

INDEPENDENT QUALITY OF SERVICE SURVEY – MOTORWAYS / HIGHWAYS OF PAKISTAN

FOURTH 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 at Thirteen (13) x Motorways & Highways during 4th Quarter i.e. October ~ December 2022. The name of Motorways and Highways along with survey dates are mentioned in **Table 1.1: QoS Survey of Motorways/Highways & Dates:**

S. #	Name	From	To	Survey Date
1.	N-50	QUETTA	ZHOB	21 Nov 2022
2.	N-50	ZHOB	QUETTA	25 Nov, 2022
3.	N-60	LAHORE	SARGODHA	13~ 14 Oct, 2022
4.	N-5	LAHORE	RAWALPINDI	21 ~ 22 Dec, 2022
5.	N-5	LAHORE	MULTAN	1 ~ 2 Dec , 2022
6.	N-80	ISLAMABAD	KOHAT	17 Nov ~ 18 Nov 2022
7.	N-130	MIANWALI	BAKHAR	5 Dec 2022
8.	M-14	ISAMABAD	D.I KHAN	30 Nov~1 Dec 2022
9.	N-115	TRANDA MUHAMMAD PANAH	JALALPUR PIRWALA	15 Dec 2022
10.	N-5	KOT SABZAL	MULTAN	20 Dec~ 21 Dec 2022
11.	N-95	CHAKDARA	BAHRAIN	23 Nov 2022
12.	N-90	KHAWAZKHEL	BEHSAM	24 Nov 2022
13.	N-55	PESHAWER	D.G KHAN	29 Nov ~ 2 Dec 2022

Table 1.1: QoS Survey of Motorways / Highways & 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 Toll Plaza to another Toll Plaza. During the survey, mobile handsets for Voice Calls, SMS were kept in technology auto detect mode whereas in case of Mobile Broadband, the 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	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Quetta to Zhob</i>	62.45	82.28	92.9	88.0	No	No	Yes	No
<i>Zhob to Quetta</i>	68.47	81.72	92.06	90.55	No	No	Yes	Yes
<i>Lahore to Sargodha</i>	95.03	84.25	83.09	85.71	Yes	No	No	No
<i>Lahore to Rawalpindi</i>	94.23	86.36	94.99	96.98	Yes	No	Yes	Yes
<i>Lahore to Multan</i>	94.74	79.00	81.36	93.98	Yes	No	No	Yes

<i>Islamabad to Kohat</i>	78.17	77.61	90.12	75.61	No	No	Yes	No
<i>Mianwali to Bakhar</i>	65.04	67.08	68.17	60.61	No	No	No	No
<i>Isamabad to D.I Khan</i>	77.71	72.74	79.77	65.65	No	No	No	No
<i>T.M Panah to Jalalpur Pirwala</i>	83.21	67.41	64.11	79.10	No	No	No	No
<i>Kot Sabzal to Multan</i>	95.00	82.80	77.94	92.23	Yes	No	No	Yes
<i>Chakdara to Kalam</i>	80.57	98.57	87.64	81.16	No	Yes	No	No
<i>Khuazakhela to Behsam</i>	71.32	76.37	85.96	57.26	No	No	No	No
<i>Peshawer to DG Khan</i>	75.28	87.58	88.12	76.21	No	No	No	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	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Zhob to Quetta</i>	75.44	85.19	85.68	84.17	No	No	No	No
<i>Lahore to Sargodha</i>	95.84	89.11	84.95	83.62	Yes	No	No	No
<i>Lahore to Rawalpindi</i>	95.39	88.07	95.34	97.68	Yes	No	Yes	Yes
<i>Lahore to Multan</i>	94.85	84.89	82.01	94.28	Yes	No	No	Yes
<i>Islamabad to Kohat</i>	77.78	80.88	80.58	81.81	No	No	No	No
<i>Mianwali to Bakhar</i>	67.48	66.69	51.28	58.92	No	No	No	No
<i>Isamabad to D.I Khan</i>	75.76	65.39	60.60	61.77	No	No	No	No
<i>T.M Panah to Jalalpur Pirwala</i>	87.27	64.25	63.16	83.07	No	No	No	No
<i>Kot Sabzal to Multan</i>	95.20	87.02	69.78	91.2	Yes	No	No	Yes
<i>Chakdara to Kalam</i>	82.03	98.20	85.72	87.65	No	Yes	No	No
<i>Khuazakhela to Behsam</i>	53.58	74.10	62.38	62.72	No	No	No	No
<i>Peshawer to DG Khan</i>	78.0	83.88	77.13	78.91	No	No	No	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, while conducting data tests, 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	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Quetta to Zhob</i>	94.90	98.84	98.72	65.06	Yes	Yes	Yes	No
<i>Zhob to Quetta</i>	89.02	94.77	96.84	82.14	No	Yes	Yes	No
<i>Lahore to Sargodha</i>	N/A	N/A	100.0	95.49	N/A	N/A	Yes	Yes
<i>Lahore to Rawalpindi</i>	N/A	59.7	95.07	64.63	N/A	No	Yes	No
<i>Lahore to Multan</i>	N/A	100.0	97.63	N/A	N/A	Yes	Yes	N/A
<i>Islamabad to Kohat</i>	92.52	100.0	80.06	58.85	Yes	Yes	No	No
<i>Mianwali to Bakhar</i>	20.41	57.89	72.70	64.04	No	No	No	No
<i>Isamabad to D.I Khan</i>	77.64	81.65	77.25	67.20	No	No	No	No
<i>T.M Panah to Jalalpur Pirwala</i>	N/A	90.81	N/A	85.29	N/A	Yes	N/A	No
<i>Kot Sabzal to Multan</i>	N/A	96.61	91.61	100.0	N/A	Yes	Yes	Yes
<i>Chakdara to Kalam</i>	86.25	100.0	99.17	70.77	No	Yes	Yes	No
<i>Khuazakhela to Behsam</i>	85.92%	100.0	74.14	63.86	No	Yes	No	No

<i>Peshawer to DG Khan</i>	79.91	92.47	92.82	52.41	No	Yes	Yes	No
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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>	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Quetta to Zhob</i>	98.63	99.6	99.1	93.50	Yes	Yes	Yes	Yes
<i>Lahore to Sargodha</i>	99.02	99.46	97.87	99.75	Yes	Yes	Yes	Yes
<i>Lahore to Rawalpindi</i>	99.08	99.63	99.86	99.37	Yes	Yes	Yes	Yes
<i>Lahore to Multan</i>	99.36	90.83	89.99	100.00	Yes	Yes	No	Yes
<i>Islamabad to Kohat</i>	91.21	98.16	97.17	93.87	Yes	Yes	Yes	Yes
<i>Mianwali to Bakhar</i>	75.06	88.53	84.71	91.23	No	No	No	Yes
<i>Isamabad to D.I Khan</i>	86.37	92.19	91.03	87.68	No	Yes	Yes	No
<i>T.M Panah to Jalalpur Pirwala</i>	99.12	96.08	59.59	99.96	Yes	Yes	No	Yes
<i>Kot Sabzal to Multan</i>	93.65	98.31	94.2	99.78	Yes	Yes	Yes	Yes
<i>Chakdara to Kalam</i>	97.20	99.95	95.48	98.77	Yes	Yes	Yes	Yes
<i>Khuazakhela to Behsam</i>	81.41	97.2	83.69	79.12	No	Yes	No	No
<i>Peshawer to DG Khan</i>	81.84	97.99	98.09	97.01	No	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 Mobile Broadband/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 and 3G 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	<i>CAPACITY TEST</i>	<i>DOWNLOAD</i>	<i>ATTEMPTS</i>	2314	2175	2317	2247
			<i>SPEED (Mbps)</i>	24.454	6.037	13.107	23.142
	<i>UPLOAD</i>	<i>ATTEMPTS</i>	2320	2178	2321	2250	
		<i>SPEED (Mbps)</i>	18.531	6.311	15.122	16.37	
	<i>DATA TRANSFER TEST</i>	<i>DOWNLOAD</i>	<i>ATTEMPTS</i>	2270	2089	2048	2228
			<i>SPEED (Mbps)</i>	10.06	5.236	8.028	10.25
		<i>UPLOAD</i>	<i>ATTEMPTS</i>	2337	2194	2337	2260
			<i>SPEED (Mbps)</i>	7.746	6.075	8.222	9.063
	<i>BROWSING TEST</i>	<i>ATTEMPTS</i>		11643	10923	11634	11277
		<i>LOADING TIME (Seconds)</i>		6.69	7.85	6.91	6.65
<i>PING TEST</i>	<i>ATTEMPTS</i>		4690	4411	4693	4542	
	<i>LATENCY (msec)</i>		259.91	251.97	280	241.8	
<i>AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm</i>			-84	-86.3	-85.1	-85	
<i>AVERAGE 3G SIGNAL STRENGTH (RSCP) dBm</i>			-82.58	-80.97	-82.61	-93.04	

DESCRIPTION				JAZZ	TELENOR	UFONE	ZONG		
LOCKED MODE	4G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	958	956	958	957	
				SPEED (Mbps)	17.125	3.957	10.491	16.64	
			UPLOAD	ATTEMPTS	950	950	950	950	
				SPEED (Mbps)	15.551	5.12	12.042	9.786	
		PING TEST	ATTEMPTS			966	966	966	965
			LATENCY (msec)			94.06	98.66	100.63	114.71
	AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm				-84.8	-87.5	-88.2	-86.1	
	3G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	469	840	773	837	
				SPEED (Mbps)	2.063	2.532	2.65	2.175	
			UPLOAD	ATTEMPTS	405	825	755	826	
				SPEED (Mbps)	0.86	1.5	2.006	0.964	
		PING TEST	ATTEMPTS			918	918	917	918
LATENCY (msec)			477.66	661.44	502.52	253.64			
AVERAGE 3G SIGNAL STRENGTH (RSCP) dBm				-74.88	-74.25	-74.91	-72.5		

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 3 Mbps of 4G/LTE & 512 Kbps 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 3 Mbps, (ii). Table 4.3: Download User Data Throughput Technology Auto Detect Mode [Fixed Size] \geq 3 Mbps, (iii). Table 4.4: Download User Data Throughput 4G/LTE Technology Locked Mode [Fixed Duration] \geq 3 Mbps & (iv). Table 4.5: Download User Data Throughput 3G Technology Locked Mode [Fixed Duration] \geq 512 Kbps.

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED DURATION)								
Road	Download Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Quetta to Zhob	20.00	6.55	13.97	27.33	Second	Fourth	Third	First
Zhob to Quetta	18.77	6.75	6.83	11.77	First	Fourth	Third	Second
Lahore to Sargodha	25.84	4.85	18.39	21.23	First	Fourth	Third	Second
Lahore to Rawalpindi	22.23	5.09	9.70	22.20	First	Fourth	Third	Second
Lahore to Multan	18.52	7.77	15.98	16.04	First	Fourth	Third	Second
Islamabad to Kohat	30.69	5.46	12.42	15.65	First	Fourth	Third	Second
Mianwali to Bakhar	26.47	7.04	13.30	27.44	Second	Fourth	Third	First
Isamabad to D.I Khan	24.80	6.12	10.50	14.89	First	Fourth	Third	Second
T.M Panah to Jalalpur Pirwala	13.91	3.99	13.45	25.50	Second	Fourth	Third	First
Kot Sabzal to Multan	26.66	6.10	8.05	24.34	First	Fourth	Third	Second
Chakdara to Kalam	22.67	9.53	15.12	30.24	Second	Fourth	Third	First
Khuazakhela to Behsam	27.97	2.67	15.64	23.38	First	Fourth	Third	Second
Peshawer to DG Khan	15.19	4.75	15.64	37.54	Third	Fourth	Second	First

Table 4.2: Download User Data Throughput Technology Auto Detect Mode [Fixed Duration] \geq 3 Mbps

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED SIZE)								
Road	Download Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Quetta to Zhob	8.45	6.77	9.25	11.67	Third	Fourth	Second	First
Zhob to Quetta	8.29	6.67	5.70	10.30	Second	Third	Fourth	First
Lahore to Sargodha	11.26	5.22	11.52	11.03	Second	Fourth	First	Third
Lahore to Rawalpindi	11.29	5.52	8.11	11.33	Second	Fourth	Third	First

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED SIZE)								
Road	Download Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Lahore to Multan</i>	10.43	6.39	8.96	9.60	First	Fourth	Third	Second
<i>Islamabad to Kohat</i>	13.41	5.05	8.36	9.65	First	Fourth	Third	Second
<i>Mianwali to Bakhar</i>	12.36	6.68	7.86	13.22	Second	Fourth	Third	First
<i>Isamabad to D.I Khan</i>	11.92	5.14	8.23	10.17	First	Fourth	Third	Second
<i>T.M Panah to Jalalpur Pirwala</i>	8.24	4.00	8.14	11.78	Second	Fourth	Third	First
<i>Kot Sabzal to Multan</i>	12.54	5.88	6.48	12.10	First	Fourth	Third	Second
<i>Chakdara to Kalam</i>	11.72	7.02	9.22	13.92	Second	Fourth	Third	First
<i>Khuazakhela to Behsam</i>	12.84	3.64	10.45	12.89	Second	Fourth	Third	First
<i>Peshawer to DG Khan</i>	10.31	5.05	11.92	14.85	Third	Fourth	Second	First

Table 4.3: Download User Data Throughput Technology Auto Detect Mode [Fixed Size] ≥ 3 Mbps

DOWNLOAD USER DATA THROUGHPUT IN 4G/LTE TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	Download Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Zhob to Quetta</i>	10.99	6.68	8.38	7.16	First	Fourth	Second	Third
<i>Lahore to Sargodha</i>	15.10	3.09	15.32	17.38	Third	Fourth	Second	First
<i>Lahore to Rawalpindi</i>	15.50	3.25	9.44	18.97	Second	Fourth	Third	First
<i>Lahore to Multan</i>	13.38	6.01	13.35	14.59	Second	Fourth	Third	First
<i>Islamabad to Kohat</i>	20.93	3.33	5.85	12.40	First	Fourth	Third	Second
<i>Mianwali to Bakhar</i>	4.09	2.15	2.41	5.53	Second	Fourth	Fourth	First
<i>Isamabad to D.I Khan</i>	7.80	1.73	3.57	5.48	First	Fourth	Fourth	Second
<i>T.M Panah to Jalalpur Pirwala</i>	15.06	3.56	12.93	17.99	Second	Fourth	Third	First
<i>Kot Sabzal to Multan</i>	23.11	5.79	16.11	18.16	First	Fourth	Third	Second
<i>Chakdara to Kalam</i>	21.41	1.82	17.64	25.99	Second	Fourth	Third	First
<i>Khuazakhela to Behsam</i>	0.65	1.76	17.12	13.84	Fourth	Fourth	First	Second
<i>Peshawer to DG Khan</i>	22.32	3.59	6.30	22.58	Second	Fourth	Third	First

Table 4.4: Download User Data Throughput 4G/LTE Technology Locked Mode [Fixed Duration] ≥ 3 Mbps

DOWNLOAD USER DATA THROUGHPUT IN 3G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	Download Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Quetta to Zhob</i>	3310.09	4286.82	4032.73	2410.64	Third	First	Second	Fourth
<i>Lahore to Sargodha</i>	3109.03	2239.95	3814.86	1973.73	Second	Third	First	Fourth
<i>Lahore to Rawalpindi</i>	2208.67	1811.03	3327.1	2389.37	Third	Fourth	First	Second
<i>Lahore to Multan</i>	2510.27	2388.08	2496.11	1689.42	First	Third	Second	Fourth
<i>Islamabad to Kohat</i>	3416.89	1884.31	2135.95	1955.74	First	Fourth	Second	Third
<i>Mianwali to Bakhar</i>	2093.44	2138.59	1721.02	1854.36	Second	First	Fourth	Third
<i>Isamabad to D.I Khan</i>	2166.22	1313.63	2360.81	1475.1	Second	Fourth	First	Third
<i>T.M Panah to Jalalpur Pirwala</i>	3290.86	2219.17	1482.73	1876.5	First	Second	Fourth	Third
<i>Kot Sabzal to Multan</i>	2945.38	4460.73	2350.35	2852.61	Second	First	Fourth	Third
<i>Chakdara to Kalam</i>	2945.38	4460.73	2350.35	2852.61	Second	First	Fourth	Third
<i>Khuazakhela to Behsam</i>	4138.82	1307.93	2418.62	2297.68	First	Fourth	Second	Third
<i>Peshawer to DG Khan</i>	1823.3	1517.58	1911.81	2037.49	Third	Fourth	Second	First

Table 4.5: Download User Data Throughput IN 3G Technology Locked Mode [Fixed Duration] ≥ 512 Kbps

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 768 Kbps of 4G/LTE & 128 Kbps 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] ≥ 768 Kbps**, (ii). **Table 4.7: Upload User Data Throughput Technology Auto Detect Mode [Fixed Size] ≥ 768 Kbps**, (iii). **Table 4.8: Upload User Data Throughput in 4G/LTE Technology Locked**

Mode [Fixed Duration] \geq 768 Kbps & (iv). Table 4.9: Upload User Data Throughput in 3G Technology Locked Mode [Fixed Duration] \geq 128 Kbps.

UPLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED DURATION)								
Road	Upload Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Quetta to Zhob</i>	16071.85	4620.93	17662.64	16913.76	Third	Fourth	First	Second
<i>Zhob to Quetta</i>	14445.73	5203.71	13526.88	16978.23	Second	Fourth	Third	First
<i>Lahore to Sargodha</i>	21187.7	6575.18	18402.93	14811.03	First	Fourth	Second	Third
<i>Lahore to Rawalpindi</i>	18033.43	6342.89	19589.29	21727.77	Third	Fourth	Second	First
<i>Lahore to Multan</i>	17483.04	6013.29	14095.94	15426.7	First	Fourth	Third	Second
<i>Islamabad to Kohat</i>	17803.1	7840.56	17885.7	15142.61	Second	Fourth	First	Third
<i>Mianwali to Bakhar</i>	15141.84	5827.45	12654.66	10180.92	First	Fourth	Second	Third
<i>Isamabad to D.I Khan</i>	17002.48	5702.02	12255.25	8878.16	First	Fourth	Second	Third
<i>T.M Panah to Jalalpur Pirwala</i>	17775.52	3989.82	11920.74	14897.28	First	Fourth	Third	Second
<i>Kot Sabzal to Multan</i>	21654.26	7437.34	12740.01	18210.53	First	Fourth	Third	Second
<i>Chakdara to Kalam</i>	18683.35	4234.95	17807.99	16642	First	Fourth	Second	Third
<i>Khuazakhela to Behsam</i>	6975.27	6775.59	15370.44	17500.71	Third	Fourth	Second	First
<i>Peshawer to DG Khan</i>	18349.59	7774.97	11452.81	16387.45	First	Fourth	Third	Second

Table 4.6: Upload User Data Throughput Technology Auto Detect Mode [Fixed Duration] \geq 768 Kbps

UPLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED SIZE)								
Road	Upload Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Quetta to Zhob</i>	6192.3	4866.38	8297.9	7990.55	Third	Fourth	First	Second
<i>Zhob to Quetta</i>	5735.17	4672.48	4846.81	6611.92	Second	Fourth	Third	First
<i>Lahore to Sargodha</i>	7284.31	5435.75	8569.24	7638.65	Third	Fourth	First	Second
<i>Lahore to Rawalpindi</i>	5842.5	5562.8	7480.29	7910.14	Third	Fourth	Second	First
<i>Lahore to Multan</i>	6025.81	5177.9	5219.32	7250.36	Second	Fourth	Third	First
<i>Islamabad to Kohat</i>	6487.43	5883.52	7538.79	6746.31	Third	Fourth	First	Second
<i>Mianwali to Bakhar</i>	6502.4	5725.2	6815.23	6831.79	Third	Fourth	Second	First
<i>Isamabad to D.I Khan</i>	6772.27	5468.01	7257.92	7667.31	Third	Fourth	Second	First
<i>T.M Panah to J. Pirwala</i>	10779.64	9131.75	11876.7	11559.4	Third	Fourth	First	Second
<i>Kot Sabzal to Multan</i>	12354.28	10908.75	11046.4	14280.9	Second	Fourth	Third	First
<i>Chakdara to Kalam</i>	12192.52	9539.01	16882.8	13549.4	Third	Fourth	First	Second
<i>Khuazakhela to Behsam</i>	10621.75	10256.71	16878.4	13814.4	Third	Fourth	First	Second
<i>Peshawer to DG Khan</i>	12252.51	10169.19	12301.7	13733.1	Third	Fourth	Second	First

Table 4.7: Upload User Data Throughput Technology Auto Detect Mode [Fixed Size] \geq 768 Kbps

UPLOAD USER DATA THROUGHPUT IN 4G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	Upload Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Zhob to Quetta</i>	7942.43	4365.81	11787.94	14687.9	Third	Fourth	Second	First
<i>Lahore to Sargodha</i>	20419.17	5123.96	17036.05	9342.6	First	Fourth	Second	Third
<i>Lahore to Rawalpindi</i>	19569.5	5166.58	17938.07	14213.99	First	Fourth	Second	Third
<i>Lahore to Multan</i>	16635.89	5101.13	10309.4	8981.37	First	Fourth	Second	Third
<i>Islamabad to Kohat</i>	13382.39	7183.49	18471.69	13544.29	Third	Fourth	First	Second
<i>Mianwali to Bakhar</i>	8658.84	3307.68	10163.53	5274.95	Second	Fourth	First	Third
<i>Isamabad to D.I Khan</i>	14837.24	5260.72	11068.11	8835.63	First	Fourth	Second	Third
<i>T.M Panah to J. Pirwala</i>	13494.83	2348.09	10761.36	7004.57	First	Fourth	Second	Third
<i>Kot Sabzal to Multan</i>	19497.48	5972.93	9416.83	7929.4	First	Fourth	Second	Third
<i>Chakdara to Kalam</i>	14040.69	3438	16406.1	13690.82	Second	Fourth	First	Third
<i>Khuazakhela to Behsam</i>	8836.05	3128.51	11945.95	23244.33	Third	Fourth	Second	First
<i>Peshawer to DG Khan</i>	17372.47	5900.3	9532.04	7745.57	First	Fourth	Second	Third

Table 4.8: Upload User Data Throughput in 4G Technology Locked Mode [Fixed Duration] ≥ 768 Kbps

UPLOAD USER DATA THROUGHPUT IN 3G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
Road	Upload Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Quetta to Zhob</i>	997.71	1890.55	2742.63	1196.13	Fourth	Second	First	Third
<i>Lahore to Sargodha</i>	654.73	1218.52	1783.34	634.46	Third	Second	First	Fourth
<i>Lahore to Rawalpindi</i>	724.45	1174.63	2345.99	608.85	Third	Second	First	Fourth
<i>Lahore to Multan</i>	1225.36	1224.81	1846.35	760.84	Second	Third	First	Fourth
<i>Islamabad to Kohat</i>	1322.19	1127.62	1515.2	847.25	Second	Third	First	Fourth
<i>Mianwali to Bakhar</i>	870.66	1105.53	1158.63	847.64	Third	Second	First	Fourth
<i>Isamabad to D.I Khan</i>	913.48	1040.11	1698.64	338.79	Third	Second	First	Fourth
<i>T.M Panah to J. Pirwala</i>	1776.22	2236.29	1173.86	665.92	Second	First	Third	Fourth
<i>Kot Sabzal to Multan</i>	1482.14	2305.9	1889.79	892.19	Third	First	Second	Fourth
<i>Chakdara to Kalam</i>	1151.39	917.79	1277.26	1651.27	Third	Fourth	Second	First
<i>Khuazakhela to Behsam</i>	322.8	975.77	2184.98	1761.51	Fourth	Third	First	Second
<i>Peshawar to DG Khan</i>	1007.85	1417.77	2184.26	1447.54	Fourth	Third	First	Second

Table 4.9: Upload User Data Throughput in 3G Technology Locked Mode [Fixed Duration] ≥ 128 Kbps

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 (Sec)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Quetta to Zhob</i>	6.3	6.5	6.3	6.4	No	No	No	No
<i>Zhob to Quetta</i>	6.2	6.7	7.3	6.5	No	No	No	No
<i>Lahore to Sargodha</i>	5.8	7.0	5.3	5.6	No	No	No	No
<i>Lahore to Rawalpindi</i>	5	7	6	5	Yes	No	No	Yes
<i>Lahore to Multan</i>	6	7	6	6	No	No	No	No
<i>Islamabad to Kohat</i>	5.5	7.1	6.5	6.2	No	No	No	No
<i>Mianwali to Bakhar</i>	5.9	6.7	6.6	5.3	No	No	No	No
<i>Isamabad to D.I Khan</i>	6.1	7.2	6.6	6.1	No	No	No	No
<i>T.M Panah to J. Pirwala</i>	7.1	7.7	7.3	7.1	No	No	No	No
<i>Kot Sabzal to Multan</i>	6.5	7.1	6.8	6.1	No	No	No	No
<i>Chakdara to Kalam</i>	6.6	8.2	6.9	6.3	No	No	No	No
<i>Khuazakhela to Behsam</i>	6.2	7.7	6.5	5.9	No	No	No	No
<i>Peshawar to DG Khan</i>	6.6	7.7	7.5	6.6	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
<i>Quetta to Zhob</i>	326	280	252	290	No	No	No	No
<i>Zhob to Quetta</i>	292	299	394	228	No	No	No	No
<i>Lahore to Sargodha</i>	261	234	217	225	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 Rawalpindi</i>	255	242	221	223	No	No	No	No
<i>Lahore to Multan</i>	242	237	304	239	No	No	No	No
<i>Islamabad to Kohat</i>	243	246	257	295	No	No	No	No
<i>Mianwali to Bakhar</i>	337	262	307	268	No	No	No	No
<i>Isamabad to D.I Khan</i>	255	342	285	314	No	No	No	No
<i>T.M Panah to J. Pirwala</i>	242	243	319	218	No	No	No	No
<i>Kot Sabzal to Multan</i>	232	220	319	211	No	No	No	No
<i>Chakdara to Kalam</i>	280	238	262	223	No	No	No	No
<i>Khuazakhela to Behsam</i>	588	266	471	270	No	No	No	No
<i>Peshawer to DG Khan</i>	269	260	308	246	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>Zhob to Quetta</i>	165	103	104	151	No	No	No	No
<i>Lahore to Sargodha</i>	66	85	88	69	Yes	No	No	Yes
<i>Lahore to Rawalpindi</i>	87	90	88	216	No	No	No	No
<i>Lahore to Multan</i>	95	98	80	98	No	No	No	No
<i>Islamabad to Kohat</i>	82	87	87	154	No	No	No	No
<i>Mianwali to Bakhar</i>	160	133	119	114	No	No	No	No
<i>Isamabad to D.I Khan</i>	108	116	117	141	No	No	No	No
<i>T.M Panah to J. Pirwala</i>	69	93	131	79	Yes	No	No	No
<i>Kot Sabzal to Multan</i>	70	89	106	69	Yes	No	No	Yes
<i>Chakdara to Kalam</i>	97	97	115	106	No	No	No	No
<i>Khuazakhela to Behsam</i>	198	130	123	217	No	No	No	No
<i>Peshawer to DG Khan</i>	112	116	111	103	No	No	No	No

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

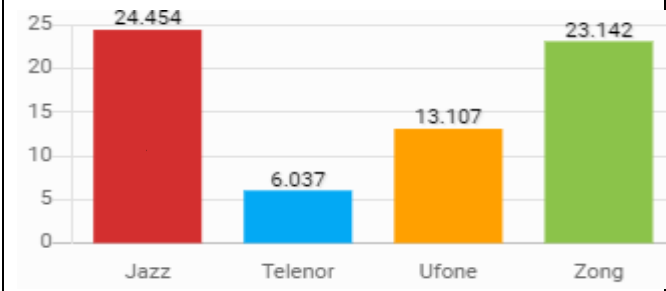
LATENCY IN 3G TECHNOLOGY LOCKED MODE								
Road	Latency [milliseconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Quetta to Zhob</i>	513	996	458	391	No	No	No	No
<i>Lahore to Sargodha</i>	607	493	521	137	No	No	No	Yes
<i>Lahore to Rawalpindi</i>	489	389	506	136	No	No	No	Yes
<i>Lahore to Multan</i>	351	496	446	117	No	No	No	Yes
<i>Islamabad to Kohat</i>	577	453	445	285	No	No	No	No
<i>Mianwali to Bakhar</i>	381	930	492	375	No	No	No	No
<i>Isamabad to D.I Khan</i>	574	600	467	371	No	No	No	No
<i>T.M Panah to J. Pirwala</i>	169	1185	292	107	No	No	No	Yes
<i>Kot Sabzal to Multan</i>	243	1025	509	111	No	No	No	Yes
<i>Chakdara to Kalam</i>	521	693	518	387	No	No	No	No
<i>Khuazakhela to Behsam</i>	642	561	521	683	No	No	No	No
<i>Peshawer to DG Khan</i>	643	719	585	399	No	No	No	No

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

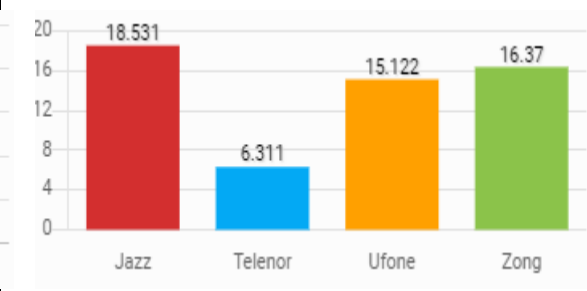
4.6. During the survey, the deployed technologies by Cellular Mobile Operators (CMOs), Success Rate of http Transfer Download Tests and Resource Block Utilization have been recorded. The details can be seen in attached graphs.

TECHNOLOGY AUTO DETECT MODE TESTING

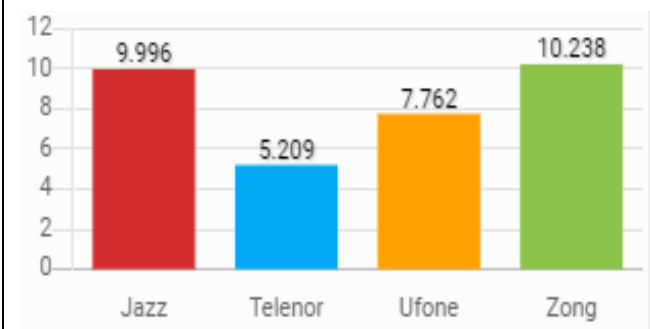
CAPACITY TEST DOWNLOAD SPEED (Mbps)



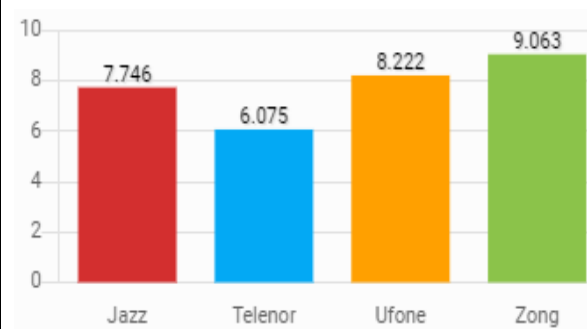
CAPACITY TEST UPLOAD SPEED (Mbps)



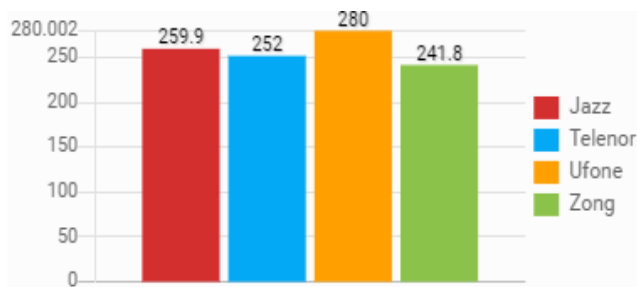
DATA TRANSFER DOWNLOAD SPEED (Mbps)



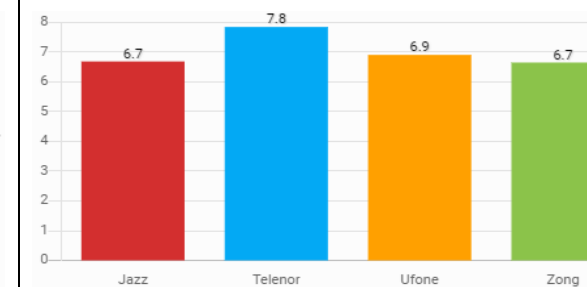
DATA TRANSFER UPLOAD SPEED (Mbps)



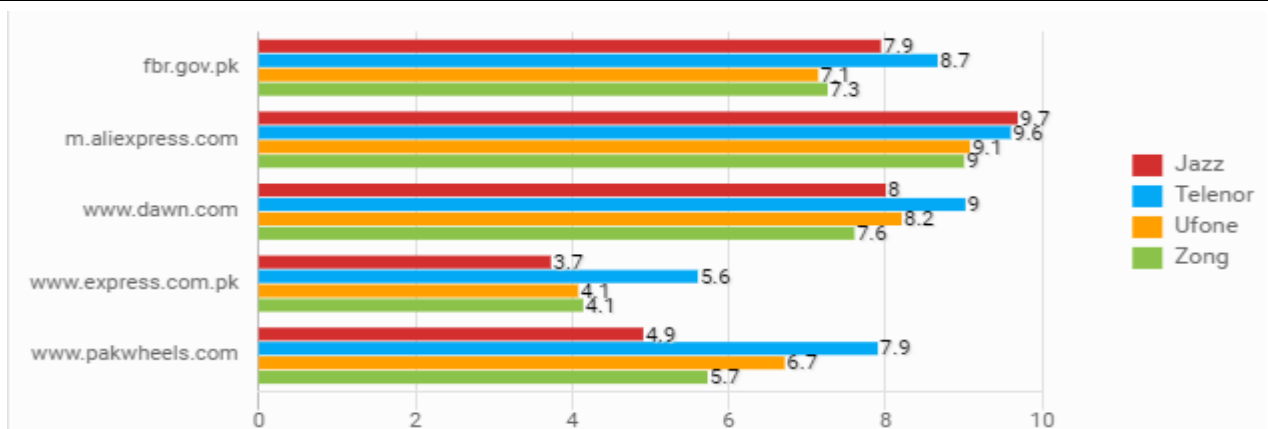
LATENCY (milliseconds)



WEBPAGE LOADING TIME (Seconds)

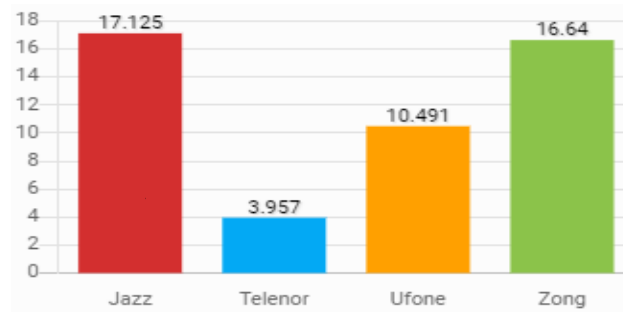


WEBPAGE LOADING TIME PER PAGE (Seconds)

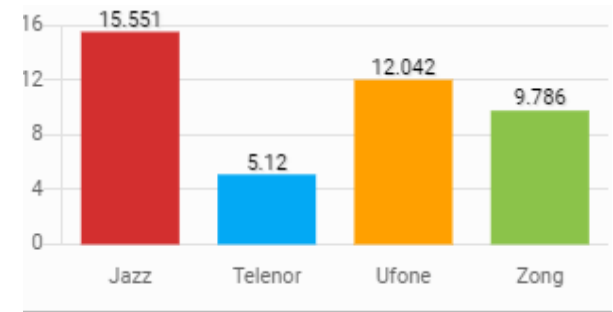


4G TECHNOLOGY LOCKED MODE

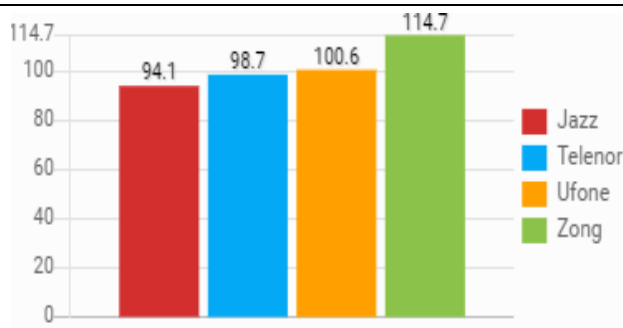
DATA TRANSFER DOWNLOAD SPEED (Mbps)



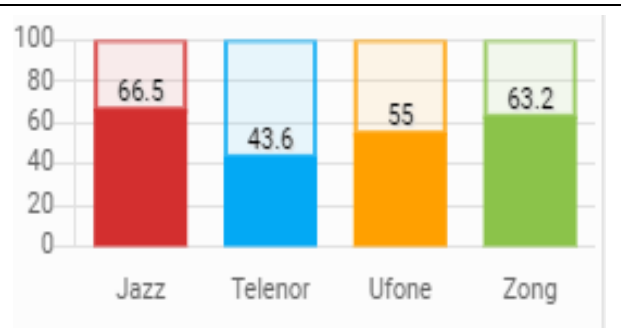
DATA TRANSFER UPLOAD SPEED (Mbps)



LATENCY (milliseconds)

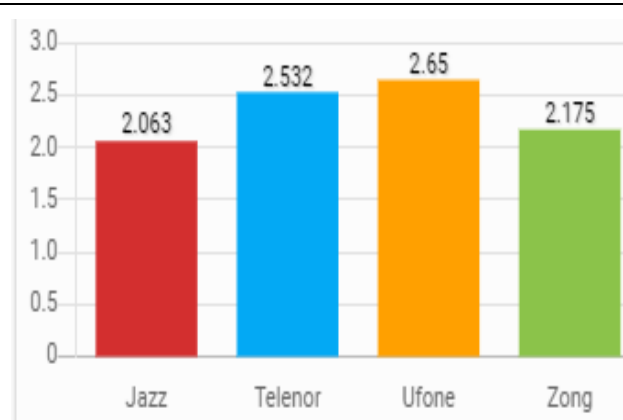


RESOURCE BLOCK USAGE DOWNLOAD

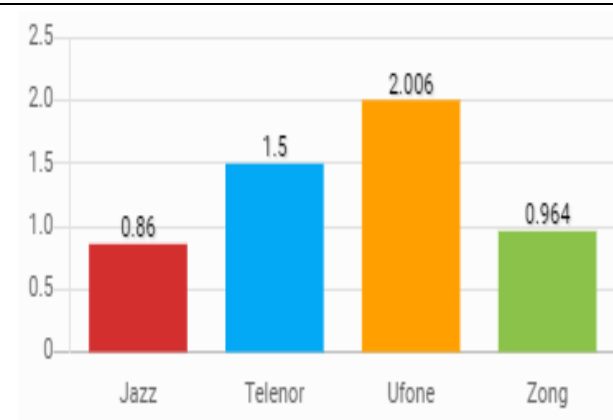


3G TECHNOLOGY LOCKED MODE

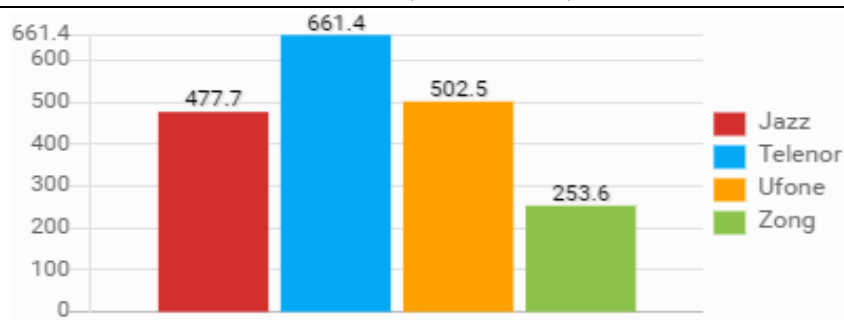
DATA TRANSFER DOWNLOAD SPEED (Mbps)



DATA TRANSFER UPLOAD SPEED (Mbps)



LATENCY (milliseconds)



VOICE SERVICE

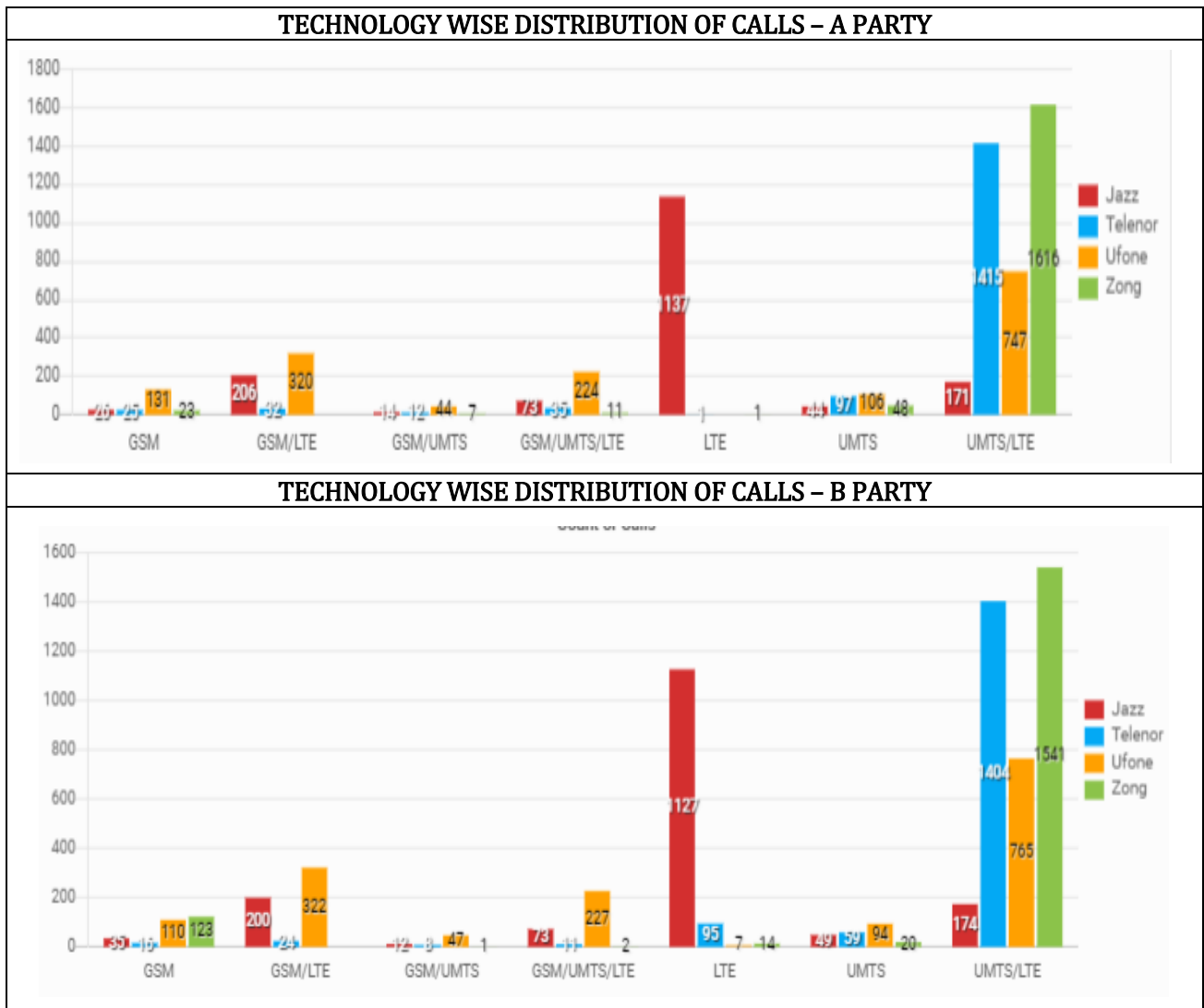
5.1. A total of 6697 Call attempts were made and out of which 828 were failed attempts. In 5869 successful call attempts, 284 calls dropped prior to completion of two minutes duration, whereas, 5585

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	1671	1617	1572	1706
FAILED CALLS ATTEMPTS	125	209	78	93
ESTABLISHED CALLS ATTEMPTS	1546	1408	1494	1613
DROPPED CALLS ATTEMPTS	45	70	60	44
COMPLETED CALLS ATTEMPTS	1501	1338	1434	1569
CALL SETUP SUCCESS RATE (%)	92.52	87.07	95.04	94.55
CALL SETUP TIME (SECONDS)	8.39	9.66	8.27	7.05
CALL COMPLETION RATE (%)	97.78	90.58	94.55	94.27
ISHO SUCCESS RATE (%)	100	100	96.97	-
RAB SETUP SUCCESS RATE (%)	100	100	96.97	-
MEAN OPINION SCORE	3.42	3.2	3.02	3.51
MEAN OPINION SCORE EXCESS RATIO - MOS < 1.6 (%)	7.7	2.58	5.92	2.5
TOTAL SPEECH TEST	15136	13737	14516	15989

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 – COMPLIANCE (YES/NO)								
Operator	*Voice KPIs	Quetta to Zhob	Zhob to Quetta	Lahore to Sargodha	Lahore to Rawalpindi	Lahore to Multan	Islamabad to Kohat	Mianwali to Bakhar
Jazz	NA	No	No	Yes	Yes	Yes	Yes	No
	SA	No	No	No	No	Yes	No	No
	CCT	No	No	Yes	Yes	Yes	Yes	No
	CCR	No	No	Yes	Yes	Yes	No	No
	MOS	No	No	Yes	Yes	Yes	Yes	Yes
	ISHO	N/a	N/a	Yes	Yes	Yes	Yes	Yes
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Telenor	NA	No	Yes	No	Yes	Yes	Yes	Yes
	SA	No	No	No	No	No	No	No
	CCT	Yes	Yes	Yes	No	Yes	Yes	Yes
	CCR	No	No	No	No	No	No	No
	MOS	Yes	Yes	Yes	No	Yes	Yes	No
	ISHO	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	RSSR	Yes	N/a	Yes	Yes	N/a	N/a	N/a
Ufone	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SA	Yes	No	Yes	Yes	Yes	No	No
	CCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	No	No	No	Yes	Yes	No	No
	MOS	Yes	Yes	Yes	Yes	Yes	No	No
	ISHO	No	Yes	Yes	Yes	No	Yes	Yes
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zong	NA	No	No	Yes	Yes	Yes	Yes	Yes
	SA	No	No	No	Yes	No	No	No
	CCT	No	No	Yes	Yes	Yes	Yes	Yes
	CCR	No	No	Yes	No	Yes	No	Yes
	MOS	No	No	Yes	Yes	Yes	Yes	Yes
	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 – COMPLIANCE (YES/NO)							
Operator	*Voice KPIs	Islamabad to D.I Khan	T.M Panah to J. Pirwala	Kot Sabzal to Multan	Chakdara to Kalam	Khuazakhela to Behsam	Peshawer to DG Khan.
Jazz	NA	Yes	Yes	Yes	Yes	No	Yes
	SA	No	Yes	Yes	Yes	No	No
	CCT	Yes	Yes	Yes	Yes	No	Yes
	CCR	No	Yes	No	Yes	Yes	Yes
	MOS	Yes	Yes	Yes	Yes	No	No
	ISHO	Yes	Yes	No	No	Yes	Yes
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes
Telenor	NA	No	Yes	Yes	Yes	Yes	Yes
	SA	No	No	No	No	No	No
	CCT	No	Yes	Yes	Yes	Yes	Yes
	CCR	No	No	No	Yes	No	No
	MOS	No	Yes	Yes	Yes	Yes	Yes
	ISHO	Yes	No	No	No	Yes	No
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes
Ufone	NA	No	Yes	Yes	Yes	No	Yes
	SA	No	No	Yes	Yes	No	No
	CCT	Yes	No	No	Yes	Yes	Yes
	CCR	No	Yes	Yes	Yes	Yes	No
	MOS	No	No	No	Yes	No	No
	ISHO	No	No	No	Yes	No	No
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes
ZonG	NA	No	Yes	Yes	Yes	No	Yes
	SA	No	Yes	Yes	Yes	No	No
	CCT	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	No	Yes	Yes	Yes	Yes	No
	MOS	Yes	Yes	Yes	Yes	Yes	Yes
	RSSR	Yes	Yes	Yes	Yes	Yes	Yes
	ISHO	N/A	N/A	N/A	N/A	N/A	N/A

* 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 Technology Auto Detect Mode						Standing
		Compliant			Non-Compliant			
		4G	3G	Total	4G	3G	Total	
1.	Ufone	4	8	12	9	4	12	First
2.	Telenor	1	9	10	12	3	15	Second
3.	Jazz	4	2	6	9	6	15	Third
4.	ZonG	4	2	6	9	19	19	Fourth

