Independent Drive Test Report

For

Shimla to Manali Highway

2019

MAY

NORTH ZONE

Key Performance Indicators: All TSPs have met the Drop Call Rate (DCR) benchmark of 2% except BSNL 2G & BSNL 3G. All TSPs have 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 Shimla to Manali Highway Route from 07:00 AM to 06:30 PM; 31st May 2019. The drive test covered a drive route of 218 KMs over a period of one day. Approximately 256 calls were made for each of the 9 networks: four 2G networks, three 3G networks and two LTE network covering 5 unique TSPs.

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

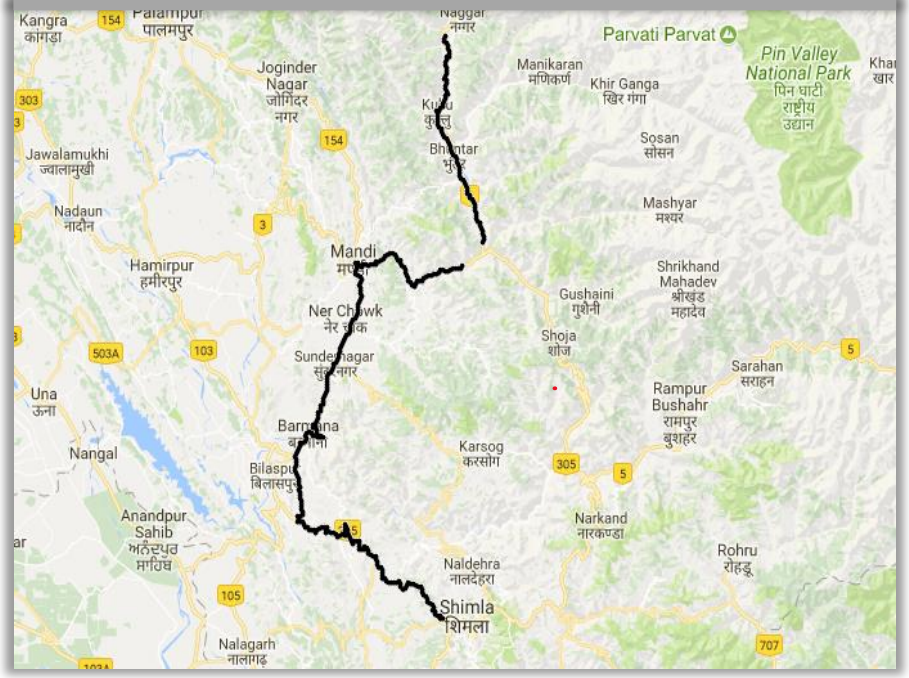
TRAI is regularly monitoring the performance of Telecom Service Providers (TSP) against the benchmarks for the various Quality of Service (QoS) parameters laid down by the Authority. TSPs submit Performance Monitoring Reports to TRAI every quarter. TRAI also undertakes audit and assessment of Quality 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 31st May 2019 covering various locations in Shimla to Manali Highway Route. The performance of **Airtel, BSNL, Tata, Jio and Vodafone Idea Limited (VIL(Idea))** 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 Shimla to Manali Highway Route:

Independent Drive test was conducted for a period of one day on 31st May 2019 in Shimla to Manali Highway Route from 07:00 AM to 06:30 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 218 KMs over a period of one day on 31st May 2019. Approximately 256 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

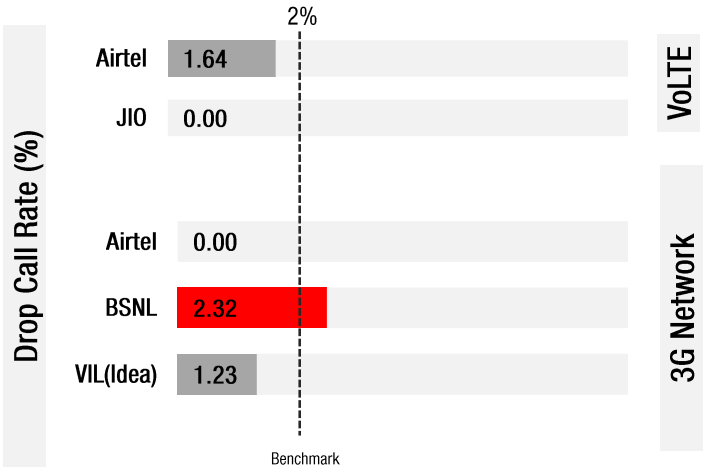
Voice Test Drive Route - Shimla to Manali

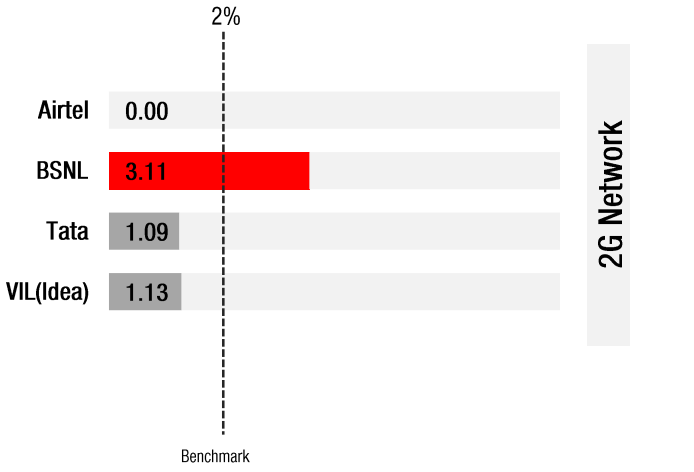


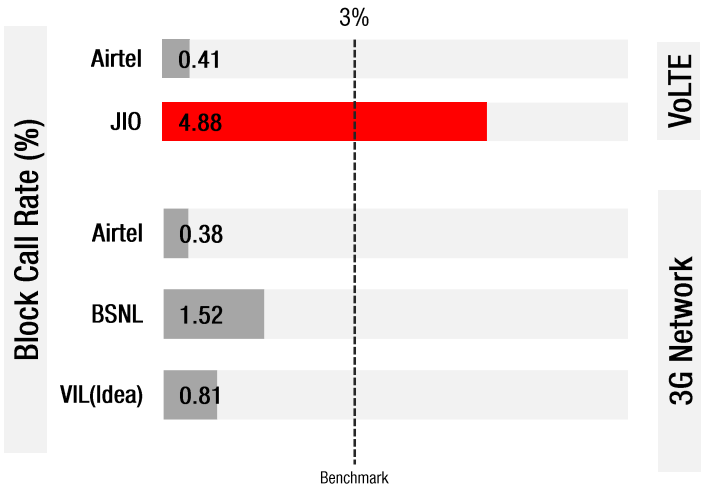
Voice Calls

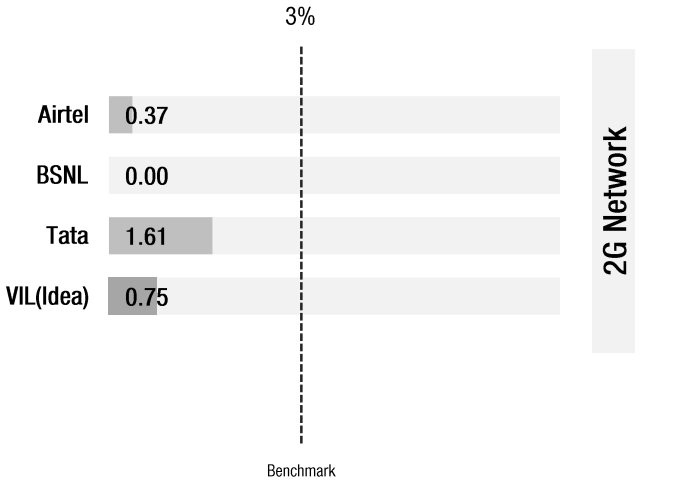
Key Observations

QoS compliance of the TSPs in Shimla to Manali Highway for Voice across technologies 2G/3G/4G-VoLTE is given below:









KPI	2G Networks			
	Airtel	BSNL	Tata	Vodafone Idea Ltd VIL(Idea)
SDCCH Congestion(<=1%)	0.37%	0.00%	1.08%	0.38%
TCH Congestion (<=2%)	0.00%	0.00%	0.53%	0.37%

KPI	3G Networks		
	Airtel	BSNL	Vodafone Idea Ltd VIL(Idea)
CSFB Failure %	0.00%	0.00%	0.00%
SDCCH Congestion%	0.00%	0.00%	0.00%
RRC Congestion%	0.38%	1.14%	0.81%
SDCCH & RRC Congestion(<=1%)	0.38%	1.14%	0.81%
TCH Congestion %	0.00%	0.00%	0.00%
RAB Congestion %	0.00%	0.38%	0.00%
TCH & RAB Congestion (<=2%)	0.00%	0.38%	0.00%

a) All TSPs have met the 2% QOS benchmark of Drop Call Rate (DCR%) except BSNL 2G & BSNL 3G.
b) Call Block Rate (CBR%) benchmark of 3% was achieved by all TSP's except Jio VoLTE.

*NA = Not Applicable Not meeting Benchmark

Voice Calls

Key Observations

Coverage

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

TSPs	2G			
	Airtel	BSNL	Tata	VIL(Idea)
Coverage%	84.19%	59.08%	83.82%	55.11%

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

TSPs	3G			VoLTE	
	Airtel	BSNL	VIL(Idea)	Airtel	Jio
Coverage %	83.85%	68.93%	62.14%	89.03%	96.79%

c) Percentage of time spent on 3G network:

TSPs	3G		
	Airtel	BSNL	VIL(Idea)
Time Spent on 3G%	63.92%	30.52%	73.26%

d) Percentage of RLT >=48:

TSPs	2G			
	Airtel	BSNL	Tata	VIL(Idea)
%RLT >=48	0.00%	2.81%	0.00%	0.00%

e) Average CST Second

TSPs	2G			
	Airtel	BSNL	Tata	VIL(Idea)
Second	2.79	2.35	2.48	2.64

TSPs	3G			VOLTE	
	Airtel	BSNL	VIL(Idea)	Airtel	Jio
Second	5.76	2.24	2.91	2.41	0.2

Summary

City Level Summary

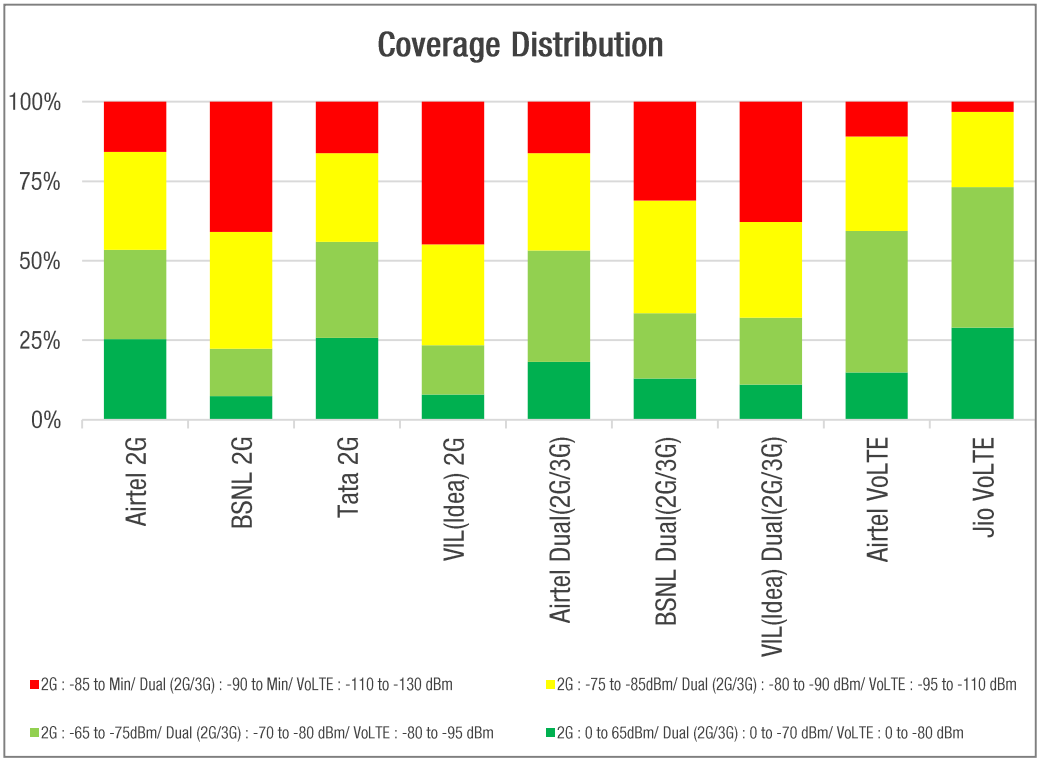
Voice Call	2G			
	Airtel	BSNL	Tata	VIL(Idea)
Call Attempt	272	289	186	268
Blocked Call Rate (%)	0.37%	0.00%	1.61%	0.75%
CSSR% (Accessibility)	99.63%	100.00%	98.39%	99.25%
Drop Call Rate (%)	0.00%	3.11%	1.09%	1.13%
Mobility HOSR (%)	98.41%	96.42%	97.50%	100.00%
Rx Quality (%)	95.01%	96.54%	94.54%	98.11%

