



Operator Assisted Drive Test Report

Rajasthan Service Area

Nagaur City

(17th Dec 2025 to 19th Dec 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 Rajasthan License Service Area (LSA) during the month of December 2025 under the supervision of TRAI Regional Office (RO), Jaipur. Details of route/area covered during the OADT is as given below:

Sl. No	Drive test route	Type of route	Distance covered (KMs)/ Locations	From date	To date
1	Nagaur	City	80 km	17-12-2025	18-12-2025
2	Nagaur	Hotspot	05 Locations	19-12-2025	19-12-2025

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.

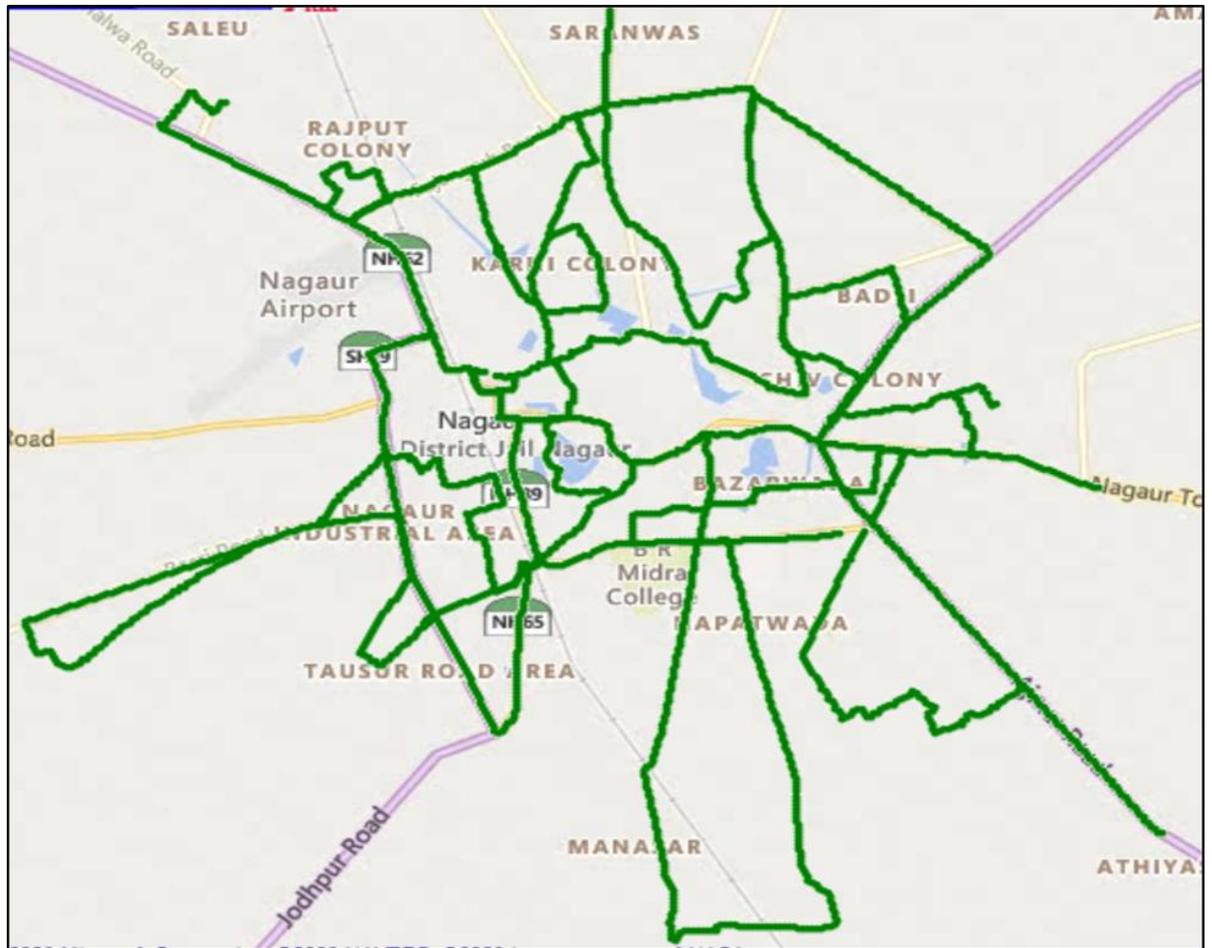


Figure-1: Drive Test Route map (Nagaur)

