

INDEPENDENT QUALITY OF SERVICE **SURVEY – MOTORWAYS AND HIGHWAYS** **OF PAKISTAN**

THIRD QUARTER 2022

ENFORCEMENT WIRELESS – II DIRECTORATE
PTA | F-5/1, ISLAMABAD

INDEPENDENT QUALITY OF SERVICE SURVEY REPORT

INTRODUCTION

1.1. In order to measure the performance and service quality of Cellular Mobile Operators (CMOs), an independent Quality of Service (QoS) Survey has been carried out on thirteen (13) x Motorways and Highways during 3rd Quarter i.e. July ~ September 2022. The name of Motorways, Highways and Inter-Cities Roads along with survey dates are mentioned in **Table 1.1: QoS Survey Roads & Dates**:

Motorways/ Highways/ Inter Cities Roads				
S. #	Name	From	To	Survey Date
1.	M-15	Hasan Abdal	Thakot	27 th ~ 28 th July, 2022
2.	N-25	Quetta	Karachi	29 th July, 2022
3.	N-125	Haripur	Taxila	22 nd August, 2022
4.	M-4	Pindi Bhatian	Multan	22 nd ~ 24 th August, 2022
5.	M-1	Islamabad	Peshawar	23 rd August ~ 29 th August, 2022
6.	M-2	Lahore	Islamabad	23 rd ~ 24 th August, 2022
7.	M-5	Multan	Sukkur	24 th ~ 25 th August, 2022
8.	N-5	Rawalpindi	Turkham	25 th ~ 26 th August, 2022
9.	M-3	Lahore	Abdul Hakeem	29 th August, 2022
10.	N-75	Islamabad	Kohala	29 th August, 2022
11.	M-11	Lahore	Sialkot	30 th August, 2022
12.	M-16	Swabi	Katlang	5 th September, 2022
13.	N-45	Nowshera	Chitral	12 th ~ 15 th September, 2022

Table 1.1: QoS Survey Roads & Dates

DRIVE TEST DETAILS

2.1. The QoS survey was carried out using Automated QoS Monitoring & Benchmarking Tool i.e. "SMARTBENCHMARKER". Drive test teams covered Motorways and Highways from one city to another city. During the survey, mobile handsets for Voice Calls, SMS were kept in auto detect mode whereas in case of Data Sessions, the mobile handsets were kept both in auto detect as well as locked mode.

MOBILE NETWORK COVERAGE

3.1. **4G / LTE SIGNAL STRENGTH.** During the survey, while conducting data test in technology auto detect mode as well as locked mode, 4G/LTE signal strength samples were recorded on survey routes. As per Next Generation Mobile Service (NGMS) licenses, licensees are required to meet the threshold of -100 dBm or above of Reference Signal Receive Power (RSRP) with 90% confidence level. Road wise compliance of 90% confidence level of signal strength is shown in (i). **Table 3.1: 4G Signal Strength Technology Auto Detect Mode -100 dBm with 90% Confidence Level** & (ii). **Table 3.2: 4G Signal Strength Technology Locked Mode -100 dBm with 90% Confidence Level.**

4G Signal Strength -100dBm with 90% Confidence Level – Technology Auto Detect Mode								
Road Name	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Hazara Motorway	77.53%	67.74%	84.18%	77.06%	No	No	No	No
Quetta To Karachi	71.97%	80.44%	93.68%	81.18%	No	No	Yes	No
Haripur To Taxila	56.56%	76.36%	85.62%	67.35%	No	No	No	No

<i>Pindi Bhatian To Multan</i>	91.04%	85.07%	80.38%	79.96%	Yes	No	No	No
<i>Multan to Sukkur</i>	87.47%	61.28%	66.56%	73.63%	No	No	No	No
<i>Nowshera To Chitral</i>	85.46%	87.47%	88.16%	86.41%	No	No	No	No
<i>Swabi To Katlang</i>	69.27%	94.27%	0.00%	61.56%	No	Yes	No	No
<i>Islamabad To Kohala</i>	82.58%	70.40%	74.68%	79.54%	No	No	No	No
<i>Islamabad To Peshawar</i>	80.14%	84.65%	92.80%	88.05%	No	No	Yes	No
<i>Lahore to Abdul Hakeem</i>	94.57%	93.80%	N/A	94.78%	Yes	Yes	N/A	Yes
<i>Lahore to Islamabad</i>	87.69%	78.30%	92.28%	79.08%	No	No	Yes	No
<i>Lahore To Sialkot</i>	98.90%	99.30%	N/A	98.35%	Yes	Yes	N/A	Yes
<i>Rawalpindi To Turkham</i>	87.38%	89.81%	93.05%	86.49%	No	No	Yes	No

Table 3.1: 4G Signal Strength Technology Auto Detect Mode -100 dBm with 90% Confidence Level

4G Signal Strength -100dBm with 90% Confidence Level – Technology Locked Mode								
Road Name	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	78.79%	68.53%	67.99%	76.76%	No	No	No	No
<i>Haripur To Taxila</i>	60.52%	62.81%	67.09%	71.24%	No	No	No	No
<i>Pindi Bhatian To Multan</i>	87.73%	84.66%	73.25%	77.71%	No	No	No	No
<i>Multan to Sukkur</i>	88.77%	67.51%	67.76%	82.64%	No	No	No	No
<i>Nowshera To Chitral</i>	83.57%	84.66%	85.87%	88.62%	No	No	No	No
<i>Swabi To Katlang</i>	63.10%	94.49%	78.69%	74.07%	No	Yes	No	No
<i>Islamabad To Kohala</i>	82.94%	70.66%	79.67%	84.77%	No	No	No	No
<i>Islamabad To Peshawar</i>	85.58%	87.15%	94.03%	87.24%	No	No	Yes	No
<i>Lahore to Abdul Hakeem</i>	97.65%	91.03%	93.52%	96.08%	Yes	Yes	Yes	Yes
<i>Lahore to Islamabad</i>	92.01%	83.88%	87.56%	85.31%	Yes	No	No	No
<i>Lahore To Sialkot</i>	98.64%	98.86%	96.12%	97.09%	Yes	Yes	Yes	Yes
<i>Rawalpindi To Turkham</i>	89.81%	86.31%	90.35%	86.05%	No	No	Yes	No

Table 3.2: 4G Signal Strength Technology Locked Mode -100 dBm with 90% Confidence Level

3.2. **3G SIGNAL STRENGTH IN TECHNOLOGY AUTO DETECT MODE.** During the survey, the signal strength samples were recorded on survey routes, wherever network switched to 3G while keeping the mobile handset in technology auto detect mode and also in technology locked mode. As per Next Generation Mobile Service (NGMS) licenses, licensees are required to meet the threshold of -100 dBm or above of Received Signal Code Power (RSCP) with 90% confidence level. Road wise compliance of 90% confidence level of signal strength is shown in (i). **Table 3.3: 3G Signal Strength Technology Auto Detect Mode -100 dBm with 90% Confidence Level** (ii). **Table 3.4: 3G Signal Strength Technology Locked Mode -100 dBm with 90% Confidence Level.**

3G Signal Strength -100dBm with 90% Confidence Level – Technology Auto Detect Mode								
Road Name	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	72.54%	93.62%	78.23%	78.79%	No	Yes	No	No
<i>Quetta To Karachi</i>	89.56%	86.36%	97.19%	91.39%	No	No	Yes	Yes

<i>Haripur To Taxila</i>	56.56%	76.36%	85.62%	67.35%	No	No	No	No
<i>Pindi Bhatian To Multan</i>	N/A	100.00%	95.85%	100.00%	N/A	Yes	Yes	Yes
<i>Multan to Sukkur</i>	N/A							
<i>Nowshera To Chitral</i>	91.36%	91.36%	90.10%	91.44%	Yes	Yes	Yes	Yes
<i>Swabi To Katlang</i>	N/A	100.00%	98.24%	100.00%	N/A	Yes	Yes	Yes
<i>Islamabad To Kohala</i>	99.74%	100.00%	96.12%	N/A	Yes	Yes	Yes	N/A
<i>Islamabad To Peshawar</i>	80.14%	84.65%	92.80%	88.05%	No	No	Yes	No
<i>Lahore to Abdul Hakeem</i>	N/A	100.00%	95.38%	100.00%	N/A	Yes	Yes	Yes
<i>Lahore to Islamabad</i>	99.68%	98.75%	96.95%	94.74%	Yes	Yes	Yes	Yes
<i>Lahore To Sialkot</i>	98.90%	99.30%	N/A	98.35%	Yes	Yes	N/A	Yes
<i>Rawalpindi To Turkham</i>	87.38%	89.81%	93.05%	86.49%	No	No	Yes	No

Table 3.3: 3G Signal Strength Technology Auto Detect Mode -100 dBm with 90% Confidence Level

3G Signal Strength -100dBm with 90% Confidence Level – Technology Locked Mode								
<i>Road Name</i>	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	87.81%	93.83%	91.90%	95.90%	No	Yes	Yes	Yes
<i>Haripur To Taxila</i>	73.26%	97.81%	93.90%	97.51%	No	Yes	Yes	Yes
<i>Pindi Bhatian To Multan</i>	99.98%	100.00%	95.09%	99.93%	Yes	Yes	Yes	Yes
<i>Multan to Sukkur</i>	96.90%	97.76%	69.19%	98.66%	Yes	Yes	No	Yes
<i>Nowshera To Chitral</i>	84.74%	98.14%	89.87%	97.25%	No	Yes	No	Yes
<i>Swabi To Katlang</i>	82.41%	99.92%	95.47%	98.42%	No	Yes	Yes	Yes
<i>Islamabad To Kohala</i>	92.94%	98.15%	95.79%	99.75%	Yes	Yes	Yes	Yes
<i>Islamabad To Peshawar</i>	95.14%	99.33%	100.00%	99.81%	Yes	Yes	Yes	Yes
<i>Lahore to Abdul Hakeem</i>	99.95%	100.00%	94.13%	100.00%	Yes	Yes	Yes	Yes
<i>Lahore to Islamabad</i>	99.60%	98.17%	99.73%	99.67%	Yes	Yes	Yes	Yes
<i>Lahore To Sialkot</i>	100.00%	100.00%	99.90%	100.00%	Yes	Yes	Yes	Yes
<i>Rawalpindi To Turkham</i>	98.01%	97.71%	97.33%	98.04%	Yes	Yes	Yes	Yes

Table 3.4: 3G Signal Strength Technology Locked Mode -100 dBm with 90% Confidence Level

MOBILE BROADBAND SERVICE

4.1. **DATA SESSIONS IN TECHNOLOGY AUTO DETECT MODE & LOCKED MODE.** A series of data tests including Capacity Tests, Data Transfer Tests, Web Browsing and Ping were carried out wherein Key Performance Indicators (KPIs) of Upload and Download User Data Throughput (i.e. Speed), Webpage Loading Time and Latency have been measured. In Fixed Duration Testing, a File of 10GB was downloaded and Uploaded for 3 minutes duration whereas in Fixed Size Testing, a File of 5MB and 2MB was completely downloaded and uploaded respectively. In order to measure Webpage Loading Time, different national webpages were checked and in case of Latency international and national host were pinged to measure Round Trip Time (RTT)/Latency. The 4G/LTE, 3G and 2G signal strength, Number of Tests, Upload and Download User Data Throughput, Webpage Loading Time and Latency detail is mentioned in **Table 4.1: Data Tests Statistics.**

DESCRIPTION			JAZZ	TELENOR	UFONE	ZONG		
AUTO DETECT MODE	CAPACITY TEST	DOWNLOAD	ATTEMPTS	2257	2240	2257	2139	
			SPEED (Mbps)	13.131	4.185	13.184	14.046	
		UPLOAD	ATTEMPTS	2263	2244	2262	2141	
			SPEED (Mbps)	15.551	5.214	12.483	15.426	
	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	2024	2076	1426	1977	
			SPEED (Mbps)	7.626	4.588	9.887	8.541	
		UPLOAD	ATTEMPTS	2288	2270	2282	2167	
			SPEED (Mbps)	5.912	5.178	7.028	6.672	
	BROWSING TEST	ATTEMPTS		11362	11281	11368	10749	
		LOADING TIME (Seconds)		7.09	8.03	6.78	7.22	
	PING TEST	ATTEMPTS		4599	4572	4591	4358	
		LATENCY (msec)		284.71	258.58	276.22	260.3	
AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm			-85.7	-88	-87.3	-87.3		
AVERAGE 3G SIGNAL STRENGTH (RSCP) dBm			-81.13	-82.38	-79.26	-80.51		
LOCKED MODE	4G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	763	756	767	766
				SPEED (Mbps)	8.572	2.154	14.256	9.902
			UPLOAD	ATTEMPTS	757	749	761	759
				SPEED (Mbps)	14.071	3.996	12.523	10.808
		PING TEST	ATTEMPTS		783	774	783	783
			LATENCY (msec)		94.79	106.63	103.64	128.06
	AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm			-86.5	-89.2	-89.9	-88	
	3G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	411	771	680	739
				SPEED (Mbps)	1.579	1.912	2.55	1.378
			UPLOAD	ATTEMPTS	292	758	658	734
				SPEED (Mbps)	0.767	1.324	2.124	1.289
		PING TEST	ATTEMPTS		845	847	836	847
LATENCY (msec)			486.07	580.62	481.32	275.15		
AVERAGE 3G SIGNAL STRENGTH (RSCP) dBm			-76.76	-74.56	-76.32	-73.69		

Table 4.1: Data Tests Statistics

4.2. **DOWNLOAD USER DATA THROUGHPUT.** As per Next Generation Mobile Service (NGMS) licenses, licensees are required to meet the threshold of minimum of 2Mbps of 4G/LTE & 256Kbps of 3G Download User Data Throughput. The results of Data Service QoS KPI i.e. Download User Data Throughput is shown in (i). **Table 4.2: Download User Data Throughput Technology Auto Detect Mode [Fixed Duration] \geq 2Mbps**, (ii). **Table 4.3: Download User Data Throughput Technology Auto Detect Mode [Fixed Size] \geq 2Mbps**, (iii). **Table 4.4: Download User Data Throughput IN 4G/LTE Technology Locked Mode [Fixed Duration] \geq 2Mbps &** (iv). **Table 4.5: Download User Data Throughput IN 3G Technology Locked Mode [Fixed Duration] \geq 256Kbps.**

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED DURATION)								
Road	User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	16.95	4.60	15.66	11.50	First	Fourth	Second	Third
<i>Quetta To Karachi</i>	6.66	3.58	5.16	5.76	First	Fourth	Third	Second
<i>Haripur To Taxila</i>	12.04	2.97	11.64	10.67	First	Fourth	Second	Third
<i>Pindi Bhatian To Multan</i>	9.43	3.78	17.01	14.27	Third	Fourth	First	Second
<i>Multan to Sukkur</i>	6.53	4.00	15.30	8.97	Third	Fourth	First	Second
<i>Nowshera To Chitral</i>	17.17	3.26	15.90	15.81	First	Fourth	Second	Third
<i>Swabi To Katlang</i>	18.82	2.95	2.31	6.28	First	Third	Fourth	Second
<i>Islamabad To Kohala</i>	16.20	5.47	10.59	17.95	Second	Fourth	Third	First
<i>Islamabad To Peshawar</i>	15.89	6.13	15.83	17.65	Second	Fourth	Third	First
<i>Lahore to Abdul Hakeem</i>	9.31	2.51	2.48	13.77	Second	Third	Fourth	First
<i>Lahore to Islamabad</i>	15.42	6.20	19.08	24.83	Third	Fourth	Second	First
<i>Lahore To Sialkot</i>	7.84	1.85	2.68	9.20	Second	Fourth	Third	First
<i>Rawalpindi To Turkham</i>	13.09	4.79	8.02	14.10	Second	Fourth	Third	First

Table4.2: Download User Data Throughput Technology Auto Detect Mode [Fixed Duration] ≥ 2Mbps

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED SIZE)								
Road	User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	9.21	5.02	11.33	8.70	Second	Fourth	First	Third
<i>Quetta To Karachi</i>	2.59	2.18	3.00	2.98	Third	Fourth	First	Second
<i>Haripur To Taxila</i>	8.58	3.75	8.48	9.06	Second	Fourth	Third	First
<i>Pindi Bhatian To Multan</i>	7.78	4.37	10.14	8.79	Third	Fourth	First	Second
<i>Multan to Sukkur</i>	6.61	4.94	10.24	7.33	Third	Fourth	First	Second
<i>Nowshera To Chitral</i>	6.12	4.06	8.66	9.36	Third	Fourth	Second	First
<i>Swabi To Katlang</i>	9.67	2.36	3.09	6.20	First	Fourth	Third	Second
<i>Islamabad To Kohala</i>	10.66	6.25	7.83	10.46	First	Fourth	Third	Second
<i>Islamabad To Peshawar</i>	9.70	5.98	8.06	10.19	Second	Fourth	Third	First
<i>Lahore to Abdul Hakeem</i>	6.75	4.05	3.14	6.75	Second	Third	Fourth	First
<i>Lahore to Islamabad</i>	8.64	5.52	11.34	12.42	Third	Fourth	Second	First
<i>Lahore To Sialkot</i>	5.83	3.56	3.37	6.87	Second	Third	Fourth	First
<i>Rawalpindi To Turkham</i>	7.10	4.27	6.30	6.99	First	Fourth	Third	Second

Table4.3: Download User Data Throughput Technology Auto Detect Mode [Fixed Size] ≥ 2Mbps

DOWNLOAD USER DATA THROUGHPUT IN 4G/LTE TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	10.58	1.12	18.06	10.32	Second	Fourth	First	Third
<i>Haripur To Taxila</i>	7.29	0.58	0.94	9.80	Second	Fourth	Third	First
<i>Pindi Bhatian To Multan</i>	8.31	2.12	15.90	9.50	Third	Fourth	First	Second
<i>Multan to Sukkur</i>	3.73	2.45	14.70	6.19	Third	Fourth	First	Second
<i>Nowshera To Chitral</i>	10.38	1.52	8.70	10.91	Second	Fourth	Third	First
<i>Swabi To Katlang</i>	19.35	1.04	9.33	5.45	First	Fourth	Second	Third
<i>Islamabad To Kohala</i>	8.49	2.12	2.57	0.26	First	Third	Second	Fourth
<i>Islamabad To Peshawar</i>	6.08	2.22	4.64	5.22	First	Fourth	Third	Second
<i>Lahore to Abdul Hakeem</i>	5.84	1.70	13.40	9.51	Third	Fourth	First	Second
<i>Lahore to Islamabad</i>	10.06	4.34	16.84	16.16	Third	Fourth	First	Second
<i>Lahore To Sialkot</i>	2.86	1.65	10.38	7.10	Third	Fourth	First	Second

DOWNLOAD USER DATA THROUGHPUT IN 4G/LTE TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Rawalpindi To Turkham</i>	7.51	2.52	6.10	12.40	Second	Fourth	Third	First

Table 4.4: Download User Data Throughput 4G/LTE Technology Locked Mode [Fixed Duration] \geq 2Mbps

DOWNLOAD USER DATA THROUGHPUT IN 3G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	User Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	1955.9	1478.29	2348.89	1393.01	Second	Third	First	Fourth
<i>Haripur To Taxila</i>	697.27	1385.09	2399.72	131.66	Third	Second	First	Fourth
<i>Pindi Bhatian To Multan</i>	1647.03	1904.81	2680.02	918.04	Third	Second	First	Fourth
<i>Multan to Sukkur</i>	1643.6	3147.14	1587.1	646.08	Second	First	Third	Fourth
<i>Nowshera To Chitral</i>	1180.13	1417.41	1677.85	1907.97	Fourth	Third	Second	First
<i>Swabi To Katlang</i>	1938.08	1339.16	1252.98	622.78	First	Second	Third	Fourth
<i>Islamabad To Kohala</i>	3422.54	2336.79	2627.78	2007.15	First	Third	Second	Fourth
<i>Islamabad To Peshawar</i>	2976.32	1305.6	3068.88	1434.13	Second	Fourth	First	Third
<i>Lahore to Abdul Hakeem</i>	2121.33	1535.92	2092.59	989.21	First	Third	Second	Fourth
<i>Lahore to Islamabad</i>	2739.34	2975.32	4634.16	2048.26	Third	Second	First	Fourth
<i>Lahore To Sialkot</i>	2157.72	928.77	1924.17	818.9	First	Third	Second	Fourth
<i>Rawalpindi To Turkham</i>	2253.39	1546.59	2377.6	1472.11	Second	Third	First	Fourth

Table 4.5: Download User Data Throughput IN 3G Technology Locked Mode [Fixed Duration] \geq 256Kbps

4.3. **UPLOAD USER DATA THROUGHPUT.** As per Cellular Mobile Network Quality of Service (QoS) Regulations 2021, licensees are required to meet the threshold of minimum of 512Kbps of 4G/LTE & 64Kbps of 3G of Upload User Data Throughput. The results of Data Service QoS KPI i.e. Upload User Data Throughput is shown in (i). **Table 4.6: Upload User Data Throughput Technology Auto Detect Mode [Fixed Duration] \geq 512Kbps,** (ii). **Table 4.7: Upload User Data Throughput Technology Auto Detect Mode [Fixed Size] \geq 512Kbps,** (iii). **Table 4.8: Upload User Data Throughput in 4G/LTE Technology Locked Mode [Fixed Duration] \geq 512Kbps & (iv). Table 4.9: Upload User Data Throughput in 3G Technology Locked Mode [Fixed Duration] \geq 64Kbps.**

UPLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED DURATION)								
Road	Auto mode Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	14587.87	5416.84	15077.61	13642.47	Second	Fourth	First	Third
<i>Quetta To Karachi</i>	8491.89	3801.03	10367.01	11640.69	Third	Fourth	Second	First
<i>Haripur To Taxila</i>	11230.98	3653.45	17372	10498.46	Second	Fourth	First	Third
<i>Pindi Bhatian To Multan</i>	18223.57	4808.59	15714.5	18452.18	Second	Fourth	Third	First
<i>Multan to Sukkur</i>	13614.95	4384.23	11527.43	16233.88	Second	Fourth	Third	First
<i>Nowshera To Chitral</i>	15235.01	5250.9	10240.83	14477.26	First	Fourth	Third	Second
<i>Swabi To Katlang</i>	10775.42	5762.55	2093.47	9508.54	First	Third	Fourth	Second
<i>Islamabad To Kohala</i>	15324.11	5745.56	11357.11	13673.78	First	Fourth	Third	Second
<i>Islamabad To Peshawar</i>	19723.39	5862.22	22065.95	13875.12	Second	Fourth	First	Third
<i>Lahore to Abdul Hakeem</i>	18904.1	5752.4	2110.75	21756.6	Second	Third	Fourth	First
<i>Lahore to Islamabad</i>	17620.53	5773.94	19572.67	17343.71	Second	Fourth	First	Third
<i>Lahore To Sialkot</i>	18184.6	5559.8	2451.13	20152.1	Second	Third	Fourth	First
<i>Rawalpindi To Turkham</i>	17573.25	7585.72	10333.83	15882.4	First	Fourth	Third	Second

Table 4.6: Upload User Data Throughput Technology Auto Detect Mode [Fixed Duration] \geq 512Kbps

UPLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED SIZE)								
Road	Auto mode Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	11277.13	11955.54	15793.16	11945.39	Fourth	Second	First	Third
<i>Quetta To Karachi</i>	11897	9124.49	14158.15	13133.52	Third	Fourth	First	Second
<i>Haripur To Taxila</i>	10855.47	11574.86	17626.95	15376.93	Fourth	Third	First	Second
<i>Pindi Bhatian To Multan</i>	12467.58	9391.43	13408.3	13347.91	Third	Fourth	First	Second
<i>Multan to Sukkur</i>	12626.25	9222.23	14443.06	12854.12	Third	Fourth	First	Second
<i>Nowshera To Chitral</i>	9660.75	9990.72	11110.27	12326.74	Fourth	Third	Second	First
<i>Swabi To Katlang</i>	9542.08	10843.03	5504.21	11129.15	Third	Second	Fourth	First
<i>Islamabad To Kohala</i>	14695.38	12393.14	14181.18	16116.53	Second	Fourth	Third	First
<i>Islamabad To Peshawar</i>	13681.64	11928.61	17152.59	11595.09	Second	Third	First	Fourth
<i>Lahore to Abdul Hakeem</i>	13808.88	10344.5	5774.5	14285.05	Second	Third	Fourth	First
<i>Lahore to Islamabad</i>	12067.95	9920.51	15794.79	14636.3	Third	Fourth	First	Second
<i>Lahore To Sialkot</i>	13667.47	10953.91	5657.78	15119.6	Second	Third	Fourth	First
<i>Rawalpindi To Turkham</i>	9729.05	11804.16	17091.28	12090.92	Fourth	Third	First	Second

Table 4.7: Upload User Data Throughput Technology Auto Detect Mode [Fixed Size] \geq 512Kbps

UPLOAD USER DATA THROUGHPUT IN 4G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	Auto mode Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	10258.97	4061.56	13169.52	7597.3	Second	Fourth	First	Third
<i>Haripur To Taxila</i>	9560.75	2167.31	11186.58	8702.39	Second	Fourth	First	Third
<i>Pindi Bhatian To Multan</i>	17150.97	3059.61	14390.69	16463.88	First	Fourth	Third	Second
<i>Multan to Sukkur</i>	12453.16	4392.83	11418.73	12532.56	Second	Fourth	Third	First
<i>Nowshera To Chitral</i>	13791.42	3139.82	9803.97	11155.9	First	Fourth	Third	Second
<i>Swabi To Katlang</i>	5518.89	5513.87	10016.8	11979.98	Third	Fourth	Second	First
<i>Islamabad To Kohala</i>	10518.23	3201.49	10200.91	8288.97	First	Fourth	Second	Third
<i>Islamabad To Peshawar</i>	14691.95	4740.2	18397.65	11038.42	Second	Fourth	First	Third
<i>Lahore to Abdul Hakeem</i>	17299.71	4319.14	18906.56	17310.84	Third	Fourth	First	Second
<i>Lahore to Islamabad</i>	17449.2	5216.95	17747.46	1844.93	Second	Third	First	Fourth
<i>Lahore To Sialkot</i>	12709.87	3988.12	23249.75	12846.39	Third	Fourth	First	Second
<i>Rawalpindi To Turkham</i>	16438.33	5939.69	4749.6	10311.89	First	Third	Fourth	Second

Table 4.8: Upload User Data Throughput in 4G Technology Locked Mode [Fixed Duration] \geq 512Kbps

UPLOAD USER DATA THROUGHPUT IN 3G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	Auto mode Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	908.11	1097.57	1855.78	655.26	Third	Second	First	Second
<i>Haripur To Taxila</i>	469.16	1083.17	2333.1	455.95	Third	Second	First	Fourth
<i>Pindi Bhatian To Multan</i>	1296.13	1557.07	2686.8	1450.44	Fourth	Second	First	Third
<i>Multan to Sukkur</i>	1137.81	1940.33	1040.37	1412.12	Third	First	Fourth	Second
<i>Nowshera To Chitral</i>	664.38	1127.39	1998.98	1788.13	Fourth	Third	First	Second
<i>Swabi To Katlang</i>	1004.01	1349.04	1502.95	1817.04	Fourth	Third	Second	First
<i>Islamabad To Kohala</i>	1426.44	1327.28	2237.87	712.11	Second	Third	First	Fourth
<i>Islamabad To Peshawar</i>	956.43	1146.28	2443.47	1128.38	Fourth	Second	First	Third

UPLOAD USER DATA THROUGHPUT IN 3G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	Auto mode Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Lahore to Abdul Hakeem	940.23	1267.22	1822.39	1499.33	Fourth	Third	First	Second
Lahore to Islamabad	878.31	1389.54	3135.34	1080.02	Fourth	Second	First	Third
Lahore To Sialkot	785.51	1141.83	2454.86	1698.94	Fourth	Third	First	Second
Rawalpindi To Turkham	846.98	1388.86	1587.24	922.82	Fourth	Second	First	Third

Table 4.9: Upload User Data Throughput in 3G Technology Locked Mode [Fixed Duration] \geq 64Kbps

4.4. **WEBPAGE LOADING TIME.** As per Cellular Mobile Network Quality of Service (QoS) Regulations 2021, licensees are required to meet Webpage Loading Time threshold of 5 Seconds. The results of Webpage Loading Time is shown in **Table 4.10: Webpage Loading Time < 5 Seconds.**

WEBPAGE LOADING TIME IN TECHNOLOGY AUTO DETECT MODE ON ROADS								
Road	Webpage Loading Time [Seconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Hazara Motorway	6	6	5	6	No	No	No	No
Quetta To Karachi	6	6	6	6	No	No	No	No
Haripur To Taxila	7	8	5	6	No	No	No	No
Pindi Bhatian To Multan	7	8	7	7	No	No	No	No
Multan to Sukkur	7	8	6	7	No	No	No	No
Nowshera To Chitral	7	8	7	7	No	No	No	No
Swabi To Katlang	6	9	8	7	No	No	No	No
Islamabad To Kohala	6	7	6	5	No	No	No	Yes
Islamabad To Peshawar	6	7	6	5	No	No	No	No
Lahore to Abdul Hakeem	6	8	8	6	No	No	No	No
Lahore to Islamabad	5	7	6	6	No	No	No	No
Lahore To Sialkot	7	8	8	6	No	No	No	No
Rawalpindi To Turkham	7	8	6	7	No	No	No	No

Table 4.10: Webpage Loading Time < 5 Seconds

4.5. **LATENCY.** As per Cellular Mobile Network Quality of Service (QoS) Regulations 2021, licensees are required to meet threshold of 75 milliseconds of 4G/LTE Technology & 150 milliseconds of 3G Technology of Latency. The results of QoS KPI Latency is shown in (i). **Table 4.11: Latency in Technology Auto Detect Mode < 75 milliseconds,** (ii). **Table 4.12: Latency in 4G/LTE Technology Locked Mode < 75 milliseconds &** (iii) **Table 4.13: Latency in 3G Technology Locked Mode < 150 milliseconds.**

LATENCY IN TECHNOLOGY AUTO DETECT MODE								
Road	Latency (milliseconds)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Hazara Motorway	286	263	254	241	No	No	No	No
Quetta To Karachi	305	290	227	269	No	No	No	No
Haripur To Taxila	294	286	214	241	No	No	No	No
Pindi Bhatian To Multan	223	234	232	282	No	No	No	No
Multan to Sukkur	247	262	335	262	No	No	No	No
Nowshera To Chitral	354	249	417	293	No	No	No	No
Swabi To Katlang	307	279	316	264	No	No	No	No
Islamabad To Kohala	243	248	250	210	No	No	No	No
Islamabad To Peshawar	283	269	212	266	No	No	No	No
Lahore to Abdul Hakeem	259	267	280	263	No	No	No	No

LATENCY IN TECHNOLOGY AUTO DETECT MODE								
Road	Latency (milliseconds)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Lahore to Islamabad</i>	266	258	215	237	No	No	No	No
<i>Lahore To Sialkot</i>	266	228	268	247	No	No	No	No
<i>Rawalpindi To Turkham</i>	304	237	225	262	No	No	No	No

Table 4.11: Latency in Technology Auto Detect Mode < 75 milliseconds

LATENCY IN 4G/LTE TECHNOLOGY LOCKED MODE								
Road	Latency [milliseconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	69.68	119.82	125.24	78.72	Yes	No	No	No
<i>Haripur To Taxila</i>	76.50	105.77	82.28	227.84	No	No	No	No
<i>Pindi Bhatian To Multan</i>	65.00	81.00	93.00	79.00	Yes	No	No	No
<i>Multan to Sukkur</i>	116.59	88.40	133.92	94.14	No	No	No	No
<i>Nowshera To Chitral</i>	90.66	126.42	124.63	151.97	No	No	No	No
<i>Swabi To Katlang</i>	162.04	120.59	105.77	86.65	No	No	No	No
<i>Islamabad To Kohala</i>	73.04	77.25	95.02	184.34	Yes	No	No	No
<i>Islamabad To Peshawar</i>	73.60	201.39	84.72	310.71	Yes	No	No	No
<i>Lahore to Abdul Hakeem</i>	116.73	74.52	89.87	83.52	No	Yes	No	No
<i>Lahore to Islamabad</i>	76.38	89.92	78.16	226.17	No	No	No	No
<i>Lahore To Sialkot</i>	91.16	99.16	77.23	89.92	No	No	No	No
<i>Rawalpindi To Turkham</i>	148.73	110.48	92.70	126.75	No	No	No	No

Table 4.12: Latency in 4G/LTE Technology Locked Mode < 75 milliseconds

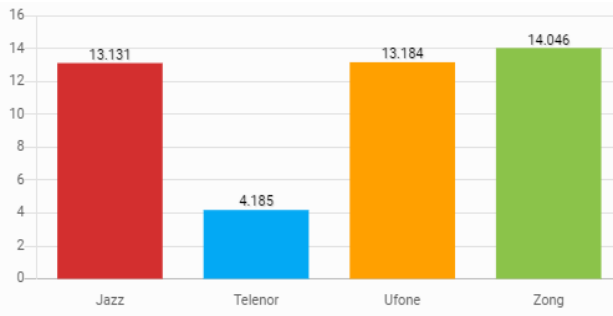
LATENCY IN 3G TECHNOLOGY LOCKED MODE								
Road	Latency [milliseconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Hazara Motorway</i>	510	337	465	207	No	No	No	No
<i>Haripur To Taxila</i>	547	480	431	187	No	No	No	No
<i>Pindi Bhatian To Multan</i>	253	739	484	204	No	No	No	No
<i>Multan to Sukkur</i>	353	955	602	216	No	No	No	No
<i>Nowshera To Chitral</i>	575	735	480	448	No	No	No	No
<i>Swabi To Katlang</i>	569	377	531	476	No	No	No	No
<i>Islamabad To Kohala</i>	474	294	392	169	No	No	No	No
<i>Islamabad To Peshawar</i>	542	292	430	209	No	No	No	No
<i>Lahore to Abdul Hakeem</i>	468	665	488	147	No	No	No	Yes
<i>Lahore to Islamabad</i>	517	495	459	187	No	No	No	No
<i>Lahore To Sialkot</i>	508	393	448	205	No	No	No	No
<i>Rawalpindi To Turkham</i>	601	425	523	463	No	No	No	No

Table 4.13: Latency in 3G Technology Locked Mode < 150 milliseconds

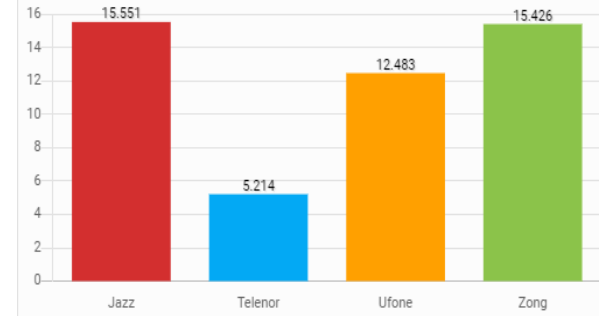
4.6. During the survey, the deployed technologies by Cellular Mobile Operators (CMOs), Success Rate of http Transfer Download Tests and Resource Block Utilization have been recorded. The details can be seen in attached graphs.

TECHNOLOGY AUTO DETECT MODE TESTING

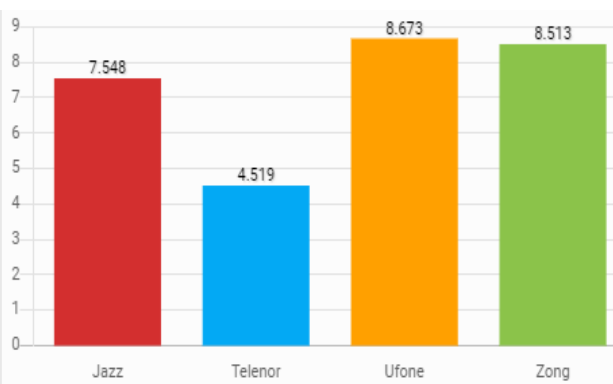
CAPACITY TEST DOWNLOAD SPEED (Mbps)



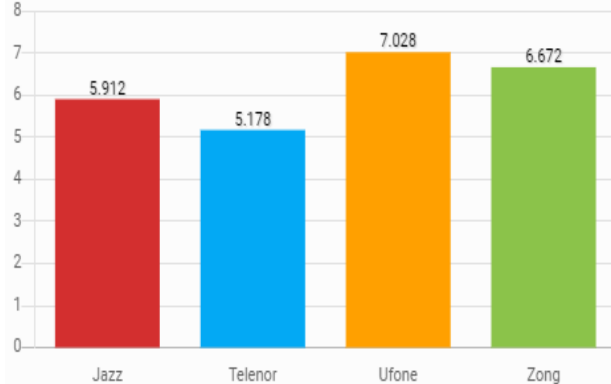
CAPACITY TEST UPLOAD SPEED (Mbps)



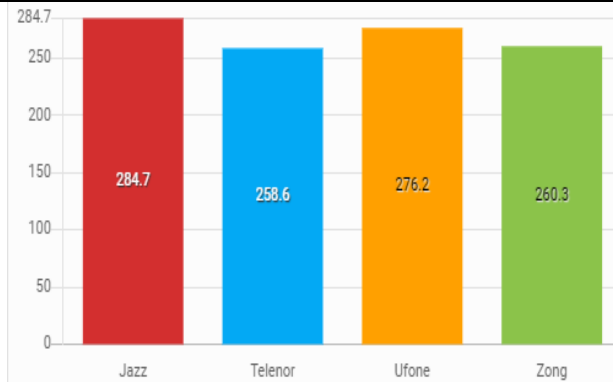
DATA TRANSFER DOWNLOAD SPEED (Mbps)



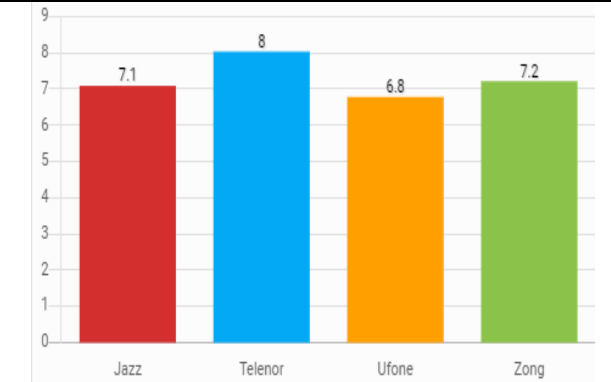
DATA TRANSFER UPLOAD SPEED (Mbps)



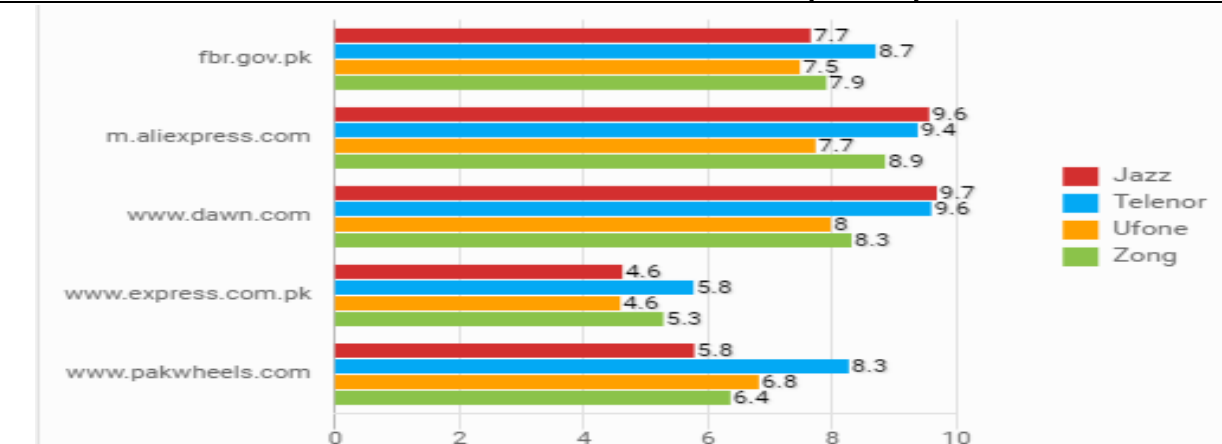
LATENCY (milliseconds)



WEBPAGE LOADING TIME (Seconds)

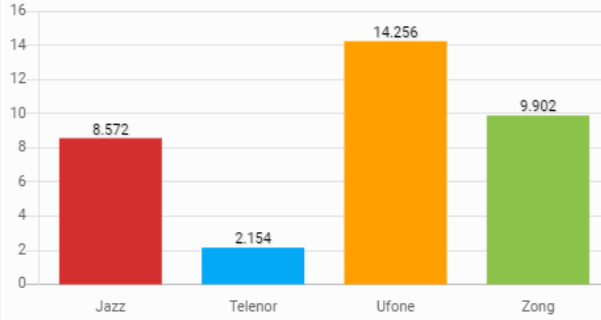


WEBPAGE LOADING TIME PER PAGE (Seconds)

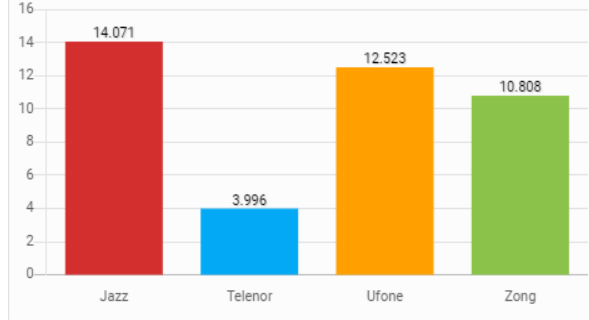


4G TECHNOLOGY LOCKED MODE

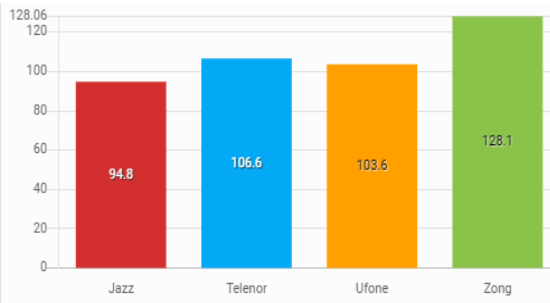
DATA TRANSFER DOWNLOAD SPEED (Mbps)



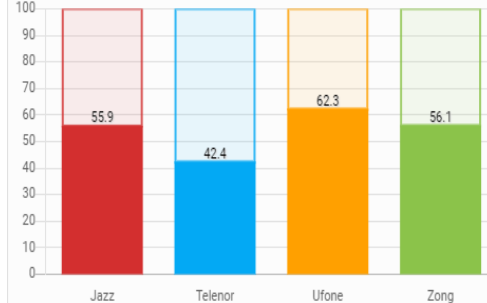
DATA TRANSFER UPLOAD SPEED (Mbps)



LATENCY (milliseconds)

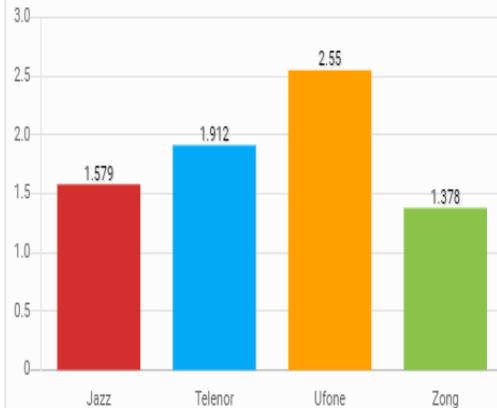


RESOURCE BLOCK USAGE DOWNLOAD

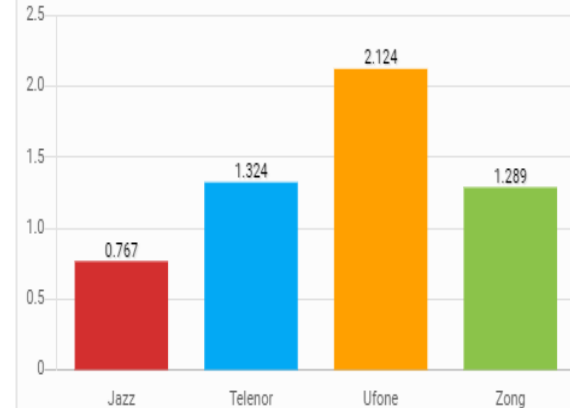


3G TECHNOLOGY LOCKED MODE

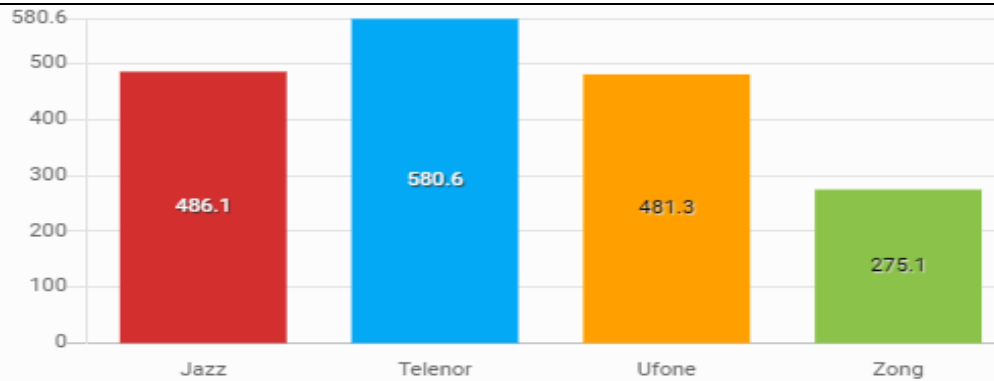
DATA TRANSFER DOWNLOAD SPEED (Mbps)



DATA TRANSFER UPLOAD SPEED (Mbps)



LATENCY (milliseconds)



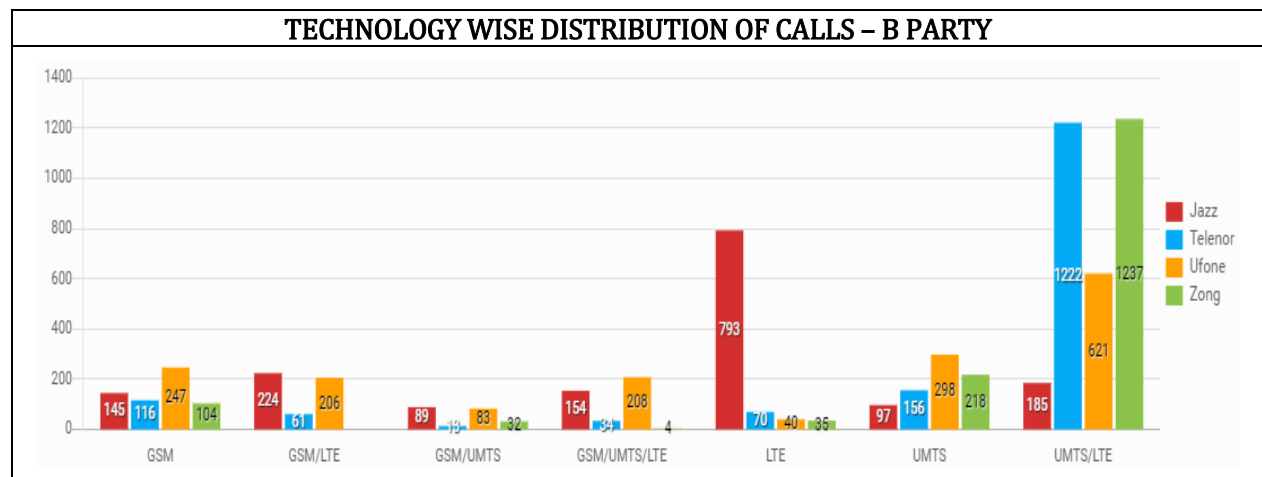
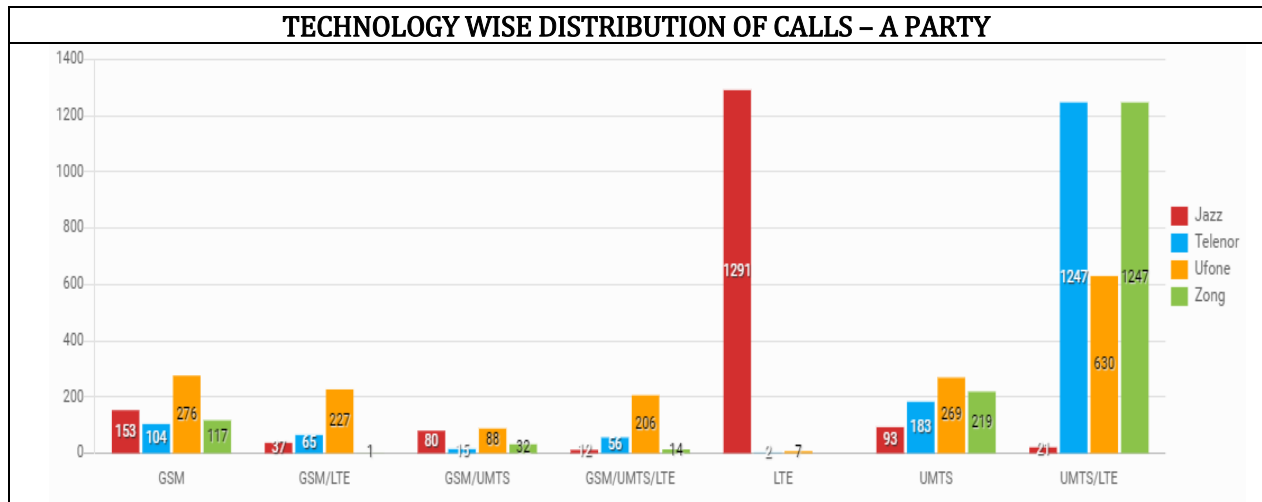
VOICE SERVICE

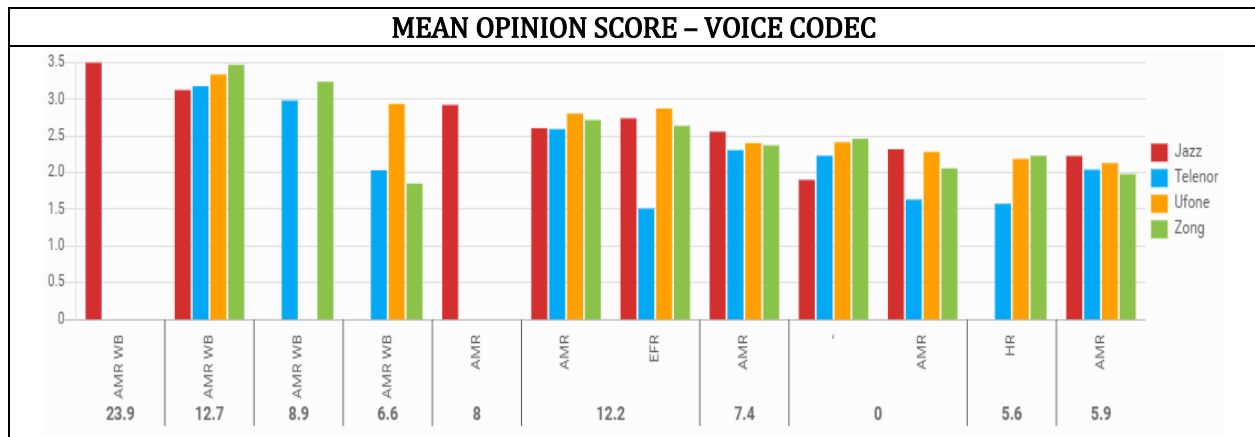
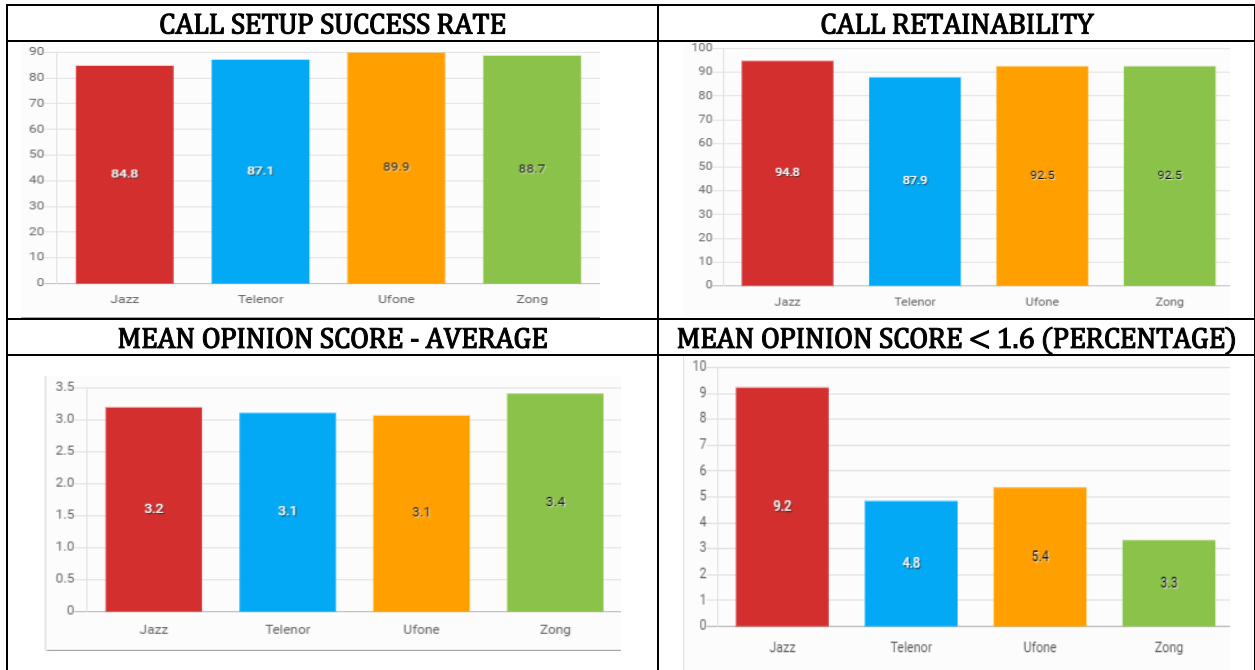
5.1. A total of **6697 Call attempts** were made and out of which **828 were failed attempts**. In **5869 successful call attempts**, **284 calls dropped** prior to completion of two minutes duration, whereas, **5585 calls remained connected** for the complete duration of two minutes. The company wise call statistics is shown in **Table 5.1: Call Statistics**.

DESCRIPTION	JAZZ	TELENOR	UFONE	ZONG
TOTAL CALLS ATTEMPTS	1690	1673	1703	1631
FAILED CALLS ATTEMPTS	257	215	172	184
ESTABLISHED CALLS ATTEMPTS	1433	1458	1531	1447
DROPPED CALLS ATTEMPTS	66	109	67	42
COMPLETED CALLS ATTEMPTS	1367	1349	1464	1405
CALL SETUP SUCCESS RATE	84.79 %	87.15 %	89.9 %	88.72 %
CALL SETUP TIME	6.66	9.66	8.22	8.04
CALL COMPLETION RATE	94.78 %	87.86 %	92.51 %	92.52 %
ISHO SUCCESS RATE	100 %	100 %	99.08 %	-
RAB SETUP SUCCESS RATE	100 %	99.96 %	99.87 %	99.9 %
MEAN OPINION SCORE	3.19	3.11	3.07	3.41
MEAN OPINION SCORE EXCESS RATIO - MOS < 1.6	9.22 %	4.84 %	5.37 %	3.33 %
TOTAL SPEECH TEST	14033	14107	15056	14208

Table5.1: Call Statistics

5.2. The overall Call Setup Success Rate and Call Retainability along with Mean Opinion Score (MOS), the percentage of mute calls and MOS with respect to Voice CODEC is shown as under:





5.3. The 7 x QoS KPIs (i.e. Network Accessibility, Call Setup Success Rate, Call Setup Time, Call Completion Rate, Mean Opinion Score, Inter System Handover Success Rate & RAB Setup Success Rate) have been measured while testing voice services in **13 x surveyed roads** of Pakistan. The compliance level of threshold values of voice QoS KPIs is shown in each **Table 5.1 & Table 5.2: Voice QoS KPIs Compliance Level**.

VOICE CALLS ROADS – COMPLIANCE (YES/NO)									
Operator	*Voice KPIs	Hazara Motorway	Quetta To Karachi	Haripur To Taxila	Pindi Bhatian To Multan	Multan to Sukkur	Nowshera To Chitral	Swabi To Katlang	
Jazz	NA	Yes	No	Yes	Yes	Yes	Yes	Yes	
	SA	No	No	No	Yes	No	No	Yes	
	CCT	Yes	Yes	Yes	Yes	Yes	No	Yes	
	CCR	No	No	No	Yes	No	No	Yes	
	MOS	Yes	Yes	No	Yes	Yes	No	No	
	ISHO	Yes	Yes	Yes	Yes	N/A	Yes	Yes	
	RSSR	Yes	Yes	Yes	Yes	N/A	Yes	Yes	
Telenor	NA	Yes	No	Yes	Yes	Yes	Yes	Yes	
	SA	No	No	No	No	No	No	No	
	CCT	No	Yes	No	Yes	Yes	Yes	Yes	
	CCR	No	No	No	No	No	No	No	
	MOS	No	No	No	Yes	Yes	Yes	Yes	
	ISHO	N/A	Yes	N/A	N/A	Yes	Yes	Yes	
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Ufone	NA	Yes	Yes	Yes	Yes	Yes	No	No	
	SA	No	No	No	No	No	No	Yes	
	CCT	Yes	Yes	Yes	No	No	Yes	Yes	
	CCR	No	No	No	Yes	Yes	No	No	
	MOS	Yes	Yes	Yes	No	No	Yes	No	
	ISHO	No	Yes	Yes	No	No	No	No	
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Zong	NA	Yes	No	Yes	Yes	Yes	No	No	
	SA	No	No	No	No	No	No	Yes	
	CCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	CCR	Yes	No	No	No	Yes	No	Yes	
	MOS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	ISHO	N/A							
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

** Note Voice QoS KPIs: Network Accessibility (NA) > 99%, Service Accessibility (SA) > 98%, Call Connection Time (CCT) ≤ 7.5 Seconds, Call Completion Ratio (CCR) ≥ 98%, Mean Opinion Score (MOS) > 3, Inter System Hand Over (ISHO) > 98% & RAB Setup Success Rate (RSSR) > 98%*

Table 5.1: Voice QoS KPIs Compliance Level

VOICE CALLS ROADS – COMPLIANCE (YES/NO)							
Operator	*Voice KPIs	Islamabad To Kohala	Islamabad To Peshawar	Lahore to Abdul Hakeem	Lahore to Islamabad	Lahore To Sialkot	Rawalpindi To Turkham
Jazz	NA	Yes	Yes	Yes	Yes	Yes	Yes
	SA	No	No	No	No	No	No
	CCT	Yes	Yes	N/A	No	N/A	No
	CCR	No	Yes	No	Yes	No	No
	MOS	No	No	Yes	Yes	Yes	Yes
	ISHO	Yes	Yes	Yes	No	N/A	No
	RSSR	Yes	Yes	Yes	Yes	N/A	Yes
Telenor	NA	Yes	Yes	Yes	Yes	Yes	Yes
	SA	No	No	No	No	No	No
	CCT	No	No	Yes	No	Yes	Yes
	CCR	No	No	No	No	No	No
	MOS	No	No	Yes	No	No	Yes

	ISHO	N/A	Yes	Yes	Yes	Yes	N/A	
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes	
Ufone	NA	Yes	Yes	Yes	Yes	Yes	Yes	
	SA	No	No	No	No	No	No	
	CCT	Yes	Yes	No	Yes	No	Yes	
	CCR	No	No	No	No	No	No	
	MOS	No	Yes	No	Yes	No	Yes	
	ISHO	Yes	No	Yes	Yes	Yes	Yes	
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes	
ZonG	NA	Yes	Yes	Yes	Yes	Yes	Yes	
	SA	No	No	No	No	No	No	
	CCT	Yes	Yes	Yes	Yes	Yes	No	
	CCR	No	No	No	Yes	No	No	
	MOS	Yes	Yes	Yes	Yes	Yes	Yes	
	ISHO	N/A						
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes	
* Note Voice QoS KPIs: Network Accessibility (NA) > 99%, Service Accessibility (SA) > 98%, Call Connection Time (CCT) ≤ 7.5 Seconds, Call Completion Ratio (CCR) ≥ 98%, Mean Opinion Score (MOS) > 3, Inter System Hand Over (ISHO) > 98% & RAB Setup Success Rate (RSSR) > 98%								

Table 5.2: Voice QoS KPIs Compliance Level

SURVEY MAPS & GRAPHICAL RESULTS

7.1 The 4G/LTE (RSRP) and 3G (RSCP) Signal Strength samples recorded during drive test on survey routes, were plotted on maps. The Signal Strength maps along-with Voice, SMS and Data QoS KPIs survey results in graphical form are shown at **Annex-A (Coverage Maps), Annex-B (Data QoS Results) and Annex-C (Voice & SMS Results)**.

STANDING IN SURVEY

8.1. CMOs have been prioritized/ placed at 1st, 2nd, 3rd & 4th position in each category i.e. Mobile Network Coverage, Mobile Broadband Service and Voice Service based upon the compliance level against each QoS KPI in each category in 13 x surveyed roads of Pakistan.

- a. **MOBILE NETWORK COVERAGE.** The categorization of CMOs as per QoS KPI i.e. Signal Strength of 4G/LTE and 3G Networks measured in Technology Auto Detect and Locked Mode is shown in **Table 8.1: CMOs Standing in Mobile Network Coverage – Technology Auto Detect Mode & Table 8.2: CMOs Standing in Mobile Network Coverage – Technology Locked Mode**

S. #.	Operator	Compliance Level – Number of Roads						Standing
		Technology Auto Detect Mode						
		Compliant			Non-Compliant			
		4G	3G	Total	4G	3G	Total	
1.	Ufone	4	9	13	7	2	9	1 st
2.	Telenor	3	8	11	10	4	14	2 nd
3.	ZonG	2	7	9	11	4	15	3 rd
4.	Jazz	3	4	7	10	5	15	4 th

Table 8.1: CMOs Standing in Mobile Network Coverage – Technology Auto Detect Mode

S. #	Operator	Compliance Level – Number of Roads Technology Locked Mode						Standing
		Compliant			Non-Compliant			
		4G	3G	Total	4G	3G	Total	
1.	Telenor	3	12	15	9	-	9	1 st
2.	ZonG	2	12	14	10	-	10	2 nd
3.	Ufone	4	10	14	8	2	10	2 nd
4.	Jazz	3	8	11	9	4	13	3 rd

Table 8.2: CMOs Standing in Mobile Network Coverage – Technology Locked Mode

b. **MOBILE BROADBAND SERVICE.** The categorization of each CMOs in Mobile Broadband Service is as under:

- (i) User Download Data Throughput. The User Download Data Throughput in Fixed Duration and Fixed Size Testing, as per the highest to lowest obtained results, is shown in **Table 8.3: CMOs Standing in User Download Data Throughput – Technology Auto Detect Mode** & **Table 8.4: CMOs Standing in User Download Data Throughput – Technology Locked Mode.**

S. #	Operator	Highest Download Throughput – Number of Roads								Standing	
		Technology Auto Detect Mode								Fixed Duration	Fixed Size
		Fixed Duration				Fixed Size					
		1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th		
1.	ZonG	6	4	3	-	6	6	1	-	1 st	1 st
2.	Ufone	2	4	5	2	4	2	5	2	3 rd	2 nd
3.	Jazz	5	5	3	-	3	5	5	-	2 nd	3 rd
4.	Telenor	-	-	2	11	-	-	2	11	4 th	4 th

**Table 8.3: CMOs Standing in User Download Data Throughput
Technology Auto Detect Mode**

S. #	Operator	Highest Download Throughput – Number of Roads								Standing	
		4G Locked Mode				3G Locked Mode				4G Fixed Duration	3G Fixed Duration
		Fixed Duration				Fixed Duration					
		1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th		
1.	Ufone	6	2	4	-	6	4	2	-	1 st	1 st
2.	Jazz	3	4	5	-	4	4	3	1	3 rd	2 nd
3.	Telenor	-	-	1	11	1	4	6	1	4 th	3 rd
4.	ZonG	3	6	2	1	1	-	1	10	2 nd	4 th

**Table 8.4: CMOs Standing in User Download Data Throughput
Technology Locked Mode**

- (ii) User Upload Data Throughput. The User Upload Data Throughput in Fixed Duration and Fixed Size Testing, as per the highest to lowest obtained results, is shown in **Table 8.5: CMOs Standing in User Upload Data Throughput – Technology Auto Detect Mode** & **Table 8.6: CMOs Standing in User Upload Data Throughput – Technology Locked Mode.**

S. #	Operator	Highest Upload Throughput – Number of Roads								Standing	
		Technology Auto Detect Mode								Fixed Duration	Fixed Size
		Fixed Duration				Fixed Size					
		1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th		
1.	Ufone	4	1	5	3	8	1	1	3	3 rd	1 st
2.	ZonG	5	4	4	-	5	6	1	1	1 st	2 nd
3.	Jazz	4	8	1	-	-	4	5	4	2 nd	3 rd
4.	Telenor	-	-	3	10	-	2	6	5	4 th	4 th

Table 8.5: CMOs Standing in User Upload Data Throughput Technology Auto Detect Mode

S. #	Operator	Highest Upload Throughput – Number of Roads								Standing	
		4G Locked Mode				3G Locked Mode				4G Fixed Duration	3G Fixed Duration
		Fixed Duration				Fixed Duration					
		1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th		
1.	Ufone	6	2	3	1	10	1	-	1	1 st	1 st
2.	Telenor	-	-	2	10	1	6	5	-	4 th	2 nd
3.	ZonG	2	5	4	1	1	5	4	2	3 rd	3 rd
4.	Jazz	4	5	3	-	-	1	3	8	2 nd	4 th

Table 8.6: CMOs Standing in User Upload Data Throughput – Technology Locked Mode

- (iii) Webpage Loading Time. The categorization of each CMOs, as per the maximum compliant of Webpage Loading Time QoS KPIs is shown, is shown in **Table 8.7: CMOs Standing in Webpage Loading Time**.

S. #	Operator	Webpage Loading Time - Number of Roads		Standing
		Compliant	Non-Compliant	
1.	ZonG	1	12	1 st
2.	Jazz	0	13	CMO not compliant at any location.
3.	Telenor	0	13	
4.	Ufone	0	13	

Table 8.7: CMOs Standing in Webpage Loading Time

- (iv) Latency. The categorization of each CMOs, as per the maximum compliant of Webpage Loading Time QoS KPIs is shown in **Table 8.8: CMOs Standing in Latency**.

