Independent Drive Test Report

For

Kurduwadi to Mumbai Railway

2019

June

WEST ZONE

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

The Independent Drive Test has been carried out by M/s PhiMetrics Technologies Pvt. Ltd. on behalf of TRAI in Kurduwadi to Mumbai Railway Route from 01:00 PM to 08:30 PM; 30th June 2019. The drive test covered a drive route of 350 KMs over a period of 1 day. Approximately 190 calls were made for each of the 13 networks: five 2G networks, five 3G networks and three 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

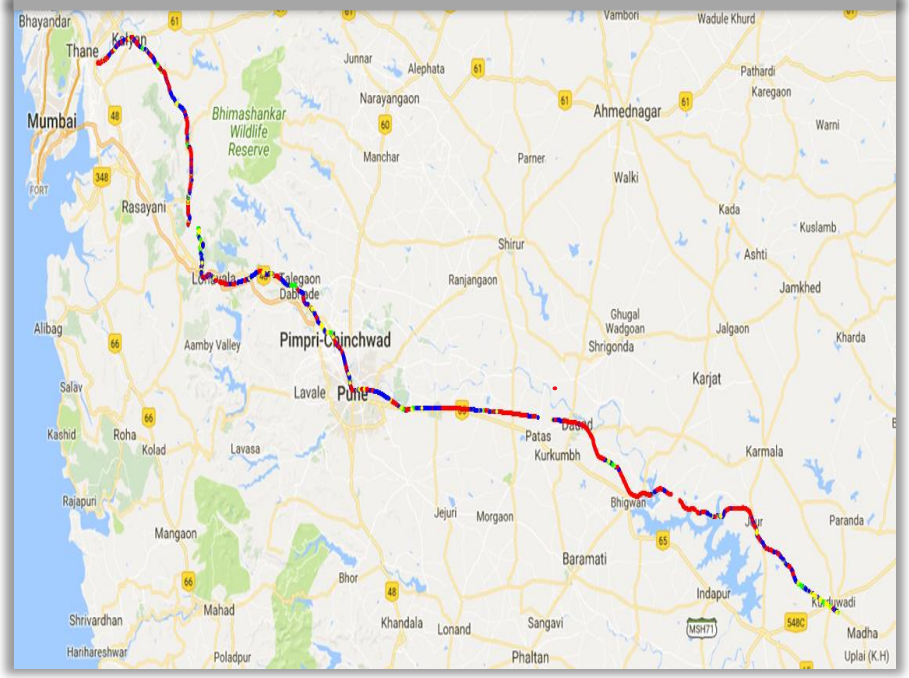
TRAI is regularly monitoring the performance of Telecom Service Providers (TSP) against the benchmarks for the various Quality of Service (QoS) parameters laid down by the Authority. TSPs submit Performance Monitoring Reports to TRAI every quarter. TRAI also undertakes audit and assessment of Quality 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 30th June 2019 covering various locations in Kurduwadi to Mumbai Railway Route. The performance of **Airtel, BSNL, Tata, Vodafone Idea Limited (VIL(Idea, Vodafone)), 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 Kurduwadi to Mumbai Railway Route:

Independent Drive test was conducted for a period of 1 day on 30th June 2019 in Kurduwadi to Mumbai Railway Route from 01:00 PM to 8:30 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 350 KMs over a period of 1 day on 15th June 2019 . Approximately 190 calls were made for each of the 13 networks: five 2G (Lock Mode) networks, five 3G (Dual mode) networks and three 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

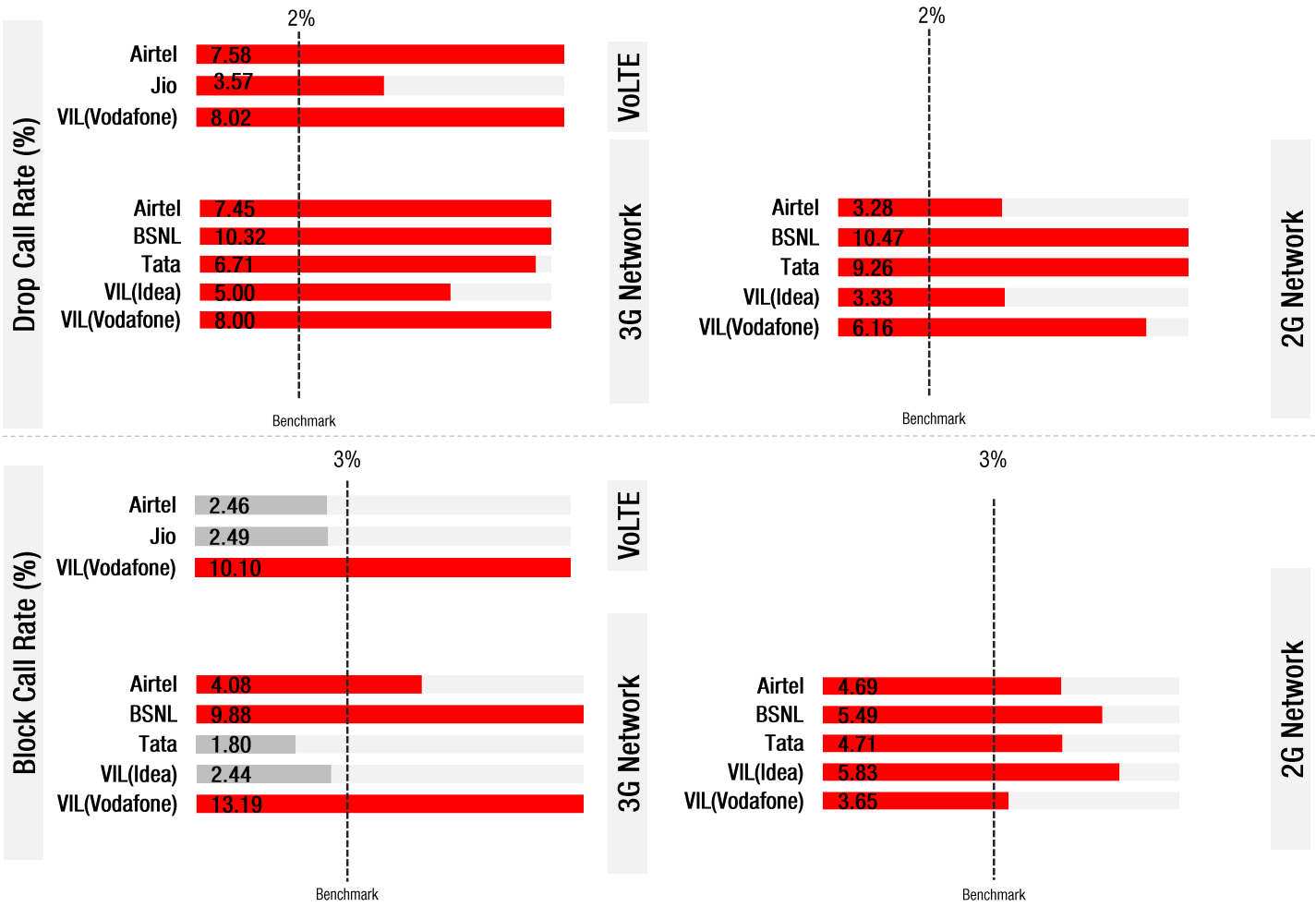
Voice Test Drive Route - Kurduwadi to Mumbai



Voice Calls

Key Observations

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



KPI	2G Networks				
	Airtel	BSNL	Tata	Vodafone Idea Ltd	
				VIL(Idea)	VIL(Vodafone)
SDCCH Congestion(<=1%)	2.09%	2.19%	0.59%	5.83%	1.83%
TCH Congestion (<=2%)	2.60%	3.30%	4.12%	0.00%	1.82%

KPI	3G Networks				
	Airtel	BSNL	Tata	Vodafone Idea Ltd	
				VIL(Idea)	VIL(Vodafone)
CSFB Failure %	1.53%	NA	NA	0.00%	0.00%
SDCCH Congestion%	0.51%	1.75%	0.00%	1.46%	4.86%
RRC Congestion%	0.00%	4.65%	0.60%	0.49%	6.25%
SDCCH & RRC Congestion(<=1%)	0.51%	6.40%	0.60%	1.95%	11.11%
TCH Congestion %	1.02%	1.16%	1.20%	0.00%	0.00%
RAB Congestion %	1.02%	2.32%	0.00%	0.49%	2.08%
TCH & RAB Congestion (<=2%)	2.04%	3.48%	1.20%	0.49%	2.08%

a) All TSPs have fail to met the 2% QOS benchmark of Drop Call Rate (DCR%).
b) All TSPs have fail to met the 2% QOS benchmark of Call Block Rate (CBR%) except Tata 3G, VIL(Idea 3G), Airtel VoLTE & JIO VoLTE.

*VIL= (Idea, Vodafone)
*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	Vodafone
Coverage%	57.07%	43.12%	63.79%	55.61%	43.08%

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

TSPs	3G					VoLTE		
	Airtel	BSNL	Tata	VIL		Airtel	Jio	VIL(Vodafone)
				Idea	Vodafone			
Coverage %	58.61%	48.36%	52.35%	52.87%	58.87%	63.62%	78.31%	46.70%

c) Percentage of time spent on 3G network:

TSPs	3G				
	Airtel	BSNL	Tata	VIL	
				Idea	Vodafone
Time Spent on 3G%	50.72%	61.51%	67.89%	49.26%	41.72%

d) Percentage of RLT >=48:

TSPs	2G				
	Airtel	BSNL	Tata	VIL	
				Idea	Vodafone
%RLT >=48	0.00%	0.55%	0.00%	0.00%	0.00%

e) Average CST Second

TSPs	2G				
	Airtel	BSNL	Tata	VIL	
				Idea	Vodafone
(Sec.)	5.76	2.48	3.46	2.71	3.11

TSPs	3G					VOLTE		
	Airtel	BSNL	Tata	VIL		Airtel	Jio	VIL(Vodafone)
				Idea	Vodafone			
Second	4.65	2.55	3.08	3.09	3.33	4.18	1.51	4.51

Summary

City Level Summary

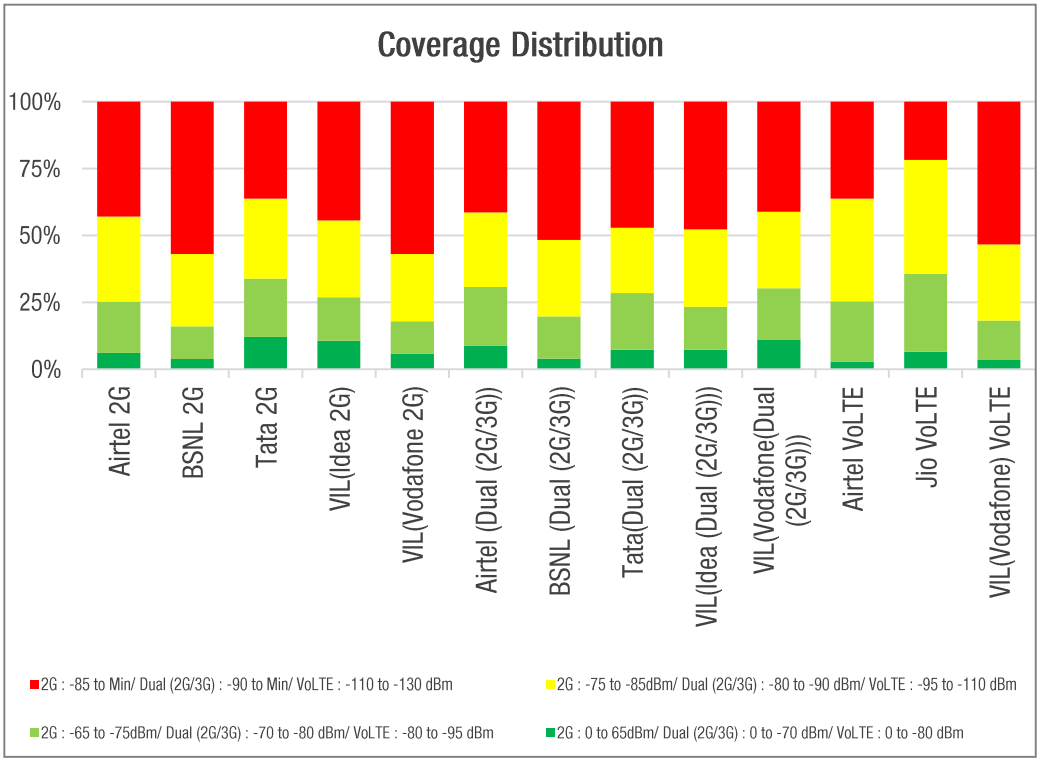
Voice Call	2G				
	Airtel	BSNL	Tata	VIL	
				Idea	Vodafone
Call Attempt	192	182	170	223	219
Blocked Call Rate (%)	4.69%	5.49%	4.71%	5.83%	3.65%
CSSR% (Accessibility)	95.31%	94.51%	95.29%	94.17%	96.35%
Drop Call Rate (%)	3.28%	10.47%	9.26%	3.33%	6.16%
Mobility HOSR (%)	99.83%	89.53%	95.72%	89.42%	94.08%
Rx Quality (%)	89.90%	93.00%	90.41%	85.86%	85.06%

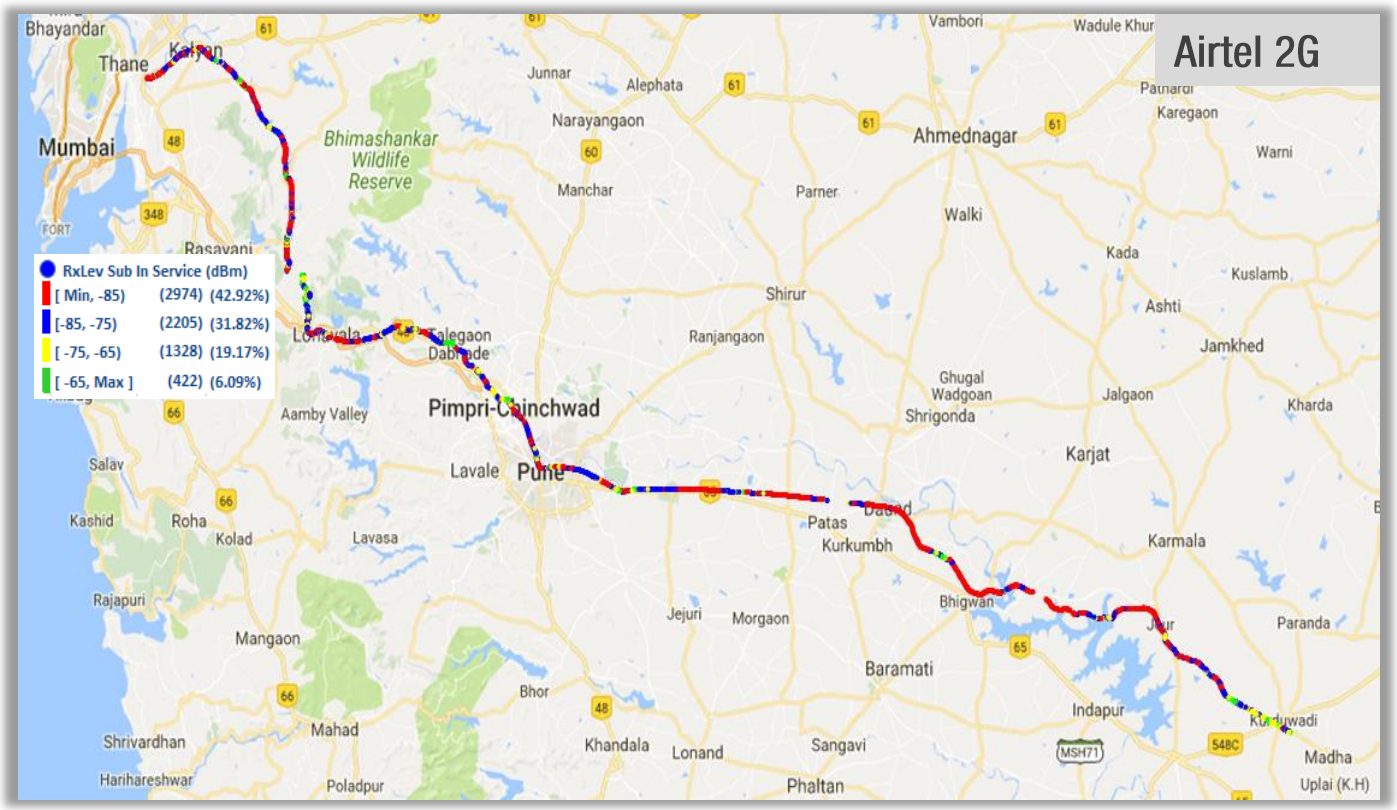
Voice Call	3G					VoLTE		
	Airtel	BSNL	Tata	VIL		Airtel	Jio	VIL(Vodafone)
				Idea	Vodafone			
Call Attempt	196	172	205	167	144	203	201	208
Blocked Call Rate (%)	4.08%	9.88%	2.44%	1.80%	13.2%	2.46%	2.49%	10.10%
CSSR% (Accessibility)	95.92%	90.12%	97.56%	98.20%	86.8%	97.54%	97.51%	89.90%
Drop Call Rate (%)	7.45%	10.32%	5.00%	6.71%	8.0%	7.58%	3.57%	8.02%
Mobility HOSR (%)	99.74%	98.93%	99.72%	99.80%	98.8%	99.90%	99.06%	99.58%
Rx Quality (%)	85.32%	88.87%	65.71%	85.75%	71.1%	69.16%	72.11%	60.44%