2.3 Areas covered

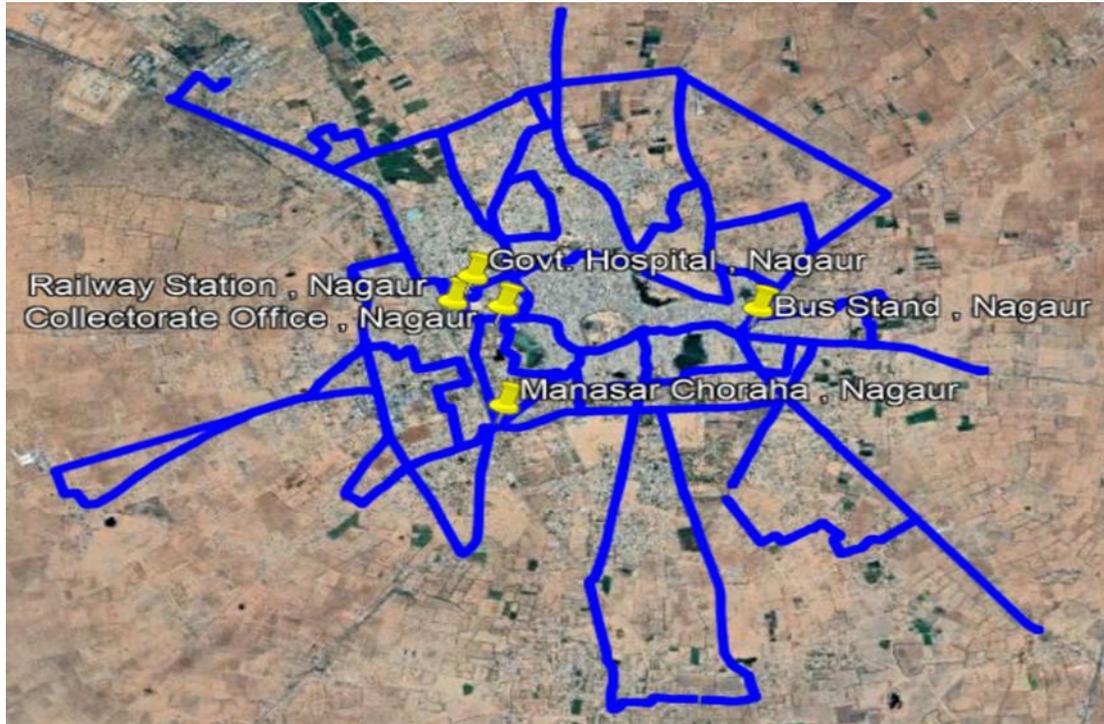
(a) Nagaur City

Bus stand, Chenar didwana rd , Vallabh circle , Hanumanbhag , Athiyasan Ajmer rd , BSF Colony , Laxmi nagar colony , Housing board , Taushar , Manasar circle , Sanjay colony , Shiv ji colony, Railway station, Collector office , Phed colony , Kansaro ka mohalla, Karni colony , Karim Nagar, Nakas , Rajput colony, Ricco area and Indra colony.etc

(b) Hot spots Covered:

Sr No	Hotspot Location
1	Manasar Chotaha, Nagaur
2	Railway Station, Nagaur
3	Bus Stand, Nagaur
4	Collectorate Office, Nagaur
5	Govt Hospital, Nagaur

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 Nagaur City of Rajasthan LSA by aggregating the results of drive tests conducted in month of December 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	182	280	165
Call Setup Success Rate %	100	98.57	100
Drop Call Rate %	0%	0%	0%
Call Setup Time-Average (Second)	3.32	5.01	3.21
Handover Success Rate %	99.11	99.16	97.05

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

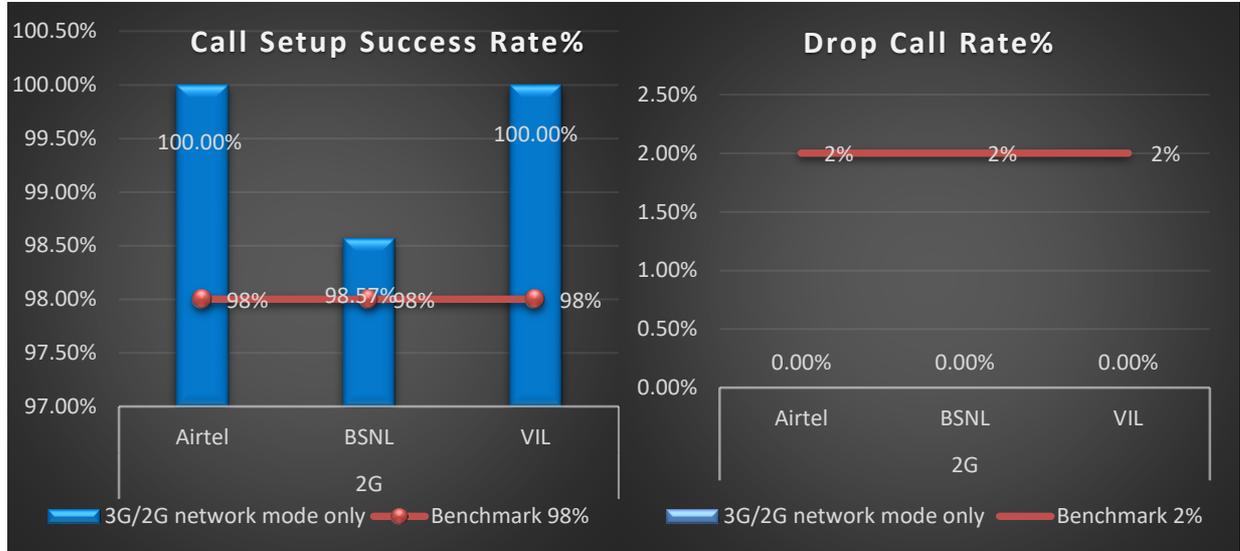


Figure-2: Call setup success rate and drop call rate performance.

