Operator Assisted Drive Test Report
Namsai and Lohit Districts,
Arunachal Pradesh
March, 2025
(RO, Kolkata)

Key Performance Indicators (KPIs):

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

AIRTEL - Rx Quality in 4G (SINR) network.

BSNL- Drop Call Rate in 2G & 3G network, Block Call Rate in 3G network, Call Set up Success Rate in 3G network and Rx Quality in 2G & 3G (Ec/Io) network.

RJIO-Rx Quality in 4G (SINR) network.

VIL- Rx Quality in 4G (SINR) network.

The Operator Assisted Drive Test has been carried out by Regional Office, Kolkata with the help of Service Providers in Namsai and Lohit Districts including National Highway 13   on 12th March 2025 from 08.30 AM to 05.00 PM. The drive test covered drive route of 205 KMs (approx) over a period of one day. Approximately 130 + 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

Namsai district is an administrative district in the state of Arunachal Pradesh in north-east India. It was carved out of Lohit district in November 2014. On 25 November 2014, the Namsai subdivision of Lohit district was declared as a new district of Arunachal Pradesh, becoming the 18th district of the state.

Lohit is an administrative district in the state of Arunachal Pradesh in India. The district headquarters is located at Tezu. As of 2011, it is the third most populous district of Arunachal Pradesh, after Papum Pare and Changlang.

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	NIMO	X-CAL	TEMS

Overview

Voice & Dynamic Data Test Drive Route

Drive Routes: Namsai and Lohit Districts

DAY-1– Dirak Gate – Dihing Bridge – Manabhum Forest Range Office – Tengapani Forest Range Office – Government Higher Secondary School, Chowkham – Government Hospital, Medo – Circuit House – Lohit Bridge – Parashuram Kunda View Point – Sunset point, Tezu – D.C Office, Tezu – Zonal Hospital, Tezu –Chow Pha Plang Lu Ground – Primary Health Centre Koronu –Zilla Parishad, Roing

Data Service Test- Static Locations

Static Locations
Dirak Gate
Tezu DC Office
Roing Bazar

Voice Calls

QoS compliance of the TSPs for Voice across technologies 2G/3G/4G-VoLTE:
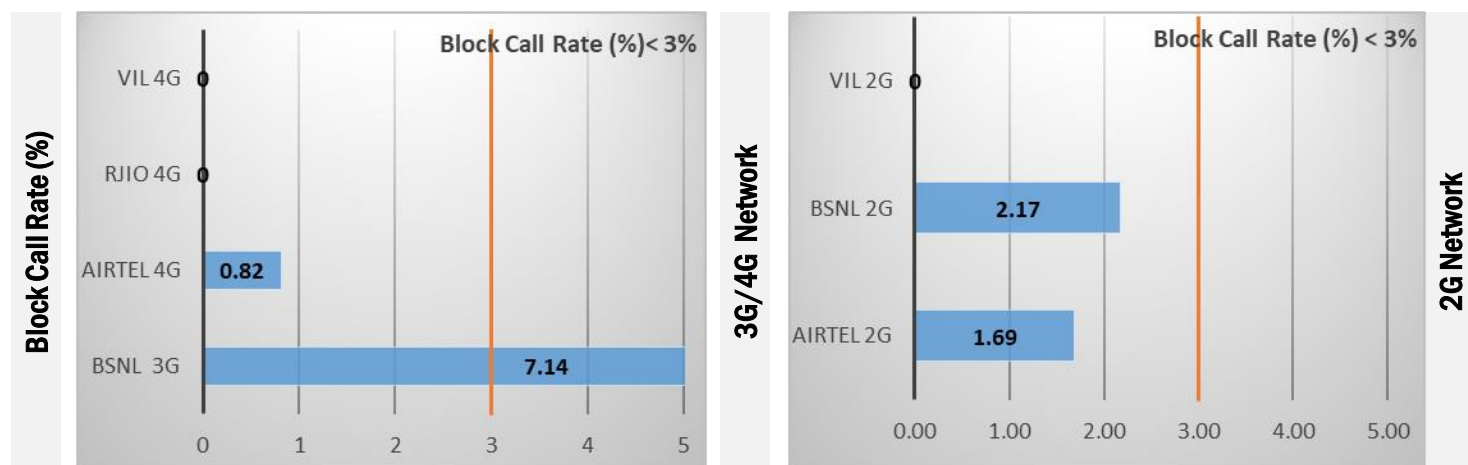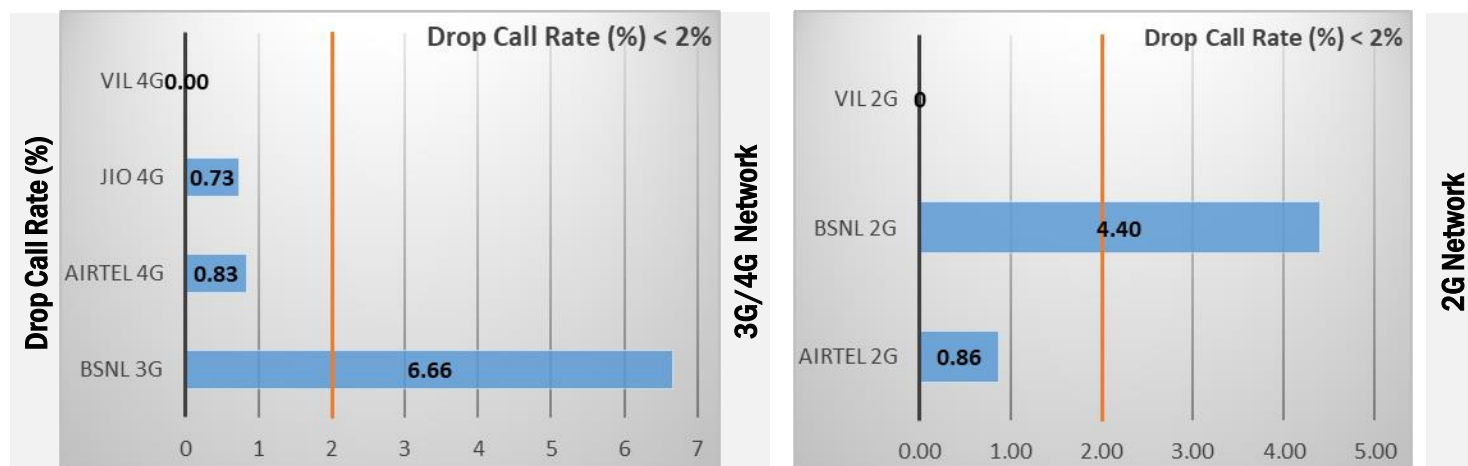
KPIs	2G			3G	4G-VoLTE		
	AIRTEL	**BSNL**	**VIL**	**BSNL**	**AIRTEL**	**RJIO**	**VIL**
Drop Call Rate %	0.86	4.4	0.00	6.66	0.83	0.73	0.00
Block Call Rate %	1.69	2.17	0.00	7.14	0.82	0.00	0.00

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 (3G) network

Voice Calls

Coverage

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

TSPs	2G		
	AIRTEL	**BSNL**	**VIL**
Coverage %	47.78	20.00	86.69

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

TSPs	3G	4G		
	BSNL	**AIRTEL**	**RJIO**	**VIL**
Coverage	28.37	76.66	78.85	81.96

Summary

Voice Call	2G		
	AIRTEL	BSNL	VIL
Call Attempt	118	92	28
Blocked Call Rate (%)	1.69	2.17	0
CSSR% (Accessibility)	98.31	97.8	100
Drop Call Rate (%)	0.86	**4.40**	0
Mobility HOSR (%)	97.92	95.55	100
Rx Quality (%)	96.82	**87.23**	**85.49**

Voice Call	3G/4G			
	BSNL 3G	AIRTEL 4G	RJIO 4G	VIL 4G
Call Attempt	60	122	137	24
Blocked Call Rate (%)	**7.14**	0.82	0.00	0
CSSR% (Accessibility)	**93.34**	99.18	100	100
Drop Call Rate (%)	**6.66**	0.83	0.73	0
Mobility HOSR (%)	96.60	99.66	96.98	100
Rx Quality (%)	**74.01**	**88.40**	**91.57**	**94.63**

Dynamic Data was tested for 205 Kms. Download Throughput was tested.

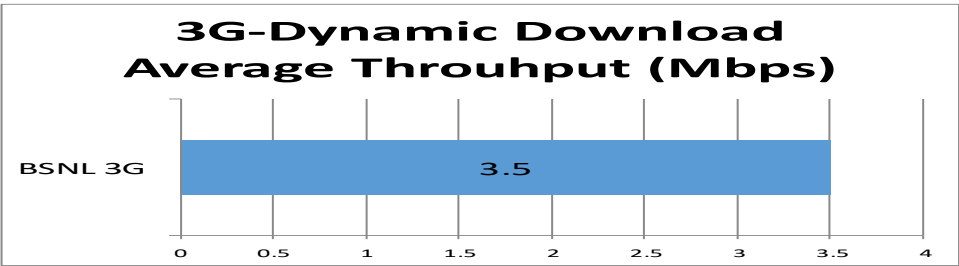**Data Download Performance (Average Throughput in Mbps) - Dynamic Data Testing**

4G/3G Network:

4G-Dynamic Download Average Throuhput (Mbps)

VIL 4G	28.51
RJIO 4G	18.57
AIRTEL 4G	6.1
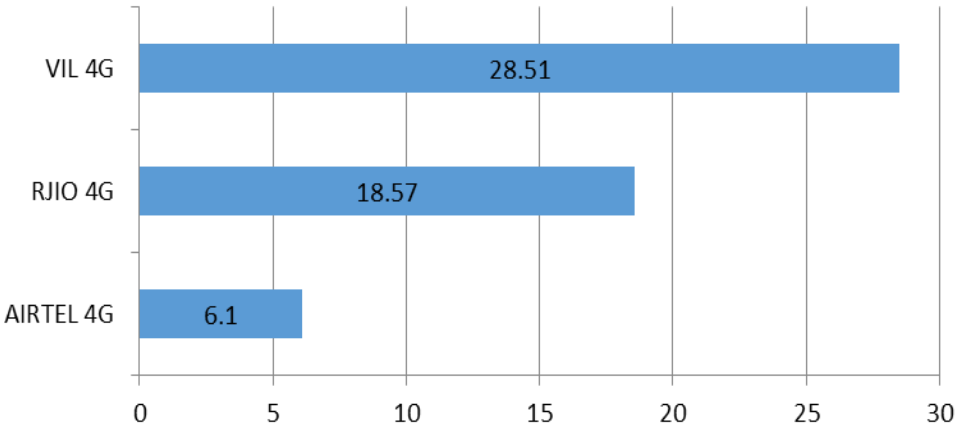
3G-Dynamic Download Average Throuhput (Mbps)

