



TELECOM REGULATORY AUTHORITY OF INDIA

Independent Drive Test Report

West Bengal LSA

February 2026

Contents

- 1. Introduction 3
- 2. Executive Summary (LSA) 3
 - 2.1 Drive test details 3
 - 2.2 Drive test routes 4
 - 2.3 Summary of areas covered 4
 - 2.4 Telecom service providers detected frequency bands 5
 - 2.5 Performance against key QoS parameters 6
- 3. QoS performance analysis-LSA level 7
 - 3.1 Overview 8
 - 3.2 Voice performance 8
 - 3.3 Data performance 11
- 4. Detailed QoS performance analysis 13
 - 4.1 Overview 13
 - 4.2 City 13
 - 4.2.1 Drive test route 13
 - 4.2.2 Areas covered 13
 - 4.2.3 Voice performance 14
 - 4.2.4 Data performance 22
 - 4.3 Hotspots 26
 - 4.3.1 Locations 26
 - 4.3.2 Hotspot covered 26
 - 4.3.3 Voice performance 27
 - 4.3.4 Data performance (Auto-selection mode 5G/4G/3G/2G) 32
 - 4.3.5 Data performance (5G Only & 4G Only Download & Upload Speed) 42
 - 4.4 Walk Test 48
 - 4.4.1 Walk test locations 48
 - 4.4.2 Walk Test Covered 48
 - 4.4.3 Voice Performance 48
 - 4.4.4 Data Performance 53
 - 4.5 Highway 56
 - 4.5.1 Drive test route 56
 - 4.5.2 Routes Covered 56
 - 4.5.3 Voice performance 56
 - 4.5.4 Data performance 65

4.6 Railway	69
4.6.1 Drive test route	69
4.6.2 Routes Covered	69
4.6.3 Voice performance	69
4.6.4 Data performance	73
5. Voice & Data Key findings	77
5.1 Overall Voice	77
5.2 Overall Data	77
5.3 Operator wise Key Findings	78
6. Annexure	84
6.1 Route wise coverage map	84
6.1.1 City	84
6.1.2 Highway	89
6.1.3 Railway	95
7. Appendix	99
7.1 Appendix-I	99
7.1.1 Drive test setup	99
7.1.2 Drive test Methodology	101
7.2 Appendix-II	103
7.2.1 Network Performance Parameters for Voice calls	103
7.2.2 Network Performance Parameters Data tests	104

1. Introduction

TRAI Act, 1997 mandates the Authority to ensure the services delivered through various telecommunications networks meet the required quality standards prescribed, to protect the interest of the consumers of telecommunication services. TRAI is also responsible for conducting the periodical audit of such services provided by the service providers so as to protect the interests of the consumers of telecommunications services.

Accordingly, TRAI has engaged M/s RedMango Analytics Pvt. Ltd. to undertake assessment of Quality of Service of mobile service through Independent Drive Test (IDT).

In IDT, the performance of all service providers providing service in a Licensed Service Area (LSA) through various technologies (like 2G/ 3G/ 4G/ 5G) for voice and data are measured by conducting drive test. The drive test routes are finalised based on various objective criteria like reported network performance, consumer complaints etc. Methodology adopted for conducting IDT is elaborated in **APPENDIX-I**.

2. Executive Summary (LSA)

2.1 Drive test details

This report covers the findings of the IDT undertaken in West Bengal License Service Area (LSA) during the month of February-2026 under the supervision of TRAI Regional Office (RO) Kolkata. Details of route/area covered during the IDT are as given below:

S. No	Drive test route	Type of route	Distance covered (KMs)	From date	To date
1	Cities & adjoining areas of North 24 Parganas and Nadia District	City	436.3	16-Feb-2026	19-Feb-2026
2	Barasat	Inter Operator Calling	1 Location	21-Feb-2026	21-Feb-2026
3	Cities & adjoining areas of North 24 Parganas and Nadia District; Barasat to Raiganj Highway	Hotspot	28 Locations	12-Feb-2026	21-Feb-2026
4	Cities & adjoining areas of North 24 Parganas and Nadia District	Walk test	4.4	18-Feb-2026	19-Feb-2026
5	Barasat to Raiganj	Highway	363.6	11-Feb-2026	12-Feb-2026
6	Howrah to Bardhaman via Bandel	Railway	107.3	10-Feb-2026	10-Feb-2026

Table-1: Drive test summary.

2.2 Drive test routes

The map provides overview of drive test routes indicating city drive, Inter-operator call test, hotspots, walk test, highway and railway as per the legends shown on the map.

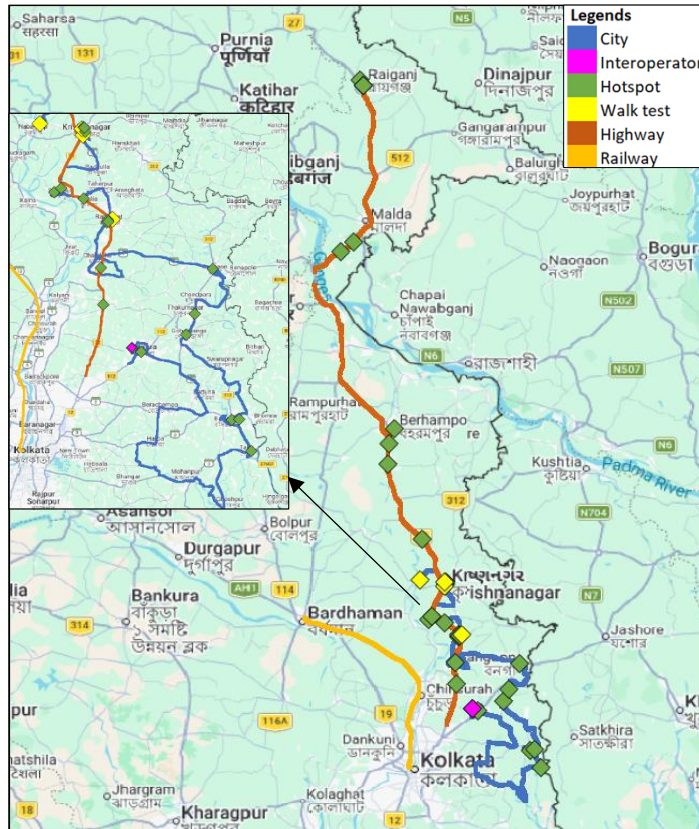


Figure-1: Drive test routes

2.3 Summary of areas covered

a) City- Habra, Kankpul, Sherpur More, South Habra, Bagjola, Gurudaha, Kholapota, Berachampa, Haroa, Minakhan, Nazat, Kharampur, Hasnabad, Basirhat, Akharpur, Aturia, Tentulia, Maslandapur, Dhakuria, Angrail, Bangaon, Chakadaha, Simurali, Ranaghat, Birnagar, Krishana Nagar, Gobindapur, Badkulla, Kanthaliath and Mayapur etc.

b) Hotspot

1. Ashoknagar State General Hospital Ashoknagar Kalyangarh
2. Basirhat Court Basirhat
3. Basirhat Super Speciality Hospital Itinda Basirhat
4. Beldanga-I B.D.O. Office Sarulia
5. Bethuadahari Wildlife Sanctuary Segun Bagan Rd Bethuadahari Rajendranagar, Bethuadahari
6. Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon
7. Central Sericulture Raninagar Chuapur Berhampore
8. Dhaanyaganga Krishi Vigyan Kendra Sargachi Mission Bus Stop NH 12 Sargachhi Mahishasthali
9. Fulia Tant Saree Hat NH 12 Belemath Phulia
10. Gobardanga Hindu College Jamdani Gobardanga
11. JMN Medical College and Hospital Panchpota Chakdaha Ektarpur
12. Kaliachak-I B.D.O. Office Malda Baliadanga
13. Krishnagar Collegiate School Rabindra Nath Tagore Rd Krishnagar

14. Krishnanagar Head Post Office Rn Tagore Road More Krishnanagar
15. Krishnanagar Palace Krishnanagar
16. Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai
17. Maulana Abul Kalam Azad University of Technology Haringhata Farm
18. Raiganj Government Medical College and Hospital
19. Raiganj Post Office
20. Ranaghat College Old Berhampore Rd Ranaghat
21. Ranaghat Session Court Ranaghat
22. Ranaghat Sub-Divisional Hospital Sreenath Pur Ranaghat
23. Santipur Hat Santipur
24. Santipur State General Hospital Santipur
25. Sree Chaitanya College Habra Bokavhoda Habra
26. Sujapur Primary Health Centre Sujapur
27. Taki Ramakrishna Mission High School Taki
28. Thakurnagar Thakurbari Thakurnagar Chikanpara

c) Walk Test

1. Krishnanagar City Junction Railway Station Krishnanagar
2. Krishnanagar Sadar District Hospital Ranaghat - Krishnanagar Byp
3. Mayapur Iskon Mandir Chaitanya Bhawan Bbt Rd Mayapur
4. Ranaghat Junction Railway Station Ranaghat

d) Highway- Barasat to Raiganj passing through Amdanga, Ranaghat, Krishnanagar, Debagram, Bhabta, Morgram, Sadikpur, Farakka, Gazole and Rupahar etc.

e) Railway- Howrah to Bardhaman via Bandel.

2.4 Telecom service providers detected frequency bands

Technologies covered during the IDT and frequency bands in use are summarised in table below:

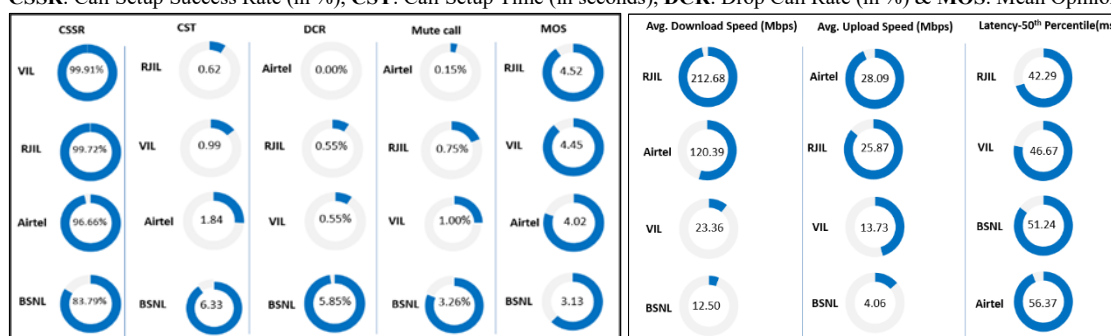
S.no.	Name of TSP	Technology	Frequency Bands (In MHz)
1	Bharti Airtel Ltd.	2G	900
2	Bharti Airtel Ltd.	4G	900,1800,2100,2300
3	Bharti Airtel Ltd.	5G	3500
4	BSNL	2G	900
5	BSNL	3G	2100
6	BSNL	4G	700,2100,2500
7	Reliance JIO Infocomm Ltd.	4G	850,1800,2300
8	Reliance JIO Infocomm Ltd.	5G	700,3500
9	Vodafone Idea Ltd.	2G	900
10	Vodafone Idea Ltd.	4G	900,1800,2100,2500
11	Vodafone Idea Ltd.	5G	3500

Table-2: Telecom service provider (TSP) covered in IDT

Note- Very few samples of 5G technology have been observed during railway drive in VIL.

2.5 Performance against key QoS parameters

CSSR: Call Setup Success Rate (in %), CST: Call Setup Time (in seconds), DCR: Drop Call Rate (in %) & MOS: Mean Opinion Score.



Summary-Voice services

Call Setup Success Rate: Airtel, BSNL, RJIL and VIL have 96.66%, 83.79%, 99.72% and 99.91% call setup success rate respectively in Auto-selection mode (5G/4G/3G/2G).

Call Setup Time: Airtel, BSNL, RJIL and VIL have call setup time of 1.84, 6.33, 0.62 and 0.99 seconds respectively in Auto-selection mode (5G/4G/3G/2G).

Drop Call Rate: Airtel, BSNL, RJIL and VIL have drop call rate of 0.00%, 5.85%, 0.55% and 0.55% respectively in Auto-selection mode (5G/4G/3G/2G).

Call Silence/Mute Rate: Airtel, BSNL, RJIL and VIL have silence call rate of 0.15%, 3.26%, 0.75% and 1.00% respectively in packet switched network (4G/5G).

Mean Opinion Score (MOS): Airtel, BSNL, RJIL and VIL have average MOS of 4.02, 3.13, 4.52 and 4.45 respectively.

Summary-Data services

Data Download performance (Overall):

Average download speed of Airtel (5G/4G) is 120.39 Mbps, BSNL (4G/3G/2G) is 12.50 Mbps, RJIL (5G/4G) is 212.68 Mbps and VIL (5G/4G/2G) is 23.36 Mbps.

Data Upload performance (Overall):

Average upload speed of Airtel (5G/4G) is 28.09 Mbps, BSNL (4G/3G/2G) is 4.06 Mbps, RJIL (5G/4G) is 25.87 Mbps and VIL (5G/4G/2G) is 13.73 Mbps.

Latency (Overall):

Airtel, BSNL, RJIL and VIL 50th percentile latency is 56.37 ms, 51.24 ms, 42.29 ms, 46.67 ms respectively.

Data performance - Hotspots (in Mbps):

Airtel- 4G D/L: 43.28	4G U/L: 6.97
5G D/L: 181.53	5G U/L: 36.97
BSNL- 4G D/L: 12.01	4G U/L: 3.95
RJIL- 4G D/L: 50.08	4G U/L: 13.64
5G D/L: 242.15	5G U/L: 29.64
VIL- 4G D/L: 16.20	4G U/L: 9.44

Note: "D/L" Download speed, "U/L" Upload speed

- The Poor signal strength in auto-selection mode (5G/4G/3G/2G) during **voice** testing has been observed in 1.60%, 34.01%, 2.13% & 5.91% of the **City IDT route** (Cities & adjoining areas of North 24 Parganas and Nadia District) in case of Airtel, BSNL, RJIL and VIL respectively. {refer **figure- 82 to 85** as per the **Section 6.1** under Para-6 (Annexure)}
- The Poor signal strength in auto-selection mode (5G/4G/3G/2G) during **data** testing has been observed in 11.36%, 29.72%, 9.87% & 17.10% of the **City IDT route** (Cities & adjoining areas of North 24 Parganas and Nadia District) in case of Airtel, BSNL, RJIL and VIL respectively. {refer **figure- 86 to 89** as per the **Section 6.1** under Para-6 (Annexure)}
- The Poor signal strength in auto-selection mode (5G/4G/3G/2G) during **voice** testing has been observed in 0.47%, 27.80%, 0.55% & 1.49% of the **Highway IDT route** (Barasat to Raiganj) in case of Airtel, BSNL, RJIL and VIL respectively. {refer **figure- 93 to 96** as per the **Section 6.1** under Para-6 (Annexure)}
- The Poor signal strength in auto-selection mode (5G/4G/3G/2G) during **data** testing has been observed in 6.68%, 27.99%, 8.28% & 6.32% of the **Highway IDT route** (Barasat to Raiganj) in case of Airtel, BSNL, RJIL and VIL respectively. {refer **figure- 97 to 100** as per the **Section 6.1** under Para-6 (Annexure)}
- The Poor signal strength in auto-selection mode (5G/4G/3G/2G) during **voice** testing has been observed in 0.66%, 8.17%, 0.65% & 2.97% of the **Railway IDT route** (Howrah to Bardhaman) in case of Airtel, BSNL, RJIL and VIL respectively. {refer **figure- 101 to 104** as per the **Section 6.1** under Para-6 (Annexure)}
- The Poor signal strength in auto-selection mode (5G/4G/3G/2G) during **data** testing has been observed in 6.19%, 35.51%, 6.57% & 8.94% of the **Railway IDT route** (Howrah to Bardhaman) in case of Airtel, BSNL, RJIL and VIL respectively. {refer **figure- 105 to 108** as per the **Section 6.1** under Para-6 (Annexure)}

QoS Performance Analysis- West Bengal LSA

3. QoS performance analysis-LSA level

3.1 Overview

This section provides summary of overall QoS performance of the telecom service provider's network in the LSA by aggregating the results of drive tests conducted in the West Bengal LSA during the month of February-2026 covering city drive, hotspots, walk test, highway and railway. (Refer Table-1)

3.2 Voice performance

(a) **Voice Call Performance in 3G/2G network mode only:** 3G/2G network mode testing has been done to reflect experience for respective users as they have only 3G/2G compatible handsets.

Parameters	Service Provider		
	3G/2G network mode only		
	AIRTEL	BSNL	VIL
Call Attempts	704	905	696
Call Setup Success Rate %	94.60	66.85	99.86
Drop Call Rate %	0.45	12.23	3.88
Call Setup Time-Average (Second)	5.02	2.79	4.73
Handover Success Rate %	97.97	97.02	99.34

Table-3: Summary of voice call performance in 3G/2G network mode only.

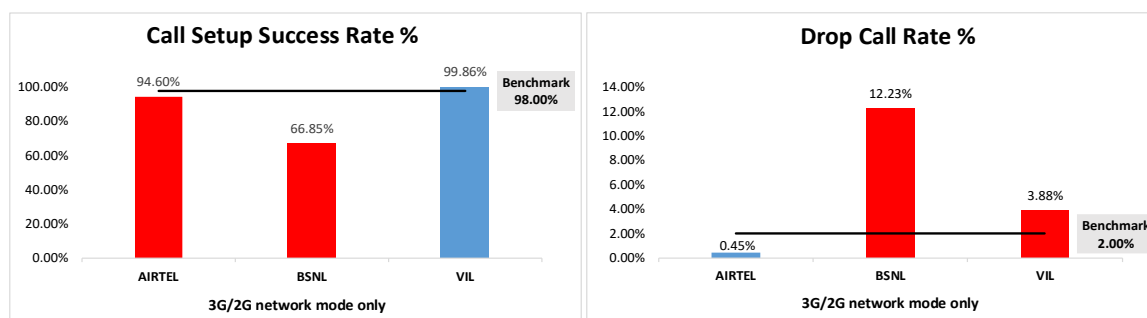


Figure-2: Call setup success rate and drop call rate performance.

Number of unique cell Id's covered in Voice test- Technology wise			
Technology	Service Provider		
	3G/2G network mode only		
	AIRTEL	BSNL	VIL
3G	NA	110	NA
2G	1156	278	858

Table-4: Technology wise number of network cell Id's latched during drive test.

Note-

- RJIL does not have 3G/2G network.
- NA- Service provider doesn't provide services in respective technology.

(b) Voice Call Performance in auto network selection mode (5G/4G/3G/2G)

Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempts	1108	1203	1087	1084
Call Setup Success Rate %	96.66	83.79	99.72	99.91
Drop Call Rate %	0.00	5.85	0.55	0.55
Call Setup Time-Average (Second)	1.84	6.33	0.62	0.99
Handover Success Rate %	99.98	98.55	99.94	100.00

Table-5: Summary of voice call performance in network auto-selection mode.

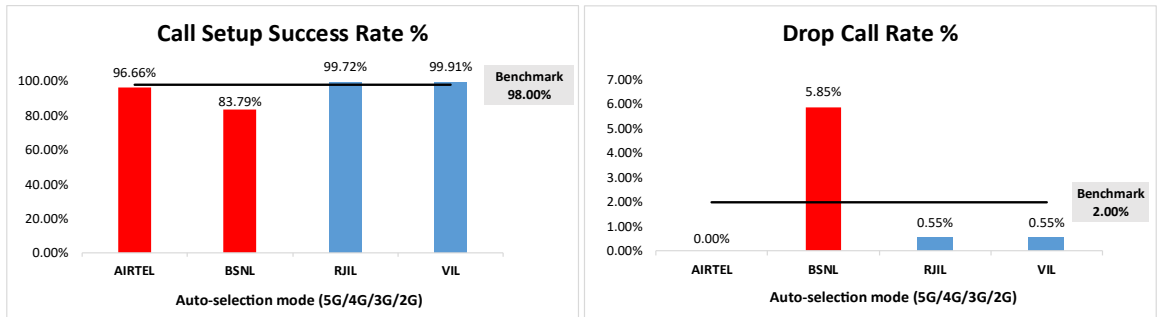


Figure-3: Performance for call setup success rate and drop call rate.

Parameter	Service Provider			
	Mobile-to-Mobile (5G/4G - Open Mode)			
	AIRTEL	BSNL	RJIL	VIL
Call Established (within service provider Network)	678	613	671	697
Number of silences call for >4 Sec	1	20	5	7
Silence Call Rate %	0.15	3.26	0.75	1.00
Number of silence instances for >4 Sec	1	32	6	10
Number of silence instances for >3 Sec	12	44	7	21
Number of silence instances for >2 sec	26	72	26	87
RTP Jitter (4G & 5G) in ms	4.69	7.93	16.07	11.50
Packet loss Rate Downlink %	0.42	3.55	0.64	0.83
Packet loss Rate Uplink %	0.28	3.25	0.49	0.60

Table-6: Summary of silence instances & packet loss rate for mobile to mobile calls.

Number of unique cell Id's covered in Voice test- Technology wise				
Technology	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
5G	0	NA	1405	0
4G	2498	613	1199	1622
3G	NA	66	NA	NA
2G	0	172	NA	21

Table-7: Technology wise number of network cell Id's latched during drive test.

Note-
<ul style="list-style-type: none"> • NA- Service provider doesn't provide services in respective technology. • 0- No cell Id's were found in respective technology.

(c) Mean Opinion Score (MOS) performance for speech quality:

Mean opinion score indicates quality of speech observed during the drive test across different technologies. This parameter has been calculated for mobile-to-mobile calls made within same operator network in auto mode (5G/4G/3G/2G). As per ITU-T Recommendation P.863.1, MOS values means: 5-Excellent, 4-Good, 3-Fair, 2-Poor, 1-Bad.

Speech Quality (MOS) distribution	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
Total Number of MOS Samples for calls table-6	6589	5186	6542	6480
Speech Quality (Average MOS)	4.02	3.13	4.52	4.45
Number of samples with MOS >=4 to <5 (Excellent)	5726	2000	5853	5497
Number of samples with MOS >=3 to <4 (Good)	681	690	445	708
Number of samples with MOS >=2 to <3 (Fair)	96	1615	132	222
Number of samples with MOS >=1 to <2 (Poor)	86	881	112	53
%age of samples with MOS >=4 to <5 (Excellent)	86.90%	38.57%	89.47%	84.83%
%age of samples with MOS >=3 to <4 (Good)	10.34%	13.31%	6.80%	10.93%
%age of samples with MOS >=2 to <3 (Fair)	1.46%	31.14%	2.02%	3.43%
%age of samples with MOS >=1 to <2 (Poor)	1.31%	16.99%	1.71%	0.82%

Table-8: Summary of speech quality (MOS) samples.

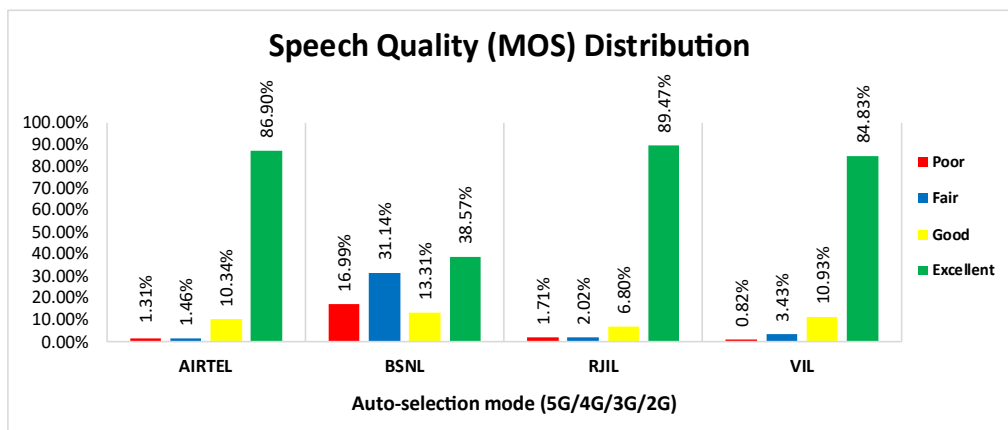


Figure- 4: Distribution of samples in MOS range.

(d) Inter-service provider voice call performance: To check the performance of inter-service providers call setup success rate, total 15 to 17 inter operator calls were attempted at one location which is Ashoknagar State General Hospital Ashoknagar kalyangarh. The call setup success rate and call setup time observation is as below.

Call Setup Success Rate %				
From Service Provider	To Service Provider			
	AIRTEL	BSNL	RJIL	VIL
AIRTEL	NA	100.00	100.00	100.00
BSNL	100.00	NA	100.00	100.00
RJIL	100.00	100.00	NA	100.00
VIL	100.00	88.24	100.00	NA

Table-9: Call setup success rate across service providers

Note-
<ul style="list-style-type: none"> • NA- Only inter-operator calls were measured during test.

Call setup time average (seconds)				
From Service Provider	To Service Provider			
	AIRTEL	BSNL	RJIL	VIL
AIRTEL	NA	3.68	2.74	2.76
BSNL	2.74	NA	7.78	7.56
RJIL	1.90	2.57	NA	1.87
VIL	1.99	3.03	1.49	NA

Table-10: Call setup time across service providers.

Note-

- NA- Only inter-operator calls were measured during test.

3.3 Data performance

(a) Data Parameters (Auto-selection mode- 5G/4G/3G/2G)

Parameters		Service Provider			
		Auto-selection mode (5G/4G/3G/2G)			
		AIRTEL	BSNL	RJIL	VIL
Download Throughput (Mbits/s)	Average	120.39	12.50	212.68	23.36
	80th Percentile	203.00	21.21	354.40	34.63
	20th Percentile	31.19	3.07	59.45	9.65
Upload Throughput (Mbits/s)	Average	28.09	4.06	25.87	13.73
	80th Percentile	51.77	6.95	47.75	24.60
	20th Percentile	6.35	1.21	5.18	3.77
Latency (ms)	50th Percentile	56.37	51.24	42.29	46.67

Table-11: Summary of data performance in network auto-selection mode.

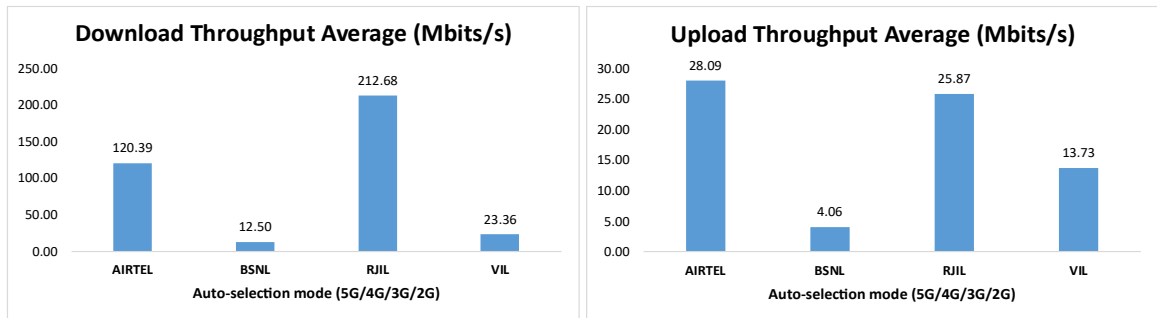


Figure- 5: Download and Upload throughput

Number of unique cell Id's covered in Data test- Technology wise				
Technology	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
5G	0	NA	1503	0
4G	2583	554	667	1800
3G	NA	104	NA	NA
2G	0	78	NA	50

Table-12: Technology wise number of network cell Id's latched during drive test.

Note-

- NA- Service provider doesn't provide services in respective technology.
- 0- No cell Id's were found in respective technology.

Detailed QoS Performance Analysis

4. Detailed QoS performance analysis

4.1 Overview

This section covers analysis on performance of various categories of drives like city, hotspots, walk test, highway and railway for all telecom service providers, the results of drive tests conducted are shown individually for respective areas/locations.

4.2 City

Drive test has been conducted on 16th February to 19th February 2026 in Cities & adjoining areas of North 24 Parganas and Nadia District. (Refer Table-1)

4.2.1 Drive test route



Figure- 6: Drive test routes

4.2.2 Areas covered

Habra, Kankpul, Sherpur More, South Habra, Bagjola, Gurudaha, Kholapota, Berachampa, Haroa, Minakhan, Nazat, Kharpur, Hasnabad, Basirhat, Akharpur, Aturia, Tentulia, Maslandapur, Dhakuria, Angrail, Bangaon, Chakadaha, Simurali, Ranaghat, Birnagar, Krishana Nagar, Gobindapur, Badkulla, Kanthaliyamath and Mayapur etc.

4.2.3 Voice performance

(a) **Voice Call Performance in 3G/2G network mode only:** 3G/2G network mode testing has been done to reflect experience for respective users as they have only 3G/2G compatible handsets.

Parameters	Service Provider		
	3G/2G network mode only		
	AIRTEL	BSNL	VIL
Call Attempts	532	712	507
Call Setup Success Rate %	93.61	59.41	99.80
Drop Call Rate %	0.40	11.35	0.20
Call Setup Time-Average (Second)	5.01	2.66	4.79
Handover Success Rate %	98.68	98.83	99.39

Table-13: Summary of voice call performance in 3G/2G network mode only.

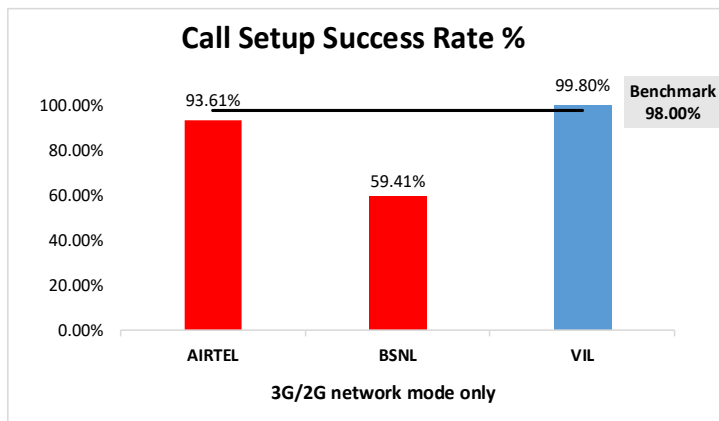


Figure-7: Performance for call setup success rate.

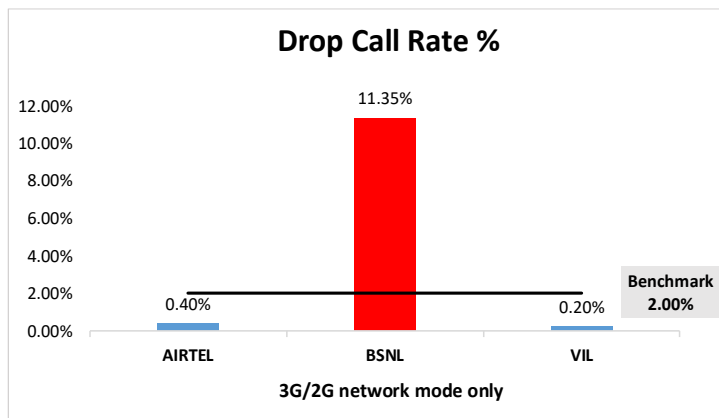


Figure-8: Performance for drop call rate.

(b) **Network Technology:** This section represent time spent on various network technologies.

Technology	Service Provider		
	AIRTEL	BSNL	VIL
3G	NA	58.08%	NA
2G	99.59%	33.83%	99.99%
Limited Service	0.41%	8.09%	0.01%

Table-14: Time spent on technology during drive test 3G/2G network mode.

Note-
<ul style="list-style-type: none"> • NA- Service provider doesn't provide services in respective technology.

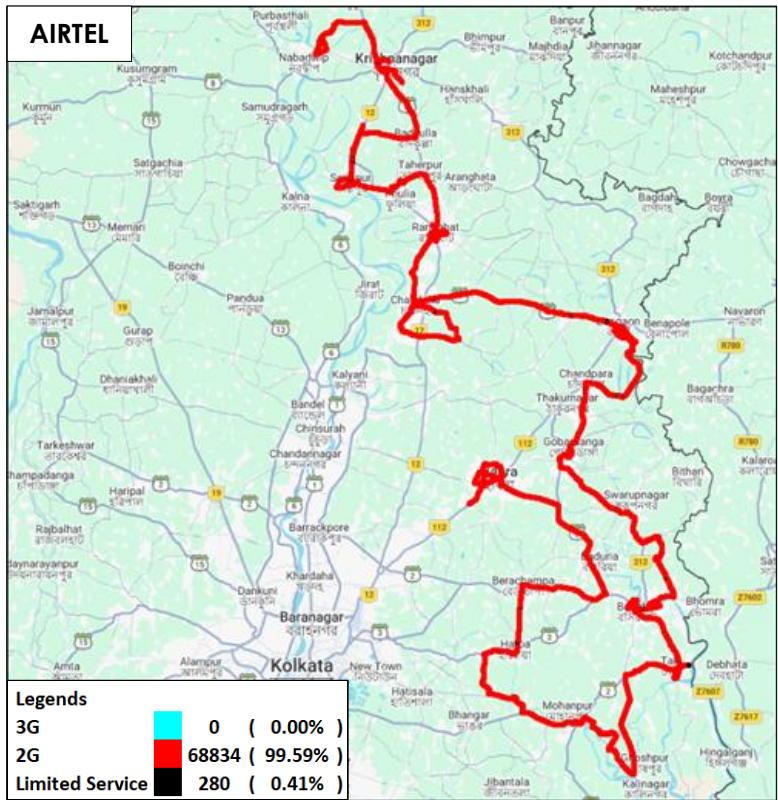


Figure-9: Serving technology plots 3G/2G network mode - AIRTEL

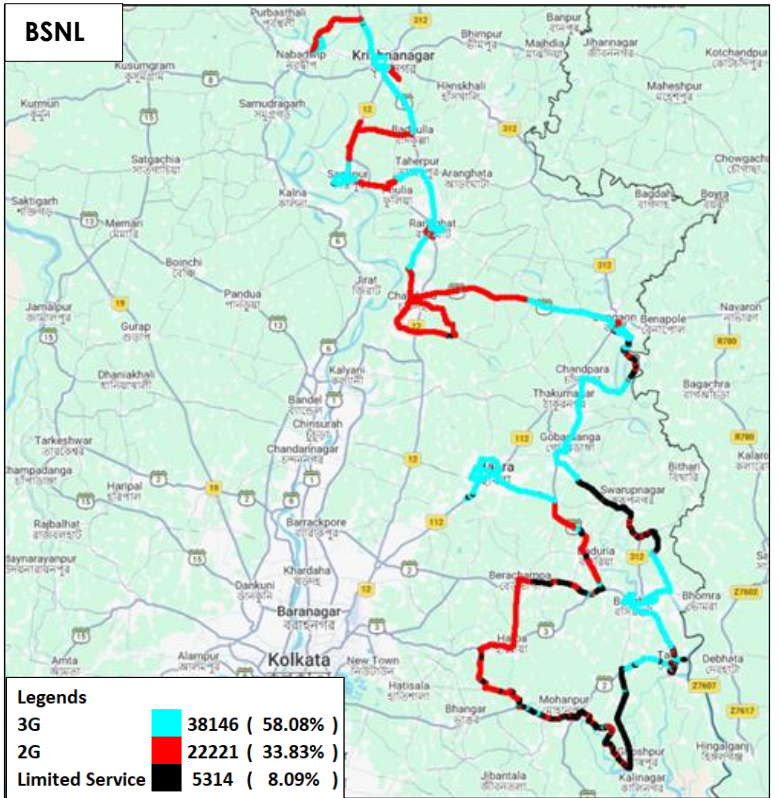


Figure-10: Serving technology plots 3G/2G network mode - BSNL.

