

TELECOM REGULATORY AUTHORITY OF INDIA

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For Immediate release

**TRAI releases findings from Independent Drive Tests (IDT)
Report for April 2025,
Nine Cities and Routes Assessed**


The Telecom Regulatory Authority of India (TRAI) today released the results of Independent Drive Tests (IDTs) conducted in April 2025, covering nine cities and highway corridors in seven Licensed Service Areas (LSAs). The nine cities and highway corridors fall under Palakkad, Varanasi, Delhi (City & Highway), Cuttack, Jodhpur, Patna, Gangtok and Pakyong with surrounding districts. These assessments were part of TRAI's periodic Quality of Service (QoS) audits, aimed at evaluating real-time network performance. The tests were carried out using calibrated equipment and standardised protocols, under direct supervision of TRAI officials across diverse on-ground environments.

2. The drive tests were undertaken through TRAI-appointed agency and evaluated both voice and data services across 2G, 3G, 4G, and 5G technologies. The scope included City Drive tests, Walk tests, Highway test and hotspot analysis. The networks of Bharti Airtel Limited, Reliance Jio Infocomm Limited, Vodafone Idea Limited, and BSNL/MTNL were covered in auto-selection and locked mode as per the requirement of tests.
3. Key Parameters Assessed:
 - a) **Voice Services:** Call Setup Success Rate (CSSR), Drop Call Rate (DCR), Call Setup Time, Call Silence Rate, Speech Quality (MOS), Coverage.
 - b) **Data Services:** Download/Upload Throughput, Latency, Jitter, Packet Drop Rate, and Video Streaming Delay.
4. Key findings of Independent Drive Tests (IDTs) are as under:
 - a) Palakkad, Varanasi and Cuttack have demonstrated better network performance by all operators with achievement of $\leq 2\%$ of Drop Call Rate against benchmark. In Varanasi and Jodhpur, all operators have achieved benchmark of 98% for Call Setup Success Rates (CSSR). Data Download and Upload speed are also observed better in Palakkad, Varanasi, Cuttack and Jodhpur.
 - b) Delhi and Bihar & Jharkhand LSA areas have recorded comparatively higher Drop Call Rates, exceeding the prescribed QoS benchmarks. Data download and upload speed are also observed relatively lower in these areas in comparison of other area tested in the Drive Test. Call Setup Success Rates (CSSR) in Gangtok and Pakyong in West Bengal LSA observed below the benchmark of 98% for all Service providers.

5. Commenting on the findings, Shri Anil Kumar Lahoti, Chairman, TRAI said: *“As India rapidly transitions into a digitally connected economy, TRAI remains committed to ensuring that service quality keeps pace with consumer expectations. These IDT results reflect actual user experience, help benchmark operator performance, and guide necessary network improvements.”*
6. The details of drive tests conducted in the seven LSAs are given below:

S. No.	City / Routes Covered	Licensed Service Area	Period of Drive Test	Distance Covered	Performance summary (attached at)
1	Palakkad	Kerala	22-04-2025 to 24-04-2025	City: 268.4 Kms Walk Test: 7.6 Kms	<u>Annexure A</u>
2	Varanasi	UP (East)	22-04-2025 to 25-04-2025	City: 245.9 Kms Walk Test: 3.2 Kms	<u>Annexure B</u>
3	Delhi & Highway: Noida to Aligarh	Delhi	15-04-2025 to 25-04-2025	City: 370.6 Kms Walk Test: 4.4 Kms Highway: 124.9 Kms	<u>Annexure C</u>
4	Cuttack	Odisha	15-04-2025 to 18-04-2025	City: 331.4 Kms	<u>Annexure D</u>
5	Jodhpur	Rajasthan	28-04-2025 to 01-05-2025	City: 314.2 Kms Walk Test: 2 Kms	<u>Annexure E</u>
6	Patna & Bihar Sharif, Sheikhpura, Munger & Jamui district	Bihar & Jharkhand	01-04-2025 to 08-04-2025	City: 354.5 Kms Walk Test: 3.1 Kms	<u>Annexure F</u>
7	Gangtok and Pakyong	West Bengal	23-04-2025 to 25-04-2025	City: 146.2 Kms Walk Test: 1.2 Kms	<u>Annexure G</u>

