

# Operator Assisted Drive Test Report

## Sitamarhi, Sheohar and East Champaran

### Districts, Bihar

### May, 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, Block Call Rate and Call Setup Success Rate in 2G network and Rx Quality in 4G (SINR) network.

**VIL**- Rx Quality in 2G network and 4G (SINR) network.

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

**\*\***-Voice calls over the 4G network of BSNL were not tested as VoLTE is not enabled in the 4G network. Only data services were tested on 4G.

The Operator Assisted Drive Test has been carried out by Regional Office, Kolkata with the help of Service Providers in Sitamarhi, Sheohar and Purba Champaran Districts and surrounding areas including National Highway 227 on 22<sup>nd</sup> and 23<sup>rd</sup> May 2025 from 08.30 AM to 07.45 PM. The drive test covered drive route of 451 KMs (approx) over a period of two days. Approximately 465 + calls were made for each of the 6 networks: three 2G networks, and three 4G networks covering four TSPs.

Overview

Voice Summary

Data Summary

# Overview

**Sitamarhi** is one of the districts in the Indian state of Bihar. Dumra is the administrative headquarters of this district. The district is a part of the Tirhut Division and is located along the border of Nepal.

**Sheohar** is an administrative district of Bihar in India. The district headquarters are located at Sheohar, and the district is a part of Tirhut Division.

**East Champaran** or **Purvi Champaran** is an administrative district in the Tirhut division of the state of Bihar in India. The district headquarter is located at Motihari.

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.

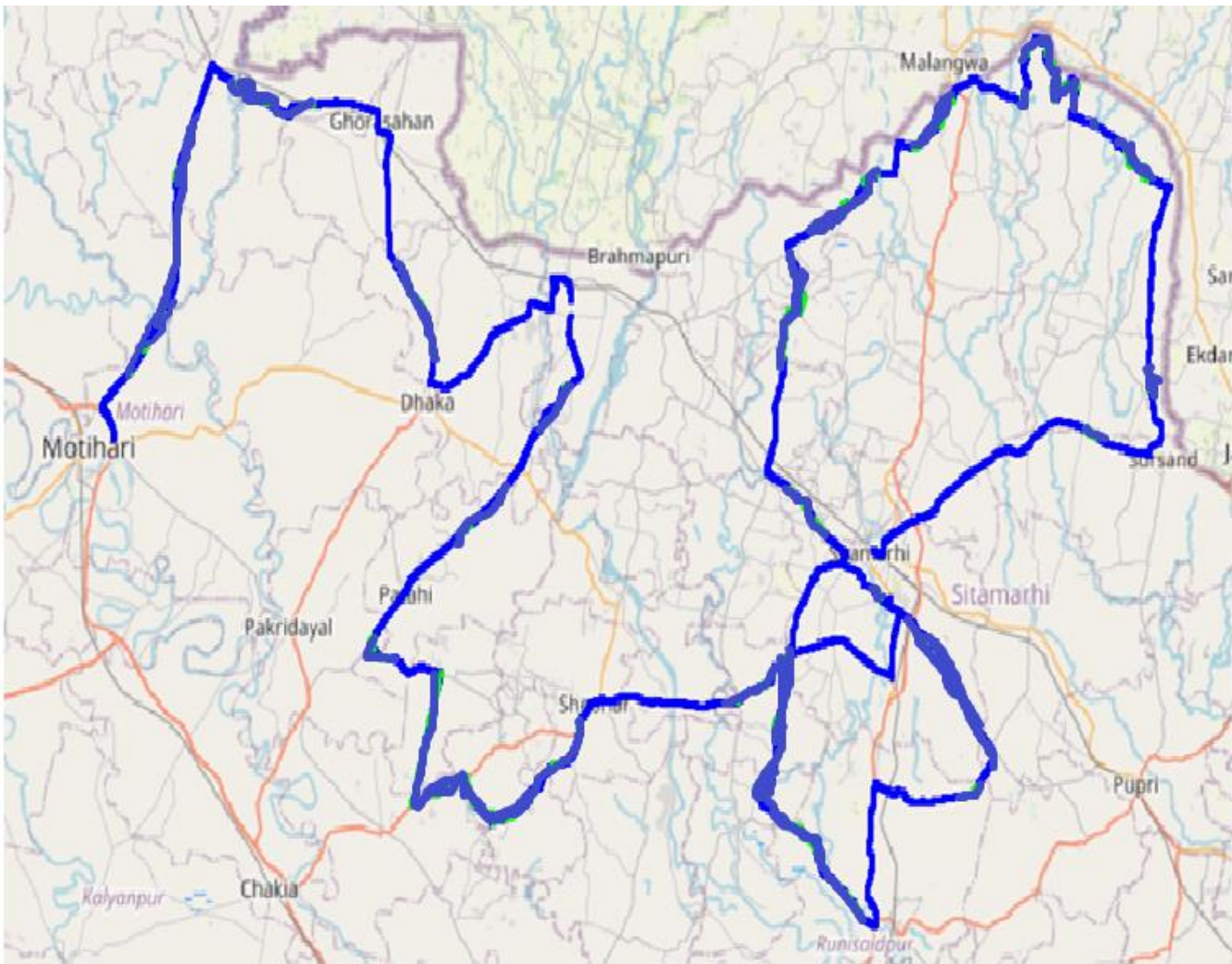
**Voice Tests:** Calls were made for 120 secs duration with wait time of 15 secs between call in 2G/ 3G on auto mode and 4G/ 5G on auto mode. Three 2G networks, one 3G network, Three 4G networks covering 4 unique TSPs were tested.

**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- commerce website www.amazon.in, www.flipkart.com and PayTm
Video Steaming	100 Sec Video & 25 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	NO	NO	NO
4G	YES	YES	YES	YES
TOOL USED	TEMS	NIMO	X-CAL	TEMS

## Voice & Dynamic Data Test Drive Route



### Drive Routes: Sitamarhi, Sheohar and East Champaran Districts

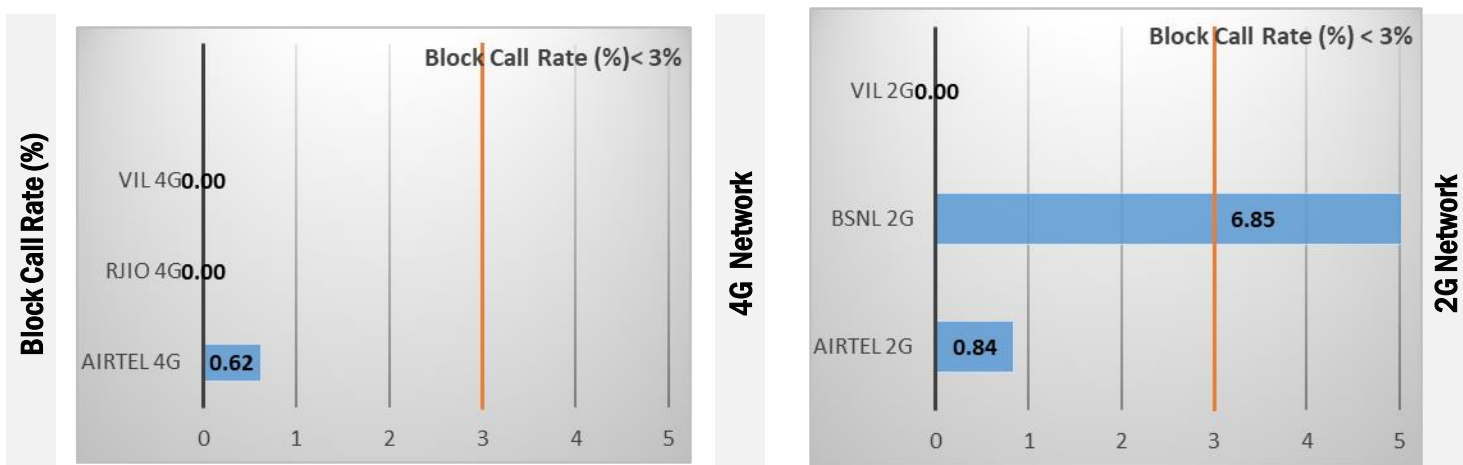
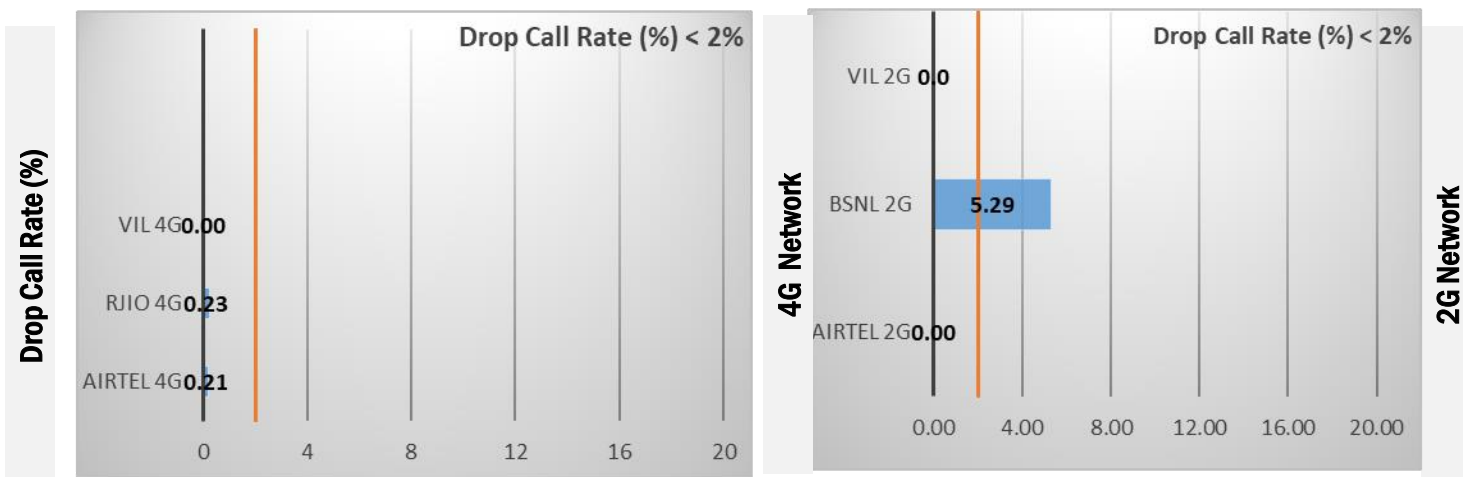
**DAY-1** Sitamarhi Railway Station – Jawaharlal Nehru Memorial College – Majhauri Bazar – Middle School – Middle School , Sanbarsa – Dayan Chhapra Panchayat Office – Dr. Ganesh Ray Degree College—D.M Office, Sitamarhi – MS Manik Chowk Sanskrit Middle School –Garha Branch Post Office – RNTS College Morsand, Runnisaidpur – Bhandari Bazar – Dema Pull Chowk – Janaki Sthan Mandir.

