

Operator Assisted Drive Test Report

North & Middle Andaman

February, 2024

(RO, Kolkata)

Key Performance Indicators (KPIs):

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

BSNL-Drop Call Rate in 3G network, Block call rate in 3G network, Call Setup Success Rate in 3G network, Rx Quality in 2G & 3G (Ec/Io) network.

VIL- Drop call Rate in 2G network, Block call Rate in 2G network, Call Setup Success Rate in 2G network, and Rx Quality in 2G network (**having only 2G Service**).

It is observed that 2G coverage of VIL on most portions of the OADT routes are inadequate and 2G & 3G/4G coverage of BSNL on some portions of the OADT routes are inadequate

Out of the four TSPs, **M/s Airtel and M/s Reliance Jio did not participate in the drive test citing lack of network coverage due to limited number of sites present along the drive test route.**

The Operator Assisted Drive Test has been carried out by Regional Office, Kolkata with the help of Service Providers in North and Middle Andaman and surrounding areas including National Highway (4) on 06th February & 07th February 2024 from 06.30 AM to 07.30 PM. The drive test covered drive route of 330 KMs (approx) over a period of 2 days. Approximately 111+ calls were made for each of the 4 networks: two 2G networks, one 3G network & one 4G network covering two TSPs.

Overview

Voice
Summary

Data
Summary

Overview

North and Middle Andaman district is one of the 3 districts of the Indian Union Territory of Andaman and Nicobar Islands located in the Bay of Bengal. Mayabunder town is the district headquarters. The District of North and Middle Andaman was created during August 2006 and has its jurisdiction from Baratang to Diglipur. It has 3 Sub-Divisions namely Rangat, Diglipur and Mayabunder comprising of 3 Tehsils.

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 Data File Success Rate.

Voice Tests: Calls were made for 90 secs duration with wait time of 5 secs between call in all technologies. Two 2G networks, one 3G network, one 4G network covering 2 unique TSPs were tested.

Data Tests: Dynamic Data Service Testing was performed along same route in all technologies. 500 KB file for 2G, 20MB file for 3G and 40MB file for 4G were downloaded from FTTP server in TSP's own server. Static Data Service Testing was also performed. Two 2G (Lock Mode) networks, one 3G (Lock Mode) network, One LTE (Lock Mode) network covering 2 unique TSPs were tested.

Service	Static Data Service Testing- Specifications
Download	2G (Locked) - 500KB, 3G (Locked) - 20 MB, 4G (Locked) - 40 MB
Upload	2G (Locked) - 100KB, 3G (Locked) - 5 MB, 4G (Locked) - 10 MB
Web Browsing	3 links of e/m commerce website www.amazon.in, www.flipkart.com and PayTm
Video Steaming	130 secs Clip
Latency	32 Bytes on www.google.com

Technology/ TSP	BSNL	VODAFONE-IDEA
2G	YES	YES
3G	YES	NO
4G	YES	NO
TOOL USED	NIMO	TEMS

Overview

Voice & Dynamic Data Test Drive Route



Drive Routes: North and Middle Andaman & NH (4)

DAY-1–Chatam Jetty-Bambooflat Jetty--Brindaban Gram Panchayat-Ferrargunj-Jirkatang -Middle Strait Jetty-Baratang–adazig Market-Bejoygarh RV-Kadamtala-Parlobjig -Kadamtala bridge-Kaushalya Nagar-Rangat Post Office-Gram Panchayat Shivapuram-Nimbudera-Tugapur-STO Office Panighat, Mayabunder-Deputy Commissioner Office, N&MA-Mayabunder- Andaman PWD Guest House-Govet. Senior Secondary School Karmatang.

DAY-2–Panighat Check Post-Kishorinagar-Khudirampur-Subashgram-AC office Diglipur-Aerial bay -Swarajgram RV-Radha Nagar-Shyam Nagar-Chainpur Police Chowki.

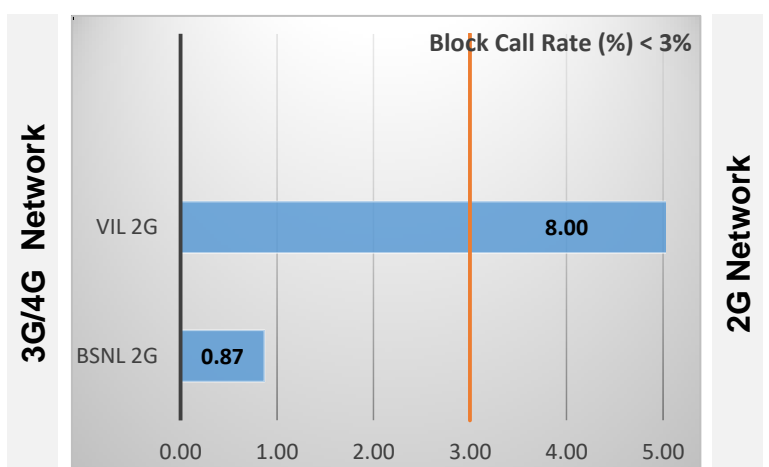
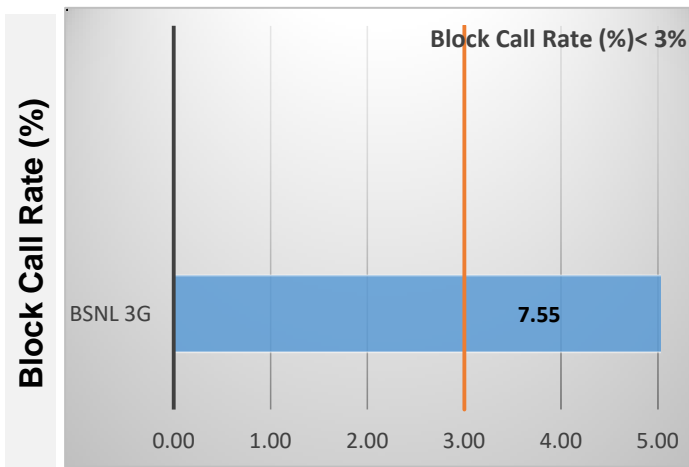
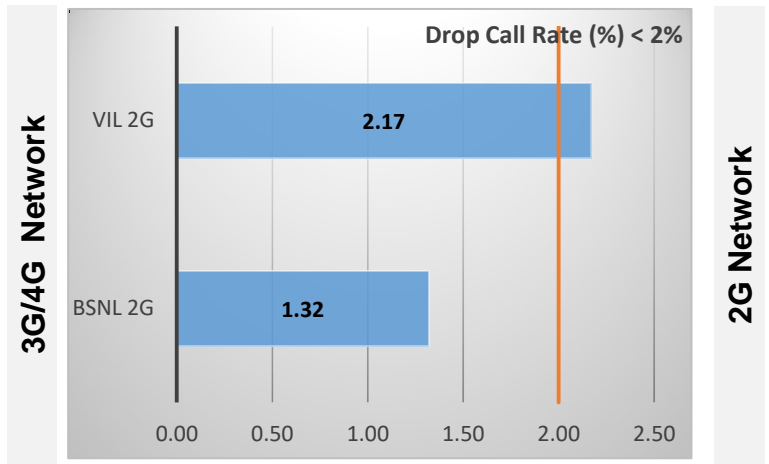
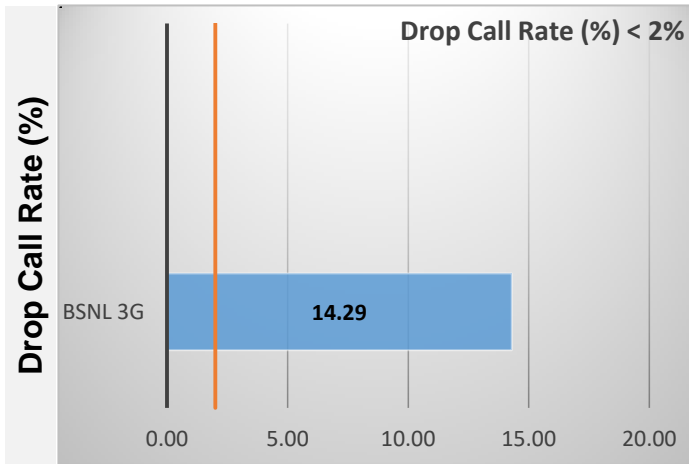
Data Service Test- Static Locations

