भादूविप्रा
TRAI

प्रभावी विनियमन – सुगम संचार
Effective Regulation – Ease of Communication

Operator Assisted Drive Test Report
Bhopal City and nearby Area

21/11/2024 to 23/11/2024

By

TRAI Regional Office Bhopal

The Operator Assisted Drive Test has been carried out by Regional Office, Bhopal with the help of Telecom Service Providers for Bhopal City and surrounding areas from 9:00 AM to 8:00 PM from 21/11/2024 to 23/11/2024. The drive test covered drive route of around …415….. KMs.

TSP	Network tested
Airtel	2G & VoLTE
BSNL	2G & 3G
JIO	VoLTE
VIL	2G, VoLTE

Key Performance Indicators:

KPI	Benchmark	Observations
Block call rate %	≤3%	**All TSPS achieved the benchmark.**
Drop call rate %	≤2%	**All TSPS achieved the benchmark.**
CSSR %	≥95 %	**All TSPS achieved the benchmark.**
Mobility HOSR %	≥95%	**All TSPS achieved the benchmark.**
Good RX Quality %	≥95%	**All TSPS achieved the benchmark except Rx Quality by Airtel and VI in 4G.**

Overview

Regional Office, TRAI Bhopal conducted Operator Assisted Drive Test. The performance of Airtel, BSNL, Vodafone Idea and Jio was monitored across various technologies (2G, 3G,4G & 5G). 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:

i. 2G – measurement – UE Locked in 2G
ii. 3G – measurement – UE in Dual mode (2G and 3G)
iii. 4G – measurement – UE in Free mode

Calls were made for the **90-sec** duration with a wait time of **10 sec** between calls in all technologies.

Data Tests:

Dynamic data – repeat data file download (to check throughput on the entire route)

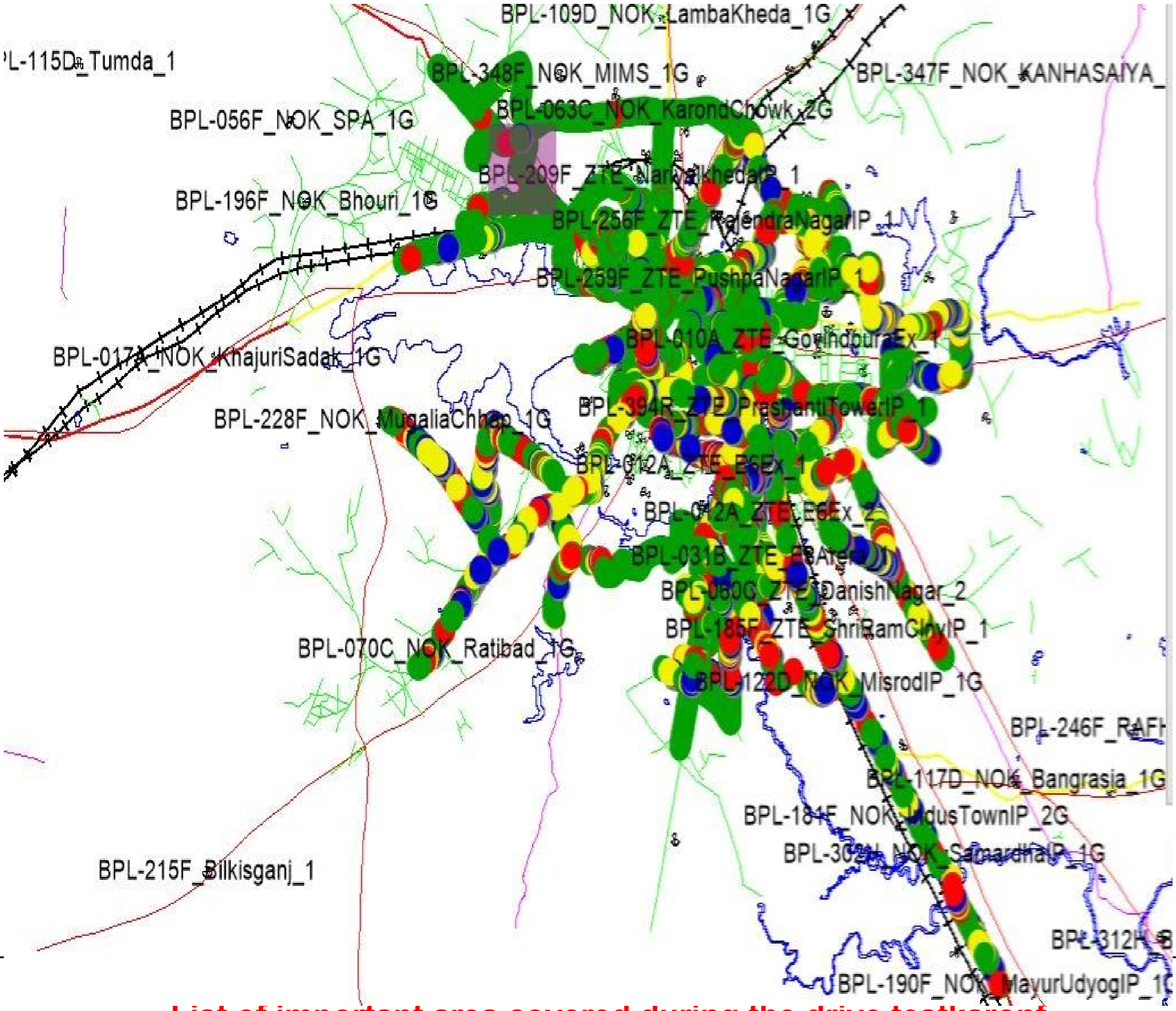
i. 3G – measurement – UE in 3G File Size- 20MB
ii. 4G – measurement – UE in LTE File Size- 40MB
iii. 5G – measurement – UE in 5G File Size- 200MB

Static Data: Download and Upload Throughputs, Web Browsing Delay, Video Streaming Delay, and Latency

i. Download- 3G - 20 MB, 4G - 40MB, 5G -200 MB
ii. Upload - 3G - 5 MB, 4G - 10MB, 5G – 100 MB
iii. Web browsing - 3 links of e-commerce websites https://www.amazon.in, https://www.flipkart.com, https://paytm.com.
iv. Video Streaming – 130 sec clip
v. Latency – 32 Bytes on www.google.com.

Overview

Voice & Dynamic Data Test Drive Route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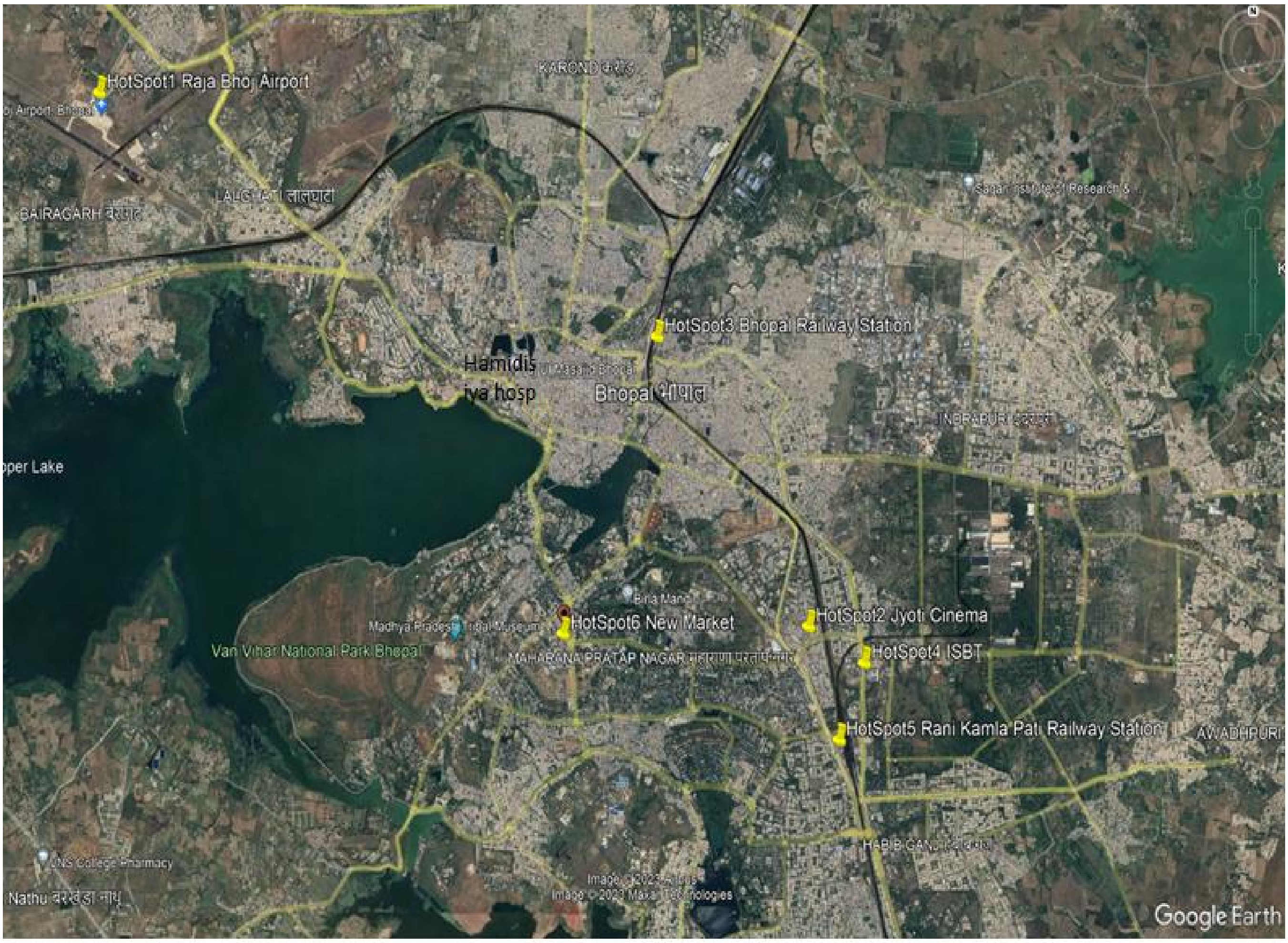
BPL-347F_NOK_KANHASAIYA_
BPL-056F_NOK_SPA_1G
BPL-063C_NOK_KarondChowk_2G
BPL-209F_ZTE_NaryalkhedaIP_1
BPL-196F_NOK_Bhouri_1G
BPL-256F_ZTE_RajendraNagarIP_1
BPL-259F_ZTE_PushpaNagarIP_1
BPL-010A_ZTE_GovindpuraEx_1
BPL-017A_NOK_KhajuriSadak_1G
BPL-228F_NOK_MugaliaChhap_1G
BPL-394R_ZTE_PrashantiTowerIP_1
BPL-012A_ZTE_E6Ex_1
BPL-012A_ZTE_E6Ex_2
BPL-031B_ZTE_E8Arera
BPL-080C_ZTE_DanishNagar_2
BPL-185F_ZTE_ShriRamColnyIP_1
BPL-070C_NOK_Ratibad_1G
BPL-122D_NOK_MisrodIP_1G
BPL-246F_RAFI
BPL-117D_NOK_Bangrasia_1G
BPL-181F_NOK_IndusTownIP_2G
BPL-302H_NOK_SamardhaIP_1G
BPL-215F_Bilkisganj_1
BPL-312H_B
BPL-190F_NOK_MayurUdyogIP_1G

List of important area covered during the drive testkaronf
Karond chowk,Ayodhya Bypass, Piplani, Awadhpuri, Anand nagar, Kokta Bypass,
AIIMS, Saket Nagar, Bagsewaniyan, Bagmugaliyan, Avind Vihar, Katara Hills,
Hoshangabad road , Mandideep, MP nagar, Shivji Nagar,,Arera Hills,
Char Imli, Shyamla Hills, LINK Road 1, Link road 2, Link road 3, Neelbad, Ratibaad,
Idgah Hills, Hamidia road, Gangwani, Airport, Gandhi Nagar, Nehru Nagar, Kotra,
Arera colony, Kolar road, Mugaliyachhap,Old city All major roads

Overview

Data Service Test- Static Locations


HotSpot1 Raja Bhoj Airport
KAROND करोंद
BAIRAGARH बैरागढ़
LALGHATI लालघाटी
HotSpot3 Bhopal Railway Station
Hamidis iya hosp
Bhopal भोपाल
INDRAPURI
pper Lake
HotSpot6 New Market
HotSpot2 Jyoti Cinema
HotSpot4 ISBT
HotSpot5 Rani Kamla Pati Railway Station
Van Vihar National Park Bhopal
MAHARANA PRATAP NAGAR
AWADHPURI
HABIB GANJ
Nathu
Google Earth

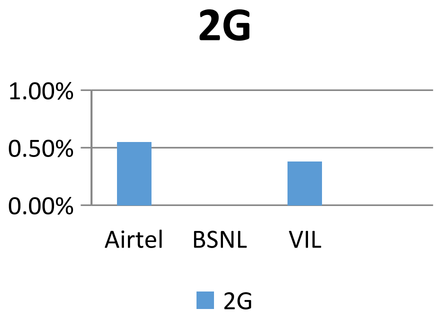
Hotspot Locations
1. Bhopal Airport
2. Bhopal Railway Station
3. RKMP Railway Station
4. New Market
5. Hamidia Hospital
6. DB City Mall

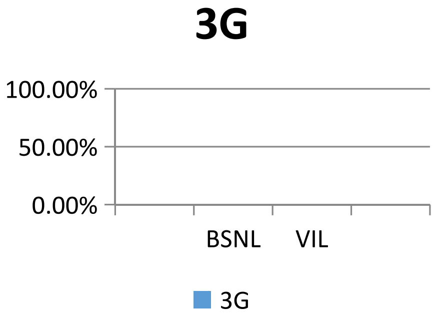
Voice Calls

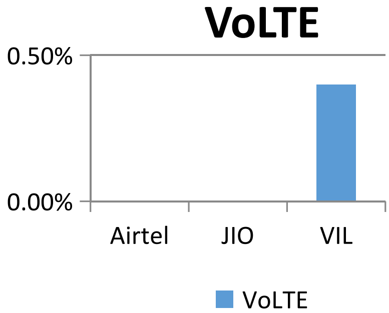
Key Observations

QoS compliance of the TSPs for Voice across technologies 2G/3G/4G-VoLTE:

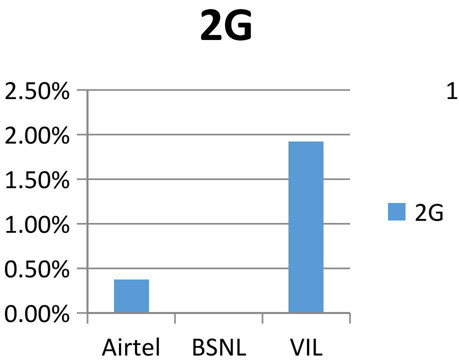
Drop Call Rate (%)

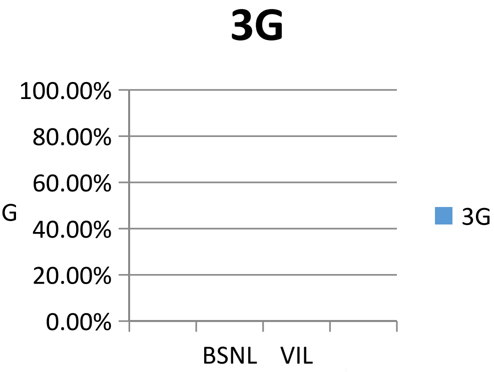


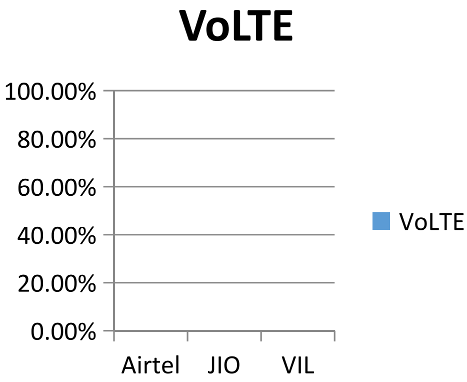




Block Call Rate (%)







KPIs	2G			3G		VoLTE		
	Airtel	BSNL	VIL	BSNL	VIL	Airtel	RJIL	VIL
Drop Call Rate %	0.55	0	0.38	0	NA	0	0.40	0
Block Call Rate %	0.37	0	1.92	0	NA	0	0.00	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 ≥ -85 dBm.

