



# INDEPENDENT DRIVE TEST REPORT

*For*

# Tatanagar to Bargarh Railway

2019

JUNE

NORTH ZONE

**Key Performance Indicators: All TSPs have fail to met the Drop Call Rate (DCR) benchmark of 2% except BSNL 2G, VIL(Idea) 2G, Airtel 3G & Jio VoLTE. All TSPs have met the Call Setup Success Rate (CSSR) of 95% except Airtel 3G & BSNL 3G.**

The Independent Drive Test has been carried out by M/s PhiMetrics Technologies Pvt. Ltd. on behalf of TRAI in Tatanagar to Bargarh Railway Route from 10:00 AM to 06:00 PM; 10<sup>th</sup> June 2019. The drive test covered a drive route of 370 KMs over a period of one day. Approximately 215 calls were made for each of the 9 networks: four 2G networks, three 3G networks and two LTE network covering 5 unique TSPs.

Overview

Voice Summary

# Overview

## Overview:

Telecom Regulatory Authority of India has been entrusted with the task of laying down the standards of quality of service to be provided by the service providers and ensuring its enforcement; and also TRAI is responsible for conducting the periodical audit of such services provided by the service providers so as to protect the interest of the consumers of telecommunications service

TRAI is regularly monitoring the performance of Telecom Service Providers (TSP) against the benchmarks for the various Quality of Service (QoS) parameters laid down by the Authority. TSPs submit Performance Monitoring Reports to TRAI every quarter. TRAI also undertakes audit and assessment of Quality of Service through independent agencies to verify the Quality of Service claimed. The Audit agencies conduct sample 'Drive tests' across various cities in the country as part of audit and assessment of the TSPs' performance.

In view of complaints on call drops and other network quality issues, on behalf of TRAI, an Independent Drive Test (IDT) was conducted by PhiMetrics Technologies Pvt. Ltd. on 30<sup>th</sup> June 2019 covering various locations in Tatanagar to Bargarh Railway Route. The performance of Airtel, BSNL, Tata, Vodafone Idea Limited VIL(Idea), and Jio were monitored across various technologies (2G, 3G, and 4G). The drive test route was defined on the basis of several factors that include - areas from where call drop complaints are commonly received; areas of heavy usage; areas where previous Drive tests showed network issues; etc.

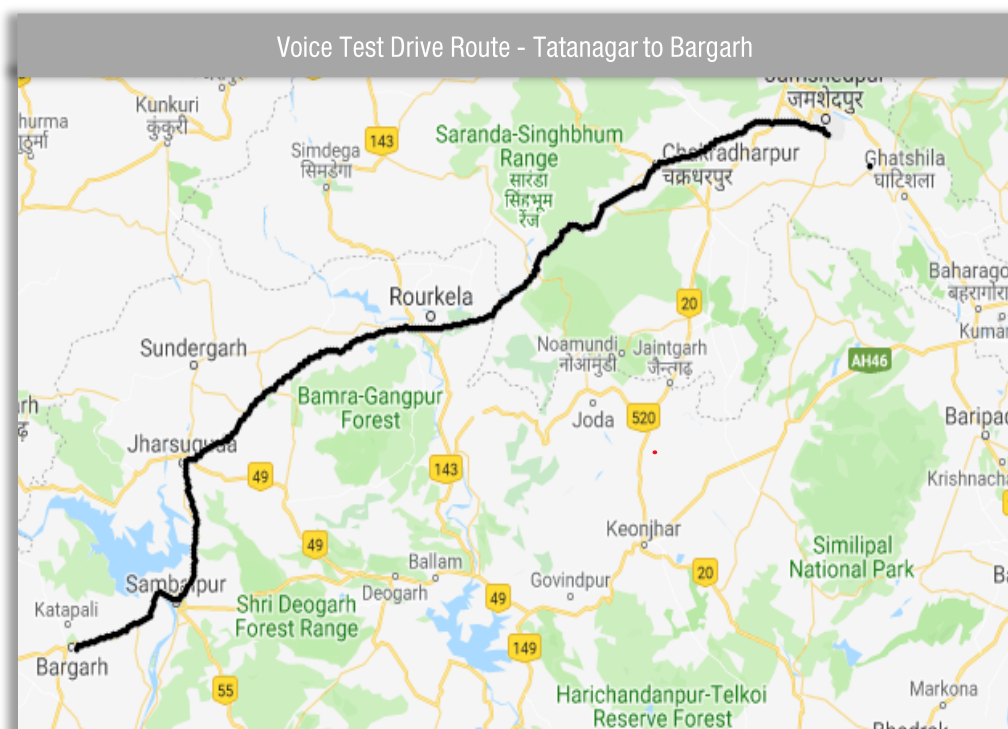
The test results obtained from these drive tests were utilized to assess the network quality for Voice and Data services in terms of **Voice**: Coverage, Quality, Handover Success Rate, Call Setup Success Rate, Drop Call Rate and Block Call Rate.

### Drive Test Details For Tatanagar to Bargarh Railway Route:

Independent Drive test was conducted for a period of 1 day on 30<sup>th</sup> June 2019 in Tatanagar to Bargarh Railway Route from 10:00 AM to 6:00 PM. Calls were made for 90 sec duration with wait time of 10 sec between calls in all technologies.

**Voice Tests:** The drive test covered a drive route of approximately 370 KMS over a period of 1 day on 30<sup>th</sup> June 2019 . Approximately 215 calls were made for each of the 9 networks: four 2G (Lock Mode) networks, three 3G (Dual mode) networks and two VoLTE network covering 5 unique TSPs.

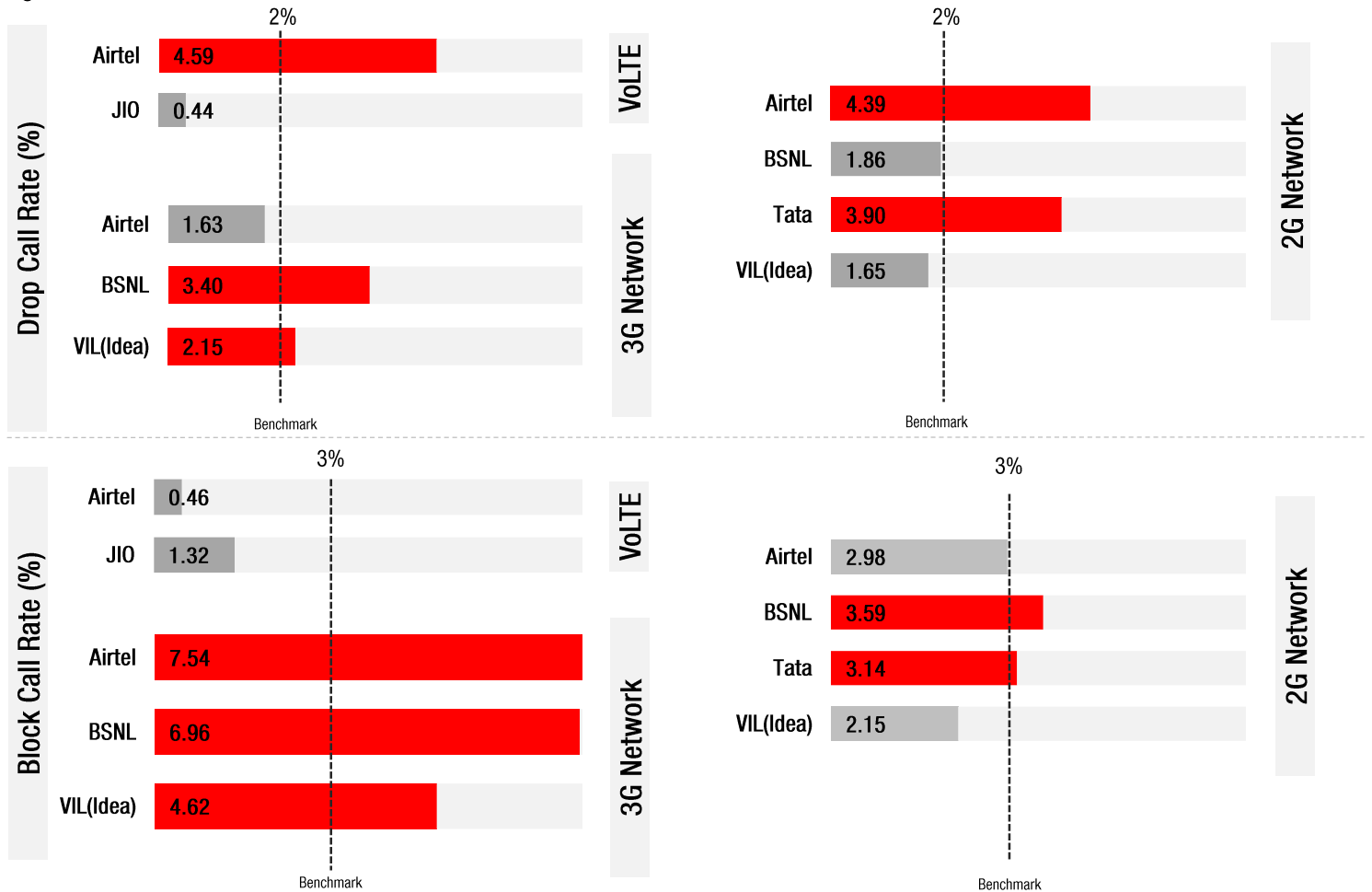
\* In case of multiple call failure in similar geo location in given period of 60secs has been counted as one call failure