Static Locations
Diglipur Bazar
Chatham Jetty

Voice Calls

Key Observations

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



KPIs	2G		3G
	BSNL	VIL	BSNL
Drop Call Rate %	1.32	2.17	14.29
Block Call Rate %	0.87	8.00	7.55

- a) BSNL (3G) & VIL (2G) do not met the 2% QOS benchmark of Drop Call Rate (DCR%).
- b) BSNL (3G) & VIL (2G) do not met the 3% QOS benchmark of Block Call Rate (BCR%).

Coverage

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

TSPs	2G	
	BSNL	VIL
Coverage %	74.19	73.14

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

TSPs	3G	4G
	BSNL	BSNL
Coverage	59.48	26.35

Summary

City Level Summary- Voice

Voice Call	2G	
	BSNL	VIL
Call Attempt	230	50.0
Blocked Call Rate (%)	0.87	8.0
CSSR% (Accessibility)	99.13	92.0
Drop Call Rate (%)	1.32	2.17
Mobility HOSR (%)	98.97	100
Rx Quality (%)	84.39	91.23

Voice Call	3G/4G
	BSNL 3G
Call Attempt	53.0
Blocked Call Rate (%)	7.55
CSSR% (Accessibility)	92.45
Drop Call Rate (%)	14.29
Mobility HOSR (%)	100
Rx Quality (%)	91.11

Summary-Data Services Dynamic

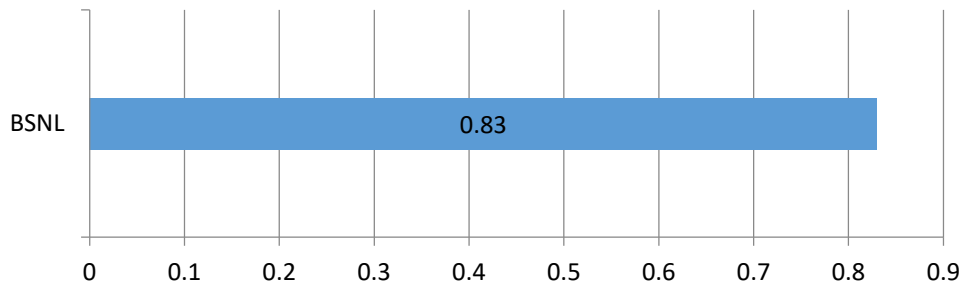
Key Observations

Dynamic Data was tested for 330 Kms. Download Throughput was tested.

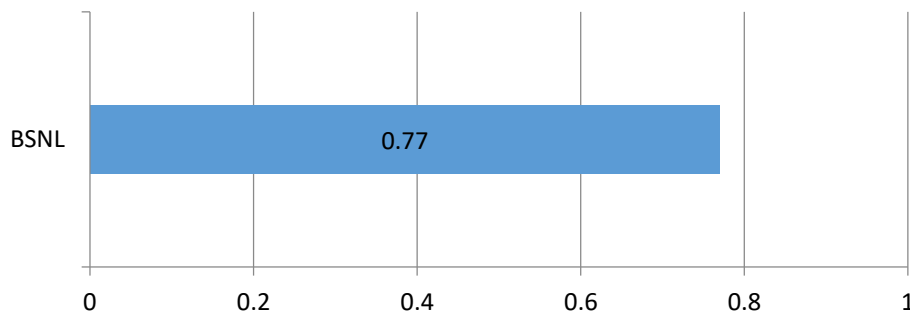
Data Download Performance (Average Throughput in Mbps) - Dynamic Data Testing

4G/3G Network:

4G-Dynamic Download Average Throughput (Mbps)



3G-Dynamic Download Average Throughput (Mbps)



Summary-Data Services Static

City Level Summary-

Average Data Services Static	2G	
	BSNL	VIL
Download Throughput (kbps)	65.0	58.20
Upload Throughput (kbps)	52.50	61.01
Web Browsing Delay (sec)	25.0	6.46
Latency (msec)	182.5	221.50

