

Operator Assisted Drive Test Report

Salem SSA

APR – 2025
(RO, HYDERABAD)

Key Performance Indicators: All TSPs have met the Drop Call Rate (DCR) benchmark of 2%. All TSPs have met the Call Setup Success Rate (CSSR) of 95%.

The Operator Assisted Drive Test (OADT) has been carried out by TRAI RO Hyderabad with the help of Service Providers in Salem City & surrounding regions of Namakkal, Tiruchengodu, Mettur and Mallasamudram from 9:00 AM to 8:00 PM during 28th to 30th April' 2025 and 02nd May 2025. The drive test covered drive route of 385 KMs & 8 hotspot over a period of 4 days. Approximately 597 calls were made for each of the 7 networks: Three 2G networks, One 3G network and Three LTE network covering four TSPs.

Overview

Voice
Summary

Data
Summary

Overview

TRAI Hyderabad conducted Operator Assisted Drive Test from 9:00 AM to 8:00 PM during 28th to 30th April' 2025 and 02nd May 2025. Covering various locations in Salem City & surrounding regions of Namakkal, Tiruchengodu, Mettur and Mallasamudram. The performance of Airtel, BSNL, Jio and Vodafone Idea Limited were monitored across various technologies (2G, 3G, and 4G). The test results obtained from these drive tests were utilized to assess the network quality for Voice and Data services in terms of

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

Data: Download and Upload Throughputs, Web Browsing Delay and Latency

Drive Test Details :

Voice Tests: Calls were made for 90 sec duration with wait time of 10 sec between calls in all technologies. The drive test covered a drive route of approximately 385 KMs over a period of 4 days from 28th to 30th April' 2025 and 02nd May 2025. Approximately 597 calls were made for each of the 7 networks: three 2G (Lock Mode) networks, one 3G (Dual mode) networks and three VoLTE network covering 4 unique TSPs.

Data Tests:

1. Dynamic data test was conducted for 385 kms over a period of 4 days for download throughput for 3G & 4G technologies.

Data Tests were performed at 6 static locations for 2G, 3G & 4G technologies of five iterations at each location.

2. For Voice and Data KPI's, 2G measurement is done with UE locked mode, 3G measurement is done with UE in Dual mode (2G & 3G) and 4G measurement is done with UE in Free Mode.

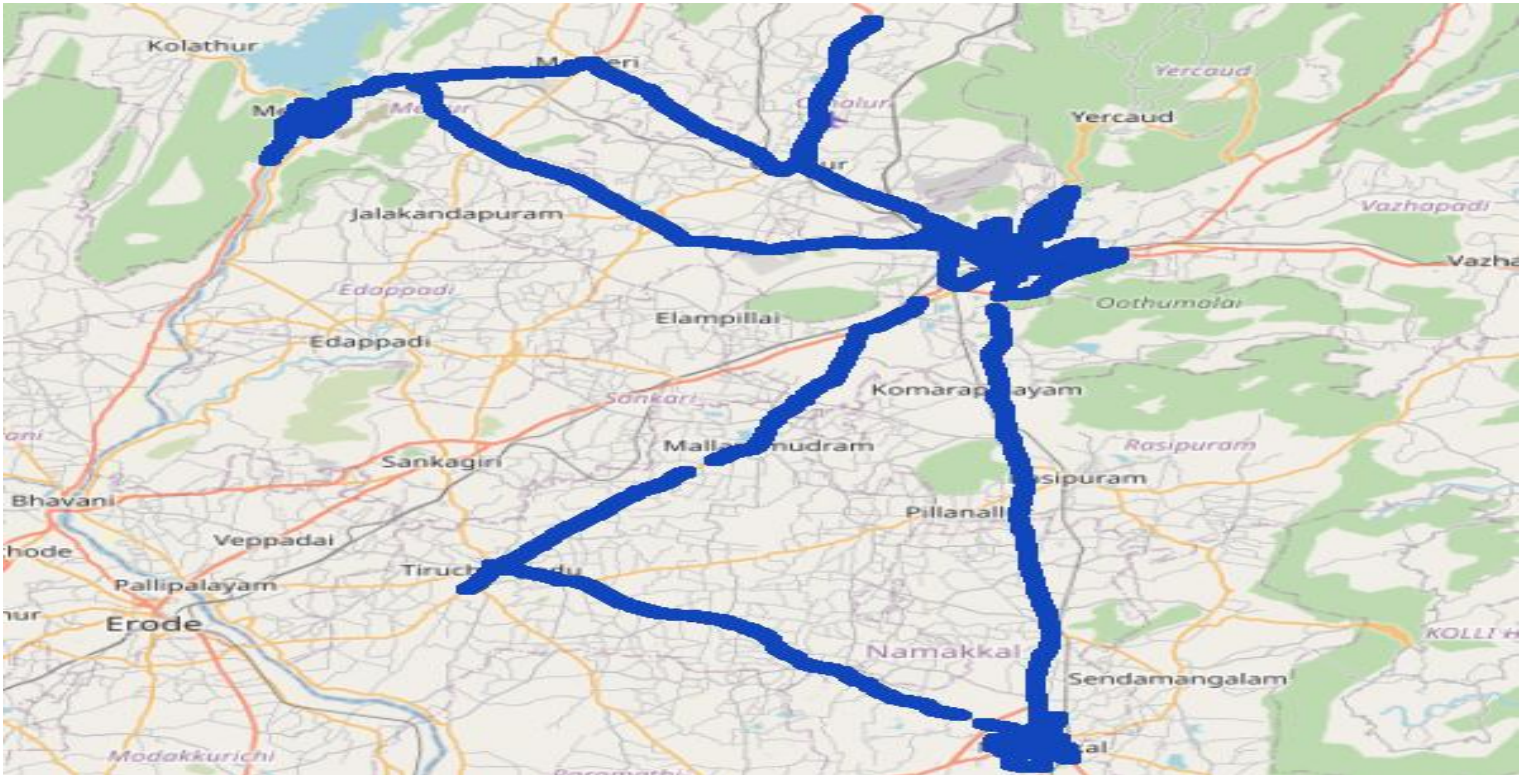
* 3G KPI's which are calculated from UE in Dual Mode (2G & 3G) includes samples and events of 2G.

* 4G KPI's which are calculated from the UE in Free Mode included samples and events of 2G & 3G.

Service	Specifications
Download	2G (Locked) - 500KB, 3G (Dual) - 20 MB, 4G (Free) - 40 MB
Upload	2G (Locked) - 100KB, 3G (Dual) - 5 MB, 4G (Free) - 10 MB
Web Browsing	3 links of e/m commerce website www.amazon.in , www.flipkart.com and www.myntra.com
Video Streaming	130 Sec Clip
Latency	32 Bytes on www.google.com

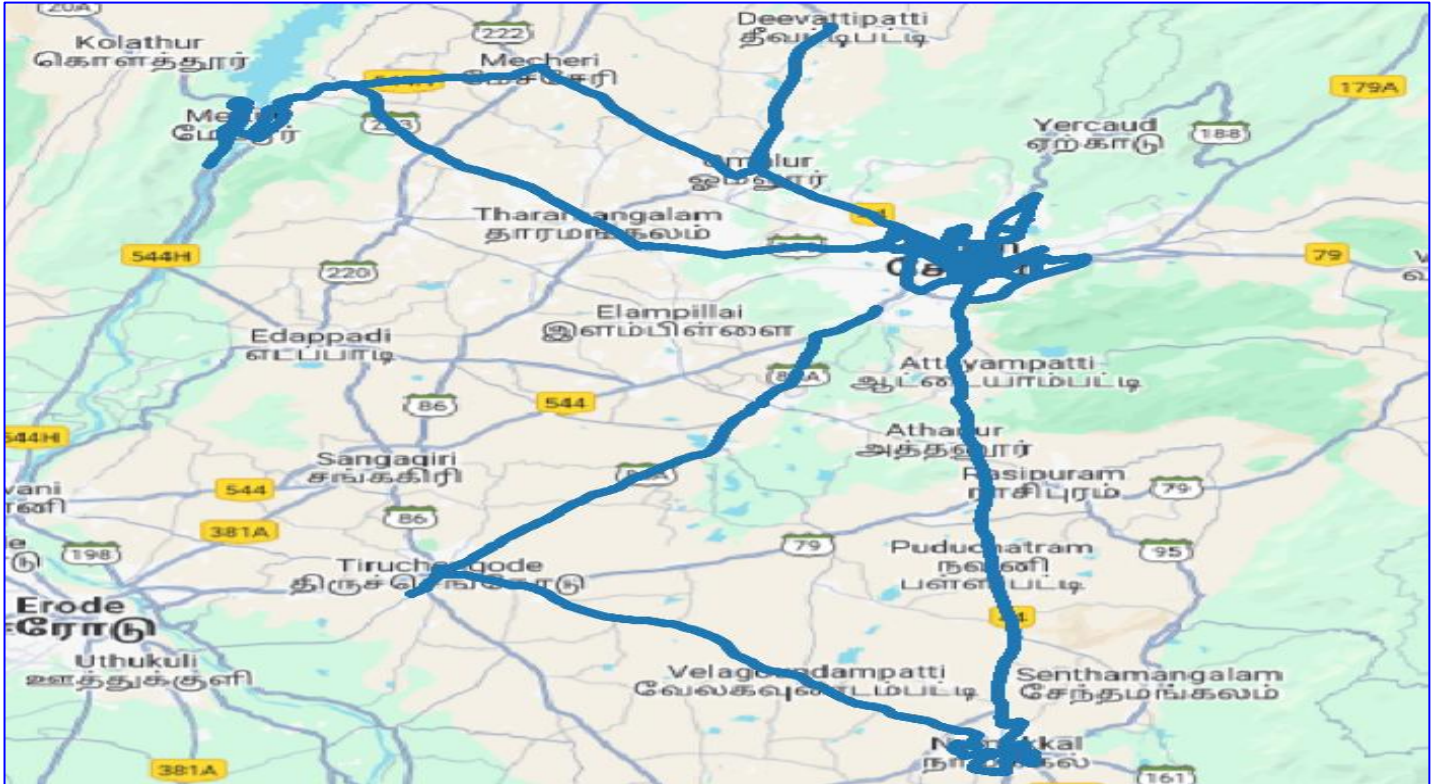
Overview

Voice & Dynamic Data Test Drive Route



Areas Covered – Nammakal Town (Day 1)	Areas Covered – Mettur Town (Day 2)	Areas Covered – Villupuram Town (Day 3)
Kondalampatti	Salem Junction	New Bus Stand
Seelanaickanpatti	Salem Steel Plant	Cherry Road
Mallur	Tharamangalam	Hasthampatti
Andagalor Gate	Nanagavalli	Gorimedu
Puchuchathiram	Mettur	Yercaud Adivaram
Budhanasanthai	Mettur Bus Stand	Kannankurichi
Namakkal	Thermal area	Chinna Thirupathi
Namakkal Town	Mecheri	Marvaneri
Vedagoundanpatti	Omalur	Kondalampatty
Kumaramangalam	Dheevatipatti	Seelanaikkanpatti
Tiruchengode	Periyar university	Gugai
Morepalayam	Raddision Blu Hotel.	Erumapalayam
Mallasamudram		Arisipalayam

Data Service Test- Static Locations



8 Static Locations

Namakkal Anjeneyar Temple

Mettur Bus Stand

Salem Periyar University

Thiruchengode Bus Stand

Salem Steel Plant

Salem New Bus Stand

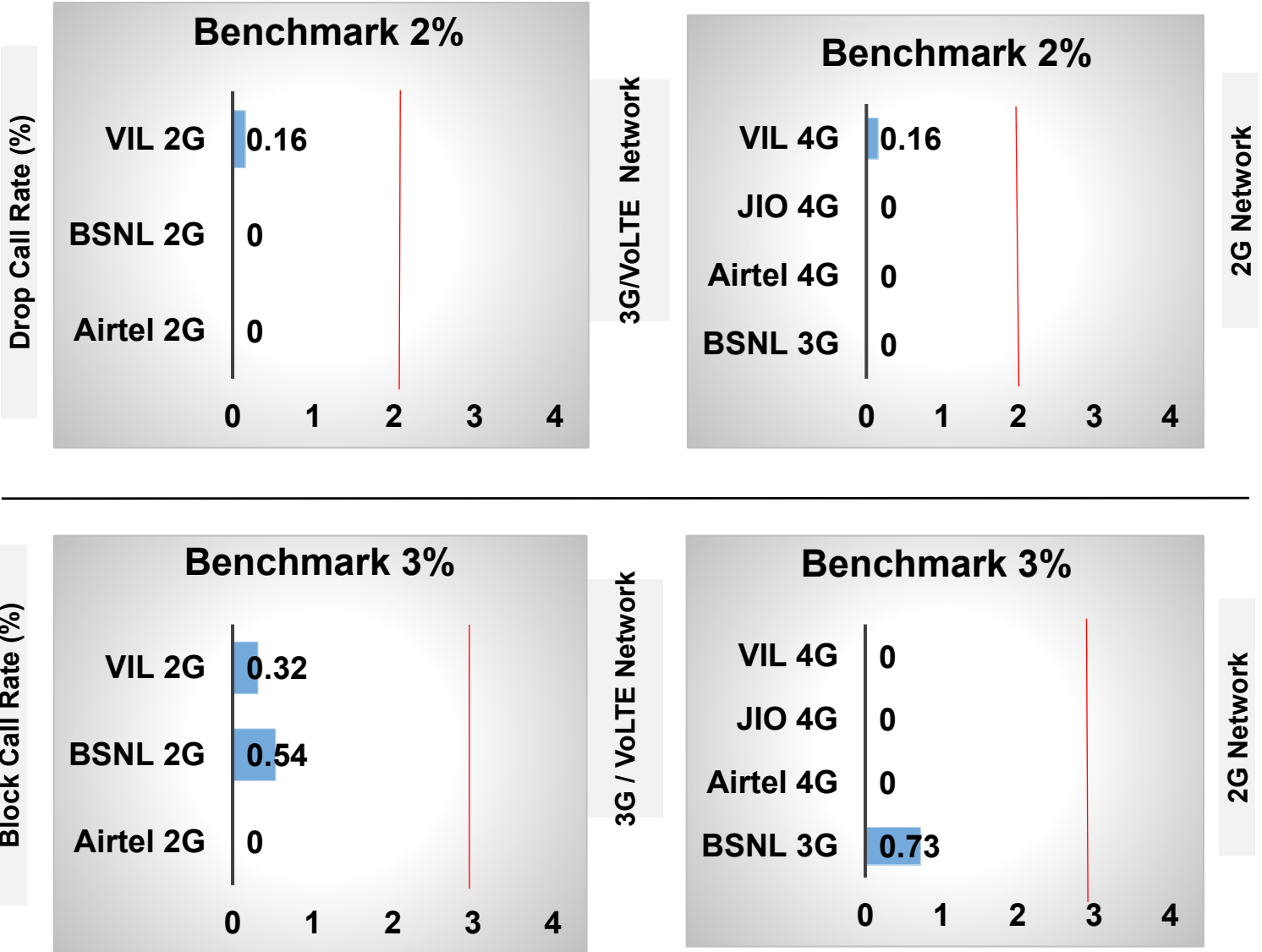
Salem Railway Station

Salem Govt. Arts College

Voice Calls

Key Observations

QoS compliance of the TSPs in **Salem** SSA for Voice across technologies 2G/3G/VoLTE:



KPIs	2G			3G	VoLTE		
	Airtel	BSNL	VIL	BSNL	Airtel	JIO	VIL
Drop Call Rate %	0	0	0.16	0	0	0	0.16
Block Call Rate %	0	0.54	0.32	0.73	0	0	0

- All TSPs have met the 2% QOS benchmark of Drop Call Rate (DCR%).
- Call Block Rate (CBR%) benchmark of 3% was achieved by all TSP's.

