TELECOM REGULATORY AUTHORITY OF INDIA

New Delhi, 17th April 2025

For Immediate release   New Websitewww.trai.gov.in

TRAI releases report on Independent Drive Tests (IDT) conducted in six LSAs covering City/ Highways/ Railway routes/ coastal areas of Andhra Pradesh LSA, Himachal Pradesh LSA, Kerala LSA, UP-West LSA, Gujarat LSA and Odisha LSA during Feb 2025.
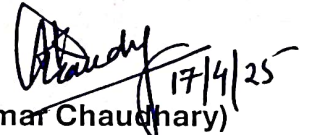
New Delhi, April 17, 2025: TRAI, through its appointed agency, conducted Independent Drive Tests (IDT) in cities/highways/Railway/Coastal area of Hyderabad (Andhra Pradesh LSA), City & Railway route of Shimla (Himachal Pradesh LSA), Alappuzha & Alappuzha Backwaters (Kerala LSA), Dehradun (UP-West LSA), Rajkot (Gujarat LSA), Highway route of Visakhapatnam to Brahmapur, Railway route from Brahmapur to Bhubaneswar and Coastal area of Paradeep (Odisha LSA). Drive tests were conducted to assess the quality of service provided by Cellular Mobile Telephone Service providers for voice and data services in February 2025.

2. In IDT, the performance of M/s Bharti Airtel Ltd., M/s BSNL/MTNL, M/s Reliance Jio Infocomm Ltd. and M/s Vodafone Idea Ltd., providing services in a Licensed Service Area (LSA) through various technologies (like 2G/ 3G/ 4G/ 5G) for voice and data, has been measured by conducting drive test. The observations presented in drive test reports represent the performance of the service providers on the area/ route under test on the day/ time of conducting the drive test.

3. The following Key Performance Indicators (KPIs) for Voice as well as Data service were assessed for the networks of all Telecom service providers operating in the region:

   I.   Voice services:
   a) Call setup success rate
   b) Drop call rate (DCR)
   c) Speech Quality using MOS (mean opinion score)
   d) Downlink & Uplink packet (voice) drop rate
   e) Call Silence Rate
   f) Coverage (%)- Signal strength

   II.   Data Service:
   a) Data Throughput (Downlink and uplink both)
   b) Packet drop rate (Downlink & Uplink)
   c) Video streaming delay
   d) Latency
   e) Jitter

4. The details of drive tests conducted in the six areas are given below:

S. No.	City / Routes Covered	Licensed Service Area	Period of Drive Test	Distance Covered	Performance summary (attached at)
1	Alappuzha & Alappuzha Backwaters	Kerala	11-02-2025 to 14-02-2025	City: 309 Kms Walk Test: 3.7 Kms Coastal: 11.7 Kms	Annexure A
2	Dehradun	UP West	04-02-2025 to 07-02-2025	City: 227.5 Kms	Annexure B
3	Shimla	Himachal Pradesh	24-02-2025 to 27-02-2025	City: 158.1 Kms Railway: 95.7 Kms	Annexure C
4	**Highway:** Visakhapatnam to Brahmapur, **Railway:** Brahmapur to Bhubaneswar and **Coastal:** Paradeep	Odisha	19-02-2025 to 20-02-2025	Highway:268.5 Kms Railway: 165.8 Kms Coastal: 2.8 Kms	Annexure D
5	Hyderabad	Andhra Pradesh	03-02-2025 to 06-02-2025	City: 391 Kms Walk Test: 5 Kms	Annexure E
6	Rajkot	Gujarat	17-02-2025 to 20-02-2025	City: 367.8 Kms Walk Test: 1 Kms	Annexure F

5. 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.
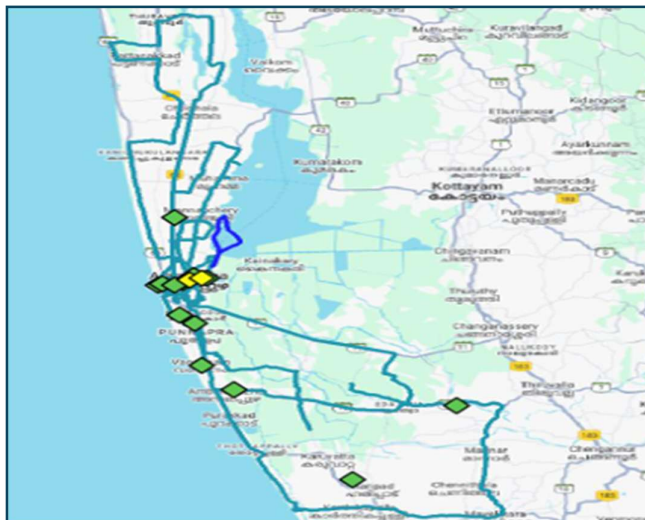
17/4/25

