



Operator Assisted Drive Test Report

Gujarat Service Area

Mehsana & Unjha City

(22nd July 2025 to 24th July 2025)

TRAI Regional Office Jaipur

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1. Introduction

TRAI Act, 1997 mandates the Authority to ensure the services delivered through various telecommunications networks meet required quality standards prescribed, to protect the interest of the consumers of telecommunication services. TRAI is also responsible for conducting the periodical audit of such services provided by the service providers so as to protect the interest of the consumers of telecommunications service.

Accordingly, TRAI with help of TSPs teams undertake assessment of Quality of Service of mobile service through Operator Assisted Drive Test (OADT).

In OADT, the performance of all service providers providing service in a Licensed Service Area (LSA) through various technologies (like 2G/ 3G/ 4G/ 5G) for voice and data are measured by conducting drive test. The drive test routes are finalized based on various objective criteria like reported network performance, consumer complaints etc.

2. Executive Summary

2.1 Drive test details

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

Date	Duration	Drive test route	Distance covered (in Kms)
22-Jul-2025	09:25AM to 08:00PM	Mehsana City	105 km
23-Jul-2025	09:50AM to 07:10PM	Mehsana to Unjha highway, Unjha City Unjha Hotspots	28 Km 43 Km Three
24-Jul-2025	09:25AM to 05:00PM	Mehsana Hotspot locations	Five
24-Jul-2025	05:00PM to 5:30PM	Wide angle Mehsana to Shanku water park Mehsana	12 km

Table-1: Drive test summary

2.2 Drive test route

(a) Mehsana City & Unjha City

The map provides overview of drive test routes indicating city drive and hotspots as per the legends shown on the map.

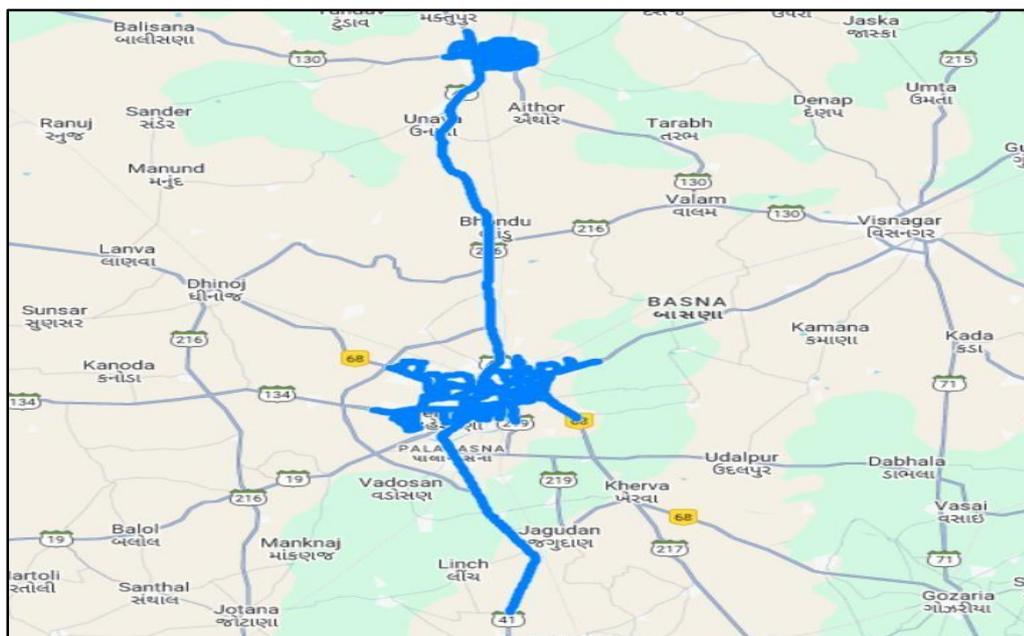


Figure-1: Drive Test Route map

2.3 Areas covered

a) Mehsana & Unjha City- Visnagar, Radhanpur Road, Nagalpur, Modhera road, GIDC, Unjha market, Umiya Mata ji temple, Khajuripole etc.

b) Hot spots Covered:

S.No	Hotspot Locations
1	Umiya Mata Mandir, Unjha
2	GSRTC Bus Stand, Unjha
3	APMC market, Unjha
4	Railway station, Mehsana
5	Civil hospital, Mehsana
6	BAPS Swaminarayan temple, Mehsana
7	GSRTC Bus stand, Mehsana
8	Wide Angle cinema, Mehsana

Table 2: Hot spot locations covered in OADT.

2.4 Telecom service providers detected frequency bands

Technologies covered during the OADT and frequency bands in use are summarized in below table.

S.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	700,2100
7	Reliance JIO Infocomm Ltd.	4G	850,1800,2300
8	Reliance JIO Infocomm Ltd.	5G	700,3500
9	Vodafone Idea Ltd.	2G	900
10	Vodafone Idea Ltd.	4G	900,1800,2100,2500

Table 3: Frequency Bands of Telecom service provider (TSP) covered in OADT.

3.Detailed QoS Performance Analysis

3.1 QoS performance analysis- Over all

Overview

This section provides summary of overall QoS performance of the telecom service provider's network in the Mehsana & Unjha City of Gujarat LSA by aggregating the results of drive tests conducted in month of July-2025 covering city drive, and hotspots

Voice performance

(a) Voice Call Performance in 3G/2G network mode only: 3G/2G network mode testing has been done to reflect experience for respective users as they have only 3G/2G compatible handsets.

Parameters	Service Provider		
	3G/2G network mode only		
	AIRTEL	BSNL	VIL
Call Attempts	305	375	316
Call Setup Success Rate %	100	99.47	100
Drop Call Rate %	0	1.07	0
Call Setup Time-Average (Second)	3.85	3.6	2.44
Handover Success Rate %	99.80	98.08	99.25

Table-4: Summary of voice call performance in 3G/2G network mode only.