BSNL 3G	3.5

Summary-Data Services Static

Average Data Services Static	3G/ 4G			
	BSNL 3G	AIRTEL 4G	RJIO 4G	VIL 4G
Download throughput in Mbps	3.43	47.00	220.57	9.72
Upload Throughput in Mbps	2.70	9.49	43.71	6.32
Video streaming delay (sec)	0.60	0.23	0.0	1.13
Web Browsing Delay (secs)	0.30	0.53	0.21	1.16
Latency (msec)	89.67	69.34	***	66.34

***Latency Report not submitted by RJIO

Location:-Dirak Gate*	3G/4G			
	BSNL 3G	AIRTEL 4G	RJIO 4G	VIL 4G
Download throughput in Mbps	3.59	48.67	297.10	9.16
Upload Throughput in Mbps	2.90	7.20	33.45	5.06
Video streaming delay (secs)	0.58	0.13	0.00	1.21
Web Browsing Delay (secs)	0.28	0.9	0.28	1.28
Latency (msec)	88.00	78.00	***	61.00

Location:- Tezu D.C Office	3G/4G			
	BSNL 3G	AIRTEL 4G	RJIO 4G	VIL 4G
Download throughput in (mbps)	3.50	53.44	139.33	9.44
Upload Throughput in (mbps)	2.80	11.40	56.86	6.87
Video streaming delay (secs)	0.60	0.08	0.0	1.08
Web Browsing Delay (secs)	0.30	0.3	0.18	1.13
Latency (msec)	90.00	58.00	***	64.00

| Location:-Roing Bazar	3G/4G			
	BSNL 3G	AIRTEL 4G	RJIO 4G	VIL 4G
Download throughput in Mbps	3.20	38.88	225.26	10.57
Upload Throughput in Mbps	2.40	9.87	40.81	7.03
Video streaming delay (secs)	0.63	0.5	0.0	1.10
Web Browsing Delay (secs)	0.33	0.4	0.18	1.07
Latency (msec)	91.00	72.00	****	74.00

***Latency Report not submitted by RJIO

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	47.78
BSNL 2G	20.00
VIL 2G	86.69
BSNL 3G	28.37
AIRTEL 4G	76.66
RJIO 4G	78.85
VIL 4G	81.96

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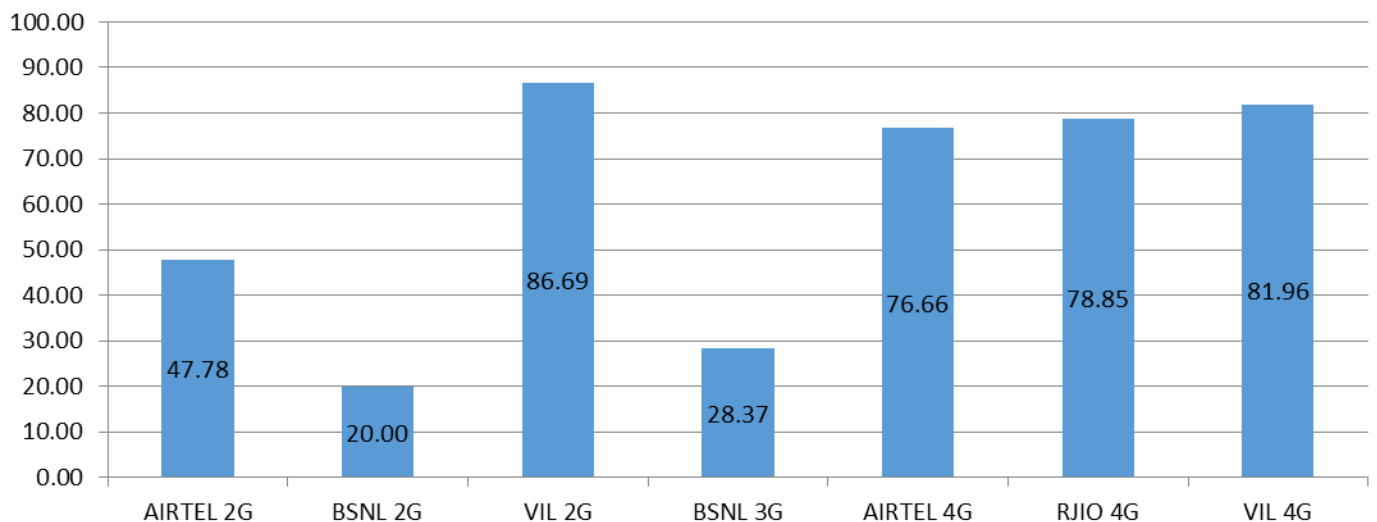
Note- Coverage is the percentage of samples having signal strength more than the threshold value (2G >= -85 dbm, 3G>= -90 dbm and 4G >= -110 dbm). However, these samples are only for the portion of the OADT routes where TSPs have coverage i.e 'no coverage' routes have been excluded.

AIRTEL

Technology	Coverage Rate %
2G	47.78
4G	76.66

2G

RX LEVEL	
0 TO -85	(581767)
-85 TO -120	(635842)
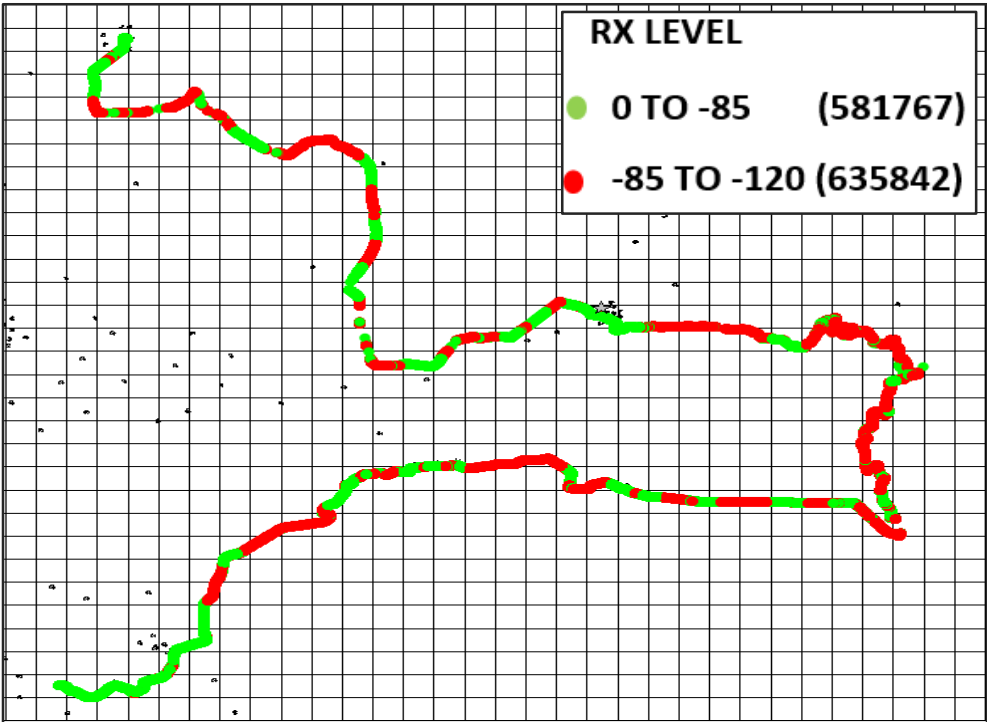
Overall Rx Level	Sample %
[Max >=-75]	26.25
[-75 >=-85)	21.53
[-85 >=-95)	22.31
[-95 >=Min)	29.91
Total	100

4G

RSRP	
0 TO -110	(2905601)
-110 TO -140	(884437)
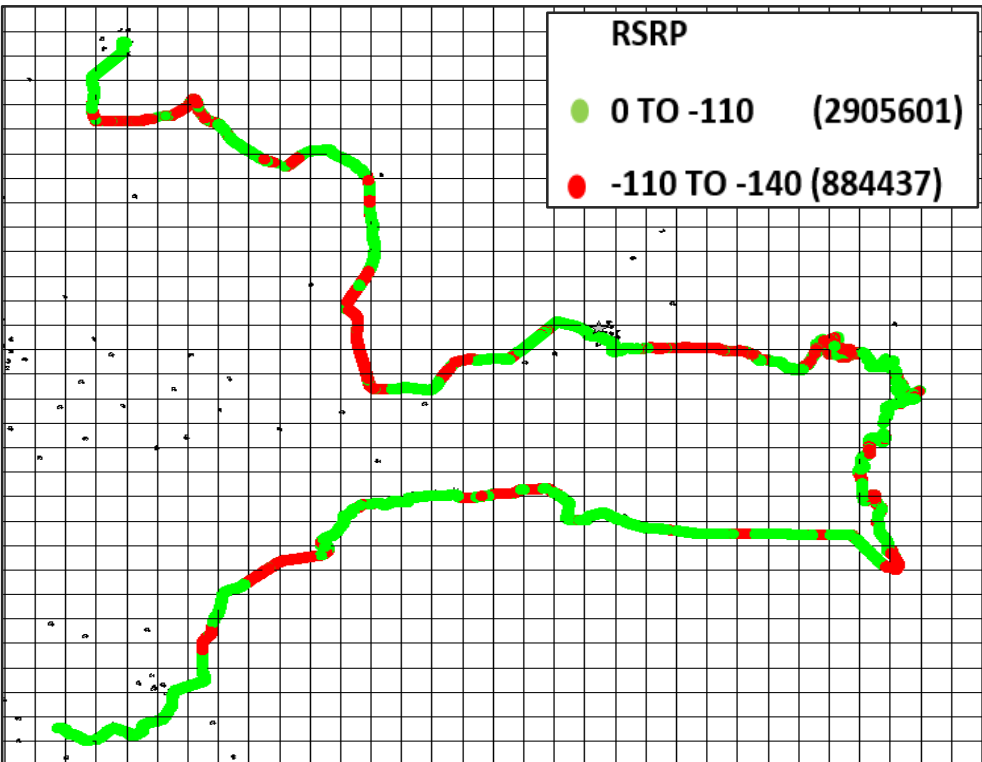
Overall RSRP	Sample %
[Max >=-80]	13.80
[-80 >=-90)	16.90
[-90 >=-110)	45.96
[-110 >=Min)	23.34
Total	100