S. #	Operator	Latency - Number of Roads								Standing
		Compliant				Non-Compliant				
		Auto	4G	3G	Total	Auto	4G	3G	Total	
1.	Jazz	0	4	0	4	13	8	12	33	1 st
2.	Telenor	0	1	0	1	13	11	12	36	2 nd
3.	ZonG	0	0	1	1	13	12	11	36	2 nd
4.	Ufone	0	0	0	0	13	12	12	37	3 rd

Table 8.8: CMOs Standing in Latency

- c. **VOICE SERVICE.** The categorization of each CMOs, as per the maximum compliant of Voice QoS KPIs is shown in **Table 8.8: CMOs Standing in Voice Service.**

S. #	Operator	Voice QoS KPIs		Standing
		Compliant	Non-Compliant	
1.	ZonG	53	25	1 st
2.	Jazz	54	31	2 nd
3.	Ufone	50	41	3 rd
4.	Telenor	47	39	4 th

Table 8.8: CMOs Standing in Voice Service

- d. **OVERALL STANDING.** The overall standing of each CMOs in different category of services is mentioned in **Table 8.9: CMOs Overall Standing in QoS Survey.**

S. #.	Service			STANDING					
				1 st	2 nd	3 rd	4 th		
1.	Mobile Network Coverage		Auto Mode	Ufone	Telenor	ZonG	Jazz		
			Locked Mode	Telenor	Ufone & Zong	Jazz	-		
2.	Mobile Broadband	Fixed Duration	Download	Auto Mode	ZonG	Jazz	Ufone	Telenor	
			Upload	4G	Ufone	ZonG	Jazz	Telenor	
				3G	Ufone	Jazz	Telenor	ZonG	
				Auto Mode	ZonG	Jazz	Ufone	Telenor	
			Fixed Size	Download	Auto Mode	ZonG	Ufone	Jazz	Telenor
				Upload	Auto Mode	Ufone	ZonG	Jazz	Telenor
		Webpage Loading Time			ZonG	CMO not compliant at any location.			
		Latency			Jazz	Telenor & Zong	Ufone	-	
		3.	Voice			ZonG	Jazz	Ufone	Telenor

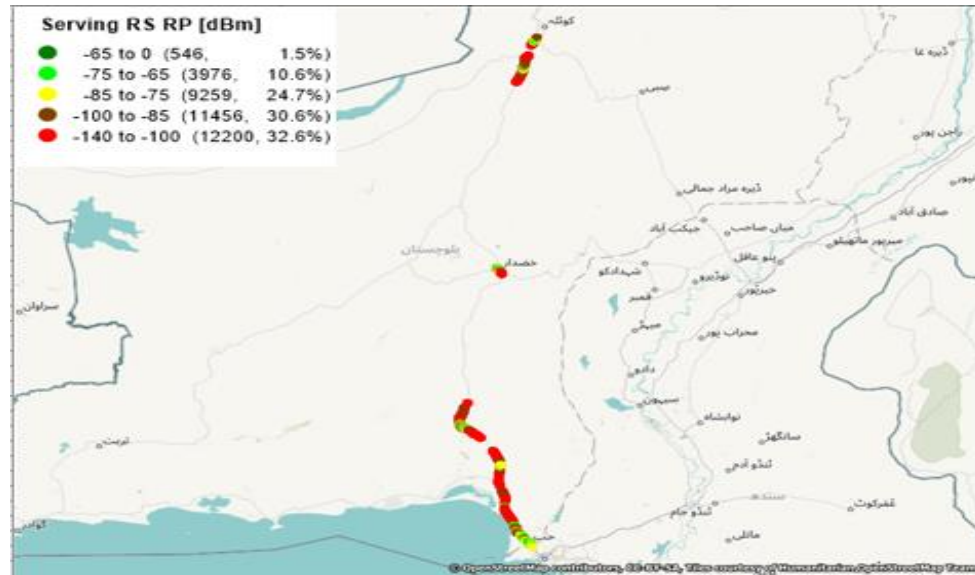
Table 8.9: CMOs Overall Standing in QoS Survey

Annex-A (Coverage Maps)

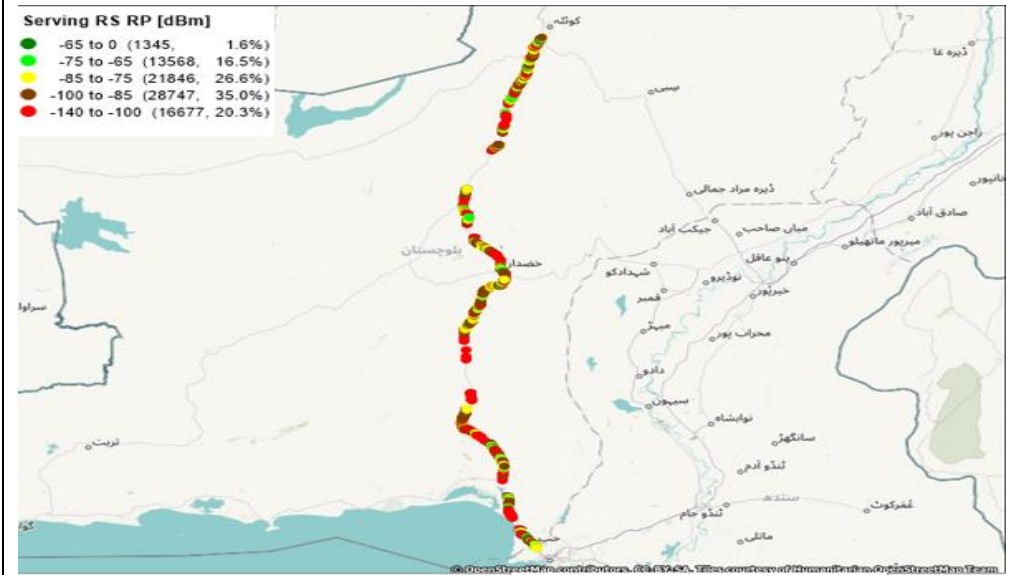
COVERAGE MAPS (AUTOMODE)

AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

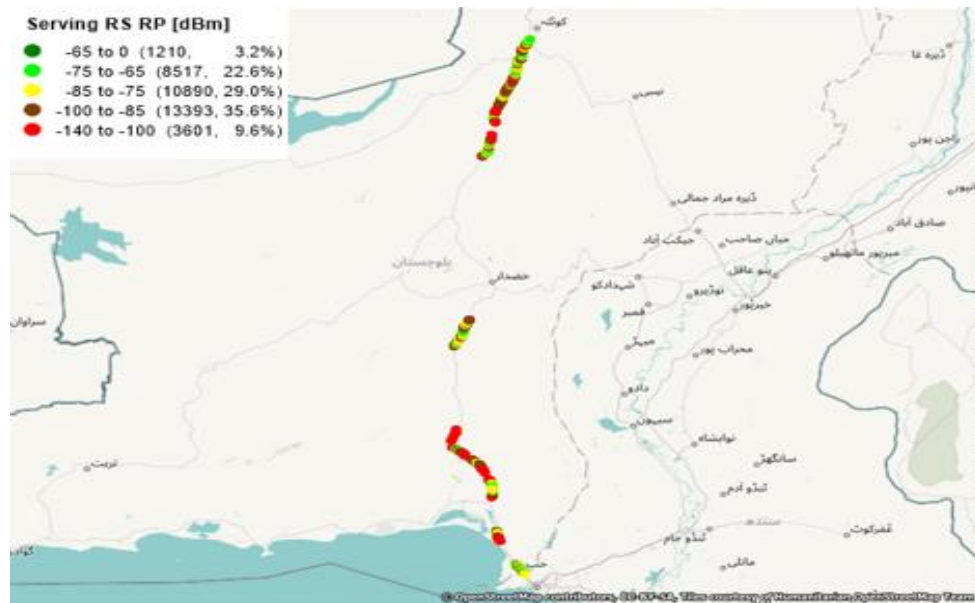
JAZZ AUTOMODE 4G NETWORK COVERAGE – QUETTA TO KARACHI



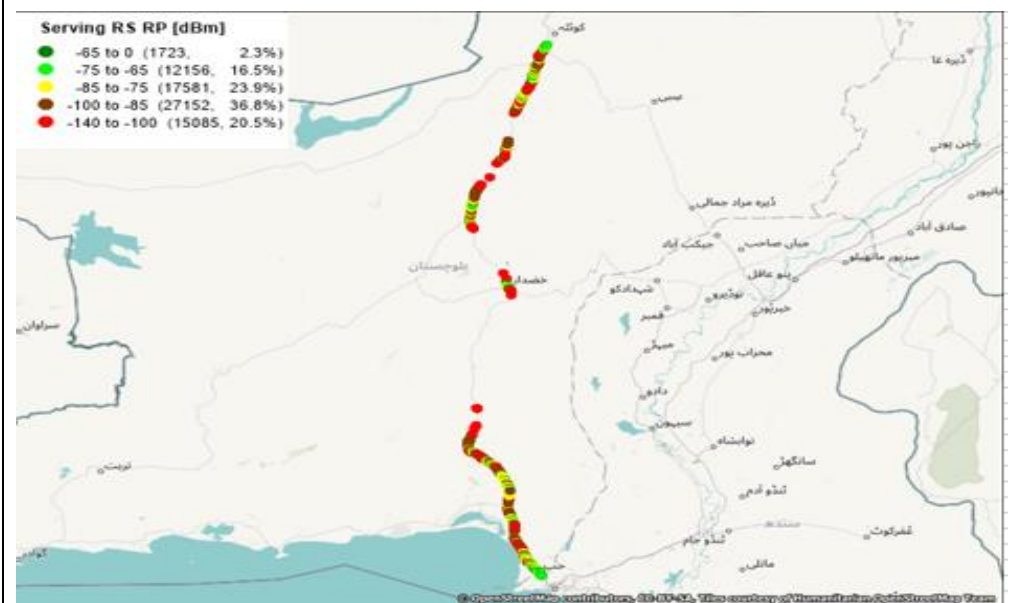
TELENOR AUTOMODE 4G NETWORK COVERAGE – QUETTA TO KARACHI



UFONE AUTOMODE 4G NETWORK COVERAGE – QUETTA TO KARACHI

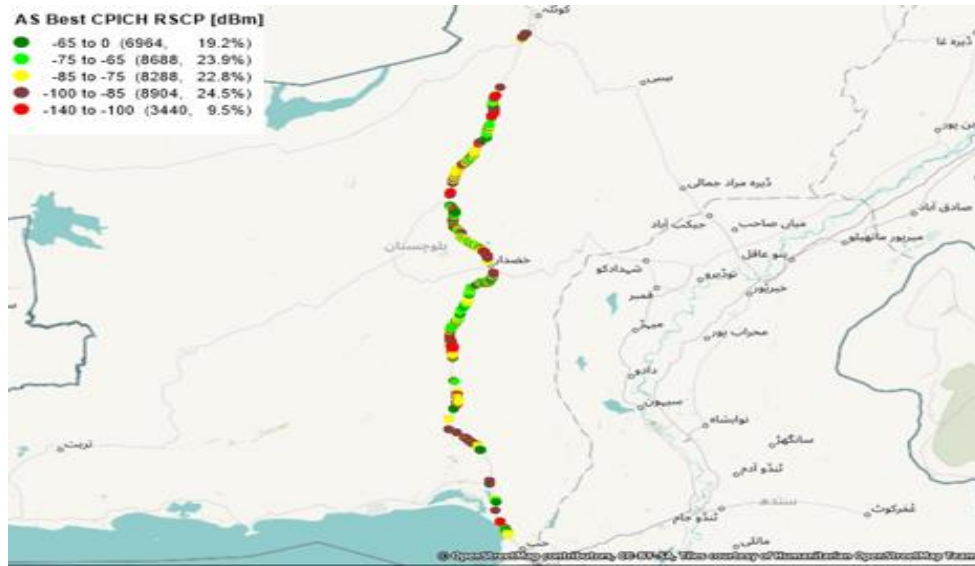


ZONG AUTOMODE 4G NETWORK COVERAGE – QUETTA TO KARACHI

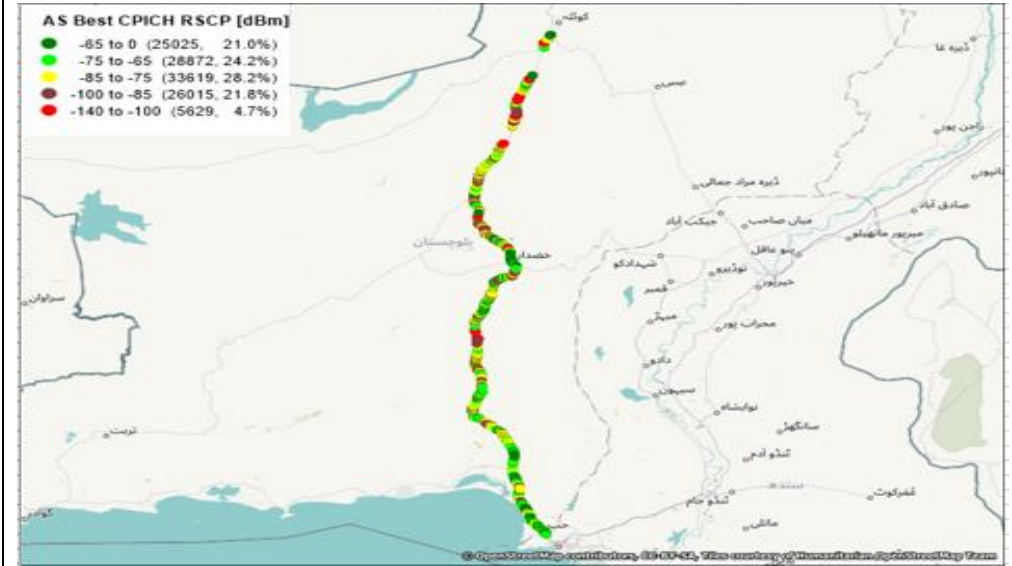


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

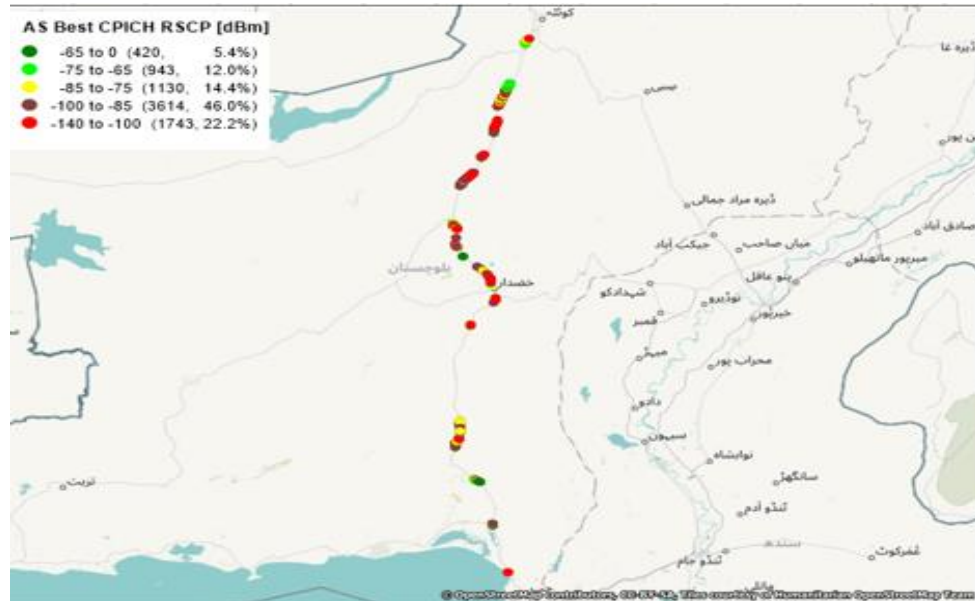
TELENOR AUTOMODE 3G NETWORK COVERAGE – QUETTA TO KARACHI



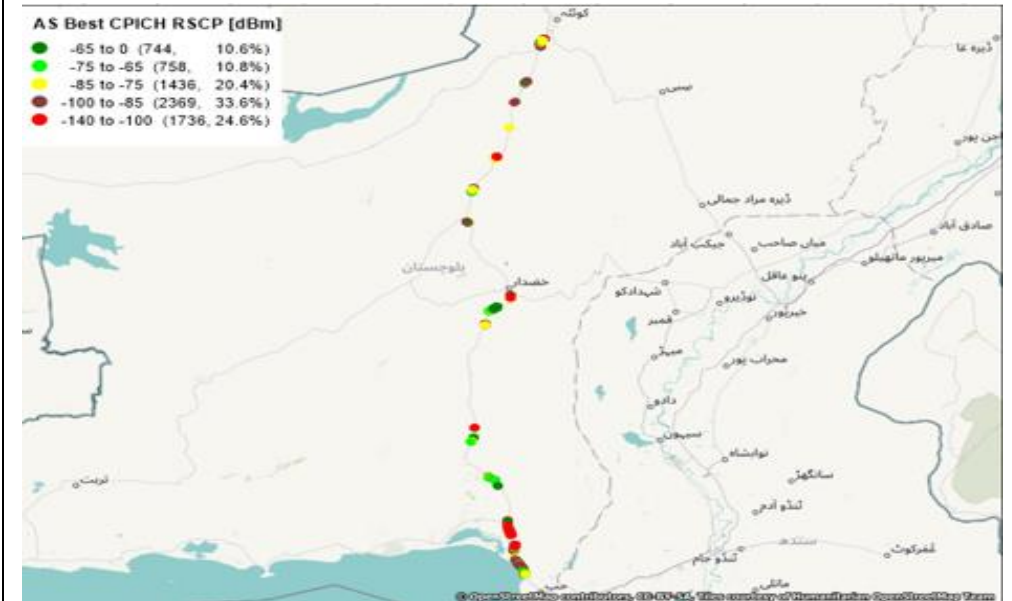
UFONE AUTOMODE 3G NETWORK COVERAGE – QUETTA TO KARACHI



ZONG AUTOMODE 3G NETWORK COVERAGE – QUETTA TO KARACHI



JAZZ AUTOMODE 3G NETWORK COVERAGE – QUETTA TO KARACHI

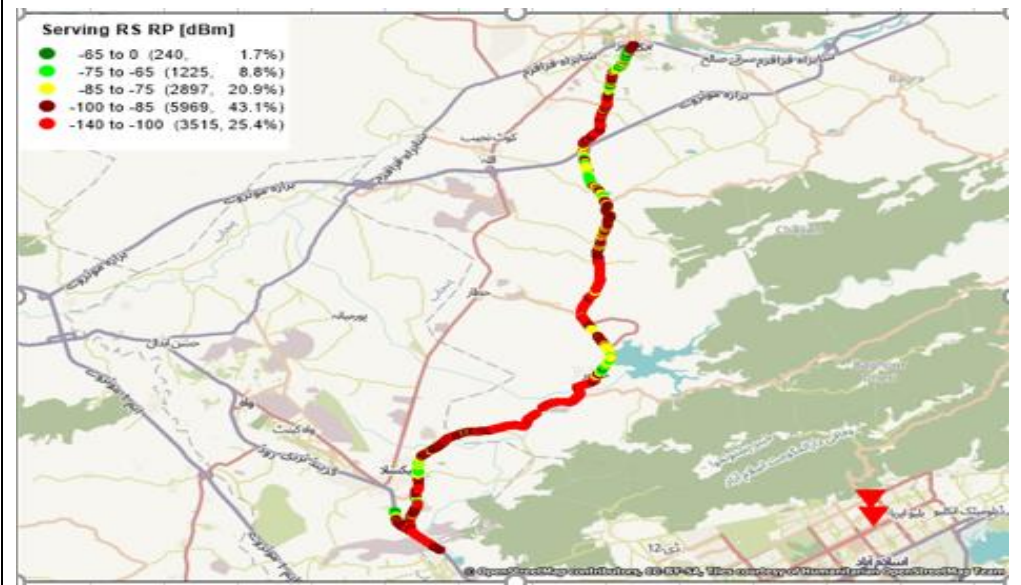


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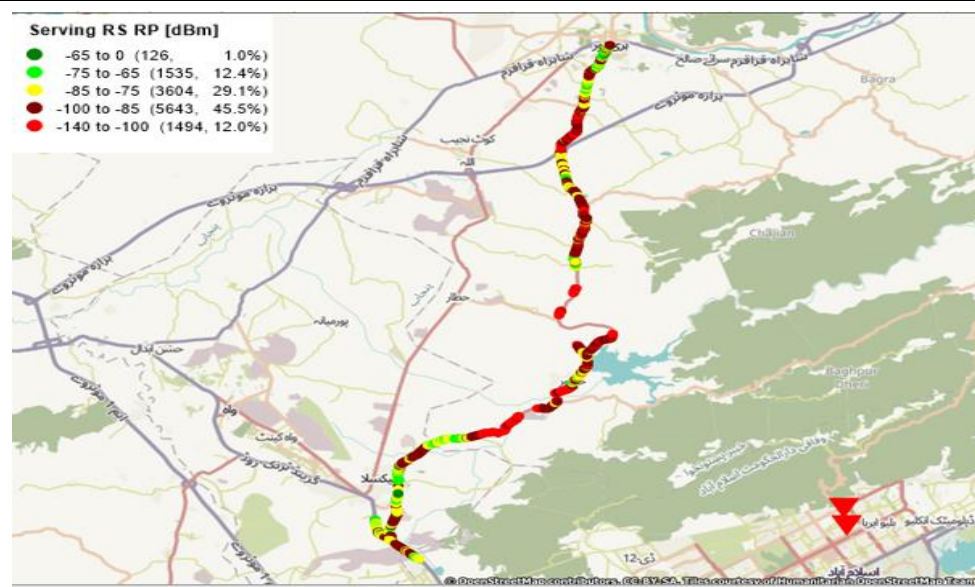
JAZZ AUTOMODE 4G NETWORK COVERAGE – HARIPUR TO TAXILA



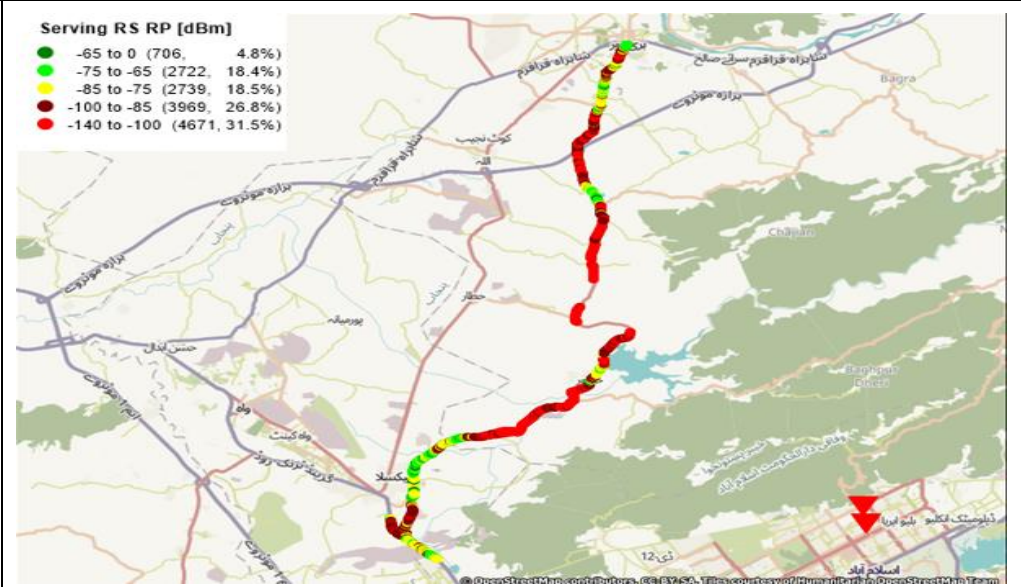
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UFONE AUTOMODE 4G NETWORK COVERAGE – HARIPUR TO TAXILA

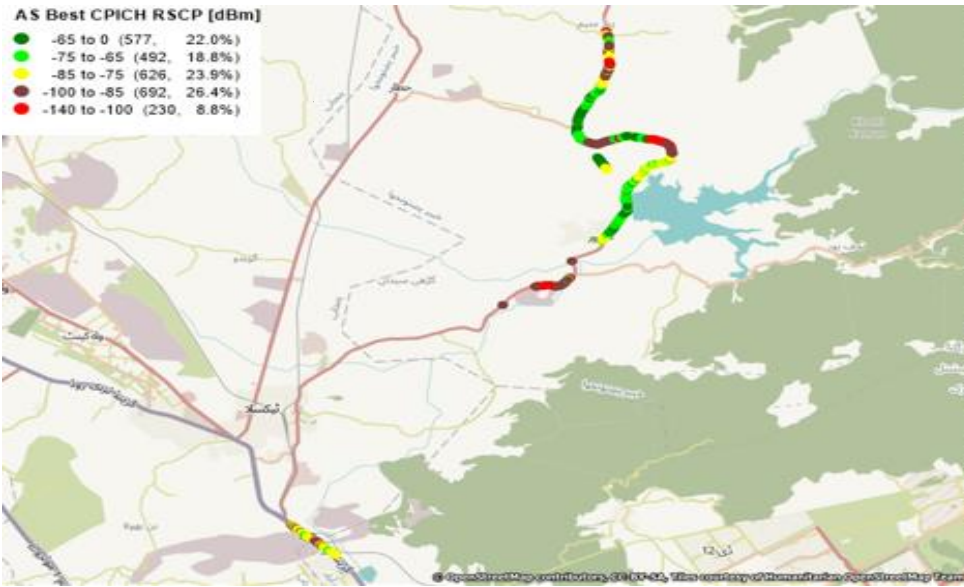


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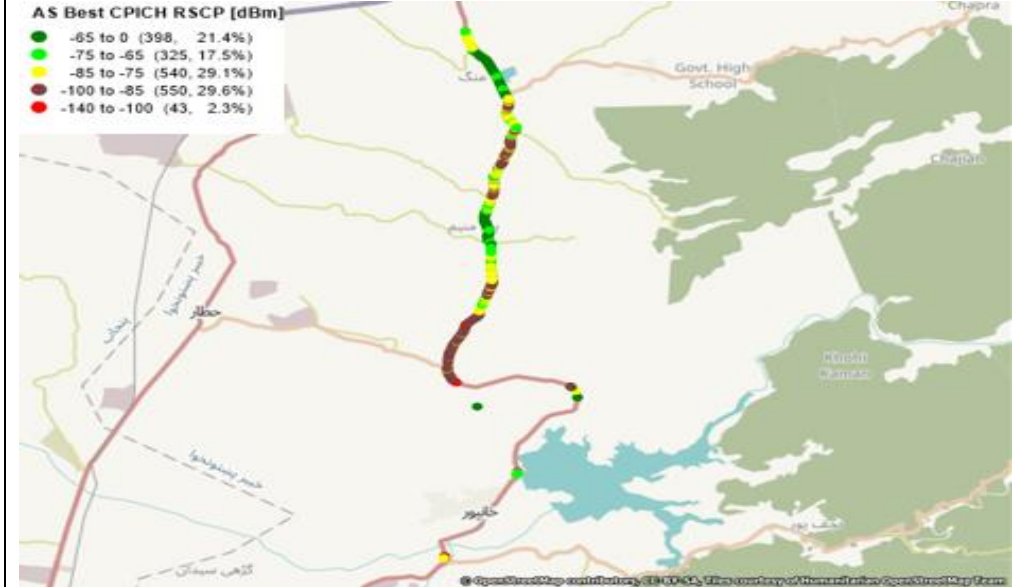


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

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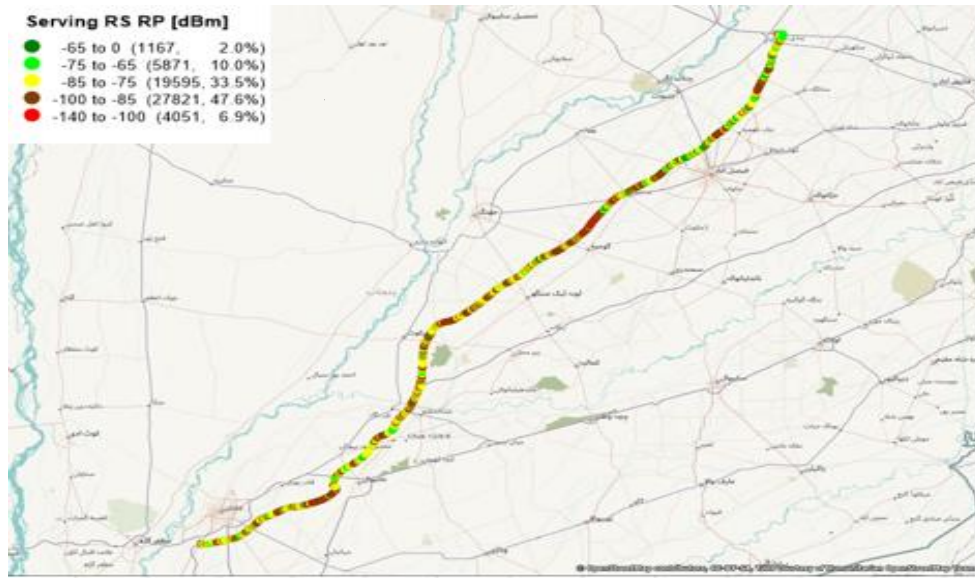


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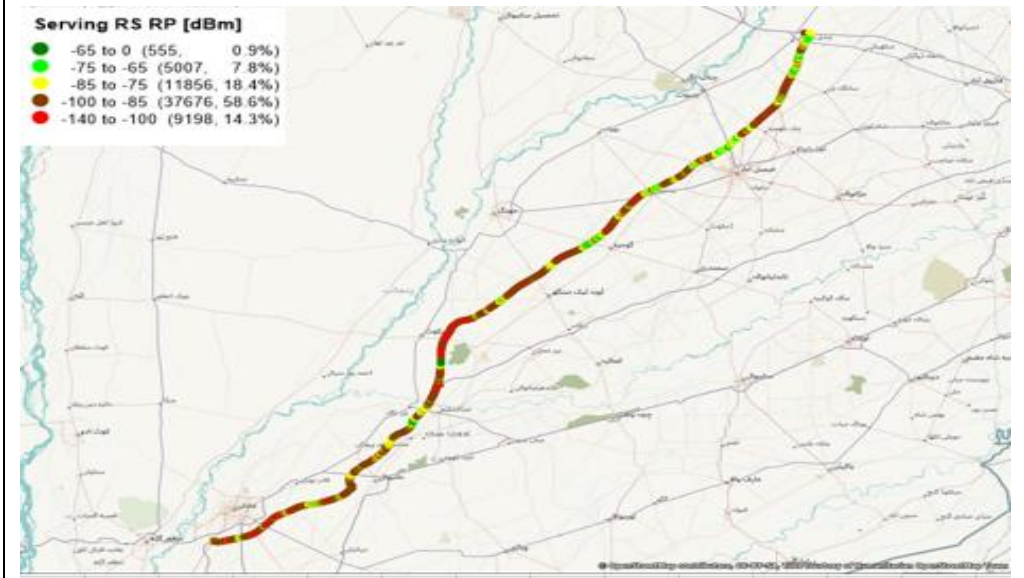


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

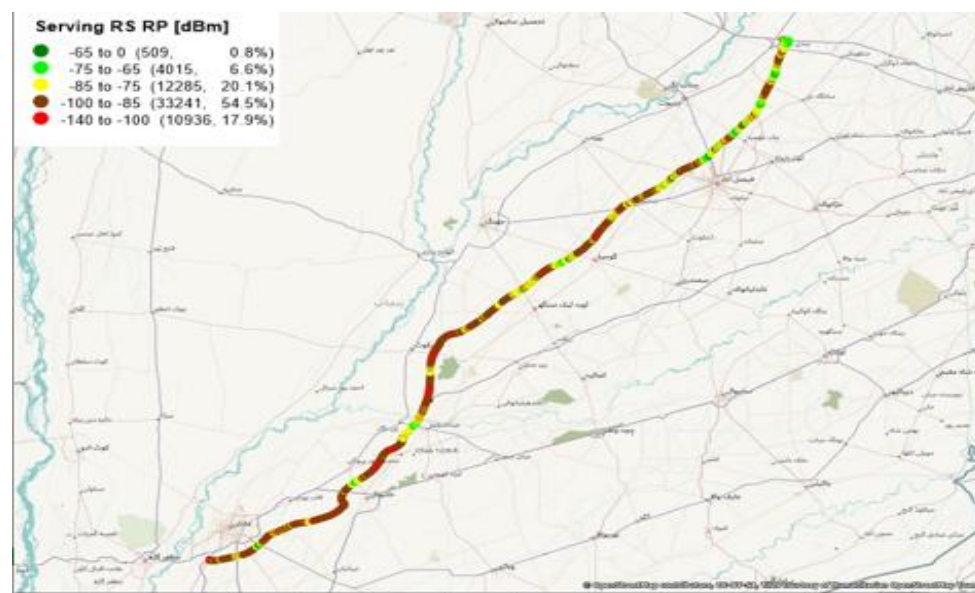
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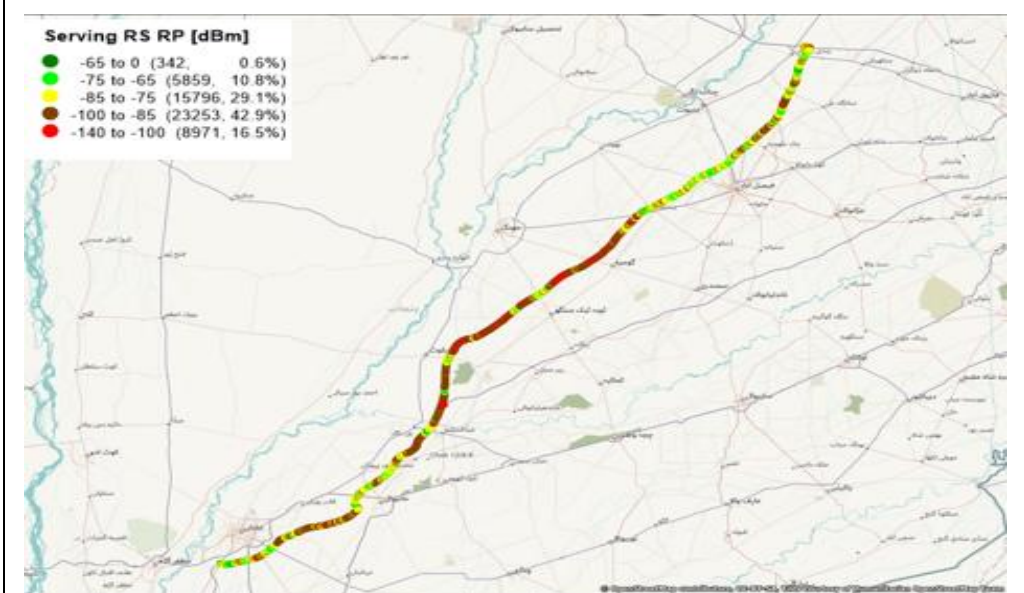
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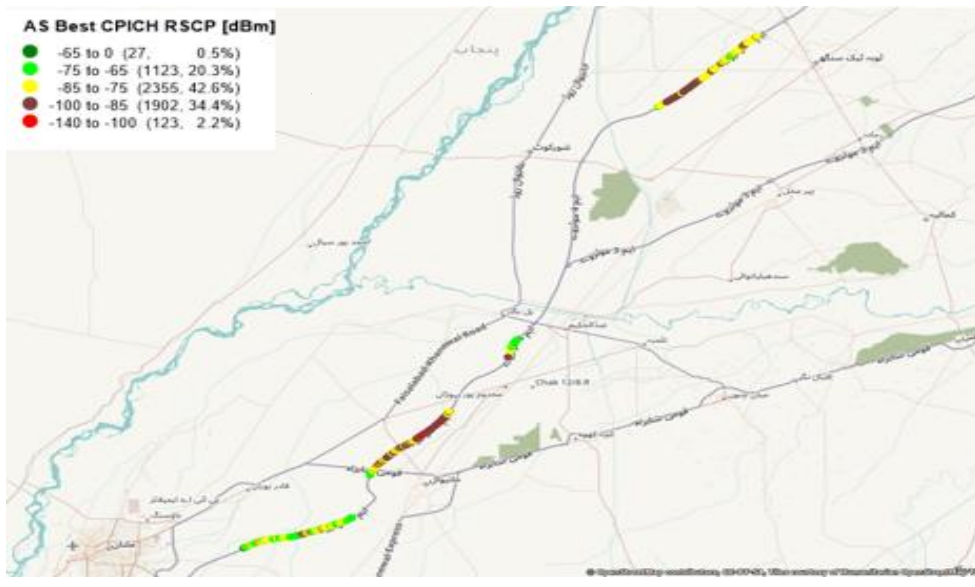


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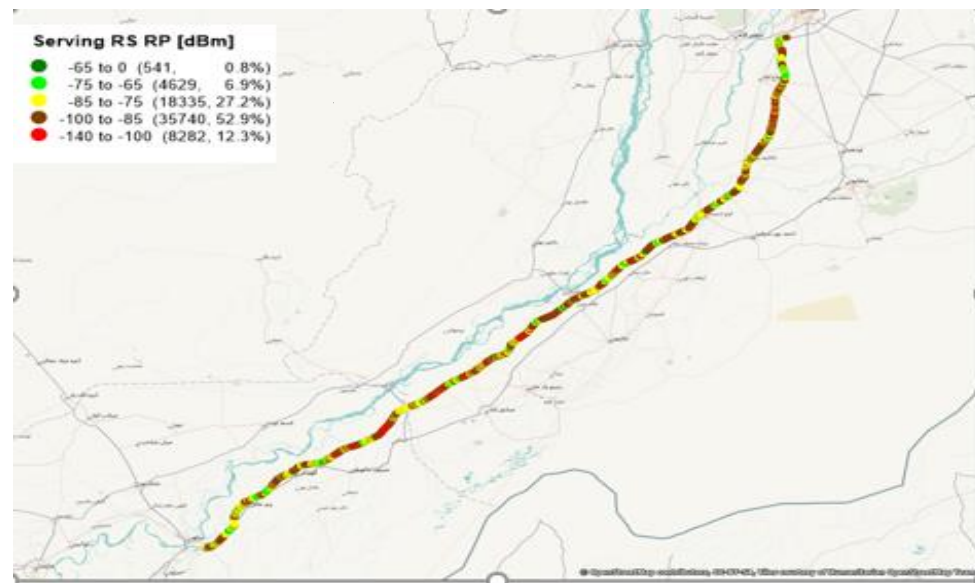
AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

UFONE AUTOMODE 3G NETWORK COVERAGE – PINDI BHATIAN TO MULTAN

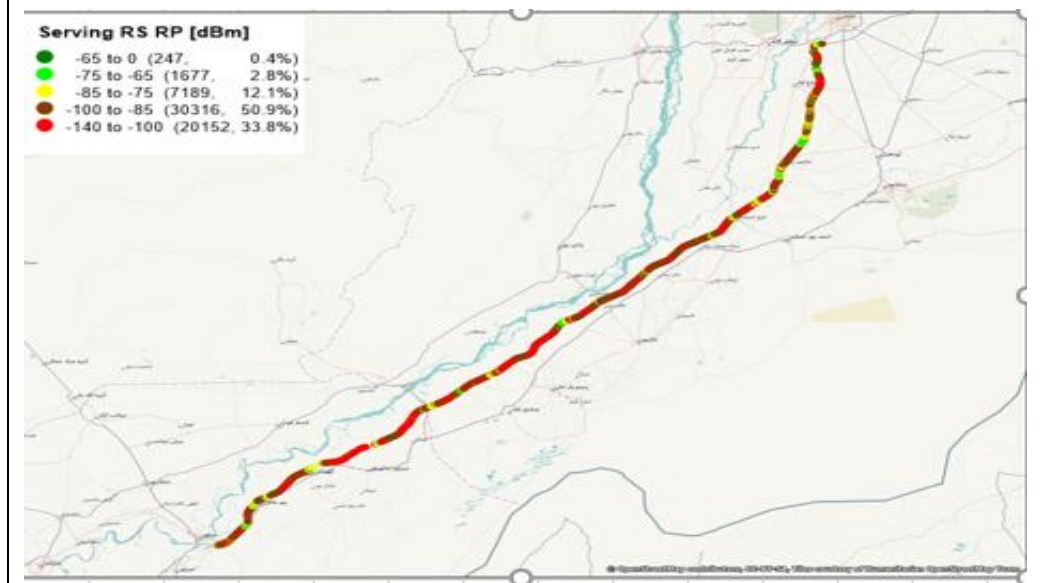


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

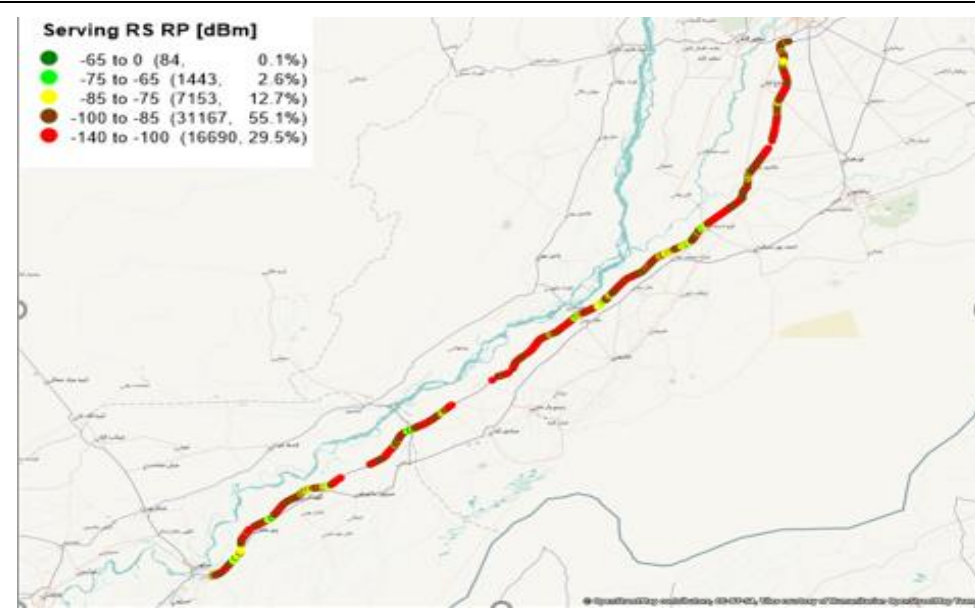
JAZZ AUTOMODE 4G NETWORK COVERAGE – MULTAN TO SUKKUR



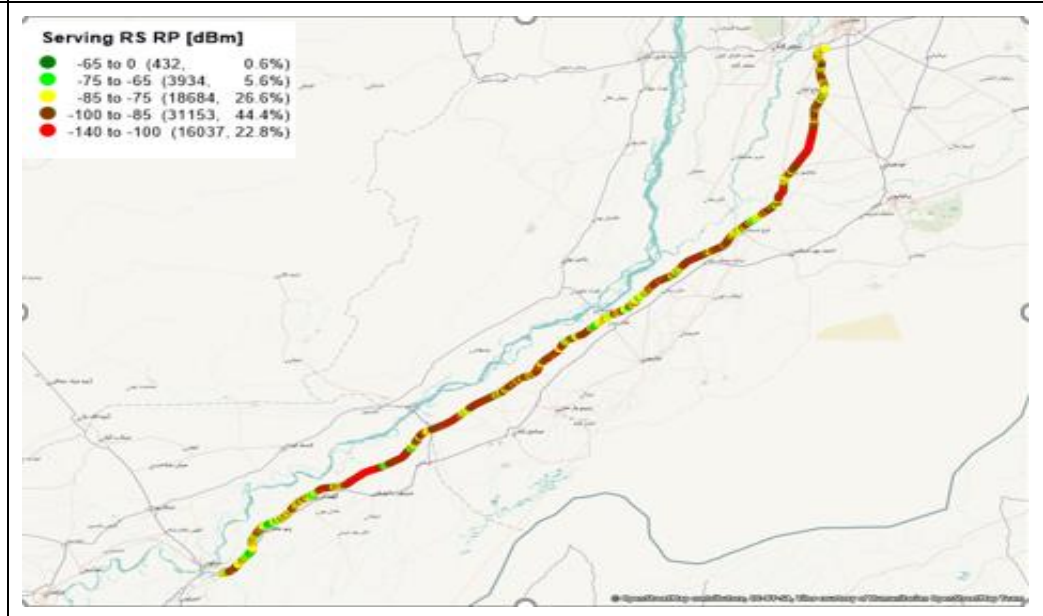
TELENOR AUTOMODE 4G NETWORK COVERAGE – MULTAN TO SUKKUR



UFONE AUTOMODE 4G NETWORK COVERAGE – MULTAN TO SUKKUR

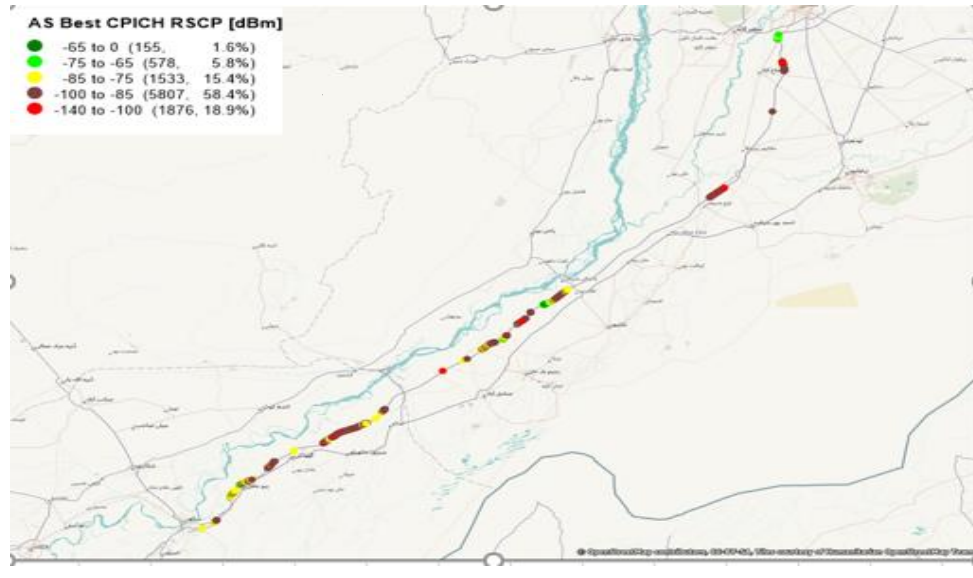


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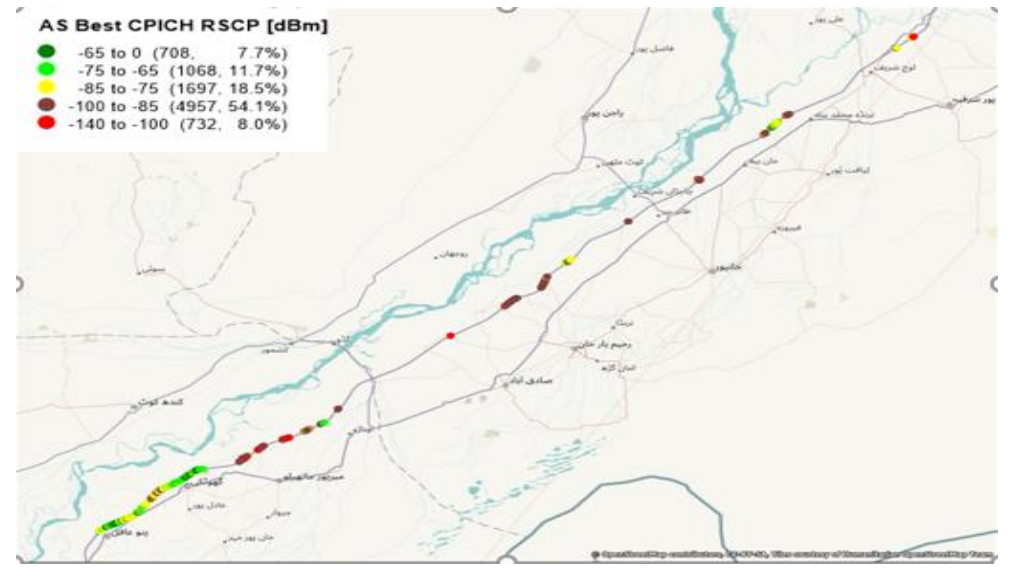


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

UFONE AUTOMODE 3G NETWORK COVERAGE – MULTAN TO SUKKUR

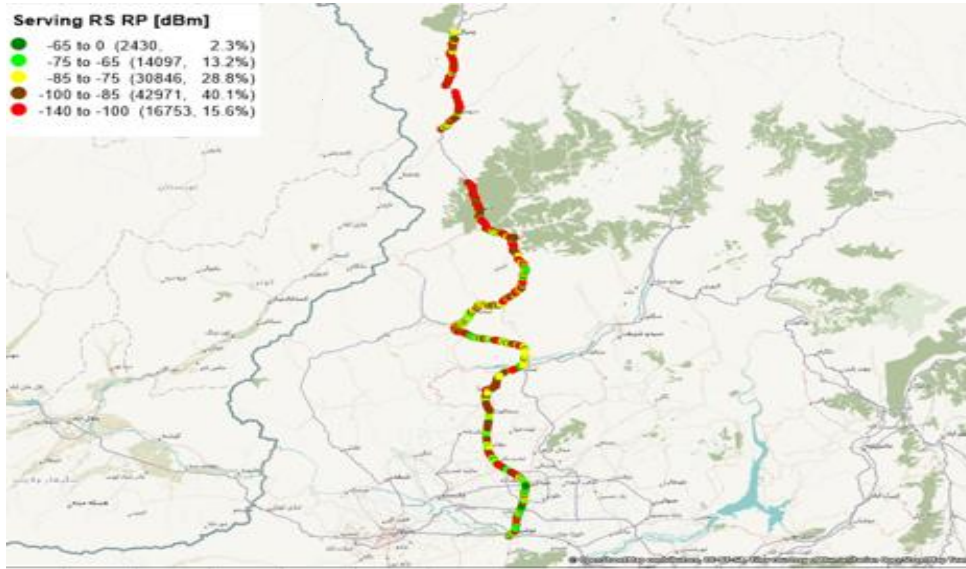


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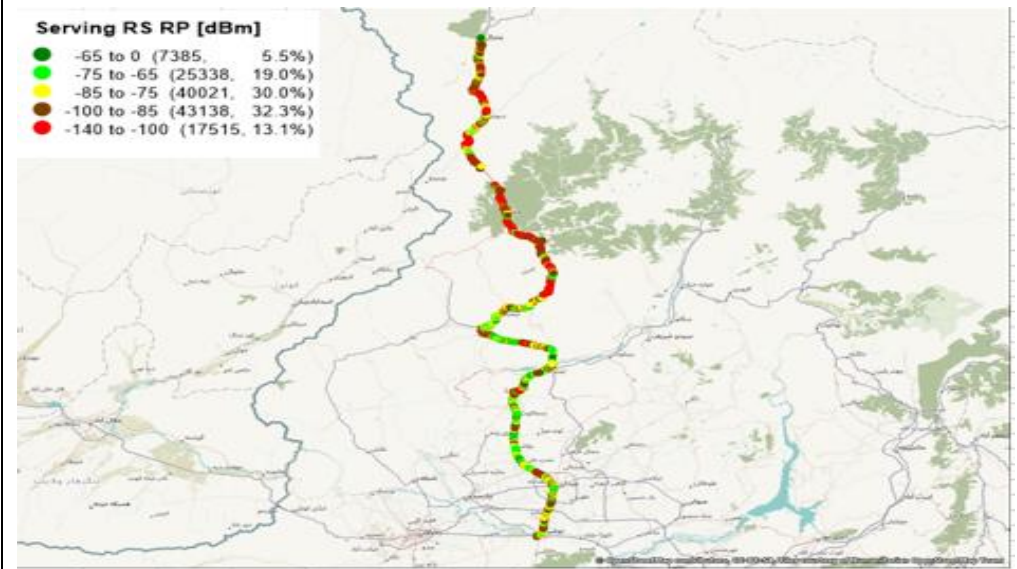


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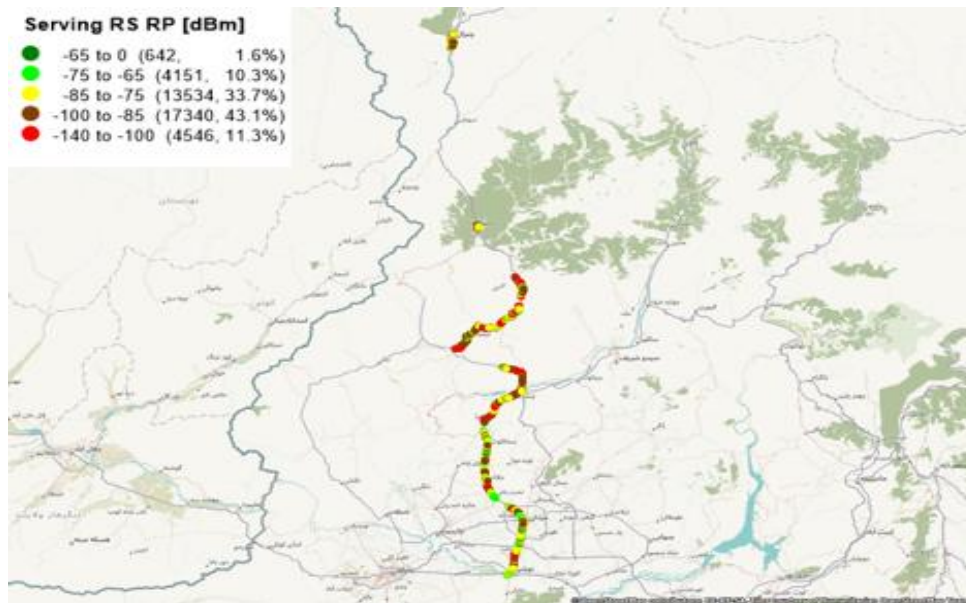
JAZZ AUTOMODE 4G NETWORK COVERAGE – NOWSHERA TO CHITRAL



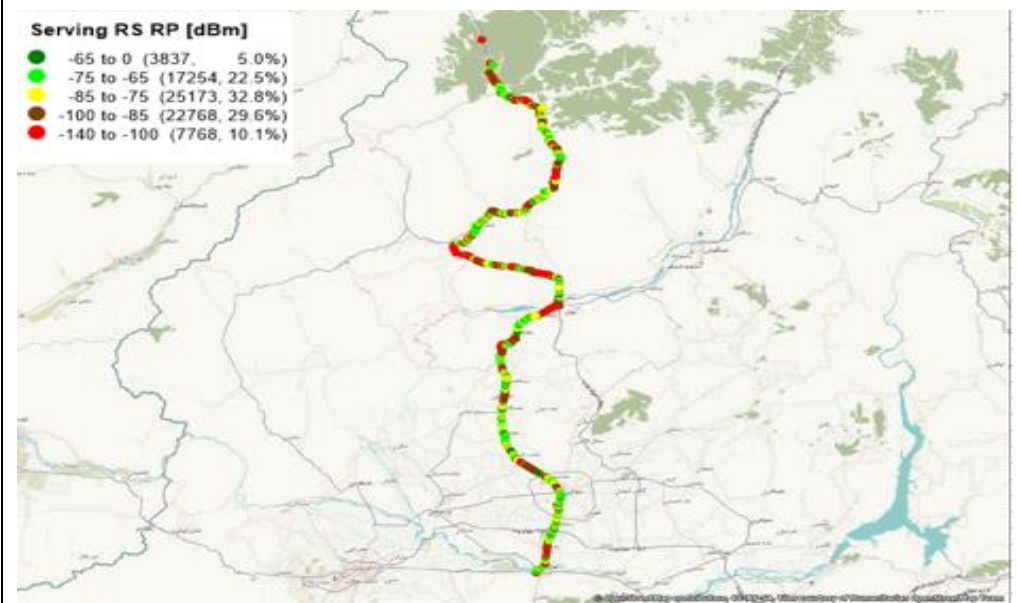
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UFONE AUTOMODE 4G NETWORK COVERAGE – NOWSHERA TO CHITRAL

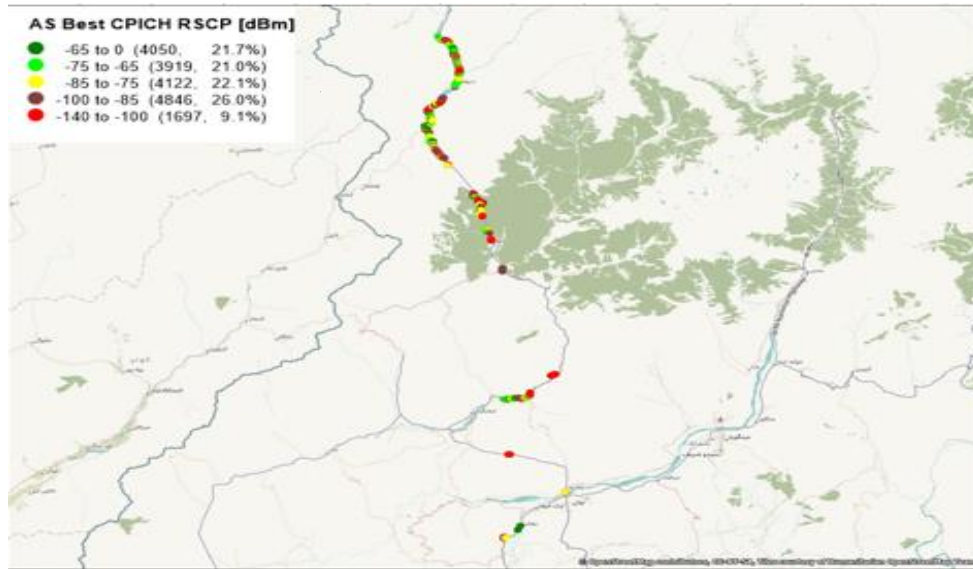


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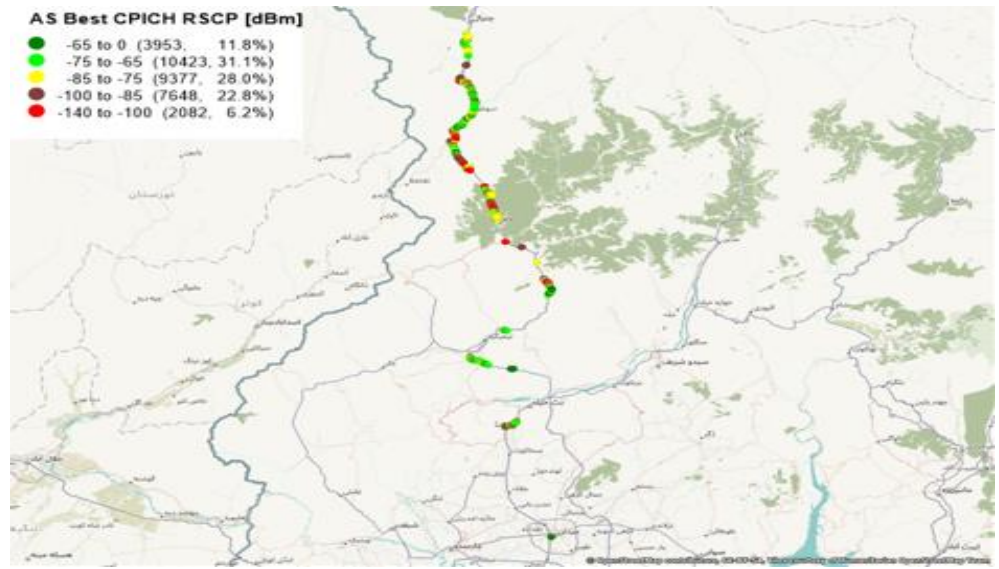


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

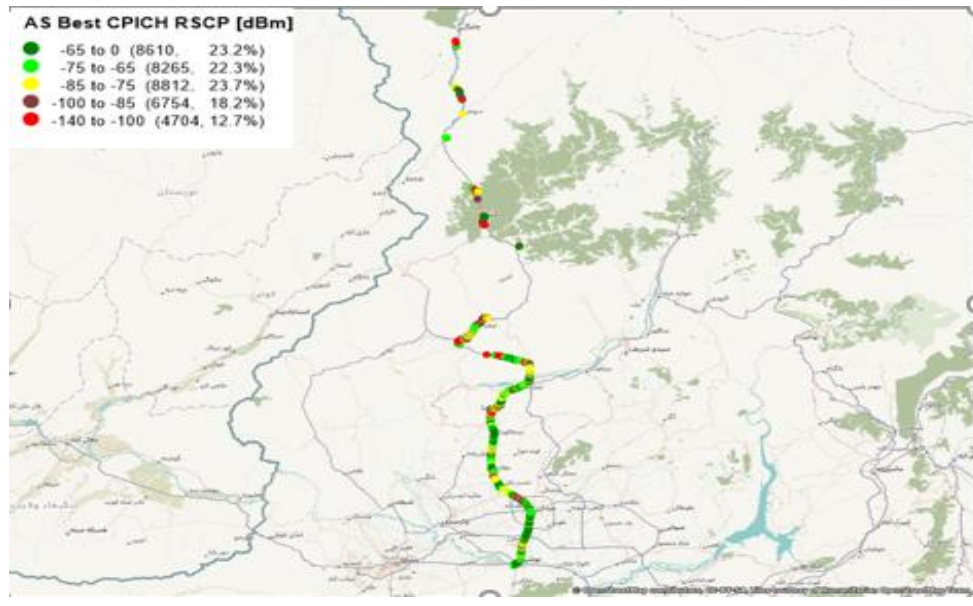
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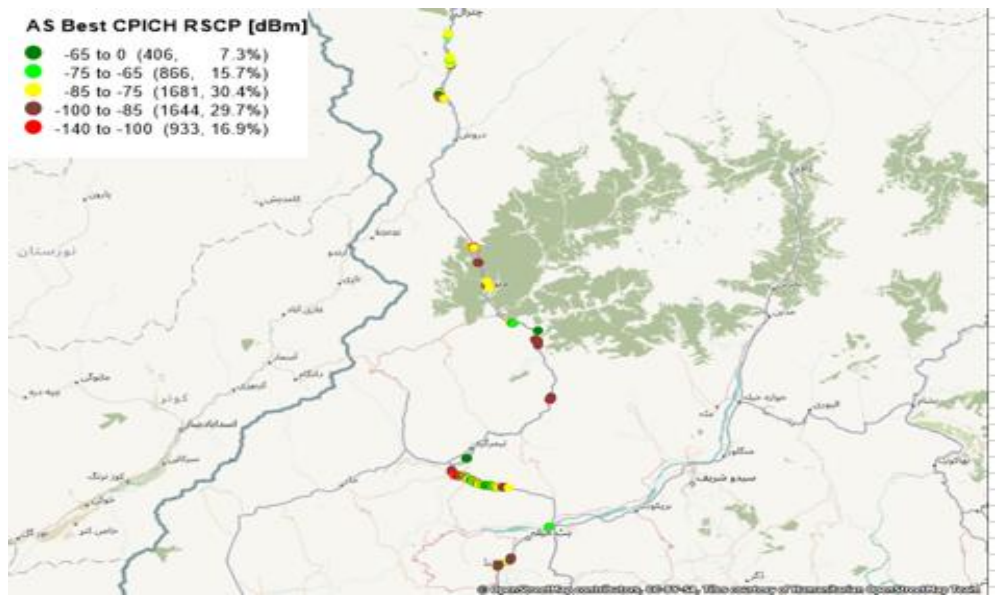
TELENOR AUTOMODE 3G NETWORK COVERAGE – NOWSHERA TO CHITRAL



UFONE AUTOMODE 3G NETWORK COVERAGE – NOWSHERA TO CHITRAL

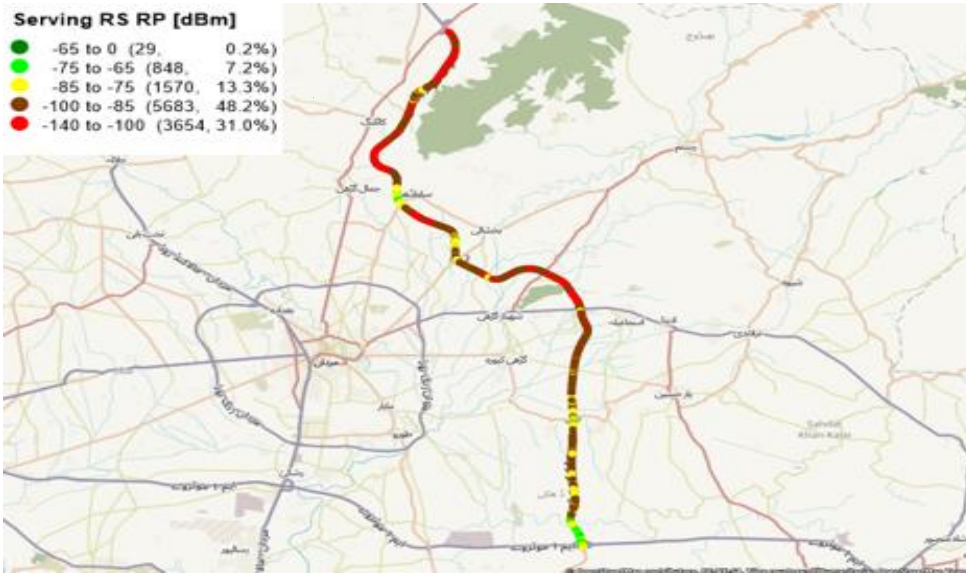


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AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

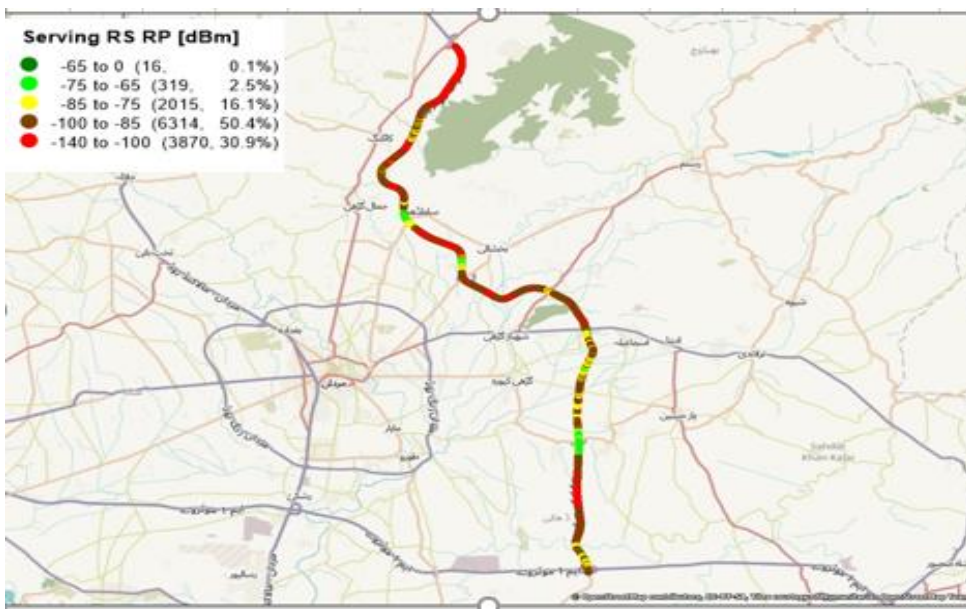
JAZZ AUTOMODE 4G NETWORK COVERAGE – SWABI TO KATLANG



TELENOR AUTOMODE 4G NETWORK COVERAGE – SWABI TO KATLANG

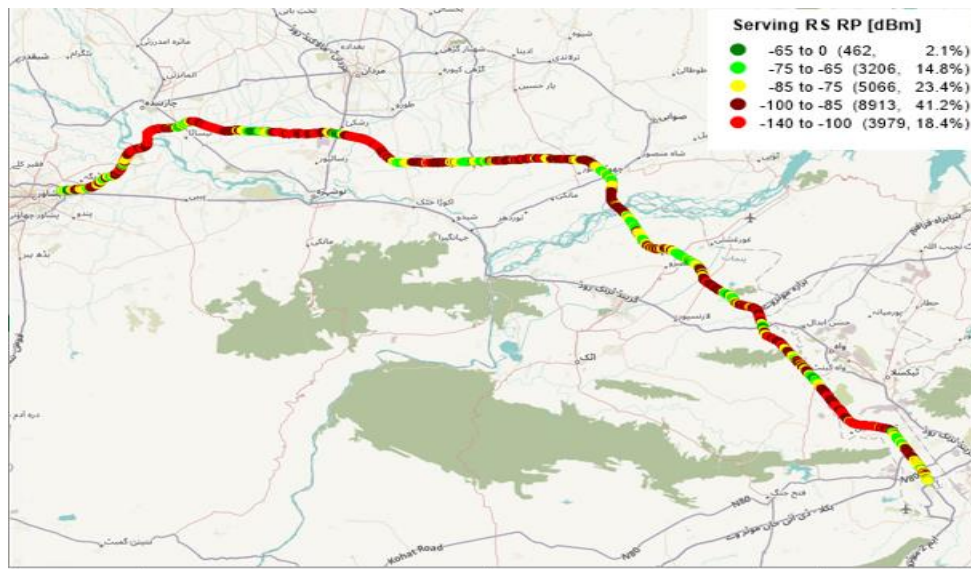


ZONG AUTOMODE 4G NETWORK COVERAGE – SWABI TO KATLANG

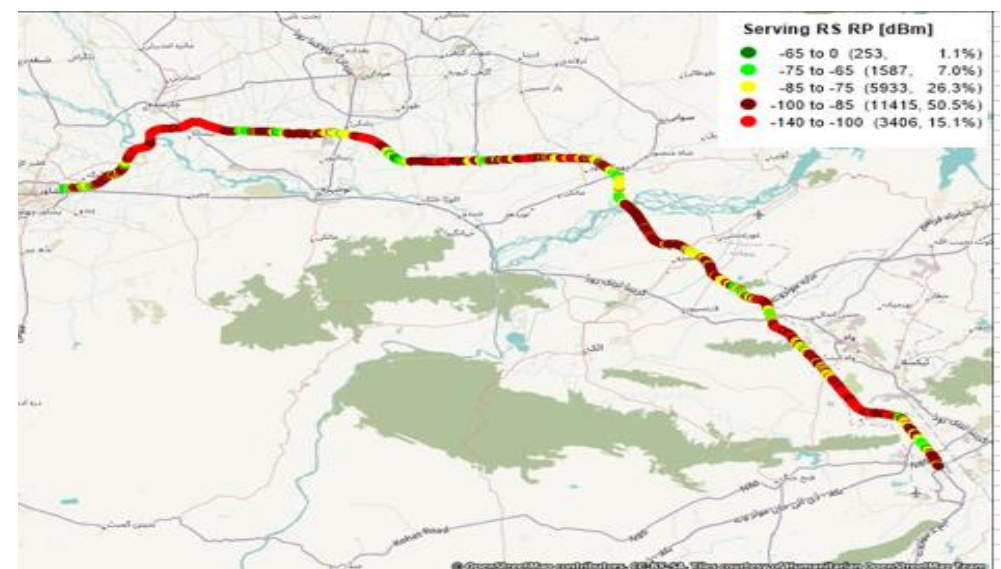


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

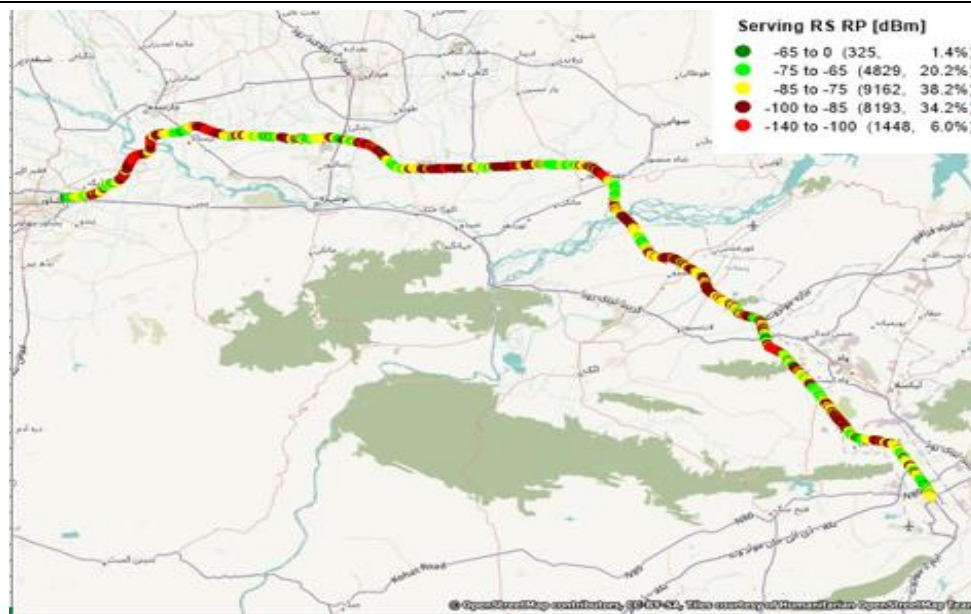
JAZZ AUTOMODE 4G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR



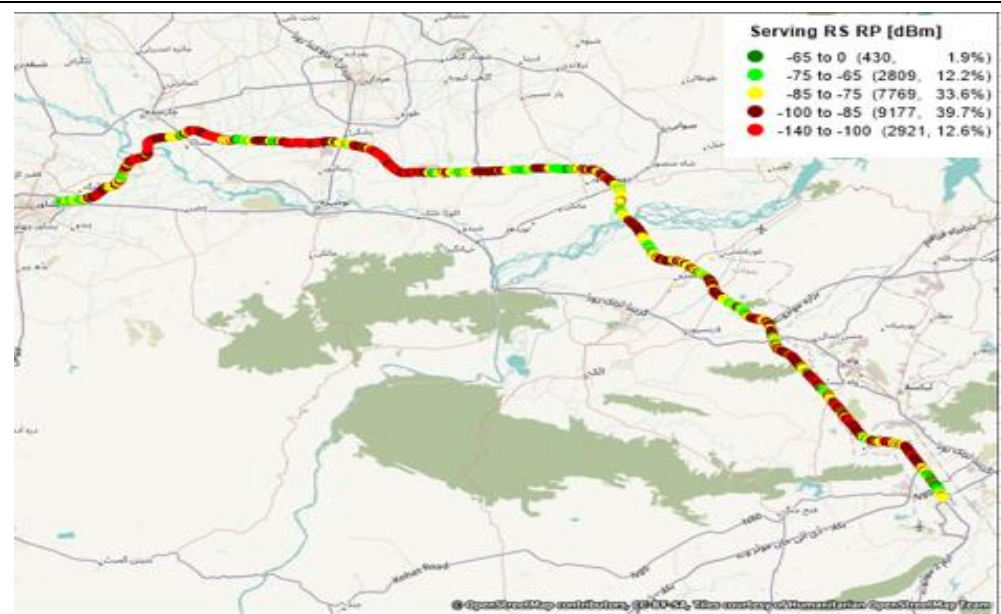
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UFONE AUTOMODE 4G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR



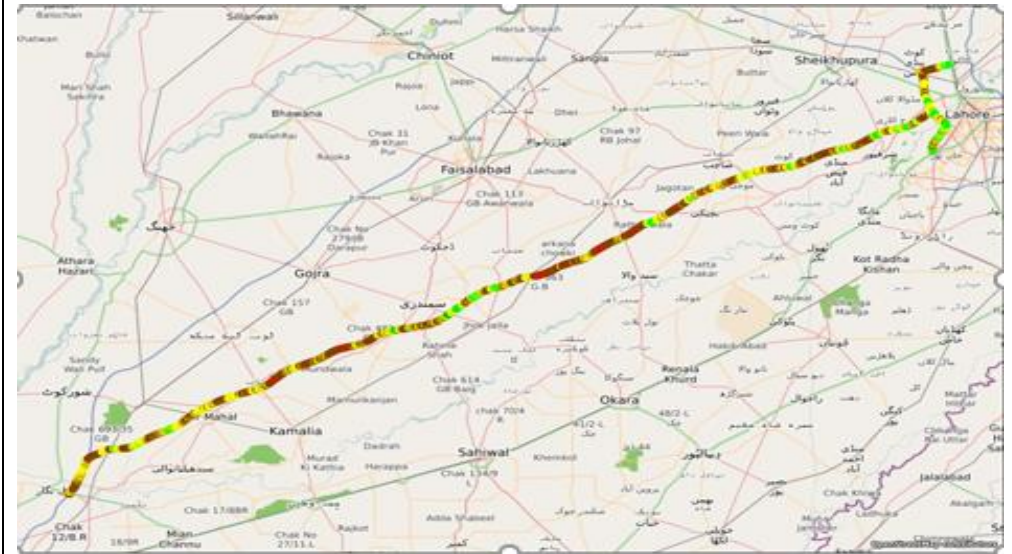
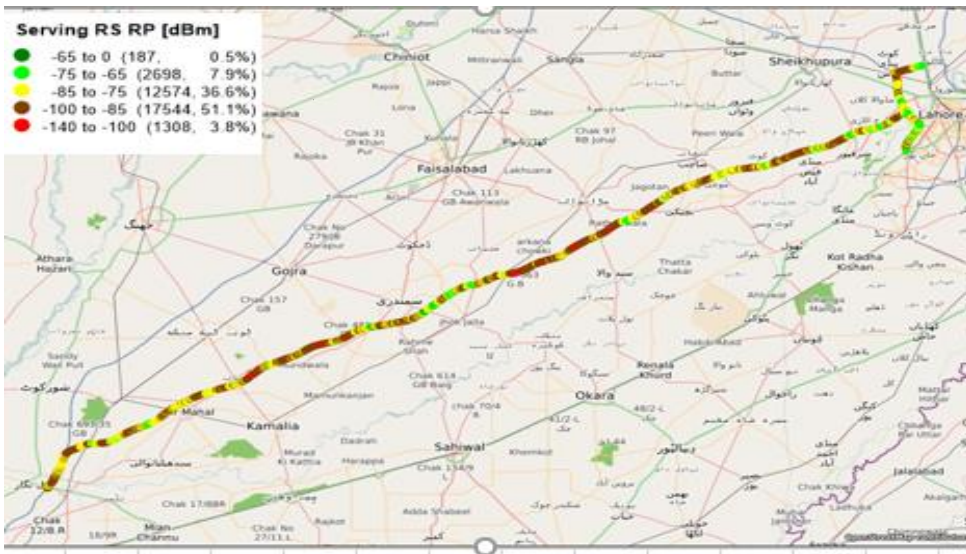
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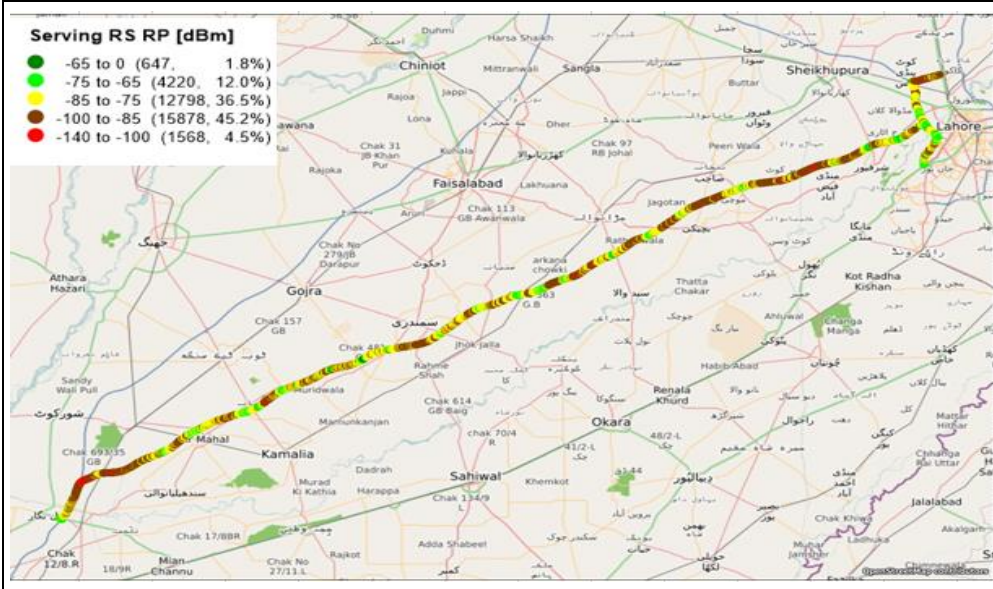
AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ AUTOMODE 4G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM

TELENOR AUTOMODE 4G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM



ZONG AUTOMODE 4G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM

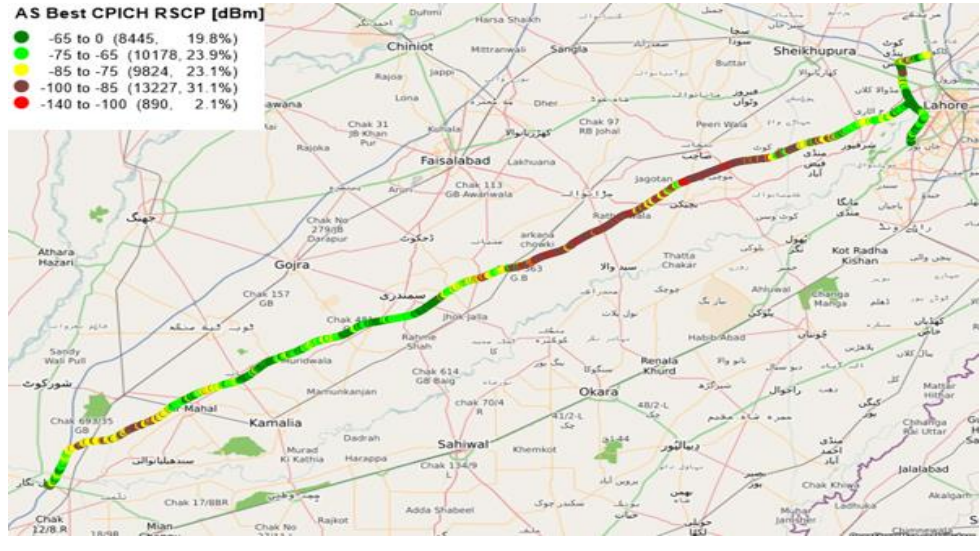


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

UFONE AUTOMODE 3G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM

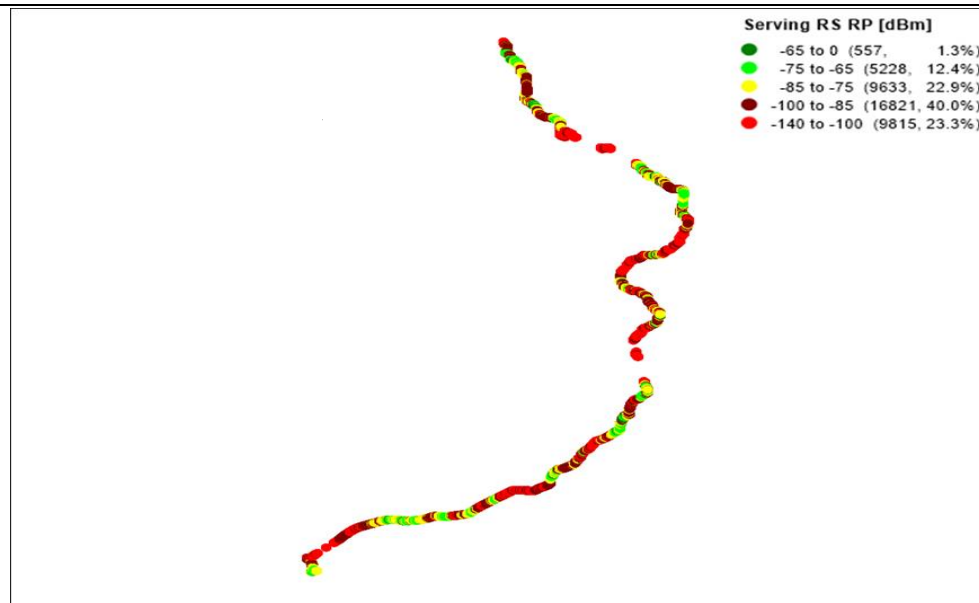
AS Best CPICH RSCP [dBm]

- 65 to 0 (8445, 19.8%)
- 75 to -65 (10178, 23.9%)
- 85 to -75 (9824, 23.1%)
- 100 to -85 (13227, 31.1%)
- 140 to -100 (890, 2.1%)

