



# Operator Assisted Drive Test (OADT)

For

## JALGAON

17<sup>th</sup> to 19<sup>th</sup> JUNE 2025

**Jalgaon-Buswal-Neri-Wavadada-Paidhi-Jalgaon**

**17-06-2025 (SH) & Jalgaon Town 150 Kms**

**Jalgaon-Chandwad-Parola-Erandol**

**18-06-2025 (NH & SH ) 351 Kms**

**6 Hotspots**

**(19-06-2025)**

**TRAI RO, Bengaluru**

**Self-Drive Test by TSP**

**Key Performance Indicators:**

**Airtel & BSNL have submitted OADT Report in New Format.**

**JIO & VIL have submitted OADT report in Old Format**

The Operator Assisted Drive Test has been carried out by the Regional Office, Bangalore with the help of Service Providers from 17<sup>th</sup> to 19<sup>th</sup> June 2025. The drive test covered the route of 501 Kms including NH/SH of 351 Kms & 6 hotspots. Approximately 250 calls were made for each of the 8 networks: three 2G networks, one 3G network and four 4G networks covering four TSPs



# Drive Test Report for

JUNE Month 2025 Year

JALGAON City and Nearby Area  
17 JUN to 19 JUN  
by  
TRAI RO ,Bengaluru

**Airtel & BSNL have submitted OADT Report in New Format.**

## 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 Jalgaon City and nearby areas from date 17/06/25 to 19/06/25 From 9:00 AM to 8:00 PM. The drive test covered drive route of around 501 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:

S.No.	Name of TSP	Technology	Frequency Bands (In MHz)
1	Bharti Airtel Ltd.	2G	1800
2	Bharti Airtel Ltd.	4G	850,1800,2100,2300
3	BSNL	2G	900Mhz
4	BSNL	3G	2100 Mhz
5	BSNL	4G	700Mhz,2100Mhz,2500Mhz

### 1.2 Quality of Service parameters measured:

#### (1) 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:

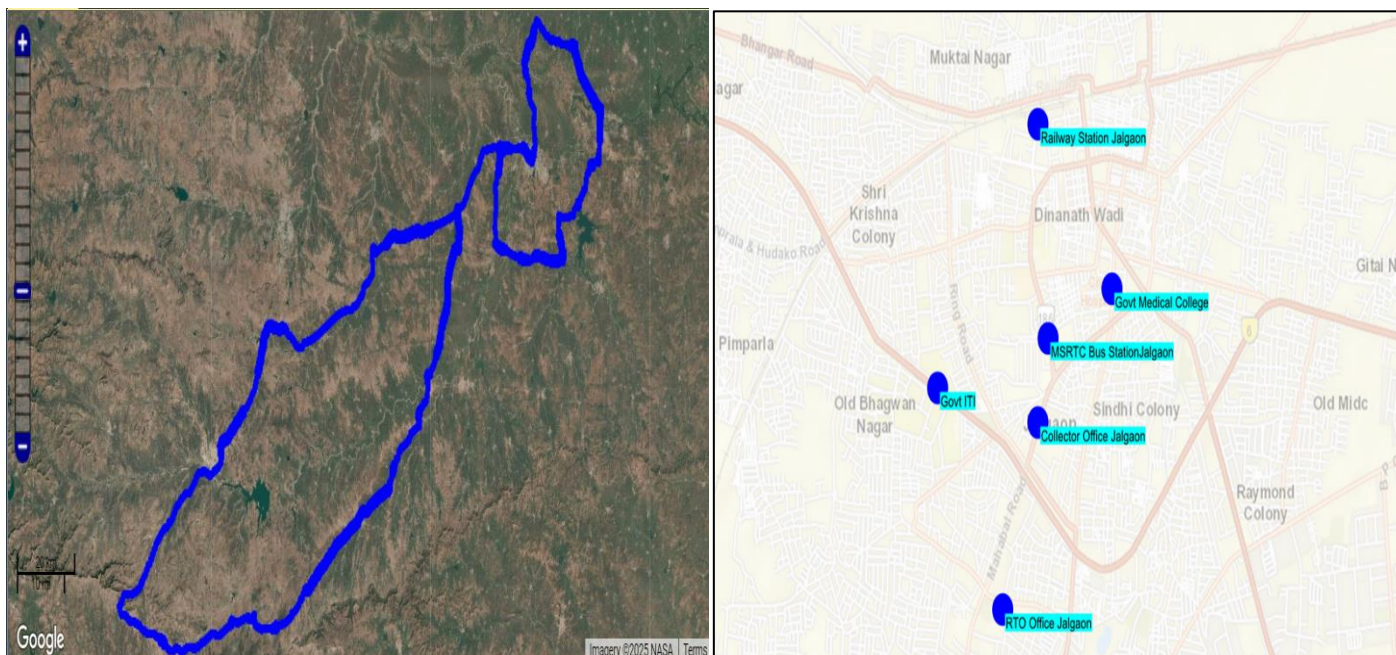
Dynamic	Static (Hotspot Location)
Data speed (DL / UL both)	Data speed (DL/UL both)
Latency	Latency
Jitter	Jitter
	Session Setup Success Rate (DL/UL)
	Packet Drop rate
	Web browsing delay
	Video Streaming performance

Drive Test Methodology adopted during the Drive test is attached as **Annexure-I**.

## 2. Executive Summary

This report covers the findings of the OADT undertaken in MHA License Service Area (LSA) during the month of JUNE (2025) under the supervision of TRAI Regional Office (RO), Bengaluru. Details of route/ area covered during the IDT is as given below:

### 2.1 Route Map of Drive test & Hotspot locations:



### 2.2 Drive Test Area detail

Date	Duration .....AMto.....P M	Drivetestroute	Distancecovered(in Kms)
17/06/2025	9 AM to 7 PM	Jalgaon- Paldhi,Mhasawad,Neri,Umale,Bhusaw al-Yawal-Kingaon -Jalgaon	151 Kms
18/06/2025	8 AM to 9 PM	Jalgaon-Paldhi -erandol-Parola-Arvi phata-Malegaon-Chandwad,Manmad- Nandgaon,Chalisingaon,Bhadgaon,Kaso da,Erandol,Jalgaon	350 Kms

Date	Time	Hotspot Location	Latitude / Longitude
19-June	9.30am	MSRTC Bus Stand Jalgaon	21.0063,75.5635
19-June	10.15am	Railway Station Jalgaon	21.0175,75.5626
19-June	11.10am	Govt. Medical College	21.0089,75.5691
19-June	01.00pm	Collector Office Jalgaon	21.0019,75.5626
19-June	12.00pm	RTO Office Jalgaon	20.9921,75.5595
19-June	01.40pm	Govt. ITI Jalgaon	21.0037,75.5538

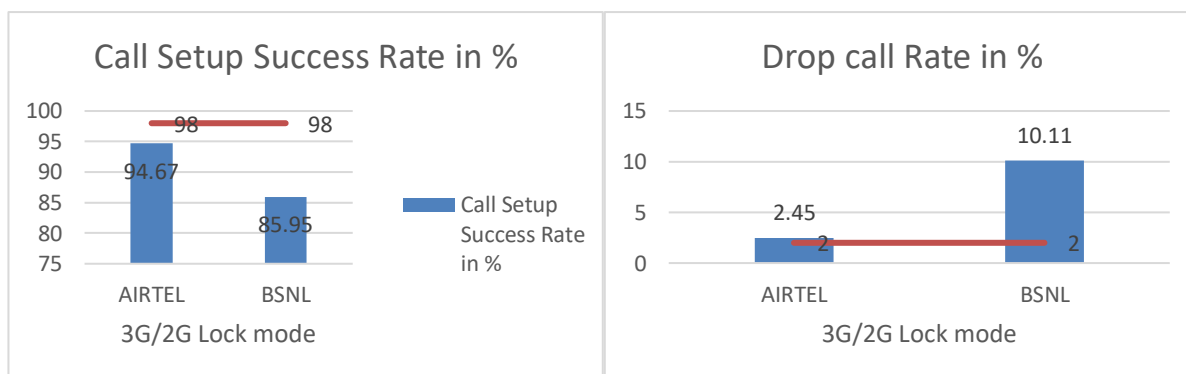
## 2.3 Details of Drive Test Tools used:

**Airtel - TEMS 27.1**

**BSNL - NEMO Handy 04 Handset, Azinquos 01 handset.**

## 2.4 Key findings(Voice & Data)

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

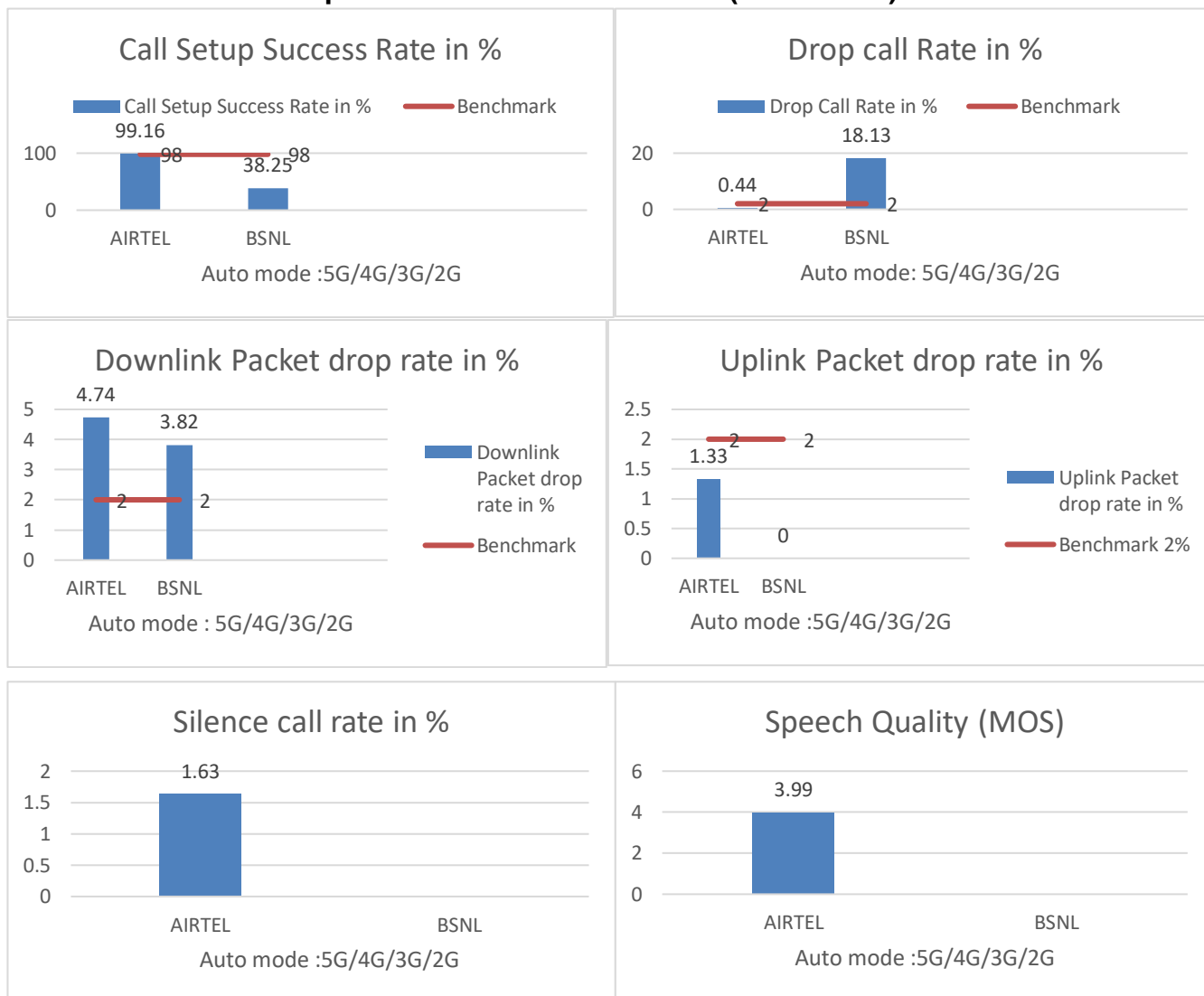


Parameter	Benchmark	AIRTEL	BSNL
Call Attempts		244	299
Call Setup Success Rate(in%)	$\geq 98.0\%$	94.67	85.95%
Drop Call Rate(in%)	$\leq 2\%$	2.45	10.11%
Call Setup Time-Average(in Seconds)		3.6	5.927
Handover Success Rate(in %)	$\geq 95\%$	97.6	76.22%

