



Operator Assisted Drive Test Report

**Barnala, Sangrur, Patiala,
Ludhiana Highway**

27th Jan 2025

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 Barnala, Sangrur, Patiala, Ludhiana Highway from 8:00 AM to 8:00 PM on 27th Jan 2025. The drive test covered drive route of 290 KMs over a period of 1 day. Approximately 225 calls were made for each of the networks.

Overview

Voice
Summary

Data
Summary

Overview

Regional Office, TRAI Jaipur conducted Operator Assisted Drive Test on **27th Jan 2025** covering Barnala, Sangrur, Patiala, Ludhiana Highway. The performance of, Vodafone Idea was monitored across various technologies (2G and 4G). The test results obtained from these drive tests were utilized to assess the network quality for Voice and Data services.

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 290 KMs. Approximately 225 (2G & 4G) calls were made for each of the 2G & 4G networks.

Data Tests:

Dynamic data test was conducted for 290 kms for download throughput in all technologies.
2G – measurement – UE Locked in 2G file size- 500KB

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

4G – measurement – UE in LTE /5G 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

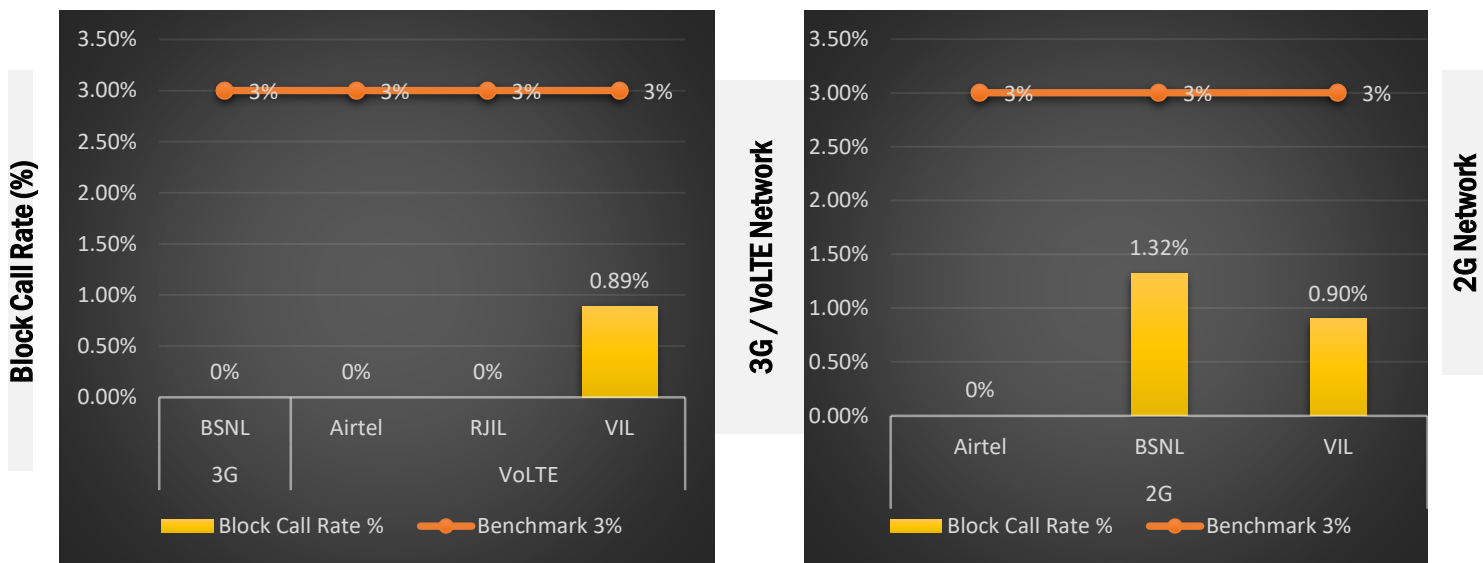
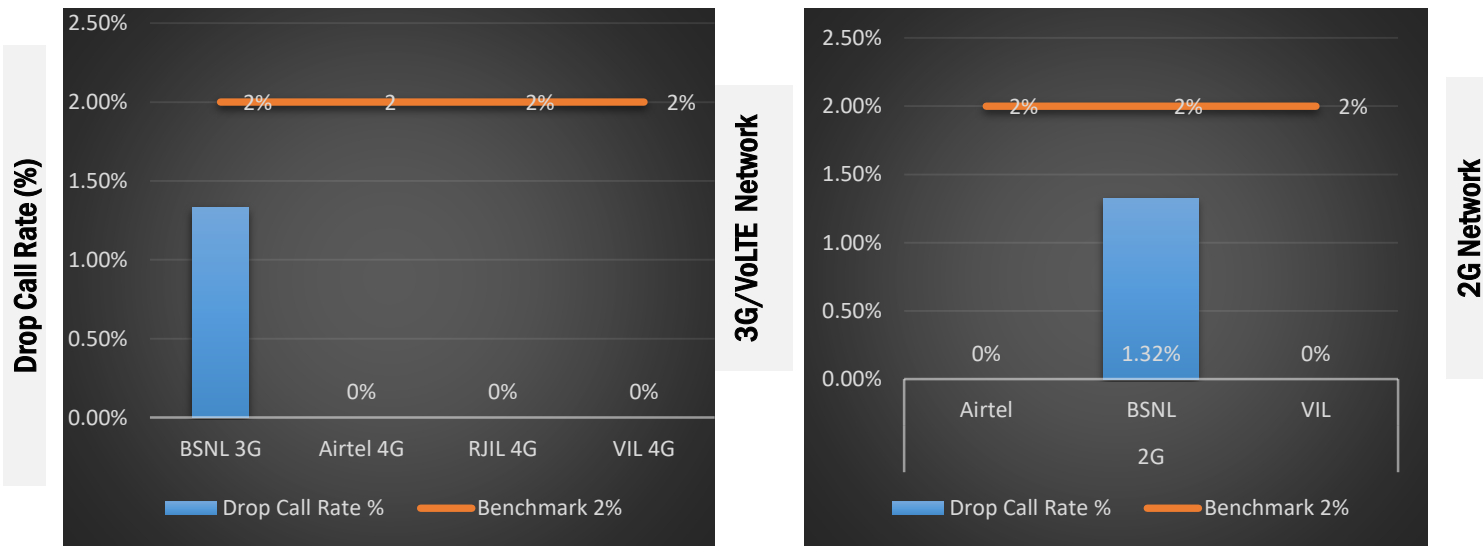
Overview