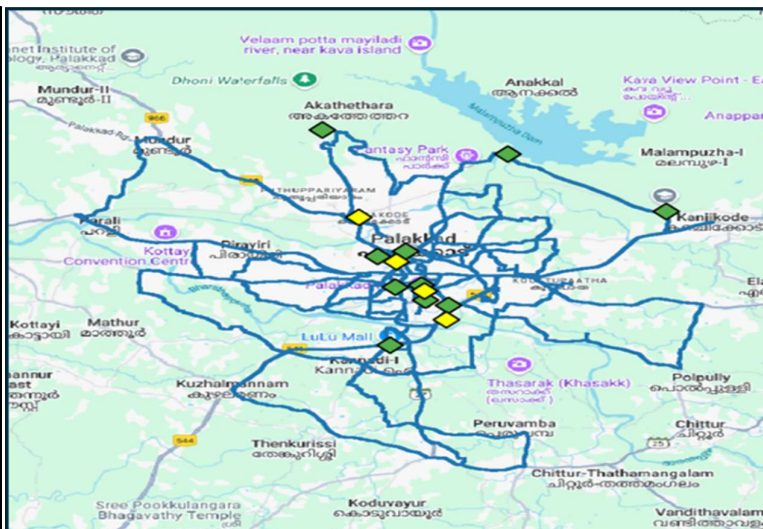
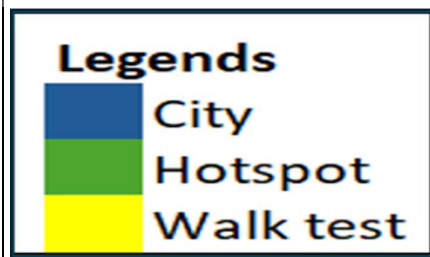
7. The detailed reports are available at TRAI website www.trai.gov.in. For any clarification/information, Shri Tejpal Singh, Advisor (QoS-I) TRAI may be contacted on email: adv-qos1@trai.gov.in or at Tel. No. +91-11-20907759.


(Sheo Bhadra Singh)
Secretary, TRAI

1. Drive test route Map: (Palakkad City- Kerala LSA)

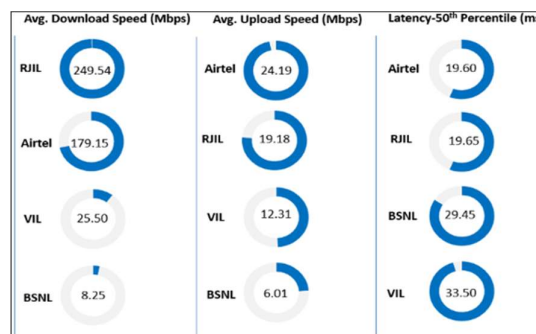
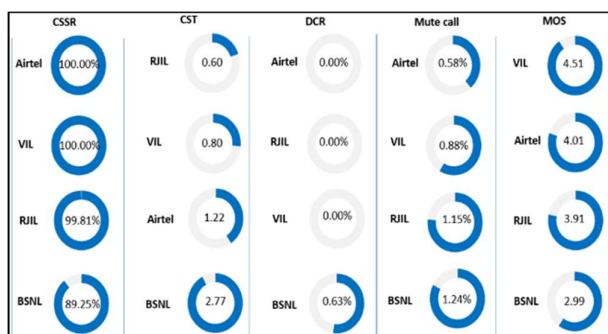
This route map indicates the routes covered in independent drive test in Palakkad city under Kerala LSA.

Legends for the Drive Tests route & area are as below



2. Performance against key QoS parameters:

CSSR: Call Setup Success Rate (in %), CST: Call Setup Time (in milli seconds), DCR: Drop Call Rate (in %) & MOS: Mean Opinion Score.



Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 100.00%, 89.25%, 99.81% and 100.00% respectively in auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 1.22, 2.77, 0.60 & 0.80 seconds respectively in auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, BSNL, RJIL and VIL have drop call rate of 0.00%, 0.63%, 0.00% & 0.00% respectively in auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, BSNL, RJIL and VIL have silence call rate 0.58%, 1.24%, 1.15% and 0.88% respectively in packet switched network (5G/4G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have average MOS Score of 4.01, 2.99, 3.91 & 4.51 respectively.

