

**Operator Assisted Drive Test Report** 

# Bharatpur & Dholpur City 25<sup>th</sup> to 28<sup>th</sup> Jun'2024 By TRAI Regional office Jaipur

<u>Key Performance Indicators:</u> All TSPs have met the Drop Call Rate (DCR) benchmark of 2% . All TSPs have met the Call Setup Success Rate (CSSR) of 95%.

The Operator Assisted Drive Test has been carried out by Regional Office, Jaipur with the help of Service Providers in Bharatpur & Dholpur City and Hotspot from 09:00 AM to 8:00 PM on 25<sup>th</sup> to 28<sup>th</sup> Jun'2024. The drive test covered drive route of 90 KMs & 6 no hotspots over a period of 4 day. Approximately 220 calls were made for each of the 7 networks: three 2G networks, one 3G networks and three LTE networks covering four TSPs.

**Overview** 

**Voice Summary** 

**Data Summary** 



Regional Office, TRAI Jaipur conducted Operator Assisted Drive Test on 25<sup>th</sup> to 28<sup>th</sup> Jun'2024 covering Bharatpur & Dholpur city. The performance of Airtel, BSNL, Vodafone Idea and Jio was monitored across various technologies (2G, 3G and 4G). The test results obtained from these drive tests were utilized to assess the network quality for Voice and Data services.

**Voice:** Coverage, Quality, Handover Success Rate, Call Setup Success Rate, Drop Call Rate and Block Call Rate.

Data: Download Throughputs, Drive Test Details :

**Voice Tests:** Calls were made for 90 sec duration with a wait time of 10 sec between calls in all technologies. The drive test covered a drive route of approximately 90 KMs. Approximately 220 calls were made for each of the Jio networks: three 2G (Lock Mode) networks, one 3G (Dual mode) networks and three VoLTE networks covering 4 unique TSPs.

#### Data Tests:

**Dynamic data test** was conducted for 90 kms for download throughput in all technologies. 2G – measurement – UE Locked in 2G file size- 500KB

- 3G measurement UE in 3G File Size- 20MB
- 4G measurement UE in LTE File Size- 40MB

#### Static data tests on 5 hotspots

- 1. Bharatpur Bus Stand
- 2. Shri Bankey Bihari Ji Temple, Bharatpur
- 3. Laxman Mandir, Bharatpur
- 4. Dholpur Bus Stand
- 5. Dholpur Junction, Railway Station
- 6. Nihal Tower (Ghantaghar), Dholpur

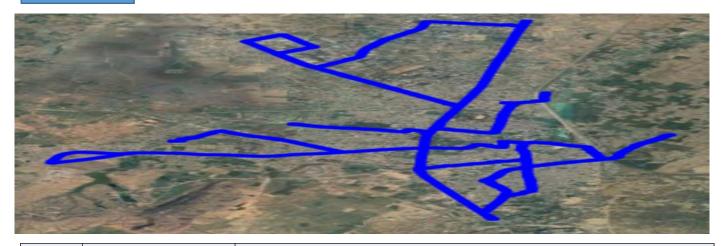
| Service      | Specifications   |
|--------------|--|
| Download     | 2G (Locked) - 500KB, 3G (Dual) - 20 MB, 4G (Free) - 40 MB  |
| Upload       | 2G (Locked) - 100KB, 3G (Dual) - 5 MB, 4G (Free) - 10 MB   |
| Web Browsing | 3 links of e/m commerce website www.amazon.in, www.flipkart.com and PayTm $% \left( {{\left[ {{\left[ {{\left[ {\left[ {\left[ {\left[ {\left[ {\left[ {\left[ $ |
| Latency      | 32 Bytes on www.google.com   |

# **Overview**

# Voice & Dynamic Data Test Drive Route



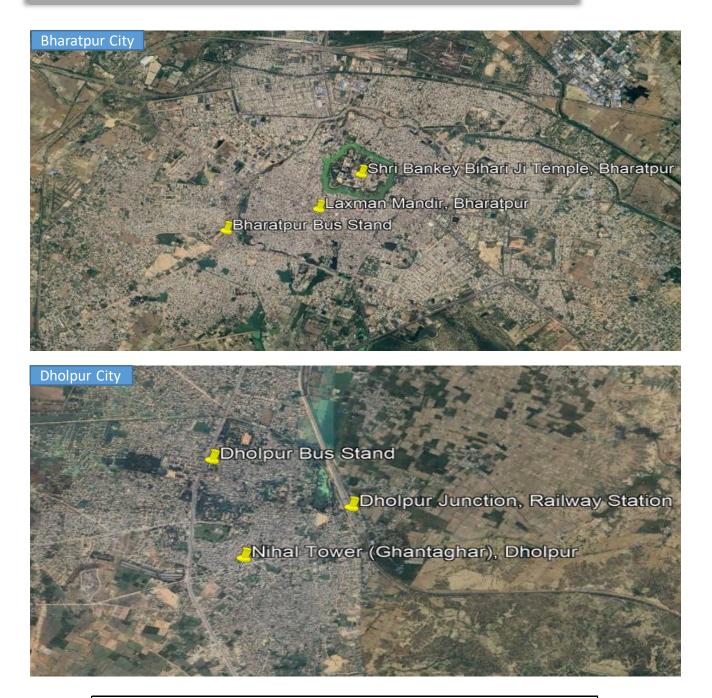
Dholpur City



| Date      | Test Scenario                            | Area to be Covered  |
|-----------|--|---|
| 25-Jun-24 | Hot Spots- 2G/3G/4G Static Data<br>Tests | Static Hotspot – 1) Bharatpur Bus Stand, 2) Shri Bankey Bihari Ji Temple, Bharatpur, 3) Laxman Mandir,<br>Bharatpur.  |
| 26-Jun-24 | 2G/3G/4G Voice and 3G/4G<br>Dynamic Data | Starting point: BSNL office—Bijali Ghar, Kali Bagichi Bus Stand, Bharatpur Bus stand, Kummher Gate, Red<br>Cross Circle, Lohagarh Fort, Shri Bihari Ji Temple, Red Cross Circle, BSNL Office. |
| 27-Jun-24 | 2G/3G/4G Voice and 3G/4G<br>Dynamic Data | Starting point: Dholpur Bus Stand, Gulab Bag Circle, Nihal Tower (Ghantaghar), Jagan Circle, Dholpur Junction<br>Railway Station, Lal Bazar, Gulab Bag Circle.                                |
| 28-Jun-24 | Hot Spots- 2G/3G/4G Static Data<br>Tests | Static Hotspot – 1) Dholpur Bus Stand, 2) Dholpur Junction, Railway Station, 3) Nihal Tower (Ghantaghar),<br>Dholpur.   |

