Operator Assisted Drive Test Report

VISAKHAPATNAM SSA
SEP – 2024
(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%. All TSPs have met the Rx Quality of 95% except Airtel, JIO & VIL VoLTE.**

The Operator Assisted Drive Test (OADT) has been carried out by TRAI RO Hyderabad with the help of Service Providers in Vizag City and surrounding areas Siripuram, Gajuwaka, Gopalapatnam, Anakapalle, Yalamanchili, Anandapuram, Rushikonda(IT Hills), Bheemili,Thagarapuvalasa and Madhurawada from 9:00 AM to 8:00 PM during 24th Sep to 27th Sep 2024. The drive test covered drive route of 443 KMs & 6 hotspot over a period of 4 days. Approximately 712 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 24th Sep to 27th Sep 2024 covering various locations in Siripuram, Gajuwaka, Gopalapatnam, Anakapalle, Yalamanchili, Anandapuram, Rushikonda(IT Hills), Bheemili,Thagarapuvalasa and Madhurawada.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 443 KMs over a period of 4 days from 24th Sep to 27th Sep 2024 . Approximately 712 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 443 kms over a period of 3 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.14

| 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

Voice & Dynamic Data Test Drive Route
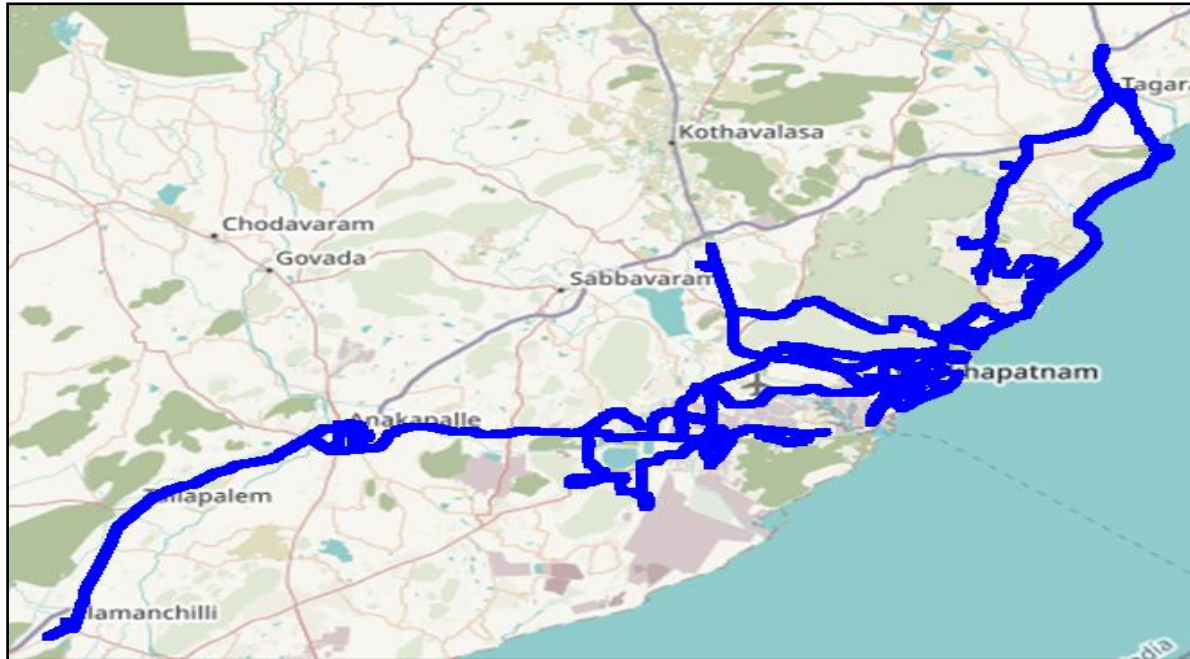
Visakhapatnam City Drive (Day-1)	NAD JN-Gajuwaka-Anakapalle-Yalamanchili Drive (Day-2)	Visakhapatnam City-Anandapuram-Thagarapuvalasa-Bheemili-Vizag City Drive (Day-3)	Visakhapatnam City Drive (Day-4)
Vishakapatnam Railway Station	NAD	Hanumanthuwaka VIMS College	NAD Kakaninagar
NAD	Auto Nagar	Bheemili Beach Road	Auto Nagar
Arilova	Jaggu Junction	GITAM College	Aganampudi
HB Colony	BC Road	Nagarapalem	Jugu Junction
Akkayapalem	Sheelanagar	IIM College	Gajuwaka
Dawarakanagar	Anakapalle Railway station	Thagarapuvalasa	Port Road
Jagadamba JN	Anakapalle Bus Station	Vizag-Bheemili Beach Road	Sheelanagar
Kancharalapalem	Sheelanagar	Visakhavalley School Road	Duvada Railwaystation
Pendurthi Junction	Sri Nagar	Hanumanthuwaka JN	Vizag Steel Plant Sectors
MVP Colony	Pedagantyada	Rushikonda IT Hills	Gajuwaka 100ft Road
Muralinagar	Gajuwaka	YSR Cricket Stadium	Sheelanagar
Maddilapalem	Anakapalle	Anandapuram	Vizag Railway Station
Pedhawaltair	Gavarapalem	Bheemili Bus Stand	
Railway Station	Yelamanchili Bus Station	Police Quarters Vishalakshi Nagar	

Overview
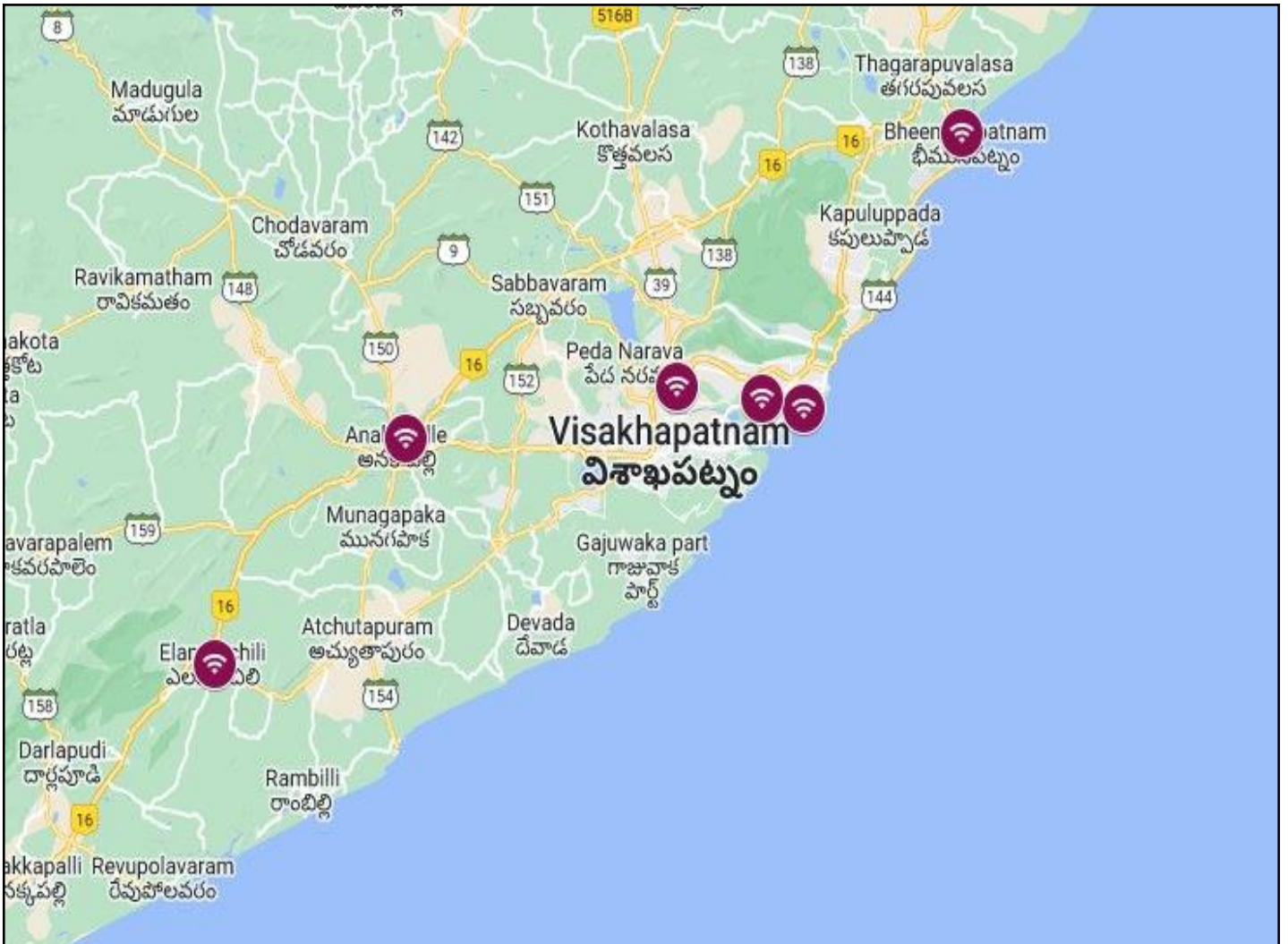
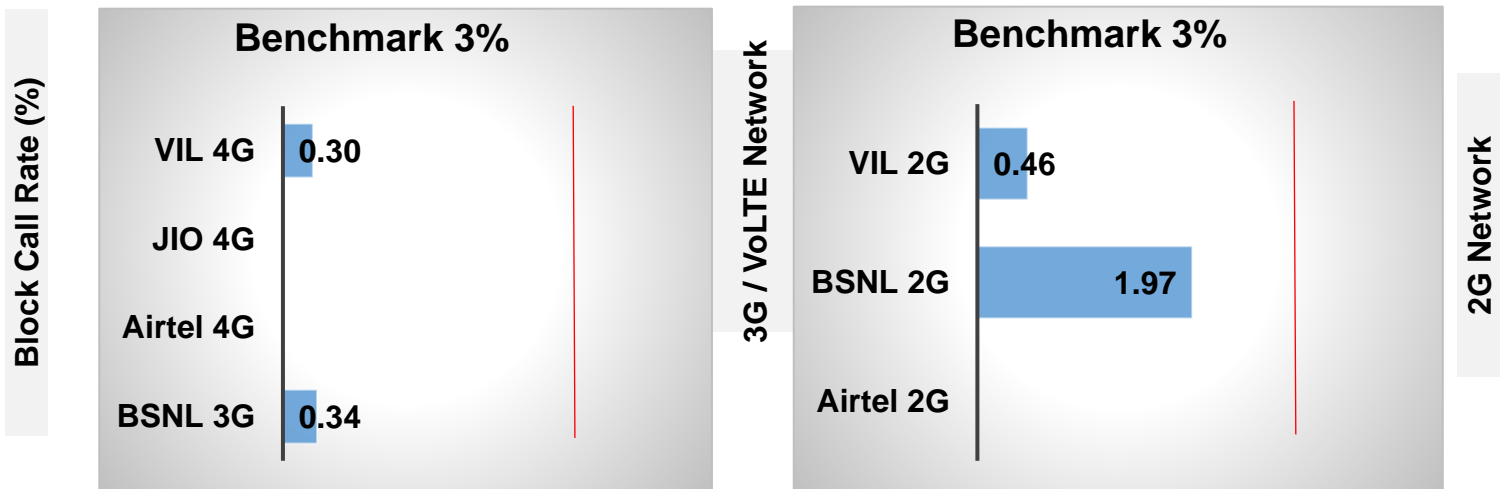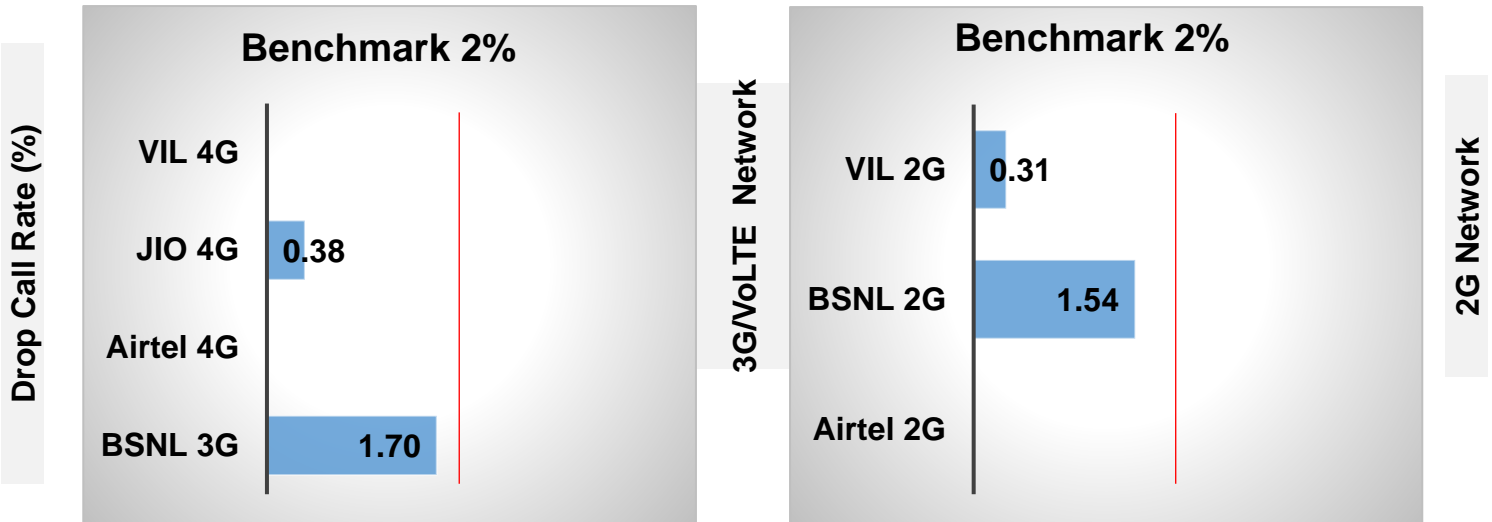| 6 Static Locations |
| :---: |
| Anakapalli Railway Station |
| Yelamanchali Bus stand |
| Bheemili Bus stand |
| Visakhapatnam Beach Bus stand |
| Visakhapatnam Railway Station |
| Visakhapatnam Airport |

Voice Calls

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

Drop Call Rate (%) — Benchmark 2% — 3G/VoLTE Network

- VIL 4G
- JIO 4G: 0.38
- Airtel 4G
- BSNL 3G: 1.70

Benchmark 2% — 2G Network

- VIL 2G: 0.31
- BSNL 2G: 1.54
- Airtel 2G

Block Call Rate (%) — Benchmark 3% — 3G / VoLTE Network

- VIL 4G: 0.30
- JIO 4G
- Airtel 4G
- BSNL 3G: 0.34

Benchmark 3% — 2G Network

- VIL 2G: 0.46
- BSNL 2G: 1.97
- Airtel 2G

KPIs	2G			3G	VoLTE		
	Airtel	BSNL	VIL	BSNL	Airtel	JIO	VIL
Drop Call Rate %	0	1.54	0.31	1.70	0	0.38	0
Block Call Rate %	0	1.97	0.46	0.34	0	0	0.30

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

b) Call Block Rate (CBR%) benchmark of 3% was achieved by all TSP's.

