



प्रभावी विनियमन – सुगम संचार
Effective Regulation – Ease of Communication

Operator Assisted Drive Test Report Haridwar-Rishikesh City and nearby Area

11/02/2025 to 13/02/2025

By

TRAI Regional Office Bhopal

The Operator Assisted Drive Test has been carried out by Regional Office, Haridwar-Rishikesh with the help of Telecom Service Providers for Haridwar-Rishikesh City and surrounding areas from 9:00 AM to 8:00 PM from 11/02/2025 to 13/02/2025. The drive test covered drive route of around 250 KMs.

TSP	Network tested
Airtel	2G & VoLTE
BSNL	2G, 3G and VoLTE
JIO	VoLTE
VIL	2G, VoLTE

Key Performance Indicators:

KPI	Benchmark	Observations
Drop call rate %	$\leq 2\%$	All TSPs achieved the benchmark except BSNL in 2G, 3G and VoLTE
CSSR %	$\geq 98\%$	All TSPs achieved the benchmark except Airtel and BSNL in VoLTE
Mobility HOSR %	$\geq 95\%$	All TSPs achieved the benchmark.
Good RX Quality %	$\geq 95\%$	All TSPs achieved the benchmark except BSNL in 3G and Airtel in VoLTE

Overview

Regional Office, TRAI Haridwar-Rishikesh conducted Operator Assisted Drive Test. The performance of Airtel, BSNL, Vodafone Idea and Jio was monitored across various technologies (2G, 3G, 4G & 5G). The test results obtained from these drive tests were utilized to assess the network quality for Voice and Data services.

Voice: Coverage, Quality, Handover Success Rate, Call Setup Success Rate, Drop Call Rate and Block Call Rate.

Data: Download Throughputs

Drive Test Details :

Voice Tests:

- i. 2G – measurement – UE Locked in 2G
- ii. 3G – measurement – UE in Dual mode (2G and 3G)
- iii. 4G – measurement – UE in Free mode

Calls were made for the **90-sec** duration with a wait time of **10 sec** between calls in all technologies.

Data Tests:

Dynamic data – repeat data file download (to check throughput on the entire route)

- i. 3G – measurement – UE in 3G File Size- 20MB
- ii. 4G – measurement – UE in LTE File Size- 40MB
- iii. 5G – measurement – UE in 5G File Size- 200MB

Static Data: Download and Upload Throughputs, Web Browsing Delay, Video Streaming Delay, and Latency

- i. Download- 3G - 20 MB, 4G - 40MB, 5G -200 MB
- ii. Upload - 3G - 5 MB, 4G - 10MB, 5G – 100 MB
- iii. Web browsing - 3 links of e-commerce websites <https://www.amazon.in>, <https://www.flipkart.com>, <https://paytm.com>.
- iv. Video Streaming – 130 sec clip
- v. Latency – 32 Bytes on www.google.com.

Overview

Voice & Dynamic Data Test Drive Route



List of important area covered during the drive test

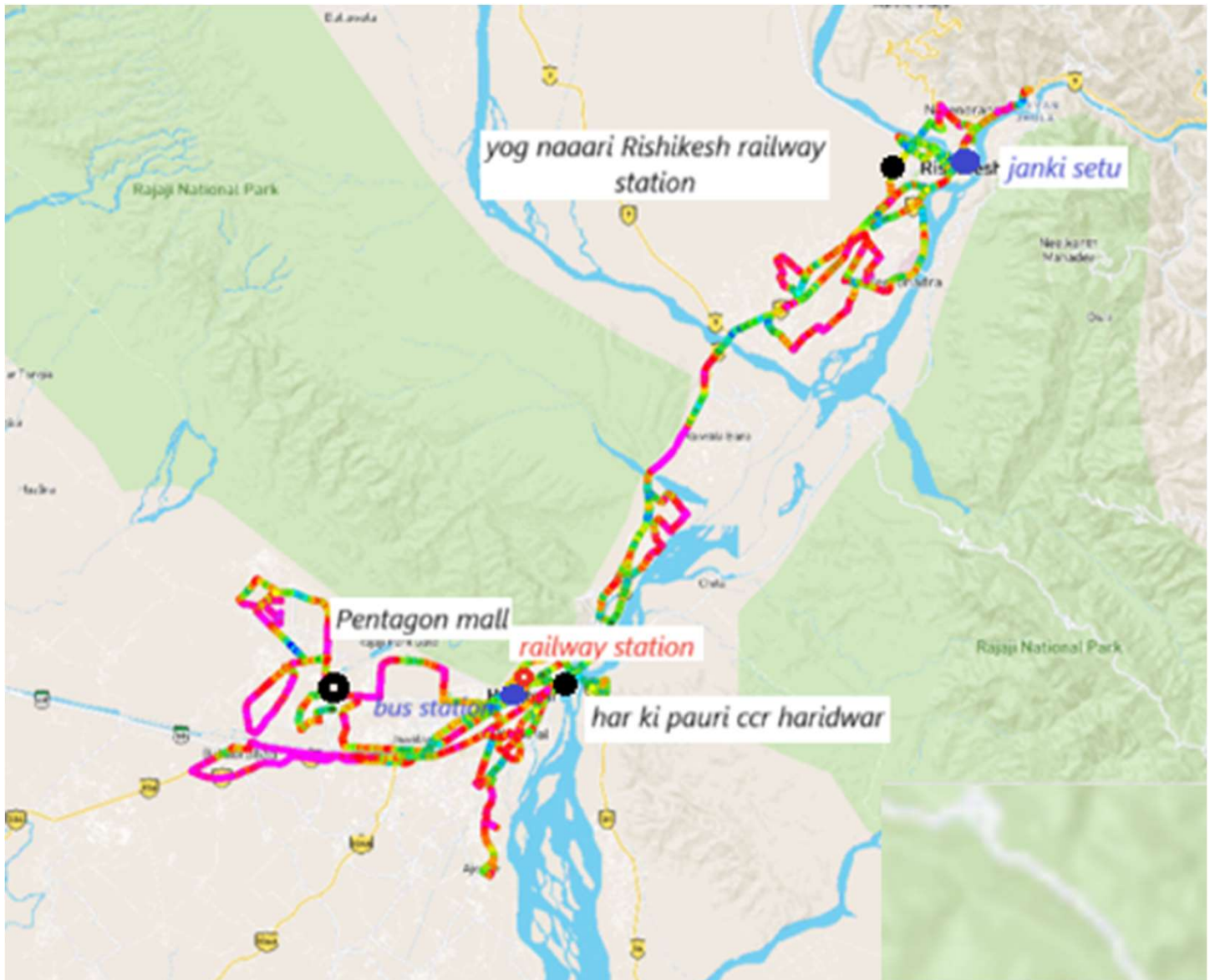
1. Haridwar bus stand, Railway station Jwalapur road, Jwalapur station road, Ranipur mod, BHEL Madhya marg, Pentagon mall, SIDCUL road, Rawali mehdud, Shivalik nagar, tehri vishtapit, Subhash nagar, Jatwara pul, Bahadarabad road, Nahar road, Mayapur

2. Har ki Pauri, Old industrial area, Singh dwar, Luxar road, Pnjanheri, Ajeetpur, Jagjitpur, Nahar road, Ramdev Pulia, Mission road Kankhal, Daksh mandir road, Sanyas road, Dehradun Haridwar Highway, Kharakdi, Saptasarovar road, Haripur kalan, Chandi ghat.

3. Haripur Kalan, Raiwala, Nepali farm, Shyampur Fatak, Gumaniwala, THDC, Yognagrirailway station, Natraj chowk, Dhalwala, Bhadrakali Mandir, Tapovan, Luxman Jhoola, Muni ki reti, Main market, Triveni Ghat, Shashtri nagar, Awas Vikas, AIIMS, IDPL, Shyampur

Overview

Data Service Test- Static Locations



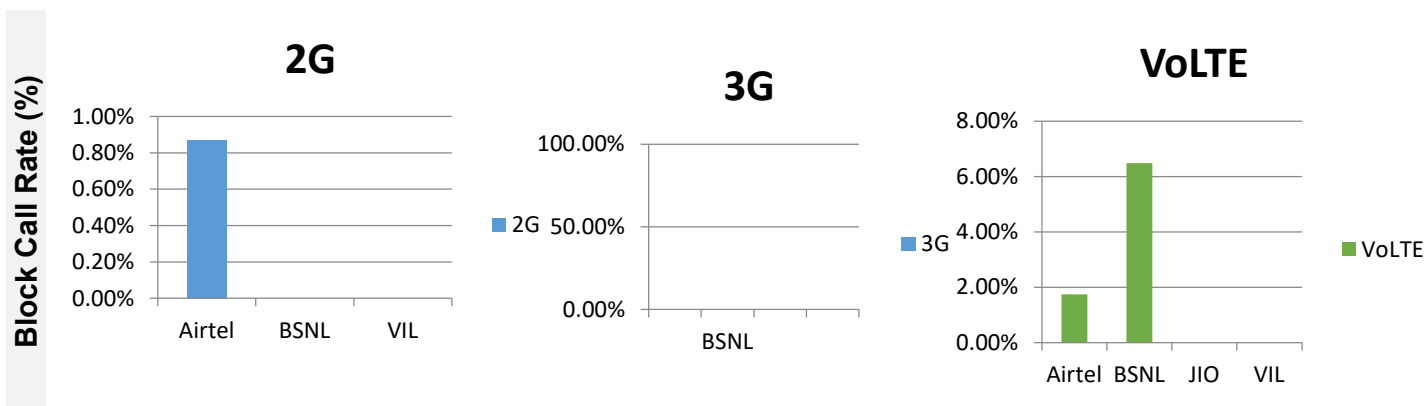
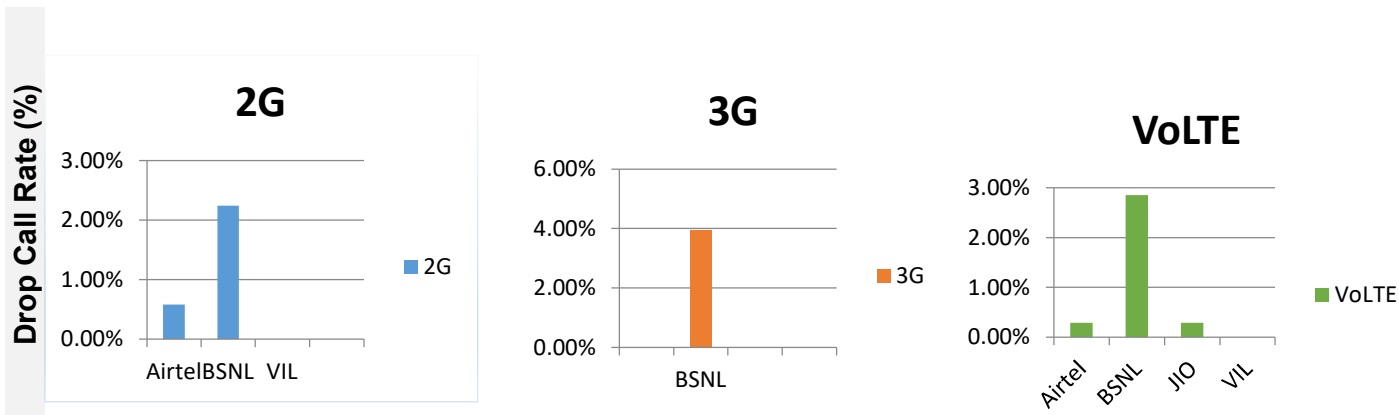
Hotspot Locations

1. Haridwar Railway Station
2. CCR Tower-Har ki Pauri
3. Pentagon Mall
4. Haridwar Bus stand
5. Yog Nagri Rishikesh Railway Station
6. Janki Setu

Voice Calls

Key Observations

QoS compliance of the TSPs for Voice across technologies 2G/3G/4G-VoLTE:



KPIs	2G			3G	VoLTE			
	Airtel	BSNL	VIL	BSNL	Airtel	RJIL	BSNL	VIL
Drop Call Rate %	0.58	2.24	0	3.95	0.29	0.28	2.85	0
Block Call Rate %	0.87	0.00	0	0.00	1.74	0.0	6.49	0

a) All TSPs have met the 2% QOS benchmark of Drop Call Rate (DCR%) except BSNL.

Voice Calls

Key Observations

Coverage

a) Percentage of coverage samples for 2G \geq -85 dBm.

TSPs	2G		
	Airtel	BSNL	VIL
Coverage %	95.6	86.46	87.7

b) Percentage of coverage samples for 3G \geq -90 dBm

TSPs	3G
	BSNL
Coverage %	53.05

b) Percentage of coverage samples for LTE \geq -110 dBm.

TSPs	VoLTE			
	Airtel	JIO	BSNL	VIL
Coverage %	98.5	97.34	98.63	98.6

c) Percentage of time spent on 3G/4G network

TSPs	3G	VoLTE		
	BSNL	Airtel	VIL	JIO
Time Spent on 3G/4G %	100	100	100	100

Data Services Dynamic

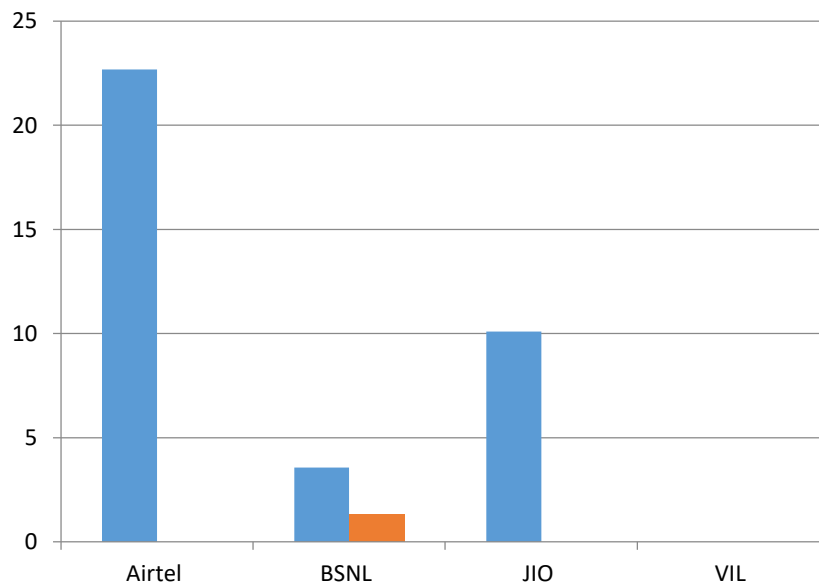
Key Observations

Dynamic Data -Download Throughput was tested.

