



INDEPENDENT DRIVE TEST REPORT

For

Srinagar to Leh Highways September 2018

NORTH ZONE

Key Performance Indicators: All TSPs have fail to met the Drop Call Rate (DCR) benchmark of 2%. All TSPs have fail to met the Call Setup Success Rate (CSSR) of 95%.

The Independent Drive Test has been carried out by M/s PhiMetrics Technologies Pvt. Ltd. on behalf of TRAI in Srinagar to Leh Highways city & adjoining areas from 9:00 AM to 9:00 PM; 11th September to 12th September 2018. The drive test covered an drive route of 405 KMs over a period of 2 days. Approximately 295 calls were made for each of the 4 networks: two 2G networks and two 3G network covering 2 unique TSPs

Overview

Voice Summary

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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 **11th September to 12th September 2018** covering various locations in Srinagar to Leh Highways & surrounding region. The performance of **Airtel and BSNL** 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; residential areas away from arterial roads; office areas; 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 Srinagar to Leh Highways:

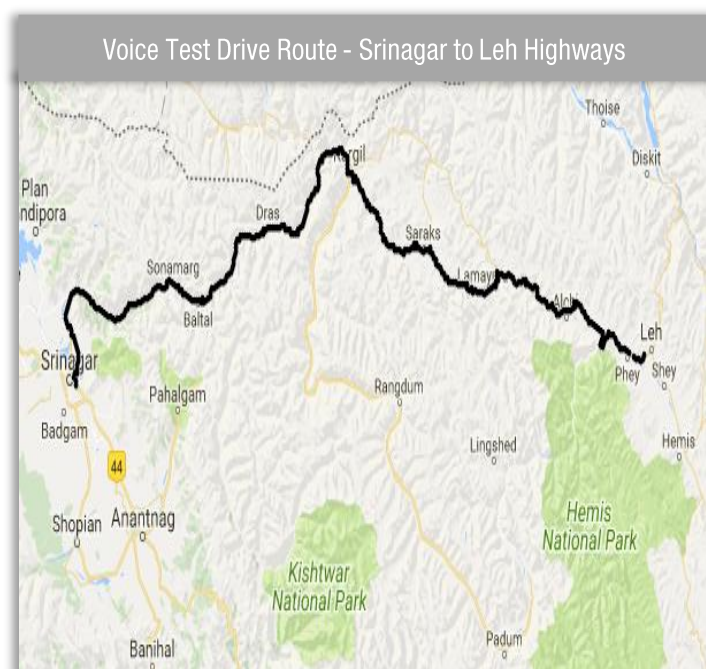
Independent Drive test was conducted for a period of 2 days on 11th September to 12th September 2018 in Srinagar to Leh Highways & surrounding areas from 9:00 AM to 9:00 PM. Calls were made for 90 sec duration with wait time of 10 sec between calls in all technologies.

Voice Tests: The drive test covered a drive route of approximately 405 KMs over a period of 2 day on 11th September to 12th September 2018. Approximately 295 calls were made for each of the 4 networks: two 2G (Lock Mode) networks and two 3G (Dual mode) networks covering 2 unique TSPs.

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

* 3G KPI's which are calculated from UE in Dual Mode (2G & 3G) includes samples and events of 2G.

