



Operator Assisted Drive Test Report

Amritsar-Pathankot Highway

&

Pathankot

28th February 2023

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 Amritsar Pathankot Highway and One Hotspot at Pathankot Town, from 9:00 AM to 8:00 PM on **28th February 2023**. The drive test covered drive route of **116** 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 28th February 2023 covering Amritsar Pathankot Highway and Pathankot 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 116 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 116 Kms for download throughput in all technologies.

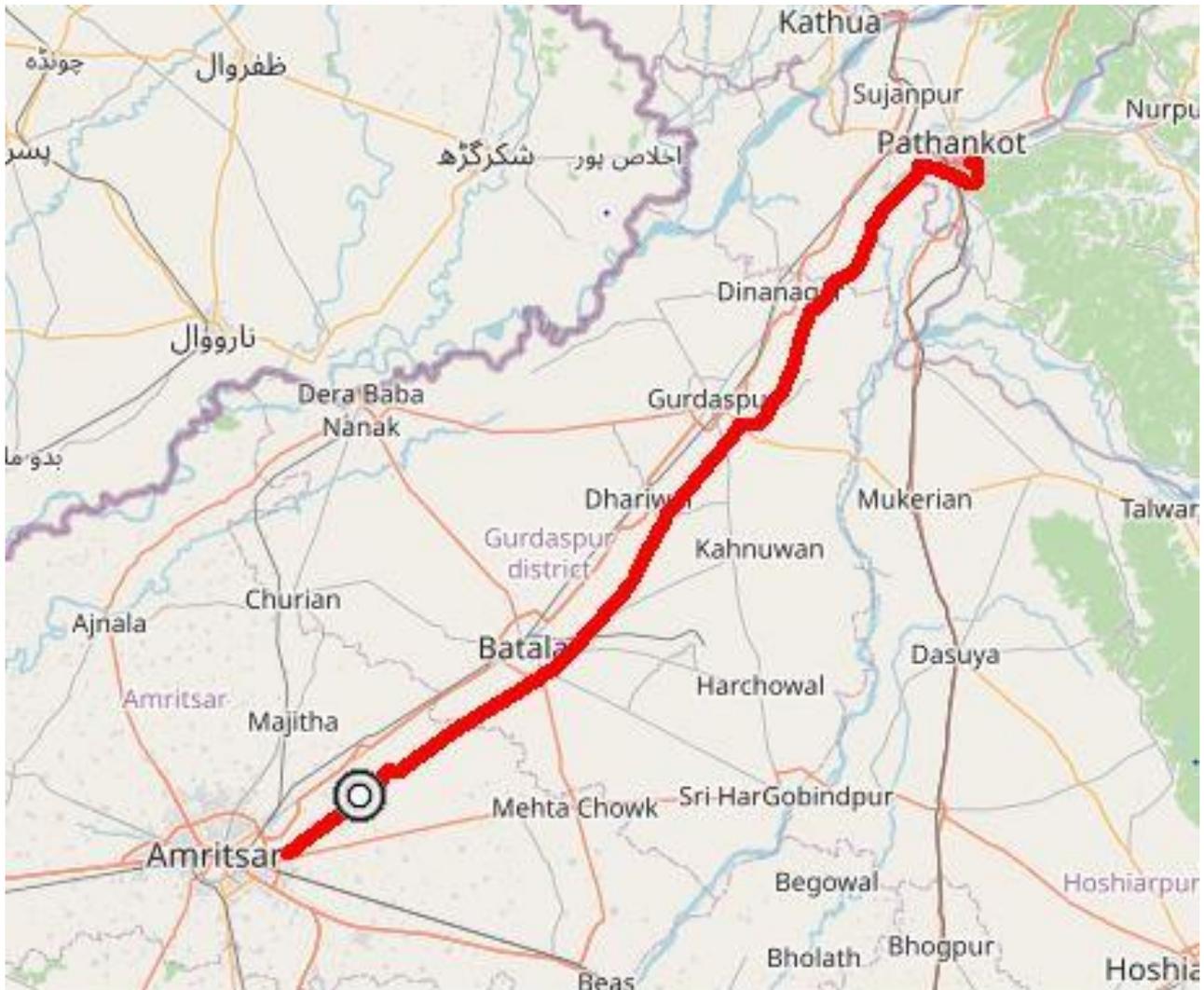
3G – measurement – UE in 3G File Size- 20MB

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

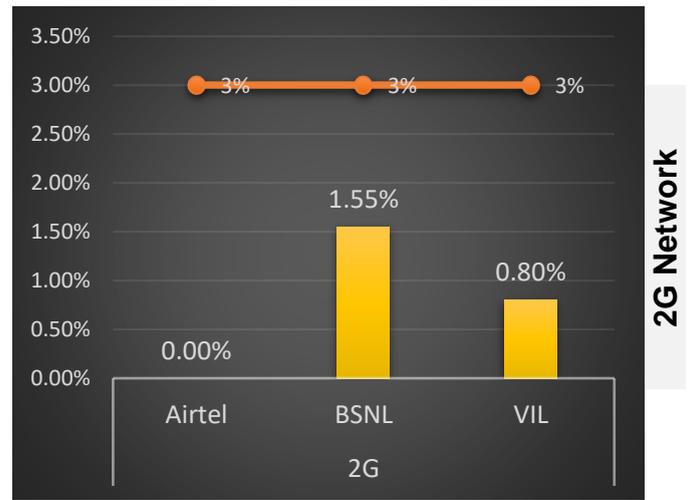
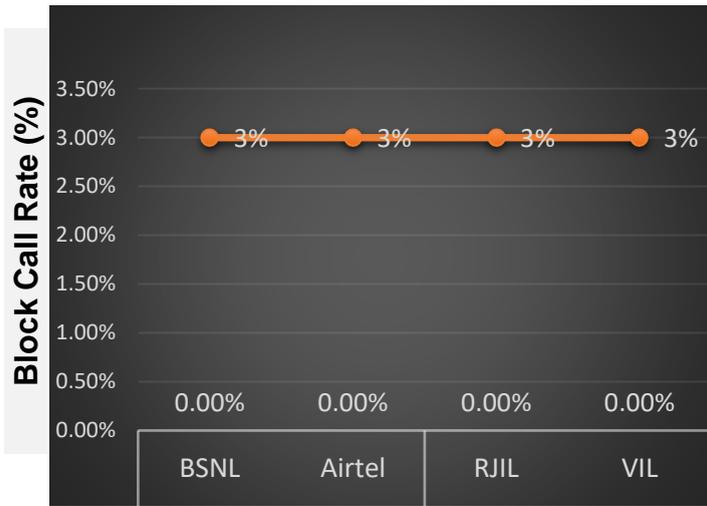
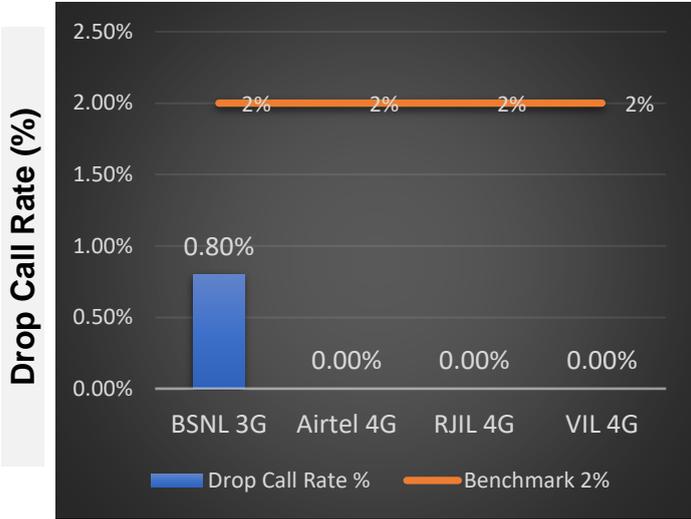


Date	Test Scenario	Area to be Covered
28-Feb-23	2G/3G/4G Voice and 3G/4G/5G Dynamic Data	Starting Point Verka Chowk Amritsar at 9:30 AM to Pathankot Bus stand completing Highway. 1 hotspot location of Pathankot Bus stand.

