



# Operator Assisted Drive Test Report

**Ajmer-Bhilwara Highway**

**&**

**Mandal Town**

**10<sup>th</sup> October 2022**

**By**

**TRAI Regional office Jaipur**

**Key Performance Indicators: All TSPs have met the Drop Call Rate (DCR) benchmark of 2% . All TSPs have met the Call Setup Success Rate (CSSR) of 95%.**

The Operator Assisted Drive Test has been carried out by Regional Office, Jaipur with the help of Service Providers on Ajmer Bhilwara Highway and One Hotspot at Mandal Town, from 9:00 AM to 8:00 PM on **10<sup>th</sup> October 2022**. The drive test covered drive route of **145** KMs over a period of 1 day. Approximately 120 calls were made for each of the networks: three 2G networks, One 3G networks and three LTE networks covering four TSPs. The Drive test reports were generated through TSPs tools and was compiled by TRAI RO Jaipur

Overview

Voice Summary

Data Summary

# Overview

Regional Office, TRAI Jaipur conducted Operator Assisted Drive Test on 10<sup>th</sup> October 2022 covering Ajmer to Bhilwara Highway and Mandal Town. The performance of Airtel, BSNL, Vodafone Idea and Jio was monitored across various technologies (2G, 3G and 4G) by TSPs themselves through their own test kits. The TSPs reports obtained from these drive tests were compiled to assess the network quality for Voice and Data services in terms of following.

**Voice:** Coverage, Quality, Handover Success Rate, Call Setup Success Rate, Drop Call Rate and Block Call Rate.

**Data:** Download Throughputs.

## **Drive Test Details :**

**Voice Tests:** Calls were made for 90 sec duration with a wait time of 10 sec between calls in all technologies. The drive test covered a drive route of approximately 145 KMs. Approximately 120 calls were made for each of the networks: three 2G (Lock Mode) networks, one 3G (Dual mode) networks and three VoLTE networks covering 4 unique TSPs.

## **Data Tests:**

**Dynamic data test** was conducted for 145 Kms for download throughput in all technologies.

3G – measurement – UE in 3G File Size- 20MB

4G – measurement – UE in LTE File Size- 40MB

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

# Overview

## Voice & Dynamic Data Test Drive Route

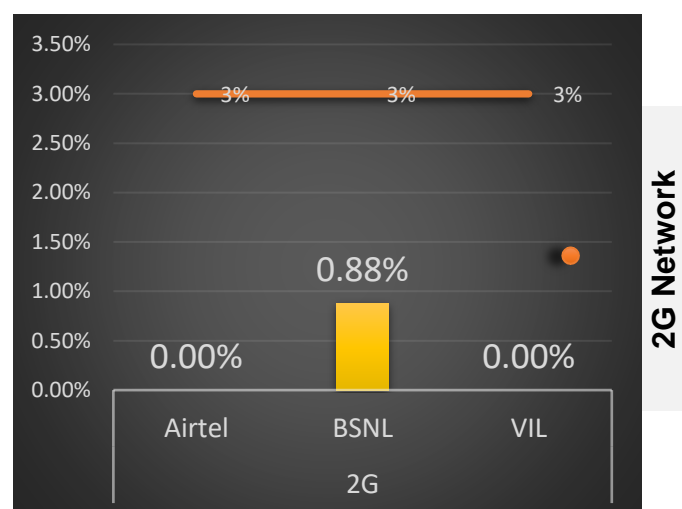
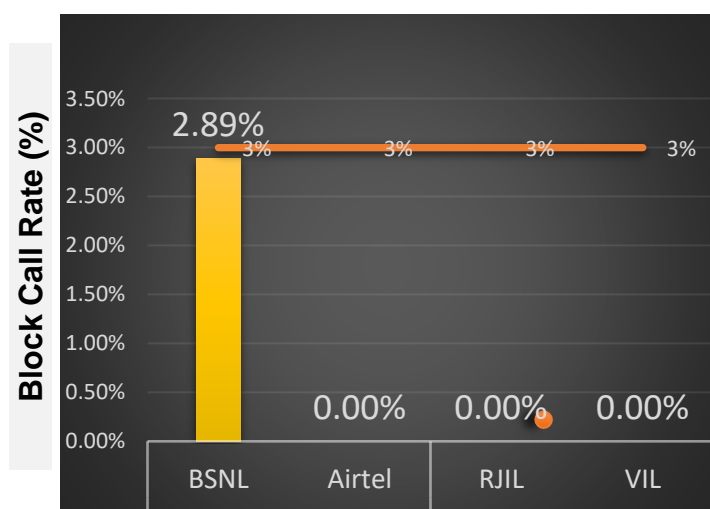
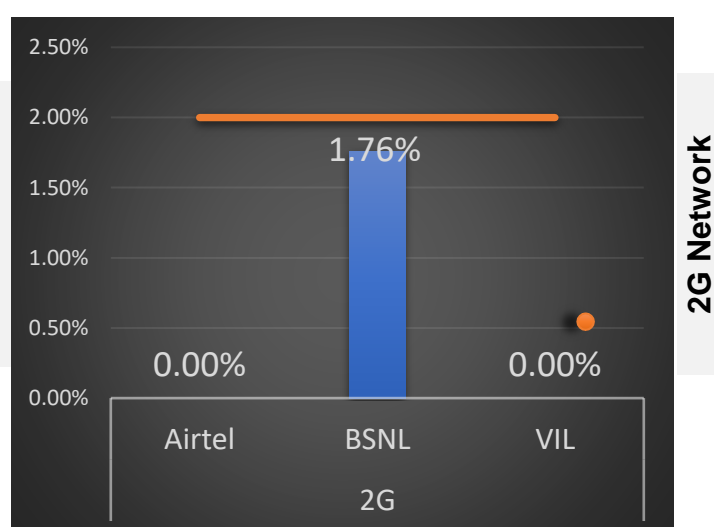
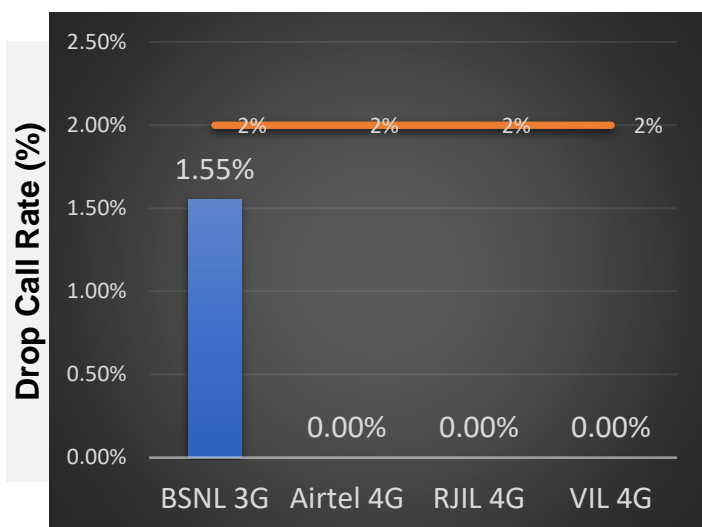


