



Operator Assisted Drive Test Report

Bikaner to Nagaur Highway

2nd March 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 Bikaner Nagaur Highway , from 9:00 AM to 8:00 PM on **2nd March 2023**. The drive test covered drive route of **120** KMs over a period of 1 day. Approximately 100 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 2nd March 2023 covering Bikaner Nagaur Highway. 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 120 KMs. Approximately 100 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 120 Kms for download throughput in all technologies.

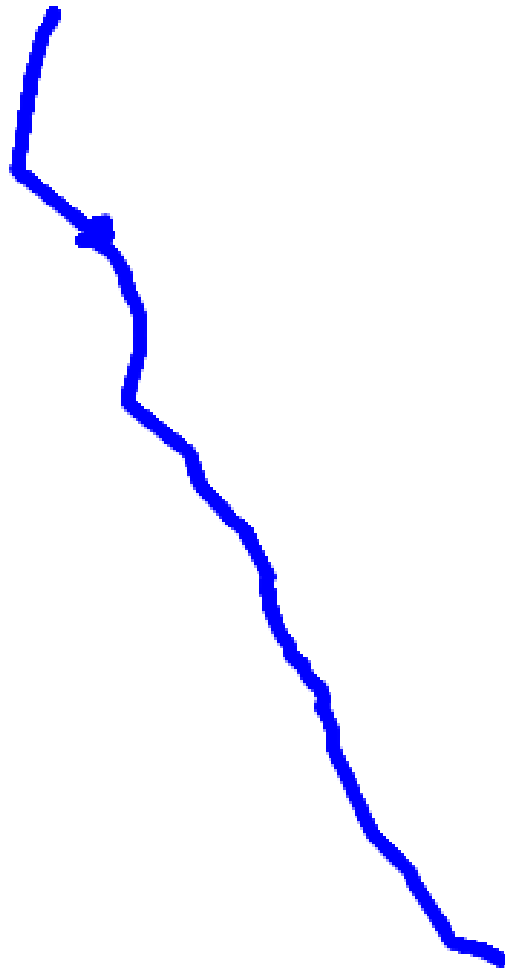
3G – measurement – UE in 3G File Size- 20MB

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

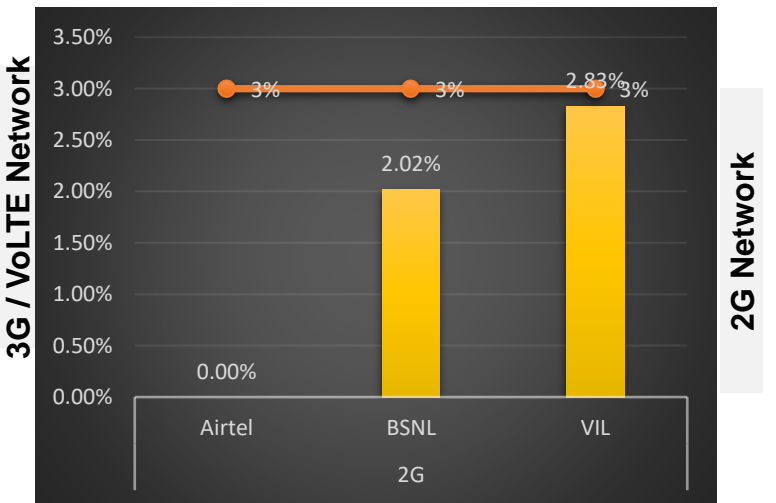
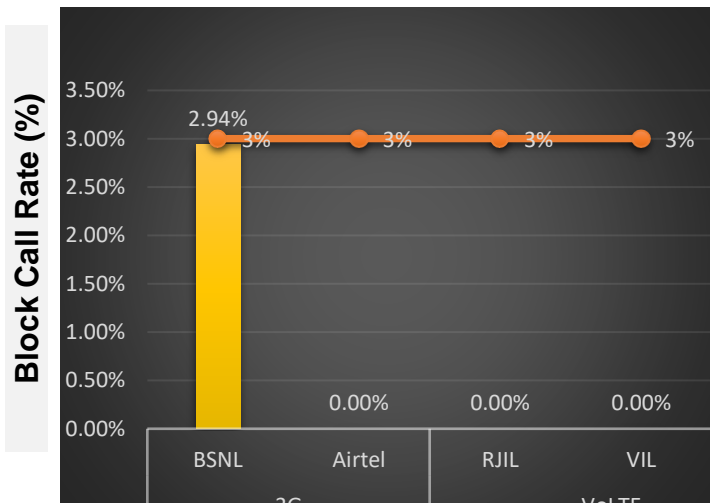
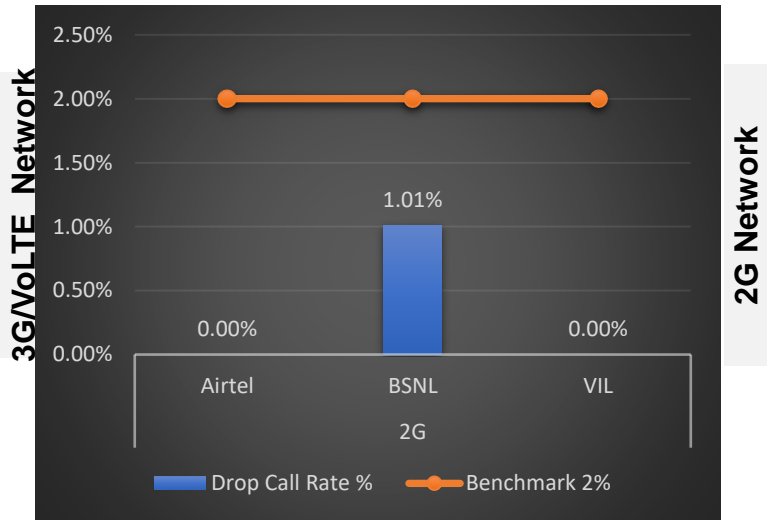
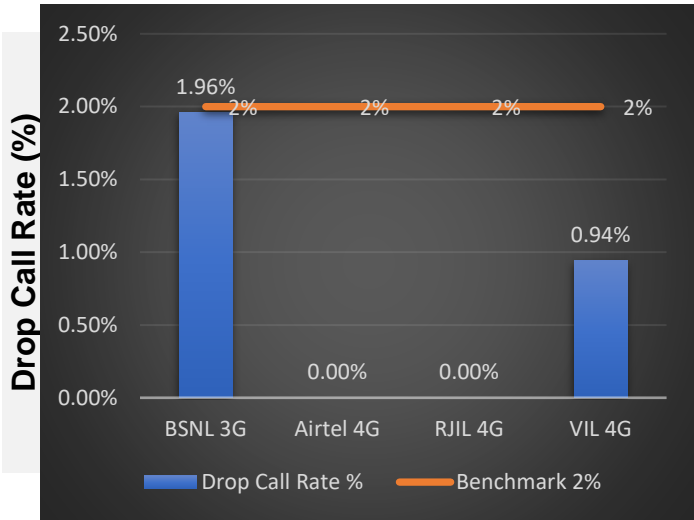


Date	Test Scenario	Area to be Covered
02 March-23	2G/4G Voice and 4G Dynamic Data	Starting Point Bikaner at 09:00 AM NH62(From Bikaner to Nagaur),Bhinasar-Palana,Deshnok(SSA Town),Rasisar,Parwa,Bhamatsar,Nokha,ShriBalaji By Pass,Alai,Gogelaw,Nagaur(Finish).