# Voice Calls

## Key Observations

QoS compliance of the TSPs in Tatanagar to Bargarh Railway for Voice across technologies 2G/3G/4G-VoLTE is given below:



KPI	2G Networks			
	Airtel	BSNL	Tata	VIL(Idea)
SDCCH Congestion(<=1%)	0.43%	1.79%	0.00%	0.00%
TCH Congestion (<=2%)	2.55%	1.79%	3.14%	2.15%

KPI	3G Networks		
	Airtel	BSNL	VIL(Idea)
CSFB Failure %	2.01%	0.00%	1.03%
SDCCH Congestion%	1.01%	1.90%	1.54%
RRC Congestion%	1.51%	1.27%	0.00%
SDCCH & RRC Congestion(<=1%)	2.51%	3.16%	1.54%
TCH Congestion %	3.02%	3.16%	2.05%
RAB Congestion %	0.00%	0.63%	0.00%
TCH & RAB Congestion (<=2%)	3.02%	3.80%	2.05%

- a) All TSPs have fail to met the 2% QoS benchmark of Drop Call Rate (DCR%) except BSNL 2G, VIL(VIL(Idea) 2G), Airtel 3G & JIO VoLTE.
- b) Call Block Rate (CBR%) benchmark of 3% was not achieved by all TSP's except Airtel 2G, VIL(Idea) 2G, Airtel VoLTE & Jio VoLTE.

\*NA = Not Applicable Not meeting Benchmark

# Voice Calls

## Key Observations

### Coverage

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

TSPs	2G			
	Airtel	BSNL	Tata	VIL(Idea)
Coverage%	66.65%	66.14%	73.38%	64.63%

b) Percentage of coverage samples for 2G  $\geq$  -85 dBm, 3G  $\geq$  -90 dBm & LTE  $\geq$  -110 dBm.

TSPs	3G			VoLTE	
	Airtel	BSNL	VIL(Idea)	Airtel	Jio
Coverage %	73.96%	64.53%	60.01%	67.58%	89.45%

c) Percentage of time spent on 3G network:

TSPs	3G		
	Airtel	BSNL	VIL(Idea)
Time Spent on 3G%	31.99%	25.78%	22.54%

d) Percentage of RLT  $\geq$ 48:

TSPs	2G			
	Airtel	BSNL	Tata	VIL(Idea)
%RLT $\geq$ 48	0.00%	36.40%	0.00%	0.00%

e) Average CST Second

TSPs	2G			
	Airtel	BSNL	Tata	VIL(Idea)
CST(sec)	3.62	2.78	3.92	3.75

TSPs	3G			VOLTE	
	Airtel	BSNL	VIL(Idea)	Airtel	JIO
CST(sec)	4.62	2.70	5.19	4.90	1.21

# Summary

## City Level Summary

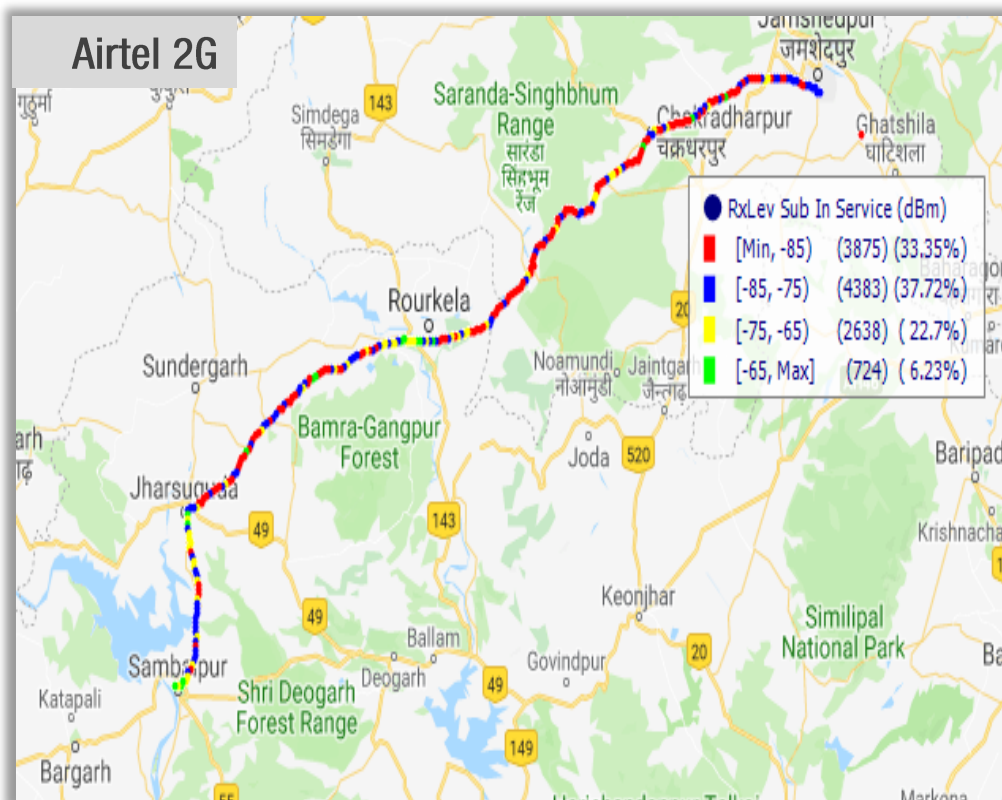
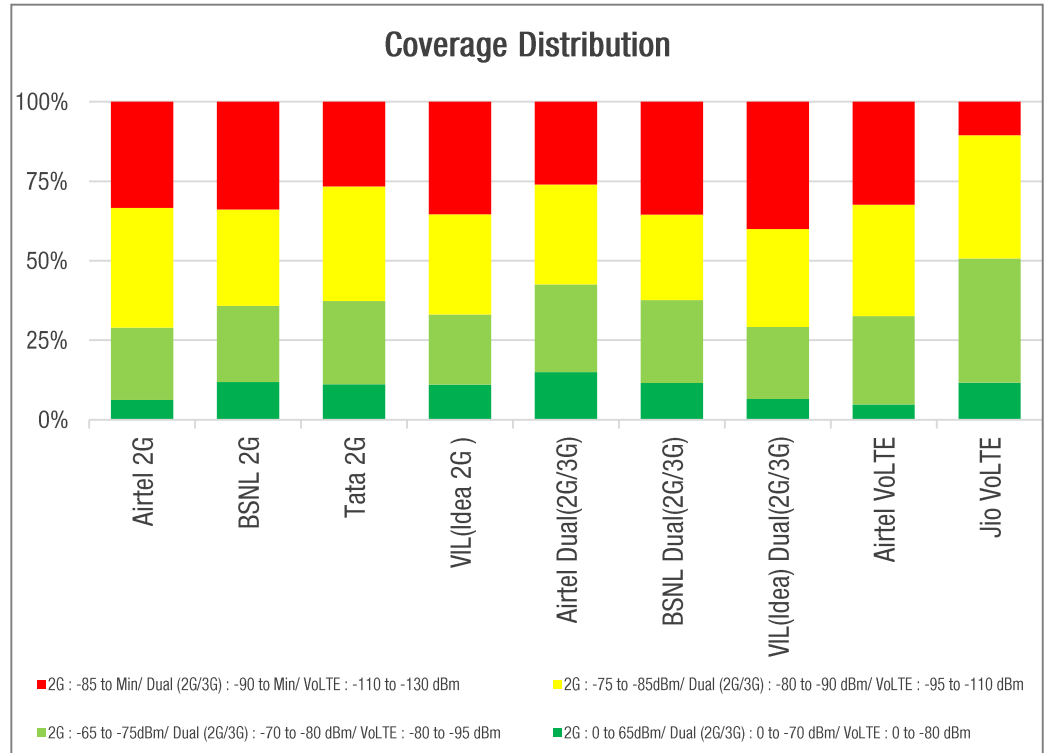
Voice Call	2G			
	Airtel	BSNL	Tata	VIL(Idea)
Call Attempt	235	223	159	186
Blocked Call Rate (%)	2.98%	3.59%	3.14%	2.15%
CSSR% (Accessibility)	97.02%	96.41%	96.86%	97.85%
Drop Call Rate (%)	4.39%	1.86%	3.90%	1.65%
Mobility HOSR (%)	96.98%	89.50%	95.88%	95.50%
Rx Quality (%)	92.56%	92.19%	92.73%	94.32%