Voice Calls

Coverage

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

TSPS	2G		
	Airtel	**BSNL**	**VIL**
Coverage %	87.1	89.5	75.70

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

TSP	3G	VoLTE (≥ -110 dBm)			VoLTE (-110 to ≥ -120 dBm)		
	BSNL	**Airtel**	**JIO**	**VIL**	**Airtel**	**JIO**	**VIL**
Coverage %	92.30	98.16	98.79	96.50	1.84	1.21	3.12

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

TSP	3G	VoLTE		
	BSNL	**Airtel**	**JIO**	**VIL**
Time spent %	56.1	100	100	99.95

Data Services Static

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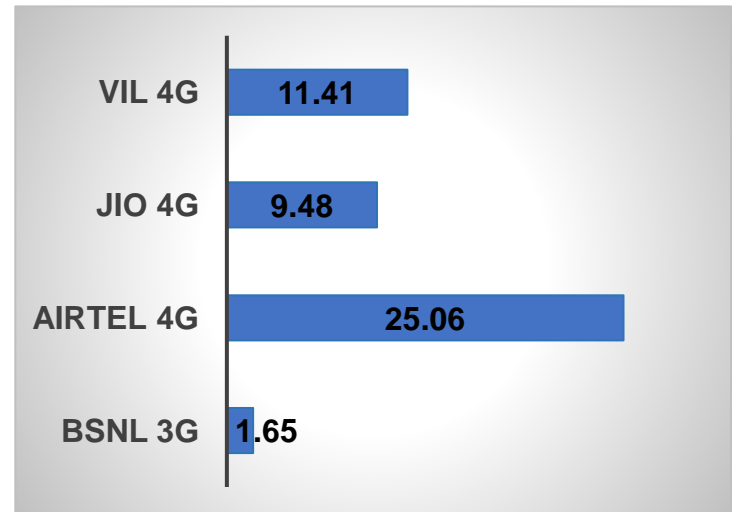
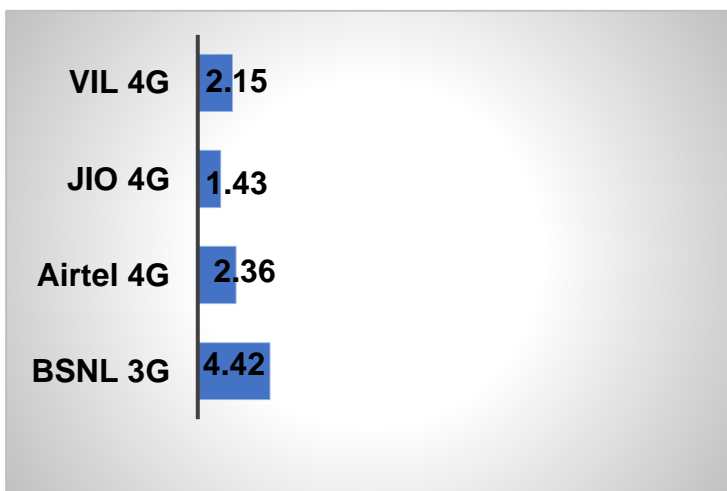## Data Download and Upload Performance (Mbps)

3G/4G/ Network:

Download Throughput (Mbps)
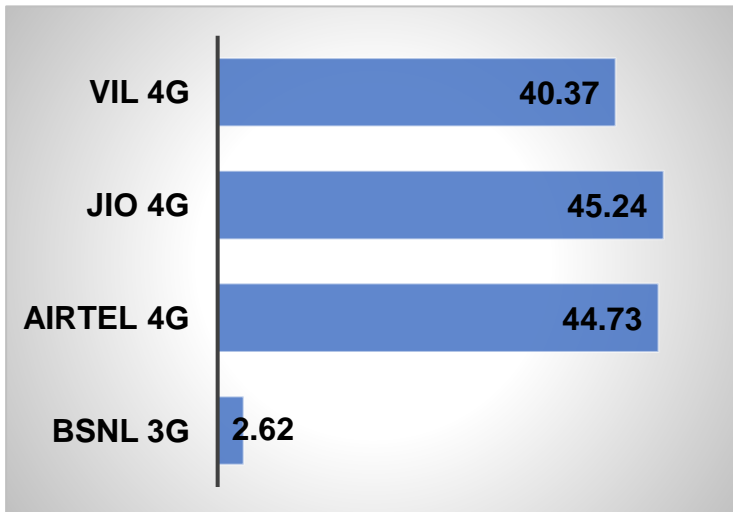
Network	Mbps
VIL 4G	40.37
JIO 4G	45.24
AIRTEL 4G	44.73
BSNL 3G	2.62

Upload Throughput (Mbps)

Network	Mbps
VIL 4G	11.41
JIO 4G	9.48
AIRTEL 4G	25.06
BSNL 3G	1.65

Web Browsing delay (Sec)

Network	Sec
VIL 4G	2.15
JIO 4G	1.43
Airtel 4G	2.36
BSNL 3G	4.42

Latency (ms)

Network	ms
VIL 4G	85.16
JIO 4G	33.6
Airtel 4G	38.76
BSNL 3G	77.31
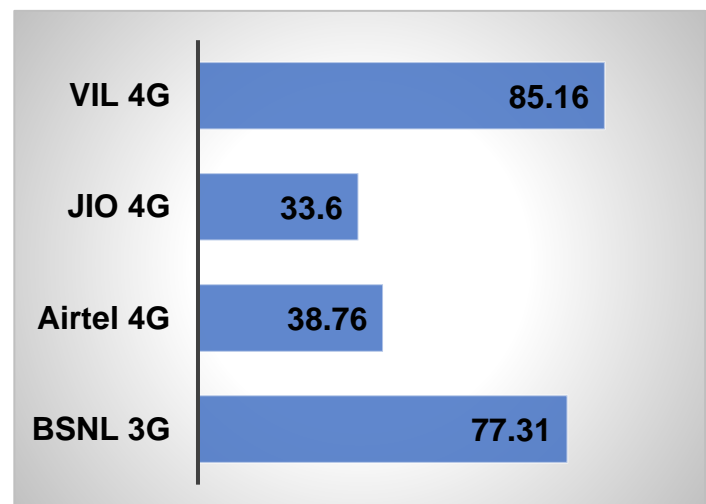
Data Services Dynamic

Dynamic Data was tested, Download Throughput was tested.
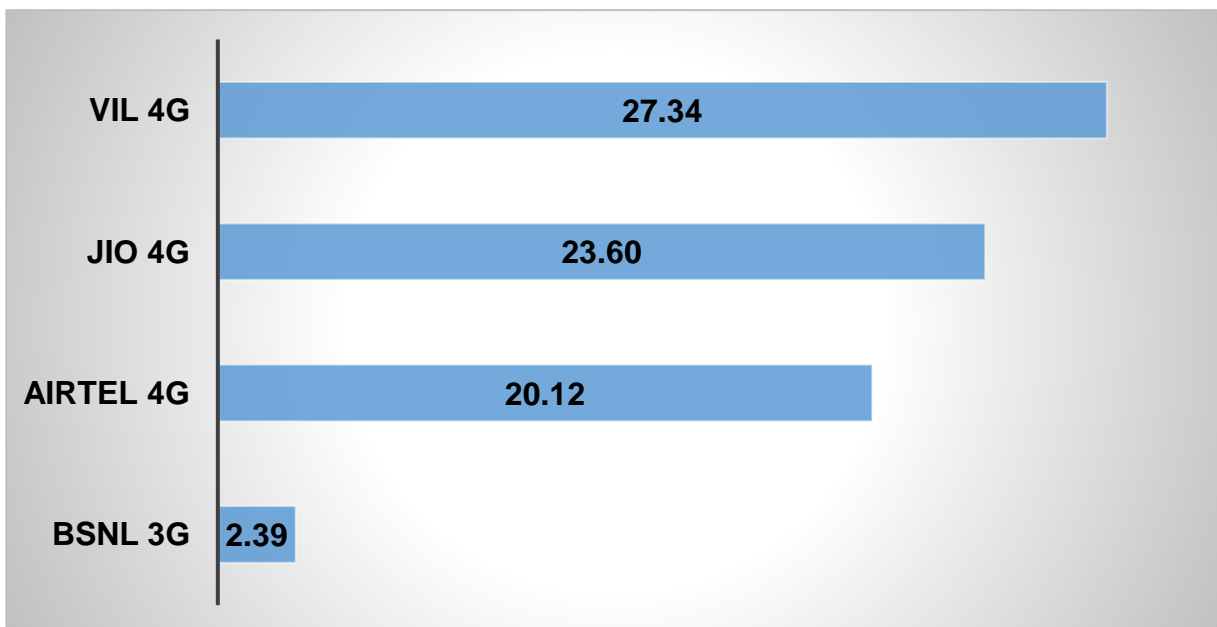
Data Download Performance (kbps) - Dynamic

3G/4G/ Network:

Data Services Dynamic	3G / 4G			
	BSNL 3G	**Airtel 4G**	**JIO 4G**	**VIL 4G**
Download throughput in Mbps	2.39	20.12	23.60	27.34

Summary

Voice Calls	2G		
	Airtel	**BSNL**	**VIL**
Call attempts	714	661	640
Block call rate %	0	1.97	0.46
CSSR %	100	98.03	99.53
Drop call rate %	0	1.54	0.31
Mobility HOSR %	97.69	96.03	99.27
RX Quality %	95.40	96	95.69

Voice Calls	3G	VoLTE		
TSP (For 3G)	**BSNL**	**Airtel**	**JIO**	**VIL**
Call attempts	295	738	797	665
Block call rate %	0.34	0	0	0.30
CSSR %	99.66	100	100	99.69
Drop call rate %	1.70	0	0.38	0
Mobility HOSR %	100	99.91	99.50	99.64
RX Quality %	95.4	92.13	94.73	94.11

Summary

Data Services Static	2G		
	Airtel	**BSNL**	**VIL**
Download throughput in Kbps	168.7	129.79	150.17
Upload Throughput in Kbps	57.15	60.82	85.28
Web browsing delay in second	3.65	43.05	11.85
Latency in (msec)	108.6	136.24	196.37

Data Services Static	3G / 4G			
	BSNL 3G	**Airtel 4G**	**JIO 4G**	**VIL 4G**
Download throughput in Mbps	2.62	44.73	45.24	40.37
Upload Throughput in Mbps	1.61	25.06	9.48	11.41
Web browsing delay in second	4.42	2.36	1.43	2.15
Latency in (msec)	77.31	38.76	33.6	85.16

Anakapalli Railway Station

	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	205.0	149.74	150.10
Upload Throughput (kbps)	35.3	67.65	50.00
Web Browsing Delay (sec)	2.3	33.66	11.60
Latency (msec)	127.7	114.54	195.20

Yelamanchali Bus stand

	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	151.4	139.26	140.30
Upload Throughput (kbps)	21.3	35.55	130.14
Web Browsing Delay (sec)	3.4	63.71	7.90
Latency (msec)	104.3	128.53	199.4

Bheemili Bus stand

	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	171.4	160.34	180.2
Upload Throughput (kbps)	84.7	73.21	40.24
Web Browsing Delay (sec)	4.2	31.10	12.50
Latency (msec)	101.7	99.29	188.60

Visakhapatnam Beach Bus stand

	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	139.8	121.65	150.02
Upload Throughput (kbps)	88.2	82.14	140.06
Web Browsing Delay (sec)	3.1	37.93	9.80
Latency (msec)	105.3	180.42	187.40

Visakhapatnam Railway station

	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	208.9	117.80	150.20
Upload Throughput (kbps)	83.9	78.39	120.40
Web Browsing Delay (sec)	4.1	24.65	13.70
Latency (msec)	108.3	173.89	196.00

Visakhapatnam Airport

	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	135.6	89.94	130.20
Upload Throughput (kbps)	29.6	27.95	30.84
Web Browsing Delay (sec)	4.8	67.26	15.62
Latency (msec)	104.3	120.75	211.6

