOICE PMR DATA: FEBRUARY

Feb-16												
Network Parameters		Name of Service Provider										
		Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.06%	0.05%	0.09%	0.06%	0.09%	0.03%	0.07%	0.03%	0.14%	1.38%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.04%	0.00%	0.00%	0.15%	0.24%	0.00%	0.44%	0.11%	0.03%	1.56%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.05%	99.18%	99.37%	98.76%	97.83%	99.60%	98.08%	97.32%	99.60%	98.16%
	SDDCH/Paging chl. Congestion	≤ 1%	0.18%	0.00%	0.03%	0.00%	0.21%	0.12%	0.15%	0.00%	0.19%	0.51%
	TCH Congestion	≤ 2%	0.87%	0.06%	0.09%	0.33%	1.19%	0.15%	0.68%	1.16%	0.40%	1.35%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.71%	0.33%	0.40%	0.25%	0.65%	0.61%	0.07%	0.13%	0.68%	1.48%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.98%	0.30%	2.21%	2.44%	0.63%	1.63%	0.42%	0.93%	2.58%	1.43%
	%age of connection with good voice quality	≥ 95%	96.62%	99.22%	98.98%	98.90%	99.20%	97.01%	99.17%	98.52%	96.47%	98.17%

6.5. 2G VOICE PMR DATA: MARCH

Mar-16												
Network Parameters		Name of Service Provider										
		Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.08%	0.05%	0.07%	0.07%	0.11%	0.05%	0.05%	0.03%	0.13%	1.36%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.04%	0.13%	0.23%	0.00%	0.15%	0.01%	0.15%	0.11%	0.70%	1.58%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	96.94%	99.08%	99.41%	98.87%	97.74%	99.52%	96.22%	98.33%	99.54%	98.54%
	SDDCH/Paging chl. Congestion	≤ 1%	0.31%	0.00%	0.05%	0.00%	0.42%	0.25%	0.13%	0.00%	0.23%	0.56%
	TCH Congestion	≤ 2%	1.41%	0.07%	0.10%	0.41%	1.33%	0.24%	0.52%	0.39%	0.46%	1.55%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.69%	0.33%	0.37%	0.24%	0.61%	0.55%	0.09%	0.23%	0.63%	1.37%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.90%	0.28%	2.07%	2.46%	0.57%	1.48%	0.50%	0.93%	2.17%	1.86%
	%age of connection with good voice quality	≥ 95%	96.51%	99.21%	99.00%	98.88%	98.80%	97.17%	99.33%	99.22%	96.59%	98.06%

6.6. 2G VOICE PMR DATA: CONSOLIDATED

Consolidated												
Network Parameters		Name of Service Provider										
		Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.07%	0.06%	0.09%	0.07%	0.10%	0.04%	0.06%	0.02%	0.12%	1.38%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.05%	0.04%	0.15%	0.10%	0.19%	0.01%	0.31%	0.07%	0.41%	1.60%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.04%	99.16%	99.06%	98.78%	97.82%	99.53%	97.57%	97.71%	99.55%	98.47%
	SDDCH/Paging chl. Congestion	≤ 1%	0.23%	0.00%	0.04%	0.00%	0.28%	0.19%	0.13%	0.00%	0.22%	0.47%
	TCH Congestion	≤ 2%	0.99%	0.06%	0.10%	0.43%	1.24%	0.21%	0.56%	0.90%	0.45%	1.45%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.72%	0.33%	0.42%	0.27%	0.65%	0.62%	0.09%	0.16%	0.67%	1.42%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.95%	0.40%	2.38%	2.76%	0.62%	1.73%	0.51%	0.96%	2.46%	1.65%
	%age of connection with good voice quality	≥ 95%	96.64%	99.22%	98.97%	98.91%	99.07%	97.00%	99.23%	98.75%	96.54%	98.26%

6.7. 2G VOICE 3 DAYS LIVE DATA

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

6.8. 2G VOICE 3 DAYS LIVE DATA: JANUARY

Jan-16												
Network Parameters		Name of Service Provider										
		Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.08%	0.09%	0.11%	0.06%	DNA	0.03%	0.04%	0.01%	DNA	1.46%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	0.00%	DNA	0.00%	0.00%	0.00%	DNA	0.10%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.18%	99.06%	98.34%	98.80%	DNA	99.53%	98.79%	97.44%	DNA	98.70%
	SDDCH/Paging chl. Congestion	≤ 1%	0.08%	0.00%	0.03%	0.00%	0.00%	0.05%	0.06%	0.00%	0.00%	0.22%
	TCH Congestion	≤ 2%	0.60%	0.11%	0.09%	0.20%	DNA	0.18%	0.40%	1.12%	DNA	1.28%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.71%	0.35%	0.53%	0.25%	DNA	0.69%	0.10%	0.10%	DNA	1.41%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	3.27%	0.21%	2.81%	3.34%	DNA	1.89%	0.63%	1.15%	DNA	2.01%
	%age of connection with good voice quality	≥ 95%	96.86%	99.23%	98.85%	98.96%	DNA	96.71%	99.17%	98.27%	DNA	98.33%

6.9. 2G VOICE 3 DAYS LIVE DATA: FEBRUARY

Network Parameters		Feb-16									
		Name of Service Provider									
		Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.05%	0.07%	0.08%	0.03%	0.07%	0.02%	0.06%	0.03%	0.16%	1.37%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.15%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.06%	99.04%	98.43%	98.97%	97.89%	99.59%	98.54%	97.42%	99.63%	98.47%
	SDDCH/Paging chl. Congestion	≤ 1%	0.15%	0.00%	0.03%	0.00%	0.20%	0.14%	0.07%	0.00%	0.21%	0.49%
	TCH Congestion	≤ 2%	0.63%	0.15%	0.08%	0.27%	1.14%	0.15%	0.53%	1.14%	0.37%	1.70%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.69%	0.32%	0.43%	0.25%	0.66%	0.61%	0.06%	0.12%	0.71%	1.54%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.84%	0.28%	2.47%	2.33%	0.60%	1.55%	0.35%	1.02%	2.66%	2.49%
	%age of connection with good voice quality	≥ 95%	96.65%	99.23%	98.95%	98.94%	99.19%	96.97%	99.18%	98.55%	96.57%	98.67%

6.10. 2G VOICE 3 DAYS LIVE DATA: MARCH

Network Parameters		Mar-16									
		Name of Service Provider									
		Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.04%	0.04%	0.07%	0.04%	0.11%	0.06%	0.05%	0.01%	0.12%	1.37%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%	0.05%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.03%	98.91%	99.44%	99.10%	98.45%	99.54%	97.07%	98.67%	99.55%	98.40%
	SDDCH/Paging chl. Congestion	≤ 1%	0.31%	0.00%	0.03%	0.00%	0.43%	0.16%	0.09%	0.00%	0.10%	0.53%
	TCH Congestion	≤ 2%	1.13%	0.18%	0.07%	0.22%	0.73%	0.23%	0.83%	0.06%	0.45%	1.72%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.67%	0.32%	0.39%	0.21%	0.52%	0.57%	0.07%	0.19%	0.62%	1.38%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.72%	0.25%	2.18%	1.87%	0.70%	1.59%	0.46%	1.22%	2.33%	2.31%
	%age of connection with good voice quality	≥ 95%	96.47%	99.21%	98.97%	98.92%	99.18%	97.13%	99.34%	99.90%	96.60%	98.67%

6.11. 2G 3 DAYS LIVE DATA: CONSOLIDATED

Consolidated											
Network Parameters		Name of Service Provider									
		Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.06%	0.07%	0.09%	0.05%	0.09%	0.03%	0.05%	0.02%	0.14%	1.40%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%	0.10%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.09%	99.00%	98.74%	98.96%	98.17%	99.55%	98.13%	97.85%	99.59%	98.52%
	SDDCH/Paging chl. Congestion	≤ 1%	0.18%	0.00%	0.03%	0.00%	0.21%	0.12%	0.07%	0.00%	0.10%	0.41%
	TCH Congestion	≤ 2%	0.79%	0.15%	0.08%	0.23%	0.93%	0.19%	0.59%	0.77%	0.41%	1.57%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.69%	0.33%	0.45%	0.24%	0.59%	0.62%	0.08%	0.14%	0.67%	1.44%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.95%	0.25%	2.49%	2.52%	0.65%	1.68%	0.48%	1.13%	2.50%	2.27%
	%age of connection with good voice quality	≥ 95%	96.66%	99.22%	98.92%	98.94%	99.19%	96.93%	99.23%	98.91%	96.59%	98.56%

6.12. 3G VOICE PMR: CONSOLIDATED

Consolidated						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.25%	0.22%	0.36%	1.53%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.78%	1.05%	1.12%	1.94%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.61%	99.85%	99.92%	95.97%
	RRC Congestion:	≤ 1%	0.66%	0.06%	0.02%	0.64%
	RAB Congestion:	≤ 2%	1.03%	0.01%	0.02%	1.34%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.44%	0.13%	0.27%	1.82%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.58%	0.31%	2.54%	2.71%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.95%	99.71%	98.99%	97.05%

6.13. 3G VOICE PMR: JANUARY

Jan-16						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.22%	DNA	0.26%	1.55%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.37%	DNA	1.52%	1.95%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.39%	DNA	99.92%	96.78%
	RRC Congestion:	≤ 1%	1.90%	DNA	0.04%	0.95%
	RAB Congestion:	≤ 2%	3.03%	DNA	0.02%	1.25%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.51%	DNA	0.31%	1.75%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.19%	DNA	2.71%	2.73%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.92%	DNA	98.97%	96.65%

6.14. 3G VOICE PMR: FEBRUARY

Feb-16						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.35%	DNA	0.35%	1.54%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	1.76%	DNA	1.76%	1.94%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.92%	DNA	99.92%	95.56%
	RRC Congestion:	≤ 1%	0.01%	DNA	0.01%	0.49%
	RAB Congestion:	≤ 2%	0.02%	DNA	0.02%	1.34%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.30%	DNA	0.30%	1.91%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	2.35%	DNA	2.35%	2.71%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	99.01%	DNA	99.01%	96.93%

6.15. 3G VOICE PMR: MARCH

Mar-16						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.19%	0.22%	0.46%	1.50%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.22%	1.05%	0.07%	1.93%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.53%	99.85%	99.93%	95.56%
	RRC Congestion:	≤ 1%	0.06%	0.06%	0.02%	0.47%
	RAB Congestion:	≤ 2%	0.05%	0.01%	0.01%	1.42%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.51%	0.13%	0.20%	1.79%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.22%	0.31%	2.57%	2.69%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.92%	99.71%	99.00%	97.58%

6.16. 3G VOICE 3 DAYS LIVE DATA: CONSOLIDATED

Consolidated						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	RCOM-3G	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.52%	1.24%	0.34%	1.51%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.18%	0.21%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.54%	99.79%	99.90%	95.48%
	RRC Congestion:	≤ 1%	0.31%	0.07%	0.02%	0.75%
	RAB Congestion:	≤ 2%	0.70%	0.03%	0.04%	1.30%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.54%	0.15%	0.26%	1.87%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.11%	0.35%	3.55%	2.71%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.93%	98.92%	99.00%	96.89%

6.17. 3G VOICE 3 DAYS LIVE DATA: JANUARY

Jan-16						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	RCOM-3G	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.71%	DNA	DNA	1.51%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	DNA	DNA	0.23%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.57%	DNA	DNA	95.57%
	RRC Congestion:	≤ 1%	0.87%	DNA	DNA	0.98%
	RAB Congestion:	≤ 2%	1.99%	DNA	DNA	1.20%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.57%	DNA	DNA	1.95%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.18%	DNA	DNA	2.69%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.93%	DNA	DNA	97.00%

6.18. 3G VOICE 3 DAYS LIVE DATA: FEBRUARY

Feb-16						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	RCOM-3G	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.15%	DNA	0.21%	1.51%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	DNA	0.00%	0.15%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.48%	DNA	99.87%	95.48%
	RRC Congestion:	≤ 1%	0.03%	DNA	0.03%	0.57%
	RAB Congestion:	≤ 2%	0.08%	DNA	0.08%	1.31%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.47%	DNA	0.34%	1.82%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	0.97%	DNA	4.47%	2.69%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.94%	DNA	98.99%	96.67%

6.19. 3G VOICE 3 DAYS LIVE DATA: MARCH

Mar-16						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	RCOM-3G	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.71%	1.24%	0.48%	1.50%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.00%	0.00%	0.36%	0.23%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.57%	99.79%	99.94%	95.39%
	RRC Congestion:	≤ 1%	0.01%	0.07%	0.01%	0.71%
	RAB Congestion:	≤ 2%	0.02%	0.03%	0.00%	1.40%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.57%	0.15%	0.18%	1.84%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.18%	0.35%	2.64%	2.75%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.93%	98.92%	99.01%	97.00%

6.20. 2G WIRELESS DATA: JANUARY

Jan-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		993003	DNA	6316	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		992351	DNA	6316	DNA	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.93%	DNA	100%	DNA	DNA	DNA	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		185353220	2953439	8836690	DNA	DNA	DNA	DNA	DNA	10288564	61041288
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		184149192	2929970	8528935	DNA	DNA	DNA	DNA	DNA	10276325	60873627
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.35%	99.21%	96.52%	DNA	DNA	DNA	DNA	DNA	99.88%	99.73%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	3780953	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		DNA	DNA	47661	DNA	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	1.02%	DNA	1.26%	DNA	DNA	DNA	DNA	DNA	DNA	DNA

6.21. 2G Wireless Data: February

Feb-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		1323201	DNA	39069	5328	DNA	DNA	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		1321547	DNA	39069	5328	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.88%	DNA	100%	100%	DNA	DNA	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		174866236	5537997	2160073	7934538	DNA	DNA	DNA	DNA	126469	53438830
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		174385166	5474195	2157498	7667863	DNA	DNA	DNA	DNA	125503	53318783
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.72%	98.85%	99.88%	96.64%	DNA	DNA	DNA	DNA	99.24%	99.78%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		DNA	143735184	532668924	3133924	DNA	DNA	DNA	DNA	DNA	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		DNA	2582416	9890736	41315	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	1.01%	1.80%	1.86%	1.32%	DNA	DNA	DNA	DNA	DNA	DNA

6.22. 2G Wireless Data: March

Mar-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		1707373	78517	46121	6290	DNA	221409	8173	20048	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		1702706	78517	46121	6290	DNA	221409	8172	20046	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.73%	100.00%	100.00%	100.00%	DNA	100.00%	99.99%	99.99%	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		196543125	5446045	2319032	8593101	DNA	61861959	DNA	DNA	9425160	55009578
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		195757127	5377516	2316717	8294032	DNA	61033337	DNA	DNA	9410493	54945498
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.60%	98.74%	99.90%	96.52%	99.61%	98.66%	99.86%	99.54%	99.84%	99.88%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		DNA	155730351	584894121	5401833	DNA	33518742591	1586030039	3806389	2599386683	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		DNA	2752199	11286716	67842	DNA	40941438	32714350	11509	95860022	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	1.05%	1.77%	1.93%	1.26%	1.21%	0.12%	2.06%	0.30%	3.69%	DNA

6.23. 2G WIRELESS DATA: CONSOLIDATED

Consolidated												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		1341192	78517	30502	5809	DNA	221409	8173	20048	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		1338868	78517	30502	5809	DNA	221409	8172	20046	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	Within 4 Hours with 95% Success Rate	99.85%	100.00%	100.00%	100.00%	DNA	100.00%	99.99%	99.99%	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		185587527	4645827	4438598	8263820	DNA	61861959	DNA	DNA	6613397	56496565
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		184763828	4593894	4334383	7980948	DNA	61033337	DNA	DNA	6604107	56379303
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.56%	98.93%	98.77%	96.58%	99.61%	98.66%	99.86%	99.54%	99.65%	99.79%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		DNA	149732768	373781333	4267879	DNA	33518742591	1586030039	3806389	2599386683	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		DNA	2667308	7075038	54579	DNA	40941438	32714350	11509	95860022	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	1.03%	1.78%	1.68%	1.29%	1.21%	0.12%	2.06%	0.30%	3.69%	DNA

6.24. 2G WIRELESS 3 DAYS LIVE DATA: JANUARY

Jan-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	5832	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	5832	DNA	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA	DNA	DNA	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		17978674	181285	218138	DNA	DNA	DNA	DNA	DNA	939177	6939610
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		17937687	182926	217851	DNA	DNA	DNA	DNA	DNA	938455	6811565
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.77%	99.10%	99.87%	DNA	DNA	DNA	DNA	DNA	99.92%	1.85%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	55490387	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		DNA	DNA	1082021	DNA	DNA	DNA	DNA	DNA	DNA	DNA
	Drop Rate = (B/A) * 100	<=5%	2.95%	DNA	1.95%	DNA	DNA	DNA	DNA	DNA	DNA	DNA

6.25. 2G Wireless 3 Days Live Data: February

Feb-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	564809	DNA	DNA	DNA	DNA	DNA	DNA	939177	5625946
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	556752	DNA	DNA	DNA	DNA	DNA	DNA	938455	5610704
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.77%	98.57%	DNA	DNA	DNA	DNA	DNA	DNA	99.92%	99.73%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.98%	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA

6.26. 2G Wireless 3 Days Live Data: March

Mar-16												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	5832	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	5832	DNA	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	100.00%	DNA	DNA	DNA	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		18643338	522591	218138	DNA	DNA	DNA	DNA	DNA	150898.78	5224231.00
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		18478235	516849	217851	DNA	DNA	DNA	DNA	DNA	149252.00	5216644.00
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.11%	98.90%	99.87%	DNA	DNA	DNA	DNA	DNA	98.91%	99.85%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		DNA	14958294	55490387	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		DNA	270775	1082021	DNA	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	1.06%	1.81%	1.95%	DNA	DNA	DNA	DNA	DNA	DNA	DNA

6.27. 2G WIRELESS 3 DAYS LIVE DATA: CONSOLIDATED

CONSOLIDATED												
Cellular Mobile Telephone Services												
S. No.	Name of Parameter	Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter												
1	Service Activation/ Provisioning											
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate											
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		18311006	422895	218138	DNA	DNA	DNA	DNA	DNA	676417.6	5929929
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		18207961	418842.3333	217851	DNA	DNA	DNA	DNA	DNA	675387.3	5879638
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.55%	98.86%	99.87%	DNA	DNA	DNA	DNA	DNA	99.58%	67.14%
3	Drop Rate											
i)	TBF originated PS Domain Iu Connection Setup Success (A)		DNA	14958294	55490387	DNA	DNA	DNA	DNA	DNA	DNA	DNA
ii)	TBF originated PS Domain Iu Connection Release (B)		DNA	270775	1082021	DNA	DNA	DNA	DNA	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	1.66%	1.81%	1.95%	DNA	DNA	DNA	DNA	DNA	DNA	DNA

6.28. 3G WIRELESS DATA: JANUARY

Jan-16						
Cellular Mobile Telephone Services						
S. No.	Name of Parameter	Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Service Quality Parameter						
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		1402682.00	DNA	1402682.00	61041288
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		1393343.00	DNA	1393343.00	60873627
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.33%	DNA	99.33%	99.73%
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	DNA	DNA
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	DNA	DNA	DNA	DNA

6.29. 3G WIRELESS DATA: FEBRUARY

Feb-16						
Cellular Mobile Telephone Services						
S. No.	Name of Parameter	Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Service Quality Parameter						
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	DNA	53438830
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	DNA	53318783
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	DNA	DNA	DNA	99.78%
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	DNA	DNA
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	DNA	DNA	DNA	DNA

6.30. 3G WIRELESS DATA: MARCH

Mar-16						
Cellular Mobile Telephone Services						
S. No.	Name of Parameter	Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Service Quality Parameter						
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	253352	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	253345	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	2490551	55009578
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	2479755	54945498
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.98%	99.46%	99.57%	99.88%
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	145713980	DNA	DNA
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	1268479	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.54%	0.87%	DNA	DNA

6.31. 3G WIRELESS DATA: CONSOLIDATED

Consolidated						
Cellular Mobile Telephone Services						
S. No.	Name of Parameter	Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Service Quality Parameter						
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	253352	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	253345	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	100.00%	DNA	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		1402682	DNA	1946617	DNA
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		1393343	DNA	1936549	DNA
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.66%	99.46%	99.45%	DNA
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	145713980	DNA	DNA
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	1268479	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	0.54%	0.87%	DNA	DNA

6.32. 3G WIRELESS 3 DAYS LIVE DATA: JANUARY

Jan-16						
Cellular Mobile Telephone Services						
S. No.	Name of Parameter	Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Service Quality Parameter						
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	DNA	6939610
ii)	tal No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	DNA	6811565
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	DNA	DNA	DNA	1.85%
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	DNA	DNA
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	DNA	DNA	DNA	DNA

6.33. 3G Wireless 3 Days Live Data: February

Feb-16						
Cellular Mobile Telephone Services						
S. No.	Name of Parameter	Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Service Quality Parameter						
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		2952304.00	DNA	185328.00	5625946
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		16714.00	DNA	184105.00	5610704
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.43%	DNA	99.34%	99.73%
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		837284.00	DNA	DNA	DNA
ii)	RNC originated PS Domain Iu Connection Release (B)		12113.00	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	1.45%	DNA	DNA	DNA

6.34. 3G Wireless 3 Days Live Data: March

MARCH						
Cellular Mobile Telephone Services						
S. No.	Name of Parameter	Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Service Quality Parameter						
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		DNA	DNA	DNA	5224231
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		DNA	DNA	DNA	5216644
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	DNA	DNA	DNA	99.85%
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		DNA	DNA	DNA	DNA
ii)	RNC originated PS Domain Iu Connection Release (B)		DNA	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	DNA	DNA	DNA	DNA

6.35. 3G Wireless 3 Days Live Data: Consolidated

CONSOLIDATED						
Cellular Mobile Telephone Services						
S. No.	Name of Parameter	Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Service Quality Parameter						
1	Service Activation/ Provisioning					
i)	Total No. of Subscribers for Service Activation (A)		DNA	DNA	DNA	DNA
ii)	Total Service Activations provided within 4 Hours (B)		DNA	DNA	DNA	DNA
iii)	Service Activation / Provisioning = (B/A) * 100	*Within 4 Hours with 95% Success Rate*	DNA	DNA	DNA	DNA
2	PDP Context Activation Success Rate					
i)	Total No. of PDP Context Activation Requests (from SGSN to GGSN) (A)		2952304	DNA	185328	DNA
ii)	Total No. of PDP Context Activation Success (path created b/w SGSN and GGSN) (B)		16714	DNA	184105	DNA
iii)	PDP Context Activation Success Rate =(B/A) *100	>=95%	99.43%	DNA	99.34%	DNA
3	Drop Rate					
i)	RNC originated PS Domain Iu Connection Setup Success (A)		837284	DNA	DNA	DNA
ii)	RNC originated PS Domain Iu Connection Release (B)		12113	DNA	DNA	DNA
iii)	Drop Rate = (B/A) * 100	<=5%	1.45%	DNA	DNA	DNA

6.36. POI Congestion: Consolidated

Consolidated										
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service										
Name of Parameter	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter										
Total No. of POI's in Month having < = 0.5% POI congestion										
Total No. of call attempts on POI	122795755	23406365	4517466	13845128	5989670	106215038	17889319	16150367	390062035	19441616
Total traffic served on all POIs (Erlang)	2941469	666137	100544	307996	139949	2409779	497958	387782	1375215	382765
Total No. of circuits on all individual POIs	5283745	1501978	297311	1218672	224262	4173966	565109	593354	2925950	1049286
Total number of working POI Service Area wise	37	65	310	6643	118	133	248	1782	1322	4122
Capacity of all POIs	5165704	1509331	296546	1197166	219118	4023215	290561	541468	2953586	865726
No. of all POI's having >=0.5% POI congestion	0	0	0	0	0	0	0	0	0	0
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.37. POI Congestion: January