BSNL

Technology	Coverage Rate %
2G	20.00
3G	28.37

2G
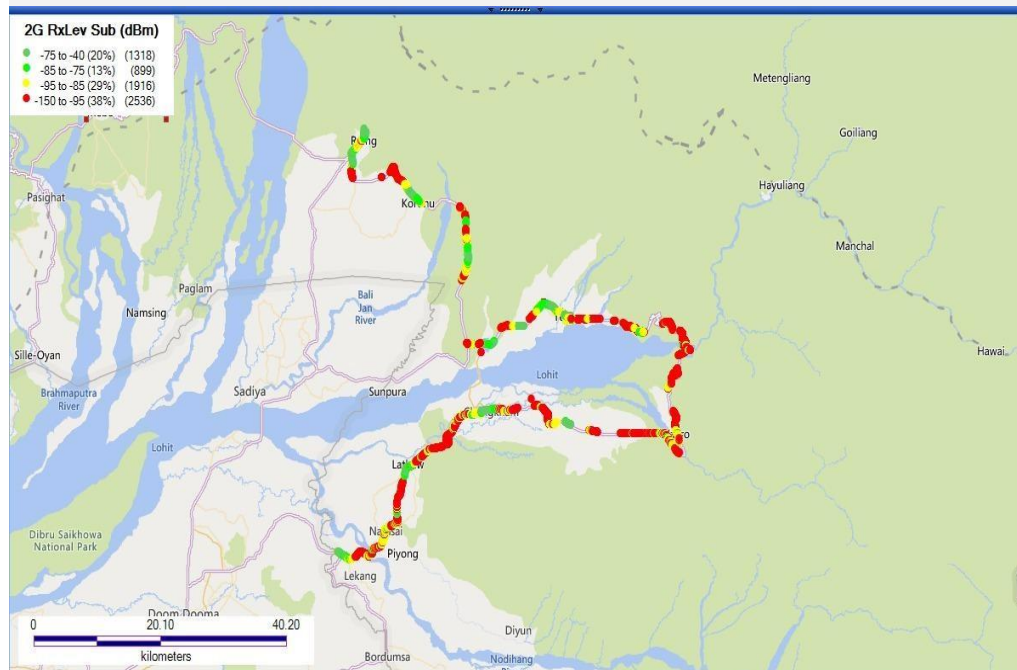
Overall Rx Level	Sample %
[Max >=-75]	20
[-75 >=-85)	13
[-85 >=-95)	29
[-95 >=Min)	38
Total	**100**

3G
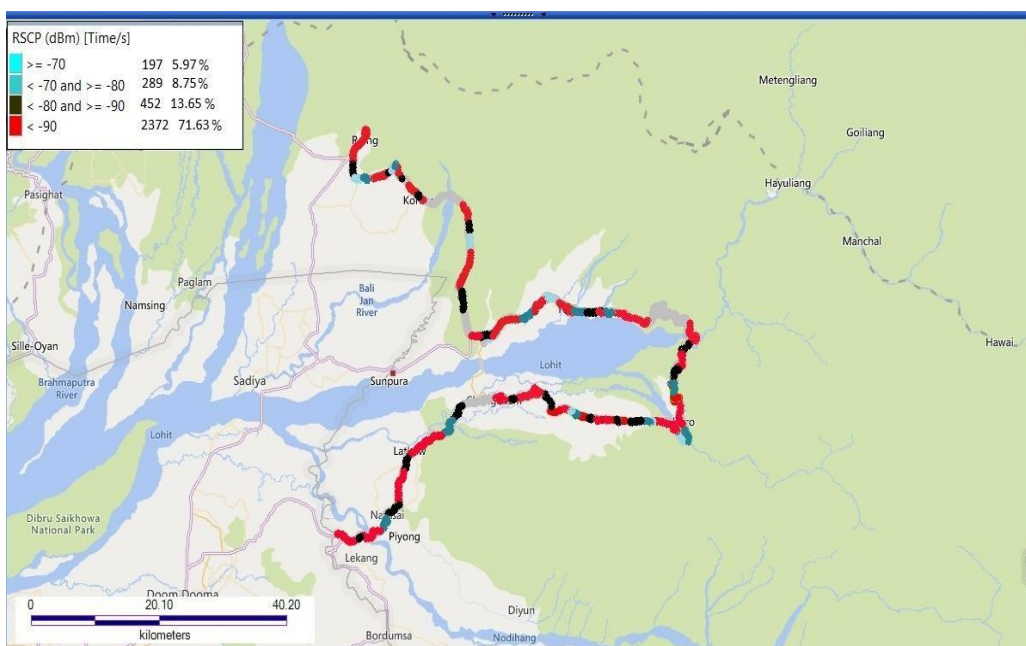
Overall RSCP	Sample %
[Max >=-70]	5.97
[-70 >=-80)	5.75
[-80 >=-90)	16.65
[-90 >=Min)	71.63
Total	**100**

RJIO

Technology	Coverage Rate %
4G	78.85
4G	

LTE KPI PCell Serving RSRP[dBm]
● -110 <=x < 0 (78.85%, 16225)
● x < -110 (21.15%, 4351)
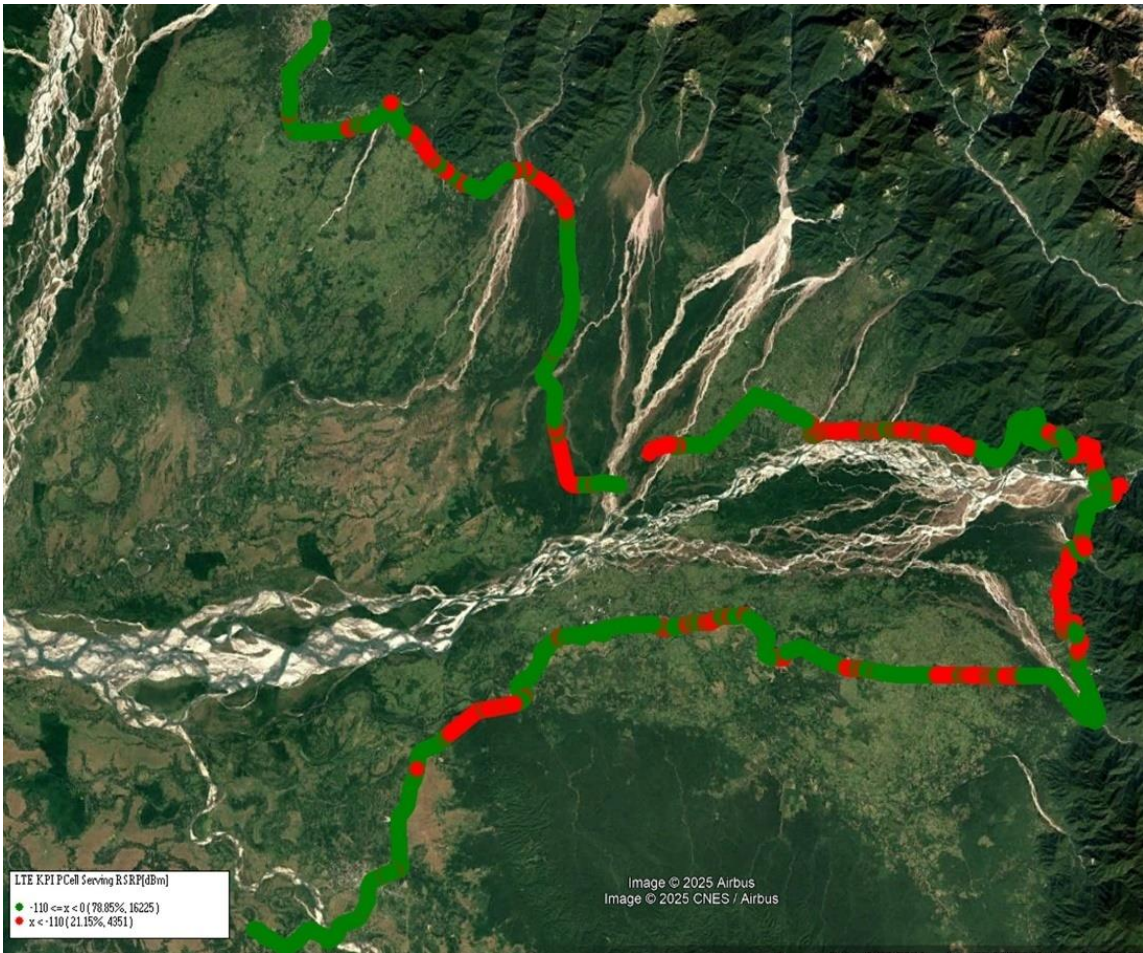
Overall RSRP	Sample %
[Max >=-80]	11.93
[-80 >=-90)	12.53
[-90>=-110)	54.39
[-110 >=Min)	21.15
Total	**100**

