

TELECOM REGULATORY AUTHORITY OF INDIA

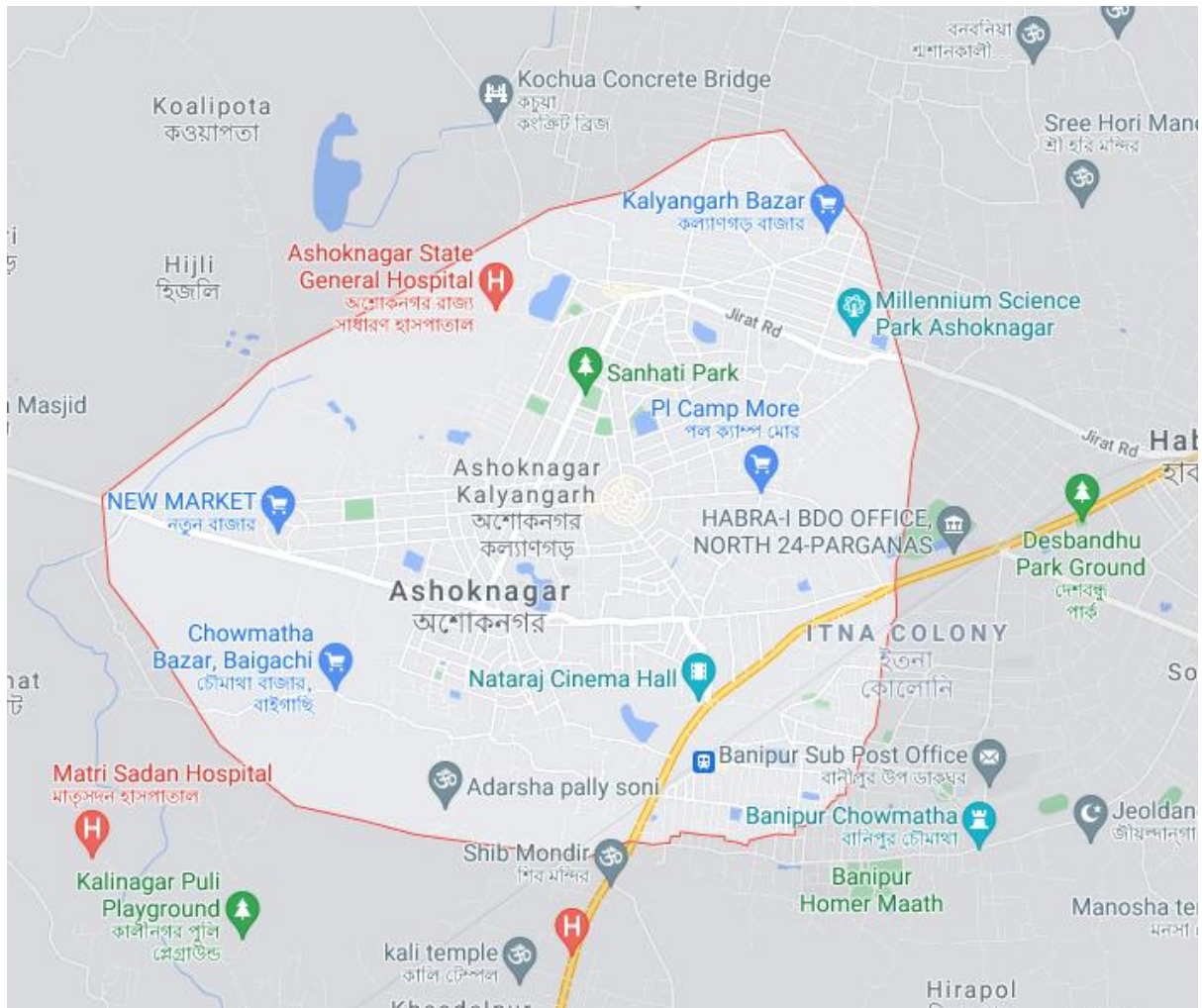
Regional Office, KOLKATA

Operator Assisted Drive Test (OADT) in Habra & Ashoknagar Town and surroundings area including National Highways-112

OVERVIEW

Habra is a town and a municipality under [Barasat sadar subdivision^{\[3\]}](#) in North 24 Parganas district of the Indian state of West Bengal. It is situated on the Jessore Road between Kolkata and the Bangladesh border at [Petrapole](#). Its location makes it an important town for export and import of goods between India and Bangladesh.

Ashoknagar is a town and a municipality in [Barasat Sadar subdivision^{\[2\]}](#) of North 24 Parganas district in the state of West Bengal, India.



The Operator Assisted Drive Test (OADT) has been carried out by Regional Office, Kolkata, TRAI in Habra and Ashoknagar Town & adjoining areas including National Highways-112 on 27th March 2021. The drive test routes covered of 54 KMs. Approximately 55 voice calls in each technology and dynamic data download from FTTP server were made for each of 8 networks: Three 2G (GSM) networks, Two 3G (UMTS) networks, Three 4G (LTE) networks covering 4 unique TSPs.

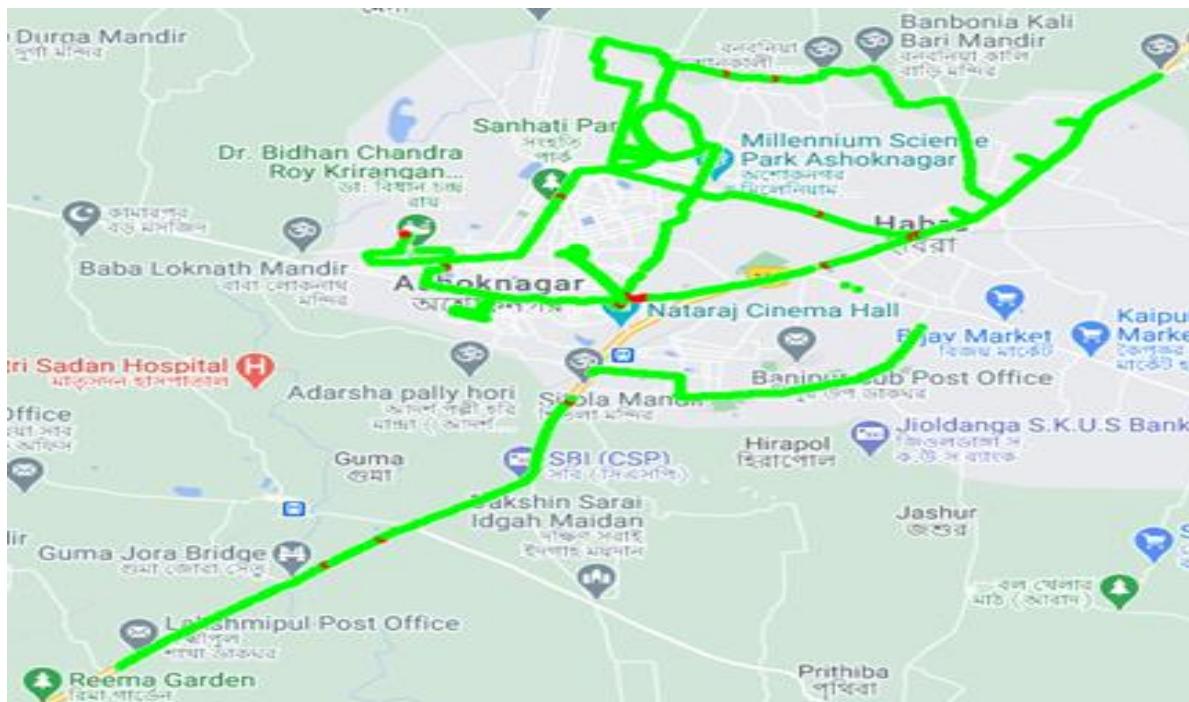
Telecom Regulatory Authority of India has been entrusted with the task of laying down the standards of quality of service to be provided by the service providers and ensuring its enforcement; and also, TRAI is responsible for conducting the periodical audit of such services provided by the service providers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

As per the instructions of TRAI HQ, TRAI Regional Office Kolkata has conducted the drive test with the help of telecom Service Providers of West Bengal LSA (Habra and Ashoknagar Town) on 27th March 2021 covering various locations in Habra and Ashoknagar Town & surrounding region. The performance of Airtel, BSNL, Vodafone Idea Limited (VIL) and RJO were monitored across various technologies (2G, 3G, and 4G).

Technology/ TSP	AIRTEL	BSNL	RJO	VODAFONE-IDEA
2G	YES	YES	NO	YES
3G	NO	YES	NO	YES
4G	YES	NO	YES	YES
TOOL USED	TEMS	NIMO & TEMS	XCAL	TEMS

DRIVE TEST ROUTE MAP FOR VOICE TEST AND DATA TEST---(Habra and Ashoknagar Town)



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, Call Setup Success Rate, Drop Call Rate and Block Call Rate.

Date: Download Throughputs, Data Success Rate and Data Drop Rate.

Drive test details for Habra and Ashoknagar Town: Operator Assisted Drive Test (OADT) was conducted for a period of one working days on 27th March 2021 in Habra and Ashoknagar Town & Surrounding areas including National Highways-112.

Voice Tests: Calls were made for 180 secs duration with wait time of 10 sec between call in all technologies. The drive test covered a drive route of 54 KMs and approximately 55 calls were made for each of the 8 networks. Three 2G (Lock Mode) networks, Two 3G (Lock Mode) networks, Three LTE (Lock Mode) networks covering 4 unique TSPs were tested.

Data Tests: Dynamic Data Service Testing was performed along same route in all technologies. 500KB File for 2G, 20MB file for 3G and 40MB file for 4G were downloaded from FTTP server in TSP's own server. Static Data Service Testing was also performed at one spot (Golbazar). Three 2G (Lock Mode) networks, Two 3G (Lock Mode) networks, Three LTE (Lock Mode) networks covering 4 unique TSPs were tested.

