



Operator Assisted Drive Test Report

Gujarat Service Area

Siddhpur & Palanpur City

(03rd Nov 2025 to 05th Nov 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 November 2025 under the supervision of TRAI Regional Office (RO), Jaipur. Details of route/area covered during the OADT is as given below:

Date	Duration AM to PM	Drive test route	Distance / Locations covered
3 rd Nov-2025	09:00AM to 10:30PM	Siddhpur to Palanpur & Nearby Area	150 km
4 th Nov-2025	08:00AM to 8:00PM	Palanpur City	175 km
5 th Nov-2025	09:25AM to 05:00PM	Hotspot locations Siddhpur & Palanpur	9 Locations

Table-1: Drive test summary

2.2 Drive test routes

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

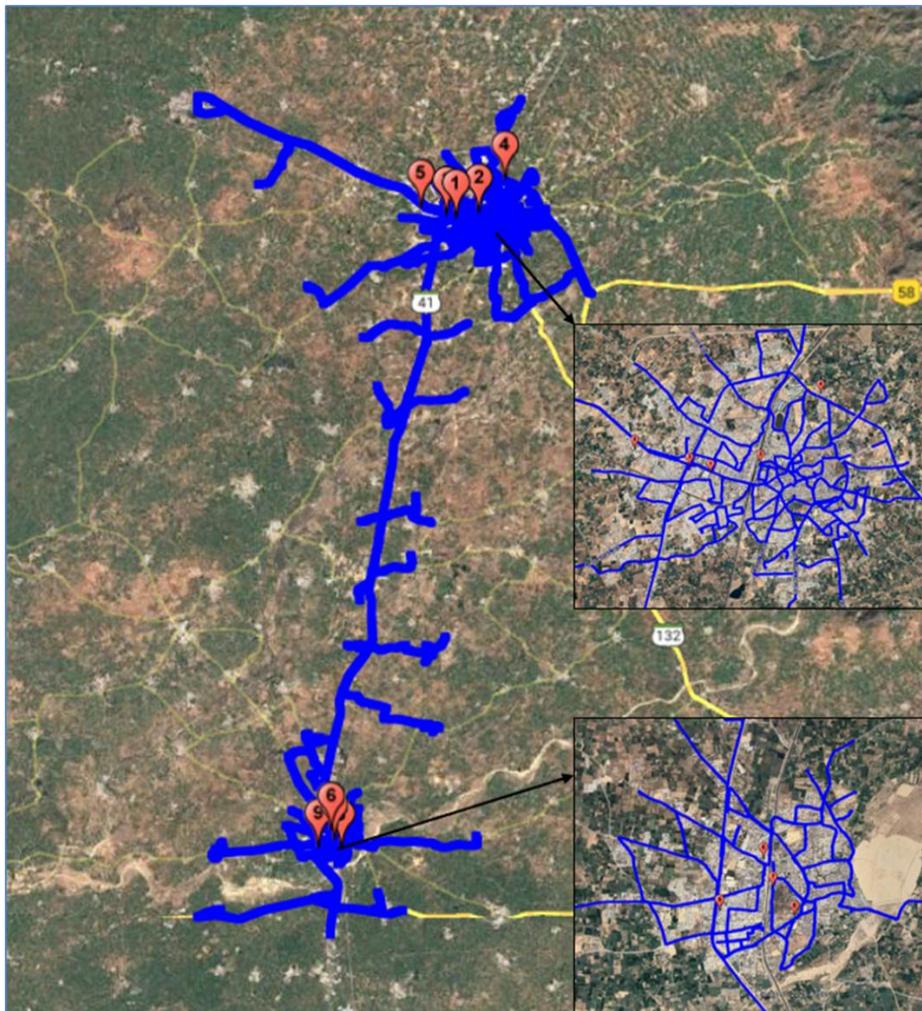


Figure-1: Drive Test Route map (Siddhpur and Palanpur)

2.3 Areas covered

(a) Siddhpur & Palanpur City

- **Siddhpur City-** Siddhpur to Palanpur Highway, Ahmedabad-Palanpur Highway passing through Siddhpur city, Bindu sarovar road, Farmer market area, Bus stand, railway Station, APMC Market. Area near Cancer Hospital, Police line area , Sunsagar Society and all other city areas.
- **Palanpur City-** Govt Bus Stand Palanpur, Angola road, Jampura road, Badarpura, Ganeshpura, Banas dairy road, Dharti township, Sardar Patel Nagar, Mansarovar Lake road, Bihari Bagh, malan darwaza and all other city areas.

(b) Hot spots Covered:

Sr No	City	Hotspot Location	Latitude & Longitude	Date of Measurement
1	Palanpur	Busport	24.17299/72.42040	5-Nov-25
2		Railway Station	24.17429/72.43124	5-Nov-25
3		Aroma Circle	24.17359/72.41693	5-Nov-25
4		RTO Office	24.18732/72.44325	5-Nov-25
5		Medi polish Hospital	24.17709/72.40667	5-Nov-25
6	Sidhpur	Bus Station	23.92245/72.36610	5-Nov-25
7		Railway Station	23.91970/72.36707	5-Nov-25
8		Govt Cancer Hospital	23.91416/72.37102	5-Nov-25
9		Govt Collage Of Nursing	23.91558/72.36107	5-Nov-25

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	700,850,2500
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:

This section provides summary of overall QoS performance of the telecom service provider's network in the Sidhpur and Palanpur City of Gujarat LSA by aggregating the results of drive tests conducted in month of November 2025 covering city drive, hotspots.