Summary-Data Service

Data Download performance (Overall): Average download speed of Airtel (5G/4G/2G) is 179.15 Mbps, BSNL (4G/3G/2G) is 8.25 Mbps, RJIL (5G/4G) is 249.54 Mbps and VIL (4G/2G) is 25.50 Mbps.

Data Upload performance (Overall): Average upload speed of Airtel (5G/4G/2G) is 24.19 Mbps, BSNL (4G/3G/2G) is 6.01 Mbps, RJIL (5G/4G) is 19.18 Mbps and VIL (4G/2G) is 12.31 Mbps.

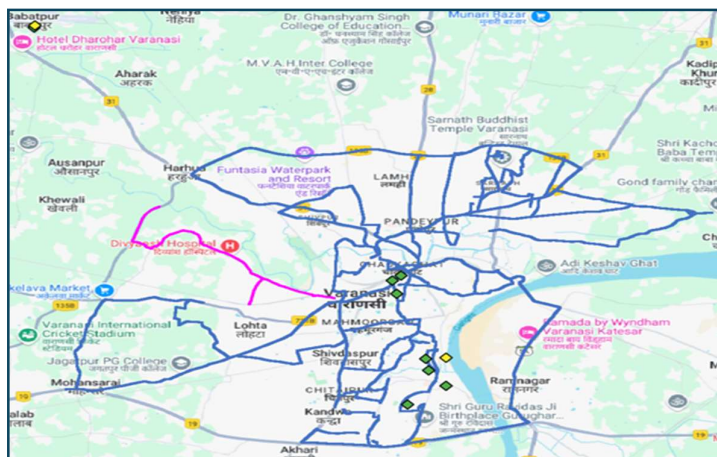
Data performance - Hotspots (in Mbps):

Airtel- 4G D/L: 49.28	4G U/L: 9.85
5G D/L: 210.77	5G U/L: 43.85
BSNL- 4G D/L: 12.15	4G U/L: 10.80
RJIL- 4G D/L: 48.91	4G U/L: 10.31
5G D/L: 88.38	5G U/L: 6.69
VIL- 4G D/L: 22.05	4G U/L: 11.34

Note- "D/L" Download speed, "U/L" Upload speed

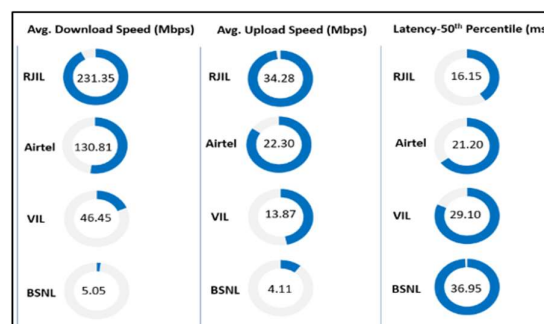
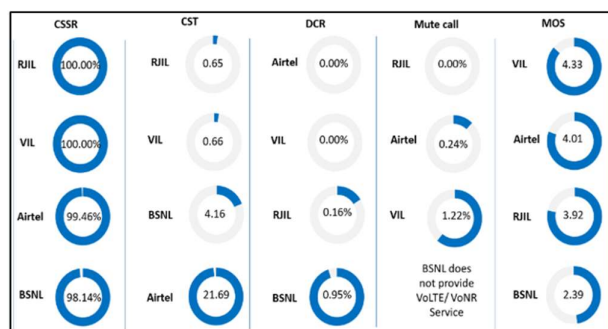
1. Drive test route Map: (Varanasi City- UP East LSA)

This route map indicates the routes covered in independent drive test in Varanasi City under UP East LSA. Legends for the Drive Tests route & area are as below



2. Performance against key QoS parameters:

CSSR: Call Setup Success Rate (in %), CST: Call Setup Time (in milli seconds), DCR: Drop Call Rate (in %) & MOS: Mean Opinion Score.



Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 99.46%, 98.14%, 100.00% and 100.00% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 21.69, 4.16, 0.65 & 0.66 seconds respectively in Auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, BSNL, RJIL and VIL have drop call rate of 0.00%, 0.95%, 0.16% & 0.00% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, RJIL and VIL have silence call rate 0.24%, 0.00% and 1.22% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have Average MOS Score of 4.01, 2.39, 3.92 & 4.33 respectively.