KEY PERFORMANCE INDICATOR OF VOICE CALLS –2G

DRIVE TEST REPORT FOR SHORT CALL (2G)-Habra & Ashoknagar			
KPI	AIRTEL	BSNL	VODAFONE-IDEA
No. SDCCH Attempt	54	***	53
No. SDCCH Block	0	***	0
SDCCH Congestion%	0	***	0
No. TCH Attempt	54	***	53
No. TCH Block	0	***	0
TCH Congestion%	0	***	0
Block Call Rate%	0	***	0
Call Attempt	54	56	53
Call Establish	54	44	53
CSSR%	100	78.57	100
No. of Drop	0	5	0
Drop Call Rate%	0	11.36	0
No. Handover Attempt	101	208	135
No. Handover Fail	0	23	1
HOSR%	100	88.94	99.26
Total Rx Level Samples	2305488	14796	739967
No. Rx Level >= -85 dbm	2238759	9120	715085
Rx Level%(>= -85 dbm)	97.1	61.64	96.64
Total Rx Quality Samples	2305488	7154	720525
Rx Quality =< 5	2223307	6360	699387
Rx Quality%(<= 5)	96.4	88.90	97.07
RLT >=48 %	0%	0%	0%

KEY PERFORMANCE INDICATOR OF VOICE CALLS –3G

DRIVE TEST REPORT FOR SHORT VOICE CALL (3G)		
KPI	BSNL	VODAFONE-IDEA
No. RRC Attempt	37	68
No. RRC Block	0	0
RRC Congestion%	0	0
No. RAB Attempt	37	68
No. RAB Block	0	0
RAB Congestion%	0	0
Block Call Rate%	0	0
Call Attempt	37	68
Call Establish	37	68
CSSR%	100	100
No. of Drop	0	0
Drop Call Rate%	0	0
No. Handover Attempt	566	1038
No. Handover Fail	0	0
HOSR%	100	100
Total Rx Level (RSCP) Level Samples	9496	264430
No. Rx Level (RSCP)>= -90 dbm	3401	213149
Rx Level%(>= -90 dbm)	35.82	80.61
Total Ec/No Samples	9467	261371
No. Ec/ No >= -14 dbm	6098	252410
Ec/No%(>= -14 dbm)	64.41	96.57

KEY PERFORMANCE INDICATOR OF VOICE CALLS –4G

DRIVE TEST REPORT FOR SHORT VOICE CALL (4G)			
KPI	Airtel	RJIO	VODAFONE-IDEA
No. RRC Attempt	54	47	69
No. RRC Block	0	0	0
RRC Congestion%	0	0	0
No. RAB Attempt	54	175	69
No. RAB Block	0	0	0
RAB Congestion%	0	0	0
Block Call Rate%	0	0	0
Call Attempt	54	61	69
Call Establish	54	61	69
CSSR%	100	100	100
No. of Drop	0	0	0
Drop Call Rate%	0	0	0
No. Handover Attempt	205	368	82
No. Handover Fail	0	4	0
HOSR%	100	98.91	100

Total Rx Level (RSRP) Level Samples	2372946	12631	1158392
No. Rx Level (RSRP)>= -110 dbm	2333368	12592	1051582
Rx Level%(>= -110 dbm)	98.3	99.69	90.78
Total SINR Samples	2510401	12631	1158719
No. SINR > 0	2446693	11228	1039273
SINR%(> 0)	97.5	88.89	89.69

KEY PERFORMANCE INDICATOR OF DATA SERVICE –2G

Download Speed-2G (LOCKED MODE)- FILE SIZE- 500KB			
TSPS	AIRTEL	BSNL	VODAFONE-IDEA
AVG. SPEED Kbps	101.2	48	134.59
% OF SAMPLES >100 Kbps	95.10	5.48	67.44
TOTAL DATA TRANSFER ATTEMPTS	124	95	88
TOTAL DATA TRANSFER SUCCESS	124	67	86
FILE TRANSFER REQUEST	124	63	86
FILE TRANSFER COMPLETE	124	44	86
FILE DOWNLOAD SUCCESS RATE%	100	46.32	97.73

KEY PERFORMANCE INDICATOR OF DATA SERVICE –3G

Download Speed-3G (LOCKED MODE)- FILE SIZE- 20 MB		
TSPS	BSNL	VODAFONE-IDEA
AVG. SPEED Mbps	2.1	1.49
% OF SAMPLES > 1Mbps	49.14	56.68
TOTAL DATA TRANSFER ATTEMPTS	80	187
TOTAL DATA TRANSFER SUCCESS	57	187
FILE TRANSFER REQUEST	57	187
FILE TRANSFER COMPLETE	52	187
FILE DOWNLOAD SUCCESS RATE%	65	100

KEY PERFORMANCE INDICATOR OF DATA SERVICE –4G

Download Speed-4G (LOCKED MODE)- FILE SIZE- 40 MB			
TSPS	Airtel	RJIO	VODAFONE-IDEA
AVG. SPEED Mbps	4.97	4.71	5.80
% OF SAMPLES > 2 Mbps	95.71	87.11	58.92
TOTAL DATA TRANSFER ATTEMPTS	246	126	185
TOTAL DATA TRANSFER SUCCESS	246	122	185
FILE TRANSFER REQUEST	246	126	185
FILE TRANSFER COMPLETE	246	121	185
FILE DOWNLOAD SUCCESS RATE%	100	96.03	100

STATIC DATA SERVICE TESTING (on Hotspot)

Service	Specifications
Download	2G (Locked) - 500KB ,3G(Locked)- 20 MB, 4G (Locked)- 40MB
Upload	2G (Locked) - 500KB ,3G(Locked)- 20 MB, 4G (Locked)- 40MB
Web browsing	3 links of e commerce websites https://www.amazon.in,https://www.flipkart.com, https://paytm.com.
Video Streaming	130 sec clip
Latency	32 Bytes on www.google.com.

Hotspot Location- (GOLBAZAR)

2G GSM NETWORK--			
TSP	AIRTEL	BSNL	VODAFONE-IDEA
Download throughput in Kbps	146.2	45	227
Upload Throughput in Kbps	56.3	30	67.52
Web browsing delay in secs	23	***	24
Latency in (msec)	187	***	221

3G UMTS NETWORK		
TSP	BSNL	VODAFONE-IDEA
Download throughput in Mbps	2.38	1.84
Upload Throughput in Mbps	1.19	1.62
Video streaming delay in secs	***	0.9
Web browsing delay in secs	***	18.31
Latency in (msec)	***	102

4G LTE NETWORK			
TSP	AIRTEL	RJIO	VODAFONE-IDEA
Download throughput in Mbps	17.01	13.85	5.32
Upload Throughput in Mbps	3.02	5.03	7.76
Video streaming delay in secs	0.46	0.51	0.48
Web browsing delay in secs	1.67	4.01	12.2
Latency in (msec)	49.8	65.5	73

MAIN OBSERVATIONS ON THE OPERATOR ASSIST DRIVE TEST—

Key Performance Indicators: (Voice Calls)—2G, 3G & 4G networks--

2G VOICE- All TSPs have met all the benchmarks of KPIs except BSNL-(CSSR, Drop call rate, HOSR and Rx Quality).

3G VOICE- All TSPs have met all the benchmarks of KPIs except BSNL-(Ec/ No).

4G VOICE- All TSPs have met all the benchmarks of KPIs except RJIO-(SINR) and VODAFONE-IDEA(SINR)

Dynamic Data Download from FTTP Server--2G, 3G & 4G networks--

2G DATA-- All TSPs have met all the benchmarks of performance indicators of dynamic data download except BSNL (File download success rate and Throughput).

3G DATA-- All TSPs have met all the benchmarks of performance indicators of dynamic data download except BSNL (File download success rate).

4G DATA-- All TSPs have met all the benchmarks of performance indicators of dynamic data download.

Static Data Service Testing --2G, 3G & 4G networks--

2G DATA- Download throughput and upload throughput of BSNL are low compared to specifications.

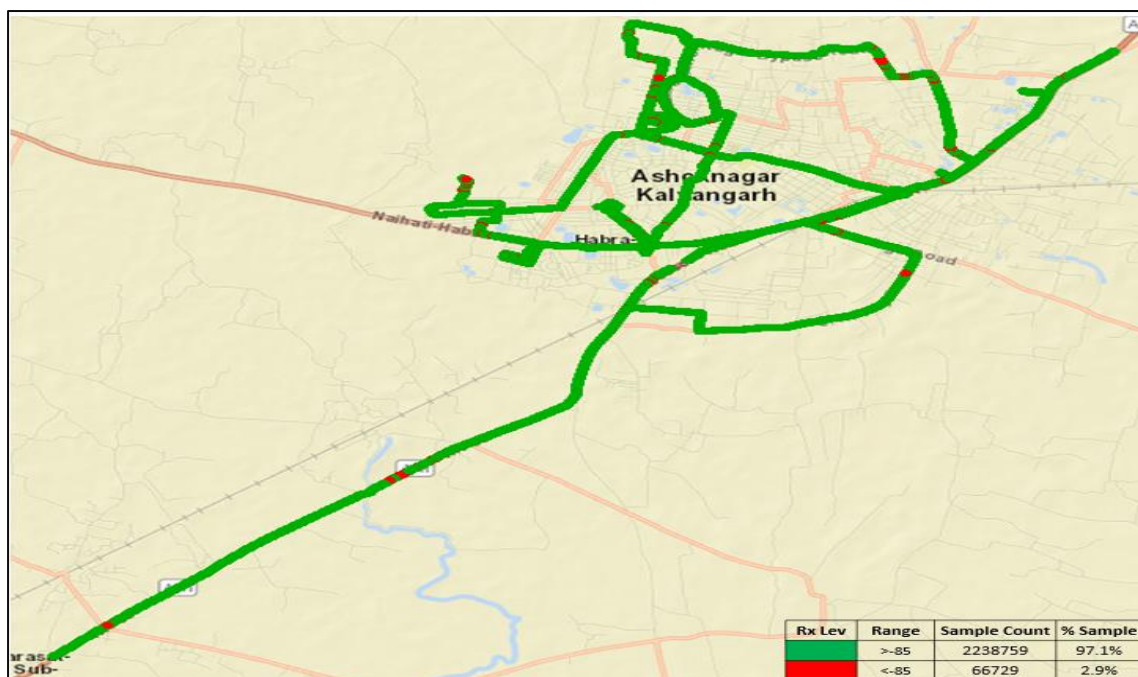
3G DATA- Web browsing delay of Vodafone-Idea is high compared to specifications.

4G DATA- Web browsing delay of Vodafone-Idea is high compared to specifications.