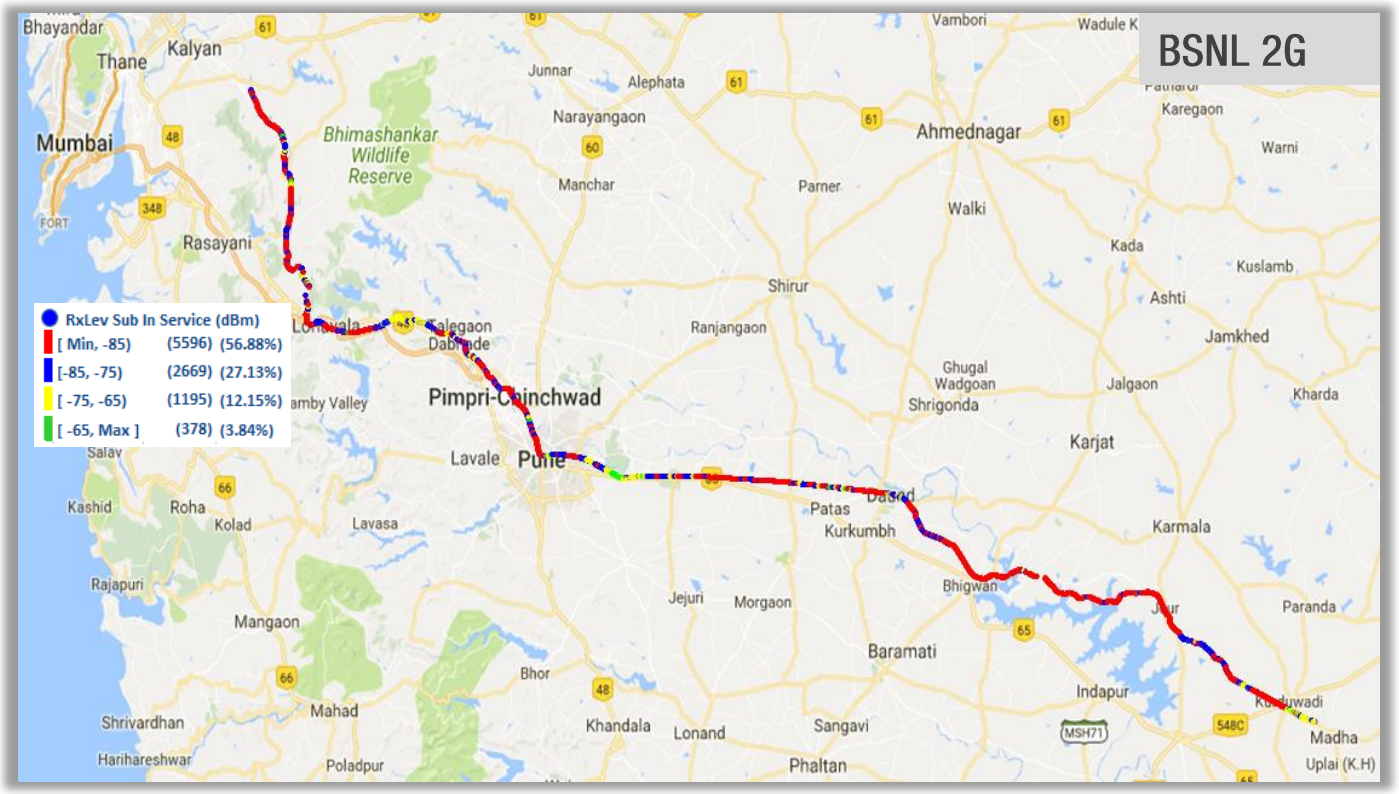
I. Coverage Details

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	57.07%
BSNL 2G	43.12%
Tata 2G	63.79%
VIL(Idea 2G)	55.61%
VIL(Vodafone 2G)	43.08%
Airtel Dual (2G/3G)	58.61%
BSNL Dual (2G/3G)	48.36%
Tata Dual (2G/3G)	52.87%
VIL(Idea) Dual (2G/3G)	52.35%
VIL(Vodafone) Dual (2G/3G)	58.87%
Airtel (VoLTE)	63.75%
Jio (VoLTE)	78.31%
VIL(Vodafone) VoLTE	46.70%






BSNL 2G
RxLev Sub In Service (dBm)
[Min, -85) (5596) (56.88%)
[-85, -75) (2669) (27.13%)
[-75, -65) (1195) (12.15%)
[-65, Max] (378) (3.84%)
Bhayandar
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Rasayani
Talegaon Dabhade
Pimpri-Chinchwad
Lavale
Pune
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Parner
Walki
Karegaon
Warni
Kada
Kuslamb
Ashti
Jamkhed
Shirur
Ranjangaon
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Patas
Kurkumbh
Karmala
Bhigwan
Paranda
Jejuri
Morgaon
Baramati
Indapur
Madha
Uplai (K.H)
Kashid
Roha
Kolad
Lavasa
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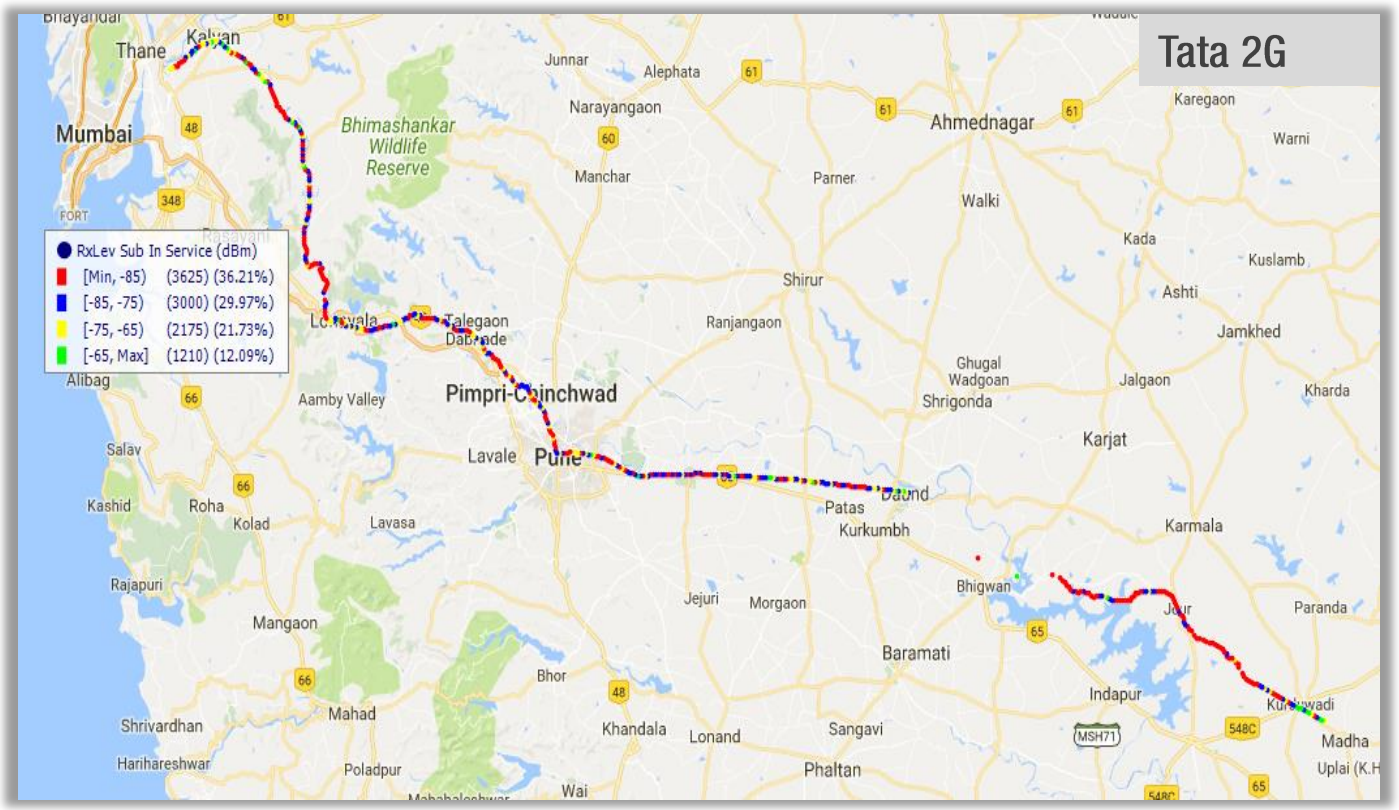
Mahad
Shrivardhan
Harihareshwar
Poladpur
Khandala
Lonand
Sangavi
Phaltan


Tata 2G
RxLev Sub In Service (dBm)
[Min, -85) (3625) (36.21%)
[-85, -75) (3000) (29.97%)
[-75, -65) (2175) (21.73%)
[-65, Max] (1210) (12.09%)
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Talegaon Dabhade
Pimpri-Chinchwad
Lavale
Pune
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
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Shrigonda
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Kharda
Karjat
Patas
Kurkumbh
Karmala
Bhigwan
Paranda
Jejuri
Morgaon
Baramati
Indapur
Madha
Alibag
Aamby Valley
Salav
Kashid
Roha
Kolad
Lavasa
Rajapuri
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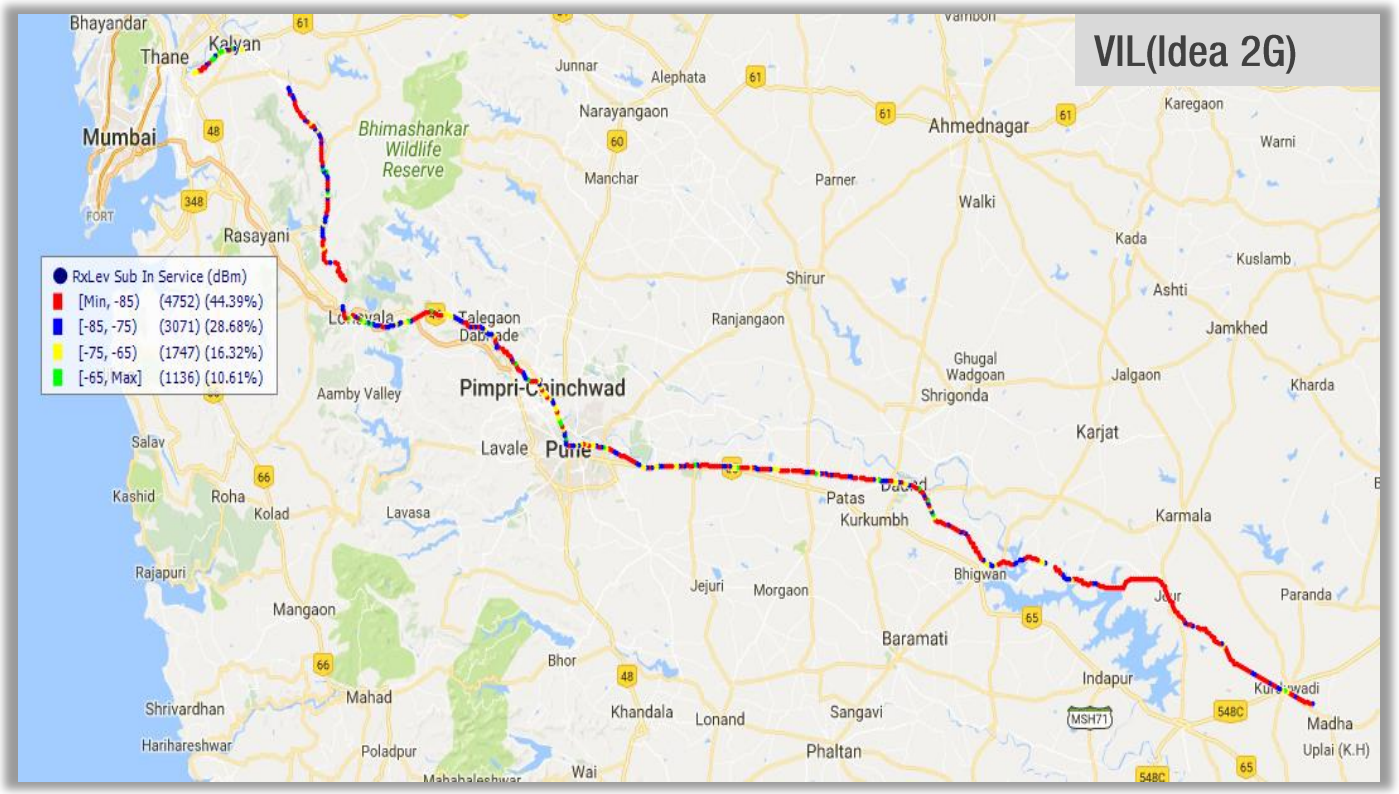
Bhor
Mahad
Shrivardhan
Harihareshwar
Poladpur
Khandala
Lonand
Sangavi
Phaltan
Wai


VIL(Idea 2G)
RxLev Sub In Service (dBm)
[Min, -85) (4752) (44.39%)
[-85, -75) (3071) (28.68%)
[-75, -65) (1747) (16.32%)
[-65, Max] (1136) (10.61%)
Bhayandar
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
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Ranjangaon
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Aamby Valley
Pimpri-Chinchwad
Lavale
Pune
Karjat
Salav
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Jejuri
Morgaon
Bhigwan
Paranda
Mangaon
Baramati
Bhor
Indapur
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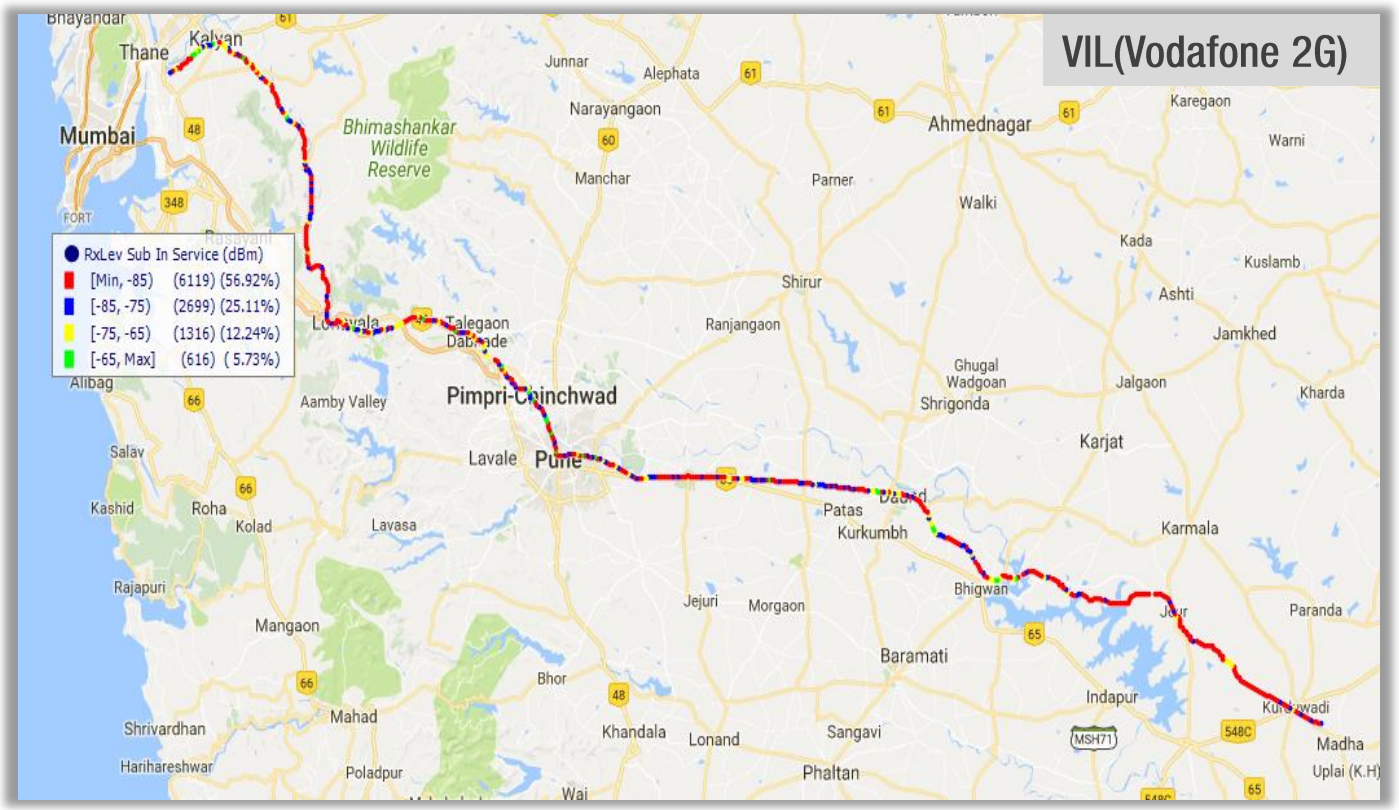
Madha
Harihareshwar
Poladpur
Phaltan
Uplai (K.H)
Wai


VIL(Vodafone 2G)
RxLev Sub In Service (dBm)
[Min, -85) (6119) (56.92%)
[-85, -75) (2699) (25.11%)
[-75, -65) (1316) (12.24%)
[-65, Max] (616) (5.73%)
Bhayandar
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Karegaon
Warni
Parner
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Kada
Kuslamb
Shirur
Ashti
Jamkhed
Ranjangaon
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Alibag
Aamby Valley
Pimpri-Chinchwad
Lavale
Pune
Karjat
Salav
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Jejuri
Morgaon
Bhigwan
Paranda
Mangaon
Baramati
Bhor
Indapur
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Khandala
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Sangavi
Madha
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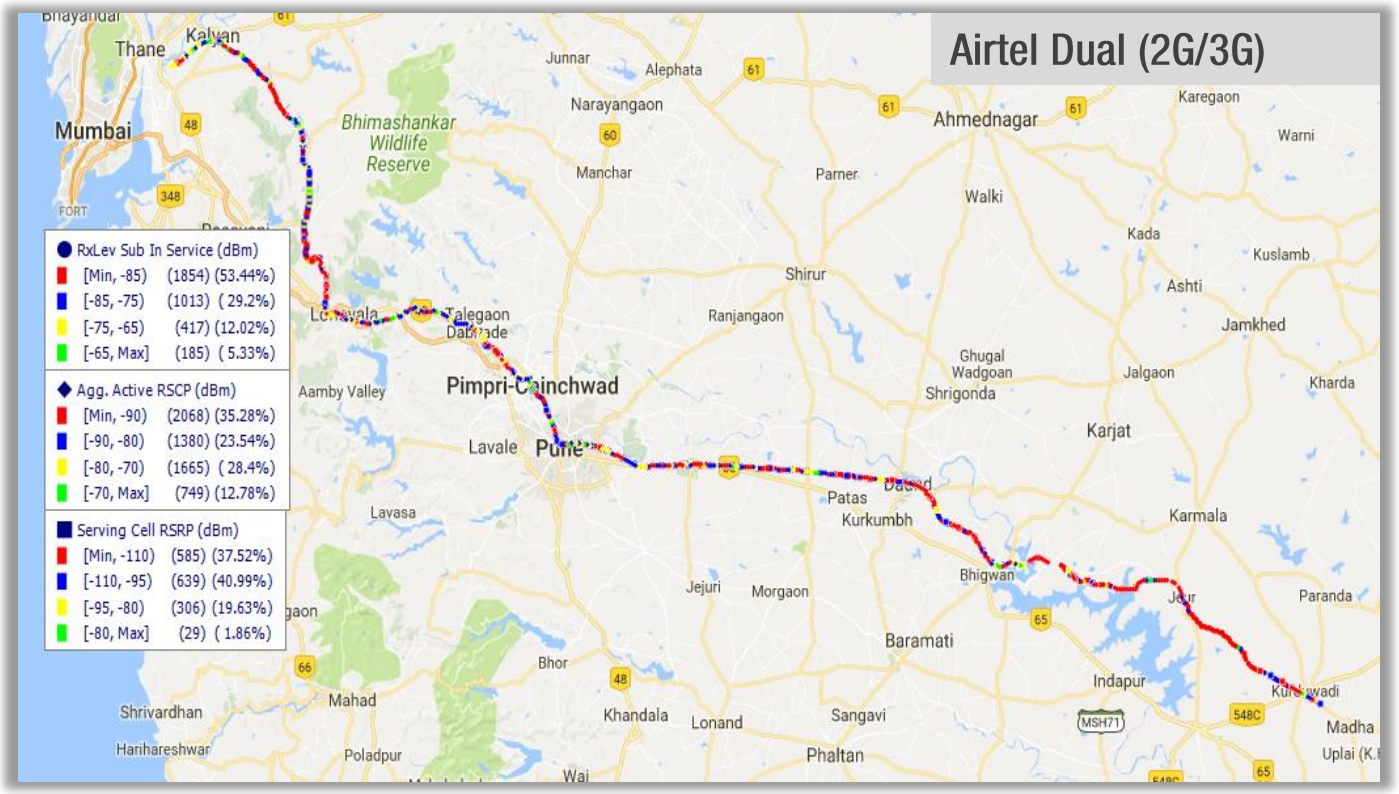
Poladpur
Phaltan
Uplai (K.H)
Wai


