



# **Operator Assisted Drive Test Report**

## **Junagadh To Diu Highway**

### **5<sup>th</sup> Dec'24**

**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 Junagadh to Diu highway from 9:00 AM to 8:00 PM by 5 Dec 2024. The drive test covered drive route of 175 KM and Approximately 145 calls were made for each of the 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 5<sup>h</sup> December . 2024 covering Junagadh to Diu 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 175 KMs. Approximately 145 calls were made for each of the networks: 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 175 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

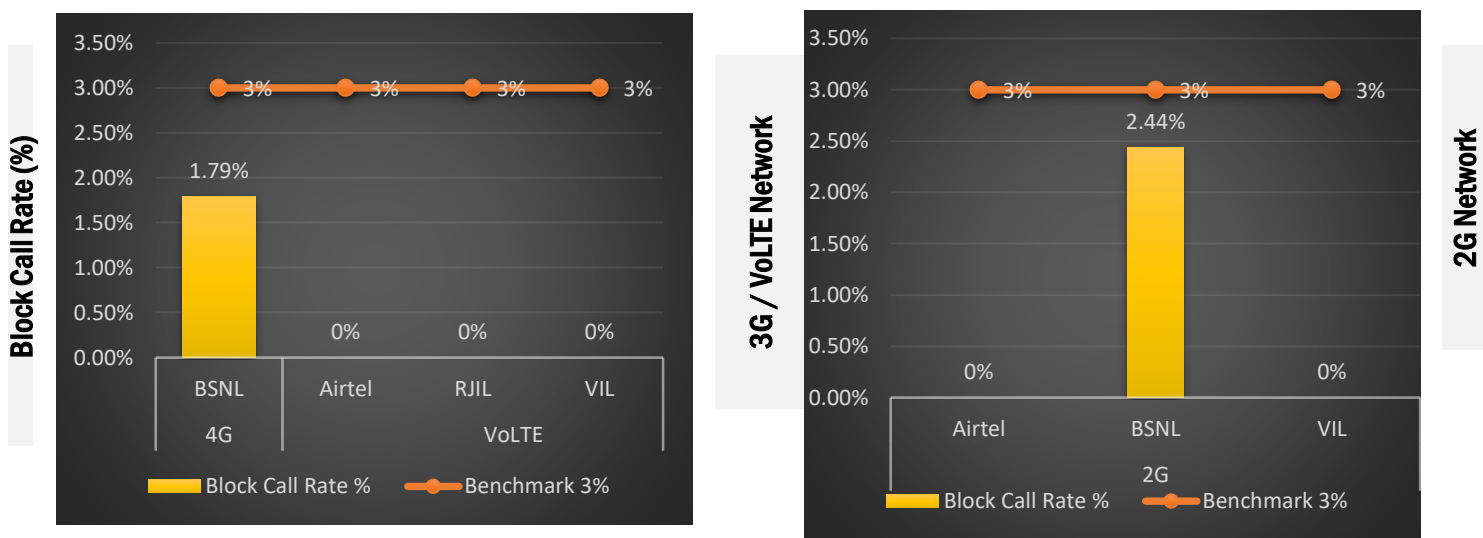
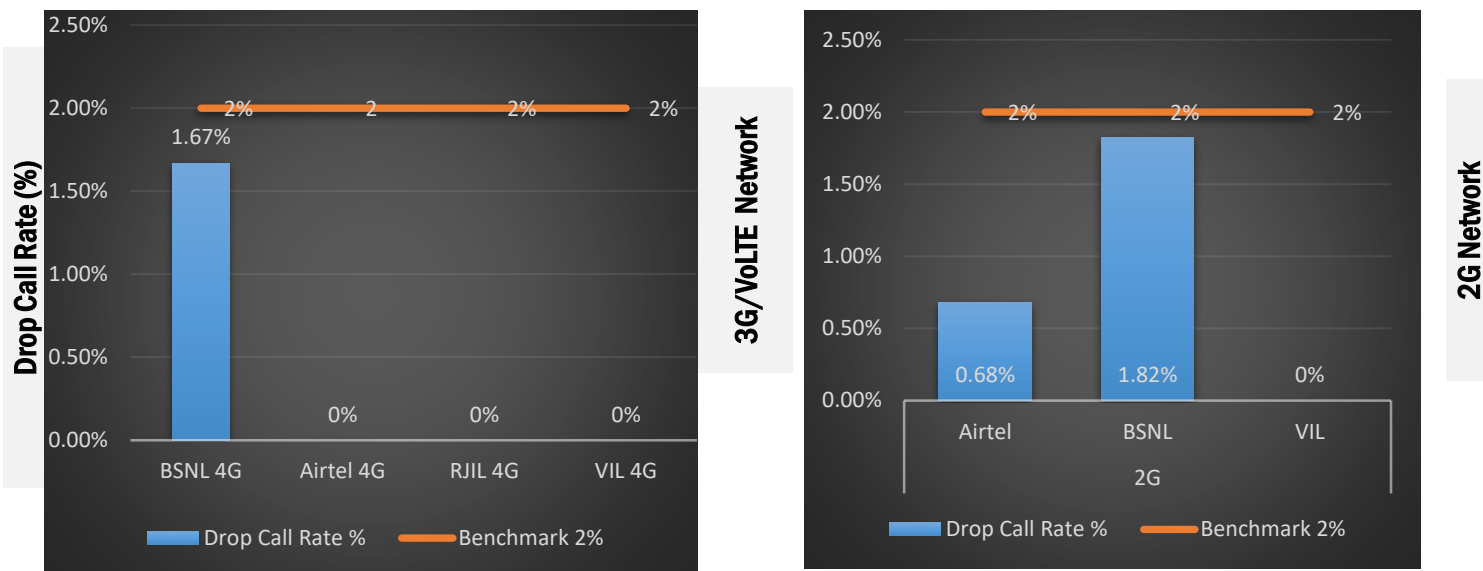
Service	Specifications
Download	2G (Locked) - 500KB, 3G (Dual) - 20 MB, 4G (Free) - 40 MB
Upload	2G (Locked) - 100KB, 3G (Dual) - 5 MB, 4G (Free) - 10 MB
Web Browsing	3 links of e/m commerce website www.amazon.in, www.flipkart.com and PayTm
Latency	32 Bytes on www.google.com

## Voice & Dynamic Data Test Drive Route



Date	Test Scenario	Area to be Covered
5-12-2024	2G/3G/4G Voice and 3G/4G/5G Dynamic Data	Starting point Madhuram gate 9:00AM- Vanthali- Keshod by pass- Gadu- Veraval bypass- Sutrapada- Kodinar bypass-Una- Diu..

**QoS compliance** of the TSPs on **Junagadh to Diu Highway** for Voice across technologies 2G/4G-VoLTE:



KPIs	2G			4G			
	Airtel	BSNL	VIL	BSNL	Airtel	RJIL	VIL
Drop Call Rate %	0.68%	1.82%	0%	1.67%	0%	0%	0%
Block Call Rate %	0%	2.44%	0%	1.79%	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

## Key Observations

### Coverage

a) Percentage of coverage samples for 2G  $\geq$  -85 dBm.