**DAY-2** Janaki Stadium – Dubba Ghat Bridge – Collectariate Sheohar – Lalgah High School –Lalgah Chhawani Hospital – Shekpurwa bazar bus stand – Govt. Middle School – Block Office, Bargania –Post Office, Dhaka, Baigania – Motihari Dhaka Bus Stop, Motihari – Virta Chowk – Chauradano Bus Stand

## Data Service Test- Static Locations

Static Locations
Sitamarhi Railway Station
Janaki Stadium, Sitamarhi

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



KPIs	2G			4G-VolTE		
	AIRTEL	BSNL	VIL	AIRTEL	RJIO	VIL
Drop Call Rate %	0	5.29	0.00	0.21	0.23	0.00
Block Call Rate %	0.84	6.85	0.00	0.62	0.00	0.00

- All TSPs have met the 2% QoS benchmark of Drop Call Rate (DCR%) except BSNL (2G) network.
- All TSPs have met the 3% QoS benchmark of Block Call Rate (BCR%) except BSNL (2G) network

Coverage

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

TSPs	2G		
	AIRTEL	BSNL	VIL
Coverage %	72.40	72.77	77.30

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

TSPs	4G			
	AIRTEL	BSNL	RJIO	VIL
Coverage	88.33	70.39	83.31	84.87

# Summary

## City Level Summary- Voice

Voice Call	2G		
	AIRTEL	BSNL	VIL
Call Attempt	474	467	282
Blocked Call Rate (%)	0.84	6.85	0.00
CSSR% (Accessibility)	98.52	93.15	100
Drop Call Rate (%)	0.00	5.29	0.00
Mobility HOSR (%)	97.87	98.62	98.55
Rx Quality (%)	96.76	97.21	91.77

Voice Call	4G		
	AIRTEL 4G	RJIO 4G	VIL 4G
Call Attempt	487	440	357
Blocked Call Rate (%)	0.62	0.00	0.00
CSSR% (Accessibility)	98.97	100	100
Drop Call Rate (%)	0.21	0.23	0.00
Mobility HOSR (%)	99.78	98.68	97.89
Rx Quality (%)	85.91	83.31	82.00

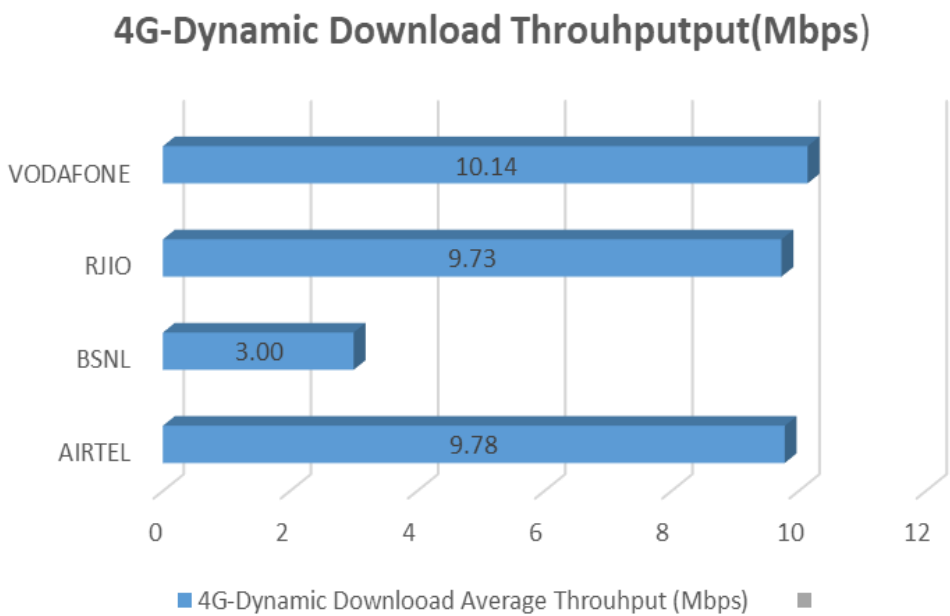
# Summary-Data Services Dynamic

Key Observations

Dynamic Data was tested for 451 Kms. Download Throughput was tested.

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

### 4G Network:



# Summary-Data Services Static

## City Level Summary-

Average Data Services Static	4G/5G			
	AIRTEL 4G/5G	BSNL 4G	RJIO 4G/5G	VIL 4G
Download throughput in Mbps	143.59	5.45	86.46	15.07
Upload Throughput in Mbps	9.69	3.50	37.19	5.52
Video streaming delay (sec)	5.84	1.5	0.50	1.50
Web Browsing Delay (secs)	2.38	6.0	1.04	5.99
Latency (msec)	21.5	75	32.87	36.5



# Summary-Data Services Static

## Location Level Summary-

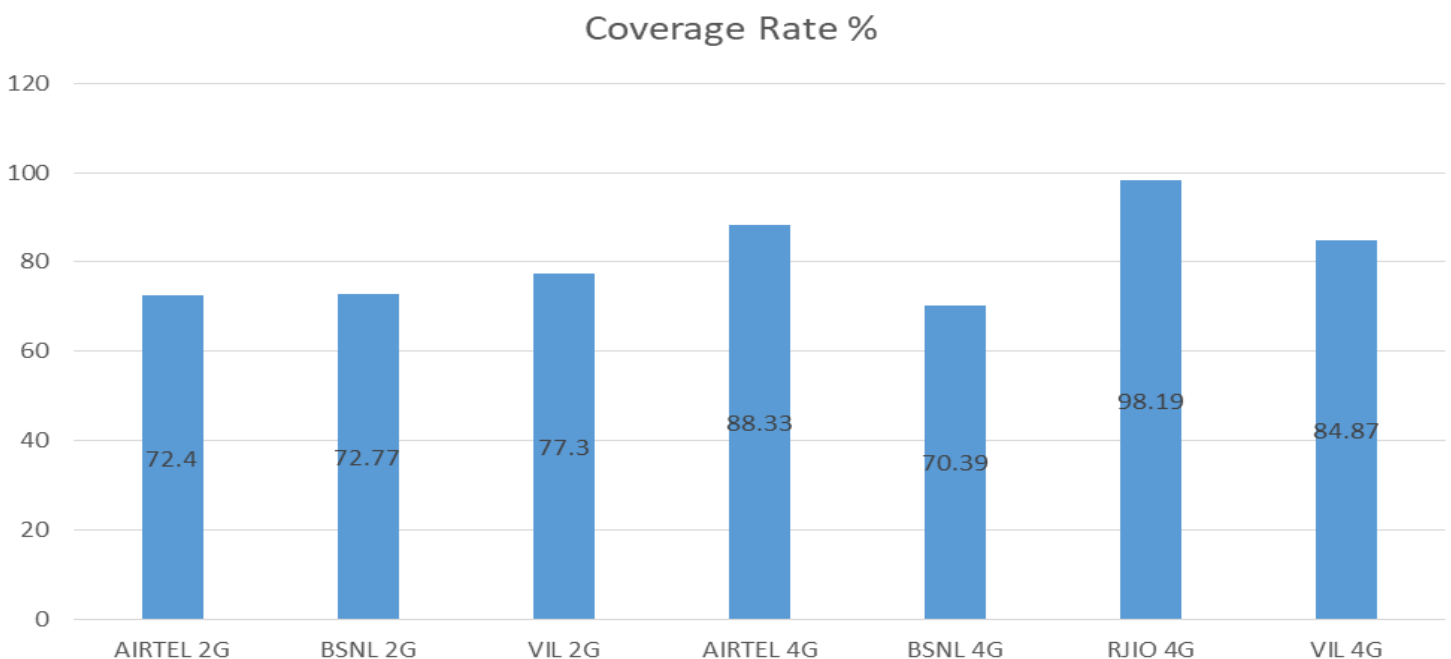
Location:-Sitamarhi Railway Station	4G /5G			
	AIRTEL 4G/5G	BSNL 4G	RJIO 4G/5G	VIL 4G
Download throughput in Mbps	179.84	4.92	62.07	14.83
Upload Throughput in Mbps	8.22	4.0	8.37	4.13
Video streaming delay (secs)	5.9	2.0	0.33	1.50
Web Browsing Delay (secs)	1.36	7.0	1.78	6.09
Latency (msec)	23	80	27.45	38.00

Location:- Janaki Stadium, Sitamarhi	4G			
	AIRTEL 4G/5G	BSNL 4G	RJIO 4G/5G	VIL 4G
Download throughput in (mbps)	107.33	6.0	110.85	15.31
Upload Throughput in (mbps)	11.16	3.0	54.02	6.92
Video streaming delay (secs)	5.78	1.0	0.67	1.50
Web Browsing Delay (secs)	3.39	5.0	1.35	5.90
Latency (msec)	20.0	70.0	38.3	35.00

## 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  $\geq$  -85 dBm, RSCP is  $\geq$  -90 dBm & RSRP  $\geq$  -110dBm. The details are as follows.