Airtel Dual (2G/3G)
RxLev Sub In Service (dBm)
[Min, -85) (1854) (53.44%)
[-85, -75) (1013) (29.2%)
[-75, -65) (417) (12.02%)
[-65, Max] (185) (5.33%)
Agg. Active RSCP (dBm)
[Min, -90) (2068) (35.28%)
[-90, -80) (1380) (23.54%)
[-80, -70) (1665) (28.4%)
[-70, Max] (749) (12.78%)
Serving Cell RSRP (dBm)
[Min, -110) (585) (37.52%)
[-110, -95) (639) (40.99%)
[-95, -80) (306) (19.63%)
[-80, Max] (29) (1.86%)
Mumbai
Thane
Kalyan
Bhimashankar Wildlife Reserve
Pimpri-Chinchwad
Pune
Lavale
Aamby Valley
Lavasa
Mahad
Shrivardhan
Harihareshwar
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Shrigonda
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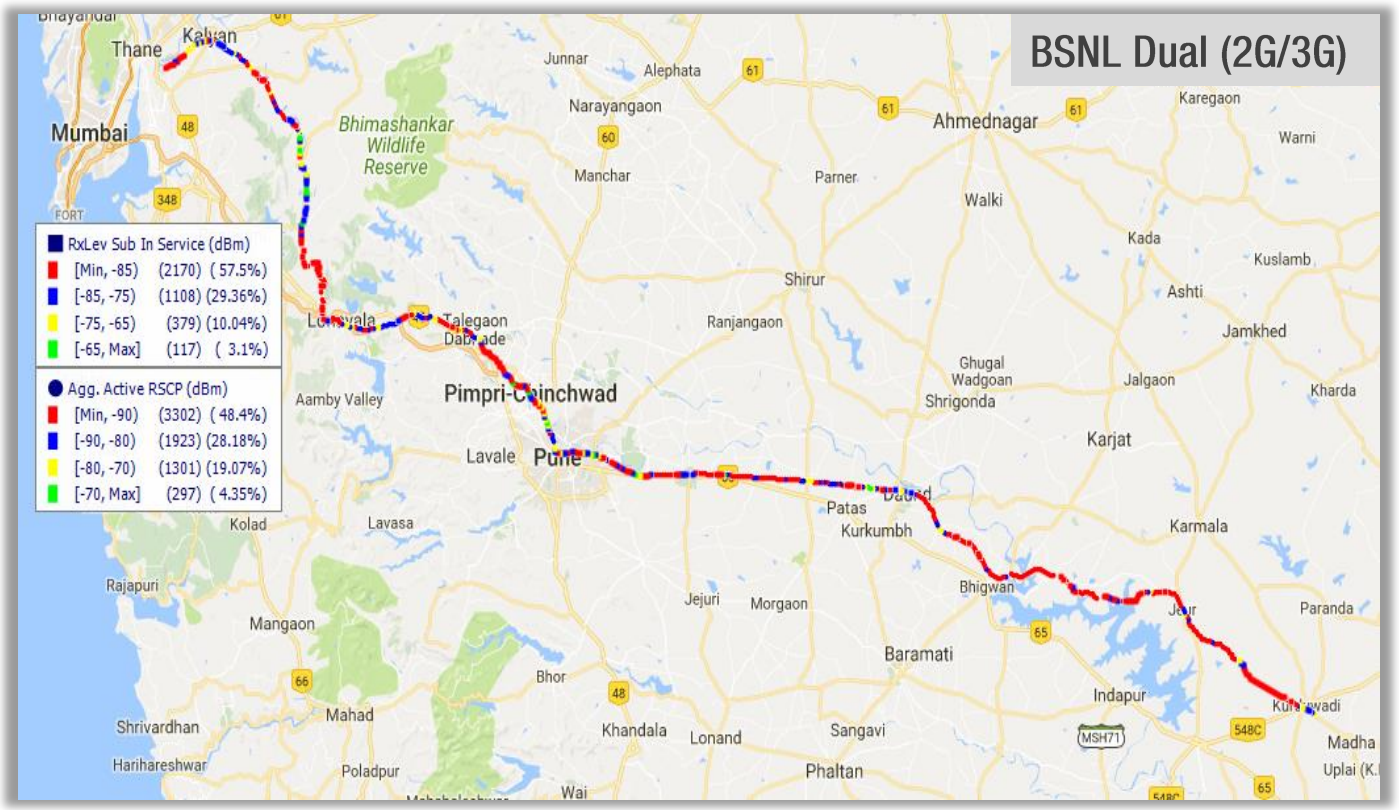
Madha
Uplai (K.)


BSNL Dual (2G/3G)
RxLev Sub In Service (dBm)
[Min, -85) (2170) (57.5%)
[-85, -75) (1108) (29.36%)
[-75, -65) (379) (10.04%)
[-65, Max] (117) (3.1%)
Agg. Active RSCP (dBm)
[Min, -90) (3302) (48.4%)
[-90, -80) (1923) (28.18%)
[-80, -70) (1301) (19.07%)
[-70, Max] (297) (4.35%)
Mumbai
Thane
Kalyan
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Pimpri-Chinchwad
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Warni
Walki
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Kuslamb
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Jamkhed
Shirur
Ranjangaon
Ghugal Wadgoan
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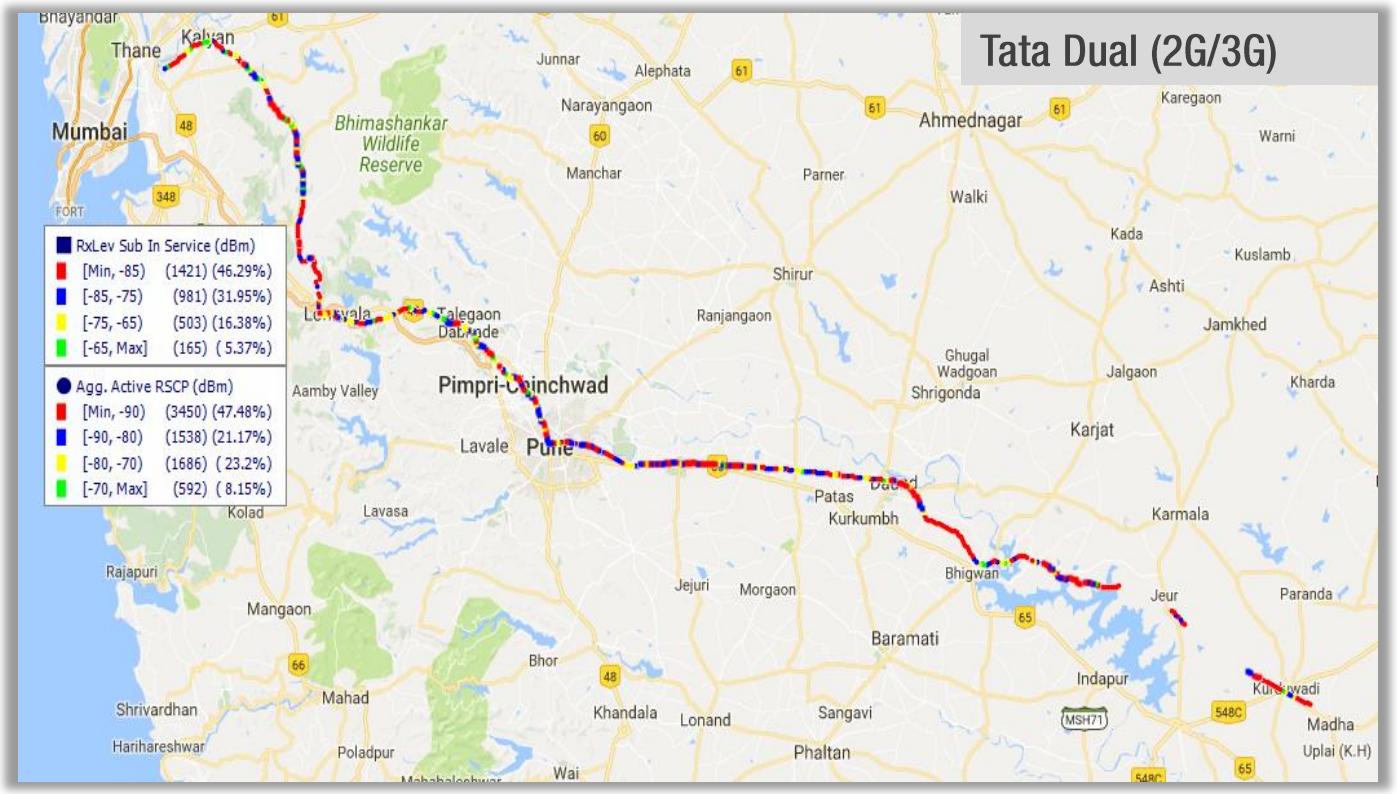
Uplai (K.)