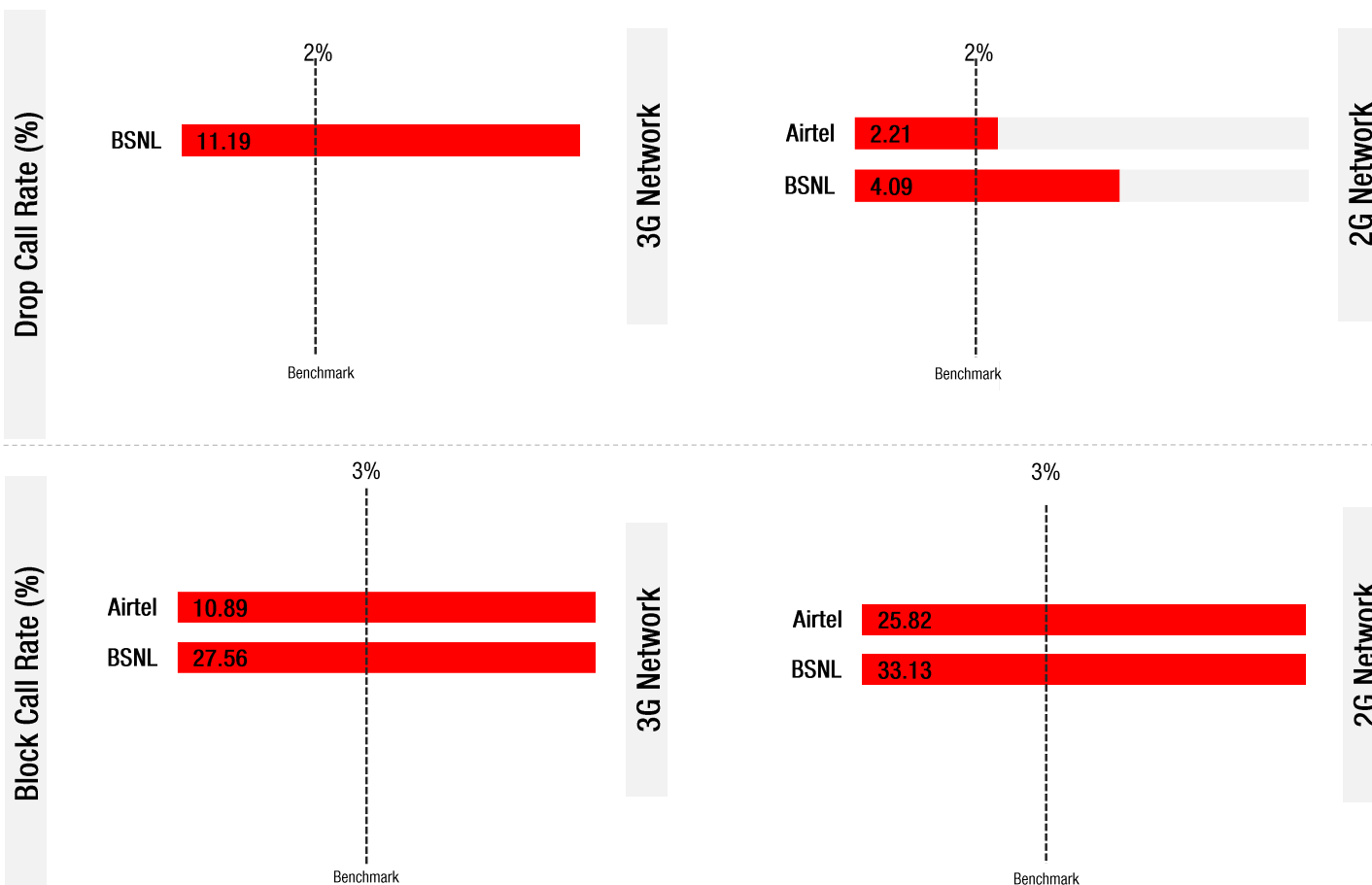
* 4G KPI's which are calculated from the UE in Free Mode included samples and events of 2G & 3G.



Voice Calls

Key Observations

QoS compliance of the TSPs in Srinagar to Leh Highways for Voice across technologies 2G/3G is given below:



KPI	2G Networks	
	Airtel	BSNL
SDCCH Congestion%	0.41%	2.43%
TCH Congestion %	25.41%	30.70%

KPI	3G Networks	
	Airtel	BSNL
CSFB Failure %	0.00%	
SDCCH Congestion%	0.00%	1.14%
RRC Congestion%	0.00%	1.99%
SDCCH & RRC Congestion%	0.00%	3.13%
TCH Congestion %	10.89%	17.33%
RAB Congestion %	0.00%	7.10%
TCH & RAB Congestion %	10.89%	24.43%

- All TSPs have fail to met the 2% QOS benchmark of Drop Call Rate (DCR%) .
- Call Block Rate (CBR%) benchmark of 3% was fail to achieved by all TSP's.

Not meeting Benchmark

Voice Calls

Key Observations

Coverage

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

TSPs	2G	
	Airtel	BSNL
Coverage%	56.23%	57.94%

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

TSPs	3G	
	Airtel	BSNL
Coverage %	58.39%	60.49%

c) Percentage of time spent on 3G network:

TSPs	3G	
	Airtel	BSNL
Time Spent on 3G%	45.50%	35.92%

d) Percentage of RLT \geq 48:

