Operator-Assisted Drive Test Report

For

Palakkad

25th to 28th April 2023
National Highways(NH-544 & NH-966 – 129 Kms
(25th & 26th April 2023)
Palakkad City & Surrounding Area – 256 Kms
(27th to 28th April 2023)

TRAI RO, Bengaluru
Operator-Assisted

Key Performance Indicators:

- All TSPs have met the 2% QOS benchmark of Drop Call Rate.
- All TSPs have met the 3% QOS benchmark of Call Block Rate.
- All 3G/4G TSPs have not met the Rx Quality.

The Operator Assisted Drive Tests has been carried out by Regional Office, Bangalore with the help of Service Providers from **25th Apr 2023 To 28th Apr 2023** The drive test covered the route of 385 KMs including NH of 129 Kms & 6 hotspots. Approximately 450 calls were made for each of the 8 networks: three 2G networks, one 3G network and four LTE networks covering four TSPs.

| Overview | Voice Summary | Data Summary |

Overview

Regional Office, TRAI Bengaluru conducted Operator Assisted Drive Test from **25th Apr 2023 To 28th Apr 2023** covering various locations in **Palakkad City & surrounding region**. The performance of Airtel, BSNL, Vodafone Idea and Jio were monitored across various technologies (2G, 3G and 4G/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, Hand Over 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 **25th Apr 2023 To 28th Apr 2023**. Approximately 450 calls were made for each of the 8 networks: three 2G (Lock Mode) networks, one 3G (Dual mode) networks and four 4G network covering 4 unique TSPs.

Data Tests: Dynamic data test (Test Data on Move) was conducted for 385 kms over a period of 3 days for download throughput for 3G & 4G technology. Data Tests were performed at 6 static locations; three 2G (Lock mode) networks, one 3G (Dual mode) networks and three 4G (Free mode) networks covering 4 unique TSPs were tested. **All the data through put figure mentioned in the report are based on the average value.**

* For Voice and Data KPI's, 2G measurement is done with UE locked on 2G, 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
Video Streaming	130 secs clip

Voice & Dynamic Data Test (Data Test on Move)
Drive Route
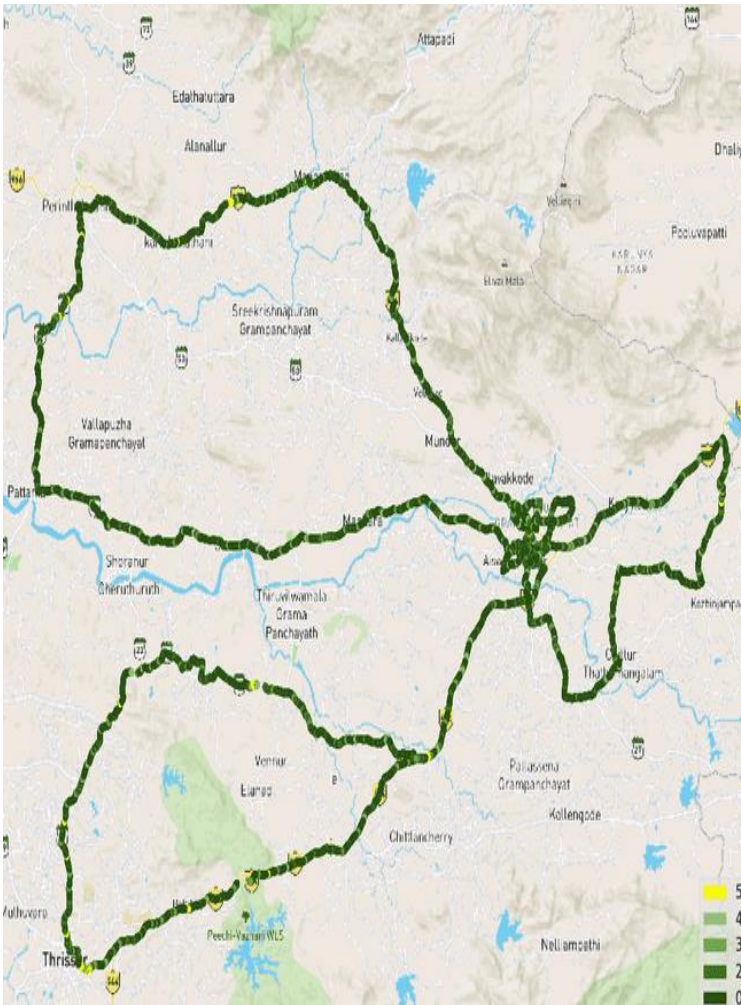
Areas covered	
Palakkad	Pattambi
Alathur	Lakkidi
Panachery	Chittur
Thrissur	Olavakkode
Kuranchery	Kanjikode
Mullukkara	Walayar
Chelakkara	Pudunagaram
Chelakode	Kannadi
Mannarkkad	Yakkara
Perintalmanna	Kalpathy

Areas covered	
DAY 1	Palakkad – Alathur – Pananchery – Thrissur – Kuranchery –Mullukara (Kodungallur-Shornur Road) – Chelakkara – Chelakode - Alathur
DAY 2	Palakkad - Mannarkkad – Paraintalmanna – Pattambi – Lakkidi Koottupatha – Palakkad
DAY 3	Palakkad City & Surrounding Aera
DAY 4	Static Locations

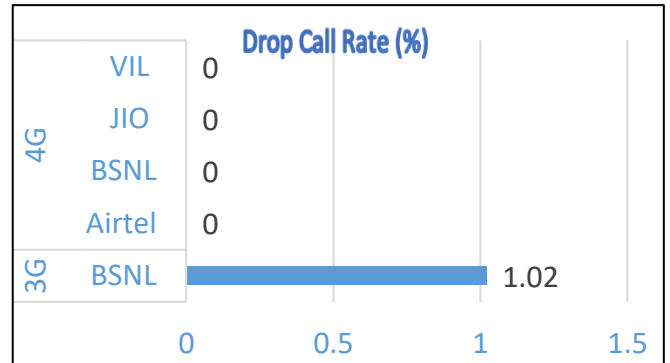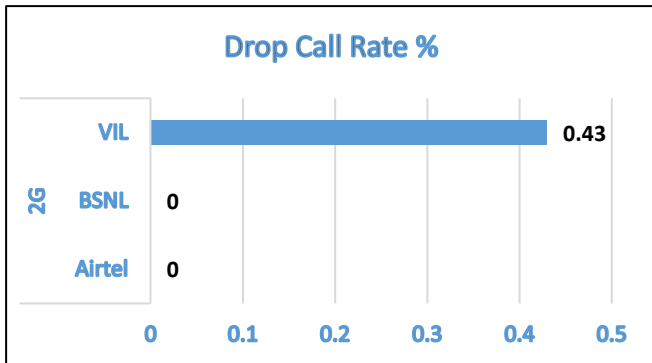## Data Service Test- Static Locations
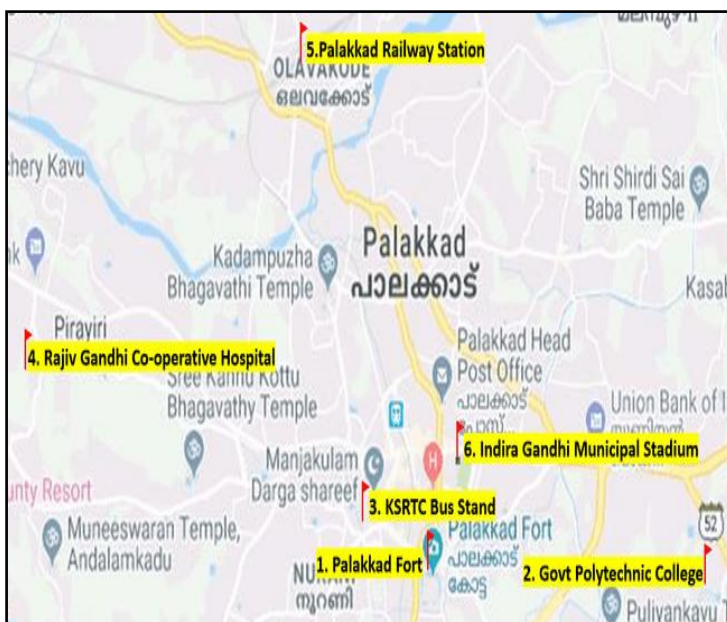
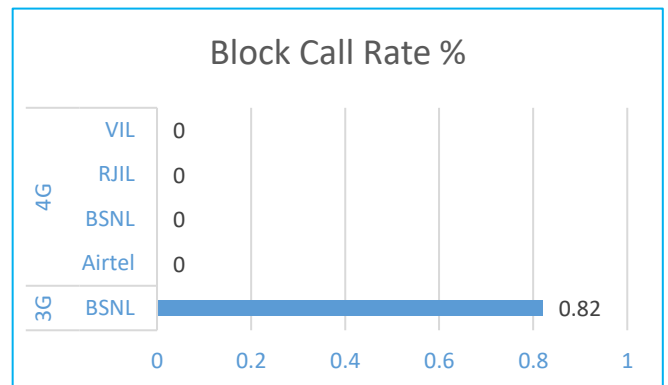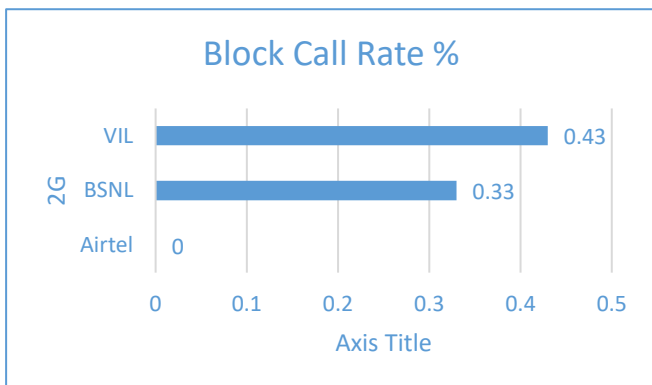| |
|---|
| 1. Palakkad Fort |
| 2. Govt Polytechnic College |
| 3. KSRTC Bus Stand |
| 4. Rajiv Gandhi Co-operative Hospital |
| 5. Palakkad Railway Station |
| 6. Indira Gandhi Municipal Stadium |

Voice Calls

Key Observations

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

Drop Call Rate (%)

Drop Call Rate %

2G:
- VIL — 0.43
- BSNL — 0
- Airtel — 0

Drop Call Rate (%)

4G:
- VIL — 0
- JIO — 0
- BSNL — 0
- Airtel — 0

3G:
- BSNL — 1.02

Block Call Rate (%)

Block Call Rate %

2G:
- VIL — 0.43
- BSNL — 0.33
- Airtel — 0

Axis Title

Block Call Rate %

4G:
- VIL — 0
- RJIL — 0
- BSNL — 0
- Airtel — 0

3G:
- BSNL — 0.82

KPIs	2G			3G	4G			
	Airtel	BSNL	VIL	BSNL	Airtel	BSNL	RJIL	VIL
Drop Call Rate %	0	0	0.43	1.02	0	0	0	0
Block Call Rate %	0	0.33	0.43	0.82	0	0	0	0

a) All TSPs have met the 2% QOS benchmark of Drop Call Rate
b) All TSPs have met the 3% QOS benchmark of Call Block

Voice Calls

Coverage

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

TSPs	2G		
	Airtel	**BSNL**	**VIL**
Coverage%	92.6	81.24	96.65

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

TSPs	3G	4G			
	BSNL	**Airtel**	**BSNL**	**JIO**	**VIL**
Coverage %	69.72	99.13	97.16	99.21	97.01

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

TSPs	3G	4G			
	BSNL	**Airtel**	**BSNL**	**JIO**	**VIL**
Time Spent on 3G/4G%	93.58	100	6.16	100	98.74

Summary

Voice Call	2G		
	Airtel	**BSNL**	**VIL**
Call Attempt	494	594	459
Blocked Call Rate (%)	0	0.33	0.43
CSSR% (Accessibility)	100	99.49	99.56
Drop Call Rate (%)	0	0	0.43
Mobility HOSR (%)	99.34	99.08	98.19
Rx Quality (%)	96.45	98.19	96.29

Voice Call	3G/4G				
	BSNL 3G	**Airtel 4G**	**BSNL 4G**	**JIO 4G**	**VIL 4G**
Call Attempt	510	486	52	461	489
Blocked Call Rate (%)	0	0.82	0	0	0
CSSR% (Accessibility)	100	98.76	100	99.6	100
Drop Call Rate (%)	0	1.02	0	0	0
Mobility HOSR (%)	99.71	99.17	100	99.7	99.6
Rx Quality (%)	80.1	91.83	83.7	94.77	91.29

Data Services Static

Data was tested at 6 locations .Following services were tested: Data Download/Upload, Latency (www.google.com), and Web browsing (Flipkart, Amazon, PayTm)
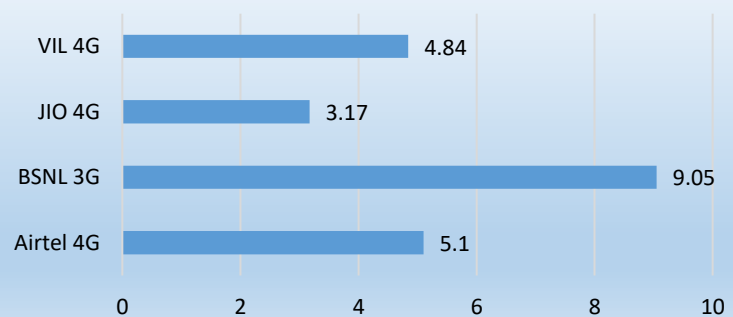
Data Download, Upload Performance (Mbps), Web Browsing delay, Video Streaming and Latency
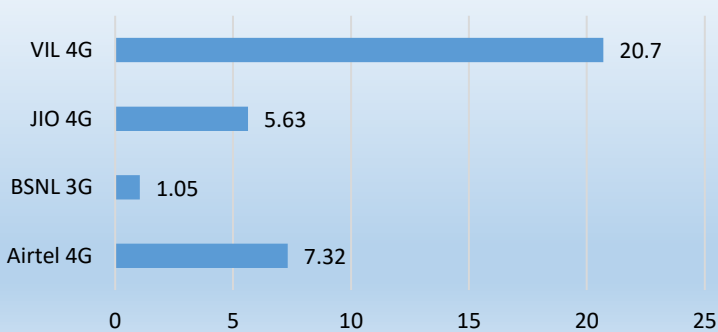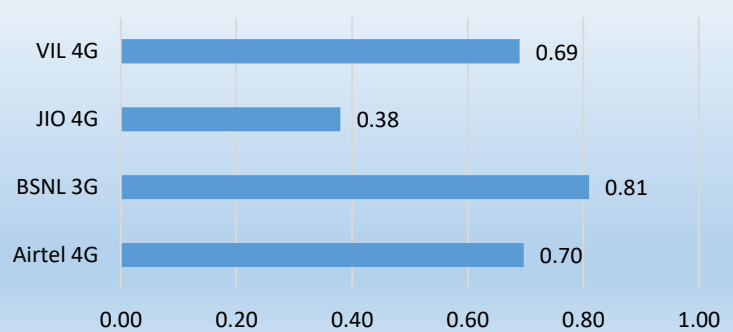3G/4G