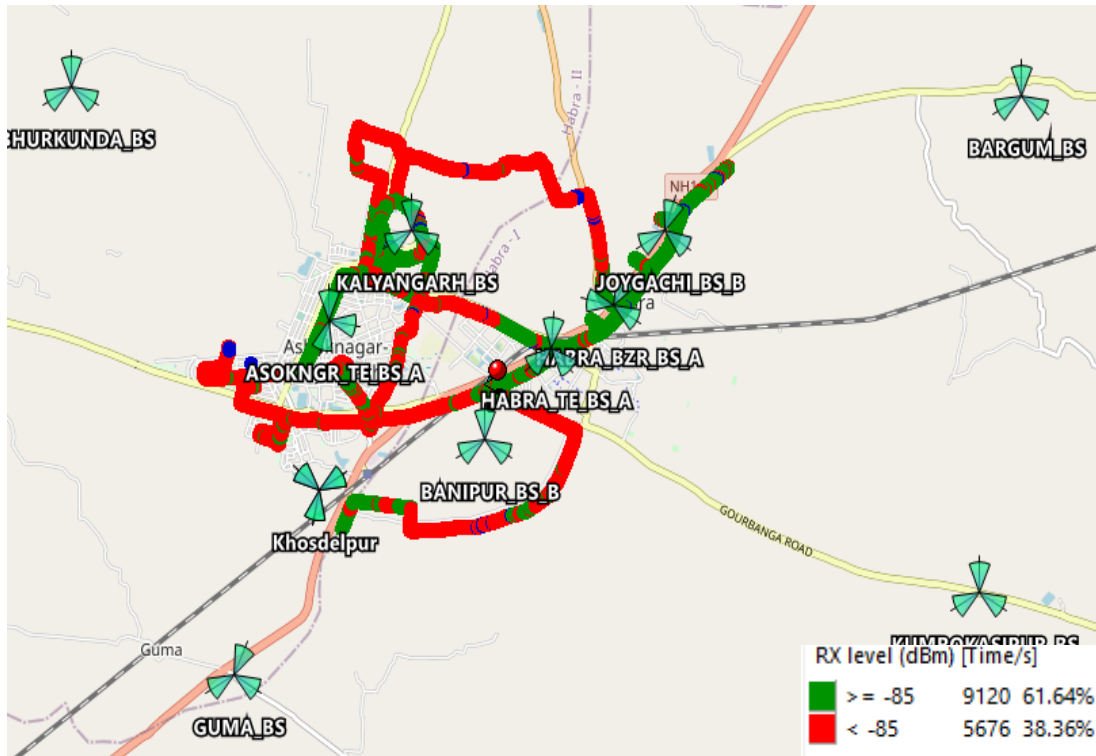
***** => BSNL did not provide the data of the drive test.**

