Operator Assisted Drive Test Report
West and South West Khasi Hills Districts
Meghalaya,
December, 2024
(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 2G & 3G network, Call Setup Success Rate in 2G network, Hand Over Success Rate in 2G & 3G network, Rx Quality in 2G & 3G (Ec/Io) 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 West and South West Khasi Hills Districts and surrounding areas including National Highway 106 in Meghalaya on 27th and 28th December 2024 from 08.30 AM to 07.30 PM. The drive test covered drive route of 473 KMs (approx) over a period of two days. Approximately 334+ 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

West Khasi Hills is an administrative district in the state of Meghalaya in India The West Khasi Hills district was carved out of the Khasi Hills district, which was divided into West and East Khasi Hills districts on 28 October 1976. The district headquarters is located at Nongstoin.
Southwest Khasi Hills is an administrative district in the state of Meghalaya in India. The South West Khasi Hills district was carved out of the West Khasi Hills district on 3 August 2012. The district headquarters is located at Mawkyrwat.

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: Meghalaya

DAY-1 Forest Check Gate & Beat Office Meghalaya-Jirang Block Office-Patharkamah Post Office-Khri River Bridge-Sharp Turning View Point-Pwd Nongkhlaw, Sub Division-Khanjan View Point-Civil Hospital Mairang-Masawa Catholic Church-Rishanskhem Livestock Market-Mawngap P.S-Lewrynghep S S A Secondary School-Khasi Heritage Village-Umlongman Catholic Church-Mawsynram MECL-Mawsynram H.S School-Ranikor Pwd

DAY-2 Ranikor Bridge-Rhino Point, Shillong, Meghalaya-Rhino Heritage Museum, Shillong, Meghalaya.

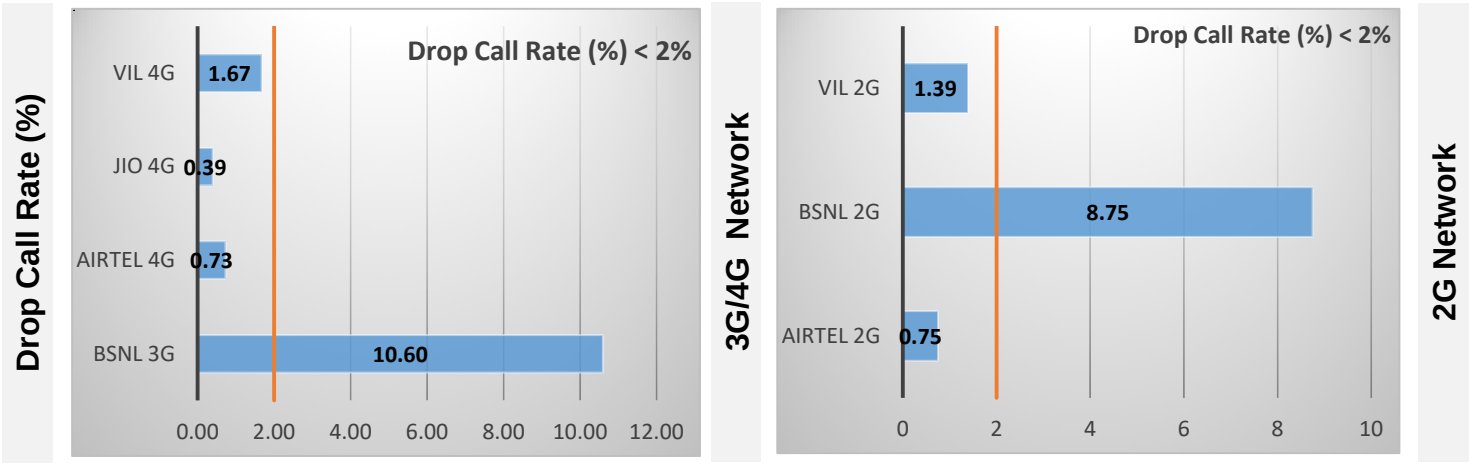
Data Service Test- Static Locations

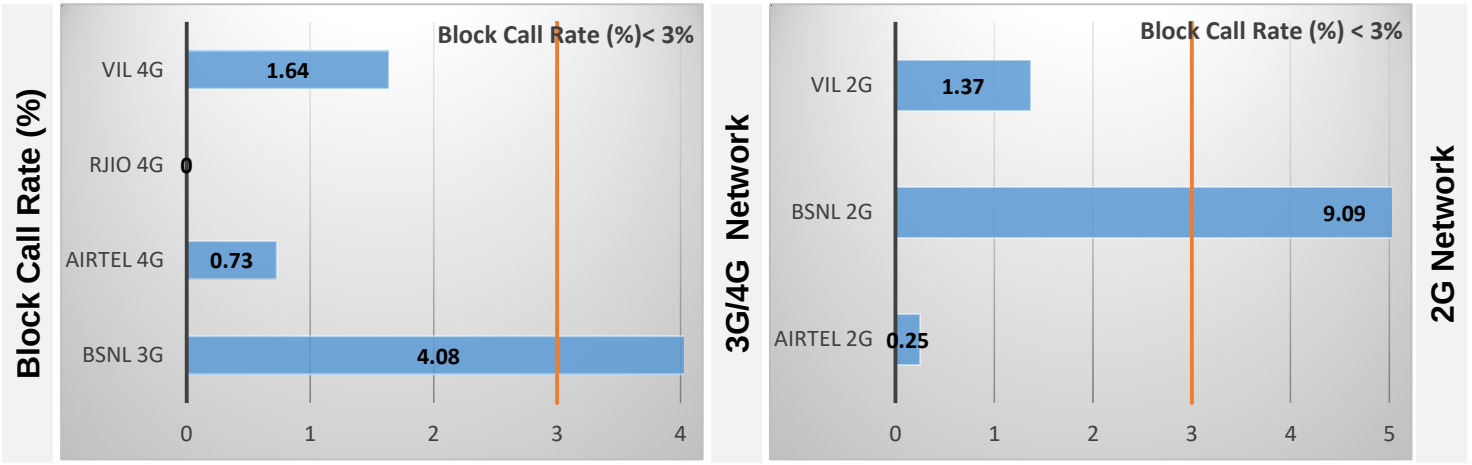
Static Locations
Forest Check Gate and Beat Office, Meghalaya

Voice Calls

Key Observations

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 %	0.75	8.75	1.39	10.60	0.73	0.39	1.67
Block Call Rate %	0.25	9.09	1.37	4.08	0.73	0	1.64

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

Key Observations

Coverage

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

TSPs	2G		
	AIRTEL	BSNL	VIL
Coverage %	77.29	63.00	81.00

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

TSPs	3G	4G		
	BSNL	AIRTEL	RJIO	VIL
Coverage	35.00	89.00	74.97	78.00

Summary

City Level Summary- Voice

Voice Call	2G		
	AIRTEL	BSNL	VIL
Call Attempt	401.00	88.00	73.00
Blocked Call Rate (%)	0.25	9.09	1.37
CSSR% (Accessibility)	99.75	90.90	98.63
Drop Call Rate (%)	0.75	8.75	1.39
Mobility HOSR (%)	98.41	94.40	100
Rx Quality (%)	95.71	93.00	90.00

Voice Call	3G/4G			
	BSNL 3G	AIRTEL 4G	RJIO 4G	VIL 4G
Call Attempt	49.00	412.00	256	61.00
Blocked Call Rate (%)	4.08	0.73	0.00	1.64
CSSR% (Accessibility)	95.91	99.27	100	98.36
Drop Call Rate (%)	10.60	0.73	0.39	1.67
Mobility HOSR (%)	92.50	99.94	98.06	100.00
Rx Quality (%)	64.00	90.00	93.46	83.00