TSPs	2G		
	Airtel	BSNL	VIL
Coverage %	64.58	93.54	91.88

b) Percentage of coverage samples for 3G ≥ -90 dBm

TSPs	3G
	BSNL
Coverage %	83.77

b) Percentage of coverage samples for LTE ≥ -110 dBm.

TSPs	VoLTE		
	Airtel	JIO	VIL
Coverage %	99.42	99.75	99.46

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

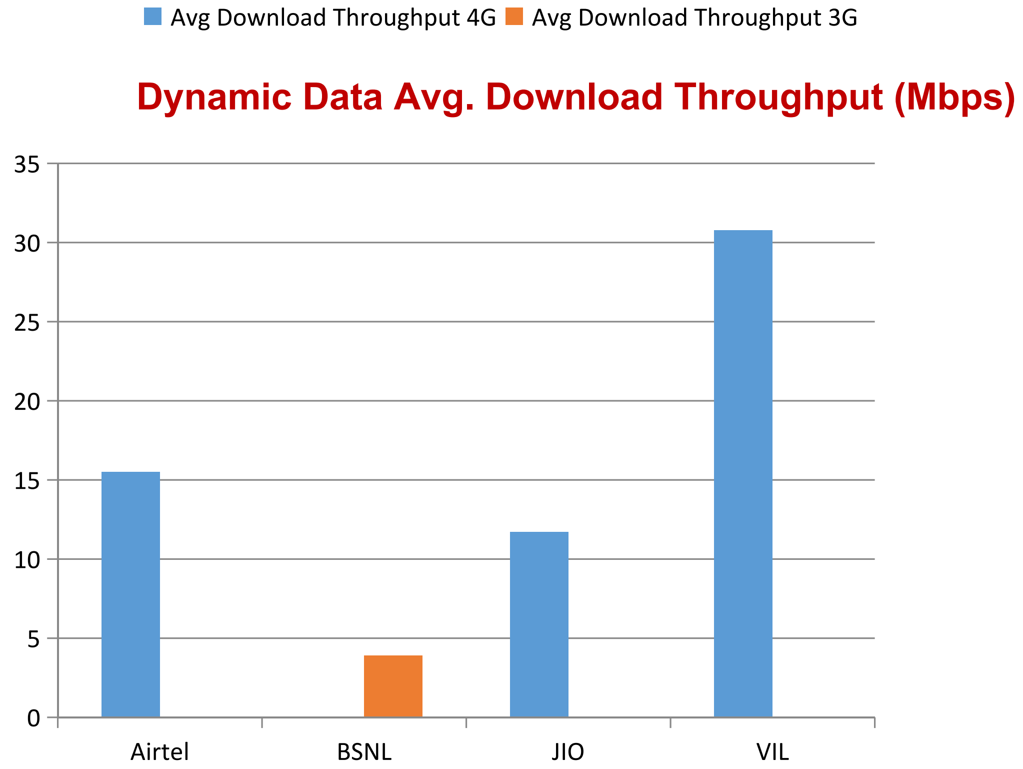
TSPs	3G		VoLTE		
	BSNL	VIL	Airtel	VIL	JIO
Time Spent on 3G/4G %	81.2	NA	100	100	100

Data Services Dynamic

Key Observations

Dynamic Data -Download Throughput was tested.

Data Download Performance – Dynamic 3G/4G/ 5G Network



TSP	Airtel	BSNL	JIO	VIL
Average Download throughput- 3G In Mbps	**NA**	**3.91**	**NA**	**NA**
Average Download throughput-LTE in Mbps	**15.52**	**NA**	**11.70**	**30.76**

Summary

City Level Summary- Voice

TSP (For 2G)	Airtel	BSNL	VIL
Call attempts	543	396	522
Block call rate %	0.37	0	1.92
CSSR %	99.63	100	98.08
Drop call rate %	0.55	0	0.38
Mobility HOSR %	96.15	98.90	98.11
RX Quality %	96.81	97.97	95.34
Average CST Sec	3.07	4.5	2.51

TSP (For 3G)	BSNL
Call attempts	387
Block call rate %	0
CSSR %	99.92
Drop call rate %	0
Mobility HOSR %	98.81
RX Quality %	95.62
Average CST (Sec)	4.5

TSP (For Volte)	Airtel	BSNL	JIO	VIL
Call attempts	578	NA	505	507
Block call rate %	0	NA	0	0
CSSR %	100	NA	99.01	100
Drop call rate %	0	NA	0.40	0
Mobility HOSR %	100	NA	99.49	99.86
RX Quality %	89.66	NA	99.55	92.66
Average CST(Sec)	0.61	NA	3.06	0.6

Summary

City Level Summary-Data Services -Static

TSP (For 3G)	BSNL
Download throughput in Mbps	4.15
Upload Throughput in Mbps	1.8
Video streaming delay in sec	1.5
Web browsing delay in second	3
Latency in (msec)	35

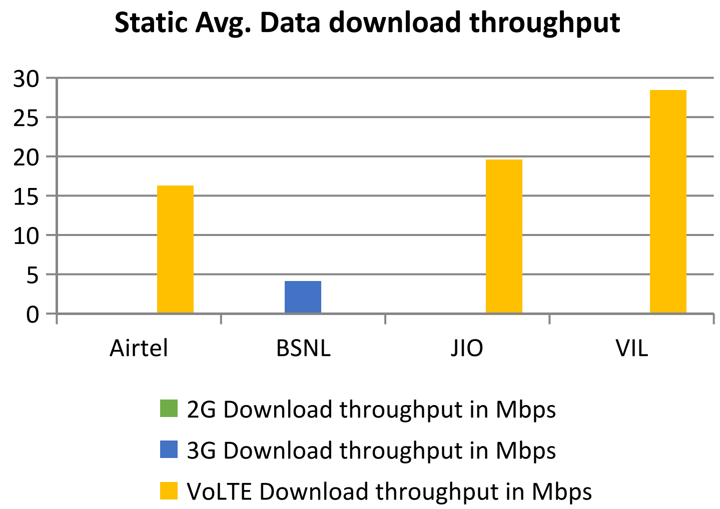
TSP (For LTE)	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	16.25	NA	19.57	28.415
Upload Throughput in Mbps	4.16	NA	4.86	15.92
Video streaming delay in sec	0.68	NA	NA	0.96
Web browsing delay in second	2.63	NA	3.95	5.457
Latency in (msec)	46.16	NA	32	54

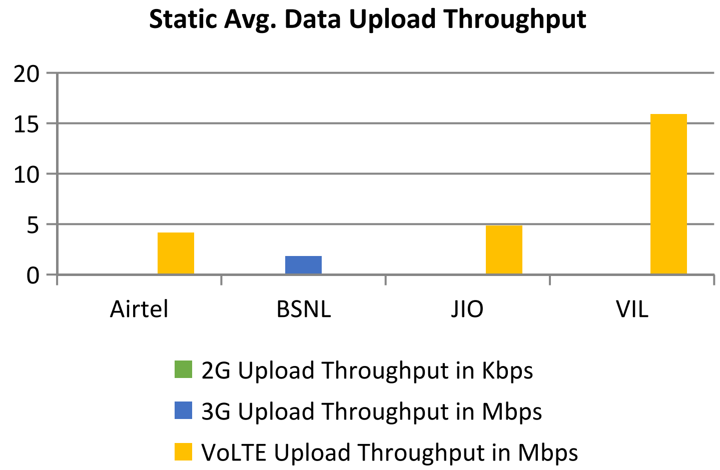
Data Services Static

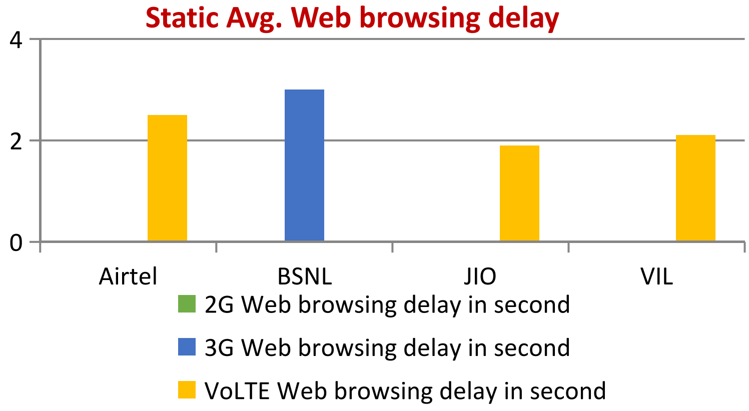
Key Observations

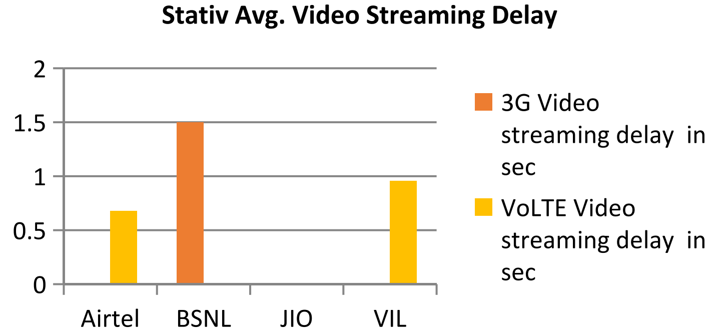
Data was tested at 6 locations .Following services were tested: Data Download/Upload, Latency (www.google.com), and Web browsing (Flipkart, Amazon, PayTm)

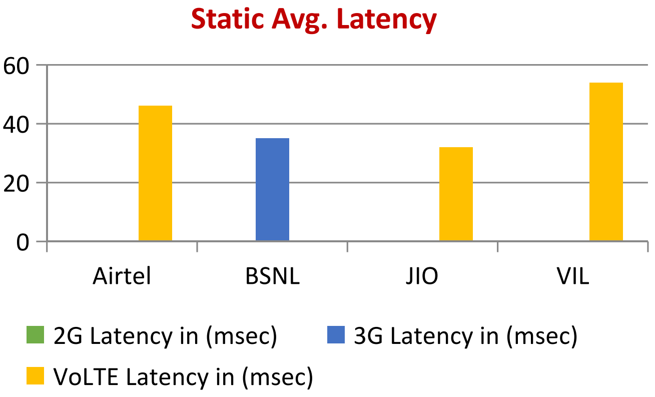
3G/4G/ 5G Network











1. Hotspot Location- Bhopal Airport

	3G			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	NA	3.72	NA	NA
Upload Throughput in Mbps	NA	1.53	NA	NA
Video streaming delay in sec	NA	2	NA	NA
Web browsing delay in second	NA	10	NA	NA
Latency in (msec)	NA	81	NA	NA

	LTE			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	19.87	NA	15.19	27.28
Upload Throughput in Mbps	6.3	NA	1.00	14.85
Video streaming delay in sec	0.63	NA	NA	0.160
Web browsing delay in second	2.76	NA	.45	4.729
Latency in (msec)	46.78	NA	30	61

2. Hotspot Location- Bhopal railway Station

	3G			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	NA	3.79	NA	NA
Upload Throughput in Mbps	NA	1.27	NA	NA
Video streaming delay in sec	NA	3.12	NA	NA
Web browsing delay in second	NA	31	NA	NA
Latency in (msec)	NA	74	NA	NA

	LTE			
	Airtel	BSNL	JIO	VIL
Download throughput in Mbps	7.23	NA	29.60	13.55
Upload Throughput in Mbps	1.89	NA	7.41	8.12
Video streaming delay in sec	0.62	NA	NA	1.5033
Web browsing delay in second	2.61	NA	2.97	6.199
Latency in (msec)	42.95	NA	43	43

3. Hotspot Location- RKMP Station

	3G			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	NA	4.92	NA	NA
Upload Throughput in Mbps	NA	1.82	NA	NA
Video streaming delay in sec	NA	3	NA	NA
Web browsing delay in second	NA	29	NA	NA
Latency in (msec)	NA	57	NA	NA

	LTE			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	26.11	NA	33.89	25.26
Upload Throughput in Mbps	6.90	NA	3.63	7.12
Video streaming delay in sec	0.66	NA	NA	0.653
Web browsing delay in second	2.78	NA	3.8	6.141
Latency in (msec)	51.43	NA	31	54

4. Hotspot Location- New Market

	3G			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	NA	3.92	NA	NA
Upload Throughput in Mbps	NA	1.32	NA	NA
Video streaming delay in sec	NA	4	NA	NA
Web browsing delay in second	NA	34	NA	NA
Latency in (msec)	NA	73	NA	NA

	LTE			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	10.98	NA	15.68	17.34
Upload Throughput in Mbps	3.57	NA	1.51	10.10
Video streaming delay in sec	0.78	NA	NA	1.111
Web browsing delay in second	2.43	NA	3.41	5.089
Latency in (msec)	40.89	NA	30	58

5. Hotspot Location- Hamidia Hospital

	3G			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	NA	4.64	NA	NA
Upload Throughput in Mbps	NA	1.43	NA	NA
Video streaming delay in sec	NA	5	NA	NA
Web browsing delay in second	NA	29	NA	NA
Latency in (msec)	NA	59	NA	NA

	LTE			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	19.01	NA	14.34	31.49
Upload Throughput in Mbps	3.8	NA	6.53	25.53
Video streaming delay in sec	0.71	NA	NA	0.911
Web browsing delay in second	2.23	NA	2.74	4.131
Latency in (msec)	38.08	NA	31	47

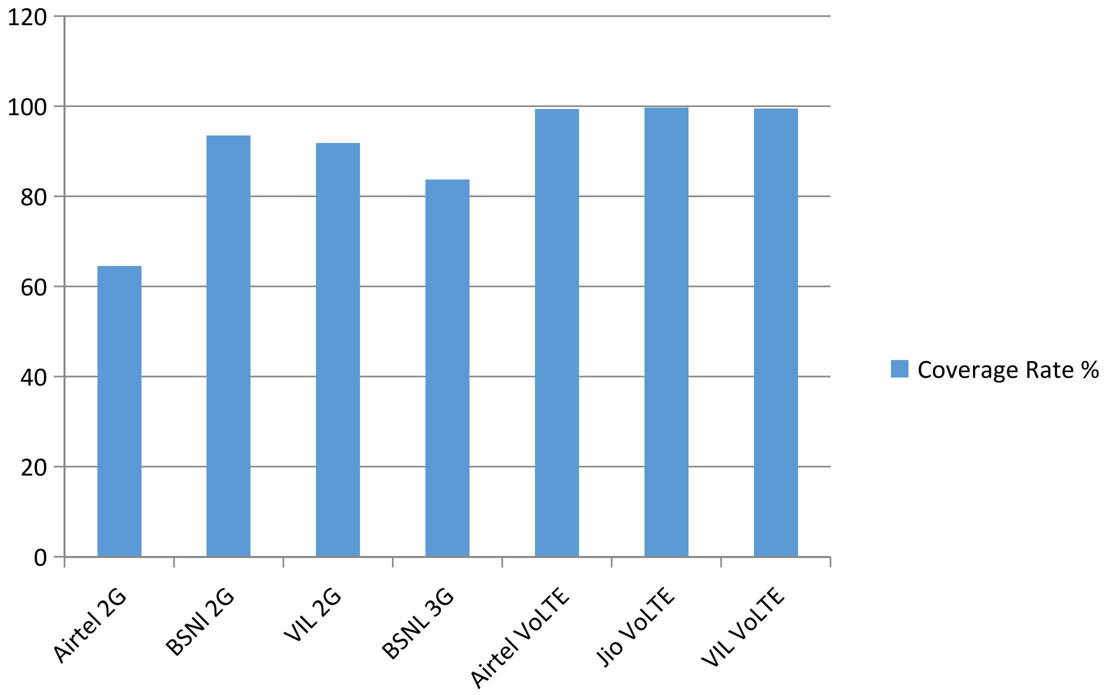
6. Hotspot Location- DB City Mall Mall

	3G			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	NA	5.32	NA	NA
Upload Throughput in Mbps	NA	1.92	NA	NA
Video streaming delay in sec	NA	3	NA	NA
Web browsing delay in second	NA	9	NA	NA
Latency in (msec)	NA	53	NA	NA

	LTE			
	Airtel	**BSNL**	**JIO**	**VIL**
Download throughput in Mbps	14.34	NA	8.76	55.57
Upload Throughput in Mbps	2.49	NA	9.10	30.08
Video streaming delay in sec	0.69	NA	NA	1.438
Web browsing delay in second	2.97	NA	3.35	6.454
Latency in (msec)	56.78	NA	28	61

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 ≥ -85 dBm, RSCP is ≥ -90 dBm & RSRP ≥ -110dBm. The details are as follows.