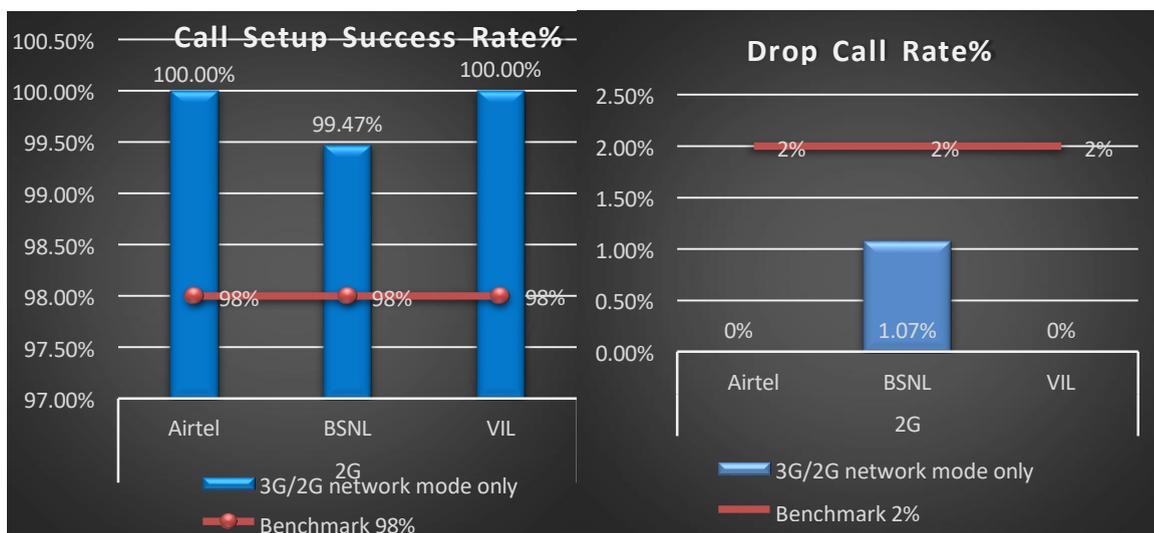


Figure-2: Call setup success rate and drop call rate performance.

Number of unique cell id's covered in Voice test- Technology wise			
Technology	Service Provider		
	3G/2G network mode only		
	AIRTEL	BSNL	VIL
3G	NA	2	N/A
2G	232	71	240

Table-5: Technology wise number of network cell id's latched during drive test.

Note-

- RJIL does not have 3G/2G network.
- NA- Service provider doesn't provide services in respective technology.

(b) Voice Call Performance in auto network selection mode(5G/4G/3G/2G)

Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempts	370	384	435	322
Call Setup Success Rate %	99.45	96.43	100	100
Drop Call Rate %	0.27	1.72	0	0
Call Setup Time-Average (Second)	1.27	1.04	1.13	0.36
Handover Success Rate %	100	95.34	99.75%	100

Table-6: Summary of voice call performance in network auto-selection mode.

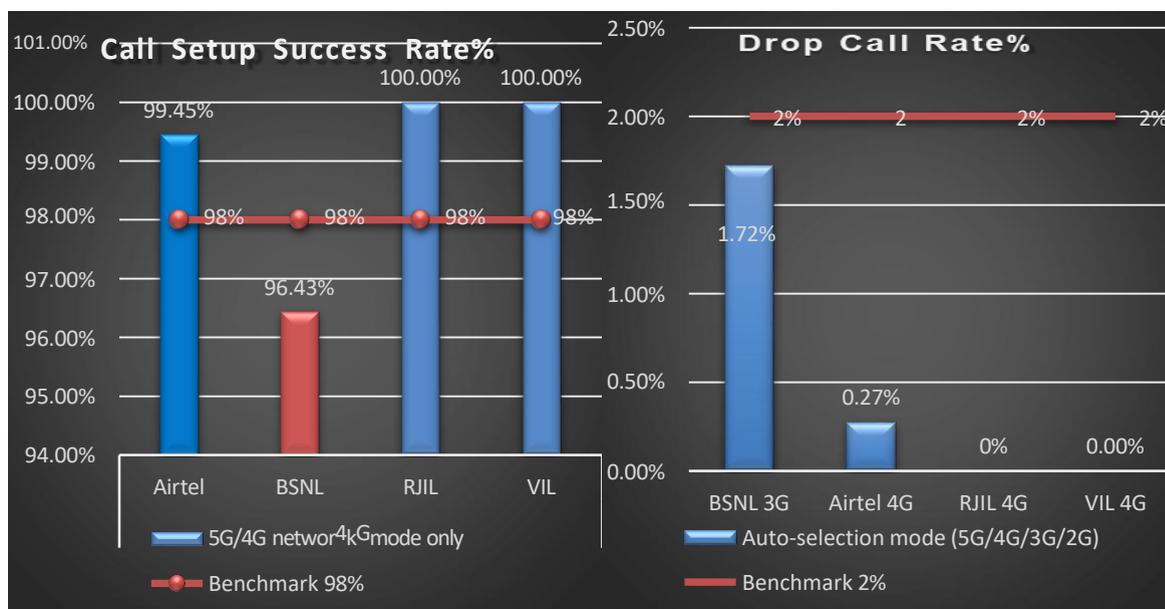


Figure-3: Performance for call setup success rate and drop call rate.

Parameter	Service Provider			
	Mobile-to-Mobile (5G/4G - Open Mode)			
	AIRTEL	BSNL	RJIL	VIL
Call Established (within service provider Network)	367	370	395	322
Packet Drop Rate (Downlink)	0.16	5.87	NA	2.29
Packet Drop Rate (Uplink)	0.17	6.34	NA	2.88
Number of silence call for > 2 sec.	0	15	7	0
Silence Call Rate %	0.00	4.03	0.95	0.00

Table-7: Summary of silence instances & packet loss rate for mobile-to-mobile call

Number of unique cell ids covered during Voice test				
	AIRTEL	BSNL/MTNL	RJIL	VIL
3G	NA	2	NA	NA
2G	NA	6	NA	0
4G	450	85	422	458
5G	NA	0	202	NA

Table-8: Technology wise number of network cell id's latched during drive test.

Note-NA- Service provider doesn't provide services on respective technology.

(c) Mean Opinion Score (MOS) performance for speech quality:

Mean opinion score indicates quality of speech observed during the drive test across different technologies. This parameter has been calculated for mobile- to-mobile calls made within same operator network in auto-mode (5G/4G/3G/2G).

As per ITU-T Recommendation P.863.1, MOS score values means: 5-Excellent, 4-Good, 3-Fair, 2-Poor, 1-Bad.

Speech Quality (MOS) distribution	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
Total Number of MOS Samples	2449	2573	3745	1773
Speech Quality (Average MOS Score)	4.096	2.37	4.30	4.31

Table-9: Summary of speech quality (MOS) samples.

(d) Data performance. (Auto-selection mode- 5G/4G/3G/2G)

Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
Download Throughput (Mbits/s)	Average	116.98	4.9	298.61	20.45
	80th Percentile	185.82	12.34	457.69	40.64
	20th Percentile	42.64	2.12	132.99	0.64
Upload Throughput (Mbits/s)	Average	29.35	8.27	52.14	8.14
	80th Percentile	51.99	9.43	83.57	21.04
	20th Percentile	9.69	1.23	18.45	0.35
Latency (ms)	50th Percentile	23	30.12	40	41

Table-10: Summary of data performance in network auto-selection mode.