(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	543	460	487
Call Setup Success Rate %	100	99.78	100
Drop Call Rate %	0	0.66	0
Call Setup Time-Average (Second)	3.88	2.6	2.41
Handover Success Rate %	99.11	95.01	98.05

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

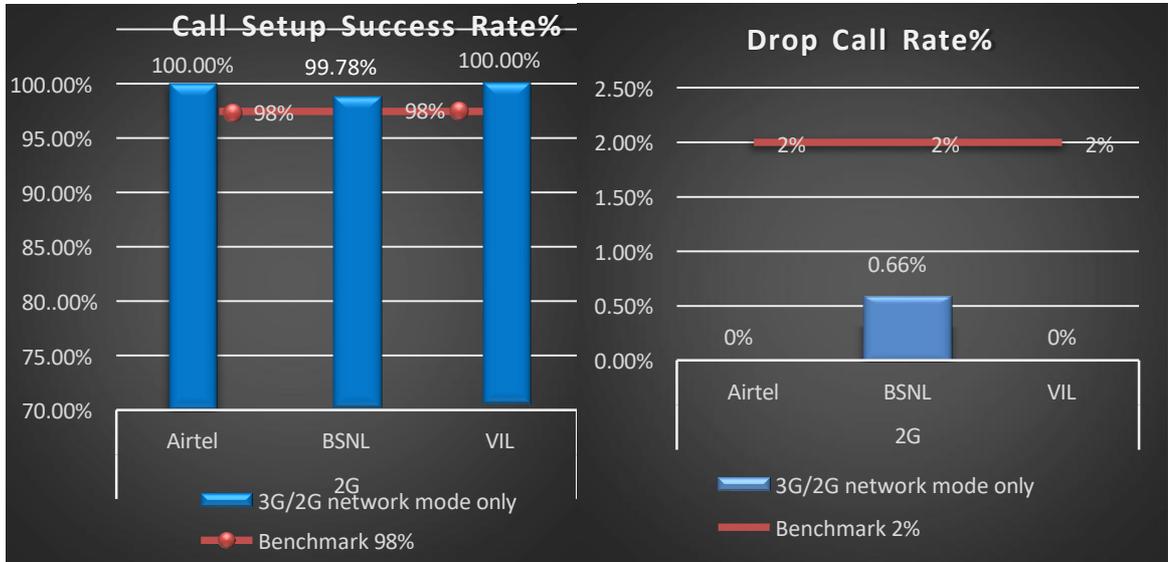


Figure-2: Call setup success rate and drop call rate performance.

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	0	N/A
2G	304	90	279

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	568	588	544	499
Call Setup Success Rate %	100	98.80	100%	100
Drop Call Rate %	0	0.86	0	0
Call Setup Time-Average (Second)	0.84	0.68	1.09	0.36
Handover Success Rate %	100	99.60	99.80%	100

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

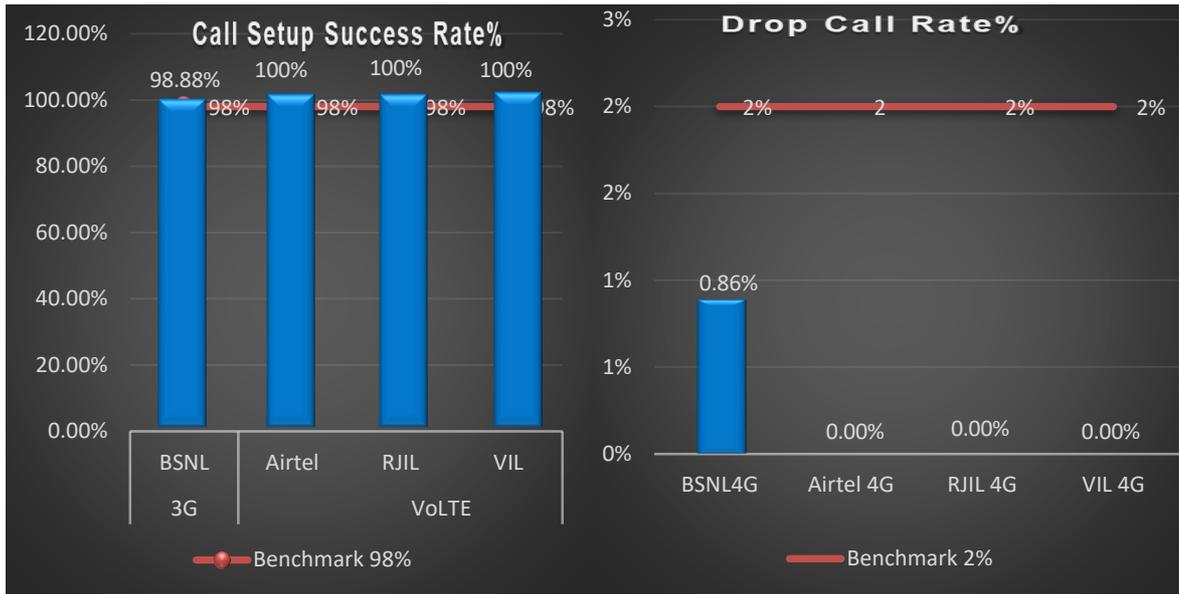


Figure-3: Performance for call setup success rate and drop call rate.