Summary-Data Service

Data Download performance (Overall): Average download speed of Airtel (5G/4G) is 130.81 Mbps, BSNL (4G/3G/2G) is 5.05 Mbps, RJIL (5G/4G) is 231.35 Mbps and VIL (4G/2G) is 46.45 Mbps.

Data Upload performance (Overall): Average upload speed of Airtel (5G/4G) is 22.30 Mbps, BSNL (4G/3G/2G) is 4.11 Mbps, RJIL (5G/4G) is 34.28 Mbps and VIL (4G/2G) is 13.87 Mbps.

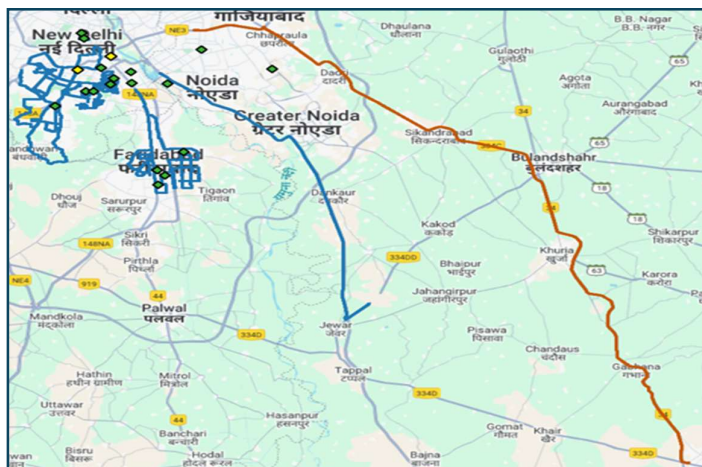
Data performance - Hotspots (in Mbps):

Airtel- 4G D/L: 63.07 4G U/L: 6.68
 5G D/L: 89.33 5G U/L: 13.46
 BSNL- 4G D/L: 6.42 4G U/L: 4.83
 RJIL- 4G D/L: 40.17 4G U/L: 10.43
 5G D/L: 163.13 5G U/L: 32.71
 VIL- 4G D/L: 29.49 4G U/L: 9.17

Note- "D/L" Download speed, "U/L" Upload speed

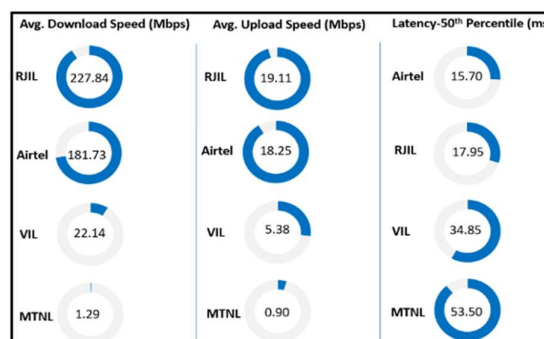
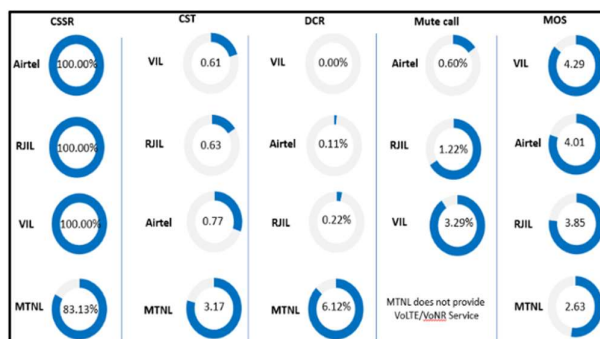
1. Drive test route Map: (Delhi city & Noida to Aligarh Highway Route - Delhi LSA)

This route map indicates the routes covered in independent drive test in Delhi city & Noida to Aligarh highway route under Delhi LSA. Legends for the Drive Tests route & area are as below



2. Performance against key QoS parameters:

CSSR: Call Setup Success Rate (in %), CST: Call Setup Time (in milli seconds), DCR: Drop Call Rate (in %) & MOS: Mean Opinion Score.