3G/4G/ Network:

Download Throughput (mbps)
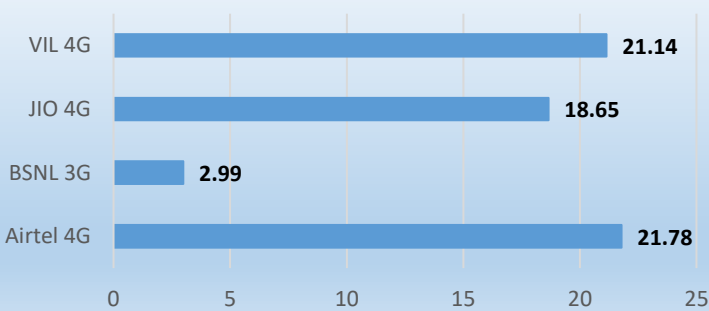
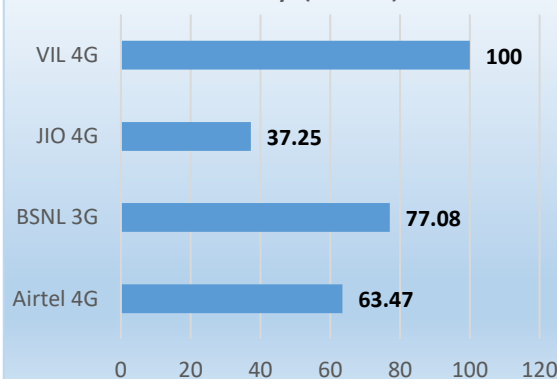| Network	Value
VIL 4G	21.14
JIO 4G	18.65
BSNL 3G	2.99
Airtel 4G	21.78

Web Browsing Delay (sec)

Network	Value
VIL 4G	4.84
JIO 4G	3.17
BSNL 3G	9.05
Airtel 4G	5.1

Upload Throughput (mbps)

Network	Value
VIL 4G	20.7
JIO 4G	5.63
BSNL 3G	1.05
Airtel 4G	7.32

Video Streaming Delay (sec)

Network	Value
VIL 4G	0.69
JIO 4G	0.38
BSNL 3G	0.81
Airtel 4G	0.70

Latency (msec)

Network	Value
VIL 4G	100
JIO 4G	37.25
BSNL 3G	77.08
Airtel 4G	63.47

Summary

Data Services Static	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	182.49	101.56	168.92
Upload Throughput (kbps)	95.01	22.38	86.43
Web Browsing Delay (sec)	57.6	47.62	53.64
Latency (msec)	377	218.8	493

Data Services Static	3G/4G				
	BSNL 3G	Airtel 4G	BSNL 4G	JIO 4G	VIL 4G
Download Throughput (mbps)	2.99	21.78	-	18.7	21.1
Upload Throughput (mbps)	1.05	7.32	-	5.63	20.7
Web Browsing Delay (sec)	9.05	5.1	-	3.17	4.84
Video Streaming Delay (sec)	0.81	0.70	-	0.38	0.69
Latency (msec)	77.08	63.47	-	37.3	100

Data Services Dynamic (Data Test on Move)	3G/4G				
	Airtel 4G	BSNL 3G	BSNL 4G	JIO 4G	VIL 4G
Download Throughput (mbps)	10.6	2.74	3.97	12.1	17.93
Upload Throughput (mbps)	7.9	0.953	2.36	2.3	11.45

Summary

Data Services Static – Palakkad Fort	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	134.26	106.4	186.65
Upload Throughput (kbps)	85.63	19.168	86.74
Web Browsing Delay (sec)	67.75	33.49	47.83
Latency (ms)	389.2	235	633

Data Services Static –Palakkad Fort	4G			
	BSNL	**Airtel**	**JIO**	**VIL**
Download Throughput (Mbps)	1.966	10.21	29.64	23.28
Upload Throughput (Mbps)	1.11	4.13	9.22	5.668
Web Browsing Delay (sec)	13.08	5.14	3.14	4.892
Video Streaming Delay (sec)	0.85	0.41	0.37	1.036
Latency (ms)	109	60.6	31.76	86

Data Services Static – Govt Polytechnic College	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	168.49	103.47	183.24
Upload Throughput (kbps)	112.5	24.71	77.11
Web Browsing Delay (sec)	51.37	39.84	57
Latency (msec)	329	211	645

Data Services Static - Govt Polytechnic College	4G			
	BSNL	**Airtel**	**JIO**	**VIL**
Download Throughput (Mbps)	3.13	15.95	16.3	15.46
Upload Throughput (Mbps)	1.44	19.73	6.92	17.39
Web Browsing Delay (sec)	6.6	4.86	3.09	6.19
Video Streaming Delay (sec)	0.81	0.46	0.36	0.962
Latency (ms)	53	59.4	45	186.2

Summary

Data Services Static – KSRTC Bus Stand	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	236.25	103.85	142.09
Upload Throughput (kbps)	98.52	28.10	75.57
Web Browsing Delay (sec)	46.75	58.88	47.93
Latency (ms)	337	220.65	284

Data Services Static- KSRTC Bus Stand	4G			
	BSNL	Airtel	JIO	VIL
Download Throughput (Mbps)	5.97	68.43	17.93	11.88
Upload Throughput (Mbps)	0.69	2.37	4.24	13.32
Web Browsing Delay (sec)	7.10	6.09	3.2	4.66
Video Streaming Delay (sec)	0.73	1.51	0.42	0.68
Latency (ms)	139.03	50	37	77

Data Services Static – Rajiv Gandhi Co-operative Hospital	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	202.91	92.74	142.36
Upload Throughput (kbps)	108.79	20.35	91.17
Web Browsing Delay (sec)	56	51.74	56.72
Latency (msec)	378	212	517

Data Services Static – Rajiv Gandhi Co-operative Hospital	4G			
	BSNL	Airtel	JIO	VIL
Download Throughput (Mbps)	2.3	15.61	15.79	26.21
Upload Throughput (Mbps)	0.88	10.39	3.74	22.55
Web Browsing Delay (sec)	10.65	4.64	3.1	4.11
Video Streaming Delay (sec)	0.68	0.39	0.38	0.35
Latency (ms)	58	66	34	71

Summary

Data Services Static – Palakkad Railway Station	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	138.88	108.60	187.64
Upload Throughput (kbps)	73.37	21.62	92.62
Web Browsing Delay (sec)	74.42	39.00	59.74
Latency (ms)	437	205.62	471

Data Services Static – Palakkad Railway Station	3G/4G			
	BSNL 3G	**Airtel**	**JIO**	**VIL**
Download Throughput (Mbps)	2.6	9.95	10.09	31.77
Upload Throughput (Mbps)	1.03	2.51	5.03	25.86
Web Browsing Delay (sec)	8.14	5.17	3.19	4.69
Video Streaming Delay (sec)	0.85	0.92	0.39	0.68
Latency (ms)	51	79	37	67

Data Services Static – . Indira Gandhi Municipal Stadium	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	214.13	94.30	171.52
Upload Throughput (kbps)	91.25	20.36	95.38
Web Browsing Delay (sec)	49.31	62.82	52.64
Latency (msec)	389.8	228.52	410

Data Services Static – . Indira Gandhi Municipal Stadium	3G/4G			
	BSNL 3G	**Airtel**	**JIO**	**VIL**
Download Throughput (Mbps)	1.99	10.51	22.18	18.23
Upload Throughput (Mbps)	1.16	4.82	4.62	39.42
Web Browsing Delay (sec)	8.75	4.69	3.31	4.52
Video Streaming Delay (sec)	0.9	0.48	0.36	0.45
Latency (ms)	52.44	66	39	113

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	92.6
BSNL 2G	81.24
VIL 2G	96.65
Airtel 4G	99.13
BSNL 3 G	69.72
BSNL 4 G	97.16
Jio 4G	99.21
VIL 4G	97.01

Coverage Distribution %

TSP	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 2G	52.4	40.2	7.1	0.3
BSNl 2G	42.82	38.42	15.98	2.78
VIL 2G	43.5	53.15	1.71	1.64
Airtel 4G	36.18	37.2	25.76	0.87
BSNL 3G	8.94	28.79	31.99	30.27
BSNL 4G	5.5	17.93	73.72	2.84
Jio 4G	42.3	30.8	26.2	0.8
VIL 4G	16.4	31.34	49.27	2.99
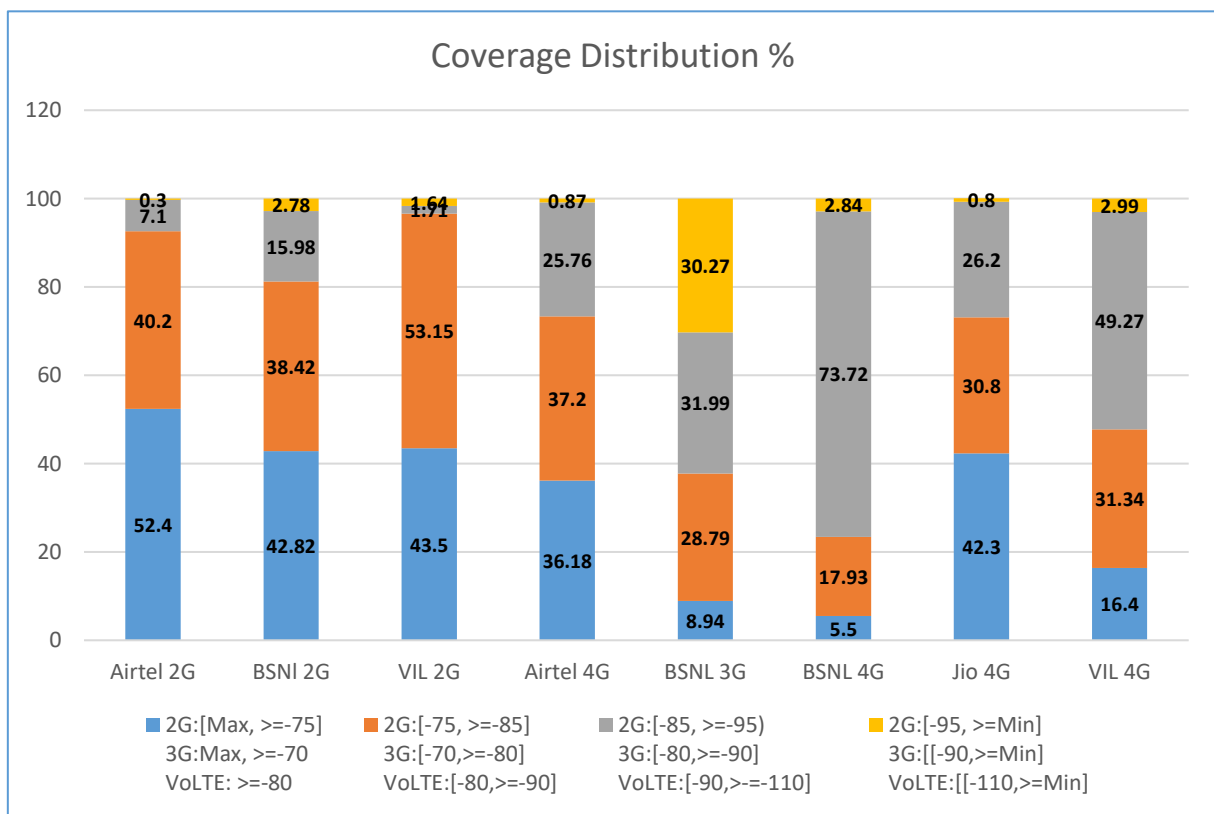
AIRTEL

Technology	Coverage Rate %
2G	92.6
4G	99.13

2G	**4G**
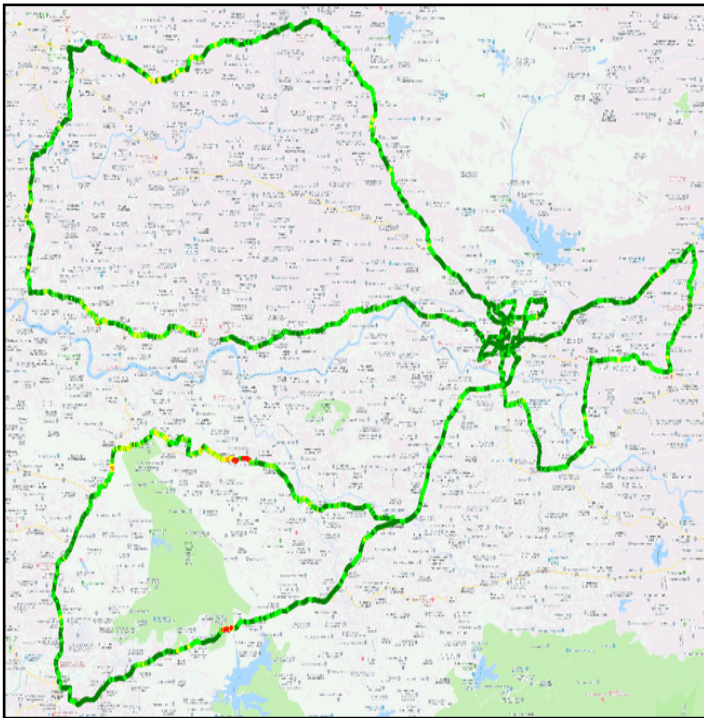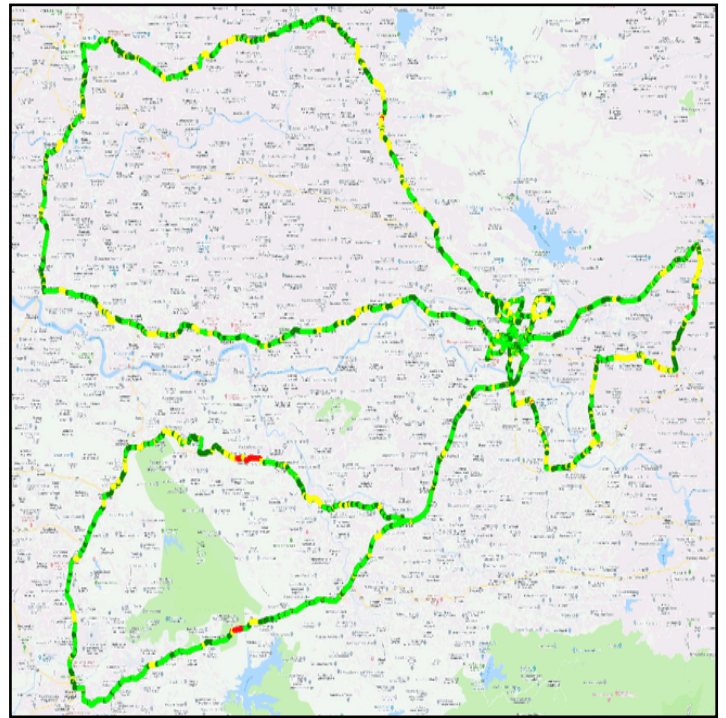
2G		
Overall RxLevel	**# Samples**	**% PDF**
[Max, >=-75]	13578	52.4%
[-75, >=-85)	10421	40.2%
[-85, >=-95)	1828	7.1%
[-95, >=Min)	74	0.3%
Total	25901	**100**