Data Download Performance – Dynamic 3G/4G/Network

■ Avg Download Throughput 4G ■ Avg Download Throughput 3G

Dynamic Data Avg. Download Throughput (Mbps)



TSP	Airtel	BSNL	JIO	VIL
Average Download throughput- 3G In Mbps	NA	1.34	NA	NA
Average Download throughput-LTE in Mbps	22.67	3.56	10.09	NA

Summary

City Level Summary- Voice

TSP (For 2G)	Airtel	BSNL	VIL
Call attempts	343	357	399
Block call rate %	0.87	0.00	0
CSSR %	98.55	100	100
Drop call rate %	0.58	2.24	0
Mobility HOSR %	97.06	98.36	99.45
RX Quality %	95	95.28	96.9
Average CST Sec	1.29	3.58	5.3

TSP (For 3G)	BSNL
Call attempts	329
Block call rate %	0.60
CSSR %	99.39
Drop call rate %	3.95
Mobility HOSR %	100
RX Quality %	93.31
Average CST (Sec)	2.95

TSP (For Volte)	Airtel	BSNL	JIO	VIL
Call attempts	344	385	363	406
Block call rate %	1.74	6.49	0	0
CSSR %	97.97	85.45	100	100
Drop call rate %	0.29	2.85	0.28	0
Mobility HOSR %	99.8	100	99.39	100
RX Quality %	88.2	96.14	95.55	97.64
Average CST(Sec)	0.68	3.02	0.814	1.3

Summary

City Level Summary- Data Services -Static

TSP (For 3G)	BSNL
Download throughput in Mbps	6.59
Upload Throughput in Mbps	1.21
Video streaming delay in sec	0.05
Web browsing delay in second	NA
Latency in (msec)	52.4

TSP (For LTE)	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	21.6	14.96	20.35	25.8
Upload Throughput in Mbps	14.9	11.72	15.43	8.9
Video streaming delay in sec	0.56	NA	0	1.5
Web browsing delay in second	0.92	NA	1.25	1.6
Latency in (msec)	25.85	36.5	28.4	36.9

TSP (For 5G)	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	199.7	NA	NA	NA
Upload Throughput in Mbps	37.37	NA	NA	NA
Video streaming delay in sec	0.52	NA	NA	NA
Web browsing delay in second	0.75	NA	NA	NA
Latency in (msec)	16.85	NA	NA	NA

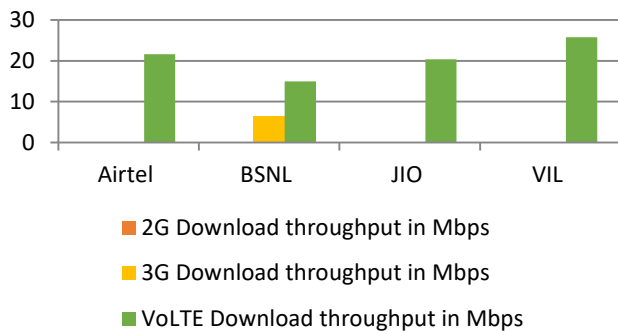
Data Services Static

Key Observations

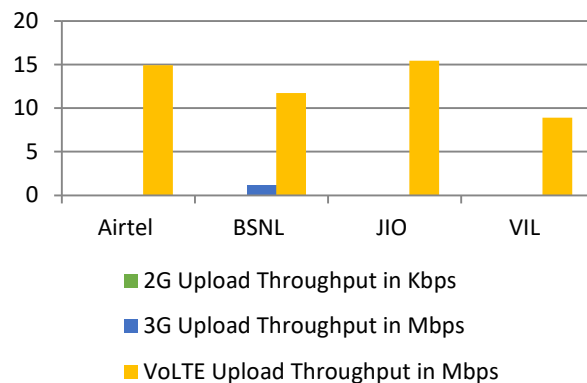
Data was tested at 6 locations .Following services were tested: Data Download/Upload, Latency (www.google.com), and Web browsing (Flipkart, Amazon, PayTm)

3G/4G/ 5G Network

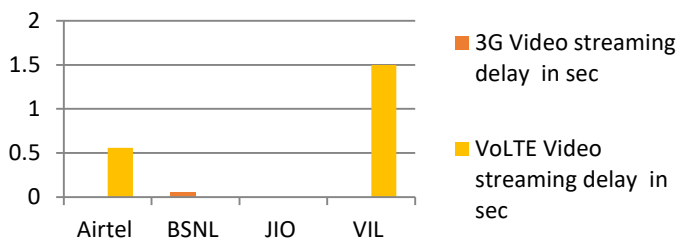
Static Avg. Data download throughput



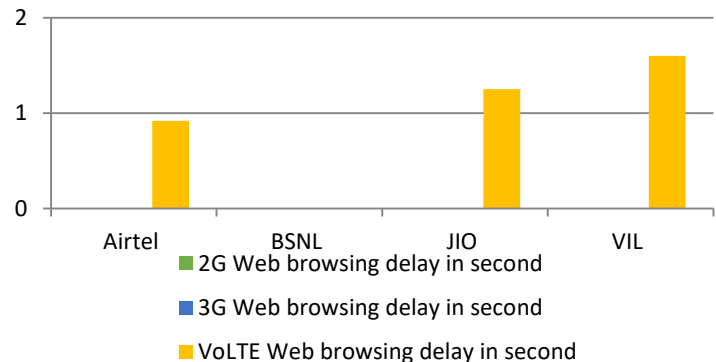
Static Avg. Data Upload Throughput



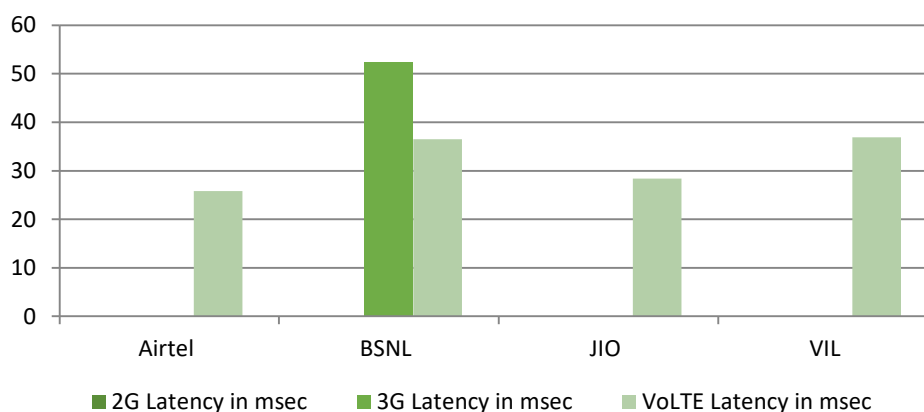
Static Avg. Video Streaming Delay



Static Avg. Web browsing delay



Static Latency in (msec)



1. Hotspot Location- Haridwar Railway

Station	3G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	NA	6.95	NA	NA
Upload Throughput in Mbps	NA	1.16	NA	NA
Video streaming delay in sec	NA	NA	NA	NA
Web browsing delay in second	NA	NA	NA	NA
Latency in (msec)	NA	68.6	NA	NA
	LTE			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	22.64	20.47	15.8	8
Upload Throughput in Mbps	12.06	6.34	19.6	5.9
Video streaming delay in sec	0.130	NA	0	1.7
Web browsing delay in second	0.85	NA	1.29	2.1
Latency in (msec)	26.0	61.8	30.85	39.3

	5G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	236.84	NA	NA	NA
Upload Throughput in Mbps	39.10	NA	NA	NA
Video streaming delay in sec	0.120	NA	NA	NA
Web browsing delay in second	0.96	NA	NA	NA
Latency in (msec)	17.5	NA	NA	NA

2. Hotspot Location- pentagon mall

	3G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	NA	4.38	NA	NA
Upload Throughput in Mbps	NA	1,23	NA	NA
Video streaming delay in sec	NA	NA	NA	NA
Web browsing delay in second	NA	NA	NA	NA
Latency in (msec)	NA	78.0	NA	NA

	LTE			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	12.10	13.20	31.5	43.6
Upload Throughput in Mbps	8.96	5.51	21.2	23.1
Video streaming delay in sec	0.170	NA	0	1.3
Web browsing delay in second	0.98	NA	1.09	1.2
Latency in (msec)	24.9	66.0	27.35	27

	5G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	158.54	NA	NA	NA
Upload Throughput in Mbps	35.49	NA	NA	NA
Video streaming delay in sec	0.110	NA	NA	NA
Web browsing delay in second	0.54	NA	NA	NA
Latency in (msec)	16.1	NA	NA	NA

3. Hotspot Location- Har ki Pauri

	3G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	NA	2.86	NA	NA
Upload Throughput in Mbps	NA	1.78	NA	NA
Video streaming delay in sec	NA	NA	NA	NA
Web browsing delay in second	NA	NA	NA	NA
Latency in (msec)	NA	86.1	NA	NA

	LTE			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	12.06	26.99	9.2	10.8
Upload Throughput in Mbps	8.87	3.01	6.6	3.1
Video streaming delay in sec	0.206	NA	0	1.5
Web browsing delay in second	1.20	NA	1.3	1.9
Latency in (msec)	25.6	57.6	25.5	53

	5G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	320.10	NA	NA	NA
Upload Throughput in Mbps	70.65	NA	NA	NA
Video streaming delay in sec	0.102	NA	NA	NA
Web browsing delay in second	0,62	NA	NA	NA
Latency in (msec)	18.0	NA	NA	NA

4. Hotspot Location- Haridwar Bus Stand

	3G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	NA	6.59	NA	NA
Upload Throughput in Mbps	NA	1.21	NA	NA
Video streaming delay in sec	NA	NA	NA	NA
Web browsing delay in second	NA	NA	NA	NA
Latency in (msec)	NA	56.0	NA	NA

	LTE			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	21.02	25.15	24.7	8.2
Upload Throughput in Mbps	18.42	14.05	18.8	4.9
Video streaming delay in sec	1.02	NA	0	1.6
Web browsing delay in second	0.74	NA	1.05	2.1
Latency in (msec)	24.0	94.0	32.65	30

	5G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	280.76	NA	NA	NA
Upload Throughput in Mbps	48.67	NA	NA	NA
Video streaming delay in sec	0.98	NA	NA	NA
Web browsing delay in second	0.87	NA	NA	NA
Latency in (msec)	16.6	NA	NA	NA

5. Hotspot Location- Yog Nagri Rishikesh Railway Station

	3G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	NA	2.76	NA	NA
Upload Throughput in Mbps	NA	1.14	NA	NA
Video streaming delay in sec	NA	NA	NA	NA
Web browsing delay in second	NA	NA	NA	NA
Latency in (msec)	NA	53.9	NA	NA

	LTE			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	13.00	10.97	9.25	48.6
Upload Throughput in Mbps	11.76	9.76	12.2	3.7
Video streaming delay in sec	0.86	NA	0	1.4
Web browsing delay in second	0.98	NA	1.4	1.3
Latency in (msec)	27.3	63.7	26.5	43.3

	5G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	63.75	NA	NA	NA
Upload Throughput in Mbps	14.20	NA	NA	NA
Video streaming delay in sec	0.83	NA	NA	NA
Web browsing delay in second	0.67	NA	NA	NA
Latency in (msec)	15.9	NA	NA	NA

6. Hotspot Location- Janki Setu

	3G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	NA	3.76	NA	NA
Upload Throughput in Mbps	NA	1.99	NA	NA
Video streaming delay in sec	NA	NA	NA	NA
Web browsing delay in second	NA	NA	NA	NA
Latency in (msec)	NA	55.1	NA	NA

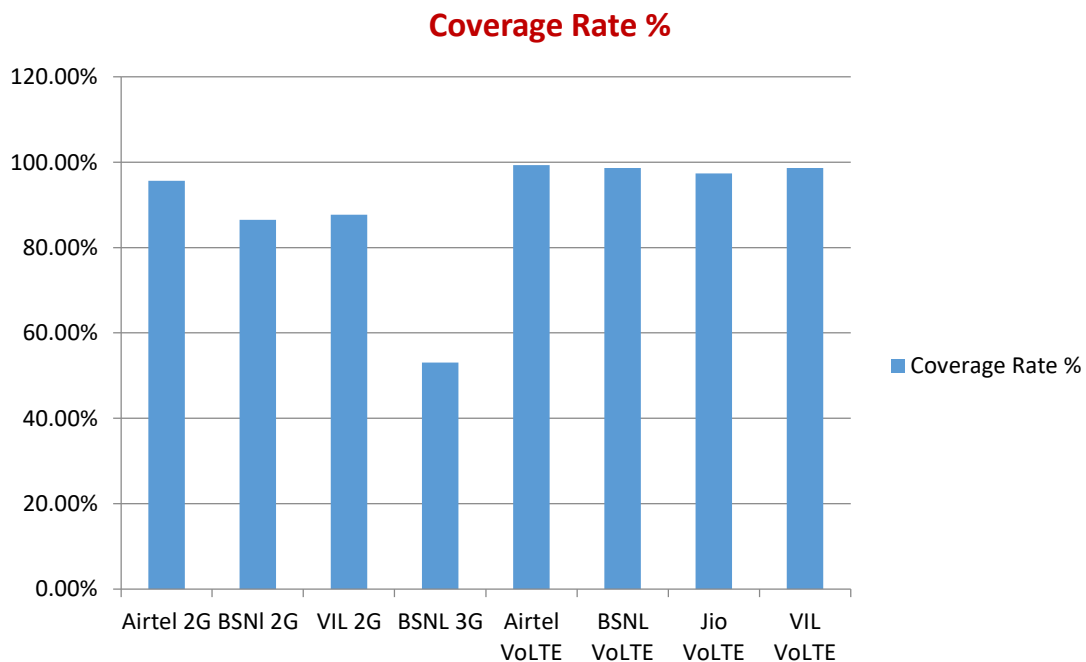
	LTE			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	23.85	14.96	31.7	35.63
Upload Throughput in Mbps	10.12	11.72	14.2	12.77
Video streaming delay in sec	1.03	NA	0	1.3
Web browsing delay in second	0.78	NA	1.39	1.1
Latency in (msec)	27.0	36.5	28	28.67

	5G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	158.82	NA	NA	NA
Upload Throughput in Mbps	21.92	NA	NA	NA
Video streaming delay in sec	0.98	NA	NA	NA
Web browsing delay in second	0.74	NA	NA	NA
Latency in (msec)	17.0	NA	NA	NA

Coverage Details

RF Coverage relates to the geographical footprint within the system that has sufficient RF signal strength to provide for a call session. The Coverage rate is calculated on the basis of % of samples in which the Rx level \geq -85 dBm, RSCP is \geq -90 dBm & RSRP \geq -110dBm. The details are as follows.