TSPs	2G	
	Airtel	BSNL
%RLT \geq 48	0.00%	39.83%

e) Average CST Second

TSPs	2G	
	Airtel	BSNL
CST(sec)	3.49	2.75

TSPs	3G	
	Airtel	BSNL
CST(sec)	5.26	2.71

Summary

City Level Summary

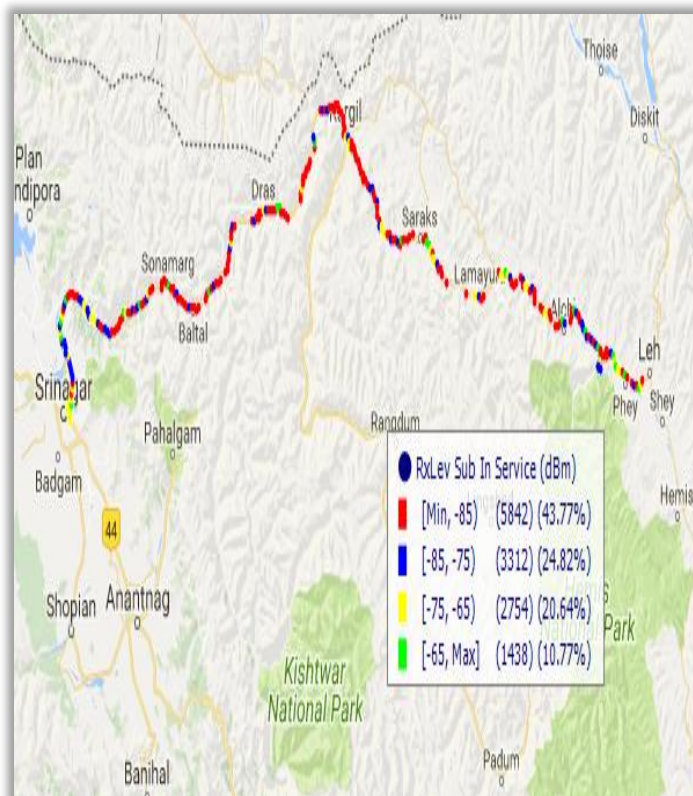
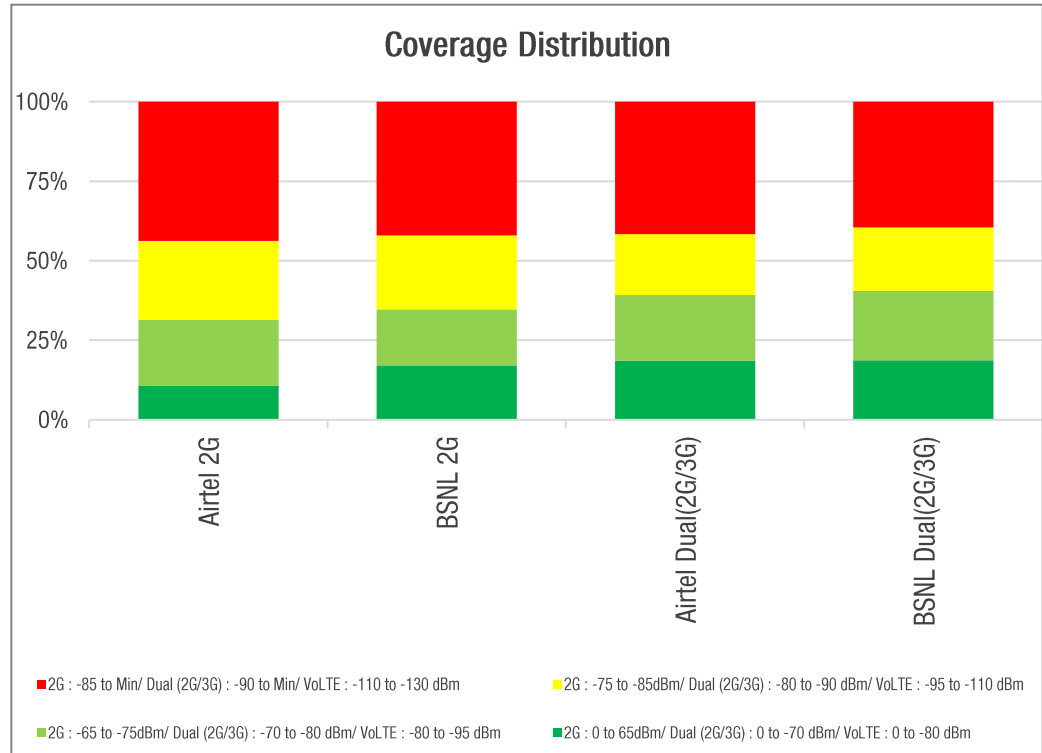
Voice Call	2G	
	Airtel	BSNL
Call Attempt	244	329
Blocked Call Rate (%)	25.82%	33.13%
CSSR% (Accessibility)	74.18%	66.87%
Drop Call Rate (%)	2.21%	4.09%
Mobility HOSR (%)	100.00%	96.88%
Rx Quality (%)	91.58%	91.28%