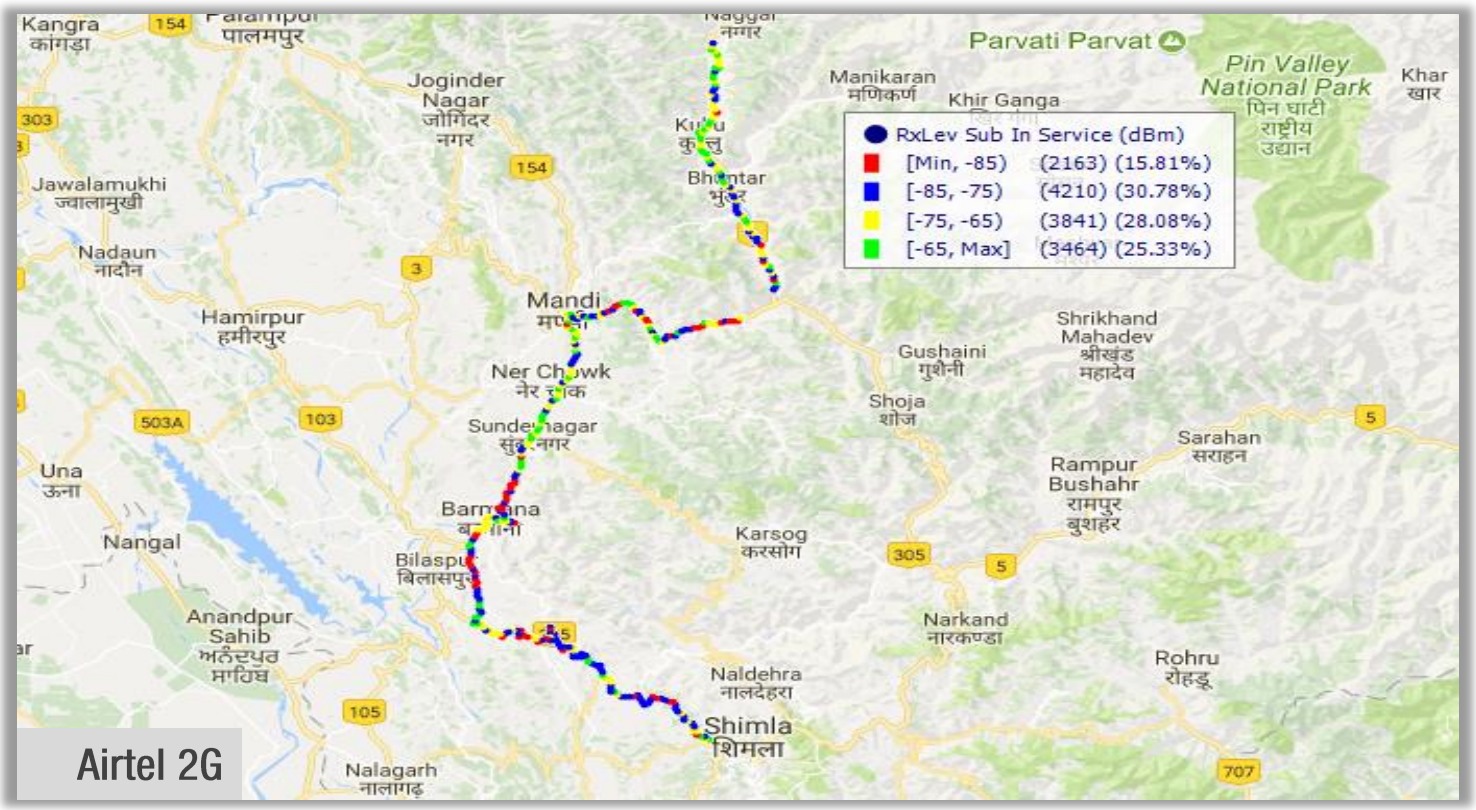
Voice Call	3G			VoLTE	
	Airtel	BSNL	VIL(Idea)	Airtel	Jio
Call Attempt	260	263	246	245	287
Blocked Call Rate (%)	0.38%	1.52%	0.81%	0.41%	4.88%
CSSR% (Accessibility)	99.62%	98.48%	99.19%	99.59%	95.12%
Drop Call Rate (%)	0.00%	2.32%	1.23%	1.64%	0.00%
Mobility HOSR (%)	99.87%	98.82%	100.00%	99.82%	99.61%
Rx Quality (%)	90.04%	97.75%	92.28%	88.54%	93.71%

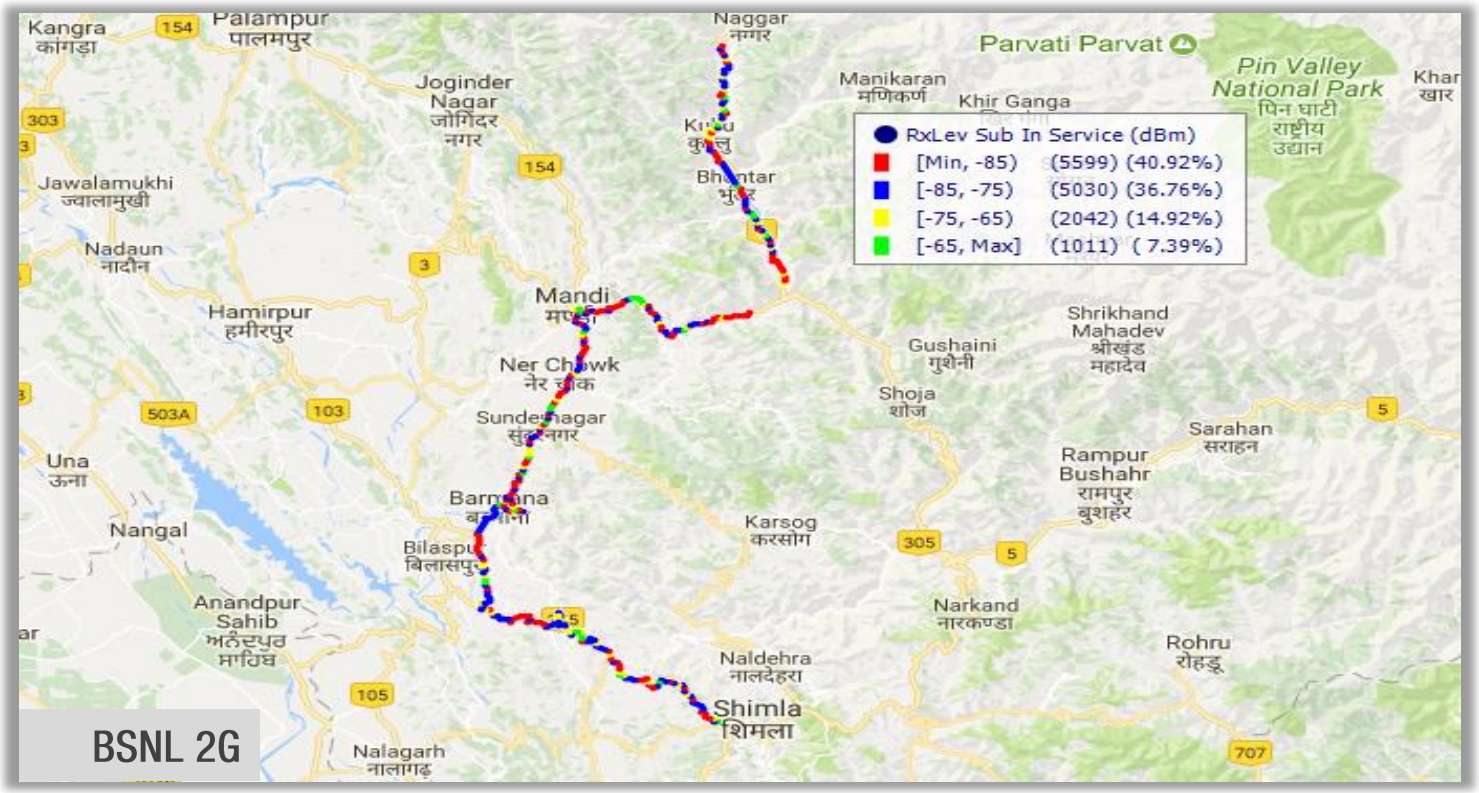
I. Coverage Details

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 dBm & RSRP ≥ -110dBm. The details are as follows.

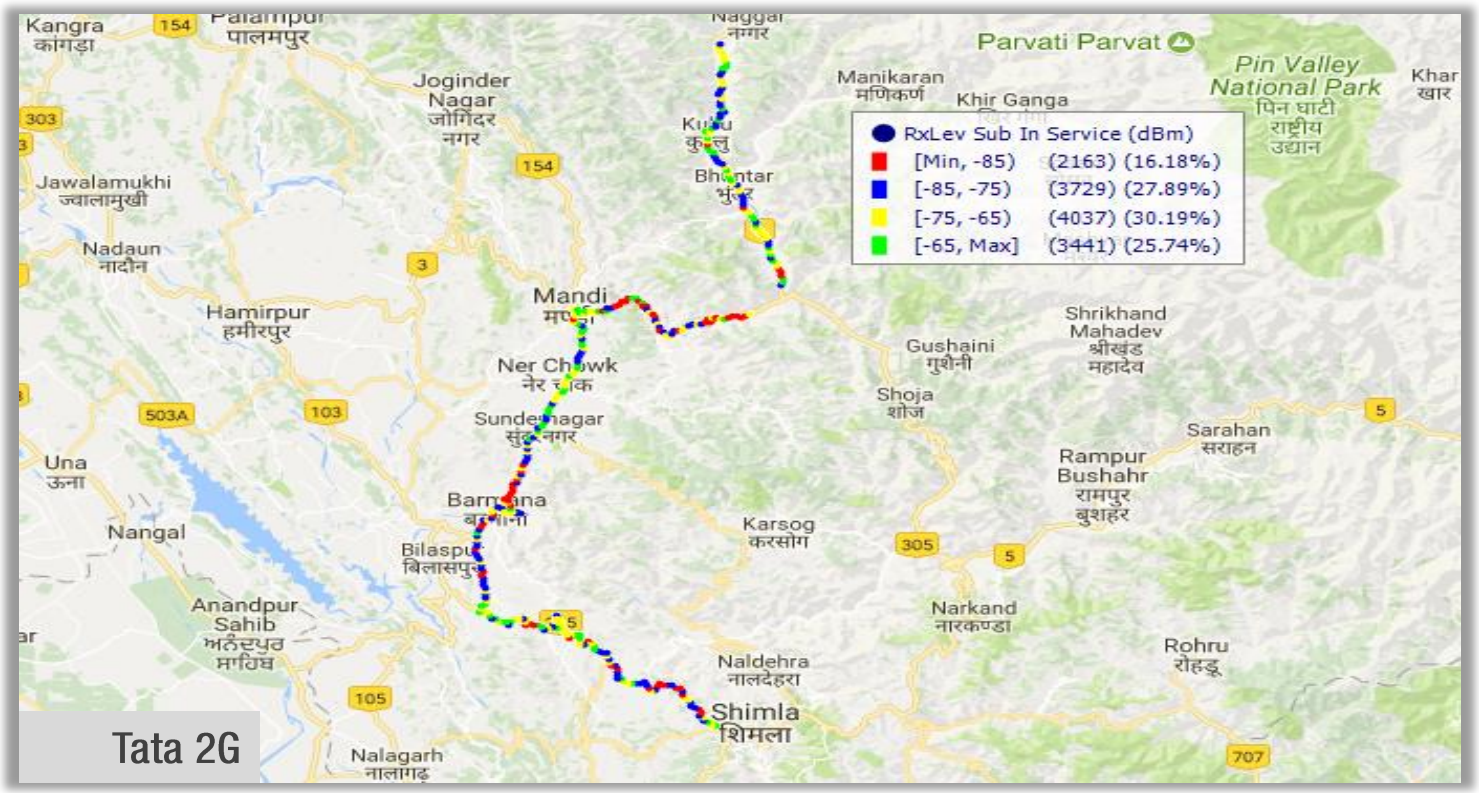
TSP	Coverage Rate
Airtel 2G	84.19%
BSNL 2G	59.08%
Tata 2G	83.82%
VIL(Idea) 2G	55.11%
Airtel Dual(2G/3G)	83.85%
BSNL Dual(2G/3G)	68.93%
VIL(Idea) Dual(2G/3G)	62.14%
Airtel VoLTE	89.03%
Jio VoLTE	96.79%



