



Operator Assisted Drive Test Report

Jaipur to Dholpur Highway via Bharatpur

25th & 27th Jun'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 on Jaipur to Bharatpur to Dholpur Highway from 09:00 AM to 07:00 PM on 25th & 27th Jun'2024. The drive test covered drive route of 280 KMs over a period of 2 days. Approximately 205 calls were made for each of the 7 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 25th & 27th Jun'2024 covering Jaipur to Bharatpur to Dholpur Highway. The performance of Airtel, BSNL, Vodafone Idea and Jio was monitored across various technologies (2G, 3G 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 280 KMs. Approximately 205 calls were made for each of the Jio 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 280 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 File Size- 40MB

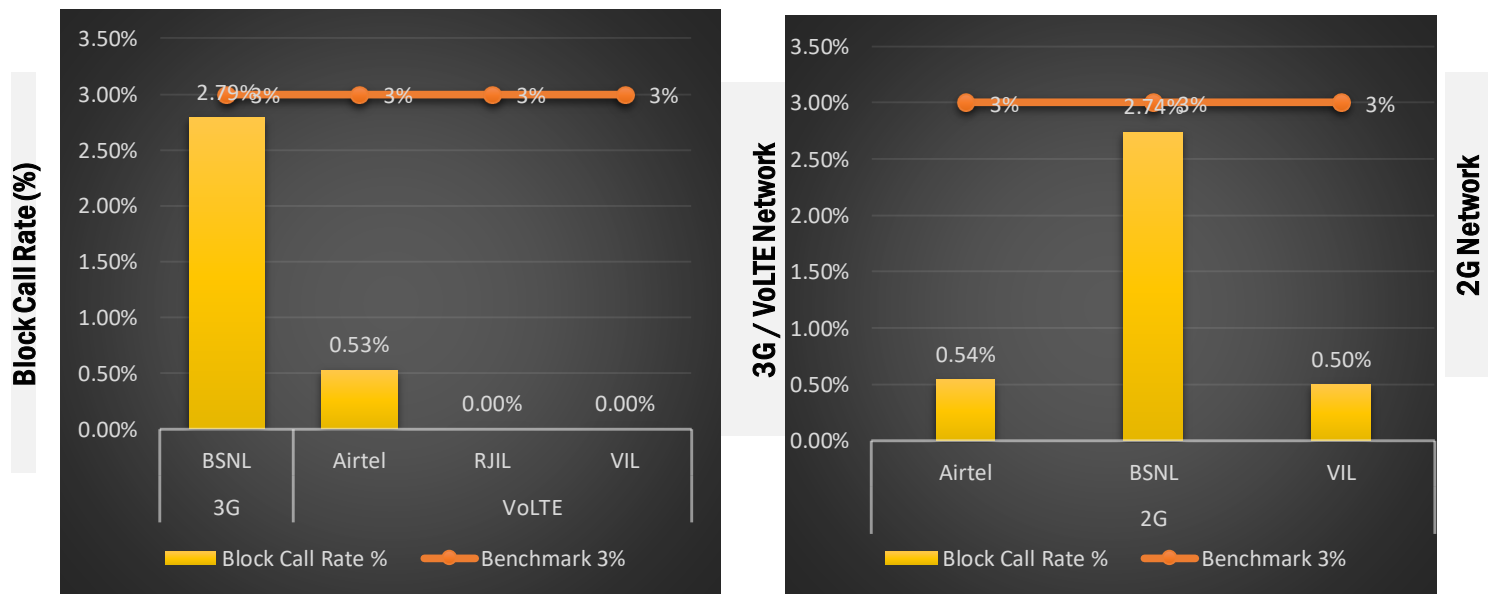
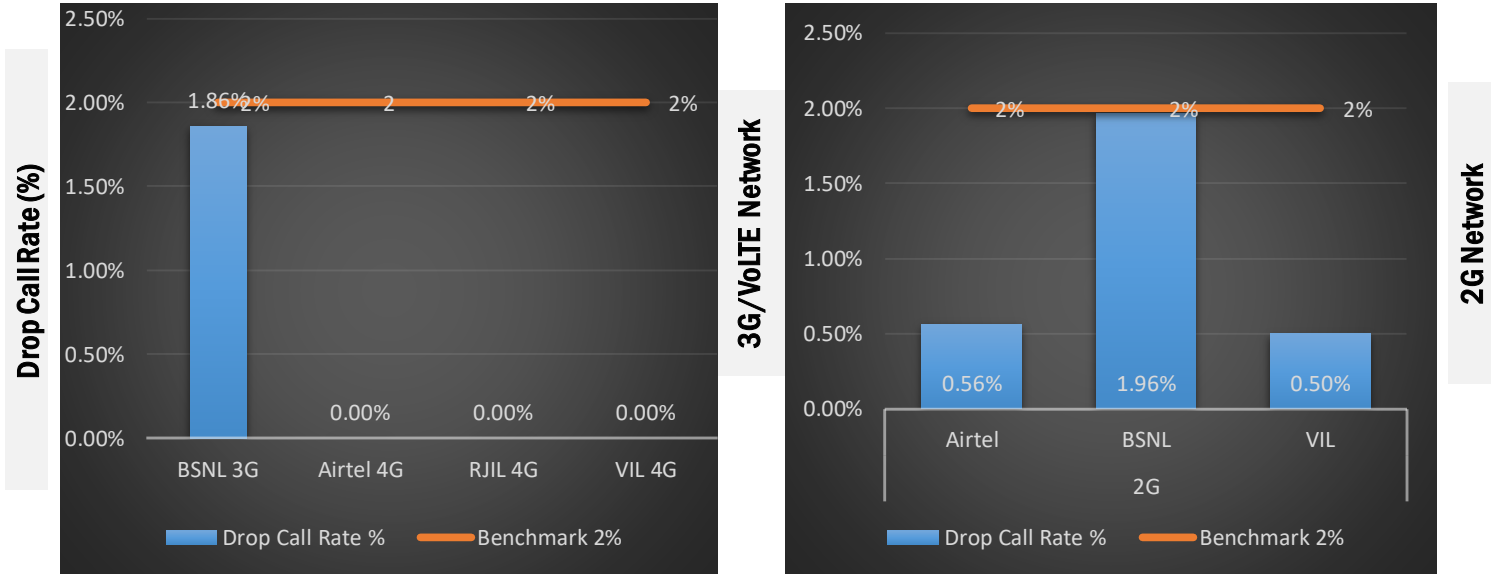
Overview