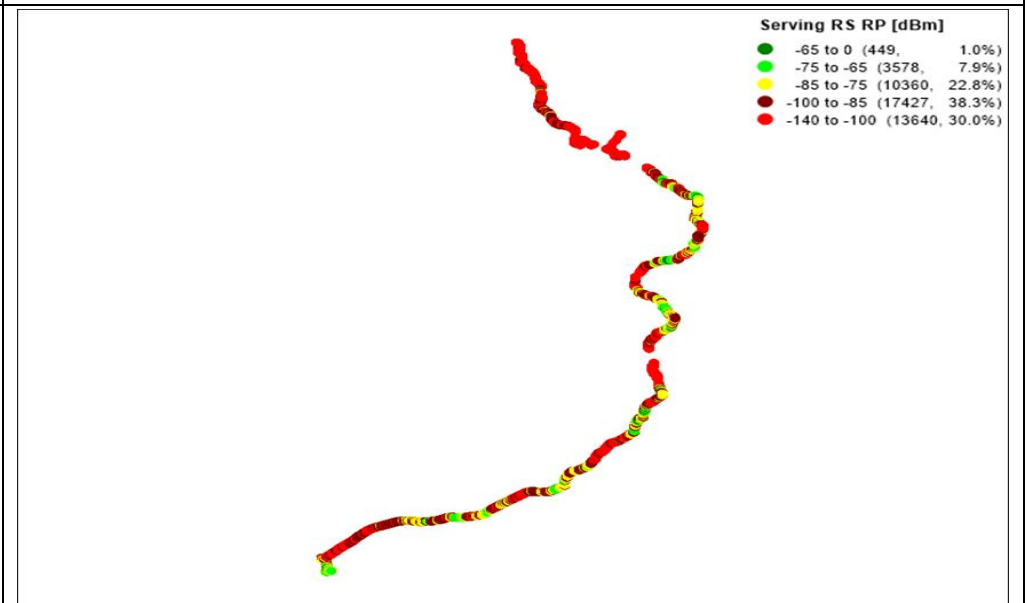


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

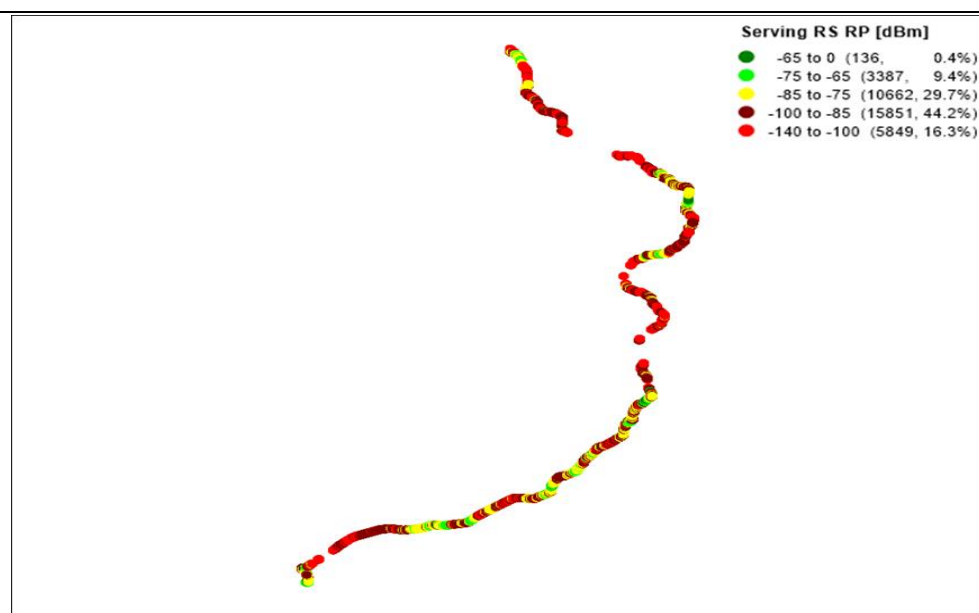
JAZZ AUTOMODE 4G NETWORK COVERAGE – HAZARA MOTORWAY



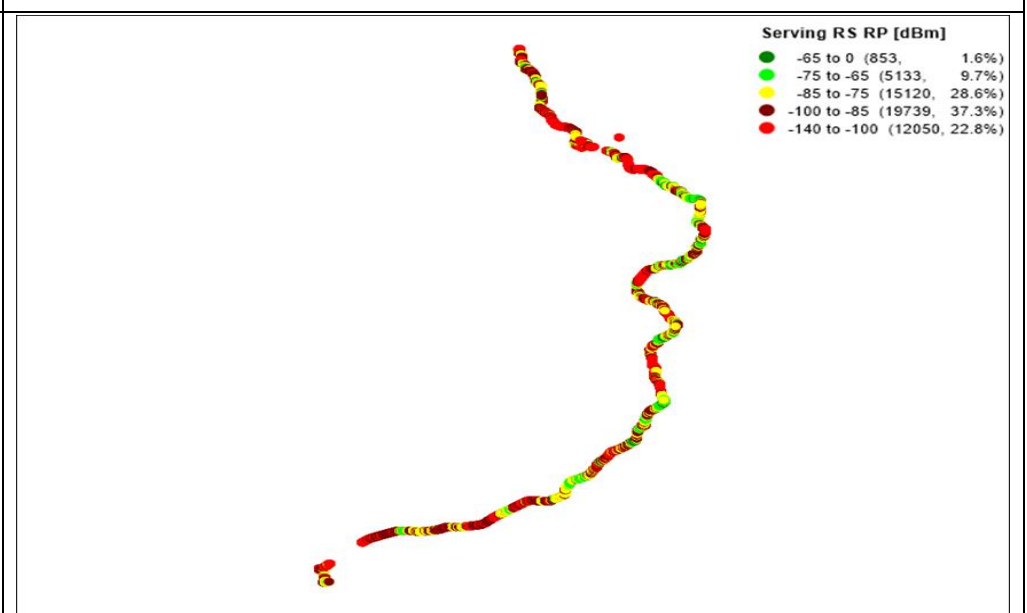
TELENOR AUTOMODE 4G NETWORK COVERAGE – HAZARA MOTORWAY



UFONE AUTOMODE 4G NETWORK COVERAGE – HAZARA MOTORWAY

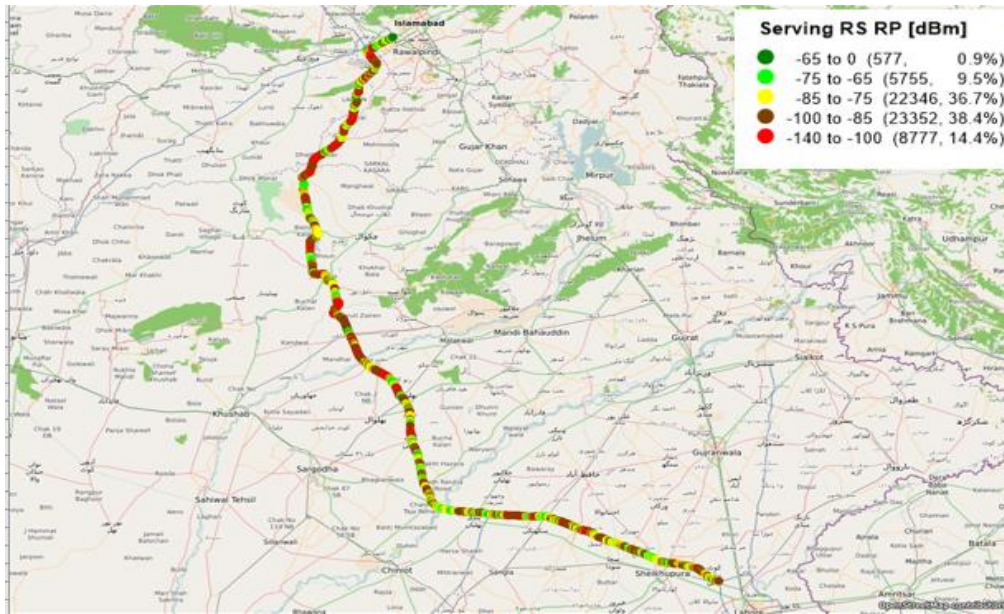


ZONG AUTOMODE 4G NETWORK COVERAGE – HAZARA MOTORWAY

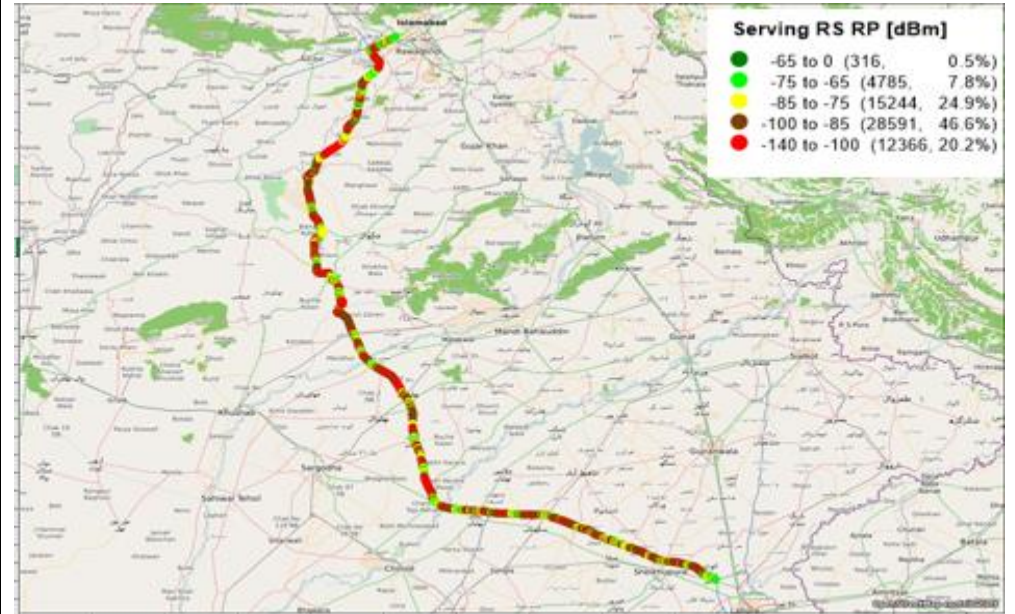


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

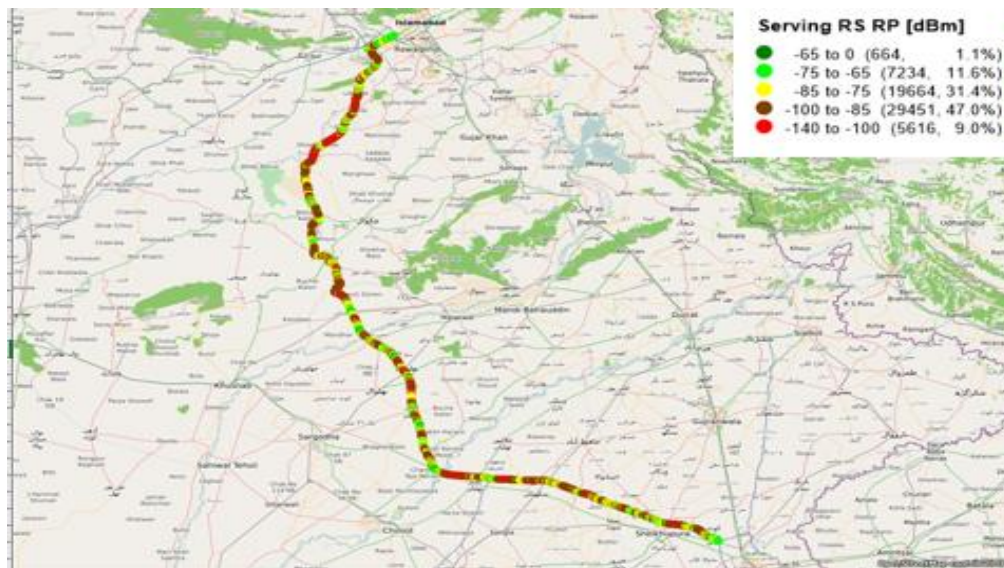
JAZZ AUTOMODE 4G NETWORK COVERAGE – LAHORE TO ISLAMABAD



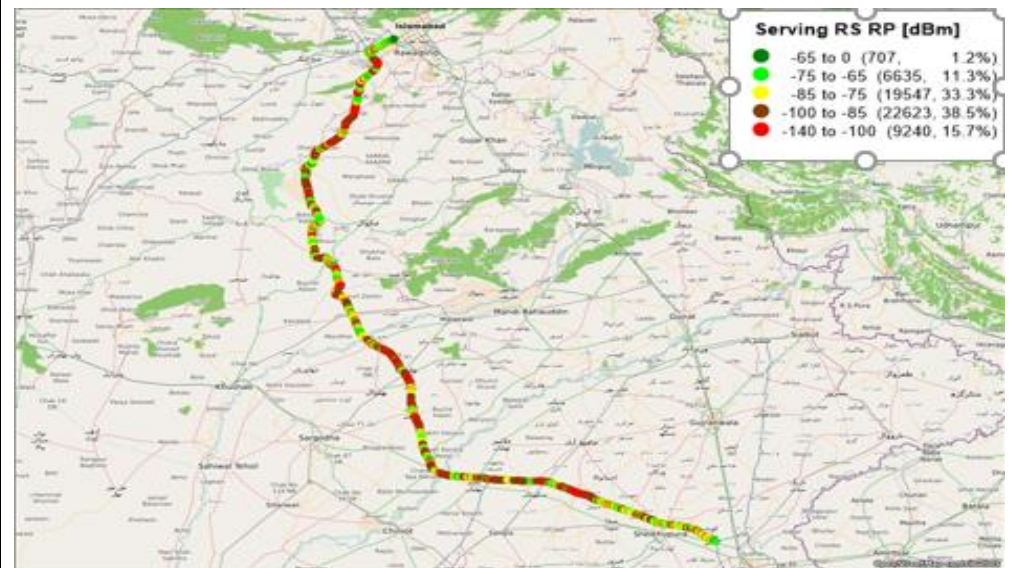
TELENOR AUTOMODE 4G NETWORK COVERAGE – LAHORE TO ISLAMABAD



UFONE AUTOMODE 4G NETWORK COVERAGE – LAHORE TO ISLAMABAD

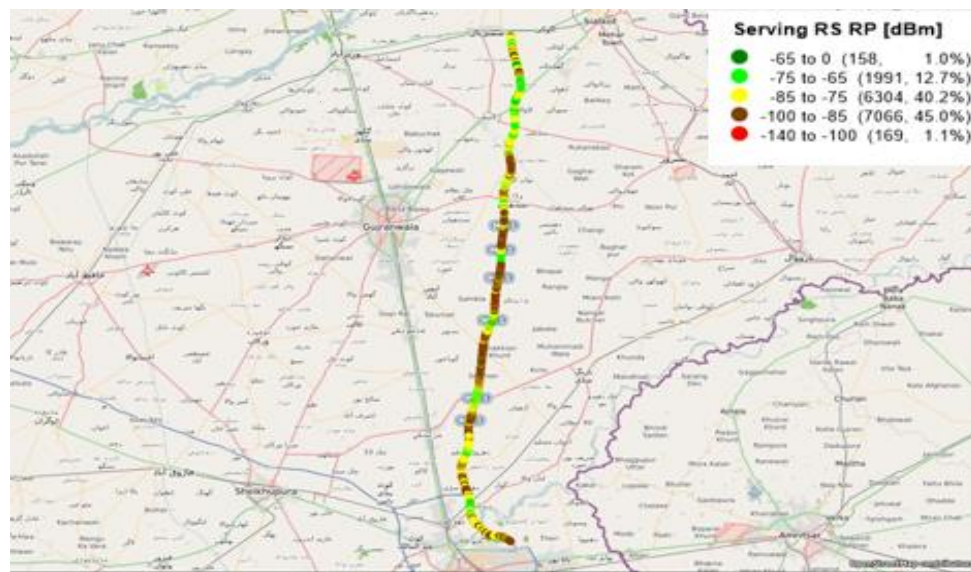


ZONG AUTOMODE 4G NETWORK COVERAGE – LAHORE TO ISLAMABAD

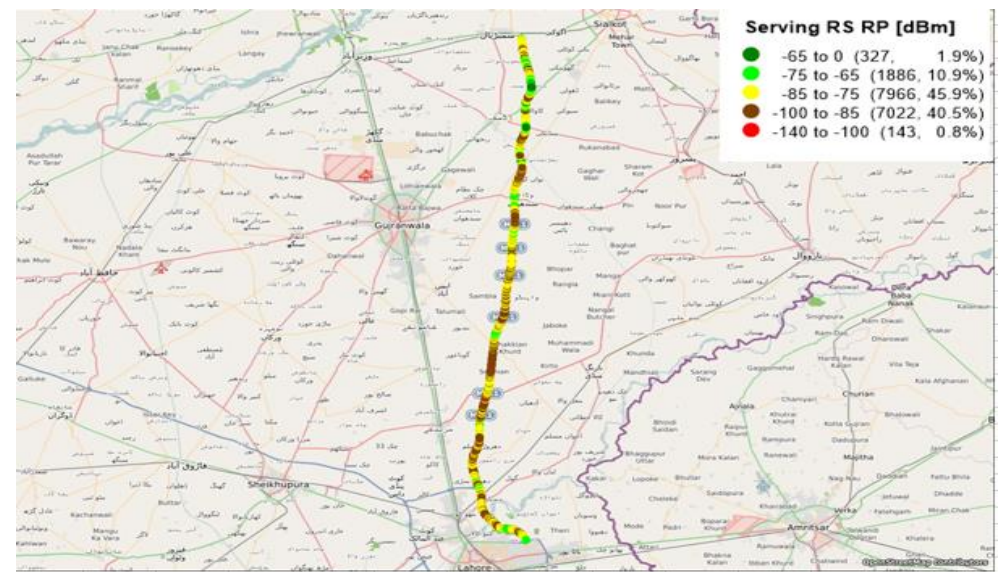


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

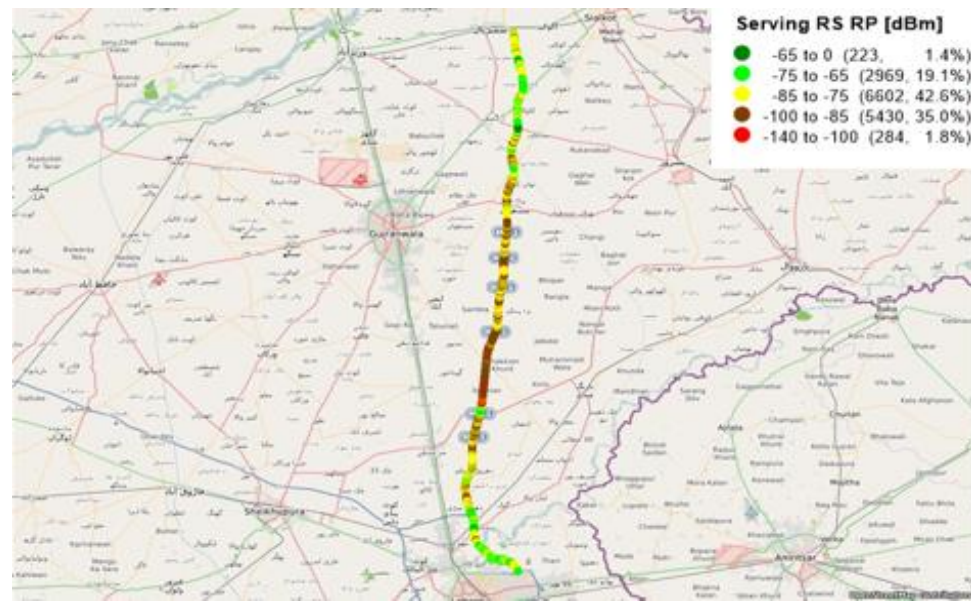
JAZZ AUTOMODE 4G NETWORK COVERAGE – LAHORE TO SIALKOT



TELENOR AUTOMODE 4G NETWORK COVERAGE – LAHORE TO SIALKOT

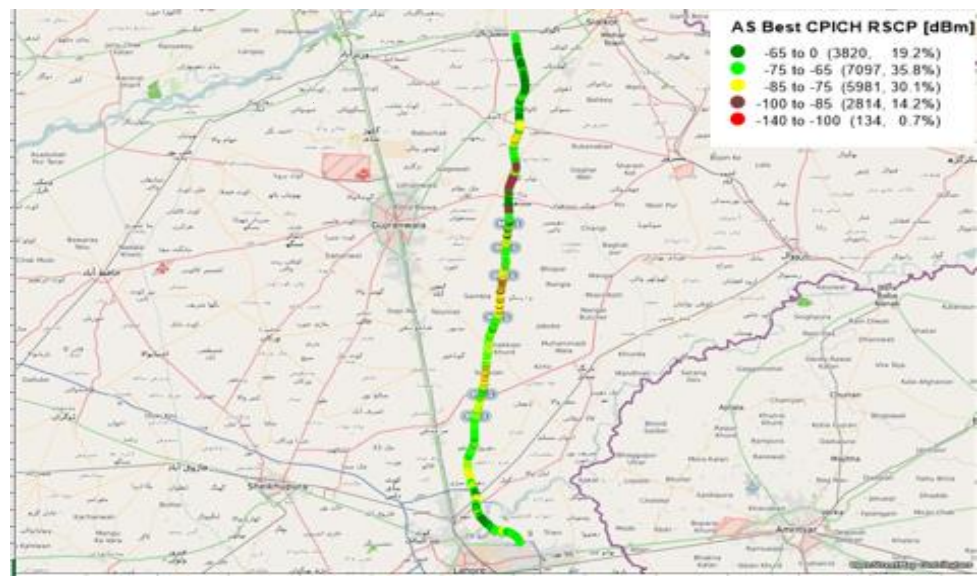


ZONG AUTOMODE 4G NETWORK COVERAGE – LAHORE TO SIALKOT



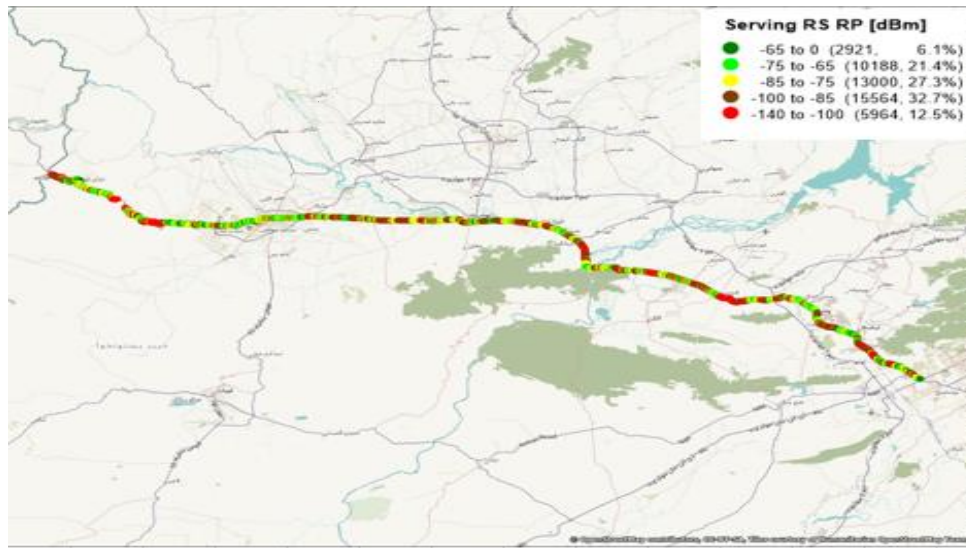
AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

Ufone Automode 3G Network Coverage – Lahore to Sialkot

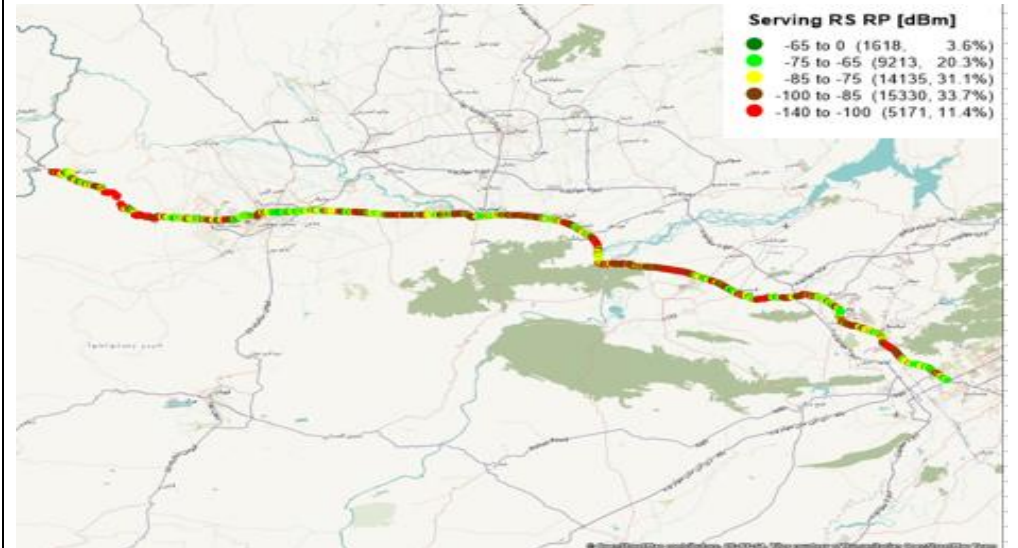


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

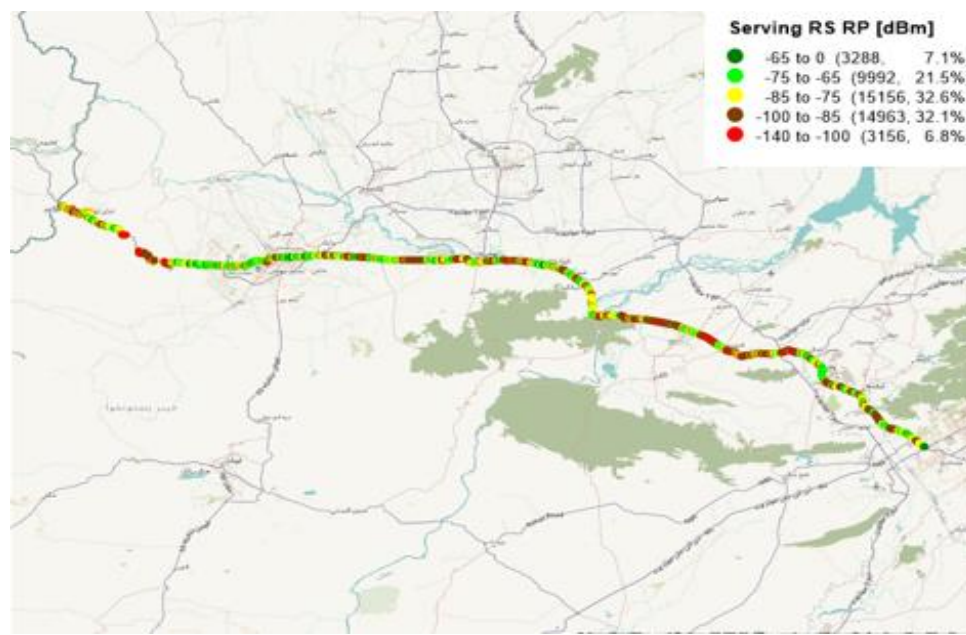
JAZZ AUTOMODE 4G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



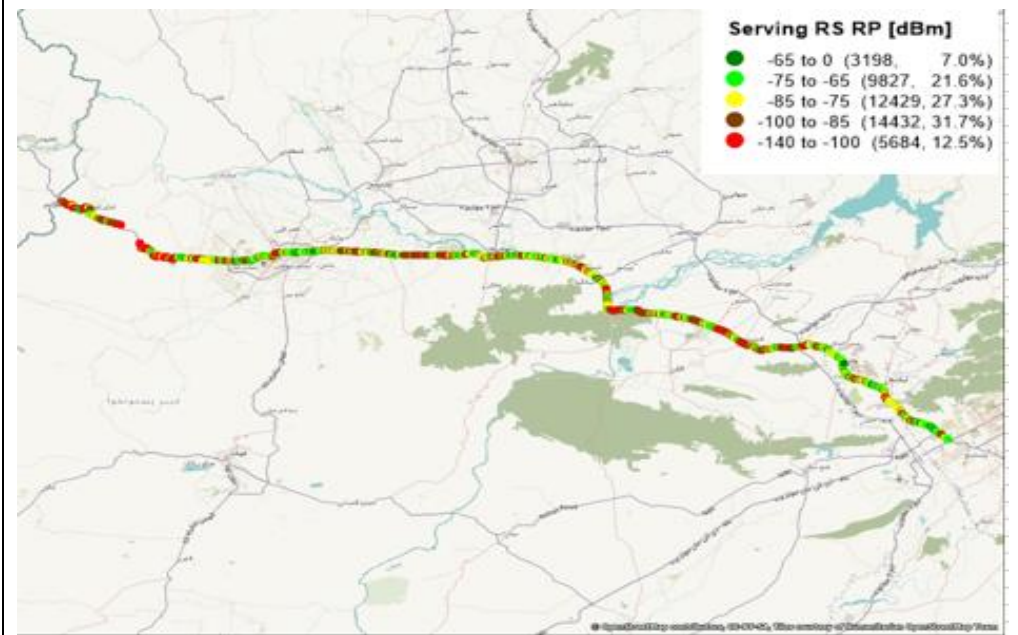
TELENOR AUTOMODE 4G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



UFONE AUTOMODE 4G NETWORK COVERAGE – RAWALPINDI TO TORKHUM

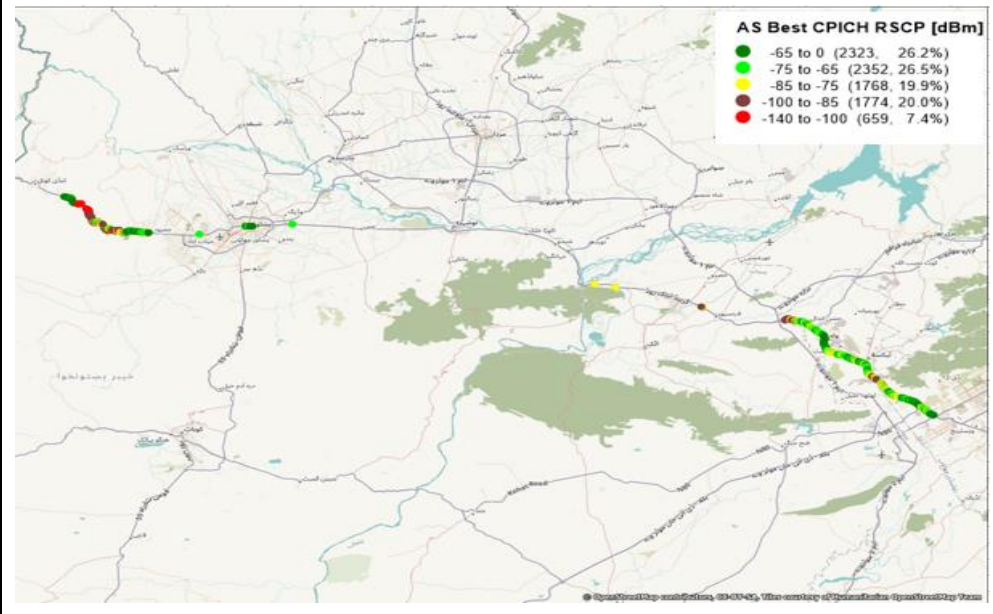


ZONG AUTOMODE 4G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

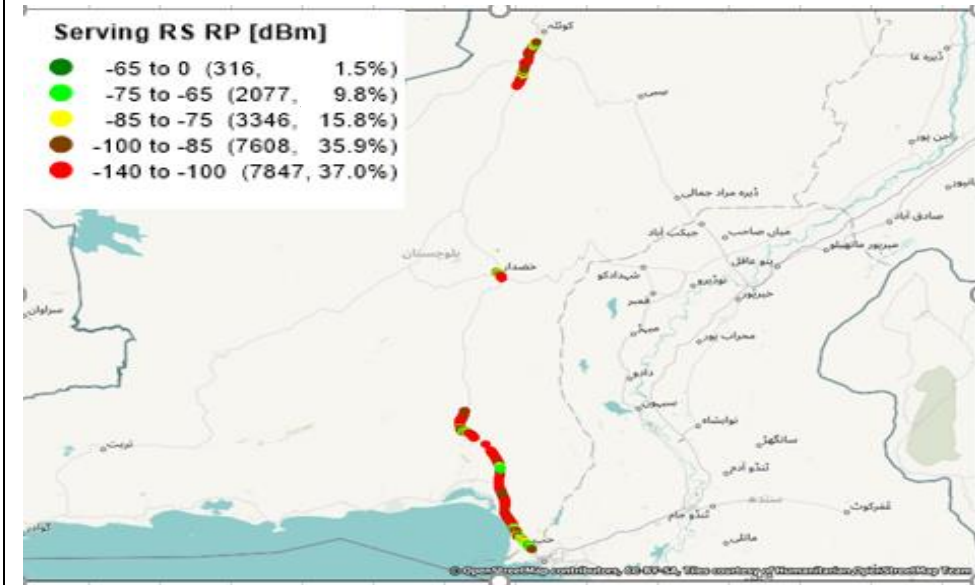
UFONE AUTOMODE 3G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



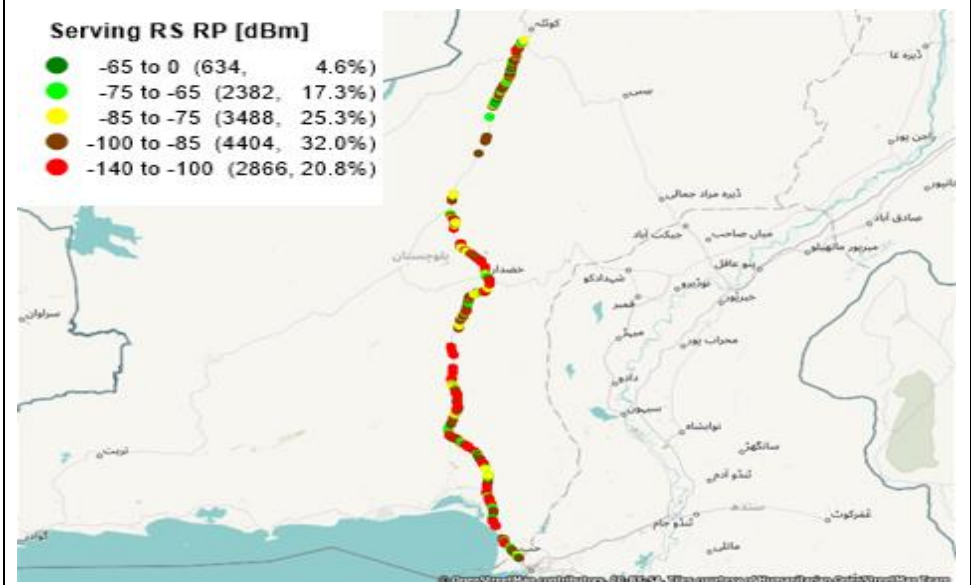
COVERAGE MAPS (4G)

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

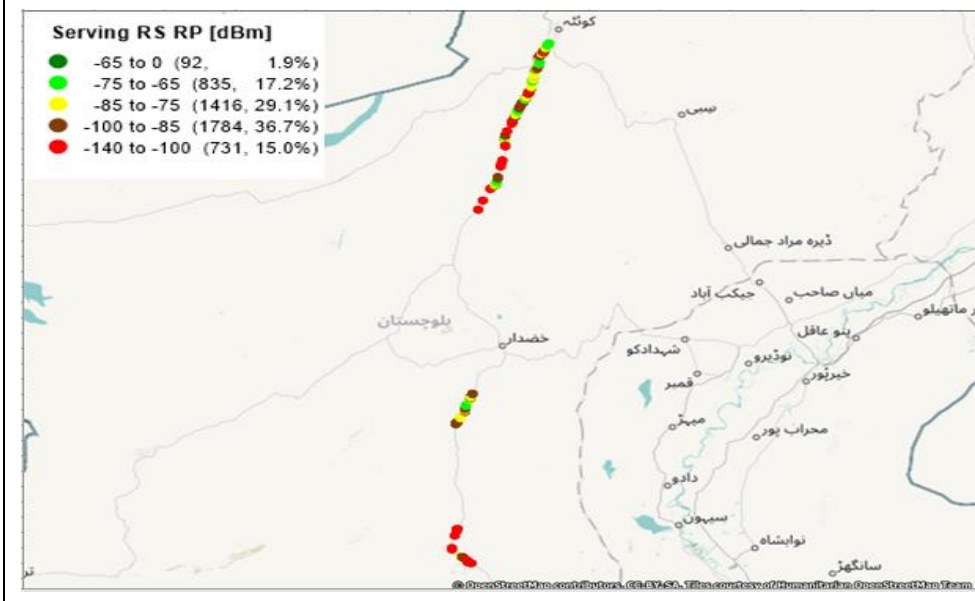
JAZZ 4G NETWORK COVERAGE – QUETTA TO KARACHI



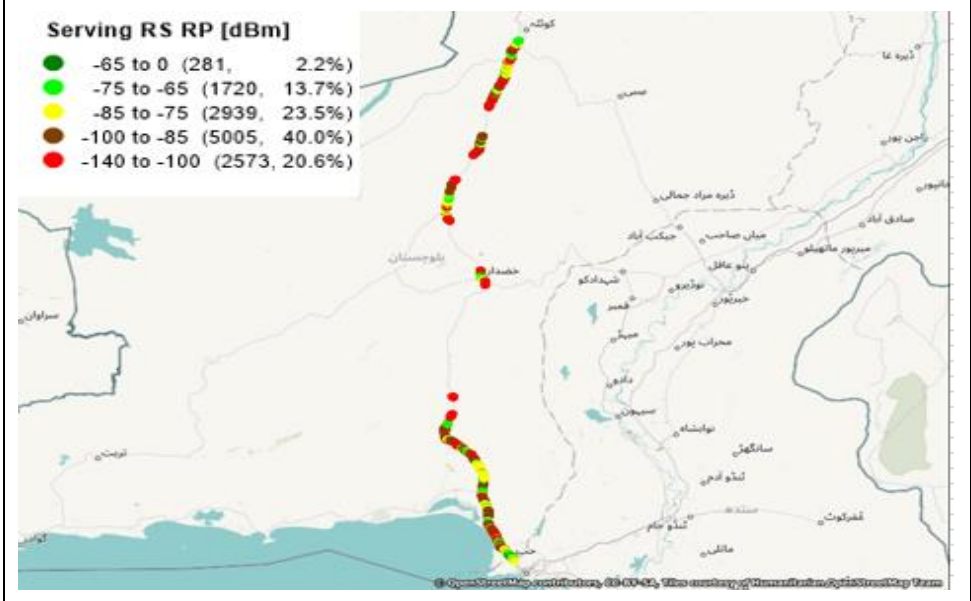
TELENOR 4G NETWORK COVERAGE – QUETTA TO KARACHI



UFONE 4G NETWORK COVERAGE – QUETTA TO KARACHI

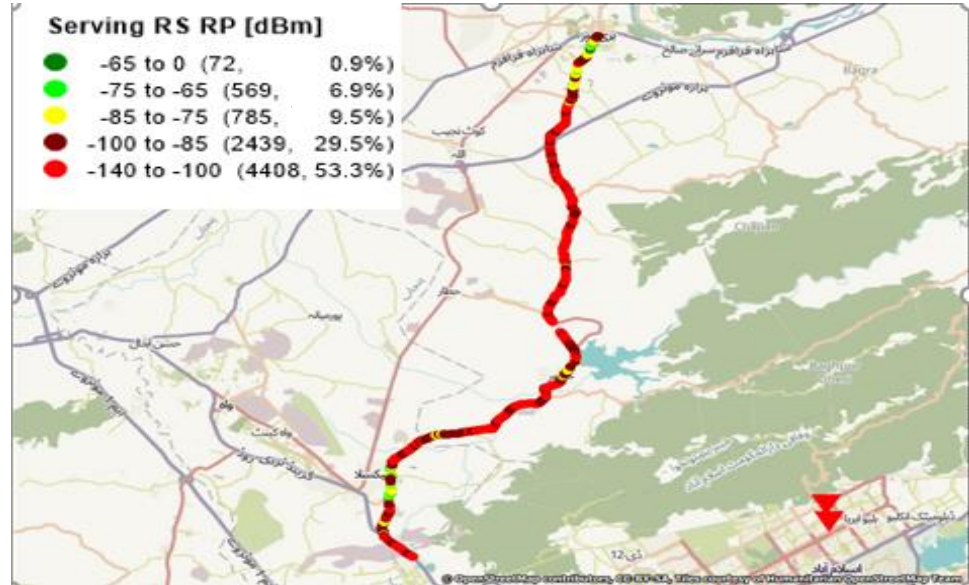


ZONG 4G NETWORK COVERAGE – QUETTA TO KARACHI

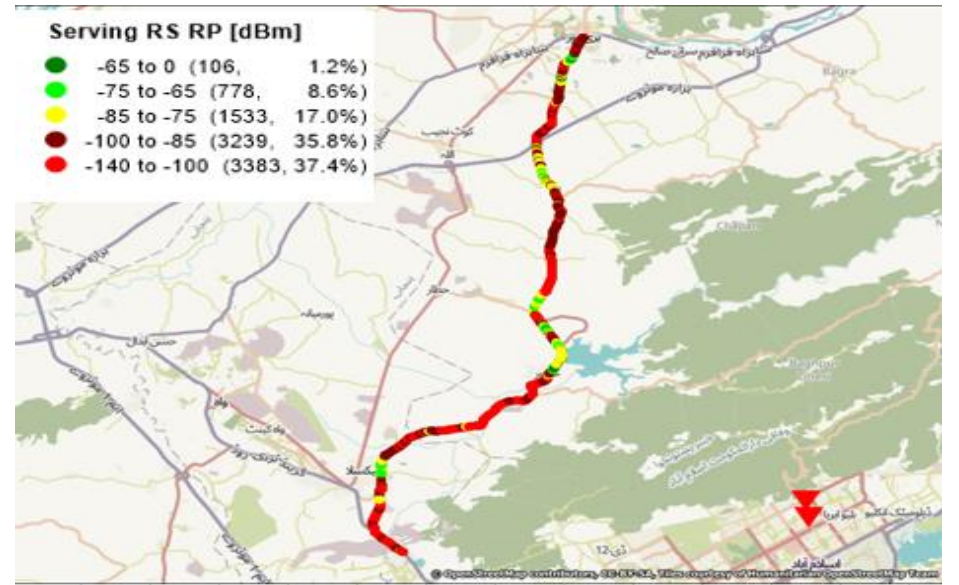


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

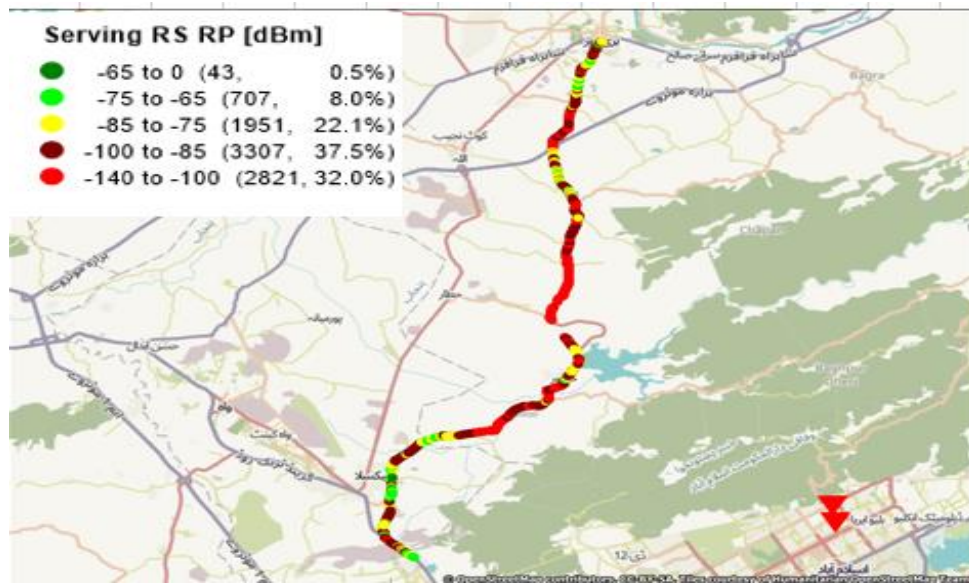
JAZZ 4G NETWORK COVERAGE – HARIPUR TO TAXILA



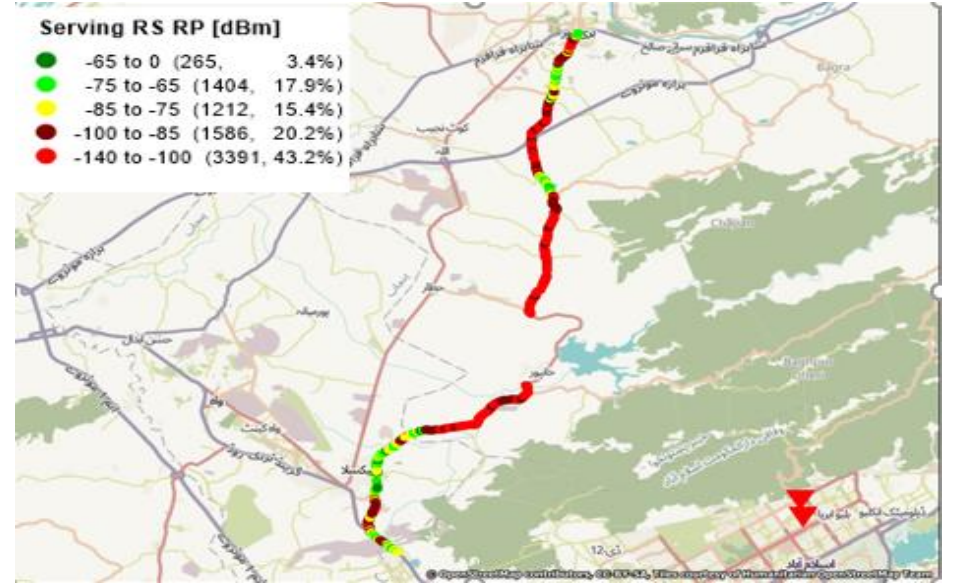
TELEOR 4G NETWORK COVERAGE – HARIPUR TO TAXILA



UFONE 4G NETWORK COVERAGE – HARIPUR TO TAXILA

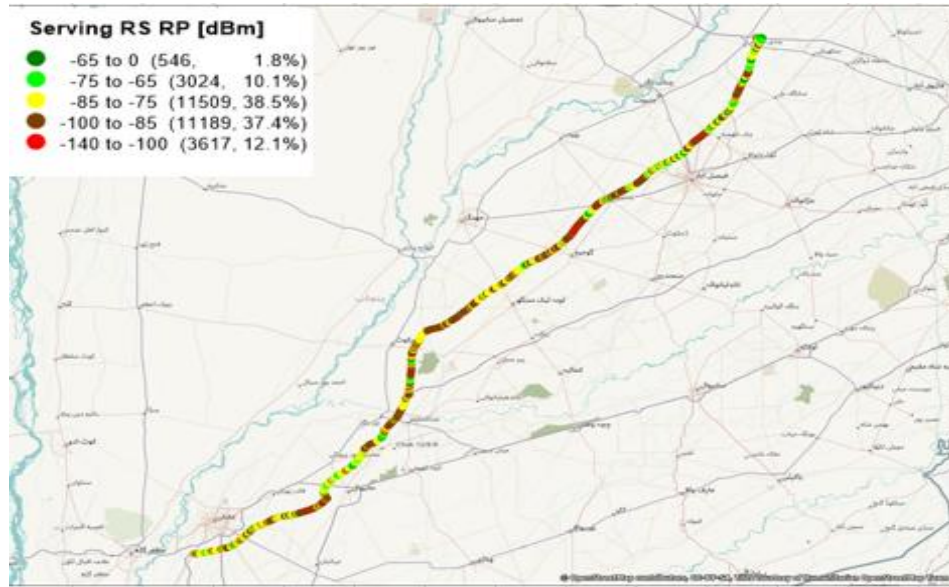


ZONG 4G NETWORK COVERAGE – HARIPUR TO TAXILA

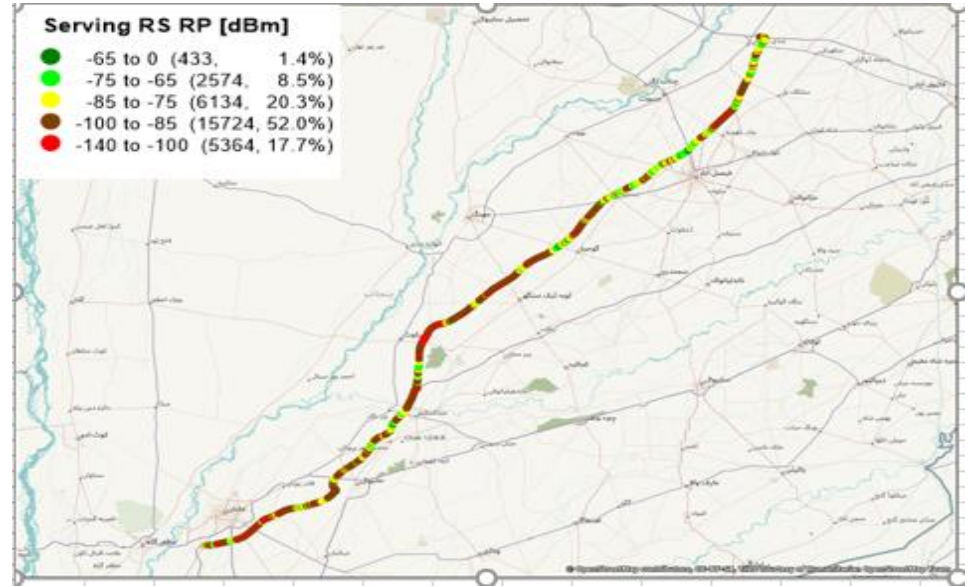


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

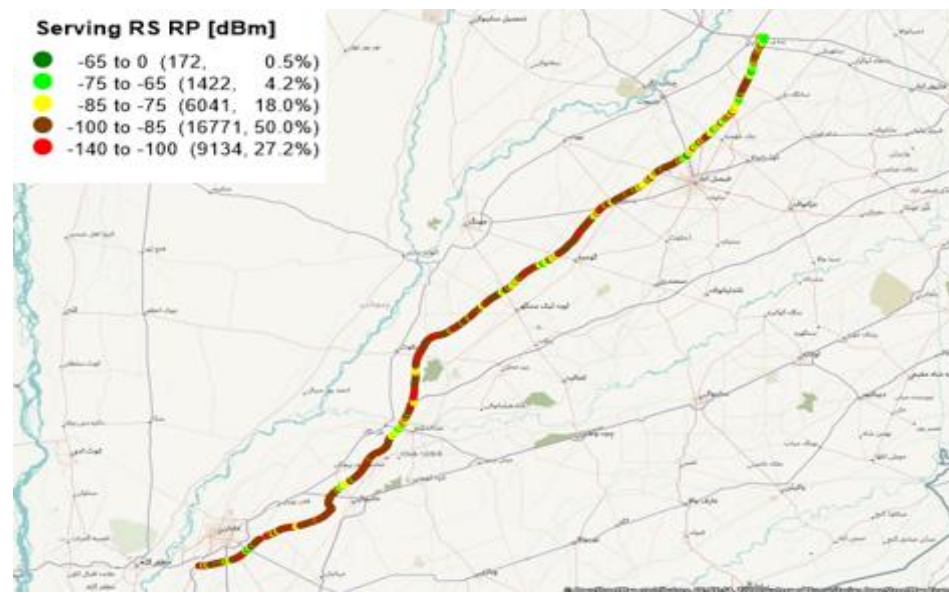
JAZZ 4G NETWORK COVERAGE – PINDI BHATIAN TO MULTAN



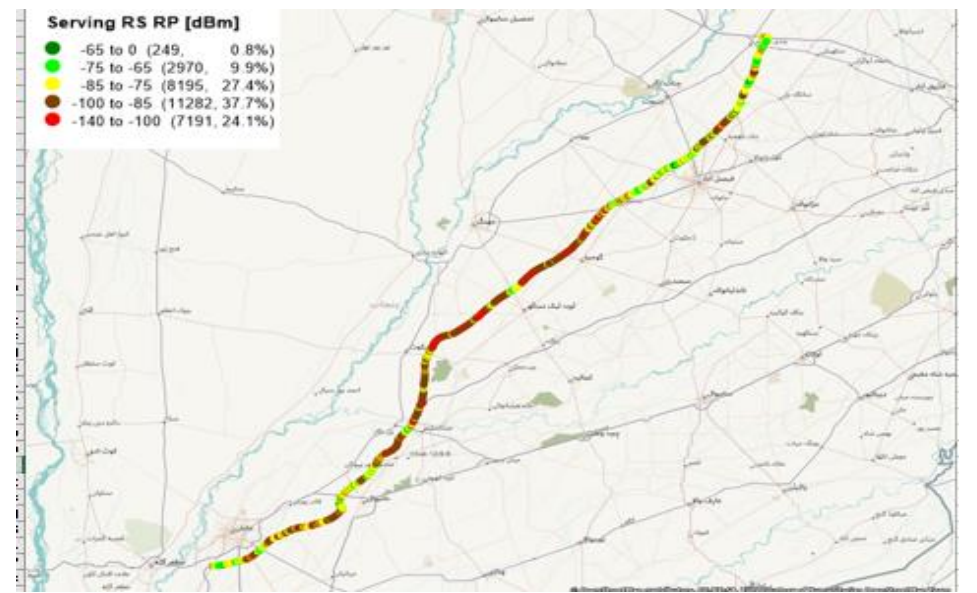
TELENOR 4G NETWORK COVERAGE – PINDI BHATIAN TO MULTAN



UFONE 4G NETWORK COVERAGE – PINDI BHATIAN TO MULTAN

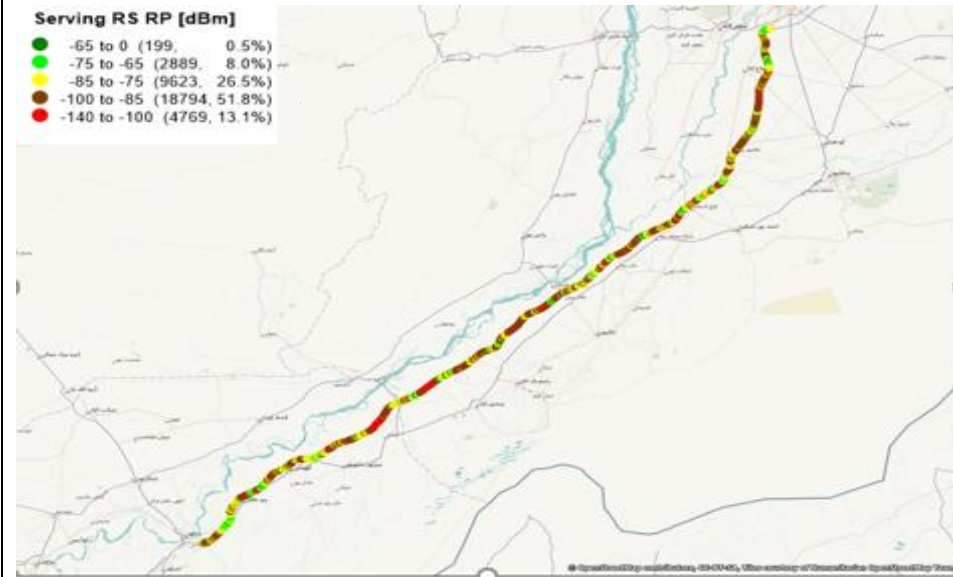


ZONG 4G NETWORK COVERAGE – PINDI BHATIAN TO MULTAN

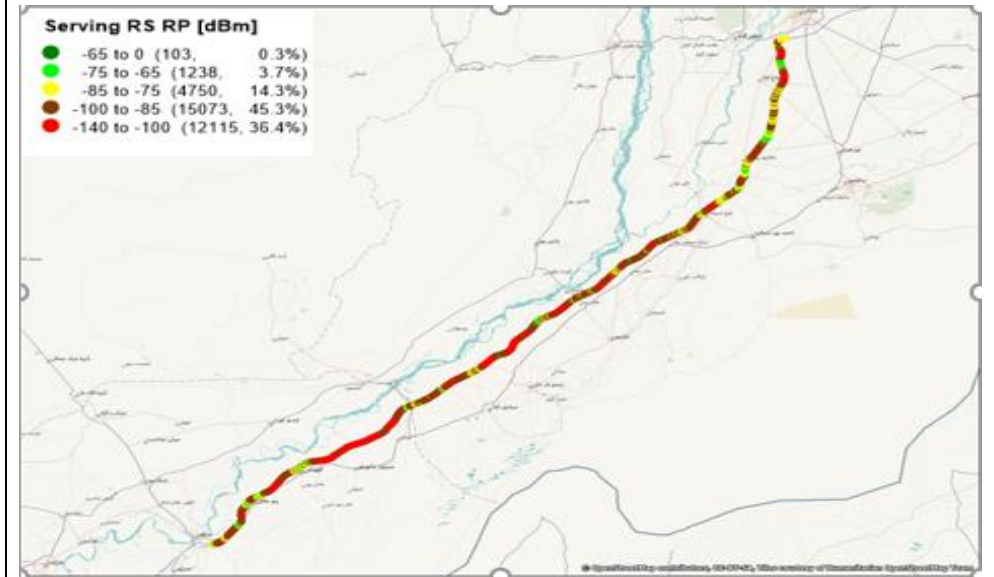


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

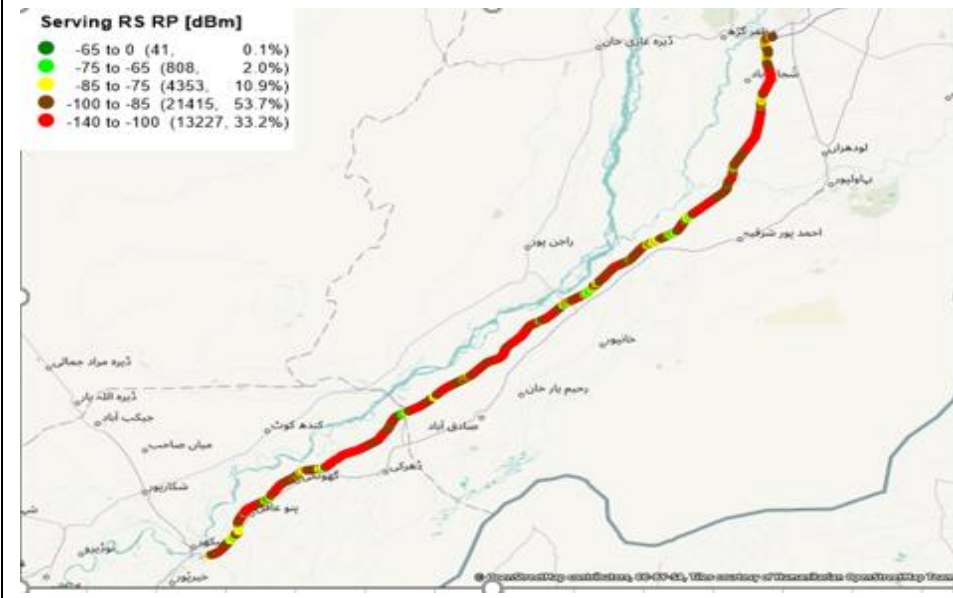
JAZZ 4G NETWORK COVERAGE – MULTAN TO SUKKUR



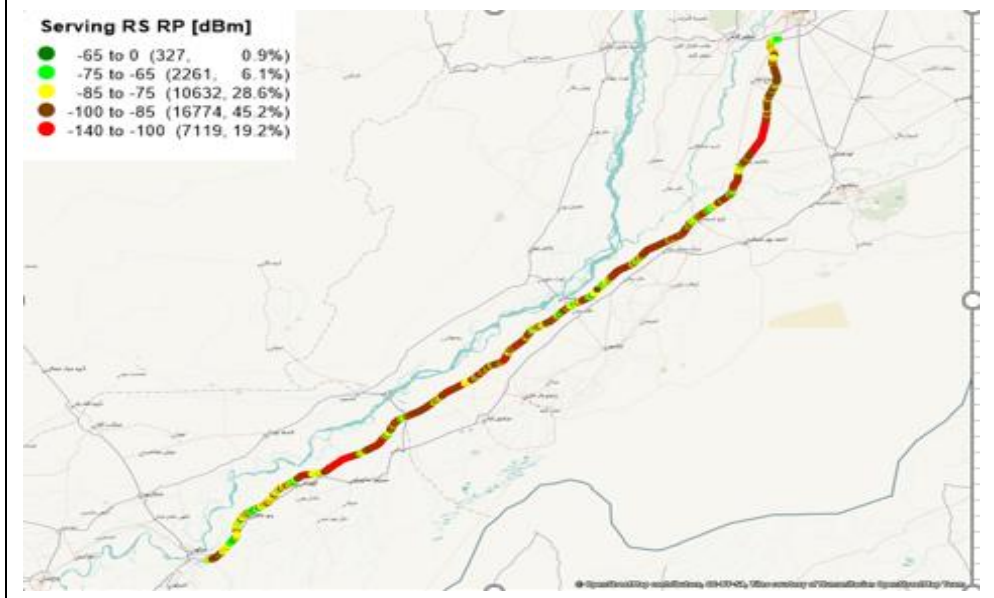
TELENOR 4G NETWORK COVERAGE – MULTAN TO SUKKUR



UFONE 4G NETWORK COVERAGE – MULTAN TO SUKKUR

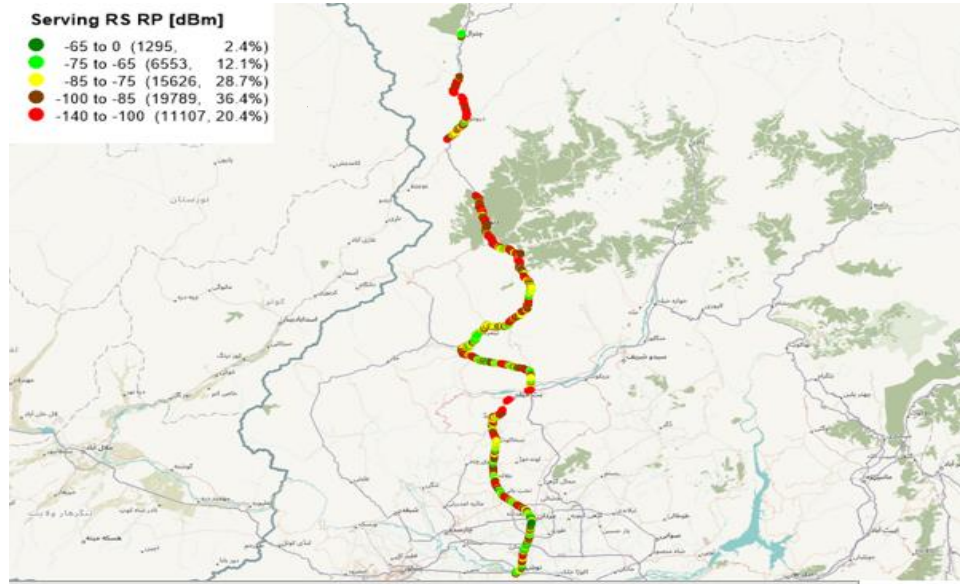


ZONG 4G NETWORK COVERAGE – MULTAN TO SUKKUR

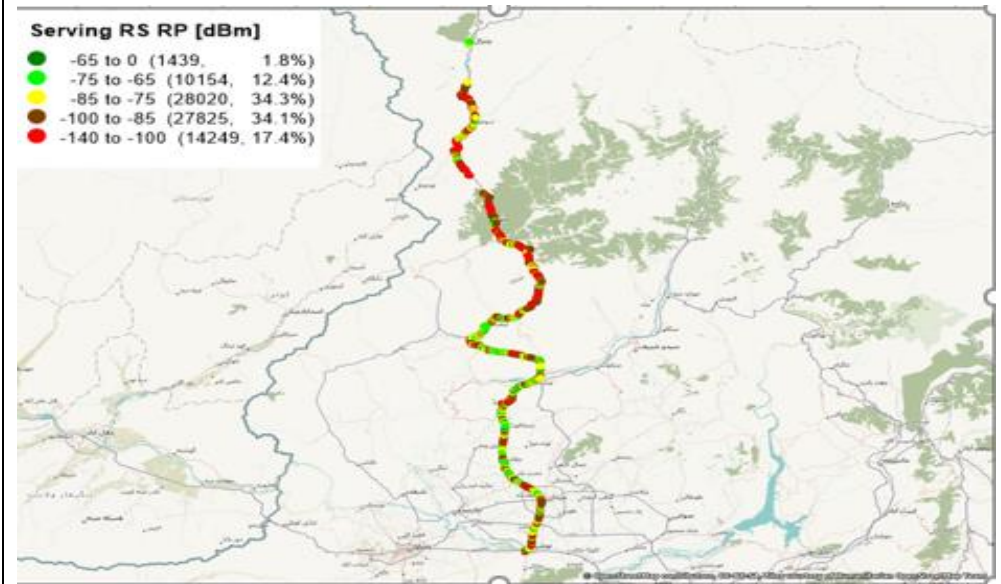


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

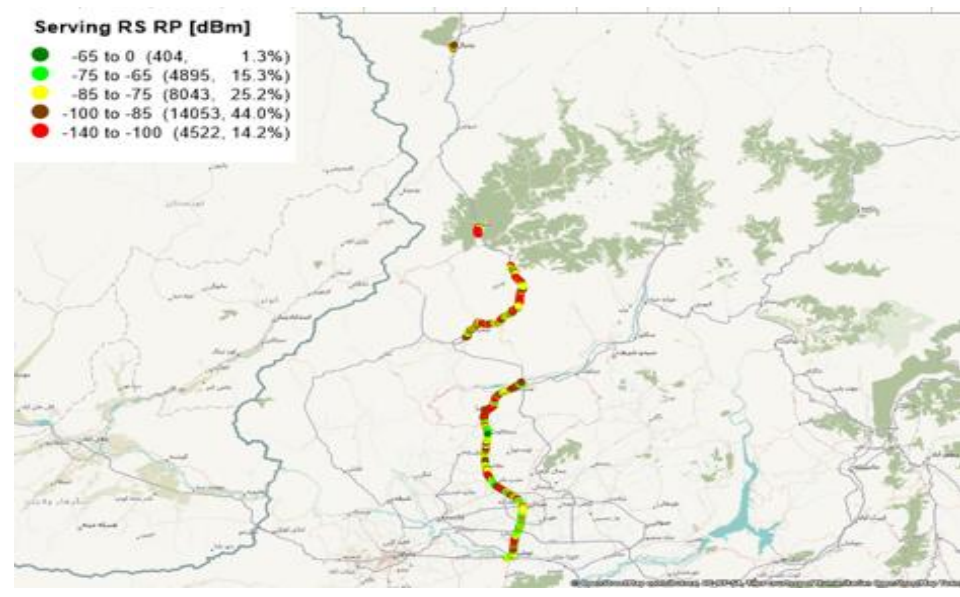
JAZZ 4G NETWORK COVERAGE – NOWSHERA TO CHITRAL



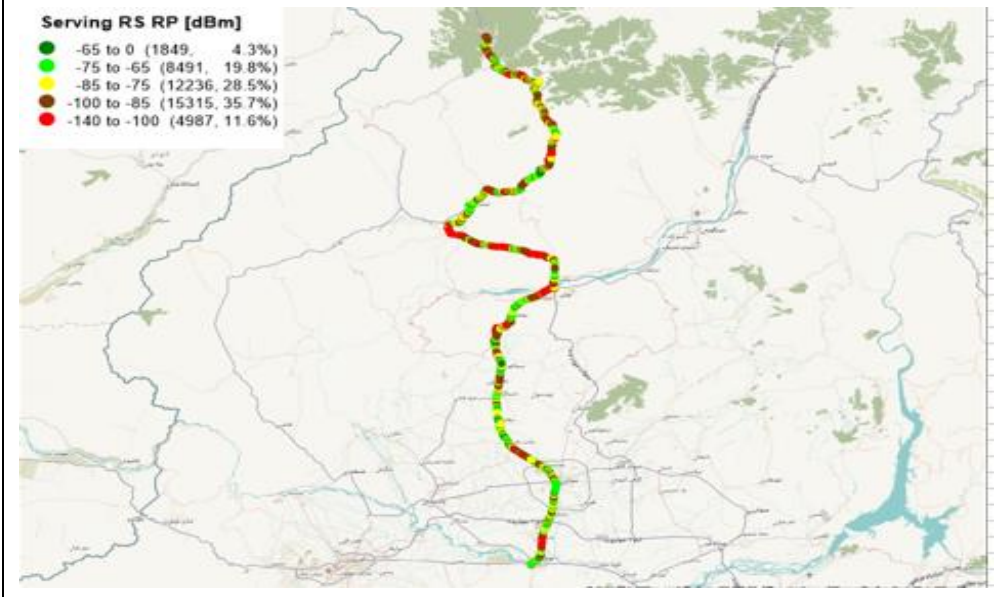
TELEOR 4G NETWORK COVERAGE – NOWSHERA TO CHITRAL



UFONE 4G NETWORK COVERAGE – NOWSHERA TO CHITRAL

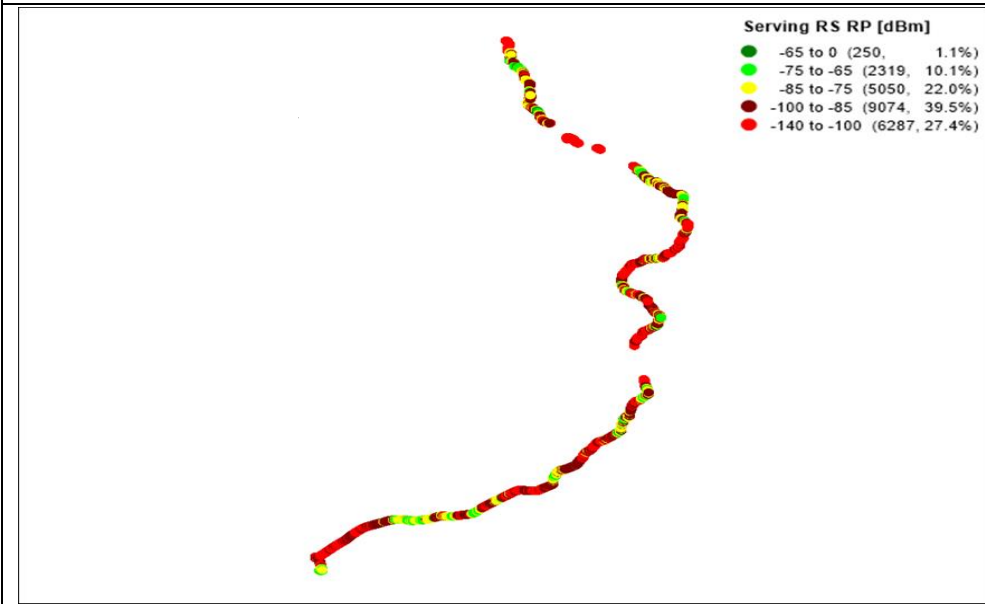


ZONG 4G NETWORK COVERAGE – NOWSHERA TO CHITRAL

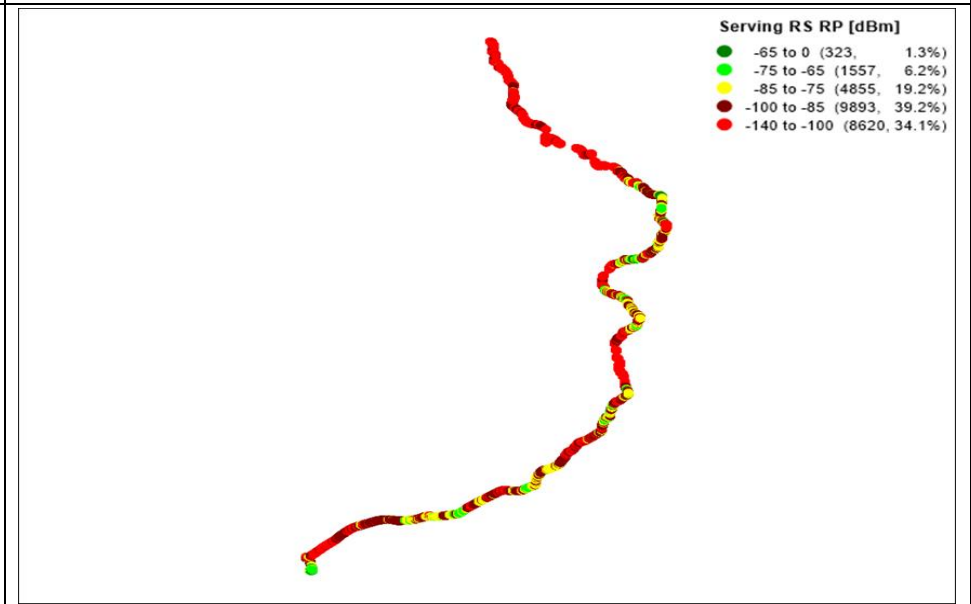


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

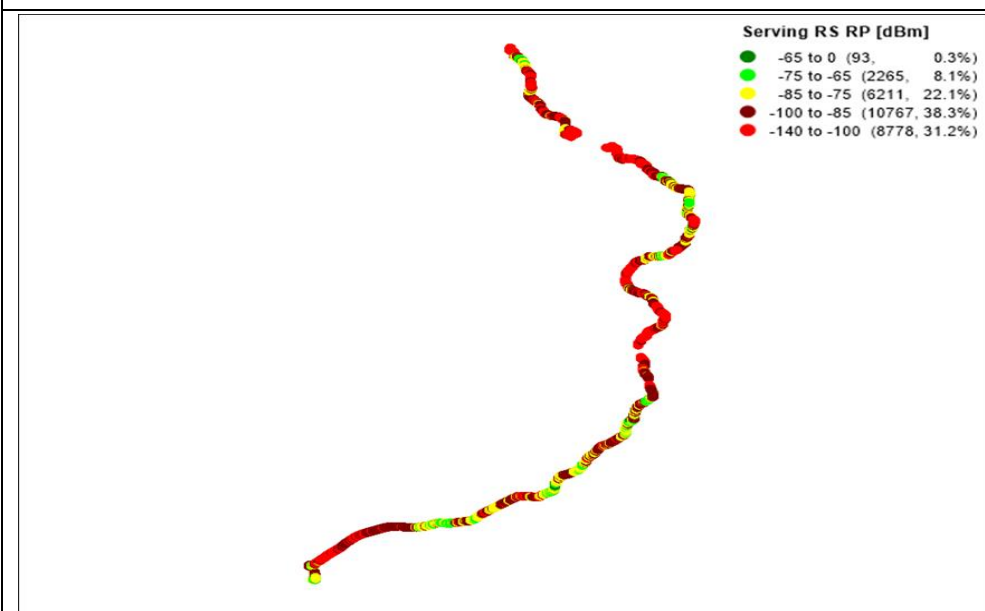
JAZZ 4G NETWORK COVERAGE – HAZARA MOTORWAY



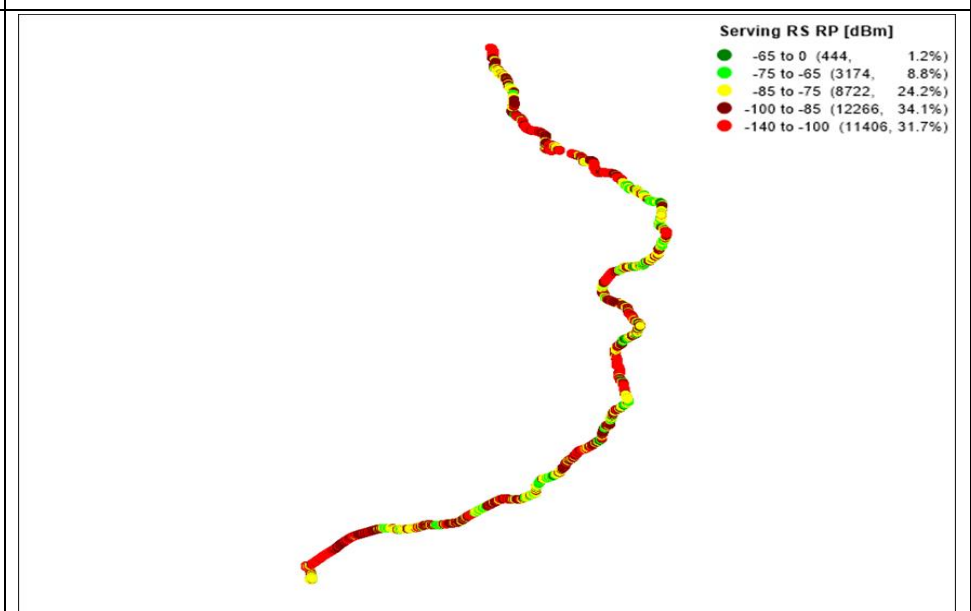
TELENOR 4G NETWORK COVERAGE – HAZARA MOTORWAY