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	15	NA
2G	96	32	80

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	184	280	185	167
Call Setup Success Rate %	100%	98.57%	100%	100%
Drop Call Rate %	0%	0%	0%	0%
Call Setup Time-Average (Second)	1.8	5.01	0.71	0.26
Handover Success Rate %	99.20%	99.16%	99.67%	100%

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

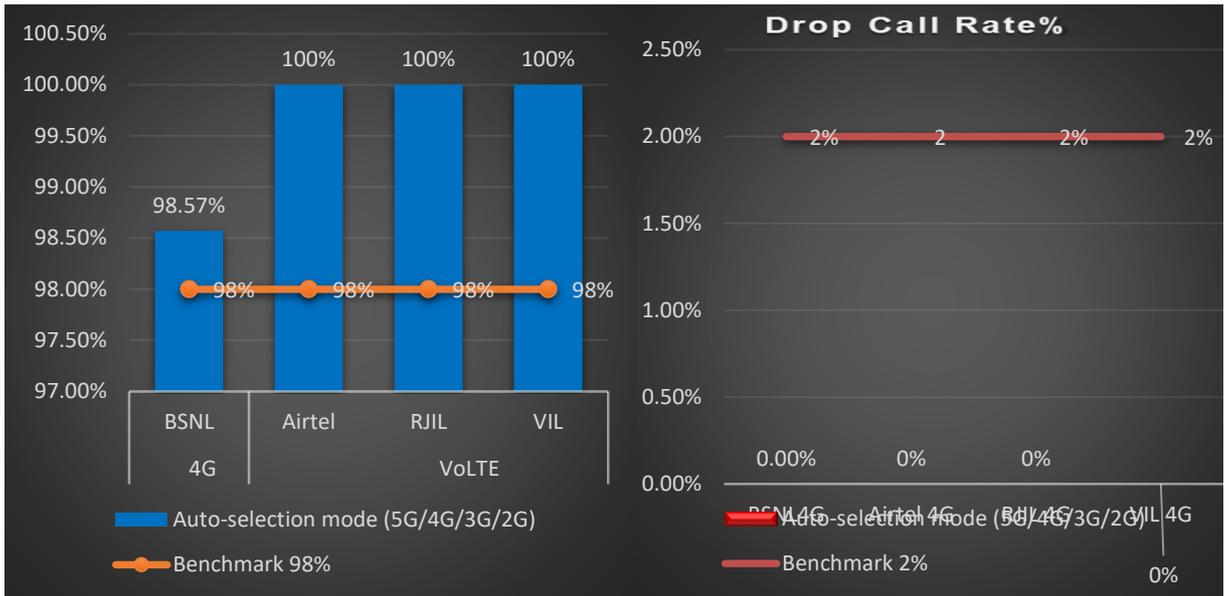


Figure-3: Performance for call setup success rate and drop call rate.

Parameter	Service Provider			
	Mobile-to-Mobile (5G/4G - Open Mode)			
	AIRTEL	BSNL	RJIL	VIL
Call Established (within service provider Network)	228	NA	173	100
Number of silences call for >4 Sec	1	NA	0	0
Silence Call Rate %	0.003%	NA	0.00%	0.00%
Number of silence instances for >4 Sec	1	NA	0	0
Number of silence instances for >3 Sec	2	NA	2	0
Number of silence instances for >2 sec	4	NA	4	0
RTP Jitter (4G & 5G) in ms	3.39	NA	8.39	55.32
Packet loss Rate Downlink %	0.22%	NA	0.81%	0.16%
Packet loss Rate Uplink %	0.24%	NA	0.87%	0.11%

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
5G	0	-	69	NA
4G	177	49	84	98
3G	NA	15	NA	NA
2G	0	32	NA	0

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 for calls	1135	NA	857	1039
Speech Quality (Average MOS Score)	4.09	NA	4.16	4.10
Number of samples with MOS >=4 to <5 (Excellent)	2070	NA	681	892
Number of samples with MOS >=3 to <4 (Good)	173	NA	105	127
Number of samples with MOS >=2 to <3 (Fair)	14	NA	46	17
Number of samples with MOS >=1 to <2 (Poor)	11	NA	25	3
%age of samples with MOS >=4 to <5 (Excellent)	91.19%	NA	79.46%	85.85%
%age of samples with MOS >=3 to <4 (Good)	7.62%	NA	12.25%	12.22%
%age of samples with MOS >=2 to <3 (Fair)	0.70%	NA	5.37%	1.64%
%age of samples with MOS >=1 to <2 (Poor)	0.48%	NA	2.92%	0.29%