4G/VoLTE		
Overall RSRP	**# Samples**	**% PDF**
[Max, >=-80]	9450	36.18%
[-80, >=-90)	9715	37.20%
[-90, >=-110)	6727	25.76%
[-110, >=Min)	226	0.87%
Total	26118	100

BSNL

Technology	Coverage Rate %
2G	81.24
3G	69.72
4G	97.16
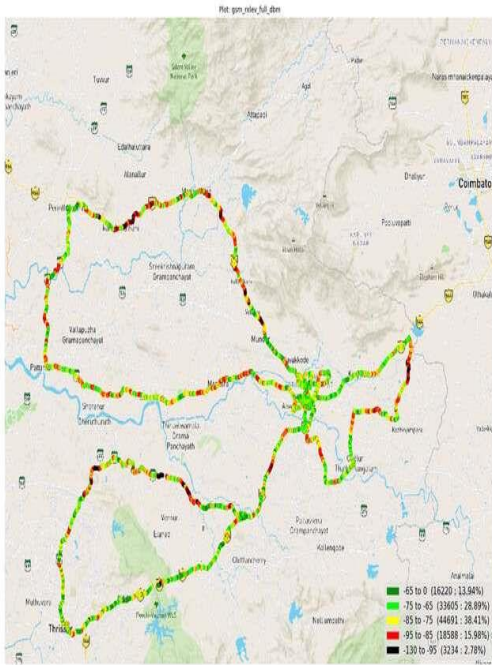
2G	3G	4G
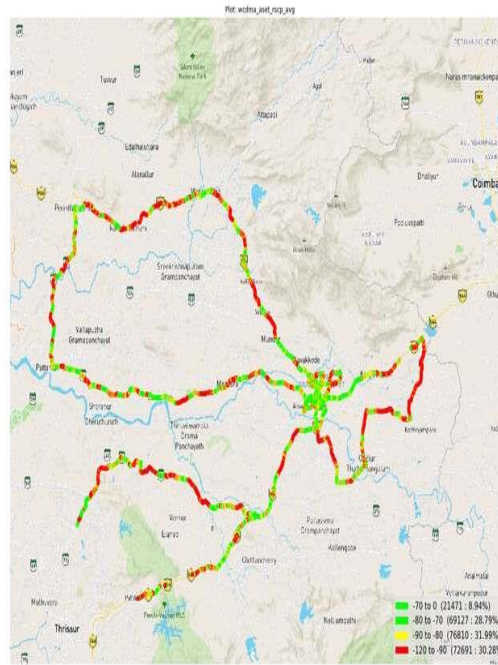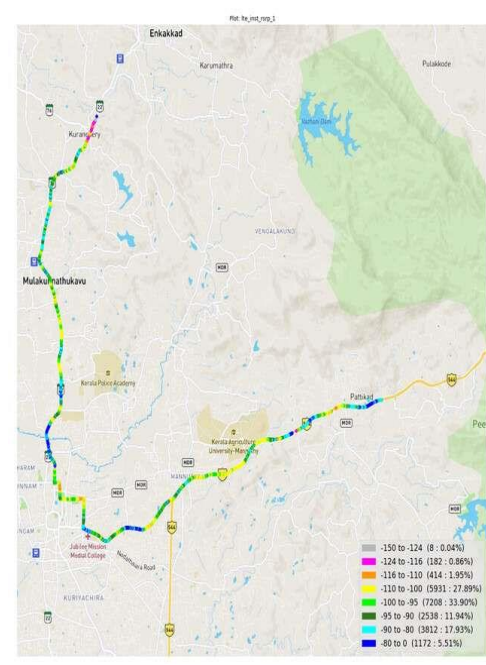
2G		
Overall RxLevel	**# Samples**	**% PDF**
[Max, >=-75]	49825	42.82
[-75, >=-85)	44691	38.42
[-85, >=-95)	18588	15.98
[-95, >=Min)	3234	2.78
Total	116338	100

3G		
Overall RSCP	**# Samples**	**% PDF**
[Max, >=-70]	21471	8.94
[-70, >=-80)	69127	28.79
[-80, >=-90)	76810	31.99
[-90, >=Min)	72691	30.28
Total	240099	100

4G/VoLTE		
Overall RSRP	**# Samples**	**% PDF**
[Max, >=-80]	1172	5.5114
[-80, >=-90)	3812	17.926
[-90, >=-110)	19489	73.722
[-110, >=Min)	604	2.840
Total	21265	100

JIO

Technology	Coverage Rate %
4G	99.21
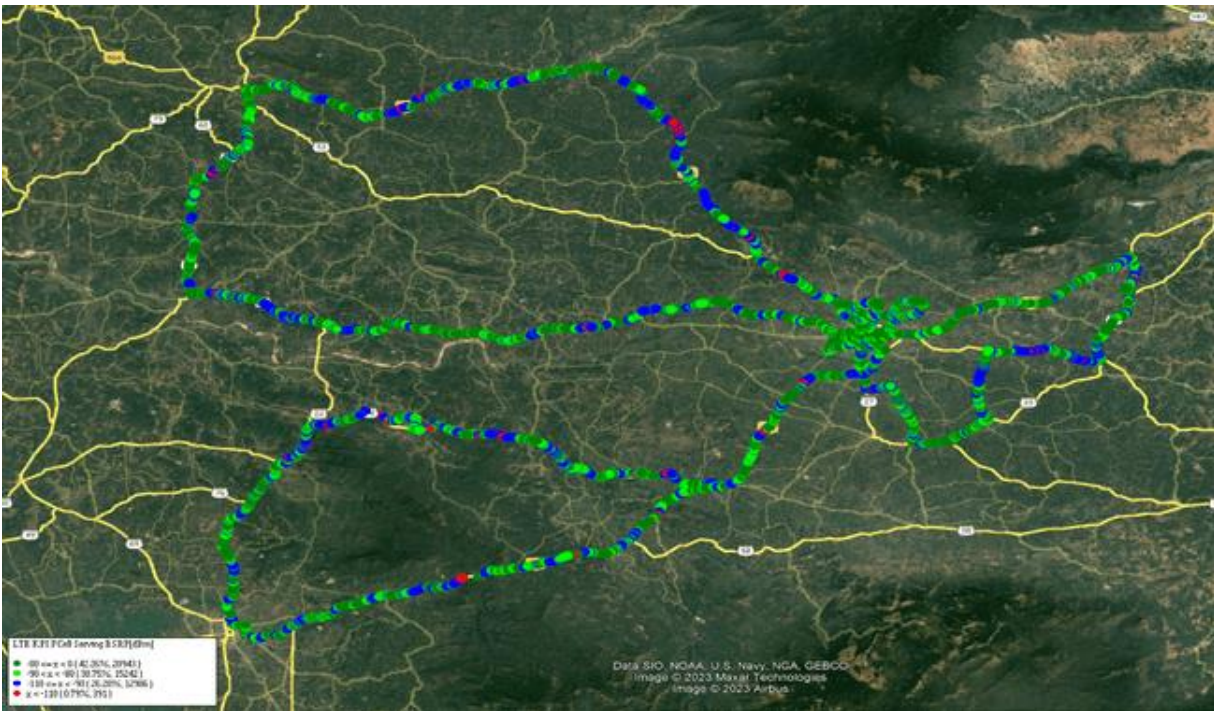
4G/VoLTE		
Overall RSRP	**# Samples**	**% PDF**
[Max, >=-80]	20943	42.3%
[-80, >=-90)	15242	30.8%
[-90, >=-110)	12986	26.2%
[-110, >=Min)	391	0.8%
Total	**49562**	**100%**

VIL

Technology	Coverage Rate %
2G	96.65
4G	97.01

2G

4G
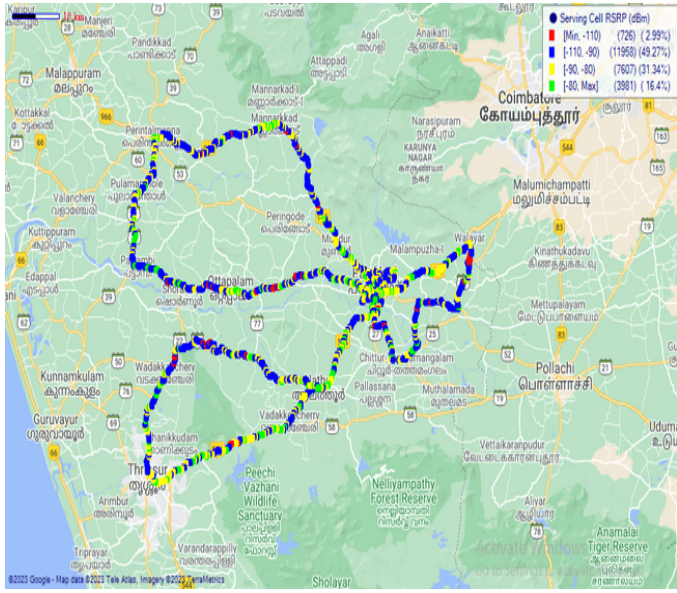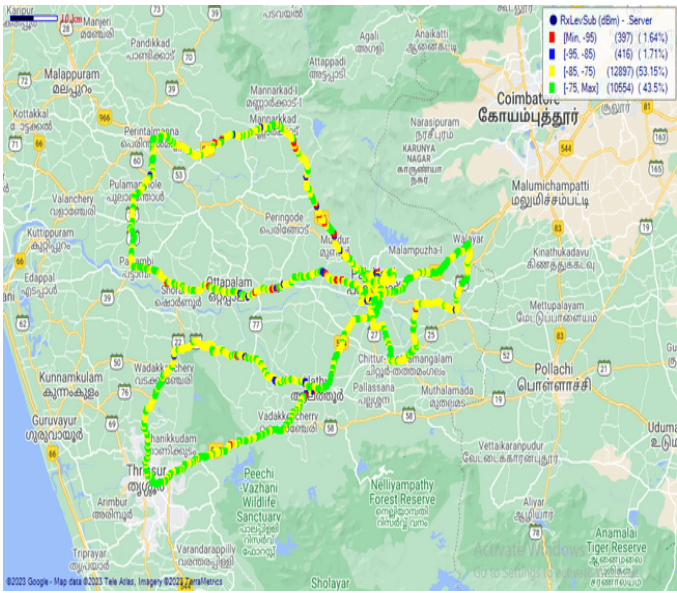
2G		
Overall RxLevel	**# Samples**	**% PDF**
[Max, >=-75]	10554	43.50
[-75, >=-85)	12897	53.15
[-85, >=-95)	416	1.71
[-95, >=Min)	397	1.64
Total	24264	100

4G/VoLTE		
Overall RSRP	**# Samples**	**% PDF**
[Max, >=-80]	3981	16.40%
[-80, >=-90)	7607	31.34%
[-90, >=-110)	11958	49.27%
[-110, >=Min)	726	2.99%
Total	24272	100%

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 4G 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	96.45
BSNL 2G	98.19
VIL 2G	96.29
Airtel 4G	91.83
BSNL 3G	80.1
BSNL 4G	83.7
Jio 4G	94.77
VIL 4G	91.29

Rx Quality

	Airtel 2G	BSNl 2G	VIL 2G	Airtel 4G	BSNL 3G	BSNL 4G	Jio 4G	VIL 4G
Rx Quality 2G:[>5] 3G:[EcNo<-14 dBm] VoLTE:[SINR<=0]	3.55	1.81	3.71	8.17	19.9	16.3	5.23	8.71
Rx Quality 2G:[<=5] 3G:[EcNo>=-14 dBm] VoLTE:[SINR>0]	96.45	98.19	96.29	91.83	80.1	83.7	94.77	91.29

- ■ Rx Quality
- ■ Rx Quality 2G:[>5] 3G:[EcNo<-14 dBm] VoLTE:[SINR<=0]
- ■ Rx Quality 2G:[<=5] 3G:[EcNo>=-14 dBm] VoLTE:[SINR>0]
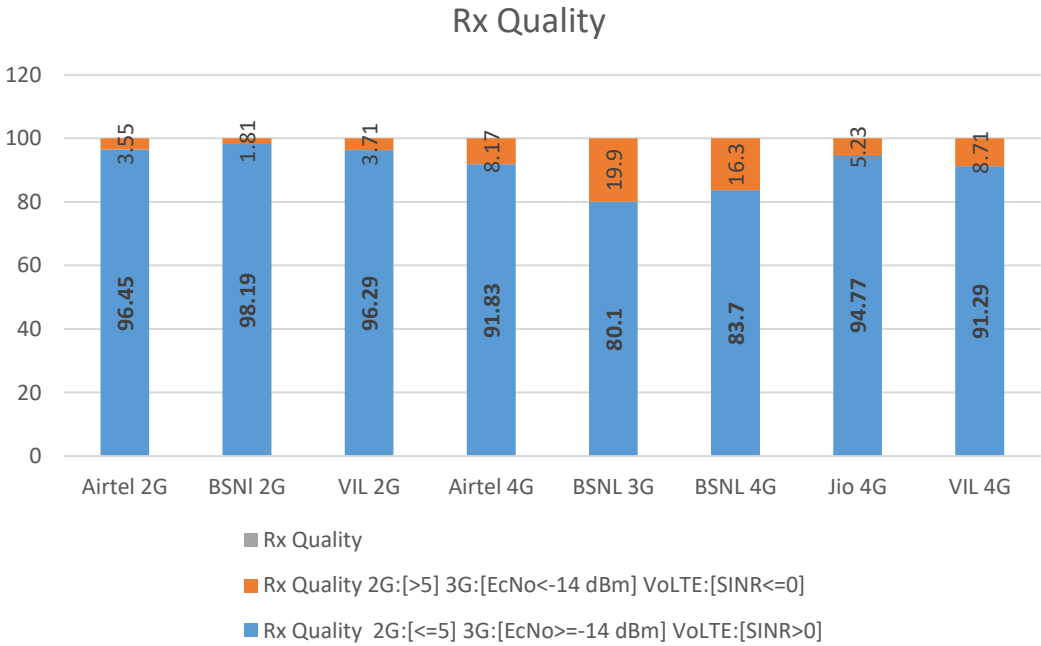
Airtel

