



Operator Assisted Drive Test Report

Shivamogga Sep. 2021

(RO, Bangalore)

Key Performance Indicators: All TSPs have met the Drop Call Rate (DCR) benchmark of 2% except BSNL 3G . All TSPs have met the Call Setup Success Rate (CSSR) of 95%.

The Operator Assisted Drive Test has been carried out by Regional Office, Bangalore with the help of Service Providers in Shivamogga City and surrounding areas Thirthahalli & Bhadravathi from 9:00 AM to 8:00 PM during 14th Sep. to 17th Sep 2021. The drive test covered drive route of 315 KMs & 6 hotspot over a period of 4 days. Approximately 680+ calls were made for each of the 8 networks: three 2G networks, two 3G network and three LTE network covering four TSPs.

Overview

Voice
Summary

Data
Summary

Overview

Regional Office, TRAI Bangalore conducted Operator Assisted Drive Test from 14th to 17th Sep. 2021 covering various locations in Shivamogga City & surrounding regions Bhadravathi and Thirthahalli. The performance of Airtel, BSNL, Vodafone Idea and Jio 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 300 + KMs over a period of 3 days from 14th to 17th Sep. 2021. Approximately 680 + calls were made for each of the 8 networks: three 2G (Lock Mode) networks, two 3G (Dual mode) networks and three VoLTE network covering 4 unique TSPs.

Data Tests:

1. Dynamic data test was conducted for 315 kms over a period of 3 days for download throughput for 3G & 4G technologies.

2. Data Tests were performed at 6 static locations for 2G, 3G & 4G technologies.

* 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.

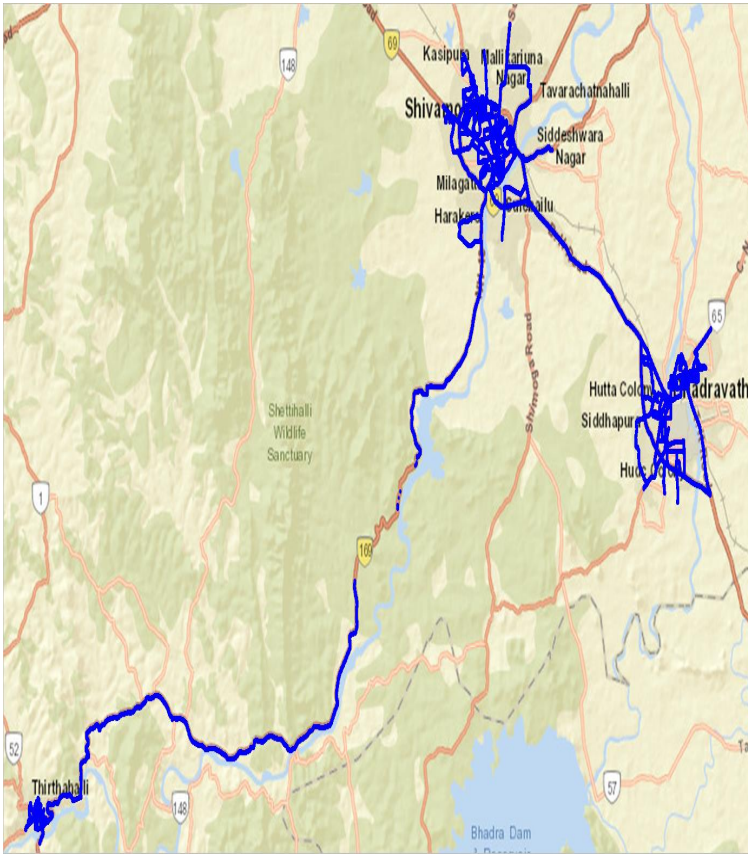
* 3G KPI's which are calculated from UE in Dual Mode (2G & 3G) includes samples and events of 2G.

* 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 PayTm
Latency	32 Bytes on www.google.com

Overview

Voice & Dynamic Data Test Drive Route



Areas Covered -Shivamogga

Gopi Circle	Navule
Jail Road	N T Road
Gandhi Nagar	Vidyanagar
Basvanagundi	Good Luck Circle
Tank Mohalla	DC Office
Vinoba Nagar	Gopal Gowda Extension
Mandali village	KSRTC bus stand
Gandhi bazar	Railway station
KR puram	City hospital
Krushni nagar	Keerthi nagar
Shivamogga to Thirthahalli Main Road	Shivamogga to Bhadravathi Main Road
Bhandrahalli	Rajappa layout
Areas Covered- Thirthahalli	Areas Covered- Bhadravathi
KSRTC Bus stand	KSRTC Bus stand
Soppugudde	Paper Town
Kuruvalli	Taluk Office
Bhartipura	Sadath Colony
	Railway Station

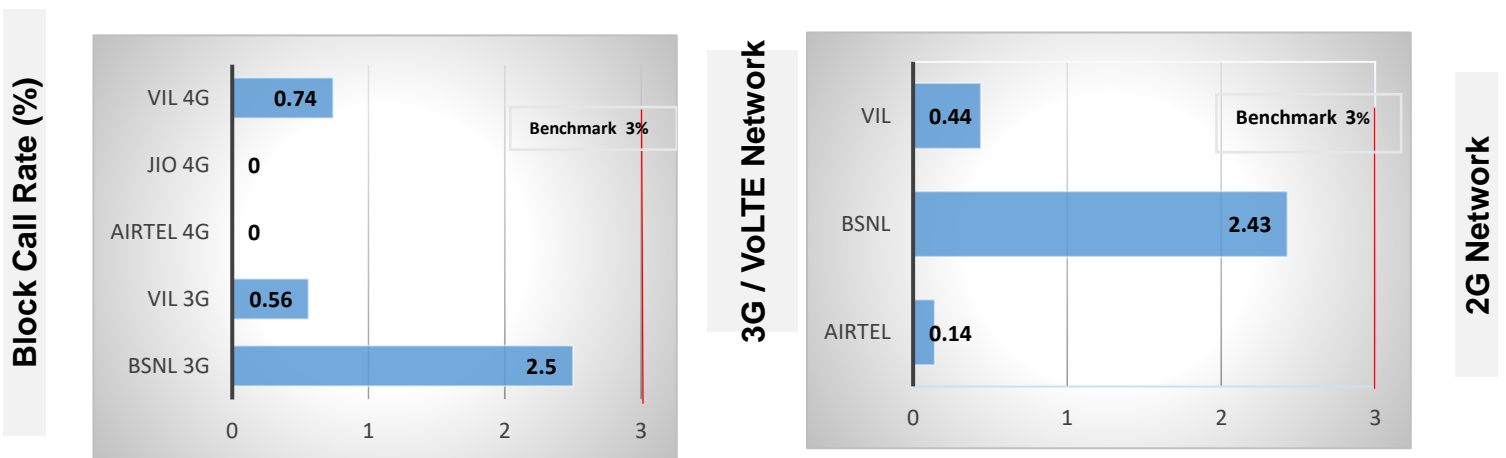
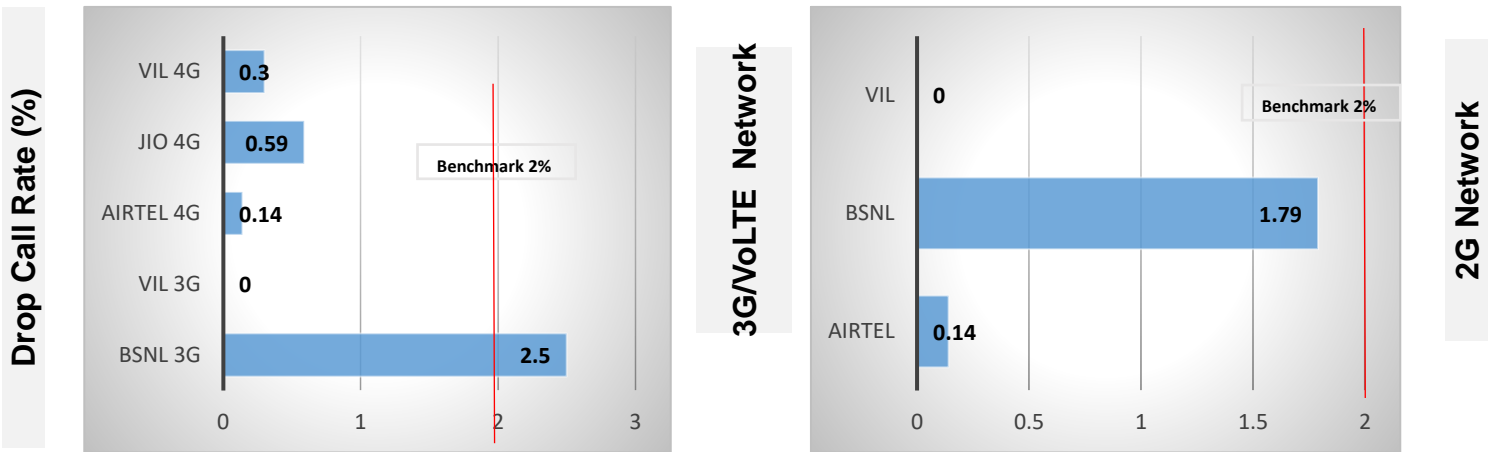
Data Service Test- Static Locations

Static Locations
Bhadravathi- KSRTC Bus Stand
Thirthahalli- Bus Stand
KSRTC Bus Stand- Shivamogga
Railway Station- Shivamogga
Nehru Stadium- Shivamogga
City Hospital -Shivamogga

Voice Calls

Key Observations

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



KPIs	2G			3G		VoLTE		
	Airtel	BSNL	VIL	BSNL	VIL	Airtel	RJIL	VIL
Drop Call Rate %	0.14	1.79	0	2.5	0	0.14	0.59	0.3
Block Call Rate %	0.14	2.43	0.44	2.5	0.56	0	0	0.74

- All TSPs have met the 2% QOS benchmark of Drop Call Rate (DCR%) except BSNL 3G..
- 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 %	87.47	98.32	89.29

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

TSPs	3G		VoLTE		
	BSNL	VIL	Airtel	JIO	VIL
Coverage %	83.25	90.24	98.99	98.3	98.51

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

TSPs	3G		VoLTE		
	BSNL	VIL	Airtel	VIL	JIO
Time Spent on 3G/4G %	93.3	98.74	100	63.39	100

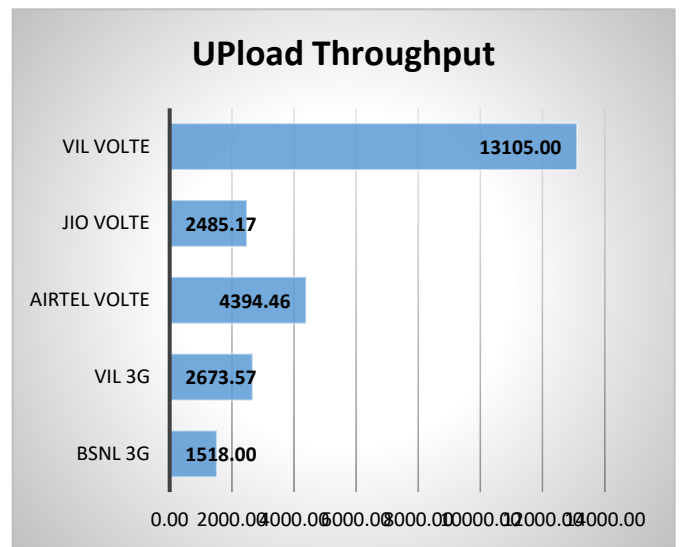
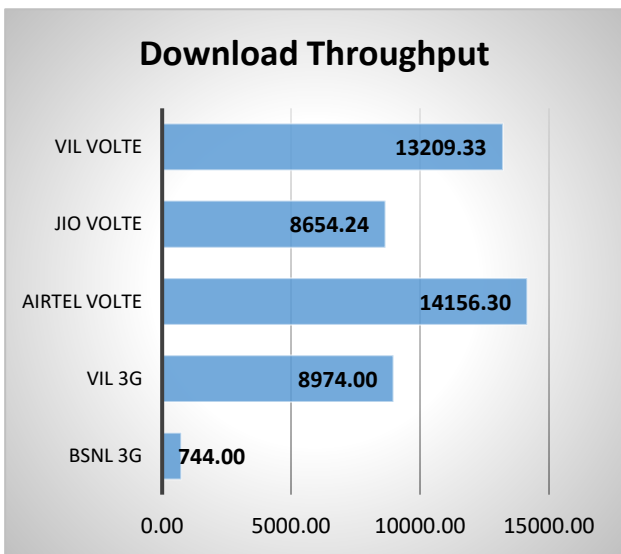
Data Services Static