Data Services static

Anakapalli Railway Station

	3G	LTE		
	BSNL	Airtel	JIO	VIL
Download Throughput (Mbps)	2.046	71.02	54.86	20.84
Upload Throughput (Mbps)	1.978	24.22	8.91	17.02
Web Browsing Delay (sec)	7.65	1.17	1.36	2.30
Latency (msec)	64.04	42.6	18	83.00

Yelamanchali Bus stand

	3G	LTE		
	BSNL	Airtel	JIO	VIL
Download Throughput (Mbps)	2.372	23.4	60.24	31.14
Upload Throughput (Mbps)	2.705	26.64	10.22	12.35
Web Browsing Delay (sec)	2.01	1.18	1.25	2.00
Latency (msec)	61.07	42.8	29	87.00

Bheemili Bus stand

	3G	LTE		
	BSNL	Airtel	JIO	VIL
Download Throughput (Mbps)	4.156	30.92	36.78	68.8
Upload Throughput (Mbps)	1.865	14.9	9.24	13.9
Web Browsing Delay (sec)	2.54	2.6	1.57	2.98
Latency (msec)	92.30	39.4	34	85.00

Visakhapatnam Beach Bus stand

	3G	LTE		
	BSNL	Airtel	JIO	VIL
Download Throughput (Mbps)	2.677	46.1	22.31	59.36
Upload Throughput (Mbps)	8.136	22.62	7.59	8.19
Web Browsing Delay (sec)	5.46	2.24	1.39	1.98
Latency (msec)	83.33	29.6	37	85.00

Visakhapatnam Railway station

	3G	LTE		
	BSNL	Airtel	JIO	VIL
Download Throughput (Mbps)	2.024	45.96	76.86	36.79
Upload Throughput (Mbps)	8.456	30.92	11.85	9.61
Web Browsing Delay (sec)	5.67	3.31	1.26	2.00
Latency (msec)	94.55	41.3	42	92.00

Visakhapatnam Airport

	3G	LTE		
	BSNL	Airtel	JIO	VIL
Download Throughput (Mbps)	2.454	51.02	20.39	25.3
Upload Throughput (Mbps)	1.487	31.06	9.08	7.4
Web Browsing Delay (sec)	3.21	3.7	1.78	1.90
Latency (msec)	68.54	36.9	42	79.00

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 ≥ -110dBm. The details are as follows.

TSP	Coverage Rate %
Airtel 2G	87.00
BSNL 2G	89.50
VIL 2G	75.70
BSNL 3G	92.30
Airtel VoLTE	98.16
JIO VoLTE	98.79
VIL VoLTE	96.50

	Airtel 2G	BSNl 2G	VIL 2G	BSNL 3G	Airtel 4G	JIO 4G	VIL 4G
2G:[-95,>=Min] / 3G:[-90,>=Min] / VoLTE:[-110,>=Min]	3.00	1.00	3.94	7.70	1.84	1.21	3.49
2G:[-85,>=-95] / 3G:[-80,>=-90] / VoLTE:[-90,>=-110]	10.00	9.40	20.35	23.10	29.88	23.96	48.64
2G:[-75,>=-85] / 3G:[-70,>=-80] / VoLTE:[-80,>=-90]	25.00	33.40	23.92	33.50	29.48	26.24	29.38
2G:[Max,>=-75] / 3G:Max,>=-70 / VoLTE:>=80	62.00	56.20	51.79	35.70	38.80	48.59	18.48

Legend:
- 2G:[Max,>=-75] / 3G:Max,>=-70 / VoLTE:>=80
- 2G:[-75,>=-85] / 3G:[-70,>=-80] / VoLTE:[-80,>=-90]
- 2G:[-85,>=-95] / 3G:[-80,>=-90] / VoLTE:[-90,>=-110]
- 2G:[-95,>=Min] / 3G:[-90,>=Min] / VoLTE:[-110,>=Min]
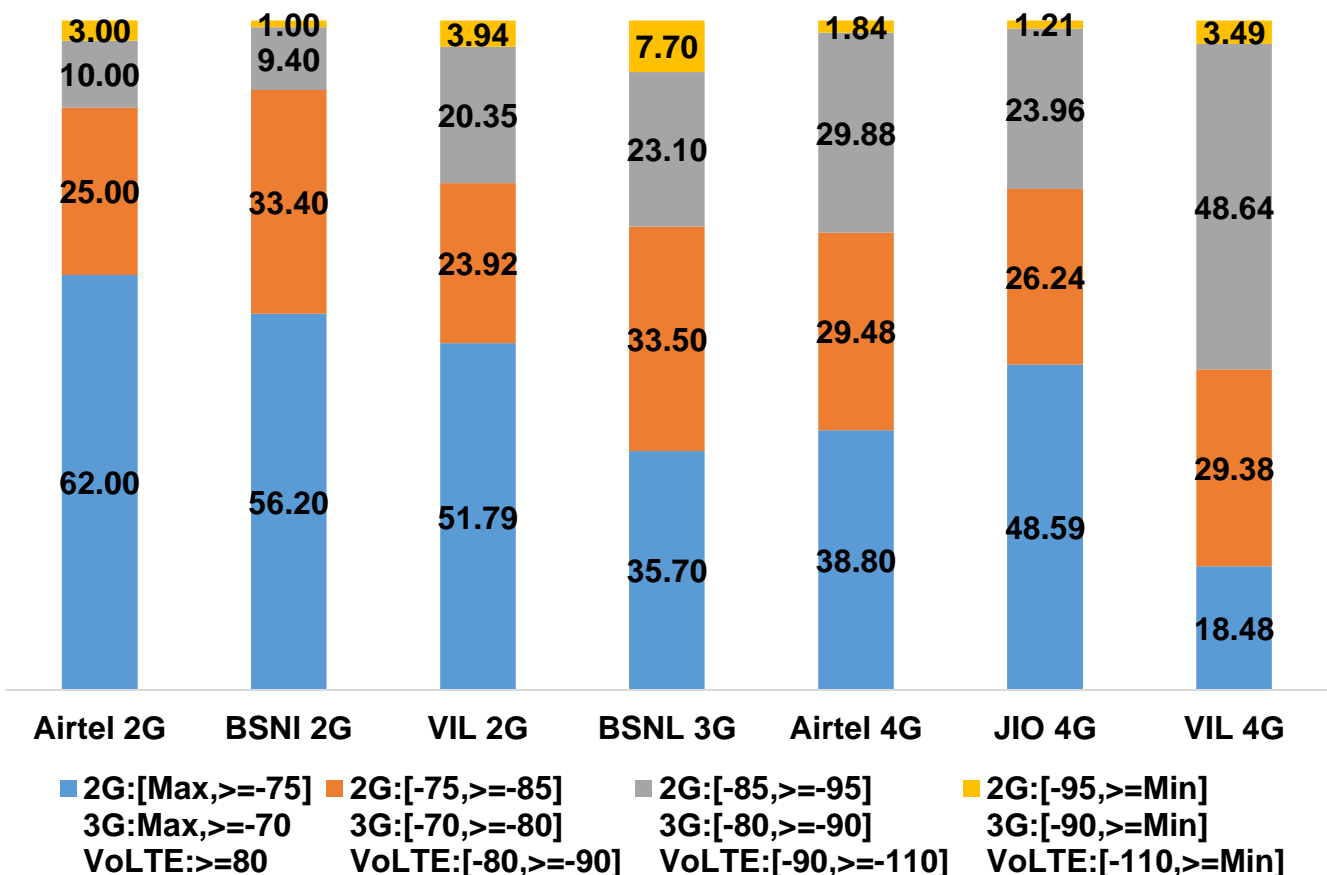
AIRTEL

Technology99.2	Coverage Rate %
2G	87.00
VoLTE	98.16

2G	VoLTE
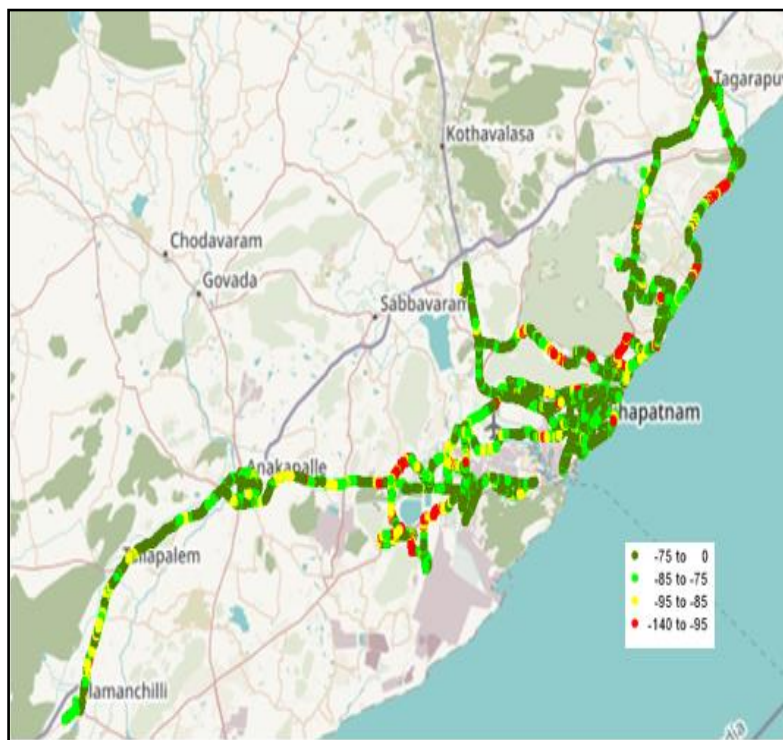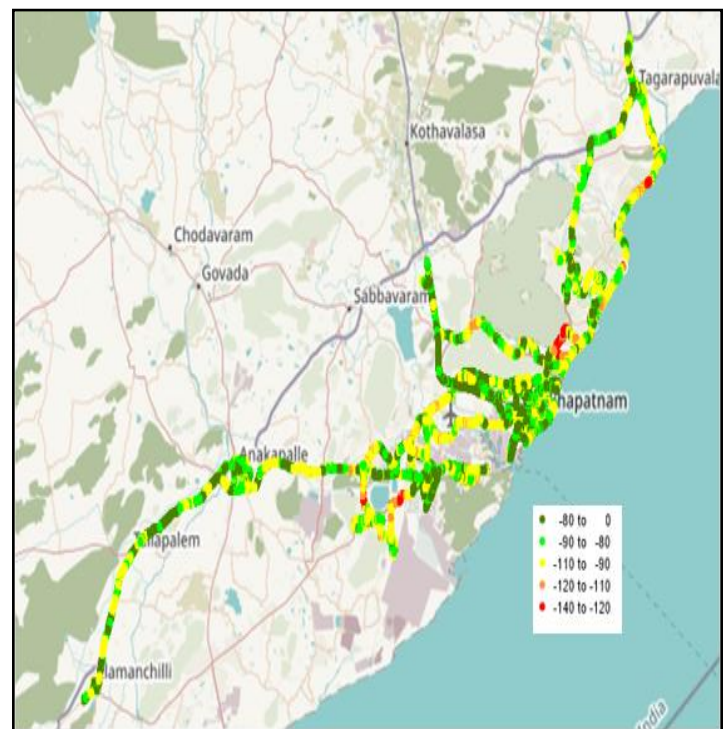
2G		
Overall RxLevel	# Samples	%
[Max, >=-75]	3709644	62
[-75, >=-85]	1459238	25
[-85, >=-95]	610966	10
[-95, >=Min]	171004	3
Total	5950852	

VoLTE		
Overall RSRP	# Samples	%
[Max, >=-80]	3690333	38.80
[-80, >=-90]	2804161	29.48
[-90, >=-110]	2841743	29.88
[-110, >=-120]	147576	1.55
[-120, >=Min]	27412	0.29
Total	9511225	