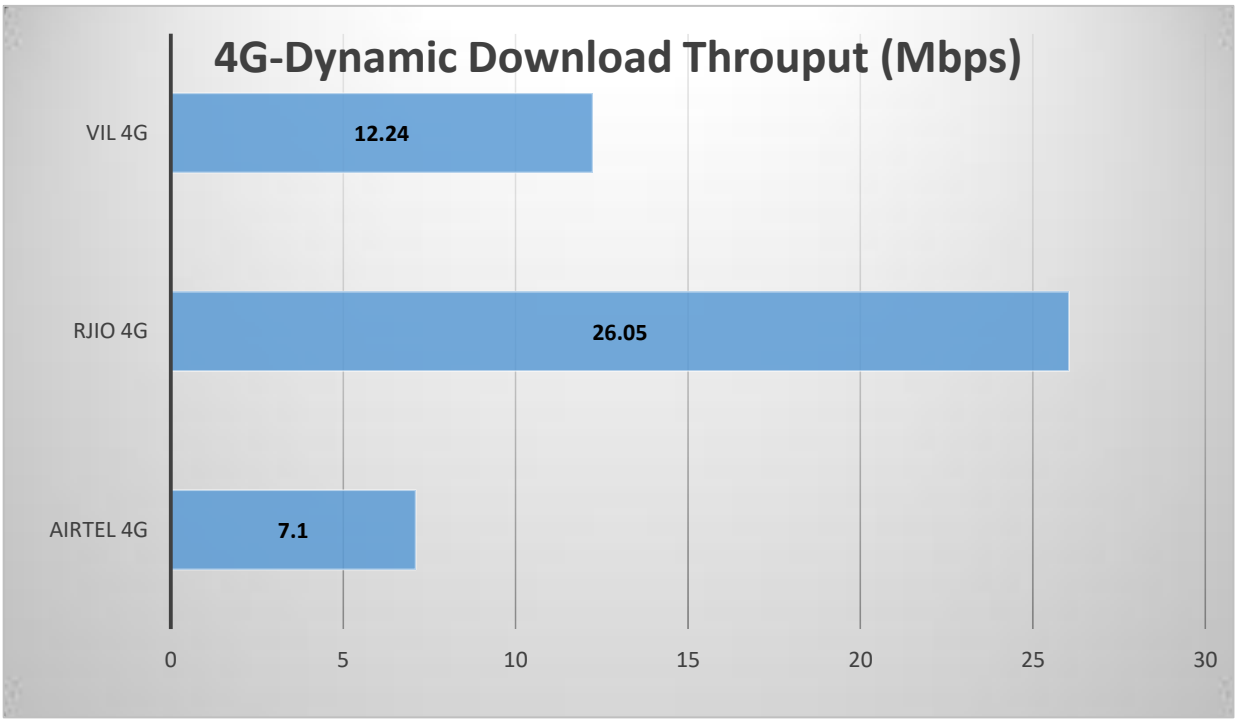
Summary-Data Services Dynamic

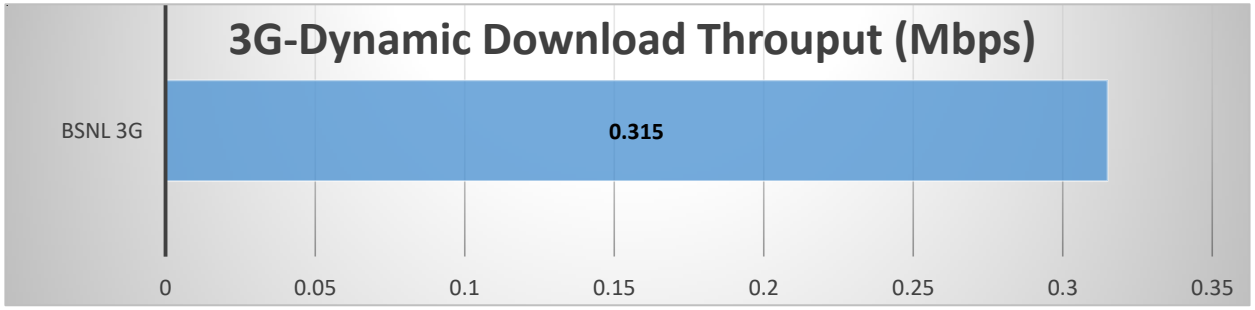
Key Observations

Dynamic Data was tested for 473 Kms. Download Throughput was tested.

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

4G/3G Network:





Summary-Data Services Static

City Level Summary-

Data Services Static at Forest Check Gate & Beat Office	4G/5G		
	AIRTEL 4G	RJIO 5G	VIL 4G
Download throughput in Mbps	17.58	158.69	18.30
Upload Throughput in Mbps	3.50	10.91	9.11
Video streaming delay (secs)	1.12	0.00	122.43
Web Browsing Delay (secs)	1.22	0.059	107.29
Latency (msec)	***	***	59.00

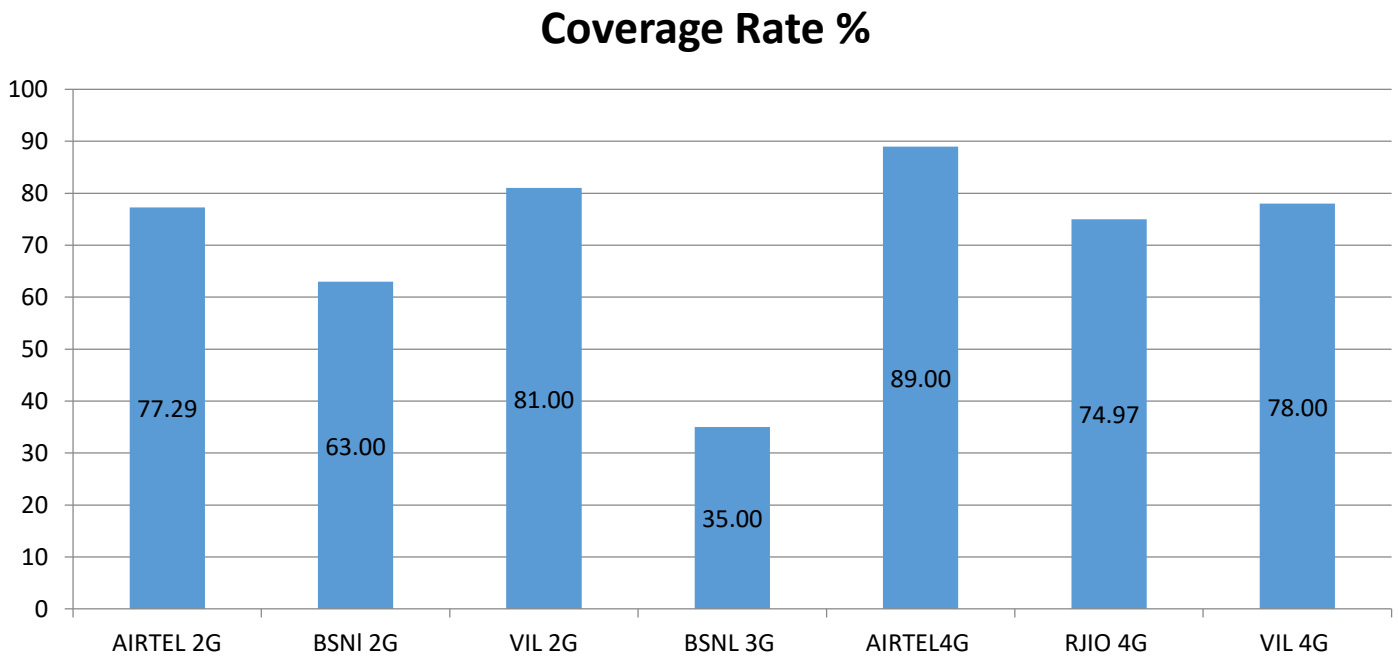
RJIO & VIL took static at Patharkhamah Post Office because no coverage at Forest Check Gate & Beat Office.

*** Latency Report is not submitted by AIRTEL & RJIO

I. Coverage Details

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	77.29
BSNL 2G	63.00
VIL 2G	81.00
BSNL 3G	35.00
AIRTEL 4G	89.00
RJIO 4G	74.97
VIL 4G	78.00

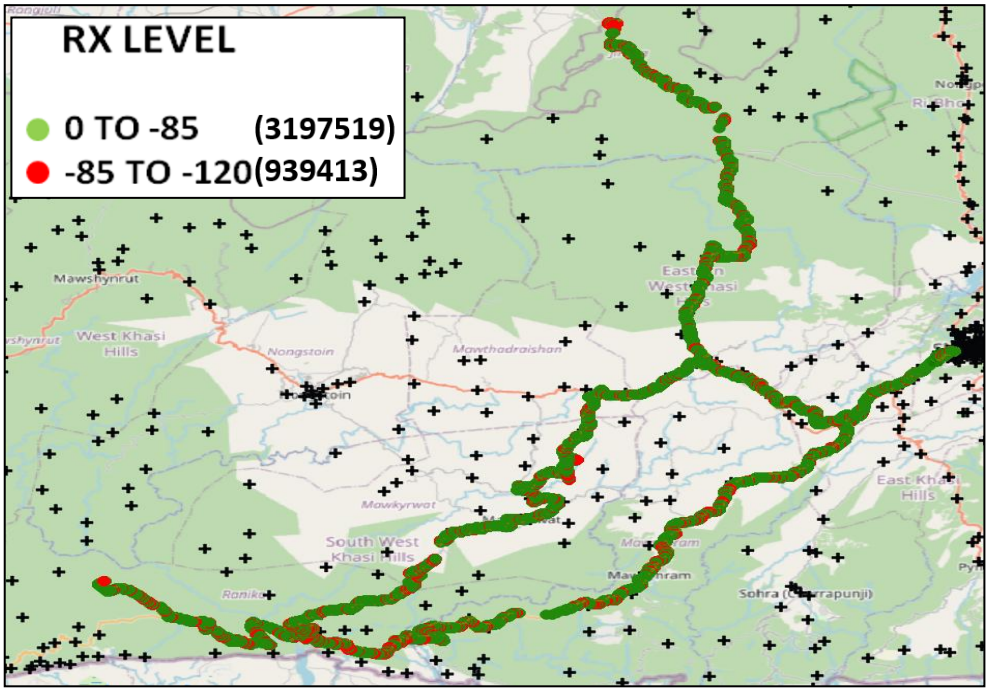


Note- Coverage is the percentage of samples having signal strength more than the threshold value (2G >= -85 dbm, 3G>= -90 dbm and 4G >= -110 dbm). However, these samples are only for the portion of the OADT routes where TSPs have coverage i.e 'no coverage' routes have been excluded.