Key Observations

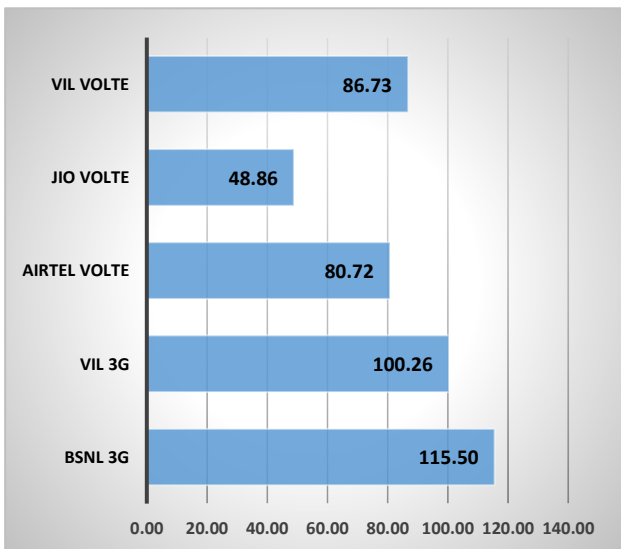
Data was tested at 6 locations .Following services were tested: Data Download/Upload, Latency (www.google.com), and Web browsing (Flipkart, Amazon, PayTm)

Data Download and Upload Performance (kbps)

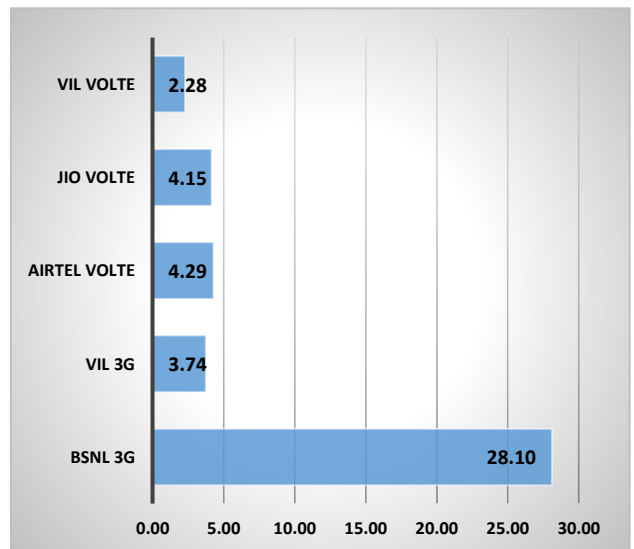
3G/4G/ Network:



Latency (ms)



Web Browsing (Sec)



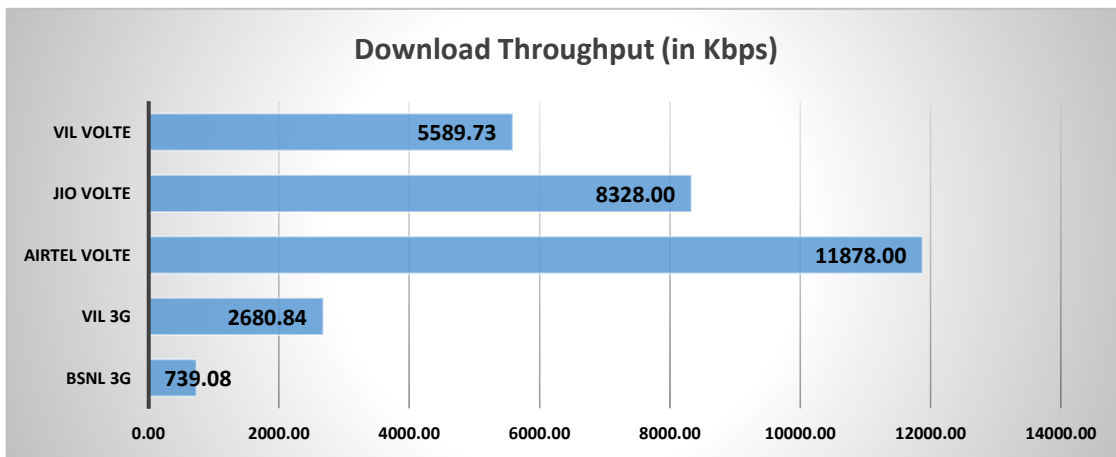
Data Services Dynamic

Key Observations

Dynamic Data was tested for 315 Kms. Download Throughput was tested.

Data Download Performance (kbps) - Dynamic

3G/4G/ Network:



Summary

City Level Summary-Voice

Voice Call	2G		
	Airtel	BSNL	VIL
Call Attempt	718	742	680
Blocked Call Rate (%)	0.14	2.43	0.44
CSSR% (Accessibility)	99.86	97.57	99.56
Drop Call Rate (%)	0.14	1.79	0
Mobility HOSR (%)	99.54	94	99.56
Rx Quality (%)	89.72	83.65	97.00

Voice Call	3G/4G				
	BSNL 3G	VIL 3G	Airtel VoLTE	JIO VoLTE	VIL VoLTE
Call Attempt	730	718	723	845	680
Blocked Call Rate (%)	2.5	0.56	0	0	0.74
CSSR% (Accessibility)	97.5	99.44	100	99.88	99.26
Drop Call Rate (%)	2.5	0	0.14	0.59	0.30
Mobility HOSR (%)	100	100	99.95	99.32	99.86
Rx Quality (%)	78.1	99.33	83.83	85.66	65.54

Summary

City Level Summary- Data Services

Data Services Static	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	203.6	182.28	173.88
Upload Throughput (kbps)	9.0	113.78	134.66
Web Browsing Delay (sec)	124.1	144.17	8.72
Latency (msec)	279.4	115.5	221.88

Data Services Static	3G/VoLTE				
	BSNL 3G	VIL 3G	Airtel VoLTE	JIO VoLTE	VIL VoLTE
Download Throughput (kbps)	744	8974.00	14156.3	8654.24	13209.33
Upload Throughput (kbps)	1518	2673.57	4394.46	2485.17	13105.33
Web Browsing Delay (sec)	28.1	3.74	4.29	4.15	2.28
Latency (msec)	115.5	100.26	80.72	48.86	86.73

Data Services Static	3G/VoLTE				
	BSNL 3G	VIL 3G	Airtel VoLTE	JIO VoLTE	VIL VoLTE
Download Throughput (kbps)	739.08	2680.84	11878	8328	5589.73

Bhadravathi - KSRTC Bus Stand	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	208.13	891	193.33
Upload Throughput (kbps)	11.47	603	146.67
Web Browsing Delay (sec)	91.58	109	10.33
Latency (msec)	278.67	116	207.33

Thirthahalli- KSRTC Bus Stand	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	220.03	77.6	96.67
Upload Throughput (kbps)	7.00	15	76.67
Web Browsing Delay (sec)	106.99	109	12.00
Latency (msec)	252.33	115	207.67

Shivamogga- KSRTC Bus Stand	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	115.07	28.8	203.00
Upload Throughput (kbps)	4.53	23.1	171.33
Web Browsing Delay (sec)	194.54	165	6.00
Latency (msec)	273.33	116	205.33

Shivamogga-Nehru Stadium	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	150.63	30.8	173.33
Upload Throughput (kbps)	4.87	17.6	146.67
Web Browsing Delay (sec)	123.28	261	9.33
Latency (msec)	287.67	115	228.67

Shivamogga-City Hospital	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	95.77	34.45	170.00
Upload Throughput (kbps)	1.37	6	86.67
Web Browsing Delay (sec)	185.32	101	6.33
Latency (msec)	292.33	116	207.33

Shivamogga-Railway Station	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	176.63	31	206.67
Upload Throughput (kbps)	4.63	18	180.00
Web Browsing Delay (sec)	210.52	120	8.33
Latency (msec)	292.33	115	277.67

Data Services static

City Level Summary(contd.)

Bhadravathi - KSRTC Bus Stand	3G		VoLTE		
	BSNL	VIL	Airtel	JIO	VIL
Download Throughput (kbps)	645	5773.33	23476.00	3876.59	9906.67
Upload Throughput (kbps)	1239	2896.67	21733.60	2611.78	10926.67
Web Browsing Delay (sec)	25	8.00	4.34	3.31	2.33
Latency (msec)	115	95.00	56.67	42.40	103.67

Thirthahalli- KSRTC Bus Stand	3G		VoLTE		
	BSNL	VIL	Airtel	JIO	VIL
Download Throughput (kbps)	845	*- VIL is not offering 3G services in Thirthahalli	10216.27	32029.45	*- VIL is not offering 4G services in Thirthahalli
Upload Throughput (kbps)	1243		1639.37	4353.26	
Web Browsing Delay (sec)	23.6		4.27	3.51	
Latency (msec)	116		87.00	35.93	

Shivamogga- KSRTC Bus Stand	3G		VoLTE		
	BSNL	VIL	Airtel	JIO	VIL
Download Throughput (kbps)	675	11460	8770.60	2298.71	10733.33
Upload Throughput (kbps)	1649	2320	3979.27	2759.47	18653.33
Web Browsing Delay (sec)	25	2.33	4.32	3.87	2.33
Latency (msec)	115	65.33	61.00	56.60	83.67

Summary

City Level Summary(contd.)

Shivamogga-Nehru Stadium	3G		VoLTE		
	BSNL	VIL	Airtel	JIO	VIL
Download Throughput (kbps)	655.5	10573.33	29532.27	3350.37	21873.33
Upload Throughput (kbps)	1679.7	2303.33	25590.20	761.66	15083.33
Web Browsing Delay (sec)	35.2	2.67	6.61	4.23	1.07
Latency (msec)	115	164.33	66.33	55.77	87.67

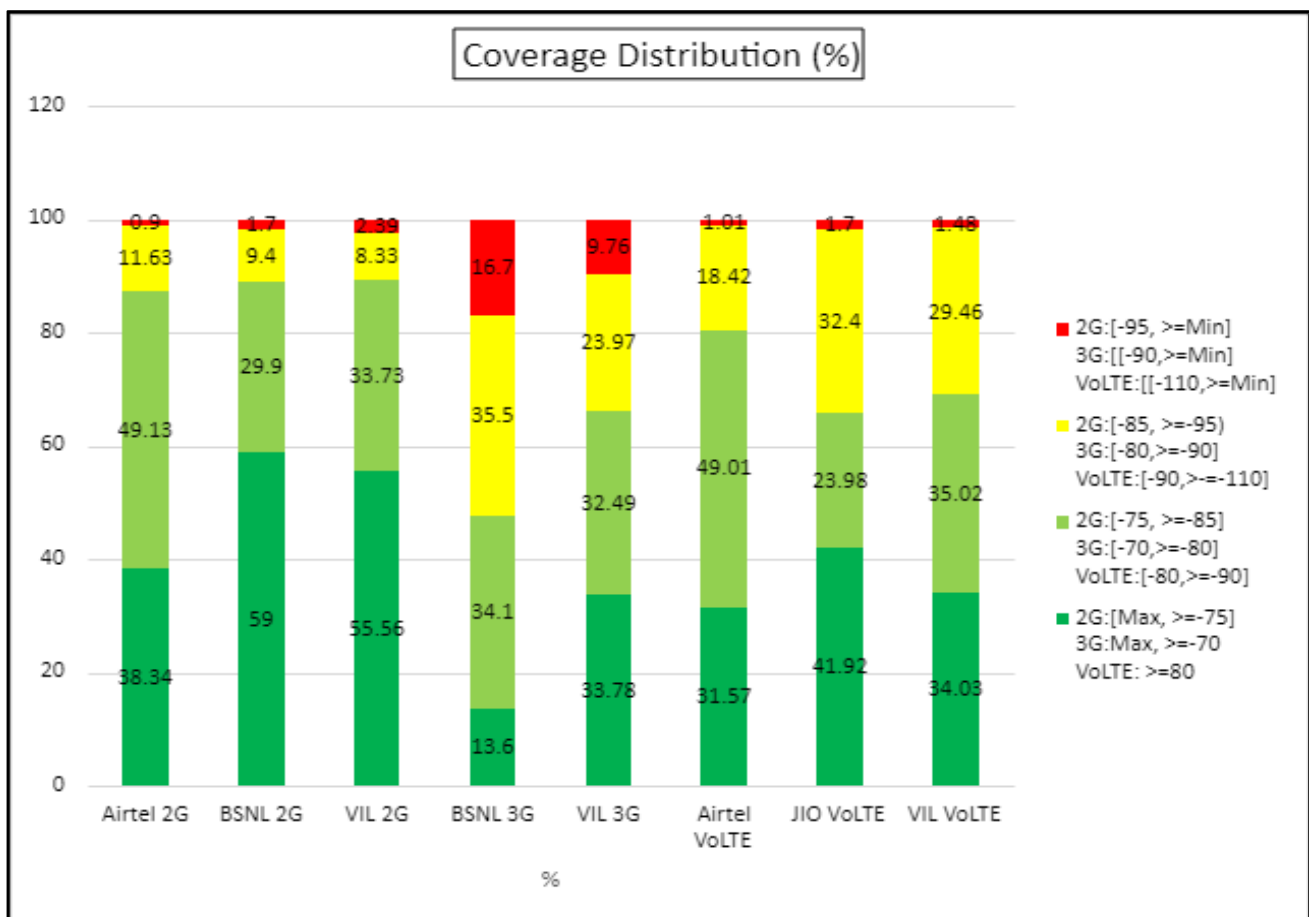
Shivamogga-City Hospital	3G		VoLTE		
	BSNL	VIL	Airtel	JIO	VIL
Download Throughput (kbps)	636.7	12083.33	18690.47	8186.26	9913.33
Upload Throughput (kbps)	1639.8	3286.67	3593.67	3345.97	5578.00
Web Browsing Delay (sec)	36	2.37	4.29	4.76	3.33
Latency (msec)	116	65.67	83.67	53.30	54.00