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	113.64	22.08	273.22	23.21
	80th Percentile	173.36	27.8	345.78	34.63
	20th Percentile	41.53	6.7	178.88	9.28
Upload Throughput (Mbits/s)	Average	42.6	4.07	46.83	12.27
	80th Percentile	50.34	5.9	64.87	19.23
	20th Percentile	13.71	1.5	27.91	3.99
Latency (ms)	50th Percentile	28.7	35	19	23.50

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	95	NA
4G	126	49	0	90
3G	NA	36	NA	NA
2G	0	38	NA	0

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

(d) Hotspots

Hotspot testing has been done on 19th December 2025. Total 5 locations have been tested in the Nagaur City.

i. Hotspot covered :

Sr No	Hotspot Location
1	Manasar Chotaha, Nagaur
2	Railway Station, Nagaur
3	Bus Stand, Nagaur
4	Collectorate Office, Nagaur
5	Govt Hospital, Nagaur

Table-12: Hotspot covered in Nagaur City

ii. Voice performance

Overall, Voice Performance				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	50	50	50	50
Call Setup Success Rate %	100%	100%	100%	100%
Drop Call Rate %	0.00%	0.00%	0.00%	0.00%
Call Setup Time-Average (Sec)	1.39	2.92	0.74	0.23

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

Manasar Chotaha, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100%	100%	100%	100%
Drop Call Rate %	0.00%	0.00%	0.00%	0.00%
Call Setup Time-Average (Sec)	1.46	2.90	0.75	0.20

iii. **Table-14:** Summary of voice call performance in network auto-selection mode

5G/4G/3G/2G).

Railway Station, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100%	100%	100%	100%
Drop Call Rate %	0.00%	0.00%	0.00%	0.00%
Call Setup Time-Average (Sec)	1.21	2.92	0.71	0.22

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

Bus Stand, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100%	100%	100%	100%
Drop Call Rate %	0.00%	0.00%	0.00%	0.00%
Call Setup Time-Average (Sec)	1.13	2.91	0.65	0.21

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

Collectorate Office, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100%	100%	100%	100%
Drop Call Rate %	0.00%	0.00%	0.00%	0.00%
Call Setup Time-Average (Sec)	1.56	2.95	0.93	0.25

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

Govt Hospital, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100%	100%	100%	100%
Drop Call Rate %	0.00%	0.00%	0.00%	0.00%
Call Setup Time-Average (Sec)	1.58	2.92	0.65	0.27

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

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

Overall Data Performance				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	259.40	23.82	347.96	38.92
Download Throughput 80th Percentile (Mbit/s)	292.17	31.23	402.06	46.78
Download Throughput 20th Percentile (Mbit/s)	51.36	9.48	262.90	26.59
Download Session Setup Success Rate %	100%	100%	100%	100%
Upload Throughput Average (Mbits/s)	50.69	6.08	93.80	23.53
Upload Throughput 80th Percentile (Mbit/s)	43.74	9.66	130.96	28
Upload Throughput 20th Percentile (Mbit/s)	15.27	2.48	63.02	19.7
Upload Session Setup Success Rate %	100%	100%	100%	100%
Web Browsing Delay (Second)	2.67	38ms	3.15	1.58
Youtube Initial Buffer Delay (Second)	0.87	2.7	0.47	0.72
Latency (ms)-50th Percentile	36	39	23.42	19
Jitter (ms)	2.75	19	6.14	4.62
Packet Loss Rate%	0.00%	0.00%	0.56%	0.00%

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

Manasar Chotaha, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	224.15	47.30	261.46	24.331
Download Session Setup Success Rate %	100%	100%	100%	100%
Upload Throughput Average (Mbits/s)	63.60	2.23	82.10	20.76
Upload Session Setup Success Rate %	100%	100%	100%	100%
Web Browsing Delay (Second)	2.48	35ms	4.03	2.09
Youtube Initial Buffer Delay (Second)	0.89	1.54	0.49	0.79
Latency (ms)-50th Percentile	21.70	41	15.21	21
Jitter (ms)	2.58	15ms	5.85	4.76
Packet Loss Rate%	0.00%	0.00%	0.1%	0.00%

Table-20: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G)

Railway Station, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	130.31	21.62	267.40	43.81
Download Session Setup Success Rate %	100%	100%	100%	100%
Upload Throughput Average (Mbits/s)	48.74	10.62	153.63	27.50
Upload Session Setup Success Rate %	100%	100%	100%	100%
Web Browsing Delay (Second)	3.32	39ms	3.69	1.57
Youtube Initial Buffer Delay (Second)	0.79	2.36	0.42	1.07
Latency (ms)-50th Percentile	20.43	40	38.72	20.00
Jitter (ms)	1.73	19ms	5.04	2.91
Packet Loss Rate%	0%	0%	0.4%	0%