Date	Test Scenario	Area to be Covered
10 Oct. 2022	2G/4G Voice and 4G Dynamic Data	Starting Point Ajmer at 09:00 AM .NH48(From Ajmer to Bhilwara), Nasirabad-Bandanwara-Bijayanagar-Roopaheli-Sareri-Raila-Mandal Chouraha-Bhilwara (Ajmer Chauraha). After Highway Drive Finish, After Lunch SSA Town Mandal Drive

# Voice Calls

## Key Observations

**QoS compliance** of the TSPs on **Ajmer-Bhilwara Highway and SSA town Mandal** for Voice across technologies 2G/3G/4G-VoLTE :



KPIs	2G			3G		4G	
	Airtel	BSNL	VIL	BSNL	Airtel	RJIL	VIL
Drop Call Rate %	0.00%	1.76%	0.00%	1.55%	0.00%	0.00%	0.00%
Block Call Rate %	0.00%	0.88%	0.00%	2.89%	0.00%	0.00%	0.00%

- All TSPs have met the 2% QOS benchmark of Drop Call Rate (DCR%).
- Call Block Rate (CBR%) benchmark of 3% was achieved by all TSP's.

# Voice Calls

## Key Observations

### Coverage

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

TSPs	2G		
	Airtel	BSNL	VIL
Coverage %	95.83%	71.91%	76.20%

b) Percentage of coverage samples for 3G  $\geq$  -90 dBm

TSPs	3G
	BSNL
Coverage %	84.25%

c) Percentage of coverage samples for LTE  $\geq$  -110 dBm.

TSPs	VoLTE		
	Airtel	JIO	VIL
Coverage %	97.46%	98.31%	99.61%

d) Percentage of time spent on 3G/4G network

TSPs	3G	VoLTE		
	BSNL	Airtel	JIO	VIL
Time spent on 3G/4G Network %	71.04%	100.00%	100.00%	100.00%

# Data Services Dynamic

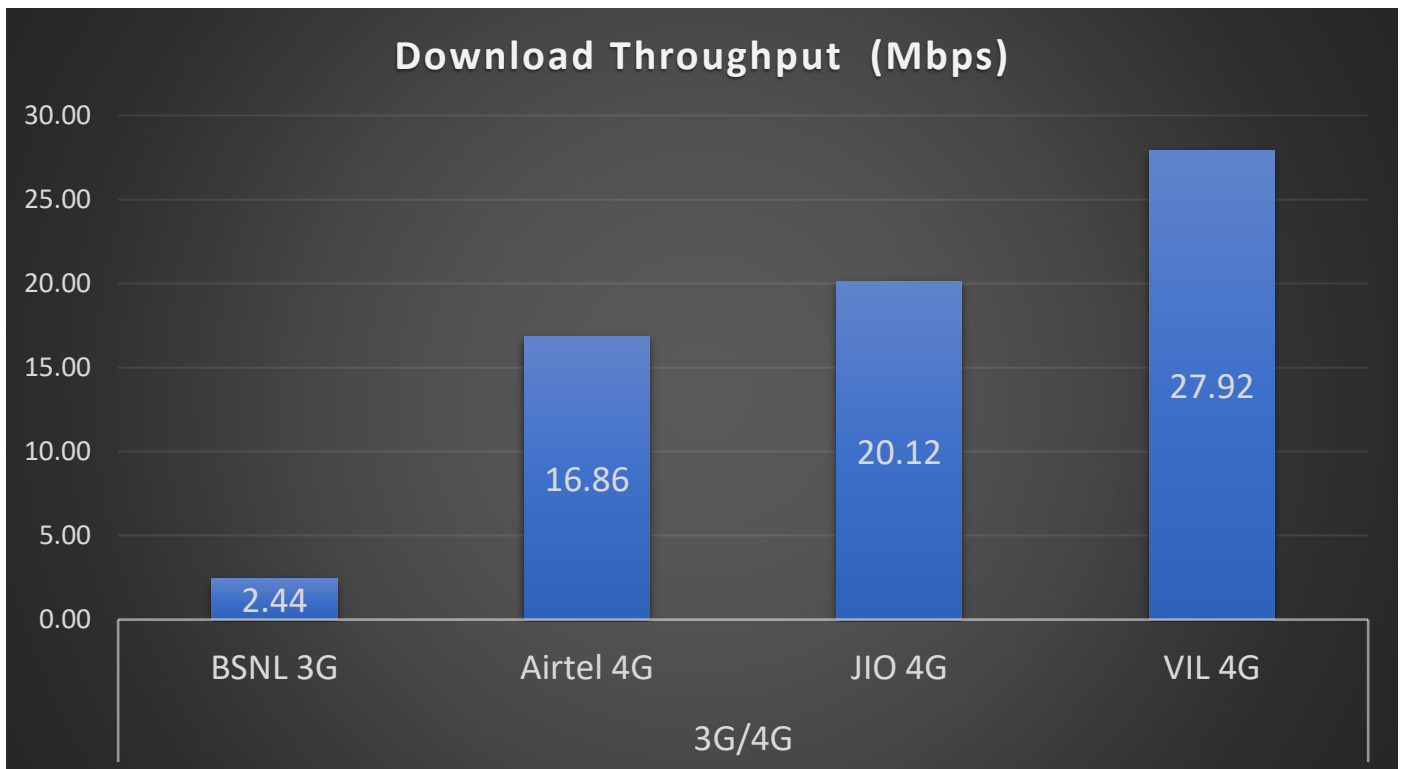
## Key Observations

Dynamic Data was tested for whole voice route. Download Throughput was tested.

### Data Download Performance (mbps) - Dynamic

3G/4G/ Network:

Data Services Dynamic	3G/4G			
	BSNL 3G	Airtel 4G	JIO 4G	VIL 4G
Download Throughput (Mbps)	2.44	16.86	20.12	27.92