Summary-Voice Service

Call Setup Success Rate: Airtel, MTNL, RJIL and VIL have call setup success rate of 100.00%, 83.13%, 100.00% and 100.00% and respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, MTNL, RJIL and VIL have call setup time of 0.77, 3.17, 0.63 & 0.61 seconds respectively in Auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, MTNL, RJIL and VIL have drop call rate of 0.11%, 6.12%, 0.22% & 0.00% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, RJIL and VIL have silence call rate of 0.60%, 1.22% and 3.29% respectively in packet switched network (5G/4G).

Mean Opinion Score (MOS): Airtel, MTNL, RJIL and VIL have average MOS Score of 4.01, 2.63, 3.85 & 4.29 respectively.

Summary-Data Service

Data Download performance (Overall): Average download speed of Airtel (5G/4G) is 181.73 Mbps, MTNL (3G/2G) is 1.29 Mbps, RJIL (5G/4G) is 227.84 Mbps and VIL (4G/2G) is 22.14 Mbps.

Data Upload performance (Overall): Average upload speed of Airtel (5G/4G) is 18.25 Mbps, MTNL (3G/2G) is 0.90 Mbps, RJIL (5G/4G) is 19.11 Mbps and VIL (4G/2G) is 5.38 Mbps.

Data performance - Hotspots (in Mbps):

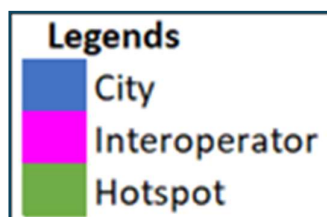
Airtel- 4G D/L: 31.23	4G U/L: 9.63
5G D/L: 242.24	5G U/L: 30.90
RJIL- 4G D/L: 32.53	4G U/L: 8.81
5G D/L: 285.62	5G U/L: 23.89
VIL- 4G D/L: 24.90	4G U/L: 7.08

Note- "D/L" Download speed, "U/L" Upload speed in 4G & 5G technology have not been observed in MTNL at hotspot locations.

1. Drive test route Map: (Cuttack City – Odisha LSA)

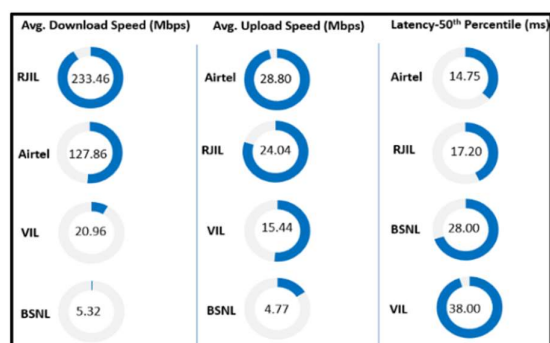
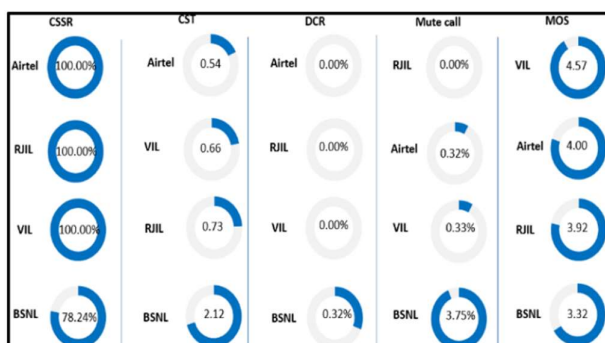
This route map indicates the routes covered in independent drive test in Cuttack City under Odisha LSA.

Legends for the Drive Tests route & area are as below



2. Performance against key QoS parameters:

CSSR: Call Setup Success Rate (in %), CST: Call Setup Time (in milli seconds), DCR: Drop Call Rate (in %) & MOS: Mean Opinion Score



Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 100.00%, 78.24%, 100.00% and 100.00% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 0.54, 2.12, 0.73 & 0.66 seconds respectively in Auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, BSNL, RJIL and VIL have drop call rate of 0.00%, 0.32%, 0.00% & 0.00% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, BSNL, RJIL and VIL have silence call rate of 0.32%, 3.75%, 0.00% and 0.33% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have average MOS Score of 4.00, 3.32, 3.92 & 4.57 respectively.