TSPs	2G		
	Airtel	BSNL	VIL
Coverage %	88.4%	29.03%	96.96%

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

TSPs	3G
	BSNL
Coverage %	29.02%

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

TSPs	VoLTE			
	BSNL	Airtel	JIO	VIL
Coverage %	80.84%	96.94%	99.53%	91.14%

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

TSPs	3G	VoLTE			
	BSNL	BSNL	Airtel	JIO	VIL
Time spent on 3G/4G Network %	10.92%	44.59%	100%	100%	100%

# Data Services Dynamic

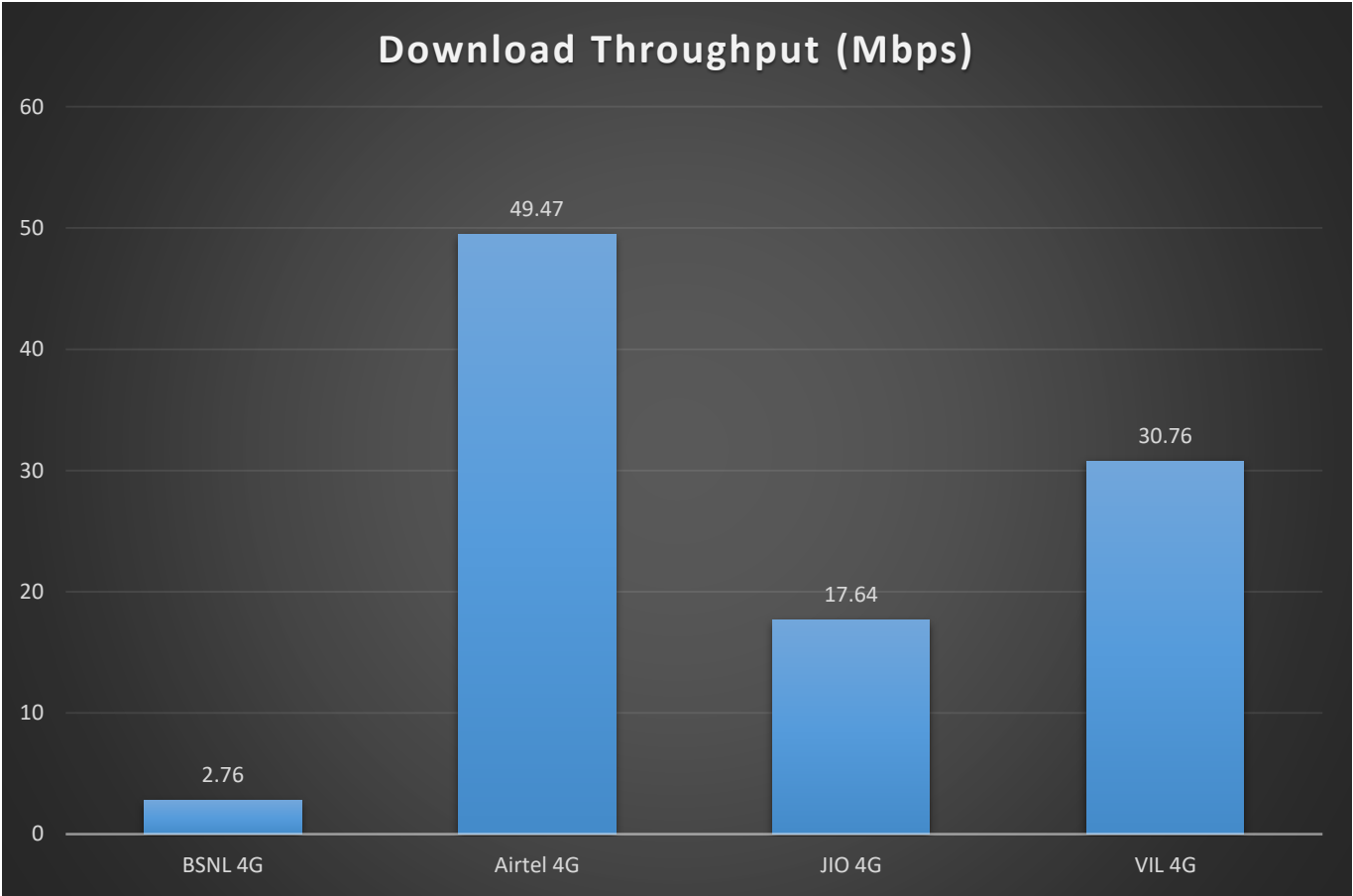
## Key Observations

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

### Data Download Performance (kbps) - Dynamic

4G/ Network:

Data Services Dynamic	VoLTE			
	BSNL 4G	Airtel 4G	JIO 4G	VIL 4G
Download Throughput (Mbps)	2.76	49.47	17.64	30.76