Tata Dual (2G/3G)
RxLev Sub In Service (dBm)
[Min, -85) (1421) (46.29%)
[-85, -75) (981) (31.95%)
[-75, -65) (503) (16.38%)
[-65, Max] (165) (5.37%)
Agg. Active RSCP (dBm)
[Min, -90) (3450) (47.48%)
[-90, -80) (1538) (21.17%)
[-80, -70) (1686) (23.2%)
[-70, Max] (592) (8.15%)
Thane
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Mumbai
Bhimashankar Wildlife Reserve
Junnar
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Warni
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Jamkhed
Ghugal Wadgoan
Shrigonda
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Kharda
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Lavale
Pune
Patas
Kurkumbh
Karmala
Bhigwan
Jeur
Paranda
Kolad
Lavasa
Rajapuri
Jejuri
Morgaon
Mangaon
Baramati
Bhor
Indapur
Shrivardhan
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Poladpur
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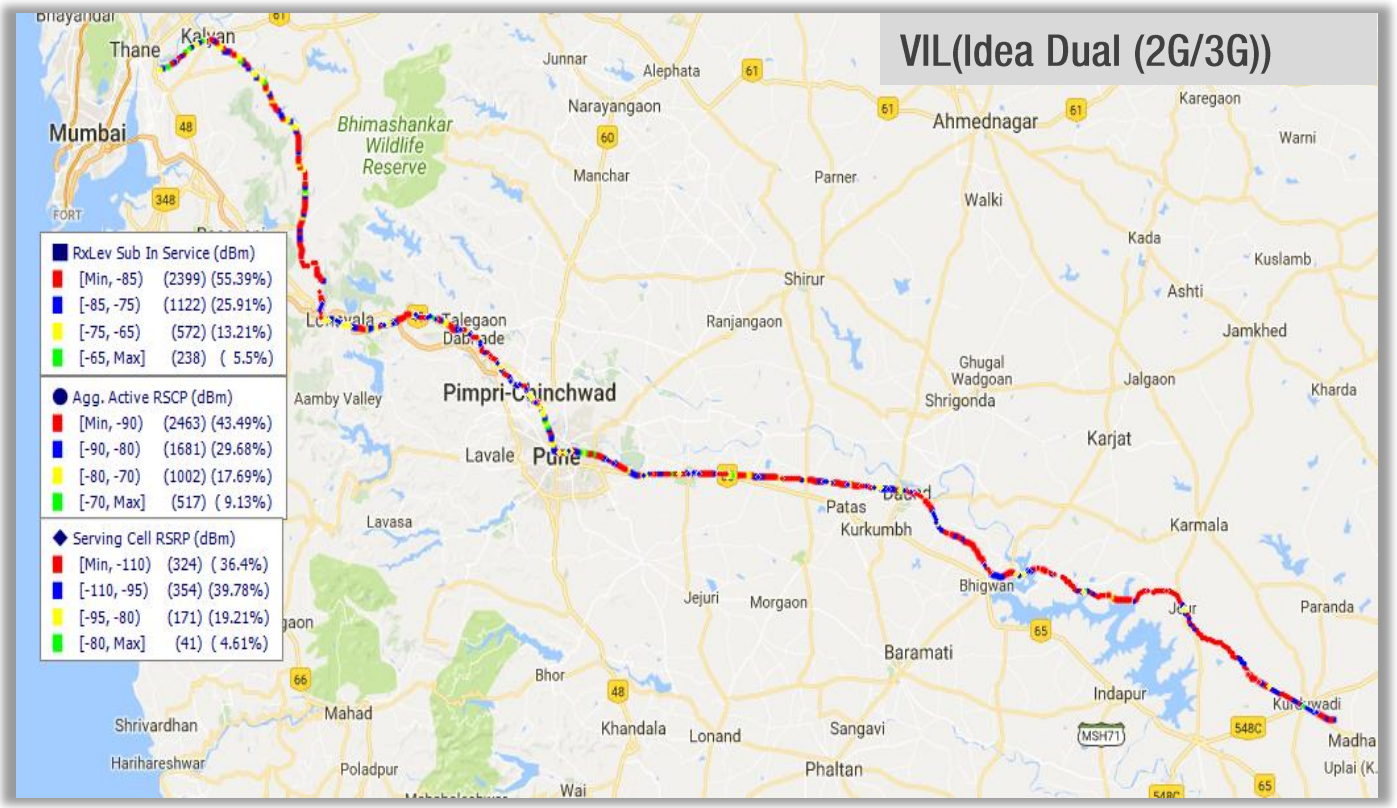
VIL(Idea Dual (2G/3G))
RxLev Sub In Service (dBm)
[Min, -85) (2399) (55.39%)
[-85, -75) (1122) (25.91%)
[-75, -65) (572) (13.21%)
[-65, Max] (238) (5.5%)
Agg. Active RSCP (dBm)
[Min, -90) (2463) (43.49%)
[-90, -80) (1681) (29.68%)
[-80, -70) (1002) (17.69%)
[-70, Max] (517) (9.13%)
Serving Cell RSRP (dBm)
[Min, -110) (324) (36.4%)
[-110, -95) (354) (39.78%)
[-95, -80) (171) (19.21%)
[-80, Max] (41) (4.61%)
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Junnar
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Ahmednagar
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Walki
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Kuslamb
Ashti
Shirur
Ranjangaon
Jamkhed
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Aamby Valley
Pimpri-Chinchwad
Lavale
Pune
Patas
Kurkumbh
Karmala
Bhigwan
Paranda
Lavasa
Jejuri
Morgaon
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Madha
Harihareshwar
Poladpur
Phaltan
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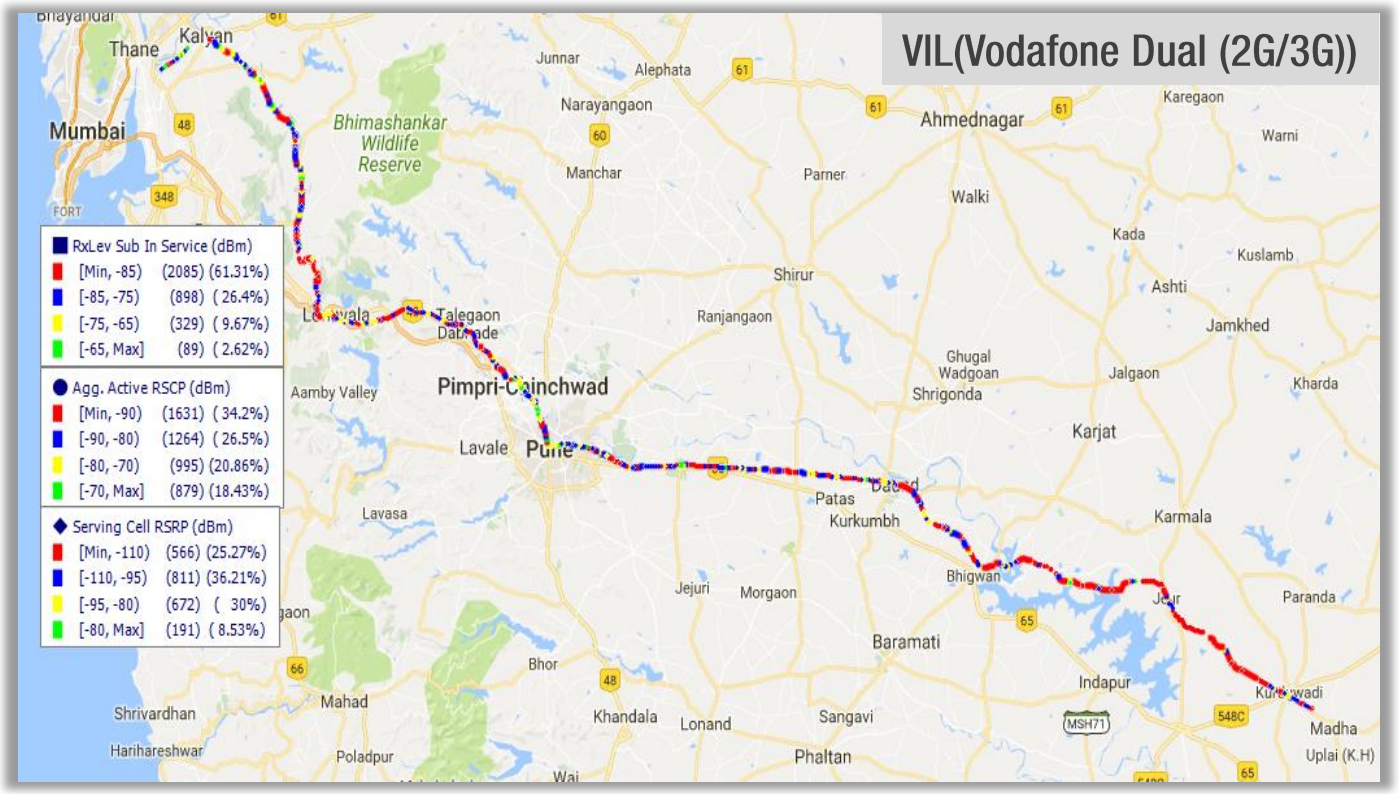
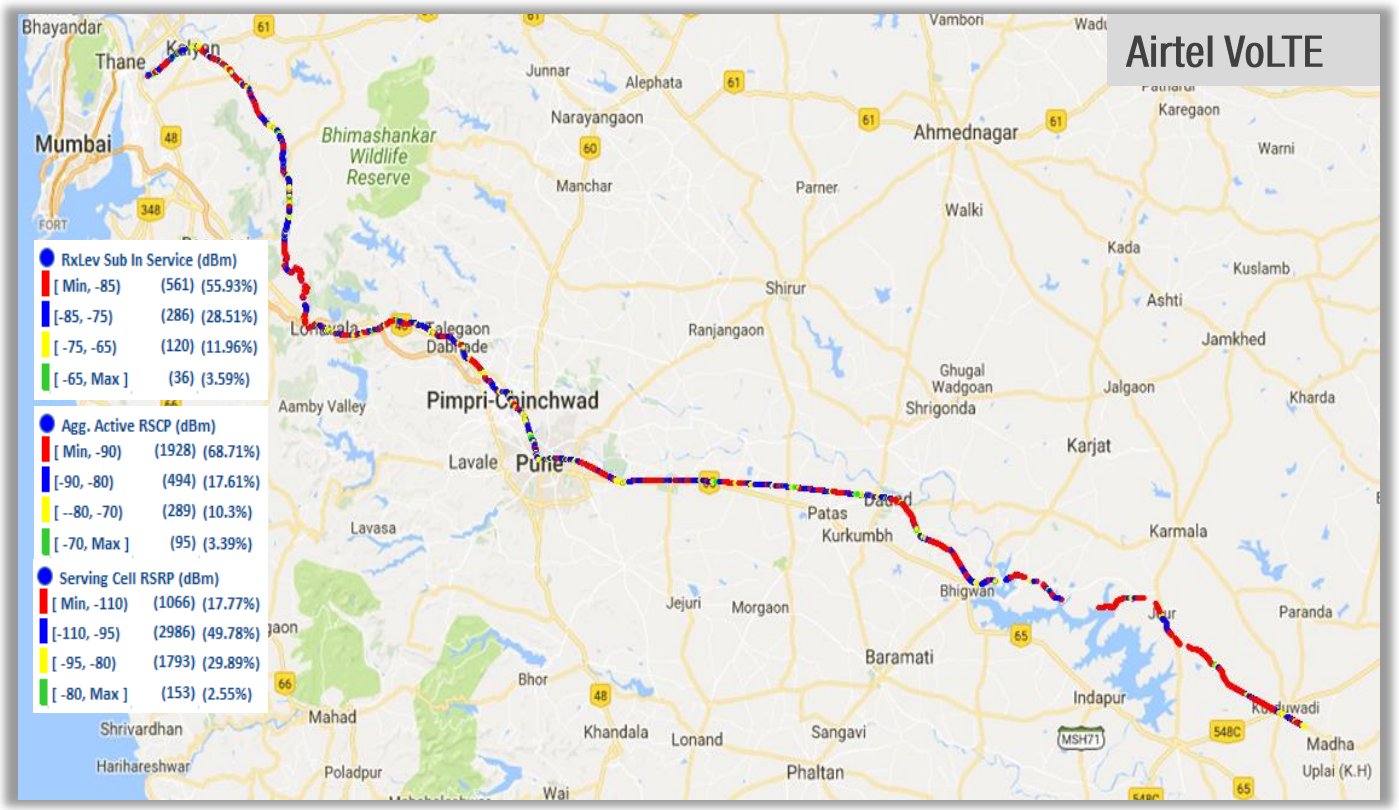
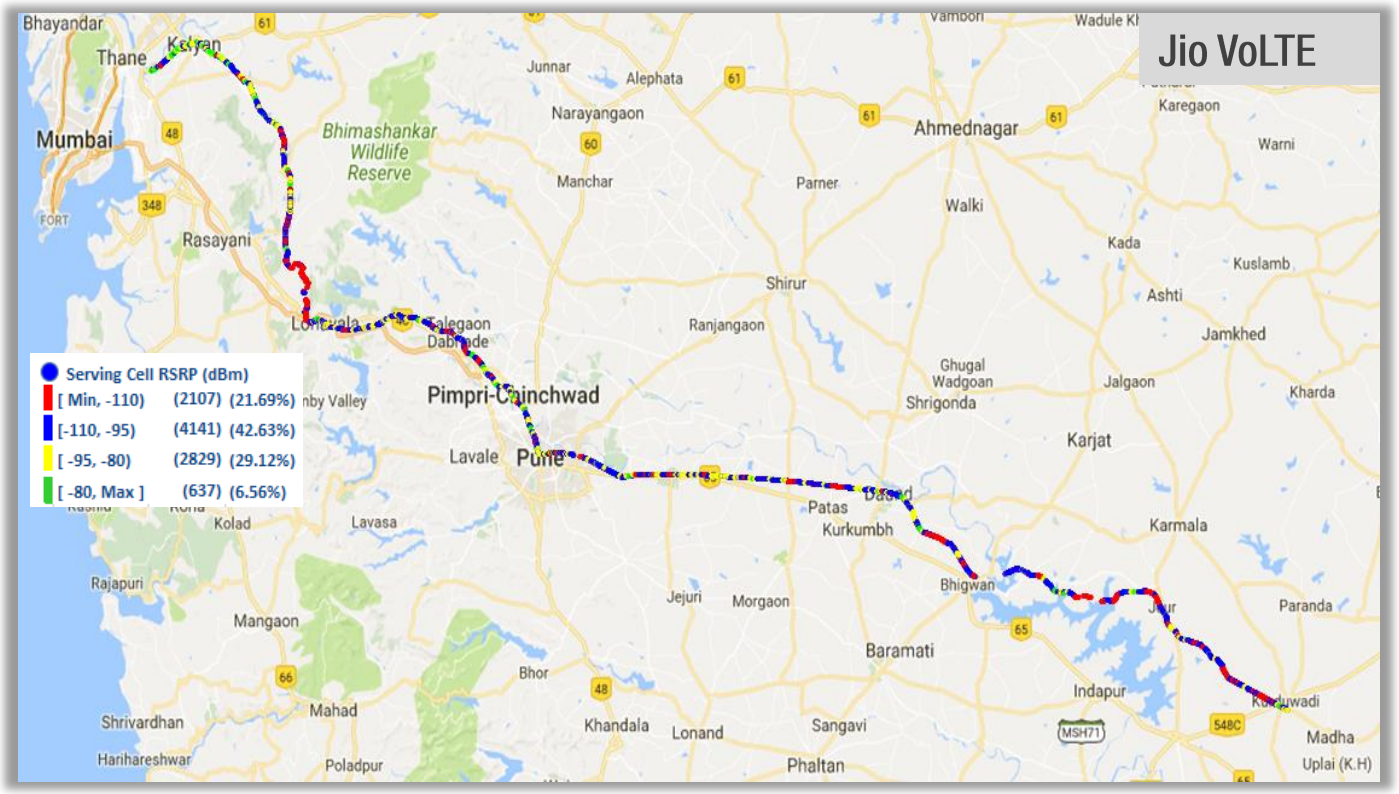
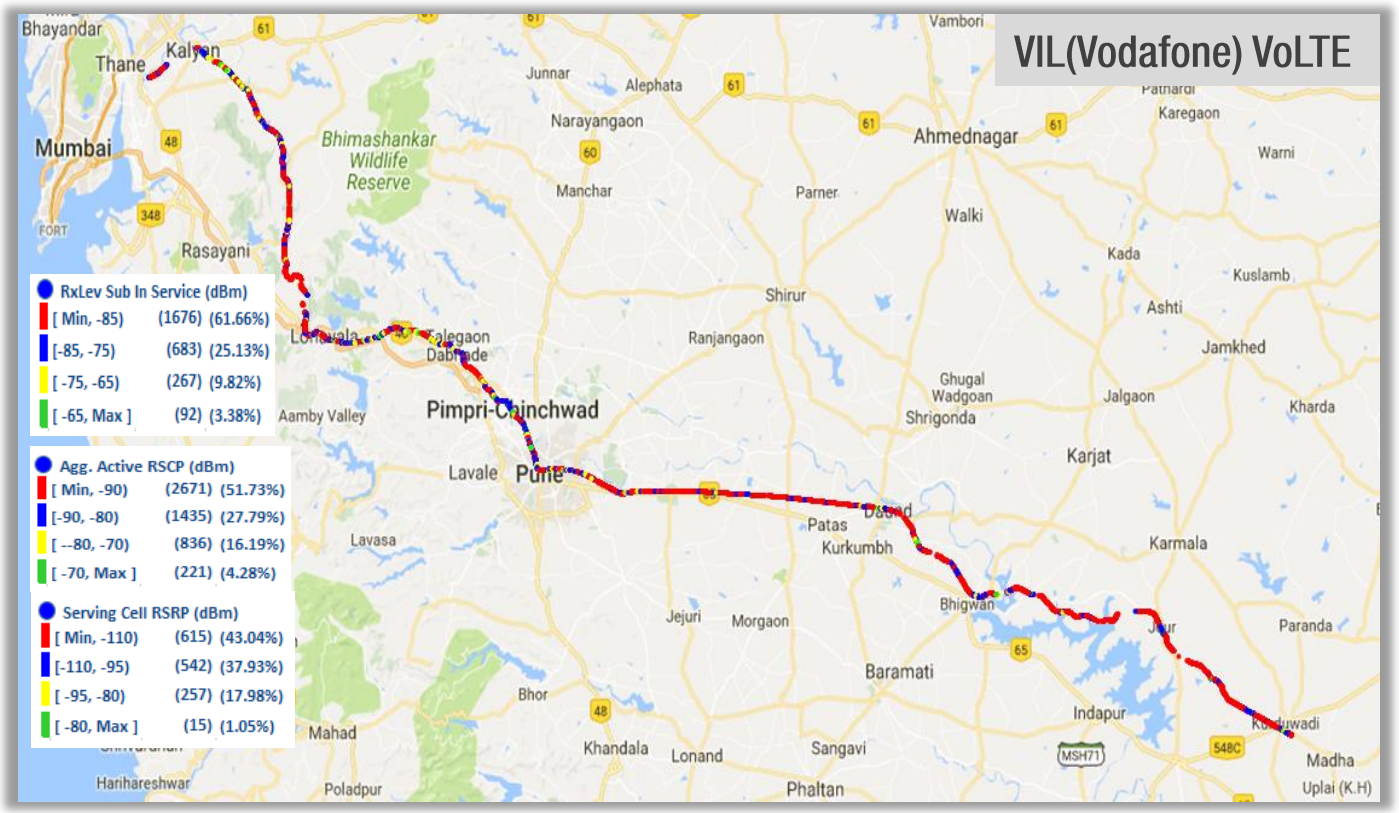

VIL(Vodafone Dual (2G/3G))
RxLev Sub In Service (dBm)
[Min, -85) (2085) (61.31%)
[-85, -75) (898) (26.4%)
[-75, -65) (329) (9.67%)
[-65, Max] (89) (2.62%)
Agg. Active RSCP (dBm)
[Min, -90) (1631) (34.2%)
[-90, -80) (1264) (26.5%)
[-80, -70) (995) (20.86%)
[-70, Max] (879) (18.43%)
Serving Cell RSRP (dBm)
[Min, -110) (566) (25.27%)
[-110, -95) (811) (36.21%)
[-95, -80) (672) (30%)
[-80, Max] (191) (8.53%)
Mumbai
Thane
Kalyan
Bhimashankar Wildlife Reserve
Pimpri-Chinchwad
Lavale
Pune
Ahmednagar
Karjat
Baramati
Indapur
Madha
Uplai (K.H)


Airtel VoLTE
RxLev Sub In Service (dBm)
[Min, -85) (561) (55.93%)
[-85, -75) (286) (28.51%)
[-75, -65) (120) (11.96%)
[-65, Max] (36) (3.59%)
Agg. Active RSCP (dBm)
[Min, -90) (1928) (68.71%)
[-90, -80) (494) (17.61%)
[--80, -70) (289) (10.3%)
[-70, Max] (95) (3.39%)
Serving Cell RSRP (dBm)
[Min, -110) (1066) (17.77%)
[-110, -95) (2986) (49.78%)
[-95, -80) (1793) (29.89%)
[-80, Max] (153) (2.55%)
Mumbai
Thane
Bhimashankar Wildlife Reserve
Pimpri-Chinchwad
Lavale
Pune
Ahmednagar
Karjat
Baramati
Indapur
Madha
Uplai (K.H)


Jio VoLTE
Serving Cell RSRP (dBm)
[Min, -110) (2107) (21.69%)
[-110, -95) (4141) (42.63%)
[-95, -80) (2829) (29.12%)
[-80, Max] (637) (6.56%)
Bhayandar
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Rasayani
Pimpri-Chinchwad
Lavale
Pune
Ahmednagar
Karjat
Baramati
Indapur
Bhigwan
Patas
Kurkumbh
Jejuri
Morgaon
Mangaon
Mahad
Khandala
Lonand
Sangavi
Phaltan
Madha

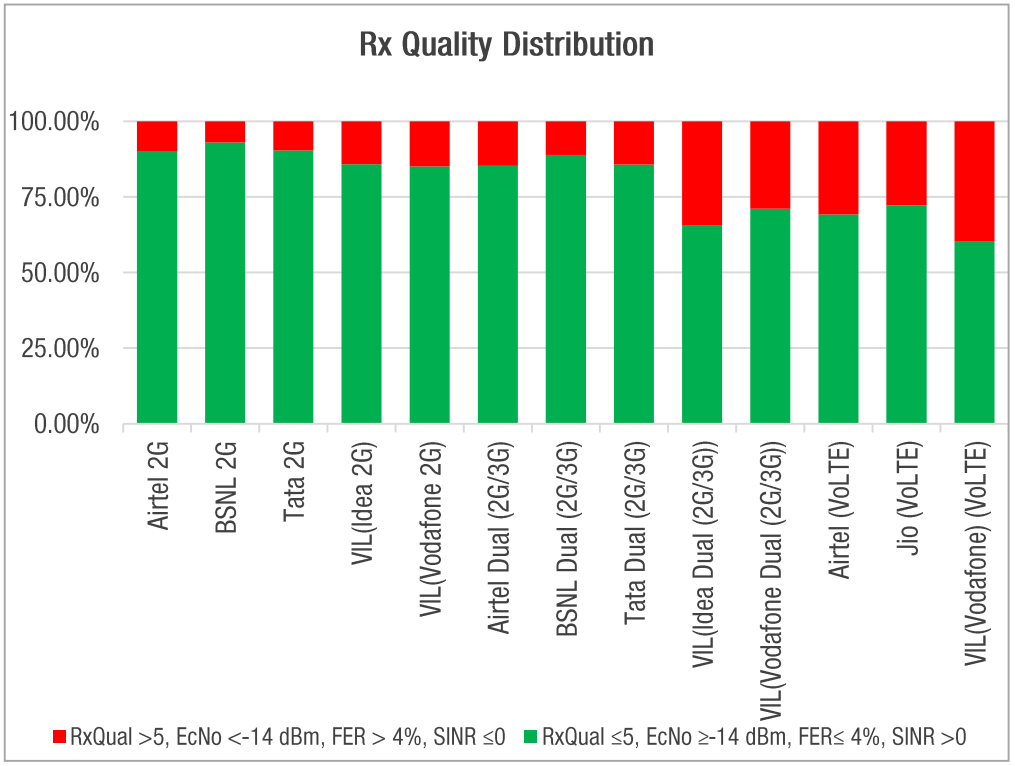

VIL(Vodafone) VoLTE
RxLev Sub In Service (dBm)
[Min, -85) (1676) (61.66%)
[-85, -75) (683) (25.13%)
[-75, -65) (267) (9.82%)
[-65, Max] (92) (3.38%)
Agg. Active RSCP (dBm)
[Min, -90) (2671) (51.73%)
[-90, -80) (1435) (27.79%)
[--80, -70) (836) (16.19%)
[-70, Max] (221) (4.28%)
Serving Cell RSRP (dBm)
[Min, -110) (615) (43.04%)
[-110, -95) (542) (37.93%)
[-95, -80) (257) (17.98%)
[-80, Max] (15) (1.05%)
Bhayandar
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Rasayani
Pimpri-Chinchwad
Lavale
Pune
Ahmednagar
Karjat
Baramati
Indapur
Bhigwan
Patas
Kurkumbh
Jejuri
Morgaon
Mahad
Khandala
Lonand
Sangavi
Phaltan
Madha