Parameter	Service Provider			
	Mobile-to-Mobile (5G/4G - Open Mode)			
	AIRTEL	BSNL	RJIL	VIL
Call Established (within service provider Network)	568	581	499	499
Packet Drop Rate (Downlink)	0.2	1.81	1.05	2.41
Packet Drop Rate (Uplink)	0.2	1.63	1.06	2.30
Number of silence call for > 2 sec.	1	8	18	0
Silence Call Rate %	0.17	0.79	1.87	0

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	RJIL	VIL
3G	NA	2	NA	NA
2G	304	32	NA	0
4G	631	180	405	531
5G	NA	NA	274	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	4624	*	4788	3318
Speech Quality (Average MOS Score)	4.06	*	4.23	4.31

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

*BSNL has not tested the 4G Voice parameters due to non-availability of testing equipment.

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

Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
Download Throughput (Mbits/s)	Average	156.92	15.8	291.79	29.45
	80th Percentile	242.85	21.7	448.80	42.34
	20th Percentile	72.63	17.2	113.23	12.94
Upload Throughput (Mbits/s)	Average	22.6	7.81	46.12	24.56
	80th Percentile	38.6	10.21	82.80	31.11
	20th Percentile	5.76	8.54	6.94	13.29
Latency (ms)	50th Percentile	25.5	34	25	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	NA	NA	258	NA
4G	631	180	405	531
3G	NA	2	NA	NA
2G	304	35	NA	00

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

(e) Hotspots

Hotspot testing has been done on 5 November 2025. Total 9 locations have been tested in the Sidhpur and Palanpur City.

i. Hotspot covered :

Sr No	City	Hotspot Location
1	Palanpur	Busport
2		Railway Station
3		Aroma Circle
4		RTO Office
5		Medi polish Hospital
6	Sidhpur	Bus Station
7		Railway Station
8		Govt Cancer Hospital
9		Govt Collage Of Nursing