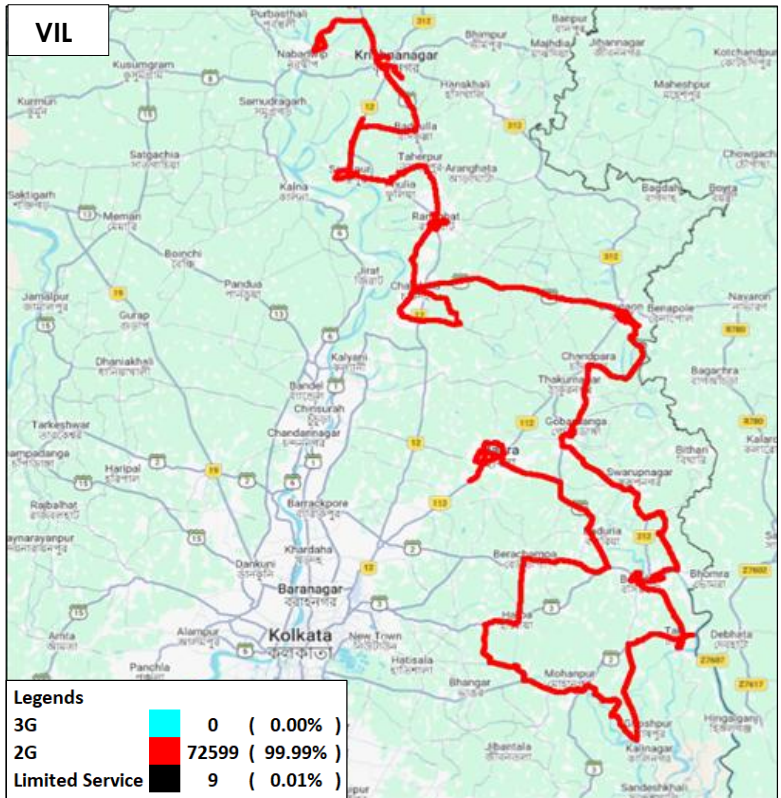


Figure-11: Serving technology plots 3G/2G network mode - VIL.

(c) Network Signal Strength Distribution: The following chart represents signal strength distribution for 3G/2G network mode only. (Refer figure- 79, 80 & 81 for map view)

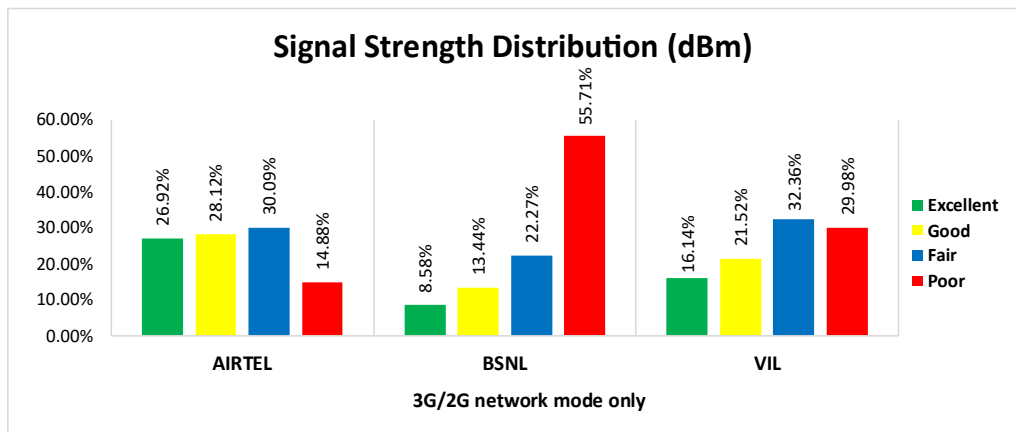


Figure-12: Signal strength distribution 3G/2G network mode only.

Observations:

- Airtel has 27% of samples falling in the excellent signal strength category.
- BSNL has 9% of samples falling in the excellent signal strength category.
- VIL has 16% of samples falling in the excellent signal strength category.

(d) Voice Call Performance in auto network selection mode (5G/4G/3G/2G)

Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempts	558	623	538	533
Call Setup Success Rate %	94.27	75.12	99.81	100.00
Drop Call Rate %	0.00	5.77	0.56	0.19
Call Setup Time Average (Second)	1.84	6.55	0.63	0.91
Handover Success Rate %	100.00	99.27	99.91	100.00

Table-15: Summary of voice call performance in network auto-selection mode.

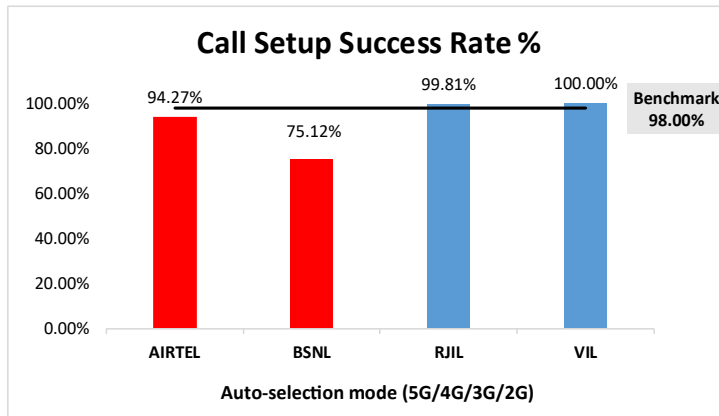


Figure-13: Performance for call setup success rate.

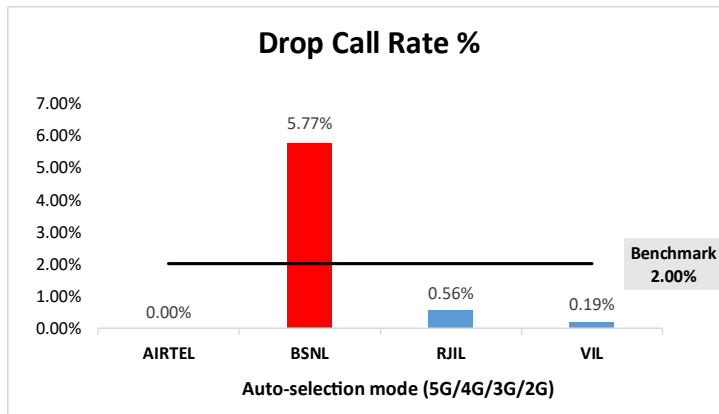


Figure-14: Performance for drop call rate.

Parameter	Service Provider			
	Mobile-to-Mobile (5G/4G - Open Mode)			
	AIRTEL	BSNL	RJIL	VIL
Call Established (within service provider Network)	527	445	520	545
Number of silences call for >4 Sec	0	14	3	4
Silence Call Rate %	0.00	3.15	0.58	0.73
Number of silence instances for >4 Sec	0	25	4	4
Number of silence instances for >3 Sec	10	28	5	10
Number of silence instances for >2 sec	18	40	19	57
RTP Jitter (4G & 5G) in ms	4.58	8.45	16.35	11.25
Packet loss Rate Downlink %	0.35	3.30	0.62	0.87
Packet loss Rate Uplink %	0.26	2.95	0.41	0.54

Table-16: Summary of silence instances & packet loss rate for mobile to mobile call.

(e) Mean Opinion Score (MOS) performance for speech quality:

Mean opinion score indicate quality of speech observed during the drive test across different technologies. This parameter has been calculated for mobile to mobile calls made within same operator network in auto mode (5G/4G/3G/2G). As per ITU-T Recommendation P.863.1, MOS value means: 5-Excellent, 4-Good, 3-Fair, 2-Poor, 1-Bad.

Speech Quality (MOS) distribution	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
Total Number of MOS Samples for calls in table-16	4670	3389	4632	4531
Speech Quality (Average MOS)	4.03	3.29	4.53	4.45
Number of samples with MOS >=4 to <5 (Excellent)	4095	1471	4167	3815
Number of samples with MOS >=3 to <4 (Good)	461	543	301	516
Number of samples with MOS >=2 to <3 (Fair)	62	923	94	166
Number of samples with MOS >=1 to <2 (Poor)	52	452	70	34
%age of samples with MOS >=4 to <5 (Excellent)	87.69%	43.41%	89.96%	84.20%
%age of samples with MOS >=3 to <4 (Good)	9.87%	16.02%	6.50%	11.39%
%age of samples with MOS >=2 to <3 (Fair)	1.33%	27.24%	2.03%	3.66%
%age of samples with MOS >=1 to <2 (Poor)	1.11%	13.34%	1.51%	0.75%

Table-17: Summary of speech quality (MOS) samples.

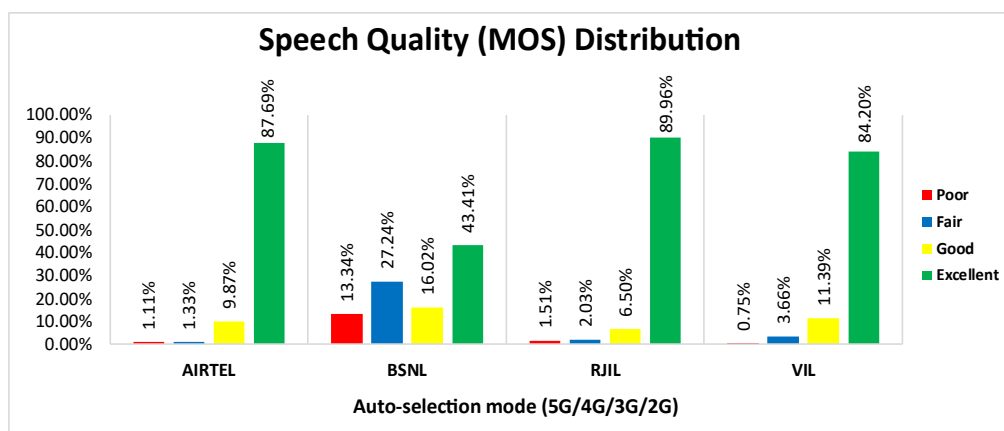


Figure-15: Distribution of samples in MOS range.

(f) Network Technology: This section represents time spent on various network technologies.

Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	7.52%	NA	77.13%	0.00%
4G	92.48%	67.50%	22.87%	99.71%
3G	NA	16.91%	NA	NA
2G	0.00%	13.19%	NA	0.29%
Limited Service	0.00%	2.41%	0.00%	0.00%

Table-18: Time spent on technology during drive test in auto-selection mode (5G/4G/3G/2G) voice.

Note-

- NA- Service provider doesn't provide services in respective technology.

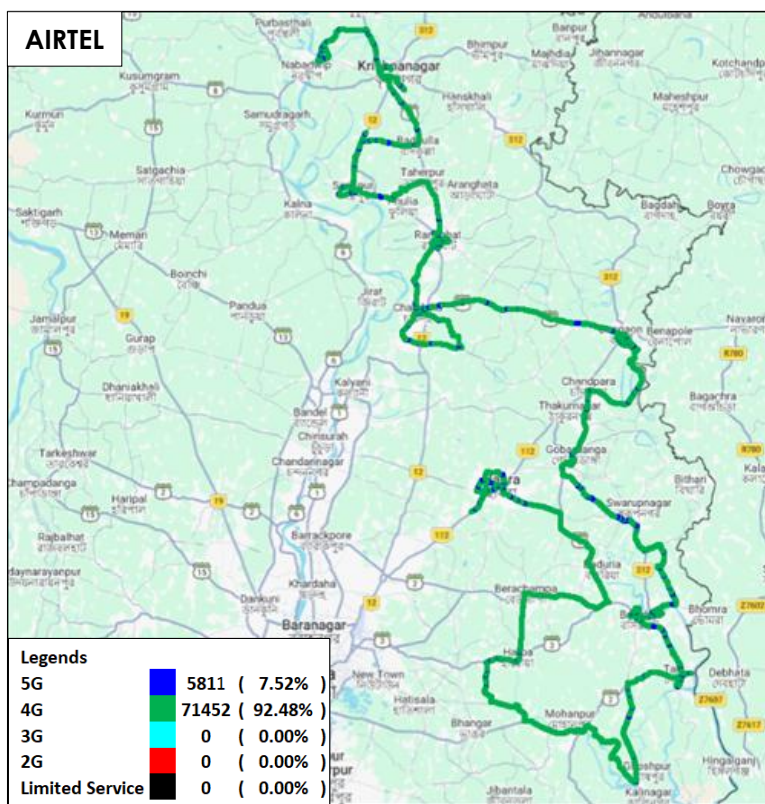


Figure-16: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - AIRTEL.

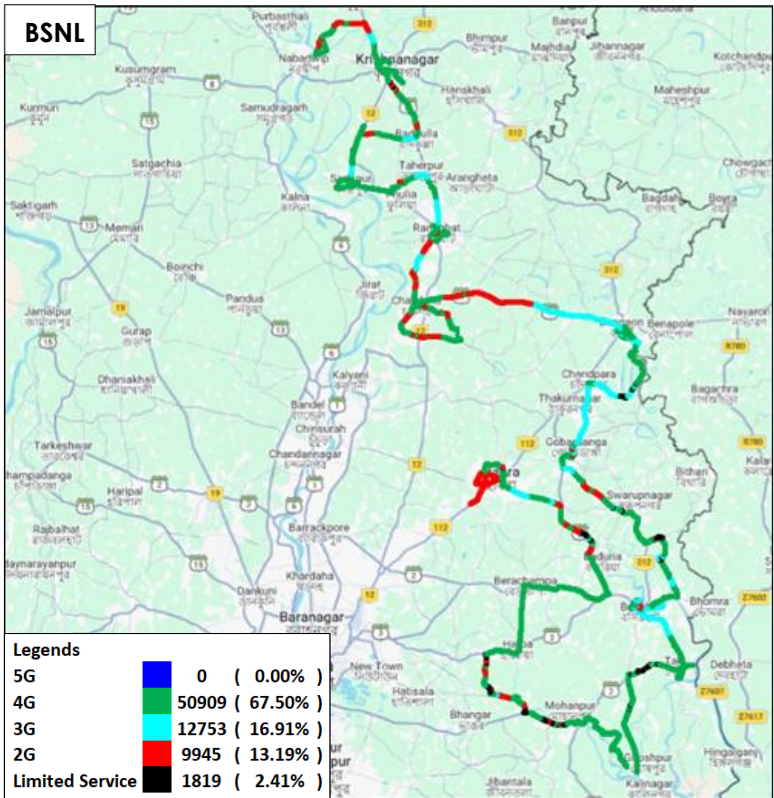


Figure-17: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - BSNL.

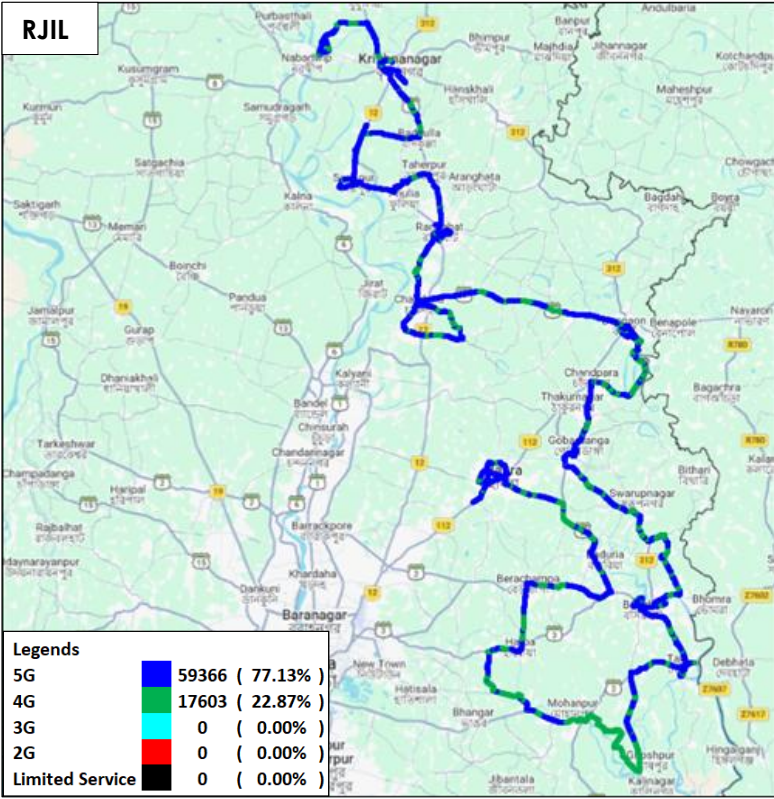


Figure-18: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - RJIL.

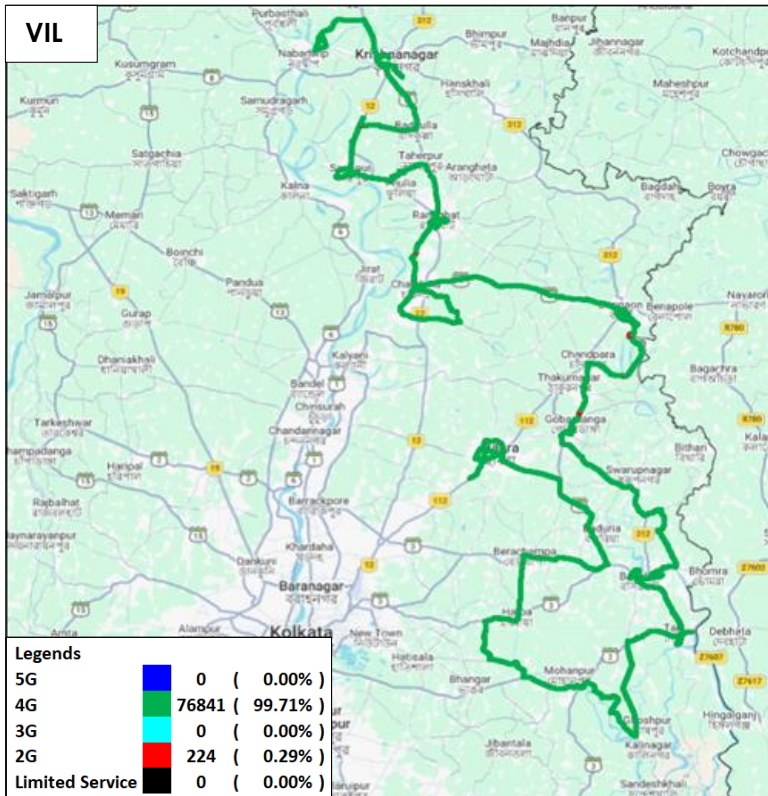


Figure-19: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - VIL.

(g) Network Signal Strength Distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G) voice. (Refer figure-82, 83, 84 & 85 for map view)

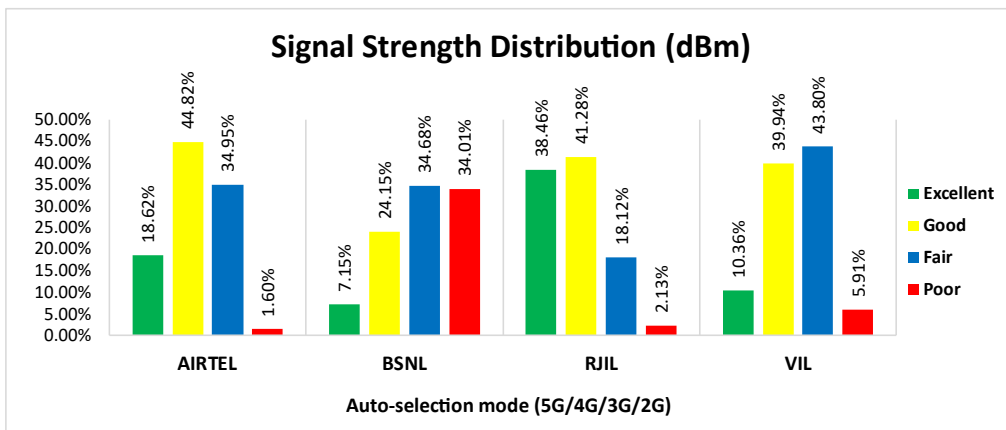


Figure-20: Signal strength distribution auto-selection mode (5G/4G/3G/2G) voice.

Observations:

- Airtel has 19% of samples falling in the excellent signal strength category.
- BSNL has 7% of samples falling in the excellent signal strength category.
- RJIL has 38% of samples falling in the excellent signal strength category.
- VIL has 10% of samples falling in the excellent signal strength category.

4.2.4 Data performance

(a) Data Parameters (Auto-selection mode- 5G/4G/3G/2G)

Parameters		Service Provider			
		Auto-selection mode (5G/4G/3G/2G)			
		AIRTEL	BSNL	RJIL	VIL
Download Throughput (Mbits/s)	Average	126.44	12.27	237.45	25.15
	80th Percentile	214.79	20.02	373.46	36.93
	20th Percentile	34.78	3.32	70.07	9.54
Upload Throughput (Mbits/s)	Average	25.98	3.94	27.80	12.77
	80th Percentile	48.56	6.96	53.33	23.85
	20th Percentile	5.67	1.21	5.61	3.26
Latency (ms)	50th Percentile	58.64	51.70	41.60	46.52

Table-19: Summary of Data performance in network auto-selection mode.

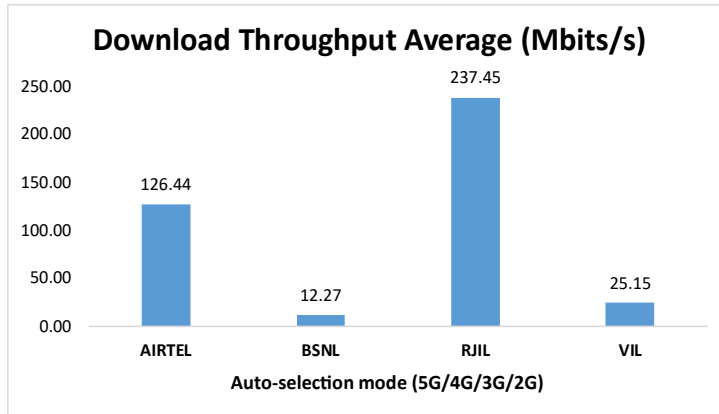


Figure- 21: Download throughput

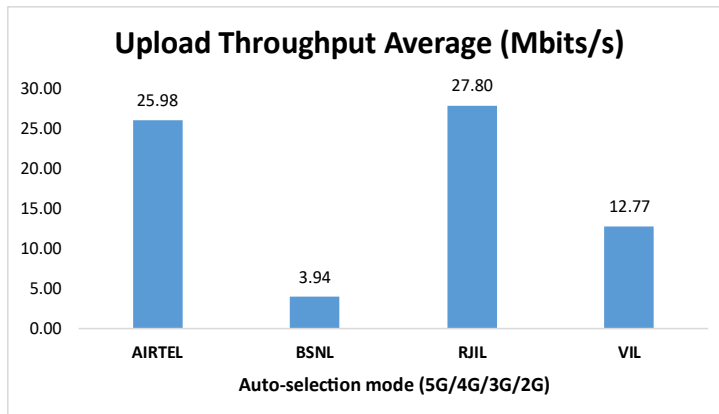


Figure- 22: Upload throughput

(b) Network Technology: This section represents time spent on various network technologies.

Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	76.15%	NA	90.85%	0.00%
4G	23.85%	82.83%	9.11%	98.65%
3G	NA	10.86%	NA	NA
2G	0.00%	2.75%	NA	1.23%
Limited Service	0.00%	3.56%	0.04%	0.12%

Table-20: Time spent on technology during drive test in auto-selection mode (5G/4G/3G/2G) data.

Note-

- NA- Service provider doesn't provide services in respective technology.

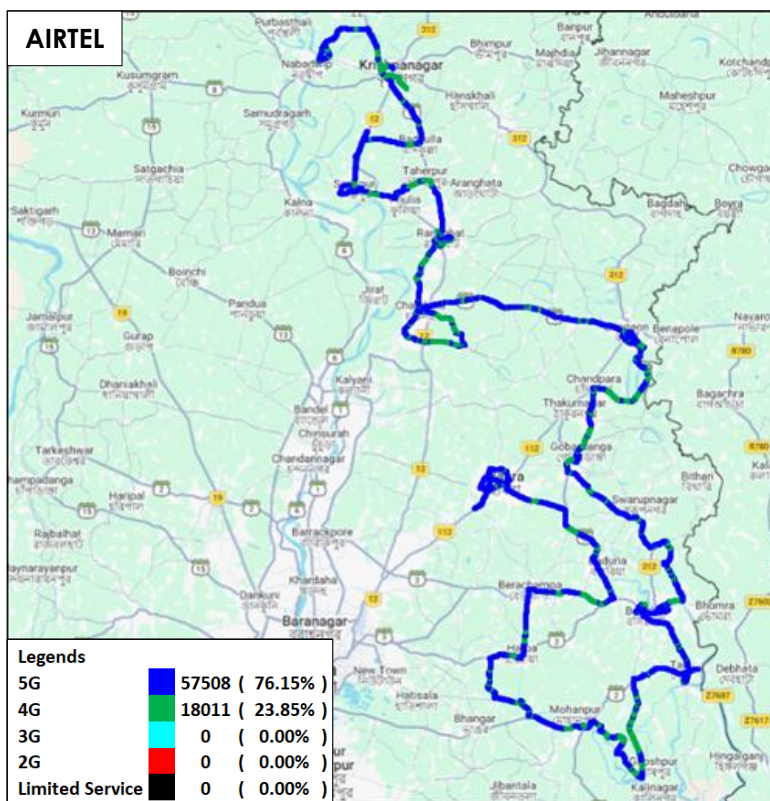


Figure-23: Serving technology plots in auto-selection mode (5G/4G/3G/2G) data -AIRTEL.

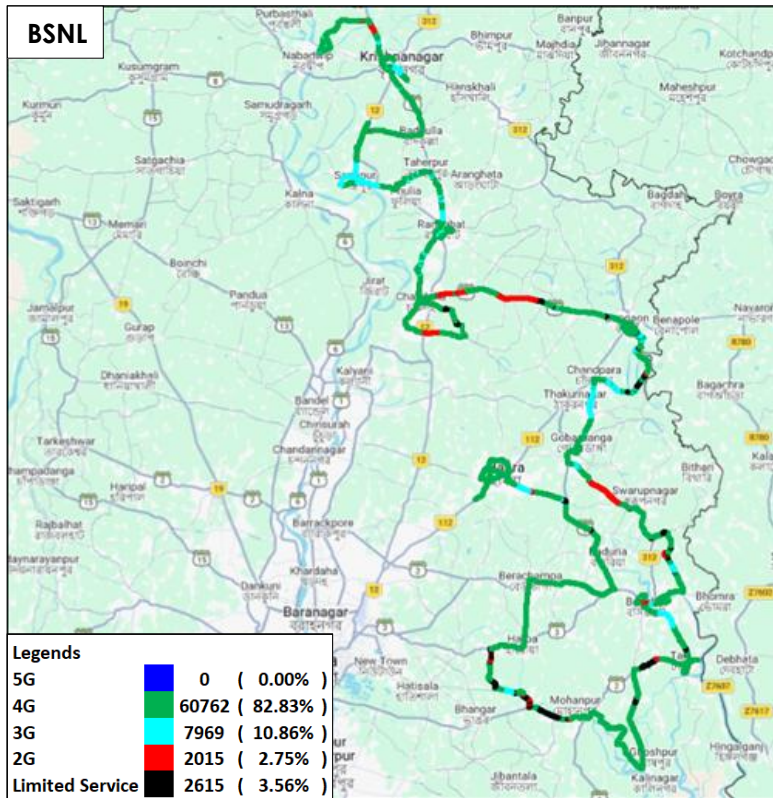


Figure-24: Serving technology plots in auto-selection mode (5G/4G/3G/2G) data-BSNL.

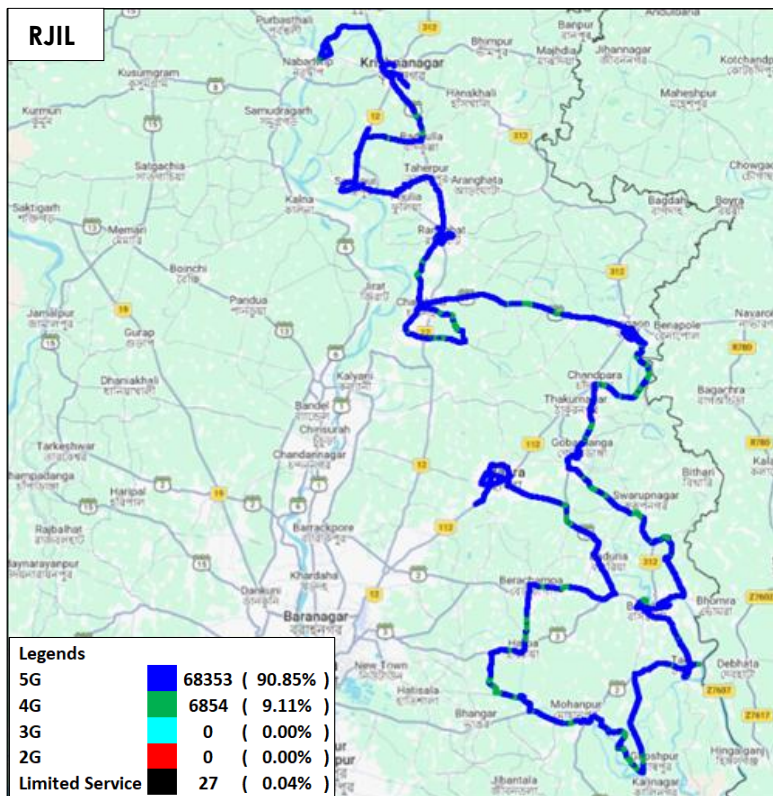


Figure-25: Serving technology plots in auto-selection mode (5G/4G/3G/2G) data- RJIL.

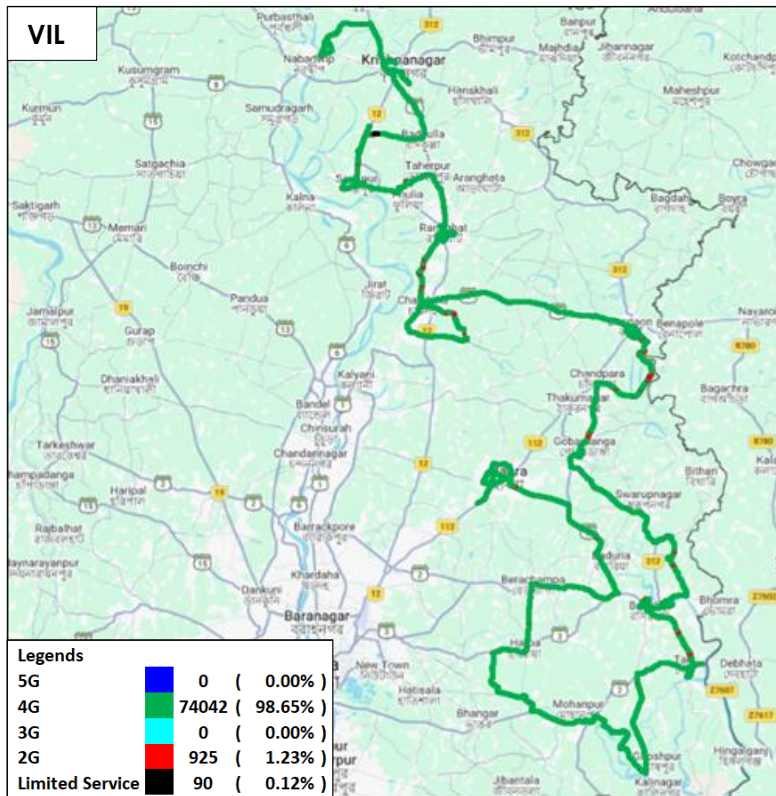


Figure-26: Serving technology plots in auto-selection mode (5G/4G/3G/2G) data- VIL

(c) Network Signal Strength Distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G) data. (Refer figure-86, 87, 88 & 89 for map view)

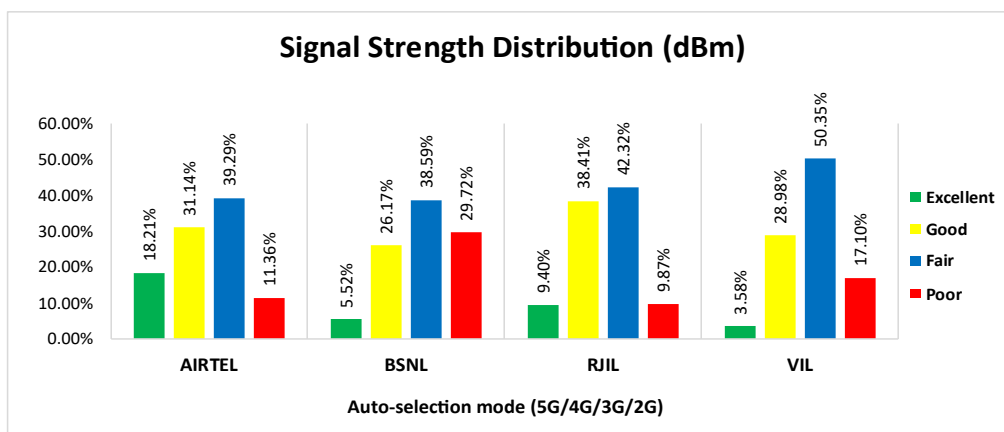


Figure-27: Signal strength distribution auto-selection mode (5G/4G/3G/2G) data.

Observations:

- Airtel has 18% of samples falling in the excellent signal strength category.
- BSNL has 6% of samples falling in the excellent signal strength category.
- RJIL has 9% of samples falling in the excellent signal strength category.
- VIL has 4% of samples falling in the excellent signal strength category.