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.	ZonG	3	10	13	9	2	11	First
2.	Telenor	1	11	12	11	1	12	Second
3.	Jazz	4	8	12	8	4	12	Second
4.	Ufone	1	8	9	11	4	15	Third

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	5	8	-	-	8	4	1	-	2 nd	1 st
2.	Jazz	8	4	1	-	4	7	2	-	1 st	2 nd
3.	Ufone	-	1	12	-	1	2	9	1	3 rd	3 rd
4.	Telenor	-	-	-	13	-	-	1	12	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				Fixed Duration	
		Fixed Duration				Fixed Duration				4G	3G
		1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th		
1.	Jazz	4	6	1	1	4	5	3	-	2 nd	1 st
2.	Telenor	-	-	-	12	4	1	2	5	4 th	2 nd
3.	Ufone	1	2	7	2	3	5	-	4	3 rd	3 rd
4.	ZonG	7	4	1	-	1	1	7	3	1 st	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 Size				Fixed Duration					
		1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th		
1.	ZonG	7	6	-	-	3	5	5	-	2 nd	1 st
2.	Ufone	6	4	3	-	2	6	5	-	3 rd	2 nd
3.	Jazz	-	3	10	-	8	2	3	-	1 st	3 rd
4.	Telenor	-	-	-	13	-	-	-	13	4 th	4 th

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

S. #	Operator	Highest Upload Throughput – Number of Roads								Standing	
		4G-Fixed Duration				3G-Fixed Duration				4G	3G
		1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th		
1.	Ufone	3	9	-	-	9	2	1	-	2 nd	1 st
2.	Telenor	-	-	-	12	2	5	4	1	4 th	2 nd
3.	ZonG	2	1	9	-	1	2	1	8	3 rd	3 rd
4.	Jazz	7	2	3	-	-	3	6	3	1 st	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	1	12	1 st
3.	Telenor	-	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.	ZonG	-	2	5	7	13	10	7	30	1 st
2.	Jazz	-	3	0	3	13	9	12	34	2 nd
3.	Telenor	-	-	-	-	13	12	12	37	-
4.	Ufone	-	-	-	-	13	12	12	37	-

Table 8.8: CMOs Standing in Latency

- c. **VOICE SERVICE**. The categorization of each CMOs, as per the maximum compliance 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	55	23	1 st
2.	Jazz	60	29	2 nd
3.	Ufone	59	32	3 rd
4.	Telenor	50	37	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	ZonG	Jazz Telenor	Ufone	-	
2.	Mobile Broadband	Fixed Duration	Download	Auto Mode	Jazz	ZonG	Ufone	Telenor	
				4G	ZonG	Jazz	Ufone	Telenor	
				3G	Jazz	Telenor	Ufone	ZonG	
			Upload	Auto Mode	Jazz	ZonG	Ufone	Telenor	
				4G	Jazz	Ufone	ZonG	Telenor	
				3G	Ufone	Telenor	ZonG	Jazz	
		Fixed Size	Download	Auto Mode	ZonG	Jazz	Ufone	Telenor	
			Upload	Auto Mode	ZonG	Ufone	Jazz	Telenor	
		Webpage Loading Time				ZonG	Jazz	Ufone	Telenor
		Latency				ZonG	Jazz	Ufone	Telenor
3.	Voice			ZonG	Jazz	Ufone	Telenor		

Table 8.9: CMOs Overall Standing in QoS Survey

MOBILE BROADBAND 3G COVERAGE MAPS

3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

JAZZ 3G NETWORK COVERAGE – QUETTA TO ZHOB (N-50)

AS Best CPICH RSCP [dBm]

- -65 to 0 (928, 13.8%)
- -75 to -65 (2594, 38.6%)
- -85 to -75 (1508, 22.5%)
- -100 to -85 (1239, 18.4%)
- -140 to -100 (448, 6.7%)



TELENOR 3G NETWORK COVERAGE – QUETTA TO ZHOB (N-50)

AS Best CPICH RSCP [dBm]

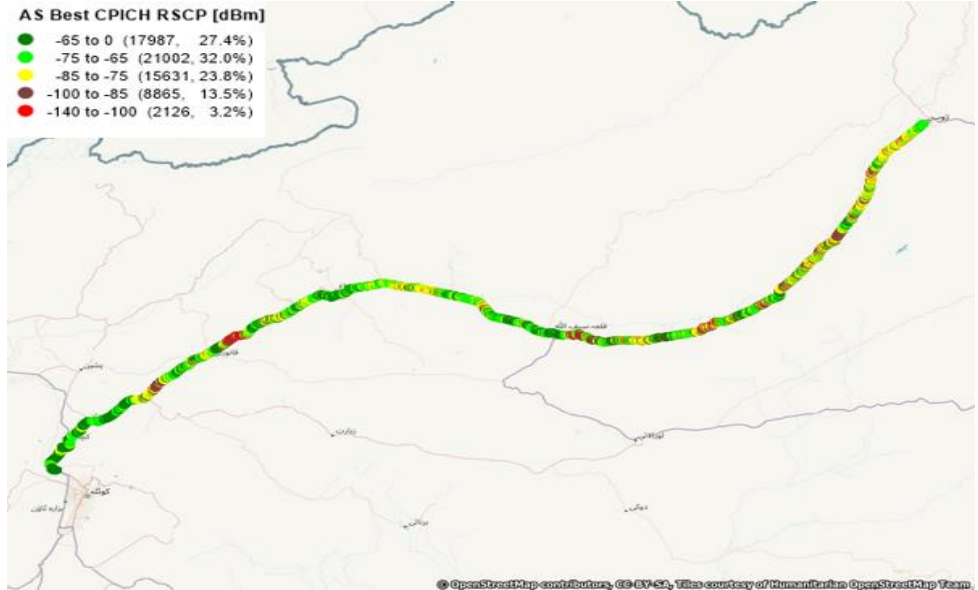
- -65 to 0 (4742, 15.7%)
- -75 to -65 (8484, 28.1%)
- -85 to -75 (10714, 35.5%)
- -100 to -85 (5302, 17.6%)
- -140 to -100 (897, 3.0%)



UFONE 3G NETWORK COVERAGE – QUETTA TO ZHOB (N-50)

AS Best CPICH RSCP [dBm]

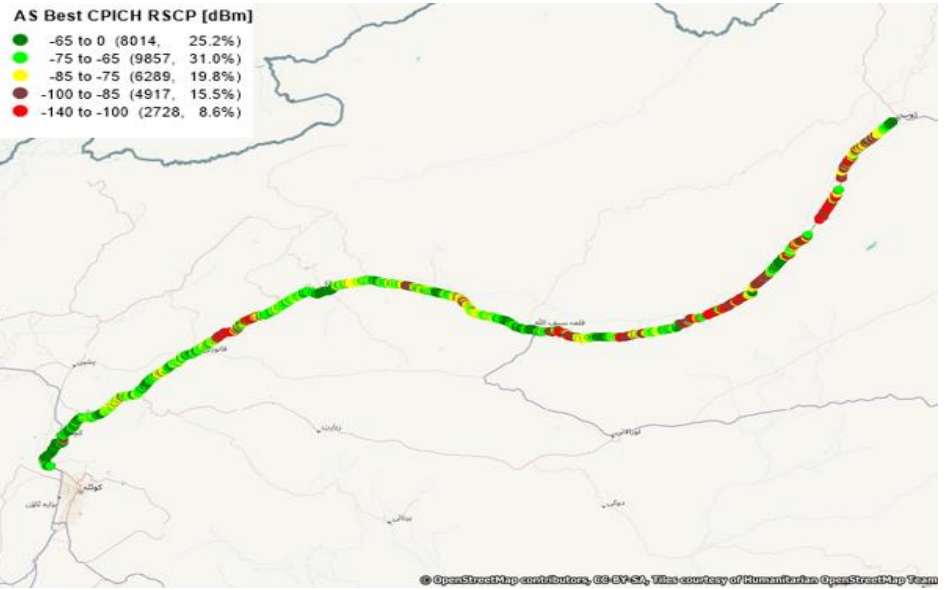
- -65 to 0 (17987, 27.4%)
- -75 to -65 (21002, 32.0%)
- -85 to -75 (15631, 23.8%)
- -100 to -85 (8865, 13.5%)
- -140 to -100 (2126, 3.2%)



ZONG 3G NETWORK COVERAGE – QUETTA TO ZHOB (N-50)

AS Best CPICH RSCP [dBm]

- -65 to 0 (8014, 25.2%)
- -75 to -65 (9857, 31.0%)
- -85 to -75 (6289, 19.8%)
- -100 to -85 (4917, 15.5%)
- -140 to -100 (2728, 8.6%)



3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

JAZZ 3G NETWORK COVERAGE – LAHORE TO SARGODHA (N-60)

AS Best CPICH RSCP [dBm]

- -65 to 0 (10310, 37.8%)
- -75 to -65 (6471, 23.7%)
- -85 to -75 (4899, 17.9%)
- -100 to -85 (5290, 19.4%)
- -140 to -100 (329, 1.2%)



TELEOR 3G NETWORK COVERAGE – LAHORE TO SARGODHA (N-60)

AS Best CPICH RSCP [dBm]

- -65 to 0 (10058, 37.0%)
- -75 to -65 (6949, 25.5%)
- -85 to -75 (5483, 20.2%)
- -100 to -85 (4452, 16.4%)
- -140 to -100 (268, 1.0%)



UFONE 3G NETWORK COVERAGE – LAHORE TO SARGODHA (N-60)

AS Best CPICH RSCP [dBm]

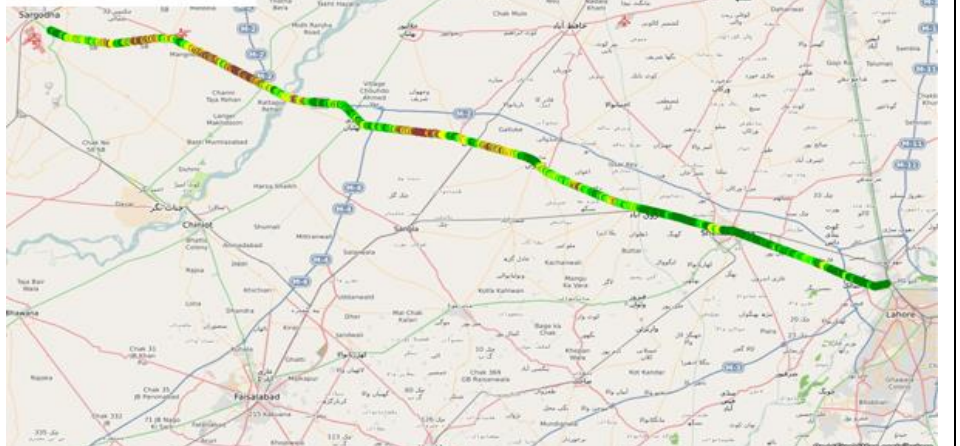
- -65 to 0 (9329, 34.7%)
- -75 to -65 (6238, 23.2%)
- -85 to -75 (5876, 21.9%)
- -100 to -85 (4682, 17.4%)
- -140 to -100 (742, 2.8%)



ZONG 3G NETWORK COVERAGE – LAHORE TO SARGODHA (N-60)

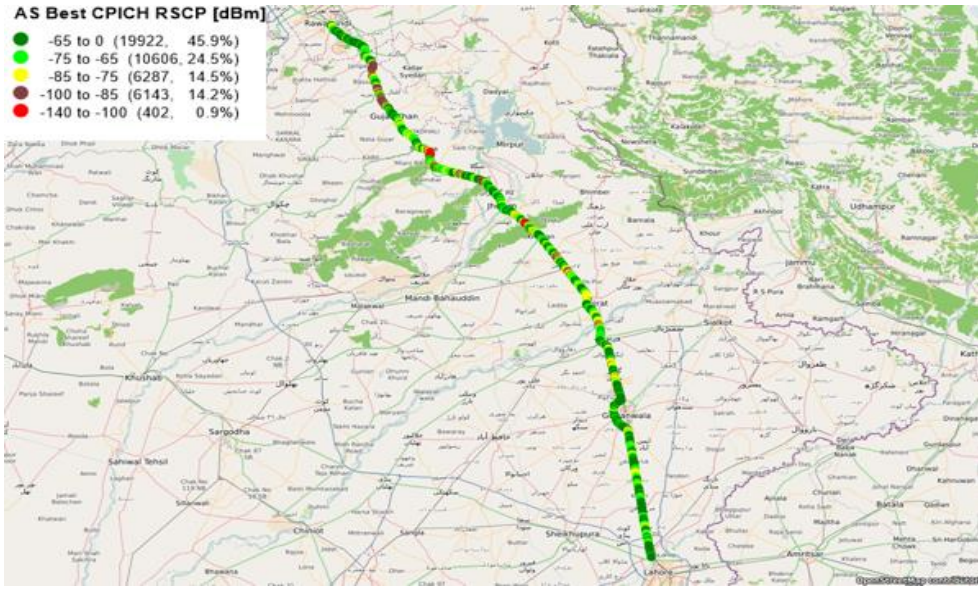
AS Best CPICH RSCP [dBm]

- -65 to 0 (10174, 36.6%)
- -75 to -65 (7708, 27.8%)
- -85 to -75 (6321, 22.8%)
- -100 to -85 (3506, 12.6%)
- -140 to -100 (65, 0.2%)

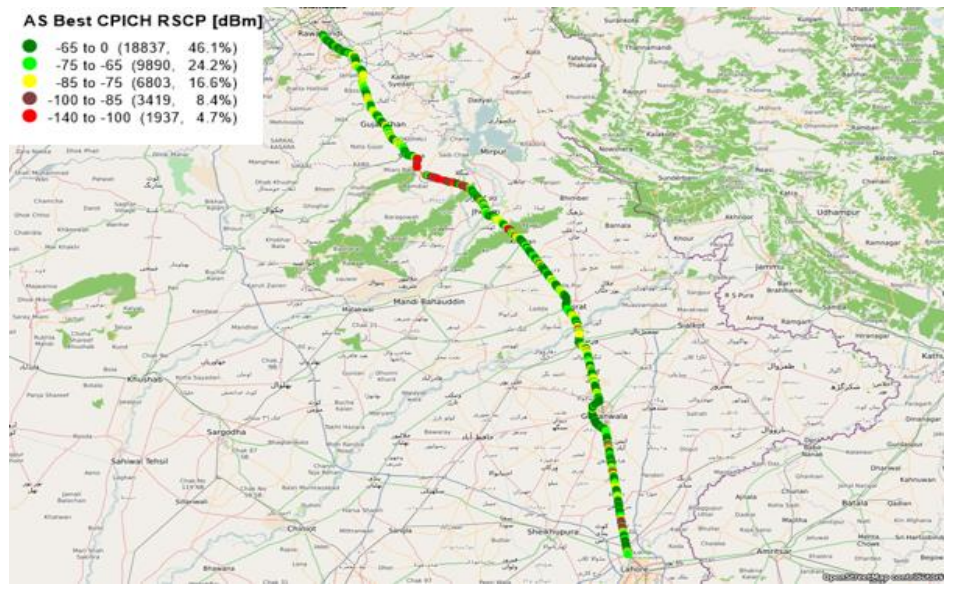


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

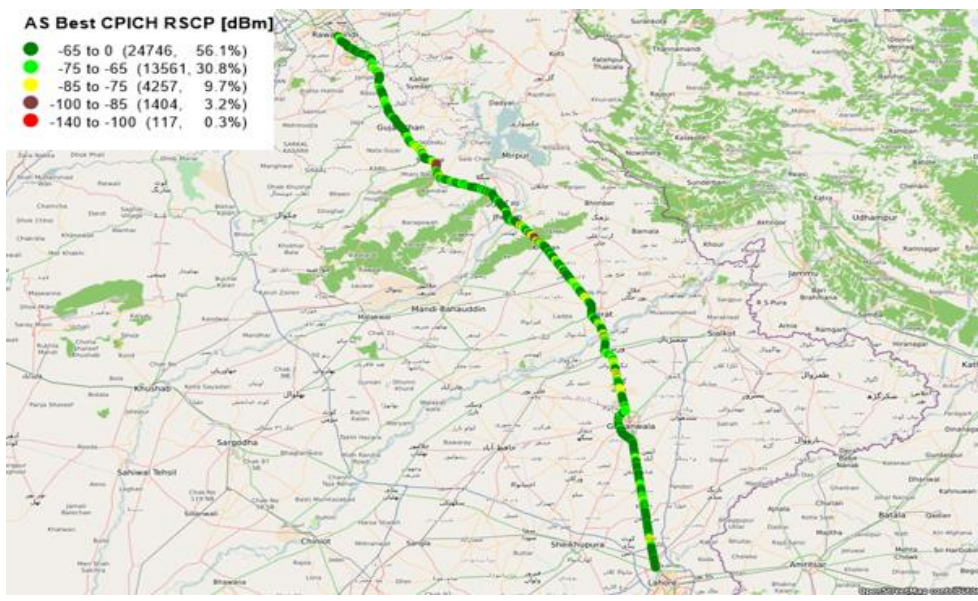
JAZZ 3G NETWORK COVERAGE – LAHORE TO RAWALPINDI (N-5)



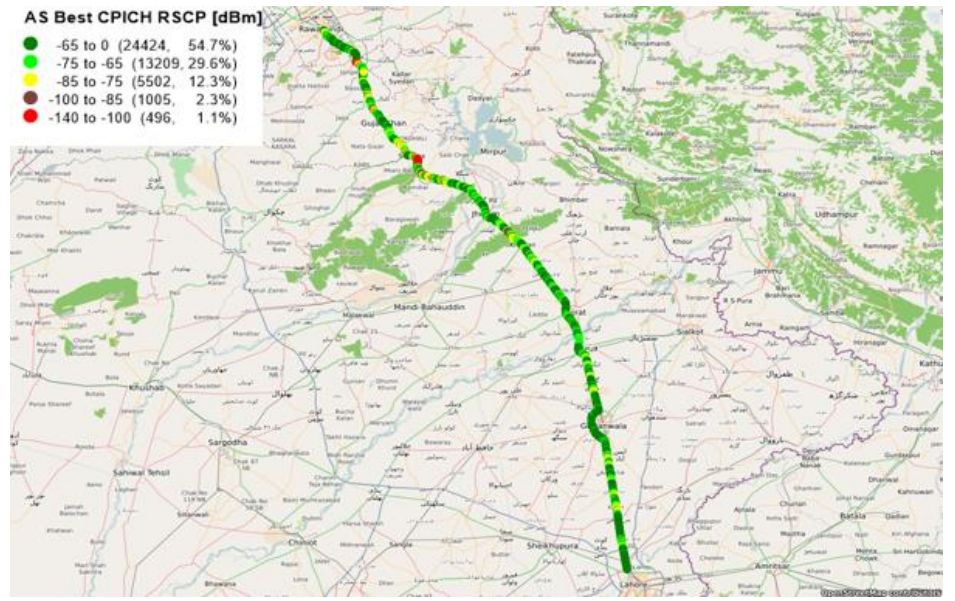
TELEOR 3G NETWORK COVERAGE – LAHORE TO RAWALPINDI (N-5)



UFONE 3G NETWORK COVERAGE – LAHORE TO RAWALPINDI (N-5)

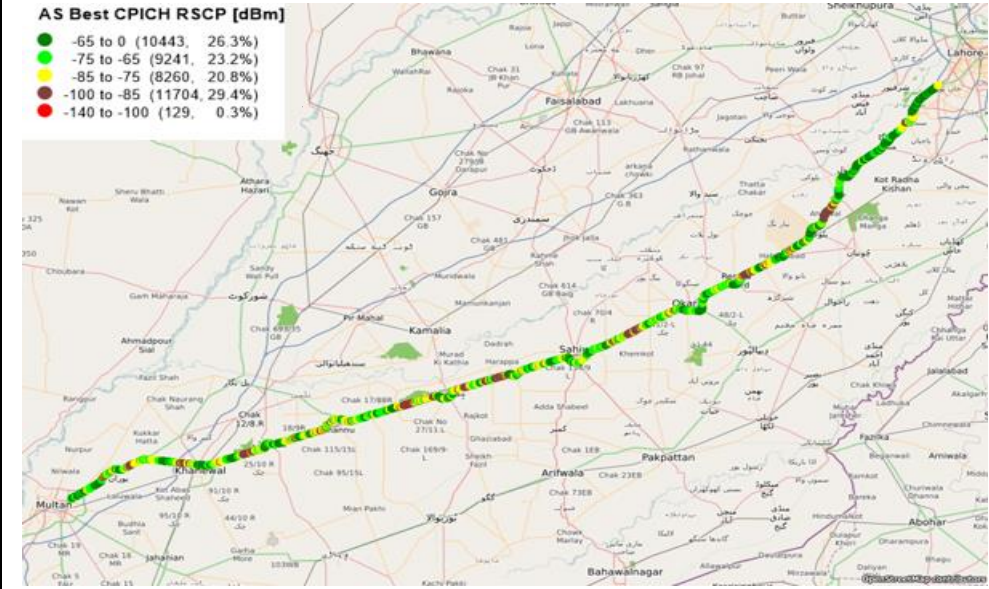


ZONG 3G NETWORK COVERAGE – LAHORE TO RAWALPINDI (N-5)

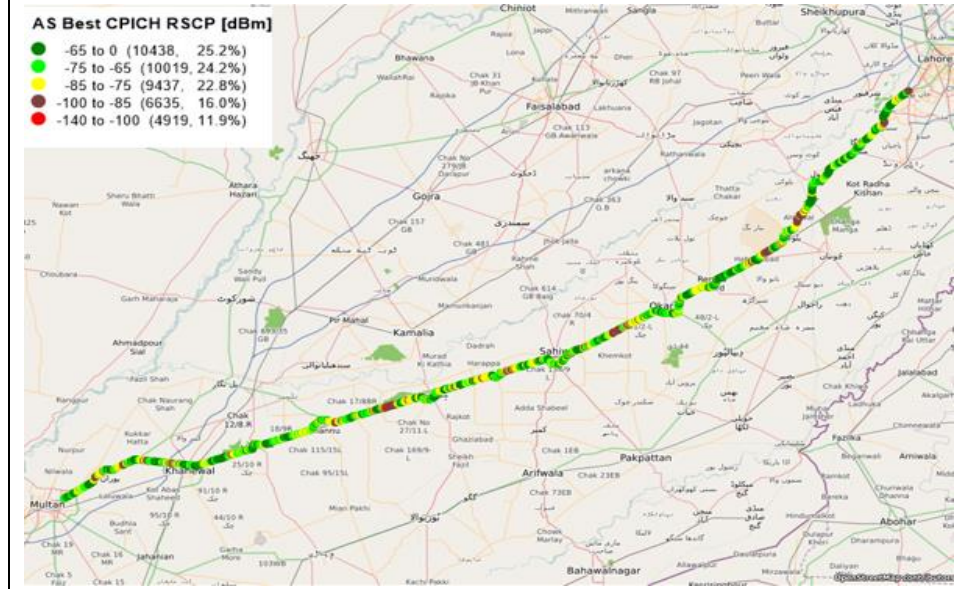


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

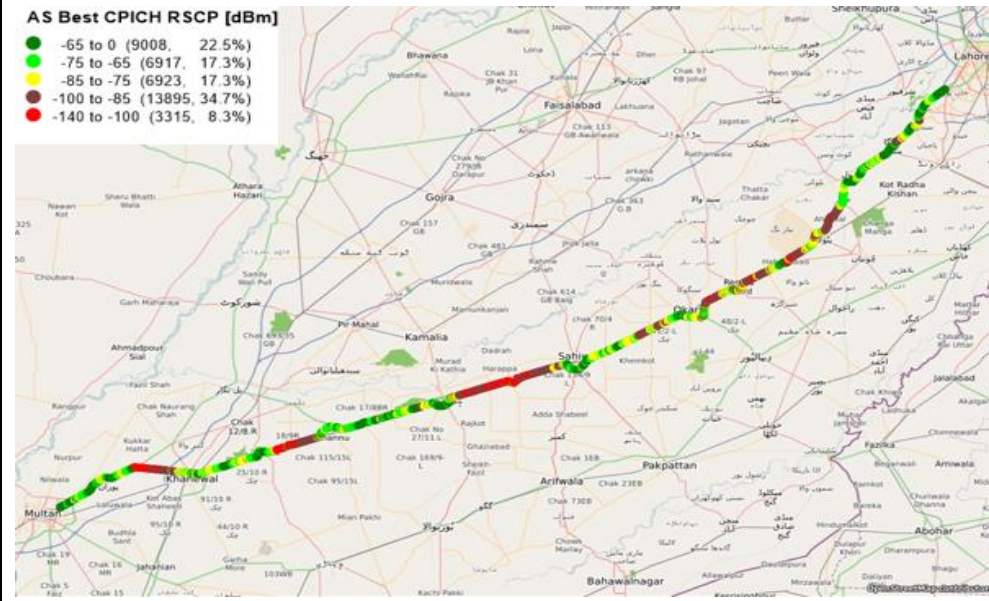
JAZZ 3G NETWORK COVERAGE – LAHORE TO MULTAN (N-5)



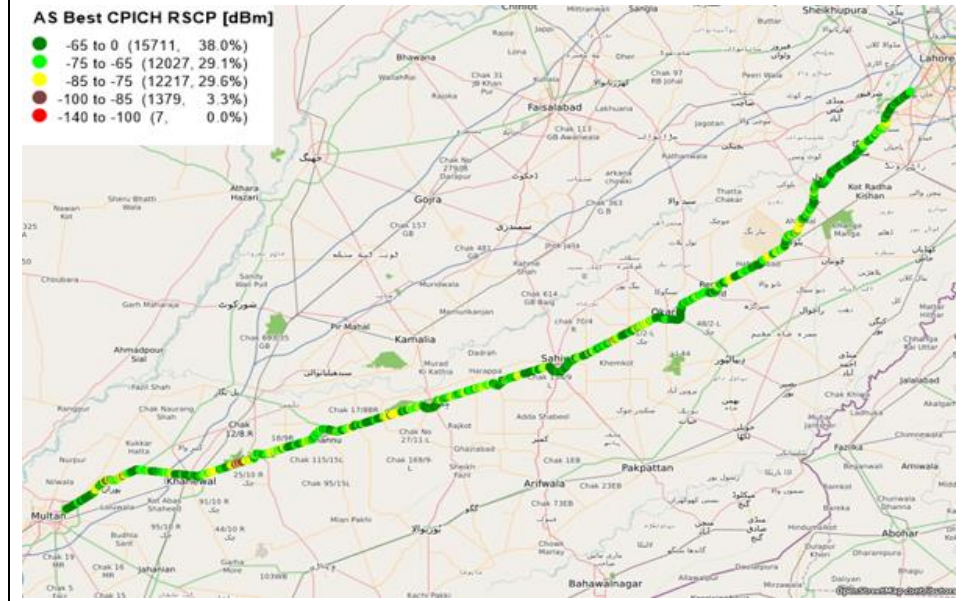
TELENOR 3G NETWORK COVERAGE – LAHORE TO MULTAN (N-5)



UFONE 3G NETWORK COVERAGE – LAHORE TO MULTAN (N-5)

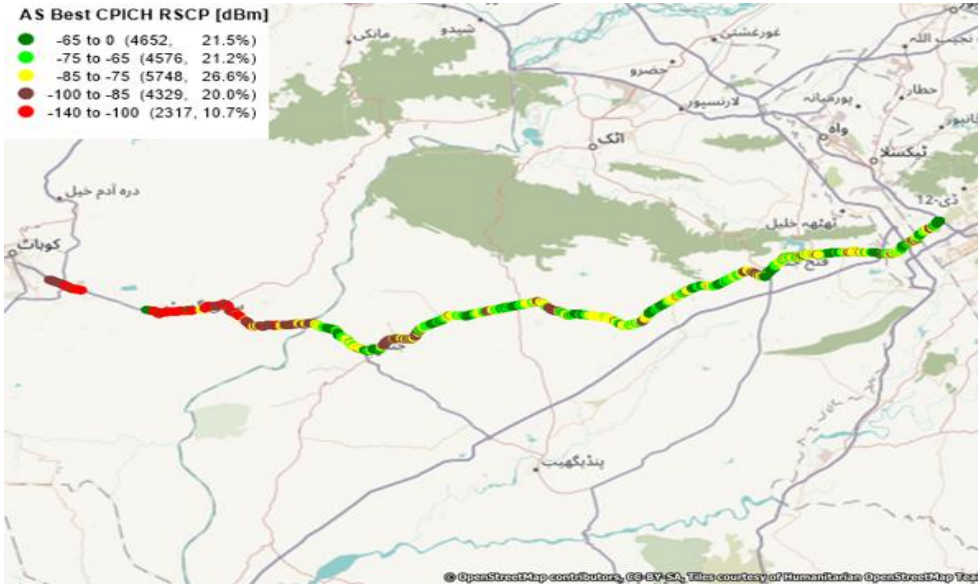


ZONG 3G NETWORK COVERAGE – LAHORE TO MULTAN (N-5)

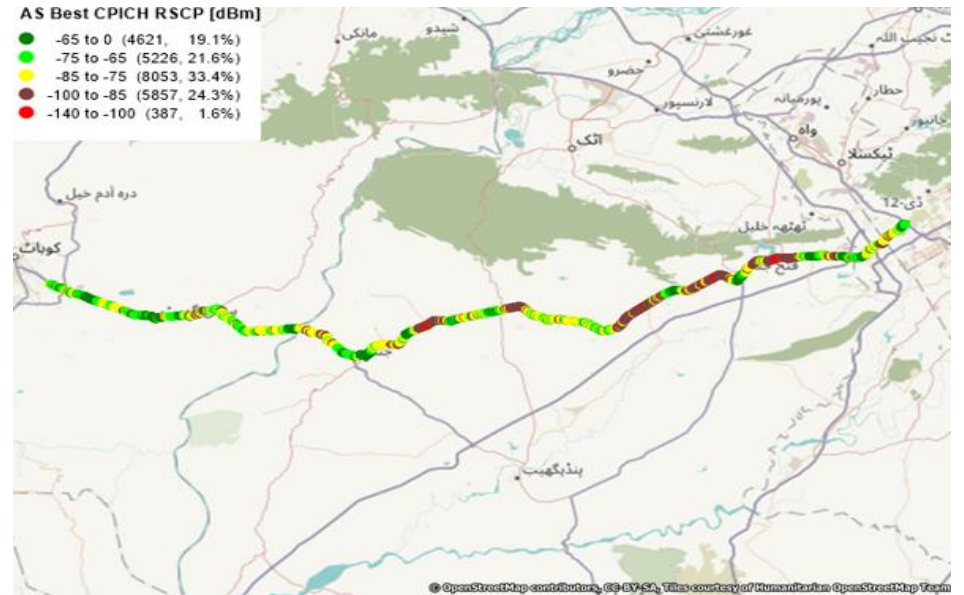


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

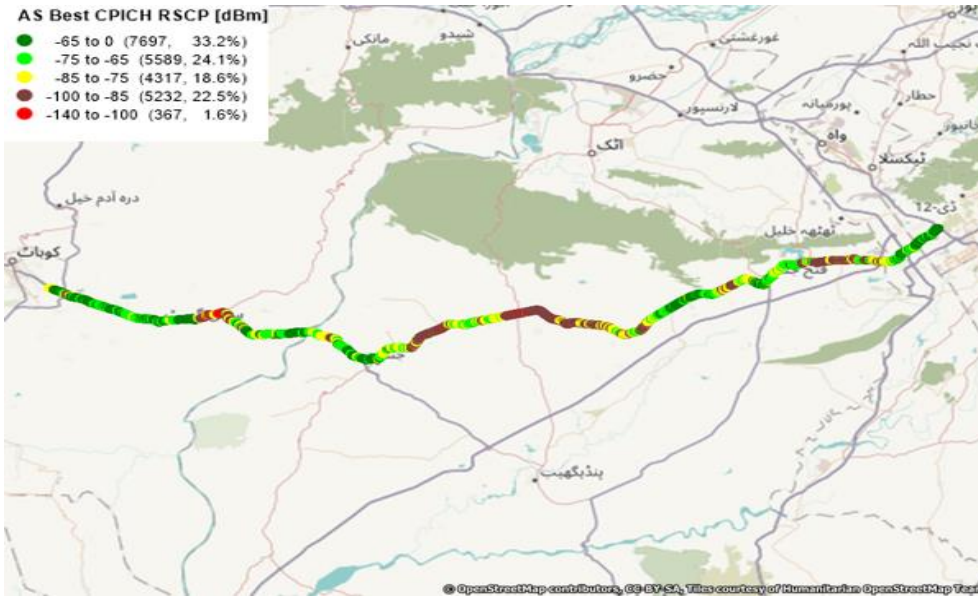
JAZZ 3G NETWORK COVERAGE – ISLAMABAD TO KOHAT (N-80)



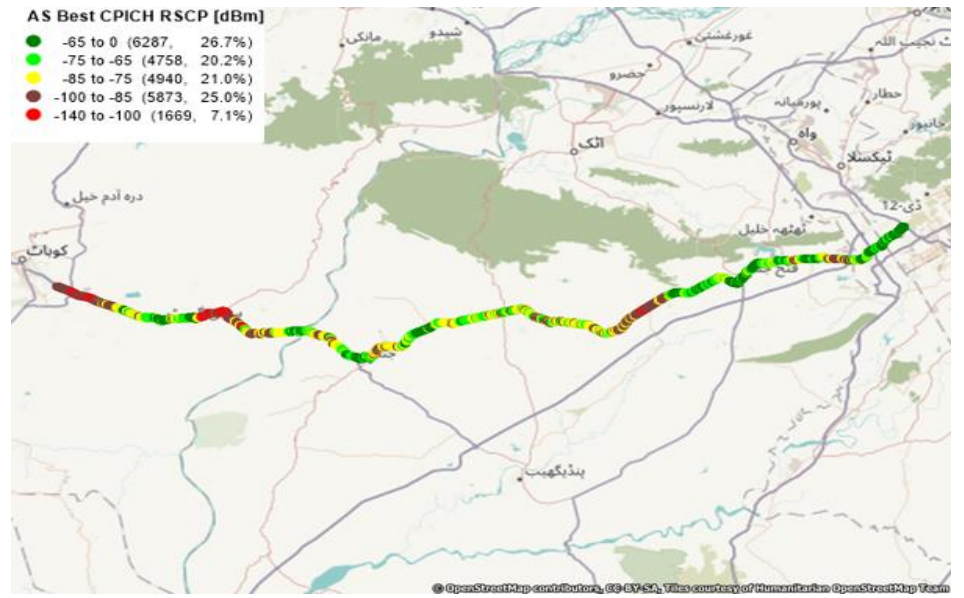
TELENOR 3G NETWORK COVERAGE – ISLAMABAD TO KOHAT (N-80)



UFONE 3G NETWORK COVERAGE – ISLAMABAD TO KOHAT (N-80)

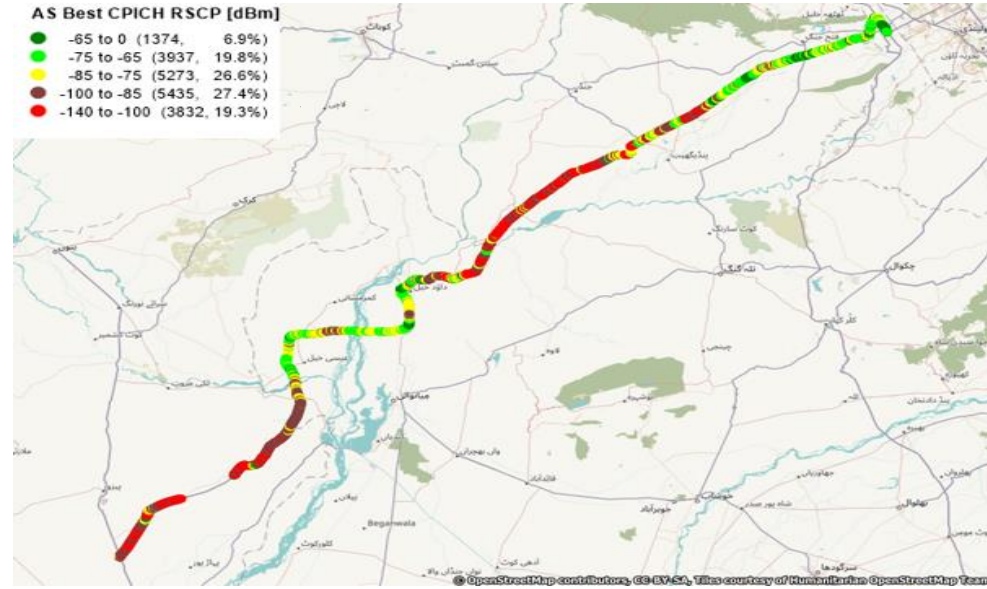


ZONG 3G NETWORK COVERAGE – ISLAMABAD TO KOHAT (N-80)

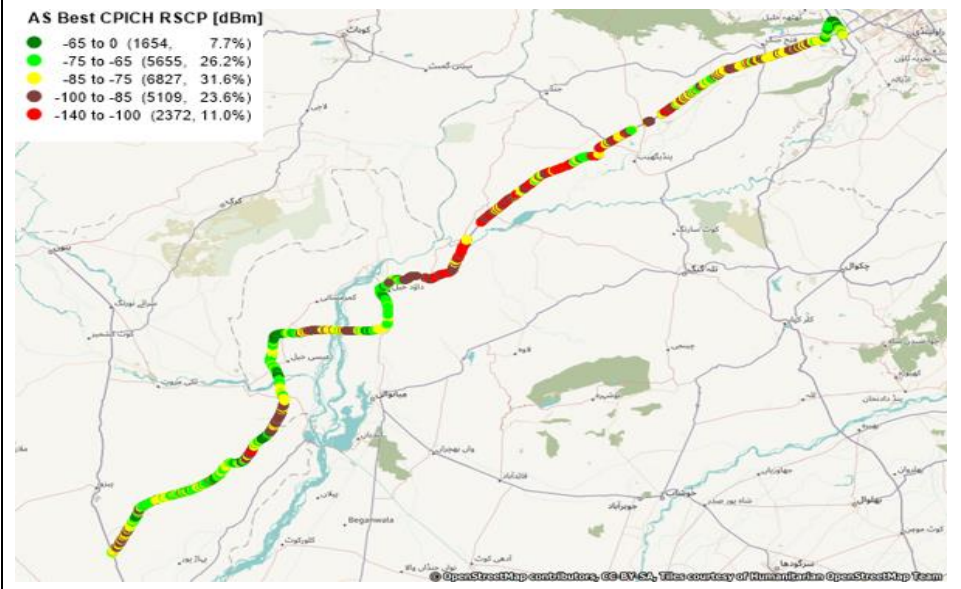


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

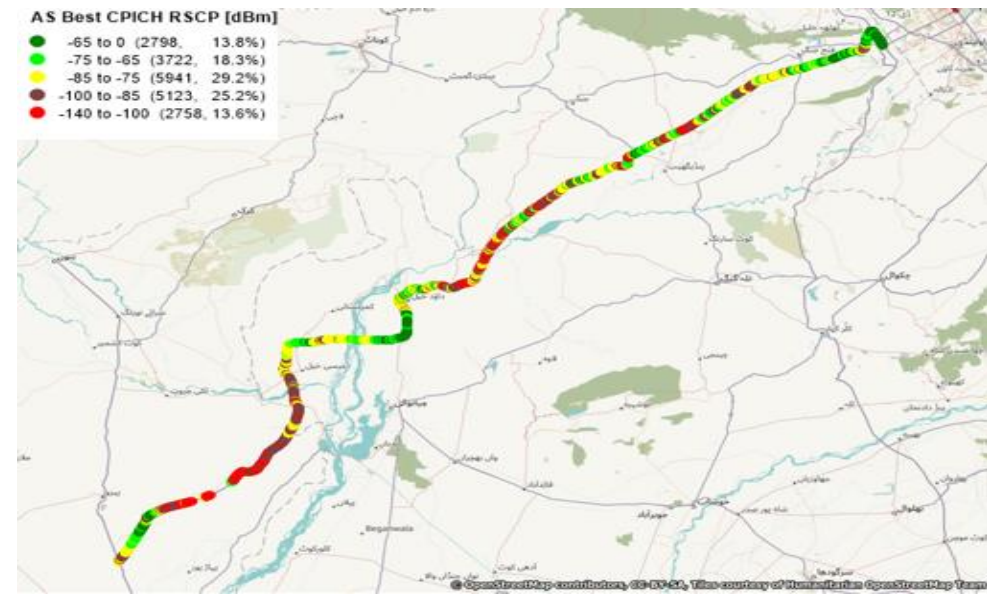
JAZZ 3G NETWORK COVERAGE – ISLAMABAD TO D.I KHAN (M-14)



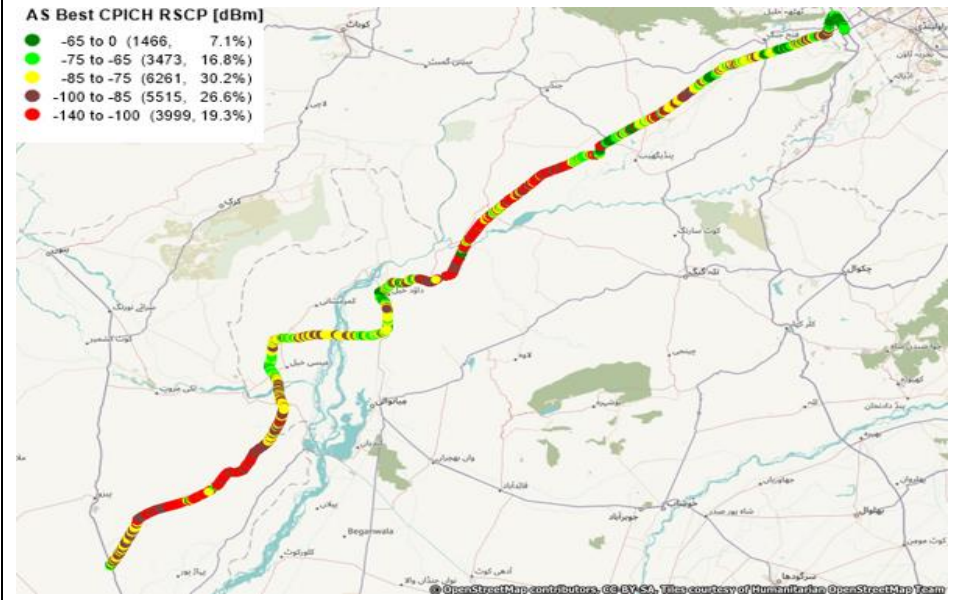
TELENOR 3G NETWORK COVERAGE – ISLAMABAD TO D.I KHAN (M-14)



UFONE 3G NETWORK COVERAGE – ISLAMABAD TO D.I KHAN (M-14)

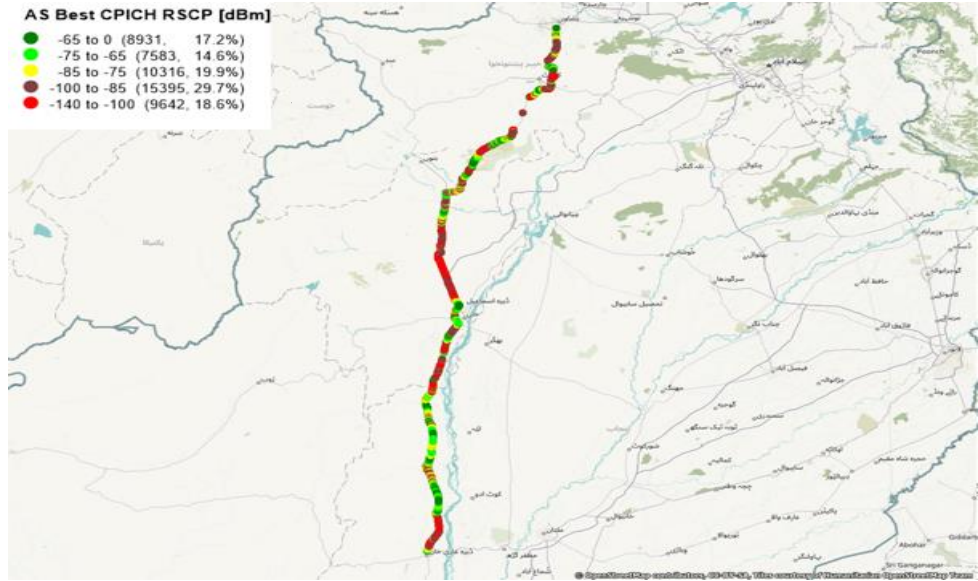


ZONG 3G NETWORK COVERAGE – ISLAMABAD TO D.I KHAN (M-14)

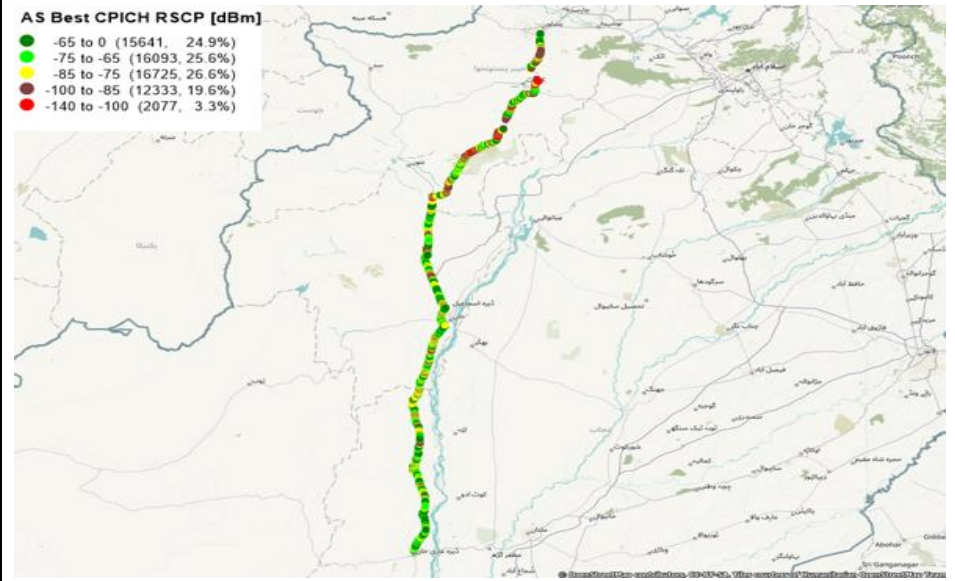


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

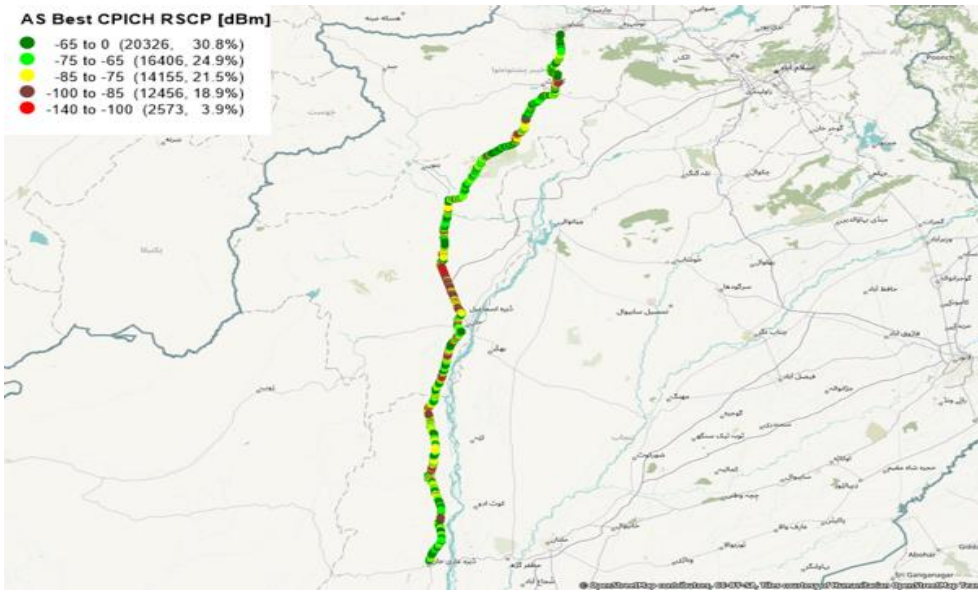
JAZZ 3G NETWORK COVERAGE – PESHAWAR TO DG KHAN (N-55)