Voice Calls

Key Observations

Coverage

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

TSPS	2G		
	Airtel	BSNL	VIL
Coverage %	97.11	97.63	98.38

b) Percentage of coverage samples for 3G \geq -90 dBm & LTE \geq -110 dBm

TSP	3G	VoLTE (\geq -110 dBm)		
	BSNL	Airtel	JIO	VIL
Coverage %	100	99.80	99.20	99.07

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

TSP	3G	VoLTE		
	BSNL	Airtel	JIO	VIL
Time spent %	35.87	100	100	99.99

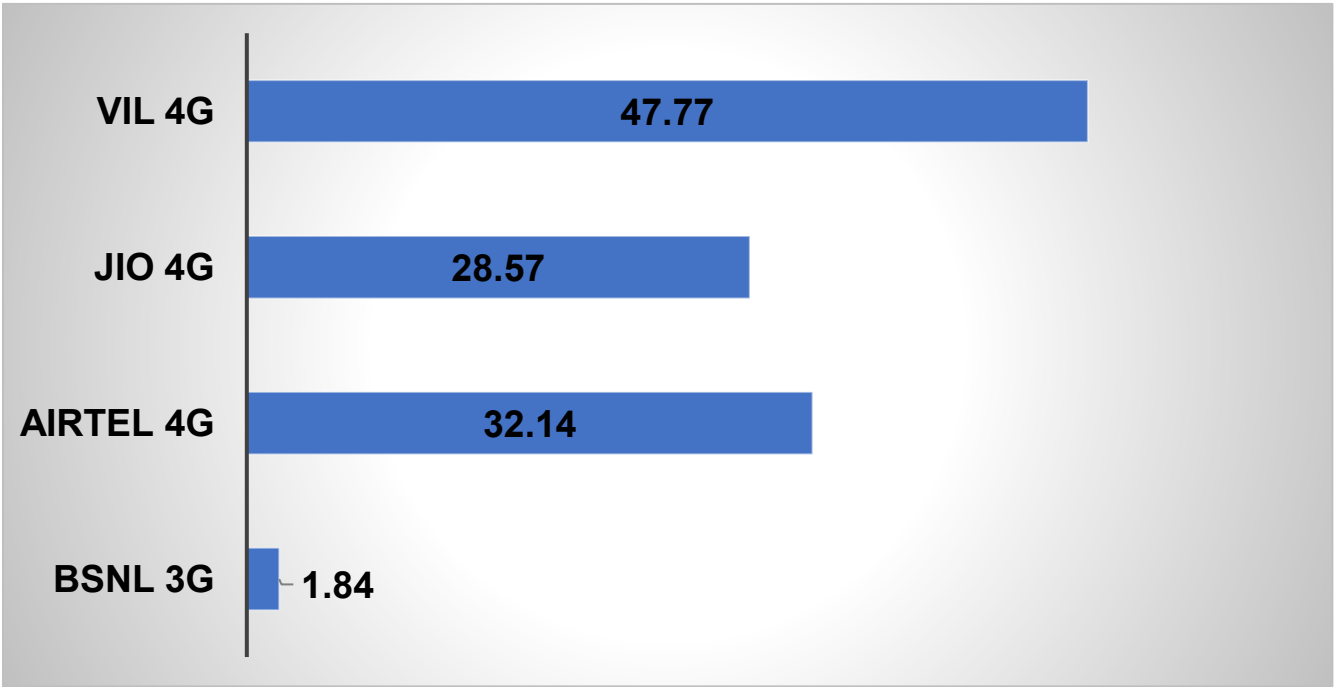
Data Services Dynamic

Key Observations

Dynamic Data was tested Download Throughput was tested.

Data Download Performance (kbps) - Dynamic

3G/4G/ Network:



Data Services Dynamic	3G / 4G			
	BSNL 3G	Airtel 4G	JIO 4G	VIL 4G
Download throughput in Mbps	1.84	32.14	28.57	47.77

Data Services Static

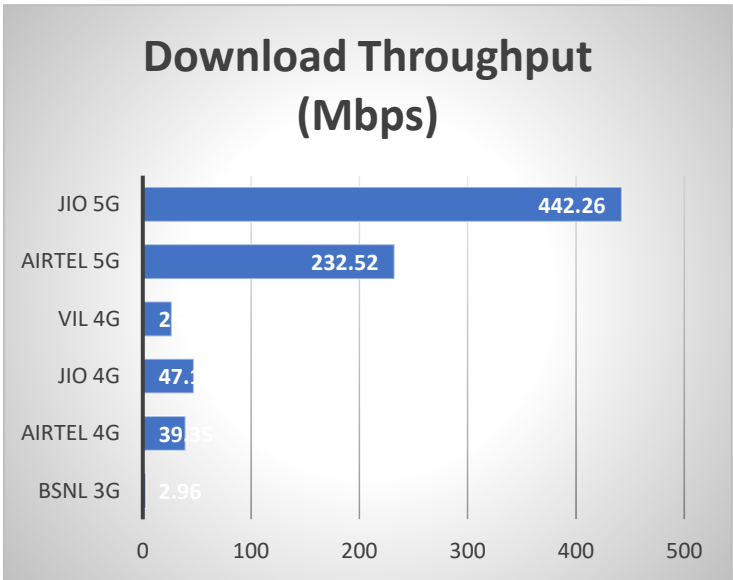
**Key Observations
(Average of 8
Hotspots)**

Data was tested at 8 locations .Following services were tested: Data Download/Upload, Latency (www.google.com), and Web browsing delay (Flipkart, Amazon, Myntra)

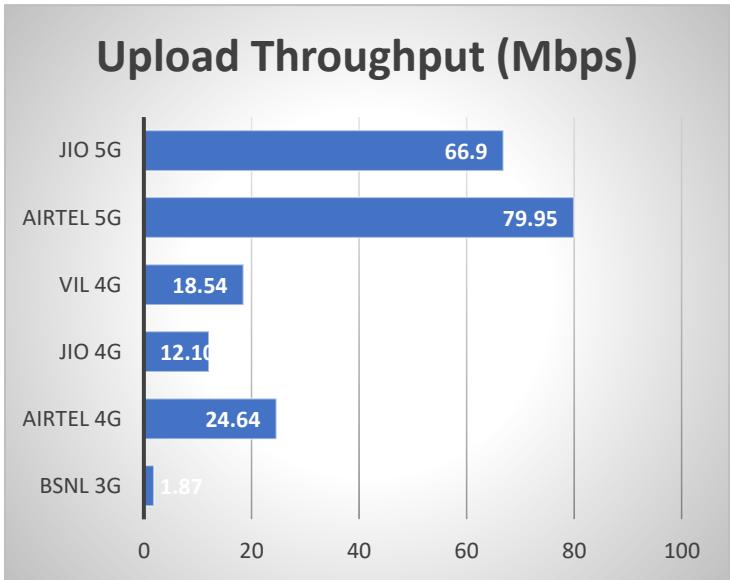
Data Download and Upload Performance (Mbps)

3G/4G/ Network:

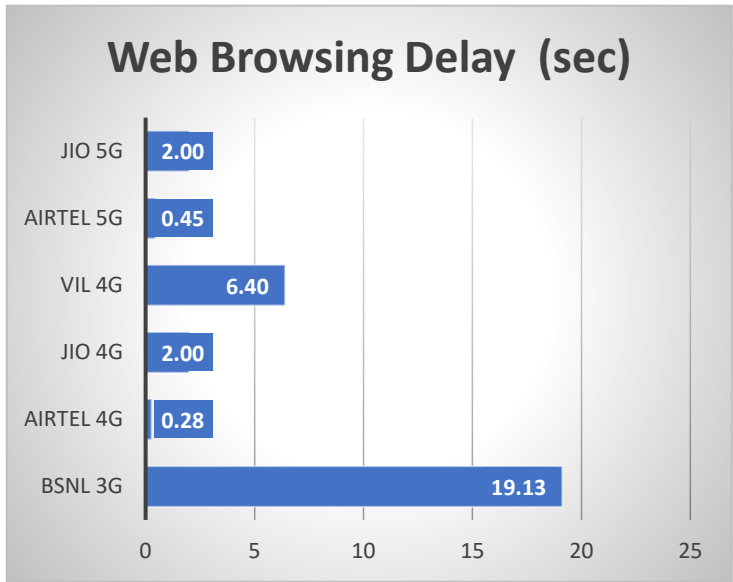
Download Throughput (Mbps)



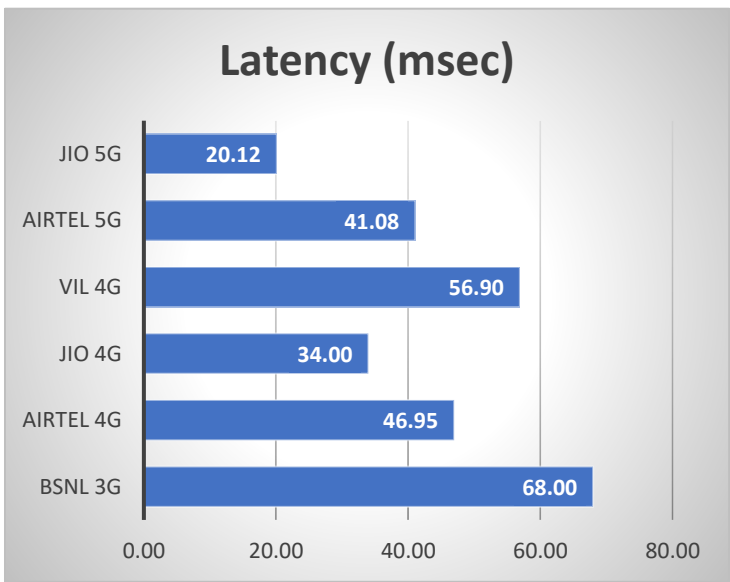
Upload Throughput (Mbps)



Web Browsing delay (Sec)



Latency (ms)



Summary

SSA Level Summary-Voice

Voice Calls	2G		
	Airtel	BSNL	VIL
Call attempts	531	557	613
Block call rate %	0.00	0.54	0.32
CSSR %	100	99.46	99.68
Drop call rate %	0.00	0.00	0.16
Mobility HOSR %	98.19	97.95	99.30
RX Quality %	96.15	98.24	97.74

Voice Calls	3G	VoLTE		
TSP (For 3G)	BSNL	Airtel	JIO	VIL
Call attempts	545	546	620	619
Block call rate %	0.73	0.00	0.00	0
CSSR %	99.27	100	100	100
Drop call rate %	0.00	0.00	0.00	0.16
Mobility HOSR %	99.64	99.27	99.51	100
RX Quality %	98.48	97.46	93.89	96.33

Summary

SSA Level Summary- (Average of 8 hotspots)- Data Services

Data Services Static	3G/4G			
	BSNL 3G	Airtel 4G	JIO 4G	VIL 4G
Download throughput in Mbps	2.96	39.35	47.18	26.65
Upload Throughput in Mbps	1.87	24.64	12.10	18.54
Web browsing delay in second	19.13	0.28	2.00	6.40
Latency in (msec)	68.0	46.95	34.00	56.9

Data Services Static	5G	
	Airtel 5G	JIO 5G
Download throughput in Mbps	232.52	442.26
Upload Throughput in Mbps	79.95	66.90
Web browsing delay in second	0.45	2.00
Latency in (msec)	41.08	20.12

Namakkal Anjaneyar Temple	3G	LTE			5G	
	BSNL	Airtel	JIO	VIL	Airtel	JIO
Download Throughput (Mbps)	2.66	30.92	52.37	37.10	209.48	342.07
Upload Throughput (Mbps)	1.69	14.27	6.95	19.50	46.46	49.64
Web Browsing Delay (sec)	16.61	0.13	2	4.80	0.62	3
Latency (msec)	72.00	47.73	35	81.20	40.20	21

Mettur Bus Stand	3G	LTE			5G	
	BSNL	Airtel	JIO	VIL	Airtel	JIO
Download Throughput (Mbps)	1.80	33.81	29.61	25.90	237.27	443.66
Upload Throughput (Mbps)	8.60	35.79	22.83	26	94.89	106.90
Web Browsing Delay (sec)	19.07	0.16	3	12.40	0.69	3
Latency (msec)	38.0	40.67	37	47.40	28.03	20