TSP	Coverage Rate %
AIRTEL 2G	72.40
BSNL 2G	72.77
VIL 2G	77.30
AIRTEL 4G	88.33
BSNL 4G	70.39
RJIO 4G	98.19
VIL 4G	84.87



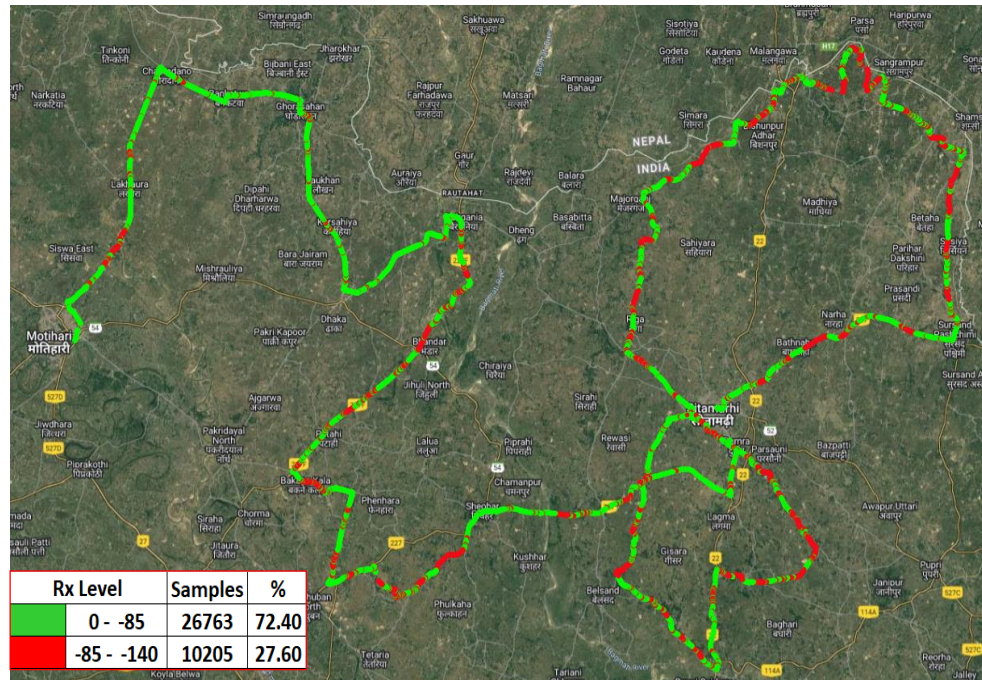
**Note- Coverage** is the percentage of samples having signal strength more than the threshold value ( 2G  $\geq$  -85 dbm, 3G  $\geq$  -90 dbm and 4G  $\geq$  -110 dbm). However, these samples are only for the portion of the OADT routes where TSPs have coverage i.e 'no coverage' routes have been excluded.

# I. Coverage Details

## AIRTEL

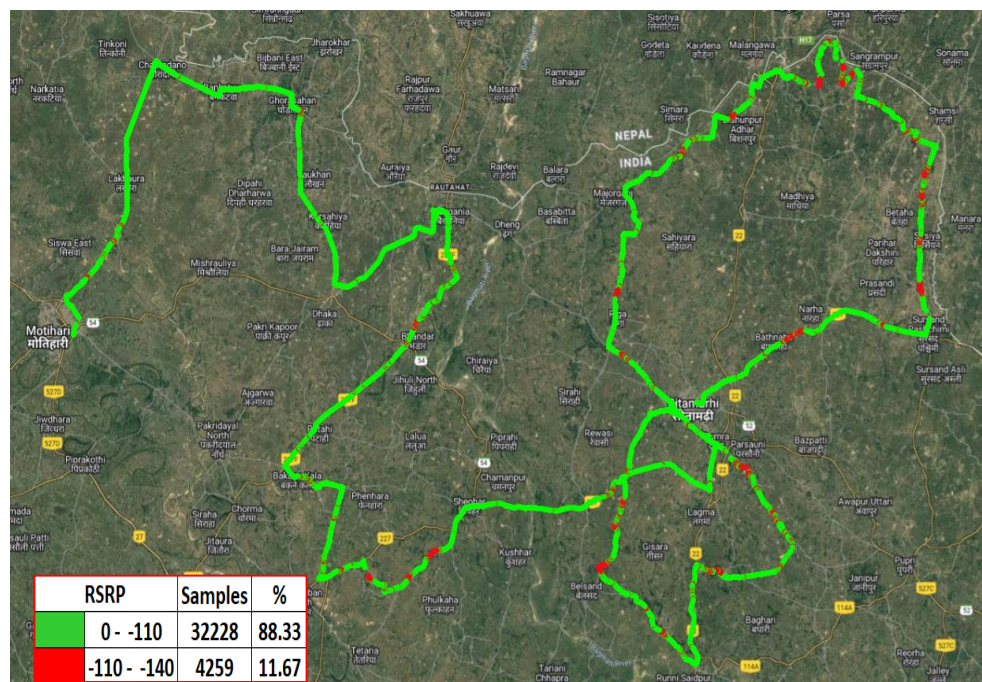
Technology	Coverage Rate %
2G	72.40
4G	88.33

## 2G



Overall Rx Level	Sample %
[Max >=-75]	39.16
[-75 >=-85)	33.23
[-85 >=-95)	19.41
[-95 >=Min)	8.20
<b>Total</b>	<b>100</b>

## 4G



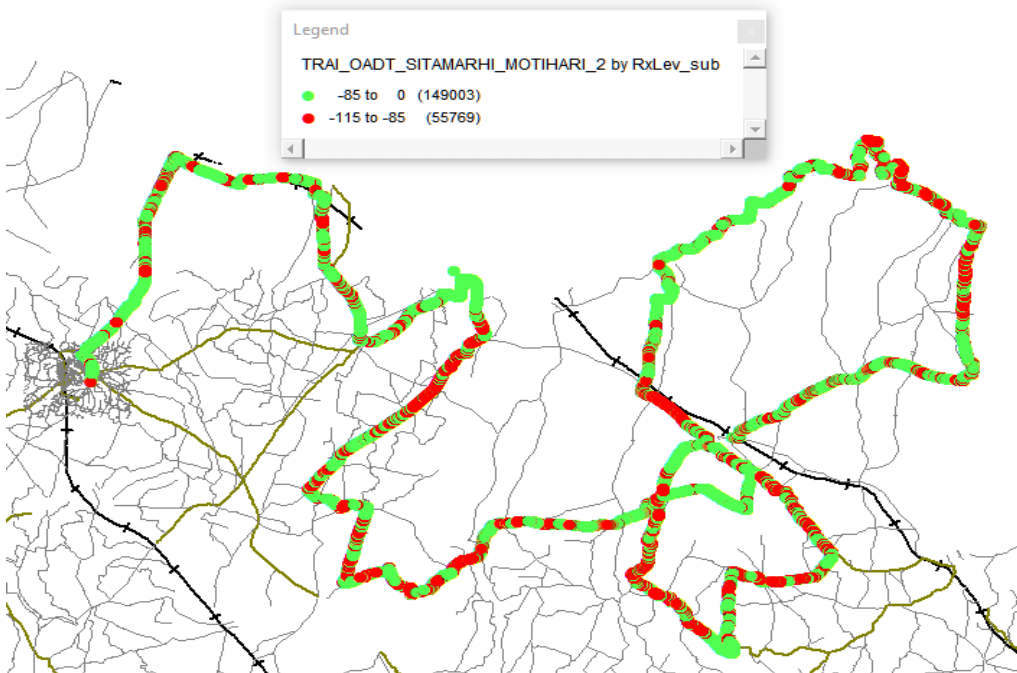
Overall RSRP	Sample %
[Max >=-80]	5.07
[-80 >=-90)	21.15
[-90 >=-110)	62.11
[-110 >=Min)	11.67
<b>Total</b>	<b>100</b>

# I. Coverage Details

## BSNL

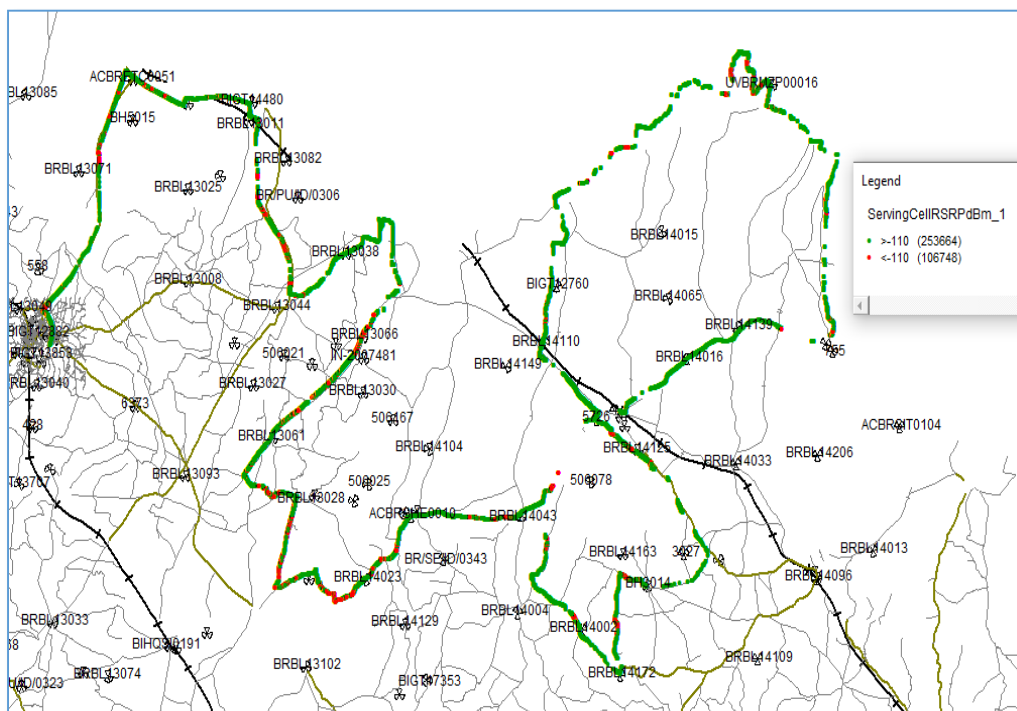
Technology	Coverage Rate %
2G	72.77
4G	70.39

### 2G



Overall Rx Level	Sample %
[Max >=-75]	50.73
[-75 >=-85)	7.28
[-85 >=-95)	14.75
[-95 >=Min)	27.24
<b>Total</b>	<b>100</b>