### 2.4.2 Number of Cell ids latched during drive test

Technology	AIRTEL	BSNL
3G	NA	94
2G	412	138

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

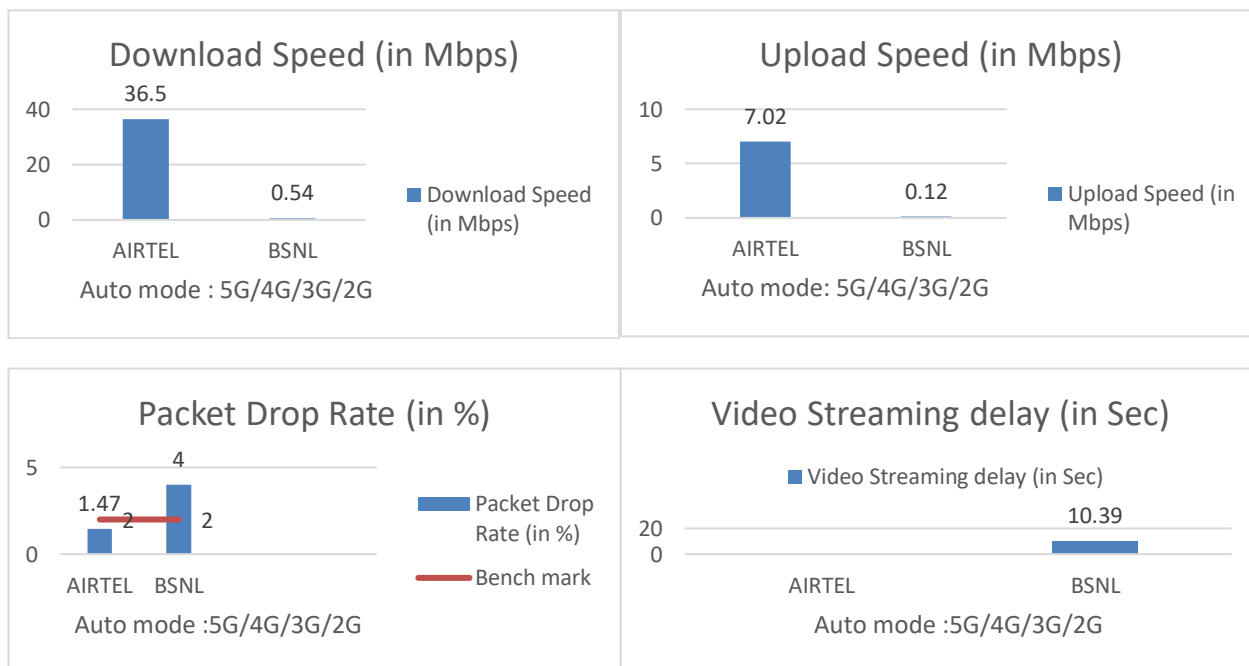


Parameter	AIRTEL	BSNL
Call Attempts	240	528
Call Setup Success Rate%	99.16	38.25
Drop Call Rate%	0.44	18.13
Call Setup Time-Average(Second)	0.58	13.265
Handover Success Rate%	97.9	94.79
Downlink Packet drop rate %	4.74	3.82
Uplink Packet drop rate%	1.33	0
Silence Call Rate%*	1.63	NA
Speech Quality (AverageMOS)	3.99	NA

#### 2.4.4 Number of Cell ids latched during drive test

Technology	AIRTEL	BSNL
5G	0	NA
4G	409	223
3G		71
2G	0	107

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



QoS Parameters		AIRTEL	BSNL
Download speed (Mbps/s)	Typical	8.29	1.89
	Average	36.5	0.54
	80thPercentile	61.85	0.766
Download Session Setup Success Rate%			91.82
Upload speed (Mbps/s)	Typical	1.29	0.66
	Average	7.02	0.12
	80thPercentile	10.92	0.23
Upload Session Setup Success Rate%		97.01	22.72
Latency(in ms)	50thPercentile	155	67
Jitter(in ms)	Average	1.3	4.89
Packet Drop Rate%		1.47	4
Web browsing delay(in sec)		-	0.025
Video Streaming performance for video		-	10.39

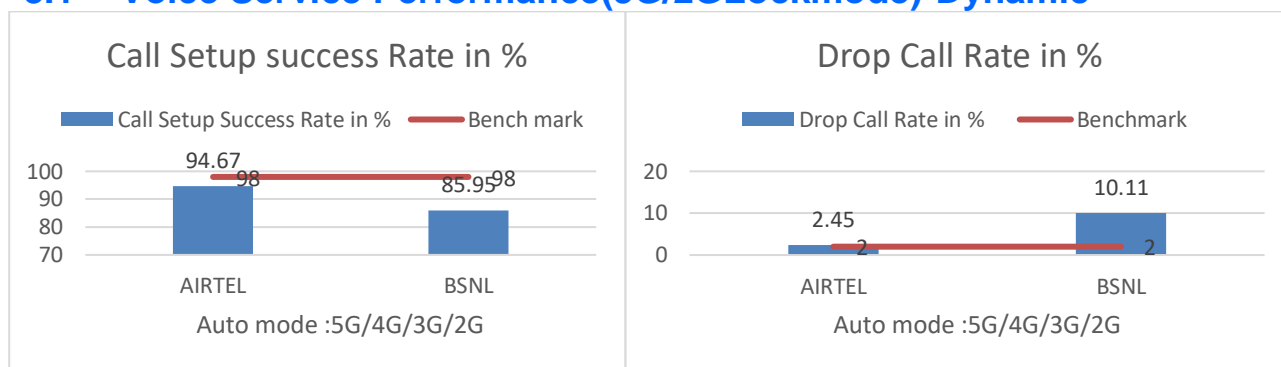
#### 2.4.6 TSP-wise Key Findings:



## Detailed QoS Performance Analysis

### 3. Performance Analysis-Dynamic

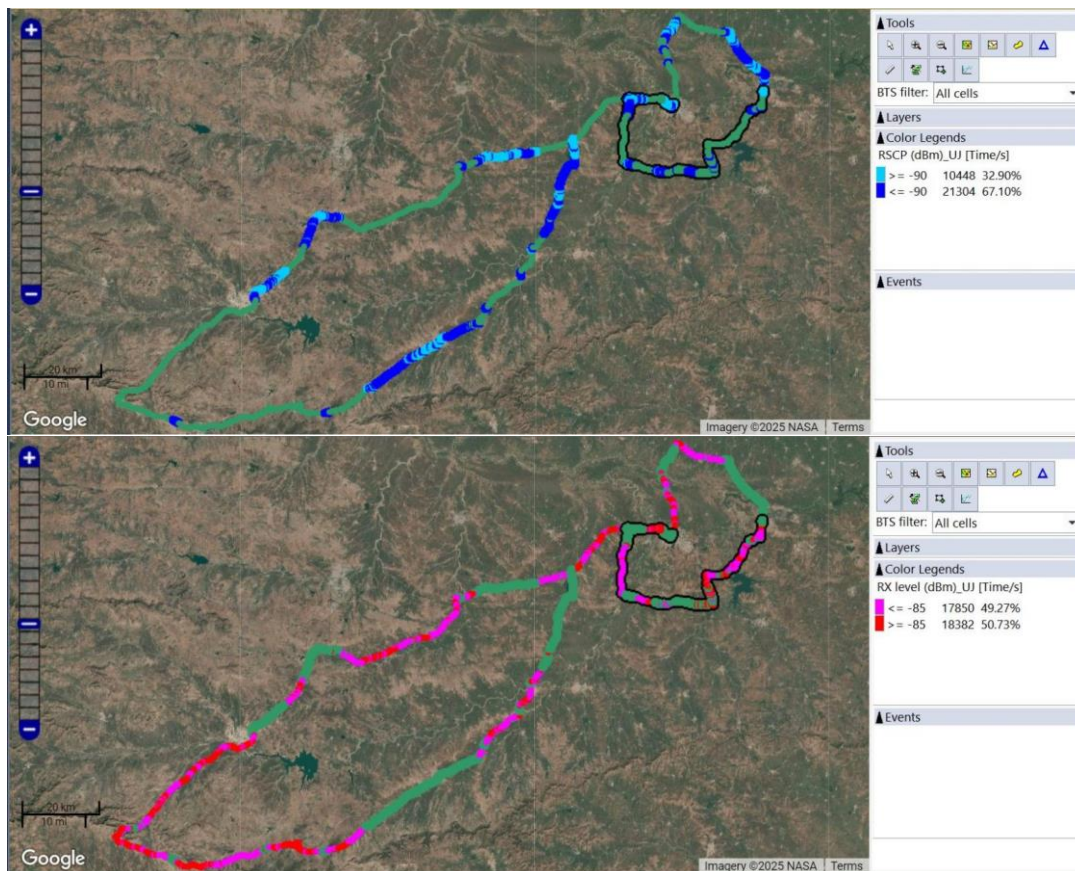
#### 3.1 Voice Service Performance(3G/2GLockmode)-Dynamic



Parameters	Airtel	BSNL
Total Distance covered(in Kms)	502	500
No .of Call Attempts	244	299
No. of Call Established	231	257
<b>Call setup success rate(CSSR)%</b>	94.67	85.95
No. of Drop Call	6	26
<b>Drop Call Rate%</b>	2.45	10.11
<b>Call Setup Time Average(Sec.)</b>	3.61	5.927
No. of Handover Attempts	626	286
No .of Handover success	611	218
<b>HOSR%</b>	97.6	76.22
Total no of RLT Occurrence	86056	1945
No of RLT>48	0	NIL