Voice & Dynamic Data Test Drive Route



Date	Test Scenario	Area to be Covered
25-Jun-24	2G/3G/4G Voice and 3G/4G Dynamic Data	Starting point: Meeting & Starting at Jaipur TRAI Office at 10:00 hrs, Jaipur to Bharatpur Highway.
27-Jun-24	2G/3G/4G Voice and 3G/4G Dynamic Data	Starting point: Regenta Resort Hotel Bharatpur, Bharatpur to Dholpur Highway.

QoS compliance of the TSPs On Jaipur to Bharatpur to Dholpur Highway for Voice across technologies 2G/3G/4G-VoLTE:



KPIs	2G			3G	4G		
	Airtel	BSNL	VIL	BSNL	Airtel	RJIL	VIL
Drop Call Rate %	0.56%	1.96%	0.50%	1.86%	0.00%	0.00%	0.00%
Block Call Rate %	0.54%	2.74%	0.50%	2.79%	0.53%	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 %	83.55%	91.56%	84.16%

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

TSPs	3G
	BSNL
Coverage %	93.05%

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

TSPs	VoLTE		
	Airtel	JIO	VIL
Coverage %	99.69%	99.68%	92.15%

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

TSPs	3G	VoLTE		
	BSNL	Airtel	JIO	VIL
Time spent on 3G/4G Network %	93.05%	99.93%	100.00%	86.73%