2G COVERAGE PLOT (RX LVL) ---

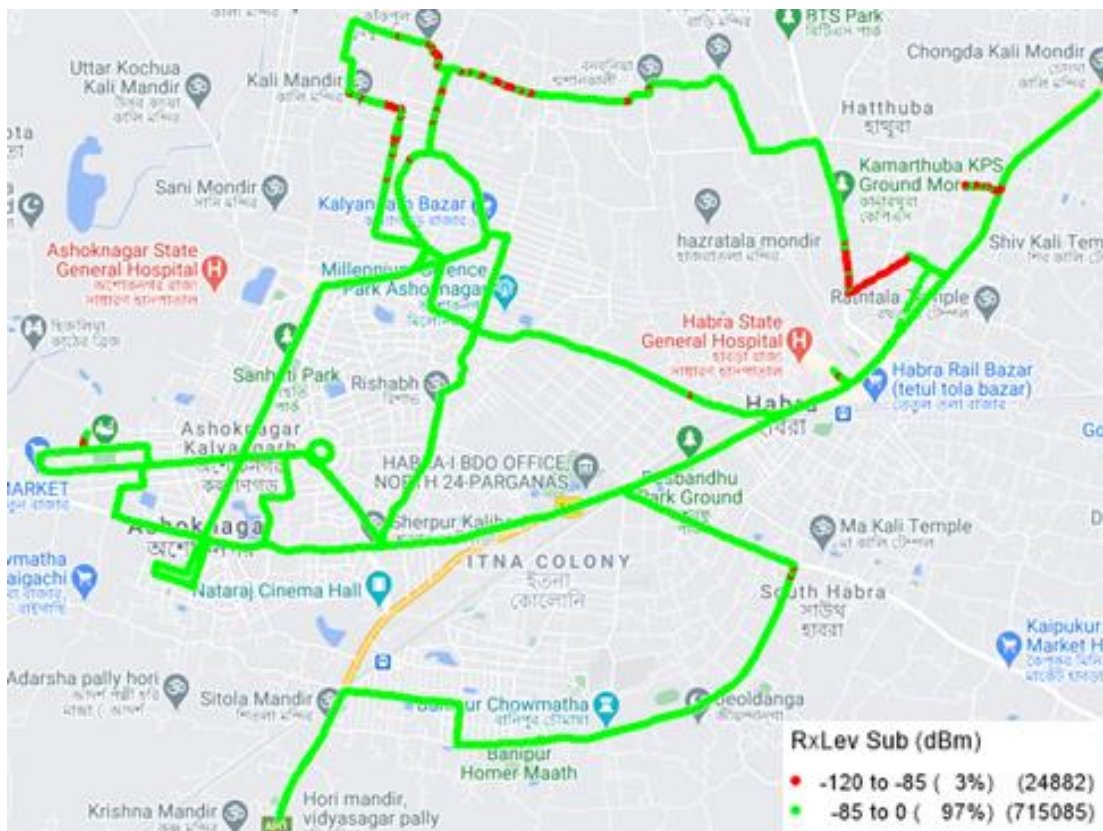
AIRTEL— HABRA & ASHOKNAGAR TOWN



BSNL— HABRA & ASHOKNAGAR TOWN

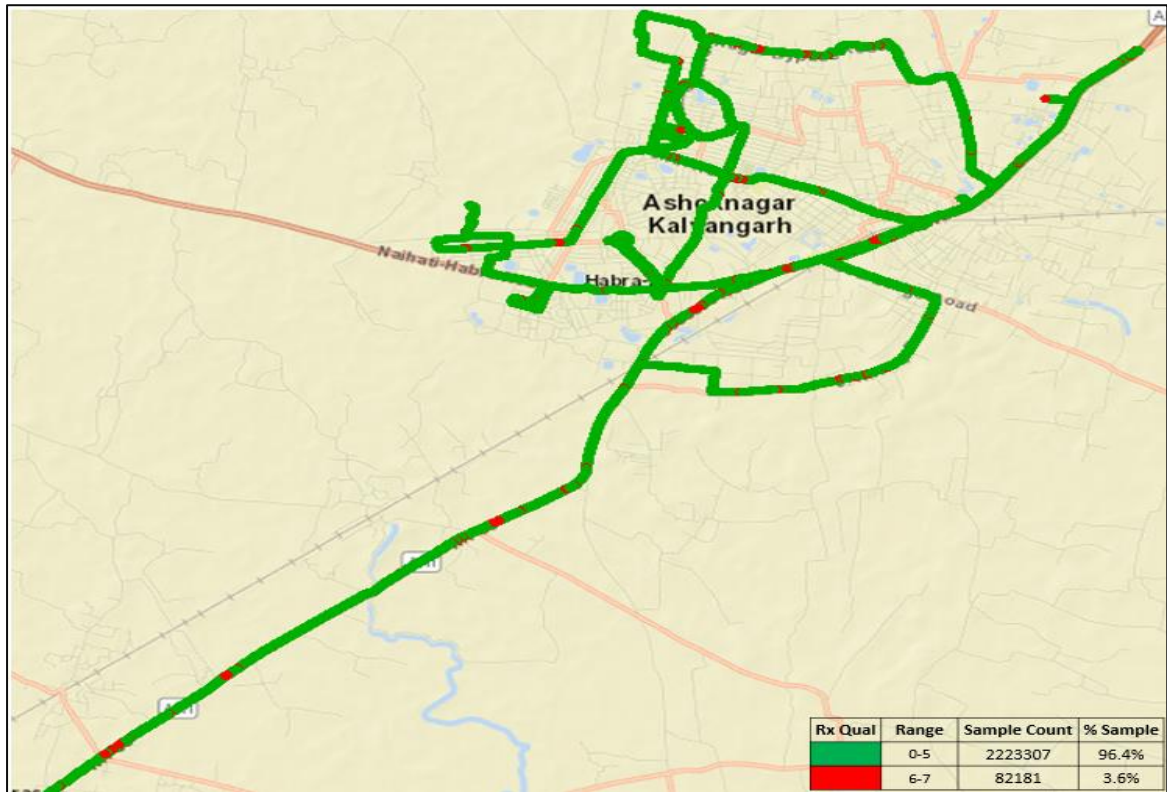


VODAFONE— HABRA & ASHOKNAGAR TOWN

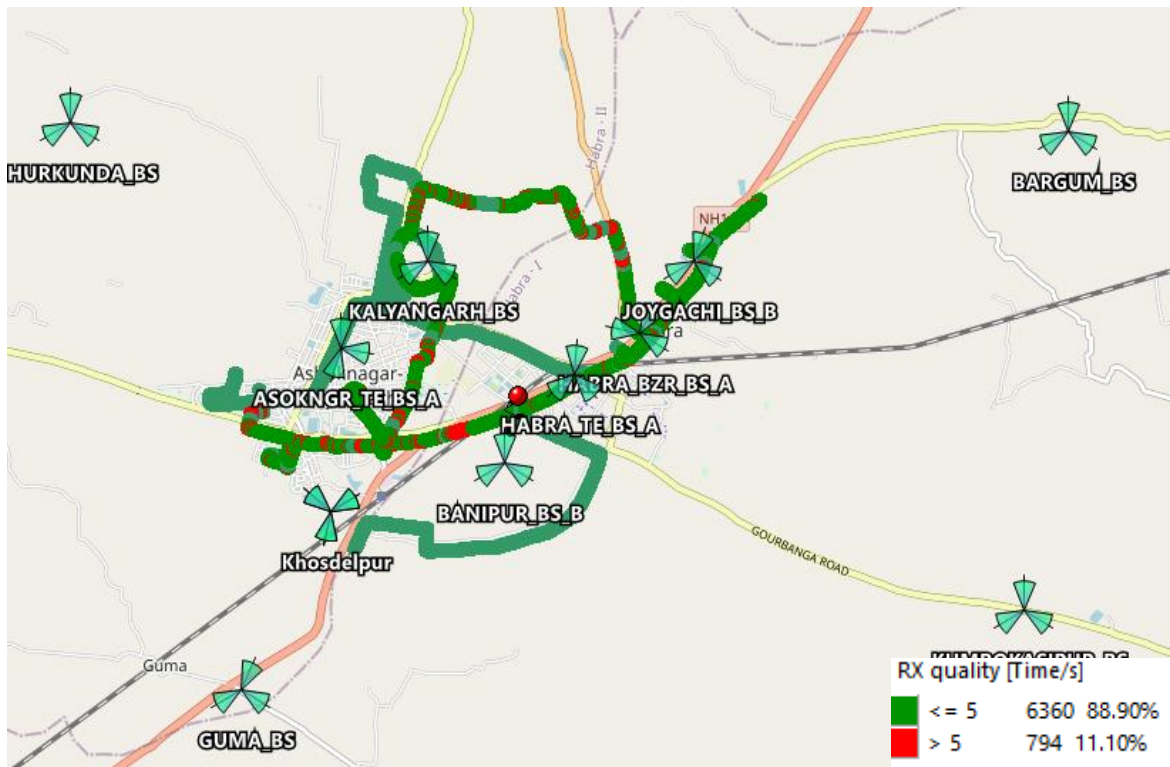


2G RX QUALITY PLOT—

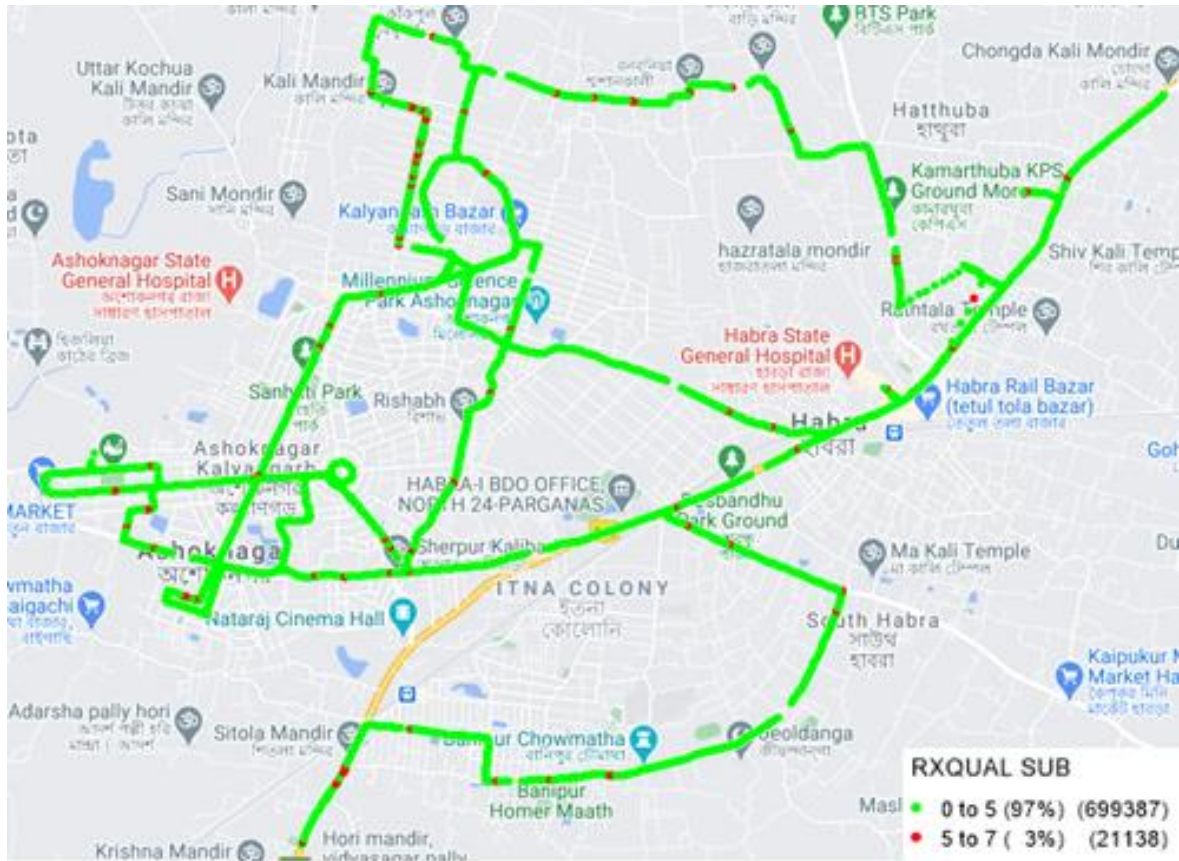
AIRTEL—HABRA & ASHOKNAGAR TOWN