#### 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
3G	NA	94
2G	412	138

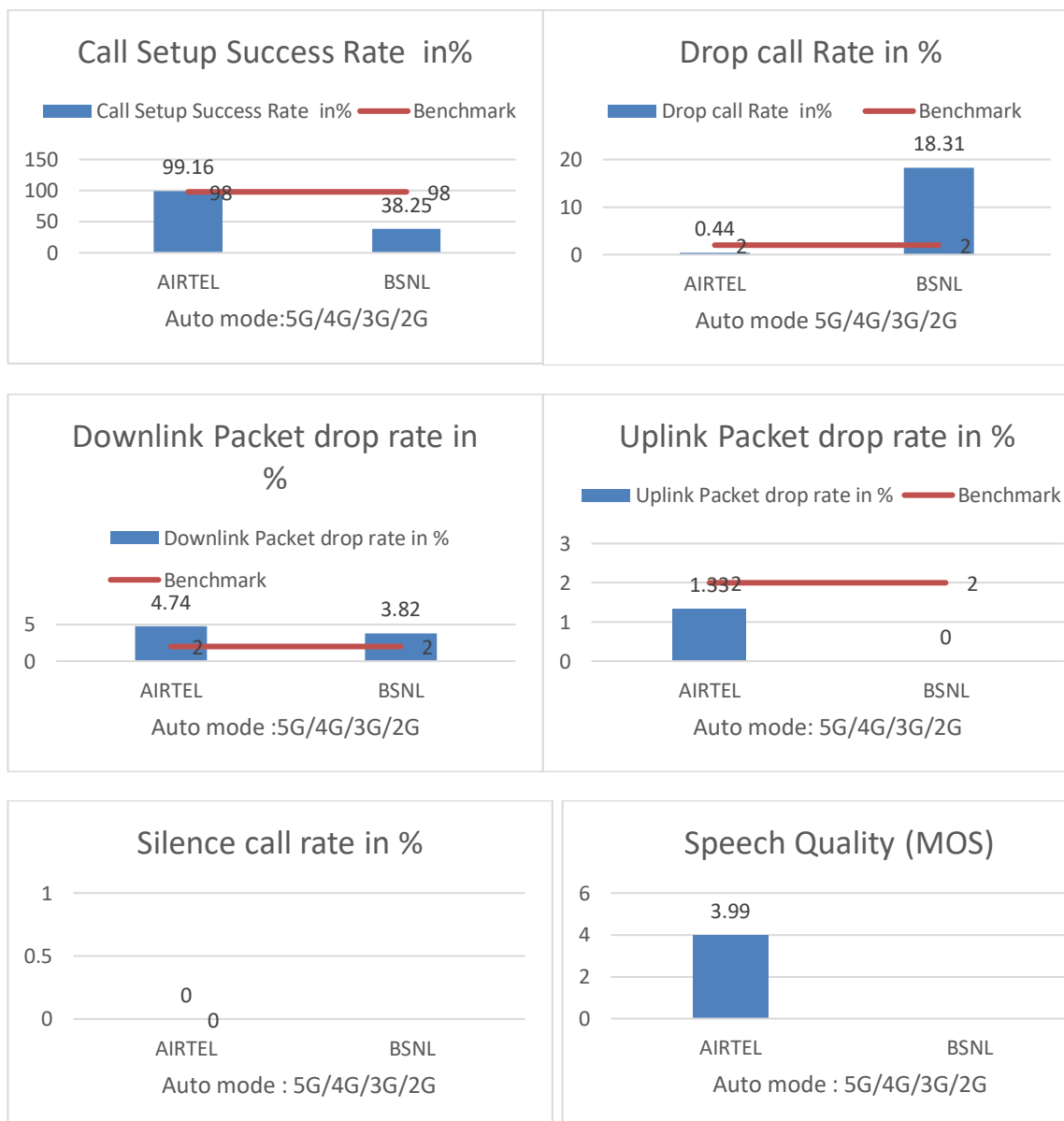


### 3.1.3 Signal Strength distribution:(3G/2G-Lockmode)

RxLevel-2G				
Overall Rx Level	No of Sample		Sample%	
	Airtel	BSNL	Airtel	BSNL
[Max,≥-65]	1129416	2814	14.87	8.15%
[-65,≥-75)	1390159	5925	18.3	17.16%
[-75,≥-85)	2281093	10826	30.03	31.35%
[-85,≥Min)	2794556	14967	36.79	43.35%
<b>Total</b>	<b>7595224</b>	<b>34532</b>	<b>100</b>	<b>100</b>

RxLevel-3G				
Overall RSCP	No of Sample		Sample%	
	Airtel	BSNL	Airtel	BSNL/MTNL
[Max,≥-70]	NA	1319	NA	4.15%
[-70,≥-80)	NA	3383	NA	10.66%
[-80,≥-90)	NA	5746	NA	18.10%
[-90,≥Min)	NA	21304	NA	67.10%
<b>Total</b>	<b>NA</b>	<b>31752</b>	<b>NA</b>	<b>100</b>

## 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
Total Distance covered(in Kms)	502	500
No. of Call Attempts	240	528
No. of Call Established	238	202
<b>Call setup success rate(CSSR)%</b>	99.16	38.25
No. of Drop Call	1	37
<b>Drop Call Rate%</b>	0.44	18.31
<b>Call Setup Time Average(Sec.)</b>	0.59	13.265
No. of Handover Attempts	1002	364
No. of Handover success	981	19
<b>HOSR%</b>	97.9	94.79
<b>Packet Drop Rate (Downlink)</b>	4.74	3.82
<b>Packet Drop Rate (Uplink)</b>	1.33	0
Number of silence call for>2sec.	0	NA
<b>Silence Call Rate%</b>	0	NA
Number of MOS samples	3015	NA
<b>Average MOS score</b>	3.99	NA

#### 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
3G	NA	71
2G	0	107
4G	409	223
5G	0	NA

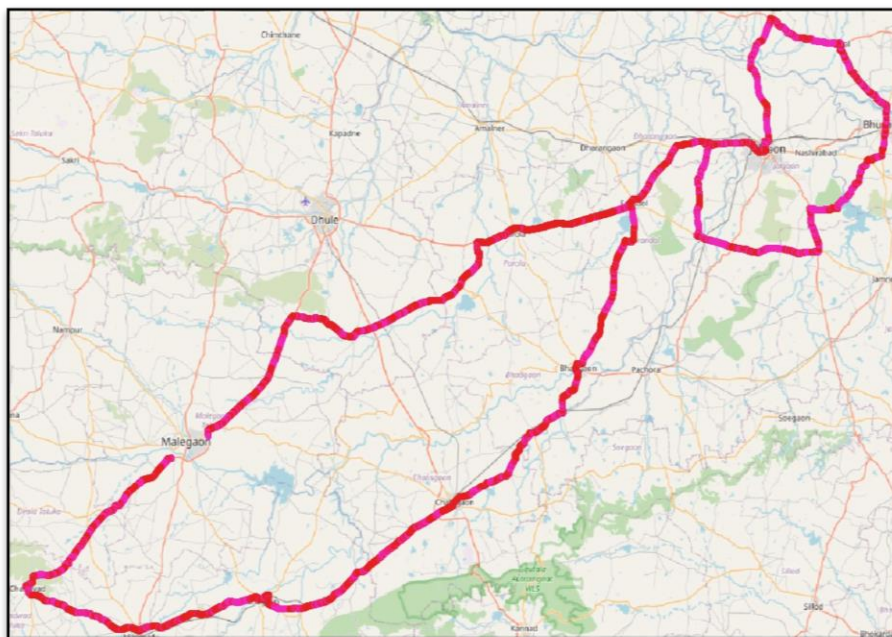
### 3.2.2 Signal Strength Map:(5G/4G/3G/2G-Automode)

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

Technology	Parameter	Range	Colour
2G	Rx Level	$\geq -85$ dBm	Pink
		$< -85$ dBm	Red
3G	RSCP	$\geq -90$ dBm	Sky blue
		$< -90$ dBm	Dark Blue
4G	RSRP	$\geq -110$ dBm	Light Green
		$< -110$ dBm	Dark Green
5G	RSRP	$\geq -110$ dBm	Light Yellow
		$< -110$ dBm	Dark Yellow

2G Rx Level: - Airtel

<b>Rxlevel [7595982]</b>
<span style="color: pink;">●</span> -85 - -110 [2795314]
<span style="color: red;">●</span> -85 - 0 [4800668]





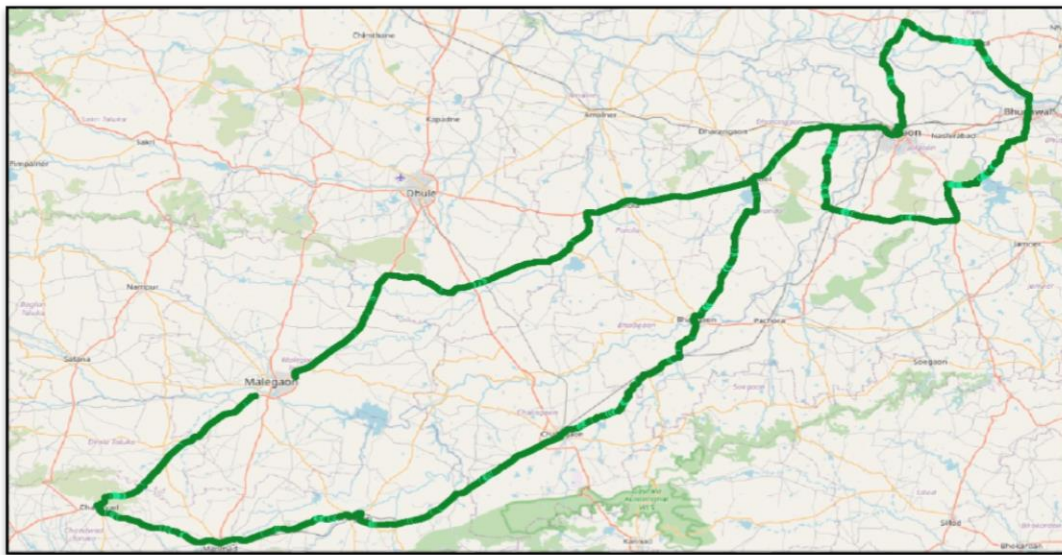
### 3.2.3 Signal Strength Map:(5G/4G/3G/2G-Automode)

**4G RSRP: - Airtel**

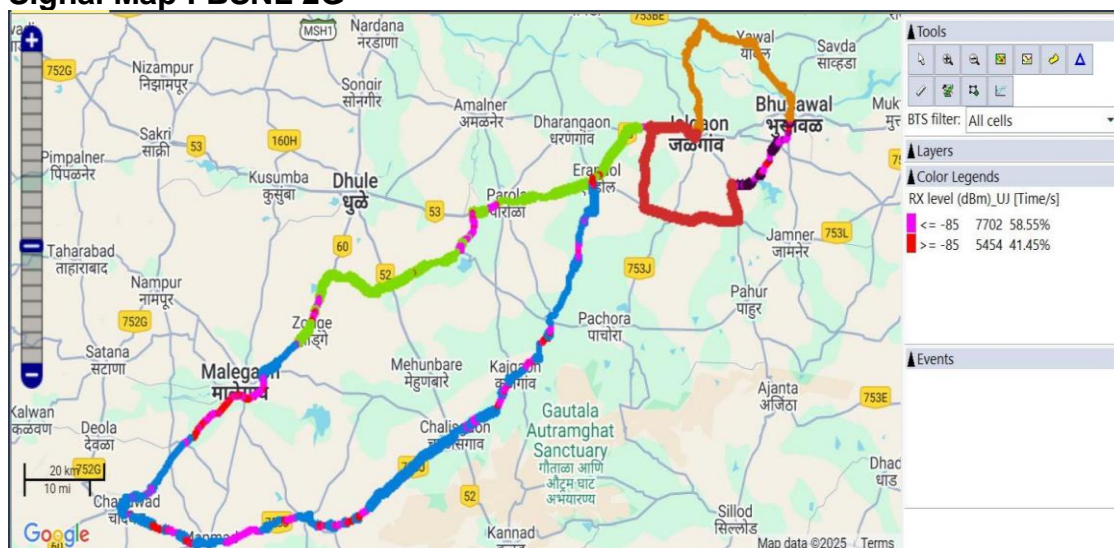
**RSRP [13533076]**

● -110 - -140 [701166]