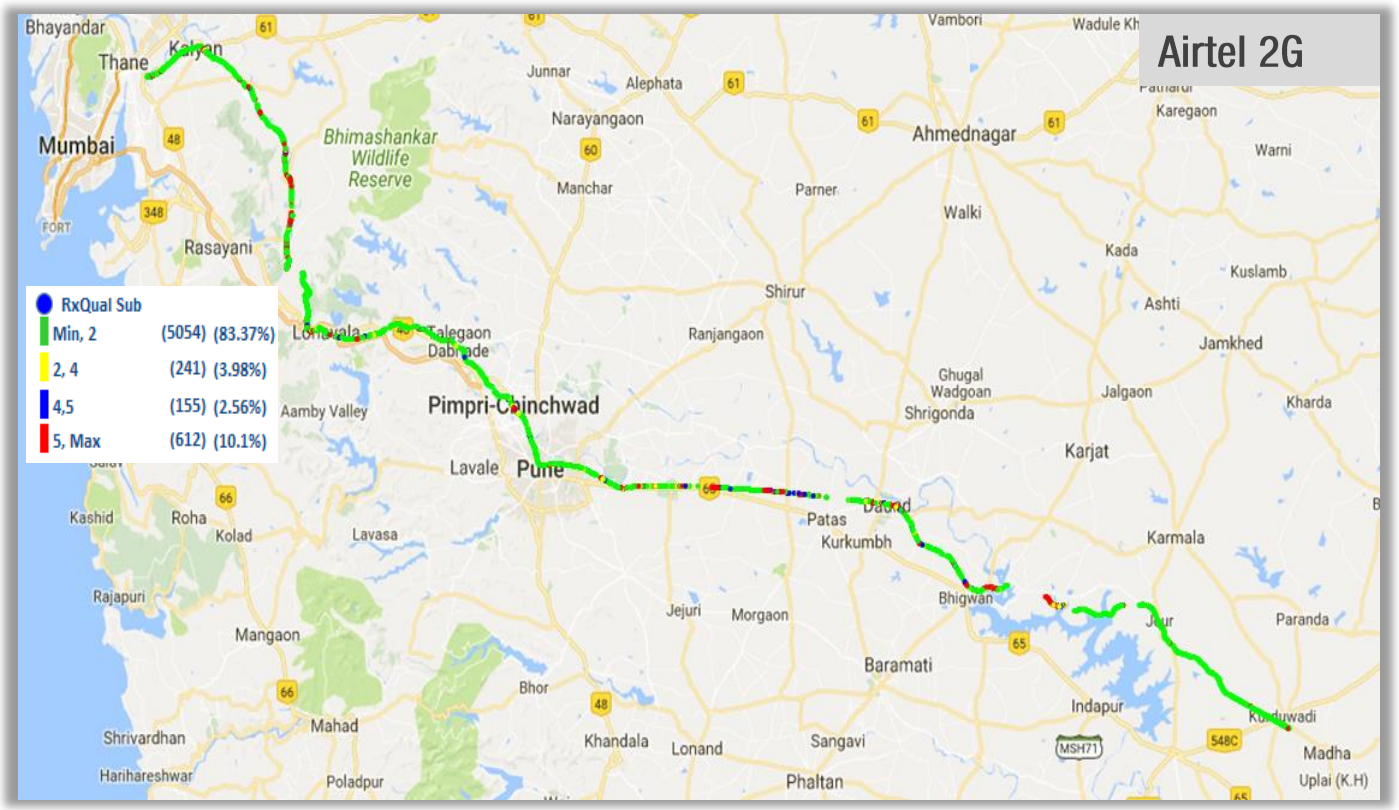
II. Quality Details

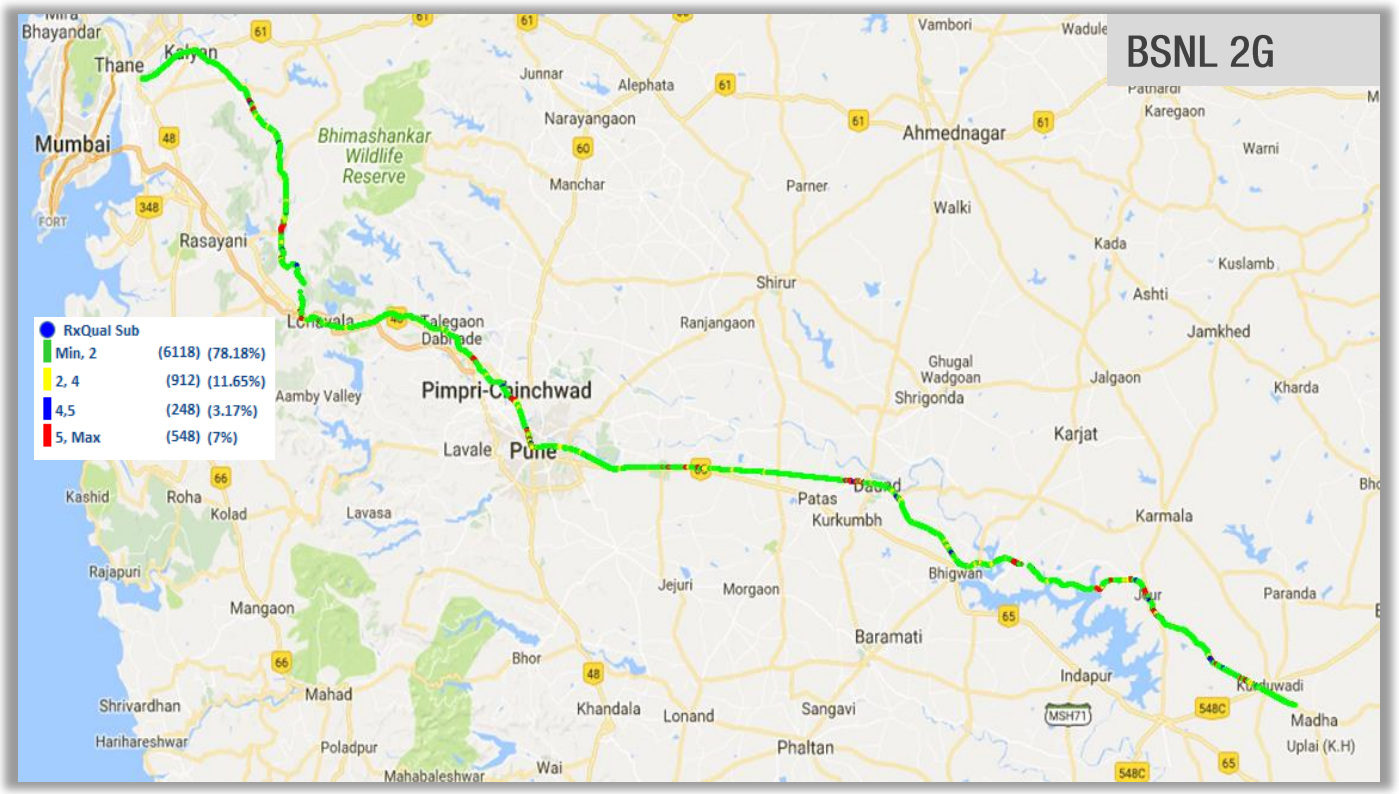
For measuring voice quality, as per the QoS norms, RxQual <=5 for GSM TSPs, EcNo >= -14 dBm for 3G TSP sand SINR >0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be ≥ 95%.

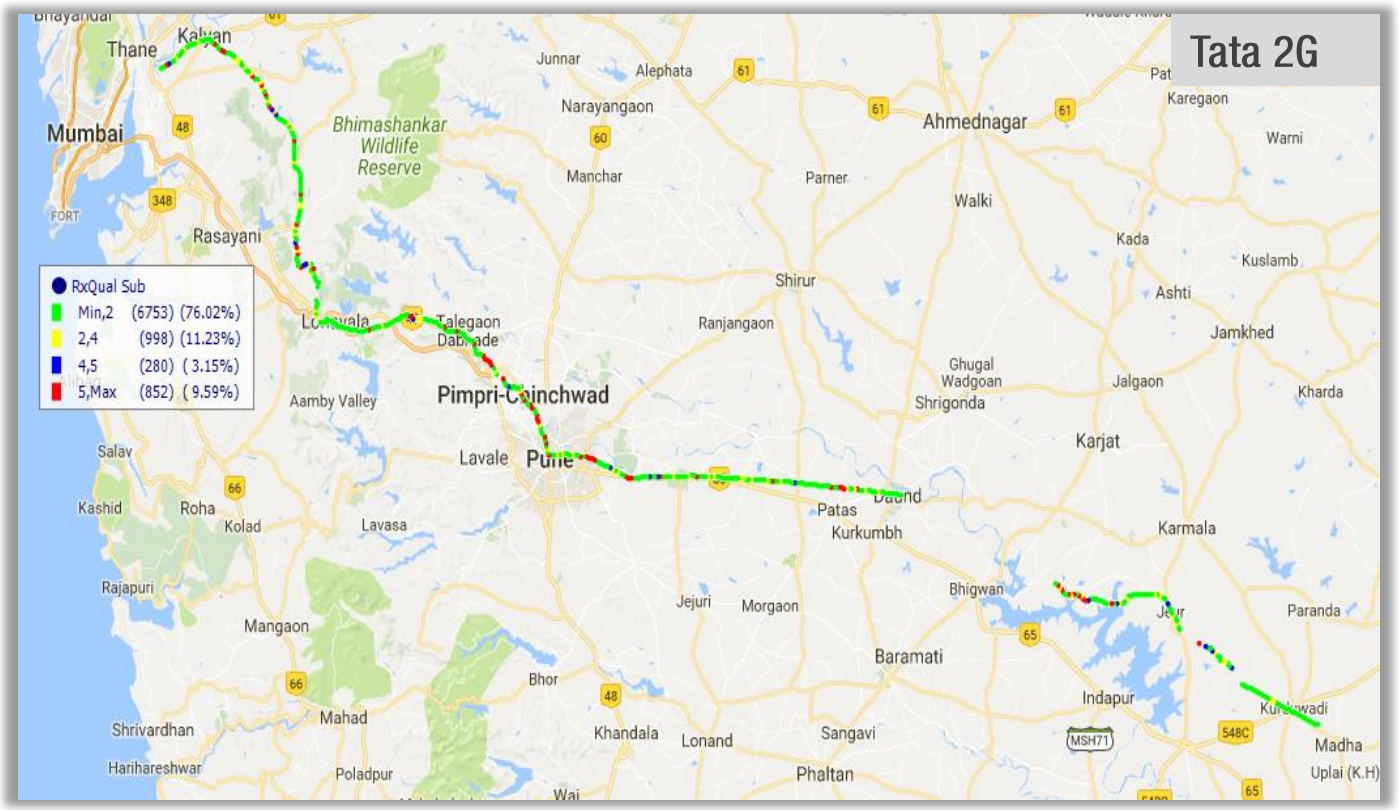
TSP	Rx Quality
Airtel 2G	89.90%
BSNL 2G	93.00%
Tata 2G	90.41%
VIL(Idea 2G)	85.86%
VIL(Vodafone 2G)	85.06%
Airtel Dual (2G/3G)	85.32%
BSNL Dual (2G/3G)	88.87%
Tata Dual (2G/3G)	85.75%
VIL(Idea Dual (2G/3G))	65.71%
VIL(Vodafone Dual (2G/3G))	71.10%
Airtel (VoLTE)	69.16%
Jio (VoLTE)	72.11%
VIL(Vodafone) VoLTE	60.44%