Voice Call	3G			VoLTE	
	Airtel	BSNL	VIL(Idea)	Airtel	Jio
Call Attempt	199	158	195	219	228
Blocked Call Rate (%)	7.54%	6.96%	4.62%	0.46%	1.32%
CSSR% (Accessibility)	92.46%	93.04%	95.38%	99.54%	98.68%
Drop Call Rate (%)	1.63%	3.40%	2.15%	4.59%	0.44%
Mobility HOSR (%)	98.22%	83.29%	97.36%	99.72%	99.42%
Rx Quality (%)	90.56%	93.76%	92.44%	75.83%	86.85%

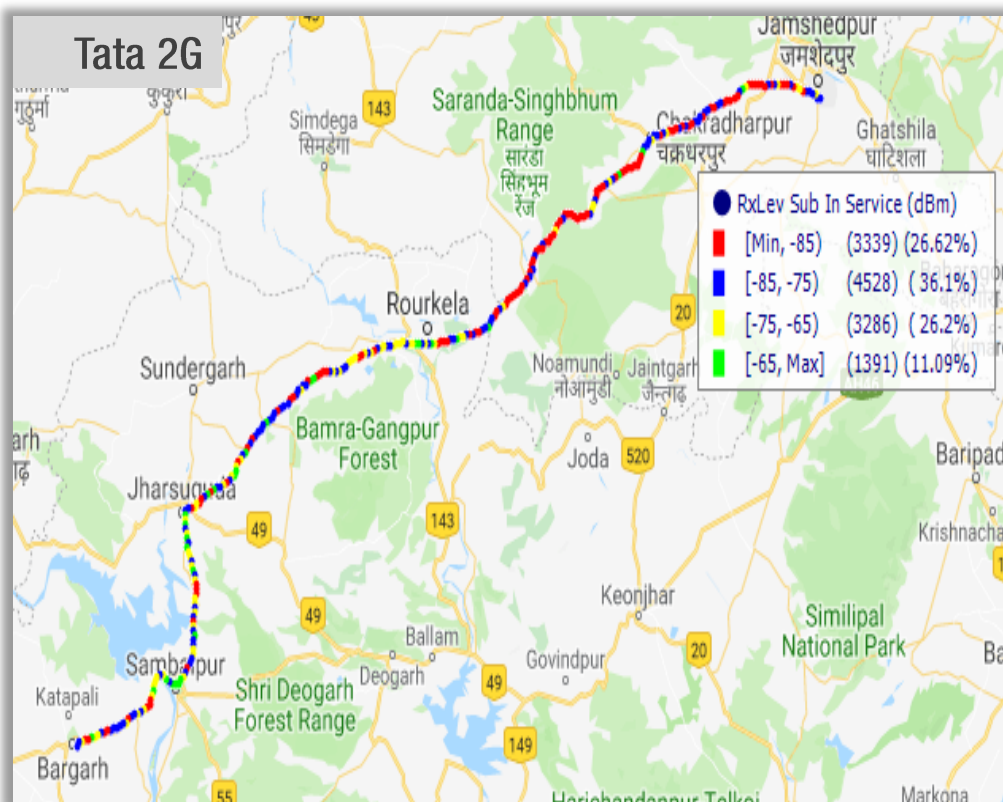
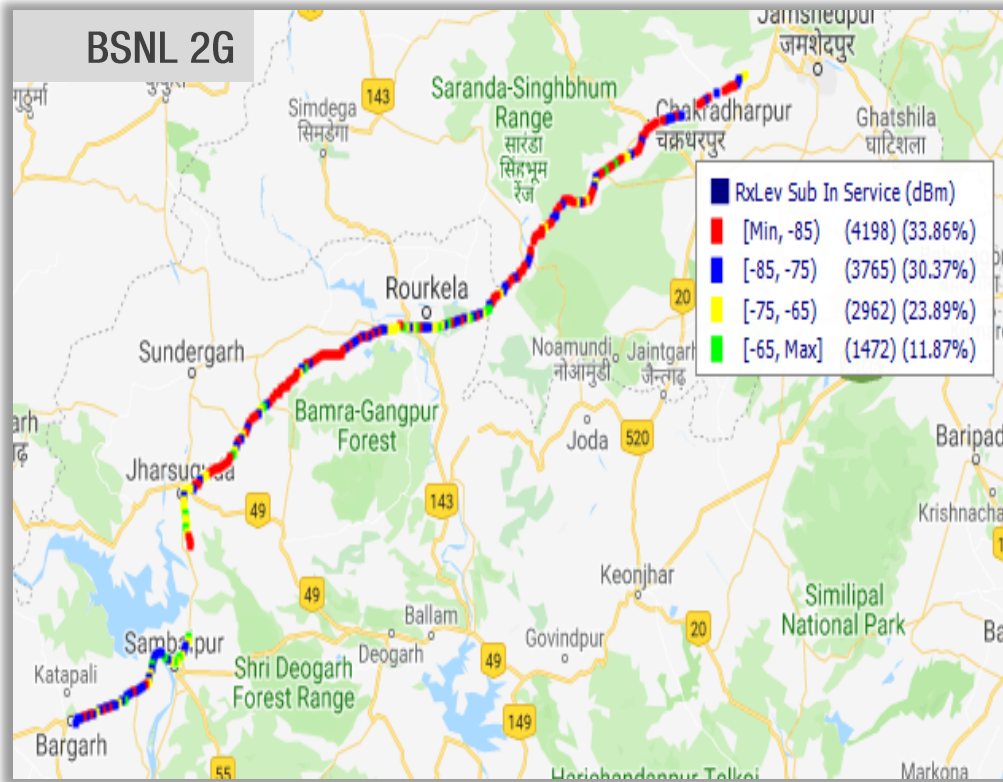
# I. Coverage Details

RF Coverage relates to the geographical footprint within the system that has sufficient RF signal strength to provide for a call/data session. The Coverage rate of an TSP is calculated on the basis of % of samples in which the Rx level  $\geq -85$  dBm, RSCP is  $\geq -90$  dBm & RSRP  $\geq -110$  dBm. The details are as follows.

TSP	Coverage Rate
Airtel 2G	66.65%
BSNL 2G	66.14%
Tata 2G	73.38%
VIL(Idea) 2G	64.63%
Airtel Dual(2G/3G)	73.96%
BSNL Dual(2G/3G)	64.53%
VIL(Idea) Dual(2G/3G)	60.01%
Airtel VoLTE	67.58%
Jio VoLTE	89.45%