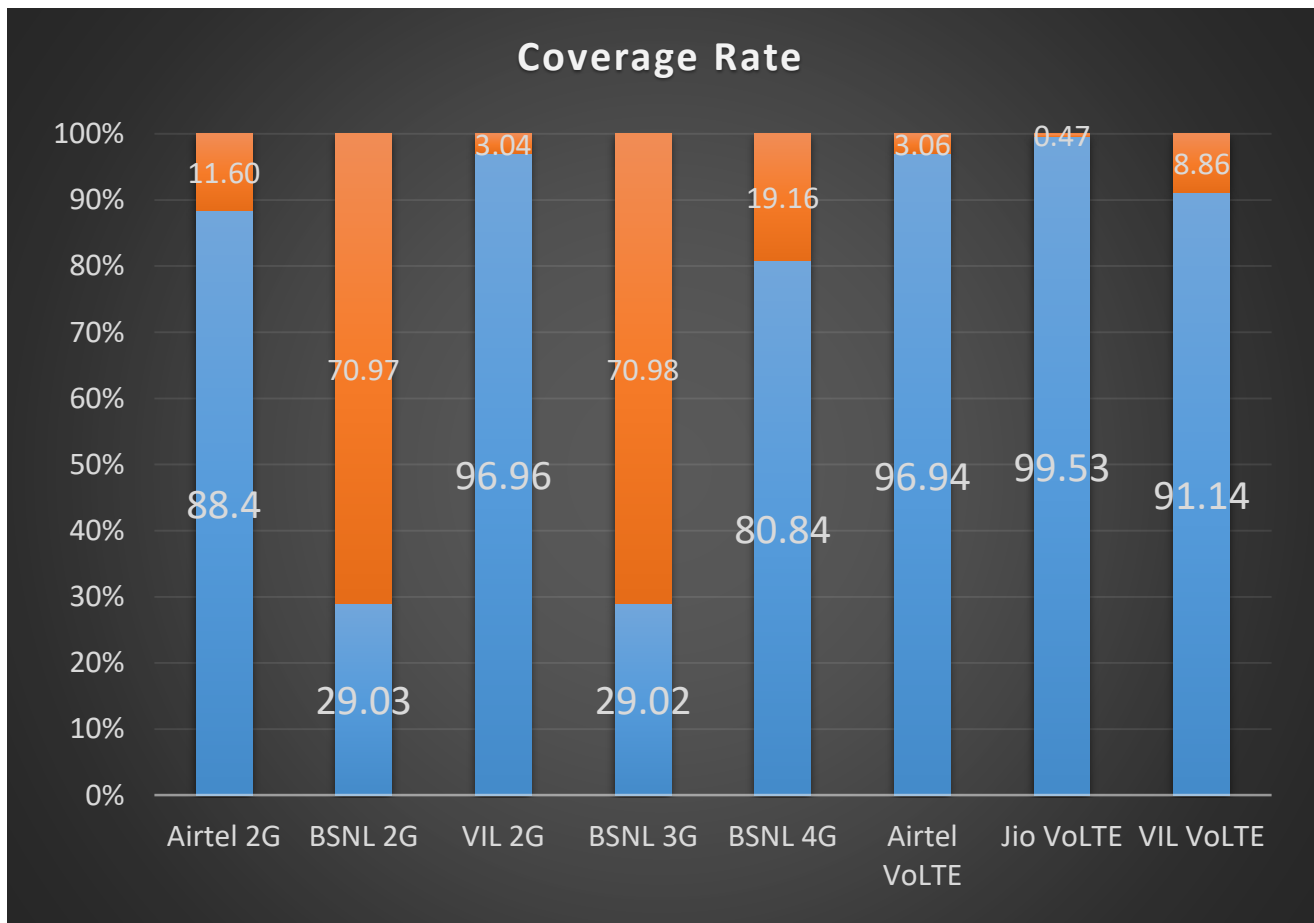
Voice Call	2G		
	Airtel	BSNL	VIL
Call Attempt	148	123	161
Blocked Call Rate (%)	0%	2.44%	0%
CSSR% (Accessibility)	100%	97.56%	100%
Drop Call Rate (%)	0.68%	1.82%	0%
Mobility HOSR (%)	96.68%	95.88%	99.22%
Rx Quality (%)	93.23%	81.02%	91.04%
Average CST Sec	3.49	2.81	2.41

Voice Call	VoLTE			
	BSNL 4G	Airtel VoLTE	JIO VoLTE	VIL VoLTE
Call Attempt	129	145	144	158
Blocked Call Rate (%)	1.79%	0%	0%	0%
CSSR% (Accessibility)	98.21%	100%	100%	100%
Drop Call Rate (%)	1.67%	0%	0%	0%
Mobility HOSR (%)	95.23%	99.89%	99.24%	99.73%
Rx Quality (%)	93.11%	91.08%	89.17%	88.98%
Average CST Sec	2.47	0.86	0.68	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  $\geq$  -85 dBm, RSCP is  $\geq$  -90 dBm & RSRP  $\geq$  -110dBm. The details are as follows.

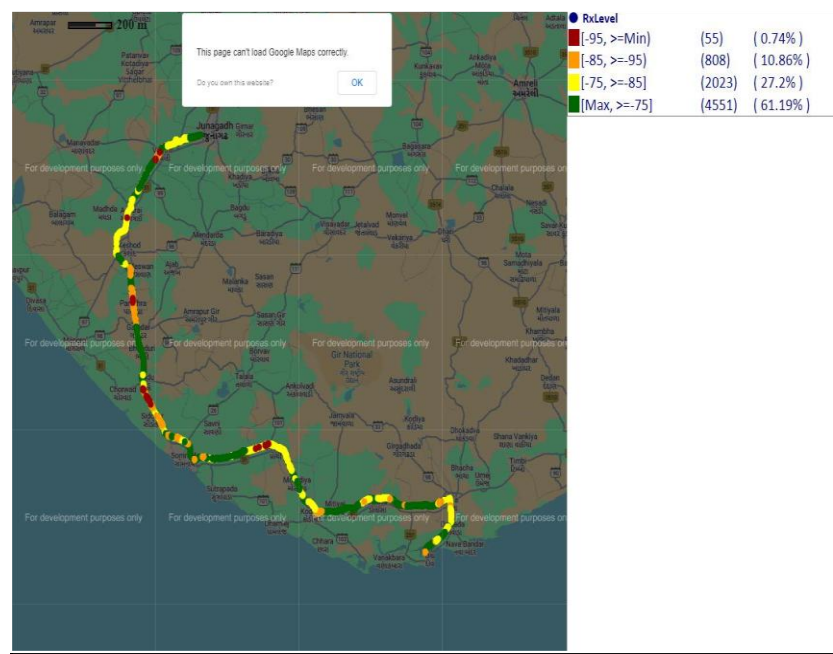
TSP	Coverage Rate %
Airtel 2G	88.4%
BSNL 2G	29.03%
VIL 2G	96.96%
BSNL 3G	29.02%
BSNL 4G	80.84%
Airtel VoLTE	96.94%
Jio VoLTE	99.53%
VIL VoLTE	91.14%



TSP-AIRTEL

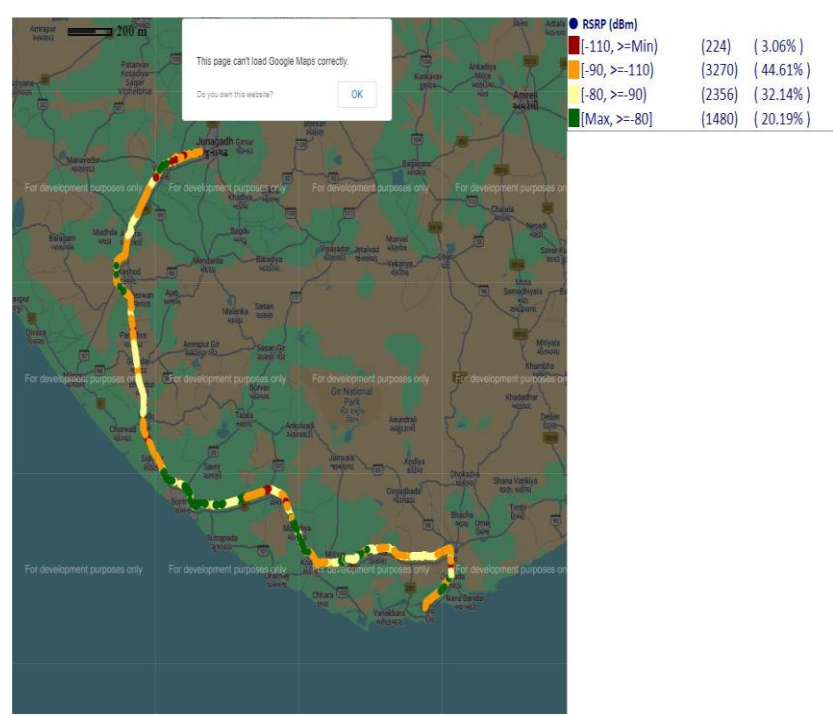
Technology	Coverage %
2G	88.40%
VoLTE	96.94%