BSNL

Technology	Coverage Rate %
2G	89.5
3G	92.3

2G	3G
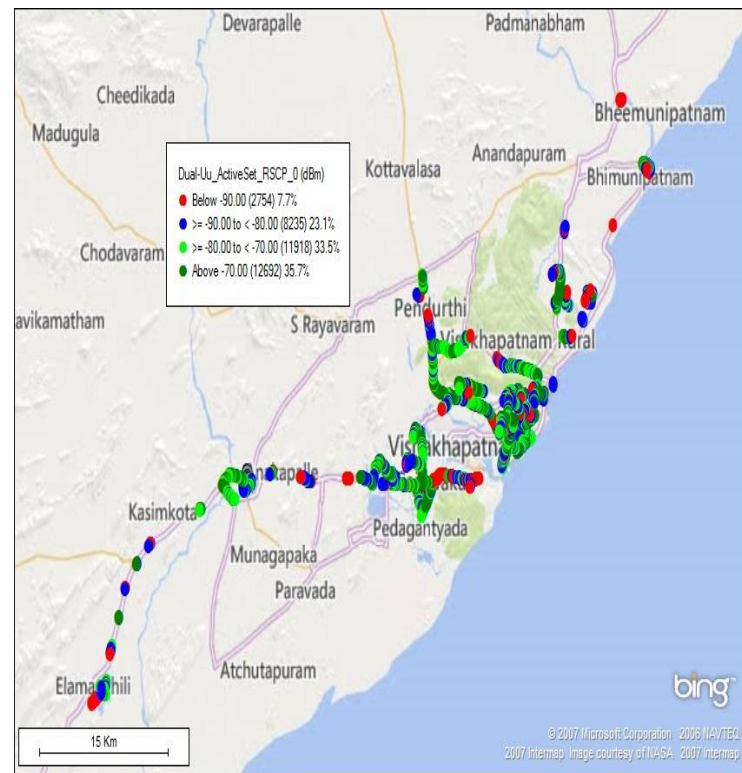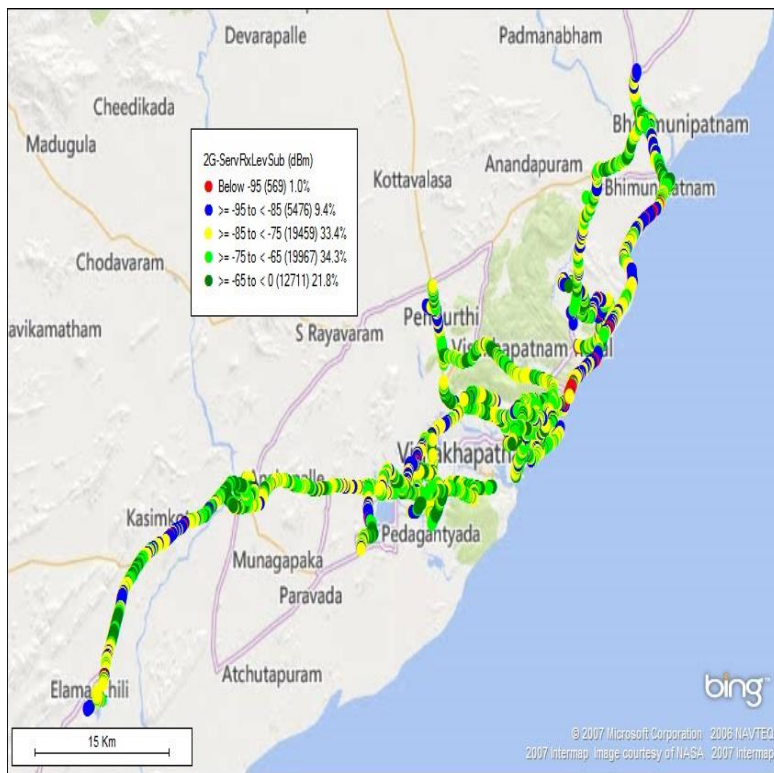
2G		
Overall RxLevel	**# Samples**	**% PDF**
[Max, >=-65]	12711	21.8
[-65, >=-75)	19967	34.3
[-75, >=-85)	19459	33.4
[-85,>=-95]	5476	9.5
[-95, >=Min)	569	1.0
Total	**58182**	**100**

3G		
Overall RSCP	**# Samples**	**% PDF**
[Max, >=-70]	12692	35.7
[-70, >=-80)	11918	33.5
[-80, >=-90)	8235	23.1
[-90, >=Min)	2754	7.7
Total	**35599**	**100**

JIO

Technology	Coverage Rate %
VoLTE	98.79

VoLTE
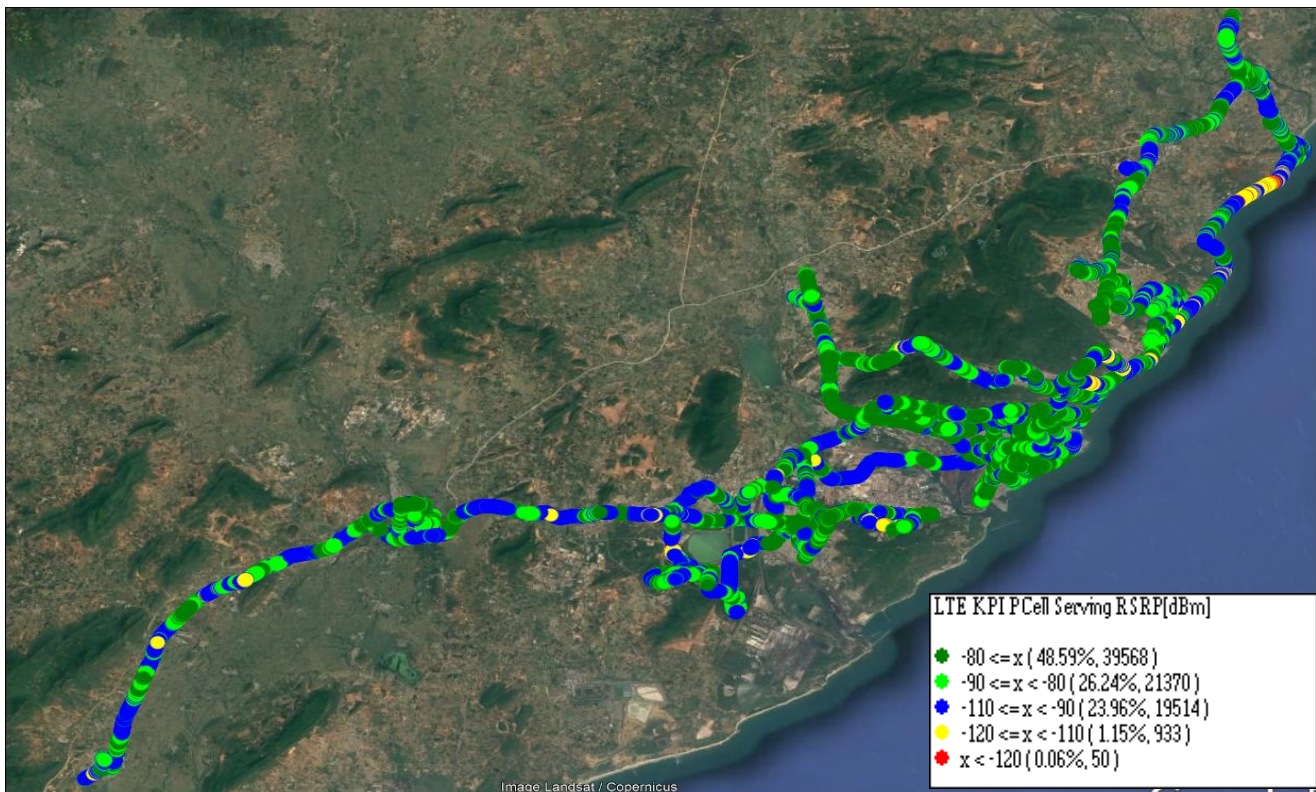
VoLTE		
Overall RSRP	# Samples	%
[Max, >=-80]	39568	48.59
[-80, >=-90]	21370	26.24
[-90, >=-110]	19514	23.96
[-110, >=-120]	933	1.15
[-120, >=Min]	50	0.06
Total	81435	100

VIL

Technology	Coverage Rate %
2G	75.70
VoLTE	96.50

2G	**VoLTE**
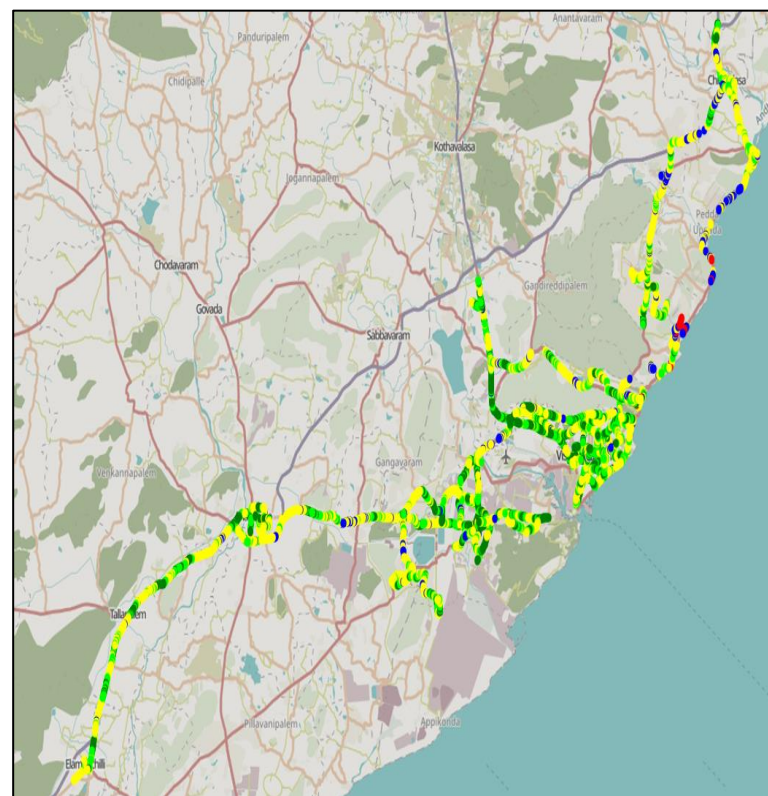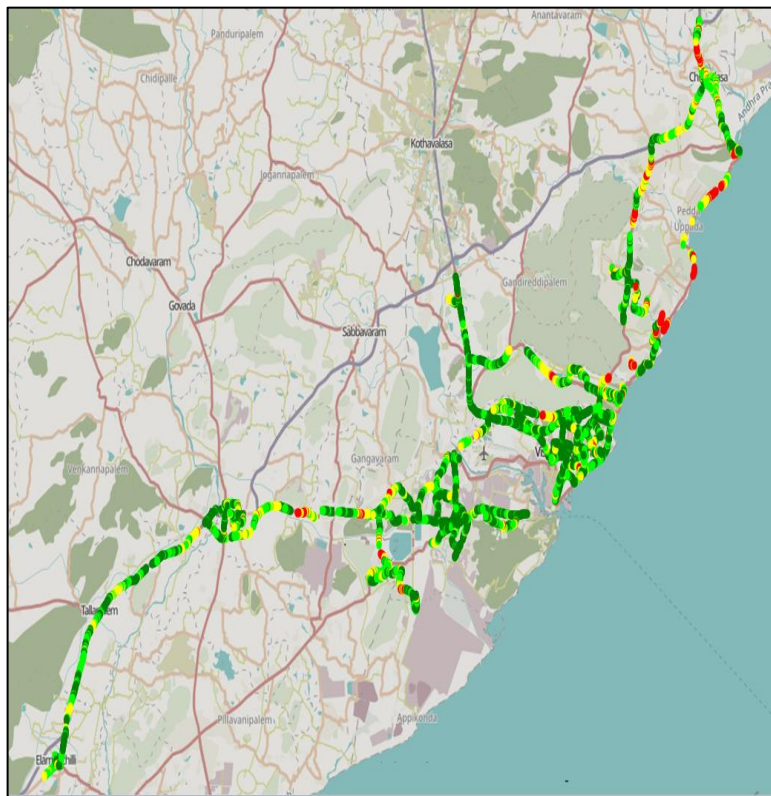
2G		
Overall RxLevel	**# Samples**	**%**
[Max, >=-75]	3665959	51.79
[-75, >=-85]	1692560	23.91
[-85, >=-95]	1440185	20.35
[-95, >=Min]	279198	3.94
Total	7077902	100.00

VoLTE		
Overall RSRP	**# Samples**	**%**
[Max, >=-80]	3129848	18.48
[-80, >=-90]	4974893	29.38
[-90, >=-110]	8236285	48.64
[-110, >=-120]	526233	3.12
[-120, >=Min]	64925	0.38
Total	16932184	100.00

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 ≥ 95%.

TSP	Rx Quality %
Airtel 2G	95.40
BSNL 2G	96
VIL 2G	95.69
BSNL 3G	95.40
Airtel 4G	92.13
JIO 4G	94.73
VIL 4G	94.11

RX Quality Distribution

	Airtel 2G	BSNl 2G	VIL 2G	BSNL 3G	Airtel 4G	JIO 4G	VIL 4G
Below Benchmark %	4.6	4.00	4.31	4.60	7.87	5.27	5.89
Rx Quality %	95.40	96	95.69	95.40	92.13	94.73	94.11

■ Rx Quality %   ■ Below Benchmark %
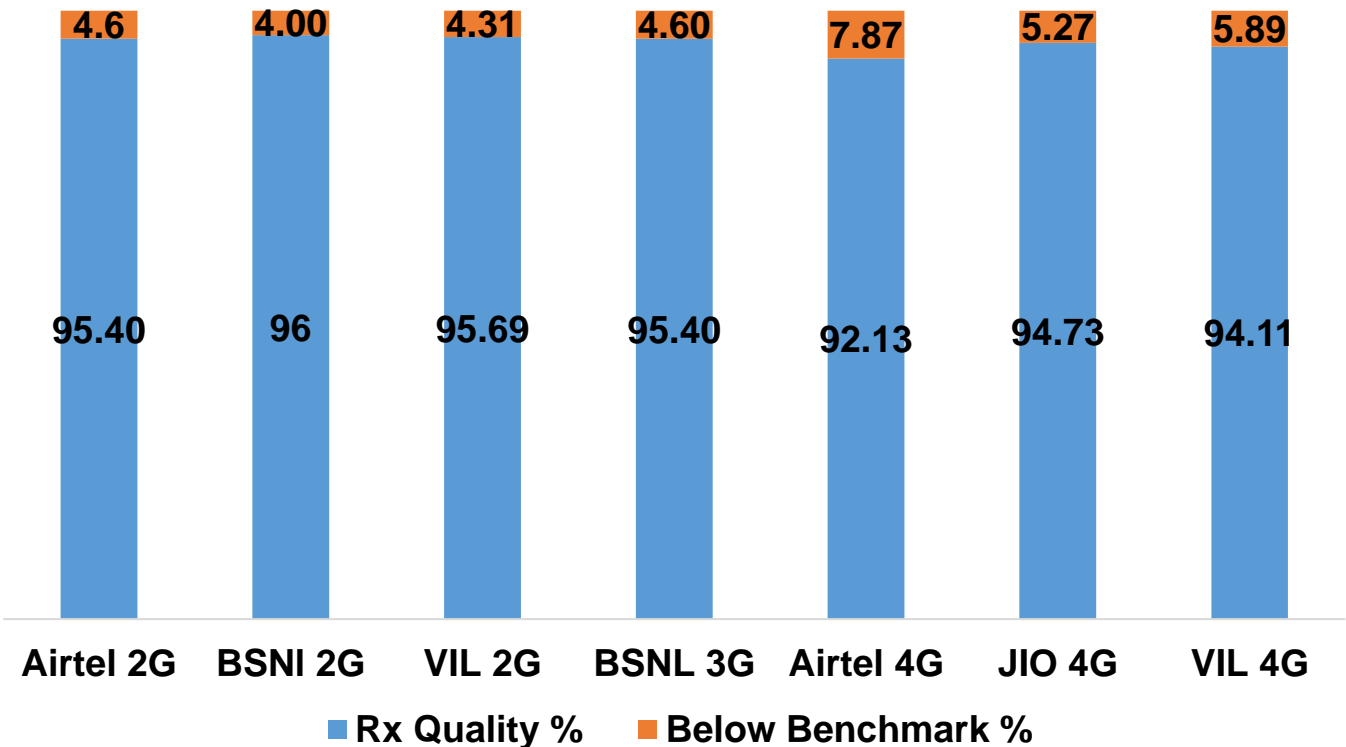
Airtel