Average Data Services Static	3G/ 4G
	BSNL 4G
Download throughput in Mbps	1.0
Upload Throughput in Mbps	0.89
Video streaming delay (secs)	***
Web Browsing Delay (secs)	7.0
Latency (msec)	73.5

*** TSP did not submit data

Summary-Data Services Static

Location Level Summary-

Location:-Chatham Jetty	2G	
	BSNL	VIL
Download Throughput (kbps)	85.0	53.70
Upload Throughput (kbps)	75.0	62.35
Web Browsing Delay (sec)	25.0	7.22
Latency (msec)	175	216

Location:-Chatham Jetty	3G/4G
	BSNL 4G
Download throughput in Mbps	0.80
Upload Throughput in Mbps	0.99
Video streaming delay (secs)	***
Web Browsing Delay (secs)	6.0
Latency (msec)	80

Location:- Diglipur Bazar	2G	
	BSNL	VIL
Download throughput in (kbps)	45.0	62.70
Upload Throughput in (kbps)	30.0	59.67
Web Browsing Delay (secs)	***	5.71
Latency (msec)	190	227

Location:- Diglipur Bazar	4G
	BSNL 4G
Download throughput in (mbps)	1.20
Upload Throughput in (mbps)	0.80
Video streaming delay (secs)	***
Web Browsing Delay (secs)	8.0
Latency (msec)	67

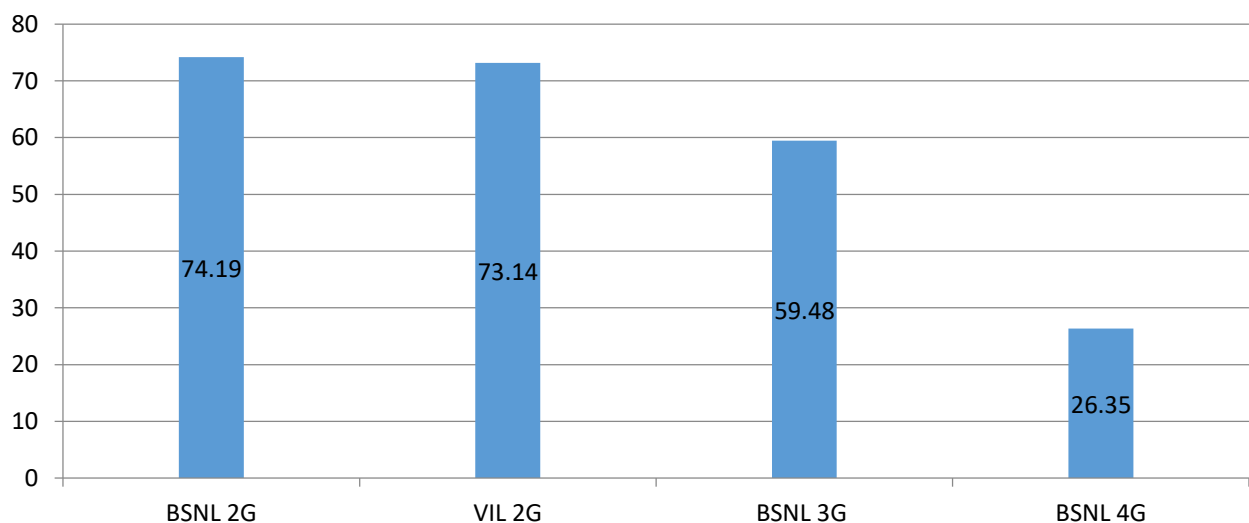
*** TSP did not submit data

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 ≥ -110 dBm. The details are as follows.

TSP	Coverage Rate %
BSNL 2G	74.19
VIL 2G	73.14
BSNL 3G	59.48
BSNL 4G	26.35

Coverage Rate %



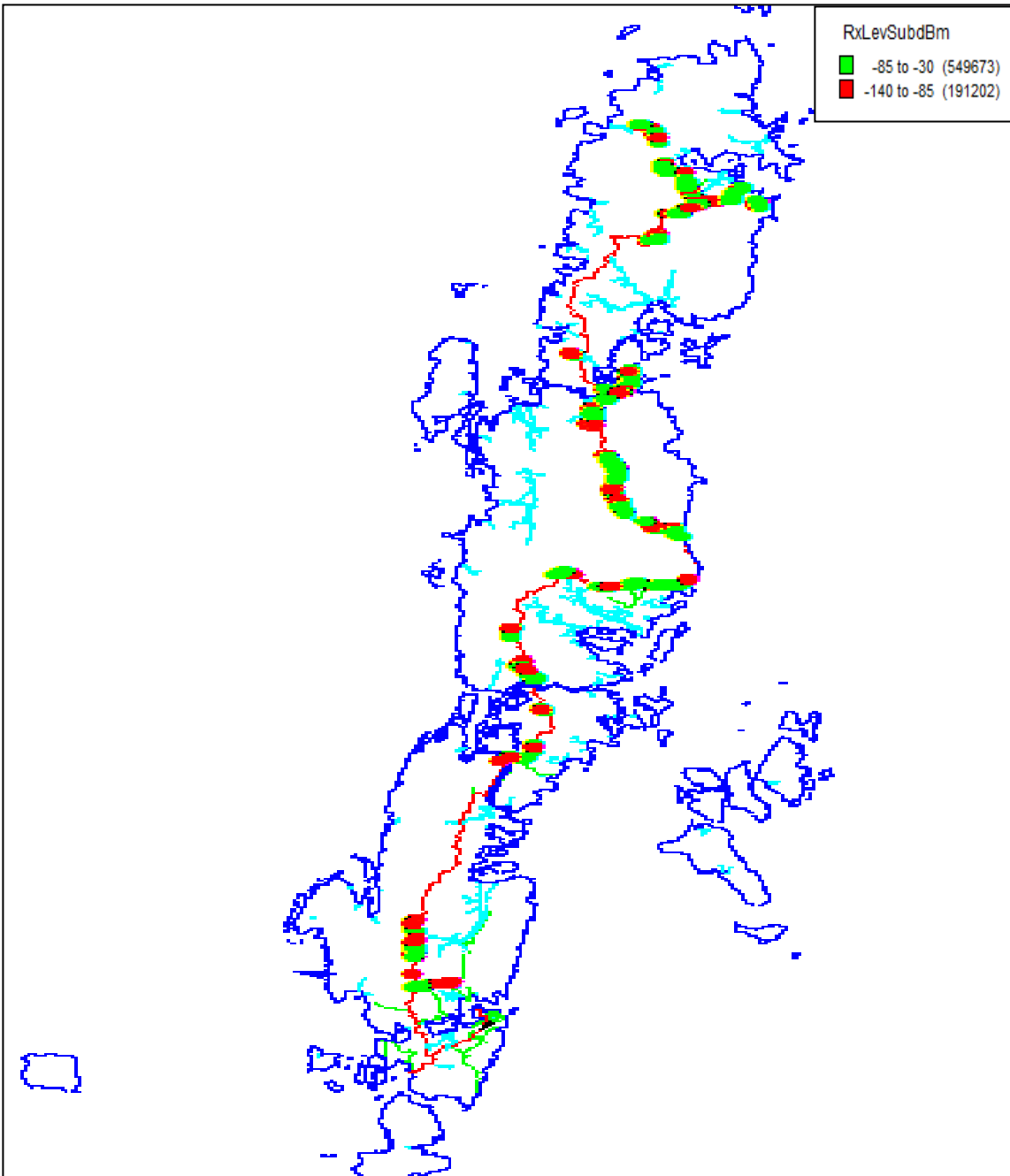
Note- Coverage is the percentage of samples having signal strength more than the threshold value (2G ≥ -85 dbm, 3G ≥ -90 dbm and 4G ≥ -110 dbm). However, these samples are only for the portion of the OADT routes where TSPs have coverage i.e 'no coverage' routes have been excluded.