AIRTEL

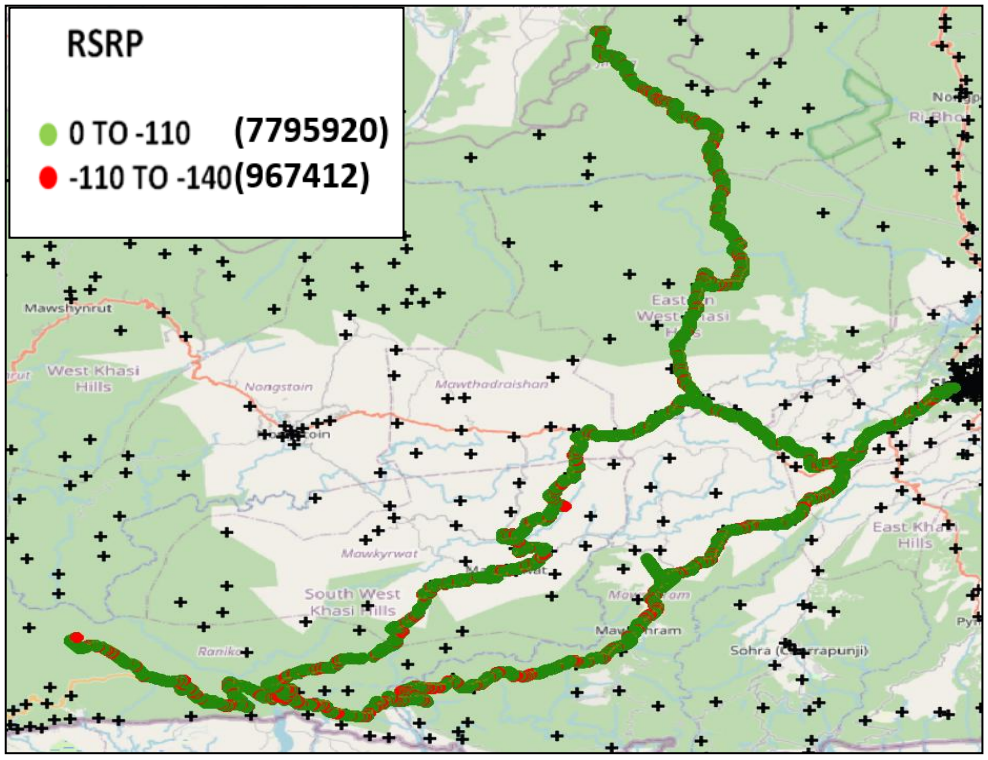
Technology	Coverage Rate %
2G	77.29
4G	89.00

2G



Overall Rx Level	Sample %
[Max >=-75]	10.00
[-75 >=-85)	68.00
[-85 >=-95)	15.00
[-95 >=Min)	7.00
Total	**100**

4G



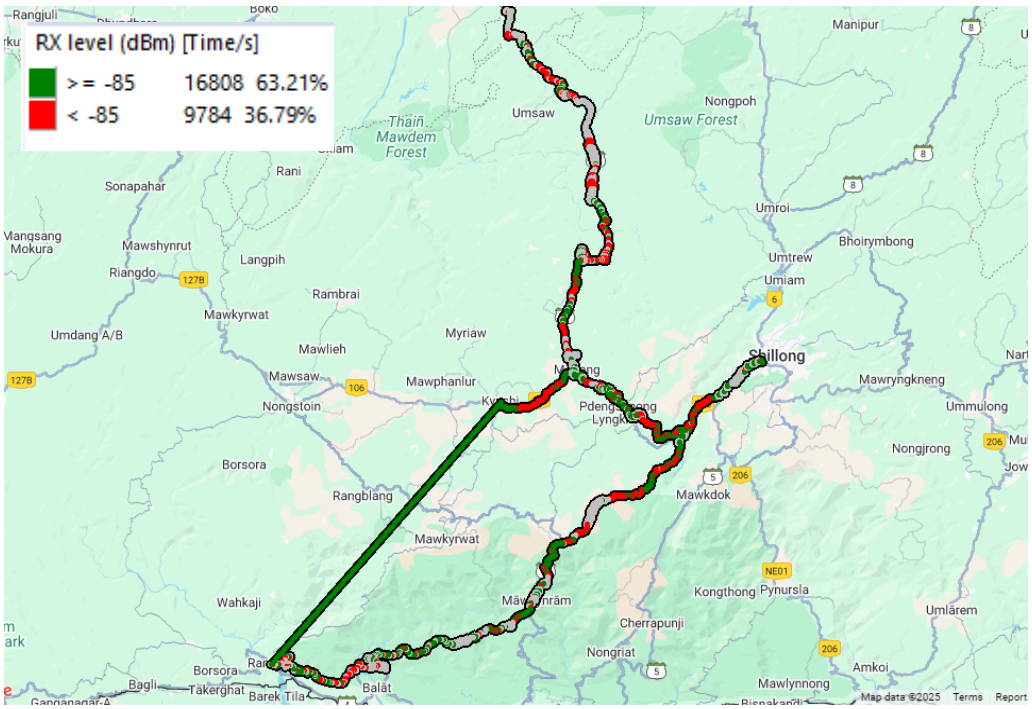
Overall RSRP	Sample %
[Max >=-80]	6.00
[-80 >=-90)	12.00
[-90 >=-110)	71.00
[-110 >=Min)	11.00
Total	**100**

I. Coverage Details

BSNL

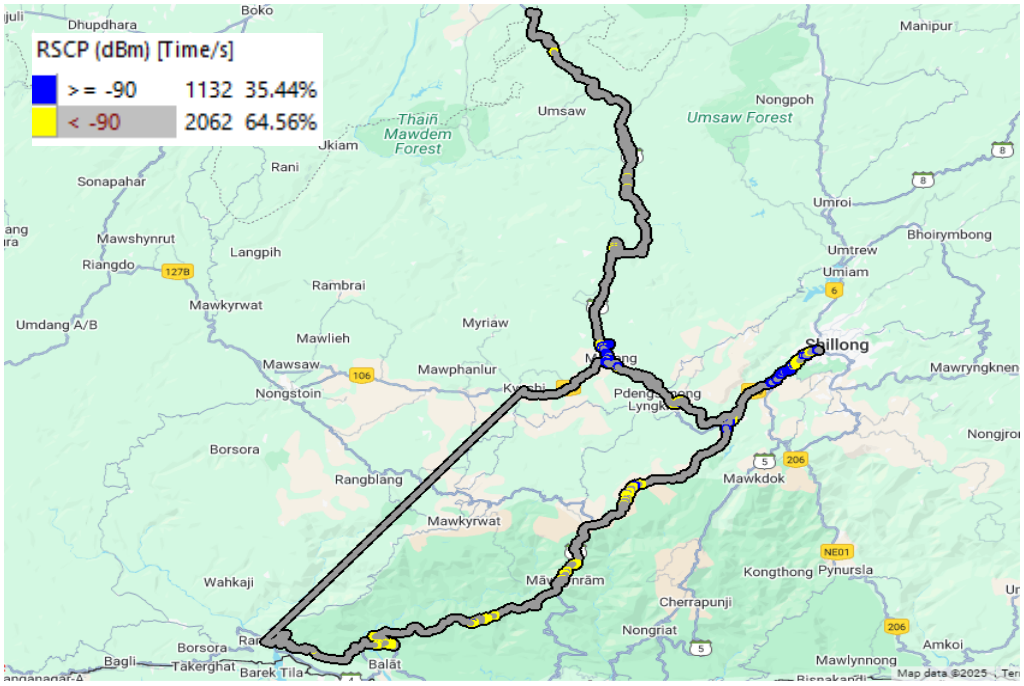
Technology	Coverage Rate %
2G	63.00
3G	35.00

2G



Overall RxLevel	Sample %
[Max >=-75]	37.97
[-75 >=-85)	25.24
[-85 >=-95)	24.48
[-95 >=Min)	12.31
Total	**100**