Jan-16										
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service										
Name of Parameter	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter										
Total No. of POI's in Month having < = 0.5% POI congestion										
Total No. of call attempts on POI	114736282	21819949	385369	12756178	5842157	107271569	25849778	737636	103013503	17254289
Total traffic served on all POIs (Erlang)	2895365	665605	8906	288314	136729	2443435	841081	16899	2024948	360051
Total No. of circuits on all individual POIs	5528882	1538685	28772	1245456	224005	4273411	810020	30579	4461179	1136563
Total number of working POI Service Area wise		65	30	6789	118	133	24	92	2015	4247
Capacity of all POIs	5405880	1546222	28698	1223477	218852	4118795	28962	27799	4503313	957404
No. of all POI's having >=0.5% POI congestion	0	0	0	0	0	0	0	0	1	0
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	TATA LOCAL (MGW)	NIL

6.38. POI CONGESTION: FEBRUARY

Feb-16										
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service										
Name of Parameter	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter										
Total No. of POI's in Month having < = 0.5% POI congestion										
Total No. of call attempts on POI	124167814	22680708	12694272	13637967	6080677	102532265	26958585	24875262	1063335286	19618539
Total traffic served on all POIs (Erlang)	2951192	639342	282176	296158	141776	2302959	633716	640745	2030250	383078
Total No. of circuits on all individual POIs	5199758	1438206	834388	1165104	224748	3989270	858127	901481	4172781	969323
Total number of working POI Service Area wise	NA	65	870	6351	118	133	696	2831	1885	3873
Capacity of all POIs	5084627	1445238	832242	1144543	219594	3845229	818714	822849	4212198	682370
No. of all POI's having >=0.5% POI congestion	0	0	0	0	0	0	0	0	0	0
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

6.39. POI CONGESTION: MARCH

Mar-16										
Monthly TRAI Network Performance Report of Cellular Mobile Telephone Service - Network Service										
Name of Parameter	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Service Quality Parameter										
Total No. of POI's in Month having < = 0.5% POI congestion										
Total No. of call attempts on POI	129483168	25718439	472756	15141239	6046174	108841279	859593	22838202	3837316	21452020
Total traffic served on all POIs (Erlang)	2977849	693465	10550	339515	141342	2482944	19078	505702	70447	405166
Total No. of circuits on all individual POIs	5122594	1529044	28772	1245456	224034	4259217	27179	848003	143889	1041972
Total number of working POI Service Area wise	37	65	30	6789	118	132	24	2424	65	4247
Capacity of all POIs	5006605	1536532	28698	1223477	218908	4105621	24008	773757	145248	957404
No. of all POI's having >=0.5% POI congestion	0	0	0	0	0	0	0	0	0	0
Name of POI not meeting the benchmark (having >=0.5% POI congestion)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

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%	77.59%	96.85%	92.28%
AIRTEL	0.01%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.99%	94.25%
BSNL	0.05%	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%	92.03%	98.52%
IDEA	0.08%	0.07%	100.00%	100.00%	100.00%	100.00%	100.00%	98.94%	96.45%
MTS	0.06%	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%	99.96%	95.78%
RCOM-GSM	0.09%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	99.71%	95.31%
RCOM-CDMA	0.08%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	99.58%	91.22%
TTSL-GSM	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	95.90%	90.15%
TTSL-CDMA	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	95.90%	98.21%
VODAFONE	0.10%	0.09%	100.00%	38.23%	100.00%	100.00%	60.56%	100.00%	97.47%

Name of Service Provider	Customer Care & Grievances Redressal	
	% of Complaints addressed at call center level	% of Complaints addressed by Appellate Authority
Benchmark		
AIRCEL	100.00%	100.00%
AIRTEL	94.12%	100.00%
BSNL	4.29%	NIL
IDEA	87.54%	NIL
MTS	100.00%	100.00%
RCOM-GSM	100.00%	100.00%
RCOM-CDMA	100.00%	100.00%
TTSL-GSM	100.00%	NIL
TTSL-CDMA	99.86%	NIL
VODAFONE	7.02%	33.33%

7.2. LIVE CALLING DATA: CONSOLIDATED

Name of Service Provider	Metering and Billing (Service Request)				Response time to customer for Assistanse	
	Total Calls Attempted	No. of Subscribers reached	Compalints/ Request attended to satisfaction	% of Complaints/ Requestattended 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	4	4	4	100%	100%	100%
AIRTEL	138	66	66	100%	100%	100%
BSNL	158	158	158	100%	100%	95%
IDEA	200	132	117	89%	100%	100%
MTS	300	185	185	100%	100%	100%
RCOM-GSM	200	64	64	100%	98.00%	98.00%
RCOM-CDMA	200	83	83	100%	99.00%	98.00%
TTSL-GSM	0	0	0	NIL	98.00%	98.00%
TTSL-CDMA	0	0	0	NIL	98.00%	98.00%
VODAFONE	285	186	158	85%	100%	100%

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	682584	673678	98.70%	135038	128240	94.97%
AIRTEL	134936	134936	100.00%	281445	249280	88.57%
BSNL	14859	14218	95.69%	8645	8644	99.99%
IDEA	1061298	1054161	99.33%	253483	253066	99.84%
MTS	186090	186049	99.98%	56224	55310	98.37%
RCOM-GSM	163281	162730	99.66%	32892	20528	62.41%
RCOM-CDMA	49534	48978	98.88%	9912	6363	64.19%
TTSL-GSM	4843	4825	99.63%	4784	4722	98.70%
TTSL-CDMA	1593	1591	99.87%	1578	1575	99.81%
VODAFONE	490916	490916	100.00%	228621	227171	99.37%

8. L1 CALLING DATA

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

- Bhilwara: 4th Feb to 6th Feb 2016
- Barmer: 22nd Feb to 24th Feb 2016
- Jhunjhunu: 29th Feb to 2nd March 2016
- Nagaur: 28th Mar to 30th March 2016

8.1. BHILWARA

8.1.1. AIRCEL

		AIRCEL	
SR. N.	**EMERGENCY NUMBER**	**CALLS MADE**	**Bhilwara**
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	√

8.1.2. BSNL

	BSNL	
SR. N.	**EMERGENCY NUMBER**	**Bhilwara**
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	X
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	√

8.1.3. MTS

	MTS	
SR. N.	EMERGENCY NUMBER	Bhilwara
1	100	√
2	101	√
3	102	√
4	104	√
5	108	√
6	138	√
7	149	X
8	181	√
9	182	√
10	1033	√
11	1037	X
12	1056	X
13	1060	X
14	1063	X
15	1064	X
16	1070	X
17	1071	X
18	1072	√
19	1073	X
20	1077	X
21	1090	X
22	1091	√
23	1097	√
24	1099	X
25	10580	X
26	10589	X
27	10740	X
28	10741	X
29	1511	√
30	1512	√
31	1514	X
32	15100	√
33	155304	X
34	155214	X
35	1903	√
36	1909	√
37	1912	√
38	1916	X
39	1950	√

8.1.4. RCOM CDMA

	RCOM CDMA			
SR. N.	EMERGENCY NUMBER	Ajmer	Beawer	KishaNgarh
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	√	√	√

8.1.5. RCOM GSM

	RCOM GSM			
SR. N.	EMERGENCY NUMBER	Ajmer	Beawer	KishaNgarh
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	√	√	√

8.1.6. TTSL CDMA

	TATA CDMA	
SR. N.	**EMERGENCY NUMBER**	**Bhilwara**
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	√

8.1.7. TTSL GSM

	TATA GSM	
SR. N.	**EMERGENCY NUMBER**	**Bhilwara**
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	√

8.2. BARMER

8.2.1. AIRCEL

		AIRCEL	
SR. N.	EMERGENCY NUMBER	CALLS MADE	BARMER
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	√

8.2.2. AIRTEL

	AIRTEL	
SR. N.	**EMERGENCY NUMBER**	**BARMER**
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	×

8.2.3. BSNL

	BSNL				
SR. N.	EMERGENCY NUMBER	CALLS MADE	BARMER	SHIV	BALOTARA
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	√	√	√

8.2.4. IDEA

	IDEA	
SR. N.	**EMERGENCY NUMBER**	**CALLS MADE**
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	×

8.2.5. MTS

	MTS			
SR. N.	EMERGENCY NUMBER	BARMER	BARMER	BARMER
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	×	×	×

8.2.6. RCOM CDMA

	RCOM CDMA			
SR. N.	EMERGENCY NUMBER	AJMER	BEAWER	KISHANGARH
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	√	√	√

8.2.7. RCOM GSM

	RCOM GSM			
SR. N.	EMERGENCY NUMBER	AJMER	BEAWER	KISHANGARH
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	√	√	√

8.2.8. TTSL CDMA

	TATA CDMA	
SR. N.	**EMERGENCY NUMBER**	**BARMER**
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	√

8.2.9. TTSL GSM

	TATA GSM	
SR. N.	EMERGENCY NUMBER	BSNL OFFICE
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	√

8.3. JHUNJHUNU

8.3.1. AIRCEL

		AIRCEL	
SR. N.	EMERGENCY NUMBER	CALLS MADE	JHUNJHUNU
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	√

8.3.2. AIRTEL

	AIRTEL	
SR. N.	**EMERGENCY NUMBER**	**JHUNJHUNU**
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	×

8.3.3. IDEA

	IDEA	
SR. N.	**EMERGENCY NUMBER**	**JHUNJHUNU**
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	√

8.3.4. MTS

	MTS	
SR. N.	EMERGENCY NUMBER	JHUNJHNU
1	100	√
2	101	√
3	102	√
4	104	√
5	108	√
6	138	√
7	149	X
8	181	√
9	182	√
10	1033	√
11	1037	X
12	1056	X
13	1060	X
14	1063	√
15	1064	√
16	1070	√
17	1071	√
18	1072	X
19	1073	X
20	1077	X
21	1090	X
22	1091	√
23	1097	√
24	1099	X
25	10580	X
26	10589	X
27	10740	X
28	10741	X
29	1511	√
30	1512	√
31	1514	X
32	15100	√
33	155304	X
34	155214	X
35	1903	√
36	1909	√
37	1912	√
38	1916	√
39	1950	√

8.3.5. RCOM CDMA

	RCOM CDMA	
SR. N.	**EMERGENCY NUMBER**	**JHUNJHUNU**
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	√

8.3.6. RCOM GSM

	RCOM GSM	
SR. N.	**EMERGENCY NUMBER**	**JHUNJHUNU**
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	√

8.3.7. TTSLCDMA

	TATA CDMA	
SR. N.	**EMERGENCY NUMBER**	**JHUNJHUNU**
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	√

8.3.8. TTSL GSM

	TATA GSM	
SR. N.	**EMERGENCY NUMBER**	**JHUNJHUNU**
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	√

8.3.9. VODAFONE

	VODAFONE		
SR. N.	EMERGENCY NUMBER	CALLS MADE	JHUNJHUNU
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	√

8.4. NAGAUR

8.4.1. AIRCEL

		AIRCEL	
SR. N.	EMERGENCY NUMBER	CALLS MADE	NAGAUR
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	√

8.4.2. BSNL

	BSNL	
SR. N.	**EMERGENCY NUMBER**	**NAGAUR**
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	×

8.4.3. IDEA

	IDEA	
SR. N.	**EMERGENCY NUMBER**	**NAGAUR**
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	√

8.4.4. MTS

	MTS	
SR. N.	EMERGENCY NUMBER	Nagaur
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	×

8.4.5. TTSL CDMA

	TATA CDMA	
SR. N.	**EMERGENCY NUMBER**	**Nagaur**
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	√

8.4.6. TTSL GSM

	TATA GSM	
SR. N.	**EMERGENCY NUMBER**	**Nagaur**
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	√

9. Operator Assisted Drive Test

The drive test was conducted simultaneously for all the operators present in the Rajasthan circle. As per the new directive given by TRAI headquarters, drive test for the month of January, February and March, 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 theRajasthan circle.

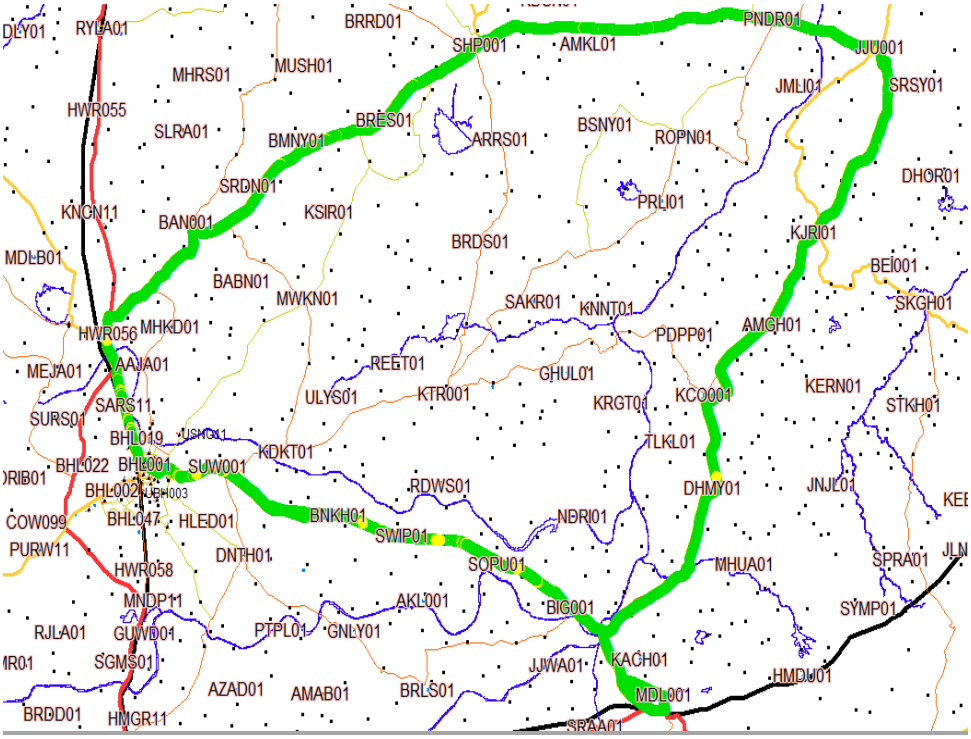
9.1. February: BHILWARA SSA

Month	Name of SSA covered	Drive Test Schedule
February 2016	BHILWARA	February 4, 2016 to February 6, 2016

9.2. Distance Covered: BHILWARA SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
BHILWARA SSA	215 km	230 km	145 km

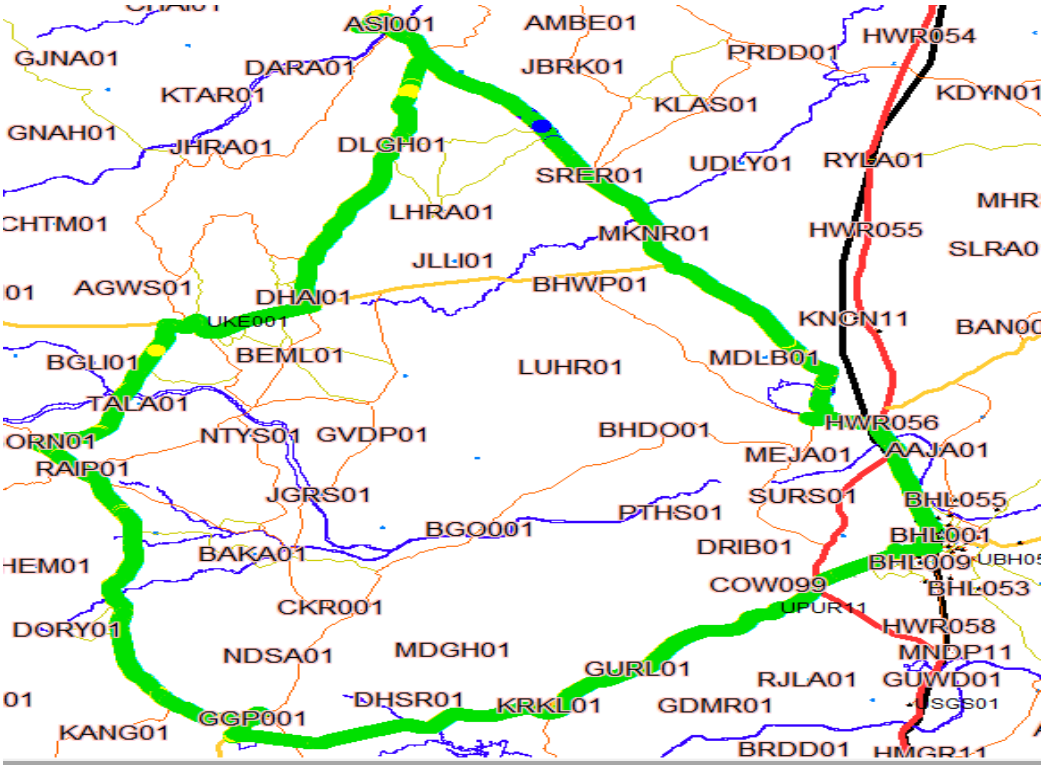
9.3. ROUTE MAP: BHILWARA SSA: DAY 1



Route Covered- day 1

1. HIGHWAY- BHILWARA TO MANDALGARH
2. HIGHWAY- MANDALGARH TO JAHAJPUR
3. HIGHWAY- JAHAJPUR TO SHAHPURA
4. HIGHWAY- SHAHPURA TO BHILWARA
5. WITHIN CITY- MANDALGARH
6. WITHIN CITY- JAHAJPURA
7. MAJOR ROAD- SHAHPURA

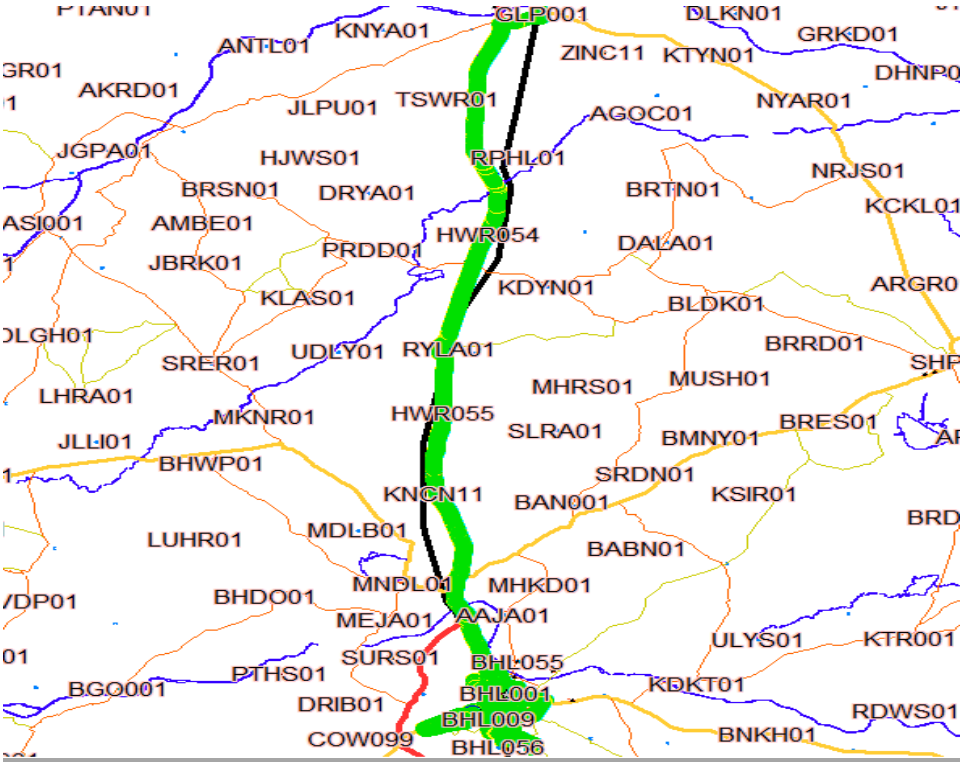
9.4. ROUTE MAP: BHILWARA SSA: DAY 2



Route Covered- Day2

1. HIGHWAY BHILWARA TO MANDAL
2. HIGHWAY MANDAL TO ASIND
3. HIGHWAY ASIND TO KARETA
4. HIGHWAY GANGAPUR TO BHILWARA
5. WITH IN CITY Mandal
6. WITH IN CITY Asind
7. WITH IN CITY Kareta
8. WITH IN CITY Gangapur
9. MAJOR ROAD RAIPUR TO GANGAPUR
10. MAJOR ROAD KARETA TO

9.5. ROUTE MAP: BHILWARA SSA: DAY 3



Route Covered- DAY3

1. BHILWARA WITHIN CITY
2. BHILWARA TO GULAPPURA HIGHWAY
3. GULABPURA MAJOR ROADS

9.6. DRIVE TEST OUTCOME

	Aircel	Airtel	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	Tata CDMA	Tata GSM	Vodafone
Total Calls Attempt (A)	478	595	483	519	549	367	442	349	436	557
Total Calls Blocked (B)	0	0	14	1	0	0	1	0	1	0
Blocked Call Rate in % (B*100/A)	0.00%	0.00%	2.90%	0.19%	0.00%	0.00%	0.23%	0.00%	0.23%	0.00%
Total Calls Established ('C)	478	595	461	518	549	367	441	349	435	557
Total Calls Drop (D)	0	0	9	0	0	0	1	0	0	0
Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	1.95%	0.00%	0.00%	0.00%	0.23%	0.00%	0.00%	0.00%
Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	95.45%	99.81%	100.00%	100.00%	99.77%	100.00%	99.77%	100.00%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	90.99%	100.00%	99.98%	100.00%	99.30%	100.00%	100.00%	99.86%

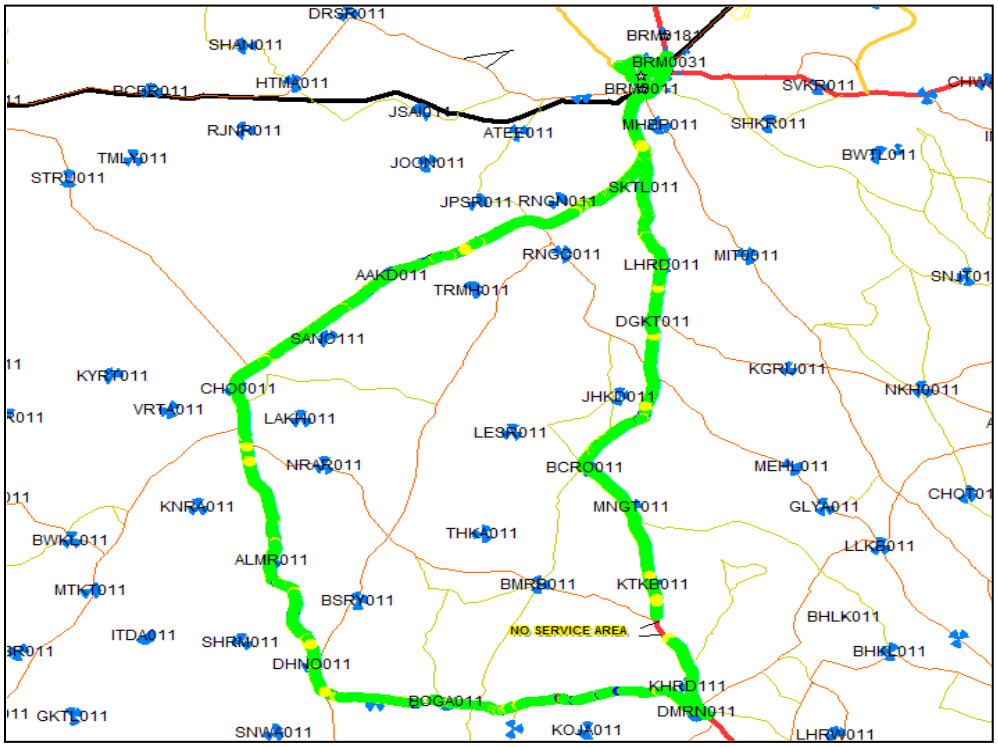
9.7. FEBRUARY: BARMER SSA

Month	Name of SSA covered	Drive Test Schedule
February 2016	BARMER	February 22, 2016 to February 24, 2016