I. Coverage Details

BSNL

Technology	Coverage Rate %
2G	74.19

2G



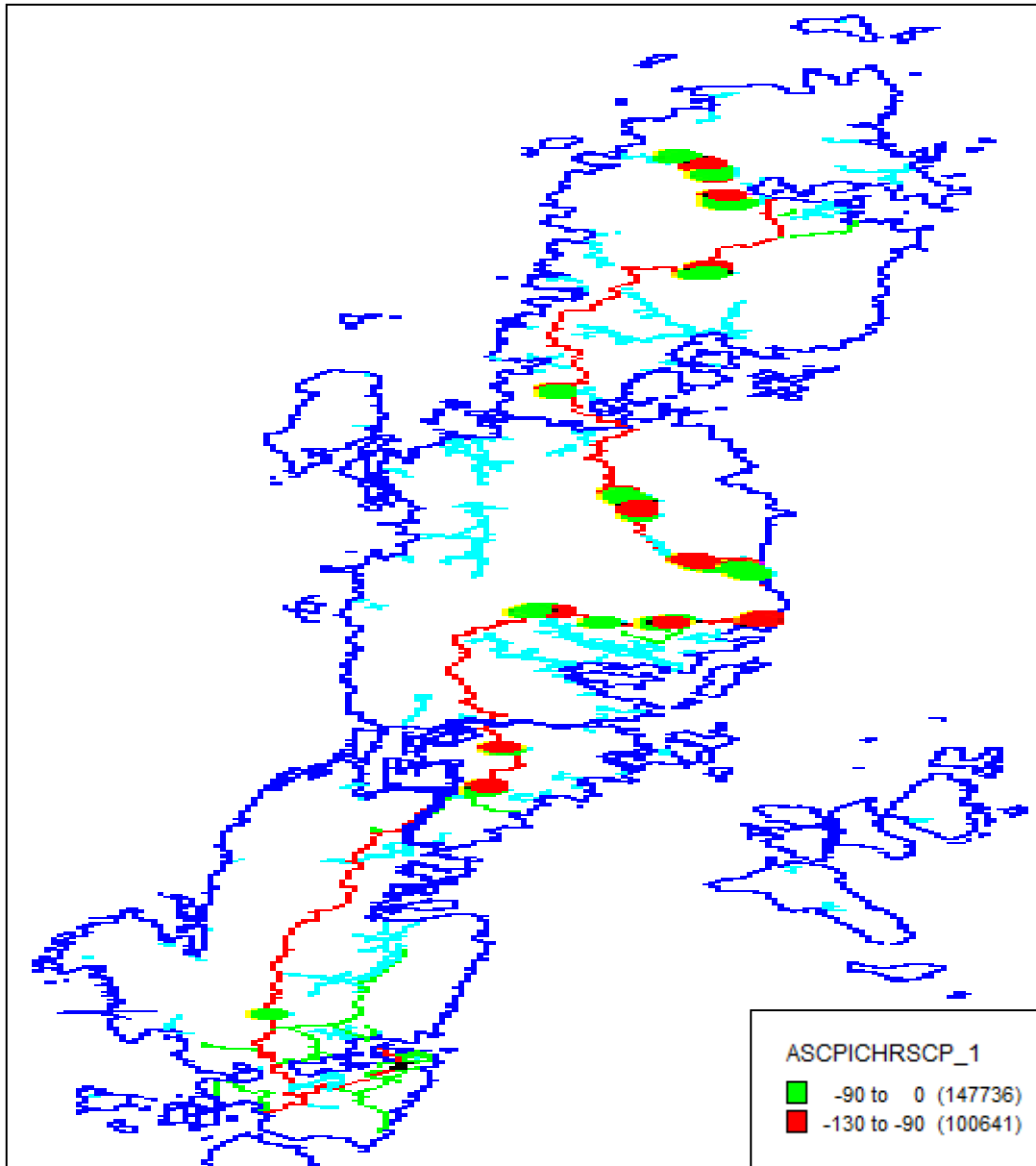
Overall RxLevel	Sample %
[Max >=-75]	38.0
[-75 >=-85]	36.19
[-85 >=-95]	18.28
[-95 >=Min)	7.53
Total	100