Voice Calls

Key Observations

QoS compliance of the TSPs on **Bikaner Nagaur Highway** for Voice across technologies 2G/3G/4G-VoLTE :



KPIs	2G			3G		4G	
	Airtel	BSNL	VIL	BSNL	Airtel	RJIL	VIL
Drop Call Rate %	0.00%	1.01%	0.00%	1.96%	0.00%	0.00%	0.94%
Block Call Rate %	0.00%	2.02%	2.83%	2.94%	0.00%	0.00%	0.00%

- a) All TSPs have met the 2% QOS benchmark of Drop Call Rate (DCR%).
- b) 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 %	97.30%	85.22%	57.86%

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

TSPs	3G
	BSNL
Coverage %	79.78%

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

TSPs	VoLTE		
	Airtel	JIO	VIL
Coverage %	98.27%	99.68%	93.53%

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

TSPs	3G	VoLTE		
	BSNL	Airtel	JIO	VIL
Time spent on 3G/4G Network %	32.59%	100.00%	100.00%	98.42%

Data Services Dynamic

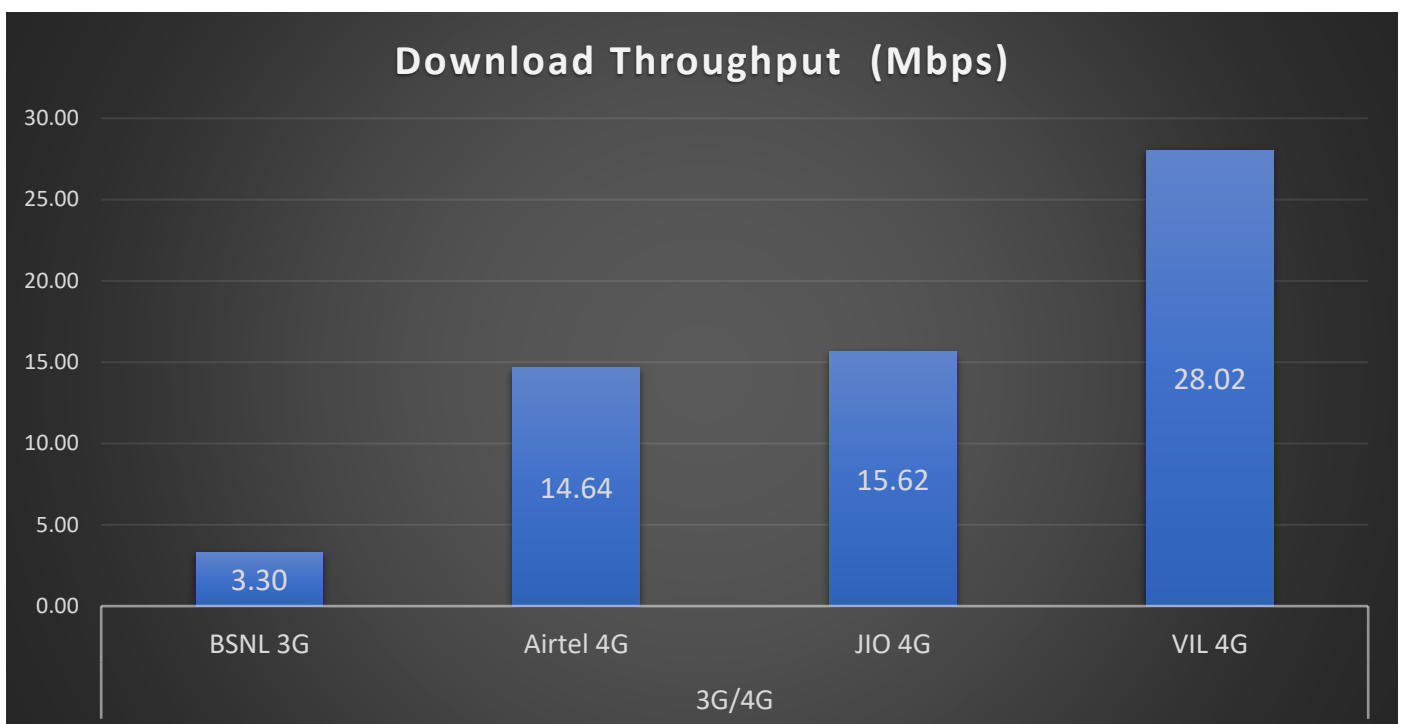
Key Observations

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)	3.30	14.64	15.62	28.02



Summary

City Level Summary-Voice

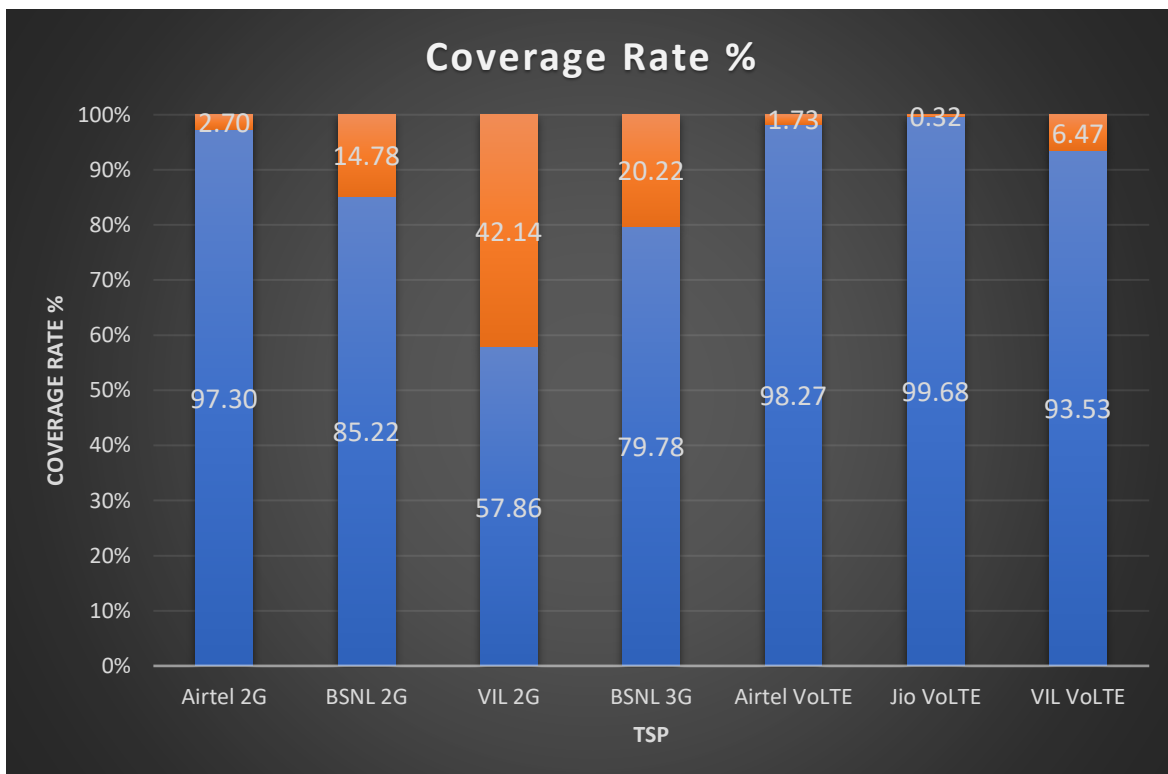
Voice Call	2G		
	Airtel	BSNL	VIL
Call Attempt	101	99	106
Blocked Call Rate (%)	0.00%	2.02%	2.83%
CSSR% (Accessibility)	100.00%	97.98%	97.17%
Drop Call Rate (%)	0.00%	1.01%	0.00%
Mobility HOSR (%)	100.00%	98.57%	99.50%
Rx Quality (%)	97.09%	95.78%	96.16%
Average CST Sec	2.46	2.10	4.98

Voice Call	3G/VoLTE			
	BSNL 3G	Airtel VoLTE	JIO VoLTE	VIL VoLTE
Call Attempt	102	101	101	106
Blocked Call Rate (%)	2.94%	0.00%	0.00%	0.00%
CSSR% (Accessibility)	97.06%	100.00%	100.00%	100.00%
Drop Call Rate (%)	1.96%	0.00%	0.00%	0.94%
Mobility HOSR (%)	98.28%	100.00%	99.25%	100.00%
Rx Quality (%)	95.14%	95.73%	94.37%	98.79%
Average CST Sec	1.03	0.58	0.56	0.42

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.

