Operator Assisted Drive Test Report

For

Goa

17th to 20th Oct 2023
Dabolim - Banda NH(66) - 130 Kms
(17th Oct 2023)
Goa & Surrounding Area - 230 Kms
(18th to 20th Oct 2023)

TRAI RO, Bengaluru

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 2G/3G/4G TSPs have met the Rx Quality except JIO 4G & VIL 4G.

The Operator Assisted Drive Test has been carried out by the Regional Office, Bangalore with the help of Service Providers from **17th to 20th Oct 2023**. The drive test covered the route of **360 Kms** including NH of **130 Kms** & **6** hotspots. Approximately **550** calls were made for each of the **7** networks: three 2G networks, one 3G network, and three LTE networks covering four TSPs.

| Overview | Voice Summary | Data Summary |

Overview

Regional Office, TRAI Bengaluru conducted Operator Assisted Drive Test from **17th to 20th Oct 2023** covering various locations in **Goa & 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 a wait time of 10 sec between calls in all technologies. The drive test covered a drive route of approximately **360 KMs** including **NH** of **130 Kms** over a period of 4 days from **17th to 20th Oct 2023**. Approximately **550** calls were made for each of the **7** networks: three 2G (Lock Mode) networks, one 3G (Dual mode) network, and three 4G networks covering 4 unique TSPs.

Data Tests: Dynamic data test (Test Data on Move) was conducted for **360 KMs** including **NH** of **130 Kms** over a period of 4 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
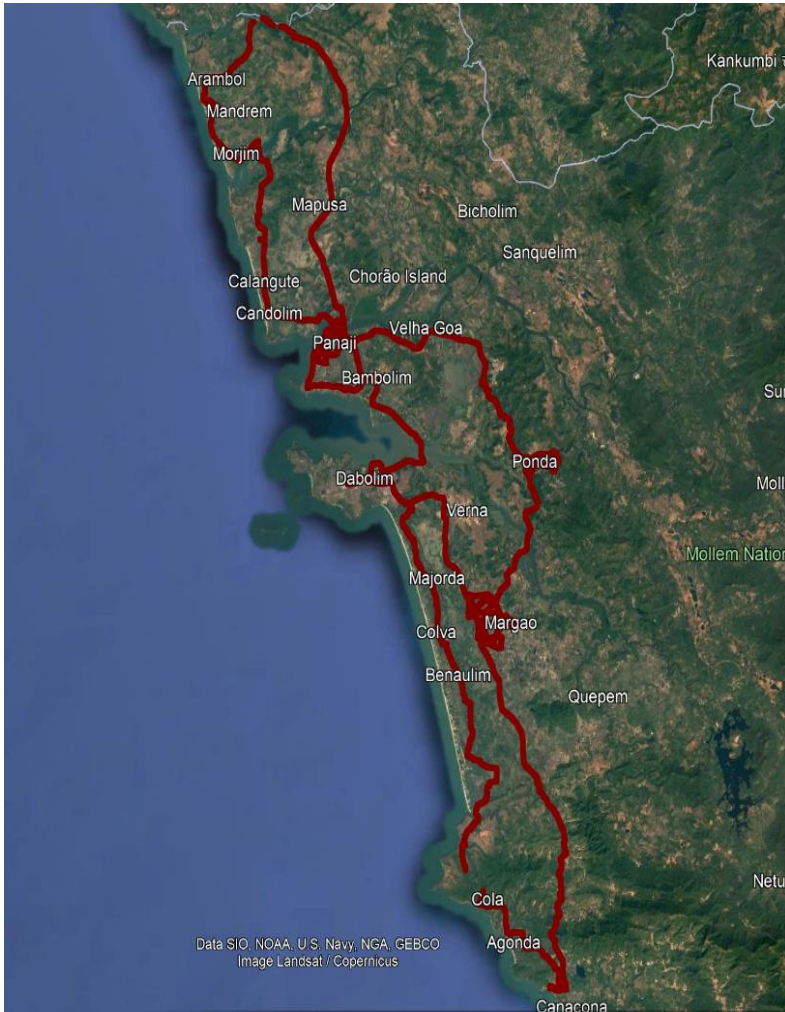
Areas covered	
Dabolim	Bambolim
Cortalim	Varca
Pernem	Colva
Arambol	Colo
Morjim	Panaji City,
Baga Beach	Ponda
Calangute	Margao
Candolim	Banda
Panaji KTC Bus Stand	Dodamarg
Palolem	Bicholim

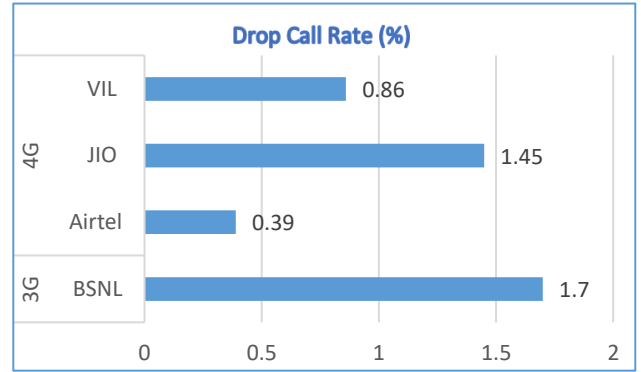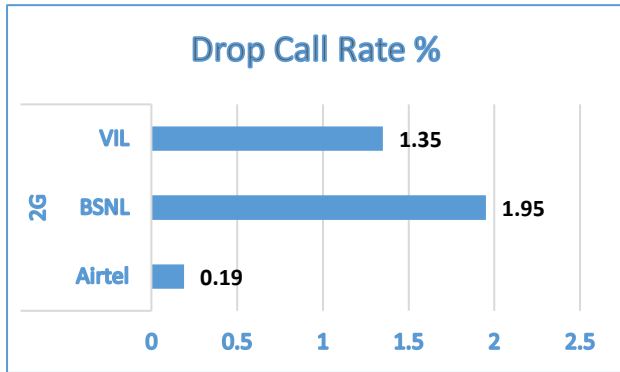## Data Service Test- Static Locations
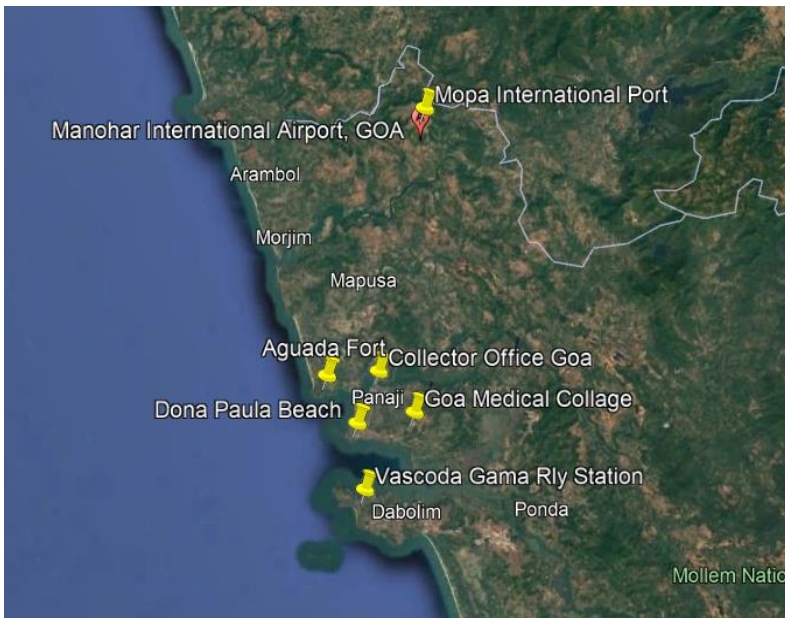
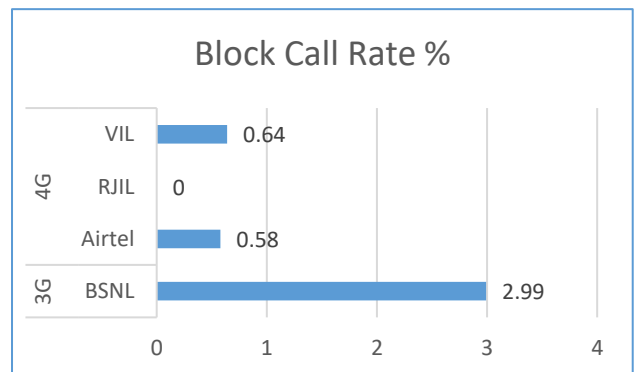| |
| --- |
| 1. Goa Madical College, Dabolim |
| 2. Vasco Railway Station |
| 3. Dona Paula Beach |
| 4. Collectorate Office |
| 5. Aguada Fort |
| 6. Mopa International Airport |

Voice Calls

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

Drop Call Rate % (2G)
- VIL: 1.35
- BSNL: 1.95
- Airtel: 0.19

Drop Call Rate (%)
- 4G VIL: 0.86
- 4G JIO: 1.45
- 4G Airtel: 0.39
- 3G BSNL: 1.7

Block Call Rate % (2G)
- VIL: 1.55
- BSNL: 2.76
- Airtel: 0.56

Block Call Rate %
- 4G VIL: 0.64
- 4G RJIL: 0
- 4G Airtel: 0.58
- 3G BSNL: 2.99
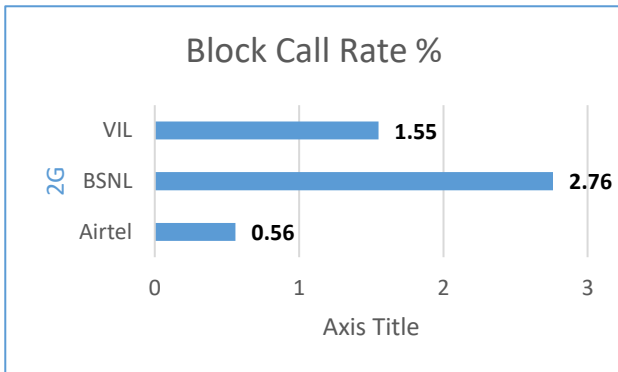
KPIs	2G			3G	4G		
	Airtel	**BSNL**	**VIL**	**BSNL**	**Airtel**	**RJIL**	**VIL**
Drop Call Rate %	0.19	1.95	1.35	1.7	0.39	1.45	0.86
Block Call Rate %	0.56	2.76	1.55	2.99	0.58	0.00	0.64

