



Operator Assisted Drive Test (OADT)
For

Shivamogga

17th to 19th Feb 2026

TRAI RO, Bengaluru

Self-Drive Test by TSP



Drive Test Report
for
Feb Month 2026 Year
Shivamogga & Nearby Area
17 Feb to 19 Feb 2026
by
TRAI RO ,Bengaluru

Table of contents

1. Overview

- 1.1 Telecom Service Providers, Technologies and frequency bands captured
- 1.2 Quality of Service parameters measured

2. Executive Summary

- 2.1 Route Map of Drive test & Hotspot locations
- 2.2 Drive Test Area detail
- 2.3 Details of Drive Test Tools
- 2.4 Key Findings (Voice & Data)

3. QoS Performance Analysis - Dynamic

- 3.1 Voice Service Performance (3G/2G Lock mode)
- 3.2 Voice Service Performance (5G/4G/3G/2G - Auto mode)
- 3.3 Data Service performance (5G/4G/3G/2G (Auto mode)
- 3.4 Time spent (Technology Wise)

4. QoS Performance Analysis - Static

- 4.1 Hot spot Locations
- 4.2 Voice Service Performance (5G/4G/3G/2G - Auto mode) – Over all
- 4.3 Data Service Performance (5G/4G/3G/2G - Auto mode) – Over all
- 4.4 Voice Service Performance (5G/4G/3G/2G-Auto mode) at each Static location
- 4.5 Data Service Performance (5G/4G/3G/2G-Auto mode) at each Static location
- 4.6 Signal Strength Distribution (5G/4G/3G/2G - Auto mode) – Over all

5. Improvement plan for shortcoming observed during Drive Test

6. Compliance Report on shortcomings observed during Drive Test

1. Overview

The Operator Assisted Drive Test carried out in Shivamogga and nearby areas from date 17/02/26 to 19/02/26 From 10:00 AM to 7:00 PM. The drive test covered drive route of around 433 KMs in 3 days and 6 hotspot locations.

1.1 Telecom Service Providers(TSPs),Technologies and frequency bands captured during Drive Test are as below:

Sl. No.	Name of TSP	Technology	Frequency Bands (In MHz)
1	Bharti Airtel Ltd.	2G	900
2	Bharti Airtel Ltd.	4G	900 ,1800 , 2100 , 2300
3	Bharti Airtel Ltd.	5G	3500
4	BSNL	2G	900
5	BSNL	3G	2100
6	BSNL	4G	2100,700 ,2500
7	Reliance JIO Infocomm Ltd.	4G	850 ,1800 ,2300
8	Reliance JIO Infocomm Ltd.	5G	700 ,3500
9	Vodafone Idea Ltd.	2G	900, 1800
10	Vodafone Idea Ltd.	3G	NA
11	Vodafone Idea Ltd.	4G	900 ,1800 , 2100.

(1) Quality of Service parameters measured:

Voice Service:

Dynamic	Static (Hotspot Location)
Call setup time	Call setup time
Call setup success rate (CSSR)	Call setup success rate (CSSR)
Dropped Call rate	Dropped Call rate
Call Silence Rate	
Handover Success Rate (HOSR)	
Packet Drop Rate (Uplink & Downlink)	
Mean Opinion Score (MOS)	
Signal Strength	

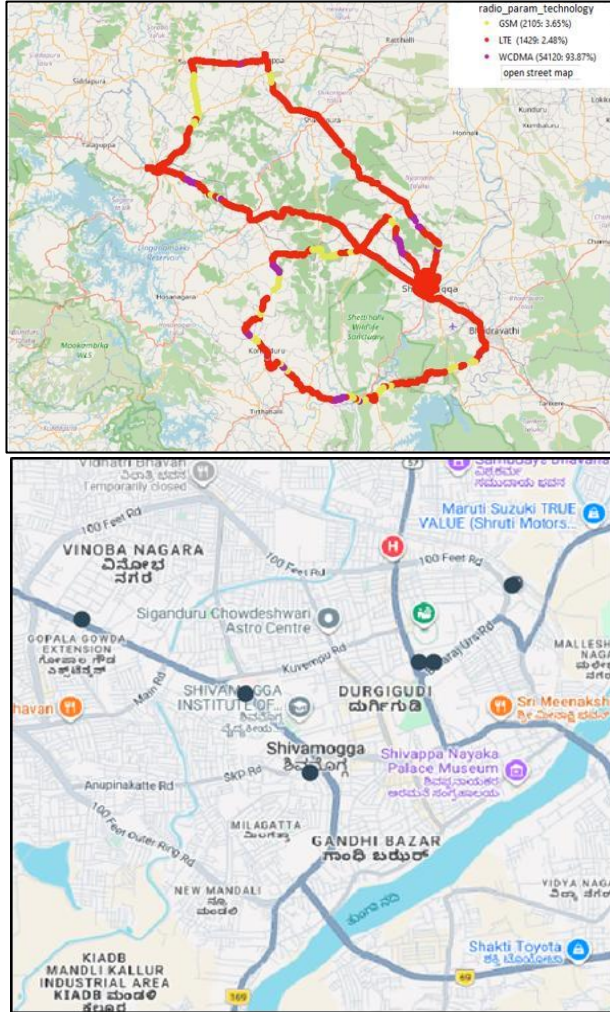
(2) Data Service:

Dynamic	Static (Hotspot Location)
Data speed (DL / UL both)	Data speed (DL/UL both)
Latency	Latency
Jitter	Jitter
	Session Setup Success Rate (DL/UL)
	Packet Drop rate
	Web browsing delay
	Video Streaming performance

2. Executive Summary

This report covers the findings of the OADT undertaken in Shivamogga, Karnataka License Service Area (LSA) during the month of Feb (2026) under the supervision of TRAI Regional Office (RO), Bengaluru. Details of route/ area covered during the OADT is as given below:

2.1 Route Map of Drive test & Hotspot locations:



2.2 Drive Test Area detail

Date	DurationAM to.....PM	Drivetestroute	Distance covered (in Km)
17-02-2026	9 AM to 6 PM	Shivamogga, Bhadravathi, Bejjvalli, Ripponpet, Ayanuru, Shivamogga.	172Km
18-02-2026	9 AM to 6 PM	Shivamogga, Savalanga, Shikaripura, Shiralkoppa, Soraba, Sagara, Anandapura, Choradi, Shivamogga.	220Km
19-02-2026	9 AM to 6 PM	Shivamogga City	41 Km

Date	Time	Hotspot Location	Latitude/Longitude
17-02-2026	04:40pm	McGann Hospital	13.934863,75.562637
17-02-2026	05:15pm	KSRTC Bus stand	13.928567,75.567648
19-02-2026	08:45am	APMC Market Yard	13.940913,75.549958
19-02-2026	10:15am	DC Office	13.937436,75.576147
19-02-2026	11:00am	Railway Station	13.943624,75.583393
19-02-2026	11:40am	Court Complex	13.937491,75.577331

2.3 Details of Drive Test Tools used:

Airtel - TEMS Investigation 27.1

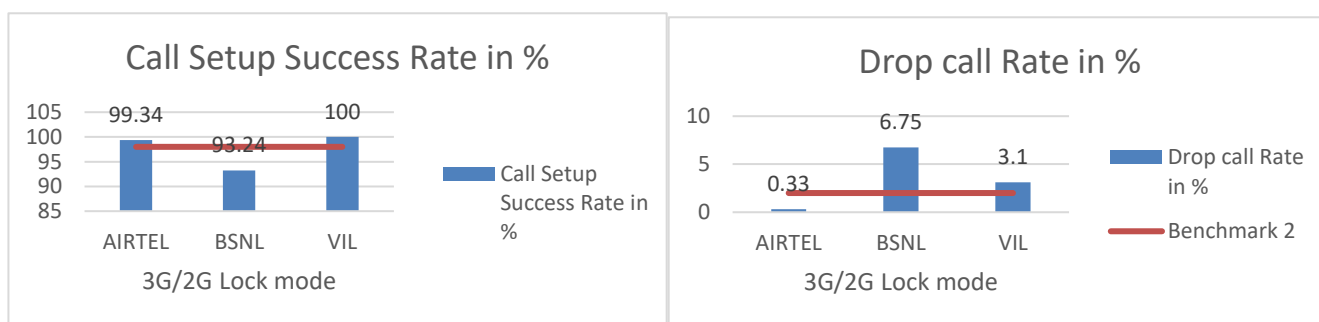
BSNL – Azenqos 5 Handsets & Agilent Handset 01.

JIO – XCAL.