9.8. DISTANCE COVERED: BARMER SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
BARMER SSA	205 km	220 km	220 km

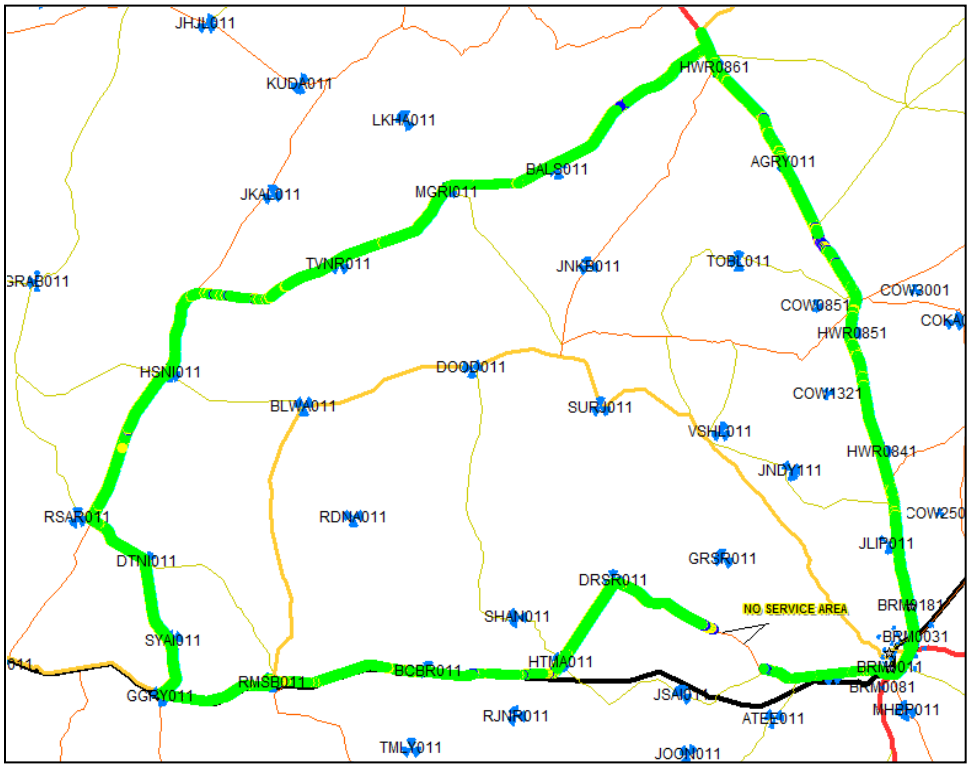
9.9. ROUTE MAP: BARMER SSA: DAY 1



Route Covered- day 1

1. WITHIN CITY BARMER
2. HIGHWAY BARMER TO CHOHTAN
3. WITHIN CITY CHOHTAN
4. HIGHWAY CHOHTAN TO DHORIMNNA
5. MAJOR ROAD DHORIMANNA
6. HIGHWAY DHORIMANNA TO BARMER

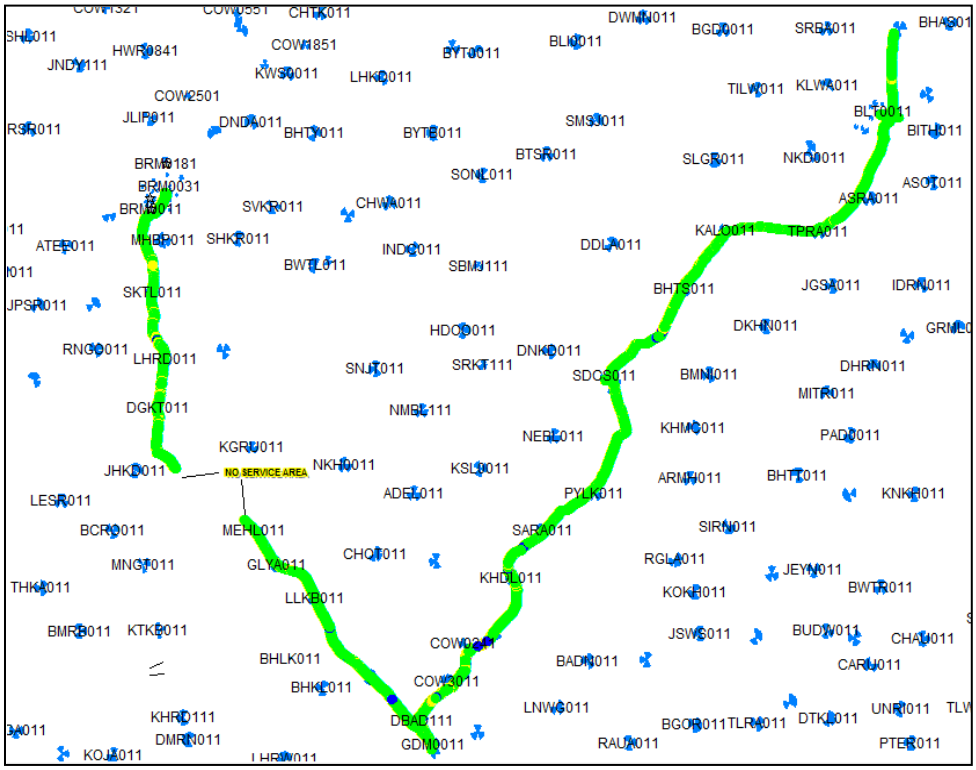
9.10. ROUTE MAP: BARMER SSA: DAY 2



Route Covered- Day2

1. HIGHWAY BARMER TO RAMSAR
2. WITHIN CITY RAMSAR
3. HIGHWAY RAMSAR TO HARSANI
4. WITHIN CITY HARSANI
5. HIGHWAY HARSANI TO SHIV
6. WITH IN CITY SHIV
7. HIGHWAY SHIV TO BARMER
8. MAJOR ROAD BARMER TOWN

9.11. ROUTE MAP: BARMER SSA: DAY 3



Route Covered- DAY3

1. HIGHWAY BARMER TO GUDAMALANI
2. WITHIN CITY GUDAMALANI
3. HIGHWAY GUDAMALANI TO SINDHARI
4. WITHIN CITY SINDHRI
5. HIGHWAY SINDHARI TO BALOTRA
6. WITHIN CITY BALOTRA
7. MAJOR ROAD BALOTRA TO PANCPADRA

9.12. DRIVE TEST OUTCOME

	Aircel	Airtel	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	Tata CDMA	Tata GSM	Vodafone
Total Calls Attempt (A)	302	598	838	341	301	204	297	261	283	613
Total Calls Blocked (B)	0	0	7	0	0	0	1	0	0	0
Blocked Call Rate in % (B*100/A)	0.00%	0.00%	0.84%	0.00%	0.00%	0.00%	0.34%	0.00%	0.00%	0.00%
Total Calls Established ('C)	302	598	831	341	301	204	296	261	283	613
Total Calls Drop (D)	0	0	6	0	0	1	1	0	0	0
Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	0.72%	0.00%	0.00%	0.49%	0.34%	0.00%	0.00%	0.00%
Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	99.16%	100.00%	100.00%	100.00%	99.66%	100.00 %	100.00%	100.00%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	97.70%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

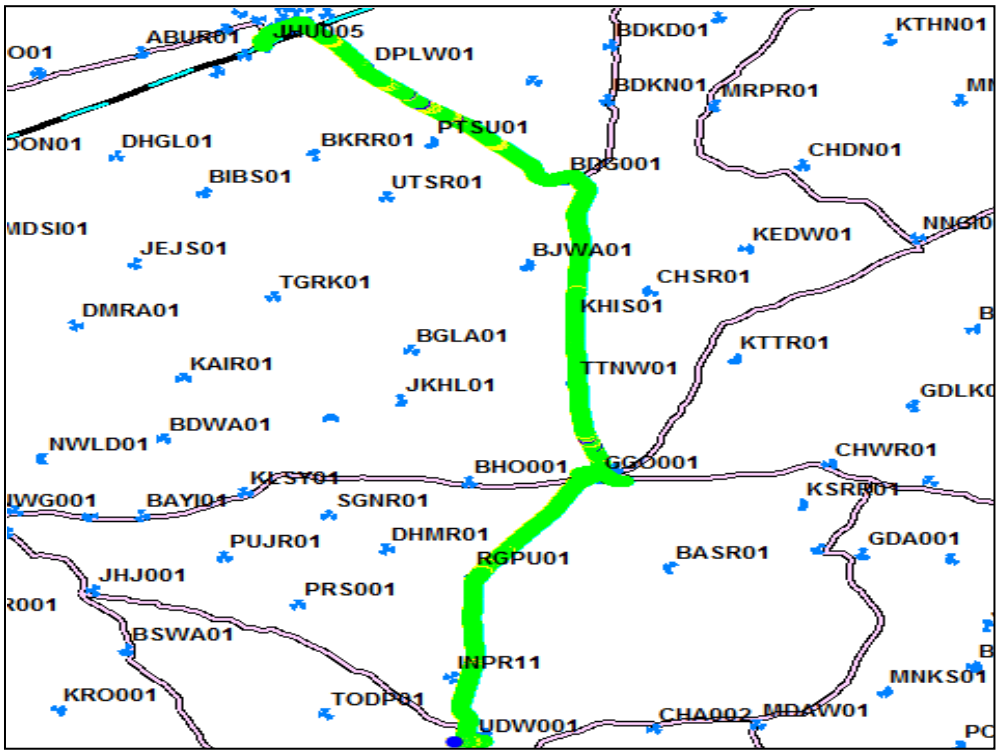
9.13. MARCH: JHUNJUNU SSA

Month	Name of SSA covered	Drive Test Schedule
March 2016	JHUNJUNU	February 29, 2016 to March 2, 2016

9.14. DISTANCE COVERED: JHUNJUNU SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
JHUNJUNU SSA	130 km	120 km	190 km

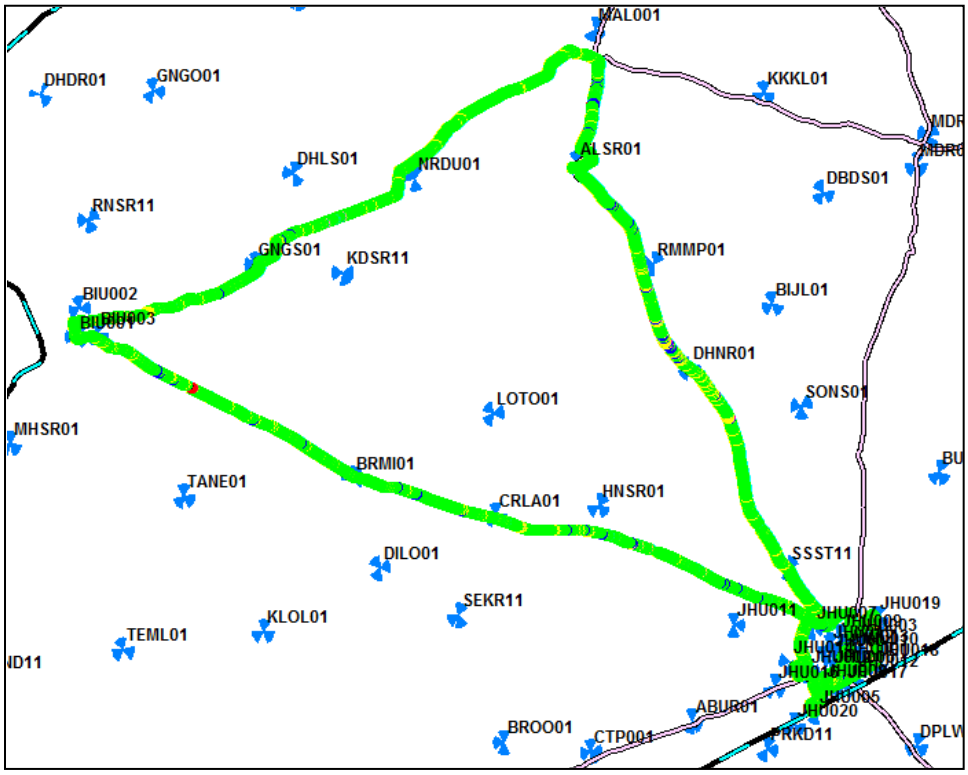
9.15. ROUTE MAP: JHUNJUNU SSA: DAY 1



Route Covered- day 1

1. WITH IN CITY UDAI PUR WATI .
2. HIGH WAY JHUN JUNU TO GUD HAG ORJI
3. HIGH

9.16. ROUTE MAP: JHUNJUNU SSA: DAY 2

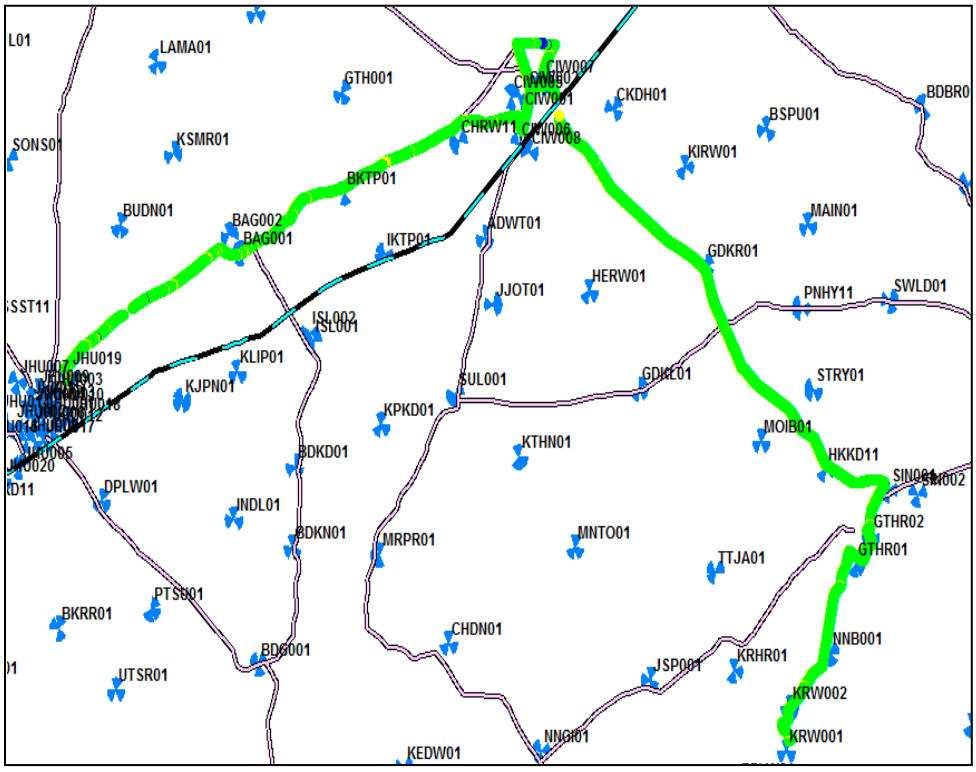


Route Covered- DAY-2

Route Covered- Day2

1. HIGHWAY JHUNJUNU TO MALSISAR VUA ALSISAR
2. WITH IN CITY ALSISAR
3. HIGHWAY BISSAU TO JHUNJUNU
4. MAJOR ROAD MALSISAR TO BISSAU ROAD.

9.17. ROUTE MAP: JHUNJUNU SSA: DAY 3



Route Covered- DAY3

1. HIGHWAY JHUNJUNU TO CHIRAWA
2. WITHIN CITY CHIRAWA
3. MAJAOR ROADS CHIRAWA TO KHETRI
4. HIGHWAY CHIRAWA TO KHETRI.

9.18. DRIVE TEST OUTCOME

	Aircel	Airtel	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	Tata CDMA	Tata GSM	Vodafone
Total Calls Attempt (A)	322	433	367	279	353	404	347	309	247	486
Total Calls Blocked (B)	0	0	2	0	0	0	0	0	0	0
Blocked Call Rate in % (B*100/A)	0.00%	0.00%	0.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Calls Establishe d ('C)	322	433	365	279	353	404	347	309	247	484
Total Calls Drop (D)	0	0	2	0	0	1	0	0	0	0
Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	0.55%	0.00%	0.00%	0.25%	0.00%	0.00%	0.00%	0.00%
Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	99.46%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.59%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	98.10%	100.00%	100.00%	100.00%	100.00%	100.00%	98.56%	99.74%

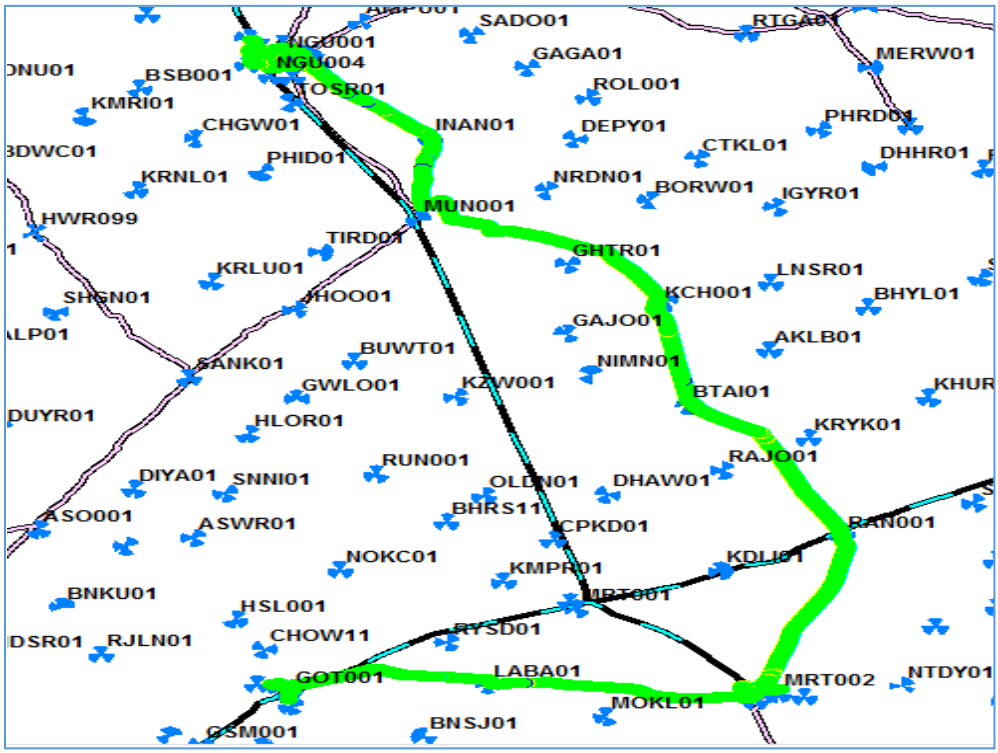
9.19. MARCH: NAGAUR SSA

Month	Name of SSA covered	Drive Test Schedule
March 2016	NAGAUR	March 28, 2016 to March 30, 2016

9.20. DISTANCE COVERED: NAGAUR SSA

Drive Test Distance Covered	Day 1	Day 2	Day 3
NAGAUR SSA	160 km	230 km	190 km

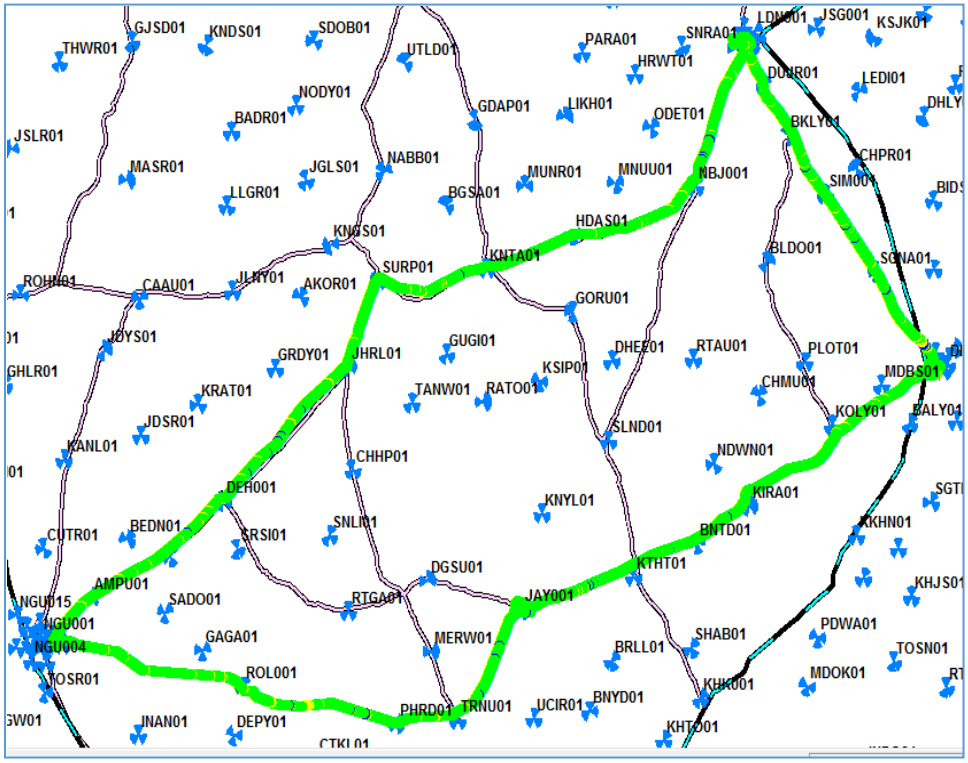
9.21. ROUTE MAP: NAGAUR SSA: DAY 1



Route Covered- day 1

1. WITH IN CITY NAGAUR.
2. WITH IN CITY GOTAN.
3. HIGH WAY NAGAUR TO MER

9.22. ROUTE MAP: NAGAUR SSA: DAY 2

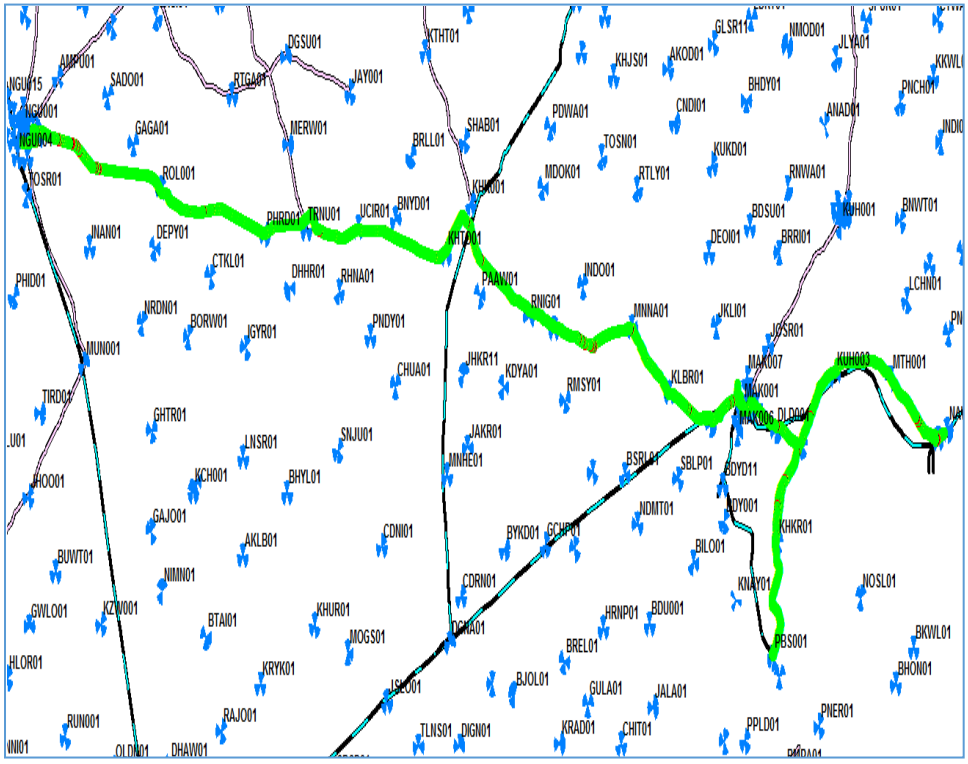


Route Covered- DAY-2

Route Covered- Day2

1. HIGHWAY NAGAUR TO LADNUN
2. WITH IN CITY LADNUN
3. HIGHWAY LADNUN TO DIDWANA
4. MAJOR ROAD DIDWANA TO JAYAL
5. HIGHWAY JAYAL TO NAGAUR.

