Operator Assisted Drive Test Report

Jind-Gohana-Sonipat-Jhajjar Highway
5th June 2024
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 in Jind-Gohana-Sonipat-Jhajjar Highway from 9:00 AM to 8:00 PM during 5th June 2024. The drive test covered drive route of 160 Kms Bhiwani SSA from 5th June. Approximately 150 calls were made for each of the four networks: three 2G networks, one 3G networks and three LTE networks covering four TSPs.

Overview   Voice Summary   Data Summary

Overview

Regional Office, TRAI Jaipur conducted Operator Assisted Drive Test on 5th June 2024 covering Jind To Jhajjar Highway via Gohana & Sonipat. The performance of All 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 160 KMs. 150 calls were made three 2G (Lock Mode) networks, two 3G (Dual mode) networks and three VoLTE /5G networks covering 4 unique TSPs.

Data Tests:

Dynamic data test was conducted for ….. 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

Static data tests:

| 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 TSP-VIL

Date	Test Scenario	Area to be Covered
05-JUNE-2024	2G/3G/4G Voice and 3G/4G/5G Dynamic Data	**Starting Point Jind bypass at 10;30 AM Jind ,Gohana,Sonipat,JHAJJAR City**

Voice Calls

QoS compliance of the TSPs on **Jind to Gohana Highway &Sonipat to Jhajjar Highway** for Voice across technologies 2G/3G/4G-VoLTE:
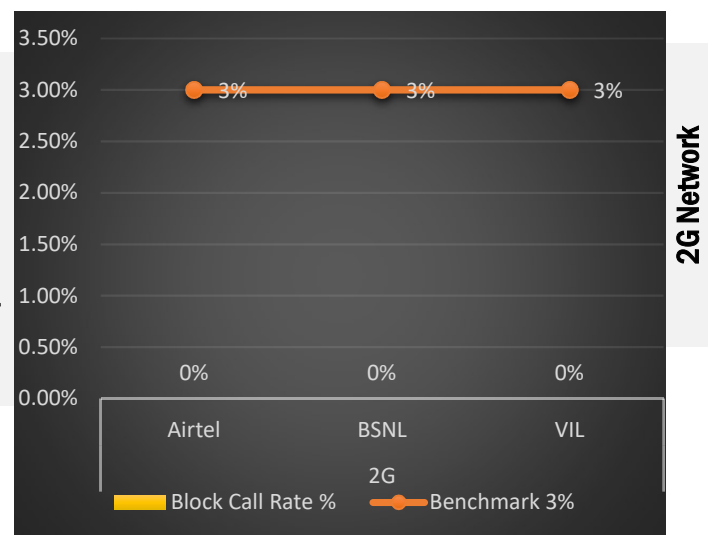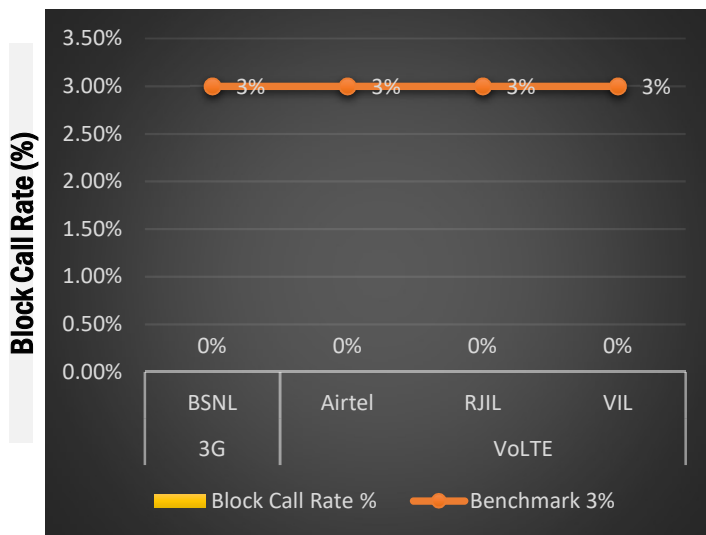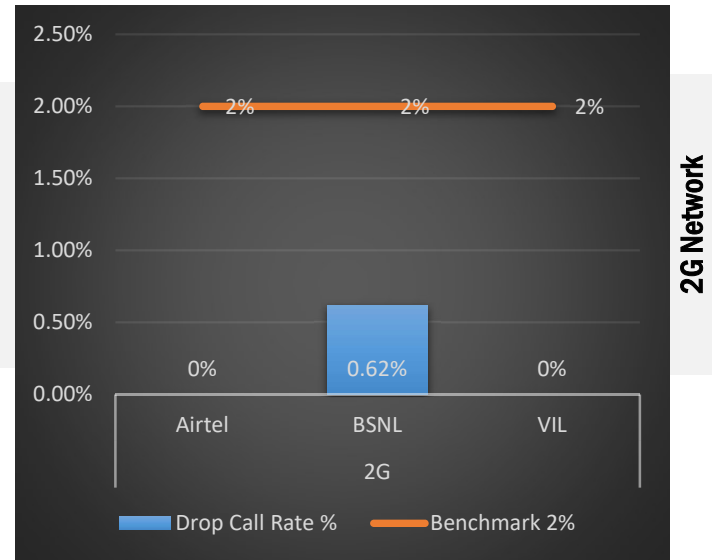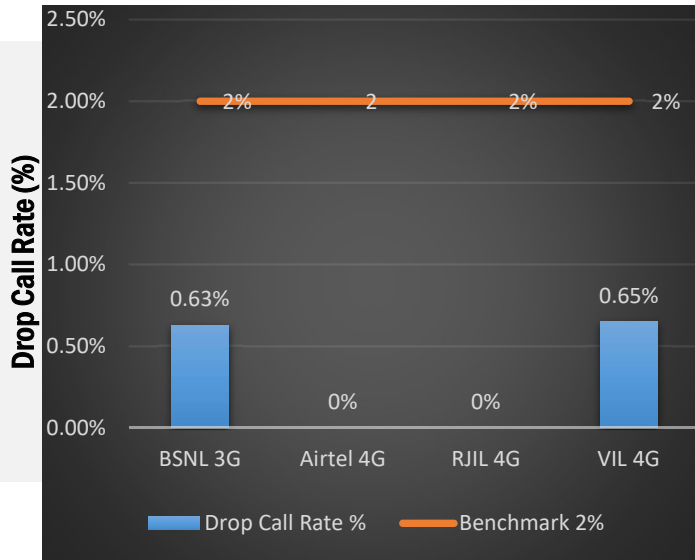
KPIs	2G			3G	4G		
	Airtel	**BSNL**	**VIL**	**BSNL**	**Airtel**	**RJIL**	**VIL**
Drop Call Rate %	0%	0.62%	0%	0.63%	0%	0%	0.65%
Block Call Rate %	0%	0%	0%	0%	0%	0%	0%