VIL – Azenqos

2.4 Key findings(Voice & Data)

2.4.1 Voice Service performance in 3G/2G mode only

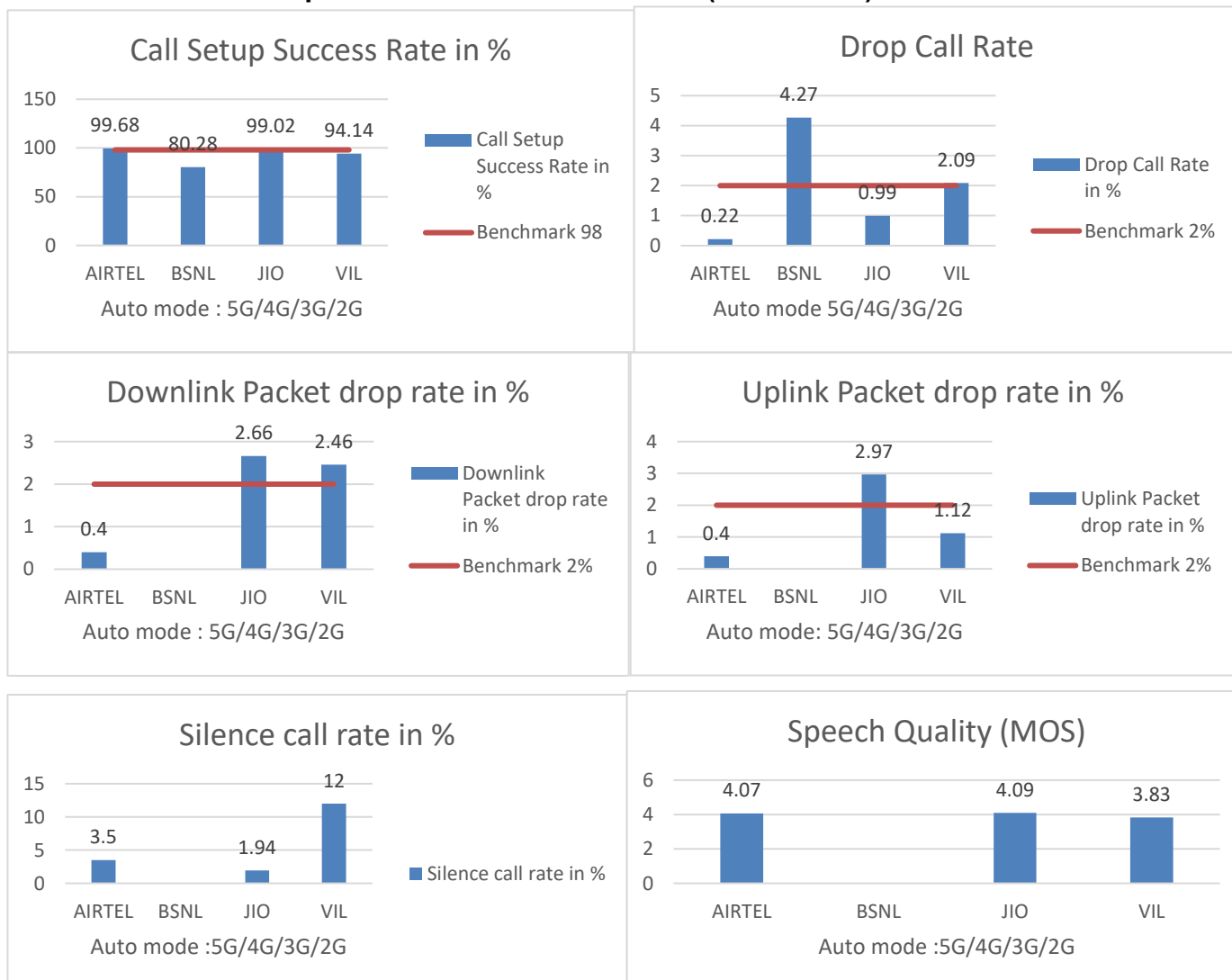


Parameter	Benchmark	AIRTEL	BSNL	VIL
Call Attempts		305	296	232
Call Setup Success Rate(in%)	$\geq 98.0\%$	99.34	93.24%	100
Drop Call Rate(in%)	$\leq 2\%$	0.33	6.75%	3.1
Call Setup Time-Average(in Seconds)		2.48	4.672	3.33
Handover Success Rate(in %)	$\geq 95\%$	98.71	96.99%	97.44

2.4.2 Number of Cell ids latched during drive test (3G/2G)

Technology	AIRTEL	BSNL	VIL
3G	NA	171	NA
2G	407	45	232

2.4.3 Voice Service performance in 5G/4G/3G/2G (Auto mode)

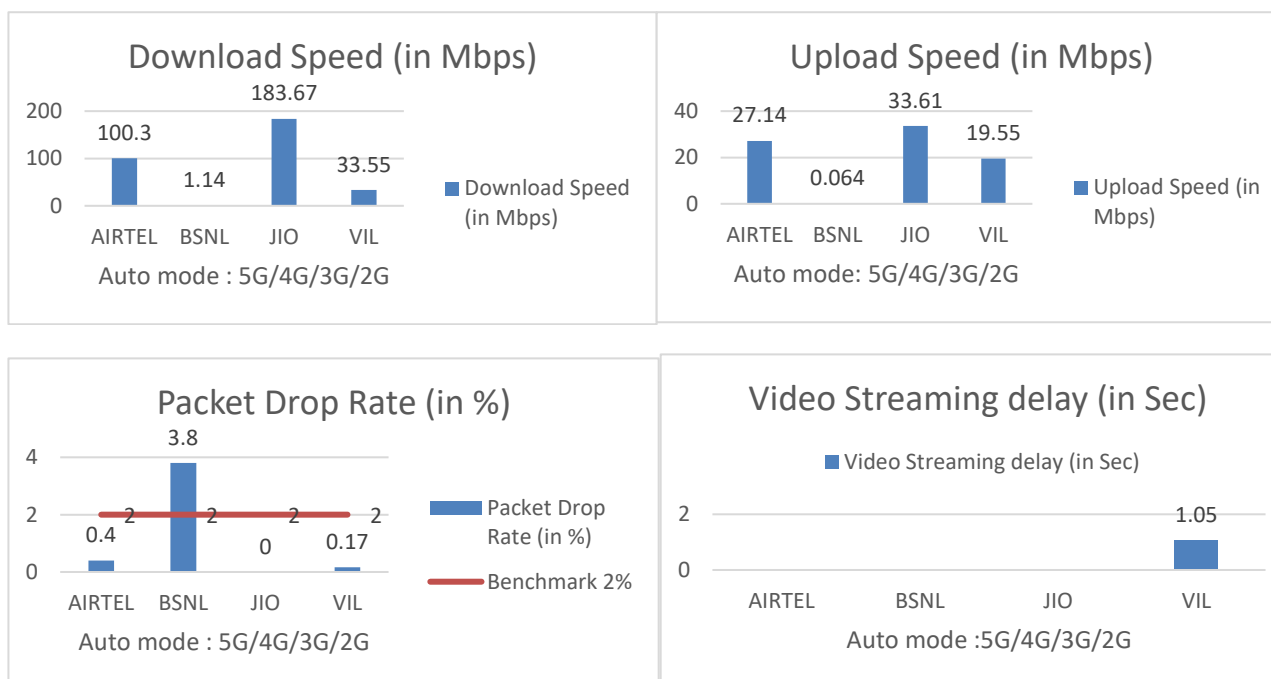


Parameter	AIRTEL	BSNL	RJIL	VIL
Call Attempts	314	444	307	239
Call Setup Success Rate%	99.68	80.28%	99.02	94.14
Drop Call Rate%	0.22	4.27%	0.99	2.09
Call Setup Time-Average(Second)	1.23	3.63	1.04	1.59
Handover Success Rate%	98.91	99.38%	96.6	99.27
Downlink Packet drop rate %	0.4	-	2.66	2.46
Uplink Packet drop rate%	0.4	-	2.97	1.12
Silence Call Rate%*	3.5	-	1.94	12
Speech Quality (AverageMOS)	4.07	-	4.09	3.83

2.4.4 Number of Cell ids latched during drive test (Automode)

Technology	AIRTEL	BSNL	RJIL	VIL
5G	407	-	153	NA
4G	738	576	687	237
3G	-	69	-	NA
2G	0	112	-	232

2.4.5 Data performance in 5G/4G/3G/2G(Automode)

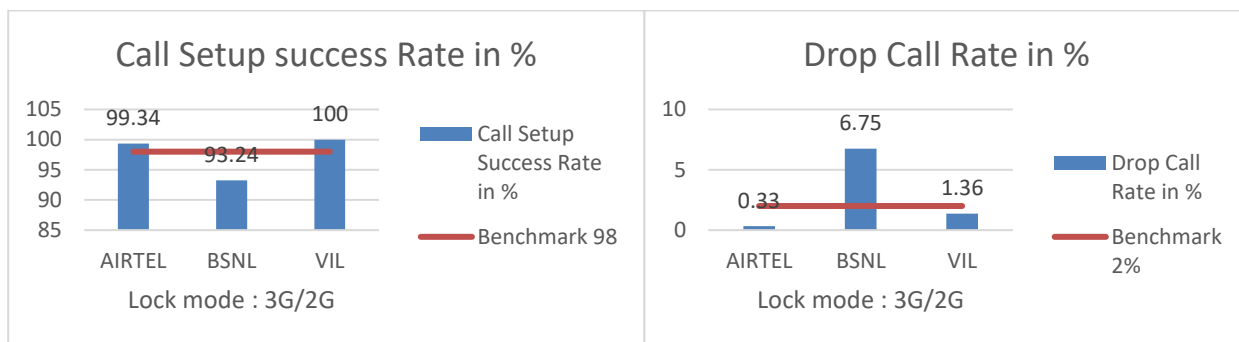


QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed (Mbits/s)	Typical	45.86	1.05	-	15
	Average	100.3	1.14	183.67	33.55
	80thPercentile	162.12	0.012	342.8	54.66
Download Session Setup Success Rate%		100%	87.28	100	96.19
Upload speed (Mbits/s)	Typical	12.89	0.035	-	8
	Average	27.14	0.064	33.61	19.55
	80thPercentile	39.88	0.029	60.45	28.66
Upload Session Setup Success Rate%		100%	-	100	91
Latency(in ms)	50thPercentile	29	54.74	39.5	87.41
Jitter(in ms)	Average	4.8	7.92	22.49	-0.44
Packet Drop Rate%		0.4	3.8	-	0.17
Web browsing delay(in sec)		NA	3.065	-	1.05
Video Streaming performance for video		NA	-	-	-