Salem Periyar University	3G	LTE			5G	
	BSNL	Airtel	JIO	VIL	Airtel	JIO
Download Throughput (Mbps)	1.46	39.31	53.52	18.90	215.76	51.58
Upload Throughput (Mbps)	2.21	16.44	13.13	12.80	83.00	59.58
Web Browsing Delay (sec)	18.31	0.24	2	5.06	0.63	2
Latency (msec)	35.0	44.67	30	44.40	34.43	22

Thiruchengode Bus Stand	3G	LTE			5G	
	BSNL	Airtel	JIO	VIL	Airtel	JIO
Download Throughput (Mbps)	2.38	45.88	25.10	22.30	318.75	442.98
Upload Throughput (Mbps)	1.15	32.54	3.36	26.80	84.24	54.38
Web Browsing Delay (sec)	20.39	0.14	2	5.63	0.14	2
Latency (msec)	71.0	48.00	36	63	43.67	16

Salem Steel Plant	3G	LTE			5G	
	BSNL	Airtel	JIO	VIL	Airtel	JIO
Download Throughput (Mbps)	2.35	52.35	73.70	21.50	202.73	477.21
Upload Throughput (Mbps)	1.74	15.23	8.36	9.40	88.33	88.88
Web Browsing Delay (sec)	25.53	0.11	2	6.34	0.18	2
Latency (msec)	74.5	44.67	34	55.80	43.33	15

Salem New Bus Stand	3G	LTE			5G	
	BSNL	Airtel	JIO	VIL	Airtel	JIO
Download Throughput (Mbps)	3.04	44.45	30.25	21.70	223.45	426.54
Upload Throughput (Mbps)	2.41	30.46	14.80	16.70	72.36	86..83
Web Browsing Delay (sec)	21.17	0.24	2	6.70	0.56	3
Latency (msec)	67.0	47.73	31	53.60	47.36	20

Salem Railway Station	3G	LTE			5G	
	BSNL	Airtel	JIO	VIL	Airtel	JIO
Download Throughput (Mbps)	3.82	30.35	69.45	39.90	239.73	399.89
Upload Throughput (Mbps)	2.02	32.57	20.65	20	89.05	77.47
Web Browsing Delay (sec)	19.26	0.22	2	5.12	0.13	2
Latency (msec)	76.5	55.03	31	52.40	44	22

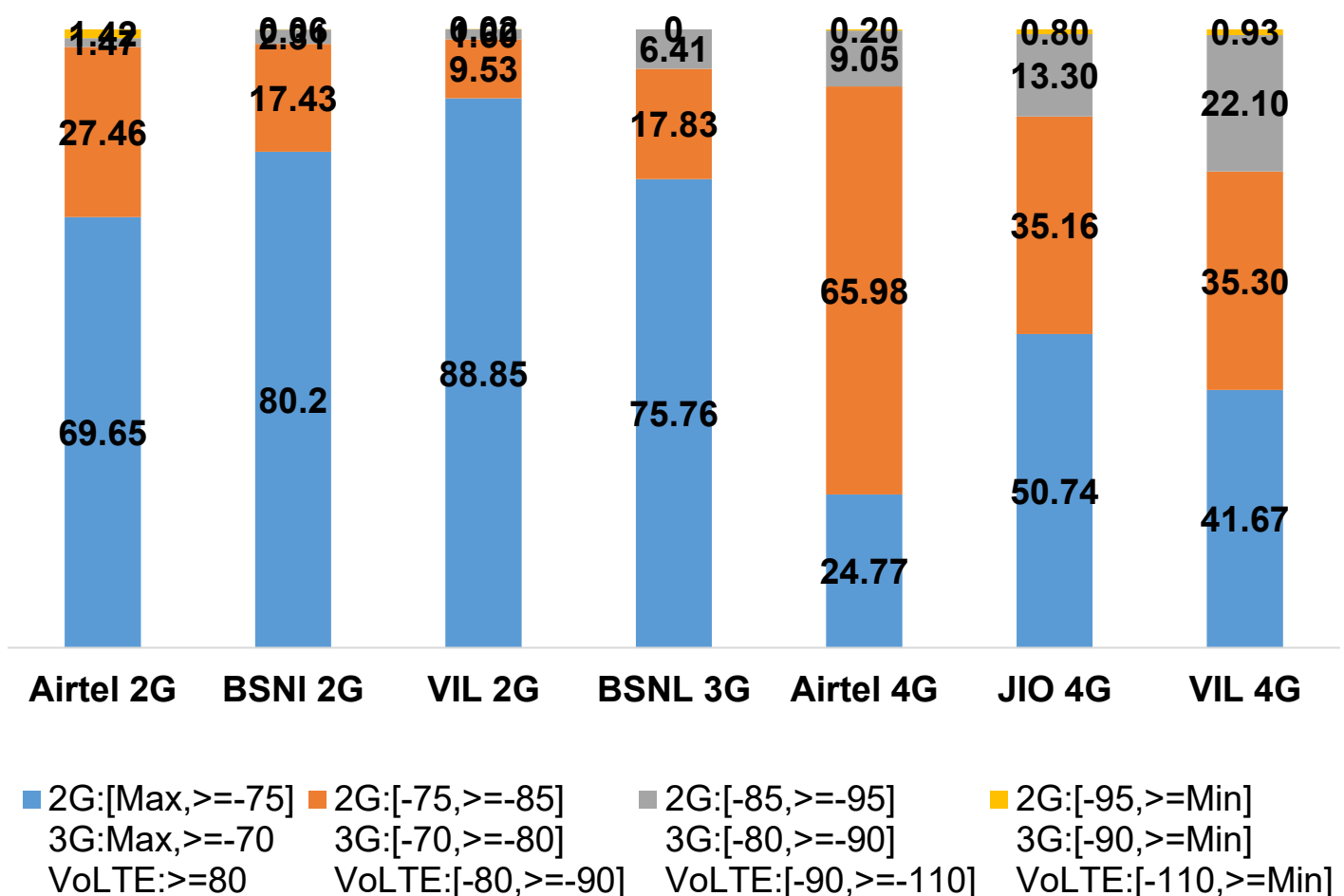
Salem Govt Arts College	3G	LTE			5G	
	BSNL	Airtel	JIO	VIL	Airtel	JIO
Download Throughput (Mbps)	8.41	37.78	43.42	25.50	213	489.89
Upload Throughput (Mbps)	4.76	19.83	6.68	17.80	81.30	11.51
Web Browsing Delay (sec)	12.68	0.17	2	5.30	0.70	2
Latency (msec)	67.0	47.73	39	57.60	47.66	18

I. 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 ≥ -85 dBm, RSCP is ≥ -90 dBm & RSRP ≥ -110 dBm. The details are as follows.

TSP	Coverage Rate %
Airtel 2G	97.11
BSNL 2G	97.63
VIL 2G	98.38
BSNL 3G	100
Airtel VoLTE	99.80
JIO VoLTE	99.20
VIL VoLTE	99.07

Coverage Details

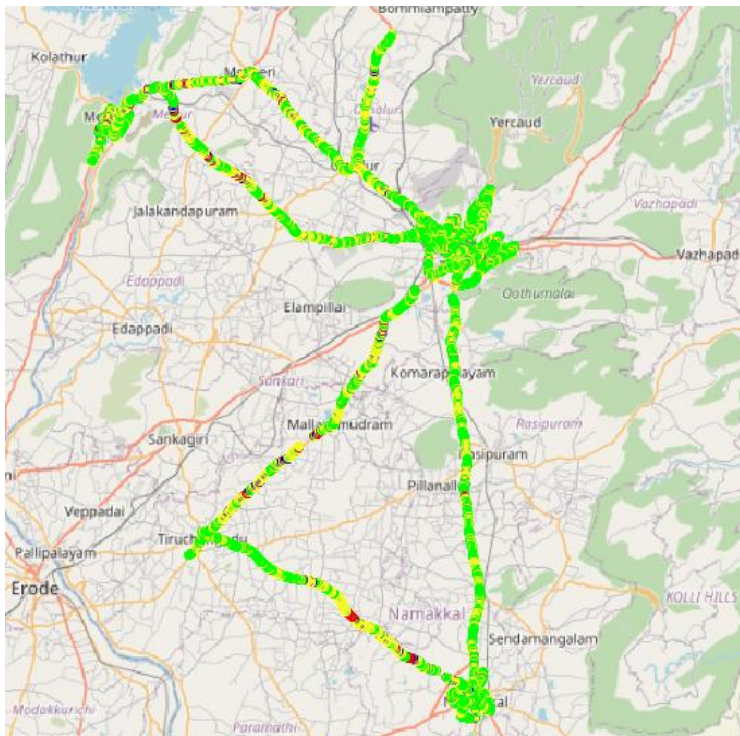


I. Coverage Details

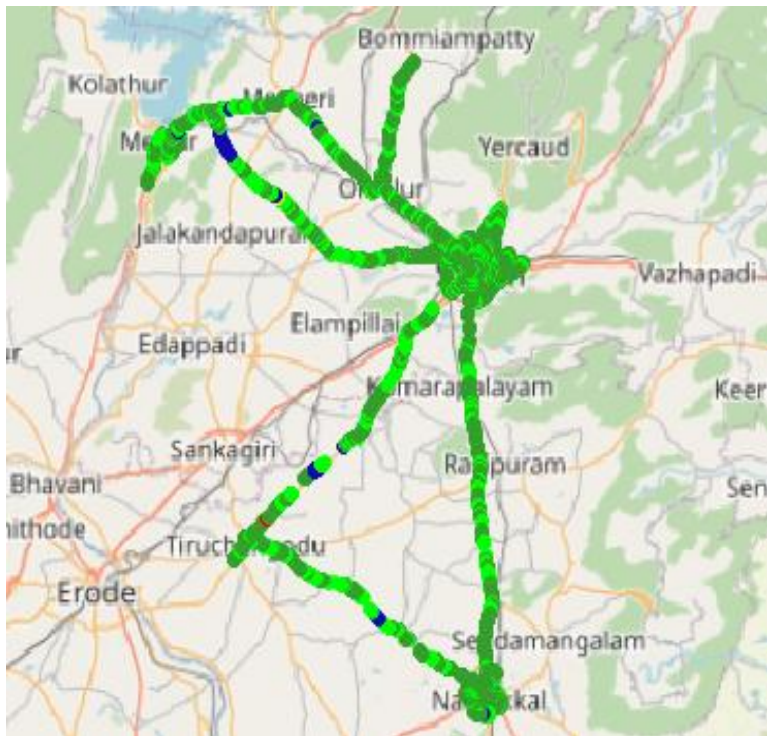
AIRTEL

Technology	Coverage Rate %
2G	97.11
VoLTE	99.80

2G



VoLTE



2G

Overall RxLevel	# Samples	%
[Max, >=-75]	6395326	69.65
[-75, >=-85]	2520992	27.46
[-85, >=-95]	135110	1.47
[-95, >=Min]	130014	1.42
Total	9181442	100

VoLTE

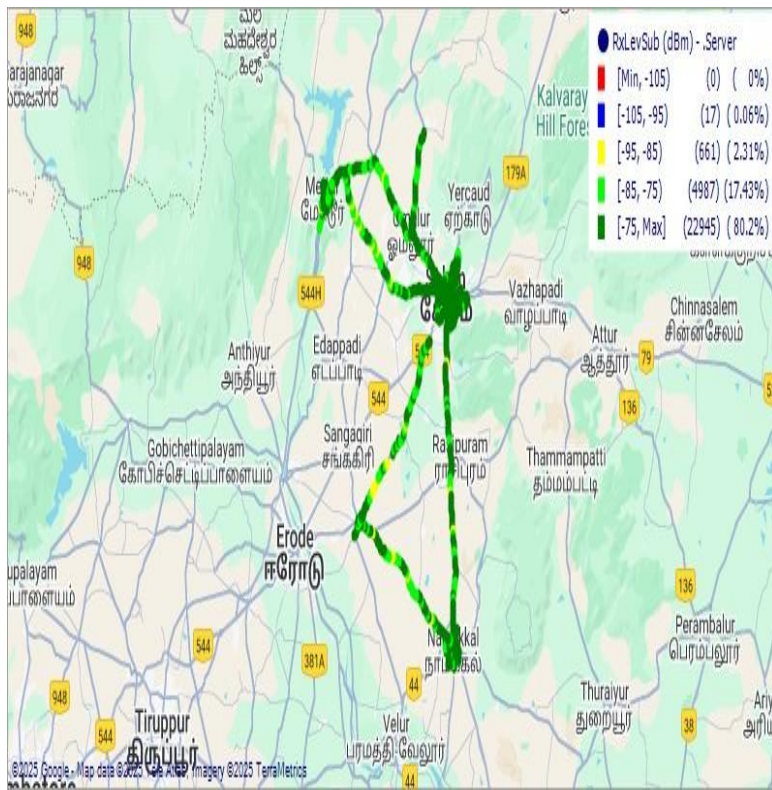
Overall RSRP	# Samples	%
[Max, >=-80]	2771794	24.77
[-80, >=-90]	7383809	65.98
[-90, >=-110]	1013343	9.05
[-110, >=-120]	20509	0.18
[-120, >=Min]	1690	0.02
Total	11191145	100