Voice Call	3G	
	Airtel	BSNL
Call Attempt	248	352
Blocked Call Rate (%)	10.89%	27.56%
CSSR% (Accessibility)	89.11%	72.44%
Drop Call Rate (%)	4.52%	5.49%
Mobility HOSR (%)	99.90%	99.42%
Rx Quality (%)	90.15%	94.06%

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

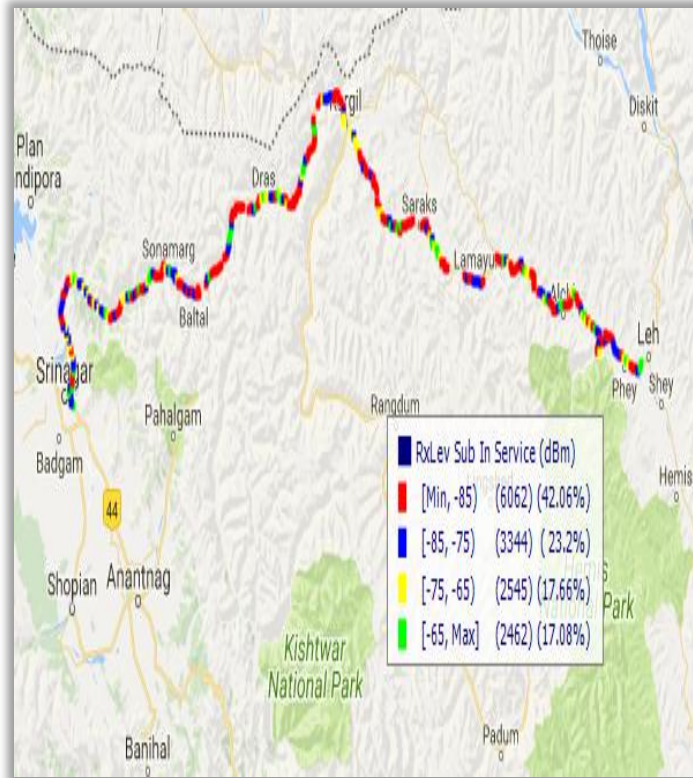
TSP	Coverage Rate
Airtel 2G	56.23%
BSNL 2G	57.94%
Airtel Dual(2G/3G)	58.39%
BSNL Dual(2G/3G)	60.49%