Detailed QoS Performance Analysis

3. Performance Analysis-Dynamic

3.1 Voice Service Performance(3G/2GLockmode)-Dynamic



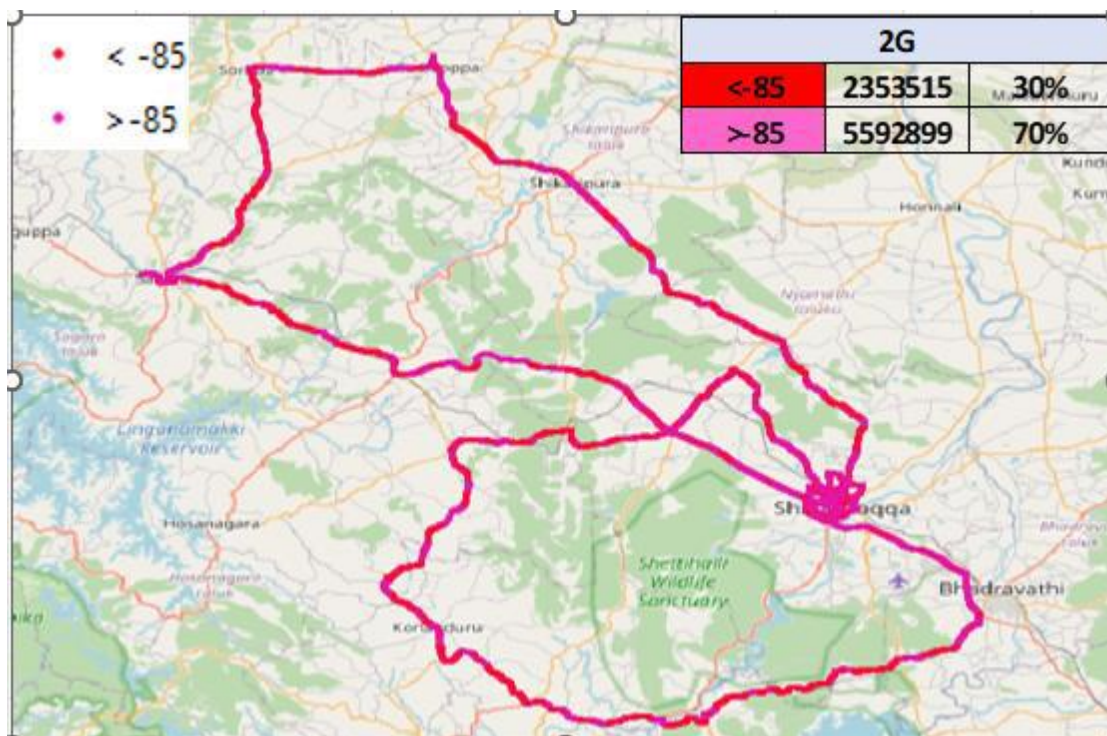
Parameters	Airtel	BSNL	RJIL	VIL
Total Distance covered(in Kms)	433	433	NA	490
No .of Call Attempts	305	296	NA	219
No. of Call Established	303	276	NA	219
Call setup success rate(CSSR)%	99.34	93.24%	NA	100
No. of Drop Call	1	20	NA	3
Drop Call Rate%	0.33	6.75%	NA	1.36
Call Setup Time Average(Sec.)	2.48	4.672	NA	1.09
No. of Handover Attempts	699	296	NA	839
No .of Handover success	690	287	NA	838
HOSR%	98.71	96.99%	NA	99.88
Total no of RLT Occurrence	81635		NA	0
No of RLT>48	0		NA	0

3.1.1 Number of Cell ids latched during drive test (3G/2G-Lockmode)

Number of unique Cell ids covered in Voice test				
Technology	AIRTEL	BSNL	RJIL	VIL
3G	NA	171	NA	NA
2G	407	45	NA	232

3.1.2 Signal Strength Map:(3G/2G-Lockmode) Airtel

Signal Strength Map (for each TSP)	Map Legend: 2G- Pink (Rx Level $\geq$ -85 dBm), 3G- Sky blue (RSCP Level $\geq$ -90 dBm) Red (Rx Level $<$ -85 dBm) Dark Blue (RSCP Level $<$ -90 dBm)
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Signal Strength Map:(3G/2G-Lockmode) BSNL

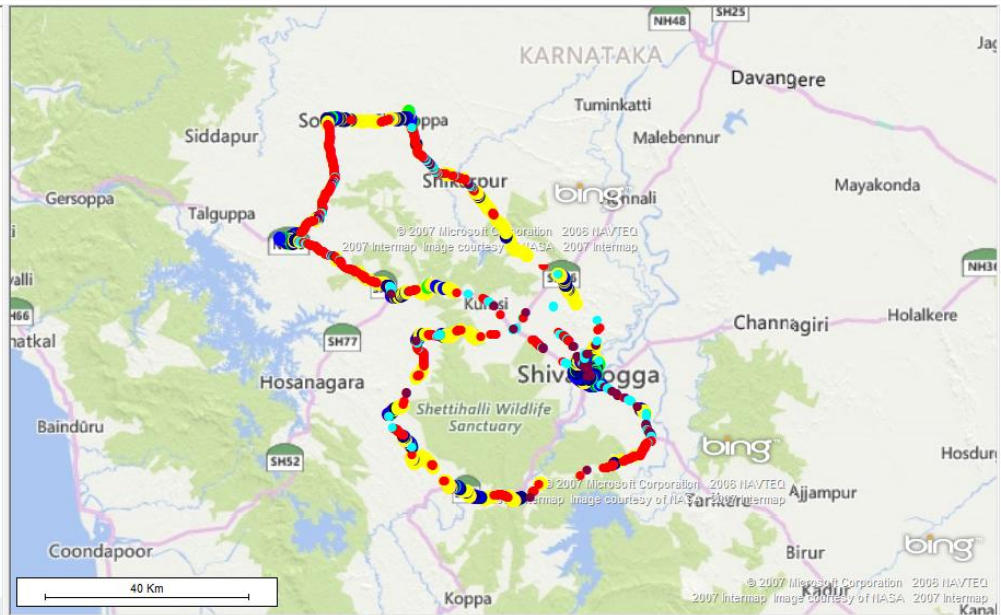
Signal Strength Map (for each TSP)

Map Legend:

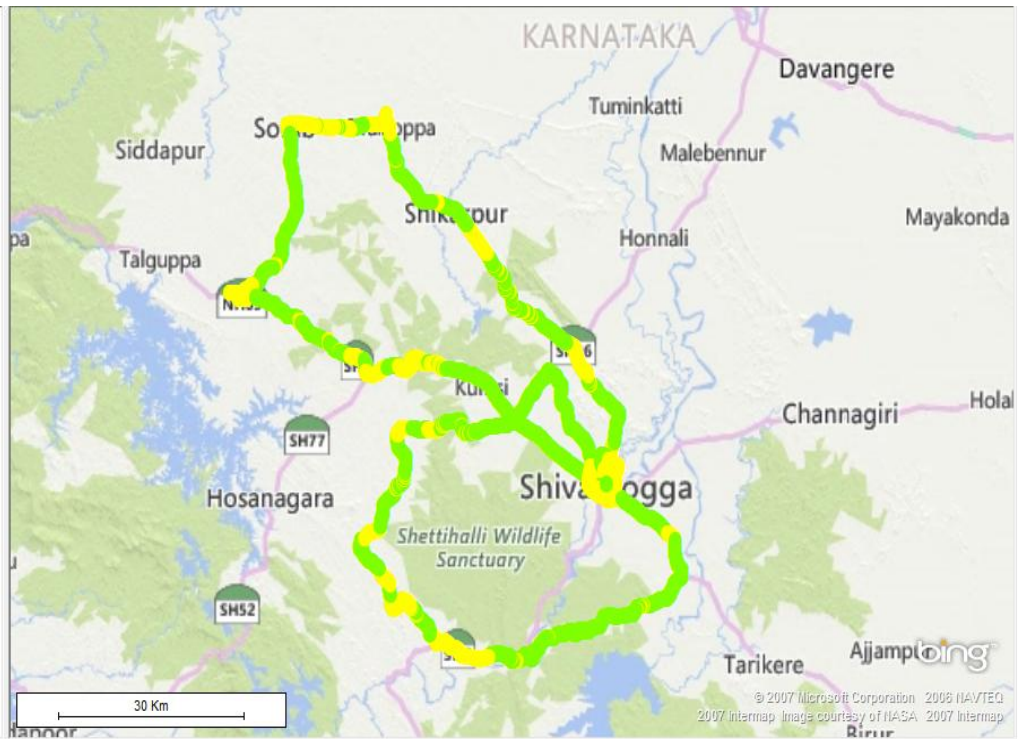
2G- **Pink** (Rx Level ≥ -85 dBm),
3G- **Sky blue** (RSCP Level ≥ -90 dBm)

Red (Rx Level < -85 dBm)
Dark Blue (RSCP Level < -90 dBm)

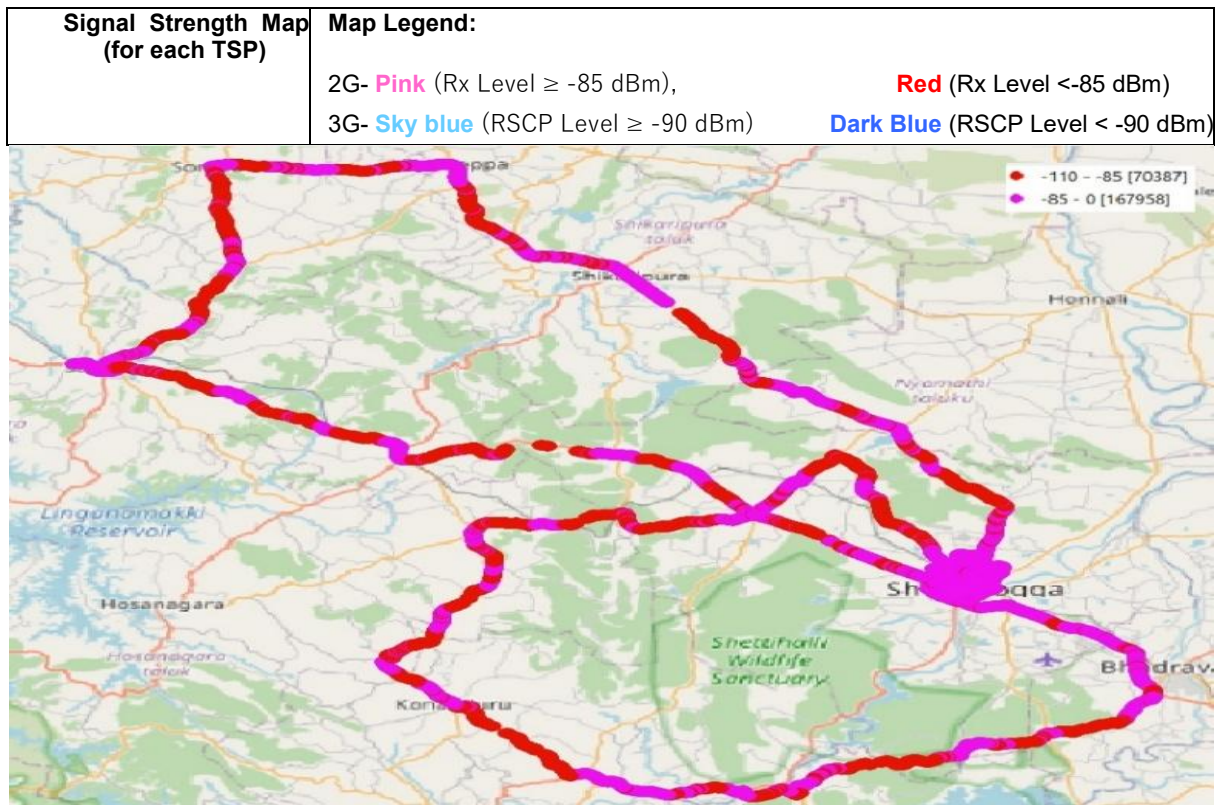
- ☒ SuperStream001-Uu_ActiveSet_RSCP_0 (dBm)
- Below -90.00 (6107) 25.9%
 - ≥ -90.00 to < -80.00 (8418) 35.6%
 - ≥ -80.00 to < -70.00 (6267) 26.5%
 - Above -70.00 (2831) 12.0%
- ☒ SuperStream001-ServRxLevSub (dBm)
- Below -85 (6362) 76.0%
 - ≥ -85 to < -75 (1167) 13.9%
 - ≥ -75 to < -65 (661) 7.9%
 - Above -65 (179) 2.1%