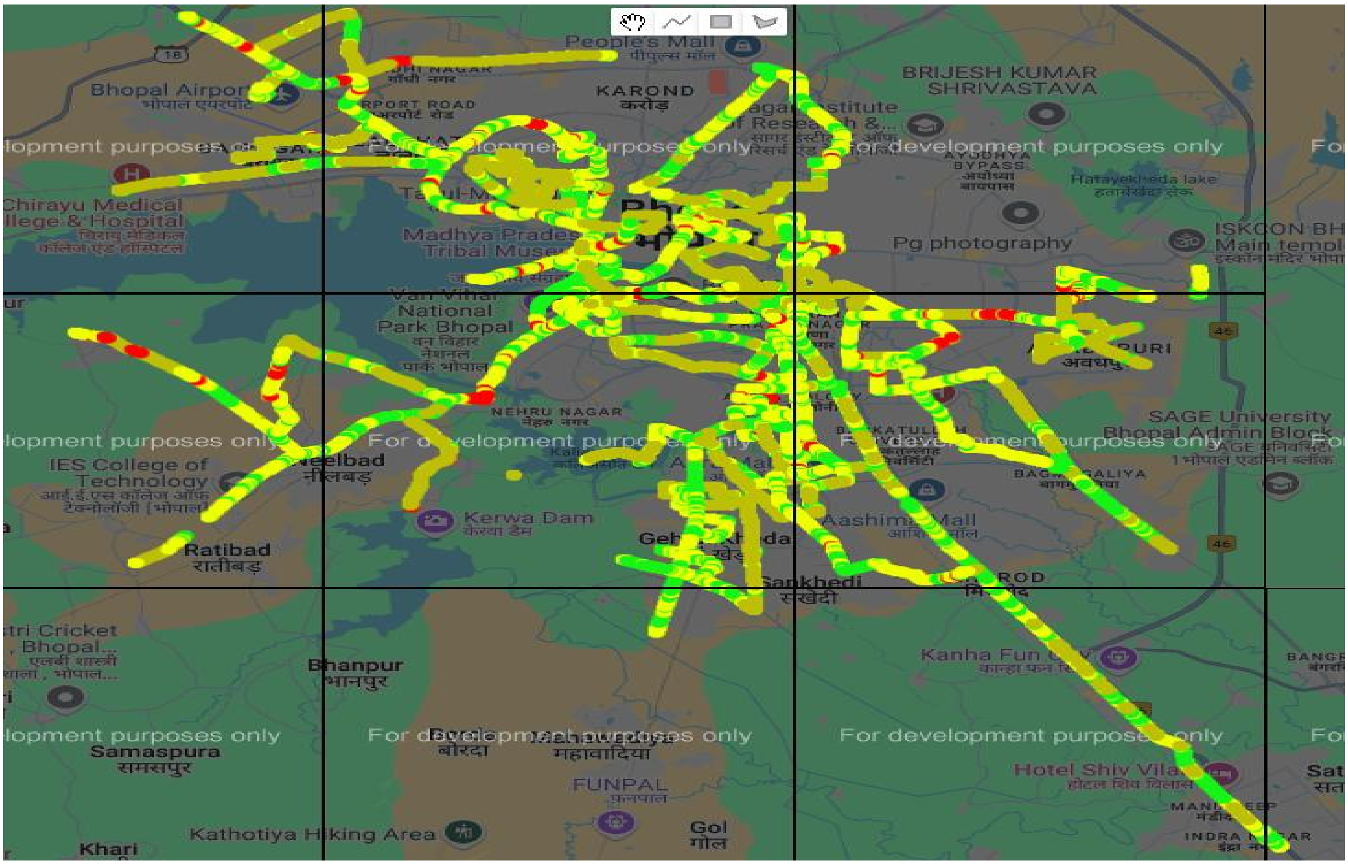
TSP	Coverage Rate %
Airtel 2G	64.58
BSNl 2G	93.54
VIL 2G	91.88
BSNL 3G	83.77
Airtel VoLTE	99.42
Jio VoLTE	99.75
VIL VoLTE	99.46



Coverage Rate %

TSP- Airtel

Technology	Coverage %
2G	64.58

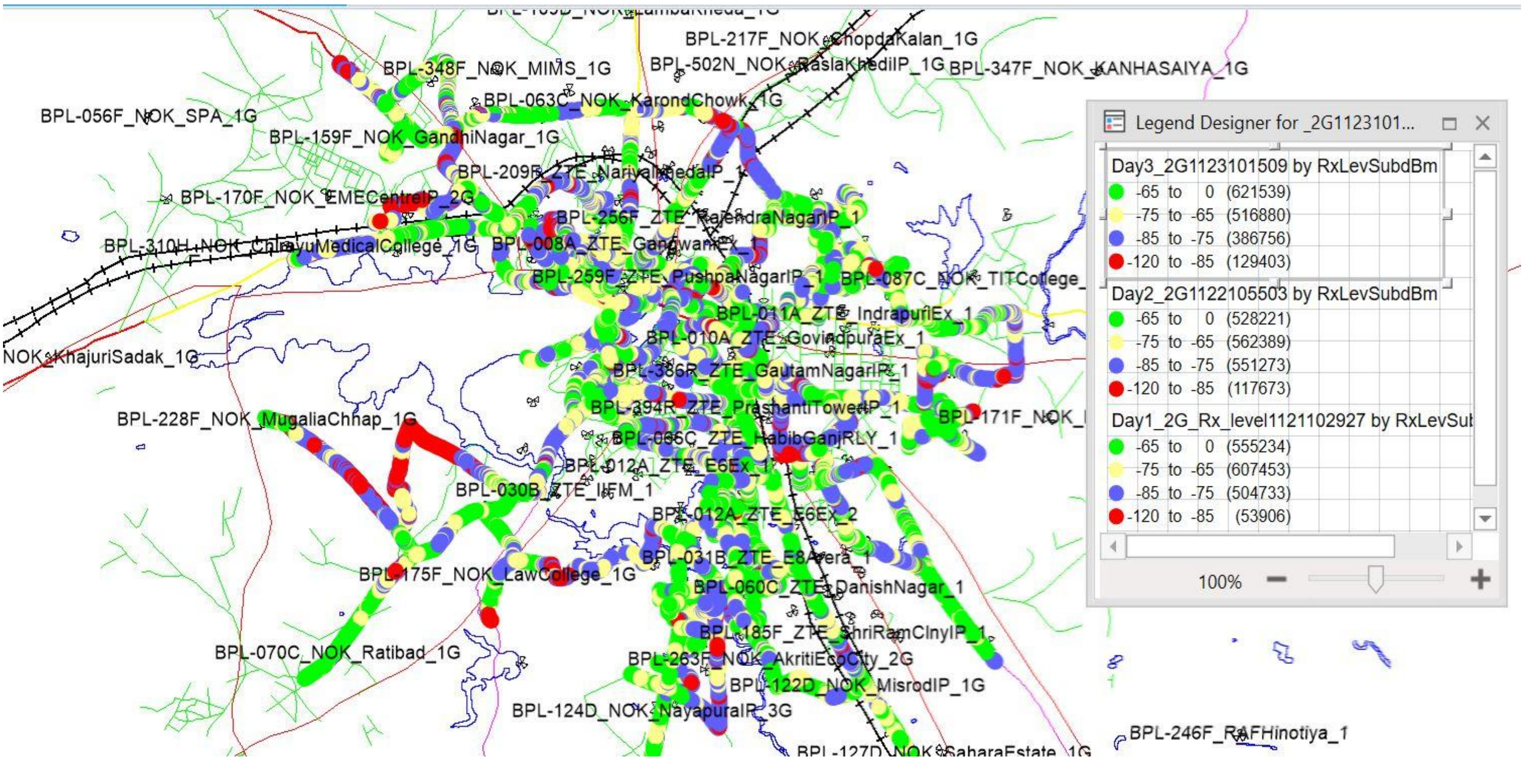

People's Mall
Bhopal Airport
KAROND
BRIJESH KUMAR SHRIVASTAVA
Chirayu Medical College & Hospital
Madhya Pradesh Tribal Museum
Pg photography
ISKCON BH Main temple
Van Vihar National Park Bhopal
NEHRU NAGAR
SAGE University Bhopal Admin Block
IES College of Technology
Neelbad
Kerwa Dam
Aashima Mall
Ratibad
Sankhedi
Bhanpur
Kanha Fun City
Samaspura
FUNPAL
Hotel Shiv Vilas
Kathotiya Hiking Area
Khari
Gol
For development purposes only

2G			
Overall RxLevel	**# Samples**	**% PDF**	**Legends**
[Max, >=-75]	12666	29.65	🟩
[-75, >=-85)	14924	34.93	🟨
[-85, >=-95)	14506	33.96	🟧
[-95, >=Min)	624	1.46	🟥

Coverage Details

TSP-...BSNL...

Technology	Coverage %
2G	93.54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BPL-063C_NOK_KarondChowk_1G
BPL-056F_NOK_SPA_1G
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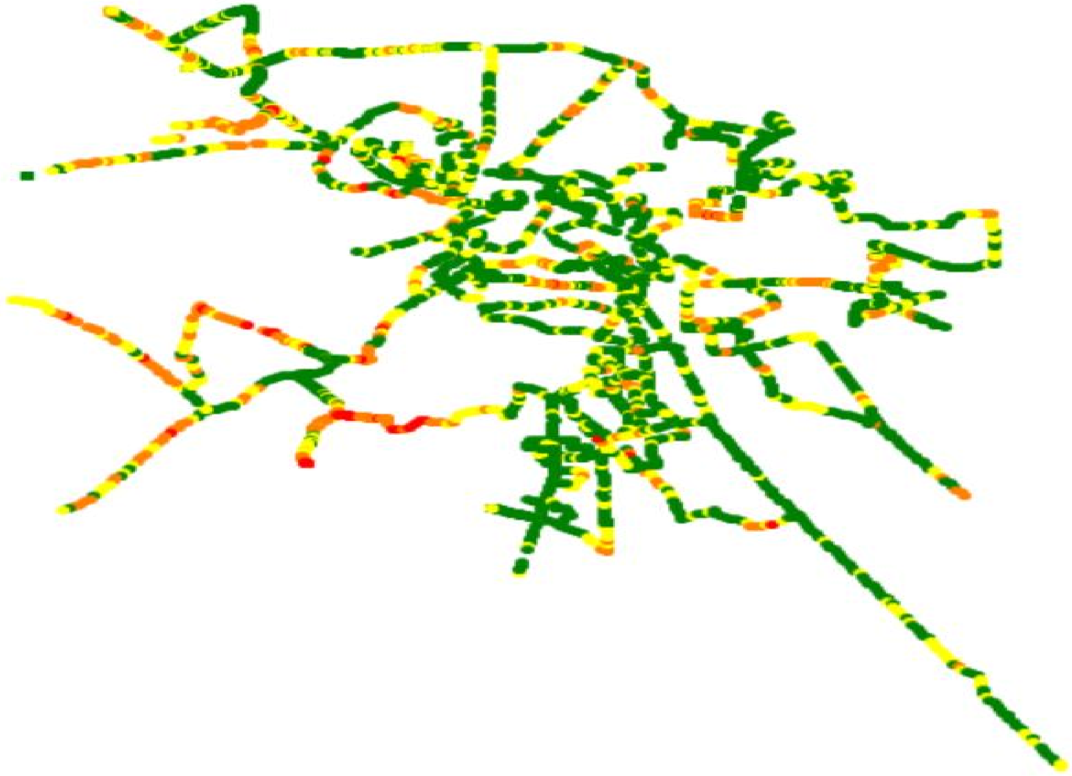
BPL-263F_NOK_AkritiEcoCity_2G
BPL-122D_NOK_MisrodIP_1G
BPL-124D_NOK_NayapuraIP_3G
BPL-246F_RAFHinotiya_1
BPL-127D_NOK_SaharaEstate_1G
Legend Designer for _2G1123101...
Day3_2G1123101509 by RxLevSubdBm
● -65 to 0 (621539)
● -75 to -65 (516880)
● -85 to -75 (386756)
● -120 to -85 (129403)
Day2_2G1122105503 by RxLevSubdBm
● -65 to 0 (528221)
● -75 to -65 (562389)
● -85 to -75 (551273)
● -120 to -85 (117673)
Day1_2G_Rx_level1121102927 by RxLevSul
● -65 to 0 (555234)
● -75 to -65 (607453)
● -85 to -75 (504733)
● -120 to -85 (53906)
100%

2G			
Overall RxLevel	**# Samples**	**% PDF**	**Legends**
[Max, >=-75]	**2916316**	**62.58**	🟩
[-75, >=-85)	**1442762**	**30.96**	🟨
[-85, >=-95)	**300982**	**6.45**	🟧
[-95, >=Min)	**451**	**0.01**	🟥
Total	**4660495**	**100**	