UFONE 4G NETWORK COVERAGE – HAZARA MOTORWAY

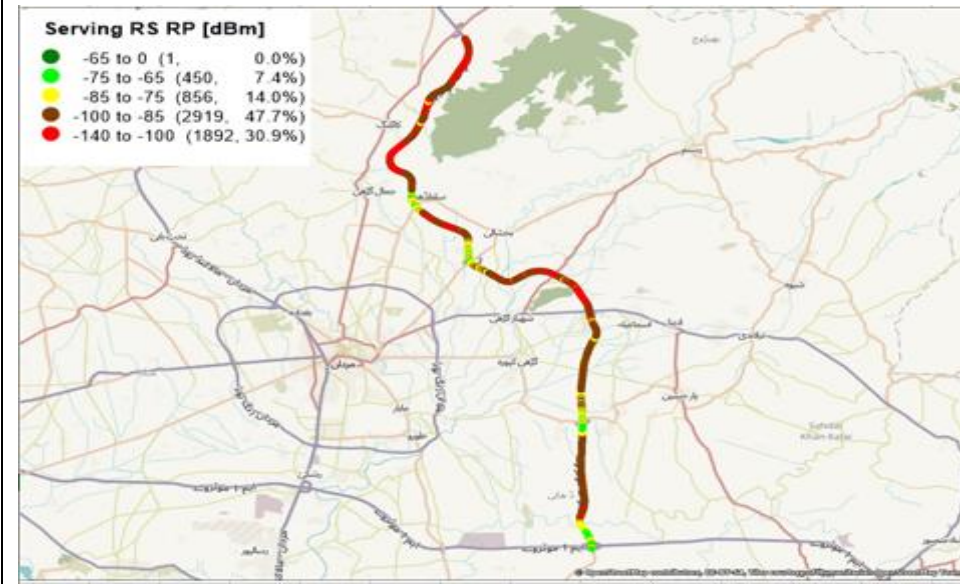


ZONG 4G NETWORK COVERAGE – HAZARA MOTORWAY

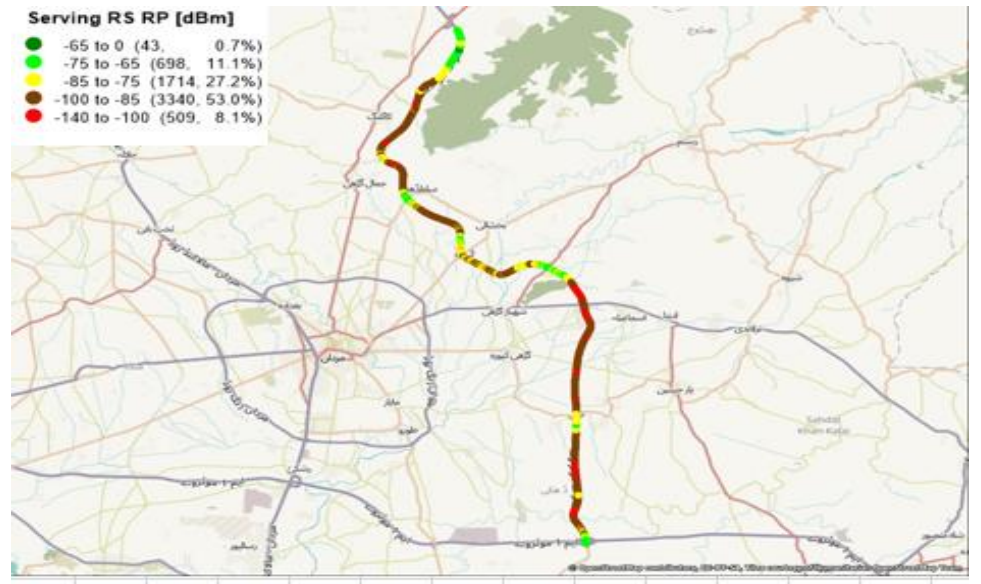


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

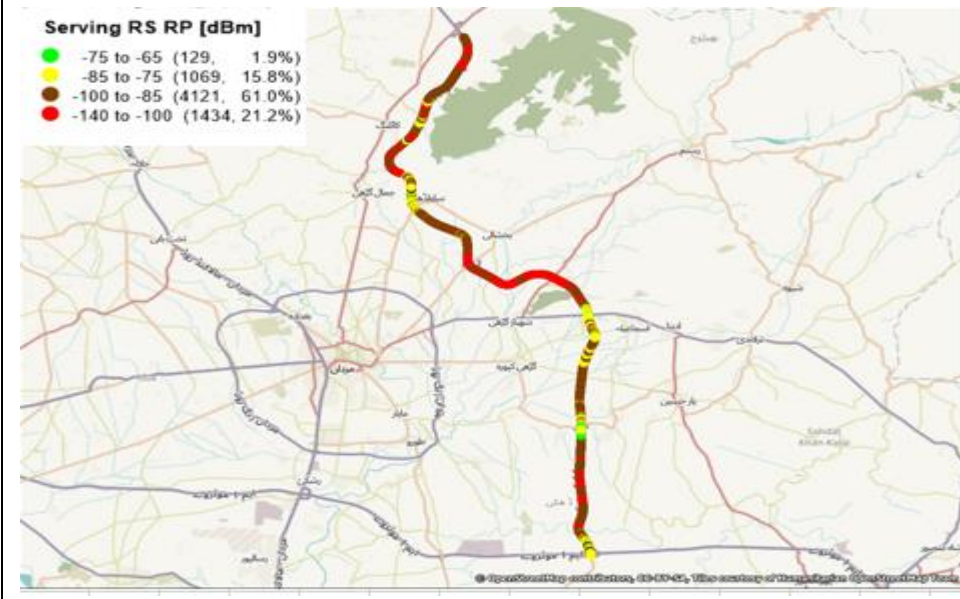
JAZZ 4G NETWORK COVERAGE – SWABI TO KATLANG



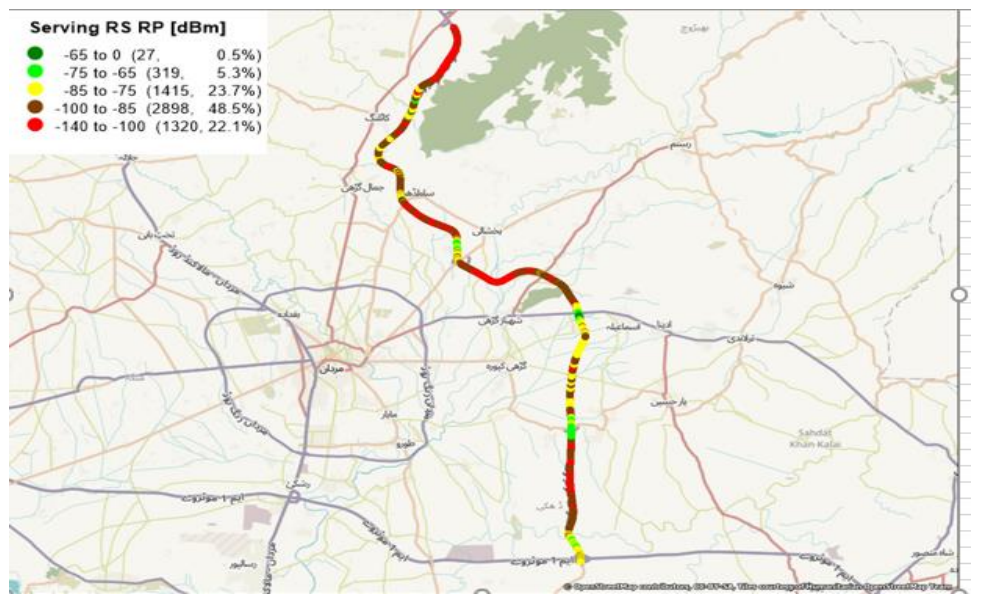
TELENOR 4G NETWORK COVERAGE – SWABI TO KATLANG



UFONE 4G NETWORK COVERAGE – SWABI TO KATLANG

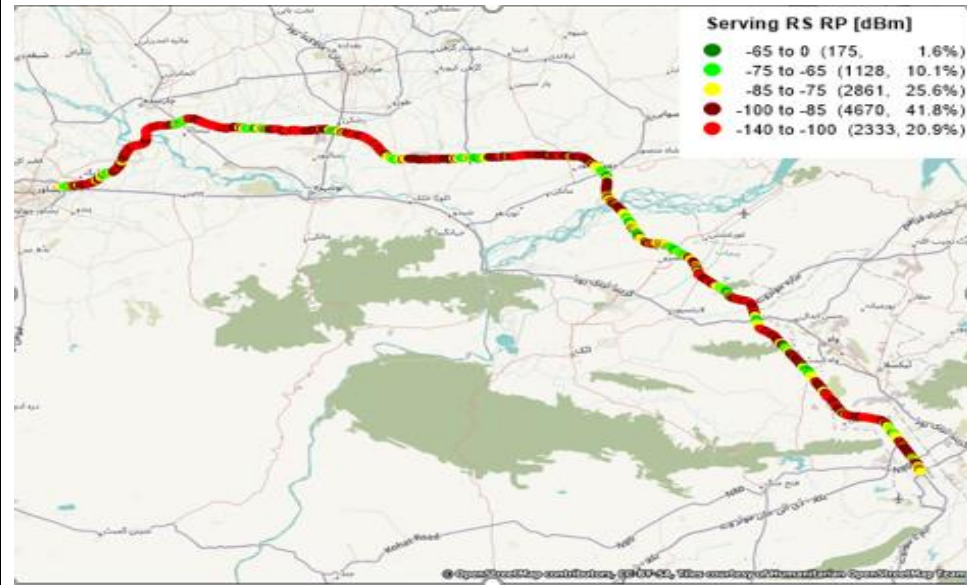


ZONG 4G NETWORK COVERAGE – SWABI TO KATLANG

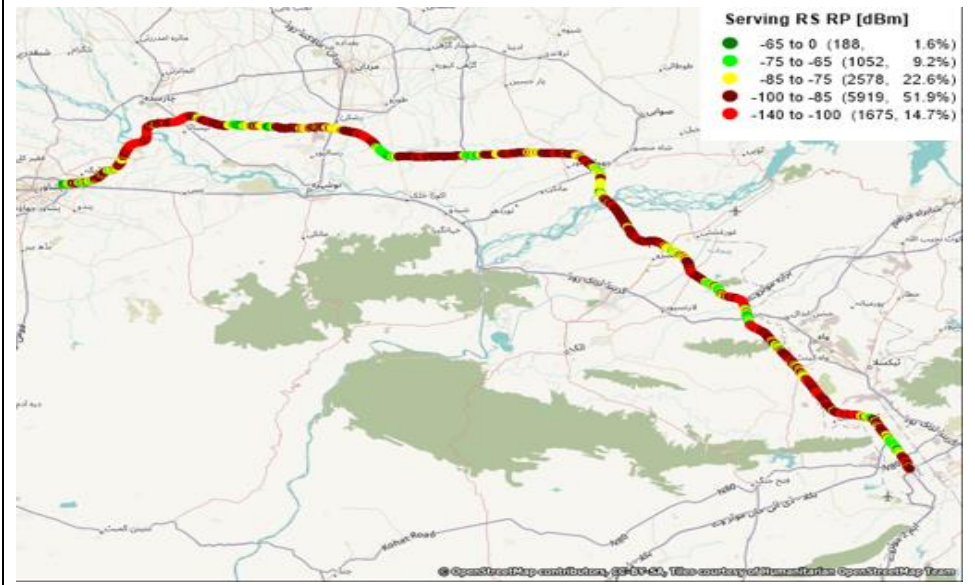


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

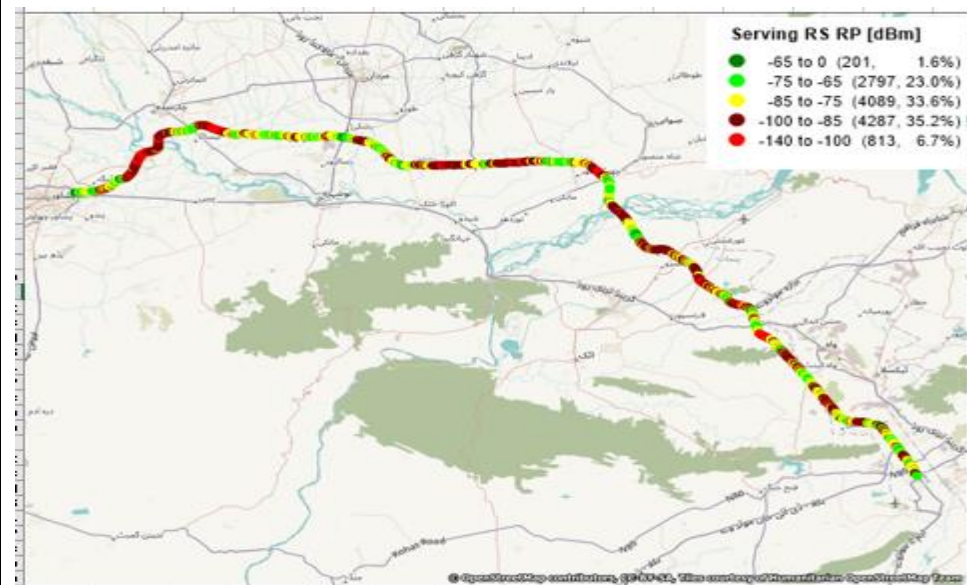
JAZZ 4G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR



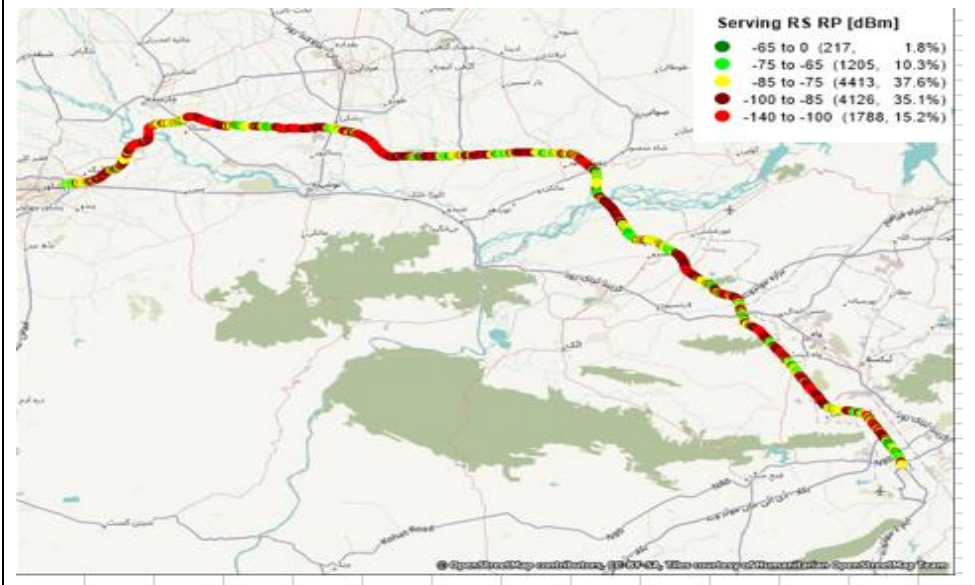
TELENOR 4G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR



UFONE 4G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR

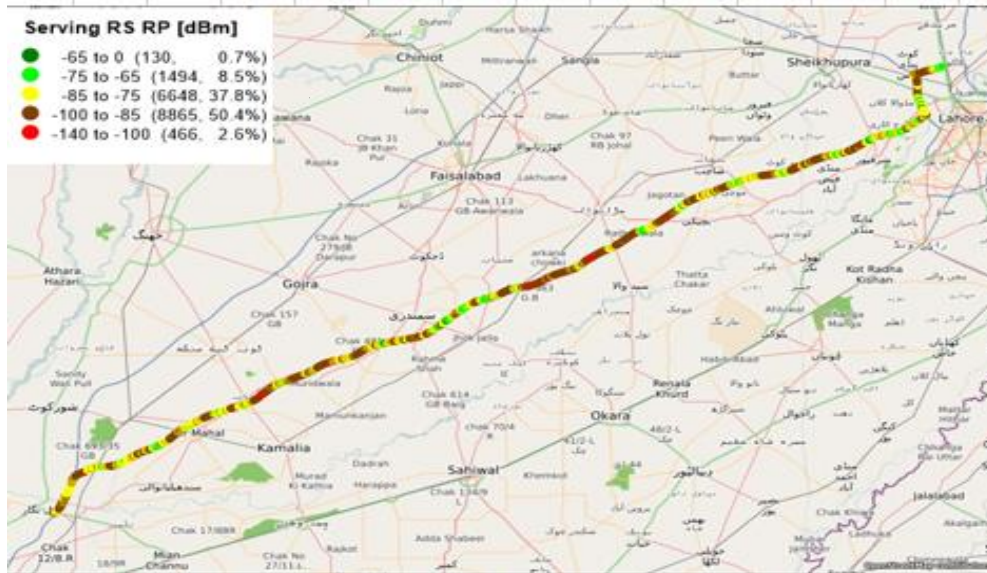


ZONG 4G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR

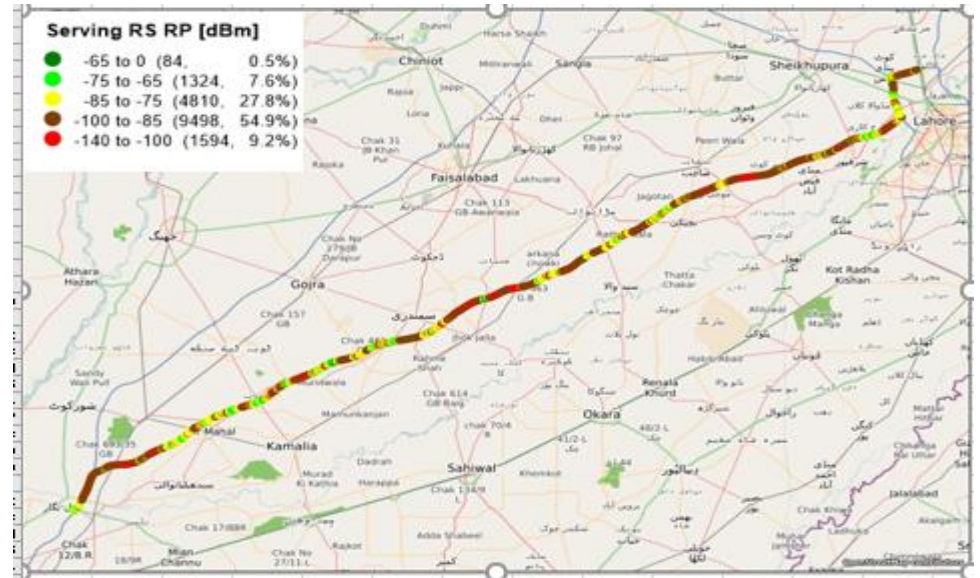


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

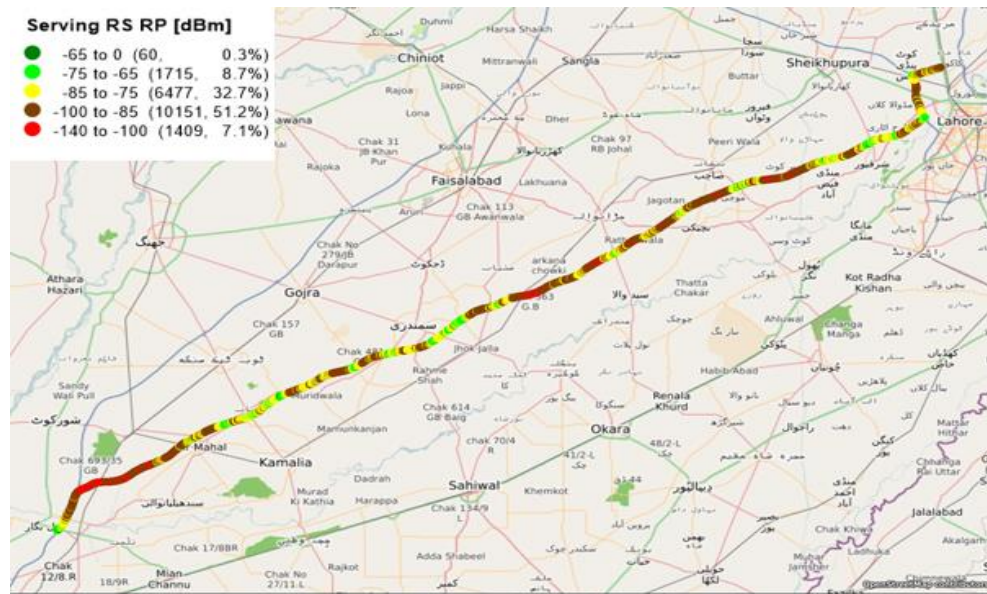
JAZZ 4G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM



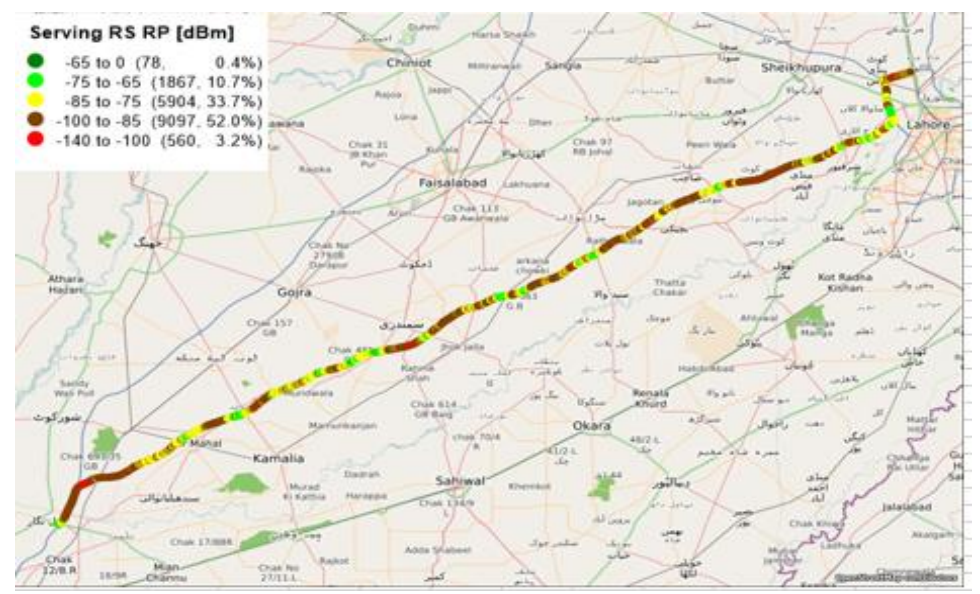
TELENOR 4G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM



UFONE 4G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM

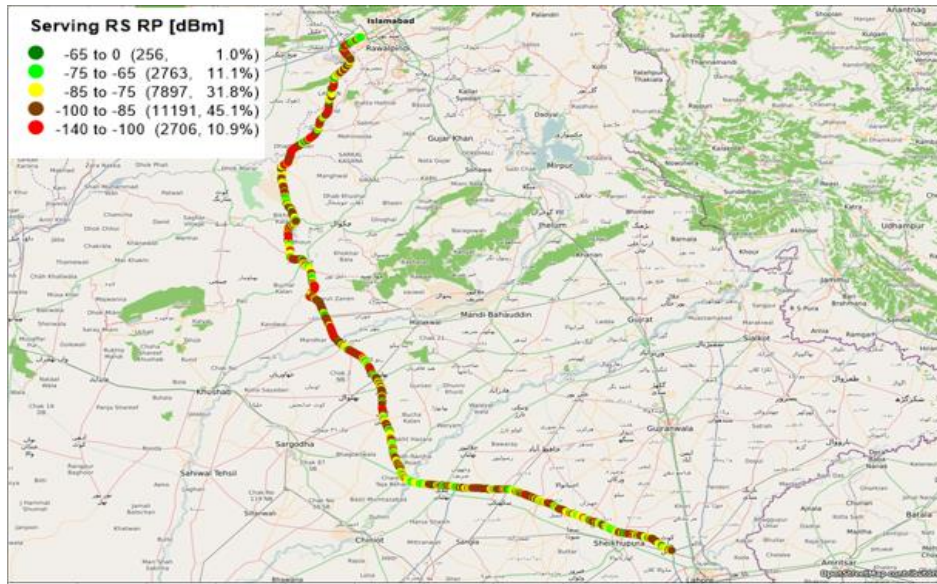


ZONG 4G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM

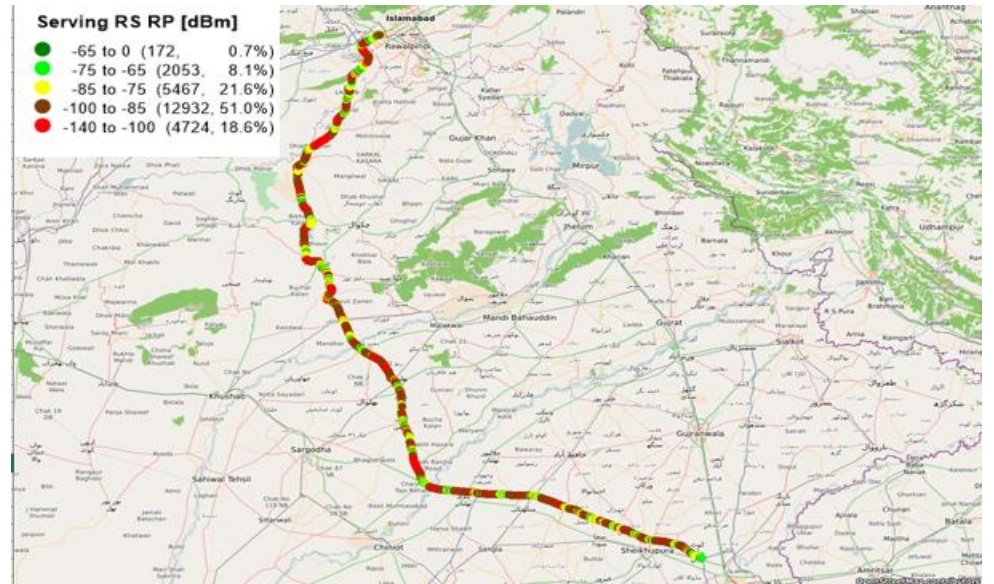


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

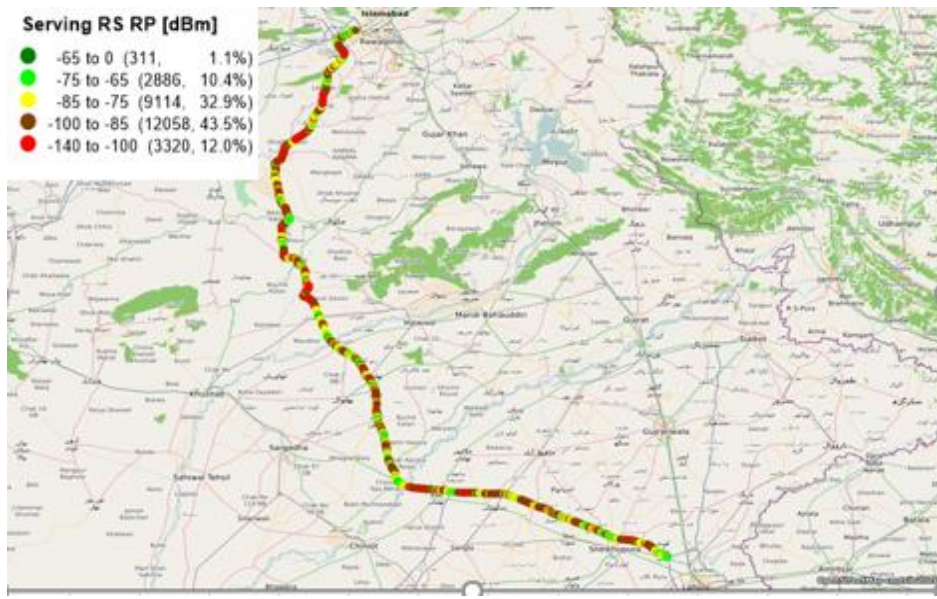
JAZZ 4G NETWORK COVERAGE – LAHORE TO ISLAMABAD



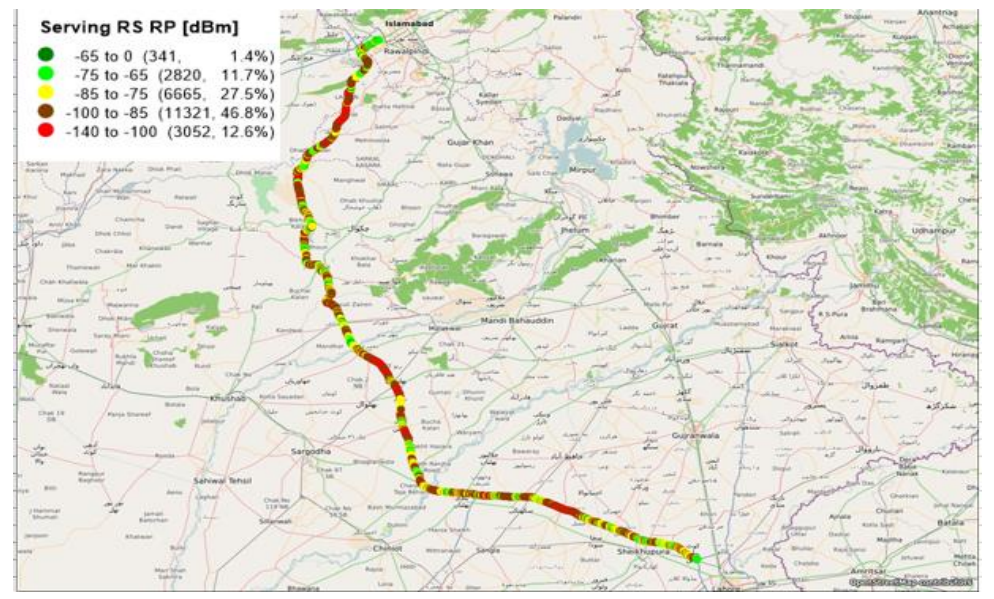
TELEOR 4G NETWORK COVERAGE – LAHORE TO ISLAMABAD



UFONE 4G NETWORK COVERAGE – LAHORE TO ISLAMABAD

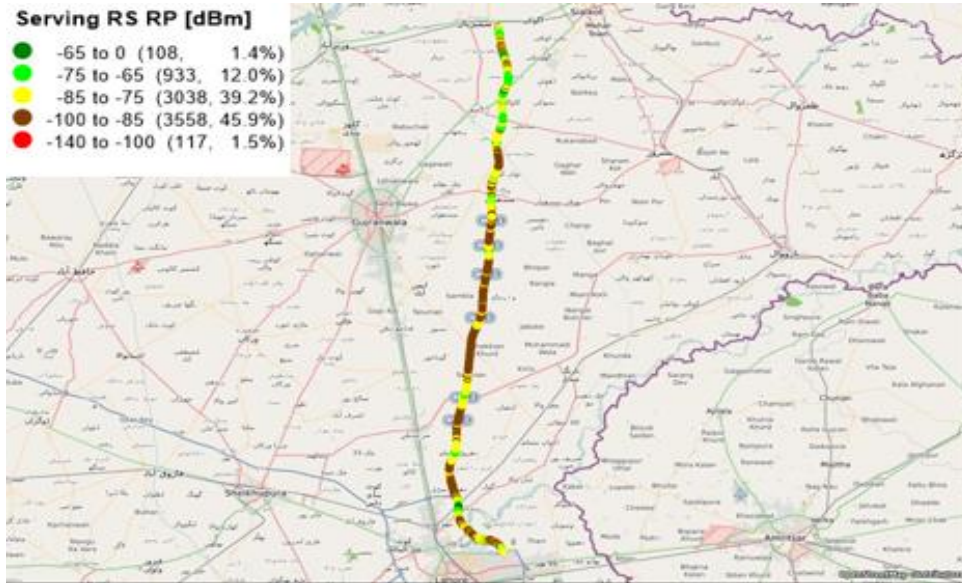


ZONG 4G NETWORK COVERAGE – LAHORE TO ISLAMABAD

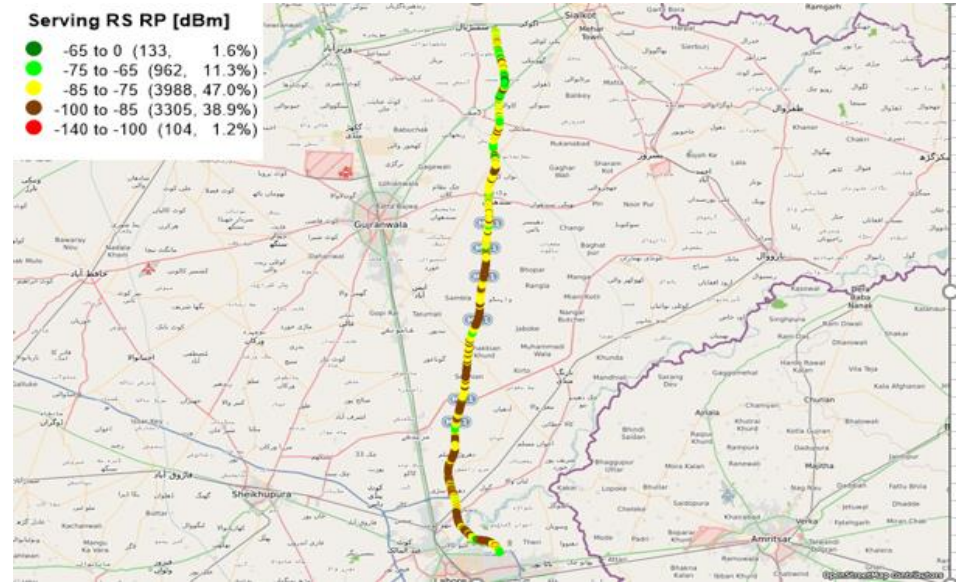
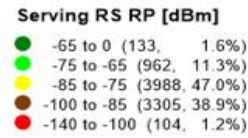


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

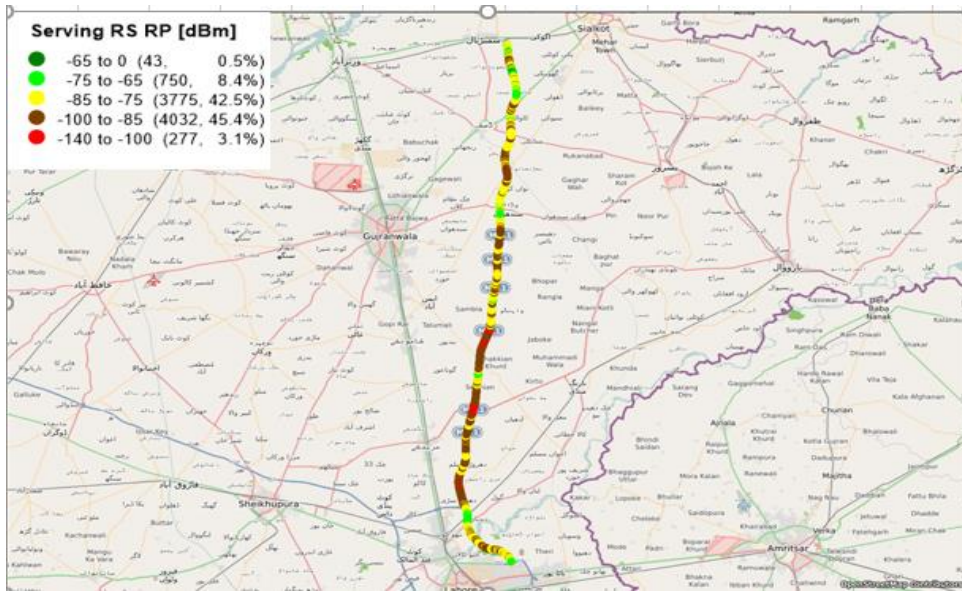
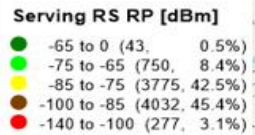
JAZZ 4G NETWORK COVERAGE – LAHORE TO SIALKOT



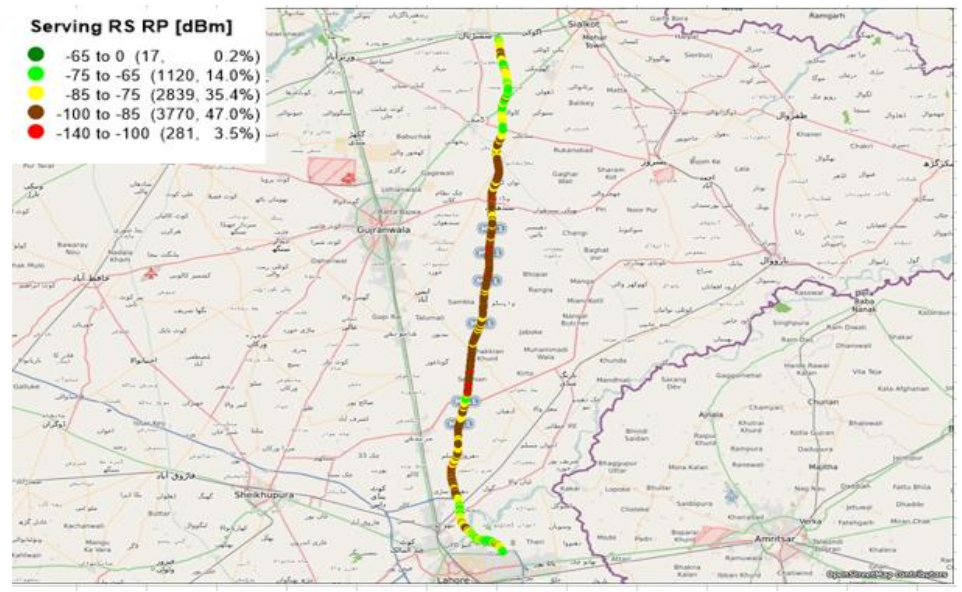
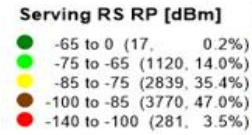
TELEOR 4G NETWORK COVERAGE – LAHORE TO SIALKOT



UFONE 4G NETWORK COVERAGE – LAHORE TO SIALKOT

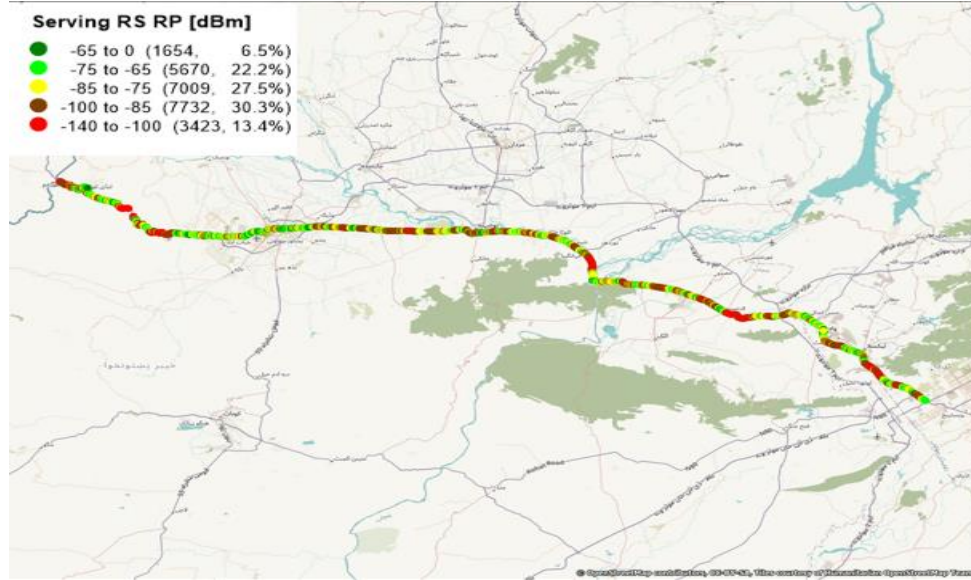


ZONG 4G NETWORK COVERAGE – LAHORE TO SIALKOT

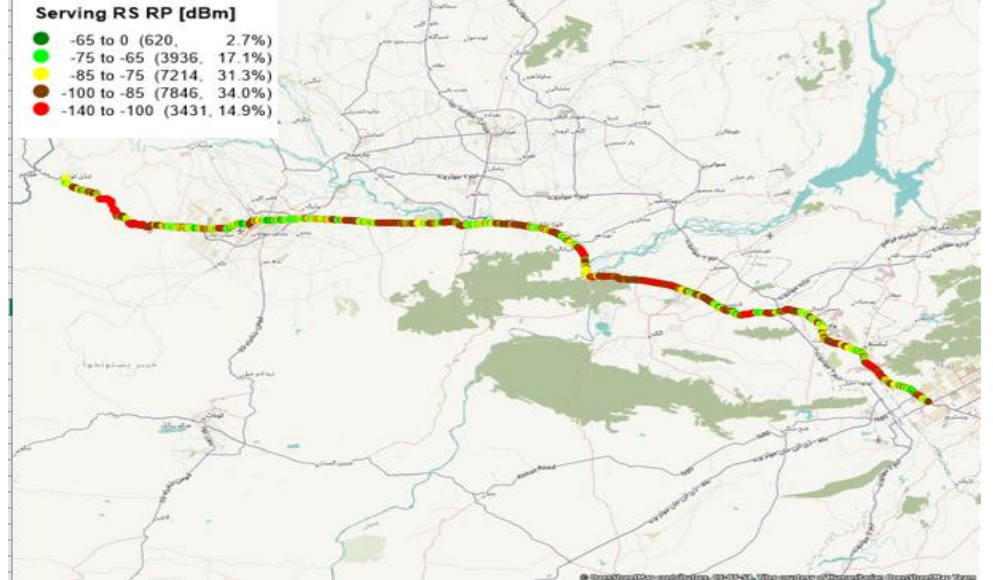


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

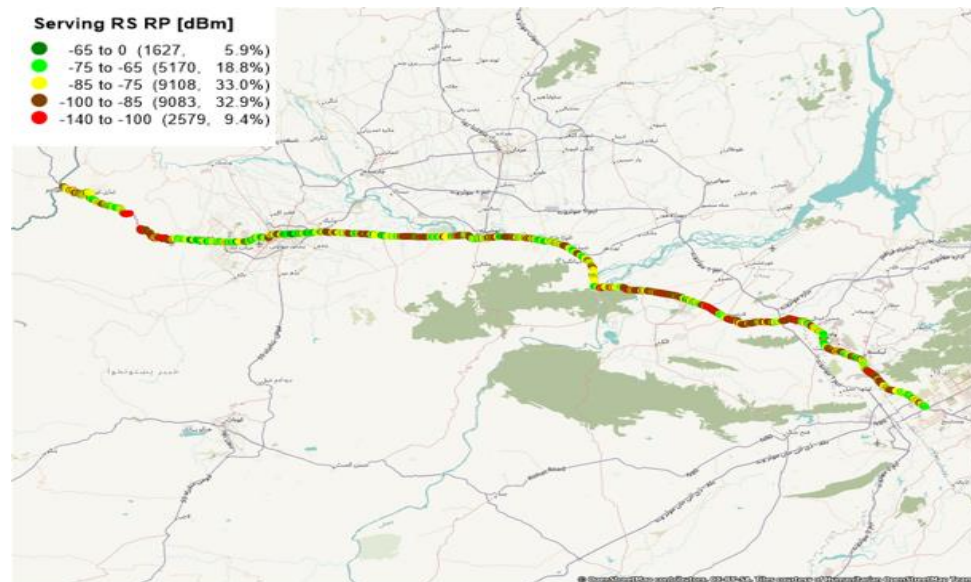
JAZZ 4G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



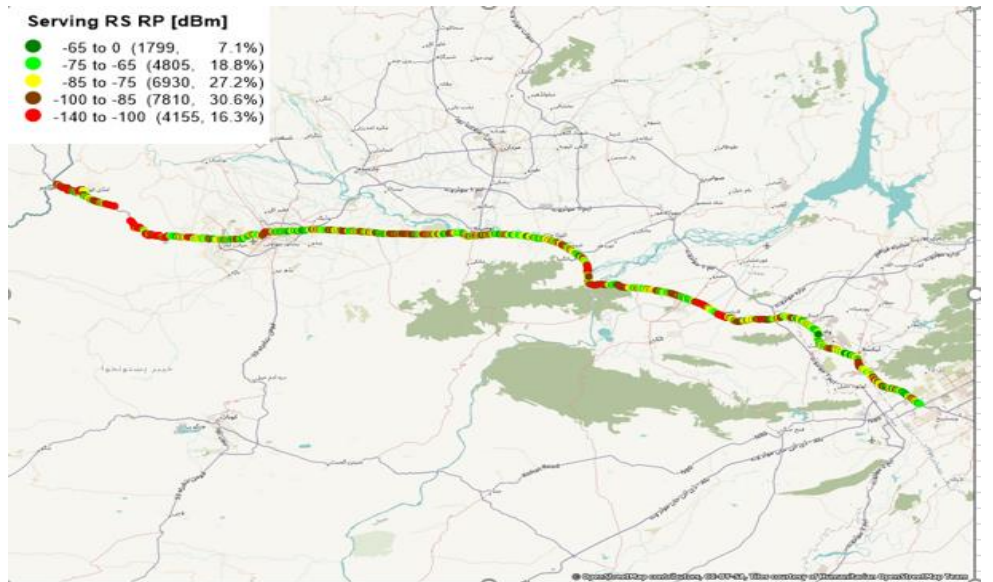
TELENOR 4G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



UFONE 4G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



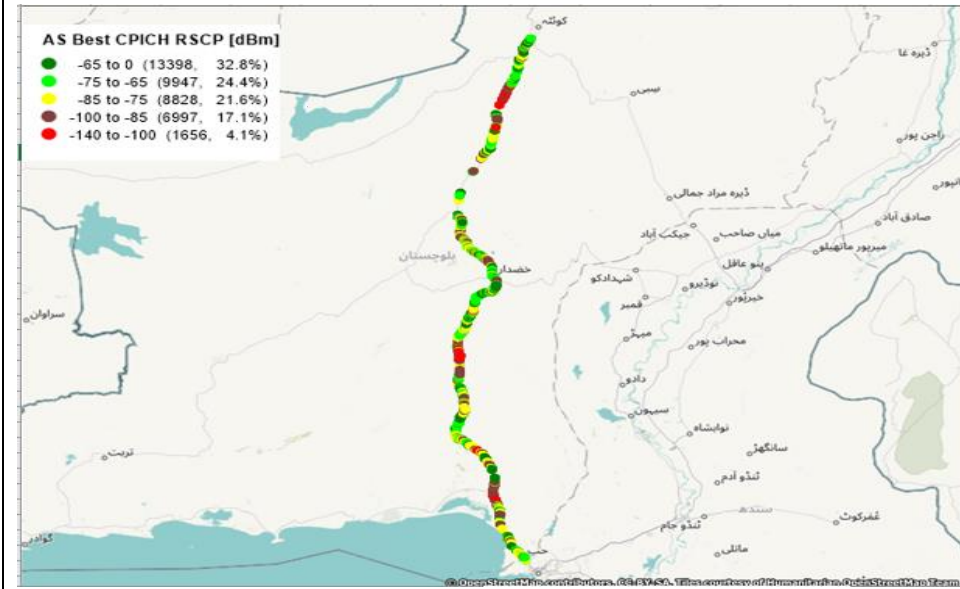
ZONG 4G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



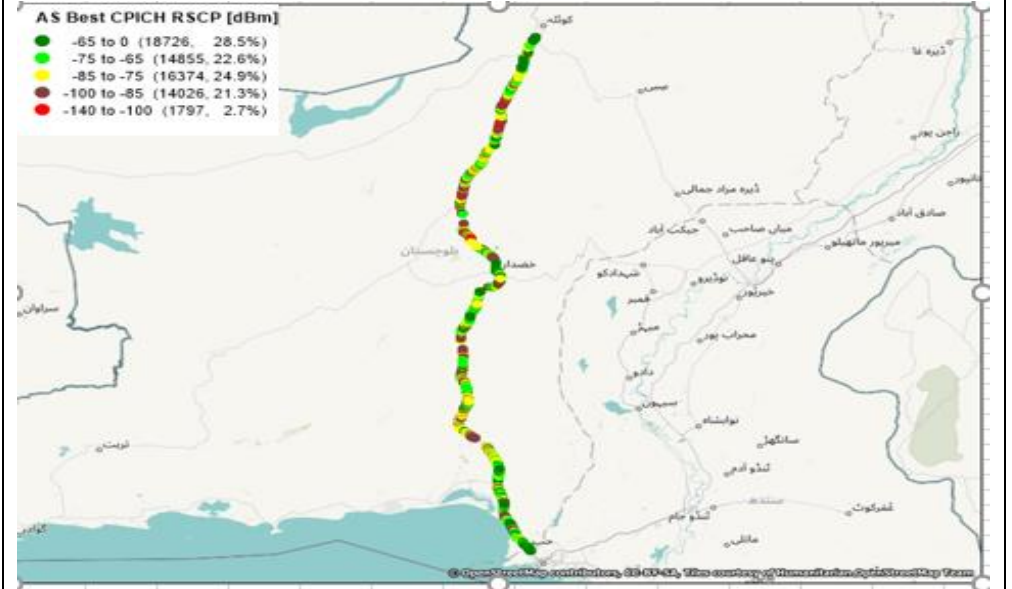
COVERAGE MAPS (3G)

3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

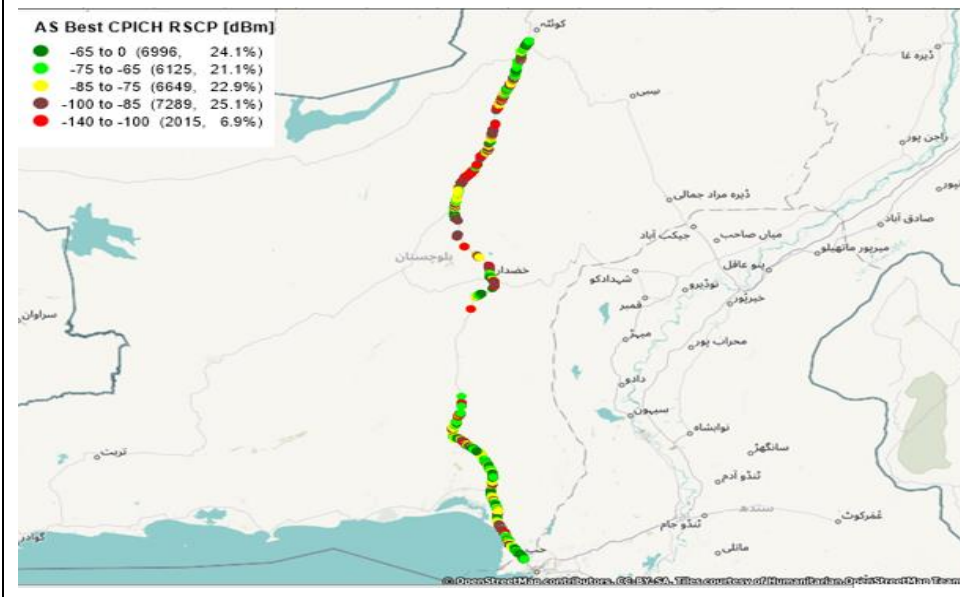
TELENOR 3G NETWORK COVERAGE – QUETTA TO KARACHI



UFONE 3G NETWORK COVERAGE – QUETTA TO KARACHI

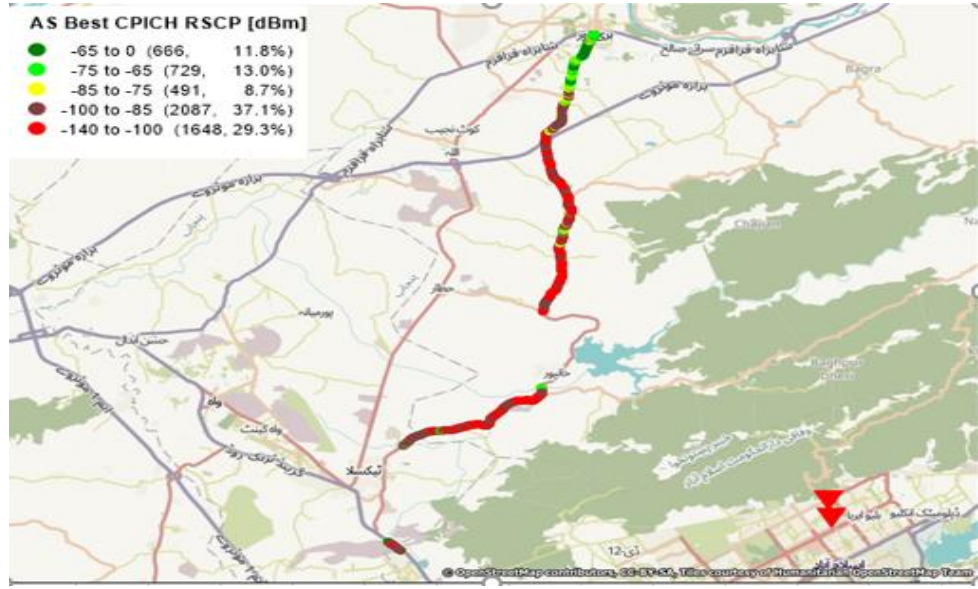


ZONG 3G NETWORK COVERAGE – QUETTA TO KARACHI

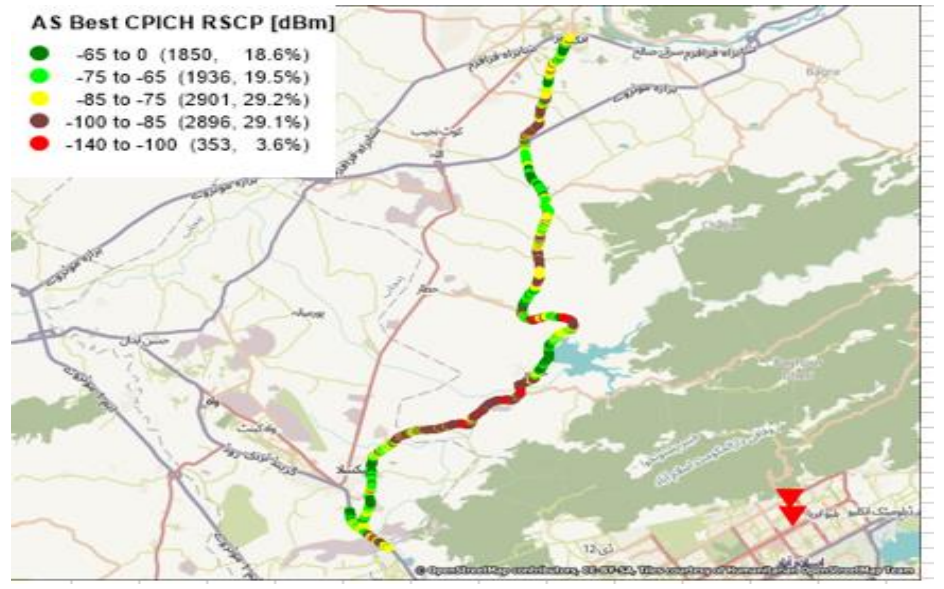


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

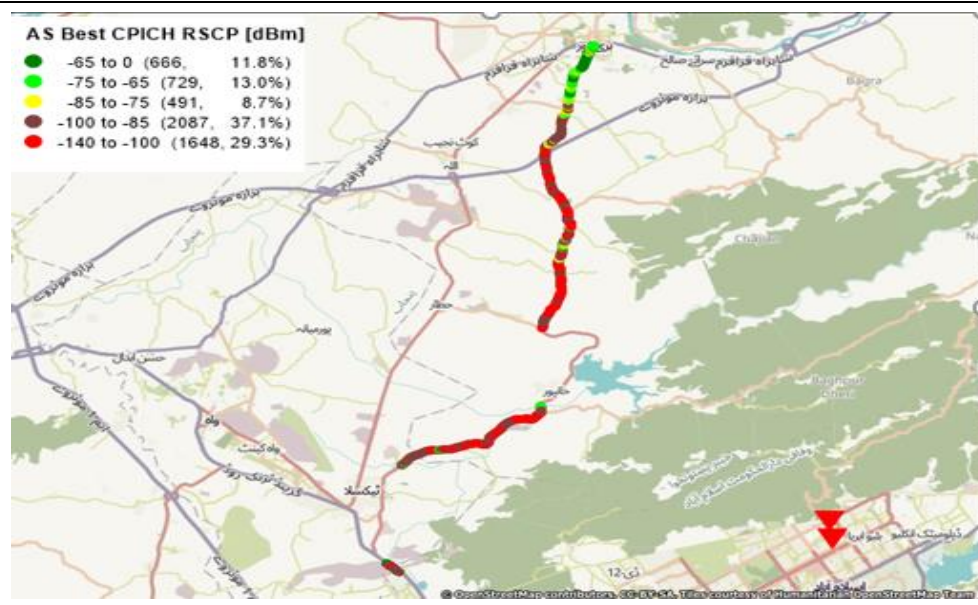
JAZZ 3G NETWORK COVERAGE – HARIPUR TO TAXILA



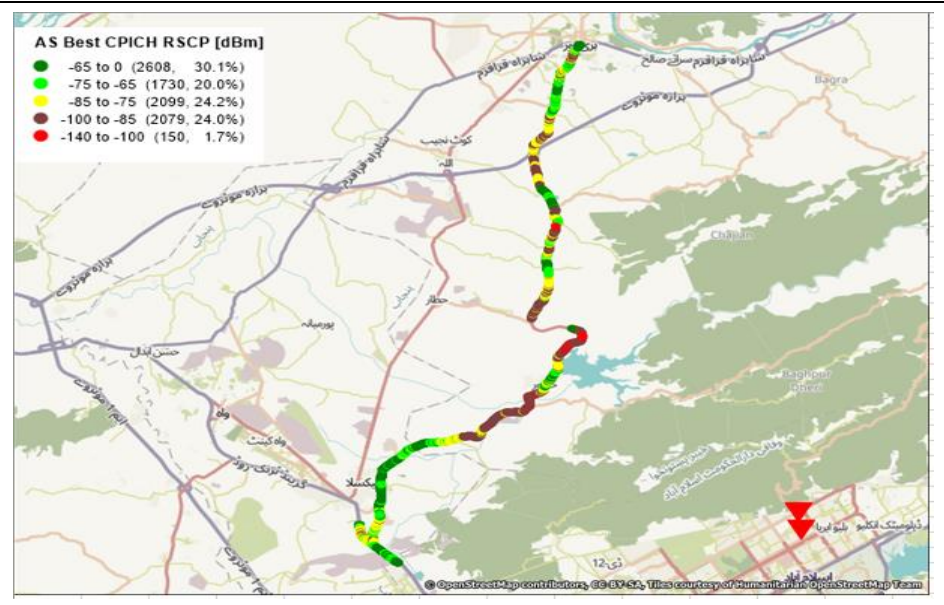
TELENOR 3G NETWORK COVERAGE – HARIPUR TO TAXILA



UFONE 3G NETWORK COVERAGE – HARIPUR TO TAXILA

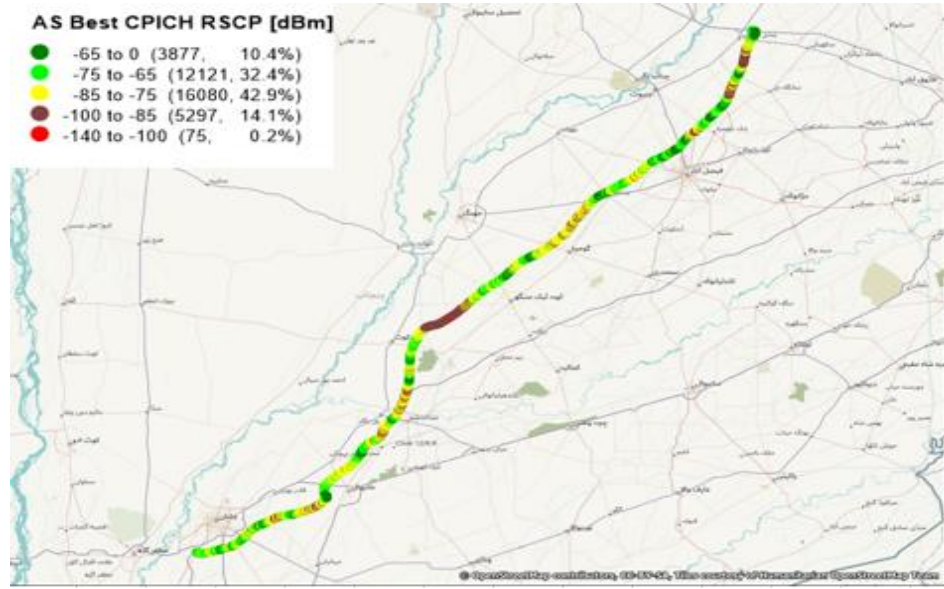


ZONG 3G NETWORK COVERAGE – HARIPUR TO TAXILA

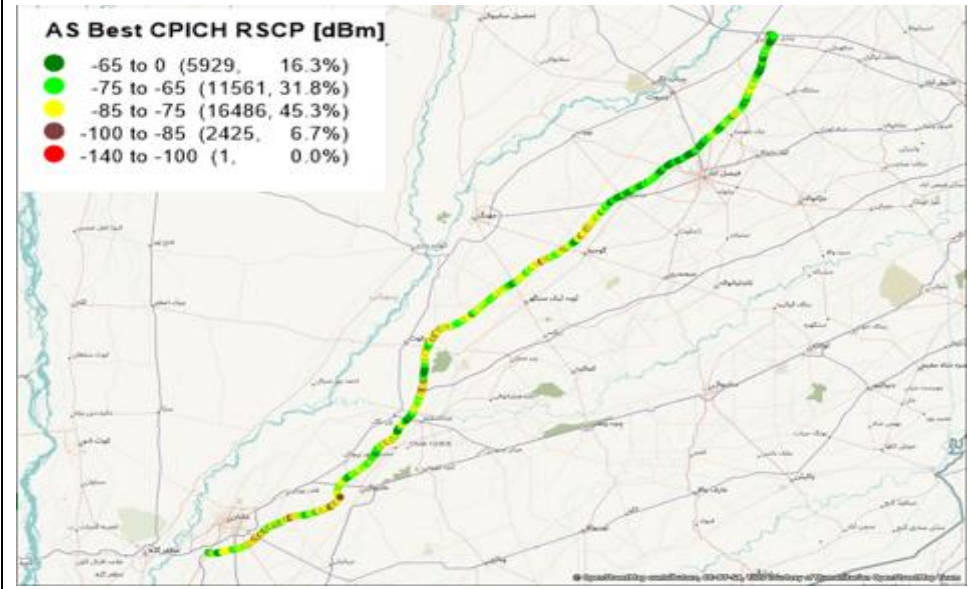


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

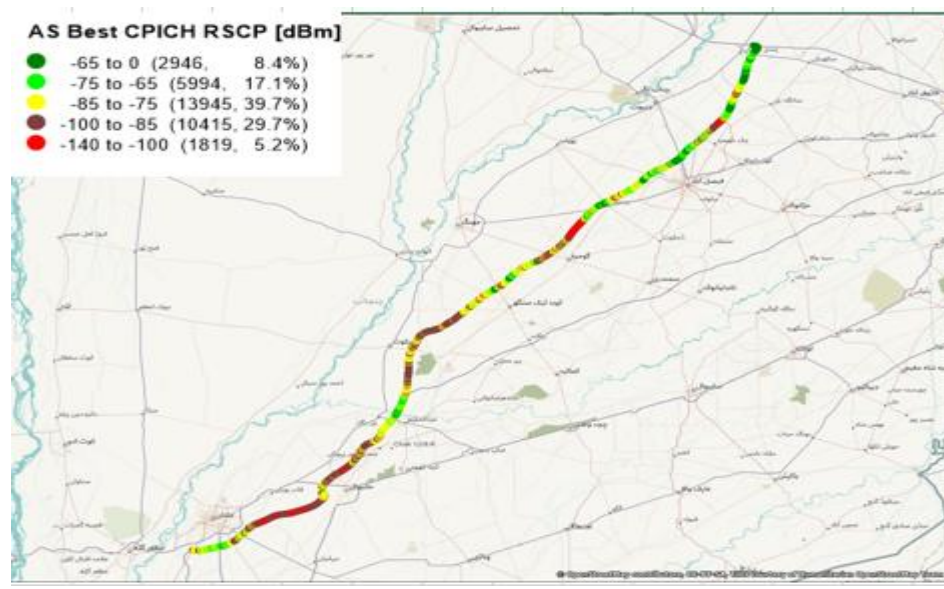
JAZZ 3G NETWORK COVERAGE – PINDI BHATIAN TO MULTAN



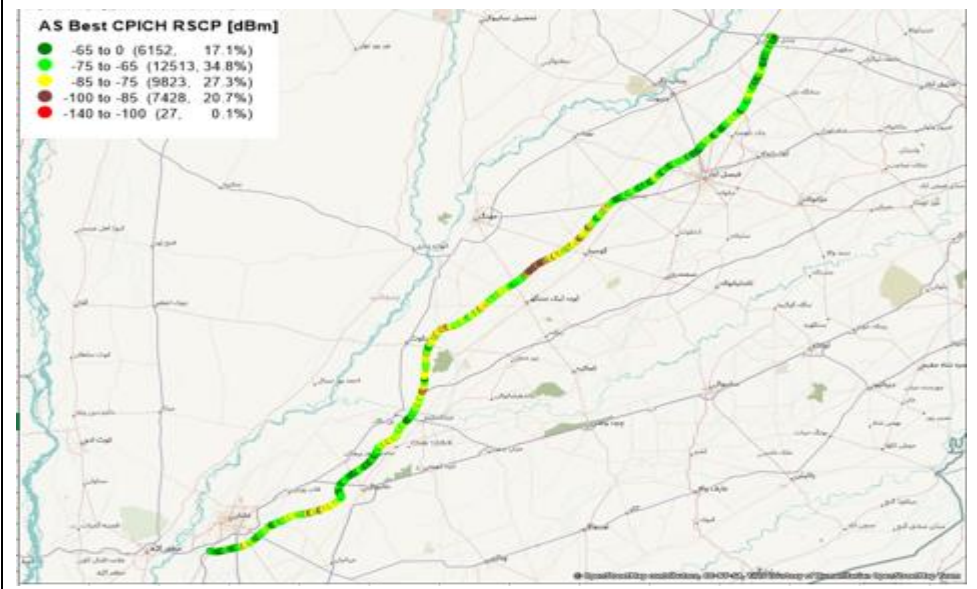
TELENOR 3G NETWORK COVERAGE – PINDI BHATIAN TO MULTAN



UFONE 3G NETWORK COVERAGE – PINDI BHATIAN TO MULTAN

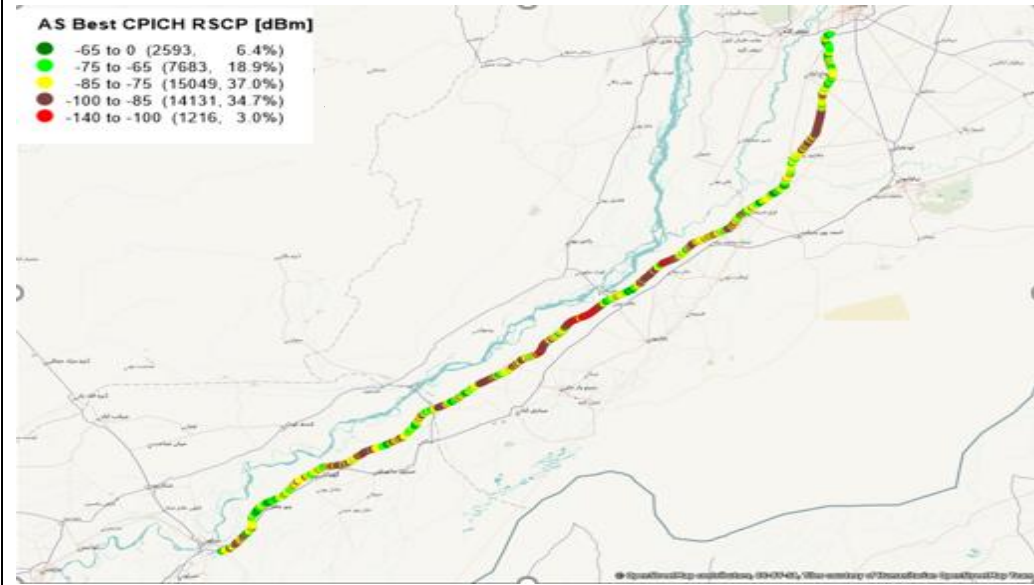


ZONG 3G NETWORK COVERAGE – PINDI BHATIAN TO MULTAN

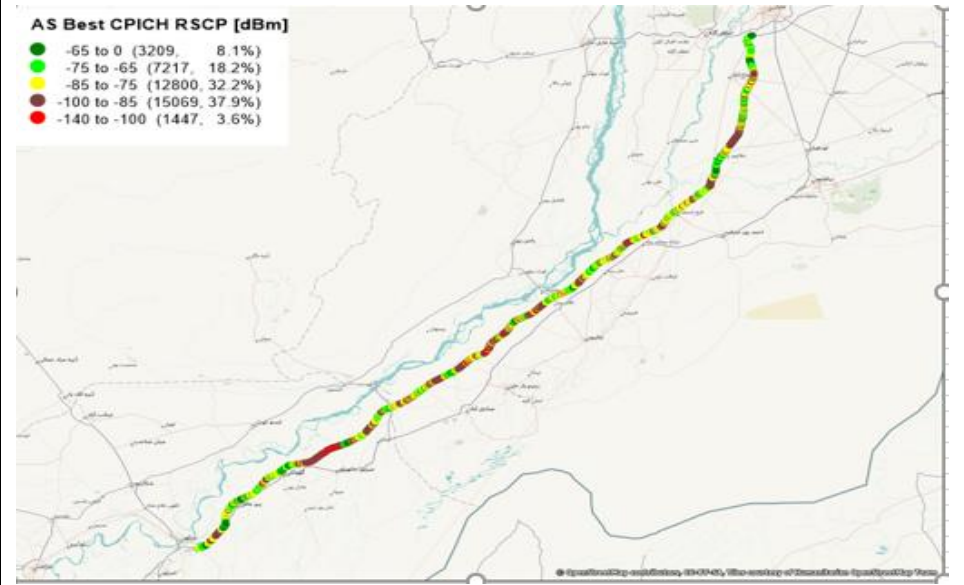


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

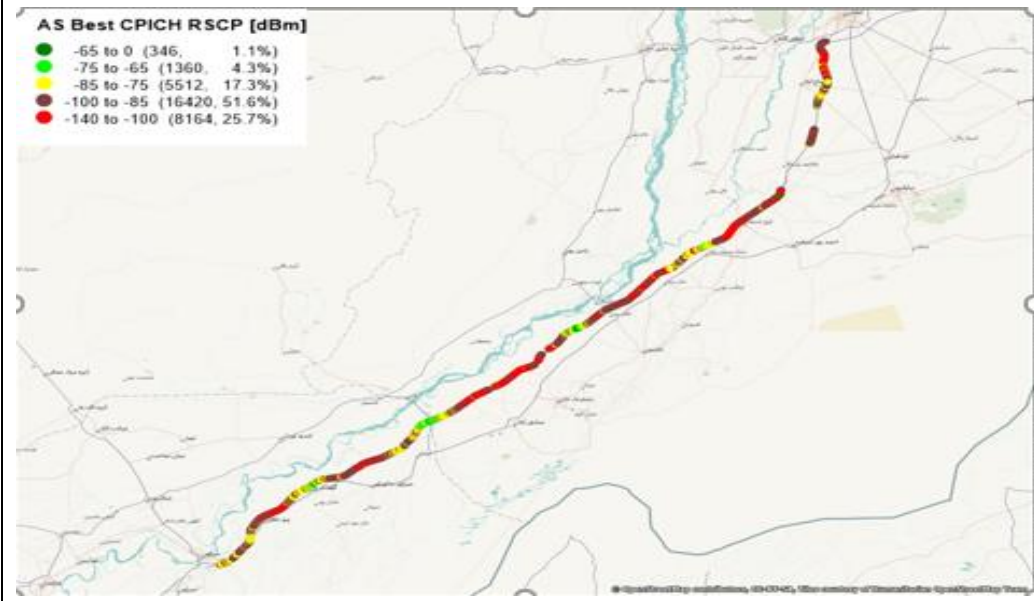
JAZZ 3G NETWORK COVERAGE – MULTAN TO SUKKUR



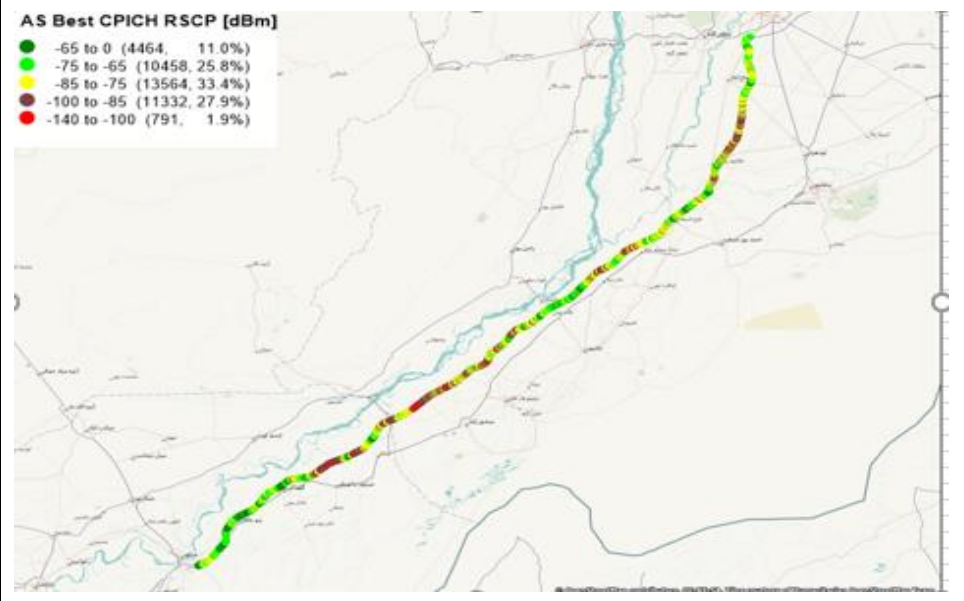
TELENOR 3G NETWORK COVERAGE – MULTAN TO SUKKUR



UFONE 3G NETWORK COVERAGE – MULTAN TO SUKKUR

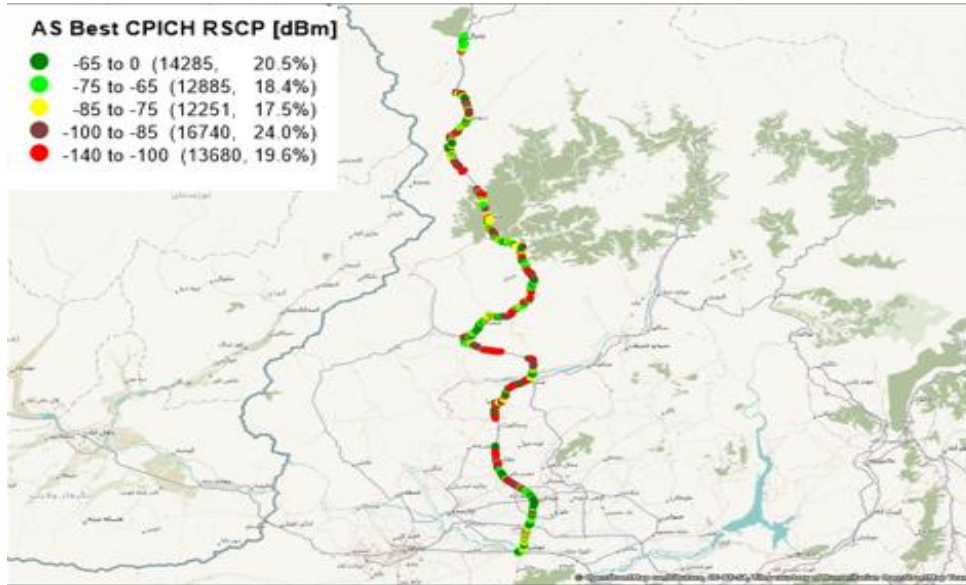


ZONG 3G NETWORK COVERAGE – MULTAN TO SUKKUR

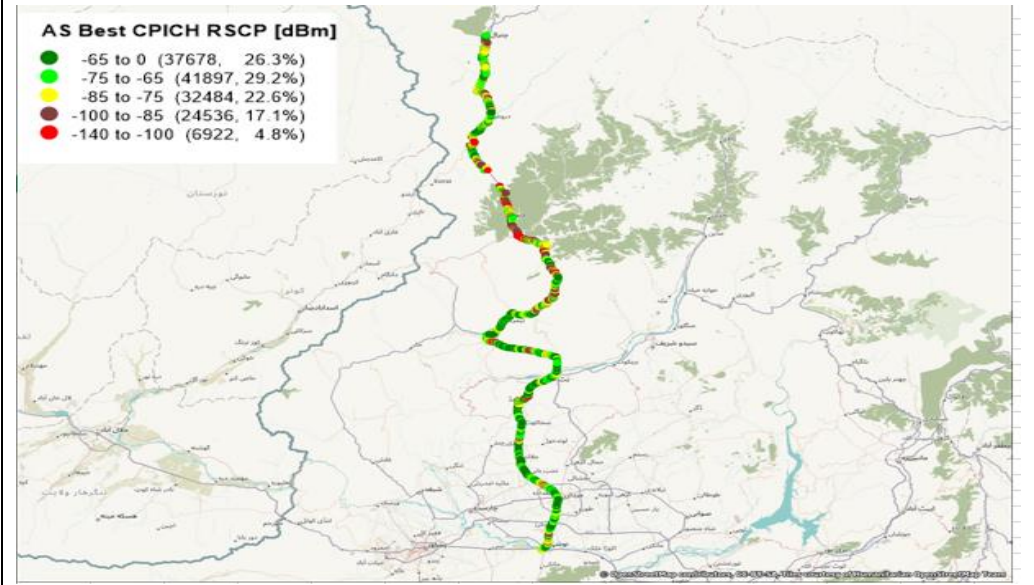


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

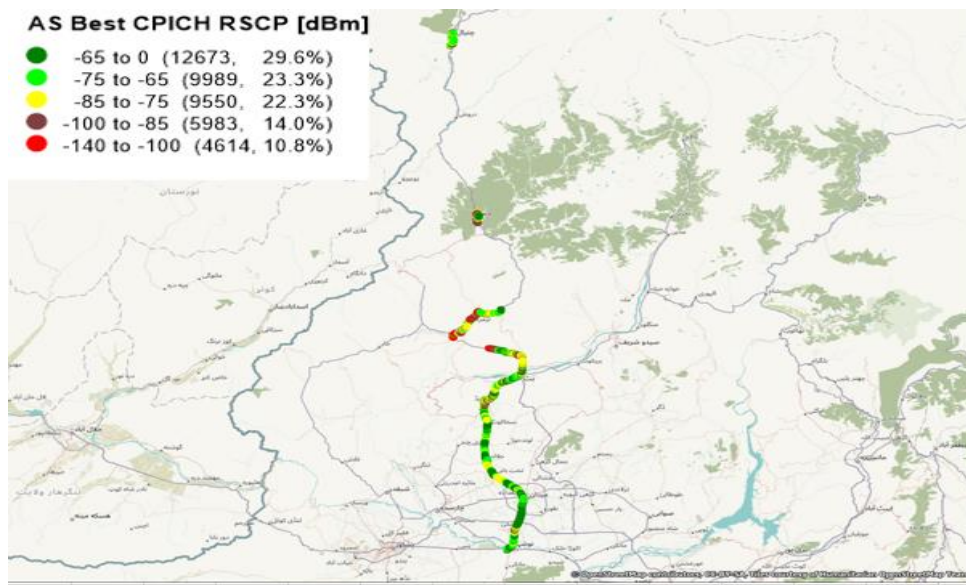
JAZZ 3G NETWORK COVERAGE – NOWSHERA TO CHITRAL