(Atul Kumar Chaudhary)
Secretary

1. **Drive test route Map:** (Alappuzha City & Alappuzha Backwaters- Kerala LSA)

This route map indicates the routes covered in independent drive test in Alappuzha & Alappuzha Backwaters under Kerala LSA.
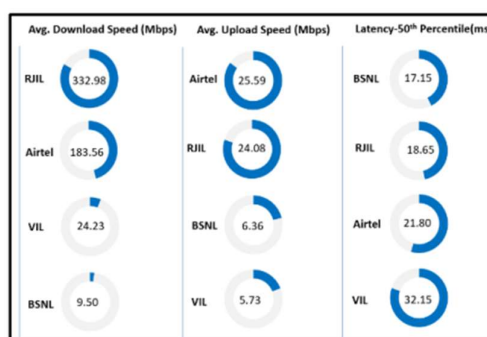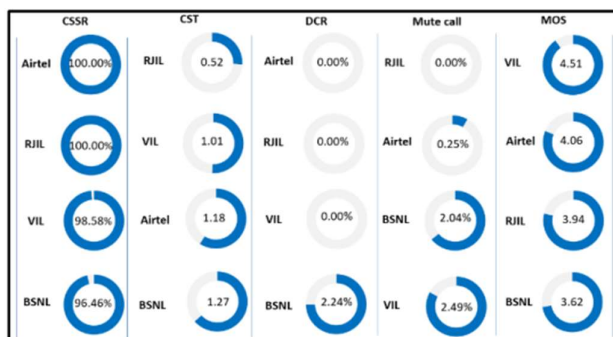
Legends for the Drive Tests route & area are as below

Legends
- City
- Hotspot
- Walk test
- Coastal

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.

CSSR		CST		DCR		Mute call		MOS	
Airtel	100.00%	RJIL	0.52	Airtel	0.00%	RJIL	0.00%	VIL	4.51
RJIL	100.00%	VIL	1.01	RJIL	0.00%	Airtel	0.25%	Airtel	4.06
VIL	98.58%	Airtel	1.18	VIL	0.00%	BSNL	2.04%	RJIL	3.94
BSNL	96.46%	BSNL	1.27	BSNL	2.24%	VIL	2.49%	BSNL	3.62

Avg. Download Speed (Mbps)		Avg. Upload Speed (Mbps)		Latency-50th Percentile(ms)	
RJIL	332.98	Airtel	25.59	BSNL	17.15
Airtel	183.56	RJIL	24.08	RJIL	18.65
VIL	24.23	BSNL	6.36	Airtel	21.80
BSNL	9.50	VIL	5.73	VIL	32.15

Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 100.00%, 96.46%, 100.00% and 98.58% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 1.18, 1.27, 0.52 & 1.01 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%, 2.24%, 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 0.25%, 2.04%, 0.00% and 2.49% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have MOS Score of 4.06, 3.62, 3.94 & 4.51 respectively.