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

Coverage

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

TSPs	2G		
	Airtel	BSNL	VIL
Coverage %	97.30%	85.98%	90.25%

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

TSPs	3G
	BSNL
Coverage %	85%

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

TSPs	VoLTE		
	Airtel	JIO	VIL
Coverage %	99%	99.64%	95.89%

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

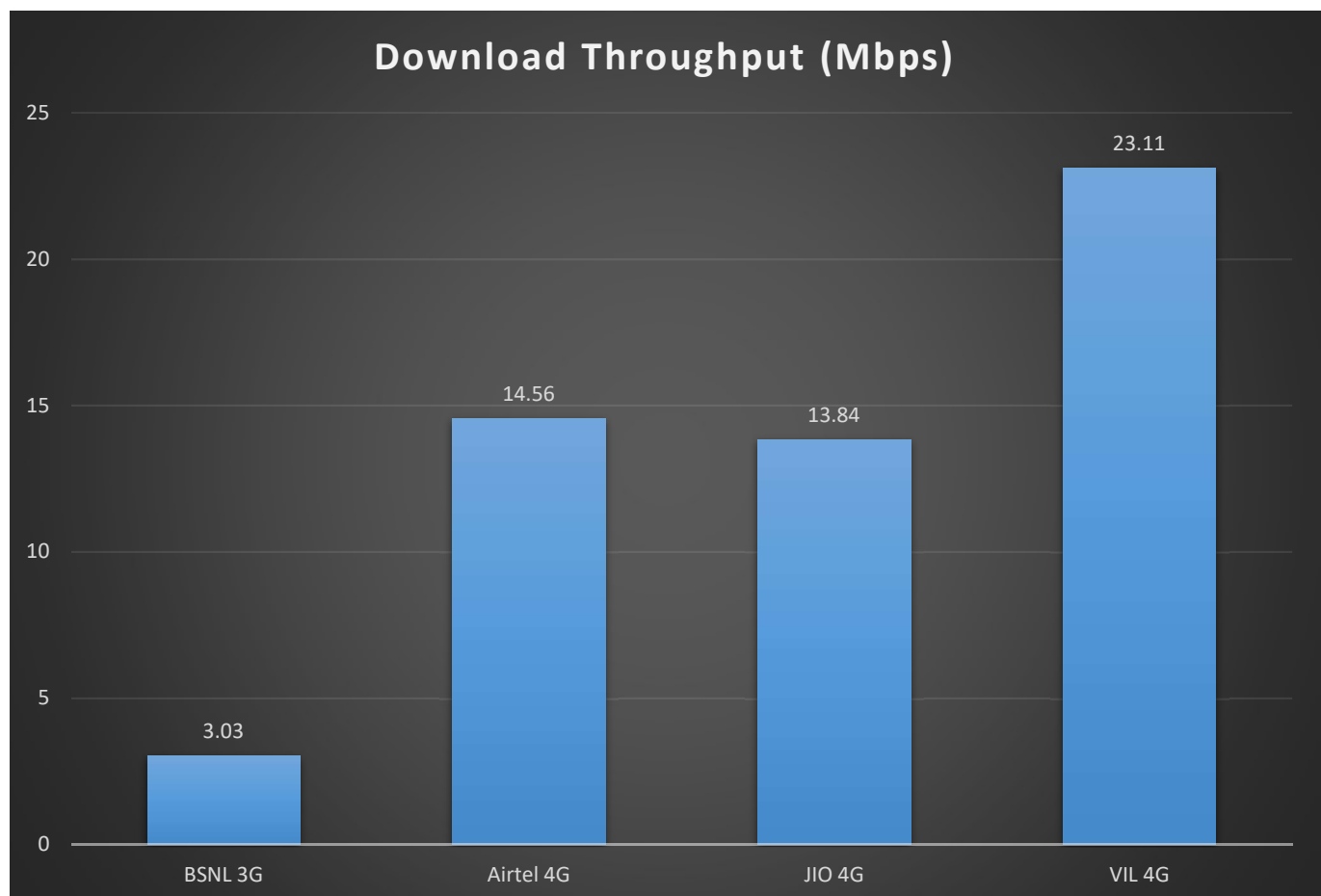| TSPs	3G	VoLTE		
	BSNL	Airtel	JIO	VIL
Time spent on 3G/4G Network %	76.17%	100%	100%	100%

Data Services Dynamic

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)	3.03	14.56	13.84	23.11

Download Throughput (Mbps)

