Operator Assisted Drive Test Report
South Tripura, Gomati and Dhalai Districts
February, 2025
(RO, Kolkata)

Key Performance Indicators (KPIs):

The following TSPs could not meet the KPIs benchmark as stated below—

AIRTEL- Rx Quality in 2G network.
BSNL-Drop Call Rate in 2G & 3G network, Block Call Rate in 2G & 3G network, Call Setup Success Rate in 2G & 3G network, Rx Quality in 2G & 3G (Ec/Io) network, Mobility HOSR(%) in 2G   network.
RJIO-Rx Quality in 4G (SINR) network.
VIL- Rx Quality in 2G & 4G (SINR) network.

The Operator Assisted Drive Test has been carried out by Regional Office, Kolkata with the help of Service Providers in South Tripura, Gomati and Dhalai Districts including National Highway 8 & 208 on 11th & 12th February 2025 from 08.00 AM to 08.30 PM. The drive test covered drive route of 328 KMs (approx) over a period of two days. Approximately 214+ calls were made for each of the 7 networks: three 2G networks, one 3G network and three 4G networks covering four TSPs.

Overview   Voice Summary   Data Summary

Overview

South Tripura is an administrative district in the state of Tripura in northeastern India. The district headquarters are located at Belonia. District has three sub divisions (Belonia, Sabroom and Santirbazar).

Gomati district is a district of Tripura, India. Udaipur is its headquarters.

Dhalai is an administrative district in the state of Tripura in India. The district headquarter is in Ambassa.

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, Call Setup Success Rate, Drop Call Rate and Block Call Rate.
**Data:** Download Throughputs and Upload Throughputs.

Voice Tests: Calls were made for 120 secs duration with wait time of 15 secs between call in 2G/ 3G on auto mode and 4G/ 5G on auto mode. Three 2G networks, one 3G network, Three 4G networks covering 4 unique TSPs were tested.

Data Tests: Dynamic Data Service Testing was performed along same route in 3G/4G/ 5G on auto mode. 250 MB file were downloaded and 125 MB file were uploaded from FTTP server in TSP's own server. Static Data Service Testing was also performed in 3G/ 4G / 5G on auto mode covering 4 unique TSPs were tested.

Service	Static Data Service Testing- Specifications
Download	250 MB in 3G/ 4G / 5G on auto mode
Upload	125 MB in 3G/ 4G / 5G on auto mode
Web Browsing	3 links of e/m commerce website www.amazon.in, www.flipkart.com and PayTm
Video Steaming	100 Sec Video & 125 sec Timeout
Latency	512 Bytes packet-- 1000 count on TSP own server using Ping.

Technology/ TSP	AIRTEL	BSNL	RJIO	VODAFONE-IDEA
2G	YES	YES	NO	YES
3G	NO	YES	NO	NO
4G	YES	NO	YES	YES
TOOL USED	TEMS	TEMS	X-CAL	TEMS

Voice & Dynamic Data Test Drive Route
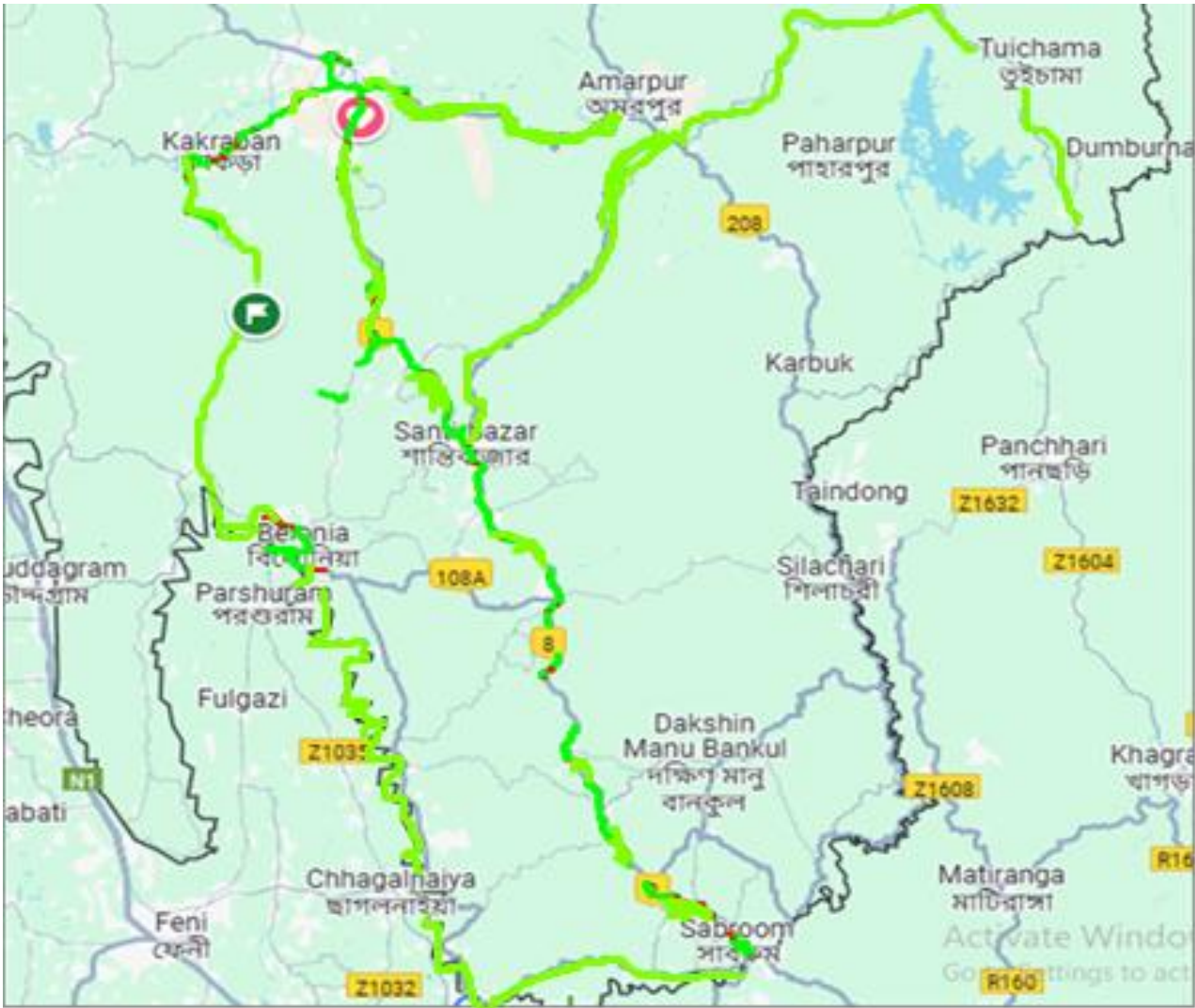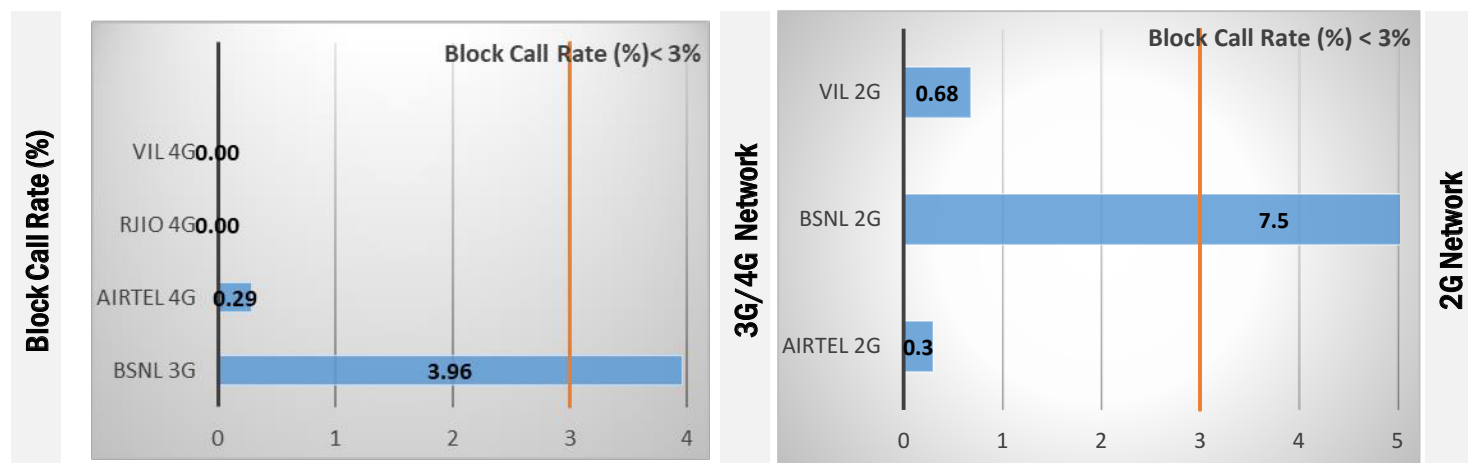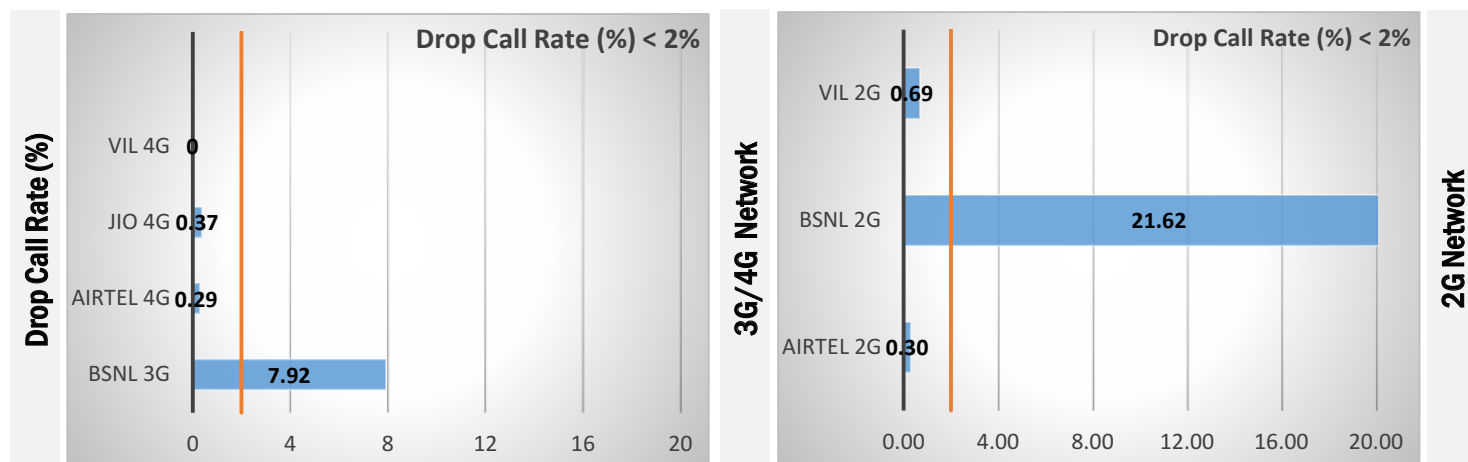

