



TELECOM REGULATORY AUTHORITY OF INDIA

Operator Assisted Drive Test Report

Limkheda City (Gujarat LSA)

April 2026

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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 finalised 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 April 2026 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	Duration of drive test
1	Limkheda	City	92 Km	22-04-2026	22-04-2026	9AM TO 1PM 5PM TO 8PM
2	Limkheda	Hotspot	01 Location	22-04-2026	22-04-2026	9AM TO 1PM 5PM TO 8PM

Table-1: Drive test summary

2.2 Drive test routes



Figure-1: Drive test routes

The map provides overview of drive test routes indicating city drive & hotspots shown on the map.

2.3 Summary of areas covered

a) Limkheda-Circuit House:- Taluka shala, BRC Bhavan Limkheda ,Vishram Gruh ,Mota Hathidhara,Mahaveer Mega Mall, Bank Of Baroda ATM, Shree Keila Maiya Nasta House,Shiv Shakti Kiranastore, B.Ed.College Singvad

b) Hotspot

1. Limkheda-Circuit House

2.4 Telecom service providers detected frequency bands

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

S.No.	Name of TSP	Technology	Frequency Bands (In MHz)
1	Bharti Airtel Ltd.	2G	1800
2	Bharti Airtel Ltd.	4G	900,1800,2100,2300
3	Bharti Airtel Ltd.	5G	3400
4	BSNL	2G	900
5	BSNL	3G	NA
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	L1800,L2100,L2500,L900

Table 2: Telecom service provider (TSP) covered in OADT.

2.5 Use of TRAI MY Speed App :

The TRAI MySpeed App is a mobile application also used during the Drive test to measure and monitor the quality of mobile broadband services experienced by users at random static/hotspot locations in Limkheda city. It helps both consumers and TRAI assess the actual performance of telecom networks.

The results are summarized below and the screenshots of corresponding tests is attached at Annexure-I:

S.No	Date	Time	Location	TSP	DL Speed	UL Speed	Latency	Packet Loss	Jitter	Coverage	Technology
1	APR,22,2026	8:53 PM	Delsar Village	AIRTEL	68.8	8.04	67 ms	0.00%	6.09	-97	4G
2	APR,22,2026	12:50 PM	Dabhada	AIRTEL	76.4	19.81	41 ms	0.00%	4.79	-92	4G
3	APR,22,2026	10:44 AM	Limkheda	AIRTEL	284.25	6.2	31 ms	0.00%	3.66	-96	5G
4	APR,22,2026	8:53 PM	Delsar Village	AIRTEL	68.8	8.04	67 ms	0.00%	6.09	-97	4G
5	APR,22,2026	6:33 PM	Ranapur Khurd	BSNL	21.57	2.67	53 ms	0.50%	6.21	-96	4G
6	APR,22,2026	10:49 AM	Limkheda	BSNL	11.58	11.92	54 ms	0.00%	6.02	-85	4G
7	APR,22,2026	12:34 PM	Limkheda	RJIL	208.52	18.11	40 ms	0.00%	4.64	-75	5G
8	APR,22,2026	6:20 PM		RJIL	240.74	16.34	55 ms	0.00%	6.69		5G
9	APR,22,2026	10:47 AM	Limkheda	VIL	34.16	18.32	49 ms	0.00%	4.07	-92	4G
10	APR,22,2026	8:57 AM	Delsar Village	VIL	37.22	12.91	48 ms	0.00%	4.33	-93	4G
11	APR,22,2026	1:15 PM	Mangal Mahudi	VIL	36.13	13.98	48 ms	0.00%	4.54	-102	4G
12	APR,22,2026	6:36 PM	Ranapur Khurd	VIL	27.17	10.9	47 ms	0.00%	4.45	-104	4G

Detailed QoS Performance Analysis

3. Detailed QoS performance analysis

3.1 Overview

This section covers analysis on performance of various categories of drives like city, hotspots and walk test for all telecom service providers, the results of drive tests conducted are shown individually for respective areas/locations.

3.2 City

Drive test has been conducted on 22th April 2026 in Limkheda City.(refer Table-1)

3.2.1 Drive test route



Figure- 2: Drive test routes.

3.2.2 Areas covered:

Taluka shala, BRC Bhavan Limkheda ,Vishram Gruh ,Mota Hathidhara,Mahaveer Mega Mall, Bank Of Baroda ATM, Shree Keila Maiya Nasta House,Shiv Shakti Kiranastore, B.Ed.College Singvad.

3.2.3 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	38	*	48
Call Setup Success Rate %	100.00	*	100.00
Drop Call Rate %	0.00	*	0.00
Call Setup Time-Average (Second)	3.08	*	10.72
Handover Success Rate %	100	*	93.75

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

*BSNI do not have 3G/2G coverage footprint in the DT Route.

(b) Technology wise Unique cell id's covered in voice test: This section represents technology wise Number of unique cell id's covered in Voice test.

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	*	NA
2G	13	*	17

Table-4: 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.
- *BSNI do not have 3G/2G coverage footprint in the DT Route.

(c) 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	43	63	59	47
Call Setup Success Rate %	100.00	98.41	100.00	100.00
Drop Call Rate %	0.00	1.61	0.00	0.00
Call Setup Time Average (Second)	0.46	0.97	1.03	0.46
Handover Success Rate %	100.00	100.00	100.00	100.00

Table-5: Summary of voice call performance in network auto-selection mode.