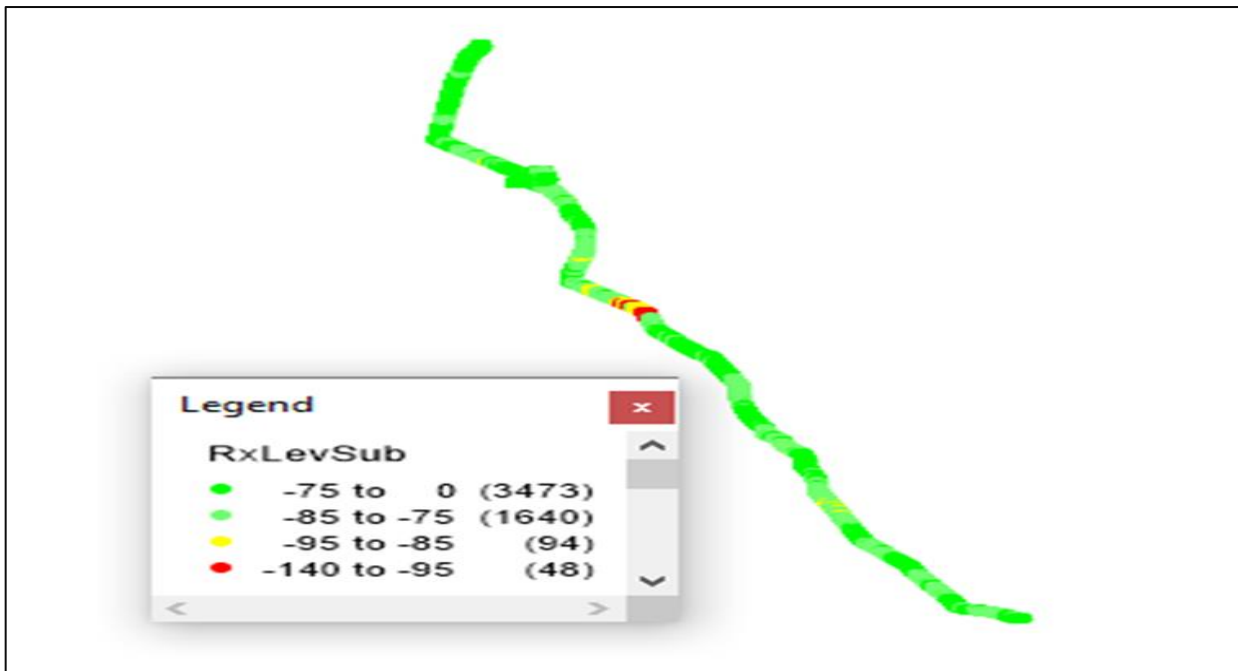
TSP	Coverage Rate %
Airtel 2G	97.30%
BSNL 2G	85.22%
VIL 2G	57.86%
BSNL 3G	79.78%
Airtel VoLTE	98.27%
Jio VoLTE	99.68%
VIL VoLTE	93.53%