I. Coverage Details

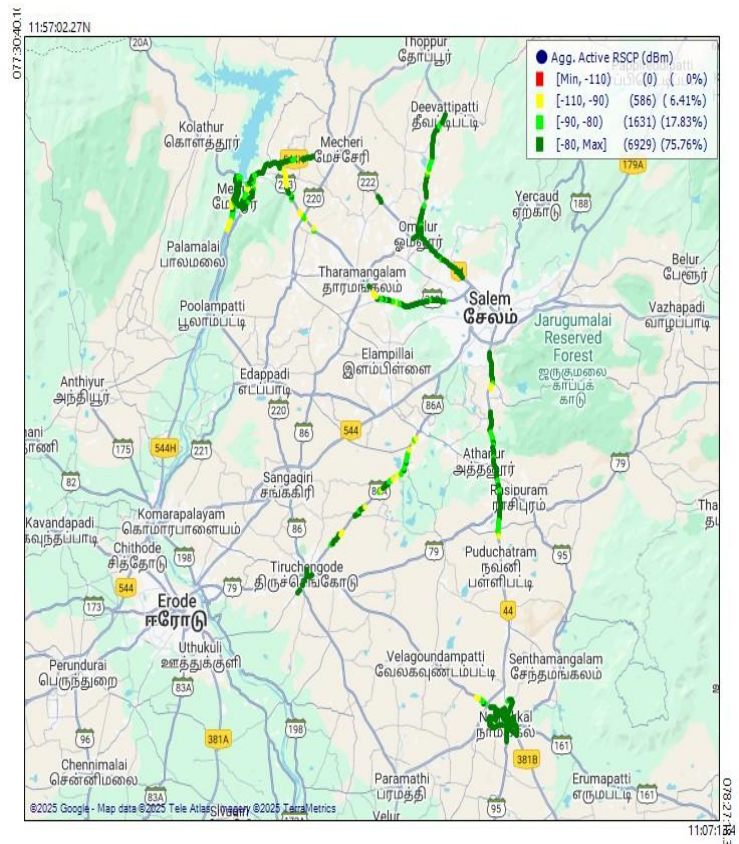
BSNL

Technology	Coverage Rate %
2G	97.63
3G	100

2G



3G



2G

Overall RxLevel	# Samples	%
[Max, >=-75]	22945	80.20
[-75, >=-85]	4987	17.43
[-85, >=-95]	661	2.31
[-95, >=Min]	17	0.06
Total	28610	100

3G

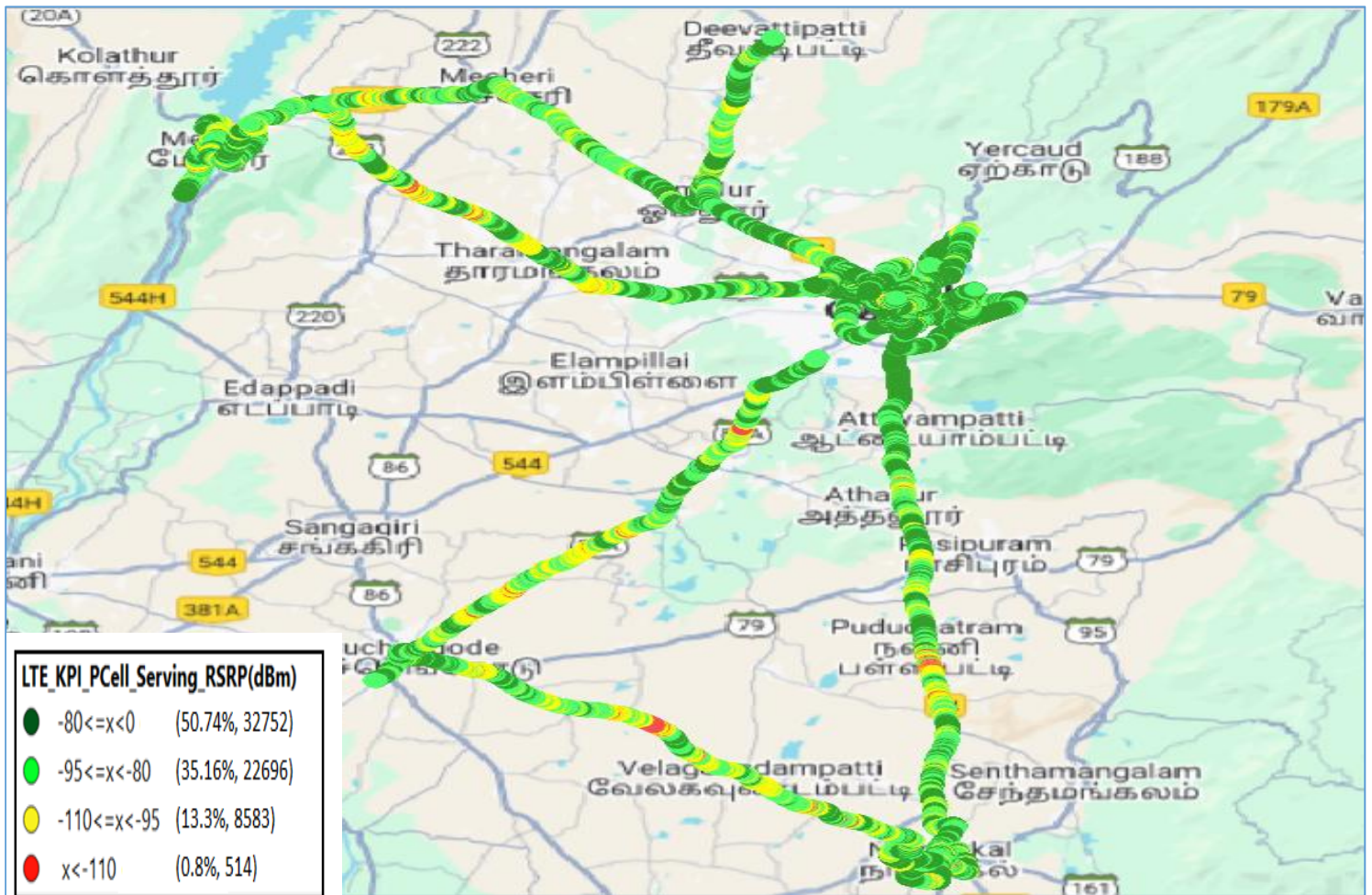
Overall RSRP	# Samples	%
[Max, >=-70]	6929	75.76
[-70, >=-80]	1631	17.83
[-80, >=-90]	586	6.41
[-90, >=Min]	0	0.00
Total	9146	100

I. Coverage Details

JIO

Technology	Coverage Rate %
VoLTE	99.20

VoLTE



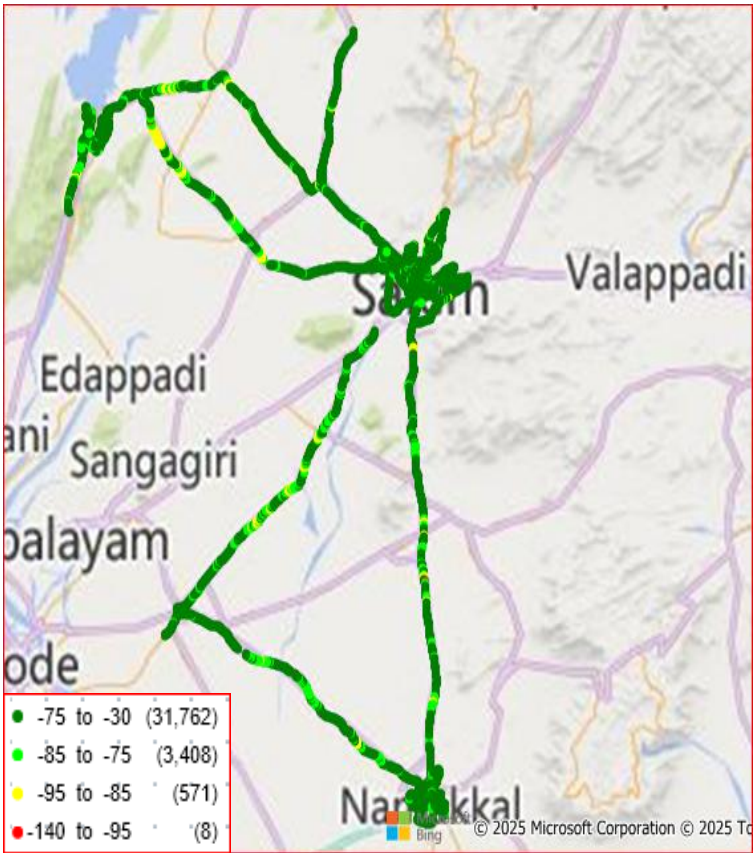
VoLTE		
Overall RSRP	# Samples	%
[Max, >=-80]	32752	50.74
[-80, >=-95)	22696	35.16
[-95, >=-110)	8583	13.30
[-110, >=Min)	514	0.80
Total	64545	100

I. Coverage Details

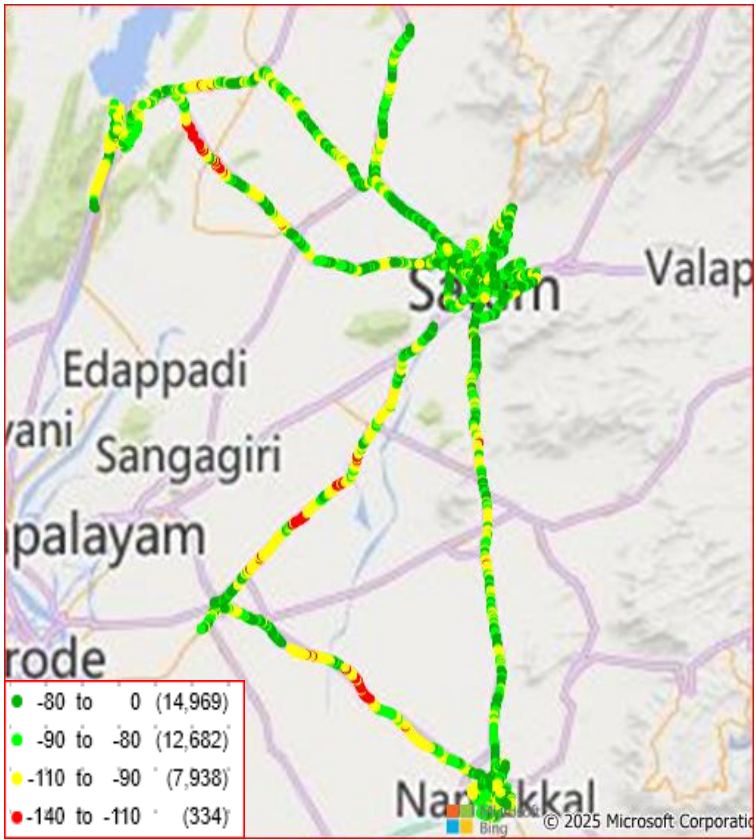
VIL

Technology	Coverage Rate %
2G	98.38
VoLTE	99.07

2G



VoLTE



2G		
Overall RxLevel	# Samples	%
[Max, >=-75]	31762	88.85
[-75, >=-85]	3408	9.53
[-85, >=-95]	571	1.60
[-95, >=Min]	8	0.02
Total	35749	100

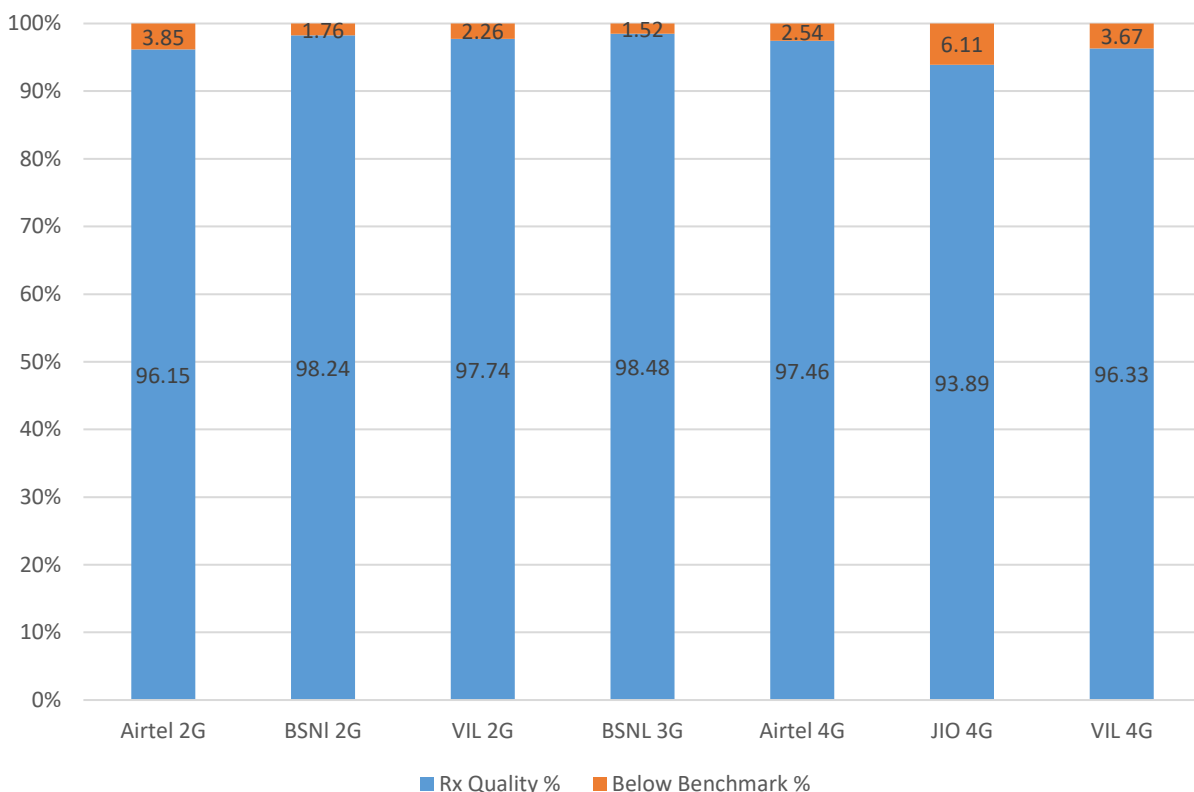
VoLTE		
Overall RSRP	# Samples	%
[Max, >=-80]	14969	41.67
[-80, >=-90]	12682	35.30
[-90, >=-110]	7938	22.10
[-110, >=-120]	334	0.93
Total	35923	100

II. Quality Details

For measuring voice quality, as per the QoS norms, Rx Qual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSP sand 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	96.15
BSNL 2G	98.24
VIL 2G	97.74
BSNL 3G	98.48
Airtel 4G	97.46
JIO 4G	93.89
VIL 4G	96.33