Drive Routes: Tripura

DAY-1–Udaipur Science Centre-Tripura Sundari Temple-Garjee Bazar Higher Secondary School-Santir Bazar District Hospital-Manubazar Post Office-Sabroom SDM Office-Indo Bangladesh Maitree Bridge-East Manughat High School-Poangbari R.D Block-D.M Office(South)-Barpathari Bazar-Jashmura High School-Tulamura Bazar-Ramesh Chowmuhani, Udaipur

DAY-2--Brahmabari Bus Stop,Udaipur-Maharani Hospital-Gandhari Bazar-Muing Hathai Watch Tower-Gandachara Market-St. Arnold Higher Secondary School-Tui Chakma-Raishyabari RD Block Office
Amarpur Degree College-Industrial Training Institute-Santirbazar-Birchandra nagar market-Dhuptali

Data Service Test- Static Locations

Static Locations
Udaipur Science Centre
Brahmabari Bus Stop, Udaipur

Voice Calls

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

Drop Call Rate (%) < 2% — 3G/4G Network:
- VIL 4G: 0
- JIO 4G: 0.37
- AIRTEL 4G: 0.29
- BSNL 3G: 7.92

Drop Call Rate (%) < 2% — 2G Network:
- VIL 2G: 0.69
- BSNL 2G: 21.62
- AIRTEL 2G: 0.30

Block Call Rate (%) < 3% — 3G/4G Network:
- VIL 4G: 0.00
- RJIO 4G: 0.00
- AIRTEL 4G: 0.29
- BSNL 3G: 3.96

Block Call Rate (%) < 3% — 2G Network:
- VIL 2G: 0.68
- BSNL 2G: 7.5
- AIRTEL 2G: 0.3

KPIs	2G			3G	4G-VoLTE		
	AIRTEL	BSNL	VIL	BSNL	AIRTEL	RJIO	VIL
Drop Call Rate %	0.30	21.62	0.69	7.92	0.29	0.37	0.00
Block Call Rate %	0.30	7.50	0.68	3.96	0.29	0.00	0.00

a) All TSPs have met the 2% QOS benchmark of Drop Call Rate (DCR%) except BSNL(2G) & (3G) network.

b) All TSPs have met the 3% QOS benchmark of Block Call Rate (BCR%) except BSNL(2G) & (3G) network.

Voice Calls

Coverage

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

TSPs	2G		
	AIRTEL	BSNL	VIL
Coverage %	56.17	48.63	85.00

b) **Percentage of coverage samples for 3G ≥ -90 dBm & 4G ≥ -110 dBm.**

TSPs	3G	4G		
	BSNL	AIRTEL	RJIO	VIL
Coverage	77.06	82.75	82.71	83.00

Summary

Voice Call	2G		
	AIRTEL	BSNL	VIL
Call Attempt	336.00	160.00	146.00
Blocked Call Rate (%)	0.30	7.50	0.68
CSSR% (Accessibility)	99.40	93.00	99.32
Drop Call Rate (%)	0.30	21.62	0.69
Mobility HOSR (%)	99.20	90.58	100.00
Rx Quality (%)	91.94	59.96	82.00

Voice Call	3G/4G			
	BSNL 3G	AIRTEL 4G	RJIO 4G	VIL 4G
Call Attempt	101.00	342.00	270.00	59.00
Blocked Call Rate (%)	3.96	0.29	0.00	0.00
CSSR% (Accessibility)	88.12	99.71	100.00	100.00
Drop Call Rate (%)	7.92	0.29	0.37	0.00
Mobility HOSR (%)	98.91	99.86	96.67	100.00
Rx Quality (%)	91.79	95.95	94.85	85.00

Dynamic Data was tested for 328 Kms. Download Throughput was tested.

Data Download Performance (Average Throughput in Mbps) - Dynamic Data Testing

4G/3G Network:

4G-Dynamic Download Average Throughput (Mbps)
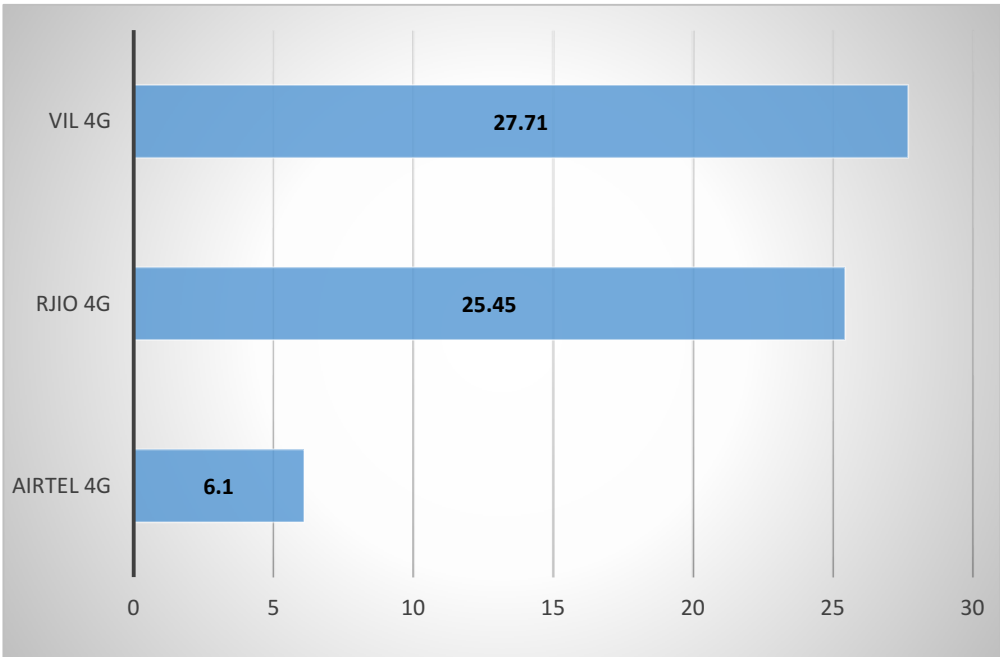
3G-Dynamic Download Average Throughput (Mbps)
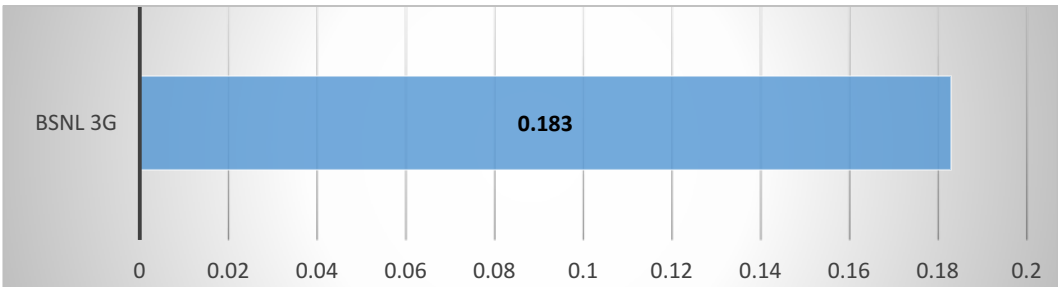
Summary-Data Services Static

Average Data Services Static	3G/4G /5G			
	BSNL 3G	AIRTEL 4G	RJIO 5G	VIL 4G
Download throughput in Mbps	0.84	60.07	323.53	18.1
Upload Throughput in Mbps	0.73	6.89	39.06	7.82
Video streaming delay (secs)	5.98	0.11	0.00	0.91
Web Browsing Delay (secs)	3.11	0.13	0.05	1.90
Latency (msec)	258.5	77.5	***	63.5

*** Report not submitted

Summary-Data Services Static

center

Location:-Udaipur Science Centre	3G/4G /5G			
	BSNL 3G	AIRTEL 4G	RJIO 5G	VIL 4G
Download throughput in Mbps	0.39	67.44	268.01	16.1
Upload Throughput in Mbps	0.07	7.98	18.64	6.98
Video streaming delay (secs)	6.12	0.12	0.00	0.84
Web Browsing Delay (secs)	3.25	0.13	0.06	1.83
Latency (msec)	312	73	***	67

*** Report not submitted

Location:- Udaipur Brahamabari Bus Stop	3G/4G /5G			
	BSNL 3G	AIRTEL 4G	RJIO 5G	VIL 4G
Download throughput in (mbps)	1.29	52.70	379.05	20.1
Upload Throughput in (mbps)	1.40	5.80	59.49	8.67
Video streaming delay (secs)	5.83	0.11	0	0.98
Web Browsing Delay (secs)	2.96	0.14	0.05	1.98
Latency (msec)	205	82	***	60.0

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.