9.23. ROUTE MAP: NAGAUR SSA: DAY 3



Route Covered- DAY3

1. HIGHWAY NAGORE TO MAKRANA.
2. WITHIN CITY MAKRANA
3. HIGHWAY MAKRANA TO PARBATSAR
4. MAJOR ROADS PARBATSAR.
5. MAJOR ROADS PARBATSAR TO NAWA.

9.24. DRIVE TEST OUTCOME

	Aircel	Airtel	BSNL	IDEA	MTS	RCOM CDMA	RCOM GSM	Tata CDMA	Tata GSM	Vodafone
Total Calls Attempt (A)	391	568	506	389	491	401	365	410	331	567
Total Calls Blocked (B)	0	0	16	1	0	0	2	0	0	0
Blocked Call Rate in % (B*100/A)	0.00%	0.00%	3.16%	0.26%	0.00%	0.00%	0.55%	0.00%	0.00%	0.00%
Total Calls Established ('C)	391	568	484	388	491	401	363	410	331	566
Total Calls Drop (D)	0	0	15	0	0	0	0	0	0	0
Dropped Calls Rate in % (D*100/C)	0.00%	0.00%	3.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Call Setup Success Rate in % (C*100/A)	100.00%	100.00%	95.65%	99.74%	100.00%	100.00%	99.45%	100.00%	100.00%	99.82%
Handover Success Rate % (total HO Success * 100/Total HO attempt)	100.00%	100.00%	95.12%	100.00%	100.00%	100.00%	99.70%	100.00%	100.00%	99.88%

10. COUNTER DETAILS

S. 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**	Connection with good quality voice (Connection with good quality voice samples 0-5 /Total voice samples)= 100 * (QUAL50DL + QUAL40DL + QUAL30DL + QUAL20DL +

	quality voice/Total voice samples)%	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 dow nlink.
QUAL10DL	Number of quality 1 reported on dow nlink.
QUAL20DL	Number of quality 2 reported on dow nlink.
QUAL30DL	Number of quality 3 reported on dow nlink.
QUAL40DL	Number of quality 4 reported on dow nlink.
QUAL50DL	Number of quality 5 reported on dow nlink.
QUAL60DL	Number of quality 6 reported on dow nlink.
QUAL70DL	Number of quality 7 reported on dow nlink

10.2. NSN (NOKIA SIEMENS NETWORK)

Sl No.	KPI	NSN
1	CSSR= (No of established Calls / No of Attempted Calls)%	CSSR= 100-100*((SDCCH_BUSY_ATT)-(TCH_SEIZ_DUE_SDCCH_CON) + (SDCCH_RADIO_FAIL)+(SDCCH_RF_OLD_HO)+(SDCCH_USER_ACT)+(SDCCH_BCSU_RESET)+(SDCCH_NETW_ACT)+(SDCCH_BTS_FAIL)+(SDCCH_LAPD_FAIL)+ (BLCK_8I_NOM)/ {(CH_REQ_MSG_REC)+(PACKET_CH_REQ)}-{(GHOST_CCCH_RES)-(REJ_SEIZ_ATT_DUE_DIST)}
2	SDCCH congestion= (SDCCH Failure/SDCCH attempts)%	SDCCH congestion = (sdcch_busy_att - .tch_seiz_due_sdcch_con)/{(CH_REQ_MSG_REC)+(PACKET_CH_REQ)}- {(GHOST_CCCH_RES)-(REJ_SEIZ_ATT_DUE_DIST)}
3	TCH congestion= (TCH Failures /TCH Attempts)%	TCH congestion = BLCK_8I_NOM / {(TCH_NORM_SEIZ)+(MSC_I_SDCCH_TCH_AT)+(BSC_I_SDCCH_TCH_AT)}
4	Call Drop Rate= (The total no of dropped calls*100)/Total no of calls successfully established (w here 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 w ith counters being used in CBBH.
6	Connection w ith good quality voice= (Connection w ith good quality voice/Total voice samples)%	Connection w ith 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)

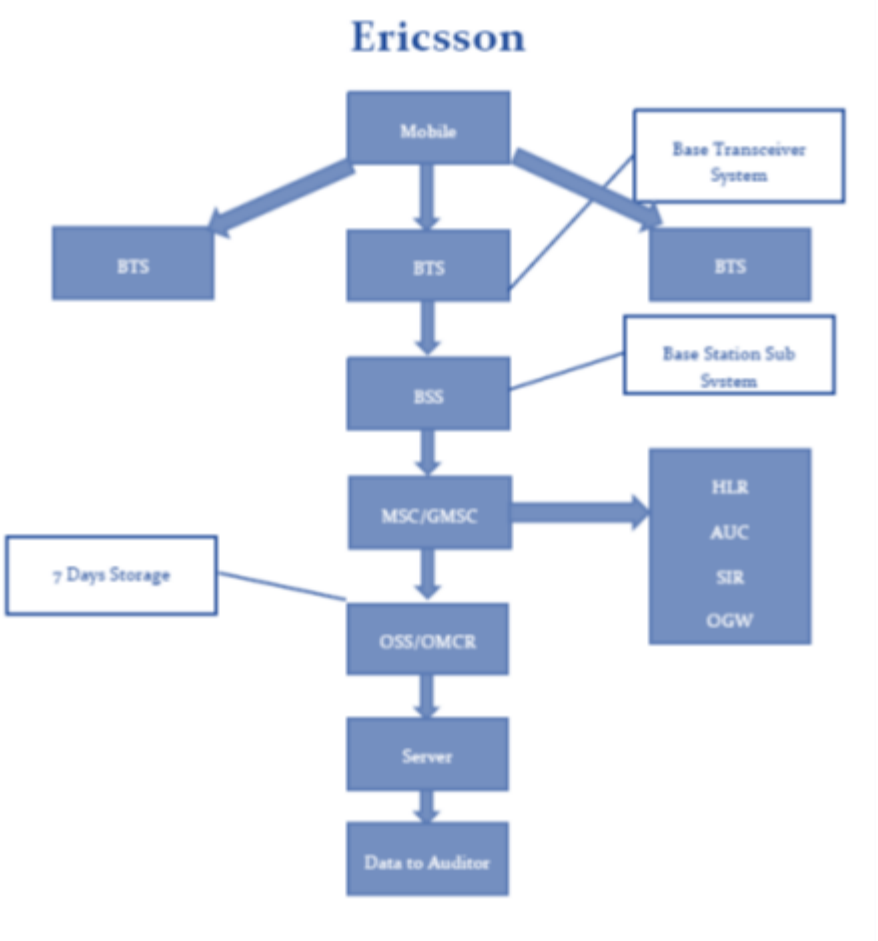
10.3. HUAWEI

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\

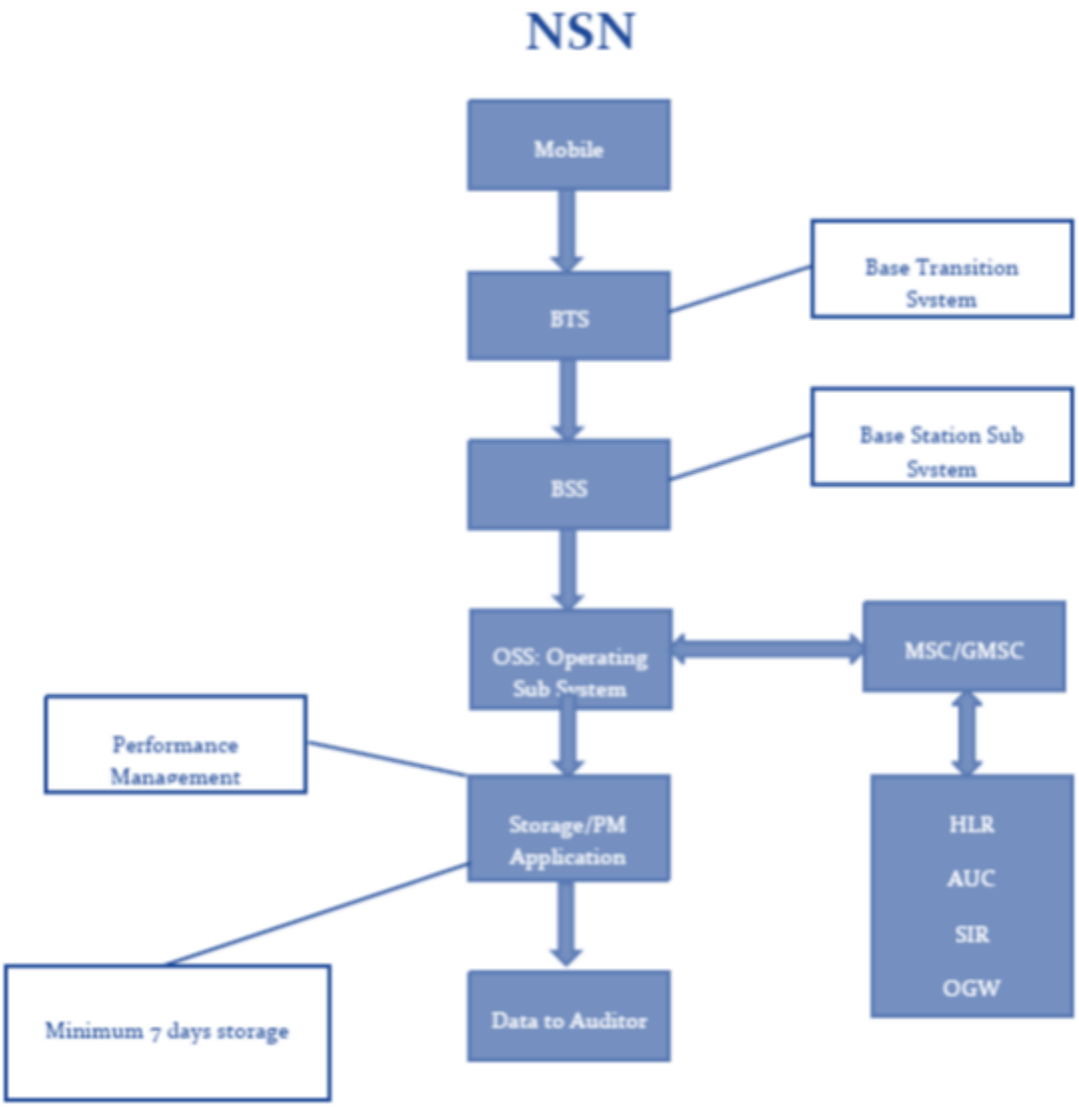
4	CALL DROP RATE (NUM)	[CS IS-95 Call Drops (Too many Erasure frames) + CS IS-2000 Call Drops (Too many Erasure frames) + CS IS-95 Call Drops (No reverse frame received) + CS IS-2000 Call Drops (No reverse frame received) + CS IS-95 Call Drops (Abis interface abnormal) + CS IS-2000 Call Drops (Abis interface 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

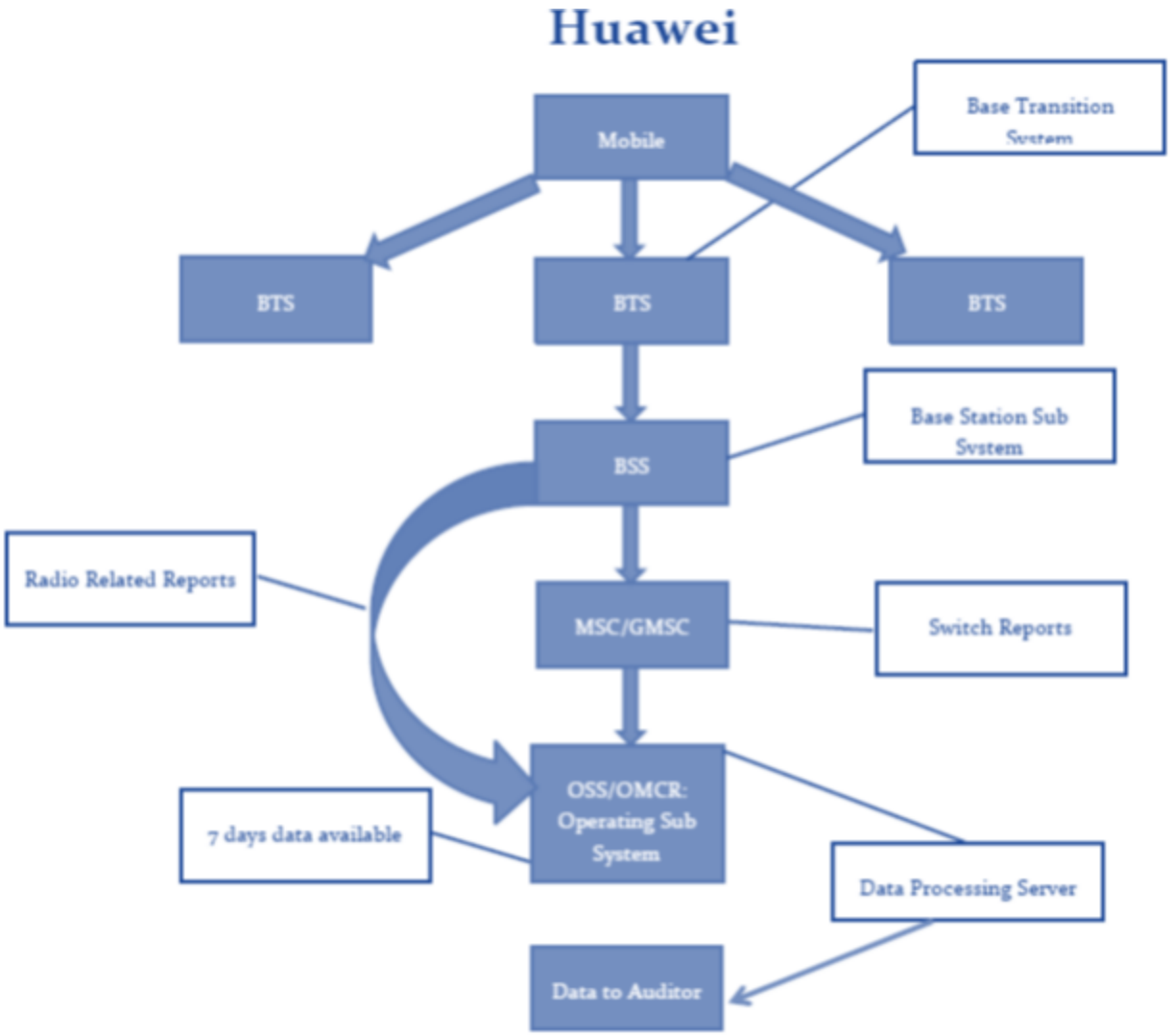
11.1. ERICSSON



11.2. NSN


NSN
Mobile
BTS
Base Transition System
BSS
Base Station Sub System
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
- JFM16 – Refers to the quarter of January, February and March 2016
- SSA – Secondary Switching Area
- NOC – Network Operation Center
- OMC – Operations and Maintenance Center
- MSC – Mobile Switching Center
- PMR – Performance Monitoring Reports
- TCBH – Time Consistent Busy Hour
- CBBH - Cell Bouncing Busy Hour
- BTS – Base Transceiver Station
- CSSR – Call Setup Success Rate
- TCH – Traffic Channel
- SDCCH – Standalone Dedicated Control Channel
- CDR – Call Drop Rate
- FER – Frame Error Rate
- SIM – Subscriber Identity Module
- GSM – Global System for Mobile
- CDMA – Code Division Multiple Access
- NA – Not Applicable
- NC – Non Compliance
- POI – Point of Interconnection
- IVR – Interactive Voice Response
- STD – Standard Trunk Dialing
- ISD – International Subscriber Dialing

13 ANNEXURE

13.1. 2G VOICE PMR DATA: CONSOLIDATED

Consolidated											
Network Parameters		Name of Service Provider									
		Benchmark	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.07%	0.06%	0.09%	0.07%	0.10%	0.04%	0.06%	0.02%	0.12%	1.38%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.05%	0.04%	0.15%	0.10%	0.19%	0.01%	0.31%	0.07%	0.41%	1.60%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	97.04%	99.16%	99.06%	98.78%	97.82%	99.53%	97.57%	97.71%	99.55%	98.47%
	SDDCH/Paging chl. Congestion	≤ 1%	0.23%	0.00%	0.04%	0.00%	0.28%	0.19%	0.13%	0.00%	0.22%	0.47%
	TCH Congestion	≤ 2%	0.99%	0.06%	0.10%	0.43%	1.24%	0.21%	0.56%	0.90%	0.45%	1.45%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	0.72%	0.33%	0.42%	0.27%	0.65%	0.62%	0.09%	0.16%	0.67%	1.42%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	2.95%	0.40%	2.38%	2.76%	0.62%	1.73%	0.51%	0.96%	2.46%	1.65%
	%age of connection with good voice quality	≥ 95%	96.64%	99.22%	98.97%	98.91%	99.07%	97.00%	99.23%	98.75%	96.54%	98.26%

13.2. 3G VOICE PMR: CONSOLIDATED

Consolidated						
Network Parameters		Name of Service Provider				
		Benchmark	AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	0.25%	0.22%	0.36%	1.53%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	0.78%	1.05%	1.12%	1.94%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	99.61%	99.85%	99.92%	95.97%
	RRC Congestion:	≤ 1%	0.66%	0.06%	0.02%	0.64%
	RAB Congestion:	≤ 2%	1.03%	0.01%	0.02%	1.34%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	0.44%	0.13%	0.27%	1.82%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	1.58%	0.31%	2.54%	2.71%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	98.95%	99.71%	98.99%	97.05%

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

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%	77.59%	96.85%	92.28%
AIRTEL	0.01%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.99%	94.25%
BSNL	0.05%	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%	92.03%	98.52%
IDEA	0.08%	0.07%	100.00%	100.00%	100.00%	100.00%	100.00%	98.94%	96.45%
MTS	0.06%	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%	99.96%	95.78%
RCOM-GSM	0.09%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	99.71%	95.31%
RCOM-CDMA	0.08%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	99.58%	91.22%
TTSL-GSM	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	95.90%	90.15%
TTSL-CDMA	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	95.90%	98.21%
VODAFONE	0.10%	0.09%	100.00%	100.00%	100.00%	100.00%	60.56%	100.00%	97.47%

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

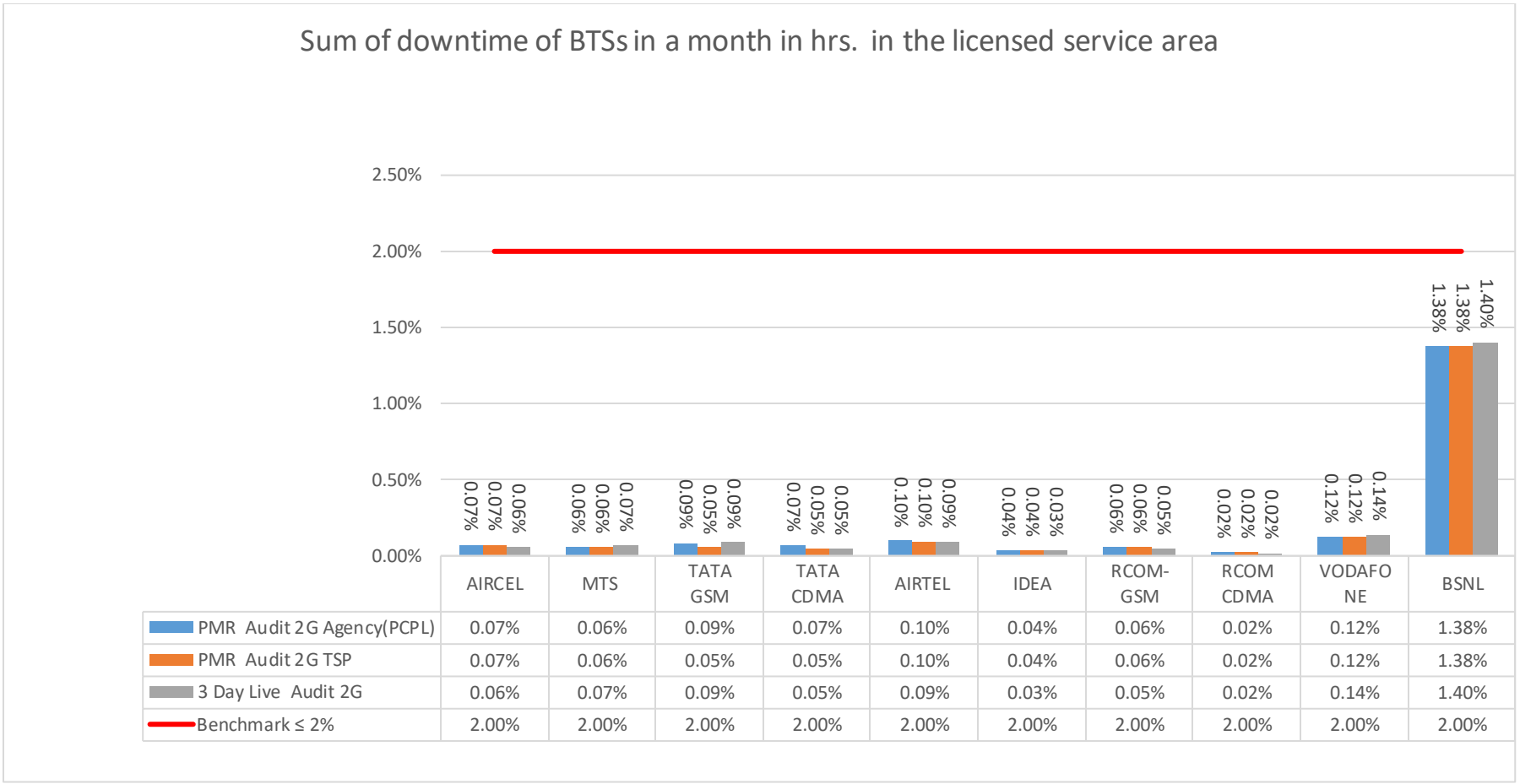
- BSNL has parameter value of 92.03% and failed to meet the benchmark of ≥95% response time to customer assistance with %age of call answered by the IVR.
- RCOM CDMA has parameter value of 91.22% and failed to meet the benchmark of ≥95% response time to customer assistance with %age of call answered by the operators (voice to voice) within 90 seconds.
- TTSL GSM has parameter value of 90.15% and failed to meet the benchmark of ≥95% response time to customer assistance with %age of call answered by the operators (voice to voice) within 90 seconds