I. Coverage Details

BSNL

Technology	Coverage Rate %
3G	59.48

3G



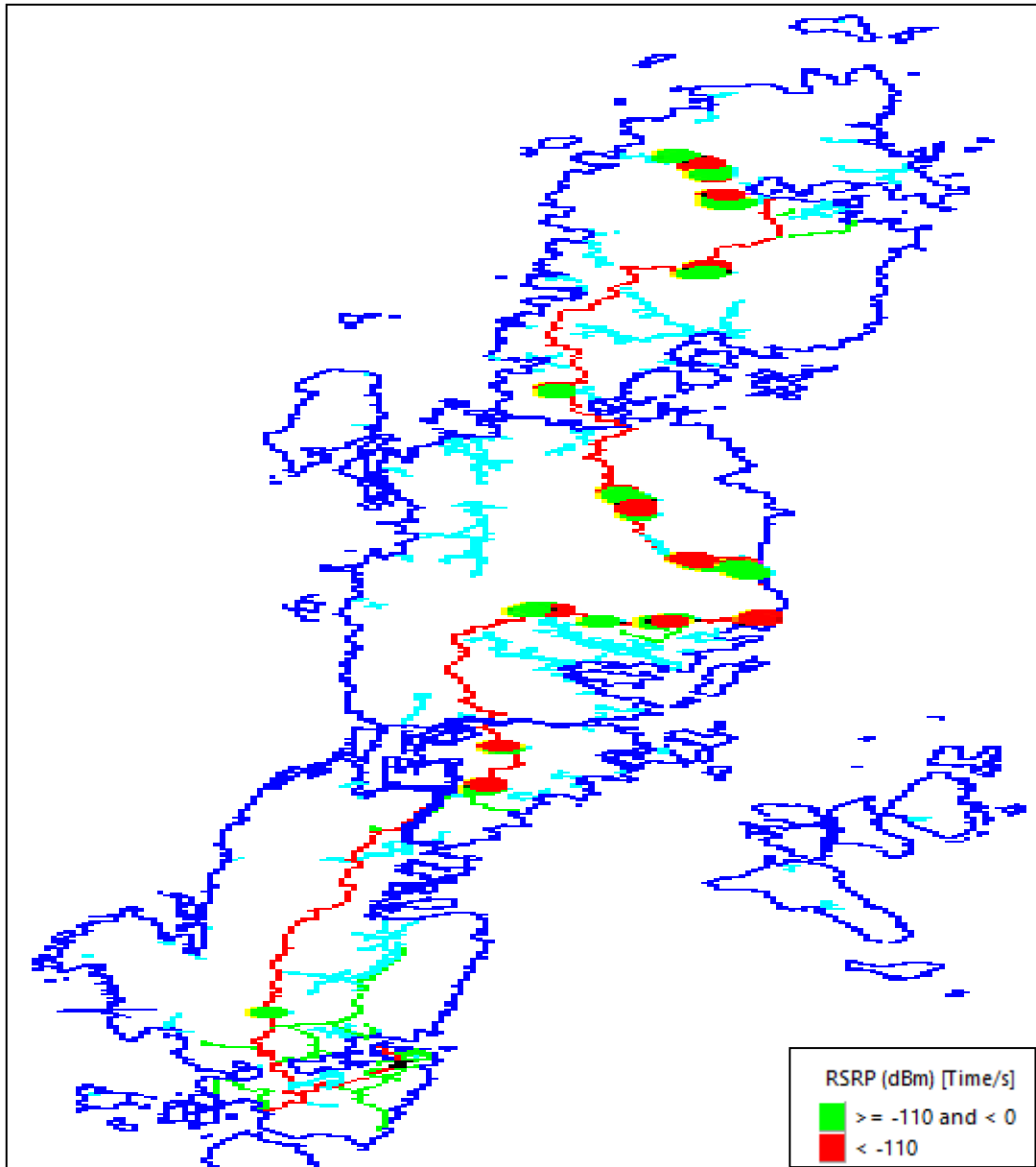
Overall RSCP	Sample %
[Max >=-70]	17
[-70 >=-80)	21
[-80 >=-90)	21
[-90 >=Min)	41
Total	100

I. Coverage Details

BSNL

Technology	Coverage Rate %
4G	26.35

4G



I. Coverage Details

VIL

Technology	Coverage Rate %
2G	73.14

2G

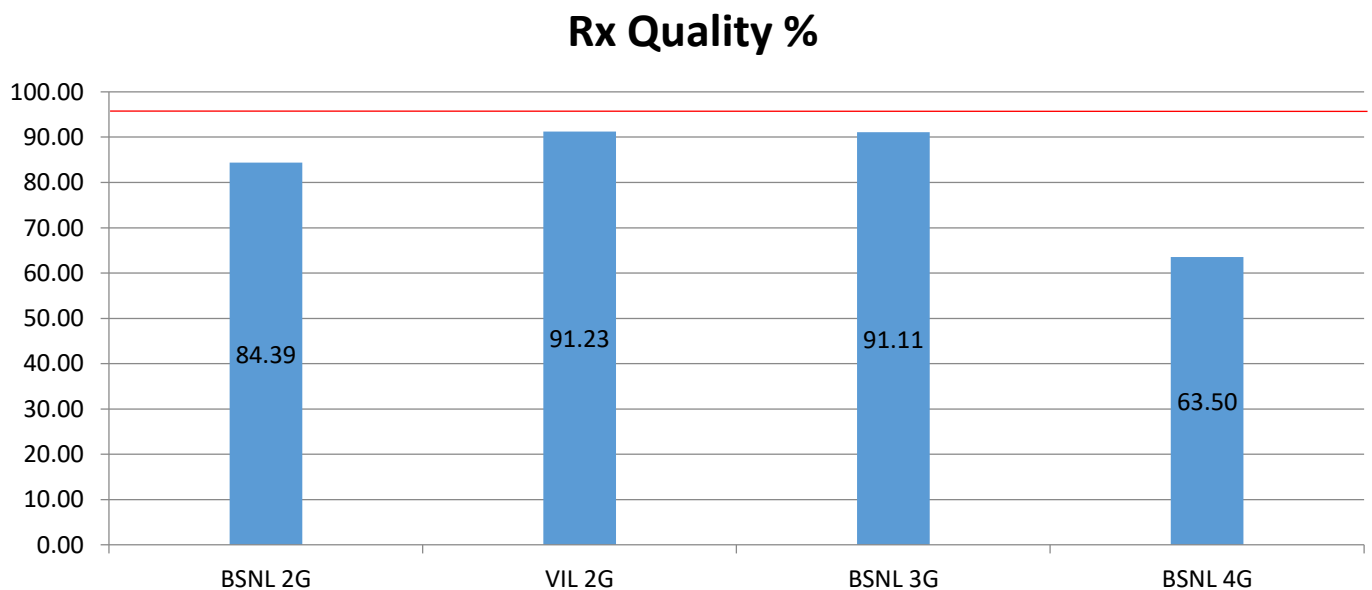


Overall RxLevel	Sample %
[Max >=-75]	32.98
[-75 >=-85)	40.16
[-85 >=-95)	17.30
[-95 =Min)	9.56
Total	100

II. Quality Details

For measuring voice quality, as per the QoS norms, Rx Quality ≤ 5 for GSM, $E_c/N_o \geq -14$ 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 $\geq 95\%$.