Voice & Dynamic Data Test Drive Route Barnala, Sangrur, Patiala, Ludhiana Highway



Date	Test Scenario	Area to be Covered
27 th Jan 2025	2G/4G Voice and 4G Dynamic Data	Starting Point Barnala 8:00 AM , Barnala, Dhanola, Badbar, Sangrur, Bhawanigarh, Channo, Patiala, Rajpura, Sarhind, Khanna, Ludhiana, Mahal Kalan, Barnala

QoS compliance of the TSPs on Barnala, Sangrur, Patiala, Ludhiana Highway for Voice across technologies 2G/3G/4G-VolTE:



KPIs	2G			3G	4G		
	Airtel	BSNL	VIL	BSNL	Airtel	RJIL	VIL
Drop Call Rate %	0%	1.32%	0%	1.33%	0%	0%	0%
Block Call Rate %	0%	1.32%	0.90%	0%	0%	0%	0.89%

- 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 %	96.32%	88.8%	99.98%

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

TSPs	3G
	BSNL
Coverage %	96.17%

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

TSPs	VoLTE		
	Airtel	JIO	VIL
Coverage %	99.17%	99.14%	99.21%

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

TSPs	3G	VoLTE		
	BSNL	Airtel	JIO	VIL
Time spent on 3G/4G Network %	99%	100%	100%	100%

Data Services Dynamic

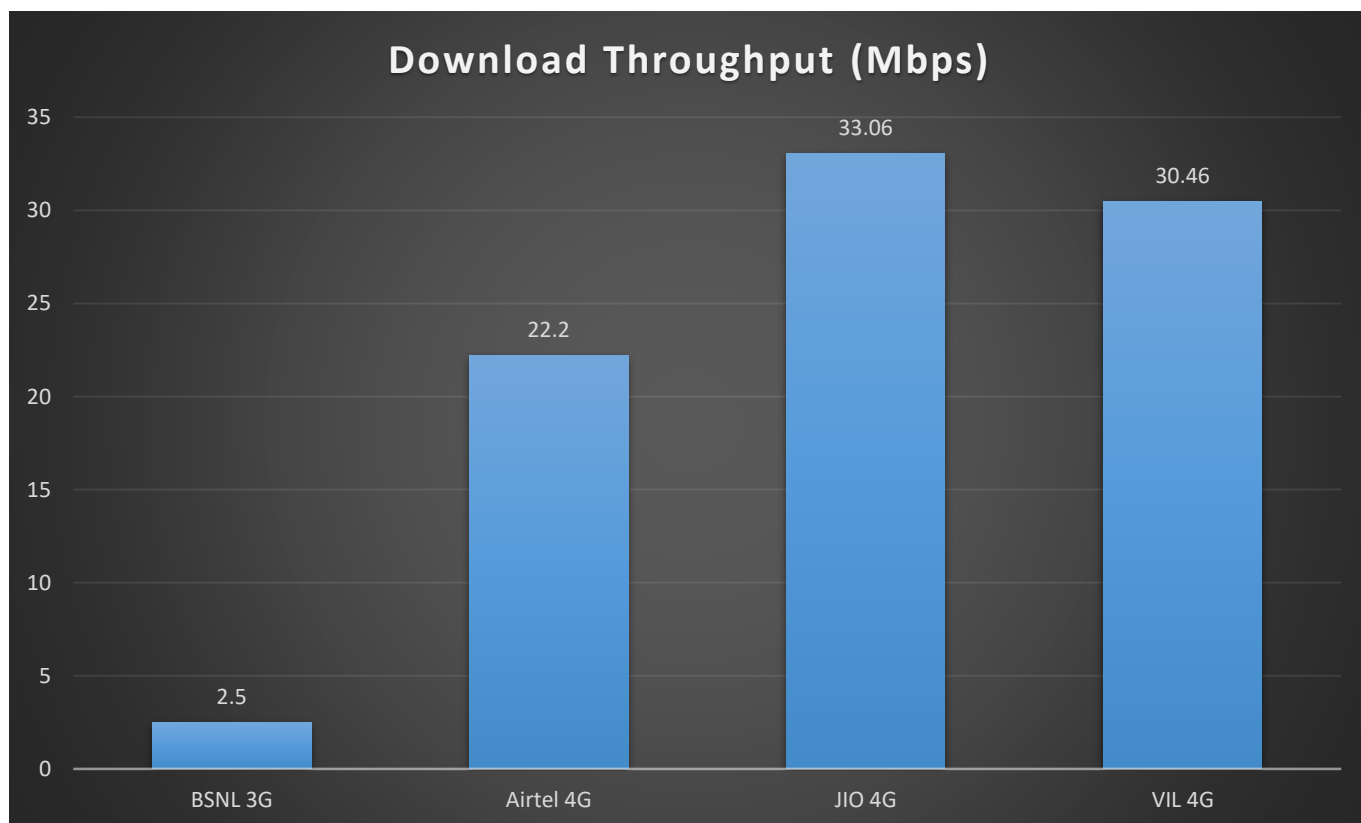
Key Observations

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

Data Download Performance (kbps) - Dynamic

3G/4G/ Network:

Data Services Dynamic	3G/VoLTE			
	BSNL 3G	Airtel 4G	JIO 4G	VIL 4G
Download Throughput (Mbps)	2.5	22.2	33.06	30.46