### 4G



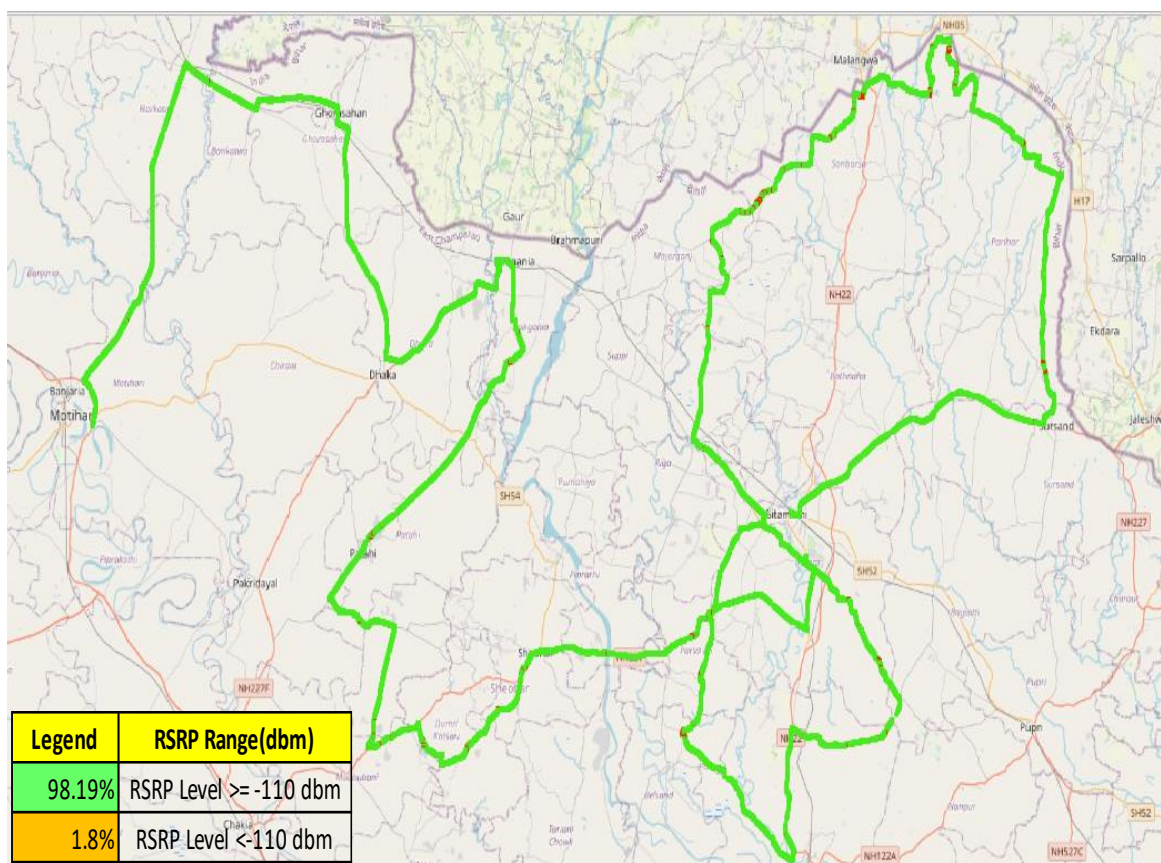
Overall RSRP	Sample %
[Max >=-80]	31.19
[-80 >=-90)	5.52
[-90 >=-110)	33.67
[-110 >=Min)	29.62
<b>Total</b>	<b>100</b>



## I. Coverage Details

### RJ10

Technology	Coverage Rate %
4G	98.19
4G	



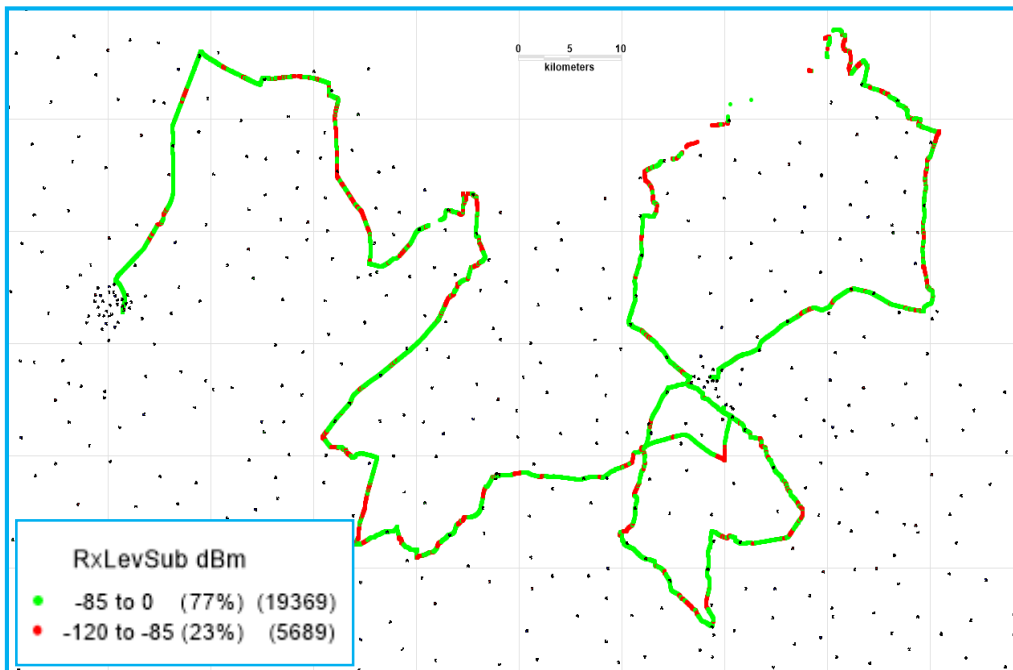
Overall RSRP	Sample %
[Max >= -80]	29.18
[-80 >= -90)	28.67
[-90 >= -110)	40.34
[-110 >= Min)	1.81
<b>Total</b>	<b>100</b>

## I. Coverage Details

### VIL

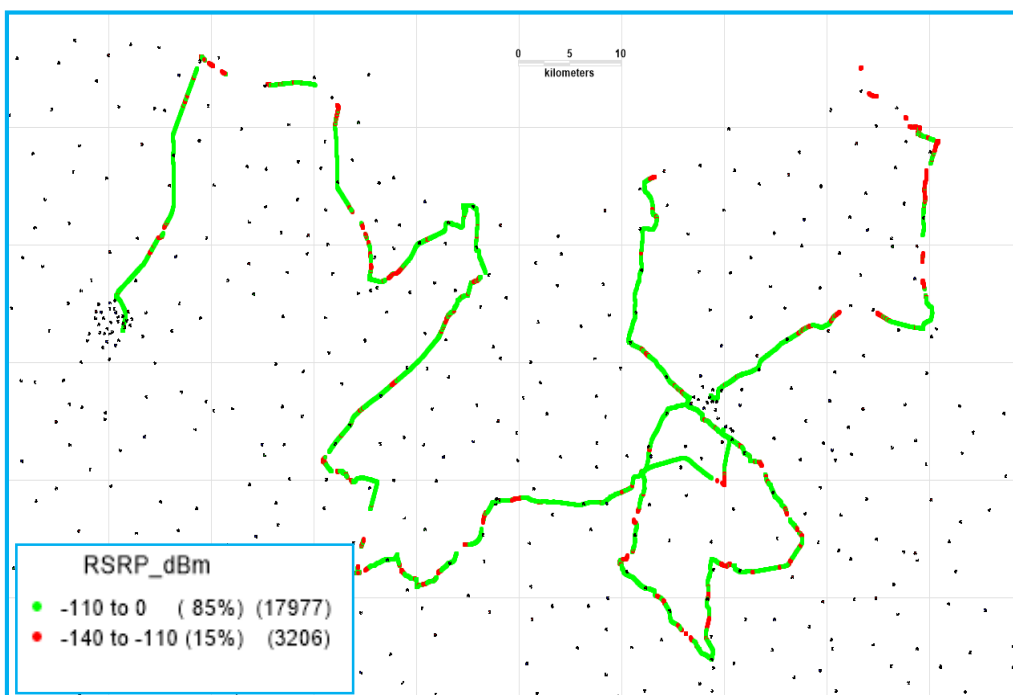
Technology	Coverage Rate %
2G	77.30
4G	84.87

### 2G



Overall Rx Level	Sample %
[Max >=-75]	45.42
[-75 >=-85)	31.87
[-85 >=-95)	18.81
[-95 =Min)	3.89
<b>Total</b>	<b>100</b>

### 4G

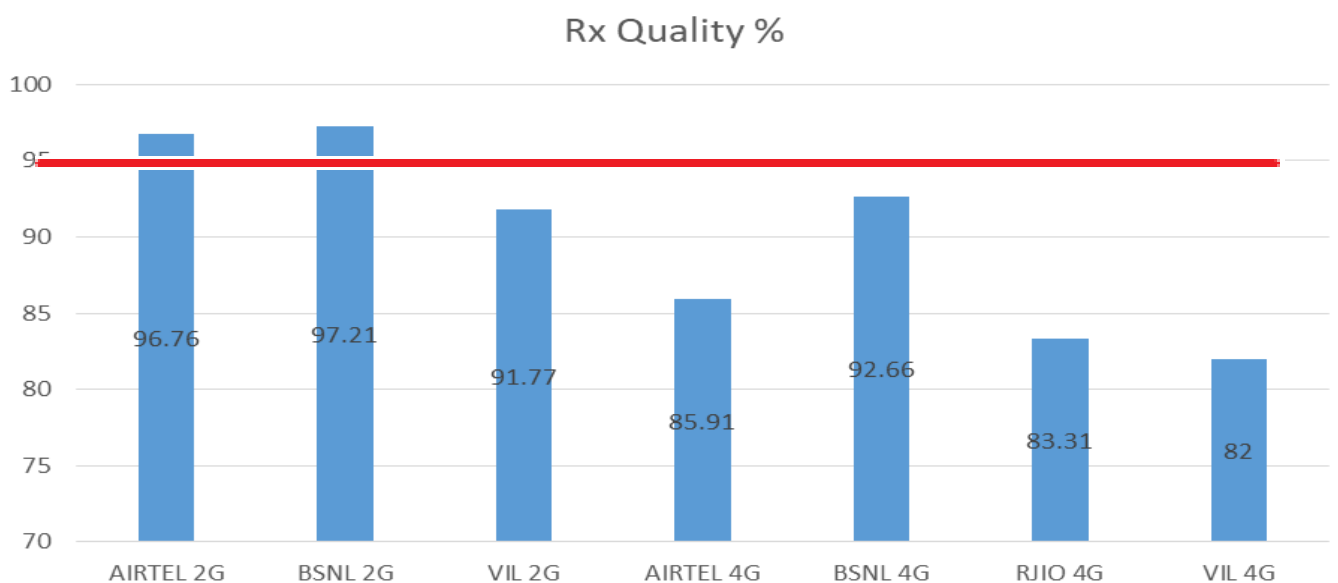


Overall RSRP	Sample %
[Max >=-80]	4.67
[-80 >=-90)	22.12
[-90>=-110)	58.07
[-110 >=Min)	15.13
<b>Total</b>	<b>100</b>

## II. Quality Details

For measuring voice quality, as per the QoS norms, Rx Quality $\leq$ 5 for GSM, Ec/No  $\geq$  -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 %
AIRTEL 2G	96.76
BSNL 2G	97.21
VIL 2G	91.77
AIRTEL 4G	85.91
BSNL 4G	92.66
RJIO 4G	83.31
VIL 4G	82.00