**Overview** 

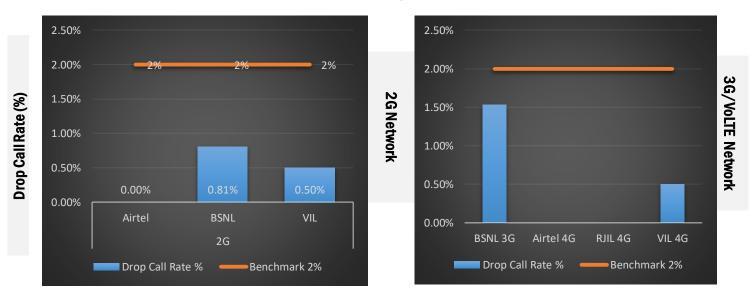
### **Data Service Test - Static Locations**



Hotspot Locations 1.Bharatpur Bus Stand 2.Shri Bankey Bihari Ji Temple, Bharatpur 3.Laxman Mandir, Bharatpur 4.Dholpur Bus Stand 5.Dholpur Junction, Railway Station 6.Nihal Tower (Ghantaghar), Dholpur

# **Voice Calls**

# **QoS compliance** of the TSPs in **Bharatpurto Dholpur City** for Voice across technologies 2G/3G/4G-VoLTE:





| KPIs                 | 2G     |       | 3G    | 4G    |        |       |       |
|----------------------|--------|-------|-------|-------|--------|-------|-------|
| INF15                | Airtel | BSNL  | VIL   | BSNL  | Airtel | RJIL  | VIL   |
| Drop Call<br>Rate %  | 0.00%  | 0.81% | 0.50% | 1.53% | 0.00%  | 0.00% | 0.50% |
| Block Call<br>Rate % | 2.00%  | 1.62% | 0.50% | 1.92% | 0.00%  | 0.00% | 0.00% |

a) All TSPs have met the 2% QOS benchmark of Drop Call Rate (DCR%).

b) Call Block Rate (CBR%) benchmark of 3% was achieved by all TSP's.

# **Voice Calls**

# **Key Observations**

### Coverage

a) Percentage of coverage samples for  $2G \ge -85$  dBm.

| TEDo       | 2G     |       |        |
|------------|--------|-------|--------|
| TSPs       | Airtel | BSNL  | VIL    |
| Coverage % | 95.74% | 97.2% | 88.51% |

b) Percentage of coverage samples for  $3G \ge -90$  dBm

| TSPs       | 3G     |
|------------|--------|
|            | BSNL   |
| Coverage % | 88.26% |

c) Percentage of coverage samples for LTE  $\geq$  -110 dBm.

| TSPs       | VoLTE  |        |        |  |  |
|------------|--------|--------|--------|--|--|
|            | Airtel | JIO    | VIL    |  |  |
| Coverage % | 99.93% | 99.92% | 98.28% |  |  |

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

| TEDa                                | 3G     | VoLTE  |      |      |
|-------------------------------------|--------|--------|------|------|
| TSPs                                | BSNL   | Airtel | JIO  | VIL  |
| Time spent on<br>3G/4G<br>Network % | 99.67% | 100%   | 100% | 100% |

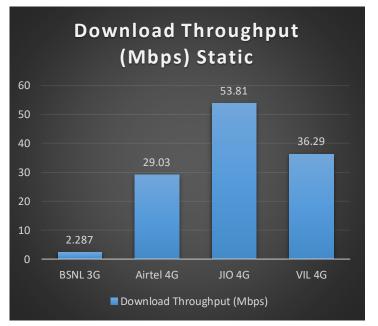
# Data Services Static

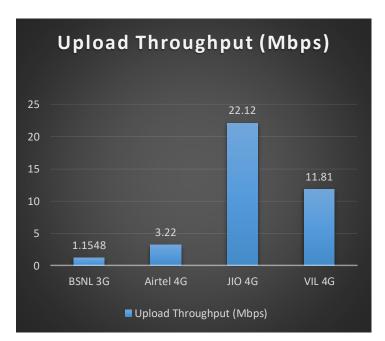
## **Key Observations**

Data was tested at 5 locations .Following services were tested: Data Download/Upload, Latency (www.google.com), and Web browsing (Flipkart, Amazon, Paytm)

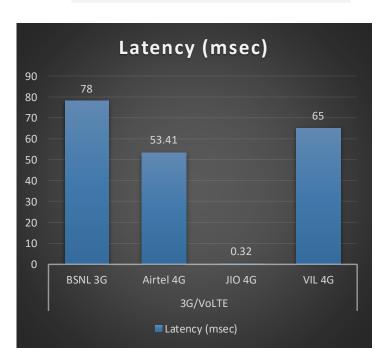
### Data Download and Upload Performance Static (Mbps)

#### 3G/4G/ Network:

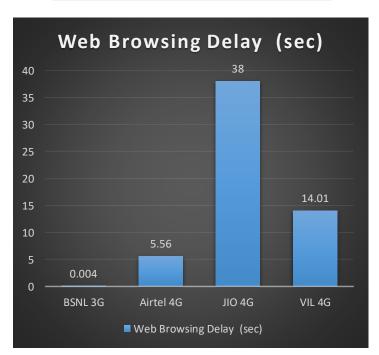




#### Latency (ms)



#### Web Browsing (Sec)



# Data Services Dynamic

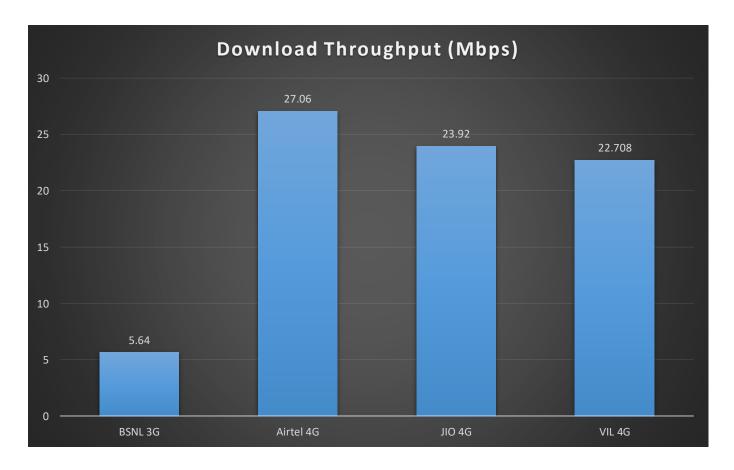
## **Key Observations**

Dynamic Data was tested for whole voice route. Download Throughput was tested.