# Summary

## City Level Summary-Voice

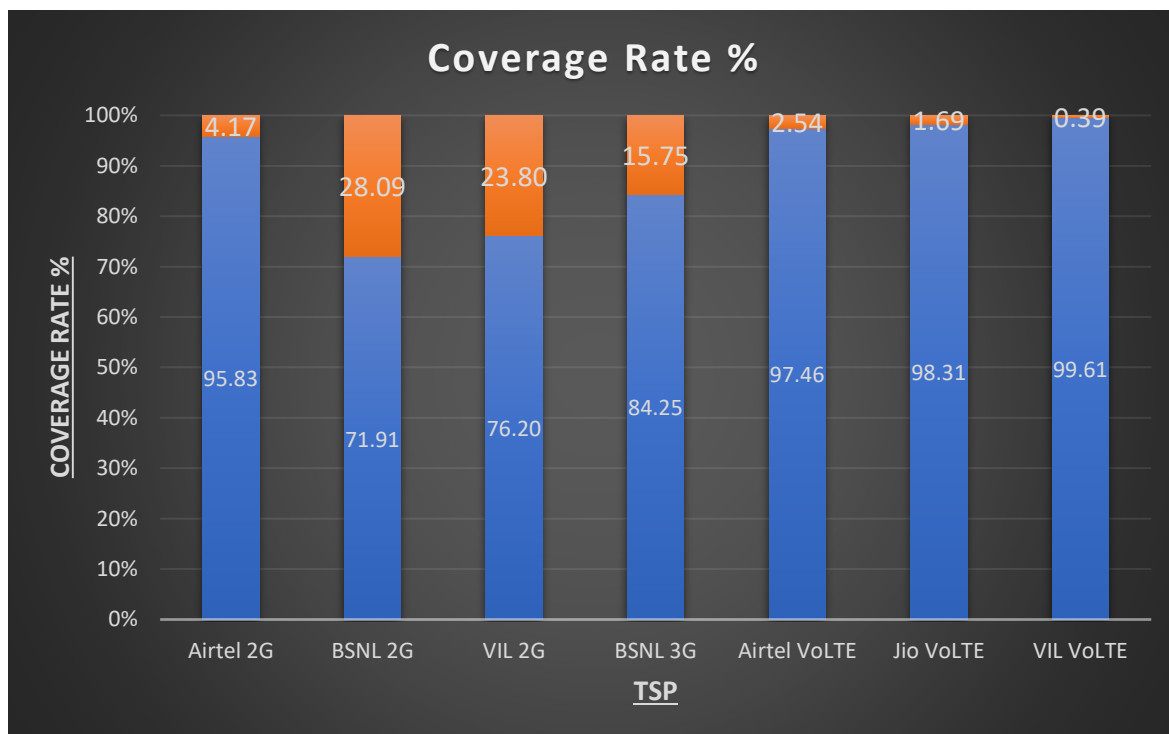
<u>Voice Call</u>	2G		
	Airtel	BSNL	VIL
Call Attempt	120	113	77
Blocked Call Rate (%)	0.00%	0.88%	0.00%
CSSR% (Accessibility)	100.00%	99.12%	100.00%
Drop Call Rate (%)	0.00%	1.76%	0.00%
Mobility HOSR (%)	100.00%	99.04%	96.10%
Rx Quality (%)	96.52%	89.61%	98.84%
Average CST Sec	2.80	3.15	3.19

<u>Voice Call</u>	3G/VoLTE			
	BSNL 3G	Airtel VoLTE	JIO VoLTE	VIL VoLTE
Call Attempt	141	120	132	81
Blocked Call Rate (%)	2.89%	0.00%	0.00%	0.00%
CSSR% (Accessibility)	97.11%	100.00%	100.00%	100.00%
Drop Call Rate (%)	1.55%	0.00%	0.00%	0.00%
Mobility HOSR (%)	97.42%	100.00%	98.95%	97.54%
Rx Quality (%)	90.21%	95.06%	93.37%	99.50%
Average CST Sec	3.50	0.53	0.60	0.36

## 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.

<b><u>TSP</u></b>	<b>Coverage Rate %</b>
Airtel 2G	<b>95.83%</b>
BSNL 2G	<b>71.91%</b>
VIL 2G	<b>76.20%</b>
BSNL 3G	<b>84.25%</b>
Airtel VoLTE	<b>97.46%</b>
Jio VoLTE	<b>98.31%</b>
VIL VoLTE	<b>99.61%</b>

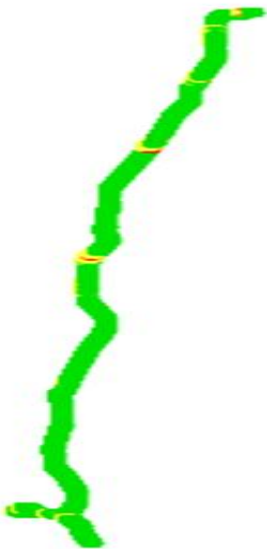




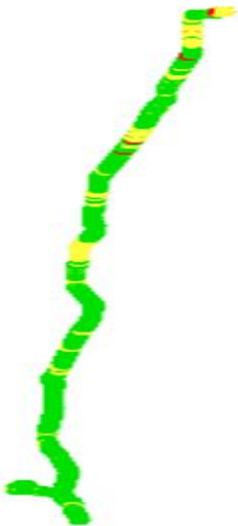
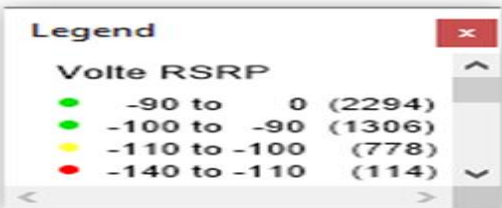
TSP-AIRTEL

TSP	Coverage Rate %
Airtel 2G	95.83%
Airtel VoLTE	97.46%

2G

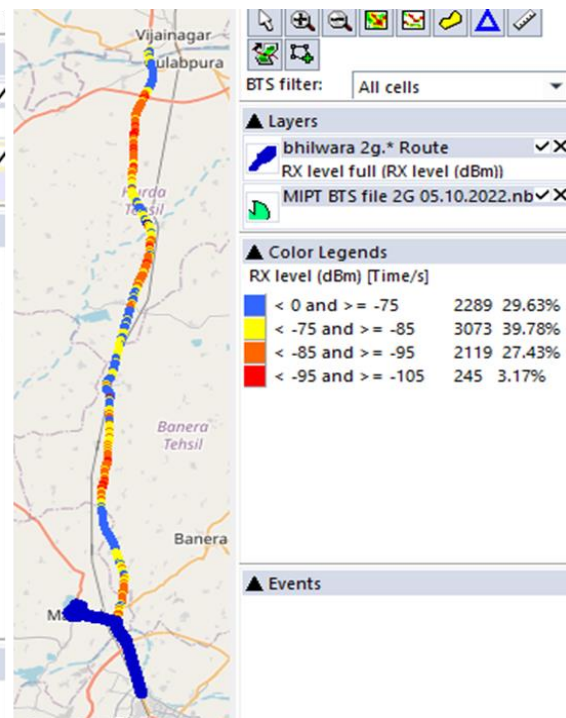
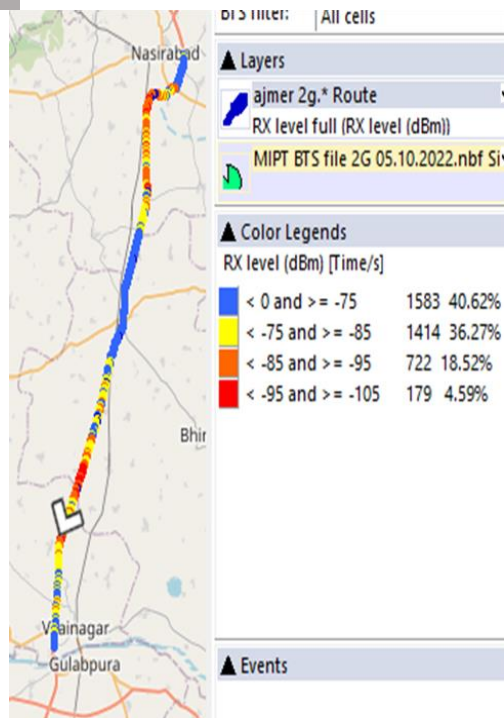