Voice Calls

Key Observations

QoS compliance of the TSPs on **Amritsar-pathankot Highway and SSA town Pathankot** for Voice across technologies 2G/3G/4G-VoLTE :



KPIs	2G			3G		4G	
	Airtel	BSNL	VIL	BSNL	Airtel	RJIL	VIL
Drop Call Rate %	0.00%	0.79%	0.00%	0.80%	0.00%	0.00%	0.00%
Block Call Rate %	0.00%	1.55%	0.80%	0.00%	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 %	98.43%	95.99%	97.00%

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

TSPs	3G
	BSNL
Coverage %	92.82%

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

TSPs	VoLTE		
	Airtel	JIO	VIL
Coverage %	99.29%	98.31%	99.00%

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

TSPs	3G	VoLTE		
	BSNL	Airtel	JIO	VIL
Time spent on 3G/4G Network %	51.50%	100.00%	100.00%	100.00%

Data Services Dynamic

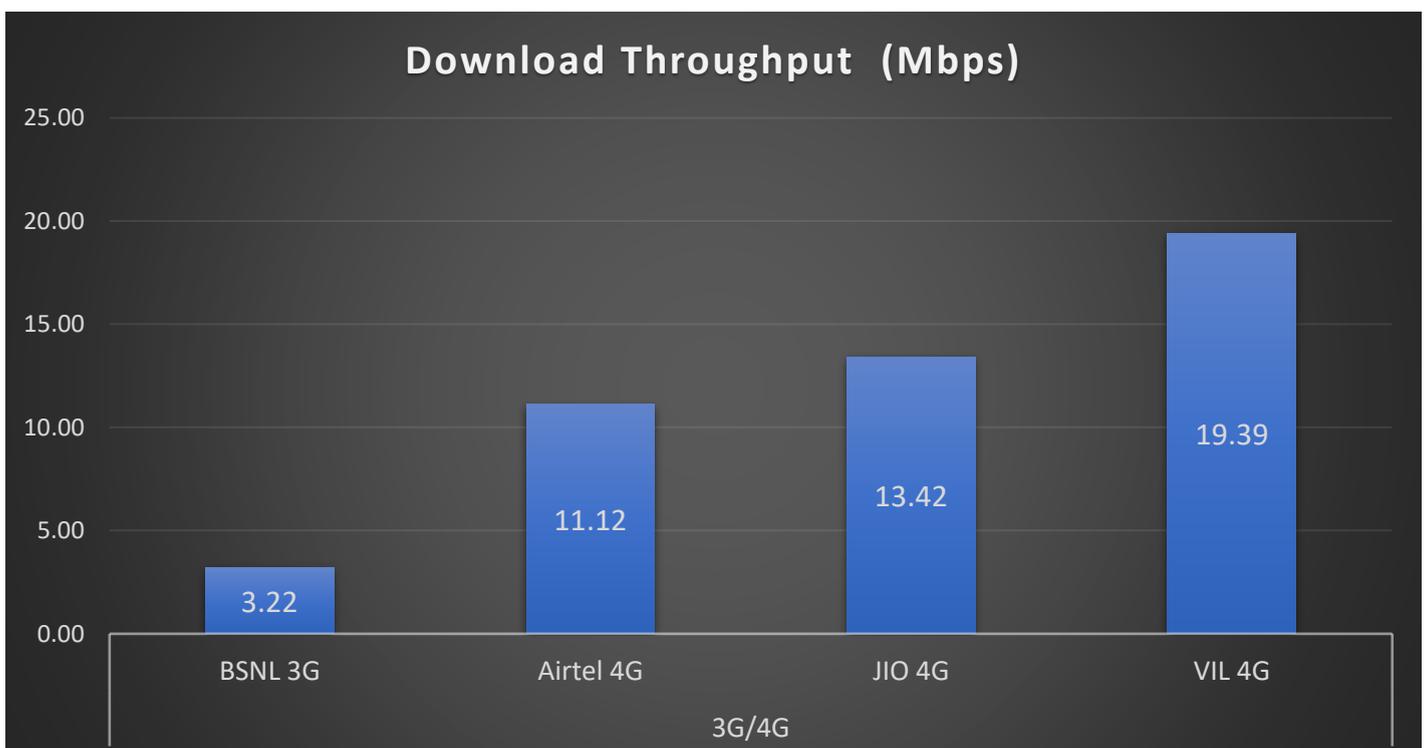
Key Observations

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)	3.22	11.12	13.42	19.39



Summary

City Level Summary-Voice

Voice Call	2G		
	Airtel	BSNL	VIL
Call Attempt	114	129	124
Blocked Call Rate (%)	0.00%	1.57%	0.80%
CSSR% (Accessibility)	100.00%	98.43%	99.20%
Drop Call Rate (%)	0.00%	0.79%	0.00%
Mobility HOSR (%)	98.58%	96.23%	100.00%
Rx Quality (%)	97.72%	96.77%	96.00%
Average CST Sec	3.94	2.60	5.08

Voice Call	3G/VoLTE			
	BSNL 3G	Airtel VoLTE	JIO VoLTE	VIL VoLTE
Call Attempt	126	115	104	128
Blocked Call Rate (%)	0.00%	0.00%	0.00%	0.00%
CSSR% (Accessibility)	100.00%	100.00%	100.00%	100.00%
Drop Call Rate (%)	0.79%	0.00%	0.00%	0.00%
Mobility HOSR (%)	100.00%	99.05%	99.27%	100.00%
Rx Quality (%)	87.15%	90.68%	87.31%	91.00%
Average CST Sec	3.07	1.68	1.05	2.48

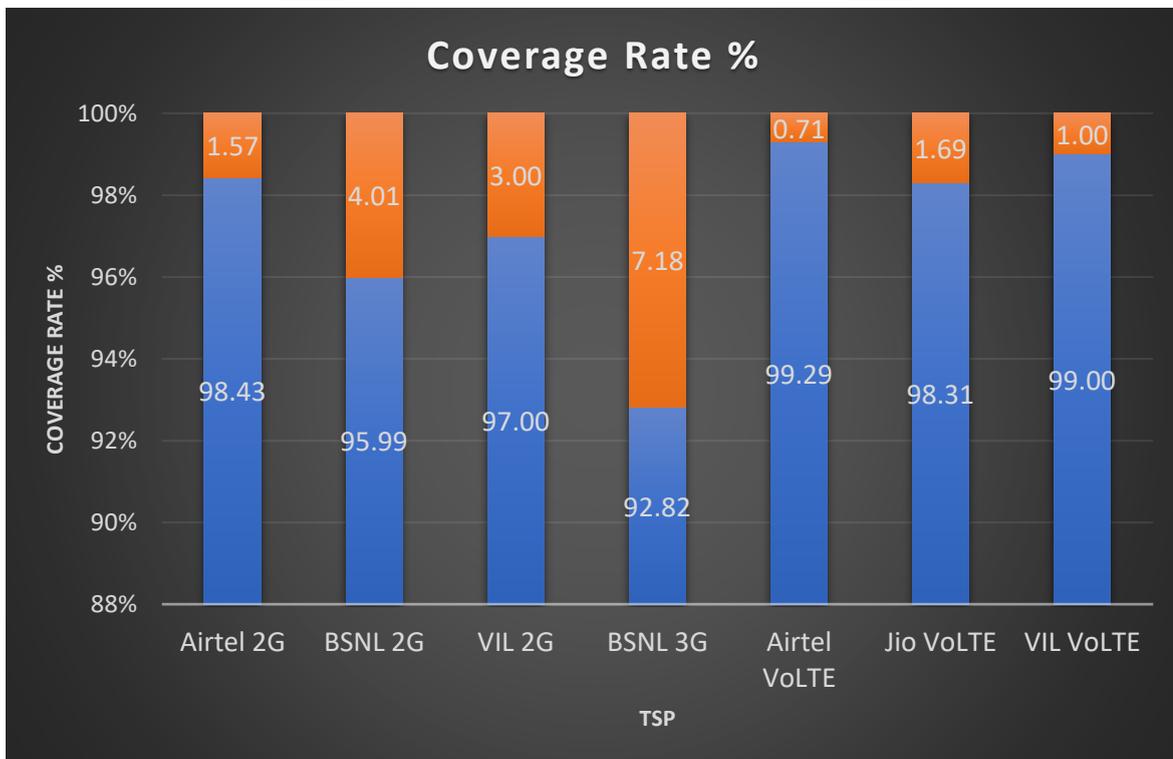
Bus Stand Pathankot	2G		
	Airtel	BSNL	VIL
Download Throughput (kbps)	178.30	115.00	143.53
Upload Throughput (kbps)	109.30	29.20	10.32
Web Browsing Delay (sec)	8.90	139.95	344.48
Latency (msec)	389.00	178.50	397.00