Data Services Dynamic

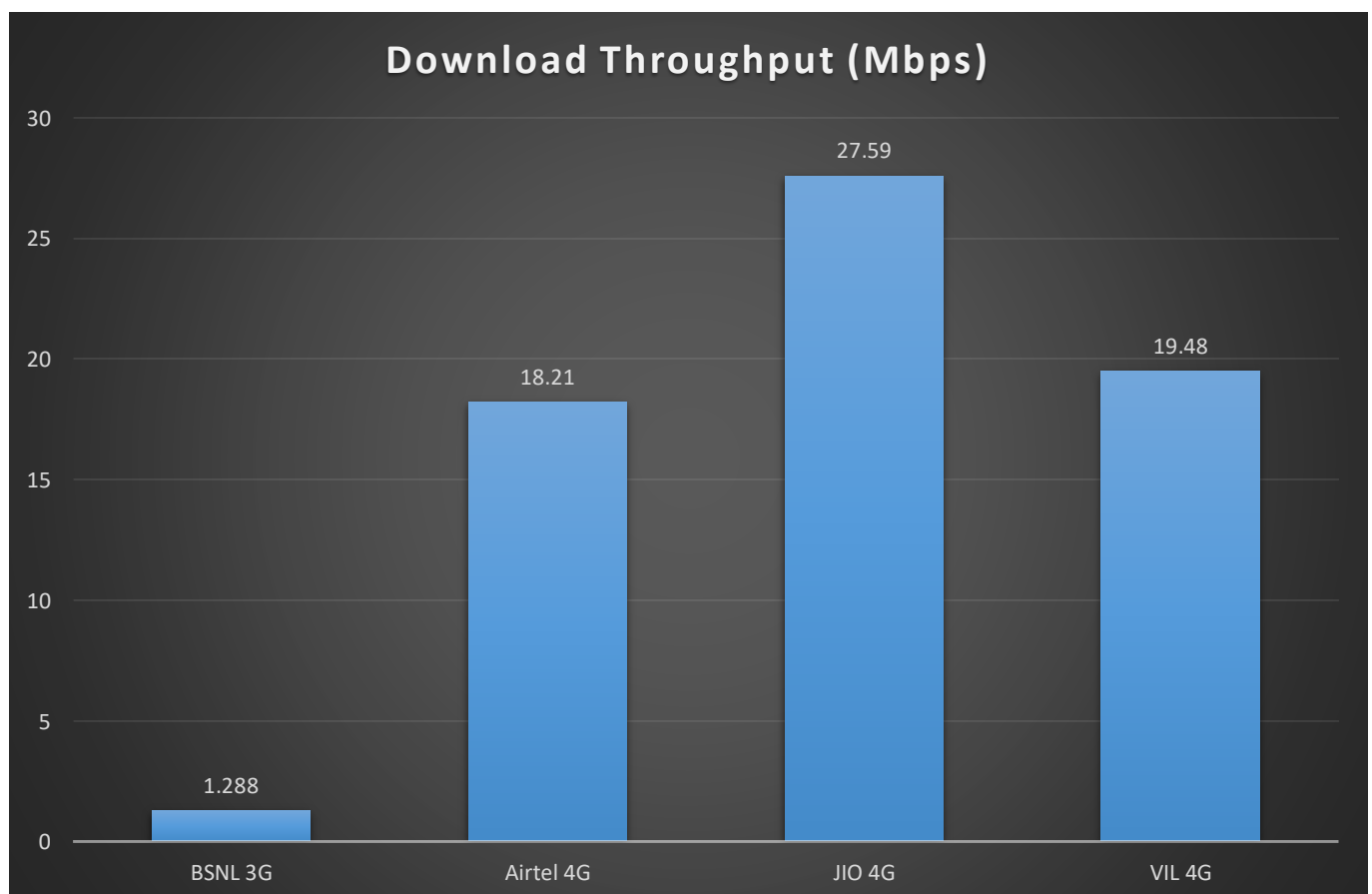
Key Observations

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)	1.288	18.21	27.59	19.48



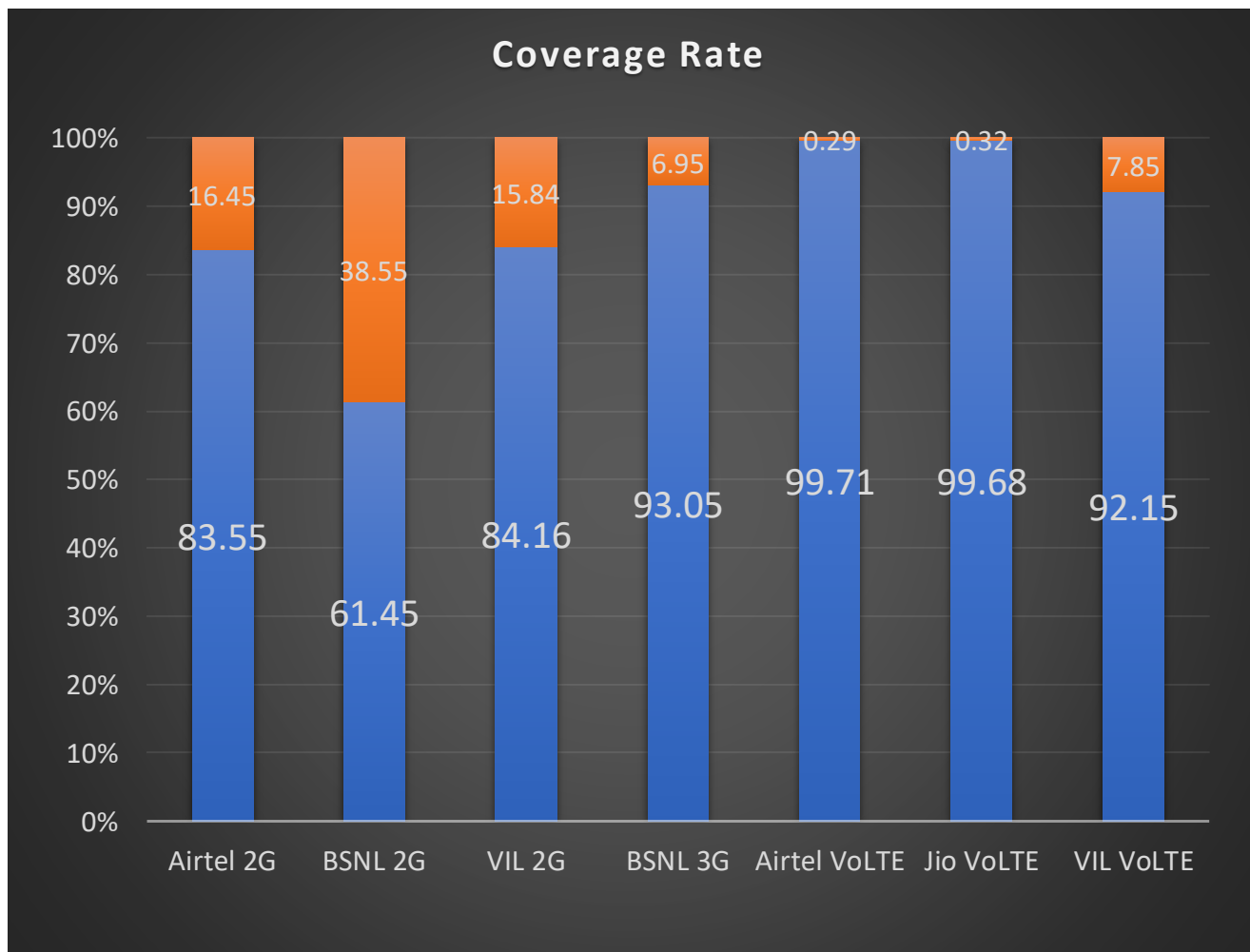
Voice Call	2G		
	Airtel	BSNL	VIL
Call Attempt	184	215	199
Blocked Call Rate (%)	0.54%	2.74%	0.5%
CSSR% (Accessibility)	99.46%	97.26%	99.5%
Drop Call Rate (%)	0.56%	1.96%	0.5%
Mobility HOSR (%)	95.645	96.4%	98.42%
Rx Quality (%)	94.07%	93.39%	96%
Average CST Sec	3.55	3.64	1.93