4.3 Hotspots

Hotspot testing has been conducted from 12th February to 21st February 2026. Twenty-Eight locations have been tested in Cities & adjoining areas of North 24 Parganas and Nadia District & Barasat to Raiganj Highway. (Refer Table-1)

4.3.1 Locations

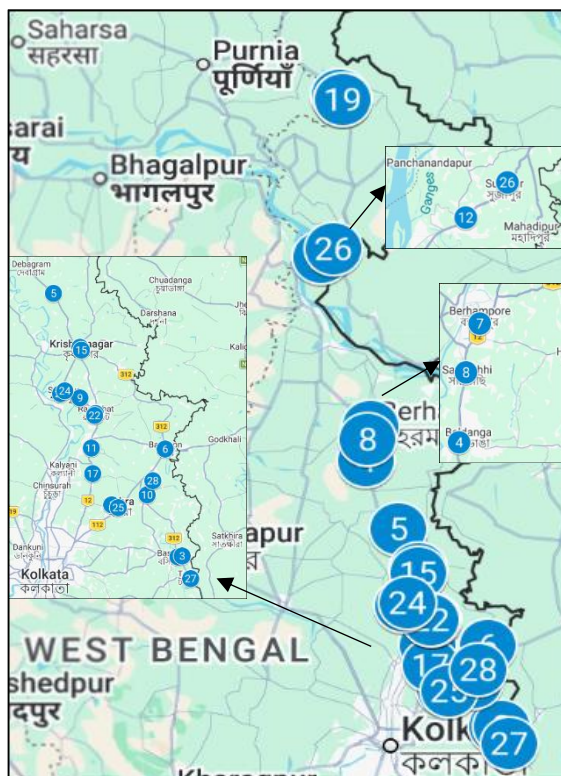


Figure- 28: Hotspot locations

4.3.2 Hotspot covered

1. Ashoknagar State General Hospital Ashoknagar Kalyangarh
2. Basirhat Court Basirhat
3. Basirhat Super Speciality Hospital Itinda Basirhat
4. Beldanga-I B.D.O. Office Sarulia
5. Bethuadahari Wildlife Sanctuary Segun Bagan Rd Bethuadahari Rajendranagar, Bethuadahari
6. Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon
7. Central Sericulture Raninagar Chuapur Berhampore
8. Dhaanyaganga Krishi Vigyan Kendra Sargachi Mission Bus Stop NH 12 Sargachhi Mahishasthali
9. Fulia Tant Saree Hat NH 12 Belemath Phulia
10. Gobardanga Hindu College Jamdani Gobardanga
11. JMN Medical College and Hospital Panchpota Chakdaha Ektarpur
12. Kaliachak-I B.D.O. Office Malda Baliadanga
13. Krishnagar Collegiate School Rabindra Nath Tagore Rd Krishnanagar
14. Krishnanagar Head Post Office Rn Tagore Road More Krishnanagar
15. Krishnanagar Palace Krishnanagar
16. Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai
17. Maulana Abul Kalam Azad University of Technology Haringhata Farm
18. Raiganj Government Medical College and Hospital
19. Raiganj Post Office
20. Ranaghat College Old Berhampore Rd Ranaghat
21. Ranaghat Session Court Ranaghat

- 22. Ranaghat Sub-Divisional Hospital Sreenath Pur Ranaghat
- 23. Santipur Hat Santipur
- 24. Santipur State General Hospital Santipur
- 25. Sree Chaitanya College Habra Bokavhoda Habra
- 26. Sujapur Primary Health Centre Sujapur
- 27. Taki Ramakrishna Mission High School Taki
- 28. Thakurnagar Thakurbari Thakurnagar Chikanpara

4.3.3 Voice performance

Overall Voice Performance				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	280	280	280	280
Call Setup Success Rate %	100.00	97.50	100.00	100.00
Drop Call Rate %	0.00	0.37	0.00	0.00
Call Setup Time-Average (Second)	1.87	6.13	0.58	0.95

Table-21: Overall summary of voice call performance in network auto-selection mode (5G/4G/3G/2G).

Ashoknagar State General Hospital Ashoknagar Kalyangarh				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	2.00	7.69	0.56	1.08

Table-22: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Basirhat Court Basirhat				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.95	2.38	0.50	0.92

Table-23: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Basirhat Super Speciality Hospital Itinda Basirhat				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.94	7.66	0.71	0.93

Table-24: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Beldanga-I B.D.O. Office Sarulia				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	10.00	0.00	0.00
Call Setup Time-Average (Second)	1.87	7.62	0.65	0.88

Table-25: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Bethuadahari Wildlife Sanctuary Segun Bagan Rd Bethuadahari Rajendranagar, Bethuadahari				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	90.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.87	7.42	0.55	0.91

Table-26: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.84	7.18	0.60	1.17

Table-27: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Central Sericulture Raninagar Chuapur Berhampore				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.84	7.33	0.52	0.95

Table-28: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Dhaanyaganga Krishi Vigyan Kendra Sargachi Mission Bus Stop NH 12 Sargachhi Mahishasthali				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.82	7.42	0.56	1.06

Table-29: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Fulia Tant Saree Hat NH 12 Belemath Phulia				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.82	7.41	0.47	0.99

Table-30: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Gobardanga Hindu College Jamdani Gobardanga				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.88	7.25	0.60	0.97

Table-31: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

JMN Medical College and Hospital Panchpota Chakdaha Ektarpur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	90.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.93	5.94	0.69	0.93

Table-32: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Kaliachak-I B.D.O. Office Malda Baliadanga				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.79	7.32	0.50	0.98

Table-33: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Krishnagar Collegiate School Rabindra Nath Tagore Rd Krishnanagar				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.87	7.10	0.53	0.94

Table-34: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Krishnanagar Head Post Office Rn Tagore Road More Krishnanagar				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.91	2.20	0.61	0.92

Table-35: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Krishnanagar Palace Krishnanagar				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.88	7.21	0.60	0.93

Table-36: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.96	7.25	0.61	1.04

Table-37: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Maulana Abul Kalam Azad University of Technology Haringhata Farm				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	60.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.81	2.62	0.61	0.80

Table-38: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Raiganj Government Medical College and Hospital				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.89	7.69	0.46	0.91

Table-39: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Raiganj Post Office				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.93	7.30	0.62	1.01

Table-40: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Ranaghat College Old Berhampore Rd Ranaghat				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.77	7.51	0.61	0.92

Table-41: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Ranaghat Session Court Ranaghat				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.84	7.37	0.63	0.84

Table-42: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Ranaghat Sub-Divisional Hospital Sreenath Pur Ranaghat				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	90.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.87	7.55	0.70	0.96

Table-43: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Santipur Hat Santipur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.91	7.25	0.53	0.97

Table-44: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Santipur State General Hospital Santipur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.94	2.15	0.63	1.01

Table-45: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Sree Chaitanya College Habra Bokavhoda Habra				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.84	2.46	0.52	0.98

Table-46: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Sujapur Primary Health Centre Sujapur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.84	2.44	0.48	0.84

Table-47: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Taki Ramakrishna Mission High School Taki				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.77	7.38	0.58	1.02

Table-48: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

Thakurnagar Thakurbari Thakurnagar Chikanpara				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	10	10	10	10
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.88	2.25	0.62	0.83

Table-49: Summary of voice call performance in network auto-selection mode(5G/4G/3G/2G).

4.3.4 Data performance (Auto-selection mode 5G/4G/3G/2G)

Overall Data Performance				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	134.24	11.66	238.17	19.80
Download Throughput 80th Percentile (Mbit/s)	221.35	18.91	402.05	31.38
Download Throughput 20th Percentile (Mbit/s)	27.98	4.14	87.21	8.67
Download Session Setup Success Rate %	100.00	95.71	100.00	100.00
Upload Throughput Average (Mbits/s)	32.35	4.25	25.61	12.96
Upload Throughput 80th Percentile (Mbit/s)	65.27	6.93	44.91	22.85
Upload Throughput 20th Percentile (Mbit/s)	6.67	1.23	5.67	2.99
Upload Session Setup Success Rate %	100.00	97.86	100.00	100.00
Web Browsing Delay (Second)	5.88	5.07	4.75	4.72
Youtube Initial Buffer Delay (Second)	1.28	2.40	0.98	1.85
Latency (ms) - 50th Percentile	57.54	50.74	42.39	47.92
Jitter (ms)	13.96	303.08	19.26	9.57
Packet Loss Rate%	17.48	16.07	3.69	1.03
Packet Loss Rate- 90th percentile	55.10	66.80	5.50	2.10

Table-50: Overall Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Ashoknagar State General Hospital Ashoknagar Kalyangarh				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	27.40	5.62	179.89	4.09
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	6.36	1.47	13.18	5.94
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	4.40	6.82	4.33	2.50
Youtube Initial Buffer Delay (Second)	1.11	5.10	0.61	1.41
Latency (ms) - 50th Percentile	73.11	56.39	41.11	48.61
Jitter (ms)	15.43	12.38	8.74	12.72
Packet Loss Rate%	30.00	2.80	0.10	4.00

Table-51: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Basirhat Court Basirhat				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	115.72	1.78	465.99	4.73
Download Session Setup Success Rate %	100.00	80.00	100.00	100.00
Upload Throughput Average (Mbits/s)	6.40	1.19	38.72	8.21
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	7.76	2.41	4.91	2.76
Youtube Initial Buffer Delay (Second)	3.11	-	0.62	1.29
Latency (ms) - 50th Percentile	106.66	1915.41	42.80	46.46
Jitter (ms)	29.70	5780.01	2.23	2.96
Packet Loss Rate%	61.50	74.50	0.00	0.00

Table-52: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Note- " " Youtube tests were failed.

Basirhat Super Speciality Hospital Itinda Basirhat				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	198.36	15.69	99.01	32.95
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	69.15	3.09	2.28	24.50
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	6.29	6.06	8.08	6.49
Youtube Initial Buffer Delay (Second)	0.74	2.68	5.59	0.75
Latency (ms) – 50th Percentile	58.23	45.91	58.36	48.76
Jitter (ms)	3.08	3.26	180.68	9.61
Packet Loss Rate%	1.60	0.20	3.80	0.20

Table-53: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Beldanga-I B.D.O. Office Sarulia				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	51.62	39.18	462.44	36.50
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	12.35	17.30	57.67	51.21
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	4.36	3.60	4.10	5.15
Youtube Initial Buffer Delay (Second)	0.72	1.11	0.50	0.74
Latency (ms) - 50th Percentile	49.52	41.42	38.49	34.29
Jitter (ms)	3.37	2.63	3.02	2.66
Packet Loss Rate%	0.10	0.10	0.00	0.20

Table-54: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Bethuadahari Wildlife Sanctuary Segun Bagan Rd Bethuadahari Rajendranagar, Bethuadahari				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	208.32	7.83	354.00	9.33
Download Session Setup Success Rate%	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	41.87	1.47	40.08	3.71
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	7.64	6.20	4.07	2.62
Youtube Initial Buffer Delay (Second)	2.13	3.90	0.72	0.90
Latency (ms)- 50th Percentile	52.39	48.69	41.57	41.03
Jitter (ms)	18.51	18.25	31.08	5.95
Packet Loss Rate%	0.60	1.80	1.10	0.50

Table-55: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	55.89	2.47	85.18	1.76
Download Session Setup Success Rate %	100.00	80.00	100.00	100.00
Upload Throughput Average (Mbits/s)	3.23	1.26	4.29	3.60
Upload Session Setup Success Rate %	100.00	80.00	100.00	100.00
Web Browsing Delay (Second)	6.24	10.77	5.34	3.13
Youtube Initial Buffer Delay (Second)	2.24	15.16	0.72	3.73
Latency (ms) - 50th Percentile	92.72	58.43	45.75	40.52
Jitter (ms)	48.99	15.10	4.29	4.59
Packet Loss Rate%	47.30	22.40	0.10	0.10

Table-56: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Central Sericulture Raninagar Chuapur Berhampore				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	24.34	18.30	258.61	14.85
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	9.56	6.30	10.80	3.08
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	7.78	4.77	3.83	3.03
Youtube Initial Buffer Delay (Second)	2.44	1.03	0.59	2.36
Latency (ms) – 50th Percentile	72.62	48.98	38.37	42.49
Jitter (ms)	27.46	4.21	64.16	9.30
Packet Loss Rate%	43.90	0.20	0.70	1.00

Table-57: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Dhaanyaganga Krishi Vigyan Kendra Sargachi Mission Bus Stop NH 12 Sargachhi Mahishasthali				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	80.36	20.47	72.11	40.77
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	14.70	10.53	3.36	12.13
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	4.22	5.27	4.38	4.45
Youtube Initial Buffer Delay (Second)	0.87	1.18	3.11	0.75
Latency (ms) - 50th Percentile	88.80	54.30	38.65	51.09
Jitter (ms)	19.27	3.43	10.68	7.33
Packet Loss Rate%	45.00	0.10	0.40	0.30

Table-58: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Fulia Tant Saree Hat NH 12 Belemath Phulia				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	336.98	31.06	386.37	11.09
Download Session Setup Success Rate%	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	70.31	2.38	42.98	11.92
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	6.95	4.34	3.70	5.84
Youtube Initial Buffer Delay (Second)	1.76	2.54	0.62	2.25
Latency (ms)- 50th Percentile	46.22	45.82	37.75	48.14
Jitter (ms)	2.21	1434.87	3.12	13.36
Packet Loss Rate%	0.10	11.60	0.00	1.50

Table-59: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Gobardanga Hindu College Jamdani Gobardanga				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	283.12	9.38	676.07	10.85
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	71.06	1.60	36.73	1.79
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	5.46	5.32	5.58	5.88
Youtube Initial Buffer Delay (Second)	1.70	4.74	0.68	7.00
Latency (ms) - 50th Percentile	52.71	55.92	46.13	45.90
Jitter (ms)	3.57	35.66	3.26	6.20
Packet Loss Rate%	0.10	4.70	0.00	0.20

Table-60: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

JMN Medical College and Hospital Panchpota Chakdaha Ektarpur				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	183.64	1.56	37.23	15.82
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	41.65	1.30	4.53	24.01
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	5.46	11.45	5.30	4.02
Youtube Initial Buffer Delay (Second)	1.00	8.41	0.62	0.99
Latency (ms) - 50th Percentile	69.01	45.72	44.06	47.97
Jitter (ms)	2.10	2.43	134.44	8.62
Packet Loss Rate%	0.40	22.30	23.50	0.20

Table-61: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Kaliachak-I B.D.O. Office Malda Baliadanga				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	28.61	24.96	239.71	28.82
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	7.19	10.29	23.73	33.75
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	4.78	4.82	4.53	5.85
Youtube Initial Buffer Delay (Second)	0.81	0.96	0.57	0.88
Latency (ms) - 50th Percentile	98.33	47.89	40.27	47.58
Jitter (ms)	22.05	2.50	2.36	17.48
Packet Loss Rate%	54.70	0.30	0.10	1.50

Table-62: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Krishnagar Collegiate School Rabindra Nath Tagore Rd Krishnanagar				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	127.23	5.01	110.75	32.37
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	20.67	3.28	20.99	3.57
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	5.29	2.90	4.70	6.11
Youtube Initial Buffer Delay (Second)	0.62	1.90	0.63	2.26
Latency (ms) - 50th Percentile	50.86	49.64	39.90	61.59
Jitter (ms)	5.29	3.07	12.61	9.57
Packet Loss Rate%	1.40	0.20	0.20	0.00

Table-63: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Krishnanagar Head Post Office Rn Tagore Road More Krishnanagar				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	136.38	7.63	225.11	11.59
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	24.82	6.09	38.12	10.18
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	4.35	4.39	4.87	3.54
Youtube Initial Buffer Delay (Second)	0.79	1.44	0.63	1.12
Latency (ms) - 50th Percentile	79.40	45.60	39.03	41.84
Jitter (ms)	4.58	6.11	2.62	35.85
Packet Loss Rate%	0.90	0.00	0.00	5.20

Table-64: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Krishnanagar Palace Krishnanagar				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	86.88	14.92	117.66	26.39
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	33.55	5.96	6.07	2.38
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	4.75	6.03	4.37	5.58
Youtube Initial Buffer Delay (Second)	0.68	1.55	0.56	7.04
Latency (ms) - 50th Percentile	48.03	46.20	42.65	62.89
Jitter (ms)	4.18	12.69	5.21	7.99
Packet Loss Rate%	0.20	0.10	0.00	0.90

Table-65: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Sohrai				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	48.18	11.17	106.95	7.71
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	6.49	1.36	3.68	1.69
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	3.42	7.57	5.88	3.87
Youtube Initial Buffer Delay (Second)	3.03	-	4.14	5.91
Latency (ms) - 50th Percentile	82.97	50.83	41.07	55.47
Jitter (ms)	23.14	3.96	5.49	23.59
Packet Loss Rate%	45.50	0.30	0.50	0.80

Table-66: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Note- "- YouTube tests were failed.
--

Maulana Abul Kalam Azad University of Technology Haringhata Farm				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	88.65	1.03	32.41	16.25
Download Session Setup Success Rate %	100.00	40.00	100.00	100.00
Upload Throughput Average (Mbits/s)	15.89	0.69	11.44	8.22
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	5.13	11.68	3.78	4.98
Youtube Initial Buffer Delay (Second)	1.07	-	0.82	0.86
Latency (ms) - 50th Percentile	101.61	64.16	43.83	54.63
Jitter (ms)	77.14	21.52	3.92	17.77
Packet Loss Rate%	58.60	54.80	0.10	0.60

Table-67: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Note--" Youtube tests were failed.

Raiganj Government Medical College and Hospital				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	109.69	7.57	9.20	21.20
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	6.68	7.90	13.24	10.33
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	5.04	1.84	2.51	6.11
Youtube Initial Buffer Delay (Second)	1.58	1.12	1.08	1.20
Latency (ms) - 50th Percentile	46.60	49.10	57.47	53.98
Jitter (ms)	16.60	3.81	12.33	7.67
Packet Loss Rate%	15.60	2.20	5.50	0.70

Table-68: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Raiganj Post Office				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	3.82	13.57	9.17	19.97
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	1.54	2.88	9.00	14.74
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	5.72	3.61	5.50	4.97
Youtube Initial Buffer Delay (Second)	-	1.33	1.27	1.01
Latency (ms) - 50th Percentile	87.84	44.99	57.16	50.45
Jitter (ms)	19.63	4.14	7.21	5.28
Packet Loss Rate%	63.20	38.00	38.10	0.40

Table-69: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Note--" Youtube tests were failed.

Ranaghat College Old Berhampore Rd Ranaghat				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	78.19	5.17	359.46	7.37
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	21.28	1.87	54.26	32.81
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	7.36	3.87	4.64	2.70
Youtube Initial Buffer Delay (Second)	1.89	2.57	0.51	1.31
Latency (ms) - 50th Percentile	57.69	49.48	38.59	52.86
Jitter (ms)	4.80	8.43	2.92	11.21
Packet Loss Rate%	1.60	1.30	0.00	6.30

Table-70: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Ranaghat Session Court Ranaghat				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	152.24	17.04	235.23	28.04
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	16.19	3.78	14.56	5.85
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	6.59	5.12	5.48	4.91
Youtube Initial Buffer Delay (Second)	0.65	1.34	0.63	0.94
Latency (ms) - 50th Percentile	63.84	55.79	63.74	54.09
Jitter (ms)	4.24	2.34	7.54	5.00
Packet Loss Rate%	4.80	1.50	1.30	0.60

Table-71: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Ranaghat Sub-Divisional Hospital Sreenath Pur Ranaghat				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	232.42	9.64	414.59	36.85
Download Session Setup Success Rate %	100.00	80.00	100.00	100.00
Upload Throughput Average (Mbits/s)	76.80	3.19	60.08	23.56
Upload Session Setup Success Rate %	100.00	60.00	100.00	100.00
Web Browsing Delay (Second)	9.07	4.08	4.14	5.79
Youtube Initial Buffer Delay (Second)	0.68	2.94	0.57	0.82
Latency (ms) - 50th Percentile	56.15	49.51	39.92	45.26
Jitter (ms)	13.08	4.67	2.77	6.10
Packet Loss Rate%	10.00	1.20	0.10	0.40

Table-72: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Santipur Hat Santipur				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	138.46	1.96	168.59	32.80
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	57.66	2.03	12.25	5.08
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	6.24	6.40	5.04	5.96
Youtube Initial Buffer Delay (Second)	1.72	11.53	0.60	0.85
Latency (ms) - 50th Percentile	46.66	52.56	51.53	50.24
Jitter (ms)	6.23	15.39	3.29	5.98
Packet Loss Rate%	0.20	49.90	0.30	0.10

Table-73: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Santipur State General Hospital Santipur				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	223.84	4.51	383.43	27.55
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	49.99	6.91	54.28	19.12
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	7.61	2.93	4.44	5.59
Youtube Initial Buffer Delay (Second)	1.77	1.91	0.66	0.84
Latency (ms) - 50th Percentile	46.24	93.90	43.10	47.19
Jitter (ms)	2.64	136.84	2.65	3.83
Packet Loss Rate%	1.20	66.80	0.00	0.30

Table-74: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Sree Chaitanya College Habra Bokavhoda Habra				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	117.63	5.77	225.69	13.66
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	39.07	6.27	19.78	27.96
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	8.67	4.41	4.76	2.34
Youtube Initial Buffer Delay (Second)	0.64	1.71	0.62	1.04
Latency (ms) - 50th Percentile	41.51	43.93	42.17	48.07
Jitter (ms)	3.66	4.87	3.40	7.25
Packet Loss Rate%	0.10	22.20	0.00	0.90

Table-75: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Sujapur Primary Health Centre Sujapur				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	190.63	6.73	309.64	15.73
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	71.07	1.20	58.58	1.94
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	4.38	7.11	4.45	4.11
Youtube Initial Buffer Delay (Second)	0.66	5.74	0.58	4.47
Latency (ms) - 50th Percentile	45.62	54.73	41.10	57.87
Jitter (ms)	2.45	4.18	3.22	7.67
Packet Loss Rate%	0.20	6.10	0.00	1.30

Table-76: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Taki Ramakrishna Mission High School Taki				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	232.87	19.73	292.91	23.25
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	79.42	4.90	11.94	5.30
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	5.24	6.53	5.31	5.10
Youtube Initial Buffer Delay (Second)	0.62	1.08	0.58	0.82
Latency (ms) - 50th Percentile	52.04	38.79	500.05	43.83
Jitter (ms)	4.07	3.71	14.80	9.79
Packet Loss Rate%	0.40	0.10	27.40	0.50

Table-77: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

Thakurnagar Thakurbari Thakurnagar Chikanpara				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	197.21	6.11	351.26	22.10
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	30.71	1.51	50.56	6.20
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Web Browsing Delay (Second)	3.95	3.52	3.84	4.25
Youtube Initial Buffer Delay (Second)	0.66	1.74	0.53	0.88
Latency (ms) - 50th Percentile	38.46	1000.05	43.03	36.83
Jitter (ms)	3.29	1095.28	2.59	2.85
Packet Loss Rate%	0.10	64.30	0.00	0.20

Table-78: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

4.3.5 Data performance (5G Only & 4G Only Download & Upload Speed)

Overall Data Performance					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	181.53	-	242.15	-
	Upload Throughput Average (Mbits/s)	36.97	-	29.64	-
4G	Download Throughput Average (Mbits/s)	43.28	12.01	50.08	16.20
	Upload Throughput Average (Mbits/s)	6.97	3.95	13.64	9.44

Table-79: Overall Summary of 5G only & 4G only data download & upload speed.

Ashoknagar State General Hospital Ashoknagar Kalyangarh					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	103.33	-	115.69	-
	Upload Throughput Average (Mbits/s)	3.31	-	11.11	-
4G	Download Throughput Average (Mbits/s)	16.65	5.68	9.47	6.97
	Upload Throughput Average (Mbits/s)	1.87	1.46	2.44	5.84

Table-80: Overall Summary of 5G only & 4G only data download & upload speed.

Basirhat Court Basirhat					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	173.43	-	534.05	-
	Upload Throughput Average (Mbits/s)	11.97	-	56.32	-
4G	Download Throughput Average (Mbits/s)	41.98	8.13	83.49	14.45
	Upload Throughput Average (Mbits/s)	2.78	1.28	23.73	7.94

Table-81: Overall Summary of 5G only & 4G only data download & upload speed.

Basirhat Super Speciality Hospital Itinda Basirhat					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	251.93	-	121.91	-
	Upload Throughput Average (Mbits/s)	78.96	-	3.74	-
4G	Download Throughput Average (Mbits/s)	50.53	15.55	12.87	15.81
	Upload Throughput Average (Mbits/s)	9.06	2.13	5.14	14.67

Table-82: Overall Summary of 5G only & 4G only data download & upload speed.

Beldanga-I B.D.O. Office Sarulia					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	50.94	-	319.46	-
	Upload Throughput Average (Mbits/s)	16.57	-	39.69	-
4G	Download Throughput Average (Mbits/s)	29.46	38.59	57.07	25.35
	Upload Throughput Average (Mbits/s)	3.64	11.38	12.98	15.74

Table-83: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "-"Respective technology was not observed during the test.

Bethuadahari Wildlife Sanctuary Segun Bagan Rd Bethuadahari Rajendranagar, Bethuadahari					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	177.35	-	309.94	-
	Upload Throughput Average (Mbits/s)	36.93	-	34.95	-
4G	Download Throughput Average (Mbits/s)	54.40	4.14	116.54	6.49
	Upload Throughput Average (Mbits/s)	9.10	1.21	21.25	8.65

Table-84: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	128.31	-	91.22	-
	Upload Throughput Average (Mbits/s)	8.75	-	6.84	-
4G	Download Throughput Average (Mbits/s)	14.33	4.57	33.70	8.59
	Upload Throughput Average (Mbits/s)	2.65	1.29	12.70	4.54

Table-85: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Central Sericulture Raninagar Chuapur Berhampore					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	12.26	-	262.36	-
	Upload Throughput Average (Mbits/s)	11.01	-	16.19	-
4G	Download Throughput Average (Mbits/s)	40.94	22.12	5.53	9.00
	Upload Throughput Average (Mbits/s)	5.23	4.96	3.21	4.46

Table-86: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Dhaanyaganga Krishi Vigyan Kendra Sargachi Mission Bus Stop NH 12 Sargachhi Mahishasthali					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	70.83	-	72.75	-
	Upload Throughput Average (Mbits/s)	5.45	-	6.74	-
4G	Download Throughput Average (Mbits/s)	35.63	16.62	12.54	37.67
	Upload Throughput Average (Mbits/s)	10.01	3.57	3.71	6.65

Table-87: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Fulia Tant Saree Hat NH 12 Belemath Phulia					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	330.18	-	342.39	-
	Upload Throughput Average (Mbits/s)	61.62	-	46.92	-
4G	Download Throughput Average (Mbits/s)	96.40	24.87	26.30	8.12
	Upload Throughput Average (Mbits/s)	12.08	1.68	9.13	3.91

Table-88: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Gobardanga Hindu College Jamdani Gobardanga					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	339.06	-	821.97	-
	Upload Throughput Average (Mbits/s)	51.85	-	75.63	-
4G	Download Throughput Average (Mbits/s)	8.23	13.70	138.62	10.10
	Upload Throughput Average (Mbits/s)	1.23	3.54	18.52	1.78

Table-89: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--"Respective technology was not observed during the test.

JMN Medical College and Hospital Panchpota Chakdaha Ektarpur					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	282.97	-	201.68	-
	Upload Throughput Average (Mbits/s)	79.49	-	9.75	-
4G	Download Throughput Average (Mbits/s)	25.35	2.95	12.79	1.57
	Upload Throughput Average (Mbits/s)	5.97	1.33	4.60	16.37

Table-90: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--"Respective technology was not observed during the test.

Kaliachak-I B.D.O. Office Malda Baliadanga					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	76.84	-	254.92	-
	Upload Throughput Average (Mbits/s)	5.39	-	45.50	-
4G	Download Throughput Average (Mbits/s)	23.34	20.59	79.95	17.71
	Upload Throughput Average (Mbits/s)	6.43	7.39	14.69	17.04

Table-91: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--"Respective technology was not observed during the test.

Krishnagar Collegiate School Rabindra Nath Tagore Rd Krishnagar					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	141.51	-	85.46	-
	Upload Throughput Average (Mbits/s)	31.17	-	14.11	-
4G	Download Throughput Average (Mbits/s)	8.79	5.48	11.22	35.22
	Upload Throughput Average (Mbits/s)	4.17	4.23	2.96	4.06

Table-92: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--"Respective technology was not observed during the test.

Krishnagar Head Post Office Rn Tagore Road More Krishnagar					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	94.11	-	211.80	-
	Upload Throughput Average (Mbits/s)	22.68	-	35.15	-
4G	Download Throughput Average (Mbits/s)	60.04	5.16	69.70	25.87
	Upload Throughput Average (Mbits/s)	2.32	6.35	23.93	4.21

Table-93: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--"Respective technology was not observed during the test.

Krishnanagar Palace Krishnanagar					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	97.64	-	65.74	-
	Upload Throughput Average (Mbits/s)	18.67	-	3.75	-
4G	Download Throughput Average (Mbits/s)	30.45	13.07	42.66	22.84
	Upload Throughput Average (Mbits/s)	7.75	3.85	4.09	2.37

Table-94: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	152.85	-	134.59	-
	Upload Throughput Average (Mbits/s)	13.60	-	6.78	-
4G	Download Throughput Average (Mbits/s)	22.20	13.01	20.79	19.68
	Upload Throughput Average (Mbits/s)	3.03	3.49	2.67	1.74

Table-95: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Maulana Abul Kalam Azad University of Technology Haringhata Farm					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	180.39	-	8.19	-
	Upload Throughput Average (Mbits/s)	25.66	-	6.17	-
4G	Download Throughput Average (Mbits/s)	72.11	0.69	57.59	19.65
	Upload Throughput Average (Mbits/s)	8.04	1.31	29.06	6.83

Table-96: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Raiganj Government Medical College and Hospital					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	119.05	-	15.09	-
	Upload Throughput Average (Mbits/s)	9.43	-	17.92	-
4G	Download Throughput Average (Mbits/s)	35.36	3.71	39.24	16.01
	Upload Throughput Average (Mbits/s)	3.05	7.75	35.74	17.78

Table-97: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Raiganj Post Office					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	8.59	-	24.35	-
	Upload Throughput Average (Mbits/s)	5.52	-	13.60	-
4G	Download Throughput Average (Mbits/s)	19.72	12.50	36.00	9.36
	Upload Throughput Average (Mbits/s)	1.27	9.11	2.85	7.77

Table-98: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Ranaghat College Old Berhampore Rd Ranaghat					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	246.18	-	368.95	-
	Upload Throughput Average (Mbits/s)	39.19	-	65.46	-
4G	Download Throughput Average (Mbits/s)	66.77	8.03	68.67	8.72
	Upload Throughput Average (Mbits/s)	11.40	6.96	15.83	14.46

Table-99: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Ranaghat Session Court Ranaghat					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	178.36	-	248.96	-
	Upload Throughput Average (Mbits/s)	42.44	-	15.82	-
4G	Download Throughput Average (Mbits/s)	46.21	15.13	31.60	27.12
	Upload Throughput Average (Mbits/s)	11.70	3.83	7.10	8.02

Table-100: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Ranaghat Sub-Divisional Hospital Sreenath Pur Ranaghat					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	239.15	-	444.79	-
	Upload Throughput Average (Mbits/s)	72.02	-	58.19	-
4G	Download Throughput Average (Mbits/s)	59.41	10.59	110.77	1.75
	Upload Throughput Average (Mbits/s)	9.88	5.96	42.11	32.37

Table-101: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Santipur Hat Santipur					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	330.88	-	164.97	-
	Upload Throughput Average (Mbits/s)	39.68	-	23.99	-
4G	Download Throughput Average (Mbits/s)	56.86	8.28	31.36	25.64
	Upload Throughput Average (Mbits/s)	18.47	2.12	8.72	7.52

Table-102: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Santipur State General Hospital Santipur					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	288.24	-	447.18	-
	Upload Throughput Average (Mbits/s)	57.59	-	61.54	-
4G	Download Throughput Average (Mbits/s)	62.75	6.59	63.48	17.36
	Upload Throughput Average (Mbits/s)	6.40	1.37	18.47	10.44

Table-103: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Sree Chaitanya College Habra Bokavhoda Habra					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	96.62	-	159.30	-
	Upload Throughput Average (Mbits/s)	27.97	-	22.15	-
4G	Download Throughput Average (Mbits/s)	9.99	2.60	42.62	9.54
	Upload Throughput Average (Mbits/s)	2.09	2.22	15.65	20.12

Table-104: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Sujapur Primary Health Centre Sujapur					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	190.69	-	426.36	-
	Upload Throughput Average (Mbits/s)	72.92	-	67.93	-
4G	Download Throughput Average (Mbits/s)	114.31	13.38	50.67	5.03
	Upload Throughput Average (Mbits/s)	25.50	1.80	17.74	5.27

Table-105: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Taki Ramakrishna Mission High School Taki					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	293.01	-	311.96	-
	Upload Throughput Average (Mbits/s)	92.09	-	9.23	-
4G	Download Throughput Average (Mbits/s)	82.48	22.79	24.06	33.91
	Upload Throughput Average (Mbits/s)	6.77	3.98	2.57	4.87

Table-106: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

Thakurnagar Thakurbari Thakurnagar Chikanpara					
Parameters		Service Provider			
		AIRTEL	BSNL	RJIL	VIL
5G	Download Throughput Average (Mbits/s)	242.34	-	214.28	-
	Upload Throughput Average (Mbits/s)	31.61	-	49.96	-
4G	Download Throughput Average (Mbits/s)	27.22	-	112.95	14.01
	Upload Throughput Average (Mbits/s)	3.40	-	20.22	8.89

Table-107: Overall Summary of 5G only & 4G only data download & upload speed.

Note- "--Respective technology was not observed during the test.