Bus Stand Pathankot	3G / 4G			
	BSNL 3G	Airtel 4G	JIO 4G	VIL 4G
Download Throughput (Mbps)	5.03	20.60	24.87	9.73
Upload Throughput(Mbps)	3.45	9.70	15.91	13.14
Video Streaming Delay (sec)	1.34	1.19	0.02	0.64
Web Browsing Delay (sec)	13.93	2.66	3.12	2.42
Latency (msec)	86.50	77.00	52.80	78.00

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.

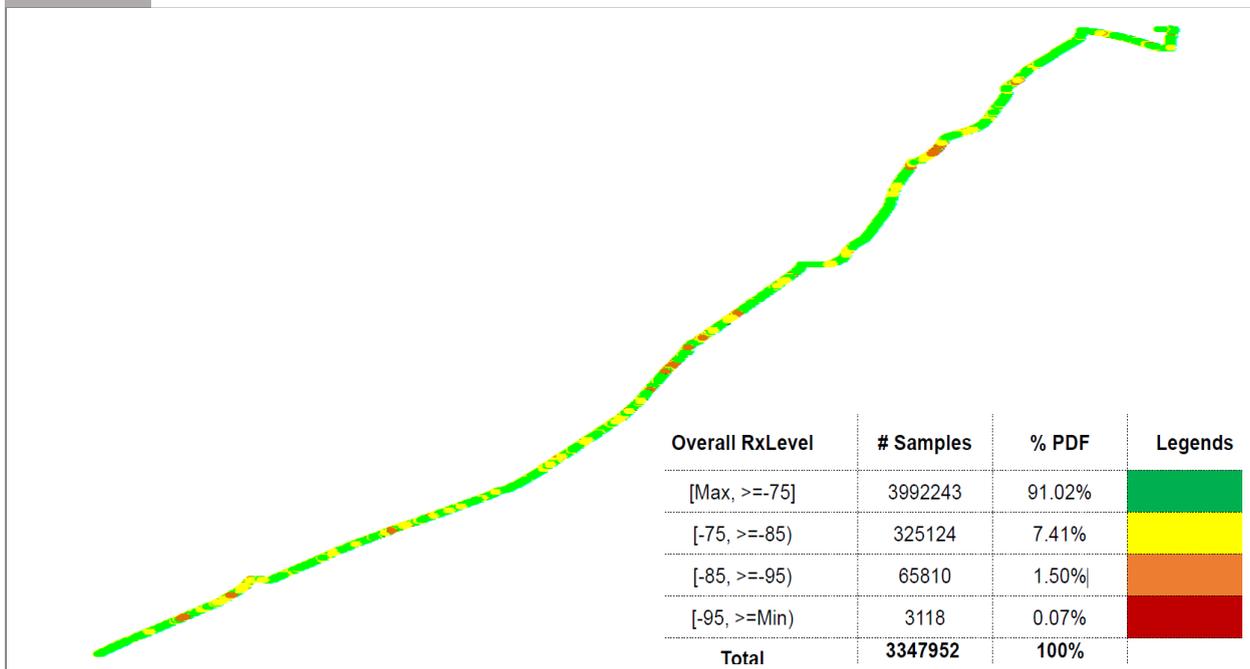
TSP	Coverage Rate %
Airtel 2G	98.43%
BSNL 2G	95.99%
VIL 2G	97.00%
BSNL 3G	92.82%
Airtel VoLTE	99.29%
Jio VoLTE	98.31%
VIL VoLTE	99.00%