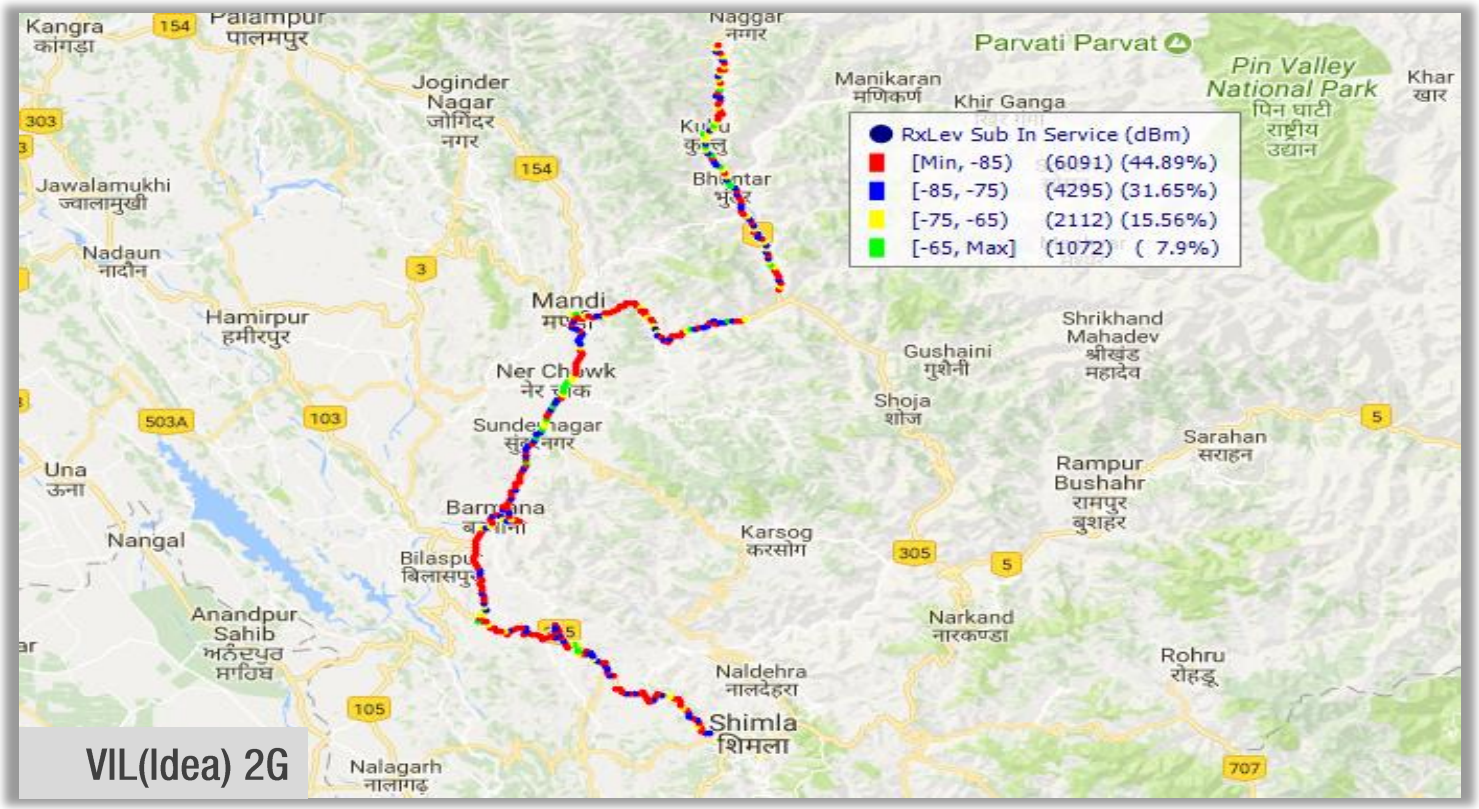




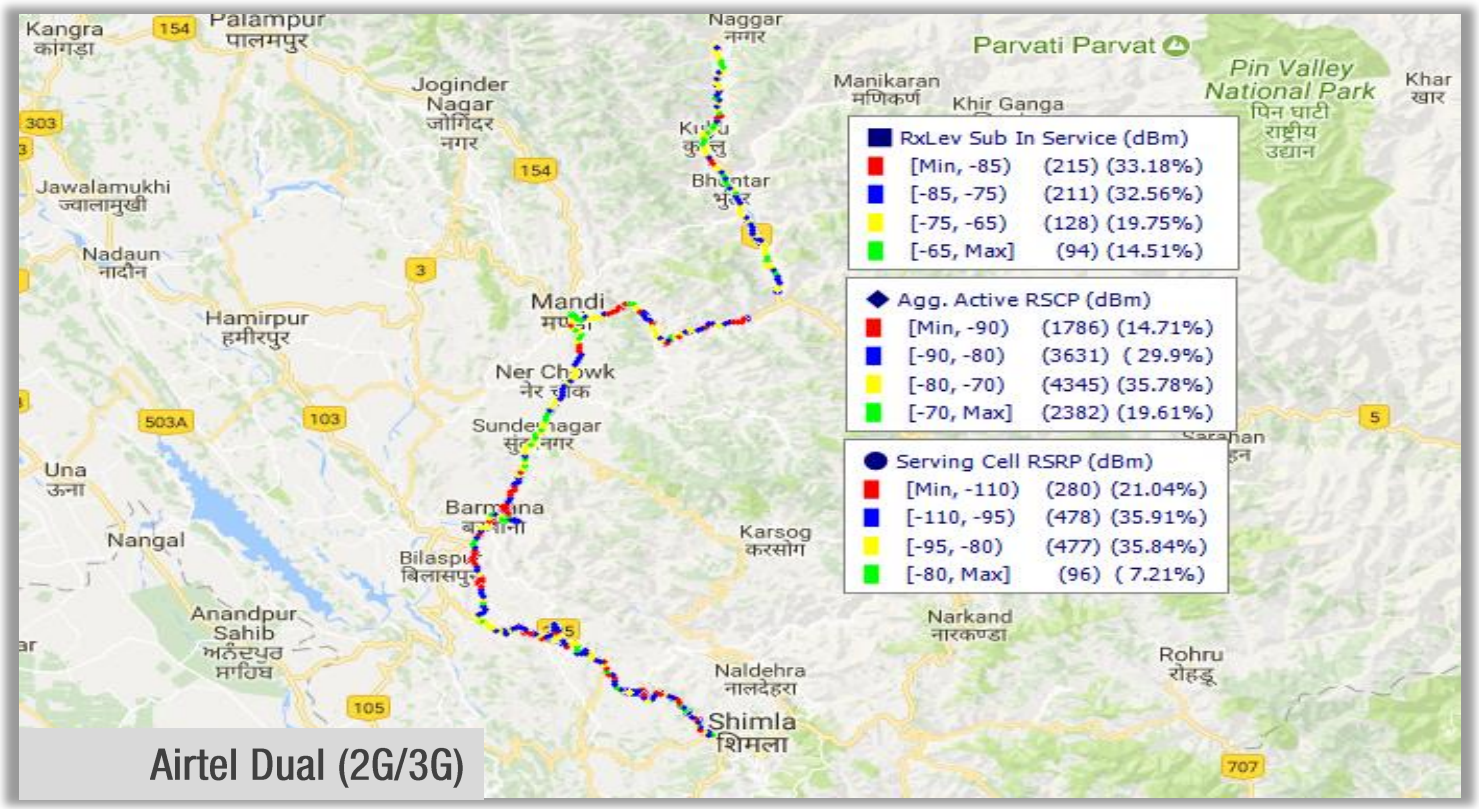
BSNL 2G



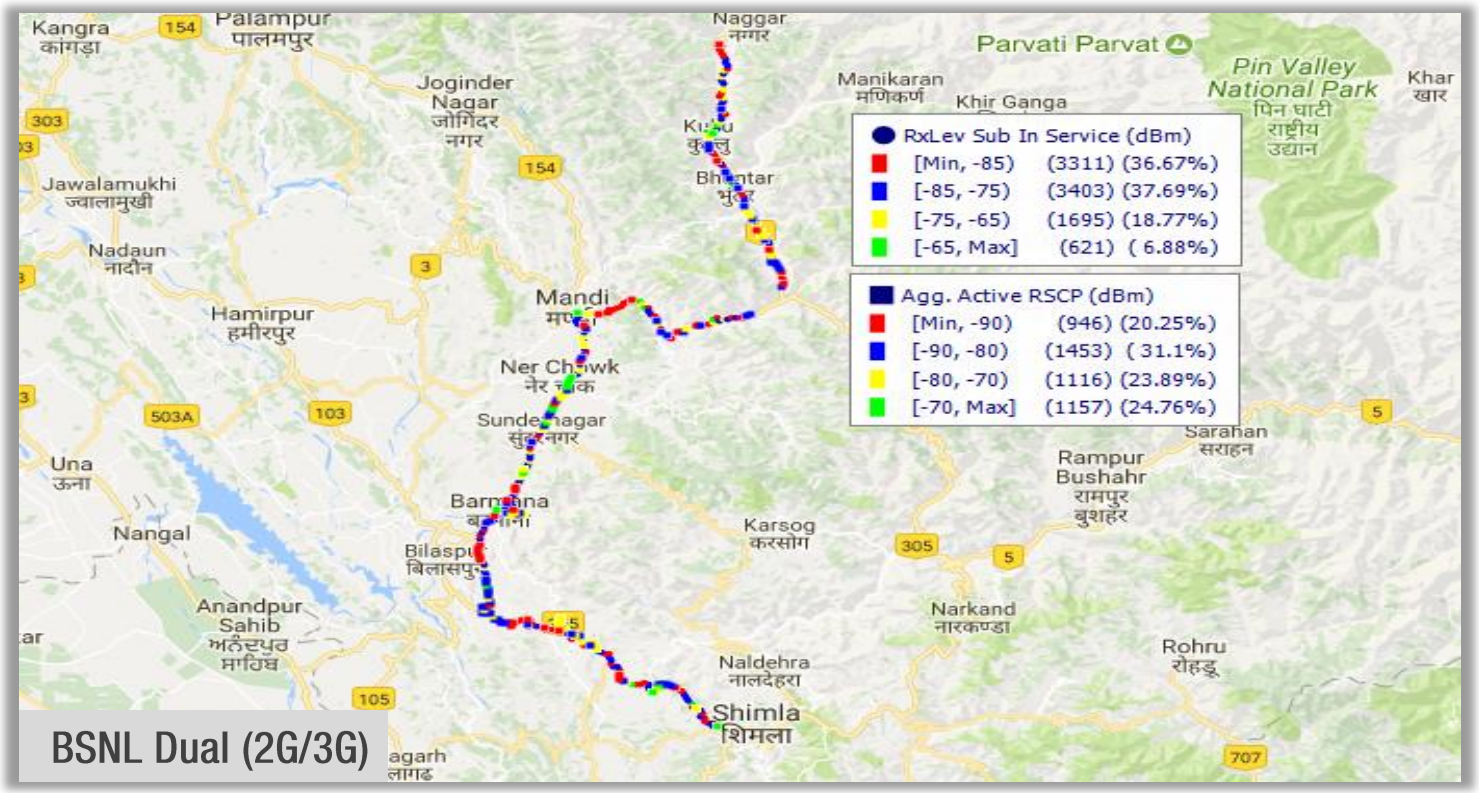
Tata 2G



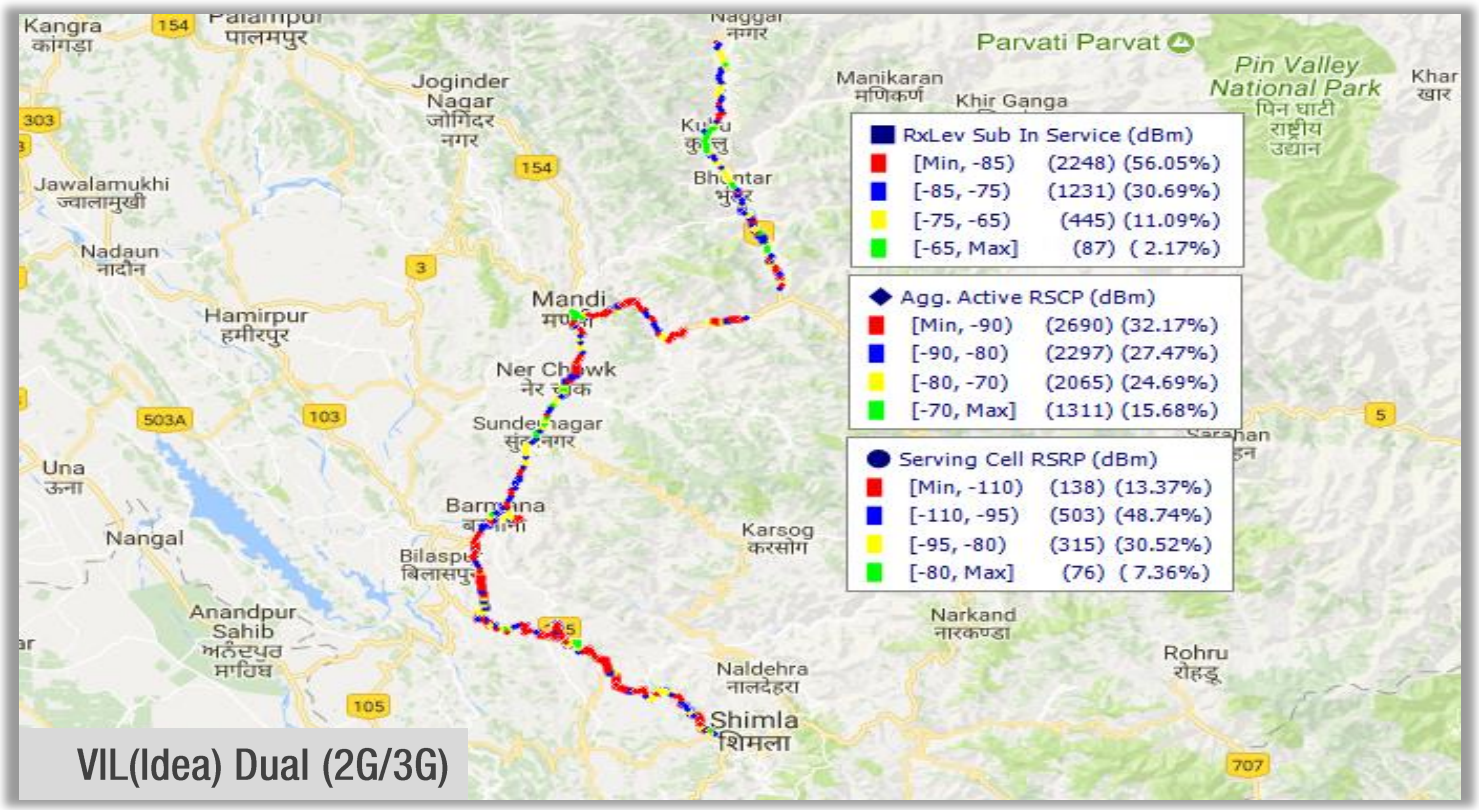