VIL

Technology	Coverage Rate %
2G	86.69
4G	81.96

2G

RxLevSub (dBm)
- >=-85 (86.69%) (284602)
- <-85 (13.31%) (43683)
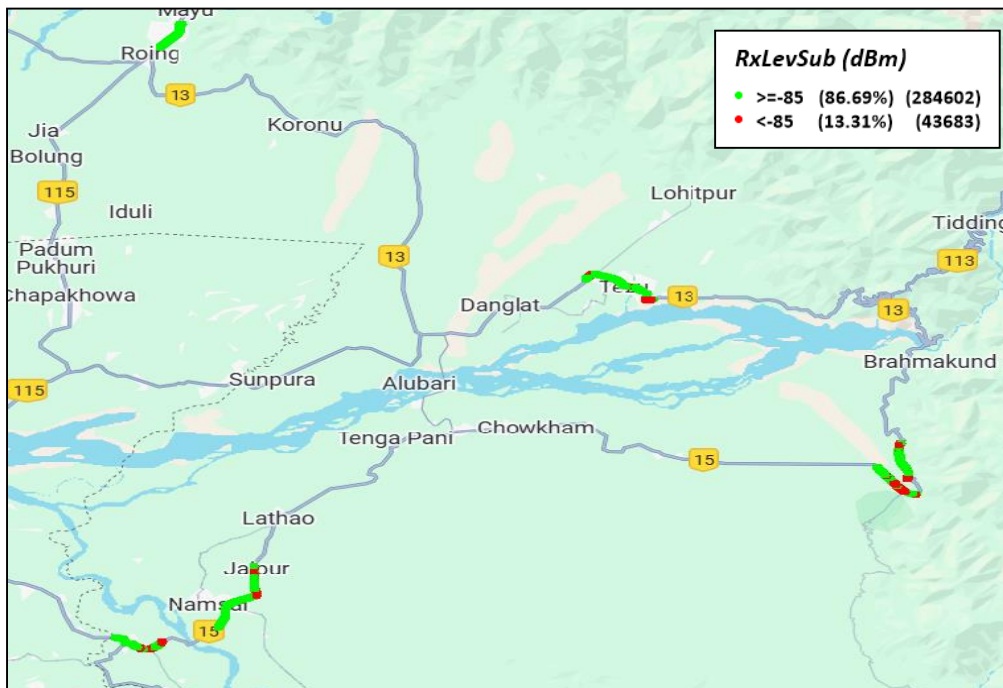
Overall Rx Level	Sample %
[Max >=-75]	45.16
[-75 >=-85)	41.53
[-85 >=-95)	9.46
[-95 =Min)	3.85
Total	**100**

4G

RSRP (dBm)
- >=-110 (81.96%) (641865)
- <-110 (18.04%) (141252)
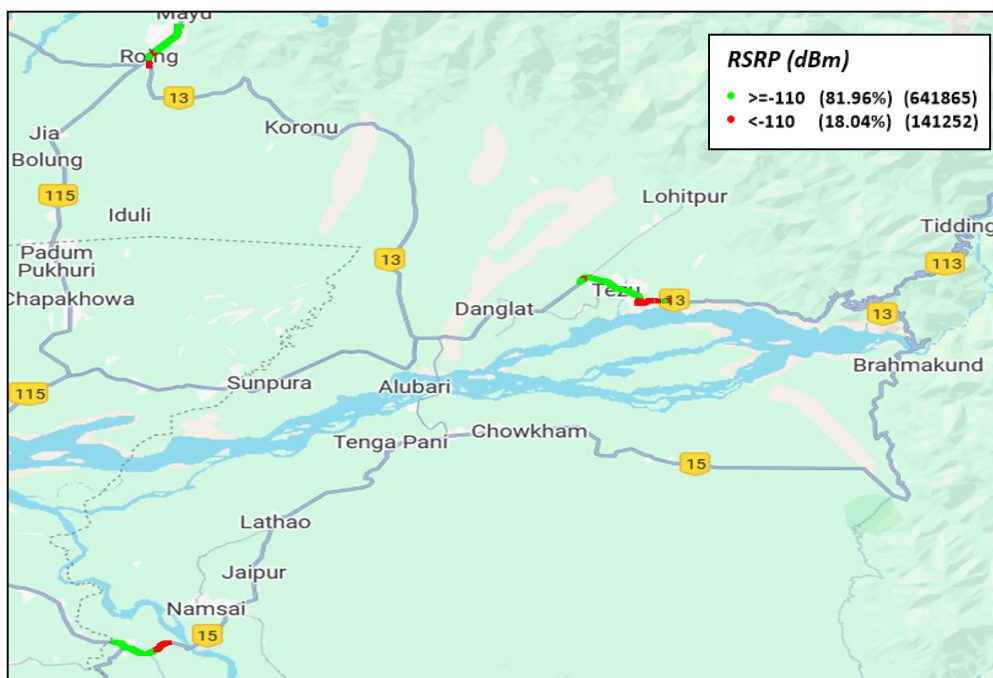
Overall RSRP	Sample %
[Max >=-80]	12.31
[-80 >=-90)	9.64
[-90>=-110)	60.01
[-110 >=Min)	18.04
Total	**100**

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	96.82
BSNL 2G	87.23
VIL 2G	85.49
BSNL 3G	74.01
AIRTEL 4G	88.40
RJIO 4G	91.57
VIL 4G	94.63

Rx Quality %

	AIRTEL 2G	BSNL 2G	VIL 2G	BSNL 3G	AIRTEL 4G	RJIO 4G	VIL 4G
	96.82	87.23	85.49	74.01	88.40	91.57	94.63
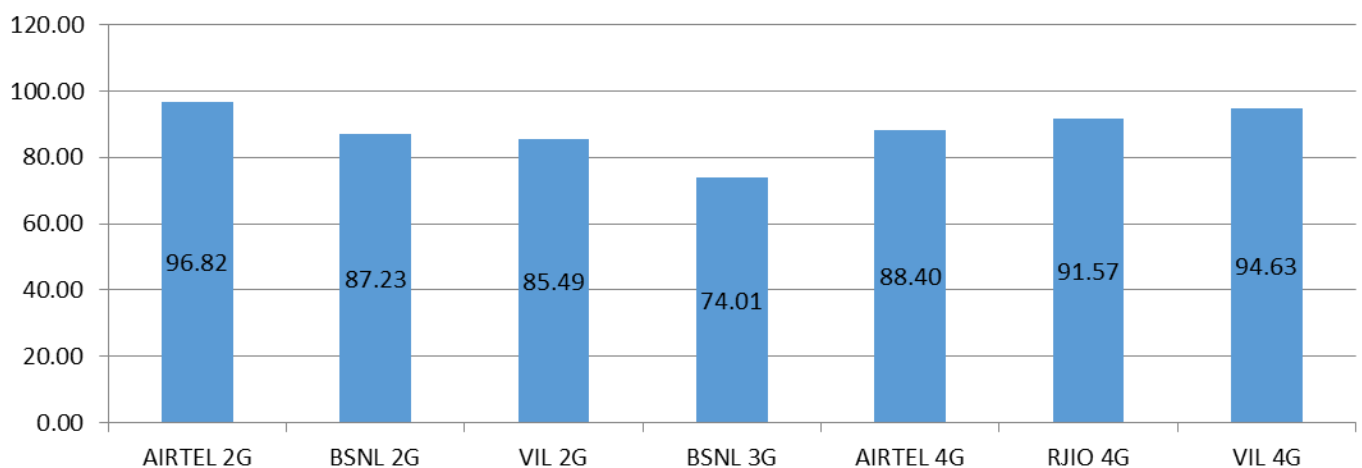
AIRTEL

Technology	Rx Quality %
2G	96.82
4G	88.40

2G

RX QUALITY
- 0 TO 5 (1178942)
- 5 TO 7 (38667)
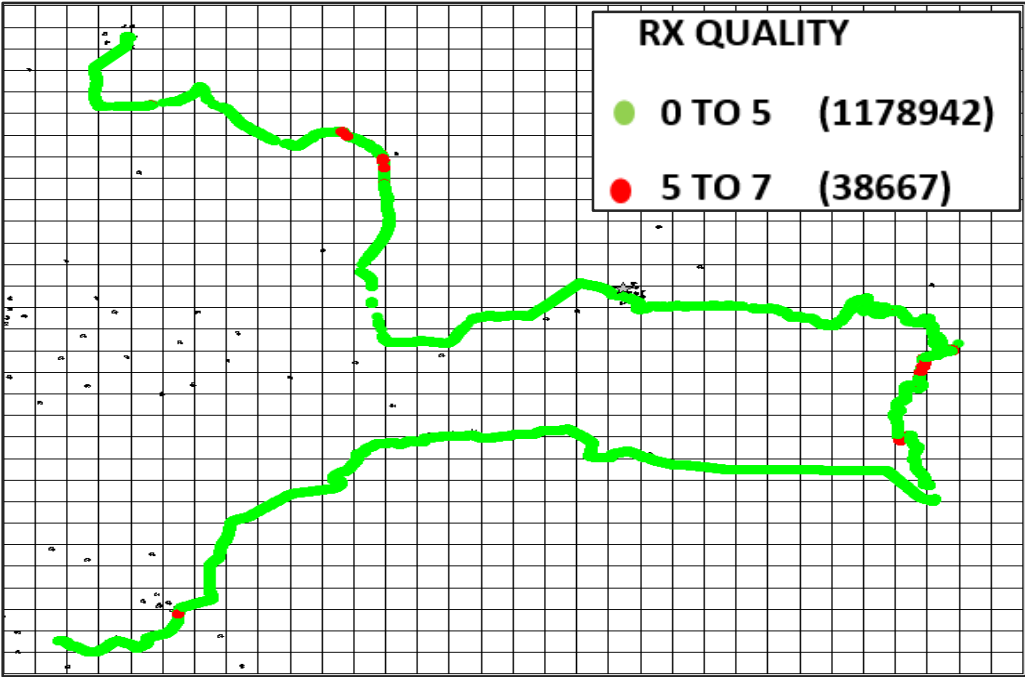
Overall Rx Quality	Sample %
(Min <=2)	90.84
(2 <=3)	3.05
(3 <=4)	1.66
(4 <=5)	1.28
(5 <=Max)	3.17
Total	100