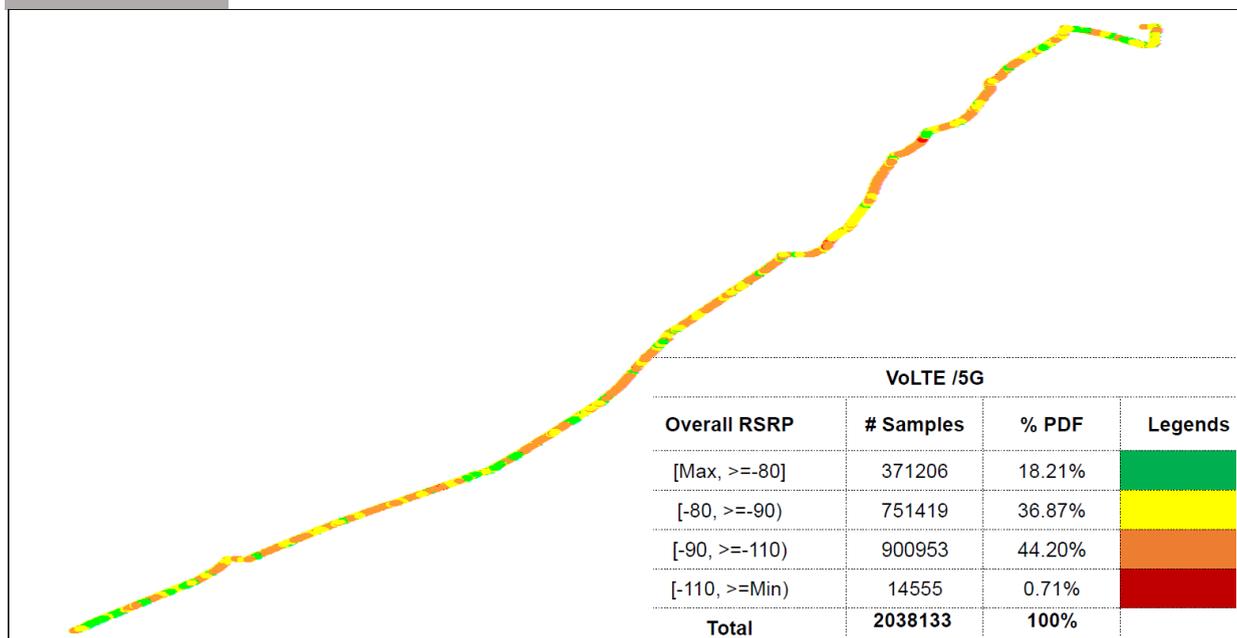
TSP-AIRTEL

TSP	Coverage Rate %
Airtel 2G	98.43%
Airtel VoLTE	99.29%

2G



VoLTE

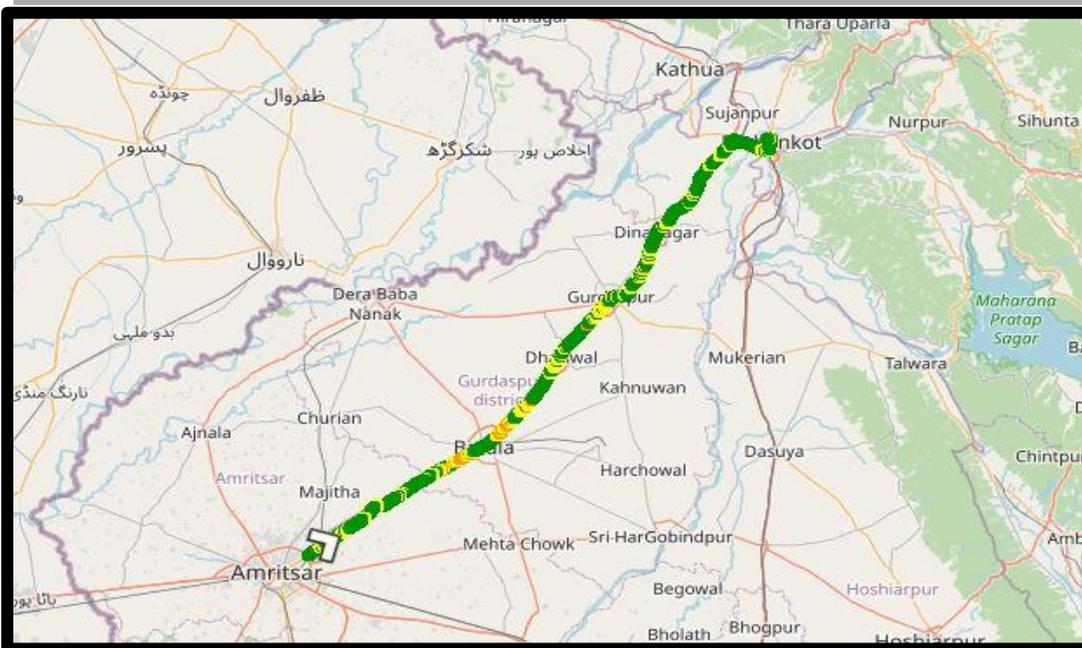


Coverage Details

TSP- BSNL

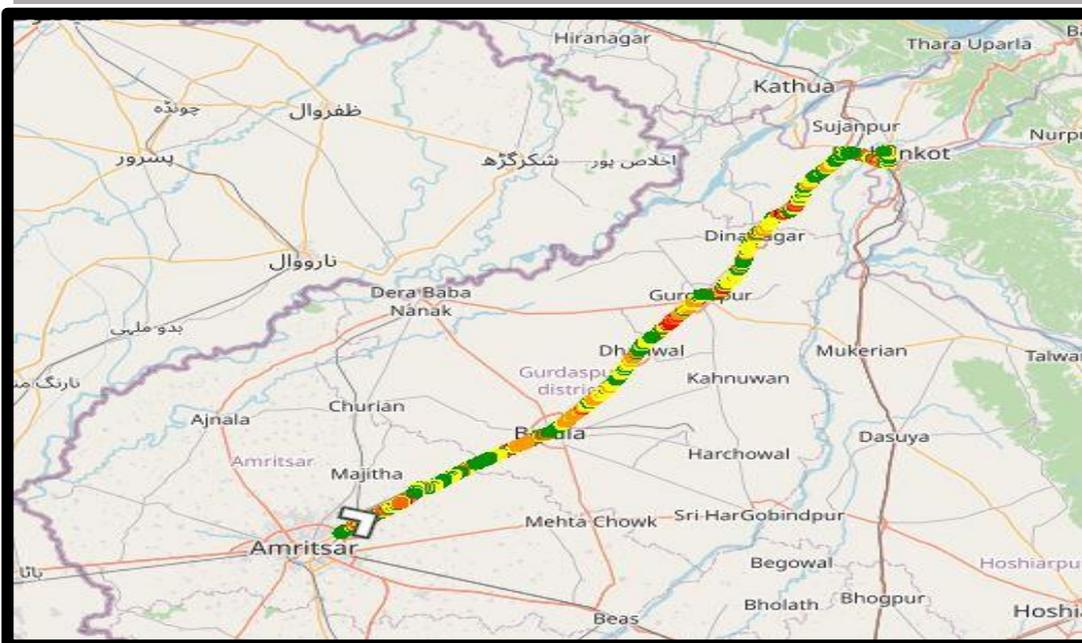
Technology	Coverage %
2G	95.99%
3G	92.82%

2G



Overall RxLevel	# Samples	% PDF	Legends
[Max, >=-75]	9067	74.29	Green
[-75, >=-85]	2649	21.70	Yellow
[-85, >=-95]	4870	3.99	Orange
[-95, >=Min)	2	0.01	Red
Total		100%	

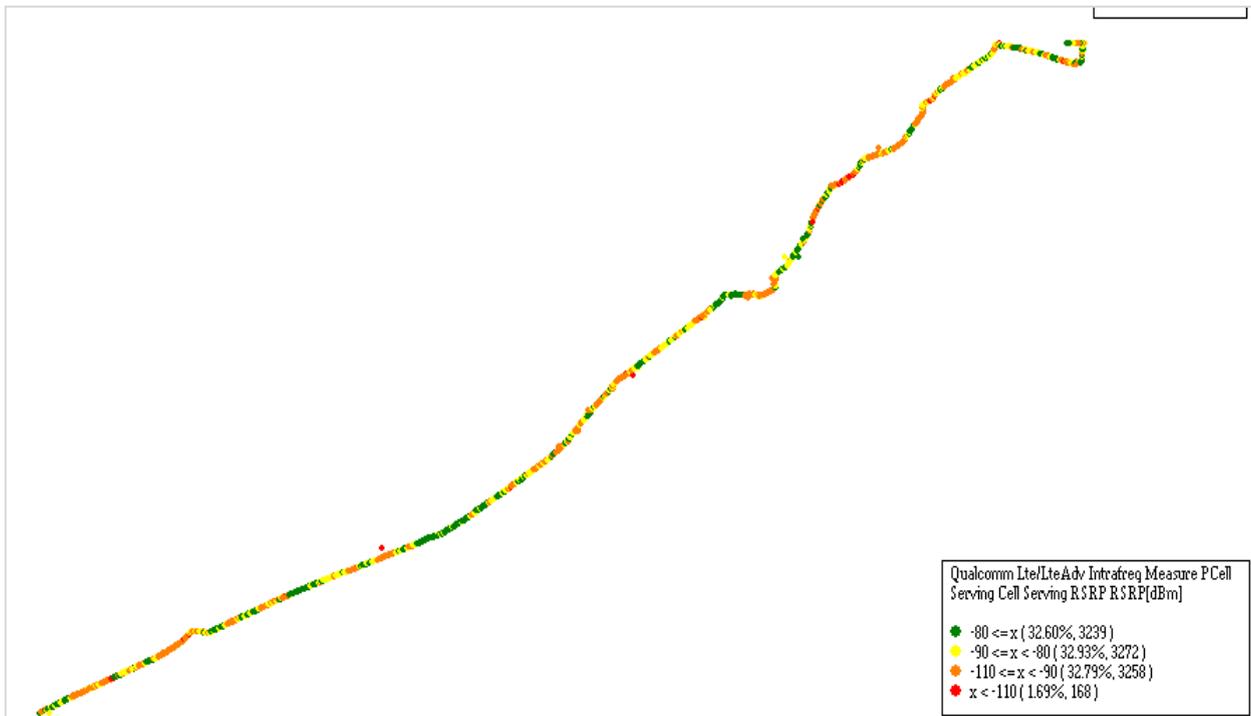
3G



Overall RSCP	# Samples	% PDF	Legends
[Max, >=-70]	36110	29.50	Green
[-70, >=-80]	4647	37.96	Yellow
[-80, >=-90]	3105	25.36	Orange
[-90, >=Min)	879	7.18	Red
Total		100%	