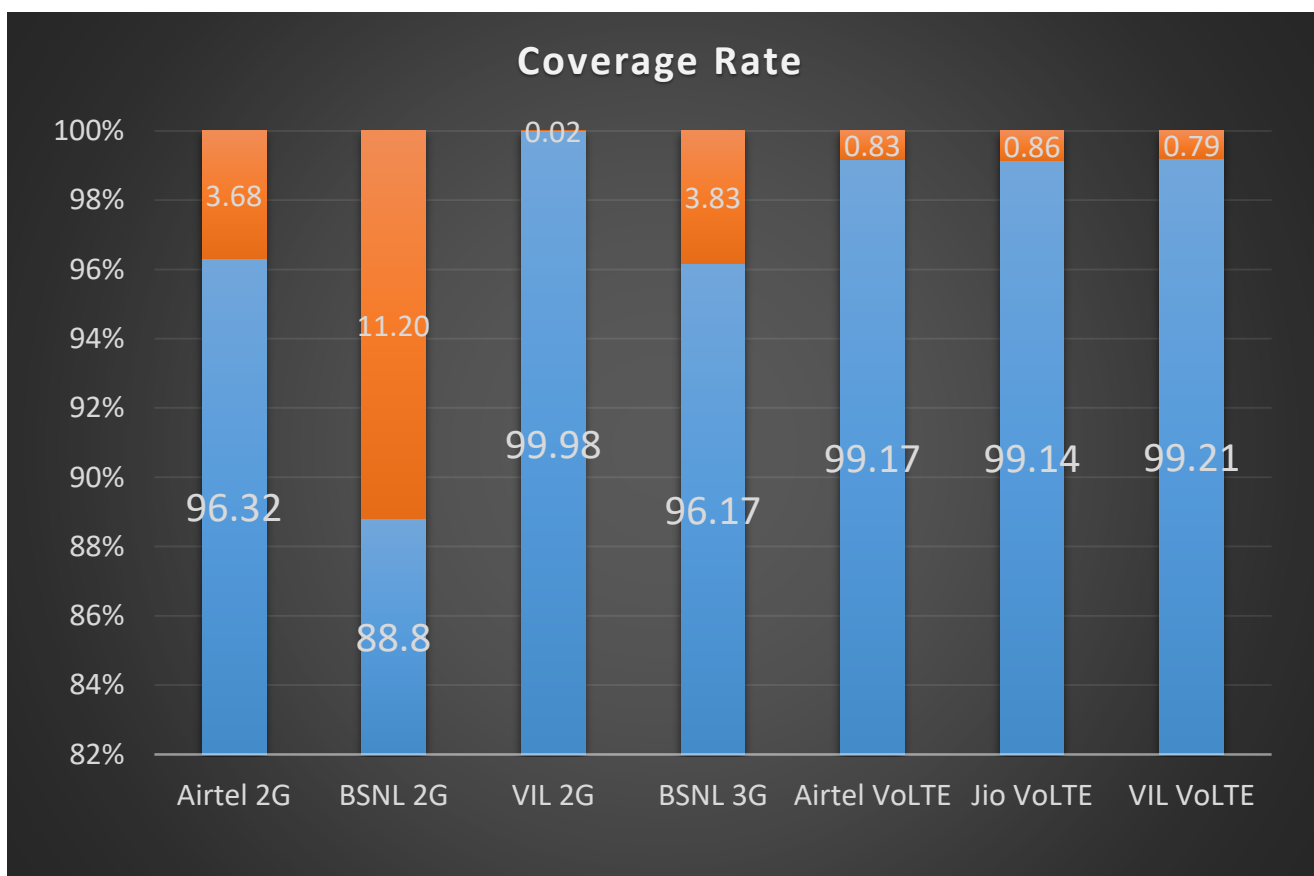
Voice Call	2G		
	Airtel	BSNL	VIL
Call Attempt	217	229	222
Blocked Call Rate (%)	0%	1.32%	0.90%
CSSR% (Accessibility)	100%	98.68%	99.10%
Drop Call Rate (%)	0%	1.32%	0%
Mobility HOSR (%)	99.59%	99.23%	99.36%
Rx Quality (%)	90.67%	95.37%	95.71%
Average CST Sec	3.42	2.7	3.5

Voice Call	3G/VoLTE			
	BSNL 3G	Airtel VoLTE	JIO VoLTE	VIL VoLTE
Call Attempt	226	224	229	223
Blocked Call Rate (%)	0%	0%	0%	0.89%
CSSR% (Accessibility)	100%	100%	100%	99.11%
Drop Call Rate (%)	1.33%	0%	0%	0%
Mobility HOSR (%)	99.97%	99%	99.39%	99.74%
Rx Quality (%)	95.32%	92.38%	90.04%	90.72%
Average CST Sec	1.9	1.32	0.7	2.1

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.

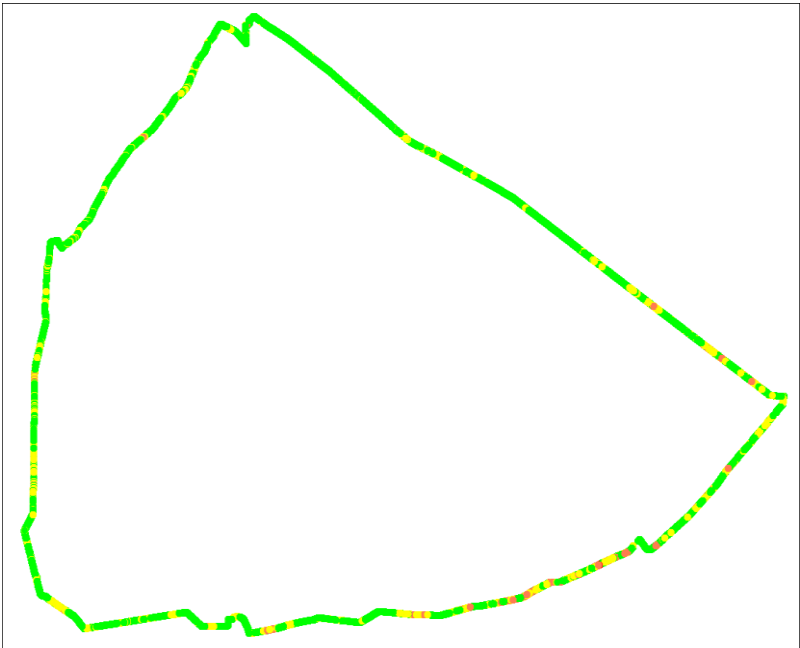
TSP	Coverage Rate %
Airtel 2G	96.32%
BSNL 2G	88.8%
VIL 2G	99.98%
BSNL 3G	96.17%
Airtel VoLTE	99.17%
Jio VoLTE	99.14%
VIL VoLTE	99.21%