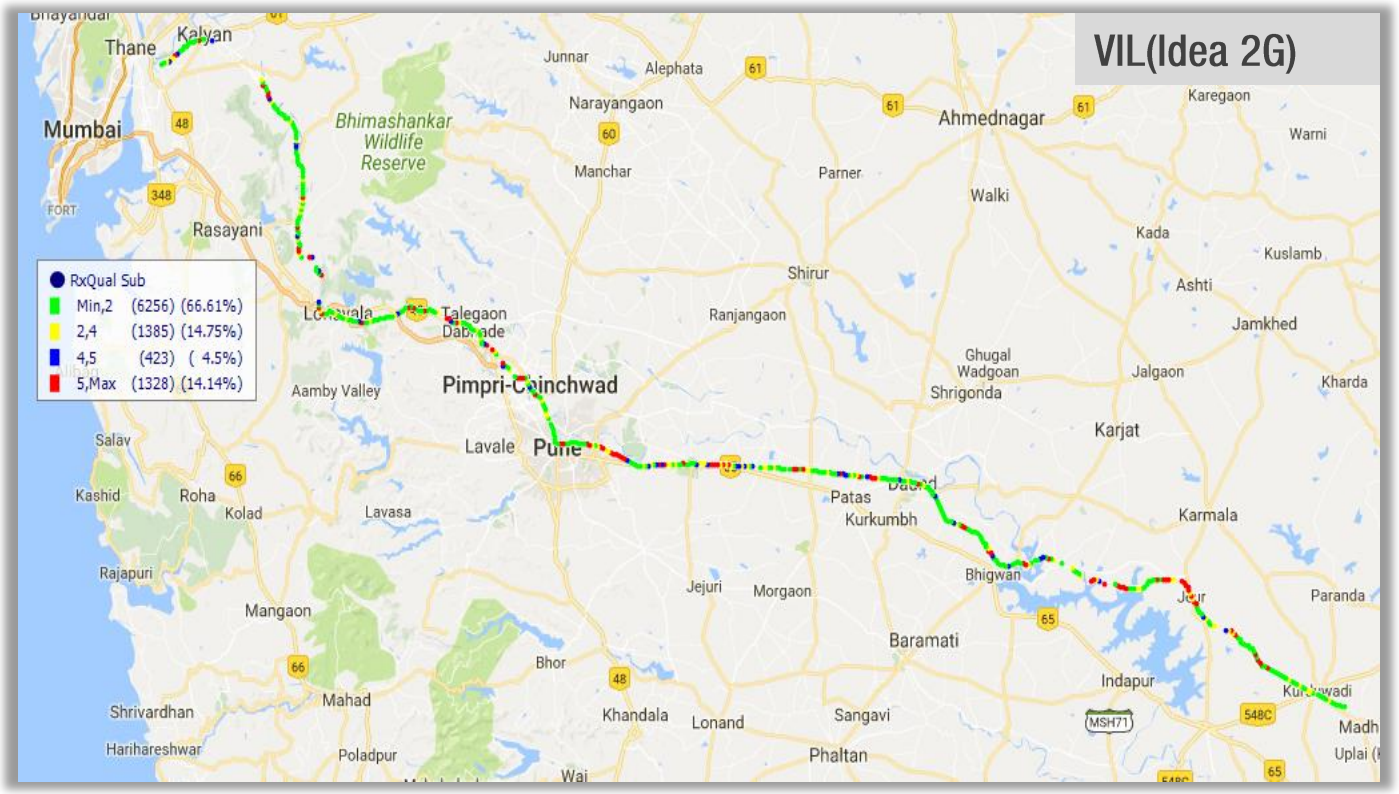
TSPs not meeting the Benchmark

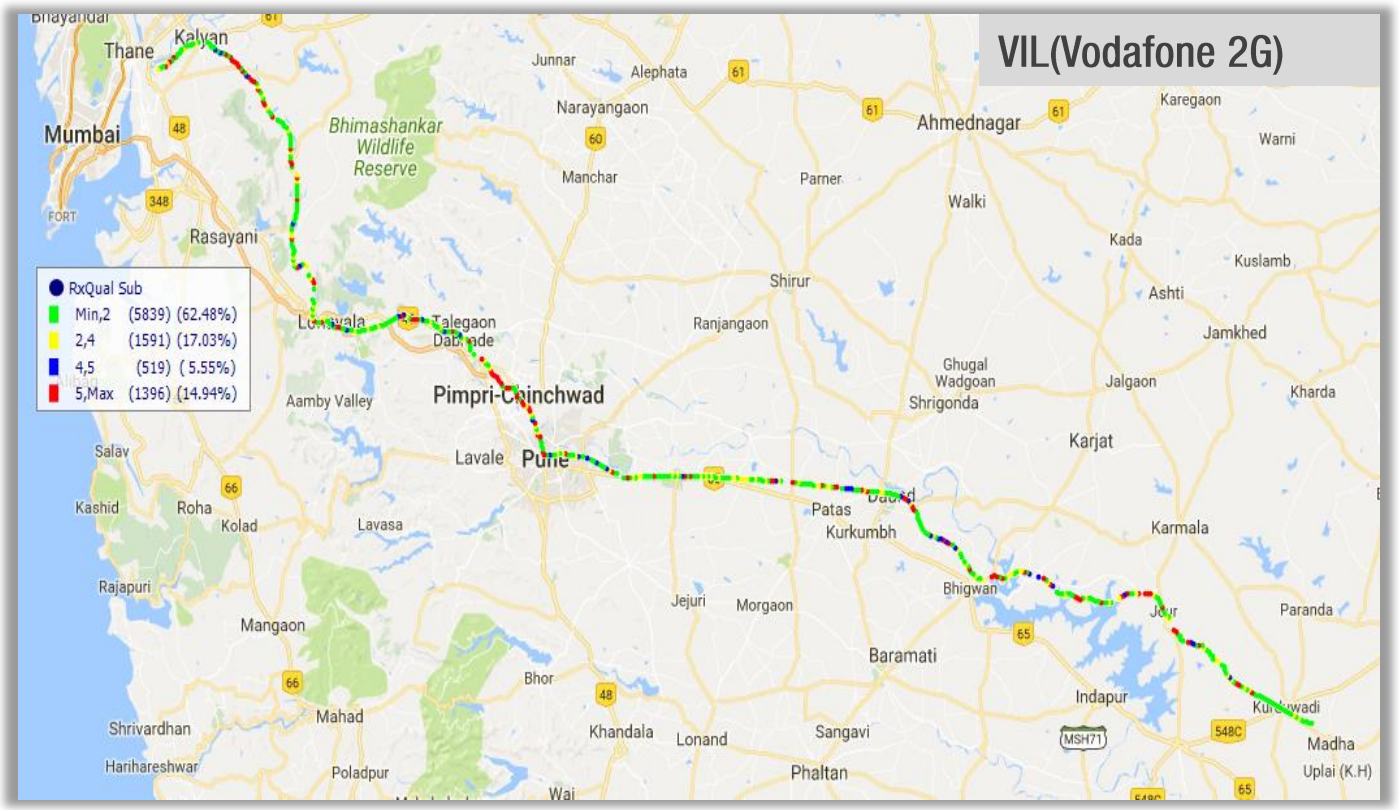


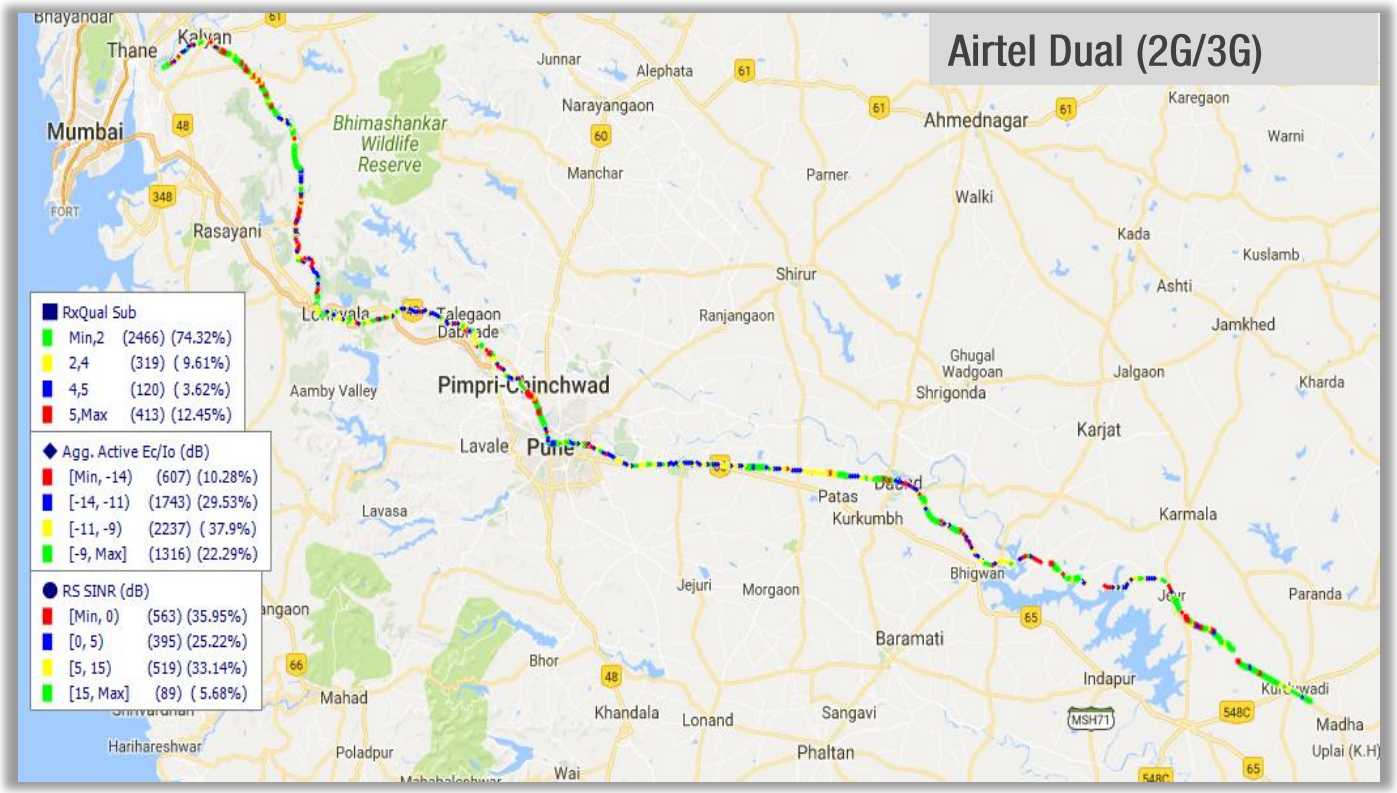


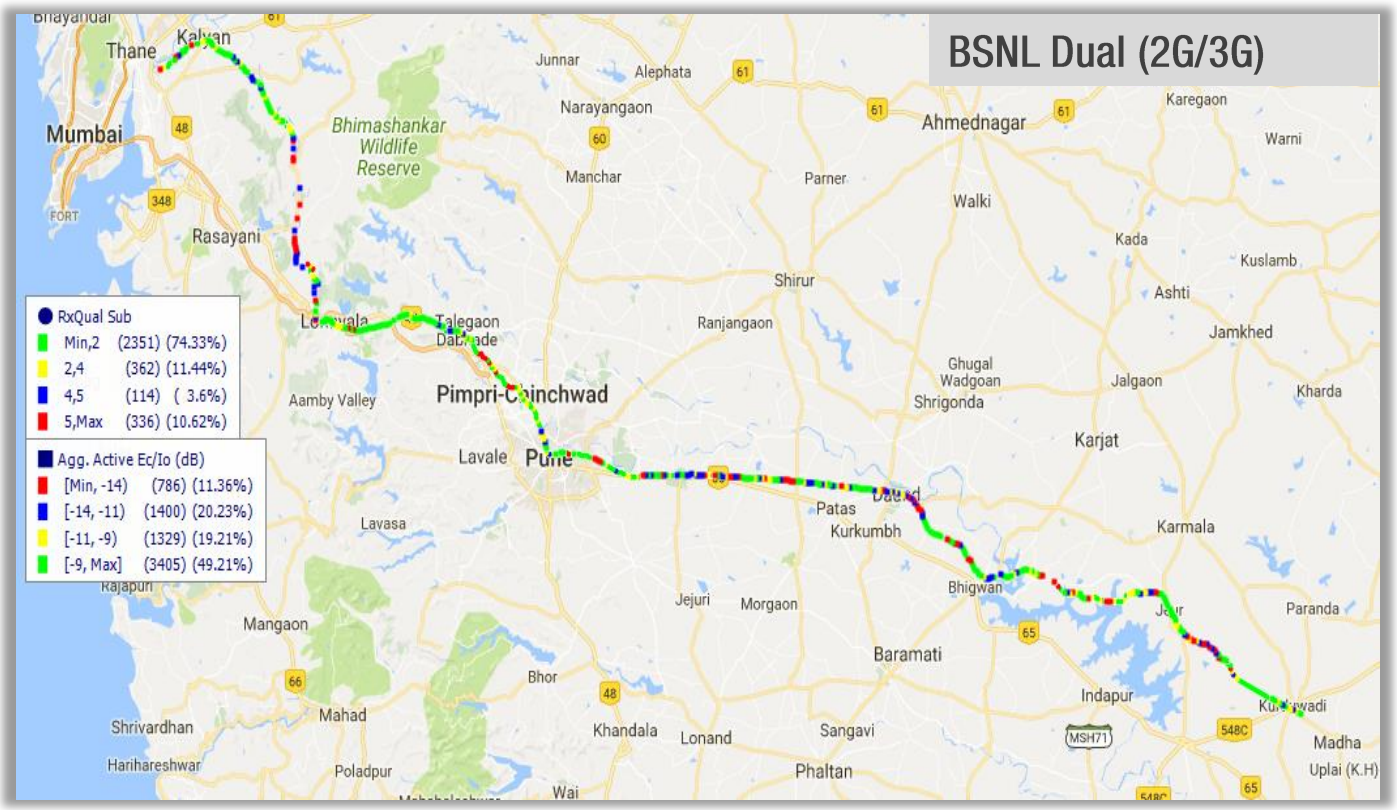

BSNL 2G
RxQual Sub
Min, 2 (6118) (78.18%)
2, 4 (912) (11.65%)
4,5 (248) (3.17%)
5, Max (548) (7%)
Mumbai
Thane
Kalyan
Rasayani
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Parner
Ahmednagar
Walki
Vambori
Karegaon
Warni
Kada
Kuslamb
Ashti
Jamkhed
Shirur
Ranjangaon
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Pimpri-Chinchwad
Lavale
Pune
Aamby Valley
Talegaon Dabhade
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Mangaon
Jejuri
Morgaon
Bhigwan
Paranda
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Madha
Uplai (K.H)
Harihareshwar
Poladpur
Phaltan
Mahabaleshwar
Wai

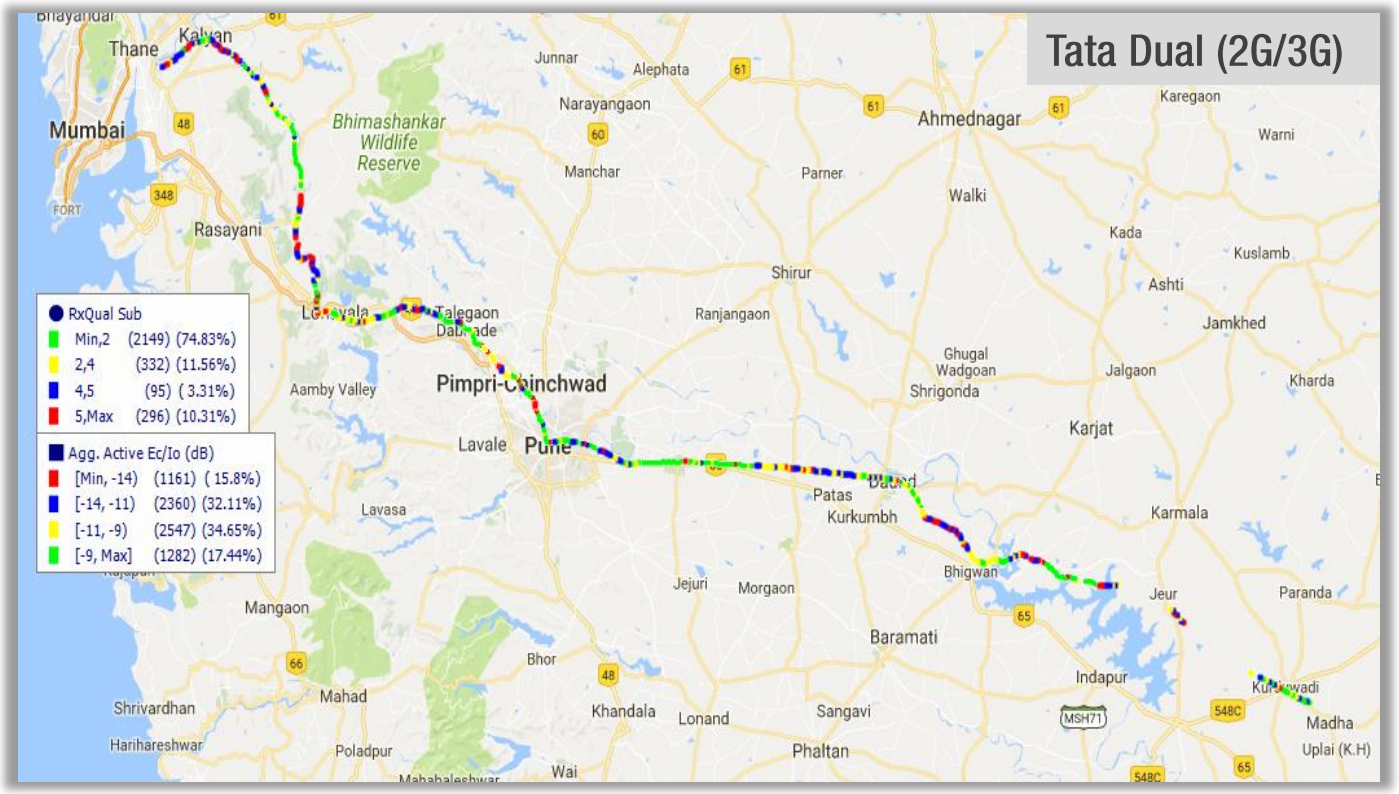

Tata 2G
RxQual Sub
Min,2 (6753) (76.02%)
2,4 (998) (11.23%)
4,5 (280) (3.15%)
5,Max (852) (9.59%)
Mumbai
Thane
Kalyan
Rasayani
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Parner
Ahmednagar
Walki
Karegaon
Warni
Kada
Kuslamb
Ashti
Jamkhed
Shirur
Ranjangaon
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Pimpri-Chinchwad
Lavale
Pune
Aamby Valley
Talegaon Dabhade
Salav
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Mangaon
Jejuri
Morgaon
Bhigwan
Paranda
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Madha
Uplai (K.H)
Harihareshwar
Poladpur
Phaltan
Wai

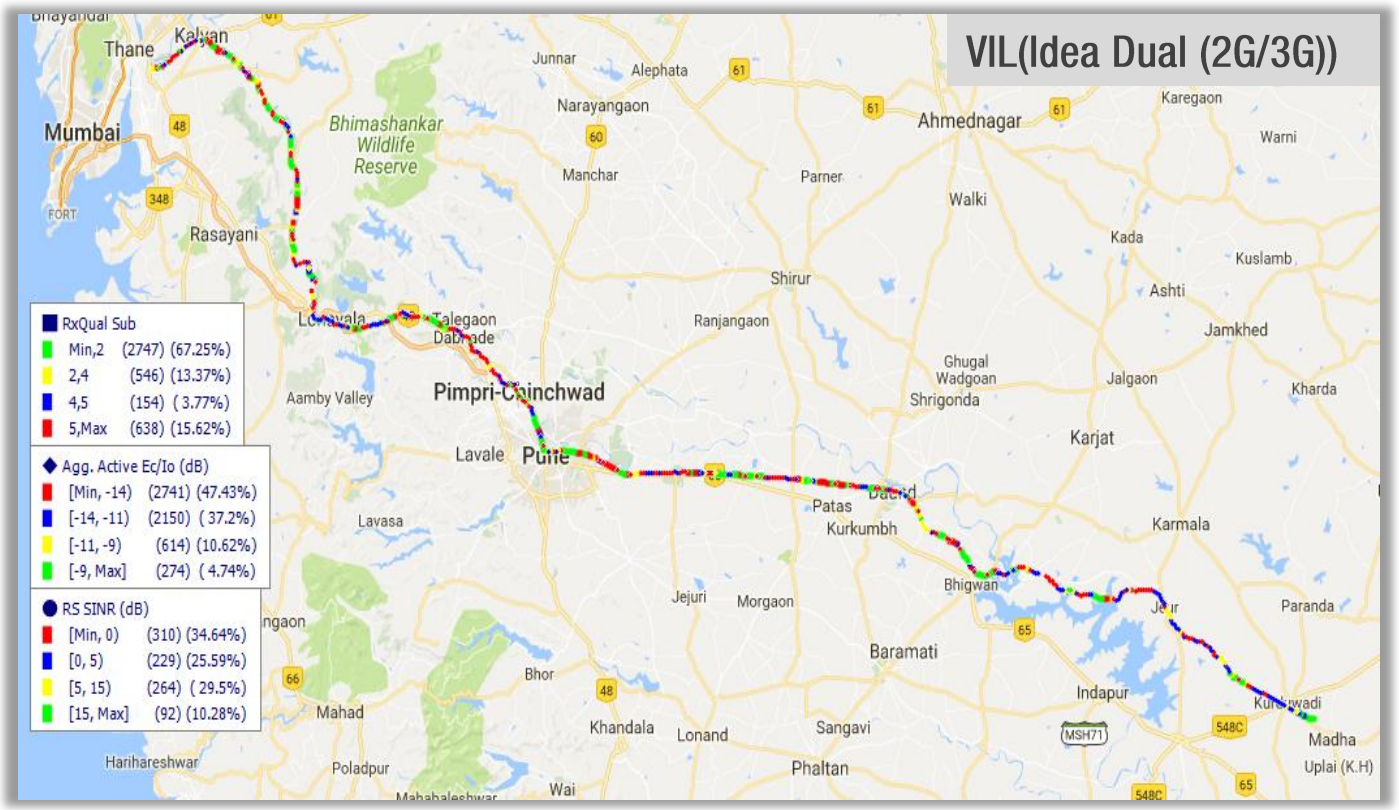

VIL(Idea 2G)
RxQual Sub
Min,2 (6256) (66.61%)
2,4 (1385) (14.75%)
4,5 (423) (4.5%)
5,Max (1328) (14.14%)
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Karegaon
Warni
Parner
Walki
Kada
Kuslamb
Ashti
Jamkhed
Rasayani
Shirur
Ranjangaon
Talegaon
Aamby Valley
Pimpri-Chinchwad
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Salav
Lavale
Pune
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Jejuri
Morgaon
Bhigwan
Paranda
Mangaon
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Harihareshwar
Poladpur
Phaltan
Wai
Madh
Uplai (

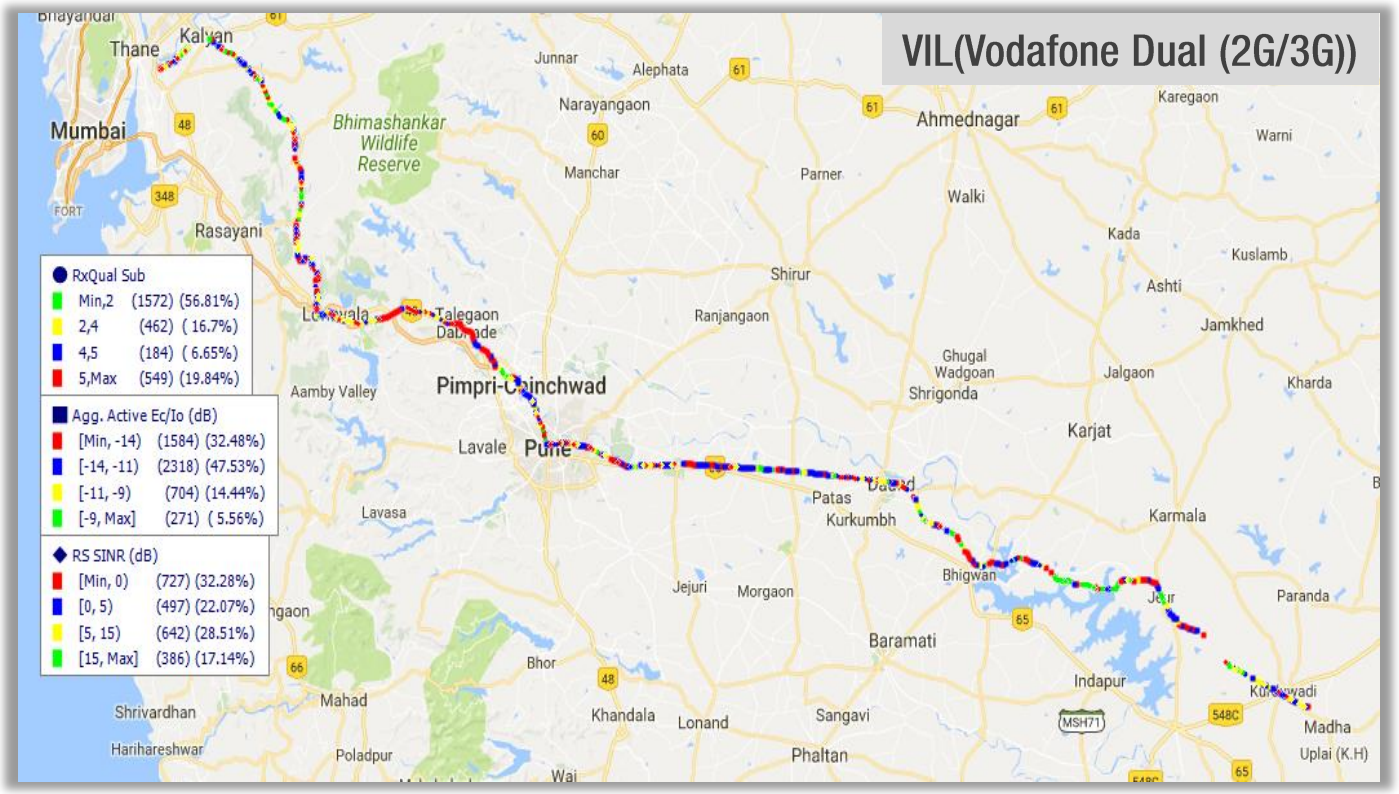

VIL(Vodafone 2G)
RxQual Sub
Min,2 (5839) (62.48%)
2,4 (1591) (17.03%)
4,5 (519) (5.55%)
5,Max (1396) (14.94%)
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Karegaon
Warni
Parner
Walki
Kada
Kuslamb
Ashti
Jamkhed
Rasayani
Shirur
Ranjangaon
Talegaon
Aamby Valley
Pimpri-Chinchwad
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Salav
Lavale
Pune
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Jejuri
Morgaon
Bhigwan
Paranda
Mangaon
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Harihareshwar
Poladpur
Phaltan
Wai
Madha
Uplai (K.H)