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

Bus Stand, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	398.78	13.83	474.25	45.02
Download Session Setup Success Rate %	100%	100%	100%	100%
Upload Throughput Average (Mbits/s)	46.82	3.85	116.46	21.52
Upload Session Setup Success Rate %	100%	100%	100%	100%
Web Browsing Delay (Second)	2.79	49	1.14	1.31
Youtube Initial Buffer Delay (Second)	0.62	2.11	0.43	0.99
Latency (ms)-50th Percentile	30.5	42ms	22.25	17.35
Jitter (ms)	2.72	19ms	7.22	3.73
Packet Loss Rate%	0%	0%	1.3%	0%

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

Collectorate Office, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	264.78	20.10	353.75	53.848
Download Session Setup Success Rate %	100%	100%	100%	100%
Upload Throughput Average (Mbits/s)	52.13	9.24	54.07	30.038
Upload Session Setup Success Rate %	100%	100%	100%	100%
Web Browsing Delay (Second)	2.14	41	3.52	1.31
Youtube Initial Buffer Delay (Second)	0.83	1.28	0.53	0.99
Latency (ms)-50th Percentile	28.7	38	20.43	18.00
Jitter (ms)	2.54	18ms	6.03	3.31
Packet Loss Rate%	0%	0%	0.7%	0%

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

Govt Hospital, Nagaur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	278.96	55.99	382.94	27.15
Download Session Setup Success Rate %	100%	100%	100%	100%
Upload Throughput Average (Mbits/s)	42.16	2.23	62.74	15.45
Upload Session Setup Success Rate %	100%	100%	100%	100%
Web Browsing Delay (Second)	2.6	38	3.35	1.24
Youtube Initial Buffer Delay (Second)	1.21	2.23	0.46	0.75
Latency (ms)-50th Percentile	26.84	40	20.53	23.00
Jitter (ms)	4.16	18ms	6.55	8.45
Packet Loss Rate%	0%	0%	0.3%	0%

Table-24: 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	Bright Green
		< -110 dBm	Dark Green
5G	RSRP	≥ -110 dBm	Yellow
		< -110 dBm	Orange

Table-25 : Signal strength legend format.

A. Airtel



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



Figure-6: Signal strength auto-selection mode 5G/4G/2G- AIRTEL.