Summary-Data Service

Data Download performance (Dynamic): BSNL and VIL operating on 4G/3G technologies have average download speed of 9.50 Mbps and 24.23 Mbps respectively. Whereas Airtel and RJIL operating on 4G/5G technologies have average download speed of 183.56 Mbps and 332.98 Mbps respectively.
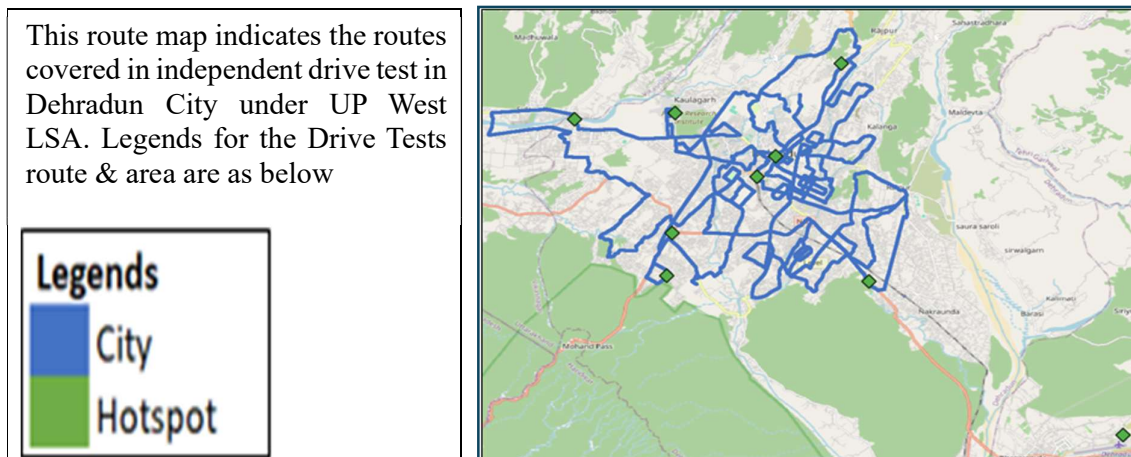
Data Upload performance (Dynamic): BSNL and VIL operating on 4G/3G technology have average upload speed of 6.36 Mbps and 5.73 Mbps respectively. Whereas Airtel and RJIL operating on 4G/5G technology have average upload speed of 25.59 Mbps and 24.08 Mbps respectively.

Data performance - Hotspots (in Mbps):
Airtel- 4G D/L: 53.63   4G U/L: 13.78
          5G D/L: 233.59   5G U/L: 43.28
BSNL- 4G D/L: 7.76   4G U/L: 7.78
RJIL-   4G D/L: 34.28   4G U/L: 7.54
          5G D/L: 347.79   5G U/L: 28.62
VIL-   4G D/L: 27.63   4G U/L: 6.98

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

1. **Drive test route Map:** (Dehradun City- UP West LSA)

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

Legends
City
Hotspot

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.
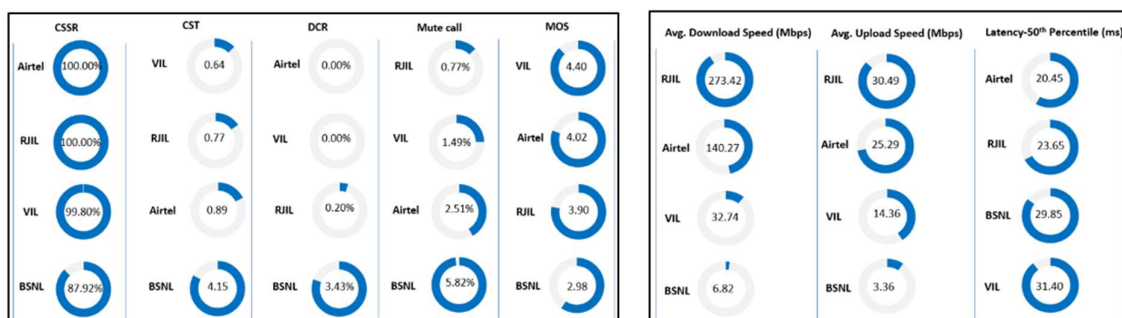
Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 100.00%, 87.92%, 100.00% and 99.80% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 0.89, 4.15, 0.77 & 0.64 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%, 3.43%, 0.20% and 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 2.51%, 5.82%, 0.77% & 1.49% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have MOS score of 4.02, 2.98, 3.90 & 4.40 respectively.

Summary-Data Service

Data Download performance (Dynamic): BSNL and VIL operating on 4G/3G technologies have average download speed of 6.82 Mbps and 32.74 Mbps respectively. Whereas Airtel and RJIL operating on 4G/5G technologies have average download speed of 140.27 Mbps and 273.42 Mbps respectively.

Data Upload performance (Dynamic): BSNL and VIL operating on 4G/3G technology have average upload speed of 3.36 and 14.36 Mbps, respectively. Whereas Airtel and RJIL operating on 4G/5G technology have average upload speed of 25.29 Mbps and 30.49 Mbps respectively.