Name of Service Provider	Customer Care & Grievances Redressal	
	% of Complaints addressed at call center level	% of Complaints addressed by Appellate Authority
AIRCEL	100.00%	100.00%
AIRTEL	94.12%	100.00%
BSNL	4.29%	NIL
IDEA	87.54%	NIL
MTS	100.00%	100.00%
RCOM-GSM	100.00%	100.00%
RCOM-CDMA	100.00%	100.00%
TTSL-GSM	100.00%	NIL
TTSL-CDMA	99.86%	NIL
VODAFONE	7.02%	33.33%

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

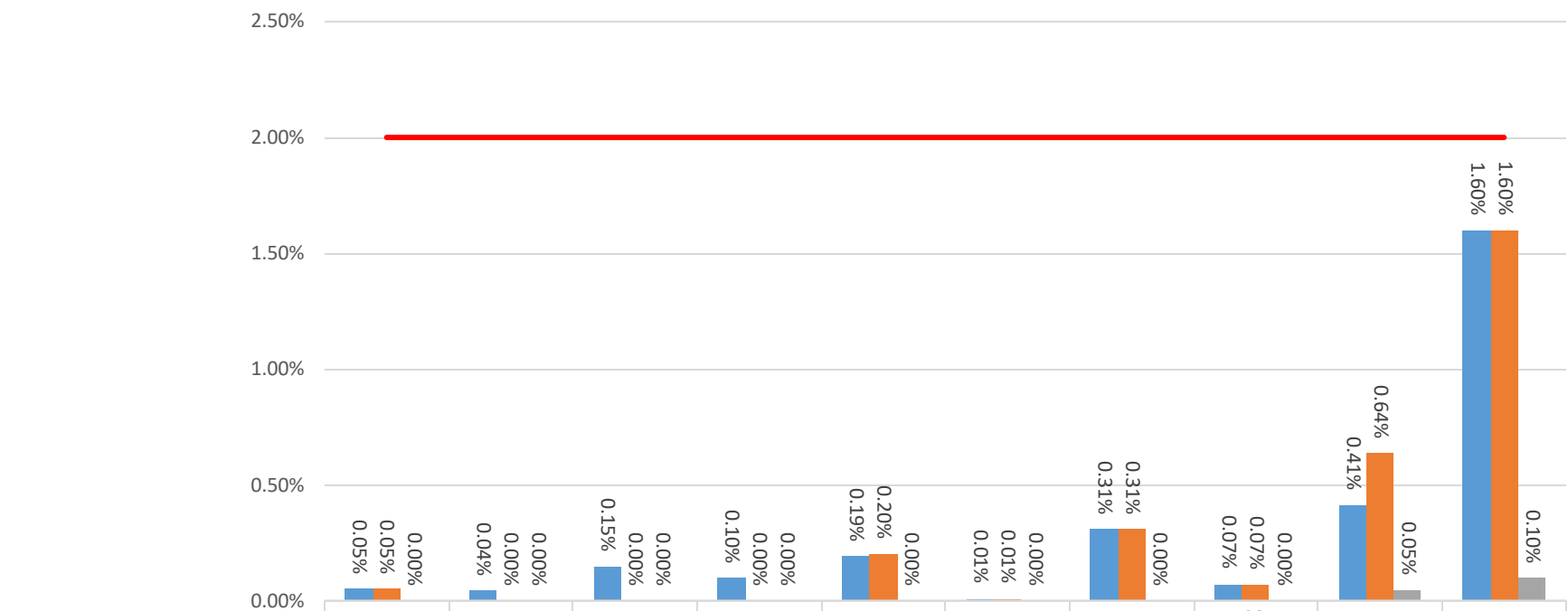
PMR Report Comparison between Audit Agency and TSP													
Network Parameters		Name of Service Provider											
		Benchmark		AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	Agency	0.07%	0.06%	0.09%	0.07%	0.10%	0.04%	0.06%	0.02%	0.12%	1.38%
			TSP	0.07%	0.06%	0.05%	0.05%	0.10%	0.04%	0.06%	0.02%	0.12%	1.38%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	Agency	0.05%	0.04%	0.15%	0.10%	0.19%	0.01%	0.31%	0.07%	0.41%	1.60%
			TSP	0.05%	0.00%	0.00%	0.00%	0.20%	0.01%	0.31%	0.07%	0.64%	1.60%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	Agency	97.04%	99.16%	99.06%	98.78%	97.82%	99.53%	97.57%	97.71%	99.55%	98.47%
			TSP	97.04%	99.16%	99.06%	98.78%	97.84%	99.53%	97.57%	97.71%	99.55%	98.47%
	SDDCH/Paging chl. Congestion	≤ 1%	Agency	0.23%	0.00%	0.04%	0.00%	0.28%	0.19%	0.13%	0.00%	0.22%	0.47%
			TSP	0.23%	0.00%	0.04%	0.00%	0.23%	0.19%	0.13%	0.00%	0.22%	0.47%
	TCH Congestion	≤ 2%	Agency	0.99%	0.06%	0.10%	0.43%	1.24%	0.21%	0.56%	0.90%	0.45%	1.45%
			TSP	0.99%	0.06%	0.10%	0.43%	1.22%	0.21%	0.56%	0.90%	0.45%	1.45%
Connection Maintenance (Retainability)	Call Drop Rate (%age)	≤ 2%	Agency	0.72%	0.33%	0.42%	0.27%	0.65%	0.62%	0.09%	0.16%	0.67%	1.42%
			TSP	0.72%	0.33%	0.42%	0.27%	0.66%	0.62%	0.09%	0.16%	0.67%	1.42%
	Worst Affected cell having more than 3% TCH drop	≤ 3%	Agency	2.95%	0.40%	2.38%	2.76%	0.62%	1.73%	0.51%	0.96%	2.46%	1.65%
			TSP	2.95%	0.40%	2.38%	2.76%	0.63%	1.73%	0.51%	1.13%	2.46%	1.65%
	%age of connection with good voice quality	≥ 95%	Agency	96.64%	99.22%	98.97%	98.91%	99.07%	97.00%	99.23%	98.75%	96.54%	98.26%
			TSP	96.64%	99.22%	98.97%	98.91%	99.17%	97.00%	99.23%	98.75%	96.54%	98.26%

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



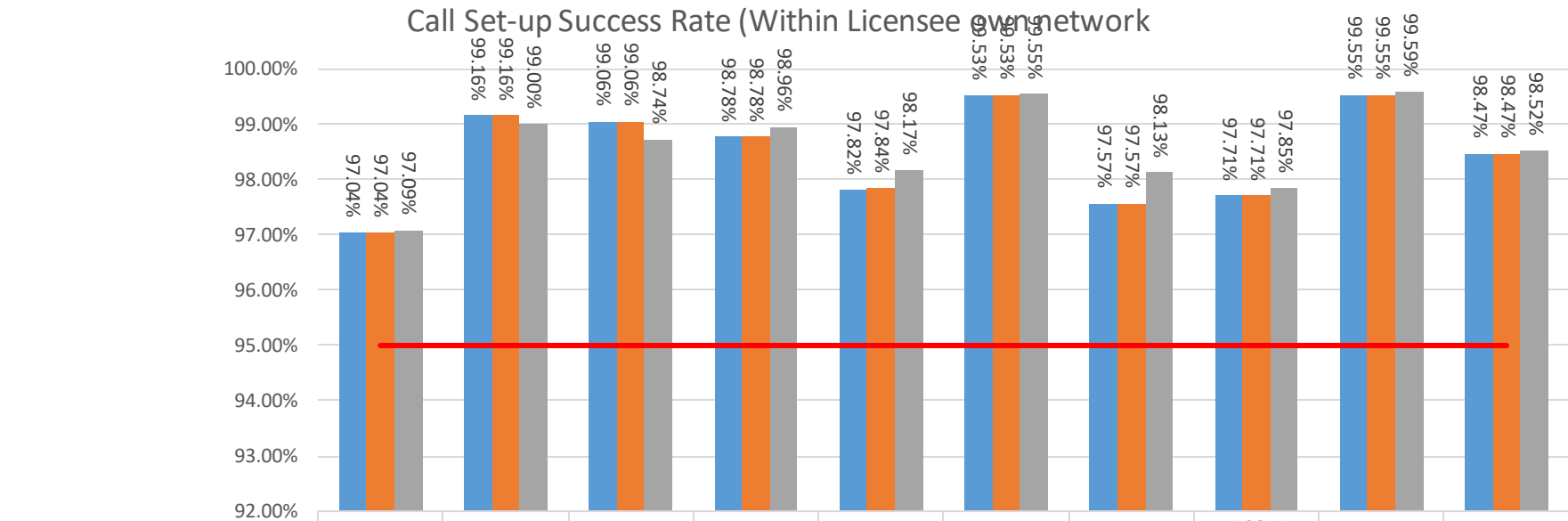
	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
PMR Audit 2G Agency(PCPL)	0.07%	0.06%	0.09%	0.07%	0.10%	0.04%	0.06%	0.02%	0.12%	1.38%
PMR Audit 2G TSP	0.07%	0.06%	0.05%	0.05%	0.10%	0.04%	0.06%	0.02%	0.12%	1.38%
3 Day Live Audit 2G	0.06%	0.07%	0.09%	0.05%	0.09%	0.03%	0.05%	0.02%	0.14%	1.40%
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



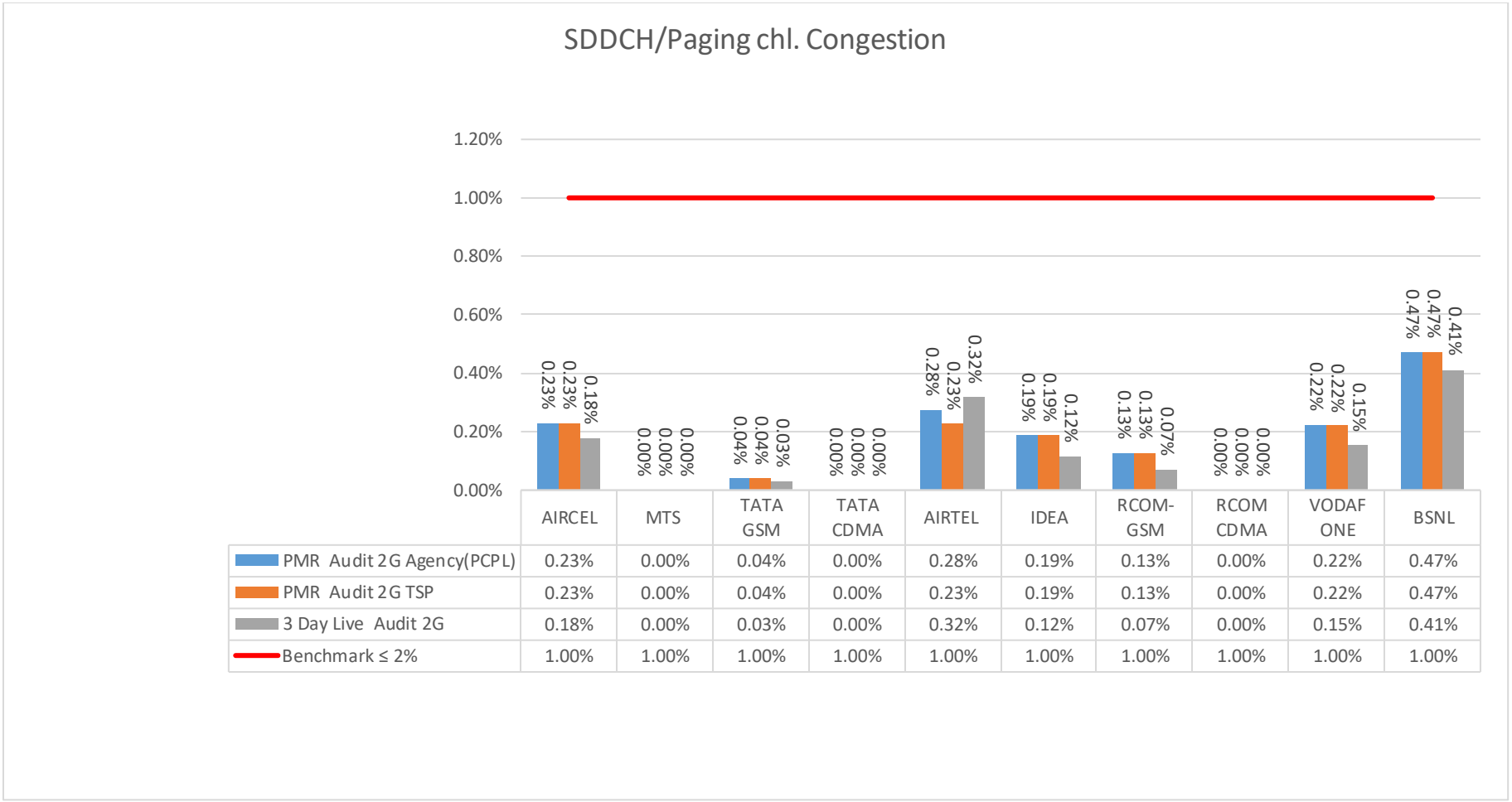
	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
PMR Audit 2G Agency(PCPL)	0.05%	0.04%	0.15%	0.10%	0.19%	0.01%	0.31%	0.07%	0.41%	1.60%
PMR Audit 2G TSP	0.05%	0.00%	0.00%	0.00%	0.20%	0.01%	0.31%	0.07%	0.64%	1.60%
3 Day Live Audit 2G	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%	0.10%
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)



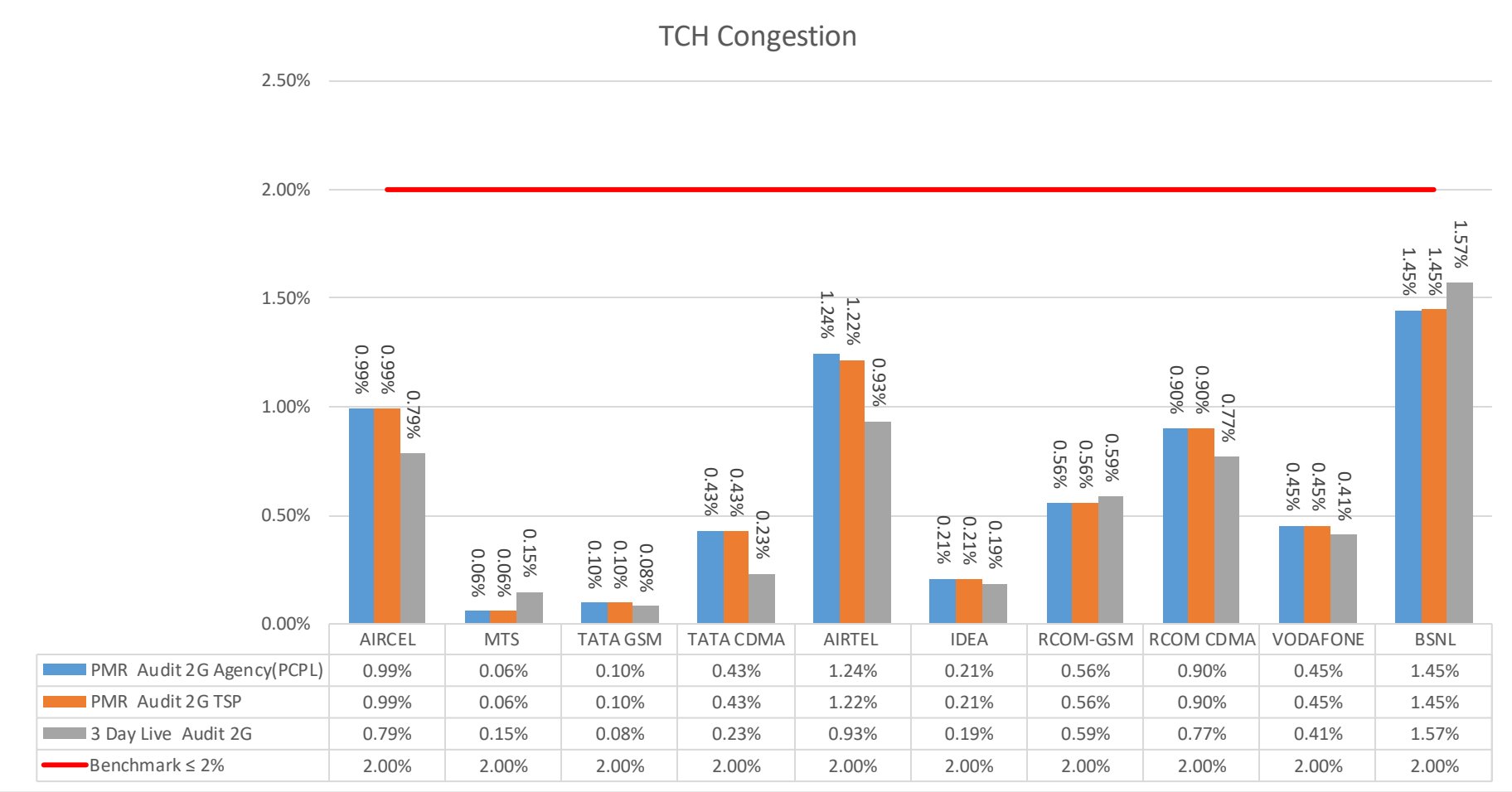
	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
PMR Audit 2G Agency(PCPL)	97.04%	99.16%	99.06%	98.78%	97.82%	99.53%	97.57%	97.71%	99.55%	98.47%
PMR Audit 2G TSP	97.04%	99.16%	99.06%	98.78%	97.84%	99.53%	97.57%	97.71%	99.55%	98.47%
3 Day Live Audit 2G	97.09%	99.00%	98.74%	98.96%	98.17%	99.55%	98.13%	97.85%	99.59%	98.52%
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



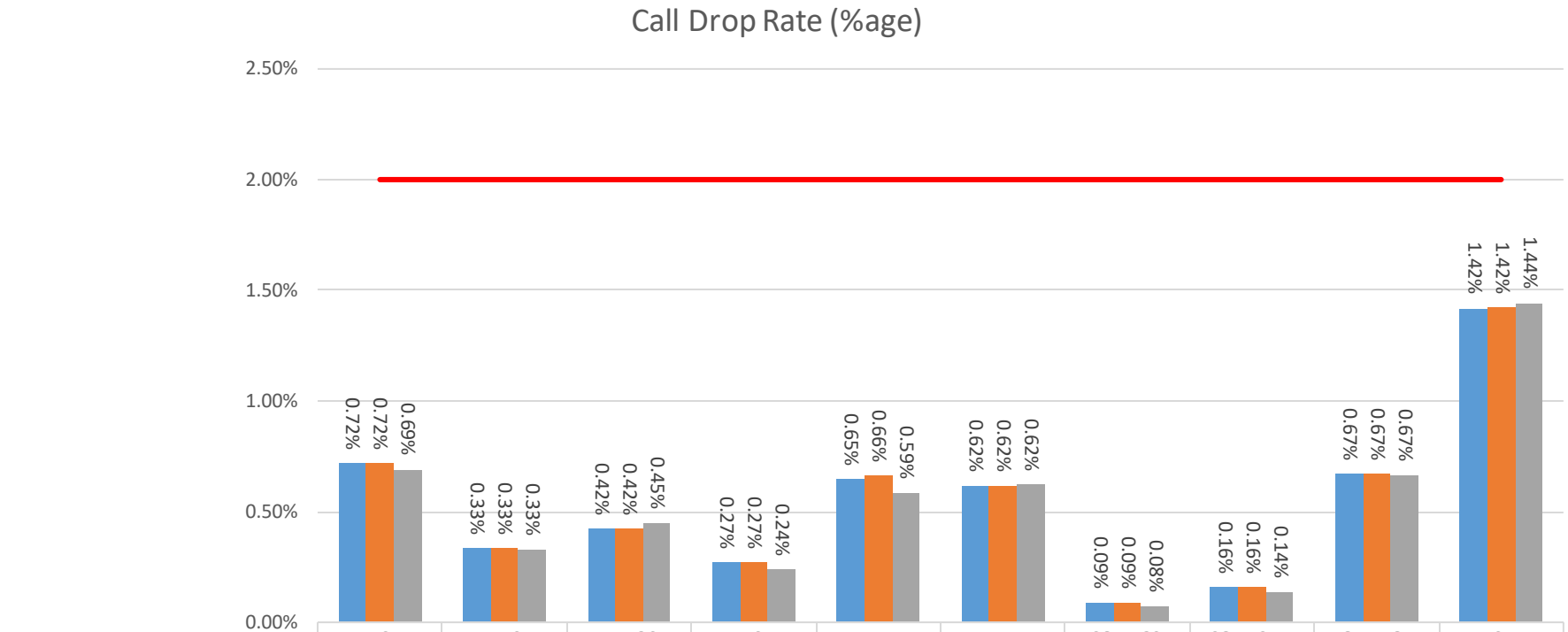
	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
PMR Audit 2G Agency(PCPL)	0.23%	0.00%	0.04%	0.00%	0.28%	0.19%	0.13%	0.00%	0.22%	0.47%
PMR Audit 2G TSP	0.23%	0.00%	0.04%	0.00%	0.23%	0.19%	0.13%	0.00%	0.22%	0.47%
3 Day Live Audit 2G	0.18%	0.00%	0.03%	0.00%	0.32%	0.12%	0.07%	0.00%	0.15%	0.41%
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



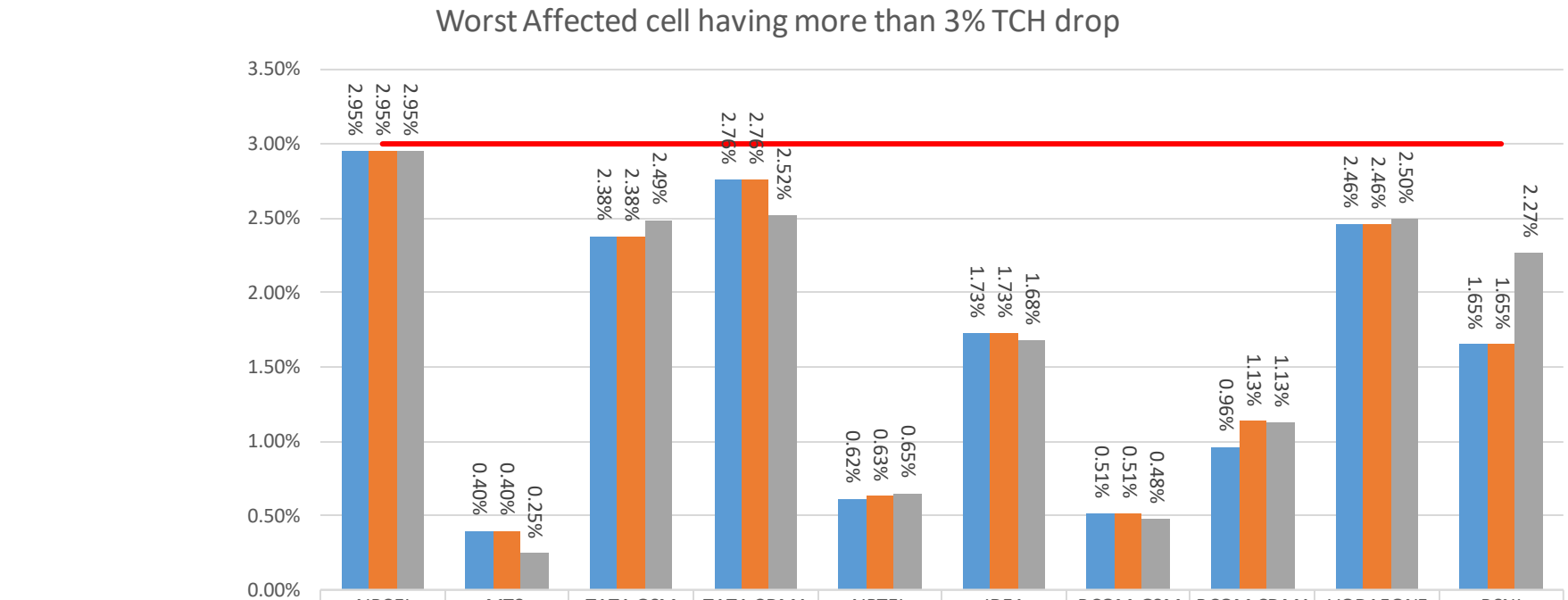
	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
PMR Audit 2G Agency(PCPL)	0.99%	0.06%	0.10%	0.43%	1.24%	0.21%	0.56%	0.90%	0.45%	1.45%
PMR Audit 2G TSP	0.99%	0.06%	0.10%	0.43%	1.22%	0.21%	0.56%	0.90%	0.45%	1.45%
3 Day Live Audit 2G	0.79%	0.15%	0.08%	0.23%	0.93%	0.19%	0.59%	0.77%	0.41%	1.57%
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)