TSP-VIL

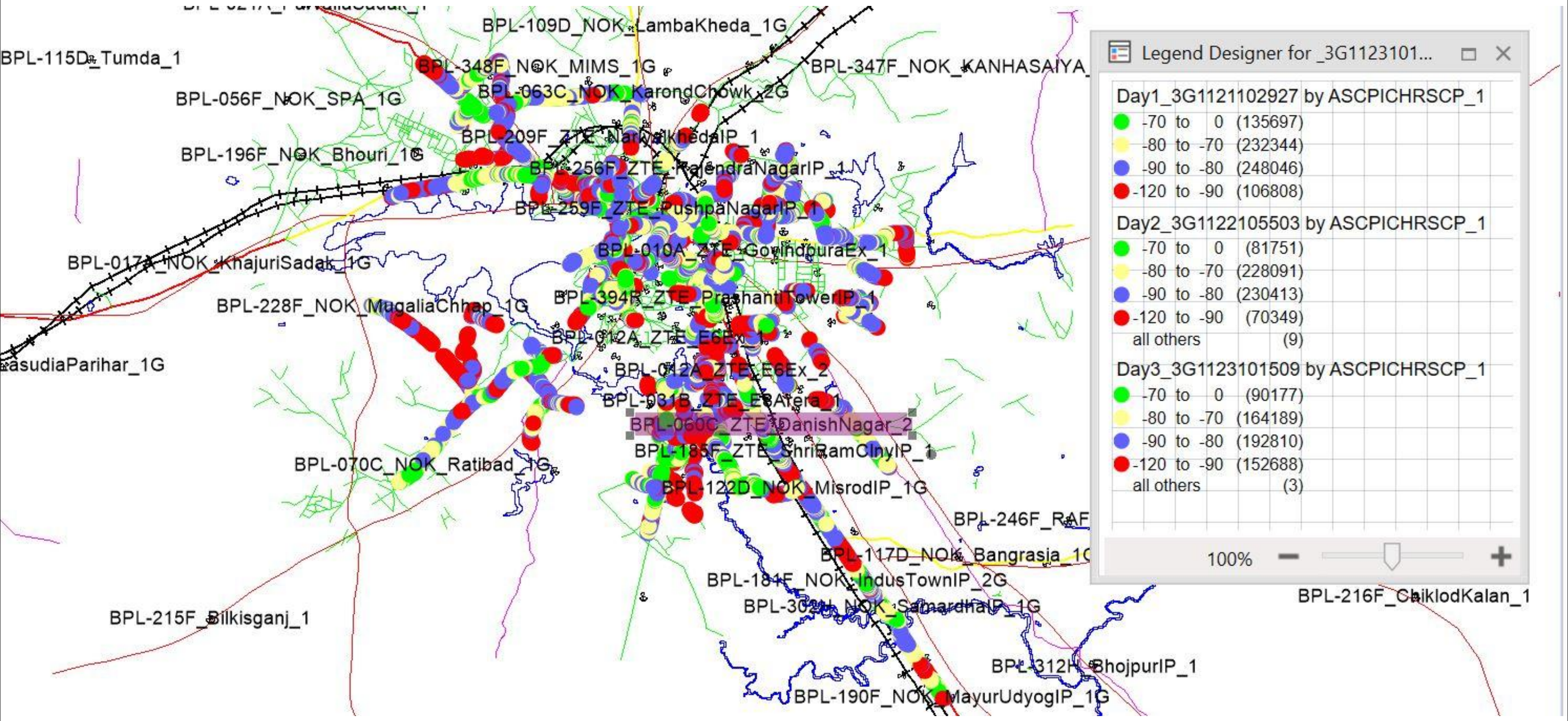
Technology	Coverage%
2G	91.88



2G			
Overall RxLevel	**# Samples**	**% PDF**	**Legends**
[Max, >=-75]	**22403**	**70.24**	🟩
[-75, >=-85)	**6901**	**21.64**	🟨
[-85, >=-95)	**2371**	**7.43**	🟧
[-95, >=Min)	**221**	**0.69**	🟥
Total	**31896**	**100**	

TSP- BSNL

Technology	Coverage %
3G	83.77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BPL-348F_NOK_MIMS_1G
BPL-347F_NOK_KANHASAIYA_
BPL-056F_NOK_SPA_1G
BPL-063C_NOK_KarondChowk_2G
BPL-209F_ZTE_NariyalkhedaIP_1
BPL-196F_NOK_Bhouri_1G
BPL-256F_ZTE_RajendraNagarIP_1
BPL-259F_ZTE_PushpaNagarIP_1
BPL-017A_NOK_KhajuriSadak_1G
BPL-010A_ZTE_GovindpuraEx_1
BPL-228F_NOK_MugaliaChhap_1G
BPL-394R_ZTE_PrashantiTowerIP_1
BPL-012A_ZTE_E6Ex_1
asudiaParihar_1G
BPL-012A_ZTE_E6Ex_2
BPL-031B_ZTE_E8Arera_1
BPL-060C_ZTE_DanishNagar_2
BPL-185F_ZTE_ShriRamClnyIP_1
BPL-070C_NOK_Ratibad_1G
BPL-122D_NOK_MisrodIP_1G
BPL-246F_RAF
BPL-117D_NOK_Bangrasia_1G
BPL-181F_NOK_IndusTownIP_2G
BPL-302H_NOK_SamardhaIP_1G
BPL-215F_Bilkisganj_1
BPL-216F_ChiklodKalan_1
BPL-312H_BhojpurIP_1
BPL-190F_NOK_MayurUdyogIP_1G
Legend Designer for _3G1123101...
100%

Day1_3G1121102927 by ASCPICHRSCP_1
🟢 -70 to 0 (135697)
🟡 -80 to -70 (232344)
🔵 -90 to -80 (248046)
🔴 -120 to -90 (106808)

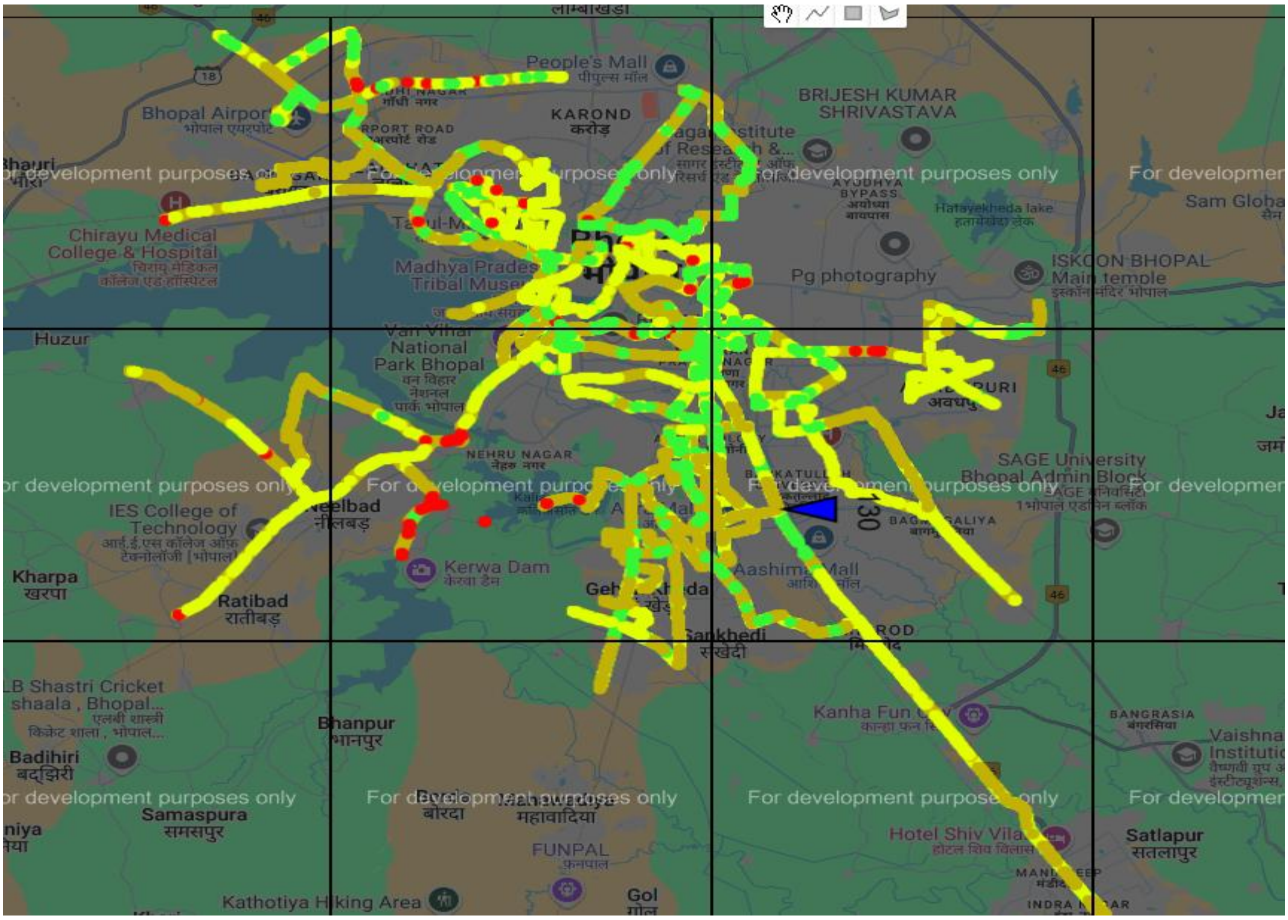
Day2_3G1122105503 by ASCPICHRSCP_1
🟢 -70 to 0 (81751)
🟡 -80 to -70 (228091)
🔵 -90 to -80 (230413)
🔴 -120 to -90 (70349)
all others (9)

Day3_3G1123101509 by ASCPICHRSCP_1
🟢 -70 to 0 (90177)
🟡 -80 to -70 (164189)
🔵 -90 to -80 (192810)
🔴 -120 to -90 (152688)
all others (3)

3G			
Overall RSCP	**# Samples**	**% PDF**	**Legends**
[Max, >=-70]	307625	15.12	🟩
[-70, >=-80)	624624	30.71	🟨
[-80, >=-90)	771269	37.93	🟧
[-90, >=Min)	329845	16.22	🟥
Total	2033363	**100**	

TSP- Airtel

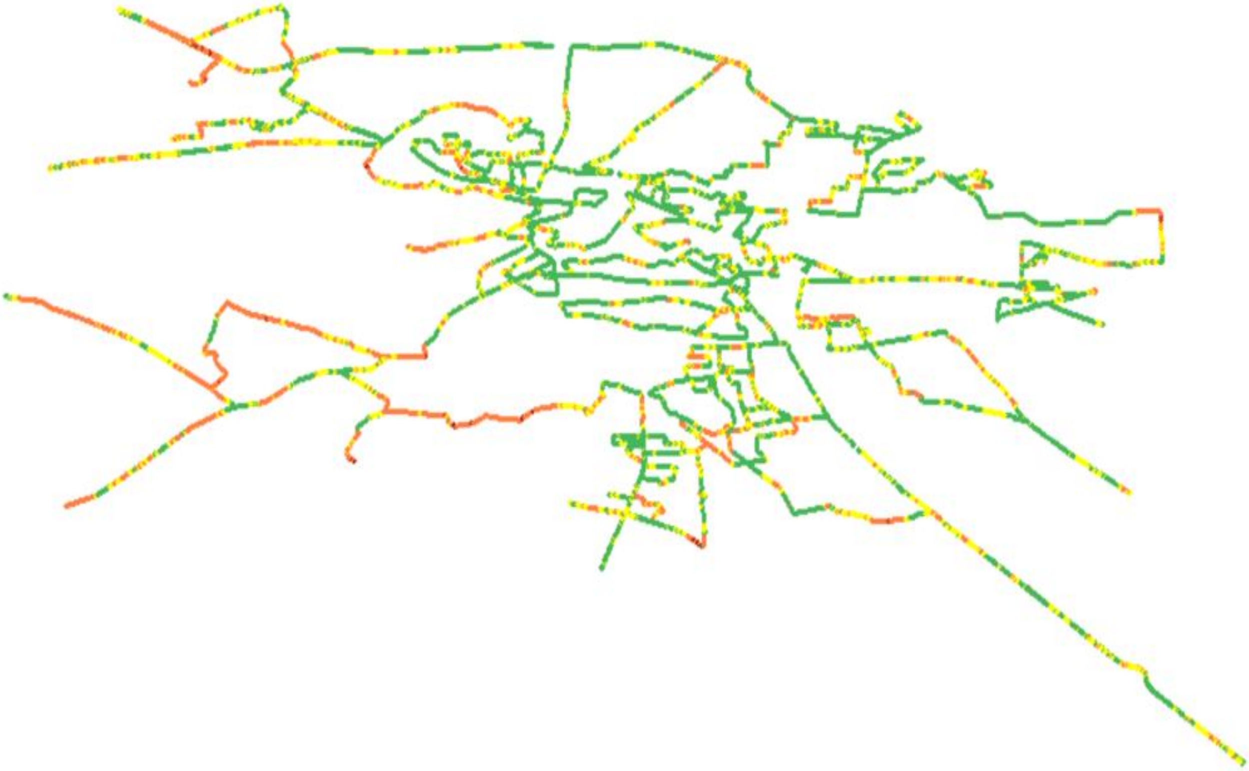
Technology	Coverage %
VoLTE	99.42


People's Mall
Bhopal Airport
KAROND
BRIJESH KUMAR SHRIVASTAVA
Chirayu Medical College & Hospital
Madhya Pradesh Tribal Museum
Pg photography
ISKCON BHOPAL Main temple
Huzur
Van Vihar National Park Bhopal
NEHRU NAGAR
SAGE University Bhopal Admin Block
IES College of Technology
Kharpa
Ratibad
Kerwa Dam
Aashima Mall
Sankhedi
LB Shastri Cricket shaala , Bhopal...
Badihiri
Bhanpur
Samaspura
Kanha Fun City
Hotel Shiv Vilas
Satlapur
FUNPAL
Kathotiya Hiking Area
For development purposes only

VoLTE			
Overall RSRP	**# Samples**	**% PDF**	**Legends**
[Max, >=-80]	**6425**	**21.86**	🟩
[-80, >=-90)	**11477**	**39.05**	🟨
[-90, >=-110)	**11320**	**38.52**	🟧
[-110, >=Min)	**169**	**0.58**	🟥
Total			

TSP-JIO

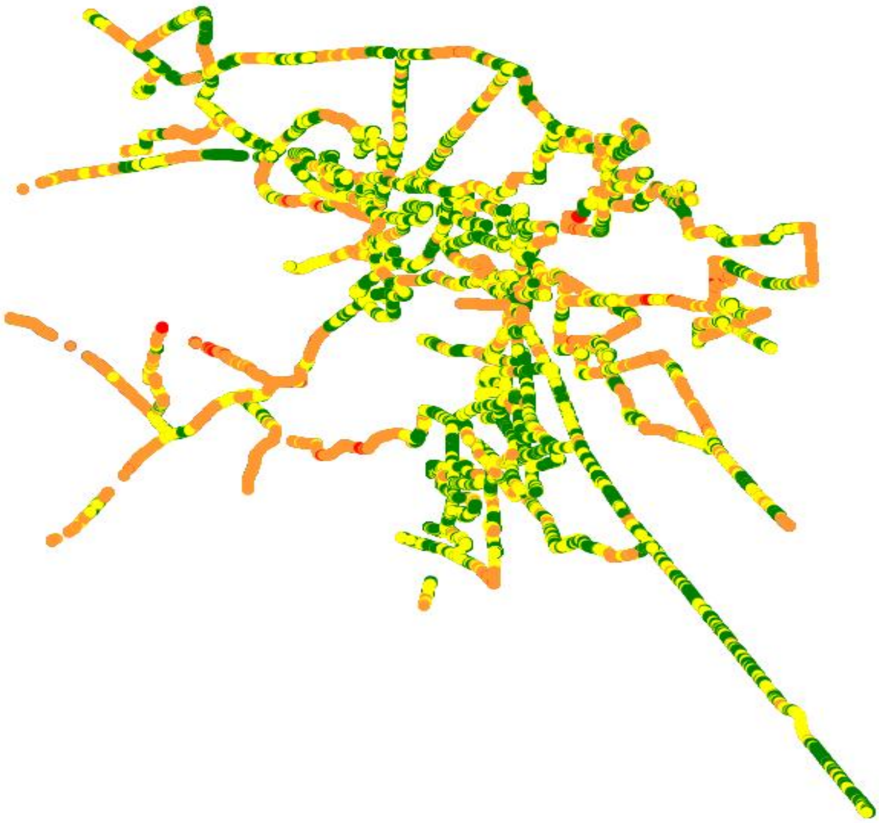
Technology	Coverage %
VoLTE	99.75



VoLTE			
Overall RSRP	**# Samples**	**% PDF**	**Legends**
[Max, >=-80]	**33941**	**56.58%**	🟩
[-80, >=-90)	**16578**	**27.64%**	🟨
[-90, >=-110)	**9320**	**15.54%**	🟧
[-110, >=Min)	**149**	**0.25%**	🟥
Total	**59988**	**100**	