4G

SINR
- 0 TO 30 (3350318)
- 0 TO -30 (439720)
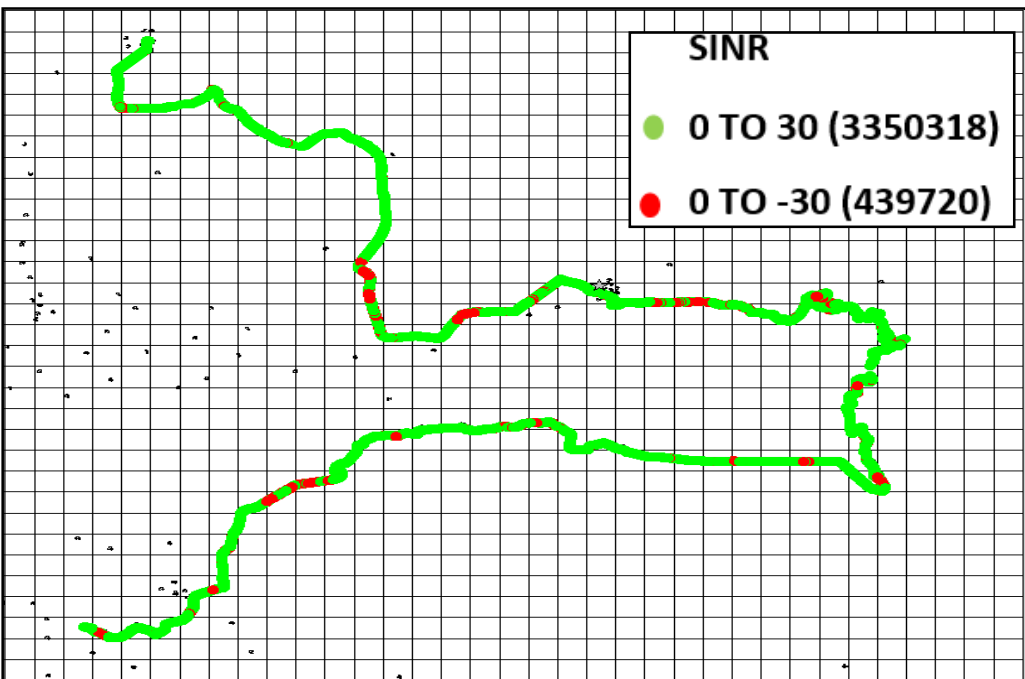
Overall SINR	Sample %
(Min <=0)	11.60
(0 <=5)	20.52
(5 <=10)	16.90
(10 <=15)	23.99
(15 <=Max)	26.99
Total	**100**

BSNL

Technology	Rx Quality %
2G	87.23
3G	74.01

2G
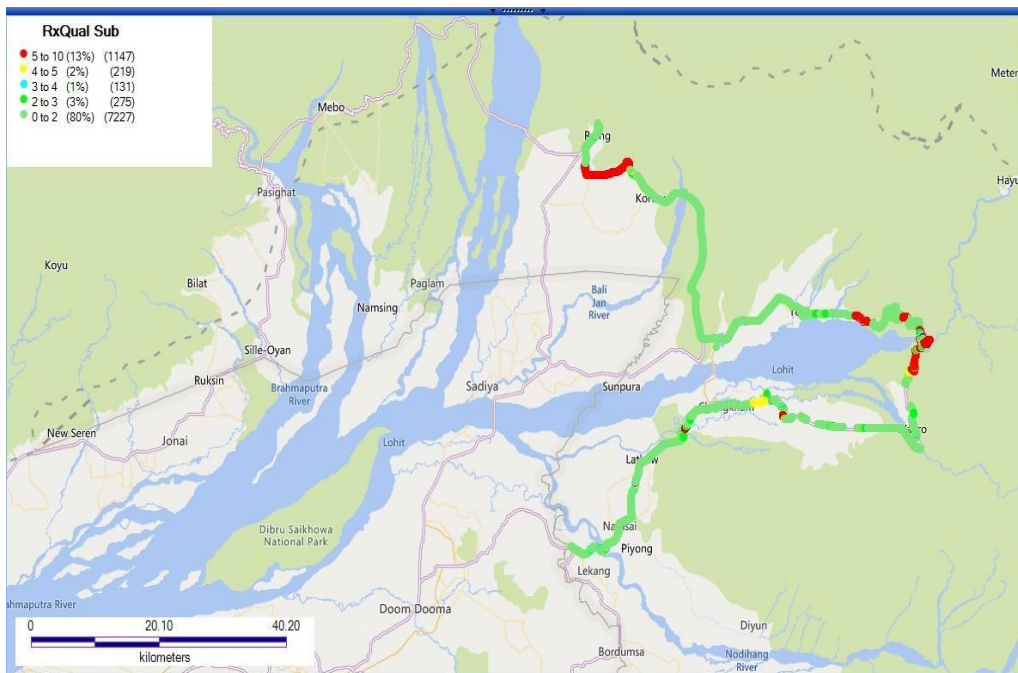
Overall Rx Quality	Sample %
(Min <=2)	80.3
(2 <=3)	3.05
(3 <=4)	1.45
(4 <=5)	2.43
(5 <=Max)	12.77
Total	100

3G
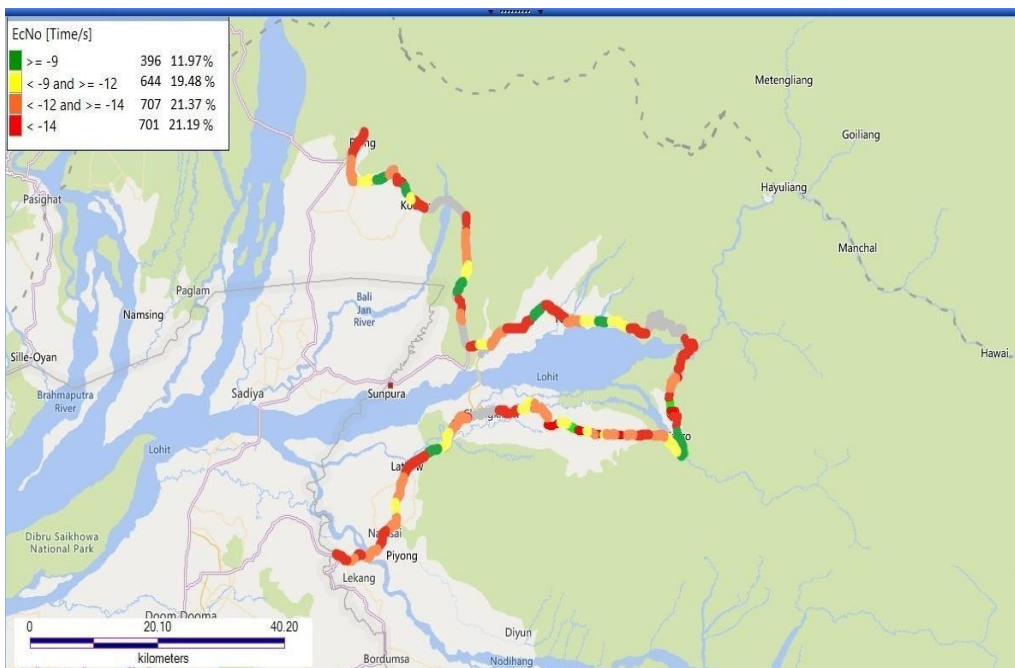
Overall EcNo	Sample %
(Min <=0)	11.97
(0 <=5)	19.48
(5 <=10)	21.37
(10 <=15)	21.19
(15 <=Max)	25.99
Total	100

RJIO

Technology	Rx Quality %
4G	91.57

4G
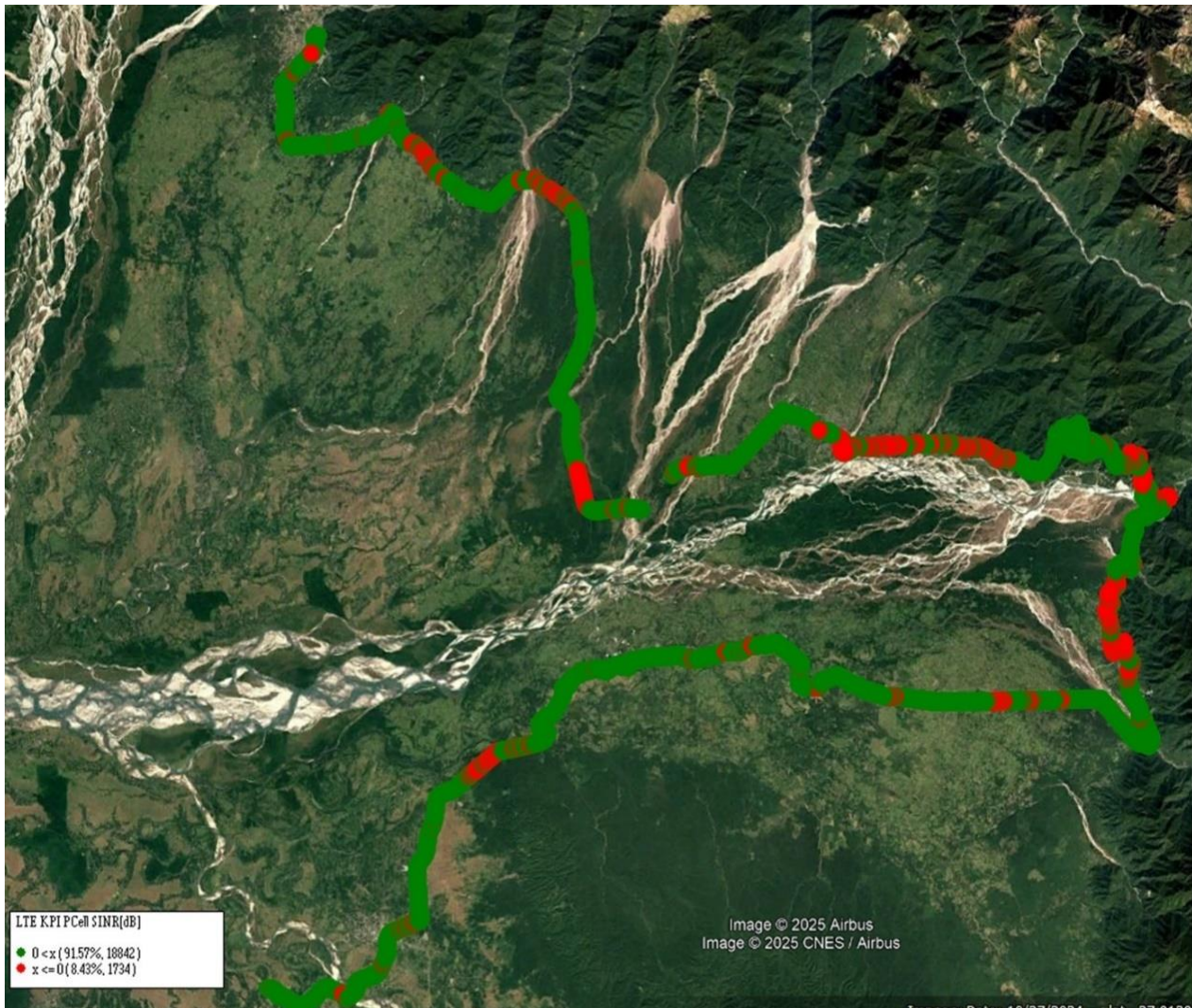
Overall SINR	Sample %
(Min <=0)	8.43
(0 <=5)	33.73
(5 <=10)	19.73
(10 <=15)	16.11
(15 <=Max)	22.00
Total	**100**