Voice Call	3G/VoLTE			
	BSNL 3G	Airtel VoLTE	JIO VoLTE	VIL VoLTE
Call Attempt	215	187	216	199
Blocked Call Rate (%)	2.79%	0.53%	0%	0%
CSSR% (Accessibility)	97.21%	99.47%	100%	100%
Drop Call Rate (%)	1.86%	0%	0%	0%
Mobility HOSR (%)	95.08%	99.31%	99.51%	96.84%
Rx Quality (%)	91.73%	82.83%	87.9%	95.3%
Average CST Sec	3.85	1.98	0.69	0.54

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

TSP	Coverage Rate %
Airtel 2G	84.81%
BSNL 2G	61.45%
VIL 2G	84.16%
BSNL 3G	93.05%
Airtel VoLTE	99.71%
Jio VoLTE	99.68%
VIL VoLTE	92.15%



Coverage Details

TSP-AIRTEL

Technology	Coverage %
2G	84.81%
VoLTE	99.71%

2G

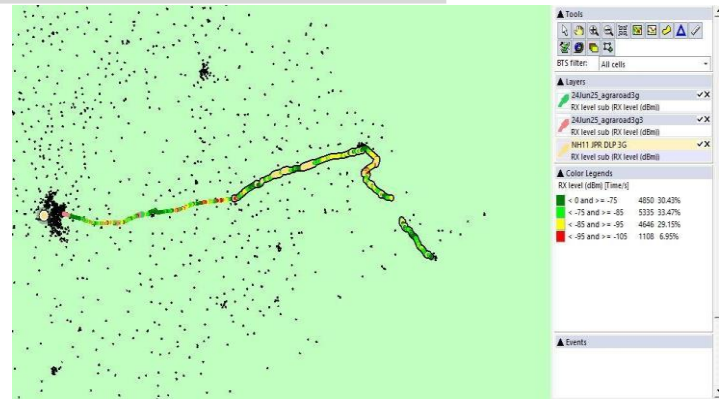
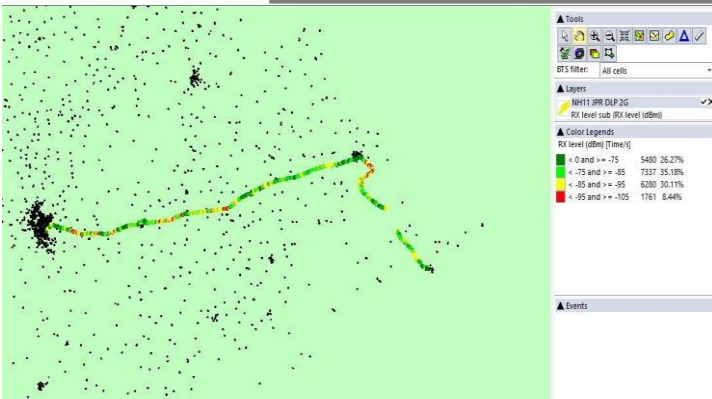


2G			
Overall RxLevel	# Samples	% PDF	Legend s
[Max, >=-75]	5524	54.33%	
[-75, >=-85)	3099	30.48%	
[-85, >=-95)	1367	13.44%	
[-95, >=Min)	178	1.75%	
Total	10168	100%	

VoLTE			
Overall RSRP	# Samples	% PDF	Legend s
[Max, >=-80]	1863	18.26%	
[-80, >=-90)	3914	38.37%	
[-90, >=-110)	4395	43.08%	
[-110, >=Min)	30	0.29%	
Total	10202	100.00	

TSP- BSNL

		Technology	Coverage %		
		2G	61.45%		
2G		3G	93.05%		3G



2G			
Overall RxLevel	# Samples	% PDF	Legends
[Max, >=-75]	5480	26.27%	
[-75, >=-85)	7337	35.18%	
[-85, >=-95)	6280	30.11%	
[-95, >=Min)	1761	8.44%	
Total	20858	100%	

3G			
Overall RSCP	# Samples	% PDF	Legends
[Max, >=-70]	4850	30.43%	
[-70, >=-80)	5335	33.47%	
[-80, >=-90)	4646	29.15%	
[-90, >=Min)	1108	6.95%	
Total	10794	100%	