Number of unique cell id's covered in Data test- Technology wise				
Technology	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
5G	0	NA	75	NA
4G	126	34	0	N
3G	NA	33	NA	NA
2G	0	33	NA	0

Table-11: Technology wise number of network cell id's latched during drive test.

3.2 Hotspots

a. Locations:

Hotspot testing was done on 23rd July & 24th July 2025. Eight locations were tested in the Unjha & Mehsana Cities.

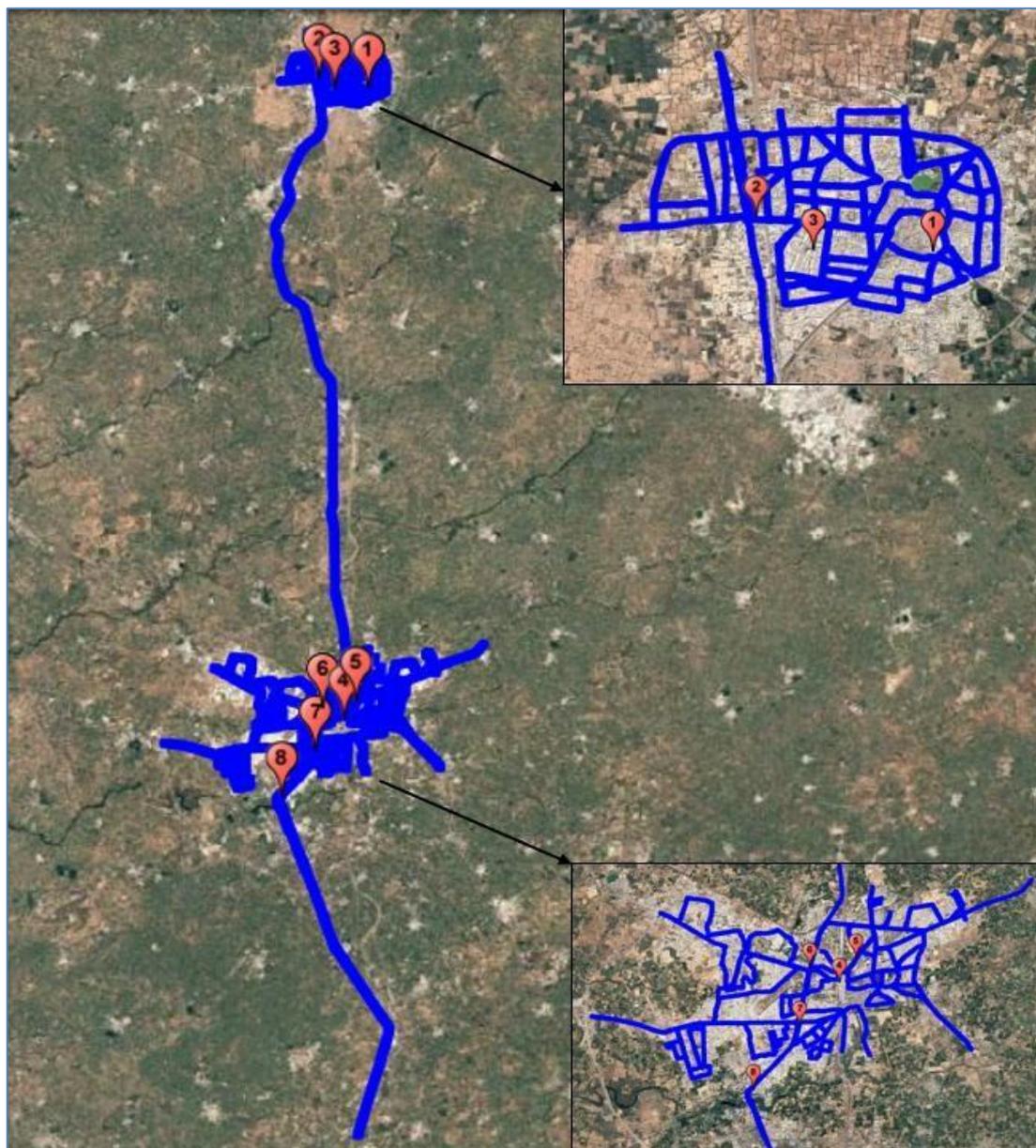


Figure- 4: Hotspot locations

b. Hot Spots Covered:

Hotspot Name	Latitude & Longitude	Date of Measurement	Time of Measurement
Umiya Mata Mandir, Unjha	23.8015/72.3958	23-jul-25	02:30PM
GSRTC Bus Stand, Unjha	23.8046/72.3799	23-jul-25	05:00PM
APMC market, Unjha	23.8004/72.3831	23-jul-25	06:15PM
Railway station, Mehsana	23.6040/72.3882	24-jul-25	09:25AM
Civil hospital, Mehsana	23.6096/72.3927	24-jul-25	10:15AM
BAPS Swaminarayan temple, Mehsana	23.6075/72.3816	24-jul-25	11:40AM
GSRTC Bus stand, Mehsana	23.5928/72.3788	24-jul-25	01:00PM
Wide Angle cinema, Mehsana	23.5790/72.3678	24-jul-25	02:30PM

Table-12: List of Hot Spots Covered.

c. Voice performance (5G/ 4G/ 3G/ 2G - Auto mode) at Hotspot locations.

i. Umiya Mata Mandir, Unjha

Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	5	5	5	5
No of Call Established	5	5	5	5
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 (Sec.)	1.03	1.05	0.79	0.17

Table-12: Voice Performance at Umiya Mata Mandir, Unjha.

ii. GSRTC Bus stand, Unjha

Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	5	5	5	5
No of Call Established	5	5	5	5
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 (Sec.)	1.07	1.15	0.80	0.44

Table-13: Voice Performance at GSRTC Bus stand, Unjha

iii. APMC Market, Unjha

Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	5	5	5	5
No of Call Established	5	5	5	5
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 (Sec.)	1.08	0.85	0.84	0.37

Table-14: Voice Performance at APMC Market, Unjha

iv. Railway station, Mehsana

Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	5	5	5	5
No of Call Established	5	5	5	5
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 (Sec.)	1.05	0.54	0.88	0.31

Table-15: Voice Performance at Railway station, Mehsana

v. Civil hospital, Mehsana

Parameters	Airtel	BSNL/MTNL	RJIL	VIL
No of Call Attempts	5	5	5	5
No of Call Established	5	5	5	5
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 (Sec.)	1.12	0.89	0.83	0.64