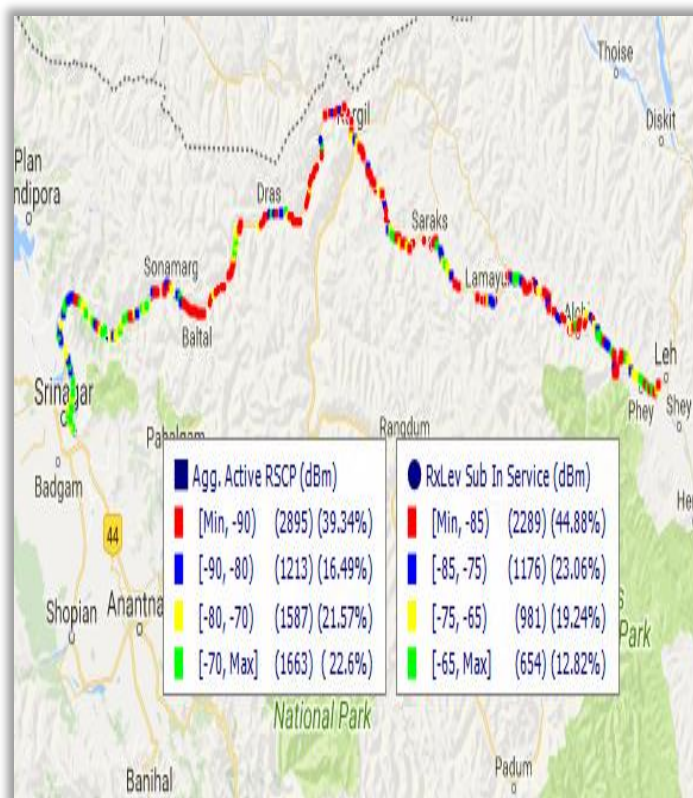
Airtel 2G

I. Coverage Details (contd.)

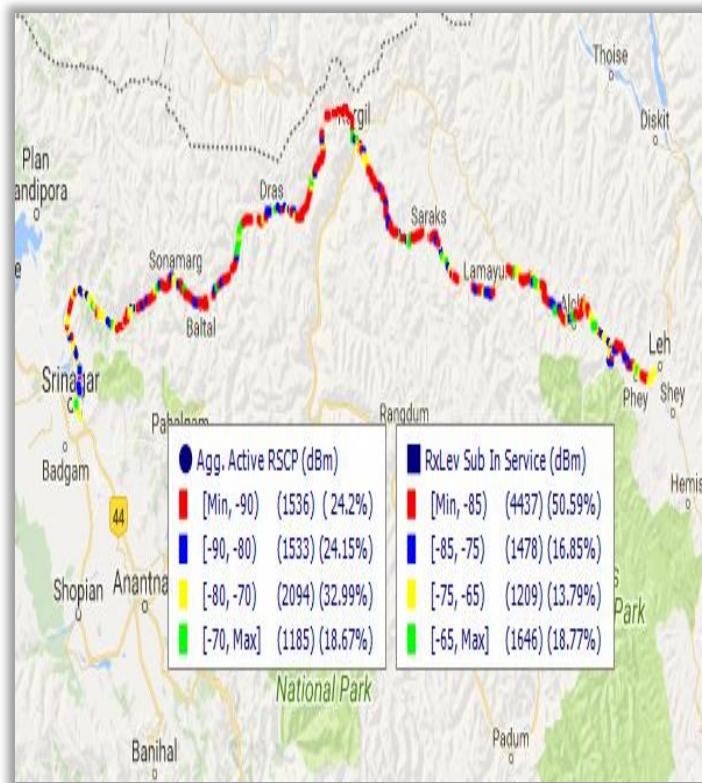
BSNL 2G



Airtel Dual(2G/3G)



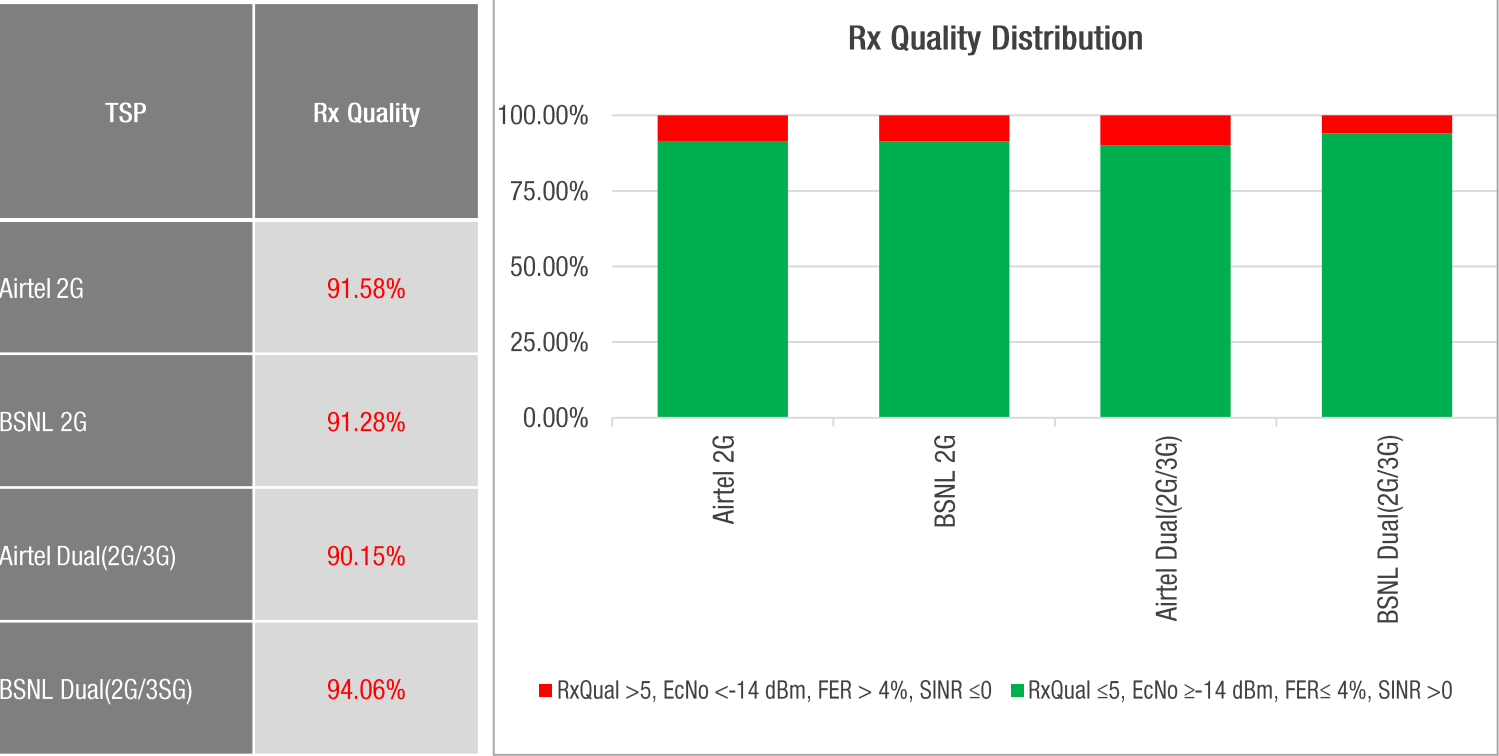
I. Coverage Details (contd.)