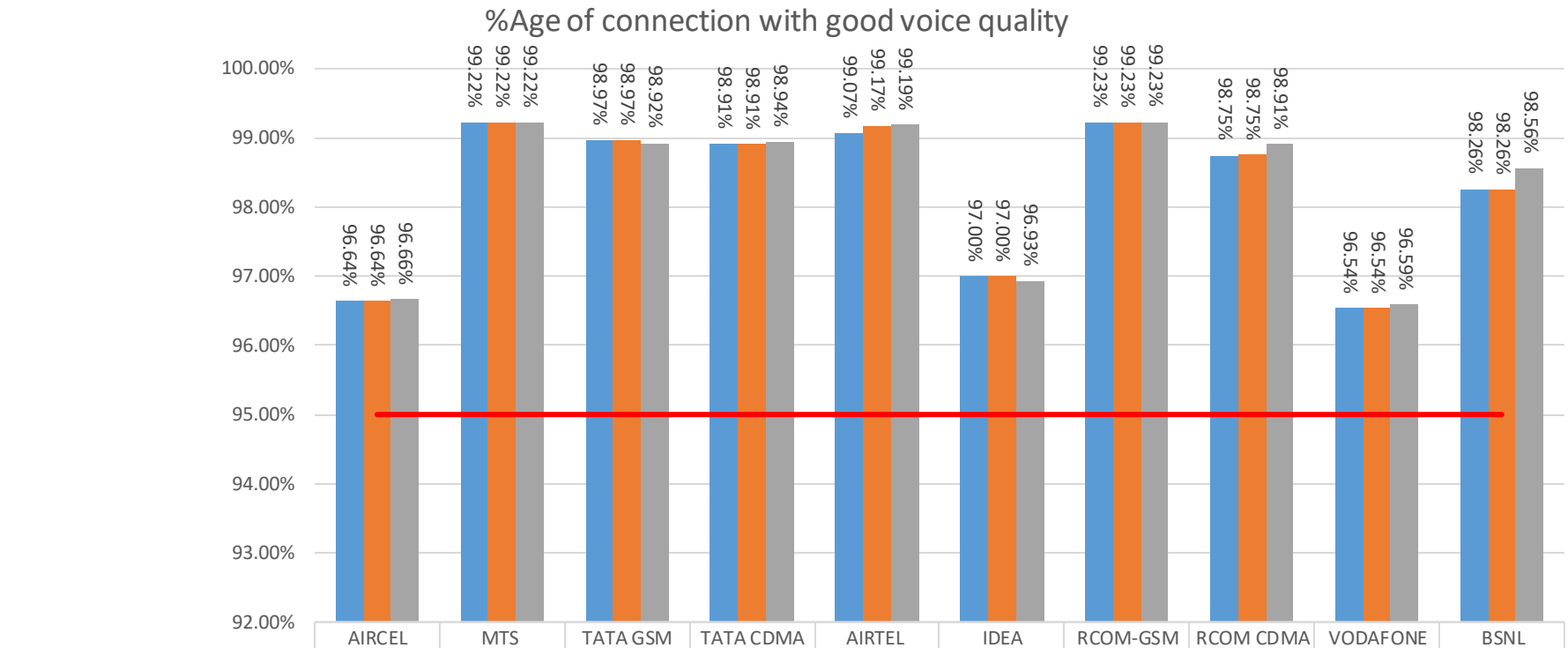
	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
PMR Audit 2G Agency(PCPL)	0.72%	0.33%	0.42%	0.27%	0.65%	0.62%	0.09%	0.16%	0.67%	1.42%
PMR Audit 2G TSP	0.72%	0.33%	0.42%	0.27%	0.66%	0.62%	0.09%	0.16%	0.67%	1.42%
3 Day Live Audit 2G	0.69%	0.33%	0.45%	0.24%	0.59%	0.62%	0.08%	0.14%	0.67%	1.44%
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	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
PMR Audit 2G Agency(PCPL)	2.95%	0.40%	2.38%	2.76%	0.62%	1.73%	0.51%	0.96%	2.46%	1.65%
PMR Audit 2G TSP	2.95%	0.40%	2.38%	2.76%	0.63%	1.73%	0.51%	1.13%	2.46%	1.65%
3 Day Live Audit 2G	2.95%	0.25%	2.49%	2.52%	0.65%	1.68%	0.48%	1.13%	2.50%	2.27%
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

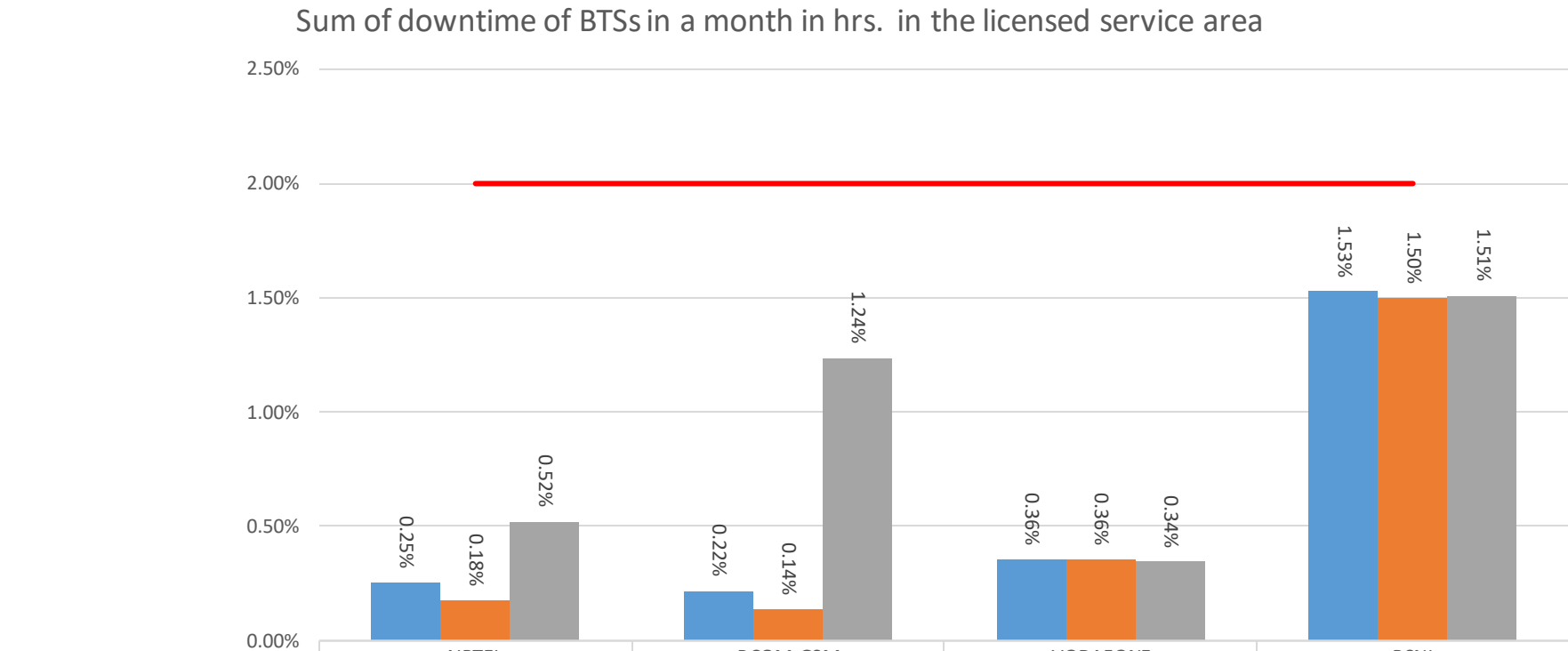


	AIRCEL	MTS	TATA GSM	TATA CDMA	AIRTEL	IDEA	RCOM-GSM	RCOM CDMA	VODAFONE	BSNL
PMR Audit 2G Agency(PCPL)	96.64%	99.22%	98.97%	98.91%	99.07%	97.00%	99.23%	98.75%	96.54%	98.26%
PMR Audit 2G TSP	96.64%	99.22%	98.97%	98.91%	99.17%	97.00%	99.23%	98.75%	96.54%	98.26%
3 Day Live Audit 2G	96.66%	99.22%	98.92%	98.94%	99.19%	96.93%	99.23%	98.91%	96.59%	98.56%
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

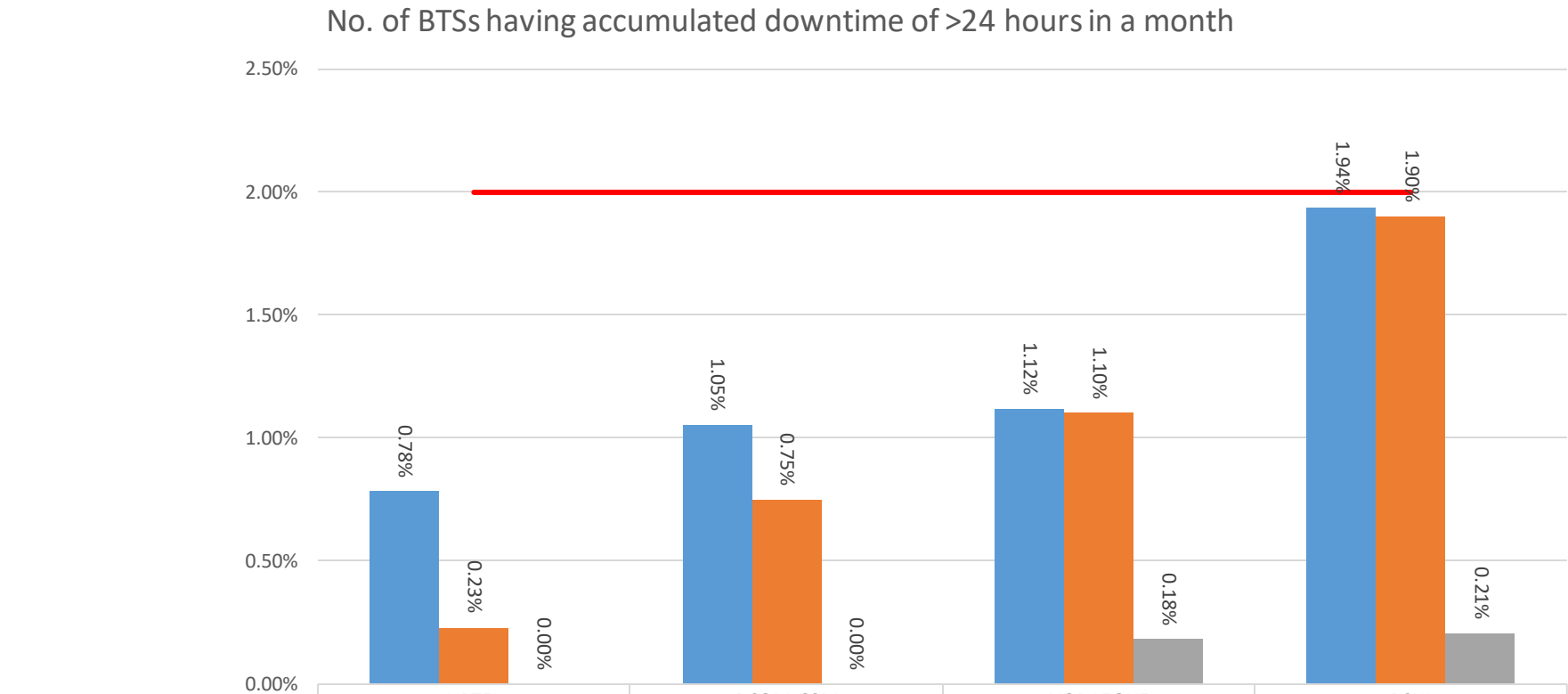
PMR Report Comparison between Audit Agency and TSP							
Network Parameters		Name of Service Provider					
		Benchmark		AIRTEL	RCOM-GSM	VODAFONE	BSNL
Network Availability	Sum of downtime of BTSs in a month in hrs. in the licensed service area	≤ 2%	Agency	0.25%	0.22%	0.36%	1.53%
			TSP	0.18%	0.14%	0.36%	1.50%
	No. of BTSs having accumulated downtime of >24 hours in a month	≤ 2%	Agency	0.78%	1.05%	1.12%	1.94%
			TSP	0.23%	0.75%	1.10%	1.90%
Connection Establishment (Accessibility)	Call Set-up Success Rate (Within Licensee own network	≥ 95%	Agency	99.61%	99.85%	99.92%	95.97%
			TSP	99.46%	99.63%	99.92%	96.33%
	RRC Congestion:	≤ 1%	Agency	0.66%	0.06%	0.02%	0.64%
			TSP	0.05%	0.04%	0.02%	0.60%
	RAB Congestion:	≤ 2%	Agency	1.03%	0.01%	0.02%	1.34%
			TSP	0.07%	0.06%	0.02%	1.30%
Connection Maintenance (Retainability)	Circuit Switched Voice Drop Rate	≤ 2%	Agency	0.44%	0.13%	0.27%	1.82%
			TSP	0.50%	0.32%	0.27%	1.80%
	Worst affected cells having more than 3% Circuit Switched Voice Drop Rate:	≤ 3%	Agency	1.58%	0.31%	2.54%	2.71%
			TSP	1.14%	1.44%	2.54%	2.67%
	Percentage of connections with Good Circuit Switched Voice Quality	≥ 95%	Agency	98.95%	99.71%	98.99%	97.05%
			TSP	98.93%	99.59%	98.99%	97.00%

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



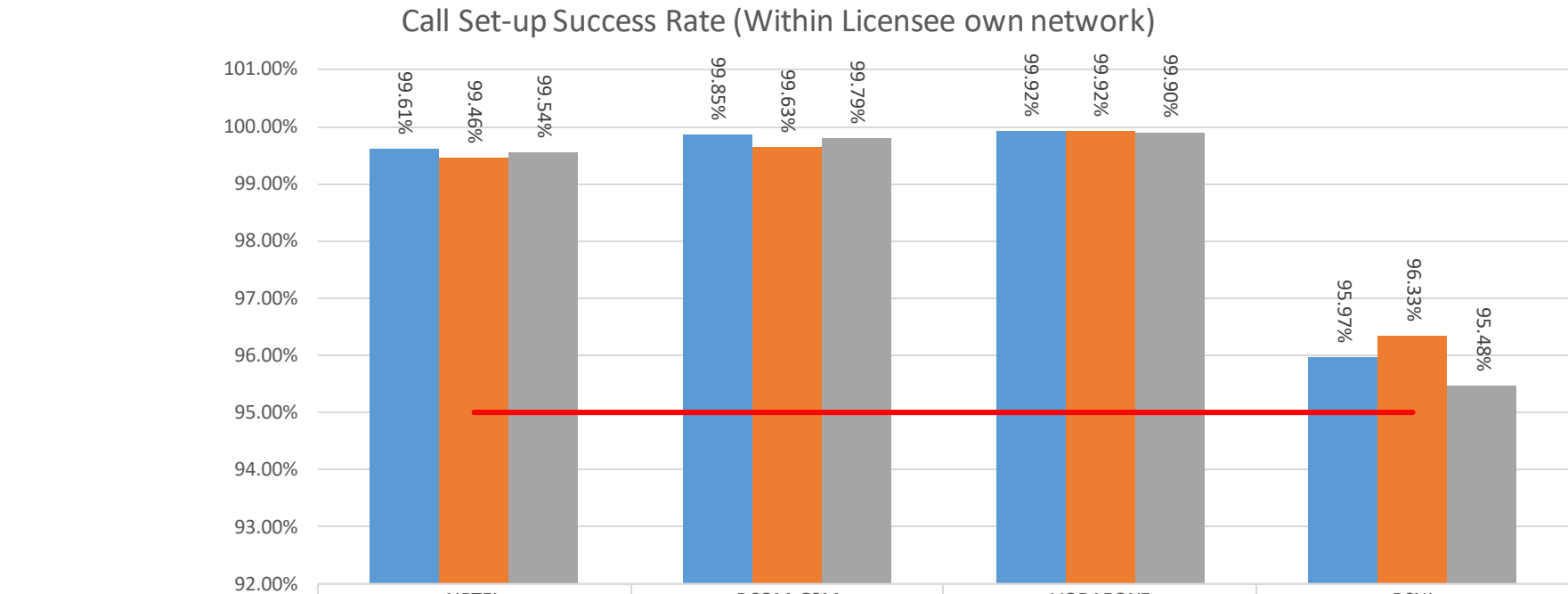
	AIRTEL	RCOM-GSM	VODAFONE	BSNL
PMR Audit 3G Agency(PCPL)	0.25%	0.22%	0.36%	1.53%
PMR Audit 3G TSP	0.18%	0.14%	0.36%	1.50%
3 Day Live Audit 3G	0.52%	1.24%	0.34%	1.51%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%

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



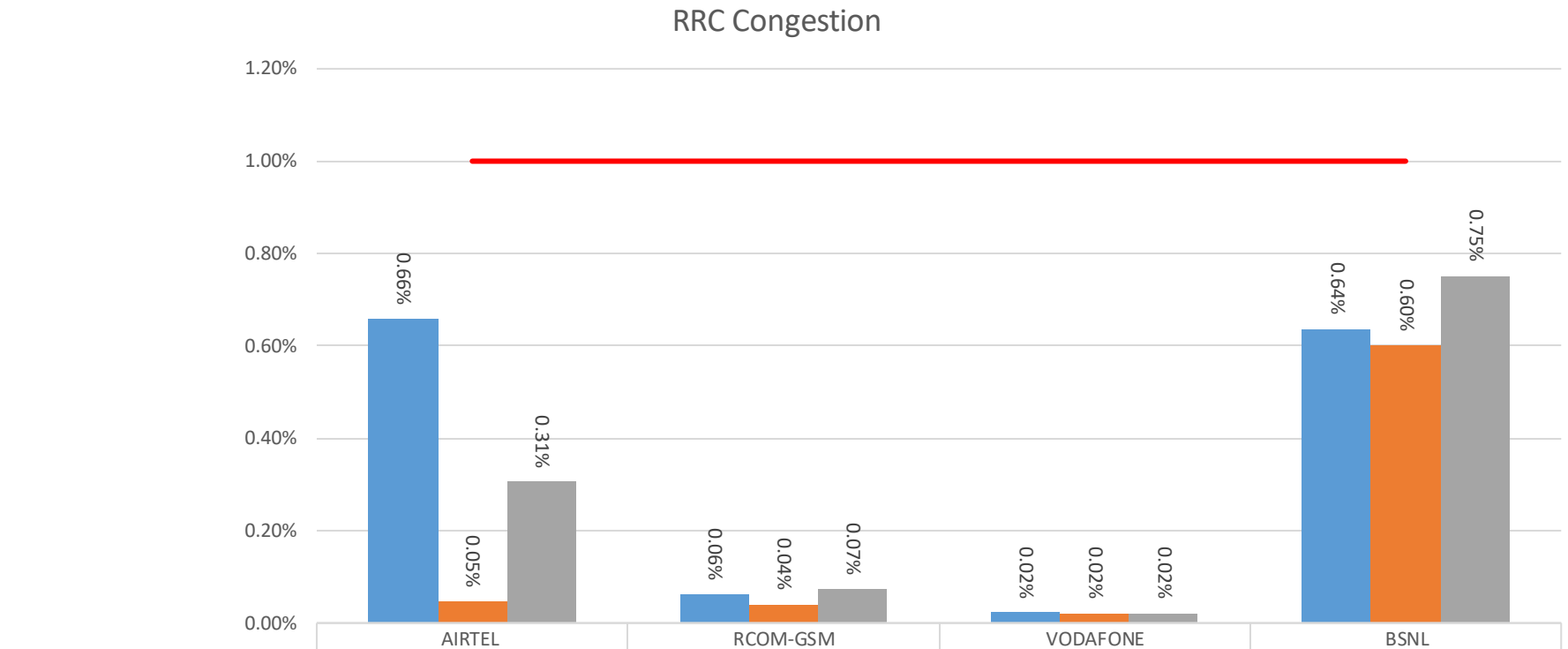
	AIRTEL	RCOM-GSM	VODAFONE	BSNL
PMR Audit 3G Agency(PCPL)	0.78%	1.05%	1.12%	1.94%
PMR Audit 3G TSP	0.23%	0.75%	1.10%	1.90%
3 Day Live Audit 3G	0.00%	0.00%	0.18%	0.21%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%