- ☒ SuperStream001-Technology_Mode (N/A)
- UMTS Mode (26712) 52.3%
 - GSM mode (24315) 47.7%
- ☒ SuperStream001-Uu_Technology_Mode (N/A)
- Unknown (517) 1.0%
 - UMTS Mode (26221) 51.4%
 - GSM mode (24291) 47.6%



Signal Strength Map:(3G/2G-Lockmode) VIL

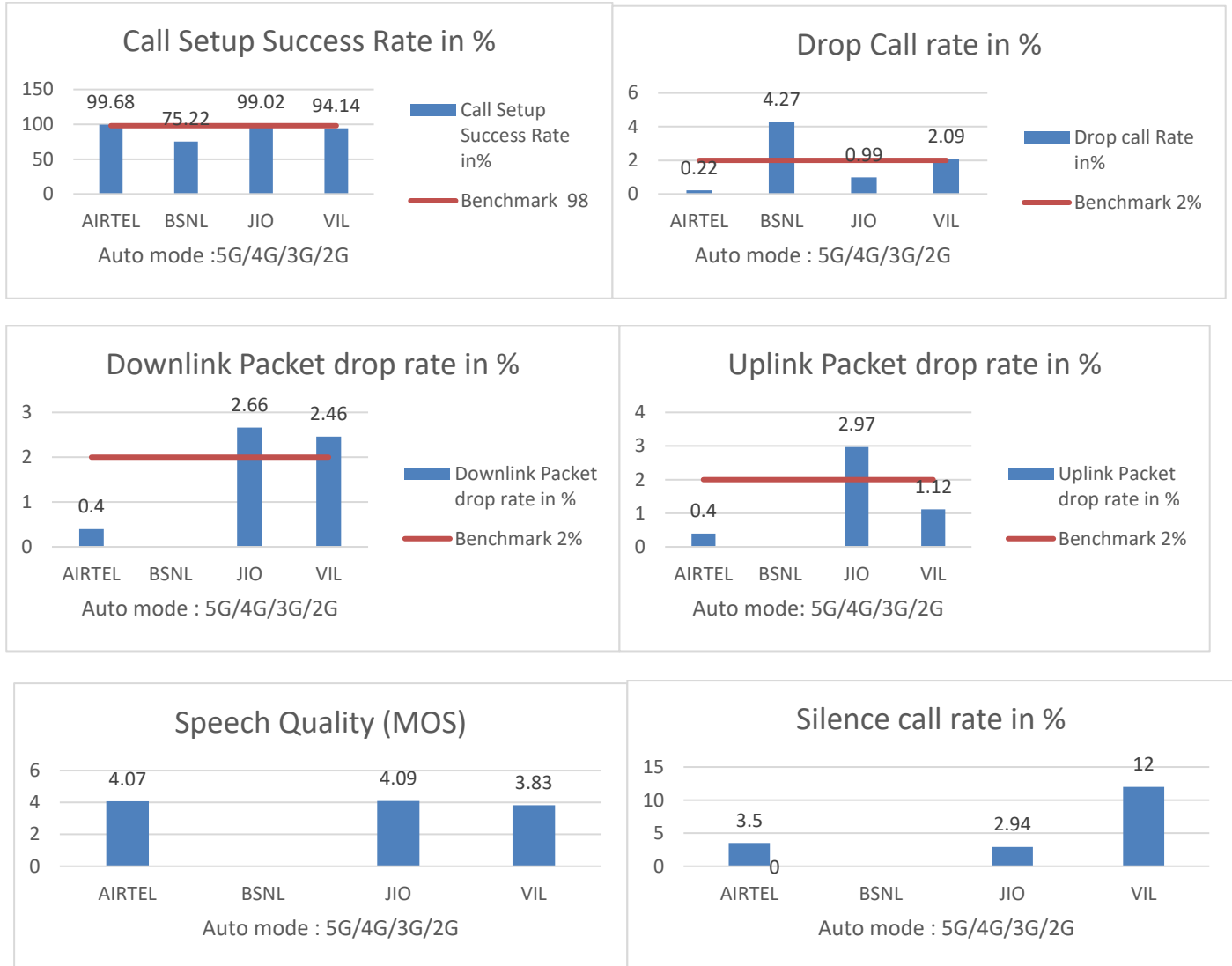


3.1.3 Signal Strength Distribution:(3G/2G-Lockmode)

RxLevel-2G								
Overall Rx Level	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max, ≥ -65]	1271102	179	NA	73923	16%	2.10%	NA	31.02
$[-65, \geq -75]$	1516385	661	NA	51607	19.08%	7.90%	NA	21.65
$[-75, \geq -85]$	2805412	1167	NA	42428	35.30%	13.90%	NA	17.8
$[-85, \geq \text{Min}]$	2353515	6362	NA	70387	29.62%	76%	NA	29.53
Total	7946414	8369	NA	238345	100%	100	NA	100

RxLevel-3G								
Overall RSCP	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max, ≥ -70]	NA	2831	NA	NA	NA	12%	NA	NA
$[-70, \geq -80]$	NA	6267	NA	NA	NA	26.50%	NA	NA
$[-80, \geq -90]$	NA	8418	NA	NA	NA	35.60%	NA	NA
$[-90, \geq \text{Min}]$	NA	6107	NA	NA	NA	25.90%	NA	NA
Total	NA	23623	NA	NA	NA	100	NA	NA

3.2 Voice Service Performance in 5G/4G/3G/2G(Automode)-Dynamic



3.2 Voice Service Performance in 5G/4G/3G/2G(Automode)-Dynamic

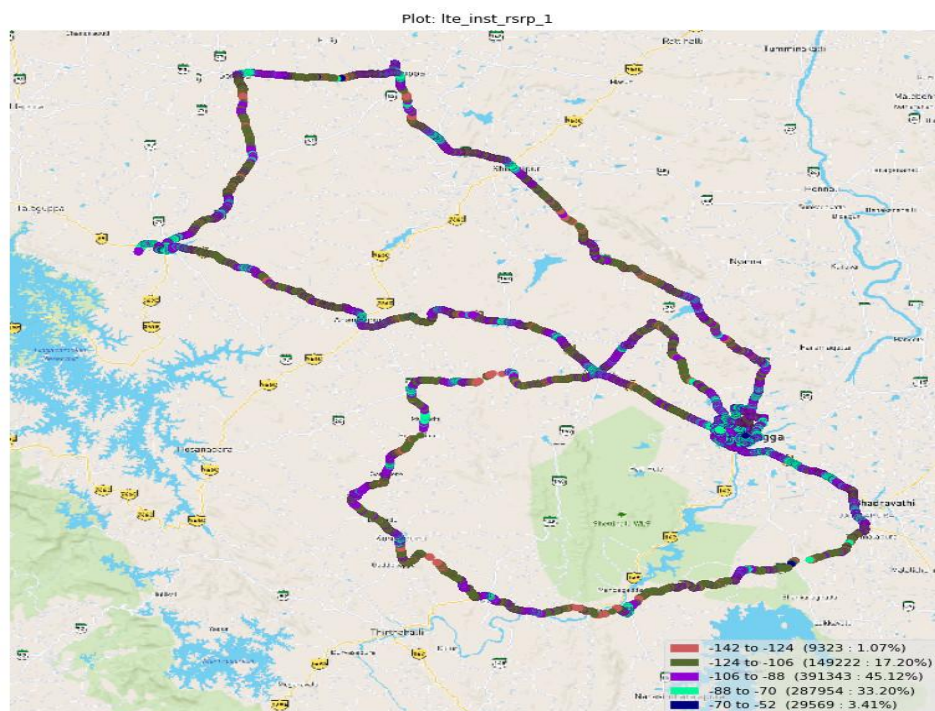
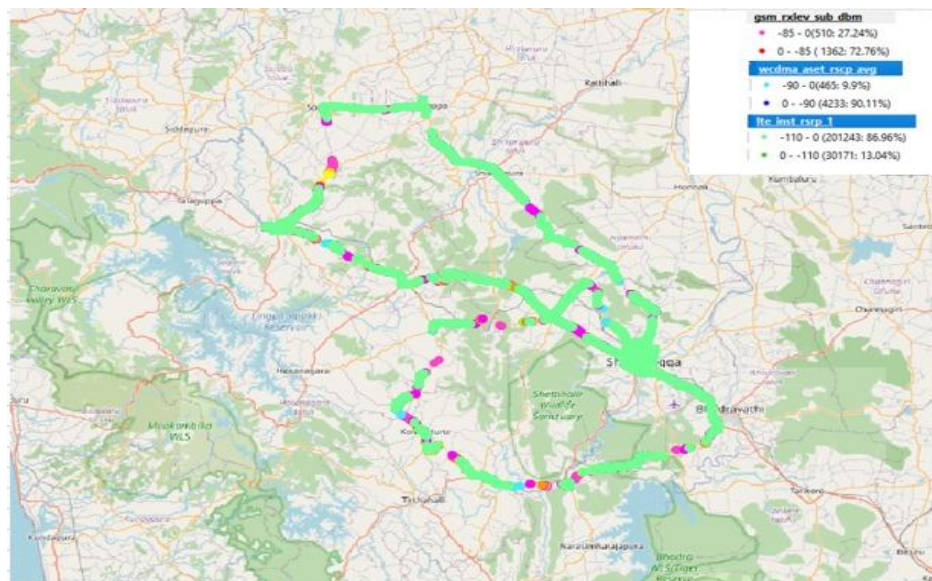
Parameters	Airtel	BSNL	RJIL	VIL
Total Distance covered(in Kms)	433	433	433	490
No. of Call Attempts	314	444	307	239
No. of Call Established	313	334	304	225
Call setup success rate(CSSR)%	99.68	75.22	99.02	94.14
No. of Drop Call	1	19	3	5
Drop Call Rate%	0.22	4.27%	0.99	2.09
Call Setup Time Average(Sec.)	1.23	1.43	1.04	1.59
No. of Handover Attempts	458	2418	2849	551
No. of Handover success	453	2409	2752	547
HOSR%	98.91	99.62%	96.6	99.27
Packet Drop Rate (Downlink)	0.4	-	2.66	2.46
Packet Drop Rate (Uplink)	0.4	-	2.97	1.12
Number of silence call for>2sec.	11	-	14	47
Silence Call Rate%	3.5	-	2.94	12
Number of MOS samples	1369	-	5352	1717
Average MOS score	4.07	-	4.09	3.83