Table-12: Hotspot covered in Sidhpur and Palanpur City

ii. Locations

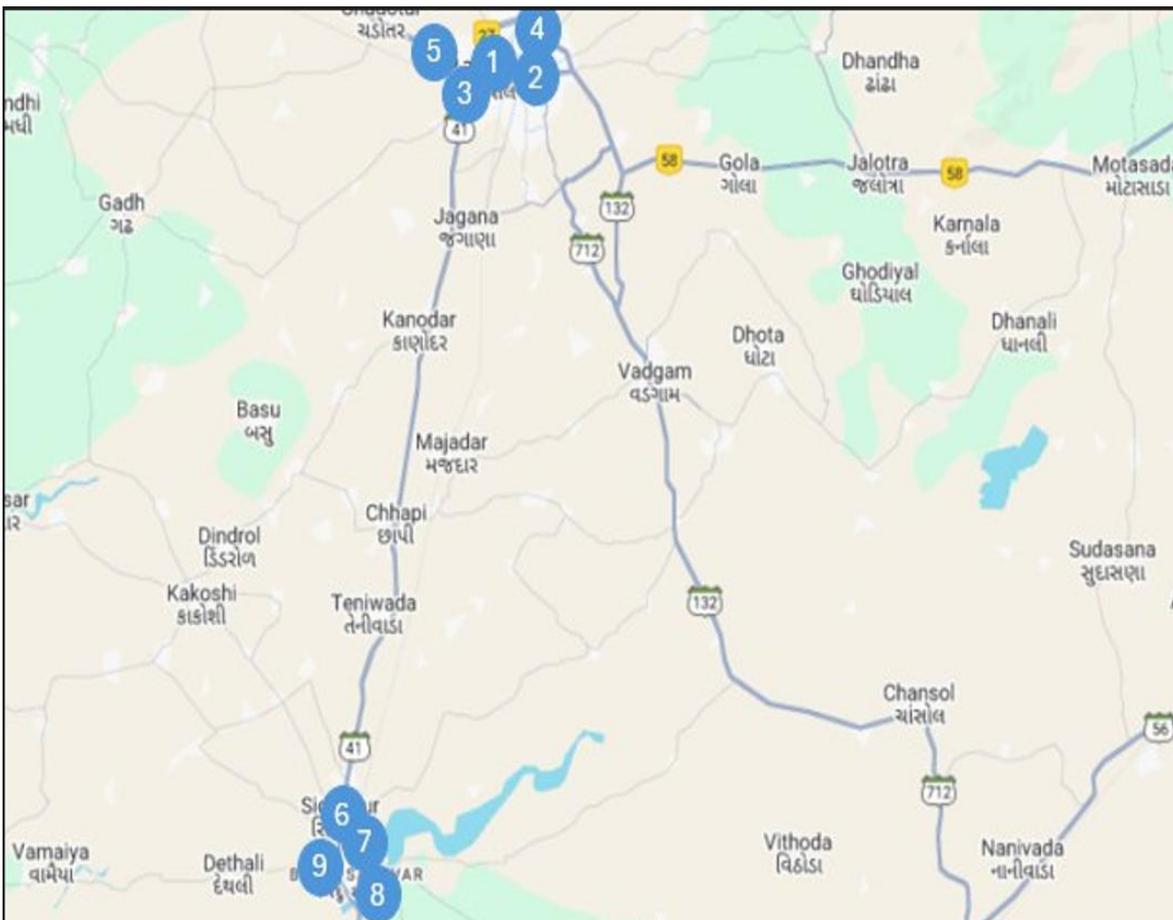


Figure- 4: Hotspot locations

iii. Voice performance

Overall Voice Performance				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	45	45	45	45
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	1.02	0.89	0.88	0.34

Table-13: Overall summary of voice call performance in network auto-selection mode (5G/4G/3G/2G).

Bus Station , Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	5	5	5	5
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	1.02	0.97	0.87	0.29

Table-14: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

Railway Station Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	5	5	5	5
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	0.98	0.93	0.86	0.36

Table-15: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

Aroma Circle, Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	5	5	5	5
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	1.16	0.92	0.86	0.40

Table-16: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

RTO Office, Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	5	5	5	5
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	1.04	0.98	0.94	0.33

Table-17: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

Medi Polish Hospital, Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	5	5	5	5
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	1.05	0.74	0.81	0.28

Table-18: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

Bus Station- Sidhpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	5	5	5	5
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	1.16	0.84	0.96	0.39

Table-19: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

Railway Station Sidhpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	5	5	5	5
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	1.31	0.86	0.86	0.45

Table-20: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

Govt. Cancer Hospital Sidhpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	5	5	5	5
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	1.06	0.99	0.96	0.26

Table-21: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

Govt. College Of Nursing Sidhpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	5	5	5	5
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Sec)	1.33	0.81	0.82	0.32

Table-22: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

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

Bus Station- Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	137.36	18	297.57	48.61
Download Session Setup Success Rate %	100	98.10	100	100
Upload Throughput Average (Mbits/s)	64.22	9	105.2	35.62
Upload Session Setup Success Rate %	100	98.14	100	100
Web Browsing Delay (Second)	12.15	4.96	2.16	3.30
Youtube Initial Buffer Delay (Second)	NA	NA	0.5	NA
Latency (ms)-50th Percentile	69.33	26	26.5	46.61
Jitter (ms)	2.44	7	3.05	4.48
Packet Loss Rate%	0	1.87	0	0

Table-23: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G)

Railway Station- Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	124.92	17	501.61	59.75
Download Session Setup Success Rate %	100	98.12	100	100
Upload Throughput Average (Mbits/s)	14.3	9	49.24	43.64
Upload Session Setup Success Rate %	100	98.18	100	100
Web Browsing Delay (Second)	15.23	4.98	1.88	3.27
Youtube Initial Buffer Delay (Second)	NA	NA	0.48	N/A
Latency (ms)-50th Percentile	45.86	28	21.5	38.21
Jitter (ms)	1.02	4	3.09	3.81
Packet Loss Rate%	0	1.87	0%	0

Table-24: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Aroma Circle-Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	172.76	16	517.19	46.76
Download Session Setup Success Rate %	100	98.16	100	100
Upload Throughput Average (Mbits/s)	51.32	8	161.13	39.15
Upload Session Setup Success Rate %	100	98.12	100	100
Web Browsing Delay (Second)	8.85	4.95	2.04	3.68
Youtube Initial Buffer Delay (Second)		NA	0.48	N/A
Latency (ms)-50th Percentile	51.2	23	32.5	45.78
Jitter (ms)	2.06	5	3.18	8.90
Packet Loss Rate%	0	1.82	0%	0

Table-25: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

RTO Office-Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	119.15	16	375.19	51.15
Download Session Setup Success Rate %	100	98.34	100	100
Upload Throughput Average (Mbits/s)	37.62	10	46.25	43.66
Upload Session Setup Success Rate %	100	98.14	100	100
Web Browsing Delay (Second)	5.18	4.92	1.78	3.36
Youtube Initial Buffer Delay (Second)		NA	0.50	N/A
Latency (ms)-50th Percentile	56.23	20	24.5	38
Jitter (ms)	1.64	5	3.30	4.23
Packet Loss Rate%	0	1.82	0%	0

Table-26: Overall Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Medi Polish Hospital-Palanpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	62.64	11	466.98	57.15
Download Session Setup Success Rate %	100	98.18	100	100
Upload Throughput Average (Mbits/s)	52.32	10	92.59	41.27
Upload Session Setup Success Rate %	100	98.86	100	100
Web Browsing Delay (Second)	10.89	4.92	1.95	3.30
Youtube Initial Buffer Delay (Second)		NA	0.46	N/A
Latency (ms)-50th Percentile	52.46	23	26	40
Jitter (ms)	2.28	4	2.73	5.94
Packet Loss Rate%	0	1.82	0%	0