Summary

Voice Call	2G		
	Airtel	**BSNL**	**VIL**
Call Attempt	115	161	134
Blocked Call Rate (%)	0.90%	0%	0%
CSSR% (Accessibility)	100%	100%	100%
Drop Call Rate (%)	0%	0.62%	0%
Mobility HOSR (%)	97.30%	98.21%	97.61%
Rx Quality (%)	96.20%	96.82%	97.44%
Average CST Sec	8.9	3.41	3.52

Voice Call	3G/VoLTE			
	BSNL 3G	**Airtel VoLTE**	**JIO VoLTE**	**VIL VoLTE**
Call Attempt	160	119	150	153
Blocked Call Rate (%)	0%	0%	0%	0%
CSSR% (Accessibility)	100%	100%	100%	100%
Drop Call Rate (%)	0.63%	0%	0%	0.65%
Mobility HOSR (%)	97.82%	99%	99.70%	98.77%
Rx Quality (%)	95.32%	96%	**90.22%**	**93.97%**
Average CST Sec	4.17	1.2	0.48	0.63

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 ≥ -85 dBm, RSCP is ≥ -90 dBm & RSRP ≥ -110dBm. The details are as follows.

TSP	Coverage Rate %
Airtel 2G	97.3%
BSNL 2G	85.98%
VIL 2G	90.25%
BSNL 3G	85%
Airtel VoLTE	99%
Jio VoLTE	99.21%
VIL VoLTE	95.89%