3G



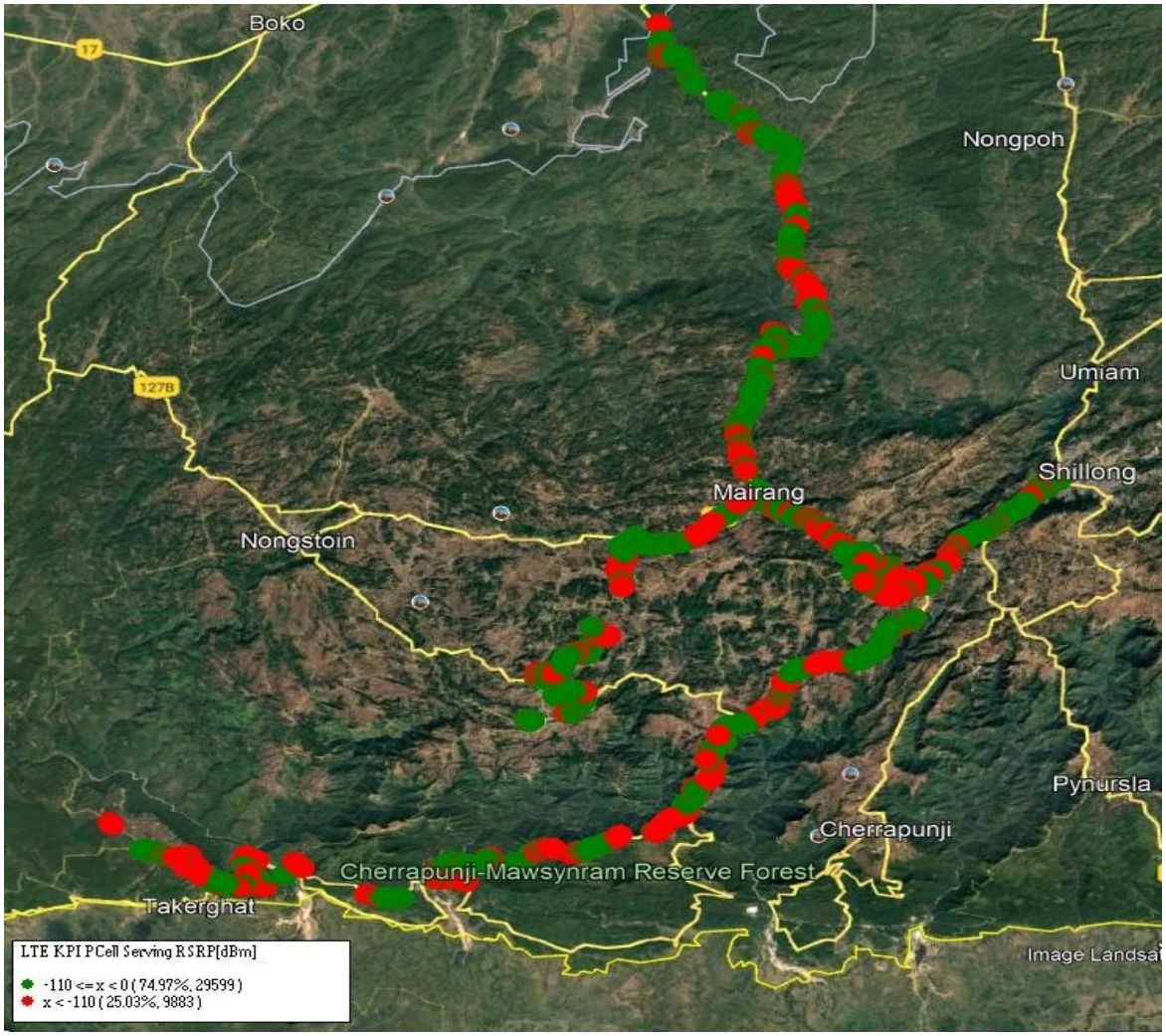
Overall RSCP	Sample %
[Max >=-70]	7.66
[-70 >=-80)	15.27
[-80 >=-90)	12.51
[-90 >=Min)	64.56
Total	**100**

I. Coverage Details

RJIO

Technology	Coverage Rate %
4G	74.97

4G



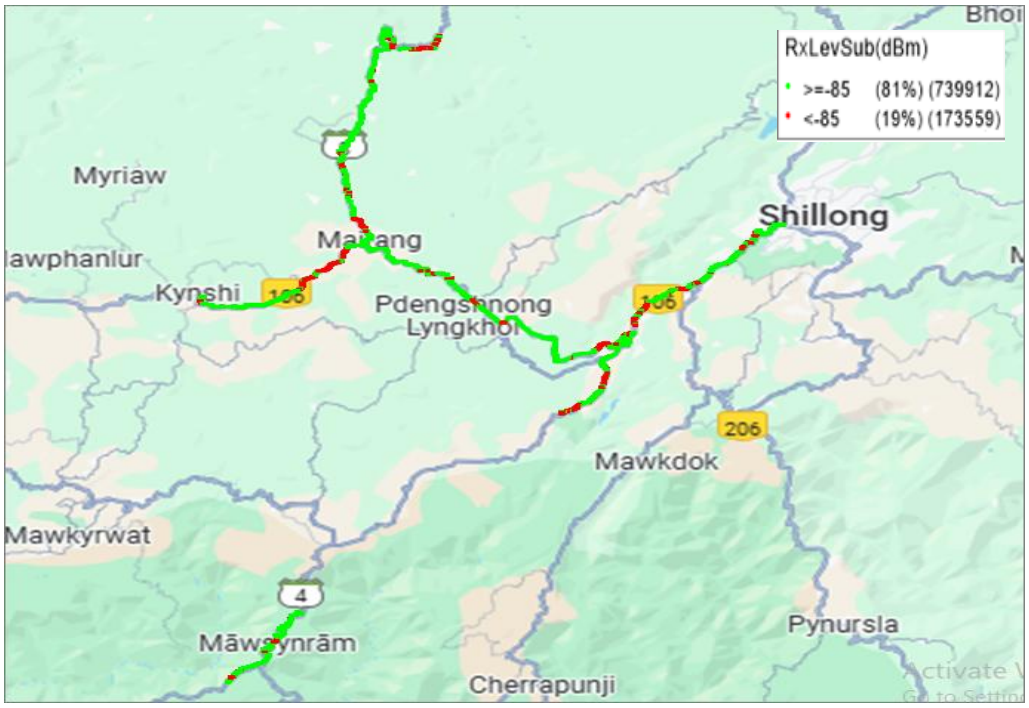
Overall RSRP	Sample %
[Max >=-80]	10.48
[-80 >=-90)	10.73
[-90>=-110)	53.76
[-110 >=Min)	25.03
Total	**100**

I. Coverage Details

VIL

Technology	Coverage Rate %
2G	81.00
4G	78.00

2G



Overall RxLevel	Sample %
[Max >=-75]	56.00
[-75 >=-85)	25.00
[-85 >=-95)	11.00
[-95 =Min)	8.00
Total	**100**

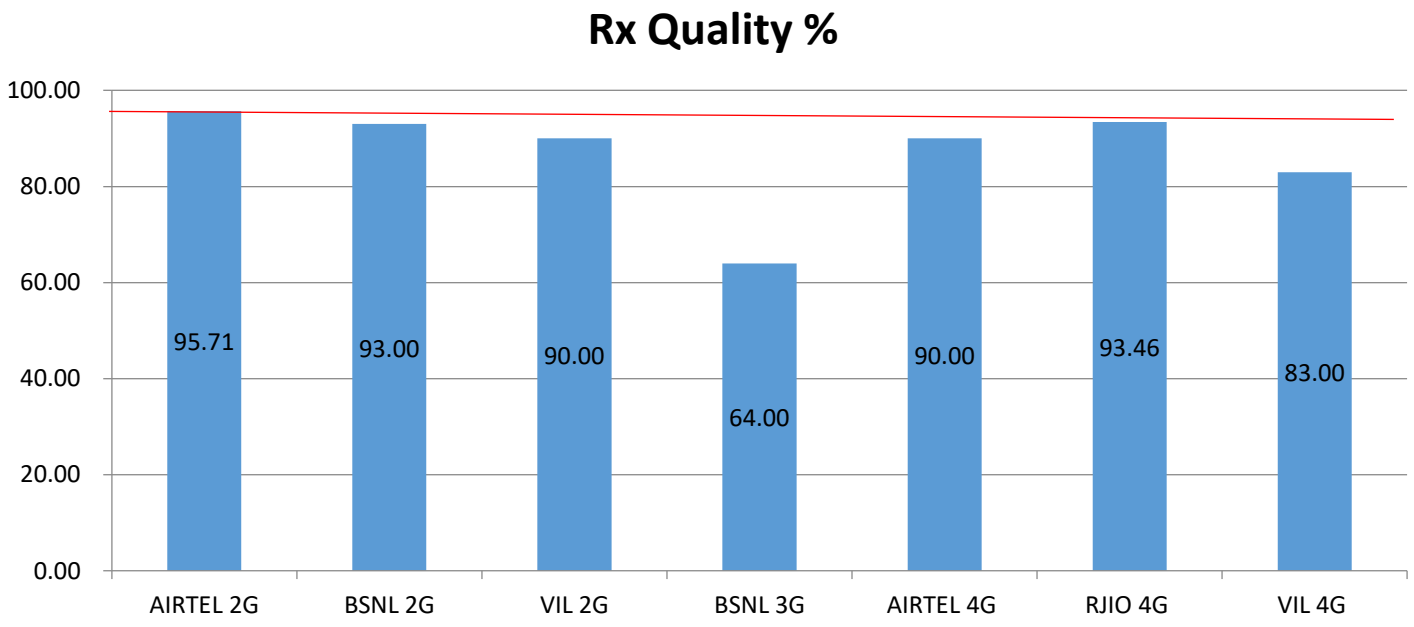
4G

Overall RSRP	Sample %
[Max >=-80]	44.00
[-80 >=-90)	21.00
[-90>=-110)	13.00
[-110 >=Min)	22.00
Total	**100**

II. Quality Details

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%.