TSP	Rx Quality %
BSNL 2G	84.39
VIL 2G	91.23
BSNL 3G	91.11
BSNL 4G	63.50

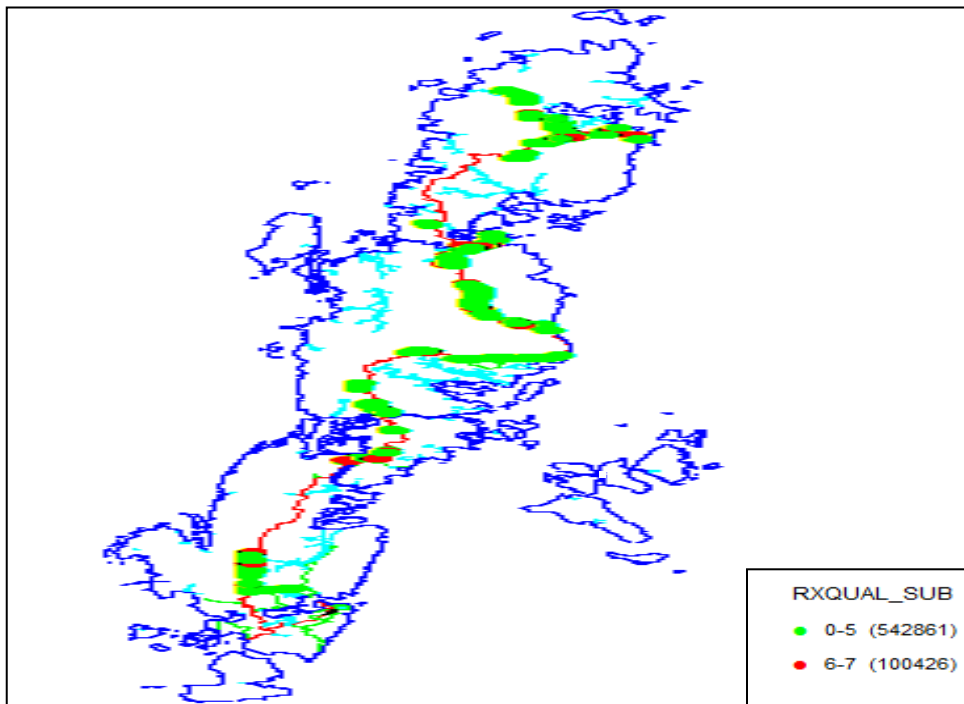


II. Quality Details

BSNL

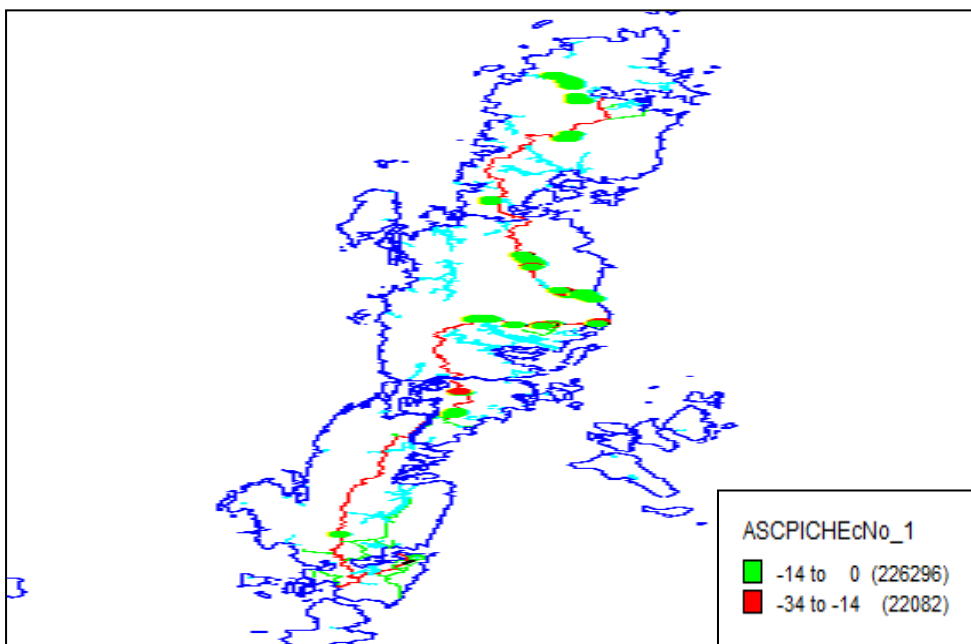
Technology	Rx Quality %
2G	84.39
3G	91.11

2G



Overall Rx Quality	Sample %
(Min <=2)	72
(2 <=3)	3
(3 <=4)	4
(4 <=5)	5
(5 <=Max)	16
Total	100