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%	75.88	60.02	70.69

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

TSPs	3G	4G		
	BSNL	**Airtel**	**JIO**	**VIL**
Coverage %	60.17	97.10	93.40	89.80

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

TSPs	3G	4G		
	BSNL	**Airtel**	**JIO**	**VIL**
Time Spent on 3G/4G%	96.25	100	100	98.95

Summary

Voice Call	2G		
	Airtel	**BSNL**	**VIL**
Call Attempt	528	687	453
Blocked Call Rate (%)	0.56	2.76	1.55
CSSR% (Accessibility)	99.43	97.24	98.45
Drop Call Rate (%)	0.19	1.95	1.35
Rx Quality (%)	95.83	95.6	95.04
Mobility HOSR (%)	99.68	95.62	97.77

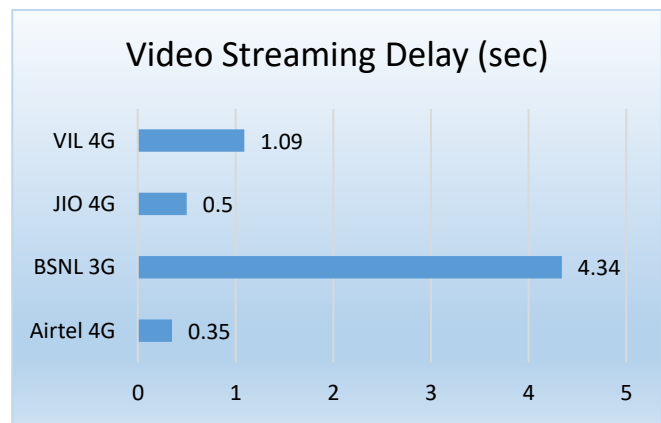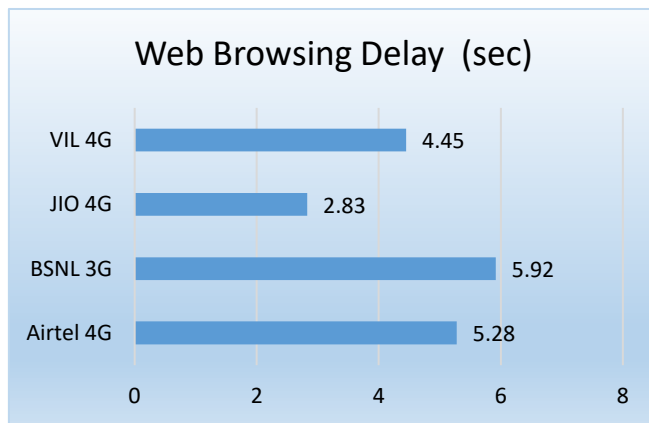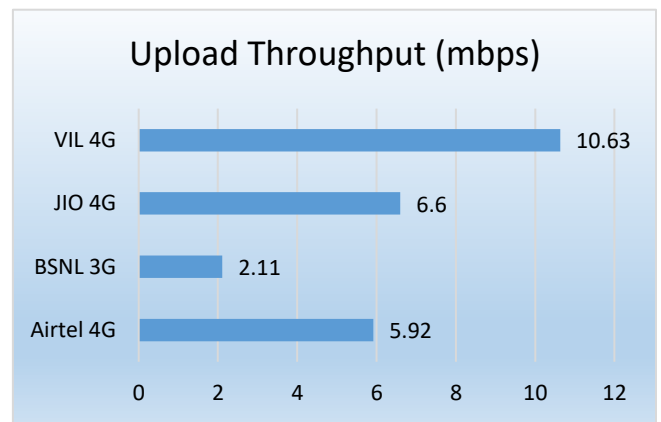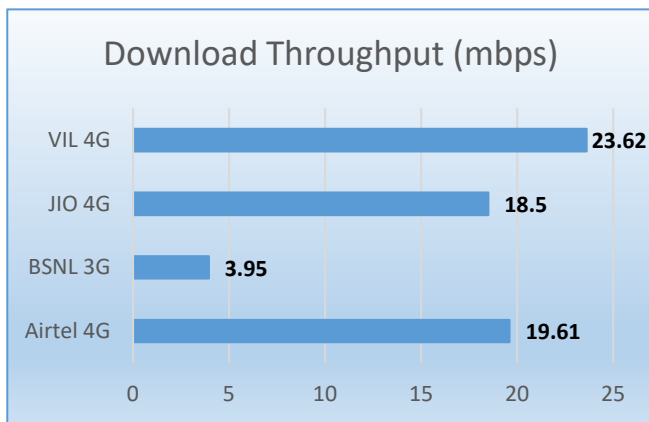| Voice Call	3G/4G			
	BSNL 3G	**Airtel 4G**	**JIO 4G**	**VIL 4G**
Call Attempt	668	513	550	466
Blocked Call Rate (%)	2.99	0.58	0.00	0.64
CSSR% (Accessibility)	97.01	99.41	100	99.36
Drop Call Rate (%)	1.7	0.39	1.45	0.86
Rx Quality (%)	95.01	95.98	**88.64**	**89.08**
Mobility HOSR (%)	95.08	100	98.9	99.01

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)

VIL 4G	23.62
JIO 4G	18.5
BSNL 3G	3.95
Airtel 4G	19.61

(x-axis: 0, 5, 10, 15, 20, 25)

Upload Throughput (mbps)

VIL 4G	10.63
JIO 4G	6.6
BSNL 3G	2.11
Airtel 4G	5.92

(x-axis: 0, 2, 4, 6, 8, 10, 12)

Web Browsing Delay (sec)

VIL 4G	4.45
JIO 4G	2.83
BSNL 3G	5.92
Airtel 4G	5.28

(x-axis: 0, 2, 4, 6, 8)

Video Streaming Delay (sec)

VIL 4G	1.09
JIO 4G	0.5
BSNL 3G	4.34
Airtel 4G	0.35

(x-axis: 0, 1, 2, 3, 4, 5)

Latency (msec)

VIL 4G	66.13
JIO 4G	97
BSNL 3G	206.45
Airtel 4G	34.36

(x-axis: 0, 50, 100, 150, 200, 250)
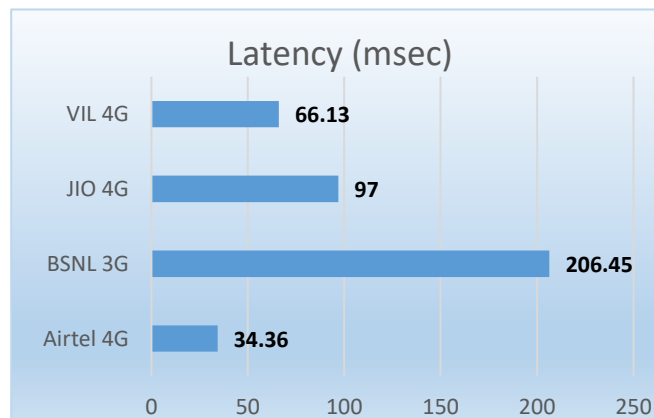
Summary

Data Services Static	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	13.79	154.21	100.1
Upload Throughput (kbps)	11.74	94.34	56.83
Web Browsing Delay (sec)	32.01	56.17	34.7
Latency (msec)	240.06	243.96	185

Data Services Static	3G/4G			
	BSNL 3G	Airtel 4G	JIO 4G	VIL 4G
Download Throughput (mbps)	3.95	19.61	18.5	23.62
Upload Throughput (mbps)	2.11	5.92	6.6	10.63
Web Browsing Delay (sec)	5.92	5.28	2.83	4.45
Video Streaming Delay (sec)	4.34	0.35	0.5	1.09
Latency (msec)	206.45	34.36	97	66.13

Data Services Dynamic (Data Test on Move)	3G/4G			
	BSNL 3G	Airtel 4G	JIO 4G	VIL 4G
Download Throughput (mbps)	2.35	7.41	20.6	14.66
Upload Throughput (mbps)	0.735	3.72	4.1	3.18

Summary

Data Services Static – Goa Medical College	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	14.7	122.48	159.6
Upload Throughput (kbps)	11.23	95.62	64.68
Web Browsing Delay (sec)	32.07	75.47	30.25
Latency (ms)	238.4	226	173

Data Services Static – Goa Medical College	4G			
	BSNL 3G	Airtel	JIO	VIL
Download Throughput (Mbps)	3.21	11.26	11.69	16.81
Upload Throughput (Mbps)	2.04	5.87	5.01	3.33
Web Browsing Delay (sec)	5.89	5.44	3.3	4.15
Video Streaming Delay (sec)	5.39	0.37	0.64	0.93
Latency (ms)	248	35.2	106.96	61

Data Services Static – Vasco Railway Station	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	13.08	93.24	80.24
Upload Throughput (kbps)	11.18	75.38	69.068
Web Browsing Delay (sec)	32.01	71.43	27.538
Latency (msec)	244	312	212

Data Services Static - Vasco Railway Station	4G			
	BSNL 3G	Airtel	JIO	VIL
Download Throughput (Mbps)	1.44	22.94	31.24	36.91
Upload Throughput (Mbps)	1	6.61	6.62	27.696
Web Browsing Delay (sec)	9.29	5.31	3.1	4.039
Video Streaming Delay (sec)	5.84	0.34	0.5	1.3912
Latency (ms)	252	35.6	98	57.4

Summary

Data Services Static – Dona Poula Beach	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	12.96	184.76	81.16
Upload Throughput (kbps)	11.22	87.34	42.28
Web Browsing Delay (sec)	32.01	47.67	35.05
Latency (ms)	241	217.40	145

Data Services Static – Dona Poula Beach	4G			
	BSNL 3G	Airtel	JIO	VIL
Download Throughput (Mbps)	8.82	19.27	17.22	37.42
Upload Throughput (Mbps)	2.56	5.85	4.9	16.95
Web Browsing Delay (sec)	4.51	5.25	2.58	3.72
Video Streaming Delay (sec)	3.44	0.37	0.38	0.96
Latency (ms)	243.40	34	89	50

Data Services Static – District Collector Office	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	14.44	184.36	93.76
Upload Throughput (kbps)	13.03	110.02	44.28
Web Browsing Delay (sec)	31.87	45.87	41.752
Latency (msec)	240	203	210