Technology	Rx Quality %
2G	95.40
VoLTE	92.13

2G	VoLTE
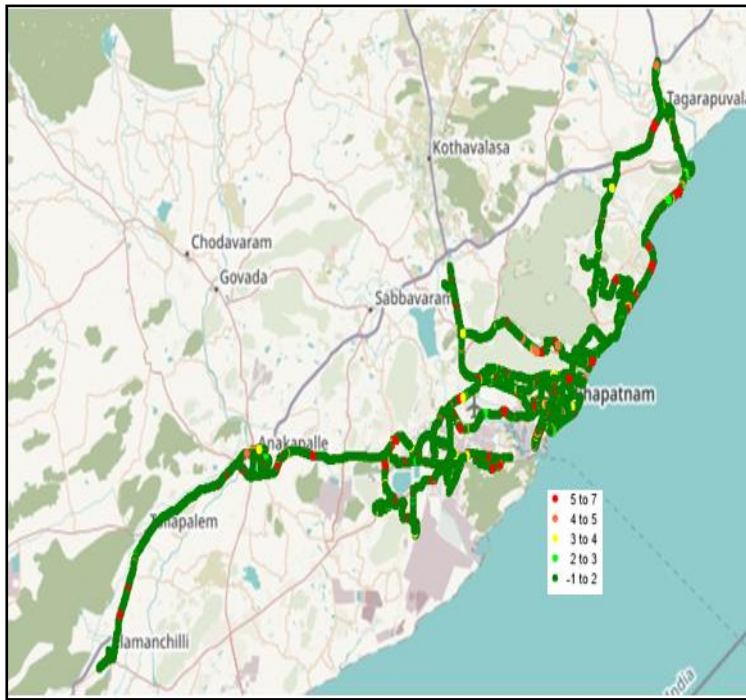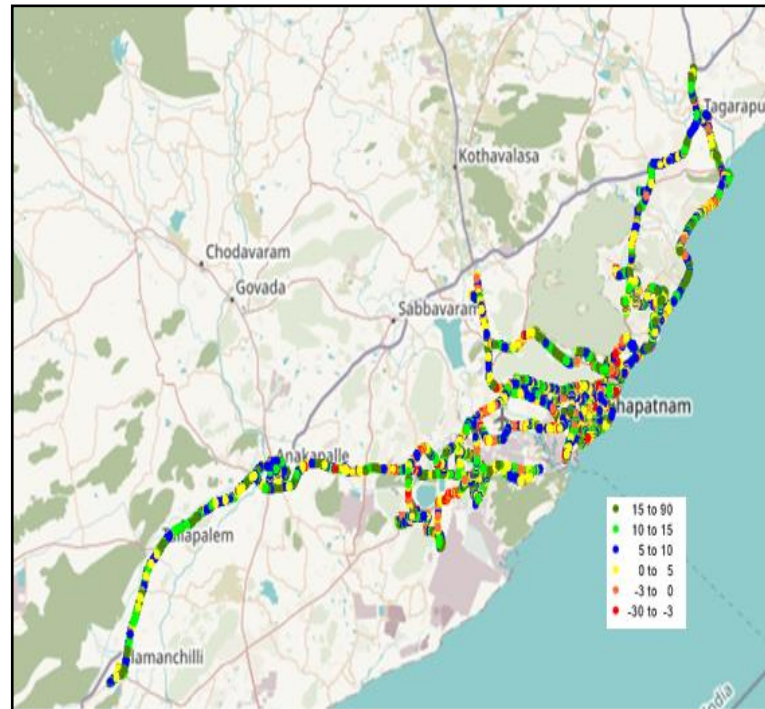
Overall Rx Quality	# Samples	%
(Min, <=2)	4789738	89.4
(2, <=3)	119172	2.2
(3 , <=4)	123600	2.3
(4 , <=5)	77985	1.5
(5 , <=Max)	249458	4.6
Total	5359953	

Overall SINR	# Samples	%
(Min, <=-3)	333649	3.0
(-3, <=0)	540276	4.87
(0, <=5)	2195629	19.79
(5, <=10)	2840883	25.61
(10, <=15)	2830144	25.51
(15, <=Max)	2354255	21.22
Total		

BSNL

Technology	Rx Quality %
BSNL 2G	96
BSNL 3G	95.40

2G
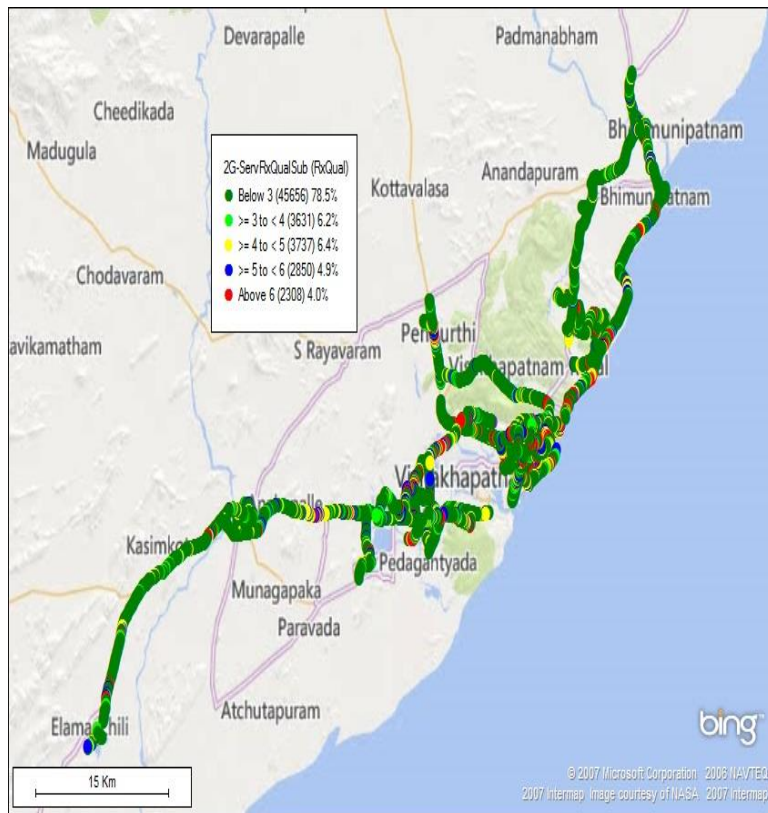
3G
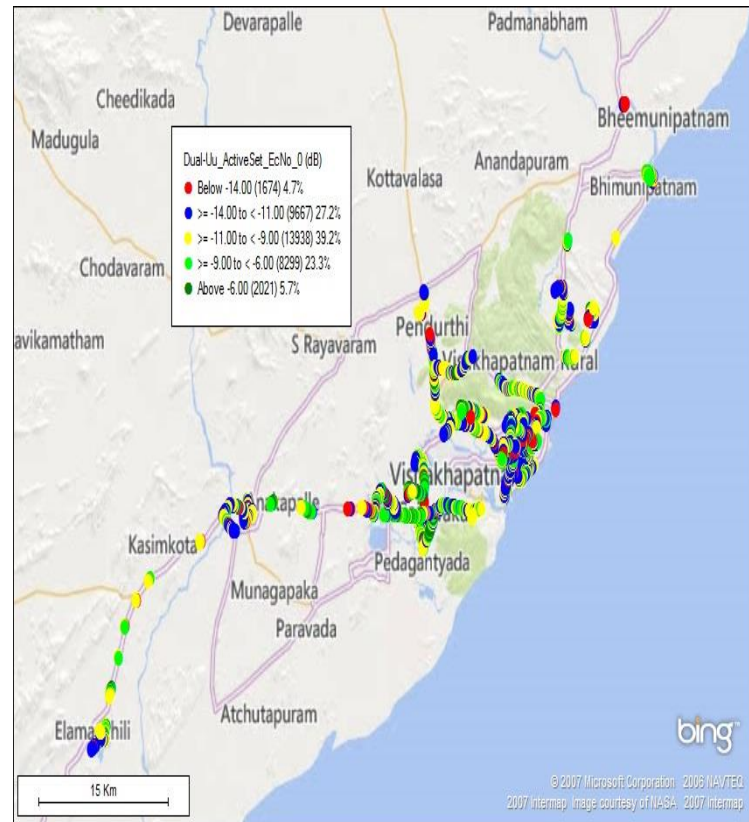
2G		
Overall Rx Quality	# Samples	% PDF
(Min, <=2)	45656	78.5
(2 , <=3)	3631	6.2
(3 , <=4)	3737	6.4
(4, <=5)	2850	4.9
(5 , <=Max)	2308	4.0
Total	58182	100

3G		
Overall EcNo	# Samples	% PDF
(Max, <=-6)	2021	5.7
(-6, <=-9)	8299	23.3
(-9, <=-11)	13938	39.2
(-11, <=-14)	9667	27.2
(-14, <= Min)	1674	4.6
Total	35599	100

JIO	
Technology	**Rx Quality %**
VoLTE	94.73

VoLTE
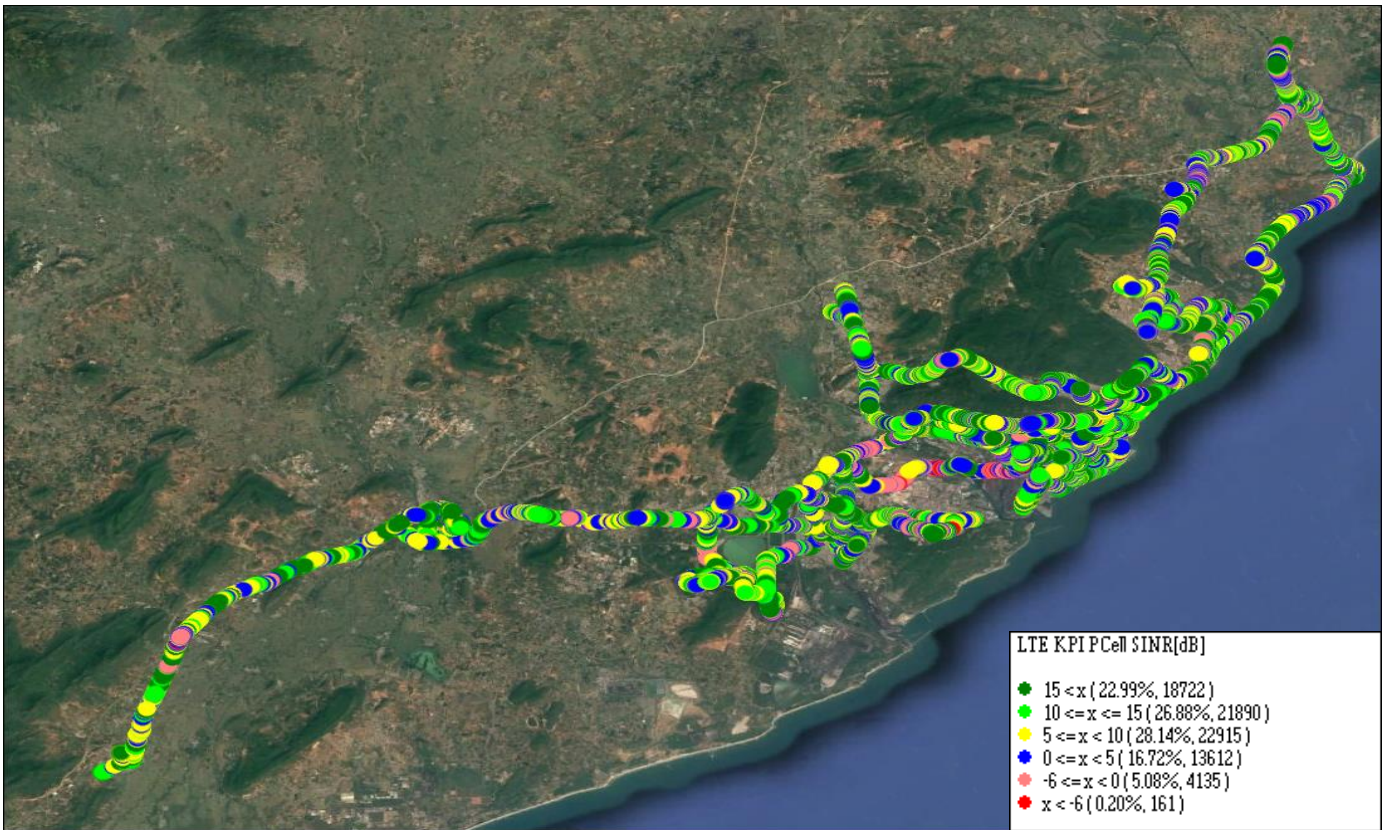
Overall SINR	# Samples	%
(Min, <=-6)	161	0.20
(-6, <=0)	4135	5.07
(0, <=5)	13612	16.72
(5, <=10)	22915	28.14
(10, <=15)	21890	26.88
(15, <=Max)	18722	22.99
Total	81435	100