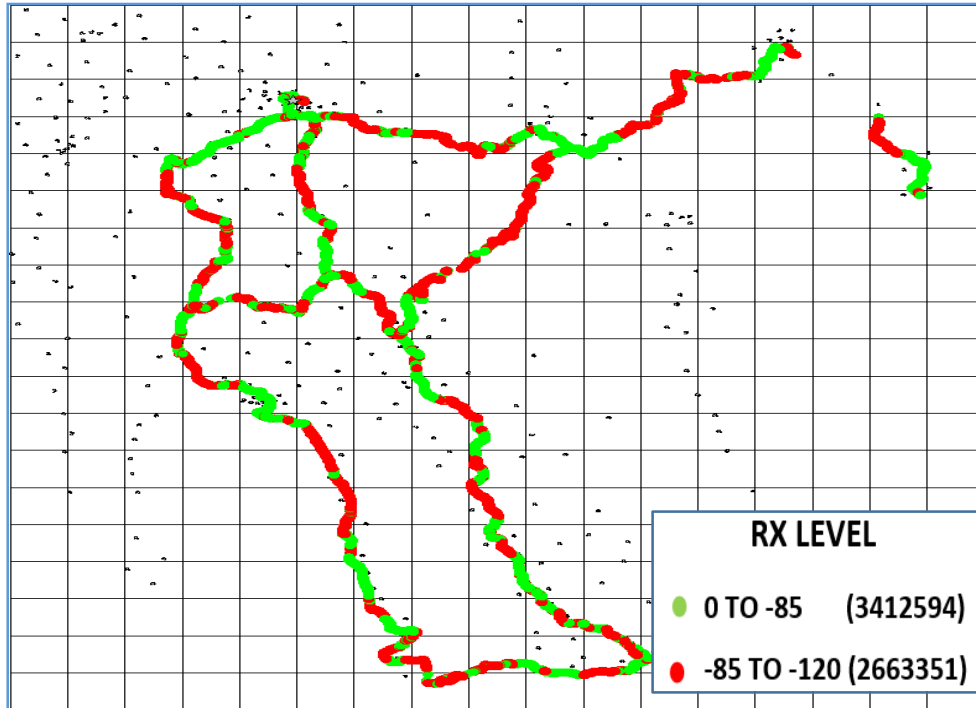| TSP	Coverage Rate %
AIRTEL 2G	56.17
BSNL 2G	48.63
VIL 2G	85.00
BSNL 3G	77.07
AIRTEL 4G	82.75
RJIO 4G	82.71
VIL 4G	83.00

Coverage Rate %
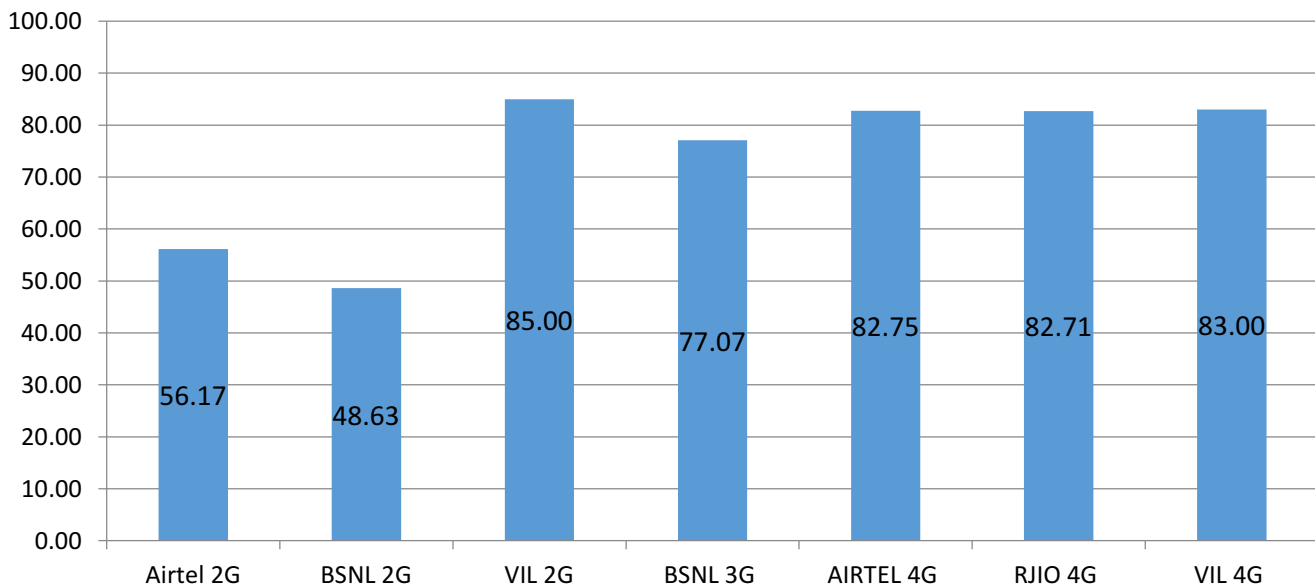
Note- Coverage is the percentage of samples having signal strength more than the threshold value (2G >= -85 dbm, 3G>= -90 dbm and 4G >= -110 dbm). However, these samples are only for the portion of the OADT routes where TSPs have coverage i.e 'no coverage' routes have been excluded.

AIRTEL

Technology	Coverage Rate %
2G	56.17
4G	82.75

2G

RX LEVEL

● 0 TO -85   (3412594)

● -85 TO -120 (2663351)

Overall Rx Level	Sample %
[Max >=-75]	20.67
[-75 >=-85)	35.49
[-85 >=-95)	21.38
[-95 >=Min)	22.45
Total	**100**

4G

4G RSRP

● 0 TO -110   (7329979)

● -110 TO -140   (1527700)
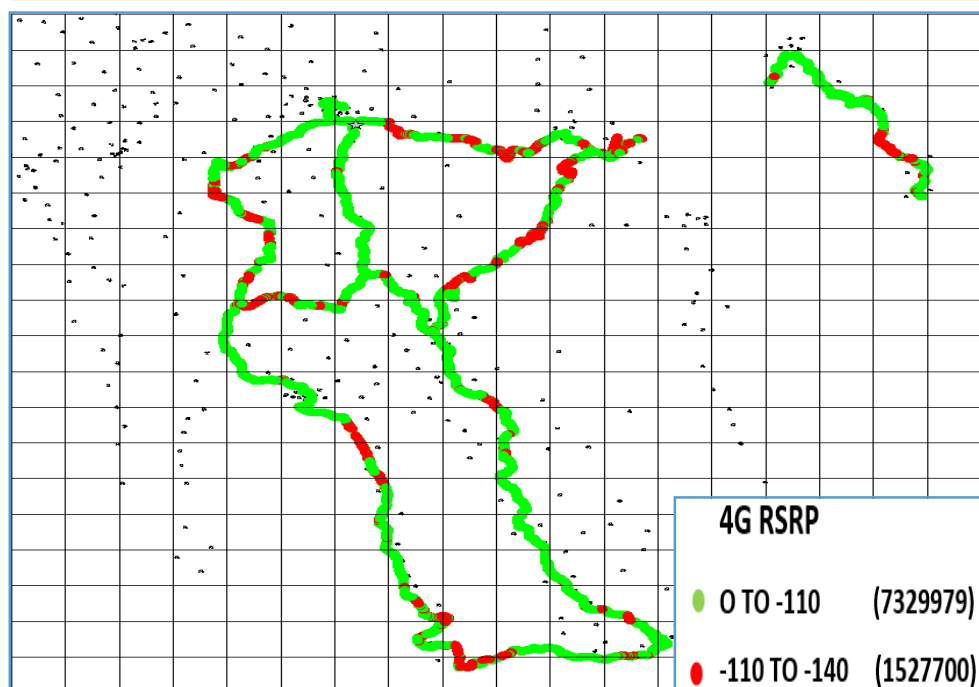
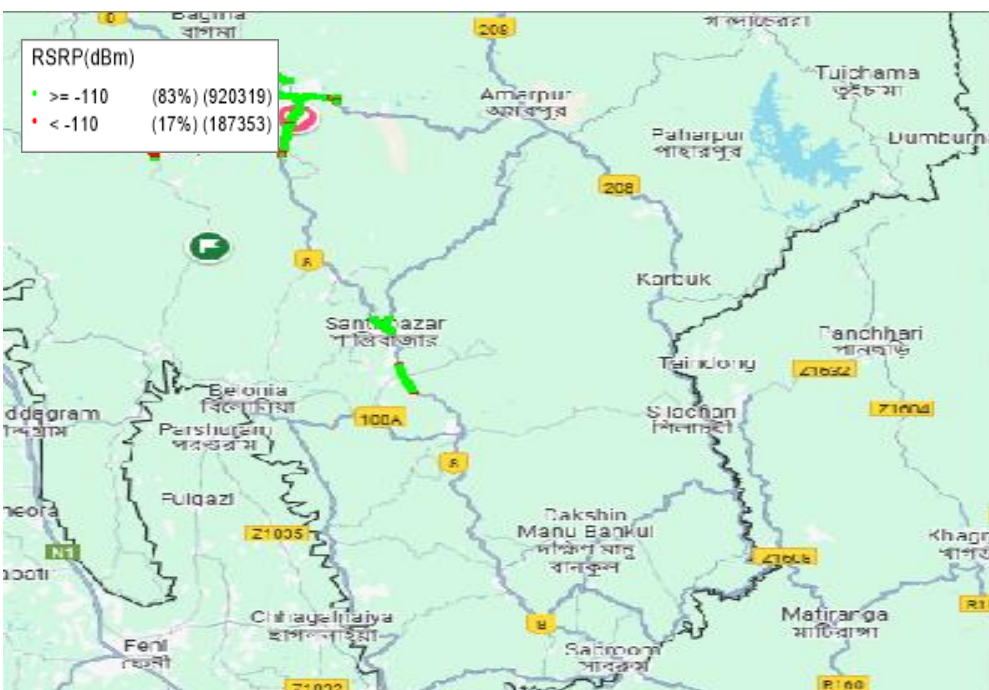| Overall RSRP	Sample %
[Max >=-80]	8.87
[-80 >=-90)	26.83
[-90 >=-110)	47.06
[-110 >=Min)	17.24
Total	**100**