TSP-VIL

Technology	Coverage %
VoLTE	99.46

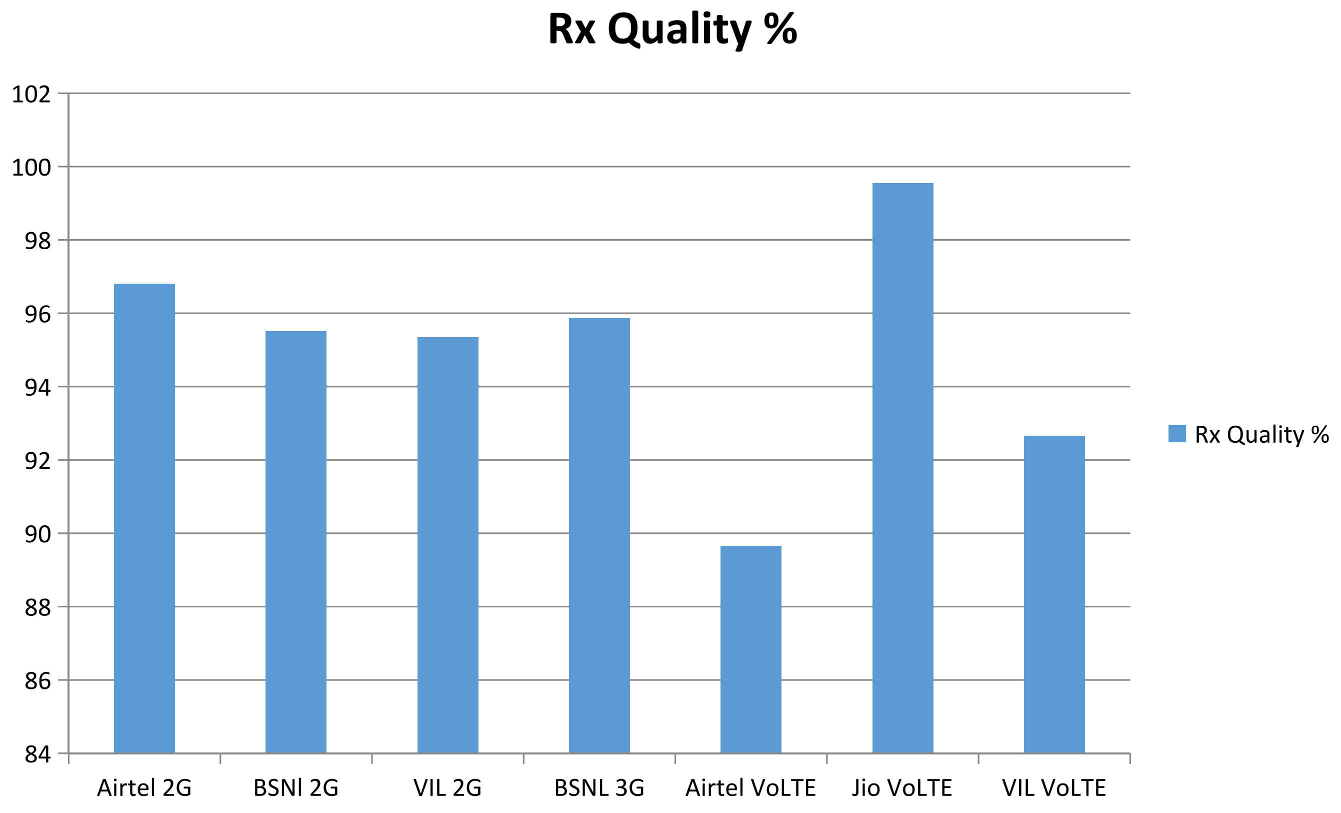


Overall RSRP	# Samples	% PDF	Legends
[Max, >=-80]	13789	44.45	🟩
[-80, >=-90)	9532	30.73	🟨
[-90, >=-110)	7533	24.28	🟧
[-110, >=Min)	167	0.54	🟥
1	31021	100	

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	96.81
BSNl 2G	95.51
VIL 2G	95.34
BSNL 3G	95.86
Airtel VoLTE	89.66
Jio VoLTE	99.55
VIL VoLTE	92.66

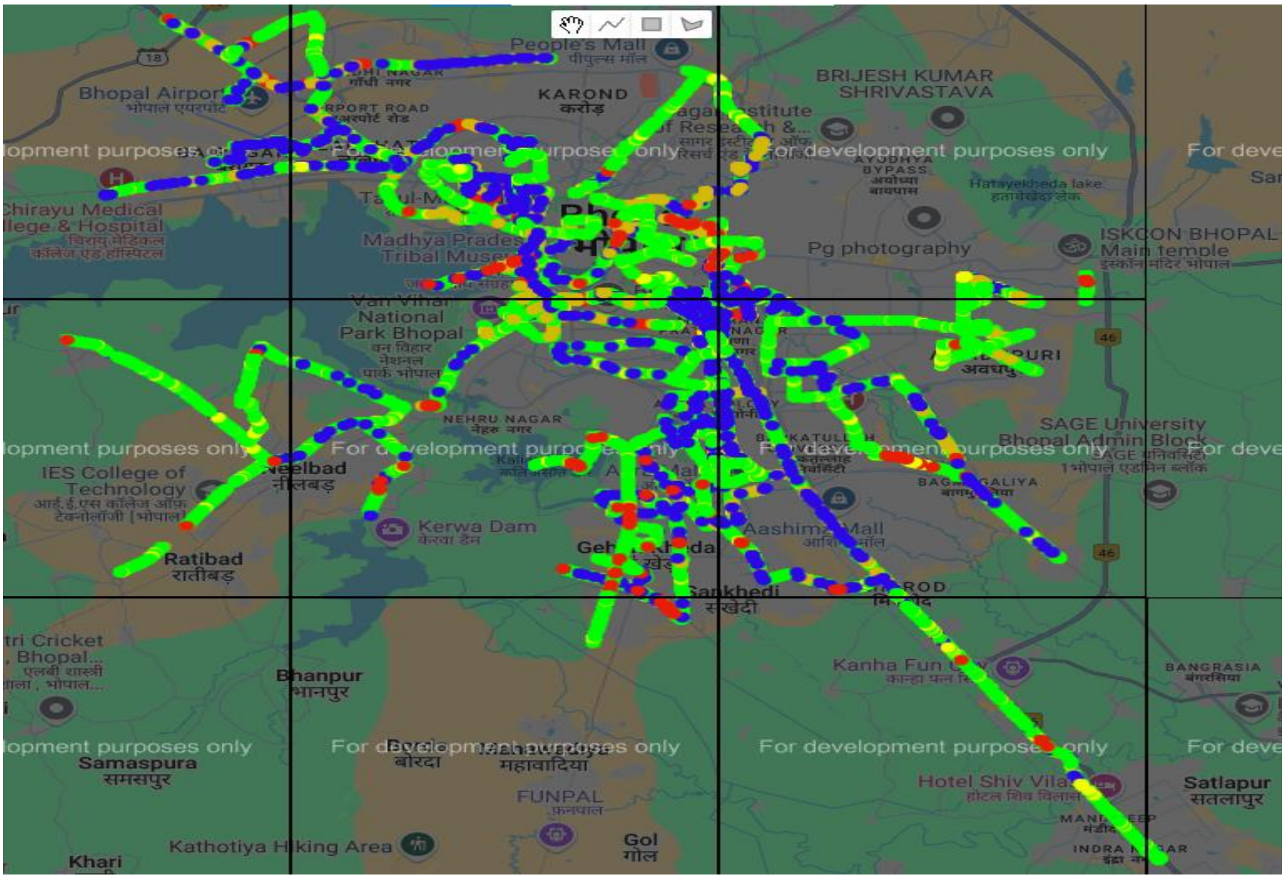


Quality Details

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- Airtel

Technology	Rx Quality %
2G	96.81



People's Mall
Bhopal Airport
KARONDA
BRIJESH KUMAR SHRIVASTAVA
Chirayu Medical College & Hospital
Madhya Pradesh Tribal Museum
Van Vihar National Park Bhopal
Pg photography
ISKCON BHOPAL Main temple
NEHRU NAGAR
Neelbad
IES College of Technology
Ratibad
Kerwa Dam
Aashima Mall
Sankhedi
SAGE University Bhopal Admin Block
BAGSEWALIYA
Kanha Fun City
Bhanpur
Samaspura
FUNPAL
Kathotiya Hiking Area
Khari
Gol
Hotel Shiv Vilas
Satlapur
BANGRASIA
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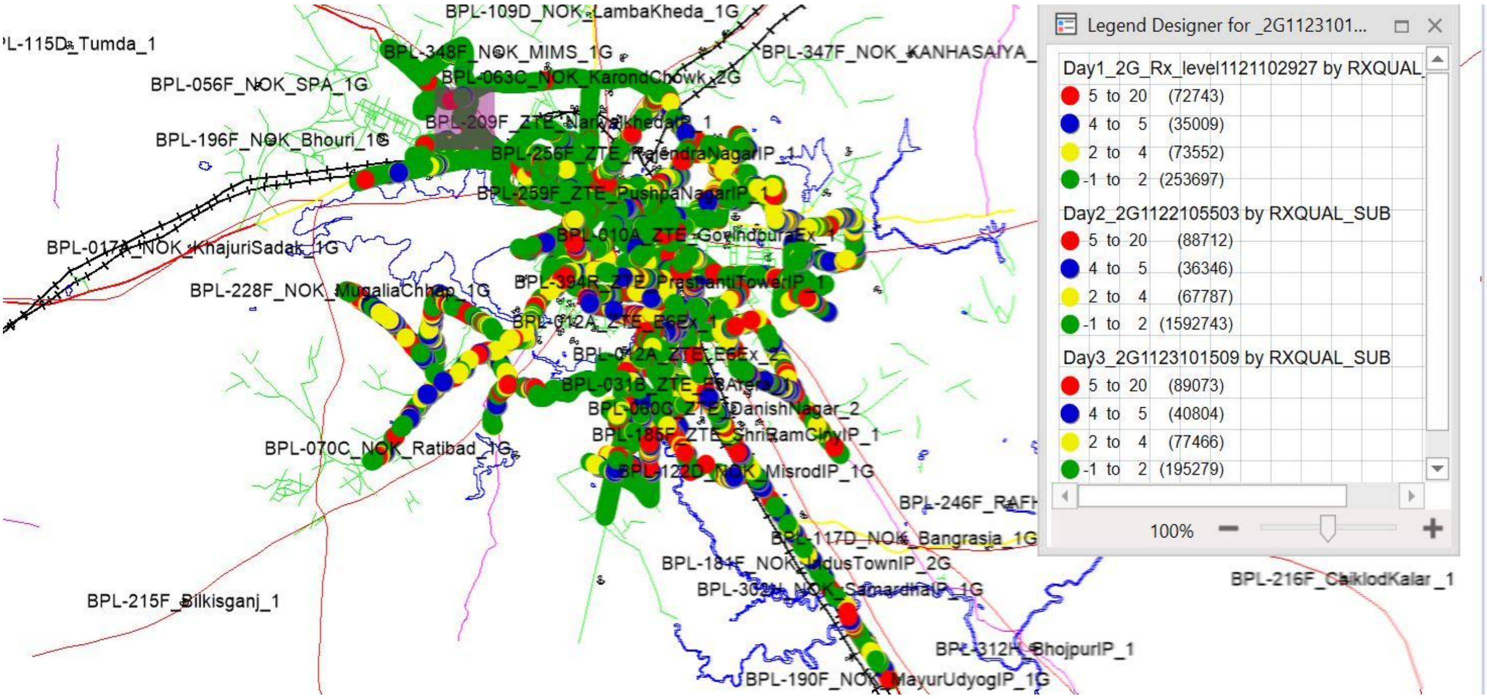
Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	29152	77.34	🟩
(2, <=3)	2987	7.92	🟨
(3 , <=4)	2454	6.51	🟦
(4 , <=5)	1895	5.03	🟧
(5 , <=Max)	1204	3.19	🟥
Total			

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-...BSNL.....

Technology	Rx Quality %
2G	95.51



Legend Designer for _2G1123101...

Day1_2G_Rx_level1121102927 by RXQUAL_
- 🟥 5 to 20 (72743)
- 🟦 4 to 5 (35009)
- 🟨 2 to 4 (73552)
- 🟩 -1 to 2 (253697)

Day2_2G1122105503 by RXQUAL_SUB
- 🟥 5 to 20 (88712)
- 🟦 4 to 5 (36346)
- 🟨 2 to 4 (67787)
- 🟩 -1 to 2 (1592743)

Day3_2G1123101509 by RXQUAL_SUB
- 🟥 5 to 20 (89073)
- 🟦 4 to 5 (40804)
- 🟨 2 to 4 (77466)
- 🟩 -1 to 2 (195279)

100%
BPL-109D_NOK_LambaKheda_1G
L-115D_Tumda_1
BPL-348F_NOK_MIMS_1G
BPL-347F_NOK_KANHASAIYA_
BPL-063C_NOK_KarondChowk_2G
BPL-056F_NOK_SPA_1G
BPL-209F_ZTE_NaryalkhedaIP_1
BPL-196F_NOK_Bhouri_1G
BPL-256F_ZTE_RajendraNagarIP_1
BPL-259F_ZTE_PushpaNagarIP_1
BPL-010A_ZTE_GovindpuraEx_1
BPL-017A_NOK_KhajuriSadak_1G
BPL-394R_ZTE_PrashantiTowerIP_1
BPL-228F_NOK_MugaliaChhap_1G
BPL-012A_ZTE_E6Ex_1
BPL-012A_ZTE_E6Ex_2
BPL-031B_ZTE_BBArera
BPL-030C_ZTE_DanishNagar_2
BPL-185F_ZTE_ShriRamColnyIP_1
BPL-070C_NOK_Ratibad_1G
BPL-122D_NOK_MisrodIP_1G
BPL-246F_RAFI
BPL-117D_NOK_Bangrasia_1G
BPL-184F_NOK_IndusTownIP_2G
BPL-302H_NOK_SamardhaIP_1G
BPL-215F_Bilkisganj_1
BPL-216F_ChiklodKalar_1
BPL-312H_BhojpurIP_1
BPL-190F_NOK_MayurUdyogIP_1G