3G



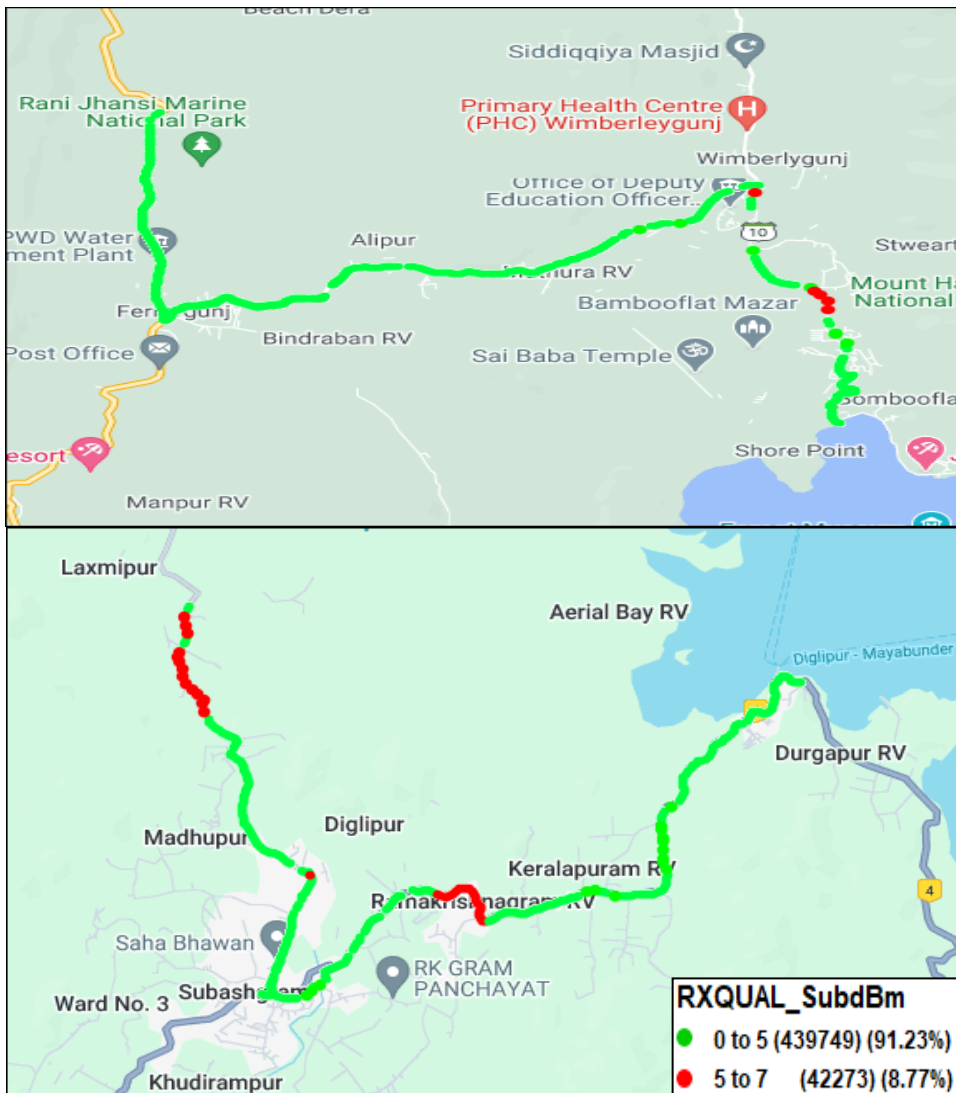
Overall EcNo	Sample %
(Max <=-6)	12
(-6 <=-9)	55
(-9 <=-11)	15
(-11 <=-14)	9
(-14 <= Min)	9
Total	100

II. Quality Details

VIL

Technology	Rx Quality %
2G	91.23

2G



Overall Rx Quality	Sample %
(Min <=2)	35.36
(2 <=3)	19.62
(3 <=4)	12.27
(4 <=5)	23.98
(5 <=Max)	8.77
Total	100