TSP-AIRTEL

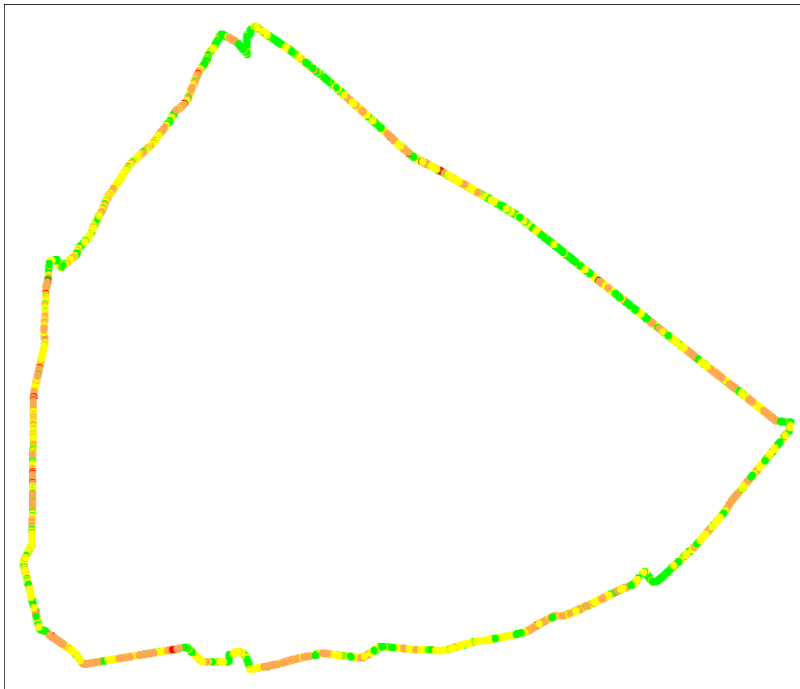
Technology	Coverage %
2G	96.32%
VoLTE	99.17%

2G



2G			
Overall RxLevel	# Samples	% PDF	Legend s
[Max, >=-75]	1383107	74.91%	
[-75, >=-85)	394971	21.39%	
[-85, >=-95)	66629	3.60%	
[-95, >=Min)	1526	.08%	
Total	1846233	100%	

VoLTE



VoLTE			
Overall RSRP	# Samples	% PDF	Legend s
[Max, >=-80]	1105200	30.74%	
[-80, >=-90)	1652876	45.99%	
[-90, >=-110)	803144	22.34%	
[-110, >=Min)	33032	.83%	
Total	3594252	100%	

Coverage Details

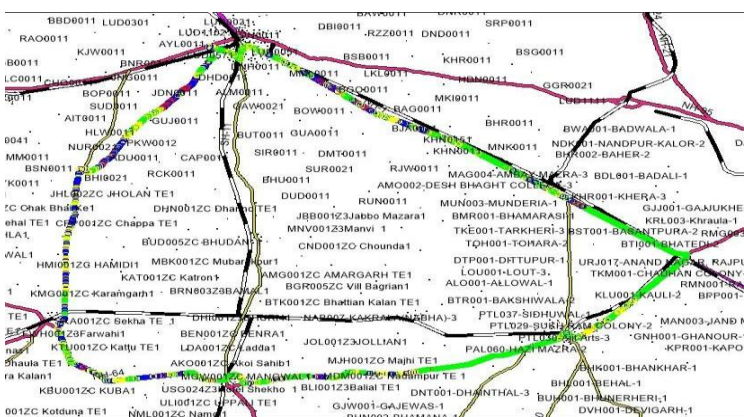
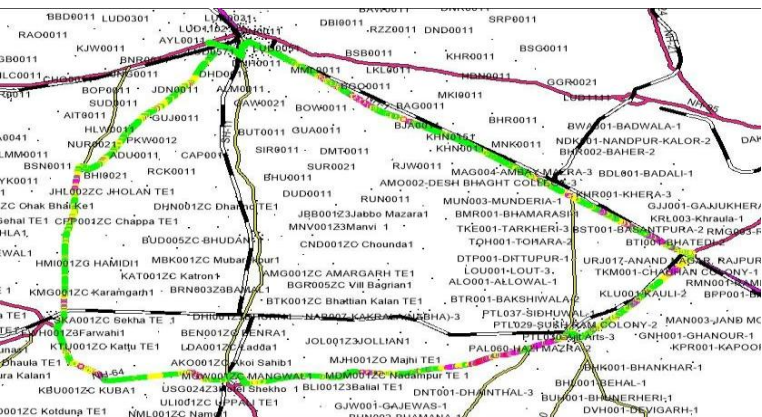
TSP- BSNL