#### Data Download Performance (kbps) - Dynamic

#### 3G/4G/ Network:

|                               | 3G/VoLTE |           |        |        |  |
|-------------------------------|----------|-----------|--------|--------|--|
| Data Services Dynamic         | BSNL3G   | Airtel 4G | JIO 4G | VIL 4G |  |
| Download Throughput<br>(Mbps) | 5.64     | 27.06     | 23.92  | 22.71  |  |



# Summary

|                          | 2G     |        |        |  |  |
|--------------------------|--------|--------|--------|--|--|
| Voice Call               | Airtel | BSNL   | VIL    |  |  |
| Call Attempt             | 212    | 246    | 205    |  |  |
| Blocked Call Rate (%)    | 2%     | 0.87%  | 0.5%   |  |  |
| CSSR%<br>(Accessibility) | 98%    | 99.13% | 99.5%  |  |  |
| Drop Call Rate (%)       | 0%     | 1.62%  | 0.5%   |  |  |
| Mobility HOSR (%)        | 97.9%  | 97.78% | 99.57% |  |  |
| Rx Quality (%)           | 96.45% | 98.78% | 95.72% |  |  |
| Average CST Sec          | 3.36   | 3.41   | 1.743  |  |  |

|                          | 3G/VoLTE |                 |           |           |  |  |
|--------------------------|----------|-----------------|-----------|-----------|--|--|
| Voice Call               | BSNL 3G  | Airtel<br>VoLTE | JIO VoLTE | VIL VoLTE |  |  |
| Call Attempt             | 260      | 223             | 219       | 205       |  |  |
| Blocked Call Rate (%)    | 1.54%    | 0%              | 0%        | 0%        |  |  |
| CSSR%<br>(Accessibility) | 98.46%   | 100%            | 100%      | 100%      |  |  |
| Drop Call Rate (%)       | 1.92%    | 0%              | 0%        | 0.5%      |  |  |
| Mobility HOSR (%)        | 95.24%   | 100%            | 99.38%    | 100%      |  |  |
| Rx Quality (%)           | 95.28%   | 91.19%          | 90.78%    | 95.21%    |  |  |
| Average CST Sec          | 3.14     | 1.88            | 0.65      | 0.496     |  |  |

# Summary

| Doto Somuioco Statio          | 2G     |        |        |  |
|-------------------------------|--------|--------|--------|--|
| Data Services Static          | Airtel | BSNL   | VIL    |  |
| Download Throughput<br>(kbps) | 142.25 | 108.16 | 266.6  |  |
| Upload Throughput<br>(kbps)   | 74.79  | 37.46  | 190.76 |  |
| Web Browsing Delay<br>(sec)   | 73.65  | 0.003  | 62.355 |  |
| Latency (msec)                | 183.25 | 136    | 171.17 |  |

|                                | 3G / 4G |           |        |        |  |
|--------------------------------|---------|-----------|--------|--------|--|
| Data Services Static           | BSNL 3G | Airtel 4G | JIO 4G | VIL 4G |  |
| Download Throughput<br>(Mbps)  | 2.287   | 29.03     | 53.81  | 36.29  |  |
| Upload<br>Throughput(Mbps)     | 1.1548  | 3.22      | 22.12  | 11.81  |  |
| Video Streaming<br>Delay (sec) | 3.685   | 0         | 1.29   | 0      |  |
| Web Browsing Delay<br>(sec)    | 0.004   | 5.56      | 38     | 14.01  |  |
| Latency (msec)                 | 78      | 53.41     | 0.32   | 65     |  |

| Pue Stand Pharatour           | 2G     |        |        |  |  |
|-------------------------------|--------|--------|--------|--|--|
| Bus Stand Bharatpur           | Airtel | BSNL   | VIL    |  |  |
| Download Throughput<br>(kbps) | 120.02 | 108.16 | 252.15 |  |  |
| Upload Throughput<br>(kbps)   | 92.5   | 37.46  | 160.89 |  |  |
| Web Browsing Delay<br>(sec)   | 78.3   | 0.003  | 62.15  |  |  |
| Latency (msec)                | 193.56 | 136    | 220    |  |  |

| Dihari li Tamula              | 2G     |        |        |  |  |
|-------------------------------|--------|--------|--------|--|--|
| Bihari Ji Temple              | Airtel | BSNL   | VIL    |  |  |
| Download Throughput<br>(kbps) | 142.2  | 120.69 | 284.54 |  |  |
| Upload Throughput<br>(kbps)   | 139.5  | 27.44  | 154.82 |  |  |
| Web Browsing Delay<br>(sec)   | 74.2   | 0.0036 | 51.63  |  |  |
| Latency (msec)                | 232.08 | 158    | 140    |  |  |

| Lovmon li Tomplo              | 2G     |       |        |  |  |
|-------------------------------|--------|-------|--------|--|--|
| <u>Laxman Ji Temple</u>       | Airtel | BSNL  | VIL    |  |  |
| Download Throughput<br>(kbps) | 185.43 | 63.74 | 262.66 |  |  |
| Upload Throughput<br>(kbps)   | 94.27  | 34    | 216.09 |  |  |
| Web Browsing Delay<br>(sec)   | 69.58  | 0.003 | 61.383 |  |  |
| Latency (msec)                | 133.87 | 138   | 166    |  |  |

| Dholpur Puc Stand             | 2G     |        |        |  |  |
|-------------------------------|--------|--------|--------|--|--|
| Dholpur Bus Stand             | Airtel | BSNL   | VIL    |  |  |
| Download Throughput<br>(kbps) | 138.43 | 158.71 | 262.57 |  |  |
| Upload Throughput<br>(kbps)   | 53.9   | 16.76  | 204.72 |  |  |
| Web Browsing Delay<br>(sec)   | 148.21 | 0.026  | 76.897 |  |  |
| Latency (msec)                | 318.14 | 188    | 170    |  |  |

|                               | 2G     |        |        |
|-------------------------------|--------|--------|--------|
| Dholpur Junction              | Airtel | BSNL   | VIL    |
| Download<br>Throughput (kbps) | 184.83 | 209.51 | 240.77 |
| Upload Throughput<br>(kbps)   | 74.15  | 27.28  | 279.83 |
| Web Browsing Delay<br>(sec)   | 82.62  | 0.003  | 65.753 |
| Latency (msec)                | 257.87 | 174    | 160    |

| Nibel Tewer (Dhelpur)         | 2G     |       |        |  |  |
|-------------------------------|--------|-------|--------|--|--|
| <u>N</u> ihal Tower (Dholpur) | Airtel | BSNL  | VIL    |  |  |
| Download Throughput<br>(kbps) | 182.63 | 93.19 | 296.91 |  |  |
| Upload Throughput<br>(kbps)   | 94.45  | 11.13 | 128.2  |  |  |
| Web Browsing Delay<br>(sec)   | 63.2   | 0.003 | 56.32  |  |  |
| Latency (msec)                | 196.1  | 180   | 171    |  |  |