JIO

Technology	Coverage %
VoLTE	99.68%

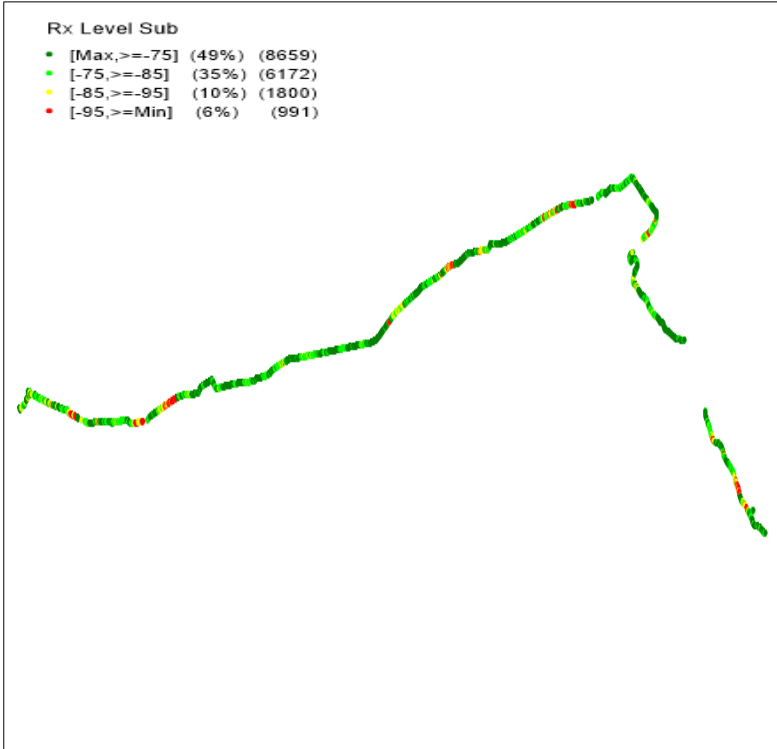


VoLTE /5G			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	9602	40.92%	
[-80, >=-90)	6869	29.28%	
[-90, >=-110)	6917	29.48%	
[-110, >=Min)	76	0.32%	
Total	23464	100%	

VIL

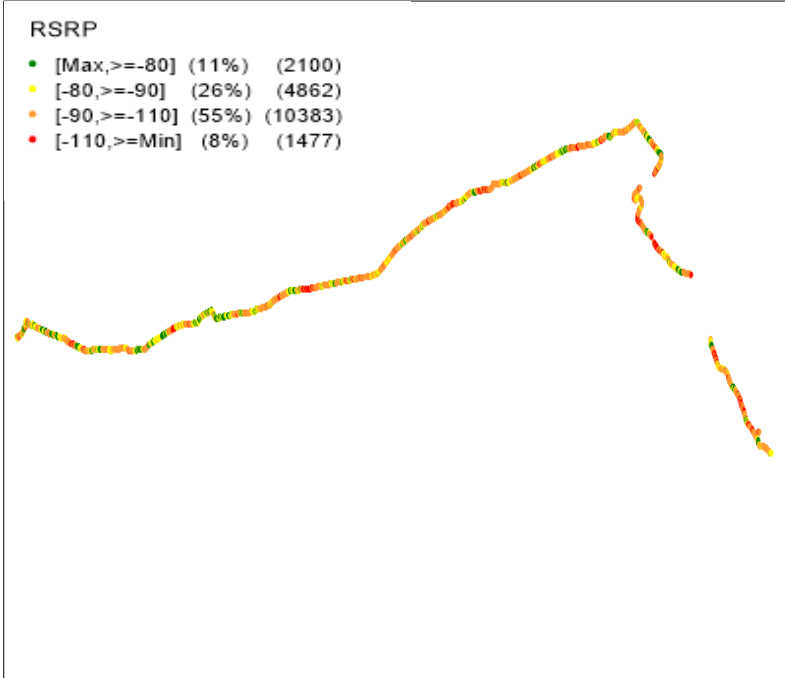
2G

Technology	Coverage Rate %
2G	84.16%
VoLTE	92.15%



2G			
Overall Rx Level	# Samples	% PDF	Legend s
[Max, >=-75]	8659	49.14%	Green
[-75, >=-85)	6172	35.02%	Yellow
[-85, >=-95)	1800	10.22%	Orange
[-95, >=Min)	991	5.62%	Red
Total	17622	100%	