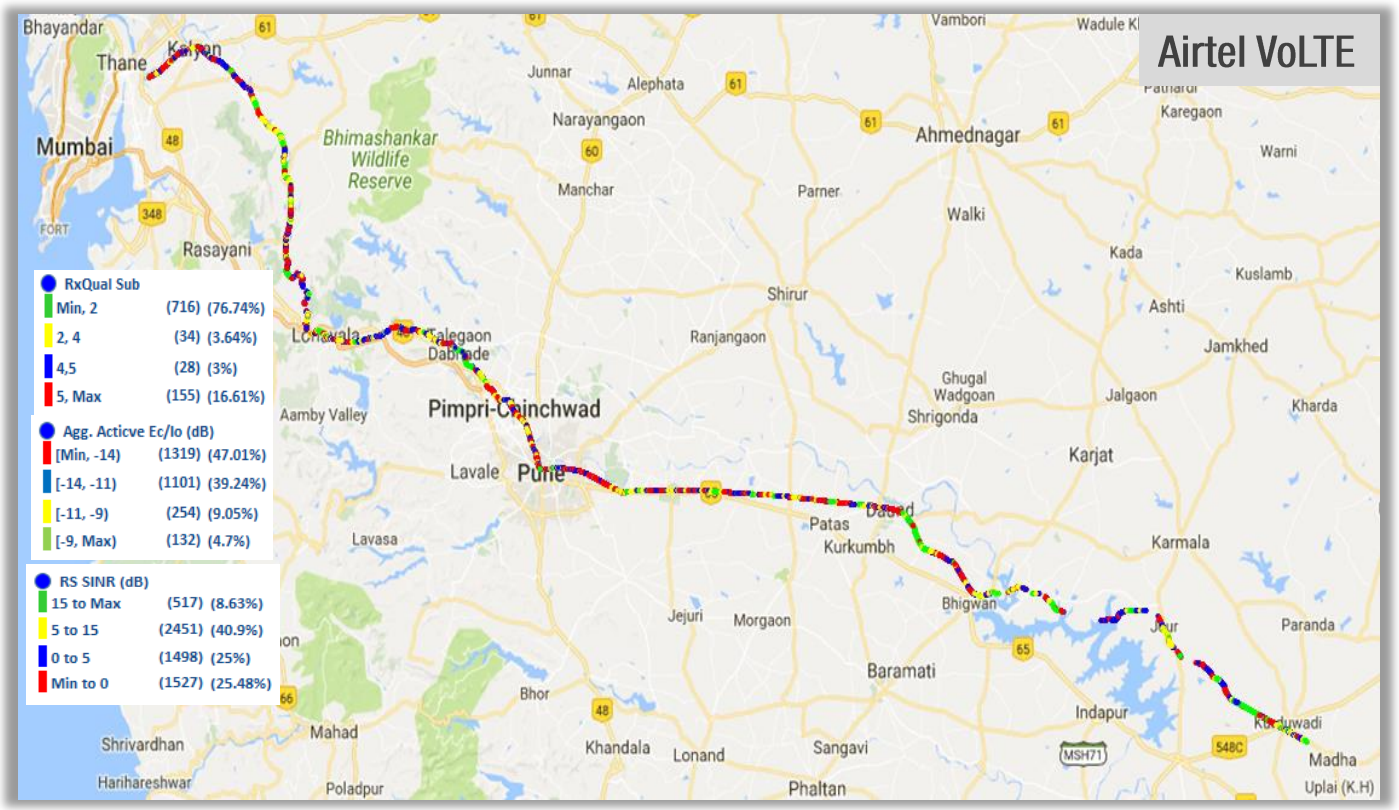

Airtel Dual (2G/3G)
RxQual Sub
Min,2 (2466) (74.32%)
2,4 (319) (9.61%)
4,5 (120) (3.62%)
5,Max (413) (12.45%)
Agg. Active Ec/Io (dB)
[Min, -14) (607) (10.28%)
[-14, -11) (1743) (29.53%)
[-11, -9) (2237) (37.9%)
[-9, Max] (1316) (22.29%)
RS SINR (dB)
[Min, 0) (563) (35.95%)
[0, 5) (395) (25.22%)
[5, 15) (519) (33.14%)
[15, Max] (89) (5.68%)
Mumbai
Thane
Kalyan
Rasayani
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Parner
Ahmednagar
Walki
Karegaon
Warni
Kada
Kuslamb
Ashti
Jamkhed
Shirur
Ranjangaon
Talegaon
Aamby Valley
Pimpri-Chinchwad
Lavale
Pune
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Patas
Kurkumbh
Karmala
Lavasa
Bhigwan
Jejuri
Morgaon
Paranda
Baramati
Bhor
Indapur
Mahad
Khandala
Lonand
Sangavi
Madha
Uplai (K.H)
Harihareshwar
Poladpur
Phaltan
Wai

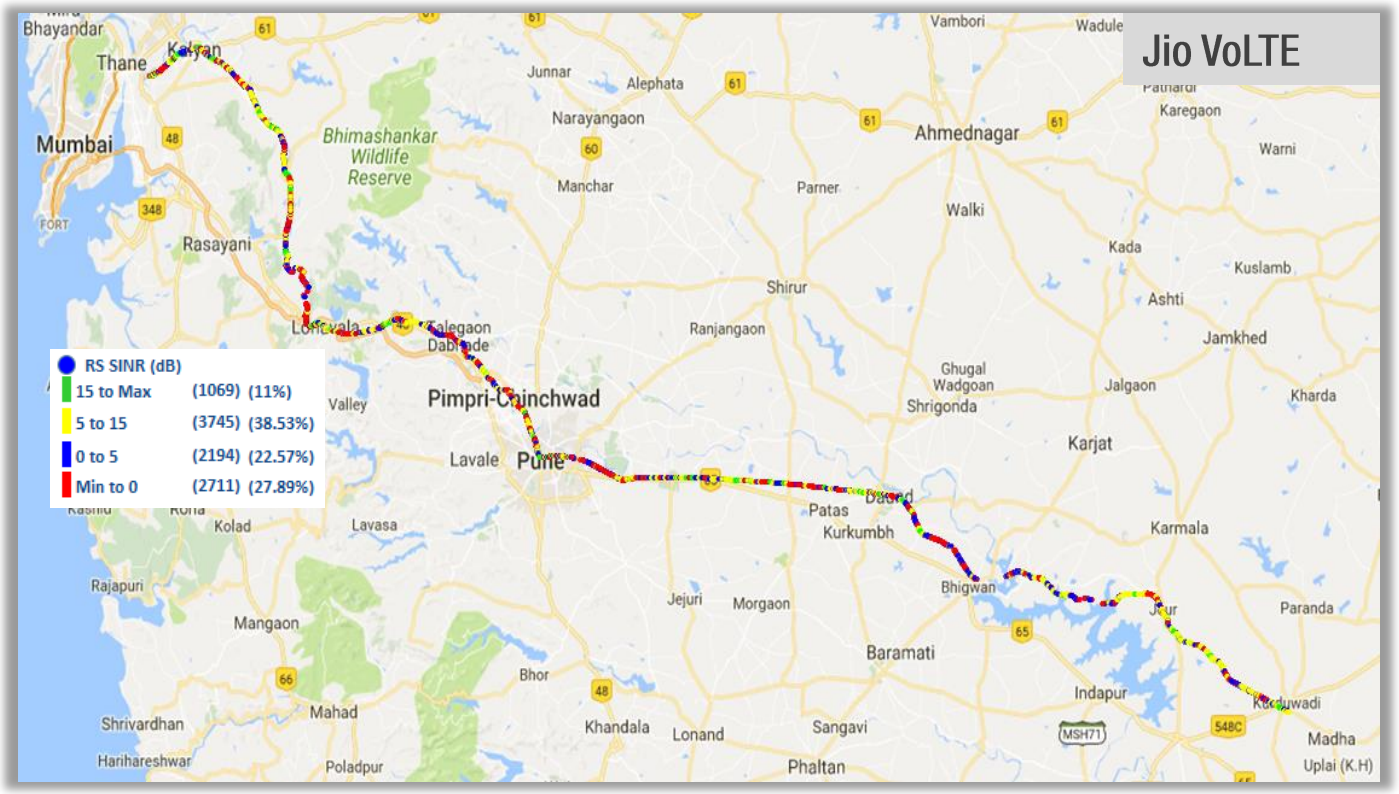

BSNL Dual (2G/3G)
RxQual Sub
Min,2 (2351) (74.33%)
2,4 (362) (11.44%)
4,5 (114) (3.6%)
5,Max (336) (10.62%)
Agg. Active Ec/Io (dB)
[Min, -14) (786) (11.36%)
[-14, -11) (1400) (20.23%)
[-11, -9) (1329) (19.21%)
[-9, Max] (3405) (49.21%)
Mumbai
Thane
Kalyan
Rasayani
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Parner
Ahmednagar
Walki
Karegaon
Warni
Kada
Kuslamb
Ashti
Jamkhed
Shirur
Ranjangaon
Talegaon
Aamby Valley
Pimpri-Chinchwad
Lavale
Pune
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Patas
Kurkumbh
Karmala
Lavasa
Bhigwan
Jejuri
Morgaon
Paranda
Mangaon
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Madha
Uplai (K.H)
Harihareshwar
Poladpur
Phaltan
Wai

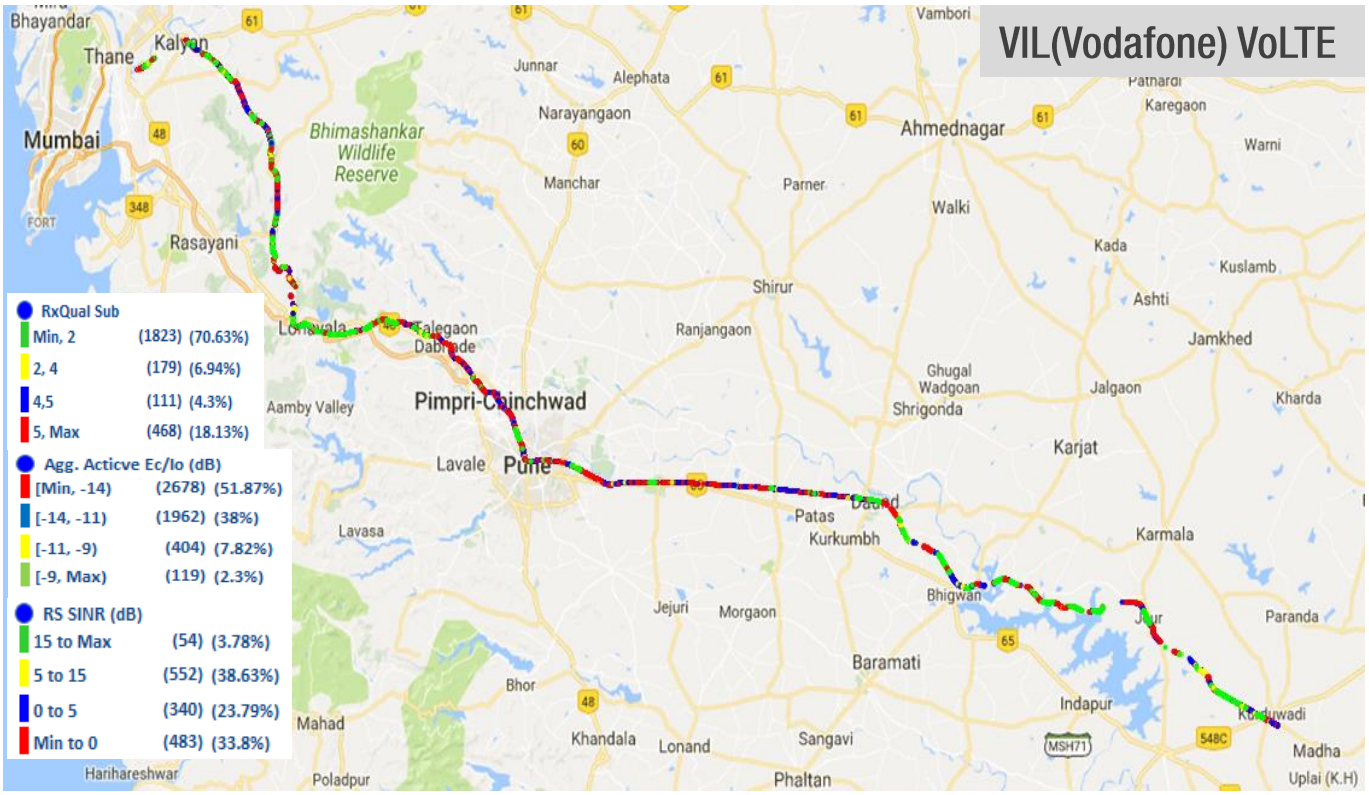

Tata Dual (2G/3G)
RxQual Sub
Min,2 (2149) (74.83%)
2,4 (332) (11.56%)
4,5 (95) (3.31%)
5,Max (296) (10.31%)
Agg. Active Ec/Io (dB)
[Min, -14) (1161) (15.8%)
[-14, -11) (2360) (32.11%)
[-11, -9) (2547) (34.65%)
[-9, Max] (1282) (17.44%)
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Rasayani
Talegaon
Pimpri-Chinchwad
Aamby Valley
Lavale
Pune
Lavasa
Mangaon
Mahad
Shrivardhan
Harihareshwar
Poladpur
Wai
Khandala
Lonand
Bhor
Jejuri
Morgaon
Baramati
Patas
Kurkumbh
Indapur
Bhigwan
Jeur
Sangavi
Phaltan
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Parner
Walki
Karegaon
Warni
Kada
Kuslamb
Ashti
Jamkhed
Shirur
Ranjangaon
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Karmala
Paranda
Madha
Uplai (K.H)
FORT
MSH71


VIL(Idea Dual (2G/3G))
RxQual Sub
Min,2 (2747) (67.25%)
2,4 (546) (13.37%)
4,5 (154) (3.77%)
5,Max (638) (15.62%)
Agg. Active Ec/Io (dB)
[Min, -14) (2741) (47.43%)
[-14, -11) (2150) (37.2%)
[-11, -9) (614) (10.62%)
[-9, Max] (274) (4.74%)
RS SINR (dB)
[Min, 0) (310) (34.64%)
[0, 5) (229) (25.59%)
[5, 15) (264) (29.5%)
[15, Max] (92) (10.28%)
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Rasayani
Talegaon
Pimpri-Chinchwad
Aamby Valley
Lavale
Pune
Lavasa
Mahad
Harihareshwar
Poladpur
Wai
Khandala
Lonand
Bhor
Jejuri
Morgaon
Baramati
Patas
Kurkumbh
Indapur
Bhigwan
Sangavi
Phaltan
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Parner
Walki
Karegaon
Warni
Kada
Kuslamb
Ashti
Jamkhed
Shirur
Ranjangaon
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Karmala
Paranda
Madha
Uplai (K.H)
FORT
MSH71

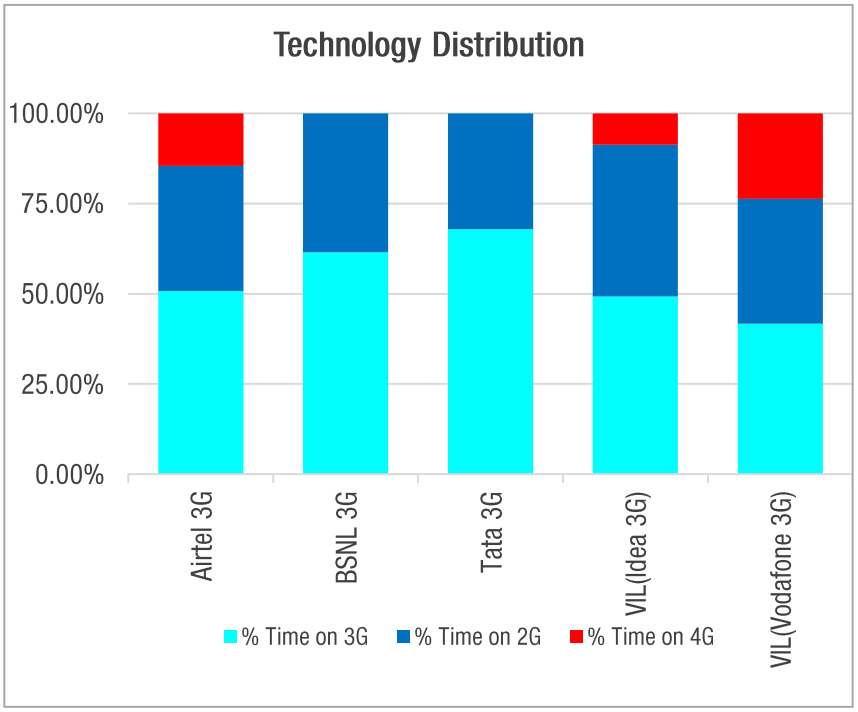

VIL(Vodafone Dual (2G/3G))
RxQual Sub
Min,2 (1572) (56.81%)
2,4 (462) (16.7%)
4,5 (184) (6.65%)
5,Max (549) (19.84%)
Agg. Active Ec/Io (dB)
[Min, -14) (1584) (32.48%)
[-14, -11) (2318) (47.53%)
[-11, -9) (704) (14.44%)
[-9, Max] (271) (5.56%)
RS SINR (dB)
[Min, 0) (727) (32.28%)
[0, 5) (497) (22.07%)
[5, 15) (642) (28.51%)
[15, Max] (386) (17.14%)
Mumbai
Thane
Kalyan
Bhimashankar Wildlife Reserve
Pune
Pimpri-Chinchwad
Ahmednagar
Baramati
Indapur
Madha

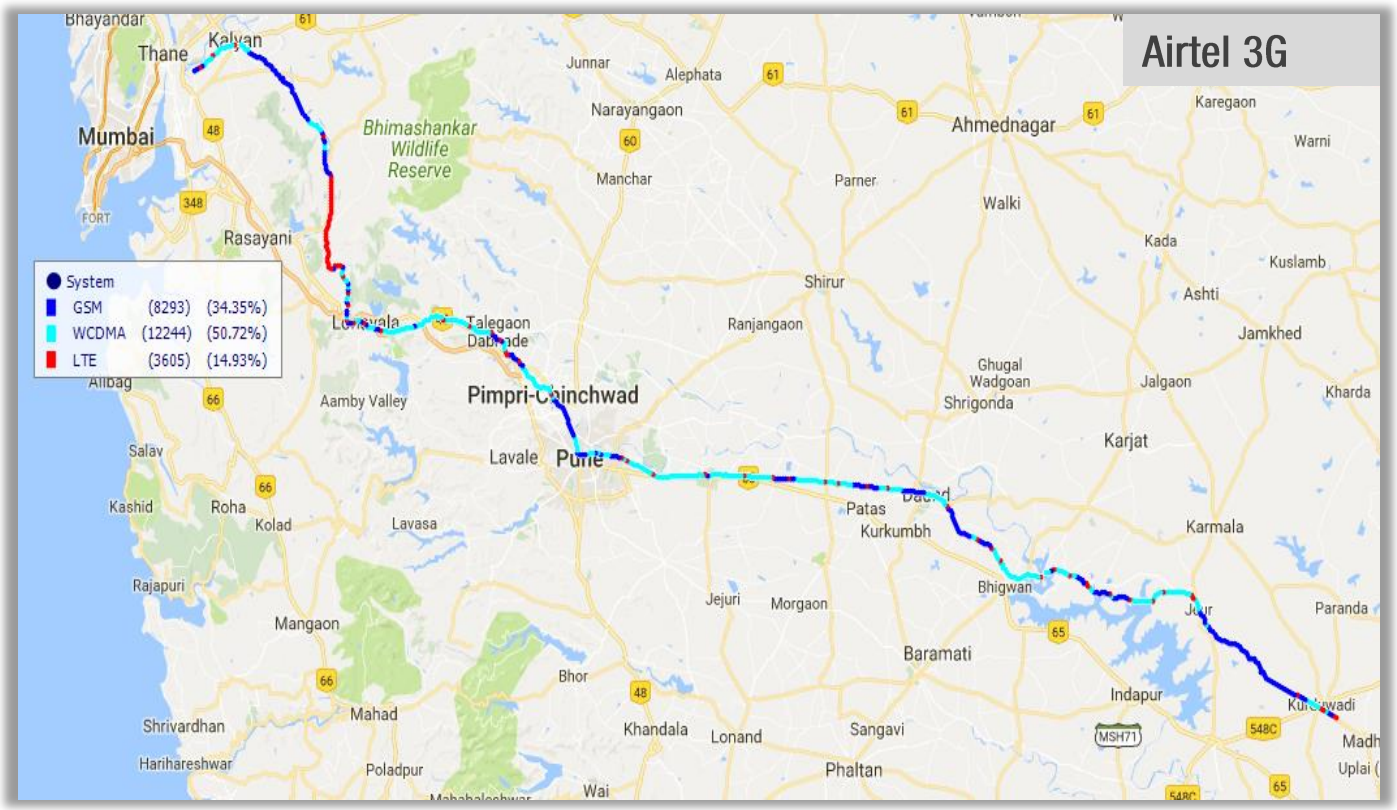

Airtel VoLTE
RxQual Sub
Min, 2 (716) (76.74%)
2, 4 (34) (3.64%)
4,5 (28) (3%)
5, Max (155) (16.61%)
Agg. Acticve Ec/Io (dB)
[Min, -14) (1319) (47.01%)
[-14, -11) (1101) (39.24%)
[-11, -9) (254) (9.05%)
[-9, Max) (132) (4.7%)
RS SINR (dB)
15 to Max (517) (8.63%)
5 to 15 (2451) (40.9%)
0 to 5 (1498) (25%)
Min to 0 (1527) (25.48%)
Mumbai
Thane
Bhimashankar Wildlife Reserve
Pune
Pimpri-Chinchwad
Ahmednagar
Baramati
Indapur
Madha