Shivamogga-Railway Station	3G		VoLTE		
	BSNL	VIL	Airtel	JIO	VIL
Download Throughput (kbps)	1008.6	4980.00	24235.43	2184.10	13620.00
Upload Throughput (kbps)	1663	2450.00	5086.03	1078.89	11566.67
Web Browsing Delay (sec)	24	3.33	3.86	4.95	8.67
Latency (msec)	116	111.00	44.33	49.20	104.67

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	87.47
BSNI 2G	98.3
VIL 2G	89.29
BSNL 3G	83.3
VIL 3G	90.24
Airtel VoLTE	98.99
Jio VoLTE	98.3
VIL VoLTE	98.51

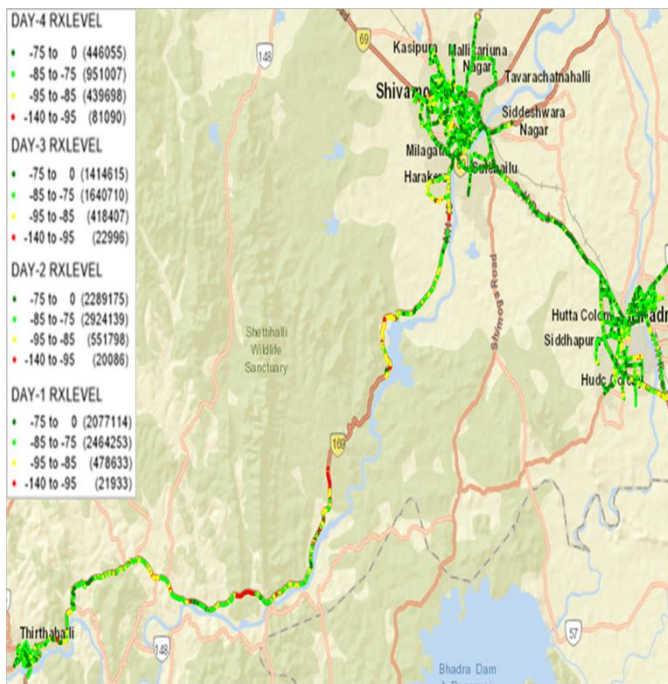


I. Coverage Details

AIRTEL

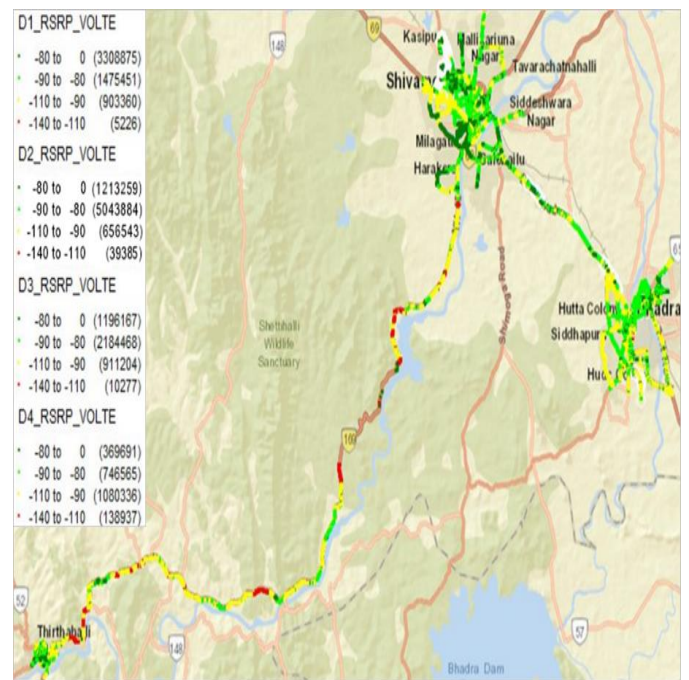
Technology	Coverage Rate %
2G	87.47
VoLTE	98.99

2G



2G		
Overall RxLevel	# Samples	% PDF
[Max, >=-75]	6226959	38.34%
[-75, >=-85)	7980109	49.13%
[-85, >=-95)	1888536	11.63%
[-95, >=Min)	146105	0.90%
Total	16241709	100%

VoLTE



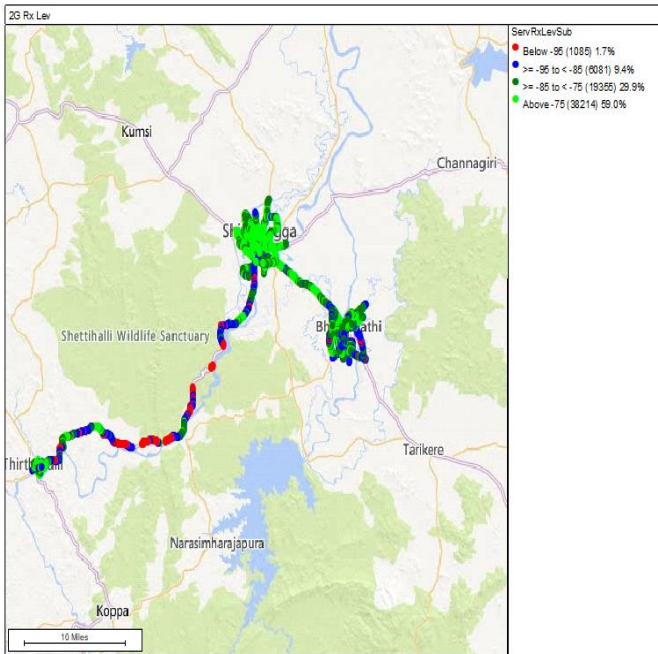
VoLTE		
Overall RSRP	# Samples	% PDF
[Max, >=-80]	6087992	31.57%
[-80, >=-90)	9450368	49.01%
[-90, >=-110)	3551443	18.42%
[-110, >=Min)	193825	1.01%
Total	19283628	100%

I. Coverage Details

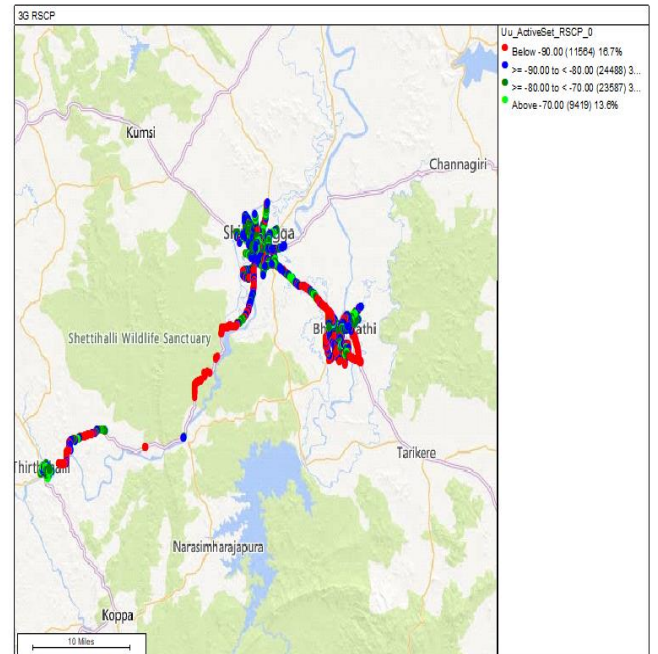
BSNL

Technology	Coverage Rate %
2G	98.3
3G	83.3

2G



3G



2G

Overall RxLevel	# Samples	% PDF
[Max, >=-75]	38214	59%
[-75, >=-85)	19355	29.9%
[-85, >=-95)	6081	9.4%
[-95, >=Min)	1085	1.7%
Total	64735	100%

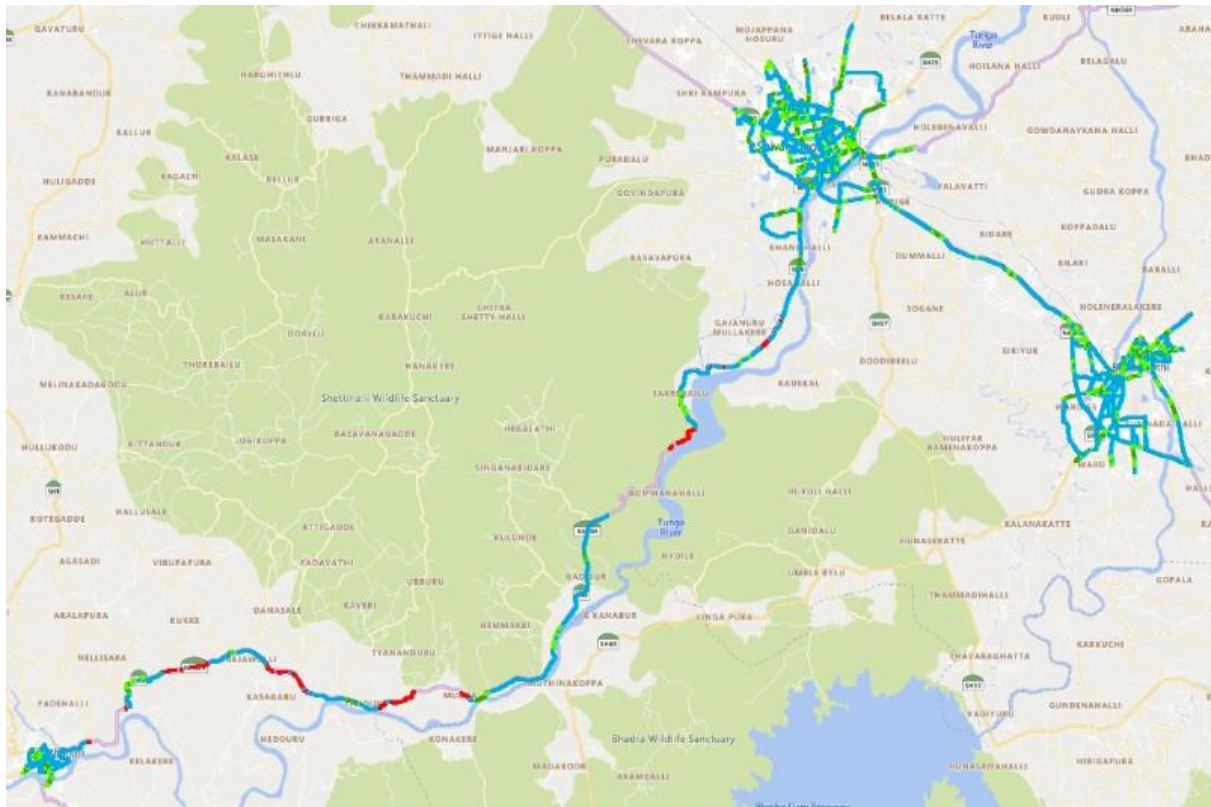
3G

Overall RSCP	# Samples	% PDF
[Max, >=-70]	9419	13.6%
[-70, >=-80)	23587	34.1%
[-80, >=-90)	24488	35.5%
[-90, >=Min)	11564	16.7%
Total	69058	100%