VoLTE

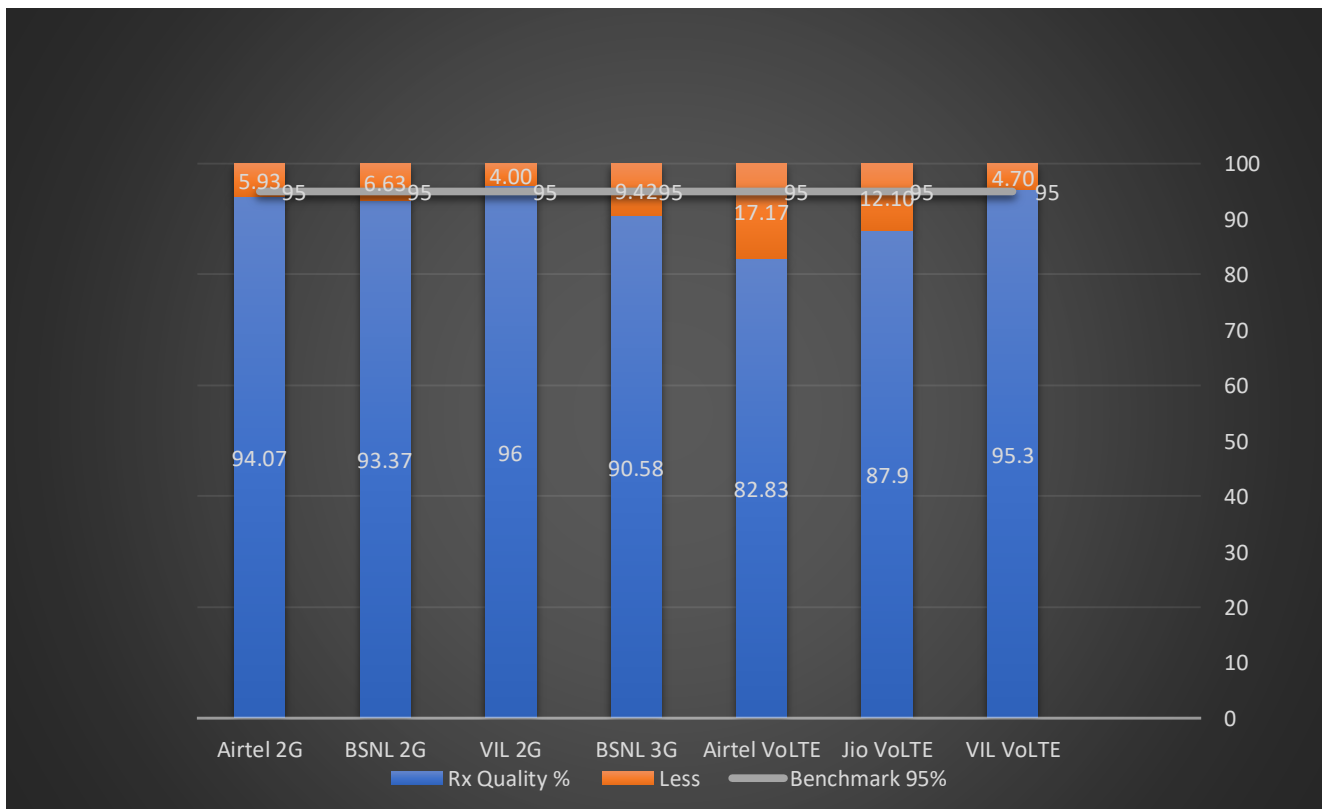


VoLTE /5G			
Overall RSRP	# Samples	% PDF	Legend s
[Max, >=-80]	2100	11.16%	Green
[-80, >=-90)	4862	25.83%	Yellow
[-90, >=-110)	10383	55.16%	Orange
[-110, >=Min)	1477	7.85%	Red
Total	18822	100%	

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	94.07%
BSNL 2G	93.37%
VIL 2G	96%
BSNL 3G	90.58%
Airtel VoLTE	82.83%
Jio VoLTE	87.9%
VIL VoLTE	95.3%