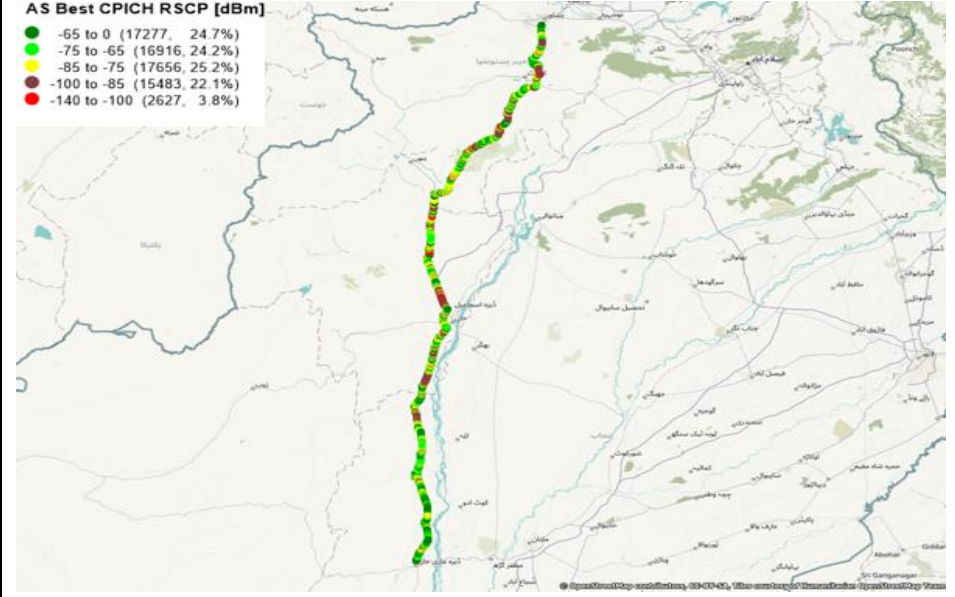
TELENOR 3G NETWORK COVERAGE – PESHAWAR TO DG KHAN (N-55)



UFONE 3G NETWORK COVERAGE – PESHAWAR TO DG KHAN (N-55)

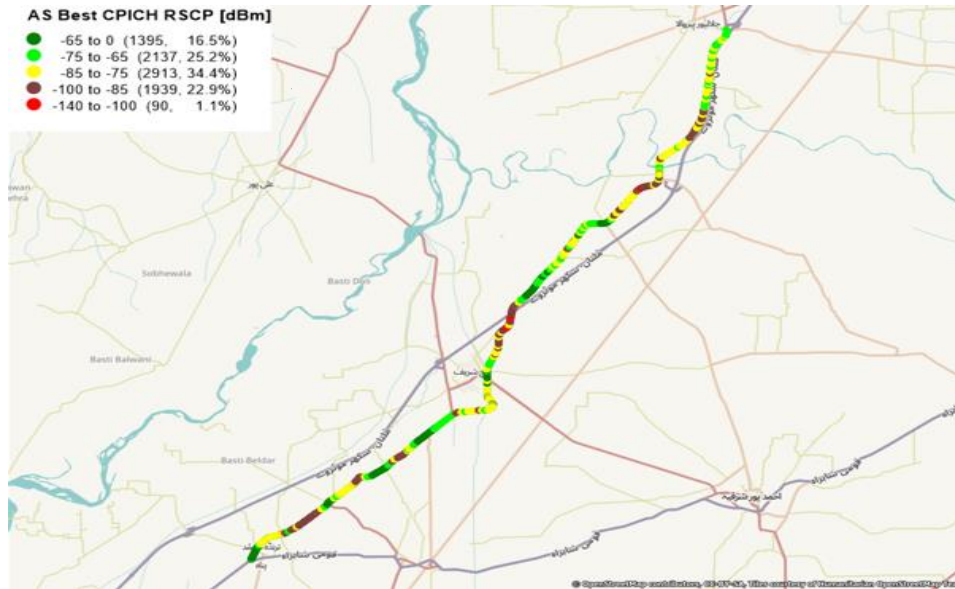


ZONG 3G NETWORK COVERAGE – PESHAWAR TO DG KHAN (N-55)

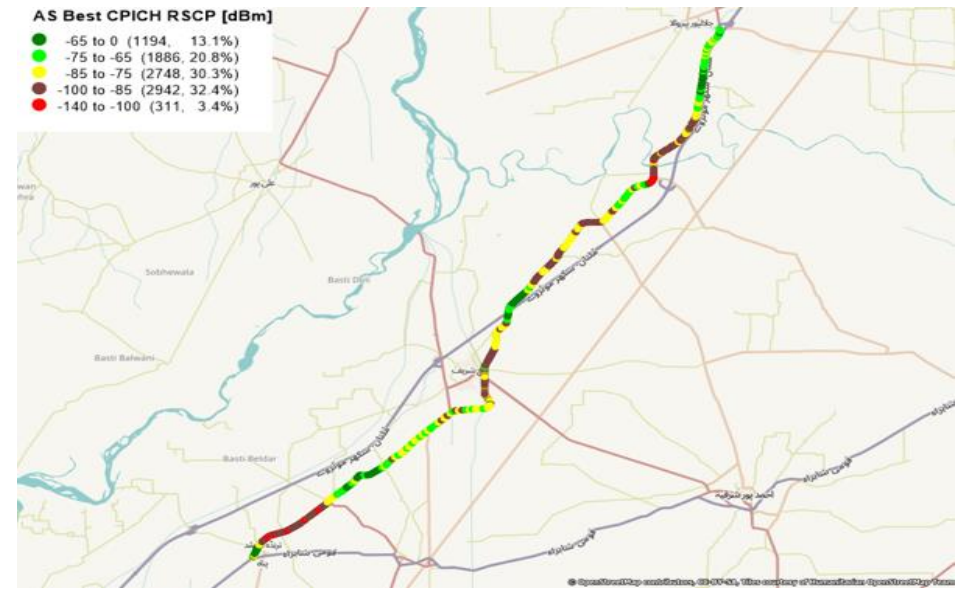


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

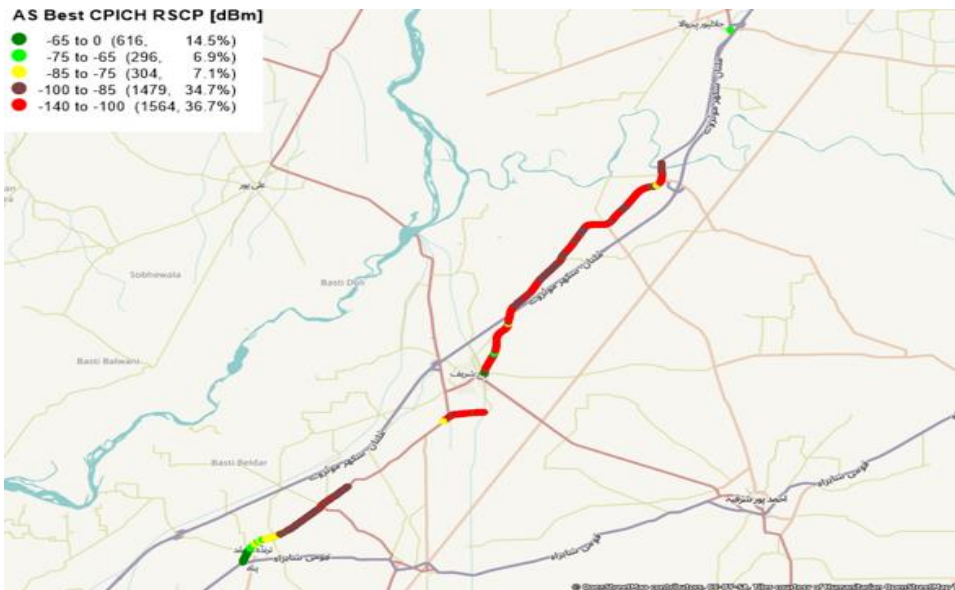
JAZZ 3G NETWORK COVERAGE – TARANDA MUHAMMAD PANA H TO JALALPUR PIRWALA (N-55)



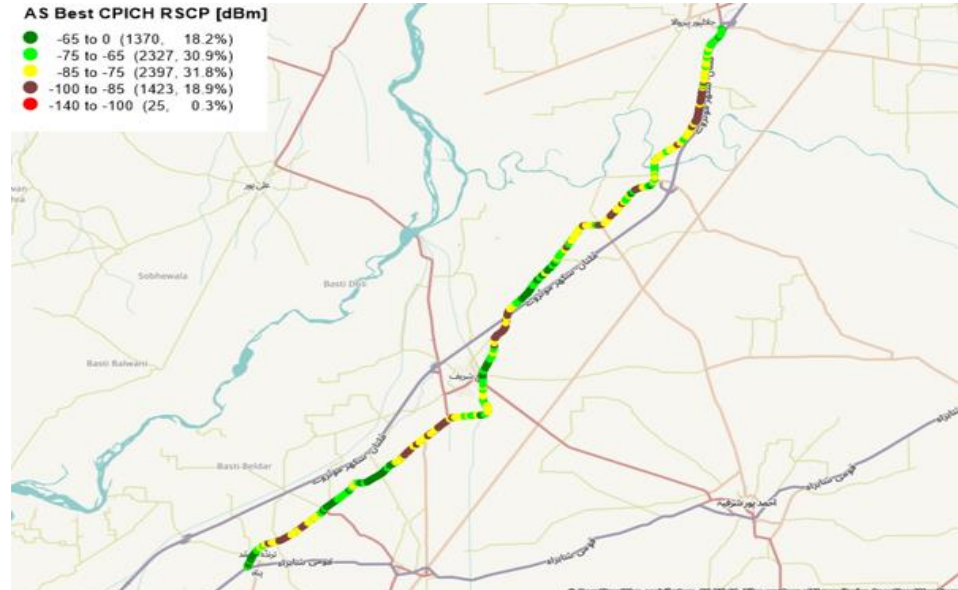
TELENOR 3G NETWORK COVERAGE – TARANDA MUHAMMAD PANA H TO JALALPUR PIRWALA (N-55)



UFONE 3G NETWORK COVERAGE – TARANDA MUHAMMAD PANA H TO JALALPUR PIRWALA (N-55)

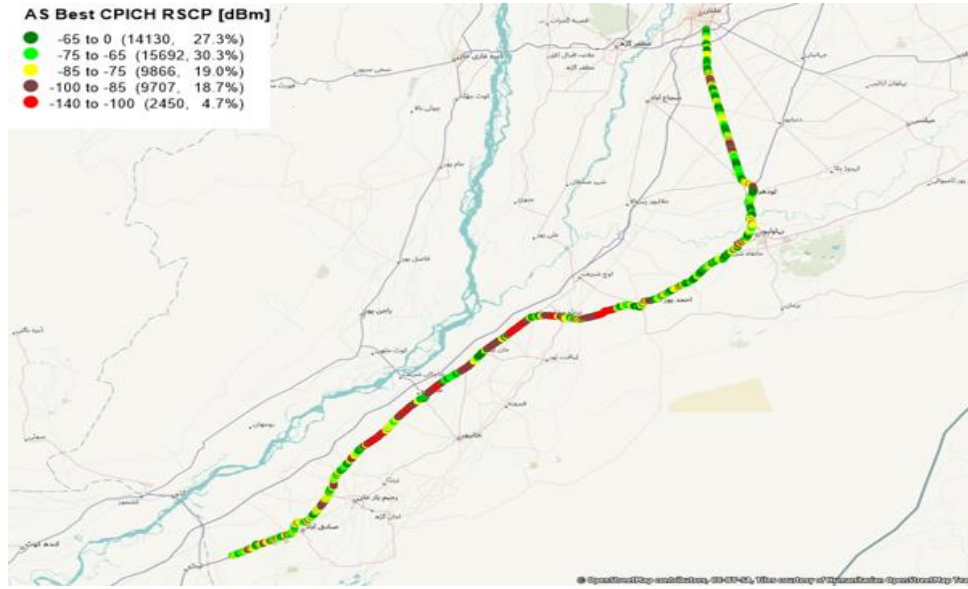


ZONG 3G NETWORK COVERAGE – TARANDA MUHAMMAD PANA H TO JALALPUR PIRWALA (N-55)

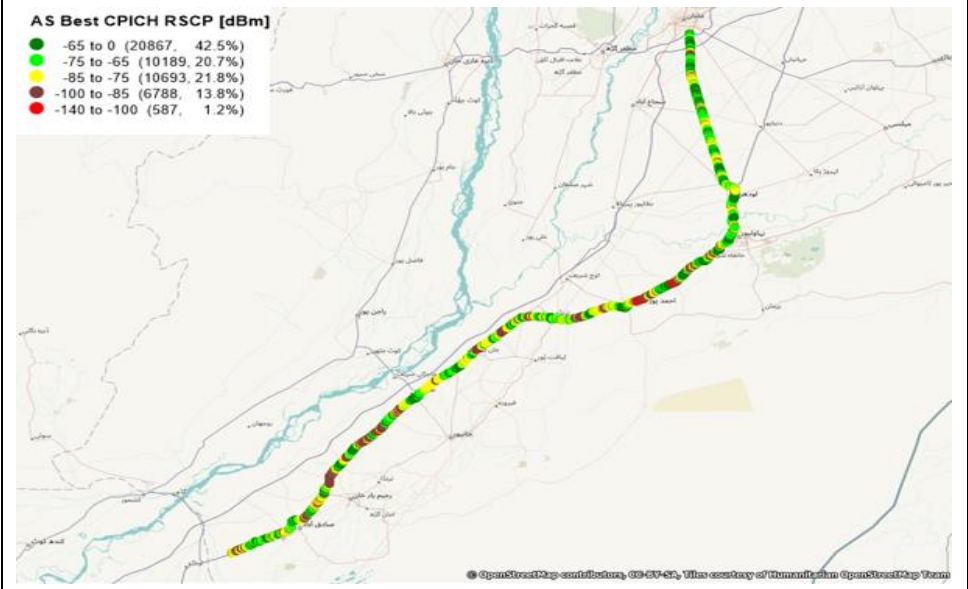


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

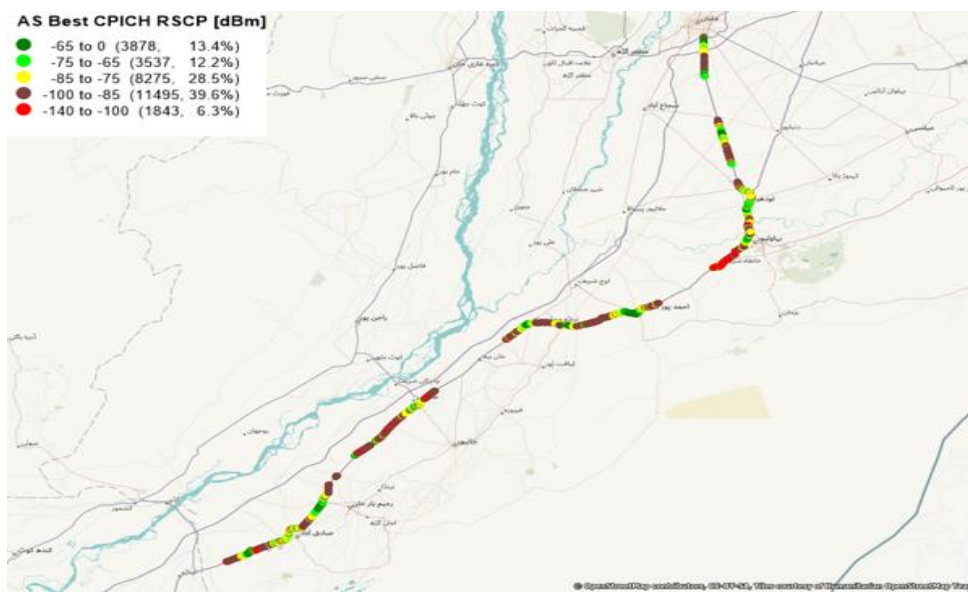
JAZZ 3G NETWORK COVERAGE – KOT SABZAL TO MULTAN (N-5)



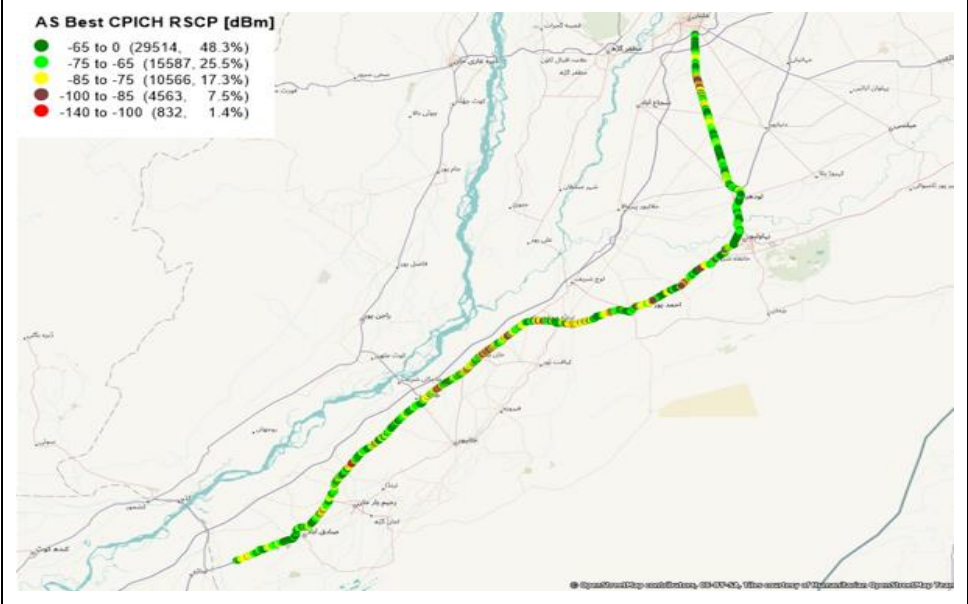
TELENOR 3G NETWORK COVERAGE – KOT SABZAL TO MULTAN (N-5)



UFONE 3G NETWORK COVERAGE – KOT SABZAL TO MULTAN (N-5)

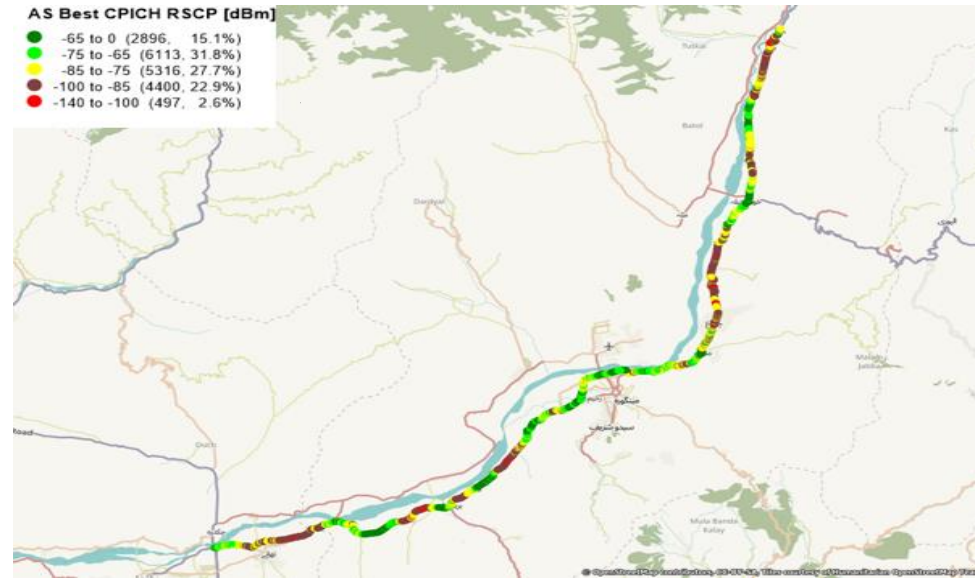


ZONG 3G NETWORK COVERAGE – KOT SABZAL TO MULTAN (N-5)

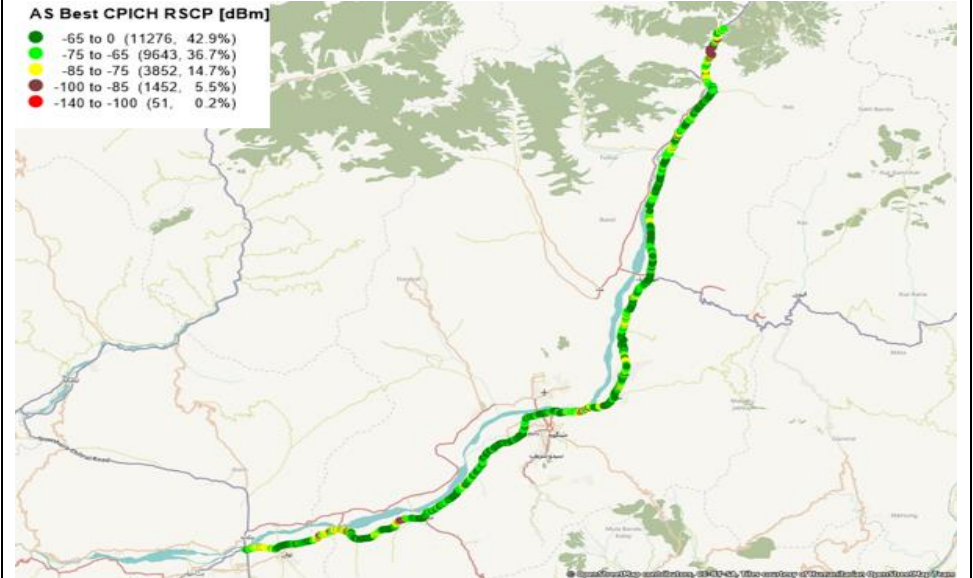


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

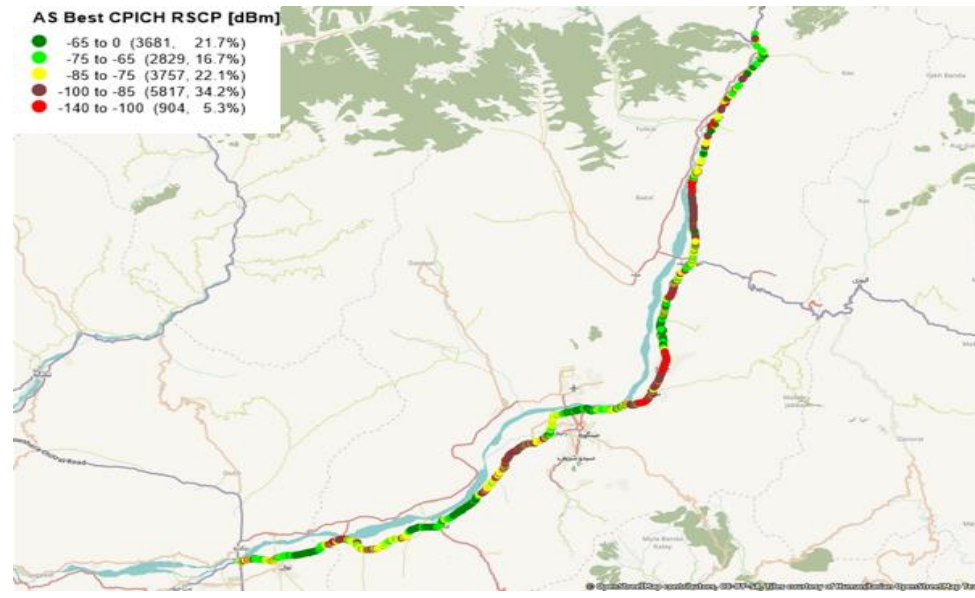
JAZZ 3G NETWORK COVERAGE – CHAK DHARA TO BAHRAIN (N-95)



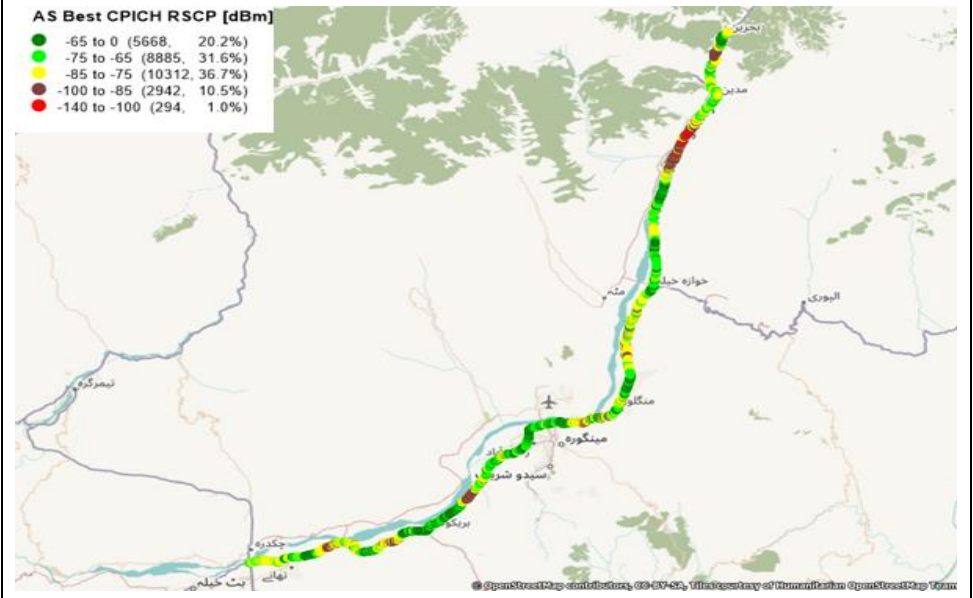
TELENOR 3G NETWORK COVERAGE – CHAK DHARA TO BAHRAIN (N-95)



UFONE 3G NETWORK COVERAGE – CHAK DHARA TO BAHRAIN (N-95)



ZONG 3G NETWORK COVERAGE – CHAK DHARA TO BAHRAIN (N-95)

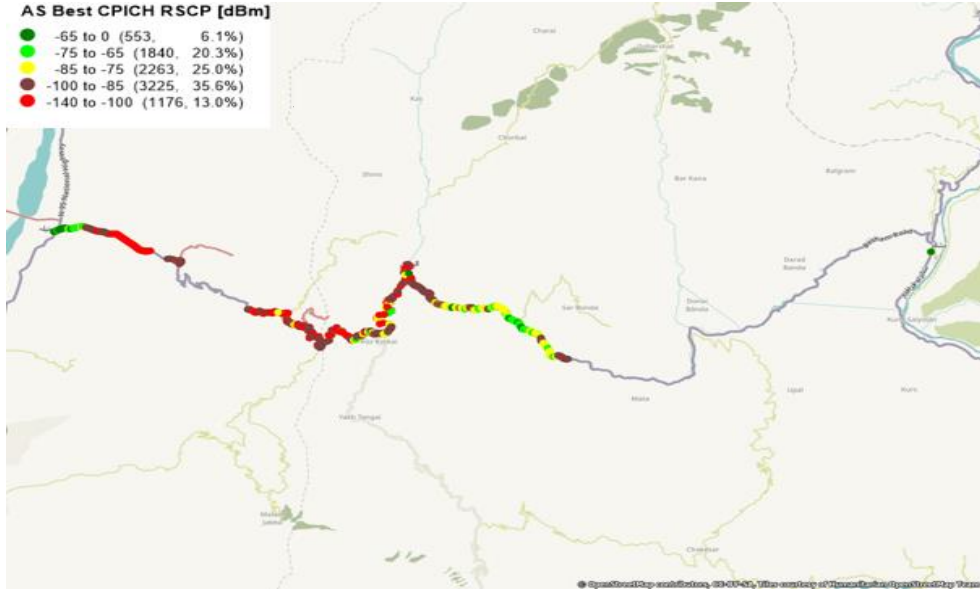


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

JAZZ 3G NETWORK COVERAGE – KHAWAZKHEL TO BEHSAM (N-90)

AS Best CPICH RSCP [dBm]

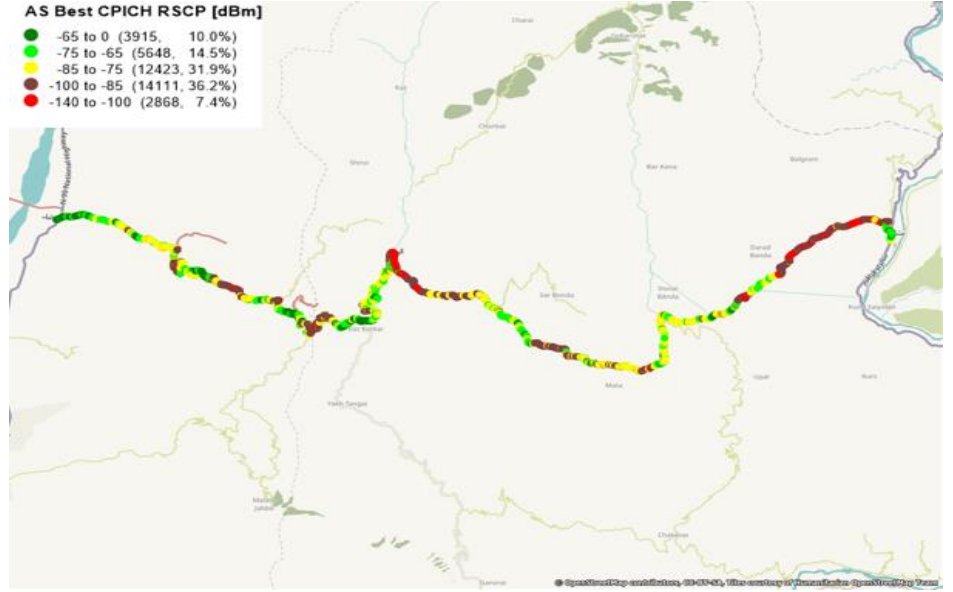
- -65 to 0 (553, 6.1%)
- -75 to -65 (1840, 20.3%)
- -85 to -75 (2263, 25.0%)
- -100 to -85 (3225, 35.6%)
- -140 to -100 (1176, 13.0%)



TELENOR 3G NETWORK COVERAGE – KHAWAZ KHEL TO BEHSAM(N-90)

AS Best CPICH RSCP [dBm]

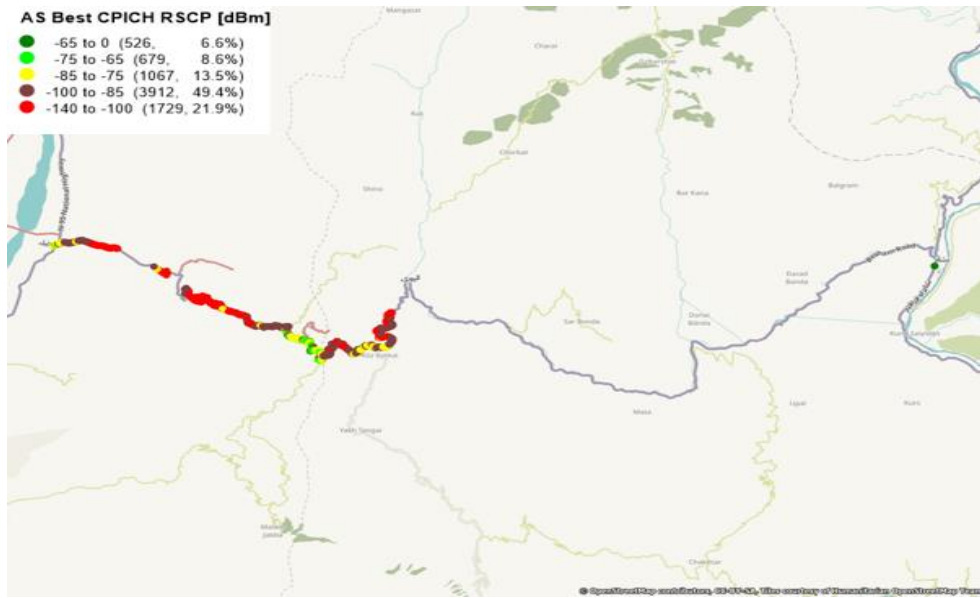
- -65 to 0 (3915, 10.0%)
- -75 to -65 (5648, 14.5%)
- -85 to -75 (12423, 31.9%)
- -100 to -85 (14111, 36.2%)
- -140 to -100 (2868, 7.4%)



UFONE 3G NETWORK COVERAGE – KHAWAZ KHEL TO BEHSAM (N-90)

AS Best CPICH RSCP [dBm]

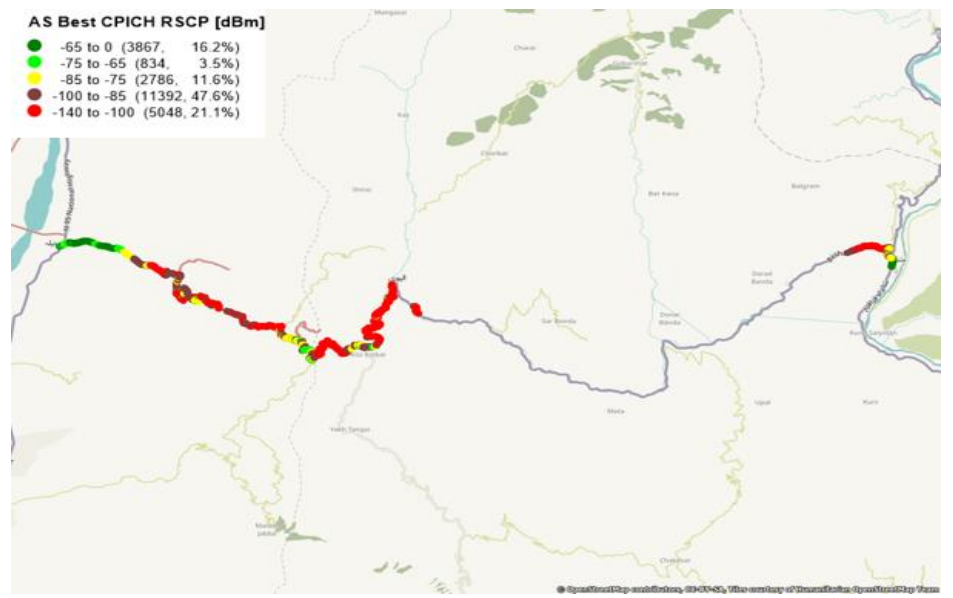
- -65 to 0 (526, 6.6%)
- -75 to -65 (679, 8.6%)
- -85 to -75 (1067, 13.5%)
- -100 to -85 (3912, 49.4%)
- -140 to -100 (1729, 21.9%)



ZONG 3G NETWORK COVERAGE – KHAWAZ KHEL TO BEHSAM (N-90)

AS Best CPICH RSCP [dBm]

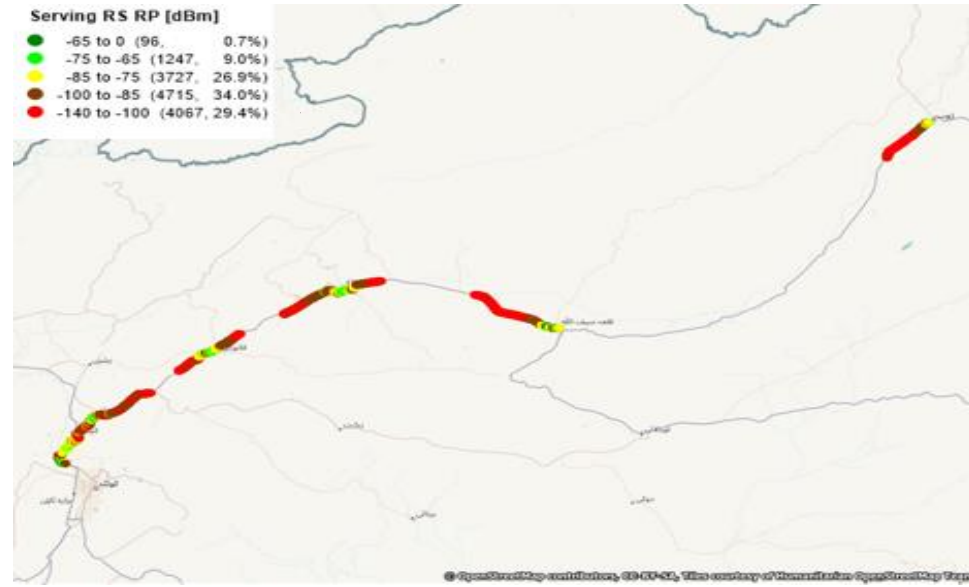
- -65 to 0 (3867, 16.2%)
- -75 to -65 (834, 3.5%)
- -85 to -75 (2786, 11.6%)
- -100 to -85 (11392, 47.6%)
- -140 to -100 (5048, 21.1%)



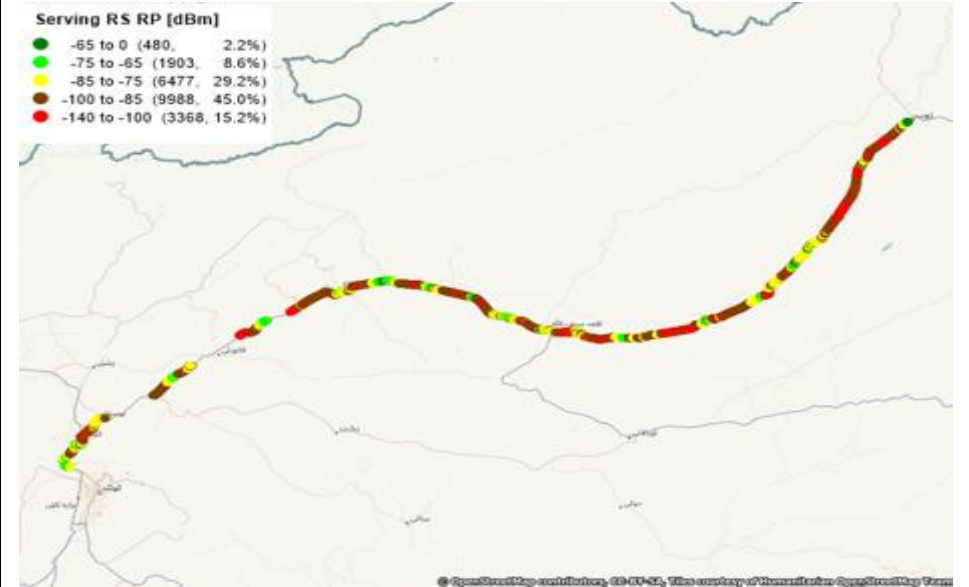
MOBILE BROADBAND 4G COVERAGE MAPS

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

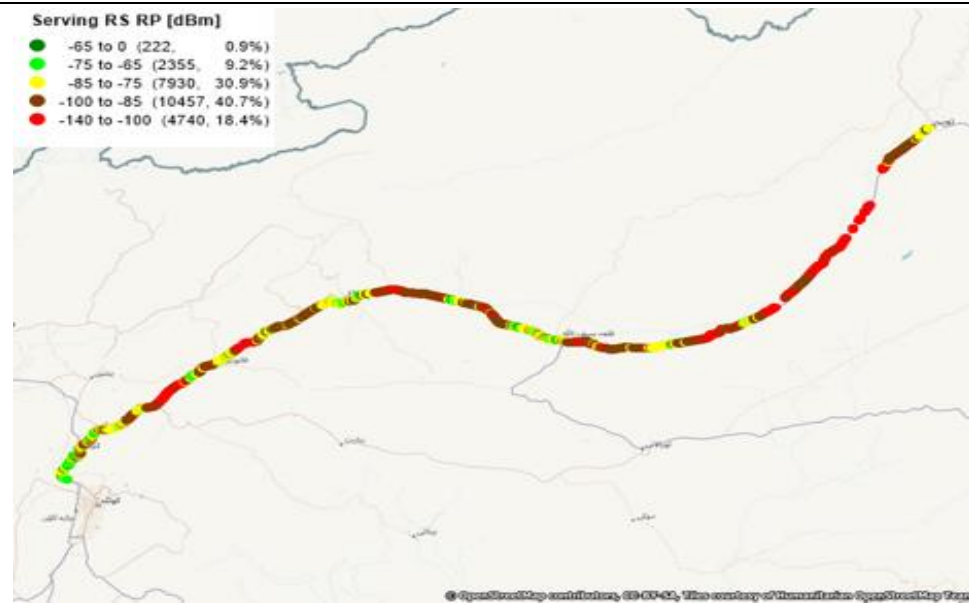
JAZZ 4G NETWORK COVERAGE – ZHOB TO QUETTA (N-50)



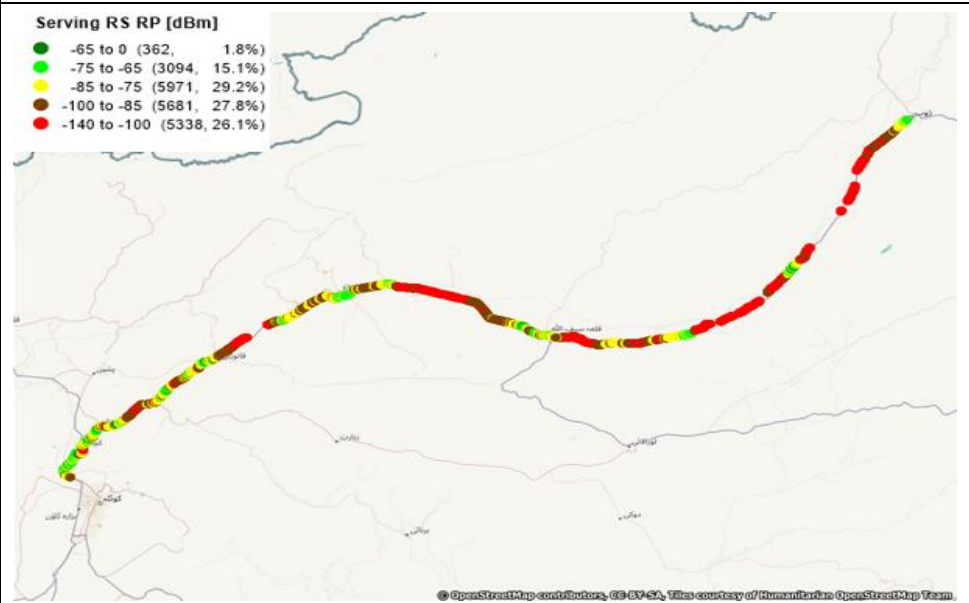
TELEOR 4G NETWORK COVERAGE – ZHOB TO QUETTA (N-50)



UFONE 4G NETWORK COVERAGE – ZHOB TO QUETTA (N-50)



ZONG 4G NETWORK COVERAGE – ZHOB TO QUETTA (N-50)

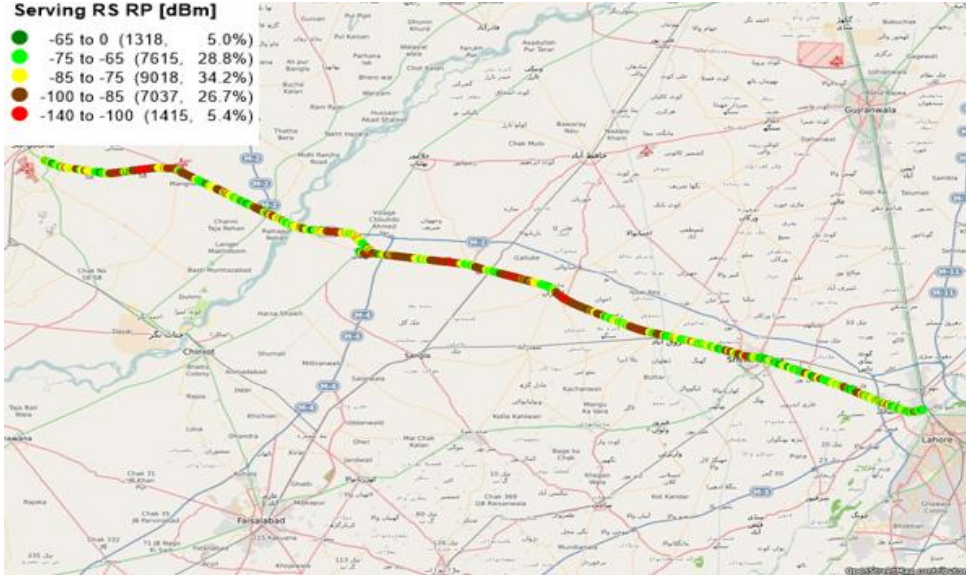


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – LAHORE TO SARGODHA (N-60)

Serving RS RP [dBm]

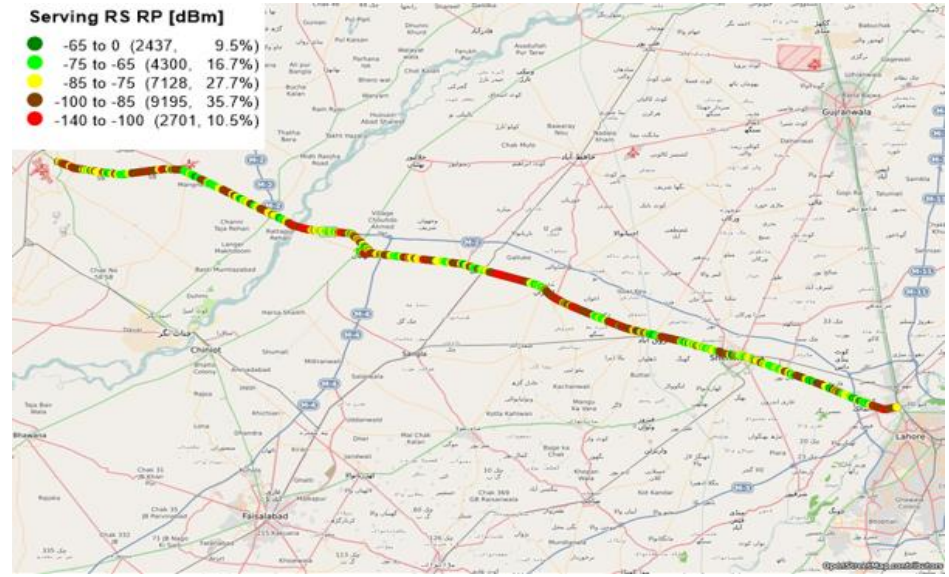
- -65 to 0 (1318, 5.0%)
- -75 to -65 (7615, 28.8%)
- -85 to -75 (9018, 34.2%)
- -100 to -85 (7037, 26.7%)
- -140 to -100 (1415, 5.4%)



TELEOR 4G NETWORK COVERAGE – LAHORE TO SARGODHA (N-60)

Serving RS RP [dBm]

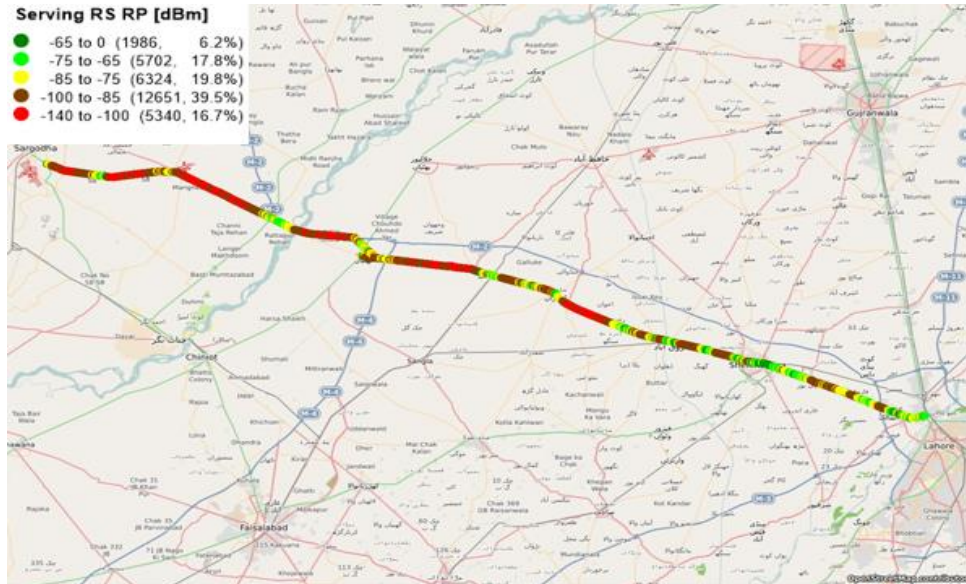
- -65 to 0 (2437, 9.5%)
- -75 to -65 (4300, 16.7%)
- -85 to -75 (7128, 27.7%)
- -100 to -85 (9195, 35.7%)
- -140 to -100 (2701, 10.5%)



UFONE 4G NETWORK COVERAGE – LAHORE TO SARGODHA (N-60)

Serving RS RP [dBm]