Data Services Static – District Collector Office	4G			
	BSNL 3G	Airtel	JIO	VIL
Download Throughput (Mbps)	4.51	16.27	14.74	8.21
Upload Throughput (Mbps)	2.16	5.65	7.7	3.03
Web Browsing Delay (sec)	4.35	5.25	2.86	5.03
Video Streaming Delay (sec)	3.86	0.34	0.48	1.12
Latency (ms)	276	31	105	71

Summary

Data Services Static – Fort Aguada	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	12.9	186.70	105.48
Upload Throughput (kbps)	12.03	103.34	68.02
Web Browsing Delay (sec)	32.07	40.40	35.83
Latency (ms)	238	261.40	181

Data Services Static – Fort Aguada	3G/4G			
	BSNL 3G	**Airtel**	**JIO**	**VIL**
Download Throughput (Mbps)	1.63	20.67	14.34	27.04
Upload Throughput (Mbps)	2.72	6.25	8.2	2.12
Web Browsing Delay (sec)	7.33	5.25	2.68	4.8
Video Streaming Delay (sec)	4.15	0.36	0.5	1.01
Latency (ms)	216	37	115	67

Data Services Static – Goa International Airport	2G		
	Airtel	**BSNL**	**VIL**
Download Throughput (kbps)	14.7	0.00	80.34
Upload Throughput (kbps)	11.83	0.00	52.64
Web Browsing Delay (sec)	32.07	0.00	38.17
Latency (msec)	238.4	0.00	189

Data Services Static – Goa International Airport	3G/4G			
	BSNL 3G	**Airtel**	**JIO**	**VIL**
Download Throughput (Mbps)	4.08	27.27	22	15.33
Upload Throughput (Mbps)	2.2	5.36	7.36	10.63
Web Browsing Delay (sec)	4.16	5.25	2.4	4.93
Video Streaming Delay (sec)	3.35	0.36	0.5	1.12
Latency (ms)	303	32	69	90

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	75.88
BSNL 2G	60.02
VIL 2G	70.69
Airtel 4G	97.10
BSNL 3 G	60.17
Jio 4G	93.40
VIL 4G	89.80

Coverage Distribution %

	Airtel 2G	BSNl 2G	VIL 2G	Airtel 4G	BSNL 3G	Jio 4G	VIL 4G
2G:[-95, >=Min] / 3G:[[-90,>=Min] / VoLTE:[[-110,>=Min]	3.54	12	10.71	2.9	39.83	6.62	10.2
2G:[-85, >=-95) / 3G:[-80,>=-90] / VoLTE:[-90,>-=-110]	20.58	25.98	18.6	40.63	23.18	41.61	42.1
2G:[-75, >=-85] / 3G:[-70,>=-80] / VoLTE:[-80,>=-90]	30.28	31.21	22.41	31.56	21.89	24.7	26.65
2G:[Max, >=-75] / 3G:Max, >=-70 / VoLTE: >=-80	45.6	30.81	48.28	24.91	15.1	27.05	21.05

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

Technology	Coverage Rate %
2G	75.88
4G	97.10

2G	**4G**

2G		
Overall RxLevel	**# Samples**	**% PDF**
[Max, >=-75]	5693752	45.60
[-75, >=-85)	3781369	30.28
[-85, >=-95)	2570185	20.58
[-95, >=Min)	442288	3.54
Total	12487594	100

4G/VoLTE		
Overall RSRP	**# Samples**	**% PDF**
[Max, >=-80]	3882074	24.912193
[-80, >=-90)	4917453	31.556466
[-90, >=-110)	6332030	40.634144
[-110, >=Min)	451471	2.8971969
Total	15583028	100

BSNL

Technology	Coverage Rate %
2G	62.02
3G	60.17
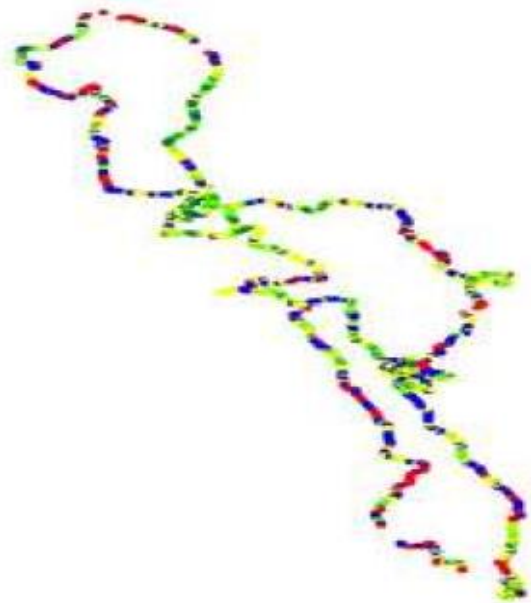
2G	**3G**

2G		
Overall RxLevel	**# Samples**	**% PDF**
[Max, >=-75]	11917	30.81
[-75, >=-85)	12074	31.21
[-85, >=-95)	10049	25.98
[-95, >=Min)	4642	12
Total	**38682**	**100**

3G		
Overall RSCP	**# Samples**	**% PDF**
[Max, >=-70]	8554	15.10
[-70, >=-80)	12410	21.89
[-80, >=-90)	13140	23.18
[-90, >=Min)	22583	39.83
Total	**56687**	**100**

JIO

Technology	Coverage Rate %
4G	93.4
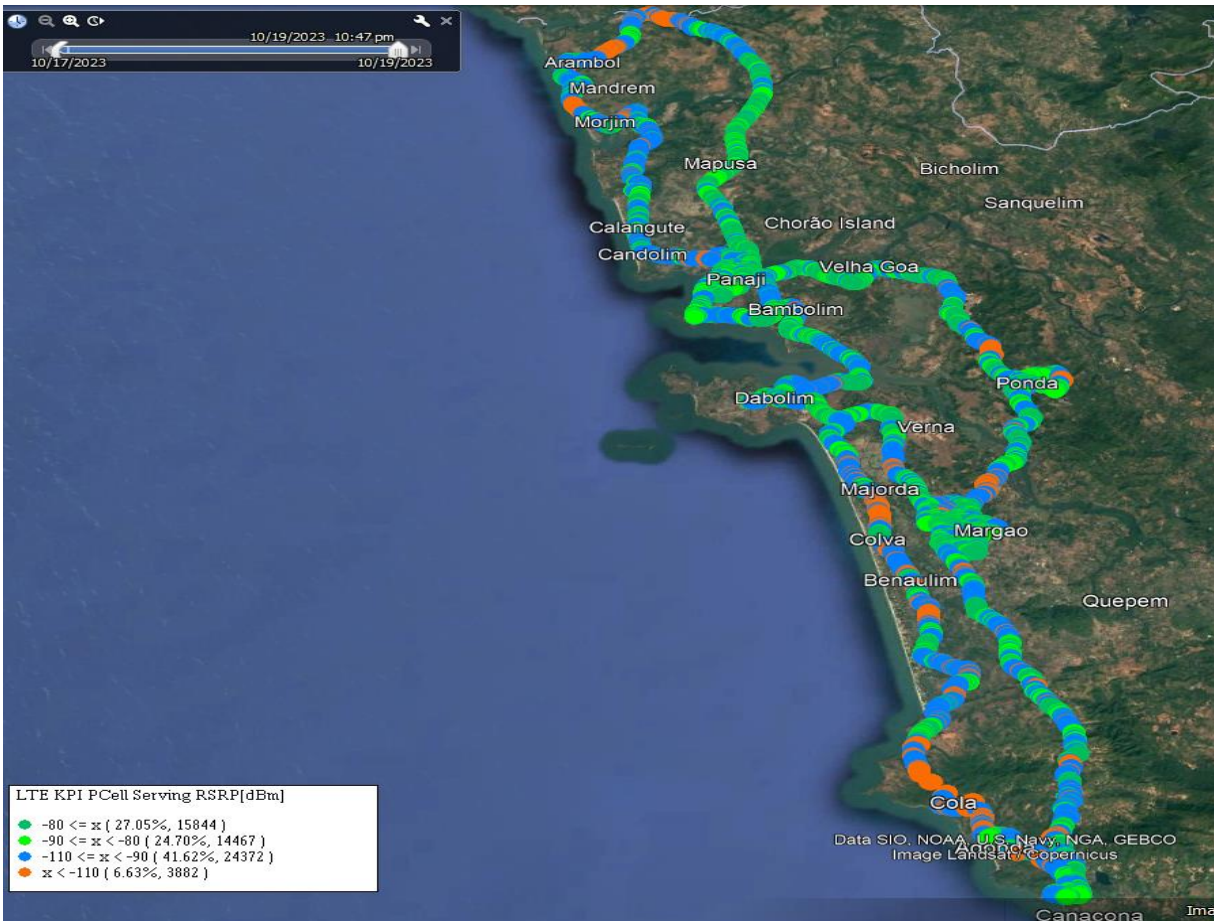
4G/VoLTE		
Overall RSRP	# Samples	% PDF
[Max, >=-80]	15844	27.05
[-80, >=-90)	14467	24.70
[-90, >=-110)	24372	41.61
[-110, >=Min)	3882	6.62
Total	**58565**	**100**

VIL

Technology	Coverage Rate %
2G	70.69
4G	89.80

2G	4G

RxLevSub (dBm)
- [Min, -95] [15409] [10.71%]
- [-95, -85] [26761] [18.6%]
- [-85, -75] [32247] [22.41%]
- [-75, Max] [69457] [48.28%]