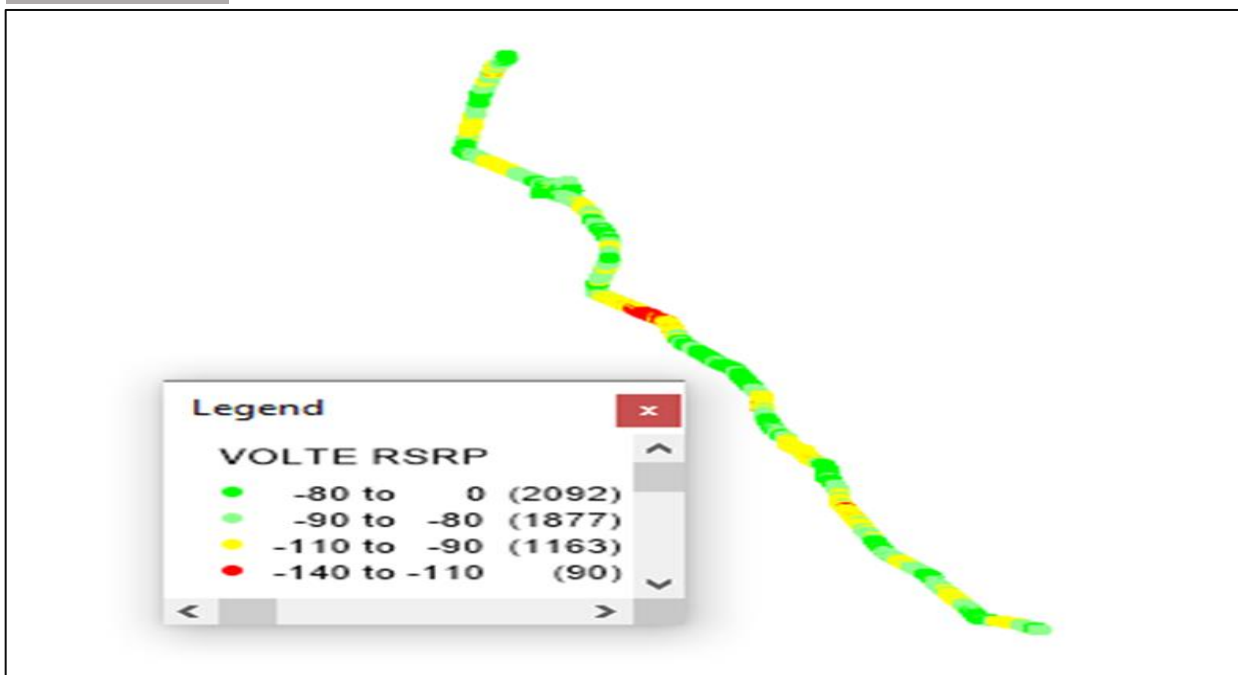
TSP-AIRTEL

TSP	Coverage Rate %
Airtel 2G	97.30%
Airtel VoLTE	98.27%

2G



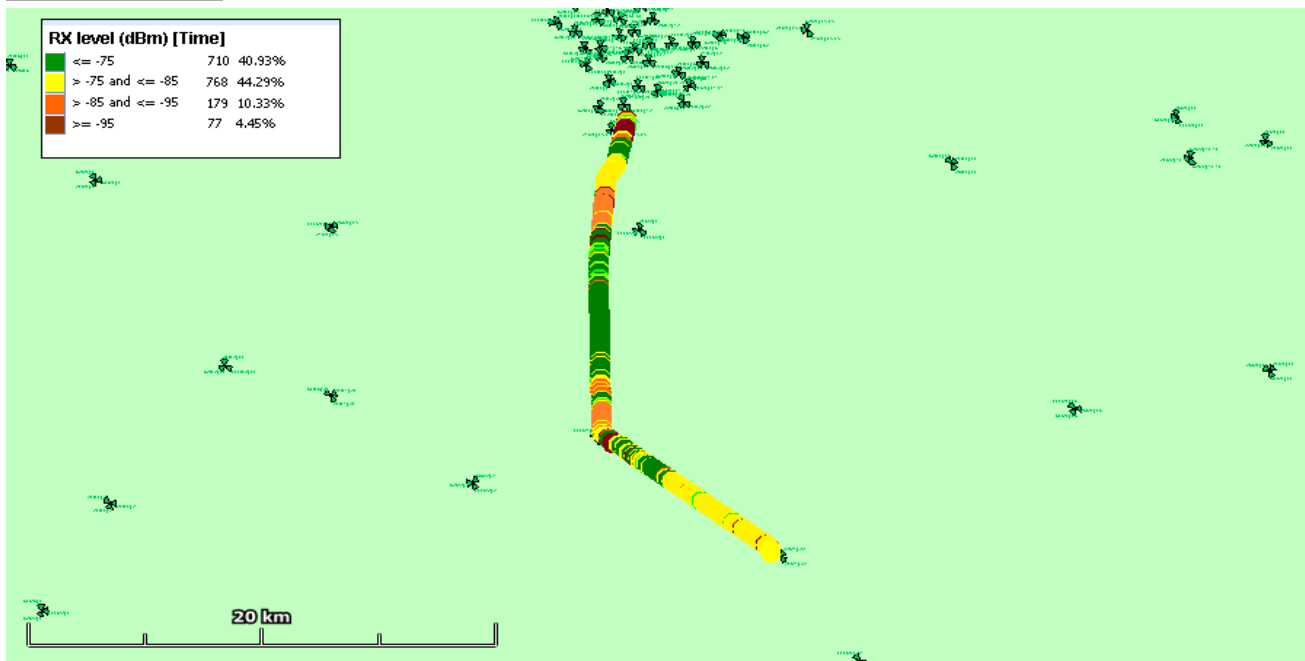
VoLTE



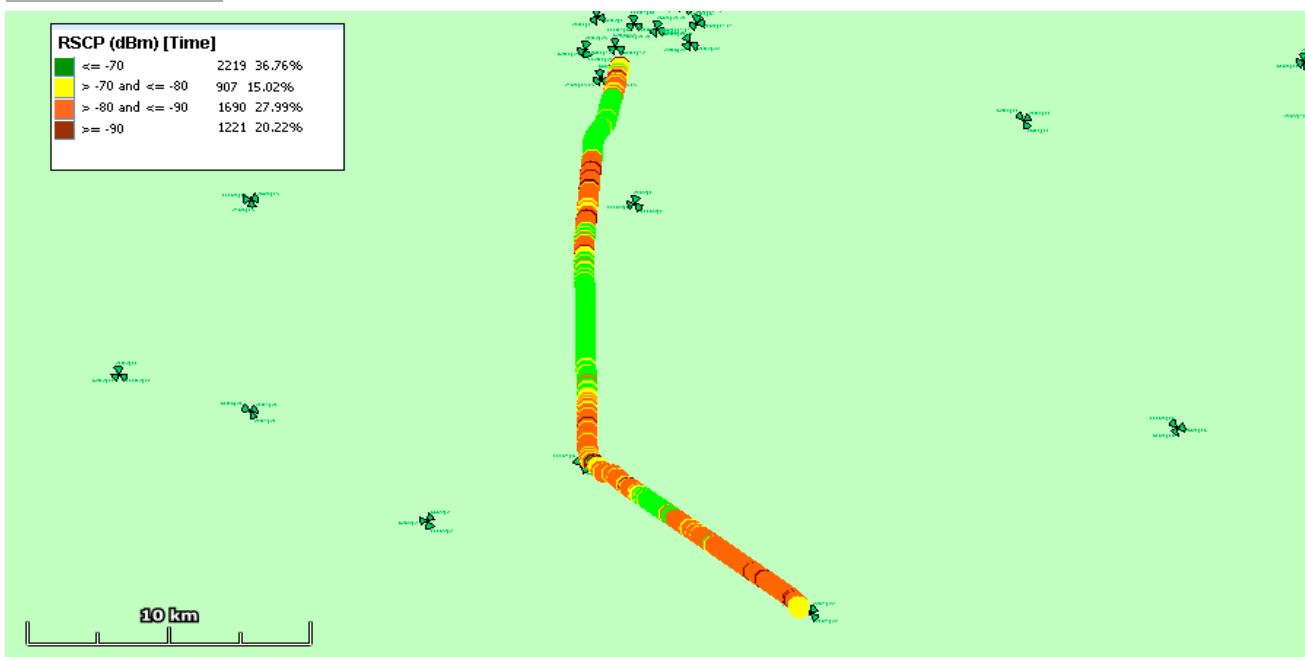
TSP- BSNL

Technology	Coverage %
2G	85.22%
3G	79.78%

2G