# **Data Services static**

| Due Otend Dhenethum               | 3G          |            |        | 4G    |        |
|-----------------------------------|-------------|------------|--------|-------|--------|
| Bus Stand Bharatpur               | BSNI        | _ /        | Airtel | JIO   | VIL    |
| Download Throughput<br>(mbps)     | 2.287       | 7 2        | 24.63  | 59.66 | 38.95  |
| Upload Throughput<br>(mbps)       | 0.11        |            | 4.97   | 21.92 | 9.91   |
| Video Streaming Delay<br>( Secs.) | 0           |            | 0      | 1.4   | 0      |
| Web Browsing Delay<br>(sec)       | 0.004 5.92  |            | 5.92   | 40    | 14.792 |
| Bihari Ji Temple                  | 3G          |            |        | 4G    |        |
| Binari or remple                  | BSNL        | Air        | el     | JIO   | VIL    |
| Download Throughput<br>(mbps)     | 2.643 28.76 |            | 76     | 59.79 | 36.22  |
| Upload Throughput<br>(mbps)       | 0.29        | 0.29 14.31 |        | 22.94 | 16.83  |
| Video Streaming Delay (<br>Secs.) | 0           | 0 0        |        | 1.28  | 0      |
| Web Browsing Delay (sec)          | 1.055 6.15  |            | 5      | 39    | 14.61  |
| Latency (msec)                    | 92 62.5     |            | .5     | 0.32  | 45     |
|                                   | 3G          |            | 4G     |       |        |
| <u>Laxman Ji Temple</u>           | BSNL        | -          | Airtel | JIO   | VIL    |

| <u>Laxman Ji Temple</u>           | BSNL  | Airtel | JIO   | VIL    |
|-----------------------------------|-------|--------|-------|--------|
| Download Throughput<br>(mbps)     | 2.41  | 36.23  | 39.24 | 31.8   |
| Upload Throughput<br>(mbps)       | 0.17  | 12.62  | 22.86 | 16.76  |
| Video Streaming Delay (<br>Secs.) | 0     | 0      | 1.21  | 0      |
| Web Browsing Delay (sec)          | 0.03  | 7.85   | 41    | 13.608 |
| Latency (msec)                    | 93.66 | 65.53  | 0.32  | 63     |

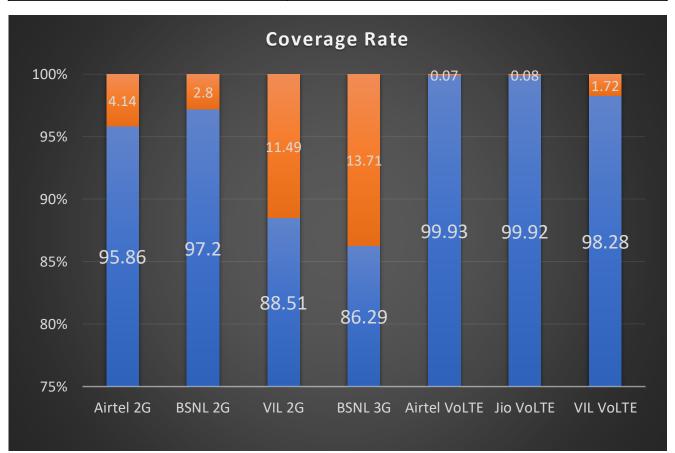
# **Data Services static**

| Dhelmur Due Stend                 | 3G      |          | 4G    |        |
|-----------------------------------|---------|----------|-------|--------|
| Dholpur Bus Stand                 | BSNI    | _ Airtel | JIO   | VIL    |
| Download Throughput<br>(mbps)     | 1.24    | 30.65    | 55.43 | 35.17  |
| Upload Throughput<br>(mbps)       | 0.083   | 8 0.83   | 20.26 | 8.72   |
| Video Streaming Delay (<br>Secs.) | 0       | 0        | 1.25  | 0      |
| Web Browsing Delay (sec)          | 0.003   | 6.59     | 39    | 13.799 |
| Latency (msec)                    | 138     | 67.1     | 0.32  | 78     |
| Dhelmur Junetien                  | 3G      |          | 4G    |        |
| Dholpur Junction                  | BSNL    | Airtel   | JIO   | VIL    |
| Download Throughput<br>(mbps)     | 1.32    | 42.58    | 53.03 | 38.94  |
| Upload Throughput<br>(mbps)       | 0.22    | 0.3      | 21.25 | 12.02  |
| Video Streaming Delay (<br>Secs.) | 0       | 0        | 1.29  | 0      |
| Web Browsing Delay (sec)          | 0.026 0 |          | 36    | 13.676 |
| Latency (msec)                    | 134     | 0        | 0.3   | 57     |

|                                   | 3G    |        | 4G    |       |
|-----------------------------------|-------|--------|-------|-------|
| <u>Nihal Tower (</u> Dholpur)     | BSNL  | Airtel | JIO   | VIL   |
| Download Throughput<br>(mbps)     | 0.67  | 40.08  | 55.71 | 36.64 |
| Upload Throughput<br>(mbps)       | 0.076 | 0.27   | 23.5  | 6.6   |
| Video Streaming Delay (<br>Secs.) | 0     | 0      | 1.33  | 0     |
| Web Browsing Delay (sec)          | 0.003 | 6.86   | 33    | 13.6  |
| Latency (msec)                    | 138   | 71.67  | 0.31  | 77    |

RF Coverage relates to the geographical footprint within the system that has sufficient RF signal strength to provide for a call session. The Coverage rate is calculated on the basis of % of samples in which the Rx level  $\geq$  -85 dBm, RSCP is  $\geq$  -90 dBm & RSRP  $\geq$  -110dBm. The details are as follows.

| TSP          | Coverage Rate % |
|--------------|-----------------|
| Airtel 2G    | 95.86%          |
| BSNL 2G      | 97.2%           |
| VIL 2G       | 88.51%          |
| BSNL 3G      | 86.29%          |
| Airtel VoLTE | 99.93%          |
| Jio VoLTE    | 99.92%          |
| VIL VoLTE    | 98.28%          |



| TSP-AIRTEL |            |  |  |  |
|------------|------------|--|--|--|
| Technology | Coverage % |  |  |  |
| 2G         | 95.86%     |  |  |  |