Serving cell RSRP (dBm)
- [Min, -110] [114255] [10.20%]
- [-110, -90] [471717] [42.10%]
- [-90, -80] [298542] [26.65%]
- [-80, Max] [235881] [21.05%]
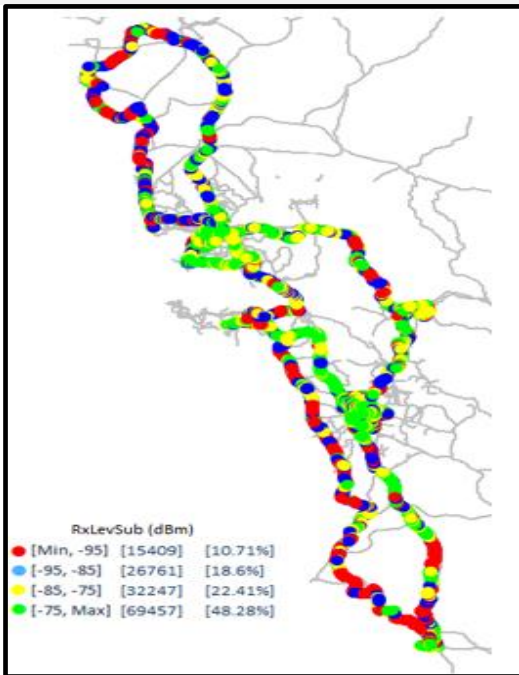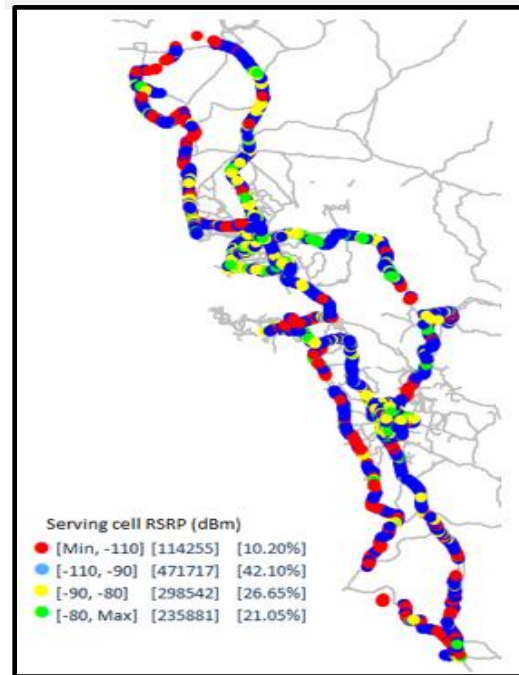
2G			4G/VoLTE		
Overall RxLevel	**# Samples**	**% PDF**	**Overall RSRP**	**# Samples**	**% PDF**
[Max, >=-75]	69457	48.28	[Max, >=-80]	235881	21.05
[-75, >=-85)	32247	22.41	[-80, >=-90)	298542	26.65
[-85, >=-95)	26761	18.60	[-90, >=-110)	471717	42.10
[-95, >=Min)	15409	10.71	[-110, >=Min)	114255	10.20
Total	143874	100	**Total**	1708102	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	95.83
BSNL 2G	95.60
VIL 2G	95.04
Airtel 4G	95.98
BSNL 3G	95.01
Jio 4G	88.64
VIL 4G	89.08

Rx Quality

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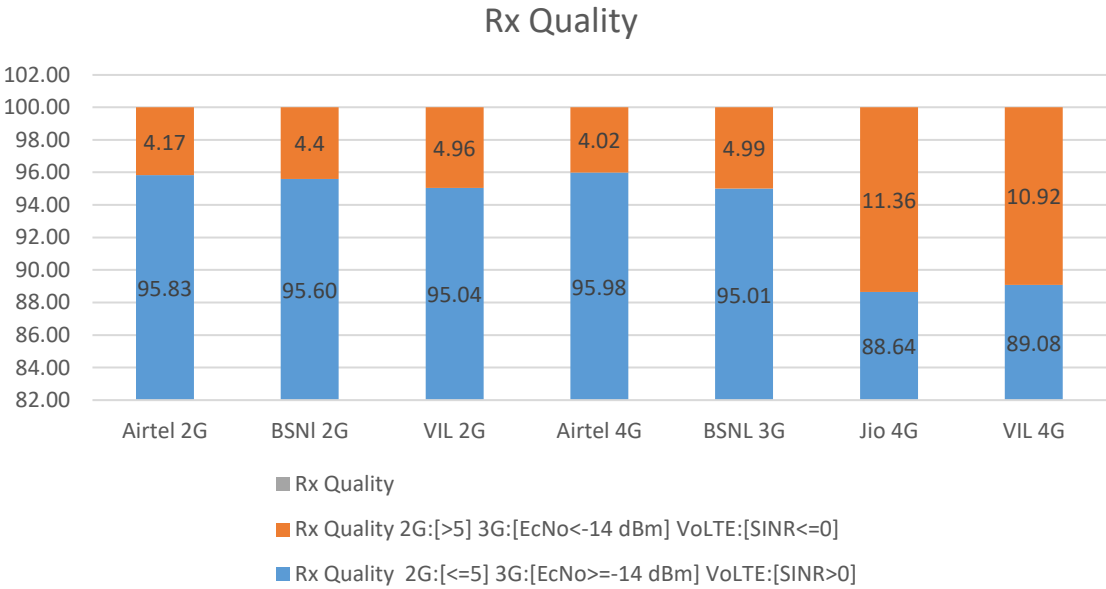
Airtel

Technology	Rx Quality %
2G	95.83
4G	95.98

2G	4G

Overall Rx Quality	# Samples	% PDF
(Min, <=2)	9161429	81.21
(2, <=3)	1001117	8.87
(3 , <=4)	360913	3.20
(4 , <=5)	287409	2.55
(5 , <=Max)	470295	4.17
Total	11281163	100

Overall SINR	# Samples	% PDF
(Min, <=0)	625689	4.024
(0, <=5)	6191903	39.821
(5, <=10)	3411815	21.942
(10, <=15)	3221479	20.718
(15, <=Max)	2098636	13.496
Total	15549522	100

BSNL

Technology	Rx Quality %
2G	95.60
3G	95.01

2G
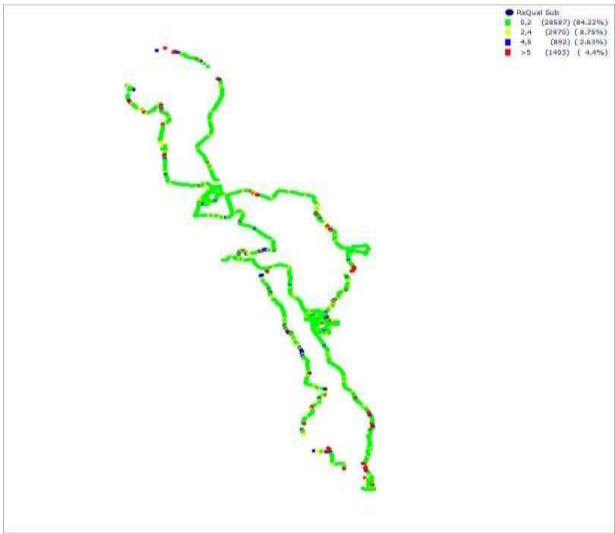
3G
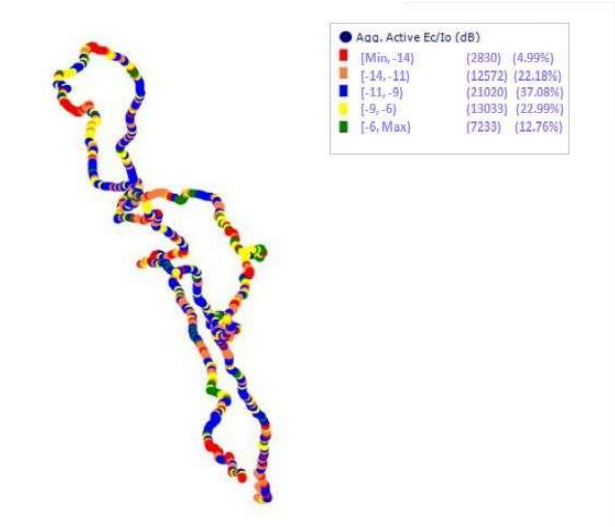
Overall Rx Quality	# Samples	% PDF
(Min, <=2)	28587	84.22
(2, <=3)	2970	8.75
(3 , <=4)	892	2.63
(4 , <=5)	1493	4.4
(5 , <=Max)	**33942**	**100**
Total	28587	84.22

Overall EcNo	# Samples	% PDF
(Max, <=-6)	7233	12.76
(-6, <=-9)	13033	22.99
(-9, <=-11)	21020	37.08
(-11, <=-14)	12572	22.18
(-14, <= Min)	2830	4.99
Total	**56688**	**100**

JIO

Technology	Rx Quality (%)
4G/4G	88.64
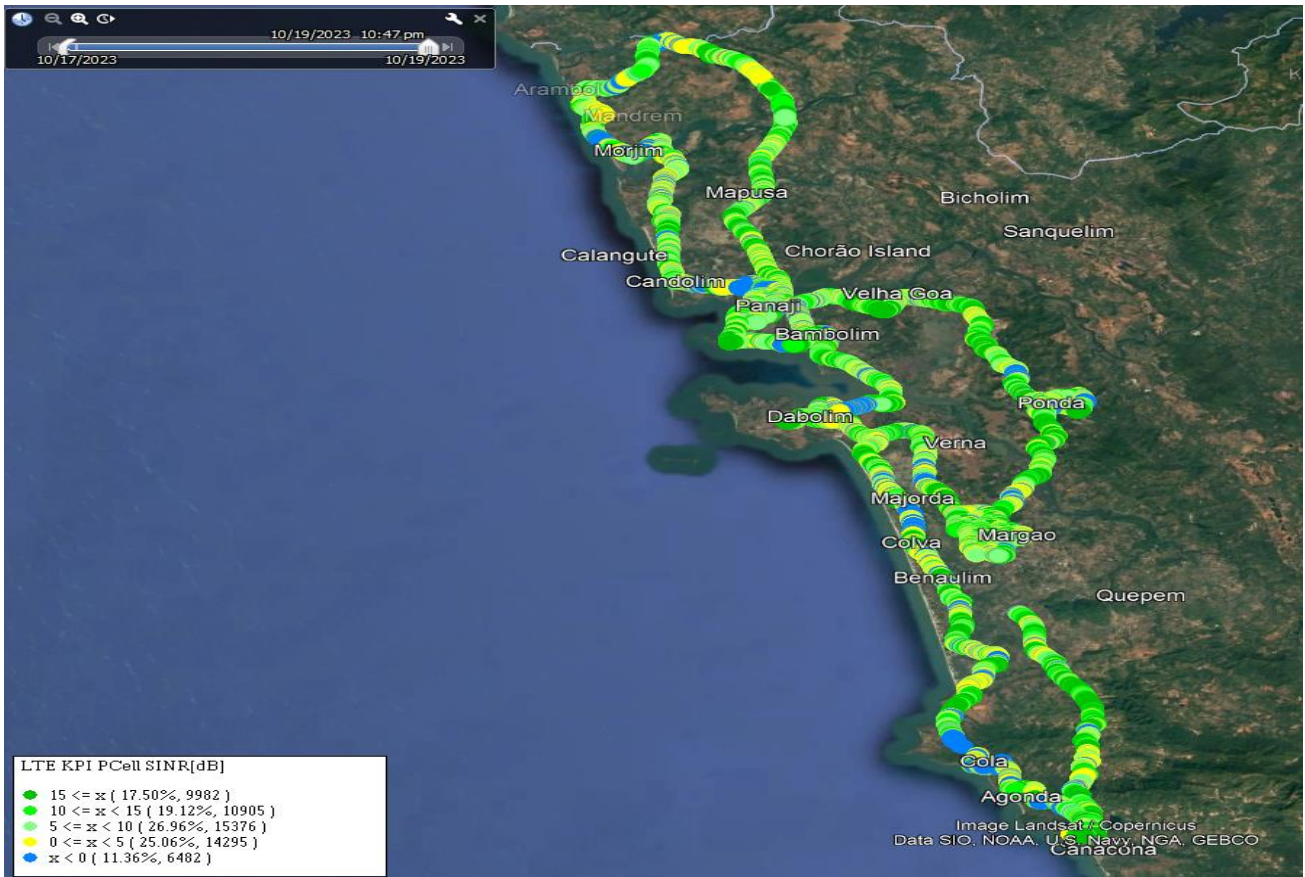
Overall SINR	# Samples	% PDF
(Min, <=0)	6482	11.36
(0, <=5)	14295	25.06
(5, <=10)	15376	26.96
(10, <=15)	10905	19.12
(15, <=Max)	9982	17.5
Total	**57040**	**100**