B. BSNL

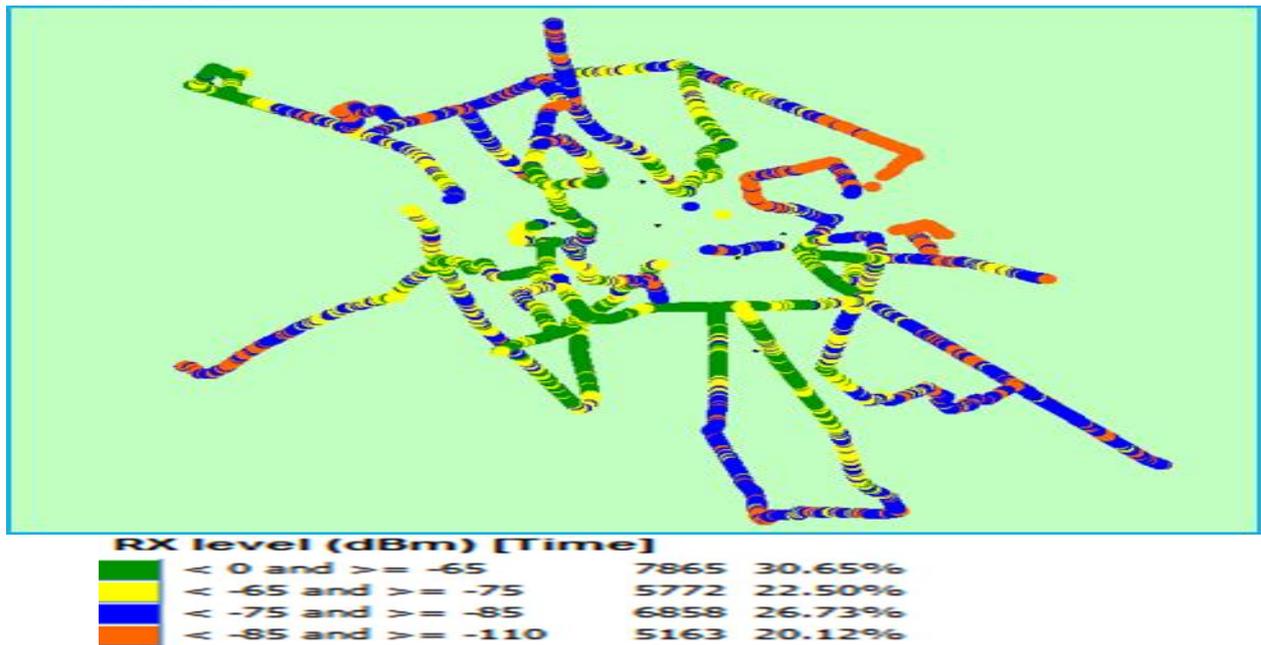


Figure-7: Serving technology plots in 3G/2G mode -BSNL

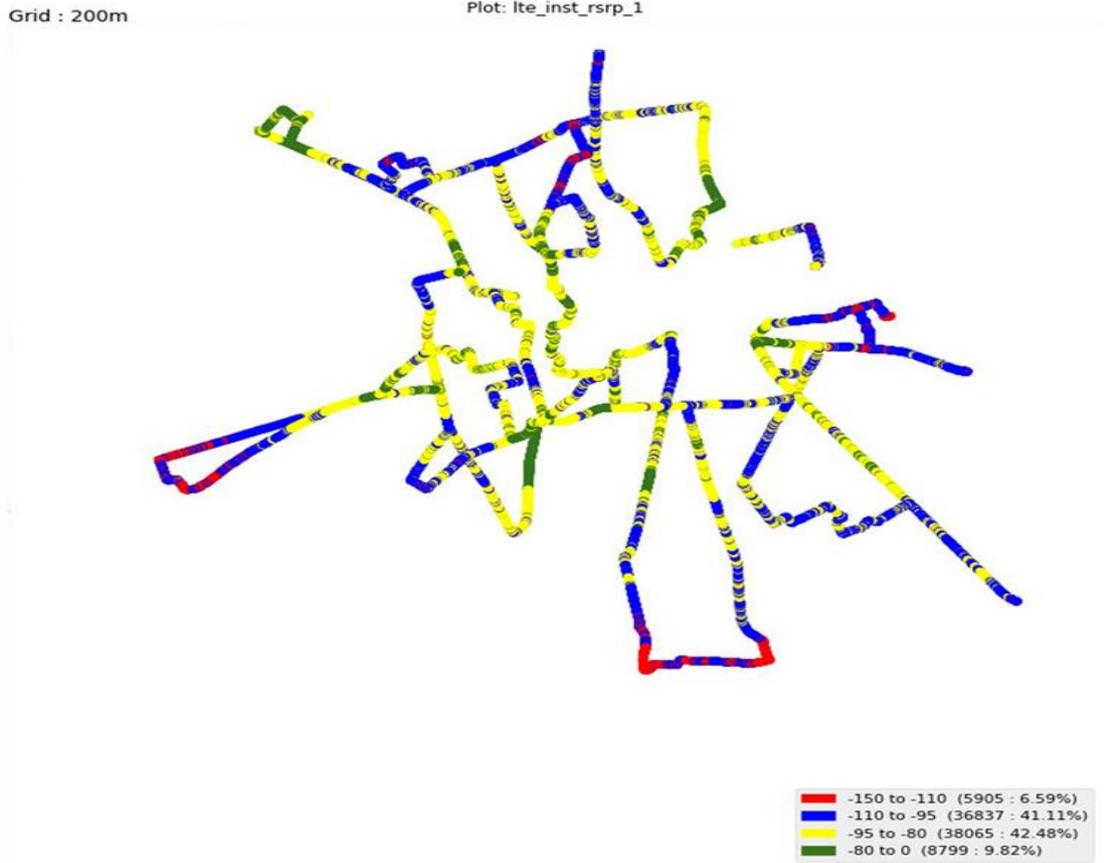


Figure-8: Serving technology plots in auto-selection mode (5G/4G/3G/2G) –BSNL