Table-27: Overall Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Bus Station-Sidhpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	131.42	12	432.65	53.32
Download Session Setup Success Rate %	100	98.18	100	100
Upload Throughput Average (Mbits/s)	58.78	9	47.51	42.28
Upload Session Setup Success Rate %	100	98.18	100	100
Web Browsing Delay (Second)	10.08	4.91	1.78	3.61
Youtube Initial Buffer Delay (Second)		NA	0.48	N/A
Latency (ms)-50th Percentile	63.66	28	26	37
Jitter (ms)	1.08	4	2.99	3.68
Packet Loss Rate%	0	1.85	0%	0

Table-28: Overall Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Railway Station-Sidhpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	183.18	18	641.62	50.59
Download Session Setup Success Rate %	100	98.18	100	100
Upload Throughput Average (Mbits/s)	58.78	9	122.36	35.72
Upload Session Setup Success Rate %	100	98.18	100	100
Web Browsing Delay (Second)	10.94	4.97	1.8	3.17
Youtube Initial Buffer Delay (Second)		NA	0.47	N/A
Latency (ms)-50th Percentile	75.1	28	24	37
Jitter (ms)	2.4	4	3.24	4.48
Packet Loss Rate%	0	1.87	0%	0

Table-29: Overall Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Govt. Cancer Hospital-Sidhpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	110.1	17	666.10	50.67
Download Session Setup Success Rate %	100	98.12	100	100
Upload Throughput Average (Mbits/s)	32.75	9	121.94	42.54
Upload Session Setup Success Rate %	100	98.15	100	100
Web Browsing Delay (Second)	8.92	4.91	1.73	3.38
Youtube Initial Buffer Delay (Second)		NA	0.53	N/A
Latency (ms)-50th Percentile	59.7	28	22.75	39
Jitter (ms)	1.8	4	1.96	5.35
Packet Loss Rate%	0	1.87	0%	0

Table-30: Overall Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Govt. College Of Nursing-Sidhpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	141.28	15	401.15	51.10
Download Session Setup Success Rate %	100	98.73	100	100
Upload Throughput Average (Mbits/s)	74.38	9	94.89	41.84
Upload Session Setup Success Rate %	100	98.12	100	100
Web Browsing Delay (Second)	8.21	4.98	2.18	3.67
Youtube Initial Buffer Delay (Second)		NA	0.50	N/A
Latency (ms)-50th Percentile	76.4	28	23	38
Jitter (ms)	1.6	4	2.71	4.56
Packet Loss Rate%	0	1.87	0%	0

Table-31: Overall Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

4. TSP Wise signal Strength :

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

Table-32 : Signal strength legend format.

A. Airtel

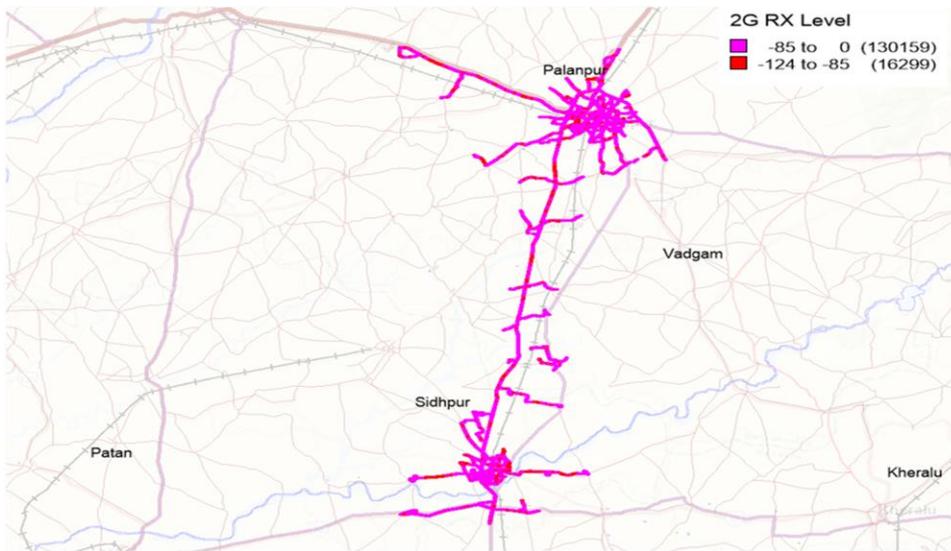


Figure-5: Signal strength 2G /3G network mode – AIRTEL

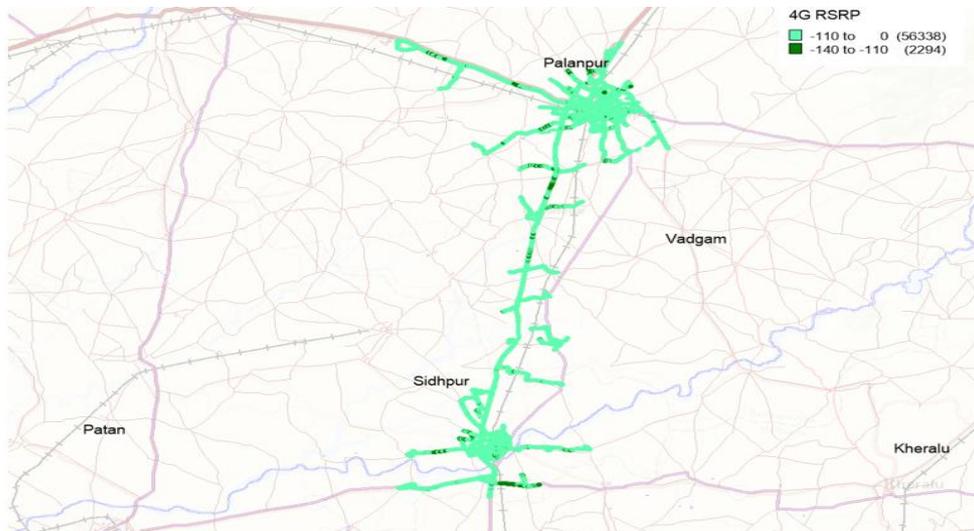


Figure-6: Signal strength auto-selection mode 4G– AIRTEL.