Data performance - Hotspots (in Mbps):
Airtel- 4G D/L: 3.96   4G U/L: 4.17
            5G D/L: 143.97   5G U/L: 20.83
BSNL- 4G D/L: 5.79   4G U/L: 3.72
RJIL- 4G D/L: 23.67   4G U/L: 4.78
            5G D/L: 251.33   5G U/L: 27.54
VIL-   4G D/L: 21.12   4G U/L: 17.35

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

1. Drive test route Map: (Shimla - Himachal Pradesh LSA)

This route map indicates the routes covered in independent drive test in Shimla City and Railway route from Shimla to Kalka under Himachal Pradesh LSA.
Legends for the Drive Tests route & area are as below

Legends
- **City** (blue)
- **Interoperator** (magenta)
- **Hotspot** (green)
- **Railway** (orange)

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.

CSSR	CST	DCR	Mute call	MOS
RJIL 98.57%	RJIL 0.86	Airtel 0.73%	Airtel 0.41%	Airtel 3.91
Airtel 98.55%	Airtel 1.36	RJIL 1.69%	RJIL 0.42%	RJIL 3.81
BSNL 93.79%	VIL 2.45	VIL 2.43%	VIL 2.75%	VIL 3.79
VIL 90.93%	BSNL 3.65	BSNL 11.27%	BSNL does not provide VoLTE/ VoNR Service	BSNL 2.53

Avg. Download Speed (Mbps)	Avg. Upload Speed (Mbps)	Latency-50th Percentile (ms)
RJIL 165.62	RJIL 17.62	RJIL 21.65
Airtel 128.12	Airtel 16.79	Airtel 23.15
VIL 12.56	VIL 4.51	BSNL 30.85
BSNL 6.22	BSNL 3.00	VIL 35.20

Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 98.55%, 93.79%, 98.57% and 90.93% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 1.36, 3.65, 0.86, & 2.45 seconds in Auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, BSNL, RJIL and VIL have drop call rate of 0.73%, 11.27%, 1.69% and 2.43% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, RJIL and VIL have silence call rate 0.41%, 0.42% & 2.75% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have MOS score of 3.91, 2.53, 3.81 & 3.79 respectively.