2G



2G			
Overall RxLevel	# Samples	% PDF	Legend s
[Max, >=-75]	4551	61.19%	
[ -75, >=-85)	2023	27.21%	
[ -85, >=-95)	808	10.86%	
[ -95, >=Min)	55	0.74%	
Total	7437	100%	

VoLTE



VoLTE			
Overall RSRP	# Samples	% PDF	Legend s
[Max, >=-80]	1480	20.19%	
[ -80, >=-90)	2356	32.14%	
[ -90, >=-110)	3270	44.61%	
[ -110, >=Min)	224	3.06%	
Total	7330	100%	

## Coverage Details

### TSP- BSNL

2G

Technology

2G

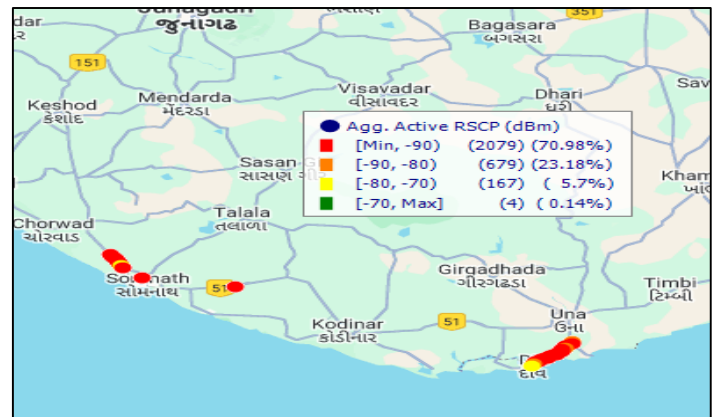
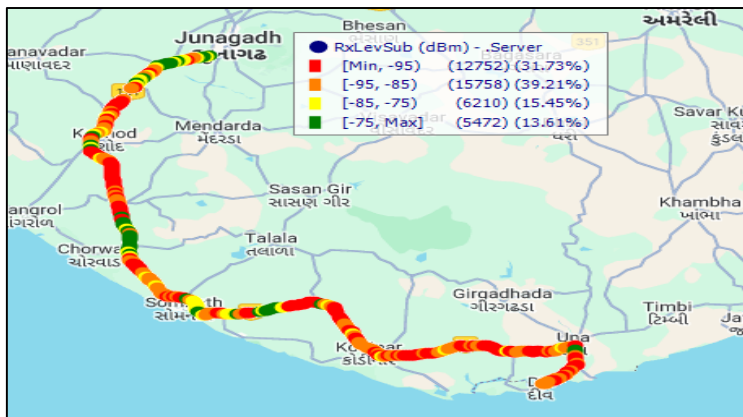
3G

Coverage %

29.06%

29.02%

3G



### 2G

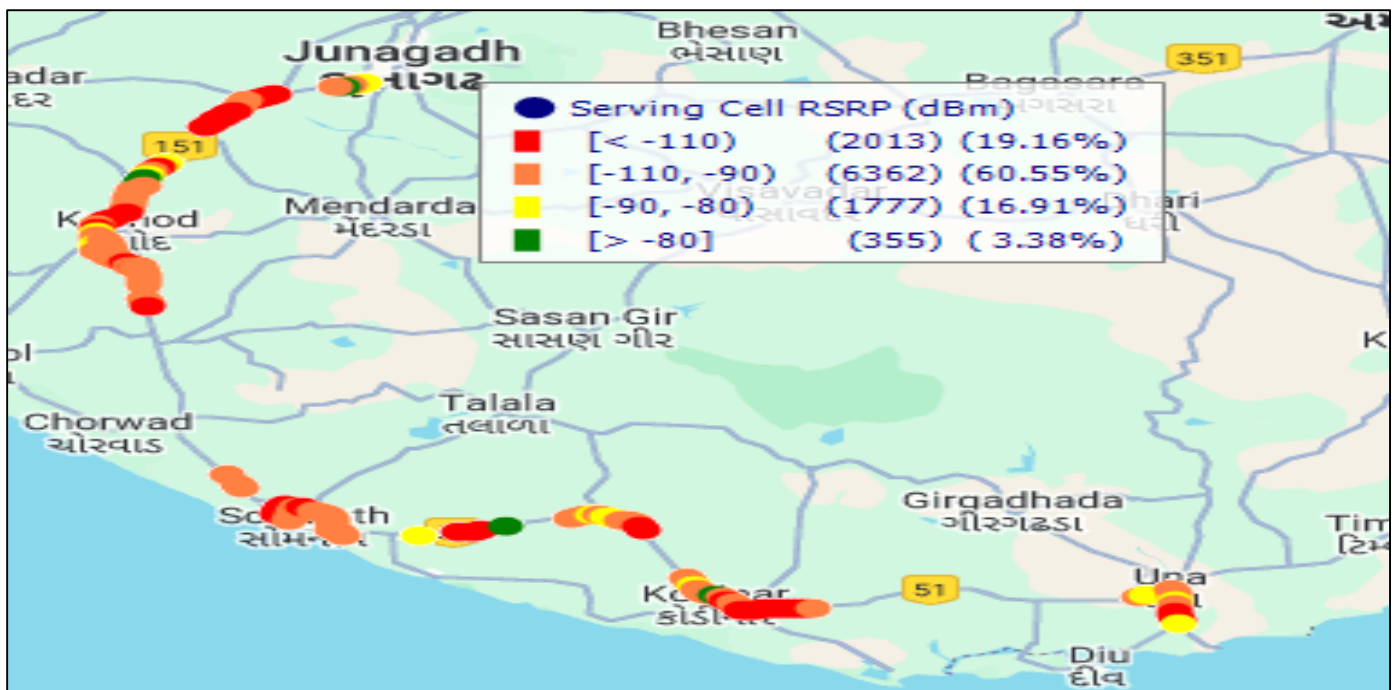
Overall RxLevel	# Samples	% PDF	Legends
[Max, >=-75]	5472	13.61%	
[-75, >=-85)	6210	15.45%	
[-85, >=-95)	15758	39.21%	
[-95, >=Min)	12752	31.73%	
Total	40192	100%	

### 3G

Overall RSCP	# Samples	% PDF	Legends
[Max, >=-70]	4	0.14%	
[-70, >=-80)	167	5.7%	
[-80, >=-90)	679	23.18%	
[-90, >=Min)	2079	70.98%	
Total	2929	100%	