BSNL-- HABRA & ASHOKNAGAR TOWN

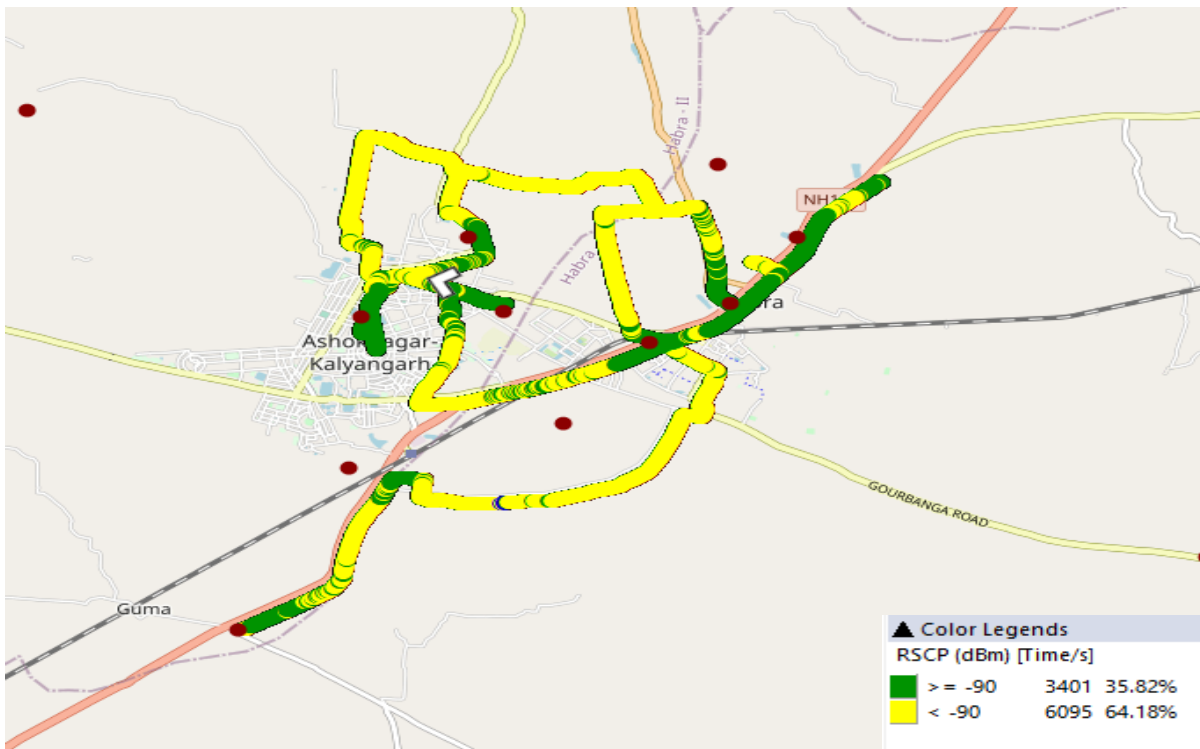


VODAFONE-- HABRA & ASHOKNAGAR TOWN

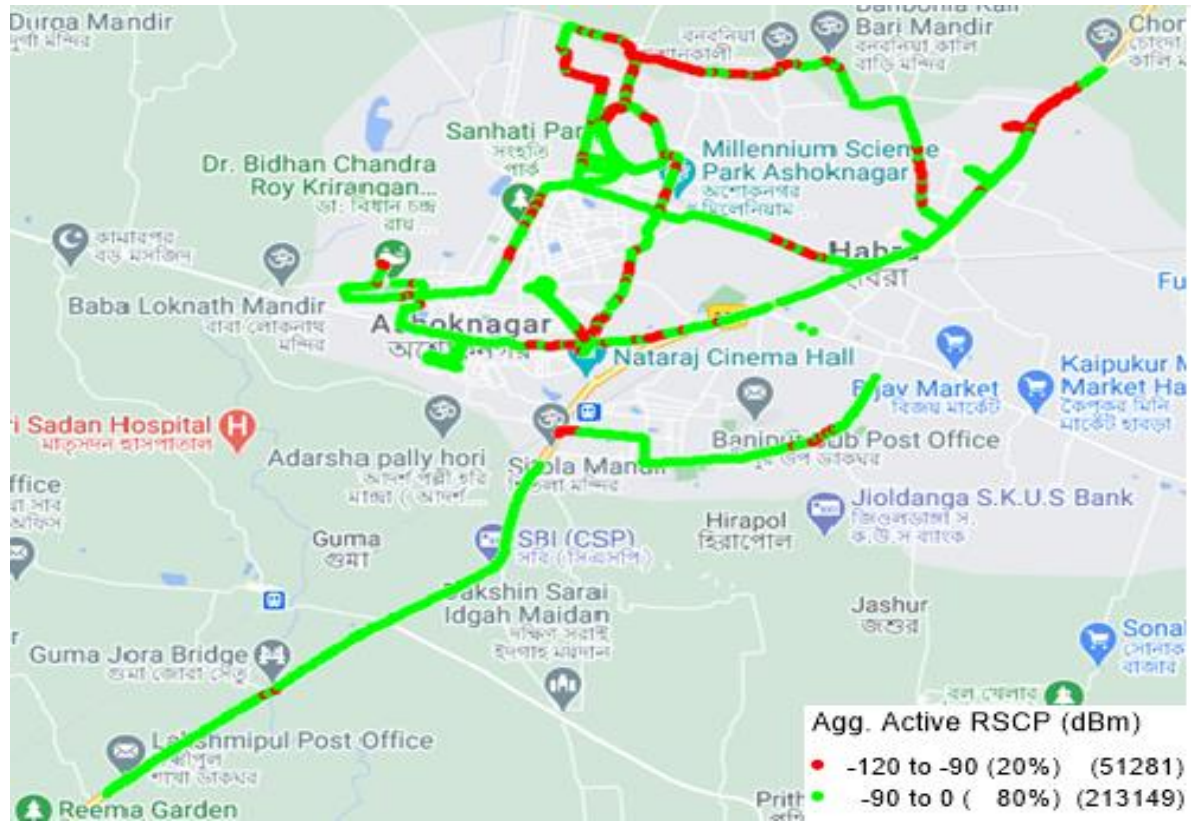


3G COVERAGE PLOT (RSCP)---

BSNL-- HABRA & ASHOKNAGAR TOWN

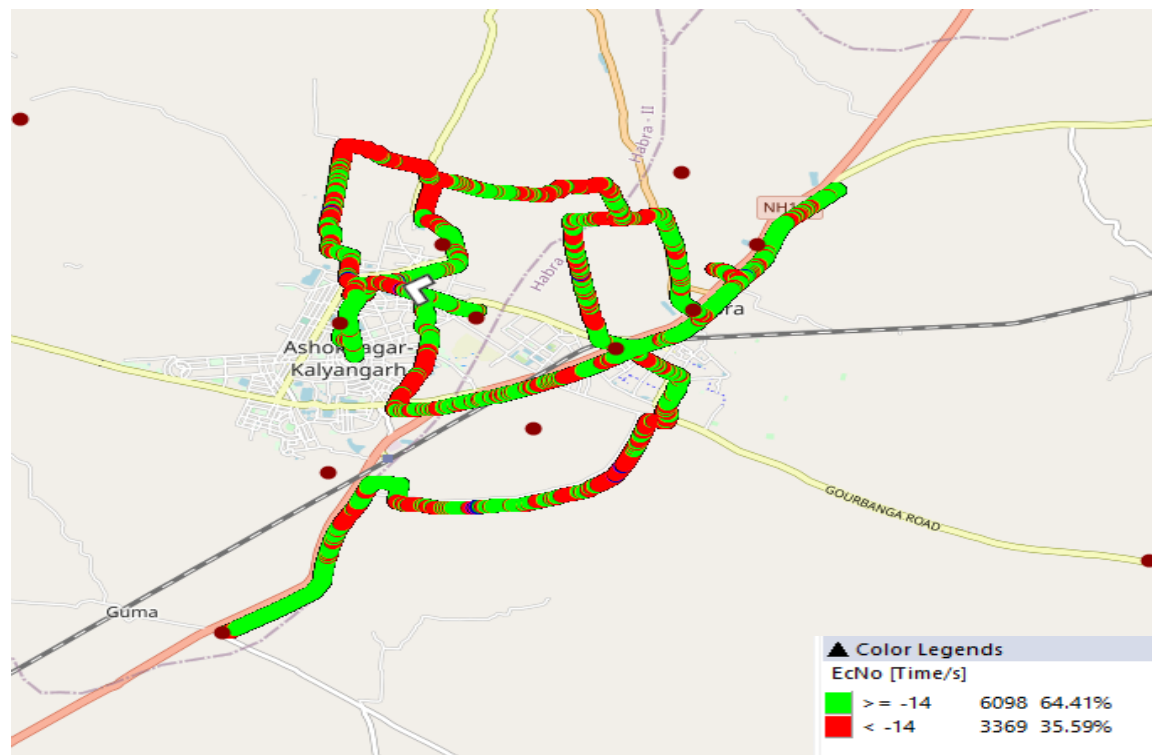


VODAFONE-- HABRA & ASHOKNAGAR TOWN

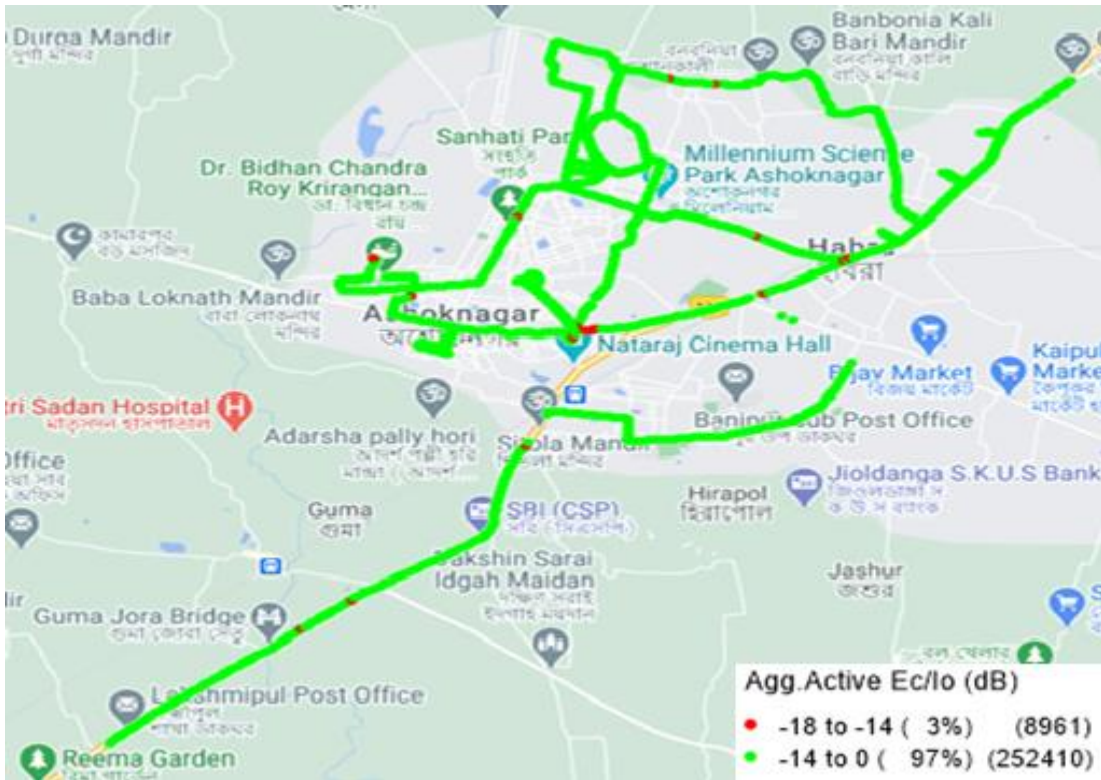