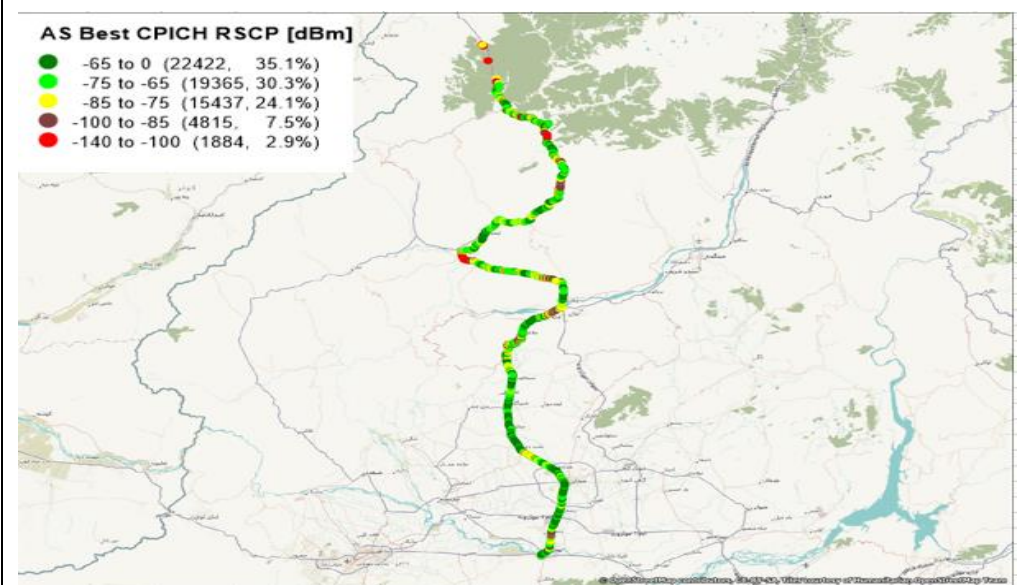
TELENOR 3G NETWORK COVERAGE – NOWSHERA TO CHITRAL



UFONE 3G NETWORK COVERAGE – NOWSHERA TO CHITRAL

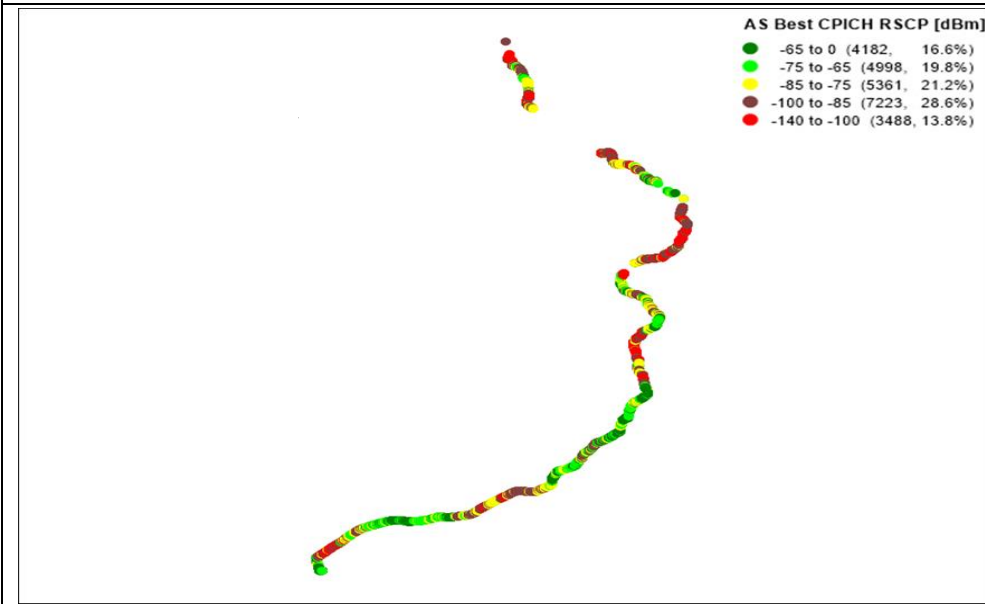


ZONG 3G NETWORK COVERAGE – NOWSHERA TO CHITRAL

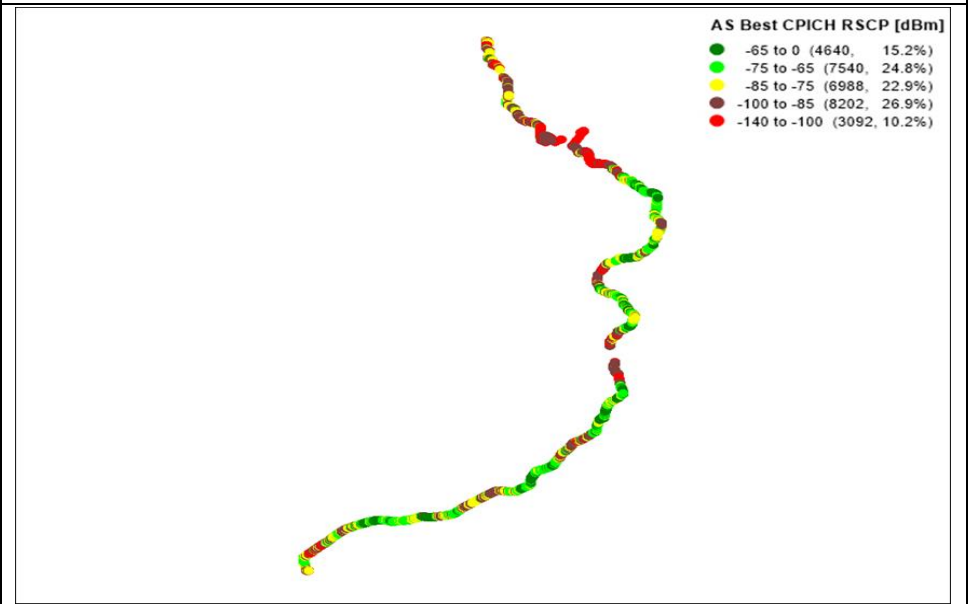


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

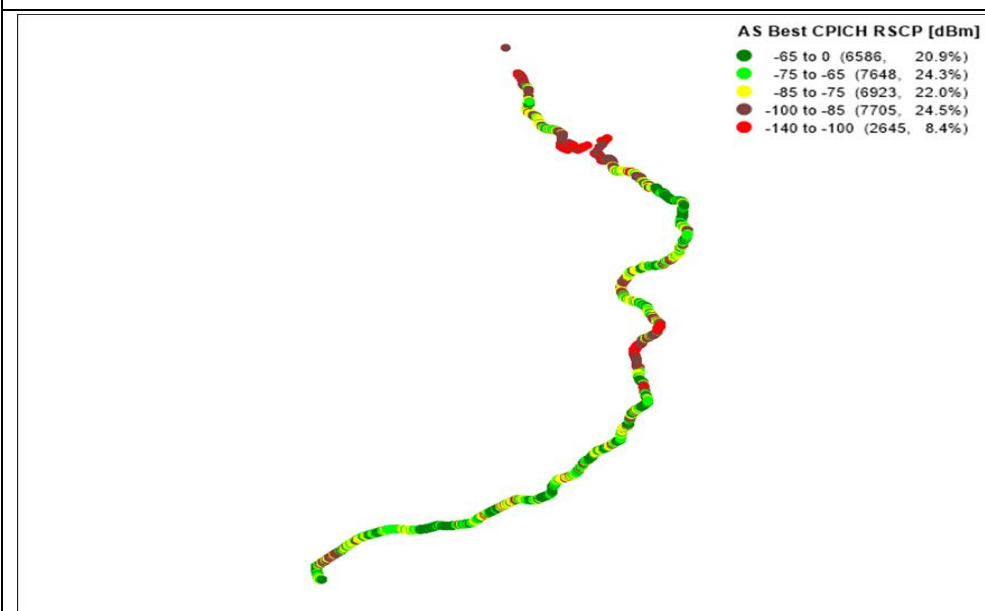
JAZZ 3G NETWORK COVERAGE – HAZARA MOTORWAY



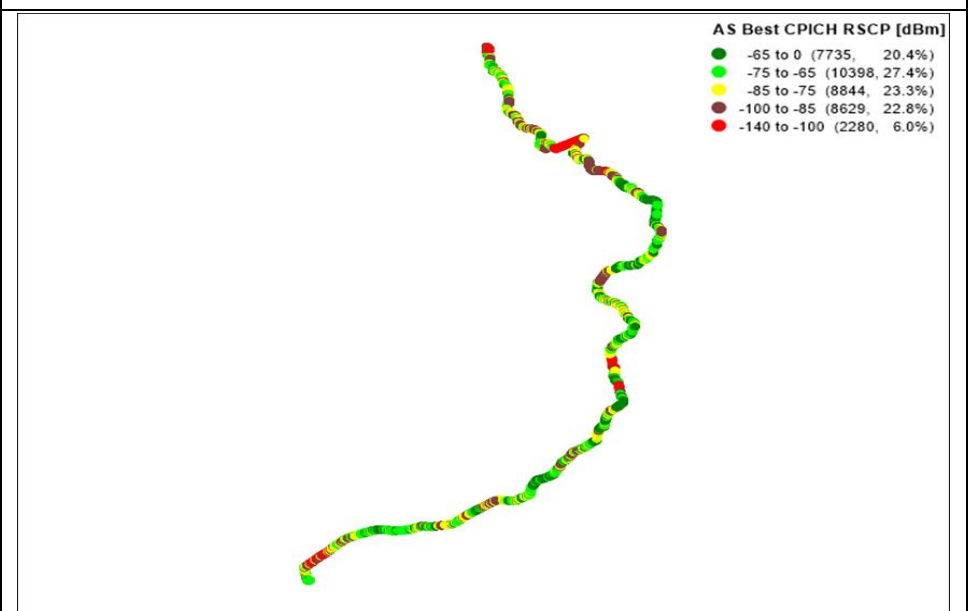
TELENOR 3G NETWORK COVERAGE – HAZARA MOTORWAY



UFONE 3G NETWORK COVERAGE – HAZARA MOTORWAY

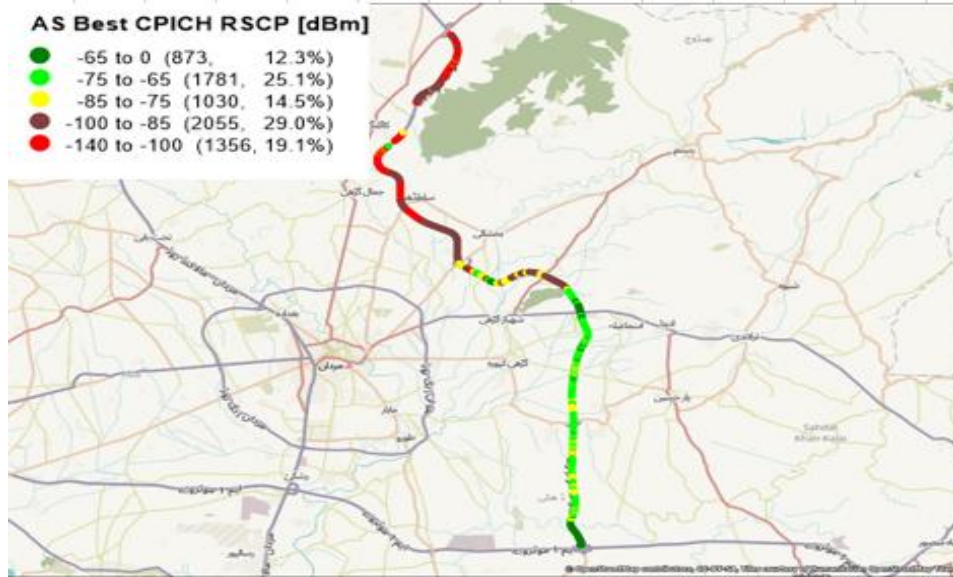


ZONG 3G NETWORK COVERAGE – HAZARA MOTORWAY

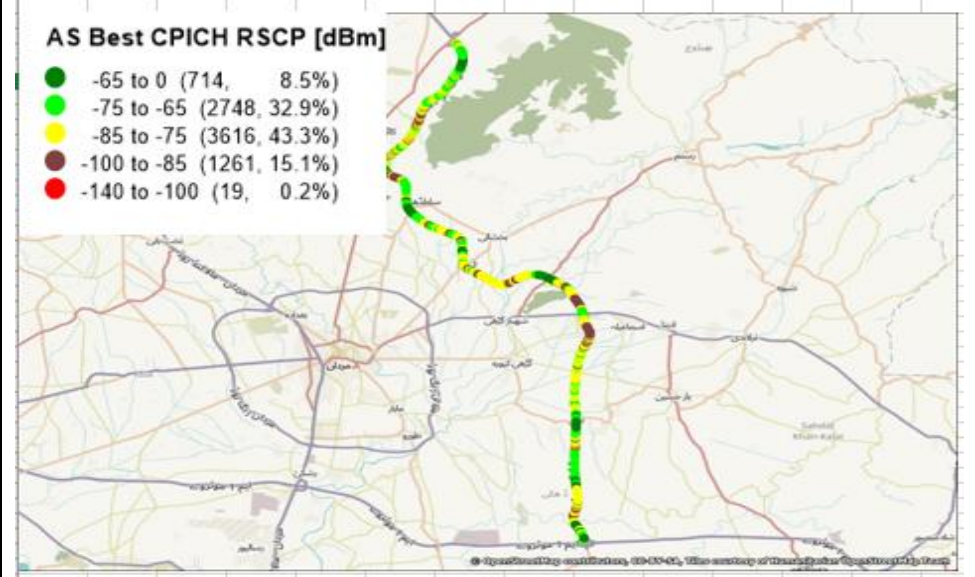


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

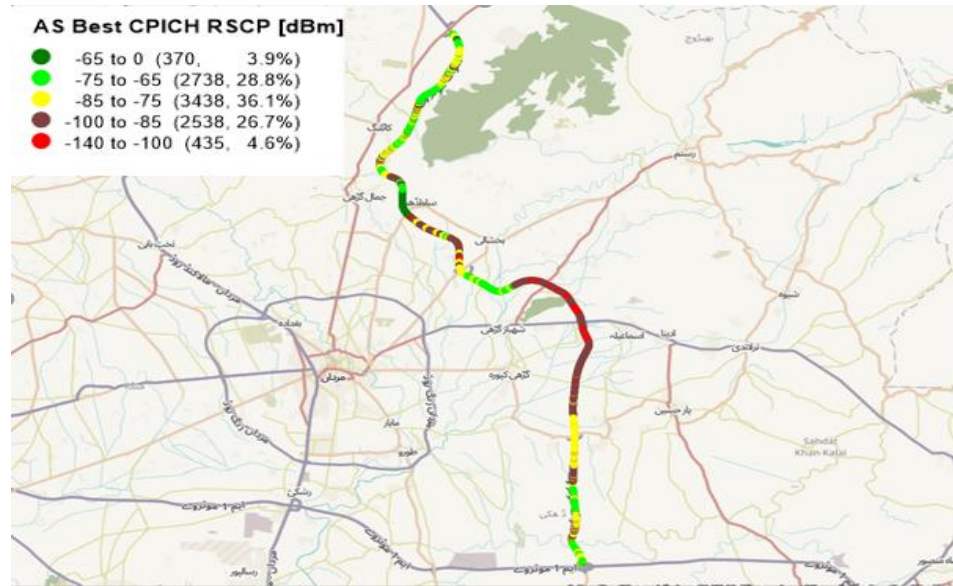
JAZZ 3G NETWORK COVERAGE – SWABI TO KATLANG



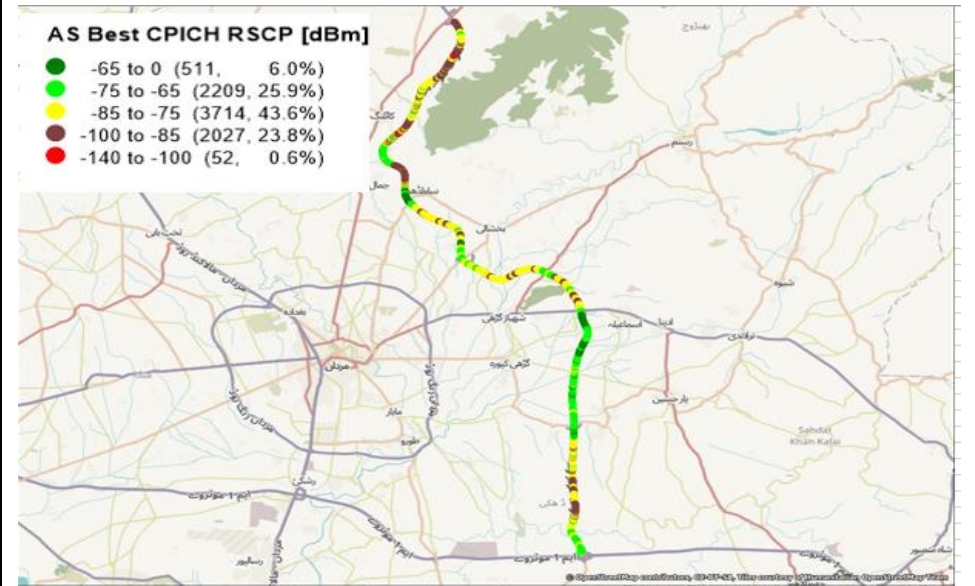
TELEOR 3G NETWORK COVERAGE – SWABI TO KATLANG



UFONE 3G NETWORK COVERAGE – SWABI TO KATLANG

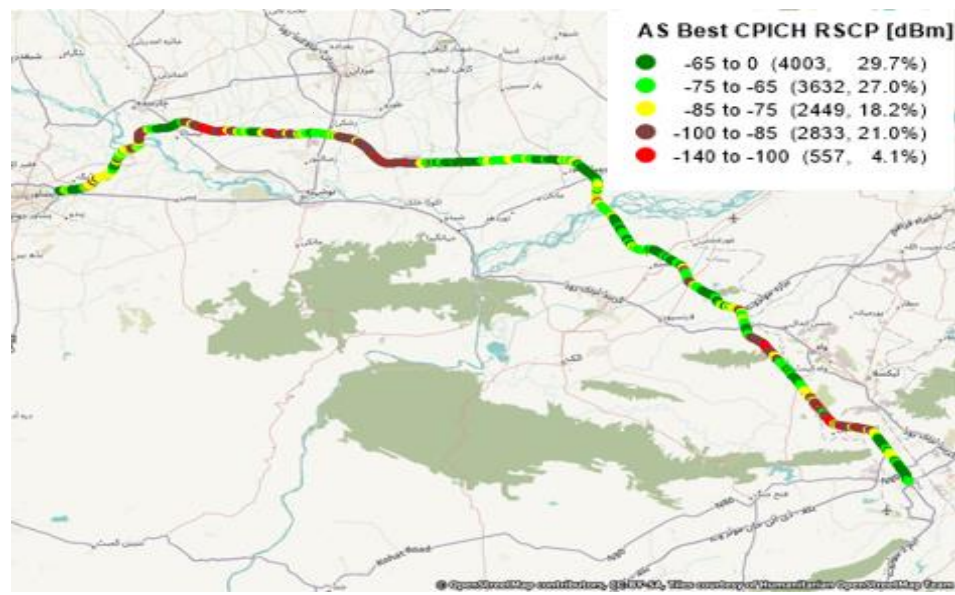


ZONG 3G NETWORK COVERAGE – SWABI TO KATLANG

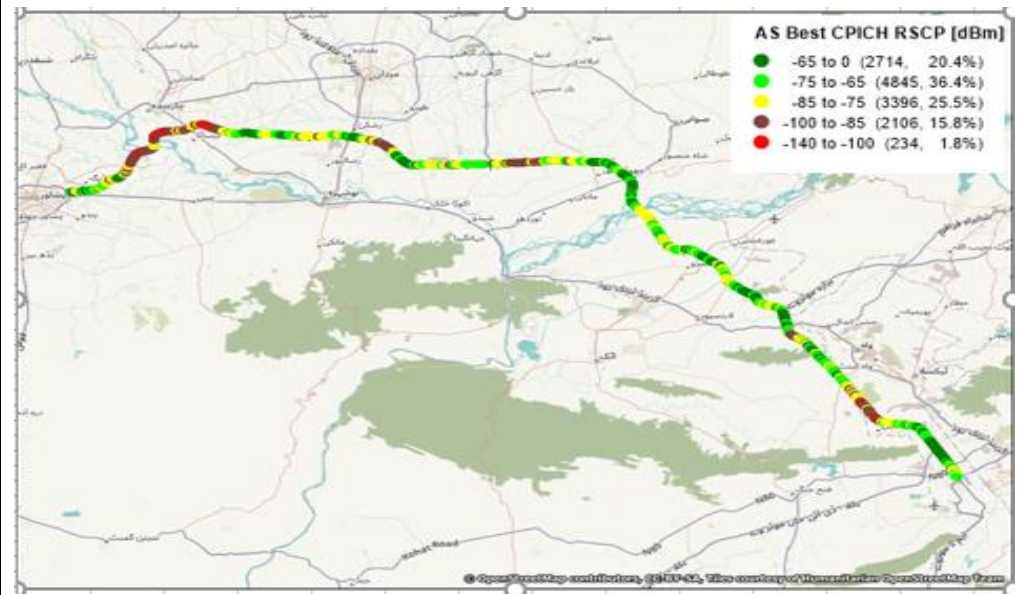


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

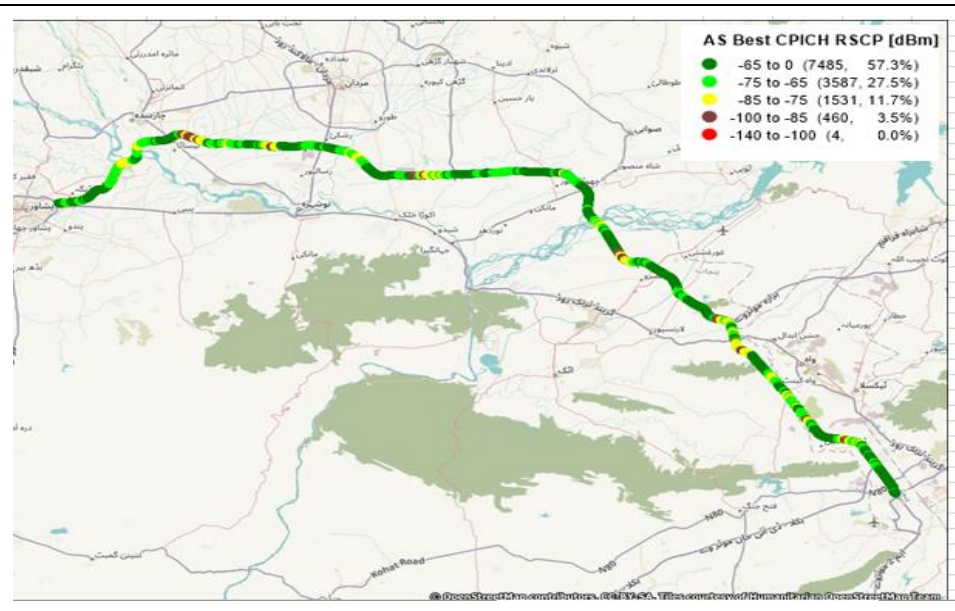
JAZZ 3G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR



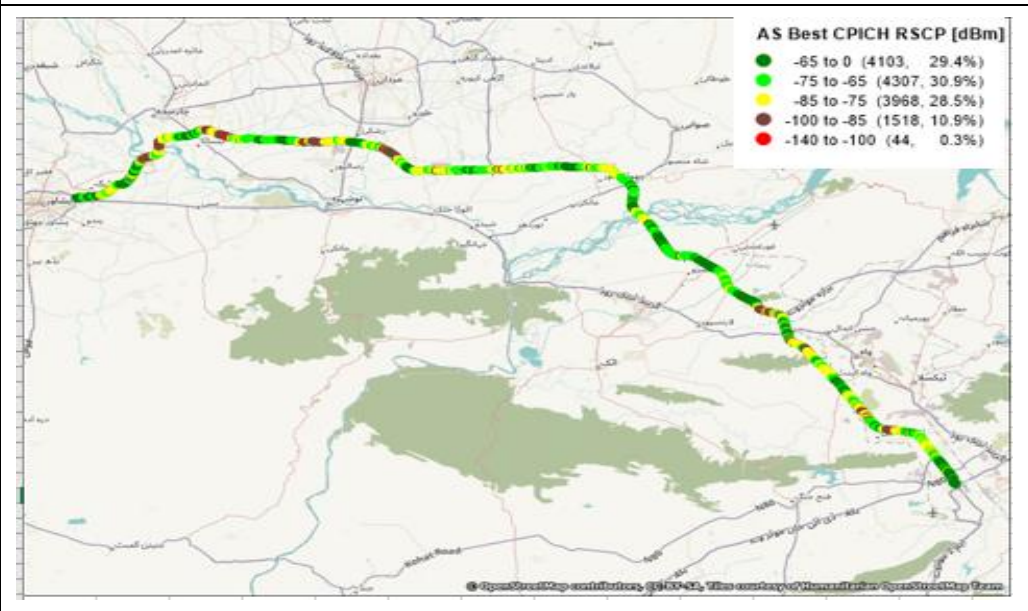
TELENOR 3G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR



UFONE 3G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR

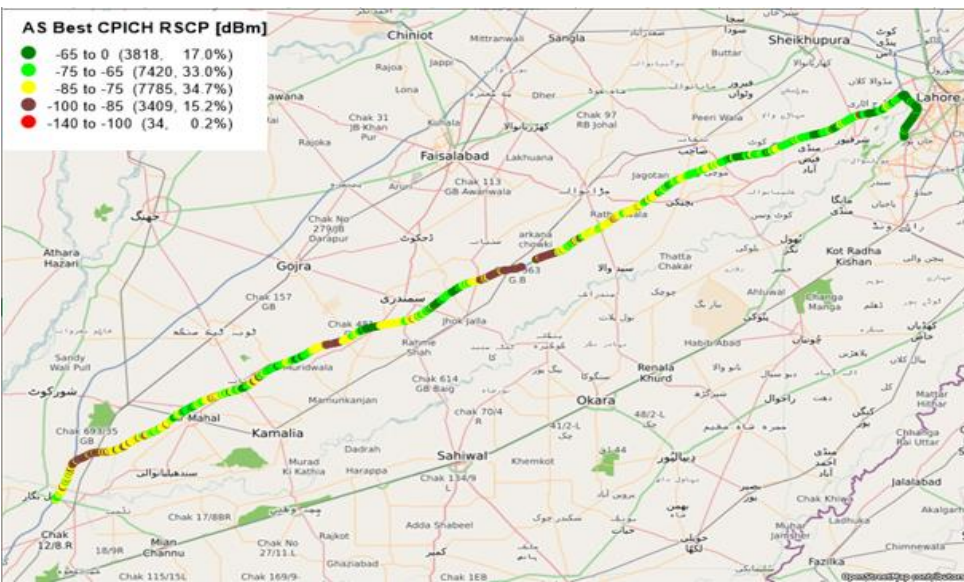


ZONG 3G NETWORK COVERAGE – ISLAMABAD TO PESHAWAR

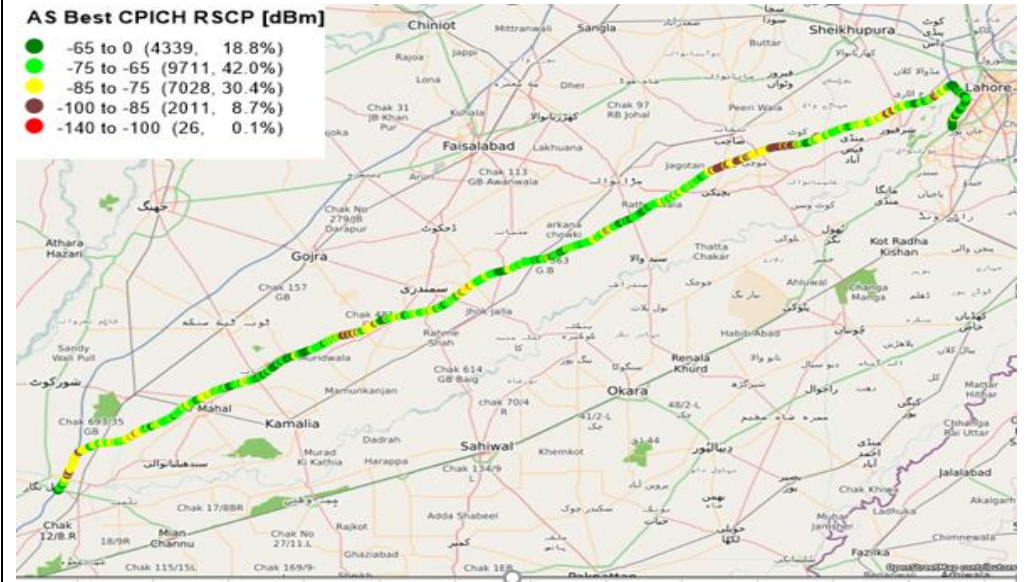


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

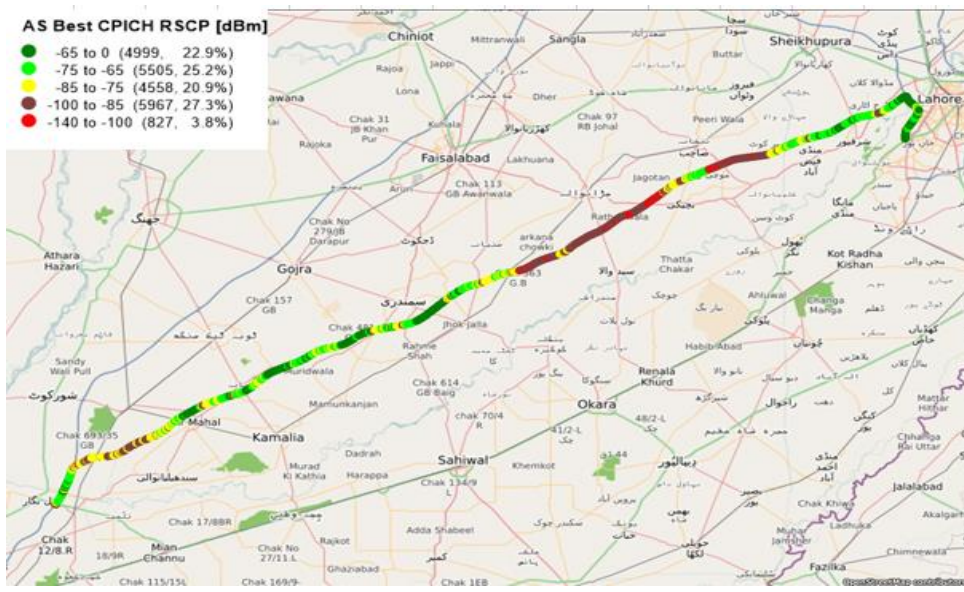
JAZZ 3G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM



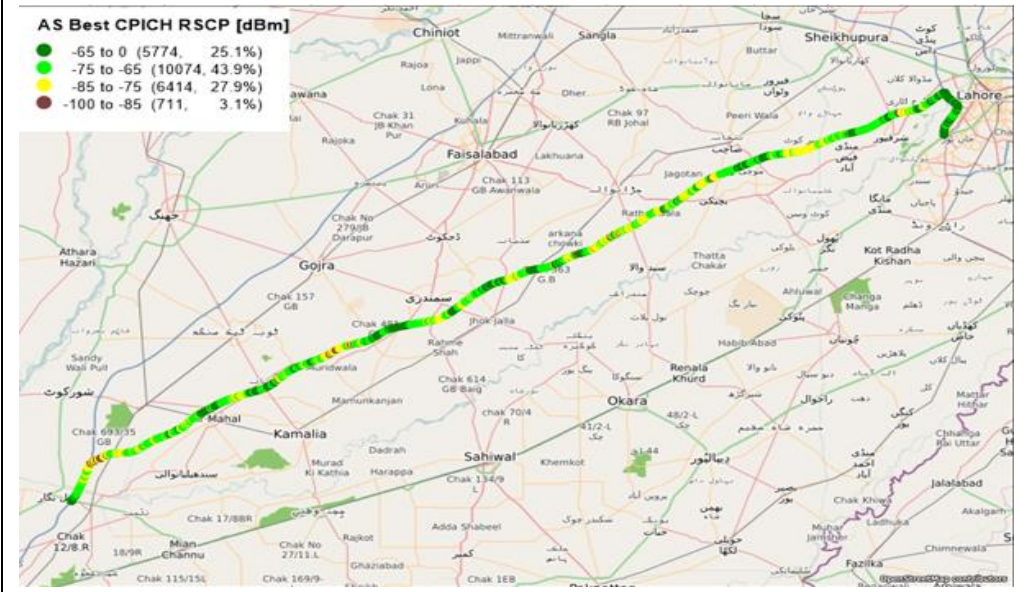
TELENOR 3G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM



UFONE 3G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM



ZONG 3G NETWORK COVERAGE – LAHORE TO ABDUL HAKEEM

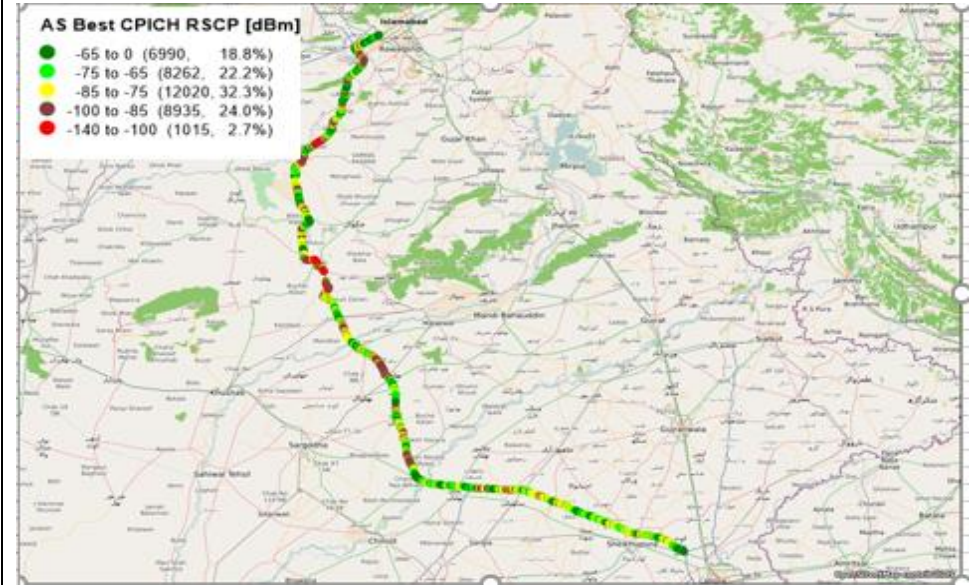


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

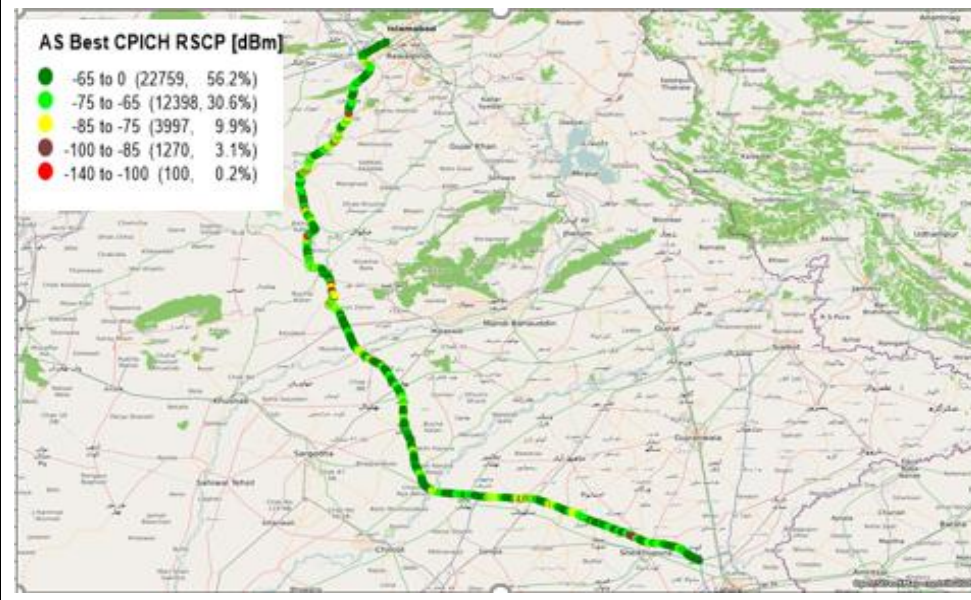
JAZZ 3G NETWORK COVERAGE – LAHORE TO ISLAMABAD



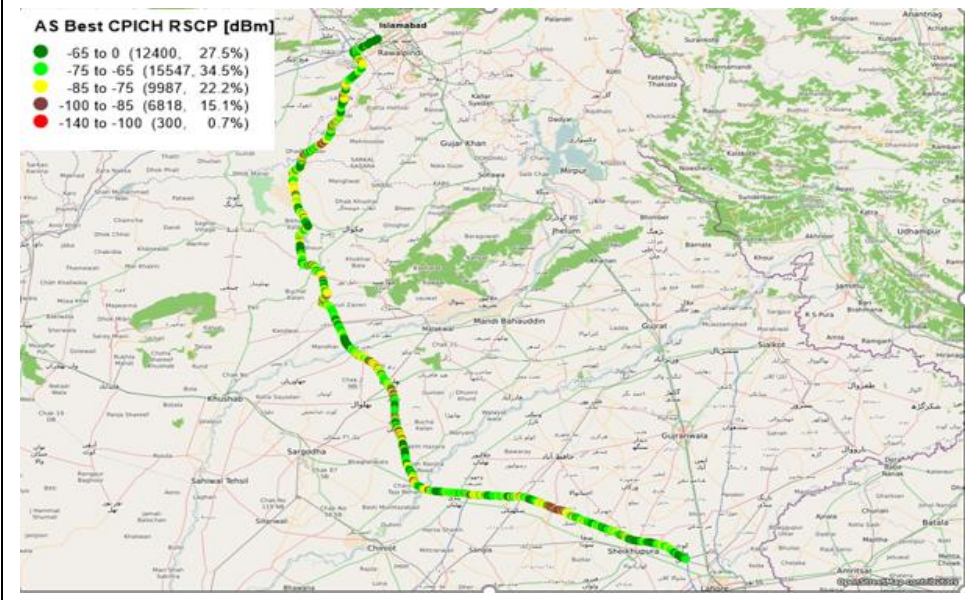
TELENOR 3G NETWORK COVERAGE – LAHORE TO ISLAMABAD



UFONE 3G NETWORK COVERAGE – LAHORE TO ISLAMABAD

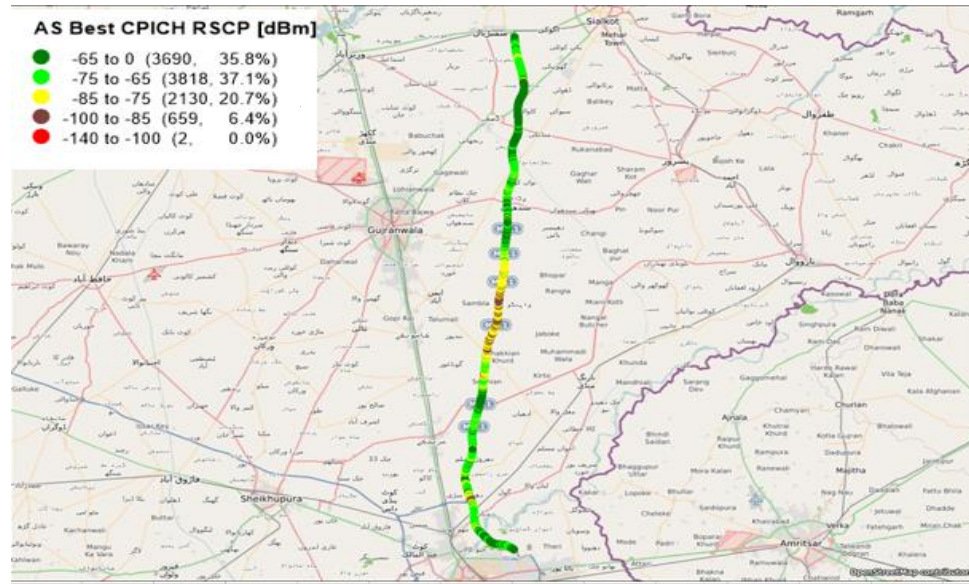


ZONG 3G NETWORK COVERAGE – LAHORE TO ISLAMABAD

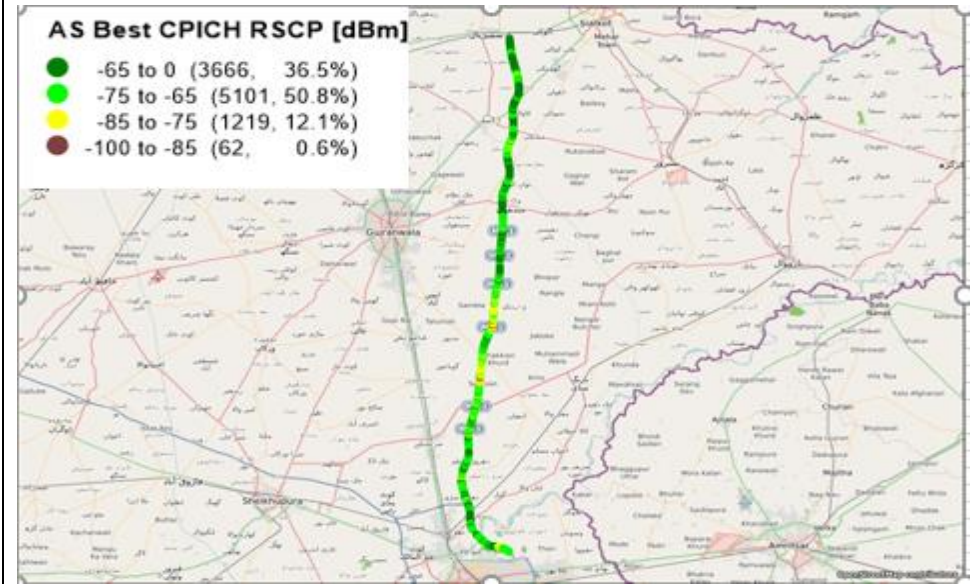


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

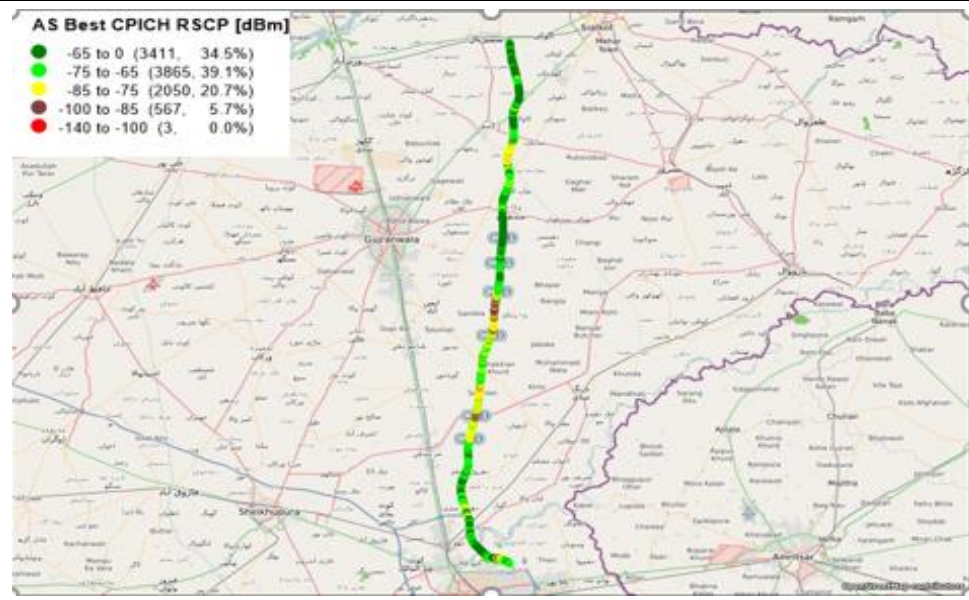
JAZZ 3G NETWORK COVERAGE – LAHORE TO SIALKOT



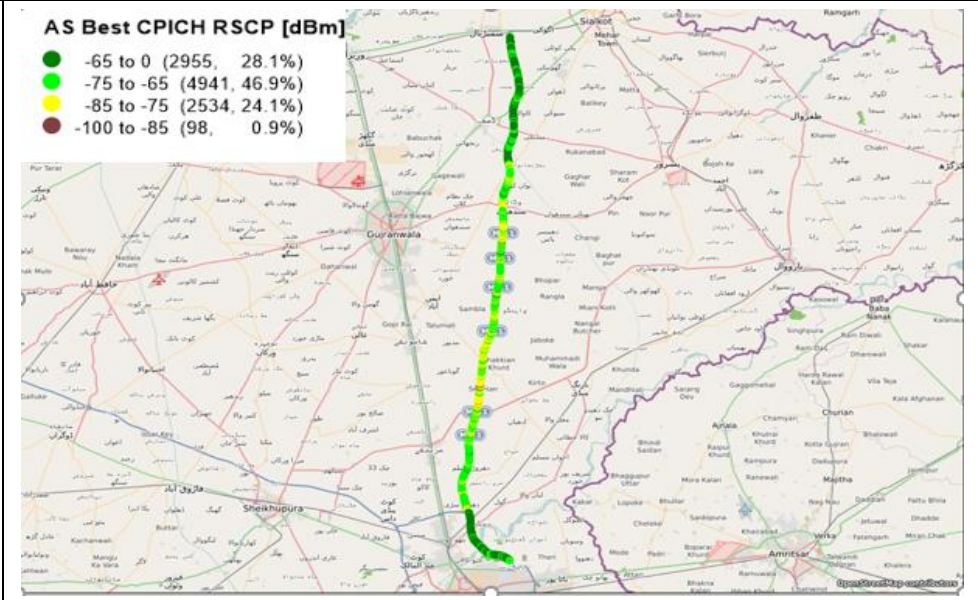
TELEOR 3G NETWORK COVERAGE – LAHORE TO SIALKOT



UFONE 3G NETWORK COVERAGE – LAHORE TO SIALKOT

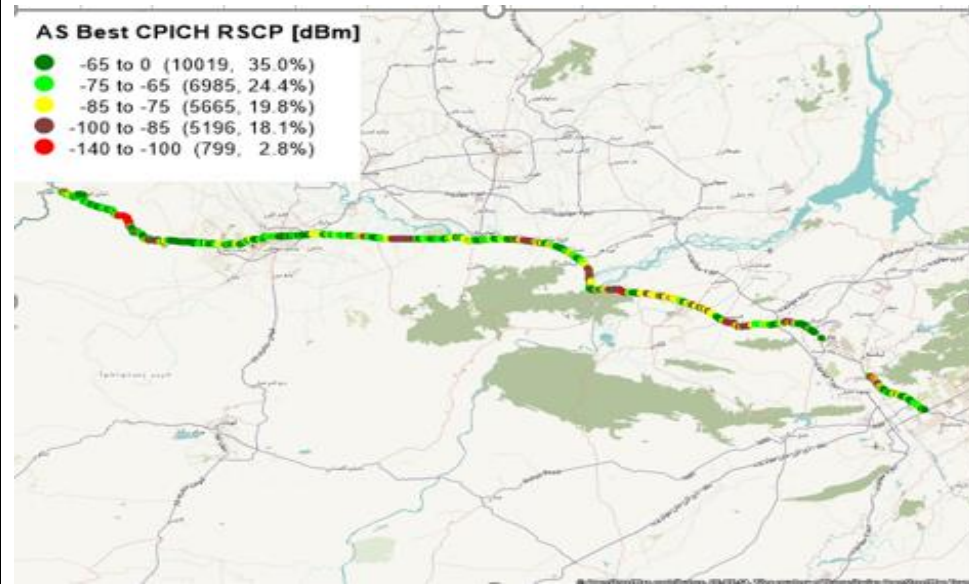


ZONG 3G NETWORK COVERAGE – LAHORE TO SIALKOT

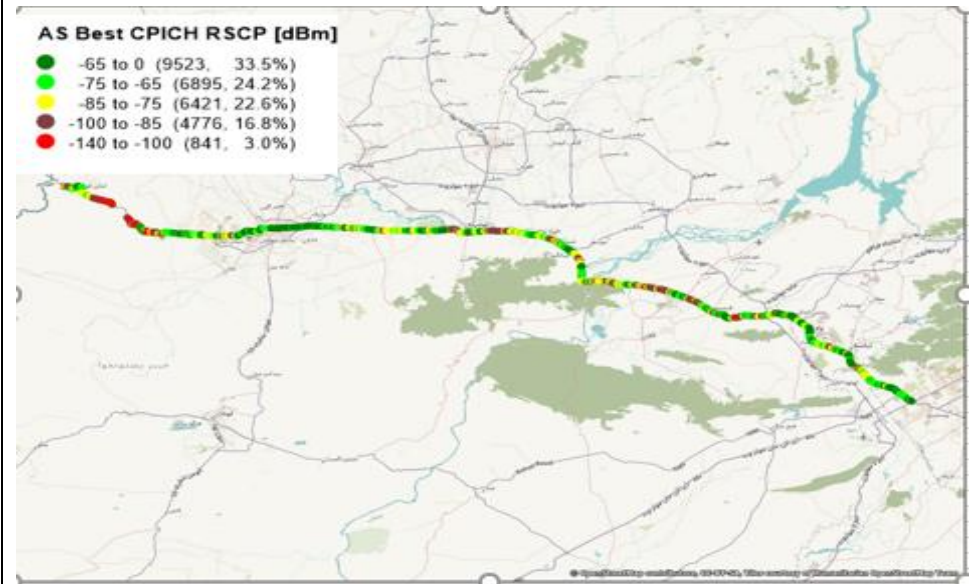


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

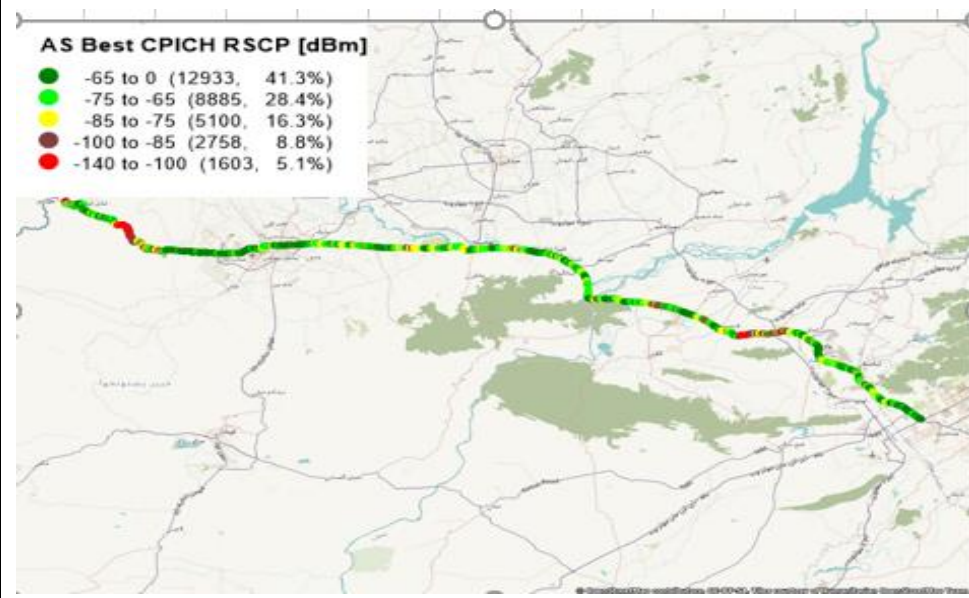
JAZZ 3G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



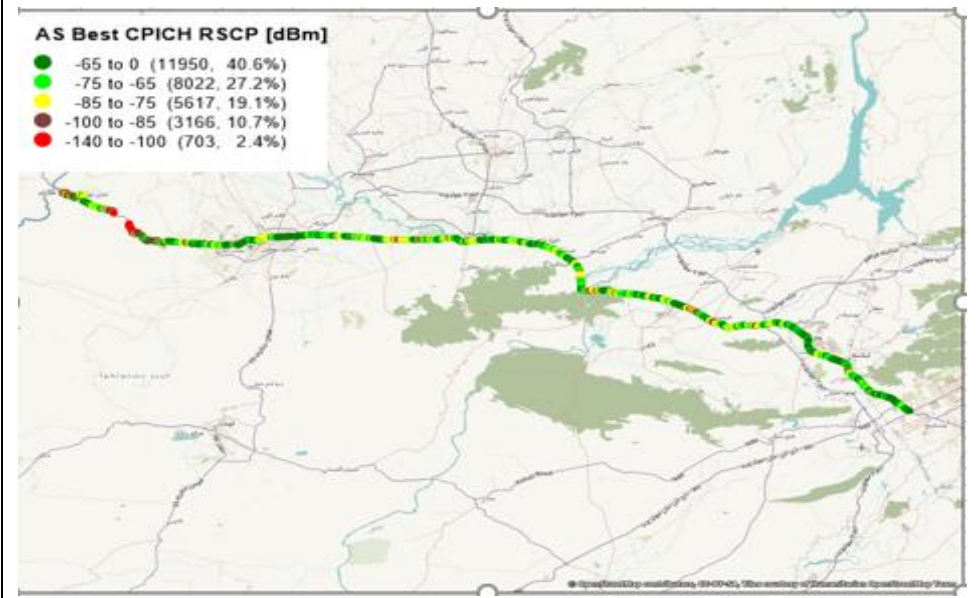
TELENOR 3G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



UFONE 3G NETWORK COVERAGE – RAWALPINDI TO TORKHUM



ZONG 3G NETWORK COVERAGE – RAWALPINDI TO TORKHUM

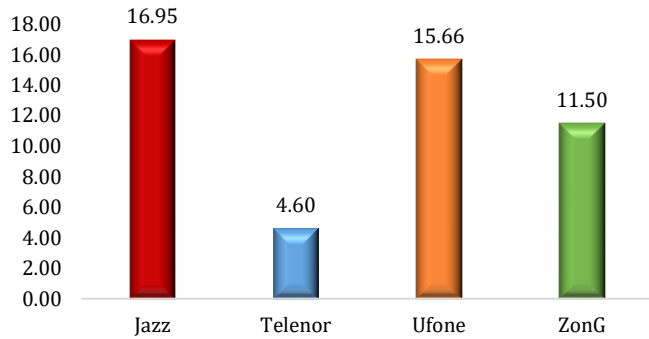


Annex-B (Data QoS Results)

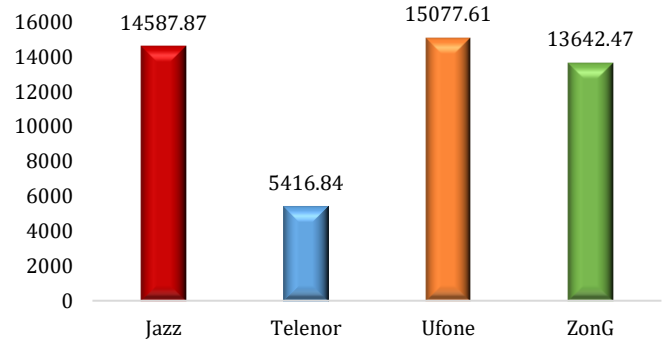
QUALITY OF SERVICE SURVEY RESULTS
(AUTOMODE)

QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – HAZARA MOTORWAY

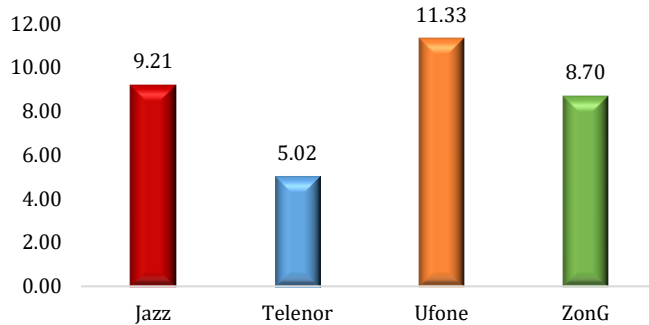
User Data Throughput Download - Fixed Duration > 2 Mbps



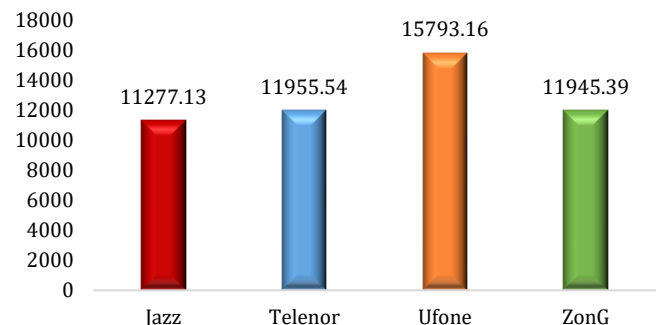
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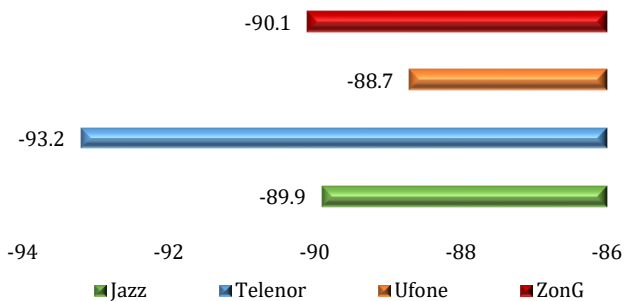
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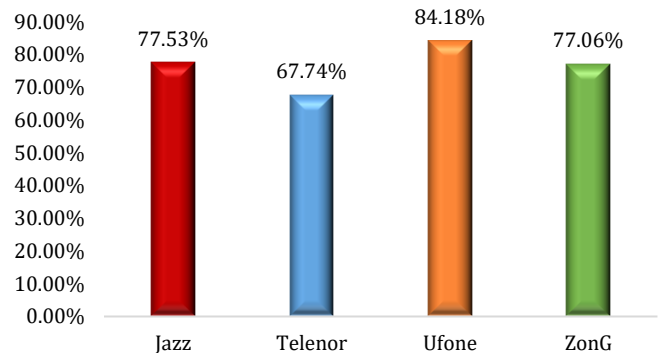
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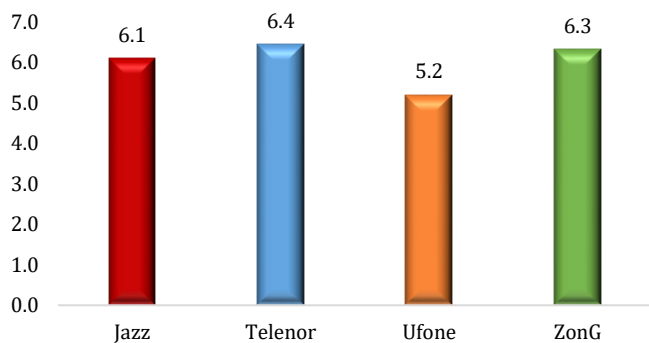
Signal Strength (RSRP) > -100dBm



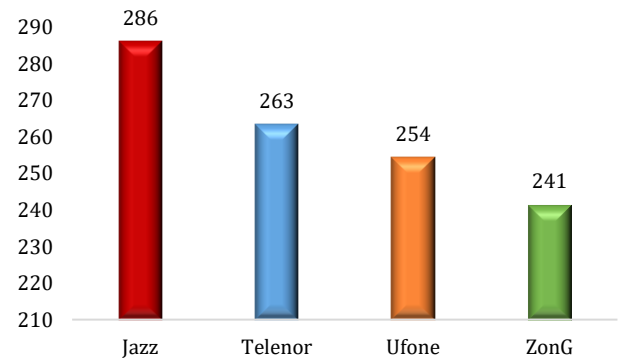
Signal Strength (RSRP) Confidence Level > 90%



Webpage Loading Time < 5 Seconds

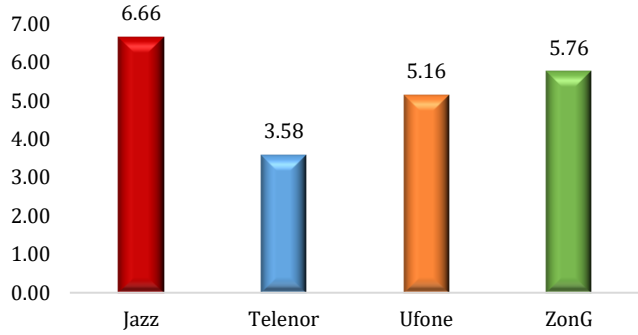


Latency < 75 ms

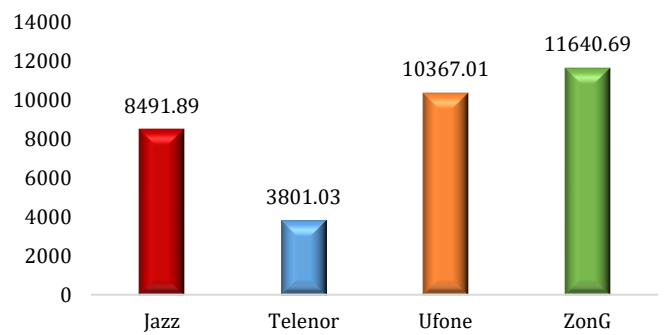


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – QUETTA TO KARACHI

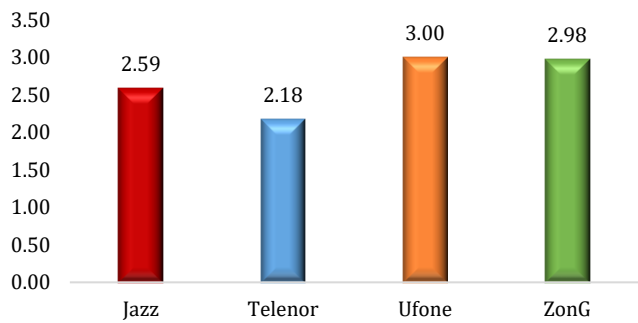
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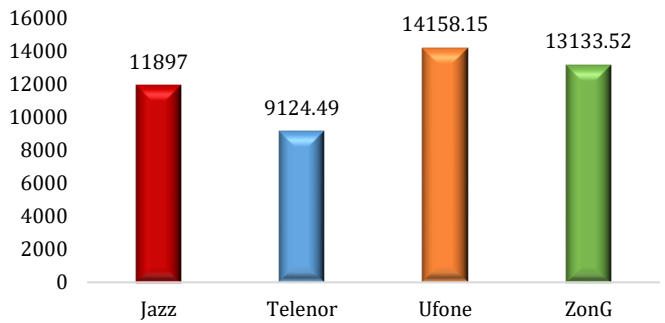
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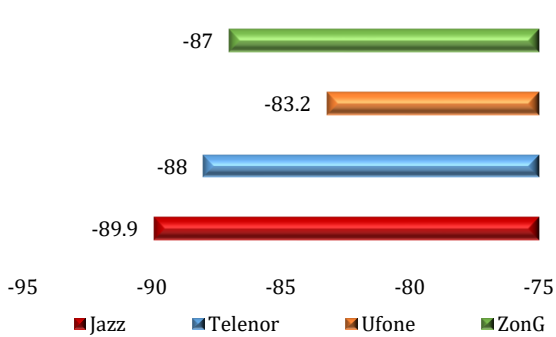
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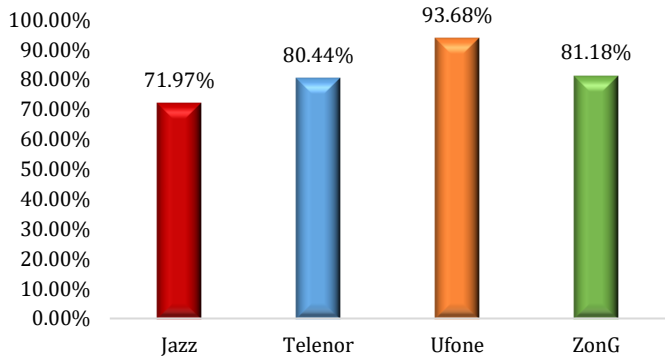
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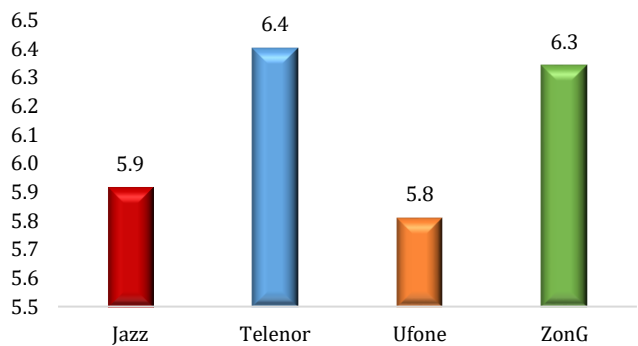
Signal Strength (RSRP) > -100dBm



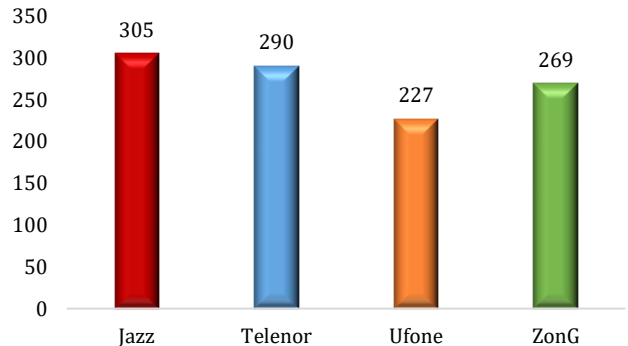
Signal Strength (RSRP) Confidence Level > 90%



Webpage Loading Time < 5 Seconds

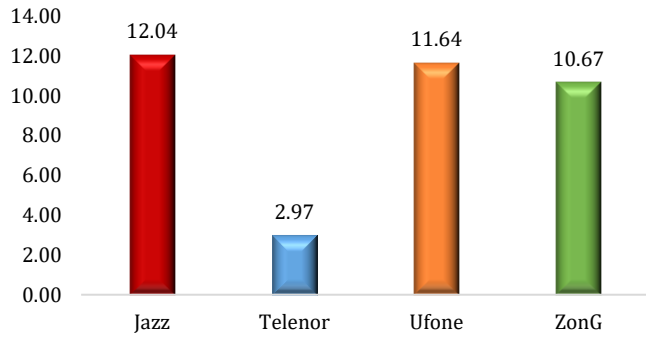


Latency < 75 ms

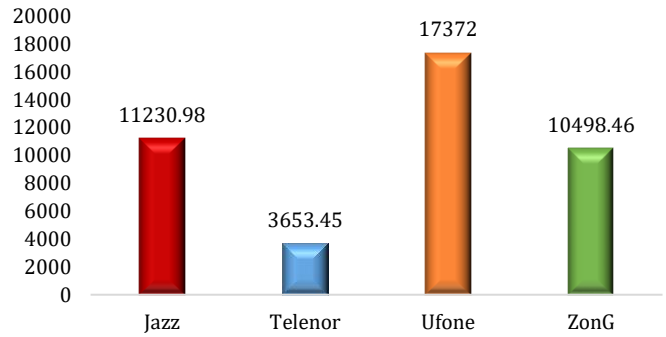


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – HARIPUR TO TAXILA

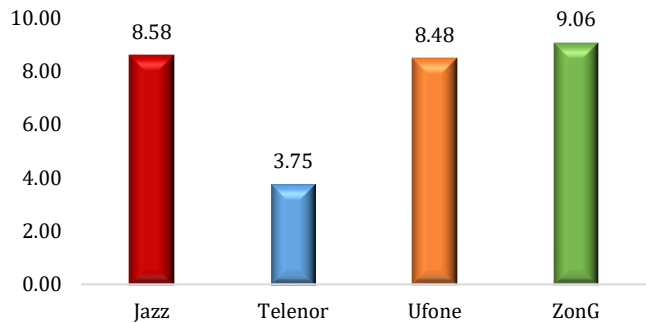
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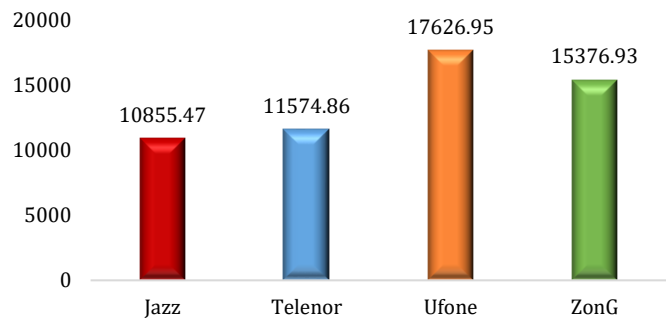
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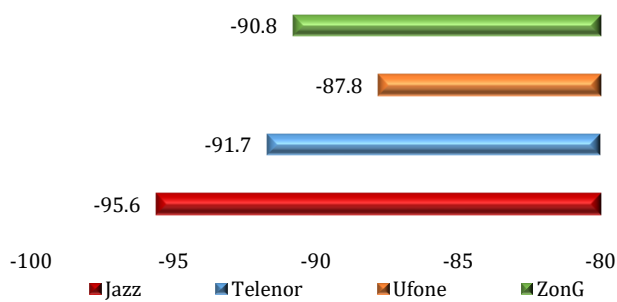
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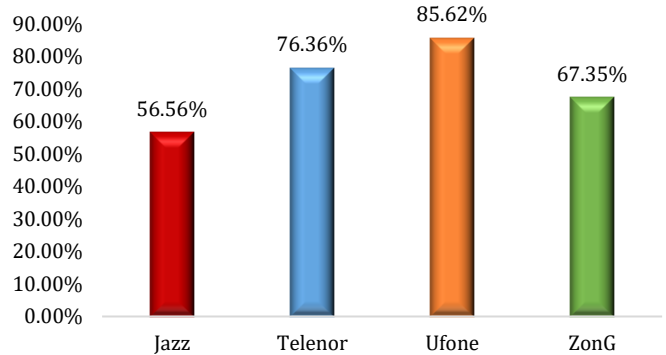
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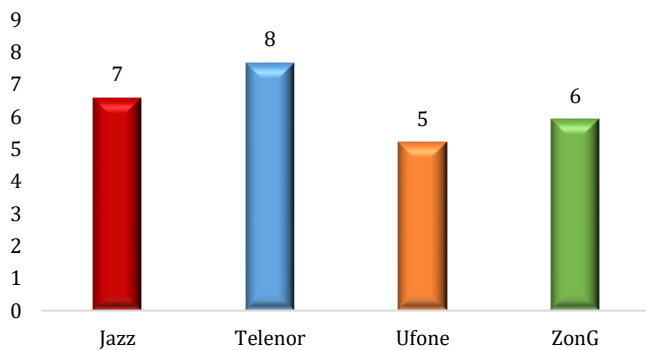
Signal Strength (RSRP) > -100dBm



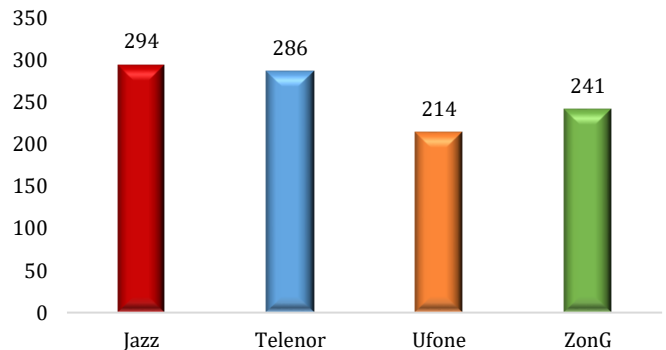
Signal Strength (RSRP) Confidencel Level > 90%



Webpage Loading Time < 5 Seconds

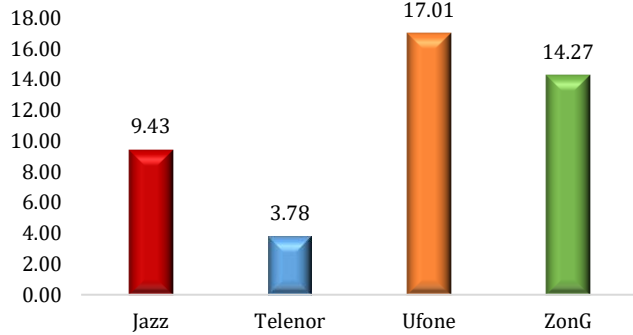


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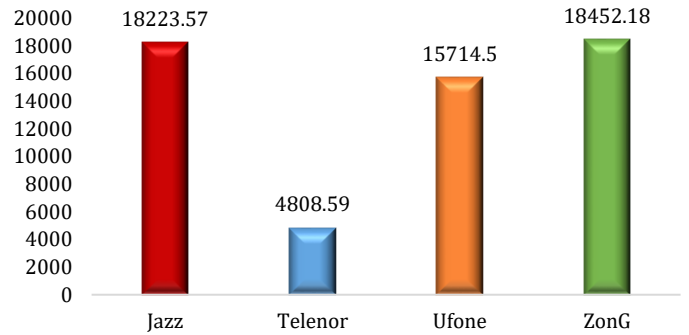