2G

|          |                                 |                          | RxLevel                                      | Dhormal<br>the  |  | 0 m   | SACH T  |
|----------|---------------------------------|--------------------------|--|---|--|---|---|
|          | (0%)                            | (0)                      | [-95, >=Min)                                 | Senthra 2   | l load Google Maps correctly.                        | terest in the second | Matendra JS For<br>Motors Bh  |
| Over     | (2.67%)<br>(16.32%)<br>(81.01%) | (162)<br>(992)<br>(4924) | [-85, >=-95)<br>[-75, >=-85]<br>[Max, >=-75] | Yani Pen Stationologiment purposes only<br>trock-ung<br>Stational Hanning<br>Stational Stational Stationa | vebsre? OK   | For develop Do you can this websit  | evelopment purposes only<br>Bong  |
| RxLe     |                                 |                          |  | Jagheena Runal<br>antina anna<br>NYEXANJUD<br>19 COLLEGE  | 1 37   | Hotel Amar<br>Vias & Resolt   | Seh<br>Hg<br>Shri Vashno deri<br>Mandri seruple Baben<br>di han So<br>di han So |
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| Tota     |                                 |                          |  | Keptudeo<br>Ngaroni Pan Behnera<br>anta<br>anta<br>anta<br>anta<br>anta<br>anta<br>anta<br>an   | y For development purposes<br>international purposes | For development purpose only  | Repthan Soltawali<br>graph graph<br>evelopment purposes only<br>that Pat        |

| 2G                 |              |        |             |  |  |
|--------------------|--------------|--------|-------------|--|--|
| Overall<br>RxLevel | #<br>Samples | % PDF  | Legend<br>s |  |  |
| [Max, >=-75]       | 4924         | 81.01% |             |  |  |
| [-75, >=-85)       | 992          | 16.32% |             |  |  |
| [-85, >=-95)       | 162          | 2.67%  |             |  |  |
| [-95, >=Min)       | 0            | 0.00   |             |  |  |
| Total              | 6078         | 100%   |             |  |  |

| Addressment   200 m   Kalevel<br>exit   Relevel     This page cart load Google Maps correctly.   Image: Second Sec   |                    | 2G           |        |             |
|--|--------------------|--------------|--------|-------------|
| e cry Por devicements parcelland in the western OK protection of parcelland in the method of the parcelland in     | Overall<br>RxLevel | #<br>Samples | % PDF  | Legen<br>ds |
| Re only For development purposes only For development purposes only Port Mark To Po   | [Max, >=-75]       | 3796         | 72.50% |             |
| Text shared of the second seco   | [-75, >=-85)       | 1134         | 21.66% |             |
|  | [-85, >=-95)       | 291          | 5.56%  |             |
| Machanal Datasan<br>Machanal Datasan<br>Set of the   | [-95, >=Min)       | 15           | 0.28%  |             |
| es entry<br>For development purposes only For development purposes o | Total              | 5236         | 100%   |             |

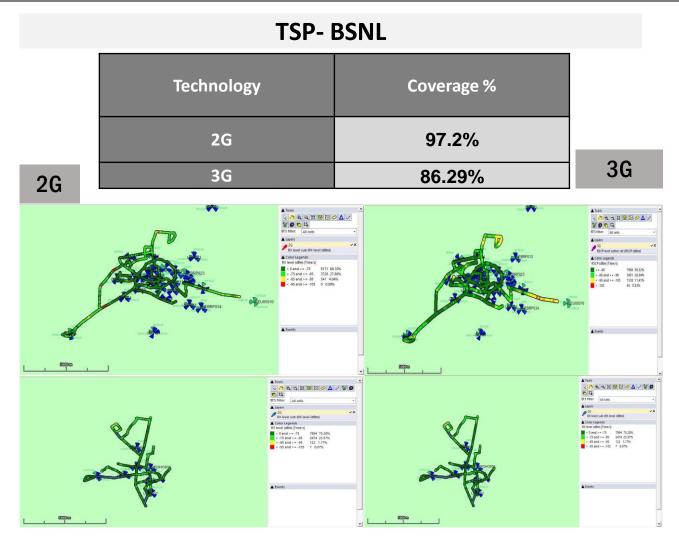
## **TSP-AIRTEL**

| VoLTE | Technology | Coverage % |
|-------|------------|------------|
|       | VoLTE      | 99.93%     |

| Mathiday 35 Fourtheet<br>Mathiday 35 Fourtheet<br>Motors Bhar abur<br>effe and abur | This page can't load Google Maps correctly.   | Dhomui<br>वर्ष्ड्र<br>संस्थ   | ● RSRP (dBm)<br>[-110, >=Min)<br>[-90, >=-110) | (0)<br>(809)     | (0%)<br>(13.18%)    |
|---|---|---|--|------------------|---------------------|
| evelopment purposes only DFor develop   | Do you own this website?  | Year Fer E or development purposes only<br>Incl Pump.<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victoria<br>Victor | [-80, >=-90)<br>[Max, >=-80]                   | (2659)<br>(2670) | (43.32%)<br>(43.5%) |
| Seh<br>He<br>Shri Vashno deri<br>Manufe jeropie Salten                              | Bhander Annual State  | Jagheena Rural<br>andra erra  |  |                  |                     |
| dite itre and Vites (   | It Ama<br>Breson<br>Answer  | VEKALAND<br>G COLLEGE<br>Institution<br>Institution<br>Institution<br>Institution<br>Institution  |  |                  |                     |
| evelopment purposes only  | Vigi Hospital - Ned<br>Francis and S<br>Tem 8 South - South | NG SUBOR DS ON M  |  |                  |                     |
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| Madhoni nyanpi<br>ndhi nyanpi<br>ang  | S HASE MOAR   | The survey of the second  |  |                  |                     |
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| Participation and Place   | Malah<br>Governmert Engineering <sup>Mass</sup><br>Occlege Bhuestpu<br>Weiter ats   | Bachtamand<br>Reprife<br>The Grand Baco<br>Alurary Herning<br>Calence   |  |                  |                     |
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|   | Q NOTE AT   | National Park Bahnera   |  |                  |                     |

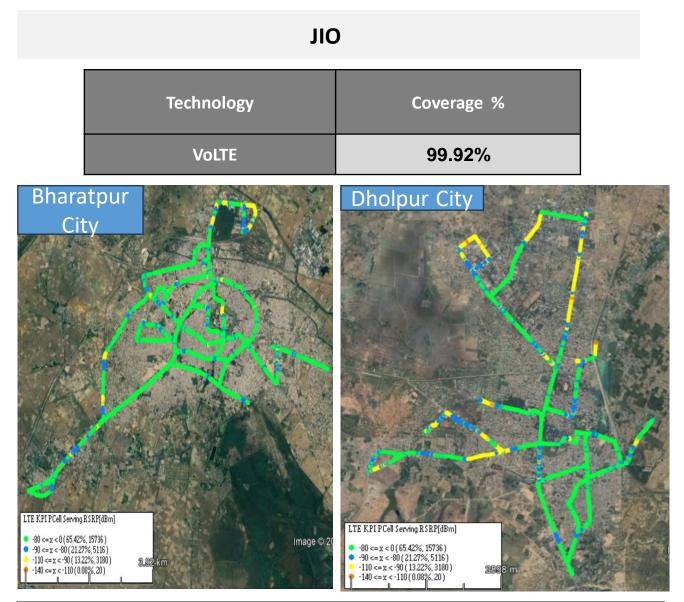
| VoLTE            |              |        |             |  |  |
|------------------|--------------|--------|-------------|--|--|
| Overall<br>RSRP  | #<br>Samples | % PDF  | Legen<br>ds |  |  |
| [Max, >=-80]     | 2670         | 43.50% |             |  |  |
| [-80, >=-90)     | 2659         | 43.32% |             |  |  |
| [-90, >=-110)    | 809          | 13.18% |             |  |  |
| [-110,<br>>=Min) | 0            | 0.00%  |             |  |  |
| Total            | 6138         | 100%   |             |  |  |