VIL(Idea) 2G



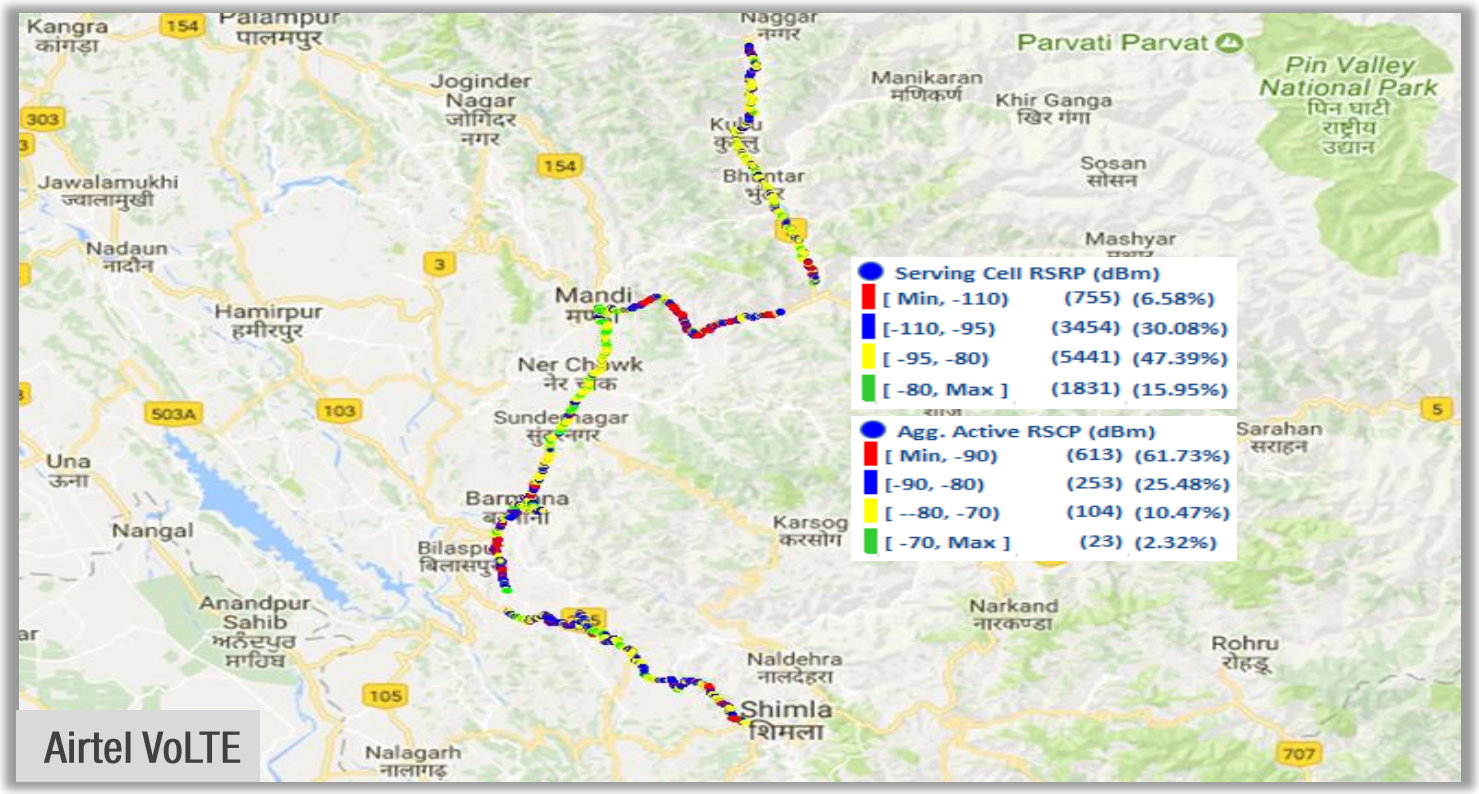
Airtel Dual (2G/3G)



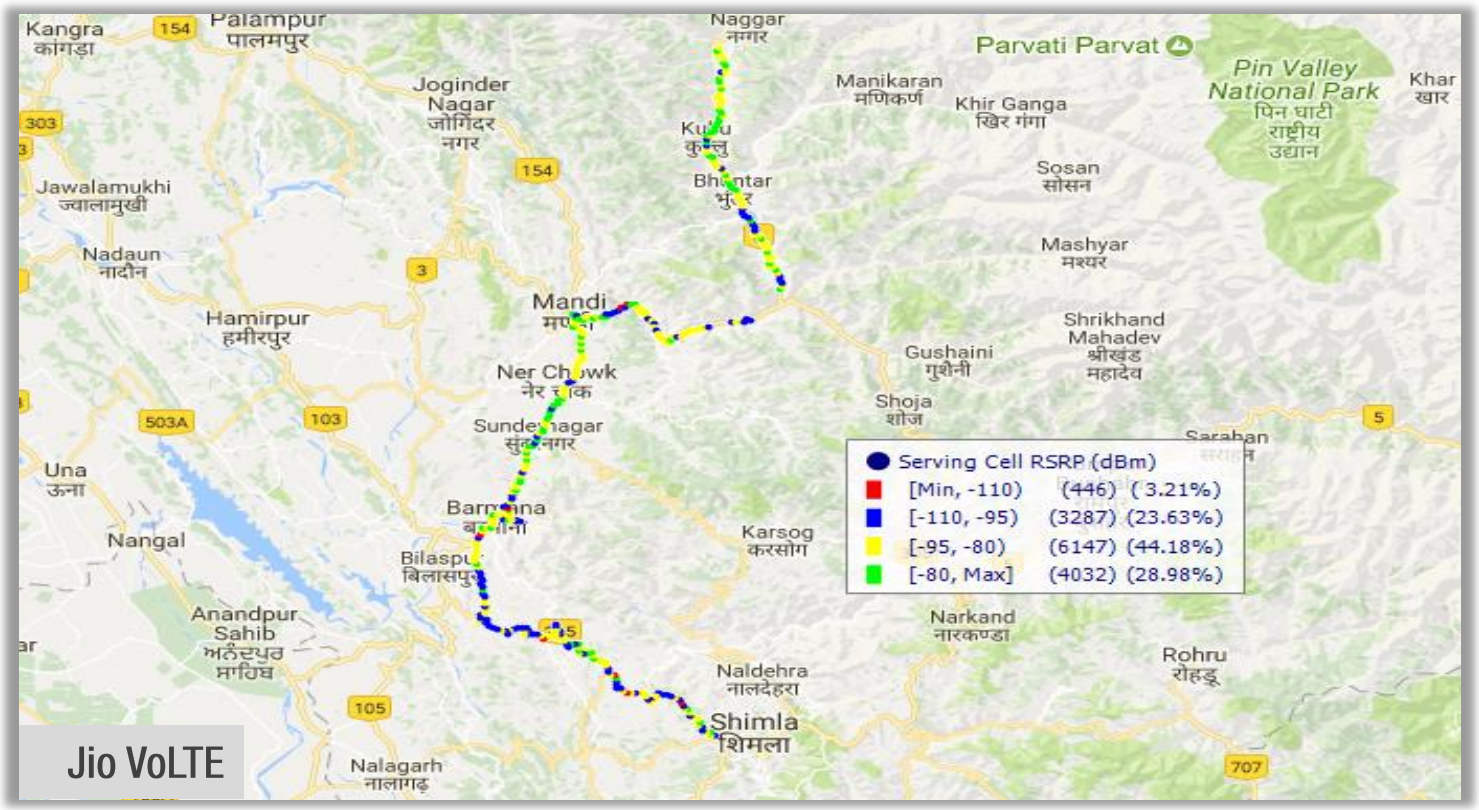
BSNL Dual (2G/3G)



VIL(Idea) Dual (2G/3G)