Technology	Rx Quality %
2G	96.45
4G	91.83

2G	4G
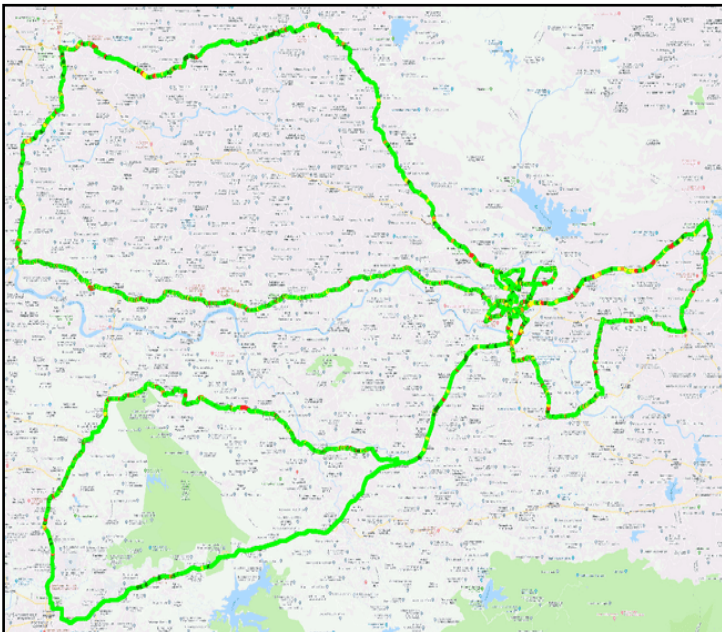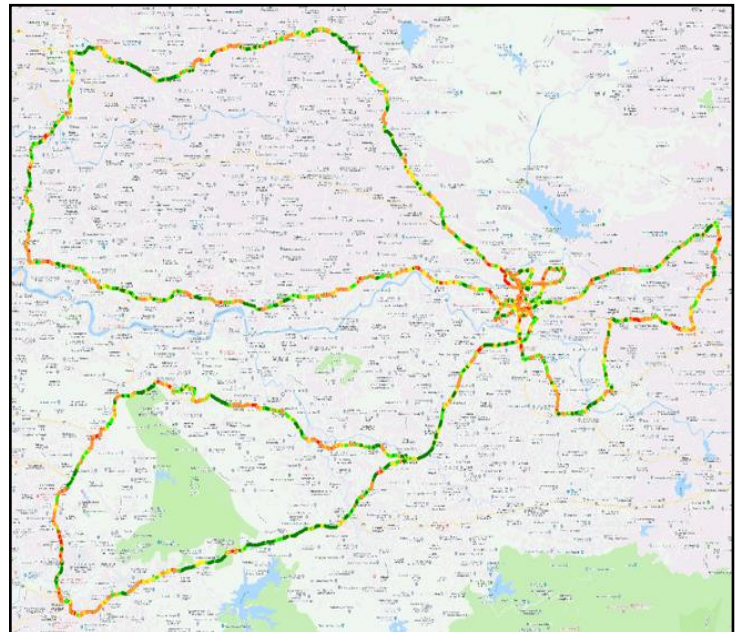
Overall Rx Quality	# Samples	% PDF
(Min, <=2)	19767	75.88%
(2, <=3)	2760	10.60%
(3 , <=4)	1714	6.58%
(4 , <=5)	884	3.39%
(5 , <=Max)	924	3.55%
Total	26049	100

Overall SINR	# Samples	% PDF
(Min, <=0)	2133	8.17%
(0, <=5)	10660	40.81%
(5, <=10)	5970	22.86%
(10, <=15)	3569	13.66%
(15, <=Max)	3786	14.50%
Total	26118	100

BSNL

Technology	Rx Quality %
2G	98.19
3G	80.1
4G	83.7

2G	**3G**	**4G**
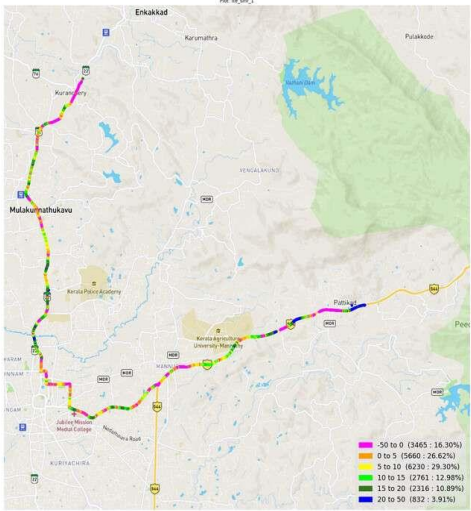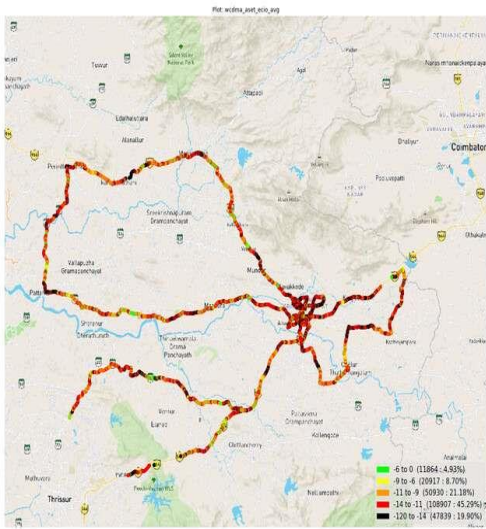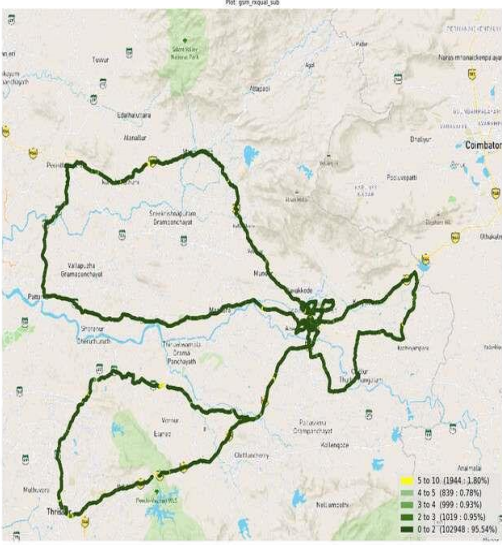
Overall Rx Quality	# Samples	% PDF
(Min, <=2)	102948	95.54
(2, <=3)	1019	0.95
(3 , <=4)	999	0.93
(4 , <=5)	839	0.78
(5 , <=Max)	1944	1.80
Total	**31830**	**100**

Overall EcNo	# Samples	% PDF
(Max, <=-6)	11864	4.93
(-6, <=-9)	20917	8.70
(-9, <=-11)	50930	21.18
(-11, <=-14)	108907	45.29
(-14, <= Min)	47839	19.90
Total	**240457**	**100**

Overall SINR	# Samples	% PDF
(Min, <=0)	3465	16.30
(0, <=5)	5660	26.62
(5, <=10)	6230	29.30
(10, <=15)	2761	12.98
(15, <=Max)	3148	14.80
Total	**21264**	**100**

JIO

Technology	Rx Quality (%)
4G/4G	94.77
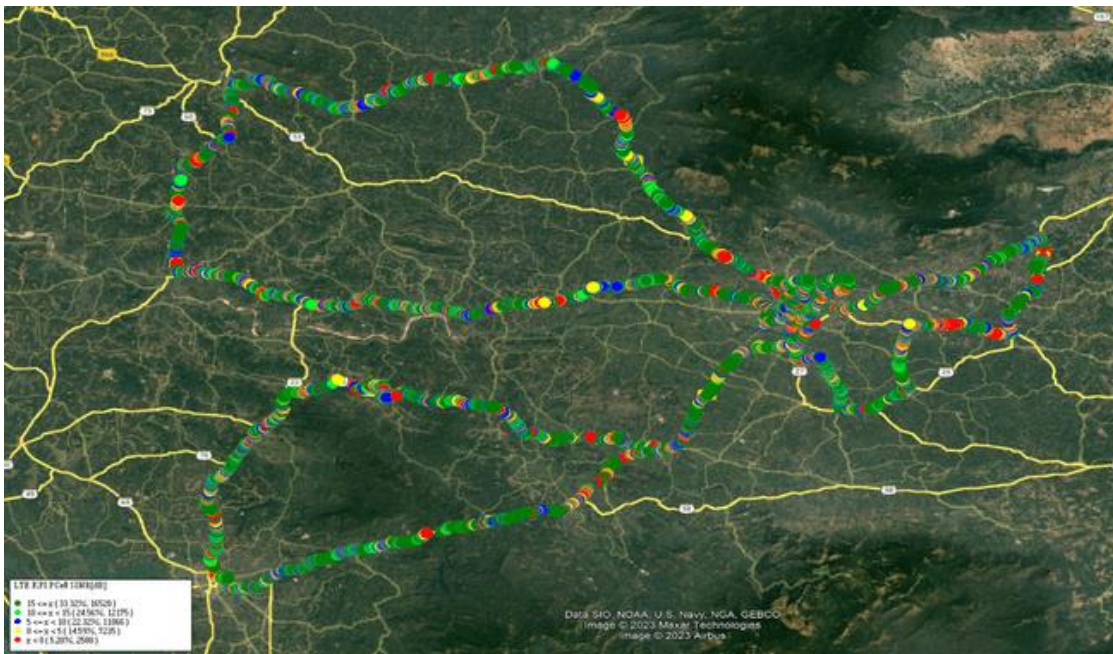
Overall SINR	# Samples	% PDF
(Min, <=0)	2580	5.20%
(0, <=5)	7235	14.59%
(5, <=10)	11066	22.32%
(10, <=15)	12175	24.56%
(15, <=Max)	16520	33.32%
Total	**49576**	**100%**

VIL

Technology	Rx Quality %
2G	96.29
4G	91.29

2G

4G
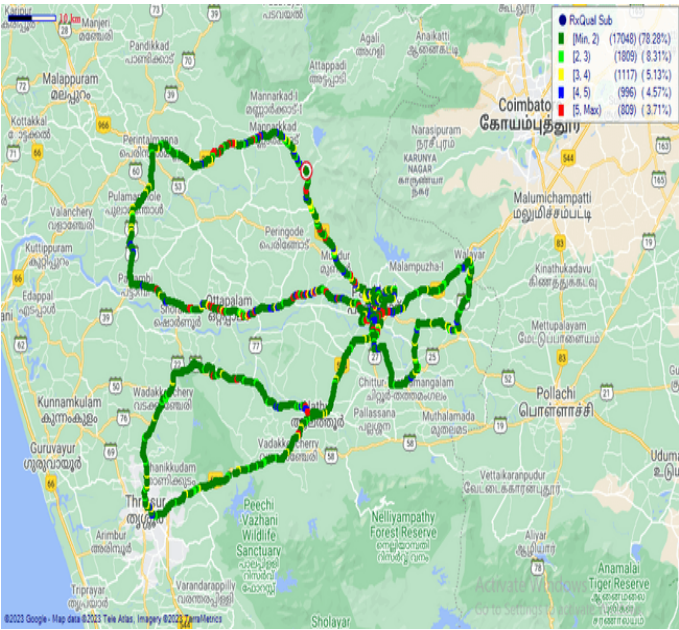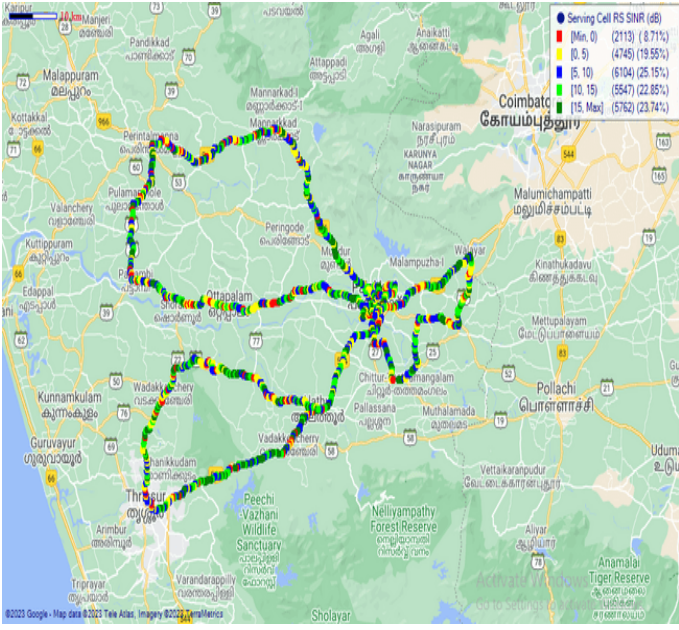
Overall Rx Quality	# Samples	% PDF
(Min, <=2)	17048	78.28%
(2, <=3)	1809	8.31%
(3 , <=4)	1117	5.13%
(4 , <=5)	996	4.57%
(5 , <=Max)	809	3.71%
Total	**21779**	**100.00%**

Overall SINR	# Samples	% PDF
(Min, <=0)	2113	8.71%
(0, <=5)	4745	19.55%
(5, <=10)	6104	25.15%
(10, <=15)	5547	22.85%
(15, <=Max)	5762	23.74%
Total	**24271**	**100.00%**

TSP	Time Spent on 3G/4G %
Airtel 4G	100
BSNL 3G	93.58
BSNL 4G	6.16
Jio 4G	100
VIL 4G	98.74

Percentage of time spent on 3G/4G/4G
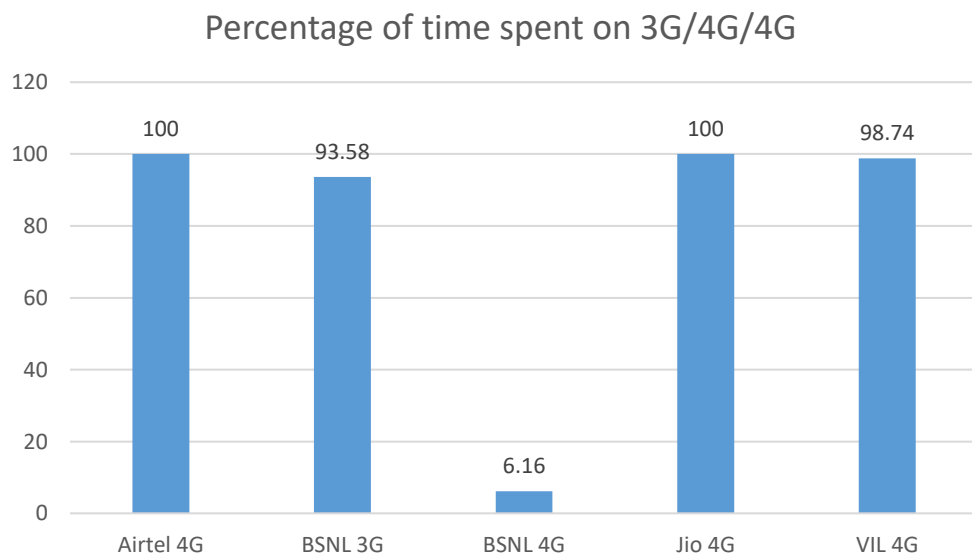
Airtel