Table-16: Voice Performance at Civil hospital, Mehsana

vi. BAPS Swaminarayan temple Mehsana

Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	5	5	5	5
No of Call Established	5	5	5	5
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 (Sec.)	1.09	1.13	0.79	0.29

Table-17: Voice Performance at BAPS Swaminarayan temple Mehsana

vii. GSRTC Bus stand, Mehsana

Name of Hotspot Location				
Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	5	5	5	5
No of Call Established	5	5	5	5
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 (Sec.)	1.21	1.28	0.78	0.28

Table-18: Voice Performance at GSRTC Bus stand, Mehsana

viii. Wide Angle cinema, Mehsana

Name of Hotspot Location				
Parameters	Airtel	BSNL	RJIL	VIL
No of Call Attempts	5	5	5	5
No of Call Established	5	5	5	5
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 (Sec.)	1.05	0.77	0.93	0.27

Table-19: Voice Performance at Wide Angle cinema, Mehsana

d. Data performance (5G/4G/3G/2G - auto mode) at each Hotspot location:

i. Umiya Mata Mandir, Unjha

QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed (Mbits/s)	20th Percentile	65.33	7.84	767.83	34.18
	Average	89.99	8.5	891.06	34.56
	80th Percentile	115.24	12.87	1028.45	34.89
Download Session Setup Success Rate %		100	96.34	100	100
Upload speed (Mbits/s)	20th Percentile	29.26	4.23	138.96	29.24
	Average	36.45	7.43	170.01	30.74
	80th Percentile	29.97	8.32	197.81	31.01
Upload Session Setup Success Rate %		100	97.32	100%	100
Latency (in ms)	50th Percentile	146.5	54	39	38
Jitter (in ms)	Average	6.55	16	NA	4.11
Packet Drop Rate %		0	2.43	0%	0
Web browsing delay (in sec)		6.47	4.65	1.42	5.5
Video Streaming performance for video		0.87	5.76	0.36	0.17

Table-20: Data Performance at Umiya Mata Mandir, Unjha

ii. GSRTC Bus stand, Unjha

QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed (Mbits/s)	20th Percentile	144.21	6.93	376.80	24.77
	Average	190.24	8.23	451.40	30.40
	80th Percentile	238.43	13.21	542.48	37.14
Download Session Setup Success Rate %		100	98.21	100	100
Upload speed (Mbits/s)	20th Percentile	44.11	4.95	92.04	11.37
	Average	47.03	5.16	112.64	18.45
	80th Percentile	51.53	5.88	133.34	27.10
Upload Session Setup Success Rate %		100	98.75	100	100
Latency (in ms)	50th Percentile	149.5	32.11	35	41.00
Jitter (in ms)	Average	3.84	10.29	NA	7.30
Packet Drop Rate %		0.2	3.54	0%	0%
Web browsing delay (in sec)		6.71	2.78	1.30	1.30
Video Streaming performance for video		0.87	4.82	0.48	0.48

Table-21: Data Performance at i. GSRTC Bus stand, Unjha

iii. APMC Market, Unjha

QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed (Mbits/s)	20th Percentile	164.12	7.88	263.01	34.88
	Average	196.42	9.34	300.38	34.98
	80th Percentile	234.67	13.54	344.52	35.07
Download Session Setup Success Rate %		100	97.23	100	100
Upload speed (Mbits/s)	20th Percentile	42.62	3.86	83.71	27.51
	Average	44.39	4.12	88.40	28.24
	80th Percentile	45.89	5.12	97.03	29
Upload Session Setup Success Rate %		100	96.83	100	100
Latency (in ms)	50th Percentile	144	34.42	33	65.2
Jitter (in ms)	Average	15.96	12.81	NA	4.07
Packet Drop Rate %		0.40	4.23	0	0
Web browsing delay (in sec)		6.25	2.61	1.20	1.20
Video Streaming performance for video		0.93	4.32	0.51	0.51

Table-22: Data Performance at APMC Market, Unjha

iv. Railway station, Mehsana

QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed (Mbits/s)	20th Percentile	132.5	8.53	418.00	28.58
	Average	157.36	9.43	480.80	30.96
	80th Percentile	176.67	15.23	545.74	33.20
Download Session Setup Success Rate %		100	97.57	100	100
Upload speed (Mbits/s)	20th Percentile	48.12	5.26	113.57	22.68
	Average	52.44	7.21	126.73	25.03
	80th Percentile	60.63	8.43	141.37	27.05
Upload Session Setup Success Rate %		100	98.64	100	100
Latency (in ms)	50th Percentile	17	31.04	38	39
Jitter (in ms)	Average	3.12	12	NA	4.05
Packet Drop Rate %		0.30	2.03	0	0
Web browsing delay (in sec)		6.45	2.43	1.23	1.23
Video Streaming performance for video		0.88	4.28	0.42	0.42

Table-23: Data Performance at Railway station, Mehsana

v. Civil hospital, Mehsana

QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed (Mbits/s)	20th Percentile	147.24	7.38	307.49	26.28
	Average	181.39	10.4	373.04	28.53
	80th Percentile	218.44	16.23	443.93	30.92
Download Session Setup Success Rate %		100	98.67	100	100
Upload speed (Mbits/s)	20th Percentile	18.20	5.25	47.28	16.95
	Average	20.16	6.27	62.91	18.35
	80th Percentile	24.39	8.85	76.55	19.76
Upload Session Setup Success Rate %		100	96.57	100	100
Latency (in ms)	50th Percentile	24	29.43	36	36
Jitter (in ms)	Average	3.97	8.45	NA	4.54
Packet Drop Rate %		0.2	3.56	0	0
Web browsing delay (in sec)		4.32	2.87	1.34	1.34
Video Streaming performance for video		0.91	4.23	0.41	0.41

Table-24: Data Performance at Civil hospital, Mehsana

vi. BAPS Swaminarayan temple, Mehsana

QoS Parameters		AIRTEL	BSNL/MTNL	RJIL	VIL
Download speed (Mbits/s)	20th Percentile	97.94	12.68	373.12	28.74
	Average	150.39	17.23	455.52	30.16
	80th Percentile	204.12	25.15	536.30	31.45
Download Session Setup Success Rate %		100	97.34	100	100
Upload speed (Mbits/s)	20th Percentile	54.67	6.59	128.38	26.87
	Average	55.21	7.86	142.81	27.16
	80th Percentile	58.83	10.24	165.95	27.41
Upload Session Setup Success Rate %		100	95.76	100	100
Latency (in ms)	50th Percentile	33	26	39	35
Jitter (in ms)	Average	5.6	8	NA	4.28
Packet Drop Rate %		0.3	4.23	0	0
Web browsing delay (in sec)		6.46	2.04	1.33	1.33
Video Streaming performance for video		0.93	4.27	0.38	0.38