JIO

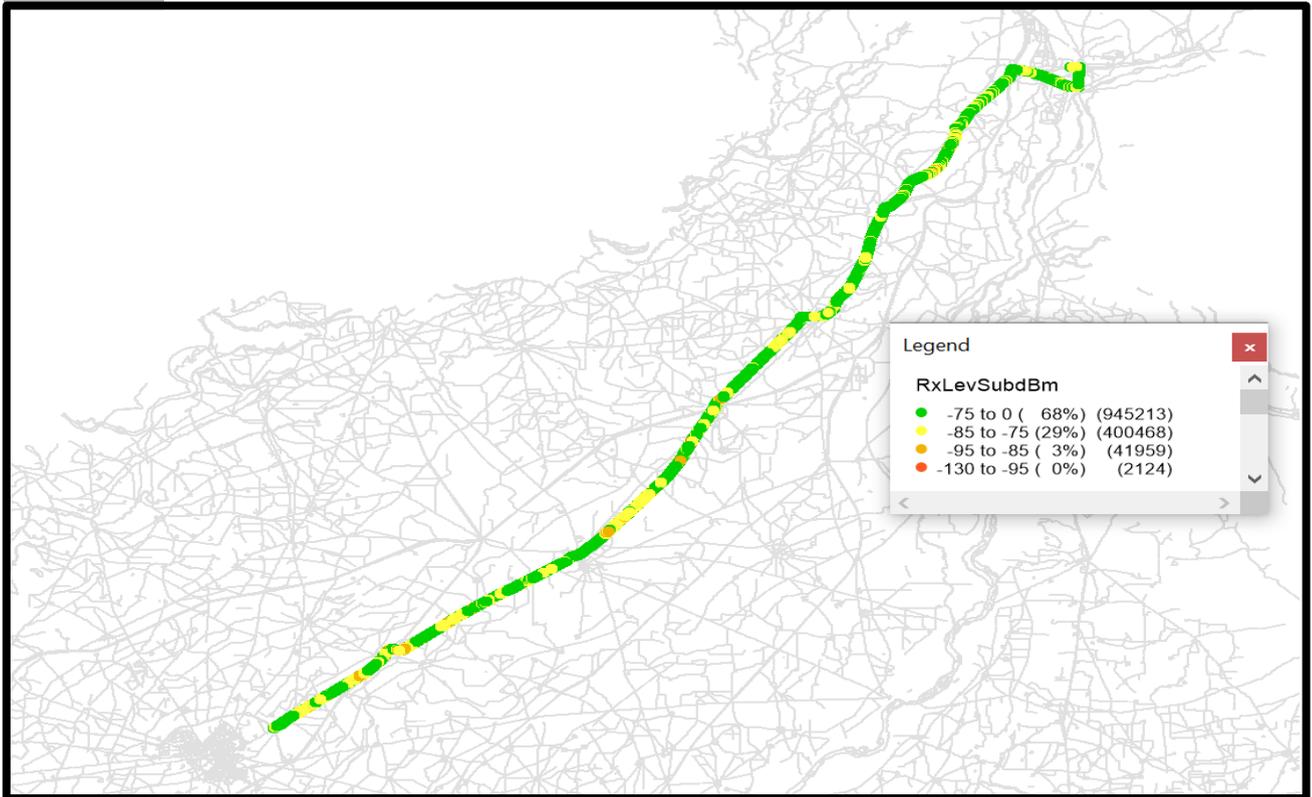
Technology	Coverage %
VoLTE	98.31



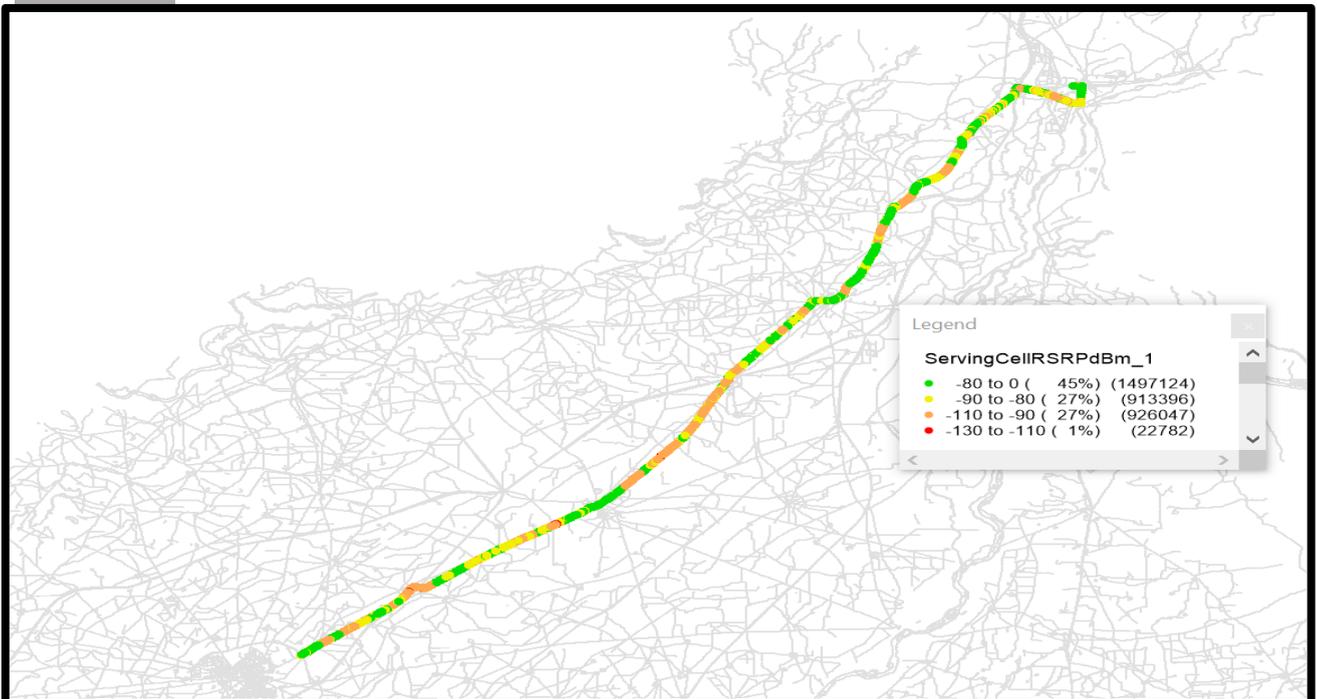
VoLTE /5G			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	3239	32.60	Green
[-80, >=-90)	3272	32.93	Yellow
[-90, >=-110)	3258	32.79	Orange
[-110, >=Min)	168	1.69	Red
Total	9937	100%	