Summary-Data Service

Data Download performance (Dynamic): BSNL and VIL operating on 4G/3G technologies have average download speed of 6.22 Mbps and 12.56 Mbps respectively. Whereas Airtel and RJIL operating on 4G/5G technologies have average download speed of 128.12 Mbps and 165.62 Mbps respectively.
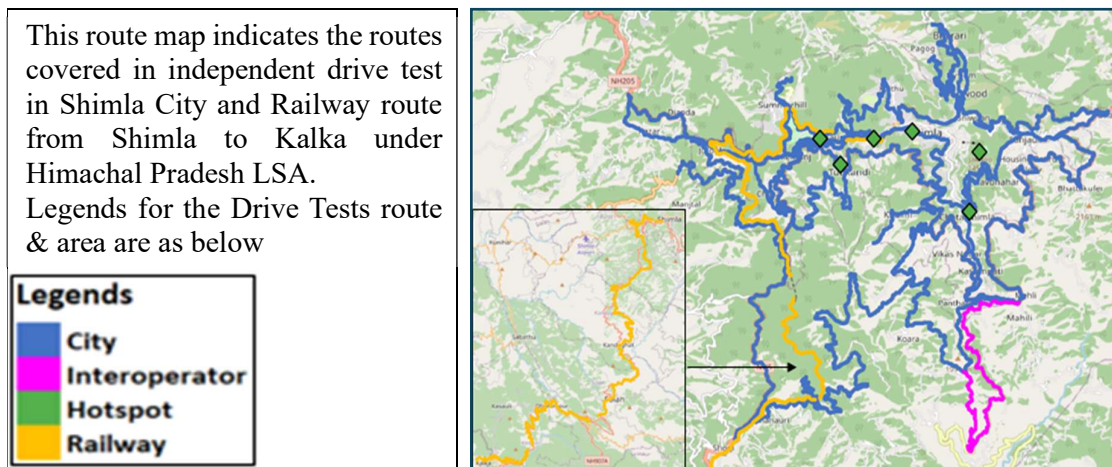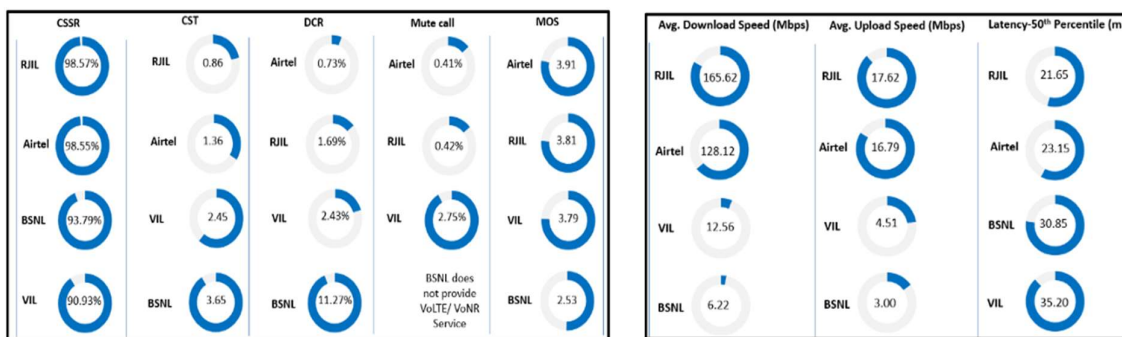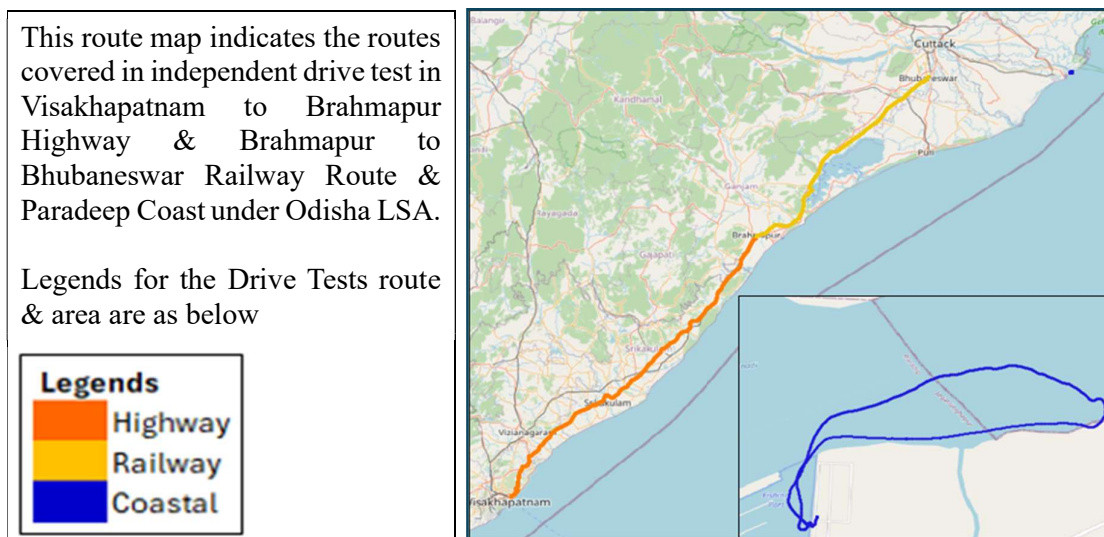
Data Upload performance (Dynamic): BSNL and VIL operating on 4G/3G technology have average upload speed of 3.00 and 4.51 Mbps, respectively. Whereas Airtel and RJIL operating on 4G/5G technology have average upload speed of 16.79 Mbps and 17.62 Mbps respectively.