|  | (0.13%)                         |               | VoLTE        |        |             |
|--|---------------------------------|---------------|--------------|--------|-------------|
| es only For development our offer and the set of the se | (23.8%)<br>(49.62%)<br>(26.45%) | Overall RSRP  | #<br>Samples | % PDF  | Legen<br>ds |
| In a cry For development purposes only For development purposes on the format purposes only For development purposes on the format purpos |                                 | [Max, >=-80]  | 1431         | 26.45% |             |
|  |                                 | [-80, >=-90)  | 2685         | 49.62% |             |
|  |                                 | [-90, >=-110) | 1288         | 23.80% |             |
| A text we design a   |                                 | [-110, >=Min) | 7            | 0.13%  |             |
| es cety. For development purposes only For development purposes only For development purposes only For development of  |                                 | Total         | 5411         | 100%   |             |

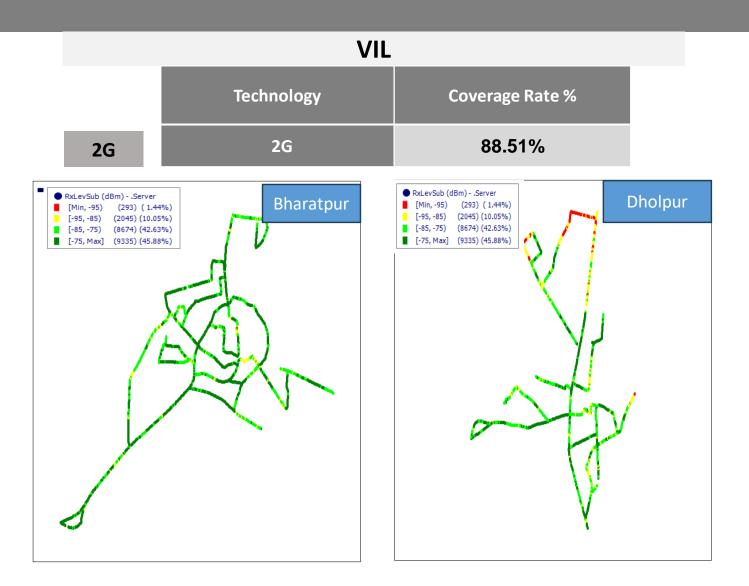


|                 | 2G        |        |         |
|-----------------|-----------|--------|---------|
| Overall RxLevel | # Samples | % PDF  | Legends |
| [Max, >=-75]    | 17143     | 71.28% |         |
| [-75, >=-85)    | 6233      | 25.92% |         |
| [-85, >=-95)    | 664       | 2.76%  |         |
| [-95, >=Min)    | 11        | 0.04%  |         |
| Total           | 24051     | 100%   |         |

|               | 3G        |        |         |
|---------------|-----------|--------|---------|
| Overall RSCP  | # Samples | % PDF  | Legends |
| [Max, >=-80]  | 13998     | 57.86% |         |
| [-80, >=-90)  | 6878      | 28.43% |         |
| [-90, >=-105) | 3237      | 13.38% |         |
| [-105, >=Min) | 79        | 0.33%  |         |
| Total         | 24192     | 100%   |         |



| VoLTE /       |           |        |         |  |  |
|---------------|-----------|--------|---------|--|--|
| Overall RSRP  | # Samples | % PDF  | Legends |  |  |
| [Max, >=-80]  | 15736     | 65.43% |         |  |  |
| [-80, >=-90)  | 5116      | 21.27% |         |  |  |
| [-90, >=-110) | 3180      | 13.22% |         |  |  |
| [-110, >=Min) | 20        | 0.08%  |         |  |  |
| Total         | 24052     | 100%   |         |  |  |



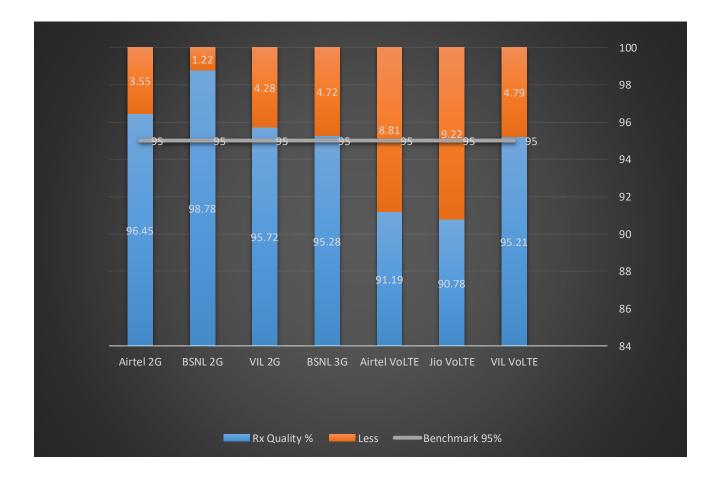
| 2G              |           |        |         |  |  |
|-----------------|-----------|--------|---------|--|--|
| Overall RxLevel | # Samples | % PDF  | Legends |  |  |
| [Max, >=-75]    | 9335      | 45.88% |         |  |  |
| [-75, >=-85)    | 8674      | 42.63% |         |  |  |
| [-85, >=-95)    | 2045      | 10.05% |         |  |  |
| [-95, >=Min)    | 293       | 1.44%  |         |  |  |
| Total           | 20347     | 100%   |         |  |  |

#### VIL Coverage Rate % Technology VoLTE/ VoLTE 98.28% Serving Cell RSRP (dBm) Serving Cell RSRP (dBm) Dholpur Bharatpur [Min, -110) (370) (1.72%) [Min, -110) (370) (1.72%) [-110, -90) (10013) (46.56%) [-110, -90) (10013) (46.56%) [-90, -80) (7585) (35.27%) [-90, -80) (7585) (35.27%) [-80, Max] (3538) (16.45%) (3538) (16.45%) [-80, Max]

| VoLTE /       |           |        |         |  |  |
|---------------|-----------|--------|---------|--|--|
| Overall RSRP  | # Samples | % PDF  | Legends |  |  |
| [Max, >=-80]  | 3538      | 16.45% |         |  |  |
| [-80, >=-90)  | 7585      | 35.27% |         |  |  |
| [-90, >=-110) | 10013     | 46.56% |         |  |  |
| [-110, >=Min) | 370       | 1.72%  |         |  |  |
| Total         | 21506     | 100%   |         |  |  |