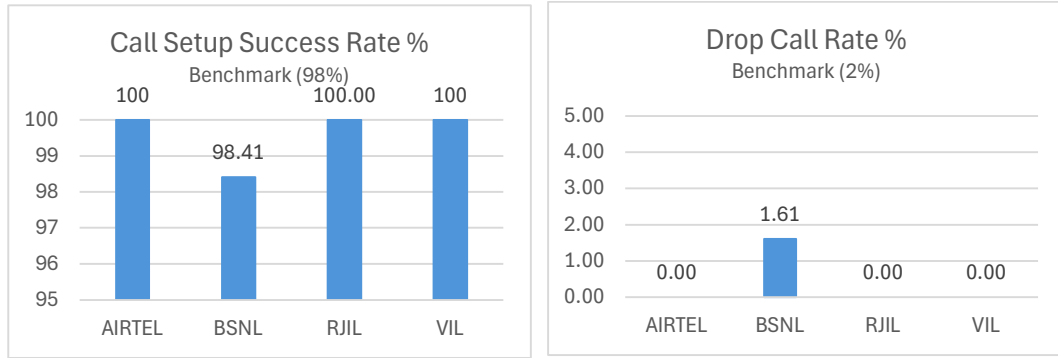


Figure-3: Performance for call setup success rate and Call drop rate.

Parameter	Service Provider			
	Mobile-to-Mobile (5G/4G - Open Mode)			
	AIRTEL	BSNL	RJIL	VIL
Call Established (within service provider Network)	43	62	49	46
Call Silence Rate %	2.32	0.67	0.00	0.00
Number of silence instances for >2 sec	1	1	0	0
Packet drop Rate Downlink %	0.48	1.78	1.76	0.13
Packet drop Rate Uplink %	0.49	1.65	1.62	0.12

Table-6: Summary of silence instances & packet loss rate for mobile to mobile call.

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

Mean opinion score indicate 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 in table-6	323	NA*	629	267
Speech Quality (Average MOS Score)	3.98	NA*	4.23	3.98

Table-7: Summary of speech quality (MOS) samples.

***MOS Test not performed by BSNL due to Test Kit issue.**

(e) Technology wise Unique cell id's covered in voice test: This section represents technology wise Number of unique cell id's covered in Voice test.

Number of unique cell id's covered in Voice test- Technology wise				
Technology	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
5G	NA	NA	13	NA
4G	47	13	11	19
3G	NA	0	NA	NA
2G	0	0	NA	0

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

3.2.4 Data performance

(a) Data Parameters (Auto-selection mode- 5G/4G/3G/2G)

Parameters		Service Provider			
		Auto-selection mode (5G/4G/3G/2G)			
		AIRTEL	BSNL	RJIL	VIL
Download Throughput (Mbits/s)	Average	93.93	15.80	219.05	16.10
	80th Percentile	177.03	21.70	417.04	26.70
	20th Percentile	10.78	10.43	30.42	4.98
Upload Throughput (Mbits/s)	Average	14.79	7.81	24.16	13.52
	80th Percentile	22.47	10.21	42.09	19.33
	20th Percentile	0.93	6.34	4.98	5.92
Latency (ms)	50th Percentile	25.50	36.00	24.50	29.87

Table-9: Summary of Data performance in network auto-selection mode.

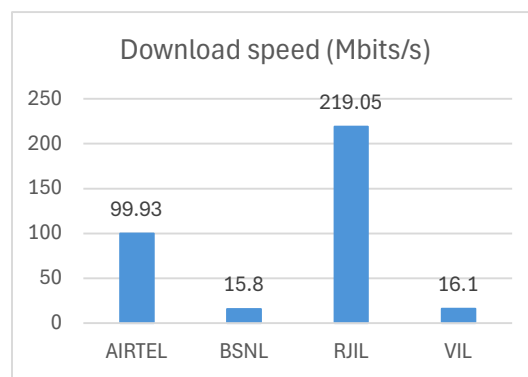


Figure- 4: Download throughput.

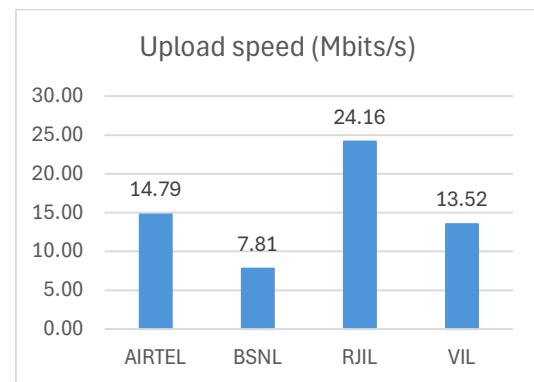


Figure- 5: Upload throughput

(b) Technology wise Unique cell id's covered in data test: This section represents technology wise Number of unique cell id's covered in Voice test.

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	13	NA
4G	47	13	11	121
3G	NA	0	NA	NA
2G	NA	0	NA	0

Table-10: Technology wise number of network cell id's latched during drive test.

3.3 Hotspots

Hotspot testing has been done on 22nd April 2026. one locations was tested in the city.