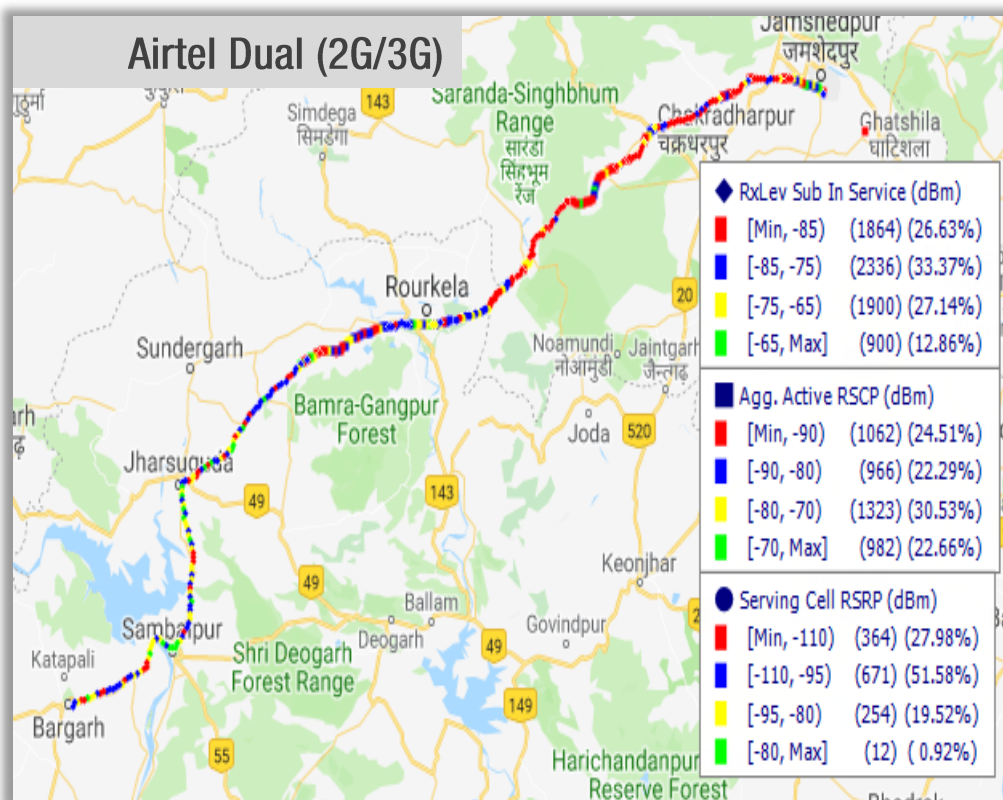
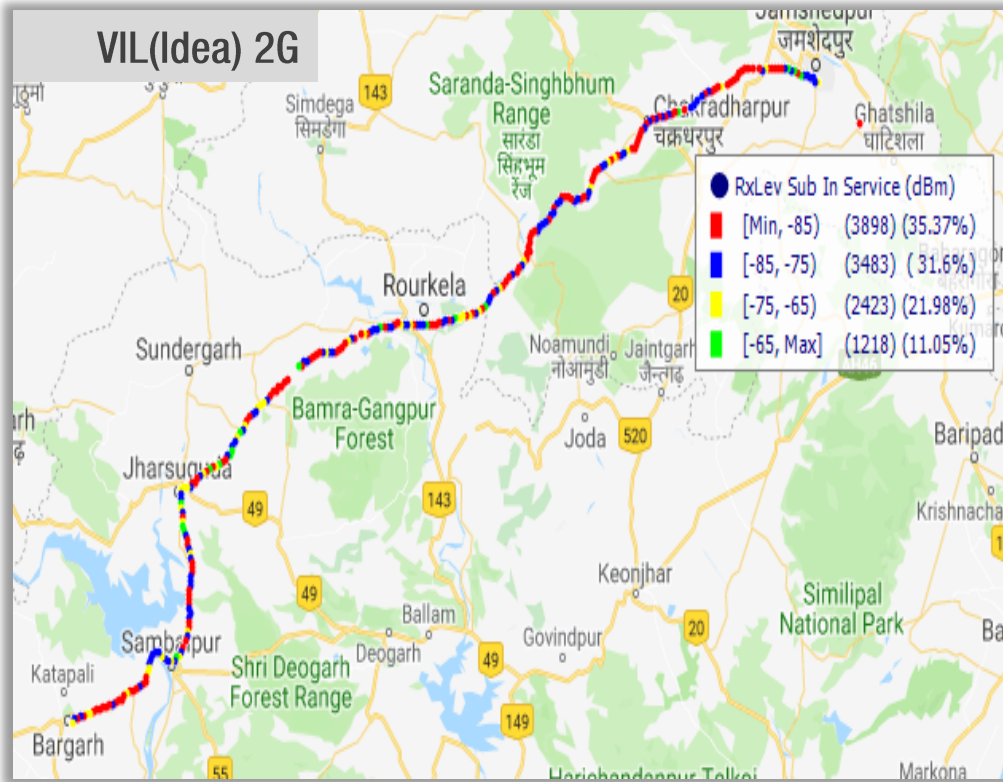


# I. Coverage Details (contd.)



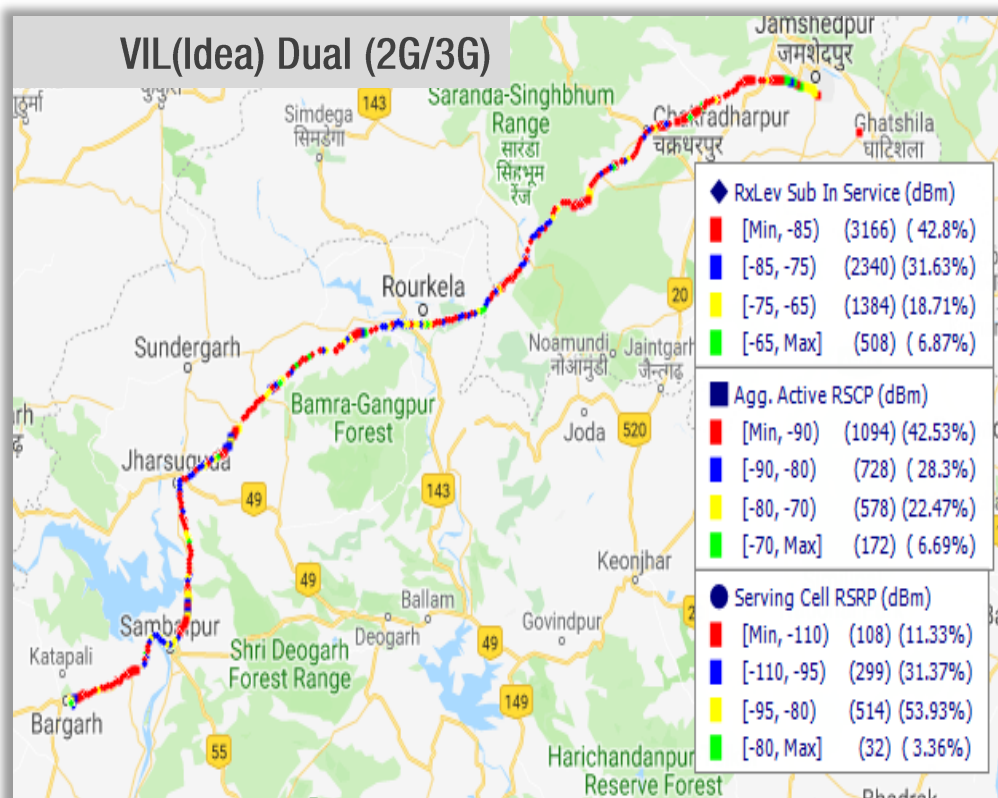
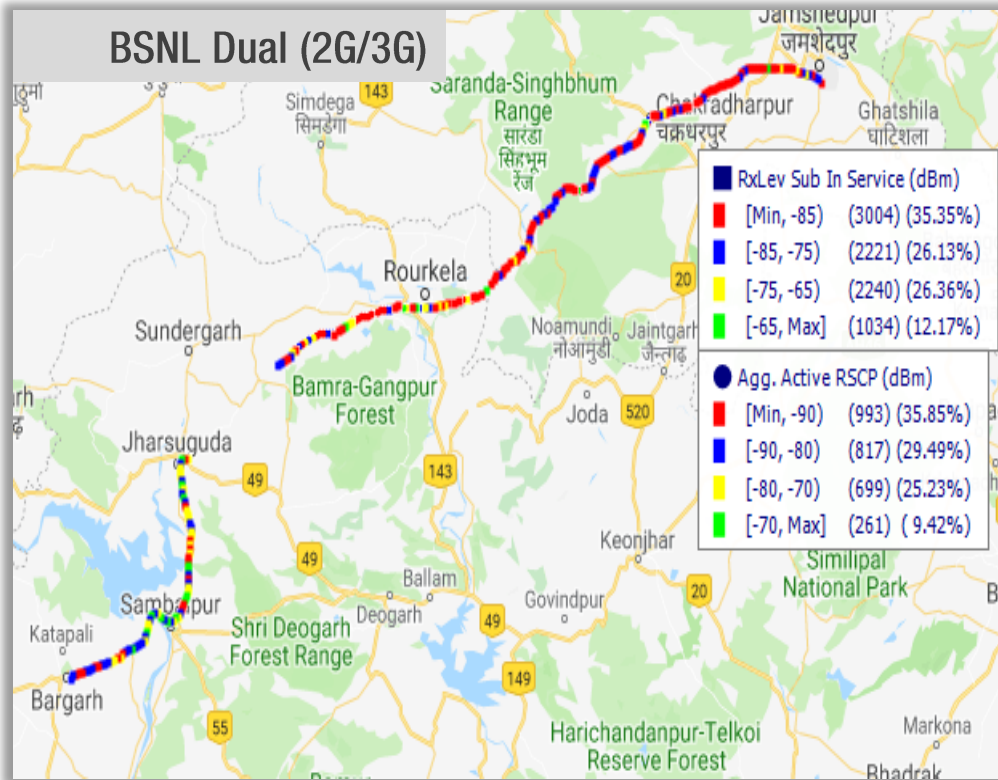