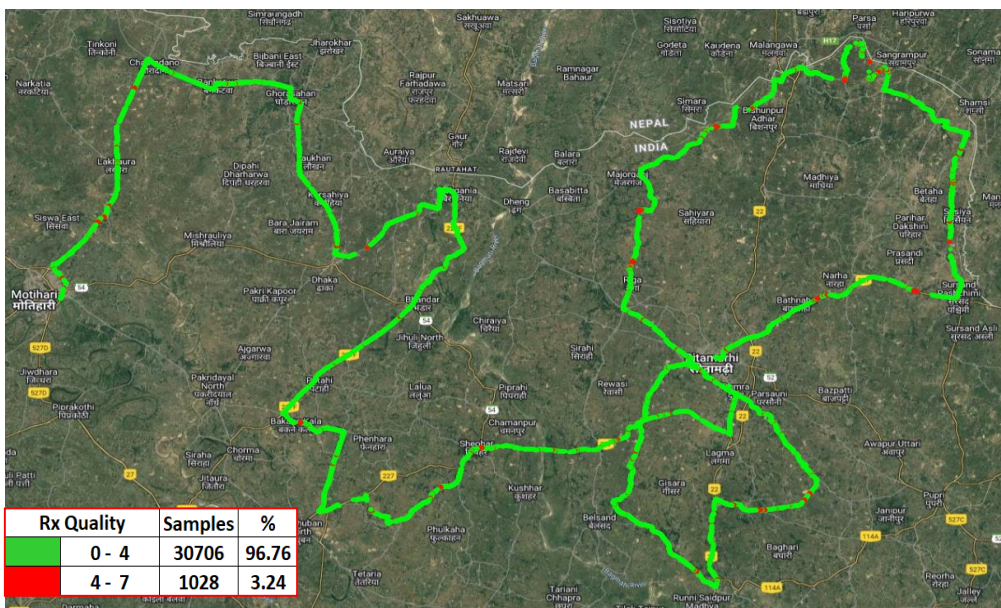


## II. Quality Details

### AIRTEL

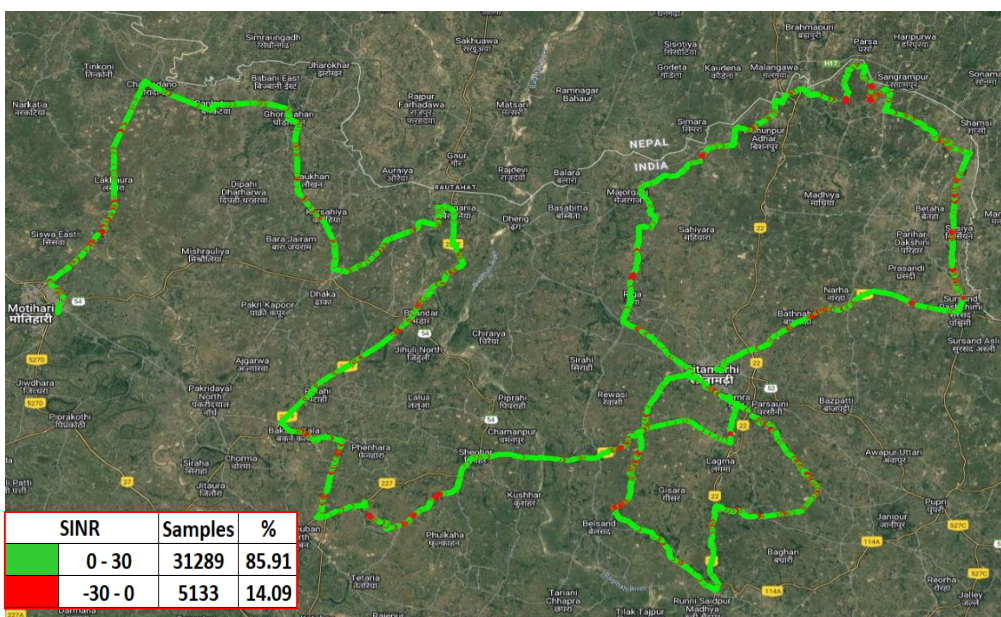
Technology	Rx Quality %
2G	96.76
4G	85.91

#### 2G



Overall Rx Quality	Sample %
(Min <=2)	88.84
(2 <=3)	5.58
(3 <=4)	2.34
(4 <=5)	1.52
(5 <=Max)	1.72
<b>Total</b>	<b>100</b>

#### 4G



Overall SINR	Sample %
(Min <=0)	14.09
(0 <=5)	31.14
(5 <=10)	25.22
(10 <=15)	18.02
(15 <=Max)	11.53
<b>Total</b>	<b>100</b>

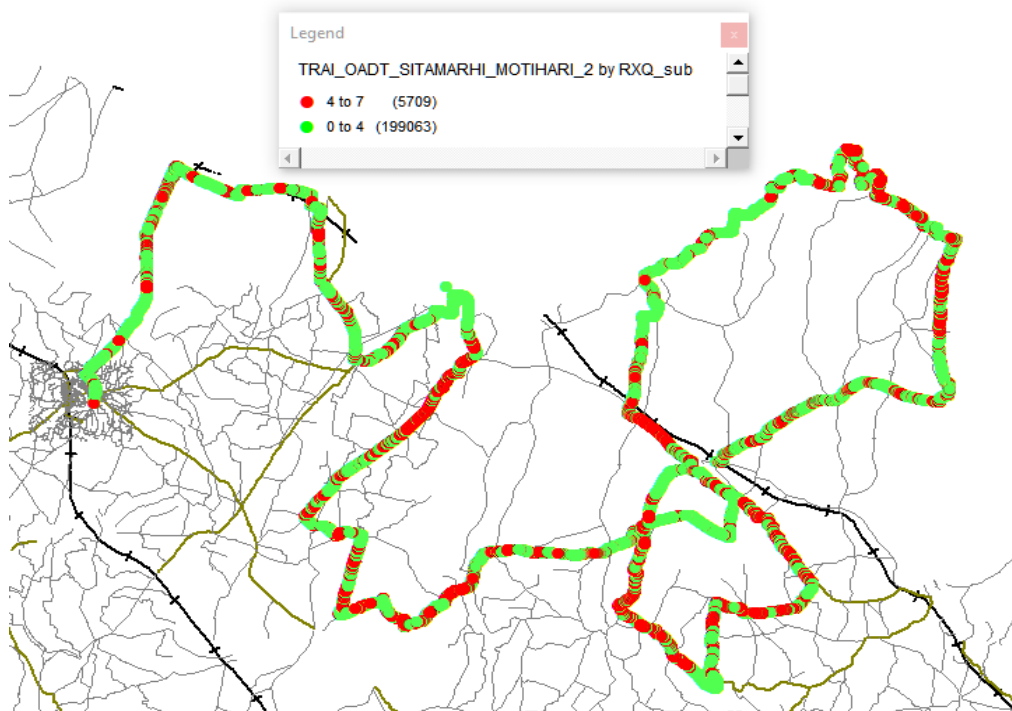


## II. Quality Details

### BSNL

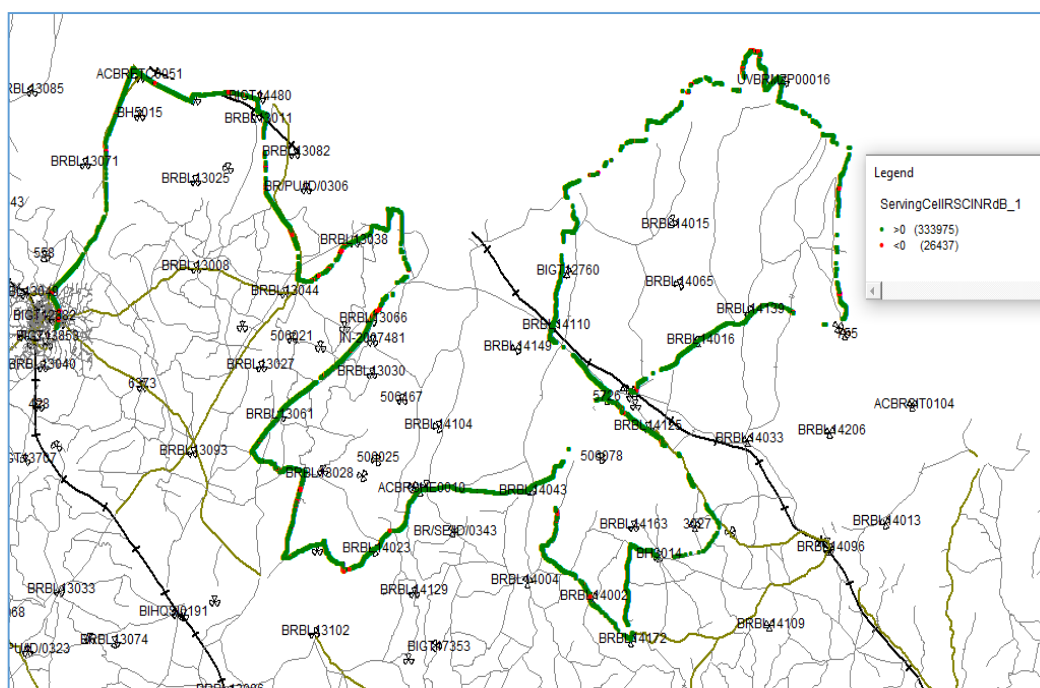
Technology	Rx Quality %
2G	97.21
4G	92.66

#### 2G



Overall Rx Quality	Sample %
(Min <=2)	96.04
(2 <=3)	0.58
(3 <=4)	0.59
(4 <=5)	0.65
(5 <=Max)	2.14
Total	100