3.3.1 Locations

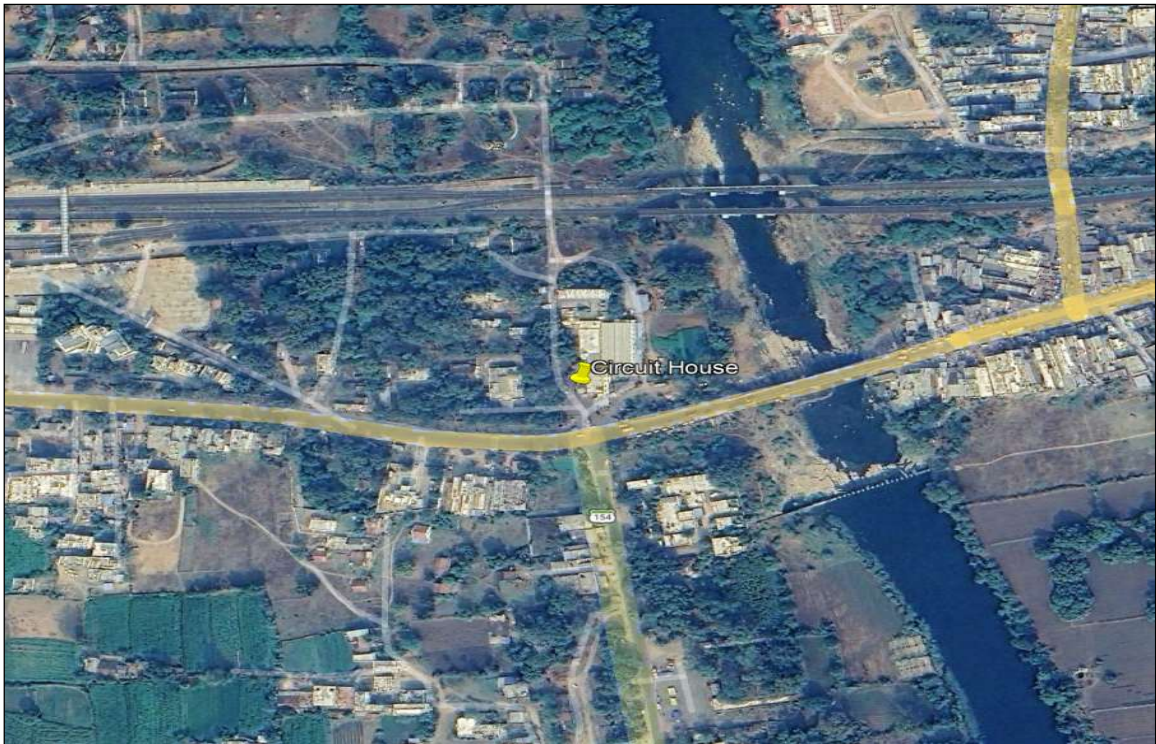


Figure-6: Hotspot locations

3.3.2 Hotspot covered

- 1. Limkheda-Circuit House

3.3.3 Voice performance

Overall Voice Performance				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	43	43	59	47
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)	0.46	0.46	1.03	0.46

Table-11: Overall summary of voice call performance in network auto-selection mode (5G/4G/3G/2G).

<i>Limkheda-Circuit House</i>				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	4	63	10	5
Call Setup Success Rate %	100.00	98.41	100.00	100.00
Drop Call Rate %	0.00	1.61	0.00	0.00
Call Setup Time-Average (Sec)	0.67	0.97	0.97	0.4

Table-12: Summary of voice call performance in network auto-selection mode 5G/4G/3G/2G).

3.3.4 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)	211.81	15.80	208.48	20.28
Download Session Setup Success Rate %	100.00	98.51	100.00	100.00
Upload Throughput Average (Mbits/s)	23.83	7.81	27.97	12.74
Upload Session Setup Success Rate %	100.00	98.41	100.00	100.00
Web Browsing Delay (Second)	1.90	5.16	1.95	2.02
Latency (ms)-50th Percentile	21.00	34.00	20.50	36.30
Jitter (ms)	3.74	10.00	3.81	0.77
Packet Loss Rate%	0.00	1.67	0.00	0.02

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

<i>Limkheda-Circuit House</i>				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	211.81	15.80	208.48	20.28
Download Session Setup Success Rate %	100.00	98.51	100.00	100.00
Upload Throughput Average (Mbits/s)	23.83	7.81	27.97	12.74
Upload Session Setup Success Rate %	100.00	98.41	100.00	100.00
Web Browsing Delay (Second)	1.90	5.16	1.95	2.02
Latency (ms)-50th Percentile	21.00	34.00	20.50	36.30
Jitter (ms)	3.74	10.00	3.81	0.77
Packet Loss Rate%	0.00	1.67	0.00	0.02

Table-14: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G)

4. TSP wise signal strength(Limkheda City):

Technology	Parameter	Range	Color
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	Light Grey
		< -110 dBm	Yellow