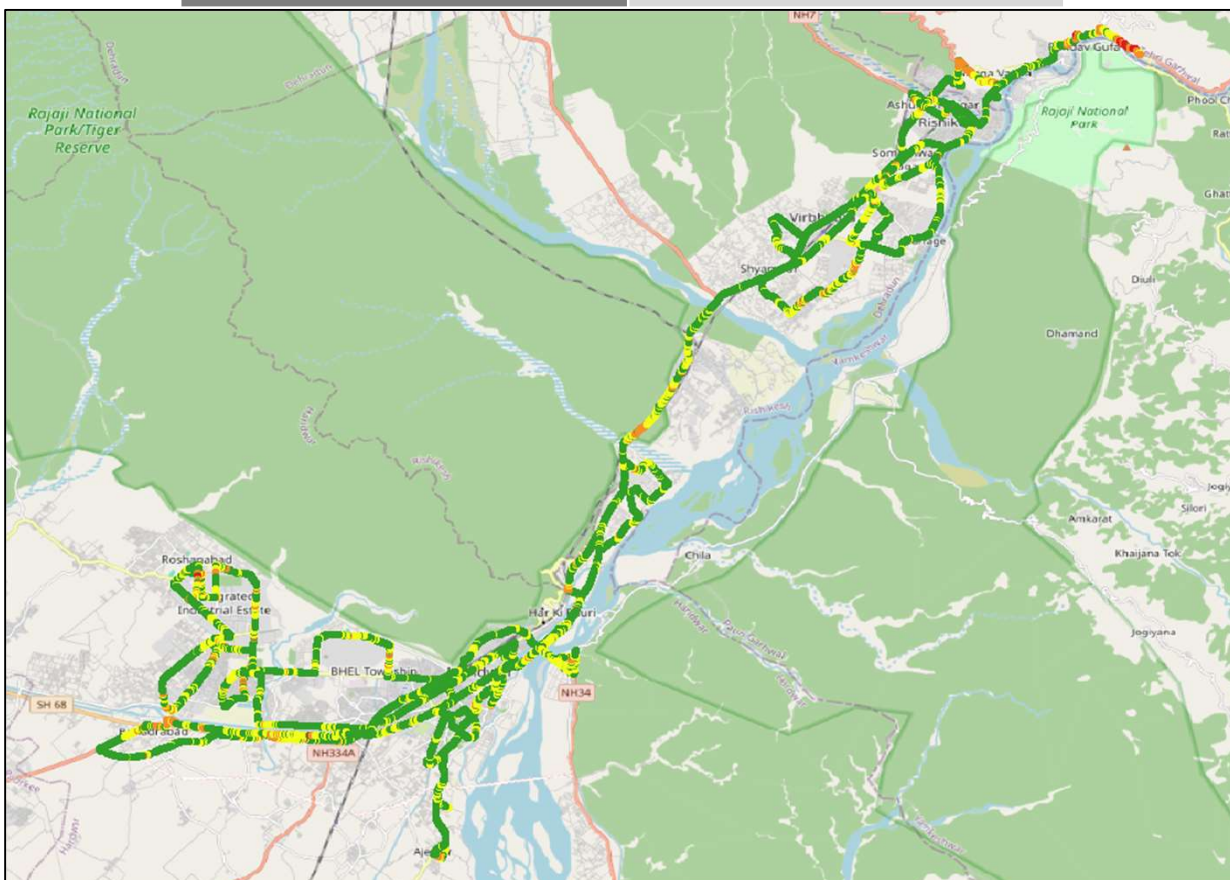
TSP	Coverage Rate %
Airtel 2G	95.6%
BSNI 2G	86.46%
VIL 2G	87.7%
BSNL 3G	53.05%
Airtel VoLTE	99.3%
BSNL VoLTE	98.63%
Jio VoLTE	97.34%
VIL VoLTE	98.6%



Coverage Details

TSP-Airtel

Technology	Coverage %
2G	95.6%

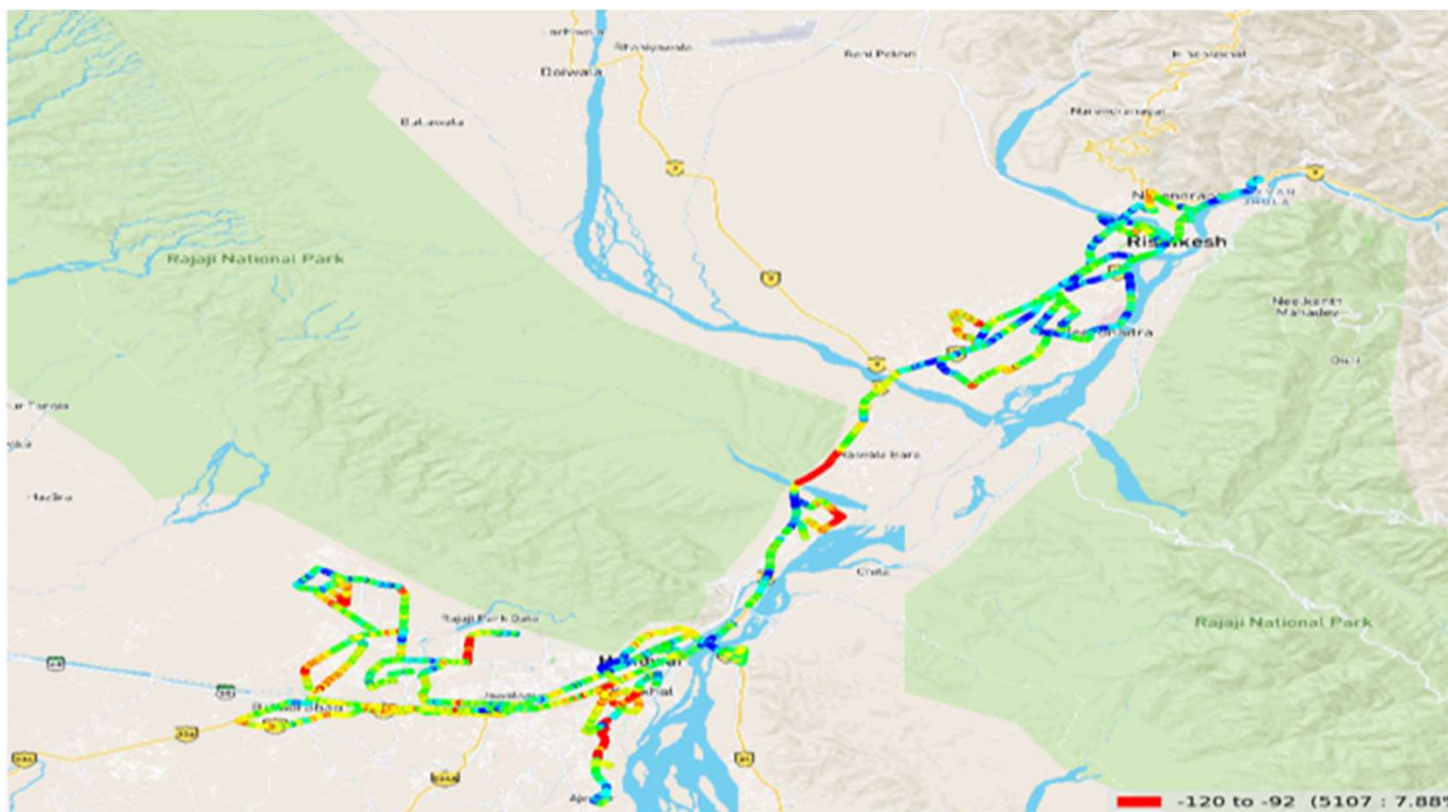


2G			
Overall RxLevel	# Samples	% PDF	Legends
[Max, >=-75]	80504	75.2%	
[-75, >=-85)	21809	20.4%	
[-85, >=-95)	4492	4.2%	
[-95, >=Min)	232	0.2%	
Total	107037		

Coverage Details

TSP-BSNL

Technology	Coverage %
2G	100%

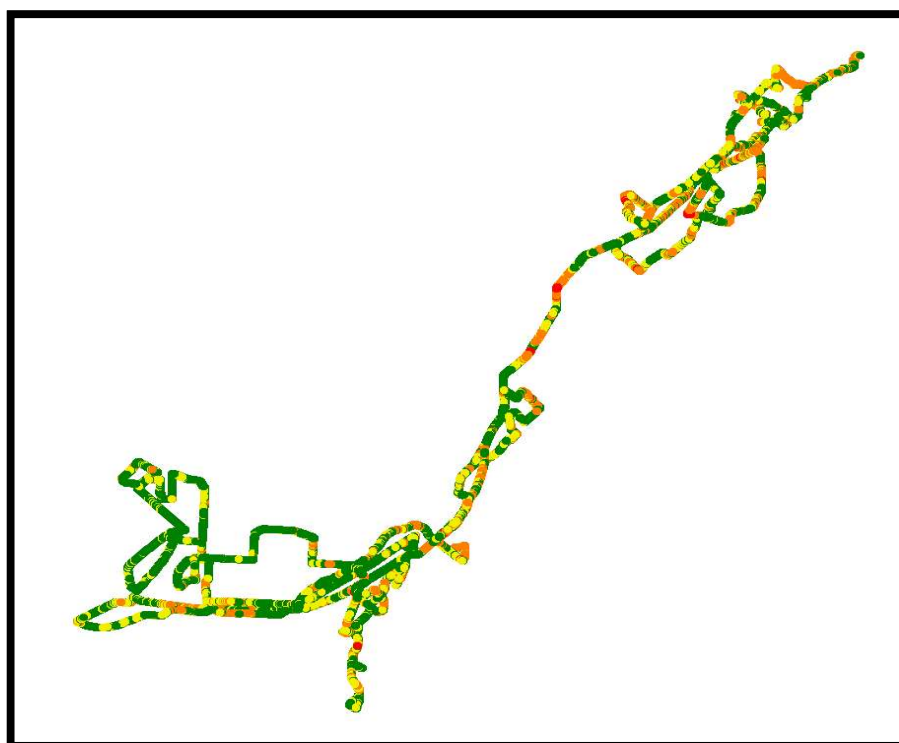


2G			
Overall RxLevel	# Samples	% PDF	Legends
[Max, >=-75]	24073	34.41	
[-75, >=-85)	20781	29.71	
[-85, >=-95)	19801	28.31	
[-95, >=Min)	5287	7.55	
Total	69942	100	

Coverage Details

TSP-VIL

Technology	Coverage %
2G	100

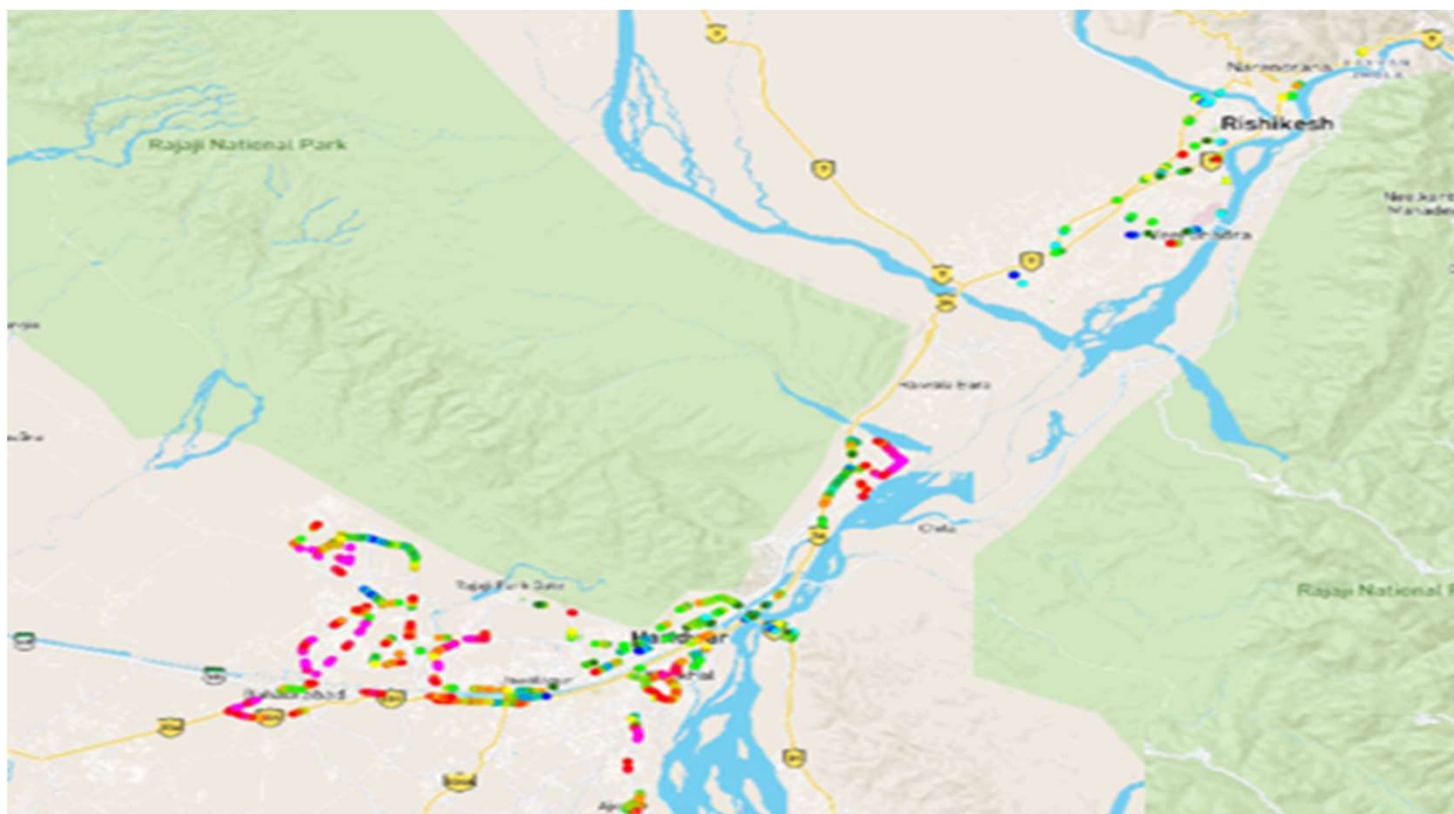


2G			
Overall RxLevel	# Samples	% PDF	Legends
[Max, >=-75]	1625011	52.8	
[-75, >=-85)	1073721	34.9	
[-85, >=-95)	361616	11.8	
[-95, >=Min)	17010	0.5	
Total	3077358	100	