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



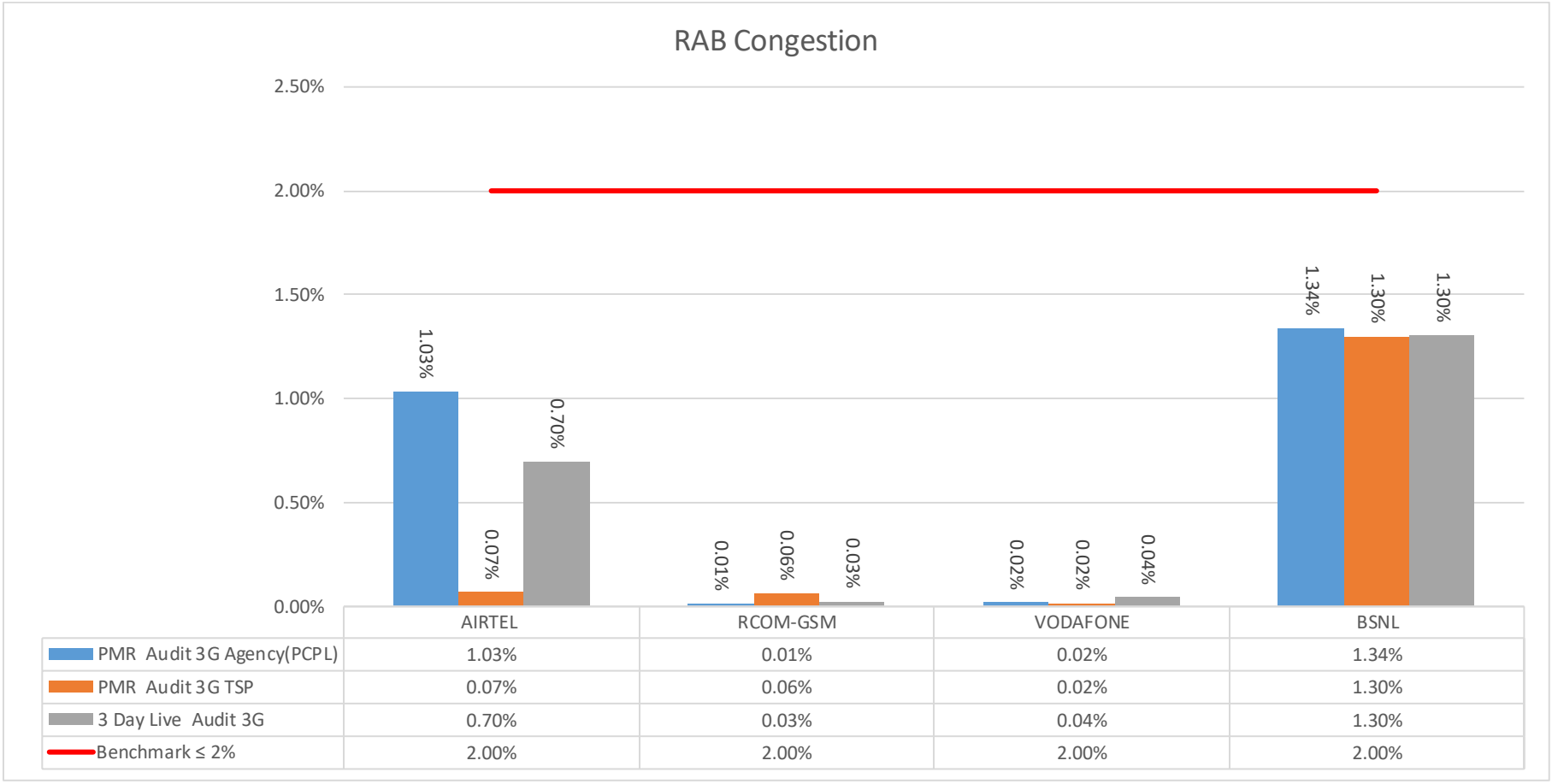
	AIRTEL	RCOM-GSM	VODAFONE	BSNL
PMR Audit 3G Agency(PCPL)	99.61%	99.85%	99.92%	95.97%
PMR Audit 3G TSP	99.46%	99.63%	99.92%	96.33%
3 Day Live Audit 3G	99.54%	99.79%	99.90%	95.48%
Benchmark ≤ 2%	95.00%	95.00%	95.00%	95.00%

13.5.4. RRC CONGESTION



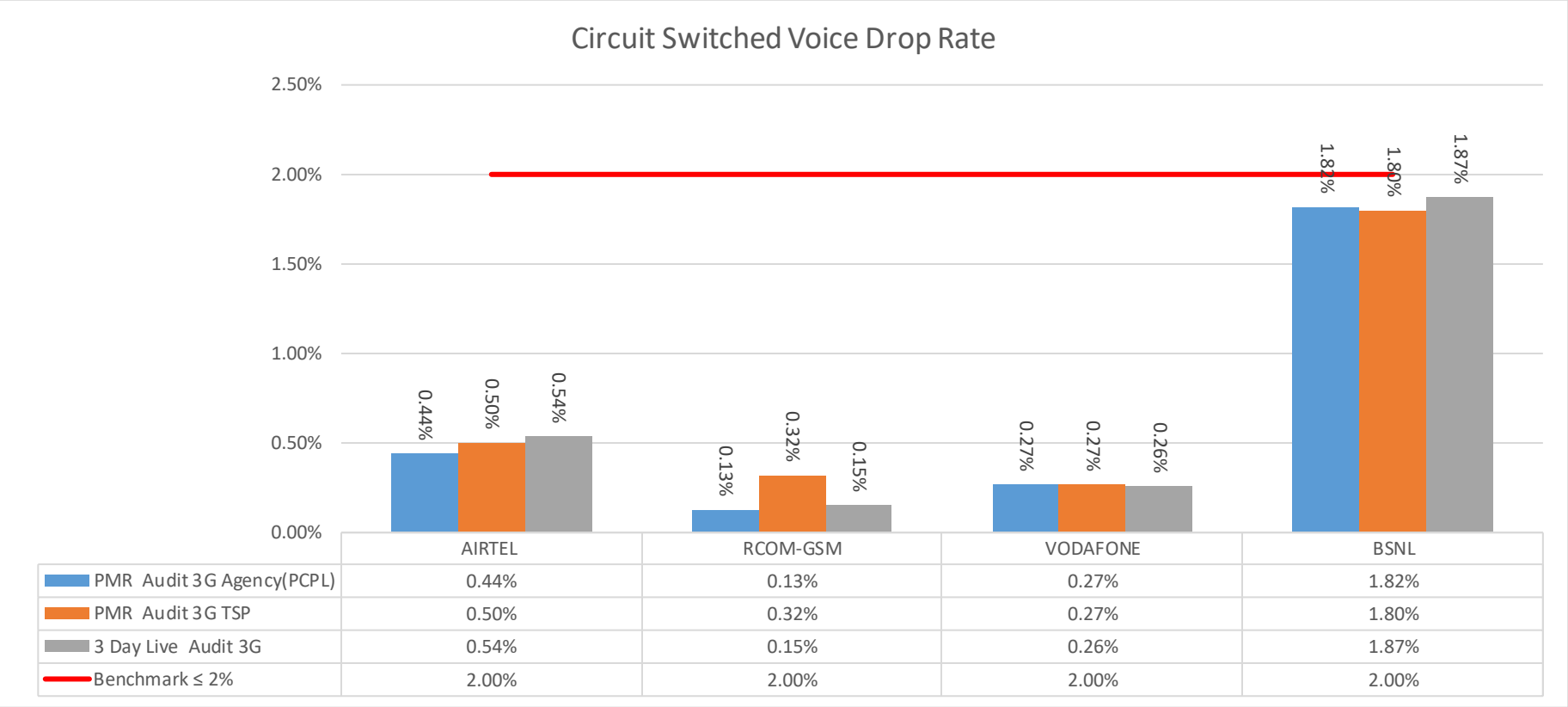
	AIRTEL	RCOM-GSM	VODAFONE	BSNL
PMR Audit 3G Agency(PCPL)	0.66%	0.06%	0.02%	0.64%
PMR Audit 3G TSP	0.05%	0.04%	0.02%	0.60%
3 Day Live Audit 3G	0.31%	0.07%	0.02%	0.75%
Benchmark ≤ 2%	1.00%	1.00%	1.00%	1.00%

13.5.5. RAB CONGESTION



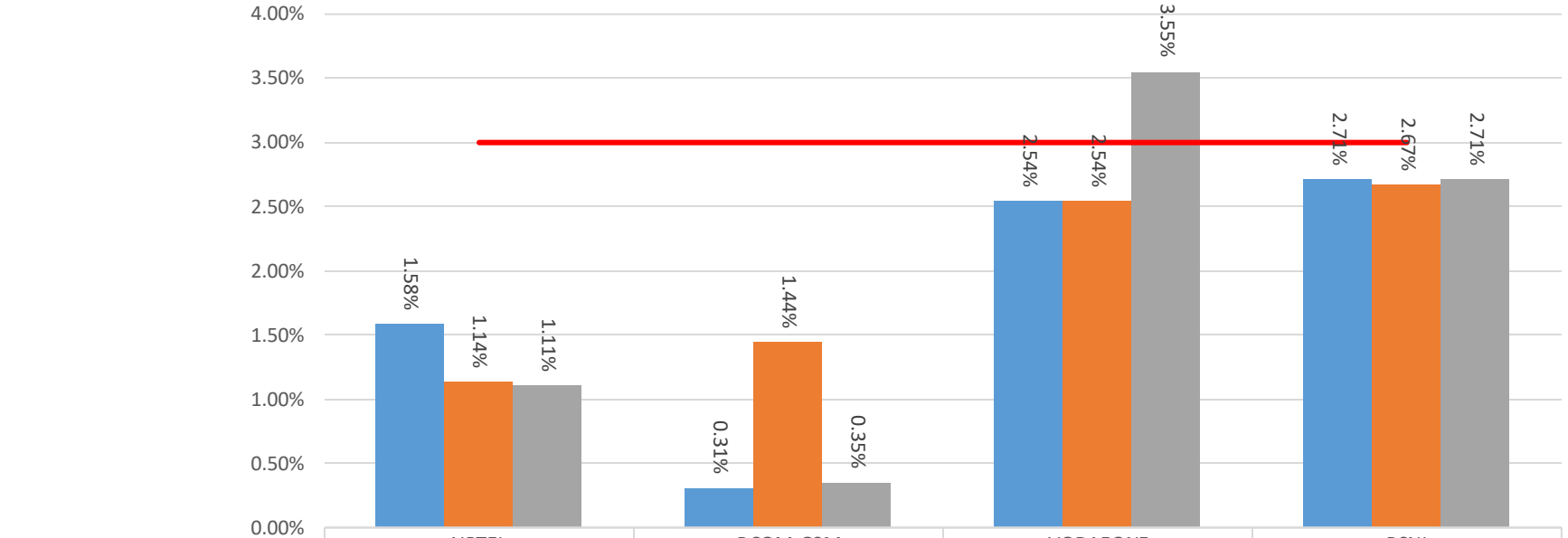
	AIRTEL	RCOM-GSM	VODAFONE	BSNL
PMR Audit 3G Agency(PCPL)	1.03%	0.01%	0.02%	1.34%
PMR Audit 3G TSP	0.07%	0.06%	0.02%	1.30%
3 Day Live Audit 3G	0.70%	0.03%	0.04%	1.30%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%

13.5.6. CIRCUIT SWITCHED VOICE DROP RATE



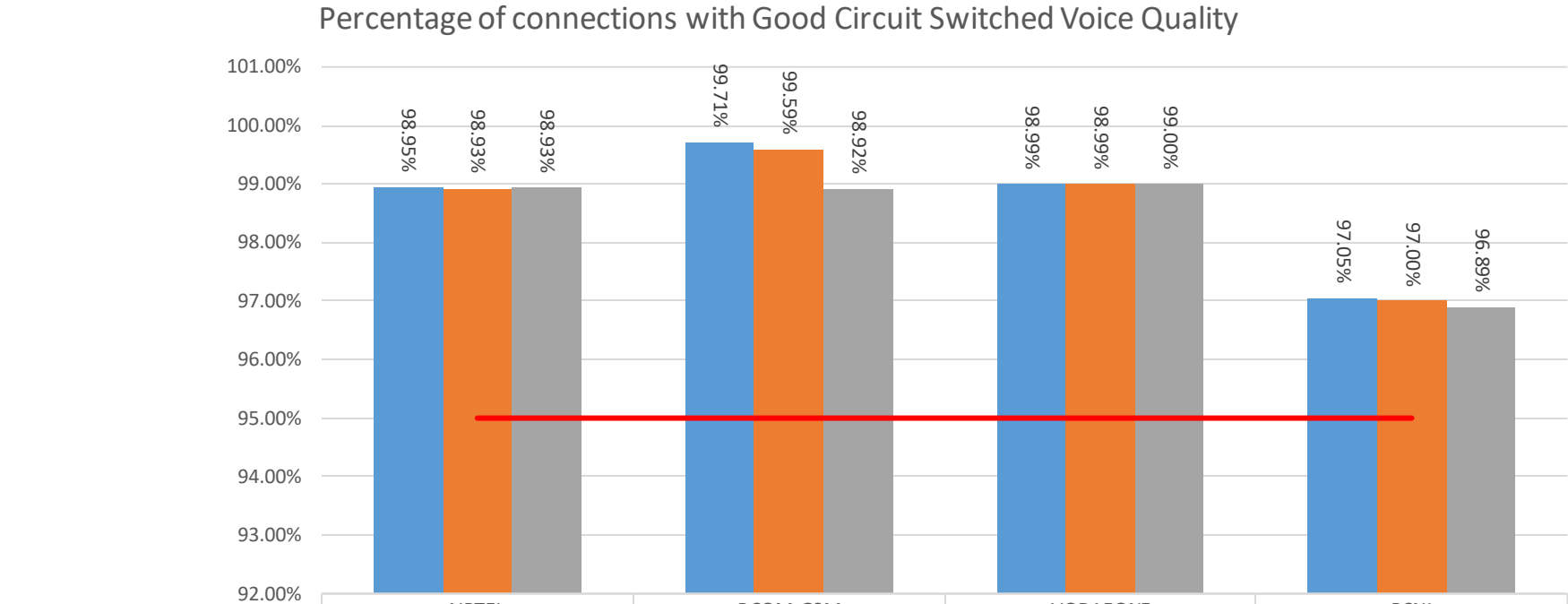
	AIRTEL	RCOM-GSM	VODAFONE	BSNL
PMR Audit 3G Agency(PCPL)	0.44%	0.13%	0.27%	1.82%
PMR Audit 3G TSP	0.50%	0.32%	0.27%	1.80%
3 Day Live Audit 3G	0.54%	0.15%	0.26%	1.87%
Benchmark ≤ 2%	2.00%	2.00%	2.00%	2.00%

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



	AIRTEL	RCOM-GSM	VODAFONE	BSNL
PMR Audit 3G Agency(PCPL)	1.58%	0.31%	2.54%	2.71%
PMR Audit 3G TSP	1.14%	1.44%	2.54%	2.67%
3 Day Live Audit 3G	1.11%	0.35%	3.55%	2.71%
Benchmark ≤ 2%	3.00%	3.00%	3.00%	3.00%

13.5.8. PERCENTAGE OF CONNECTIONS WITH GOOD CIRCUIT SWITCHED VOICE QUALITY

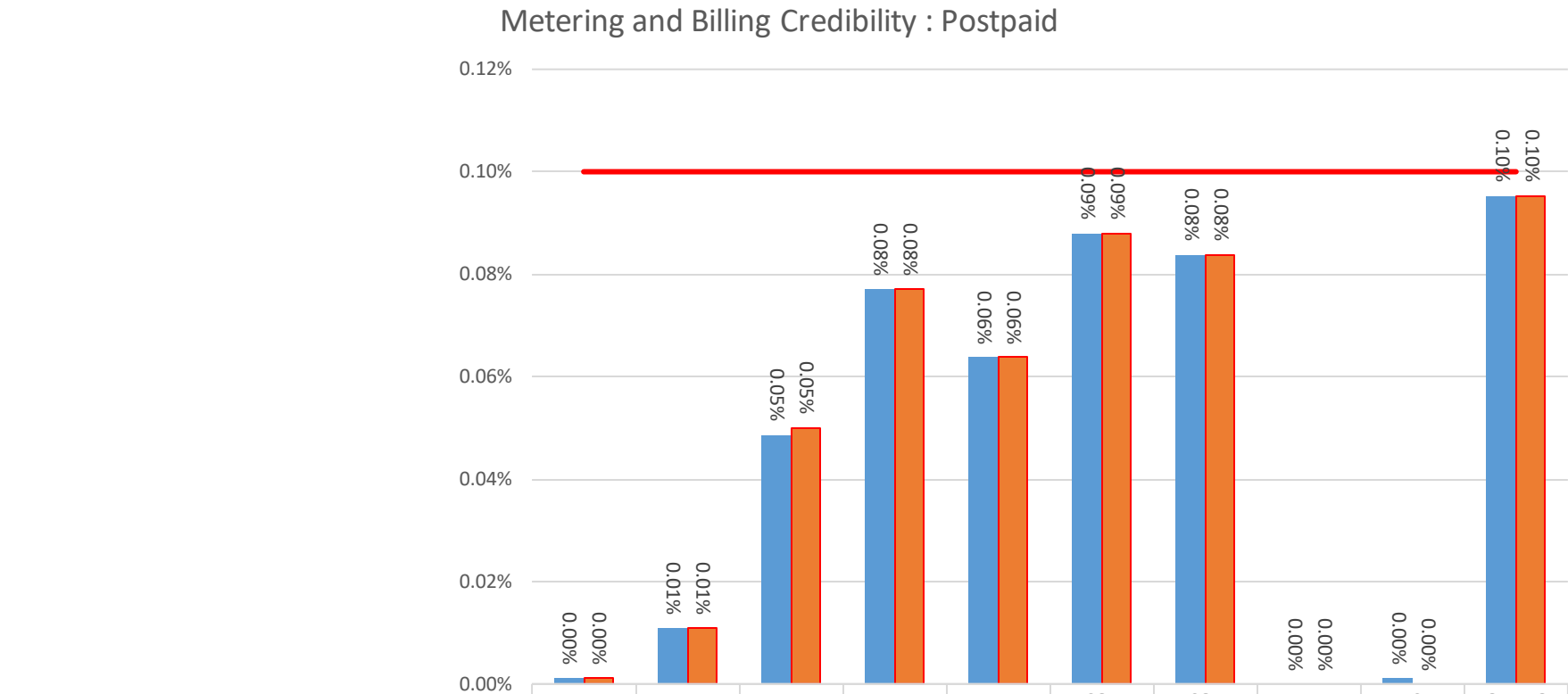


	AIRTEL	RCOM-GSM	VODAFONE	BSNL
PMR Audit 3G Agency(PCPL)	98.95%	99.71%	98.99%	97.05%
PMR Audit 3G TSP	98.93%	99.59%	98.99%	97.00%
3 Day Live Audit 3G	98.93%	98.92%	99.00%	96.89%
Benchmark ≤ 2%	95.00%	95.00%	95.00%	95.00%

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

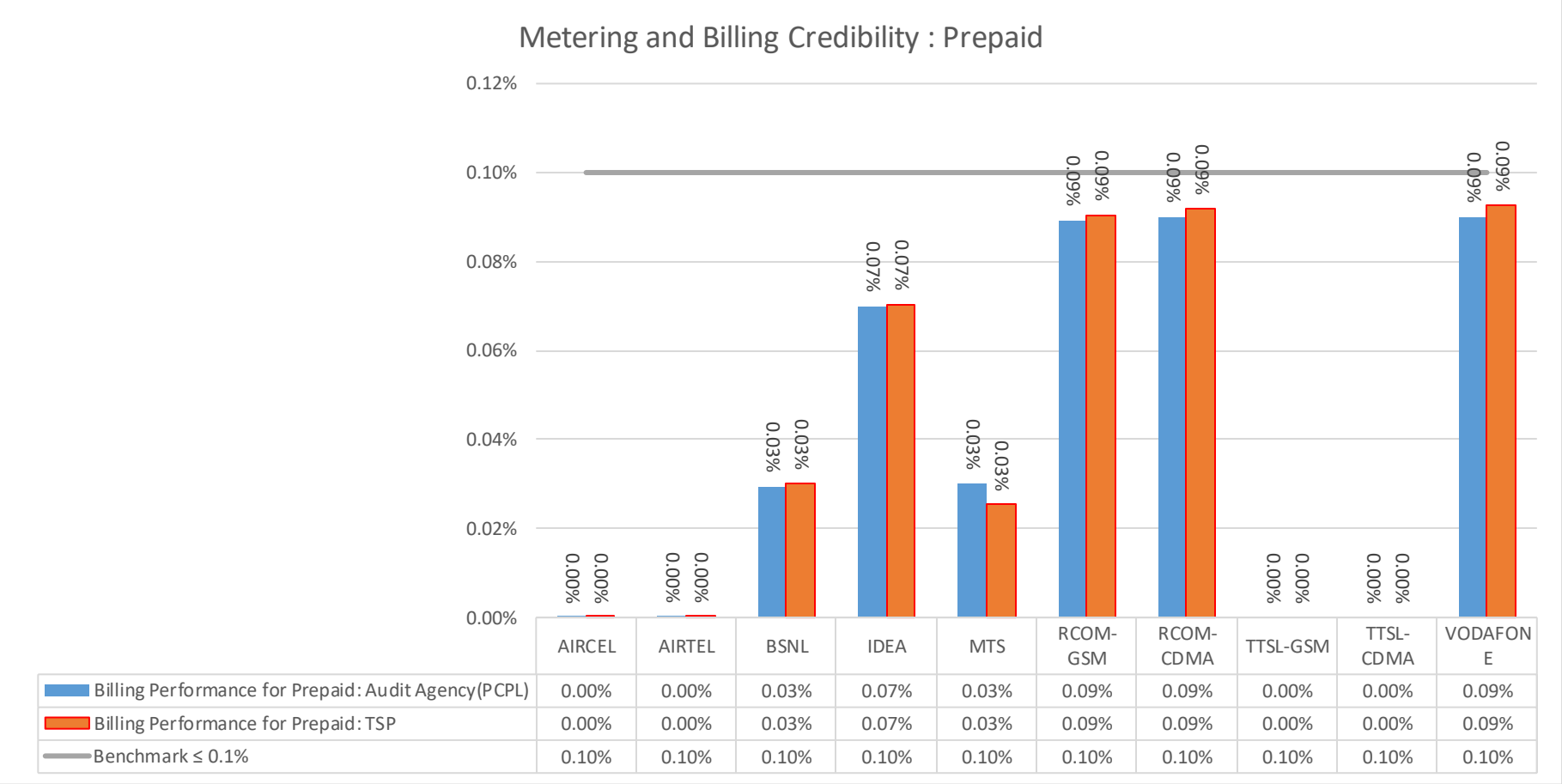
Name of Service Provider	Metering and Billing credibility				Billing Complaints						Termination & Closures		Time taken for refund of deposits after closures: Benchmark		Response time to customer for assistance			
	Postpaid Subscribers		Prepaid Subscribers		%age complaints resolved within 4 weeks		%age 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%	77.59%	77.59%	96.85%	96.85%	92.28%	92.28%
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%	99.99%	99.99%	94.25%	94.25%
BSNL	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%	92.03%	100.00%	98.52%	98.52%
IDEA	0.08%	0.08%	0.07%	0.07%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.94%	98.94%	96.45%	96.45%
MTS	0.06%	0.06%	0.03%	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.96%	99.96%	95.78%	95.78%
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%	100.00%	100.00%	99.71%	99.71%	95.31%	95.31%
RCOM-CDMA	0.08%	0.08%	0.09%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.91%	99.91%	99.58%	99.58%	91.22%	91.22%
TTSL-GSM	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	95.90%	95.90%	90.15%	90.13%
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%	95.90%	100.00%	98.21%	98.21%
VODAFONE	0.10%	0.10%	0.09%	0.09%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	60.57%	100.00%	100.00%	100.00%	97.47%	97.53%