3G RX QUALITY PLOT (Ec/No)—

BSNL-- HABRA & ASHOKNAGAR TOWN

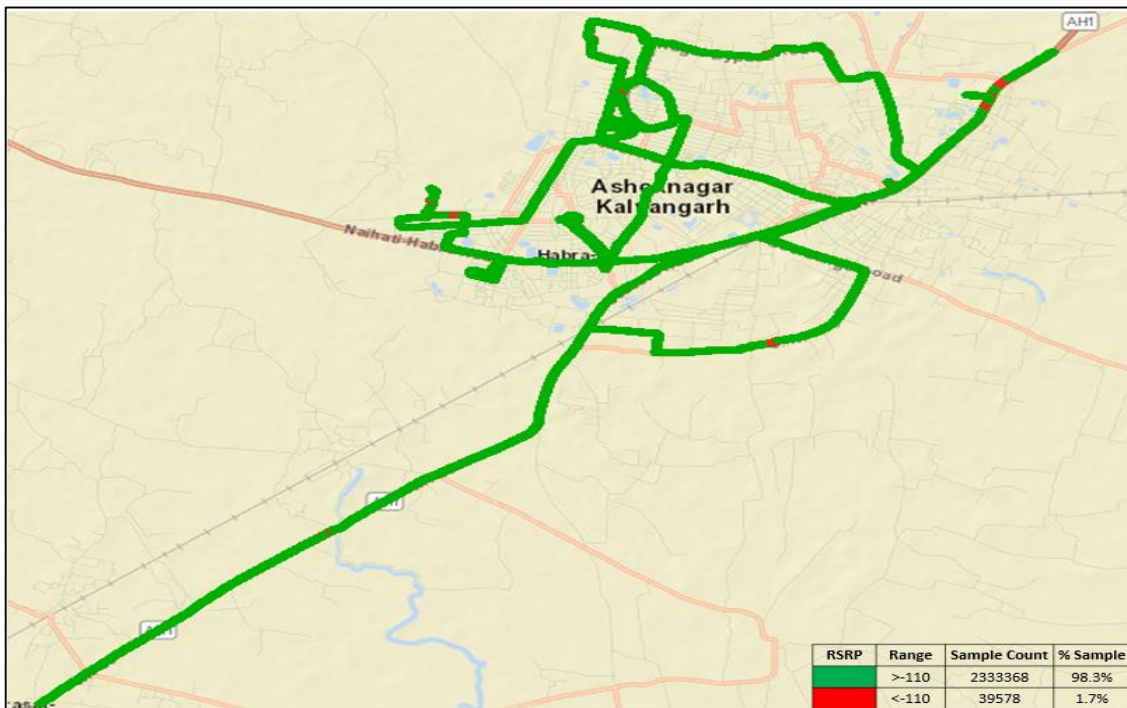


VODAFONE-- HABRA & ASHOKNAGAR TOWN



4G COVERAGE PLOT (RSRP)---

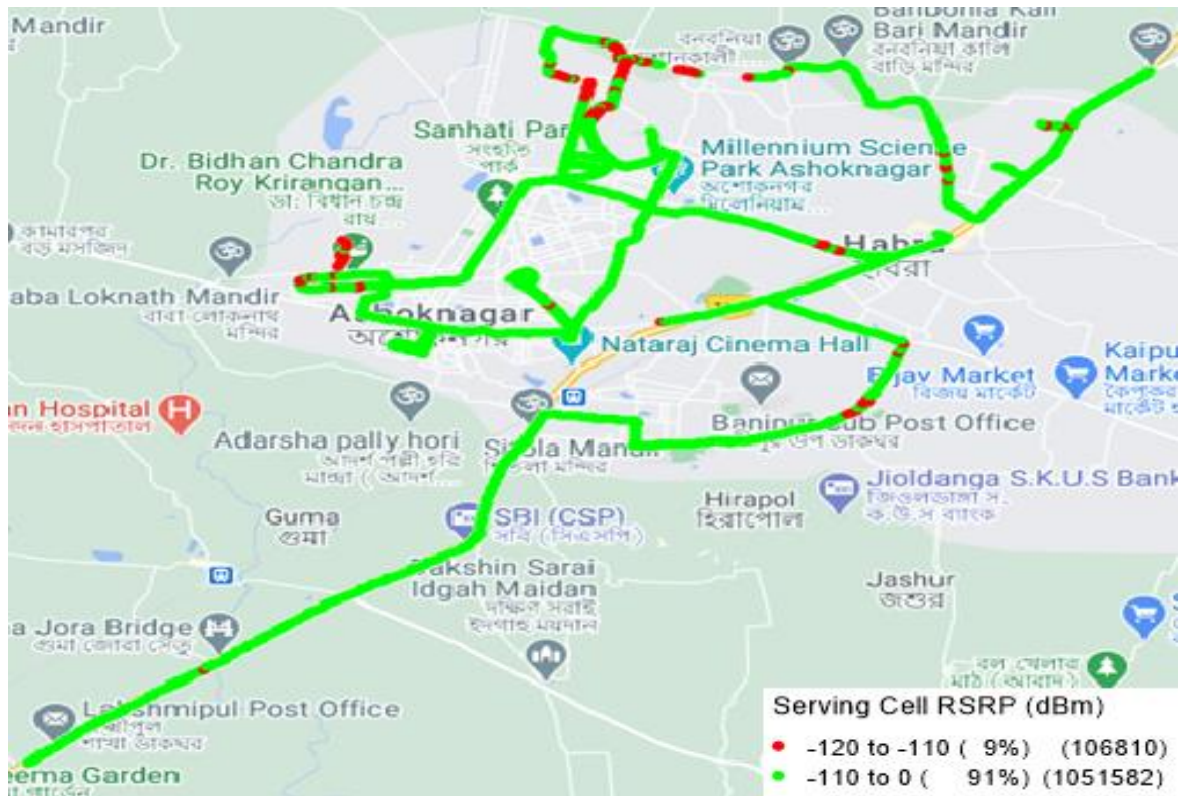
AIRTEL-- HABRA & ASHOKNAGAR TOWN



RJIO-- HABRA & ASHOKNAGAR TOWN

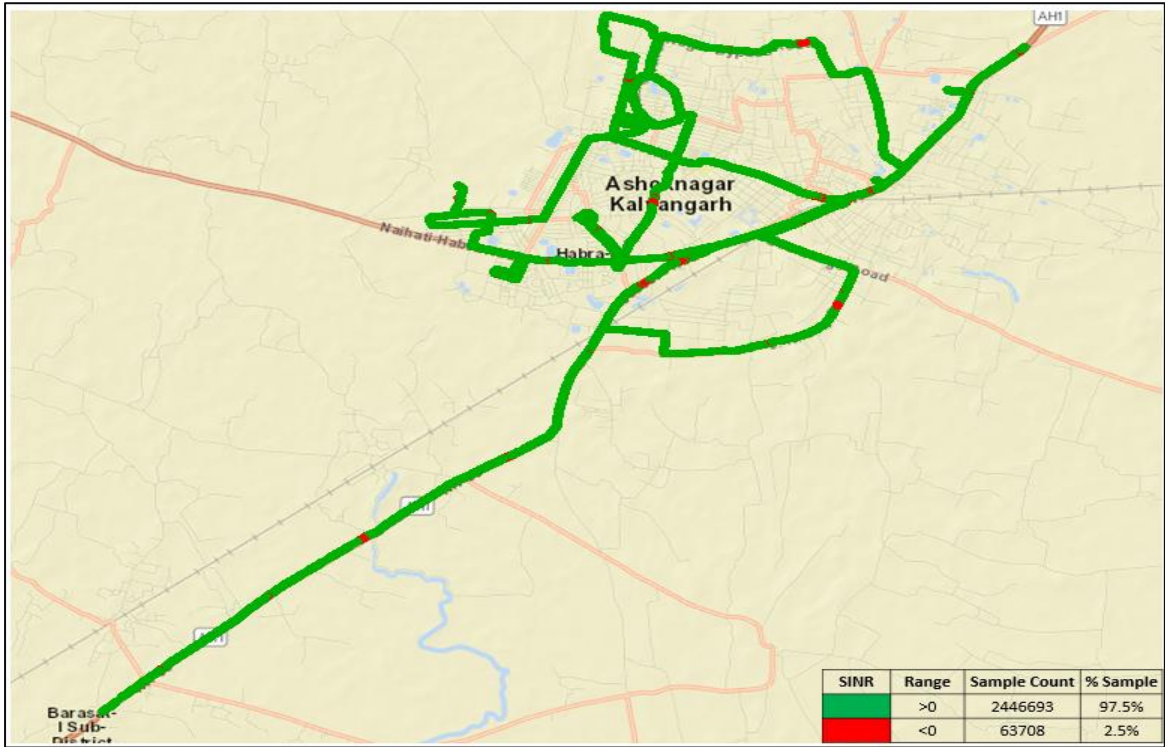