Coverage Rate
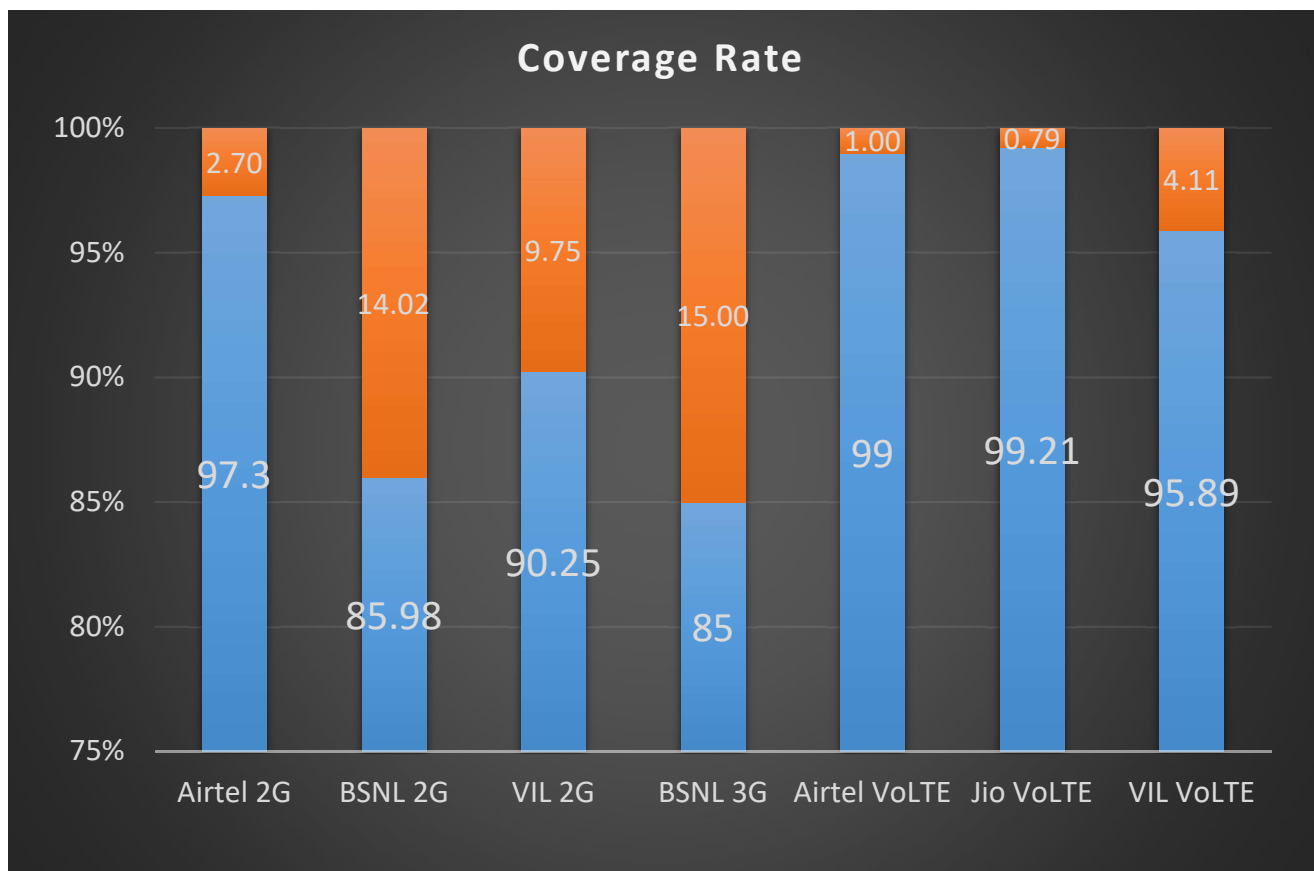
TSP-AIRTEL

Technology	Coverage %
2G	97.3%
VoLTE	99%

2G
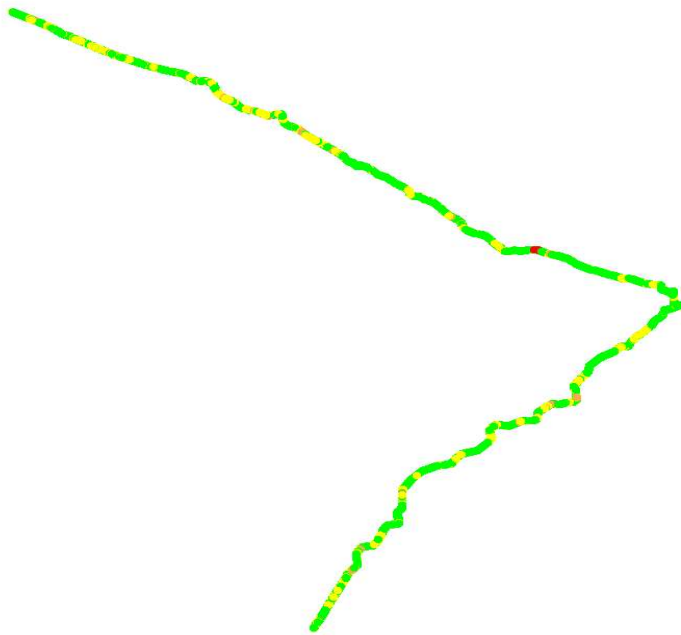
2G			
Overall RxLevel	**# Samples**	**% PDF**	**Legends**
[Max, >=-75]	587349	71.3%	🟩
[-75, >=-85)	213976	26.0%	🟨
[-85, >=-95)	20477	2.5%	🟧
[-95, >=Min)	1699	0.2%	🟥
Total	823501	100.0%	
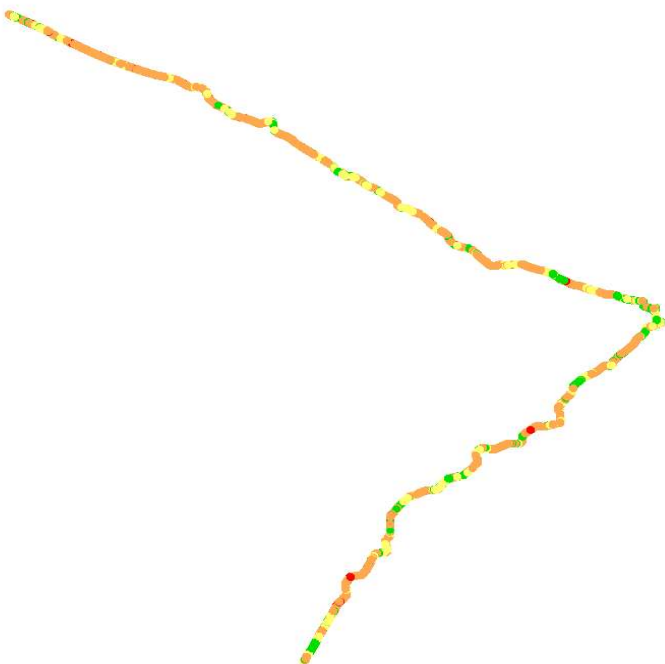
VoLTE

VoLTE			
Overall RSRP	**# Samples**	**% PDF**	**Legends**
[Max, >=-80]	234028	15%	🟩
[-80, >=-90)	451702	29%	🟨
[-90, >=-110)	868231	55%	🟧
[-110, >=Min)	18852	1%	🟥
Total	1572813	100%	

TSP- BSNL

Technology	Coverage %
2G	85.98%
3G	85.0%

2G

3G

2G
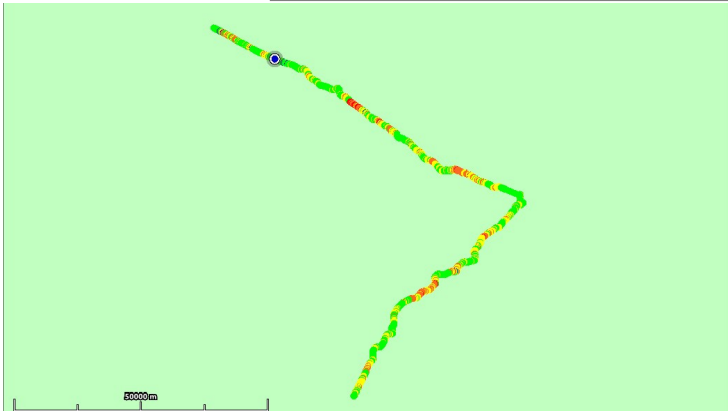
Overall RxLevel	# Samples	% PDF	Legends
[Max, >=-75]	7710	54.61%	
[-75, >=-85)	4428	31.37%	
[-85, >=-95)	1853	13.13%	
[-95, >=Min)	126	0.90%	
Total	14117	100%	

3G

Overall RSCP	# Samples	% PDF	Legends
[Max, >=-70]	1976	21.91%	
[-70, >=-80)	3029	33.59%	
[-80, >=-90)	2661	29.50%	
[-90, >=Min)	1353	15.00%	
Total	9019	100%	

JIO

Technology	Coverage %
VoLTE	**99.21%**

Qualcomm Lte/LteAdv Intrafreq Measure PCell
Serving Cell Serving RSRP RSRP[dBm]