Table-25: Data Performance at BAPS Swaminarayan temple, Mehsana

vii. GSRTC Bus stand, Mehsana

QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed (Mbits/s)	20th Percentile	130.95	9.45	332.48	36.09
	Average	145.01	13.23	370.22	37.53
	80th Percentile	169.44	21.76	410.49	39.11
Download Session Setup Success Rate %		100	96.27	100	100
Upload speed (Mbits/s)	20th Percentile	11.10	6.45	73.60	23.83
	Average	25.14	7.83	97.06	24.42
	80th Percentile	52.6	11.65	118.84	25.03
Upload Session Setup Success Rate %		100	96.87	100	100
Latency (in ms)	50th Percentile	22	27	37	38
Jitter (in ms)	Average	6.15	6	NA	4.54
Packet Drop Rate %		0.30	3.27	0	0
Web browsing delay (in sec)		6.85	2.78	1.38	1.38
Video Streaming performance for video		0.91	4.87	0.44	0.44

Table-26: Data Performance at GSRTC Bus stand, Mehsana

viii. Wide Angle cinema, Mehsana

QoS Parameters		AIRTEL	BSNL	RJIL	VIL
Download speed (Mbits/s)	20th Percentile	182.77	8.34	336.81	29.34
	Average	194.97	10.78	499.88	31.27
	80th Percentile	222.99	18.25	644.95	33.27
Download Session Setup Success Rate %		100	98.29	100	100
Upload speed (Mbits/s)	20th Percentile	28.98	5.29	126.83	31.34
	Average	32.33	6.72	141.69	31.79
	80th Percentile	38.03	10.72	157.14	32.65
Upload Session Setup Success Rate %		100	97.45	100	100
Latency (in ms)	50th Percentile	26	28	33	37
Jitter (in ms)	Average	4.53	7	NA	4.32
Packet Drop Rate %		0.20	2.83	0%	0%
Web browsing delay (in sec)		6.94	2.34	1.25	1.25
Video Streaming performance for video		1.34	4.28	0.40	0.40

Table-27: Data Performance at Wide Angle cinema, Mehsana

4. TSP Wise signal Strength (Mehsana & Unjha City)

Technology	Parameter	Range	Colour
2G	Rx Level	≥ -85 dBm	Magenta
		< -85 dBm	Red
3G	RSCP	≥ -90 dBm	Cyan
		< -90 dBm	Blue
4G	RSRP	≥ -110 dBm	Light Green
		< -110 dBm	Dark Green
5G	RSRP	≥ -110 dBm	Yellow
		< -110 dBm	Orange