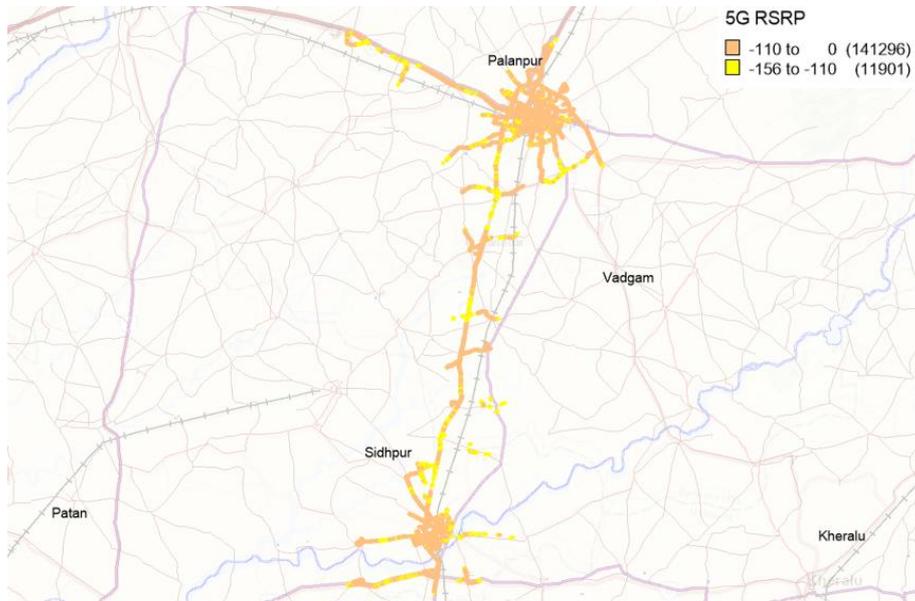


Figure-7: Signal strength auto-selection mode 4G- AIRTEL.