VIL

Technology	Rx Quality %
2G	**95.04**
4G	**89.08**

2G

RxQual Sub
- [Min, 2] [102175] [89.89%]
- [2, 3] [2105] [1.85%]
- [3, 4] [1827] [1.61%]
- [4, 5] [1921] [1.69%]
- [5, Max] [5639] [4.96%]

4G

Serving cell RS SINR (dB)
- [Min, -6] [6379] [0.94%]
- [-6, 0] [67785] [9.98%]
- [0, Max] [605037] [89.08%]
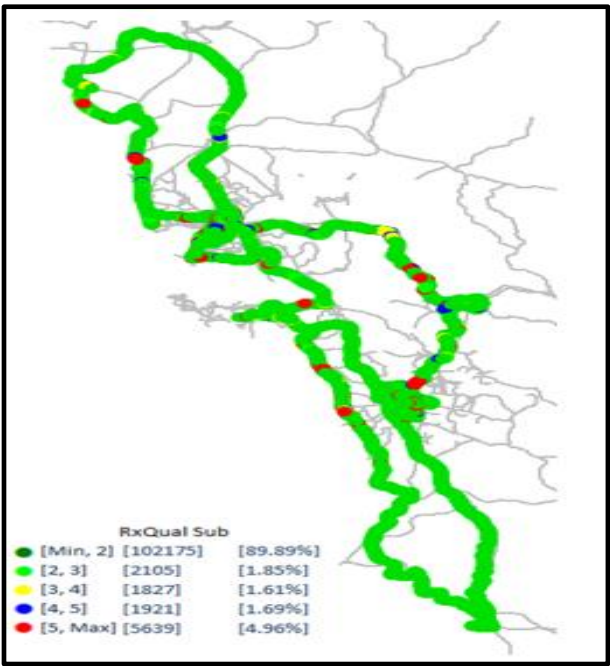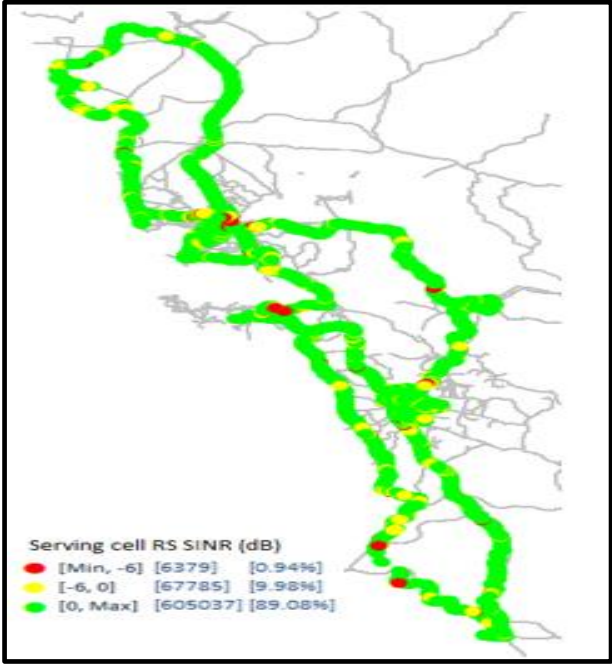
Overall Rx Quality	# Samples	% PDF	Overall SINR	# Samples	% PDF
(Min, <=2)	102175	89.89	(Min, <=0)	74167	10.92
(2, <=3)	2105	1.85	(0, <=5)	161231	23.74
(3 , <=4)	1827	1.61	(5, <=10)	165398	24.35
(4 , <=5)	1921	1.69	(10, <=15)	125958	18.55
(5 , <=Max)	5539	4.96	(15, <=Max)	152427	22.44
Total	113667	100	**Total**	679181	100

TSP	Time Spent on 3G/4G %
Airtel 4G	100
BSNL 3G	96.25
Jio 4G	100
VIL 4G	98.95

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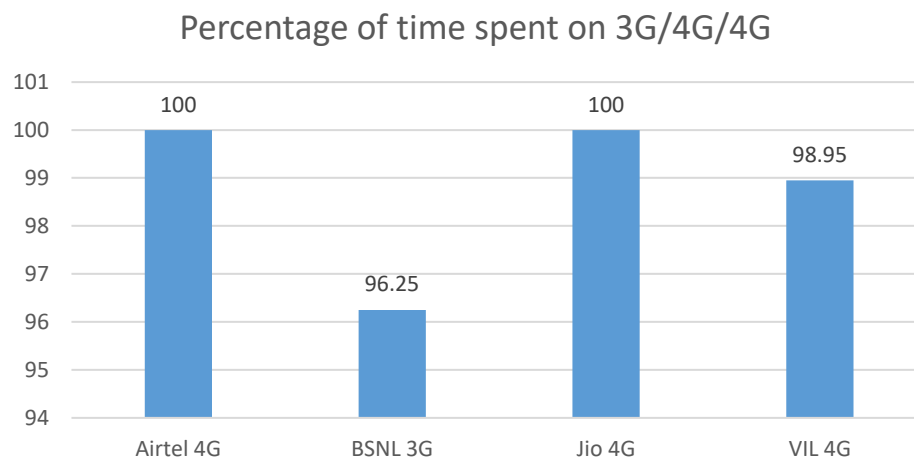
Airtel

Technology	Time Spent %
4G	100

BSNL

Technology	Time Spent %
3G	96.25

Technology Plot of complete SSA (3G)

RATforBand
WCDMA (56847) (96.25%)
GSM (2217) (3.75%)