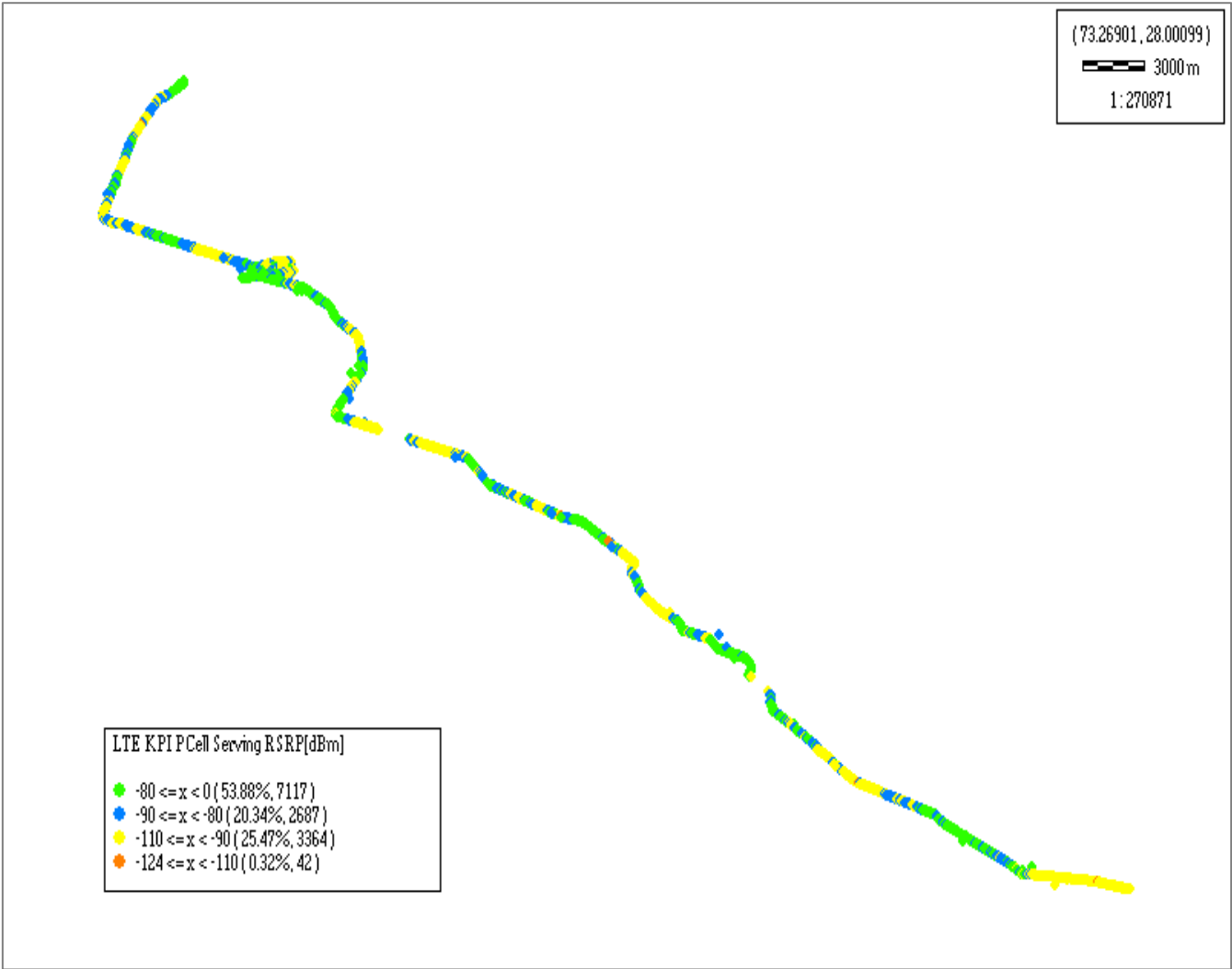


3G



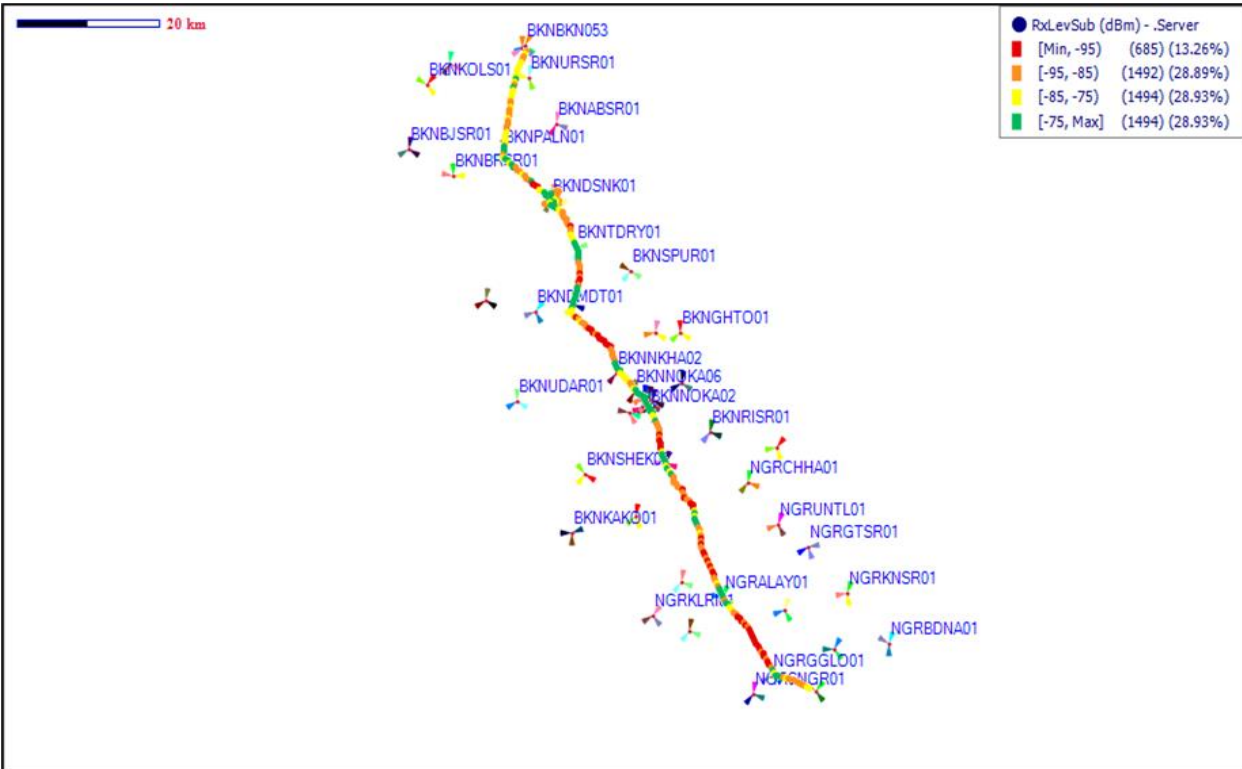
JIO

Technology	Coverage %
VoLTE	99.68%

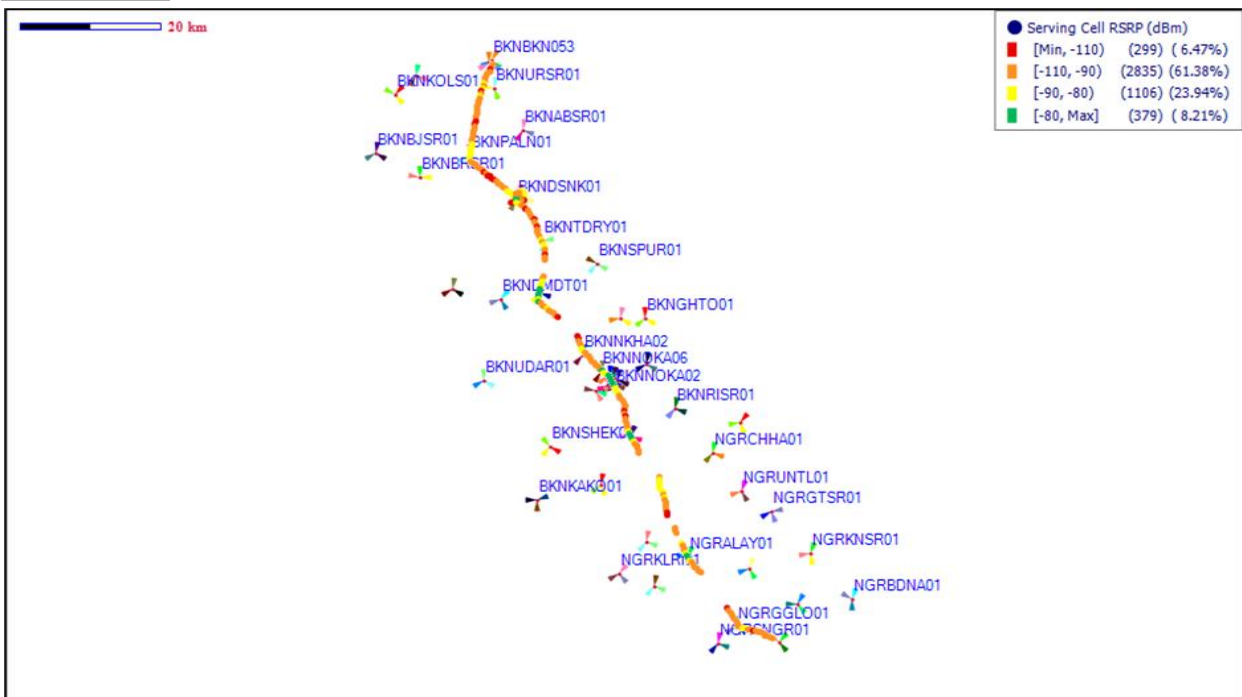


VIL

	Technology	Coverage Rate %
	2G	57.86%
2G	VoLTE	93.53%



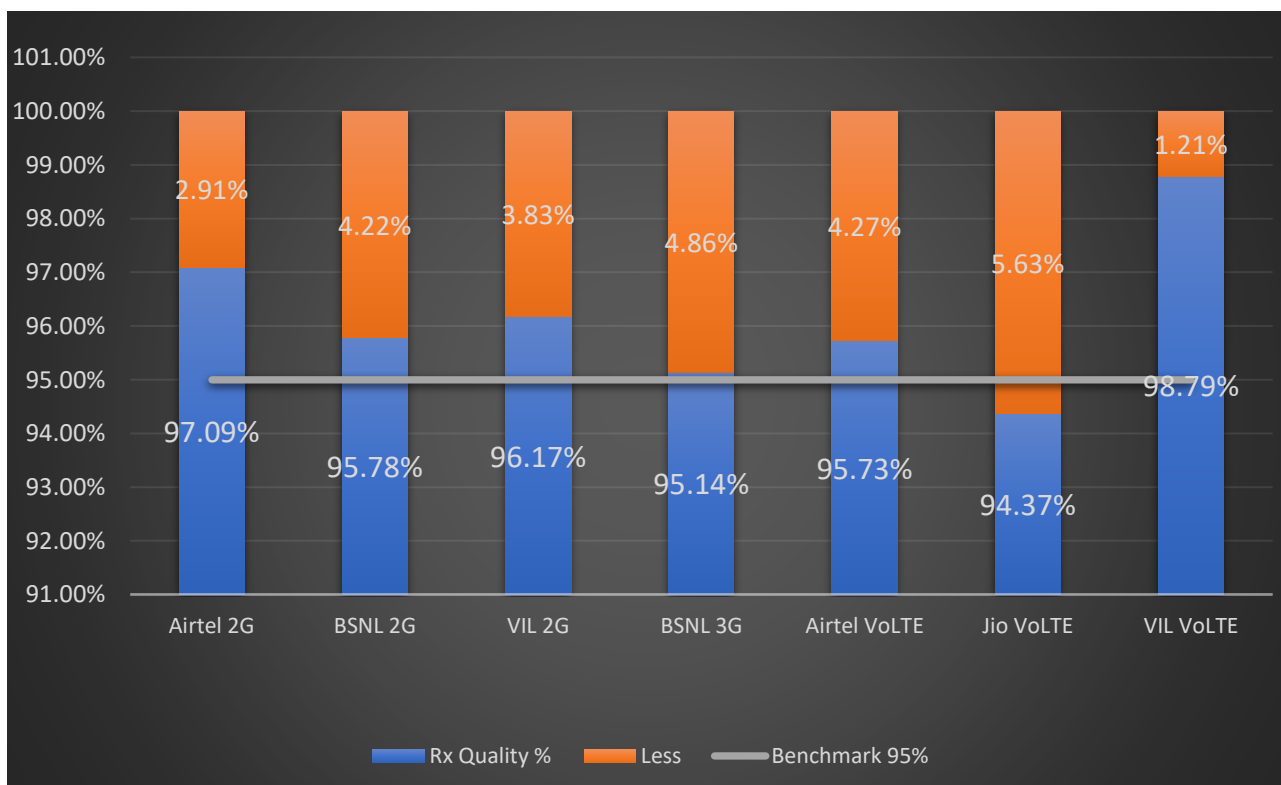