4.4 Walk Test

Walk test has been conducted on 18th February & 19th February 2026. Four locations have been tested in the city. (Refer Table-1)

4.4.1 Walk test locations

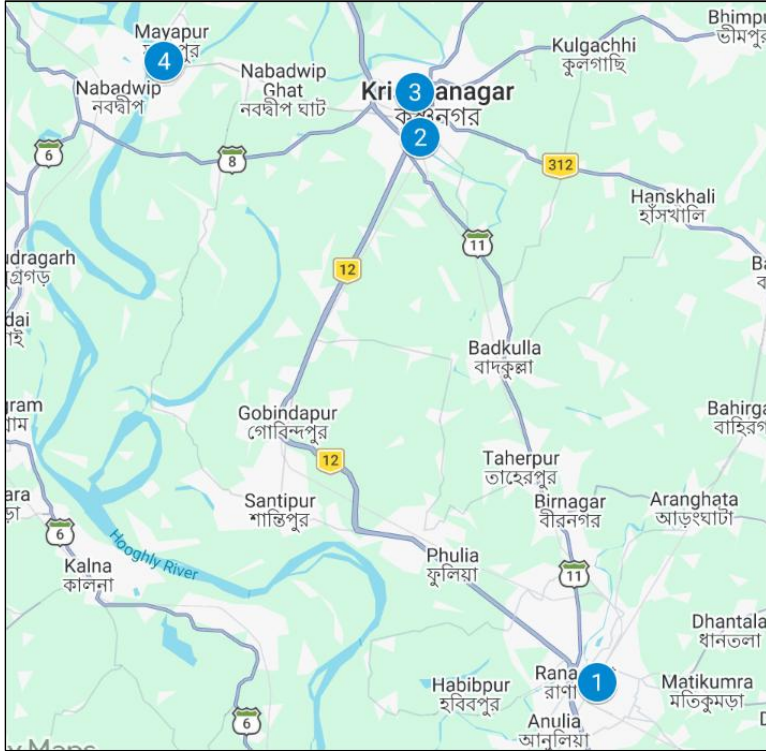


Figure-29: Walk Test locations.

4.4.2 Walk Test Covered

1. Krishnanagar City Junction Railway Station Krishnanagar
2. Krishnanagar Sadar District Hospital Ranaghat - Krishnanagar Byp
3. Mayapur Iskon Mandir Chaitanya Bhawan Bbt Rd Mayapur
4. Ranaghat Junction Railway Station Ranaghat

4.4.3 Voice Performance

i) Krishnanagar City Junction Railway Station Krishnanagar

(a) Voice Call Performance in auto network selection mode

(5G/4G/3G/2G)

Krishnanagar City Junction Railway Station Krishnanagar				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	12	12	11	12
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	8.33	0.00	0.00
Call Setup Time-Average (Second)	1.85	2.57	0.50	0.97
Handover Success Rate %	100.00	100.00	100.00	100.00

Table-108: Summary of voice call performance in network auto-selection mode (5G/4G/3G/2G).

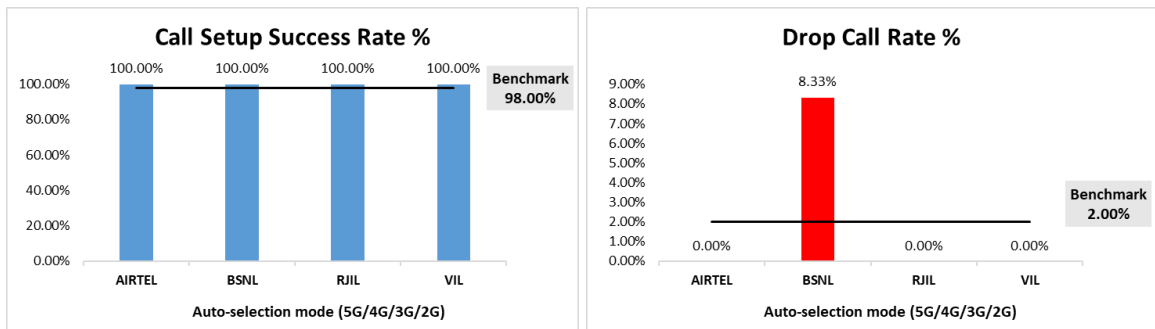


Figure- 30: Performance for call setup success rate and drop call rate.

(b) Network Technology: This section represents time spent on various network technologies.

Krishnanagar City Junction Railway Station Krishnanagar				
Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	8.86%	NA	100.00%	NA
4G	91.14%	0.00%	0.00%	100.00%
3G	NA	100.00%	NA	NA
2G	0.00%	0.00%	NA	0.00%
Limited service	0.00%	0.00%	0.00%	0.00%

Table-109: Time spent on technology during walk test.

(c) Network Signal Strength distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G).

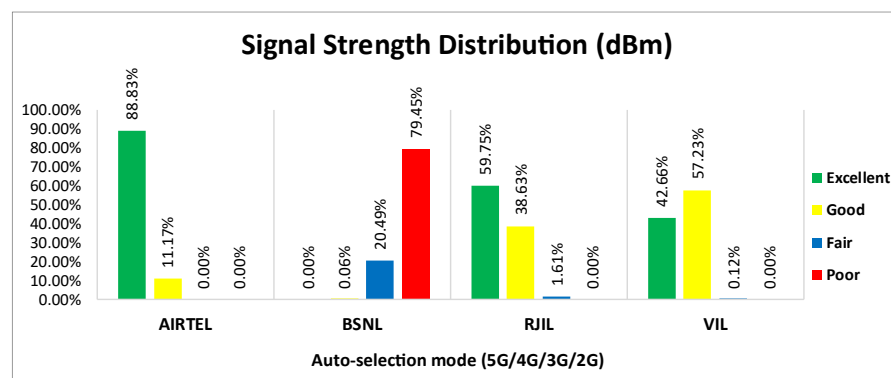


Figure-31: Signal strength distribution auto-selection mode (5G/4G/3G/2G).

ii) Krishnanagar Sadar District Hospital Ranaghat – Krishnanagar Byp

(a) Voice Call Performance in auto network selection mode (5G/4G/3G/2G)

Krishnanagar Sadar District Hospital Ranaghat - Krishnanagar Byp				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	11	12	11	11
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	8.33	0.00	0.00
Call Setup Time-Average (Second)	1.82	7.44	0.52	0.87
Handover Success Rate %	100.00	100.00	100.00	100.00

Table-110: Summary of voice call performance in network auto-selection mode (5G/4G/3G/2G).

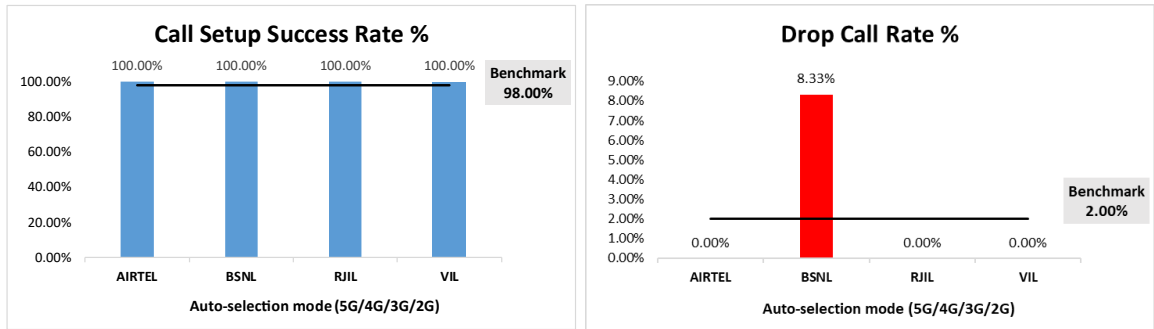


Figure- 32: Performance for call setup success rate and drop call rate.

(b) Network Technology: This section represents time spent on various network technologies.

Krishnanagar Sadar District Hospital Ranaghat - Krishnanagar Byp				
Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	2.33%	NA	100.00%	NA
4G	97.67%	100.00%	0.00%	100.00%
3G	NA	0.00%	NA	NA
2G	0.00%	0.00%	NA	0.00%
Limited service	0.00%	0.00%	0.00%	0.00%

Table-111: Time spent on technology during walk test.

(c) Network Signal Strength distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G).

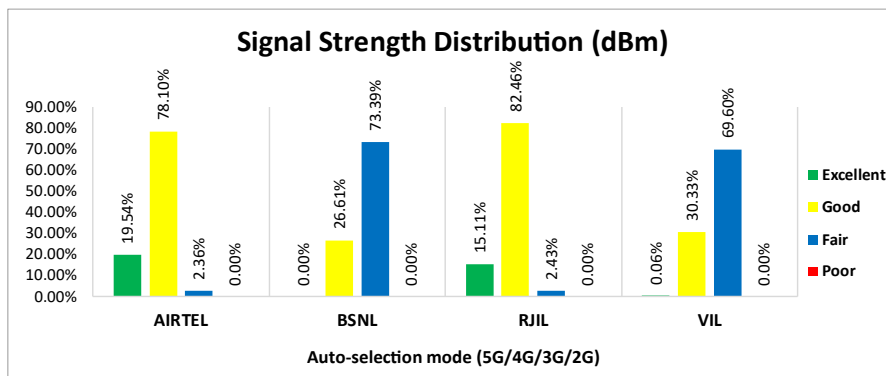


Figure-33: Signal strength distribution auto-selection mode (5G/4G/3G/2G).

iii) Mayapur Iskon Mandir Chaitanya Bhawan Bbt Rd Mayapur

(a) Voice Call Performance in auto network selection mode (5G/4G/3G/2G)

Mayapur Iskon Mandir Chaitanya Bhawan Bbt Rd Mayapur				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	13	13	12	13
Call Setup Success Rate %	100.00	100.00	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.96	3.16	0.49	0.91
Handover Success Rate %	100.00	100.00	100.00	100.00

Table-112: Summary of voice call performance in network auto-selection mode (5G/4G/3G/2G).

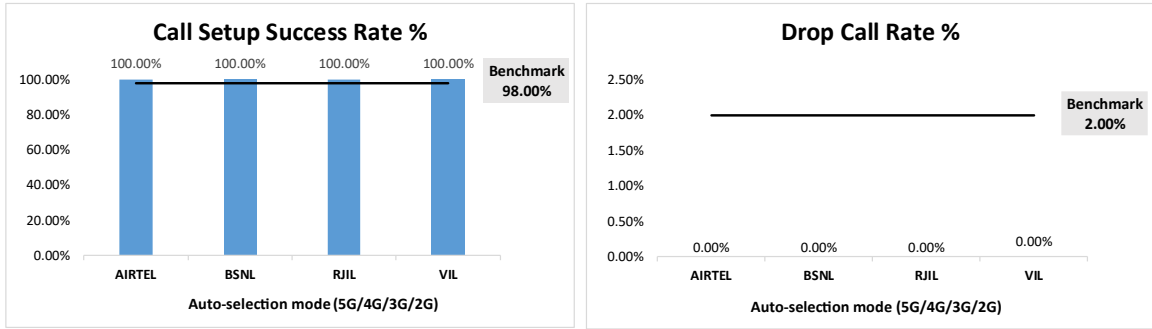


Figure- 34: Performance for call setup success rate and drop call rate.

(b) Network Technology: This section represents time spent on various network technologies.

Mayapur Iskon Mandir Chaitanya Bhawan Bbt Rd Mayapur				
Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	4.72%	NA	73.76%	NA
4G	95.28%	9.13%	26.24%	100.00%
3G	NA	90.87%	NA	NA
2G	0.00%	0.00%	NA	0.00%
Limited service	0.00%	0.00%	0.00%	0.00%

Table-113: Time spent on technology during walk test.

(c) Network Signal Strength distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G).

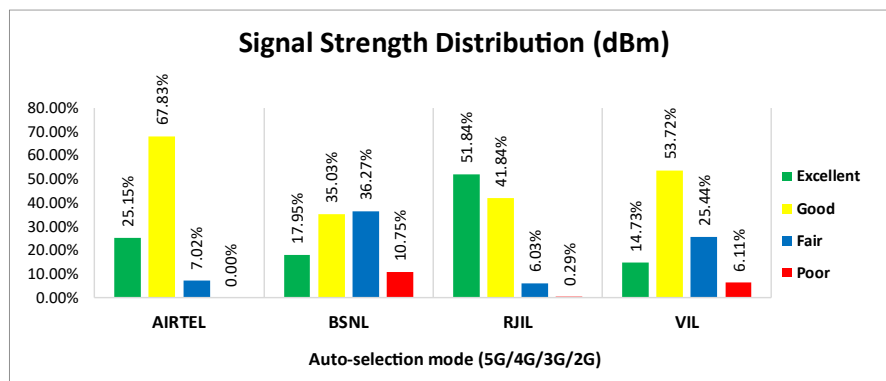


Figure-35: Signal strength distribution auto-selection mode (5G/4G/3G/2G).

iv) Ranaghat Junction Railway Station Ranaghat

(a) Voice Call Performance in auto network selection mode (5G/4G/3G/2G)

Ranaghat Junction Railway Station Ranaghat				
Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempt	11	16	11	12
Call Setup Success Rate %	100.00	62.50	100.00	100.00
Drop Call Rate %	0.00	0.00	0.00	0.00
Call Setup Time-Average (Second)	1.88	7.49	0.60	0.99
Handover Success Rate %	100.00	100.00	100.00	100.00

Table-114: Summary of voice call performance in network auto-selection mode (5G/4G/3G/2G).

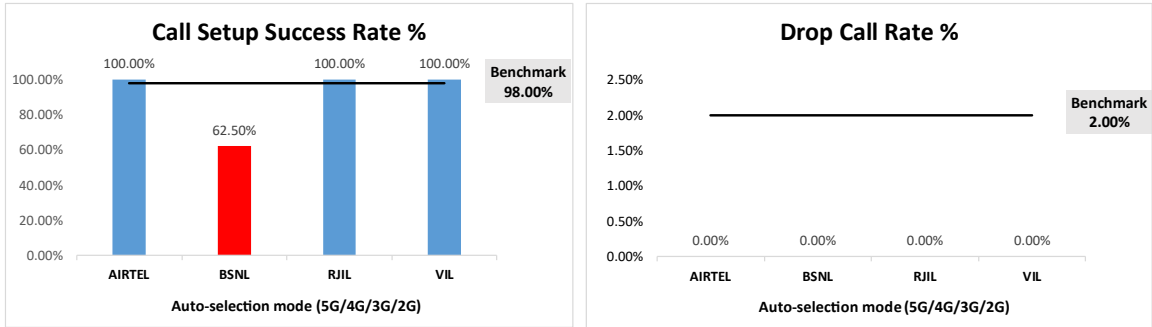


Figure- 36: Performance for call setup success rate and drop call rate.

(b) Network Technology: This section represents time spent on various network technologies.

Ranaghat Junction Railway Station Ranaghat				
Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	0.00%	NA	54.56%	NA
4G	100.00%	99.83%	45.44%	100.00%
3G	NA	0.00%	NA	NA
2G	0.00%	0.00%	NA	0.00%
Limited service	0.00%	0.17%	0.00%	0.00%

Table-115: Time spent on technology during walk test.

(c) Network Signal Strength distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G).

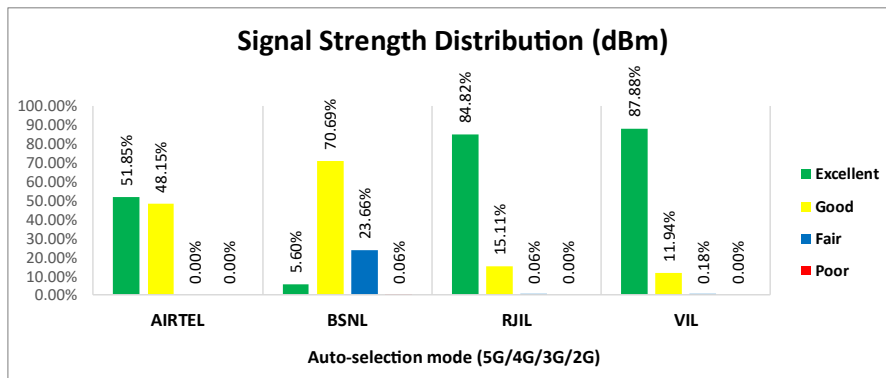


Figure-37: Signal strength distribution auto-selection mode (5G/4G/3G/2G).

4.4.4 Data Performance

i) Krishnanagar City Junction Railway Station Krishnanagar

(a) Data Parameters (Auto-selection mode- 5G/4G/3G/2G)

Krishnanagar City Junction Railway Station Krishnanagar				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	70.80	21.84	90.84	18.19
Download Throughput 80th Percentile	118.72	24.98	151.11	27.18
Download Throughput 20th Percentile	32.96	19.21	22.26	10.72
Download Session Setup Success Rate %	100.00	92.31	100.00	100.00
Upload Throughput Average (Mbits/s)	62.52	13.21	30.47	21.80
Upload Throughput 80th Percentile	79.54	15.74	45.33	26.81
Upload Throughput 20th Percentile	49.45	11.39	18.14	18.00
Upload Session Setup Success Rate %	100.00	84.62	100.00	100.00
Latency (ms)-50th Percentile	55.78	45.45	44.88	49.85

Table-116: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

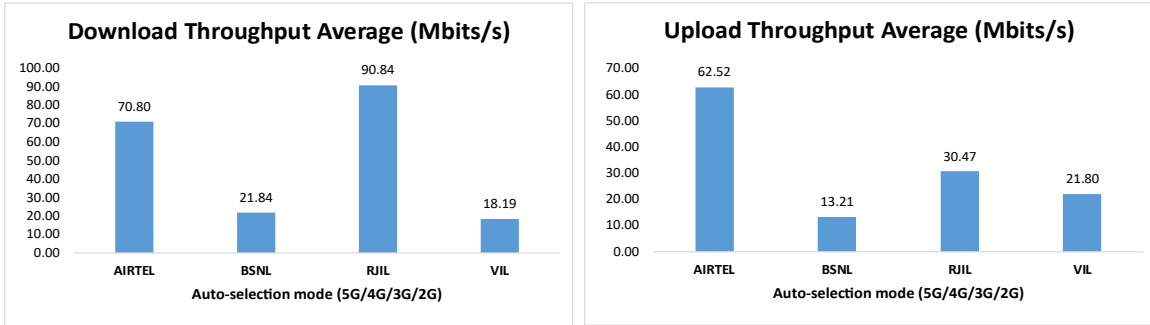


Figure- 38: Download and Upload throughput.

ii) Krishnanagar Sadar District Hospital Ranaghat – Krishnanagar Byp

(a) Data Parameters (Auto-selection mode- 5G/4G/3G/2G)

Krishnanagar Sadar District Hospital Ranaghat - Krishnanagar Byp				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	84.14	12.24	96.87	18.97
Download Throughput 80th Percentile	149.89	14.08	136.36	21.81
Download Throughput 20th Percentile	24.12	10.62	55.88	14.89
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	29.45	5.10	11.92	9.06
Upload Throughput 80th Percentile	48.09	6.17	14.90	12.47
Upload Throughput 20th Percentile	5.53	3.65	8.41	6.40
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Latency (ms)-50th Percentile	57.29	54.34	45.55	46.37

Table-117: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

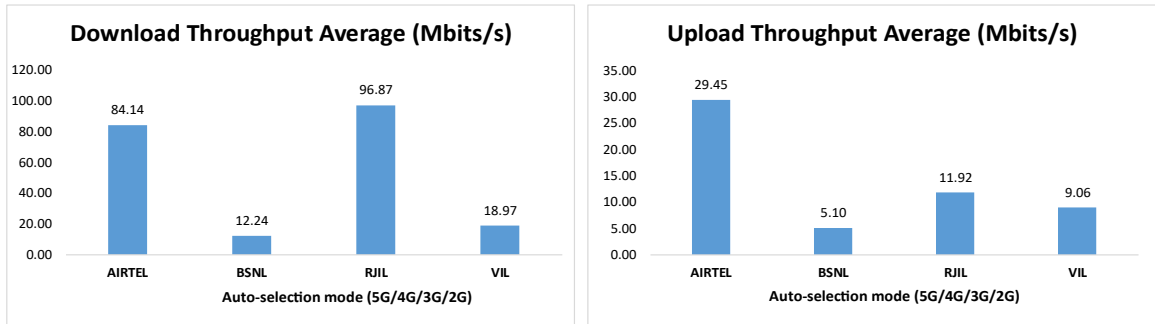


Figure- 39: Download and Upload throughput.

**iii) Mayapur Iskon Mandir Chaitanya Bhawan Bbt Rd Mayapur
(a) Data Parameters (Auto-selection mode- 5G/4G/3G/2G)**

Mayapur Iskon Mandir Chaitanya Bhawan Bbt Rd Mayapur				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	90.82	14.64	82.32	19.80
Download Throughput 80th Percentile	161.30	18.23	96.49	23.63
Download Throughput 20th Percentile	28.07	11.66	72.67	16.27
Download Session Setup Success Rate %	100.00	92.31	100.00	100.00
Upload Throughput Average (Mbits/s)	33.11	4.07	33.10	16.96
Upload Throughput 80th Percentile	62.80	6.14	56.20	27.57
Upload Throughput 20th Percentile	8.99	1.43	10.22	8.99
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Latency (ms)-50th Percentile	55.16	54.22	41.03	47.60

Table-118: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

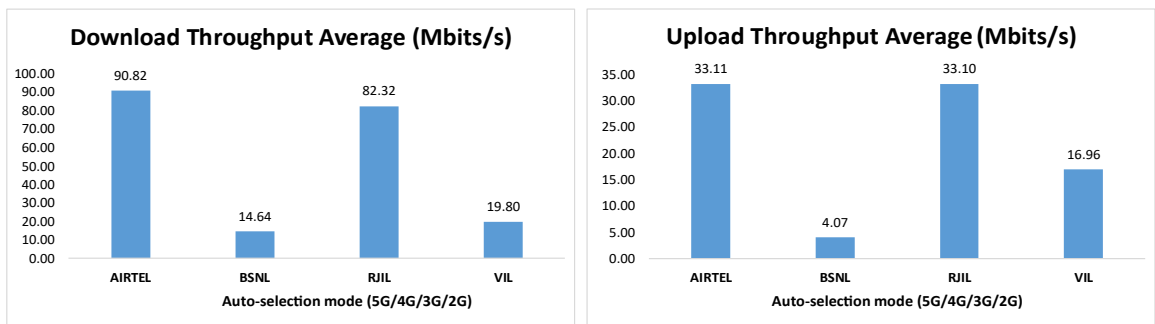


Figure- 40: Download and Upload throughput.

iv) Ranaghat Junction Railway Station Ranaghat
(a) Data Parameters (Auto-selection mode- 5G/4G/3G/2G)

Ranaghat Junction Railway Station Ranaghat				
Parameters	Service Provider			
	Auto-Selection Mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Download Throughput Average (Mbits/s)	84.38	9.30	65.52	28.95
Download Throughput 80th Percentile	96.89	11.82	92.31	37.14
Download Throughput 20th Percentile	72.46	6.05	29.73	19.82
Download Session Setup Success Rate %	100.00	100.00	100.00	100.00
Upload Throughput Average (Mbits/s)	63.52	3.95	34.27	34.97
Upload Throughput 80th Percentile	76.28	7.72	43.03	40.61
Upload Throughput 20th Percentile	53.43	1.20	23.83	31.49
Upload Session Setup Success Rate %	100.00	100.00	100.00	100.00
Latency (ms)-50th Percentile	54.18	55.38	45.73	47.81

Table-119: Summary of Data performance in network auto-selection mode (5G/4G/3G/2G).

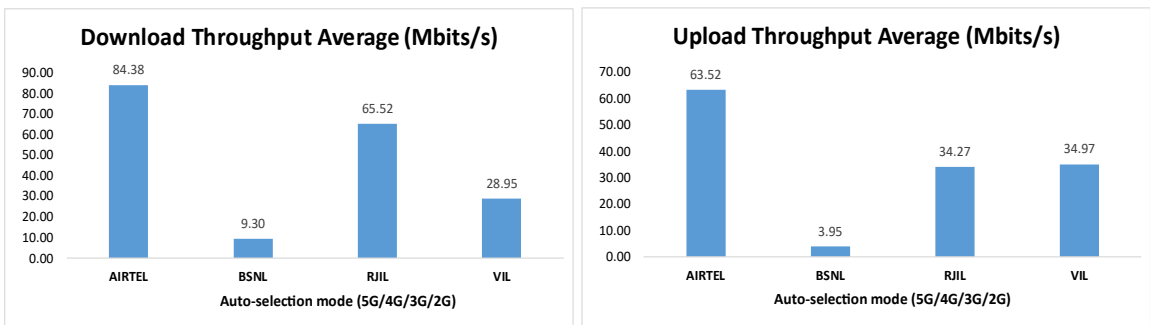


Figure- 41: Download and Upload throughput.

4.5 Highway

Drive test has been conducted on 11th February to 12th February 2026 covering one highway route. (Refer Table-1)

4.5.1 Drive test route

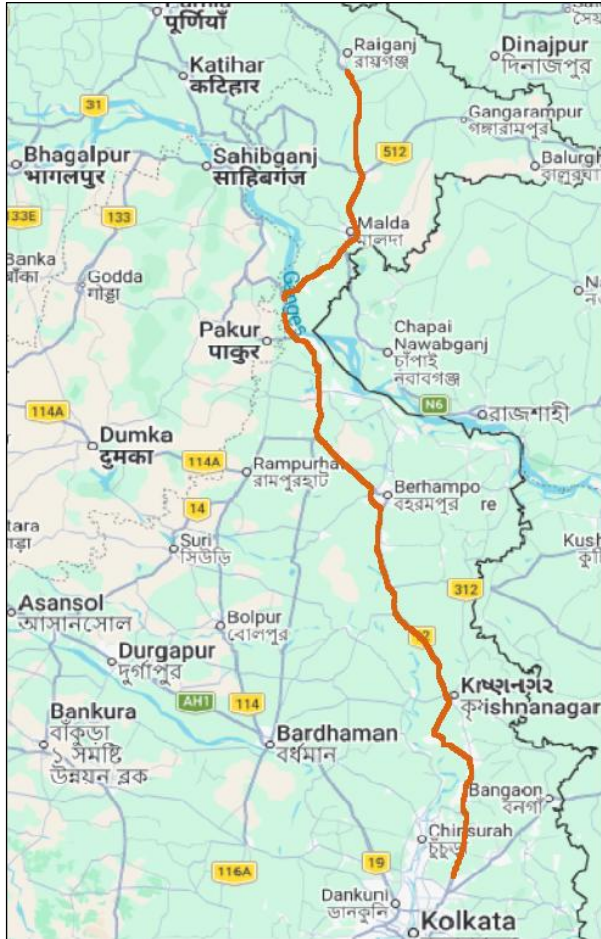


Figure-42: Drive test route Highway.

4.5.2 Routes Covered

Barasat to Raiganj passing through Amdanga, Ranaghat, Krishnanagar, Debagram, Bhabta, Morgram, Sadikpur, Farakka, Gazole and Rupahar etc.

4.5.3 Voice performance

(a) Voice Call Performance in 3G/2G network mode only: 3G/2G network mode testing has been done to reflect the experience for respective users as they have only 3G/2G compatible handsets.

Parameters	Service Provider		
	3G/2G network mode only		
	AIRTEL	BSNL	VIL
Call Attempts	172	193	189
Call Setup Success Rate %	97.67	94.30	100.00
Drop Call Rate %	0.60	14.29	13.76
Call Setup Time-Average (Second)	5.05	3.07	4.57
Handover Success Rate %	96.89	94.89	99.23

Table-120: Summary of voice call performance in 3G/2G network mode only.

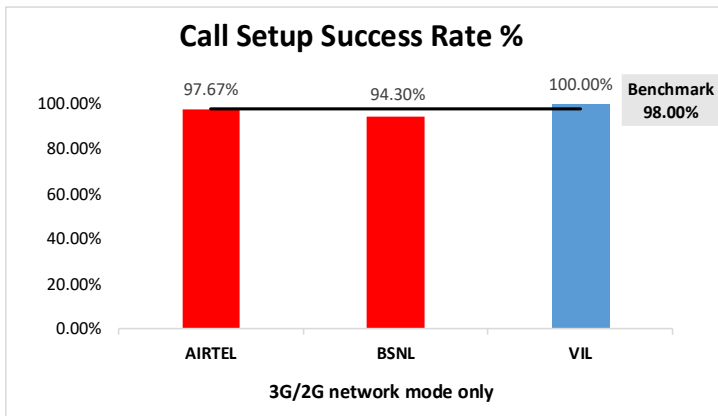


Figure-43: Performance for call setup success rate.

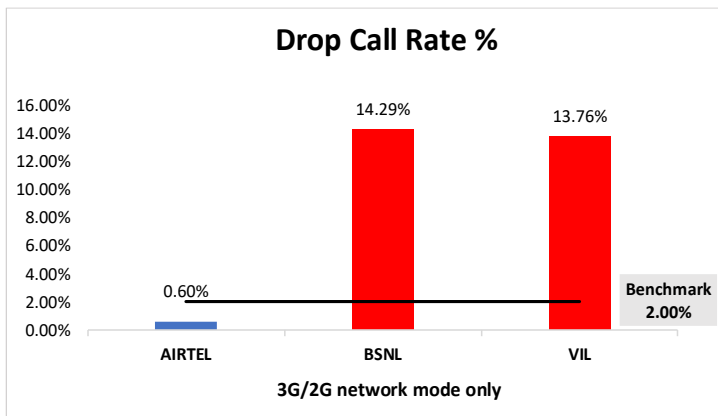


Figure-44: Performance for drop call rate.

(b) Network Technology: This section represents time spent on various network technologies.

Technology	Service Provider		
	AIRTEL	BSNL	VIL
3G	NA	25.60%	NA
2G	99.92%	74.06%	99.96%
Limited Service	0.08%	0.33%	0.04%

Table-121: Time spent on technology during drive test 3G/2G network mode only.

Note-

- NA- Service provider doesn't provide services in respective technology.

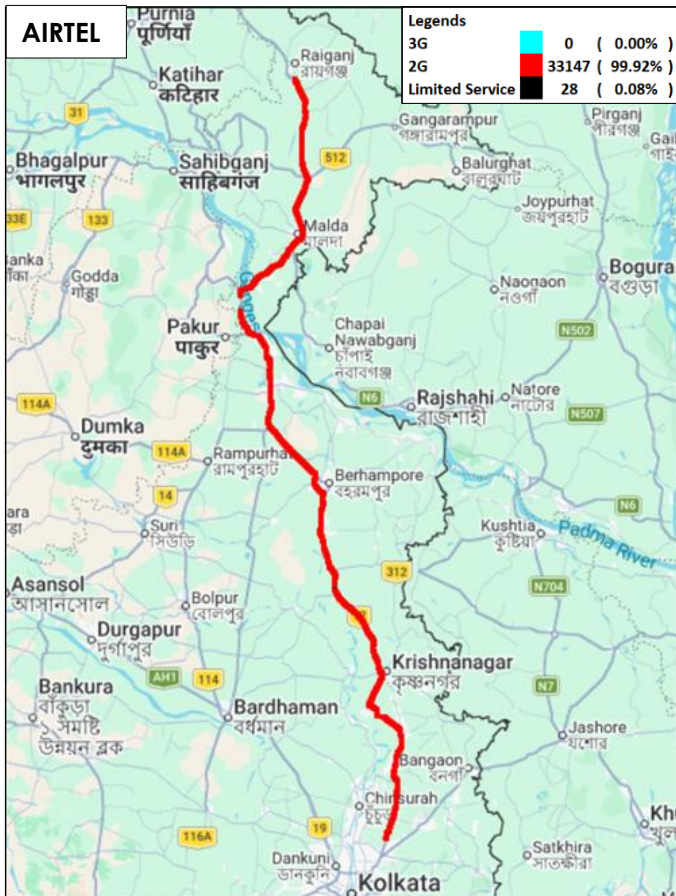


Figure-45: Serving technology plots 3G/2G network mode - AIRTEL.

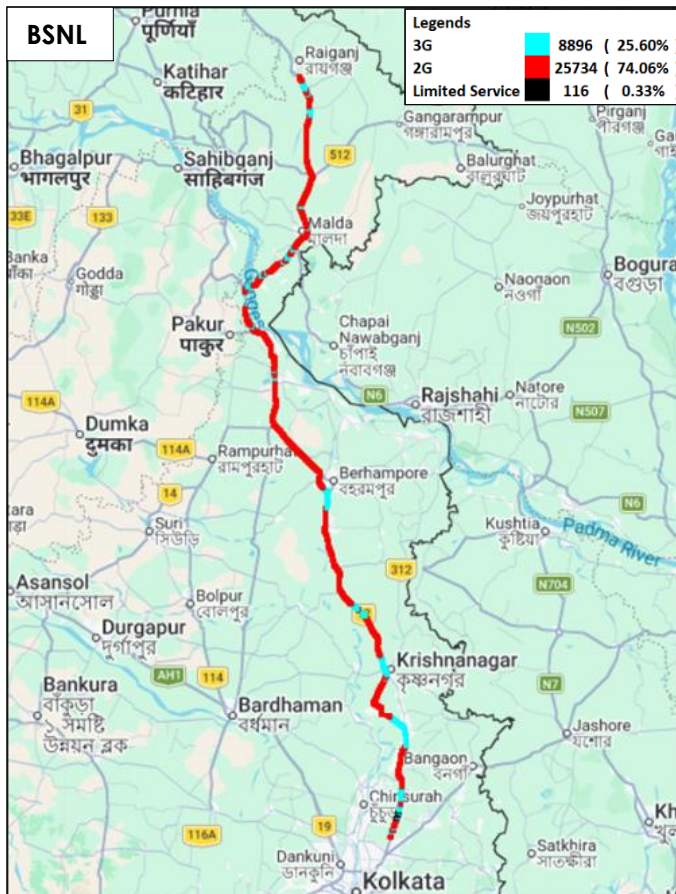


Figure-46: Serving technology plots 3G/2G network mode - BSNL.

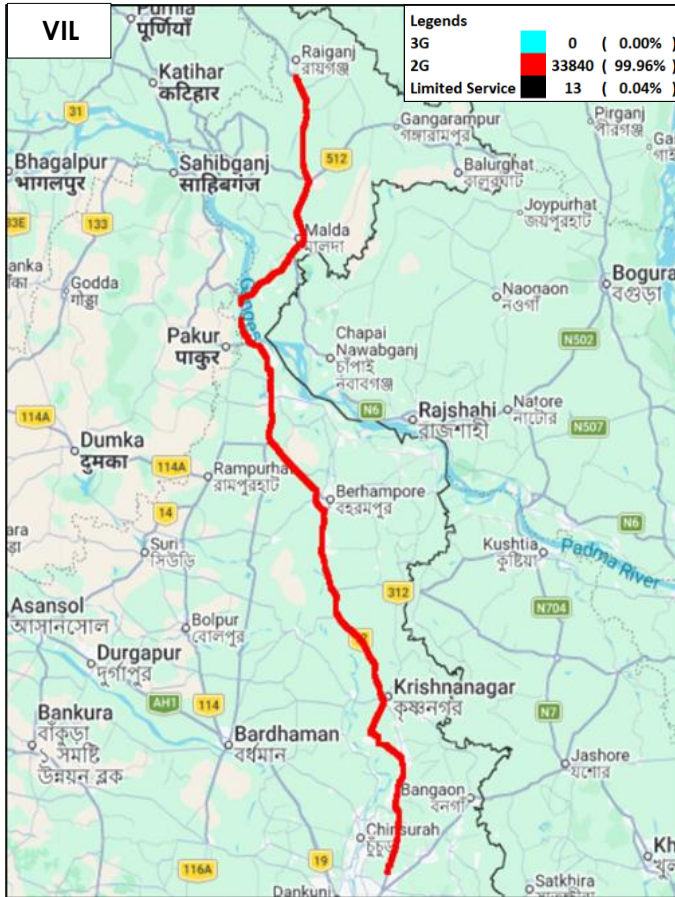


Figure 47: Serving technology plots 3G/2G network mode - VIL.