Data performance - Hotspots (in Mbps):
Airtel- 4G D/L: 57.30   4G U/L: 19.04
          5G D/L: 224.11   5G U/L: 30.60
BSNL- 4G D/L: 7.58   4G U/L: 3.05
RJIL-   4G D/L: 23.12   4G U/L: 6.31
          5G D/L: 194.12   5G U/L: 14.08
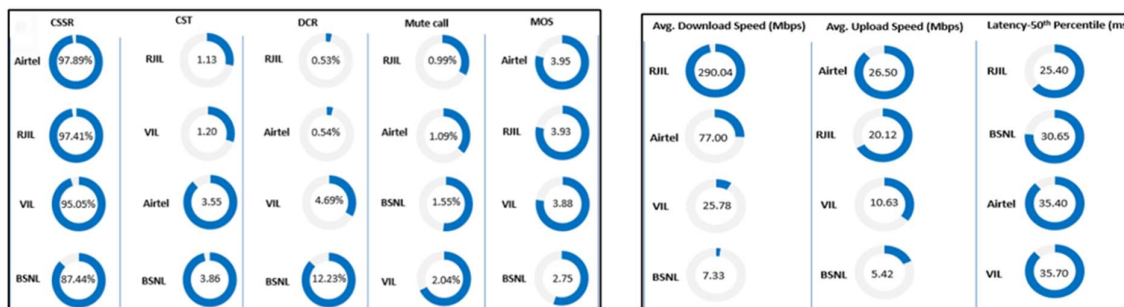VIL-   4G D/L: 9.80   4G U/L: 3.12

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

1. **Drive test route Map:** (Visakhapatnam to Brahmapur Highway & Brahmapur to Bhubaneswar Railway Route & Paradeep Coastal area - Odisha LSA)

This route map indicates the routes covered in independent drive test in Visakhapatnam to Brahmapur Highway & Brahmapur to Bhubaneswar Railway Route & Paradeep Coast under Odisha LSA.

Legends for the Drive Tests route & area are as below

Legends
Highway
Railway
Coastal

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.

CSSR		CST		DCR		Mute call		MOS	
Airtel	97.89%	RJIL	1.13	RJIL	0.53%	RJIL	0.99%	Airtel	3.95
RJIL	97.41%	VIL	1.20	Airtel	0.54%	Airtel	1.09%	RJIL	3.93
VIL	95.05%	Airtel	3.55	VIL	4.69%	BSNL	1.55%	VIL	3.88
BSNL	87.44%	BSNL	3.86	BSNL	12.23%	VIL	2.04%	BSNL	2.75

Avg. Download Speed (Mbps)		Avg. Upload Speed (Mbps)		Latency-50th Percentile (ms)	
RJIL	290.04	Airtel	26.50	RJIL	25.40
Airtel	77.00	RJIL	20.12	BSNL	30.65
VIL	25.78	VIL	10.63	Airtel	35.40
BSNL	7.33	BSNL	5.42	VIL	35.70

Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 97.89%, 87.44%, 97.41% and 95.05% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 3.55, 3.86, 1.13, & 1.20 seconds respectively in Auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, BSNL, RJIL and VIL have drop call rate of 0.54%, 12.23%, 0.53% and 4.69% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, BSNL, RJIL and VIL have silence call rate of 1.09%, 1.55%, 0.99% & 2.04% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have MOS score of Quality of 3.95, 2.75, 3.93 & 3.88 respectively.

Summary-Data Service

Data Download Performance (Dynamic): BSNL and VIL operating on 4G/3G technologies have average download speed of 7.33 Mbps and 25.78 Mbps respectively. Whereas Airtel and RJIL operating on 4G/5G technologies have average download speed of 77.00 Mbps and 290.04 Mbps respectively.

Data Upload Performance (Dynamic): BSNL and VIL operating on 4G/3G technology have average upload speed of 5.42 and 10.63 Mbps, respectively. Whereas Airtel and RJIL operating on 4G/5G technology have average upload speed of 26.50 Mbps and 20.12 Mbps respectively.
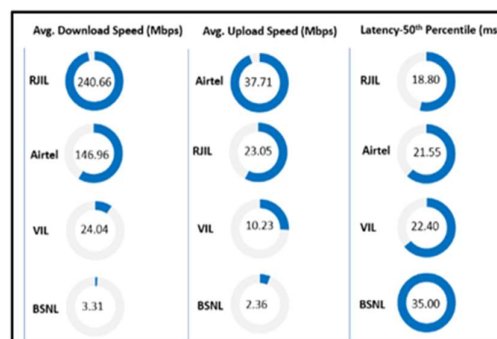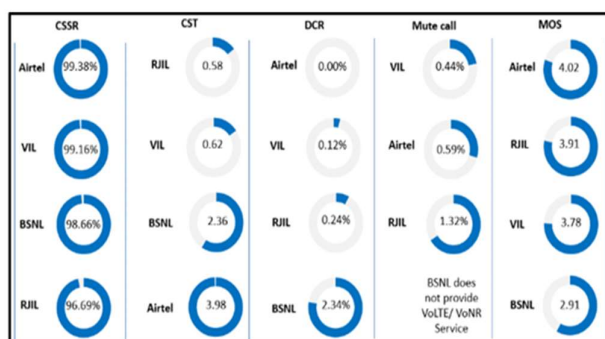
1. **Drive test route Map:** (Hyderabad City- Andhra Pradesh LSA)