VIL

Technology	Rx Quality %
2G	95.69
VoLTE	94.11

2G	VoLTE
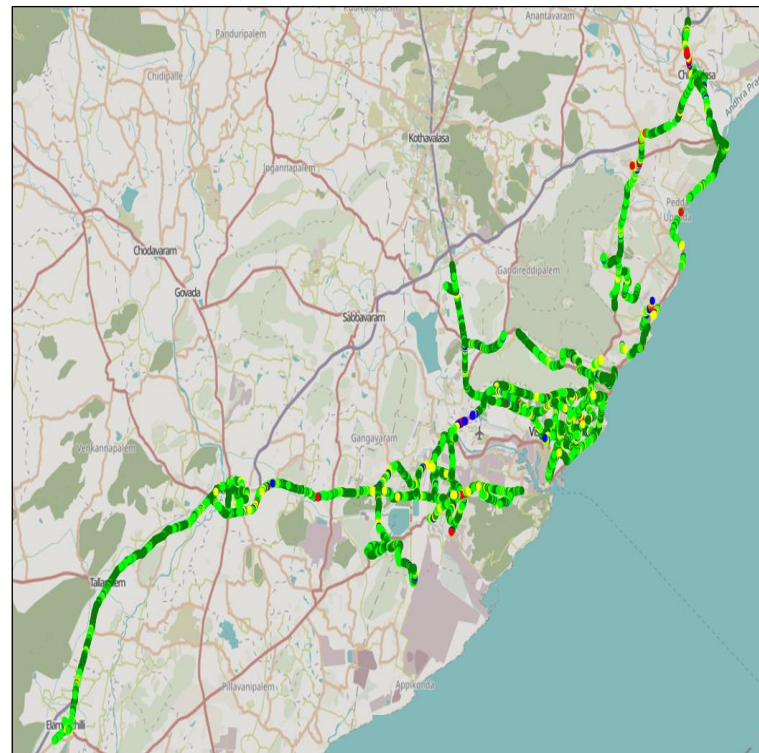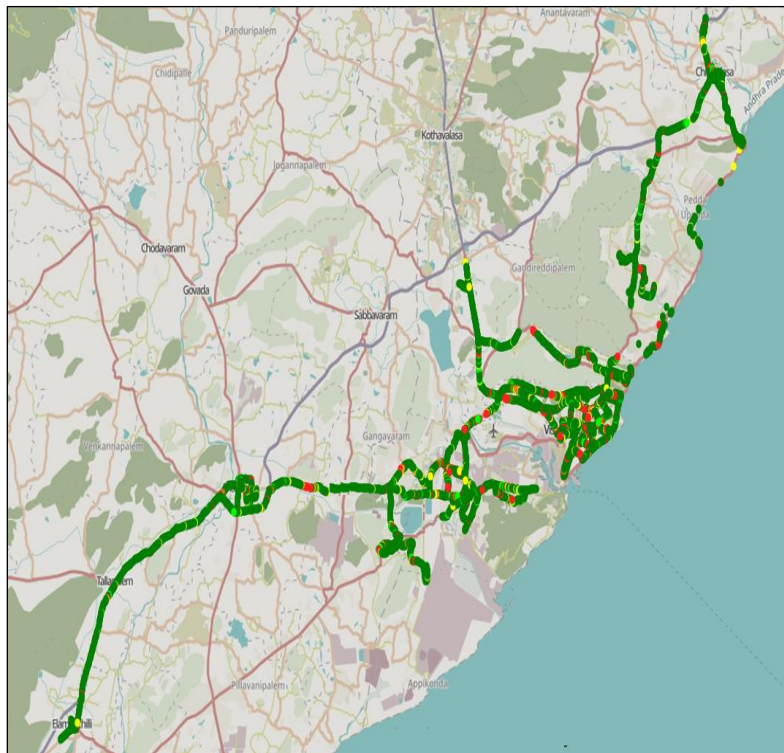
Overall Rx Quality	# Samples	%
(Min, <=2)	6476840	91.51
(2, <=3)	101970	1.44
(3 , <=4)	95887	1.35
(4 , <=5)	98312	1.39
(5 , <=Max)	304893	4.31
Total	7077902	100

Overall SINR	# Samples	%
(Min, <=-3)	358934	2.12
(-3, <=0)	638851	3.77
(0, <=5)	1832168	10.82
(5, <=10)	3824975	22.59
(10, <=15)	2837480	16.76
(15, <=Max)	7439776	43.94
Total	16932184	100.00

TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	56.10
Airtel VoLTE	100
JIO VoLTE	100
VIL VoLTE	99.95
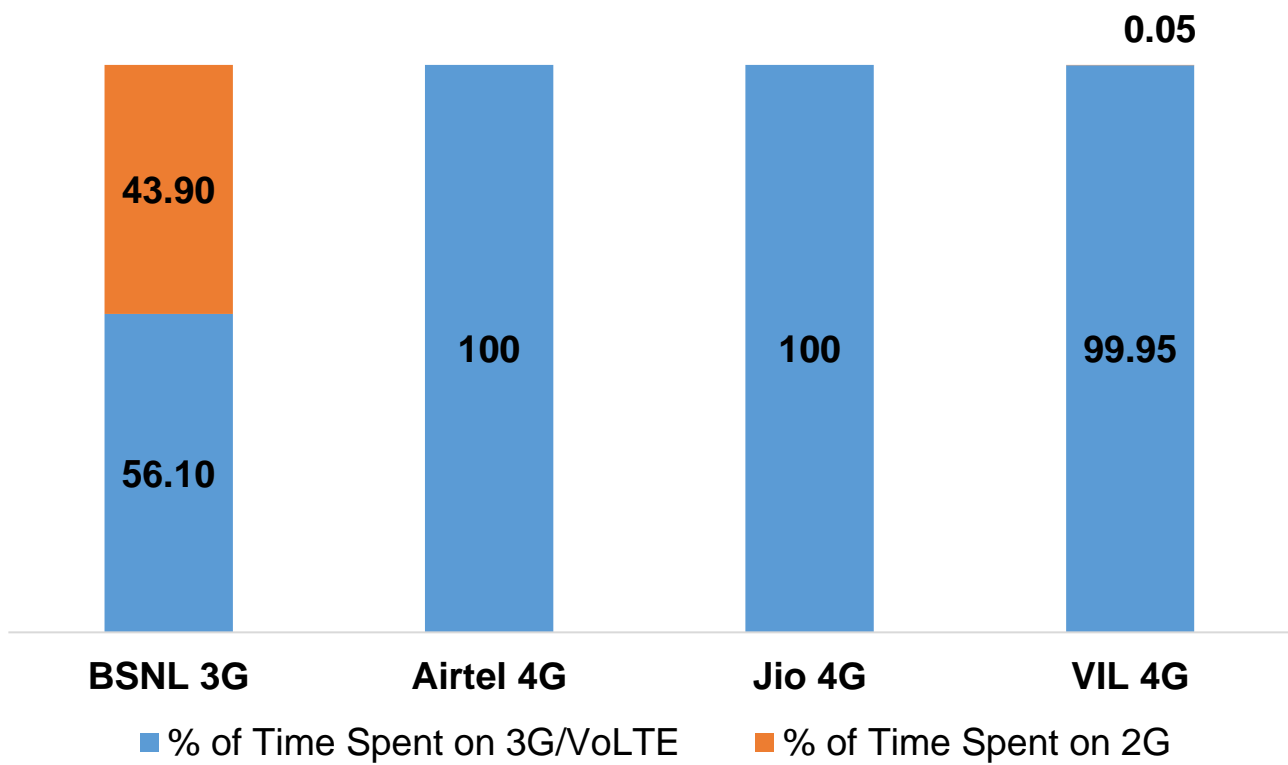
- % of Time Spent on 3G/VoLTE
- % of Time Spent on 2G

Airtel

Technology	Time Spent %
3G / VoLTE	100
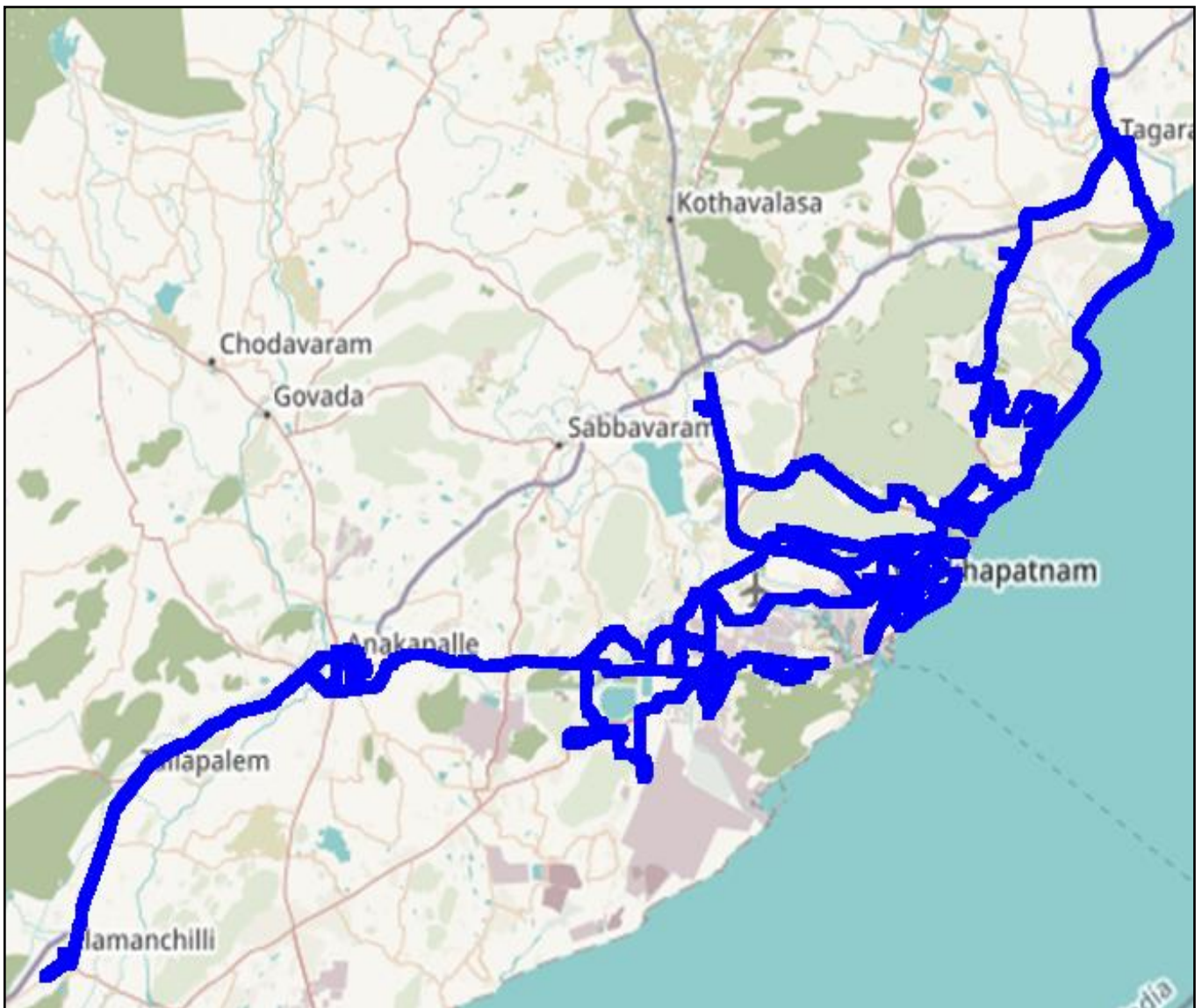
BSNL