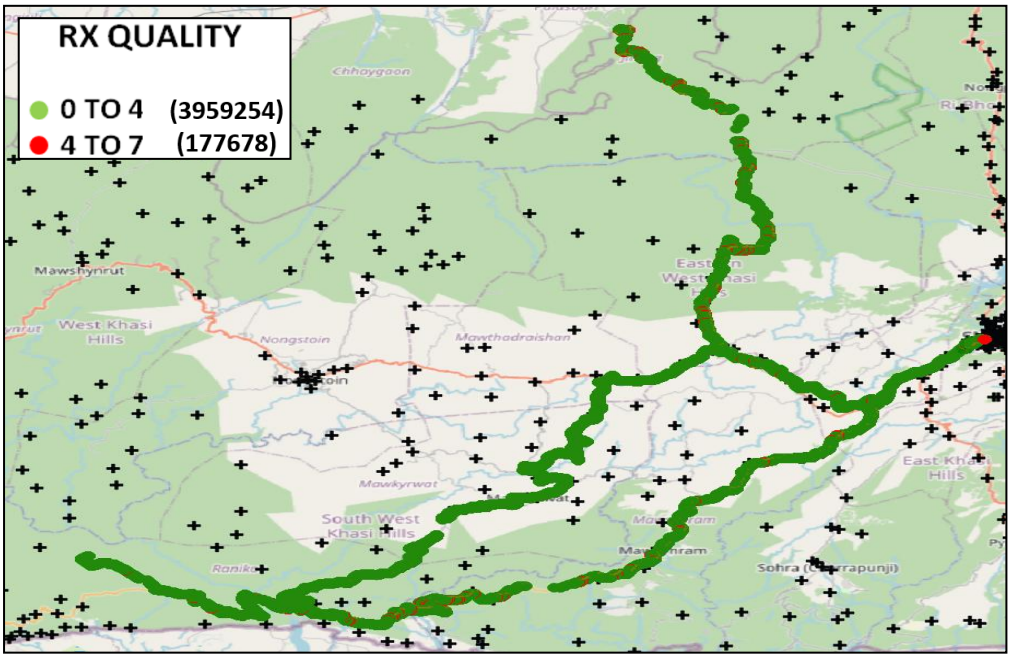
TSP	Rx Quality %
AIRTEL 2G	95.71
BSNL 2G	93.00
VIL 2G	90.00
BSNL 3G	64.00
AIRTEL 4G	90.00
RJIO 4G	93.46
VIL 4G	83.00



AIRTEL

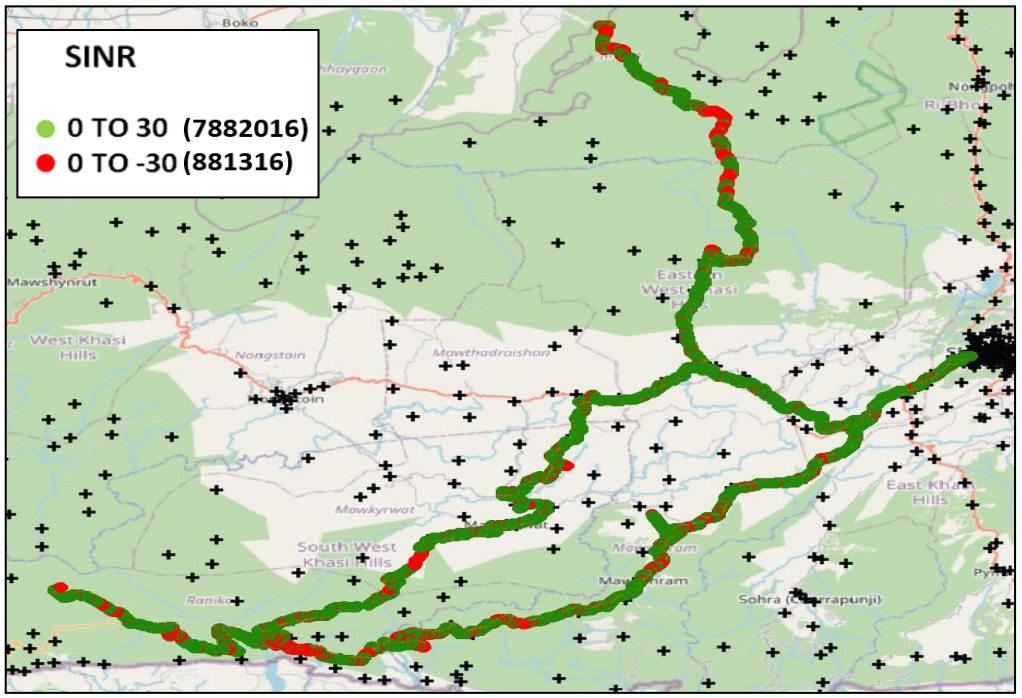
Technology	Rx Quality %
2G	95.71
4G	90.00

2G



Overall Rx Quality	Sample %
(Min <=2)	88.00
(2 <=3)	5.00
(3 <=4)	3.00
(4 <=5)	2.00
(5 <=Max)	2.00
Total	100

4G



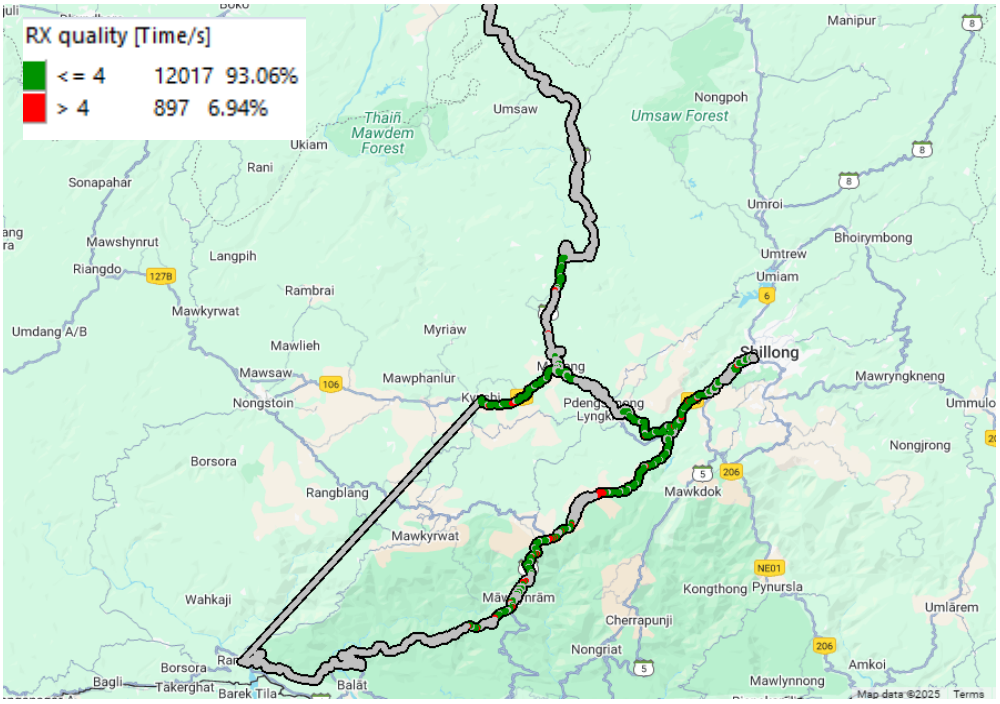
Overall SINR	Sample %
(Min <=0)	10.00
(0 <=5)	34.00
(5 <=10)	20.00
(10 <=15)	15.00
(15 <=Max)	21.00
Total	**100**

II. Quality Details

BSNL

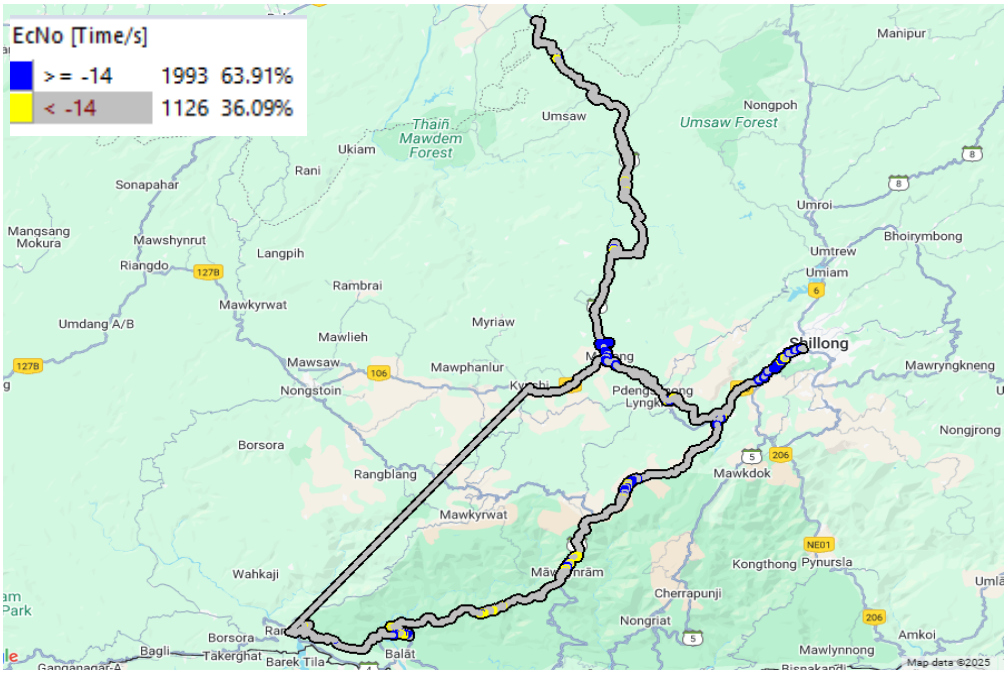
Technology	Rx Quality %
2G	93.00
3G	64.00