● -80 <= x (44.90%, 6313)
● -90 <= x < -80 (29.49%, 4146)
● -110 <= x < -90 (24.83%, 3491)
● x < -110 (0.79%, 111)
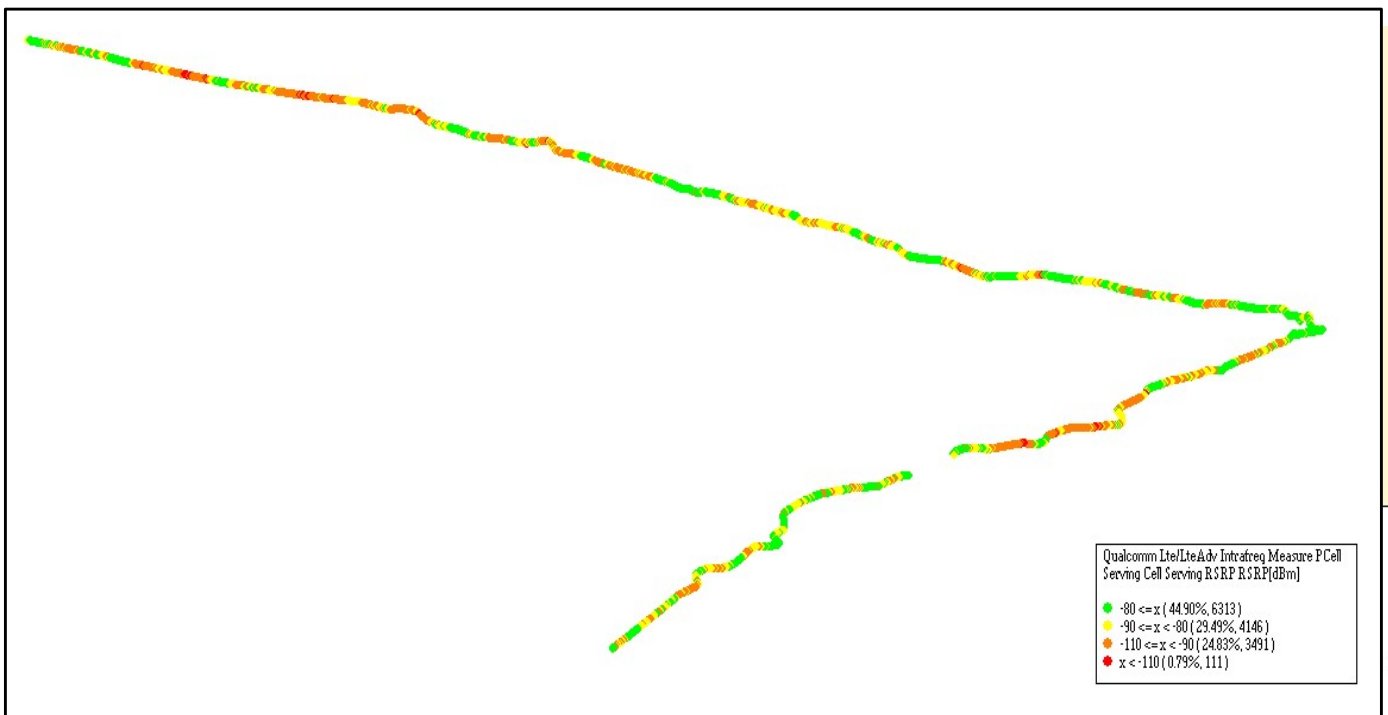
VoLTE /5G			
Overall RSRP	**# Samples**	**% PDF**	**Legends**
[Max, >=-80]	**6313**	**44.90%**	🟩
[-80, >=-90)	**4146**	**29.49%**	🟨
[-90, >=-110)	**3491**	**24.83%**	🟧
[-110, >=Min)	**111**	**.79%**	🟥
Total	**14061**	**100%**	

VIL

Technology	Coverage Rate %
2G	90.25%
VoLTE	95.89%

2G
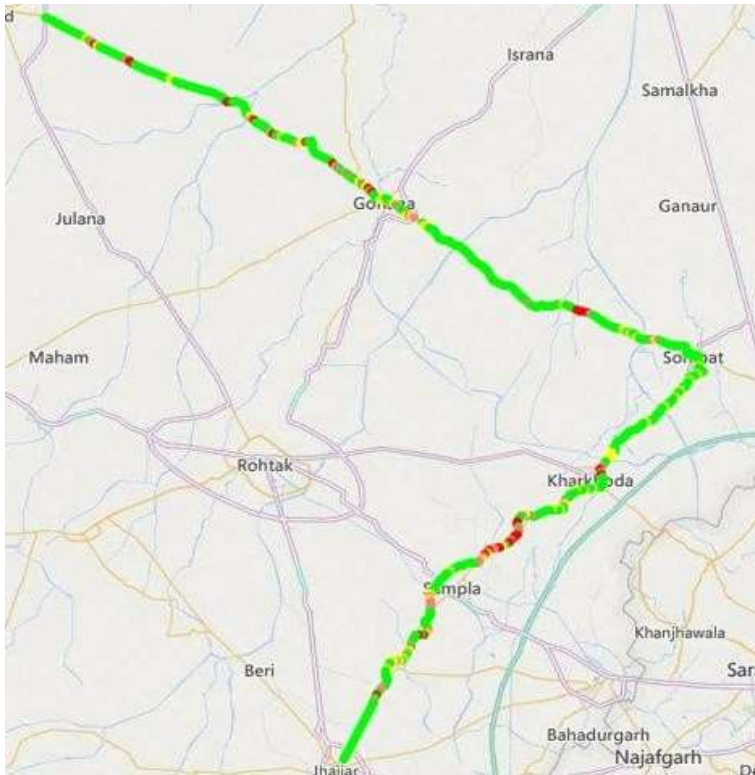
2G			
Overall Rx Level	# Samples	% PDF	Legends
[Max, >=-75]	5598	78.01%	
[-75, >=-85)	878	12.24%	
[-85, >=-95)	499	6.95%	
[-95, >=Min)	201	2.8%	
Total	7176	100%	