3.2.1 Number of Cell ids latched during drive test 5G/4G/3G/2G-Automode)

Number of unique cell ids covered in Voice test				
Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
3G	NA	69	-	NA
2G	0	112	-	2
4G	738	576	687	191
5G	407	NA	153	NA

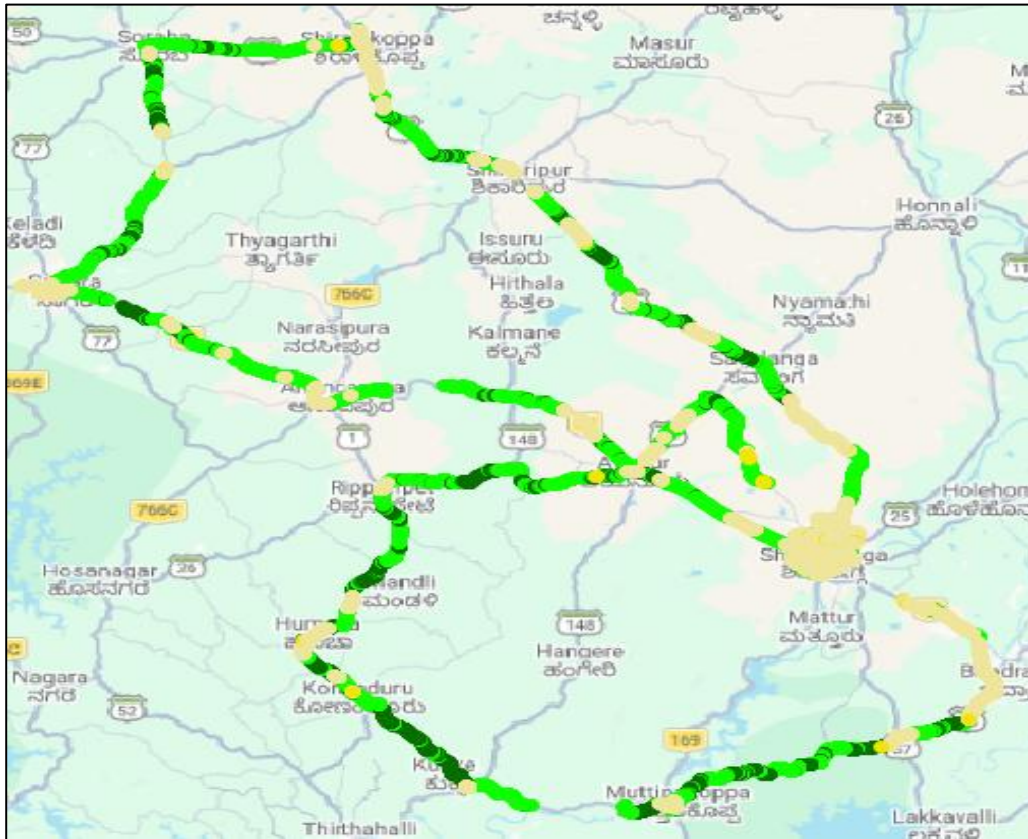
Signal Strength Map - BSNL : (5G/4G/3G/2G-Automode)

SignalStrength Map	MapLegend- 2G- Pink (RxLevel $\geq$ -85dBm), 3G- Skyblue (RSCPLLevel $\geq$ -90dBm)	Red (RxLevel $<$ -85dBm) DarkBlue (RSCPLLevel $<$ -90dBm)
	MapLegend- 4G- Light Green (RSRPLLevel $\geq$ -110 dBm), DarkGreen (RSRPLLevel $<$ -110 dBm) 5G- Light Yellow (RSRP Level $\geq$ -110 dBm), DarkYellow (RSRPLLevel $<$ -110dBm)	



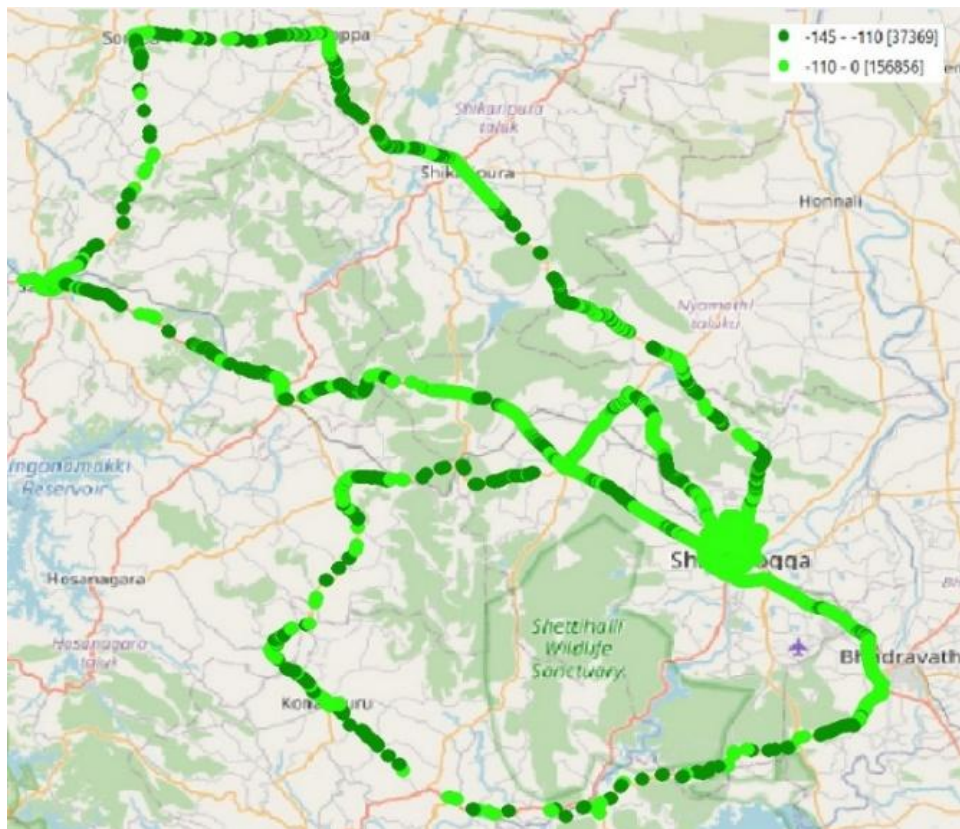
Signal Strength Map: JIO (5G/4G/3G/2G-Automode)

Signal Strength Map	Map Legend- 2G- Pink (Rx Level ≥ -85 dBm), 3G- Sky blue (RSCP Level ≥ -90 dBm)	Red (Rx Level < -85 dBm) Dark Blue (RSCP Level < -90 dBm)
	Map Legend- 4G- Light Green (RSRP Level ≥ -110 dBm), 5G- Light Yellow (RSRP Level ≥ -110 dBm),	Dark Green (RSRP Level < -110 dBm) Dark Yellow (RSRP Level < -110 dBm)



Signal Strength Map: VIL (5G/4G/3G/2G-Automode)

Signal Strength Map	Map Legend- 2G- Pink (Rx Level ≥ -85 dBm), Red (Rx Level < -85 dBm) 3G- Sky blue (RSCP Level ≥ -90 dBm) Dark Blue (RSCP Level < -90 dBm)
	Map Legend- 4G- Light Green (RSRP Level ≥ -110 dBm), Dark Green (RSRP Level < -110 dBm) 5G- Light Yellow (RSRP Level ≥ -110 dBm), Dark Yellow (RSRP Level < -110 dBm)