Technology		Coverage %
2G		88.8%
3G		96.17%

2G

3G

3G

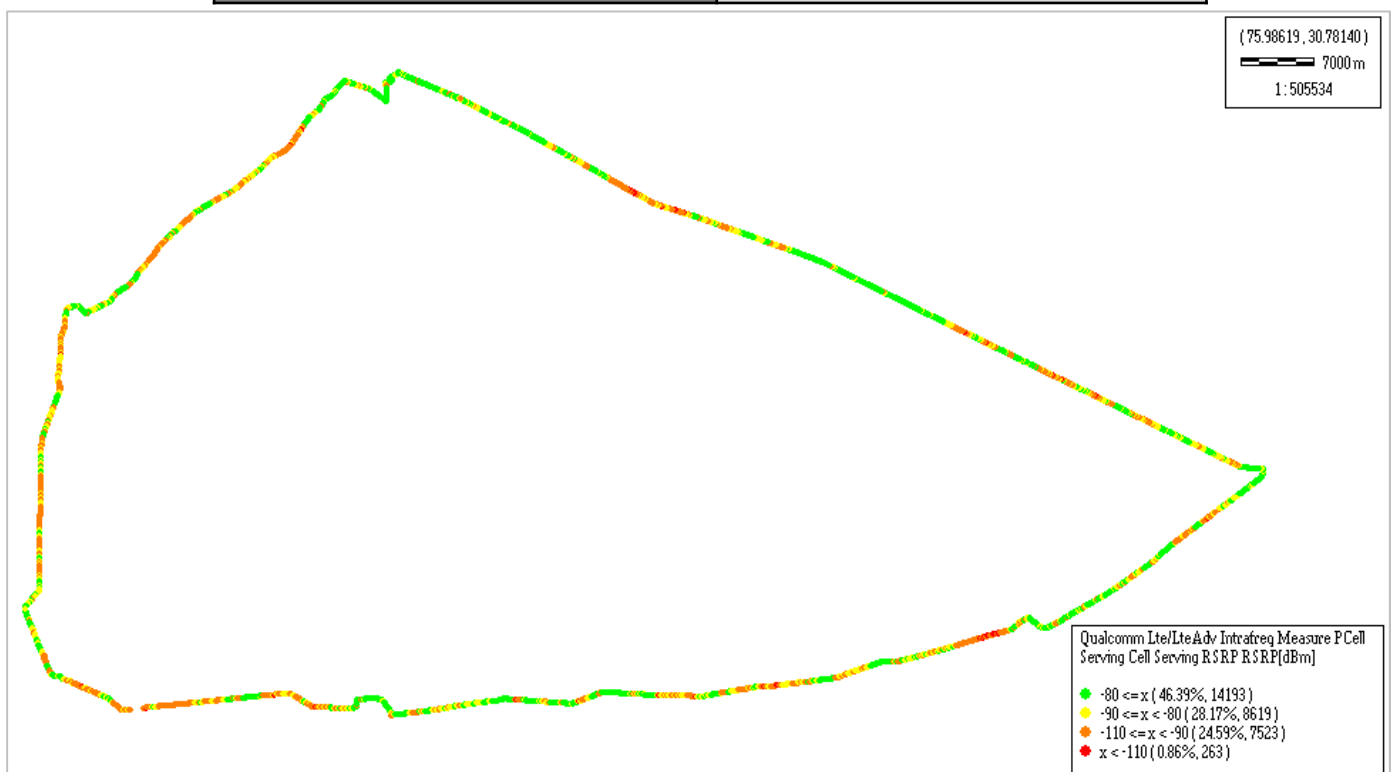


2G			
Overall RxLevel	# Samples	% PDF	Legends
[Max, >=-75]	35043	59%	
[-75, >=-85]	17706	29.80%	
[-85, >=-95]	6177	10.4%	
[-95, >=Min]	454	0.8%	
Total	59380	100%	

3G			
Overall RSCP	# Samples	% PDF	Legends
[Max, >=-70]	203143	34.61%	
[-70, >=-80]	210643	35.89%	
[-80, >=-90]	150714	25.67%	
[-90, >=Min]	22469	3.83%	
Total	397969	100%	

JIO

Technology	Coverage %
VoLTE	99.14%

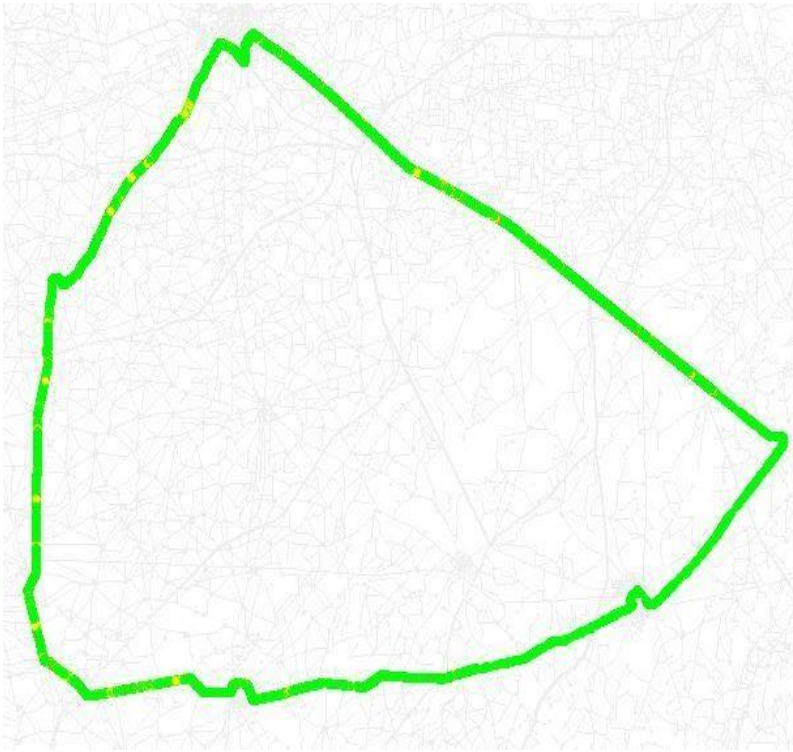


VoLTE /5G			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	14193	46.38%	
[-80, >=-90)	8619	28.17%	
[-90, >=-110)	7523	24.59%	
[-110, >=Min)	263	0.86%	
Total	30598	100%	

VIL

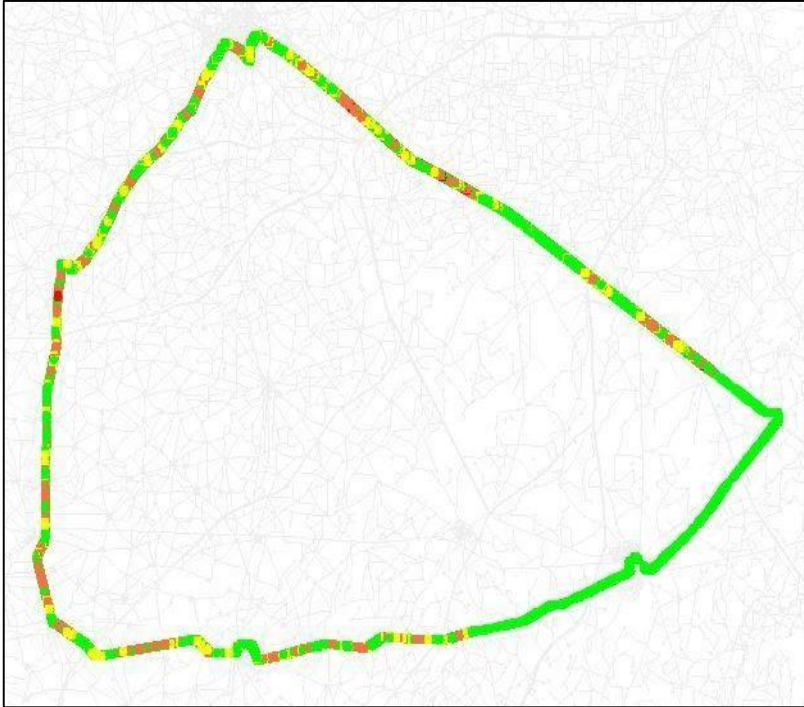
2G

Technology	Coverage Rate %
2G	99.98%
VoLTE	99.21%



2G			
Overall Rx Level	# Samples	% PDF	Legends
[Max, >=-75]	6579900	92.38%	
[-75, >=-85)	471540	6.62%	
[-85, >=-95)	70031	0.98%	
[-95, >=Min)	1182	0.02%	
Total	7122653	100 %	