I. Coverage Details

JIO

Technology	Coverage Rate %
VoLTE	98.30



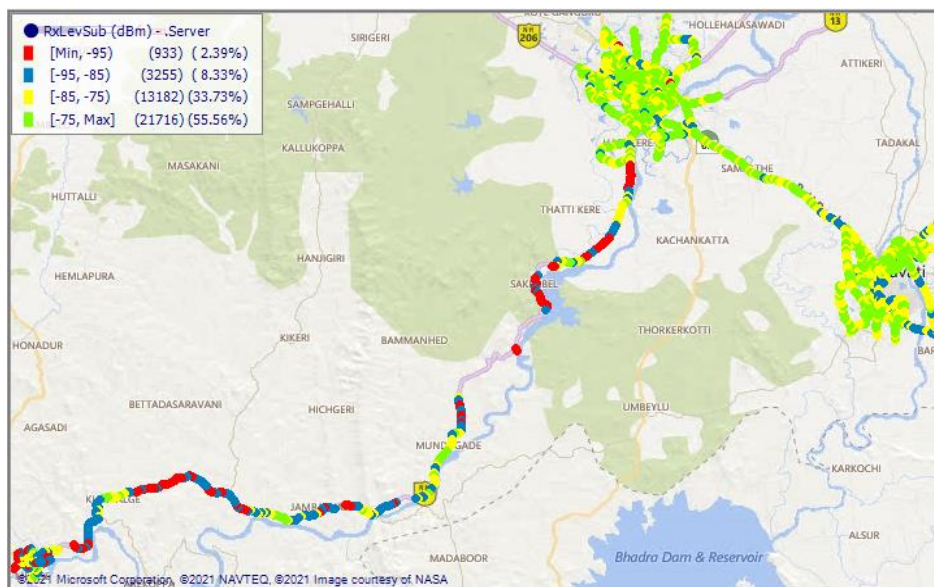
VoLTE		
Overall RSRP	# Samples	% PDF
[Max, >=-80]	907579	41.92%
[-80, >=-90)	519194	23.98%
[-90, >=-110)	701365	32.40%
[-110, >=Min)	36833	1.70%
Total	2164971	100%

I. Coverage Details

VIL

Technology	Coverage Rate %
2G	89.29

2G



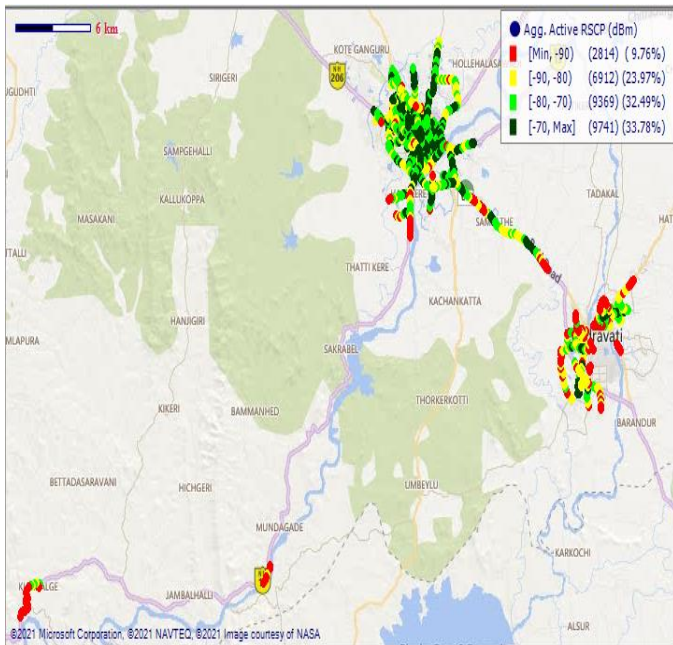
2G		
Overall RxLevel	# Samples	% PDF
[Max, >=-75]	21716	55.56%
[-75, >=-85)	13182	33.73%
[-85, >=-95)	3255	8.33%
[-95, >=Min)	933	2.39%
Total	39086	100%

I. Coverage Details

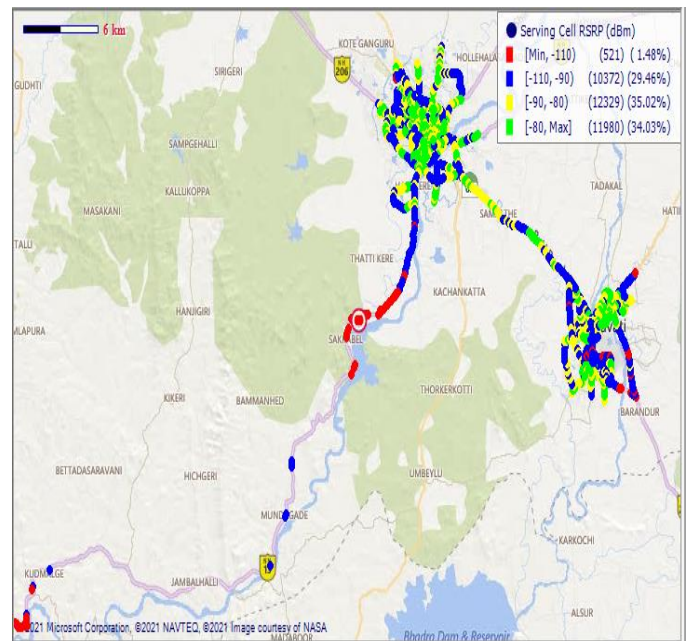
VIL

Technology	Coverage Rate %
3G	90.24
4G	98.51

3G



4G



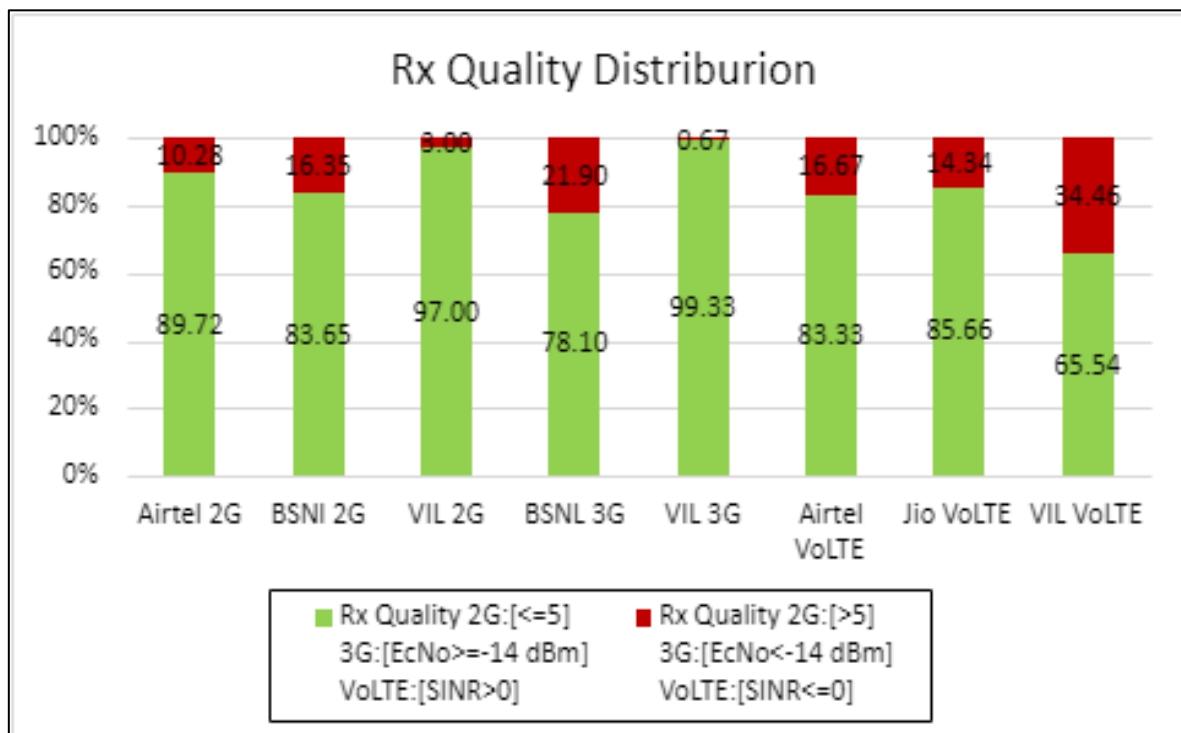
3G		
Overall RSCP	# Samples	% PDF
[Max, >=-70]	9741	33.78%
[-70, >=-80)	9369	32.49%
[-80, >=-90)	6912	23.97%
[-90, >=Min)	2814	9.76%
Total	28836	100 %

VoLTE		
Overall RSRP	# Samples	% PDF
[Max, >=-80]	11980	34.03%
[-80, >=-90)	12329	35.02%
[-90, >=-110)	10372	29.46%
[-110, >=Min)	521	1.48%
Total	35202	100%

II. Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 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	89.72
BSNI 2G	83.65
VIL 2G	97
BSNL 3G	78.1
VIL 3G	99.33
Airtel VoLTE	83.33
Jio VoLTE	85.66
VIL VoLTE	65.54



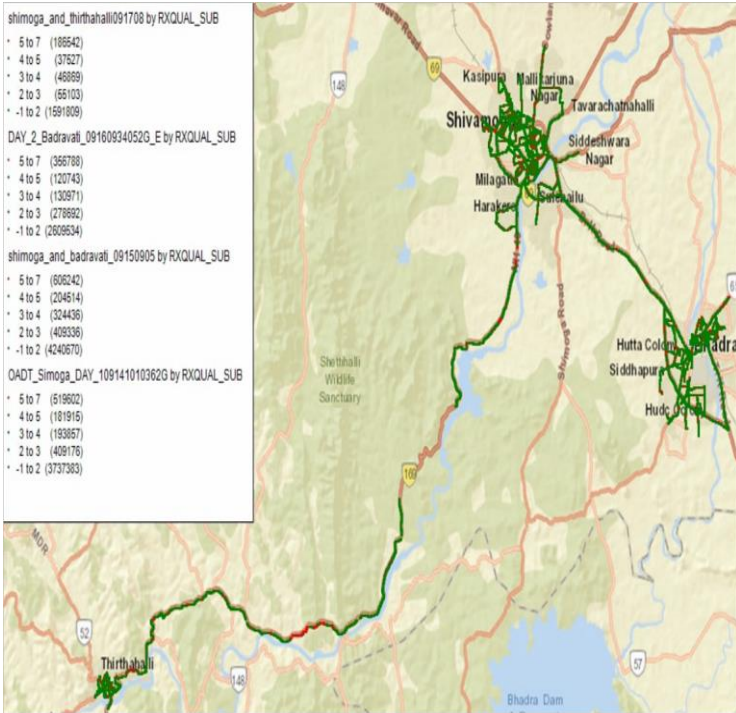
II. Quality Details

Airtel

Technology	Rx Quality %
2G	89.72
VoLTE	83.83

2G

```
shimoga_and_thirahalli091708 by RXQUAL_SUB
* 5 to 7 (188542)
* 4 to 5 (37527)
* 3 to 4 (48889)
* 2 to 3 (58103)
* -1 to 2 (1591809)
DAY_2_Badravali_09160934052G_E by RXQUAL_SUB
* 5 to 7 (356788)
* 4 to 5 (120743)
* 3 to 4 (130971)
* 2 to 3 (278992)
* -1 to 2 (2609534)
shimoga_and_badravali_09150905 by RXQUAL_SUB
* 5 to 7 (80242)
* 4 to 5 (204514)
* 3 to 4 (324436)
* 2 to 3 (409336)
* -1 to 2 (4240670)
OADT_Simoga_DAY_109141010362G by RXQUAL_SUB
* 5 to 7 (519602)
* 4 to 5 (181916)
* 3 to 4 (183857)
* 2 to 3 (409176)
* -1 to 2 (3737383)
```



VoLTE

D1_SINR_VOLTE

```
* -30 to 0 (1022189)
* 0 to 5 (923689)
* 5 to 10 (658001)
* 10 to 15 (2823238)
* 15 to 30 (265795)
```