VoLTE

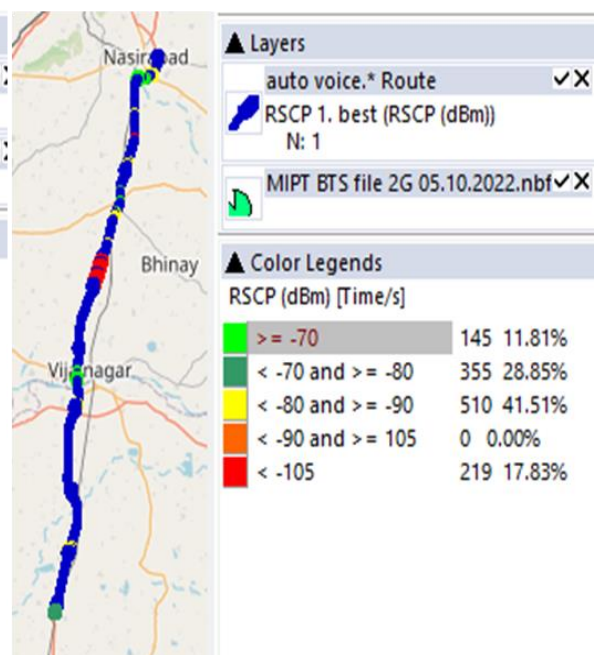
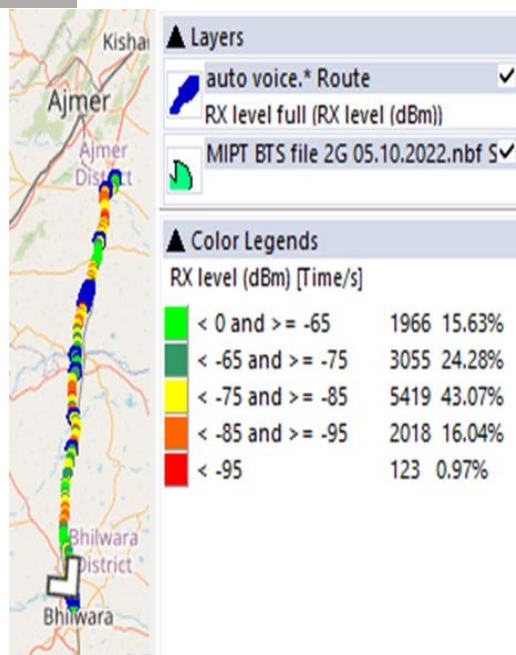