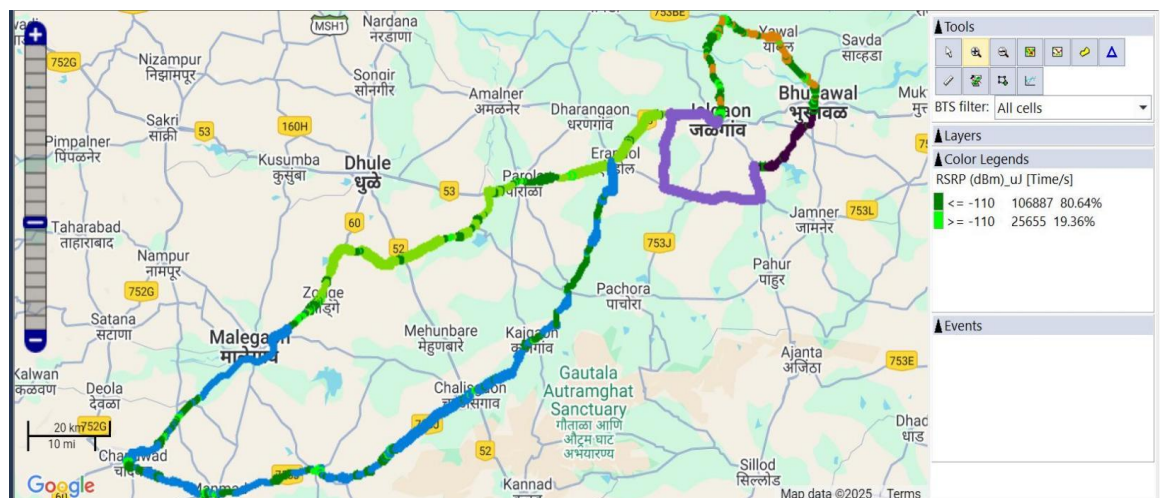
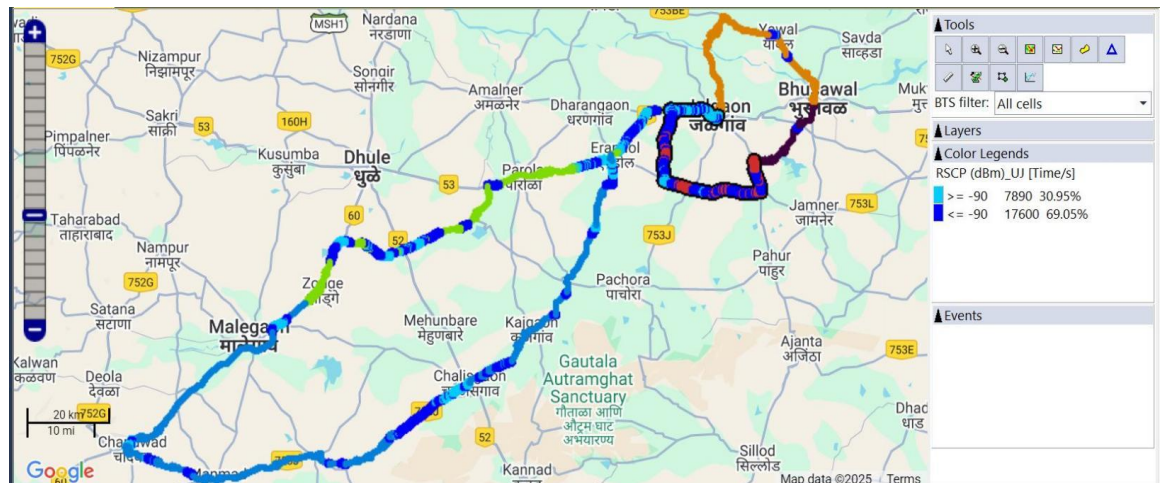
● -110 - 0 [12831910]



### 3.2.2 Signal Map : BSNL 2G



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



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

RxLevel-2G				
Overall Rx Level	No of Sample		Sample%	
	Airtel	BSNL	Airtel	BSNL
[Max,≥-65]	1129416	831	14.87	5.96
[-65,≥-75)	1390159	2418	18.3	17.34
[-75,≥-85)	2281093	3187	30.03	22.86
[-85, ≥Min)	2794556	7507	36.79	53.84
<b>Total</b>	7595224	13943	100	100

RxLevel-3G				
Overall RSCP	No of Sample		Sample%	
	Airtel	BSNL	Airtel	BSNL/MTNL
[Max,≥-70]	NA	850	NA	3.34
[-70,≥-80)	NA	2588	NA	10.15
[-80,≥-90)	NA	4452	NA	17.47
[-90, ≥Min)	NA	17600	NA	69.05
<b>Total</b>	NA	25490	NA	100

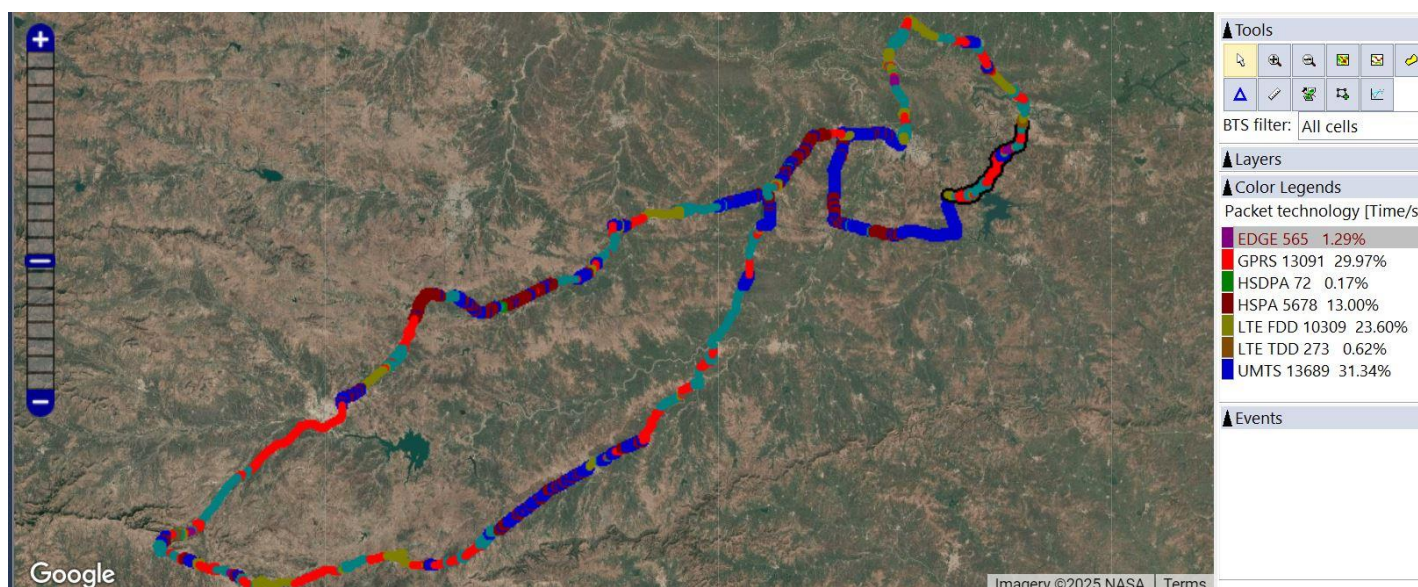
RxLevel-4G				
Overall RSRP	No of Sample		Sample%	
	Airtel	BSNL	Airtel	BSNL
[Max,≥-80]	2904391	123	21.46	0.09
[-80,≥-95]	5821666	3245	43.01	2.45
[-95,≥-110]	4105853	22568	30.33	17.03
[-110,≥Min]	701166	106604	5.18	80.43
<b>Total</b>	13533076	132540	100	100



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

QoS Parameters		AIRTEL	BSNL
Download speed (M bits/s)	Average	36.5	0.54
	80thPercentile	61.88	0.766
	20thPercentile	8.29	0
Upload speed (M bits/s)	Average	7.01	0.12
	80thPercentile	10.92	0.23
	20thPercentile	1.29	0
Latency (ms)	Average	158.7	56
	50thPercentile	155	67
Jitter(ms)	Average	1.3	4.45

### 3.4 Time Spent(Technology-wise) BSNL



Note:-As system was not permitting to change the color of legend. Time spent technology data is mentioned in default color, not as specified.

## 4 QoS Performance Analysis-Static

### 4.1 Hotspot Locations

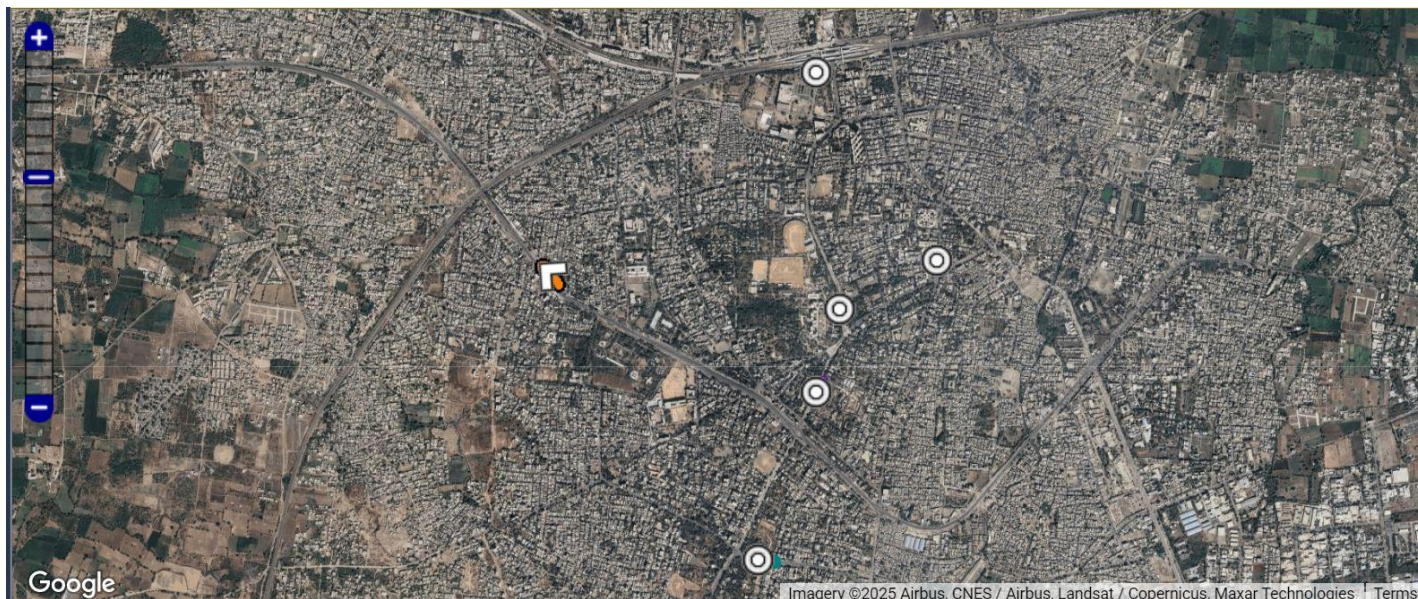


Table-12

Hotspot Name	Latitude & Longitude	Date of Measurement	Time of Measurement
MSRTC Bus Stand Jalgaon	21.0063,75.5635	19-June	9.30am
Railway Station Jalgaon	21.0175,75.5626	19-June	10.15am
Govt Medical College	21.0089,75.5691	19-June	11.10am
Collector Office Jalgaon	21.0019,75.5626	19-June	01.00pm
RTO Office Jalgaon	20.9921,75.5595	19-June	12.00pm
Govt. ITI Jalgaon	21.0037,75.5538	19-June	01.40pm

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

Parameters	Airtel	BSNL
No of Call Attempts	30	528
No of Call Established	30	202
<b>Call setup success rate(CSSR)%</b>	100	38.25
No. of Drop Call	0	37
<b>Drop Call Rate%</b>	0	18.31
<b>Call Setup Time Average(Sec.)</b>	0.55	13.27

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

QoS Parameters		AIRTEL	BSNL
Download speed(M bits/s)	Typical	42.26	2.89
	Average	56.15	0.54
	80thPercentile	72.17	0.766
Download Session Setup Success Rate%		100	91.82
Upload speed (M bits/s)	Typical	7.41	0.66
	Average	12.52	0.12
	80thPercentile	16.01	0.23
Upload Session Setup Success Rate%		100	22.72
Latency(in ms)	50thPercentile	152.58	67
Jitter(in ms)	Average	3.61	4.45
Packet Drop Rate%		6.27	4
Web browsing delay(in sec)		0	0.025
Video Streaming performance for video		1.06	10.39



#### 4.4 Voice Service Performance (5G/4G/3G/2G-Automode) at Bus Stand Hotspot location

Name of Hotspot Location 1	BUS STAND	
Parameters	Airtel	BSNL
No of Call Attempts	5	25
No of Call Established	5	25
Call setup success rate(CSSR)%	100	100
No. of Drop Call	0	0
Drop Call Rate%	0	0
Call Setup Time Average(Sec.)	0.53	9
Total no of RLT Occurrence	-	2
No of RLT>48	-	0

#### 4.5 Data Service Performance (5G/4G/3G/2G-auto mode) at Bus stand Hotspot location:

Name of Hotspot Location 1		BUS STAND	
QoS Parameters		AIRTEL	BSNL
	Typical	49.04	3.2
	Average	53.18	2.22
Download speed(M bits/s)	80thPercentile	61.06	3.57
Download Session Setup Success Rate%		100	100
	Typical	1.73	1.48
	Average	2.6364	0.44
Upload speed (M bits/s)	80thPercentile	2.27	1.07
Upload Session Setup Success Rate%		100	100
Latency(in ms)	50thPercentile	132.5	89
Jitter(in ms)	Average	5.13	4.67
Packet Drop Rate%		1.32	4.7
Web browsing delay(in sec)		-	39
Video Streaming performance for video		1.32	11.67