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

Legends
- **City** (blue)
- **Hotspot** (green)
- **Walk Test** (yellow)
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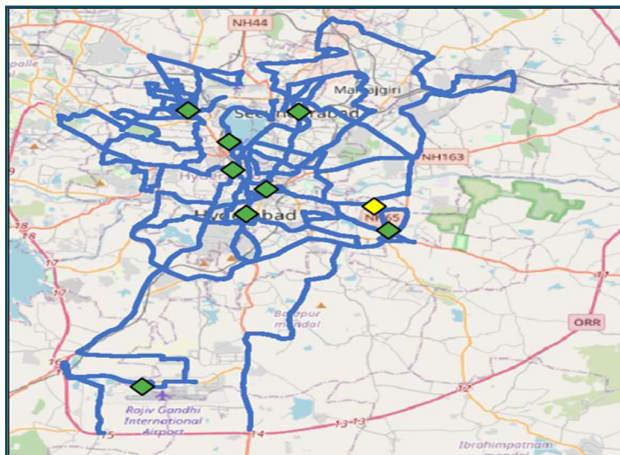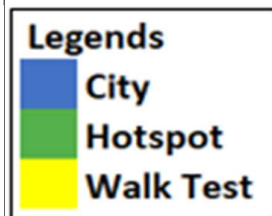
2. **Performance against key QoS parameters:**

CSSR: Call setup success rate (in %), **CST:** Call setup time (in milli seconds), **DCR:** Drop call rate (in %) & **MOS:** Mean Opinion Score.

	CSSR	CST	DCR	Mute call	MOS
	Airtel 99.38%	RJIL 0.58	Airtel 0.00%	VIL 0.44%	Airtel 4.02
	VIL 99.16%	VIL 0.62	VIL 0.12%	Airtel 0.59%	RJIL 3.91
	BSNL 98.66%	BSNL 2.36	RJIL 0.24%	RJIL 1.32%	VIL 3.78
	RJIL 96.69%	Airtel 3.98	BSNL 2.34%	BSNL does not provide VoLTE/ VoNR Service	BSNL 2.91

	Avg. Download Speed (Mbps)	Avg. Upload Speed (Mbps)	Latency-50th Percentile (ms)
	RJIL 240.66	Airtel 37.71	RJIL 18.80
	Airtel 146.96	RJIL 23.05	Airtel 21.55
	VIL 24.04	VIL 10.23	VIL 22.40
	BSNL 3.31	BSNL 2.36	BSNL 35.00

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Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 99.38%, 98.66%, 96.69% and 99.16% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 3.98, 2.36, 0.58, & 0.62 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%, 2.34%, 0.24% & 0.12% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, RJIL and VIL have silence rate of 0.59%, 1.32% & 0.44% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have MOS score of 4.02, 2.91, 3.91, & 3.78 respectively.