Coverage Details

TSP- BSNL

Technology	Coverage %
3G	27.22

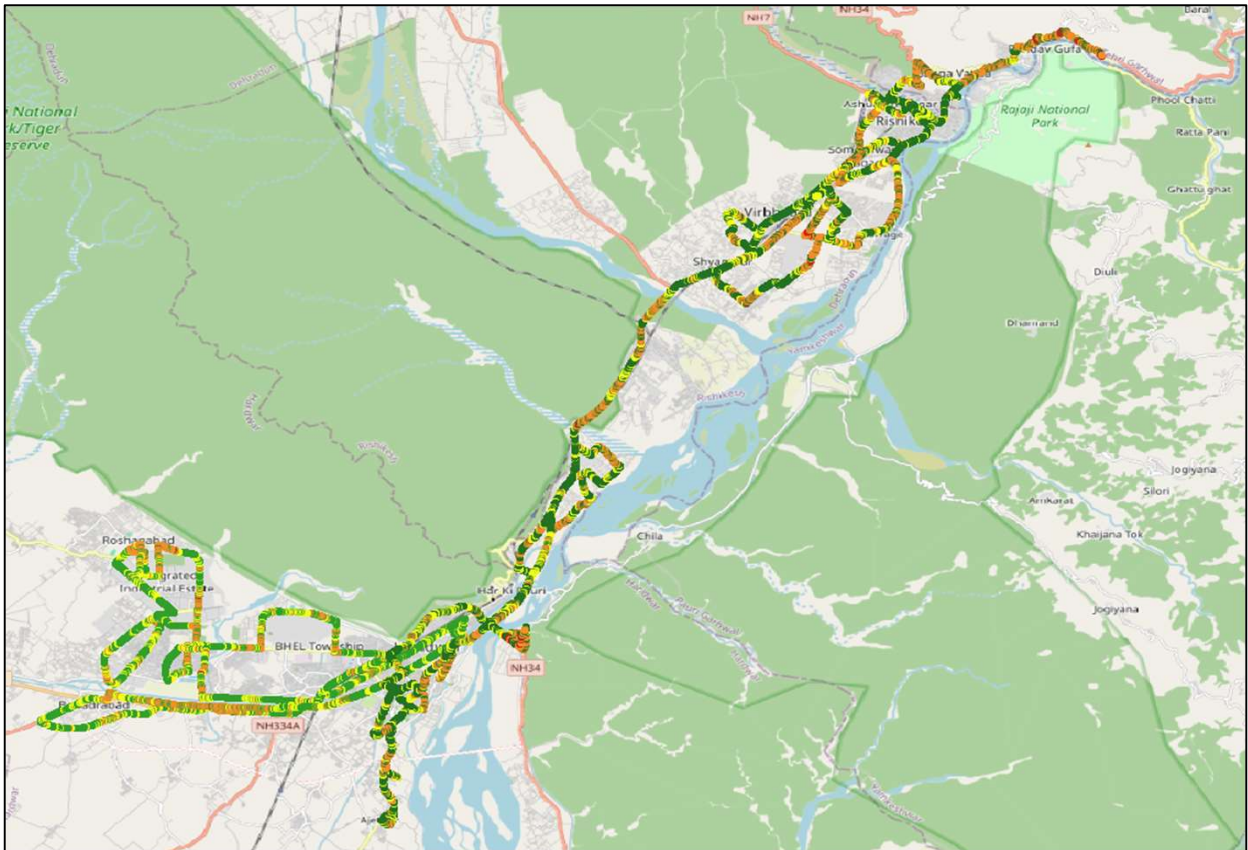


3G			
Overall RSCP	# Samples	% PDF	Legends
[Max, >=-70]	4656	14.74	
[-70, >=-80]	3378	10.69	
[-80, >=-90]	9290	29.42	
[-90, >=Min]	14253	45.13	
Total	31577	100	

Coverage Details

TSP-Airtel

Technology	Coverage %
VoLTE	99.3%

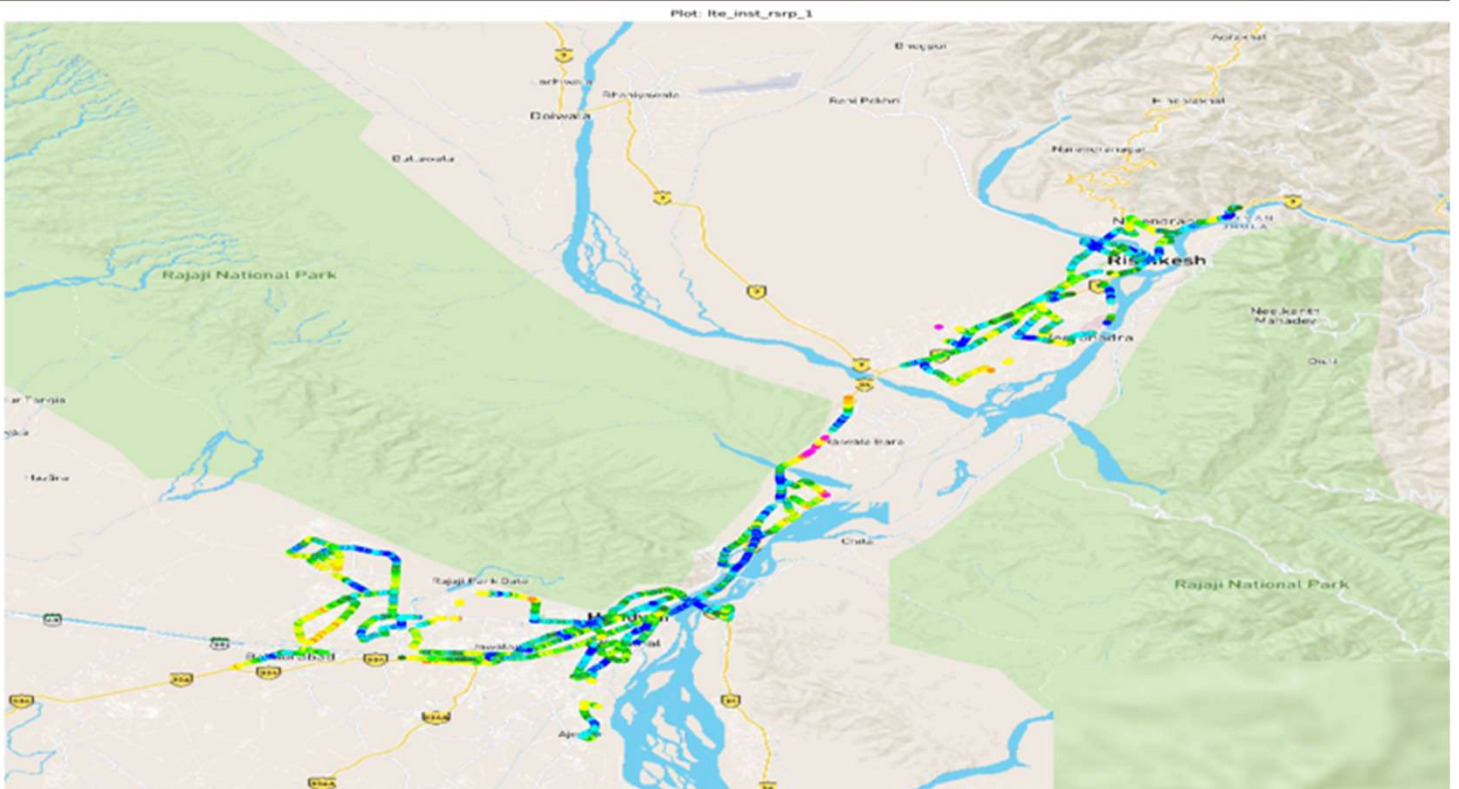


VoLTE			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	691807	50.4%	Green
[-80, >=-90)	445000	32.4%	Yellow
[-90, >=-110)	224732	16.4%	Orange
[-110, >=Min)	10060	0.7%	Red
Total	1371599		

Coverage Details

TSP-BSNL

Technology	Coverage %
VoLTE	93.88

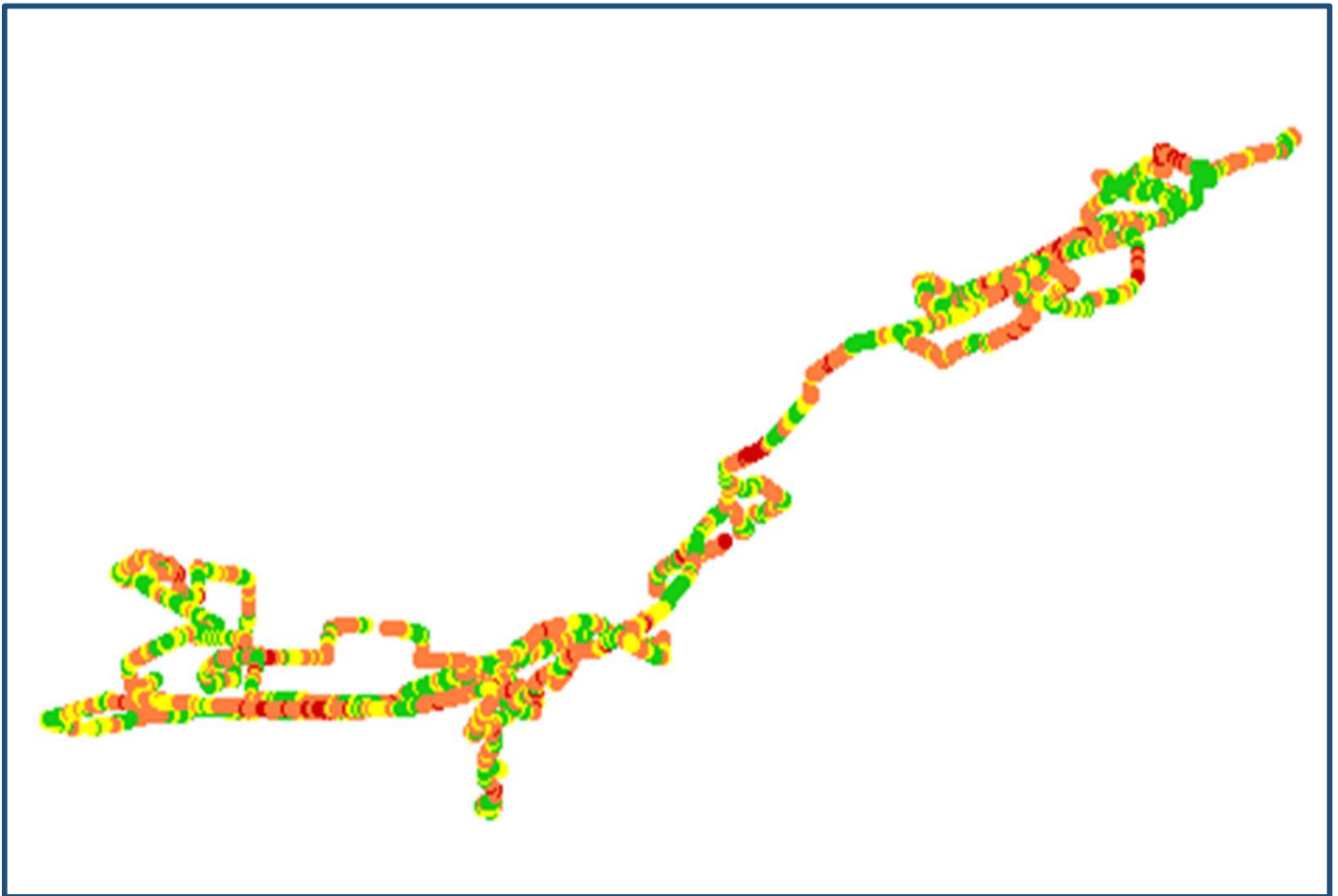


VoLTE			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	20148	15.21	
[-80, >=-90)	40445	30.54	
[-90, >=-110)	69998	52.86	
[-110, >=Min)	1812	1.36	
Total	132403	100	

Coverage Details

TSP-RJIO

Technology	Coverage %
VoLTE	97.34

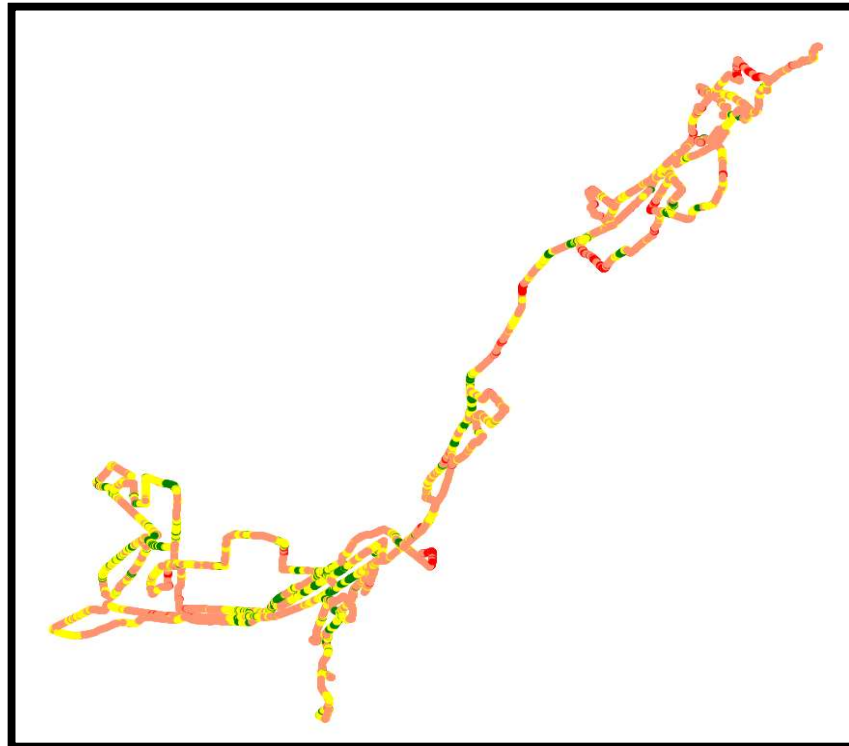


VoLTE			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	10965	27.92	
[-80, >=-90)	10490	26.71	
[-90, >=-110)	16768	42.70	
[-110, >=Min)	1045	2.66	
Total	39268	100	