2G



Overall Rx Quality	Sample %
(Min <=2)	89.83
(2 <=3)	1.59
(3 <=4)	1.64
(4 <=5)	1.67
(5 <=Max)	5.27
Total	**100**

3G

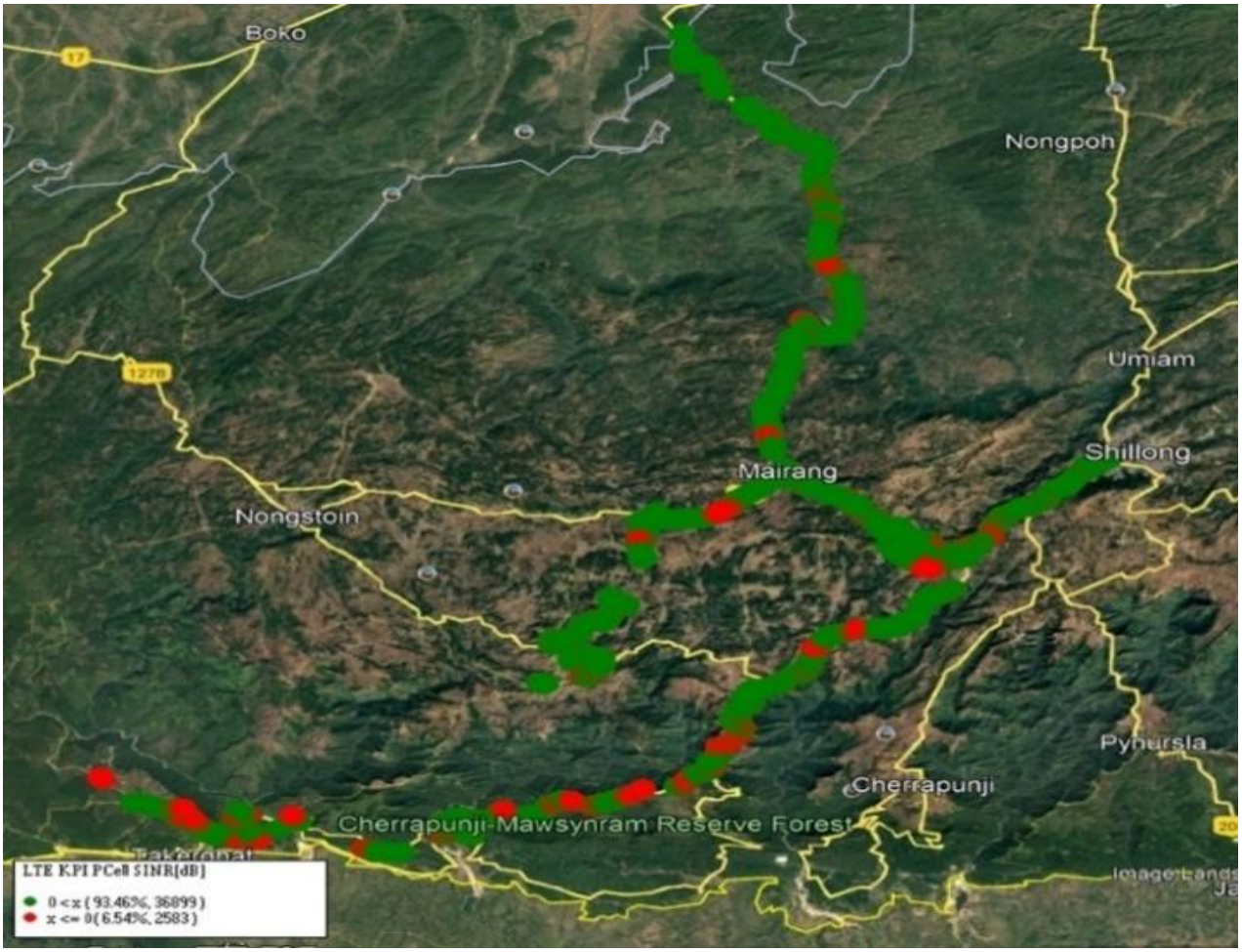


Overall EcNo	Sample %
(Max <=-6)	8.45
(-6 <=-9)	12.85
(-9 <=-11)	23.52
(-11 <=-14)	19.09
(-14 <= Min)	36.09
Total	**100**

RJIO

Technology	Rx Quality %
4G	93.46

4G



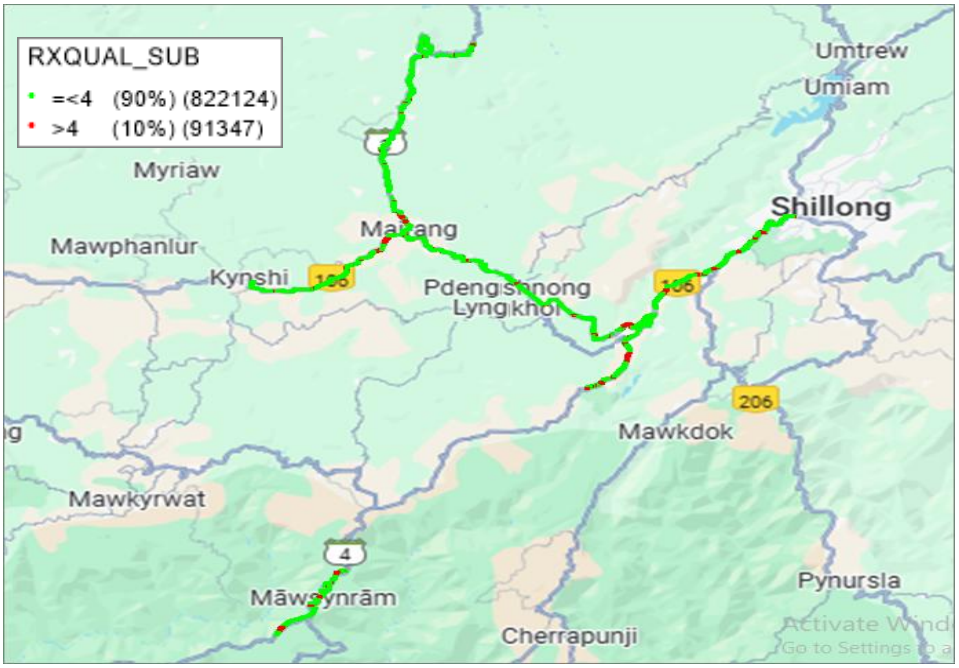
Overall SINR	Sample %
(Min <=0)	6.54
(0 <=5)	35.36
(5 <=10)	23.16
(10 <=15)	16.63
(15 <=Max)	18.31
Total	**100**

II. Quality Details

VIL

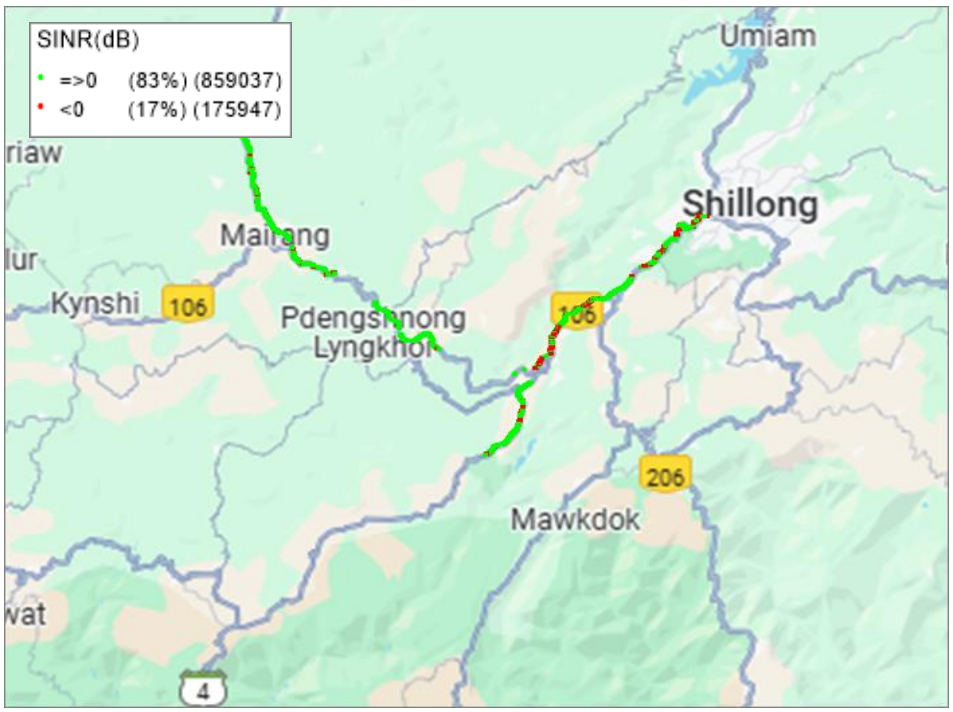
Technology	Rx Quality %
2G	90.00
4G	83.00