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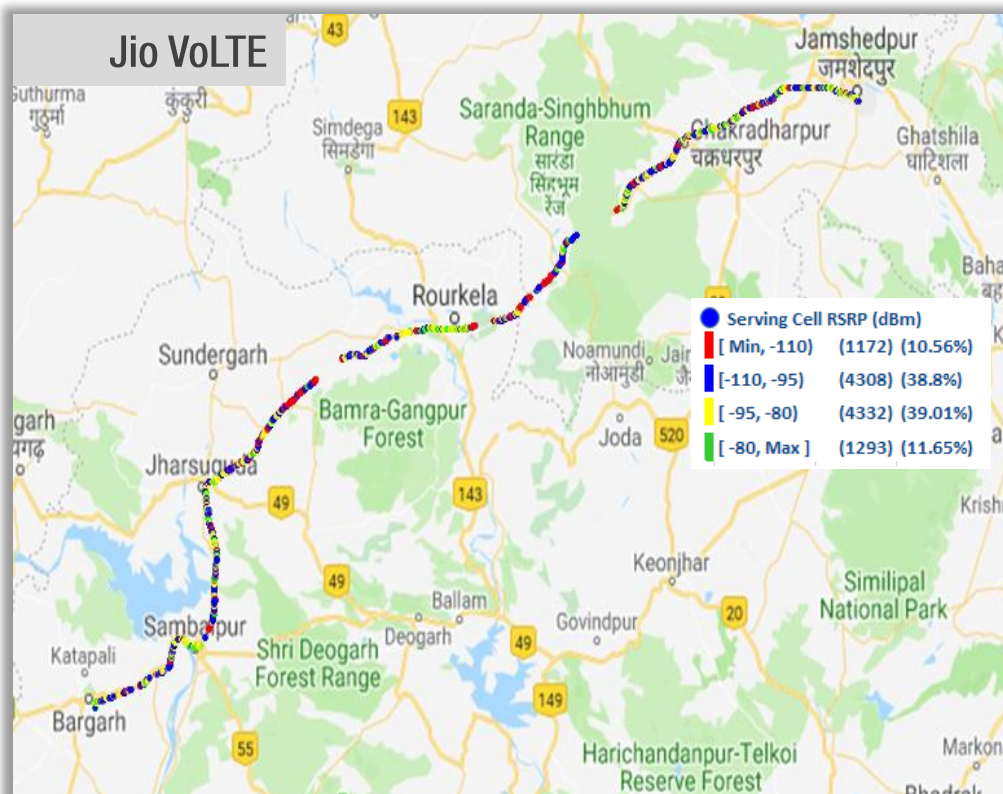
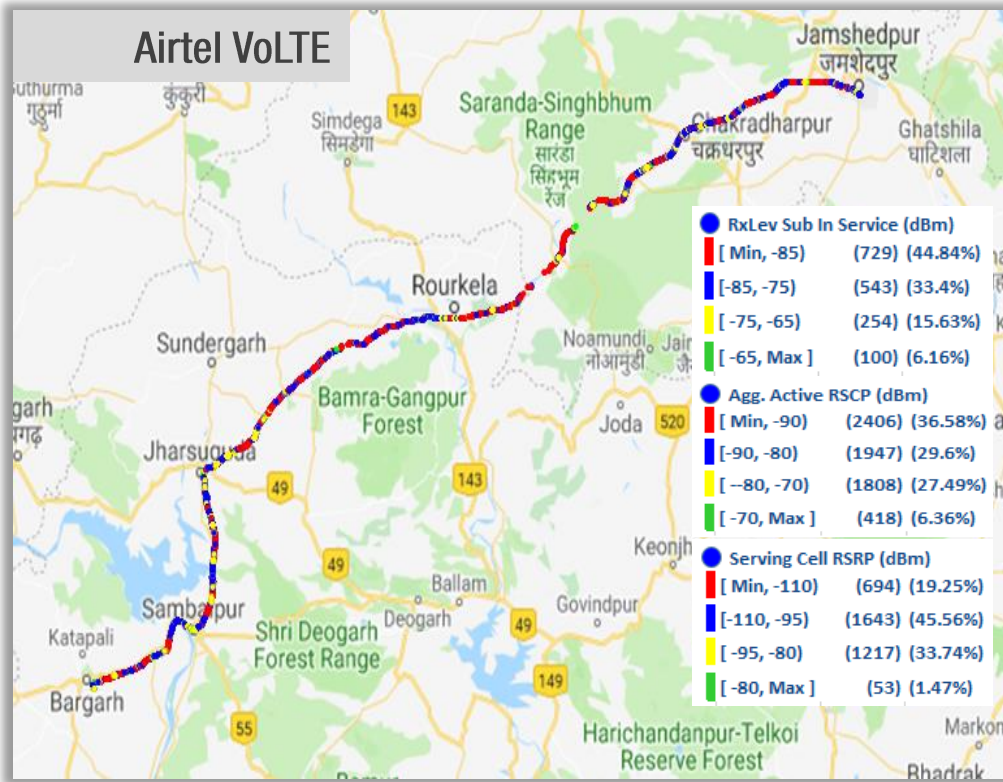




# I. Coverage Details (contd.)



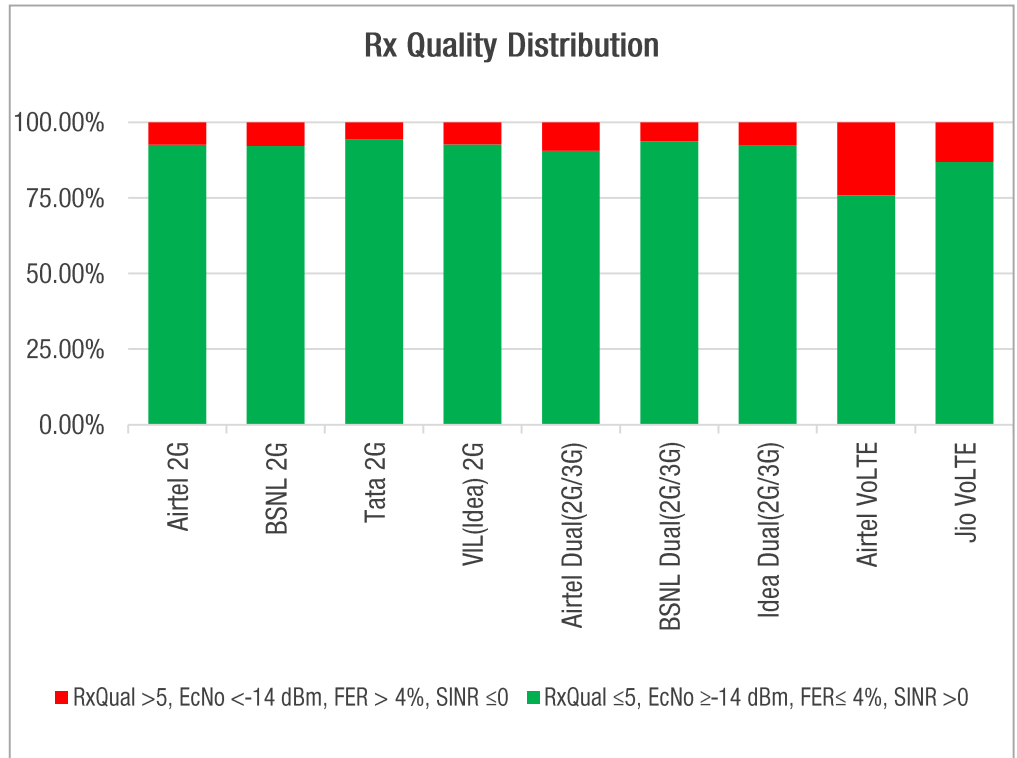
# I. Coverage Details (contd.)