BSNL

Technology	Coverage Rate %
2G	48.63
3G	77.07

2G
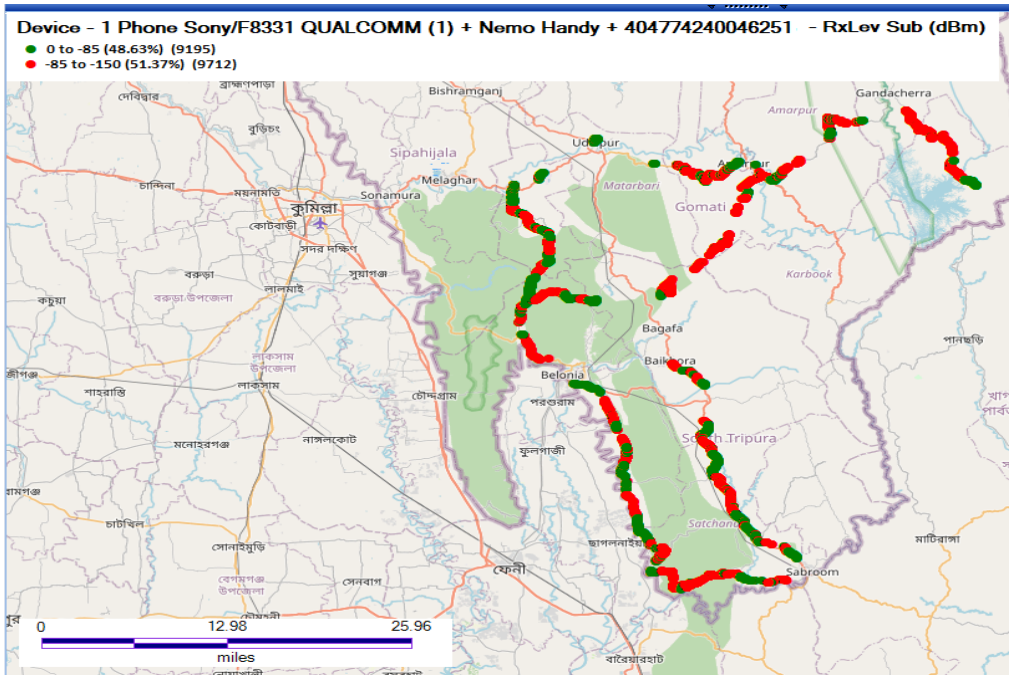
| Overall RxLevel	Sample %
[Max >=-75]	20.55
[-75 >=-85)	28.08
[-85 >=-95)	37.27
[-95 >=Min)	14.10
Total	**100**

3G
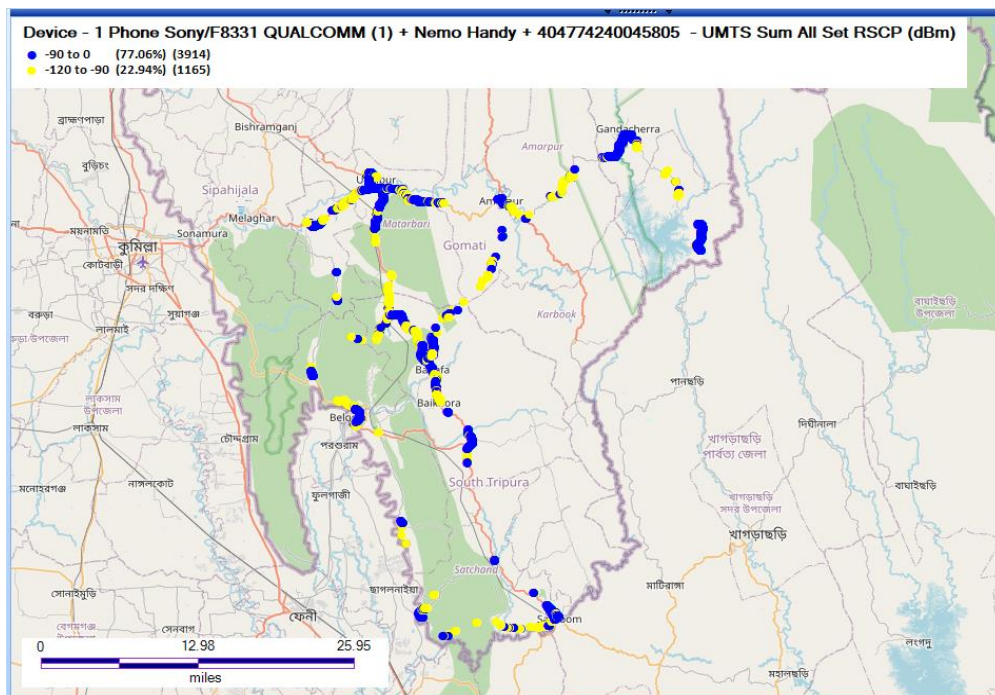
Overall RSCP	Sample %
[Max >=-70]	57.12
[-70 >=-80)	7.90
[-80 >=-90)	12.05
[-90 >=Min)	22.93
Total	**100**

RJIO

Technology	Coverage Rate %
4G	82.71
4G	
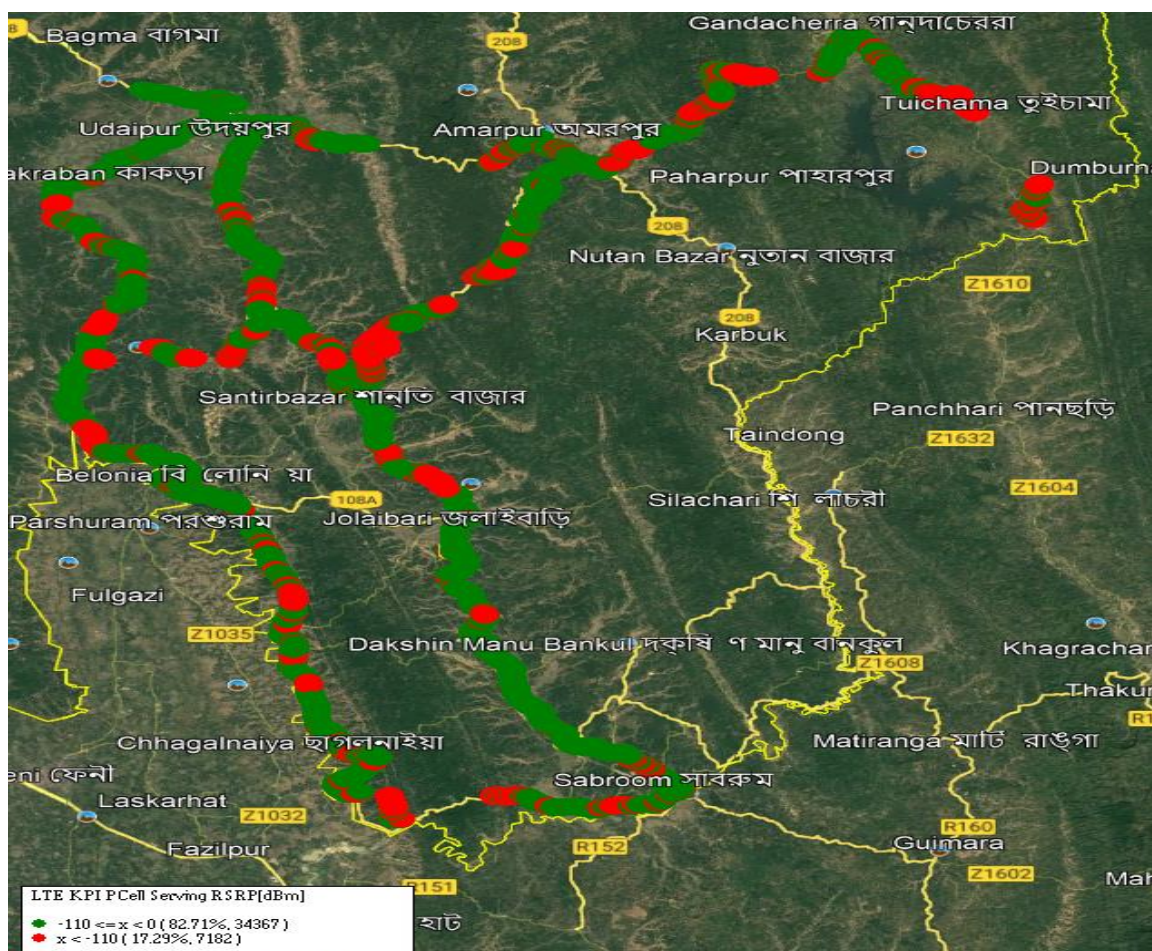
Overall RSRP	Sample %
[Max >=-80]	16.50
[-80 >=-90)	15.72
[-90>=-110)	50.50
[-110 >=Min)	17.28
Total	**100**

VIL

Technology	Coverage Rate %
2G	85.00
4G	83.00

2G
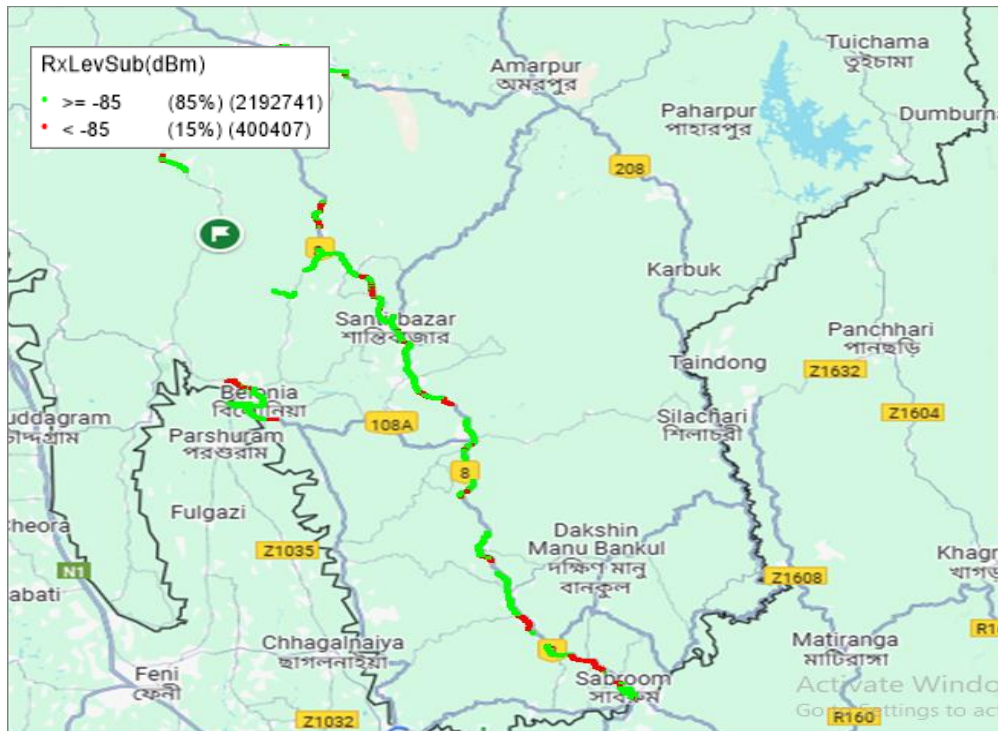
Overall RxLevel	Sample %
[Max >=-75]	54.00
[-75 >=-85)	31.00
[-85 >=-95)	9.00
[-95 =Min)	6.00
Total	**100**