VoLTE



II. Quality Details

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

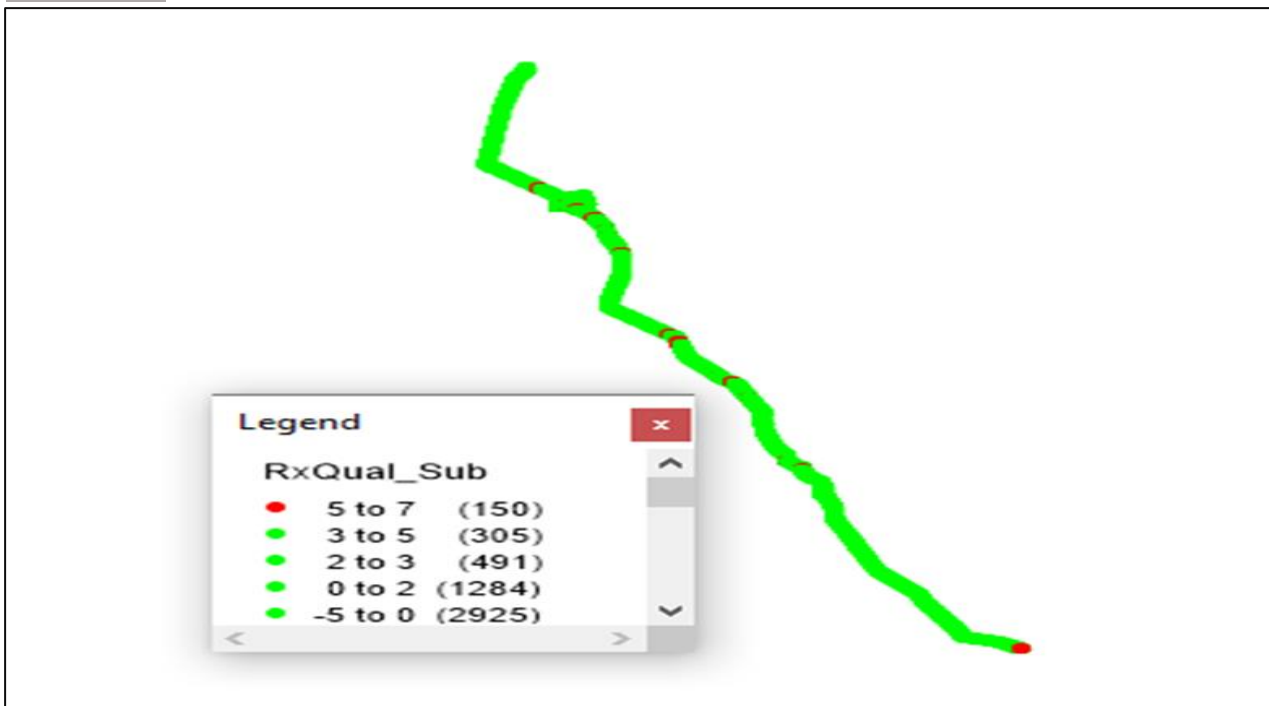
TSP	Rx Quality %
Airtel 2G	97.09%
BSNL 2G	95.78%
VIL 2G	96.17%
BSNL 3G	95.14%
Airtel VoLTE	95.73%
Jio VoLTE	94.37%
VIL VoLTE	98.79%