VIL

	Technology	Coverage Rate %
	2G	97.00
2G	VoLTE	99.00



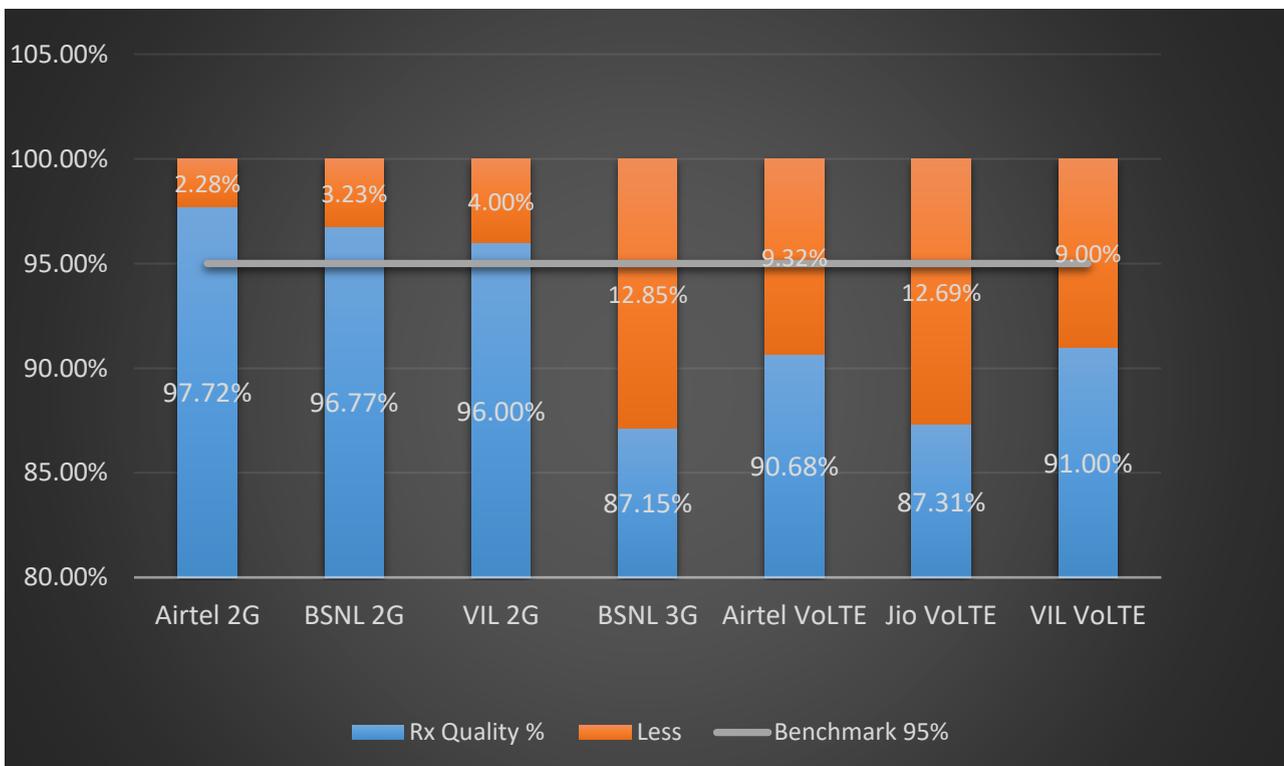
VoLTE



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	97.72%
BSNL 2G	96.77%
VIL 2G	96.00%
BSNL 3G	87.15%
Airtel VoLTE	90.68%
Jio VoLTE	87.31%
VIL VoLTE	91.00%