## BSNL

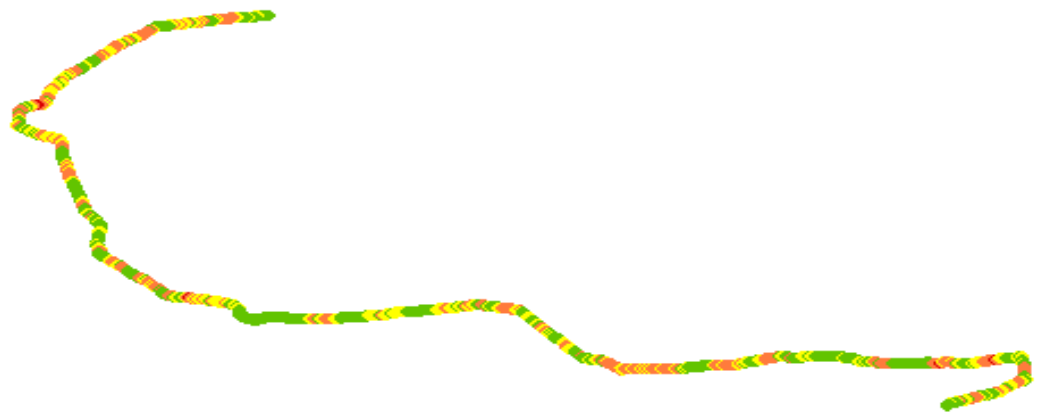
Technology	Coverage %
VoLTE	80.84%



VoLTE /5G			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	355	3.38%	
[-80, >=-90)	1777	16.91%	
[-90, >=-110)	6362	60.55%	
[-110, >=Min)	2013	19.16%	
Total	10507	100%	

## JIO

Technology	Coverage %
VoLTE	99.53%



LTE KPI PCell Serving RSRP[dBm]

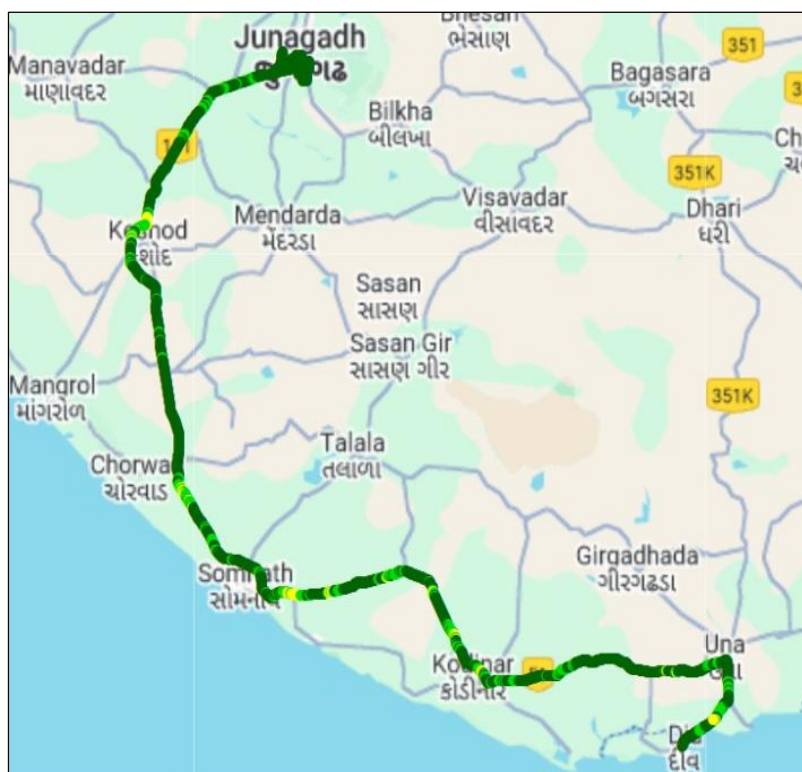
-80 <= x ( 42.23%, 6677 )  
 -90 <= x < -80 ( 29.12%, 4604 )  
 -110 <= x < -90 ( 28.18%, 4456 )  
 x < -110 ( 0.47%, 75 )

VoLTE /5G			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	6677	42.23%	
[-80, >=-90)	4604	29.12%	
[-90, >=-110)	4456	28.18%	
[-110, >=Min)	75	0.47%	
Total	15812	100%	

## VIL

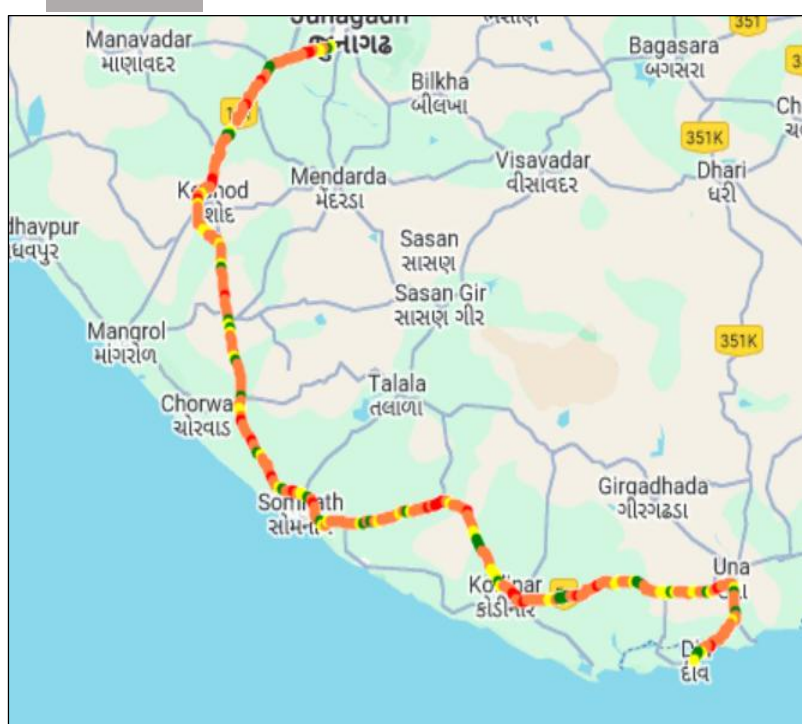
2G

Technology	Coverage Rate %
2G	96.96%
VoLTE	91.14%



2G			
Overall Rx Level	# Samples	% PDF	Legends
[Max, >=-75]	26405	81.18%	
[-75, >=-85]	5034	15.48%	
[-85, >=-95]	1075	3.31%	
[-95, >=Min)	11	0.03%	
Total	32525	100%	