#### 4G

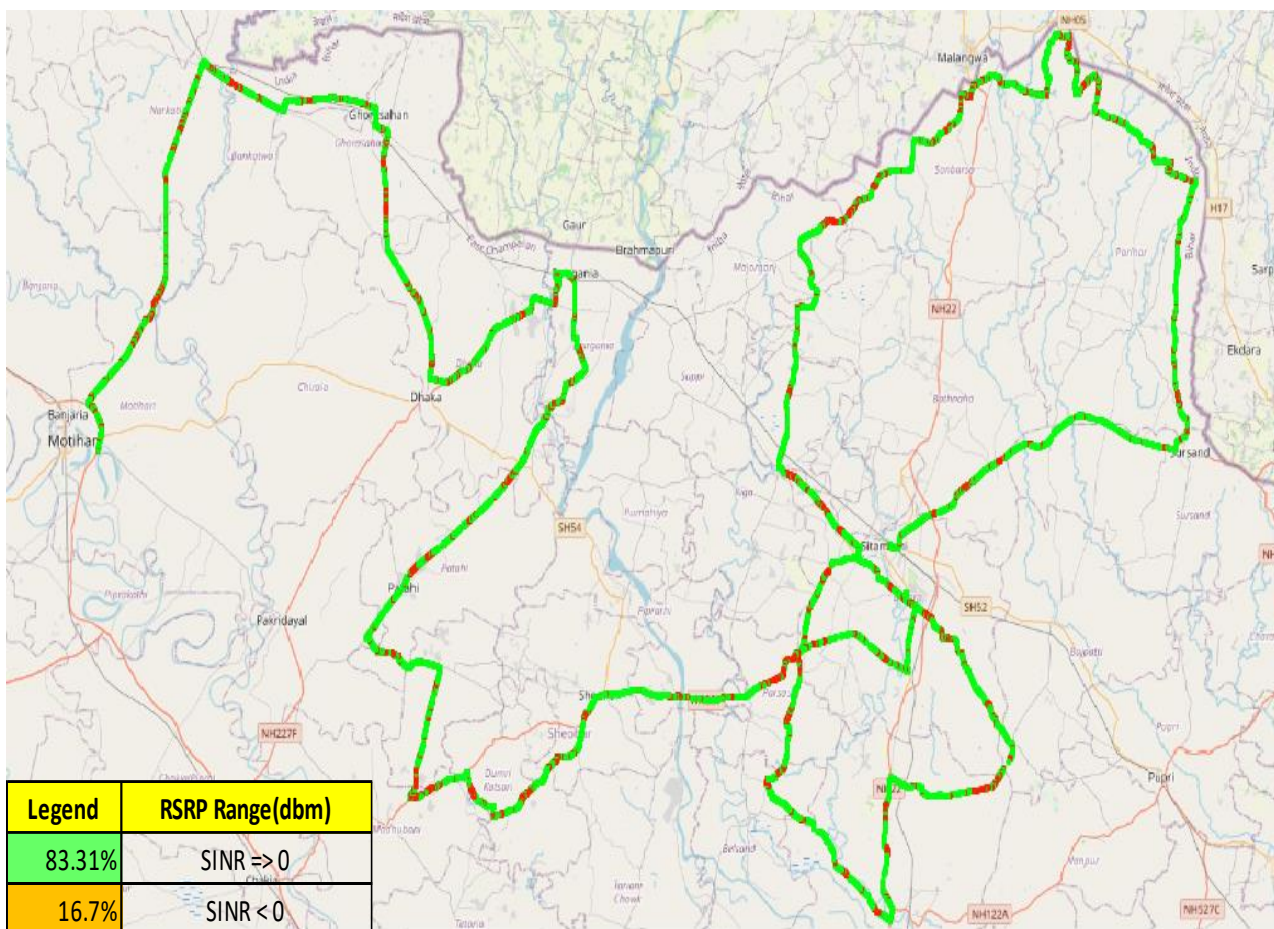


Overall SINR	Sample %
(Min <=0)	7.34
(0 <=5)	37.03
(5 <=10)	16.31
(10 <=15)	15.09
(15 <=Max)	24.23
Total	100

## II. Quality Details

### RJIO

Technology	Rx Quality %
4G	<b>83.31</b>
4G	



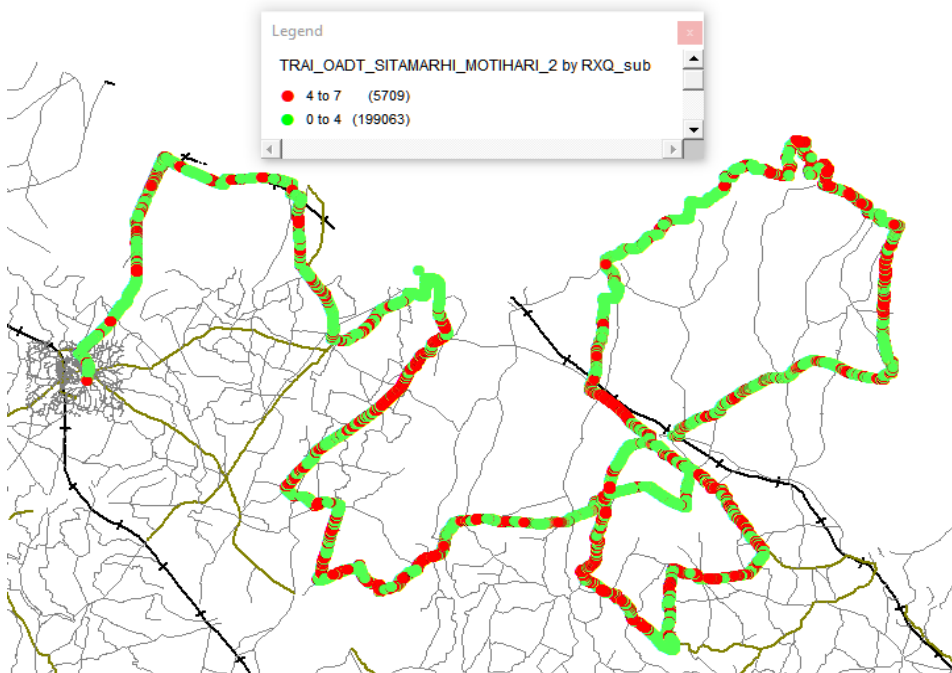
Overall SINR	Sample %
(Min $\leq$ 0)	16.69
(0 $\leq$ 5)	26.66
(5 $\leq$ 10)	25.93
(10 $\leq$ 15)	18.47
(15 $\leq$ Max)	12.25
<b>Total</b>	<b>100</b>

## II. Quality Details

### VIL

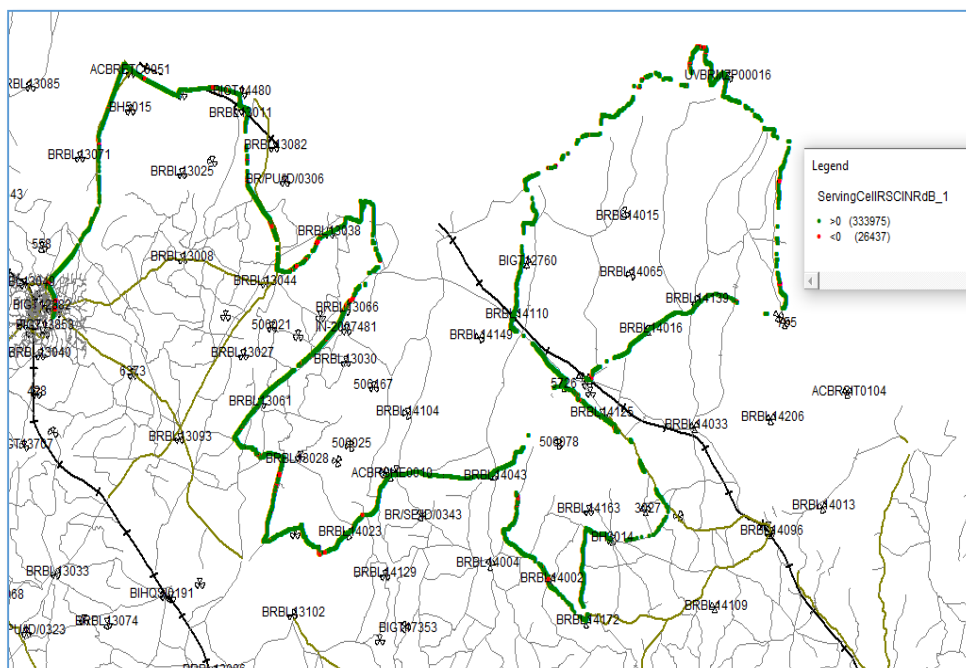
Technology	Rx Quality %
2G	91.77
4G	82.00

#### 2G



Overall Rx Quality	Sample %
(Min <=2)	80.90
(2 <=3)	5.73
(3 <=4)	5.13
(4 <=5)	3.10
(5 <=Max)	5.13
<b>Total</b>	<b>100</b>

#### 4G



Overall SINR	Sample %
(Min <=0)	18.00
(0 <=5)	21.73
(5 <=10)	25.74
(10 <=15)	17.43
(15 <=Max)	17.10
<b>Total</b>	<b>100</b>



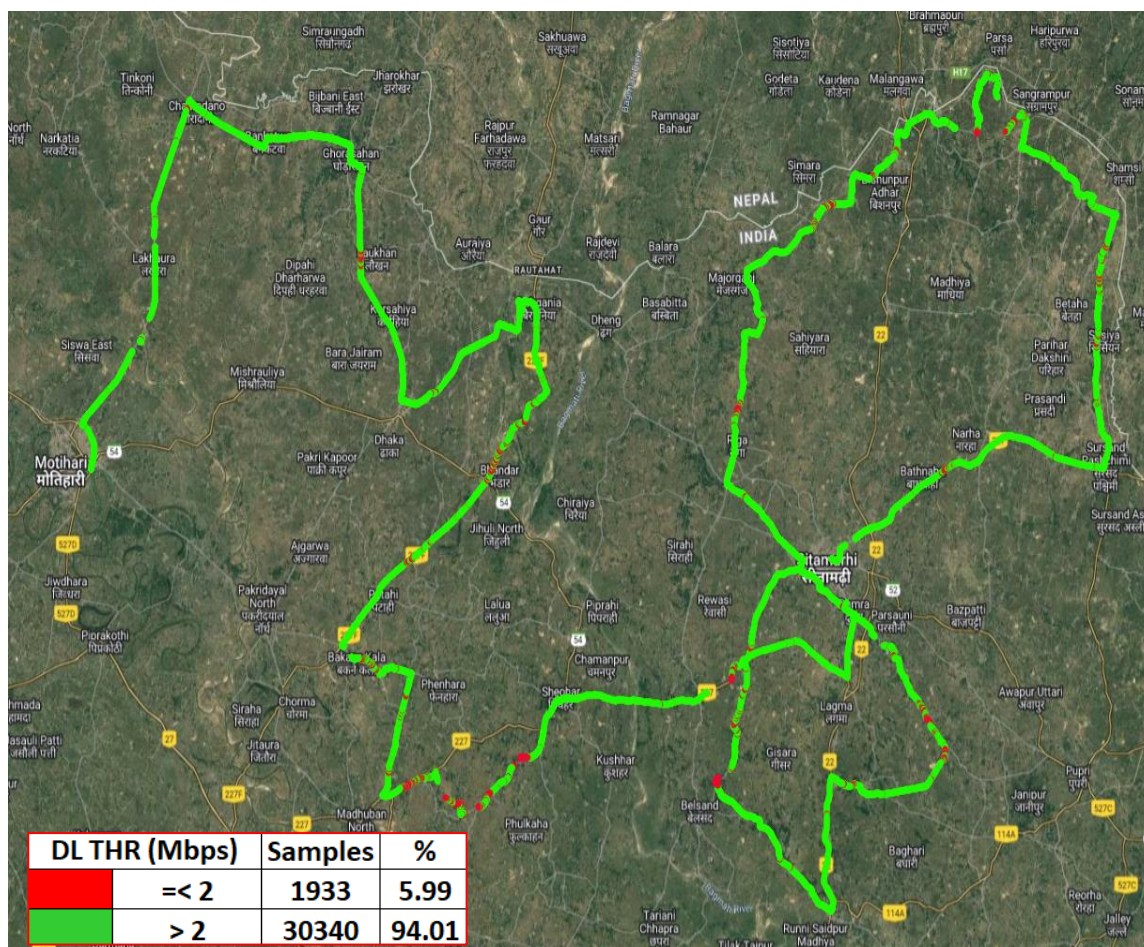
### III. Dynamic Data Test- 4G DL Details