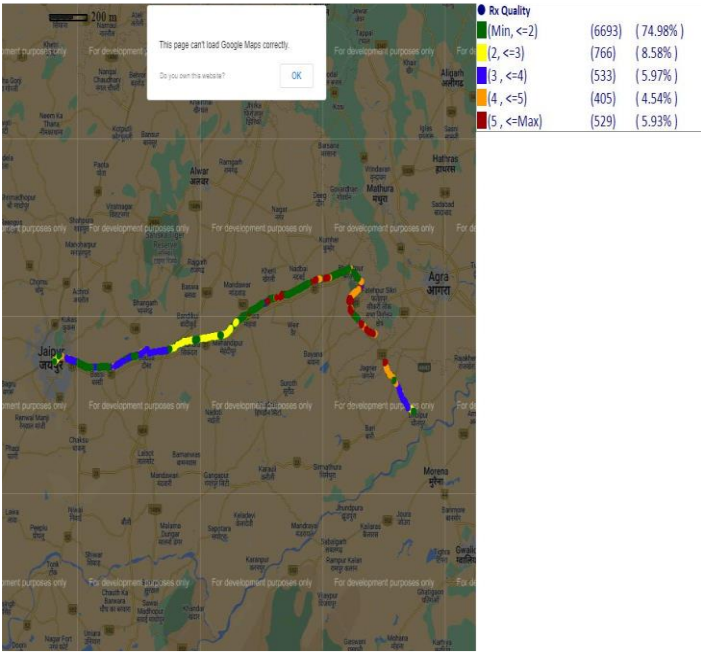


II. Quality Details

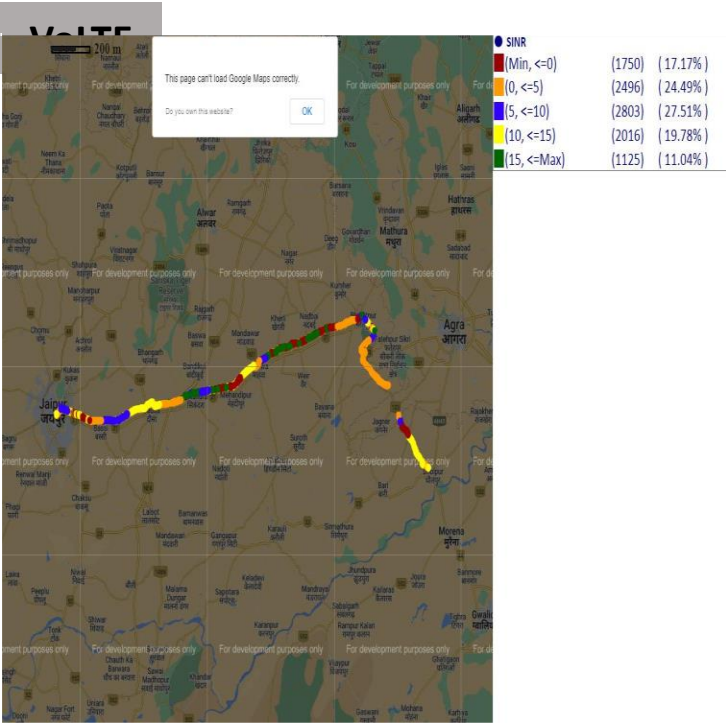
Airtel

Technology	Rx Quality %
2G	94.07%
VoLTE	82.83%

2G



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	6693	74.98%	
(2, <=3)	766	8.58%	
(3, <=4)	533	5.97%	
(4, <=5)	405	4.54%	
(5, <=Max)	529	5.93%	
Total	8926	100.00	



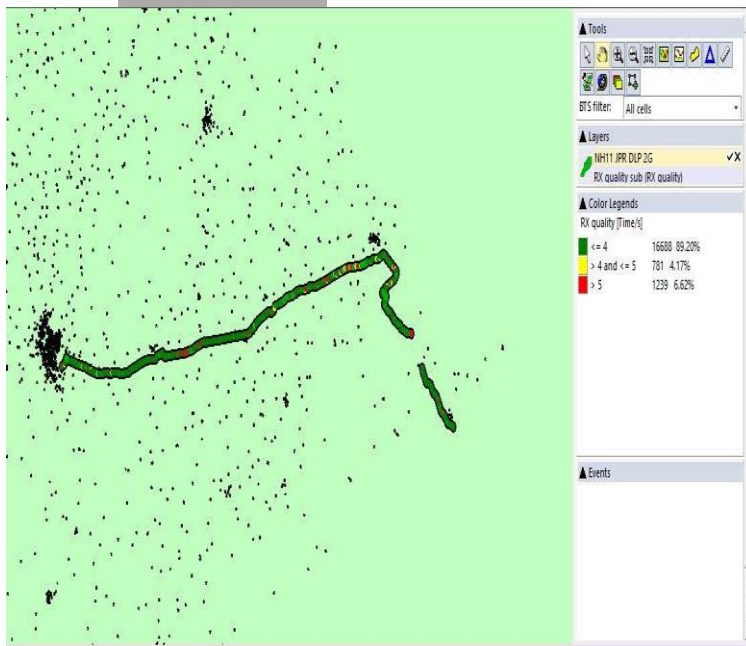
Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	1750	17.17%	
(0, <=5)	2496	24.49%	
(5, <=10)	2803	27.51%	
(10, <=15)	2016	19.78%	
(15, <=Max)	1125	11.04%	
Total	10190	100.00	

II. Quality Details

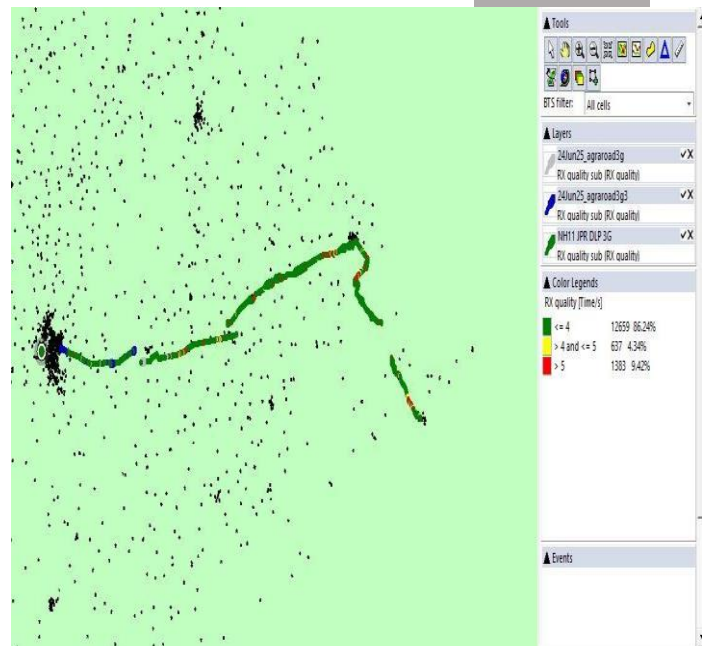
BSNL

Technology	Rx Quality %
2G	93.37%
3G	90.58%

2G



3G



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=4)	16688	89.20%	
(4 , <=5)	781	4.17%	
(5 , <=Max)	1239	6.62%	
Total	18708	100%	