Summary-Data Service

Data Download performance (Overall): Average download speed of Airtel (5G/4G) is 127.86 Mbps, BSNL (4G/3G) is 5.32 Mbps, RJIL (5G/4G) is 233.46 Mbps and VIL (4G/2G) is 20.96 Mbps.

Data Upload performance (Overall): Average upload speed of Airtel (5G/4G) is 28.80 Mbps, BSNL (4G/3G) is 4.77 Mbps, RJIL (5G/4G) is 24.04 Mbps and VIL (4G/2G) is 15.44 Mbps.

Data performance - Hotspots (in Mbps):

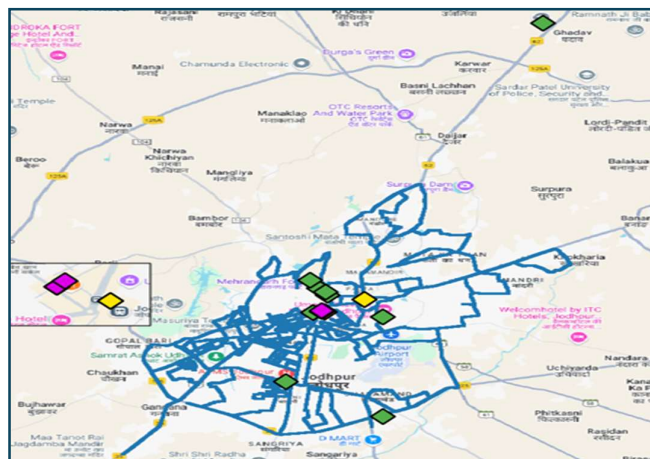
Airtel- 4G D/L: 48.23 4G U/L: 9.92
 5G D/L: 161.26 5G U/L: 44.53
 BSNL- 4G D/L: 6.77 4G U/L: 8.42
 RJIL- 4G D/L: 40.91 4G U/L: 11.76
 5G D/L: 102.09 5G U/L: 15.52
 VIL- 4G D/L: 19.25 4G U/L: 16.56

Note- "D/L" Download speed, "U/L" Upload speed

1. Drive test route Map: (Jodhpur City- Rajasthan LSA)

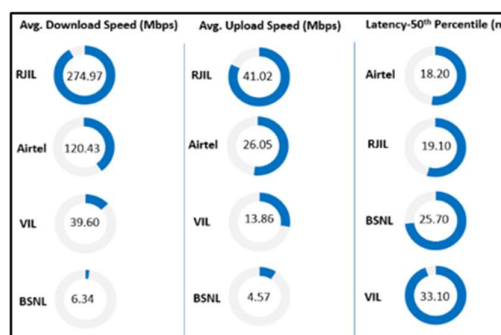
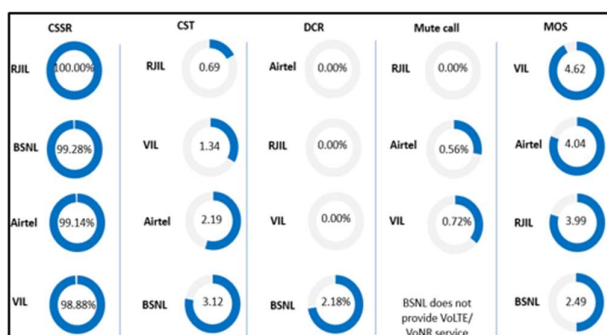
This route map indicates the routes covered in independent drive test in Jodhpur City under Rajasthan LSA.

Legends for the Drive Tests route & area are as below



2. Performance against key QoS parameters:

CSSR: Call Setup Success Rate (in %), CST: Call Setup Time (in milli seconds), DCR: Drop Call Rate (in %) & MOS: Mean Opinion Score



Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 99.14%, 99.28%, 100.00%, and 98.88% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL & VIL have call setup time of 2.19, 3.12, 0.69 and 1.34 seconds respectively in Auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, BSNL, RJIL and VIL have drop call rate of 0.00%, 2.18%, 0.00% and 0.00% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, RJIL and VIL have silence call rate of 0.56%, 0.00% and 0.72% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have average MOS Score of 4.04, 2.49, 3.99 and 4.62 respectively.