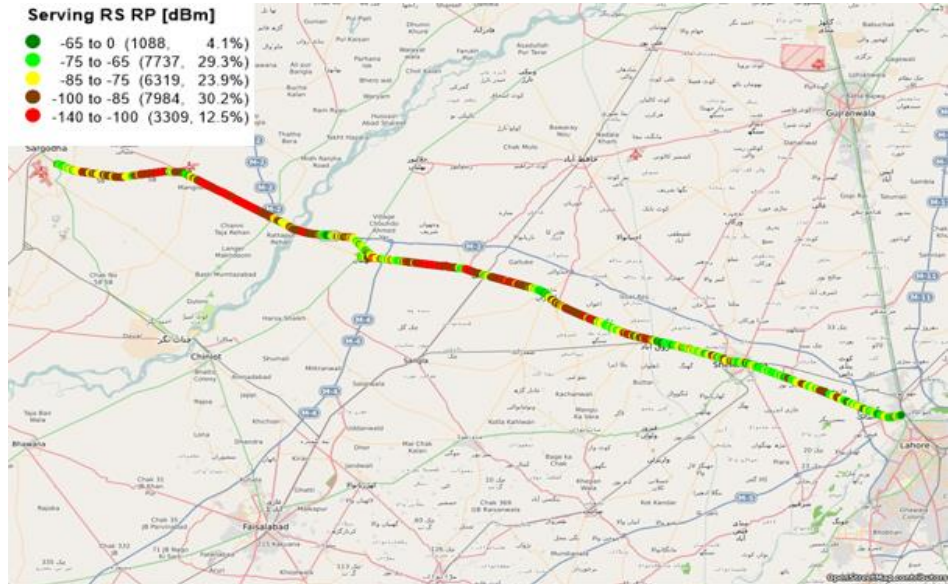
- -65 to 0 (1986, 6.2%)
- -75 to -65 (5702, 17.8%)
- -85 to -75 (6324, 19.8%)
- -100 to -85 (12651, 39.5%)
- -140 to -100 (5340, 16.7%)



ZONG 4G NETWORK COVERAGE – LAHORE TO SARGODHA (N-60)

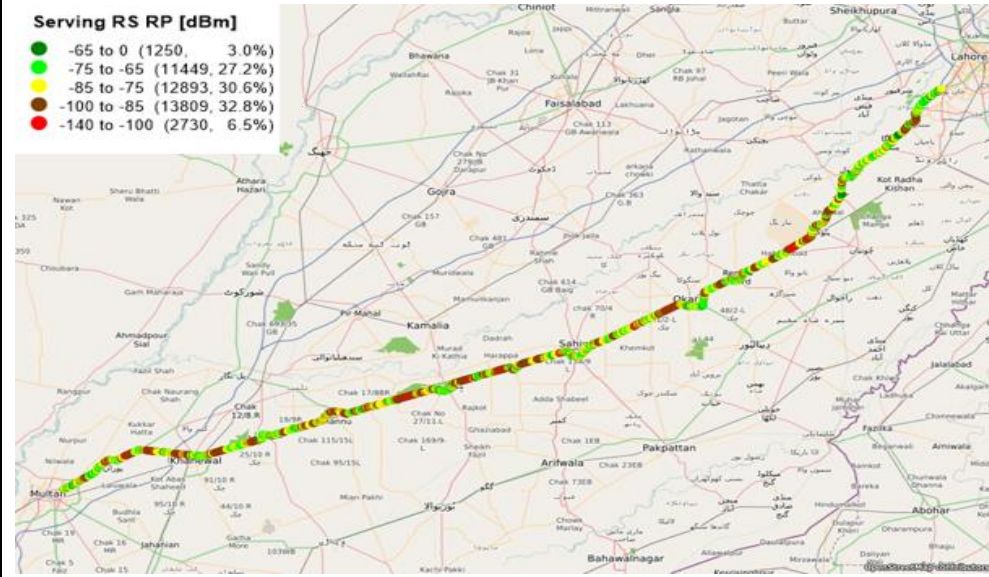
Serving RS RP [dBm]

- -65 to 0 (1088, 4.1%)
- -75 to -65 (7737, 29.3%)
- -85 to -75 (6319, 23.9%)
- -100 to -85 (7984, 30.2%)
- -140 to -100 (3309, 12.5%)

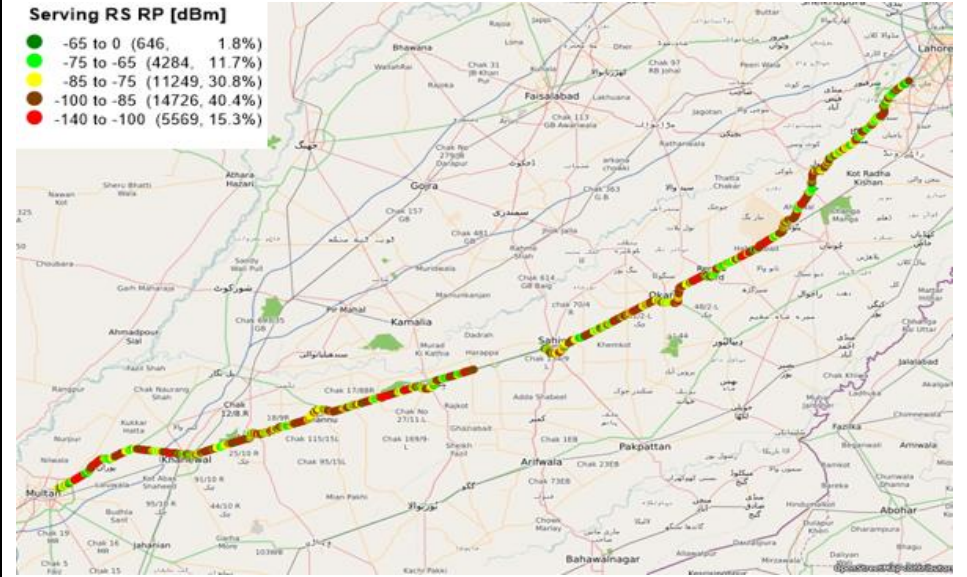


4G MOBILE COVERAGE - SIGNAL STRENGTH (RSRP)

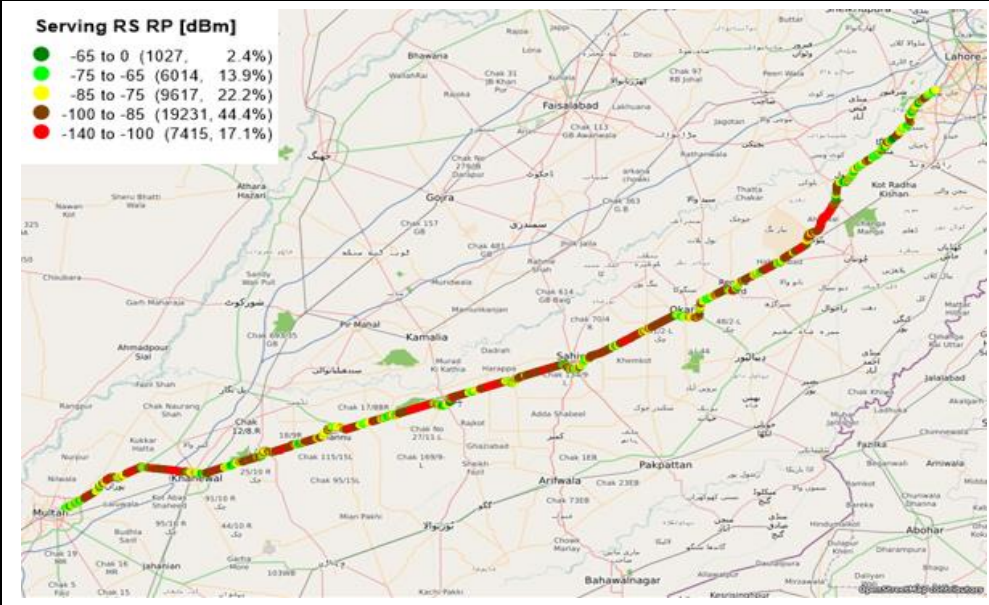
JAZZ 4G NETWORK COVERAGE - LAHORE TO MULTAN (N-5)



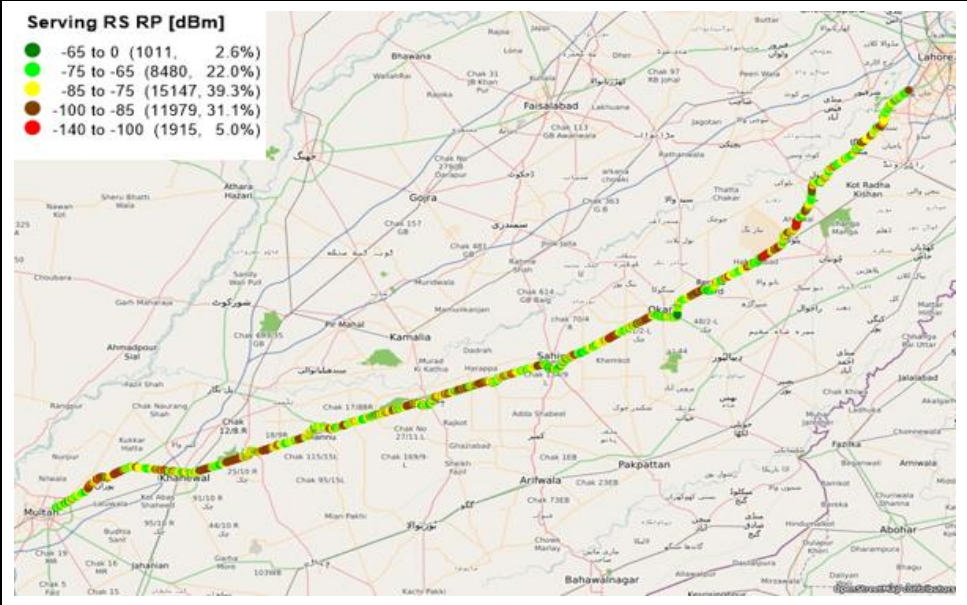
TELEOR 4G NETWORK COVERAGE - LAHORE TO MULTAN (N-5)



UFONE 4G NETWORK COVERAGE - LAHORE TO MULTAN (N-5)



ZONG 4G NETWORK COVERAGE - LAHORE TO MULTAN (N-5)

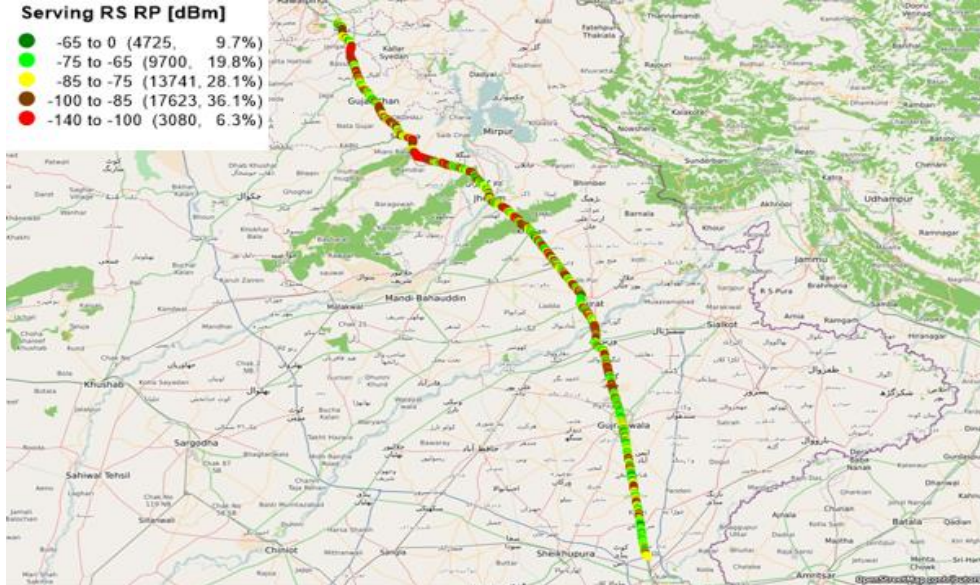


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – LAHORE TO RAWALPINDI (N-5)

Serving RS RP [dBm]

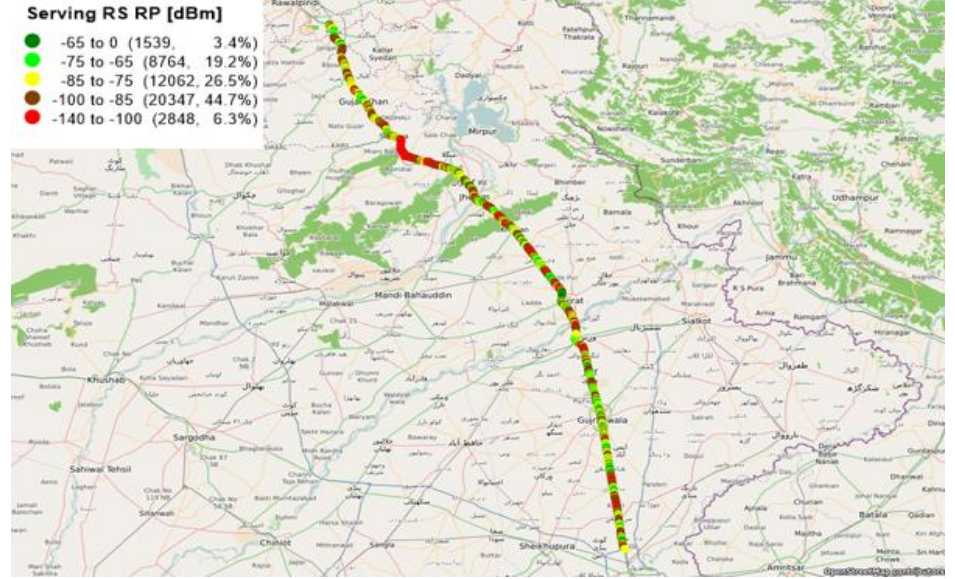
- -65 to 0 (4725, 9.7%)
- -75 to -65 (9700, 19.8%)
- -85 to -75 (13741, 28.1%)
- -100 to -85 (17623, 36.1%)
- -140 to -100 (3080, 6.3%)



TELEOR 4G NETWORK COVERAGE – LAHORE TO RAWALPINDI (N-5)

Serving RS RP [dBm]

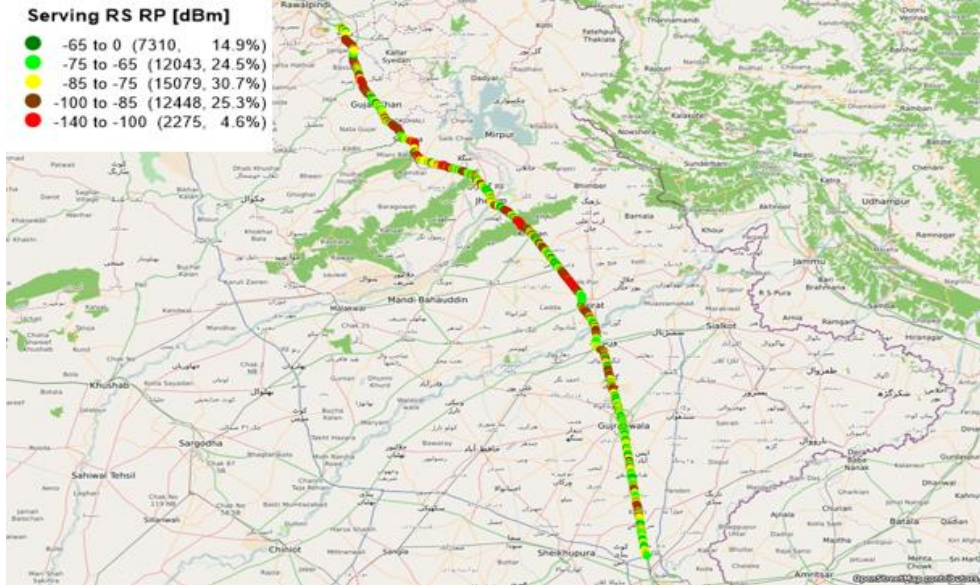
- -65 to 0 (1539, 3.4%)
- -75 to -65 (8764, 19.2%)
- -85 to -75 (12062, 26.5%)
- -100 to -85 (20347, 44.7%)
- -140 to -100 (2848, 6.3%)



UFONE 4G NETWORK COVERAGE – LAHORE TO RAWALPINDI (N-5)

Serving RS RP [dBm]

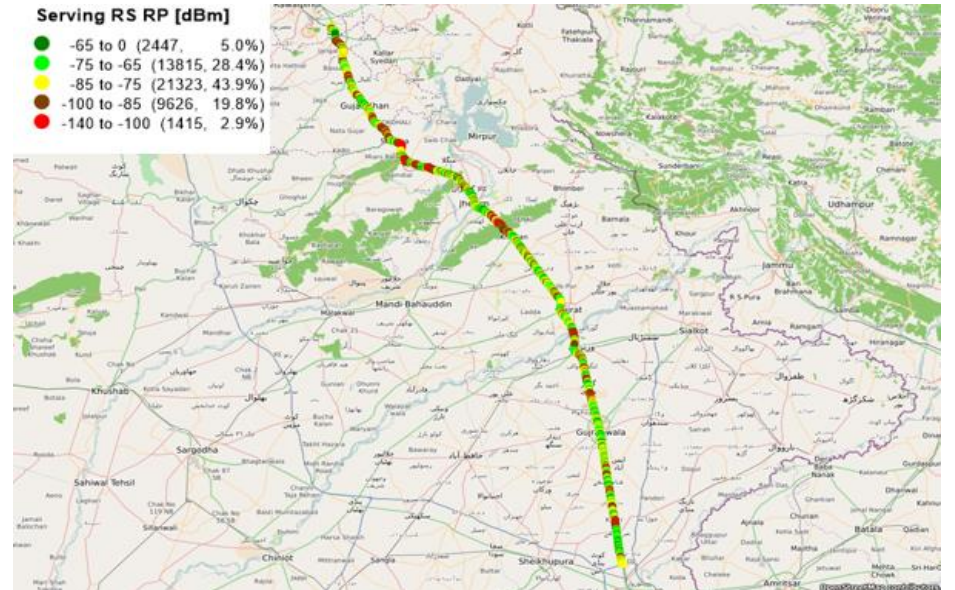
- -65 to 0 (7310, 14.9%)
- -75 to -65 (12043, 24.5%)
- -85 to -75 (15079, 30.7%)
- -100 to -85 (12448, 25.3%)
- -140 to -100 (2275, 4.6%)



ZONG 4G NETWORK COVERAGE – LAHORE TO RAWALPINDI (N-5)

Serving RS RP [dBm]

- -65 to 0 (2447, 5.0%)
- -75 to -65 (13815, 28.4%)
- -85 to -75 (21323, 43.9%)
- -100 to -85 (9626, 19.8%)
- -140 to -100 (1415, 2.9%)

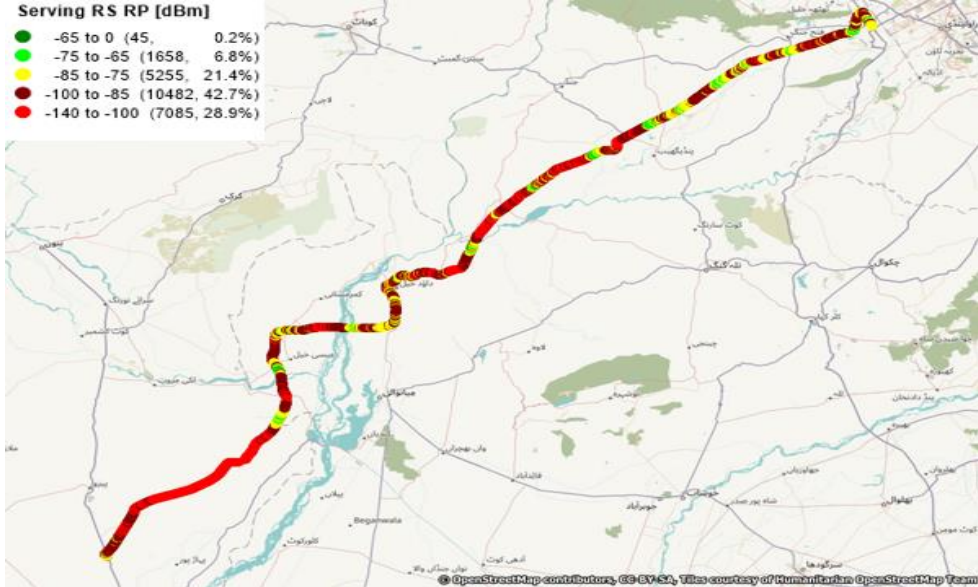


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – ISLAMABAD TO D.I KHAN (M-14)

Serving RS RP [dBm]

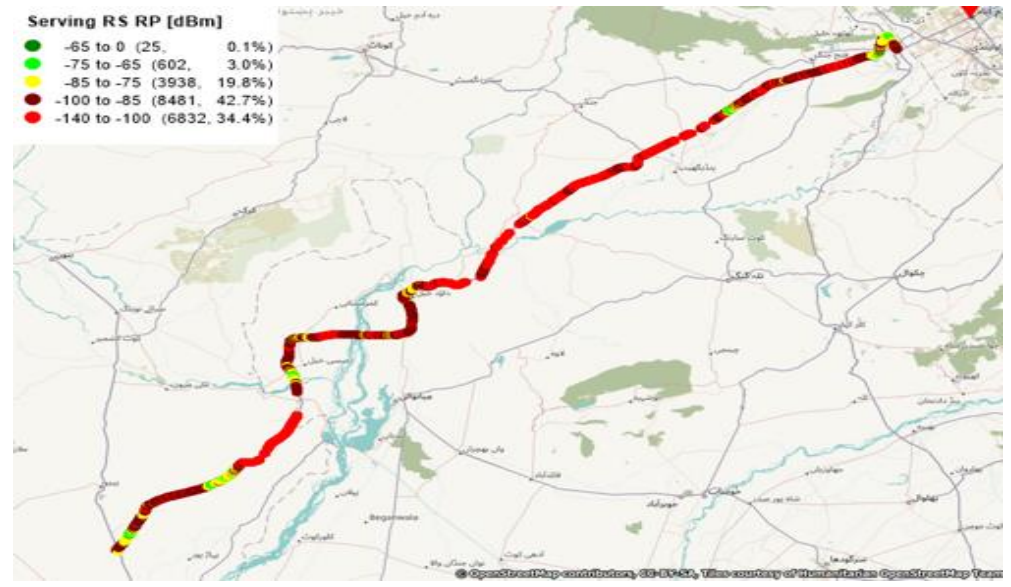
- -65 to 0 (45, 0.2%)
- -75 to -65 (1658, 6.8%)
- -85 to -75 (5255, 21.4%)
- -100 to -85 (10482, 42.7%)
- -140 to -100 (7085, 28.9%)



TELENOR 4G NETWORK COVERAGE – ISLAMABAD TO D.I KHAN (M-14)

Serving RS RP [dBm]

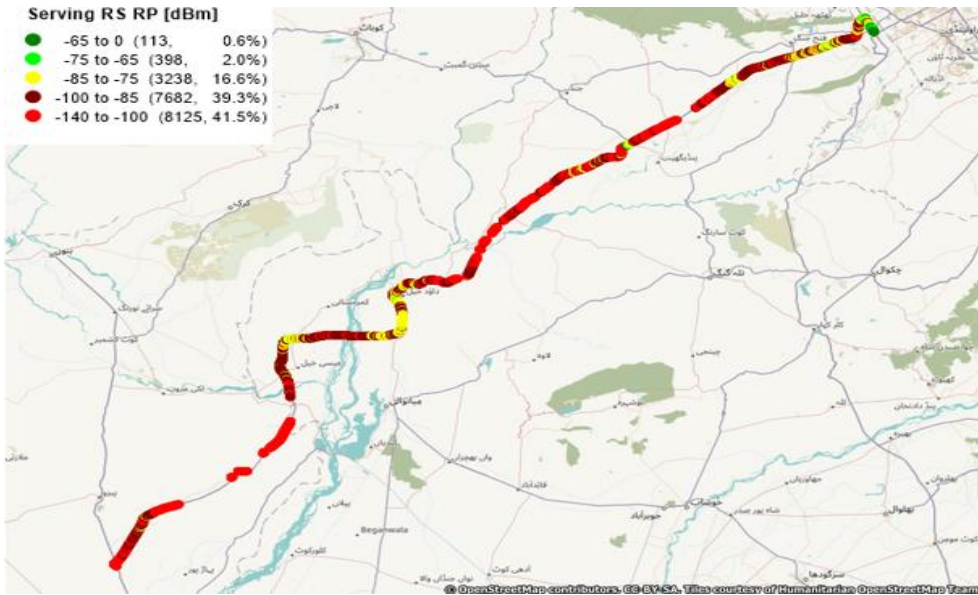
- -65 to 0 (25, 0.1%)
- -75 to -65 (602, 3.0%)
- -85 to -75 (3938, 19.8%)
- -100 to -85 (8481, 42.7%)
- -140 to -100 (6832, 34.4%)



UFONE 4G NETWORK COVERAGE – ISLAMABAD TO D.I KHAN (M-14)

Serving RS RP [dBm]

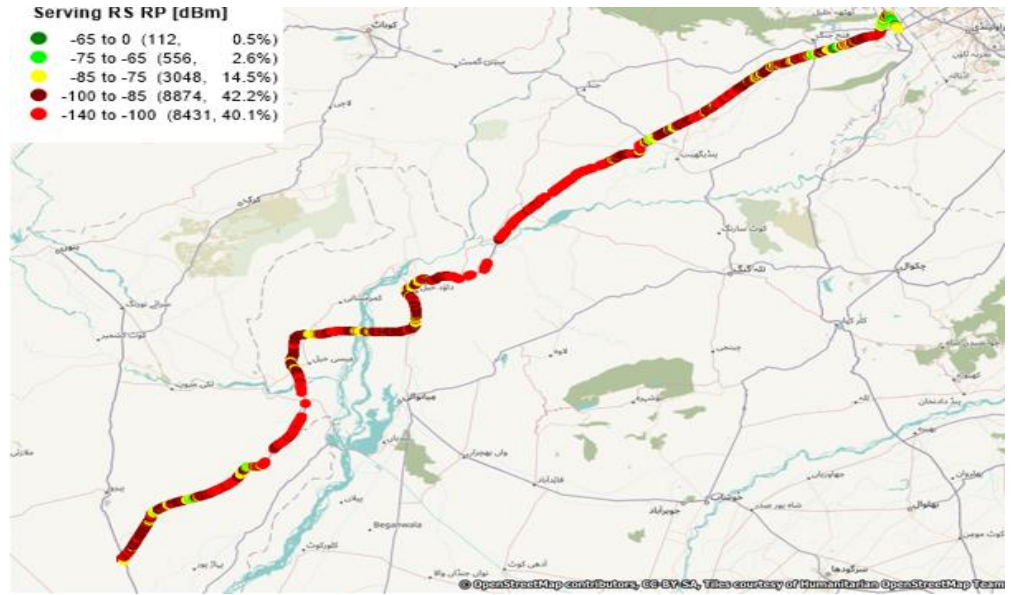
- -65 to 0 (113, 0.6%)
- -75 to -65 (398, 2.0%)
- -85 to -75 (3238, 16.6%)
- -100 to -85 (7682, 39.3%)
- -140 to -100 (8125, 41.5%)



ZONG 4G NETWORK COVERAGE – ISLAMABAD TO D.I KHAN (M-14)

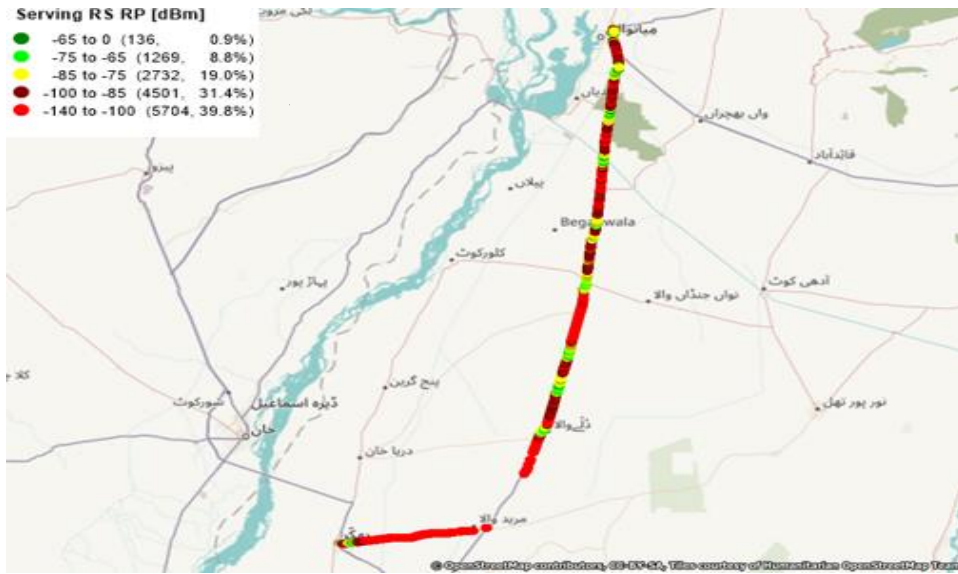
Serving RS RP [dBm]

- -65 to 0 (112, 0.5%)
- -75 to -65 (556, 2.6%)
- -85 to -75 (3048, 14.5%)
- -100 to -85 (8874, 42.2%)
- -140 to -100 (8431, 40.1%)

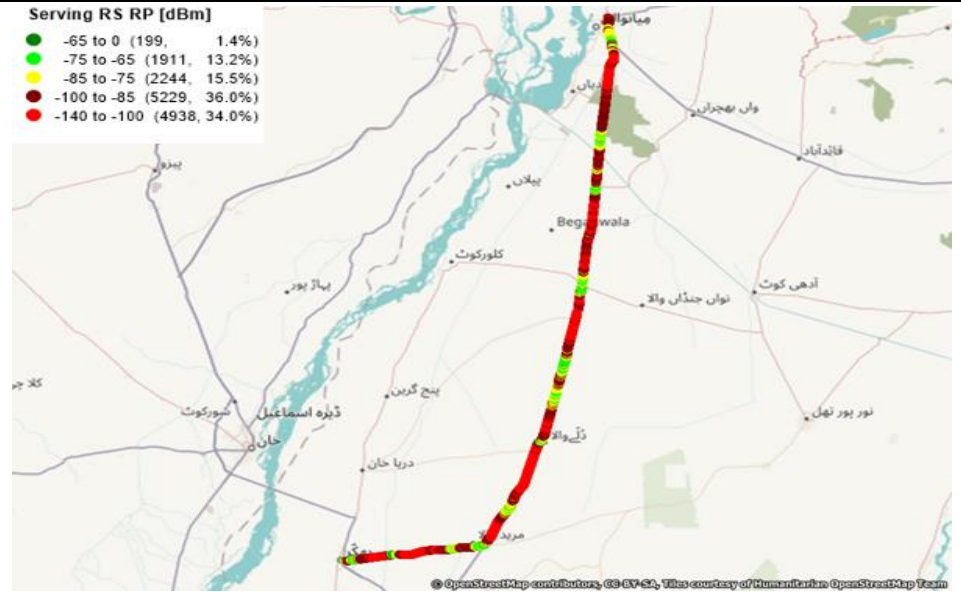


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

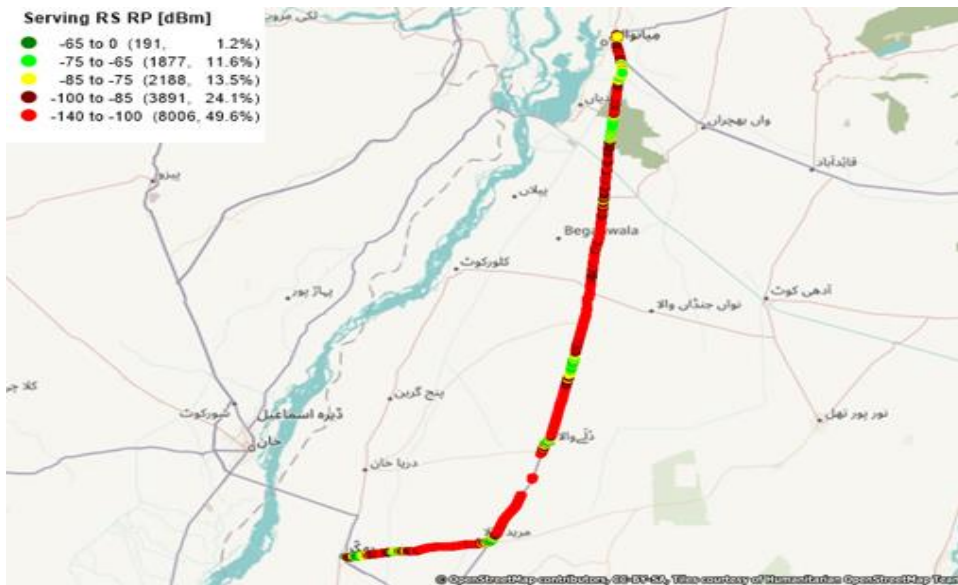
JAZZ 4G NETWORK COVERAGE – MIANWALI TO BHAKKAR (N-130)



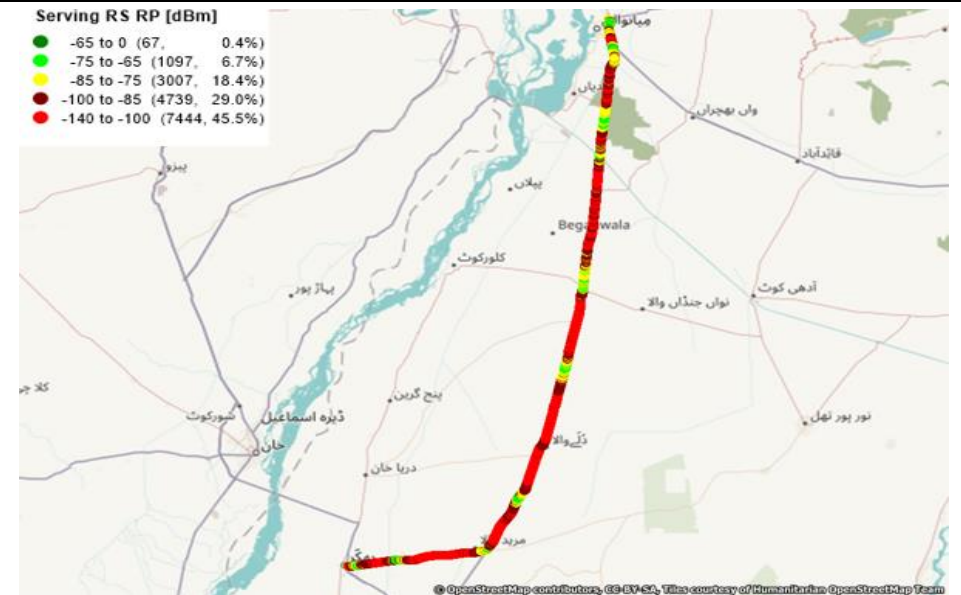
TELENOR 4G NETWORK COVERAGE – MIANWALI TO BHAKKAR (N-130)



UFONE 4G NETWORK COVERAGE – MIANWALI TO BHAKKAR (N-130)

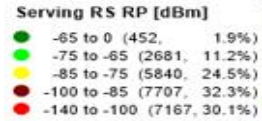


ZONG 4G NETWORK COVERAGE – MIANWALI TO BHAKKAR (N-130)



4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

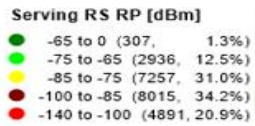
JAZZ 4G NETWORK COVERAGE – ISLAMABAD TO KOHAT (N-80)



TELEOR 4G NETWORK COVERAGE – ISLAMABAD TO KOHAT (N-80)



UFONE 4G NETWORK COVERAGE – ISLAMABAD TO KOHAT (N-80)



ZONG 4G NETWORK COVERAGE – ISLAMABAD TO KOHAT (N-80)

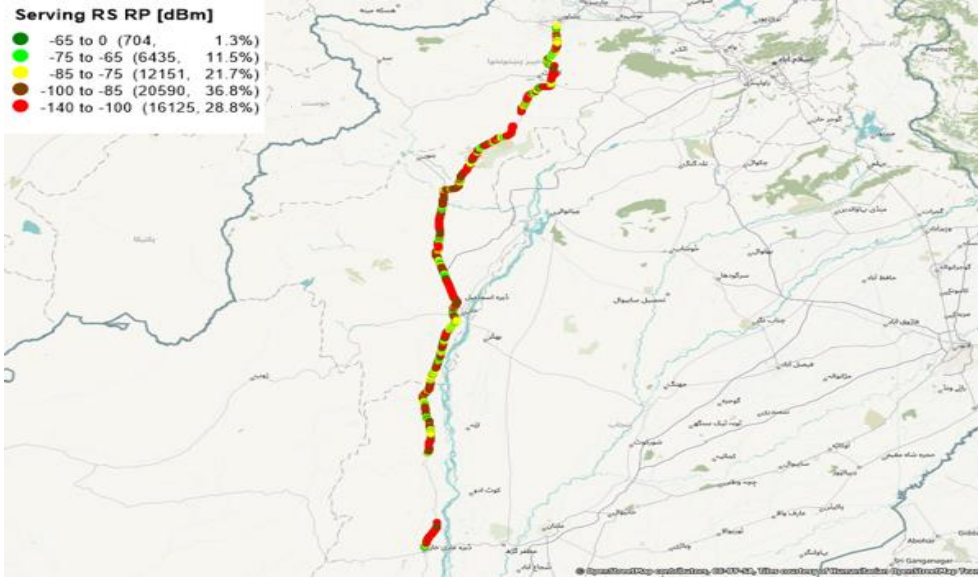


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – PESHAWAR TO DG KHAN (N-55)

Serving RS RP [dBm]

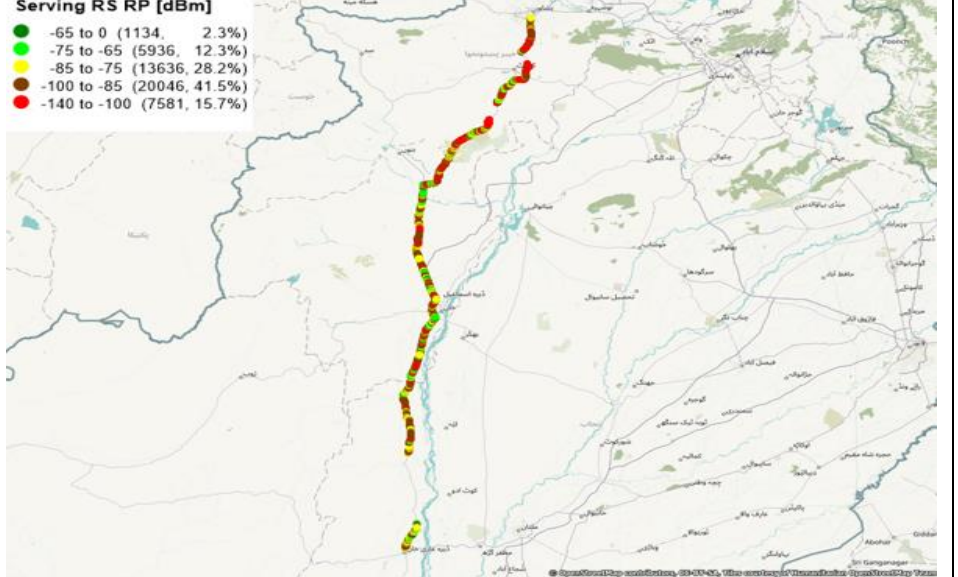
- -65 to 0 (704, 1.3%)
- -75 to -65 (6435, 11.5%)
- -85 to -75 (12151, 21.7%)
- -100 to -85 (20590, 36.8%)
- -140 to -100 (16125, 28.8%)



TELENOR 4G NETWORK COVERAGE – PESHAWAR TO DG KHAN (N-55)

Serving RS RP [dBm]

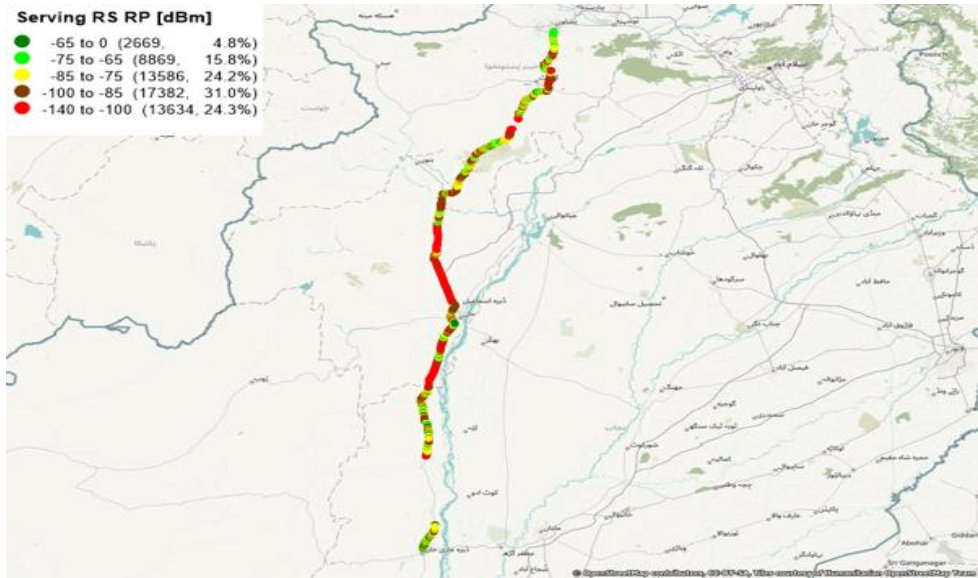
- -65 to 0 (1134, 2.3%)
- -75 to -65 (5936, 12.3%)
- -85 to -75 (13636, 28.2%)
- -100 to -85 (20046, 41.5%)
- -140 to -100 (7581, 15.7%)



UFONE 4G NETWORK COVERAGE – PESHAWAR TO DG KHAN (N-55)

Serving RS RP [dBm]

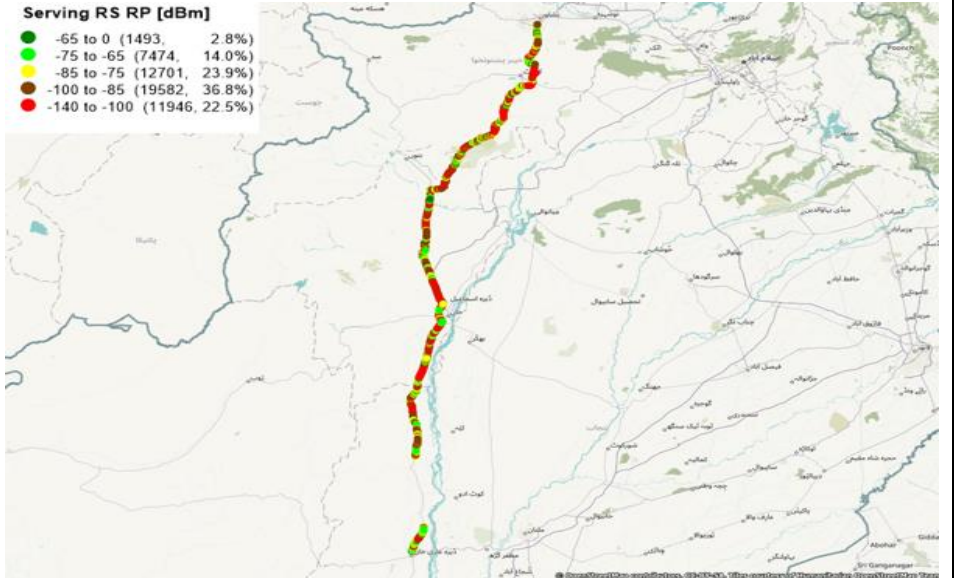
- -65 to 0 (2669, 4.8%)
- -75 to -65 (8869, 15.8%)
- -85 to -75 (13586, 24.2%)
- -100 to -85 (17382, 31.0%)
- -140 to -100 (13634, 24.3%)



ZONG 4G NETWORK COVERAGE – PESHAWAR TO DG KHAN (N-55)

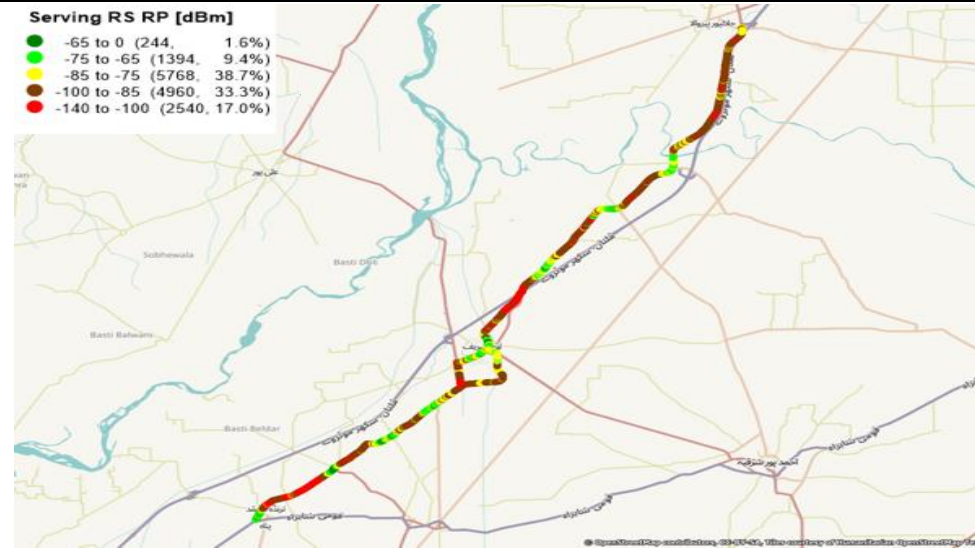
Serving RS RP [dBm]

- -65 to 0 (1493, 2.8%)
- -75 to -65 (7474, 14.0%)
- -85 to -75 (12701, 23.9%)
- -100 to -85 (19582, 36.8%)
- -140 to -100 (11946, 22.5%)

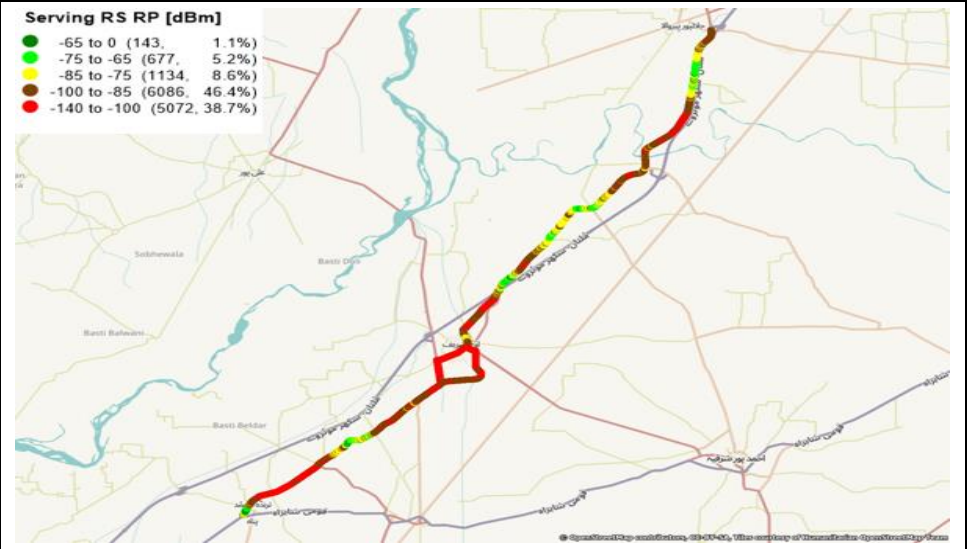


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

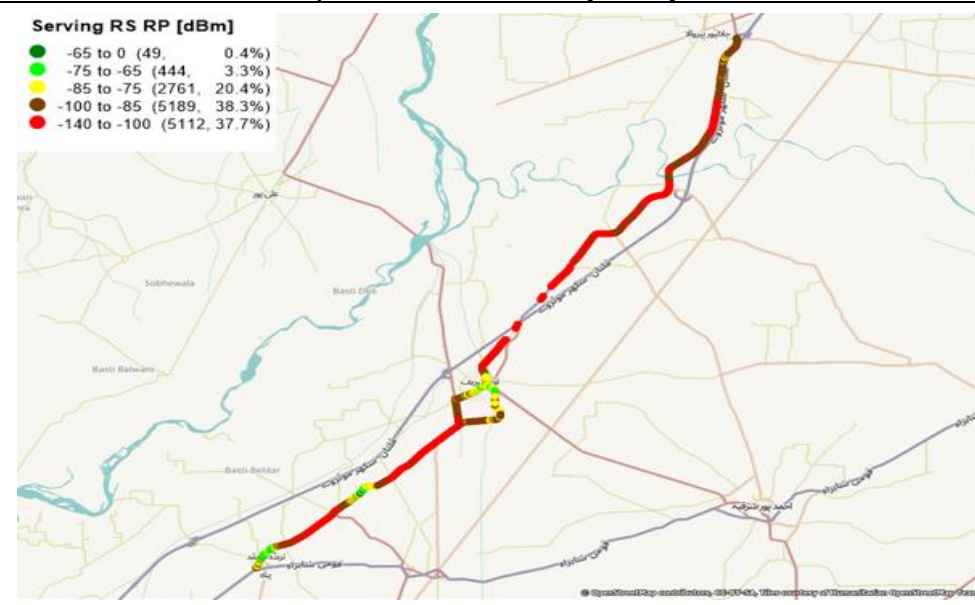
JAZZ 4G NETWORK COVERAGE – TARANDA MUHAMMAD PANAHA TO JALALPUR PIRWALA (N-115)