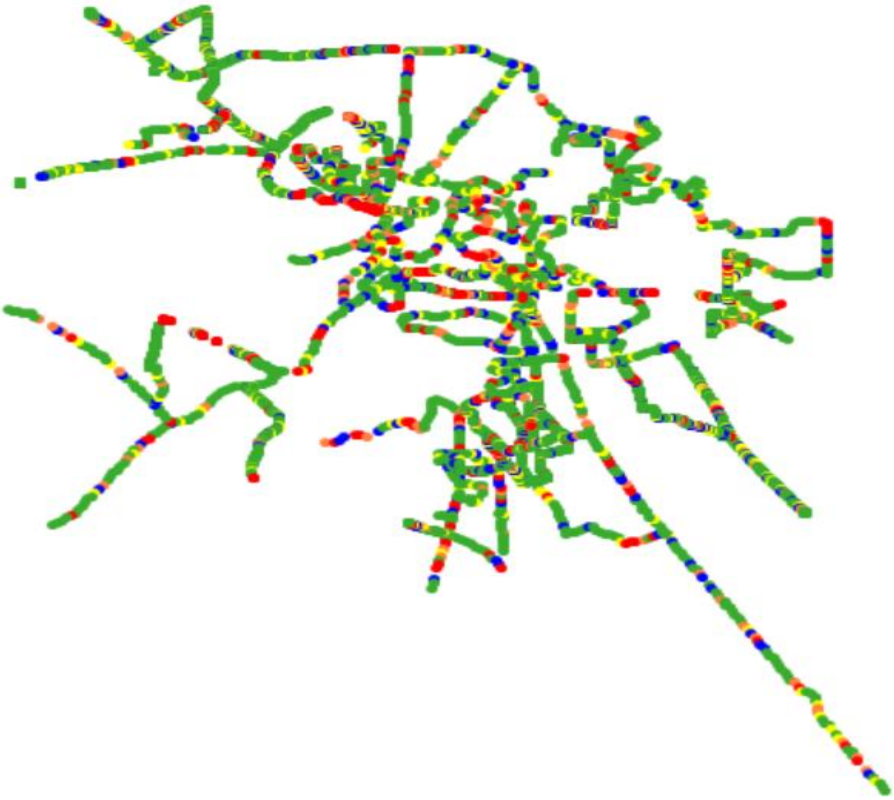
Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	2041719	82.68	🟩
(2, <=3)	218805	8.53	🟨
(3 , <=4)	112159	4.3	🟦
(4 , <=5)	115043	4.49	🟧
(5 , <=Max)			🟥
Total	2562211	100	

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-VIL

Technology	Rx Quality%
2G	95.34



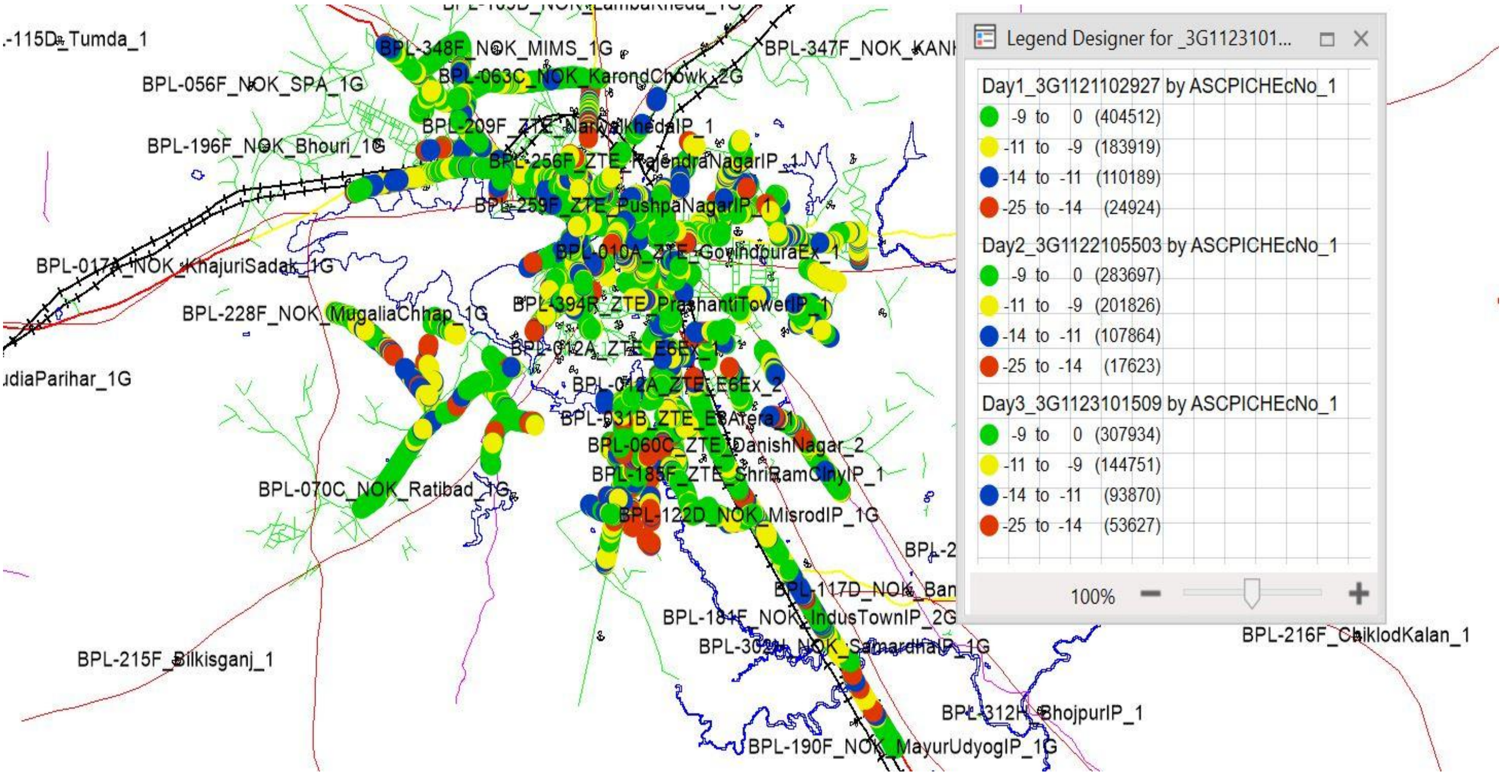
Overall Rx Quality	# Samples	% PDF	Legends
(Min, <=2)	25136	75.24	🟩
(2, <=3)	3176	9.51	🟨
(3 , <=4)	2278	6.82	🟦
(4 , <=5)	1258	3.77	🟧
(5 , <=Max)	1560	4.67	🟥
Total	33408	100	

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-…BSNL…..

Technology	Rx Quality %
3G	95.86



.-115D_Tumda_1
BPL-348F_NOK_MIMS_1G
BPL-347F_NOK_KANI
BPL-056F_NOK_SPA_1G
BPL-063C_NOK_KarondChowk_2G
BPL-209F_ZTE_NariyalkhedaIP_1
BPL-196F_NOK_Bhouri_1G
BPL-256F_ZTE_RajendraNagarIP_1
BPL-259F_ZTE_PushpaNagarIP_1
BPL-010A_ZTE_GovindpuraEx_1
BPL-017A_NOK_KhajuriSadak_1G
BPL-228F_NOK_MugaliaChhap_1G
BPL-394R_ZTE_PrashantiTowerIP_1
udiaParihar_1G
BPL-012A_ZTE_E6Ex_1
BPL-012A_ZTE_E6Ex_2
BPL-031B_ZTE_E8Area
BPL-060C_ZTE_DanishNagar_2
BPL-070C_NOK_Ratibad_1G
BPL-185F_ZTE_ShriRamClnyIP_1
BPL-122D_NOK_MisrodIP_1G
BPL-117D_NOK_Ban
BPL-184F_NOK_IndusTownIP_2G
BPL-302H_NOK_SamardhaIP_1G
BPL-215F_Bilkisganj_1
BPL-216F_ChiklodKalan_1
BPL-312H_BhojpurIP_1
BPL-190F_NOK_MayurUdyogIP_1G
Legend Designer for _3G1123101...
100%

Day1_3G1121102927 by ASCPICHEcNo_1
- 🟢 -9 to 0 (404512)
- 🟡 -11 to -9 (183919)
- 🔵 -14 to -11 (110189)
- 🔴 -25 to -14 (24924)

Day2_3G1122105503 by ASCPICHEcNo_1
- 🟢 -9 to 0 (283697)
- 🟡 -11 to -9 (201826)
- 🔵 -14 to -11 (107864)
- 🔴 -25 to -14 (17623)

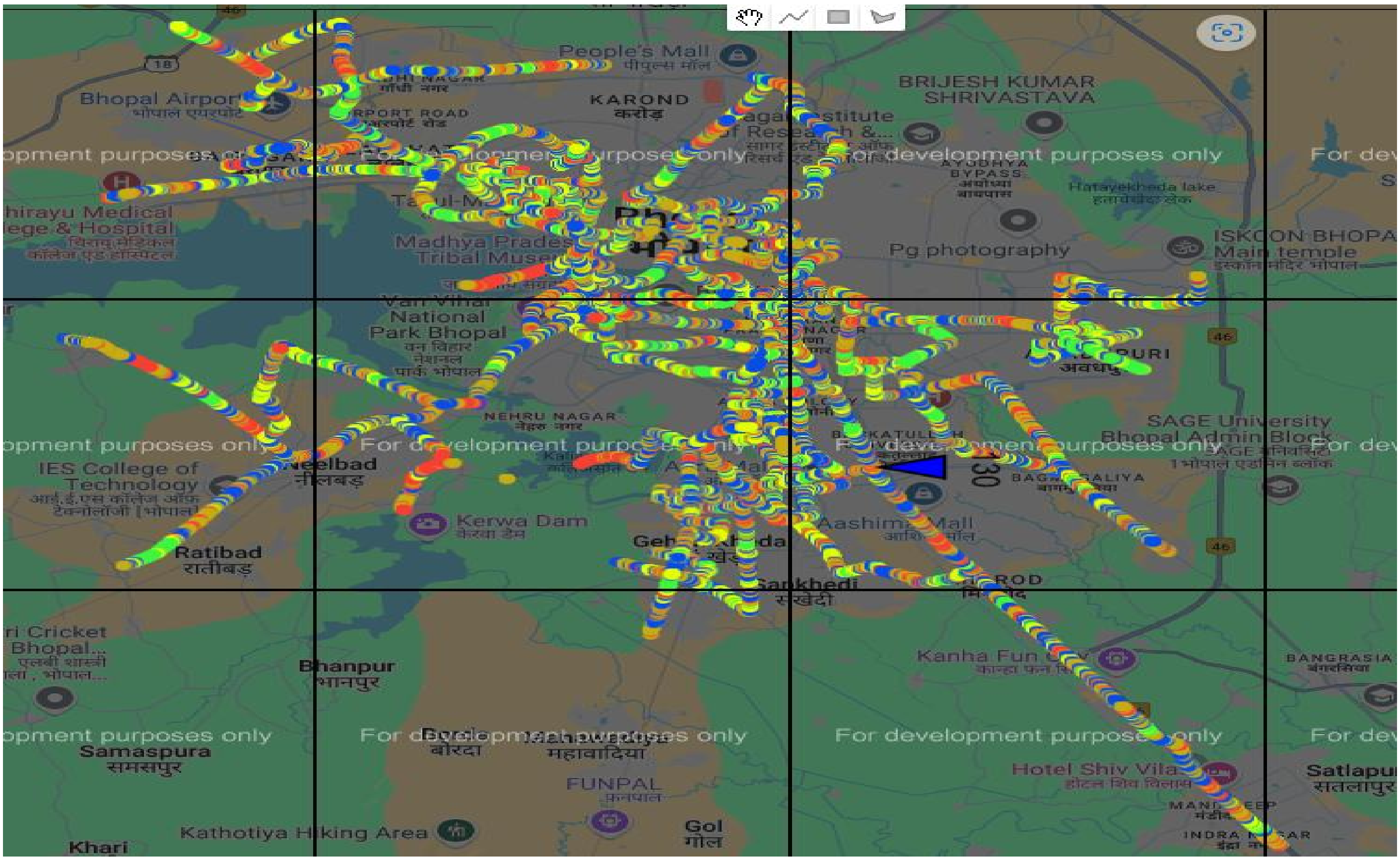
Day3_3G1123101509 by ASCPICHEcNo_1
- 🟢 -9 to 0 (307934)
- 🟡 -11 to -9 (144751)
- 🔵 -14 to -11 (93870)
- 🔴 -25 to -14 (53627)

Overall Ec/No	# Samples	% PDF	Legends
(Max, <=-6)	632143	40.24	🟩
(-6, <=-9)	530496	35.77	🟨
(-9, <=-11)	311923	19.85	🟦
(-11, <=-14)	69269	4.14	🟧
(-14, <= Min)			🟥
Total	1543831	**100**	

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- Airtel

Technology	Rx Quality %
VoLTE	89.66


Bhopal Airport
People's Mall
KARONDO
BRIJESH KUMAR SHRIVASTAVA
Madhya Pradesh Tribal Museum
Van Vihar National Park Bhopal
NEHRU NAGAR
Neelbad
IES College of Technology
Kerwa Dam
Ratibad
Aashima Mall
Sankhedi
Pg photography
ISKCON BHOPAL Main temple
SAGE University Bhopal Admin Block
Kanha Fun City
Bhanpur
Samaspura
Kathotiya Hiking Area
FUNPAL
Gol
Hotel Shiv Vilas
Satlapur
Khari
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130

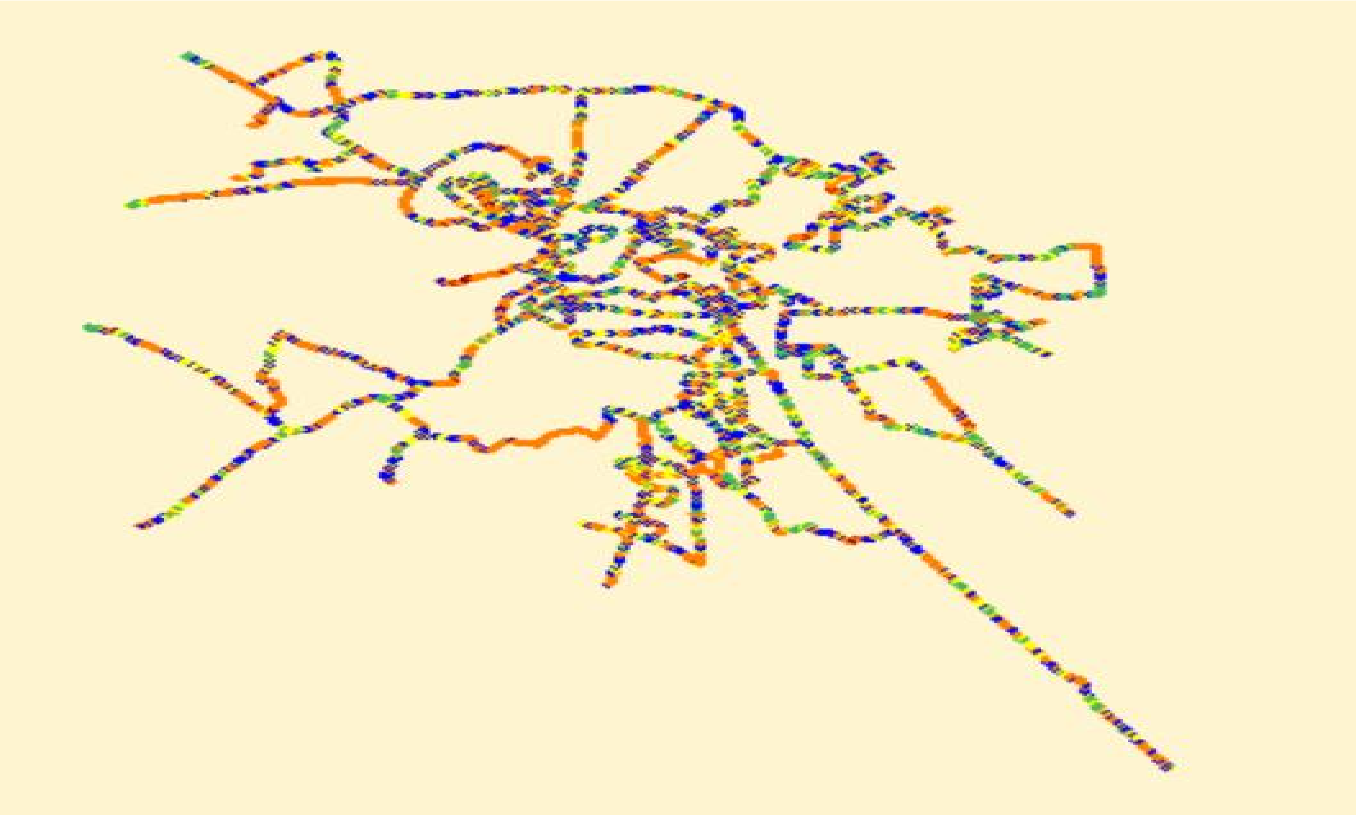
Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	3035	10.34	🟥
(0, <=5)	8076	27.5	🟧
(5, <=10)	9022	30.73	🟦
(10, <=15)	5361	18.26	🟨
(15, <=Max)	3868	13.17	🟩
Total			