VODAFONE-- HABRA & ASHOKNAGAR TOWN

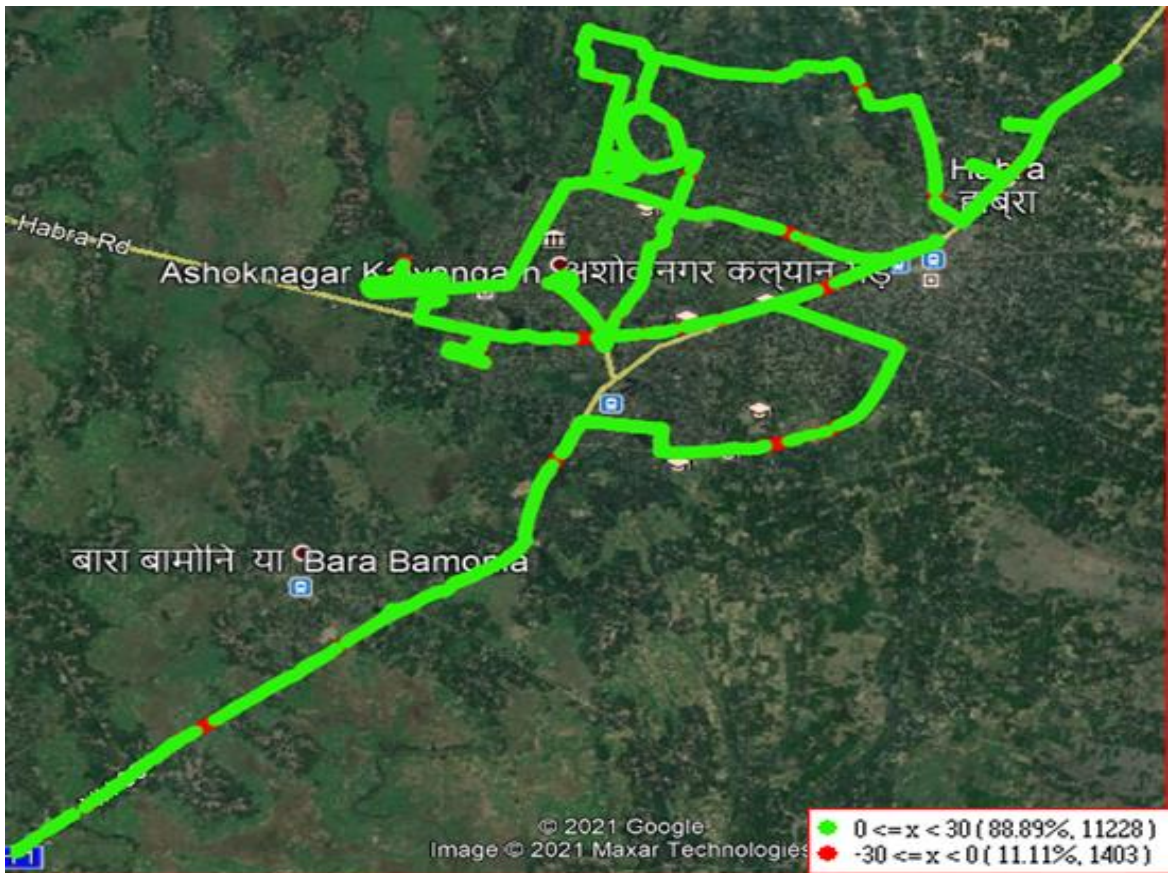


4G RX QUALITY PLOT (SINR)---

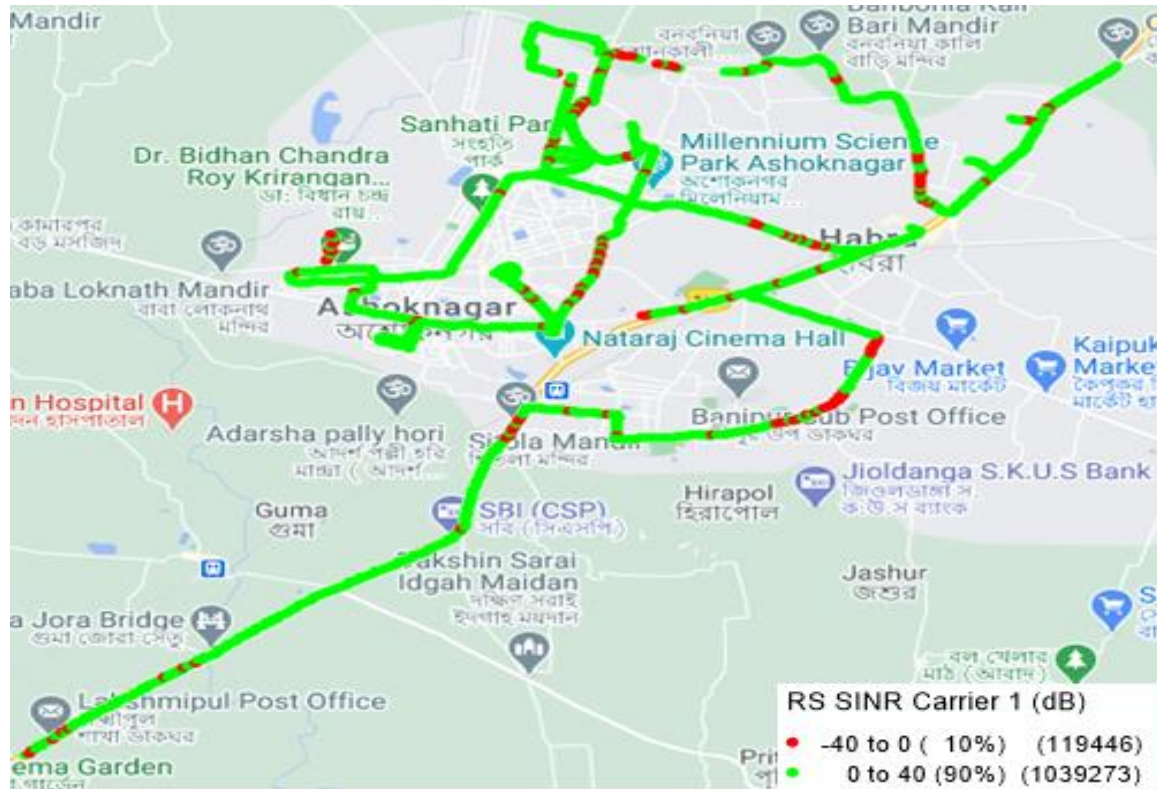
AIRTEL— HABRA & ASHOKNAGAR TOWN



RJIO— HABRA & ASHOKNAGAR TOWN

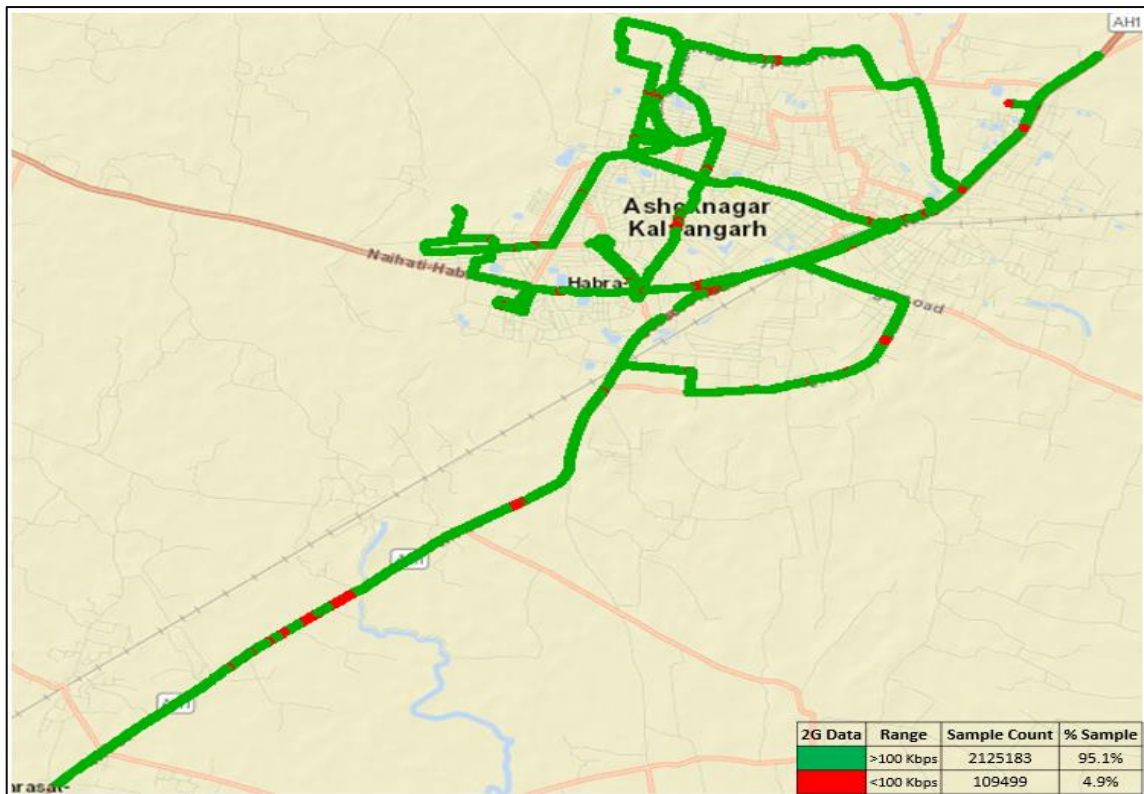


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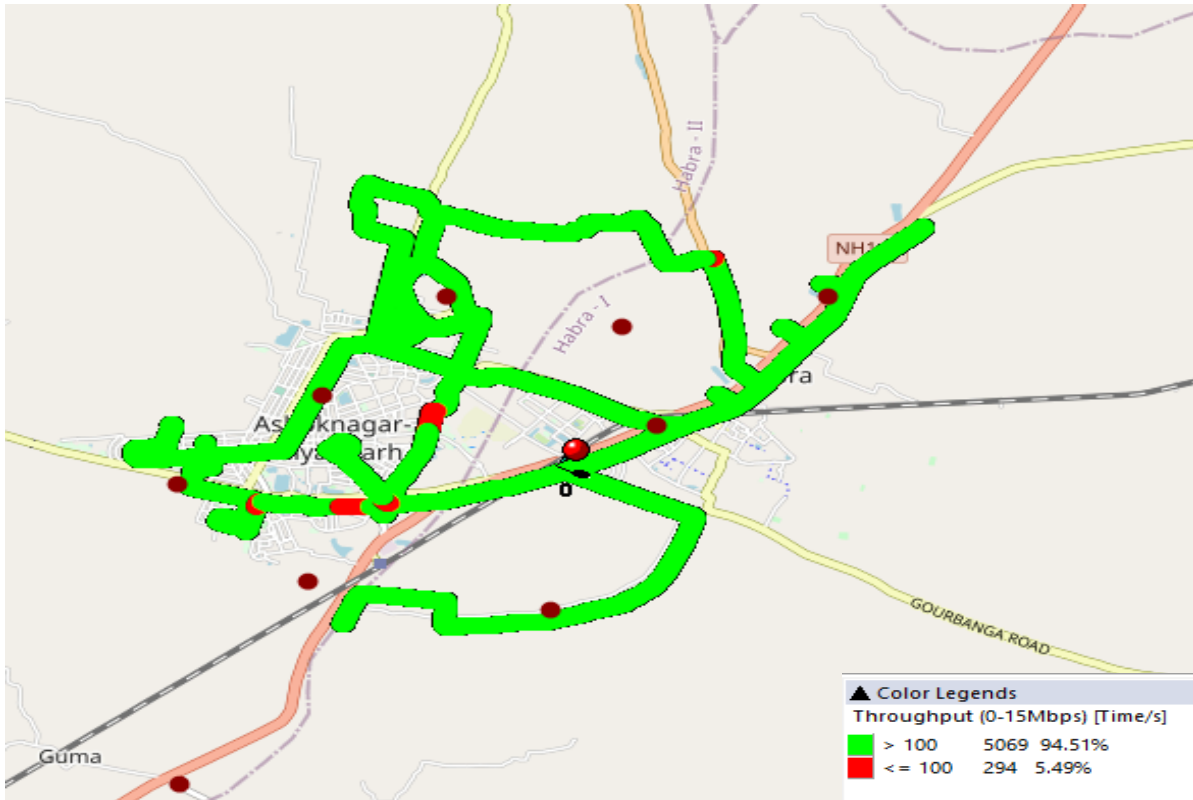