Airtel VoLTE



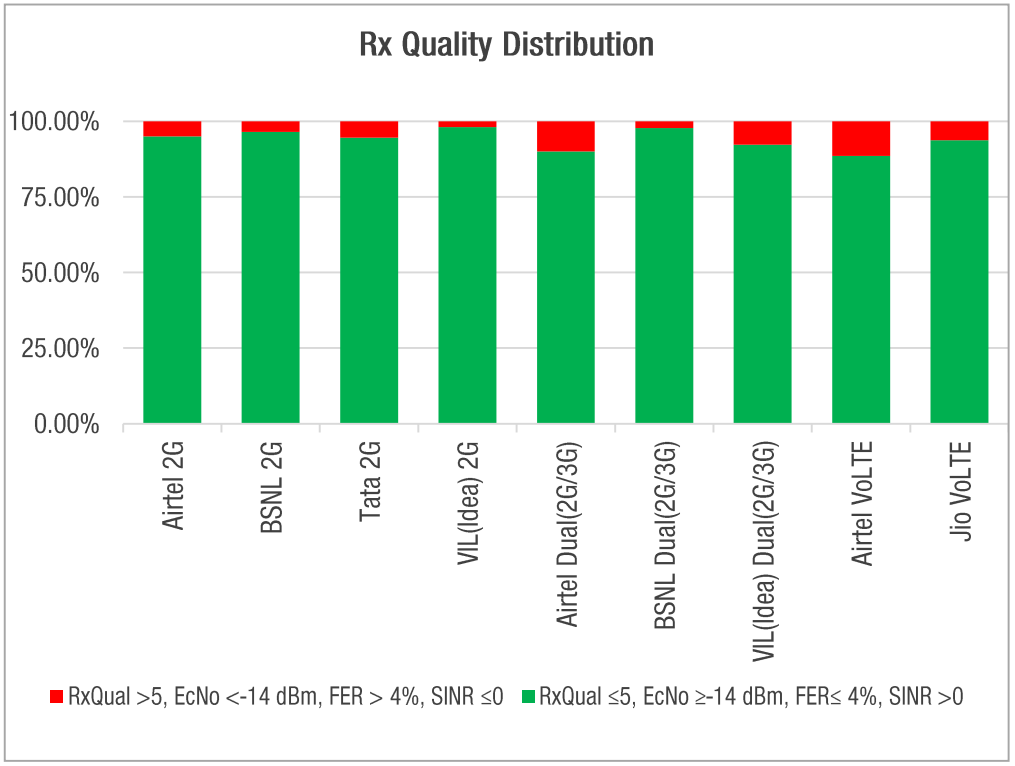
Jio VoLTE

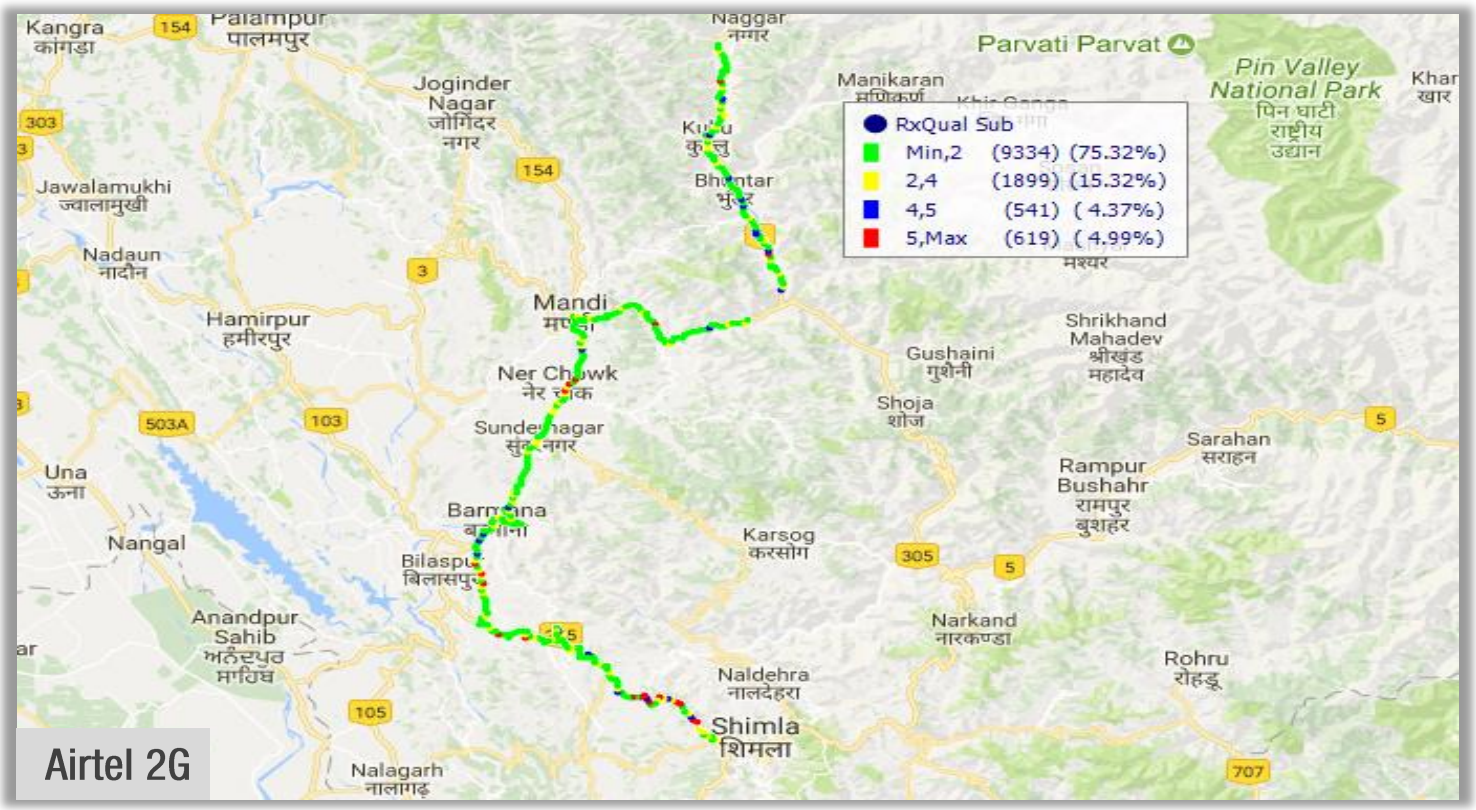
II. Quality Details

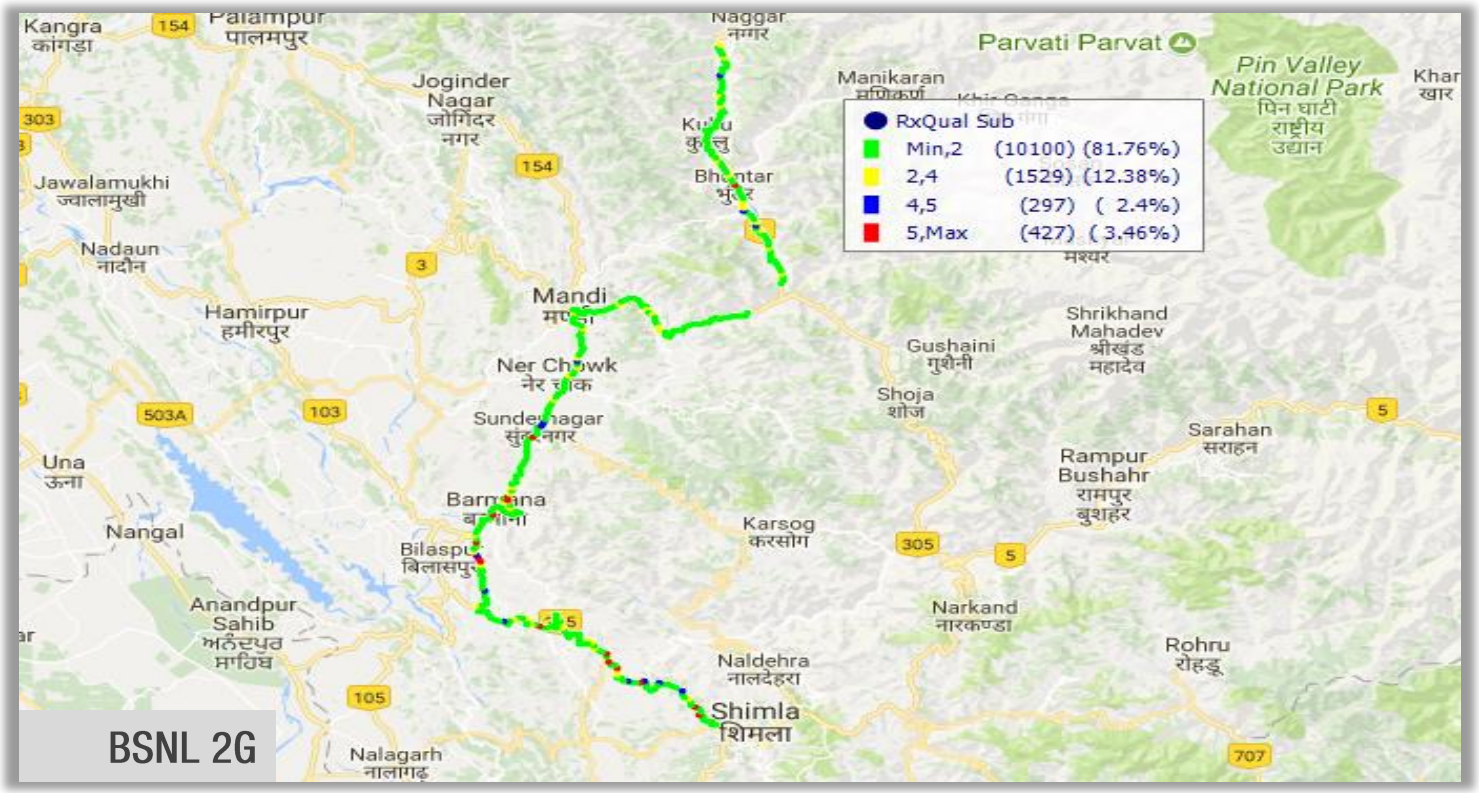
For measuring voice quality, as per the QoS norms, RxQual <=5 for GSM TSPs, EcNo >= -14 dBm for 3G TSP sand SINR >0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be ≥ 95%.

TSP	Rx Quality
Airtel 2G	95.01%
BSNL 2G	96.54%
Tata 2G	94.54%
VIL(Idea) 2G	98.11%
Airtel Dual(2G/3G)	90.04%
BSNL Dual(2G/3G)	97.75%
VIL(Idea) Dual(2G/3G)	92.28%
Airtel VoLTE	88.54%
Jio VoLTE	93.71%