D2_SINR_VOLTE

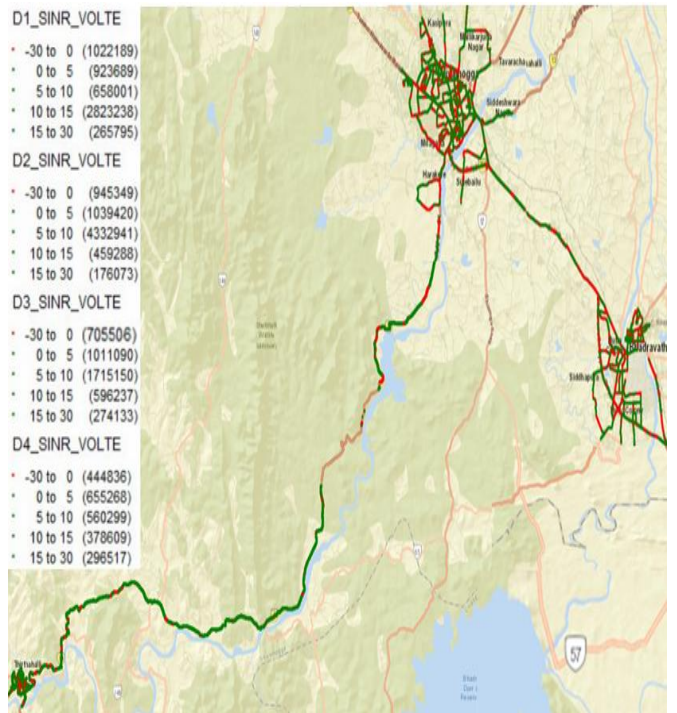
```
* -30 to 0 (945349)
* 0 to 5 (1039420)
* 5 to 10 (4332941)
* 10 to 15 (459288)
* 15 to 30 (176073)
```

D3_SINR_VOLTE

```
* -30 to 0 (705506)
* 0 to 5 (1011090)
* 5 to 10 (1715150)
* 10 to 15 (596237)
* 15 to 30 (274133)
```

D4_SINR_VOLTE

```
* -30 to 0 (444836)
* 0 to 5 (655268)
* 5 to 10 (560299)
* 10 to 15 (378609)
* 15 to 30 (298517)
```



Overall Rx Quality	# Samples	% PDF
(Min, <=2)	12179396	74.99%
(2, <=3)	1152307	7.09%
(3, <=4)	696133	4.29%
(4, <=5)	544699	3.35%
(5, <=Max)	1669174	10.28%
Total	16241709	89.7%

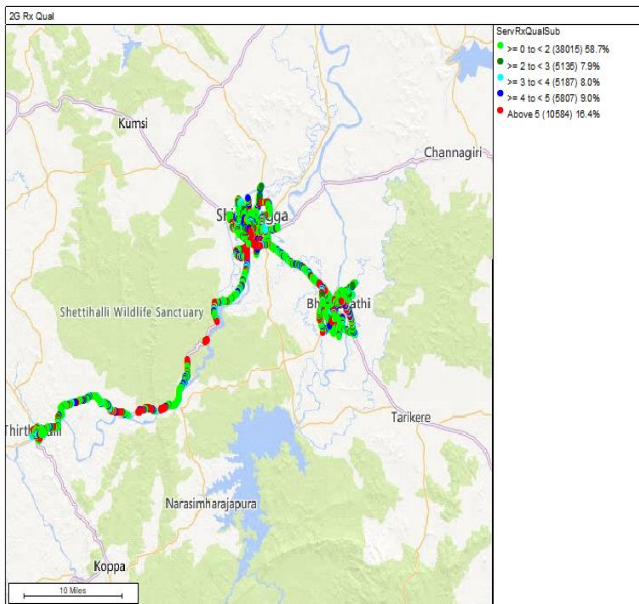
Overall SINR	# Samples	% PDF
(Min, <=0)	3117880	16.17%
(0, <=5)	3629467	18.82%
(5, <=10)	7266391	37.68%
(10, <=15)	4257372	22.08%
(15, <=Max)	1012518	5.25%
Total	19283628	100%

II. Quality Details

BSNL

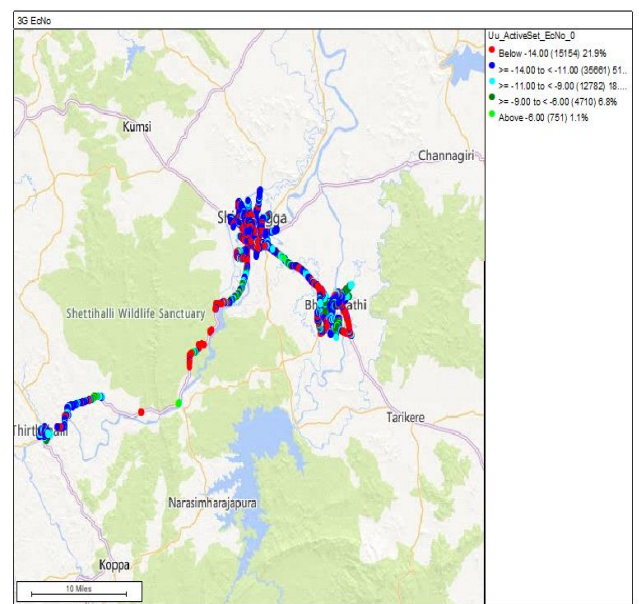
Technology	Rx Quality %
2G	83.65
3G	78.1

2G



Overall Rx Quality	# Samples	% PDF
(Min, <=2)	38015	58.7%
(2, <=3)	5135	7.9%
(3, <=4)	5187	8%
(4, <=5)	5807	9%
(5, <=Max)	10584	16.4
Total	64728	100%

3G

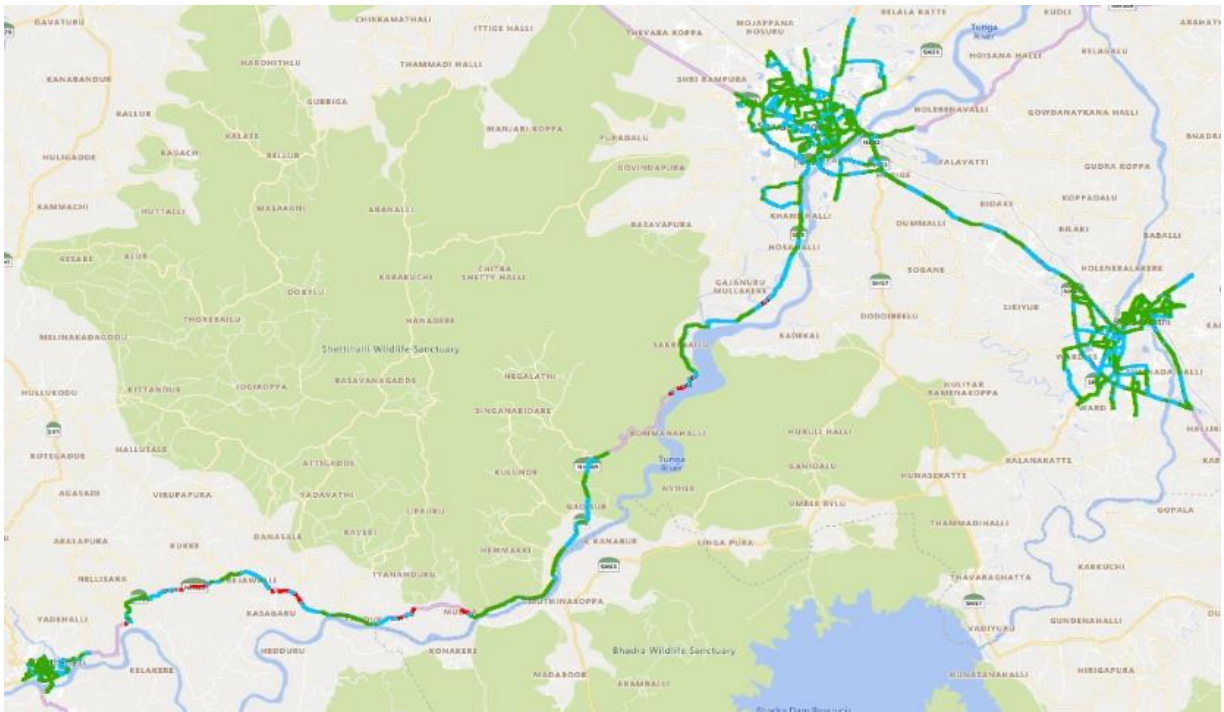


Overall EcNo	# Samples	% PDF
(Max, <=-6)	751	1.1%
(-6, <=-9)	4710	6.8%
(-9, <=-11)	12782	18.5%
(-11, <=-14)	35661	51.6%
(-14, <= Min)	15154	21.9%
Total	69058	100%

II. Quality Details

JIO

Technology	Rx Quality %
VoLTE	85.66



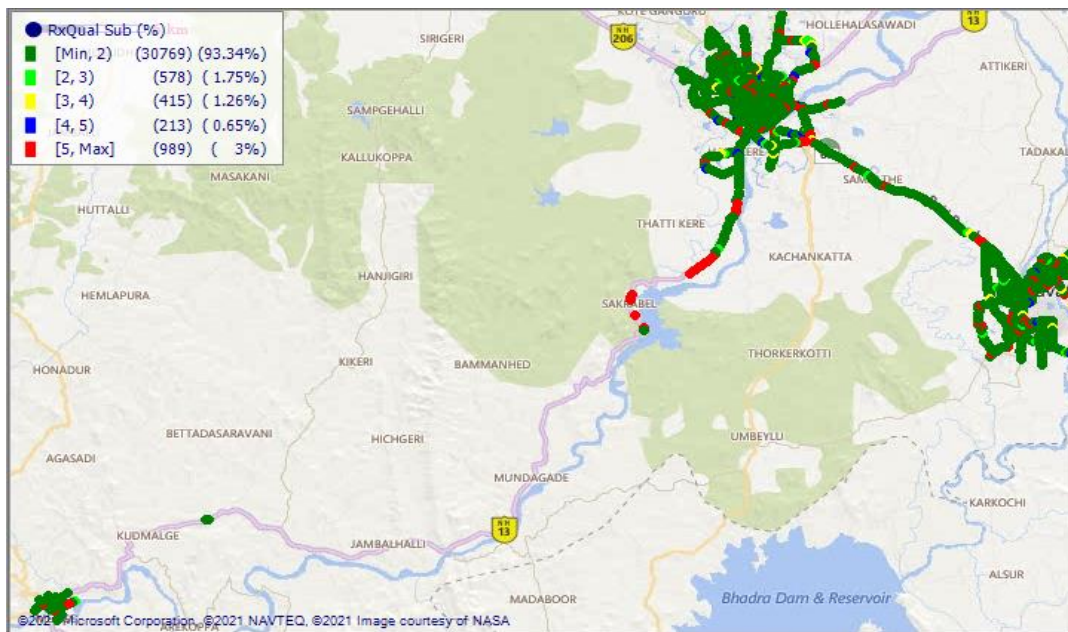
Overall SINR	# Samples	% PDF
(Min, <=0)	310369	14.34%
(0, <=5)	428186	19.78%
(5, <=10)	463970	21.43%
(10, <=15)	426677	19.71%
(15, <=Max)	535769	24.75%
Total	2164971	100%

II. 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 $\geq 95\%$.

VIL

Technology	Rx Quality %
2G	97

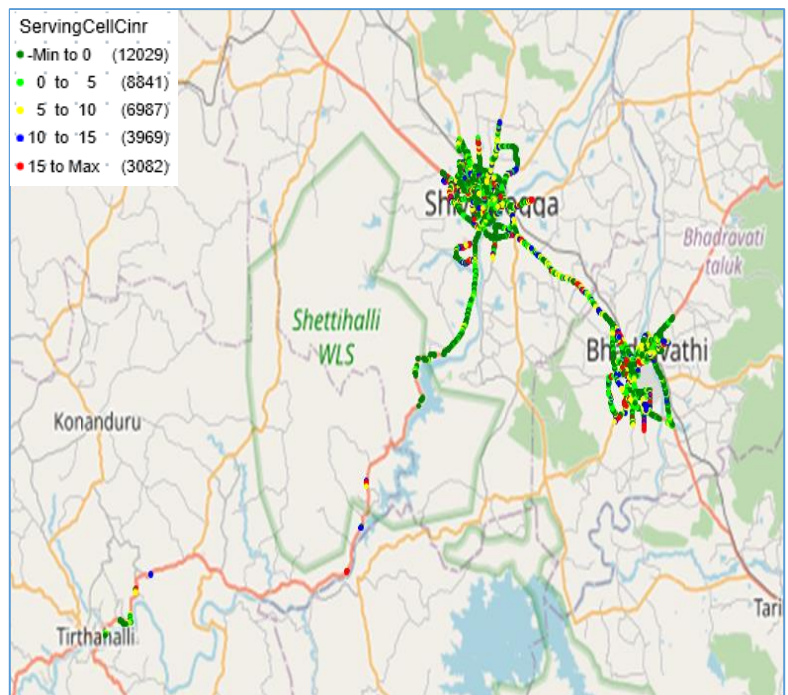
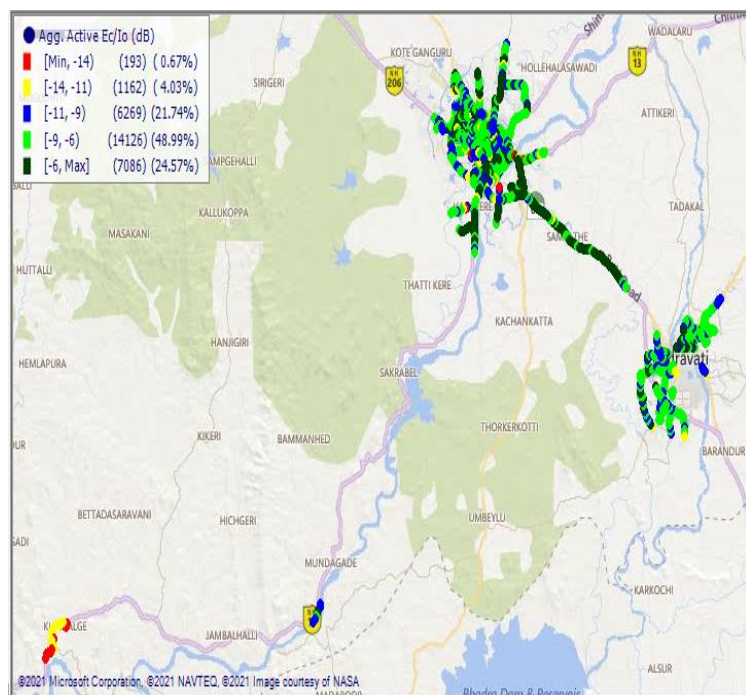