## TSP- BSNL

	Technology	Coverage %
2G	2G	71.91%
	3G	84.25%

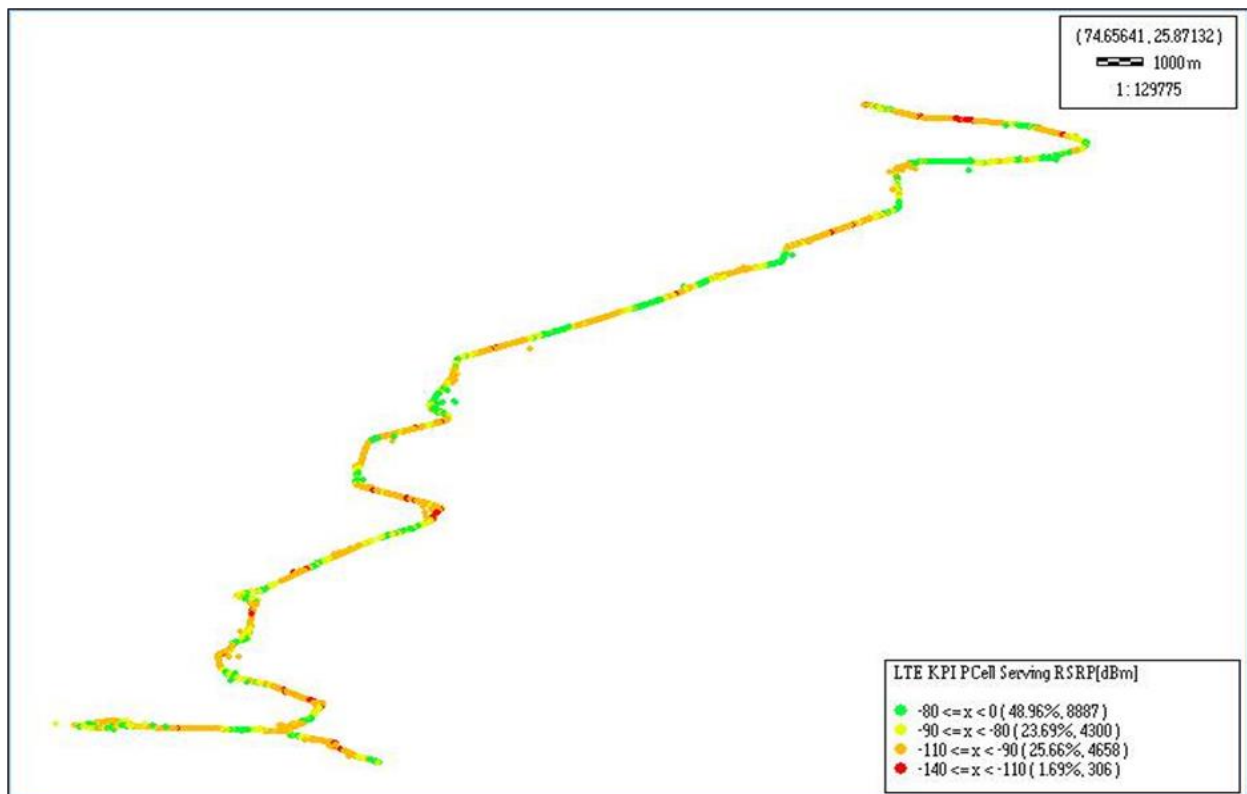


## 3G



## JIO

Technology	Coverage %
VoLTE	98.31

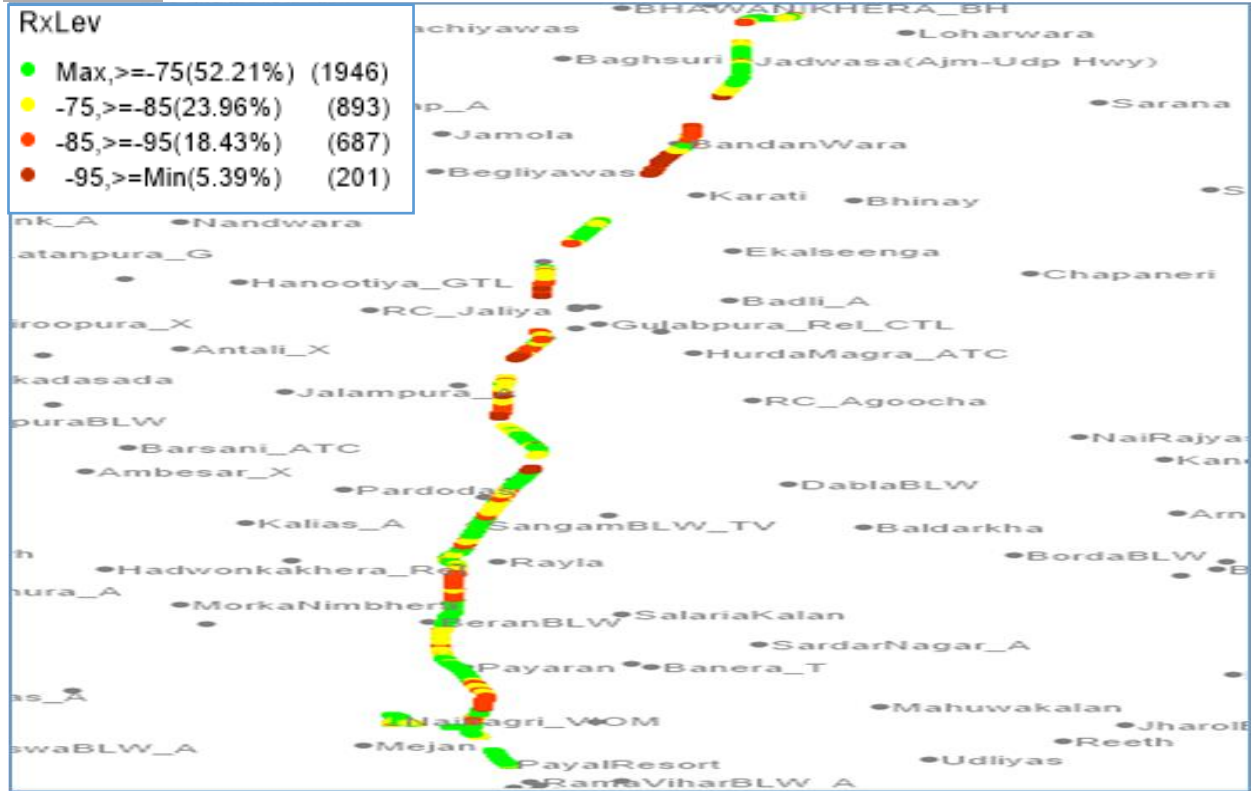


## VoLTE

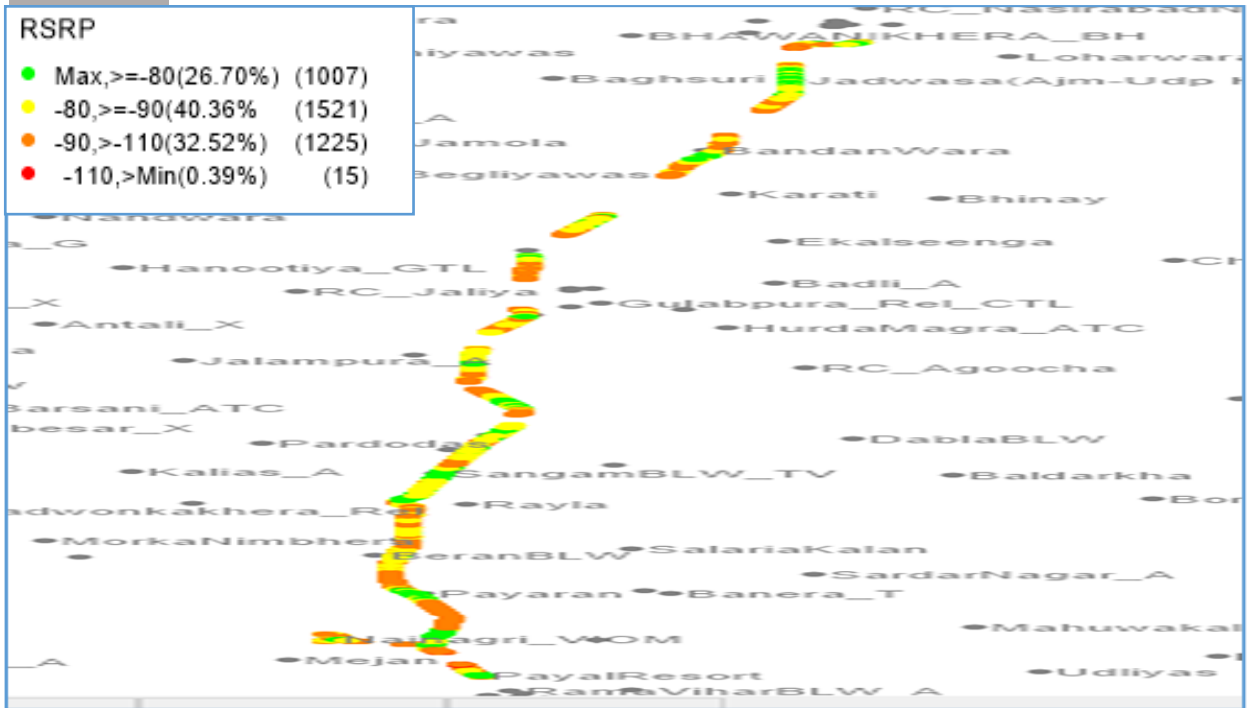
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	8887	48.96	
[-80, >=-90)	4300	23.69	
[-90, >=-110)	4658	25.66	
[-110, >=Min)	306	1.69	
<b>Total</b>		<b>100%</b>	