B. BSNL

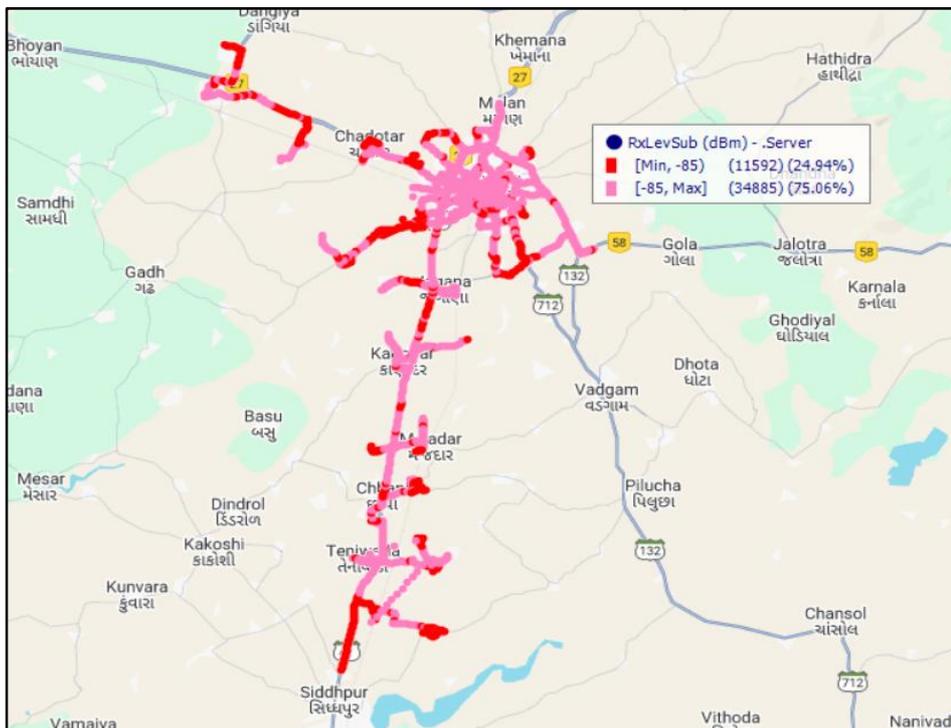


Figure-8: Signal strength auto-selection mode 3G/2G - BSNL

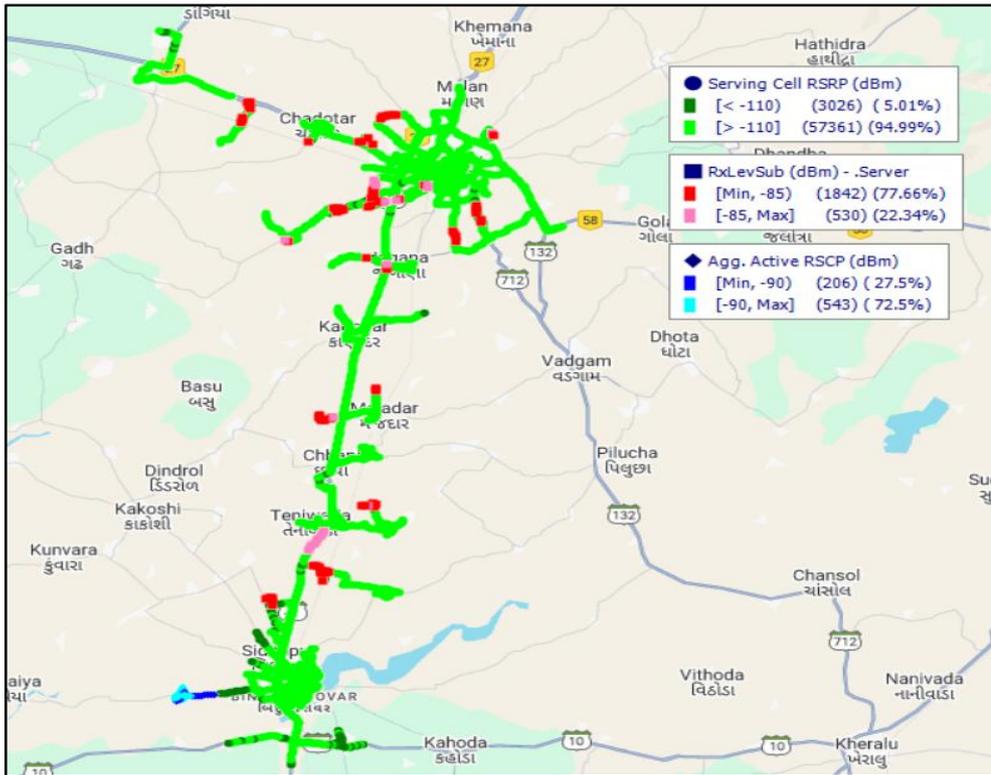


Figure-9: Serving technology plots in auto-selection mode (5G/4G/3G/2G) –BSNL

C. RJIL

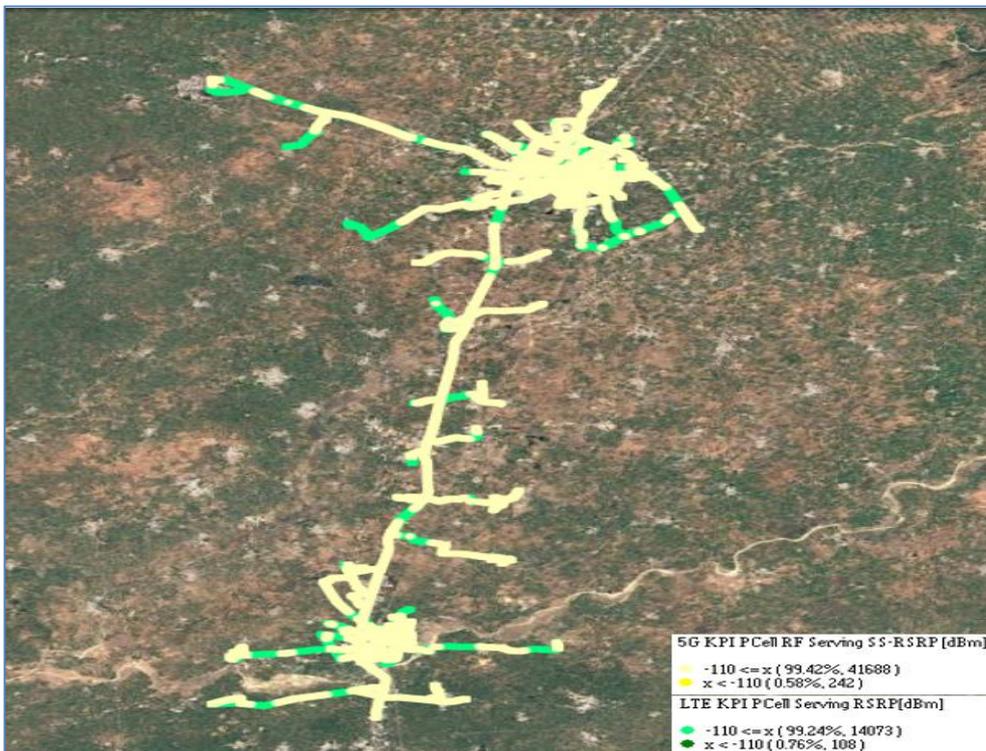


Figure-10: Signal strength auto-selection mode 5G/4G/3G/2G – RJIL.