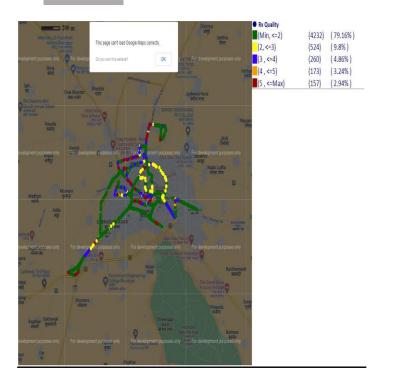
For measuring voice quality, as per the QoS norms, RxQual <=5 for GSM TSPs, EcNo >= -14 dBm for 3G TSP sand SINR >0 in case of VoLTE is considered to be good, where as quality beyond this benchmark is considered to be bad. The benchmark should usually be  $\geq$  95%.

| <u>TSP</u>   | Rx Quality % |
|--------------|--------------|
| Airtel 2G    | 96.45%       |
| BSNL 2G      | 98.78%       |
| VIL 2G       | 95.72%       |
| BSNL 3G      | 95.28%       |
| Airtel VoLTE | 91.19%       |
| Jio VoLTE    | 90.78%       |
| VIL VoLTE    | 95.21%       |



| Airtel     |              |  |
|------------|--------------|--|
| Technology | Rx Quality % |  |
| 2G         | 96.45%       |  |

2G



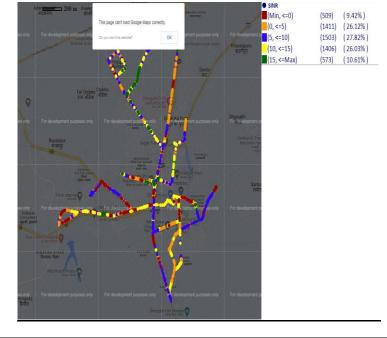
| Overall Rx<br>Quality | #<br>Samples | % PDF  | Legend<br>s |
|-----------------------|--------------|--------|-------------|
| (Min, <=2)            | 4232         | 79.16% |             |
| (2, <=3)              | 524          | 9.80%  |             |
| (3 , <=4)             | 260          | 4.86%  |             |
| (4 , <=5)             | 173          | 3.24%  |             |
| (5 , <=Max)           | 157          | 2.94%  |             |
| Total                 | 5346         | 100%   |             |

| Addresses 200 m. Kaper<br>Andresses   In only The page can't bad Google Maps conscily.   The page can't bad Google Maps conscily. The page can't bad Google Maps conscily.   De get one ma webset The rates too mice   Part development of the page can't bad Google Maps conscily. The page can't bad Google Maps conscily.   De get one ma webset The rates too mice   Part development of the page can't bad Google Maps conscily. The rates too mice   De get one ma webset The rates too mice   Part development of the page can't bad Google Maps conscily. The rates too mice   De get one ma webset The rates too mice   Part development of the page can't bad Google Maps conscil. The rates too mice   Part development of too mice Sanda  | Overall Rx<br>Quality | #<br>Sample<br>s | % PDF  | Legends |
|--|-----------------------|------------------|--------|---------|
| norty For development pursous any For development pursous any For development pursous any For development pursous any  | (Min, <=2)            | 3701             | 80.11% |         |
| Rupapur<br>Pering<br>Pering  | (2, <=3)              | 379              | 8.20%  |         |
| All Control Co   | (3 , <=4)             | 223              | 4.83%  |         |
| n off<br>Print and<br>Print and<br>Prin | (4 , <=5)             | 125              | 2.71%  |         |
| New Works of the Second Se  | (5 ,<br><=Max)        | 192              | 4.15%  |         |
| es only<br>enables<br>feder<br>feder<br>brengt h for threetopment purposes only<br>brengt h for threetopment purposes only<br>brengt h for threetopment purposes only  | Total                 | 4620             | 100%   |         |

|       | Airtel     |              |  |
|-------|------------|--------------|--|
|       | Technology | Rx Quality % |  |
| VoLTE | VoLTE      | 91.19%       |  |

| Sector   2 (U m)   Sink     Maximum 2.0 in mater   This page cartitad Googe Haps correctly.   Sector   Sector   Sector     Maximum 2.0 in mater   This page cartitad Googe Haps correctly.   OK   Fin the for consequences only   Sink     Maximum 2.0 in mater   This page cartitad Googe Haps correctly.   OK   Fin the for consequences only   Sink     Maximum 2.0 in mater   This page cartitad Googe Haps correctly.   OK   Fin the for consequences only   Sink     Maximum 2.0 in mater   This page cartitad Googe Haps correctly.   OK   Fin the for consequences only   Sink     Maximum 2.0 in mater   This page cartitad Googe Haps correctly.   OK   Fin the for consequences only   Sink     Maximum 2.0 in mater   This page cartitad Googe Haps correctly.   Fin the for consequences only   Fin the for consequ   | Overall<br>SINR | #<br>Samples |  |
|--|-----------------|--------------|--|
| And a set of the set o   | (Min, <=0)      | 503          |  |
| Netsymet purpase of a first extension of the  | (0, <=5)        | 1607         |  |
| Matron person<br>mild<br>/ Add<br>count 0<br>count 0<br>co | (5, <=10)       | 1787         |  |
| The Visit Part Part Part Part Part Part Part Par   | (10, <=15)      | 1417         |  |
| B O primar   | (15, <=Max)     | 819          |  |
| The set of  | Total           | 6133         |  |

| Overall<br>SINR | #<br>Sample<br>s | % PDF  | Legends |
|-----------------|------------------|--------|---------|
| (Min, <=0)      | 509              | 9.42%  |         |
| (0, <=5)        | 1411             | 26.12% |         |
| (5, <=10)       | 1503             | 27.82% |         |
| (10, <=15)      | 1406             | 26.03% |         |
| (15,<br><=Max)  | 573              | 10.61% |         |
| Total           | 5402             | 100%   |         |