13.6.1. METERING AND BILLING CREDIBILITY : POSTPAID



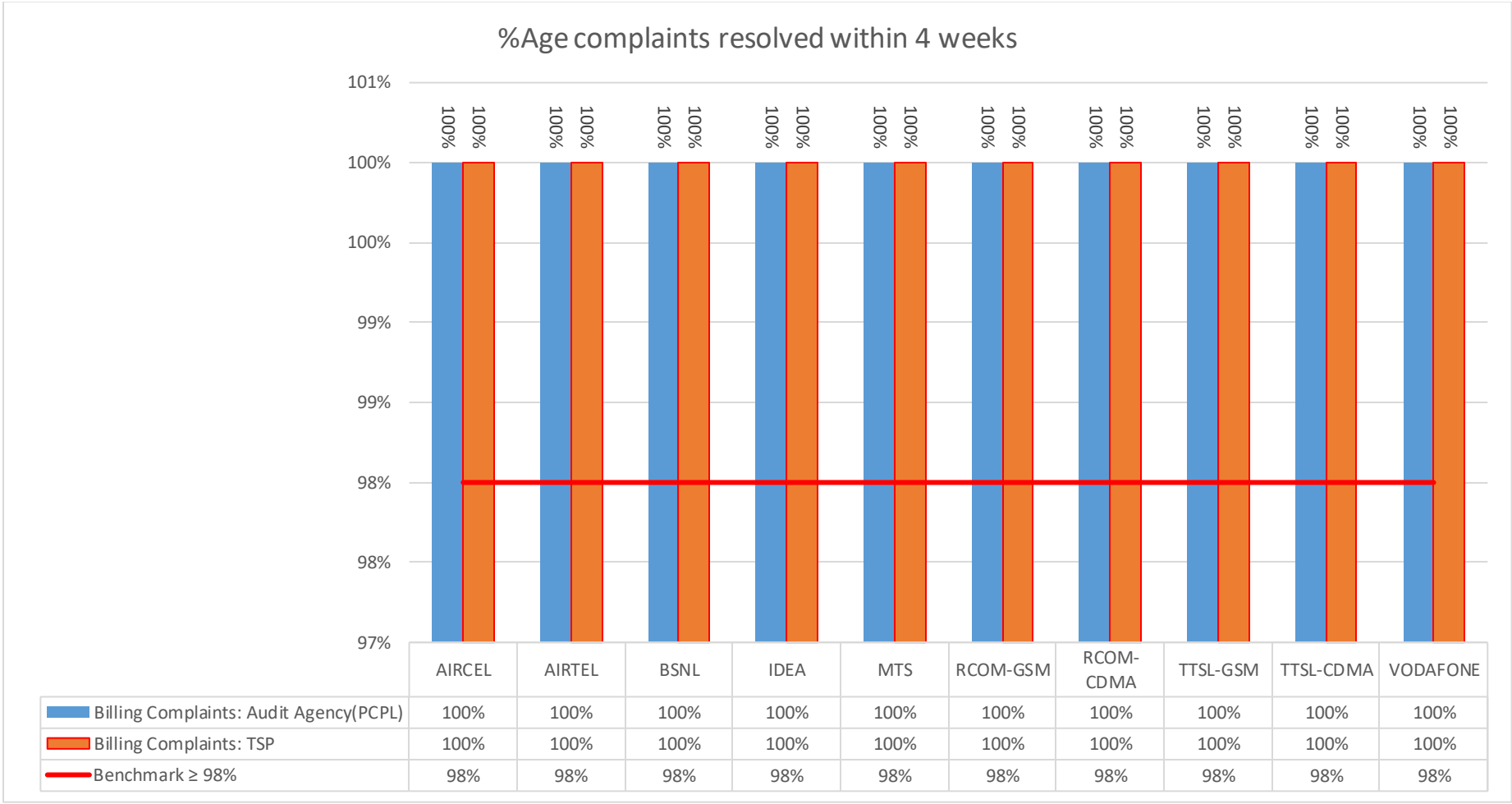
	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM-GSM	RCOM-CDMA	TTSL-GSM	TTSL-CDMA	VODAFONE
Billing Performance for Postpaid: Audit Agency(PCPL)	0.00%	0.01%	0.05%	0.08%	0.06%	0.09%	0.08%	0.00%	0.00%	0.10%
Billing Performance for Postpaid: TSP	0.00%	0.01%	0.05%	0.08%	0.06%	0.09%	0.08%	0.00%	0.00%	0.10%
Benchmark ≤ 0.1%	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	MTS	RCOM-GSM	RCOM-CDMA	TTSL-GSM	TTSL-CDMA	VODAFONE
Billing Performance for Prepaid: Audit Agency(PCPL)	0.00%	0.00%	0.03%	0.07%	0.03%	0.09%	0.09%	0.00%	0.00%	0.09%
Billing Performance for Prepaid: TSP	0.00%	0.00%	0.03%	0.07%	0.03%	0.09%	0.09%	0.00%	0.00%	0.09%
Benchmark ≤ 0.1%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%

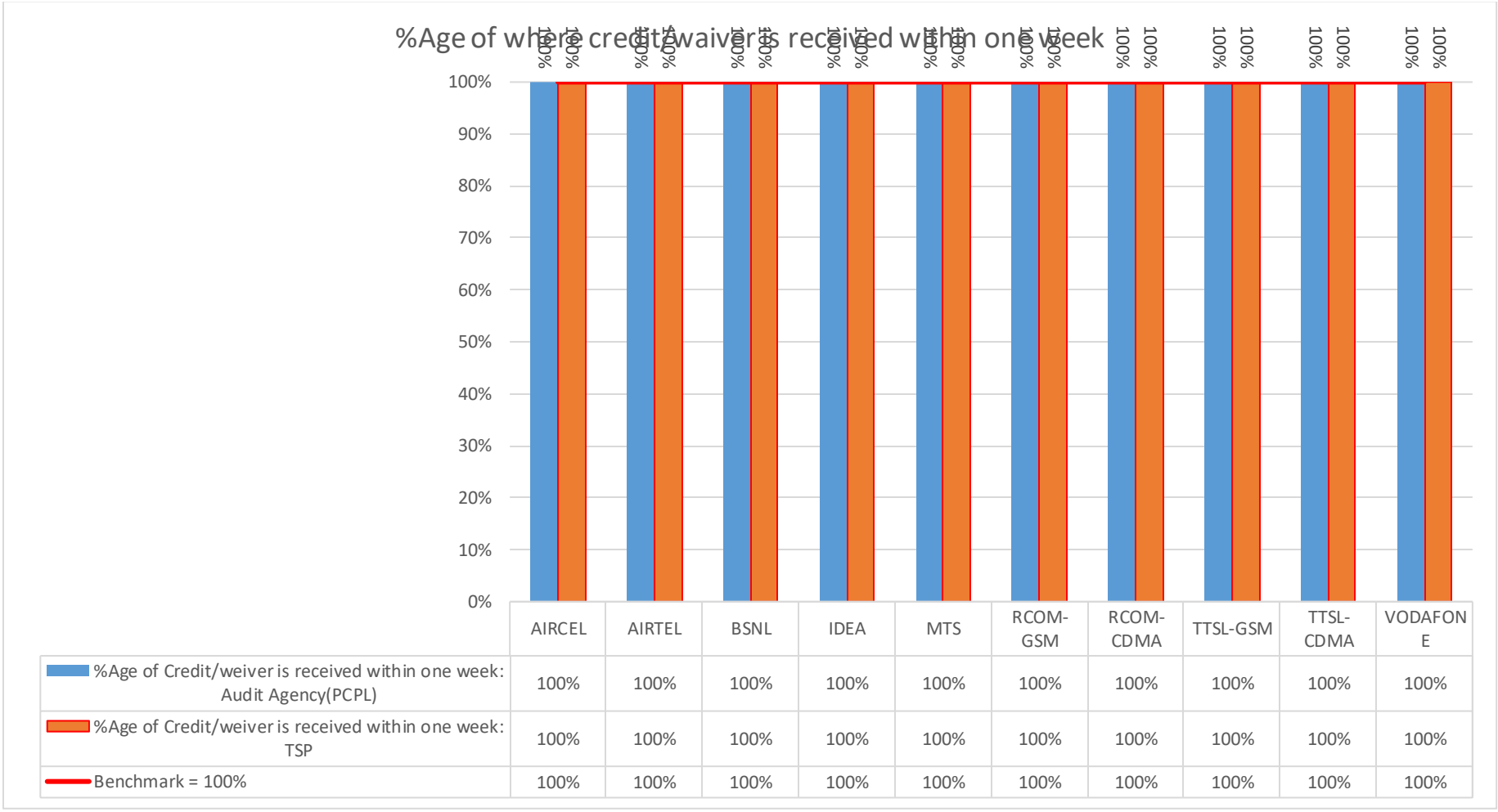
13.6.3. %AGE COMPLAINT RESOLVED WITHIN 4 WEEKS



13.6.4. %AGE COMPLAINTS RESOLVED WITHIN 6 WEEKS

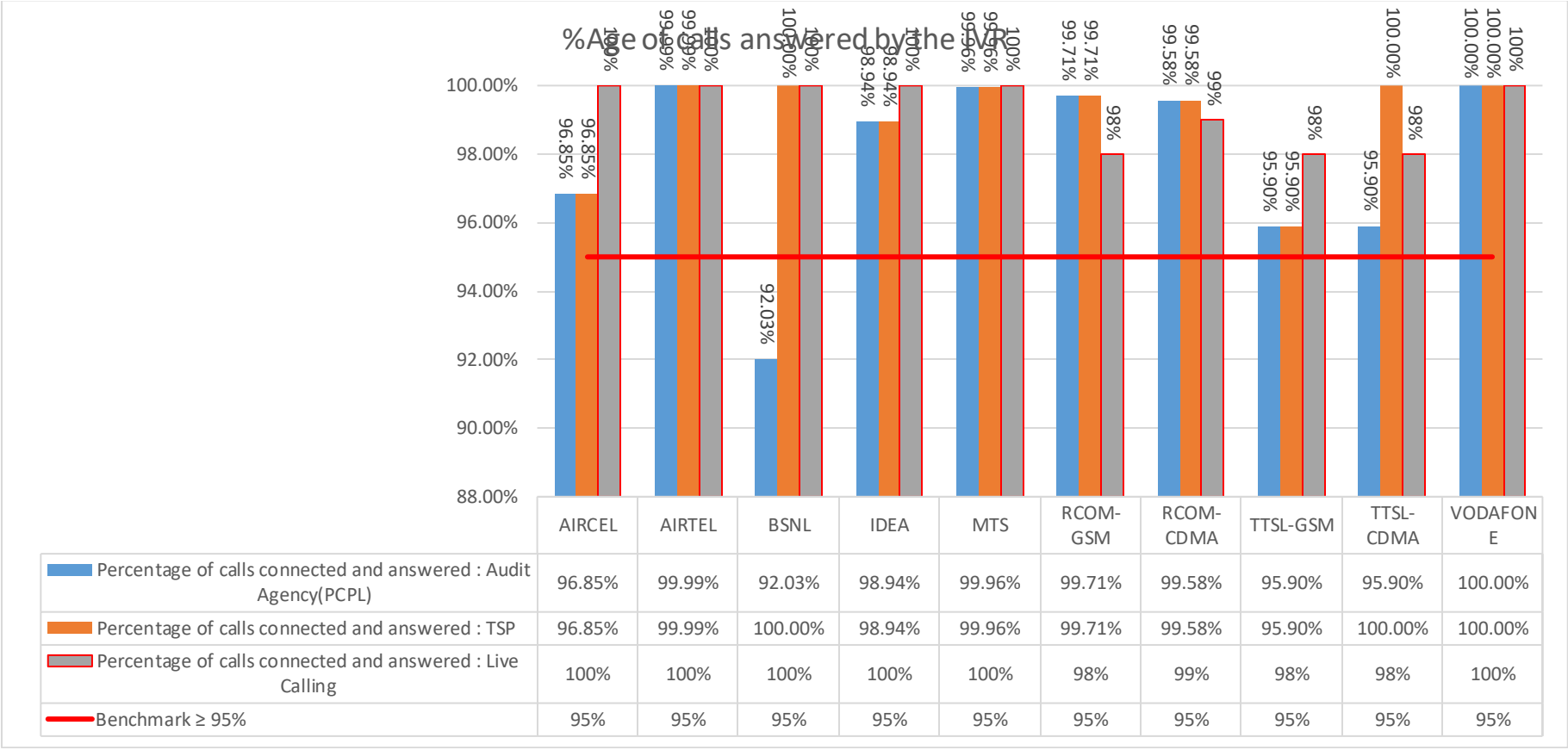
	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM-GSM	RCOM-CDMA	TTSL-GSM	TTSL-CDMA	VODAFONE
Billing Complaints: Audit Agency(PCPL)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Billing Complaints: TSP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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



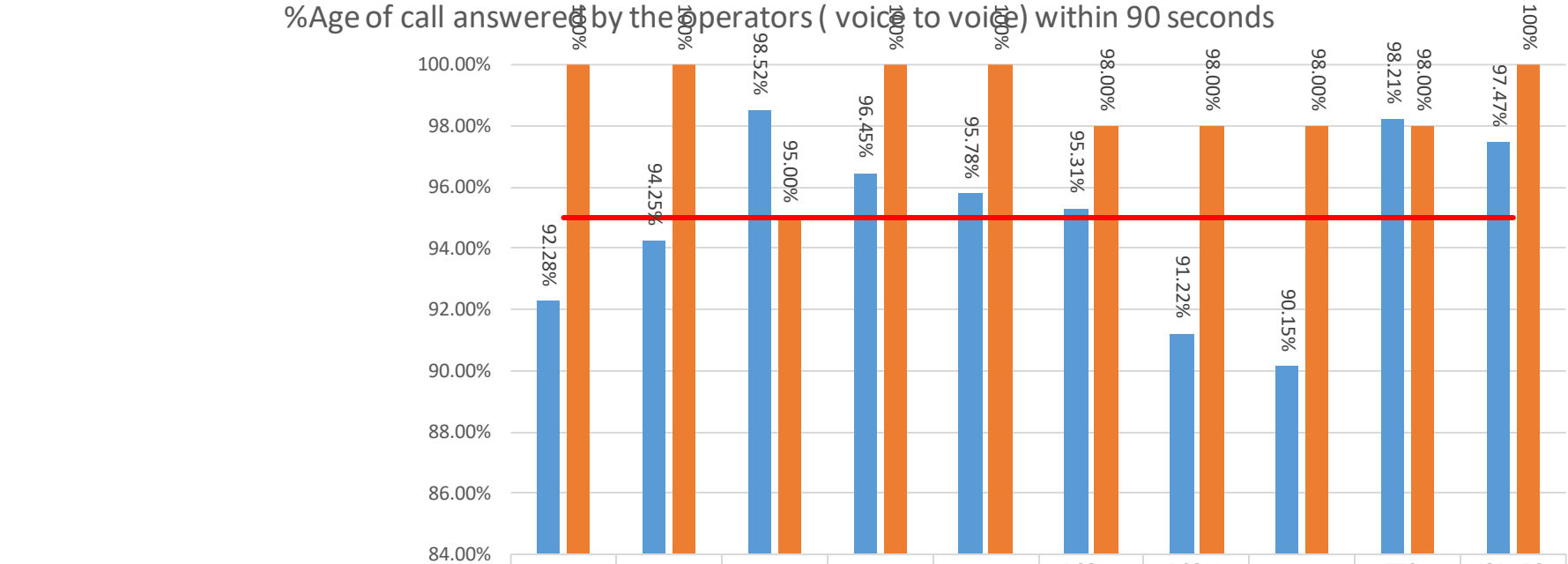
	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM-GSM	RCOM-CDMA	TTSL-GSM	TTSL-CDMA	VODAFONE
%Age of Credit/weiver is received within one week: Audit Agency(PCPL)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
%Age of Credit/weiver is received within one week: TSP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

13.6.6. %AGE OF CALLS ANSWERED BY THE IVR



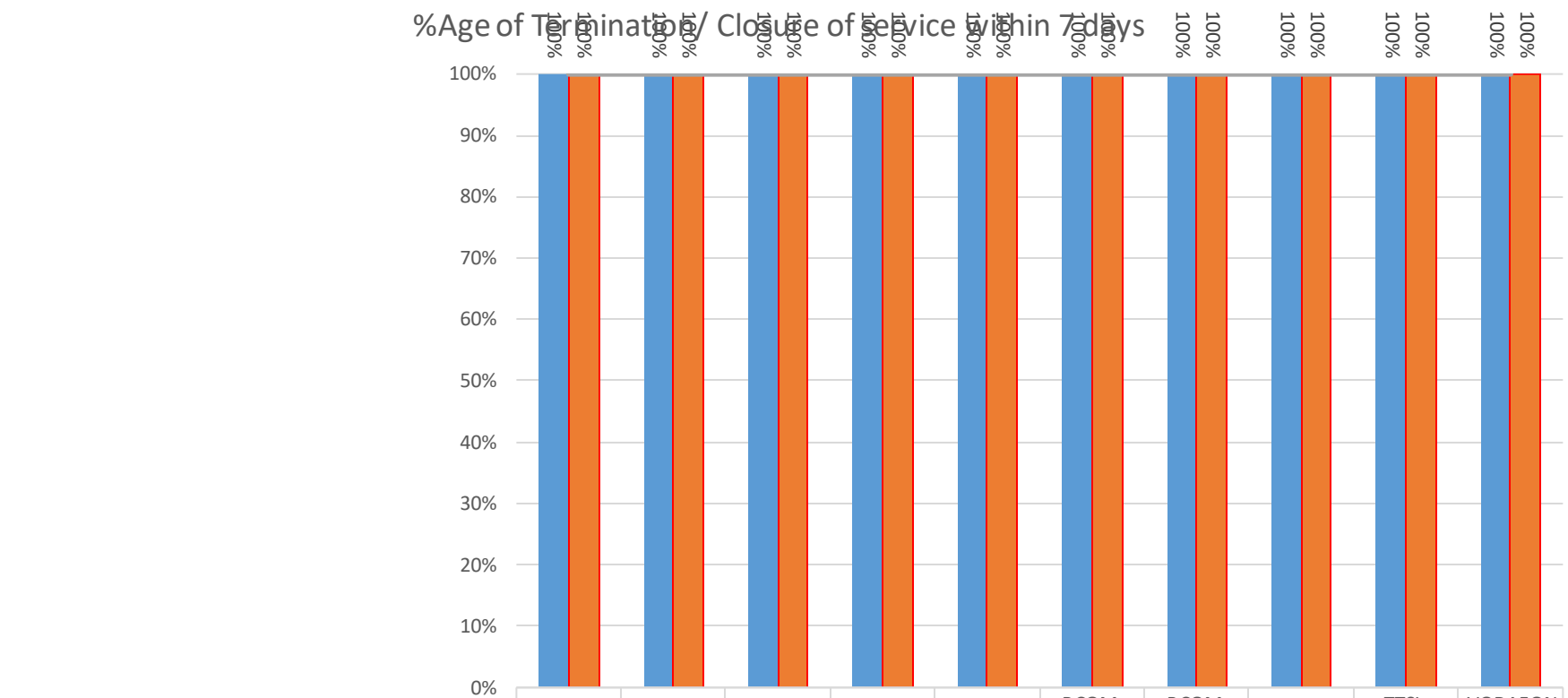
	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM-GSM	RCOM-CDMA	TTSL-GSM	TTSL-CDMA	VODAFONE
Percentage of calls connected and answered : Audit Agency(PCPL)	96.85%	99.99%	92.03%	98.94%	99.96%	99.71%	99.58%	95.90%	95.90%	100.00%
Percentage of calls connected and answered : TSP	96.85%	99.99%	100.00%	98.94%	99.96%	99.71%	99.58%	95.90%	100.00%	100.00%
Percentage of calls connected and answered : Live Calling	100%	100%	100%	100%	100%	98%	99%	98%	98%	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



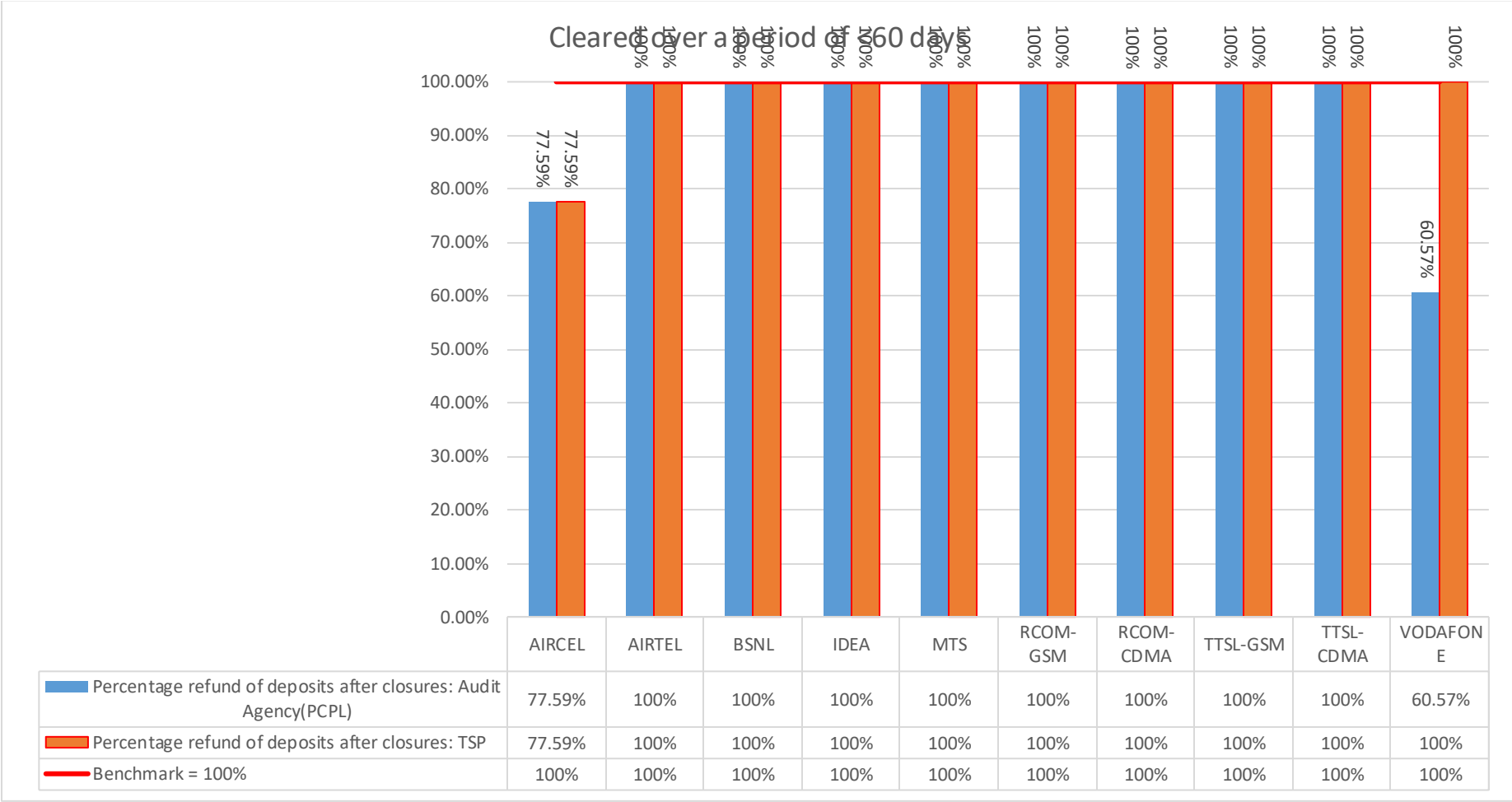
	AIRCEL	AIRTEL	BSNL	IDEA	MTS	RCOM-GSM	RCOM-CDMA	TTSL-GSM	TTSL-CDMA	VODAFONE
Percentage of calls connected and answered by the operators: Audit Agency(PCPL)	92.28%	94.25%	98.52%	96.45%	95.78%	95.31%	91.22%	90.15%	98.21%	97.47%
Percentage of calls connected and answered by the operators: Live Calling	100%	100%	95.00%	100%	100%	98.00%	98.00%	98.00%	98.00%	100%
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	MTS	RCOM-GSM	RCOM-CDMA	TTSL-GSM	TTSL-CDMA	VODAFONE
Percentage cases closure done within 7 days: Audit Agency(PCPL)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Percentage cases closure done within 7 days: 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	MTS	RCOM-GSM	RCOM-CDMA	TTSL-GSM	TTSL-CDMA	VODAFONE
Percentage refund of deposits after closures: Audit Agency(PCPL)	77.59%	100%	100%	100%	100%	100%	100%	100%	100%	60.57%
Percentage refund of deposits after closures: TSP	77.59%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benchmark = 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

14 KEY FINDINGS

14.1. 2G VOICE PMR - CONSOLIDATED

- No operator out of benchmark for any QoS parameter

14.2. 3G VOICE PMR - CONSOLIDATED

- No operator out of benchmark for any QoS parameter

14.3. BILLING AND CUSTOMER CARE

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