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – PINDI BHATIAN TO MULTAN

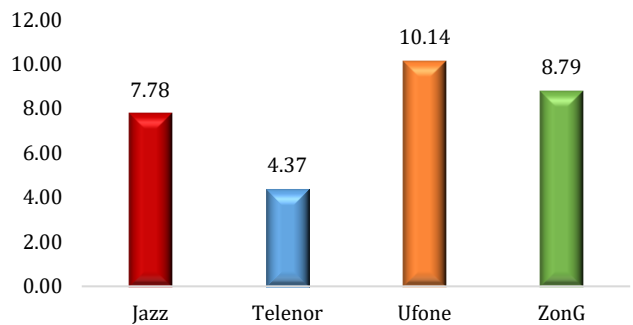
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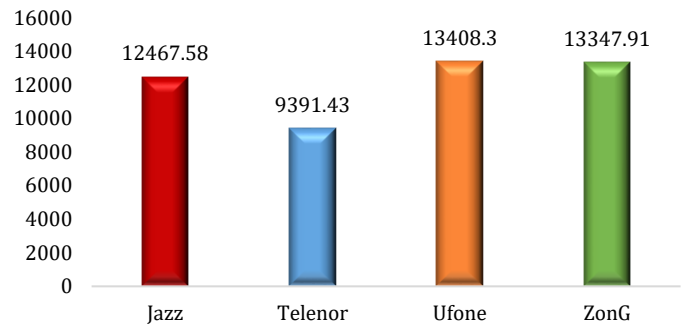
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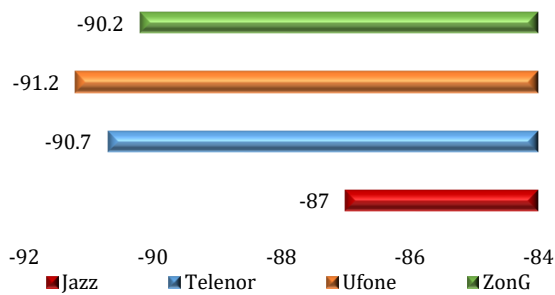
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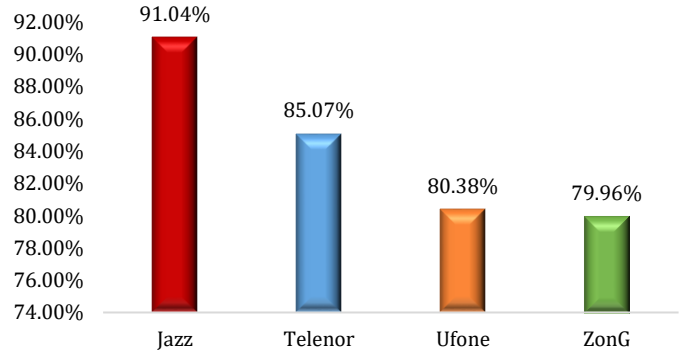
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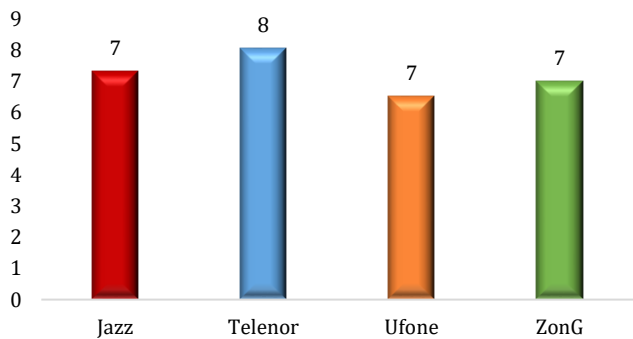
Signal Strength (RSRP) > -100dBm



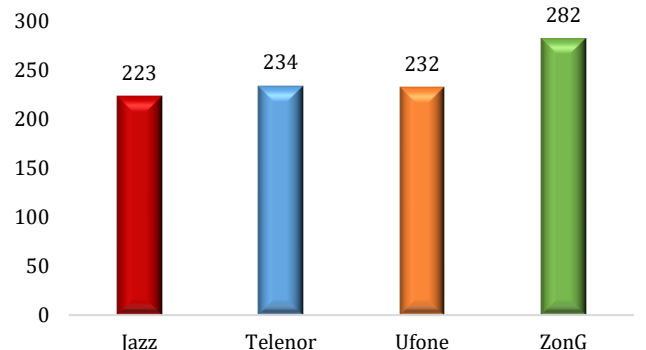
Signal Strength (RSRP) Confidencel Level > 90%



Webpage Loading Time < 5 Seconds

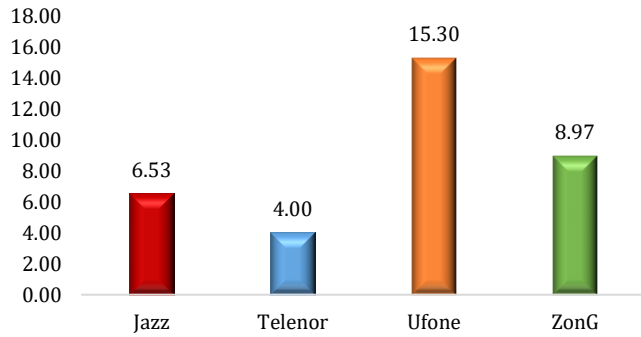


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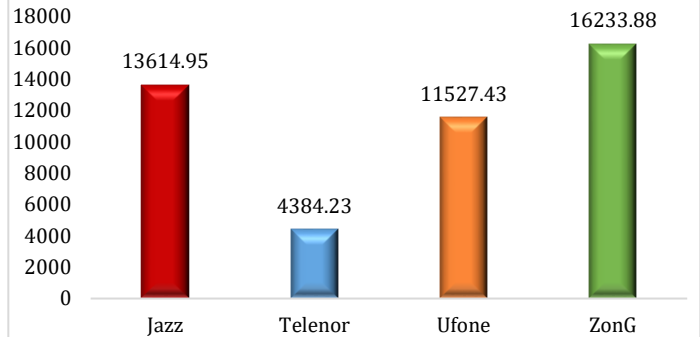


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – MULTAN TO SUKKUR

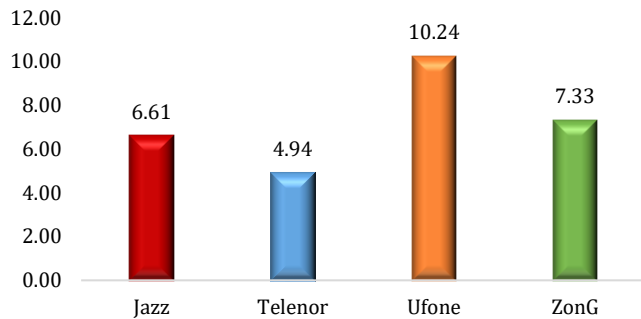
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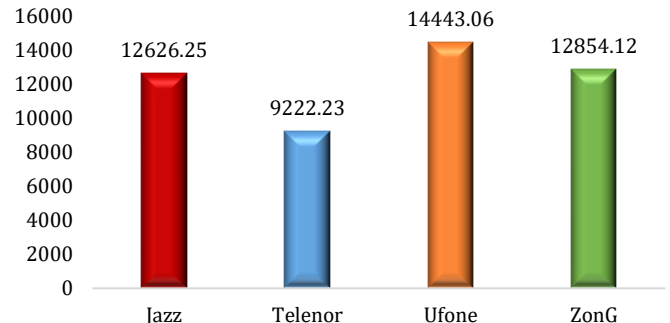
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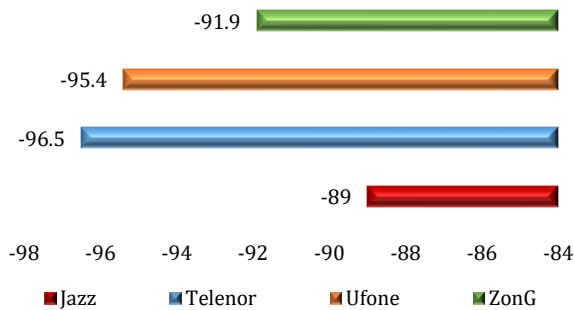
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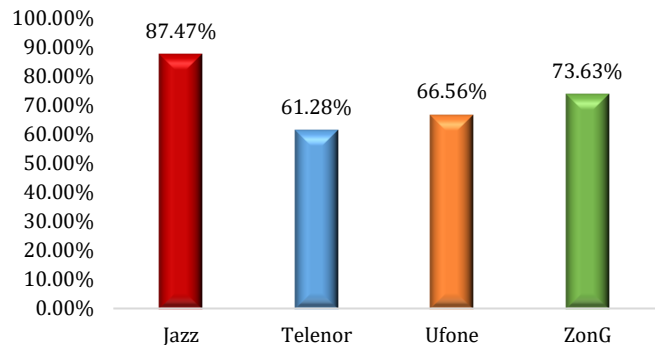
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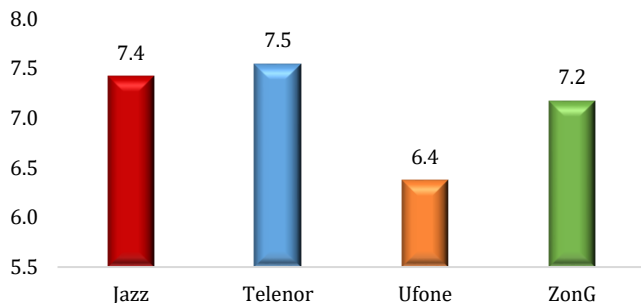
Signal Strength (RSRP) > -100dBm



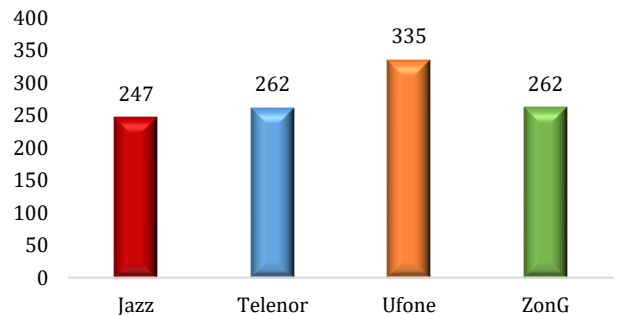
Signal Strength (RSRP) Confidencel Level > 90%



Webpage Loading Time < 5 Seconds

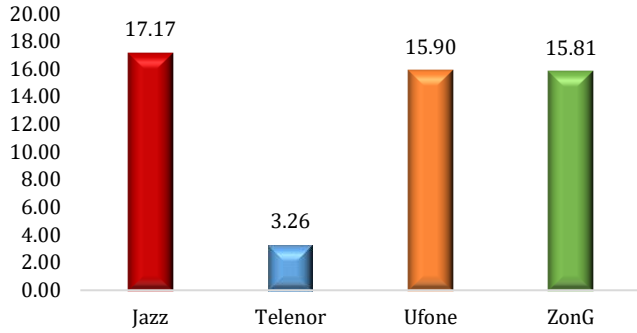


Latency < 75 ms

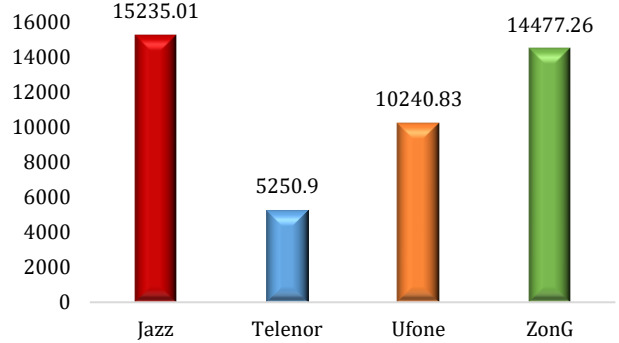


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – NOWSHERA TO CHITRAL

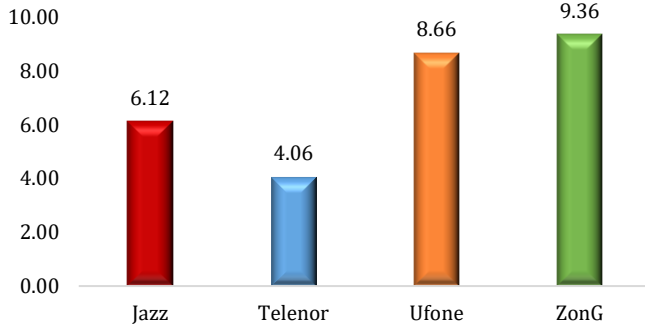
User Data Throughput Download - Fixed Duration > 2 Mbps



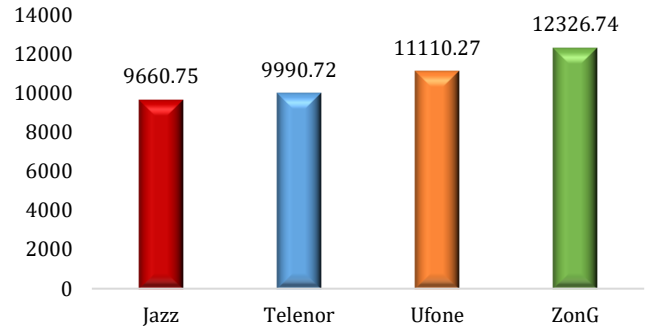
User Data Throughput Upload - Fixed Duration > 512 Kbps



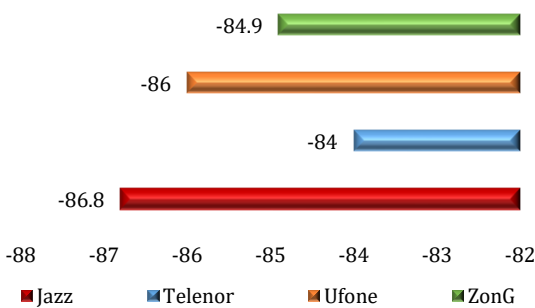
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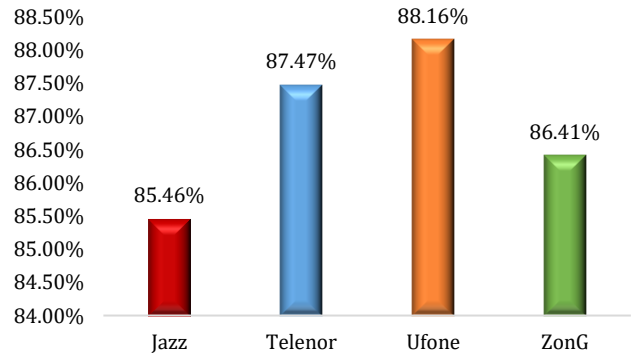
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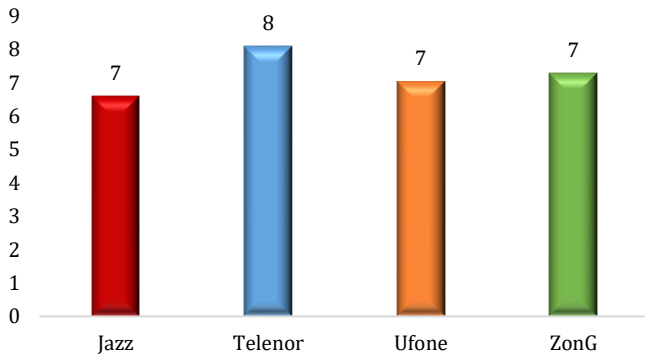
Signal Strength (RSRP) > -100dBm



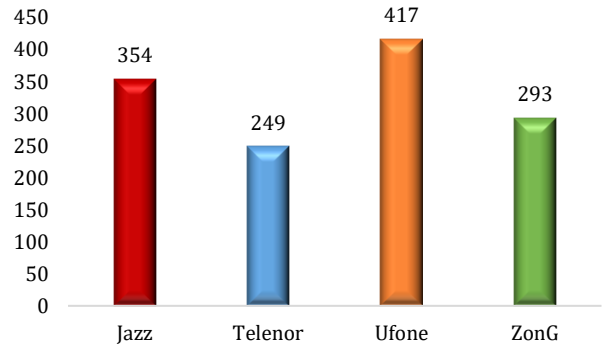
Signal Strength (RSRP) Confidencel Level > 90%



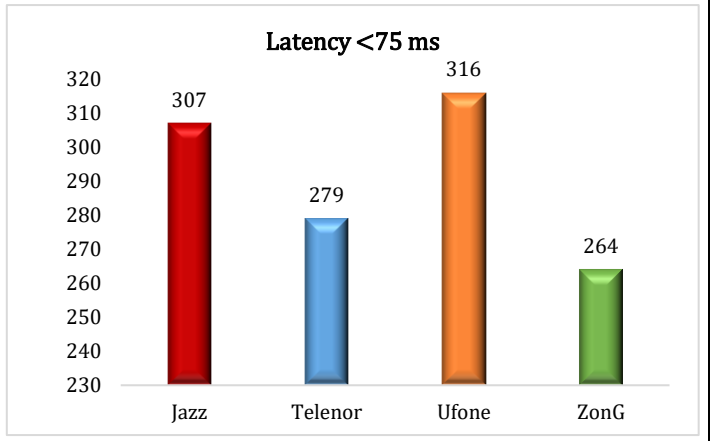
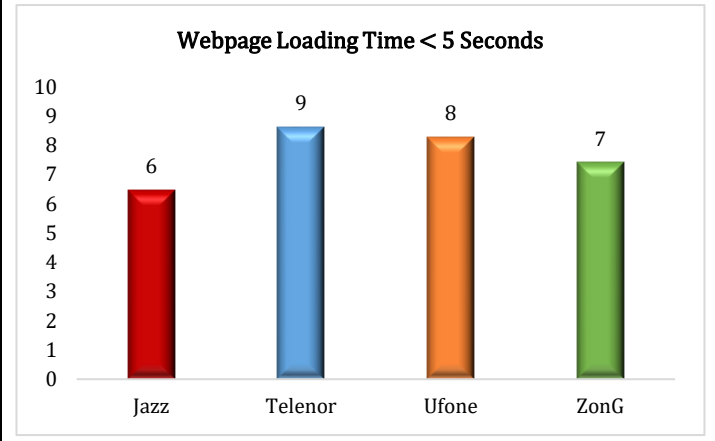
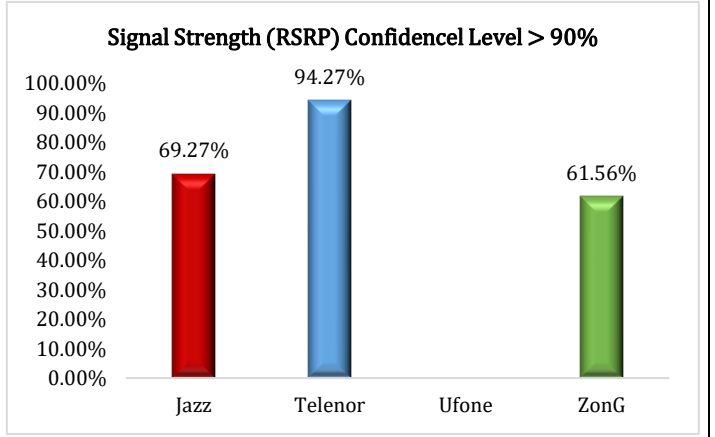
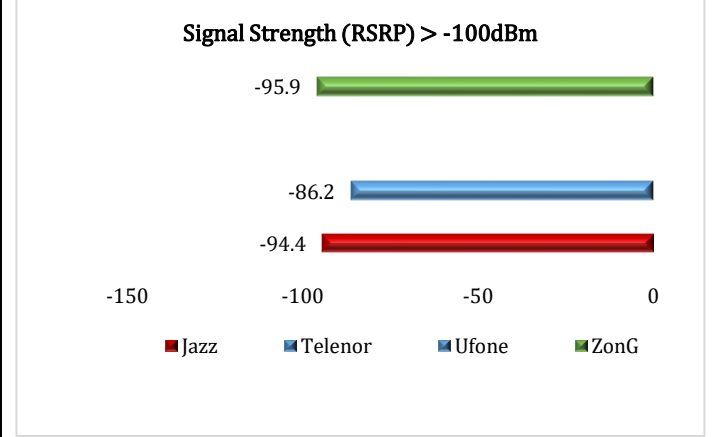
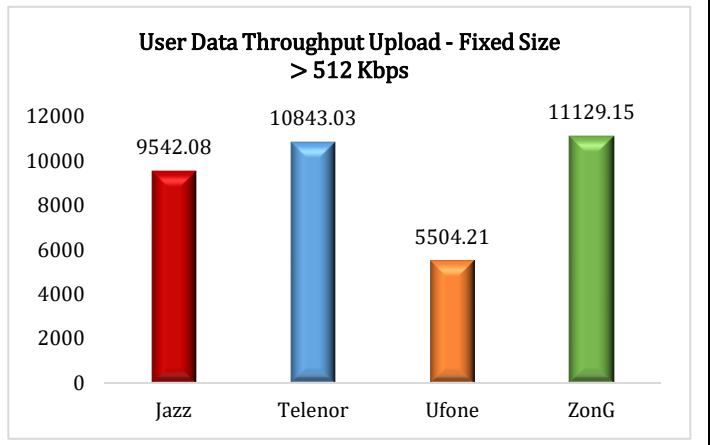
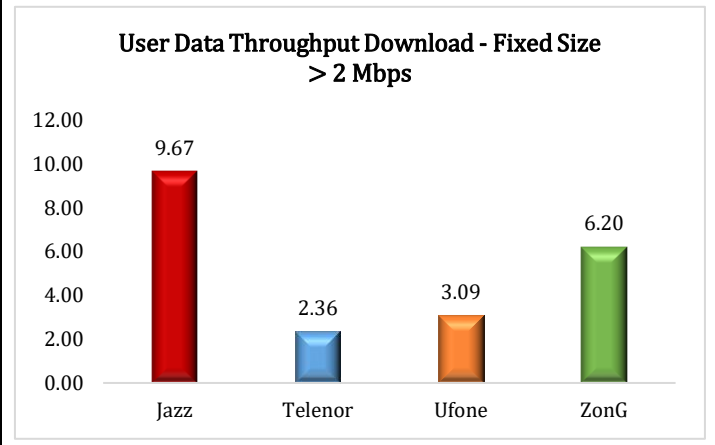
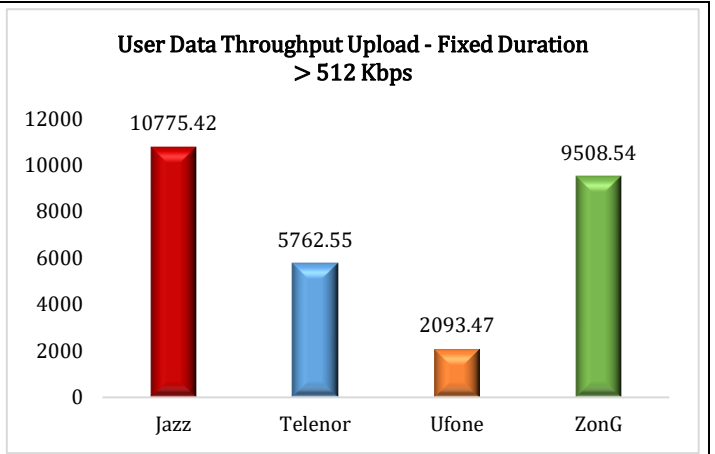
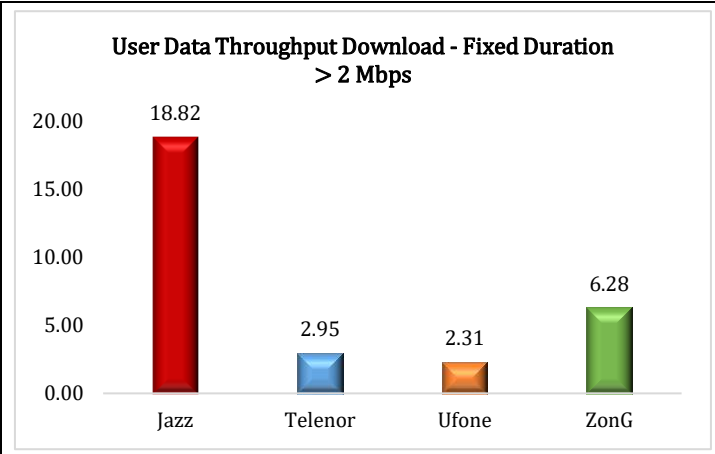
Webpage Loading Time < 5 Seconds



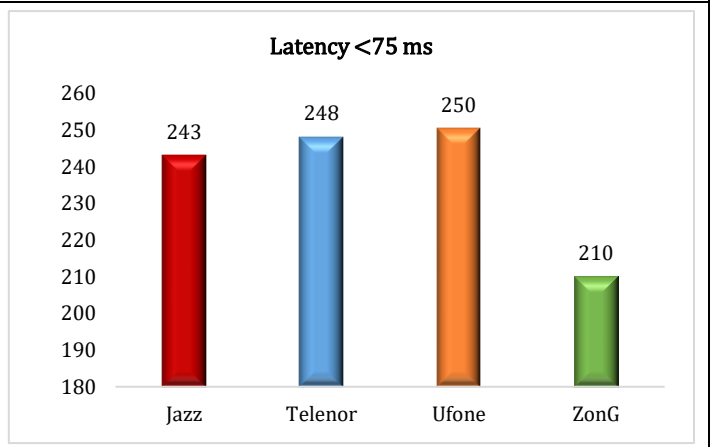
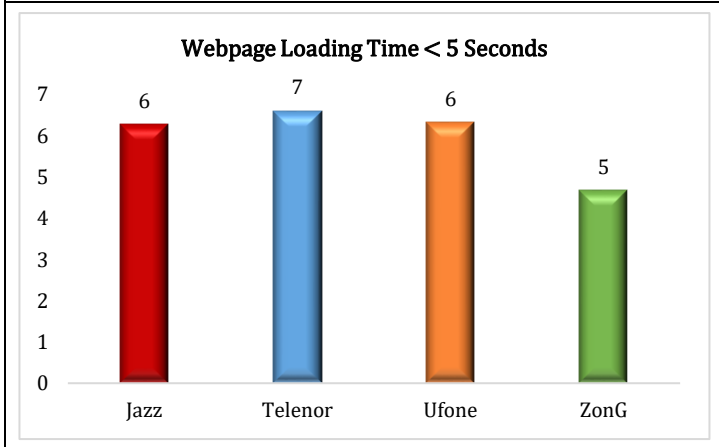
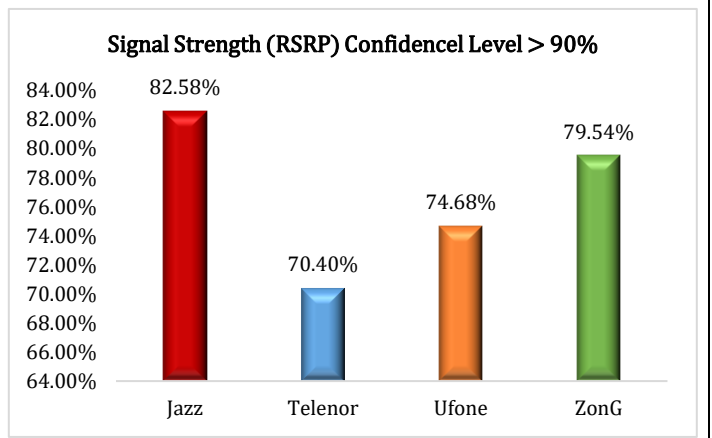
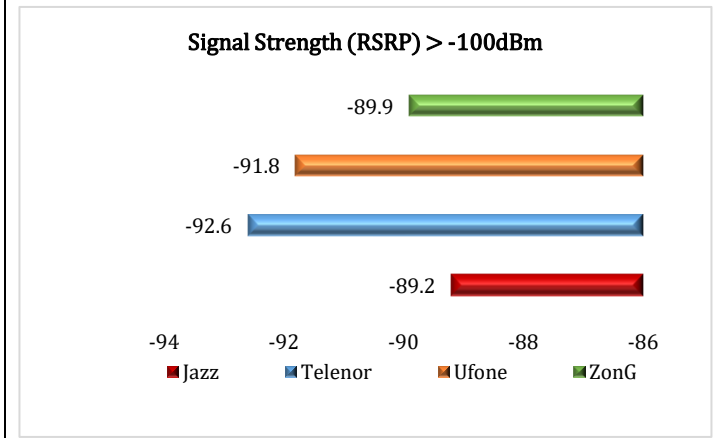
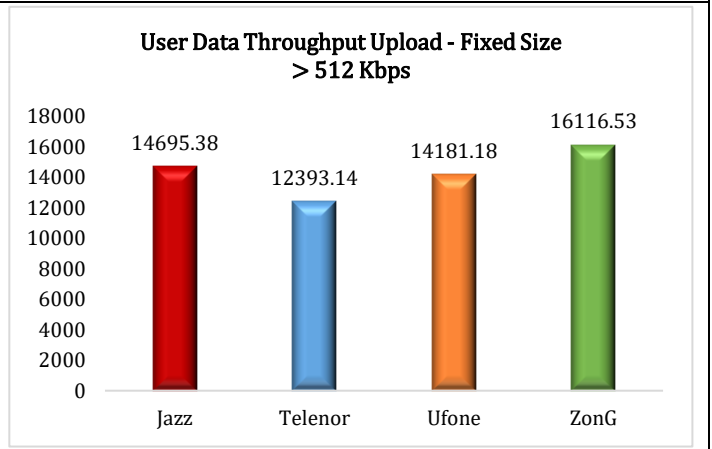
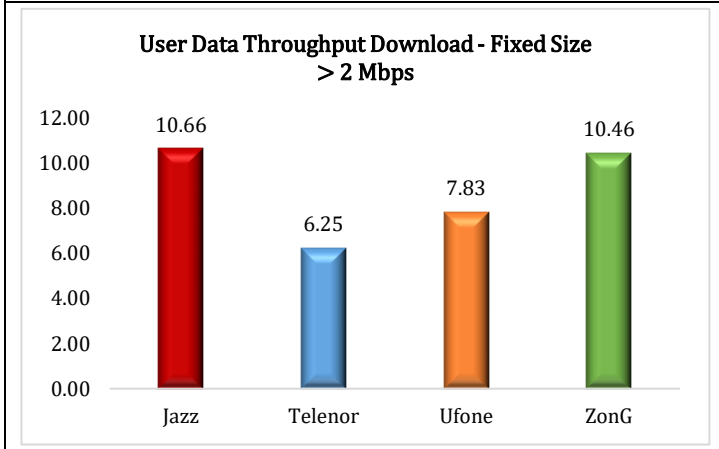
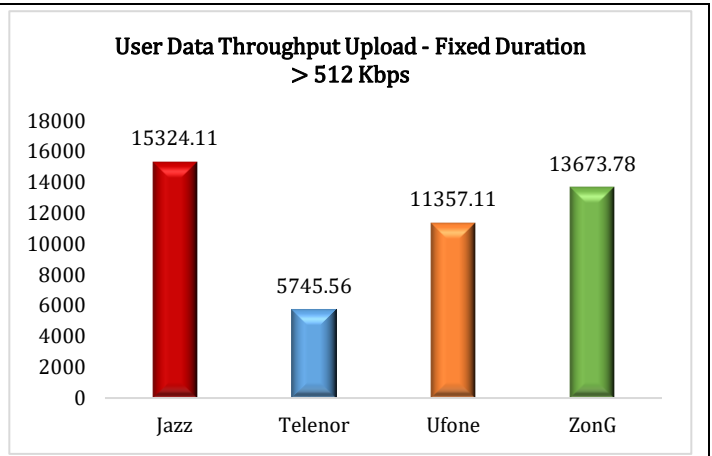
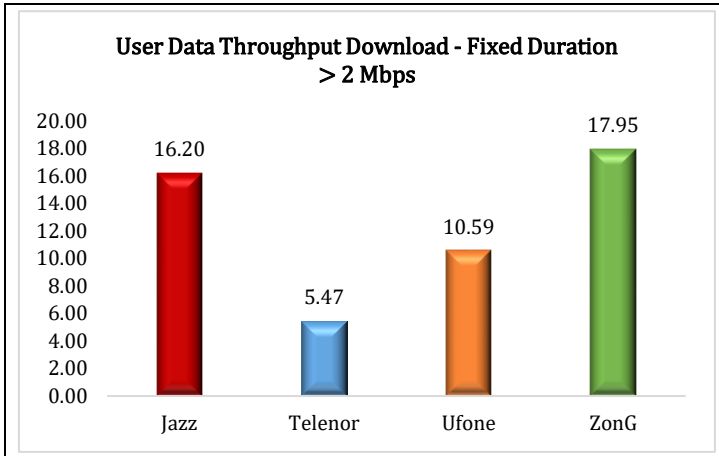
Latency < 75 ms



QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – SWABI TO KATLANG

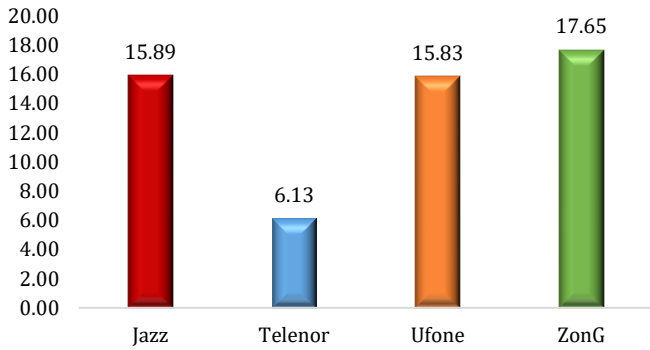


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – ISLAMABAD TO KOHALA

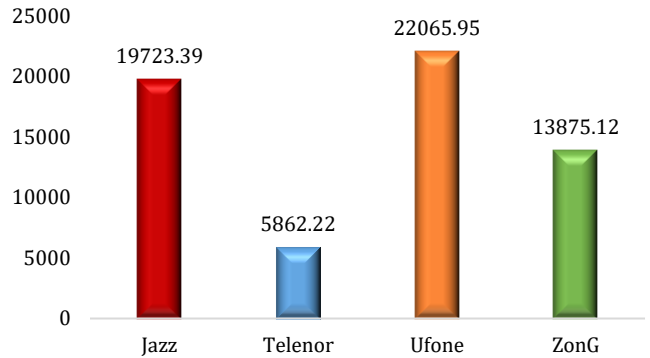


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – ISLAMABAD TO PESHAWAR

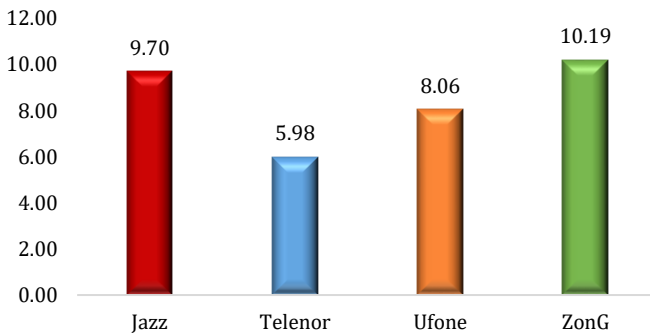
User Data Throughput Download - Fixed Duration > 2 Mbps



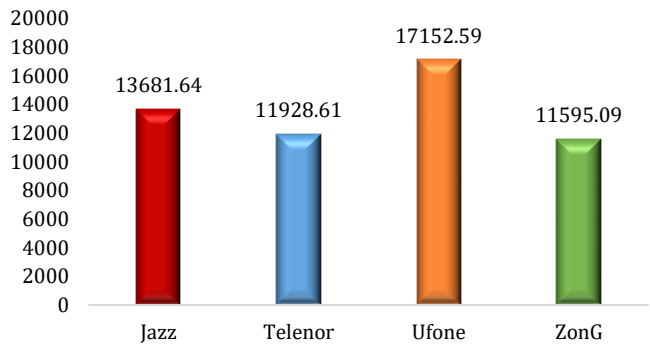
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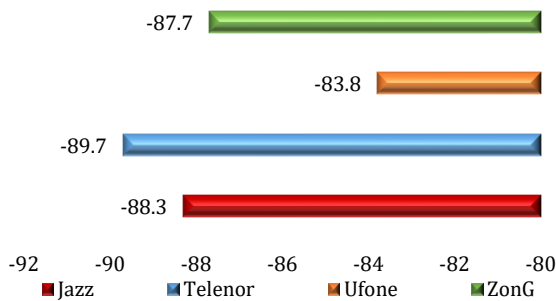
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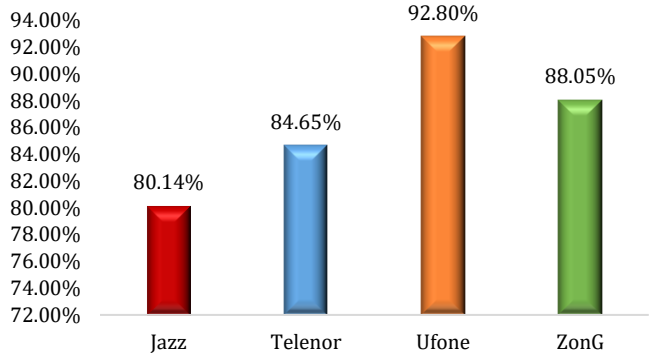
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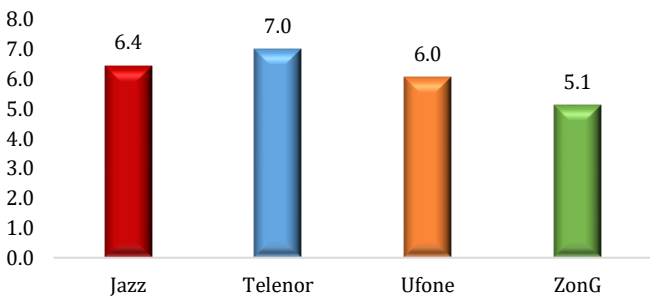
Signal Strength (RSRP) > -100dBm



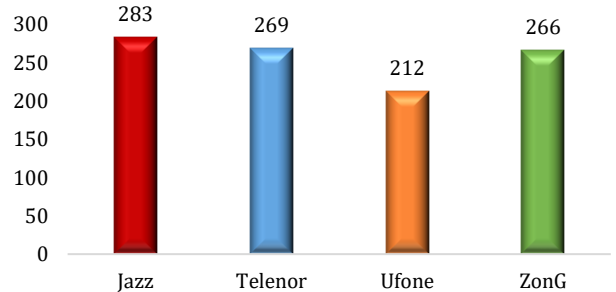
Signal Strength (RSRP) Confidence Level > 90%



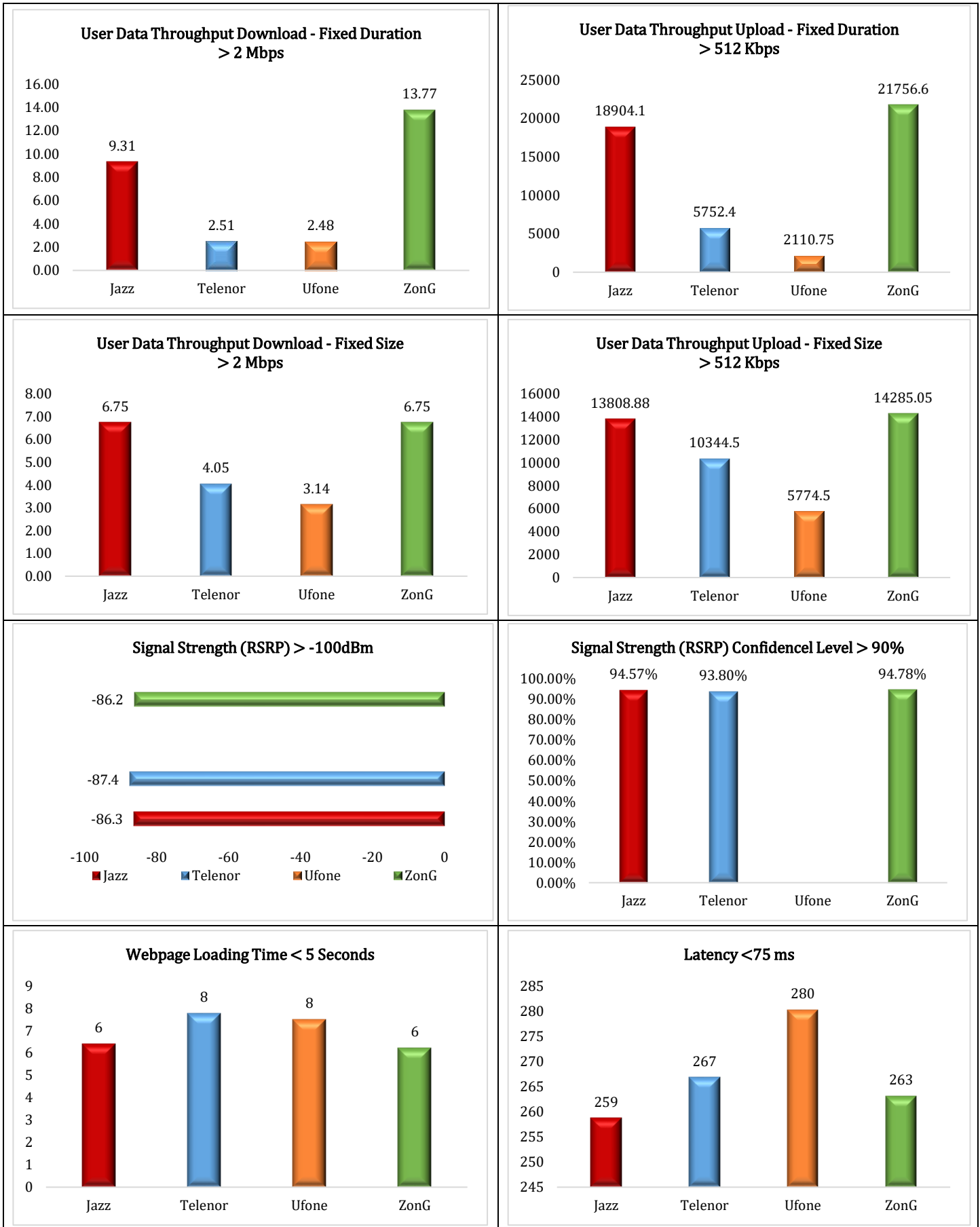
Webpage Loading Time < 5 Seconds



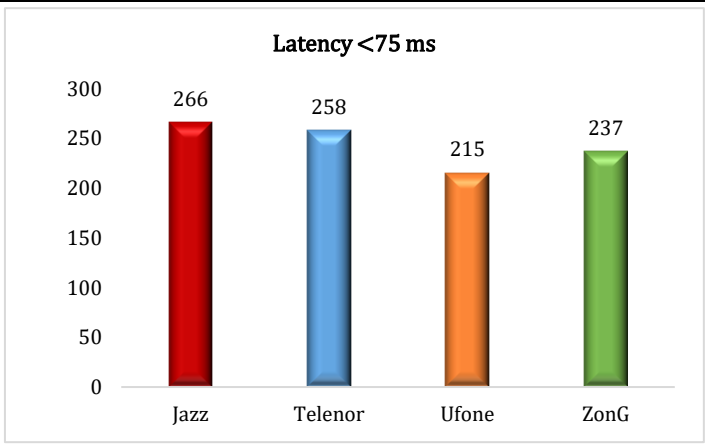
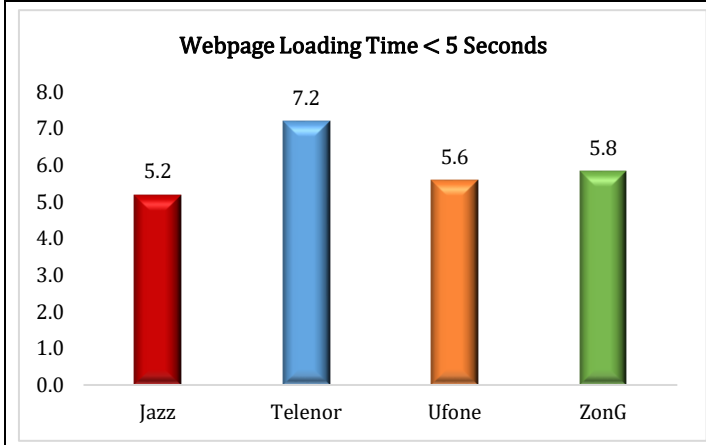
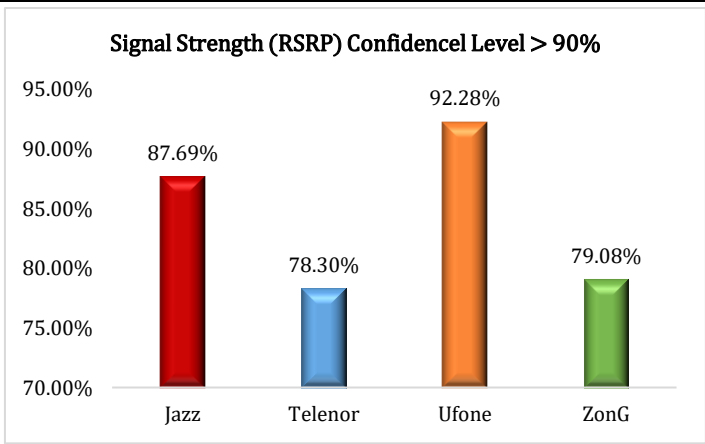
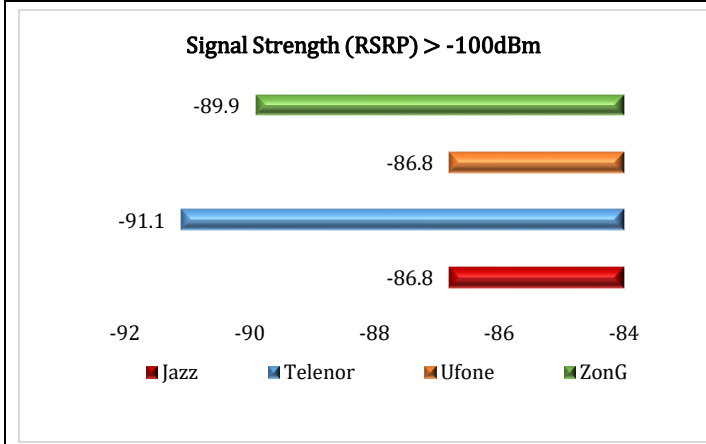
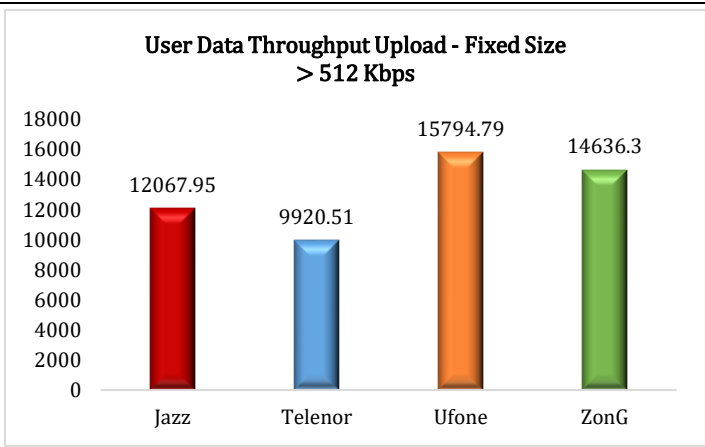
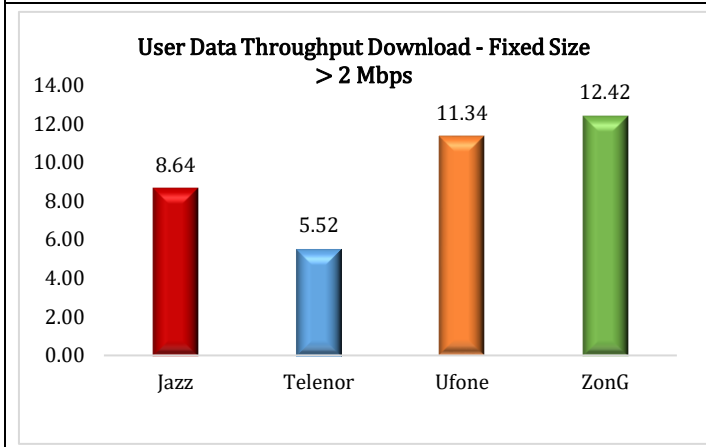
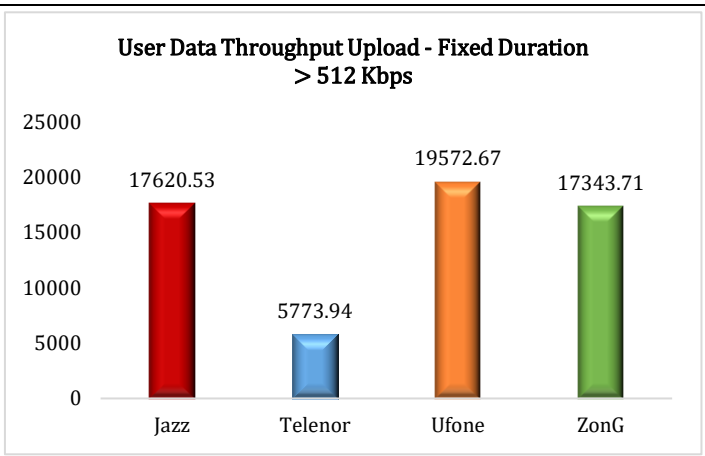
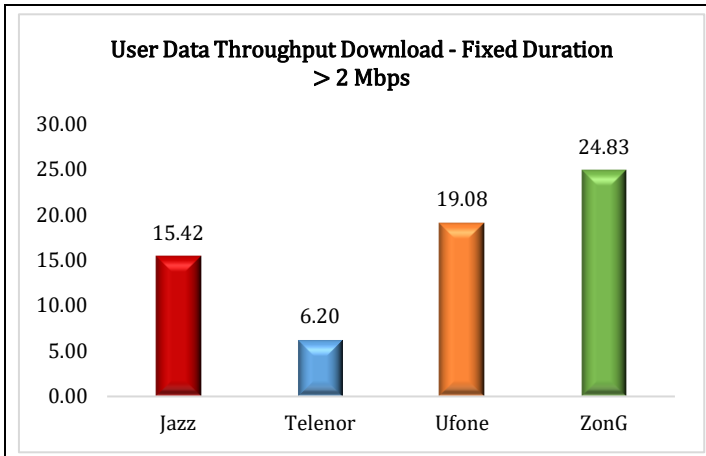
Latency < 75 ms



QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – LAHORE TO ABDUL HAKEEM

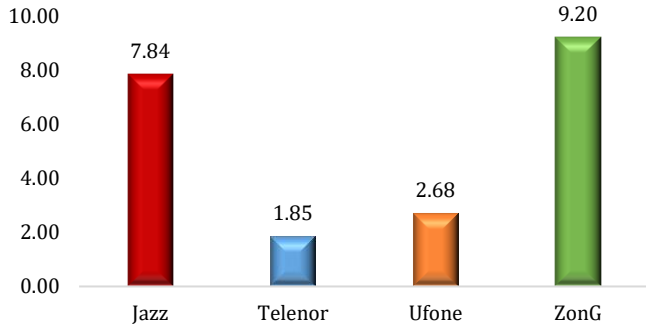


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – LAHORE TO ISLAMABAD

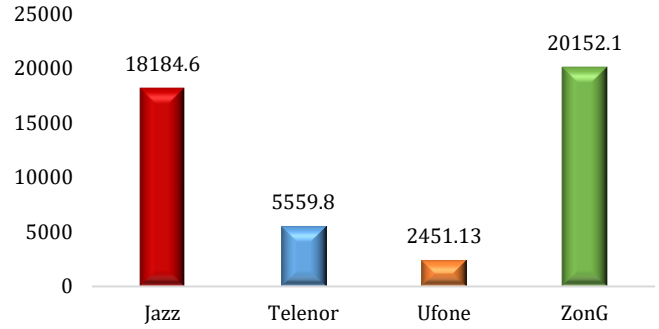


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – LAHORE TO SIALKOT

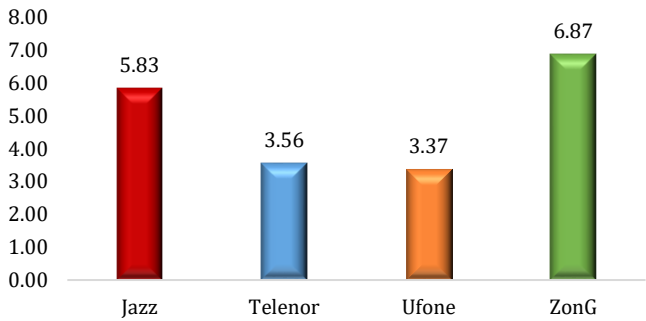
User Data Throughput Download - Fixed Duration > 2 Mbps



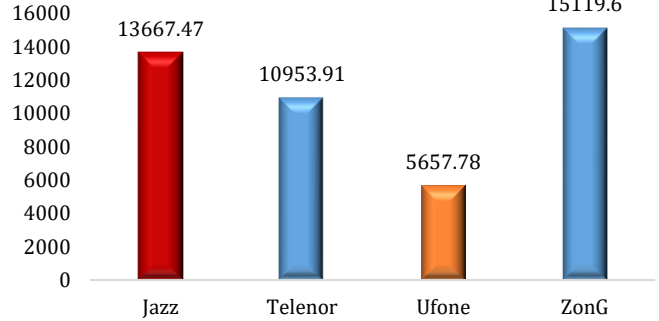
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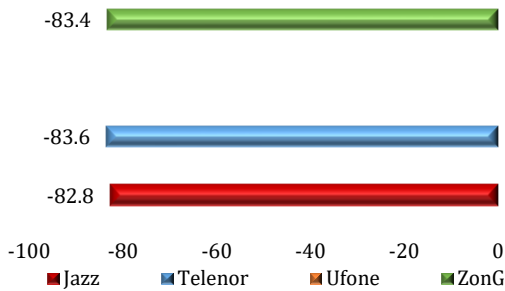
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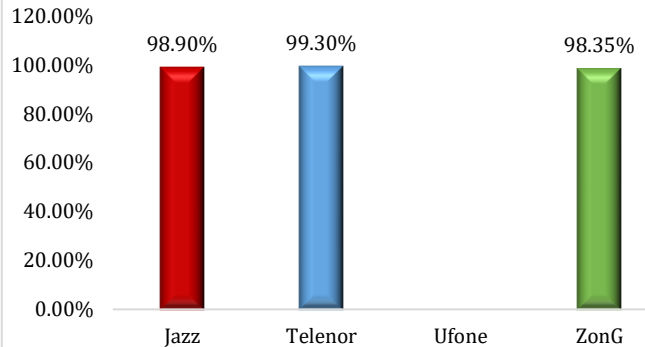
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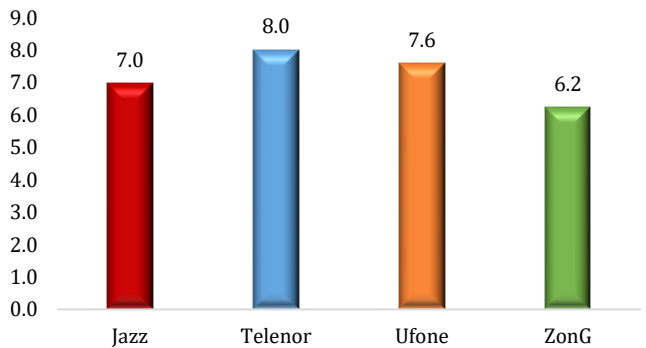
Signal Strength (RSRP) > -100dBm



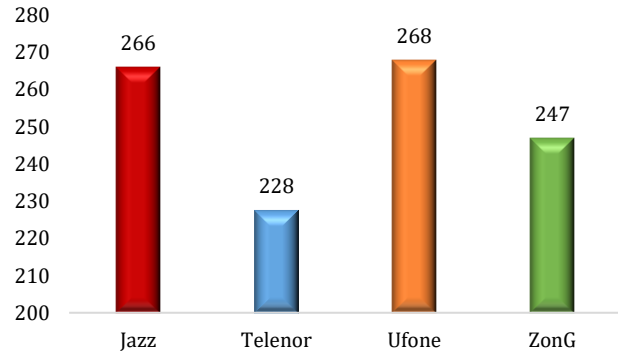
Signal Strength (RSRP) Confidencel Level > 90%



Webpage Loading Time < 5 Seconds

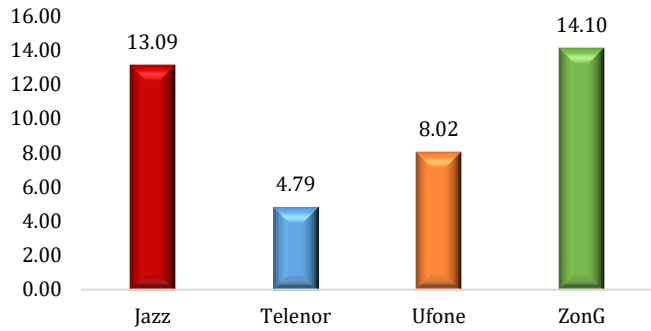


Latency < 75 ms

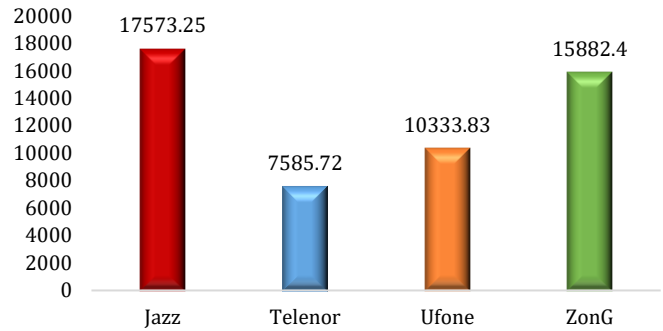


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – RAWALPINDI TO TORKHUM

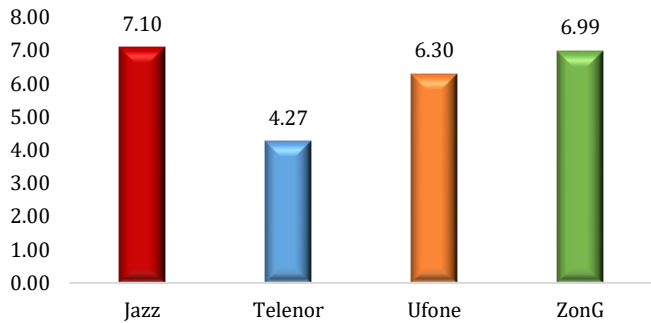
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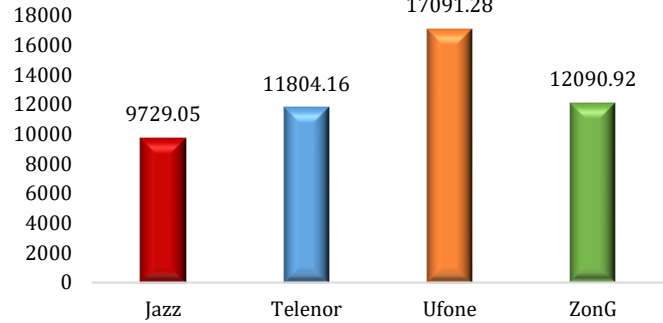
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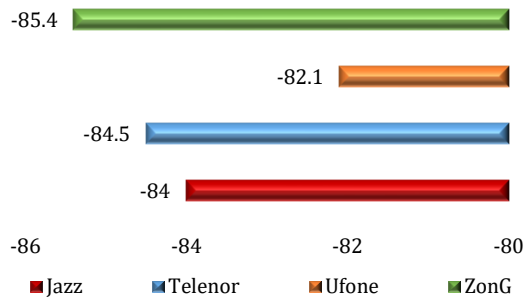
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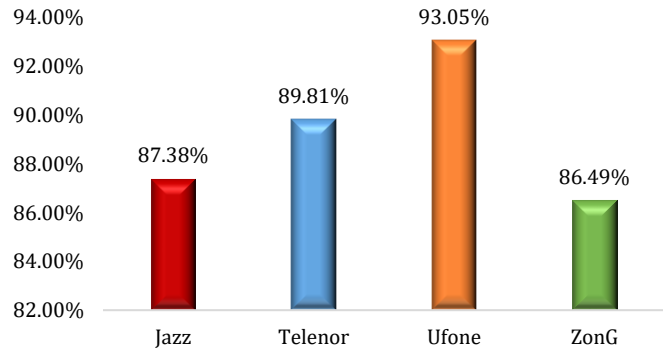
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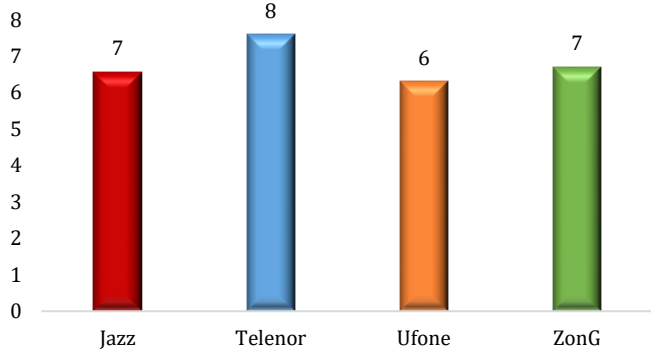
Signal Strength (RSRP) > -100dBm



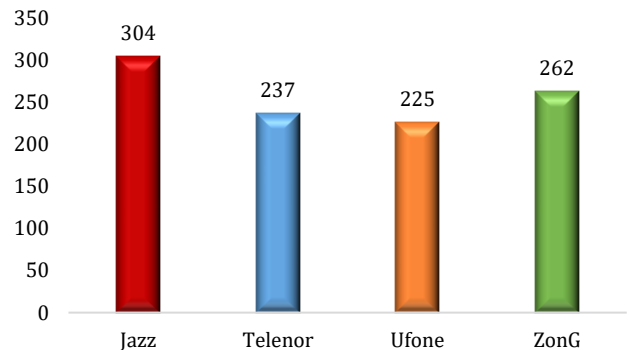
Signal Strength (RSRP) Confidence Level > 90%



Webpage Loading Time < 5 Seconds



Latency < 75 ms

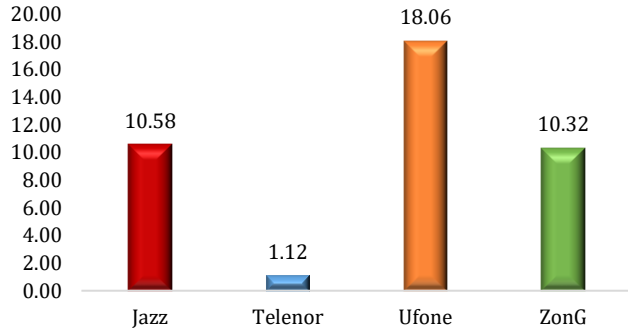


QUALITY OF SERVICE SURVEY RESULTS

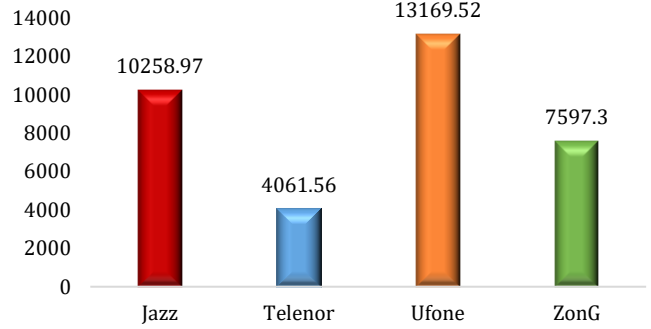
(4G)

QUALITY OF SERVICE SURVEY RESULTS (4G) – HAZARA MOTORWAY

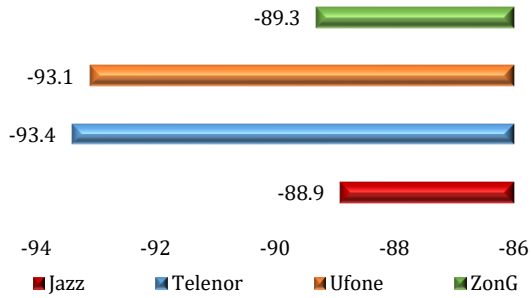
**User Data Throughput Download (4G)
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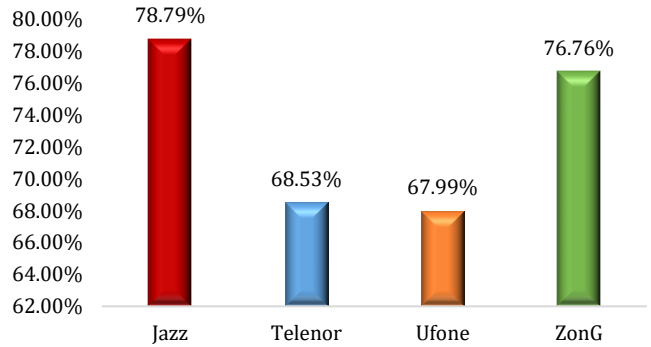
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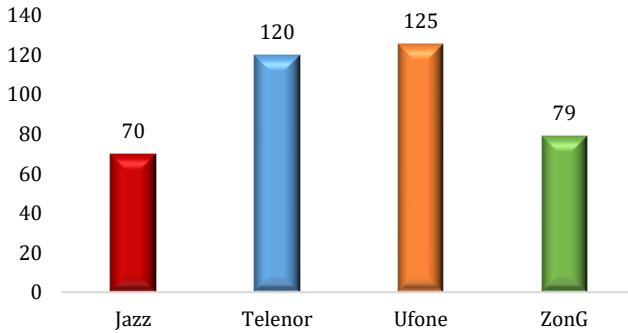
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

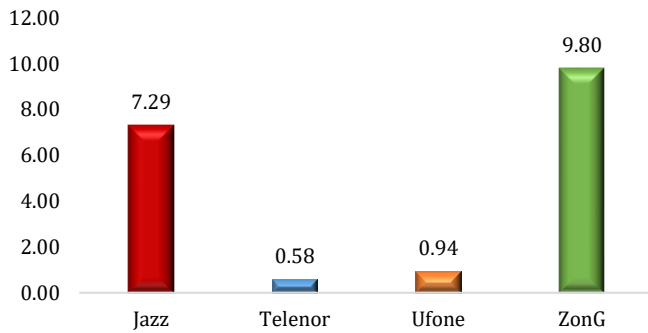


Latency (4G) <75 ms

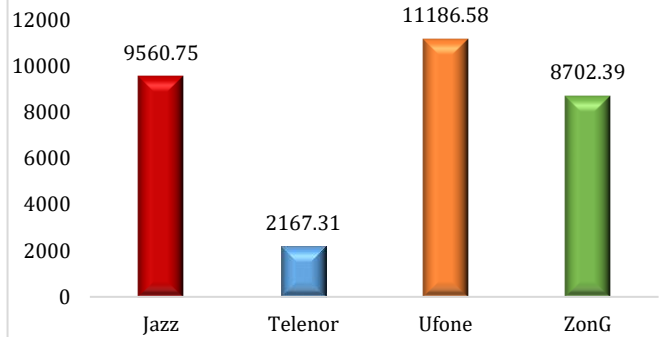


QUALITY OF SERVICE SURVEY RESULTS (4G) – HARIPUR TO TAXILA

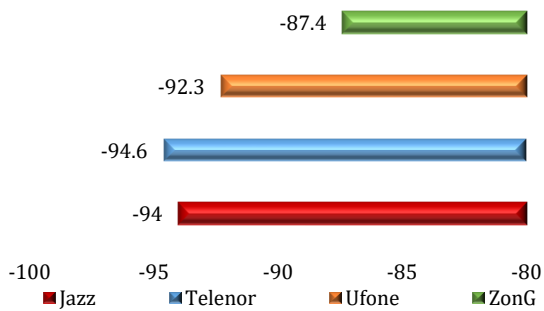
**User Data Throughput Download (4G)
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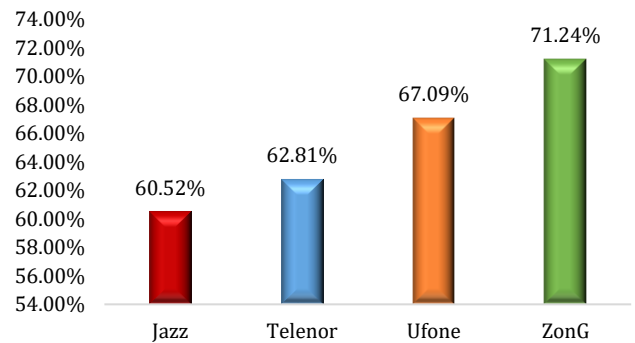
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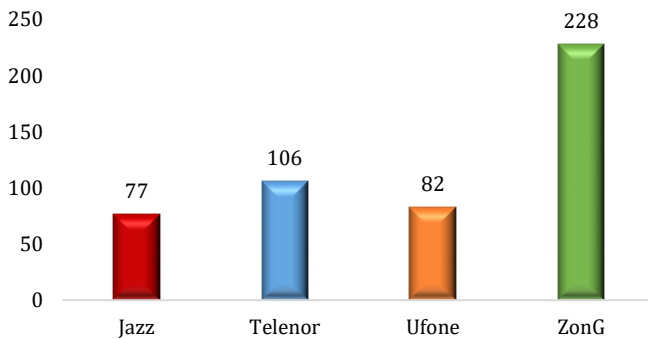
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

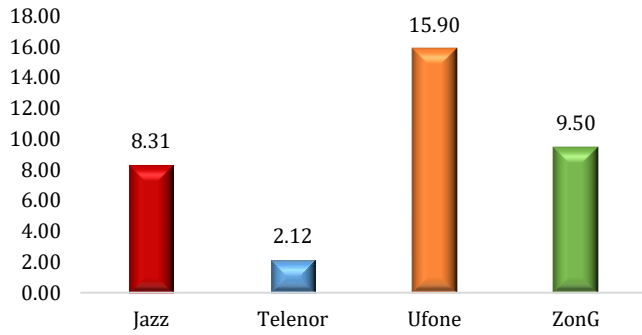


Latency (4G) <75 ms

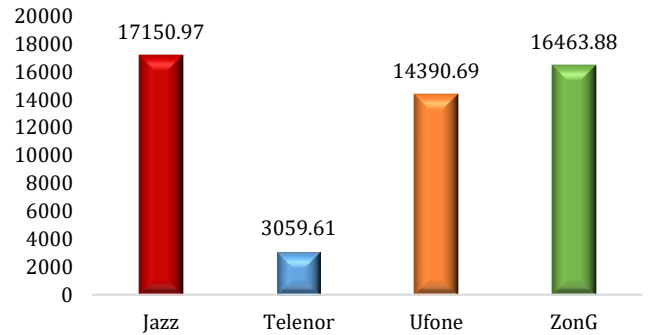


QUALITY OF SERVICE SURVEY RESULTS (4G) – PINDI BHATIAN TO MULTAN

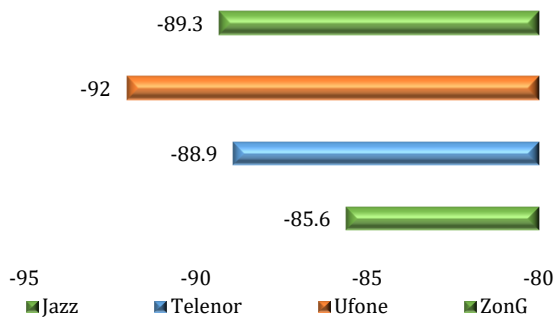
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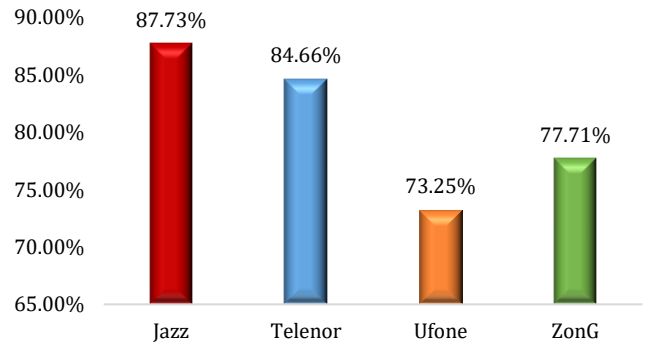
**User Data Throughput Upload (4G)
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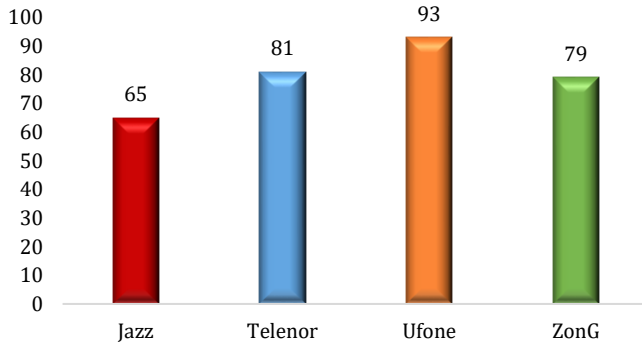
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

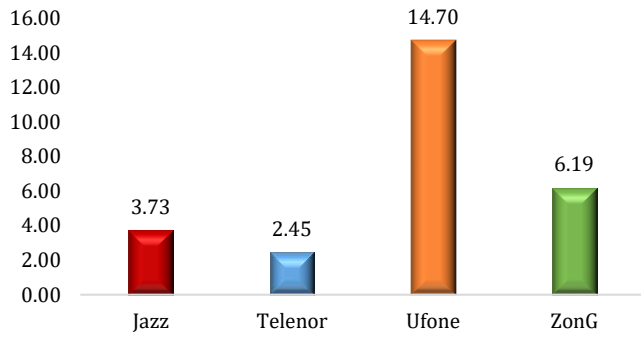


Latency (4G) <75 ms

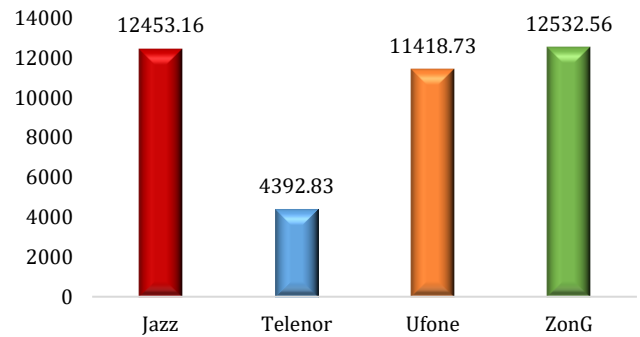


QUALITY OF SERVICE SURVEY RESULTS (4G) – MULTAN TO SUKKUR

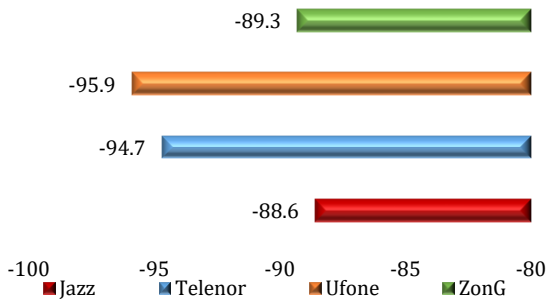
**User Data Throughput Download (4G)
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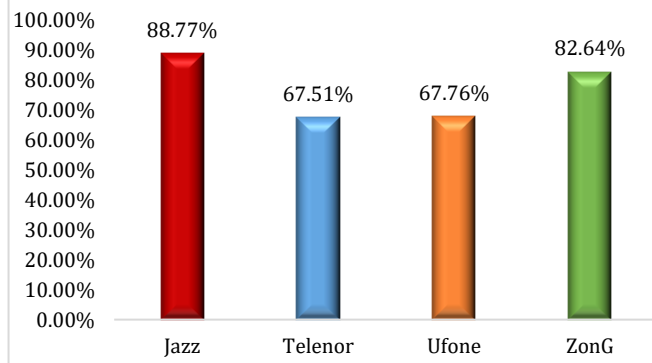
**User Data Throughput Upload (4G)
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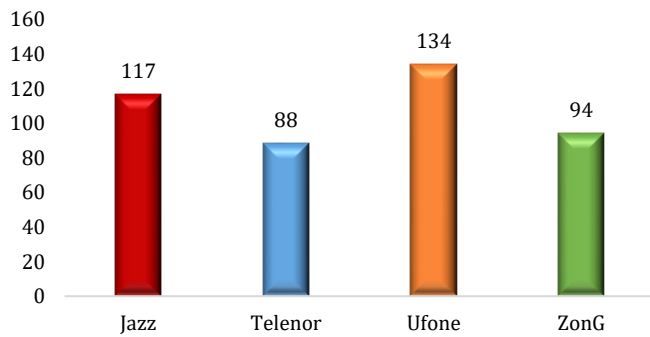
Signal Strength (RSRP) > -100dBm