Table:15 Signal strength legend format

4.1 AIRTEL



Figure-7: Signal strength 3G/2G network mode-AIRTEL

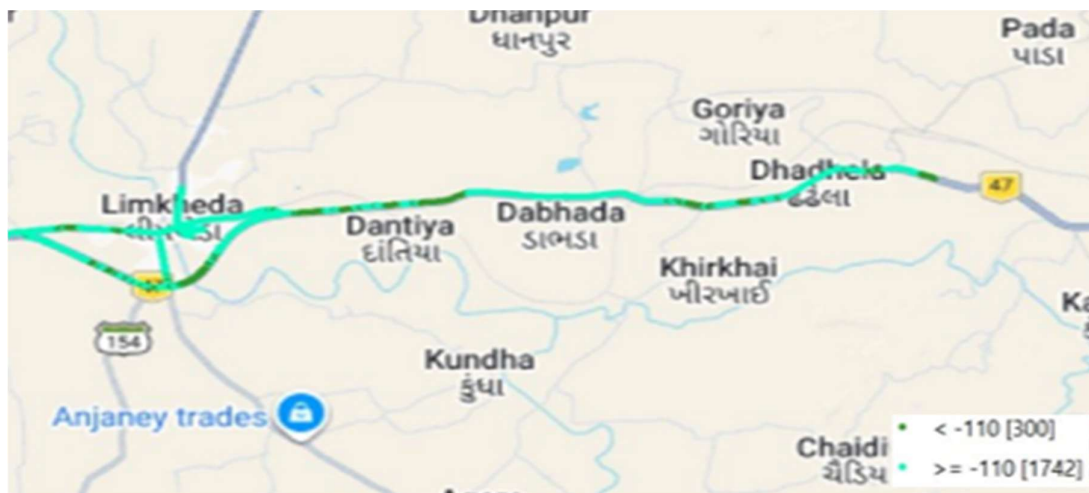


Figure-8: Signal strength 4G network mode-AIRTEL

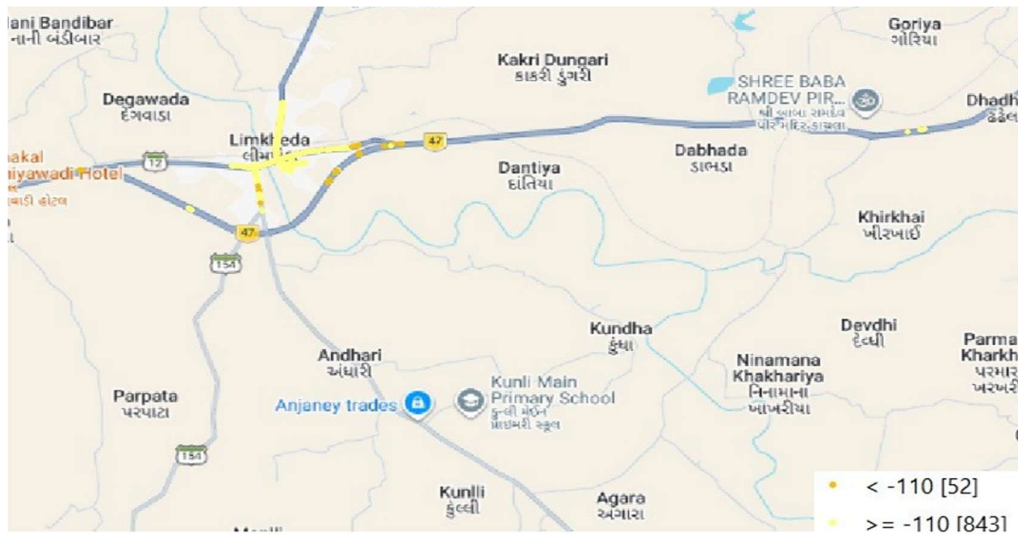


Figure-9: Signal strength 5G network mode-AIRTEL

4.2 BSNL

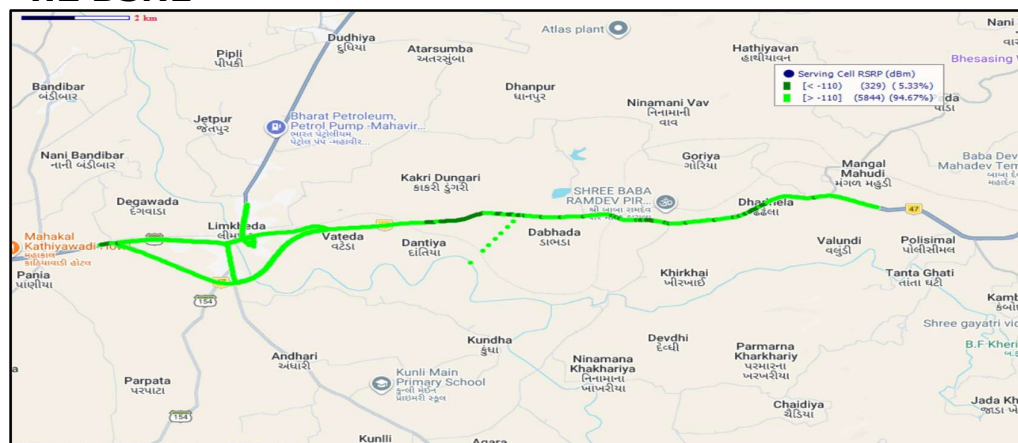


Figure-10: Signal strength auto-selection mode 5G/4G/3G/2G – BSNL

4.3 RJIL

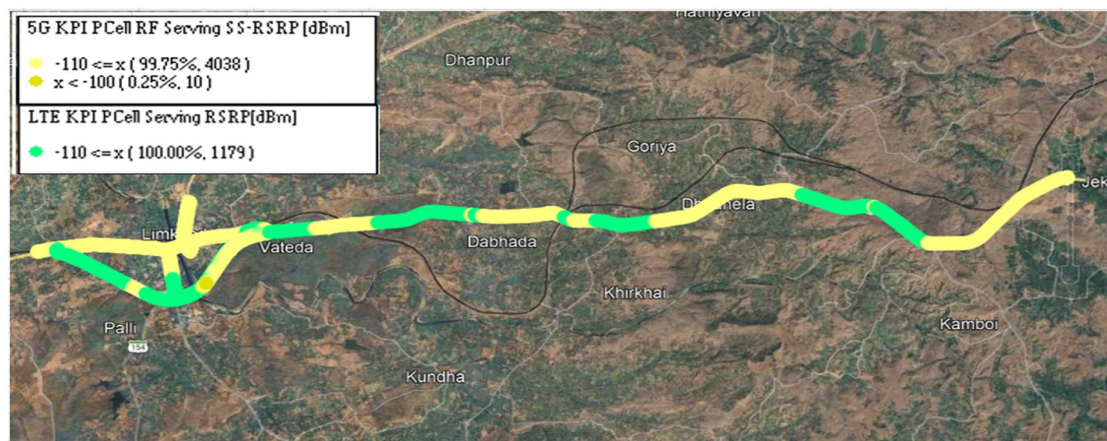


Figure-11: Signal strength auto-selection mode 5G/4G/3G/2G – RJIL.

4.4 VIL

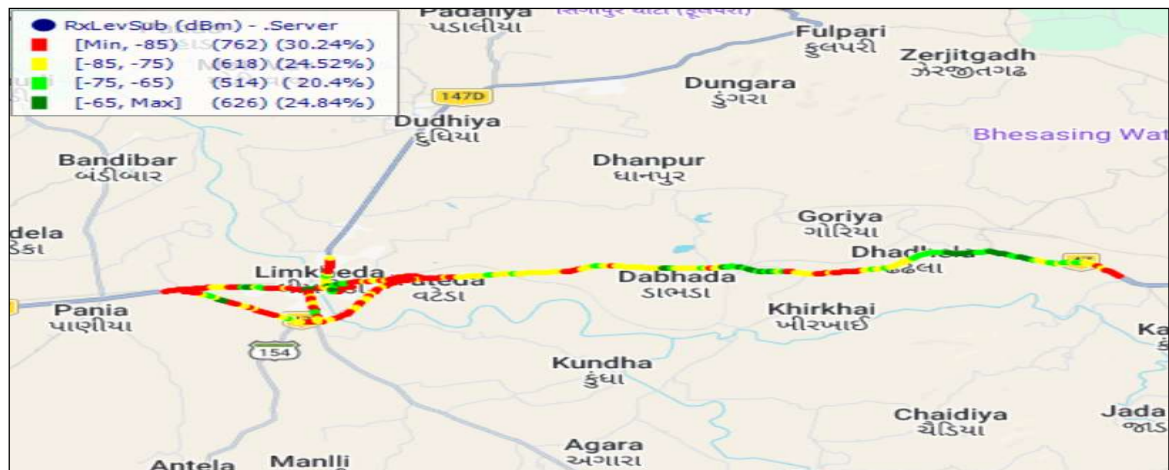


Figure-12: Signal strength 3G/2G network mode-VIL



Figure-13: 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:

Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Setup Success Rate %	100.00	98.41	100.00	100.00
Drop Call Rate %	0.00	1.61	0.00	0.00
Call Setup Time Average (Second)	0.46	0.97	1.03	0.46
Silence Call Rate %	2.32	0.67	0.00	0.00
Average MOS score	3.98	NA	4.23	3.98
Packet Drop Rate (Downlink) in %	0.48	1.78	1.76	0.13
Packet Drop Rate(Uplink)in %	0.49	1.65	1.62	0.12
Download Throughput (Declared)	27.99	5.00	15.00	15.00
Download Throughput (Average)	93.93	15.8	219.05	16.10
Upload Throughput (Declared)	5.86	3.00	7.00	8.00
Upload Throughput (Average)	14.79	7.81	13.52	24.16
Latency in ms (50 th percentile)	25.50	36.00	19.87	24.50

Table:16 Operator wise comparative analysis of QoS parameters

***The Call silence rate not captured by BSNL due to Test Kit issue.**

TSPs response:

- Handover Success Rate (HOSR) VALUE 93.75% in 3G/2G Mode is below Benchmark (>95%) for VIL.** (Table 3 Page-7)

VIL Response: As per action taken report M/s VIL has done soft optimization of two sites namely Limkheda By Pass Road and Likmheda Main road done however VIL has given the timeline upto 31-03-2027 for 02 new sites. **The issue is open. (Action plan attached at Annexure-II)**

- Call Silence Rate of Airtel as 2.32 % is not meeting the benchmark (<1%).** (Table 16 Page 15)