VoLTE
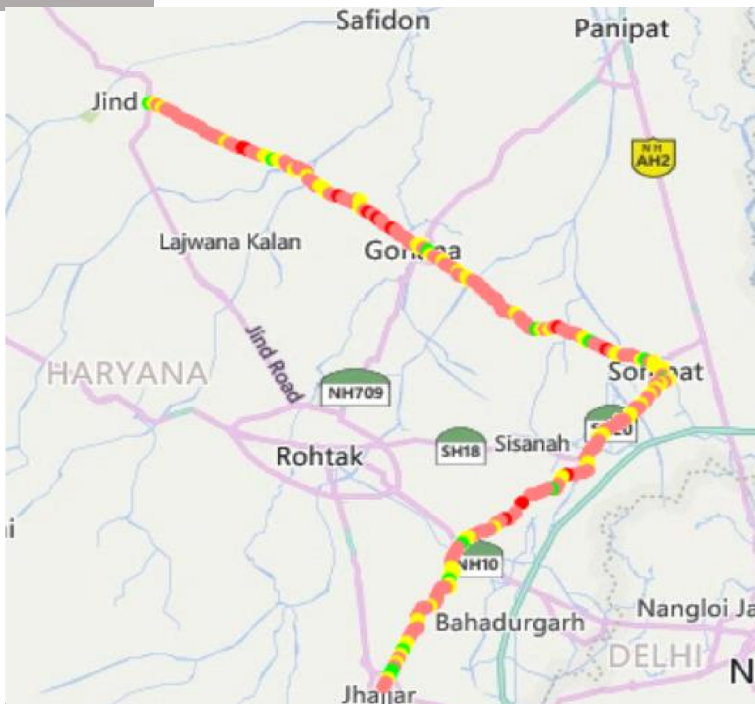
VoLTE /5G			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	873	11.22%	
[-80, >=-90)	1921	24.69%	
[-90, >=-110)	4668	59.98%	
[-110, >=Min)	320	4.11%	
Total	7782	100%	

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 ≥ 95%.

TSP	Rx Quality %
Airtel 2G	**96.2%**
BSNL 2G	**96.82%**
VIL 2G	**97.44%**
BSNL 3G	**95.32%**
Airtel VoLTE	**96%**
Jio VoLTE	**90.22%**
VIL VoLTE	**93.97%**
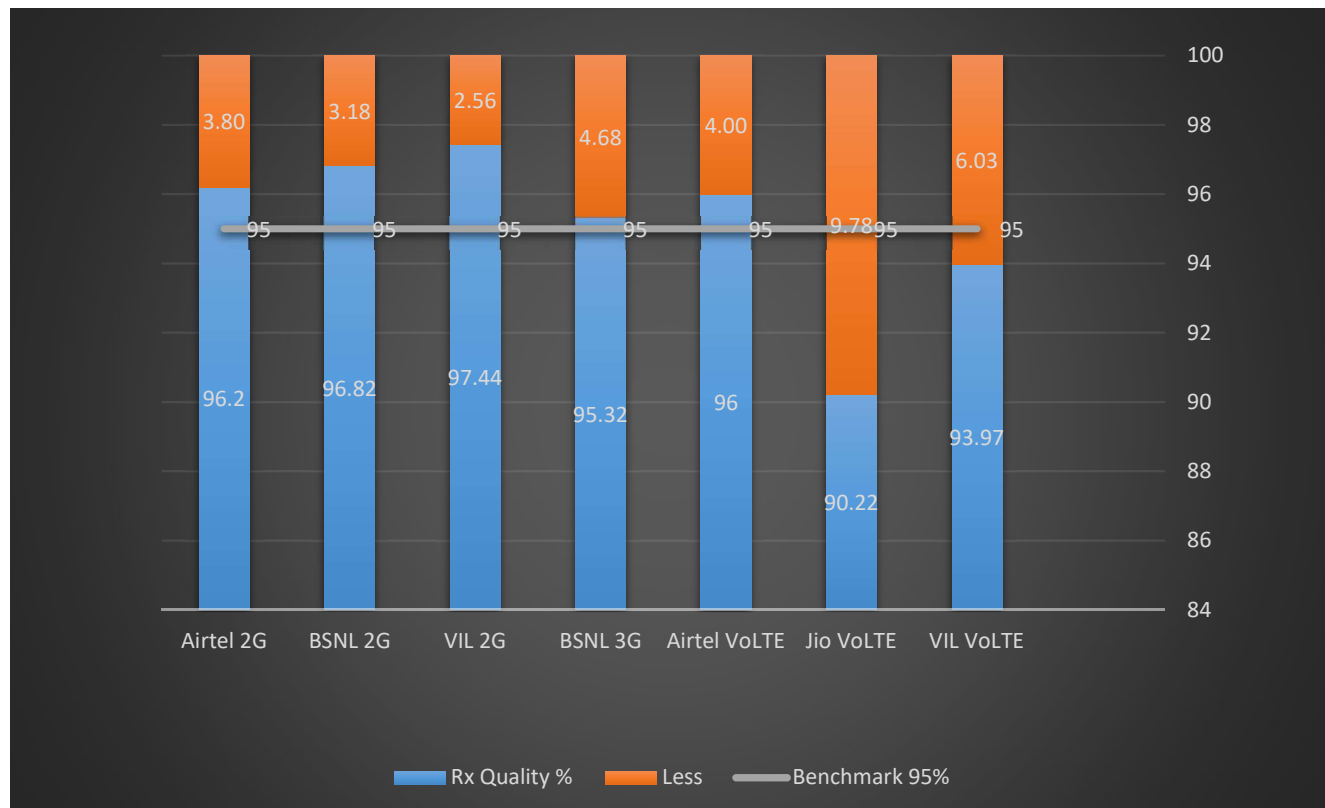
Airtel