4G

Overall RSRP	Sample %
[Max >=-80]	33.00
[-80 >=-90)	31.00
[-90>=-110)	20.00
[-110 >=Min)	16.00
Total	**100**

For measuring voice quality, as per the QoS norms, Rx Quality<=5 for GSM, Ec/No >= -14 dBm for 3G 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 ≥ 95%.

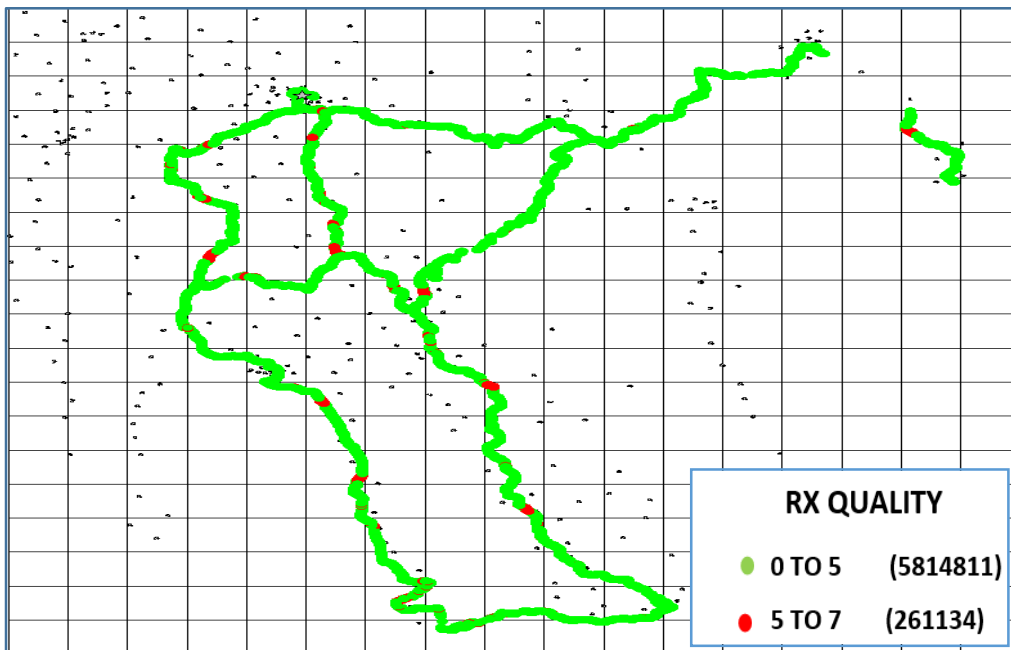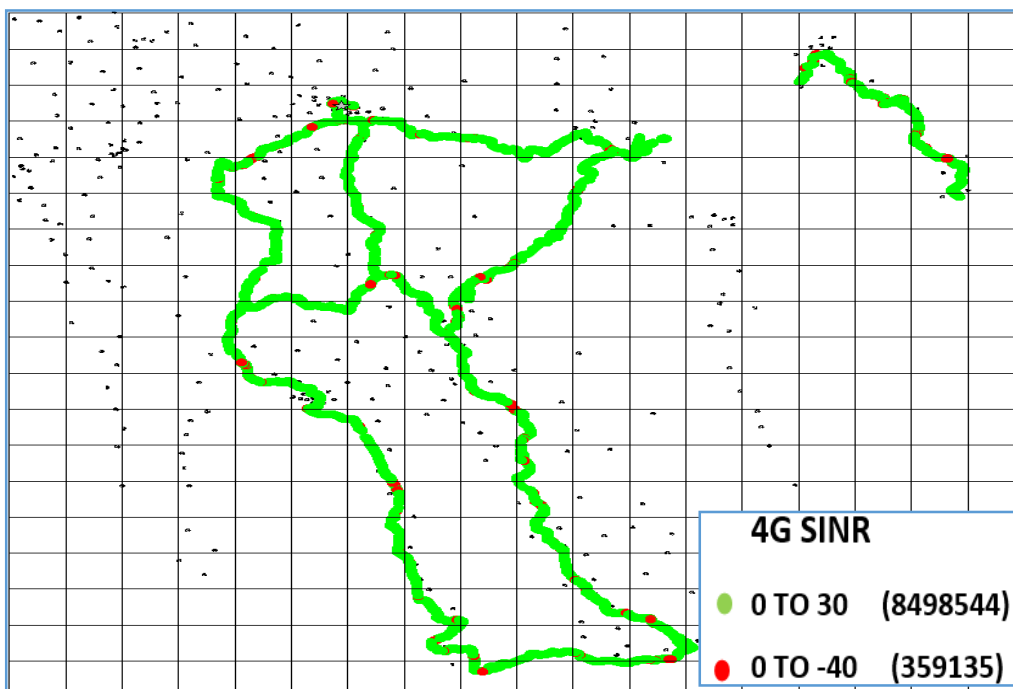| TSP	Rx Quality %
AIRTEL 2G	91.94
BSNL 2G	59.96
VIL 2G	82.00
BSNL 3G	91.79
AIRTEL 4G	95.95
RJIO 4G	94.85
VIL 4G	85.00
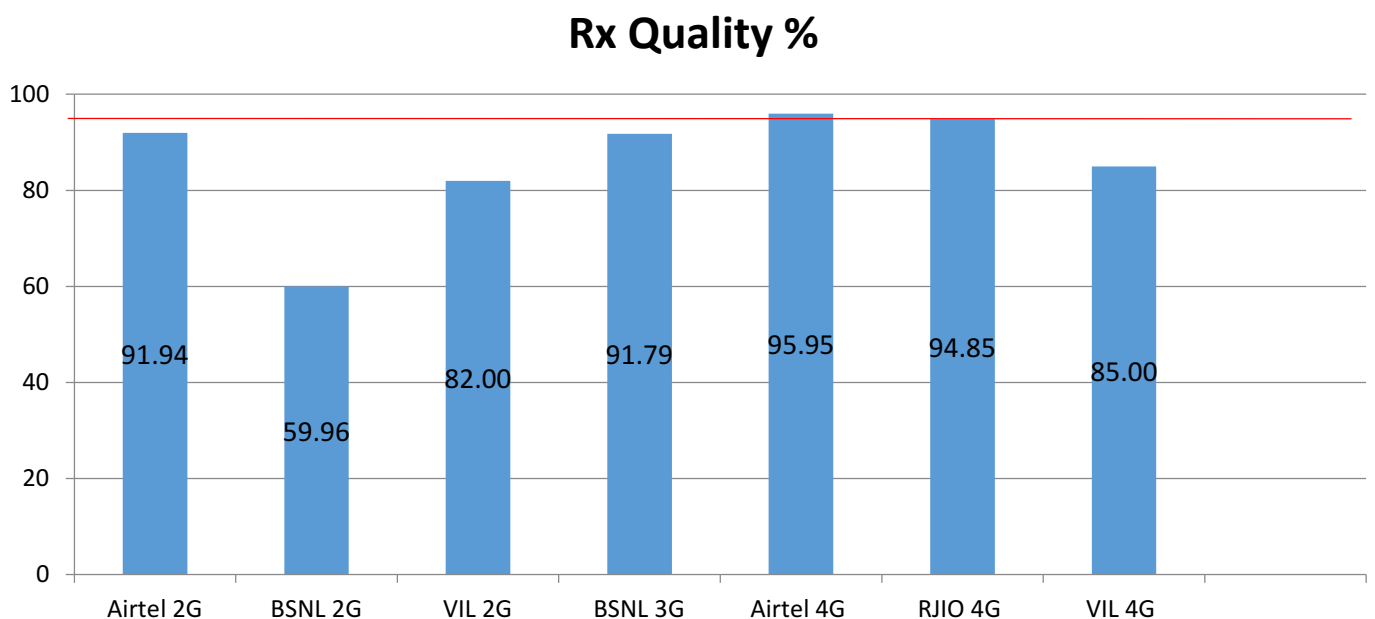
Rx Quality %

AIRTEL

Technology	Rx Quality %
2G	91.94
4G	95.95

2G

Overall Rx Quality	Sample %
(Min <=2)	86.79
(2 <=3)	1.68
(3 <=4)	3.47
(4 <=5)	3.76
(5 <=Max)	4.30
Total	100

RX QUALITY

● 0 TO 5   (5814811)
● 5 TO 7   (261134)

4G

Overall SINR	Sample %
(Min <=0)	4.05
(0 <=5)	16.03
(5 <=10)	22.17
(10 <=15)	23.64
(15 <=Max)	34.11
Total	100

4G SINR

● 0 TO 30   (8498544)
● 0 TO -40   (359135)