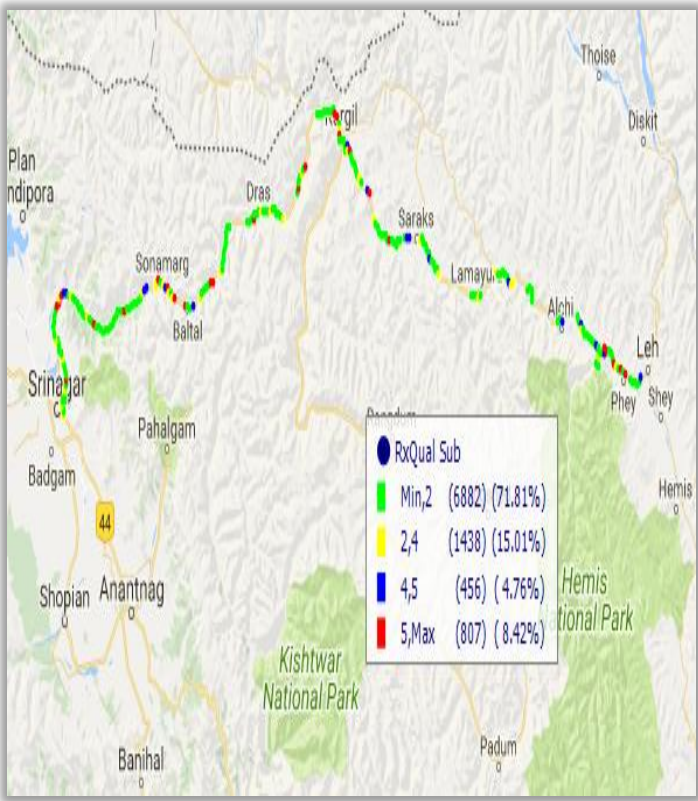
BSNL Dual (2G/3G)

II. Quality Details

For measuring voice quality, as per the QoS norms, RxQual ≤ 5 for GSM TSPs, EcNo ≥ -14 dBm for 3G TSPs, is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be $\geq 95\%$.