(c) Network Signal Strength Distribution: The following chart represents signal strength distribution for 3G/2G network mode only. (Refer figure-90, 91 & 92 for map view)

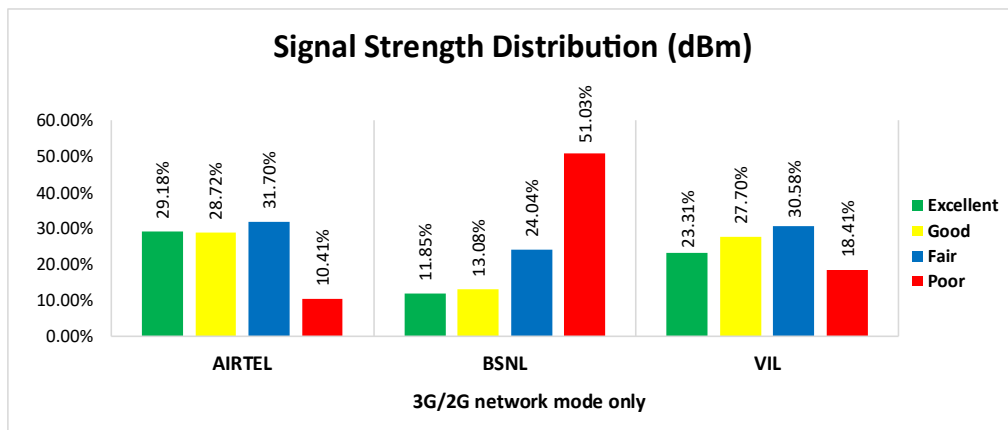


Figure-48: Signal strength distribution 3G/2G network mode only.

Observations:

- Airtel has 29% of samples falling in the excellent signal strength category.
- BSNL has 12% of samples falling in the excellent signal strength category.
- VIL has 23% of samples falling in the excellent signal strength category.

(d) Voice Call Performance in auto network selection mode (5G/4G/3G/2G)

Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempts	180	200	180	177
Call Setup Success Rate %	97.22	88.00	100.00	100.00
Drop Call Rate %	0.00	13.07	1.11	0.00
Call Setup Time Average (Second)	1.78	6.29	0.67	1.13
Handover Success Rate %	99.93	96.48	99.96	100.00

Table-122: Summary of voice call performance in network auto-selection mode.

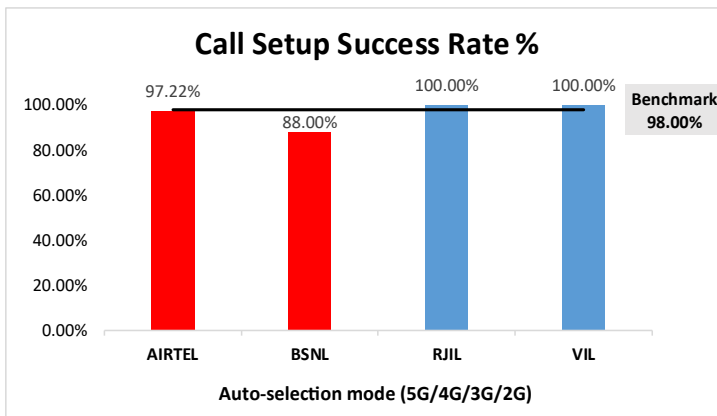


Figure-49: Performance for call setup success rate.

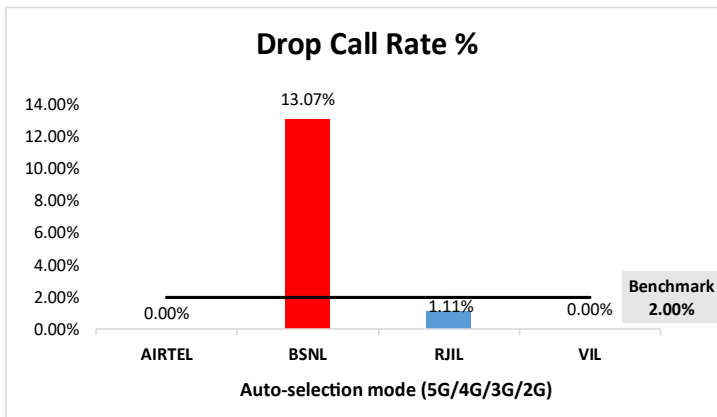


Figure-50: Performance for drop call rate.

Parameter	Service Provider			
	Mobile-to-Mobile (5G/4G - Open Mode)			
	AIRTEL	BSNL	RJIL	VIL
Call Established (within service provider Network)	151	168	151	152
Number of silence call for >4 Sec	1	6	2	3
Silence Call Rate %	0.66	3.57	1.32	1.97
Number of silence instances for >4 Sec	1	7	2	6
Number of silence instances for >3 Sec	2	16	2	11
Number of silence instances for >2 sec	8	32	7	30
RTP Jitter (4G & 5G) in ms	4.94	6.88	15.45	12.03
Packet loss Rate Downlink %	0.67	4.35	0.73	0.67
Packet loss Rate Uplink %	0.35	4.29	0.75	0.81

Table-123: Summary of silence instances & packet loss rate for mobile to mobile call.

(e) Mean Opinion Score (MOS) performance for speech quality:

Mean opinion score indicate quality of speech observed during the drive test across different technologies. This parameter has been calculated for mobile to mobile calls made within same operator network in auto mode (5G/4G/3G/2G). As per ITU-T Recommendation P.863.1, MOS values means: 5-Excellent, 4-Good, 3-Fair, 2-Poor, 1-Bad.

Speech Quality (MOS) distribution	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
Total Number of MOS Samples for calls in table-123	1919	1797	1910	1949
Speech Quality (Average MOS)	4.00	2.84	4.50	4.46
Number of samples with MOS >=4 to <5 (Excellent)	1631	529	1686	1682
Number of samples with MOS >=3 to <4 (Good)	220	147	144	192
Number of samples with MOS >=2 to <3 (Fair)	34	692	38	56
Number of samples with MOS >=1 to <2 (Poor)	34	429	42	19
%age of samples with MOS >=4 to <5 (Excellent)	84.99%	29.44%	88.27%	86.30%
%age of samples with MOS >=3 to <4 (Good)	11.46%	8.18%	7.54%	9.85%
%age of samples with MOS >=2 to <3 (Fair)	1.77%	38.51%	1.99%	2.87%
%age of samples with MOS >=1 to <2 (Poor)	1.77%	23.87%	2.20%	0.97%

Table-124: Summary of speech quality (MOS) samples.

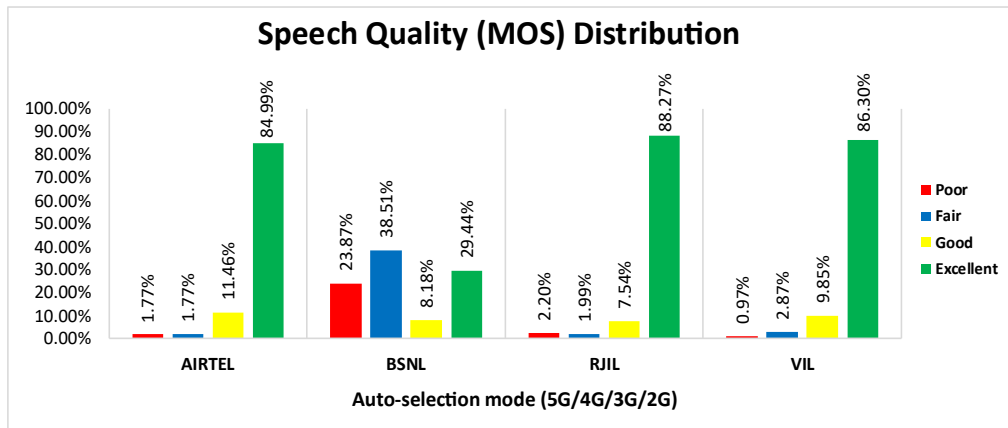


Figure-51: Distribution of samples in MOS range.

(f) Network Technology: This section represents time spent on various network technologies.

Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	6.74%	NA	72.34%	0.00%
4G	93.26%	63.73%	27.66%	99.51%
3G	NA	7.53%	NA	NA
2G	0.00%	28.04%	NA	0.49%
Limited Service	0.00%	0.69%	0.00%	0.00%

Table-125: Time spent on technology during drive test in auto-selection mode (5G/4G/3G/2G) voice.

Note-

- NA- Service provider doesn't provide services in respective technology.

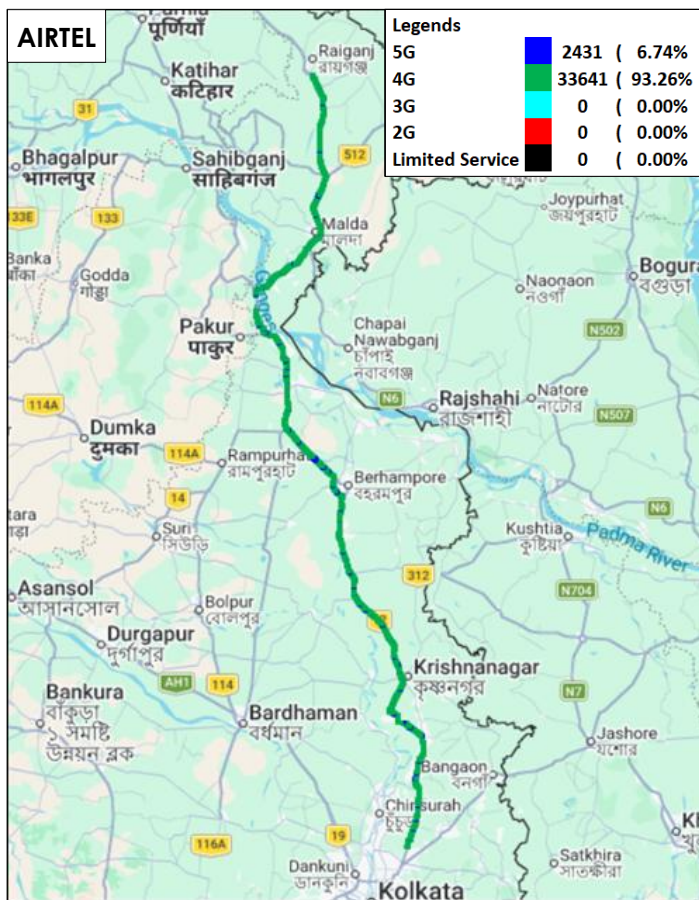


Figure-52: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - AIRTEL

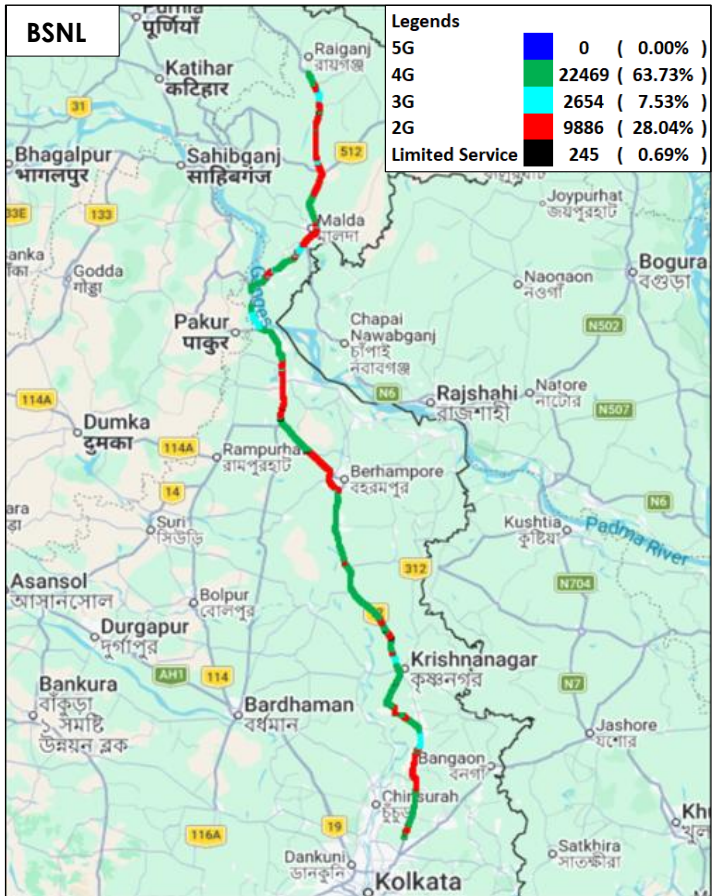


Figure-53: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - BSNL.

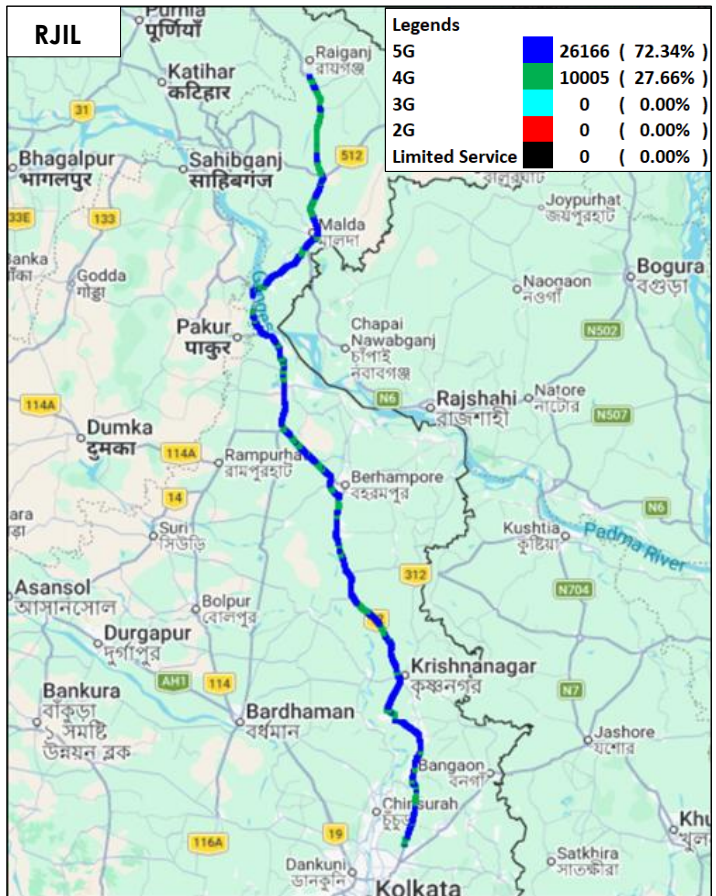


Figure-54: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - RJIL.

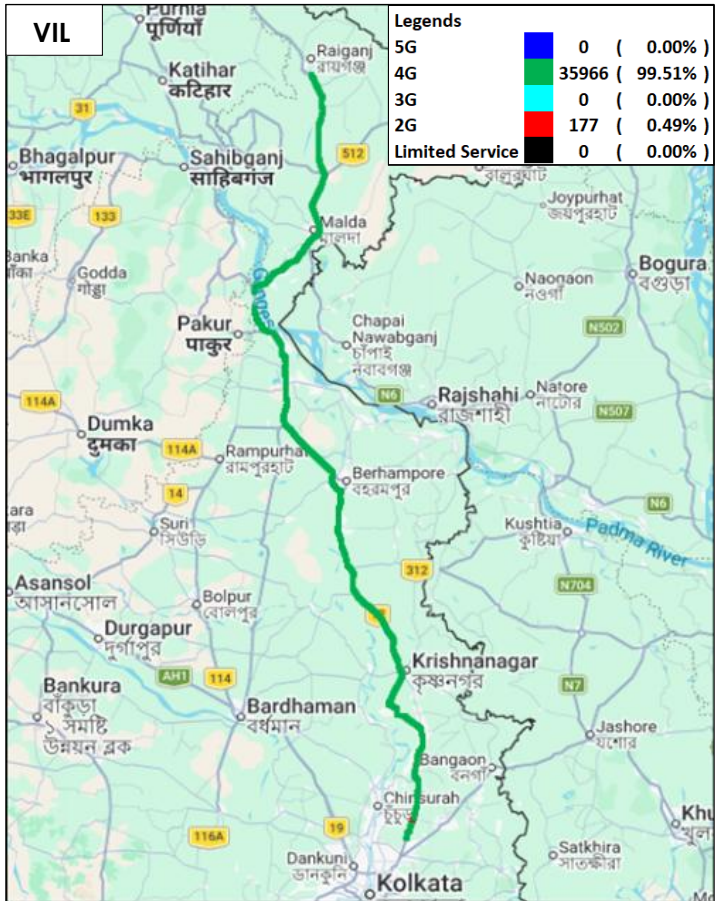


Figure-55: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - VIL.

(g) Network Signal Strength Distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G) voice. (Refer figure-93, 94, 95 & 96 for map view)

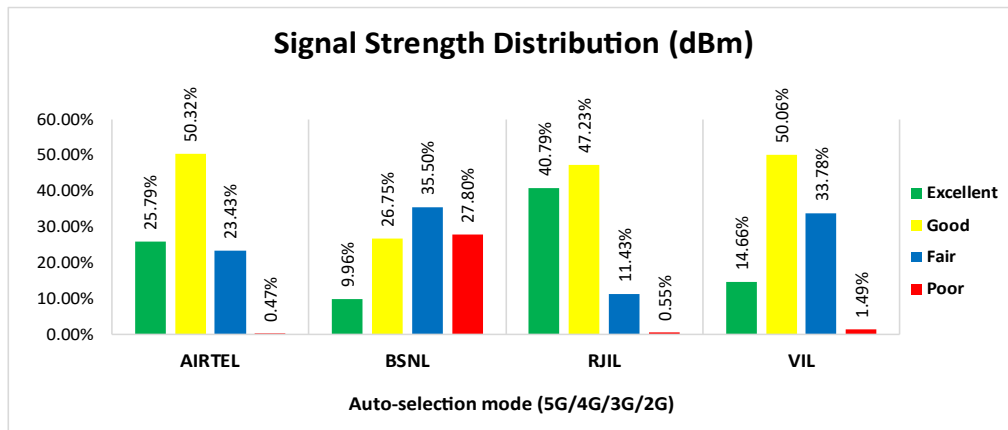


Figure-56: Signal strength distribution auto-selection mode (5G/4G/3G/2G) voice.

Observations:

- Airtel has 26% of samples falling in the excellent signal strength category.
- BSNL has 10% of samples falling in the excellent signal strength category.
- RJIL has 41% of samples falling in the excellent signal strength category.
- VIL has 15% of samples falling in the excellent signal strength category.

4.5.4 Data performance

(a) Data Parameters (Auto-selection mode- 5G/4G/3G/2G)

Parameters		Service Provider			
		Auto-selection mode (5G/4G/3G/2G)			
		AIRTEL	BSNL	RJIL	VIL
Download Throughput (Mbits/s)	Average	105.27	14.79	197.17	22.07
	80th Percentile	172.28	26.82	323.02	33.35
	20th Percentile	26.58	2.87	58.09	9.22
Upload Throughput (Mbits/s)	Average	28.12	4.01	23.76	15.73
	80th Percentile	50.14	7.02	45.15	25.82
	20th Percentile	7.37	1.20	4.17	4.43
Latency (ms)	50th Percentile	52.39	52.46	43.36	45.03

Table-126: Summary of Data performance in network auto-selection mode.

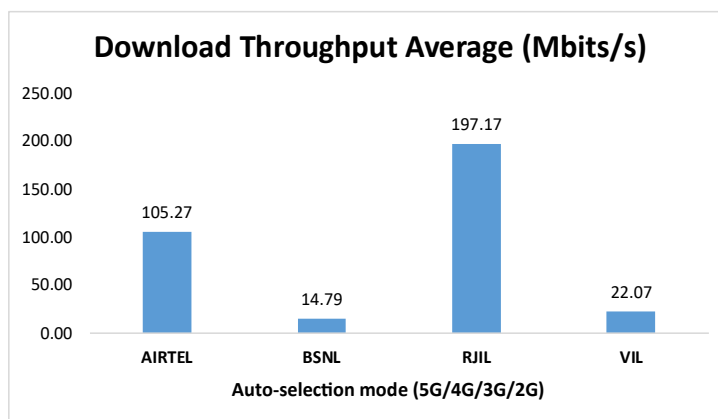


Figure 57: Download throughput.

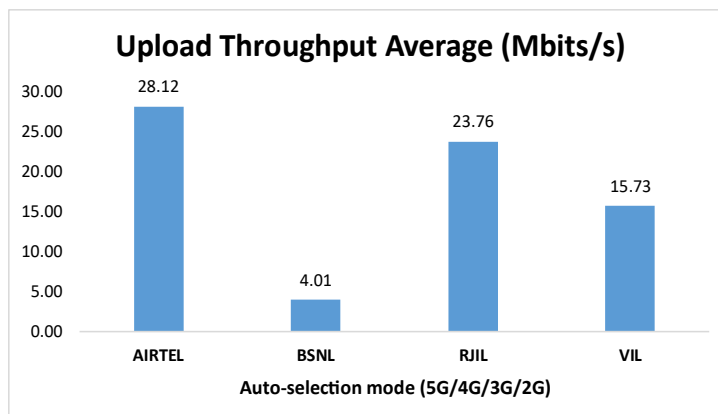


Figure-58: Upload throughput.

(b) Network Technology: This section represents time spent on various network technologies.

Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	74.47%	NA	88.90%	0.00%
4G	25.53%	76.94%	11.10%	99.93%
3G	NA	6.17%	NA	NA
2G	0.00%	15.01%	NA	0.07%
Limited Service	0.00%	1.88%	0.00%	0.00%

Table-127: Time spent on technology during drive test in auto-selection mode (5G/4G/3G/2G) data.

Note-

- NA- Service provider doesn't provide services in respective technology.

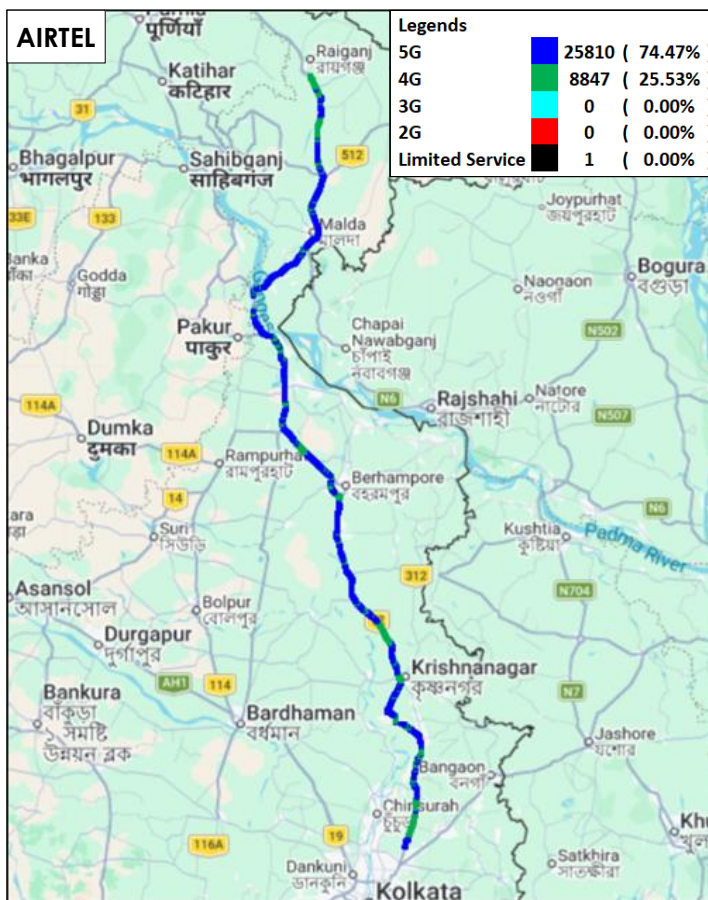


Figure-59: Serving technology plots in auto-selection mode (5G/4G/3G/2G) data - AIRTEL

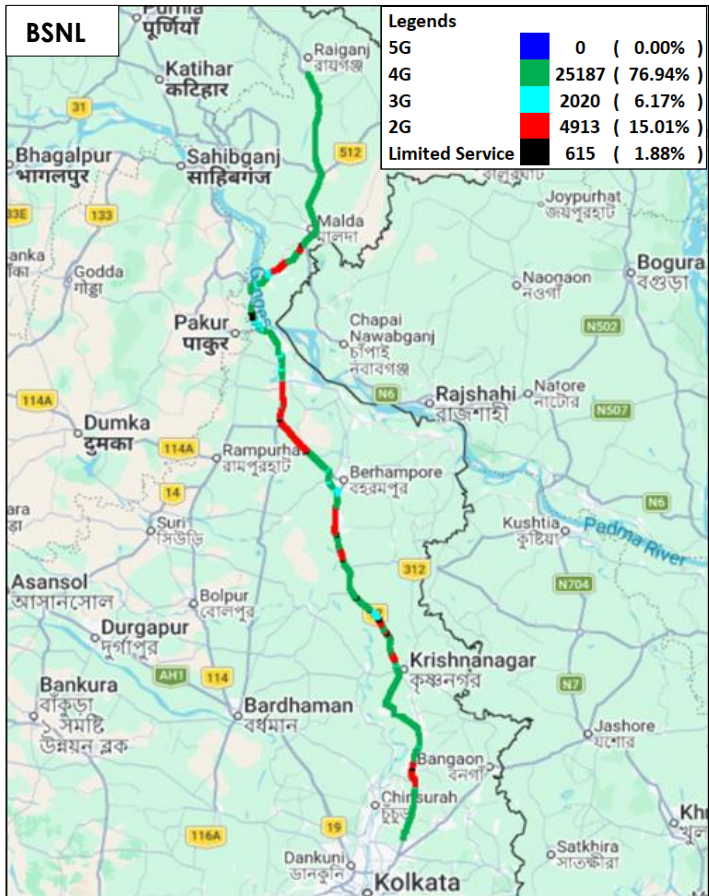


Figure-60: Serving technology plots in auto-selection mode (5G/4G/3G/2G) data - BSNL.

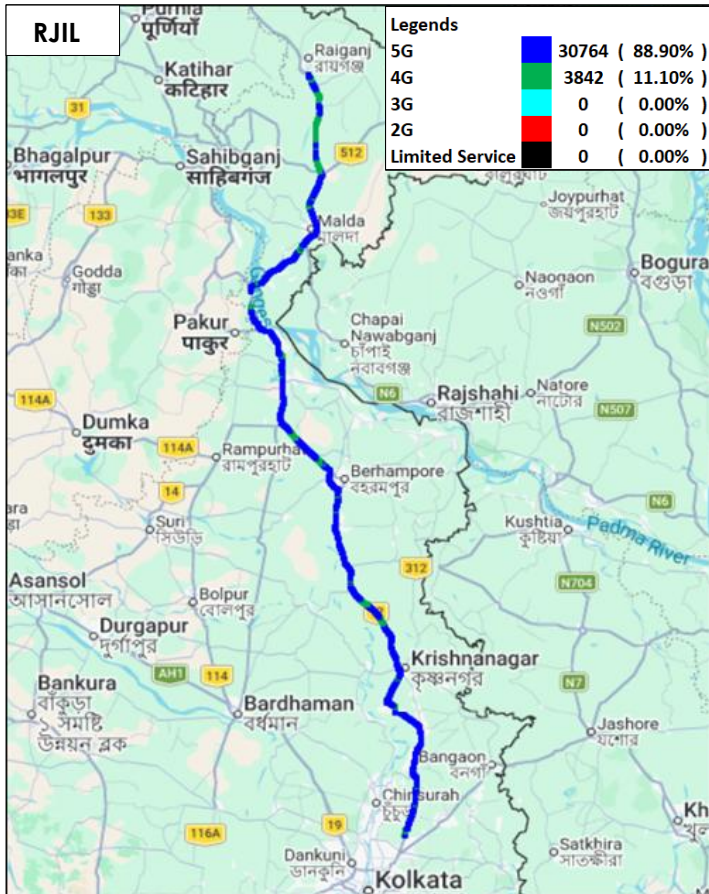


Figure-61: Serving technology plots in auto-selection mode (5G/4G/3G/2G) data - RJIL.

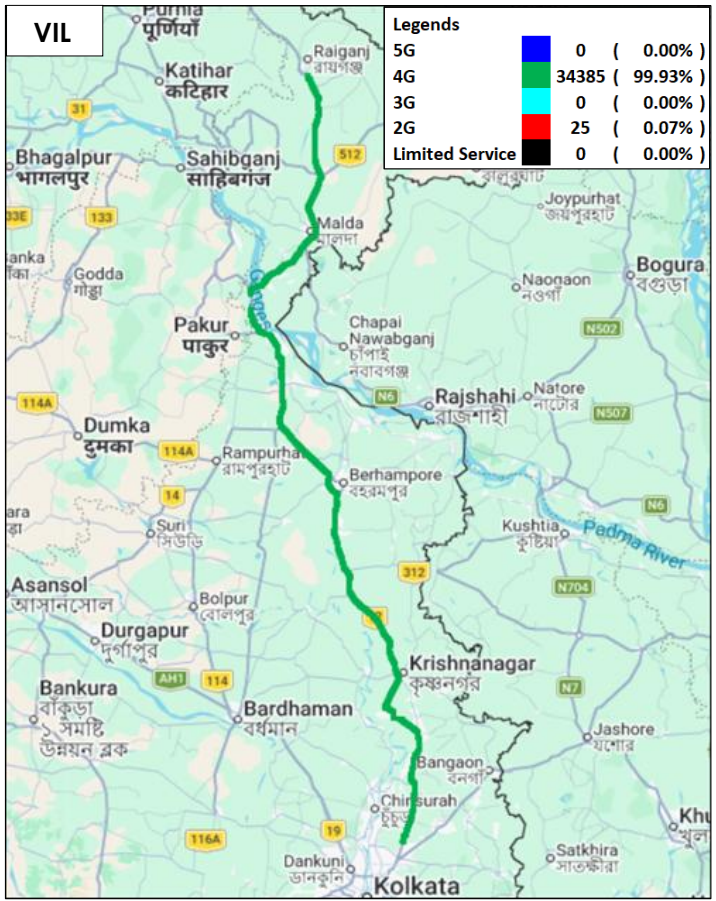


Figure-62: Serving technology plots in auto-selection mode (5G/4G/3G/2G) data - VIL.

(c) Network Signal Strength Distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G) data. (Refer figure-97, 98, 99 & 100 for map view)

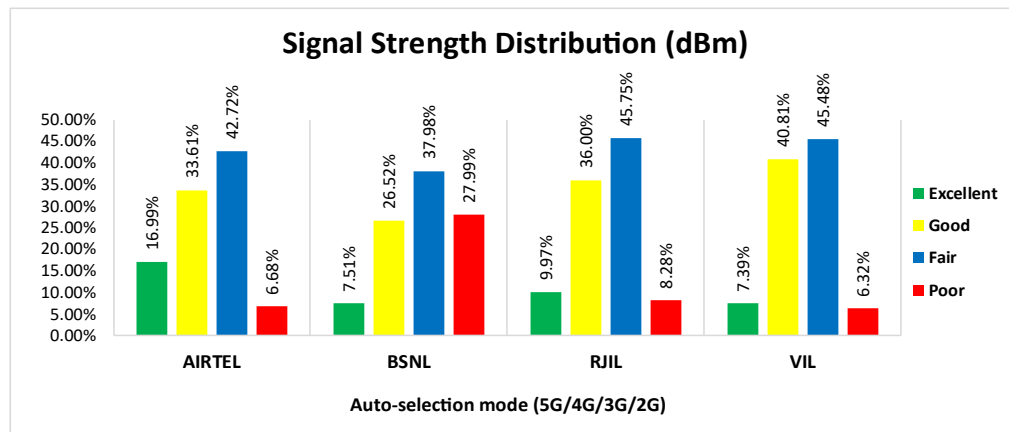


Figure-63: Signal strength distribution auto-selection mode (5G/4G/3G/2G) data.

Observations:

- Airtel has 17% of samples falling in the excellent signal strength category.
- BSNL has 8% of samples falling in the excellent signal strength category.
- RJIL has 10% of samples falling in the excellent signal strength category.
- VIL has 7% of samples falling in the excellent signal strength category.

4.6 Railway

Drive test has been conducted on 10th February 2026 covering one Railway route. (Refer Table-1)

4.6.1 Drive test route

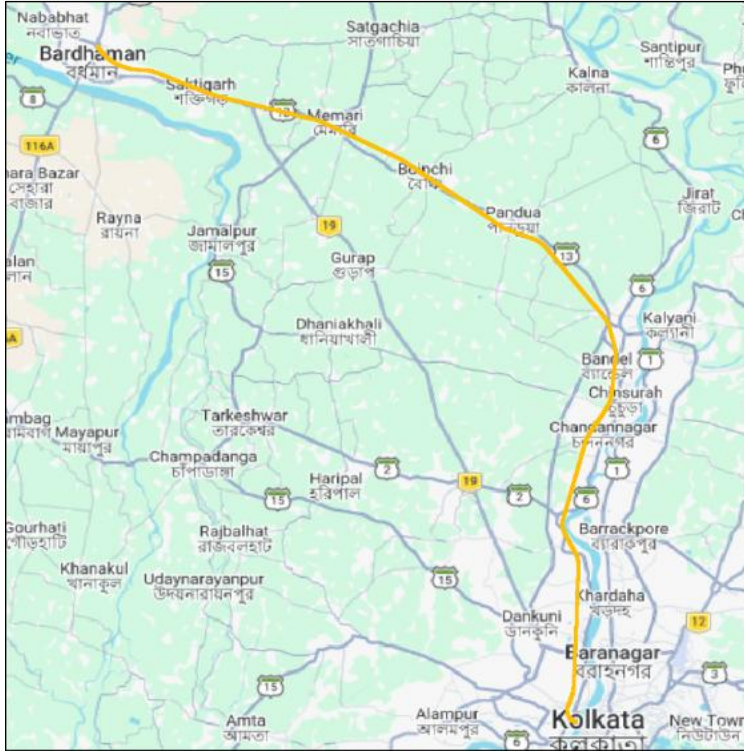


Figure-64: Drive test route Coastal.