a. Airtel

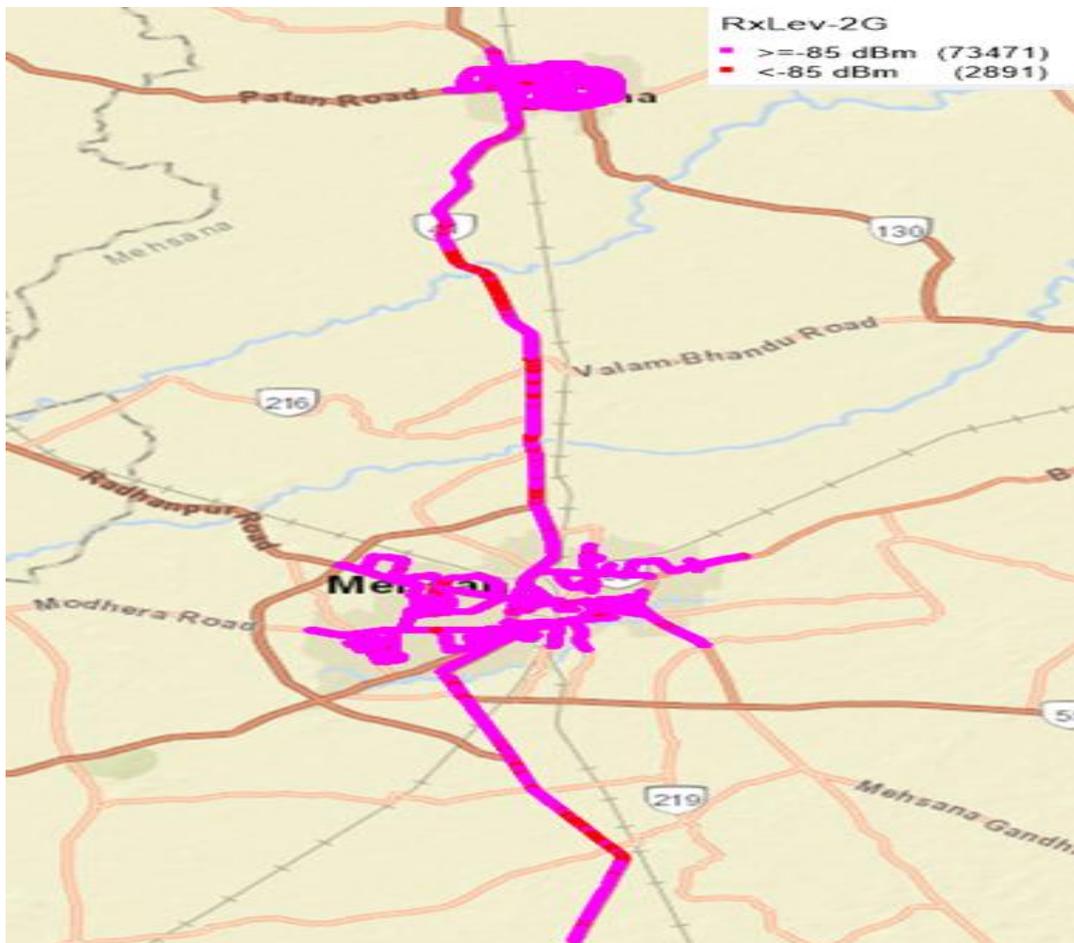


Figure-5: Signal strength 2G network mode – AIRTEL

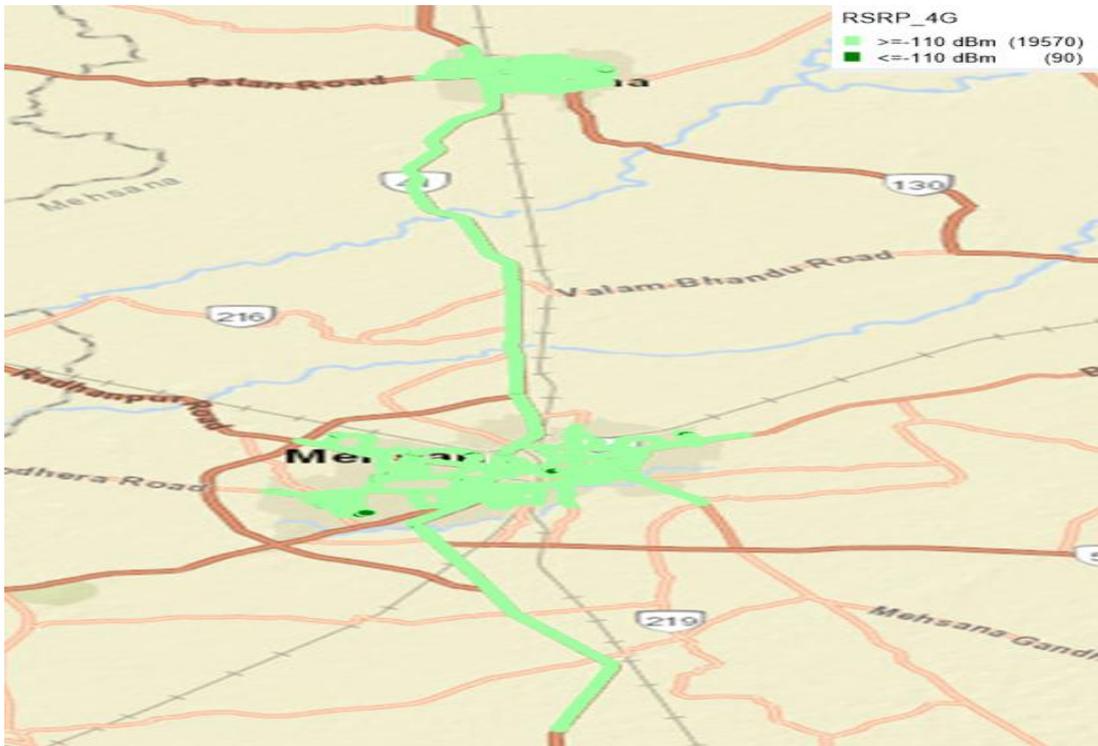


Figure-6: Signal strength auto-selection mode 4G- AIRTEL.



Figure-7: Signal strength auto-selection mode 5G- AIRTEL.