Coverage Details

TSP-VIL

Technology	Coverage %
VoLTE	100

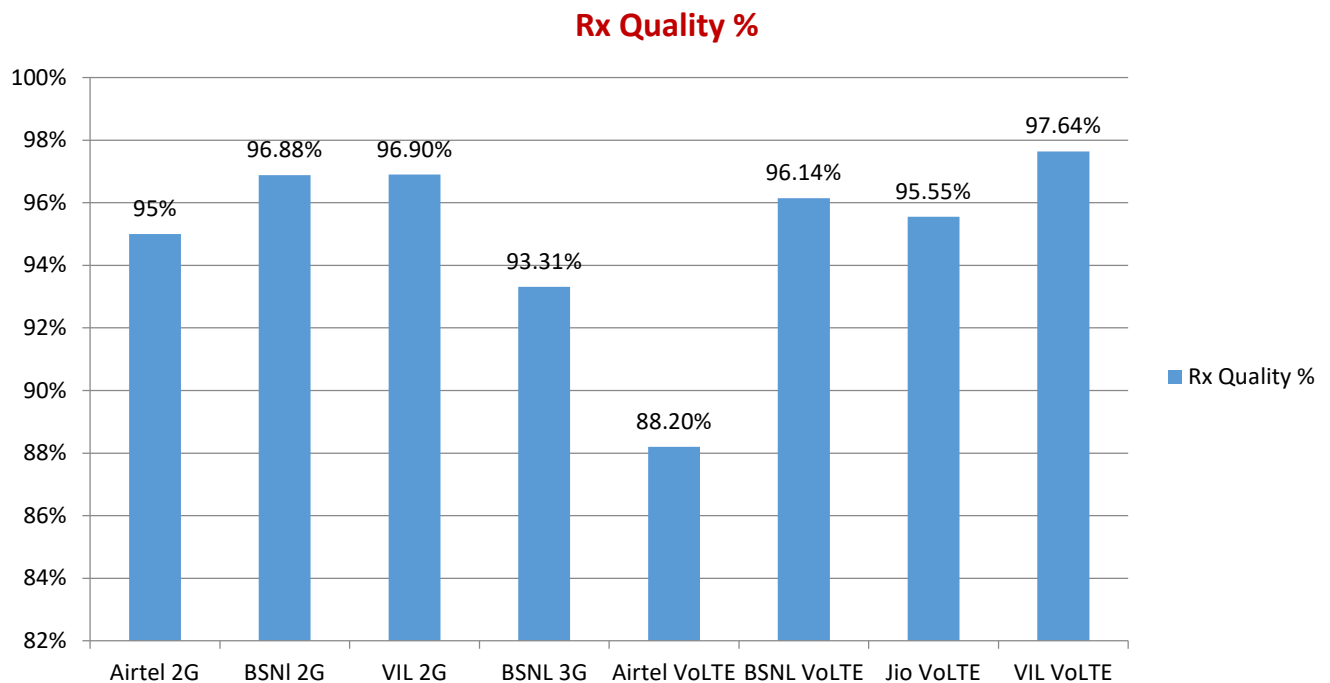


VoLTE			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	5170171	34.8	
[-80, >=-90)	1191623	8.0	
[-90, >=-110)	8286505	55.8	
[-110, >=Min)	212320	1.4	
Total	14860619	100	

Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP and SINR > 0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.

TSP	Rx Quality %
Airtel 2G	95%
BSNI 2G	96.88%
VIL 2G	96.9%
BSNL 3G	93.31%
Airtel VoLTE	88.20%
BSNL VoLTE	96.14%
Jio VoLTE	95.55%
VIL VoLTE	97.64%

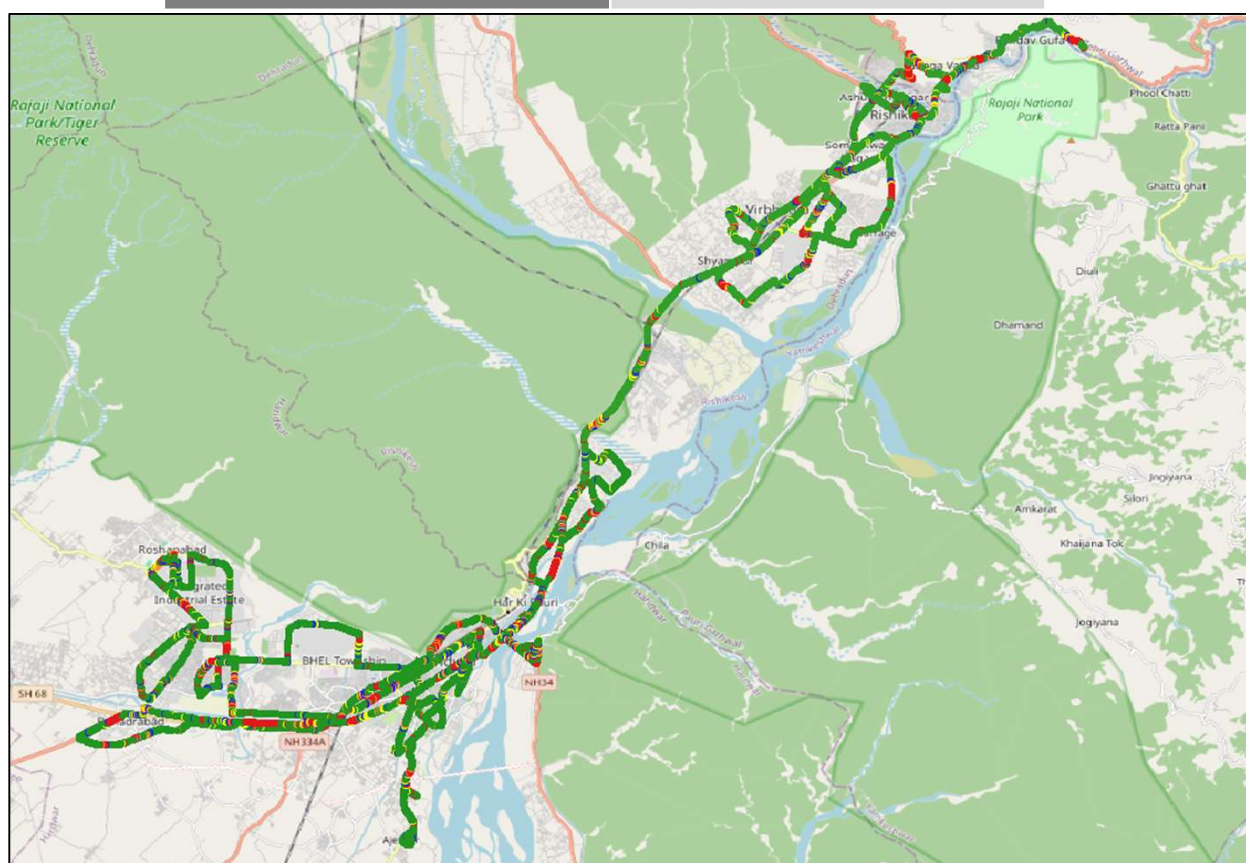


Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP and SINR > 0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.

TSP-Airtel

Technology	Rx Quality %
2G	95%



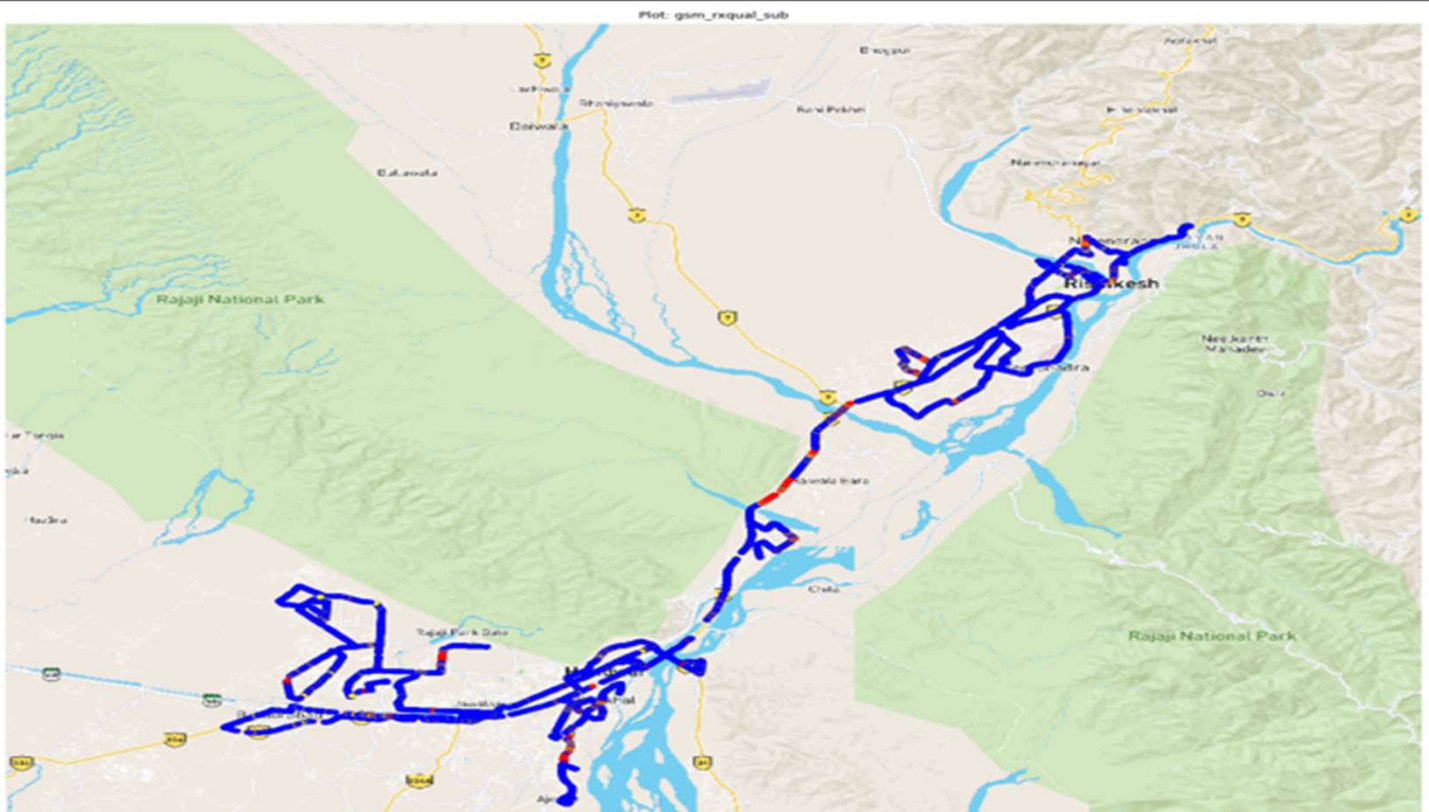
Overall Rx Quality	# Samples	% PDF	Legends
(Min, ≤ 2)	55753	76%	
(2, ≤ 3)	2481	3%	
(3, ≤ 4)	3305	4%	
(4, ≤ 5)	8829	12%	
(5, $\leq \text{Max}$)	3359	5%	
Total	73727		

Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP and SINR > 0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.

TSP-BSNL

Technology	Rx Quality %
2G	96.88



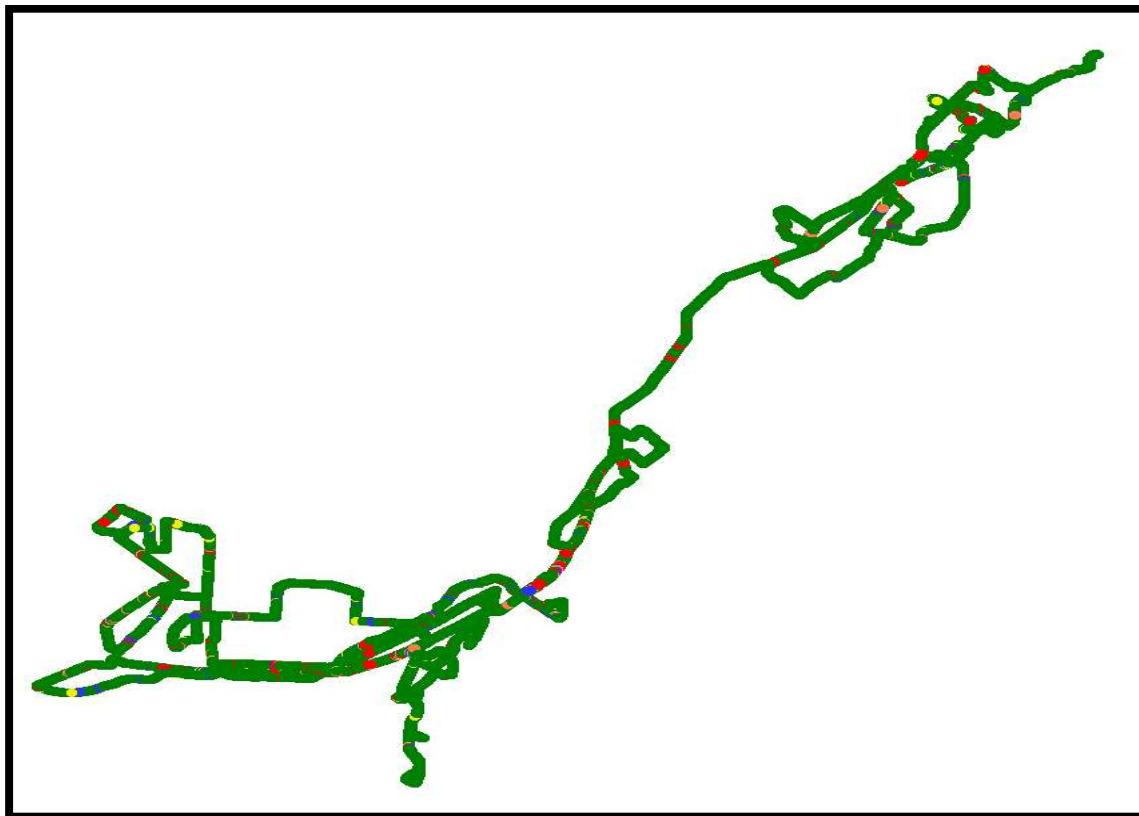
Overall Rx Quality	# Samples	% PDF	Legends
(Min, ≤ 2)	2426	49.98	Green
(2, ≤ 3)	1092	22.50	Yellow
(3, ≤ 4)	1106	22.79	Blue
(4, ≤ 5)	115	2.36	Orange
(5, $\leq \text{Max}$)	114	2.34	Red
Total	4853	100	

Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP and SINR > 0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.