Overall Ec/No	# Samples	% PDF	Legends
(Max , <=-11)	12659	86.24%	
(-11 , <=-14)	637	4.34%	
(-14 , <=Min)	1383	9.42%	
Total	14679	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	87.90%



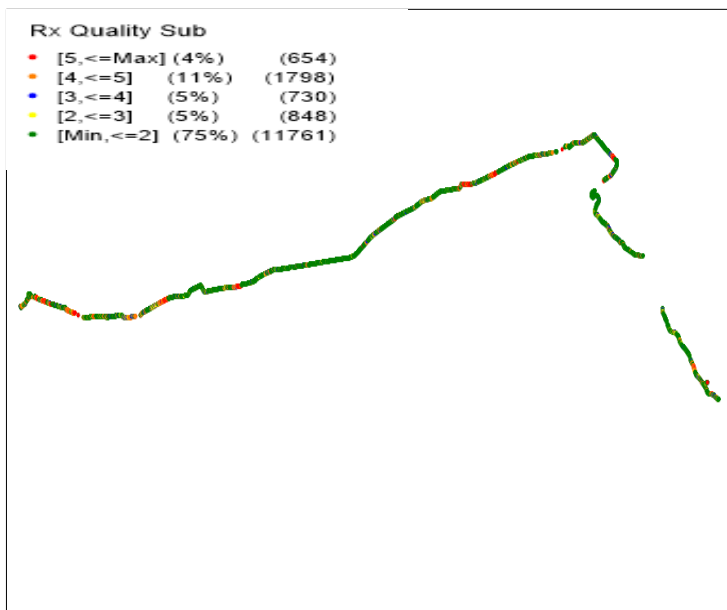
Overall SINR	# Samples	% PDF	Legends
(Min, ≤ -6)	248	1.06%	
$(-6, \leq -3)$	827	3.52%	
$(-3, \leq 0)$	1764	7.52%	
$(0, \leq 5)$	5236	22.32%	
$(5, \leq 10)$	5867	25.00%	
$(10, \leq 15)$	4777	20.36%	
$(15, \leq \text{Max})$	4745	20.22%	
Total	23464	100%	

II. Quality Details

VIL

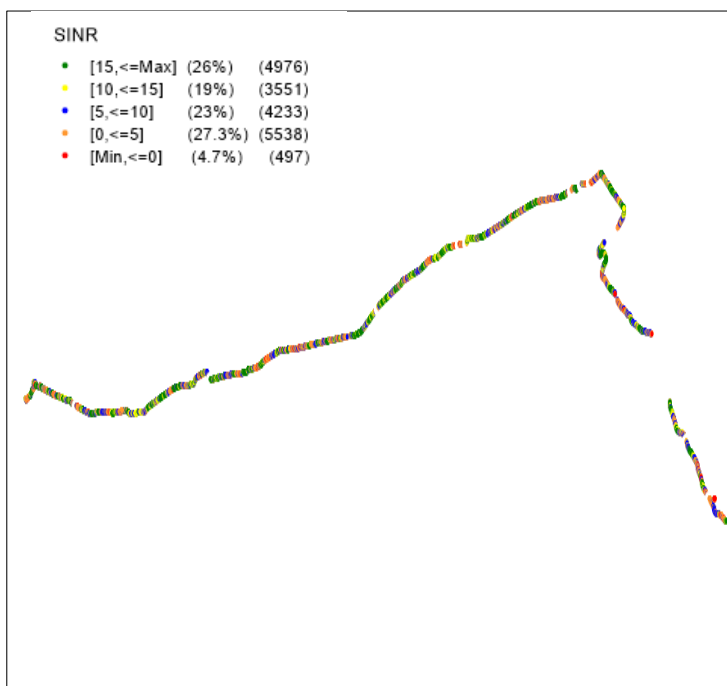
Technology	Rx Quality %
2G	96%
4G	95.3%

2G



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	11761	75%	Green
(2, <=3)	848	5%	Yellow
(3, <=4)	730	5%	Blue
(4, <=5)	1798	11%	Orange
(5, <=Max)	654	4%	Red
Total	15791	100%	

VoLTE



Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	497	4.7%	Red
(0, <=5)	5538	27.3%	Orange
(5, <=10)	4233	23%	Blue
(10, <=15)	3551	19%	Yellow
(15, <=Max)	4976	26%	Green
Total	18795	100%	

III. Technology Details

TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	93.05%
Airtel VoLTE	99.93%
Jio VoLTE	100.00%
VIL VoLTE	86.73%