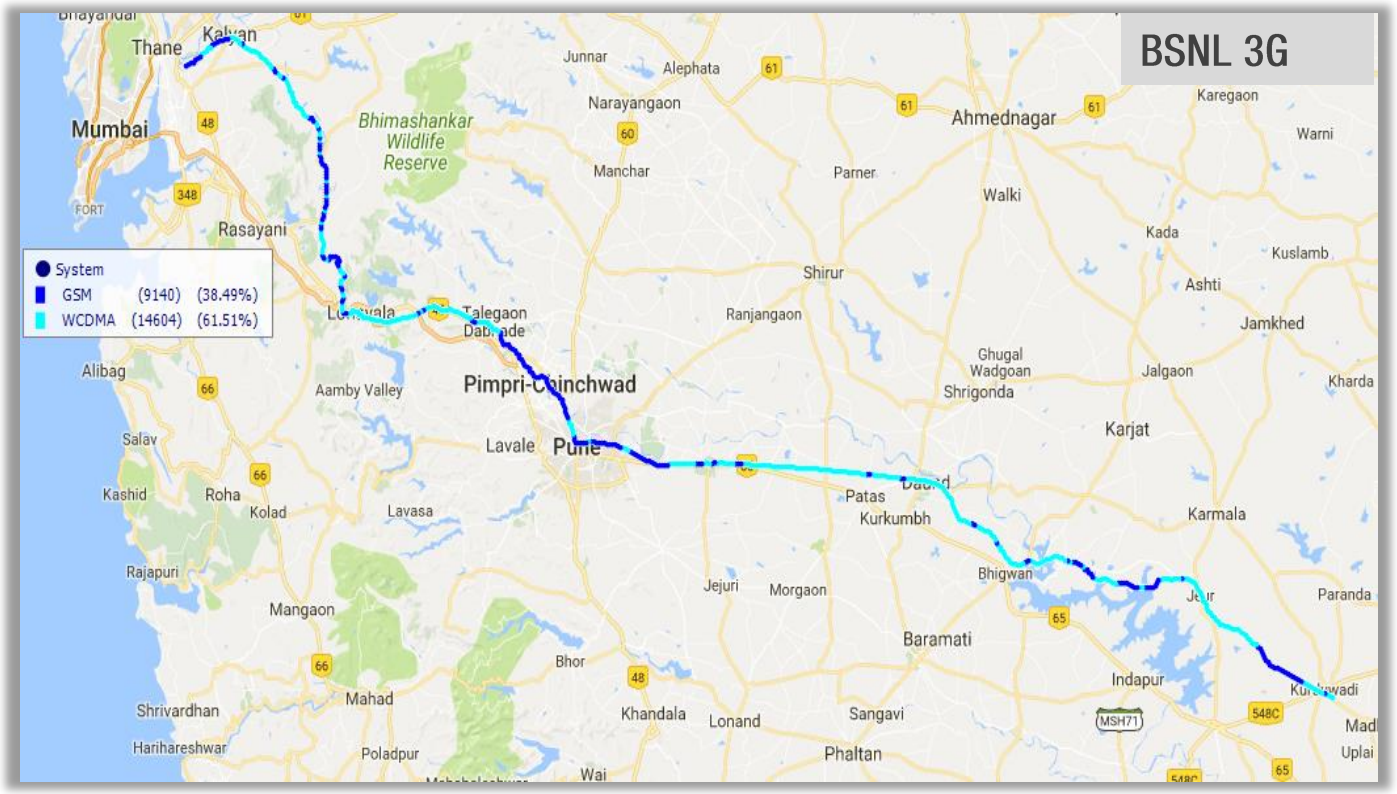

Jio VoLTE
RS SINR (dB)
15 to Max (1069) (11%)
5 to 15 (3745) (38.53%)
0 to 5 (2194) (22.57%)
Min to 0 (2711) (27.89%)
Bhayandar
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Rasayani
Pimpri-Chinchwad
Lavale
Pune
Ahmednagar
Karjat
Baramati
Indapur
Madha
Uplai (K.H)

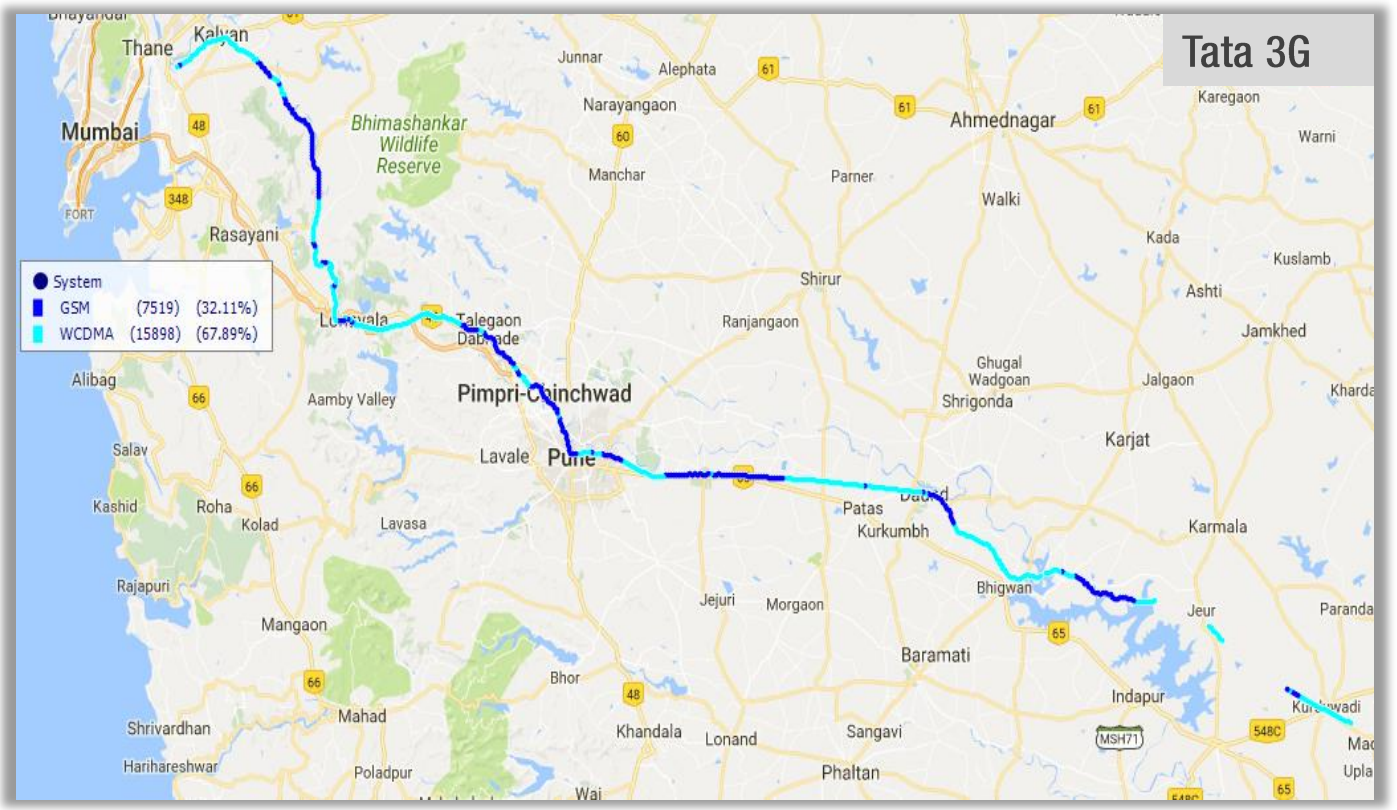

VIL(Vodafone) VoLTE
RxQual Sub
Min, 2 (1823) (70.63%)
2, 4 (179) (6.94%)
4,5 (111) (4.3%)
5, Max (468) (18.13%)
Agg. Actcve Ec/Io (dB)
[Min, -14) (2678) (51.87%)
[-14, -11) (1962) (38%)
[-11, -9) (404) (7.82%)
[-9, Max) (119) (2.3%)
RS SINR (dB)
15 to Max (54) (3.78%)
5 to 15 (552) (38.63%)
0 to 5 (340) (23.79%)
Min to 0 (483) (33.8%)
Bhayandar
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Rasayani
Pimpri-Chinchwad
Lavale
Pune
Ahmednagar
Karjat
Baramati
Indapur
Madha
Uplai (K.H)

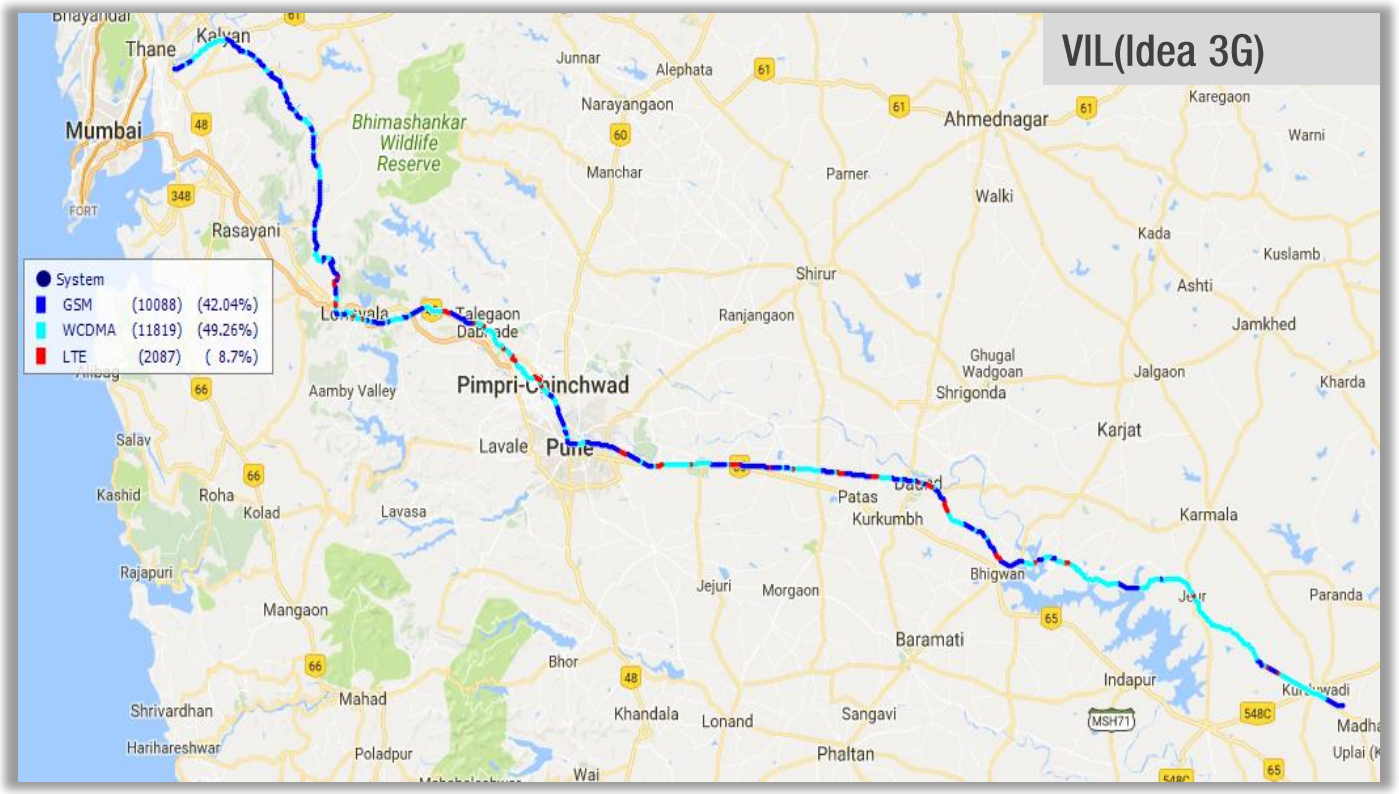
TSP	% Time on 3G
Airtel 3G	50.72%
BSNL3G	61.51%
Tata 3G	67.89%
VIL(Idea 3G)	49.26%
VIL(Vodafone 3G)	41.72%

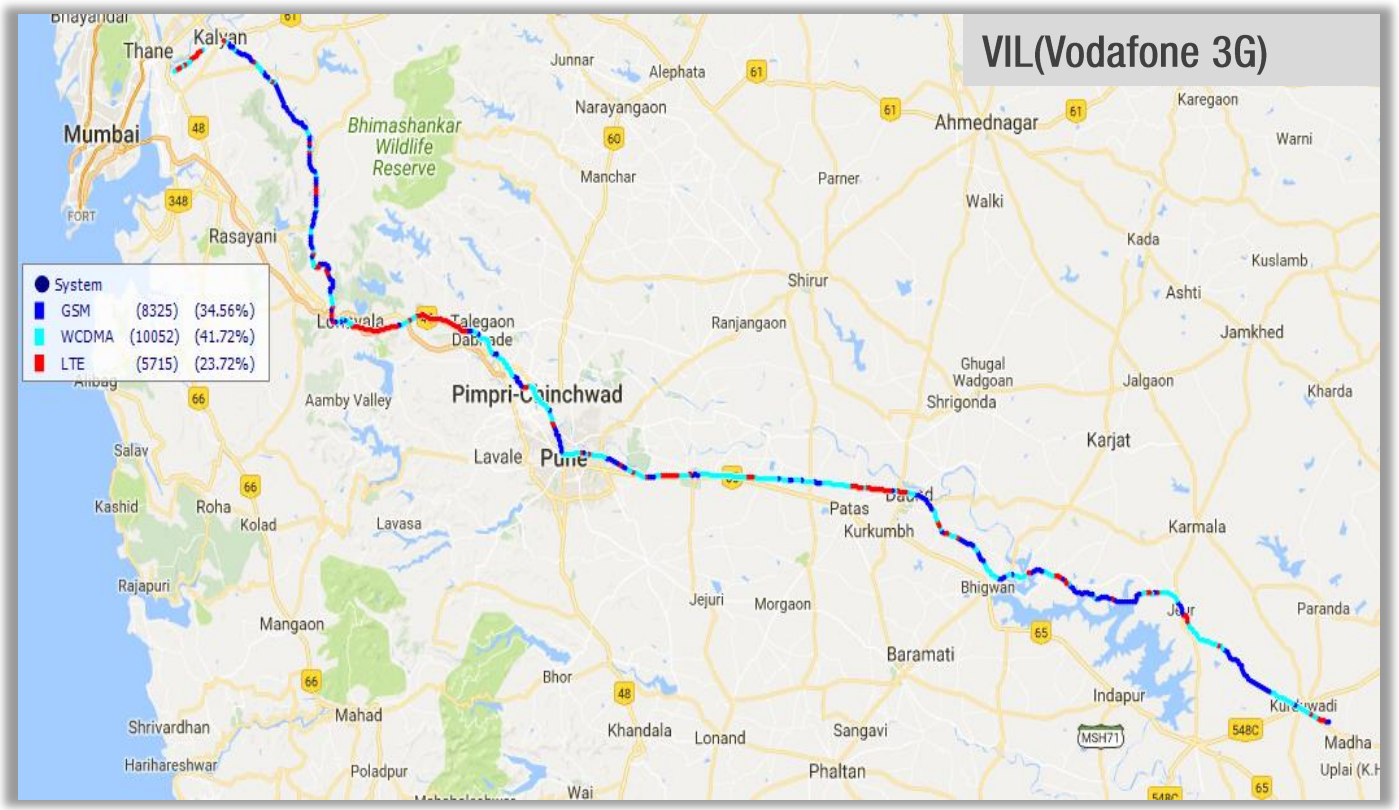





BSNL 3G
System
GSM (9140) (38.49%)
WCDMA (14604) (61.51%)
Thane
Mumbai
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Karegaon
Warni
Parner
Walki
Kada
Kuslamb
Ashti
Jamkhed
Shirur
Ranjangaon
Rasayani
Talegaon Dabhade
Alibag
Aamby Valley
Pimpri-Chinchwad
Lavale
Pune
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Salav
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Jejuri
Morgaon
Bhigwan
Paranda
Mangaon
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Harihareshwar
Poladpur
Phaltan
Wai
Uplai


Tata 3G
System
GSM (7519) (32.11%)
WCDMA (15898) (67.89%)
Thane
Mumbai
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Karegaon
Warni
Parner
Walki
Kada
Kuslamb
Ashti
Jamkhed
Shirur
Ranjangaon
Rasayani
Talegaon Dabhade
Alibag
Aamby Valley
Pimpri-Chinchwad
Lavale
Pune
Ghugal Wadgoan
Shrigonda
Jalgaon
Karjat
Salav
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Jejuri
Morgaon
Bhigwan
Jeur
Paranda
Mangaon
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Harihareshwar
Poladpur
Phaltan
Wai


VIL(Idea 3G)
System
GSM (10088) (42.04%)
WCDMA (11819) (49.26%)
LTE (2087) (8.7%)
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Karegaon
Warni
Parner
Walki
Rasayani
Kada
Kuslamb
Shirur
Ashti
Ranjangaon
Jamkhed
Talegaon
Aamby Valley
Pimpri-Chinchwad
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Salav
Lavale
Pune
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Jejuri
Morgaon
Bhigwan
Paranda
Mangaon
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Harihareshwar
Poladpur
Phaltan
Wai
Uplai


VIL(Vodafone 3G)
System
GSM (8325) (34.56%)
WCDMA (10052) (41.72%)
LTE (5715) (23.72%)
Thane
Kalyan
Mumbai
Bhimashankar Wildlife Reserve
Junnar
Alephata
Narayangaon
Manchar
Ahmednagar
Karegaon
Warni
Parner
Walki
Rasayani
Kada
Kuslamb
Shirur
Ashti
Ranjangaon
Jamkhed
Talegaon
Aamby Valley
Pimpri-Chinchwad
Ghugal Wadgoan
Shrigonda
Jalgaon
Kharda
Karjat
Salav
Lavale
Pune
Kashid
Roha
Kolad
Lavasa
Patas
Kurkumbh
Karmala
Rajapuri
Jejuri
Morgaon
Bhigwan
Paranda
Mangaon
Baramati
Bhor
Indapur
Shrivardhan
Mahad
Khandala
Lonand
Sangavi
Harihareshwar
Poladpur
Phaltan
Wai
Madha
Uplai