Overall Rx Quality	# Samples	% PDF
(Min, ≤ 2)	30769	93.34%
(2, ≤ 3)	578	1.75%
(3, ≤ 4)	415	1.26%
(4, ≤ 5)	213	0.65%
(5, $\leq \text{Max}$)	989	3%
Total	32964	100%

II. Quality Details

VIL

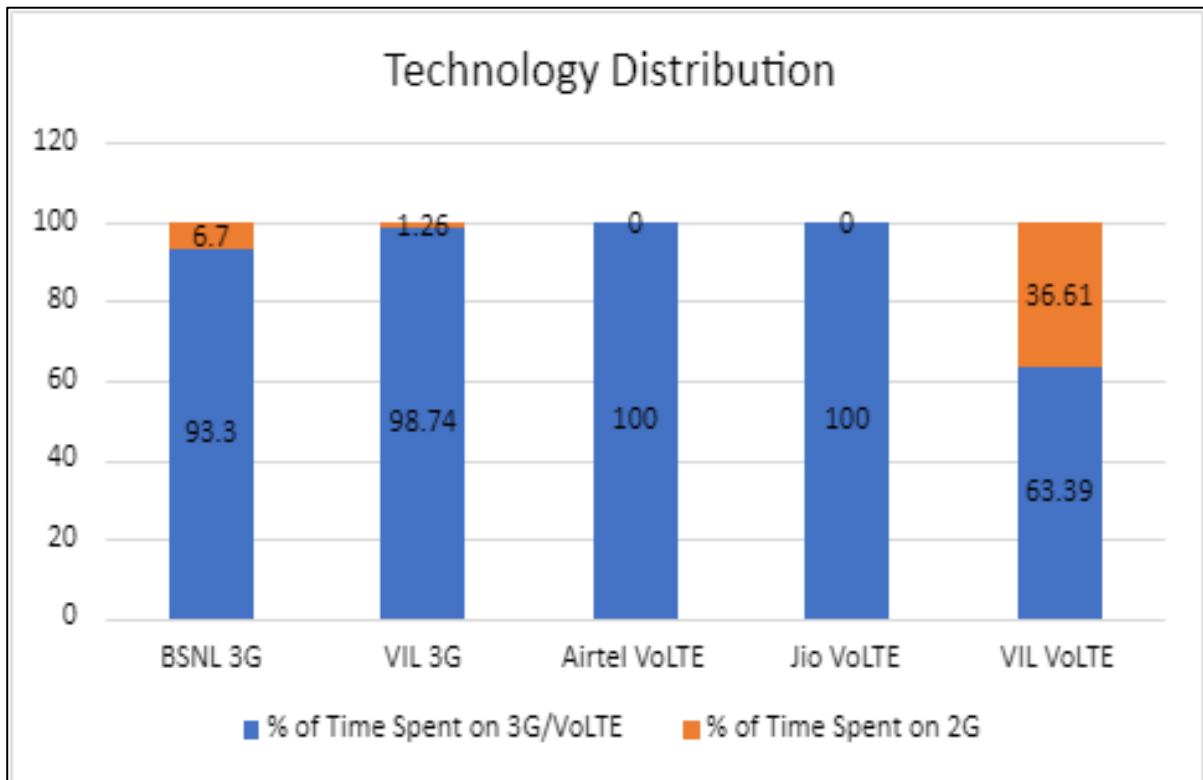
Technology	Rx Quality %
3G	99.33
4G	65.54



Overall EcNo	# Samples	% PDF	Overall SINR	# Samples	% PDF
(Max, <=-6)	7086	24.57%	(Min, <=0)	12029	34.46%
(-6, <=-9)	14126	48.99%	(0, <=5)	8841	25.33%
(-9, <=-11)	6269	21.74%	(5, <=10)	6987	20.02%
(-11, <=-14)	1162	4.03%	(10, <=15)	3969	11.37%
(-14, <= Min)	193	0.67%	(15, <=Max)	3082	8.83%
Total	28836	100%	Total	34908	100%

III. Technology Details

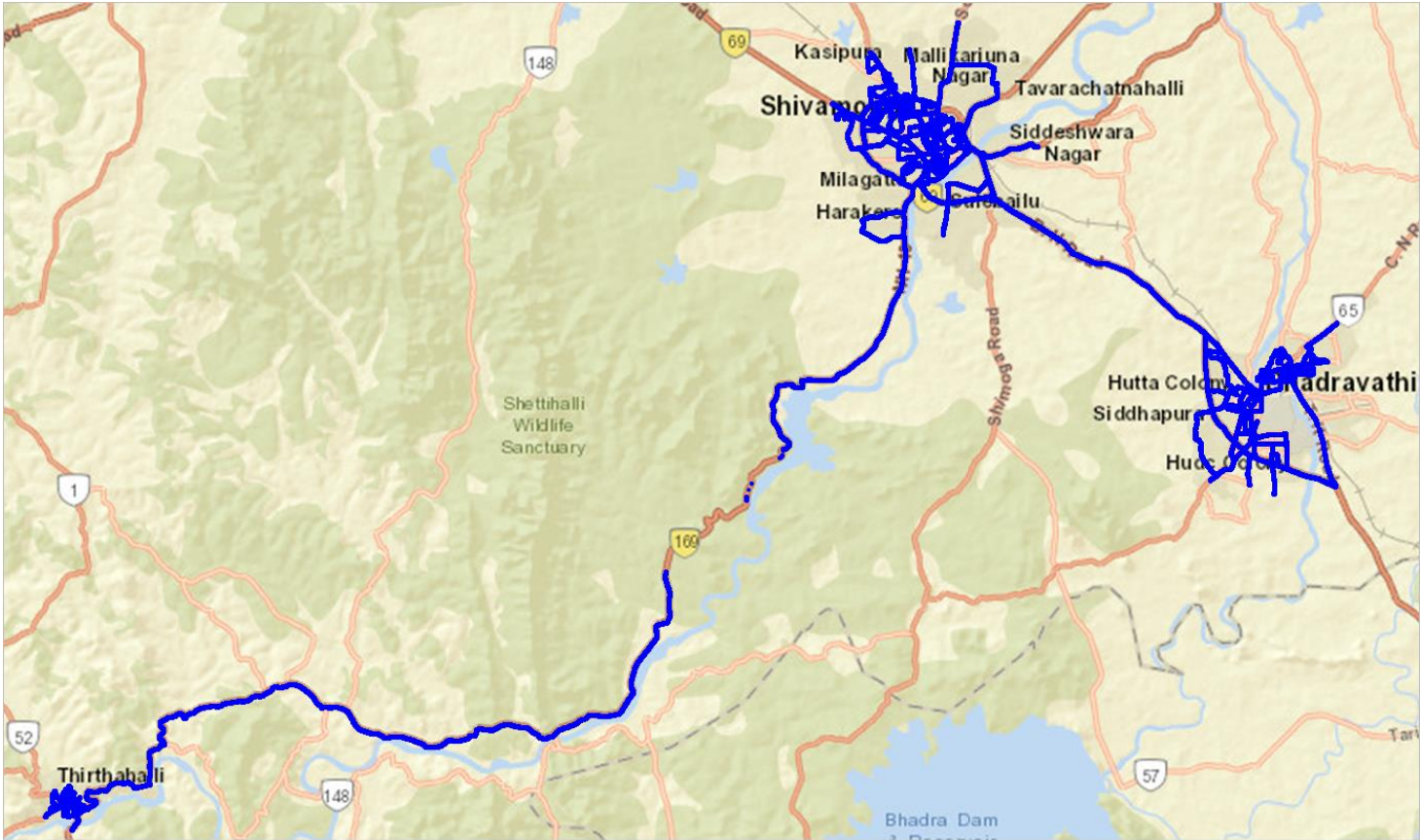
TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	93.3
VIL 3G	98.74
Airtel VoLTE	100
Jio VoLTE	100
VIL VoLTE	63.39