Technology	Time Spent on 3G
3G	56.10
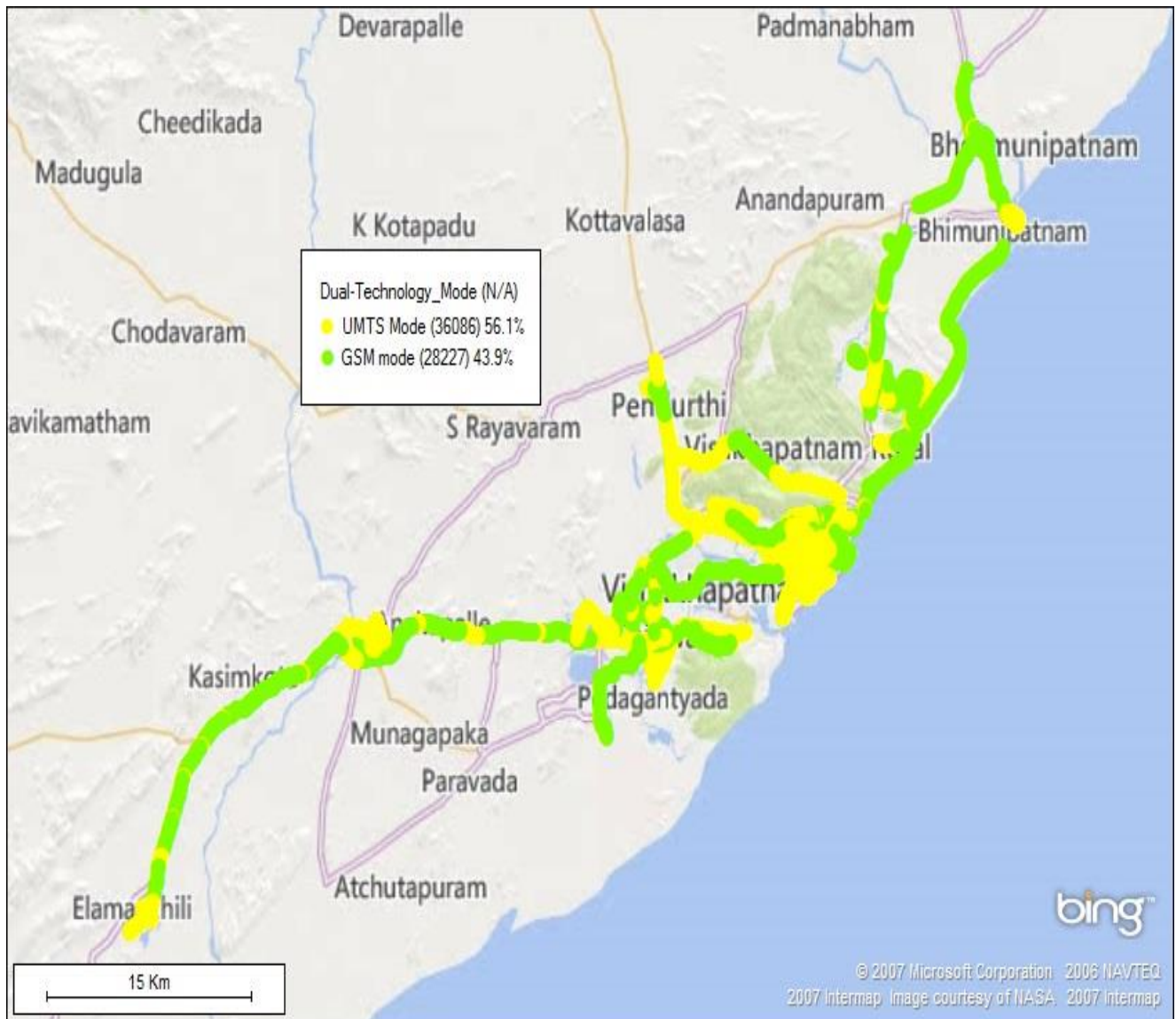
JIO

Technology	Time Spent %
3G / VoLTE	100
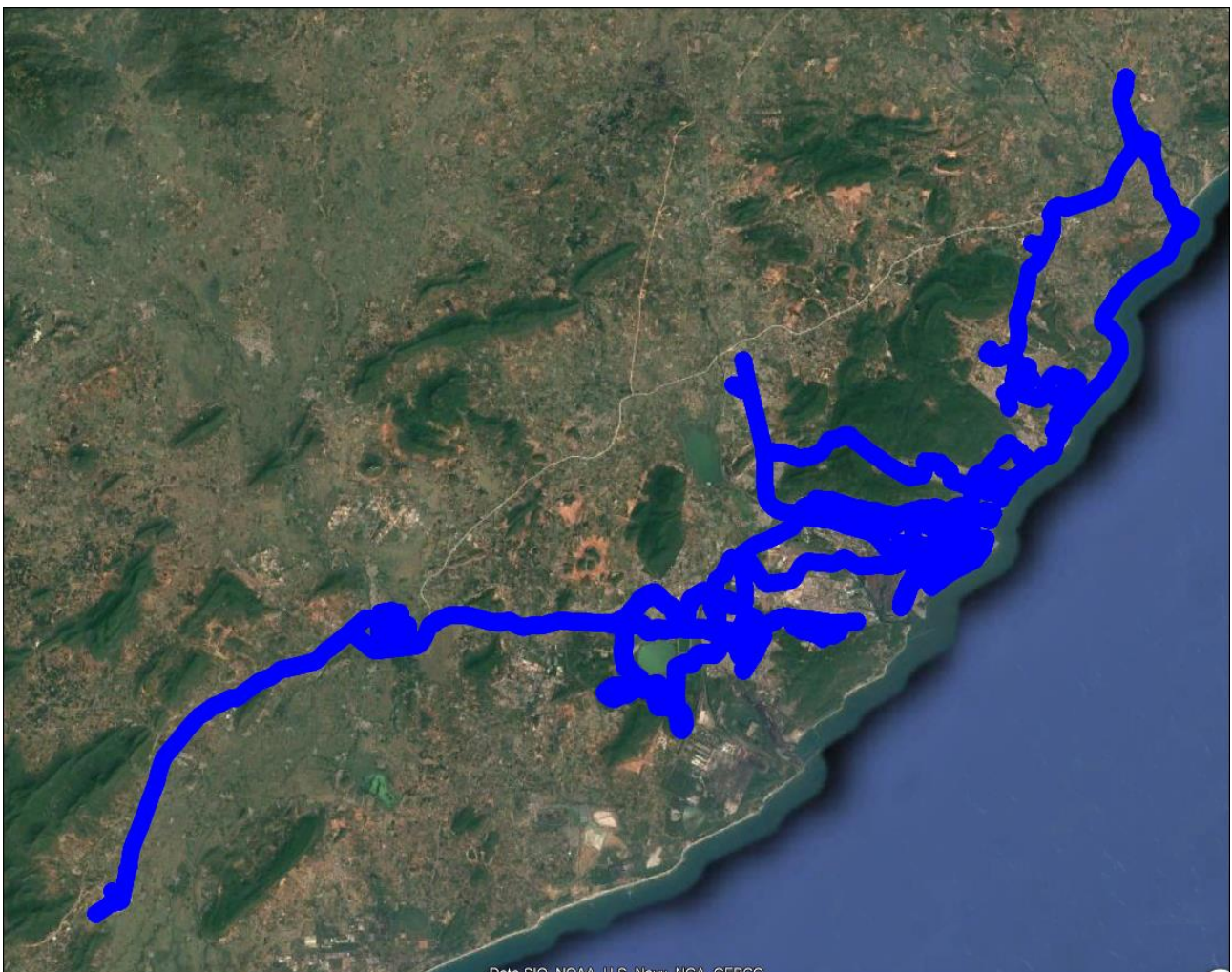
VIL

Technology	Time Spent %
3G / VoLTE	99.95

Airtel

Data Statistics - Dynamic Complete SSA

Data KPIs - Overall	3G / 4G
Download Throughput (Mbps)	20.12
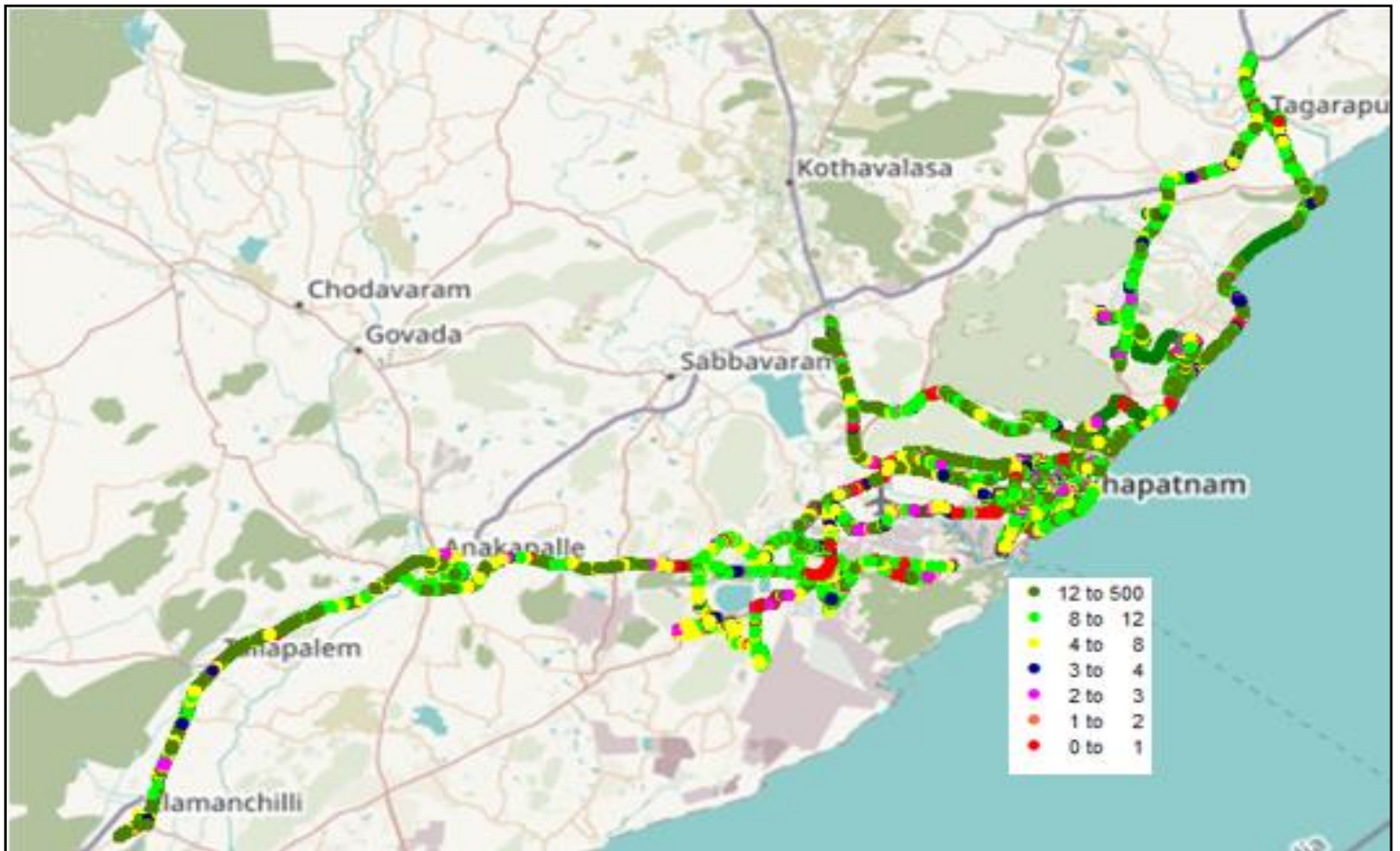
DL throughput	No of Sample	%
0 to 1 Mbps	631433	4.0
1 to 2 Mbps	377881	2.4
2 to 3 Mbps	637770	4.1
3 to 4 Mbps	546340	3.5
4 to 8 Mbps	2850580	18.2
8 to 12 Mbps	4744262	30.4
>12 Mbps	5836778	37.36
Total	15625044	

BSNL

Data Statistics - Dynamic Complete SSA 520Kms

Data KPIs - Overall	3G
Download Throughput (Mbps)	2.39

3G DL-Physical_Throughput_DL (kbps)
- Below 1000.00 kbps (29450) 59.6%
- >= 1000.00 kbps to < 2.000 Mbps (6979) 14.1%
- >= 2.000 Mbps to < 3.000 Mbps (4454) 9.0%
- >= 3.000 Mbps to < 4.000 Mbps (2924) 5.9%
- >= 4.000 Mbps to < 8.000 Mbps (4937) 10.0%
- >= 8.000 Mbps to < 12.00 Mbps (694) 1.4%
- Above 12.00 Mbps (2) 0.0%
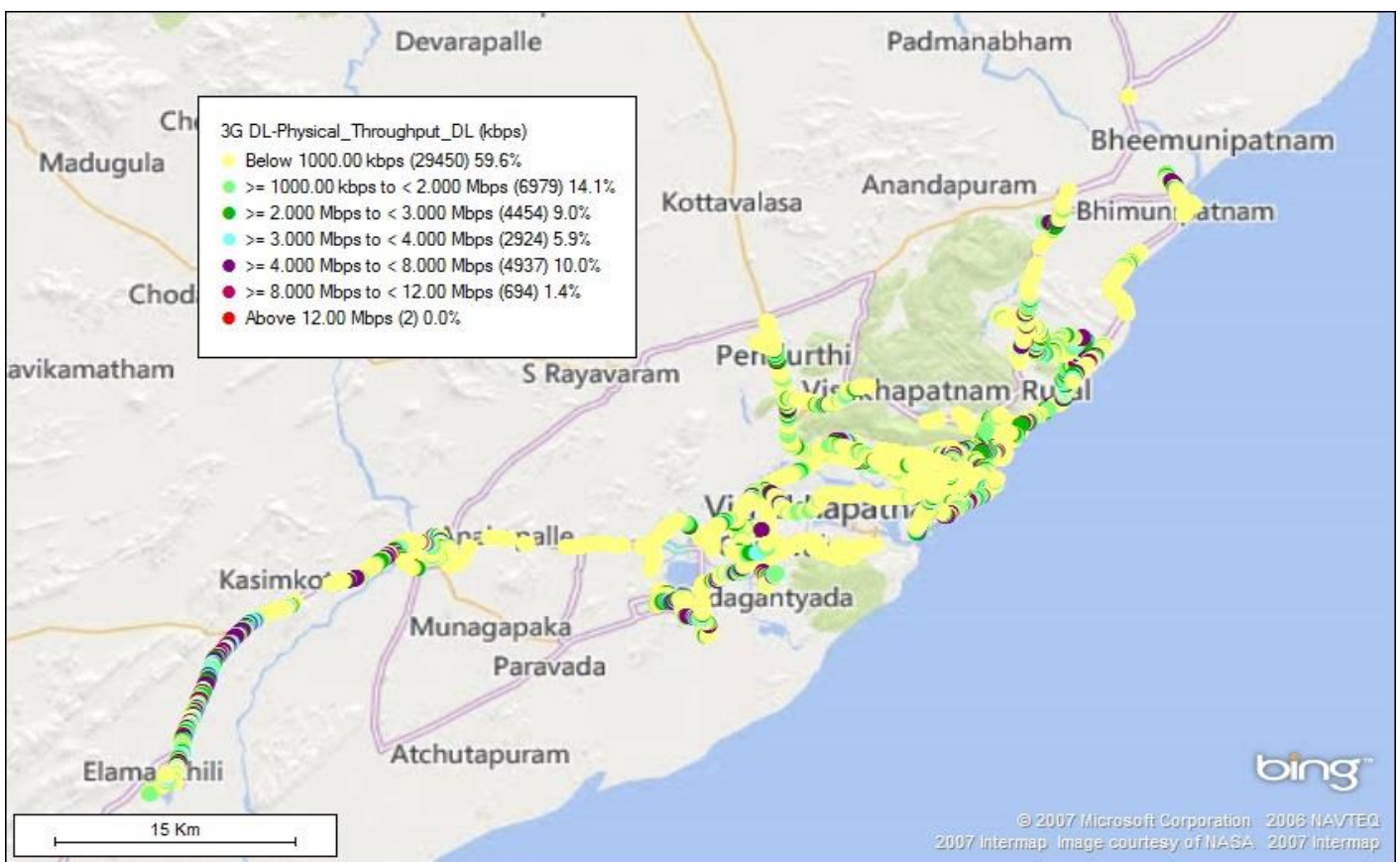
DL throughput	No of Samples	%
0 to 1 Mbps	29450	59.6
1 to 2 Mbps	6979	14.1
2 to 3 Mbps	4454	9.0
3 to 4 Mbps	2924	5.9
4 to 8 Mbps	4937	10.0
8 to 12 Mbps	694	1.4
>12 Mbps	2	0