3.2.3 Signal Strength distribution:(5G/4G/3G/2G-Automode)

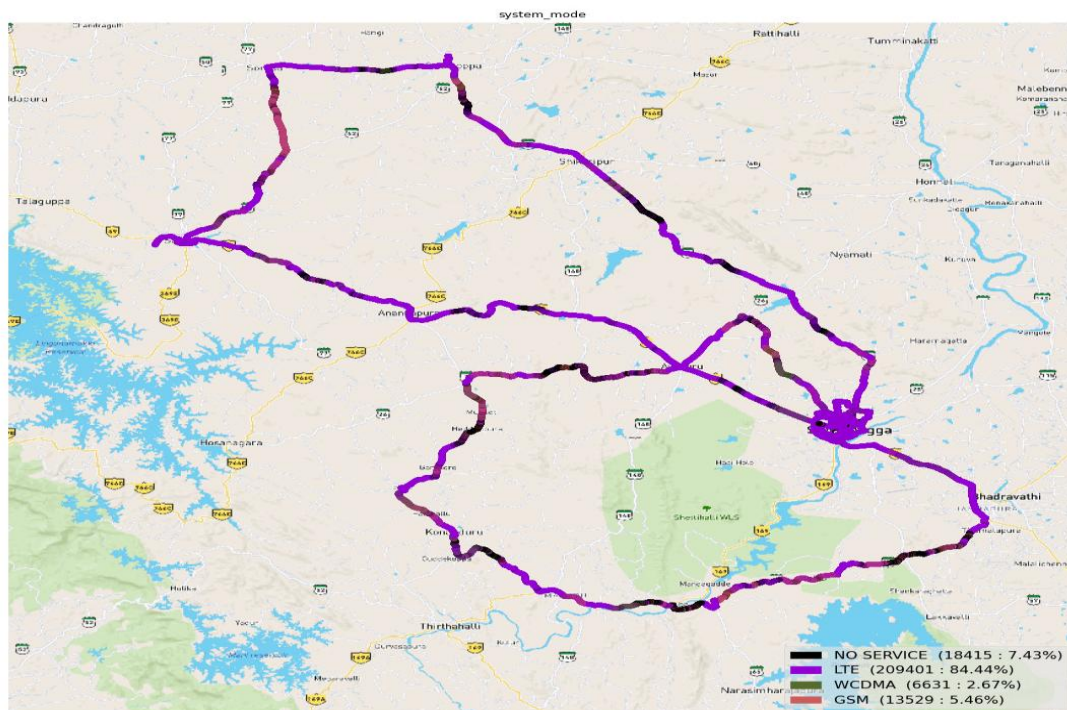
RxLevel-2G								
Overall Rx Level	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max, ≥-65]	NA	394	NA	0	NA	1.57	NA	0
[-65, ≥-75]	NA	1260	NA	0	NA	5.02	NA	0
[-75, ≥-85]	NA	5335	NA	2	NA	21.25	NA	33.33
[-85, ≥Min)	NA	17829	NA	4	NA	71.05	NA	66.67
Total	NA	24818	NA	6	NA	100	NA	100
RxLevel-3G								
Overall RSCP	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max, ≥-70]	NA	251	NA	NA	NA	1.91	NA	NA
[-70, ≥-80]	NA	618	NA	NA	NA	4.71	NA	NA
[-80, ≥-90]	NA	1730	NA	NA	NA	13.18	NA	NA
[-90, ≥Min)	NA	10525	NA	NA	NA	80.2	NA	NA
Total	NA	13124	NA	NA	NA	100	NA	NA
RxLevel-4G								
Overall RSRP	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max, ≥-80]	4424	5671	3253	16316	18.18%	3.41	12.99	14.54
[-80, ≥-95]	10313	55209	6753	31912	42.38%	33.2	26.97	28.44
[-95, ≥-110]	6228	75031	9781	40315	25.60%	45.12	39.06	35.93
[-110, ≥Min]	3367	30382	5253	23675	13.84%	18.27	20.98	21.1
Total	24332	166293	25040	112218	100%	100	100	100
RxLevel-5G								
Overall RSRP	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max, ≥-80]	3836	NA	10971	NA	25.37%	NA	49.59	NA
[-80, ≥-95]	7872	NA	8805	NA	52.07%	NA	39.8	NA
[-95, ≥-110]	2872	NA	2211	NA	19.00%	NA	9.99	NA
[-110, ≥Min]	538	NA	138	NA	3.56%	NA	0.62	NA
Total	15118		22125		100%		100	

3.3 Data Service performance in 5G/4G/3G/2G(Automode)-Dynamic

QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed (M bits/s)	Average	100.3	1.14	183.67	33.55
	80thPercentile	162.12	2.15	342.8	54.66
	20thPercentile	45.86	0.012	17.2	7.6
Upload speed (M bits/s)	Average	27.14	0.06	33.61	19.55
	80thPercentile	39.88	0.098	60.45	28.66
	20thPercentile	12.89	0.026	2.89	2.95
Latency (ms)	Average	37	54.77	48.95	96.71
	50thPercentile	29	55.34	39.5	87.41
Jitter(ms)	Average	4.8	8.08	22.49	-0.44

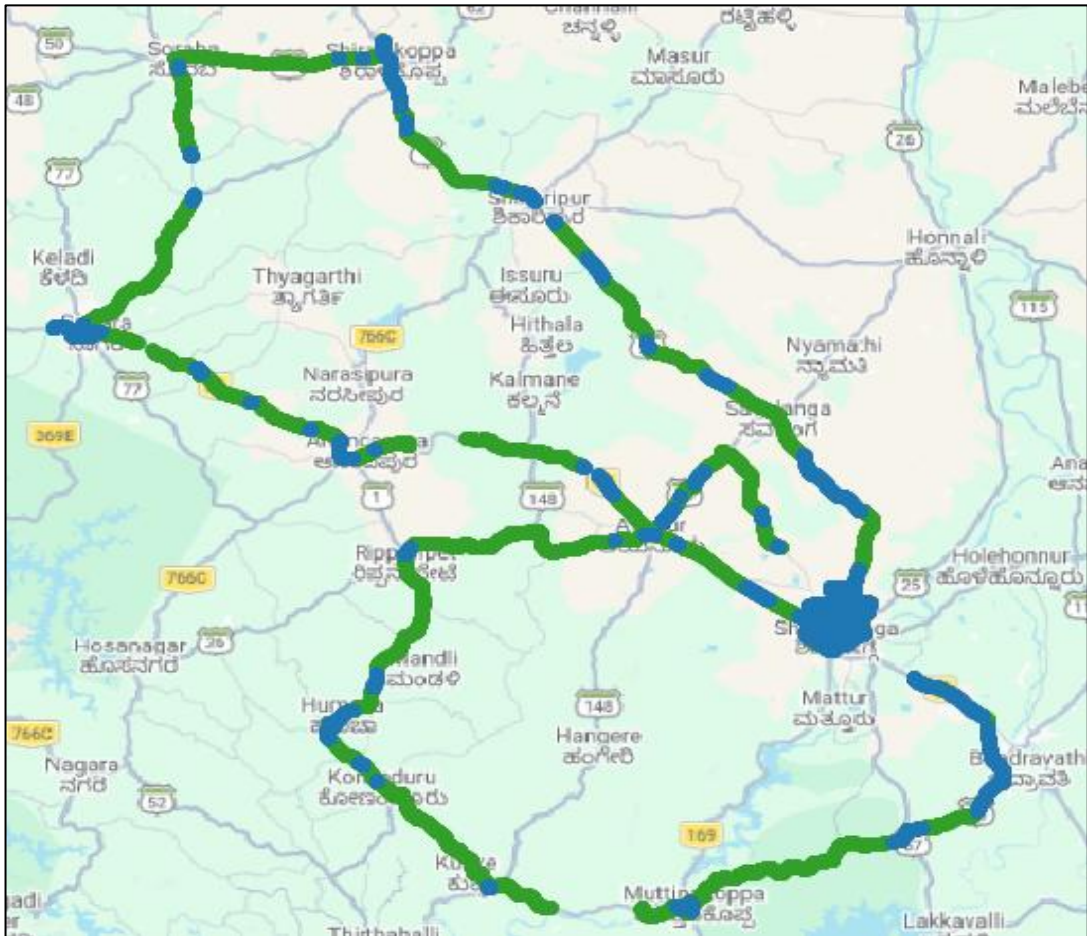
Time Spent(Technology-wise) BSNL

Time Spent Map (for each TSP)	Map Legend: 2G – Red 3G – Yellow 4G – Green 5G - Blue
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Time Spent(Technology-wise) JIO

Time Spent Map (RJIL)	Map Legend: 4G – Green 5G - Blue
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Time Spent(Technology-wise) VIL

Time Spent Map (for each TSP)

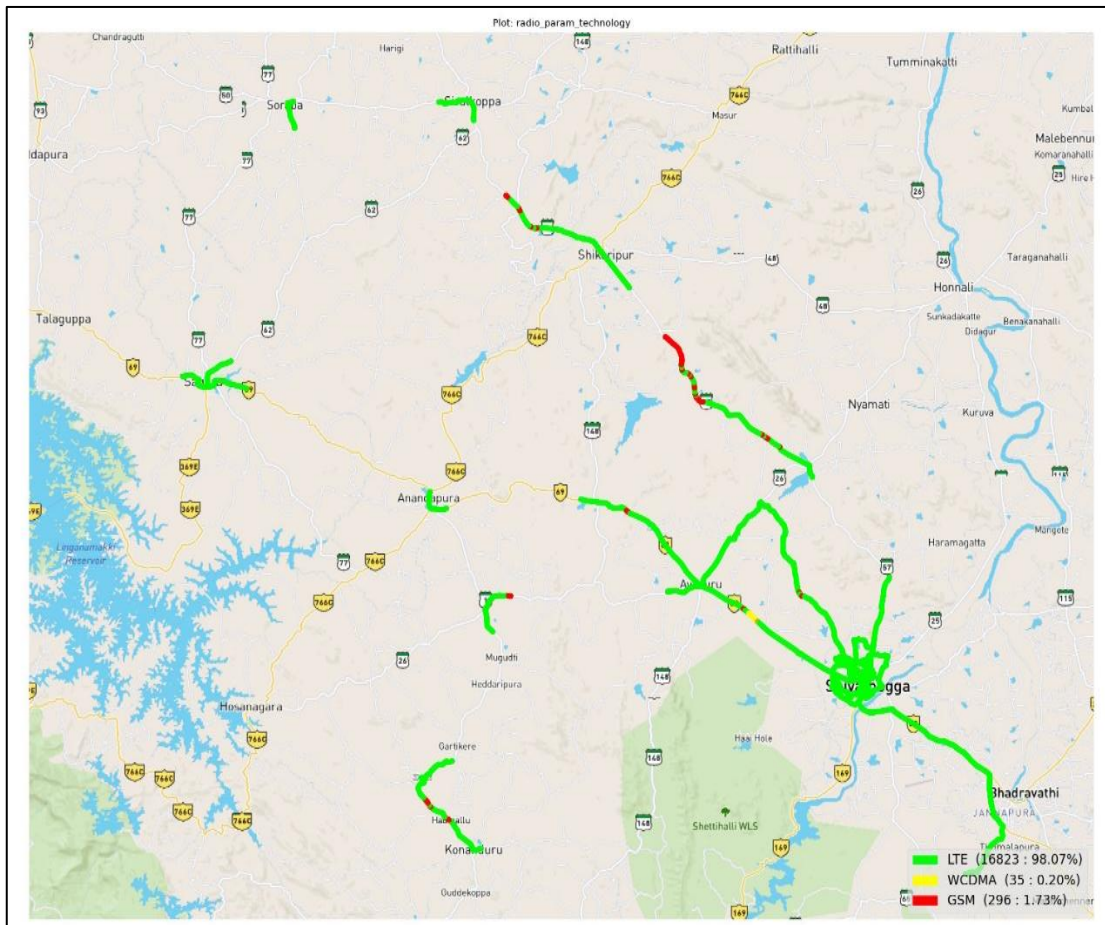
Map Legend:

2G - Red

Green

5G - Blue

3G - Yellow 4G -



QoS Performance Analysis-Static

4.1 Hotspot Locations



Hotspot Name	Latitude & Longitude	Date of Measurement	Time of Measurement
McGann Hospital	13.934863,75.562637	17-02-2026	04:40pm
KSRTC Bus stand	13.928567,75.567648	17-02-2026	05:15pm
APMC Market Yard	13.940913,75.549958	19-02-2026	08:45am
DC Office	13.937436,75.576147	19-02-2026	10:15am
Shimoga Railway Station	13.943624,75.583393	19-02-2026	11:00am
Court Complex	13.937491,75.577331	19-02-2026	11:40am

4.2 Voice Service Performance(5G/4G/3G/2G-Automode)–Overall

Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	60	60	60	60
No of Call Established	60	60	60	60
Call setup success rate(CSSR)%	100	100	100	100
No. of Drop Call	0	0	0	0
Drop Call Rate%	0	0	0	0
Call Setup Time Average(.)	1.12	1.84	0.67	1.013

4.3 Data Service Performance(5G/4G/3G/2G-Automode)–Overall

QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed(M bits/s)	Typical	101	1.86	-	2.86
	Average	145.85	3.16	336.23	31.45
	80thPercentile	201.91	4.13	432.3	64.69
Download Session Setup Success Rate%		100	100	100	100
Upload speed (M bits/s)	Typical	20.81	0.06	-	1.83
	Average	30.93	0.116	45.39	13.86
	80thPercentile	39.79	0.161	56.85	22.84
Upload Session Setup Success Rate%		100	100	100	100
Latency(in ms)	50thPercentile	29	53.89	39.96	54.8
Jitter(in ms)	Average	10.93	8.018	15.51	2.57
Packet Drop Rate%		0	0.02%	1.39	0
Web browsing delay(in)		6.91	4.2	1.28	3.03
Video Streaming performance for video		0.97	7.37	0.26	0.84

4.4 Voice Service Performance (5G/4G/3G/2G-Automode) at McGann Hospital.

Name of Hotspot Location 1	McGann District Hospital			
Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	10	10	10	10
No of Call Established	10	10	10	10
Call setup success rate(CSSR)%	100	100	100	100
No. of Drop Call	0	0	0	0
Drop Call Rate%	0	0	0	0
Call Setup Time Average(.)	1.12	1.97	0.8	0.354
Total no of RLT Occurrence	-	-	-	-
No of RLT>48	-	-	-	-

4.5 Data Service Performance (5G/4G/3G/2G-auto mode) at McGann Hospital.

Name of Hotspot Location 1		McGann District Hospital			
QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed(M bits/s)	Typical	104.81	1.62	-	2.86
	Average	141.18	3.59	72.86	6.08
	80thPercentile	182.62	5.84	120.79	7.8
Download Session Setup Success Rate%			96.42%	100	100
Upload speed (M bits/s)	Typical	20.57	0.07	-	1.83
	Average	22.93	0.128	6.63	4.97
	80thPercentile	25.55	0.11	10.77	7.22
Upload Session Setup Success Rate%		100	100%	100	100
Latency(in ms)	50thPercentile	20	55.3	53.5	54.8
Jitter(in ms)	Average	5	9.12	53.95	3.21
Packet Drop Rate%		0	0.01%	3.75	0.28
Web browsing delay(in)		16.09	0.62	3.91	2.64
Video Streaming performance for video		0.742	6.68	0.36	0.74

Voice Service Performance (5G/4G/3G/2G-Automode) at KSRTC Bus Stand

Name of Hotspot Location 2	Bus Stand Shivammoga			
Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	10	10	10	10
No of Call Established	10	9	10	10
Call setup success rate(CSSR)%	100%	90	100	100
No. of Drop Call	0	0	0	0
Drop Call Rate%	0%	0	0	0
Call Setup Time Average(sec.)	1.45	1.97	0.71	0.488
Total no of RLT Occurrence	-	-	-	-
No of RLT>48	-	-	-	-

Data Service Performance (5G/4G/3G/2G-auto mode) at KSRTC Bus Stand

Name of Hotspot Location 2		Bus Stand Shivammoga			
QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed(M bits/s)	Typical	139	1.95	-	52.58
	Average	183.58	2.82	195.89	61.45
	80thPercentile	214.61	5.06	264.89	64.69
Download Session Setup Success Rate%		-	100	100	100
Upload speed (M bits/s)	Typical	33.06	0.02	-	11.51
	Average	37.55	0.09	33.08	12.22
	80thPercentile	40.46	0.06	43.25	12.97
Upload Session Setup Success Rate%		100	100	100	100
Latency(in ms)	50thPercentile	26	55.35	38.5	62
Jitter(in ms)	Average	8.2	7.65	10.12	2.43
Packet Drop Rate%		0	0.66	0.6	0
Web browsing delay(in)		4.32	1.6	0.72	3.37
Video Streaming performance for video		0.95	6.65	0.22	1.09

Voice Service Performance (5G/4G/3G/2G-Automode) at APMC Market

Name of Hotspot Location 3	APMC Market Shivammoga			
Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	10	10	10	10
No of Call Established	10	10	10	10
Call setup success rate(CSSR)%	100	100	100	100
No. of Drop Call	0	0	0	0
Drop Call Rate%	0%	0	0%	0
Call Setup Time Average(.)	1	0.92	0.18	2.514
Total no of RLT Occurrence	-	-	-	-
No of RLT>48	-	-	-	-

Data Service Performance (5G/4G/3G/2G-auto mode) at APMC Market

Name of Hotspot Location 3		APMC Market Shivammoga			
QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed(M bits/s)	Typical	87.56	2.18	-	4.22
	Average	102.61	3.55	511.99	8.03
	80thPercentile	118.53	4.87	654.65	9.27
Download Session Setup Success Rate%		-	4.41%	100	100
Upload speed (Mbits/s)	Typical	31.29	0.06	-	8.18
	Average	37.21	0.112	102.89	11.09
	80thPercentile	40.88	0.211	126.1	13.51
Upload Session Setup Success Rate%		100	96.82%	100	100
Latency(in ms)	50thPercentile	25	53.15	33	43.9
Jitter(in ms)	Average	13.8	7.47	7.08	2.47
Packet Drop Rate%		0	0.13%	0	0
Web browsing delay(in)		5.93	0.7	0.76	3.71
Video Streaming performance for video		0.66	5.6	0.28	0.86

Voice Service Performance (5G/4G/3G/2G-Automode) at DC office

Name of Hotspot Location 4	District Commissioner office Shivammoga			
Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	10	10	10	10
No of Call Established	10	10	10	10
Call setup success rate(CSSR)%	100%	100	100	100
No. of Drop Call	0	0	0	0
Drop Call Rate%	0%	0	0	0
Call Setup Time Average(.)	1.13	2.015	0.66	0.906
Total no of RLT Occurrence	-	-	-	-
No of RLT>48	-	--	-	-

Data Service Performance (5G/4G/3G/2G-auto mode) at DC office

Name of Hotspot Location 4		District Commissioner office Shivammoga			
QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed(M bits/s)	Typical	137.8	2.35	-	17.86
	Average	162.87	3.16	520.73	39.97
	80thPercentile	205.25	3.98	606.13	58.97
Download Session Setup Success Rate%		-	97.13%	100	100
Upload speed (Mbits/s)	Typical	18.48	0.08	-	25.29
	Average	19.91	0.12	36.46	27.65
	80thPercentile	21.11	0.171	43.51	29.56
Upload Session Setup Success Rate%		100	96.6	100	100
Latency(in ms)	50thPercentile	30	56.25	35.25	61.7
Jitter(in ms)	Average	11.4	8.89	5.41	2.29
Packet Drop Rate%		0	1.5	2	0
Web browsing delay(in)		5.28	0.68	0.8	2.64
Video Streaming performance for video		0.92	7.3	0.24	0.67

Voice Service Performance (5G/4G/3G/2G-Automode) at Railway Station.

Name of Hotspot Location 5	Railway Station Shivamogga			
Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	10	10	10	10
No of Call Established	10	10	10	10
Call setup success rate(CSSR)%	100	100	100	100
No. of Drop Call	0	0	0	0
Drop Call Rate%	0	0	0	0
Call Setup Time Average(.)	1.01	1.96	0.24	0.959
Total no of RLT Occurrence	-	-	-	-
No of RLT>48	-	-	-	-

Data Service Performance (5G/4G/3G/2G-auto mode) at Railway Station.

Name of Hotspot Location 5		Railway Station Shivamogga			
QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed(M bits/s)	Typical	145.59	1.94	-	20.96
	Average	185.86	2.96	389.95	64.91
	80thPercentile	222.65	3.61	495	86.24
Download Session Setup Success Rate%		-	96.32%	100	100
Upload speed (M bits/s)	Typical	13.52	0.07	-	11.16
	Average	30.67	0.126	63	18.59
	80thPercentile	39.01	0.198	77.28	22.84
Upload Session Setup Success Rate%		100	99.22%	100	100
Latency(in ms)	50thPercentile	51	50.19	39	44
Jitter(in ms)	Average	20.2	5.65	6.23	2.58
Packet Drop Rate%		0	0.01	0	0
Web browsing delay(in)		4.46	0.63	0.81	2.7
Video Streaming performance for video		1.73	10.73	0.29	0.88

Voice Service Performance (5G/4G/3G/2G-Automode) at Court Shivammoga.