VoLTE

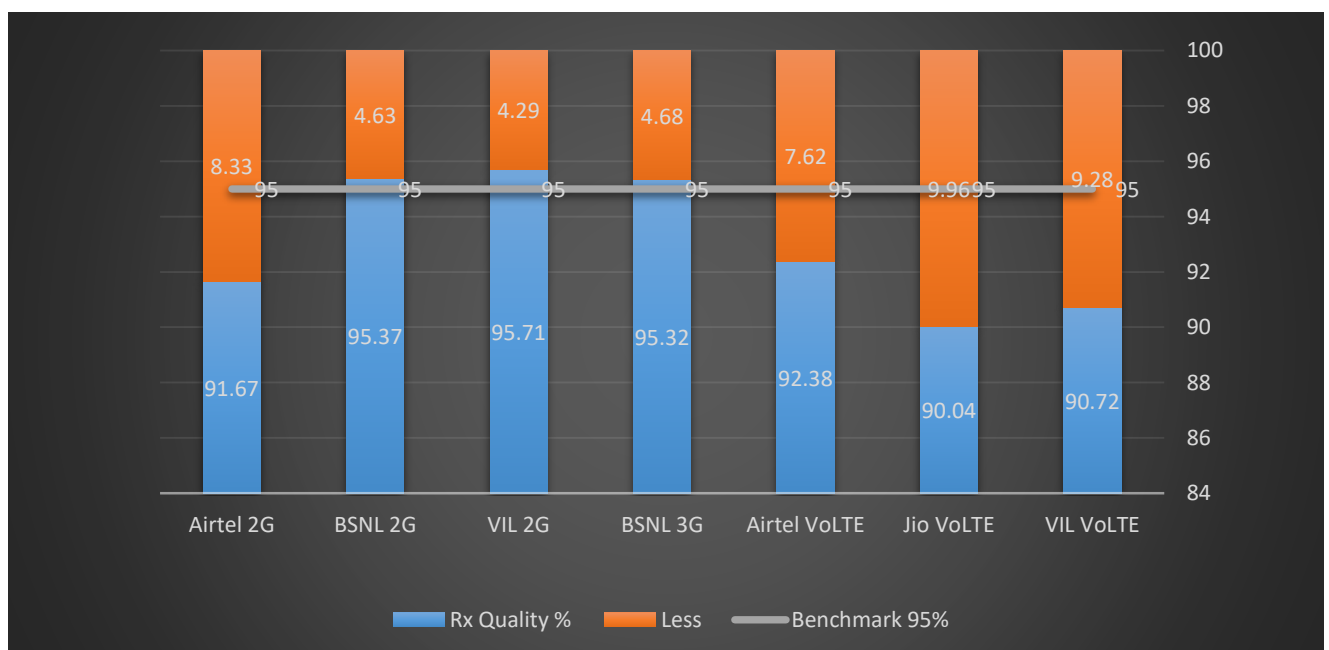


VoLTE /5G			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	3652732	51.28%	
[-80, >=-90)	1692100	23.76%	
[-90, >=-110)	1721444	24.17%	
[-110, >=Min)	56377	0.79%	
Total	5572653	100%	

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. The benchmark should usually be $\geq 95\%$.

<u>TSP</u>	Rx Quality %
Airtel 2G	90.67%
BSNL 2G	95.37%
VIL 2G	95.71%
BSNL 3G	95.32%
Airtel VoLTE	92.38%
Jio VoLTE	90.04%
VIL VoLTE	90.72%