Summary-Data Service

Data Download performance (Overall): Average download speed of Airtel (5G/4G) is 120.43 Mbps, BSNL (4G/3G) is 6.34 Mbps, RJIL (5G/4G) is 274.97 Mbps and VIL (4G/2G) is 39.60 Mbps.

Data Upload performance (Overall): Average upload speed of Airtel (5G/4G) is 26.05 Mbps, BSNL (4G/3G) is 4.57 Mbps, RJIL (5G/4G) is 41.02 Mbps and VIL (4G/2G) is 13.86 Mbps.

Data performance - Hotspots (in Mbps):

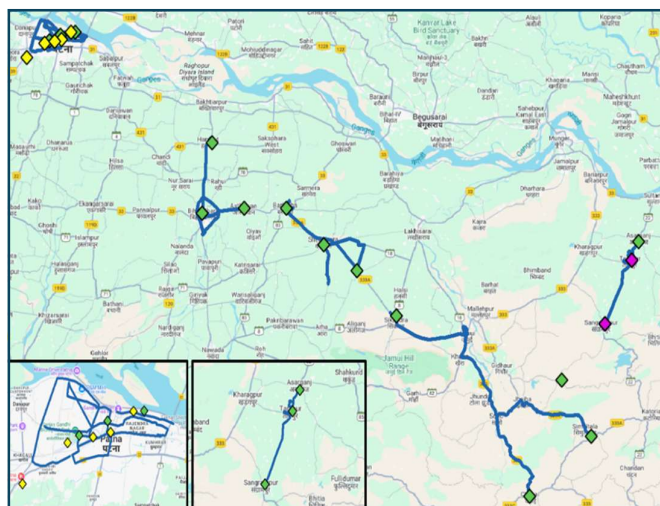
Airtel- 4G D/L: 44.58	4G U/L: 13.86
5G D/L: 123.08	5G U/L: 19.67
BSNL- 4G D/L: 10.38	4G U/L: 8.32
RJIL- 4G D/L: 35.49	4G U/L: 11.81
5G D/L: 172.95	5G U/L: 27.57
VIL- 4G D/L: 34.48	4G U/L: 15.96

Note- "D/L" Download speed, "U/L" Upload speed

1. Drive test route Map: (Patna city & Bihar Sharif, Sheikhpura, Munger & Jamui district – Bihar & Jharkhand LSA)

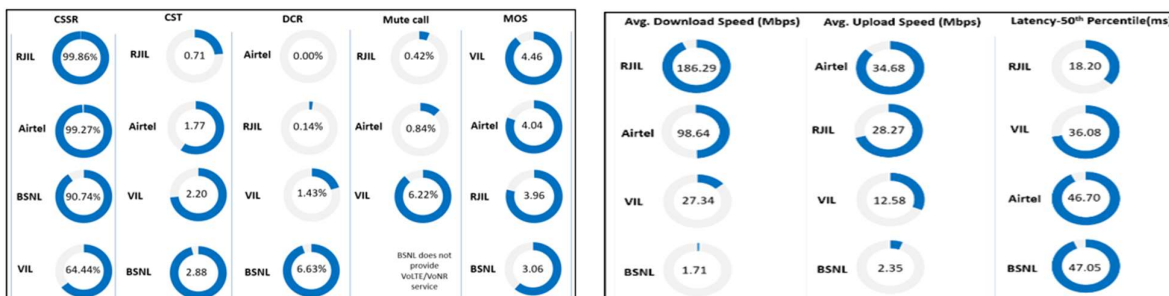
This route map indicates the routes covered in independent drive test in Patna city & Bihar Sharif, Sheikhpura, Munger & Jamui district under Bihar LSA including Jharkhand.

Legends for the Drive Tests route & area are as below



2. Performance against key QoS parameters:

CSSR: Call Setup Success Rate (in %), CST: Call Setup Time (in milli seconds), DCR: Drop Call Rate (in %) & MOS: Mean Opinion Score.



Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 99.27%, 90.74%, 99.86% and 64.44% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL & VIL have call setup time of 1.77, 2.88, 0.71 and 2.20 seconds respectively in Auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, BSNL, RJIL and VIL have drop call rate 0.00%, 6.63%, 0.14% and 1.43% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, RJIL and VIL have silence call rate 0.84%, 0.42% and 6.22% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have average MOS Score of 4.04, 3.06, 3.96 and 4.46 respectively.