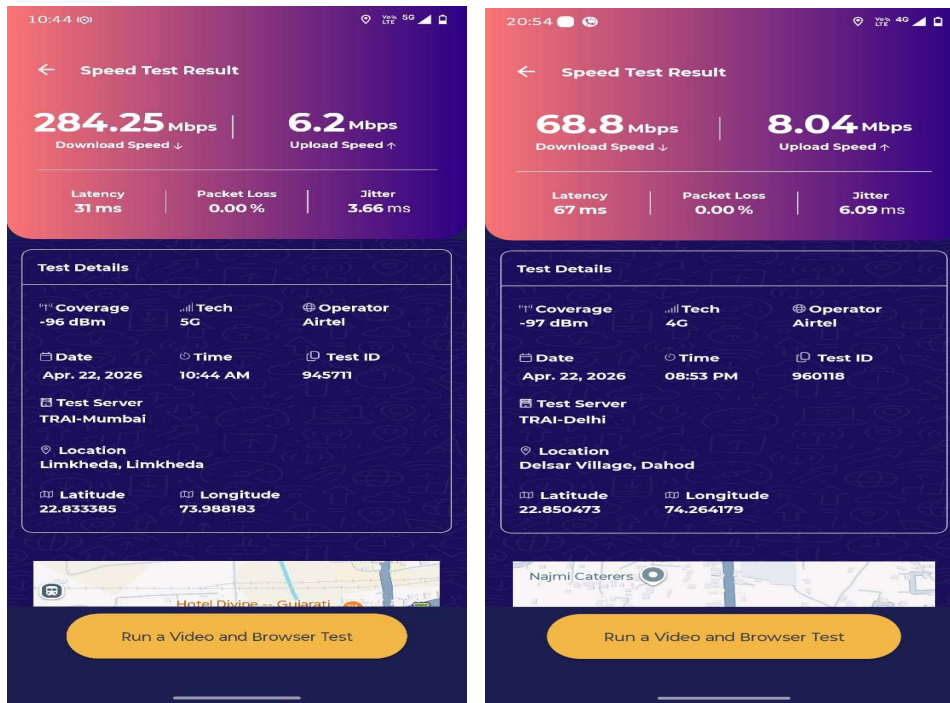
Airtel Response: As per action plan received on 16-06-2026 one new Site has been planned **at Goriya (on Limkheda highway)** and the timeline for installation is Nov. 2026. **The issue is still open. (Action plan attached at Annexure-III)**

Annexure-I

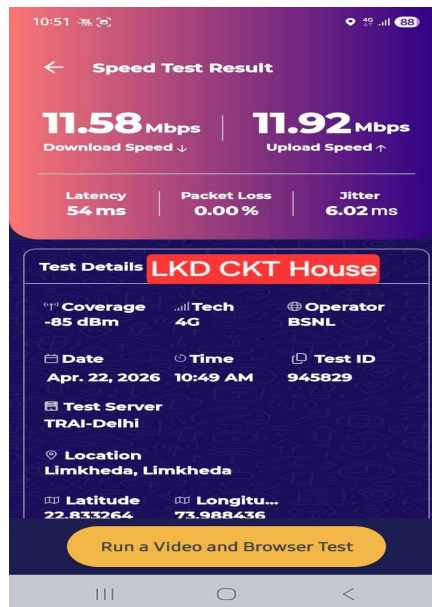
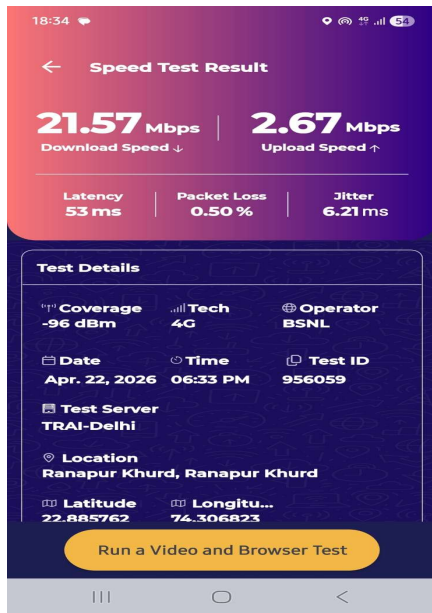
6. TRAI My Speed App Screen shots: -

Speed test with TRAI My Speed App is carried out randomly during the drive test as well as at each hotspot location.

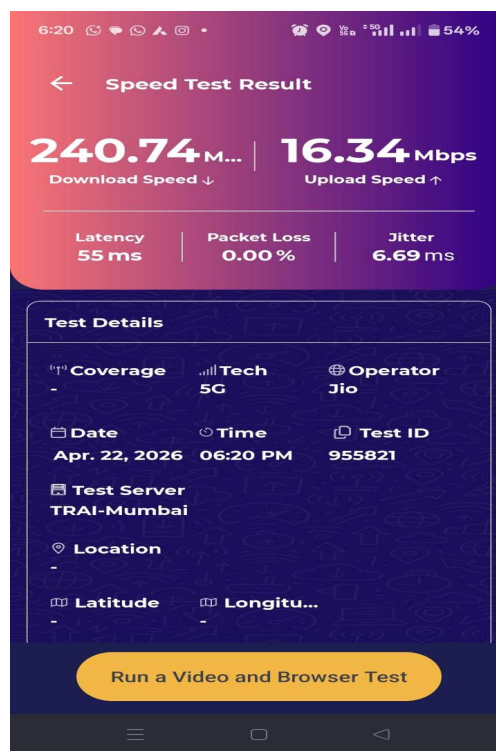
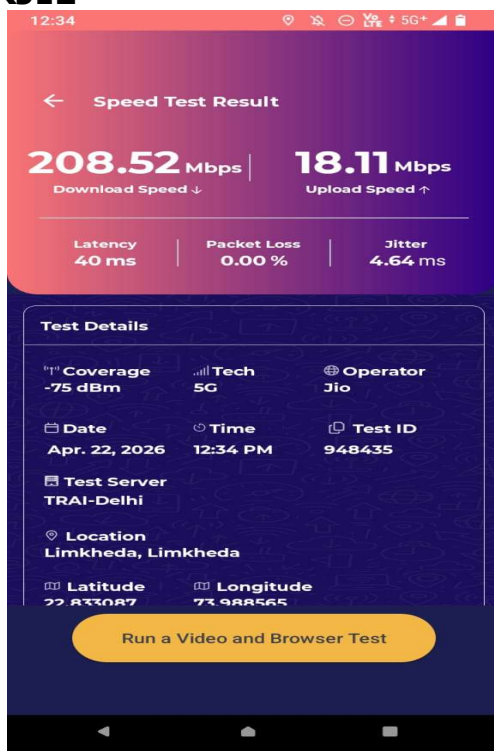
AIRTEL