TSP-VIL

Technology	Rx Quality %
2G	96.9



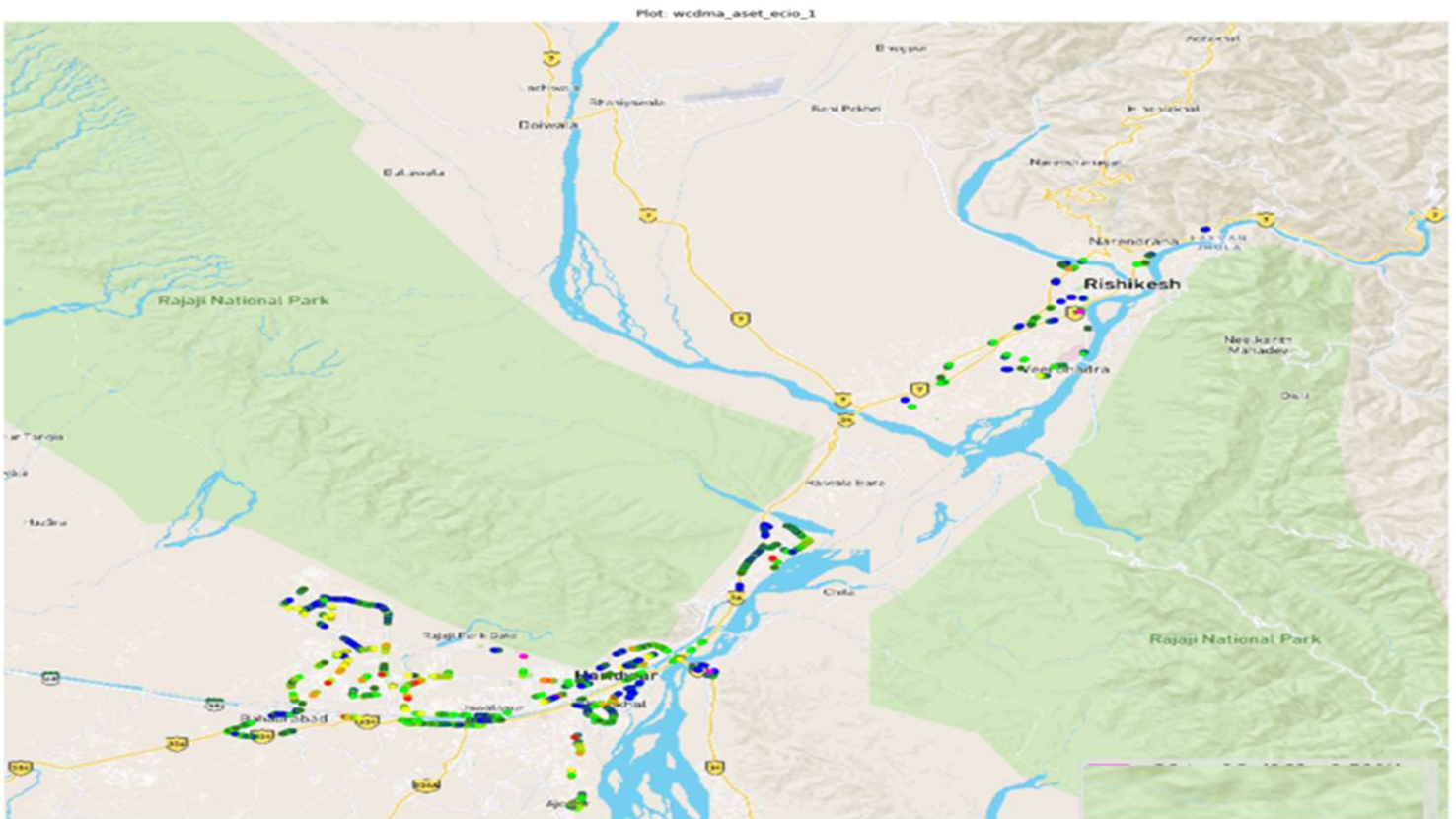
Overall Rx Quality	# Samples	% PDF	Legends
(Min, ≤ 2)	2854002	92.7	
(2, ≤ 3)	43704	1.4	
(3, ≤ 4)	41889	1.4	
(4, ≤ 5)	42368	1.4	
(5, $\leq \text{Max}$)	95395	3.1	
Total	3077358	100	

Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP and SINR > 0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.

TSP-BSNL

Technology	Rx Quality %
3G	93.31



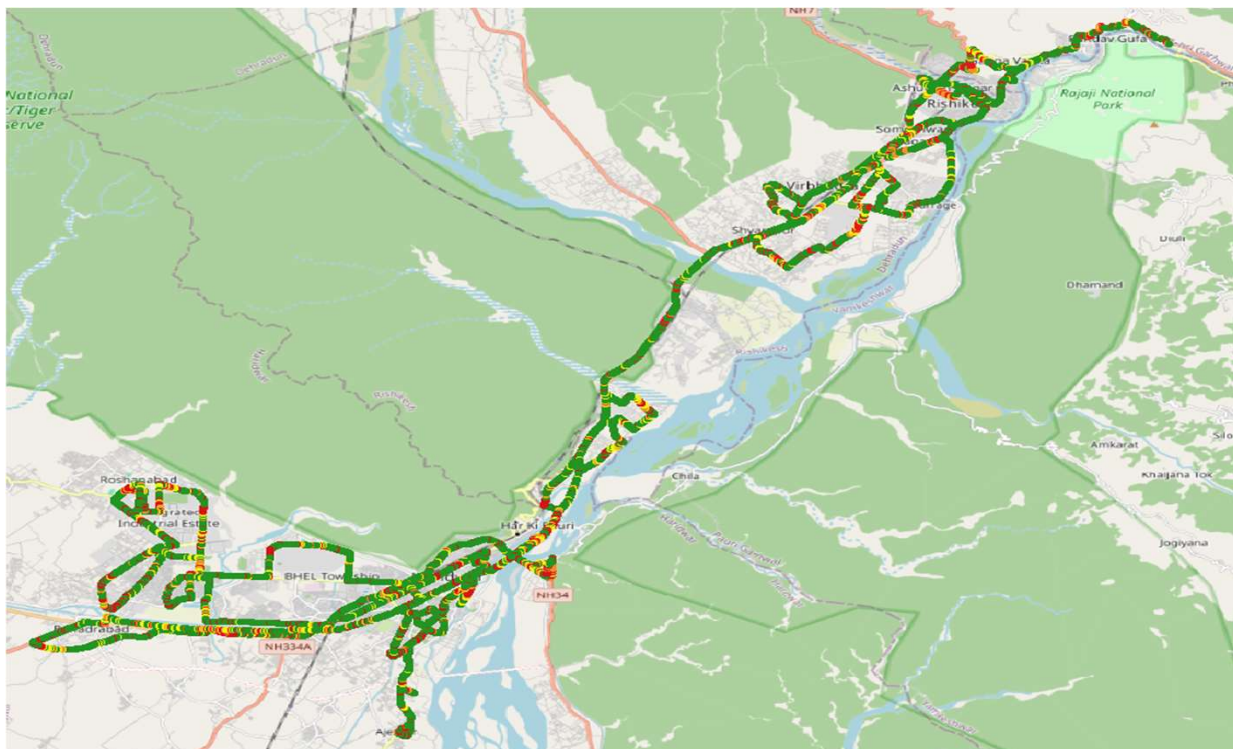
Overall Ec/No	# Samples	% PDF	Legends
(Max, ≤ -6)	7622	24.13	
(-6, ≤ -9)	7762	24.58	
(-9, ≤ -11)	9720	30.78	
(-11, ≤ -14)	4362	13.81	
(-14, \leq Min)	2111	6.68	
Total	31577	100	

Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP and SINR > 0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.

TSP-Airtel

Technology	Rx Quality %
VoLTE	88.20%



Overall SINR	# Samples	% PDF	Legends
(Min, ≤ 0)	48391	12%	
(0, ≤ 5)	104536	26%	
(5, ≤ 10)	126460	31%	
(10, ≤ 15)	81333	20%	
(15, $\leq \text{Max}$)	48338	12%	
Total	409058		

Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP and SINR > 0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.

TSP-BSNL

Technology	Rx Quality %
VoLTE	96.14



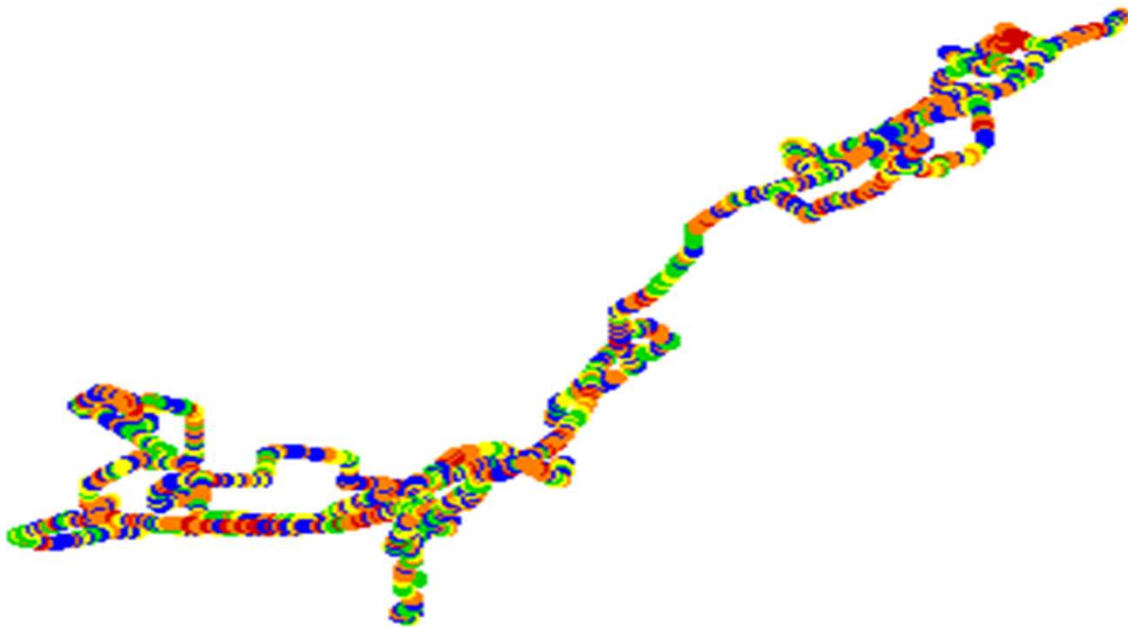
Overall SINR	# Samples	% PDF	Legends
(Min, ≤ 0)	5100	3.85	
(0, ≤ 5)	19010	14.35	
(5, ≤ 10)	31220	23.58	
(10, ≤ 15)	32705	24.70	
(15, $\leq \text{Max}$)	44362	33.50	
Total	132397	100	

Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP and SINR > 0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.

TSP-RJIO

Technology	Rx Quality %
VoLTE	95.55



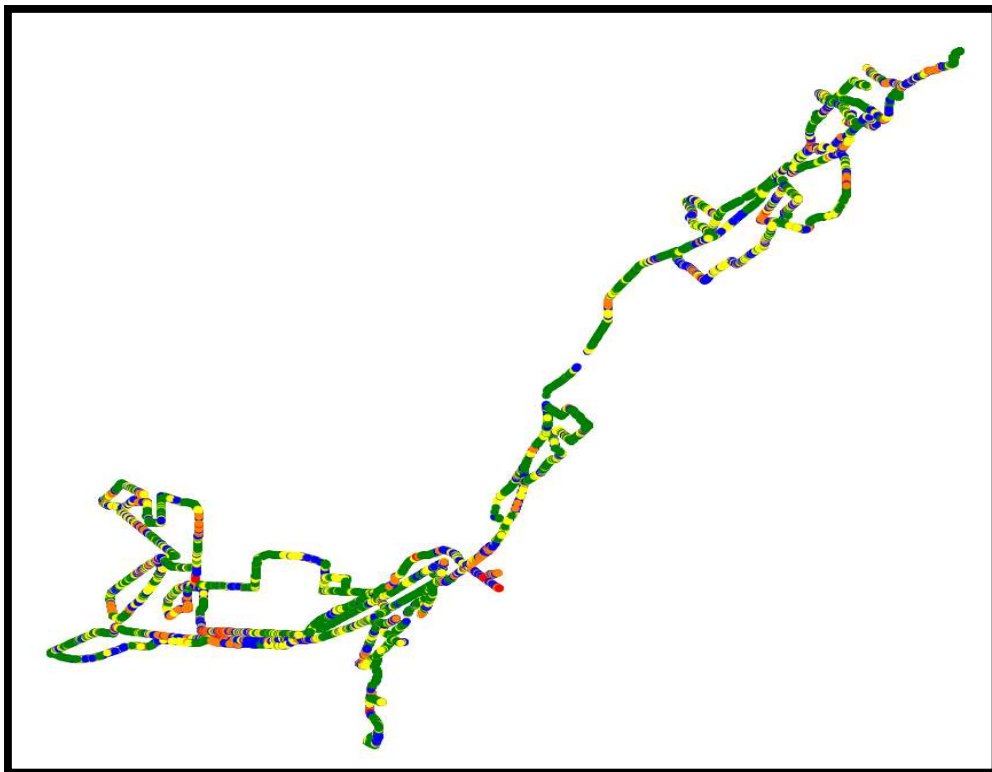
Overall SINR	# Samples	% PDF	Legends
(Min, ≤ 0)	1745	4.45	
(0, ≤ 5)	11616	29.58	
(5, ≤ 10)	11086	28.23	
(10, ≤ 15)	7019	17.87	
(15, $\leq \text{Max}$)	7802	19.87	
Total	39268	100	

Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP and SINR > 0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.