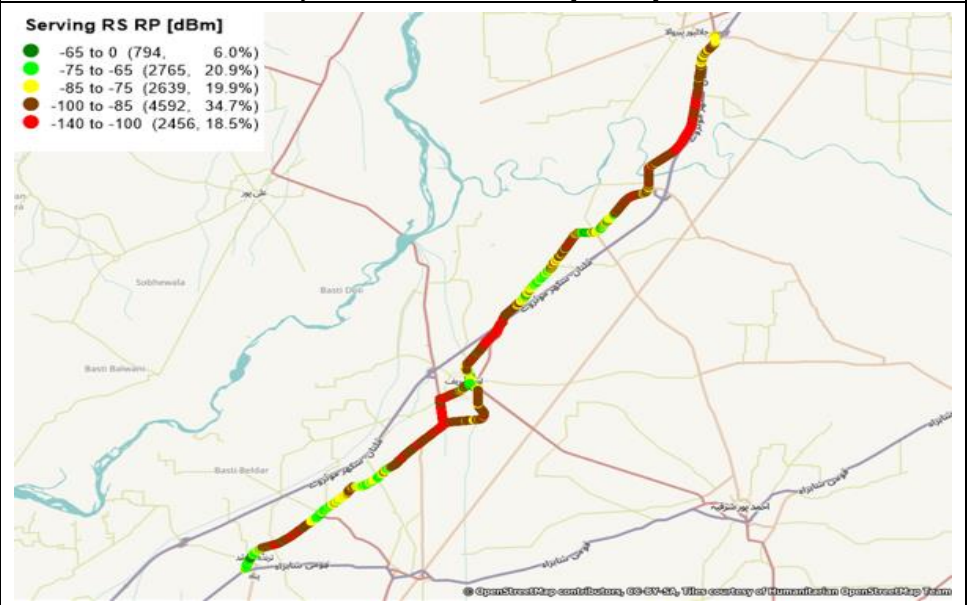
TELENOR 4G NETWORK COVERAGE – TARANDA MUHAMMAD PANAHA TO JALALPUR PIRWALA (N-115)



UFONE 4G NETWORK COVERAGE – TARANDA MUHAMMAD PANAHA TO JALALPUR PIRWALA (N-115)



ZONG 4G NETWORK COVERAGE – TARANDA MUHAMMAD PANAHA TO JALALPUR PIRWALA (N-115)

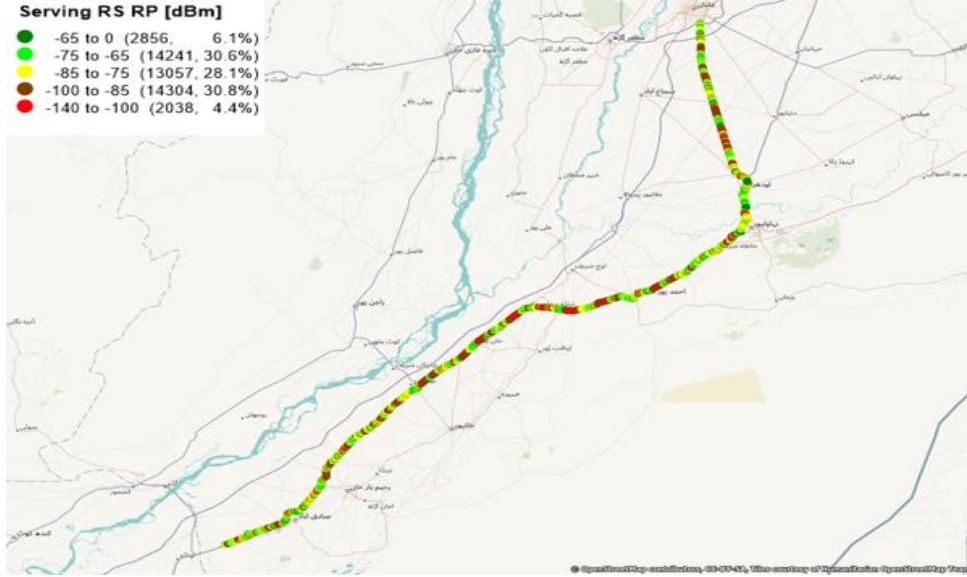


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – KOT SABZAL TO MULTAN (N-5)

Serving RS RP [dBm]

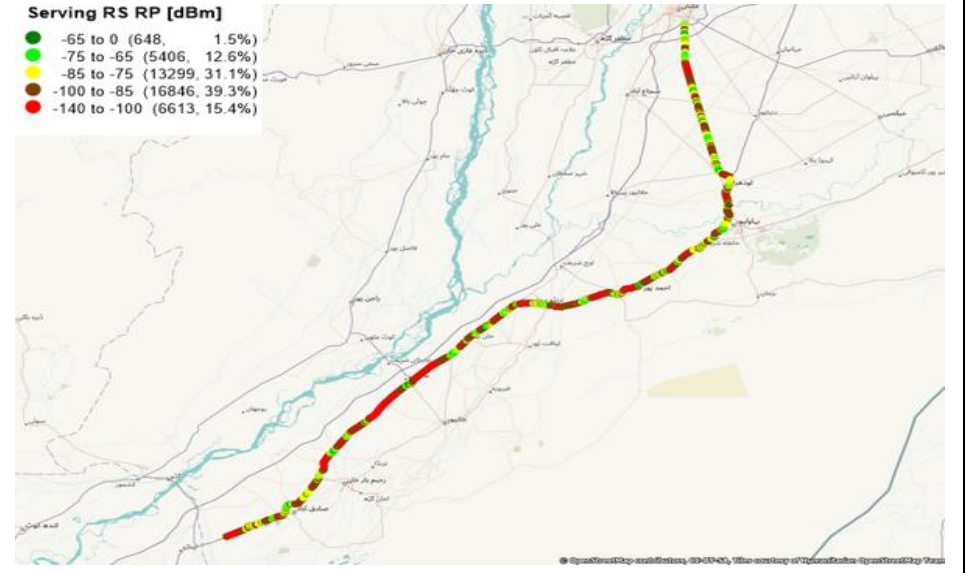
- -65 to 0 (2856, 6.1%)
- -75 to -65 (14241, 30.6%)
- -85 to -75 (13057, 28.1%)
- -100 to -85 (14304, 30.8%)
- -140 to -100 (2038, 4.4%)



TELENOR 4G NETWORK COVERAGE – KOT SABZAL TO MULTAN (N-5)

Serving RS RP [dBm]

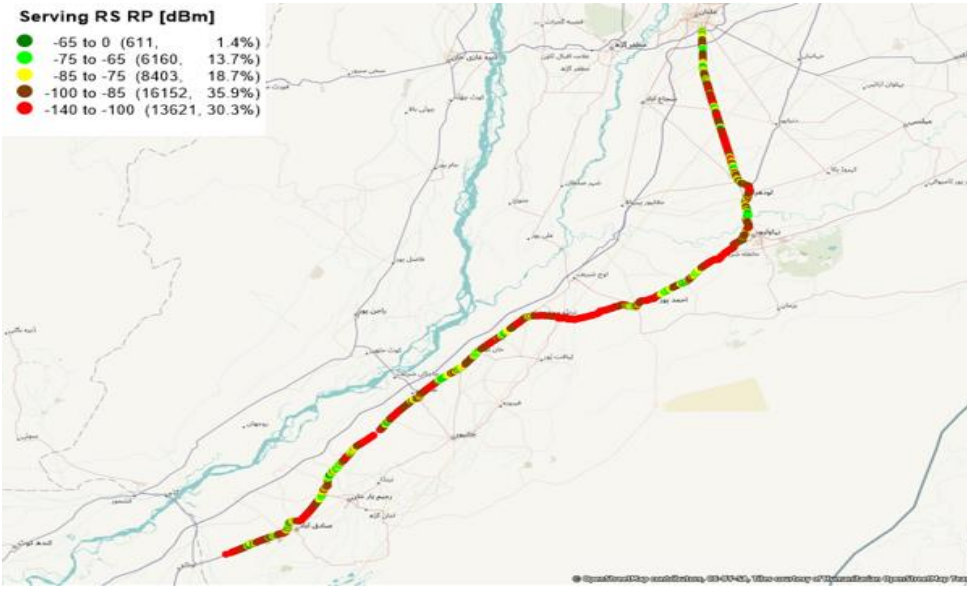
- -65 to 0 (648, 1.5%)
- -75 to -65 (5406, 12.6%)
- -85 to -75 (13299, 31.1%)
- -100 to -85 (16846, 39.3%)
- -140 to -100 (6613, 15.4%)



UFONE 4G NETWORK COVERAGE – KOT SABZAL TO MULTAN (N-5)

Serving RS RP [dBm]

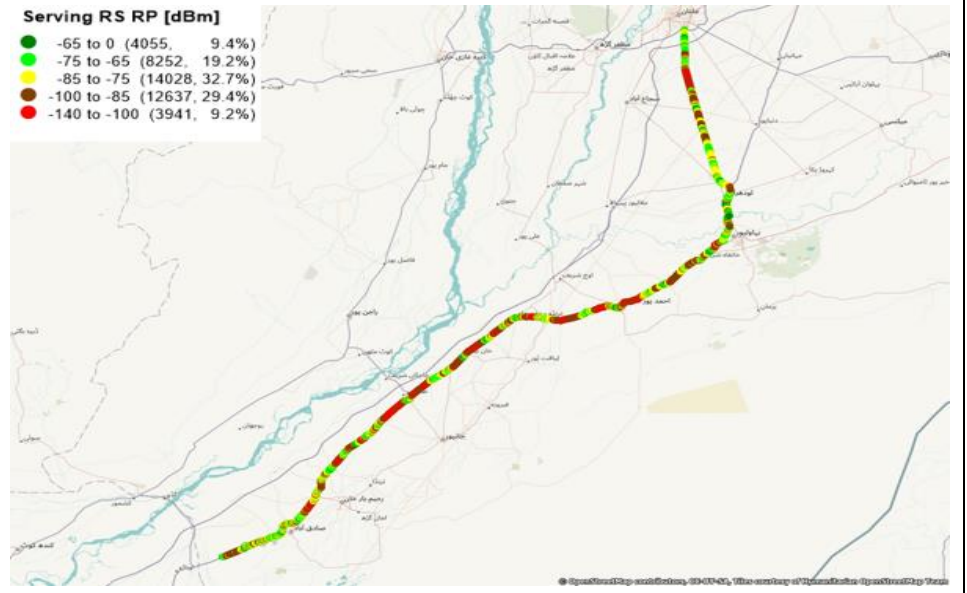
- -65 to 0 (611, 1.4%)
- -75 to -65 (6160, 13.7%)
- -85 to -75 (8403, 18.7%)
- -100 to -85 (16152, 35.9%)
- -140 to -100 (13621, 30.3%)



ZONG 4G NETWORK COVERAGE – KOT SABZAL TO MULTAN (N-5)

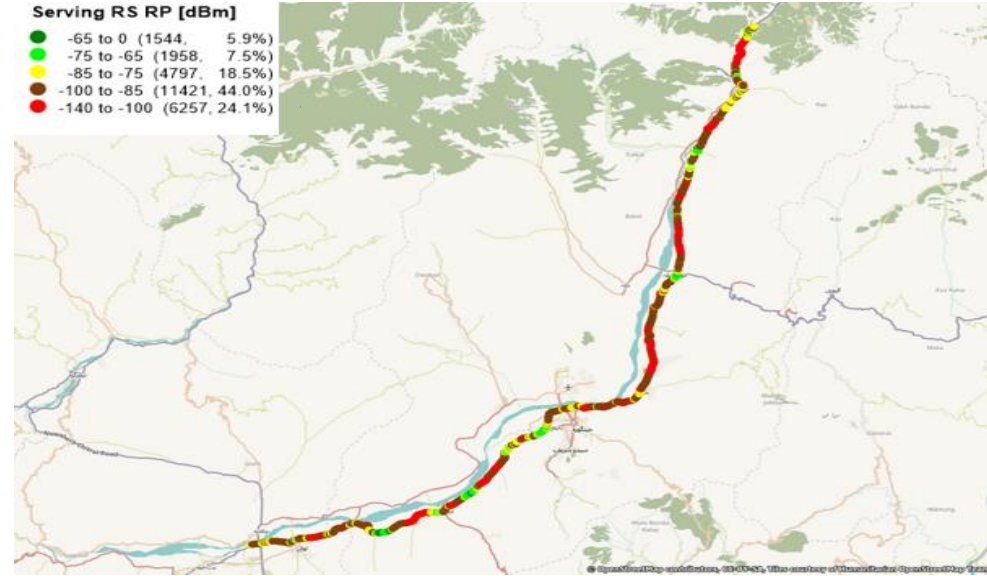
Serving RS RP [dBm]

- -65 to 0 (4055, 9.4%)
- -75 to -65 (8252, 19.2%)
- -85 to -75 (14028, 32.7%)
- -100 to -85 (12637, 29.4%)
- -140 to -100 (3941, 9.2%)

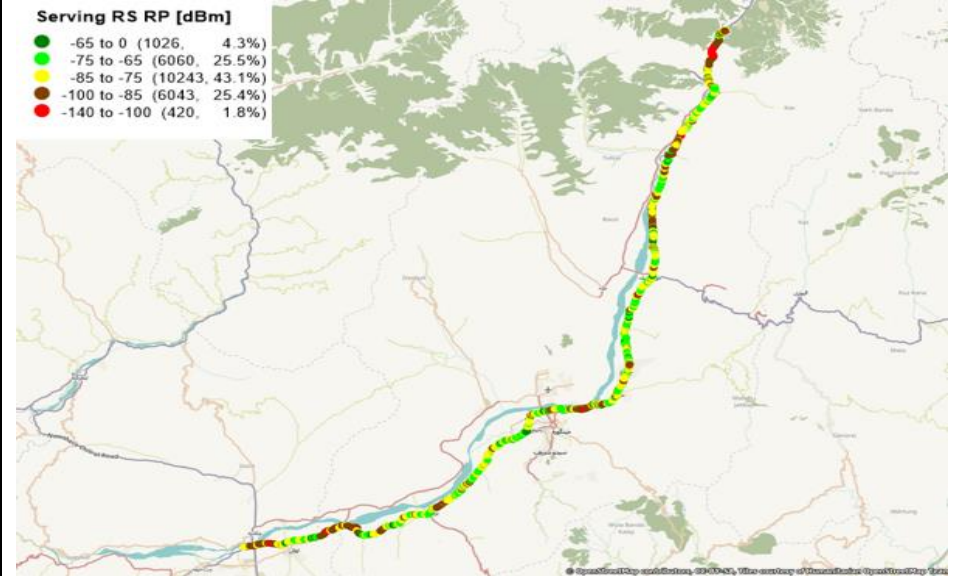


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

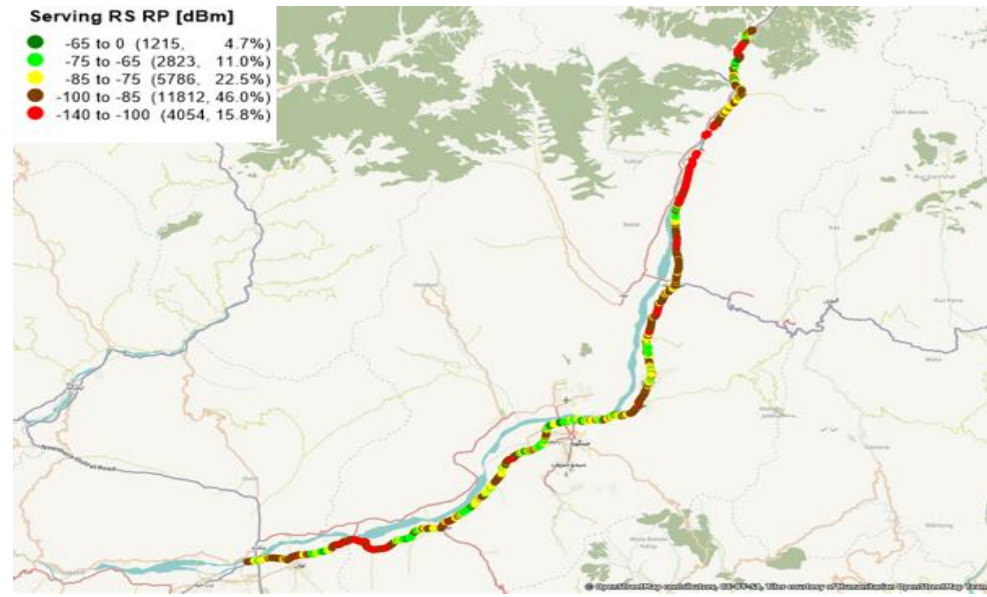
JAZZ 4G NETWORK COVERAGE – CHAK DHARA TO BAHRAIN (N-95)



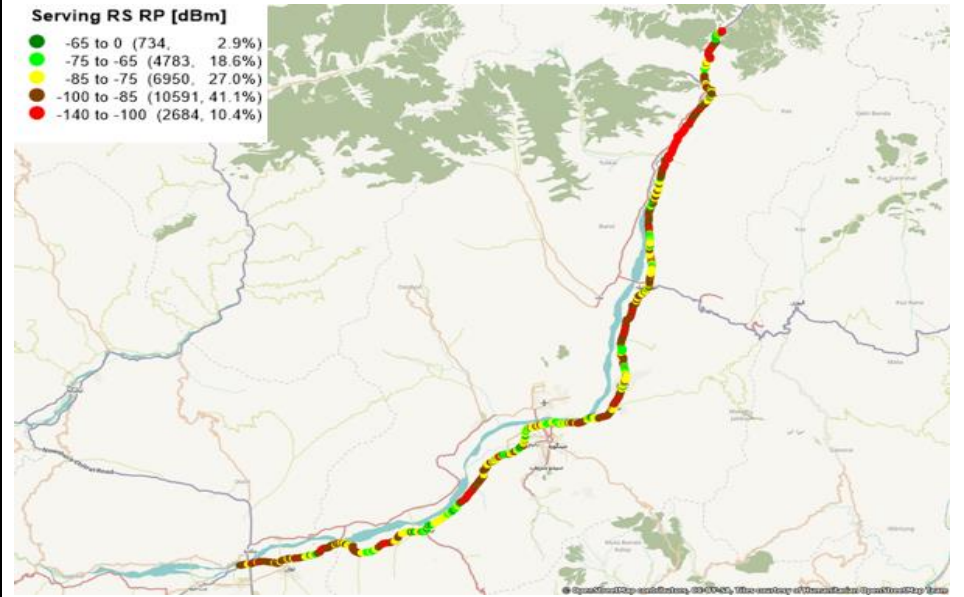
TELENOR 4G NETWORK COVERAGE – CHAK DHARA TO BAHRAIN (N-95)



UFONE 4G NETWORK COVERAGE – CHAK DHARA TO BAHRAIN (N-95)

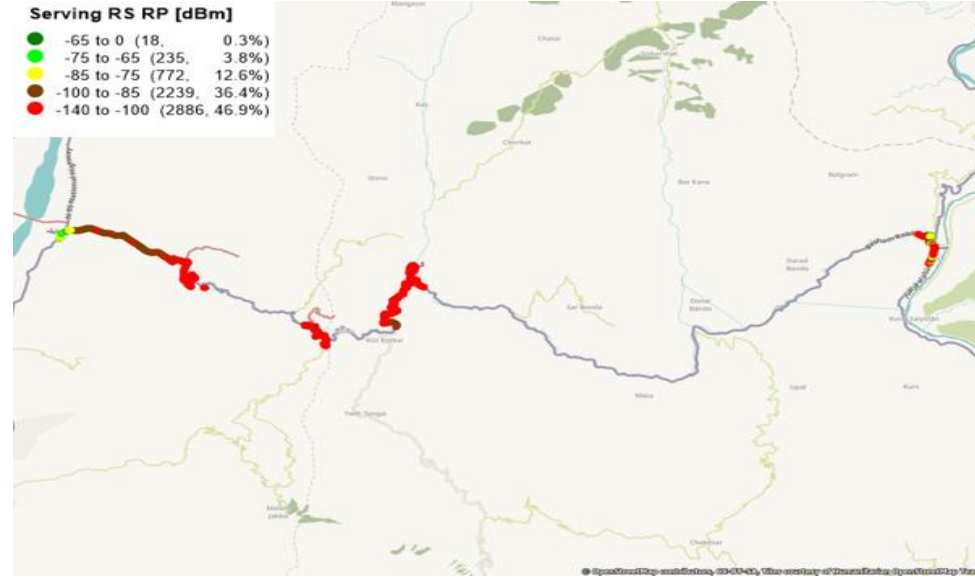


ZONG 4G NETWORK COVERAGE – CHAK DHARA TO BAHRAIN (N-95)

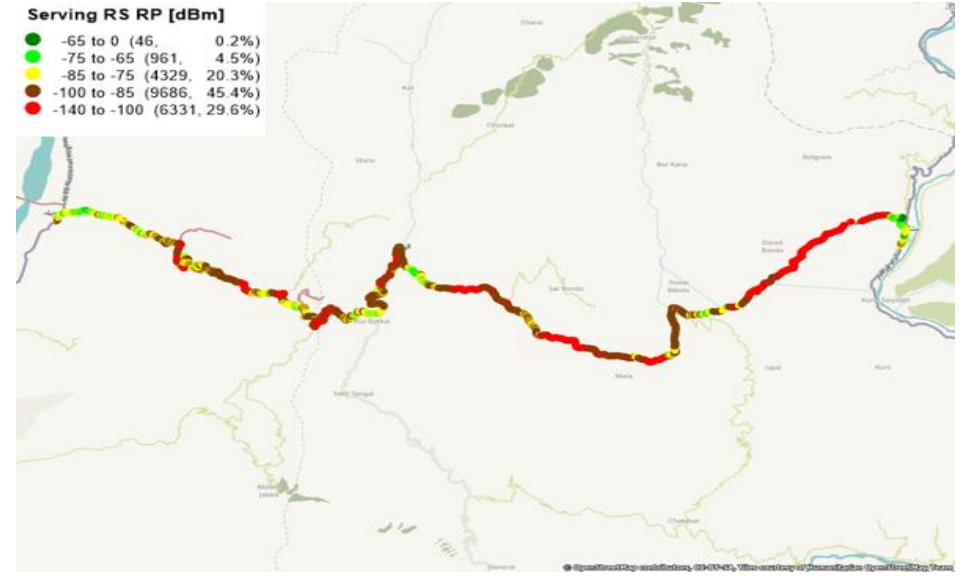


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

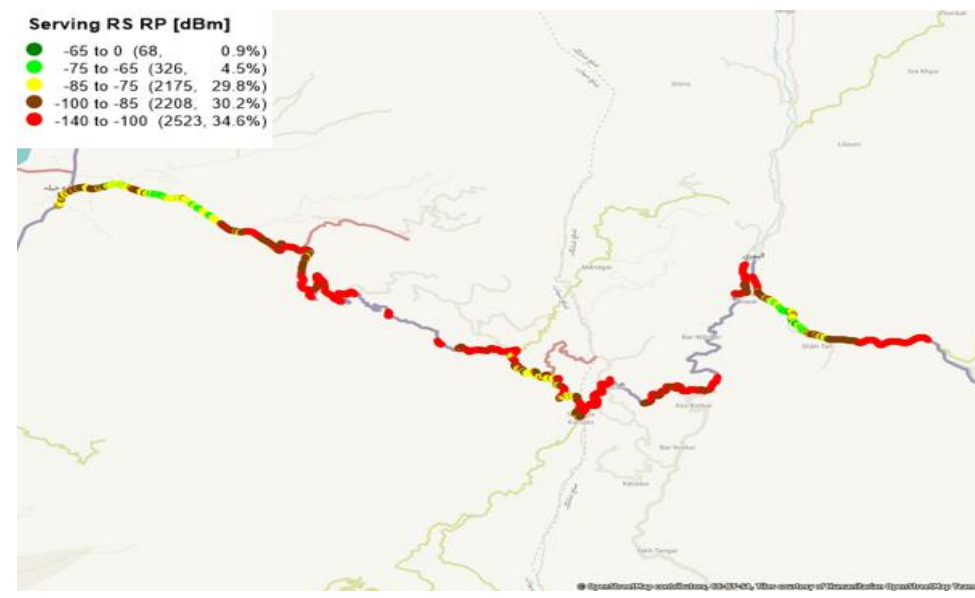
JAZZ 4G NETWORK COVERAGE – KHAWAZKHEL TO BESHAM (N-90)



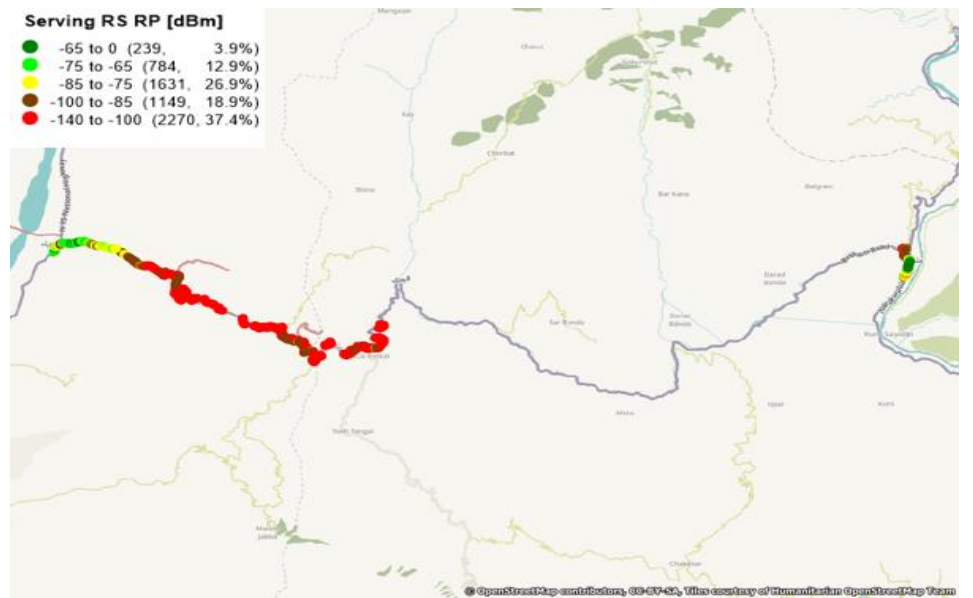
TELENOR 4G NETWORK COVERAGE – KHAWAZKHEL TO BESHAM (N-90)



UFONE 4G NETWORK COVERAGE – KHAWAZKHEL TO BESHAM (N-90)



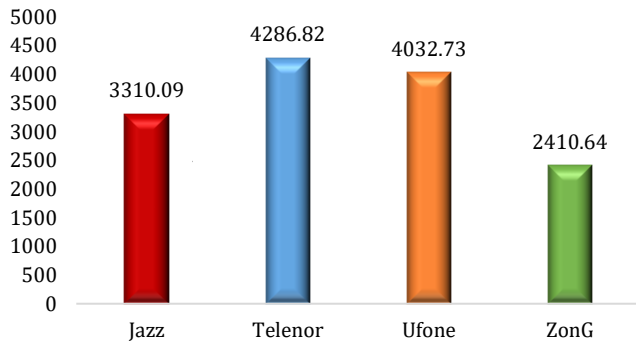
ZONG 4G NETWORK COVERAGE – KHAWAZKHEL TO BESHAM (N-90)



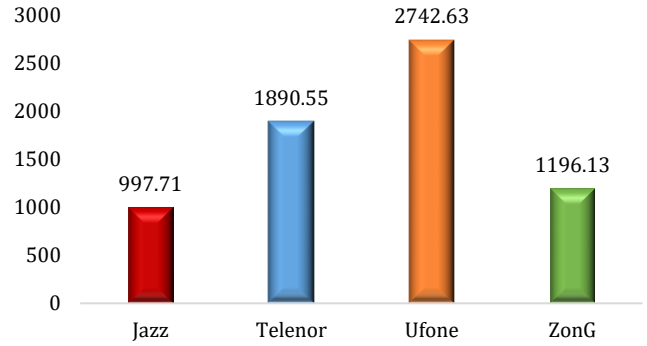
MOBILE BROADBAND 3G KPIs RESULT

QUALITY OF SERVICE SURVEY RESULTS (3G) – QUETTA TO ZHOB (N-50)

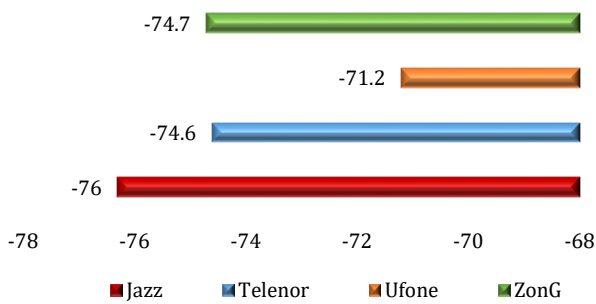
User Data Throughput Download (3G) > 512 Kbps



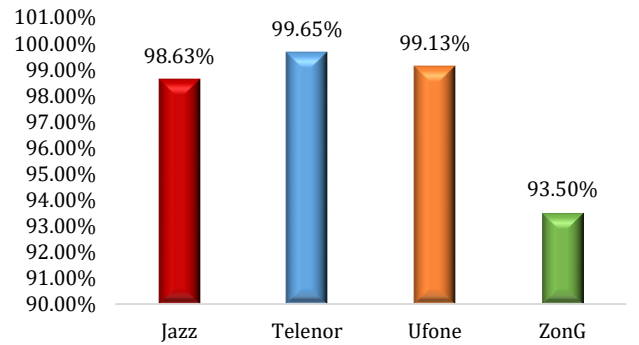
User Data Throughput Upload (3G) > 128 Kbps



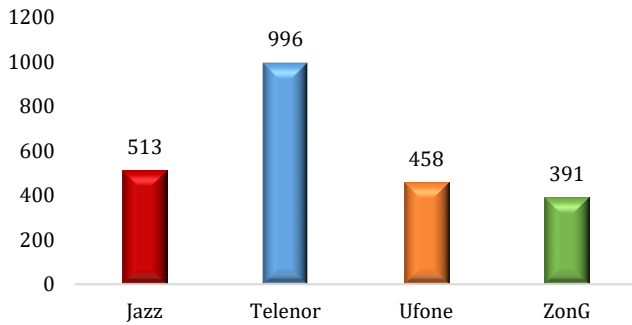
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%

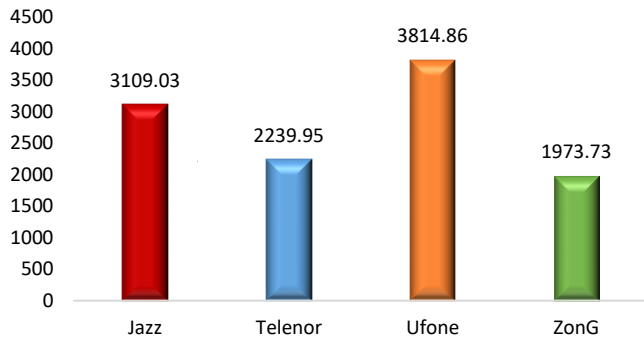


Latency (3G) < 150 ms

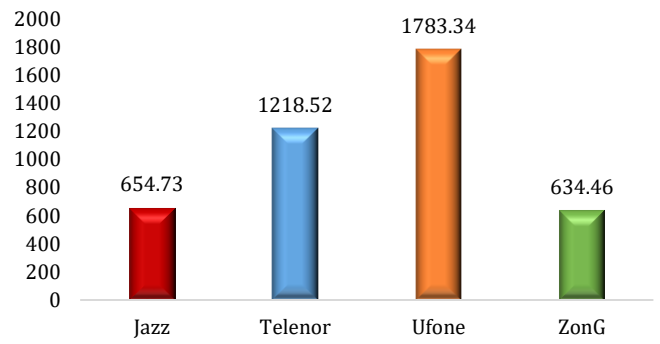


QUALITY OF SERVICE SURVEY RESULTS (3G) – LAHORE TO SARGODHA (N-60)

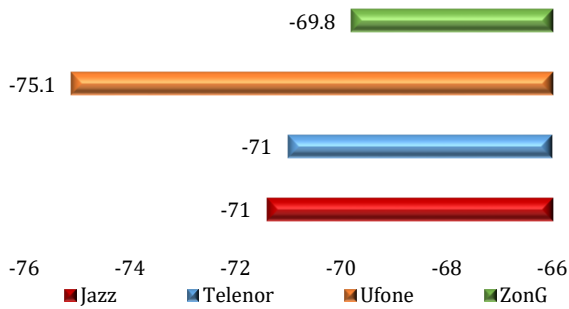
User Data Throughput Download (3G) > 512 Kbps



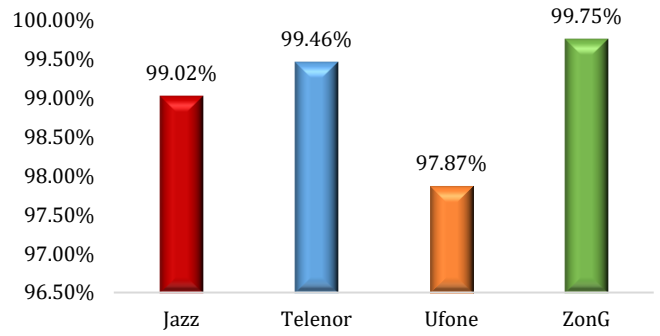
User Data Throughput Upload (3G) > 128 Kbps



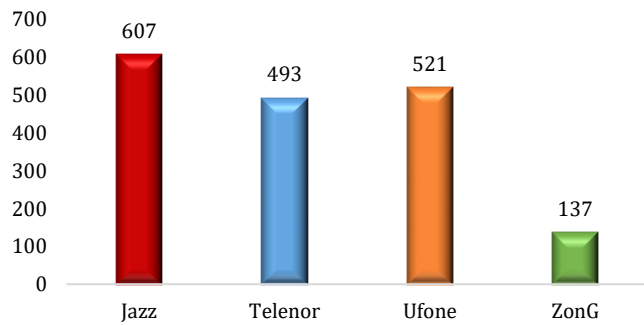
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%

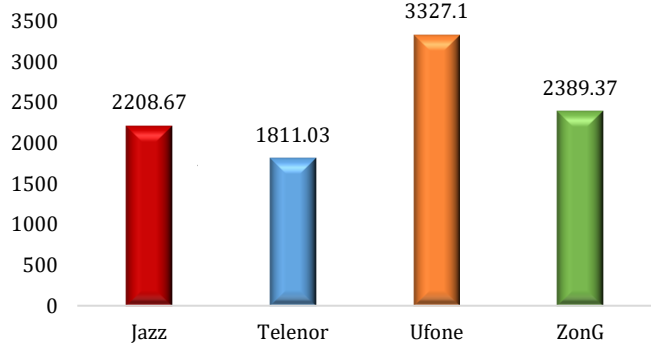


Latency (3G) < 150 ms

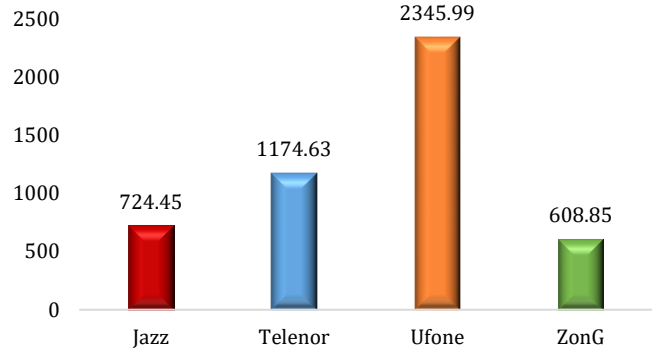


QUALITY OF SERVICE SURVEY RESULTS (3G) – LAHORE TO RAWALPINDI (N-5)

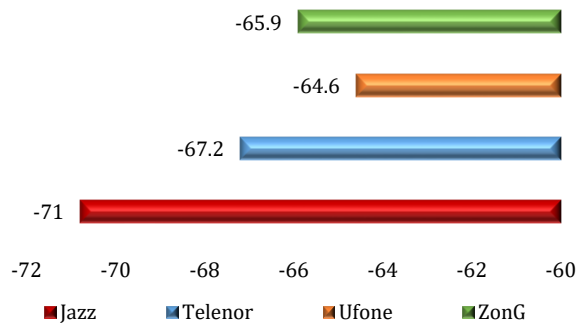
User Data Throughput Download (3G) > 512 Kbps



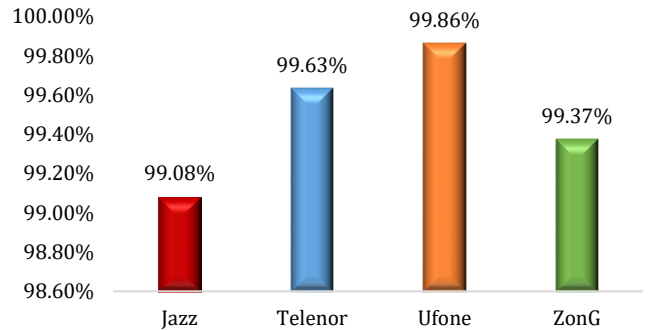
User Data Throughput Upload (3G) > 128 Kbps



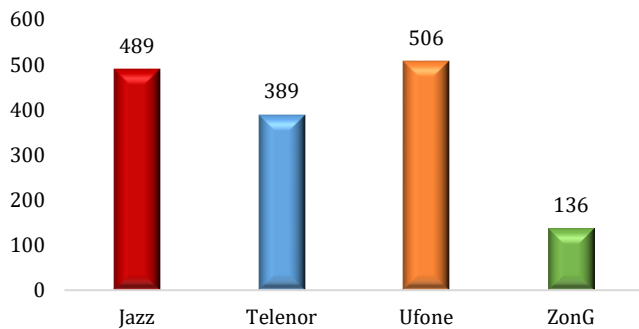
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%

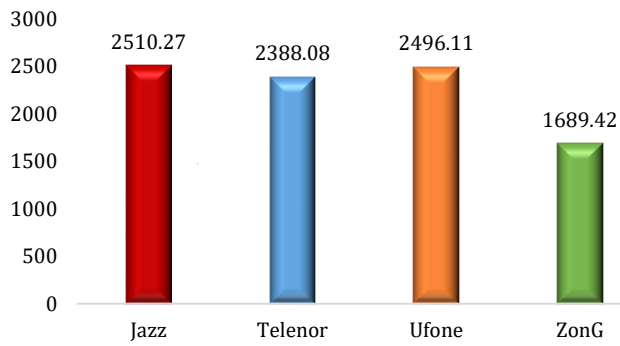


Latency (3G) < 150 ms

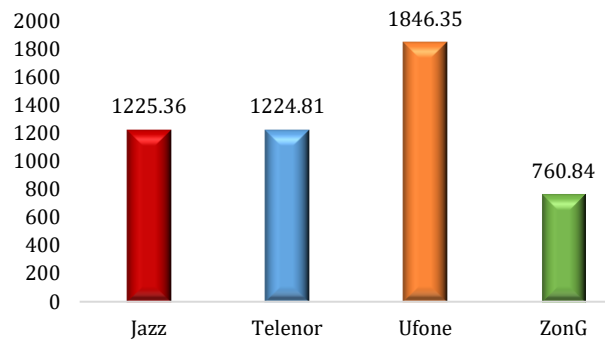


QUALITY OF SERVICE SURVEY RESULTS (3G) – LAHORE TO MULTAN (N-5)

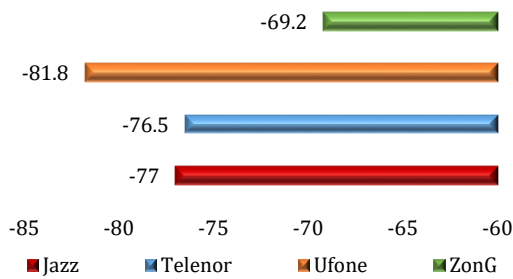
User Data Throughput Download (3G) > 512 Kbps



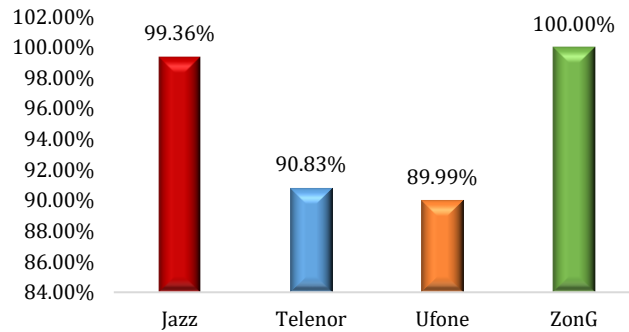
User Data Throughput Upload (3G) > 128 Kbps



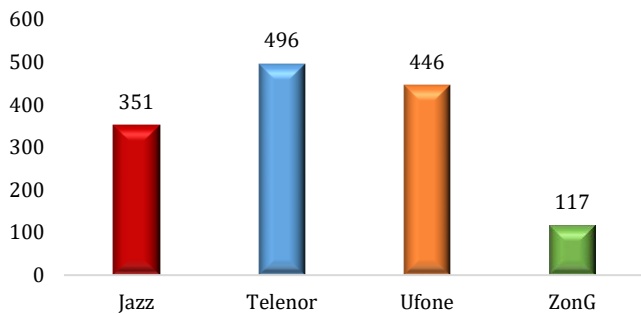
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%

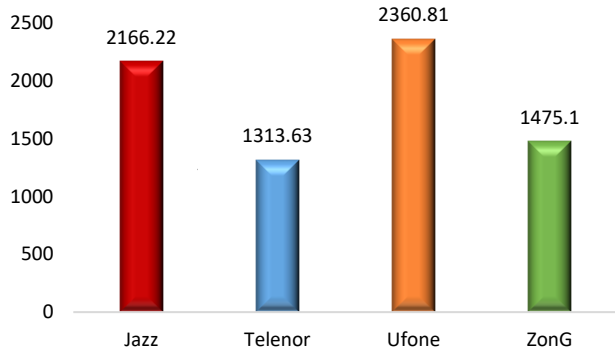


Latency (3G) < 150 ms

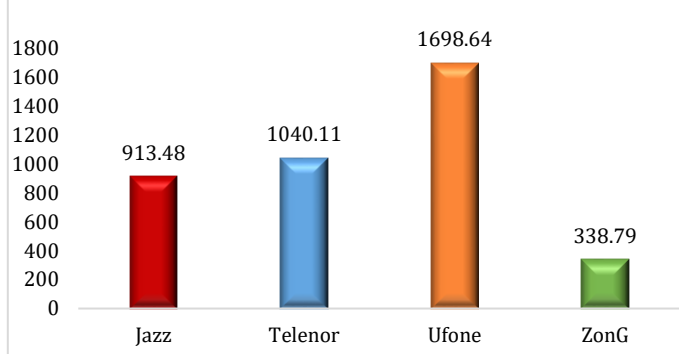


QUALITY OF SERVICE SURVEY RESULTS (3G) – ISLAMABAD TO D.I KHAN (M-14)

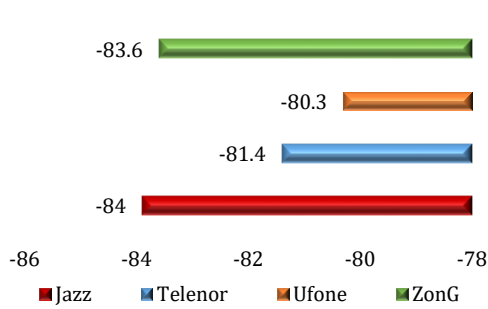
User Data Throughput Download (3G) > 512 Kbps



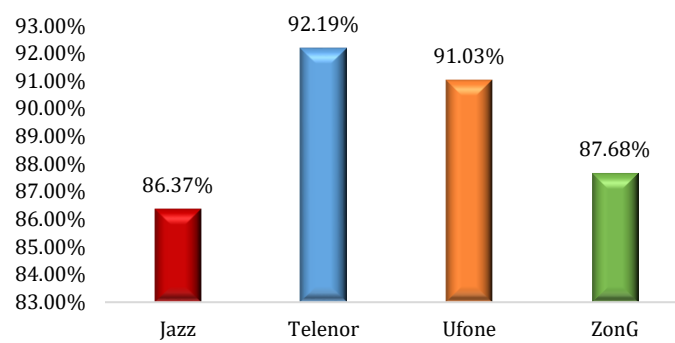
User Data Throughput Upload (3G) > 128 Kbps



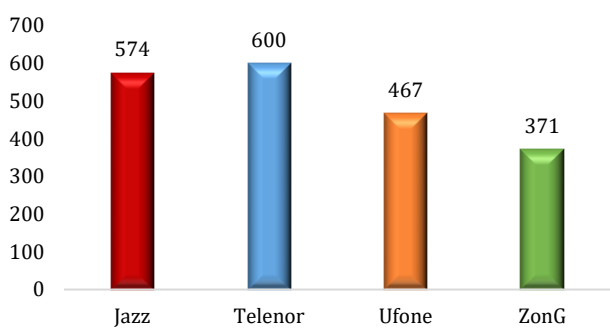
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidence Level > 90%

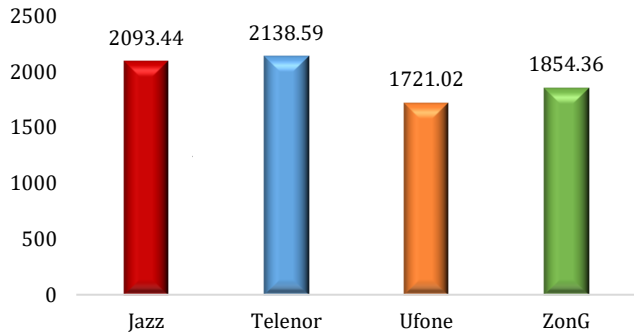


Latency (3G) < 150 ms

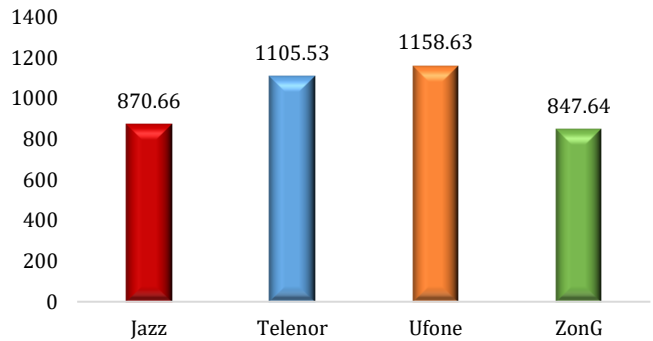


QUALITY OF SERVICE SURVEY RESULTS (3G) – MIANWALI TO BHAKKAR (N-130)

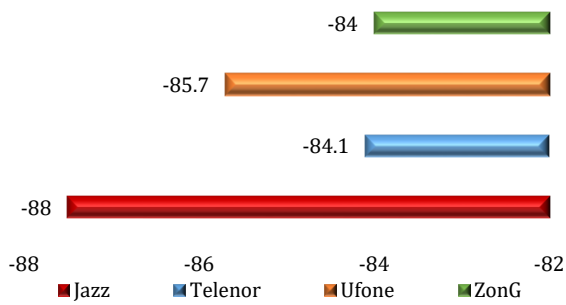
User Data Throughput Download (3G) > 512 Kbps



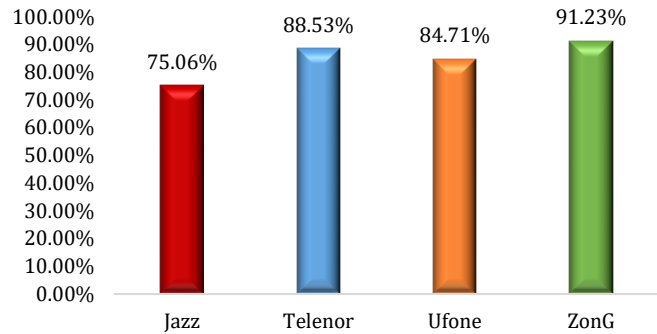
User Data Throughput Upload (3G) > 128 Kbps