4.6.2 Routes Covered

Howrah to Bardhaman via Bandel.

4.6.3 Voice performance

(a) Voice Call Performance in auto network selection mode (5G/4G/3G/2G)

Parameters	Service Provider			
	Auto-selection mode (5G/4G/3G/2G)			
	AIRTEL	BSNL	RJIL	VIL
Call Attempts	43	47	44	46
Call Setup Success Rate %	100.00	93.62	95.45	97.83
Drop Call Rate %	0.00	13.64	2.38	11.11
Call Setup Time Average (Second)	1.76	6.86	0.81	1.73
Handover Success Rate %	100.00	99.63	100.00	100.00

Table-128: Summary of voice call performance in network auto-selection mode.

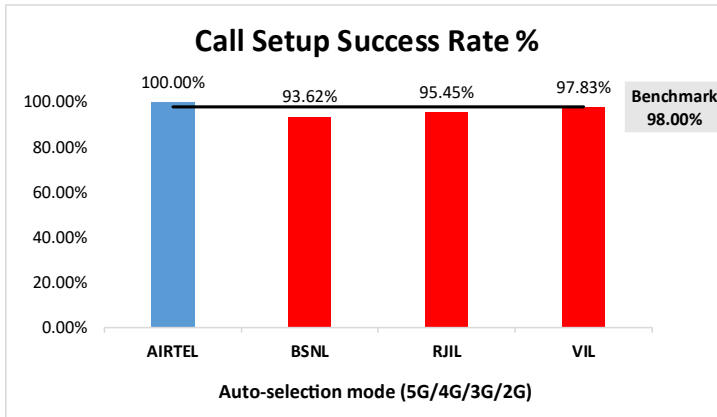


Figure-65: Performance for call setup success rate.

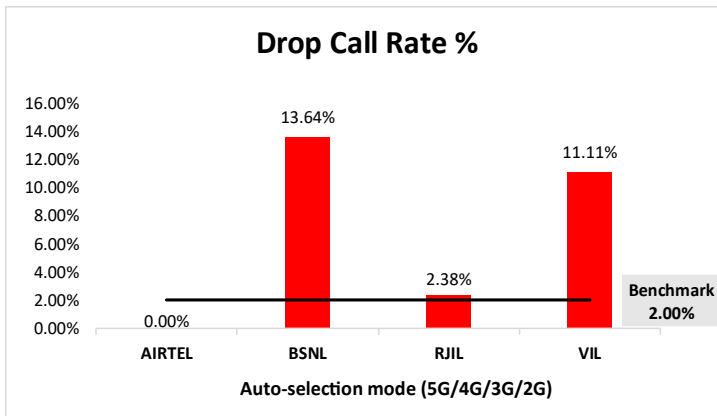


Figure-66: Performance for drop call rate.

(b) Network Technology: This section represents time spent on various network technologies.

Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	3.29%	NA	65.46%	1.22%
4G	96.71%	82.76%	34.49%	95.29%
3G	NA	1.67%	NA	NA
2G	0.00%	14.72%	NA	3.40%
Limited Service	0.00%	0.85%	0.05%	0.09%

Table-129: Time spent on technology during drive test in auto-selection mode (5G/4G/3G/2G) voice.

Note-

- NA- Service provider doesn't provide services in respective technology.

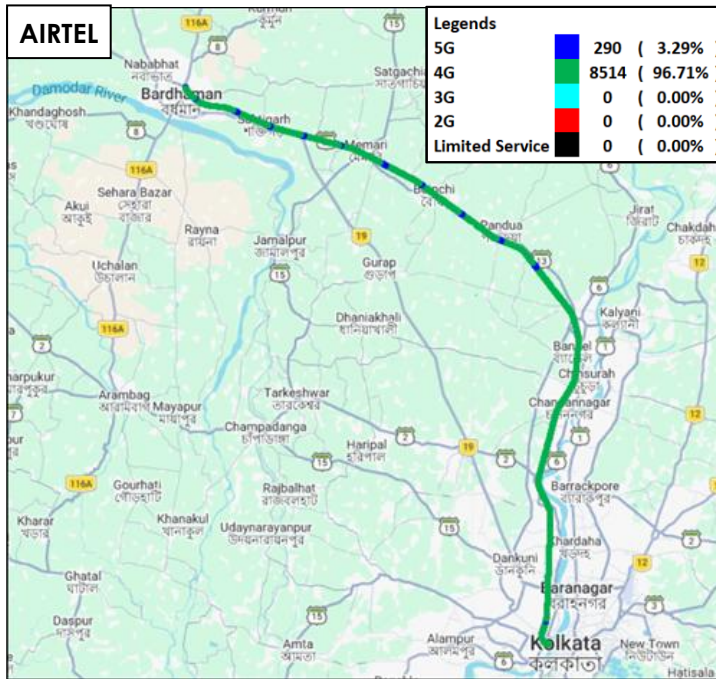


Figure-67: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice – AIRTEL.

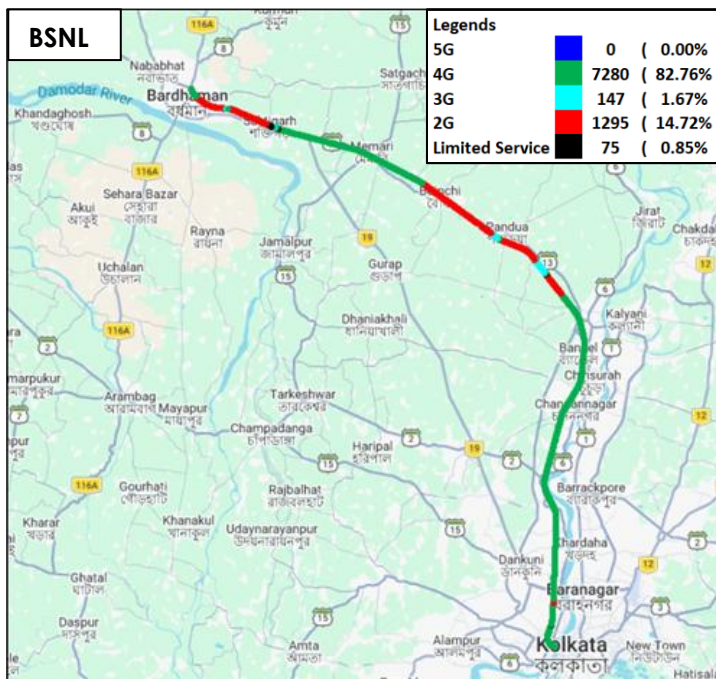


Figure-68: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - BSNL.

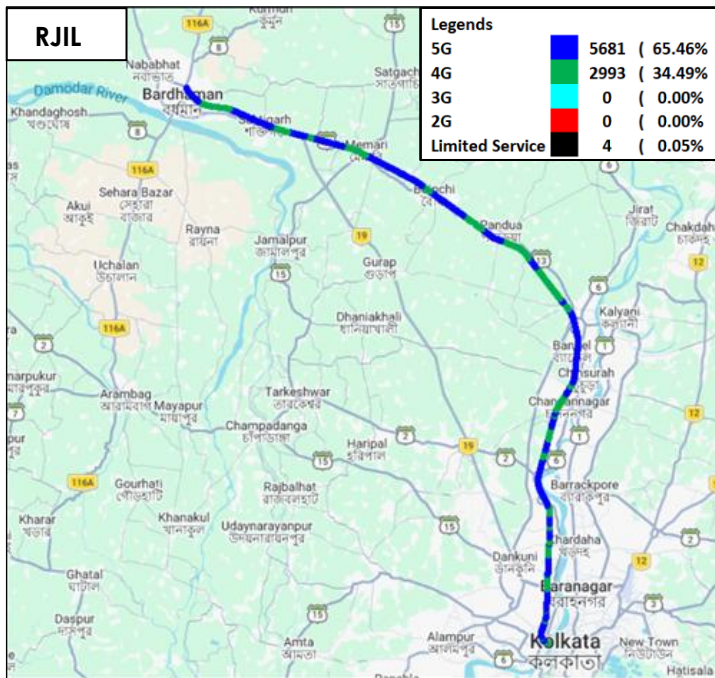


Figure-69: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - RJIL.

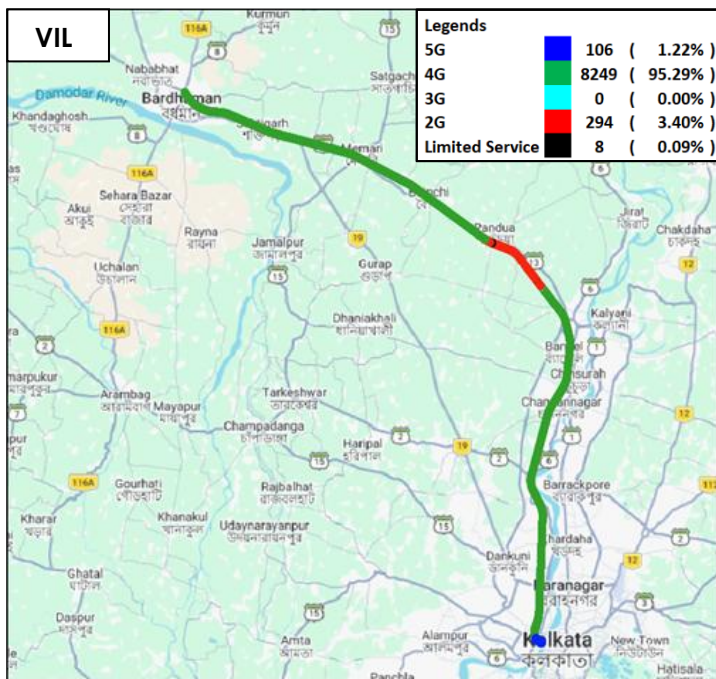


Figure-70: Serving technology plots in auto-selection mode (5G/4G/3G/2G) voice - VIL.

(c) Network Signal Strength Distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G) voice. (Refer figure-101, 102, 103 & 104 for map view)

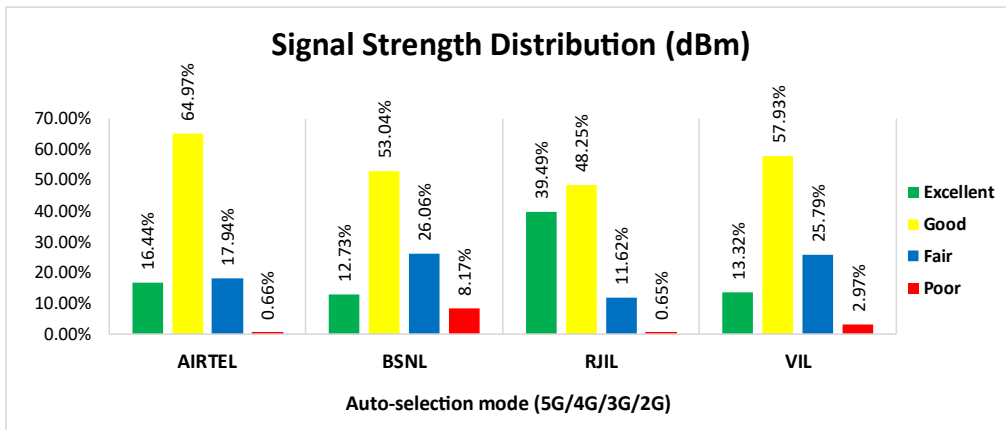


Figure-71: Signal strength distribution auto-selection mode 5G/4G/3G/2G voice.

Observations:

- Airtel has 16% of samples falling in the excellent signal strength category.
- BSNL has 13% of samples falling in the excellent signal strength category.
- RJIL has 39% of samples falling in the excellent signal strength category.
- VIL has 13% of samples falling in the excellent signal strength category.

4.6.4 Data performance

(a) Data Parameters (Auto-selection mode- 5G/4G/3G/2G)

Parameters		Service Provider			
		Auto-selection mode (5G/4G/3G/2G)			
		AIRTEL	BSNL	RJIL	VIL
Download Throughput (Mbits/s)	Average	132.50	7.11	96.33	21.70
	80th Percentile	224.04	11.90	180.05	30.94
	20th Percentile	33.68	0.80	13.55	10.78
Upload Throughput (Mbits/s)	Average	23.95	3.02	15.33	10.10
	80th Percentile	40.40	4.58	25.83	13.39
	20th Percentile	7.53	1.22	3.12	6.00
Latency (ms)	50th Percentile	45.79	52.62	41.60	44.19

Table-130: Summary of Data performance in network auto-selection mode.

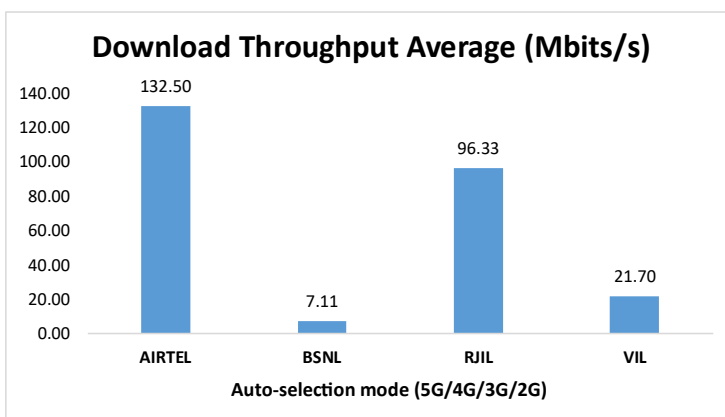


Figure 72: Download throughput.

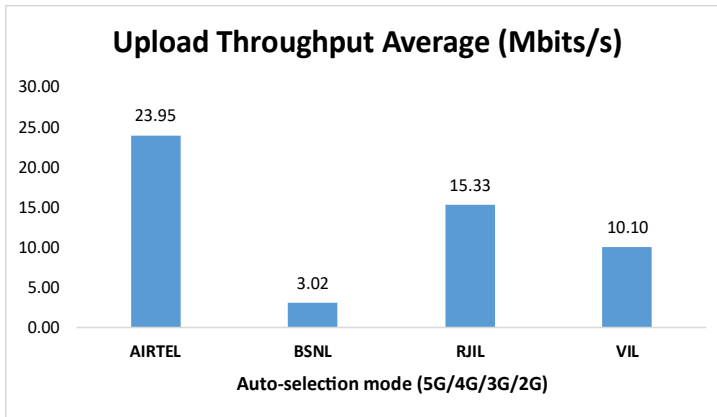


Figure-73: Upload throughput.

(b) Network Technology: This section represents time spent on various network technologies.

Technology	Service Provider			
	AIRTEL	BSNL	RJIL	VIL
5G	81.61%	NA	97.34%	18.49%
4G	18.39%	49.60%	2.66%	80.86%
3G	NA	48.20%	NA	NA
2G	0.00%	1.94%	NA	0.63%
Limited Service	0.00%	0.26%	0.00%	0.02%

Table-131: Time spent on technology during drive test in auto-selection mode (5G/4G/3G/2G) data.

Note-

- NA- Service provider doesn't provide services in respective technology.

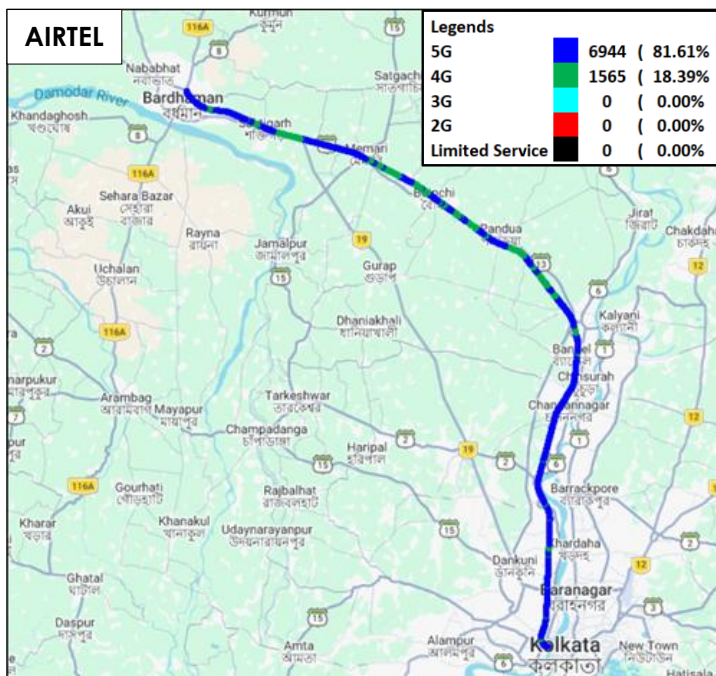


Figure-74: Serving technology plot in auto-selection mode (5G/4G/3G/2G) data - AIRTEL.

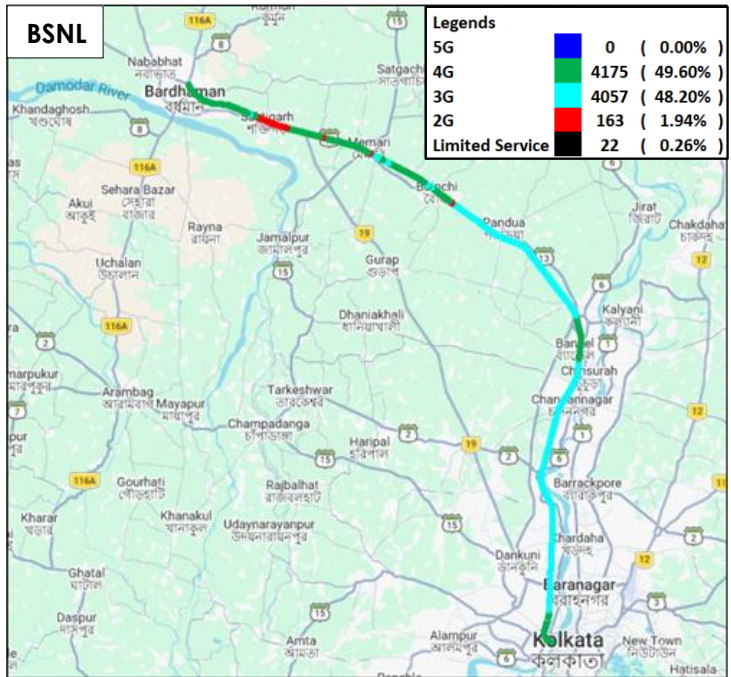


Figure-75: Serving technology plot in auto-selection mode (5G/4G/3G/2G) data - BSNL.

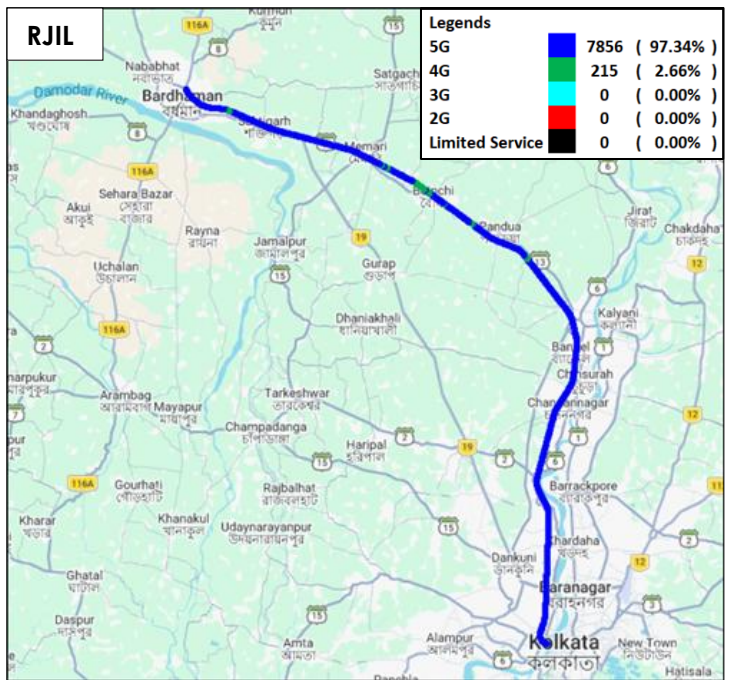


Figure-76: Serving technology plot in auto-selection mode (5G/4G/3G/2G) data - RJIL.

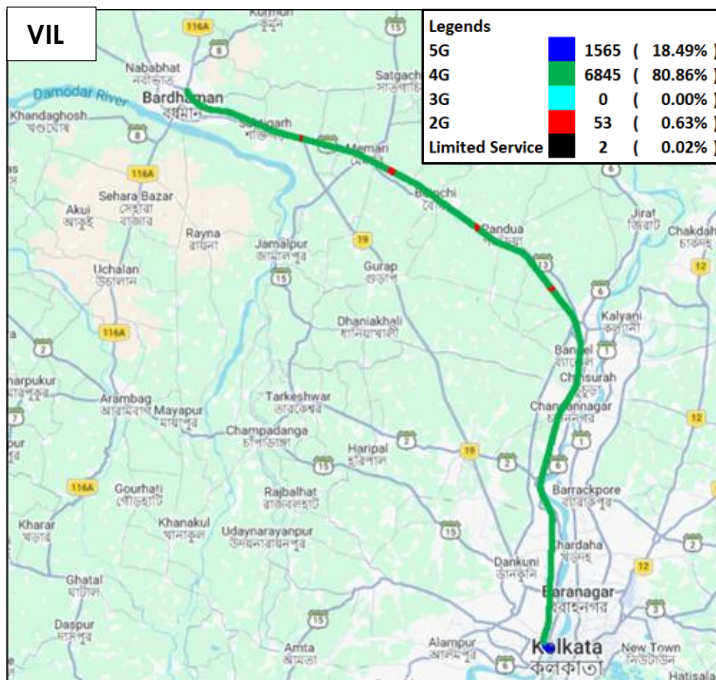


Figure-77: Serving technology plot in auto-selection mode (5G/4G/3G/2G) data – VIL.

(c) Network Signal Strength Distribution: The following chart provides signal strength distribution for auto-selection mode (5G/4G/3G/2G) data. (Refer figure-105, 106, 107 & 108 for map view)

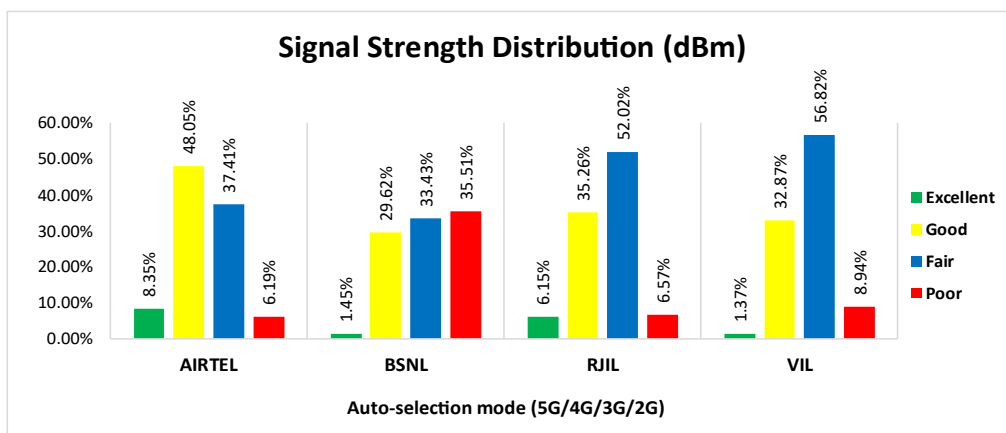


Figure-78: Signal strength distribution auto-selection mode (5G/4G/3G/2G) data.

Observations:

- Airtel has 8% of samples falling in the excellent signal strength category.
- BSNL has 1% of samples falling in the excellent signal strength category.
- RJIL has 6% of samples falling in the excellent signal strength category.
- VIL has 1% of samples falling in the excellent signal strength category.

5. Voice & Data Key findings

5.1 Overall Voice

1. Call Setup Success Rate:

- a) Airtel, BSNL and VIL have 94.60%, 66.85% and 99.86% call setup success rate respectively in 3G/2G network mode. (refer table-3)
- b) Airtel, BSNL, RJIL and VIL have 96.66%, 83.79%, 99.72% and 99.91% call setup success rate respectively in auto-selection mode (5G/4G/3G/2G). (refer table-5)
- c) Airtel, BSNL & RJIL have 100.00% call setup success rate while calling on peer service provider's network for inter-operator calls. (refer table-9)
- d) VIL had a 100.00% call setup success when calling Airtel and RJIL whereas call blocking was observed when calling BSNL. (refer table-9)

2. Call Setup Time:

- a) Airtel, BSNL and VIL call setup time is 5.02, 2.79 and 4.73 seconds respectively in 3G/2G network mode. (refer table-3)
- b) Airtel, BSNL, RJIL & VIL call setup time is 1.84, 6.33, 0.62 & 0.99 seconds respectively in auto-selection mode (5G/4G/3G/2G). (refer table-5)

3. Call Silence/Mute Rate:

In packet switched network (4G/5G) Airtel, BSNL, RJIL and VIL have 0.15%, 3.26%, 0.75% and 1.00% silence call rate respectively. Further Airtel, BSNL, RJIL & VIL downlink RTP packet loss is 0.42%, 3.55%, 0.64% and 0.83% respectively. In uplink Airtel, BSNL, RJIL & VIL RTP packet loss is 0.28%, 3.25%, 0.49% & 0.60% respectively. (refer table-6)

4. Drop Call Rate:

- a) Airtel, BSNL and VIL drop call rate is 0.45%, 12.23% and 3.88% respectively in 3G/2G network mode. (refer table-3)
- b) Airtel, BSNL, RJIL and VIL drop call rate is 0.00%, 5.85%, 0.55% and 0.55% respectively in auto-selection mode (5G/4G/3G/2G). (refer table-5)

5.2 Overall Data

1. Data download and upload performance (Overall i.e. LSA):

- a) Airtel, BSNL, RJIL and VIL average download speeds are 120.39 Mbps, 12.50 Mbps, 212.68 Mbps and 23.36 Mbps respectively. (refer table-11)
- b) Airtel, BSNL, RJIL and VIL average upload speeds are 28.09 Mbps, 4.06 Mbps, 25.87 Mbps and 13.73 Mbps respectively. (refer table-11)

2. Data download and upload performance (static i.e. while stationary):

- a) Airtel, BSNL, RJIL and VIL average download speeds are 134.24 Mbps, 11.66 Mbps, 238.17 Mbps and 19.80 Mbps respectively. (refer table-50)
- b) Airtel, BSNL, RJIL and VIL average upload speeds are 32.35 Mbps, 4.25 Mbps, 25.61 Mbps and 12.96 Mbps respectively. (refer table-50)

3. Data session setup success rate (static i.e. while stationary):

- a) Airtel, BSNL, RJIL and VIL have 100.00%, 95.71%, 100.00% & 100.00% download session setup success rate respectively. (refer table-50)
- b) Airtel, BSNL, RJIL and VIL have 100.00%, 97.86%, 100.00% & 100.00% upload session setup success rate respectively. (refer table-50)

5.3 Operator wise Key Findings

1. Airtel:

Voice

- 94.60% call setup success rate and 0.45% drop call rate have been observed in 3G/2G network mode for LSA. Performance is not meeting the benchmark of 98.00% for call setup success rate. (refer table-3)
- 96.66% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for LSA. Performance is not meeting the benchmark of 98.00% for call setup success rate. (refer table-5)
- 93.61% call setup success rate and 0.40% drop call rate have been observed in 3G/2G network mode for city drive. Performance is not meeting the benchmark of 98.00% for call setup success rate. (refer table-13)
- 94.27% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for city drive. Performance is not meeting the benchmark of 98.00% for call setup success rate. (refer table-15)
- 100.00% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for all hotspot locations. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-21)
- 100.00% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for all walk test locations. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-108, 110, 112 to 114)
- 97.67% call setup success rate and 0.60% drop call rate have been observed in 3G/2G network mode for highway drive. Performance is not meeting the benchmark of 98.00% for call setup success rate. (refer table-120)
- 97.22% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for highway drive. Performance is not meeting the benchmark of 98.00% for call setup success rate. (refer table-122)
- 100.00% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for railway drive. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-128)

Data

- Airtel has 120.39 Mbps average download speed & 28.09 Mbps average upload speed for LSA. (refer table-11)
- Airtel has 126.44 Mbps average download speed & 25.98 Mbps average upload speed across measured routes for city drive. (refer table-19)
- Ashoknagar State General Hospital Ashoknagar Kalyangarh, Beldanga-I B.D.O. Office Sarulia, Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon, Central Sericulture Raninagar Chuapur Berhampore, Dhaanyaganga Krishi Vigyan Kendra Sargachi Mission Bus Stop NH 12 Sargachi Mahishasthali, Kaliachak-I B.D.O. Office Malda Baliadanga, Krishnanagar Palace Krishnanagar, Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai, Maulana Abul Kalam Azad University of Technology Haringhata Farm, Raiganj Post Office and Ranaghat College Old Berhampore Rd Ranaghat have less download speed (less than 100 Mbps) out of total 28 hotspot locations for auto-selection mode (5G/4G/3G/2G). (refer table-51, 54, 56, 57, 58, 62, 65, 66, 67, 69 & 70)

- Ashoknagar State General Hospital Ashoknagar Kalyangarh, Basirhat Court Basirhat, Beldanga-I B.D.O. Office Sarulia, Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon, Central Sericulture Raninagar Chuapur Berhampore, Dhaanyaganga Krishi Vigyan Kendra Sargachi Mission Bus Stop NH 12 Sargachhi Mahishasthali, Kaliachak-I B.D.O. Office Malda Baliadanga, Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai, Maulana Abul Kalam Azad University of Technology Haringhata Farm, Raiganj Government Medical College and Hospital, Raiganj Post Office and Ranaghat Session Court Ranaghat have less upload speed (less than 20 Mbps) out of total 28 hotspot locations for auto-selection mode (5G/4G/3G/2G). (refer table-51, 52, 54, 56, 57, 58, 62, 66, 67, 68, 69 & 71)
- All locations have less download speed (less than 100 Mbps) for auto-selection mode (5G/4G/3G/2G). (refer table-116, 117, 118 & 119)
- Airtel has 105.27 Mbps average download speed & 28.12 Mbps average upload speed across measured routes for highway drive. (refer table-126)
- Airtel has 132.50 Mbps average download speed & 23.95 Mbps average upload speed across measured routes for railway drive. (refer table-130)

2. BSNL:

Voice

- 66.85% call setup success rate and 12.23% drop call rate have been observed in 3G/2G network mode for LSA. Performance is not meeting the benchmark of 98.00% & 2.00% respectively. (refer table-3)
- 83.79% call setup success rate and 5.85% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for LSA. Performance is not meeting the benchmark of 98.00% & 2.00% respectively. (refer table-5)
- 59.41% call setup success rate and 11.35% drop call rate have been observed in 3G/2G network mode for city drive. Performance is not meeting the benchmark of 98.00% & 2.00% respectively. (refer table-13)
- 75.12% call setup success rate and 5.77% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for city drive. Performance is not meeting the benchmark of 98.00% & 2.00% respectively. (refer table-15)
- 97.50% call setup success rate and 0.37% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for all hotspot locations. Performance is not meeting the benchmark of 98.00% for call setup success rate. (refer table-21)
- 100.00% call setup success rate and 8.33% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) at Krishnanagar City Junction Railway Station Krishnanagar and Krishnanagar Sadar District Hospital Ranaghat - Krishnanagar Byp walk test locations. Performance is not meeting the benchmark of 2.00% for drop call rate. (refer table- 108 and 110)
- 100.00% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) at Mayapur Iskon Mandir Chaitanya Bhawan Bbt Rd Mayapur walk test locations. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-112)
- 62.50% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) at Ranaghat Junction Railway Station Ranaghat walk test location. Performance is not meeting the benchmark of 98.00% for call setup success rate. (refer table-114)

- 94.30% call setup success rate and 14.29% drop call rate have been observed in 3G/2G network mode for highway drive. Performance is not meeting the benchmark of 98.00% & 2.00% respectively. (refer table-120)
- 88.00% call setup success rate and 13.07% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for highway drive. Performance is not meeting the benchmark of 98.00% & 2.00% respectively. (refer table-122)
- 93.62% call setup success rate and 13.64% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for railway drive. Performance is not meeting the benchmark of 98.00% & 2.00% respectively. (refer table-128)

Data

- BSNL has 12.50 Mbps average download speed & 4.06 Mbps average upload speed for LSA. (refer table-11)
- BSNL has 12.27 Mbps average download speed & 3.94 Mbps average upload speed across measured routes for city drive. (refer table-19)
- Ashoknagar State General Hospital Ashoknagar Kalyangarh, Basirhat Court Basirhat, Bethuadahari Wildlife Sanctuary Segun Bagan Rd Bethuadahari Rajendranagar, Bethuadahari, Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon, Gobardanga Hindu College Jamdani Gobardanga, JMN Medical College and Hospital Panchpota Chakdaha Ektarpur, Krishnagar Collegiate School Rabindra Nath Tagore Rd Krishnanagar, Krishnanagar Head Post Office Rn Tagore Road More Krishnanagar, Maulana Abul Kalam Azad University of Technology Haringhata Farm, Raiganj Government Medical College and Hospital, Ranaghat College Old Berhampore Rd Ranaghat, Ranaghat Sub-Divisional Hospital Sreenath Pur Ranaghat, Santipur Hat Santipur, Santipur State General Hospital Santipur, Sree Chaitanya College Habra Bokavhoda Habra, Sujapur Primary Health Centre Sujapur and Thakurnagar Thakurbari Thakurnagar Chikanpara have less download speed (less than 10 Mbps) out of total 28 hotspot locations for auto-selection mode (5G/4G/3G/2G). (refer table-51, 52, 55, 56, 60, 61, 63, 64, 67, 68, 70, 72, 73, 74, 75, 76 & 78)
- Ashoknagar State General Hospital Ashoknagar Kalyangarh, Basirhat Court Basirhat, Bethuadahari Wildlife Sanctuary Segun Bagan Rd Bethuadahari Rajendranagar, Bethuadahari, Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon, Gobardanga Hindu College Jamdani Gobardanga, JMN Medical College and Hospital Panchpota Chakdaha Ektarpur, Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai, Maulana Abul Kalam Azad University of Technology Haringhata Farm, Ranaghat College Old Berhampore Rd Ranaghat, Sujapur Primary Health Centre Sujapur and Thakurnagar Thakurbari Thakurnagar Chikanpara have less upload speed (less than 2 Mbps) out of total 28 hotspot locations for auto-selection mode (5G/4G/3G/2G). (refer table-51, 52, 55, 56, 60, 61, 66, 67, 70, 76 & 78)
- Ranaghat Junction Railway Station Ranaghat has less download speed (less than 10 Mbps) out of total 4 walk test locations for auto-selection mode (5G/4G/3G/2G). (refer table-119)
- BSNL has 14.79 Mbps average download speed & 4.01 Mbps average upload speed across measured routes for highway drive. (refer table-126)
- BSNL has 7.11 Mbps average download speed & 3.02 Mbps average upload speed across measured routes for railway drive. (refer table-130)