VIL

Technology	Rx Quality %
2G	85.49
4G	94.63

2G
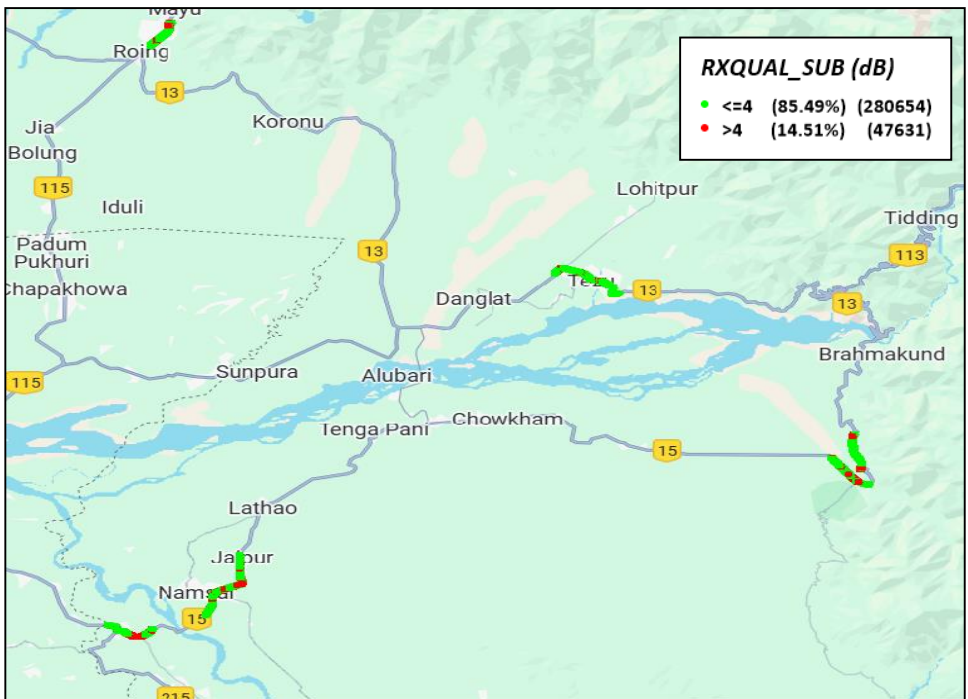
Overall Rx Quality	Sample %
(Min <=2)	76.17
(2 <=3)	3.03
(3 <=4)	6.29
(4 <=5)	3.57
(5 <=Max)	10.94
Total	100

4G
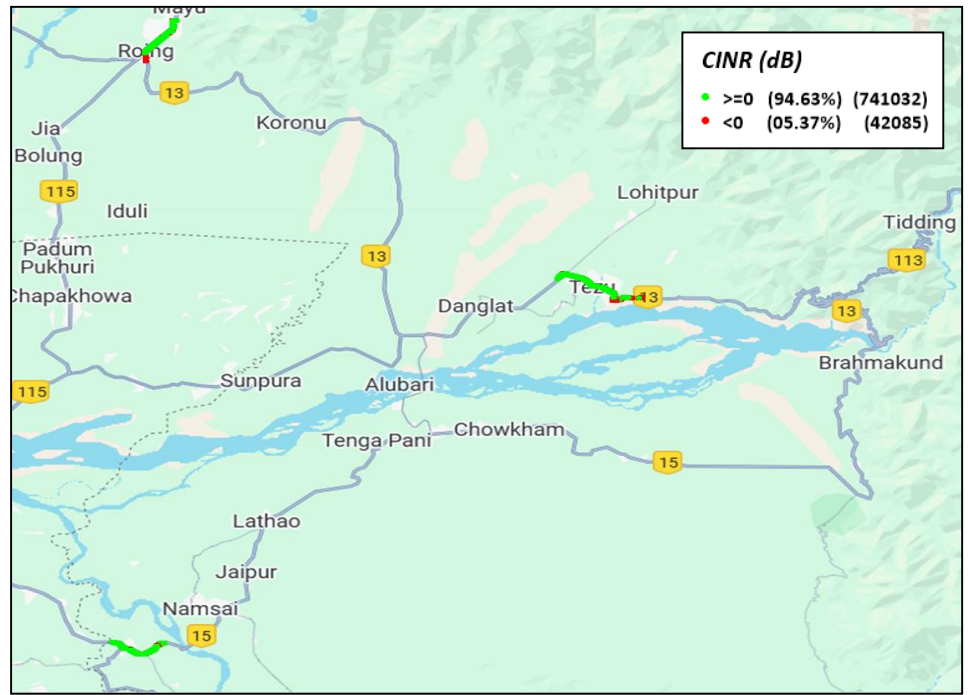
Overall SINR	Sample %
(Min <=0)	5.37
(0 <=5)	10.21
(5 <=10)	30.51
(10 <=15)	19.65
(15 <=Max)	34.26
Total	100

AIRTEL

Dynamic Data Testing Complete 205 Kms

Data KPIs - Overall	4G
Average Download Throughput (Mbps)	6.10

4G
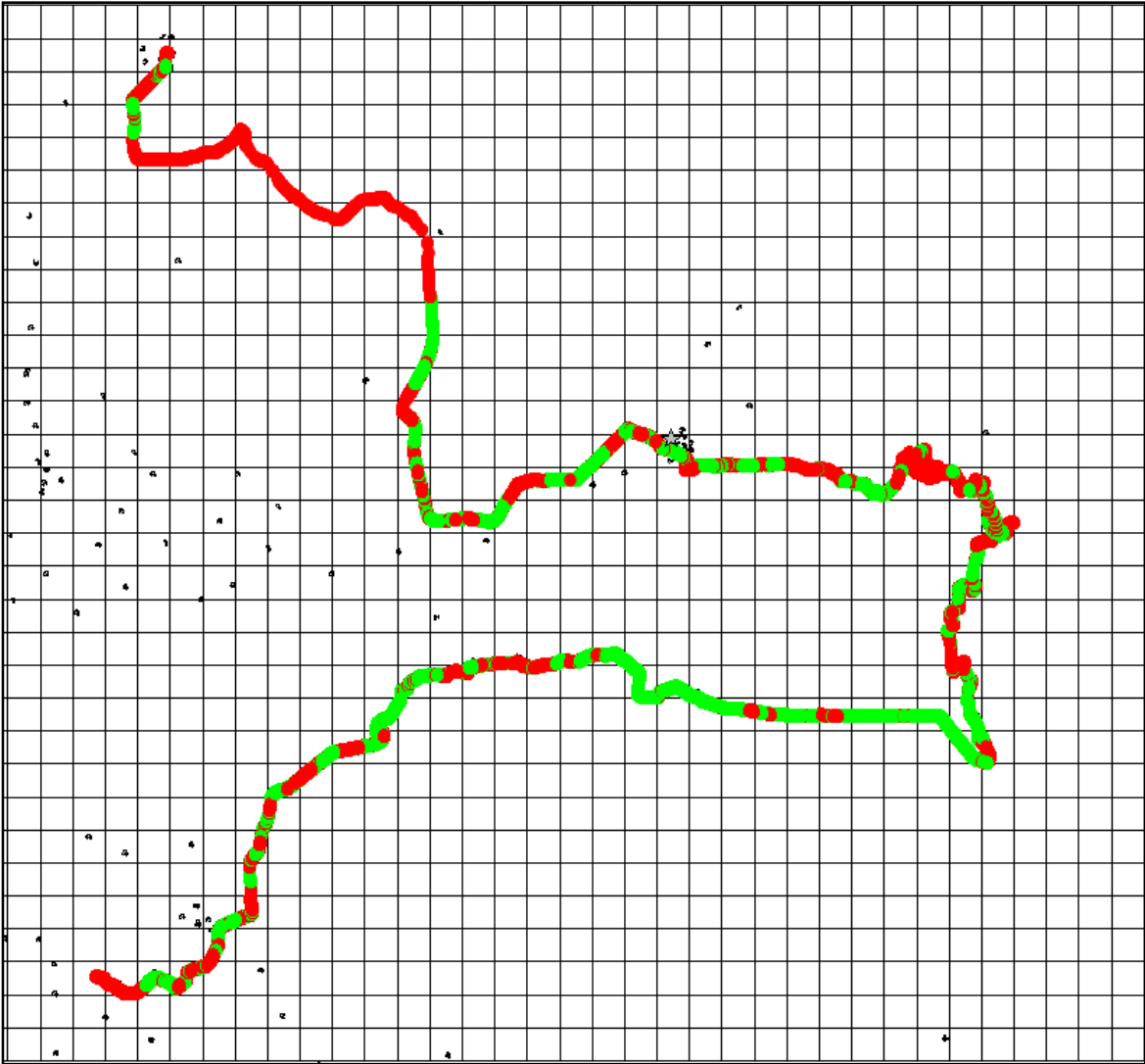
AVG. DOWNLOAD SPEED (Mbps)	6.10
% FILE TRANSFER COMPLETE	100
DL throughput	Sample %
0 to <2 Mbps	19.49
2 to <10 Mbps	9.30
10 to <=30 Mbps	15.04
>30 Mbps	56.16
Total	**100**