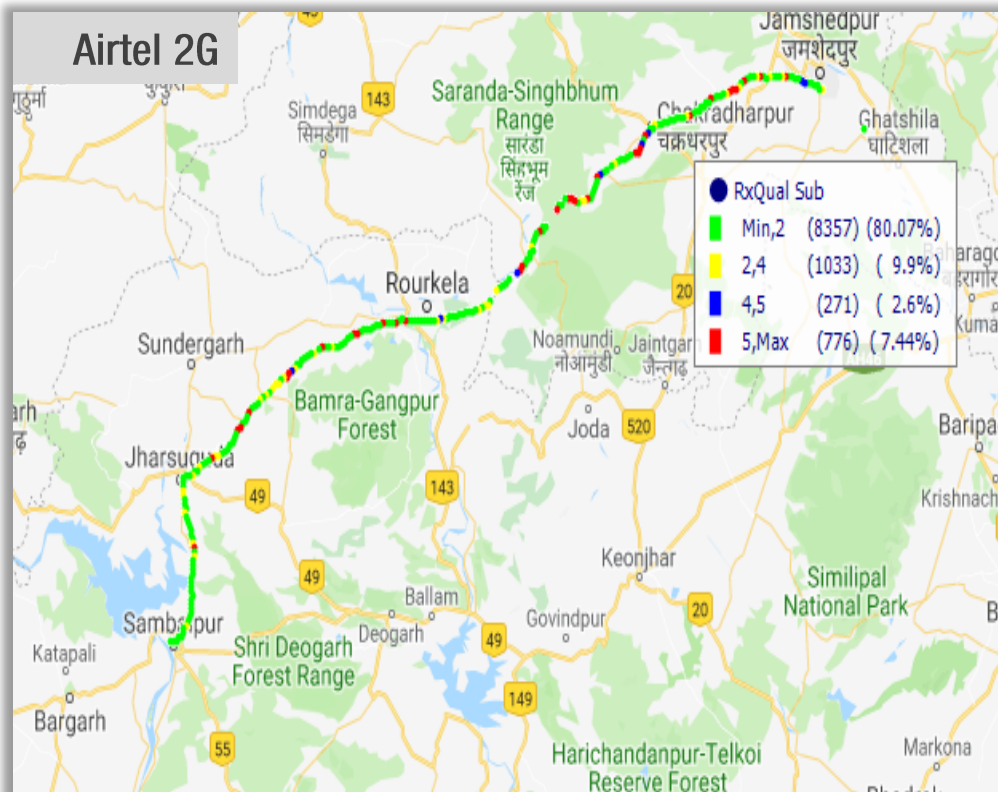
## II. Quality Details

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  $\geq 95\%$ .

TSP	Rx Quality
Airtel 2G	92.56%
BSNL 2G	92.19%
Tata 2G	94.32%
VIL(Idea) 2G	92.73%
Airtel Dual(2G/3G)	90.56%
BSNL Dual(2G/3G)	93.76%
VIL(Idea) Dual(2G/3G)	92.44%
Airtel VoLTE	75.83%
Jio VoLTE	86.85%

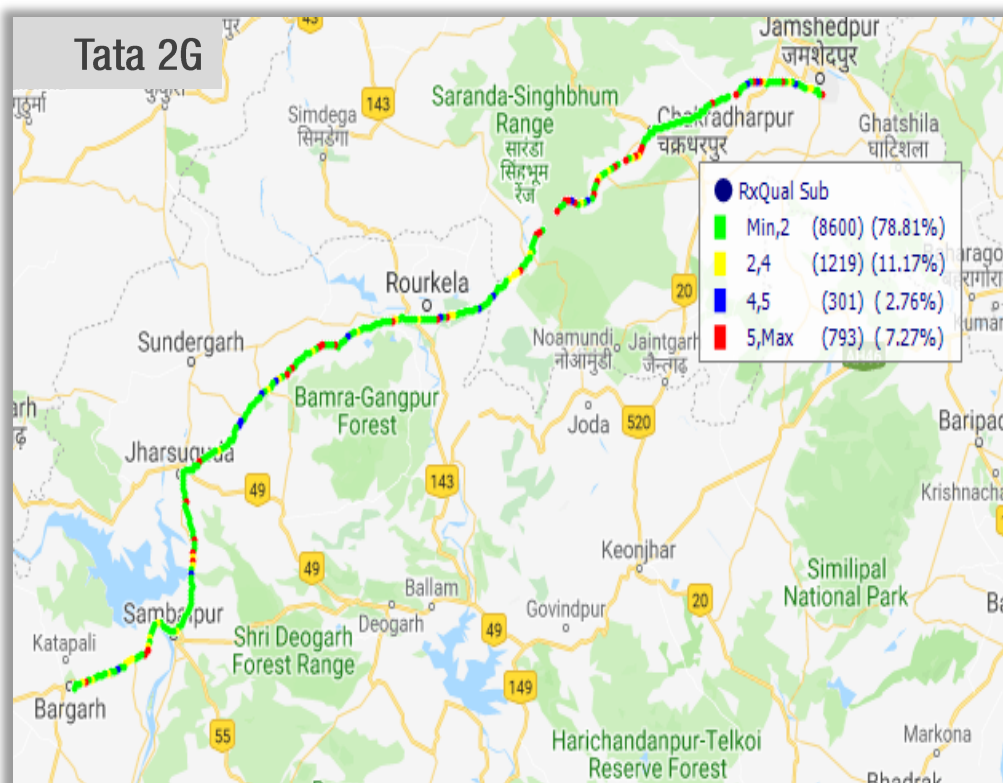
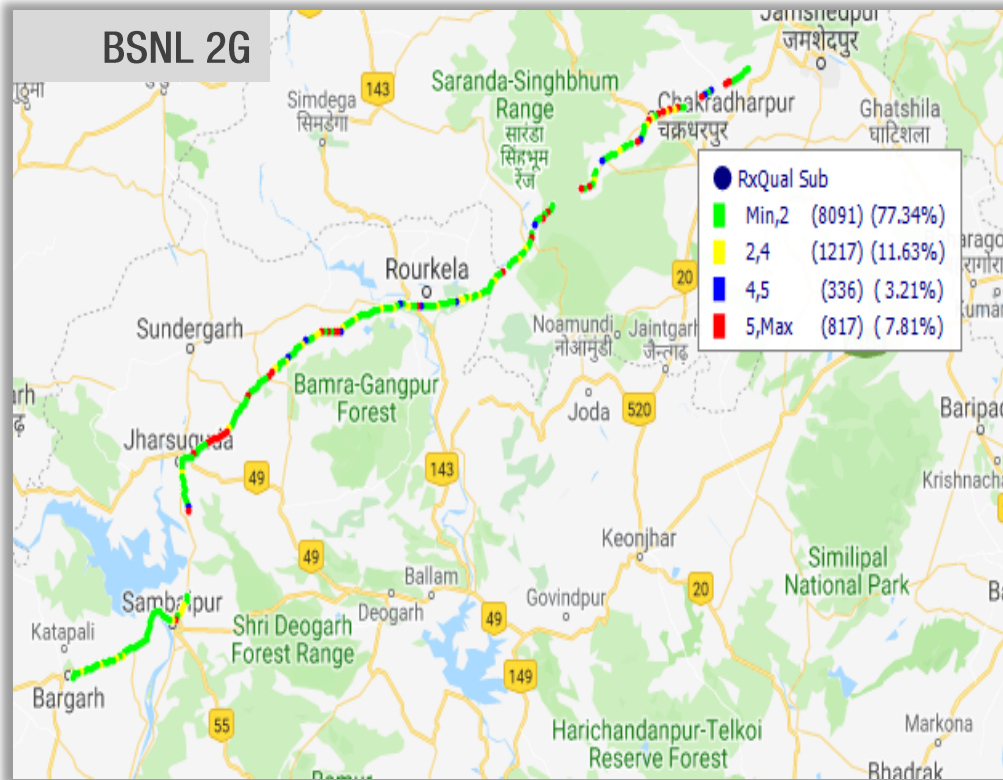