b. BSNL

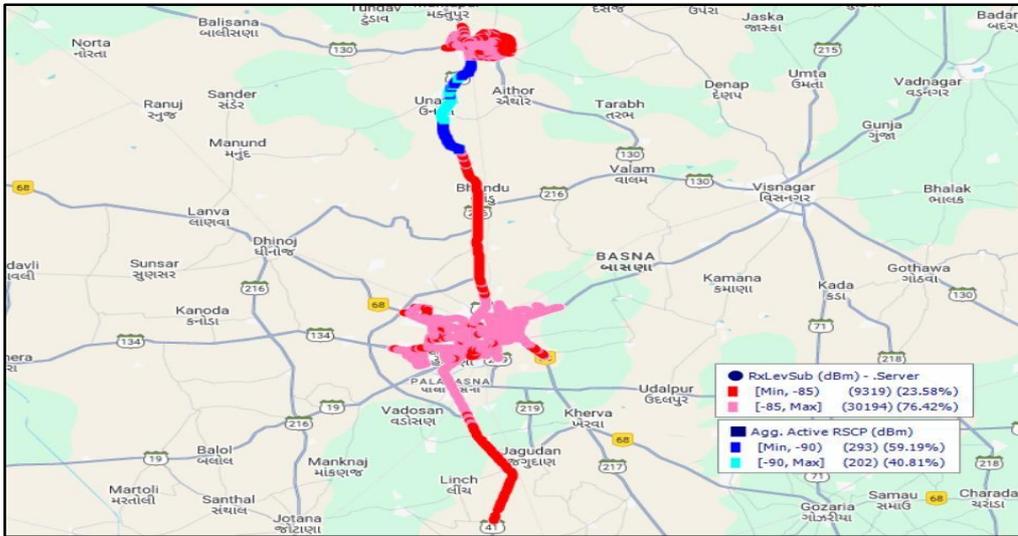


Figure-8: Signal strength auto-selection mode 3G/2G – BSNL

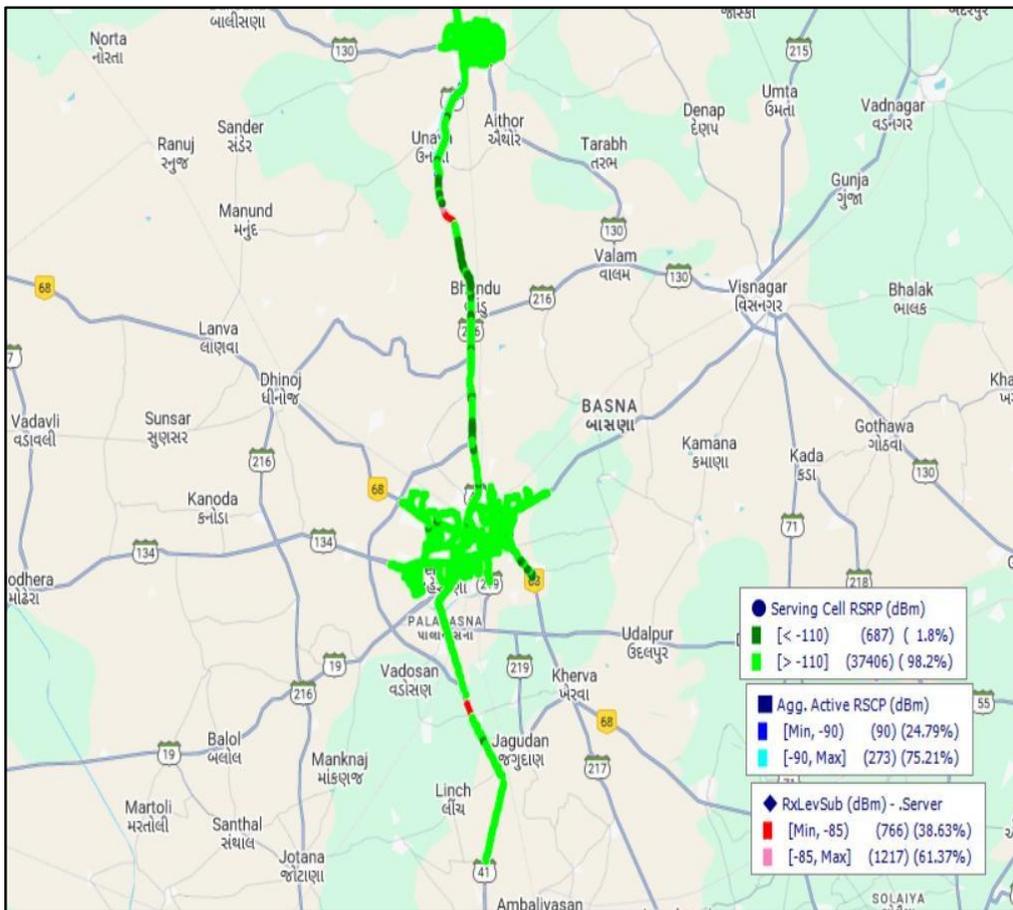


Figure-9: Signal strength auto-selection mode 4G – BSNL

c. RJIL

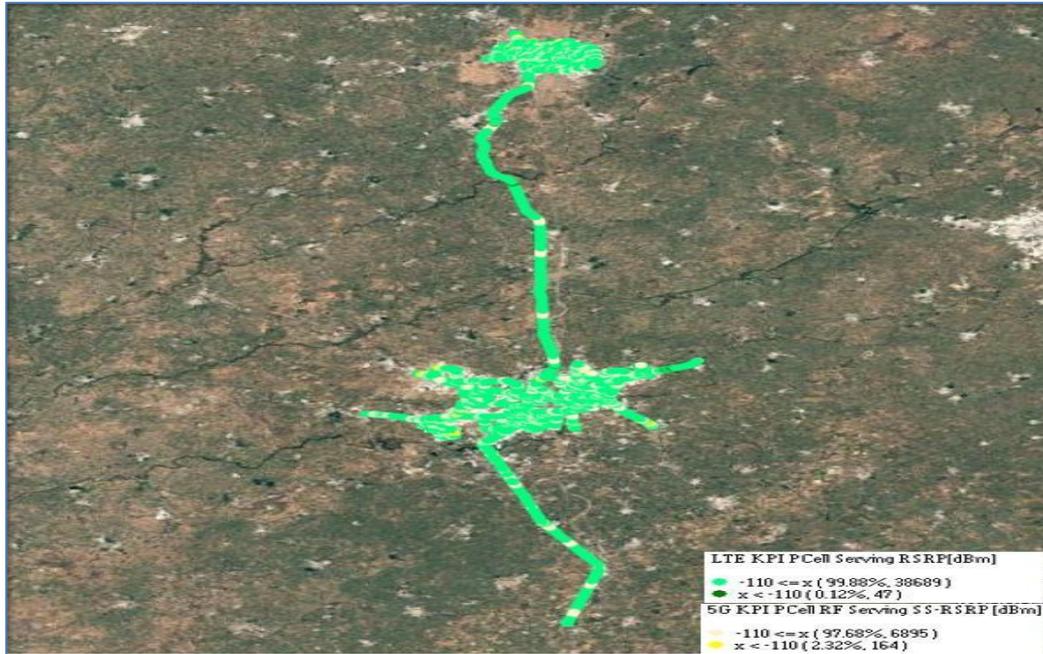


Figure-10: Signal strength auto-selection mode 4G – RJIL.

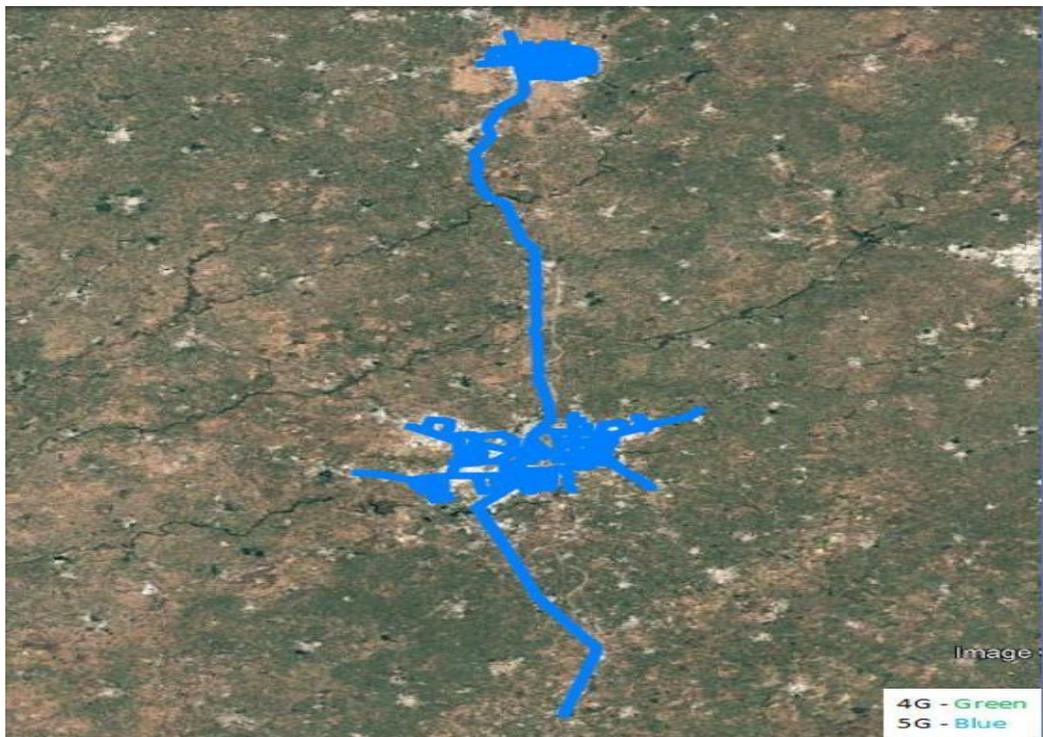


Figure-11: Signal strength auto-selection mode 5G – RJIL.