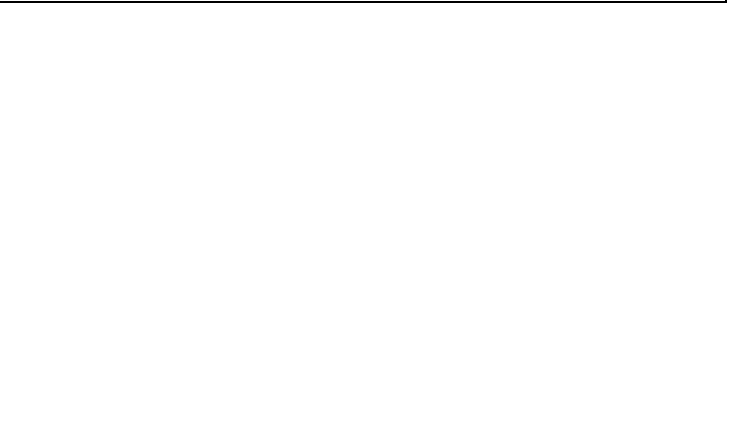
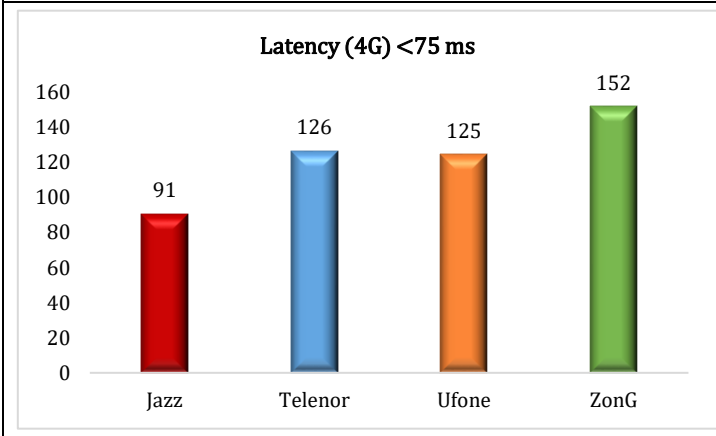
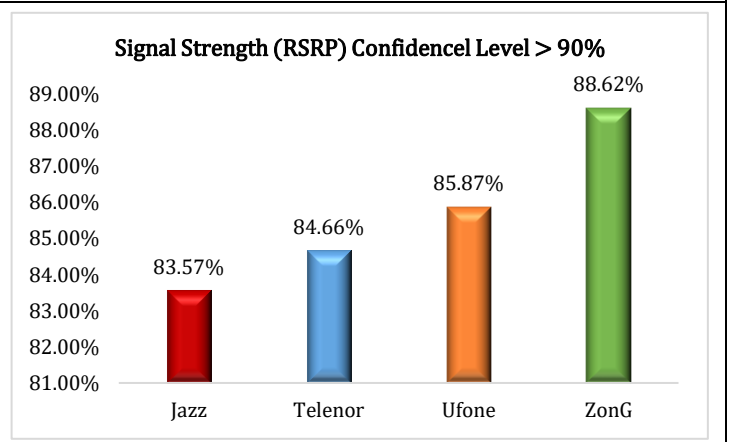
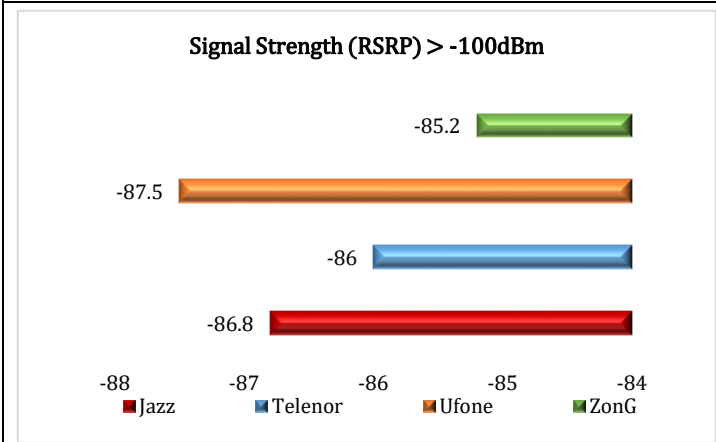
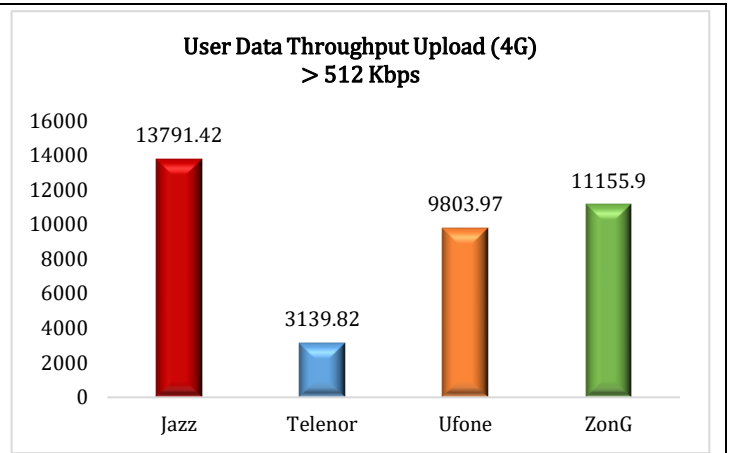
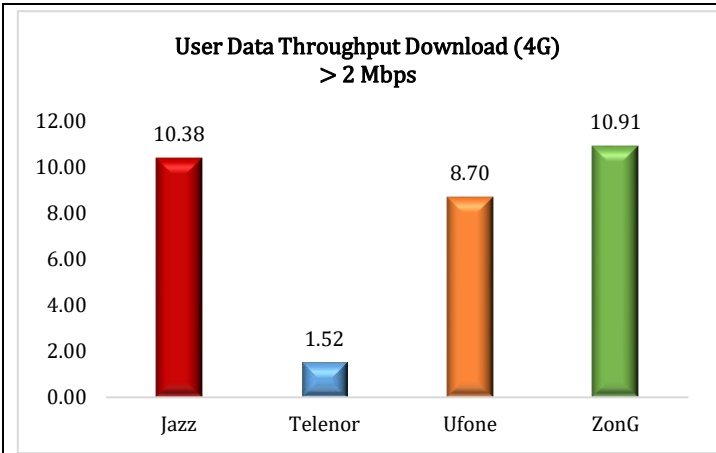
Signal Strength (RSRP) Confidencel Level > 90%



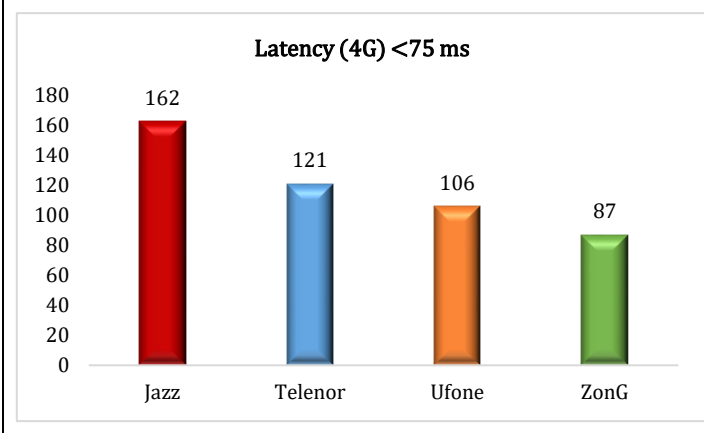
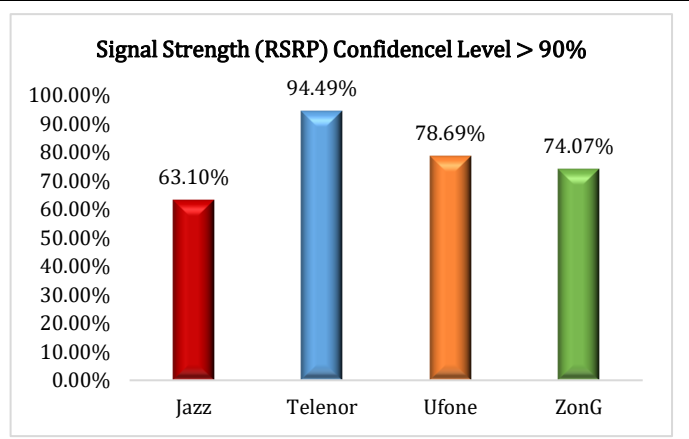
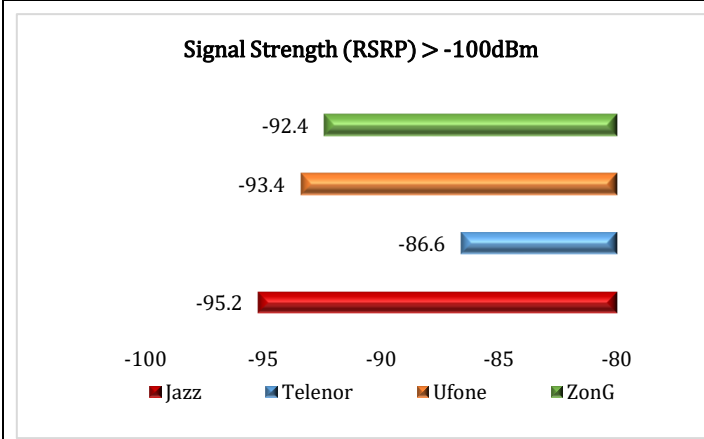
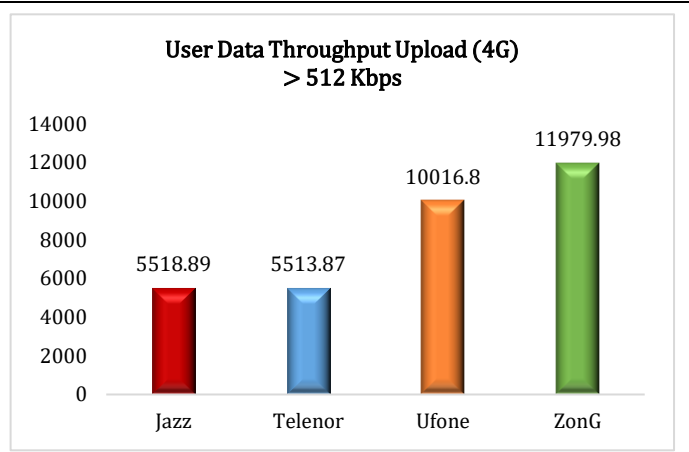
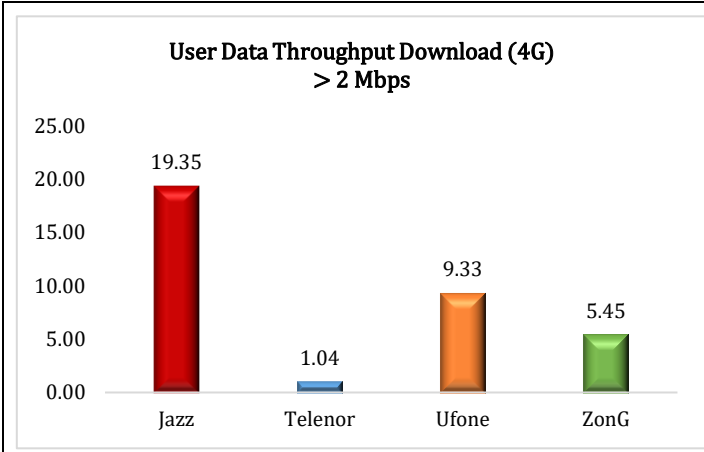
Latency (4G) <75 ms



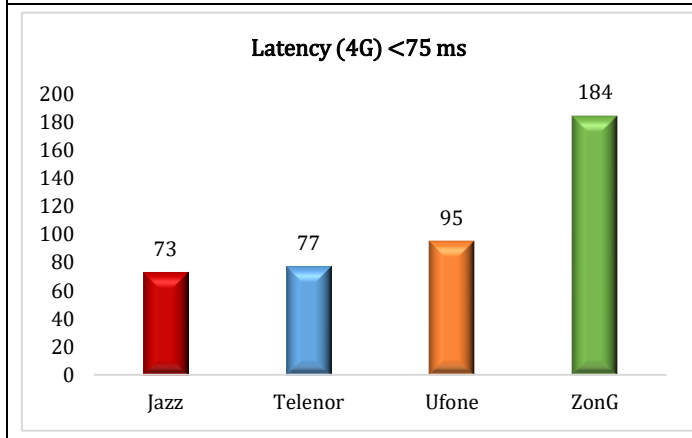
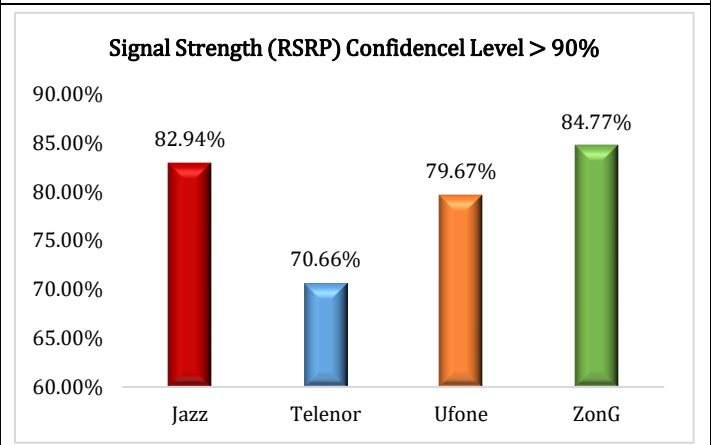
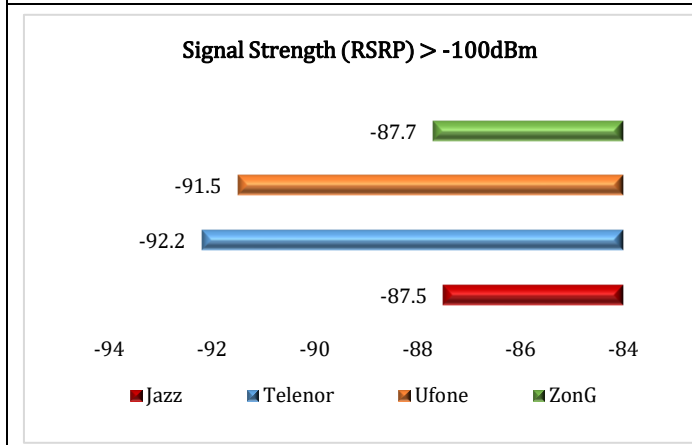
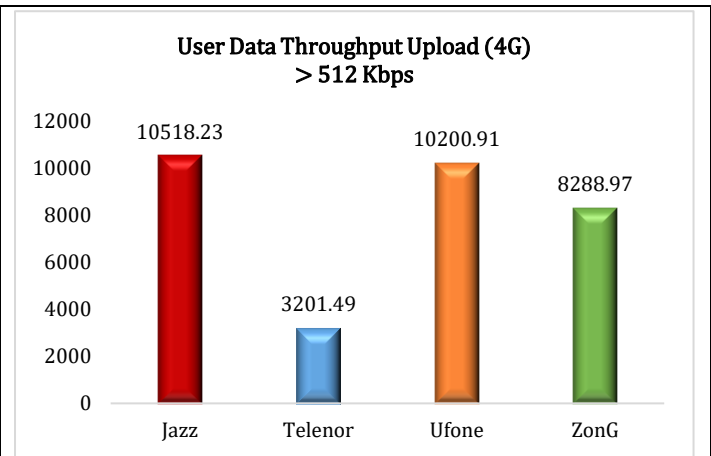
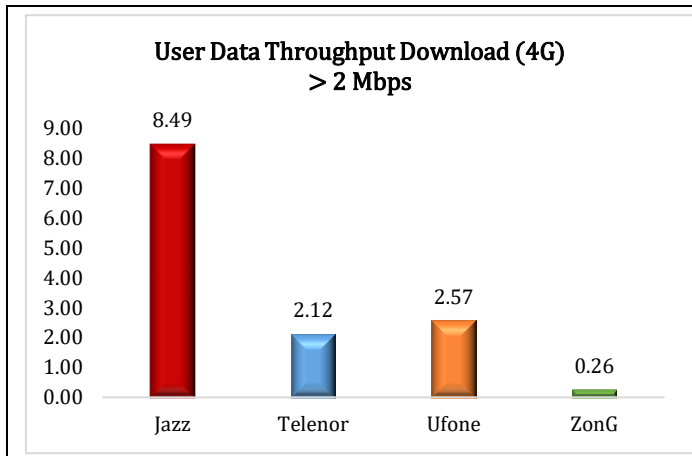
QUALITY OF SERVICE SURVEY RESULTS (4G) – NOWSHERA TO CHITRAL



QUALITY OF SERVICE SURVEY RESULTS (4G) – SWABI TO KATLANG

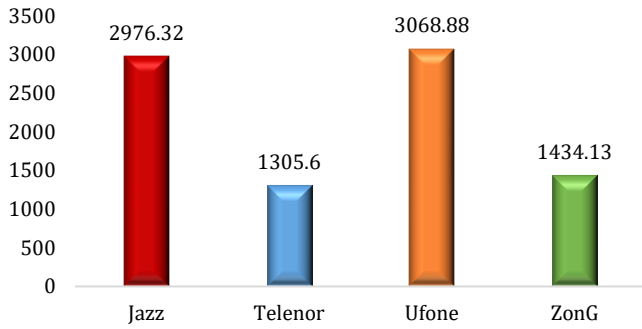


QUALITY OF SERVICE SURVEY RESULTS (4G) – ISLAMABAD TO KOHALA

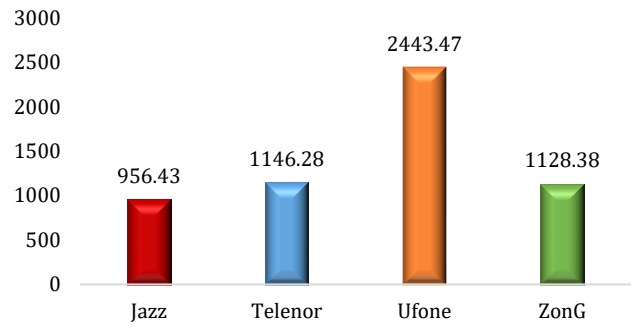


QUALITY OF SERVICE SURVEY RESULTS (4G) – ISLAMABAD TO PESHAWAR

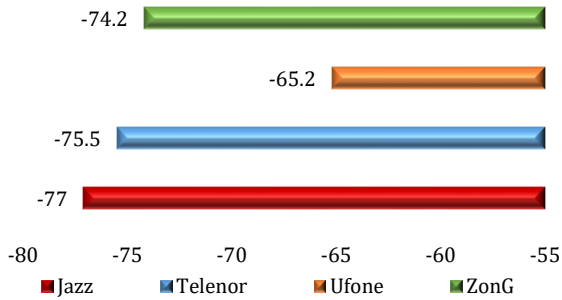
User Data Throughput Download (3G) > 256 Kbps



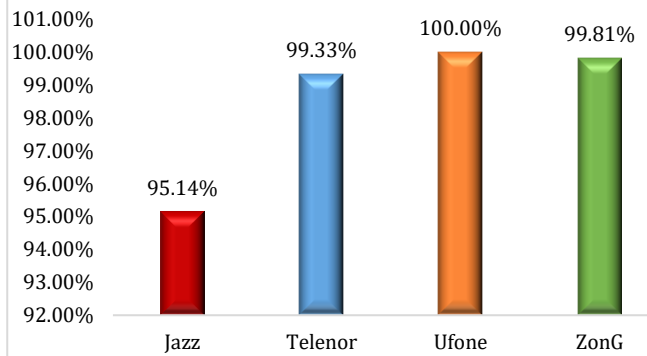
User Data Throughput Upload (3G) > 64 Kbps



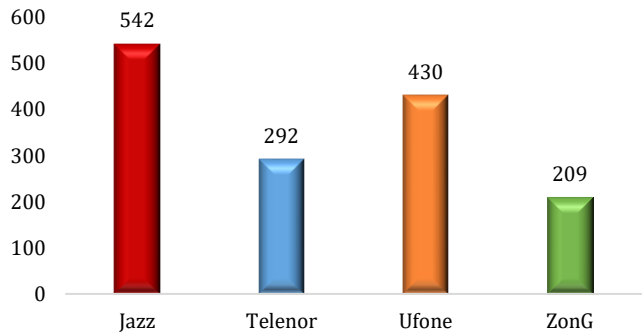
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%

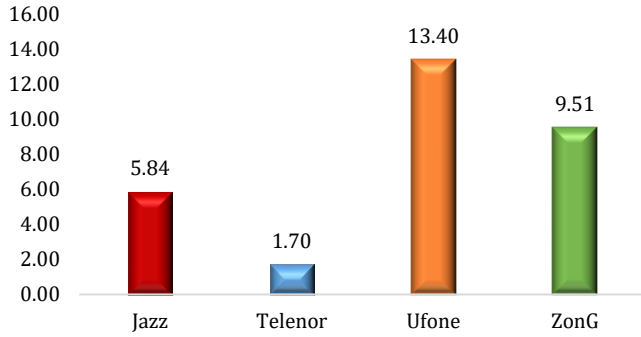


Latency (3G) < 150 ms

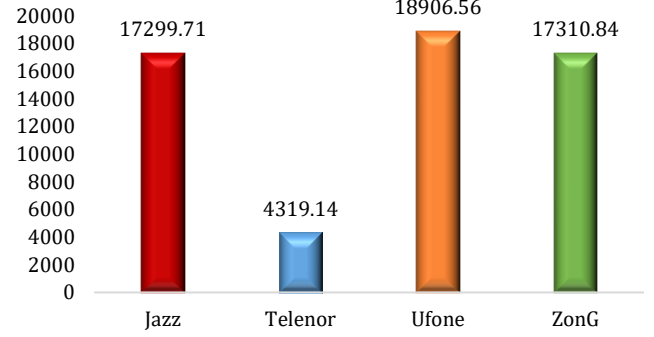


QUALITY OF SERVICE SURVEY RESULTS (4G) – LAHORE TO ABDUL HAKEEM

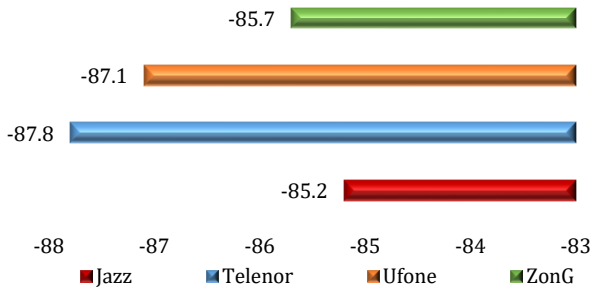
**User Data Throughput Download (4G)
> 2 Mbps**



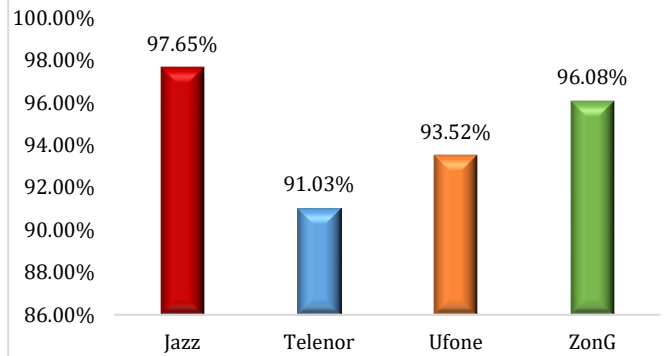
**User Data Throughput Upload (4G)
> 512 Kbps**



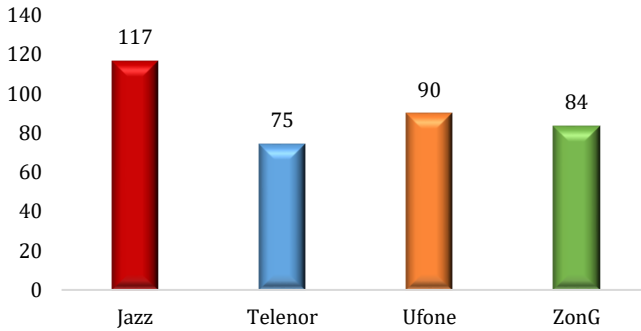
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

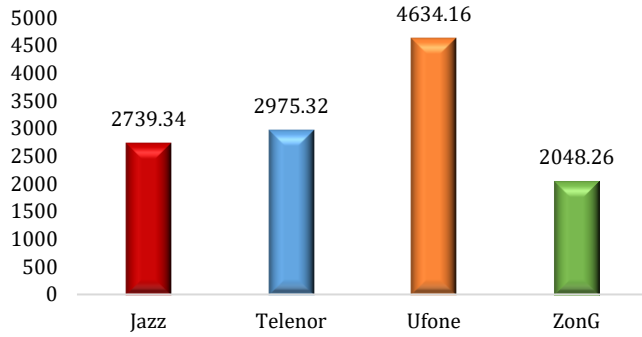


Latency (4G) <75 ms

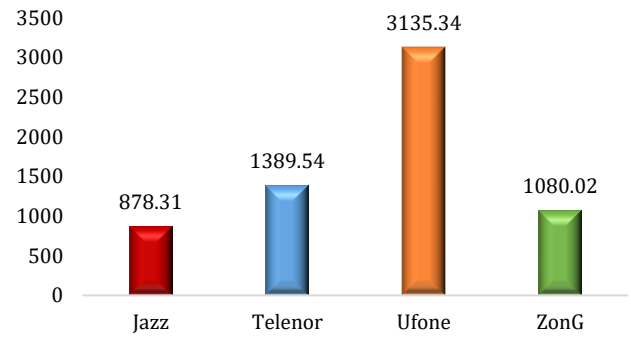


QUALITY OF SERVICE SURVEY RESULTS (4G) – LAHORE TO ISLAMABAD

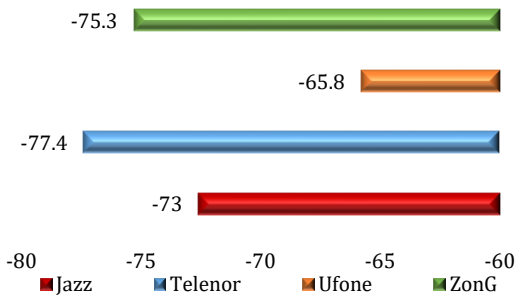
**User Data Throughput Download (3G)
> 256 Kbps**



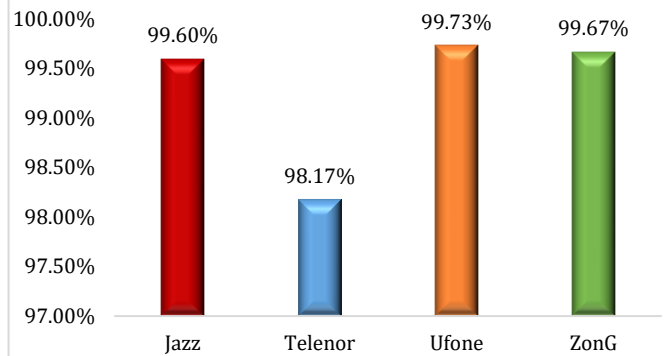
**User Data Throughput Upload (3G)
> 64 Kbps**



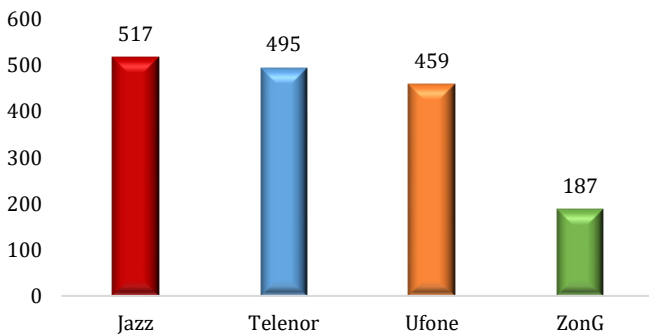
Signal Strength (RSCP) > -100dBm



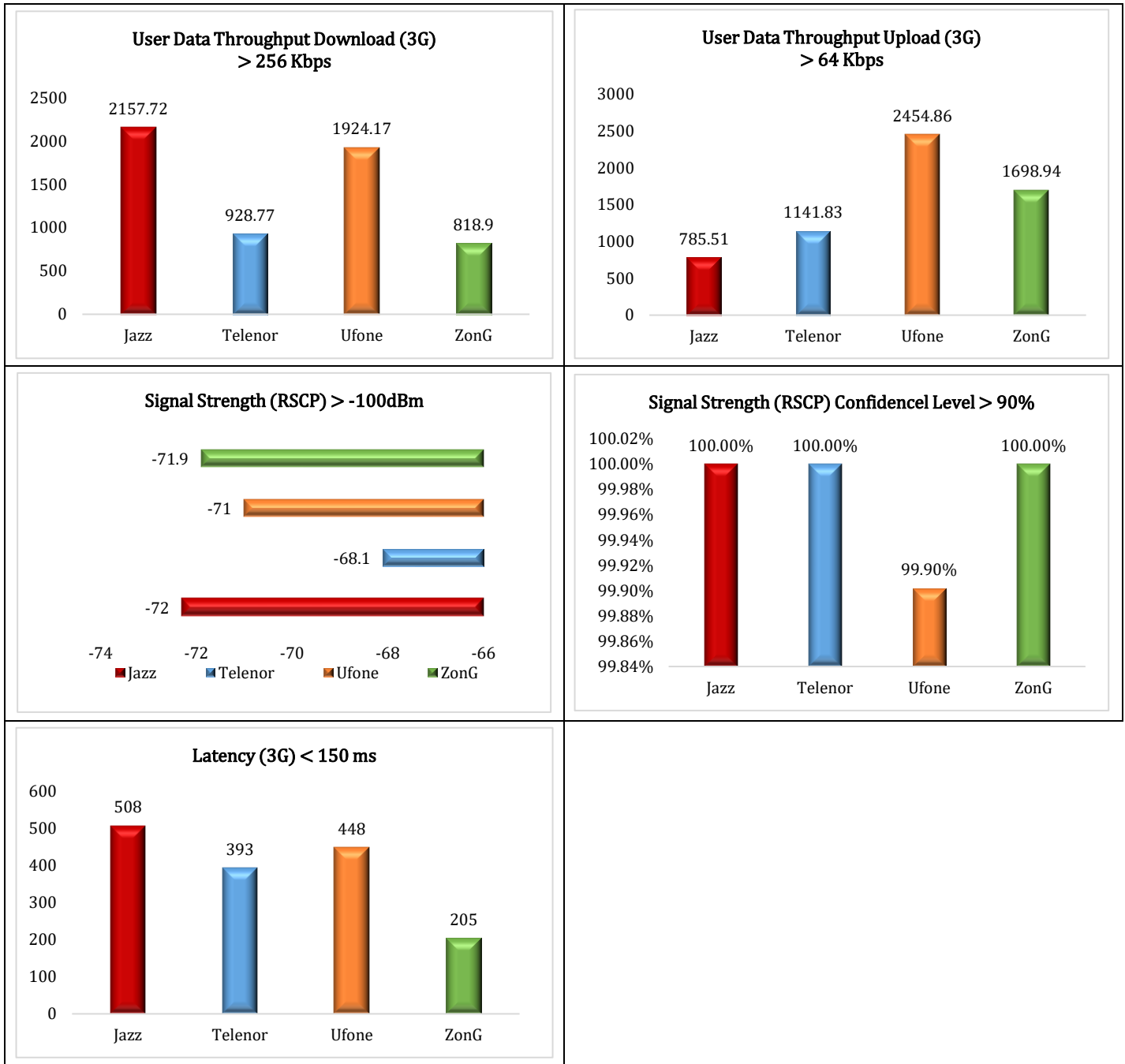
Signal Strength (RSCP) Confidencel Level > 90%



Latency (3G) < 150 ms

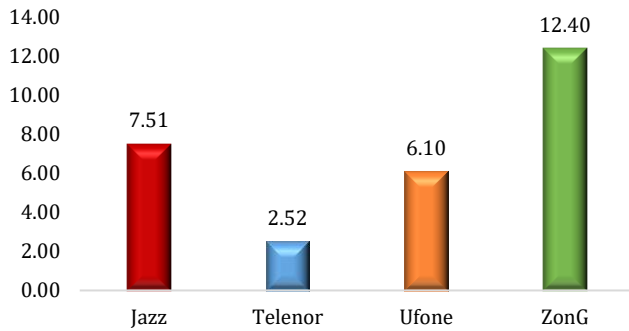


QUALITY OF SERVICE SURVEY RESULTS (4G) – LAHORE TO SIALKOT

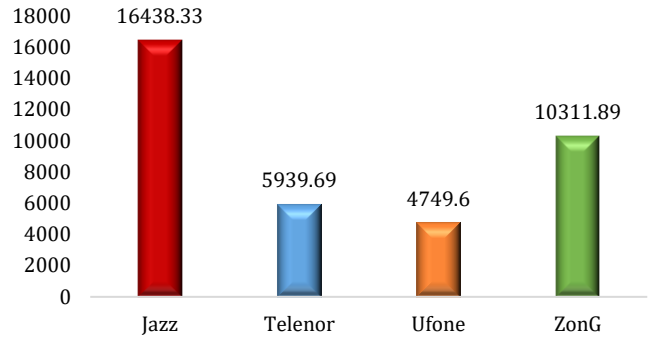


QUALITY OF SERVICE SURVEY RESULTS (4G) – RAWALPINDI TO TORKHUM

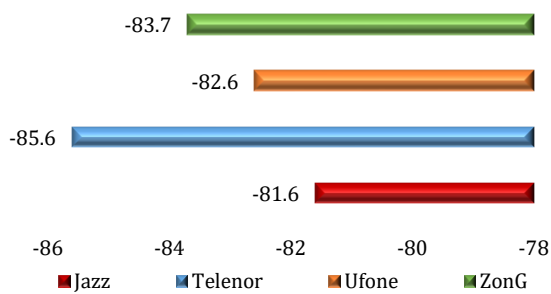
**User Data Throughput Download (4G)
> 2 Mbps**



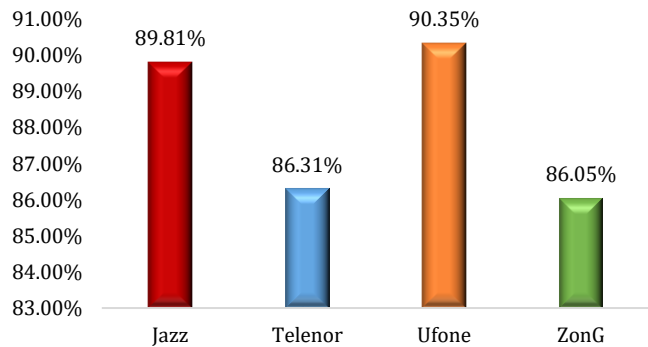
**User Data Throughput Upload (4G)
> 512 Kbps**



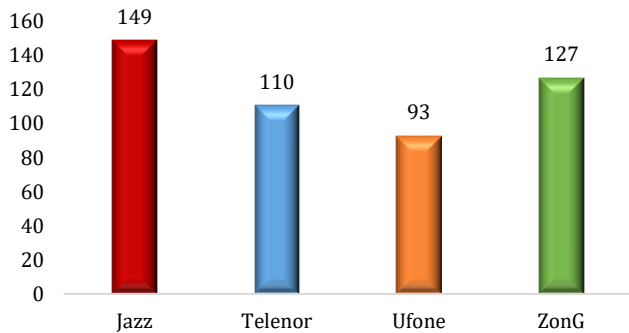
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidence Level > 90%



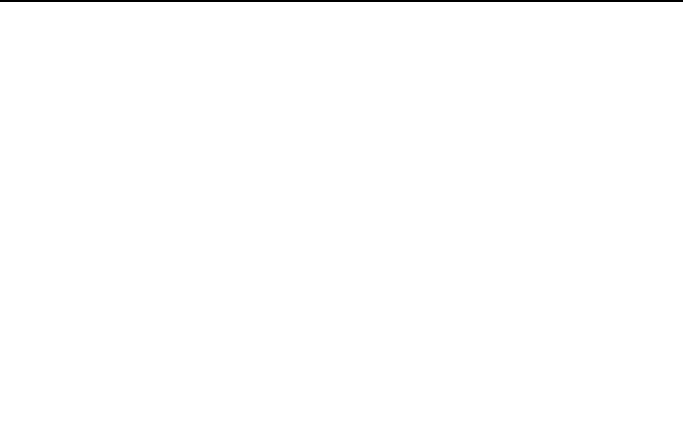
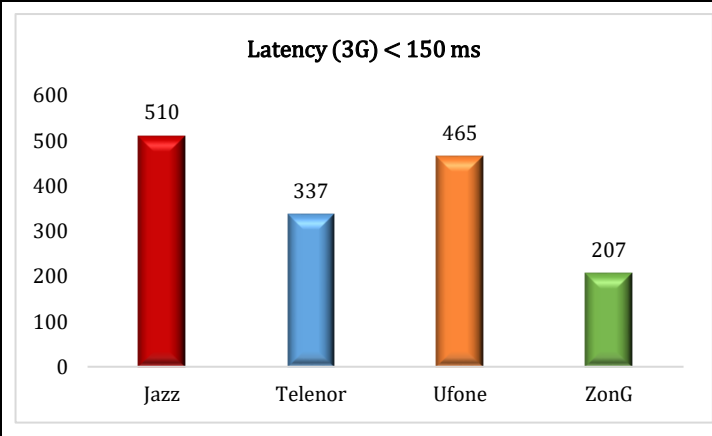
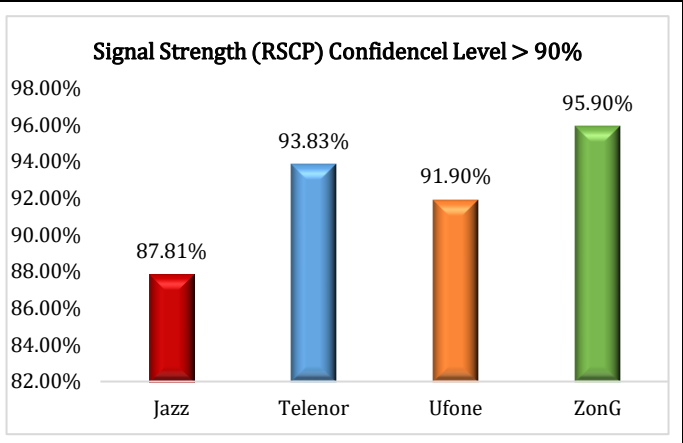
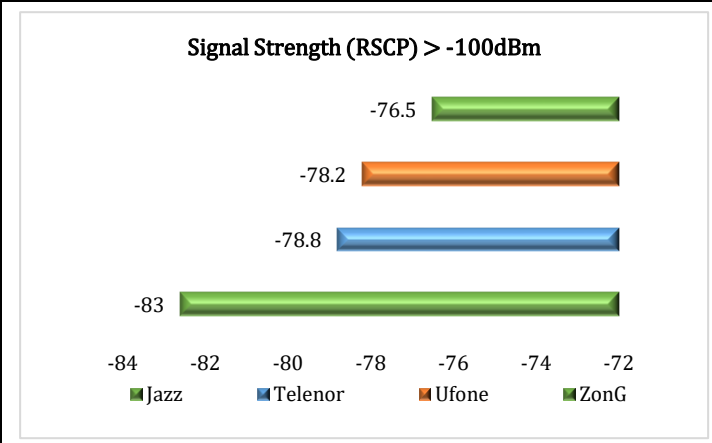
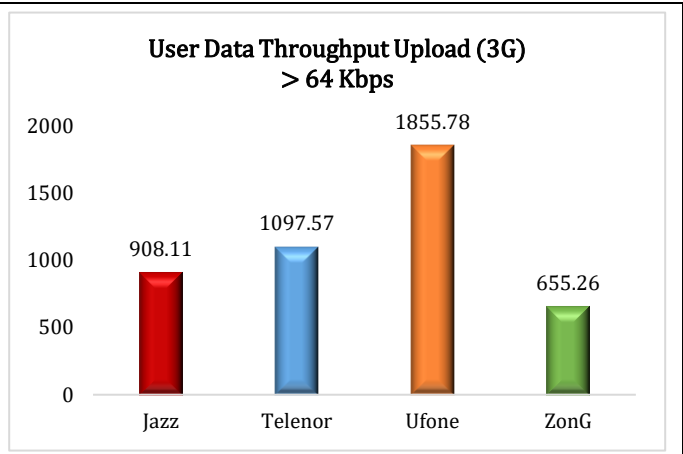
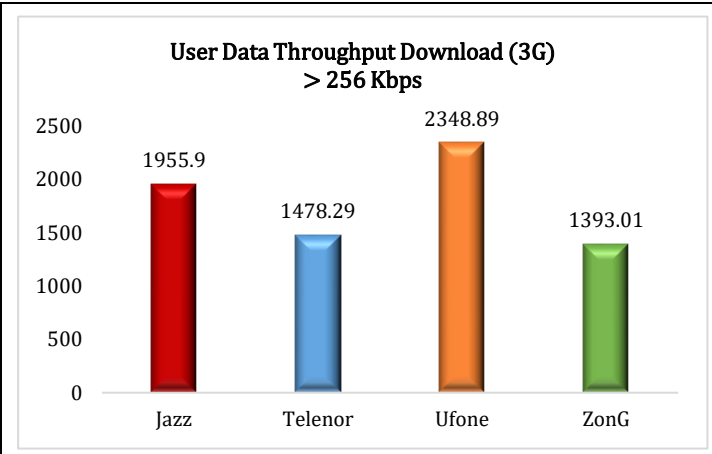
Latency (4G) <75 ms



QUALITY OF SERVICE SURVEY RESULTS

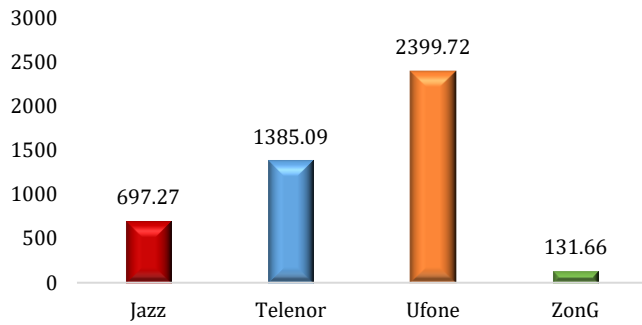
(3G)

QUALITY OF SERVICE SURVEY RESULTS (3G) – HAZARA MOTORWAY

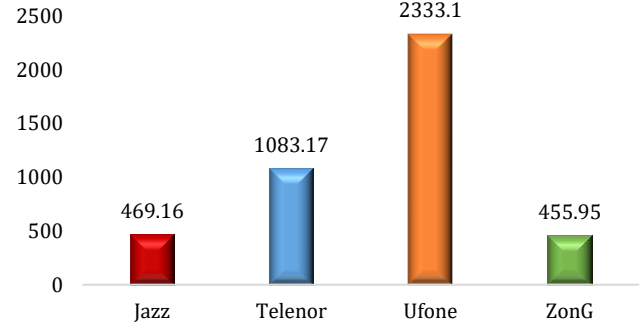


QUALITY OF SERVICE SURVEY RESULTS (3G) – HARIPUR TO TAXILA

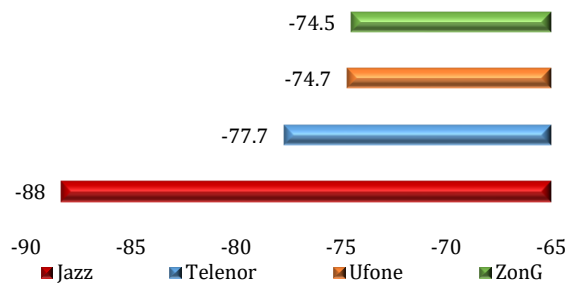
**User Data Throughput Download (3G)
> 256 Kbps**



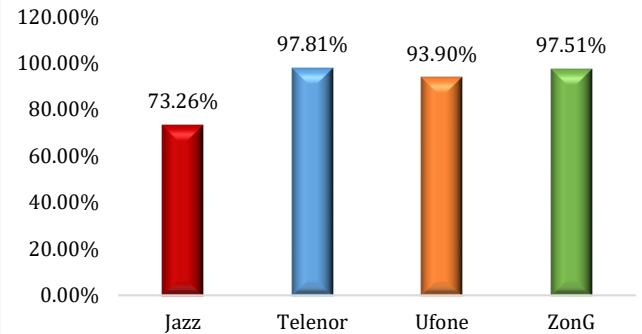
**User Data Throughput Upload (3G)
> 64 Kbps**



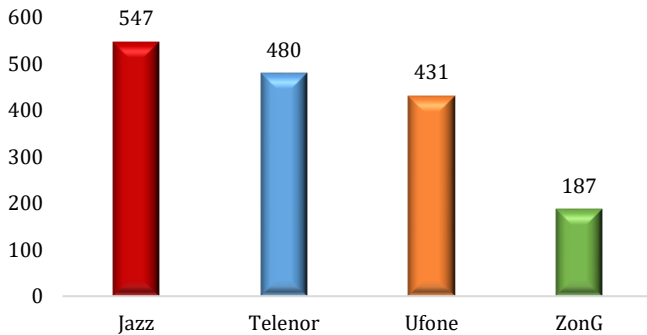
Signal Strength (RSCP) > -100dBm



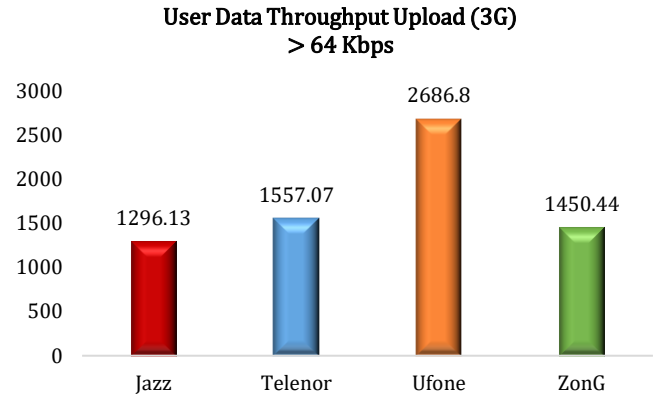
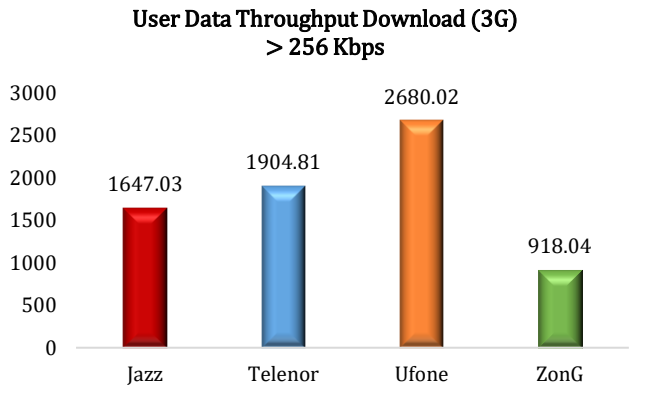
Signal Strength (RSCP) Confidencel Level > 90%



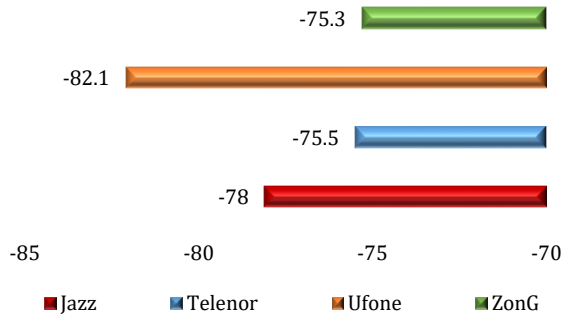
Latency (3G) < 150 ms



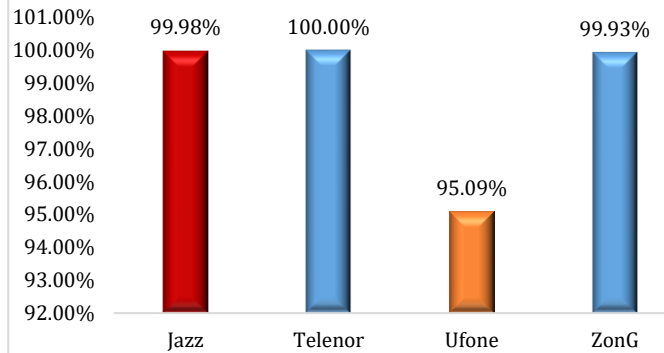
QUALITY OF SERVICE SURVEY RESULTS (3G) – PINDI BHATIAN TO MULTAN



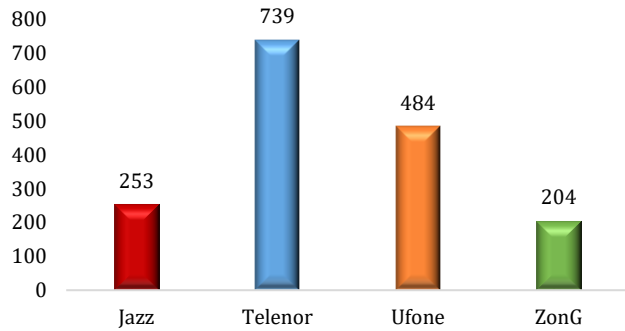
Signal Strength (RSCP) > -100dBm



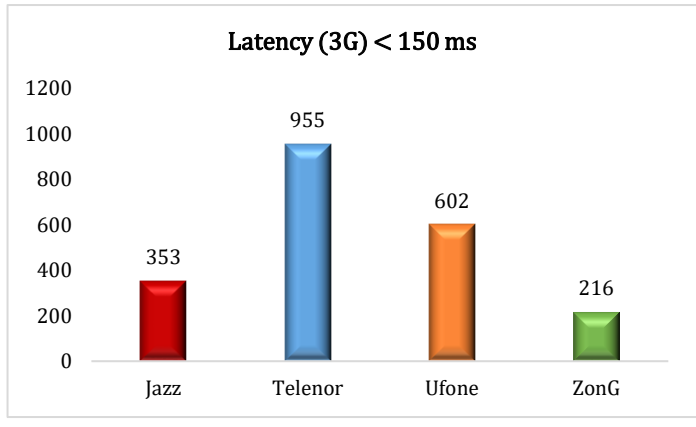
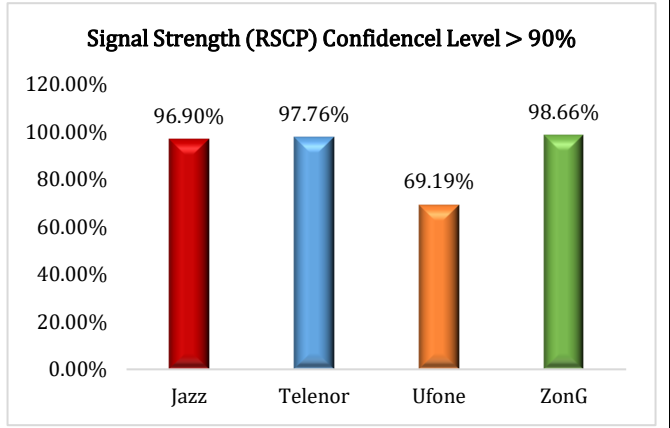
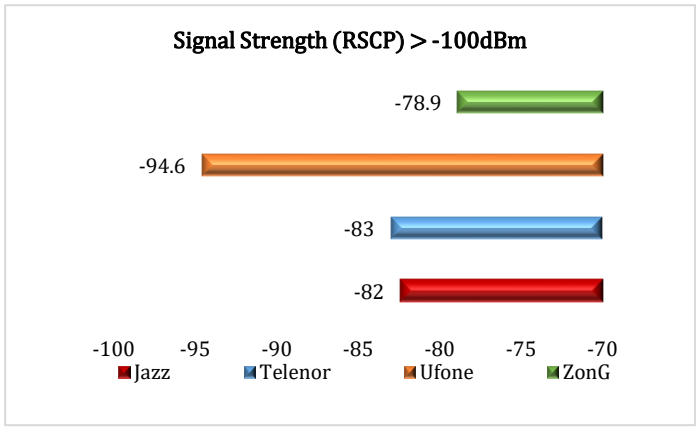
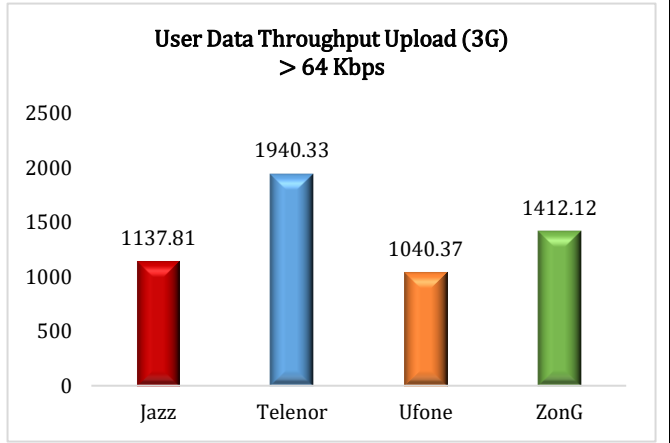
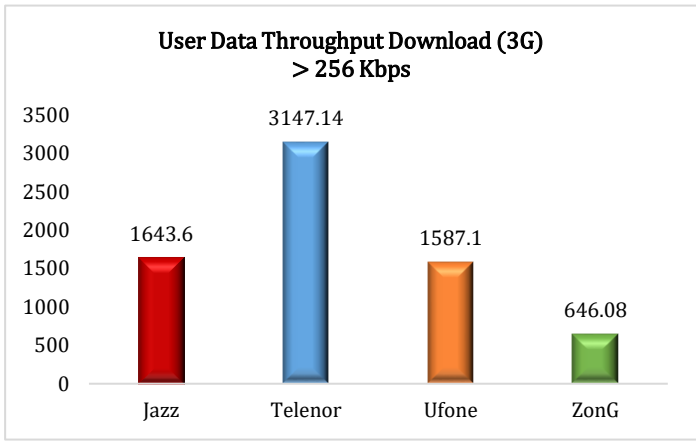
Signal Strength (RSCP) Confidencel Level > 90%



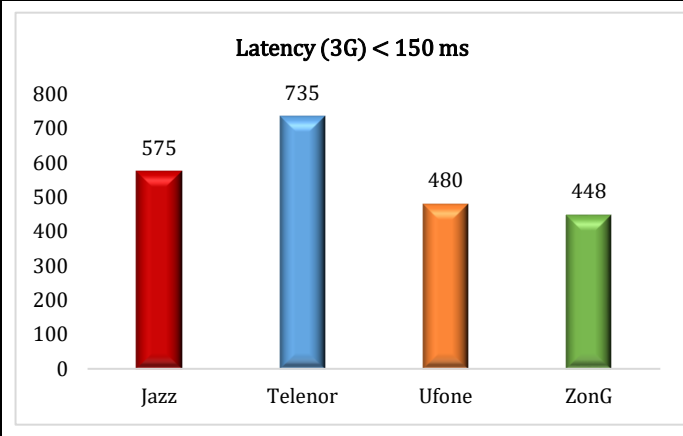
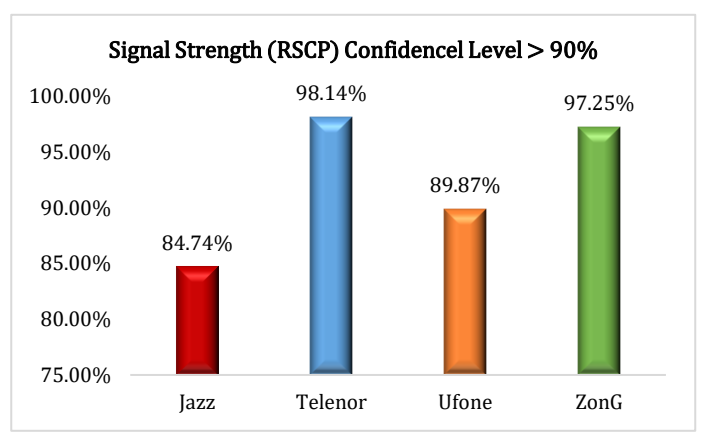
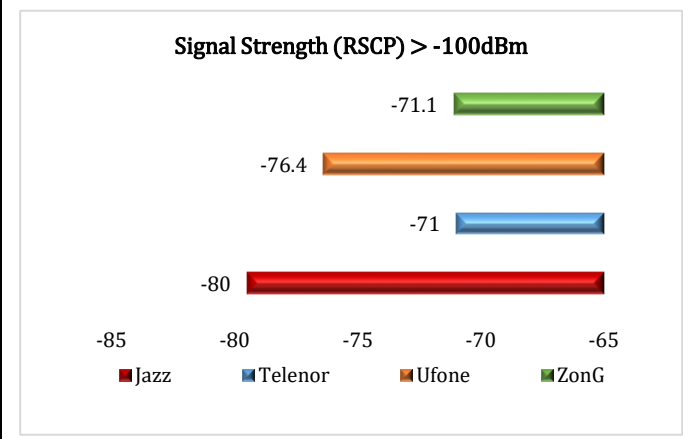
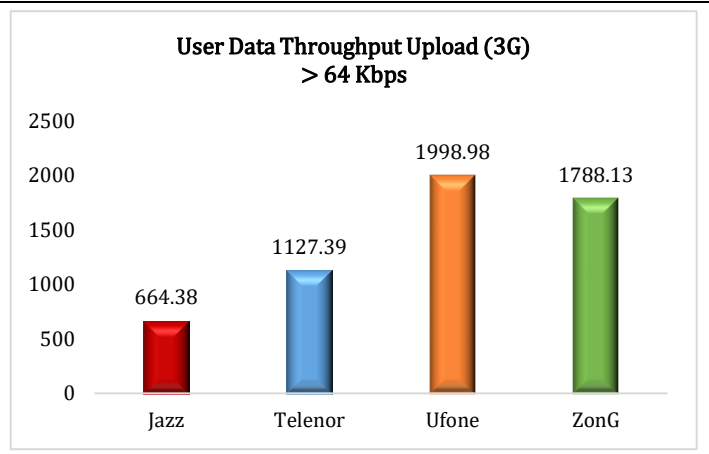
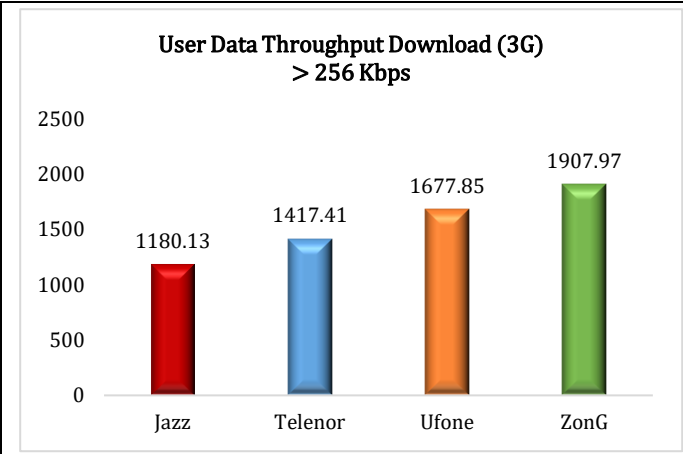
Latency (3G) < 150 ms



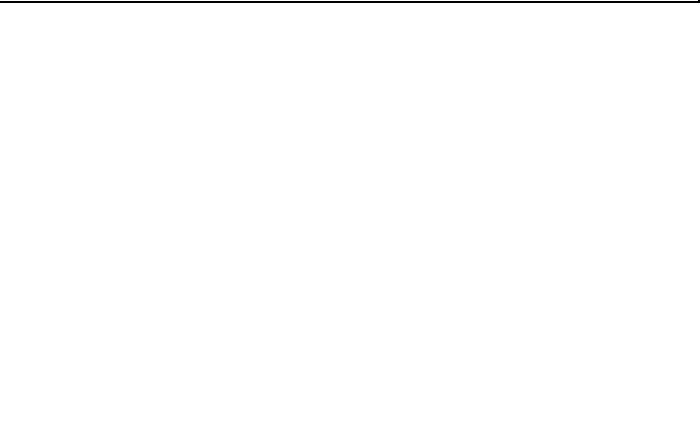
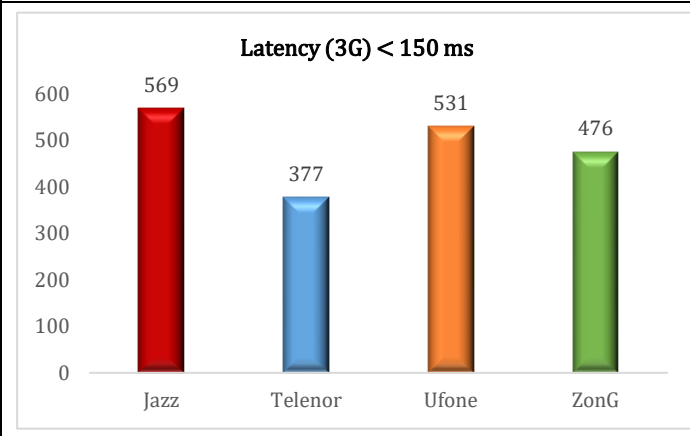
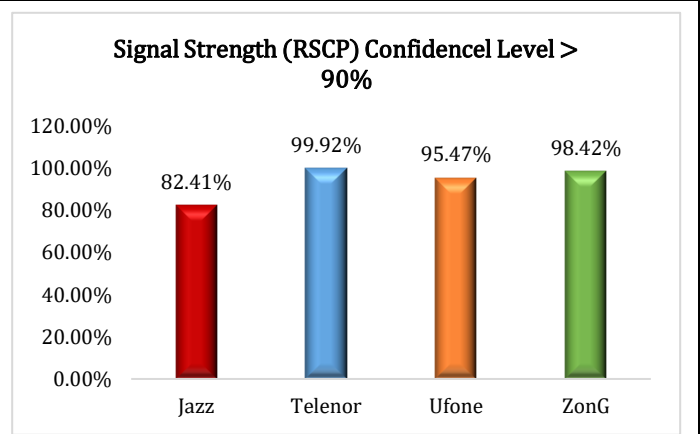
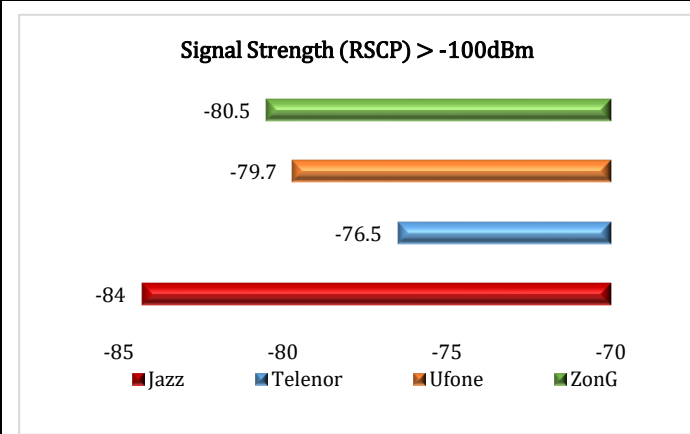
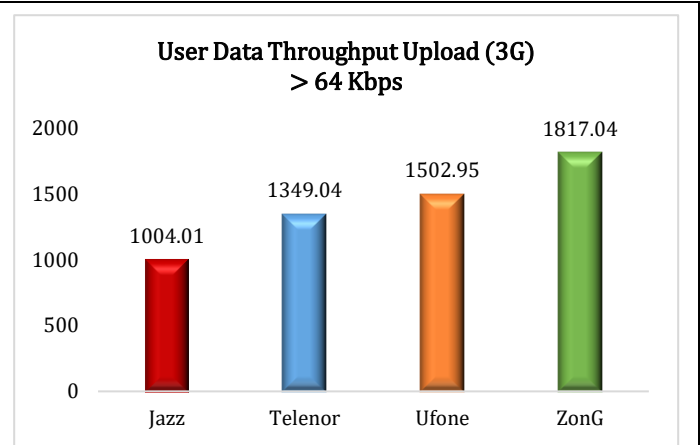
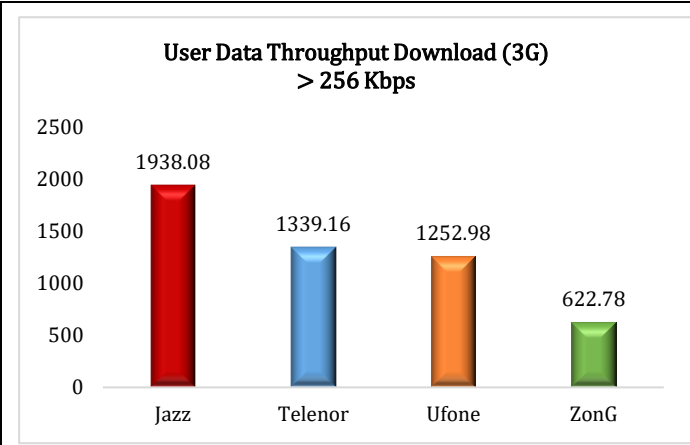
QUALITY OF SERVICE SURVEY RESULTS (3G) – MULTAN TO SUKKUR



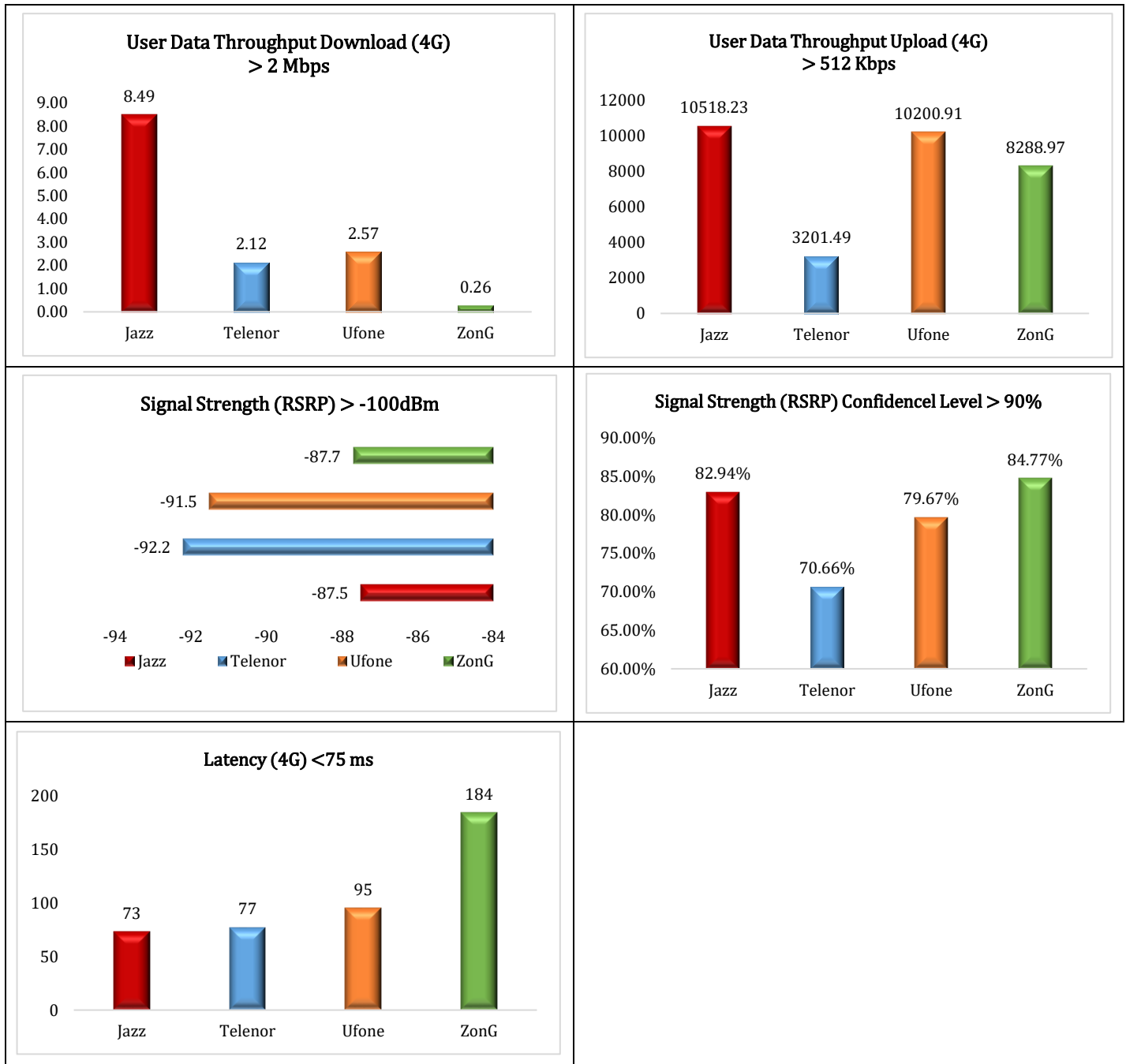
QUALITY OF SERVICE SURVEY RESULTS (3G) – NOWSHERA TO CHITRAL



QUALITY OF SERVICE SURVEY RESULTS (3G) – SWABI TO KATLANG

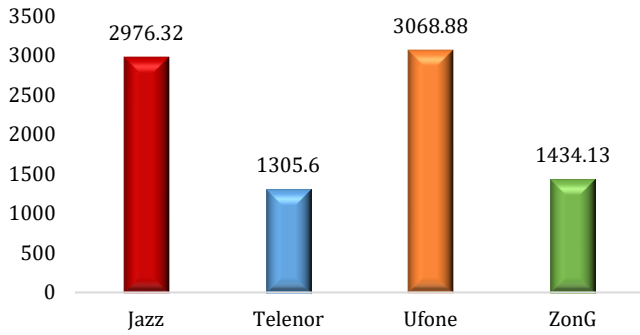


QUALITY OF SERVICE SURVEY RESULTS (3G) – ISLAMABAD TO KOHALA

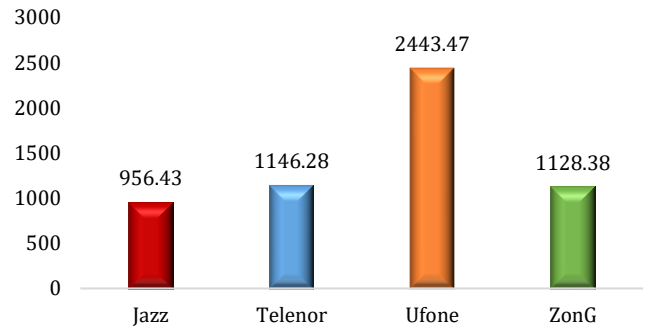


QUALITY OF SERVICE SURVEY RESULTS (3G) – ISLAMABAD TO PESHAWAR

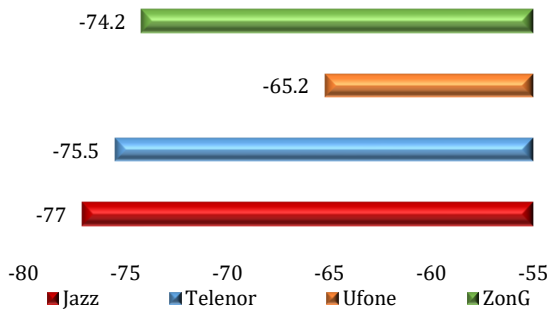
**User Data Throughput Download (3G)
> 256 Kbps**



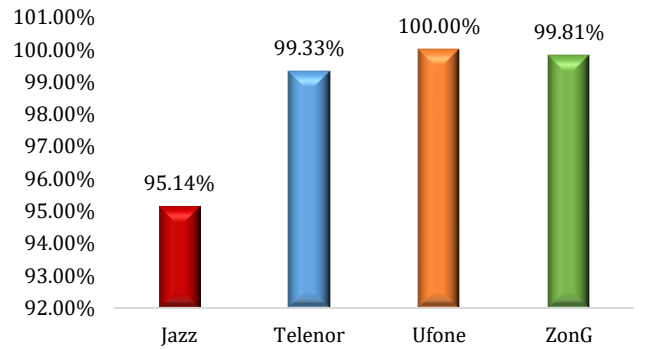
**User Data Throughput Upload (3G)
> 64 Kbps**



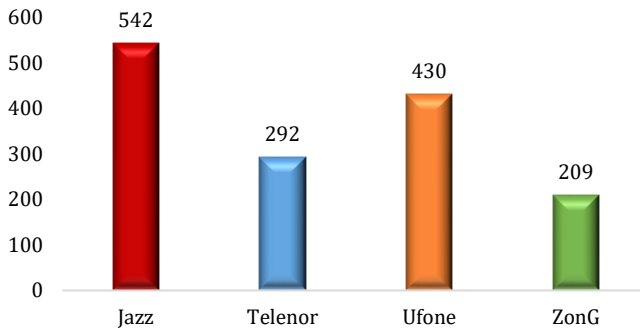
Signal Strength (RSCP) > -100dBm



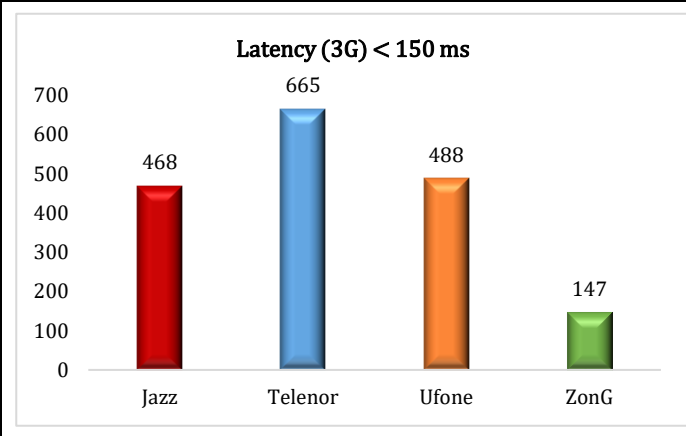
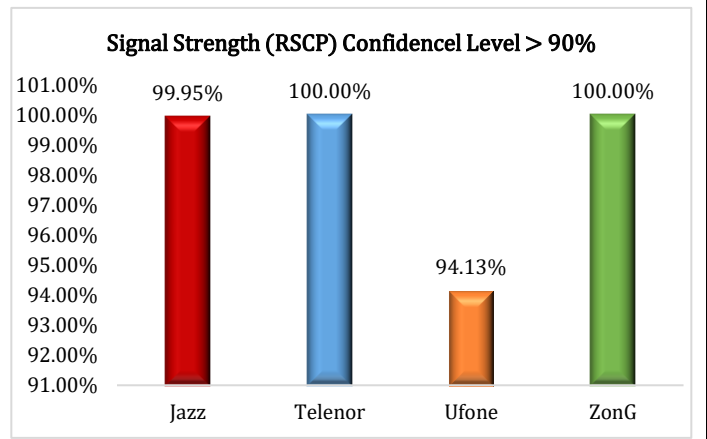
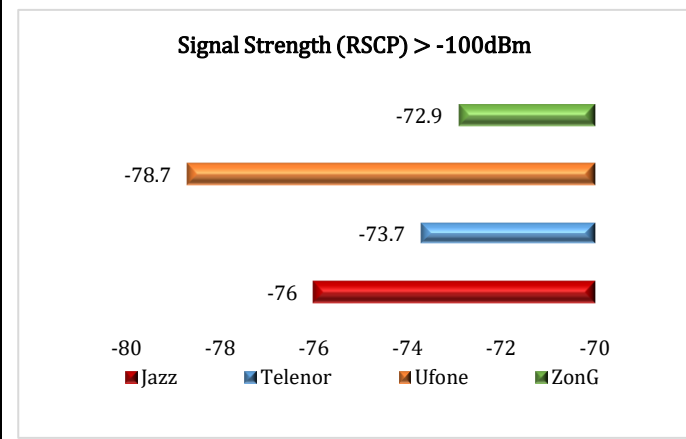
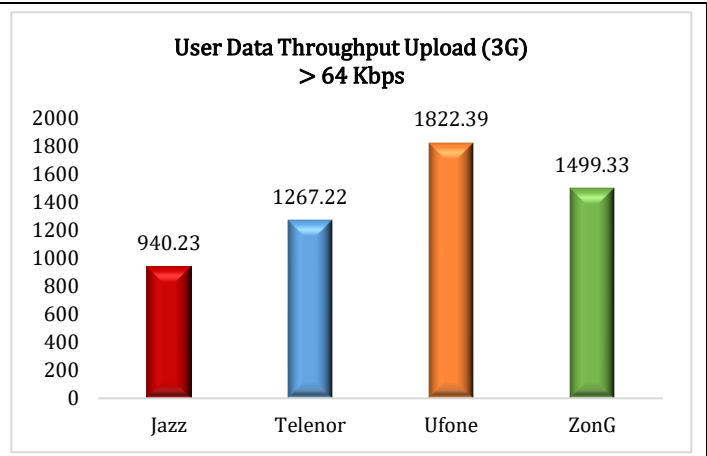
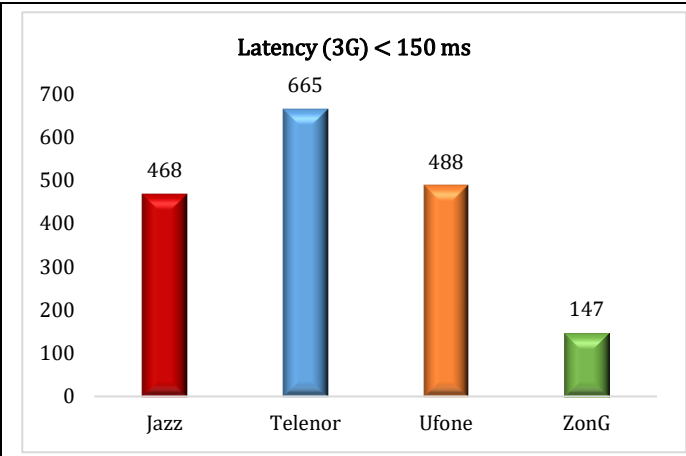
Signal Strength (RSCP) Confidencel Level > 90%