3. RJIL:

Voice

- 99.72% call setup success rate and 0.55% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for LSA. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-5)
- 99.81% call setup success rate and 0.56% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for city drive. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-15)
- 100.00% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for all hotspot locations. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-21)
- 100.00% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for all walk test locations. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-108, 110, 112 & 114)
- 100.00% call setup success rate and 1.11% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for highway drive. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-122)
- 95.45% call setup success rate and 2.38% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for railway drive. Performance is not meeting the benchmark of 98.00% & 2.00% respectively. (refer table-128)

Data

- RJIL has 212.68 Mbps average download speed & 25.87 Mbps average upload speed for LSA. (refer table-11)
- RJIL has 237.45 Mbps average download speed & 27.80 Mbps average upload speed across measured routes for city drive. (refer table-19)
- Basirhat Super Speciality Hospital Itinda Basirhat, Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon, Dhaanyaganga Krishni Vigyan Kendra Sargachi Mission Bus Stop NH 12 Sargachhi Mahishasthali, JMN Medical College and Hospital Panchpota Chakdaha Ektarpur, Maulana Abul Kalam Azad University of Technology Haringhata Farm, Raiganj Government Medical College and Hospital and Raiganj Post Office have less download speed (less than 100 Mbps) out of total 28 hotspot locations for auto-selection mode (5G/4G/3G/2G). (refer table-53, 56, 58, 61, 67, 68 & 69)
- Ashoknagar State General Hospital Ashoknagar Kalyangarh, Basirhat Super Speciality Hospital Itinda Basirhat, Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon, Central Sericulture Raninagar Chuapur Berhampore, Dhaanyaganga Krishni Vigyan Kendra Sargachi Mission Bus Stop NH 12 Sargachhi Mahishasthali, JMN Medical College and Hospital Panchpota Chakdaha Ektarpur, Krishnanagar Palace Krishnanagar, Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai, Maulana Abul Kalam Azad University of Technology Haringhata Farm, Raiganj Government Medical College and Hospital, Raiganj Post Office, Ranaghat Session Court Ranaghat, Santipur Hat Santipur, Sree Chaitanya College Habra Bokavhoda Habra and Taki Ramakrishna Mission High School Taki have less upload speed (less than 20 Mbps) out of total 28 hotspot locations for auto-selection mode (5G/4G/3G/2G). (refer table-51, 53, 56, 57, 58, 61, 65, 66, 67, 68, 69, 71, 73, 75 & 77)
- All locations have less download speed (less than 100 Mbps) for auto-selection mode (5G/4G/3G/2G). (refer table-116, 117, 118 & 119)

- Krishnanagar Sadar District Hospital Ranaghat - Krishnanagar Byp has less upload speed (less than 20 Mbps) out of total 4 walk test locations for auto-selection mode (5G/4G/3G/2G). (refer table-117)
- RJIL has 197.17 Mbps average download speed & 23.76 Mbps average upload speed across measured routes for highway drive. (refer table-126)
- RJIL has 96.33 Mbps average download speed & 15.33 Mbps average upload speed across measured routes for railway drive. (refer table-130)

4. VIL: Voice

- 99.86% call setup success rate and 3.88% drop call rate have been observed in 3G/2G network mode for LSA. Performance is not meeting the benchmark of 2.00% for drop call rate. (refer table-3)
- 99.91% call setup success rate and 0.55% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for LSA. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-5)
- 99.80% call setup success rate and 0.20% drop call rate have been observed in 3G/2G network mode for city drive. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-13)
- 100.00% call setup success rate and 0.19% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for city drive. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-15)
- 100.00% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for all hotspot locations. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-21)
- 100.00% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for all walk test locations. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-108, 110, 112 & 114)
- 100.00% call setup success rate and 13.76% drop call rate have been observed in 3G/2G network mode for highway drive. Performance is not meeting the benchmark of 2.00% for drop call rate. (refer table-120)
- 100.00% call setup success rate and 0.00% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for highway drive. Performance is well within the benchmark of 98.00% & 2.00% respectively. (refer table-122)
- 97.83% call setup success rate and 11.11% drop call rate have been observed in auto-selection mode (5G/4G/3G/2G) for railway drive. Performance is not meeting the benchmark of 98.00% & 2.00% respectively. (refer table-128)

Data

- VIL has 23.36 Mbps average download speed & 13.73 Mbps average upload speed for LSA. (refer table-11)
- VIL has 25.15 Mbps average download speed & 12.77 Mbps average upload speed across measured routes for city drive. (refer table-19)
- Ashoknagar State General Hospital Ashoknagar Kalyangarh, Basirhat Court Basirhat, Bethuadahari Wildlife Sanctuary Segun Bagan Rd Bethuadahari Rajendranagar, Bethuadahari, Bongaon S. D. Hospital Dr. J. R. Dhar Chakdaha Champaberia Bongaon, Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai

and Ranaghat College Old Berhampore Rd Ranaghat have less download speed (less than 10 Mbps) out of total 28 hotspot locations for auto-selection mode (5G/4G/3G/2G). (refer table-51, 52, 55, 56, 66 & 70)

- Gobardanga Hindu College Jamdani Gobardanga, Kulik Bird & Wildlife Sanctuary NH 12 Raiganj Soharai and Sujapur Primary Health Centre Sujapur have less upload speed (less than 2 Mbps) out of total 28 hotspot locations for auto-selection mode (5G/4G/3G/2G). (refer table-60, 66 & 76)
- VIL has 22.07 Mbps average download speed & 15.73 Mbps average upload speed across measured routes for highway drive. (refer table-126)
- VIL has 21.70 Mbps average download speed & 10.10 Mbps average upload speed across measured routes for railway drive. (refer table-130)

6. Annexure

6.1 Route wise coverage map

6.1.1 City

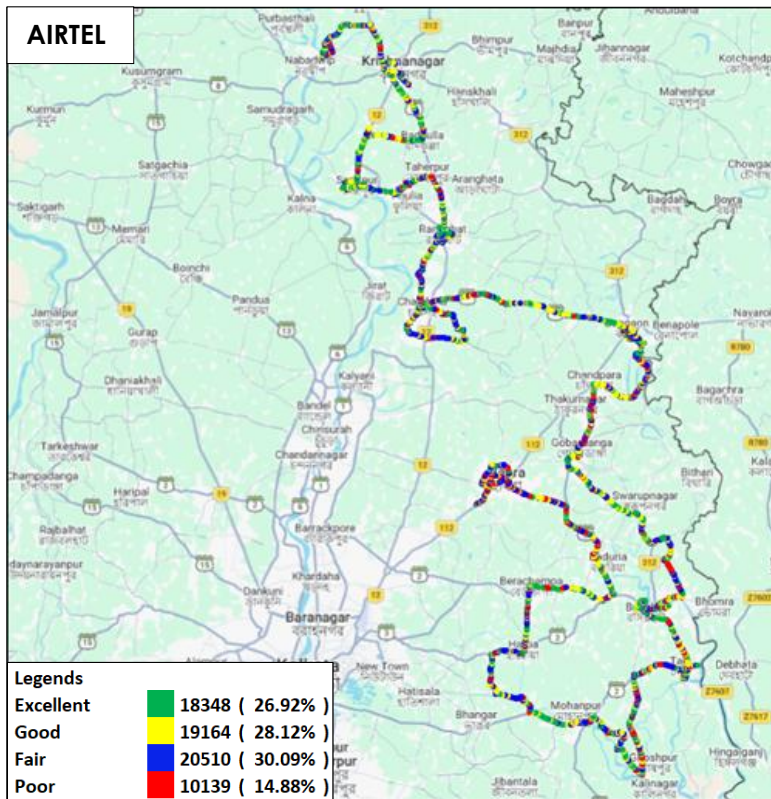


Figure-79: Signal strength 3G/2G network mode voice - AIRTEL.

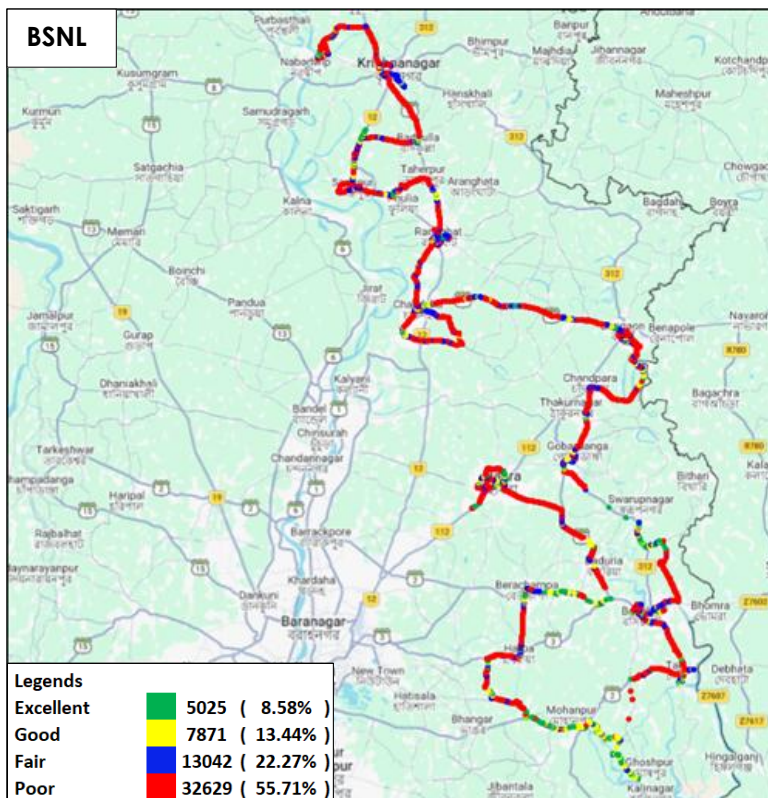


Figure-80: Signal strength 3G/2G network mode voice - BSNL.

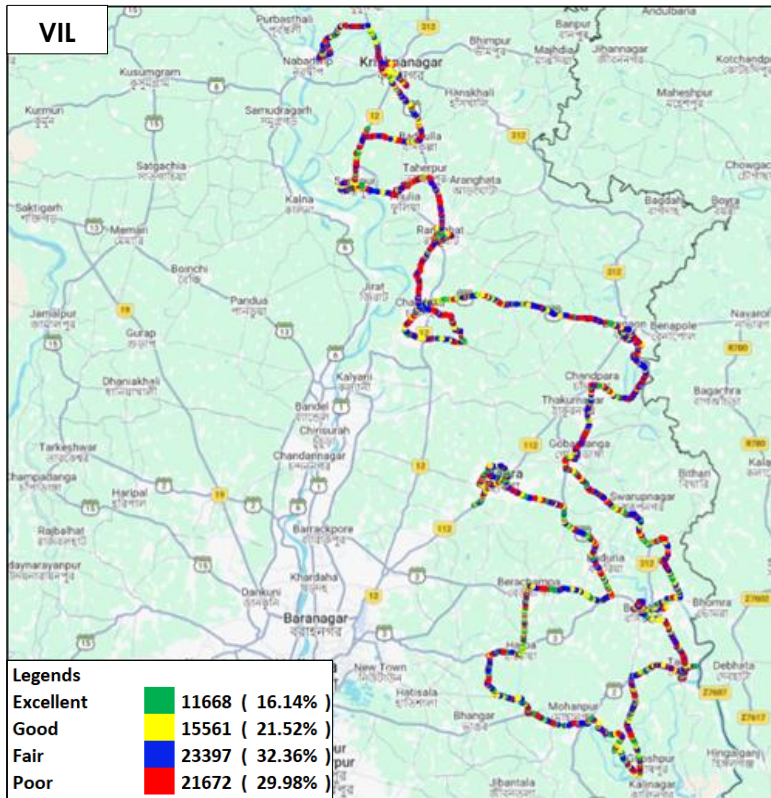


Figure-81: Signal strength 3G/2G network mode voice - VIL.

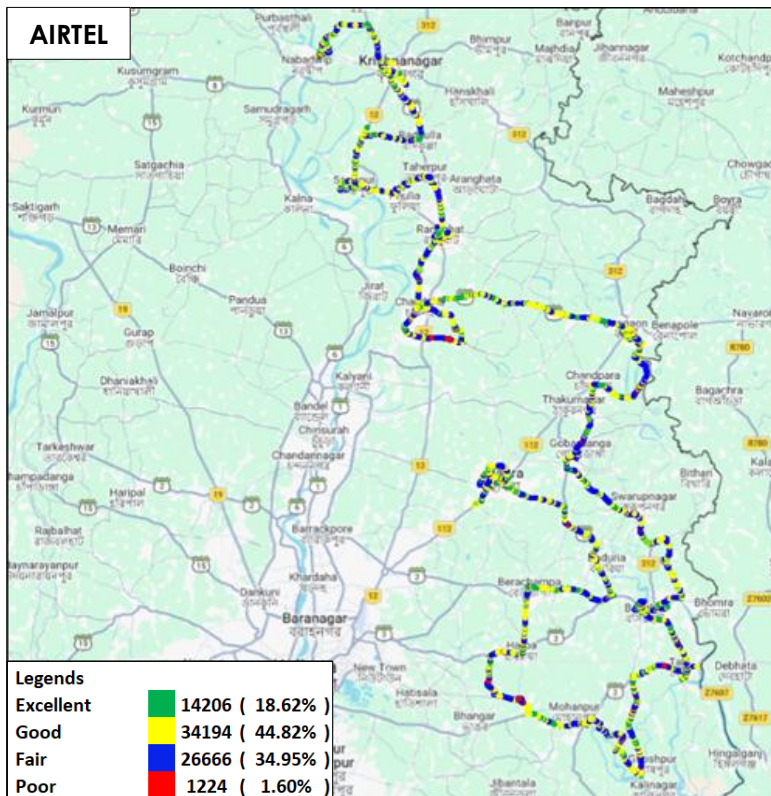


Figure-82: Signal strength auto-selection mode (5G/4G/3G/2G) voice - AIRTEL.

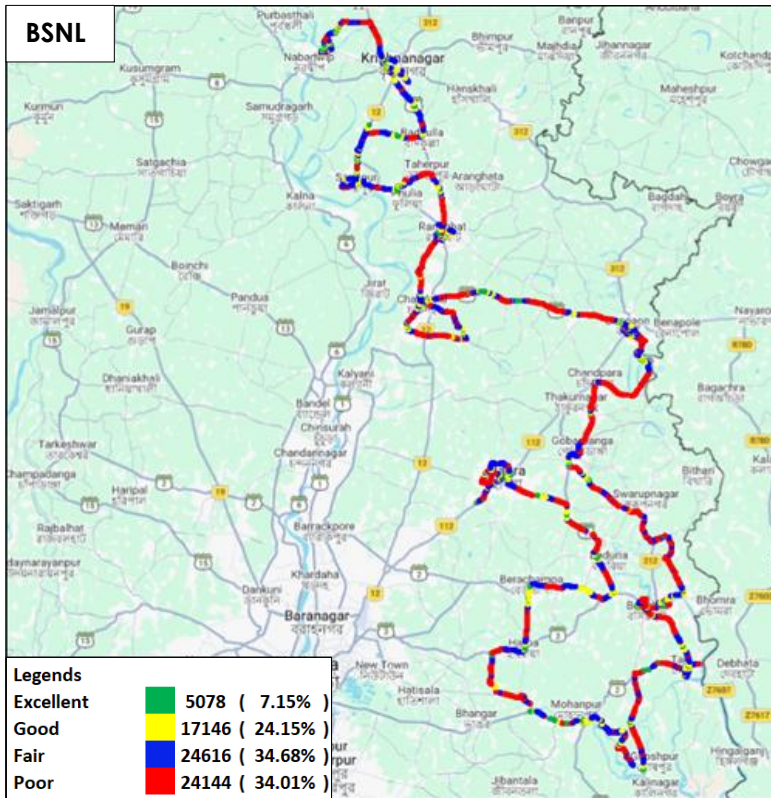


Figure-83: Signal strength auto-selection mode (5G/4G/3G/2G) voice - BSNL.

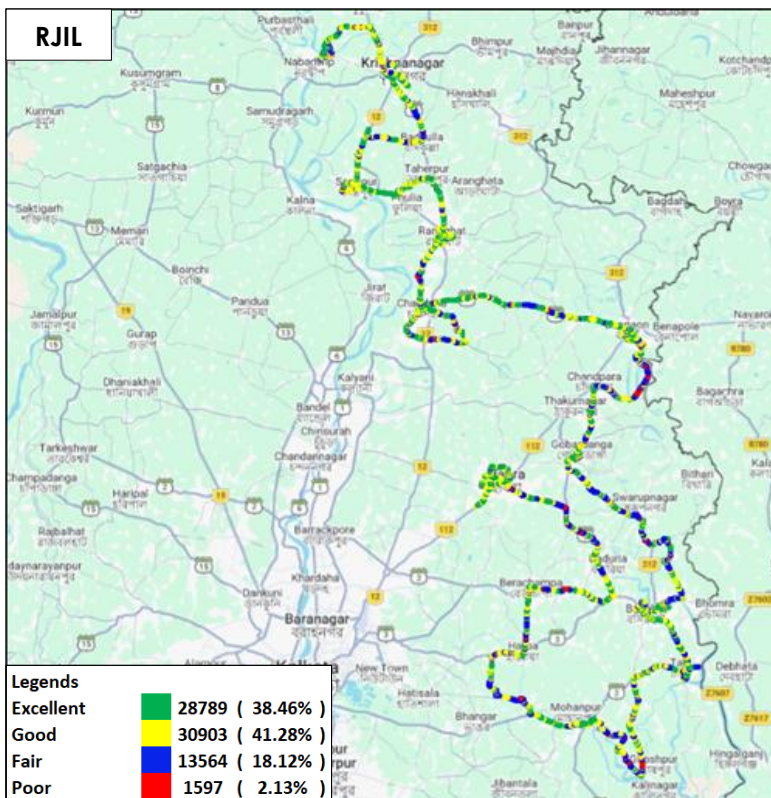


Figure-84: Signal strength auto-selection mode (5G/4G/3G/2G) voice - RJIL.

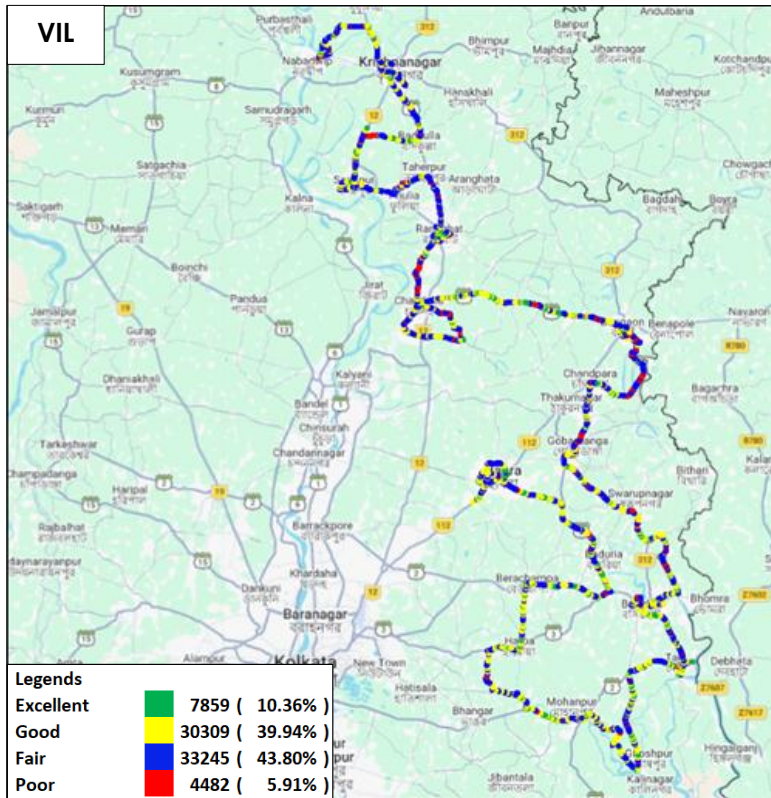


Figure-85: Signal strength auto-selection mode (5G/4G/3G/2G) voice - VIL.

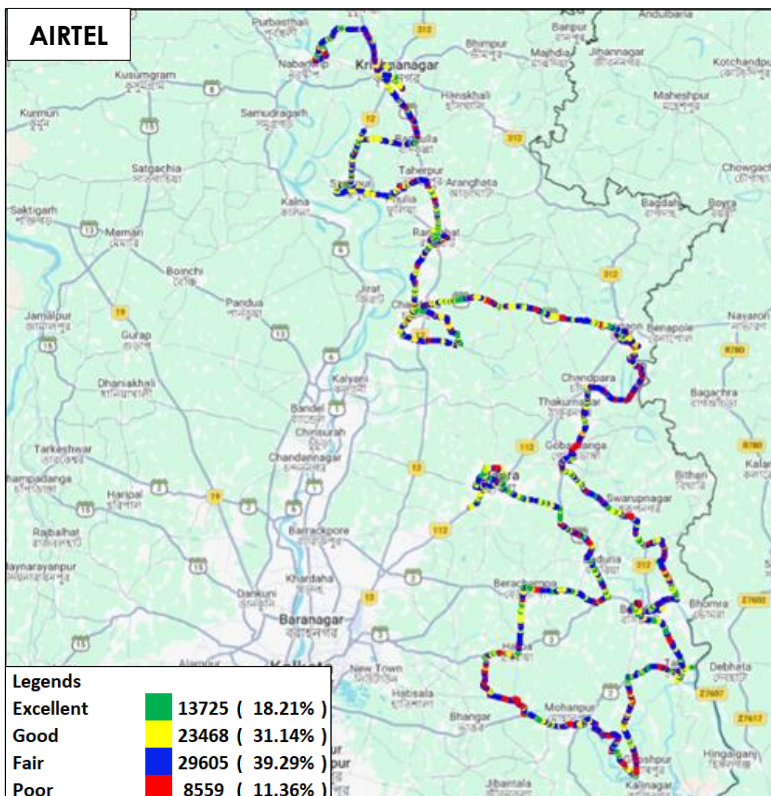


Figure-86: Signal strength auto-selection mode (5G/4G/3G/2G) data - AIRTEL.

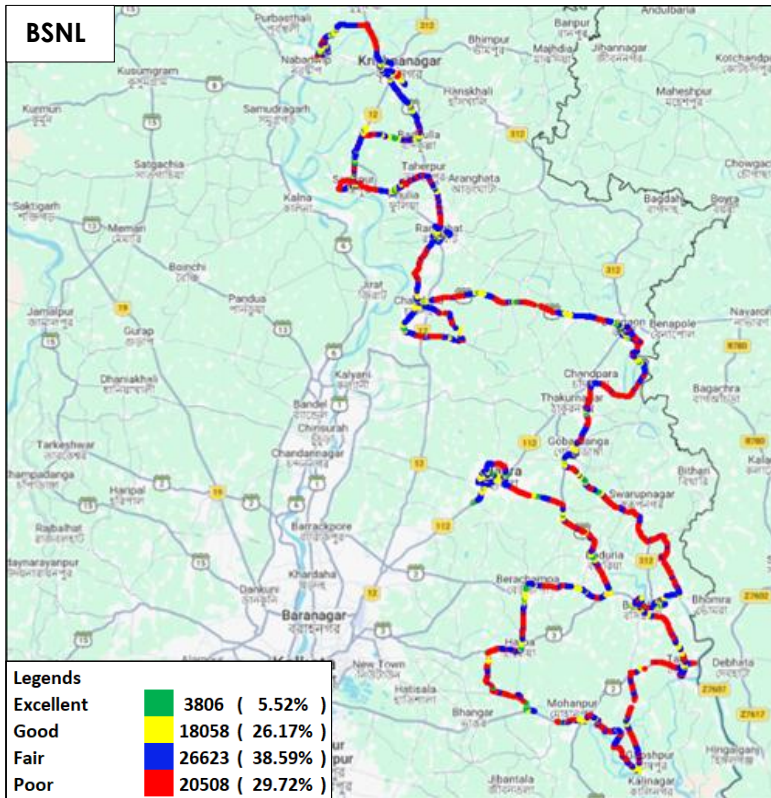


Figure-87: Signal strength auto-selection mode (5G/4G/3G/2G) data - BSNL.

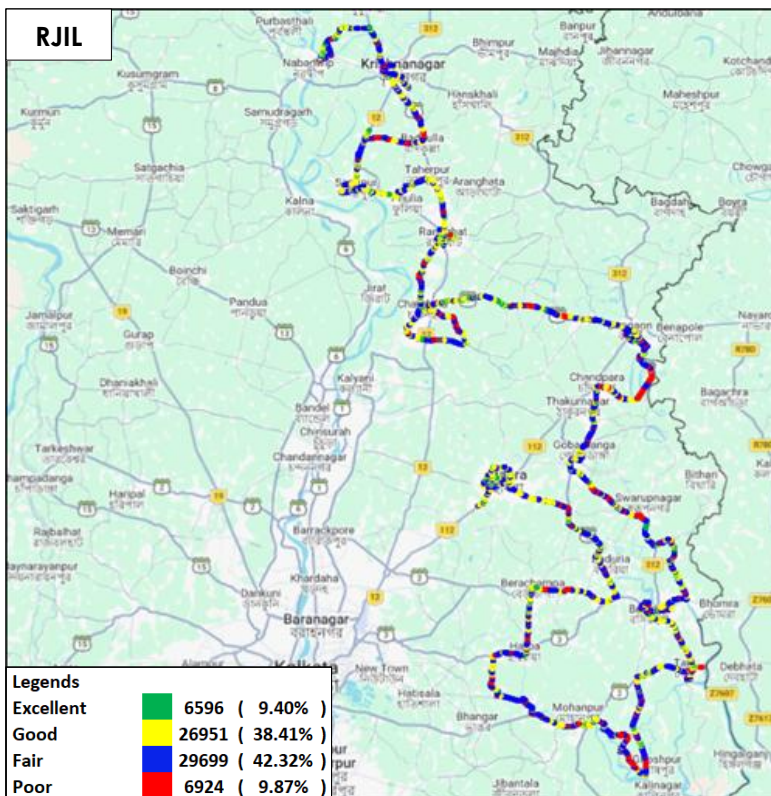


Figure-88: Signal strength auto-selection mode (5G/4G/3G/2G) data - RJIL.

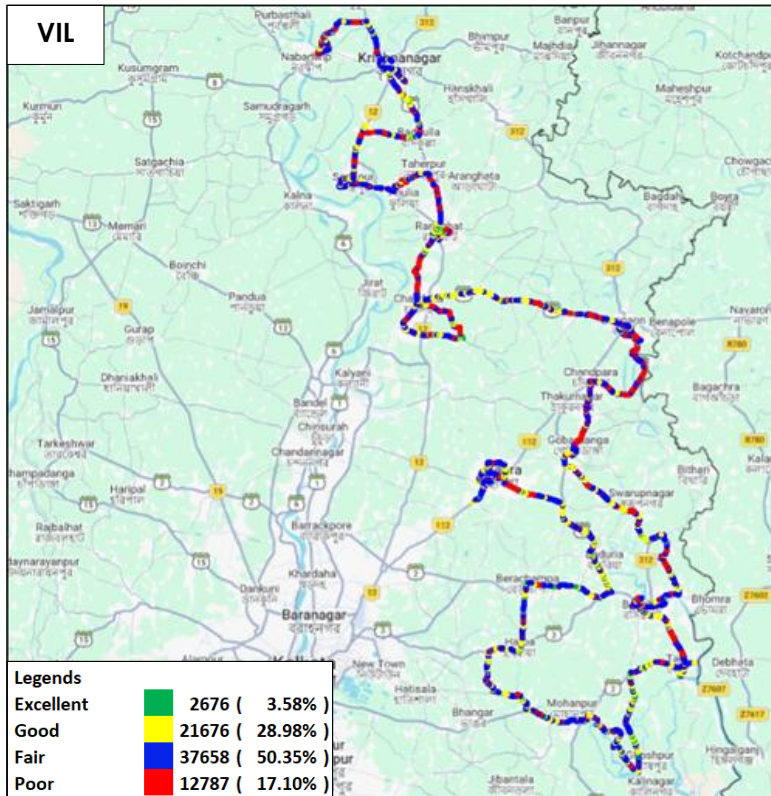


Figure-89: Signal strength auto-selection mode (5G/4G/3G/2G) data - VIL.

6.1.2 Highway

i) Barasat to Raiganj



Figure-90: Signal strength 3G/2G network mode voice - AIRTEL.



Figure-91: Signal strength 3G/2G network mode voice - BSNL.

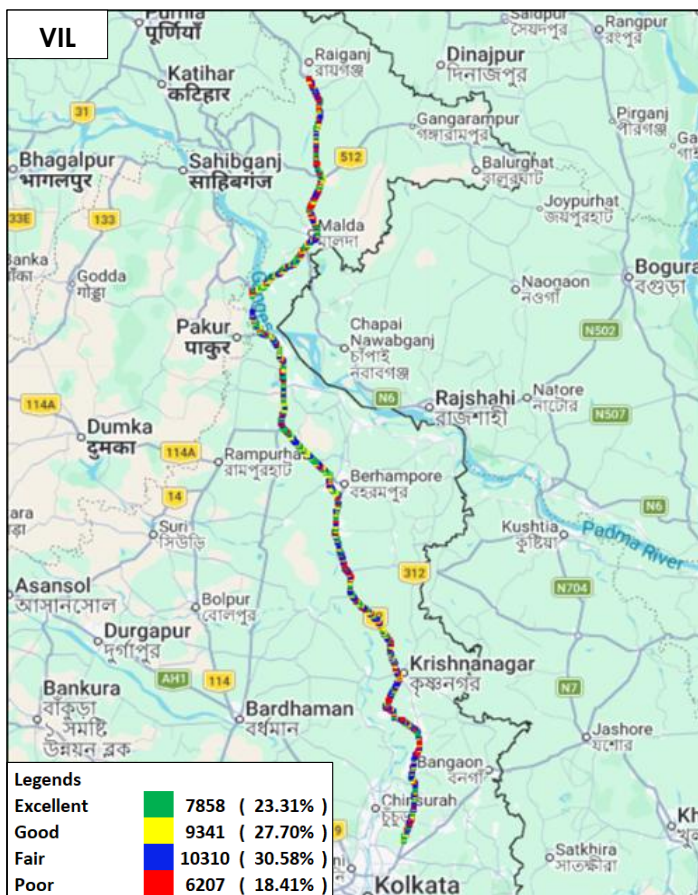


Figure-92: Signal strength 3G/2G network mode voice - VIL.



Figure-93: Signal strength auto-selection mode (5G/4G/3G/2G) voice - AIRTEL.



Figure-94: Signal strength auto-selection mode (5G/4G/3G/2G) voice - BSNL.



Figure-95: Signal strength auto-selection mode (5G/4G/3G/2G) voice - RJIL.



Figure-96: Signal strength auto-selection mode (5G/4G/3G/2G) voice - VIL.



Figure-97: Signal strength auto-selection mode (5G/4G/3G/2G) data - AIRTEL.



Figure-98: Signal strength auto-selection mode (5G/4G/3G/2G) data - BSNL.



Figure-99: Signal strength auto-selection mode (5G/4G/3G/2G) data - RJIL.

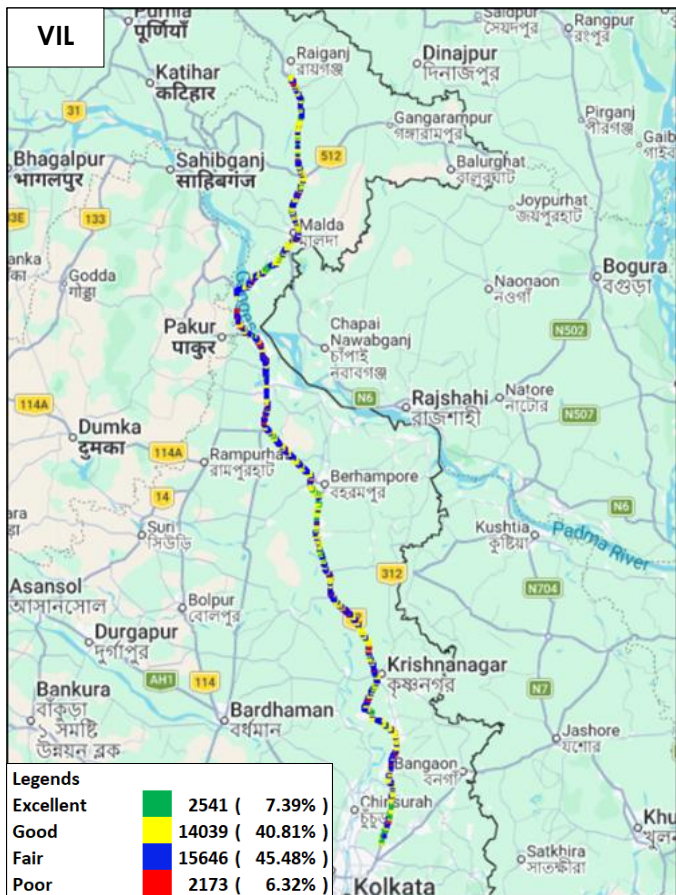


Figure-100: Signal strength auto-selection mode (5G/4G/3G/2G) data - VIL.

6.1.3 Railway

i) Howrah to Bardhaman

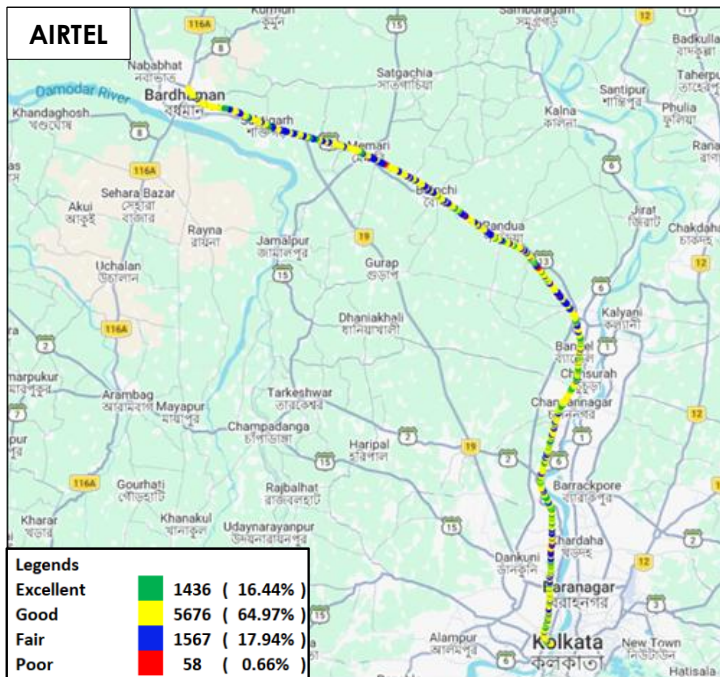


Figure-101: Signal strength auto-selection mode (5G/4G/3G/2G) voice - AIRTEL.