Technology	Time Spent %
4G	100
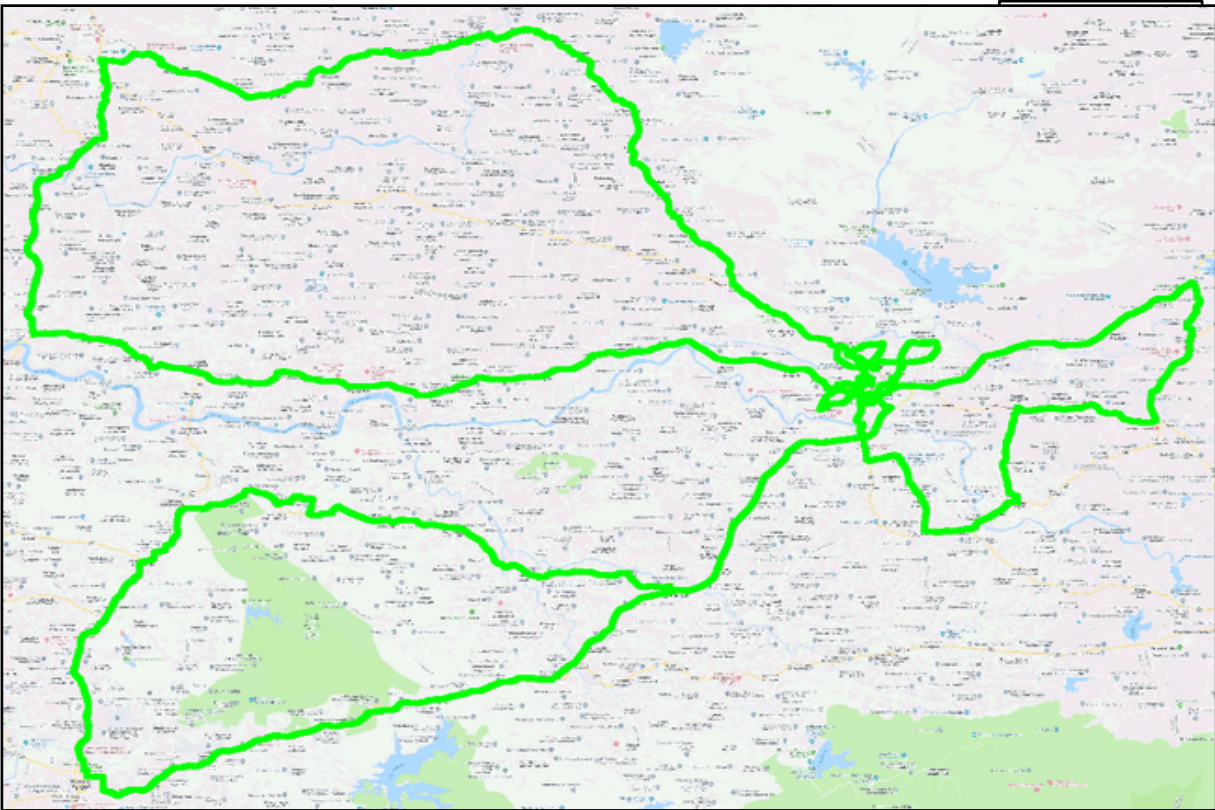
BSNL

Technology	Time Spent %
3G	93.58
4G	6.16

Technology Plot of complete SSA (3G)
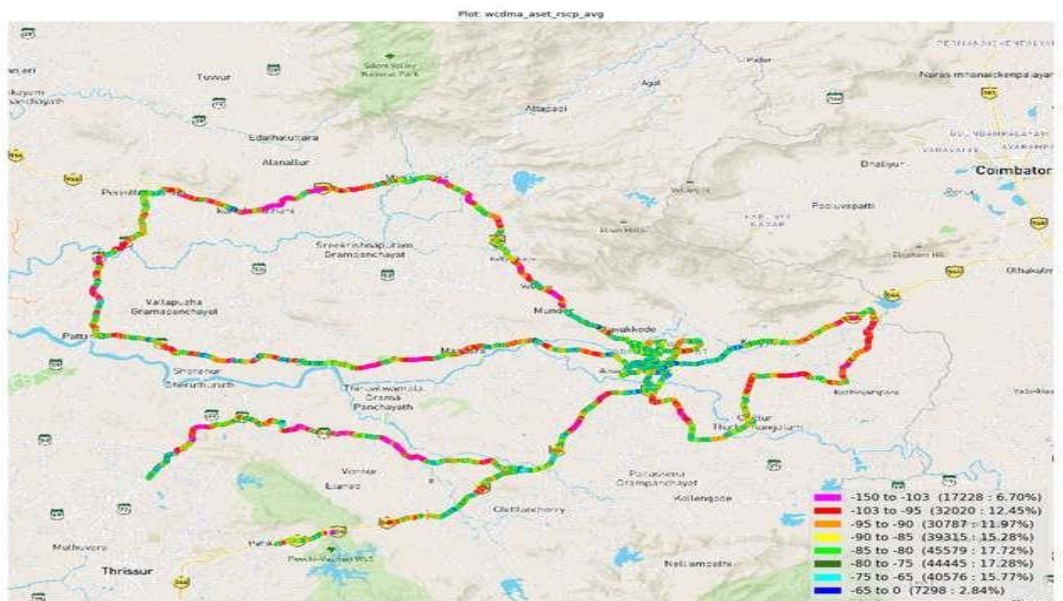
Technology Plot of complete SSA (4G/VoLTE)

JIO

Technology	Time Spent %
4G	100
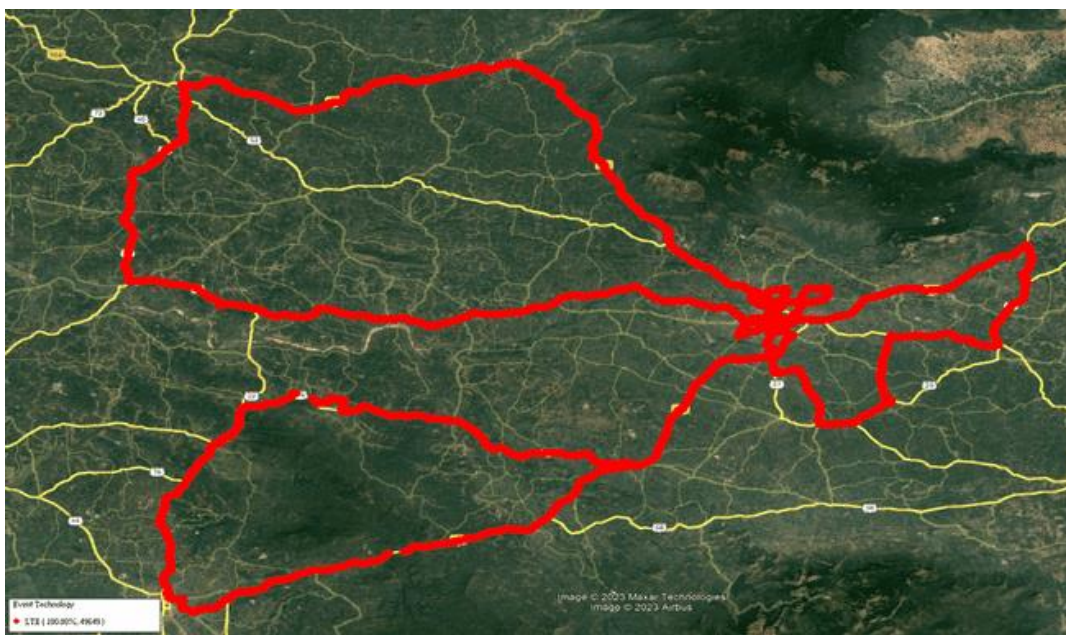
VIL

Technology	Time Spent
4G	98.74
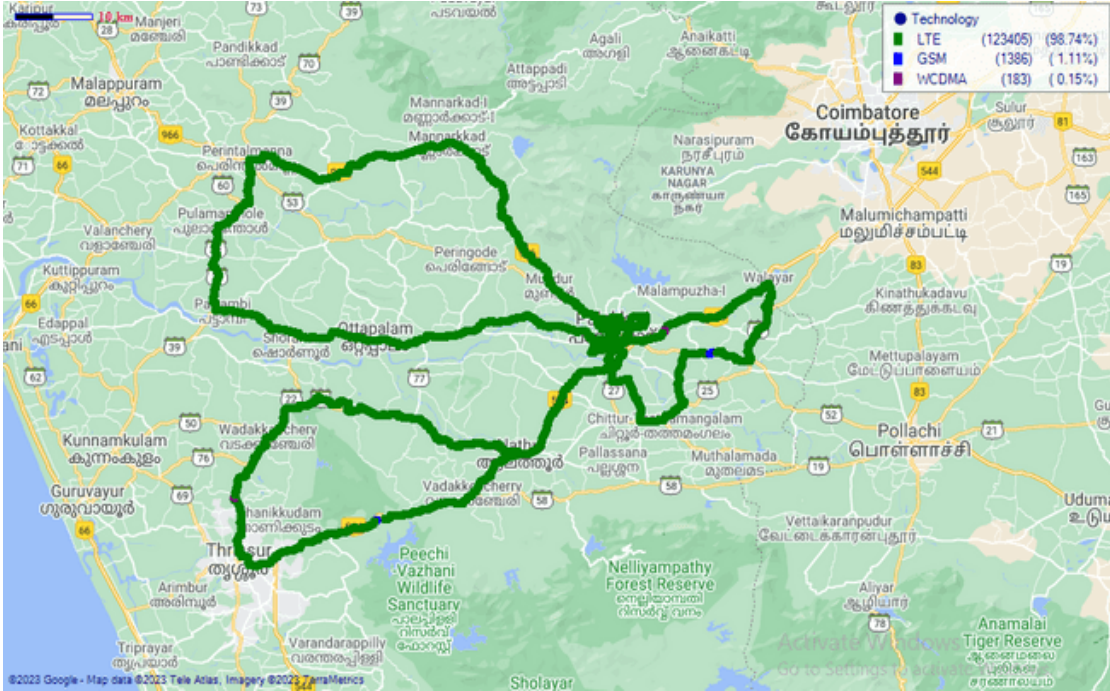
Airtel
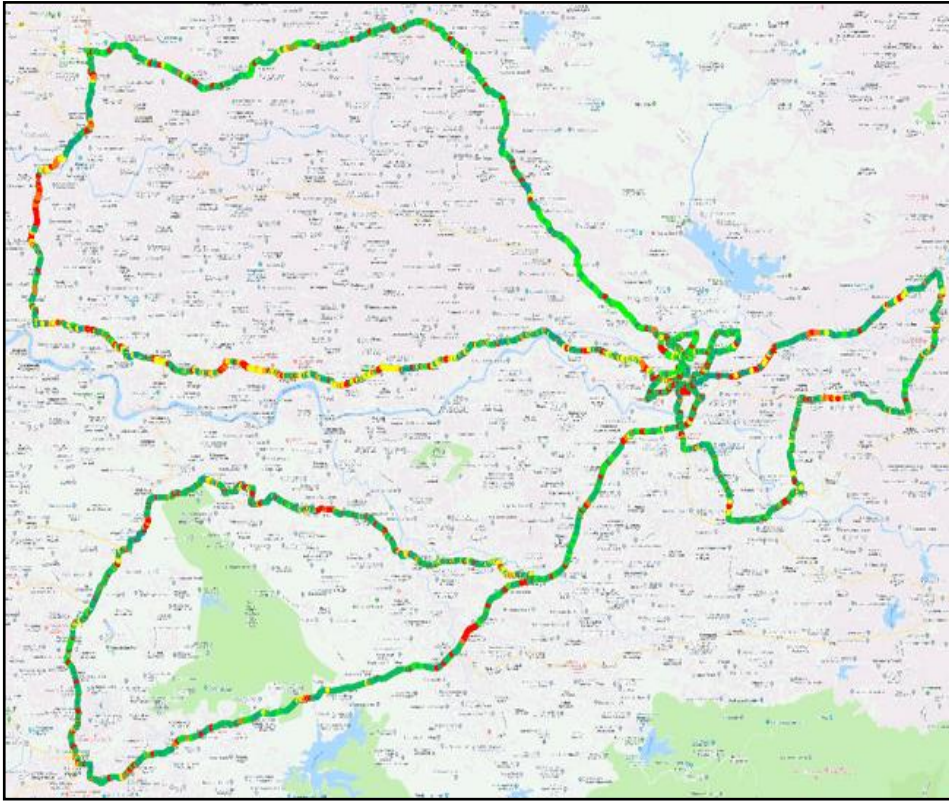
DL throughput	No. of Samples	%
0 to 1 Mbps	3420	13.45%
1 to 2 Mbps	1324	5.21%
2 to 3 Mbps	2687	10.57%
3 to 4 Mbps	4247	16.70%
4 to 8 Mbps	9646	37.94%
8 to 12 Mbps	1474	5.80%
>12 Mbps	2628	10.34%
Total	25426	
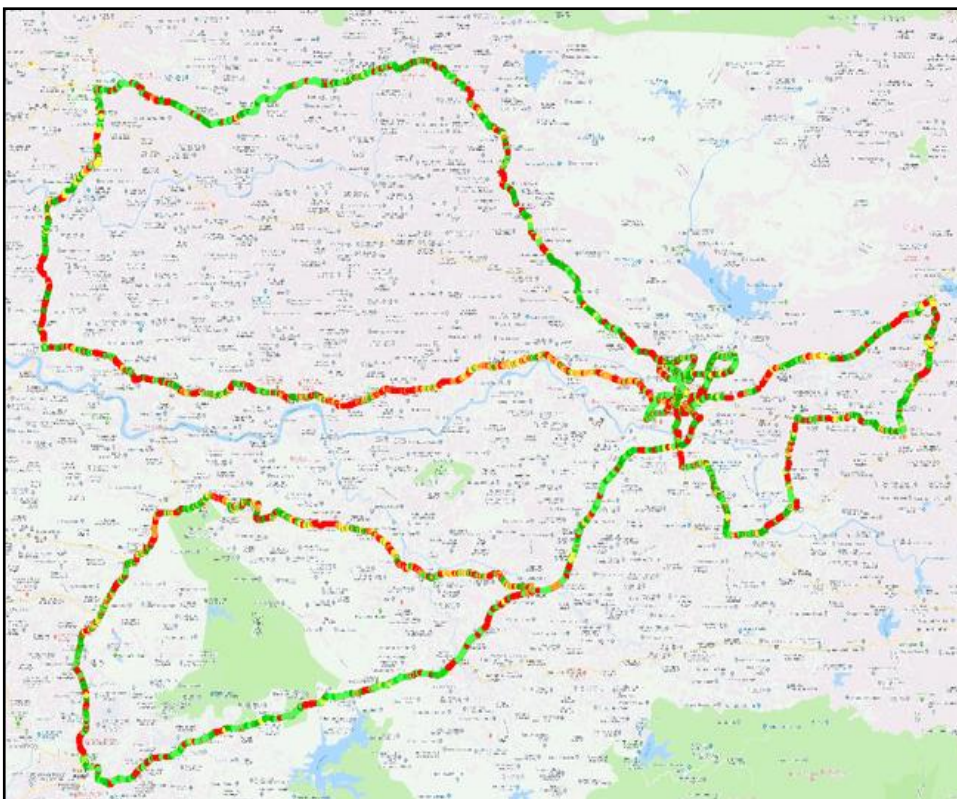
UL throughput	No. of samples	%
0 to 256 Kbps	5929	23.91%
250 to 512 Kbps	2246	9.06%
512 Kbps to 1 Mbps	2992	12.07%
1 to 2 Mbps	3502	14.13%
2 to 3 Mbps	2045	8.25%
3 to 4 Mbps	1850	7.00%
>4 Mbps	6228	25.12%
Total	24792	