TSP-VIL

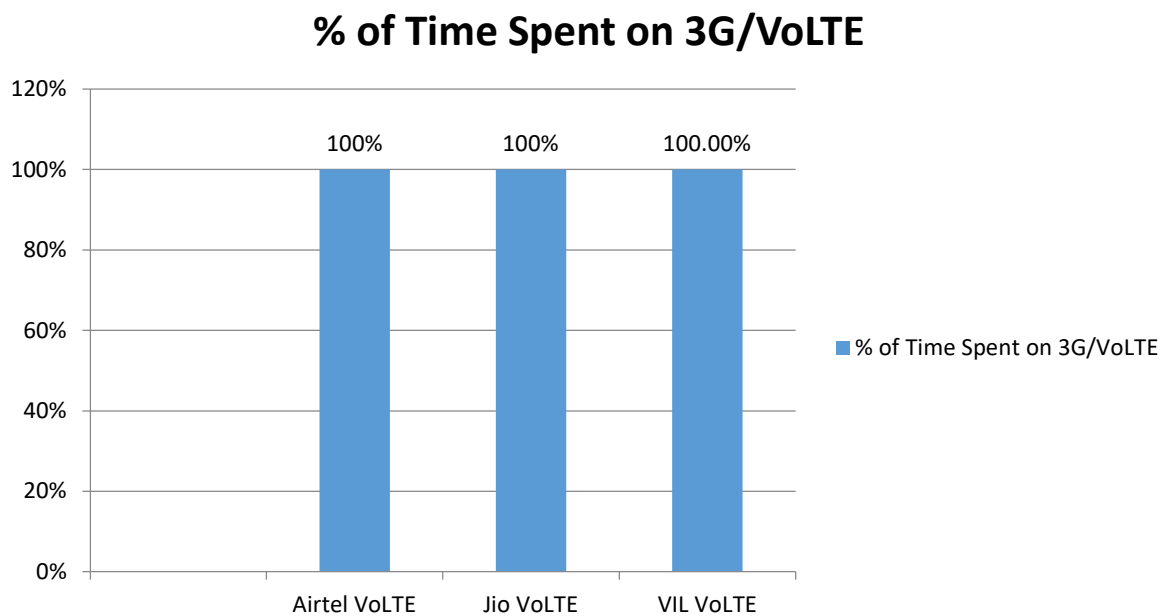
Technology	Rx Quality %
VoLTE	97.64



Overall SINR	# Samples	% PDF	Legends
(Min, ≤ 0)	351311	2.36	
(0, ≤ 5)	5578666	37.54	
(5, ≤ 10)	1258659	8.47	
(10, ≤ 15)	1348528	9.07	
(15, $\leq \text{Max}$)	6324349	42.56	
Total	14861513	100.0	

Technology Details

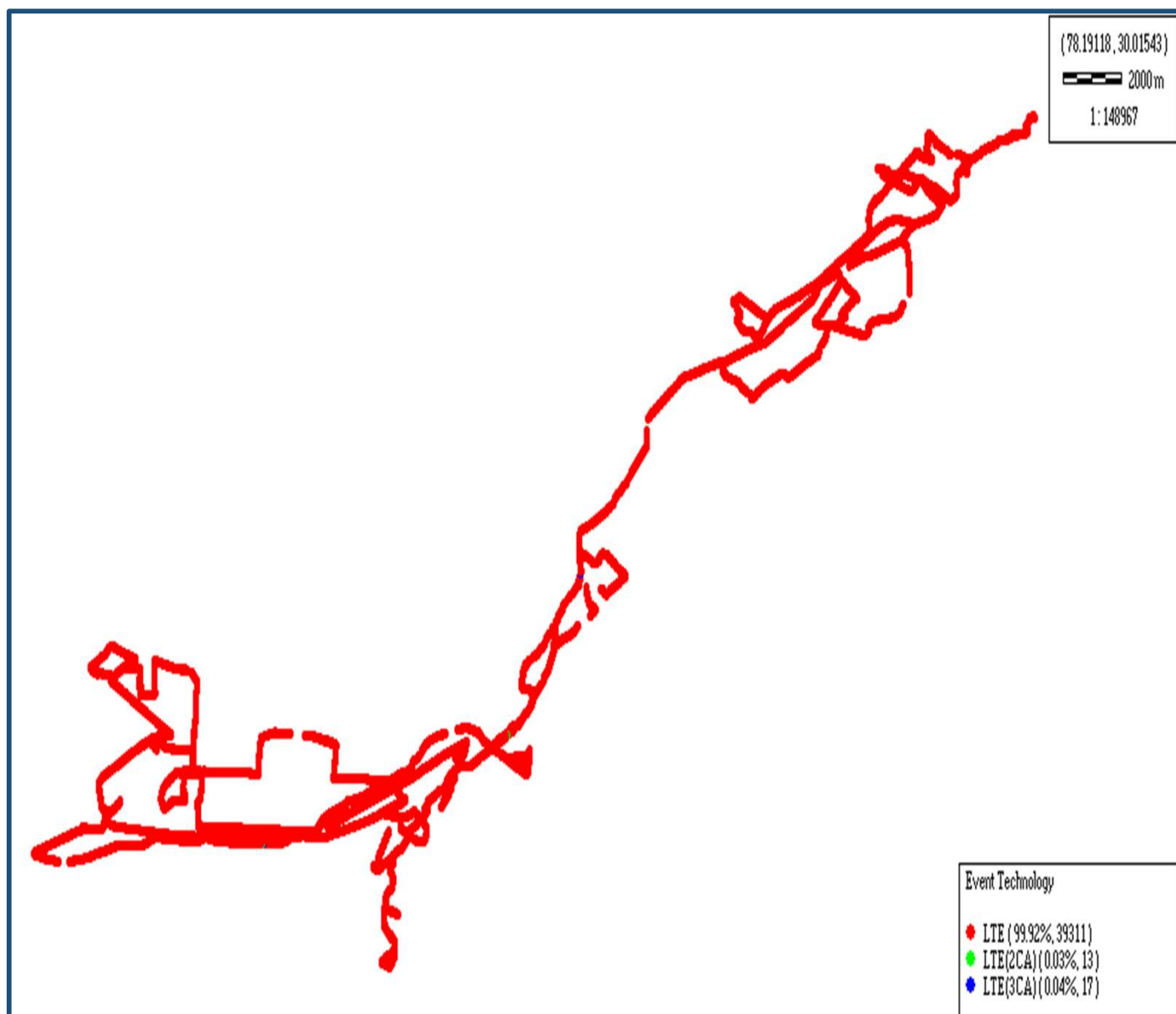
TSP	% of Time Spent on 3G/VoLTE
BSNL VoLTE	NA
Airtel VoLTE	100%
Jio VoLTE	100%
VIL VoLTE	100%



Technology Details

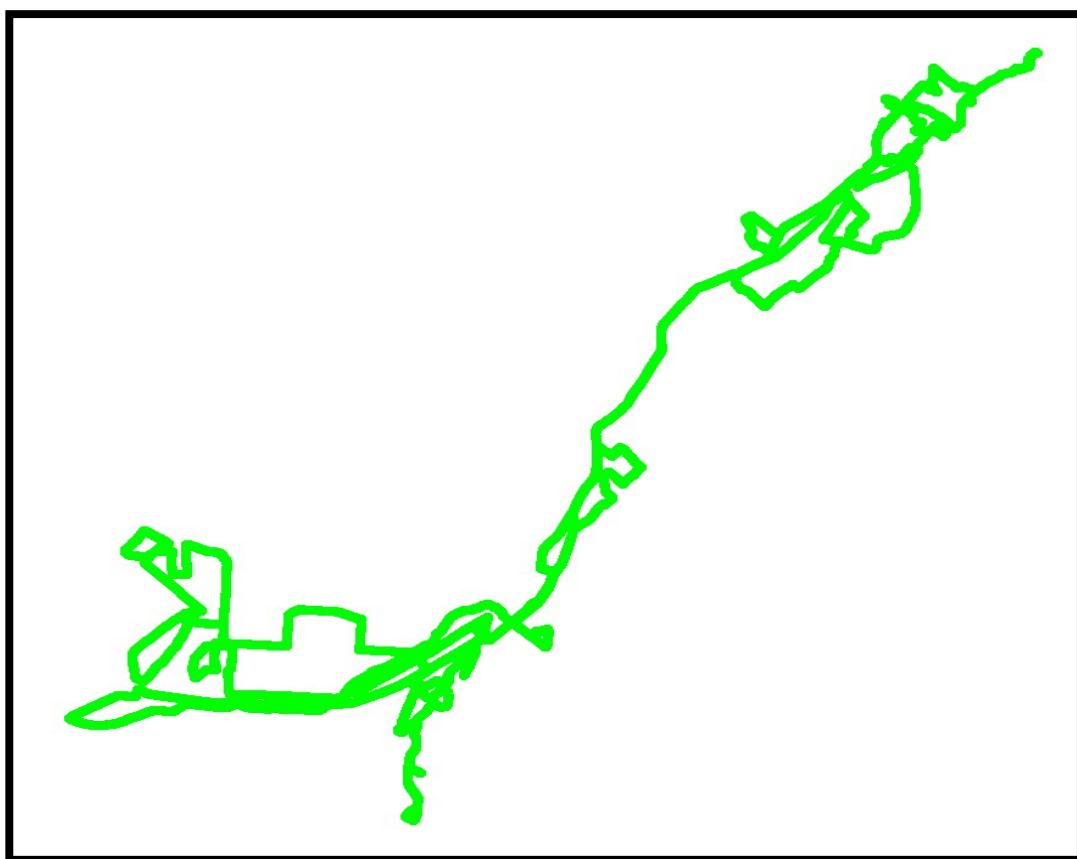
TSP-RJIO

Technology	% of Time Spent on
VoLTE	100%



TSP-VIL

Technology	% of Time Spent on
VoLTE	100

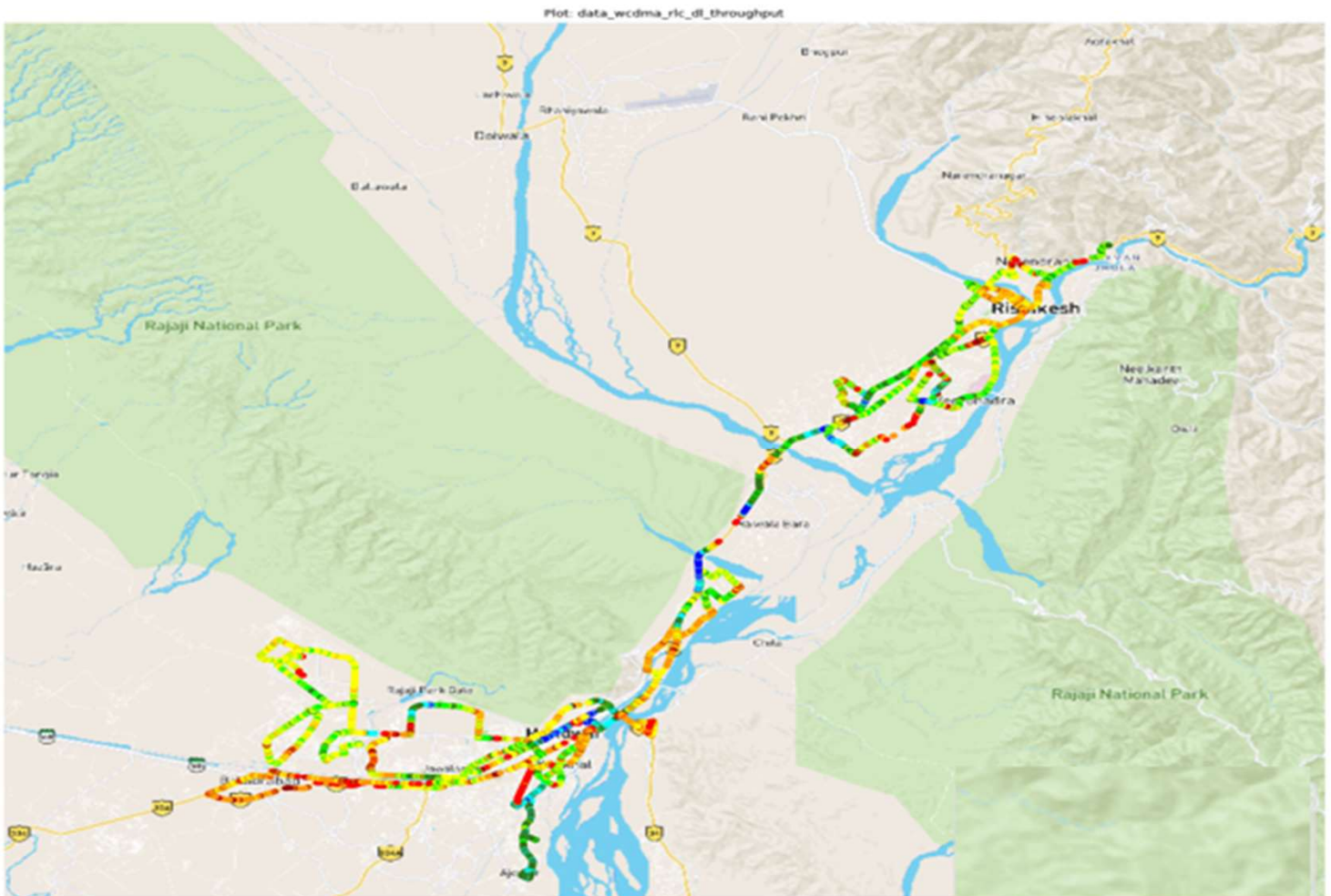


Dynamic Data Test

TSP-BSNL

Data Statistics - Dynamic data testing

Data KPIs - Overall	3G
Download Throughput (Mbps)	1.34



DL throughput	No of Sample	%	Legends
< 1 Mbps	6843	57.63	
1-5 Mbps	4486	37.78	
5-10 Mbps	261	2.19	
>10Mbps	282	2.37	