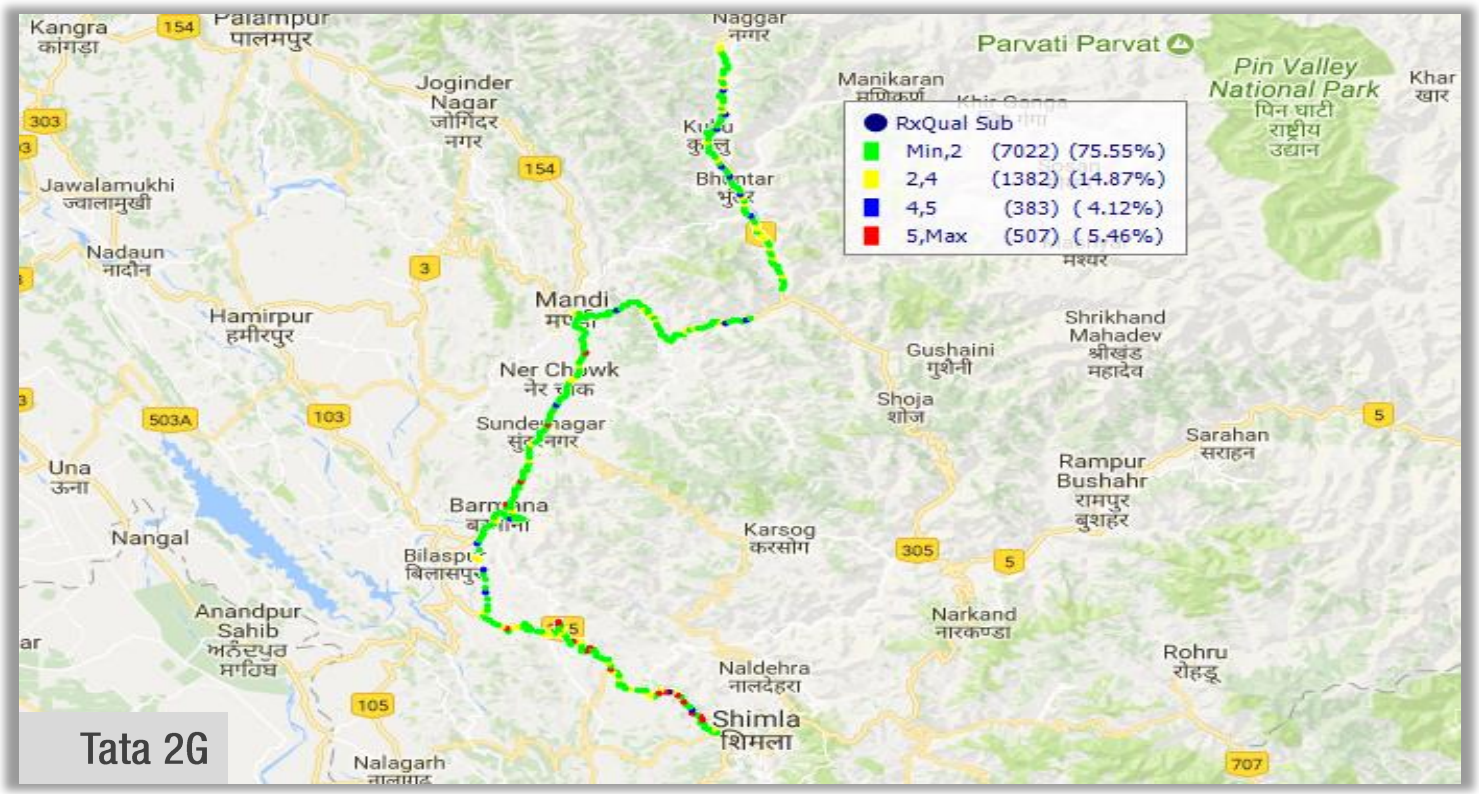
TSPs not meeting the Benchmark



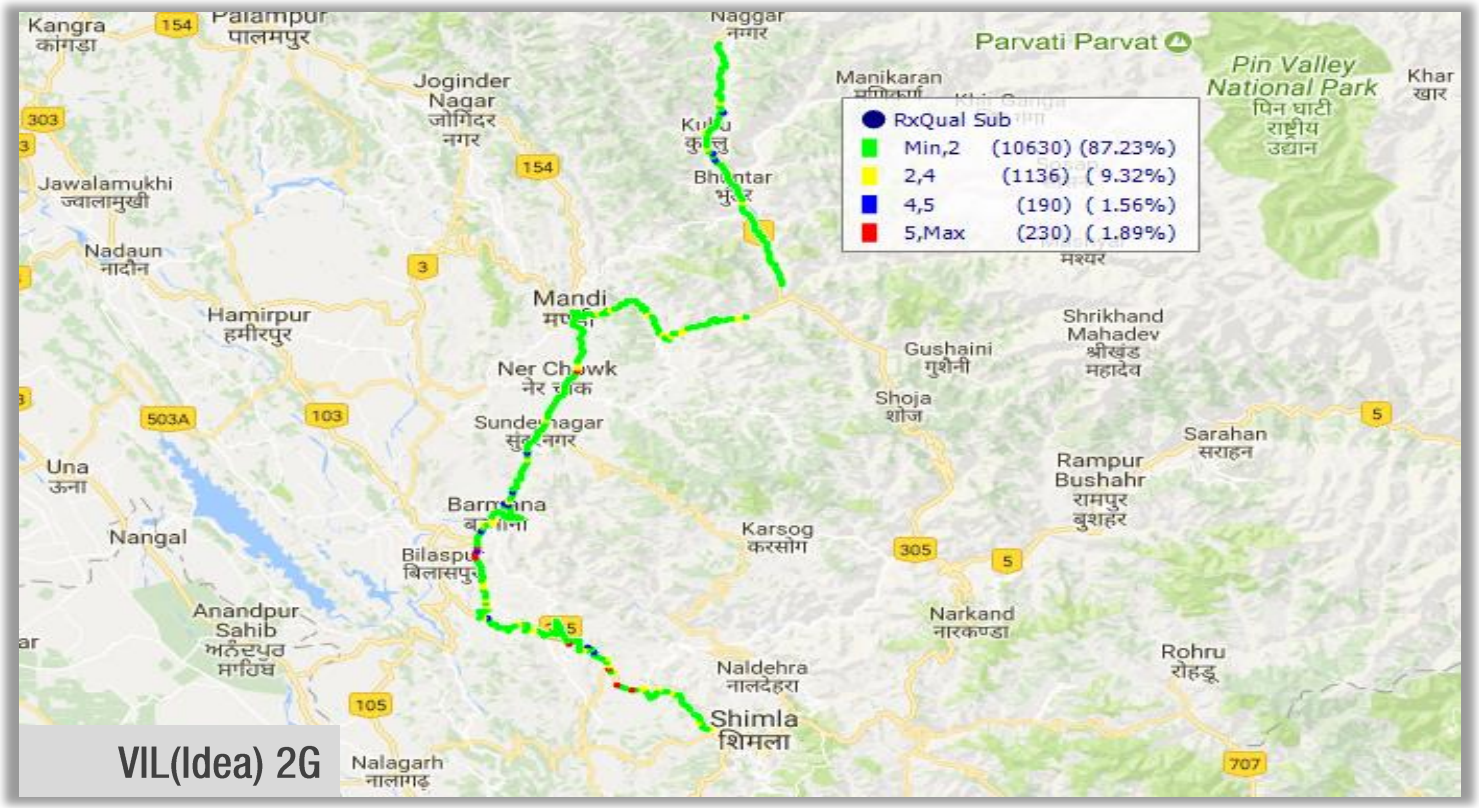


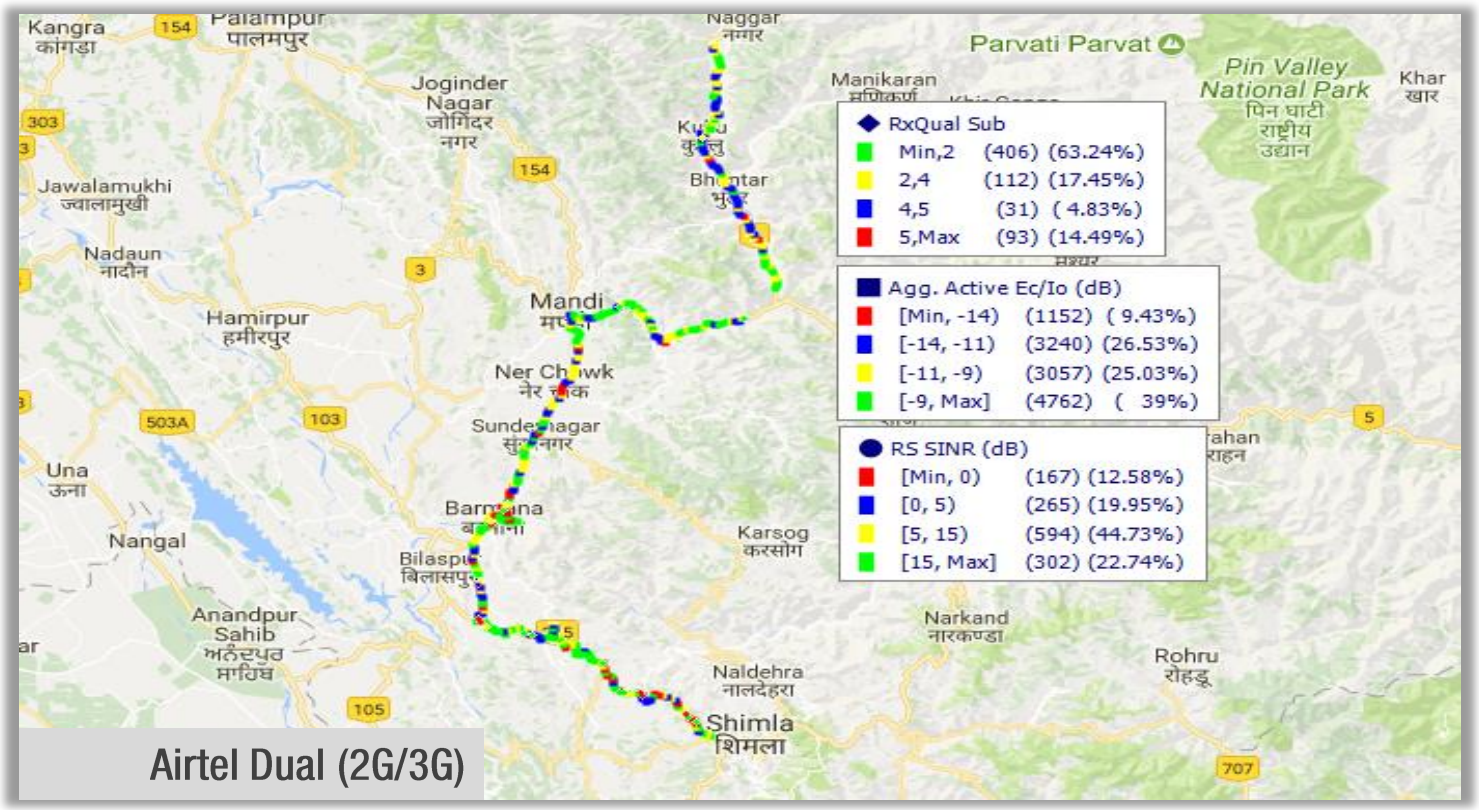


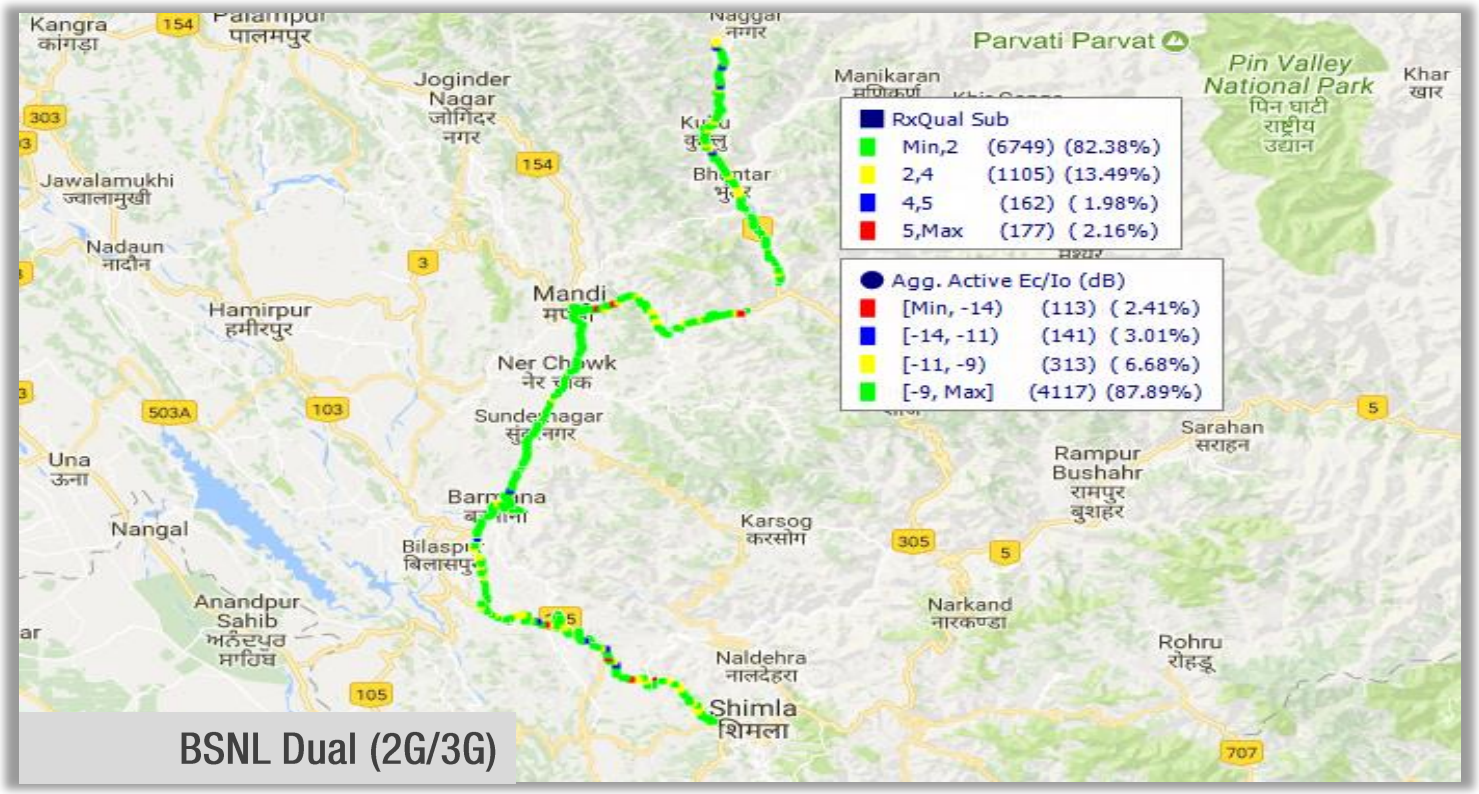
BSNL 2G



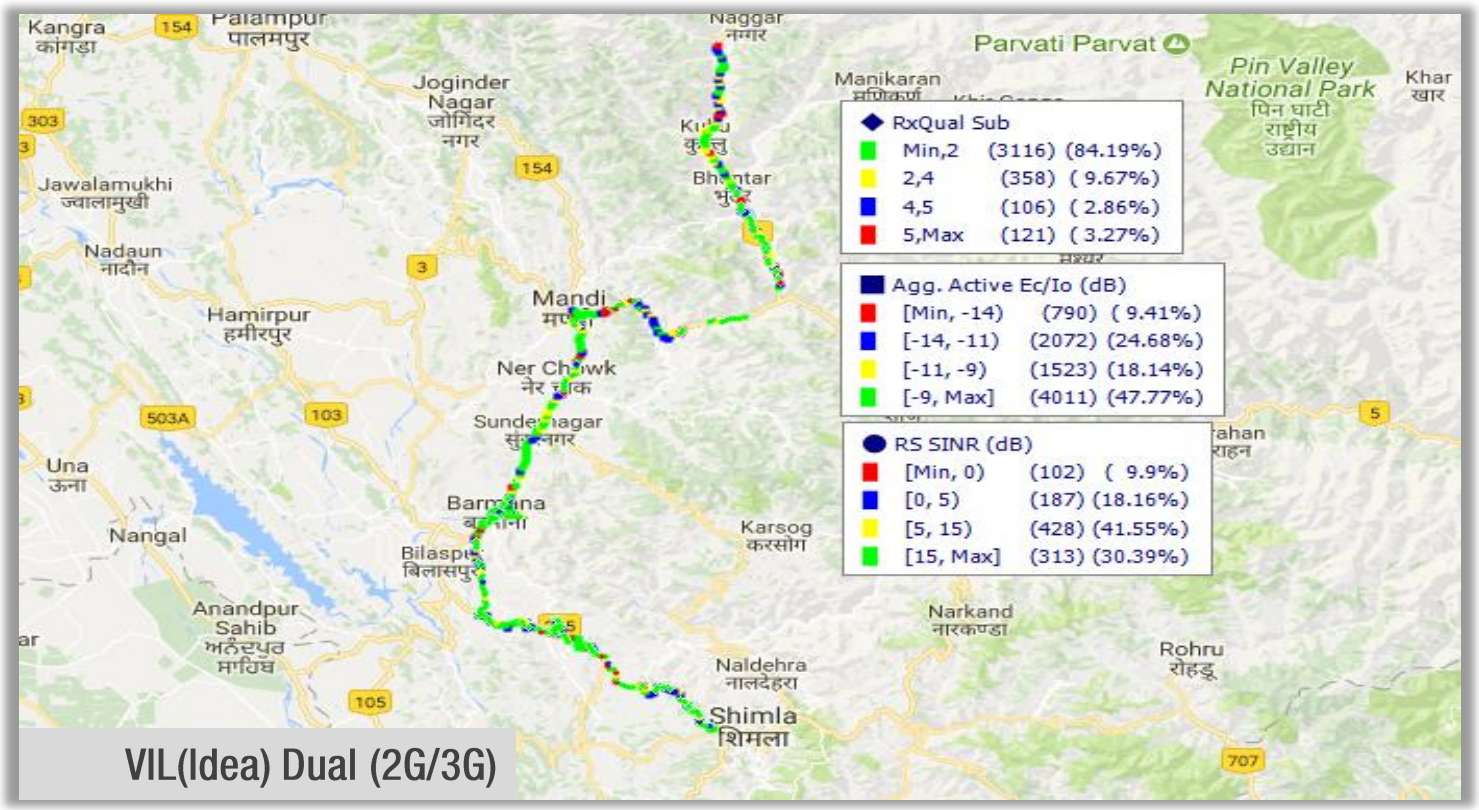
Tata 2G


Kangra
कांगड़ा
Palampur
पालमपुर
Naggar
नग्गर
Parvati Parvat
Pin Valley
National Park
पिन घाटी
राष्ट्रीय
उद्यान
Khar
खार
Manikaran
मणिकर्ण
Joginder
Nagar
जोगिंदर
नगर
Kullu
कुल्लू
Bhuntar
भुंतर
Jawalamukhi
ज्वालामुखी
Nadaun
नादौन
Hamirpur
हमीरपुर
Mandi
मण्डी
Ner Chowk
नेर चौक
Sundernagar
सुंदर नगर
Gushaini
गुशैनी
Shrikhand
Mahadev
श्रीखंड
महादेव
Shoja
शोज
Sarahan
सराहन
Rampur
Bushahr
रामपुर
बुशहर
Una
ऊना
Nangal
Barmana
बरमाना
Bilaspur
बिलासपुर
Karsog
करसोग
Anandpur
Sahib
आनंदपुर
साहिब
Narkand
नारकण्डा
Rohru
रोहड़ू
Naldehra
नालदेहरा
Shimla
शिमला
Nalagarh
नालागढ़
RxQual Sub
Min,2 (10630) (87.23%)
2,4 (1136) (9.32%)
4,5 (190) (1.56%)
5,Max (230) (1.89%)
VIL(Idea) 2G