2G



Overall Rx Quality	Sample %
(Min <=2)	49.00
(2 <=3)	30.00
(3 <=4)	11.00
(4 <=5)	7.00
(5 <=Max)	3.00
Total	**100**

4G



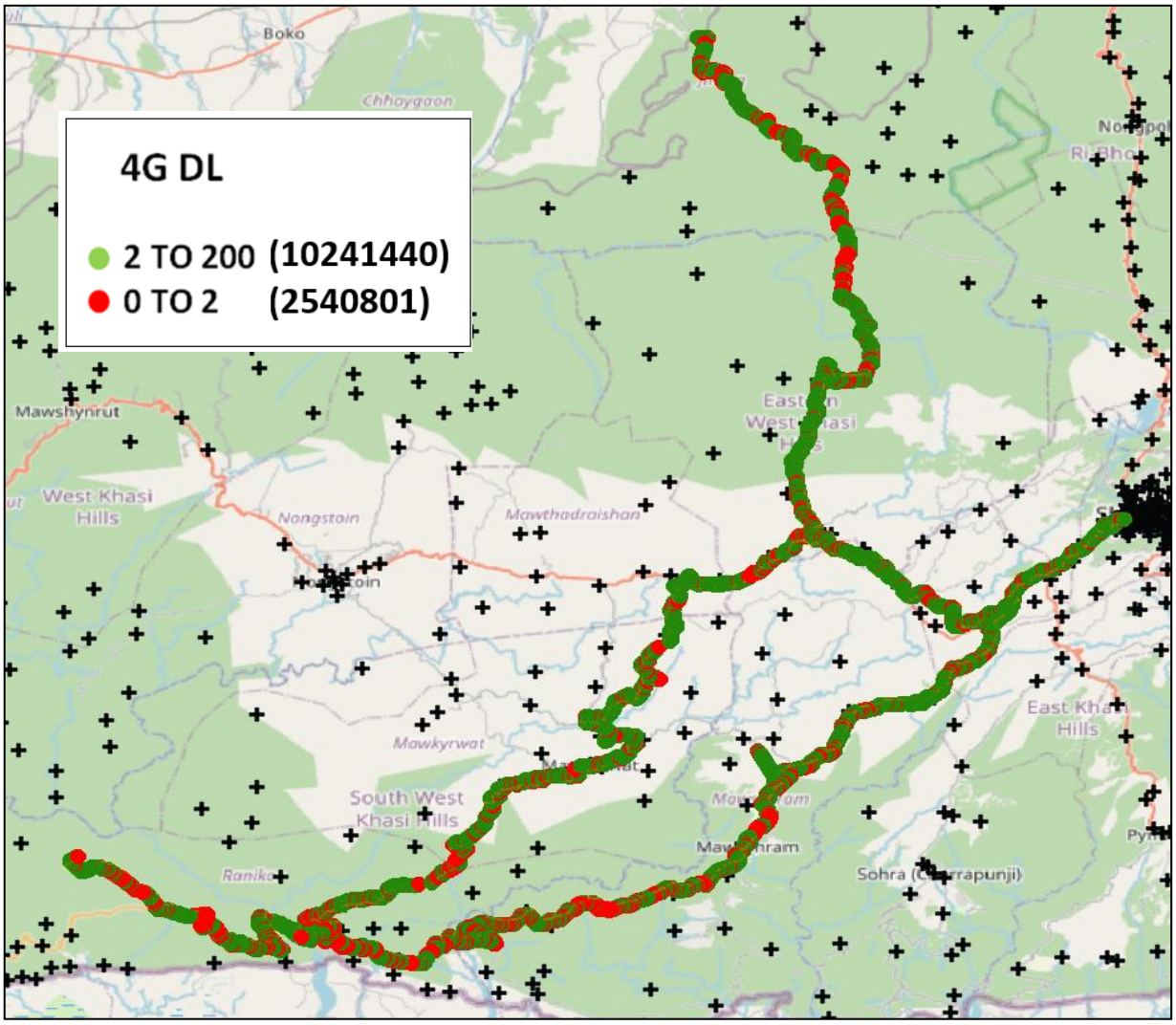
Overall SINR	Sample %
(Min <=0)	17.00
(0 <=5)	26.00
(5 <=10)	16.00
(10 <=15)	14.00
(15 <=Max)	27.00
Total	**100**

AIRTEL

Dynamic Data Testing Complete 473 Kms

Data KPIs - Overall	**4G**
Average Download Throughput (Mbps)	7.1

4G



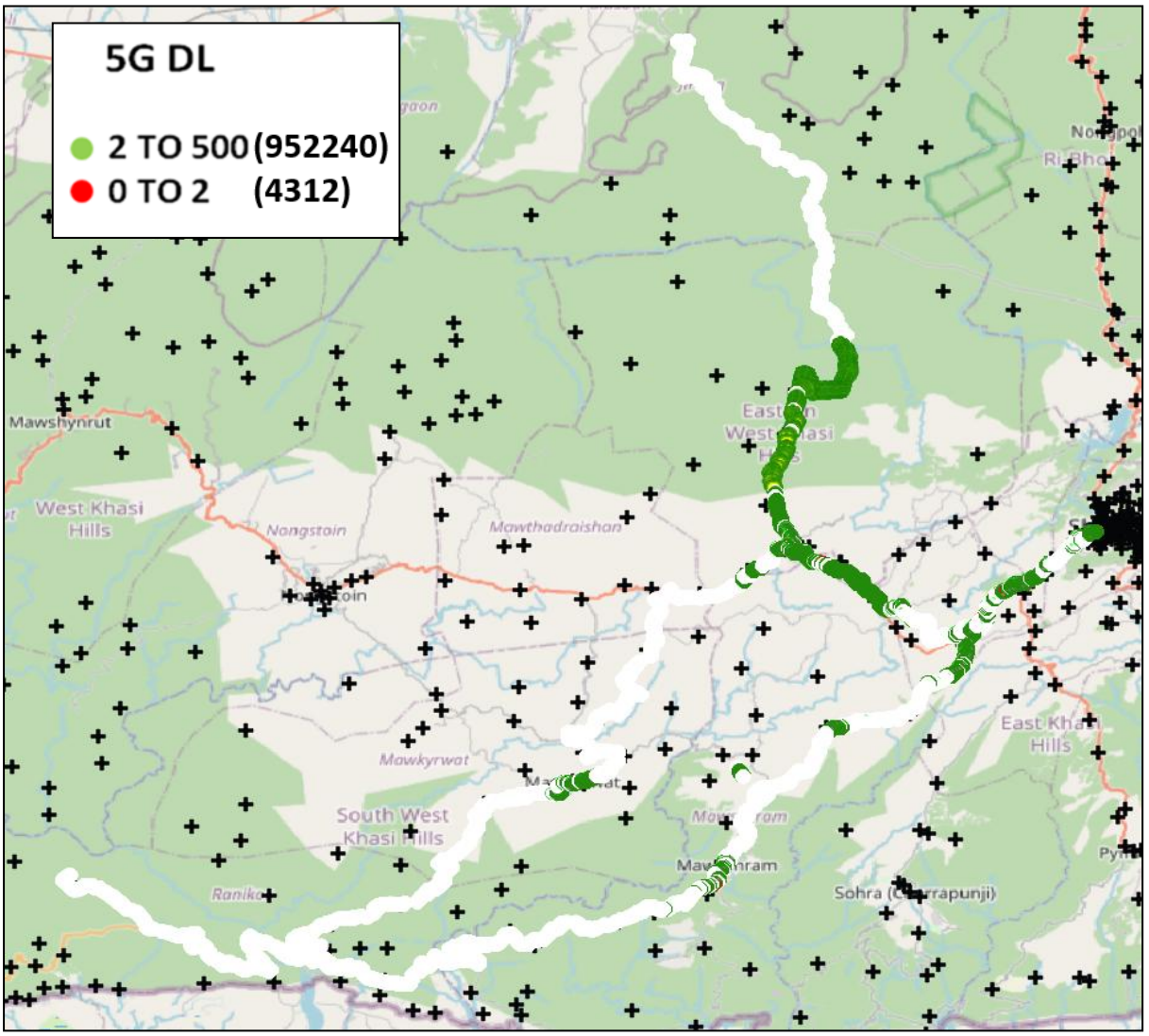
AVG. DOWNLOAD SPEED (Mbps)	7.10
DL throughput	**Sample %**
0 to <2 Mbps	20%
2 to <10 Mbps	41%
10 to <=30 Mbps	26%
>30 Mbps	13%
Total	**100**