**AIRTEL**

**Dynamic Data Testing Complete 451 Kms**

Data KPIs - Overall	4G
Average Download Throughput (Mbps)	9.78

**4G**



AVG. DOWNLOAD SPEED (Mbps)	9.78
DL throughput	Sample %
0 to <2 Mbps	52.60
2 to <10 Mbps	21.70
10 to <=30 Mbps	14.98
>30 Mbps	10.72
Total	100

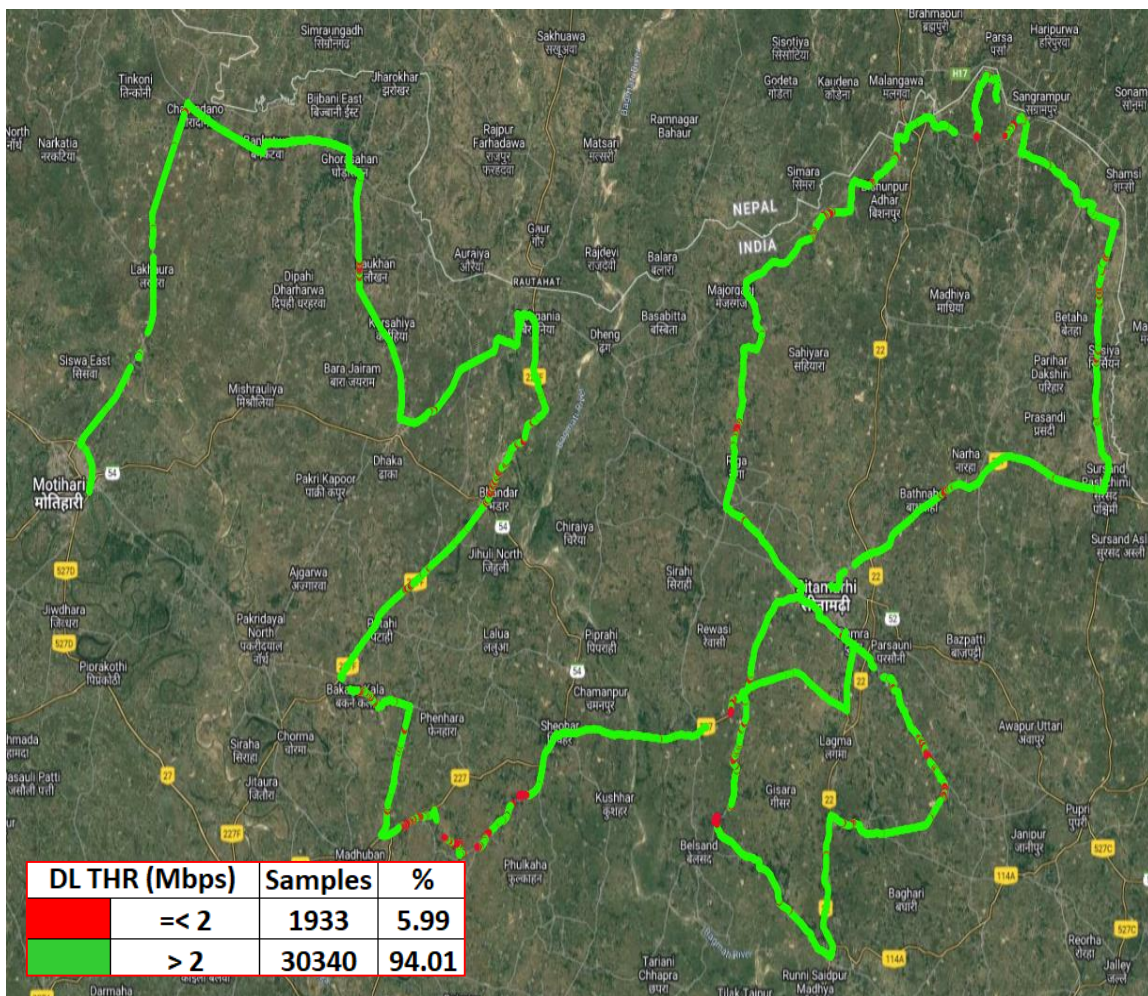
### III. Dynamic Data Test- 5G DL Details

#### AIRTEL

#### Dynamic Data Testing Complete 451 Kms

Data KPIs - Overall	5G
Average Download Throughput (Mbps)	112.45

**5G**



AVG. DOWNLOAD SPEED (Mbps)	112.45
DL throughput	Sample %
0 to <2 Mbps	1.14
2 to <10 Mbps	3.26
10 to <50 Mbps	19.99
> 50 Mbps	75.62
<b>Total</b>	<b>100</b>



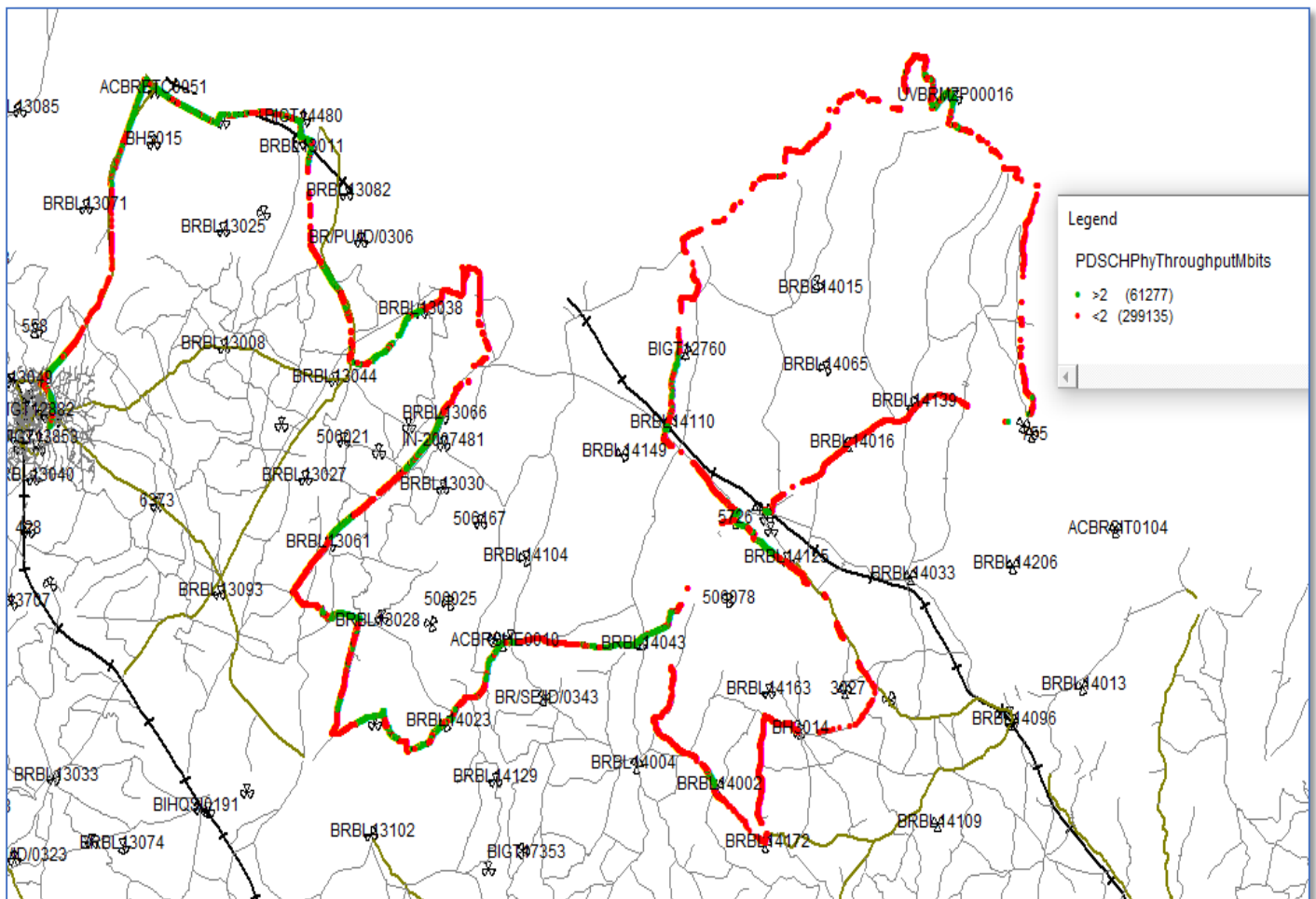
### III. Dynamic Data Test- 4G DL Details

#### BSNL

#### Dynamic Data Testing Complete 451 Kms

Data KPIs - Overall	4G
Average Download Throughput (Mbps)	3.0

#### 4G



AVG. DOWNLOAD SPEED (Mbps)	3.0
DL throughput	Sample %
0 to <2 Mbps	83
2 to <10 Mbps	8
10 to <=30 Mbps	6
>30 Mbps	3
<b>Total</b>	<b>100</b>