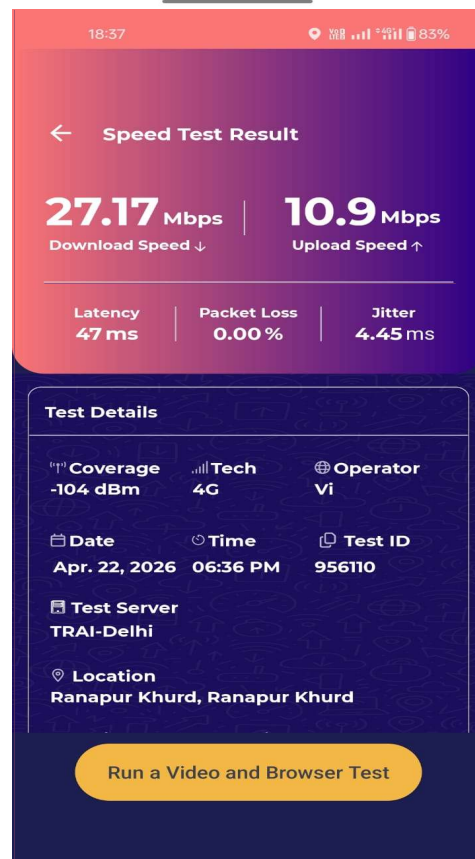
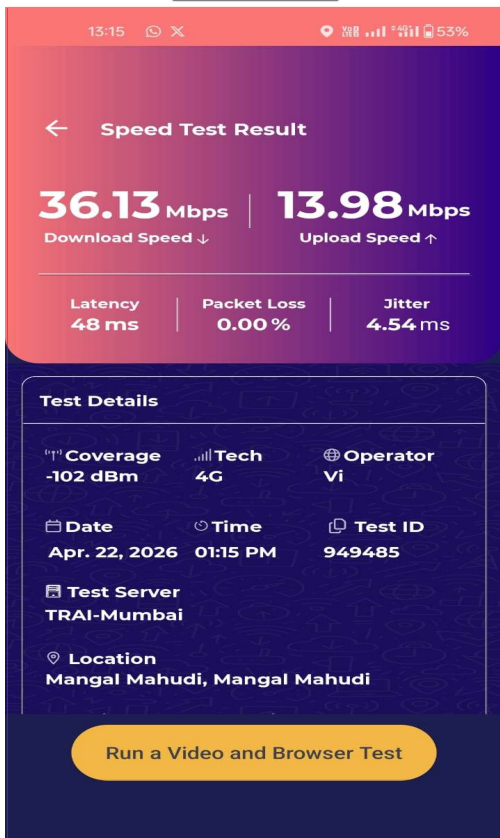
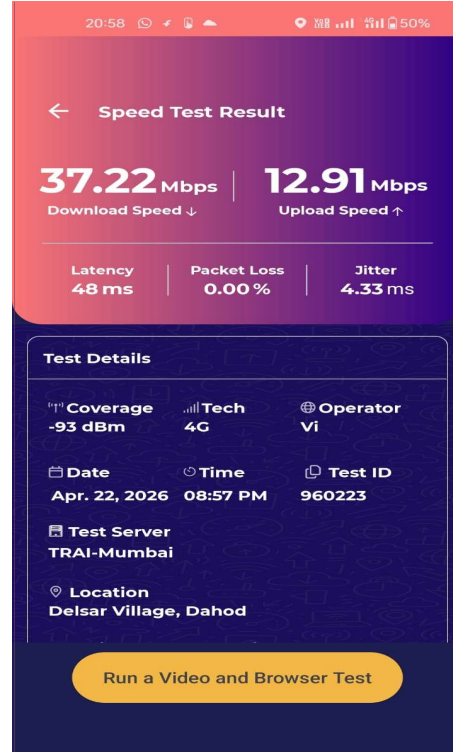
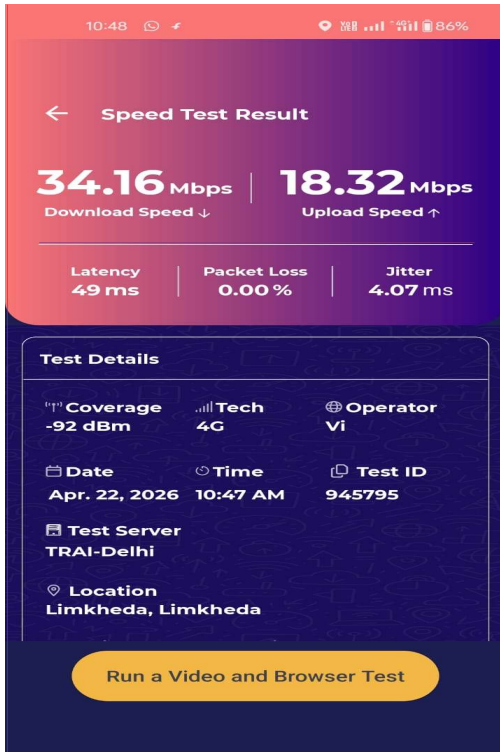