Technology	Rx Quality %
2G	96.2%
VoLTE	96%

2G
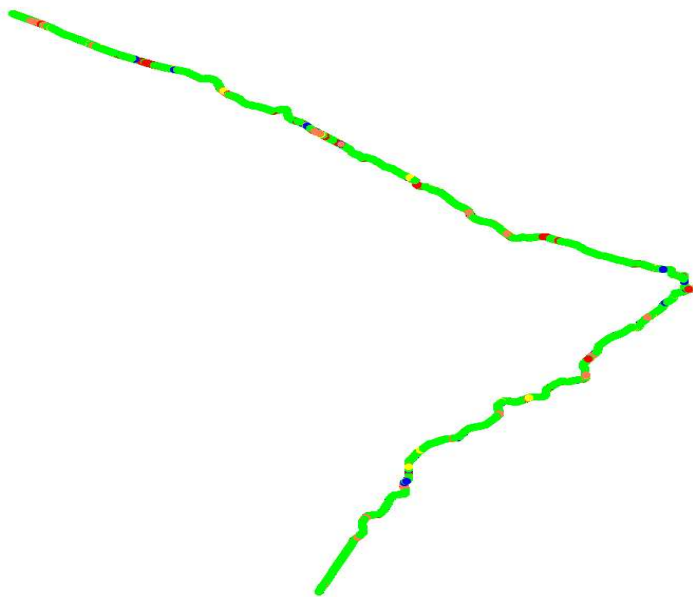
Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	691276	83.9%	
(2, <=3)	20680	2.5%	
(3 , <=4)	23212	2.8%	
(4 , <=5)	57169	6.9%	
(5 , <=Max)	31164	3.9%	
Total	823501	100.0%	

VoLTE
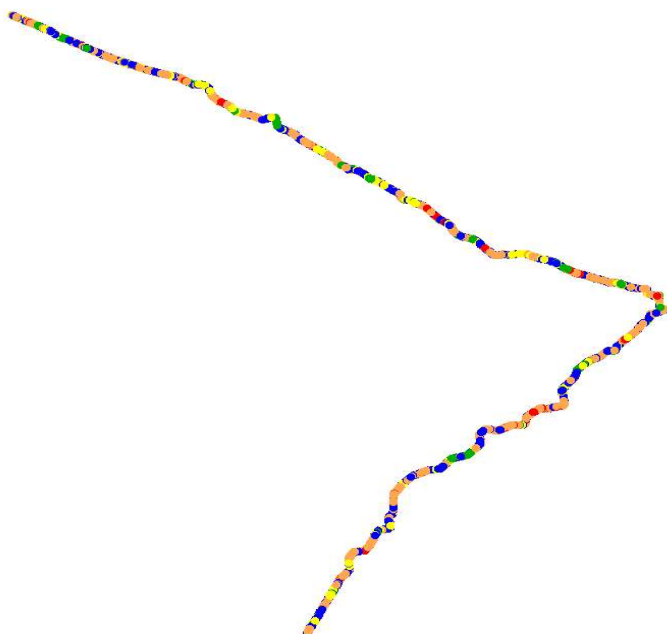
Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	56170	4%	
(0, <=5)	716759	48%	
(5, <=10)	387842	26%	
(10, <=15)	215073	14%	
(15, <=Max)	126316	8%	
Total	1502160	100%	

BSNL

Technology	Rx Quality %
2G	96.82%
3G	95.32%

2G

3G
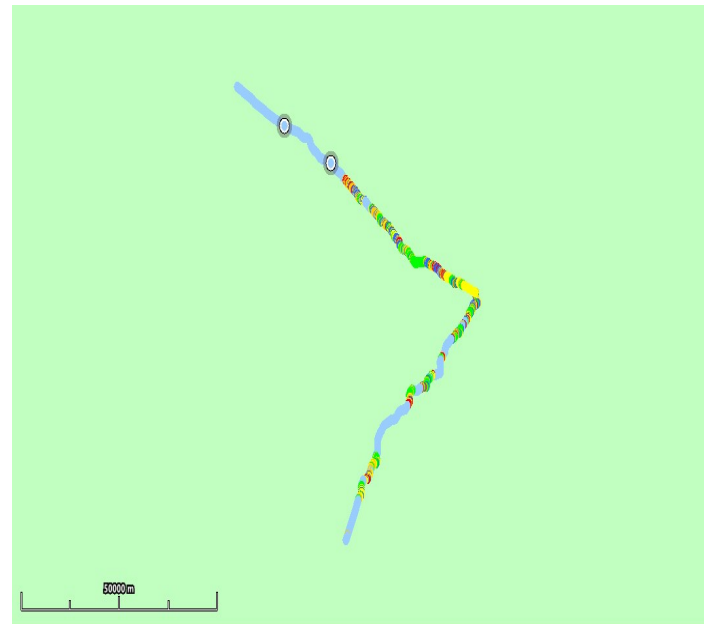
Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	10810	92.73	
(2, <=3)	178	1.53	
(3 , <=4)	166	1.43	
(4 , <=5)	132	1.13	
(5 , <=Max)	370	3.18	
Total	11656	100%	

Overall Ec/No	# Samples	% PDF	Legends
(Max, <=-6)	2894	32.10	
(-6, <=-9)	2193	24.33	
(-9, <=-11)	2065	22.91	
(-11, <=-14)	1441	15.98	
(-14, <= Min)	422	4.68	
Total	8593	100%	

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 ≥ 95%.

JIO

Technology	Rx Quality %
VoLTE	90.22%

Qualcomm Lte/LteAdv Intrafreq Measure
PCell Serving Cell Serving SINR SINR[dB]