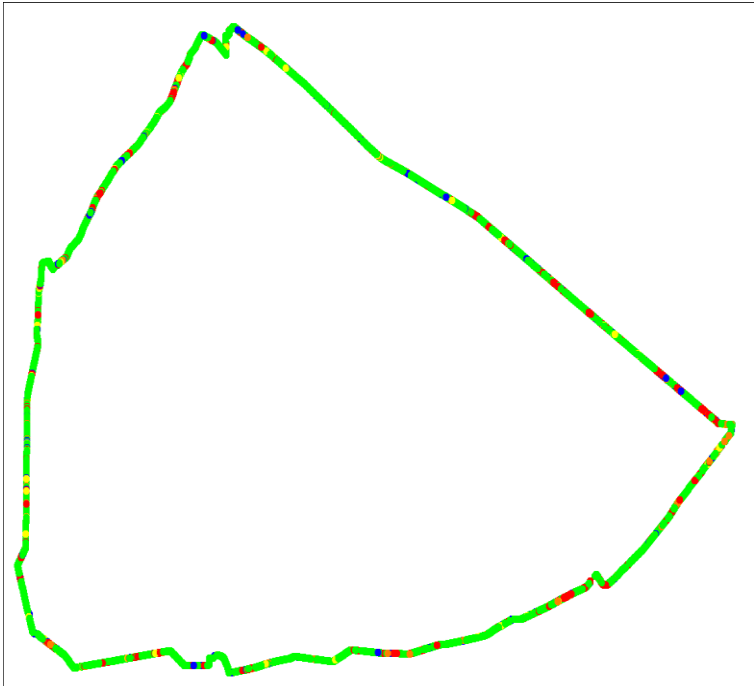


II. Quality Details

Airtel

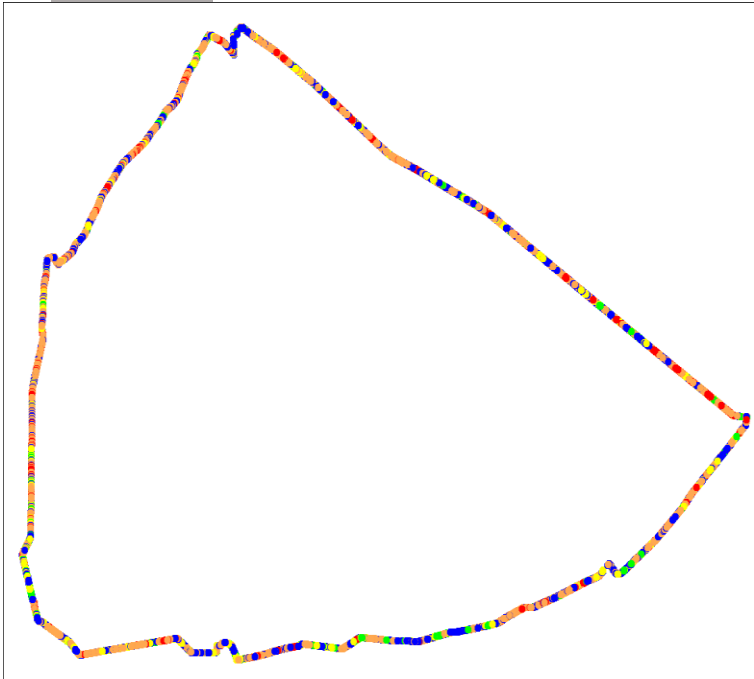
Technology	Rx Quality %
2G	90.67%
VoLTE	92.38%

2G



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	1478119	80.06%	
(2, <=3)	60210	3.27%	
(3 , <=4)	68448	3.70%	
(4 , <=5)	67168	3.64%	
(5 , <=Max)	172288	9.33%	
Total	1846233	100%	

VoLTE



Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	273992	7.62%	
(0, <=5)	1722905	47.95%	
(5, <=10)	900313	25.04%	
(10, <=15)	484632	13.48%	
(15, <=Max)	212454	5.91%	
Total	3594296	100%	

II. Quality Details

BSNL

2G

Technology

Rx Quality %

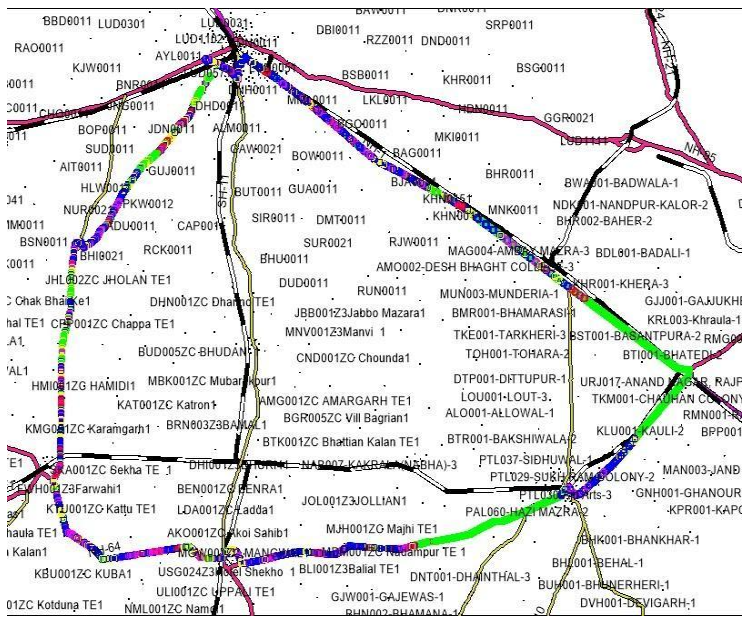
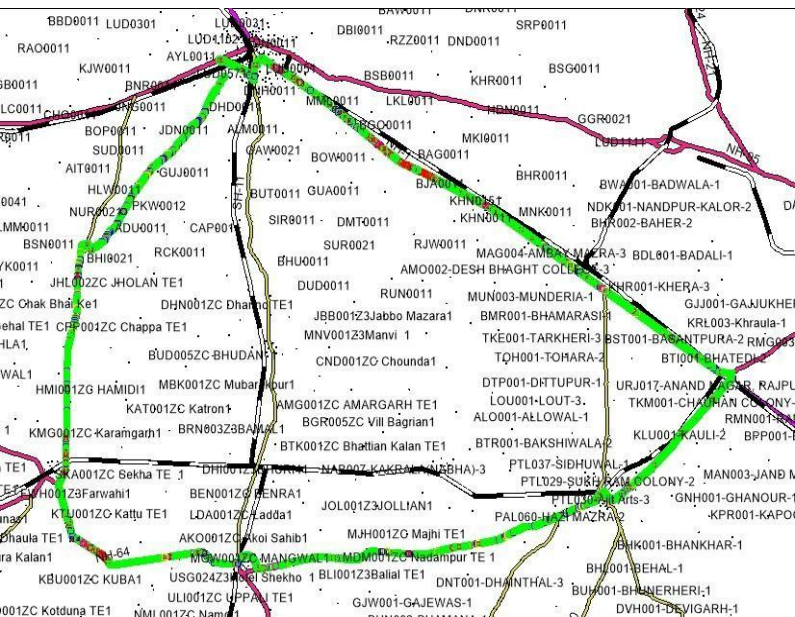
2G

95.37%

3G

95.32%

3G



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	48536	88.11%	
(2, <=3)	1165	2.12%	
(3, <=4)	1298	2.36%	
(4, <=5)	1534	2.78%	
(5, <=Max)	2552	4.63%	
Total	55085	100%	