BSNL
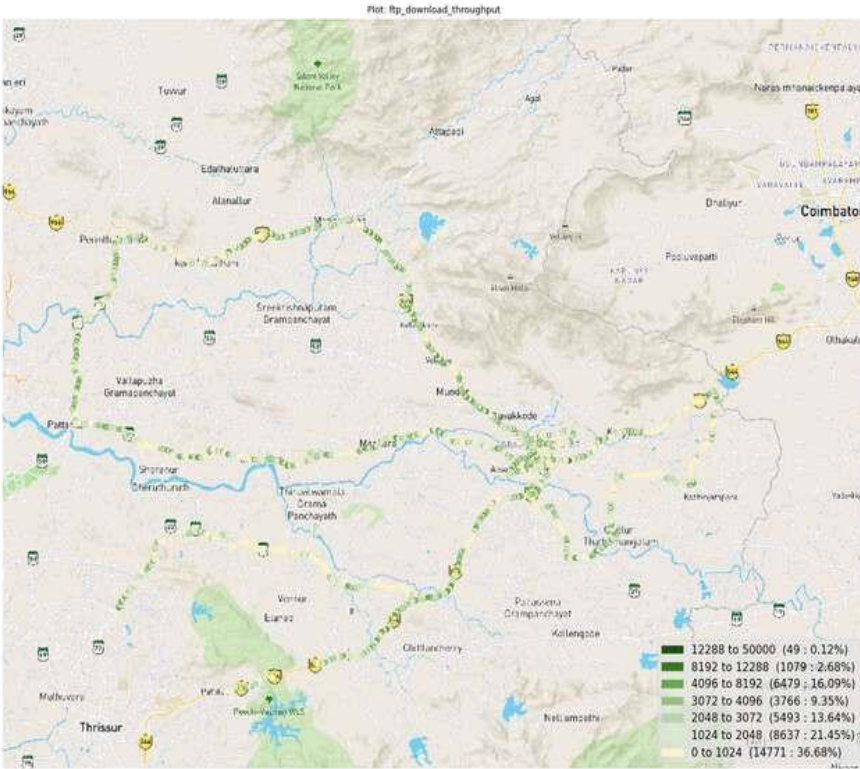
DL throughput	No. of Samples	%
0 to 1 Mbps	14771	36.68
1 to 2 Mbps	8637	21.45
2 to 3 Mbps	49	0.12
3 to 4 Mbps	5493	13.64
4 to 8 Mbps	3766	9.35
8 to 12 Mbps	6479	16.09
>12 Mbps	1079	2.68
Total	40274	100

UL throughput	No. of Samples	%
0 to 1 Mbps	15770	41.54
1 to 2 Mbps	10154	26.75
2 to 3 Mbps	2276	6.00
3 to 4 Mbps	3976	10.47
4 to 8 Mbps	496	1.31
8 to 12 Mbps	137	0.36
>12 Mbps	5153	13.57
Total	37962	100

BSNL
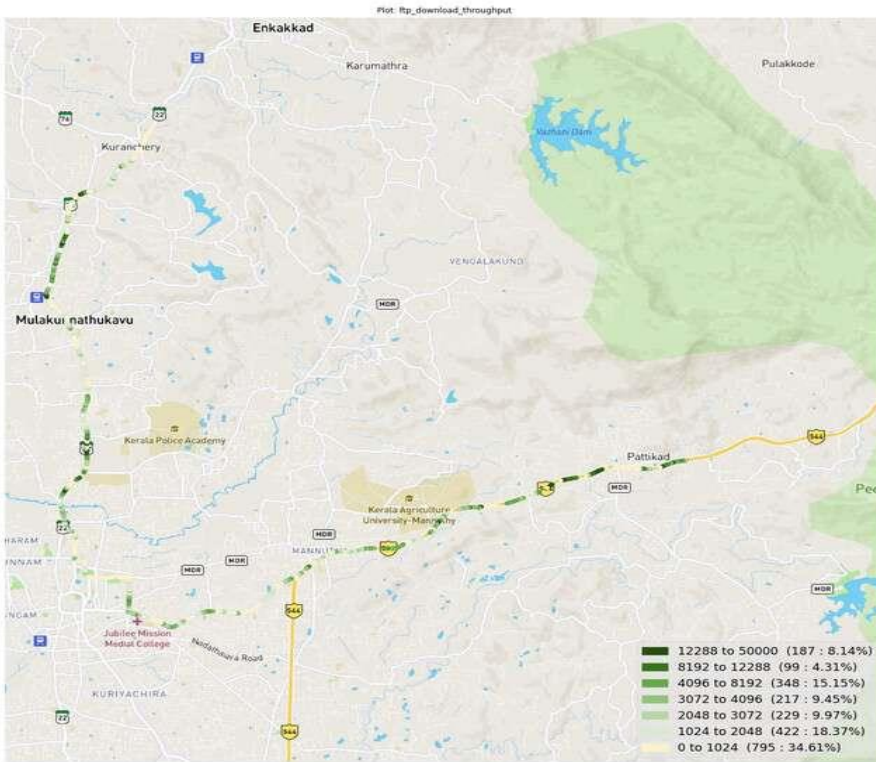
DL throughput	No. of Samples	%
0 to 1 Mbps	795	34.61
1 to 2 Mbps	422	18.37
2 to 3 Mbps	229	9.97
3 to 4 Mbps	217	9.45
4 to 8 Mbps	348	15.15
8 to 12 Mbps	99	4.31
>12 Mbps	187	8.14
Total	2297	100
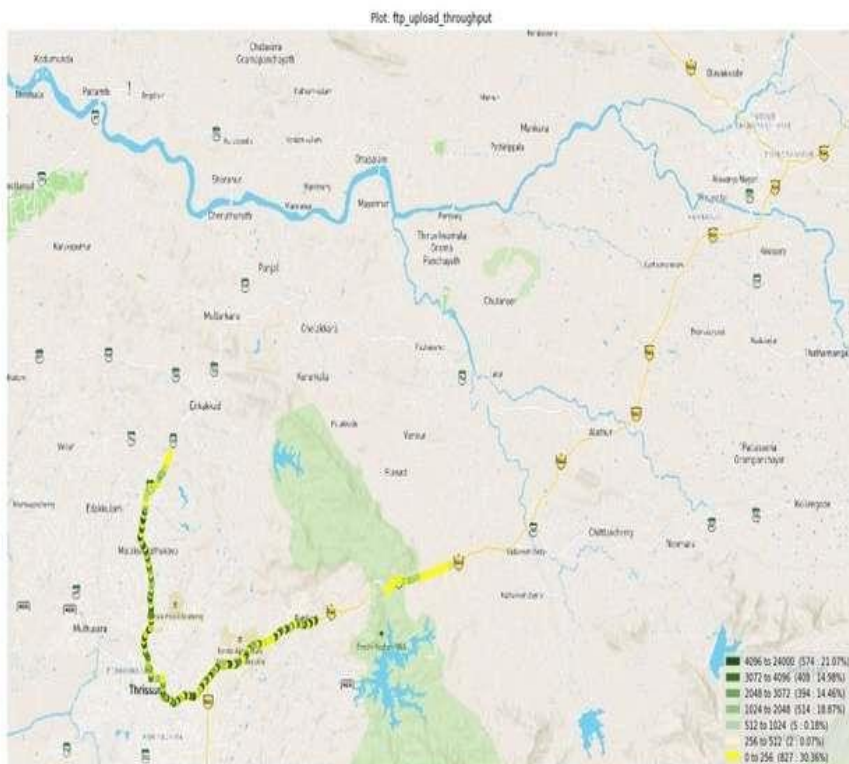
UL throughput	No. of Samples	%
0 to 1 Mbps	827	30.36
1 to 2 Mbps	2	0.07
2 to 3 Mbps	5	0.18
3 to 4 Mbps	514	18.87
4 to 8 Mbps	394	14.46
8 to 12 Mbps	408	14.98
>12 Mbps	574	21.08
Total	2724	100

JIO
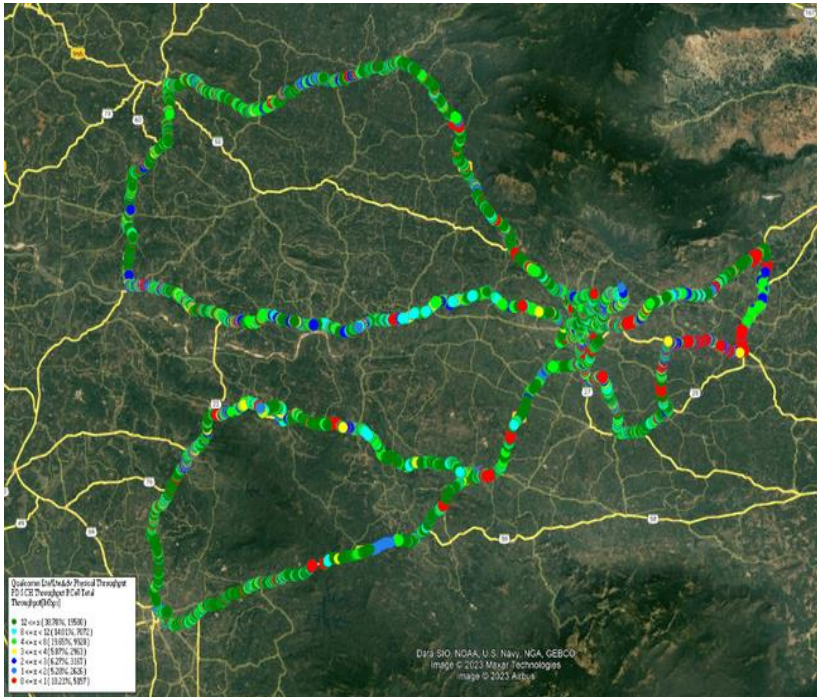
DL throughput	No. of Samples	%
0 to 1 Mbps	5157	10.21
1 to 2 Mbps	2626	5.20
2 to 3 Mbps	3167	6.27
3 to 4 Mbps	2963	5.87
4 to 8 Mbps	9920	19.65
8 to 12 Mbps	7072	14.01
>12 Mbps	19580	38.78
Total	50485	100
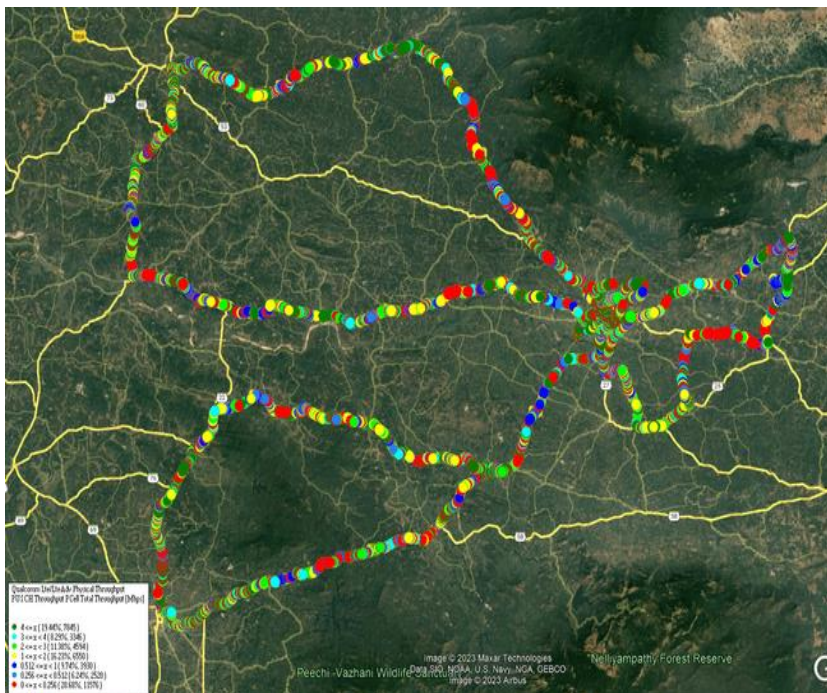
UL throughput	No. of samples	%
0 to 256 kbps Mbps	11576	28.68
256 to 512 kbps	2520	6.24
512 Kbps to 1 Mbps	3930	9.74
1 to 2 Mbps	6550	16.23
2 to 3 Mbps	4594	11.38
3 to 4 Mbps	3346	8.29
>4Mbps	7845	19.44
Total	40361	100