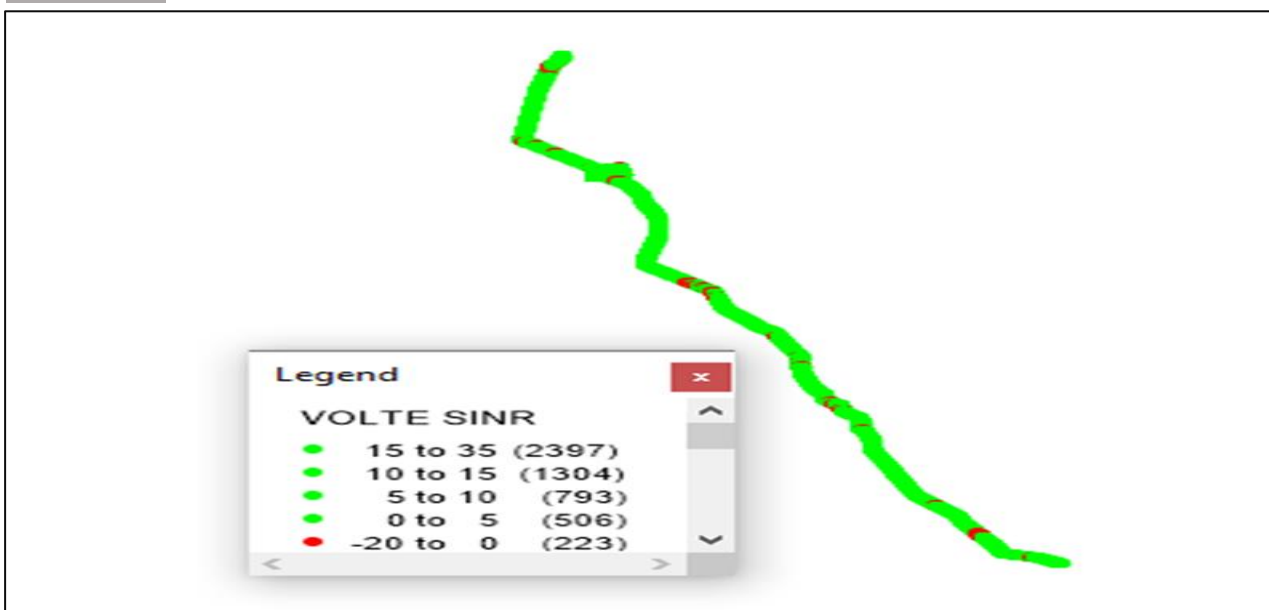
Airtel

Technology	Rx Quality %
2G	97.09%
VoLTE	95.73%

2G



VoLTE



II. Quality Details

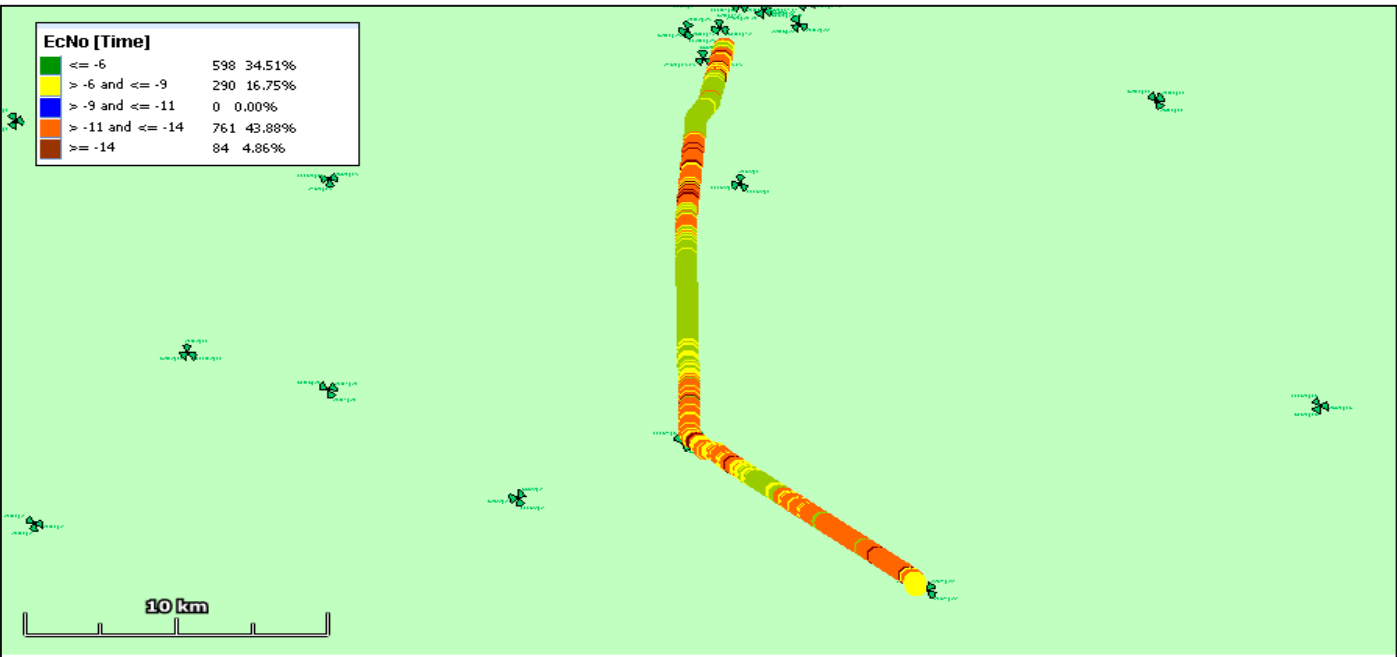
BSNL

Technology	Rx Quality %
2G	95.78%
3G	95.14%

2G



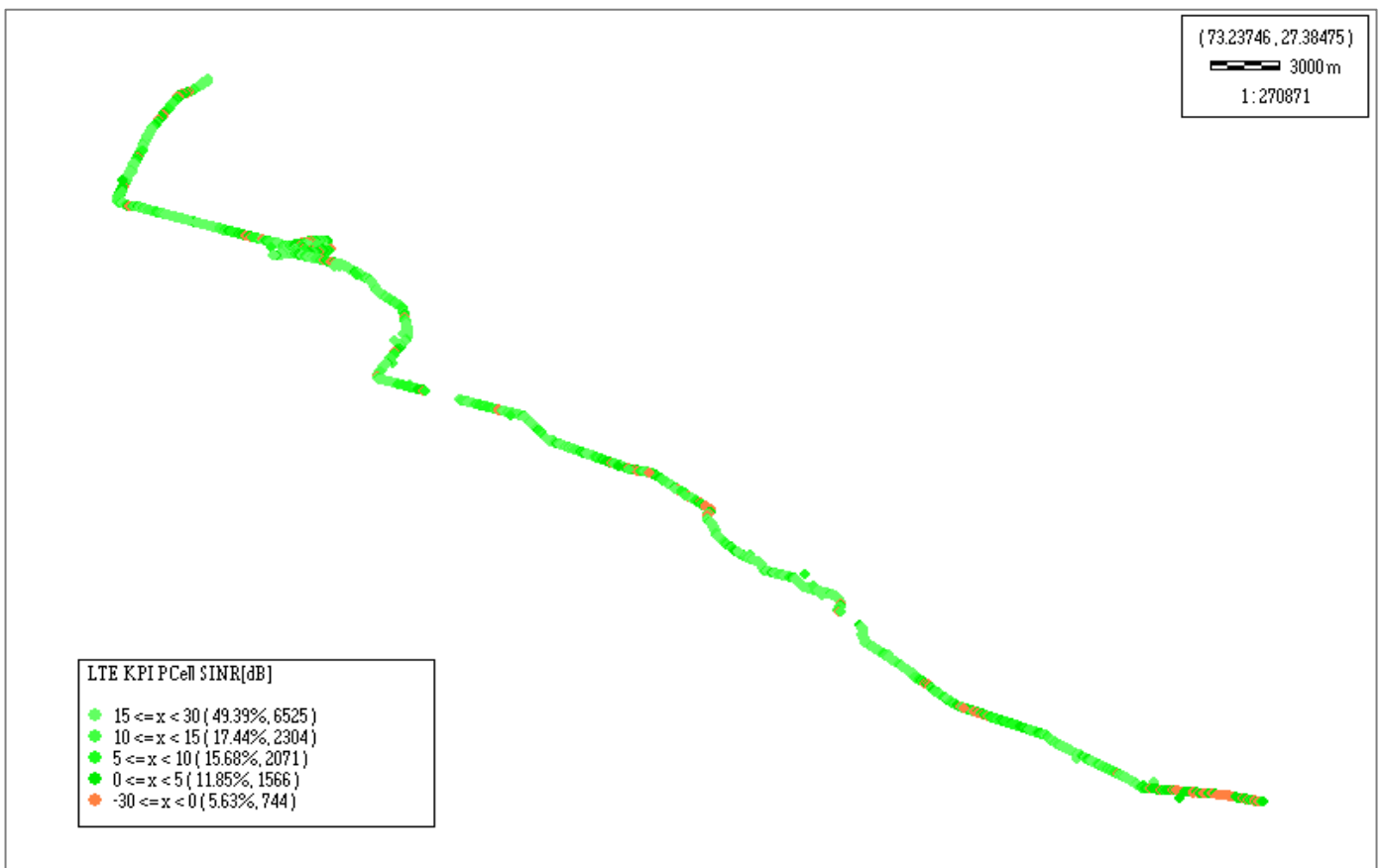
3G



Quality Details

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JIO	