VIL

2G	Technology	Coverage Rate %
	2G	76.20
	VoLTE	99.61



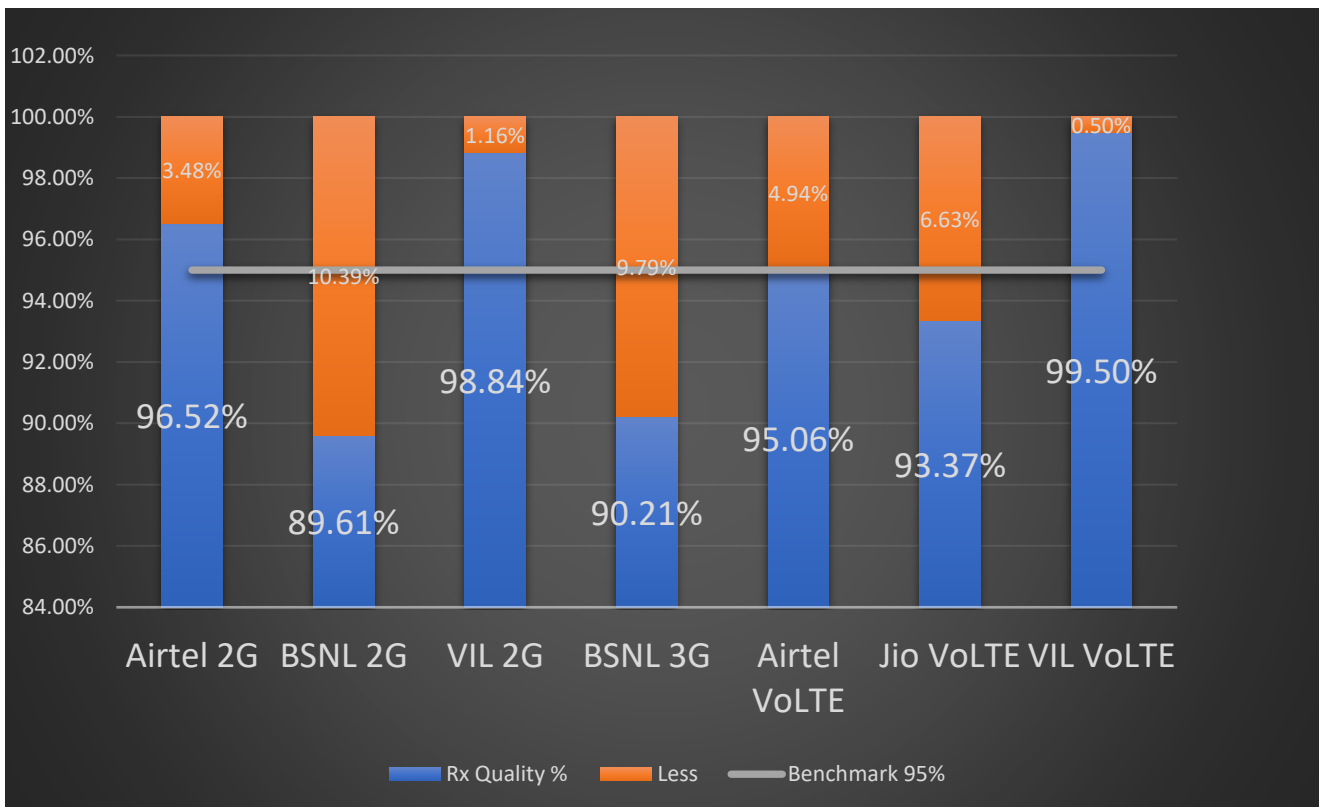
VoLTE



## II. Quality Details

For measuring voice quality, as per the QoS norms, RxQual  $\leq 5$  for GSM TSPs, EcNo  $\geq -14$  dBm for 3G TSP and SINR  $> 0$  in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad.

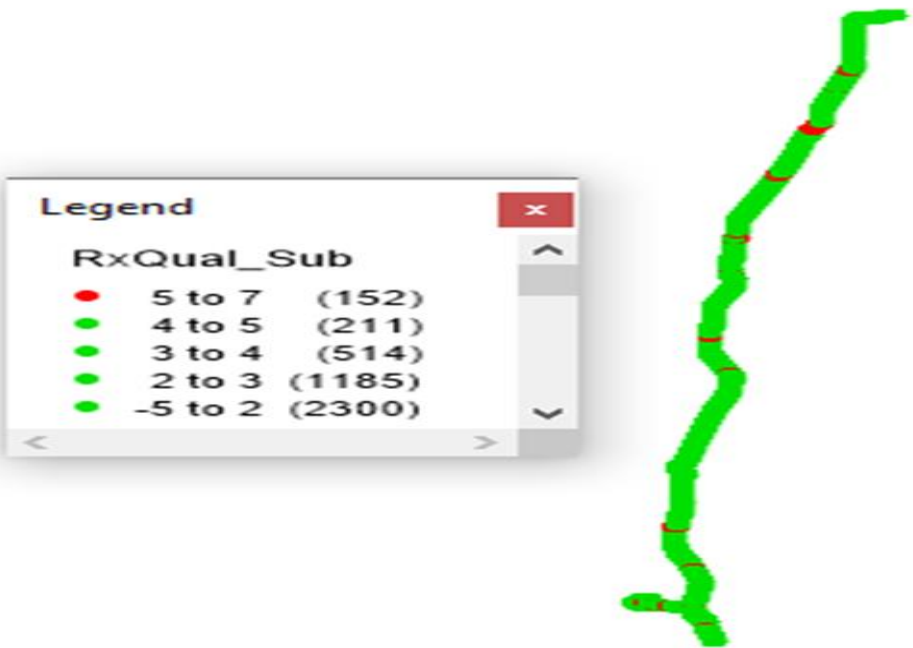
TSP	Rx Quality %
Airtel 2G	96.52%
BSNL 2G	89.61%
VIL 2G	98.84%
BSNL 3G	90.21%
Airtel VoLTE	95.06%
Jio VoLTE	93.37%
VIL VoLTE	99.50%