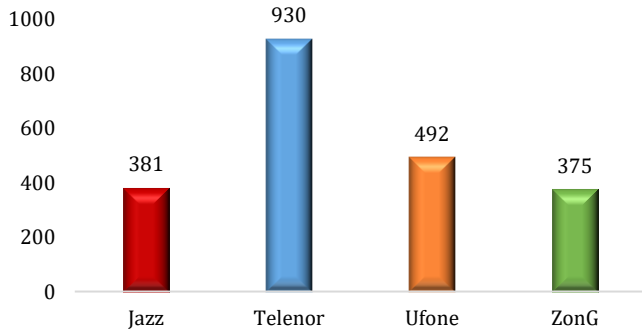
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%

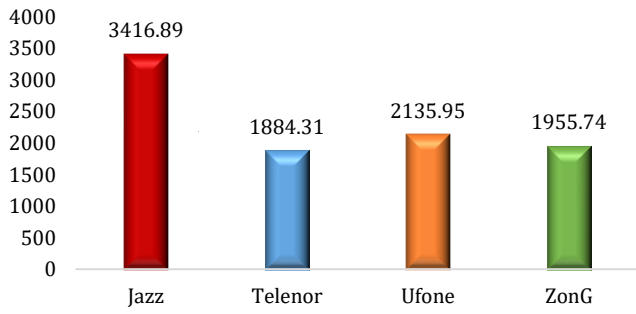


Latency (3G) < 150 ms

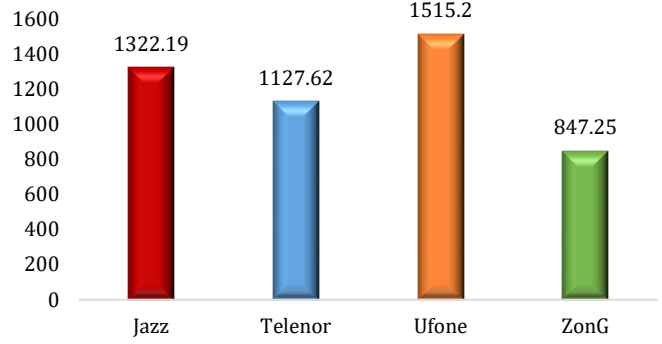


QUALITY OF SERVICE SURVEY RESULTS (3G) – ISLAMABAD TO KOHAT (N-80)

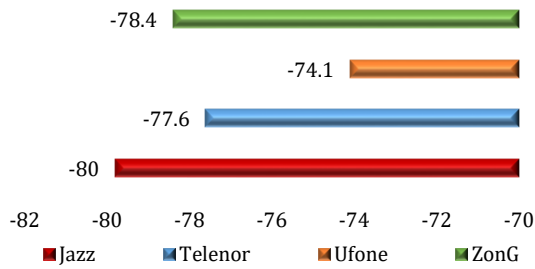
User Data Throughput Download (3G) > 512 Kbps



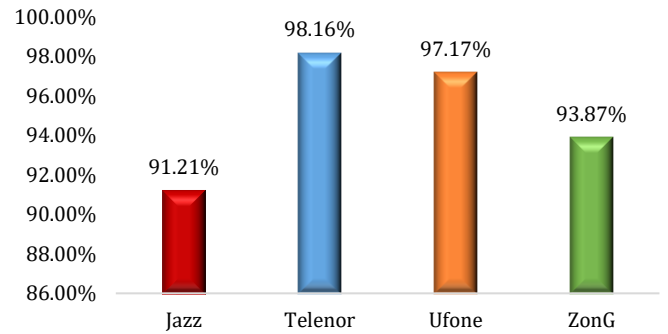
User Data Throughput Upload (3G) > 128 Kbps



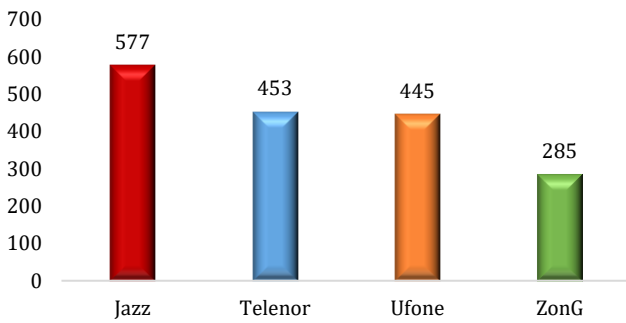
Signal Strength (RSCP) > -100dBm



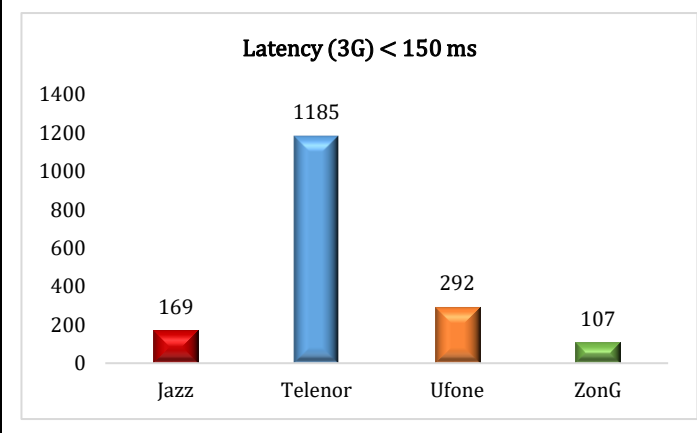
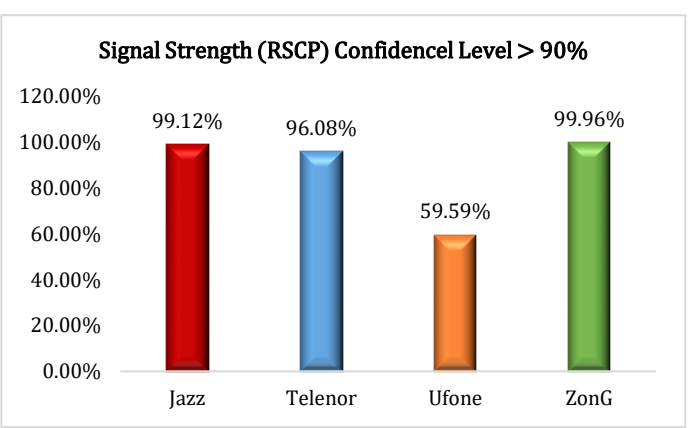
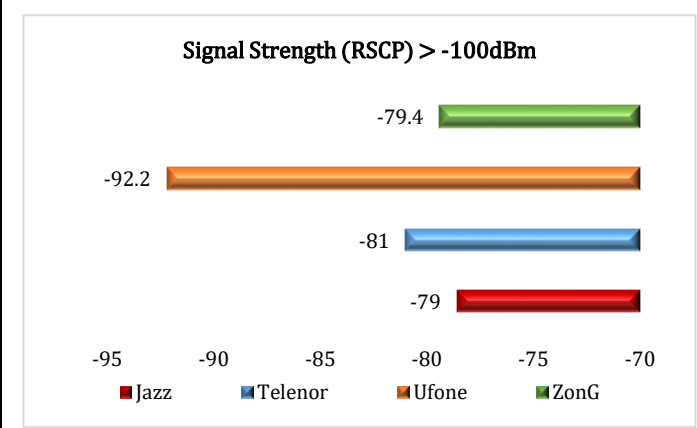
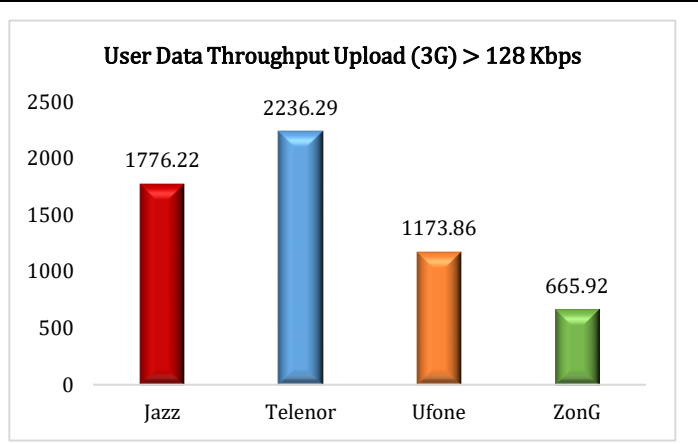
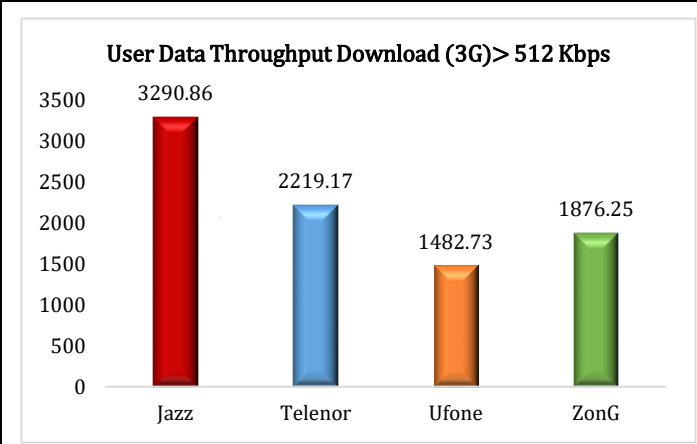
Signal Strength (RSCP) Confidencel Level > 90%



Latency (3G) < 150 ms

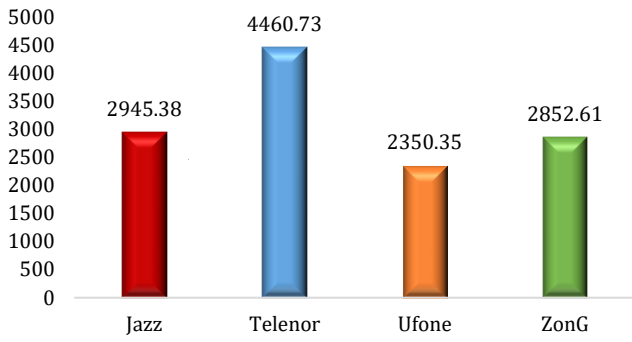


QUALITY OF SERVICE SURVEY RESULTS (3G) – TARANDA MUHMMAD PANNAH TO JALALPUR PIRWALA (N-115)

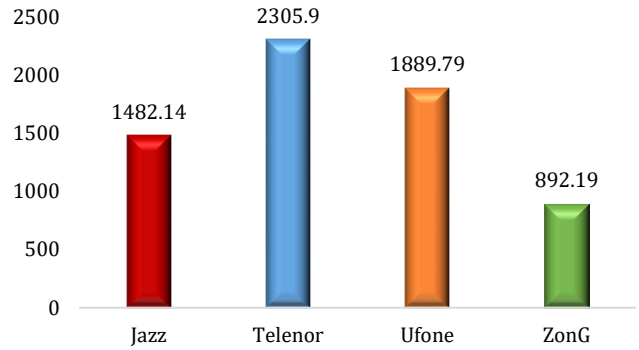


QUALITY OF SERVICE SURVEY RESULTS (3G) – KOT SABZAL TO MULTAN (N-5)

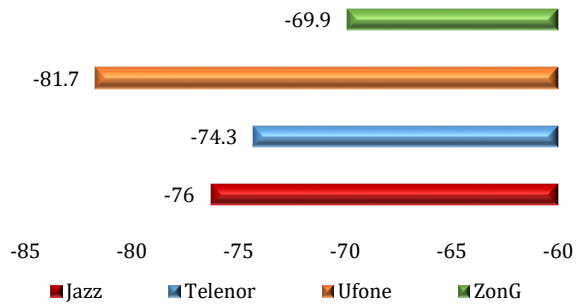
User Data Throughput Download (3G) > 512 Kbps



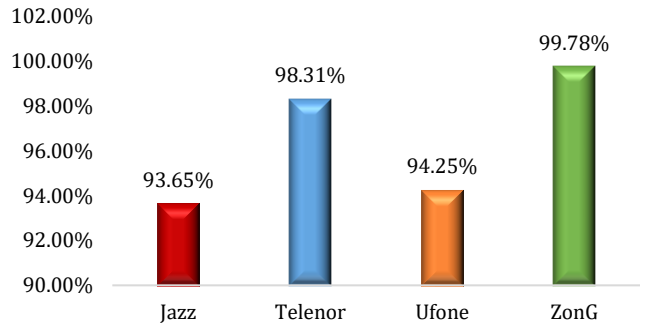
User Data Throughput Upload (3G) > 128 Kbps



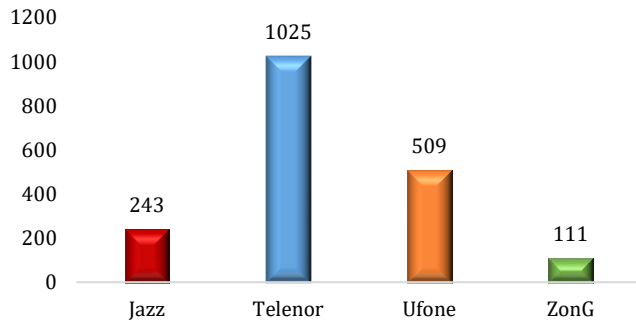
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%

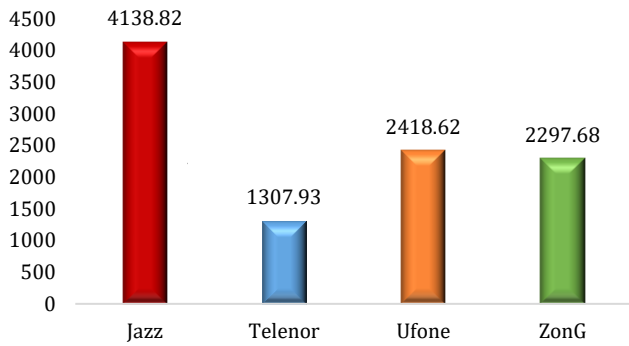


Latency (3G) < 150 ms

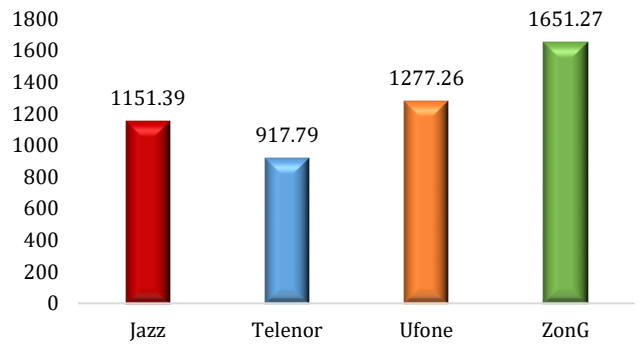


QUALITY OF SERVICE SURVEY RESULTS (3G) – CHAK DHARA TO BAHRAIN (N-95)

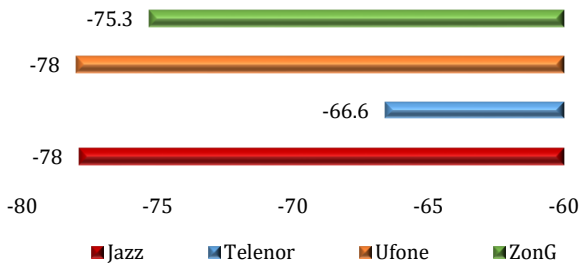
User Data Throughput Download (3G) > 512 Kbps



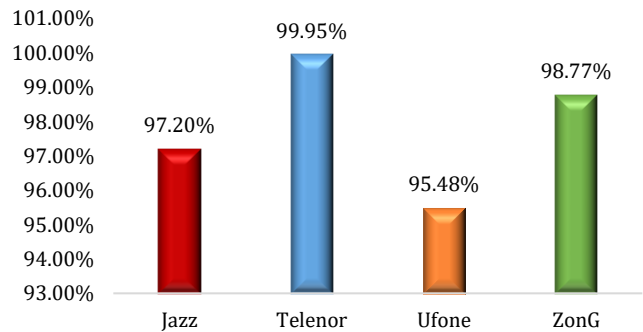
User Data Throughput Upload (3G) > 128 Kbps



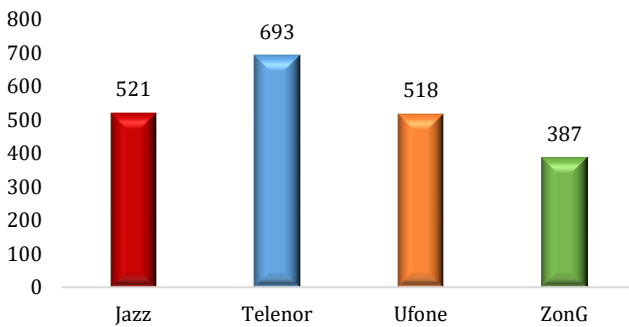
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%

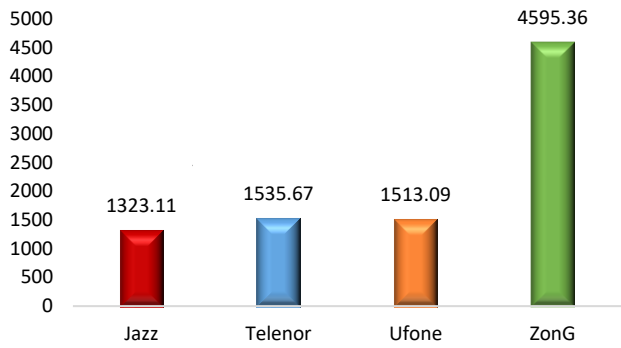


Latency (3G) < 150 ms

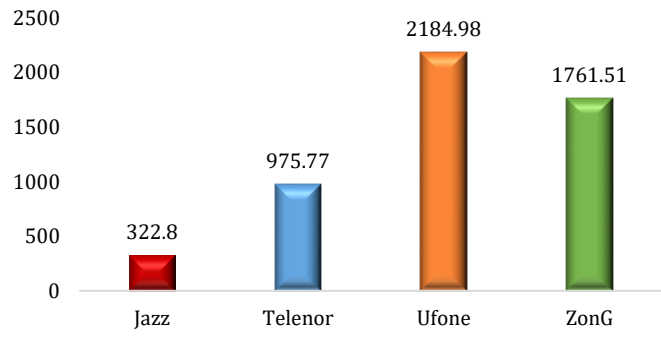


QUALITY OF SERVICE SURVEY RESULTS (3G) – KHAWAZKHEL TO BESHAM (N-90)

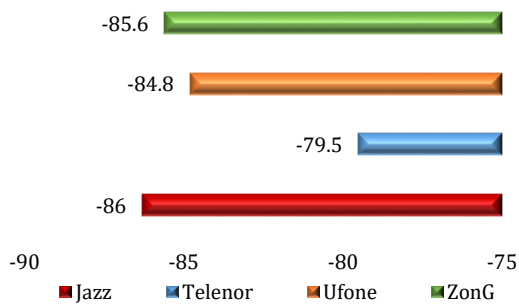
User Data Throughput Download (3G) > 512 Kbps



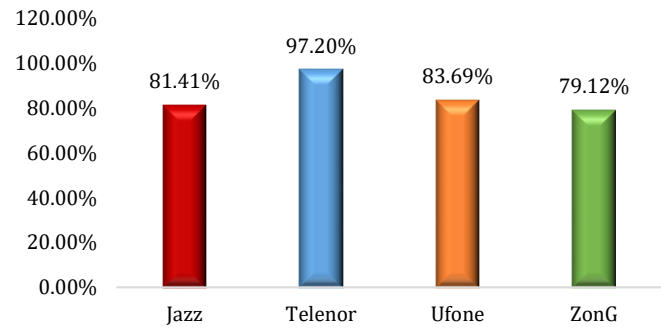
User Data Throughput Upload (3G) > 128 sKbps



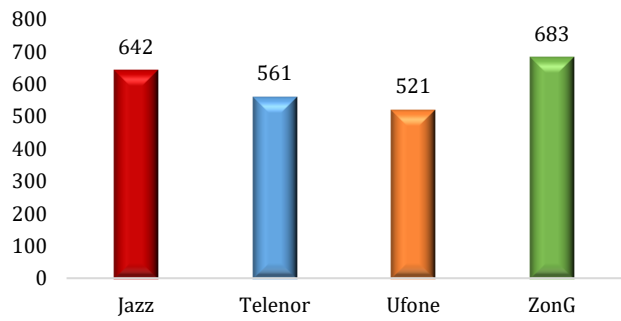
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%

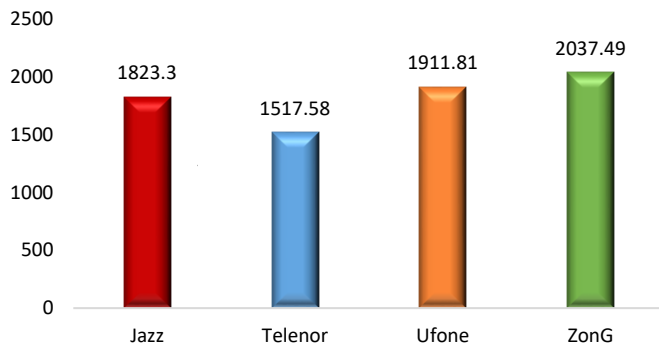


Latency (3G) < 150 ms

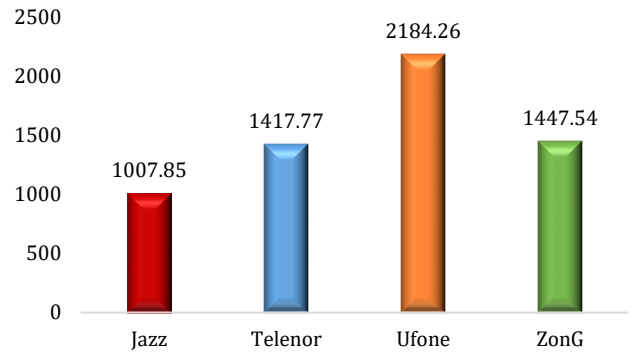


QUALITY OF SERVICE SURVEY RESULTS (3G) – PESHAWAR TO DG KHAN (N-55)

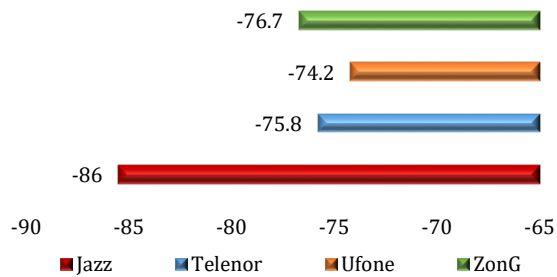
User Data Throughput Download (3G) > 512 Kbps



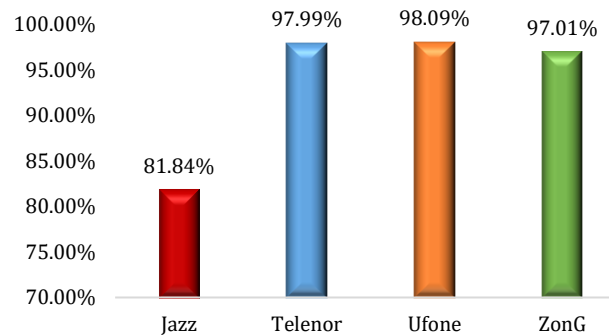
User Data Throughput Upload (3G) > 128 Kbps



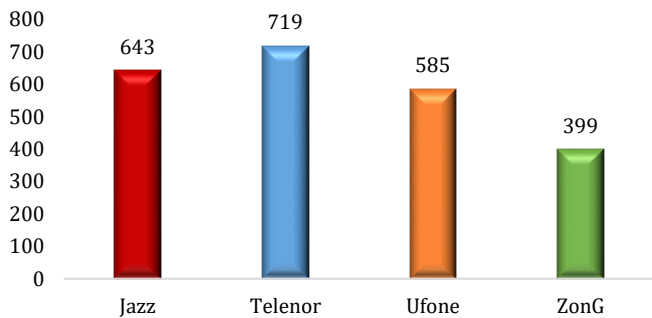
Signal Strength (RSCP) > -100dBm



Signal Strength (RSCP) Confidencel Level > 90%



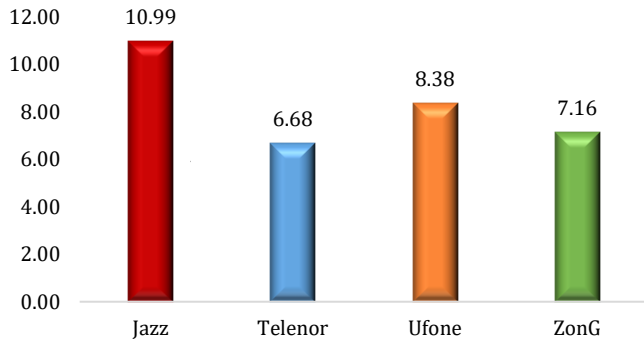
Latency (3G) < 150 ms



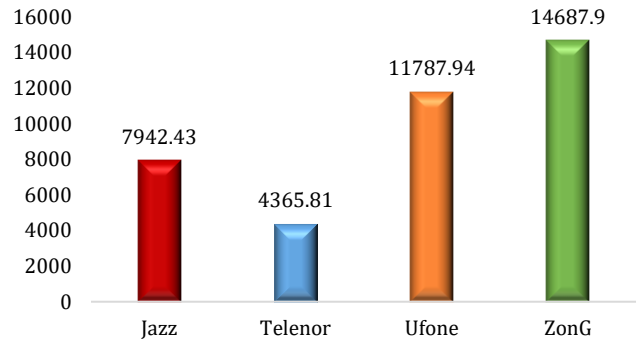
MOBILE BROADBAND 4G KPIs RESULT

QUALITY OF SERVICE SURVEY RESULTS (4G) – ZHOB TO QUETTA (N-50)

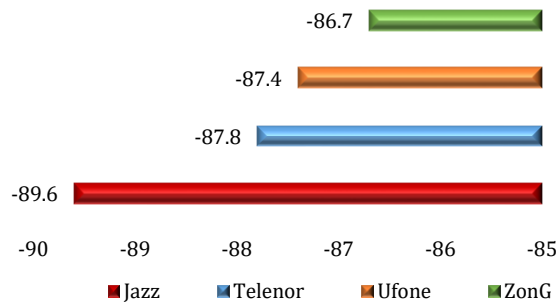
User Data Throughput Download (4G) > 3 Mbps



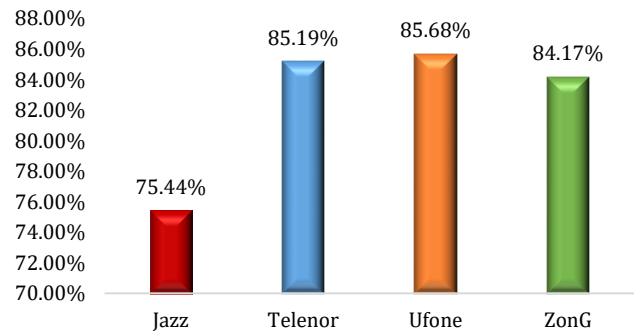
User Data Throughput Upload (4G) > 768 Kbps



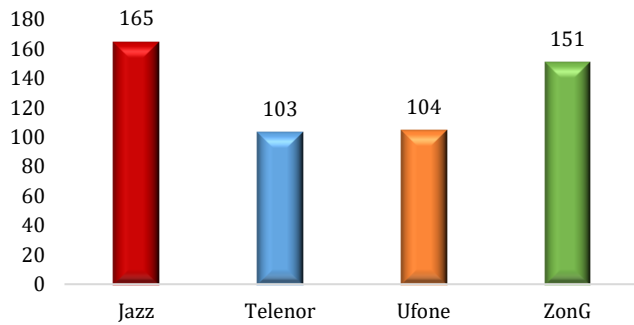
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

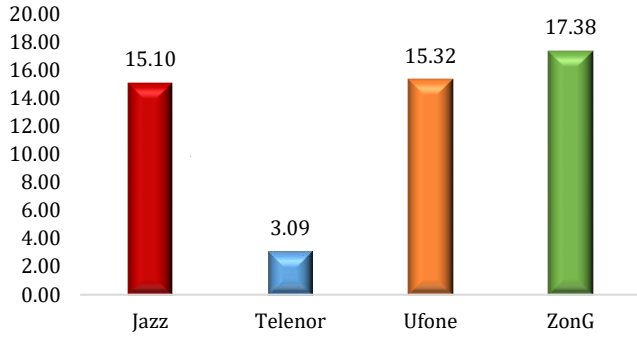


Latency (4G) <75 ms

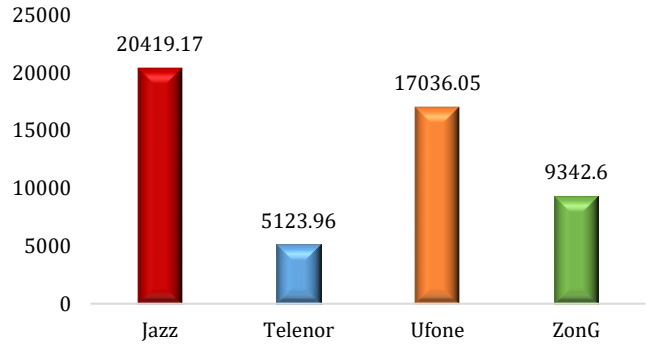


QUALITY OF SERVICE SURVEY RESULTS (4G) – LAHORE TO SARGODHA (N-60)

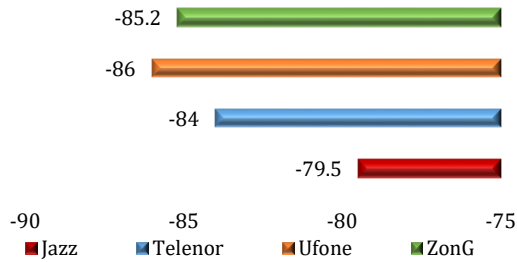
User Data Throughput Download (4G) > 3 Mbps



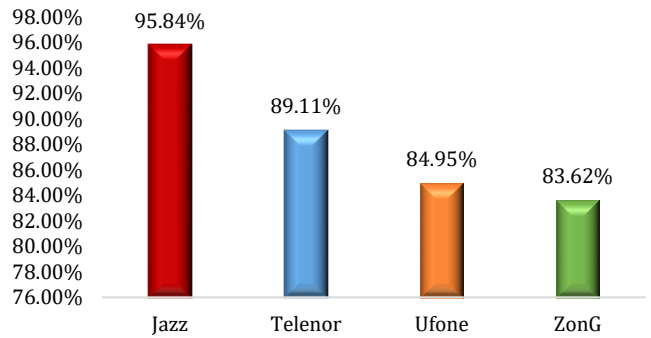
User Data Throughput Upload (4G) > 768 Kbps



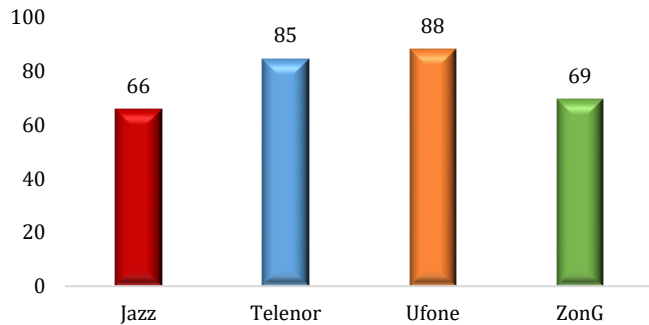
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

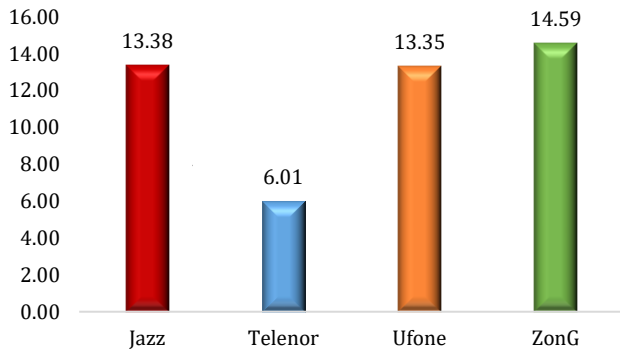


Latency (4G) <75 ms

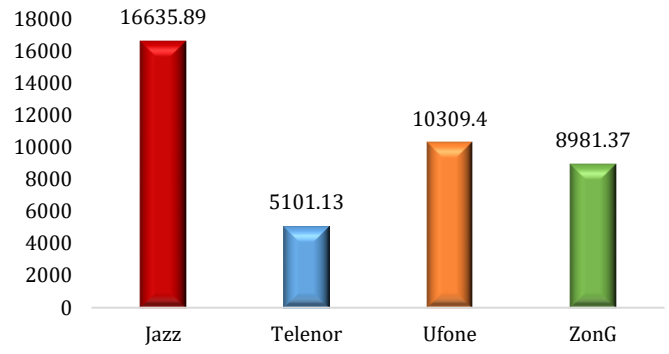


QUALITY OF SERVICE SURVEY RESULTS (4G) – LAHORE TO MULTAN (N-5)

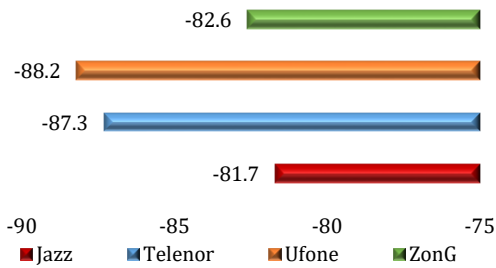
User Data Throughput Download (4G) > 3 Mbps



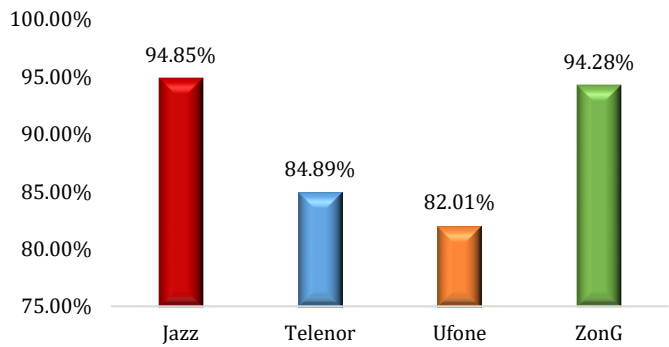
User Data Throughput Upload (4G) > 768 Kbps



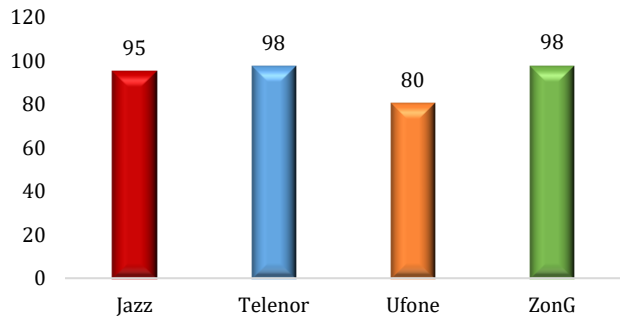
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidence Level > 90%

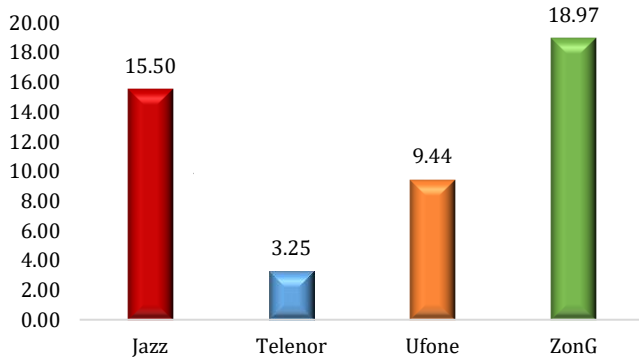


Latency (4G) < 75 ms

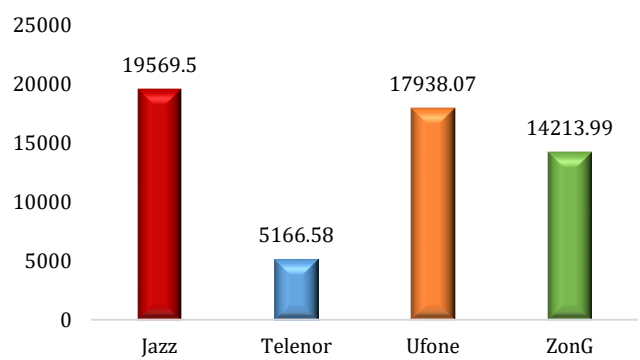


QUALITY OF SERVICE SURVEY RESULTS (4G) – LAHORE TO RAWALPINDI (N-5)

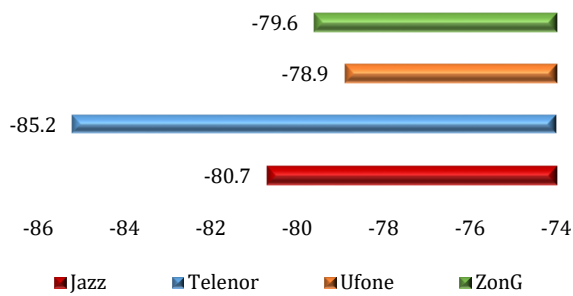
User Data Throughput Download (4G) > 3 Mbps



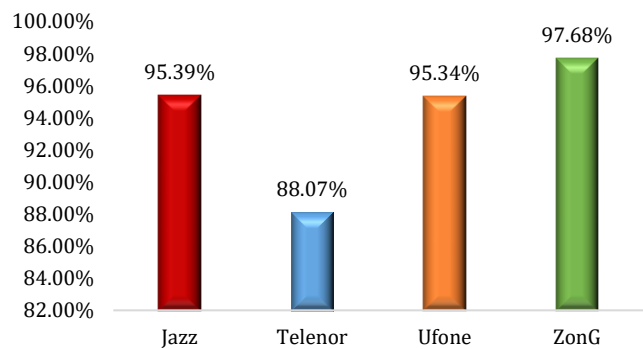
User Data Throughput Upload (4G) > 768 Kbps



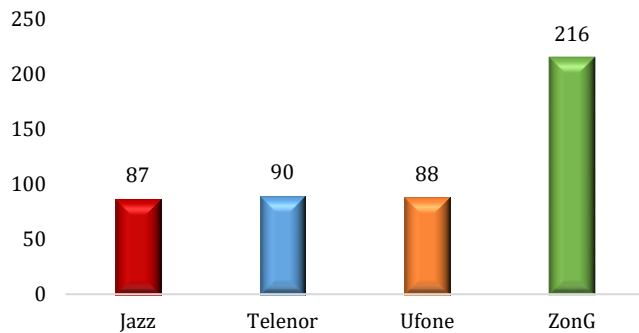
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

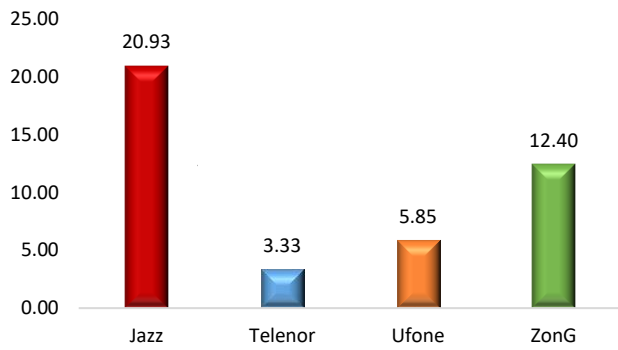


Latency (4G) < 75 ms

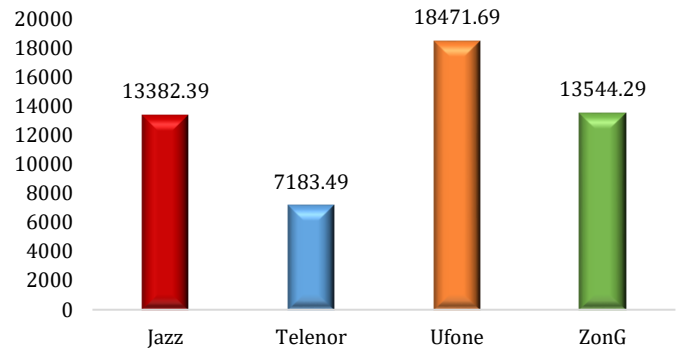


QUALITY OF SERVICE SURVEY RESULTS (4G) – ISLAMABAD TO KOHAT (N-80)

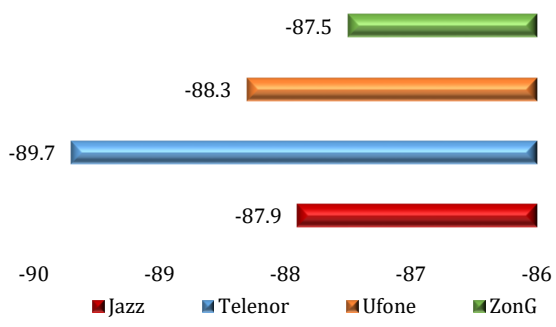
User Data Throughput Download (4G) > 3 Mbps



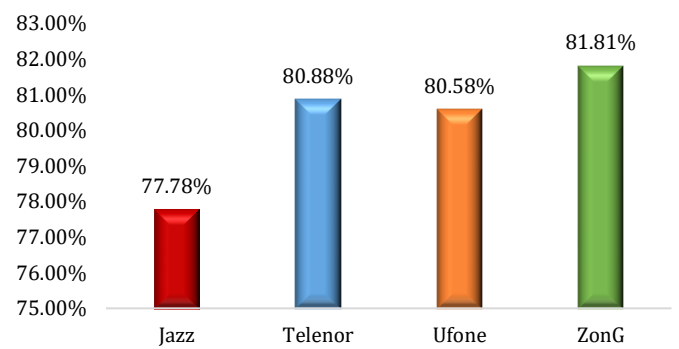
User Data Throughput Upload (4G) > 768 Kbps



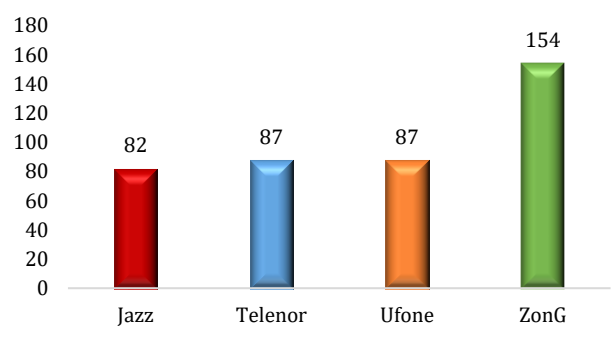
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

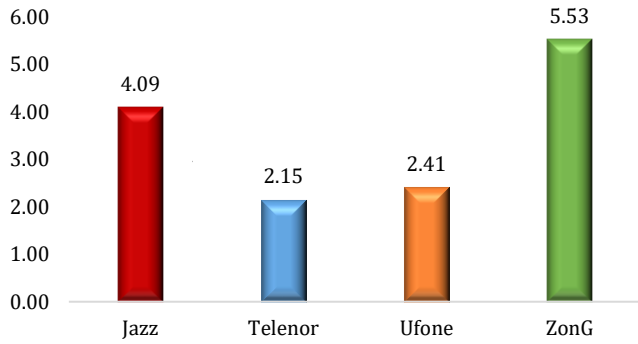


Latency (4G) < 75 ms

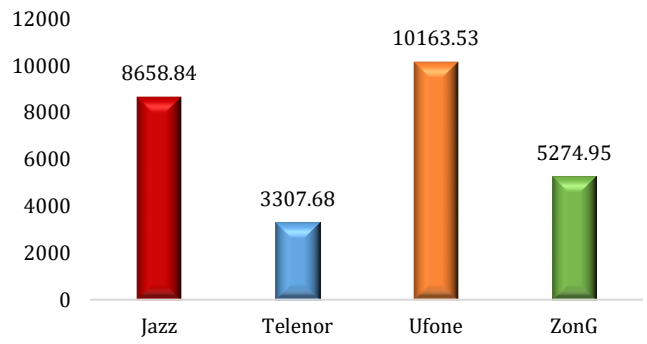


QUALITY OF SERVICE SURVEY RESULTS (4G) – MIANWALI TO BHAKKAR (N-130)

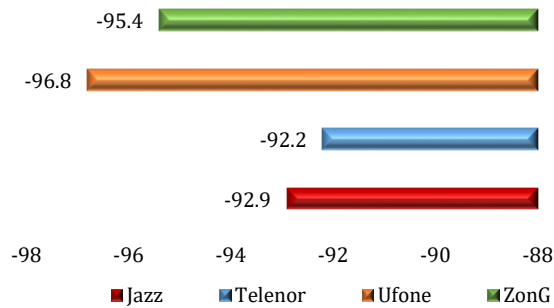
User Data Throughput Download (4G) > 3 Mbps



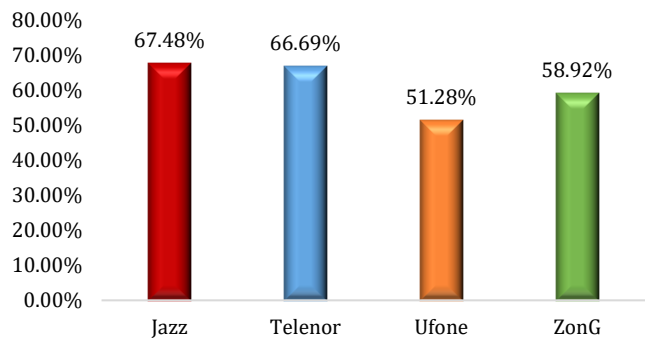
User Data Throughput Upload (4G) > 768 Kbps



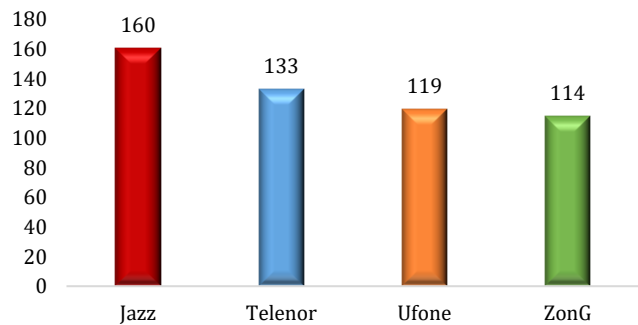
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

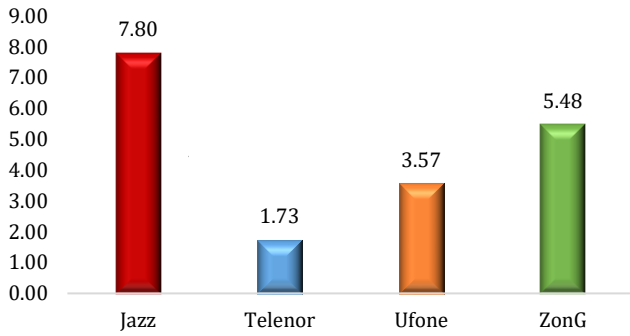


Latency (4G) < 75 ms

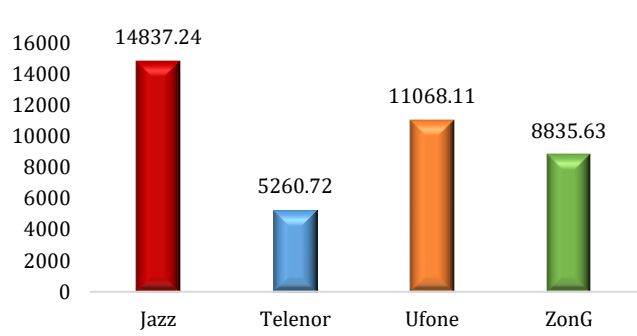


QUALITY OF SERVICE SURVEY RESULTS (4G) – ISLAMABAD TO D.I KHAN (M-14)

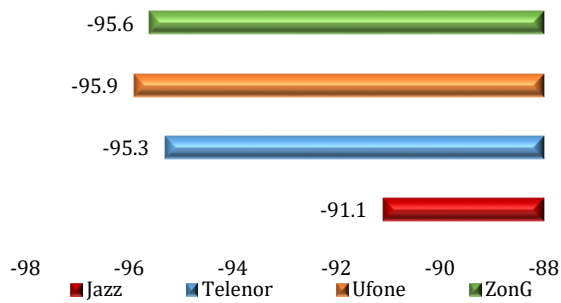
User Data Throughput Download (4G) > 3 Mbps