RX Quality Distribution

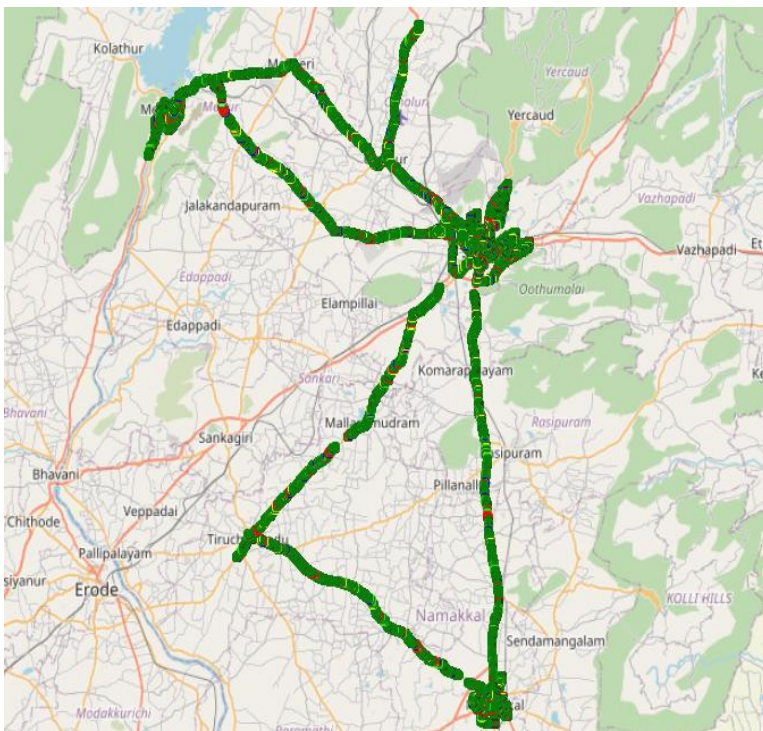


II. Quality Details

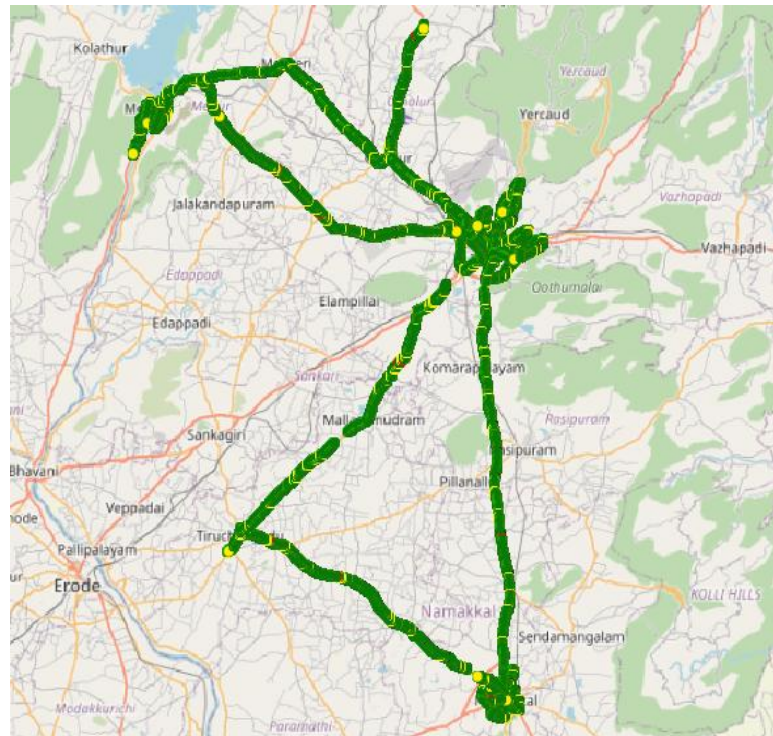
Airtel

Technology	Rx Quality %
2G	96.15
VoLTE	97.46

2G



VoLTE



Overall Rx Quality	# Samples	%
(Min, <=2)	7852703	91.87
(2, <=3)	153774	1.80
(3, <=4)	193839	2.27
(4, <=5)	18220	0.21
(5, <=Max)	329175	3.85
Total	8547711	100

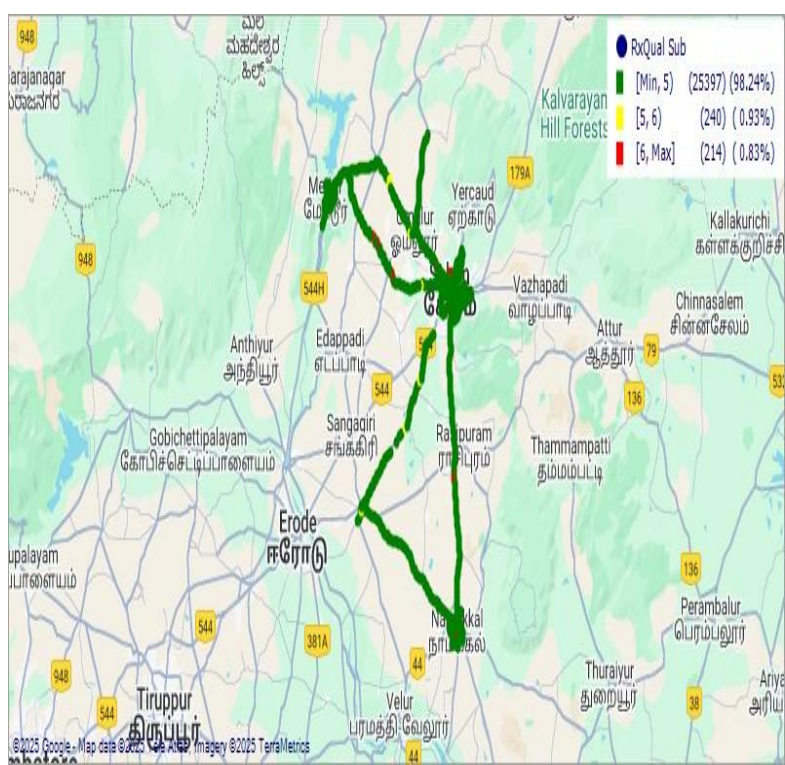
Overall SINR	# Samples	%
(Min, <=-3)	94464	0.72
(-3, <=0)	241013	1.82
(0, <=5)	3036468	23.02
(5, <=10)	1593191	12.07
(10, <=15)	1423223	10.78
(15, <=Max)	6808285	51.59
Total	13196644	100

II. Quality Details

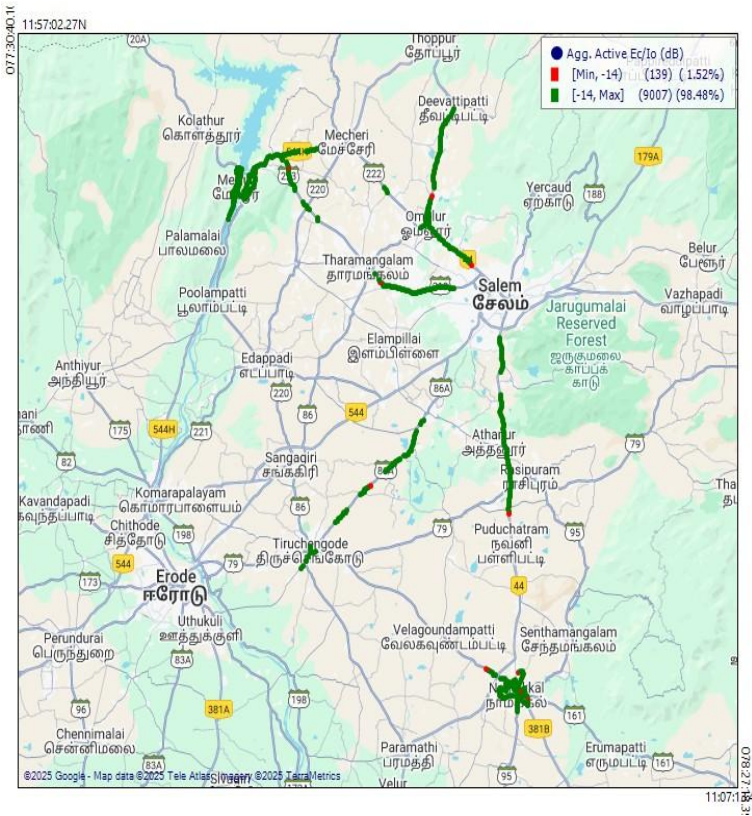
BSNL

Technology	Rx Quality %
2G	98.24
3G	98.48

2G



3G



Overall Rx Quality	# Samples	%
(Min, <=5)	25397	98.24
(5 , <=6)	240	0.93
(6 , <=Max)	214	0.83
Total	25851	100

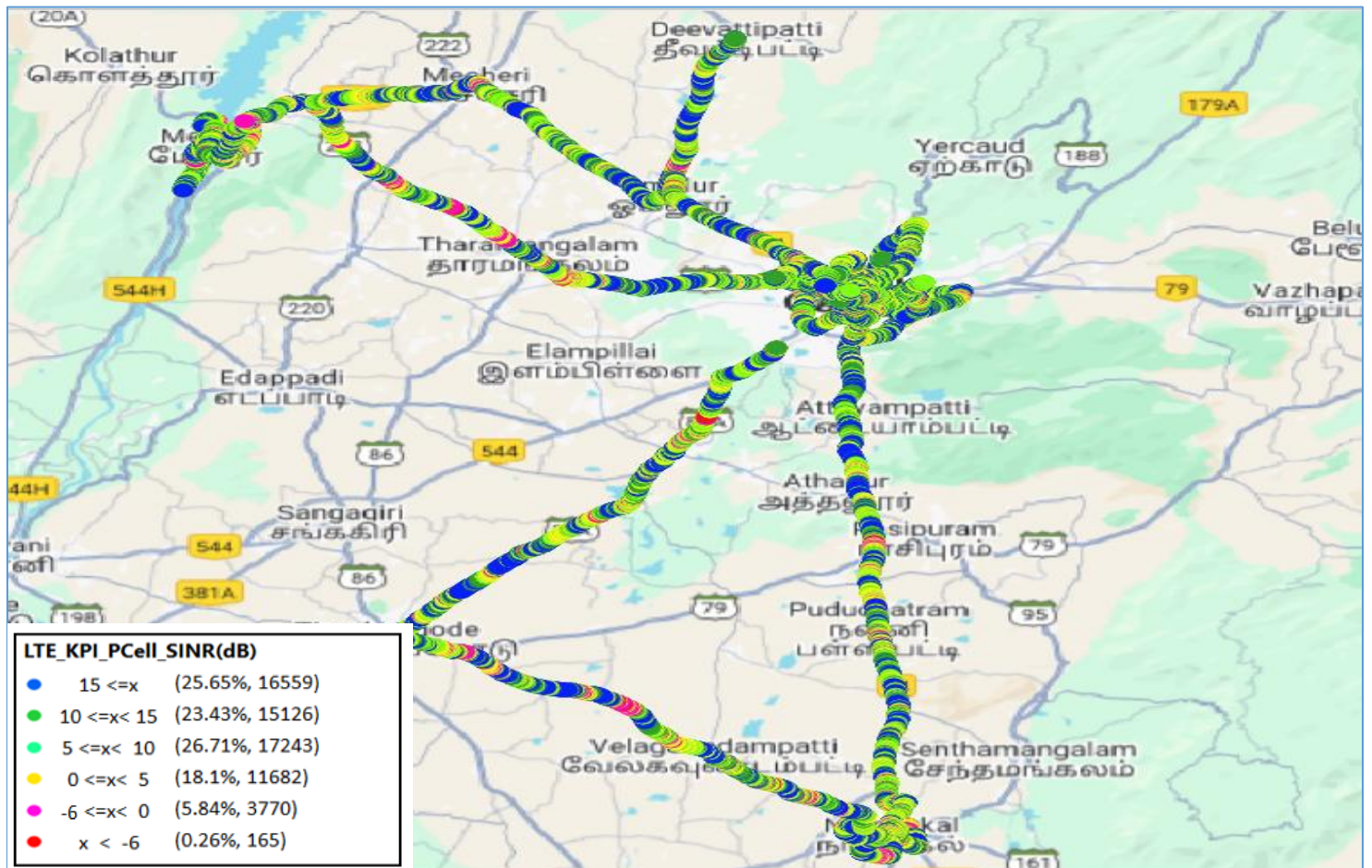
Overall SINR	# Samples	%
(Max, <=-14)	9007	98.48
(-14, <= Min)	139	1.52
Total	9146	100

II. Quality Details

JIO

Technology	Rx Quality %
VoLTE	93.89

VoLTE



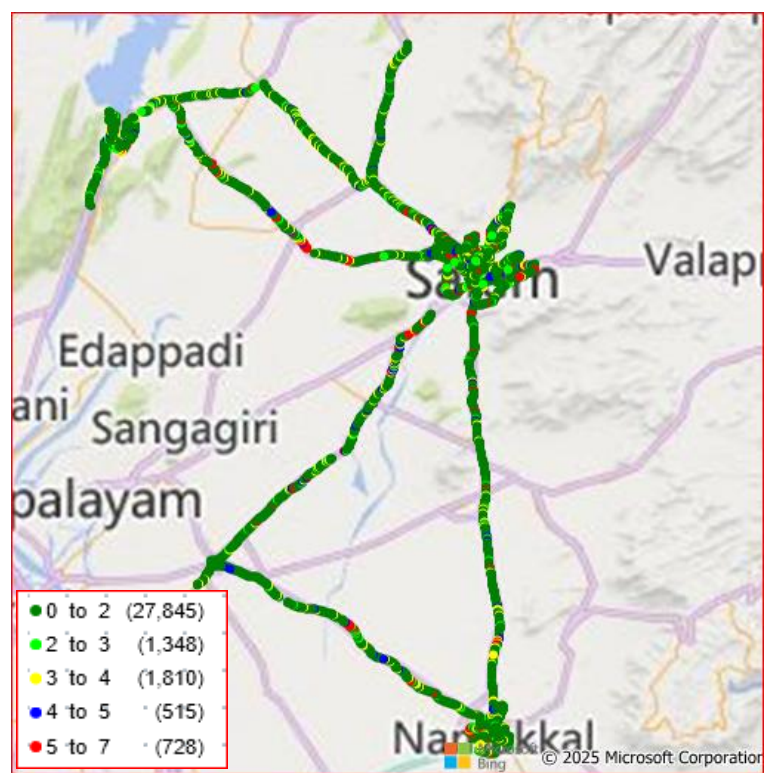
Overall SINR	# Samples	%
(Min, ≤-6)	165	0.26
(-6, ≤0)	3770	5.85
(0, ≤5)	11682	18.10
(5, ≤10)	17243	26.71
(10, ≤15)	15126	23.43
(15, ≤Max)	16559	25.65
Total	64545	100