JIO

Technology	Time Spent %
4G	100
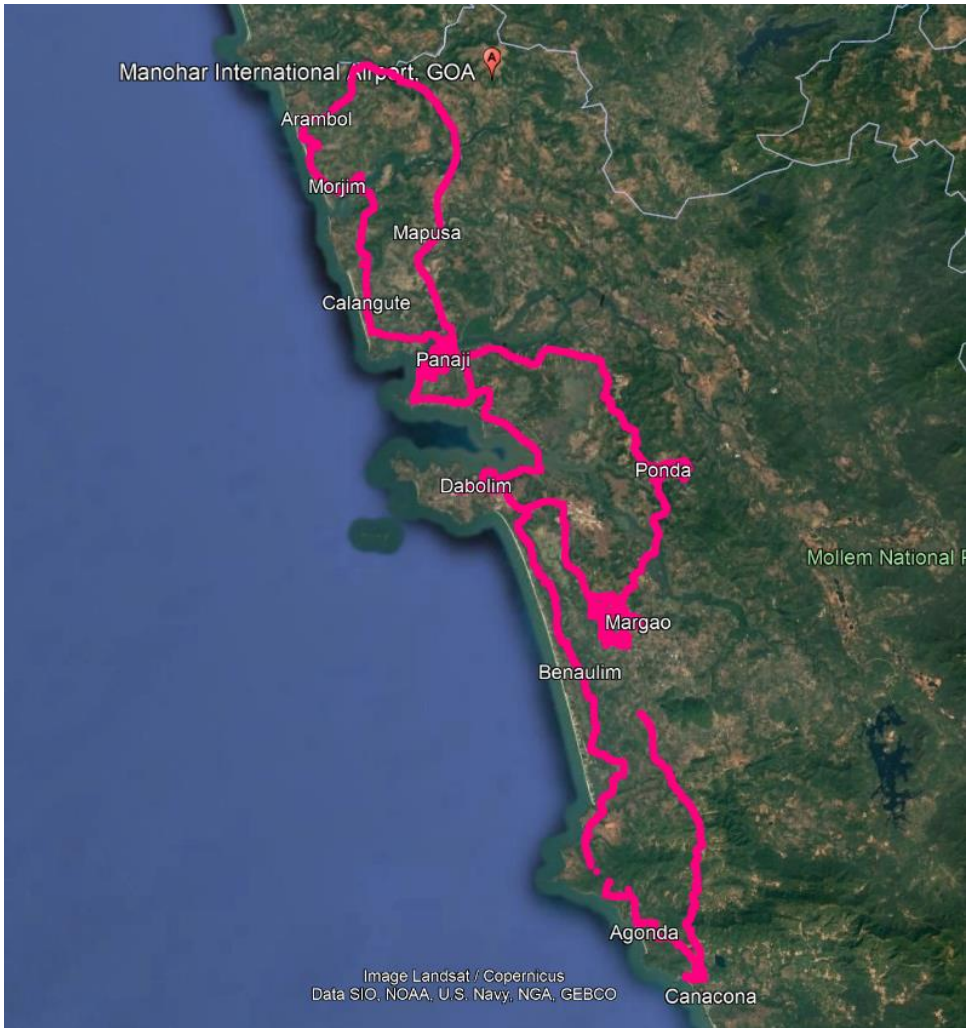
VIL

Technology	Time Spent
4G	98.95
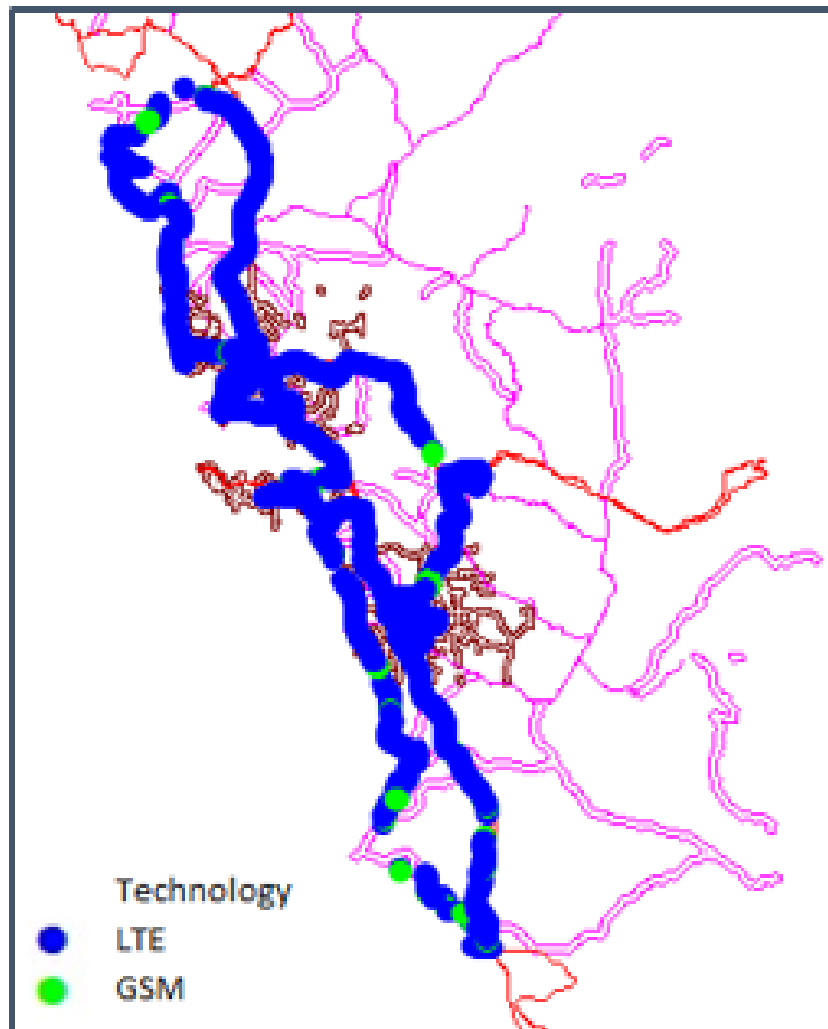
Airtel

DL throughput	No. of Samples	%
0 to 1 Mbps	699347	7.88
1 to 2 Mbps	260777	2.94
2 to 3 Mbps	3136961	35.35
3 to 4 Mbps	2123181	23.93
4 to 8 Mbps	942185	10.62
8 to 12 Mbps	1335360	15.05
>12 Mbps	375476	4.23
Total	8873287	100
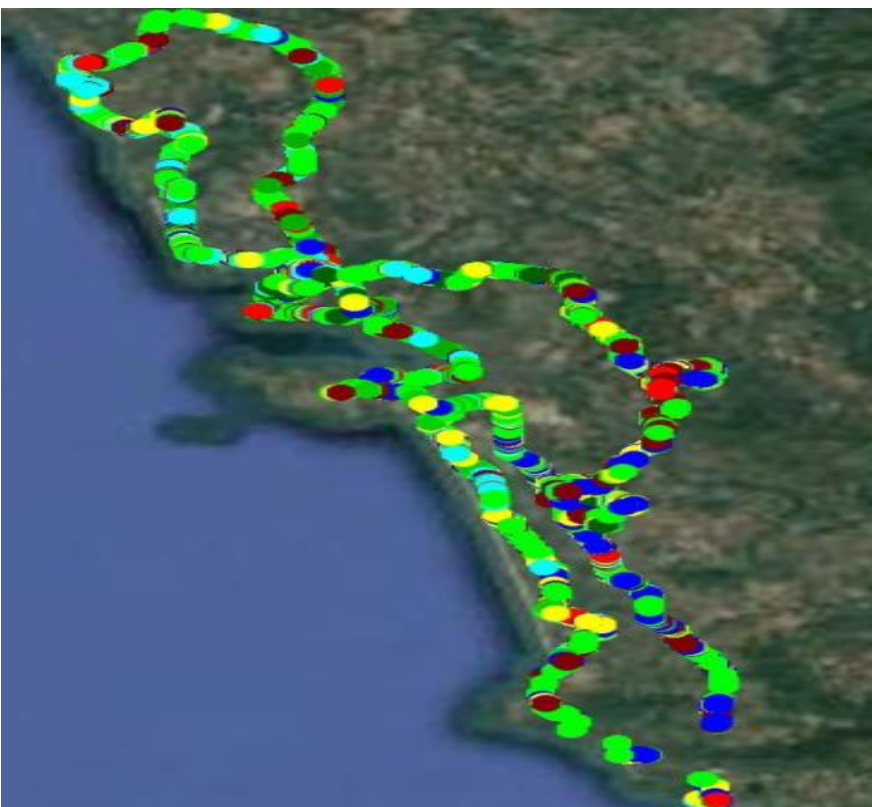
UL throughput	No. of samples	%
0 to 256 Kbps	849718	12.85
250 to 512 Kbps	1367986	20.68
512 Kbps to 1 Mbps	628859	9.51
1 to 2 Mbps	1408390	21.29
2 to 3 Mbps	1323211	20.01
3 to 4 Mbps	674524	10.20
>4 Mbps	361365	5.46
Total	6614053	100

BSNL

FTP Download Throughput Mean (kbps)
[Min, 1024)   (5095) (25.25%)
[1024, 2048)   (5655) (28.02%)
[2048, 3072)   (3771) (18.69%)
[3072, 4096)   (2193) (10.87%)
[4096, 8192)   (3384) (16.77%)
[8192, 12288)   (76) (0.38%)
[12288, Max]   (6) (0.03%)

DL throughput	No. of Samples	%
0 to 1 Mbps	5095	25.25
1 to 2 Mbps	5655	28.02
2 to 3 Mbps	3771	18.69
3 to 4 Mbps	2193	10.87
4 to 8 Mbps	3384	16.77
8 to 12 Mbps	76	0.38
>12 Mbps	6	0.03
Total	20180	100
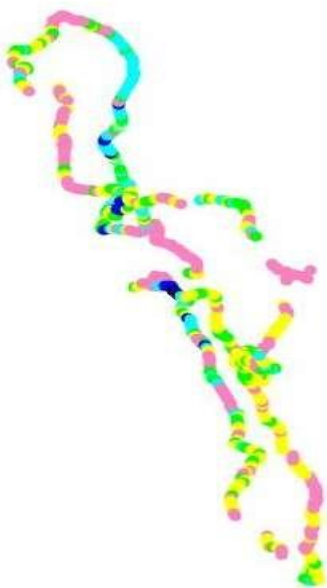
FTP Upload Throughput Mean (kbps)
[Min, 0)   (0) (0%)
[0, 256)   (4890) (17.9%)
[256, 512)   (7655) (28.02%)
[512, 1024) (7841) (28.7%)
[1024, 2048) (5715) (20.92%)
[2048, 3072) (1090) (3.99%)
[3072, 4096) (127) (0.46%)
[4096, Max]   (0) (0%)

UL throughput	No. of Samples	%
0 to 1 Mbps	0	0.00
1 to 2 Mbps	4890	17.90
2 to 3 Mbps	7655	28.02
3 to 4 Mbps	7841	28.70
4 to 8 Mbps	5715	20.92
8 to 12 Mbps	1090	3.99
>12 Mbps	127	0.46
Total	27318	100

JIO
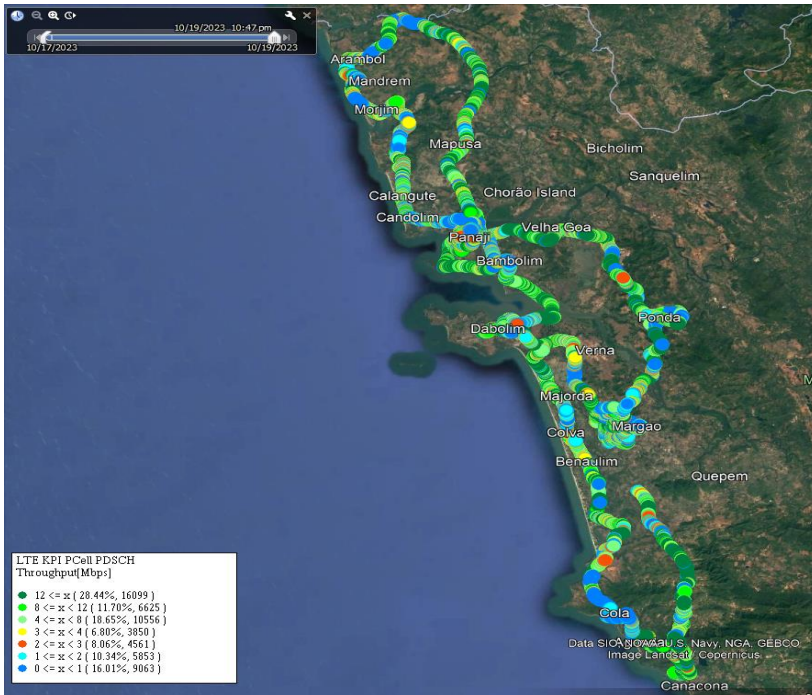
DL throughput	No. of Samples	%
0 to 1 Mbps	9063	16.01
1 to 2 Mbps	5853	10.34
2 to 3 Mbps	4561	8.06
3 to 4 Mbps	3850	6.8
4 to 8 Mbps	10556	8.06
8 to 12 Mbps	6625	10.34
>12 Mbps	16099	16.01
Total	56607	100
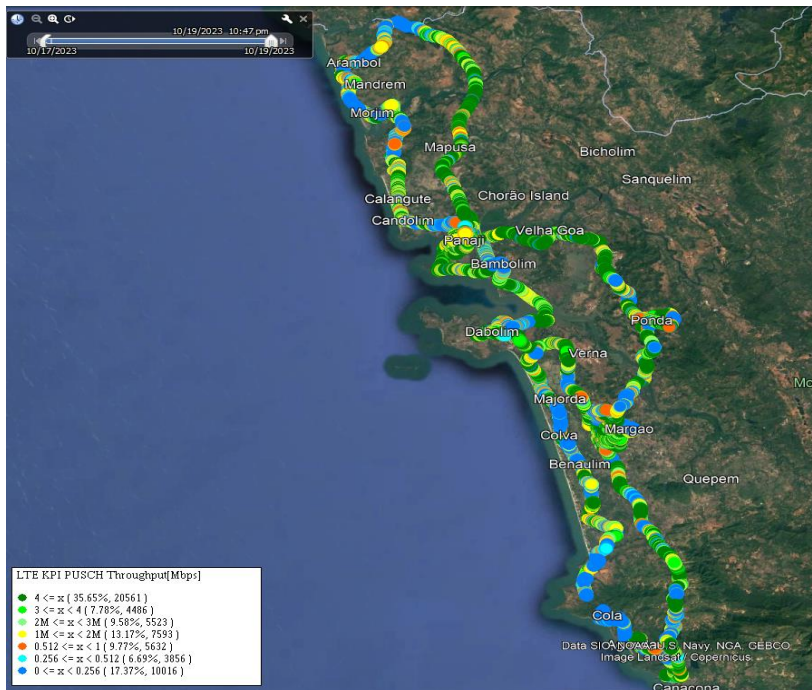
UL throughput	No. of samples	%
0 to 256 kbps Mbps	10016	17.37
256 to 512 kbps	3856	6.69
512 Kbps to 1 Mbps	5632	9.77
1 to 2 Mbps	7593	13.17
2 to 3 Mbps	5523	9.58
3 to 4 Mbps	4486	7.78
>4Mbps	20561	35.65
Total	64751	100