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

Name of Hotspot Location 2	RAILWAY STATION	
Parameters	Airtel	BSNL
No of Call Attempts	5	25
No of Call Established	5	25
Call setup success rate(CSSR)%	100	100
No. of Drop Call	0	0
Drop Call Rate%	0	0
Call Setup Time Average(Sec.)	0.55	4.921
Total no of RLT Occurrence	-	0
No of RLT>48	-	0

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

Name of Hotspot Location 2		RAILWAY STATION	
QoS Parameters		AIRTEL	BSNL
	Typical	70.37	2.86
	Average	124.86	2.6
Download speed(M bits/s)	80thPercentile	180.08	3.55
Download Session Setup Success Rate%		100	100
	Typical	14.71	0.8
	Average	35.84	0.066
Upload speed (M bits/s)	80thPercentile	50.99	0.101
Upload Session Setup Success Rate%		100	100
Latency(in ms)	50thPercentile	156.5	62
Jitter(in ms)	Average	2.5	5.21
Packet Drop Rate%		5.71	11.7
Web browsing delay(in sec)			0.035
Video Streaming performance for video		1.12	6.73

## Voice Service Performance (5G/4G/3G/2G-Automode) at Govt Medical Collage Hotspot

Name of Hotspot Location 3	GOVT MEDI COLLEGE	
Parameters	Airtel	BSNL
No of Call Attempts	5	25
No of Call Established	5	23
Call setup success rate(CSSR)%	100	92
No. of Drop Call	0	0
Drop Call Rate%	0	0
Call Setup Time Average(Sec.)	0.64	6.84
Total no of RLT Occurrence	-	0
No of RLT>48	-	0

## Data Service Performance (5G/4G/3G/2G-auto mode) at Govt Medical Hotspot

Name of Hotspot Location 3		GOVT MEDI COLLEGE	
QoS Parameters		AIRTEL	BSNL
	Typical	31	1.2
	Average	36.48	0.521
Download speed(M bits/s)	80thPercentile	41.72	1.32
Download Session Setup Success Rate%		100	100
	Typical	6.76	0.92
	Average	8	0.033
Upload speed (Mbits/s)	80thPercentile	9.23	0.018
Upload Session Setup Success Rate%		100	100
Latency(in ms)	50thPercentile	155.5	92
Jitter(in ms)	Average	3.2	4.92
Packet Drop Rate%		0.06	10.05
Web browsing delay(in sec)		0	0.025
Video Streaming performance for video		0.96	7.66

## Voice Service Performance (5G/4G/3G/2G-Automode) at COLLECTOR Office Hotspot location

Name of Hotspot Location 4	COLLECTOR OFFICE	
Parameters	Airtel	BSNL
No of Call Attempts	5	25
No of Call Established	5	21
Call setup success rate(CSSR)%	100	84
No. of Drop Call	0	0
Drop Call Rate%	0	0
Call Setup Time Average(Sec.)	0.48	5.43
Total no of RLT Occurrence	-	4
No of RLT>48	-	0

## Data Service Performance (5G/4G/3G/2G-auto mode) at Collector Office Hotspot location

Name of Hotspot Location 4		COLLECTOR OFFICE	
QoS Parameters		AIRTEL	BSNL
	Typical	20.6	0.744
	Average	26.37	0.254
Download speed(M bits/s)	80thPercentile	31.41	0.002
Download Session Setup Success Rate%		100	100
	Typical	10.85	0.015
	Average	13.98	0.059
Upload speed (Mbits/s)	80thPercentile	17.68	0.0054
Upload Session Setup Success Rate%		100	100
Latency(in ms)	50thPercentile	156	92
Jitter(in ms)	Average	3.08	5.59
Packet Drop Rate%		11.25	6.21
Web browsing delay(in sec)		-	0.033
Video Streaming performance for video		0.89	6.63

## Voice Service Performance (5G/4G/3G/2G-Automode) at RTO Hotspot location

Name of Hotspot Location 5	RTO OFFICE	
Parameters	Airtel	BSNL
No of Call Attempts	5	25
No of Call Established	5	25
Call setup success rate(CSSR)%	100	100
No. of Drop Call	0	0
Drop Call Rate%	0	0
Call Setup Time Average(Sec.)	0.57	3.12
Total no of RLT Occurrence	-	0
No of RLT>48	-	0

## Data Service Performance (5G/4G/3G/2G-auto mode) at RTO Hotspot location

Name of Hotspot Location 5		RTO OFFICE	
QoS Parameters		AIRTEL	BSNL
	Typical	61.38	3.2
	Average	69	1.19
Download speed(M bits/s)	80thPercentile	86.22	3.06
Download Session Setup Success Rate%		100	100
	Typical	5.18	2.3
	Average	7.81	0.09
Upload speed (M bits/s)	80thPercentile	8.15	1.671
Upload Session Setup Success Rate%		100	100
Latency(in ms)	50thPercentile	160	53
Jitter(in ms)	Average	3.95	3.92
Packet Drop Rate%		8.57	0
Web browsing delay(in sec)		-	0.019
Video Streaming performance for video		1.01	1.125



## Voice Service Performance (5G/4G/3G/2G-Automode) at GOVT ITI Hotspot location

Name of Hotspot Location 6	GOVT ITI	
Parameters	Airtel	BSNL
No of Call Attempts	5	25
No of Call Established	5	25
Call setup success rate(CSSR)%	100	100
No. of Drop Call	0	0
Drop Call Rate%	0	0
Call Setup Time Average(Sec.)	0.51	4.79
Total no of RLT Occurrence	-	0
No of RLT>48	-	0

## Data Service Performance (5G/4G/3G/2G-auto mode) at GOVT ITI Hotspot location

Name of Hotspot Location 6		GOVT ITI	
QoS Parameters		AIRTEL	BSNL
	Typical	21.17	3.02
	Average	27	2.31
Download speed(M bits/s)	80thPercentile	32.58	0.32
Download Session Setup Success Rate%		100	100
	Typical	5.24	3.4
	Average	6.85	1.1
Upload speed (Mbits/s)	80thPercentile	7.76	2.78
Upload Session Setup Success Rate%		100	100
Latency(In ms)	50thPercentile	155	59
Jitter(in ms)	Average	3.77	4.91
Packet Drop Rate%		15.71	4
Web browsing delay(in sec)		-	0.031
Video Streaming performance for video		1.03	1.12

#### 4.6 Signal Strength distribution at Static location–Overall

RxLevel-2G				
Overall Rx Level	No of Sample		Sample%	
	Airtel	BSNL	Airtel	BSNL
[Max,≥-65]	452141	NA	44.93	NA
[-65,≥-75)	259315	NA	25.77	NA
[-75,≥-85)	292557	NA	29.07	NA
[-85, ≥Min)	2399	NA	0.24	NA
<b>Total</b>	1006412		100	

RxLevel-3G				
Overall RSCP	No of Sample		Sample%	
	Airtel	BSNL	Airtel	BSNL
[Max,≥-70]	NA	1494	NA	31.21
[-70,≥-80)	NA	3162	NA	66.03
[-80,≥-90)	NA	132	NA	2.76
[-90, ≥Min)	NA	0	NA	0
<b>Total</b>		4788		100

RxLevel-4G				
Overall RSRP	No of Sample		Sample%	
	Airtel	BSNL	Airtel	BSNL
[Max,≥-80]	211503	1340	12.8559419	5.85
[-80,≥-95]	1376697	6939	83.6807833	30.26
[-95,≥-110]	56581	10473	3.43920441	45.67
[-110, ≥Min]	396	4177	0.02407036	18.22
<b>Total</b>	1645177	22929	100	100

## 5 Improvement plan for short coming observed during Drive Test

Sr. No.	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/upgradation of existing site/upgradation of backhaul etc.)	Time Line/ Remarks
1	Airtel	Jalgaon_Paldhi_Mhasavad		20.9024/75.4431	Call Drop	Optimization plan	
2	Airtel	Jalgaon_Chandawad		20.7411/74.8834	Call Drop	Optimization plan	
3	Airtel	Chalisgoan_Erandol		20.8035/75.2928	Call Drop	Optimization plan	
4	BSNL	Collector office Jalgaon	Jalgaon MH	21.001710,75.562796	Poor speed ,Low coverage ,3G/4G fluctuation	Optimization will improve low coverage in area.	15 <sup>th</sup> of July 2025
5	BSNL	Day 1 route	Jalgaon Rural,MH	20.896962,75.443125	Low coverage/2G only coverage	Upgradation of site Ravanje will be done	Aug-25
6	BSNL	Day 1 route	Jalgaon rural,MH	20.847880,75.635927	Low coverage due to OFC brake	Back-haul upgradation will be done by providing OFC ring	Aug-25
7	BSNL	Day 1 route	Jalgaon rural,MH	20.867381,75.656566	Low coverage due to OFC brake	Back-haul upgradation will be done by providing OFC ring	Aug-25
8	BSNL	Day 2- route	Erandol,MH	20.920854,75.319146	Handover failure	Handover definition done problem,resolved	27 <sup>th</sup> June 25
9	BSNL	Day-2 route	Parola,MH	20.863618,75.065931	Poor coverage	New site has to be planned	Dec-25
10	BSNL	Railway station	Jalgaon,MH	21.017780,75.562819	Low data speed	Back-haul has to be improved by adding additional Bandwidth	30 <sup>th</sup> July-25
11	BSNL	Govt Medi college	Jalgaon MH	21.008201,75.569025	Low data speed	Back haul has to be improved by adding additional Bandwidth	30 <sup>th</sup> July-25

## 6 Compliance Report for short comings observed during Drive Test BSNL

Improvement in KPI Parameter	Airtel	BSNL
Call Drop location/area wise action taken and improvement observed		ON Day -1 Drive Call drops were occurred near neridigar and umale region.These was due to OFC Brake/BTS failures on route.OFC brake is restored and calldrops are removed .
Down Link Packet Drop (DLPD) for voice & Up Link Packet Drop (ULPD) for voice in 4G & 5G - location/area wise action taken and improvement observed		
Call Setup failure ,and Hand Over failure-  location/area wise action taken and improvement observed		Handover fails occurred on day -1 routes near mhasawad region were reduced by neighbour defination in area.
Poor Rx Quality-location/area wise action taken and improvement observed		At paldhi region Poor RX quality observed.It was due to only one sector was working on site .Now all 3 sectors were made working and Rx quality is improved .
Poor Coverage-location/area wise action taken and improvement observed		In day 2 drive Poor coverage was observed near Mondhale .USO Site in region is proposed.
Poor DL Speed (i.e. Speed < 2 Mbps) - location/area wise action taken and improvement observed		
Others Poor KPIs(e.g .high latency ,etc)-  location/area wise action taken and improvement observed		



## 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	$CSSR = \frac{\text{Total Call Established}}{\text{Total Call Attempt}} \times 100$ Call Setup attempt time: 30 sec. Call duration(City/Highway):90/180sec. Wait/ Guard Time: 15sec.
3	Dropped Call rate(DCR)	$\text{Call Drop Rate} = \frac{\text{Total Call Drop}}{\text{Total Call Established}} \times 100$
4	Call Silence Rate (Muting)	$\text{Silence call rate} = \frac{\text{count of silence}}{\text{Total calls established}} \times 100$ Continuous RTP gap $\geq 2$ sec
5	Handover Success Rate	$\text{Handover Success Rate} = \frac{\text{Count of successful handovers (All Technology Handover combined)}}{\text{Total count of Handover Attempt (All Technology Handover combined)}} \times 100$ 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 $\geq 4$ and $< 5$ , Good :MOS $\geq 3$ and $< 4$ , Fair: MOS $\geq 2$ and $< 3$ , Poor :MOS $\geq 1$ and $< 2$

## (2) Data Tests:

Sl. No.	QoS Parameter	Measurement Criteria and methodology
1	Data speed in M bits/s (DL/UL both)	Download Speed = Total bytes transferred during download / Total time for transfer Upload 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-TCP Connection 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) x 100
5	Packet drop rate (in %)	No. of packets lost out of total packet transferred during the testing. <ul style="list-style-type: none"> <li>Packet loss rate = (Total packet lost / Total packet sent) x 100</li> <li>Packet delay (RTT) &gt; 90 ms considered as packet loss and included in Packet drop rate.</li> <li>The measurements should include all major types of packets i.e., TCP, UDP and RTP in their representative ratio.</li> </ul> <p>The 90th percentile value of the packet drop measurements shall be considered the Packet drop rate.</p>
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 <a href="https://www.youtube.com/watch?v=rH2Rjvl0DFs">https://www.youtube.com/watch?v=rH2Rjvl0DFs</a>

# Operator Assisted Drive Test Report

For

## JALGAON

17<sup>th</sup> to 19<sup>th</sup> JUNE 2025

Jalgaon-Buswal-Neri-Wavadada-Paidhi-Jalgaon

17-06-2025 (SH) & Jalgaon Town 150 Kms

Jalgaon-Chandwad-Parola-Erandol

18-06-2025 (NH & SH ) 351 Kms

6 Hotspots

(19-06-2025)

Old Format Report JIO & VIL

TRAI RO, Bengaluru

### Key Performance Indicators:

- Both TSPs have met the 2% QOS benchmark of Drop Call Rate.
- Both TSPs have met the 3% QOS benchmark of Call Block Rate
- VIL 2G TSP met Rx Quality except JIO 4G & VIL 4G .
- Both TSPs have met the Mobility HOSR,
- Both TSPs have met CSSR%(Accessibility).