— TSPs not meeting the Benchmark

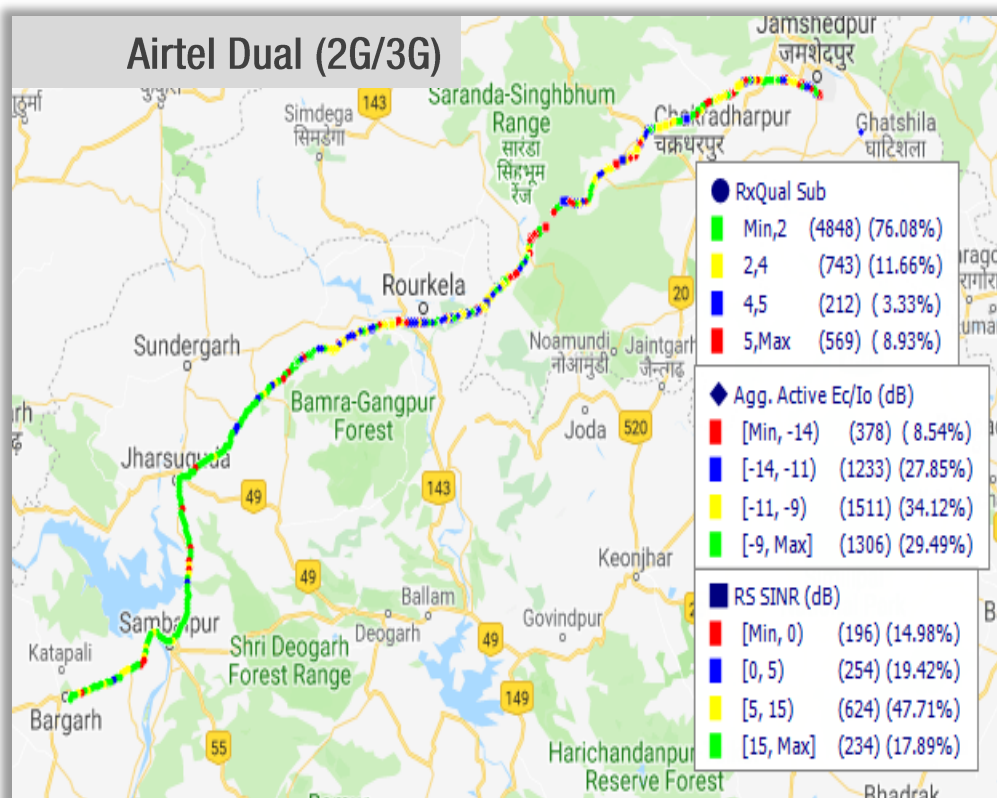
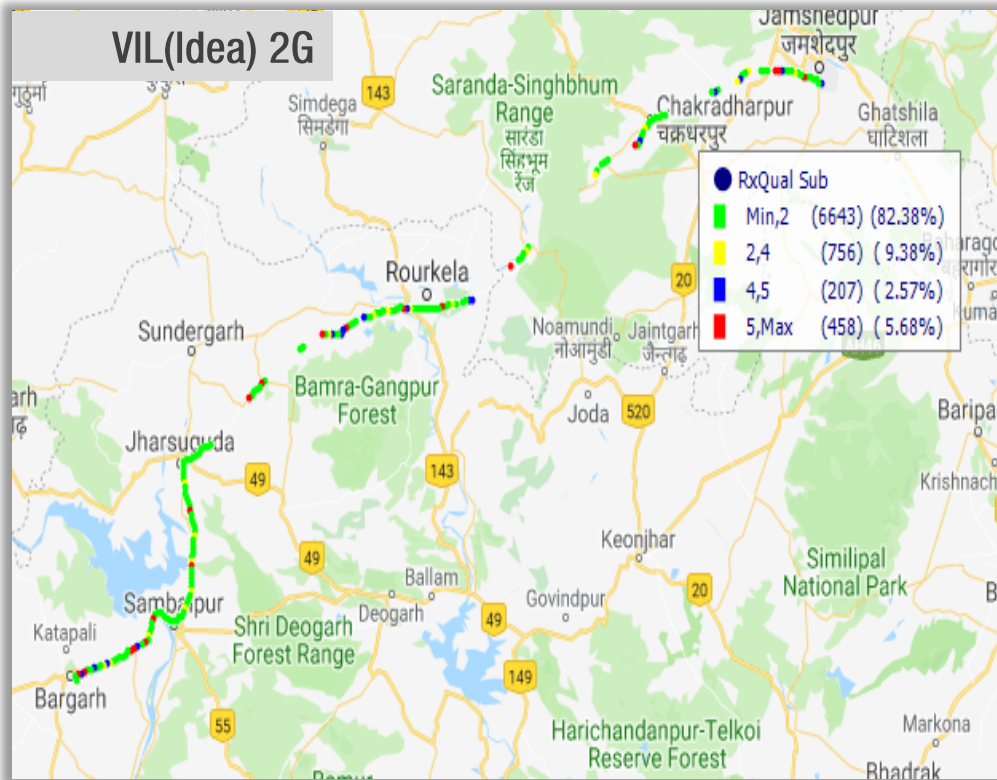