VIL

DL throughput	No. of Samples	%
0 to 1 Mbps	3849711	29.67
1 to 2 Mbps	560801	4.32
2 to 3 Mbps	479974	3.70
3 to 4 Mbps	451587	3.48
4 to 8 Mbps	1496730	11.54
8 to 12 Mbps	825961	6.37
>12 Mbps	5309803	40.92
Total	12974567	100

UL throughput	No. of samples	%
0 to 256 Kbps	1040620	43.94
250 to 512 Kbps	60668	2.56
512 Kbps to 1 Mbps	98275	4.15
1 to 2 Mbps	170862	7.22
2 to 3 Mbps	119467	5.04
3 to 4 Mbps	114525	4.84
>4Mbps	763709	32.25
Total	2368126	100

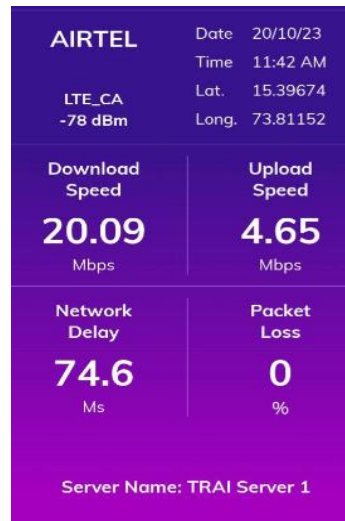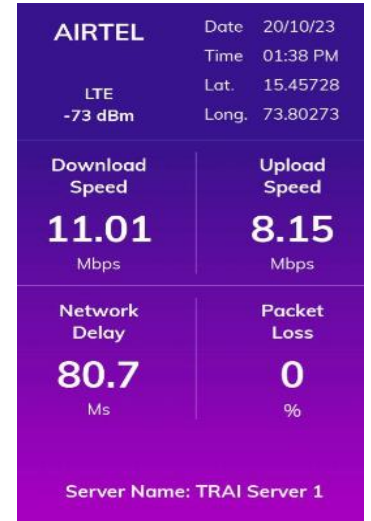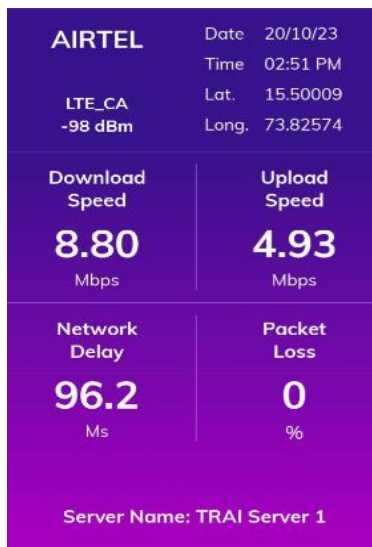| Techology-2G	Goa Medical College	Vasco Railway Station	Dona Poula Beach	District Collector Office	Fort Aguada	Goa International Airport
Download Speed (Mbps)	0.12	0.15	0.14	0.12	0.13	0.21
Upload Speed (Mbps)	0.12	0.12	0.1	0.12	0.07	0.1
Latency	NA	NA	NA	NA	NA	NA

Goa Medical College

Vasco Railway Station

Dona Poula Beach

District Collector Office

Fort Aguada

Goa International Airport

V. TRAI My Speed App Test Details-4G

Techology-4G/VoLTE	Goa Medical College	Vasco Railway Station	Dona Poula Beach	District Collector Office	Fort Aguada	Goa International Airport
Download Speed (Mbps)	9.38	20.09	11.01	8.8	28.13	26.73
Upload Speed (Mbps)	18.38	4.65	8.15	4.93	4.13	3.81
Latency	69.9	74.6	80.07	96.2	63.8	75.9

Goa Medical College

AIRTEL
Date 20/10/23
Time 10:08 AM
LTE -74 dBm
Lat. 15.46373
Long. 73.85578
Download Speed 9.38 Mbps
Upload Speed 18.38 Mbps
Network Delay 69.9 Ms
Packet Loss 9 %
Server Name: TRAI Server 1

Vasco Railway Station

AIRTEL
Date 20/10/23
Time 11:42 AM
LTE_CA -78 dBm
Lat. 15.39674
Long. 73.81152
Download Speed 20.09 Mbps
Upload Speed 4.65 Mbps
Network Delay 74.6 Ms
Packet Loss 0 %
Server Name: TRAI Server 1

Dona Poula Beach

AIRTEL
Date 20/10/23
Time 01:38 PM
LTE -73 dBm
Lat. 15.45728
Long. 73.80273
Download Speed 11.01 Mbps
Upload Speed 8.15 Mbps
Network Delay 80.7 Ms
Packet Loss 0 %
Server Name: TRAI Server 1

District Collector Office

AIRTEL
Date 20/10/23
Time 02:51 PM
LTE_CA -98 dBm
Lat. 15.50009
Long. 73.82574
Download Speed 8.80 Mbps
Upload Speed 4.93 Mbps
Network Delay 96.2 Ms
Packet Loss 0 %
Server Name: TRAI Server 1

Fort Aguada

AIRTEL
Date 20/10/23
Time 04:35 PM
LTE_CA -83 dBm
Lat. 15.49290
Long. 73.77330
Download Speed 28.13 Mbps
Upload Speed 4.13 Mbps
Network Delay 63.8 Ms
Packet Loss 0 %
Server Name: TRAI Server 1

Goa International Airport

AIRTEL
Date 20/10/23
Time 07:15 PM
LTE_CA -74 dBm
Lat. 15.73002
Long. 73.86588
Download Speed 26.73 Mbps
Upload Speed 3.81 Mbps
Network Delay 75.9 Ms
Packet Loss 0 %
Server Name: TRAI Server 1

V. TRAI MySpeed App Test Details-2G

Techology-2G	Goa Medical College	Vasco Railway Station	Dona Poula Beach	District Collector Office	Fort Aguada	Goa International Airport
Download Speed (Kbps)	100	110	190	190	170	30
Upload Speed (Kbps)	130	100	200	50	120	20
Latency(ms)	161.6	230.5	179.2	427.7	450.4	590.3

Goa Medical College   **Vasco Railway Station**   **Dona Poula Beach**

District Collector Office   **Fort Aguada**   **Goa International Airport**

V. TRAI MySpeed App Test Details-3G/4G

Techology-4G/VoLTE	Goa Medical College	Vasco Railway Station	Dona Poula Beach	District Collector Office	Fort Aguada	Goa International Airport
Download Speed (Mbps)	1.94	1.80	6.73	1.79	1.38	4.35
Upload Speed (Mbps)	2.30	1.34	3.11	1.85	1.22	1.73
Latency(ms)	78.6	94.3	63.5	56.5	52.1	56.1

Goa Medical College

Vasco Railway Station

Dona Poula Beach

District Collector Office

Fort Aguada

Goa International Airport

Jio

Techology-4G	Goa Medical College	Vasco Railway Station	Dona Poula Beach	District Collector Office	Fort Aguada	Goa International Airport
Download Speed (Mbps)	5.08	12.10	2.92	16.08	13.20	1.93
Upload Speed (Mbps)	5.55	4.51	2.59	20.24	3.70	1.18
Latency	110.1	109.6	87.6	109.5	121.6	111.4