C. RJIL

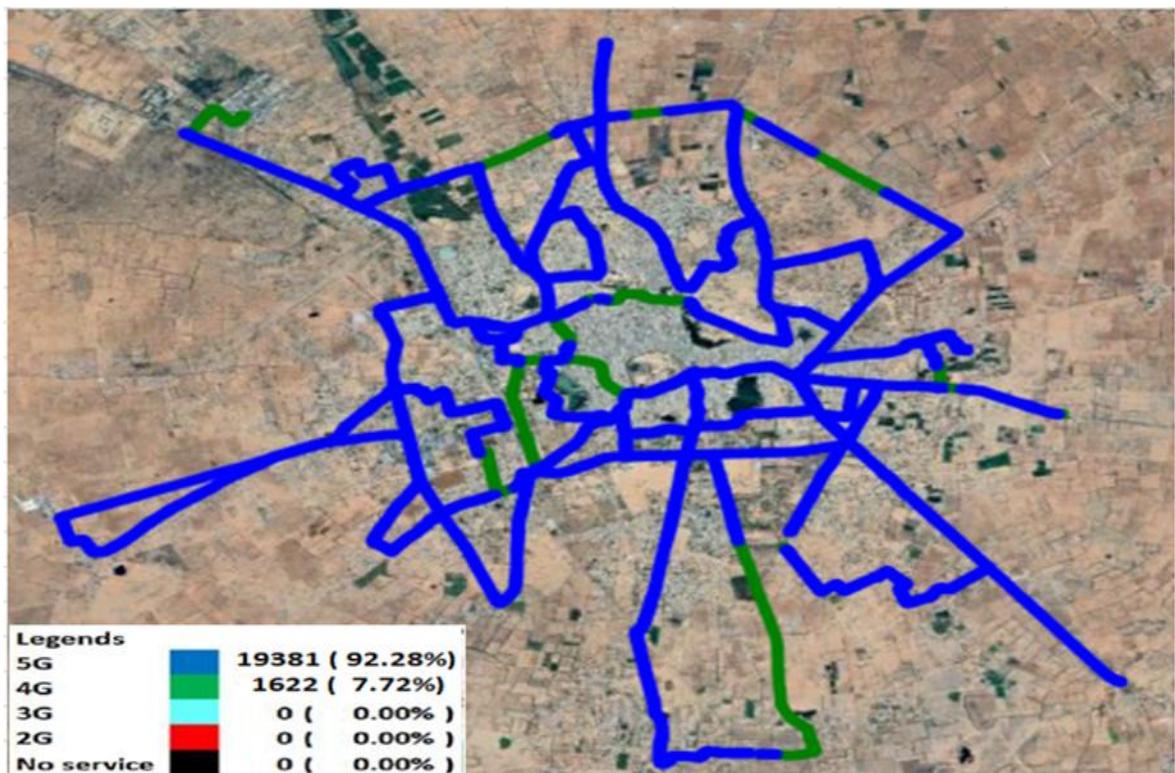


Figure-10: Signal strength auto-selection mode 5G/4G/3G/2G – RJIL.

D. VII

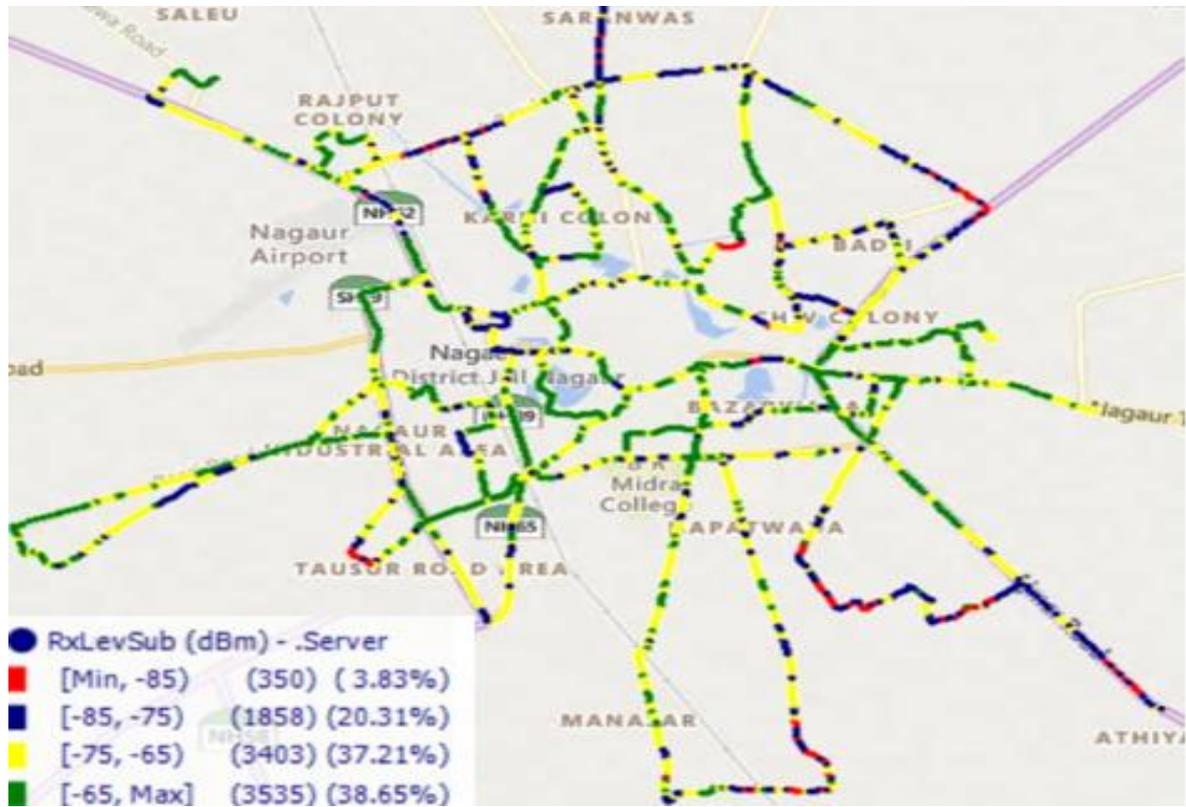


Figure-11: Signal strength 3G/2G network mode – VIL.