III. Technology Details

Airtel

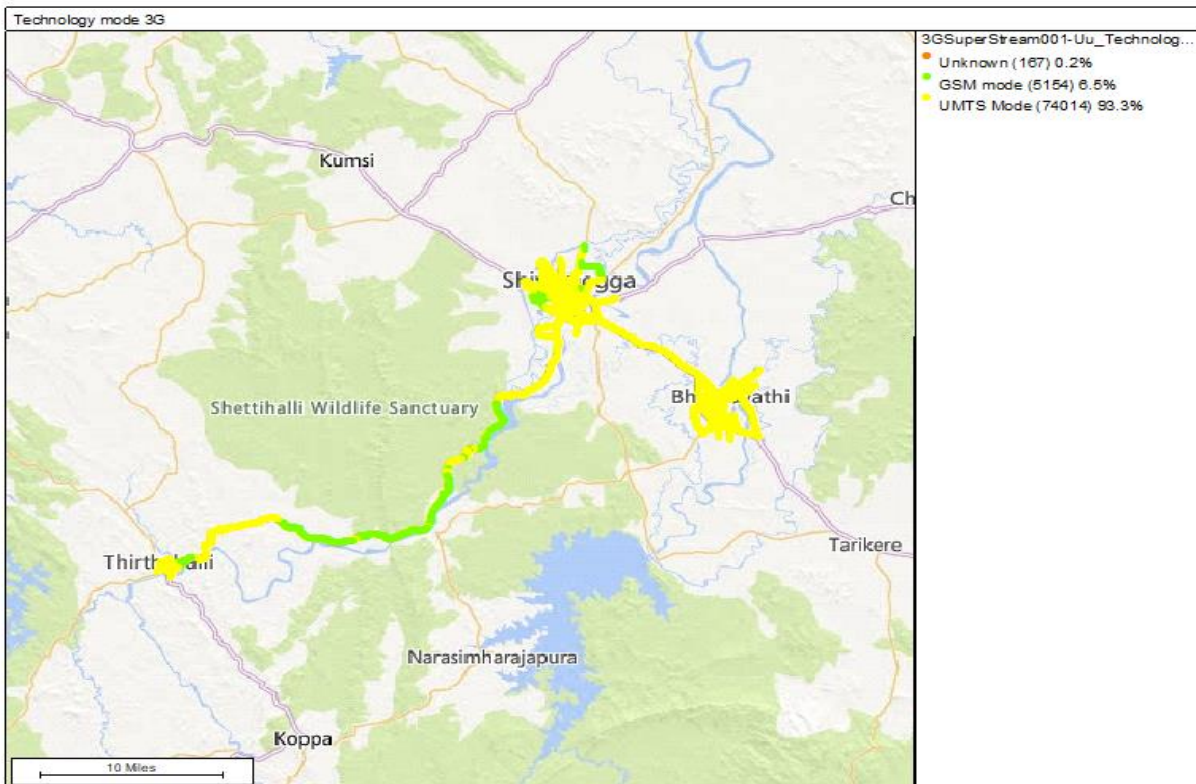
Technology	Time Spent on 4G
4G	100%



III. Technology Details

BSNL

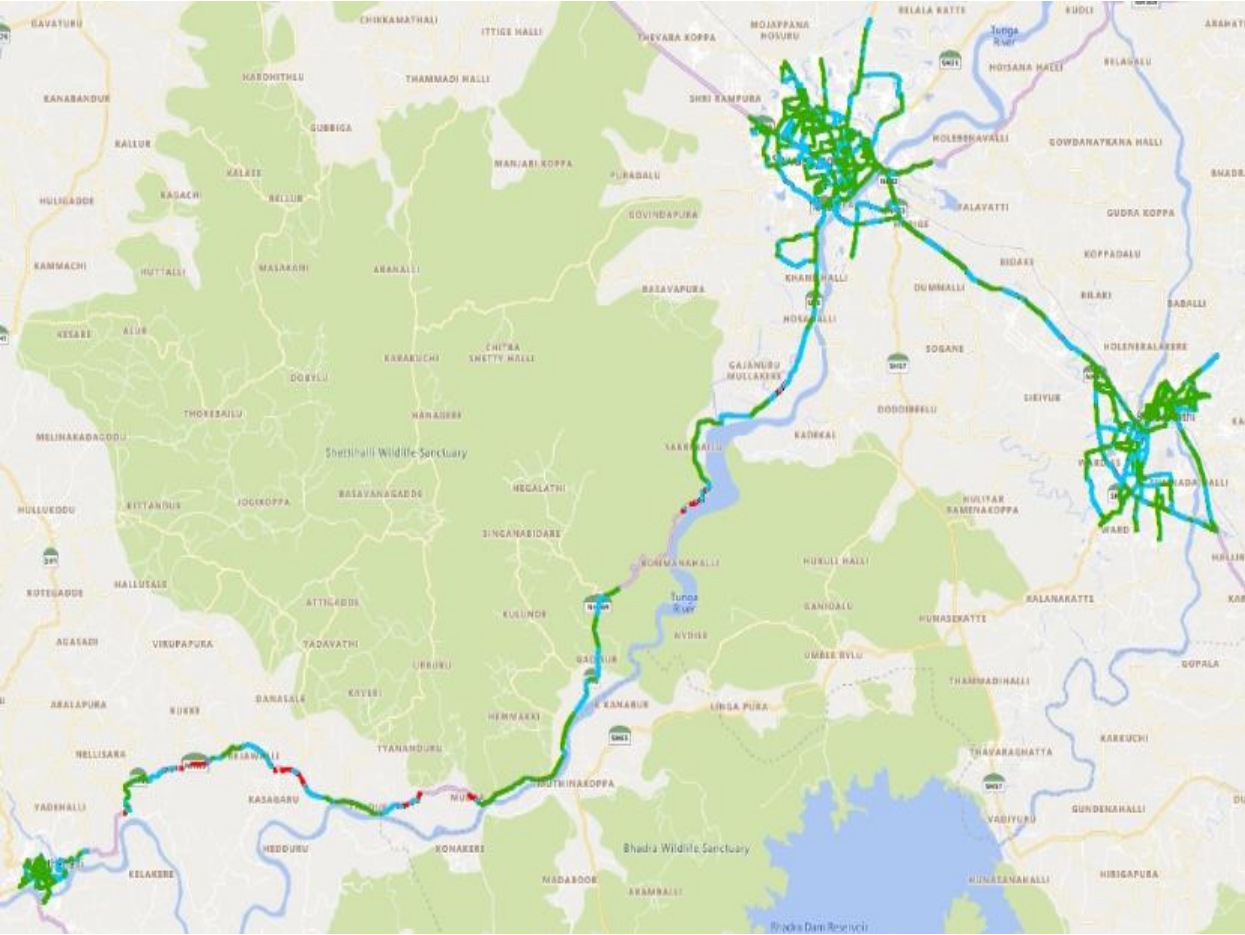
Technology	Time Spent on 3G
3G	93.3%



III. Technology Details

JIO

Technology	Time Spent on 4G
4G	100%

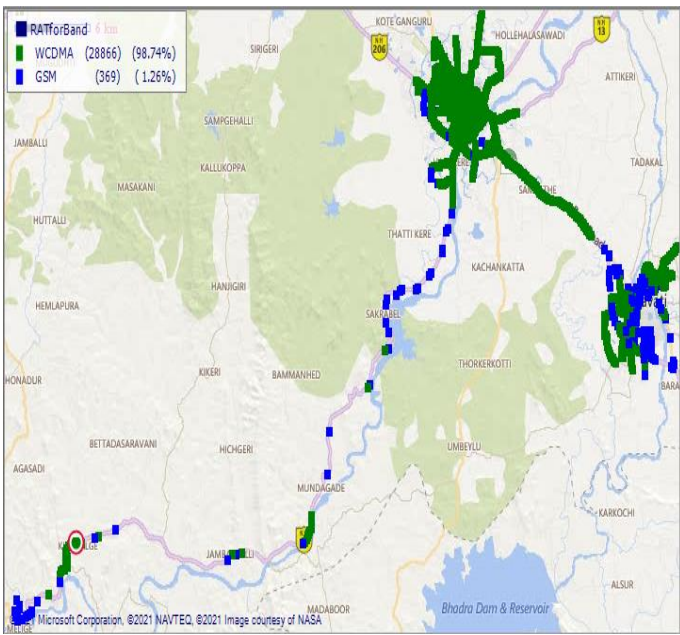


III. Technology Details

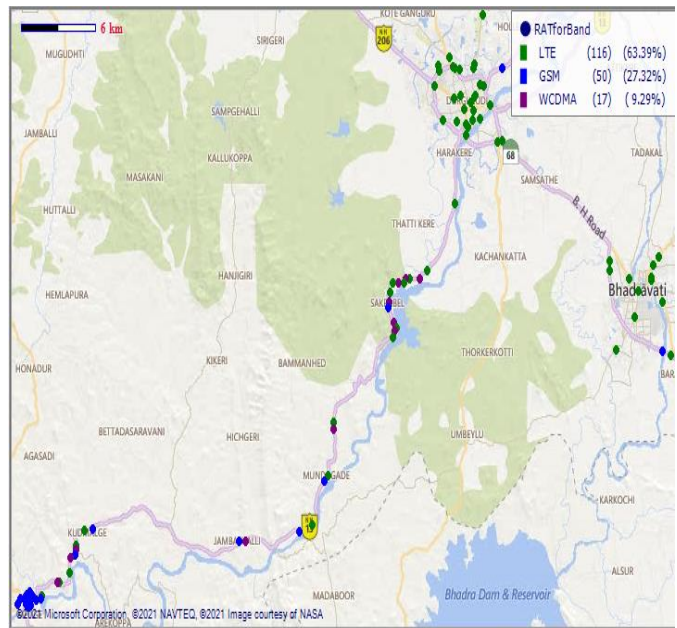
VIL

Technology	Time Spent on 4G
3G	98.74%
4G	63.39%

3G



4G

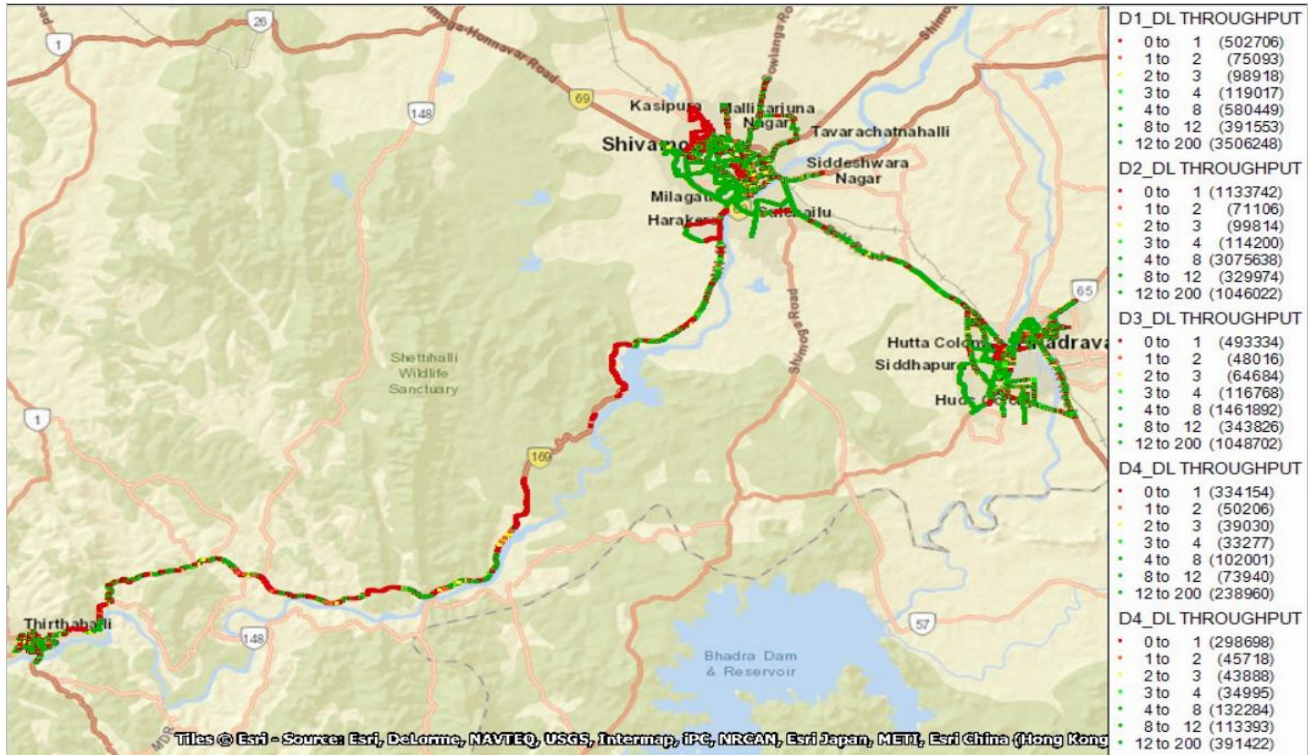


IV. Dynamic Data Test- 4G DL Details

Airtel

Data Statistics - Dynamic Complete SSA 320 Kms

Data KPIs - Overall	4G
Download Throughput (Kbps)	11878



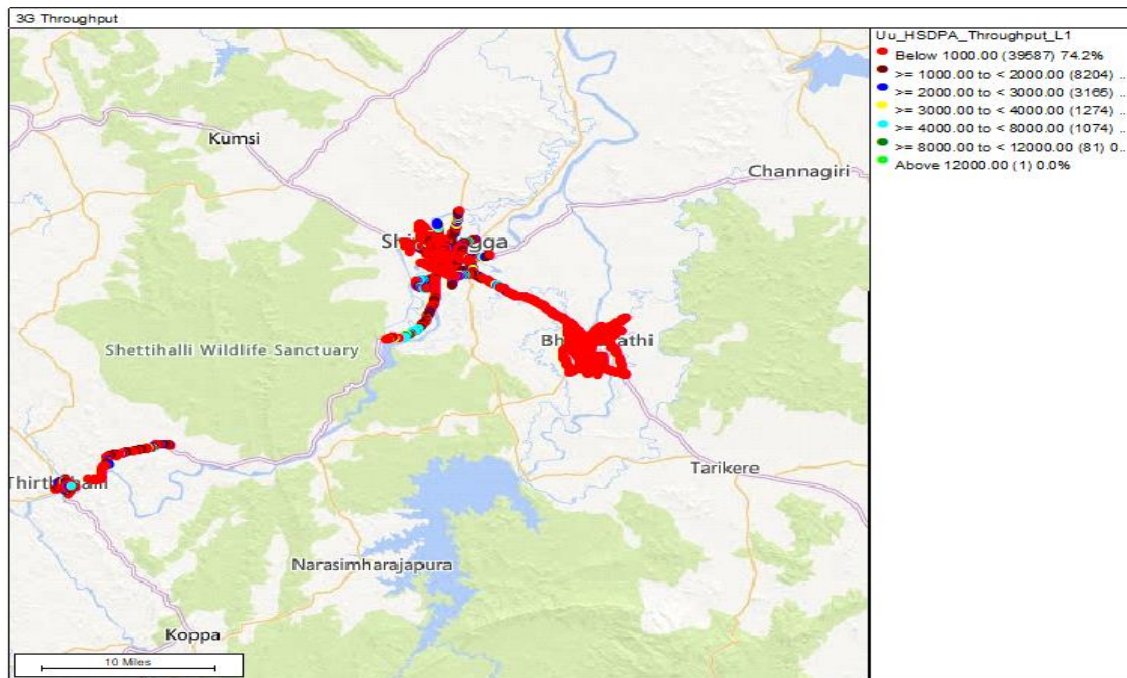
DL throughput	No of Sample	%
0 to 1 Mbps	2762634	16.59
1 to 2 Mbps	290139	1.74
2 to 3 Mbps	346334	2.08
3 to 4 Mbps	418257	2.51
4 to 8 Mbps	5352264	32.14
8 to 12 Mbps	1252686	7.52
>12 Mbps	6231354	37.42