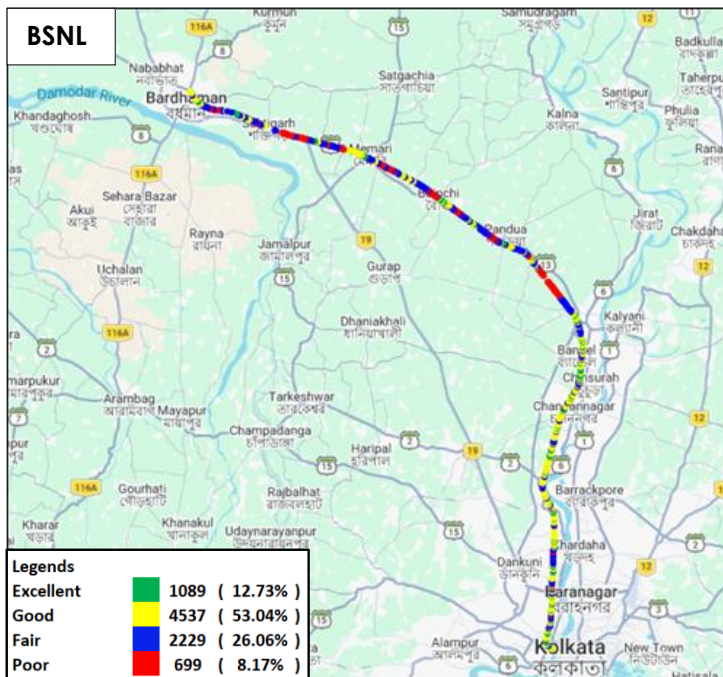


Figure-102: Signal strength auto-selection mode (5G/4G/3G/2G) voice - BSNL.

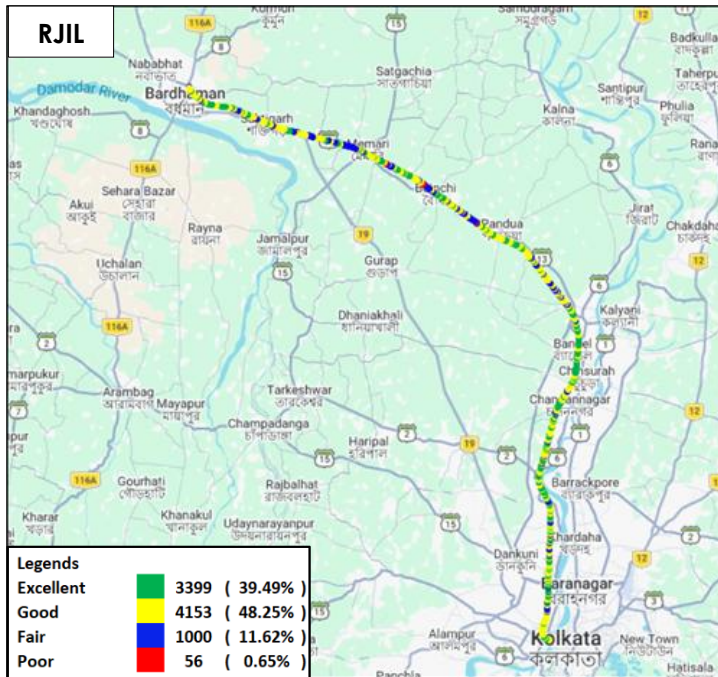


Figure-103: Signal strength auto-selection mode (5G/4G/3G/2G) voice - RJIL.

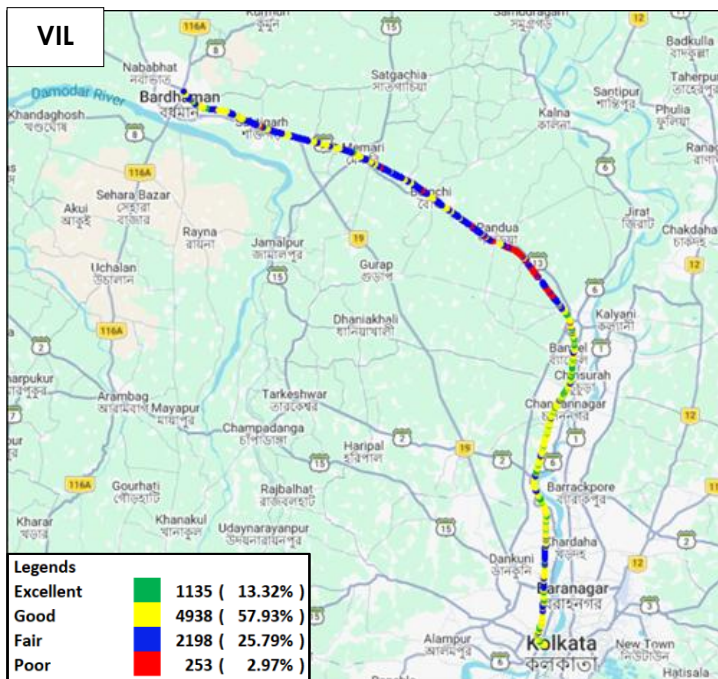


Figure-104: Signal strength auto-selection mode (5G/4G/3G/2G) voice - VIL.

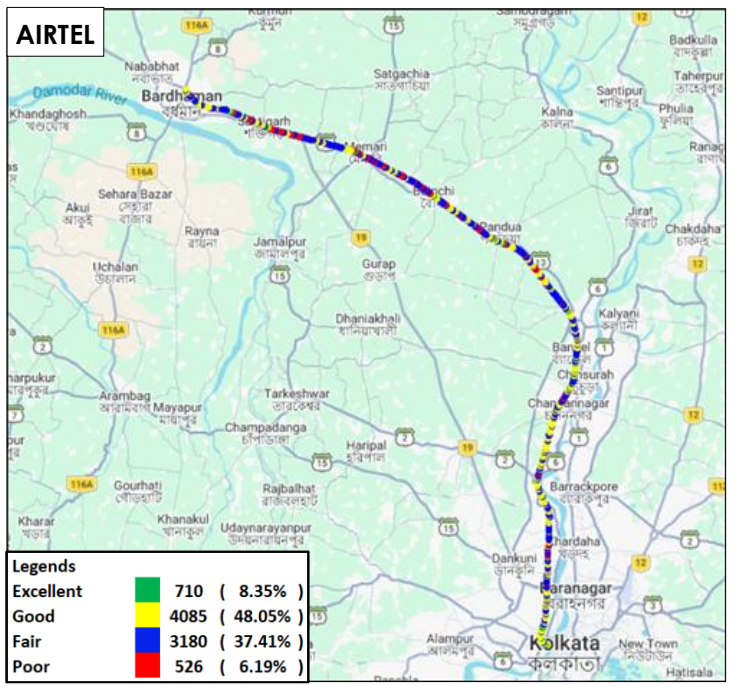


Figure-105: Signal strength auto-selection mode (5G/4G/3G/2G) data - AIRTEL.

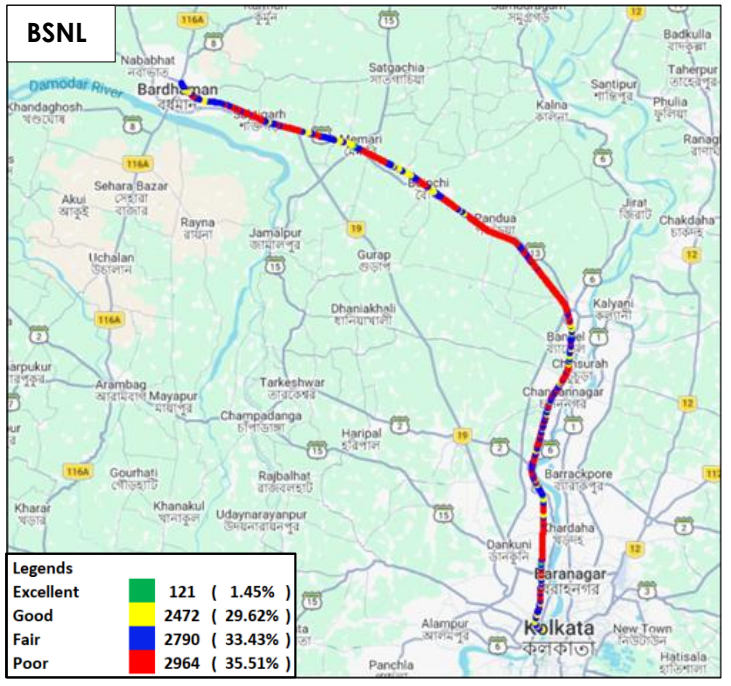


Figure-106: Signal strength auto-selection mode (5G/4G/3G/2G) data - BSNL.

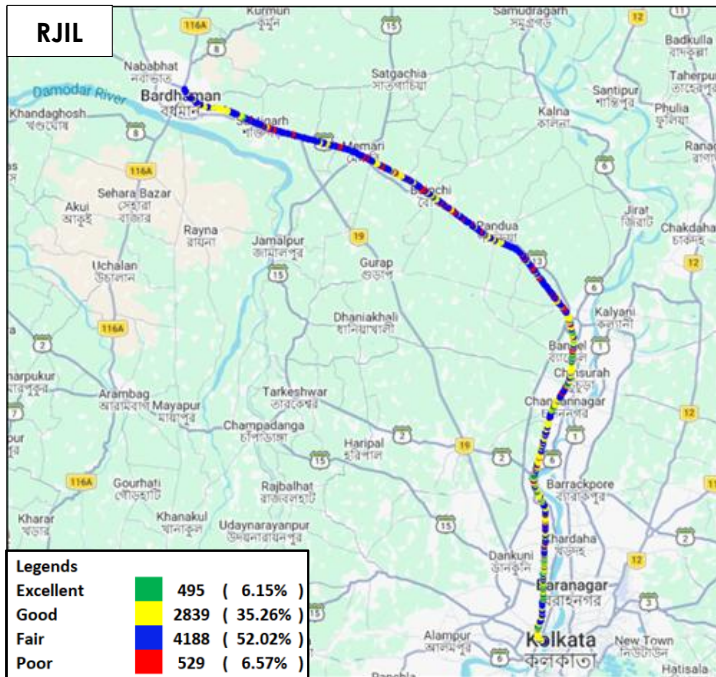


Figure-107: Signal strength auto-selection mode (5G/4G/3G/2G) data - RJIL.

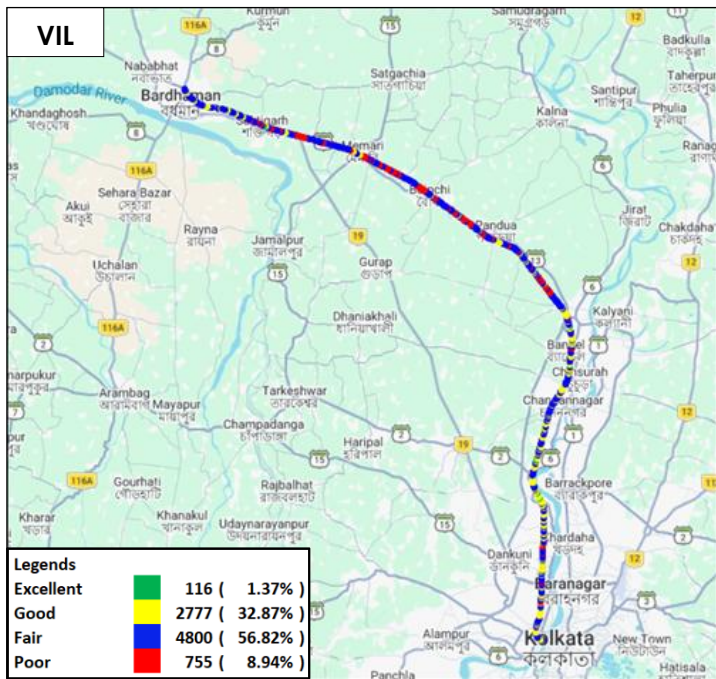


Figure-108: Signal strength auto-selection mode (5G/4G/3G/2G) data - VIL.

7. Appendix

The details of the setup used for conducting the drive test and the network or performance parameters captured under different conditions may be seen at Appendix-I. The calculation method of each QoS parameter is given in Appendix-II of the report. The summary of key equipment used in technical setup is as under

- **Device-1:** OnePlus Nord CE3 for 3G/2G CAT-15 Smartphone.
- **Device-2:** Samsung Galaxy S23 for 5G/4G/3G/2G CAT-20 Smartphone
- **Drive test Software:** Azenqos Engineering capable Applications to capture actual user experience.

7.1 Appendix-I

7.1.1 Drive test setup

Voice Call		
Call details	Technology	Detail
Call Setup Timeout	<ul style="list-style-type: none"> • 3G/2G auto mode- switch Call • 5G/4G/3G/2G auto mode- switch Call • 5G/4G MOS Call 	30 Sec
Call Duration		90/180 seconds
Wait/ Guard Time		15 Sec

Table-132: Voice test detail

<p>Note-</p> <ul style="list-style-type: none"> • There is 15 sec wait time after locking and before starting first call in 3G/2G call. • 10 calls to be made at each Hotspot location. • Minimum 10 Calls to be made during the walk test. Call count will be increased based on walk test distance. • Speech quality (MOS) has been measured only in city drive & highway by making Mobile to Mobile call. • 90 Sec calls were made in highway route drive. 		
Data Test		
Test Type	Technology	Detail
HTTP Download	5G/4G/3G/2G Auto Mode	500 MB File- 30 Sec Timeout, (Multithread 3- TCP Connection at a time)
HTTP Upload		250 MB File- 30 Sec Timeout, (Multithread 3- TCP Connection at a time)
YouTube Streaming		20 Sec Video & 25 sec Timeout (Only at Hotspot)
Web Browsing		3 popular websites (www.google.co.in , www.irctc.co.in , sbi.bank.in) 20 sec timeout (only at Hotspot)

Latency & Jitter (TWAMP-UDP)		25 count- Dynamic 500 count- Hotspot Payload- 512 bytes in all drive
Packet Loss Rate (TWAMP-UDP & TCP)		500 counts (TWAMP-UDP) 500 counts (TCP) at each hotspot Payload- 512 bytes in all drive

Table-133: Data test detail

Note-

- 5 Data iteration to be done at each hotspot location.
- Minimum 5 iteration to be made during the walk test. Iteration count will be increased based on walk test distance.
- TWAMP-UDP & TCP test to be performed only once at hotspot location.
- Youtube & Web browsing test to be performed at static location only.
- All values are taken up to two decimal places with round off.
- Delhi-based TRAI server was used for HTTP Download, HTTP Upload, TCP and TWAMP testing for Airtel, BSNL and RJIL.
- VIL server was used for HTTP Download, HTTP Upload, TCP and TWAMP testing, for VIL.

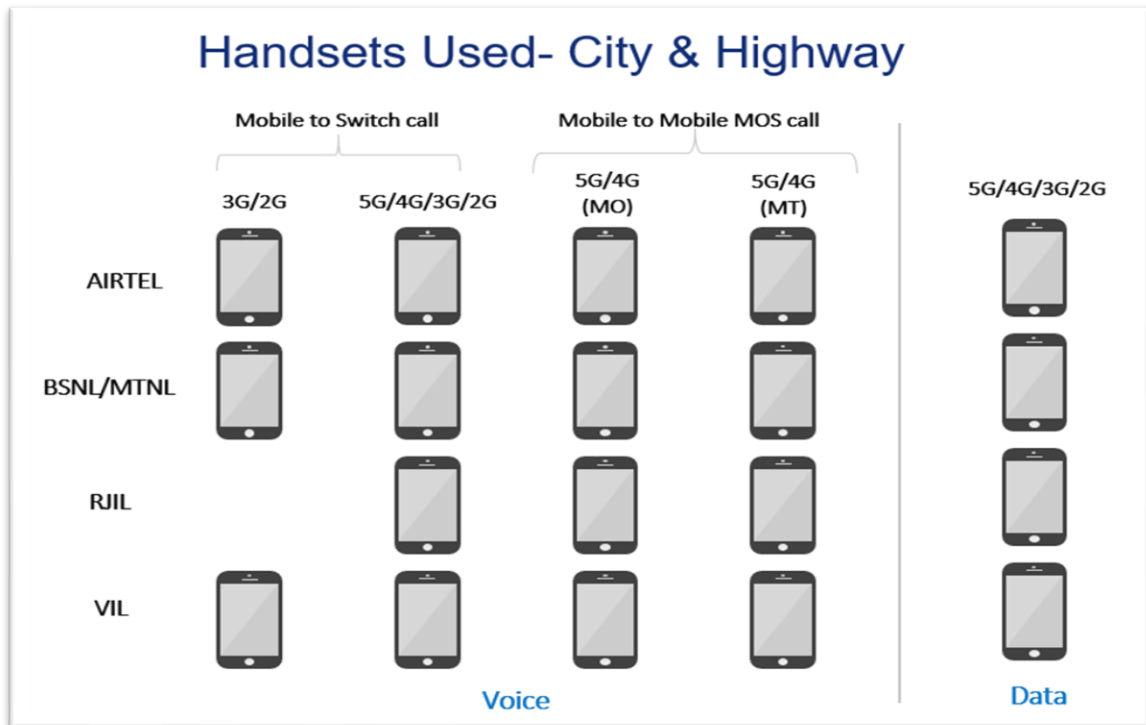


Figure-109: Number of handsets used in city & highway drive

MO: Mobile originating

MT: Mobile terminating

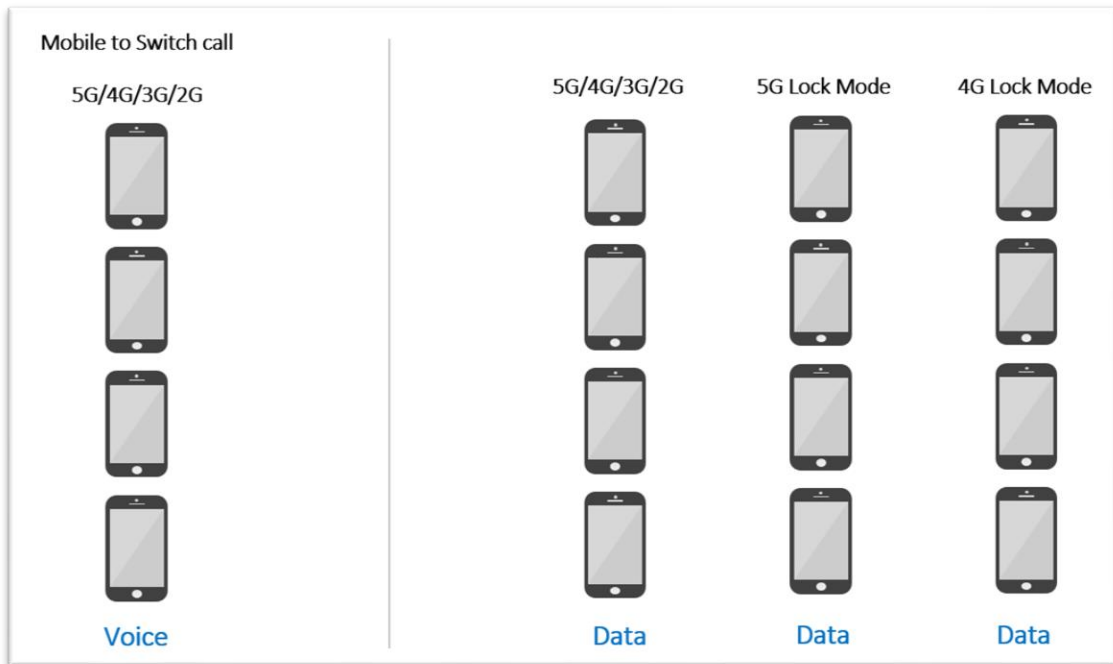


Figure-110: Number of handsets used in railway/metro/walktest/hotspot/coastal area.

Note- 5G & 4G Lock mode testing has been performed at hotspot locations only.

7.1.2 Drive test Methodology

(a) Dynamic voice testing (on the move)

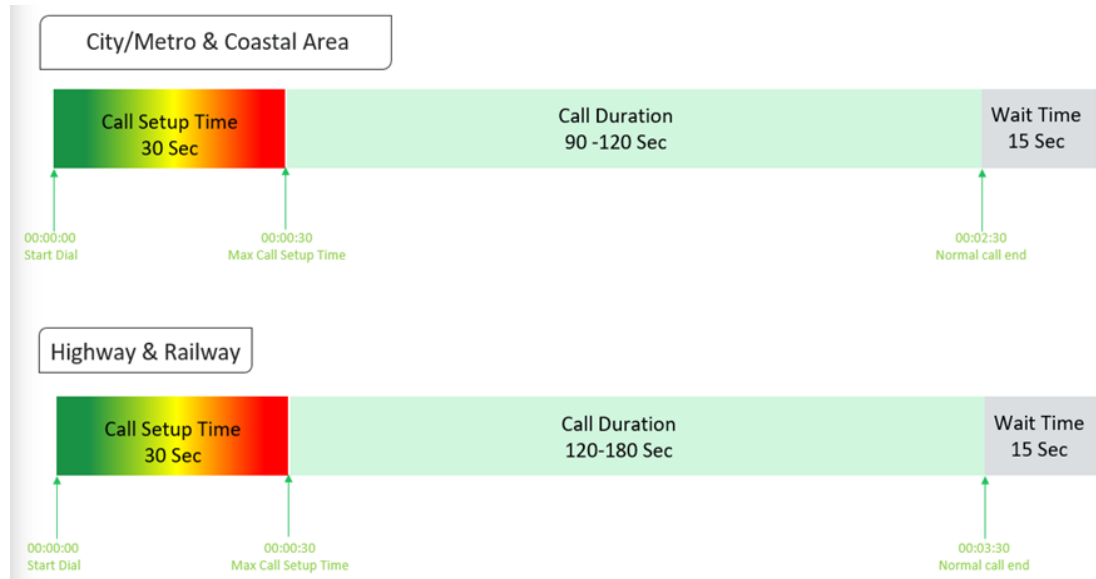


Figure-111: Voice test script for city/railway/metro/highway & coastal area

- 15 sec wait time is applied after locking Radio Access Technology (RAT) to 3G/2G and before starting first call in 3G/2G call.
- Speech quality (MOS) will be measured only City & Highway drive by making Mobile to Mobile calls.

(b) Hotspot voice testing



Figure-112: Voice test script for walktest/hotspot

- 10 calls to be made at each Hotspot location.
- Minimum 10 Calls to be made during the walk test. Call count will be increased based on walk test distance.

(c) Dynamic Data (internet) test

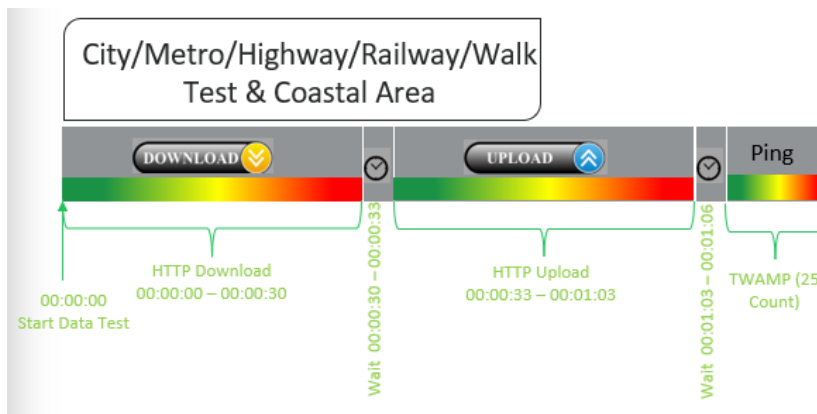


Figure-113: Data test script used in city/metro/railway/highway/walk test & coastal area

(d) Static Data(internet) testing

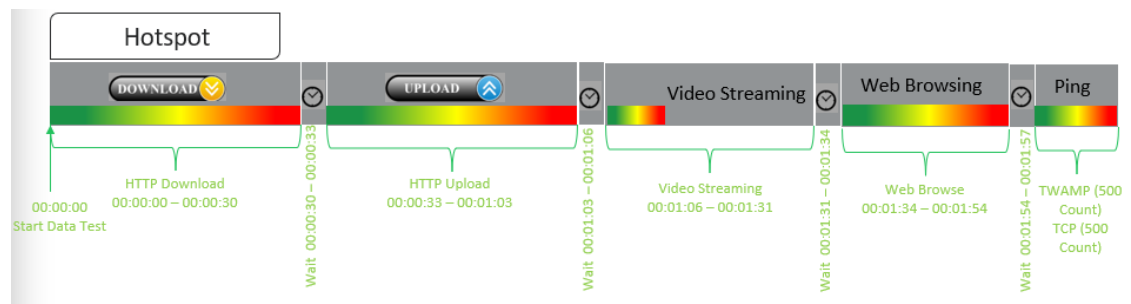


Figure-114: Data test script used at hotspot

- 5 Data iteration done at each hotspot location
- Min. 5 iteration made during the walk test.
- Web browsing duration mentioned above is for one web site only.
- One ping iteration (with 500 Count of each- TWAMP & TCP) done at hotspot location.

7.2 Appendix-II

7.2.1 Network Performance Parameters for Voice calls

Parameter Name	Definition
Call Setup Success Rate	<p>(i) Call Setup Success Rate is defined as the ratio of Established Calls to Call Attempts. 'Established Calls' mean the following events have happened in call setup:</p> <ul style="list-style-type: none"> (a) Call attempt is made (b) The signaling channel is allocated (c) The call is routed to the outwards path of the terminating network (d) An alert signal is received by caller in the form of ring back tone, busy tone, or an announcement. <p>CSSR = (Total Call Established/ Total Call Attempt) *100</p> <p>As per QoS Regulation 2024 benchmark value is >=98%</p>
Drop Call Rate	<p>Call drop represents the service provider network's ability to maintain a call once it has been successfully established. This parameter shall include both incoming calls and outgoing calls which, once they have been established and have an assigned traffic channel/ bearer, are dropped, or interrupted before their normal completion by the user, the cause of the early termination being within the service provider's network</p> <p>Drop Call Rate = (Total Call Drop/Total Call Established) *100</p> <p>As per QoS Regulation 2024 benchmark value is <=2%</p>
Call Setup Time	<p>Time taken from call initiate to call alerting/ringing.</p> <p>Call Setup Time = T2- T1</p> <p>T2- Ringing (VoLTE/VoNR) & Alerting (for WCDMA & GSM), T1- Invite (VoLTE/VoNR) & CM Service Request (for WCDMA & GSM)</p>
Voice Quality (MOS)	<p>Voice quality in mobile networks is measured with algorithms based on ITU-T P.863 (POLQA). The grading for Voice quality has been given as:</p> <p>Excellent: MOS ≥ 4 and < 5 Good : MOS ≥ 3 and < 4 Fair : MOS ≥ 2 and < 3 Poor : MOS ≥ 1 and < 2</p>
Handover Success Rate	<p>Handover Success Rate = Count of successful handovers (All Technology Handover combined) / Total count of Handover Attempt (All Technology Handover combined) *100</p> <p>Handover type which are considered- 2G Inter & Intra cell, 3G Soft & IRAT, 4G Inter & Intra frequency & SRVCC, 5G Inter & Intra frequency & 5G to 4G handovers.</p>
Silence Call	<p>A call which has ≥ 4 sec continuous RTP gap is considered as a Silence Call.</p> <p>Silence call rate = (count of silence call / Total calls established) *100</p> <p>If a call observes multiple silence count ≥ 4 sec in a particular established call it has been taken as one silent event.</p>

Jitter	<p>The inter arrival jitter is the difference in the relative transit time for two packets. The relative transit time is the difference between a packet's Real-time Transport Protocol (RTP) timestamp and the receiver's clock at the time of arrival, measured in the same units. If S_i is the RTP timestamp from packet i, and R_i is the time of arrival in RTP timestamps units for packet i, then for two packets i and j the inter-arrival jitter D can be expressed as: $D(i,j) = (R_j - R_i) - (S_j - S_i)$</p> <p>The interarrival jitter is calculated continuously as each data packet i is received from source $SSRC_n$, using this difference D for that packet and the previous packet $i-1$ in order of arrival (not necessarily in sequence), according to the formula $J(i) = J(i-1) + (D(i-1,i) - J(i-1))/16$ or 8</p>																																		
Downlink Packet Drop Rate	<p>Number of RTP (Real-time Transport Protocol) Packets lost divided by total RTP packet received (against each source_SSRC and sequence number) at call originating handset. This KPI is calculated from MOS call for packet call only (VoNR/VoLTE).</p>																																		
Uplink Packet Drop Rate	<p>Number of RTP (Real-time Transport Protocol) Packets lost divided by total RTP packet received (against each source_SSRC and sequence number) at call terminating handset. This KPI is calculated from MOS call for packet call only (VoNR/VoLTE).</p>																																		
Signal Strength	<p>Signal strength is the signal power level received by the wireless user.</p> <table border="1"> <thead> <tr> <th rowspan="2">Parameter Name</th> <th rowspan="2">Technology</th> <th colspan="4">Signal Strength (dBm)</th> </tr> <tr> <th>Excellent</th> <th>Good</th> <th>Fair</th> <th>Poor</th> </tr> </thead> <tbody> <tr> <td>Rx Level</td> <td>GSM</td> <td>0 to \geq -65</td> <td><-65 to \geq -75</td> <td><-75 to \geq -85</td> <td><-85 to min</td> </tr> <tr> <td>RSCP</td> <td>WCDMA</td> <td>0 to \geq -70</td> <td><-70 to \geq -80</td> <td><-80 to \geq -90</td> <td><-90 to min</td> </tr> <tr> <td>RSRP</td> <td>LTE</td> <td>0 to \geq -80</td> <td><-80 to \geq -95</td> <td><-95 to \geq -110</td> <td><-110 to min</td> </tr> <tr> <td>SS_RSRP</td> <td>NR</td> <td>0 to \geq -80</td> <td><-80 to \geq -95</td> <td><-95 to \geq -110</td> <td><-110 to min</td> </tr> </tbody> </table>	Parameter Name	Technology	Signal Strength (dBm)				Excellent	Good	Fair	Poor	Rx Level	GSM	0 to \geq -65	<-65 to \geq -75	<-75 to \geq -85	<-85 to min	RSCP	WCDMA	0 to \geq -70	<-70 to \geq -80	<-80 to \geq -90	<-90 to min	RSRP	LTE	0 to \geq -80	<-80 to \geq -95	<-95 to \geq -110	<-110 to min	SS_RSRP	NR	0 to \geq -80	<-80 to \geq -95	<-95 to \geq -110	<-110 to min
Parameter Name	Technology			Signal Strength (dBm)																															
		Excellent	Good	Fair	Poor																														
Rx Level	GSM	0 to \geq -65	<-65 to \geq -75	<-75 to \geq -85	<-85 to min																														
RSCP	WCDMA	0 to \geq -70	<-70 to \geq -80	<-80 to \geq -90	<-90 to min																														
RSRP	LTE	0 to \geq -80	<-80 to \geq -95	<-95 to \geq -110	<-110 to min																														
SS_RSRP	NR	0 to \geq -80	<-80 to \geq -95	<-95 to \geq -110	<-110 to min																														

Table-134: Network performance parameter and definition voice

7.2.2 Network Performance Parameters Data tests

Parameter Name	Definition
Download Speed (Mbps)	<p>The download speed is defined as the data transmission rate that is achieved for downloading a test file from a test server to a test device.</p> <p>Download Speed = Total bytes transferred during download / Total time for transfer</p> <ul style="list-style-type: none"> 80th percentile (upper range) & 20th percentile (lower range) value has been calculated for download throughput in dynamic drive and Hotspot combine data
Upload Speed (Mbps)	<p>The upload speed is the data transmission rate that is achieved for uploading a test file from a test device to a test server.</p> <p>Upload Speed = Total bytes transferred during upload / Total time for transfer.</p> <ul style="list-style-type: none"> 80th percentile (upper range) & 20th percentile (lower range) value has been calculated for upload throughput in dynamic drive and Hotspot combine data.
Download Session Setup Success Rate	<p>(total download session established (successfully connected to server)/ total download session attempt) *100. This KPI has been calculated for Hotspot only.</p>

Upload Session Setup Success Rate	(total upload session established (successfully connected to server)/ total upload session attempt)*100. This KPI need to report for Hotspot only.
Web Page Download Time	Web browsing test is used to measure performance in terms of opening a web/HTTP page. Time taken to open the web page successfully is considered as web browsing delay/web page download time.
Video Streaming Delay	The Video streaming delay is time taken from start of video transfer to First video frame displayed in player.
Latency (TWAMP-UDP)	Latency is the time it takes for a small data set to be transmitted from a device to a server on the Internet and back to the same device again. The Latency is measured in milliseconds (ms). To calculate the one-way latency, we just do half of the round-trip time. 50th percentile of one-way latency has been reported.
Jitter (TWAMP-UDP)	Measure of variation in time in arrival of packets from a source to destination The consideration of packet delay jitter is considered by standard deviation of Inter Packet Delay Variation. If IPDV is used. By standard deviation is meant the average of standard deviation of IPDV on DL $IPDV(i) = D(i) - D(i-1)$ then Stdvs of IPDV is considered as jitter.
Packet Loss Rate (TWAMP-UDP & TCP)	Number of packets lost out of total packet transferred during test. Packet loss rate = (Total packet lost / Total packet sent) *100 * Packet delay (using TWAMP-UDP & TCP) >90 ms considered as packet loss and included in packet loss rate. * Packet loss rate is calculated based on TWAMP-UDP & TCP. *90 th percentile for Packet loss rate has been reported in overall Hotspot performance summary.

Table-135: Network performance parameter and definition Data

Disclaimer: The observations presented above and, in the reports, represent the performance of the service providers on the area/route under test on the day/time of conducting the drive test and no inference whatsoever may be drawn regarding the quality of the telecom service by the service providers in the whole city/state/licensed service area.