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-JIO

Technology	Rx Quality %
VoLTE	**99.55**



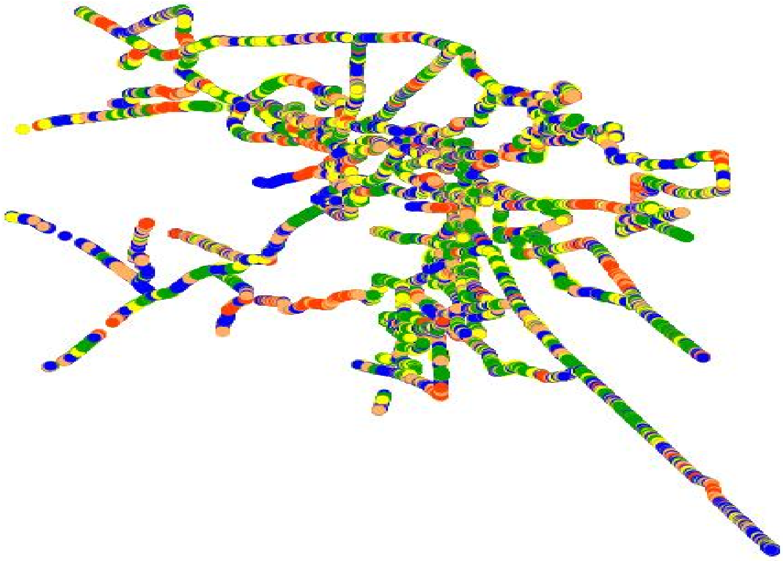
Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	268	0.45	🟥
(0, <=5)	20343	33.91	🟧
(5, <=10)	17278	28.80	🟦
(10, <=15)	12566	20.95	🟨
(15, <=Max)	9533	15.89	🟩
Total	59988	100	

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%.

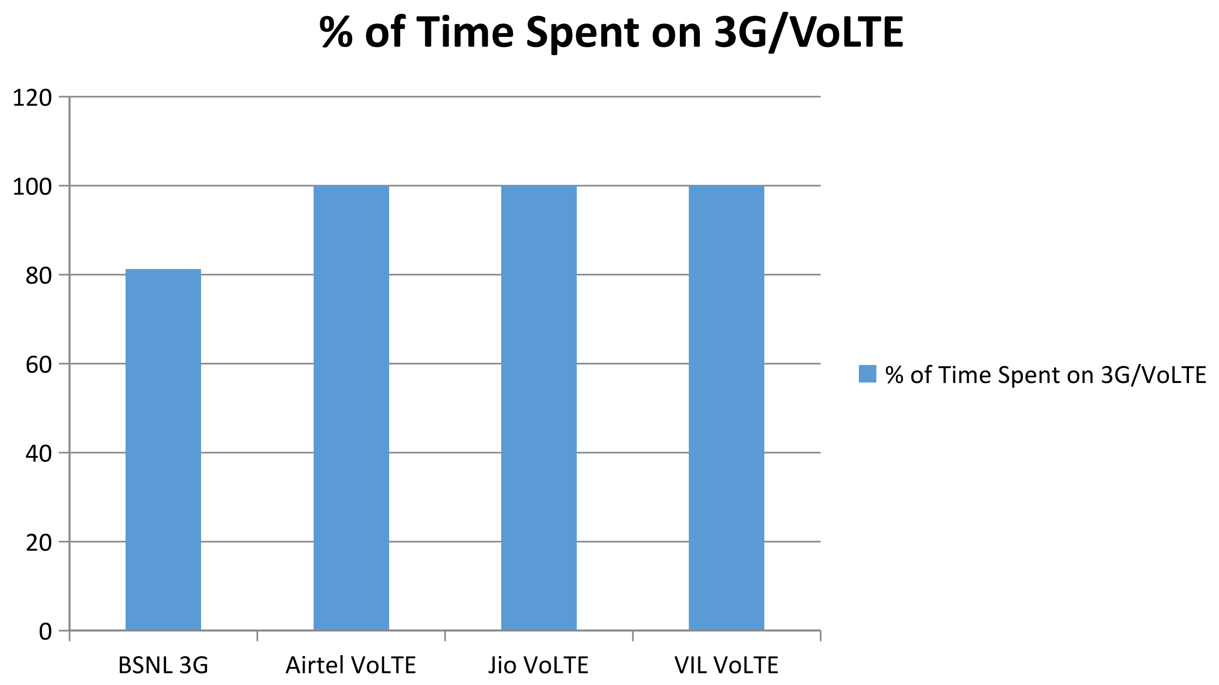
TSP-VIL

Technology	Rx Quality %
VoLTE	**92.66**



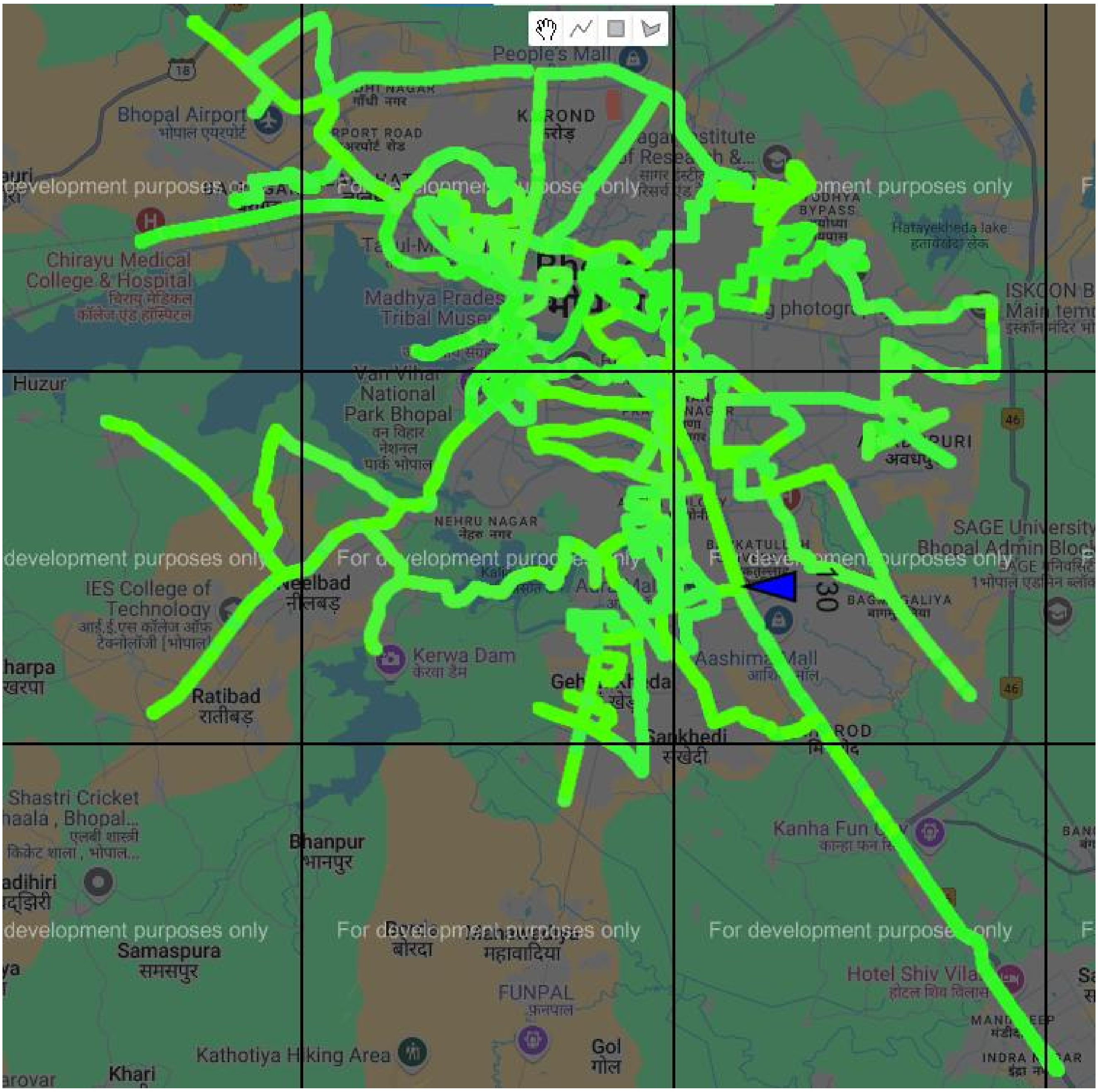
Overall SINR	# Samples	% PDF	Legends
(Min, <=0)	2276	7.34	🟥
(0, <=5)	5267	16.98	🟧
(5, <=10)	7197	23.2	🟦
(10, <=15)	6838	22.05	🟨
(15, <=Max)	9440	30.43	🟩
Total			

TSP	% of Time Spent on 3G/VoLTE
BSNL 3G	**81.2**
Airtel VoLTE	**100**
Jio VoLTE	**100**
VIL VoLTE	**100**



TSP-Airtel

Technology	% of Time Spent on
VoLTE	100%


Bhopal Airport
People's Mall
Chirayu Medical College & Hospital
Madhya Pradesh Tribal Museum
Van Vihar National Park Bhopal
Huzur
NEHRU NAGAR
Neelbad
IES College of Technology
Kerwa Dam
Ratibad
Aashima Mall
Sankhedi
SAGE University Bhopal Admin Block
Kanha Fun City
Bhanpur
Samaspura
Kathotiya Hiking Area
FUNPAL
Gol
Hotel Shiv Vilas
Hatayekheda lake
ISKCON Bhopal Main temple
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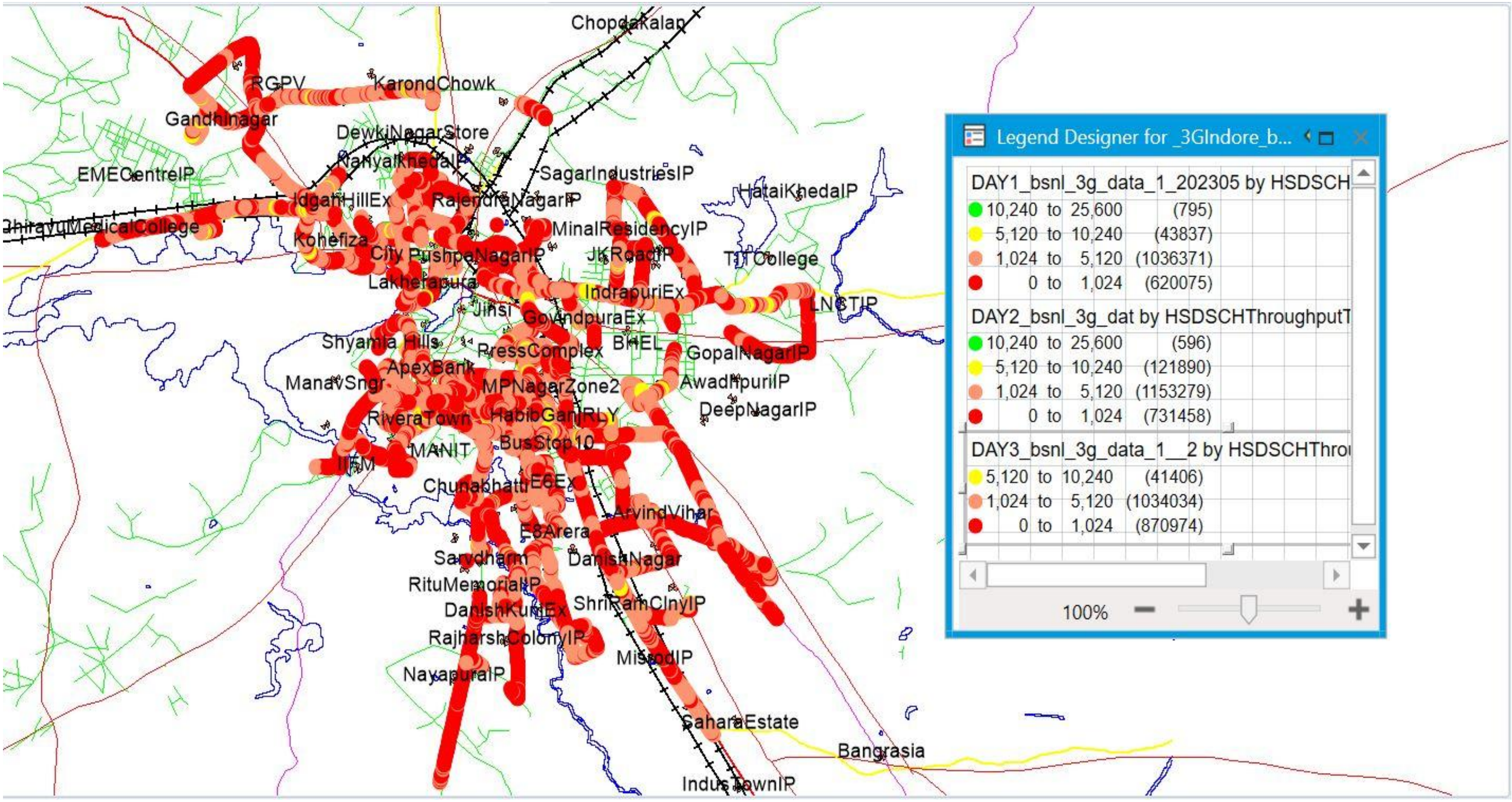
TSP-JIO