II. Quality Details

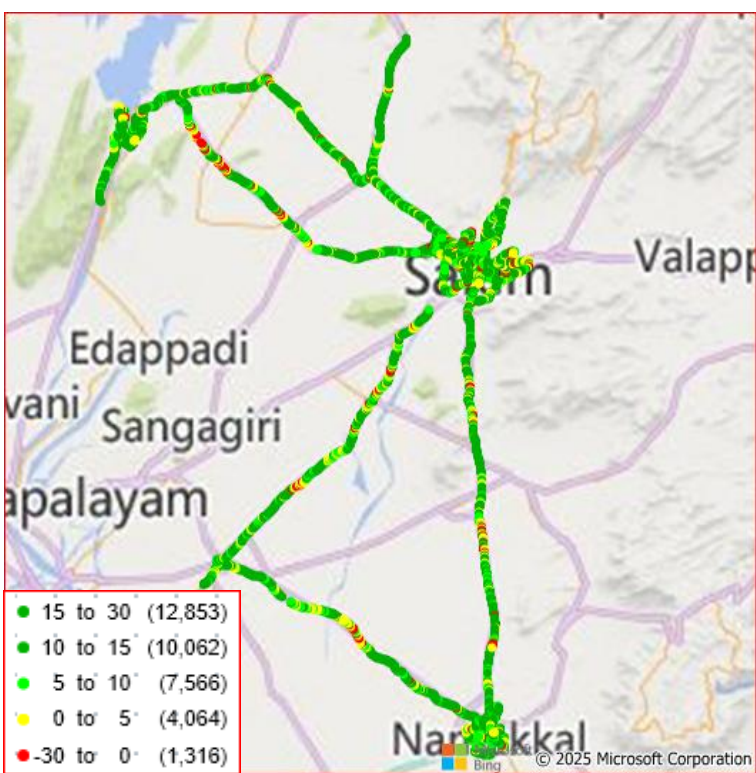
VIL

Technology	Rx Quality %
2G	97.74
VoLTE	96.33

2G



VoLTE

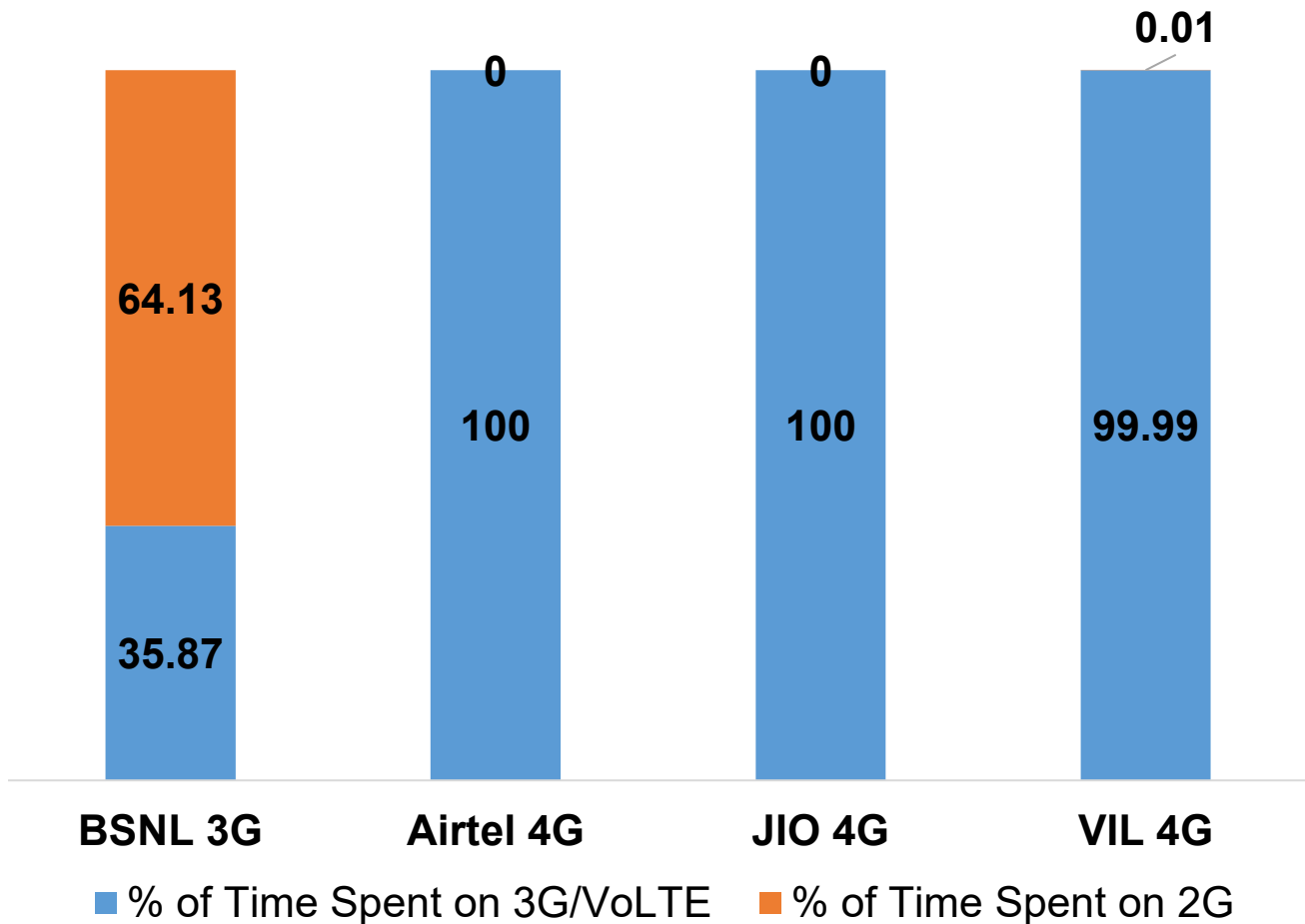


Overall Rx Quality	# Samples	%
(Min, <=2)	27845	86.35
(2, <=3)	1348	4.18
(3 , <=4)	1810	5.61
(4 , <=5)	515	1.60
(5 , <=Max)	728	2.26
Total	32246	100

Overall SINR	# Samples	%
(Min, <=0)	1316	3.67
(0, <=5)	4064	11.33
(5, <=10)	7566	21.10
(10, <=15)	10062	28.06
(15, <=Max)	12853	35.84
Total	35861	100

III. Technology Details

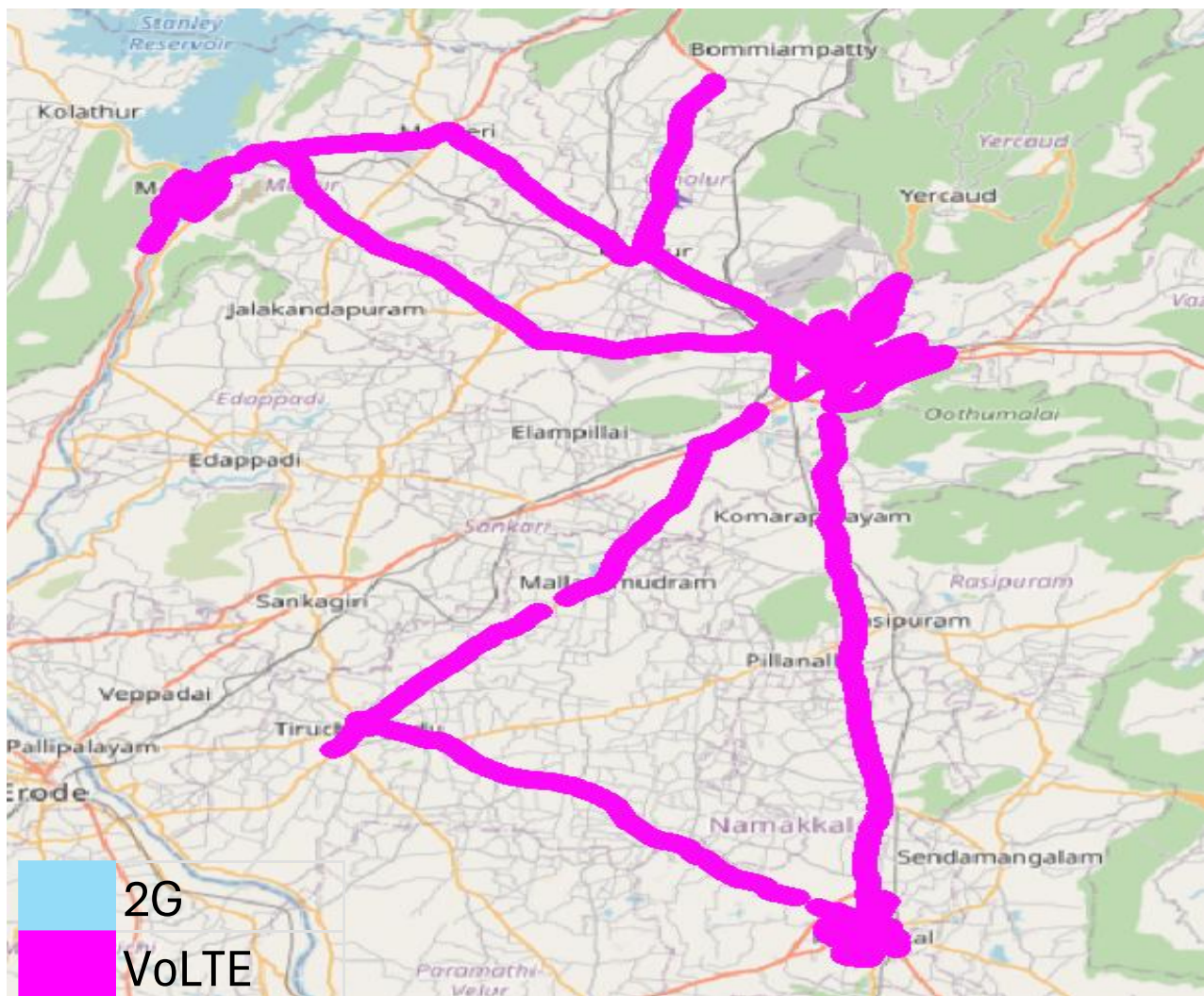
TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	35.87
Airtel VoLTE	100
JIO VoLTE	100
VIL VoLTE	99.99