VoLTE

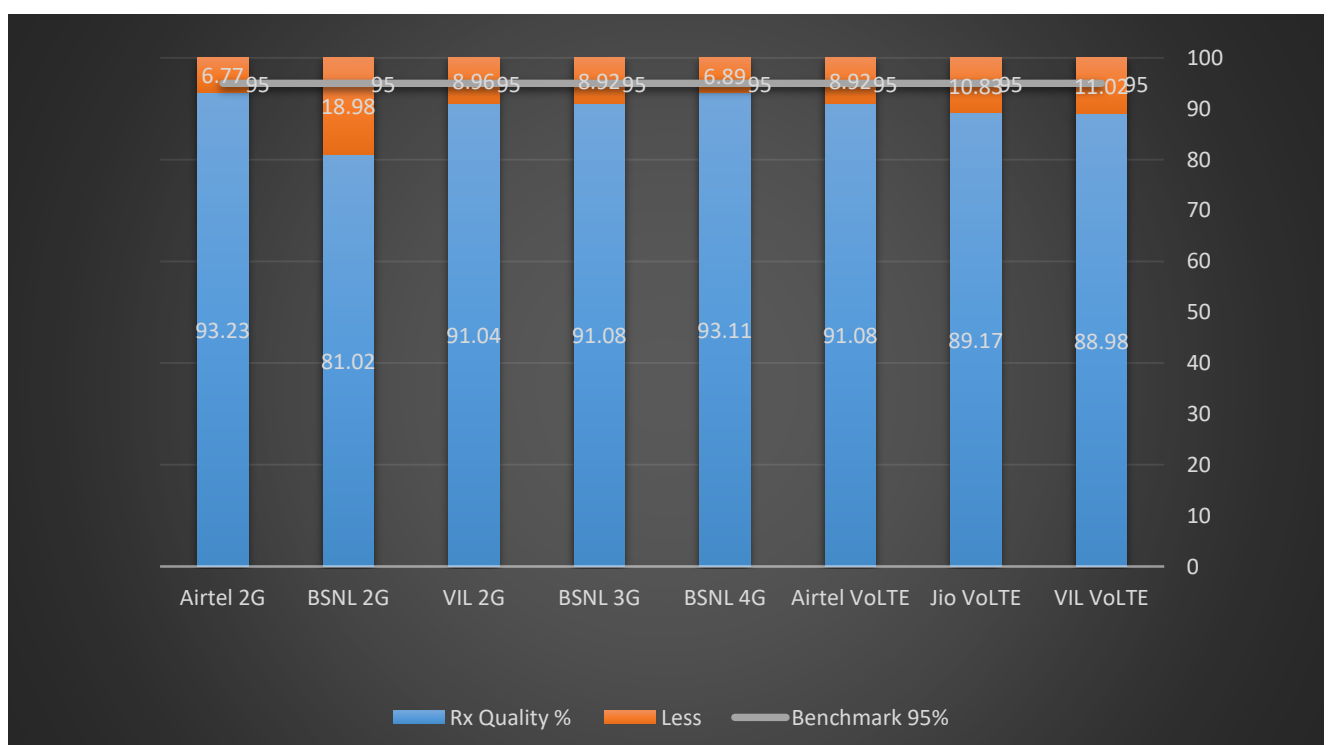


VoLTE /5G			
Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	813	9.69%	
[-80, >=-90]	1515	18.07%	
[-90, >=-110]	5316	63.38%	
[-110, >=Min)	743	8.86%	
Total	8387	100%	

## II. Quality Details

For measuring voice quality, as per the QoS norms, RxQual  $\leq 5$  for GSM TSPs, EcNo  $\geq -14$  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	93.23%
BSNL 2G	81.02%
VIL 2G	91.04%
BSNL 3G	91.08%
BSNL 4G	93.11%
Airtel VoLTE	91.08%
Jio VoLTE	89.17%
VIL VoLTE	88.98%

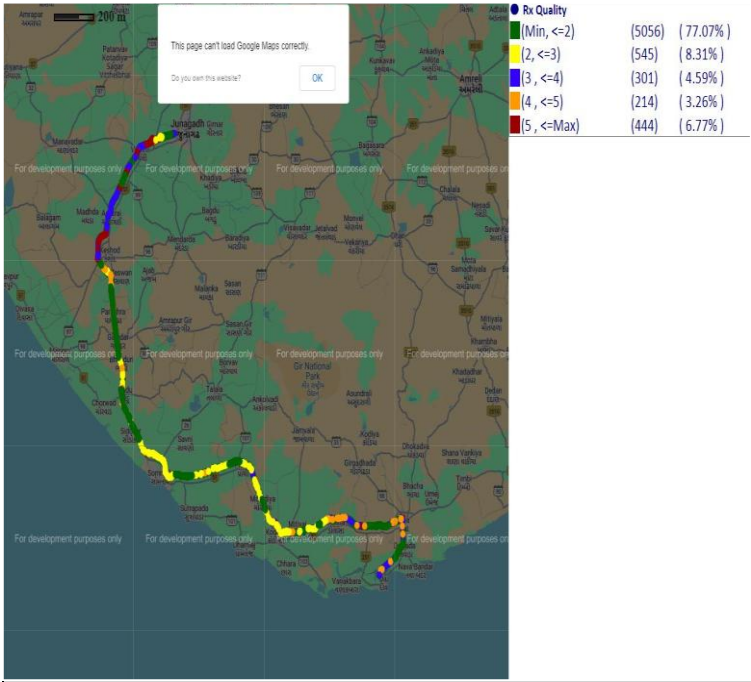


II. Quality Details

Airtel

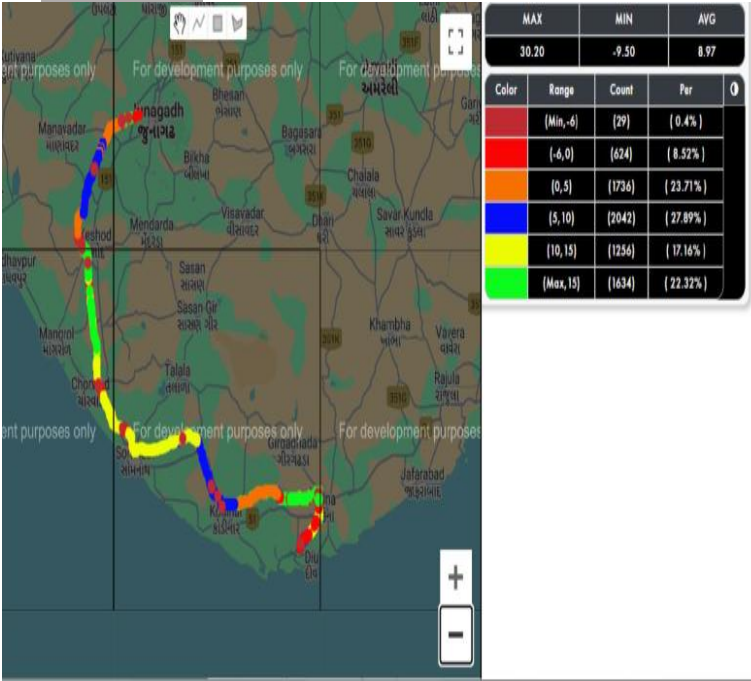
Technology	Rx Quality %
2G	93.23%
VoLTE	91.08%

2G



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	5056	77.07%	
(2, <=3)	545	8.31%	
(3, <=4)	301	4.59%	
(4, <=5)	214	3.26%	
(5, <=Max)	444	6.77%	
Total	6560	100%	

VoLTE



Overall SINR	# Samples	% PDF	Legends
(Min, -6)	29	0.4%	
(-6,0)	624	8.52%	
(0,5)	1736	23.71%	
(5,10)	2042	27.89%	
(10,15)	1256	17.16%	
(Max,15)	1634	22.32%	
Total	7321	100%	