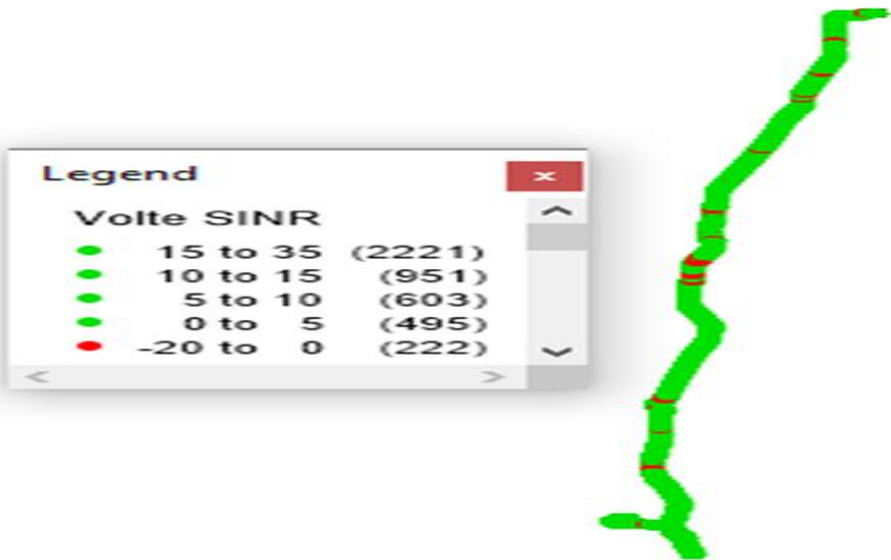
Airtel

Technology	Rx Quality %
2G	96.52%
VoLTE	95.06%

2G



VoLTE

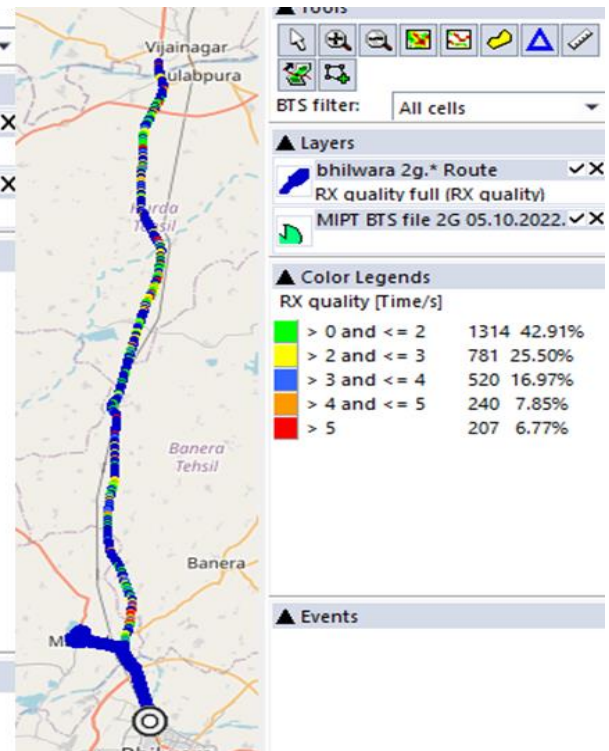
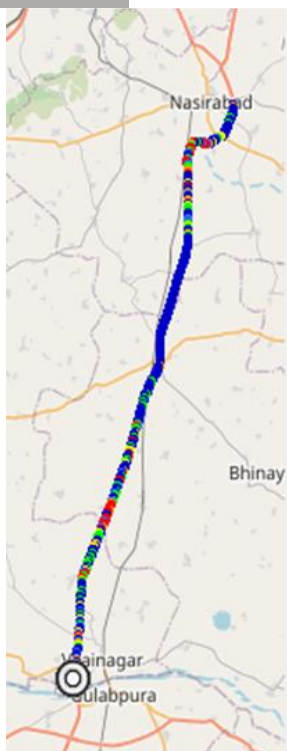




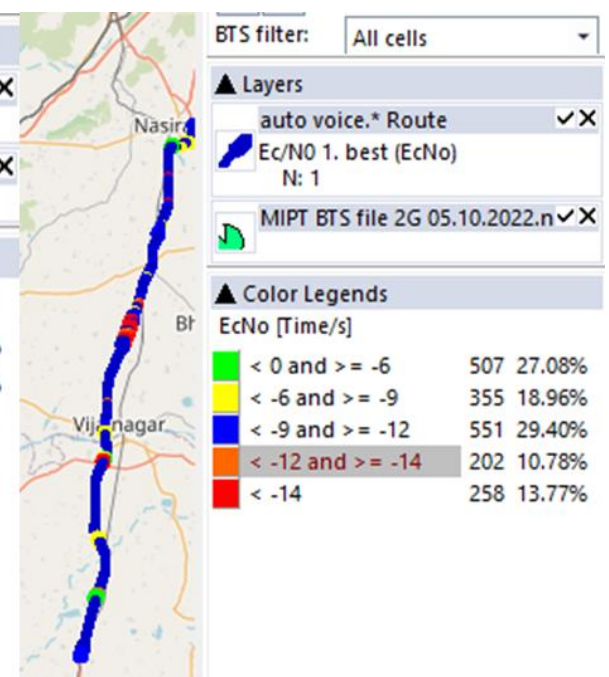
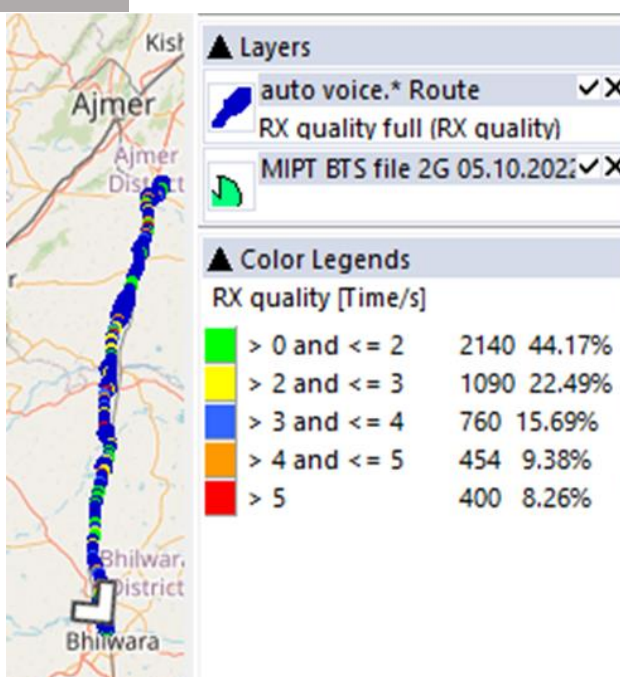
## II. Quality Details