AIRTEL

Dynamic Data Testing Complete 205 Kms

Data KPIs - Overall	5G
Average Download Throughput (Mbps)	48.8

5G

5G DL
- 2 TO 500 (523834)
- 0 TO 2   (126841)
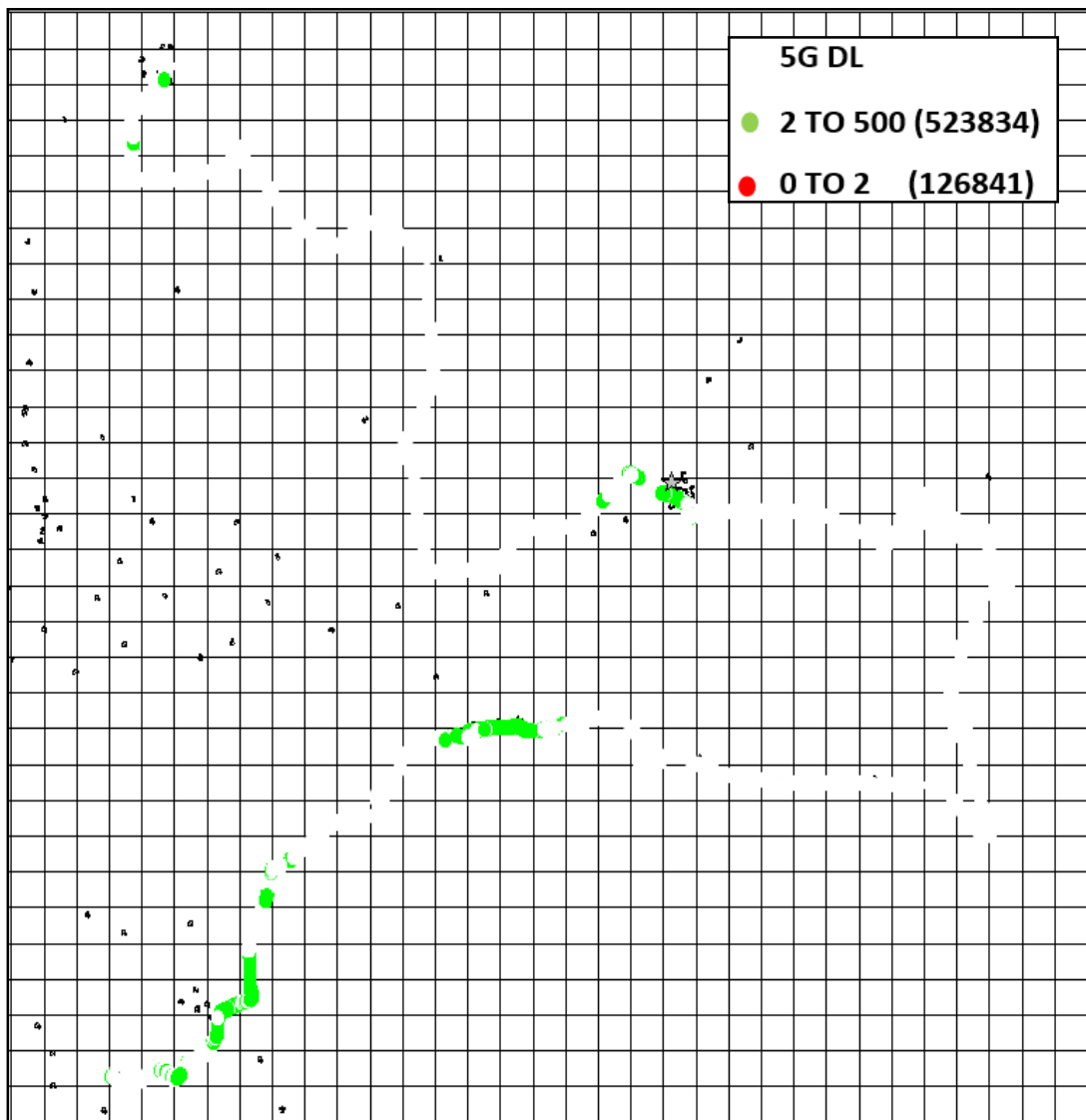
AVG. DOWNLOAD SPEED (Mbps)	48.8
% FILE TRANSFER COMPLETE	100
DL throughput	**Sample %**
0 to <2 Mbps	5.01
2 to <10 Mbps	3.45
10 to <50 Mbps	6.47
> 50 Mbps	85.07
Total	**100**

BSNL

Dynamic Data Testing Complete 205 Kms

Data KPIs - Overall	3G
Average Download Throughput (Mbps)	3.5

3G
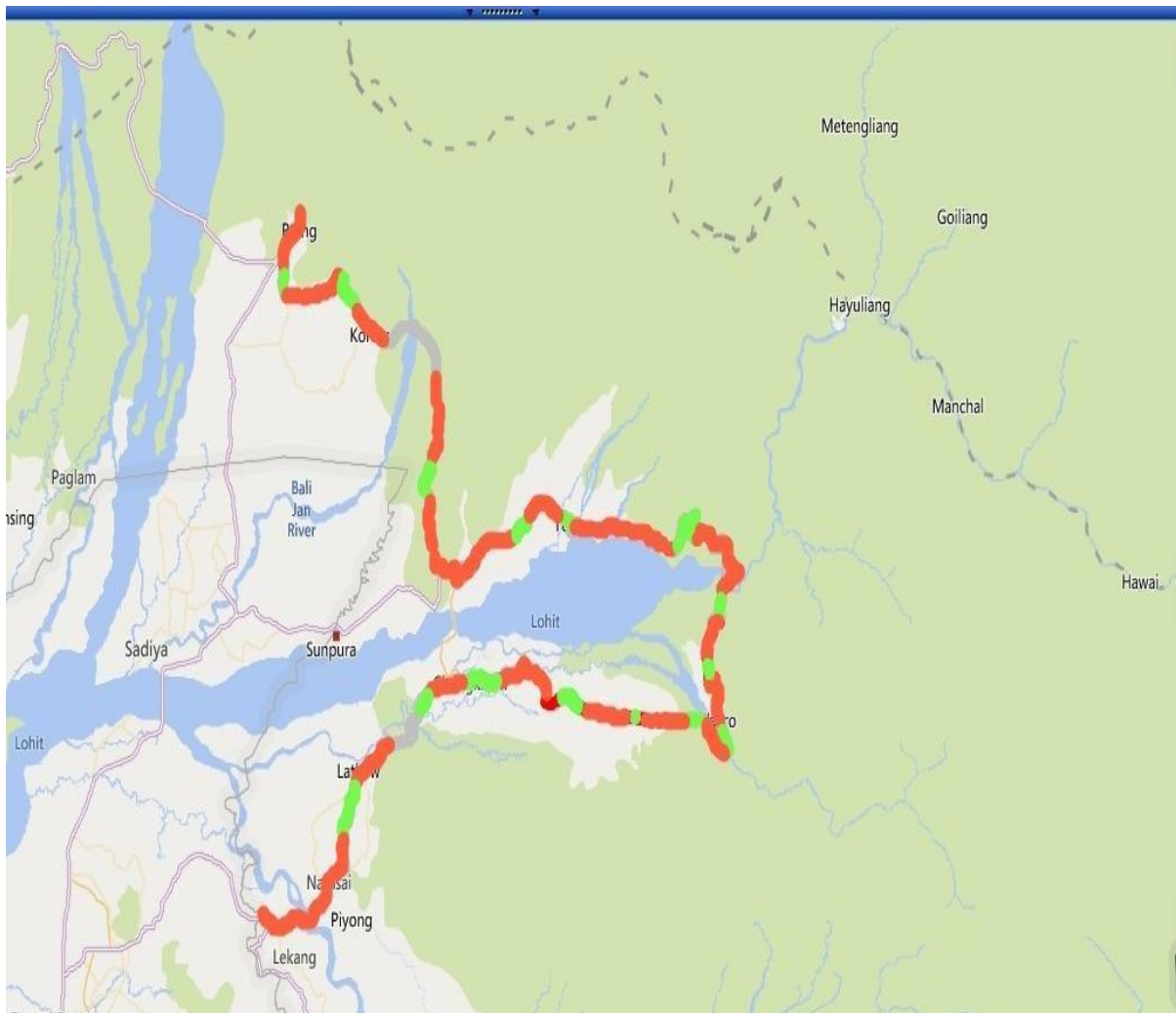
AVG. DOWNLOAD SPEED (Mbps)	3.5
DL throughput	Sample %
0 to <2 Mbps	49.9
2 to <=10 Mbps	40.41
>10 Mbps	9.69
Total	**100**