## II. Quality Details

### BSNL

2G

Technology

Rx Quality %

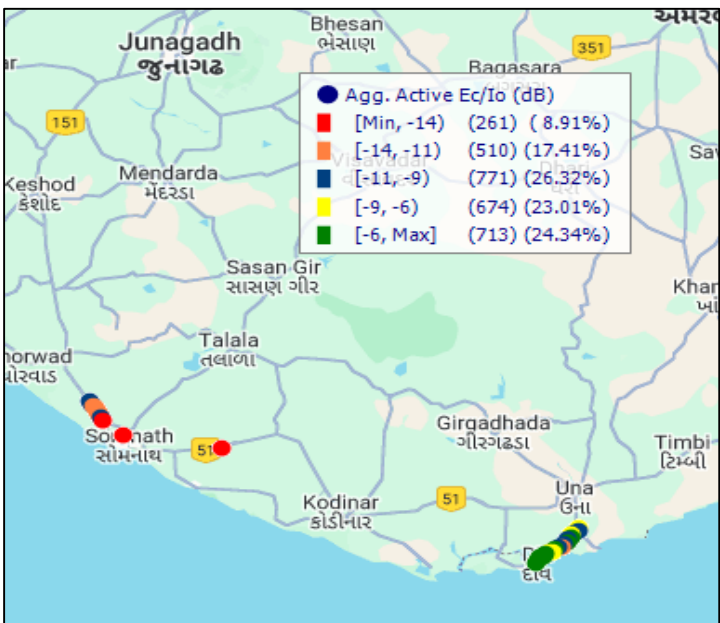
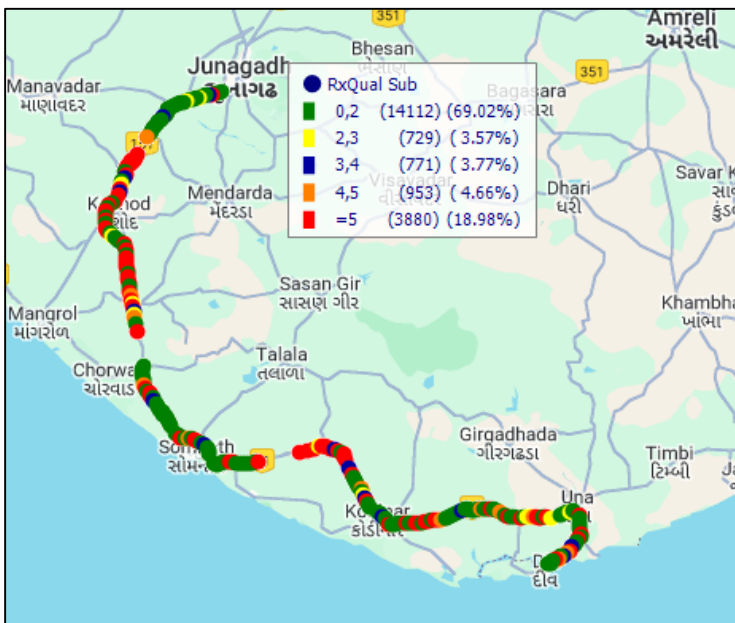
2G

81.02%

3G

91.08%

3G



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	14112	69.02%	
(2, <=3)	729	3.57%	
(3, <=4)	771	3.77%	
(4, <=5)	953	4.66%	
(5, <=Max)	3880	18.98%	
Total	20445	100%	

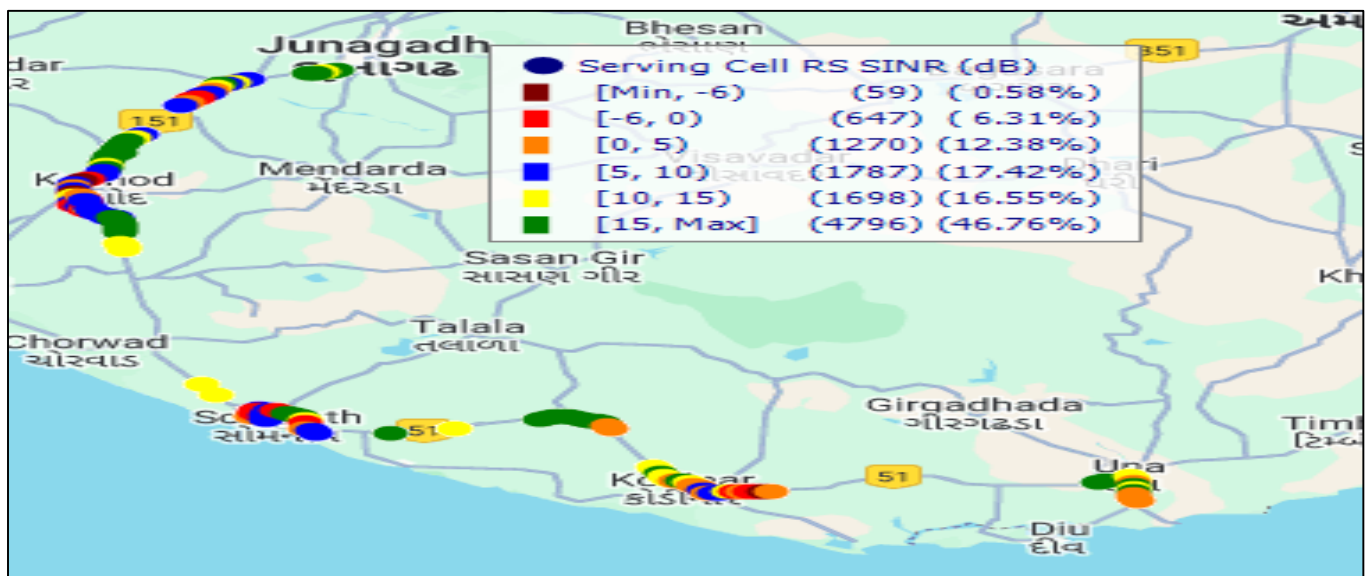
Overall Ec/No	# Samples	% PDF	Legends
(Max, <=-6)	713	24.34%	
(-6, <=-9)	674	23.01%	
(-9, <=-11)	771	26.32%	
(-11, <=-14)	510	17.41%	
(-14, <= Min)	261	8.92%	
Total	2929	100%	

## II. Quality Details

For measuring voice quality, as per the QoS norms, RxQual  $\leq 5$  for GSM TSPs, EcNo  $\geq -14$  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  $\geq 95\%$ .