JIO

Data Statistics - Dynamic Complete SSA

Data KPIs - Overall	3G / 4G
Download Throughput (Mbps)	23.60

LTE KPI MAC DL Throughput[Mbps]

- 12 <= x (74.84%, 60204)
- 8 <= x < 12 (7.21%, 5802)
- 4 <= x < 8 (7.69%, 6189)
- 3 <= x < 4 (2.12%, 1703)
- 2 <= x < 3 (2.18%, 1755)
- 1 <= x < 2 (2.02%, 1624)
- 0 <= x < 1 (3.94%, 3166)
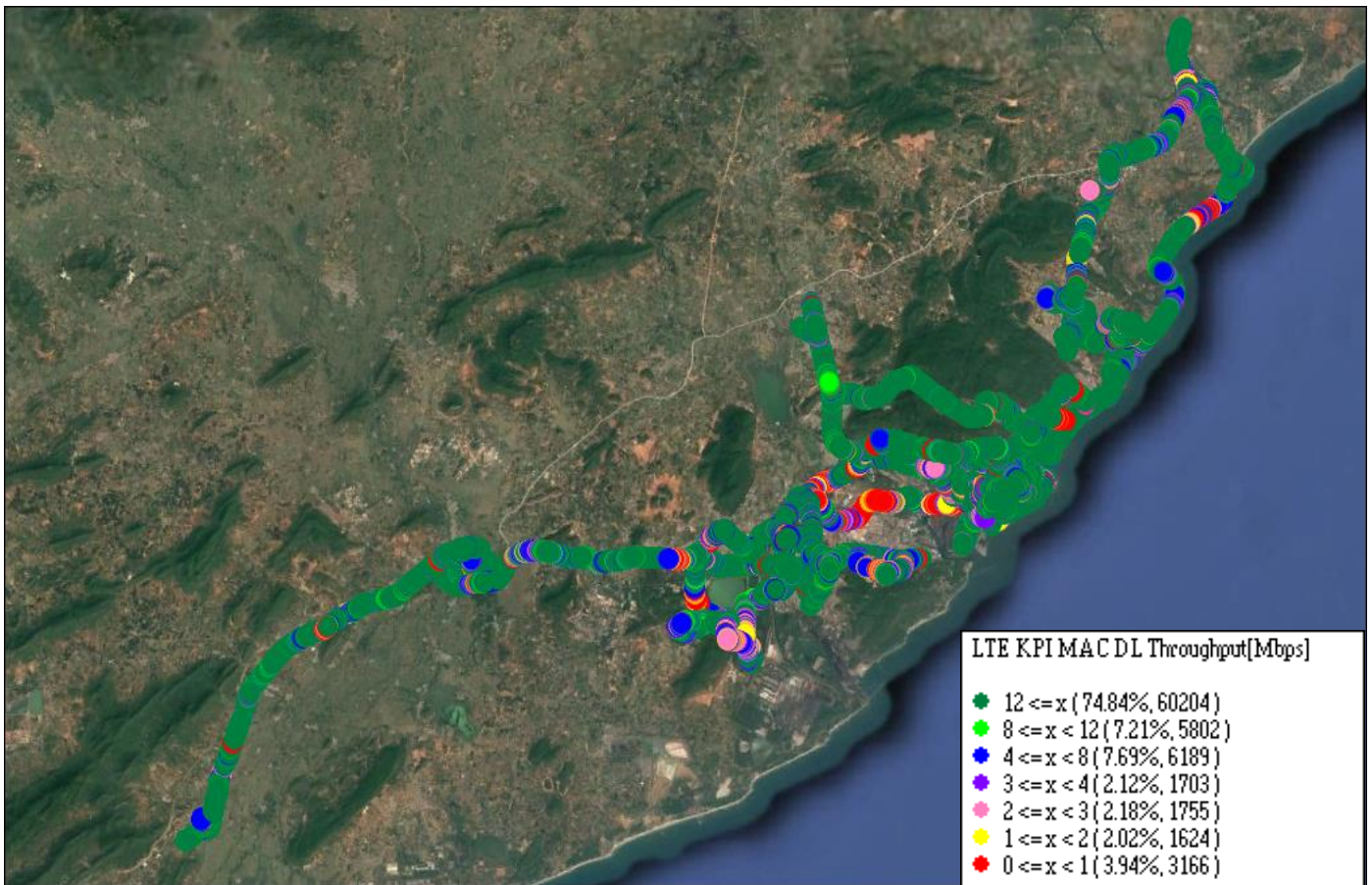
DL Throughput	No of Sample	%
0 to 1 Mbps	3166	3.94
1 to 2 Mbps	1624	2.02
2 to 3 Mbps	1755	2.18
3 to 4 Mbps	1703	2.12
4 to 8 Mbps	6189	7.69
8 to 12 Mbps	5802	7.21
>12 Mbps	60204	74.84

VIL

Data Statistics - Dynamic Complete SSA

Data KPIs - Overall	3G / 4G
Download Throughput (Mbps)	27.34
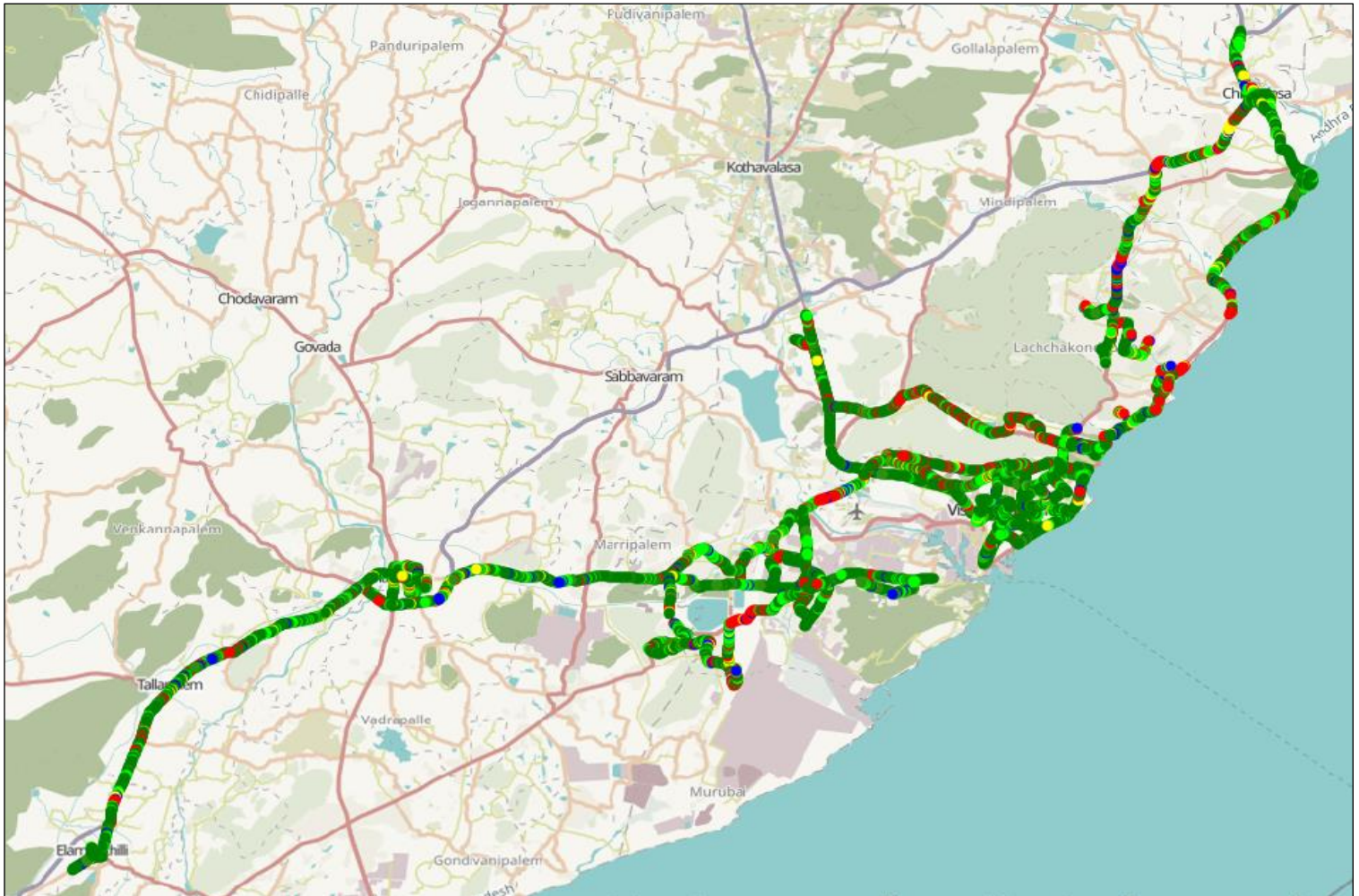
DL throughput	No of Sample	%
0 to 1 Mbps	1207345	4.51
1 to 2 Mbps	555075	2.07
2 to 3 Mbps	562395	2.10
3 to 4 Mbps	549284	2.05
4 to 8 Mbps	5832381	21.77
8 to 12 Mbps	8854219	33.05
>12 Mbps	9230936	34.45
Total	26791635	100

Airtel

Technology 4G	1. Anakapalli Rly station	2.Elamanchali Bus Stand	3. Bheemili Bus stand	4. Visakhapatnam Beach Bus Stand	5. Visakhapatnam Railway Station	6. Visakhapatnam Airport
Download in Mbps	66.10	51.71	50.76	83.97	37.77	40.11
Upload in Mbps	36.54	5.43	31.39	18.02	17.32	15.69

BSNL

Technology 4G	1. Anakapalli Rly station	2.Elamanchali Bus Stand	3. Bheemili Bus stand	4. Visakhapatnam Beach Bus Stand	5. Visakhapatnam Railway Station	6. Visakhapatnam Airport
Download in Mbps	2.87	3.23	3.36	2.57	2.40	2.53
Upload in Mbps	1.33	1.20	3.76	1.33	2.05	1.25

JIO

Technology 4G	1. Anakapalli Rly station	2.Elamanchali Bus Stand	3. Bheemili Bus stand	4. Visakhapatnam Beach Bus Stand	5. Visakhapatnam Railway Station	6. Visakhapatnam Airport
Download in Mbps	77.67	80.66	88.95	101.59	87.24	72.55
Upload in Mbps	6.96	9.87	26.00	5.15	11.05	2.10

VIL

Technology 4G	1. Anakapalli Rly station	2.Elamanchali Bus Stand	3. Bheemili Bus stand	4. Visakhapatnam Beach Bus Stand	5. Visakhapatnam Railway Station	6. Visakhapatnam Airport
Download in Mbps	32.88	21.62	33.76	23.34	52.75	19.38
Upload in Mbps	9.68	12.96	10.78	4.95	8.23	6.27

S.No	No of NH/SH routes	NH routes	SH routes	Distance (Km)
NH/SH Routes covered in OADT by Airtel / BSNL / RJIL / VIL			
1	Beach Road to Pendurthi		39	21
2	Vepagunta to MVP colony via Simhachalam & Hanumanthuwaka		144,138	19
3	Scindia to Aganampudi via Gajuwaka		157	22
4	Visakhapatnam to Anakapalli via Lankelapalem	16		41
5	Anakapalli to Yelamanchali via Kasimkota	16		24
6	Visakhapatnam to Tagarapuvalasa via Anandapuram	16		28
7	Visakhapatnam to Tagarapuvalasa via Bheemili & Beach Road		144	37