Legend

S

% PDF

8.20%

26.20%

29.14%

23.10%

13.35%

100%

|                    | BSNL  |  |  |
|--------------------|---|--|--|
| 2G                 | Technology 2G<br>3G   | Rx Quality %     98.78%     95.28%   | 3G   |
|                    | Image: Section 2000     Image: Section 2000 |  | Image: State of the state   |
|                    | ▲ Toold ▲   ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●   | , The second sec | Ligen<br>State<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State:<br>State: |
| Overall Rx Quality | # Samples   | % PDF  | Legends  |
| (Min, <=4)         | 20659   | 96.94%   |  |
| (4, <=5)           | 392   | 1.84%  |  |
| (5, <=Max)         | 260   | 1.22%  |  |
| Total              | 21311   | 100%   |  |
| Overall Ec/No      | # Samples   | % PDF  | Legends  |
| (Min, <=-11)       | 17095   | 70.68%   |  |
| (-11 , <=-14)      | 5951  | 24.60%   |  |
| (-14 , <=Max)      | 1140  | 4.72%  |  |
| Tetal              | 24496   | 1000/  |  |

24186

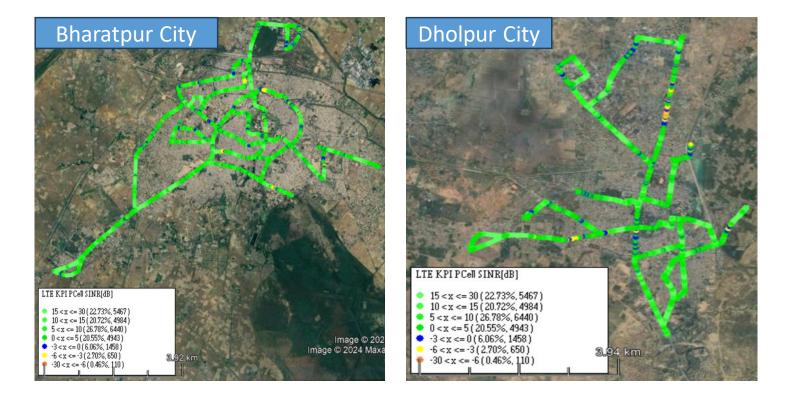
100%

Total

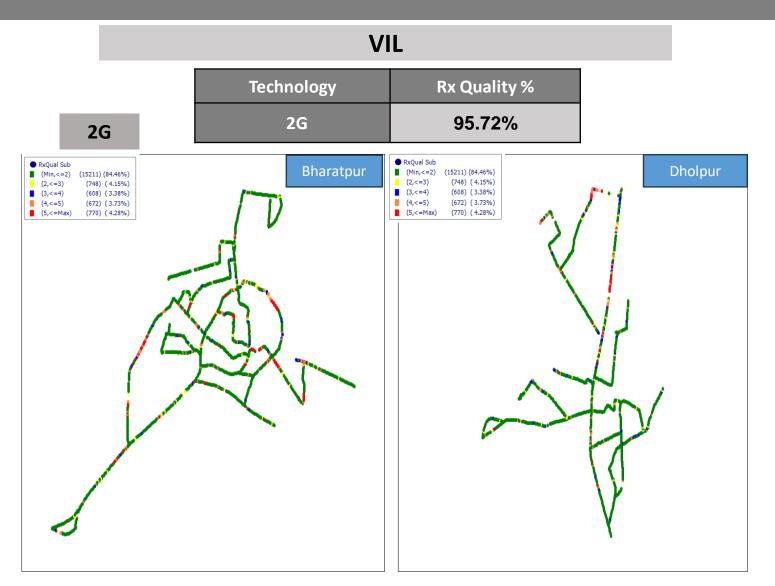
## **Quality Details**

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|---|---|---|---|
|   | • | ~ | - |

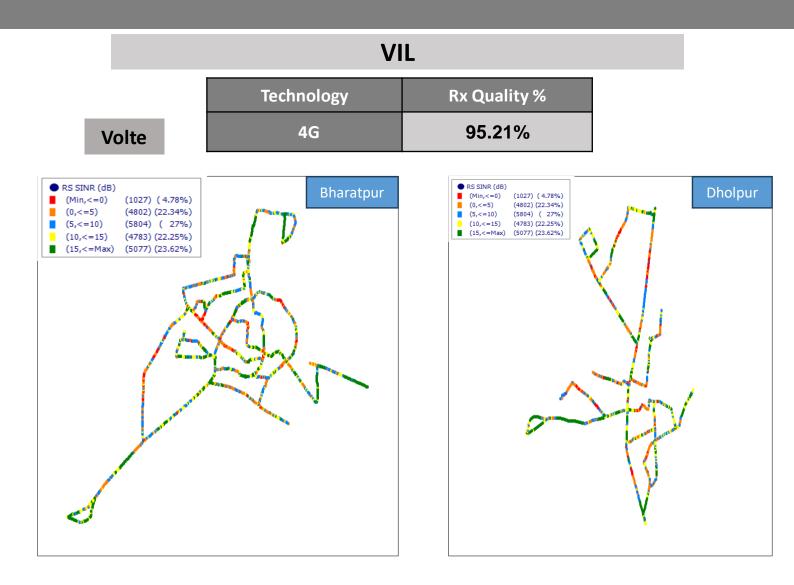
| Technology | Rx Quality % |
|------------|--------------|
| VoLTE      | 90.78%       |



| Overall SINR | # Samples | % PDF  | Legends |
|--------------|-----------|--------|---------|
| (Min, <=-6)  | 110       | 0.46%  |         |
| (-6, <=-3)   | 650       | 2.7%   |         |
| (-3, <=0)    | 1458      | 6.06%  |         |
| (0, <=5)     | 4943      | 20.55% |         |
| (5, <=10)    | 6440      | 26.78% |         |
| (10, <=15)   | 4984      | 20.72% |         |
| (15, <=Max)  | 5467      | 22.73% |         |
| Total        | 24052     | 100%   |         |



| Overall Rx Quality | # Samples | % PDF  | Legends |
|--------------------|-----------|--------|---------|
| (Min, <=2)         | 15211     | 84.46% |         |
| (2, <=3)           | 748       | 4.15%  |         |
| (3 , <=4)          | 608       | 3.38%  |         |
| (4 , <=5)          | 672       | 3.73%  |         |
| (5 , <=Max)        | 770       | 4.28%  |         |
| Total              | 18009     | 100%   |         |



| Overall SINR | # Samples | % PDF  | Legends |
|--------------|-----------|--------|---------|
| (Min, <=0)   | 1027      | 4.78%  |         |
| (0, <=5)     | 4802      | 22.34% |         |
| (5, <=10)    | 5804      | 27%    |         |
| (10, <=15)   | 4783      | 22.25% |         |
| (15, <=Max)  | 5077      | 23.63% |         |
| Total        | 21493     | 100%   |         |

| TSP          | % of Time Spent on 3G/VoLTE |
|--------------|-----------------------------|
| BSNL 3G      | 99.67%                      |
| Airtel VoLTE | 100%                        |
| Jio VoLTE    | 100%                        |
| VIL VoLTE    | 100%                        |