RJIO

Dynamic Data Testing Complete 205 Kms

Data KPIs - Overall	4G
Average Download Throughput (Mbps)	18.57

4G
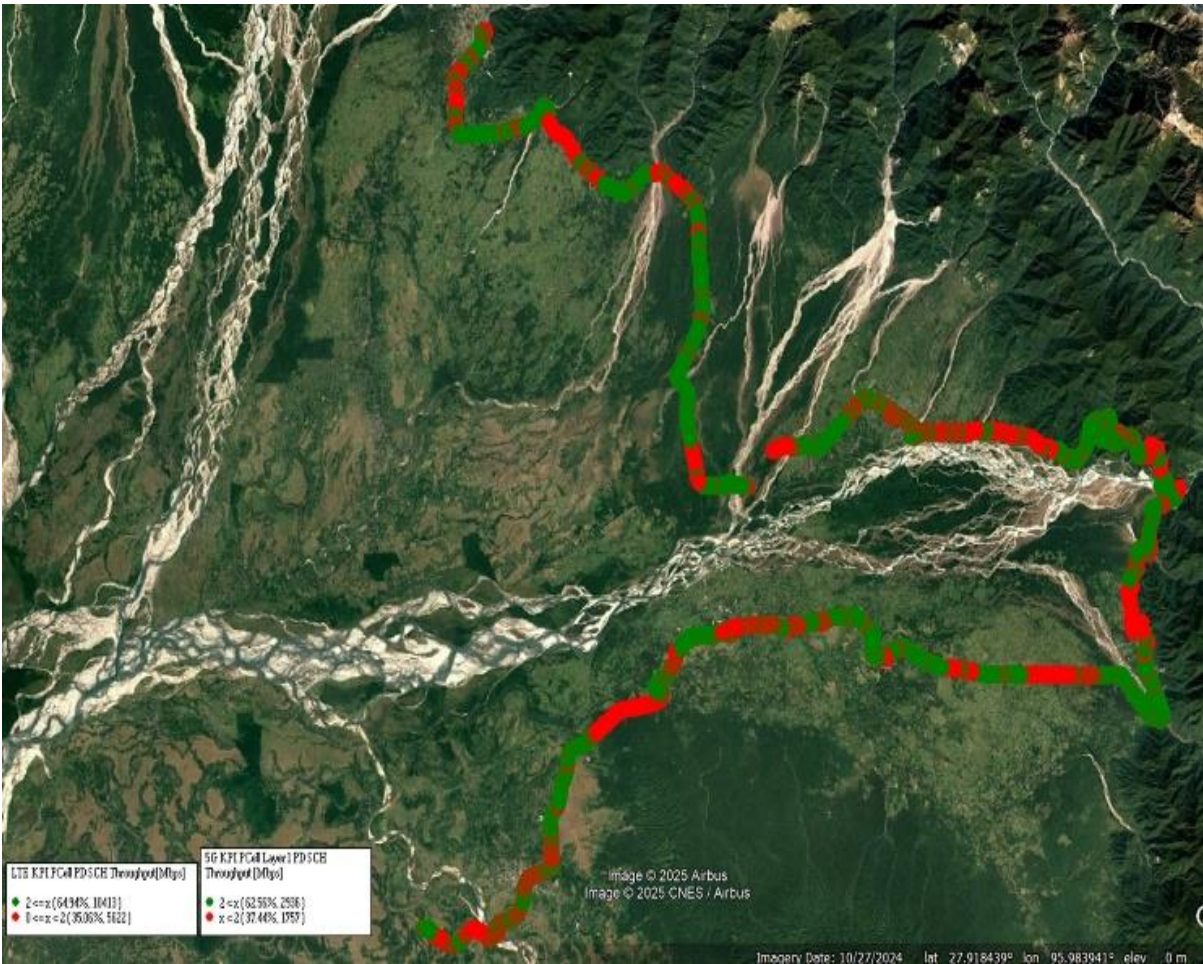
AVG. DOWNLOAD SPEED (Mbps)	18.57
% FILE TRANSFER COMPLETE	100.00
DL throughput	Sample %
0 to <2 Mbps	35.06
2 to <10 Mbps	32.24
10 to <=30 Mbps	25.87
>30 Mbps	6.83
Total	**100**

RJIO

Dynamic Data Testing Complete 205 Kms

Data KPIs – Overall	5G
Average Download Throughput (Mbps)	173.01

5G
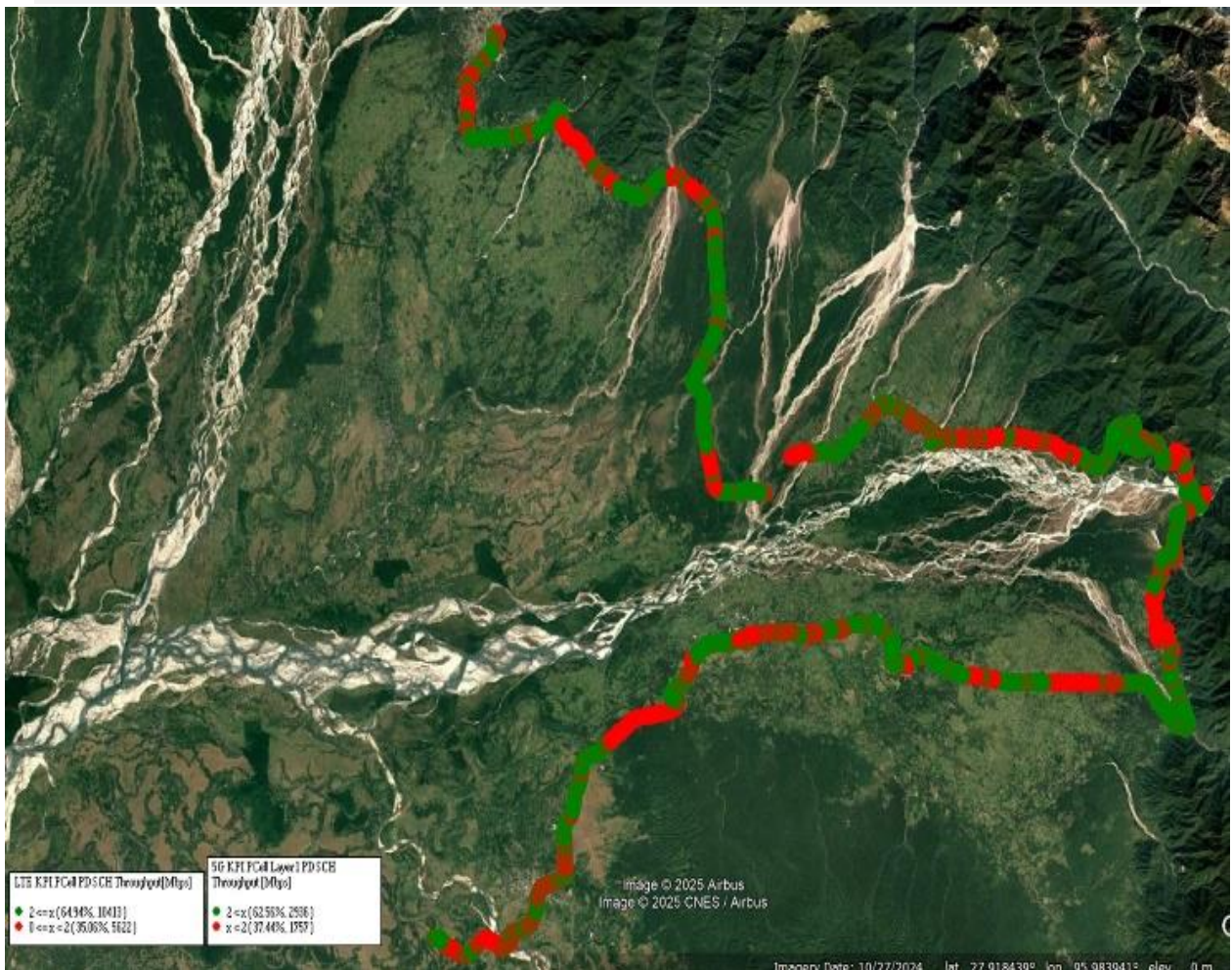
AVG. DOWNLOAD SPEED (Kbps)	173.01
% FILE TRANSFER COMPLETE	100
DL throughput	**Sample %**
0 to <2 Mbps	37.44
2 to <10 Mbps	8.05
10 to <50 Mbps	10.91
> 50 Mbps	43.60
Total	**100**

VIL

Dynamic Data Testing Complete 205 Kms

Data KPIs – Overall	4G
Average Download Throughput (Mbps)	28.51

4G
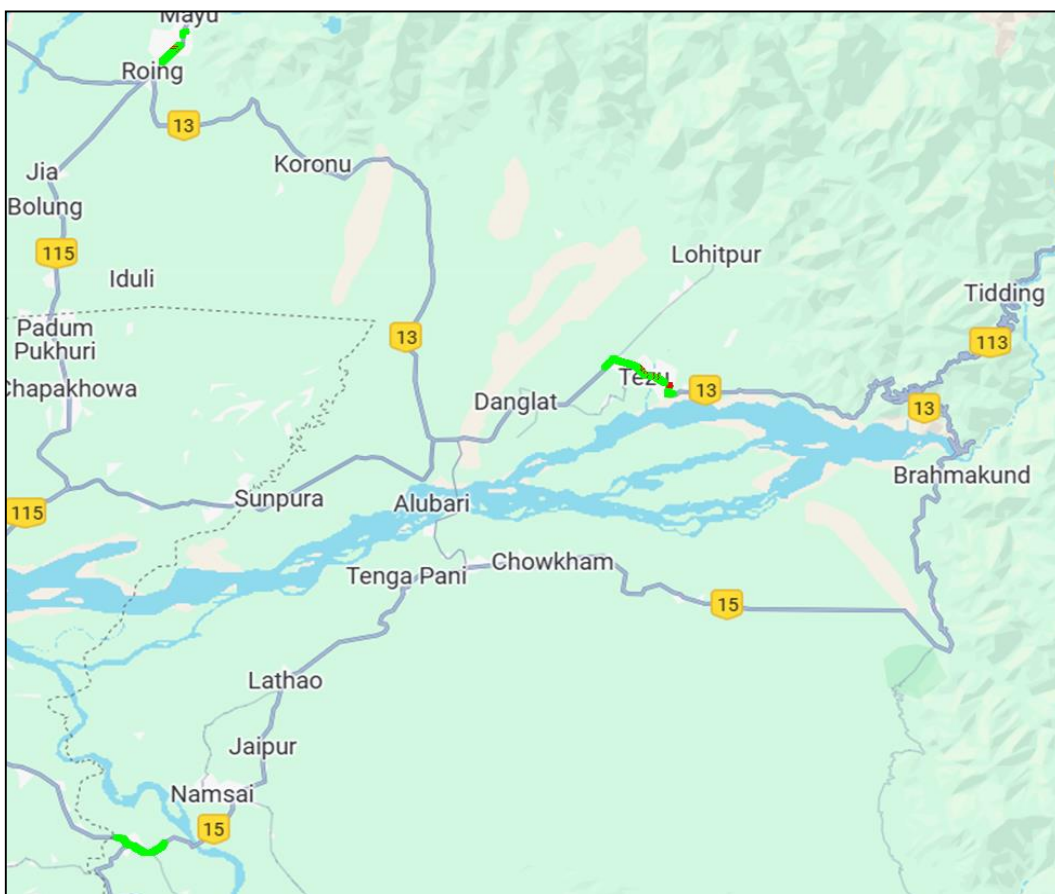
AVG. DOWNLOAD SPEED (Mbps)	28.51
% FILE TRANSFER COMPLETE	100
DL throughput	**Sample %**
0 to <2 Mbps	10.93
2 to <10 Mbps	24.31
10 to <=30 Mbps	35.41
>30 Mbps	29.35
Total	**100**