The Operator Assisted Drive Test has been carried out by the Regional Office, Bangalore with the help of Service Providers from 17<sup>th</sup> to 19<sup>th</sup> JUNE 2025. The drive test covered the route of 501 Kms including NH/SH of 151 Kms & 6 hotspots. Approximately 240 calls were made for each of the 3 networks: One 2G networks and Two 4G networks covering Two TSPs.

Overview

Voice Summary

Data Summary



# Overview

Regional Office, TRAI Bengaluru conducted Operator Assisted Drive Test from **17<sup>th</sup> to 19<sup>th</sup> June 2025** covering various locations in **Jalgaon & Surrounding Region**. The performance of Airtel, BSNL, Vodafone Idea, and JIO were monitored across various technologies (2G, 3G, and 4G). The test results obtained from these drive tests were utilized to assess the network quality for Voice and Data services in terms of

**Voice:** Coverage, Quality, Hand Over Success Rate, Call Setup Success Rate, Drop Call Rate and Block Call Rate.

**Data:** Download and Upload Throughputs, Web Browsing Delay and Latency

## Drive Test Details:

**Voice Tests:** Calls were made for 90 sec duration with a wait time of 10 sec between calls in all technologies. The drive test covered a drive route of approximately 501 **KMs** including **NH/SH of 151 Kms** over a period of 3 days from **17<sup>th</sup> to 19<sup>th</sup> June 2025**. Approximately 240 calls were made for each of the 3 networks: One 2G (Lock Mode) networks, and Two 4G networks covering 2 unique TSPs.

**Data Tests:** Dynamic data test (Test Data on Move) was conducted for 501 **KMs** including **NH/SH of 151 Kms** over a period of 3 days for download throughput for 4G technology. Data Tests were performed at 6 static locations; One 2G (Lock mode) network, and Two 4G (Free mode) networks covering 2 unique TSPs were tested. **All the data through put figure mentioned in the report are based on the average value.**

\* For Voice and Data KPI's, 2G measurement is done with UE locked on 2G, and 4G measurement is done with UE in Free Mode.

\* 4G KPI's which are calculated from the UE in Free Mode included samples and events of 2G .

Service	Specifications
Download	2G (Locked) - 500KB, 3G (Dual) - 20 MB, 4G (Free) - 40 MB
Upload	2G (Locked) - 100KB, 3G (Dual) - 5 MB, 4G (Free) - 10 MB
Web Browsing	3 links of e/m commerce website <a href="http://www.amazon.in">www.amazon.in</a> , <a href="http://www.flipkart.com">www.flipkart.com</a> and PayTm
Latency	32 Bytes on <a href="http://www.google.com">www.google.com</a>
Video Streaming	130 secs clip

# Overview

## Voice & Dynamic Data Test (Data Test on Move) Drive Route

Voice & Dynamic Drive (Test Data on Move) (UL&DL) Route



Areas covered
Jalgaon
Bhusawal
Malegaon
Chandwad
Chalisgaon
Yawal
Erandol

## Data Service Test- Static Locations



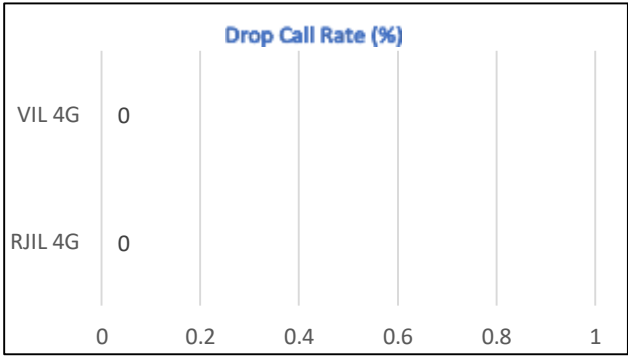
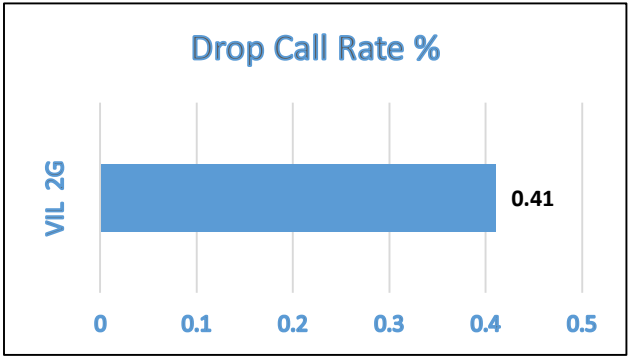
Location Name
Railway station
Bus Stand
Medical College
Collector office
RTO office
ITI College

# Voice Calls

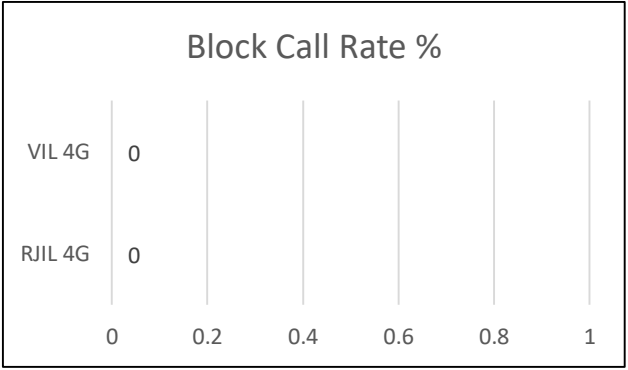
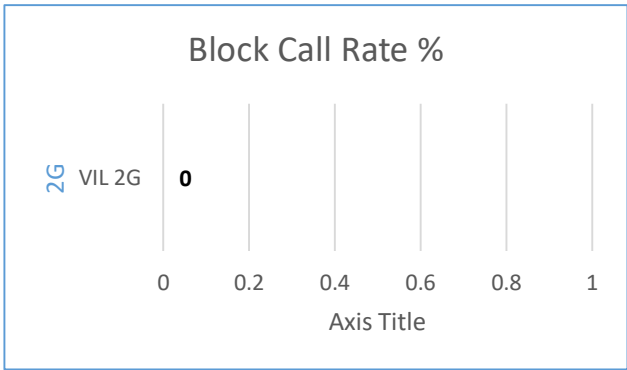
## Key Observations

QoS compliance of the TSPs for Voice across technologies 2G/3G/4G:

Drop Call Rate (%)



Block Call Rate (%)



KPIs	2G	4G	
	VIL 2G	RJIL 4G	VIL 4G
Drop Call Rate %	0.41	0	0
Block Call Rate %	0	0	0

- a) Both TSPs have met the 2% QOS benchmark of Drop Call Rate.
- b) Both TSPs have met the 3% QOS benchmark of Call Block

# Voice Calls

## Key Observations

### Coverage

a) Percentage of coverage samples for 2G  $\geq$  -85 dBm.

TSPs	2G
	VIL
Coverage%	71.04

b) Percentage of coverage samples for 3G  $\geq$  -90 dBm & LTE  $\geq$  -110 dBm.

TSPs	4G	
	JIO	VIL
Coverage %	95.1	87.06

c) Percentage of time spent on 3G/4G network

TSP	Percentage of time spent on 4G	Percentage of time spent on 5G
Jio 4G	25.6	74.4
VIL 4G	98.3	0

## City Level Summary

# Summary

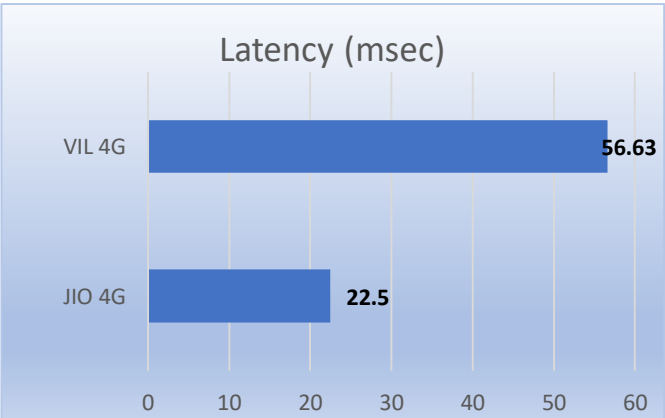
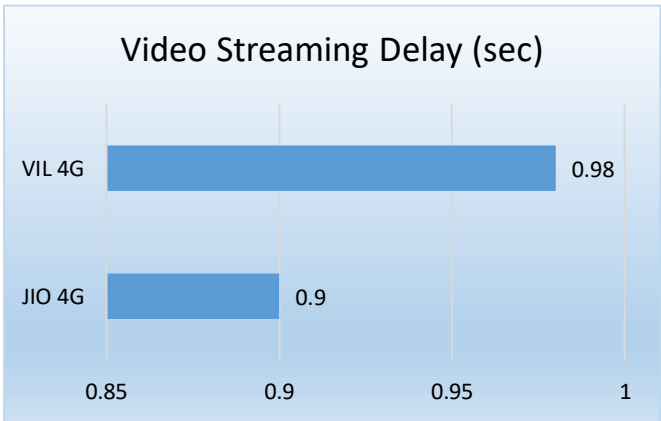
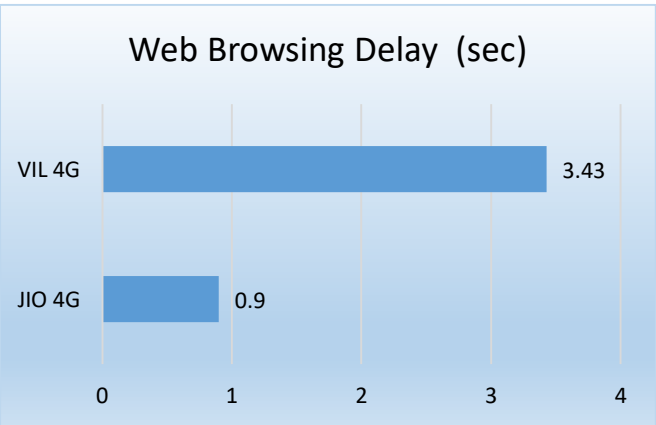
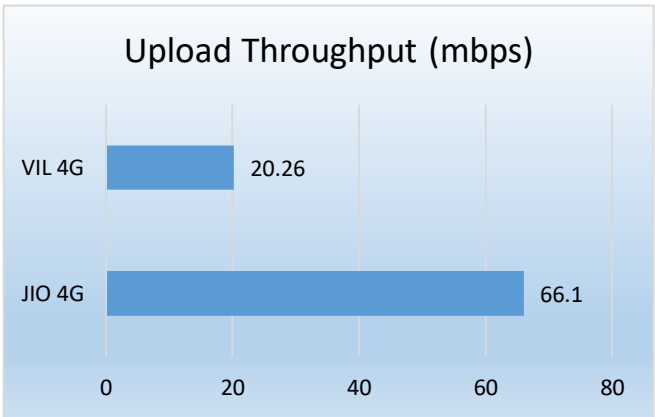
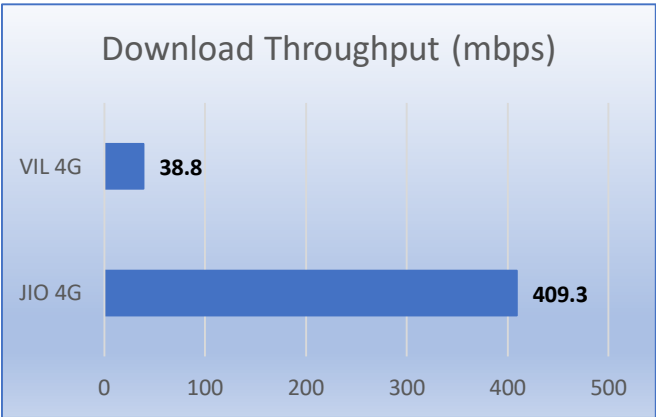
Voice Call	2G
	VIL
Call Attempt	<b>246</b>
Blocked Call Rate (%)	<b>0</b>
CSSR% (Accessibility)	<b>100</b>
Drop Call Rate (%)	<b>0.41</b>
Rx Quality (%)	<b>95.24</b>
Mobility HOSR (%)	<b>98.89</b>