Dynamic Data Test

TSP-Airtel

Data Statistics - Dynamic data testing

Data KPIs - Overall	LTE
Download Throughput (Mbps)	22.67



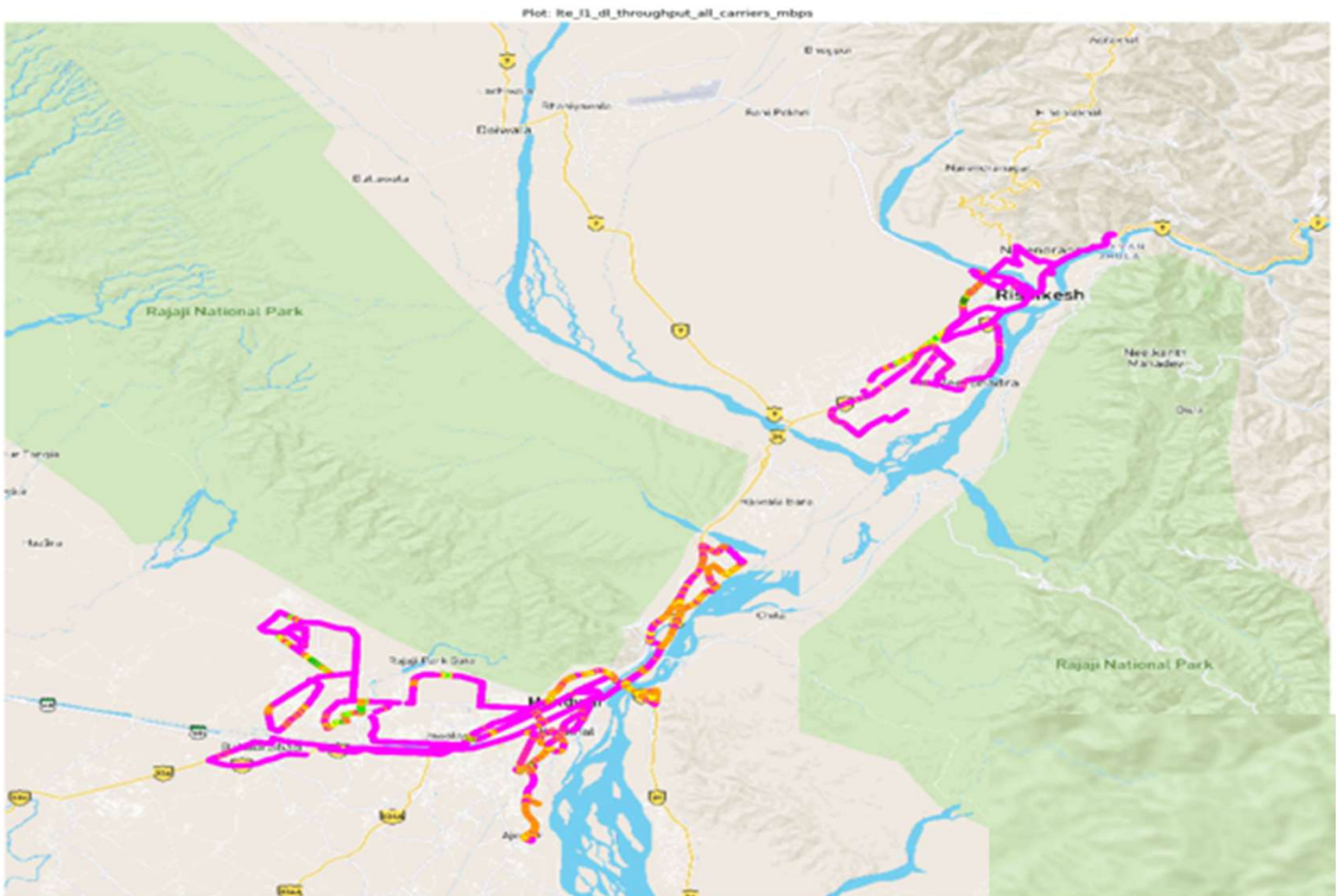
DL throughput	No of Sample	%	Legends
< 2Mbps	1104742	9.92	
2-5 Mbps	559816	5.02	
5-10 Mbps	1155675	10.37	
>10Mbps	8313867	74.69	

Dynamic Data Test

TSP-BSNL

Data Statistics - Dynamic data testing

Data KPIs - Overall	4G
Download Throughput (Mbps)	3.56

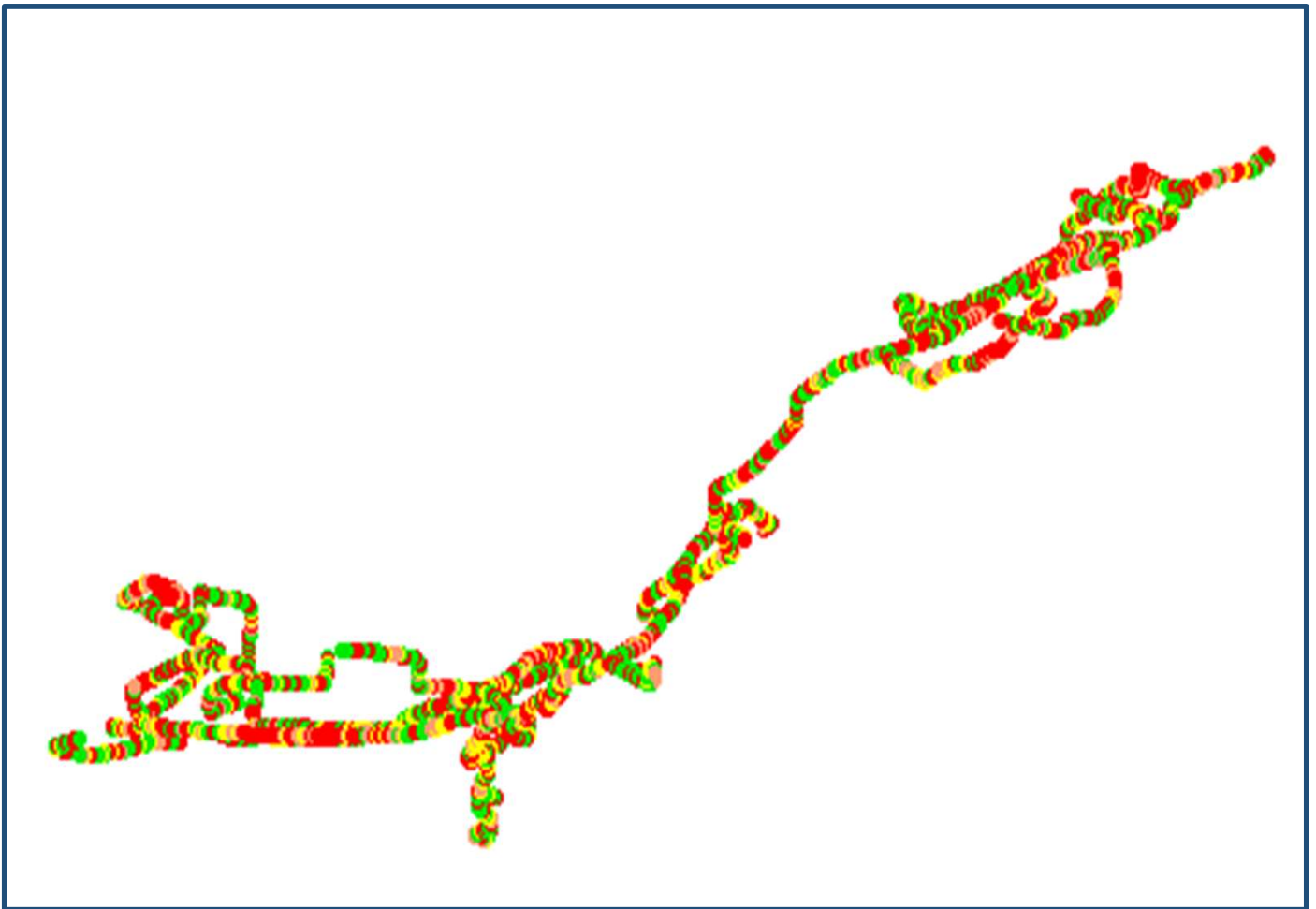


DL throughput	No of Sample	%	Legends
< 2Mbps	10235	34.26	
2-5 Mbps	10605	35.49	
5-10 Mbps	6855	22.94	
>10Mbps	2179	7.29	

TSP-RJIO

Data Statistics - Dynamic data testing

Data KPIs - Overall	LTE
Download Throughput (Mbps)	10.093

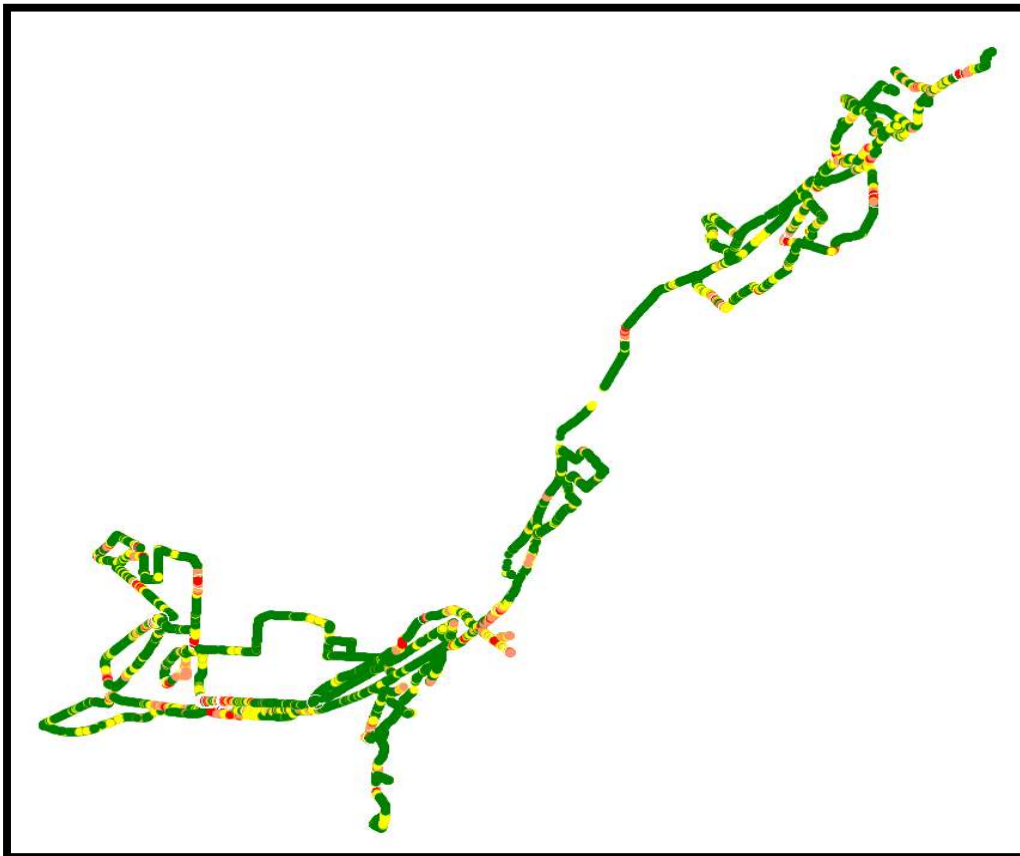


DL throughput	No of Sample	%	Legends
< 2Mbps	10039	32.19	
2-5 Mbps	4664	14.96	
5-10 Mbps	6192	19.86	
>10Mbps	10289	32.99	

TSP-VIL

Data Statistics - Dynamic data testing

Data KPIs - Overall	LTE
Download Throughput (Mbps)	14.32



DL throughput	No of Sample	%	Legends
< 2Mbps	780953	5.3	
2-5 Mbps	1423458	9.6	
5-10 Mbps	1864034	12.5	
>10Mbps	10792557	72.6	

Data testing on hotspots using traimyspeed app

Hotspot		Airtel	BSNL	JIO	VIL
1. Haridwar Railway Station	3G download in Mbps	NA	6.95	NA	NA
	3G upload in Mbps	NA	1.16	NA	NA
	4G download in Mbps	13.05	20.47	32.60	8.39
	4G upload in Mbps	16.96	6.34	22.18	8.46
	5G download in Mbps	326.54	NA	315.10	NA
	5G upload in Mbps	71.66	NA	101.18	NA
2. Pentagon Mall	3G download in Mbps	NA	4.38	NA	NA
	3G upload in Mbps	NA	1.23	NA	NA
	4G download in Mbps	23.69	13.20	33.25	20.09
	4G upload in Mbps	13.53	5.51	8.49	11.68
	5G download in Mbps	133.85	NA	100.51	NA
	5G upload in Mbps	25.84	NA	95.69	NA

Data testing on hotspots using traимyspeed app

Hotspot		Airtel	BSNL	JIO	VIL
3. Har ki Pauri	3G download in Mbps	NA	2.86	NA	NA
	3G upload in Mbps	NA	1.78	NA	NA
	4G download in Mbps	22.03	26.99	30.12	8.12
	4G upload in Mbps	25.43	3.01	3.26	4.06
	5G download in Mbps	283.79	NA	121.94	NA
	5G upload in Mbps	49.75	NA	37.39	NA
4. Haridwar Bus Stand	3G download in Mbps	NA	6.59	NA	NA
	3G upload in Mbps	NA	1.21	NA	NA
	4G download in Mbps	23.69	25.15	38.60	8.39
	4G upload in Mbps	13.53	14.05	28.18	8.46
	5G download in Mbps	33.85	NA	325.60	NA
	5G upload in Mbps	25.84	NA	106.68	NA

Data testing on hotspots using traimyspeed app

Hotspot		Airtel	BSNL	JIO	VIL
5. Yog Nagri Rishikesh Railway Station	3G download in Mbps	NA	2.76	NA	NA
	3G upload in Mbps	NA	1.14	NA	NA
	4G download in Mbps	NA	10.06	84.37	27.77
	4G upload in Mbps	NA	9.76	12.65	4.94
	5G download in Mbps	NA	NA	251.62	NA
	5G upload in Mbps	NA	NA	56.38	NA
6. Janki Setu	3G download in Mbps	NA	3.76	NA	NA
	3G upload in Mbps	NA	1.99	NA	NA
	4G download in Mbps	NA	14.96	52.87	24.31
	4G upload in Mbps	NA	11.72	14.05	18.99
	5G download in Mbps	NA	NA	215.33	NA
	5G upload in Mbps	NA	NA	75.61	NA