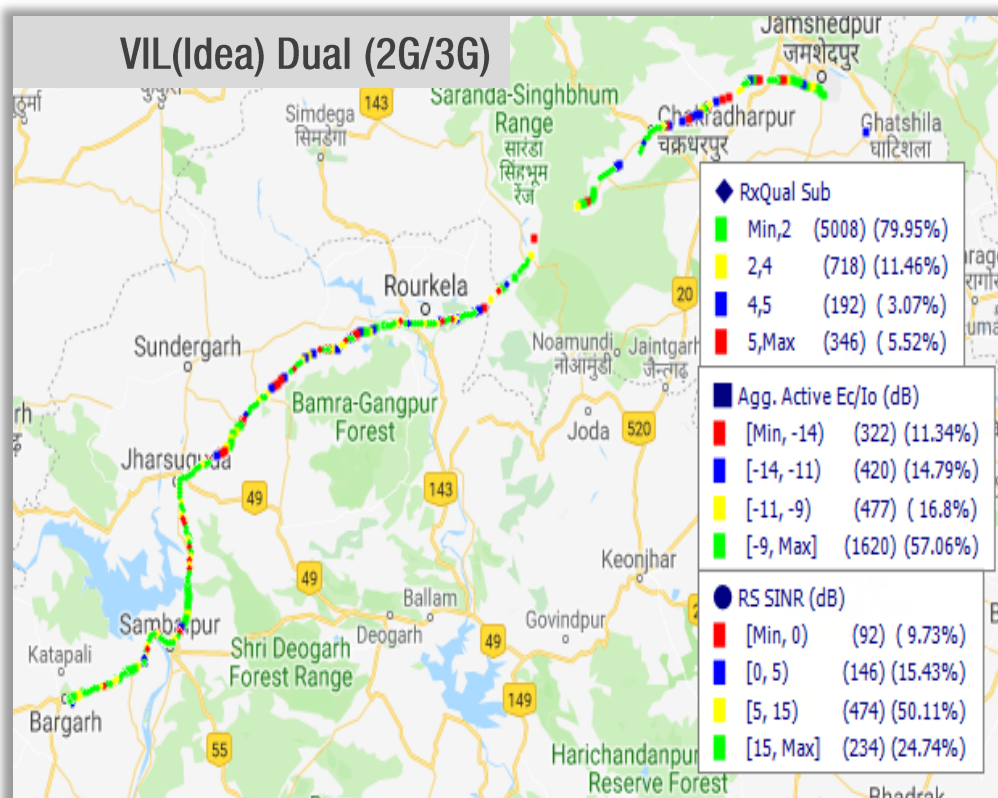
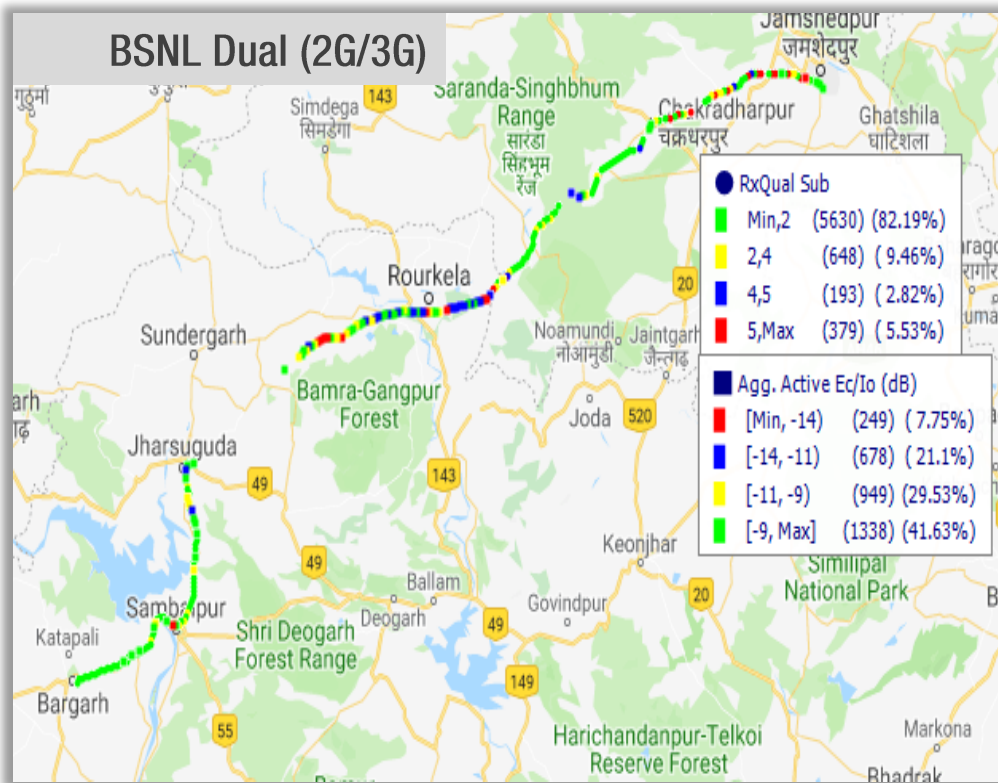
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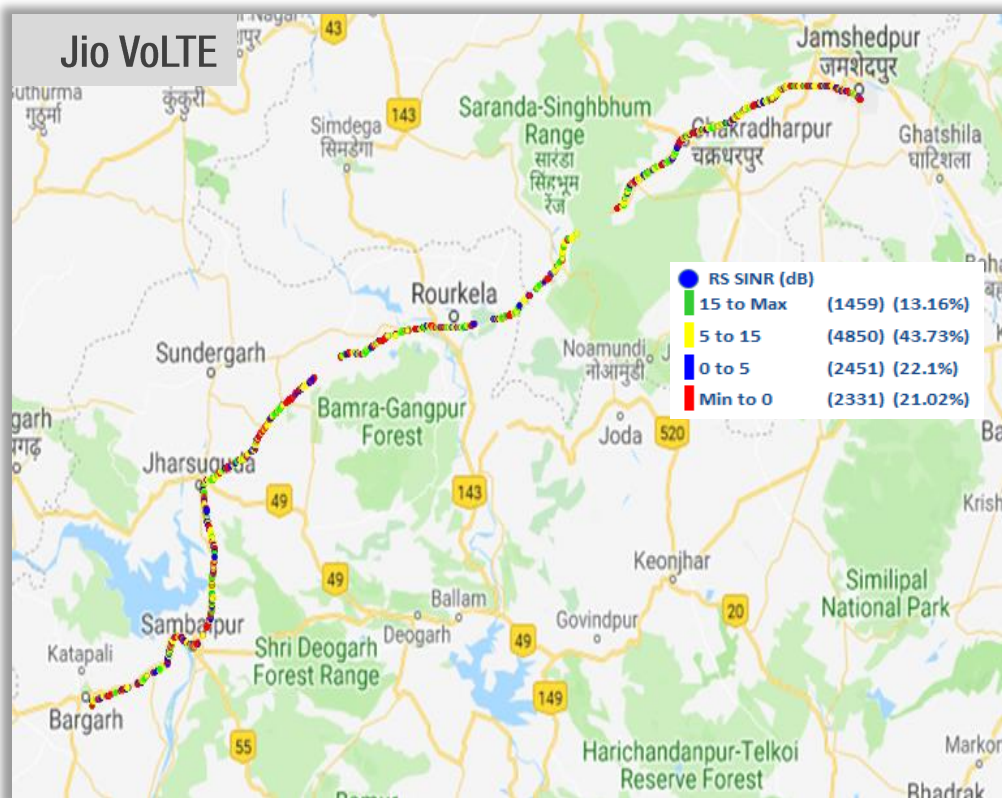
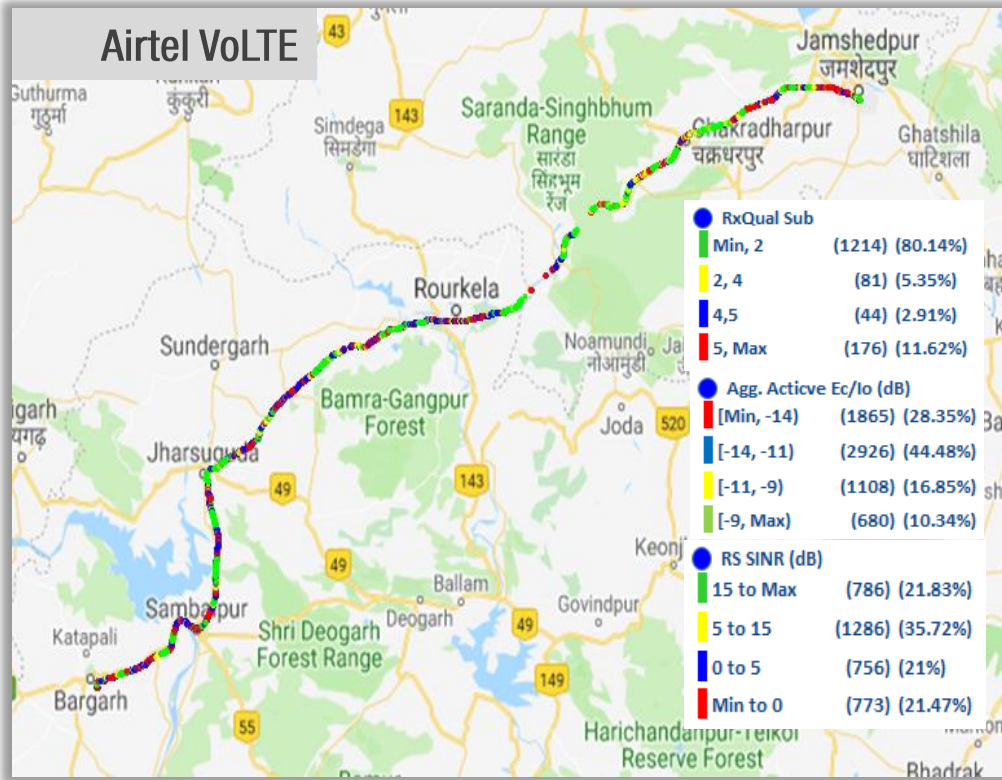


## II. Quality Details (contd.)



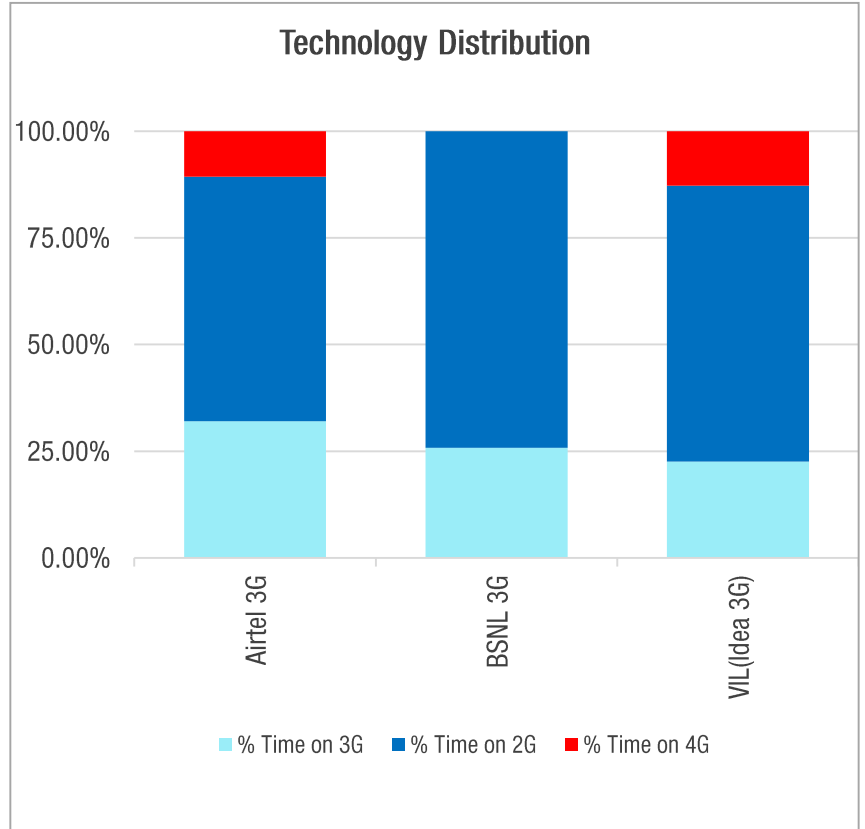


## II. Quality Details (contd.)



### III. Technology Details

TSP	% Time on 3G
Airtel 3G	31.99%
BSNL3G	25.78%
VIL(Idea) 3G	22.54%



### III. Technology Details(contd.)