d. VIL

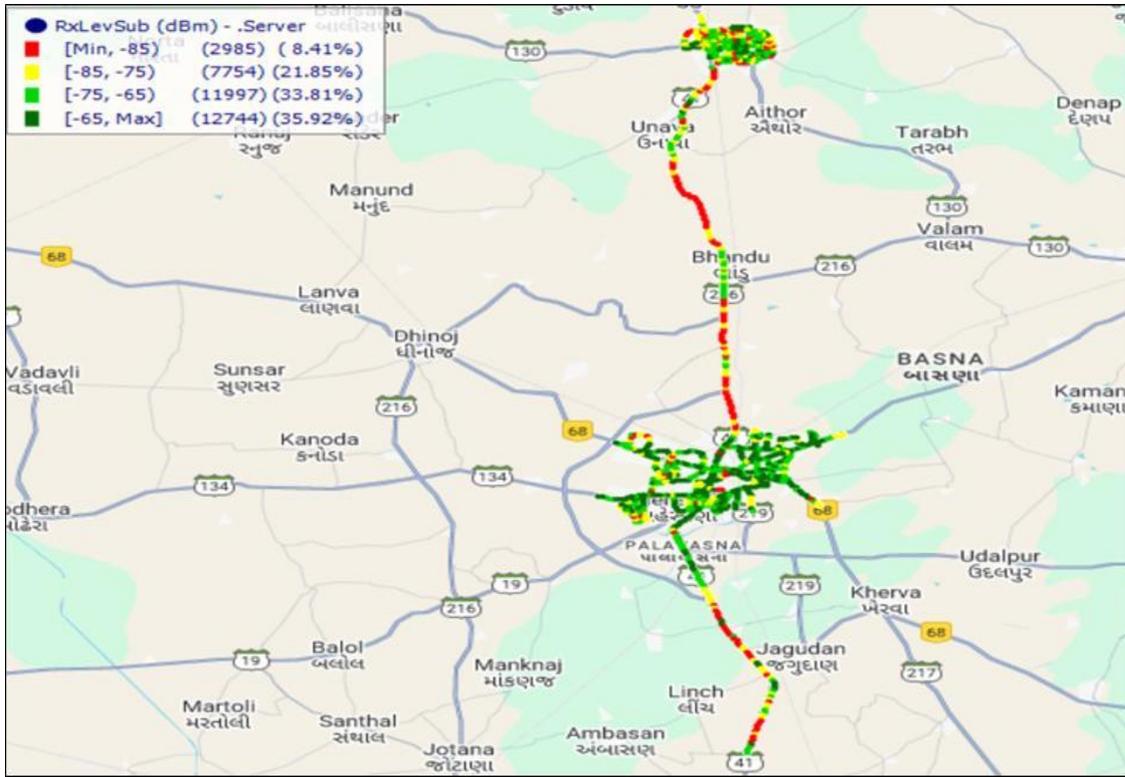


Figure-12: Signal strength 2G- VIL

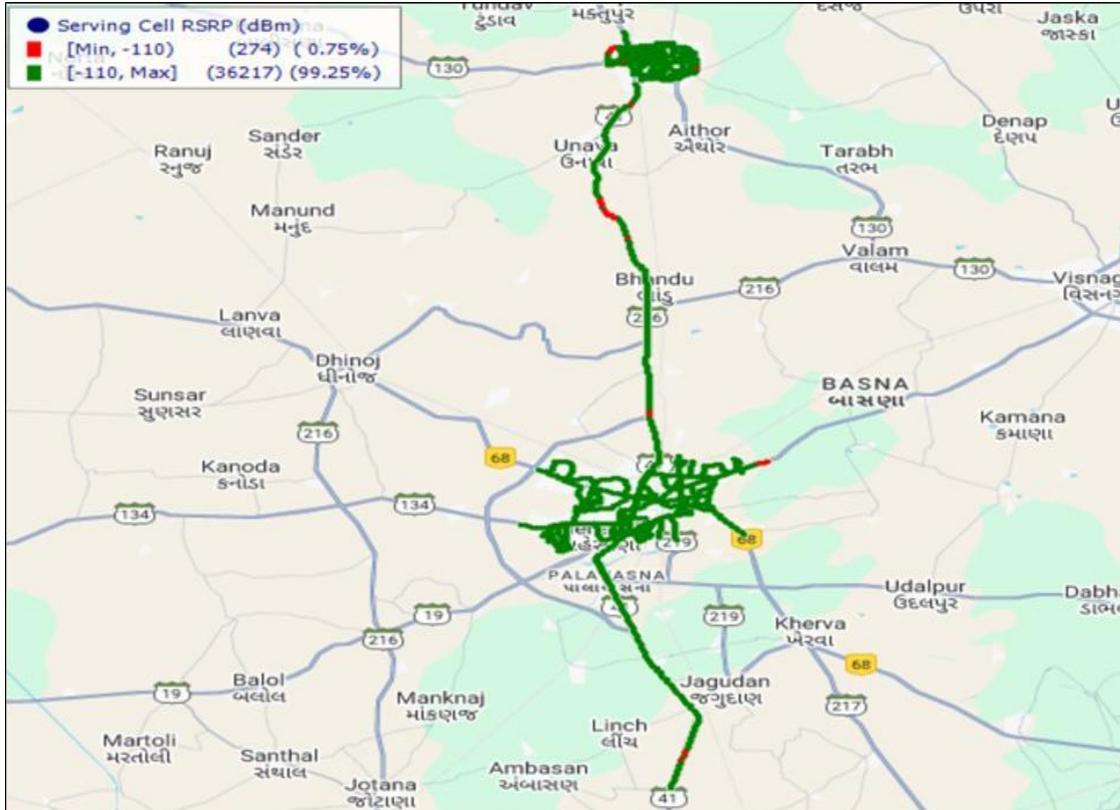


Figure-13: Signal strength 4G- VIL

5.Conclusion:

The operator wise comparative Analysis of various key parameters is given in table below:

S.No.	KPIs (Auto-selection mode (5G/4G/3G/2G))	Measured in	AIRTEL	BSNL	RJIL	VIL
1	Call Setup Success Rate (CSSR)	%	99.45	96.43	100.00	100.00
2	Drop Call Rate (DCR)	%	0.27	1.72	0.00	0.00
3	Call Silence rate (Mute Call)	%	0.00	4.03	0.95	0.00
4	Average MOS Score	1-5	4.10	2.37	4.30	4.31
5	TSP Offered typical download speed (In Mbps)	(Mbits/s)	21.58	5	15	15
6	Average Download Throughput (Data Speed)	(Mbits/s)	116.98	4.9	298.61	20.45
7	TSP Offered typical upload speed (In Mbps)	(Mbits/s)	5.62	3	7	8
8	Average Upload Throughput (Data Speed)	(Mbits/s)	29.35	8.27	52.14	8.14

BSNL in this drive test has not met the QoS benchmark of Call Setup Success Rate of 98% and the offered average download speed of 5 Mbps.