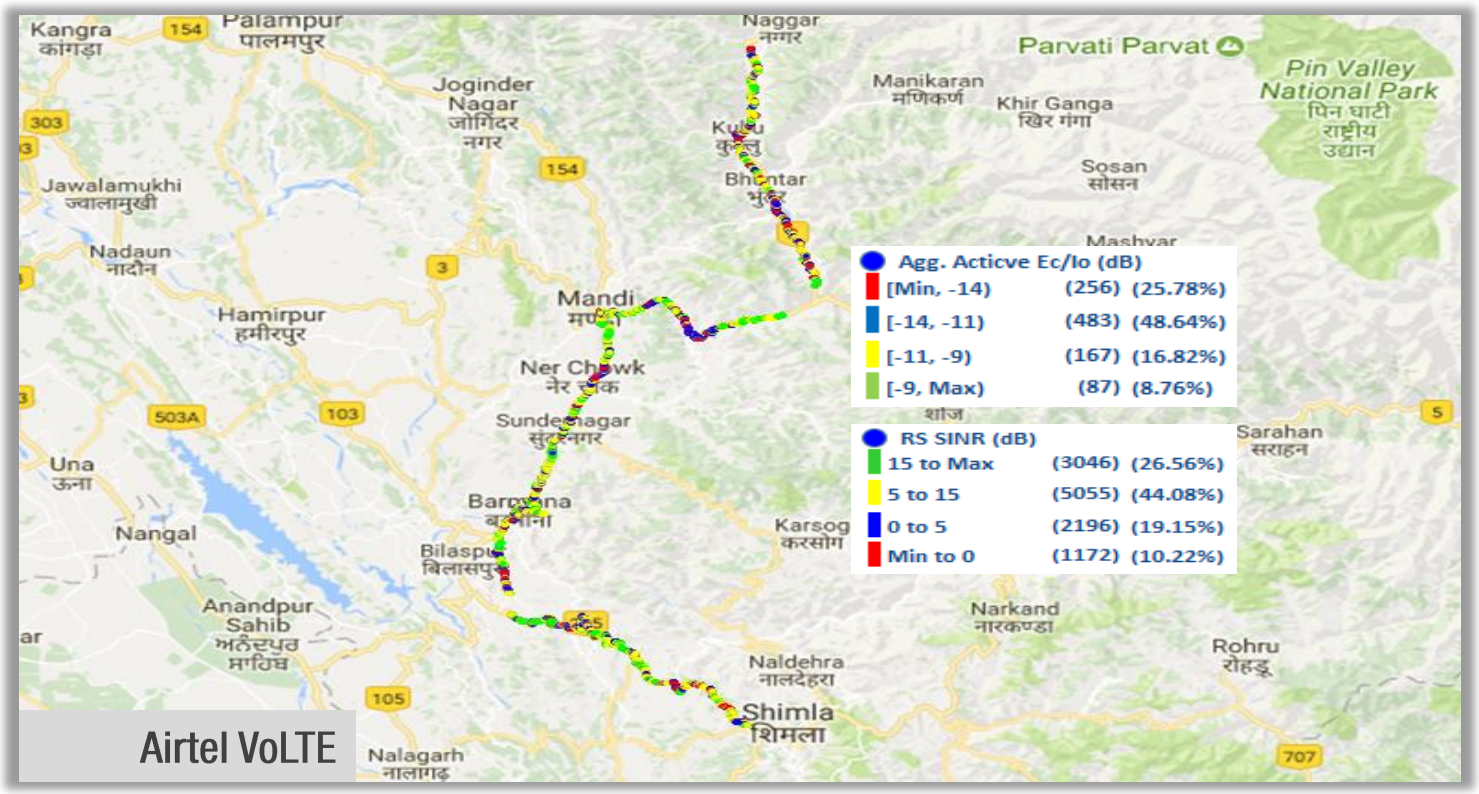

Kangra
कांगड़ा
Palampur
पालमपुर
Naggar
नग्गर
Parvati Parvat
Pin Valley
National Park
पिन घाटी
राष्ट्रीय
उद्यान
Khar
खार
Manikaran
मणिकर्ण
Joginder
Nagar
जोगिंदर
नगर
Kullu
कुल्लू
Bhuntar
भुंतर
Jawalamukhi
ज्वालामुखी
Nadaun
नादौन
Hamirpur
हमीरपुर
Mandi
मण्डी
Ner Chowk
नेर चौक
Sundernagar
सुंदर नगर
Una
ऊना
Nangal
Barmana
बरमाना
Bilaspur
बिलासपुर
Karsog
करसोग
Anandpur
Sahib
आनंदपुर
साहिब
Narkand
नारकण्डा
Rohru
रोहड़ू
Naldehra
नालदेहरा
Shimla
शिमला
RxQual Sub
Min,2 (406) (63.24%)
2,4 (112) (17.45%)
4,5 (31) (4.83%)
5,Max (93) (14.49%)
Agg. Active Ec/Io (dB)
[Min, -14) (1152) (9.43%)
[-14, -11) (3240) (26.53%)
[-11, -9) (3057) (25.03%)
[-9, Max] (4762) (39%)
RS SINR (dB)
[Min, 0) (167) (12.58%)
[0, 5) (265) (19.95%)
[5, 15) (594) (44.73%)
[15, Max] (302) (22.74%)
Airtel Dual (2G/3G)



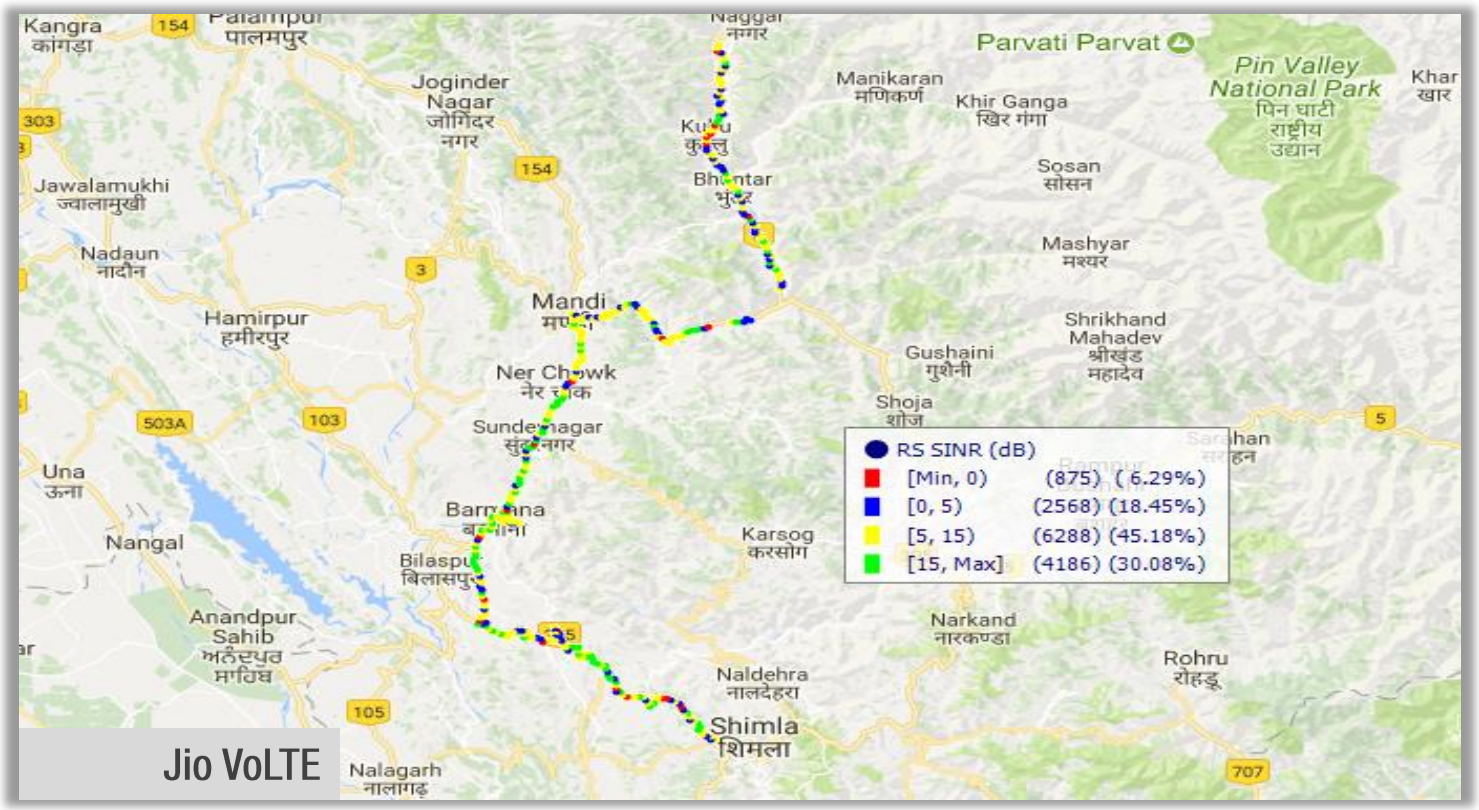
BSNL Dual (2G/3G)



VIL(Idea) Dual (2G/3G)