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Summary-Data Service

Data Download performance (Dynamic): BSNL and VIL operating on 4G/3G technologies have average download speed of 3.31 Mbps and 24.04 Mbps respectively. Whereas Airtel and RJIL operating on 4G/5G technologies have average download speed of 146.96 Mbps and 240.66 Mbps respectively.
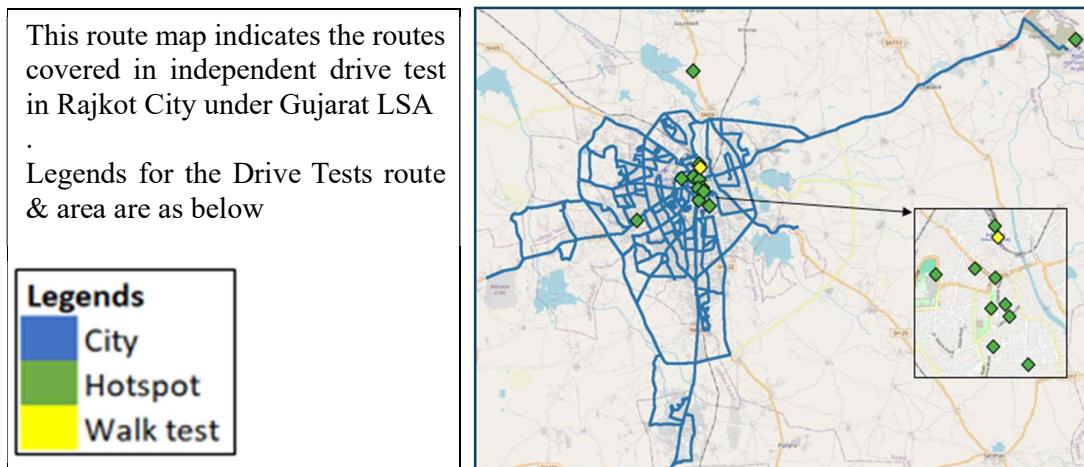
Data Upload performance (Dynamic): BSNL and VIL operating on 4G/3G technology have average upload speed of 2.36 and 10.23 Mbps respectively. Whereas Airtel and RJIL operating on 4G/5G technology have average upload speed of 37.71 Mbps and 23.05 Mbps, respectively.

Data performance - Hotspots (in Mbps):

Airtel-	4G D/L: 35.18	4G U/L: 10.36
	5G D/L: 118.77	5G U/L: 41.90
RJIL-	4G D/L: 36.22	4G U/L: 6.64
	5G D/L: 232.09	5G U/L: 24.75
VIL-	4G D/L: 23.12	4G U/L: 16.70

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

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1. **Drive test route Map:** (Rajkot City- Gujarat LSA)

This route map indicates the routes covered in independent drive test in Rajkot City under Gujarat LSA
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Legends for the Drive Tests route & area are as below

Legends
City
Hotspot
Walk test

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.
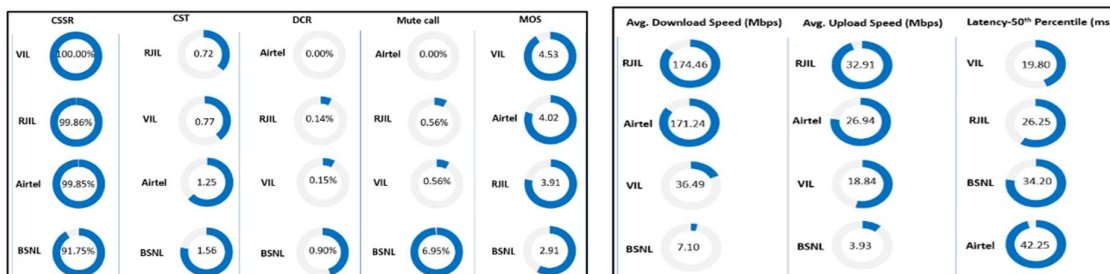
Summary-Voice Service

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have call setup success rate of 99.85%, 91.75%, 99.86% 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 1.25, 1.56, 0.72 & 0.77 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%, 0.90%, 0.14% & 0.15% respectively in Auto selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, BSNL, RJIL and VIL have silence rate of 0.00%, 6.95%, 0.56% & 0.56% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have MOS score of 4.02, 2.91, 3.91 & 4.53 respectively.

Summary-Data Service

Data Download performance (Dynamic): BSNL and VIL operating on 4G/3G technologies have average download speed of 7.10 Mbps and 36.49 Mbps respectively. Whereas Airtel and RJIL operating on 4G/5G technologies have average download speed of 171.24 Mbps and 174.46 Mbps respectively.

Data Upload performance (Dynamic): BSNL and VIL operating on 4G/3G technology have average upload speed of 3.93 and 18.84 Mbps respectively. Whereas Airtel and RJIL operating on 4G/5G technology have average upload speed of 26.94 Mbps and 32.91 Mbps, respectively.

Data performance - Hotspots (in Mbps):
Airtel- 4G D/L: 43.09   4G U/L: 8.96
            5G D/L: 165.69   5G U/L: 23.15
BSNL- 4G D/L: 17.00   4G U/L: 10.97
RJIL- 4G D/L: 30.79   4G U/L: 9.55
            5G D/L: 141.79   5G U/L: 20.28
VIL-   4G D/L: 40.08   4G U/L: 22.29

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