BSNL

Technology	Rx Quality %
2G	59.96
3G	91.79

2G
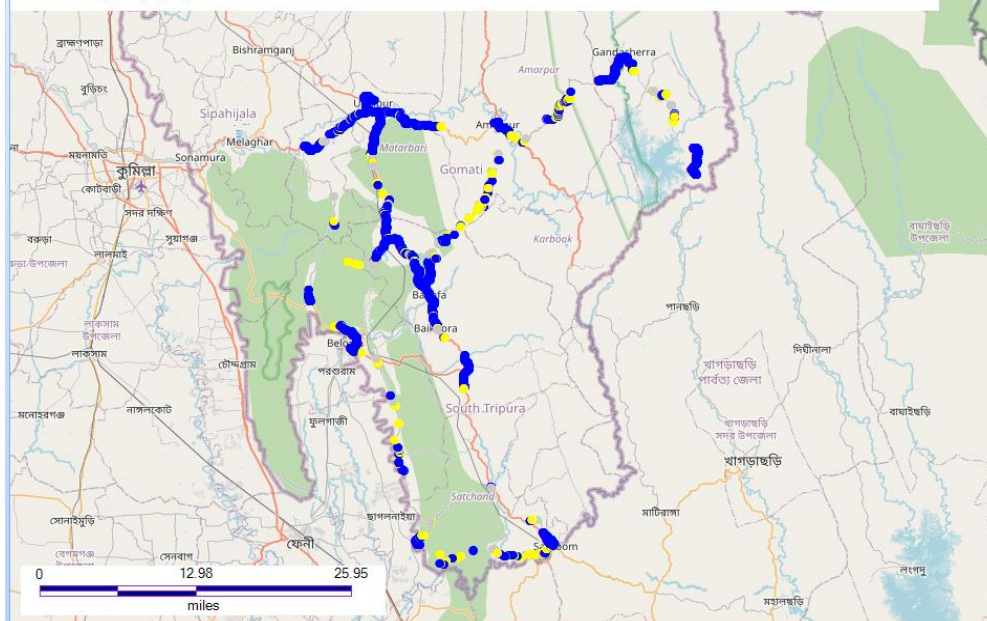

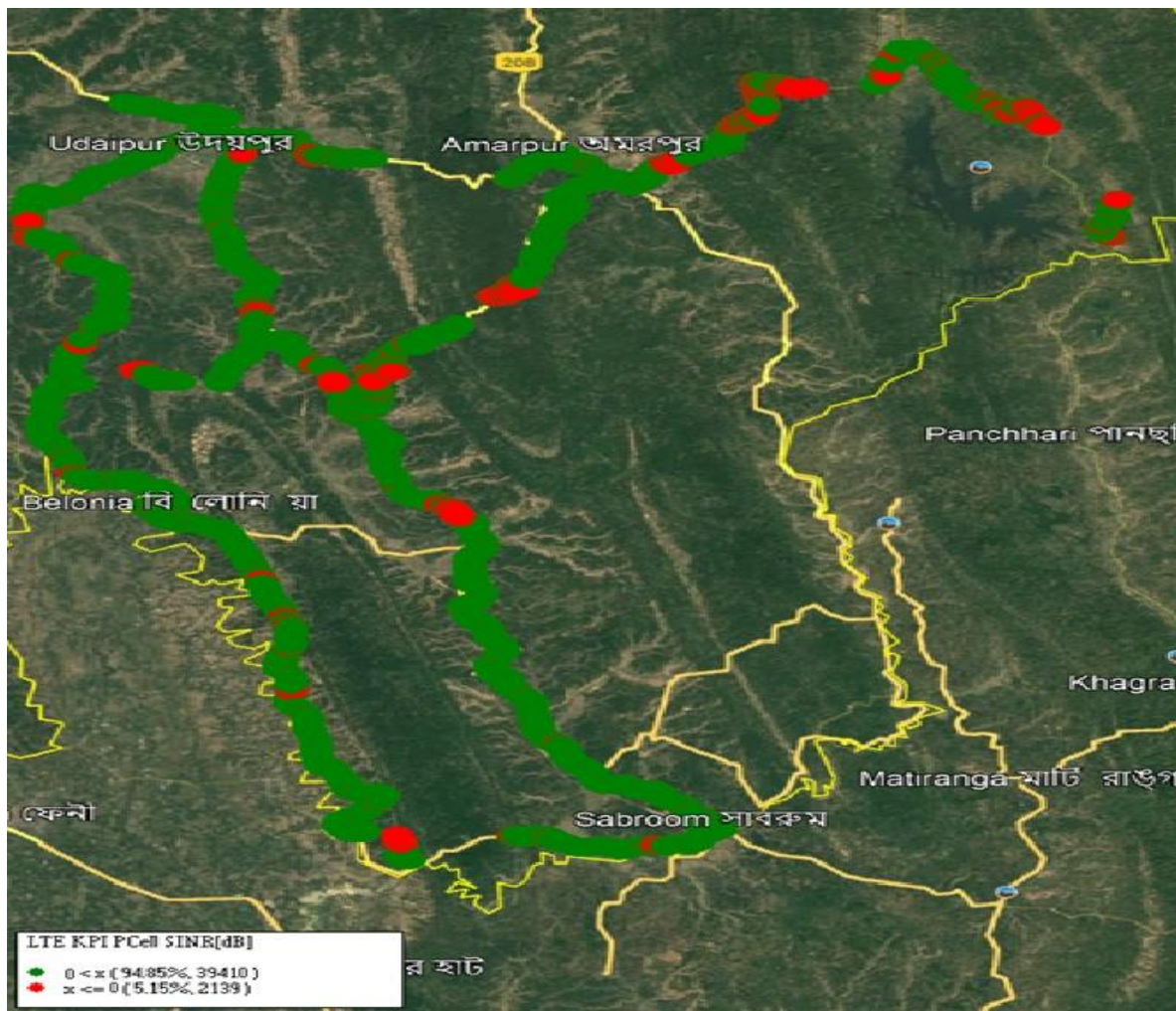| Overall Rx Quality	Sample %
(Min <=2)	51.5
(2 <=3)	8.46
(3 <=4)	6.45
(4 <=5)	4.56
(5 <=Max)	29.03
Total	100

3G

Overall EcNo	Sample %
(Max <=-6)	11.7
(-6 <=-9)	60.13
(-9 <=-11)	8.31
(-11 <=-14)	11.65
(-14 <= Min)	8.21
Total	100

RJIO

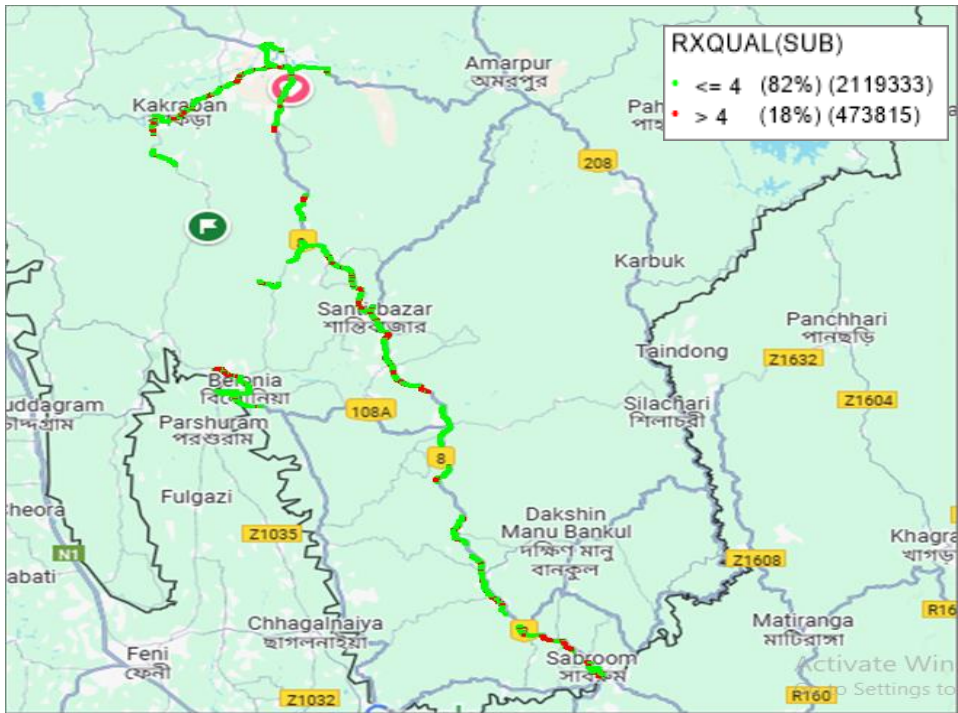| Technology	Rx Quality %
4G	94.85

4G

Overall SINR	Sample %
(Min <=0)	5.15
(0 <=5)	26.80
(5 <=10)	24.52
(10 <=15)	20.70
(15 <=Max)	22.83
Total	**100**

VIL

Technology	Rx Quality %
2G	82.0
4G	85.0

2G

RXQUAL(SUB)
- <= 4 (82%) (2119333)
- > 4 (18%) (473815)

Overall Rx Quality	Sample %
(Min <=2)	49
(2 <=3)	24
(3 <=4)	9
(4 <=5)	15
(5 <=Max)	3
Total	100

4G

CINR(dB)
- > 0 (85%) (936599)
- < 0 (15%) (171073)