Name of Hotspot Location 6	Court Shivammoga			
Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	10	10	10	10
No of Call Established	10	10	10	10
Call setup success rate(CSSR)%	100	100	100	100
No. of Drop Call	0	0	0	0
Drop Call Rate%	0	0	0	0
Call Setup Time Average(.)	1.11	2.19	0.65	0.856
Total no of RLT Occurrence	-	-	-	-
No of RLT>48	-	-	-	-

Data Service Performance (5G/4G/3G/2G-auto mode) at Court Shivammoga

Name of Hotspot Location 6		Court Shivammoga			
QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed(M bits/s)	Typical	86.58	2.05	-	17.86
	Average	95.57	3.06	325.97	39.97
	80thPercentile	104.61	3.61	452.31	58.97
Download Session Setup Success Rate%			99.95%	100	100
Upload speed (Mbits/s)	Typical	23.59	0.07	-	25.29
	Average	36.29	0.123	30.25	27.65
	80thPercentile	47.18	0.171	40.2	29.56
Upload Session Setup Success Rate%		100	98.37%	100	100
Latency(In ms)	50thPercentile	67	56.75	40.5	61.7
Jitter(in ms)	Average	7	9.39	10.26	2.29
Packet Drop Rate%		0	1.46	2	0
Web browsing delay(in)		5.64	0.83	0.7	2.64
Video Streaming performance for video		0.86	11.1	0.18	0.67

4.3 Signal Strength distribution at Static location–Overall

RxLevel-2G								
Overall Rx Level	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max,≥-65]	NA	NA	NA	NA	NA	NA	NA	NA
[-65,≥-75)	NA	NA	NA	NA	NA	NA	NA	NA
[-75,≥-85)	NA	NA	NA	NA	NA	NA	NA	NA
[-85,≥Min)	NA	NA	NA	NA	NA	NA	NA	NA
Total	NA	NA	NA	NA	NA	NA	NA	NA
RxLevel-3G								
Overall RSCP	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max,≥-70]	NA	1613	NA	NA	NA	24.40%	NA	NA
[-70,≥-80)	NA	2885	NA	NA	NA	43.60%	NA	NA
[-80,≥-90)	NA	2093	NA	NA	NA	31.70%	NA	NA
[-90,≥Min)	NA	19	NA	NA	NA	0.30%	NA	NA
Total	NA	6610	NA	NA	NA	100	NA	NA
RxLevel-4G								
Overall RSRP	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max,≥-80]	NA	9548	361	645	NA	4.57	31.17	13.53
[-80,≥-95]	NA	87780	543	1868	NA	41.92	46.89	39.18
[-95,≥-110]	NA	59888	225	2171	NA	28.59	19.43	45.53
[-110,≥Min]	NA	52185	29	84	NA	24.92	2.5	1.76
Total	NA	209401	1158	4768	NA	100	100	100
RxLevel-5G								
Overall RSRP	No of Sample				Sample%			
	Airtel	BSNL	RJIL	VIL	Airtel	BSNL	RJIL	VIL
[Max,≥-80]	535761	NA	2804	NA	30%	NA	46.67	NA
[-80,≥-95]	866193	NA	2827	NA	48%	NA	47.05	NA
[-95,≥-110]	404945	NA	369	NA	22%	NA	6.14	NA
[-110,≥Min]	0	NA	8	NA	0%	NA	0.13	NA
Total	1806899		6008		100%		100	

5 Improvement plan for short coming observed during Drive Test

Sr.	Name of TSP	Route / Location	Name of Area & LSA	Lat. & Long.	Observation (No coverage / Poor coverage / Poor Signal Quality/ Call drops / Call Setup failure, and Hand Over failure/ Block/ Down Link Packet Drop/ Up Link Packet Drop/ speed less than 2Mb locations/)	Improvement Plan (Optimization/Radiation of New Site/up-gradation of existing site/upgradation of backhaul etc.)	Time Line/ Remarks
1	Airtel	Sagar-Sorba Rd	Duguru	14.2478,75.0939	1 Drop call in 4G	High ISD >8.1KM, new site required	High vegetation area/Under Assessment
2	Airtel	Sagar-Sorba Rd	Lingadahalli	14.210338,75.81996	1 block call in 2G	MDA UR2 Optimization Planned	27-Mar-26
3	Airtel	Bangalore-Honvara Highway	Kaspadi	14.117981,75.134029	1 drop call in 2G	High ISD >5.1KM, new site required/ Optimization also planned	High vegetation area // New site Under/Assesment/27 mar-26
4	BSNL	Devabailu	Shimoga	14.0462616,75.505383	Poor coverage due to long distance between stations.	New tower will be proposed in between in the upcoming projects.	
5	BSNL	SH1 road	Shimoga	13.872992,75.225157	Poor coverage due to long distance between stations.	New tower will be proposed in between in the upcoming projects.	
6	BSNL	SH65	Shimoga	13.758772,75.659134	Poor coverage due to long distance between stations.	New tower will be proposed in between in the upcoming projects.	
7	BSNL	Taralgatta camp	Shikaripura	14.220066,75.394059	Poor coverage due to long distance between stations.	New tower will be proposed in between in upcoming projects	
8	BSNL	Nedaravalli, Bangalore - Honnavara road	Shimoga	14.115642,75.143626	Poor coverage due to long distance between stations.	New tower will be proposed in between in upcoming projects	
9	VI	Shimoga-Hunasekatte RD	Shimoga , Karnataka	13.78795977 75.65589537	Call Drop 2G	Drop due to no further site available	
10	VI	Araga-Garathikere RD	Shimoga , Karnataka	13.837335 75.2169531	Call Drop 2G	Drop due to no further site available	
11	VI	Shimoga- Tyajavalli, Devabalu RD	Shimoga , Karnataka	14.01862553 75.51518941	Call Drop 2G	No drop as per stats, site working fine	
12	VI	Shimoga- Tyajavalli, Devabalu RD	Shimoga , Karnataka	13.99843091 75.5280833	Call Drop 2G	Drop drop due poor level/ High ISD	
13	VI	Shikaripura-Shirlakoppa RD	Shimoga , Karnataka	14.28482438 75.30667582	Call Drop 2G	Drop drop due poor level/ High ISD	
14	VI	Ayanur-Chodi RD	Shimoga , Karnataka	14.06132856 75.38859783	Call Drop 2G	Drop due to no further site available	
15	VI	Shimoga-Ayanur RD	Shimoga , Karnataka	13.99066753 75.47412194	Call Drop 2G	Drop drop due poor level/ High ISD	
16	VI	Konanduru-Garathikere RD	Shimoga , Karnataka	13.83224401 75.22556021	Call Drop 2G	drop due to no further 4G site available	
17	VI	Konanduru-Garathikere RD	Shimoga , Karnataka	13.87397829 75.2296432	Call Block 4G	Nearest site at almost 4km call blocked due to no coverage area	
18	VI	Ripponpet-Ayanur RD	Shimoga , Karnataka	13.99840968 75.26321477	Call Drop 4G	Call dropped due to site fluctuation now its stable	
19	VI	Ripponpet-Savalanga RD	Shimoga , Karnataka	14.01871305 75.44297105	Call Drop 4G	site fluctuation observed on the day of drive, stable now	
20	VI	Shimoga-Ayanur RD	Shimoga , Karnataka	13.98602005 75.47972246	Call Drop 4G	Nearest site at 4.2KM from drop location, drop happened due to poor coverage	



6 Compliance Report for short comings observed during Drive Test Airtel

Drive Test Methodology adopted during the Drive test:

(1) VoiceTests:

Sl.No.	QoS Parameter	Measurement Criteria and methodology
1	Call setup time	Time taken from call initiate to call alerting/ringing.
2	Call setup success rate	CSSR=(Total Call Established/Total Call Attempt)*100 Call Setup attempt time: 30 sec. Call duration(City/Highway):90/180sec. Wait/ Guard Time: 15sec.
3	Dropped Call rate(DCR)	Call Drop Rate=(Total Call Drop/Total Call Established)*100
4	Call Silence Rate (Muting)	Silence call rate=(count of silence/Total calls established)*100 Continuous RTP gap ≥ 2 sec
5	Handover Success Rate	Handover Success Rate = Count of successful handovers (All Technology Handover combined) / Total count of Handover Attempt (All Technology Handover combined) *100 Handover types which are considered- 2G Inter & Intra cell, 3G Soft & IRAT, 4G Inter & Intra frequency & SRVCC, 5G Inter & Intra frequency & 5G to 4G handovers.
6	Packet Drop Rate(DL& UL)for Packet Switched Network (4G & 5G)	Number of RTP (Real-time Transport Protocol) Packets lost divided by total RTP packet received (against each source SSRC and sequence number) at call originating handset. This KPI will be calculated from MOS call for packet call only (VoNR/VoLTE)
7	Mean Opinion Score (MOS) Performance(in5G/4G/3G/2G:Auto mode)	Voice quality in mobile networks is measured with algorithms based on ITU-T P.863 (POLQA) Excellent: MOS ≥ 4 and < 5 , Good :MOS ≥ 3 and < 4 , Fair: MOS ≥ 2 and < 3 ,Poor :MOS ≥ 1 and < 2

(2) Data Tests:

Sl. No.	QoS Parameter	Measurement Criteria and methodology
1	Data speed in M bits/s (DL/UL both)	DownloadSpeed=Totalbytes transferred during download/Total time for transfer Speed = Total bytes transferred during upload / Total time for transfer. Download: File Size: 500 MB for 120 sec, 30 Sec Timeout Upload: File size: 250 MB for 120 sec, 30 Sec Timeout (Multithread3-TCPConnection at a time for both DL&UL)
2	Latency(in ms)	Latency is the time taken by a packet to reach the receiving endpoint after being transmitted from the sending point in broadband service. Test with Packet of size of 512 Bytes - 1000 count on TSP's Test server using UDP packets (TWAMP)
3	Jitter(in ms)	Test with Packet of size of 512/256 Bytes - 1000 count on TSP's own Test server using UDP (TWAMP) & RTP packets separately
4	Session Setup Success Rate(in %)(DL/UL)	(Total DL or UL session established (successfully connected to server)/ Total DL or UL session attempt) x100
5	Packet drop rate (in %)	No. of packets lost out of total packet transferred during the testing. - Packet loss rate=(Total packet lost/Total packet sent)x100 - Packet delay(RTT)>90ms considered as packet loss and included in Packet drop rate. - The measurements should include all major types of packets i.e., TCP, UDP and RTP in their representative ratio. The 90th percentile value of the packet drop measurements shall be considered the Packet drop rate.
6	Web browsing delay(in seconds)	Time taken to open the web pages successfully is considered as web browsing delay/ web page download time. LSA-wise 3 popular websites to be taken
7	Video Streaming performance (in seconds)	TRAI Prescribed Video of 20 Sec with 25 sec Timeout & without caching https://www.youtube.com/watch?v=rH2RjvI0DFs