IV. Dynamic Data Test- 3G DL Details

BSNL

Data Statistics - Dynamic Complete SSA 320 Kms

Data KPIs - Overall	3G
Download Throughput (Kbps)	739.08



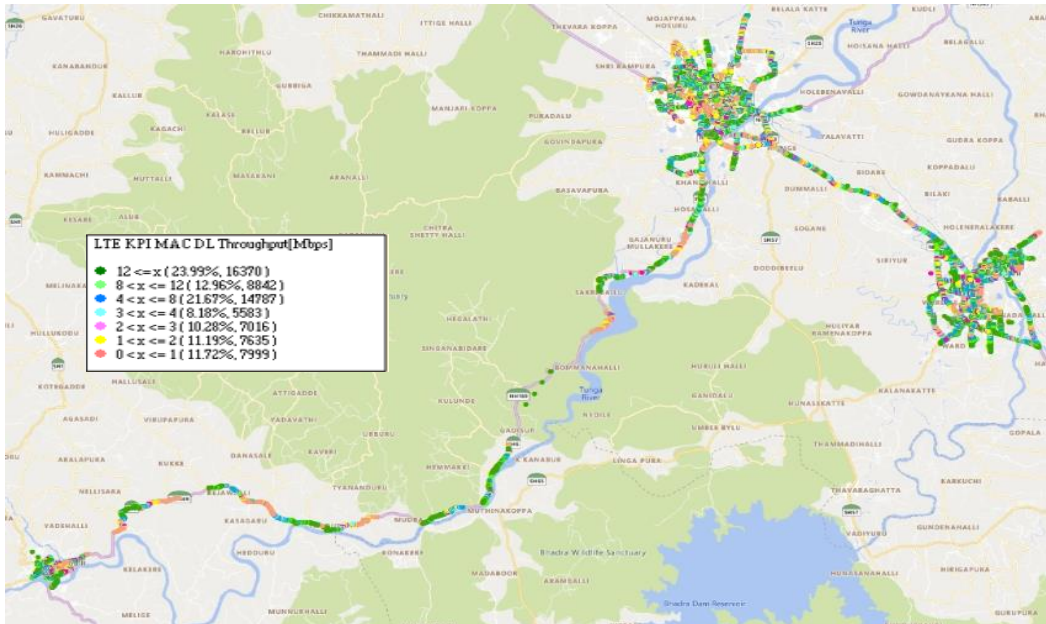
DL throughput	No of Samples	%
0 to 1 Mbps	39687	75.61
1 to 2 Mbps	8204	15.63
2 to 3 Mbps	2166	4.13
3 to 4 Mbps	1274	2.43
4 to 8 Mbps	1074	2.05
8 to 12 Mbps	81	0.15
>12 Mbps	1	0

IV. Dynamic Data Test- 4G DL Details

Jio

Data Statistics - Dynamic Complete SSA - 350 Kms

Data KPIs - Overall	4G
Download Throughput (Kbps)	8328



DL throughput	No. of samples	%
0 to 1 Mbps	7999	11.72
1 to 2 Mbps	7635	11.19
2 to 3 Mbps	7016	10.28
3 to 4 Mbps	5583	8.18
4 to 8 Mbps	14787	21.67
8 to 12 Mbps	8842	12.96
>12 Mbps	16370	23.99

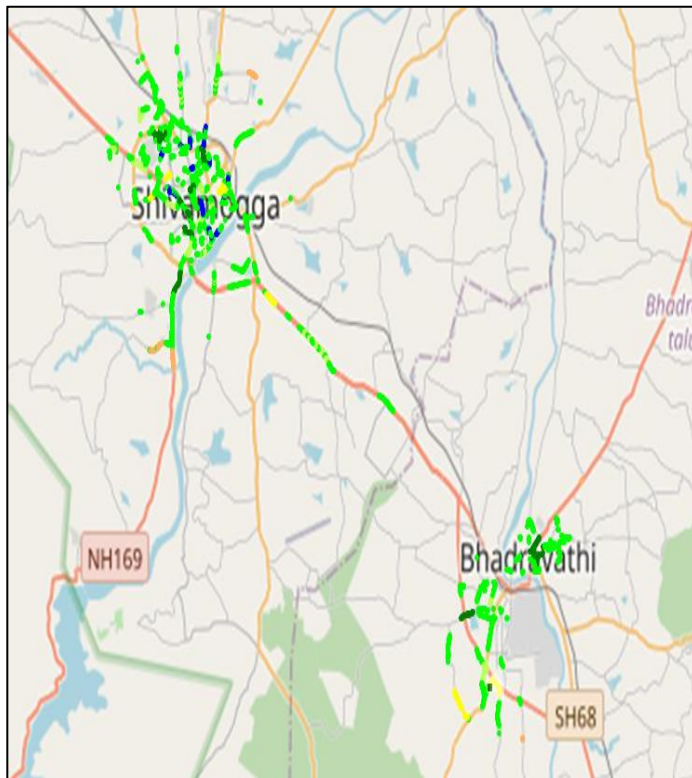
IV. Dynamic Data Test-3G/4G DL Details

VIL

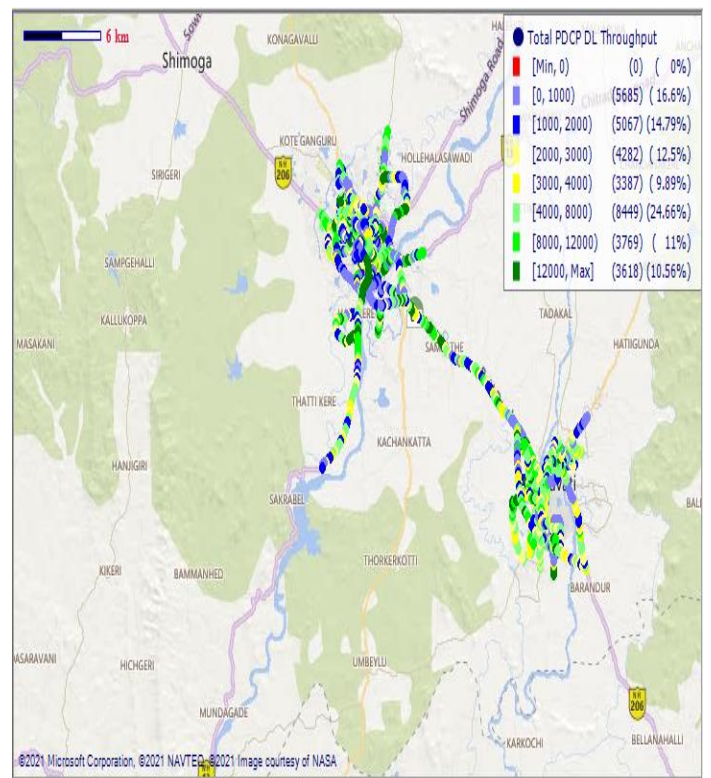
Data Statistics - Dynamic Complete SSA 315 Kms

Data KPIs - Overall	3G	4G
Download Throughput (Kbps)	2680.84	5589.73

3G



4G



DL throughput	No of Sample	%
0 to 1 Mbps	129	1.34
1 to 2 Mbps	446	4.64
2 to 3 Mbps	6524	67.89
3 to 4 Mbps	916	9.53
4 to 8 Mbps	1201	12.5
8 to 12 Mbps	394	4.1
>12 Mbps	0	0
Total	9610	100

DL throughput	No of Sample	%
0 to 1 Mbps	5685	16.6
1 to 2 Mbps	5067	14.79
2 to 3 Mbps	4282	12.5
3 to 4 Mbps	3387	9.89
4 to 8 Mbps	8449	24.66
8 to 12 Mbps	3769	11
>12 Mbps	3618	10.56
Total	34257	100

V. Screenshots of TRAI MySpeed App

Airtel

Technology - 4G	Badravathi – KSRTC Bus stand	Shivamogga – City Hospital	Shivamogga – KSRTC Bus Stand	Shivamogga – Nehru Ground	Shivamogga – Railway Stn	Thirhathalli – KSRTC Bus Stand
Download Speed Mbps	28.54	39.16	18.76	28.84	9.17	8.64
Upload Speed Mbps	5.55	4.13	6.14	6.79	6.79	1.57
Latency Ms	55.8	39.2	72.1	49.4	55.9	55

Badravathi - KSRTC



Shivamogga – City Hosp



Shivamogga – KSRTC



Shivamogga – Nehru Ground



Shivamogga – Railway Stn



Thirthahalli - KSRTC



V. Screenshots of TRAI MySpeed App

BSNL

Techology- 3G	City Hospital	KSRTC Bus stand Shivamogga	Nehru Stadium	Railway Station Shivamogga	Thirthahalli Bus Stand	KSRTC Bus Stand Bhadravathi
Download Speed Mbps	2.90	0.36	2.19	5.89	0.36	0.36
Upload Speed Mbps	0.49	0.26	1.80	1.36	0.26	0.26
Latency Sec	Not Captured in the App					

Shivamogga-MC GAIN HOSPITAL 3G



Shivamogga -RAILWAY STN 3G



Shivamogga NEHRU STADIUM 3G



THIRTHAHALLY BUS STND 3G



Shivamogga KSRTC BUS STND 3G



BHADRAVATHI BUS STND 3G



V. Screenshots of TRAI MySpeed App

JIO

Technology- 4G	City Hospital Shivamogga	KSRTC Bus stand Shivamogga	Nehru Stadium	Railway Station Shivamogga	Thirthahalli Bus Stand	KSRTC Bus Stand Bhadravathi
Download Speed Mbps	5.02	5.17	5.05	2.31	23.17	25.02
Upload Speed Mbps	4.46	9.37	3.17	1.36	3.34	2.16
Latency Ms	58.5	41.5	51.4	61.5	63.4	57.5

City Hospital Shivamogga



KSRTC Bus stand Shivamogga



Nehru Stadium



Railway Station Shivamogga



Thirthahalli Bus Stand



KSRTC Bus Stand Bhadravathi

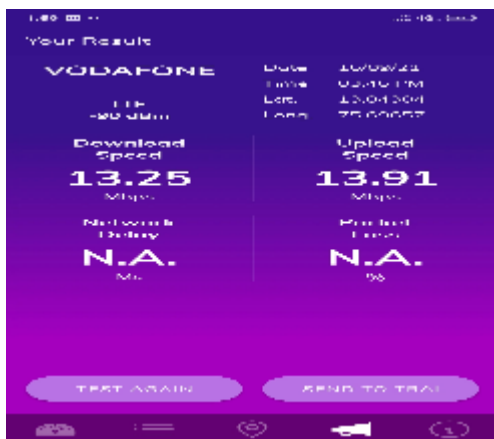


V. Screenshots of TRAI MySpeed App

VIL

Techology- 4G	KSTRC Bus stand Bhdravathi	Thirthalli KSRTC Bus stand	KSRTC Bus stand Shivamogga	Nehru Stadium Shivamogga	City Hospital Shivamogga	Railway station Shivamogga
Download Speed Mbps	13.25	0.14	12.39	22.27	9.09	10.43
Upload Speed Mbps	13.91	0.26	13.69	16.00	6.58	1.81
Latency Sec	Not captured in the App					

KSTRC Bus stand Bhdravathi



Thirthalli KSRTC Bus stand



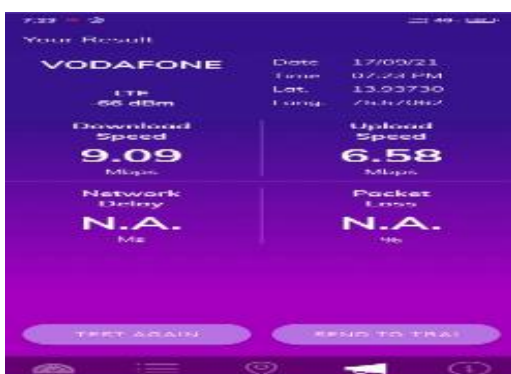
KSRTC Bus stand Shivamogga



Nehru Stadium Shivamogga



City Hospital Shivamogga



Railway station Shivamogga