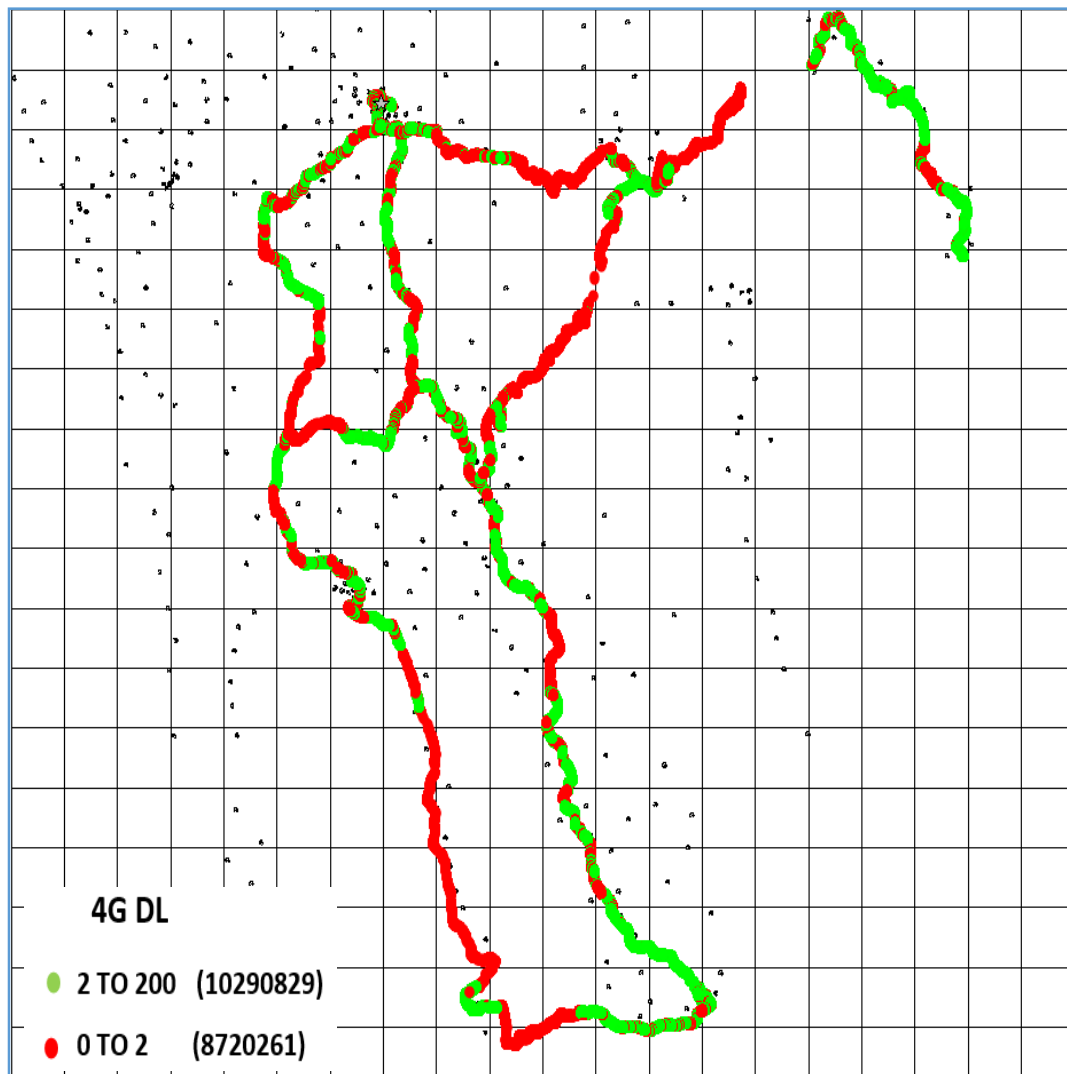| Overall SINR	Sample %
(Min <=0)	15
(0 <=5)	27
(5 <=10)	22
(10 <=15)	21
(15 <=Max)	15
Total	100

AIRTEL

Dynamic Data Testing Complete 328 Kms

Data KPIs - Overall	4G
Average Download Throughput (Mbps)	6.1

4G

4G DL

● 2 TO 200 (10290829)

● 0 TO 2   (8720261)

AVG. DOWNLOAD SPEED (Kbps)	6.1
DL throughput	Sample %
0 to <2 Mbps	45.87
2 to <10 Mbps	34.21
10 to <=30 Mbps	13.96
>30 Mbps	5.97
Total	100

AIRTEL

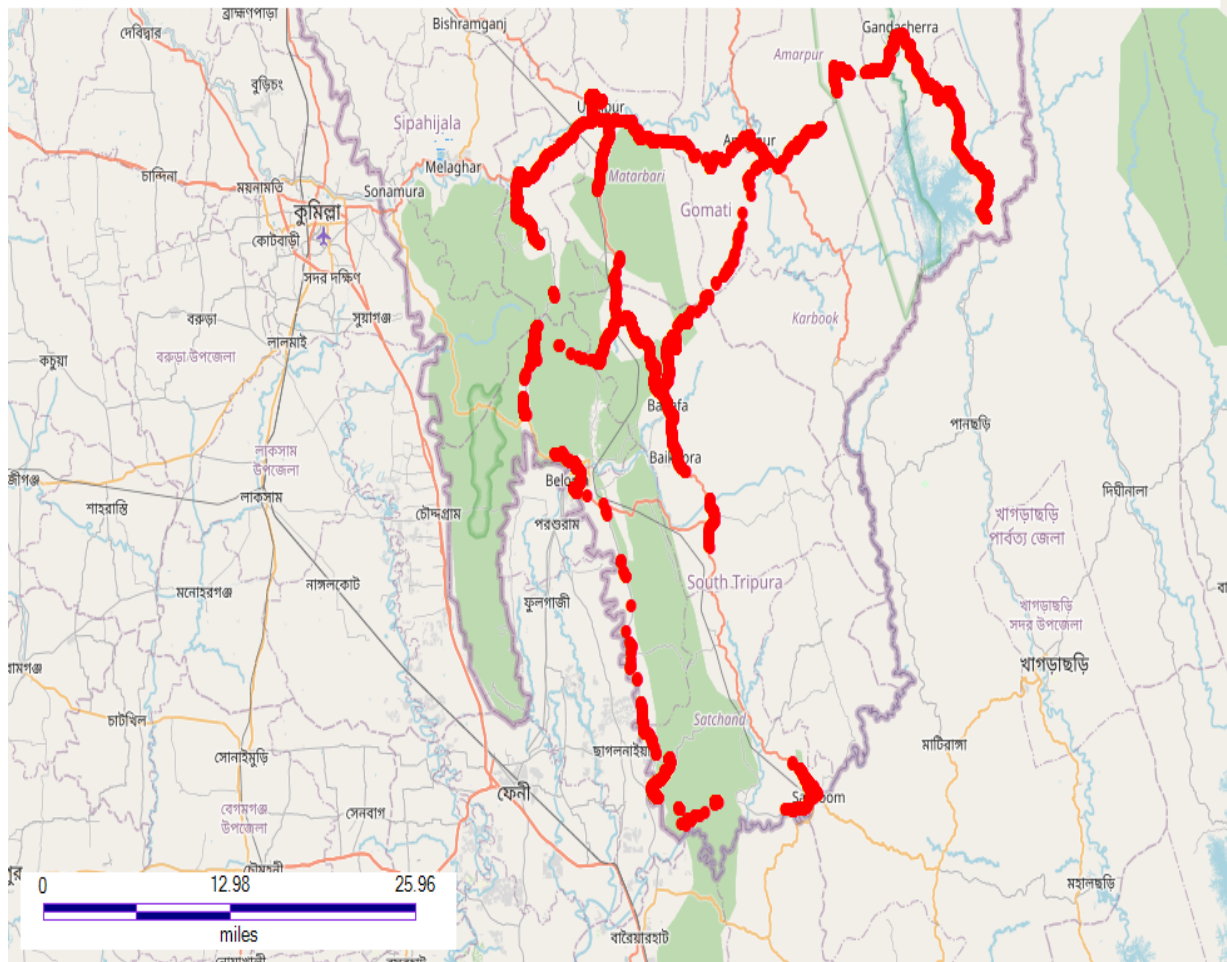### Dynamic Data Testing Complete 328 Kms

Data KPIs - Overall	5G
Average Download Throughput (Mbps)	51.2

5G

5G DL

• 2 TO 500   (4839443)

• 0 TO 2   (145287)
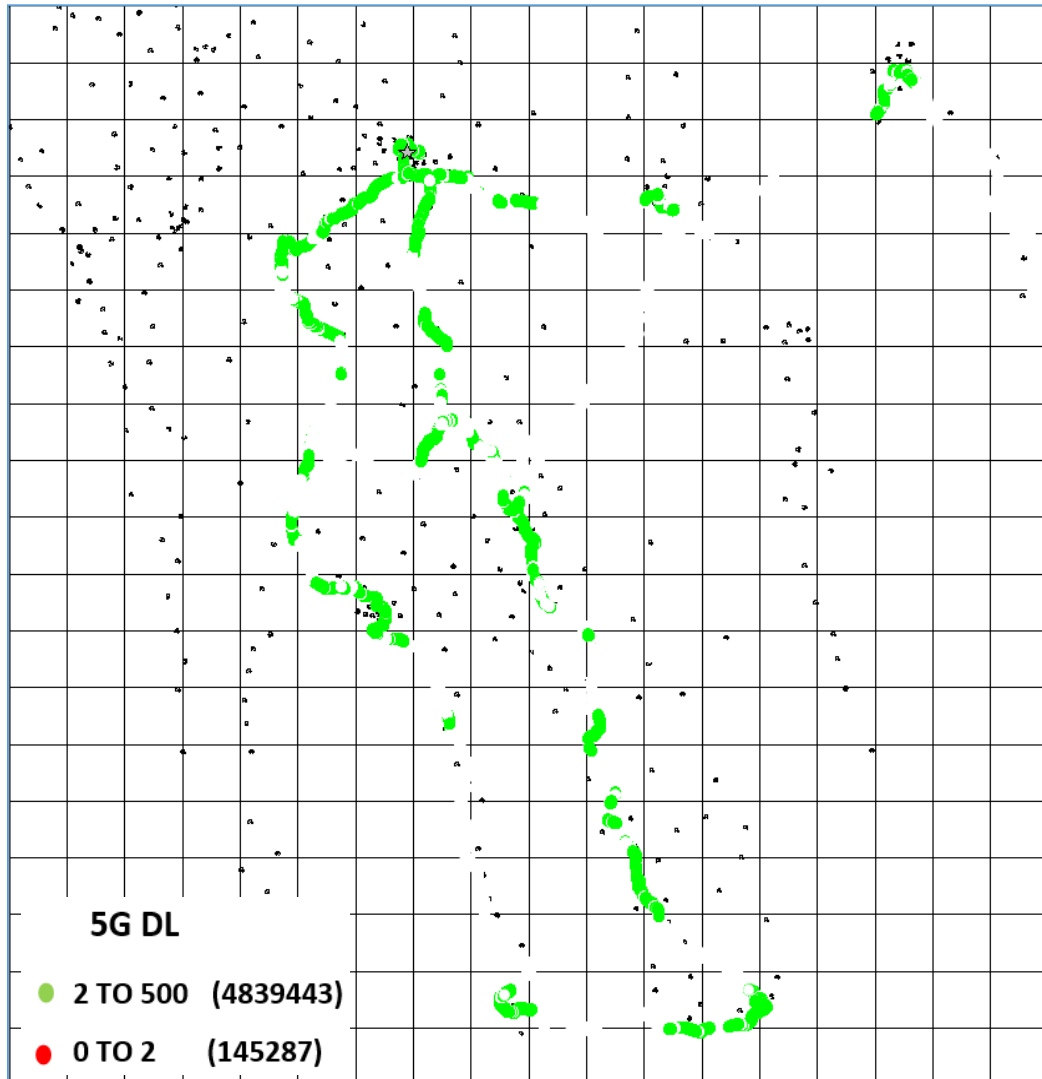
AVG. DOWNLOAD SPEED (Mbps)	51.2
DL throughput	Sample %
0 to <2 Mbps	2.91
2 to <10 Mbps	1.24
10 to <50 Mbps	9.16
> 50 Mbps	86.68
Total	100