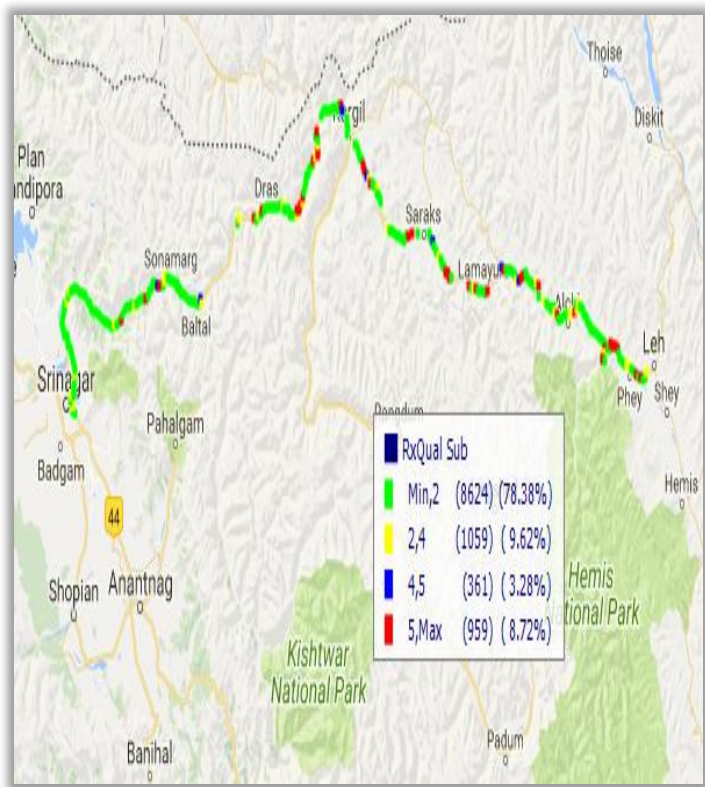
— TSPs not meeting the Benchmark



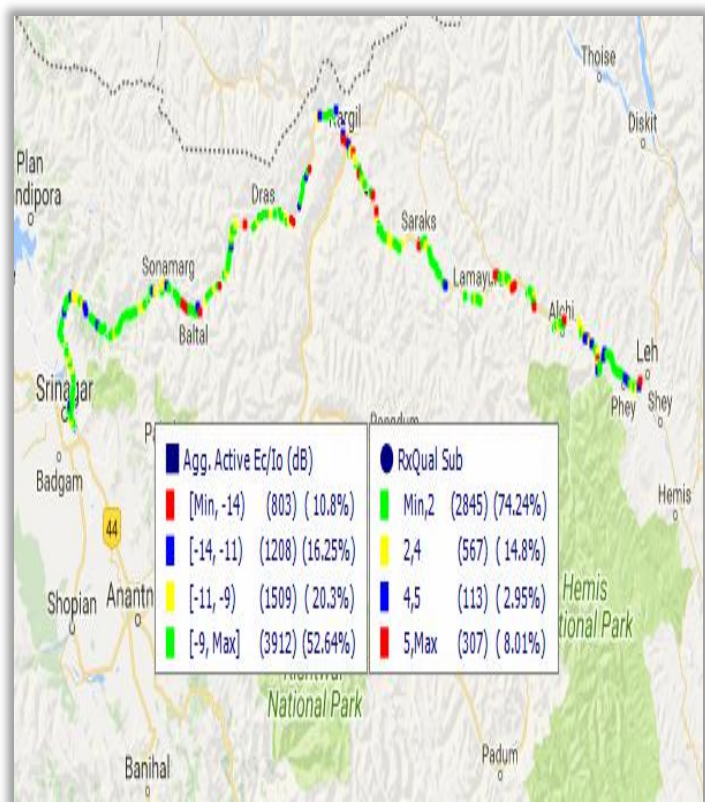
Airtel 2G

II. Quality Details (contd.)

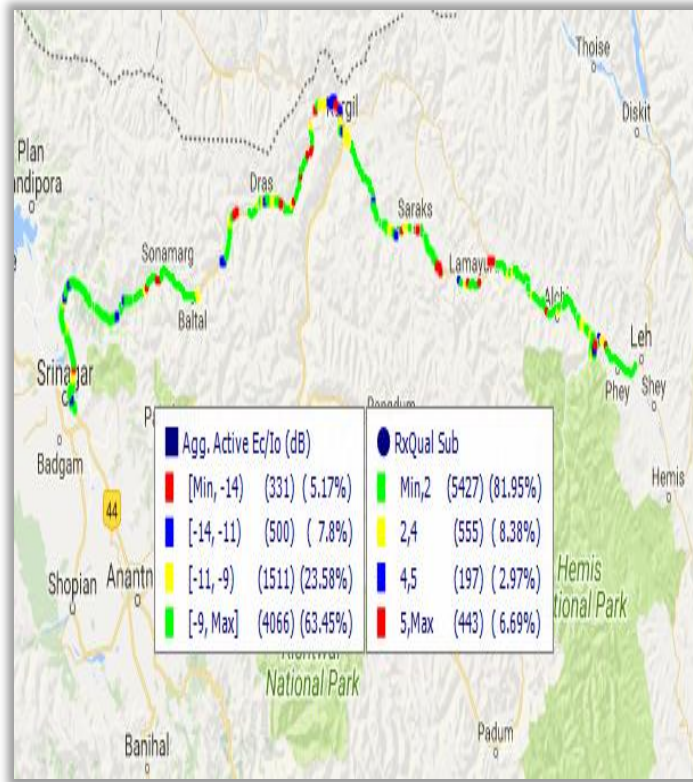
BSNL 2G



Airtel Dual (2G/3G)