Technology	% of Time Spent on
VoLTE	100

TSP- BSNL

Data Statistics - Dynamic data testing

Data KPIs - Overall	3G
Download Throughput (Mbps)	3.9

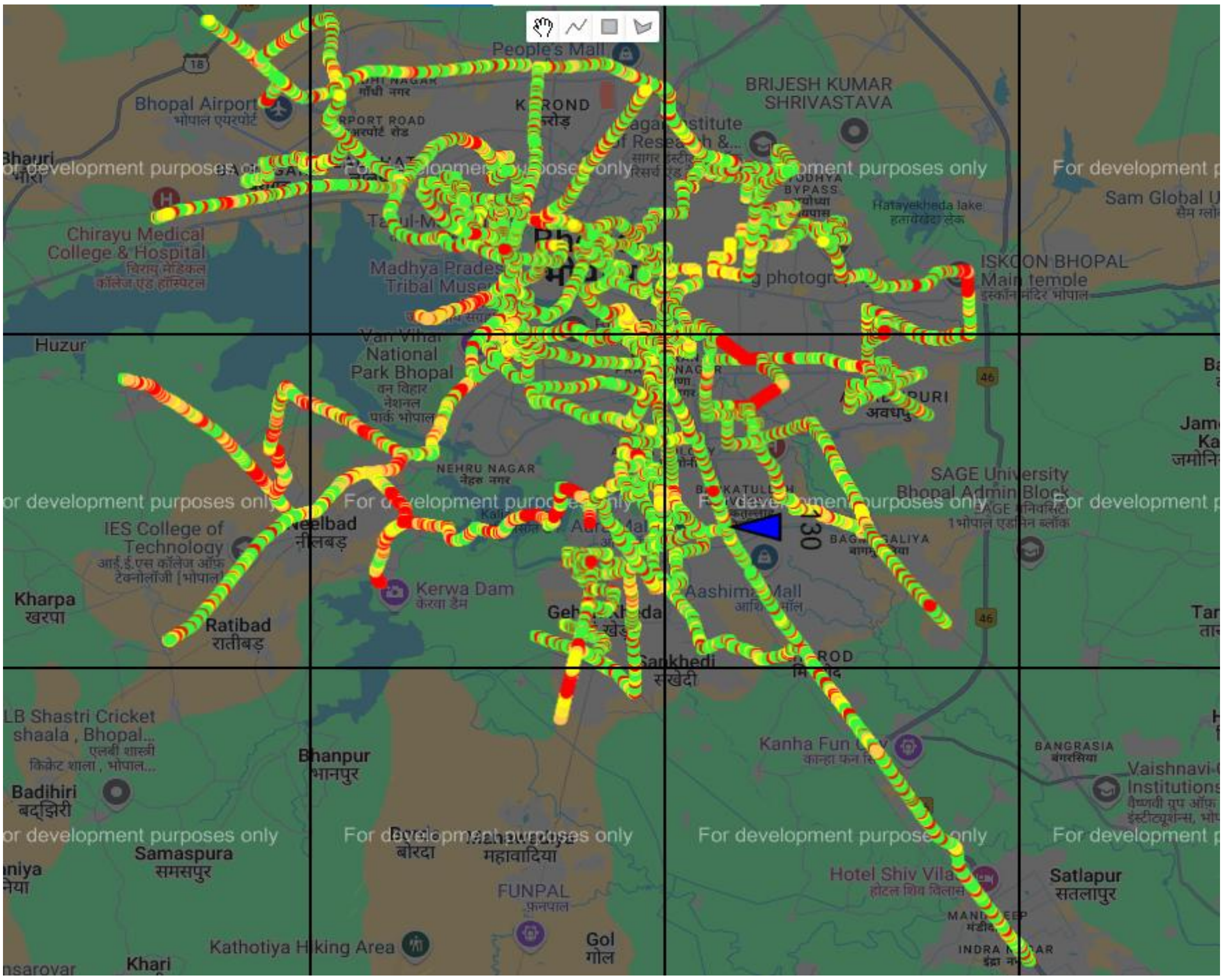

ChopdaKalan
RGPV
KarondChowk
Gandhinagar
DewkiNagarStore
EMECentreIP
NayaKhedaIP
SagarIndustriesIP
IdgahHillEx
RajendraNagarIP
HataiKhedaIP
ChirayuMedicalCollege
MinalResidencyIP
Kohefiza
City PushpaNagarIP
JKRoadIP
TITCollege
Lakherapura
IndrapuriEx
LNCTIP
Jinsi
GovindpuraEx
Shyamla Hills
PressComplex
BHEL
GopalNagarIP
ApexBank
ManavSngr
MPNagarZone2
AwadhpuriIP
RiveraTown
HabibGanjRLY
DeepNagarIP
MANIT
BusStop10
IIFM
ChunaBhatti
E6Ex
ArvindVihar
E8Arera
Sarvdharm
DanishNagar
RituMemorialIP
DanishKunjEx
ShriRamClnyIP
RajharshColonyIP
MisrodIP
NayapuraIP
SaharaEstate
Bangrasia
IndusTownIP
Legend Designer for _3GIndore_b...
DAY1_bsnl_3g_data_1_202305 by HSDSCH
10,240 to 25,600 (795)
5,120 to 10,240 (43837)
1,024 to 5,120 (1036371)
0 to 1,024 (620075)
DAY2_bsnl_3g_dat by HSDSCHThroughputT
10,240 to 25,600 (596)
5,120 to 10,240 (121890)
1,024 to 5,120 (1153279)
0 to 1,024 (731458)
DAY3_bsnl_3g_data_1__2 by HSDSCHThrou
5,120 to 10,240 (41406)
1,024 to 5,120 (1034034)
0 to 1,024 (870974)
100%

DL throughput	No of Sample	%	Legends
< 1 Mbps	2222507	39.30	🟥
1-5 Mbps	3223684	57.00	🟧
5-10 Mbps	207133	3.66	🟨
>10Mbps	1391	0.024	🟩

TSP- Airtel

Data Statistics - Dynamic data testing

Data KPIs - Overall	LTE
Download Throughput (Mbps)	15.52


People's Mall
Bhopal Airport
भोपाल एयरपोर्ट
AIRPORT ROAD
KAROND
BRIJESH KUMAR SHRIVASTAVA
Bhauri
Chirayu Medical College & Hospital
Madhya Pradesh Tribal Museum
Hatayekheda lake
ISKCON BHOPAL Main temple
Sam Global U
Huzur
Van Vihar National Park Bhopal
NEHRU NAGAR
SAGE University Bhopal Admin Block
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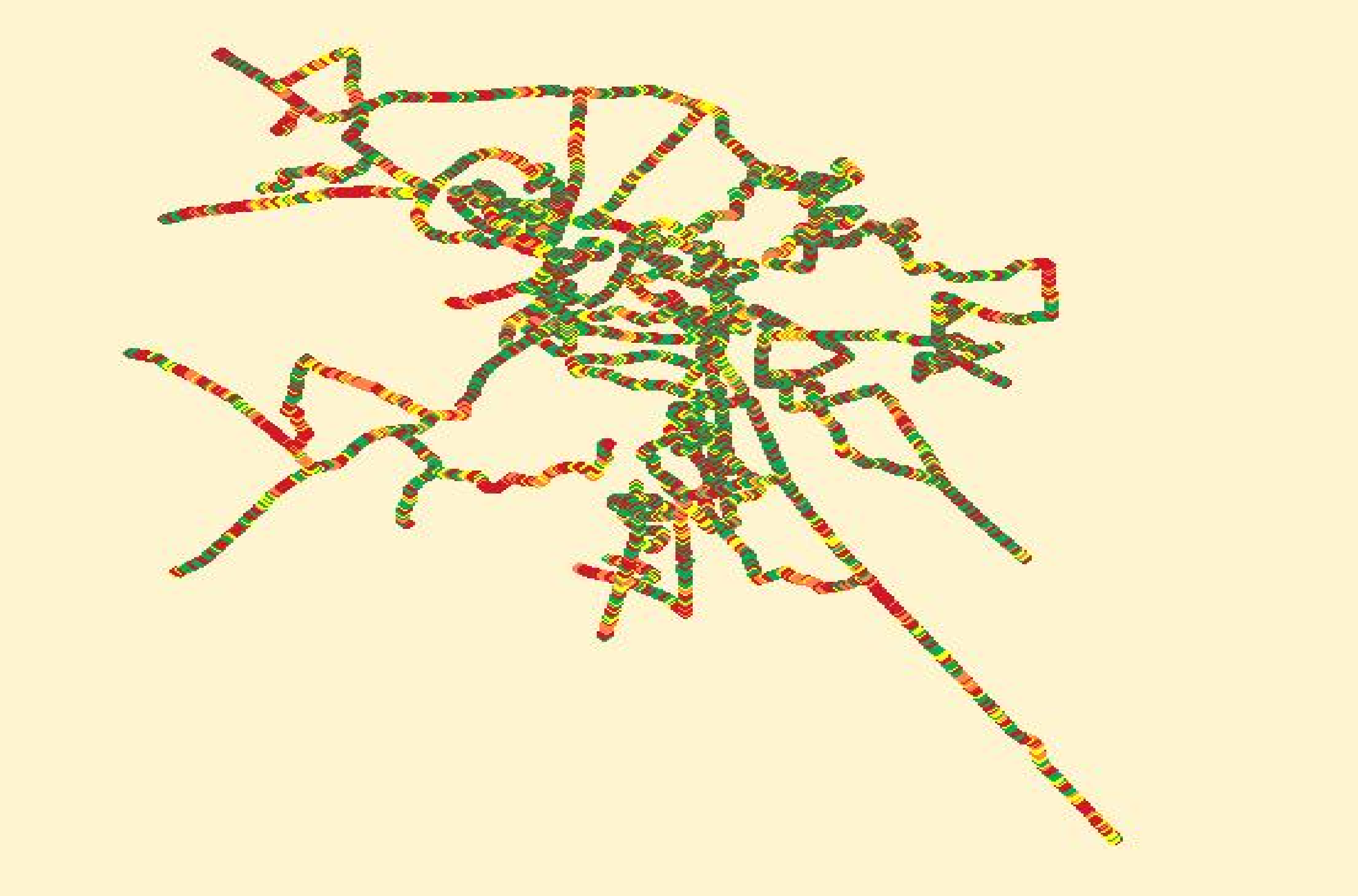
Neelbad
नीलबड़
Kerwa Dam
केरवा डैम
Aashima Mall
Kharpa
खरपा
Ratibad
रातीबड़
Sankhedi
सखेदी
LB Shastri Cricket shaala, Bhopal
Badihiri
Bhanpur
भानपुर
Kanha Fun City
BANGRASIA
Vaishnavi Institutions
Samaspura
समसपुर
Hotel Shiv Vilas
Satlapur
सतलापुर
FUNPAL
Kathotiya Hiking Area
Gol
गोल
Khari
For development purposes only

DL throughput	No of Sample	%	Legends
< 2Mbps	6616	21.85	🟥
2-5 Mbps	3026	9.99	🟧
5-10 Mbps	4412	14.57	🟨
>10Mbps	16222	53.58	🟩

TSP- Jio

Data Statistics - Dynamic data testing

Data KPIs - Overall	LTE
Download Throughput (Mbps)	11.70

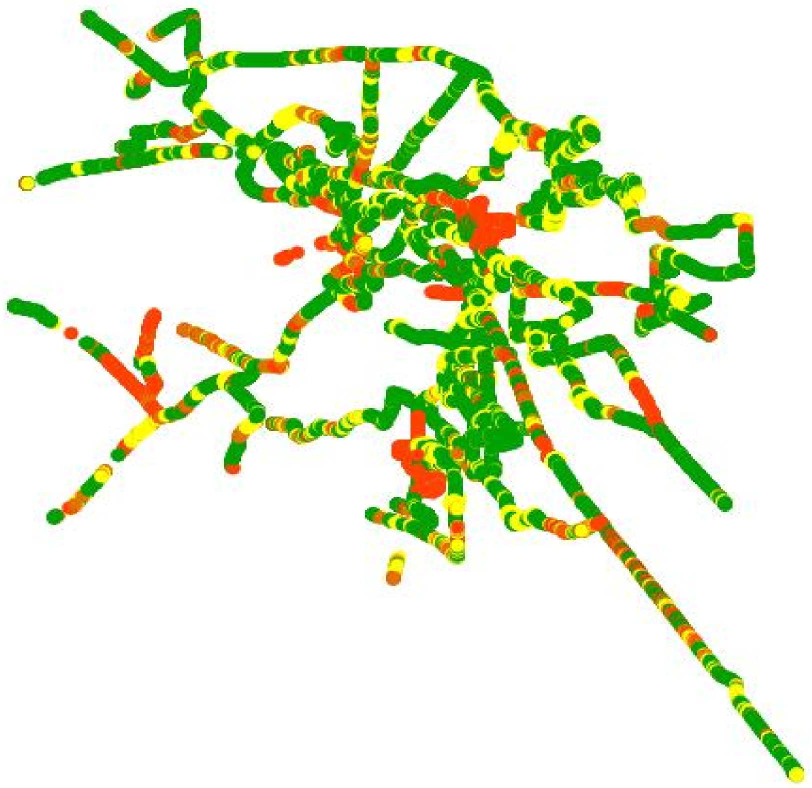


DL throughput	No of Sample	%	Legends
< 2Mbps	18458	32.86%	🟥
2-5 Mbps	6521	11.61%	🟧
5-10 Mbps	8563	15.24%	🟨
>10Mbps	22636	40.29%	🟩

TSP-VIL

Data Statistics - Dynamic data testing

Data KPIs - Overall	LTE
Download Throughput (Mbps)	30.76



DL throughput	No of Sample	%	Legends
< 2Mbps	3480	13.44	🟥
2-5 Mbps	1621	6.26	🟧
5-10 Mbps	2376	9.18	🟨
>10Mbps	18416	71.12	🟩

Data testing on hotspots using traimyspeed app

Hotspot		Airtel	BSNL	JIO	VIL
1. Bhopal Airport	3G download in Mbps	NA	4.39	NA	NA
	3G upload in Mbps	NA	1.92	NA	NA
	4G download in Mbps	24.86	NA	19.39	27.28
	4G upload in Mbps	15.93	NA	6.52	14.85
	5G download in Mbps	44.00	NA	NA	NA
	5G upload in Mbps	8.69	NA	NA	NA
2. Bhopal Railway station	3G download in Mbps	NA	3.72	NA	NA
	3G upload in Mbps	NA	2.25	NA	NA
	4G download in Mbps	9.19	NA	18.76	13.55
	4G upload in Mbps	1.83	NA	2.42	8.12
	5G download in Mbps	93.31	NA	NA	NA
	5G upload in Mbps	13.47	NA	NA	NA

Hotspot		Airtel	BSNL	JIO	VIL
3. RKMP Station	3G download in Mbps	NA	2.11	NA	NA
	3G upload in Mbps	NA	1.09	NA	NA
	4G download in Mbps	55.72	NA	18.27	25.6
	4G upload in Mbps	11.48	NA	2.23	7.12
	5G download in Mbps	166.08	NA	NA	NA
	5G upload in Mbps	24.40	NA	NA	NA
4. New Market	3G download in Mbps	NA	5.98	NA	NA
	3G upload in Mbps	NA	3.96	NA	NA
	4G download in Mbps	8.23	NA	16.31	17.34
	4G upload in Mbps	4.96	NA	4.85	10.10
	5G download in Mbps	60.11	NA	NA	NA
	5G upload in Mbps	22.03	NA	NA	NA

Data testing on hotspots using traimyspeed app

Hotspot		Airtel	BSNL	JIO	VIL
5. Hamidia Hospital	3G download in Mbps	NA	1.78	NA	NA
	3G upload in Mbps	NA	1.89	NA	NA
	4G download in Mbps	38.09	NA	17.54	31.49
	4G upload in Mbps	18.41	NA	5.52	25.53
	5G download in Mbps	70.88	NA	NA	NA
	5G upload in Mbps	16.78	NA	NA	NA
6. DB City Mall	3G download in Mbps	NA	2.38	NA	NA
	3G upload in Mbps	NA	1.71	NA	NA
	4G download in Mbps	15.68	NA	19.17	55.57
	4G upload in Mbps	14.95	NA	7.40	30.08
	5G download in Mbps	49.48	NA	NA	NA
	5G upload in Mbps	23.81	NA	NA	NA