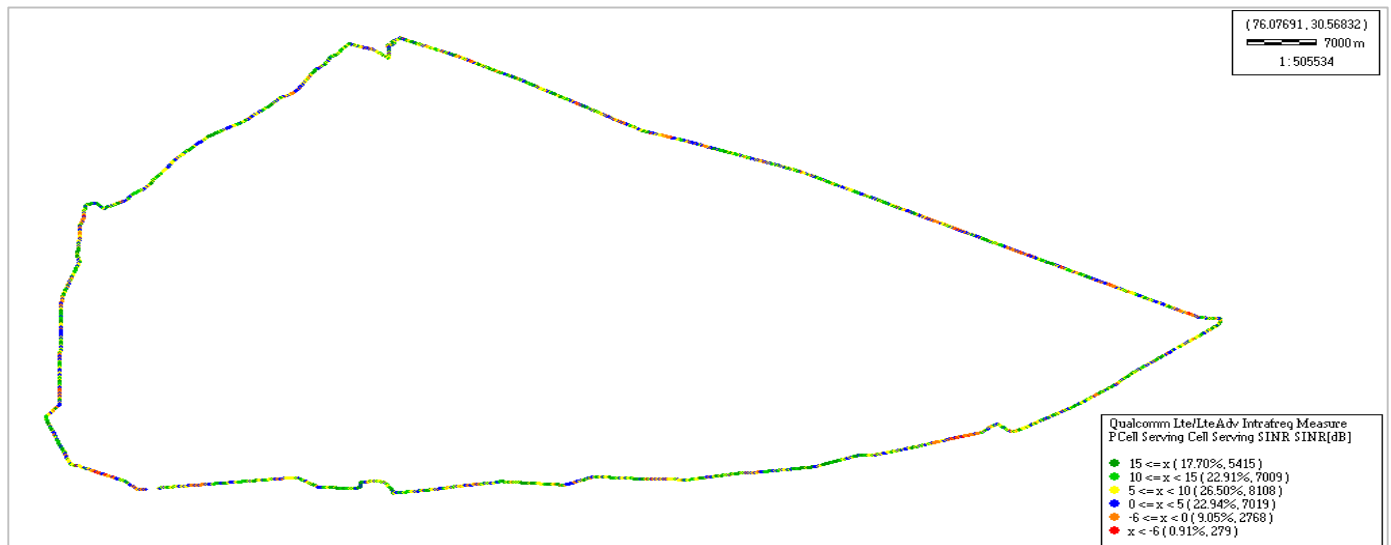
Overall Ec/No	# Samples	% PDF	Legends
(Max, <=-6)	59487	13.44%	
(-6, <=-9)	93337	21.08%	
(-9, <=-11)	143897	32.50%	
(-11, <=-14)	125328	28.30%	
(-14, <= Min)	20743	4.68%	
Total	442792	100%	

II. 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	90.04%



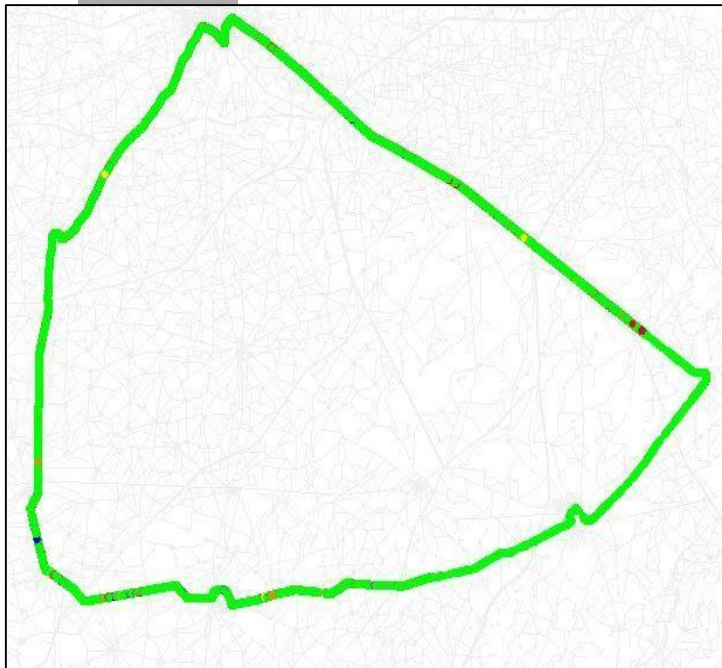
Overall SINR	# Samples	% PDF	Legends
(Min, ≤ -6)	279	0.91%	
(-6, ≤ 0)	2768	9.05%	
(0, ≤ 5)	7019	22.94%	
(5, ≤ 10)	8108	26.50%	
(10, ≤ 15)	7009	22.91%	
(15, $\leq \text{Max}$)	5415	17.69%	
Total	30598	100%	

II. Quality Details

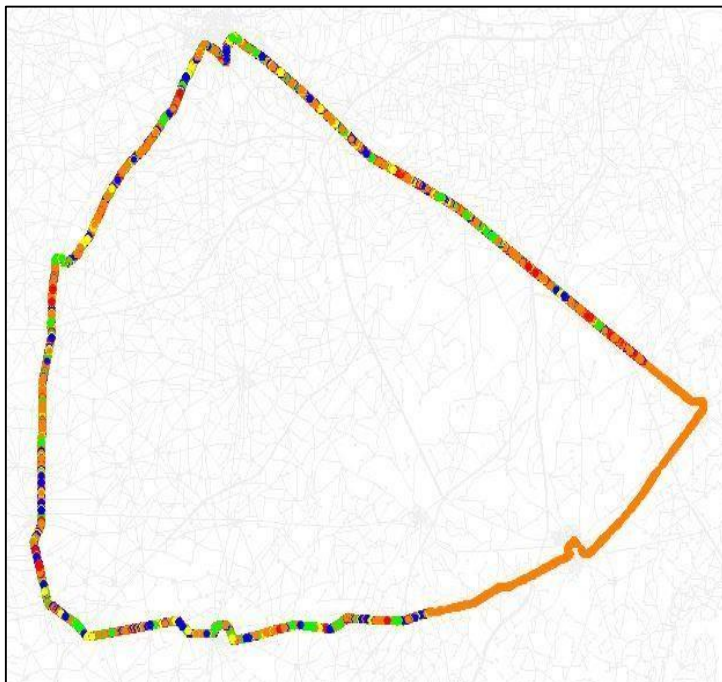
VIL

Technology	Rx Quality %
2G	95.71%
4G	90.72%

2G



VolTE



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	6673695	93.70%	
(2, <=3)	42851	0.60%	
(3, <=4)	46528	0.65%	
(4, <=5)	54111	0.76%	
(5, <=Max)	305468	4.29%	
Total	7122653	100%	

Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	660649	9.28%	
(0, <=5)	2891599	40.60%	
(5, <=10)	1280520	17.98%	
(10, <=15)	1102392	15.48%	
(15, <=Max)	1187493	16.66%	
Total	7122653	100%	

III. Technology Details

TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	99.00%
Airtel VoLTE	100%
Jio VoLTE	100%
VIL VoLTE	100%