III. Technology Details

Airtel

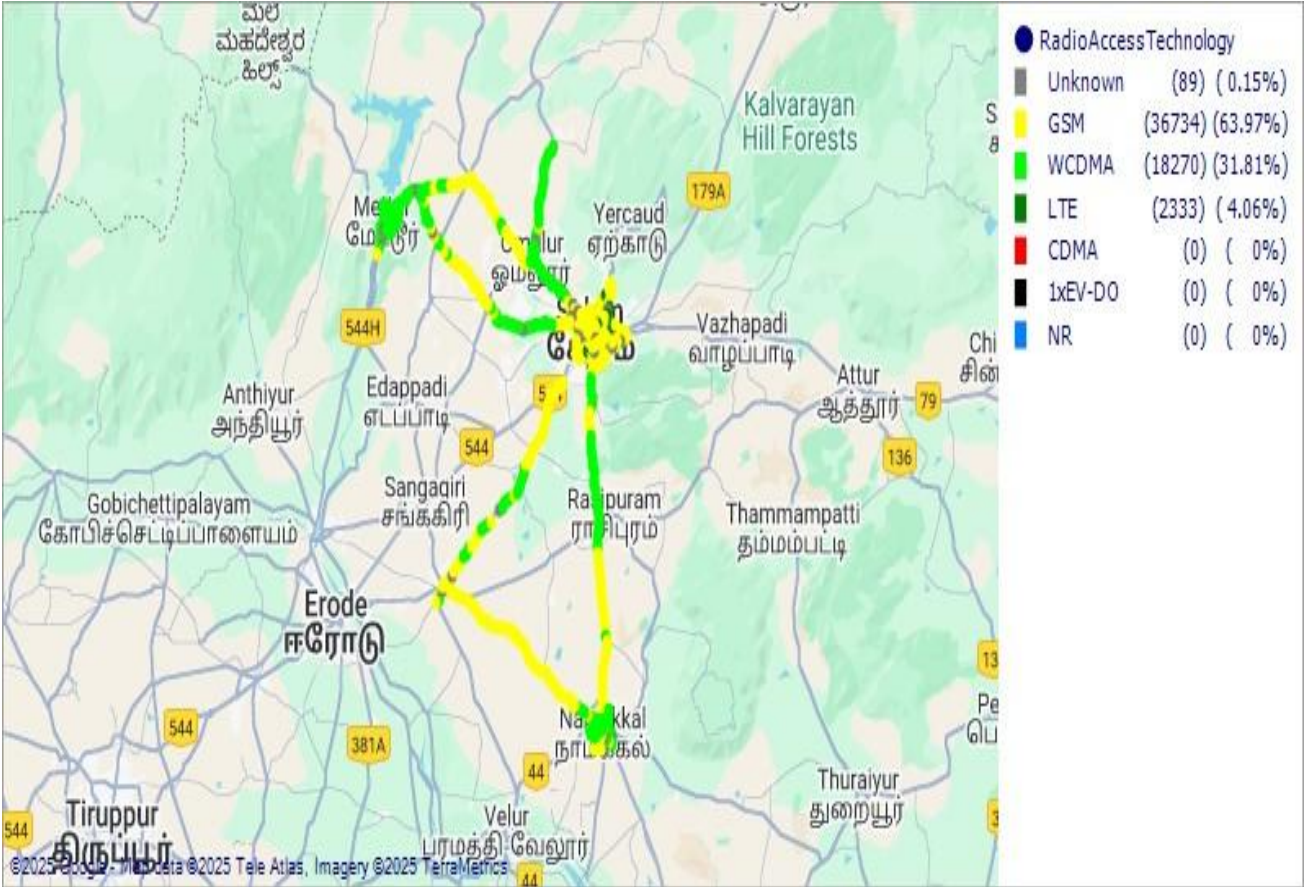
Technology	Time Spent %
VoLTE	100



III. Technology Details

BSNL

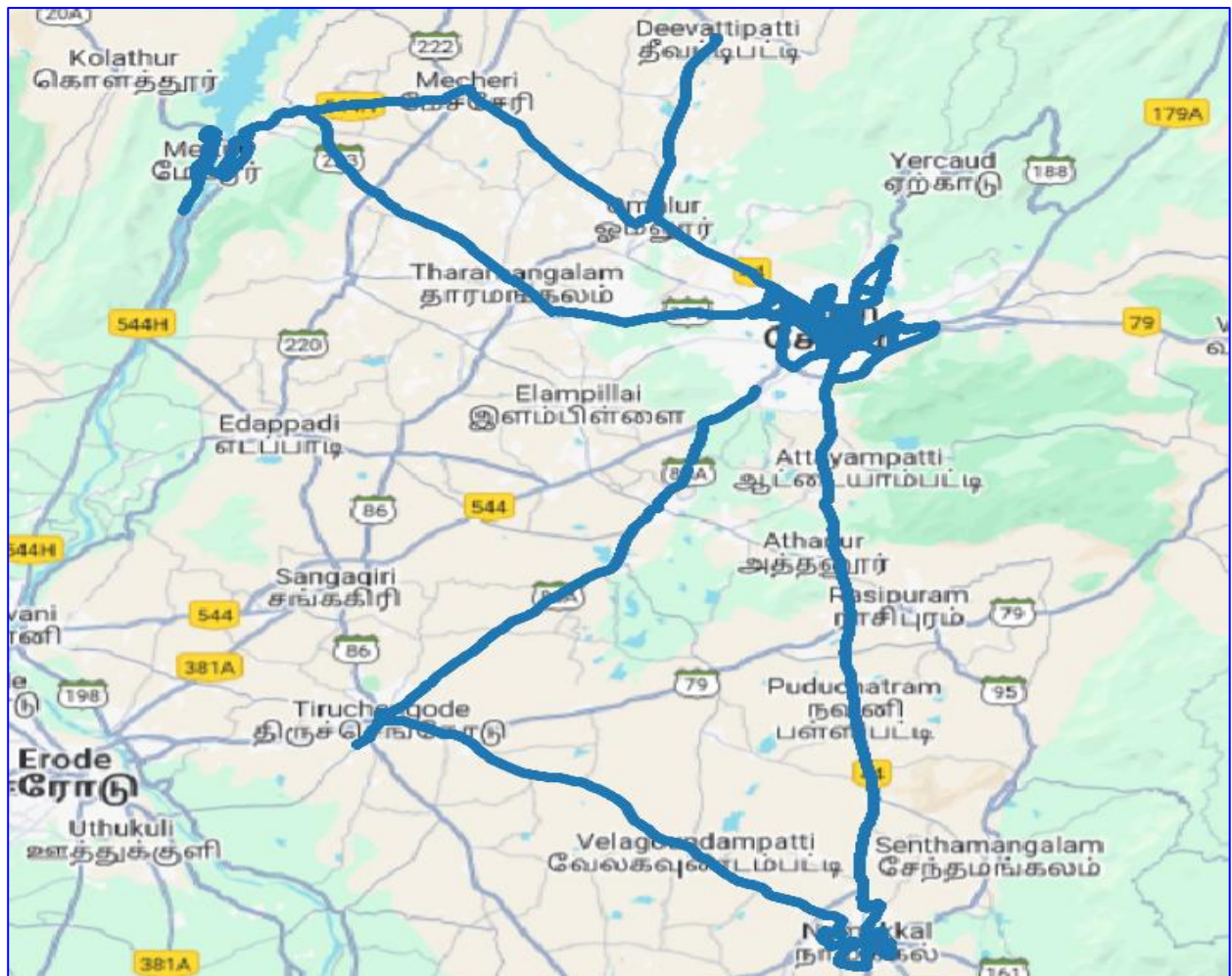
Technology	Time Spent on 3G
3G	35.87



III. Technology Details

JIO

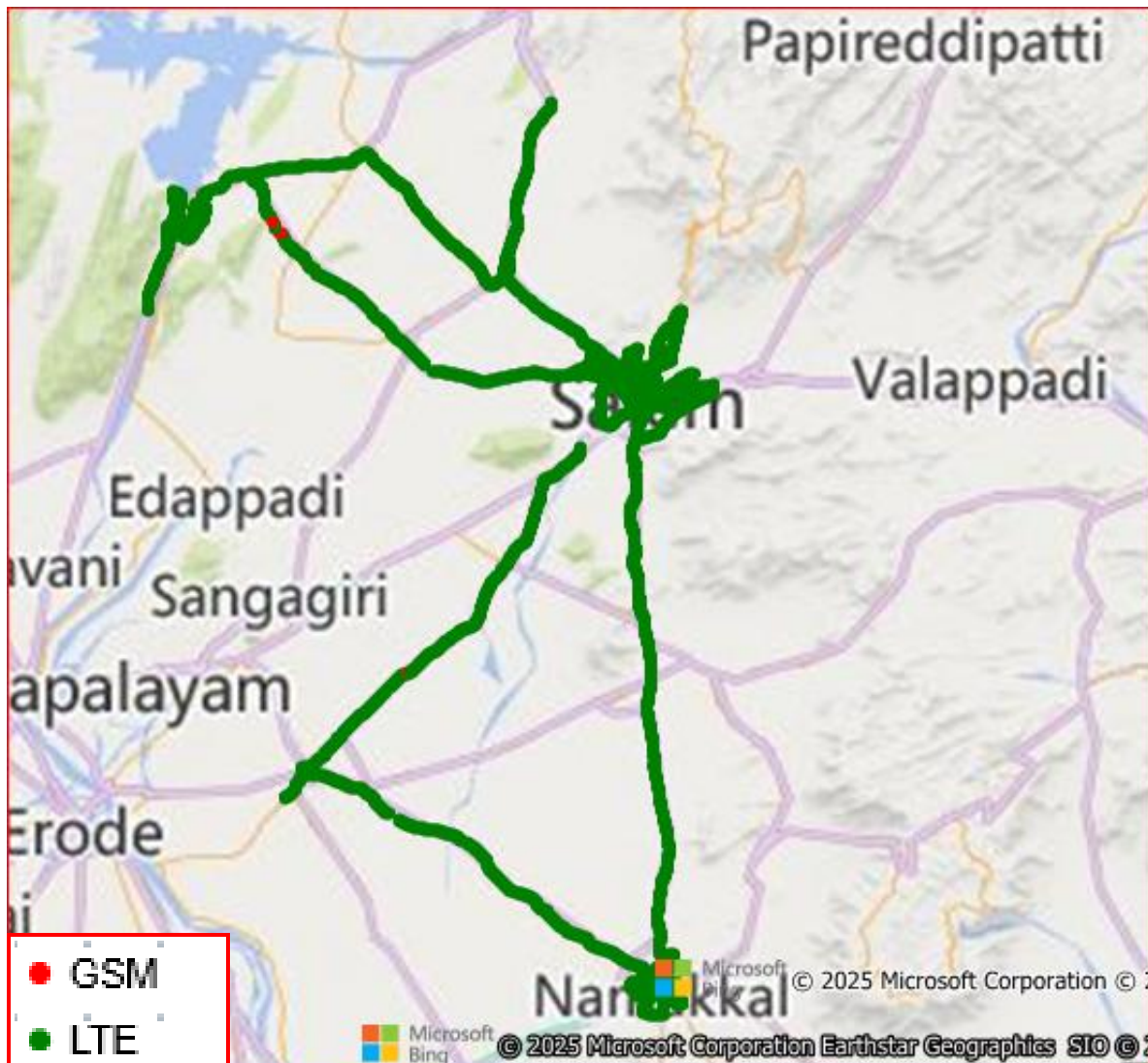
Technology	Time Spent %
VoLTE	100



III. Technology Details

VIL

Technology	Time Spent %
VoLTE	99.99

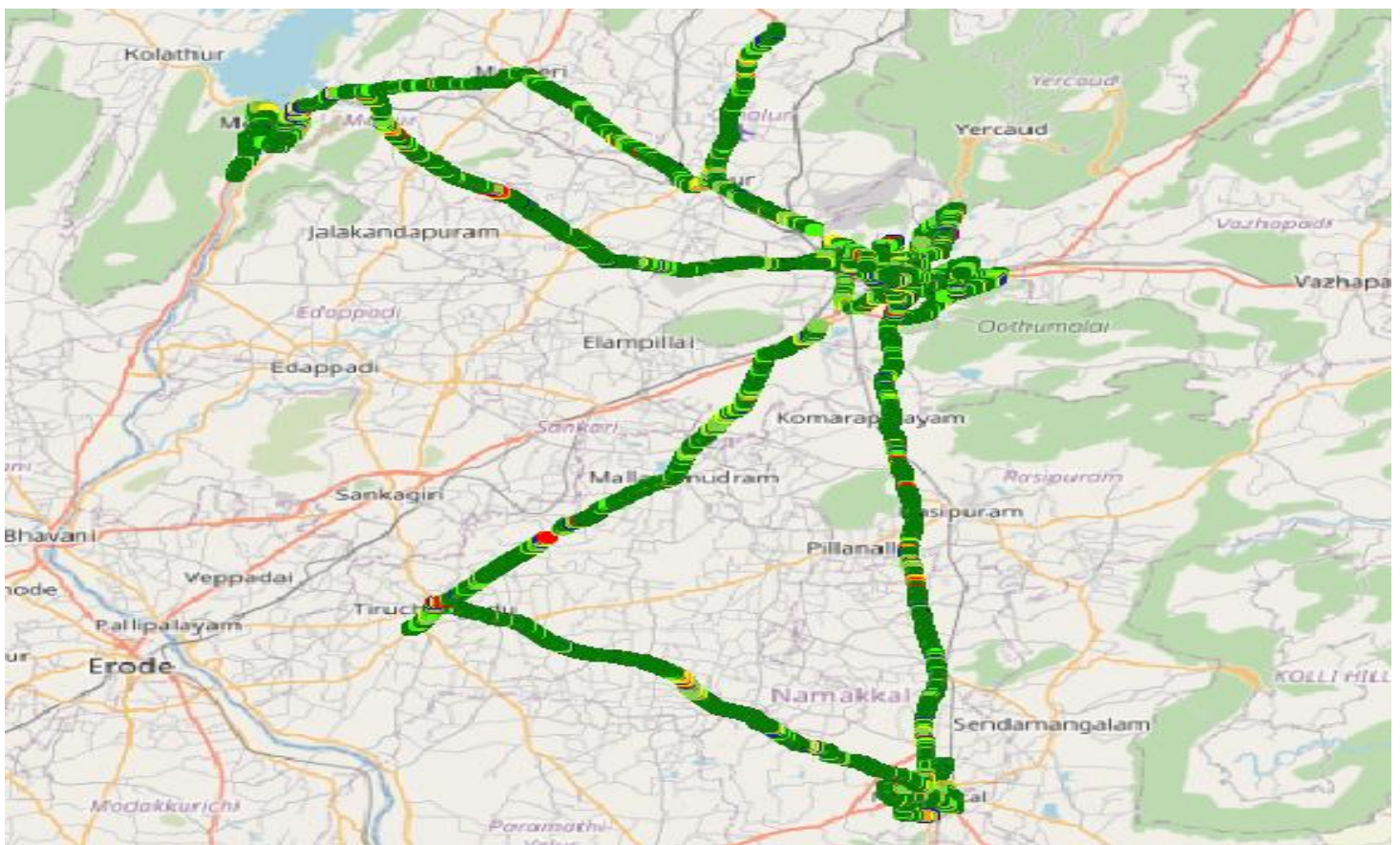


IV. Dynamic Data Test- 3G / 4G DL Details

Airtel

Data Statistics - Dynamic Complete SSA

Data KPIs - Overall	4G
Download Throughput (Mbps)	32.14



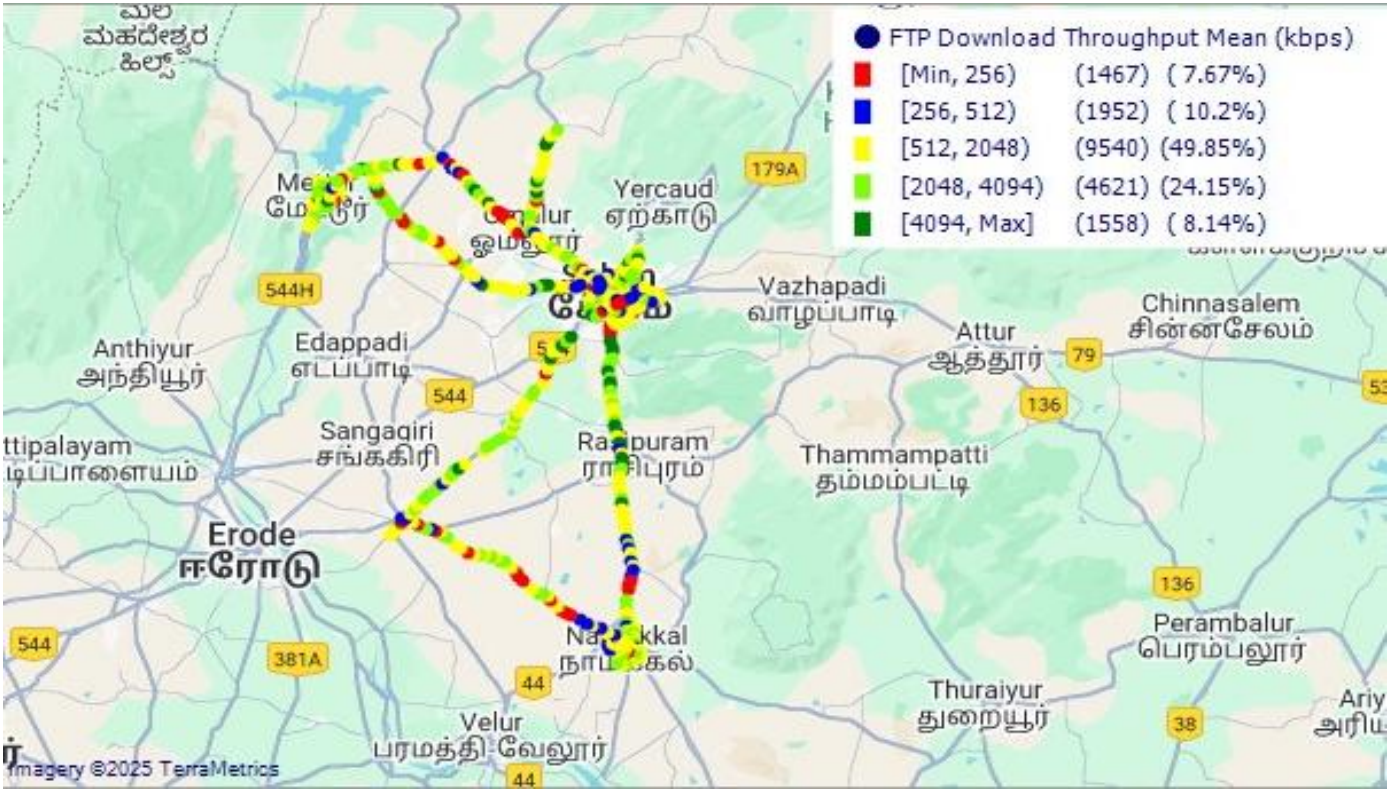
DL throughput	No of Sample	%
0 to 1 Mbps	14934	1.42
1 to 2 Mbps	18787	1.79
2 to 3 Mbps	41623	3.97
3 to 4 Mbps	34909	3.33
4 to 8 Mbps	124673	11.89
8 to 12 Mbps	103409	9.86
>12 Mbps	710341	67.74
Total	1048676	100