VIL
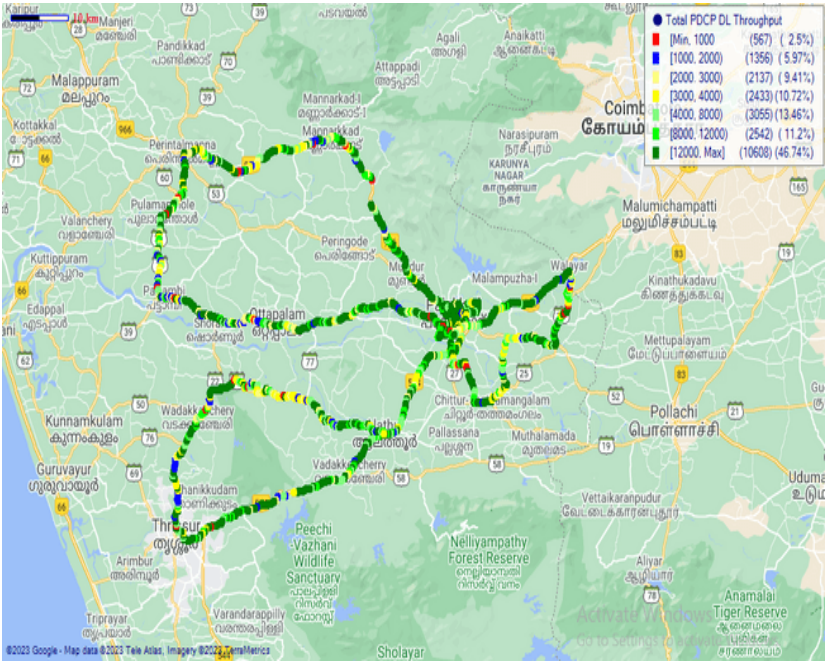
DL throughput	No. of Samples	%
0 to 1 Mbps	567	2.50%
1 to 2 Mbps	1356	5.97%
2 to 3 Mbps	2137	9.41%
3 to 4 Mbps	2433	10.72%
4 to 8 Mbps	3055	13.46%
8 to 12 Mbps	2542	11.20%
>12 Mbps	10608	46.74%
Total	22698	100%
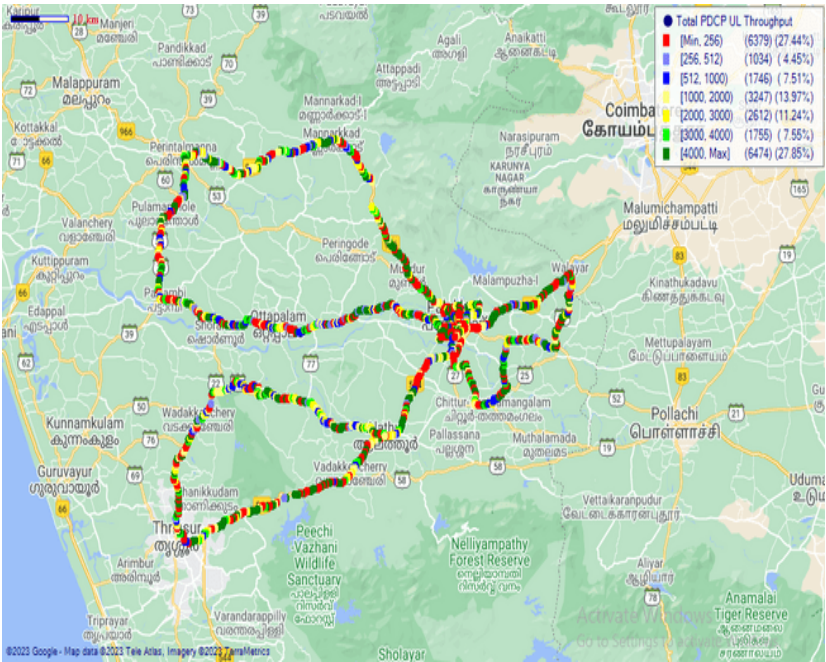
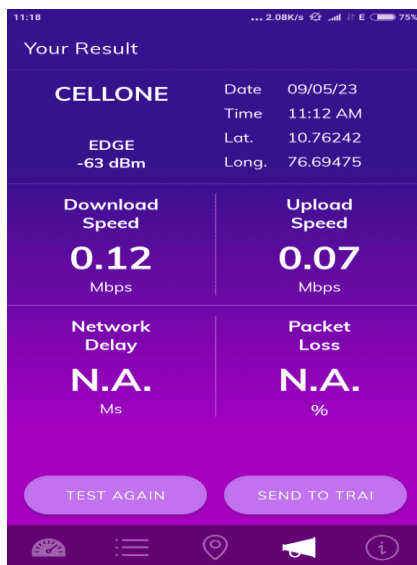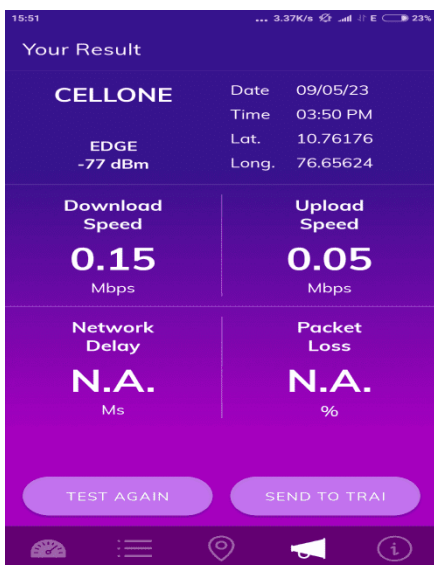| UL throughput	No. of samples	%
0 to 256 Kbps	6379	27.44%
250 to 512 Kbps	1034	4.45%
512 Kbps to 1 Mbps	1746	7.51%
1 to 2 Mbps	3247	13.97%
2 to 3 Mbps	2612	11.24%
3 to 4 Mbps	1755	7.55%
>4Mbps	6474	27.85%
Total	23247	100%

V. TRAI My Speed App Test Details-2G

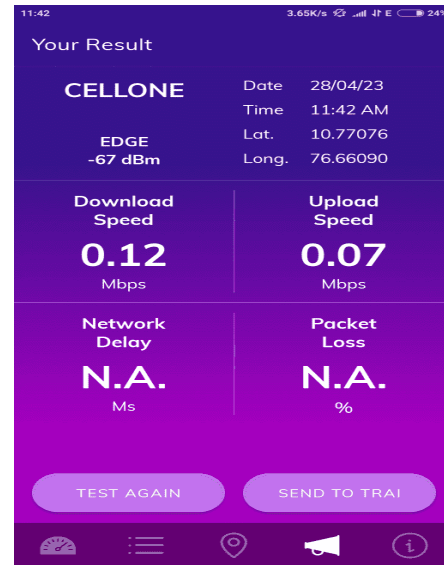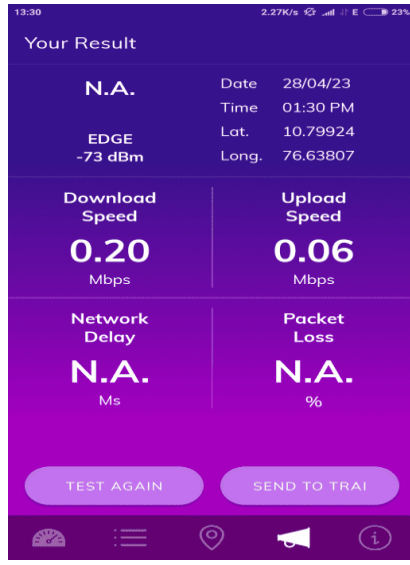| Techology-2G	Palakkad Fort	Govt Polytechnic College	KSRTC Bus Stand	Rajiv Gandhi Co-operative Hospital	Palakkad Railway Station	. Indira Gandhi Municipal Stadium
Download Speed (Mbps)	0.13	0.22	0.28	0.24	0.17	0.26
Upload Speed (Mbps)	0.03	0.19	0.24	0.25	0.20	0.17
Latency	NA	NA	NA	NA	NA	NA
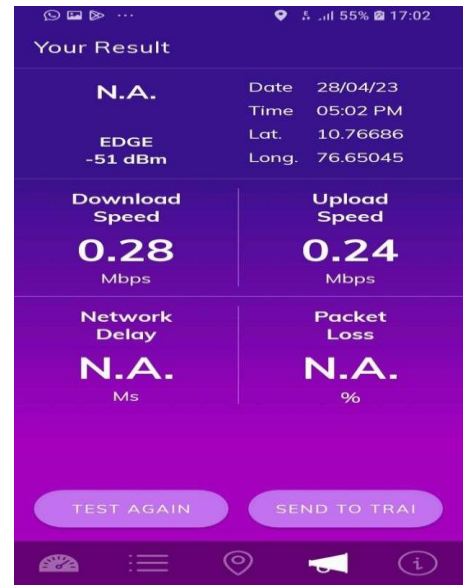
Palakkad Fort

Govt Polytechnic College

KSRTC Bus Stand

Rajiv Gandhi Co-operative Hospital

Palakkad Railway Station

Indira Gandhi Municipal Stadium

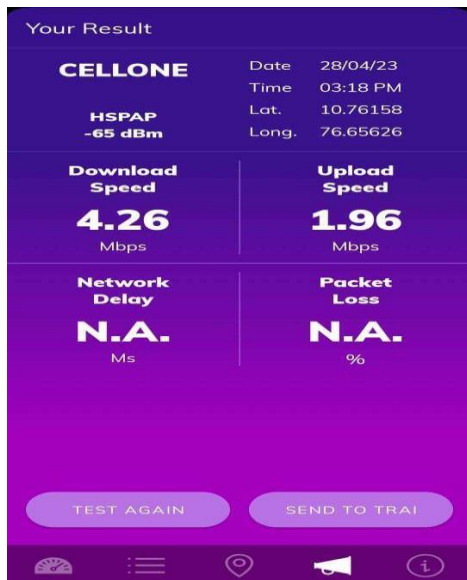| Techology-4G/VoLTE	Palakkad Fort	Govt Polytechnic College	KSRTC Bus Stand	Rajiv Gandhi Co-operative Hospital	Palakkad Railway Station	. Indira Gandhi Municipal Stadium
Download Speed (Mbps)	57.29	62.51	22.48	35.61	31.18	22.63
Upload Speed (Mbps)	6.78	28.88	5.11	14.78	3.50	6.47
Latency	27.6	34.4	41.6	33.2	48.6	38

Palakkad Fort   **Govt Polytechnic College**   **KSRTC Bus Stand**
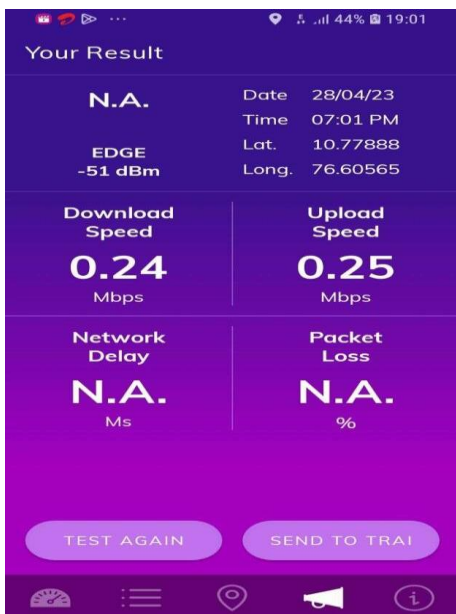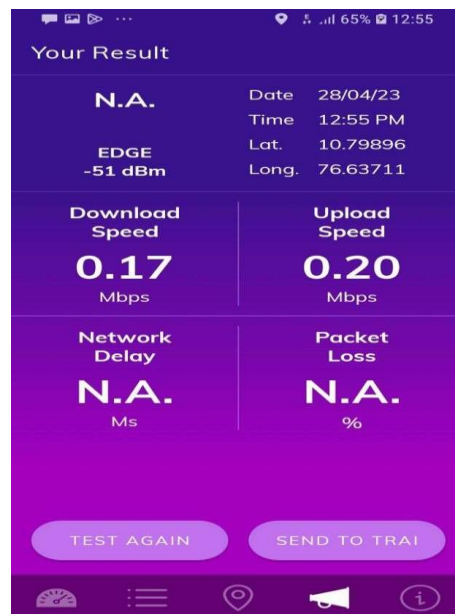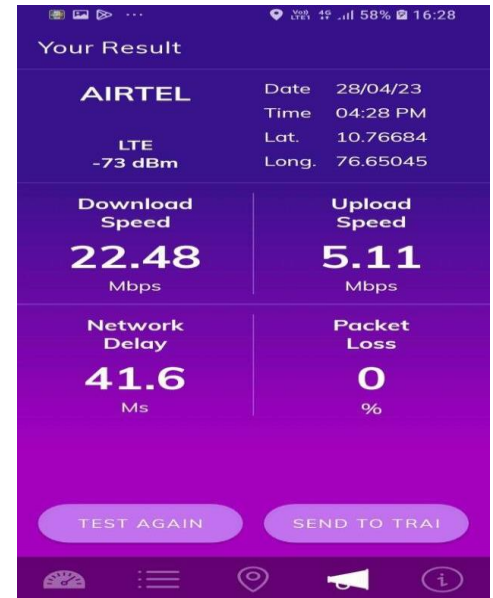
Rajiv Gandhi Co-operative Hospital   **Palakkad Railway Station**   **Indira Gandhi Municipal Stadium**
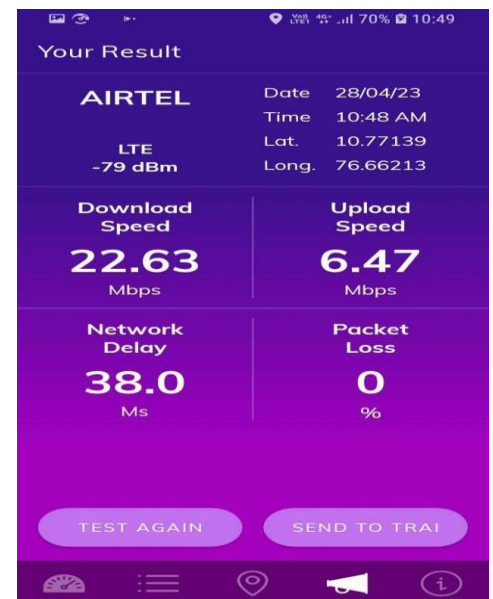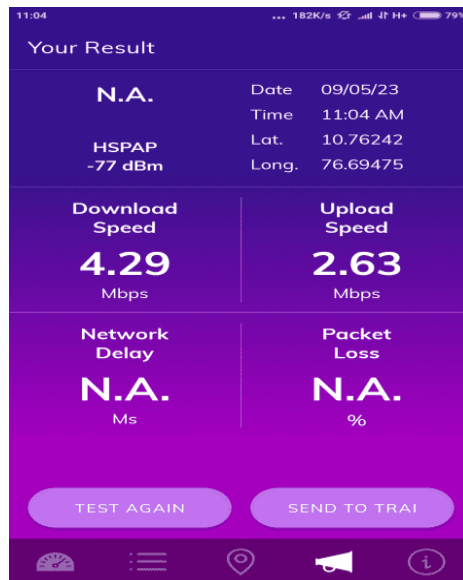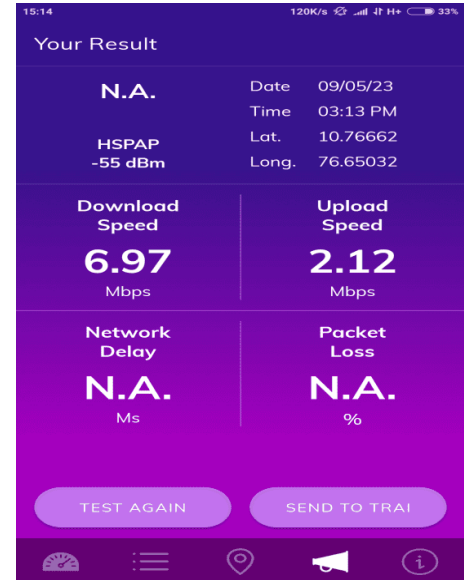
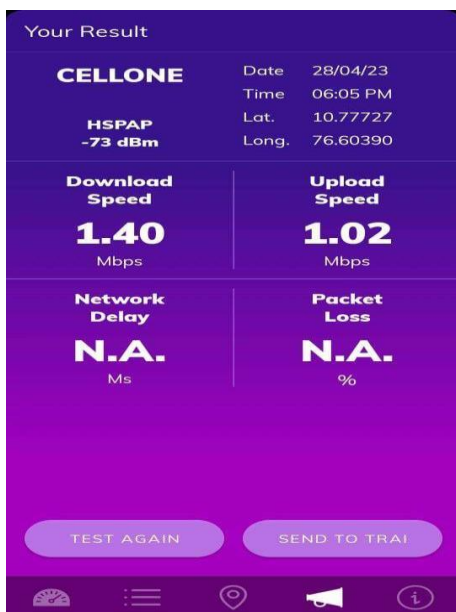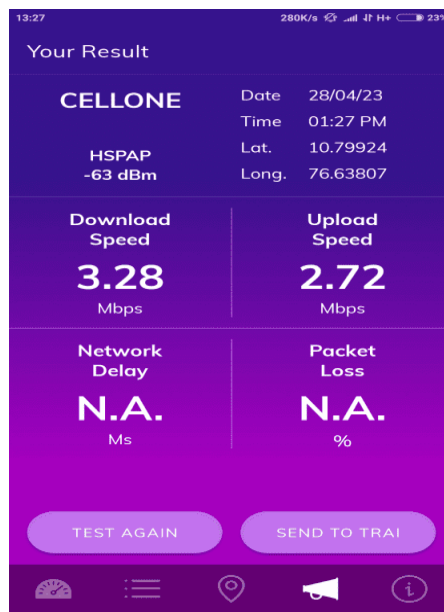# V. TRAI MySpeed App Test Details-2G