### BSNL

Technology	Rx Quality %
VoLTE	93.11%



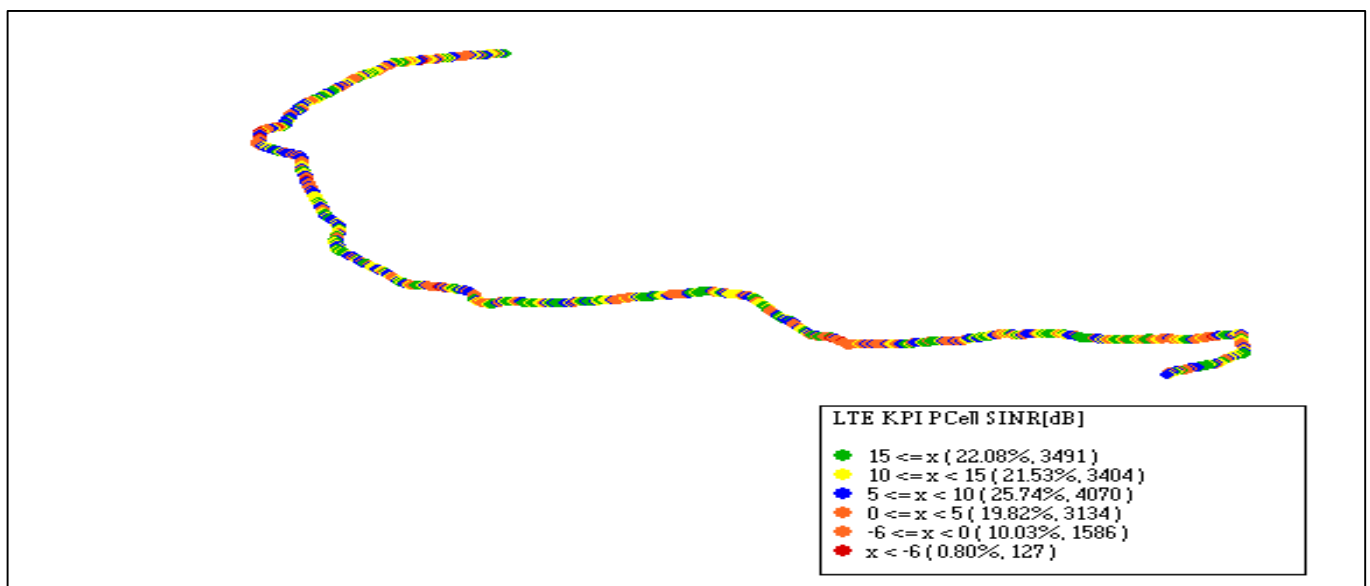
Overall SINR	# Samples	% PDF	Legends
(Min, $\leq 0$ )	726	6.89%	
(0, $\leq 5$ )	1270	12.38%	
(5, $\leq 10$ )	1787	17.42%	
(10, $\leq 15$ )	1698	16.55%	
(15, $\leq \text{Max}$ )	4796	46.76%	
Total	10277	100%	

## II. Quality Details

For measuring voice quality, as per the QoS norms, RxQual  $\leq 5$  for GSM TSPs, EcNo  $\geq -14$  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	89.17%



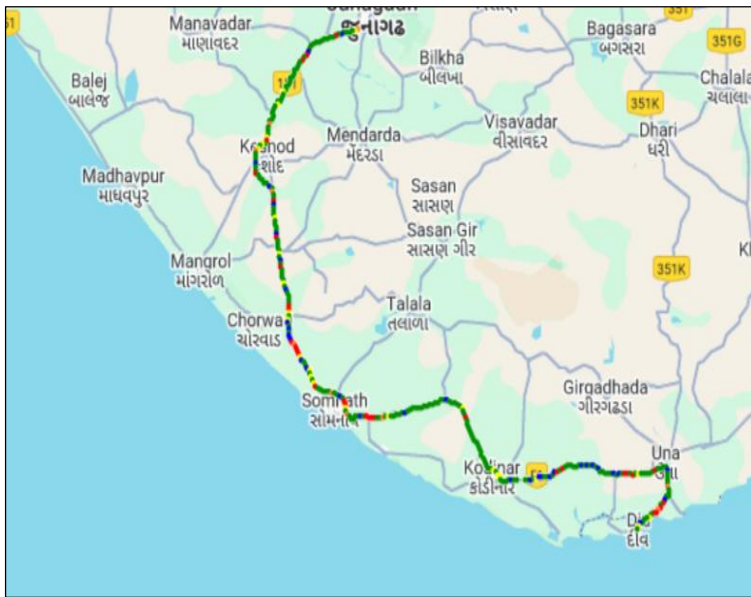
Overall SINR	# Samples	% PDF	Legends
(Min, $\leq -6$ )	127	0.80%	
(-6, $\leq 0$ )	1586	10.03%	
(0, $\leq 5$ )	3134	19.82%	
(5, $\leq 10$ )	4070	25.74%	
(10, $\leq 15$ )	3404	21.53%	
(15, $\leq \text{Max}$ )	3491	22.08%	
Total	27568	100%	

## II. Quality Details

### VIL

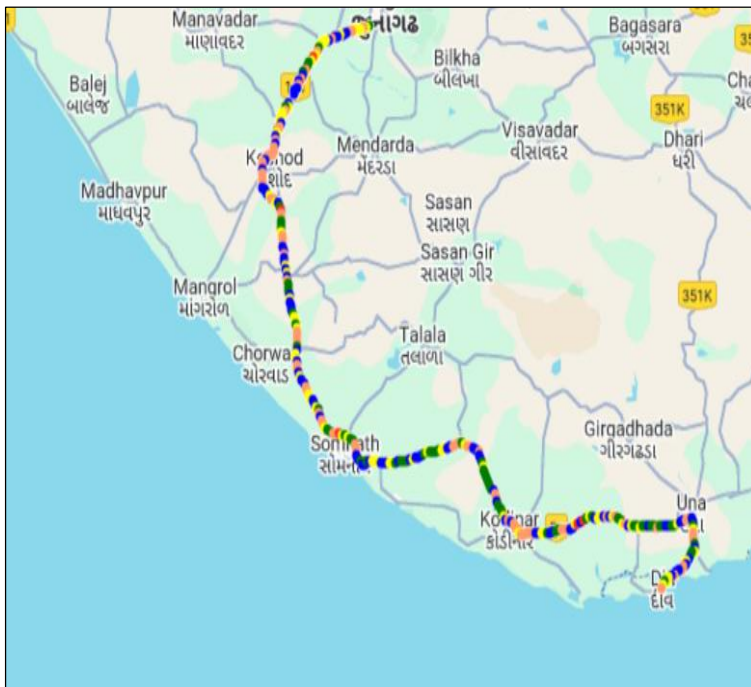
2G

Technology	Rx Quality %
2G	91.04%
4G	88.98%



Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	5418	72.27%	
(2, <=3)	515	6.87%	
(3, <=4)	561	7.48%	
(4, <=5)	329	4.39%	
(5, <=Max)	674	8.99%	
Total	7497	100%	

VolTE



Overall SINR	# Samples	% PDF	Legends
(Min, <=-6)	87	1.04%	
(-6, <=0)	837	9.98%	
(0, <=5)	1635	19.51%	
(5, <=10)	2274	27.13%	
(10, <=15)	1611	19.22%	
(15, <=Max)	1938	23.12%	
Total	8382	100%	

### III. Technology Details

TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	10.92%
BSNL 4G	44.59%
Airtel VoLTE	100%
Jio VoLTE	100%
VIL VoLTE	100%