BSNL:



RJIL





Observations of TRAI MySpeed test:

1. Airtel

- a) The download speed recorded was between 284.25 and 68.80 Mbps at Limkheda having higher values as compared to declared for Gujarat LSA as 27.99 Mbps.
- b) Upload speeds varied between 6.20 Mbps and 19.81 Mbps having higher values as declared for Gujarat LSA as compared to declared for Gujarat LSA as 5.89 Mbps.
- c) Packet loss was 0% in all Airtel measurements.
- d) Latency ranged from 31 ms to 67 ms, while jitter varied from 3.66 ms to 6.09 ms.
- e) Coverage strength ranged from -92 dBm to -97 dBm.

2. BSNL

- a) Download speeds ranged from 11.58 Mbps to 21.57 Mbps. as compared to declared for Gujarat LSA as 5 Mbps.
- b) Upload speeds ranged from 2.67 Mbps to 11.92 Mbps as compared to declared for Gujarat LSA as 3 Mbps.
- c) A packet loss of 0.50% was observed at Ranapur Khurd, while the other observation recorded 0% packet loss.
- d) Latency varied between 53 ms and 54 ms, and jitter between 6.02 ms and 6.21 ms.
- e) Coverage ranged from -85 dBm to -96 dBm.

3. Reliance Jio (RJIL):

- a) Download speeds ranged from 208.52 Mbps to 240.74 Mbps as compared to declared for Gujarat LSA as 15 Mbps.
- b) upload speeds between 16.34 Mbps and 18.11 Mbps as compared to declared for Gujarat LSA as 7 Mbps.
- c) Packet loss remained 0% in all observations.
- d) Latency ranged from 40 ms to 55 ms, while jitter varied between 4.64 ms and 6.69 ms.

4. Vodafone Idea (Vi/VIL)

- a) Download speeds ranged from 27.17 Mbps to 37.22 Mbps as compared to declared for Gujarat LSA as 15 Mbps.
- b) Upload speeds ranged from 10.90 Mbps to 18.32 Mbps as compared to declared for Gujarat LSA as 8 Mbps.
- c) Packet loss was 0% in all observations.
- d) Latency ranged from 47 ms to 49 ms, while jitter ranged from 4.07 ms to 4.54 ms.
- e) Coverage strength ranged from -92 dBm to -104 dBm.

Annexure-II

Action Taken Report of M/s VIL in respect of OADT conducted in Dahod City

Sr.	Name of TSP	Route / Location	Name of Area & LSA	Lat. & Long.	Observation (No coverage / Poor coverage / Poor Signal Quality/ Call drops / Call Setup failure, and Hand Over failure/ Block/ Down Link Packet Drop/ Up Link Packet Drop/ speed less than 2Mb locations/)	Improvement Plan (Optimization/ Radiation of New Site/up-gradation of existing site/upgradation of backhaul etc.)	Time Line/ Remarks	Remarks 2nd July'26
1	vi	Limkheda Town Main Road	Limkheda	22.837349 73.991451	2G Poor Coverage	Optimization Planned	31-May	Requisite Optimization done
2	vi	Limkheda Main Road	Limkheda	22.833185 73.986823	2G Poor Coverage	Optimization Planned	31-May	Requisite Optimization done
3	vi	Limkheda By Pass Road	Limkheda	22.824151 73.989809	2G Poor Coverage	Soft optimization planned	31-May	Requisite Optimization done
4	vi	Limkheda Main Road	Limkheda	22.8338576 73.9931477	2G HO Failure	Soft optimization planned	31-May	Requisite Optimization done
5	vi	Limkheda Main Road	Limkheda	22.833657 73.9931624	2G HO Failure	Soft optimization planned	31-May	Requisite Optimization done
6	vi	Limkheda Main Road	Limkheda	22.8363254 74.0023419	2G HO Failure	Soft optimization planned	31-May	Requisite Optimization done
7	vi	Limkheda Main Road	Limkheda	22.836539 74.0029436	2G HO Failure	Soft optimization planned	31-May	Requisite Optimization done

Annexure-III

Action Taken Report of M/s Airtel in respect of OADT conducted in Limkheda City

Limkheda City ATR:

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/Radio of New Site/up-gradation of existing site/upgradation of backhaul etc.)	Timeline/ Remarks
1	Airtel	Goriya	Limkheda Highway	22.83819 & 74.07460	Mute call	New site – Planning Input Taken	Nov'26