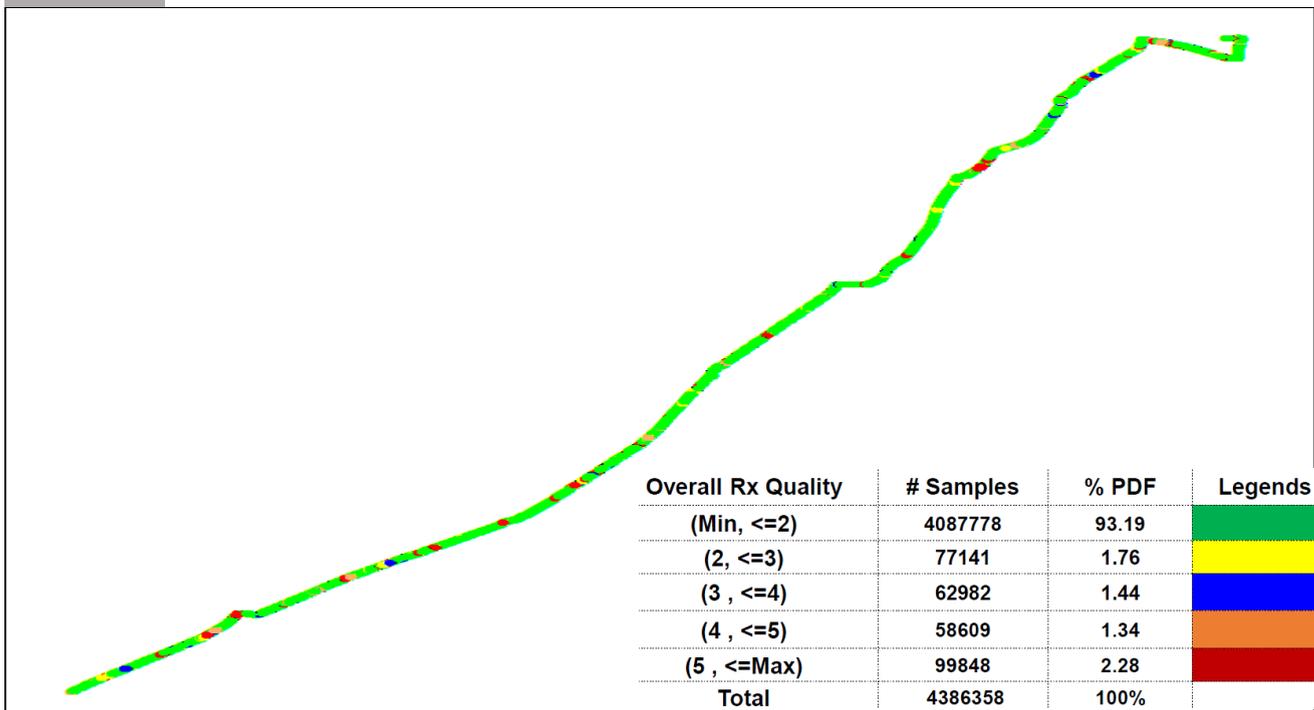


II. Quality Details

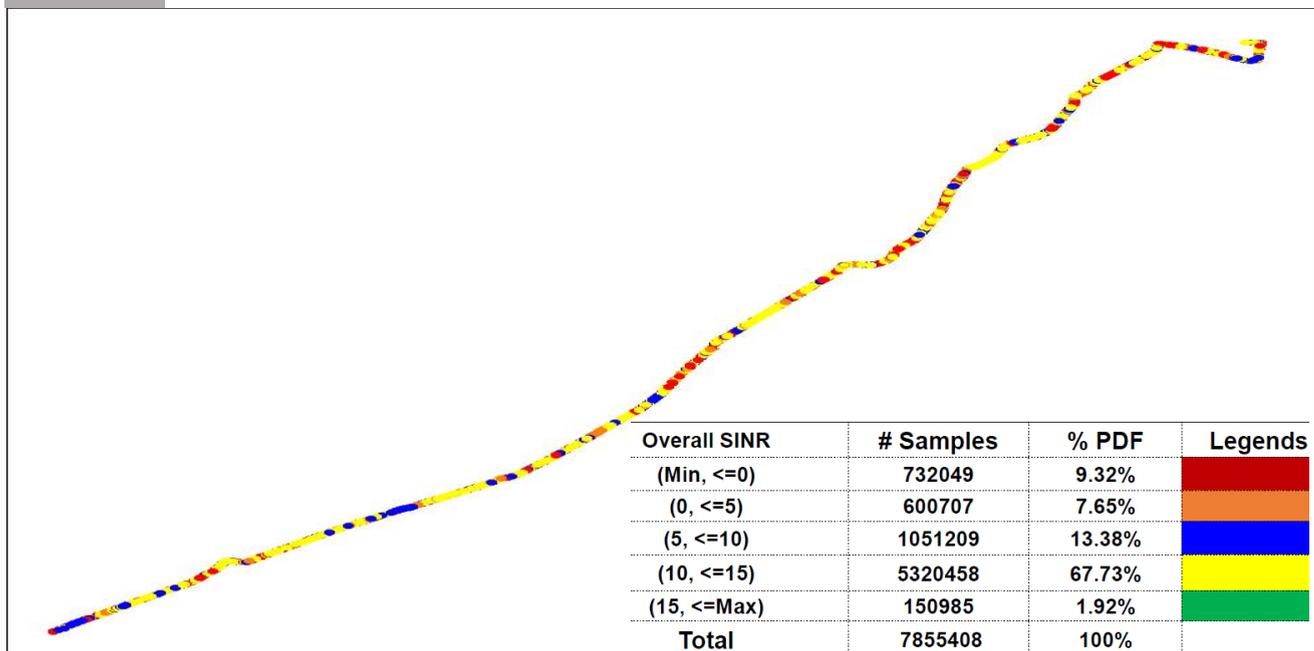
Airtel

Technology	Rx Quality %
2G	97.72%
VoLTE	90.68%

2G



VoLTE

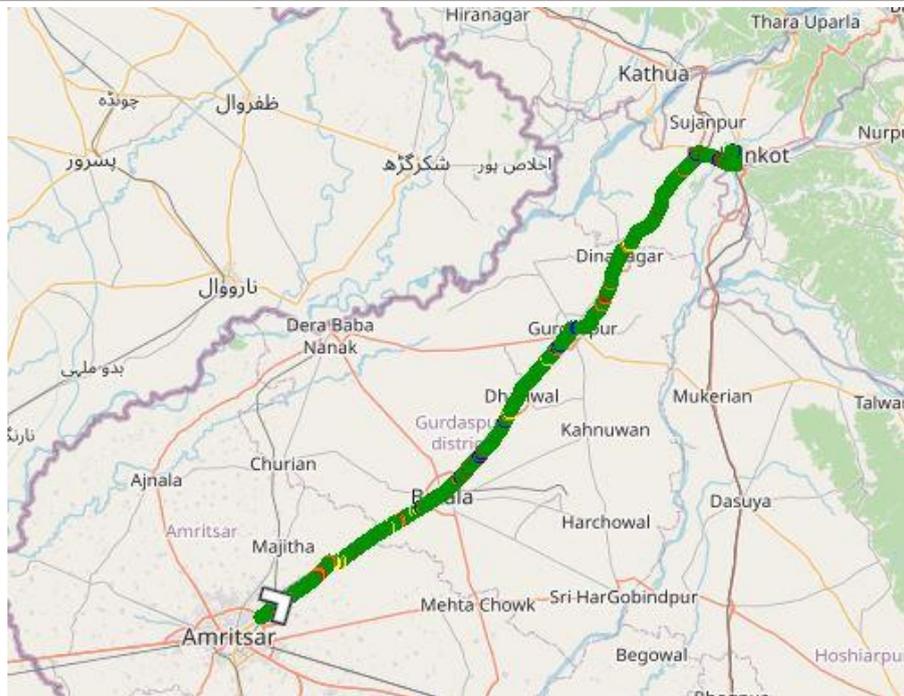


II. Quality Details

BSNL

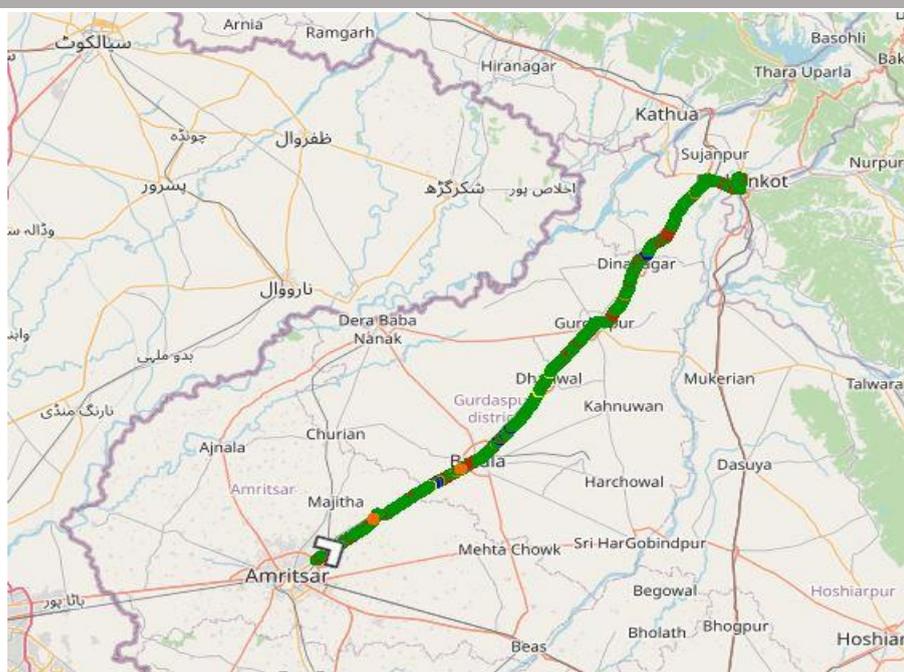
Technology	Rx Quality %
2G	96.77
3G	87.15

2G



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	10326	94.14	Green
(2, <=3)	207	1.65	Yellow
(3, <=4)	211	1.60	Blue
(4, <=5)	177	0.96	Orange
(5, <=Max)	364	1.65	Red
Total	27783	100%	

3G

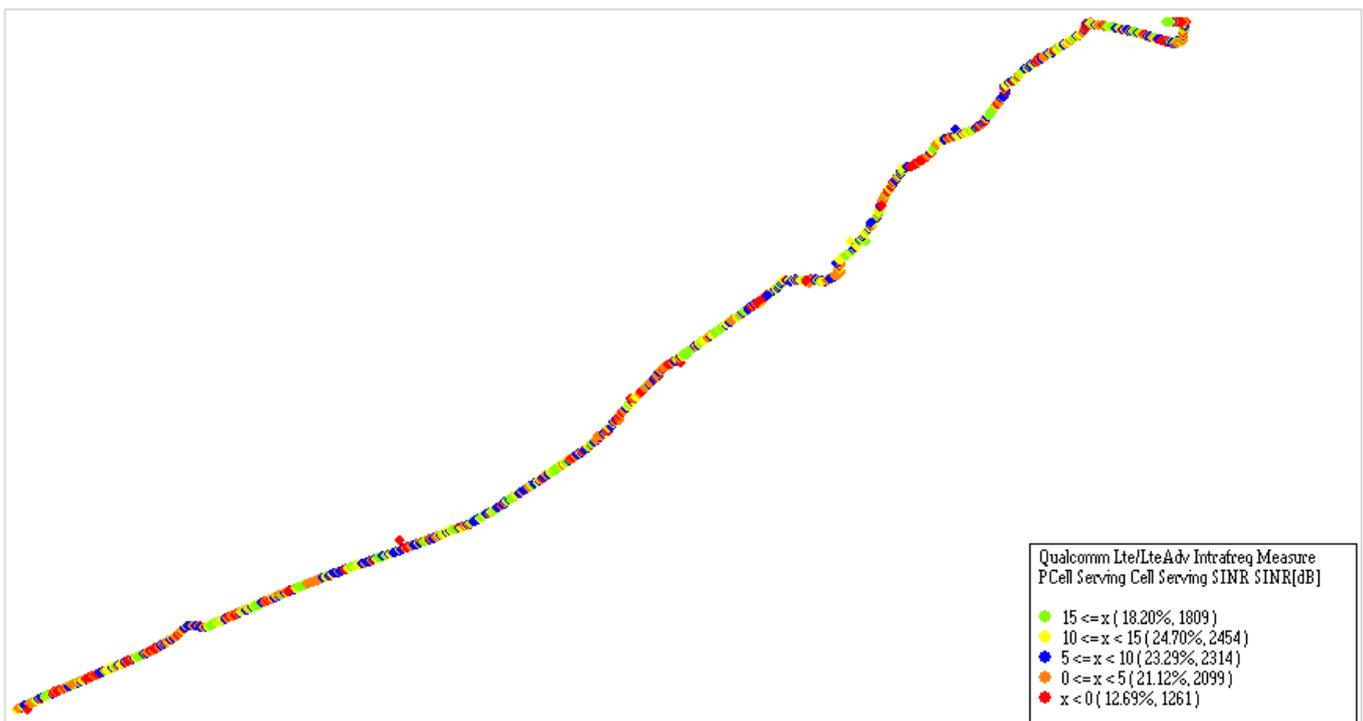


Overall Ec/No	# Samples	% PDF	Legends
(Max, <=-6)	10396	87.15	Green
(-6, <=-9)	0	0	Yellow
(-9, <=-11)	0	0	Blue
(-11, <=-14)	0	0	Orange
(-14, <=Min)	1533	12.85	Red
Total		100%	

Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -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. The benchmark should usually be $\geq 95\%$.