AIRTEL

Dynamic Data Testing Complete 473 Kms

Data KPIs - Overall	5G
Average Download Throughput (Mbps)	67.00

5G



AVG. DOWNLOAD SPEED (Mbps)	67.00
DL throughput	**Sample %**
0 to <2 Mbps	0.45%
2 to <10 Mbps	2.66%
10 to <50 Mbps	26.06%
> 50 Mbps	70.84%
Total	**100**

IV. Dynamic Data Test- 3G DL Details

BSNL

Dynamic Data Testing Complete 473 Kms

Data KPIs - Overall	3G
Average Download Throughput (Mbps)	0.315

3G

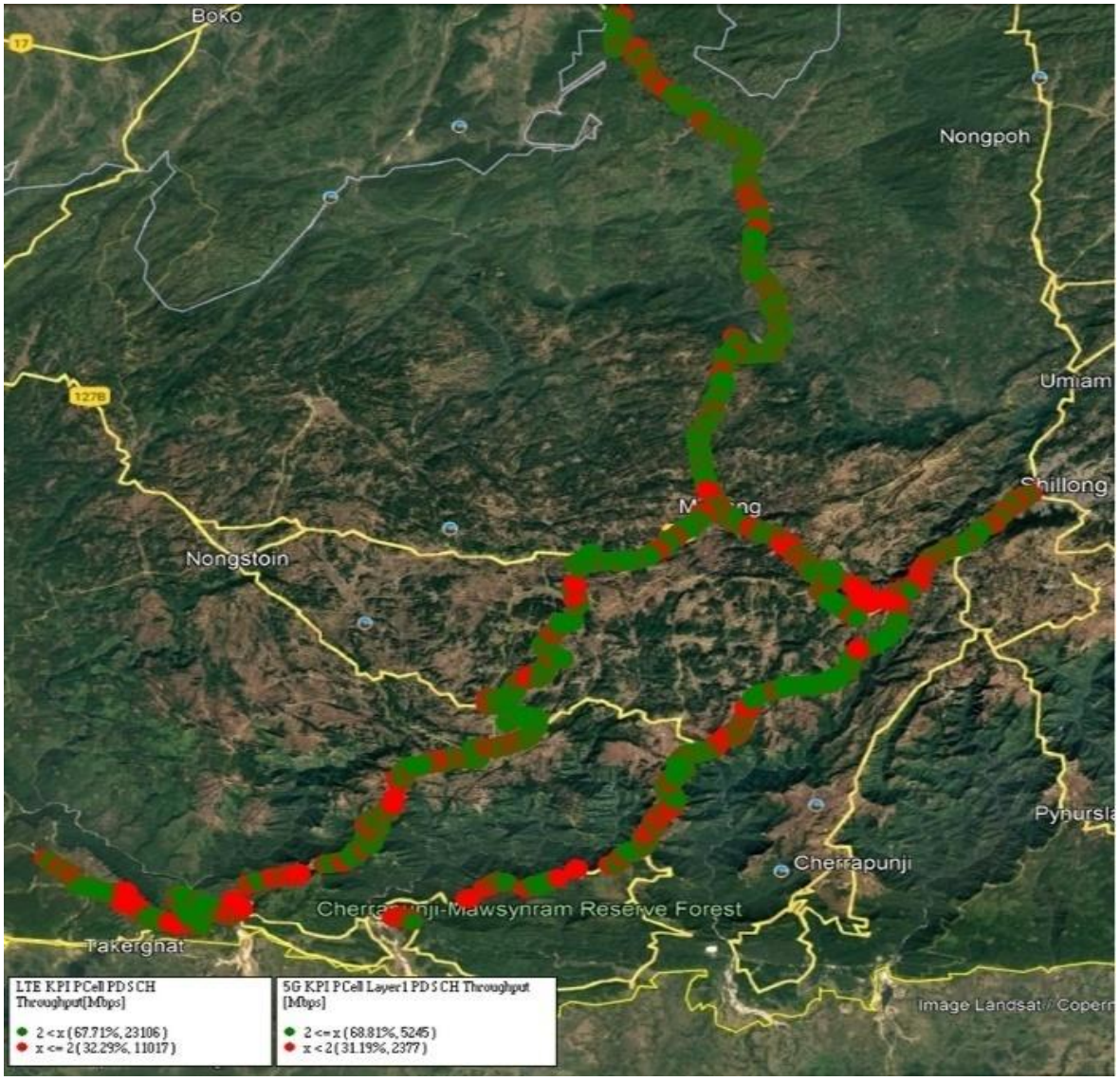
AVG. DOWNLOAD SPEED (Mbps)	0.315
DL throughput	**Sample %**
0 to <2 Mbps	100
2 to <=10 Mbps	0
>10 Mbps	0
Total	**100**

RJIO

Dynamic Data Testing Complete 473 Kms

Data KPIs - Overall	**4G**
Average Download Throughput (Mbps)	26.05

4G



AVG. DOWNLOAD SPEED (Mbps)	26.05
DL throughput	**Sample %**
0 to <2 Mbps	32.29
2 to <10 Mbps	24.36
10 to <=30 Mbps	28.05
>30 Mbps	15.31
Total	**100**

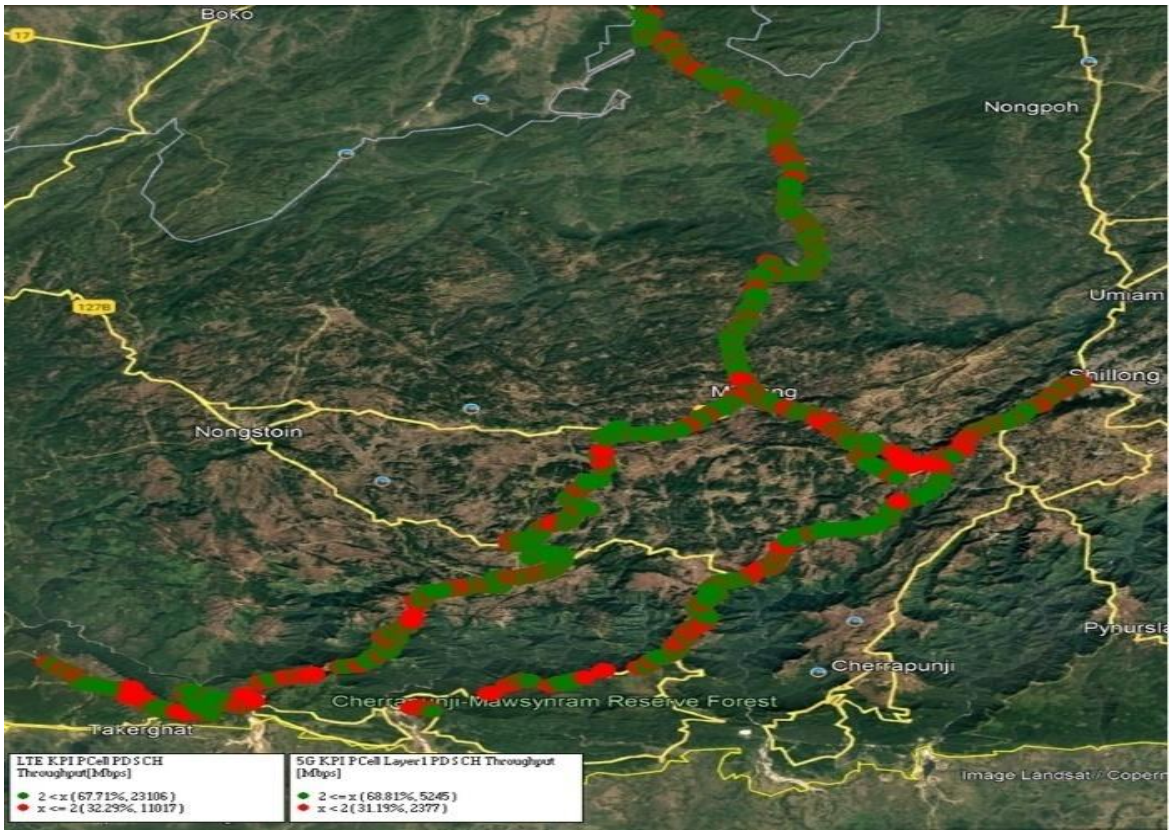
IV. Dynamic Data Test- 5G DL Details

RJIO

Dynamic Data Testing Complete 473 Kms

Data KPIs - Overall	5G
Average Download Throughput (Mbps)	194.23

5G



AVG. DOWNLOAD SPEED (Mbps)	194.23
DL throughput	**Sample %**
0 to <2 Mbps	31.19
2 to <10 Mbps	18.59
10 to <50 Mbps	16.81
> 50 Mbps	33.42
Total	**100**

VIL

Dynamic Data Testing Complete 473 Kms

Data KPIs – Overall	4G
Average Download Throughput (Mbps)	12.24

4G

AVG. DOWNLOAD SPEED (Mbps)	12.24
DL throughput	**Sample %**
0 to <2 Mbps	1.85
2 to <10 Mbps	95.08
10 to <=30 Mbps	0.62
>30 Mbps	2.46
Total	**100**