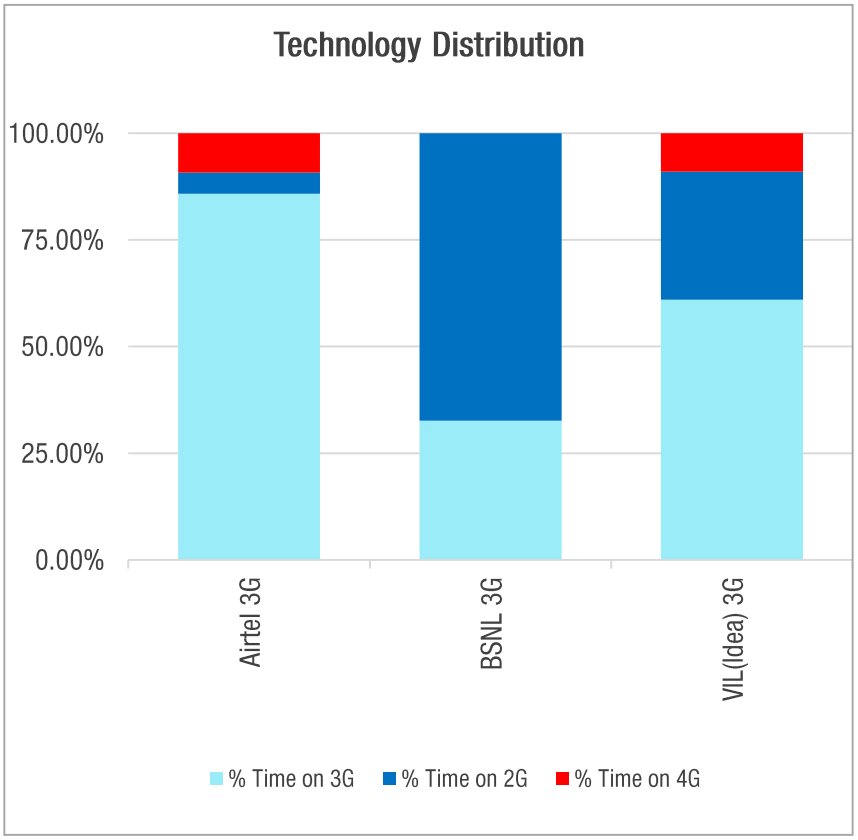
Airtel VoLTE

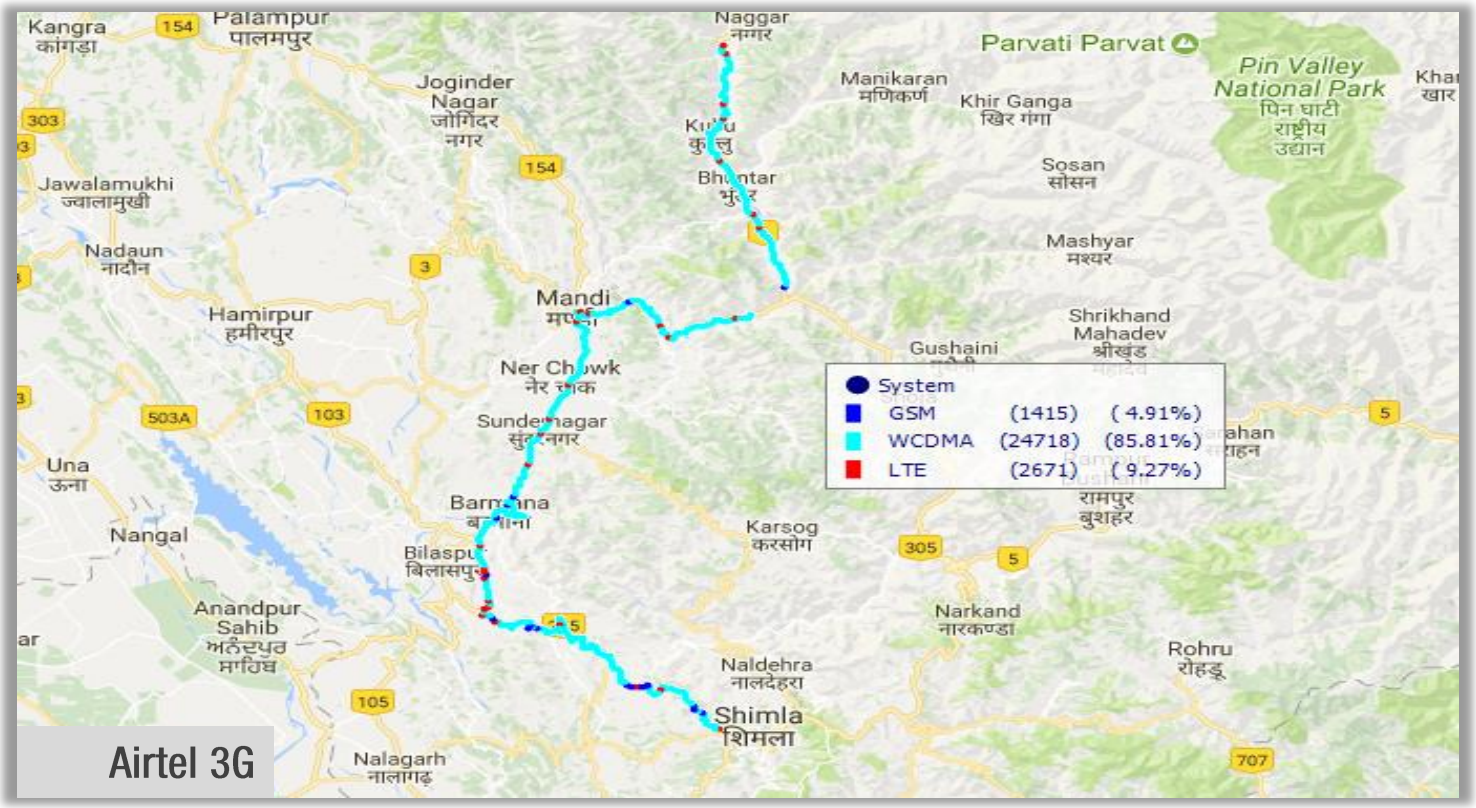


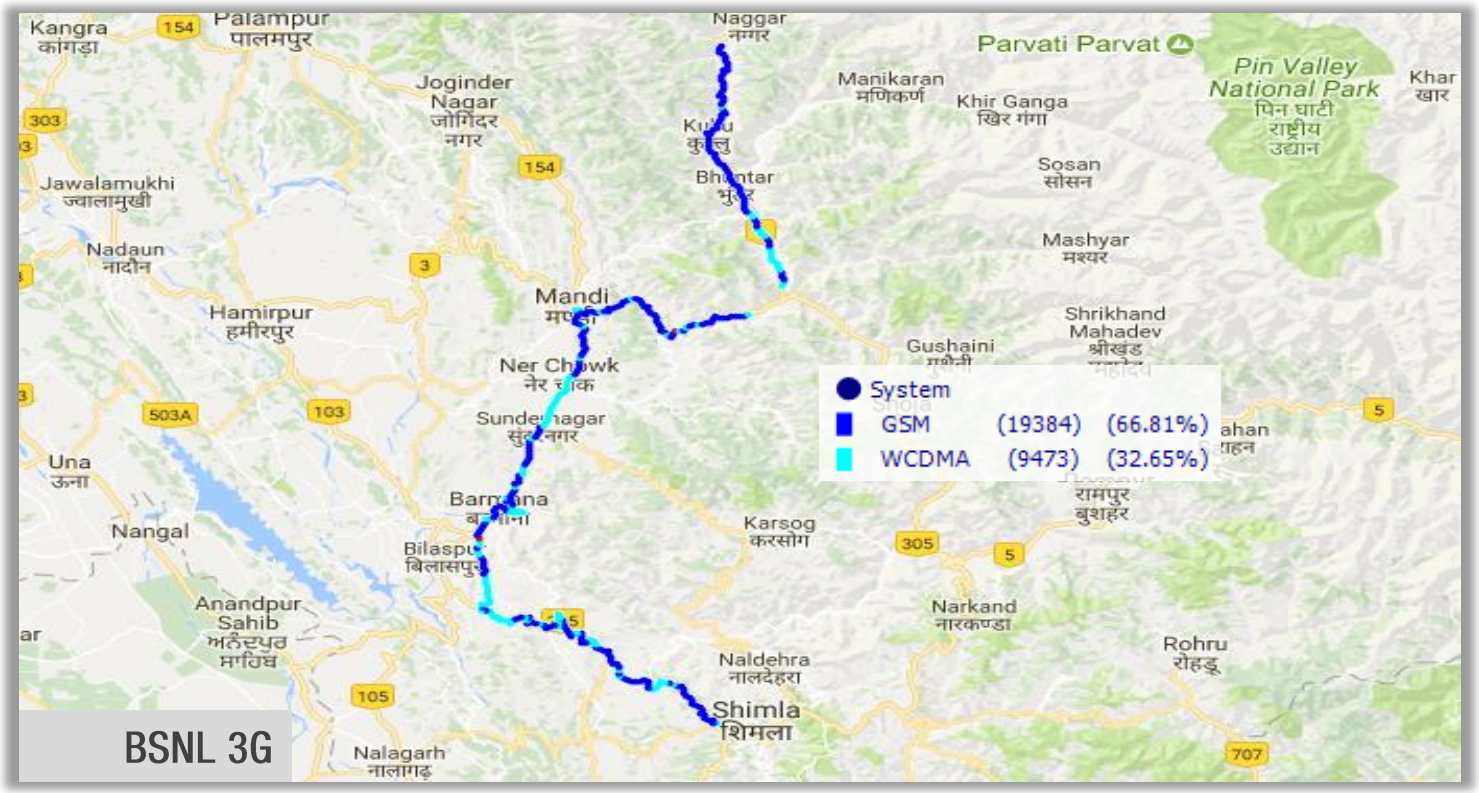
Jio VoLTE

III. Technology Details

TSP	% Time on 3G
Airtel 3G	85.81%
BSNL3G	32.65%
VIL(Idea) 3G	60.93%



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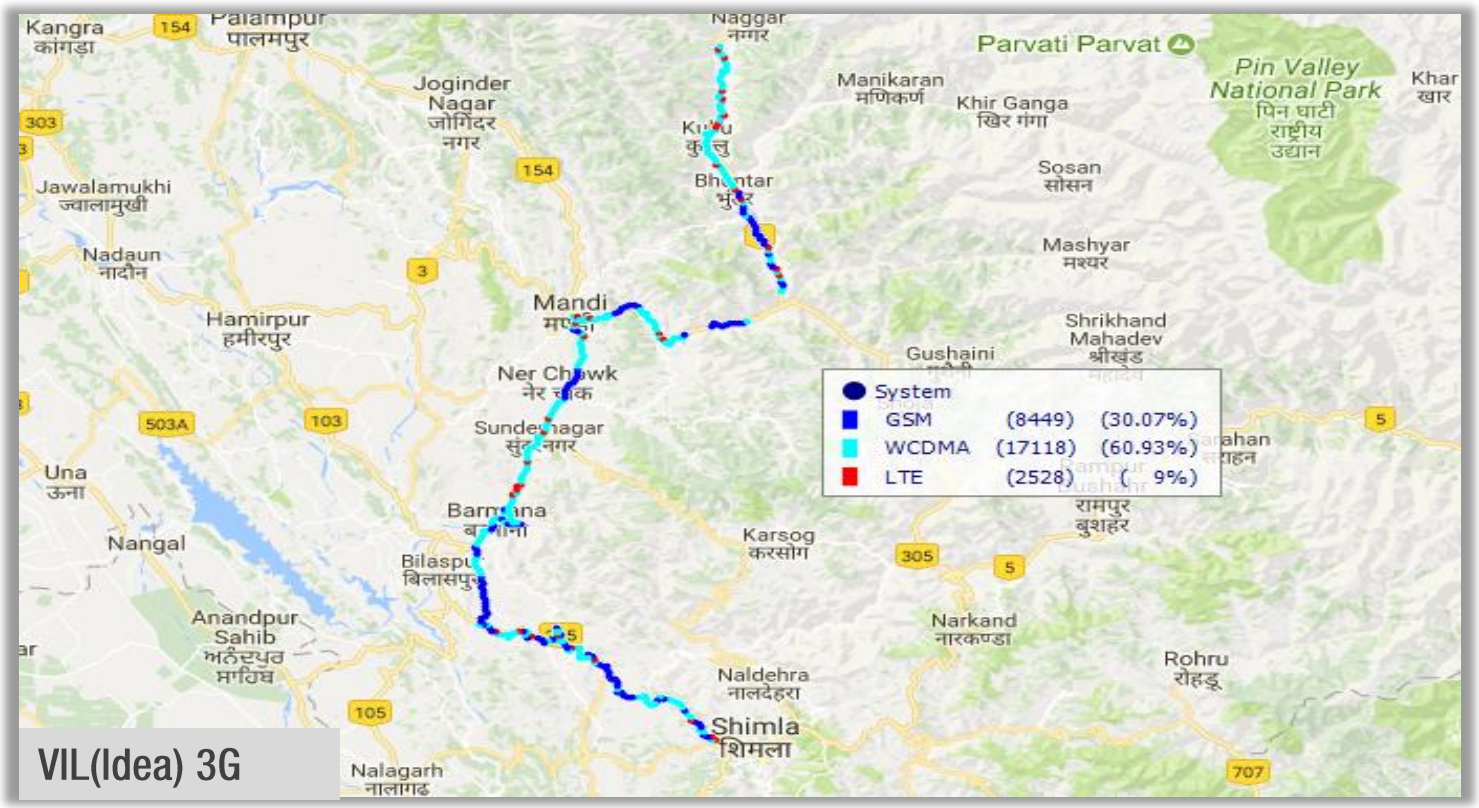
उद्यान
Khar
खार
Manikaran
मणिकर्ण
Khir Ganga
खिर गंगा
Joginder
Nagar
जोगिंदर
नगर
Kullu
कुल्लू
Bhuntar
भुंतर
Sosan
सोसन
Jawalamukhi
ज्वालामुखी
Nadaun
नादौन
Mashyar
मश्यर
Hamirpur
हमीरपुर
Mandi
मण्डी
Shrikhand
Mahadev
श्रीखंड
Gushaini
Ner Chowk
नेर चौक
Sundernagar
सुंदरनगर
Una
ऊना
Barmana
बरमाना
Nangal
Bilaspur
बिलासपुर
Karsog
करसोग
रामपुर
बुशहर
Anandpur
Sahib
ਅਨੰਦਪੁਰ
ਸਾਹਿਬ
Narkand
नारकण्डा
Rohru
रोहड़ू
Naldehra
नालदेहरा
Shimla
शिमला
Nalagarh
नालागढ़
System
GSM (19384) (66.81%)
WCDMA (9473) (32.65%)
BSNL 3G


Kangra
कांगड़ा
Palampur
पालमपुर
Naggar
नग्गर
Parvati Parvat
Pin Valley
National Park
पिन घाटी
राष्ट्रीय
उद्यान
Khar
खार
Manikaran
मणिकर्ण
Khir Ganga
खिर गंगा
Joginder
Nagar
जोगिंदर
नगर
Kullu
कुल्लू
Bhuntar
भुंतर
Sosan
सोसन
Jawalamukhi
ज्वालामुखी
Nadaun
नादौन
Mashyar
मश्यर
Hamirpur
हमीरपुर
Mandi
मण्डी
Shrikhand
Mahadev
श्रीखंड
Gushaini
Ner Chowk
नेर चौक
Sundernagar
सुंदरनगर
Una
ऊना
Barmana
बरमाना
Nangal
Bilaspur
बिलासपुर
Karsog
करसोग
रामपुर
बुशहर
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Shimla
शिमला
Nalagarh
नालागढ़
System
GSM (8449) (30.07%)
WCDMA (17118) (60.93%)
LTE (2528) (9%)
VIL(Idea) 3G