JIO	
Technology	Rx Quality %
VoLTE	87.31



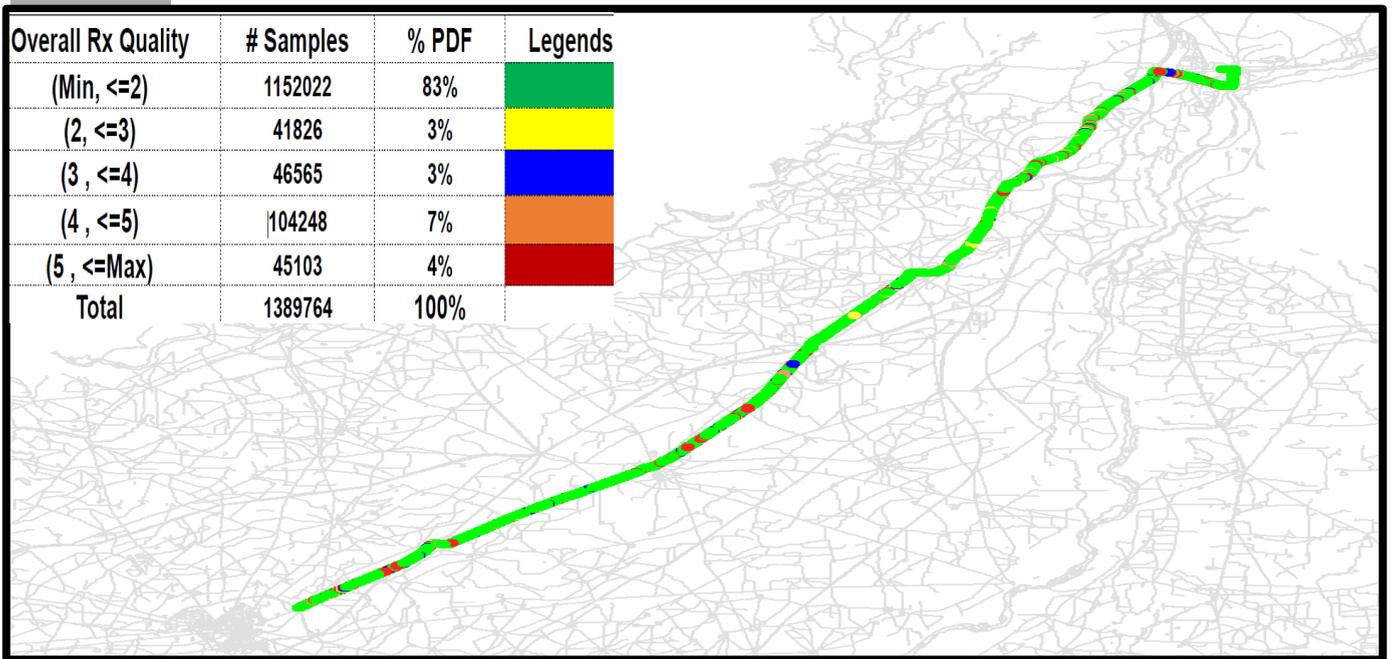
Overall SINR	# Samples	% PDF	Legends
(Min, ≤ 0)	1261	12.69	
(0, ≤ 5)	2099	21.12	
(5, ≤ 10)	2314	23.29	
(10, ≤ 15)	2454	24.70	
(15, \leq Max)	1809	18.20	
Total	9937	100%	

II. Quality Details

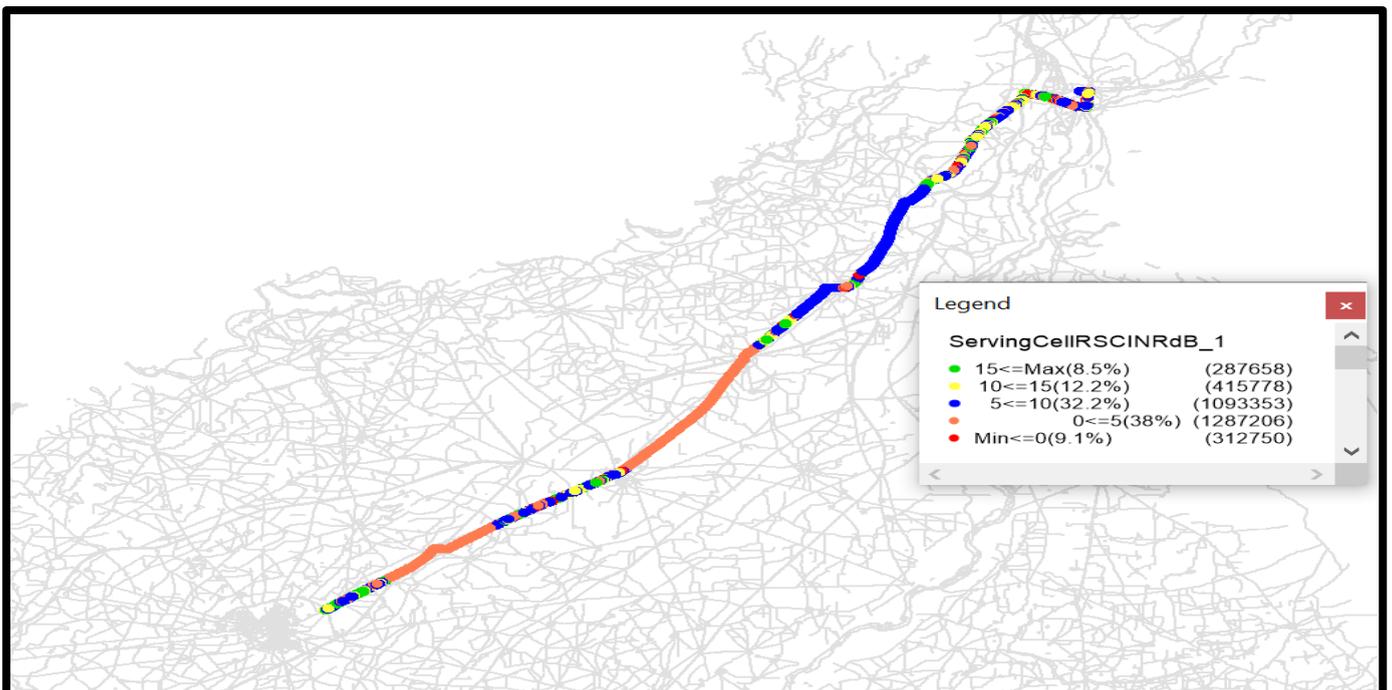
VIL

Technology	Rx Quality %
2G	96.00
4G	91.00

2G



VoLTE



III. Technology Details

TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	51.50%
Airtel VoLTE	100.00%
Jio VoLTE	100.00%
VIL VoLTE	100.00%