Techology-2G	Palakkad Fort	Govt Polytechnic College	KSRTC Bus Stand	Rajiv Gandhi Co-operative Hospital	Palakkad Railway Station	. Indira Gandhi Municipal Stadium
Download Speed (Kbps)	150	120	140	170	200	120
Upload Speed (kbps)	50	70	10	50	60	70
Latency(ms)	NA	NA	NA	NA	NA	NA

Palakkad Fort

Govt Polytechnic College

KSRTC Bus Stand

Rajiv Gandhi Co-operative Hospital

Palakkad Railway Station
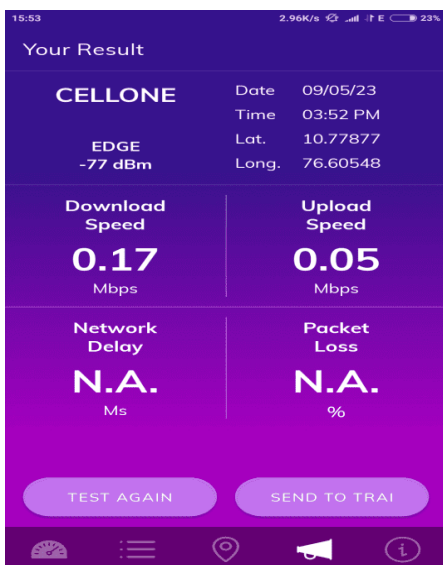
Indira Gandhi Municipal Stadium

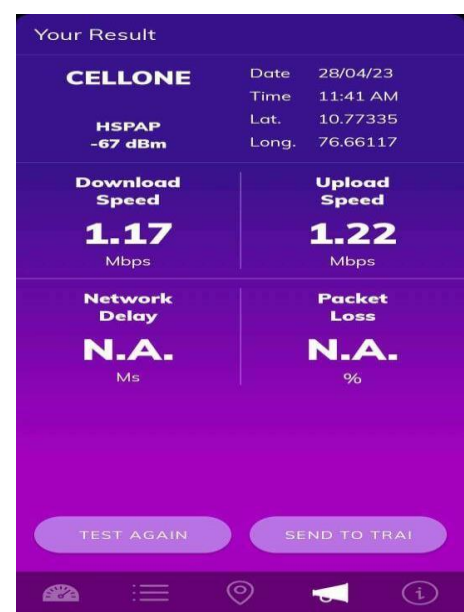| Techology-4G/VoLTE	Palakkad Fort	Govt Polytechnic College	KSRTC Bus Stand	Rajiv Gandhi Co-operative Hospital	Palakkad Railway Station	. Indira Gandhi Municipal Stadium
Download Speed (Mbps)	4.26	4.29	6.97	1.40	3.28	1.17
Upload Speed (Mbps)	1.96	2.63	2.12	1.02	2.72	1.22
Latency(ms)	NA	NA	NA	NA	NA	NA

Palakkad Fort

Govt Polytechnic College

KSRTC Bus Stand

Rajiv Gandhi Co-operative Hospital

Palakkad Railway Station

Indira Gandhi Municipal Stadium

Techology-4G/VoLTE	Palakkad Fort	Govt Polytechnic College	KSRTC Bus Stand	Rajiv Gandhi Co-operative Hospital	Palakkad Railway Station	. Indira Gandhi Municipal Stadium
Download Speed (Mbps)	36.19	22.8	17.58	22.04	16.09	20.38
Upload Speed (Mbps)	10.77	23.23	8.49	5.15	3.24	23.17
Latency(ms)	25	53.5	33.6	37.2	36.4	32.8

Palakkad Fort

JIO	Date	28/04/23
	Time	02:50 PM
LTE	Lat.	10.76160
-69 dBm	Long.	76.65642

Download Speed	Upload Speed
36.19 Mbps	10.77 Mbps
Network Delay	Packet Loss
25.0 Ms	0 %

Govt Polytechnic College

JIO	Date	28/04/23
	Time	09:07 AM
LTE	Lat.	10.76577
-90 dBm	Long.	76.69513

Download Speed	Upload Speed
22.80 Mbps	23.23 Mbps
Network Delay	Packet Loss
53.5 Ms	0 %

KSRTC Bus Stand

JIO	Date	28/04/23
	Time	03:40 PM
LTE	Lat.	10.76727
-73 dBm	Long.	76.64982

Download Speed	Upload Speed
17.58 Mbps	8.49 Mbps
Network Delay	Packet Loss
33.6 Ms	0 %

Rajiv Gandhi Co-operative Hospital

Your Result

JIO	Date	28/04/23
	Time	05:17 PM
LTE	Lat.	10.77525
-96 dBm	Long.	76.60499

Download Speed	Upload Speed
22.04 Mbps	5.15 Mbps
Network Delay	Packet Loss
37.2 Ms	0 %

Palakkad Railway Station

JIO	Date	28/04/23
	Time	12:42 PM
LTE	Lat.	10.79863
-80 dBm	Long.	76.63748

Download Speed	Upload Speed
16.09 Mbps	3.24 Mbps
Network Delay	Packet Loss
36.4 Ms	0 %

Indira Gandhi Municipal Stadium

JIO	Date	28/04/23
	Time	11:04 AM
LTE	Lat.	10.77140
-66 dBm	Long.	76.66245

Download Speed	Upload Speed
20.38 Mbps	23.17 Mbps
Network Delay	Packet Loss
32.8 Ms	0 %

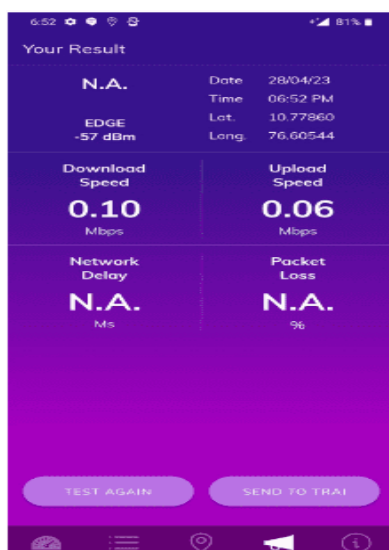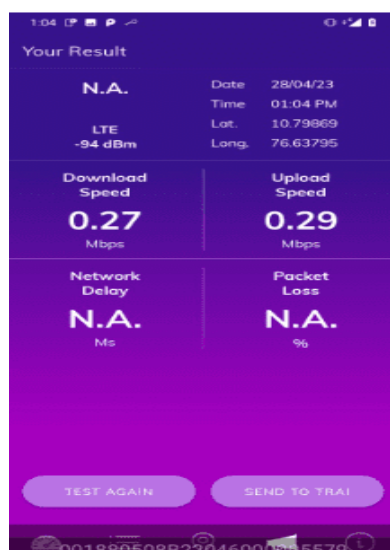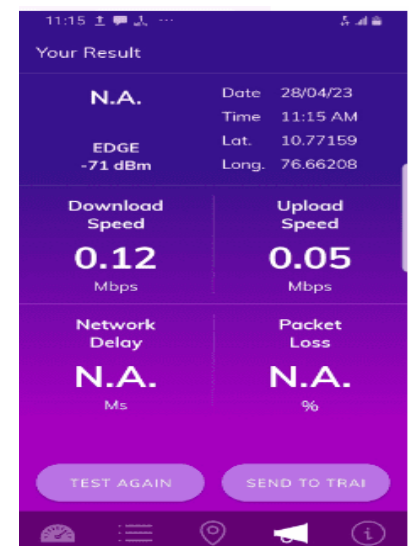| Techology-2G	Palakkad Fort	Govt Polytechnic College	KSRTC Bus Stand	Rajiv Gandhi Co-operative Hospital	Palakkad Railway Station	. Indira Gandhi Municipal Stadium
Download Speed (Mbps)	0.15	0.21	0.11	0.10	0.27	0.12
Upload Speed (Mbps)	0.15	0.08	0.03	0.06	0.29	0.05
Latency	NA	NA	NA	NA	NA	NA
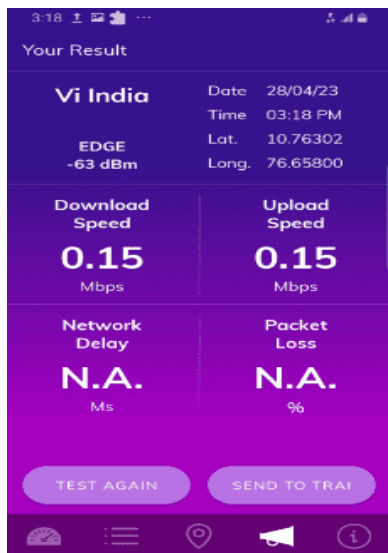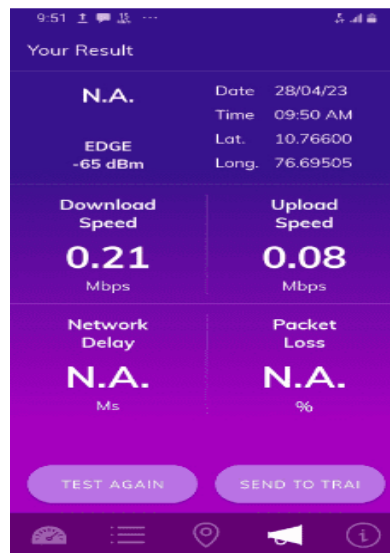
Palakkad Fort **Govt Polytechnic College** **KSRTC Bus Stand**

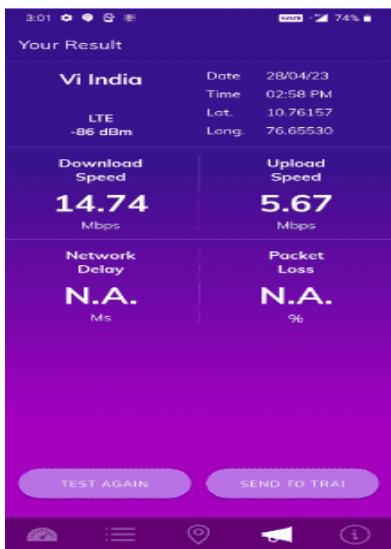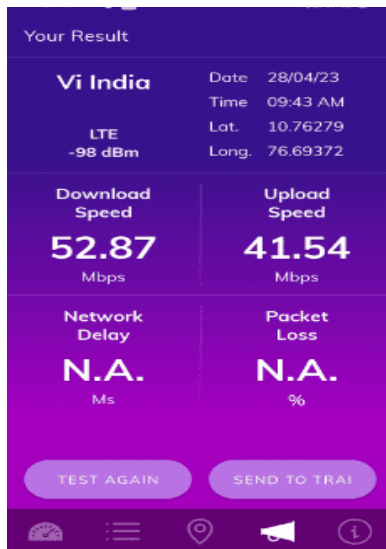**Rajiv Gandhi Co-operative Hospital** **Palakkad Railway Station** **Indira Gandhi Municipal Stadium**
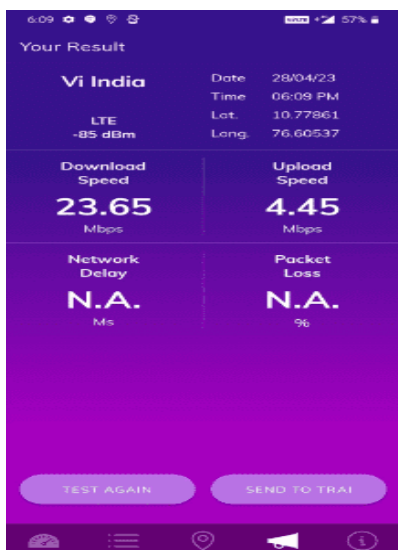
Techology-4G/VoLTE	Palakkad Fort	Govt Polytechnic College	KSRTC Bus Stand	Rajiv Gandhi Co-operative Hospital	Palakkad Railway Station	. Indira Gandhi Municipal Stadium
Download Speed (Mbps)	14.74	52.87	12.64	23.65	14.65	14.57
Upload Speed (Mbps)	5.67	41.54	4.64	4.45	6.87	3.58
Latency	NA	NA	NA	NA	NA	NA

Palakkad Fort

Govt Polytechnic College

KSRTC Bus Stand

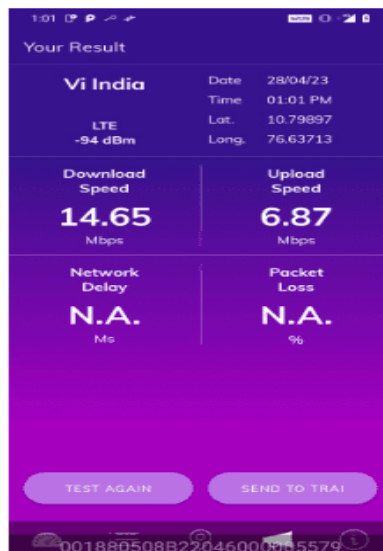### Rajiv Gandhi Co-operative Hospital

Palakkad Railway Station

Indira Gandhi Municipal Stadium