Goa Medical College

Your Result

JIO
Date 20/10/23
Time 10:46 AM
LTE_CA
-80 dBm
Lat. 15.46203
Long. 73.85218

Download Speed
5.08
Mbps

Upload Speed
5.55
Mbps

Network Delay
110.1
Ms

Packet Loss
0
%

Server Name: Nagpur

Vasco Railway Station

Your Result

JIO
Date 20/10/23
Time 12:21 PM
LTE
-61 dBm
Lat. 15.39584
Long. 73.81158

Download Speed
12.10
Mbps

Upload Speed
4.51
Mbps

Network Delay
109.6
Ms

Packet Loss
0
%

Server Name: Nagpur

Dona Poula Beach

Your Result

JIO
Date 20/10/23
Time 01:29 PM
LTE
-85 dBm
Lat. 15.45928
Long. 73.80570

Download Speed
2.92
Mbps

Upload Speed
2.59
Mbps

Network Delay
87.6
Ms

Packet Loss
0
%

Server Name: Nagpur

District Collector Office

JIO
Date 20/10/23
Time 04:58 PM
LTE
-68 dBm
Lat. 15.49716
Long. 73.77280

Download Speed
16.08
Mbps

Upload Speed
20.24
Mbps

Network Delay
109.5
Ms

Packet Loss
0
%

Server Name: Nagpur

Fort Aguada

Your Result

JIO
Date 20/10/23
Time 06:34 PM
LTE
-72 dBm
Lat. 15.73052
Long. 73.87141

Download Speed
13.20
Mbps

Upload Speed
3.70
Mbps

Network Delay
121.6
Ms

Packet Loss
0
%

Server Name: Nagpur

Goa International Airport

Your Result

JIO
Date 20/10/23
Time 04:05 PM
LTE
-91 dBm
Lat. 15.50061
Long. 73.82544

Download Speed
1.93
Mbps

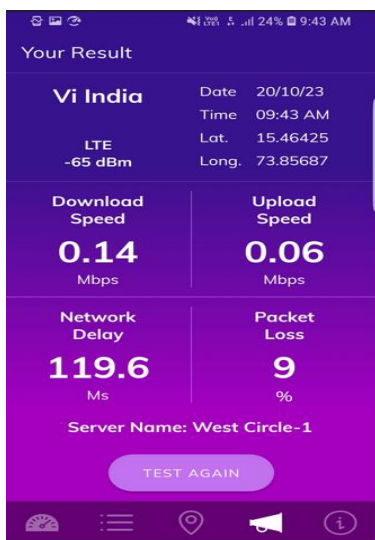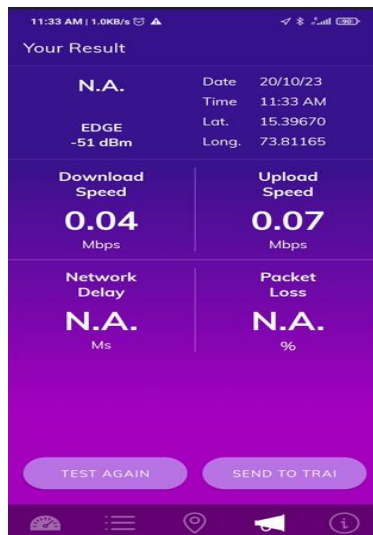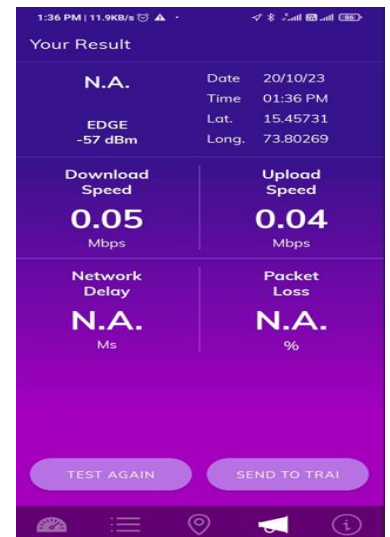Upload Speed
1.18
Mbps

Network Delay
111.4
Ms

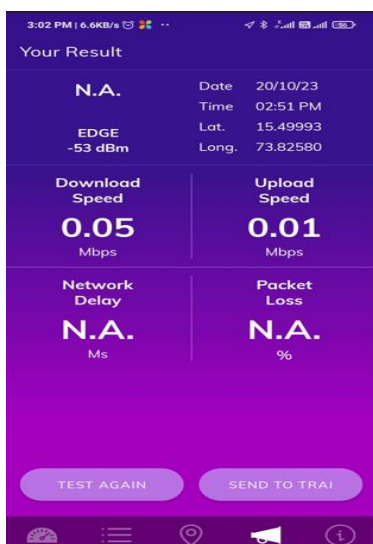Packet Loss
0
%

Server Name: Nagpur

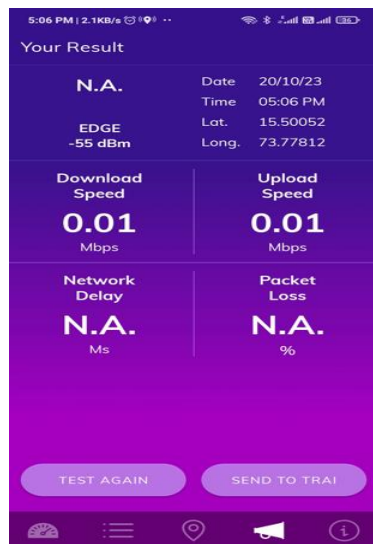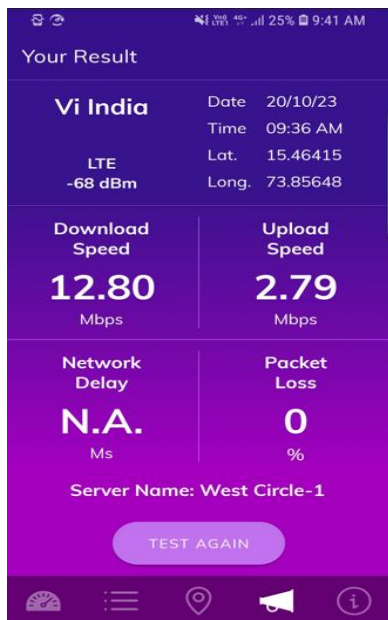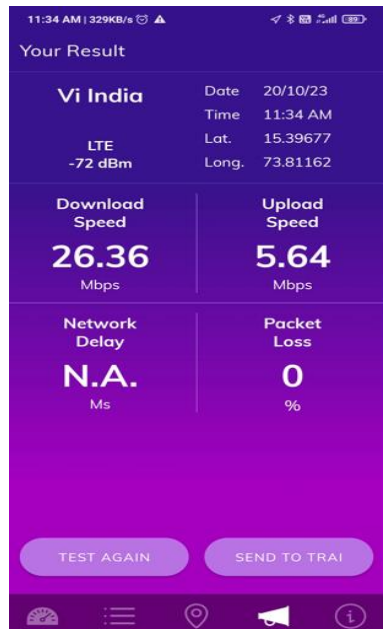| Techology-2G	Goa Medical College	Vasco Railway Station	Dona Poula Beach	District Collector Office	Fort Aguada	Goa International Airport
Download Speed (Mbps)	0.14	0.04	0.05	0.05	0.01	0.15
Upload Speed (Mbps)	0.06	0.07	0.04	0.01	0.01	0.05
Latency	NA	NA	NA	NA	NA	NA

Goa Medical College

Vasco Railway Station

Dona Poula Beach

District Collector Office

Fort Aguada

Goa International Airport

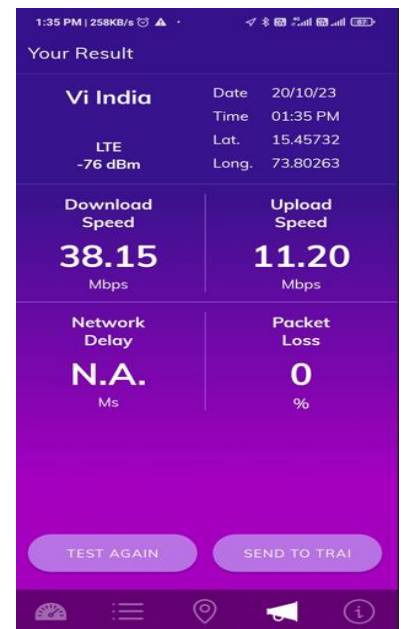# VODAFONE IDEA

V. TRAI MySpeed App Test Details-4G
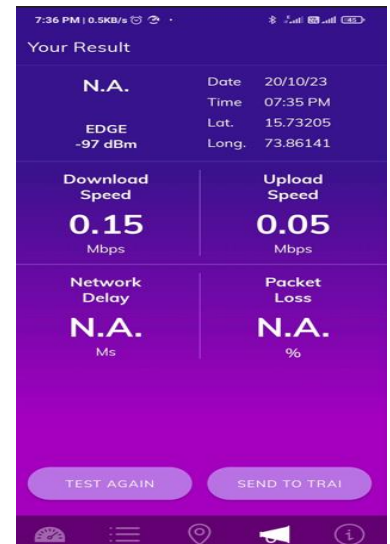
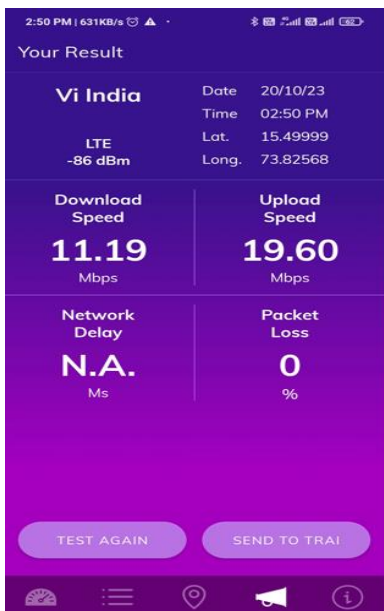| Techology-4G/VoLTE	Goa Medical College	Vasco Railway Station	Dona Poula Beach	District Collector Office	Fort Aguada	Goa International Airport
Download Speed (Mbps)	12.80	26.36	38.15	11.19	26.31	39.93
Upload Speed (Mbps)	2.79	5.64	11.20	19.60	2.10	23.64
Latency	NA	NA	NA	NA	NA	NA

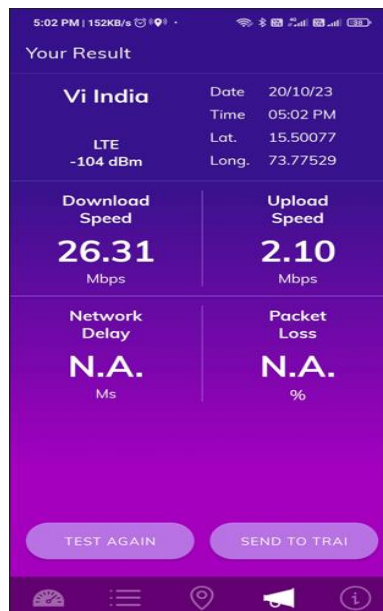### Goa Medical College

Vasco Railway Station

Dona Poula Beach

District Collector Office

Fort Aguada

Goa International Airport