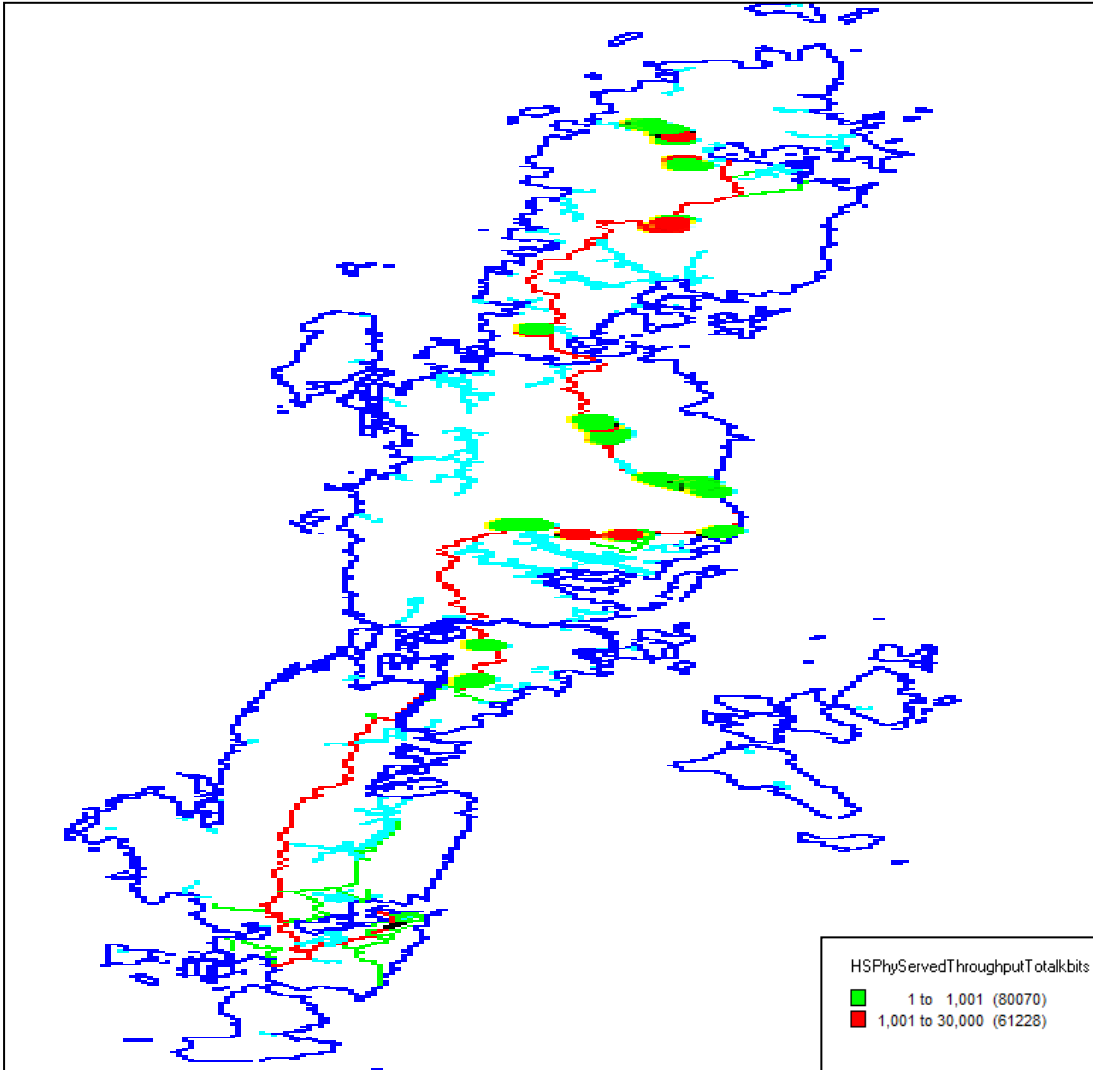
IV. Dynamic Data Test- 3G DL Details

BSNL

Dynamic Data Testing Complete 330 Kms

Data KPIs - Overall	3G
Average Download Throughput (Mbps)	.77

3G



AVG. DOWNLOAD SPEED (Mbps)	0.77
% FILE TRANSFER COMPLETE	76.6%
DL throughput	Sample %
0 to 0.5 Mbps	38.58
0.5 to 1 Mbps	18.08
1 to 2 Mbps	22.06
2 to 5 Mbps	18.95
>5 Mbps	2.32
Total	100

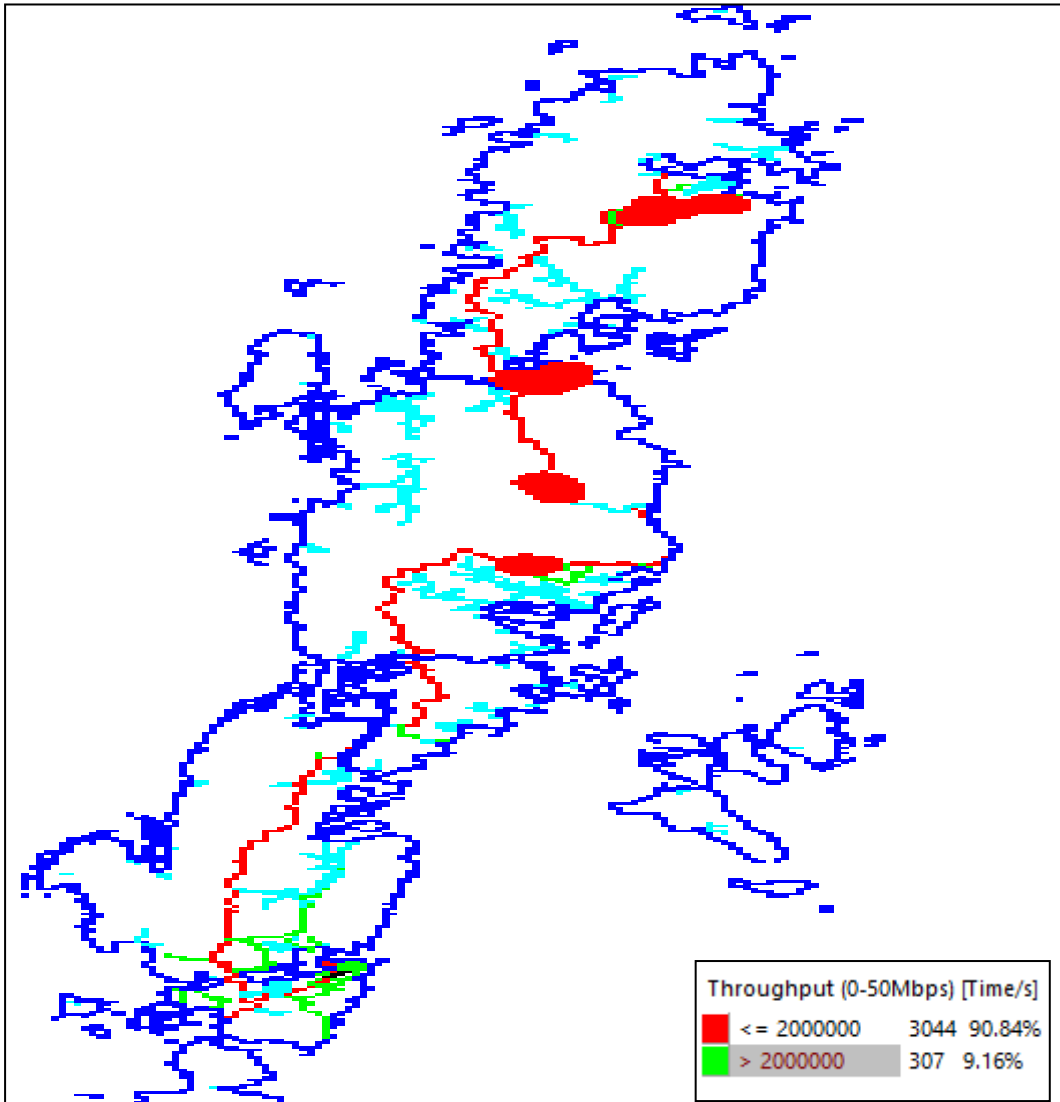
IV. Dynamic Data Test- 4G DL Details

BSNL

Dynamic Data Testing Complete 330 Kms

Data KPIs - Overall	4G
Average Download Throughput (Mbps)	0.83

4G



AVG. DOWNLOAD SPEED (Mbps)	0.83
% FILE TRANSFER COMPLETE	66.66
DL throughput	Sample %
0 to 1 Mbps	72.53
1 to 2 Mbps	18.31
2 to 5 Mbps	9.1
5 to 10 Mbps	0.06
>10 Mbps	0
Total	100

IV. Dynamic Data Test-2G DL Details

VIL

Dynamic Data Testing Complete 330 Kms

Data KPIs – Overall	2G
Average Download Throughput (Kbps)	76.43

2G



AVG. DOWNLOAD SPEED (Kbps)	76.43
% FILE TRANSFER COMPLETE	56.76
DL throughput	Sample %
0 to 50 Kbps	53.81
50 to 100 Kbps	39.23
100 to 200 Kbps	3.37
200 to 300 Kbps	3.59
>300 Kbps	0.00
Total	100