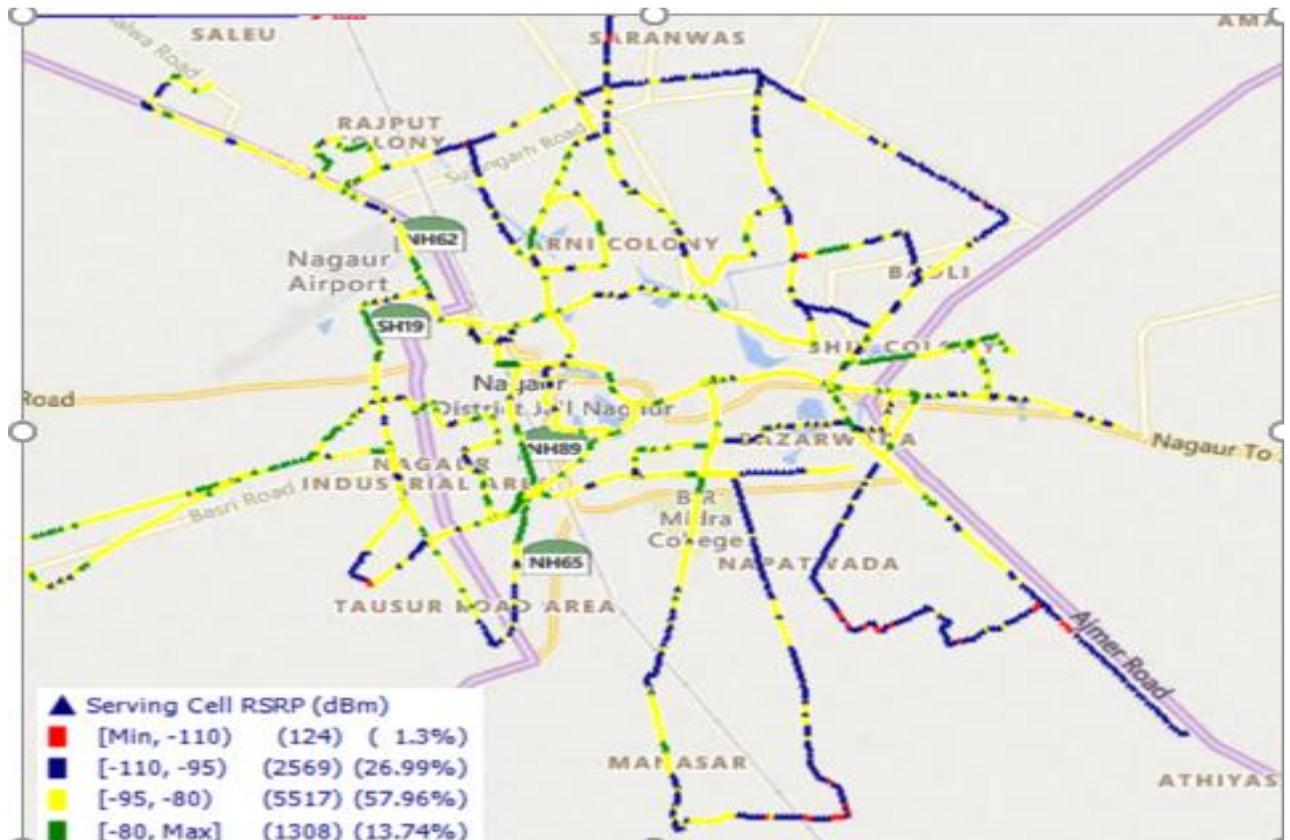


Figure 12--: Signal strength auto-selection mode 5G/4G/3G/2G – VIL

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))	Measure d in	AIRTEL	BSNL	RJIL	VIL
1	Call Setup Success Rate (CSSR)	%	100%	98.57%	100%	100%
2	Drop Call Rate (DCR)	%	0%	0%	0%	0%
3	Call Silence rate (Mute Call)	%	0.003%	NA	0.00%	0.00%
4	Average MOS Score	1-5	4.09	NA	4.16	4.10
5	TSP Offered typical download speed (In Mbps)	(Mbits/s)	27.64	4	15	15
6	Average Download Throughput (Data Speed)	(Mbits/s)	113.64	22.08	273.22	23.21
7	TSP Offered typical upload speed (In Mbps)	(Mbits/s)	11.5	2	7	8
8	Average Upload Throughput (Data Speed)	(Mbits/s)	42.6	4.07	46.83	12.27

Table-26 : Operator wise comparative Analysis of various key parameters

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