BSNL

Dynamic Data Testing Complete 328 Kms

Data KPIs - Overall	3G
Average Download Throughput (Mbps)	0.18

3G

Device - 1 Phone Sony/F8331 QUALCOMM (1) + Nemo Handy + 404774240045805 - UMTS Downlink RLC Throughput (kbps)

● 2,048 to 10,240 (0%)   (0)
● 0 to 2,048   (100%) (10689)

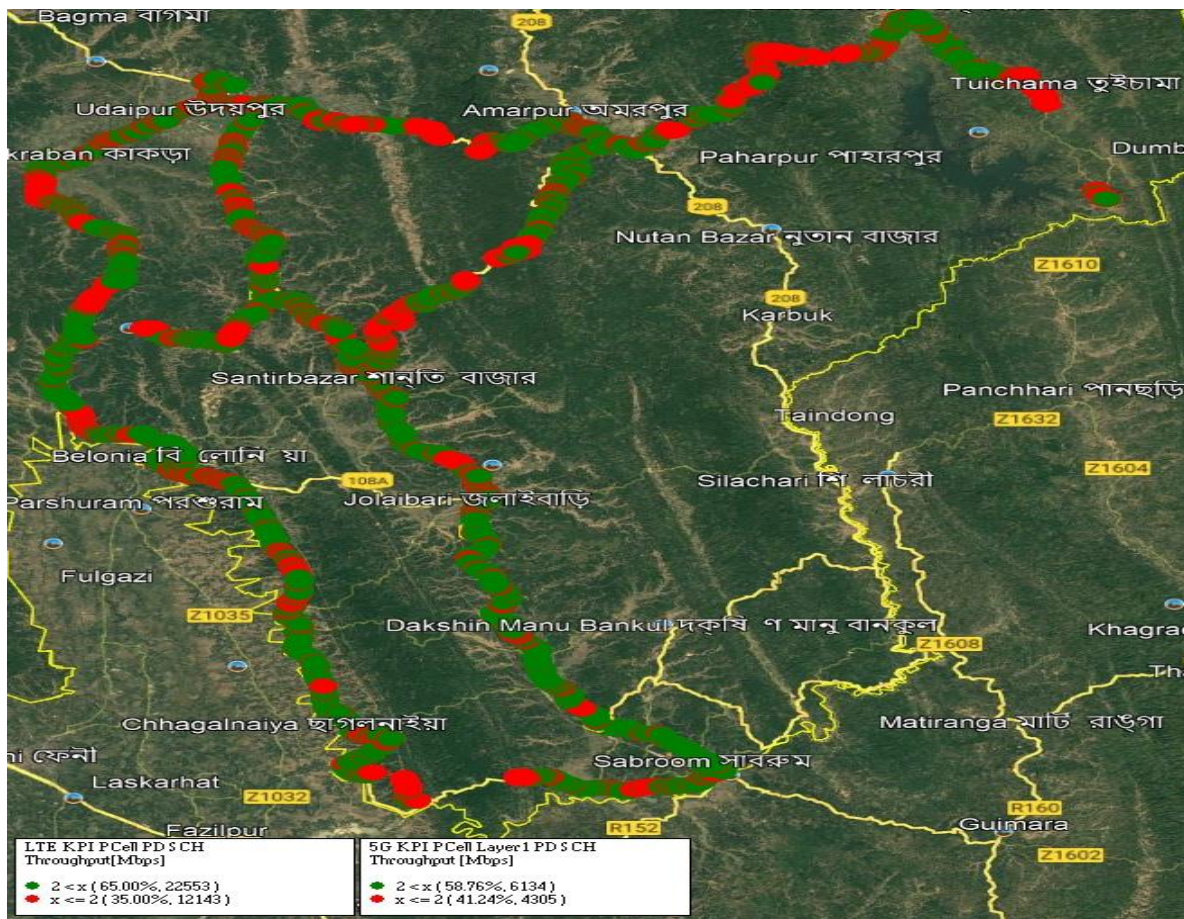| AVG. DOWNLOAD SPEED (Mbps)	0.18
DL throughput	Sample %
0 to <2 Mbps	100
2 to <=10 Mbps	0
>10 Mbps	0
Total	**100**

RJIO

Dynamic Data Testing Complete 328 Kms

Data KPIs - Overall	4G/5G
Average Download Throughput (Mbps)	25.45/204.27

4G/5G

AVG. DOWNLOAD SPEED (Mbps) 4G	25.45
DL throughput	Sample %
0 to <2 Mbps	34.99
2 to <10 Mbps	35.80
10 to <=30 Mbps	17.24
>30 Mbps	11.97
Total	100

AVG. DOWNLOAD SPEED (Mbps) 5G	204.27
DL throughput	Sample %
0 to <2 Mbps	41.24
2 to <10 Mbps	15.04
10 to <50 Mbps	17.11
> 50 Mbps	26.61
Total	100

VIL

Dynamic Data Testing Complete 328 Kms

Data KPIs – Overall	4G
Average Download Throughput (Mbps)	27.71

4G
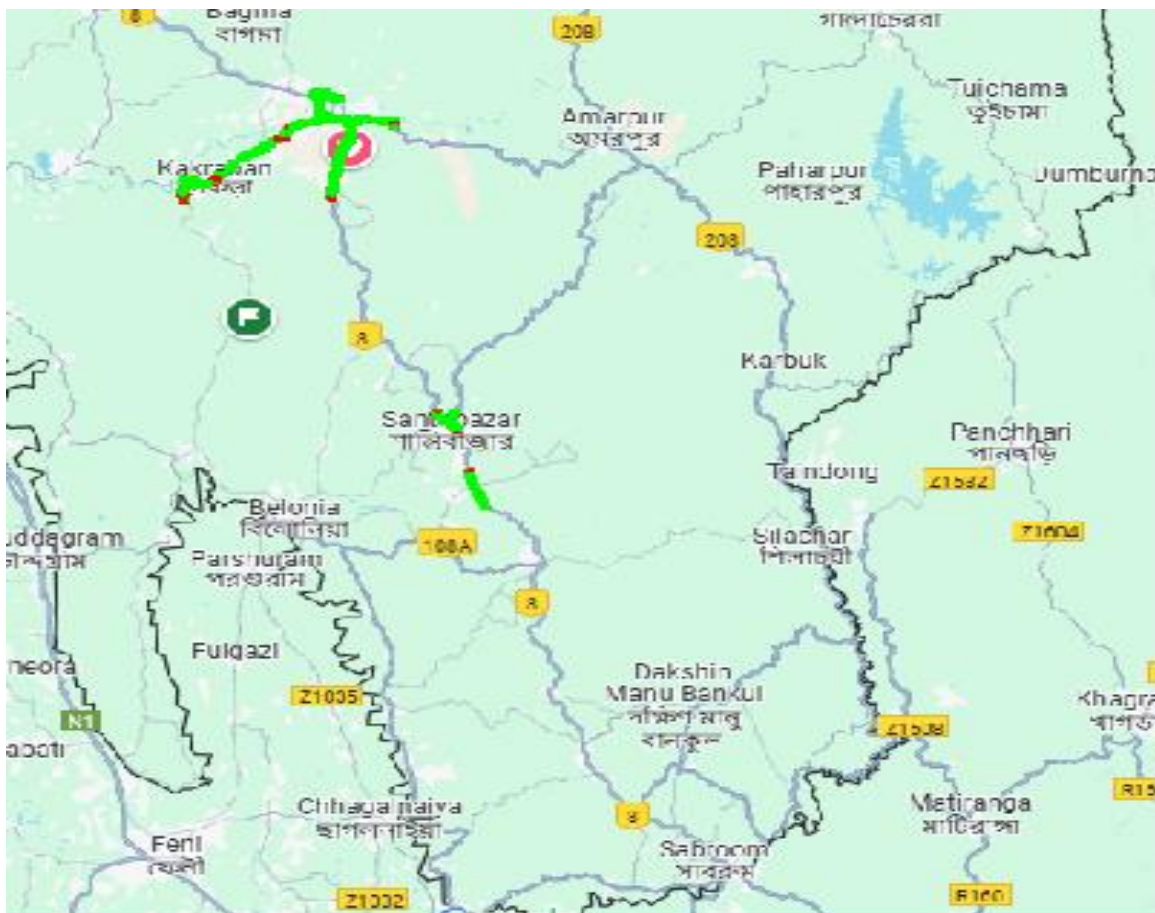
AVG. DOWNLOAD SPEED (Mbps)	27.71
DL throughput	Sample %
0 to <2 Mbps	12
2 to <10 Mbps	31
10 to <=30 Mbps	40
>30 Mbps	17
Total	**100** |