Voice Call	4G	
	JIO 4G	VIL 4G
Call Attempt	<b>202</b>	<b>247</b>
Blocked Call Rate (%)	<b>0</b>	<b>0</b>
CSSR% (Accessibility)	<b>100</b>	<b>100</b>
Drop Call Rate (%)	<b>0</b>	<b>0</b>
Rx Quality (%)	<b>87.2</b>	<b>91.44</b>
Mobility HOSR (%)	<b>100</b>	<b>99.81</b>

Data was tested at 6 locations. The following services were tested: Data Download/Upload, Latency (www.google.com), and Web browsing (Flipkart, Amazon, Paytm)

Data Download, Upload Performance (Mbps), Web Browsing delay, Video Streaming and Latency

4G/5G



# Summary

Data Services Static		
Data Services Static	4G	
	JIO 4G	VIL 4G
Download Throughput (mbps)	409.3	38.8
Upload Throughput (mbps)	66.1	20.26
Browsing (sec)	0.9	3.43
Video Streaming Delay (sec)	0.9	0.98
Latency (msec)	22.5	56.63

Data Services Dynamic		
Data Services Dynamic	4G	
	JIO 4G	VIL 4G
Download Throughput (mbps)	269.2	23.4
Upload Throughput (mbps)	18.8	14.57

# Summary

Data Services Static		
Location 1 (MSRTC Bus Stand)		
	JIO 4G	VIL 4G
Download Throughput (mbps)	387.4	33.47
Upload Throughput (mbps)	50.9	9.62
Browsing (sec)	0.96	3.99
Video Streaming Delay (sec)	0.82	1.2
Latency (msec)	22.8	39.4

Data Services Static		
Location 2 (Railway station)		
	JIO 4G	VIL 4G
Download Throughput (mbps)	443.6	60.3
Upload Throughput (mbps)	67.48	22.02
Browsing (sec)	0.82	3.613
Video Streaming Delay (sec)	0.8	0.868
Latency (msec)	20.8	56.2

Data Services Static		
Location 3 (Govt Medical College)		
	JIO 4G	VIL 4G
Download Throughput (mbps)	347.6	24.04
Upload Throughput (mbps)	74.78	19.56
Browsing (sec)	1	3.16
Video Streaming Delay (sec)	1.02	0.91
Latency (msec)	25.6	55.8



# Summary

Data Services Static		
Location 4(RTO office Jalgaon )		
	JIO 4G	VIL 4G
Download Throughput (mbps)	605.3	31.64
Upload Throughput (mbps)	106.2	29.08
Browsing (sec)	0.62	3.13
Video Streaming Delay (sec)	0.82	1.05
Latency (msec)	21.2	75.4

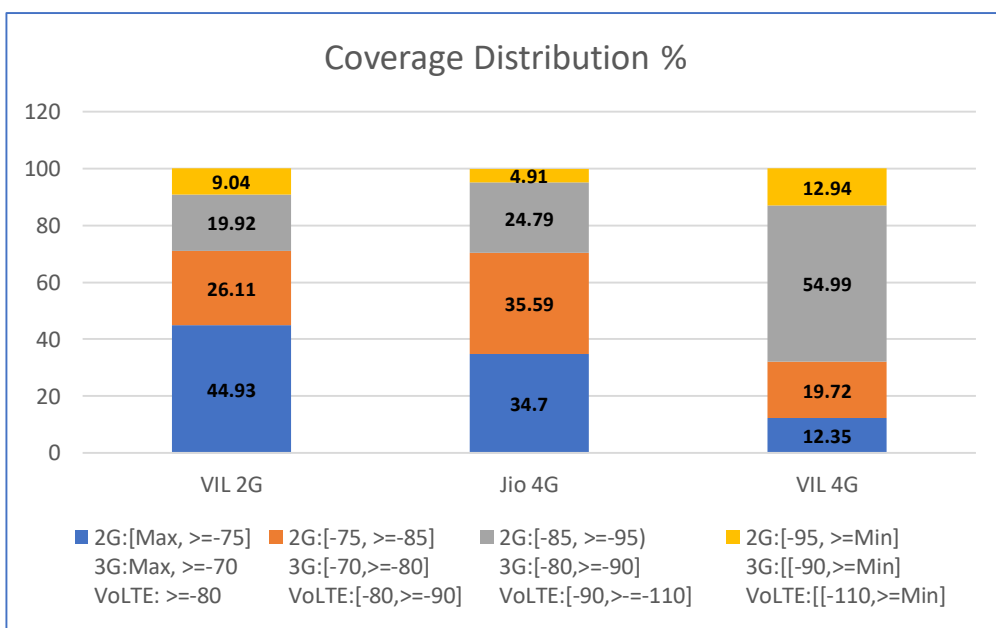
Data Services Static		
Location 5 (Collector Office)		
	JIO 4G	VIL 4G
Download Throughput (mbps)	421.3	64.2
Upload Throughput (mbps)	64.88	24.76
Browsing (sec)	0.8	3.45
Video Streaming Delay (sec)	0.96	0.85
Latency (msec)	21.8	52.6

Data Services Static		
Location 6 ( Govt ITI)		
	JIO 4G	VIL 4G
Download Throughput (mbps)	250.3	19.13
Upload Throughput (mbps)	32.3	16.5
Browsing (sec)	1.4	3.24
Video Streaming Delay (sec)	0.96	0.99
Latency (msec)	23	60.4

## I. Coverage Details

RF Coverage relates to the geographical footprint within the system that has sufficient RF signal strength to provide for a call session. The Coverage rate is calculated on the basis of % of samples in which the Rx level  $\geq -85$  dBm, RSCP is  $\geq -90$  dBm & RSRP  $\geq -110$  dBm. The details are as follows.

COVERAGE	
TSP	Coverage Rate %
VIL 2G	71.04
Jio 4G	95.1
VIL 4G	87.06



## JIO

Technology	Coverage Rate
4G	95.1



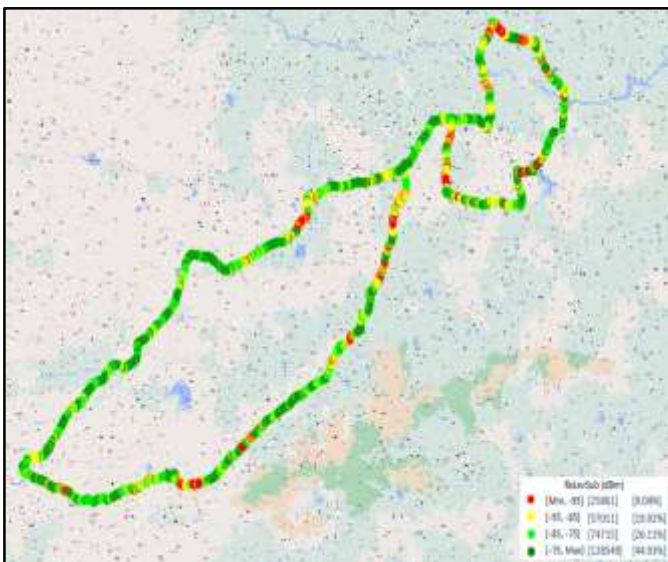
4G/VolTE		
Overall RSRP	# Samples	% PDF
[Max, >=-80]	14,517	34.7%
[-80, >=-90)	14,884	70.3%
[-90, >=-110)	10,369	95.1%
[-110, >=Min)	2049	100.0%
Total	41,819	

## I. Coverage Details

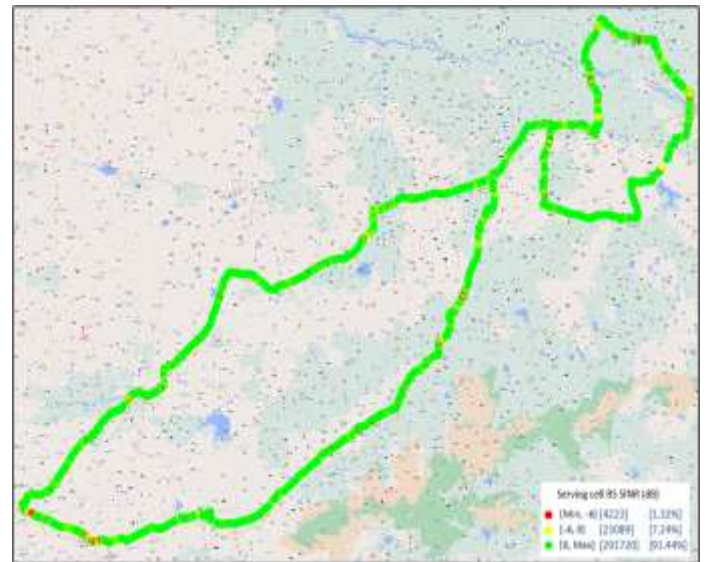
### VIL

Technology	Coverage Rate %
2G	71.04
4G	87.06

### 2G



### 4G

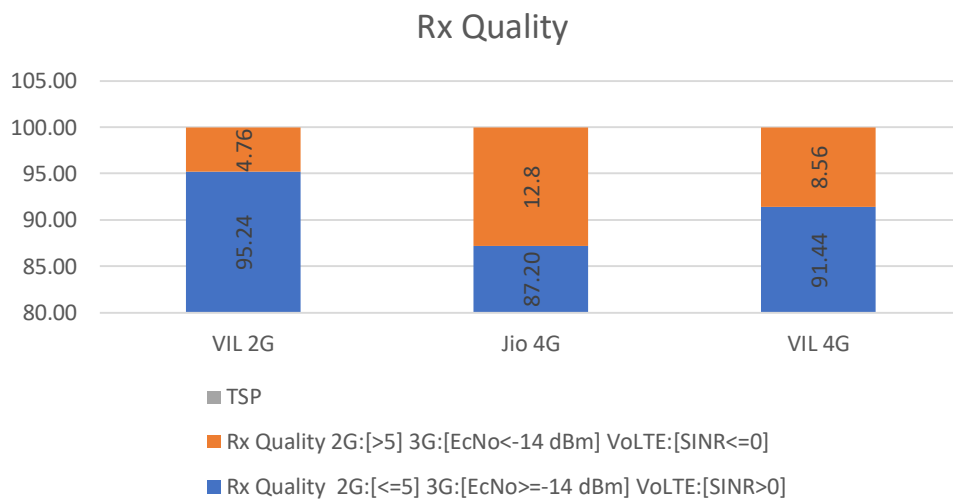


2G			VoLTE		
Overall RxLevel	# Samples	% PDF	Overall RSRP	# Samples	% PDF
[Max, >= -75]	128549	44.93	[Max, >= -80]	39404	12.35
[-75, >= -85]	74715	26.11	[-80, >= -90]	62929	19.72
[-85, >= -95]	57011	19.92	[-90, >= -110]	175432	54.99
[-95, >= Min)	25861	9.04	[-110, >= Min)	41267	12.94
<b>Total</b>	<b>286136</b>	<b>100</b>	<b>Total</b>	<b>319032</b>	<b>100</b>

## II. Quality Details

For measuring voice quality, as per the QoS norms, RxQual  $\leq 5$  for GSM TSPs, EcNo  $\geq -14$  dBm for 3G TSP and SINR  $> 0$  in case of 4G is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be  $\geq 95\%$ .