DATA DOWNLOAD THROUGHPUT PLOT—2G

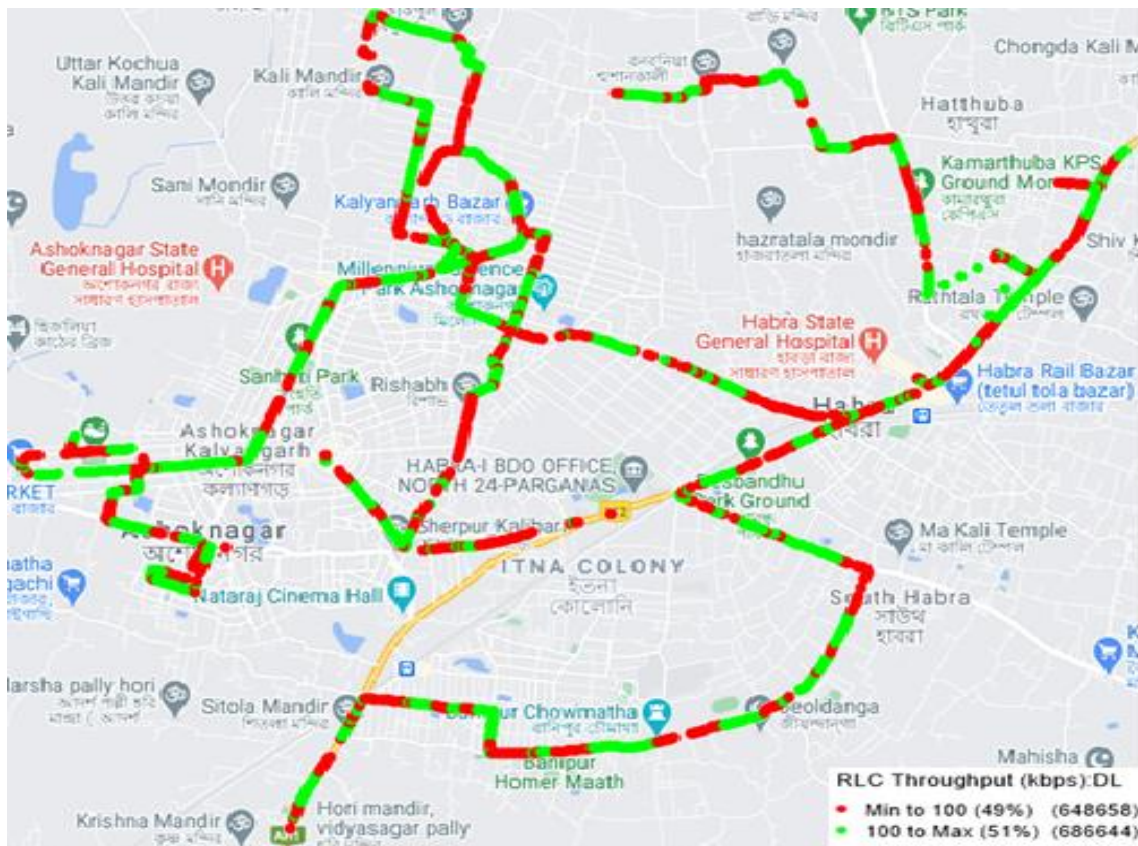
AIRTEL-- HABRA & ASHOKNAGAR TOWN



BSNL-- HABRA & ASHOKNAGAR TOWN

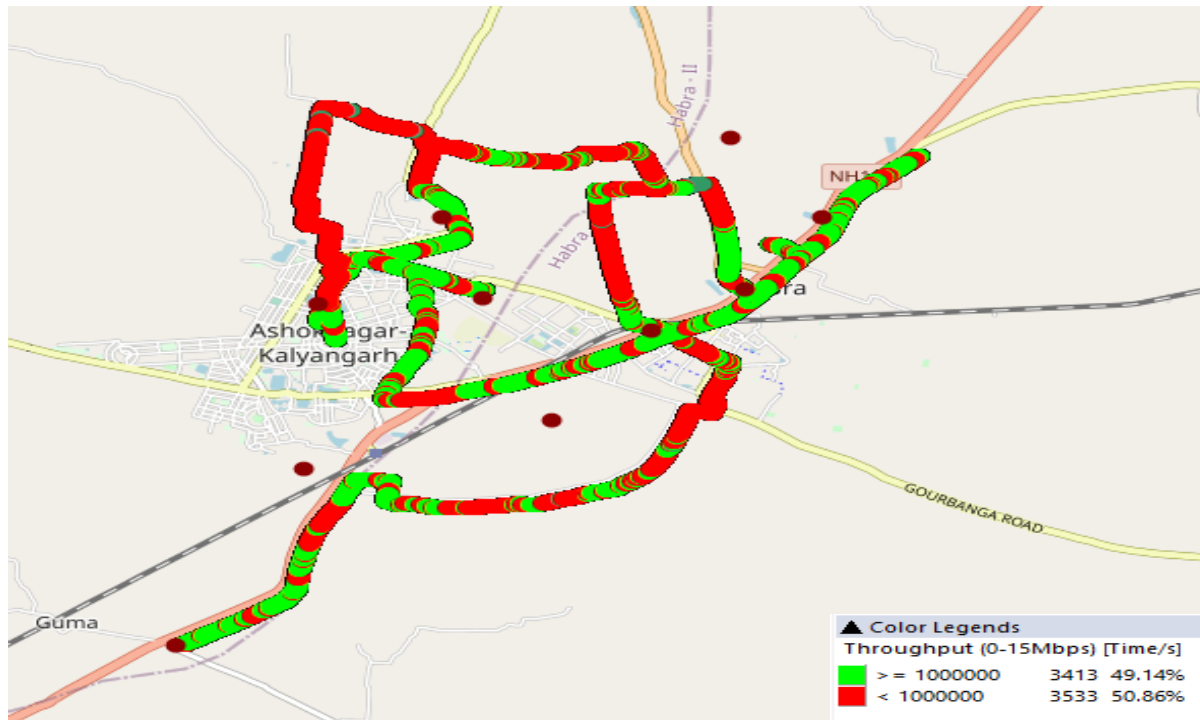


VODAFONE— HABRA & ASHOKNAGAR TOWN

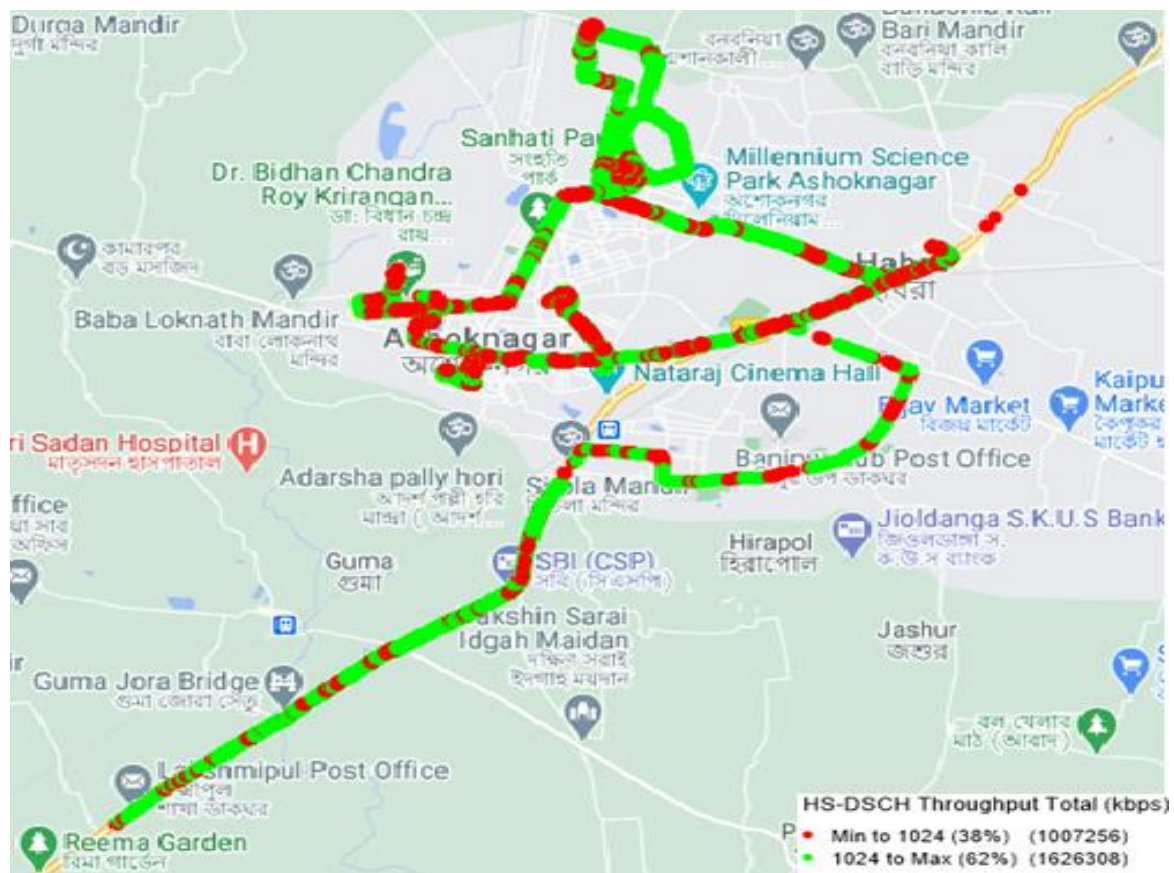


DATA DOWNLOAD THROUGHPUT PLOT—3G

BSNL-- HABRA & ASHOKNAGAR TOWN

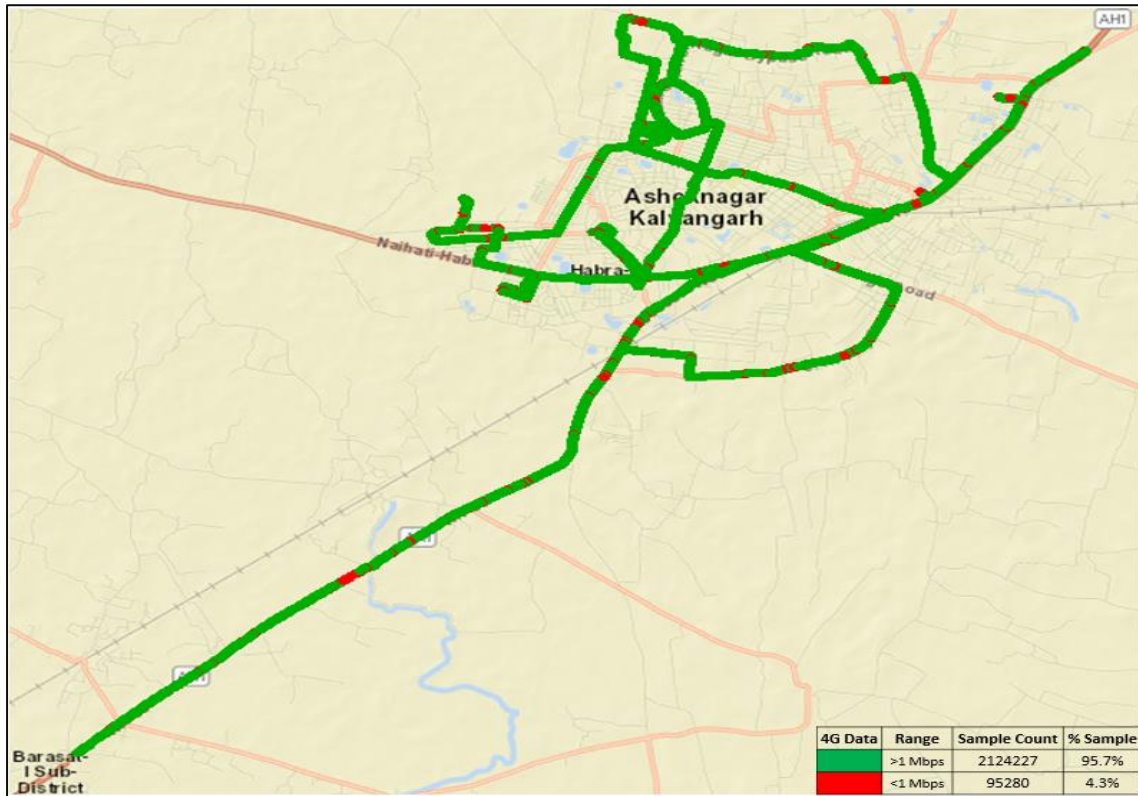


VODAFONE-- HABRA & ASHOKNAGAR TOWN

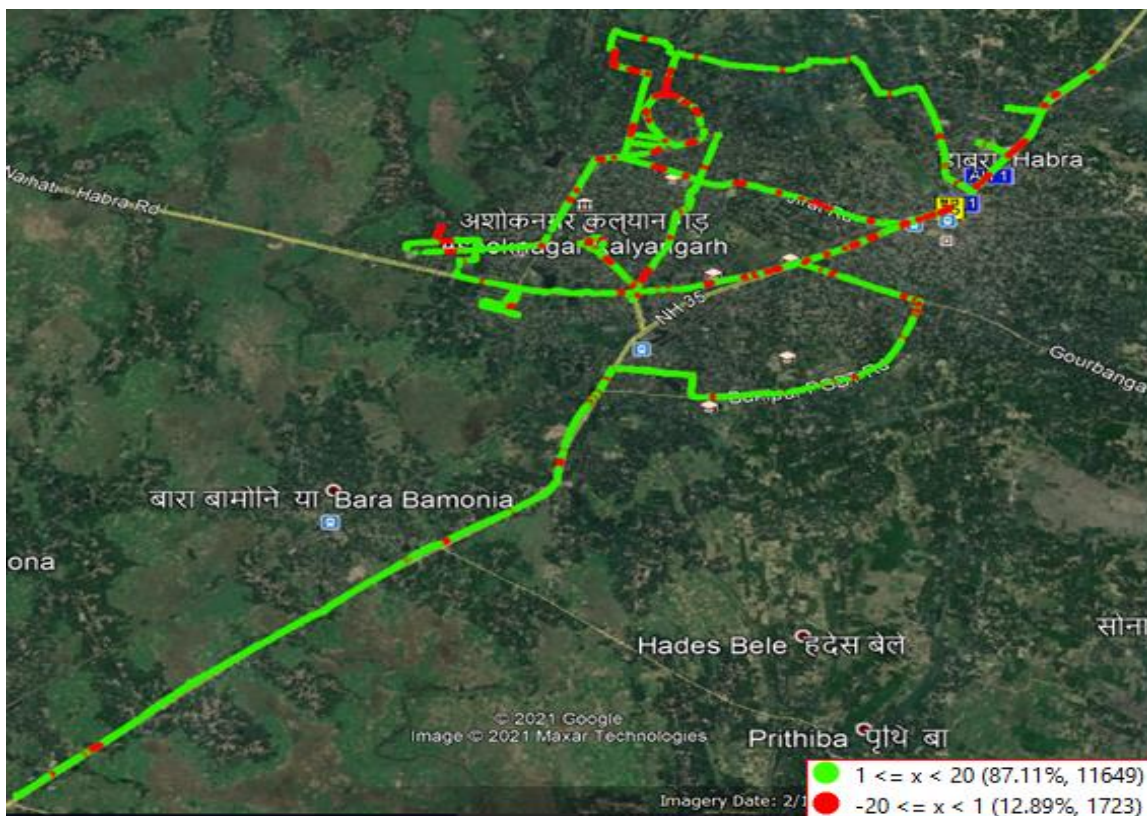


DATA DOWNLOAD THROUGHPUT PLOT—4G

AIRTEL-- HABRA & ASHOKNAGAR TOWN



RJIO-- HABRA & ASHOKNAGAR TOWN



VODAFONE— HABRA & ASHOKNAGAR TOWN