### BSNL

	Technology	Rx Quality %
2G	2G	89.61
	3G	90.21



### 3G

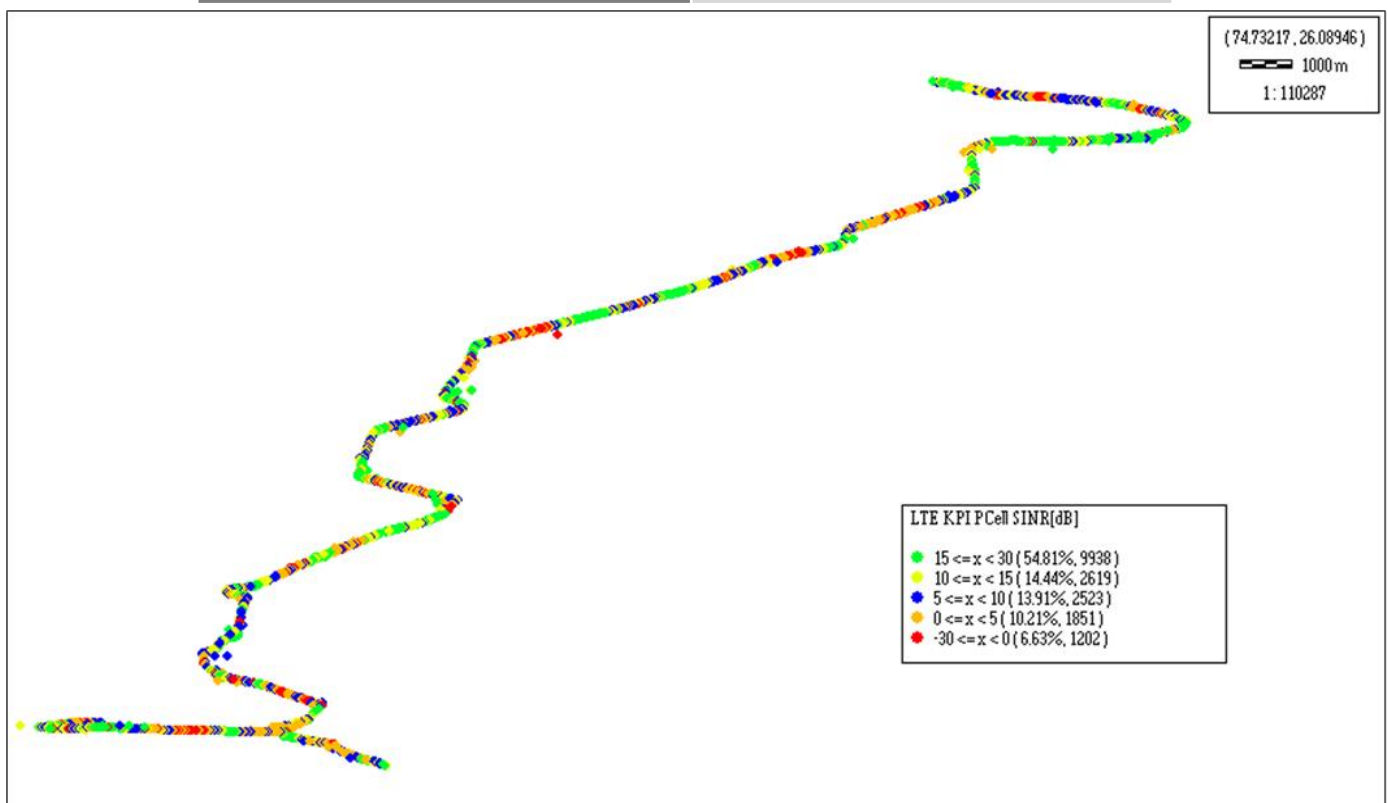


## Quality Details

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### JIO

Technology	Rx Quality %
VoLTE	93.37



Overall SINR	# Samples	% PDF	Legends
(Min, $\leq 0$ )	1202	6.63	
(0, $\leq 5$ )	1851	10.21	
(5, $\leq 10$ )	2523	13.91	
(10, $\leq 15$ )	2619	14.44	
(15, $\leq$ Max)	9938	54.81	
Total		100%	

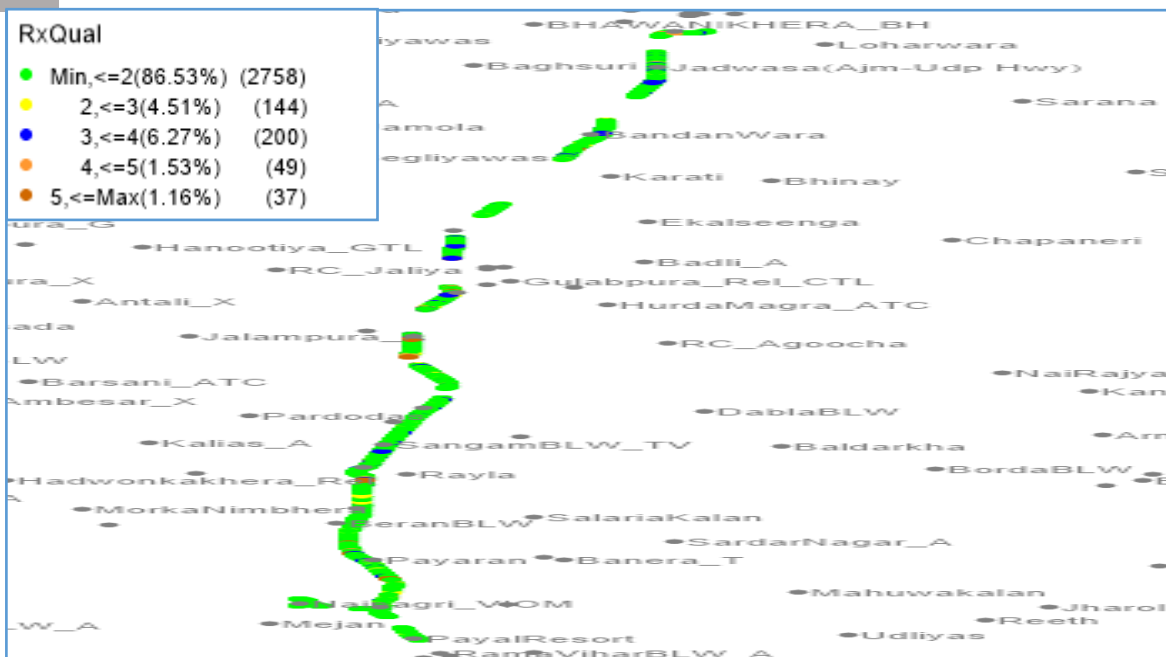


## II. Quality Details

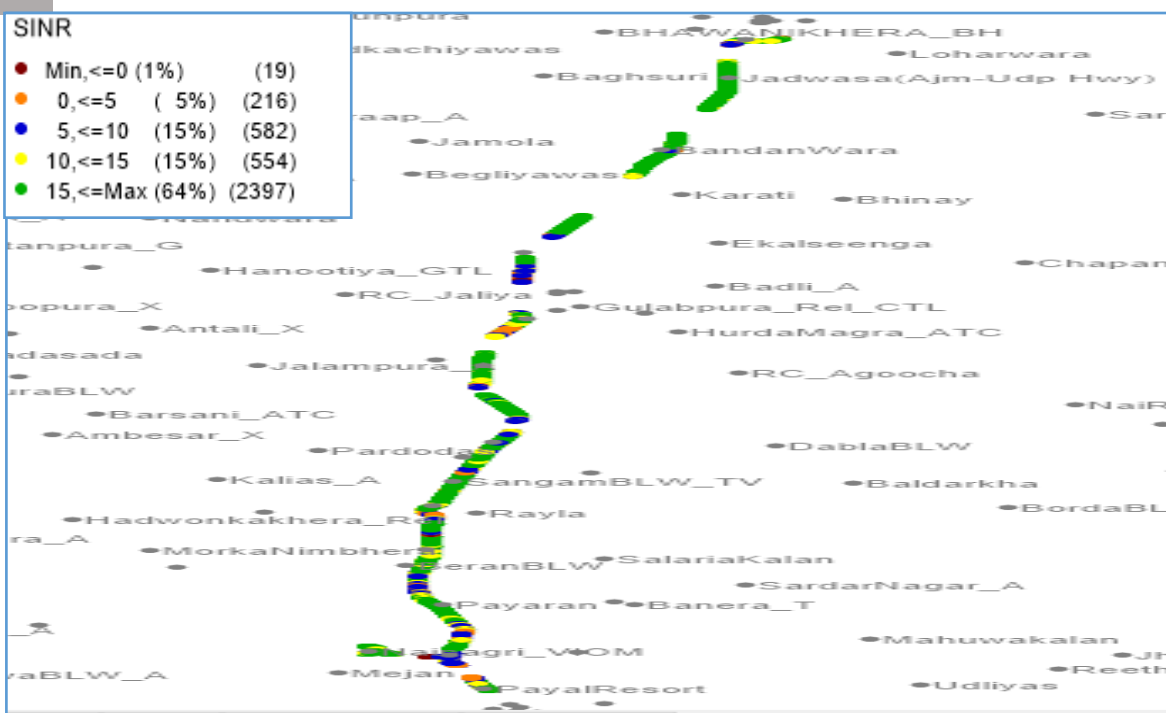
### VIL

Technology	Rx Quality %
2G	98.84
4G	99.50

2G



VoLTE



### III. Technology Details

<u>TSP</u>	% of Time Spent on 3G/VoLTE
BSNL 3G	71.04%
Airtel VoLTE	100.00%
Jio VoLTE	100.00%
VIL VoLTE	100.00%