TSP	Rx Quality
VIL 2G	95.24
Jio 4G	87.2
VIL 4G	91.44



### JIO

Technology	Rx Quality (%)
4G	<b>87.2%</b>



Overall SINR	# Samples	% PDF
(15, <=Max)	9,078	21.7%
(10, <=15)	8,940	43.1%
(5, <=10)	9,974	66.9%
(0, <=5)	8,461	87.2%
(Min, <=0)	5,366	100.00%
<b>Total</b>	<b>41,819</b>	

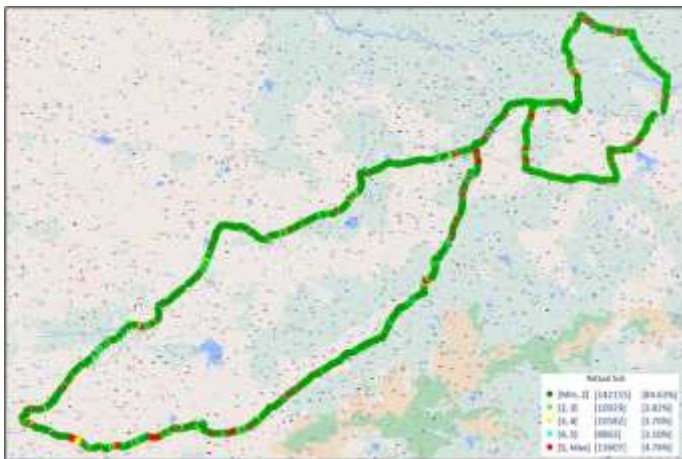


## II. Quality Details

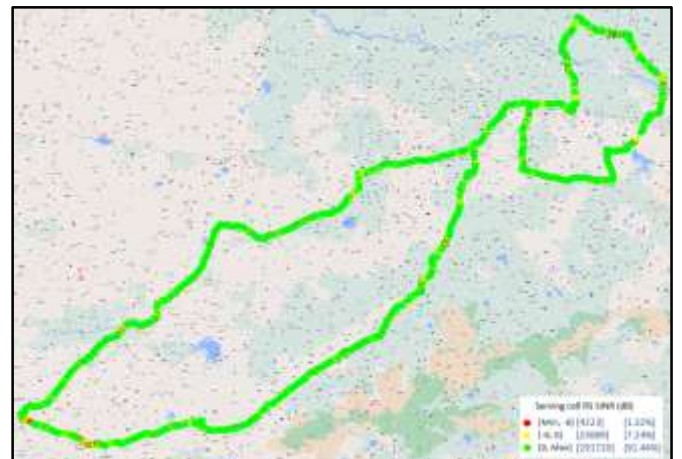
### VIL

Technology	Rx Quality %
2G	95.24
4G	91.44

### 2G

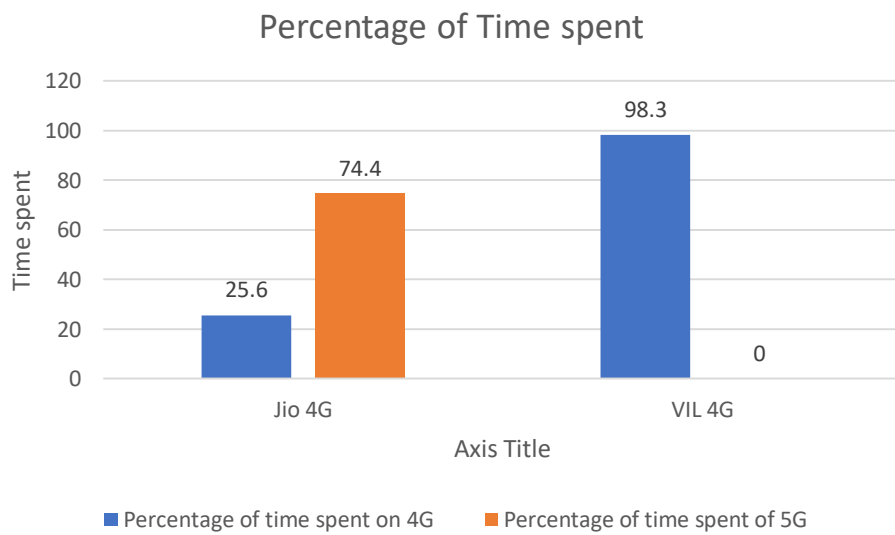


### 4G



2G			4G		
Overall RxQuality	# Samples	% PDF	Overall SINR	# Samples	% PDF
[Min, <=2]	242155	84.63	[Min, <=0]	27312	8.56
[2, <=3)	10929	3.82	[0, <=5)	64037	20.07
[3, <=4)	10582	3.70	[5, <=10)	75378	23.63
[4, <=5)	8863	3.10	[10, <=15)	60708	19.03
[5, <=Max)	13607	4.76	[15, <=Max)	91597	28.71
<b>Total</b>	<b>286136</b>	<b>100</b>	<b>Total</b>	<b>319032</b>	<b>100</b>

TSP	Percentage of time spent on 4G	Percentage of time spent of 5G
Jio 4G	25.6	74.4
VIL 4G	98.3	0

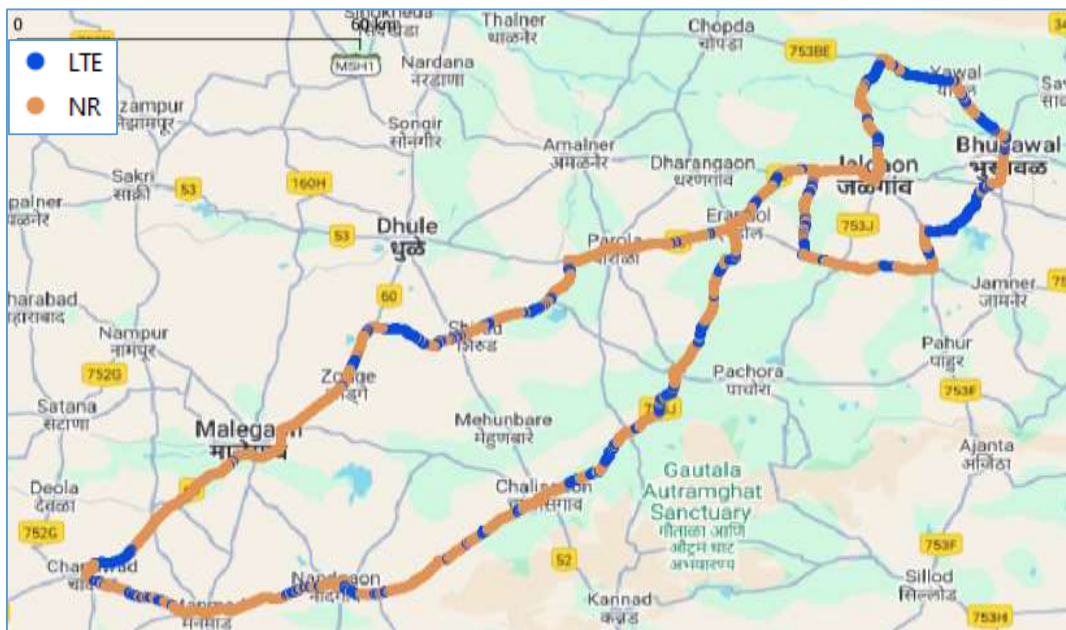




### III. Technology Details

#### JIO

Technology	Time Spent %
4G (LTE)	25.6
5G(NR)	74.4



### III. Technology Details

#### VIL

Technology	Time Spent (%)
4G	98.3%



## IV. Dynamic Data Test(Data Test on Move)- 3G/4G DL/UL Details

### JIO

DL throughput	No. of samples	% PDF
>100 Mbps	10,400	60.2%
50 to 100 Mbps	901	65.4%
25 to 50 Mbps	1,052	71.5%
10 to 25 Mbps	1,513	80.2%
< 10 Mbps	3,423	100.0%
Total	17,289	

UL throughput	No. of samples	% PDF
> 25 Mbps	6,413	24.6%
10 to 25 Mbps	3,575	38.4%
5 to 10 Mbps	2,558	48.2%
2 to 5 Mbps	9,670	85.3%
0 to 2 Mbps	3,817	100.0%
Total	26033	

*Note: Dynamic data drive test was done in sequential mode using a single handset running UL & DL script alternatively. Hence data cannot be plotted for DL & UL separately*

## IV. Dynamic Data Test (Data Test on Move)- 4G DL/UL Details

### VIL



Download Throughput	No. of samples	%
0 to 1 Mbps	2658	7.95
1 to 2 Mbps	1254	3.75
2 to 3 Mbps	940	2.81
3 to 4 Mbps	856	2.56
4 to 8 Mbps	3056	9.14
8 to 12 Mbps	2826	8.45
>12 Mbps	21849	65.34



Upload Throughput	No. of samples	%
0 to 256 Kbps	3262	10.68
256 to 512 Kbps	1658	5.43
512 Kbps to 1 Mbps	1423	4.66
1 to 2 Mbps	1002	3.28
2 to 3 Mbps	4041	13.23
3 to 4 Mbps	3463	11.34
>4 Mbps	15693	51.38



# V. TRAI My Speed App Test Details-4G

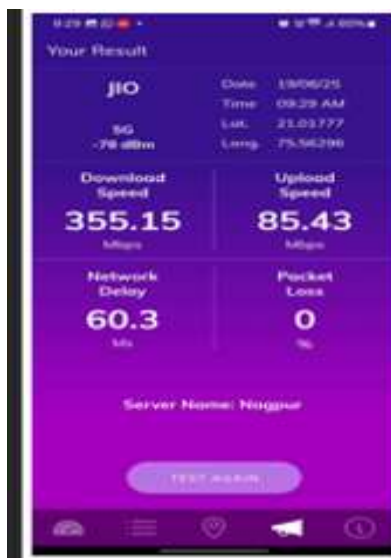
## JIO

Techology-4G	Location 1 (Railway Station)	Location 2 (Bus Stand)	Location 3 (Govt Medical College)	Location 4 (Collector office)	Location 5 (RTO Office)	Location 6 (ITI)
Download Speed	355.1	294.5	318.0	301.0	402.1	222.3
Upload Speed	85.4	29.6	34.8	42.3	101.5	36.7
Latency	60	66.7	61.5	94.6	58.6	68.6

### Railway Station

### Bus Stand

### Medical College



### Collector OFFICE

### RTO

### ITI Jalgaon



# V. TRAI My Speed App Test Details-4G

VIL

Technology-4G	Location 1 Bus Stand Jalgaon	Location 2- Railway Station Jalgaon	Location 3- Govt.Medical Collage Jalgaon	Location 4- District Collector Office Jalgaon	Location 5- RTO Office Jalgaon	Location 6- Govt.ITI Collage Jalgaon
Download Speed in Mbps	30.39	29.98	22.53	110.67	61.91	109.46
Upload Speed in Mbps	20.81	21.78	18.45	92.48	63.21	63.49
Latency	99.7	43.9	36.2	82	87.7	92.6

Bus Stand



Railway Station



Govt Medical Collage



Collector Office



RTO Office



Govt ITI Collage