IV. Dynamic Data Test-
3G DL Details

BSNL

Data Statistics - Dynamic Complete SSA

Data KPIs - Overall	3G
Download Throughput (Mbps)	1.84



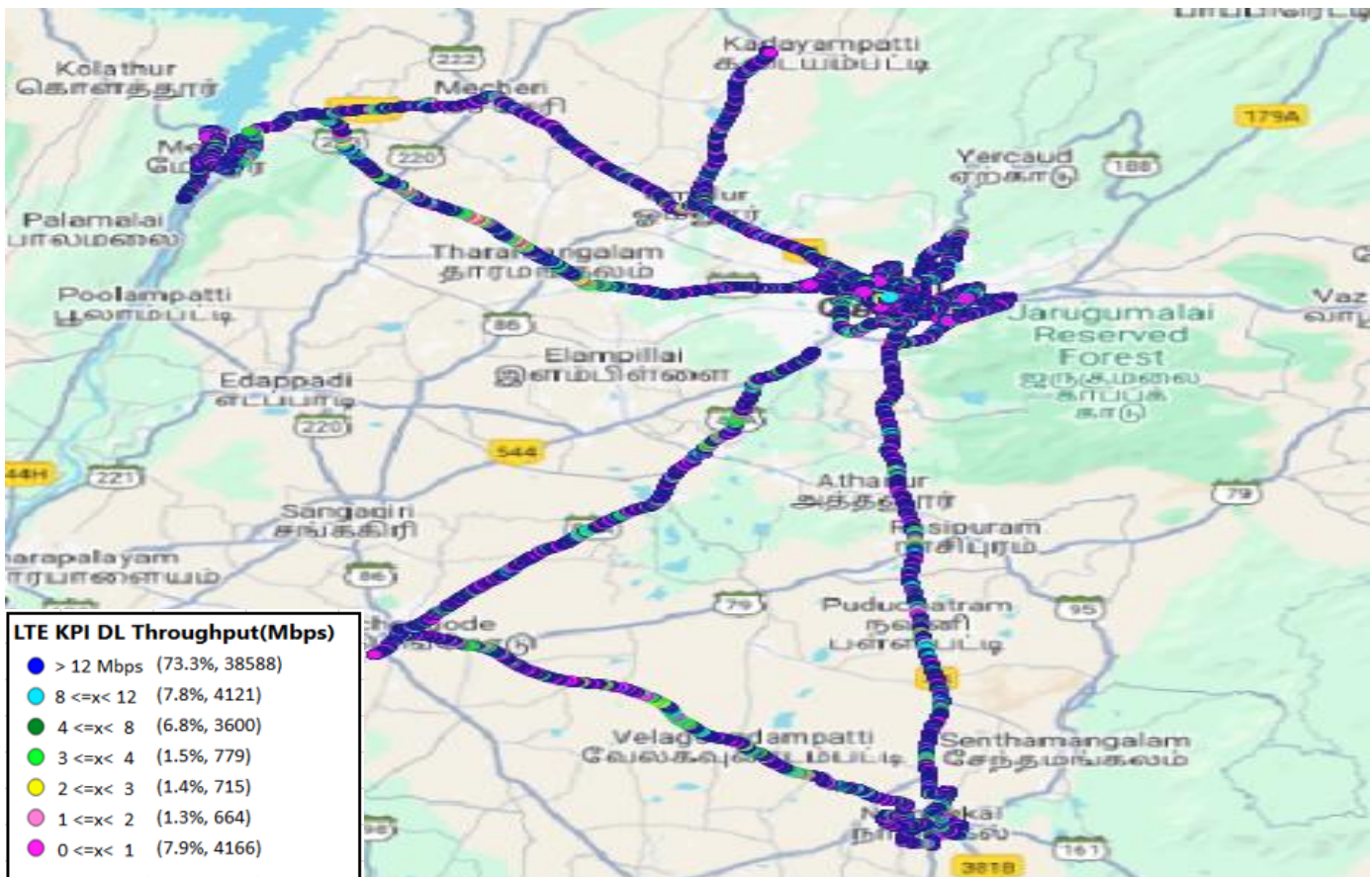
DL throughput	No of Sample	%
0 to 256 Kbps	1467	07.66
256 to 512 Kbps	1952	10.20
512 to 2 Mbps	9540	49.85
2 to 4 Mbps	4621	24.15
>4 Mbps	1558	08.14
Total	19138	100

IV. Dynamic Data Test- 3G / 4G DL Details

JIO

Data Statistics - Dynamic Complete SSA

Data KPIs - Overall	4G
Download Throughput (Mbps)	28.57

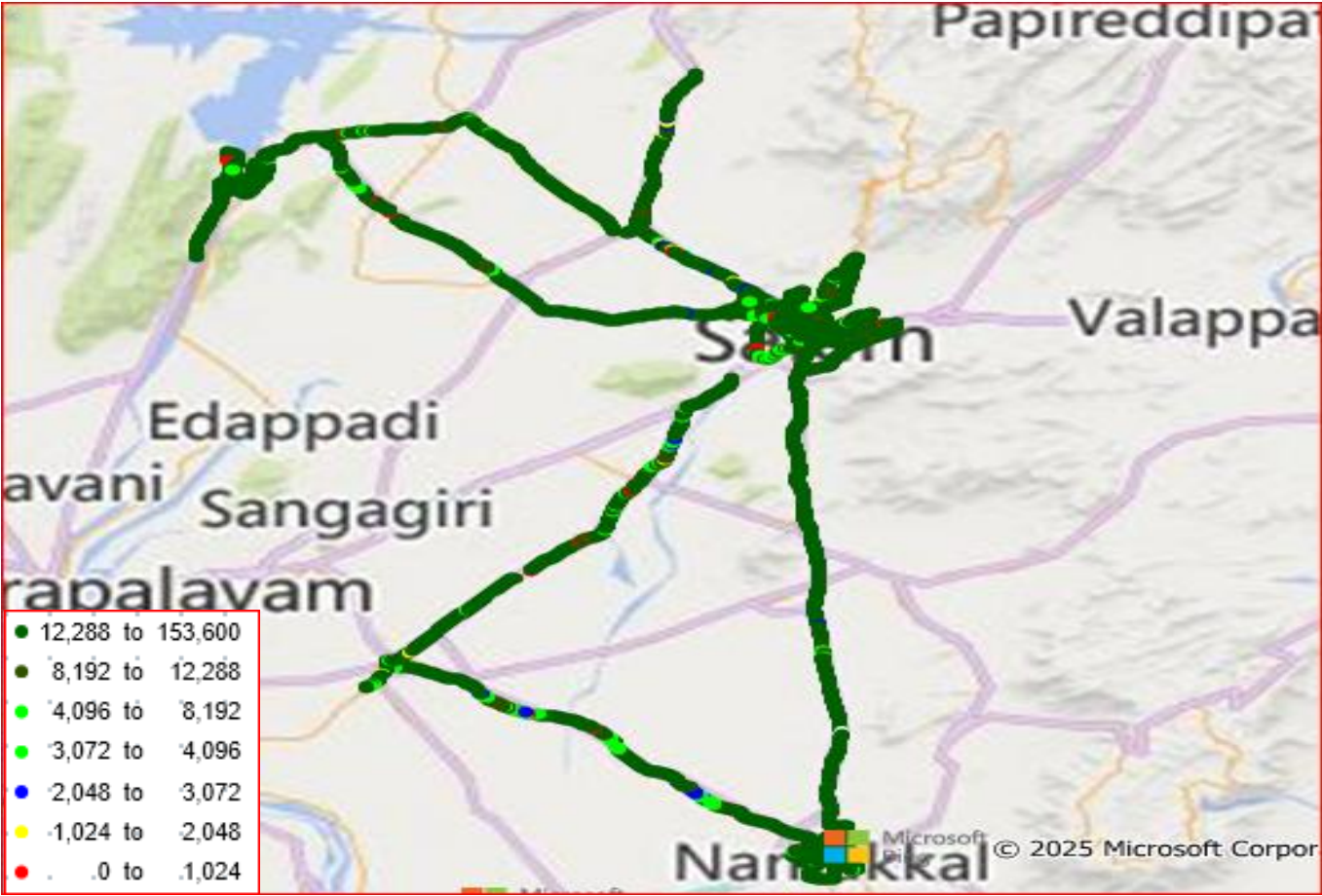


DL Throughput	No of Sample	%
>12 Mbps	38588	73.3
8 to 12 Mbps	4121	7.8
4 to 8 Mbps	3600	6.8
3 to 4 Mbps	779	1.5
2 to 3 Mbps	715	1.4
1 to 2 Mbps	664	1.3
0 to 1 Mbps	4166	7.9
Total	52633	100

VIL

Data Statistics - Dynamic Complete SSA

Data KPIs - Overall	4G
Download Throughput (Mbps)	47.77



DL throughput	No of Sample	%
0 to 1 Mbps	223	0.67
1 to 2 Mbps	113	0.34
2 to 3 Mbps	206	0.62
3 to 4 Mbps	166	0.50
4 to 8 Mbps	940	2.81
8 to 12 Mbps	1471	4.40
>12 Mbps	30281	90.66
Total	28612	100

Airtel

Technology 5G	1. Namakkal Anjaneyar Temple	2. Mettur Bus Stand	3. Salem Periyar University	4. Thiruchengode Bus Stand
Download in Mbps	319.98	464.52	303.09	256.42
Upload in Mbps	63.41	91.75	77.09	92.07

Technology 5G	5. Salem Steel Plant	6. Salem New Bus Stand	7. Salem Railway Station	8. Salem Govt Arts College
Download in Mbps	250.06	277.23	540.48	287.33
Upload in Mbps	72.99	112.50	92.62	101.41

BSNL

Technology 3G	1. Namakkal Anjaneyar Temple	2. Mettur Bus Stand	3. Salem Periyar University	4. Thiruchengode Bus Stand
Download in Mbps	1.02	1.38	3.04	1.19
Upload in Mbps	1.59	1.24	1.76	1.61

Technology 3G	5. Salem Steel Plant	6. Salem New Bus Stand	7. Salem Railway Station	8. Salem Govt Arts College
Download in Mbps	1.49	3.04	3.41	5.68
Upload in Mbps	1.09	3.47	1.12	6.63

JIO

Technology 5G	1. Namakkal Anjaneyar Temple	2. Mettur Bus Stand	3. Salem Periyar University	4. Thiruchengode Bus Stand
Download in Mbps	227.92	404.45	337.07	340.85
Upload in Mbps	46.15	83.17	65.19	72.09

Technology 5G	5. Salem Steel Plant	6. Salem New Bus Stand	7. Salem Railway Station	8. Salem Govt Arts College
Download in Mbps	392.80	385.88	361.21	411
Upload in Mbps	67.36	74.35	78.11	89.02

VIL

Technology 4G	1. Namakkal Anjaneyar Temple	2. Mettur Bus Stand	3. Salem Periyar University	4. Thiruchengode Bus Stand
Download in Mbps	21.59	14.59	41.9	42.46
Upload in Mbps	12.05	9.56	23.79	10.65

Technology 4G	5. Salem Steel Plant	6. Salem New Bus Stand	7. Salem Railway Station	8. Salem Govt Arts College
Download in Mbps	56	44.4	54.88	53.77
Upload in Mbps	15.67	20.28	16.93	22.29

VI. NH/SH Routes covered

NH/SH Routes covered in OADT by Airtel / BSNL / RJIL / VIL				
S.No	No of NH/SH routes	NH routes	SH routes	Distance (Km)
1	Seelnaikkanpatti to Namakkal	NH 44	-	46
2	Namakkal to Tiruchengode	-	SH 79	37
3	Tiruchengode to Ariyanur	-	SH 86A	40
4	Ariyanur-Uthamasolapuram	NH 544		
5	Steel Plant to Kunjandiyur	-	SH 223	33
6	Mettur to Mecheri	NH 544	-	21
7	Mecheri to Omalur	-	SH 222	16
8	Omalur - Devattipatti	NH 44		17
9	Devattipatti to Salem	NH 44	-	14