- 15 <= x (23.42%, 3293)
- 10 <= x < 15 (20.67%, 2906)
- 5 <= x < 10 (25.33%, 3562)
- 0 <= x < 5 (20.80%, 2925)
- x < 0 (9.78%, 1375)
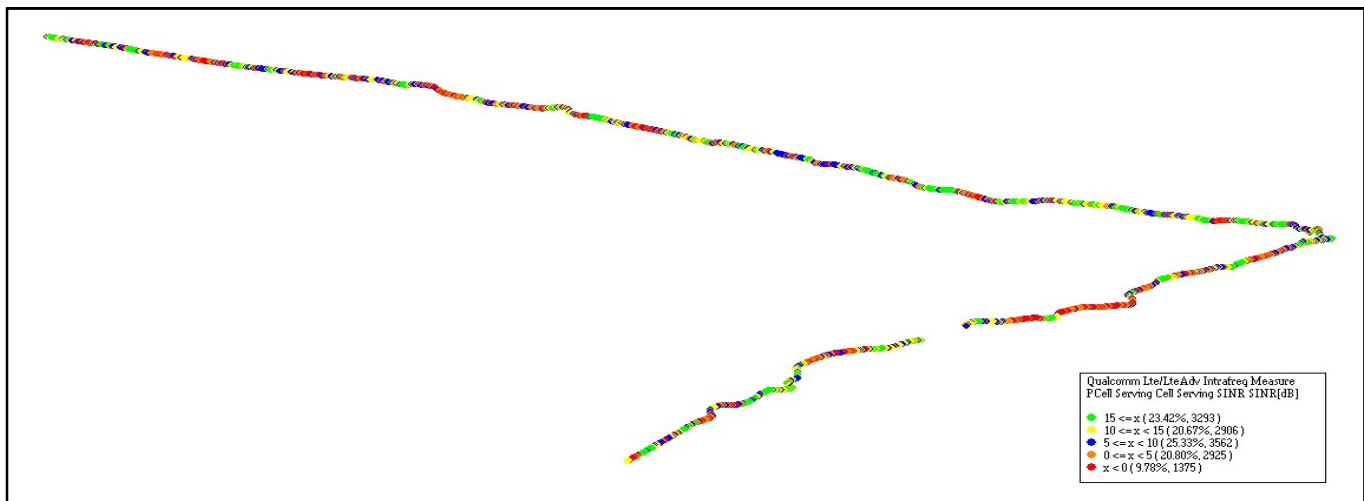
Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	1375	9.78%	
(0, <=5)	2925	20.80%	
(5, <=10)	3562	25.33%	
(10, <=15)	2906	20.67%	
(15, <=Max)	3293	23.42%	
Total	14061	100%	

VIL

Technology	Rx Quality %
2G	97.44%
4G	93.97%

2G
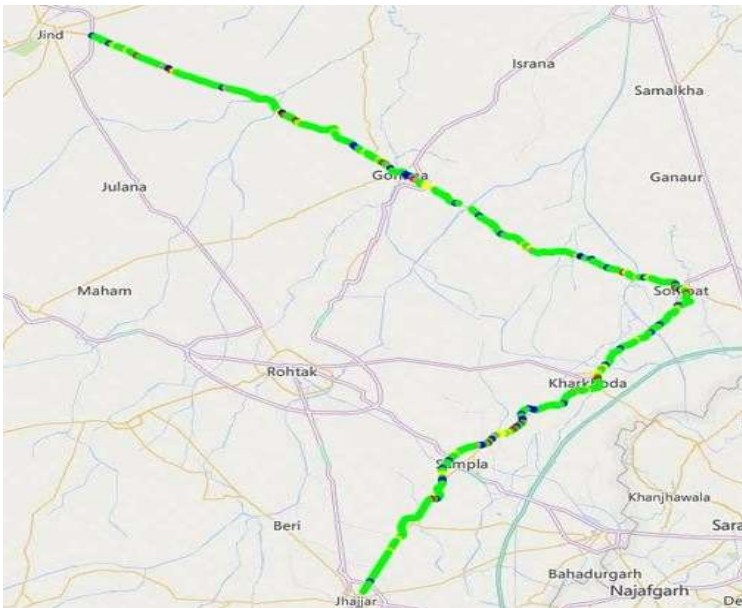
Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	5480	84.99%	
(2, <=3)	321	4.98%	
(3 , <=4)	329	5.1%	
(4 , <=5)	153	2.37%	
(5 , <=Max)	165	2.56%	
Total	6448	100%	
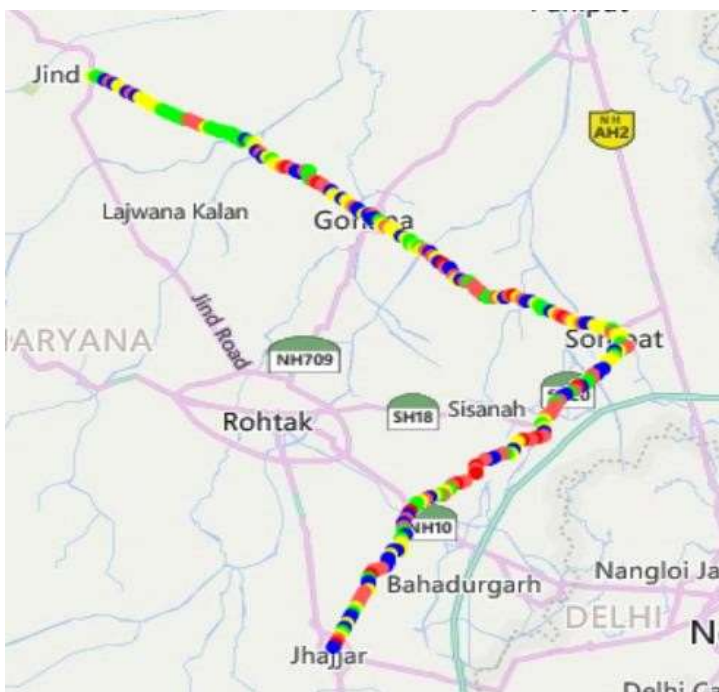
VoLTE

Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	465	6.03%	
(0, <=5)	1958	25.42%	
(5, <=10)	1845	23.95%	
(10, <=15)	1847	23.98%	
(15, <=Max)	1588	20.62%	
Total	7703	100%	

TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	76.17%
Airtel VoLTE	100%
Jio VoLTE	100%
VIL VoLTE	100%

Time Spent On 3G/4G