Summary-Data Service

Data Download performance (Overall): Average download speed of Airtel (5G/4G/2G) is 98.64 Mbps, BSNL (4G/3G/2G) is 1.71 Mbps, RJIL (5G/4G) is 186.29 Mbps and VIL (4G/2G) is 27.34 Mbps.

Data Upload performance (Overall): Average upload speed of Airtel (5G/4G/2G) is 34.68 Mbps, BSNL (4G/3G/2G) is 2.35 Mbps, RJIL (5G/4G) is 28.27 Mbps and VIL (4G/2G) is 12.58 Mbps.

Data performance - Hotspots (in Mbps):

Airtel- 4G D/L: 66.08	4G U/L: 15.34
5G D/L: 154.13	5G U/L: 41.83
BSNL- 4G D/L: 6.39	4G U/L: 10.96
RJIL- 4G D/L: 51.08	4G U/L: 12.00
5G D/L: 255.46	5G U/L: 33.68
VIL- 4G D/L: 24.07	4G U/L: 18.33

Note- "D/L" Download speed, "U/L" Upload speed

1. Drive test route Map: (Gangtok city and Pakyong Districts areas – West Bengal LSA)

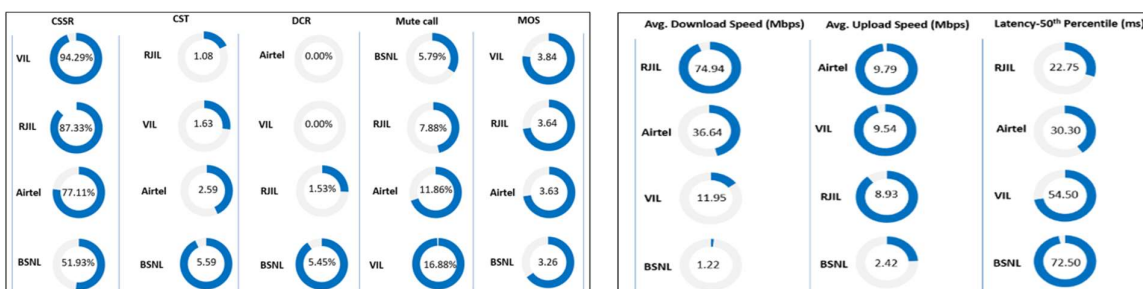
This route map indicates the routes covered in independent drive test in Gangtok city and Pakyong Districts under West Bengal LSA.

Legends for the Drive Tests route & area are as below



2. Performance against key QoS parameters:

CSSR: Call Setup Success Rate (in %), CST: Call Setup Time (in milli seconds), DCR: Drop Call Rate (in %) & MOS: Mean Opinion Score



Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 77.11%, 51.93%, 87.33% and 94.29% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 2.59, 5.59, 1.08 & 1.63 seconds respectively in Auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, BSNL, RJIL and VIL have drop call rate of 0.00%, 5.45%, 1.53% & 0.00% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, BSNL, RJIL and VIL have silence call rate 11.86%, 5.79%, 7.88% and 16.88% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have Average MOS Score of 3.63, 3.26, 3.64 & 3.84 respectively.

Summary-Data Service

Data Download performance (Overall): Average download speed of Airtel (5G/4G/2G) is 36.64 Mbps, BSNL (4G/3G/2G) is 1.22 Mbps, RJIL (5G/4G) is 74.94 Mbps and VIL (4G/2G) is 11.95 Mbps.

Data Upload performance (Overall): Average upload speed of Airtel (5G/4G/2G) is 9.79 Mbps, BSNL (4G/3G/2G) is 2.42 Mbps, RJIL (5G/4G) is 8.93 Mbps and VIL (4G/2G) is 9.54 Mbps.

Data performance - Hotspots (in Mbps):

Airtel- 4G D/L: 48.73	4G U/L: 14.35
5G D/L: 162.20	5G U/L: 39.19
BSNL- 4G D/L: 1.04	4G U/L: 2.47
RJIL- 4G D/L: 26.78	4G U/L: 7.52
5G D/L: 79.15	5G U/L: 13.71
VIL- 4G D/L: 11.18	4G U/L: 9.74

Note- "D/L" Download speed, "U/L" Upload speed