D. VIL

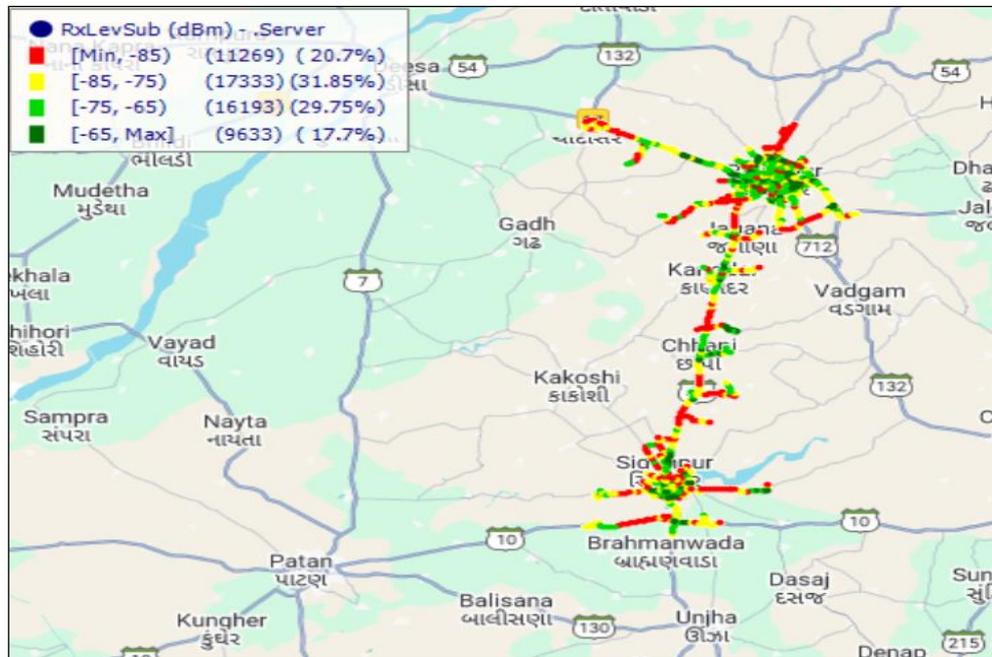


Figure-11: Signal strength 3G/2G network mode – VIL.

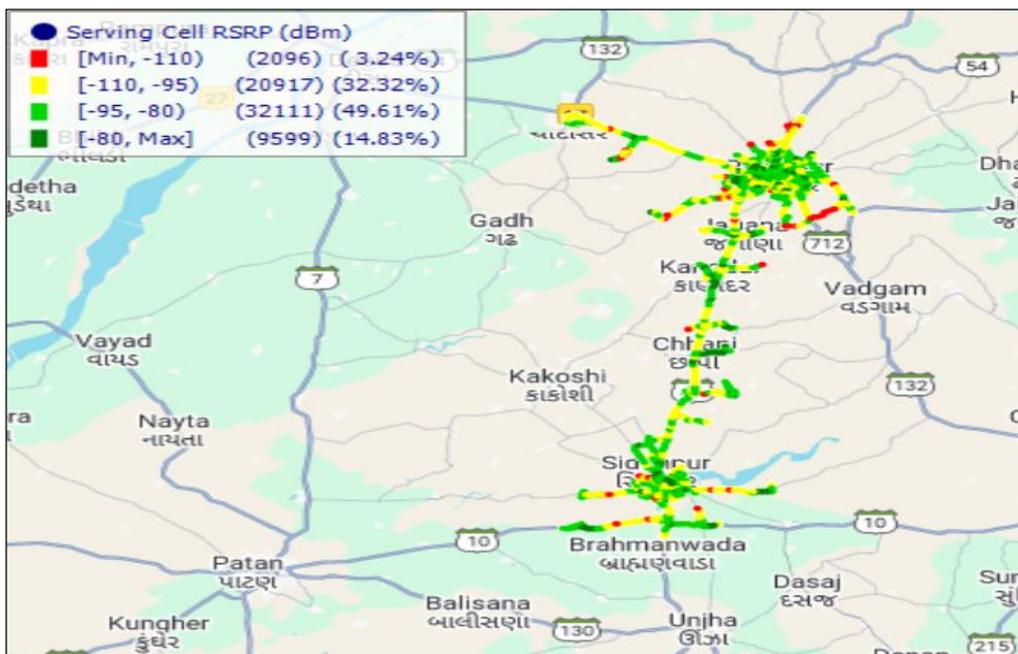


Figure 12-: Signal strength auto-selection mode 5G/4G/3G/2G – VIL

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)	%	100.00	98.80	100.00	100.00
2	Drop Call Rate (DCR)	%	0.00	0.86	0.00	0.00
3	Call Silence rate (Mute Call)	%	0.17	0.79	1.87	0
4	Average MOS Score	1-5	4.06	NA*	4.23	4.31
5	TSP Offered typical download speed (In Mbps)	(Mbits/s)	18.45	3.54	15.00	15.00
6	Average Download Throughput (Data Speed)	(Mbits/s)	156.92	15.8	291.79	29.45
7	TSP Offered typical upload speed (In Mbps)	(Mbits/s)	4.79	2.93	7.00	8.00
8	Average Upload Throughput (Data Speed)	(Mbits/s)	22.6	7.81	46.12	24.56

Table-33 : Operator wise comparative Analysis of various key parameters

*NA-BSNL has not tested the 4G Voice parameters due to non-availability of testing equipment.