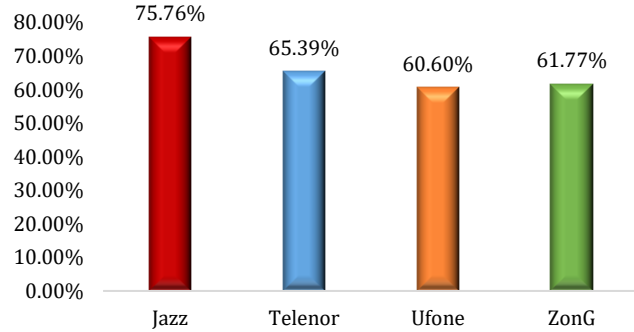
User Data Throughput Upload (4G) > 768 Kbps



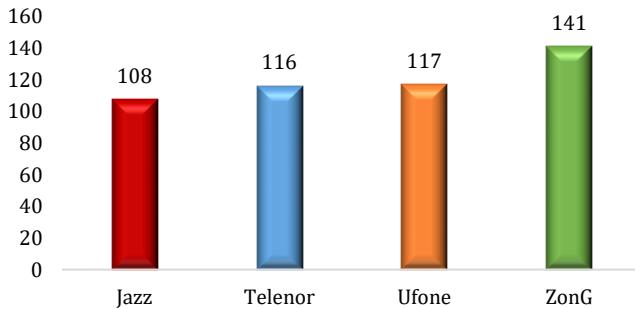
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

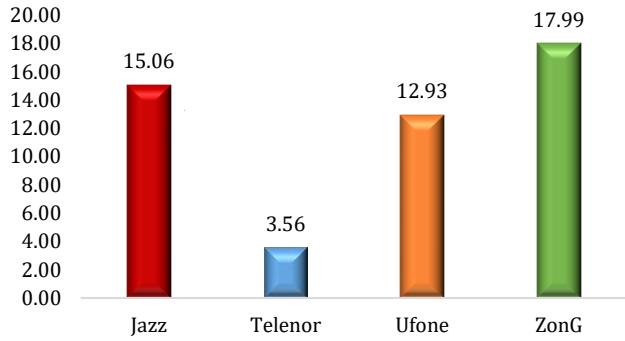


Latency (4G) < 75 ms

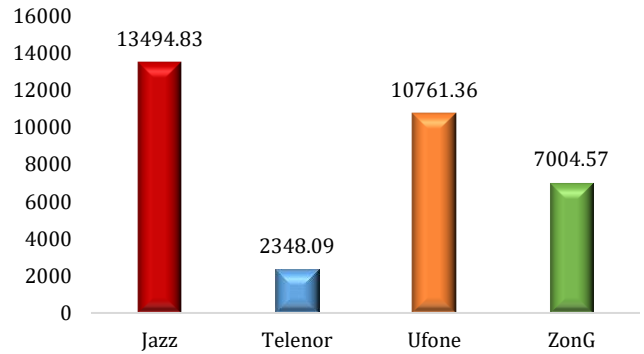


QUALITY OF SERVICE SURVEY RESULTS (4G) – TARANDA MUHMMAD PANNAH TO JALALPUR PIRWALA (N-115)

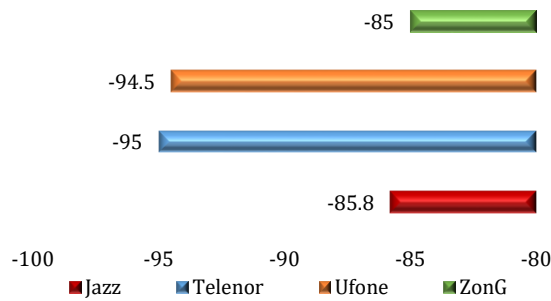
User Data Throughput Download (4G) > 3 Mbps



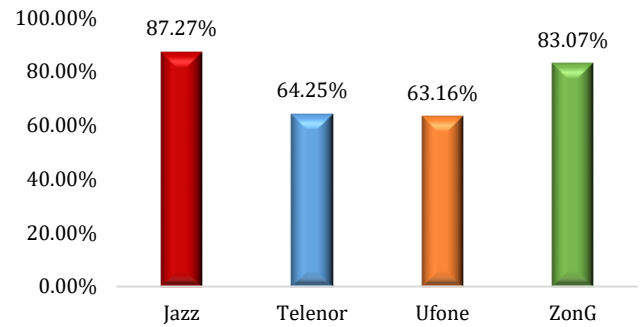
User Data Throughput Upload (4G) > 768 Kbps



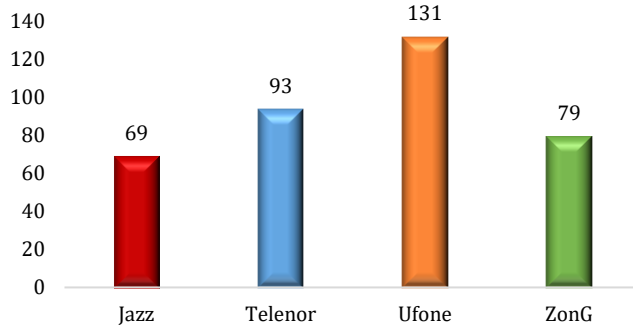
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

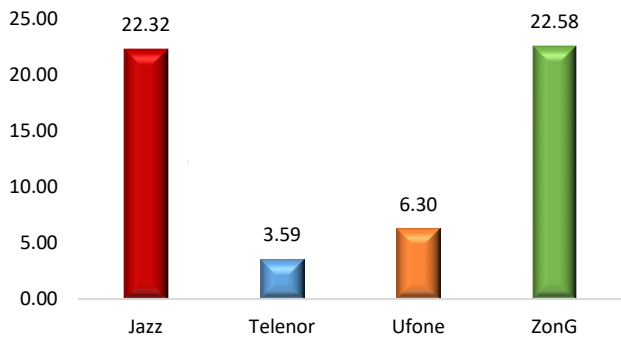


Latency (4G) < 75 ms

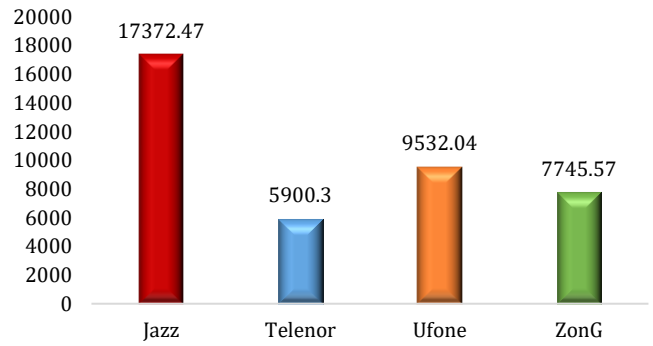


QUALITY OF SERVICE SURVEY RESULTS (4G) – PESHAWAR TO DG KHAN (N-55)

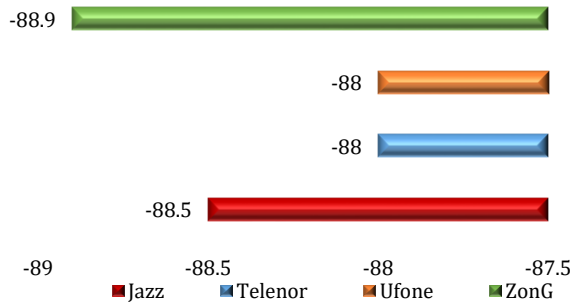
User Data Throughput Download (4G) > 3 Mbps



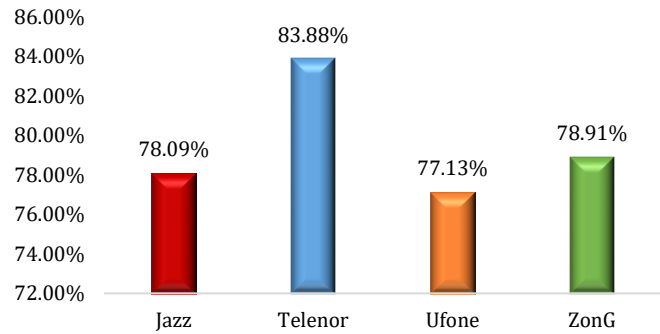
User Data Throughput Upload (4G) > 768 Kbps



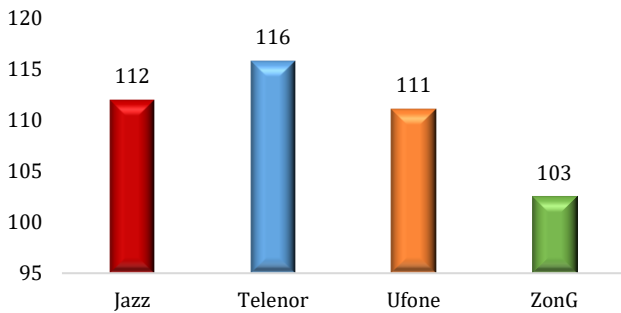
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

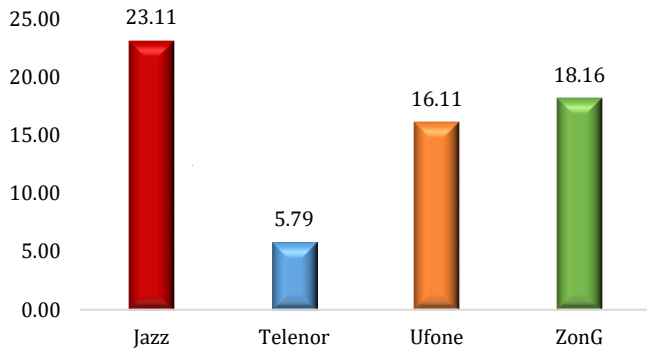


Latency (4G) < 75 ms

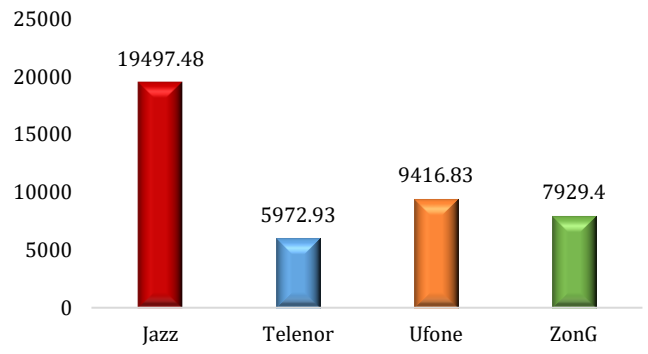


QUALITY OF SERVICE SURVEY RESULTS (4G) – KOT SABZAL TO MULTAN (N-5)

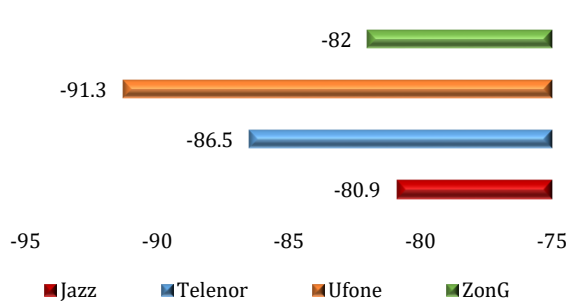
User Data Throughput Download (4G) > 3 Mbps



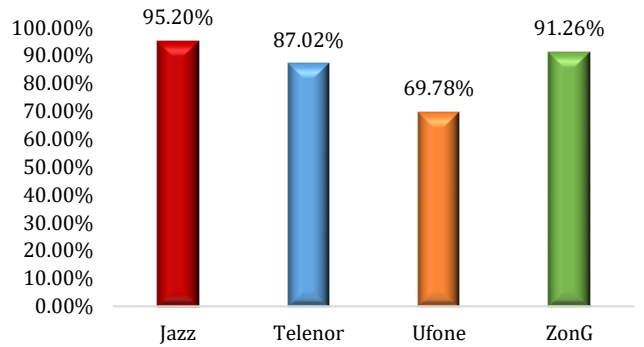
User Data Throughput Upload (4G) > 768 Kbps



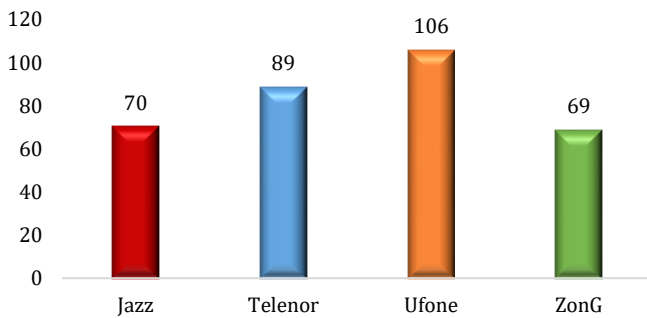
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

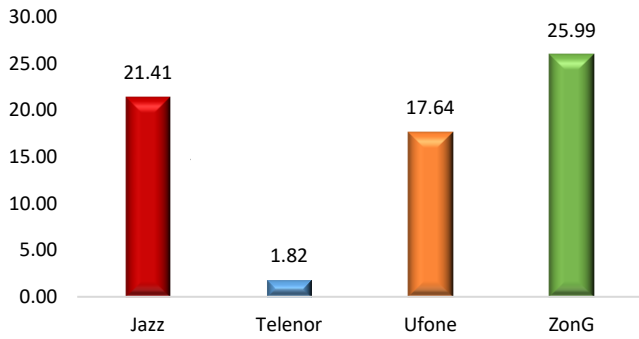


Latency (4G) <75 ms

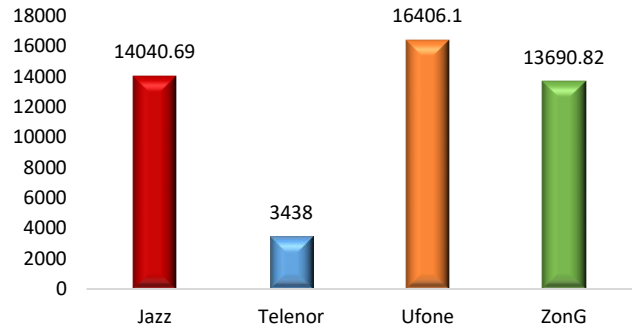


QUALITY OF SERVICE SURVEY RESULTS (4G) – CHAK DHARA TO BAHRAIN (N-95)

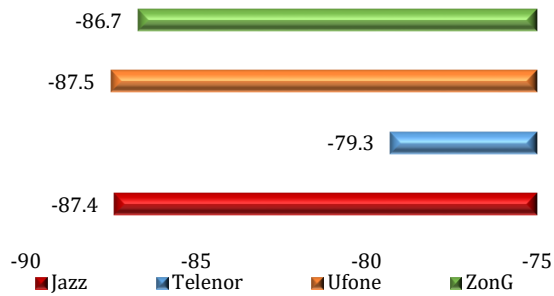
User Data Throughput Download (4G) > 3 Mbps



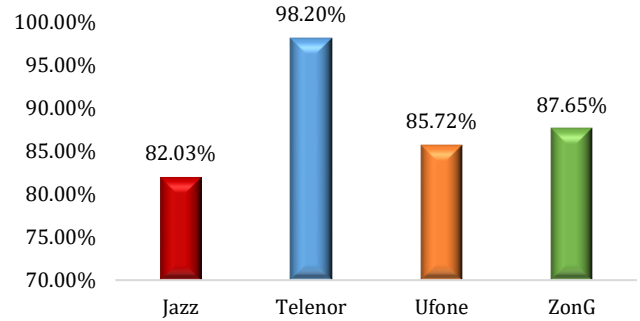
User Data Throughput Upload (4G) > 768 Kbps



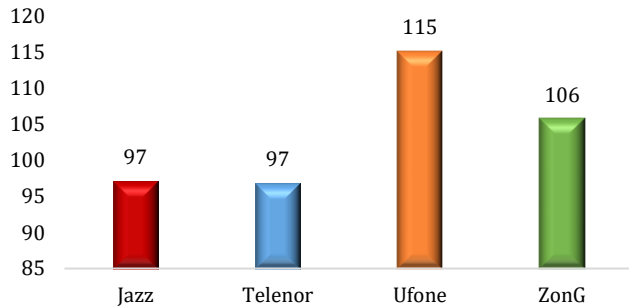
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidencel Level > 90%

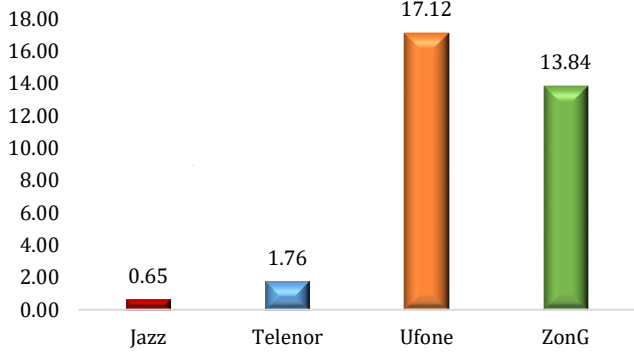


Latency (4G) < 75 ms

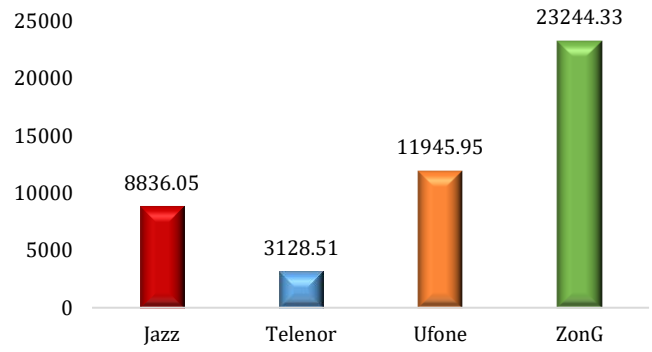


QUALITY OF SERVICE SURVEY RESULTS (4G) – KHAWAZKHEL TO BEHSAM (N-90)

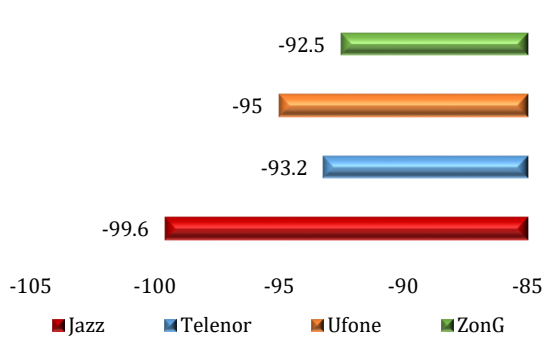
User Data Throughput Download (4G) > 3 Mbps



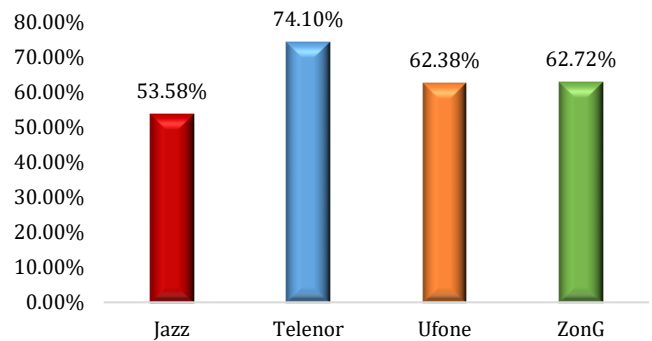
User Data Throughput Upload (4G) > 768 Kbps



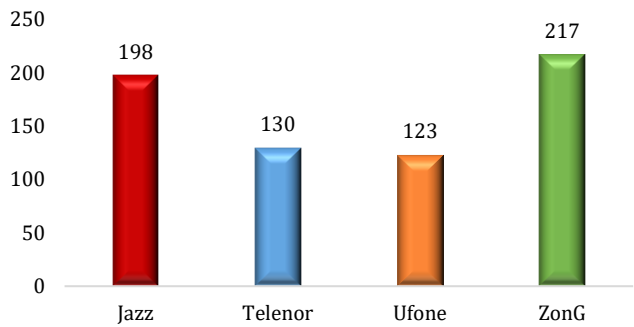
Signal Strength (RSRP) > -100dBm



Signal Strength (RSRP) Confidence Level > 90%



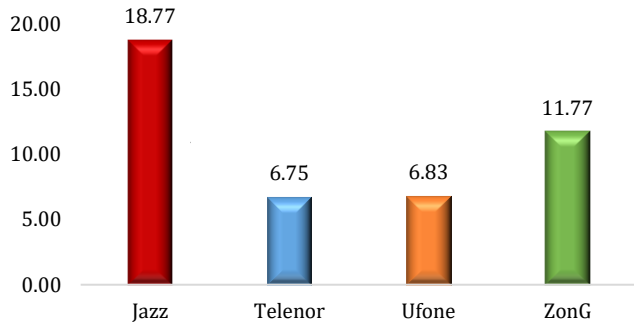
Latency (4G) < 75 ms



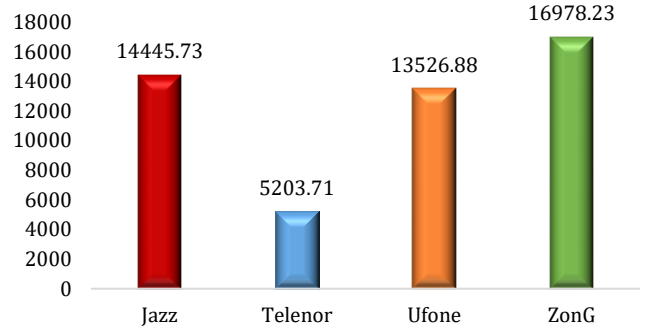
MOBILE BROADBAND AUTOMODE KPIs RESULT

QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – ZHOB TO QUETTA (N-50)

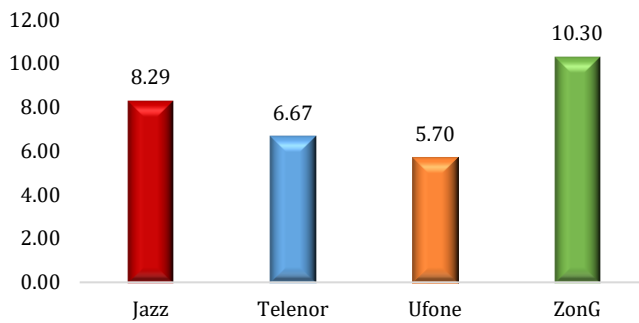
User Data Throughput Download - Fixed Duration > 3 Mbps



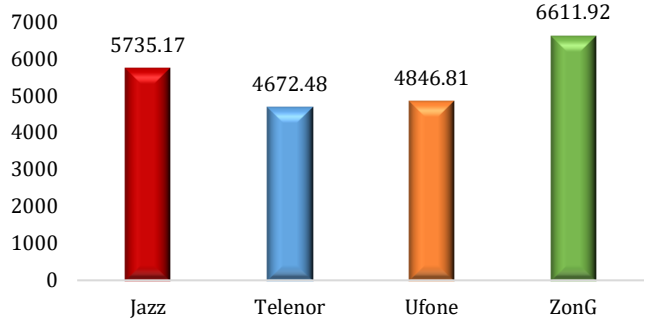
User Data Throughput Upload - Fixed Duration > 768 Kbps



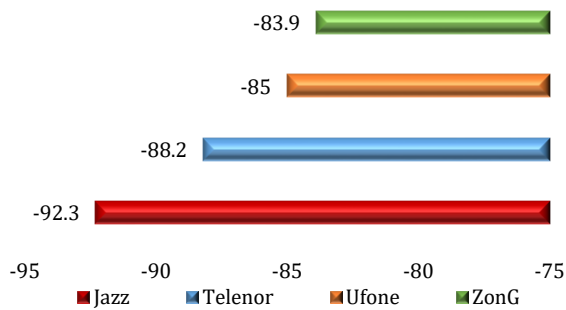
User Data Throughput Download - Fixed Size > 3 Mbps



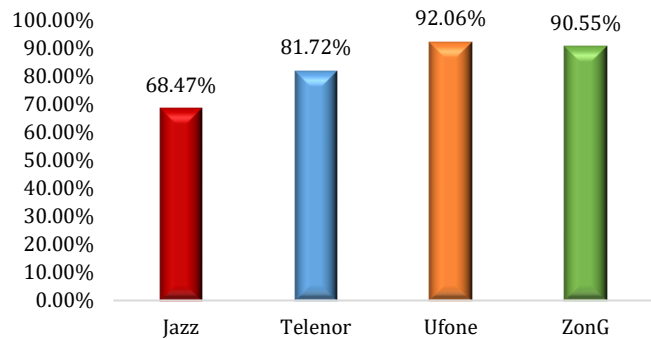
User Data Throughput Upload - Fixed Size > 768Kbps



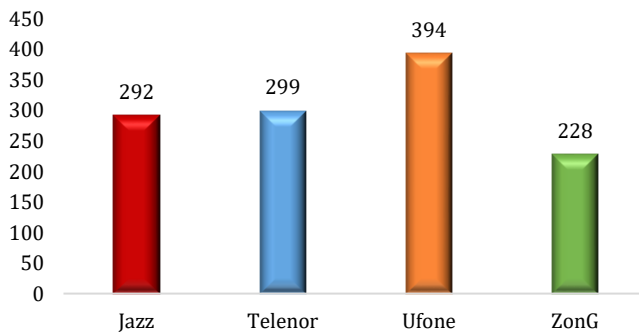
Signal Strength (RSRP) > -100dBm



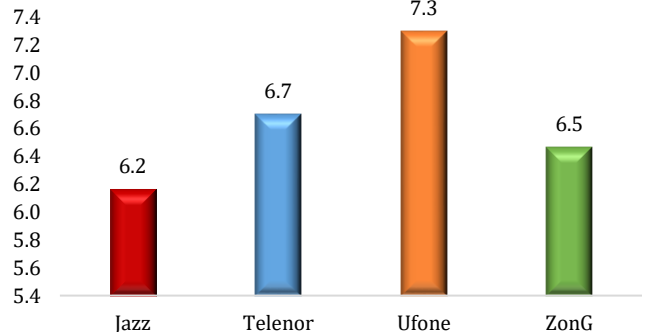
Signal Strength (RSRP) Confidencel Level > 90%



Latency < 75 ms

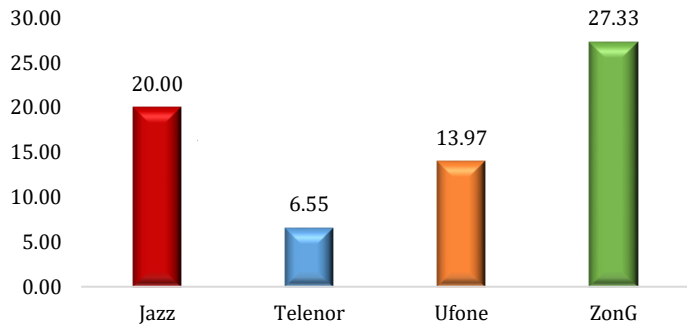


Webpage Loading Time < 5 Seconds

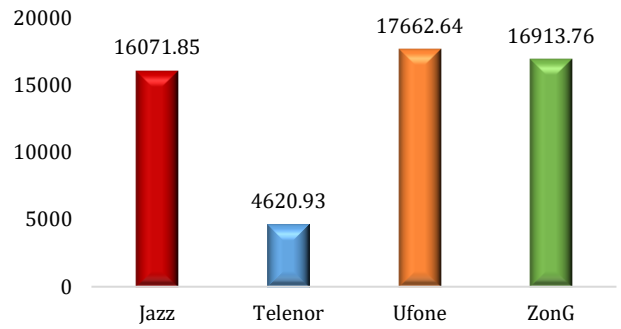


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – QUETTA TO ZHOB (N-50)

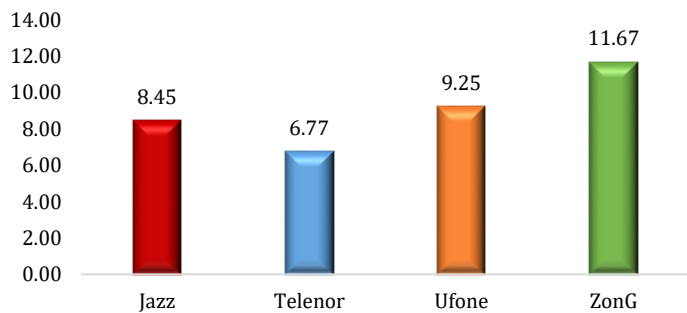
User Data Throughput Download - Fixed Duration > 3 Mbps



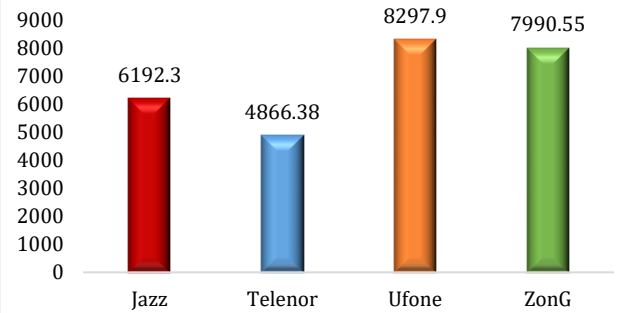
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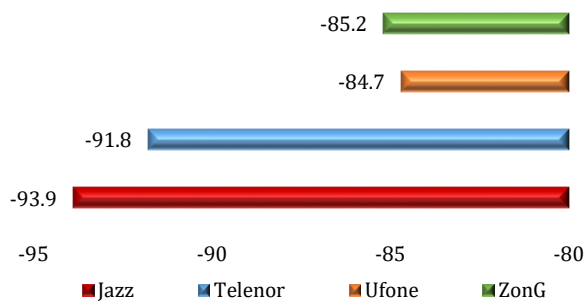
User Data Throughput Download - Fixed Size > 3 Mbps



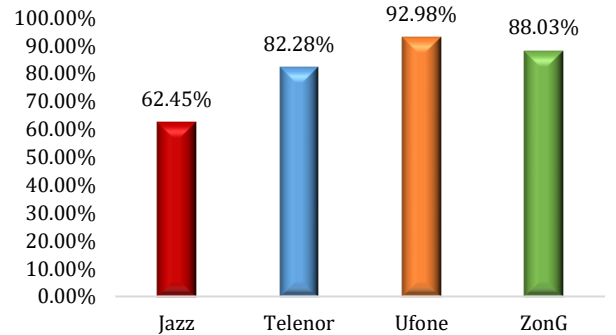
User Data Throughput Upload - Fixed Size > 768 Kbps



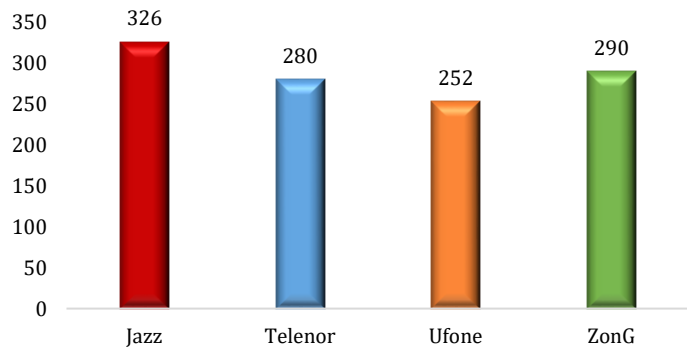
Signal Strength (RSRP) > -100dBm



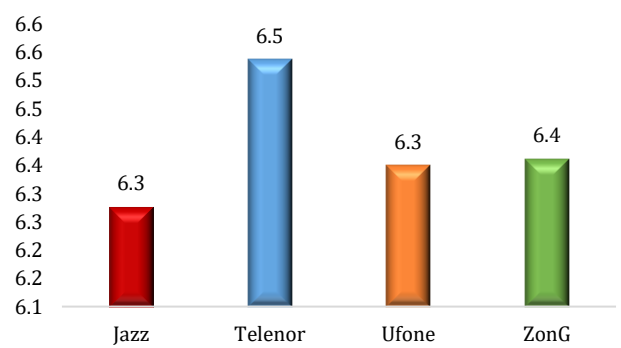
Signal Strength (RSRP) Confidencel Level > 90%



Latency <75 ms



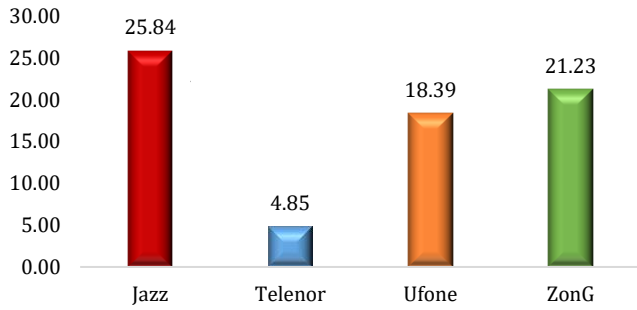
Webpage Loading Time < 5 Seconds



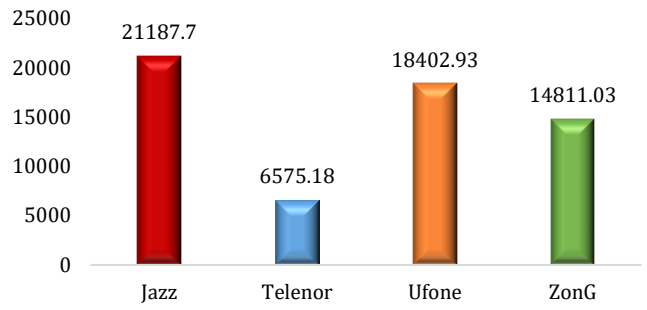
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – LAHORE TO SARGODHA

(N-60)

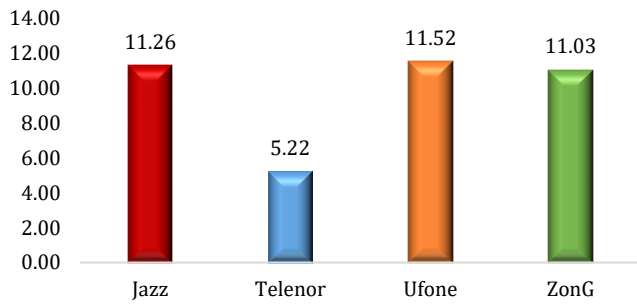
User Data Throughput Download - Fixed Duration > 3 Mbps



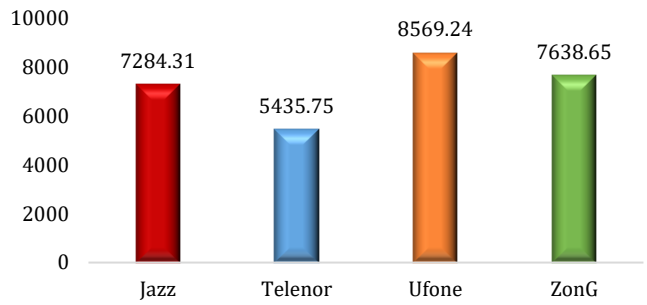
User Data Throughput Upload - Fixed Duration >768 Kbps



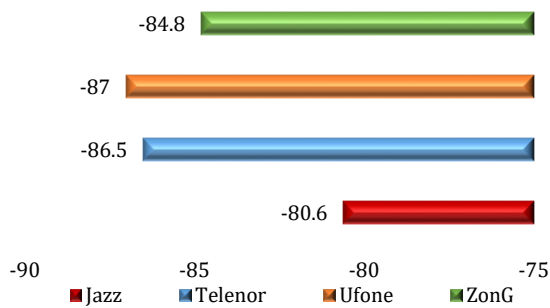
User Data Throughput Download - Fixed Size > 3 Mbps



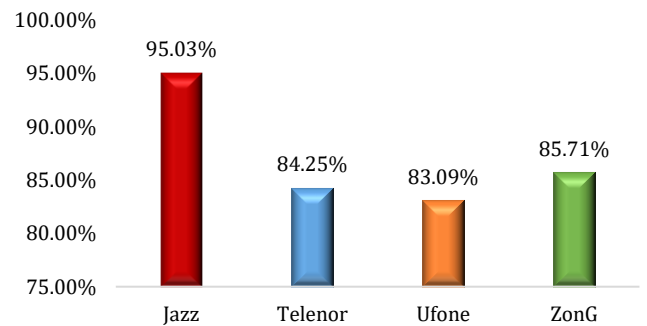
User Data Throughput Upload - Fixed Size > 768 Kbps



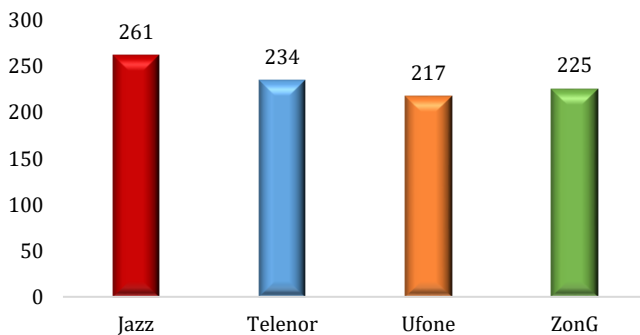
Signal Strength (RSRP) > -100dBm



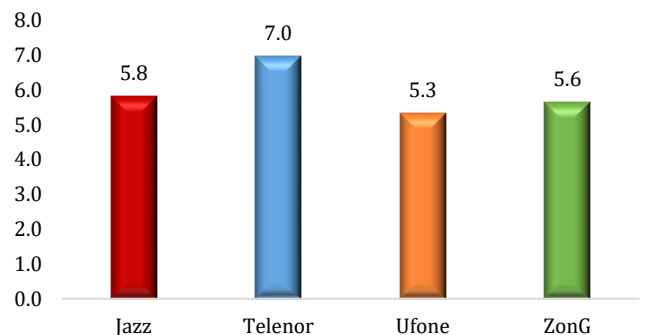
Signal Strength (RSRP) Confidencel Level > 90%



Latency <75 ms

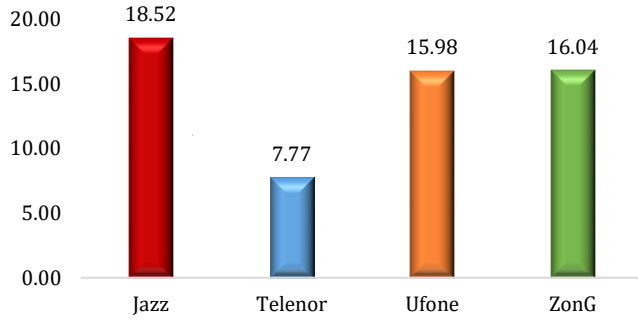


Webpage Loading Time < 5 Seconds

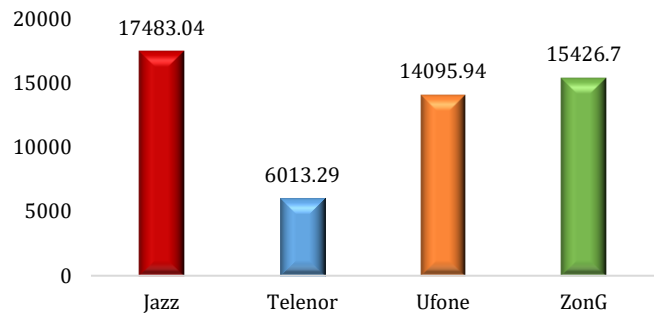


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – LAHORE TO MULTAN (N-5)

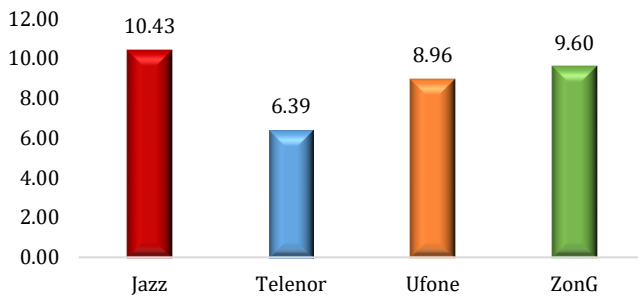
User Data Throughput Download - Fixed Duration > 3 Mbps



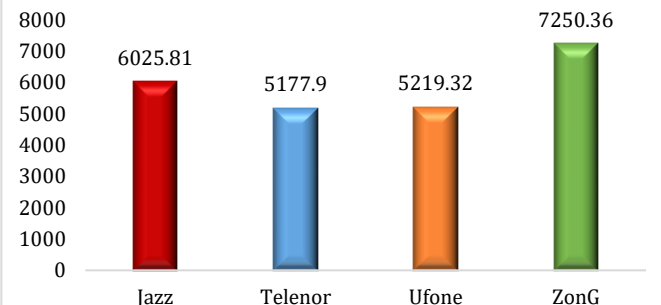
User Data Throughput Upload - Fixed Duration > 768 Kbps



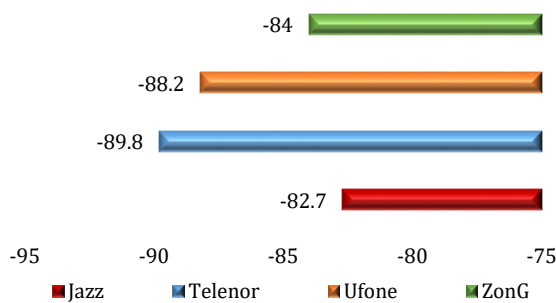
User Data Throughput Download - Fixed Size > 3 Mbps



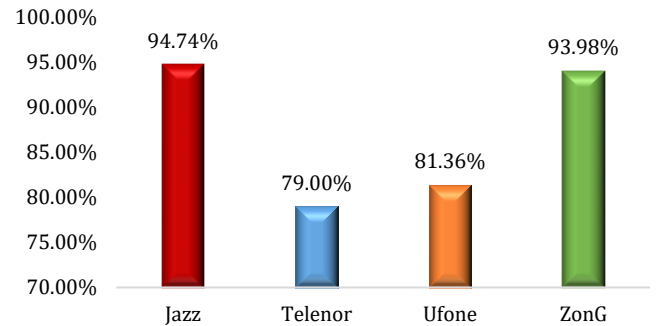
User Data Throughput Upload - Fixed Size > 768 Kbps



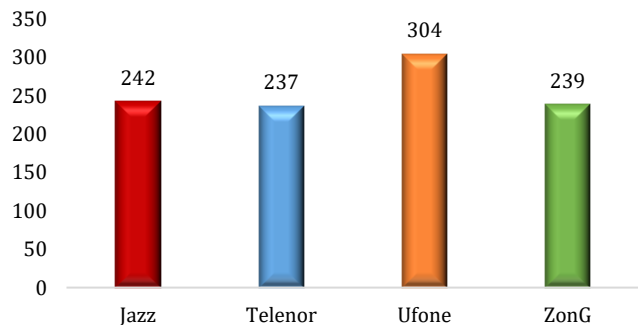
Signal Strength (RSRP) > -100dBm



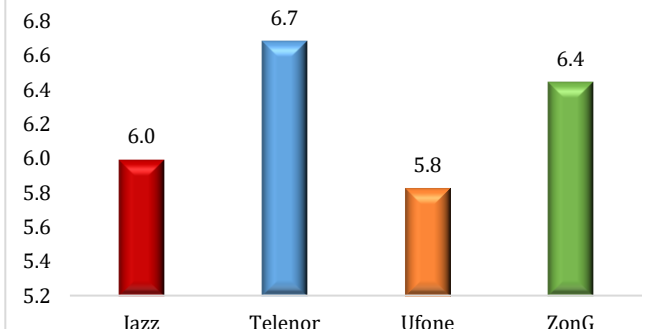
Signal Strength (RSRP) Confidencel Level > 90%



Latency < 75 ms

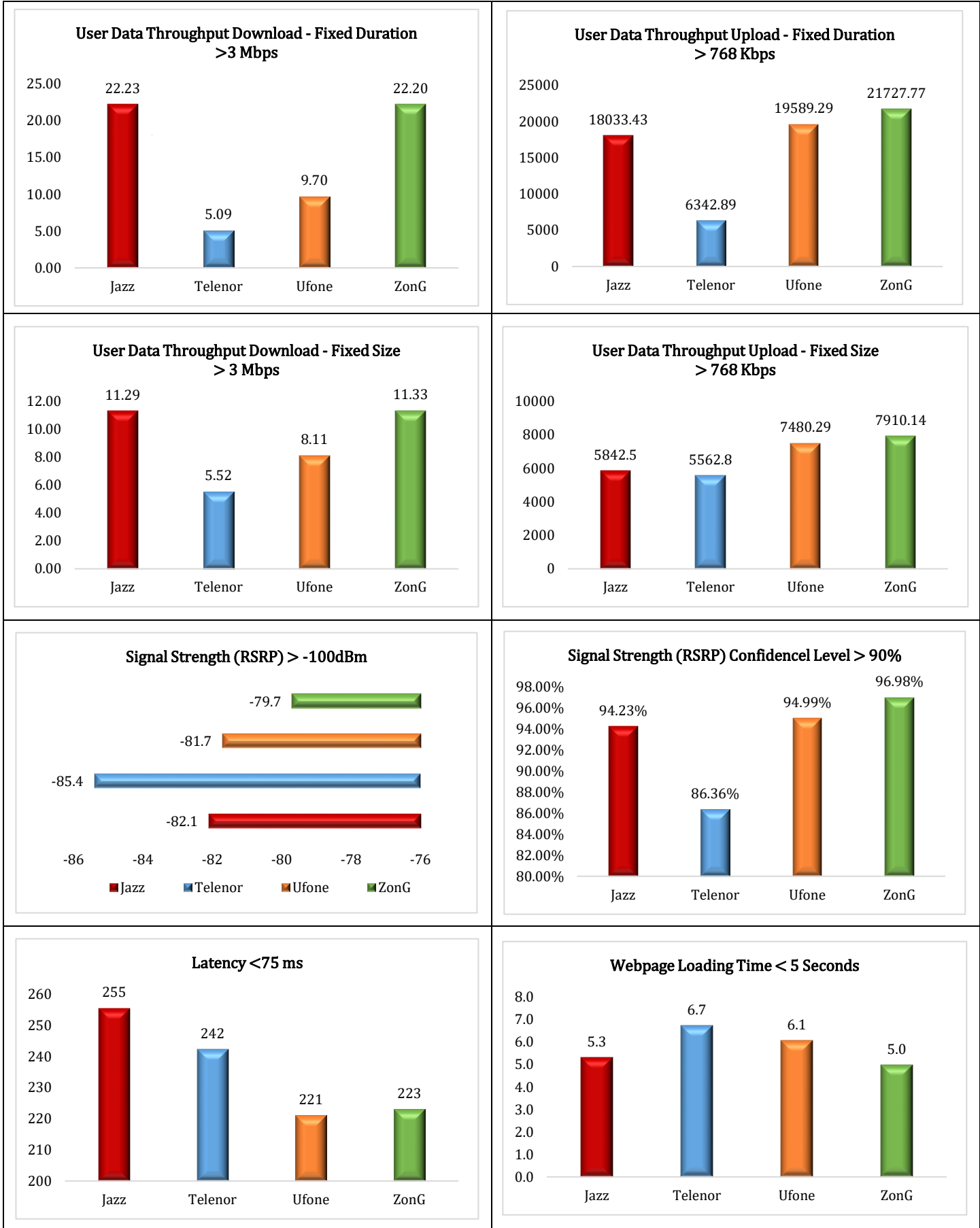


Webpage Loading Time < 5 Seconds



QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) - LAHORE TO RAWALPINDI

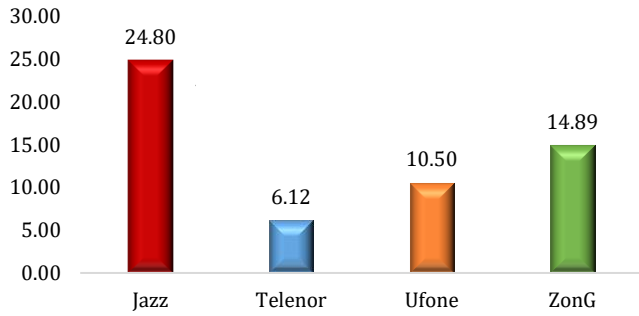
(N-5)



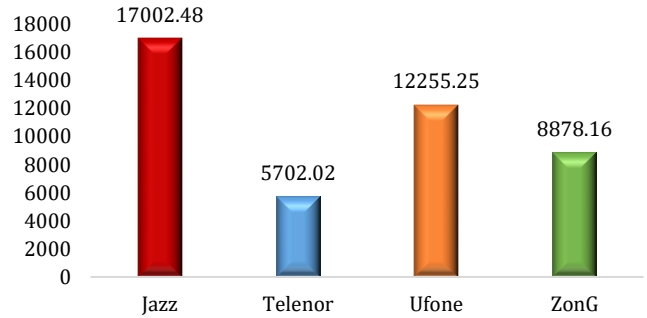
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – ISLAMABAD TO D.I KHAN

(M-14)