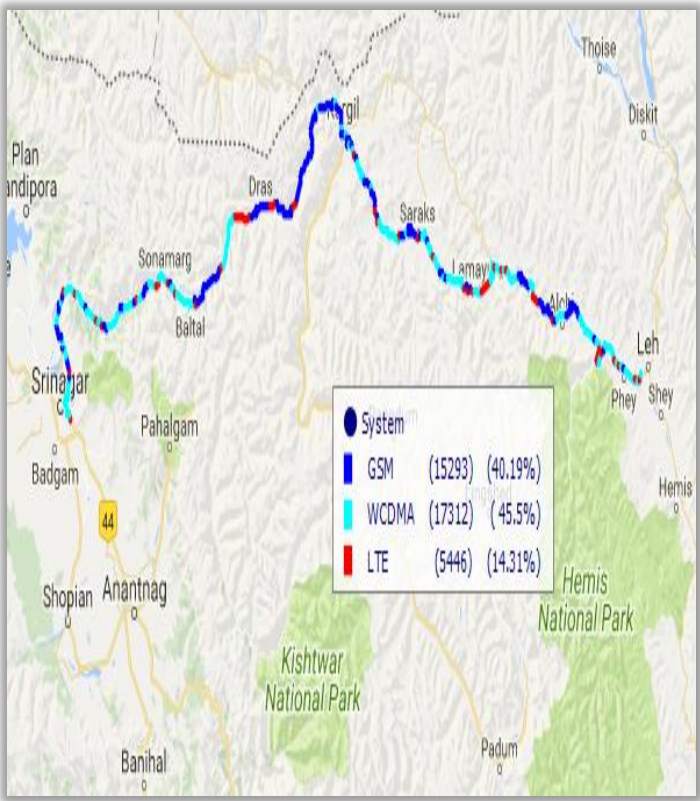
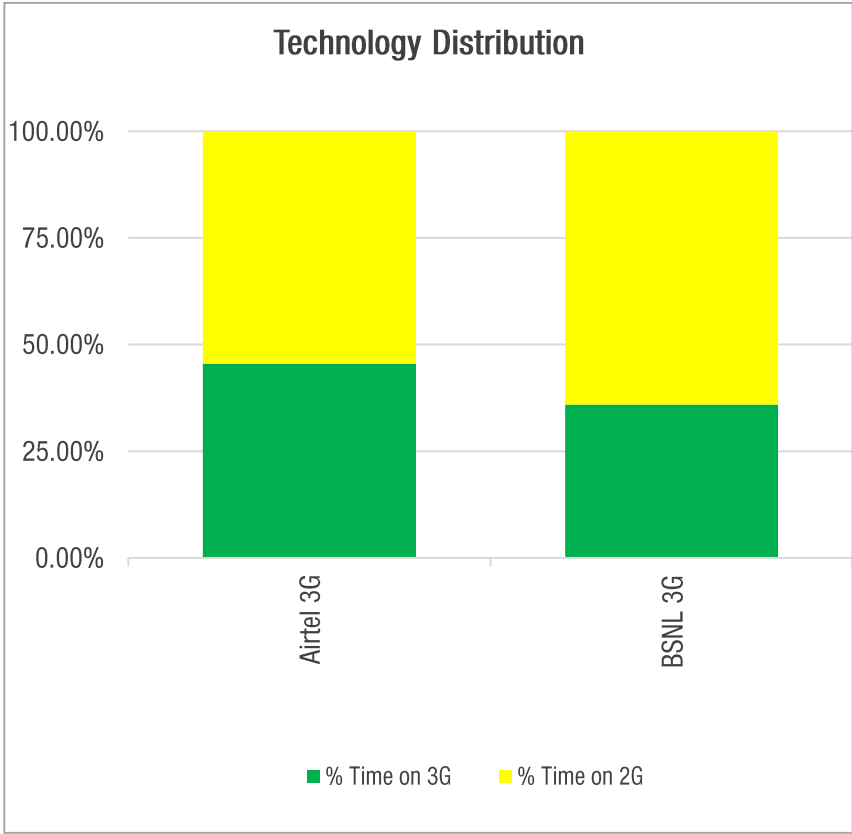
II. Quality Details (contd.)



BSNL Dual (2G/3G)

III. Technology Details

TSP	% Time on 3G
Airtel 3G	45.50%
BSNL 3G	35.92%



Airtel 3G

II. Quality Details (contd.)

BSNL 3G