Technology	Rx Quality %
VoLTE	94.37%

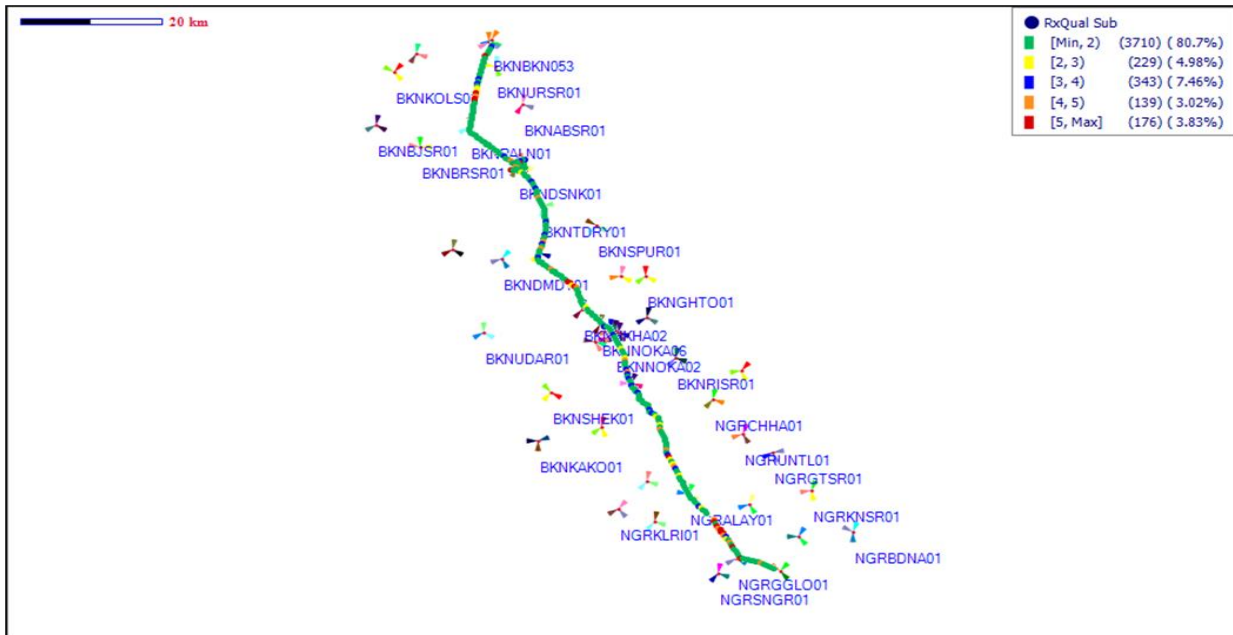


II. Quality Details

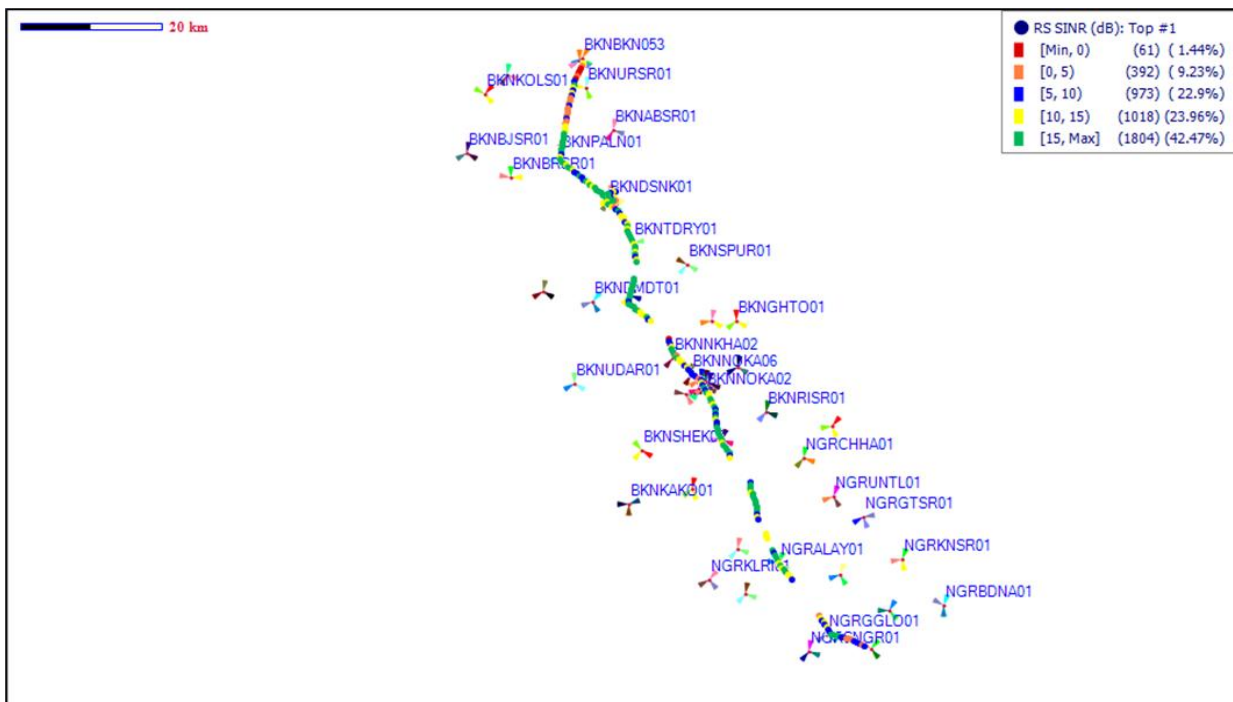
VIL

Technology	Rx Quality %
2G	96.17%
4G	98.79%

2G



VoLTE



III. Technology Details

TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	32.59%
Airtel VoLTE	100.00%
Jio VoLTE	100.00%
VIL VoLTE	98.42%