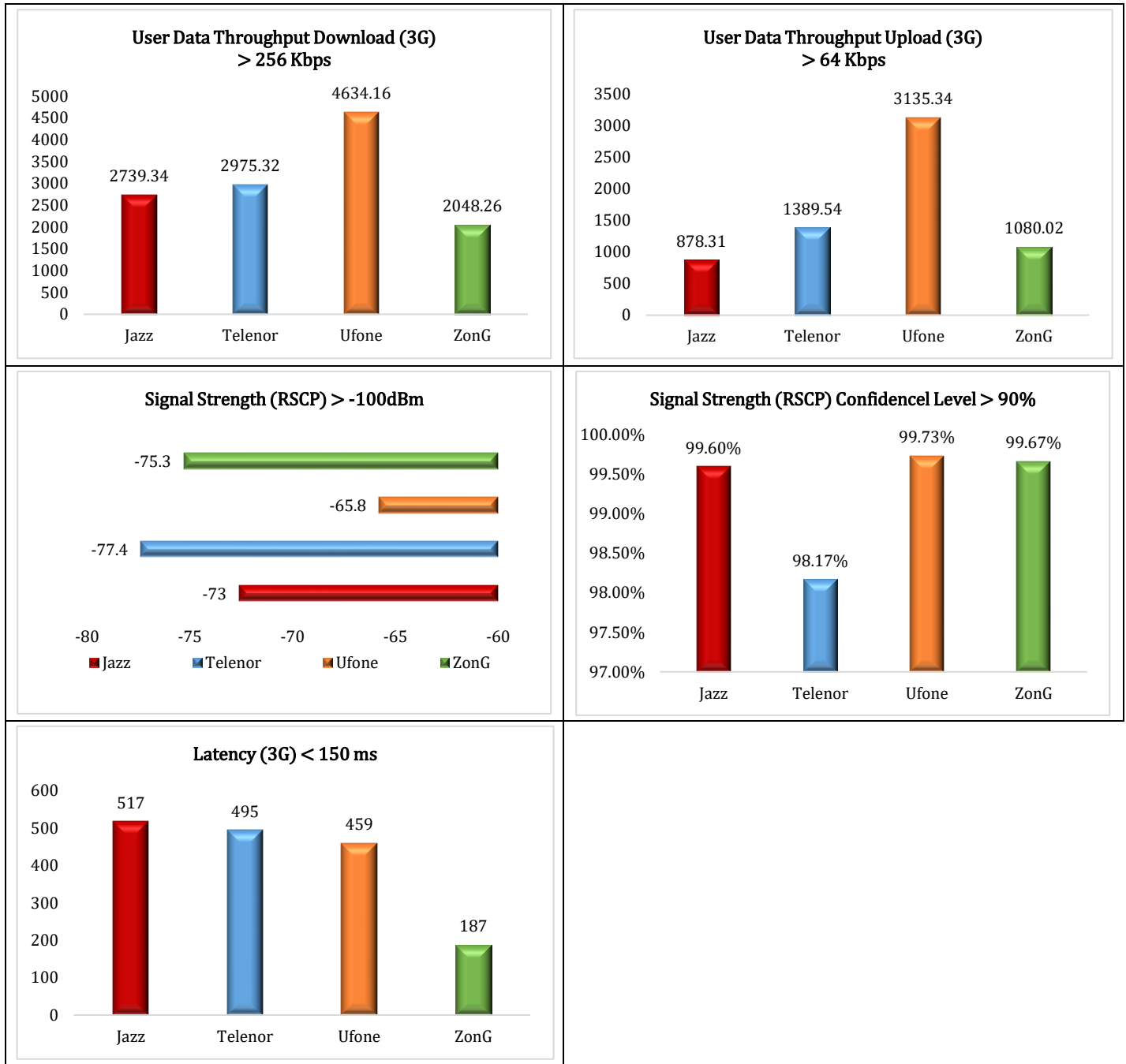
Latency (3G) < 150 ms



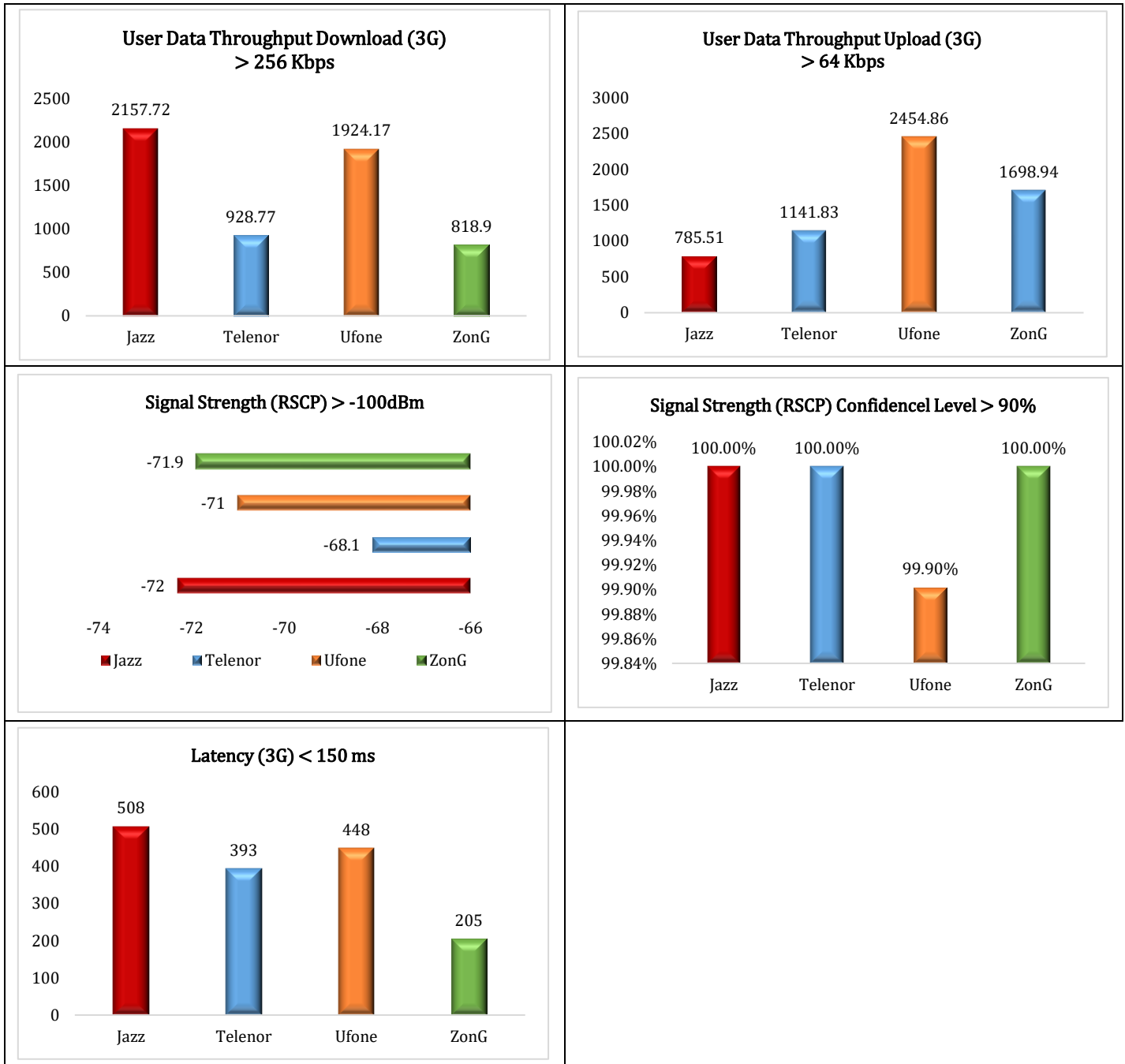
QUALITY OF SERVICE SURVEY RESULTS (3G) – LAHORE TO ABDUL HAKEEM



QUALITY OF SERVICE SURVEY RESULTS (3G) – LAHORE TO ISLAMABAD

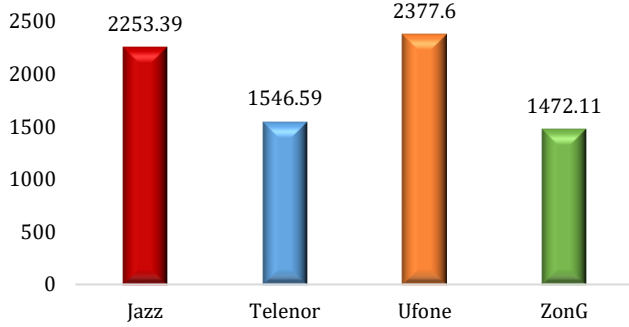


QUALITY OF SERVICE SURVEY RESULTS (3G) – LAHORE TO SIALKOT

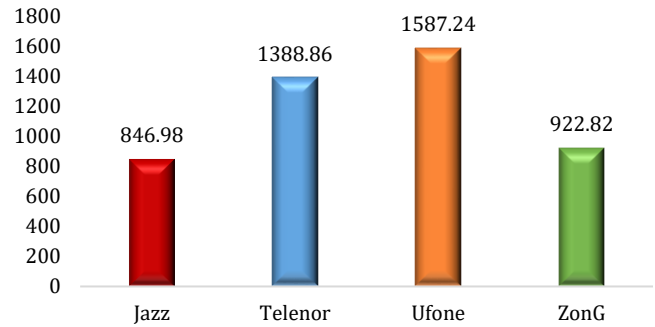


QUALITY OF SERVICE SURVEY RESULTS (3G) – RAWALPINDI TO TORKHUM

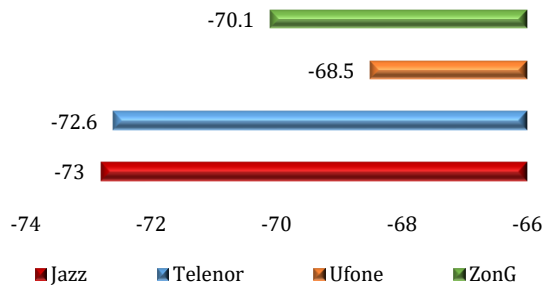
User Data Throughput Download (3G) > 256 Kbps



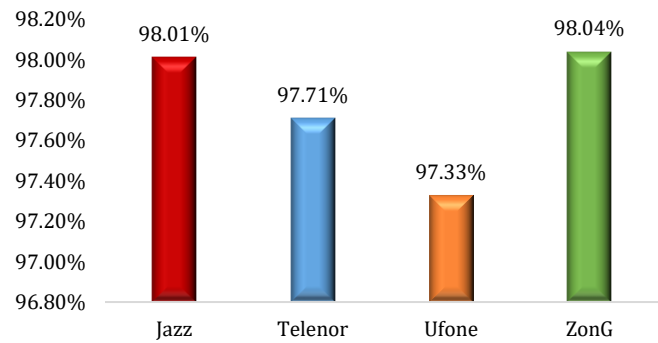
User Data Throughput Upload (3G) > 64 Kbps



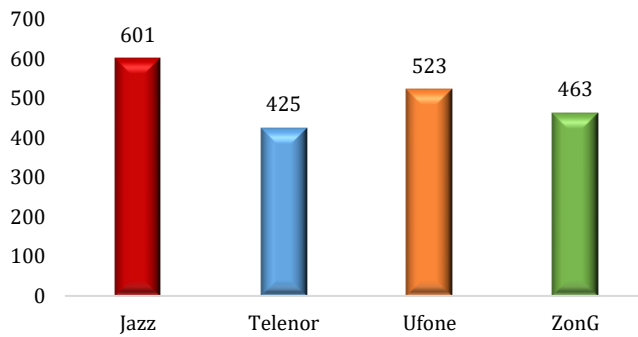
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%



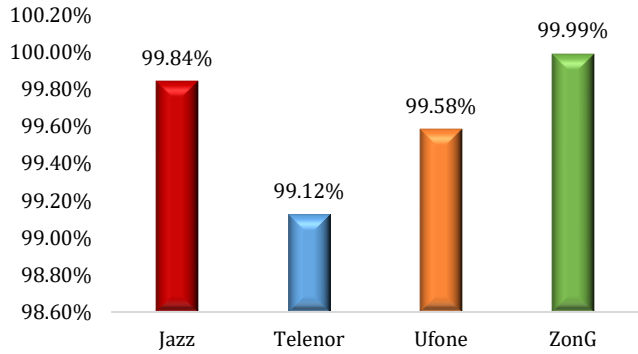
Latency (3G) < 150 ms



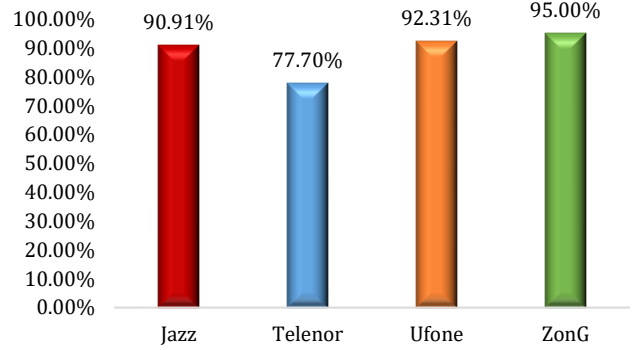
Annex-C (Voice & SMS Results)

QUALITY OF SERVICE SURVEY RESULTS – HAZARA MOTORWAY

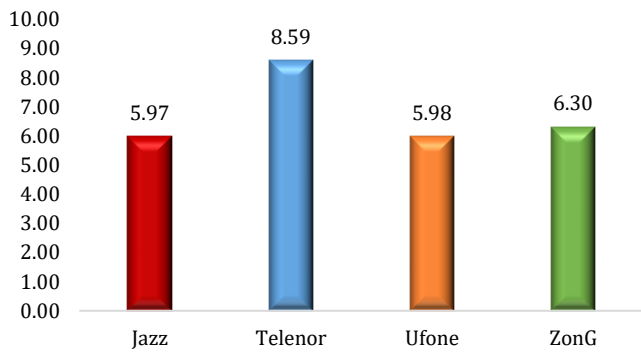
Network Accessibility > 99%



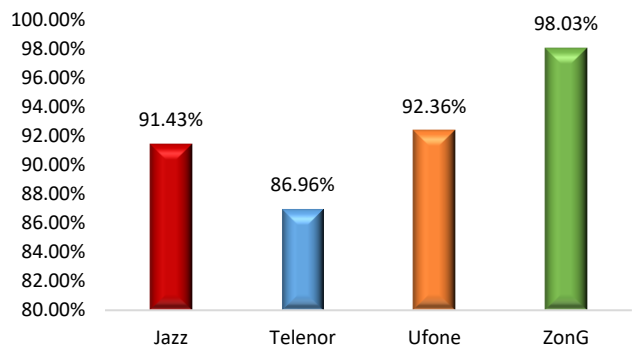
Call Setup Success Rate > 98%



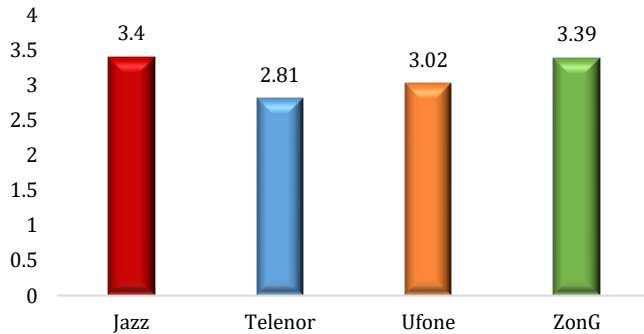
Call Connection Time < 7.5 Seconds



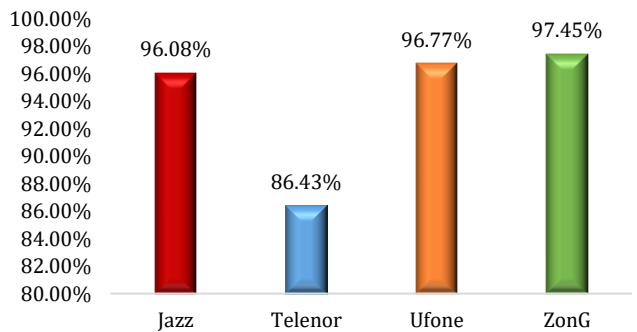
Call Completion Ratio > 98%



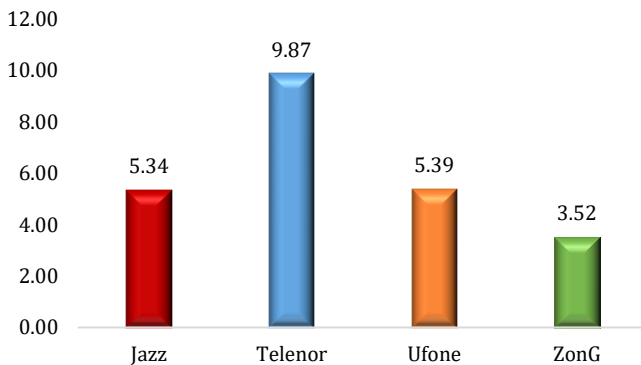
Mean Opinion Score > 3



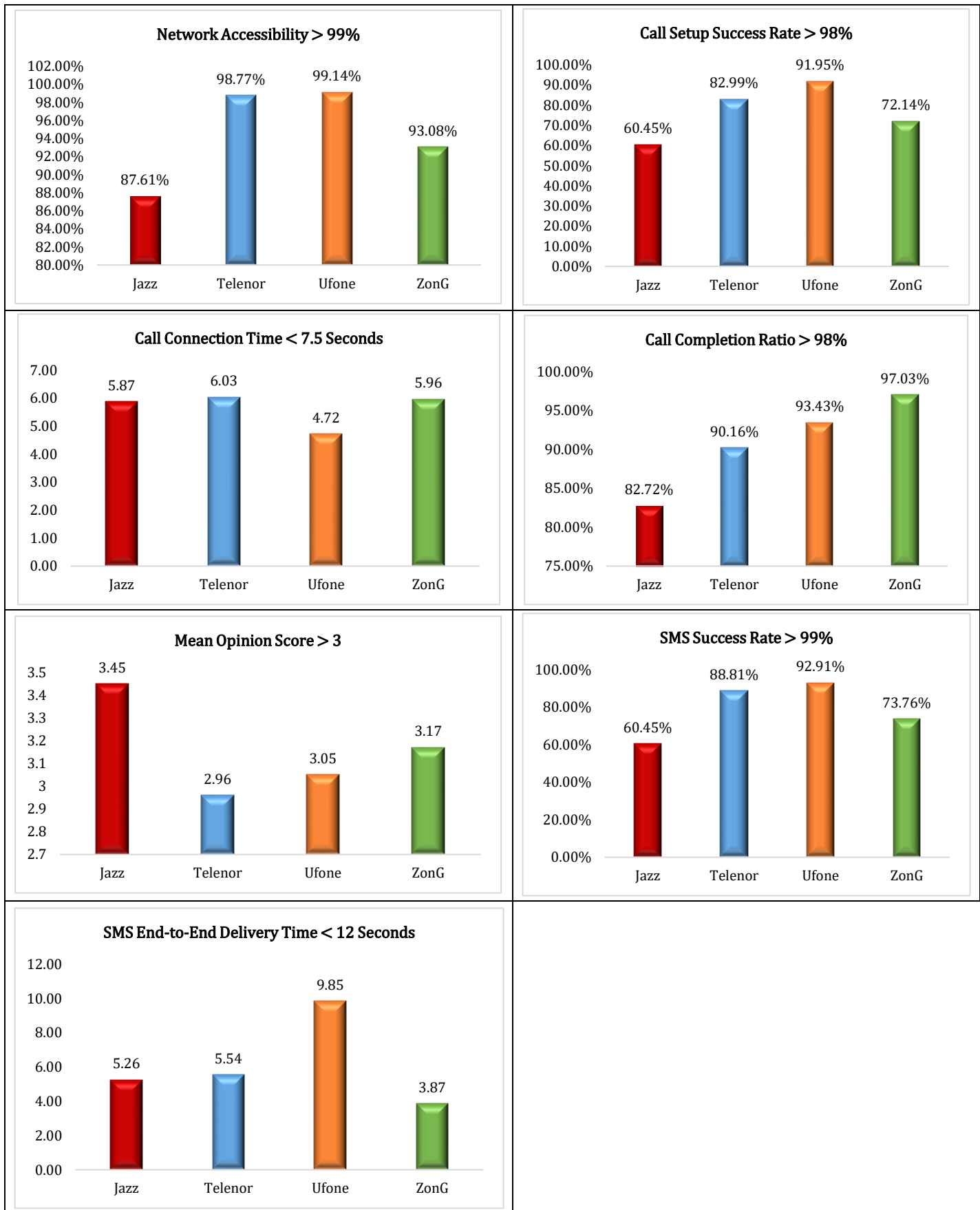
SMS Success Rate > 99%



SMS End-to-End Delivery Time < 12 Seconds

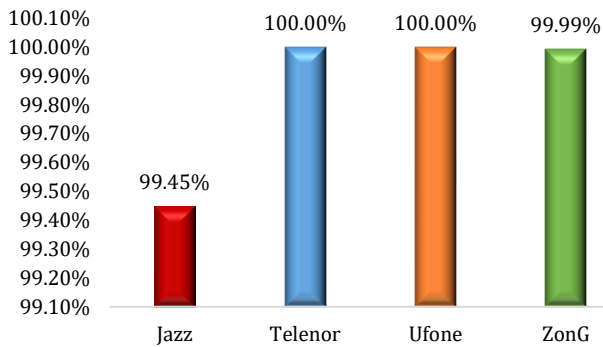


QUALITY OF SERVICE SURVEY RESULTS – QUETTA TO KARACHI

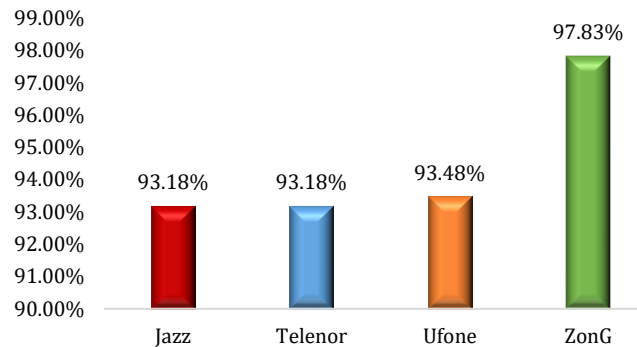


QUALITY OF SERVICE SURVEY RESULTS – HARIPUR TO TAXILA

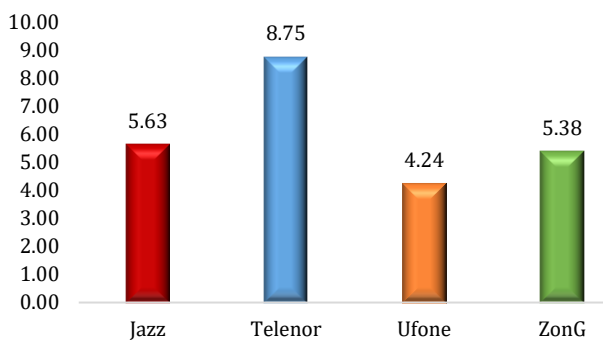
Network Accessibility > 99%



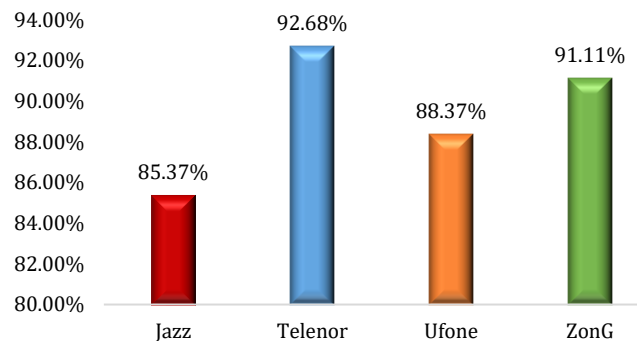
Call Setup Success Rate > 98%



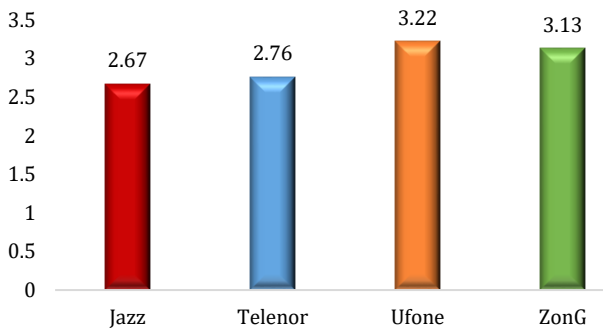
Call Connection Time < 7.5 Seconds



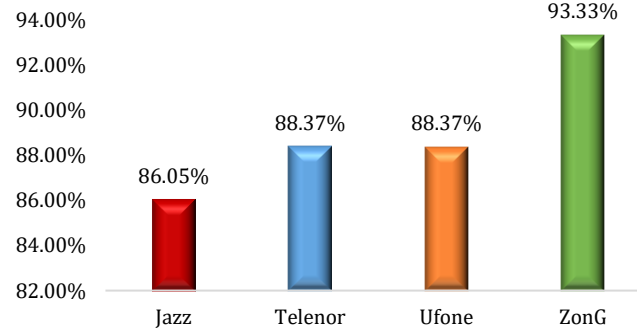
Call Completion Ratio > 98%



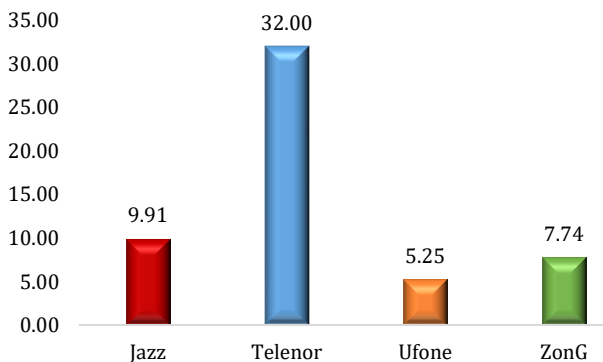
Mean Opinion Score > 3



SMS Success Rate > 99%

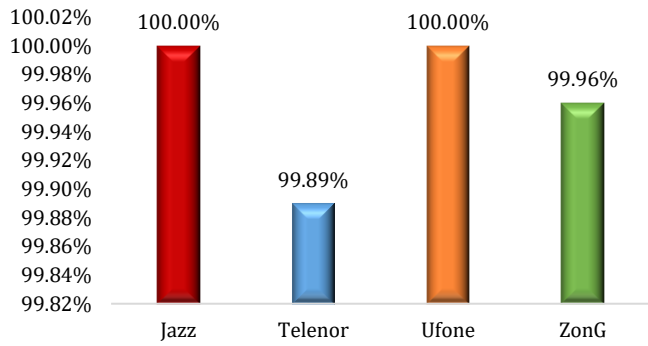


SMS End-to-End Delivery Time < 12 Seconds

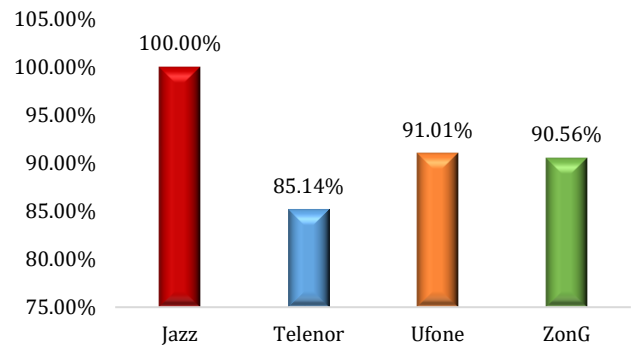


QUALITY OF SERVICE SURVEY RESULTS – PINDI BHATIAN TO MULTAN

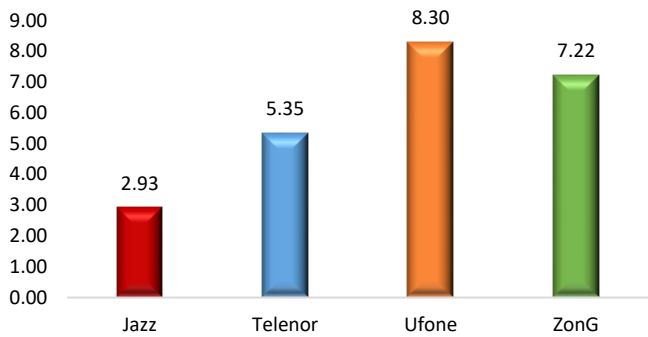
Network Accessibility > 99%



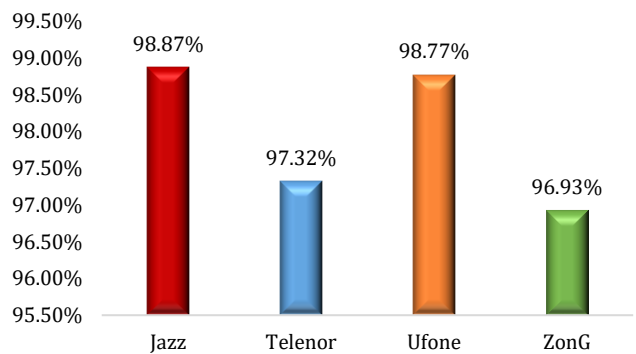
Call Setup Success Rate > 98%



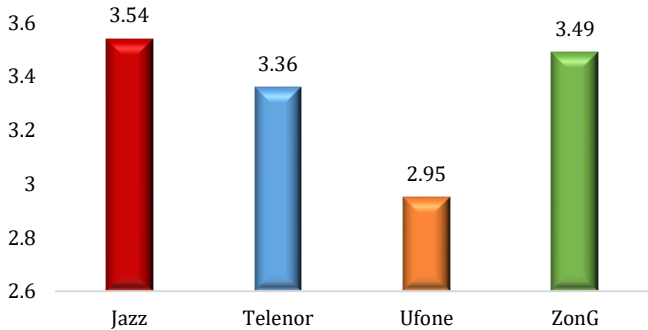
Call Connection Time < 7.5 Seconds



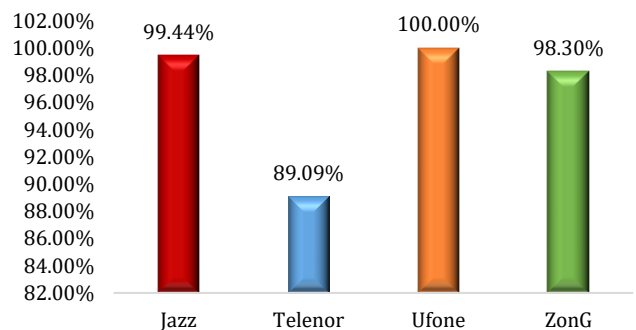
Call Completion Ratio > 98%



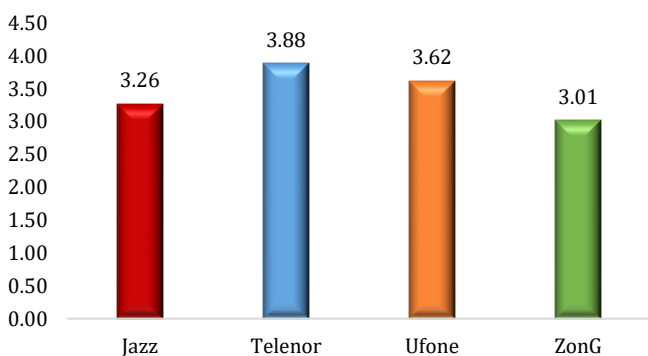
Mean Opinion Score > 3



SMS Success Rate > 99%

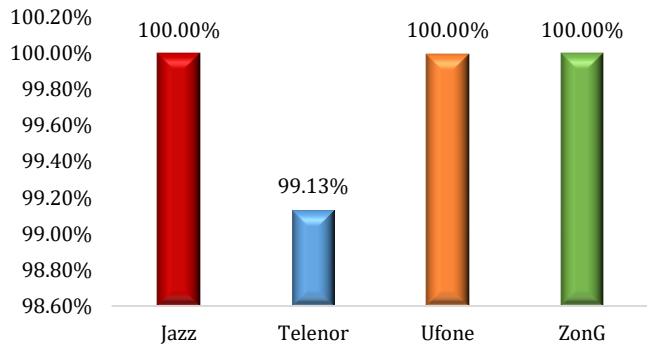


SMS End-to-End Delivery Time < 12 Seconds

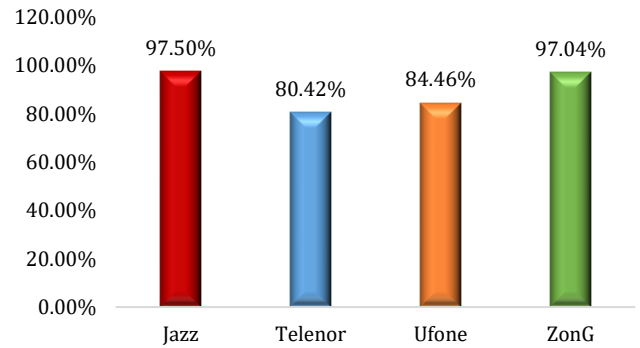


QUALITY OF SERVICE SURVEY RESULTS – MULTAN TO SUKKUR

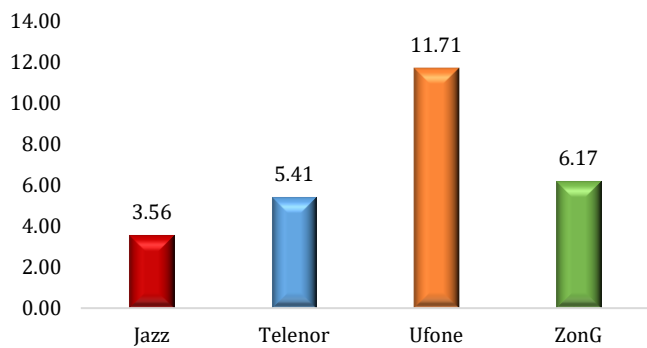
Network Accessibility > 99%



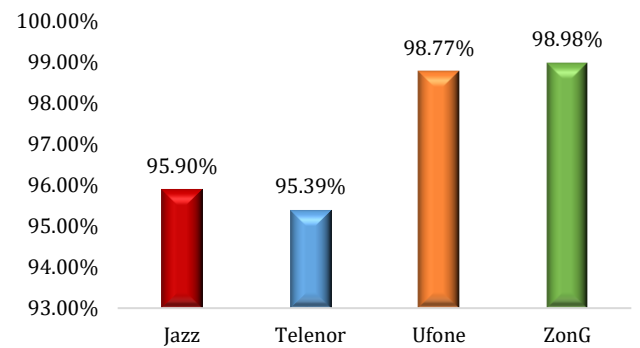
Call Setup Success Rate > 98%



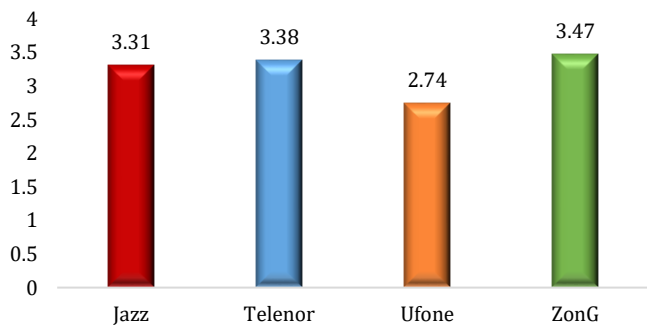
Call Connection Time < 7.5 Seconds



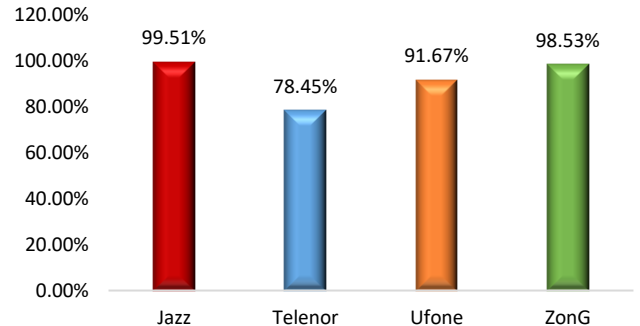
Call Completion Ratio > 98%



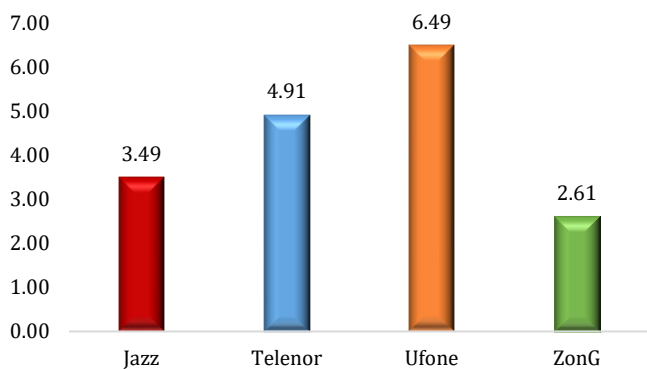
Mean Opinion Score > 3



SMS Success Rate > 99%

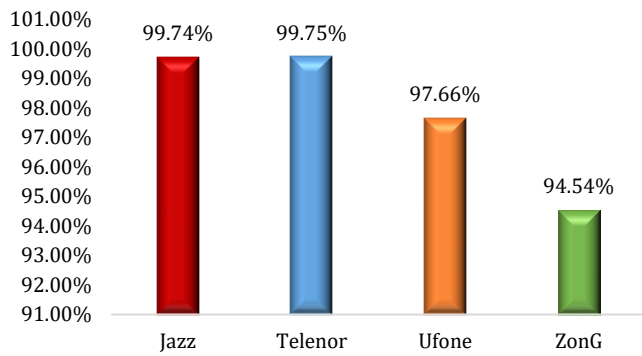


SMS End-to-End Delivery Time < 12 Seconds

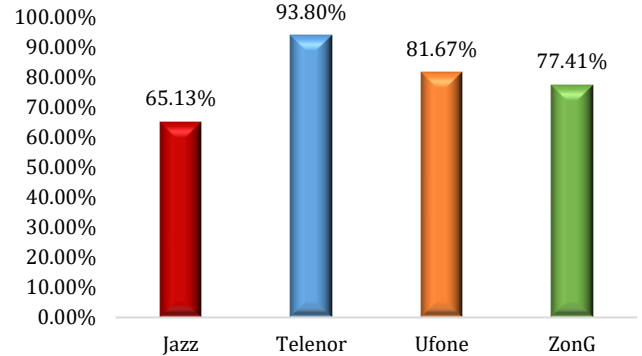


QUALITY OF SERVICE SURVEY RESULTS –NOWSHERA TO CHITRAL

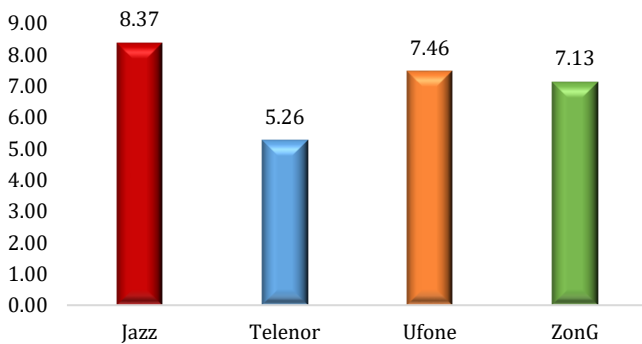
Network Accessibility > 99%



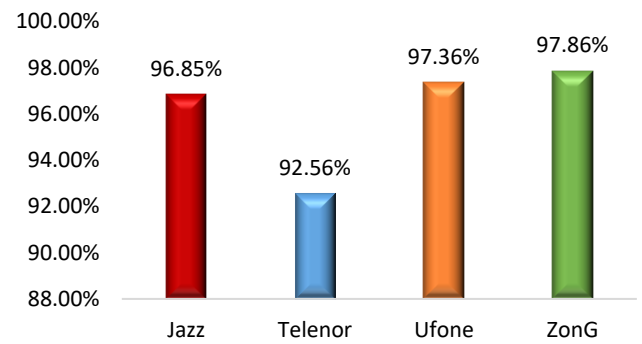
Call Setup Success Rate > 98%



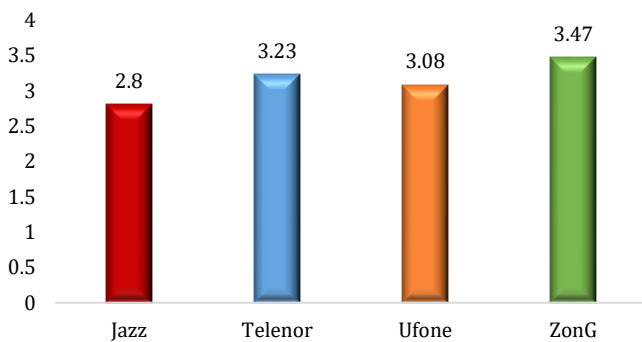
Call Connection Time < 7.5 Seconds



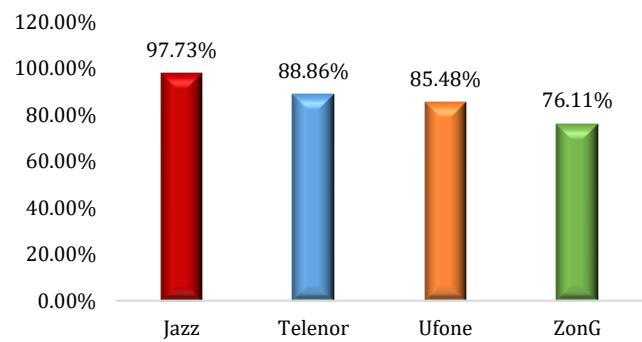
Call Completion Ratio > 98%



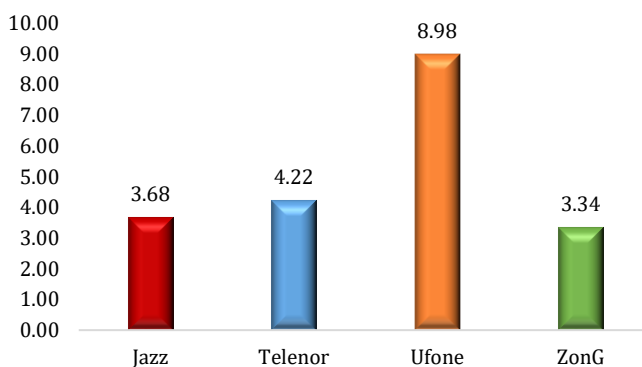
Mean Opinion Score > 3



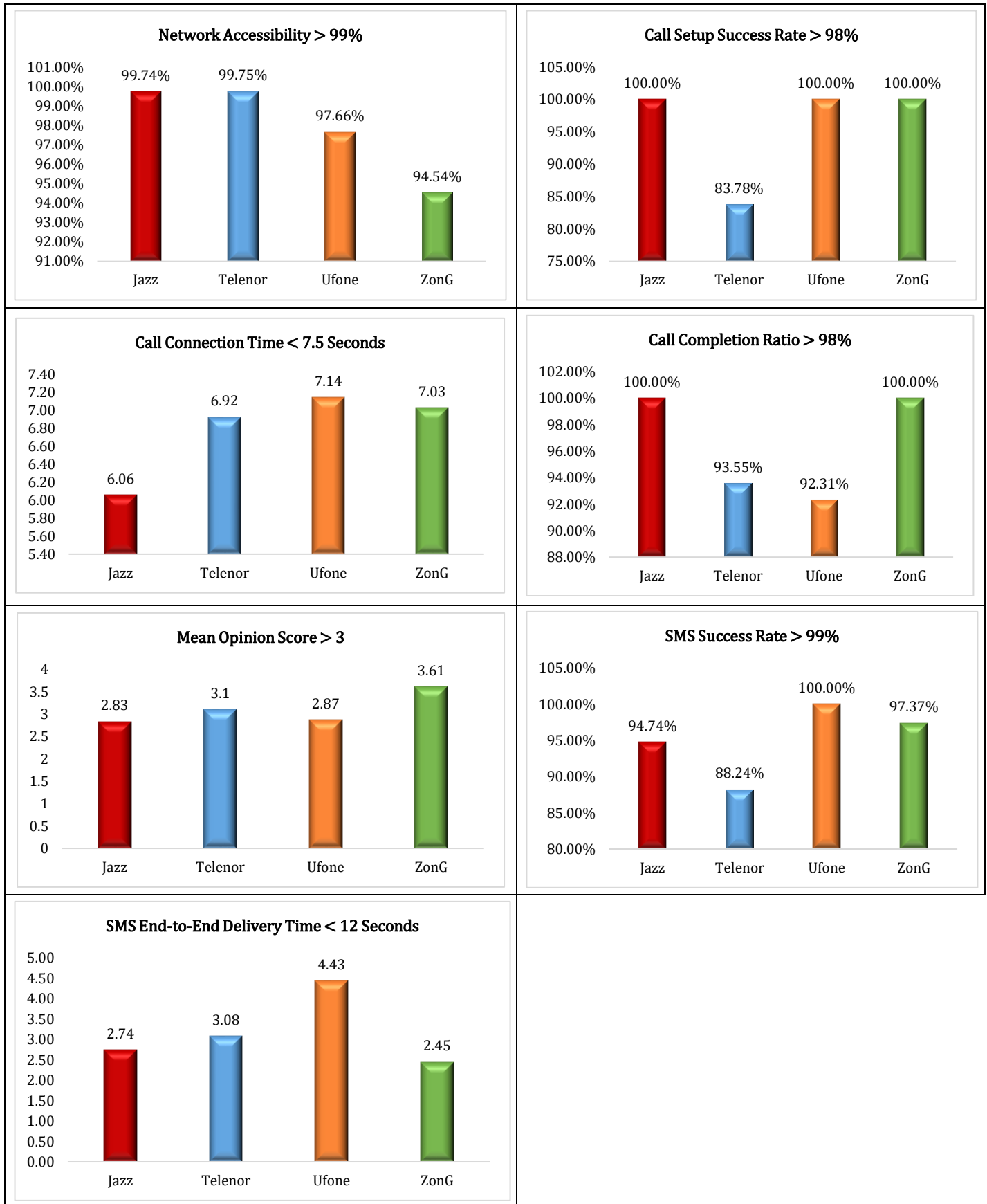
SMS Success Rate > 99%



SMS End-to-End Delivery Time < 12 Seconds

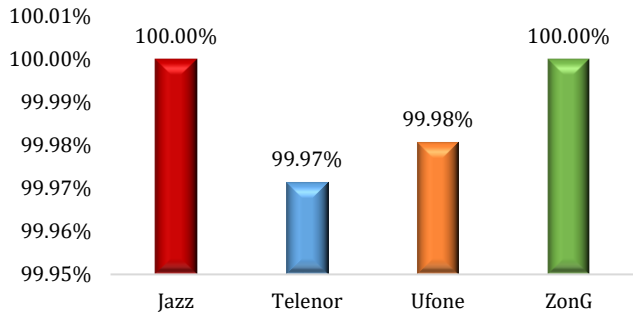


QUALITY OF SERVICE SURVEY RESULTS – SWABI TO KATLANG

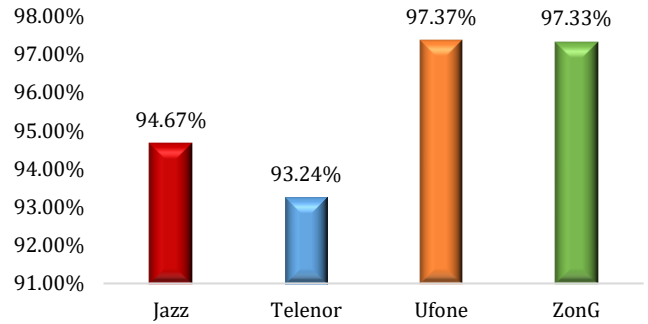


QUALITY OF SERVICE SURVEY RESULTS – ISLAMABAD TO KOHALA

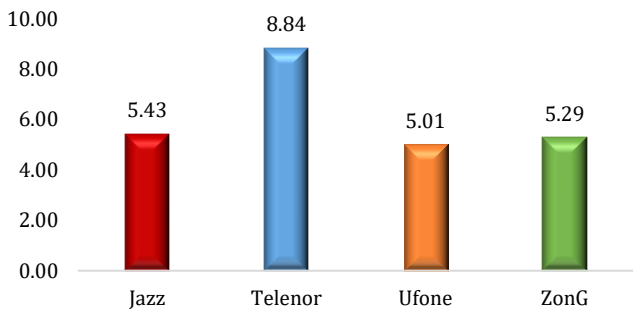
Network Accessibility > 99%



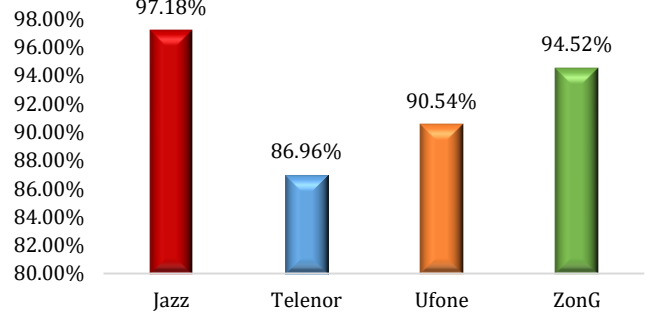
Call Setup Success Rate > 98%



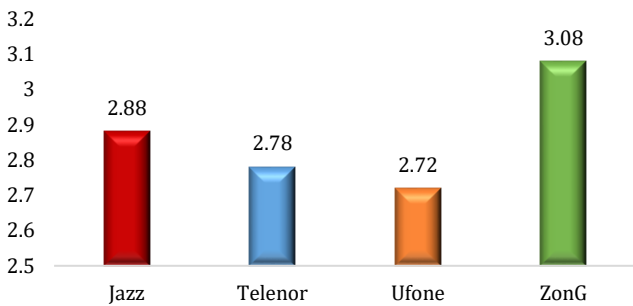
Call Connection Time < 7.5 Seconds



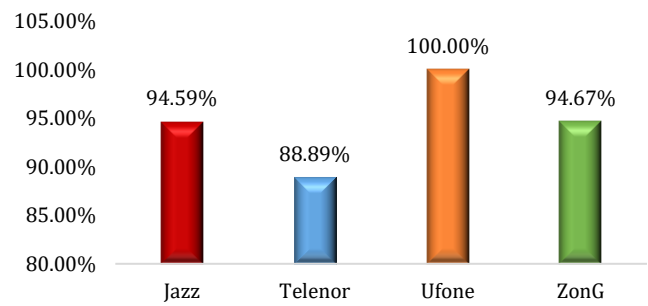
Call Completion Ratio > 98%



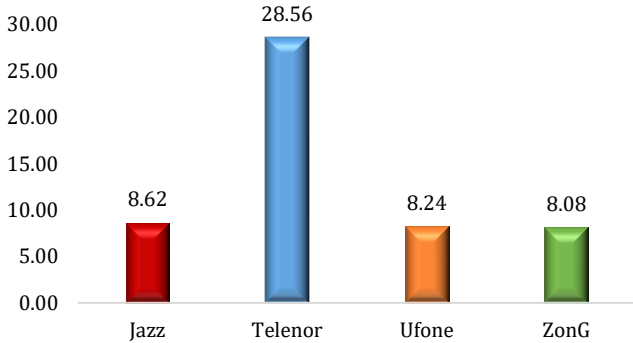
Mean Opinion Score > 3



SMS Success Rate > 99%

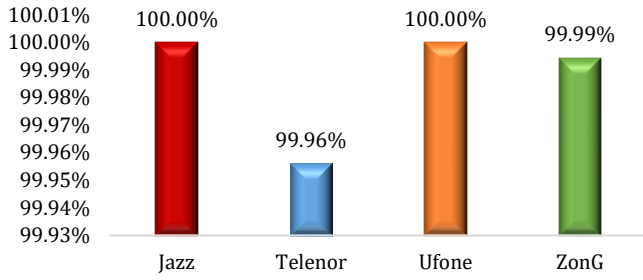


SMS End-to-End Delivery Time < 12 Seconds

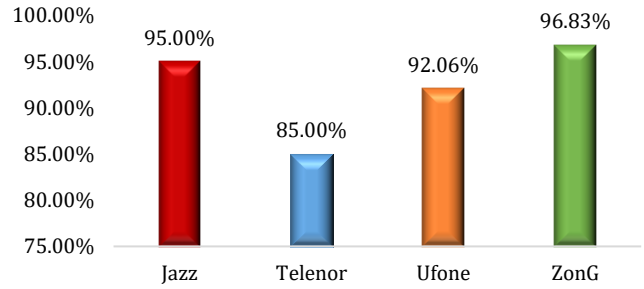


QUALITY OF SERVICE SURVEY RESULTS – ISLAMABAD TO PESHAWAR

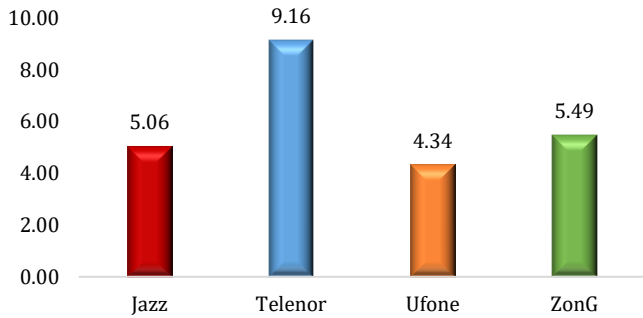
Network Accessibility > 99%



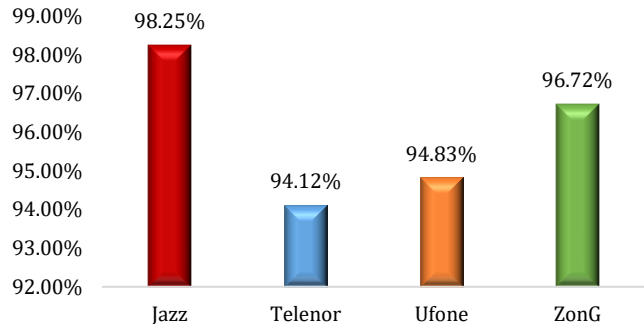
Call Setup Success Rate > 98%



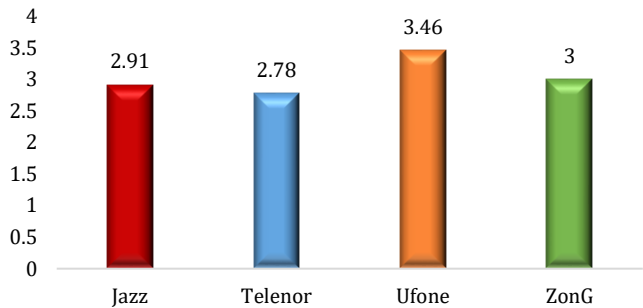
Call Connection Time < 7.5 Seconds



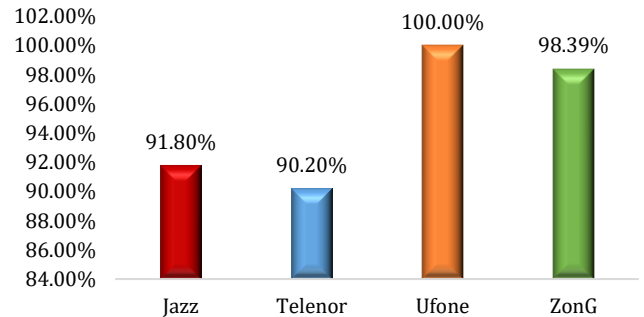
Call Completion Ratio > 98%



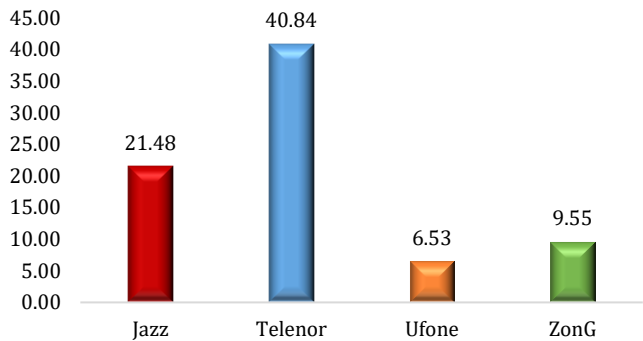
Mean Opinion Score > 3



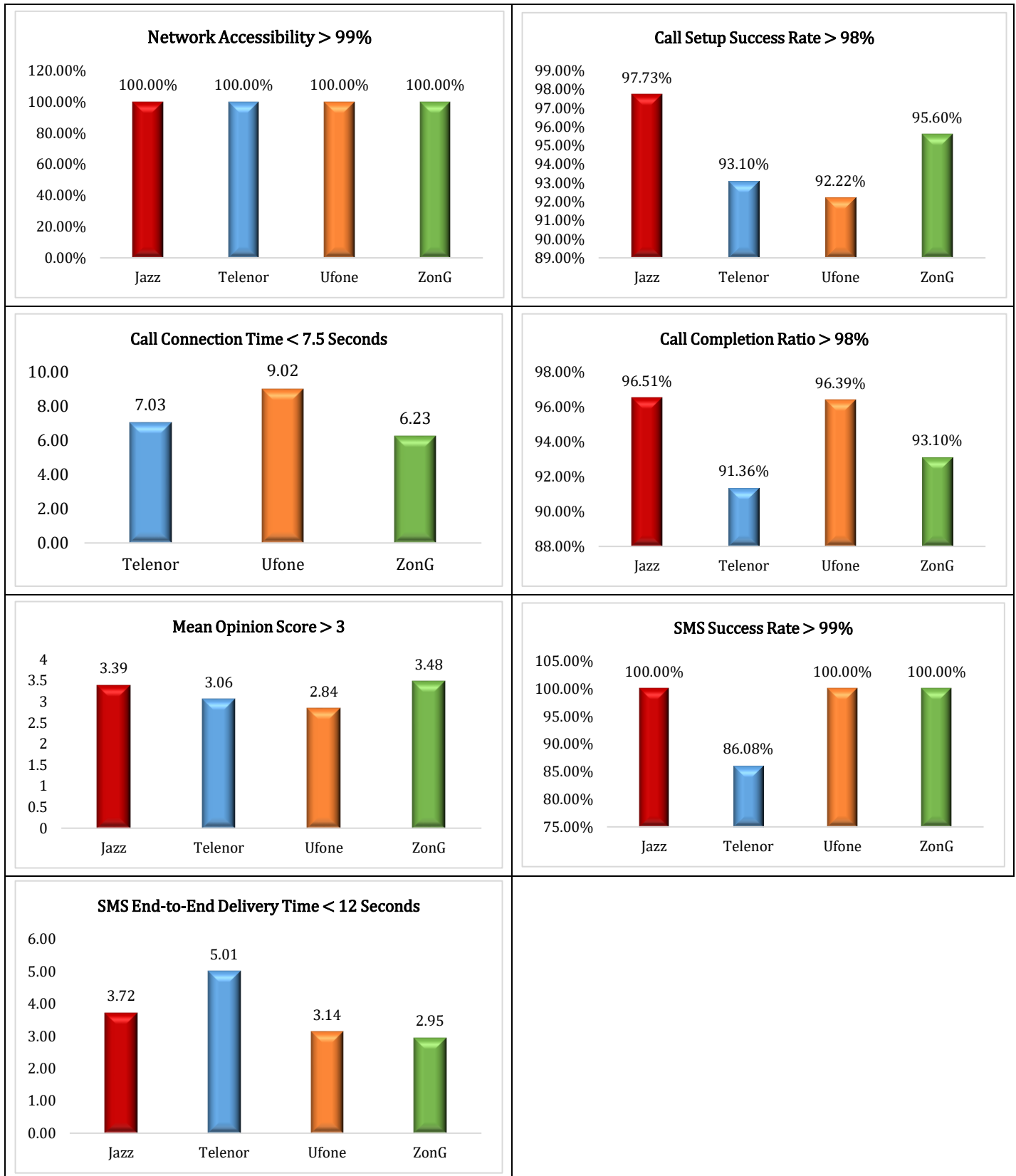
SMS Success Rate > 99%



SMS End-to-End Delivery Time < 12 Seconds

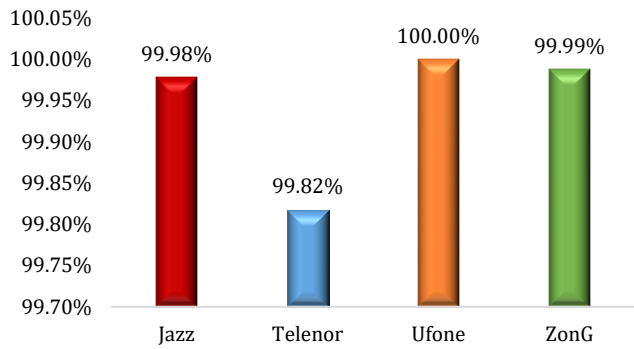


QUALITY OF SERVICE SURVEY RESULTS – LAHORE TO ABDUL HAKEEM

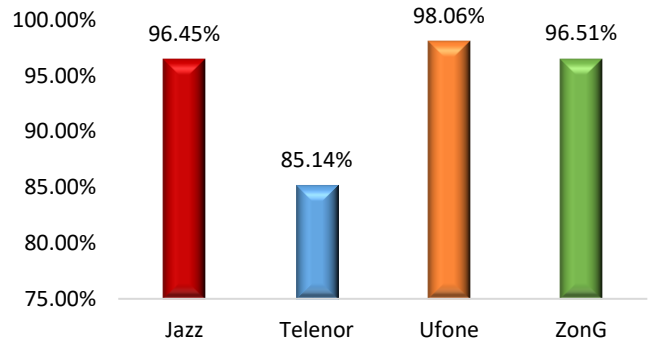


QUALITY OF SERVICE SURVEY RESULTS – LAHORE TO ISLAMABAD

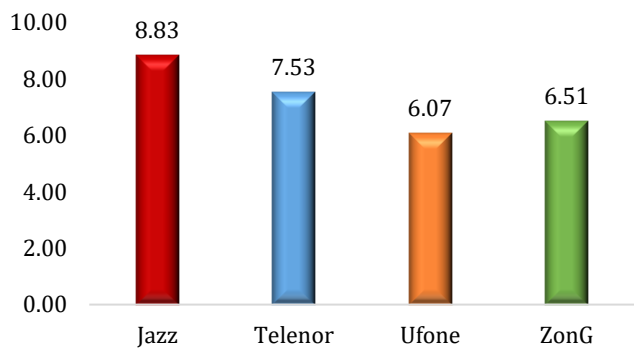
Network Accessibility > 99%



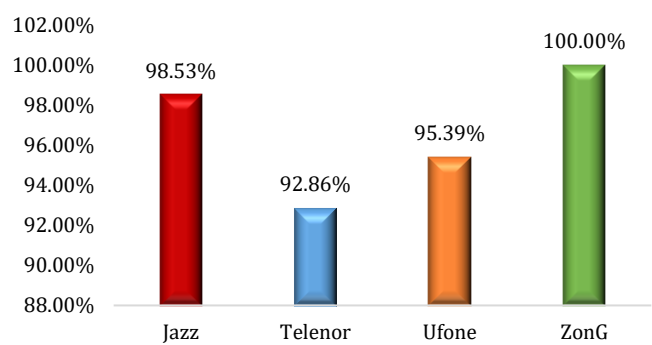
Call Setup Success Rate > 98%



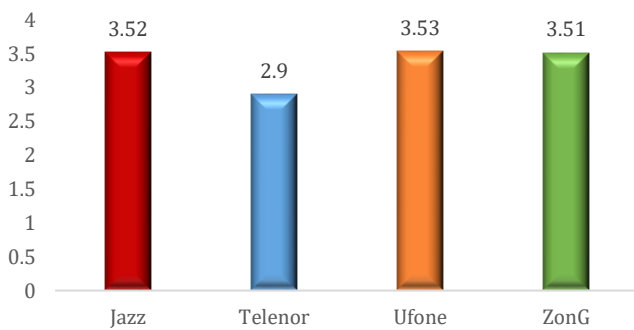
Call Connection Time < 7.5 Seconds



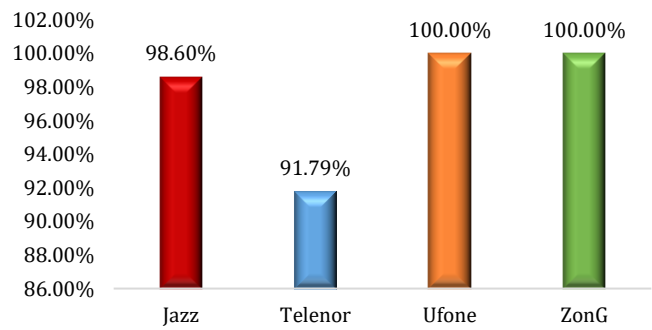
Call Completion Ratio > 98%



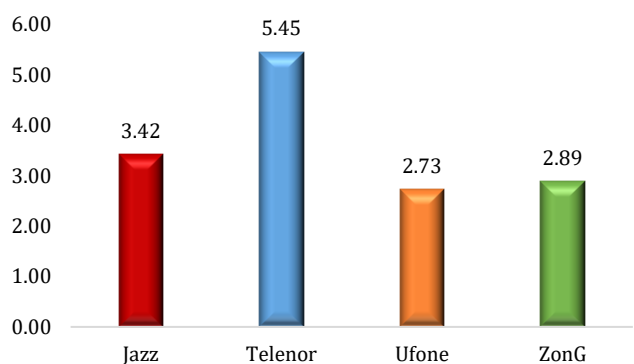
Mean Opinion Score > 3



SMS Success Rate > 99%

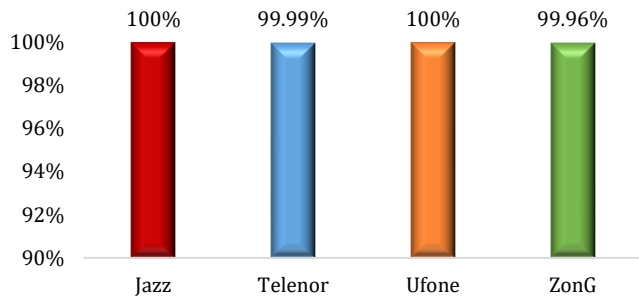


SMS End-to-End Delivery Time < 12 Seconds

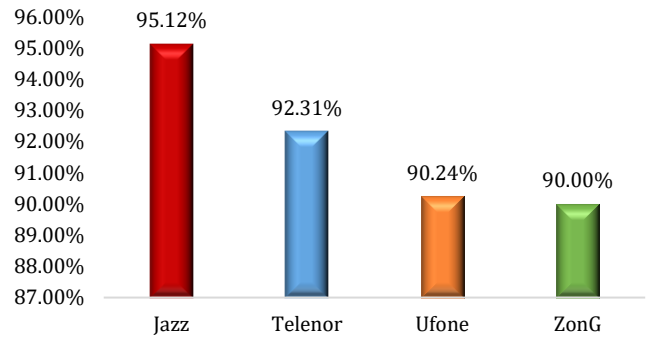


QUALITY OF SERVICE SURVEY RESULTS – LAHORE TO SIALKOT

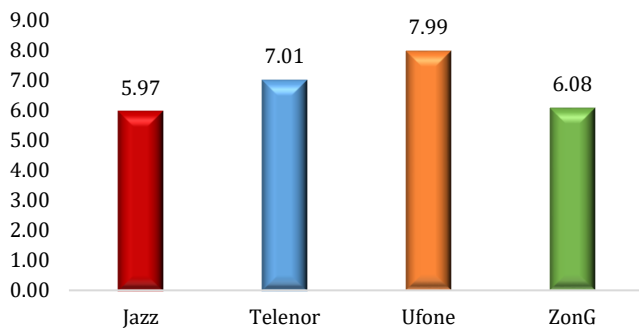
Network Accessibility > 99%



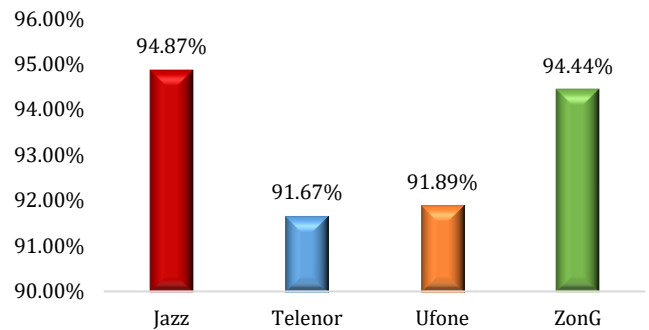
Call Setup Success Rate > 98%



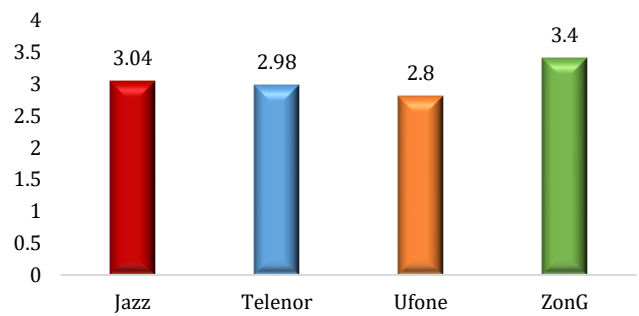
Call Connection Time < 7.5 Seconds



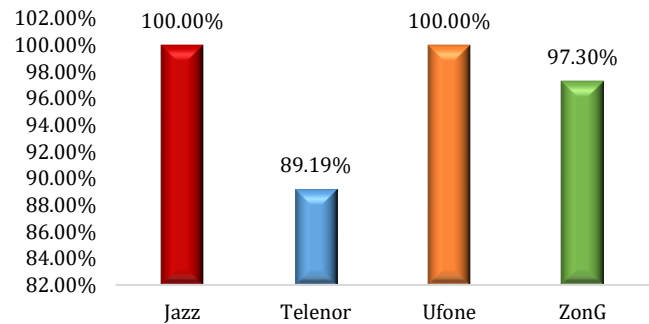
Call Completion Ratio > 98%



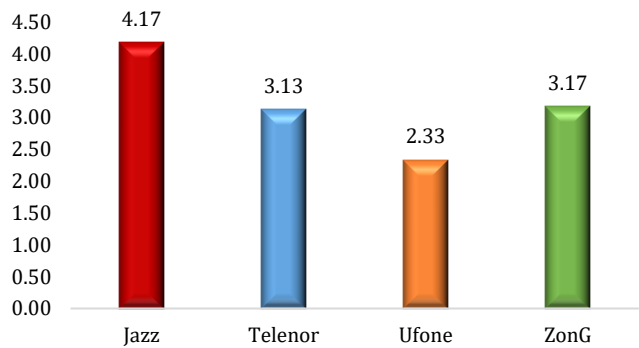
Mean Opinion Score > 3



SMS Success Rate > 99%

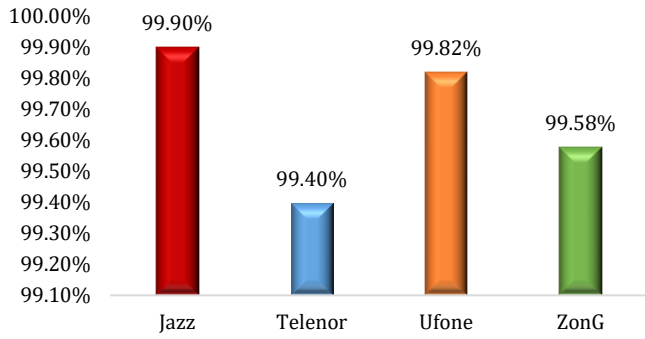


SMS End-to-End Delivery Time < 12 Seconds

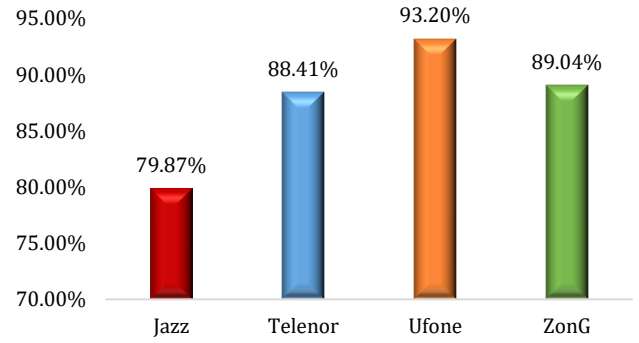


QUALITY OF SERVICE SURVEY RESULTS – RAWALPINDI TO TURKHAM

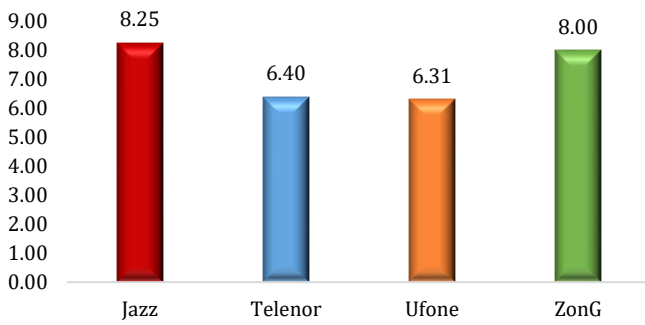
Network Accessibility > 99%



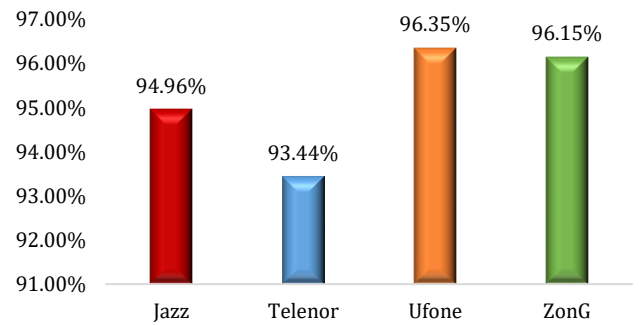
Call Setup Success Rate > 98%



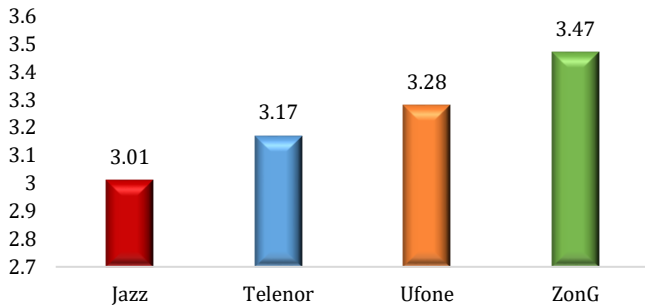
Call Connection Time < 7.5 Seconds



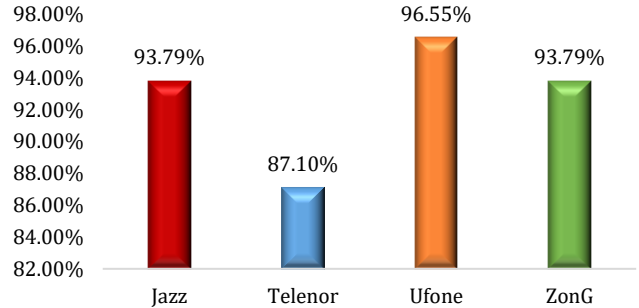
Call Completion Ratio > 98%



Mean Opinion Score > 3



SMS Success Rate > 99%



SMS End-to-End Delivery Time < 12 Seconds