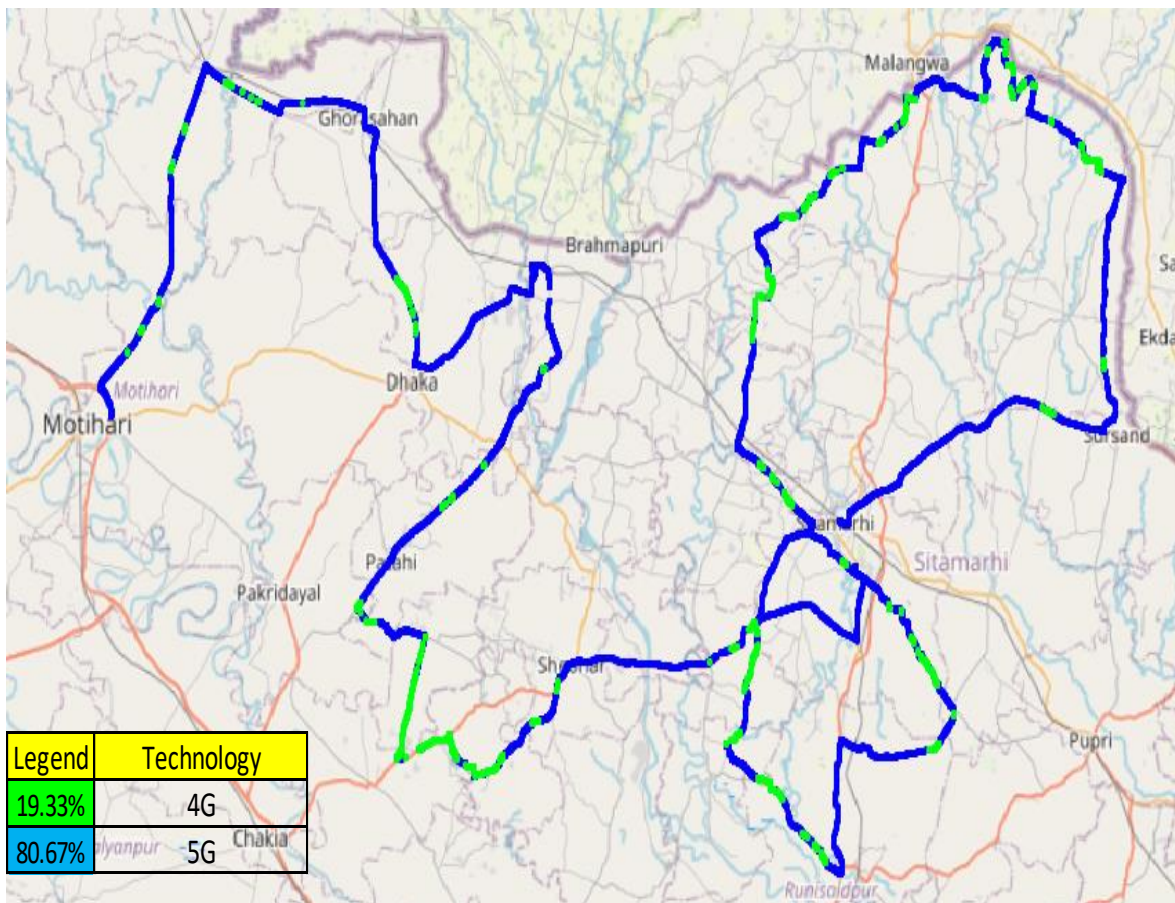
### III. Dynamic Data Test- 4G DL Details

#### RJIO

##### Dynamic Data Testing Complete 451 Kms

Data KPIs - Overall	4G
Average Download Throughput (Mbps)	9.73

#### 4G



AVG. DOWNLOAD SPEED (Mbps)	9.73
DL throughput	Sample %
0 to <2 Mbps	19.10
2 to <10 Mbps	18.57
10 to <=30 Mbps	15.11
>30 Mbps	47.22
<b>Total</b>	<b>100</b>

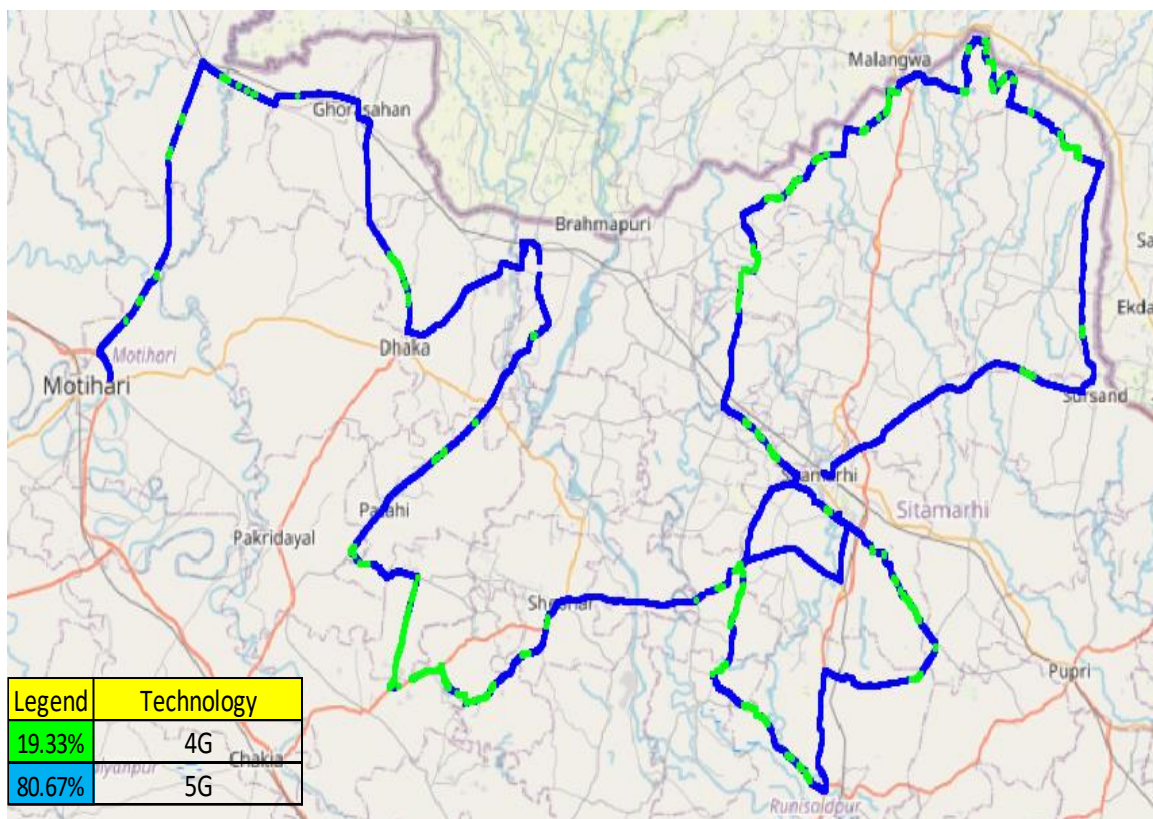
### III. Dynamic Data Test-5G DL Details

#### RJIO

#### Dynamic Data Testing Complete 451 Kms

Data KPIs – Overall	5G
Average Download Throughput (Mbps)	93.78

#### 5G



AVG. DOWNLOAD SPEED (Mbps)	93.78
DL throughput	Sample %
0 to <2 Mbps	***Report was not submitted
2 to <10 Mbps	
10 to <50 Mbps	
> 50 Mbps	
<b>Total</b>	



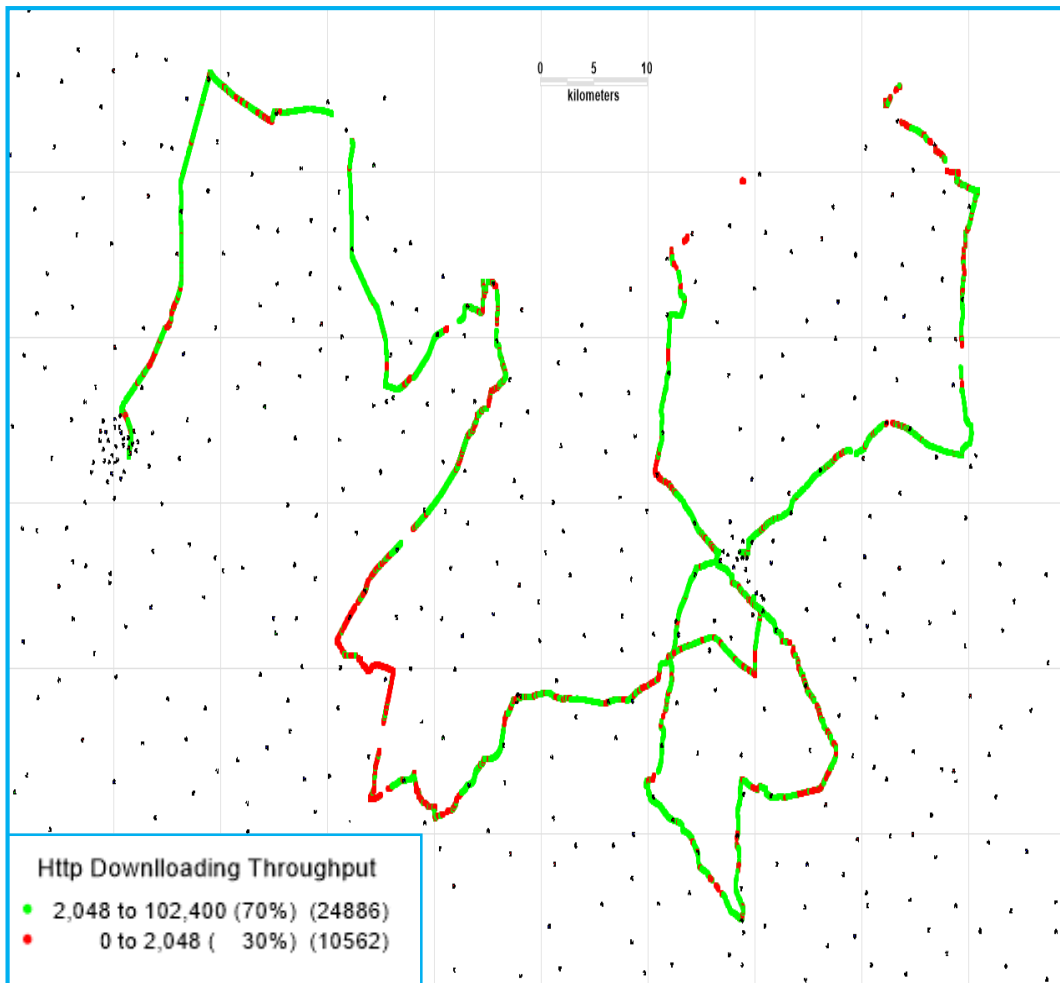
### III. Dynamic Data Test-4G DL Details

## VIL

### Dynamic Data Testing Complete 451 Kms

Data KPIs – Overall	4G
Average Download Throughput (Mbps)	10.14

## 4G



AVG. DOWNLOAD SPEED (Mbps)	10.14
DL throughput	Sample %
0 to <2 Mbps	29.80
2 to <10 Mbps	34.17
10 to <=30 Mbps	27.67
>30 Mbps	8.36
<b>Total</b>	<b>100</b>