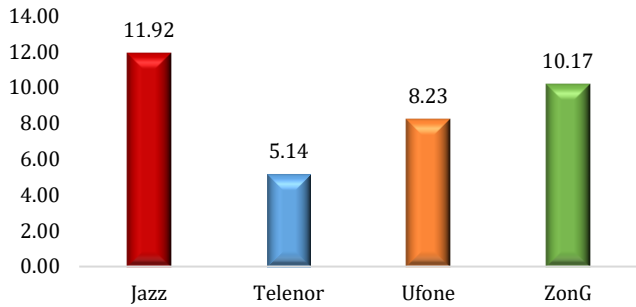
User Data Throughput Download - Fixed Duration > 3 Mbps



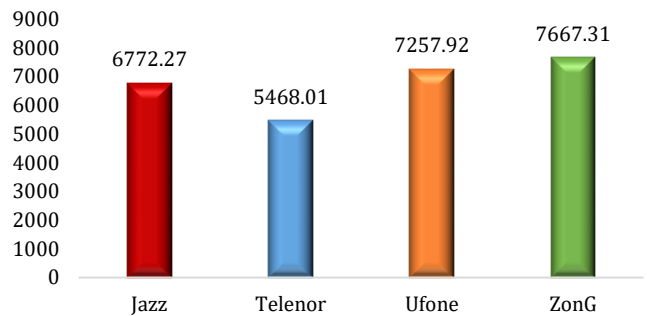
User Data Throughput Upload - Fixed Duration > 768 Kbps



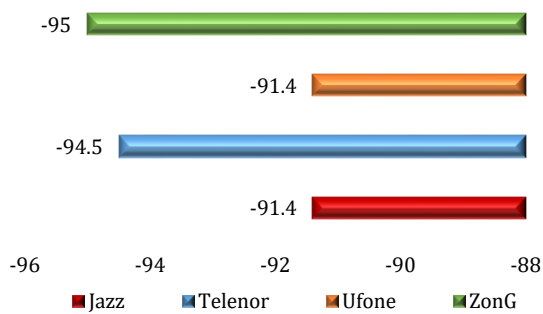
User Data Throughput Download - Fixed Size > 3 Mbps



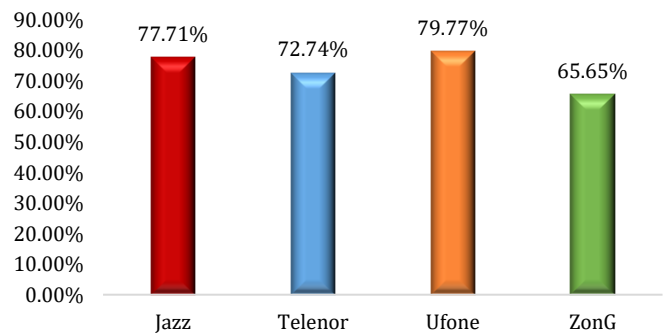
User Data Throughput Upload - Fixed Size > 768Kbps



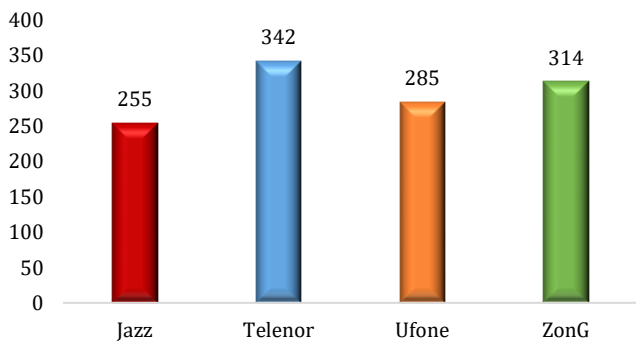
Signal Strength (RSRP) > -100dBm



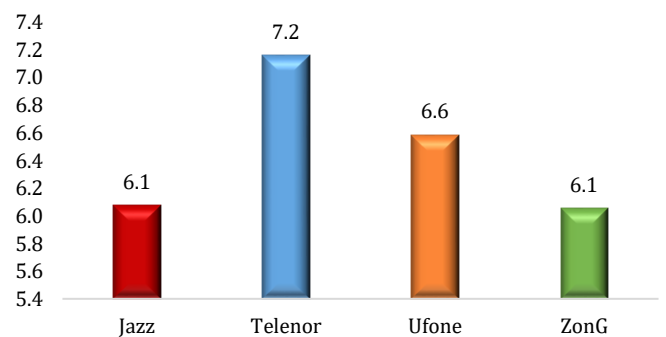
Signal Strength (RSRP) Confidencel Level > 90%



Latency < 75 ms

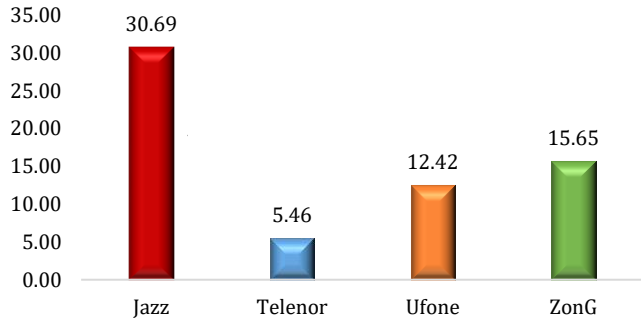


Webpage Loading Time < 5 Seconds

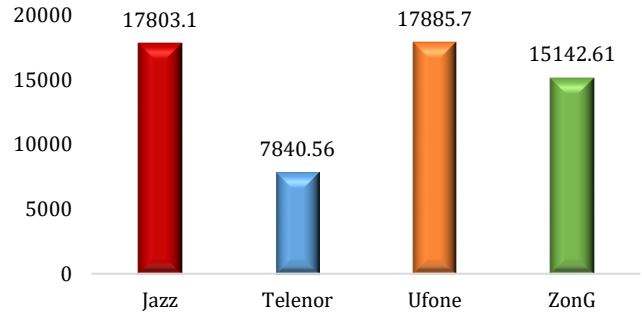


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – ISLAMABAD TO KOHAT (N-80)

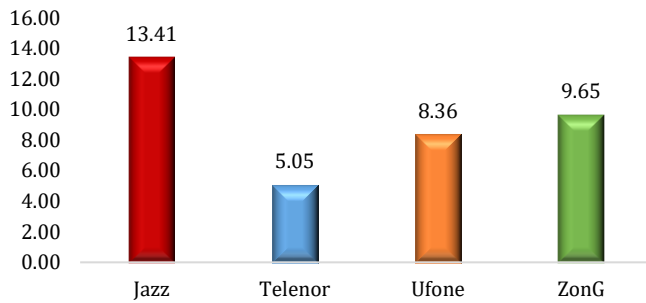
User Data Throughput Download - Fixed Duration > 3 Mbps



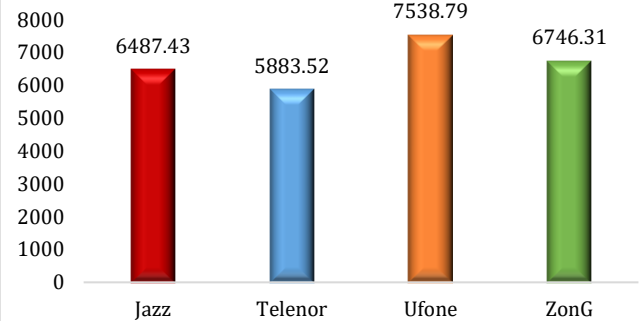
User Data Throughput Upload - Fixed Duration >768 Kbps



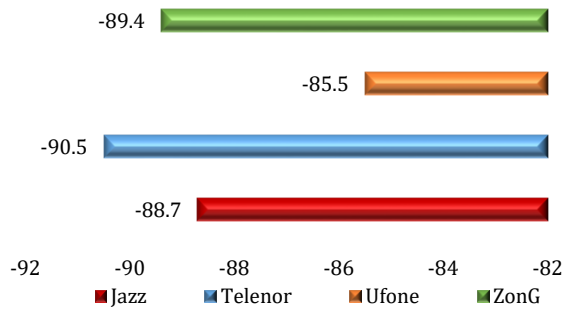
User Data Throughput Download - Fixed Size > 3 Mbps



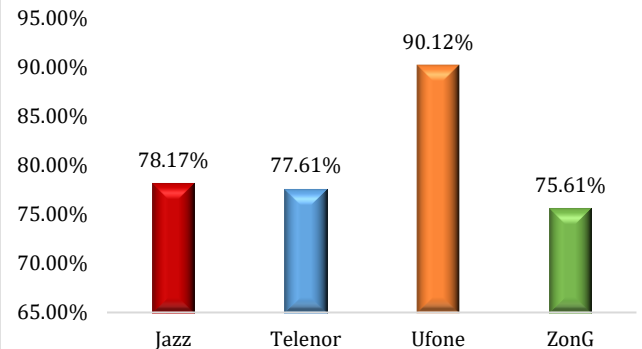
User Data Throughput Upload - Fixed Size > 768 Kbps



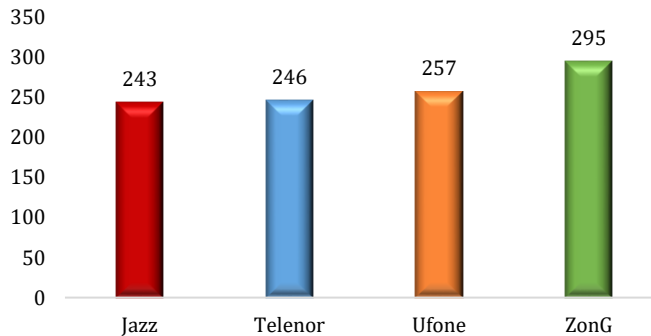
Signal Strength (RSRP) > -100dBm



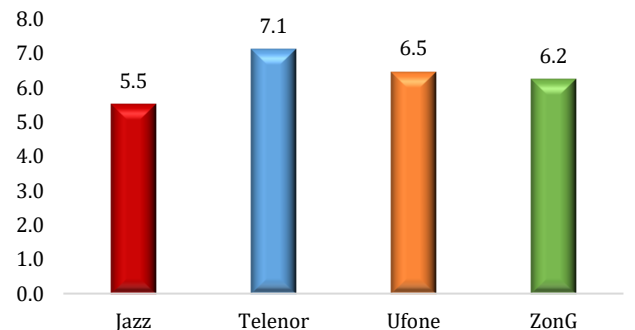
Signal Strength (RSRP) Confidencel Level > 90%



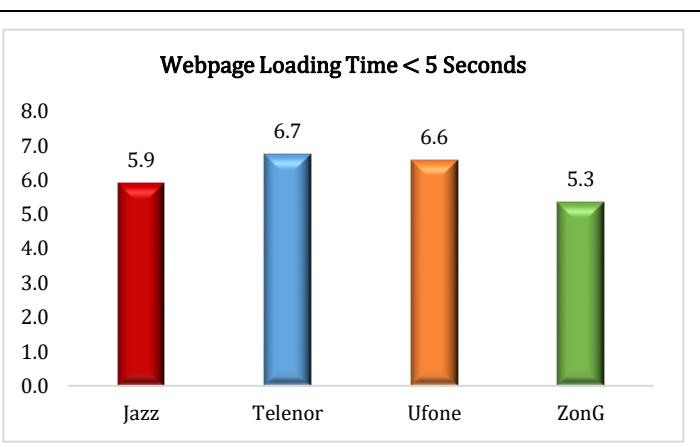
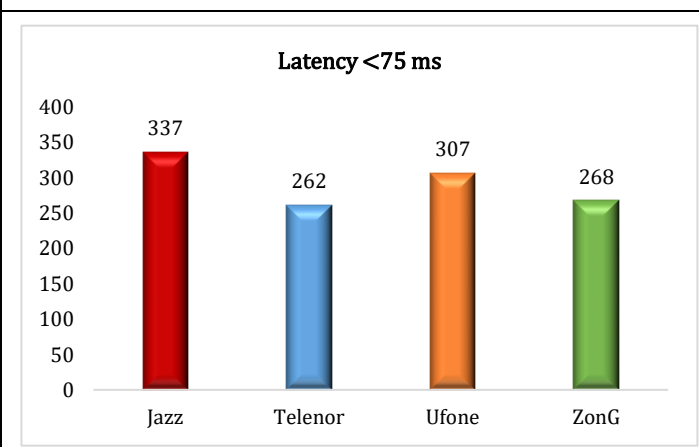
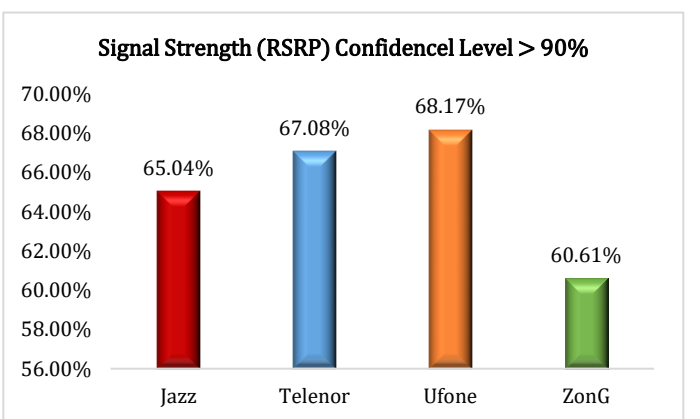
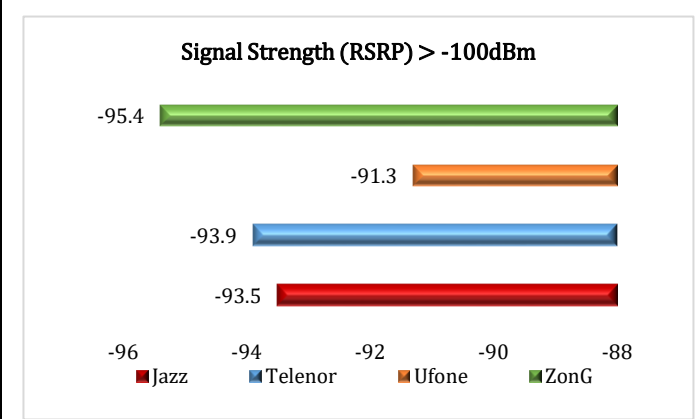
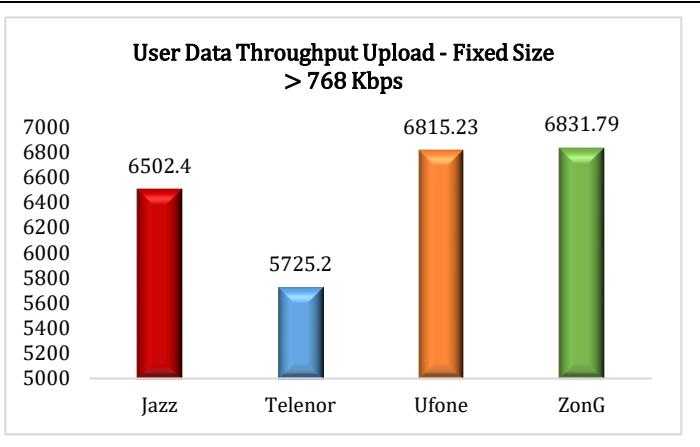
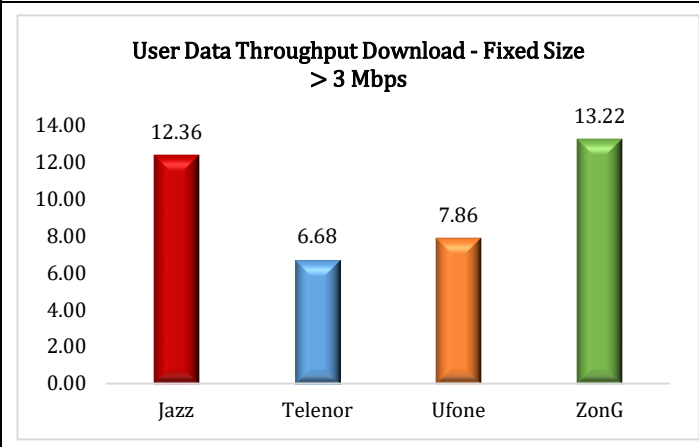
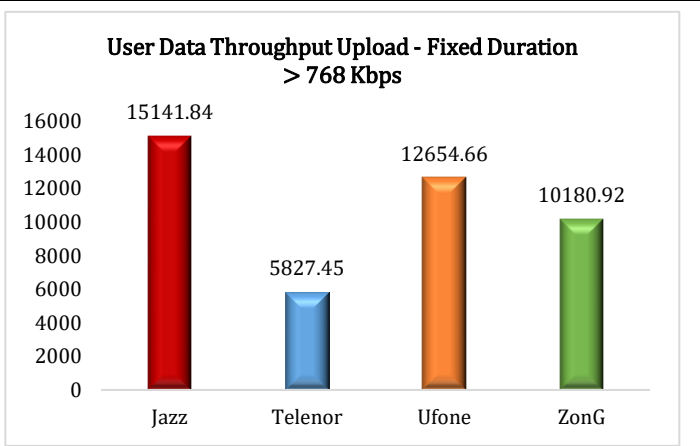
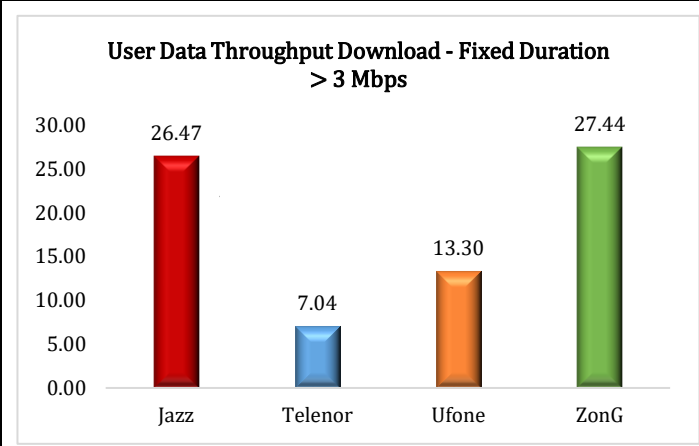
Latency <75 ms



Webpage Loading Time < 5 Seconds



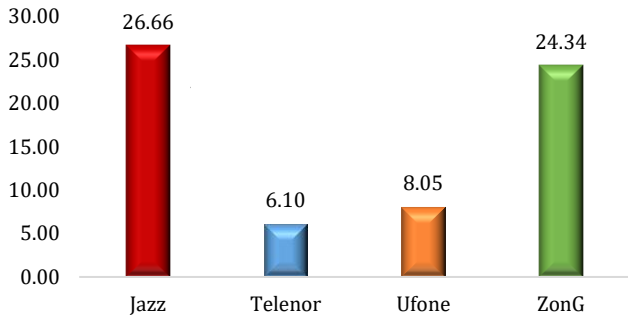
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – MIANWALI TO BHAKKAR (N-130)



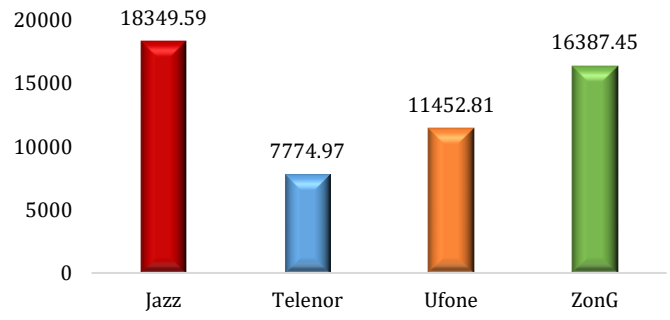
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – PESHAWAR TO DG KHAN

(N-55)

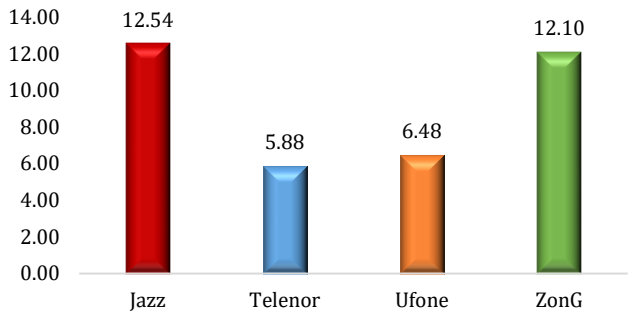
User Data Throughput Download - Fixed Duration > 3 Mbps



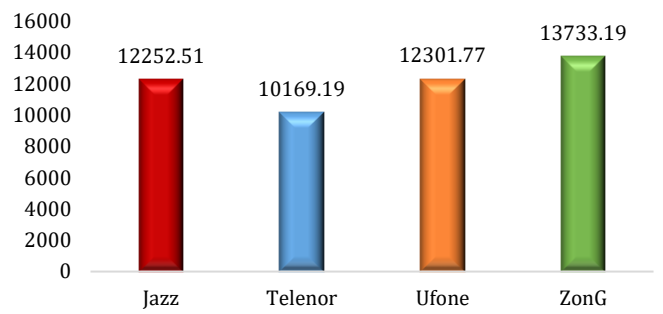
User Data Throughput Upload - Fixed Duration > 768 Kbps



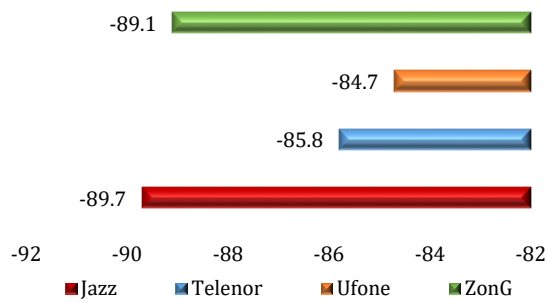
User Data Throughput Download - Fixed Size > 3 Mbps



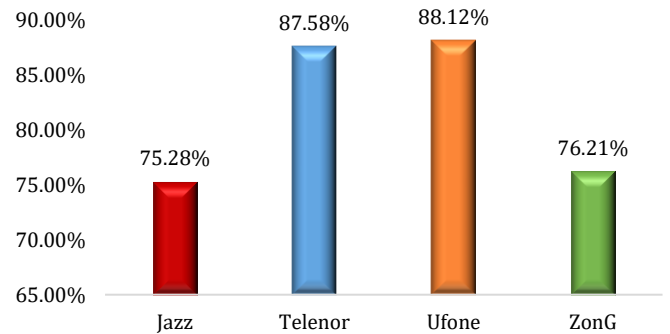
User Data Throughput Upload - Fixed Size > 768 Kbps



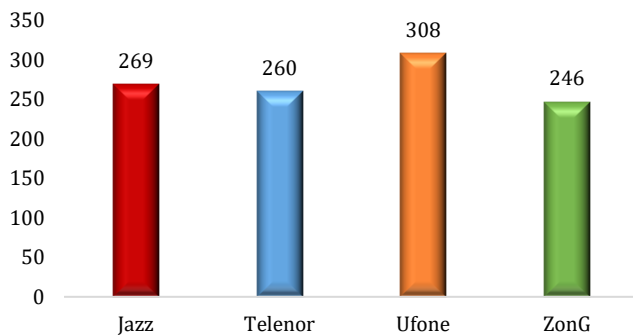
Signal Strength (RSRP) > -100dBm



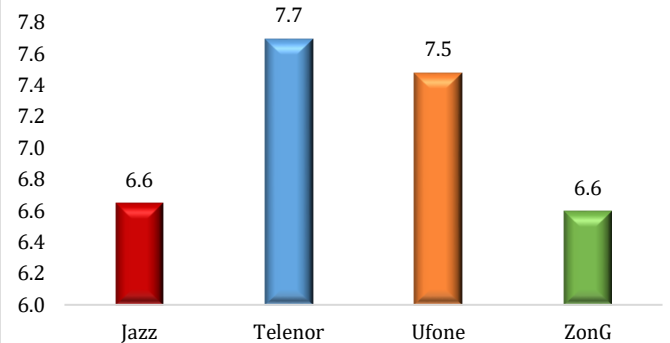
Signal Strength (RSRP) Confidencel Level > 90%



Latency < 75 ms



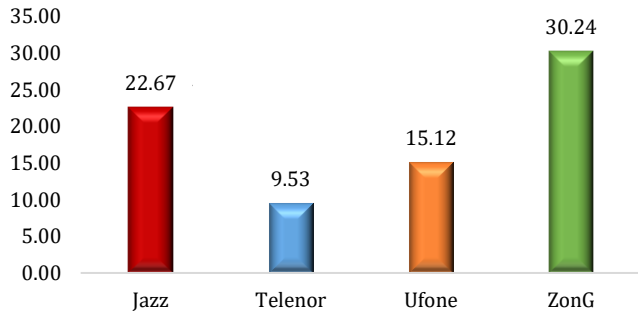
Webpage Loading Time < 5 Seconds



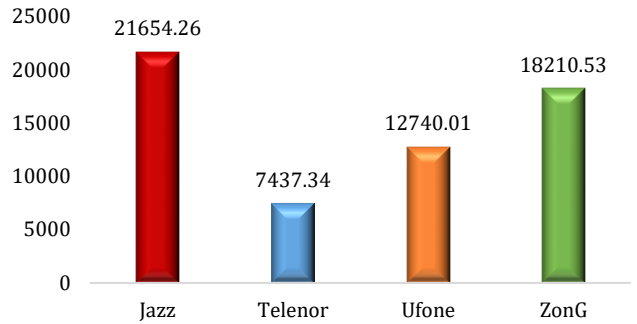
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – KOT SABZAL TO MULTAN

(N-5)

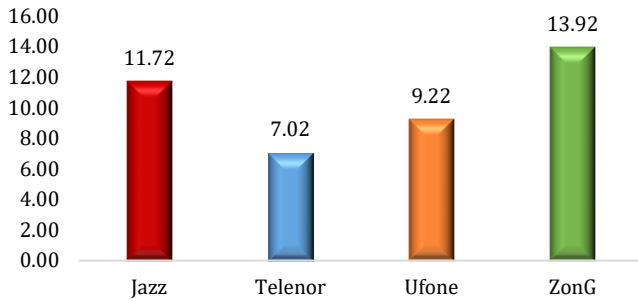
User Data Throughput Download - Fixed Duration > 3 Mbps



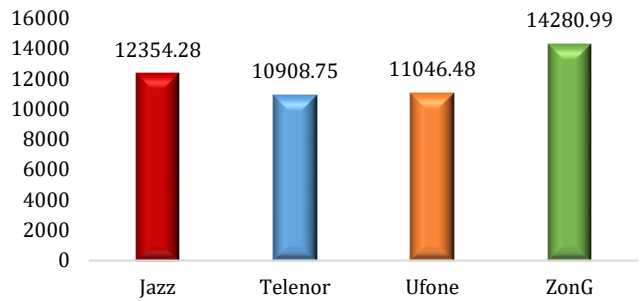
User Data Throughput Upload - Fixed Duration >768 Kbps



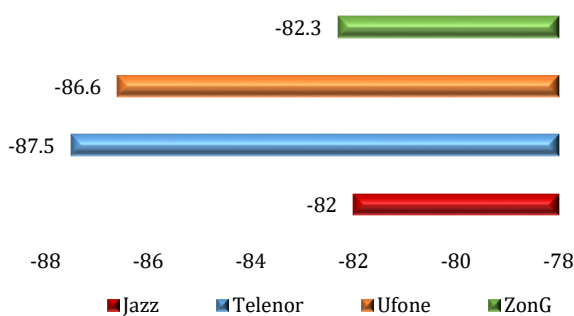
User Data Throughput Download - Fixed Size > 3 Mbps



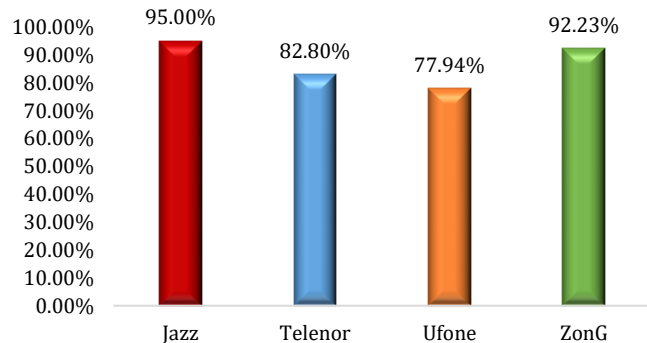
User Data Throughput Upload - Fixed Size >768 Kbps



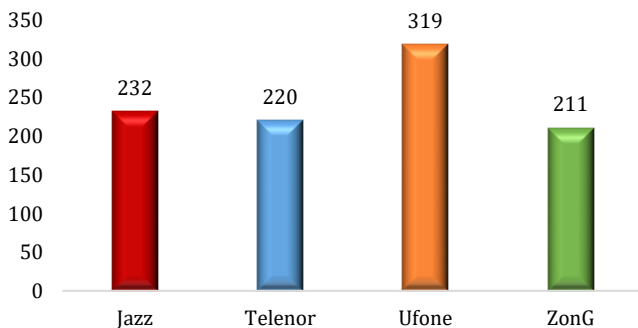
Signal Strength (RSRP) > -100dBm



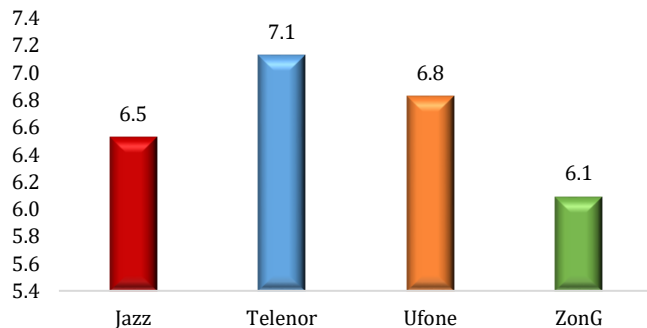
Signal Strength (RSRP) Confidencel Level > 90%



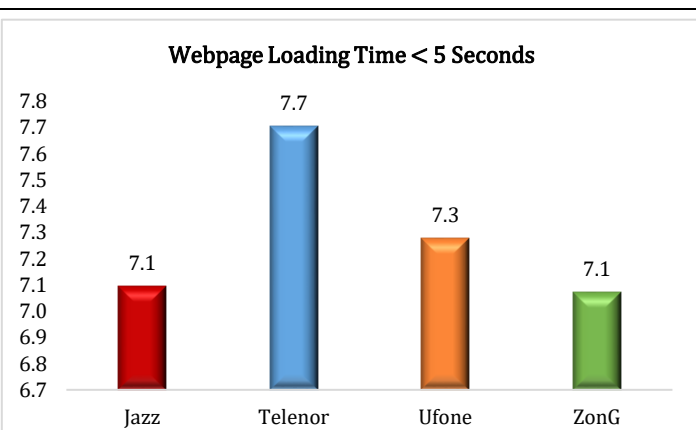
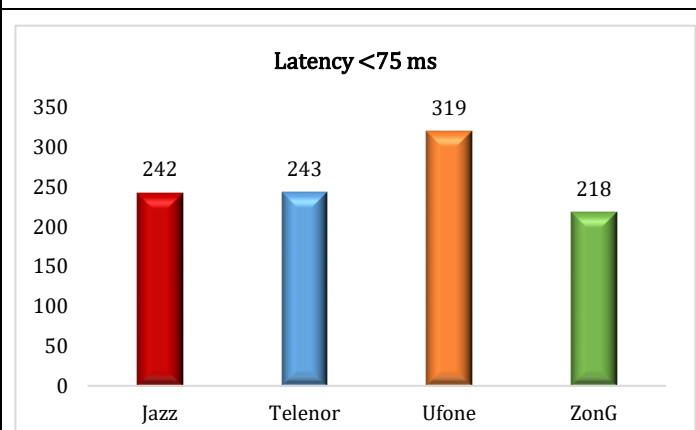
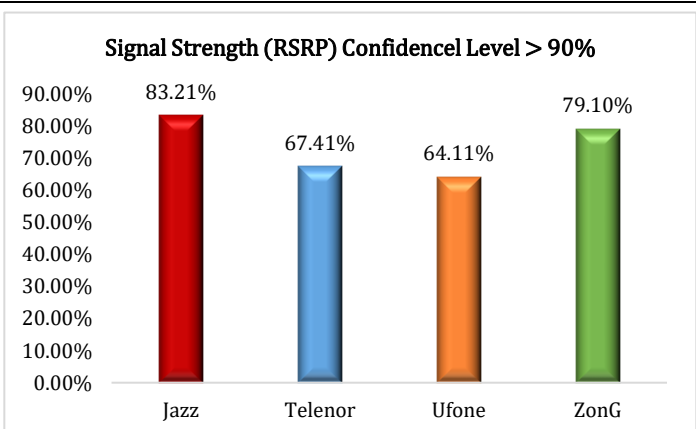
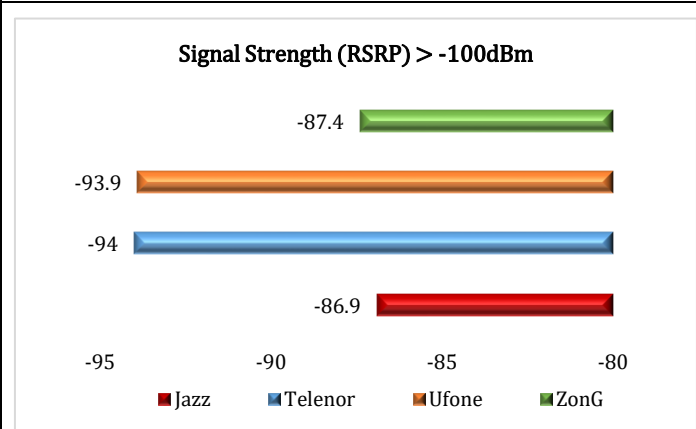
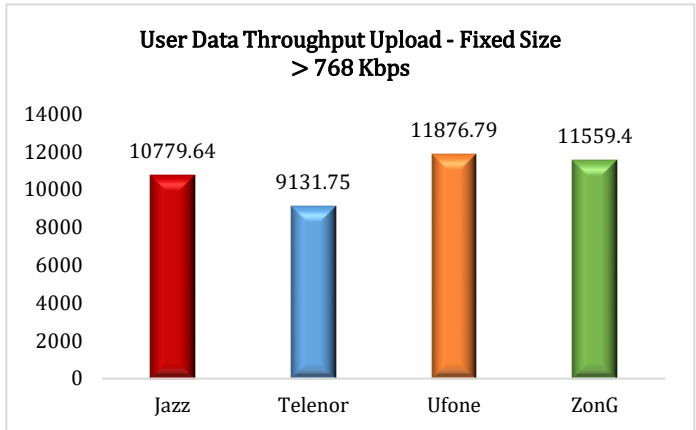
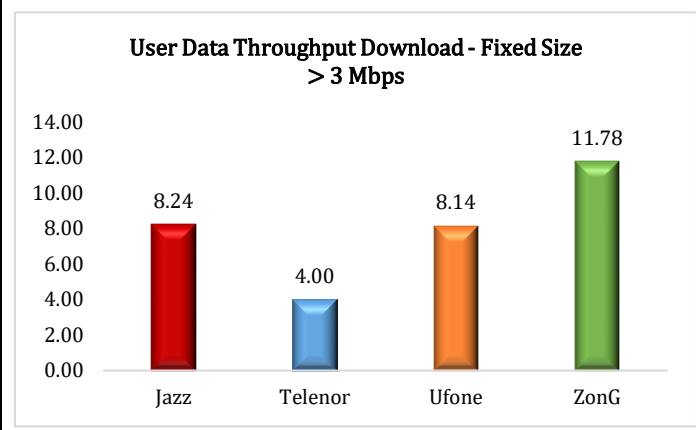
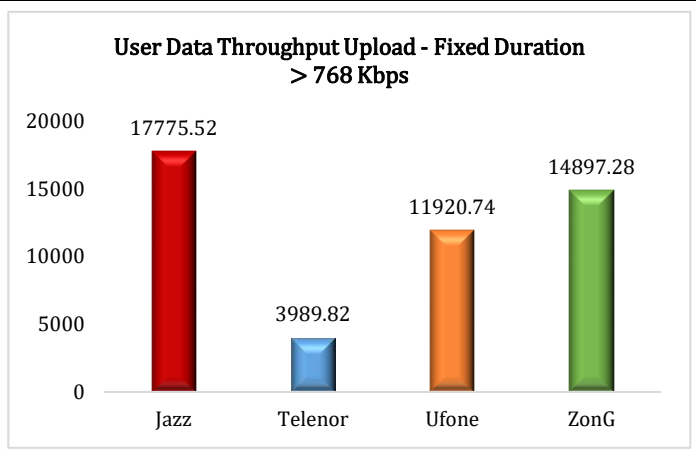
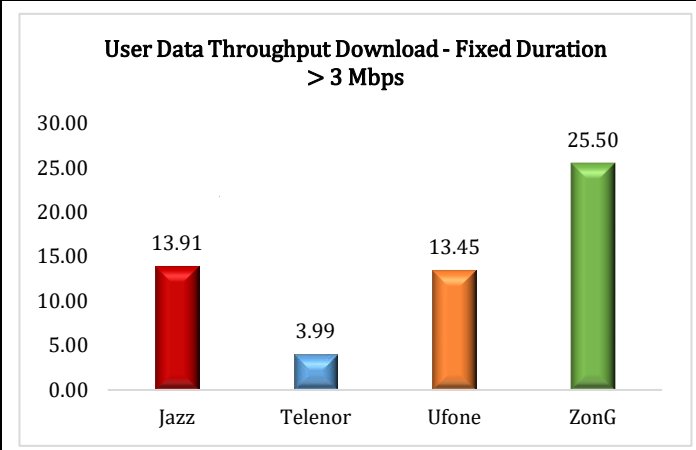
Latency <75 ms



Webpage Loading Time < 5 Seconds

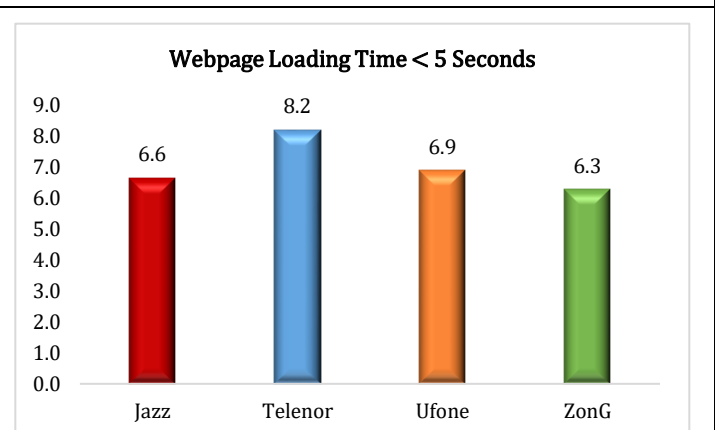
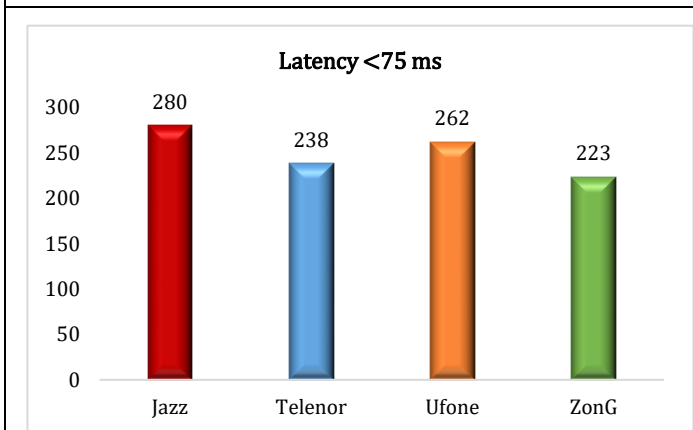
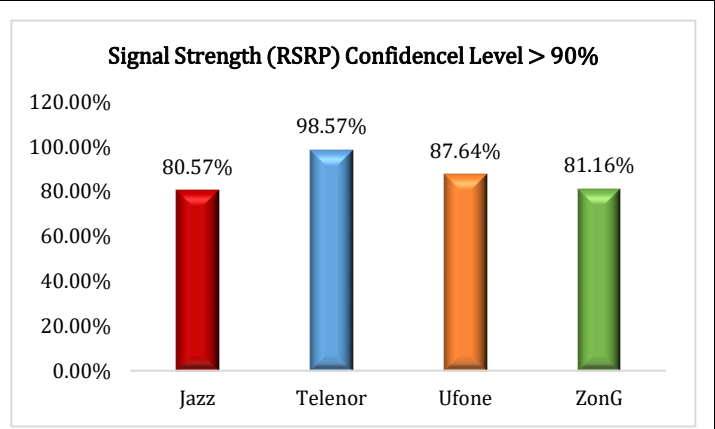
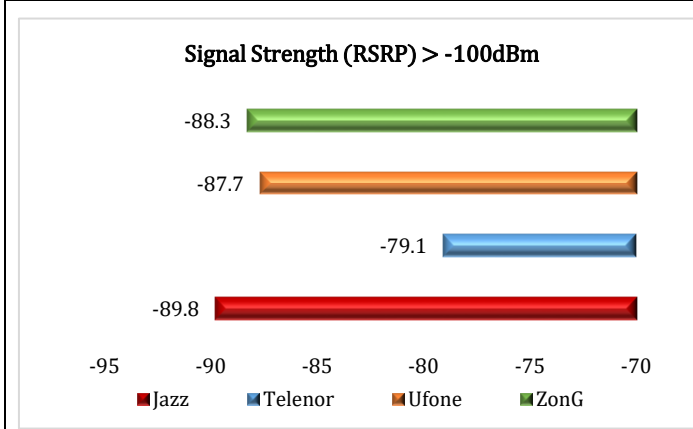
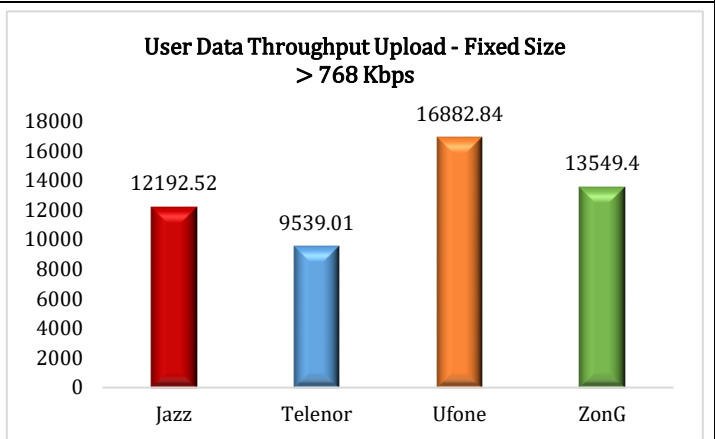
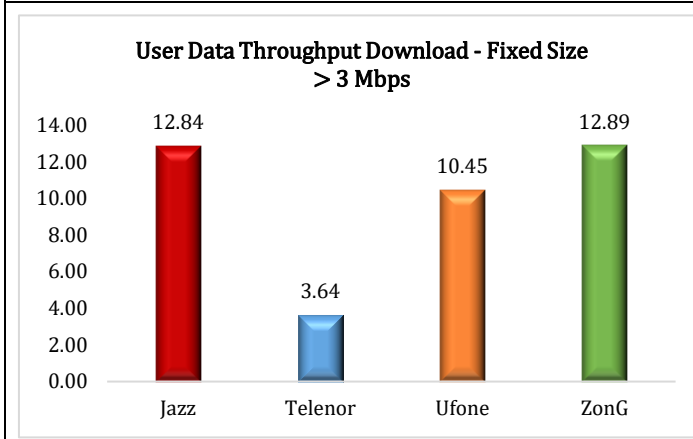
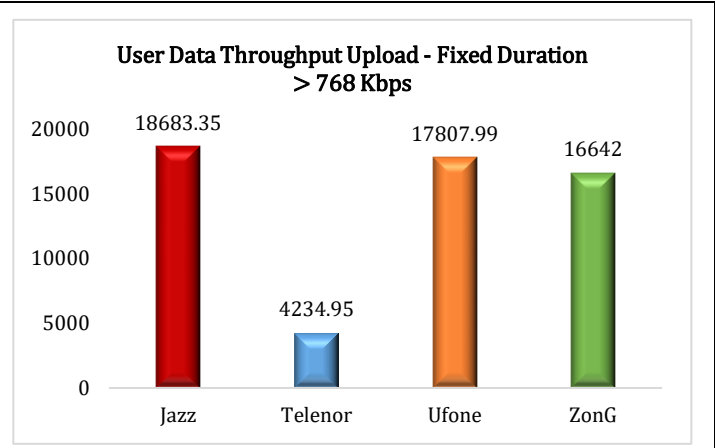
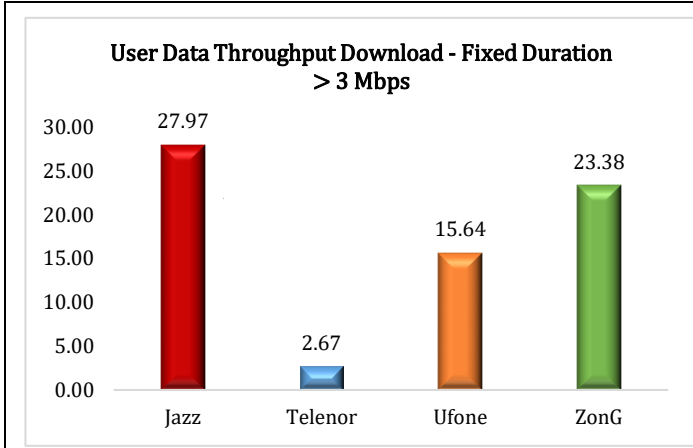


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – TARRANDA MUHAMMAD PANAH TO JALALPUR PIRWALA (N-115)



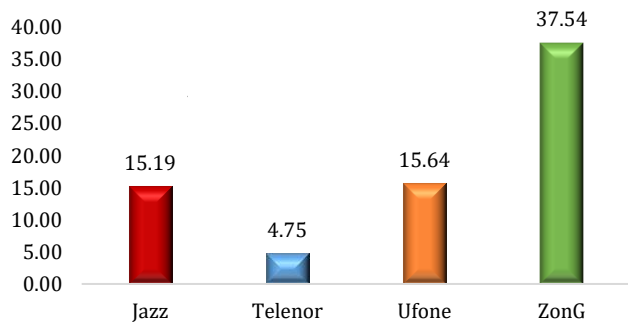
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – CHAK DHARA TO BAHRAIN

(N-95)

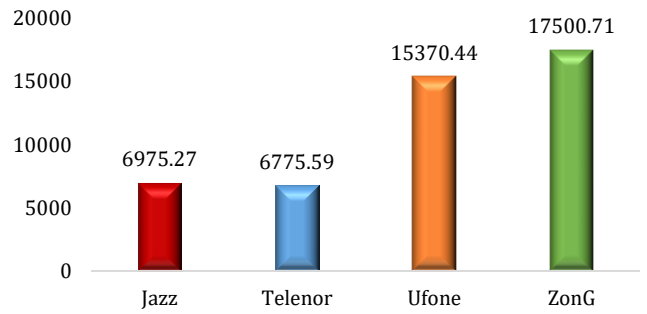


QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – KHAWAZKHEL BESHAM (N-90)

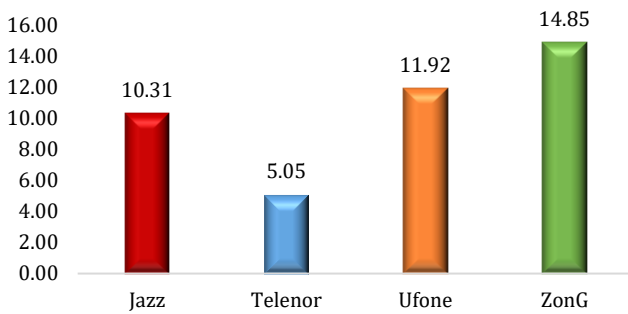
**User Data Throughput Download - Fixed Duration
> 3 Mbps**



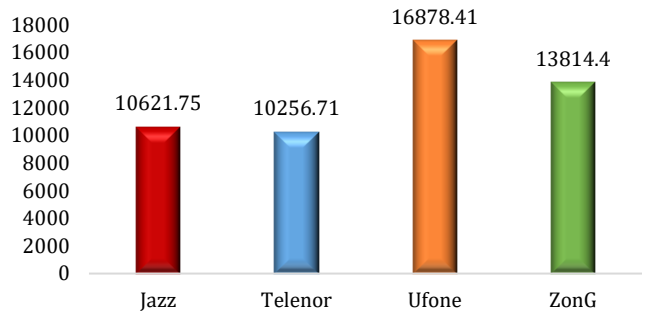
**User Data Throughput Upload - Fixed Duration
> 768 Kbps**



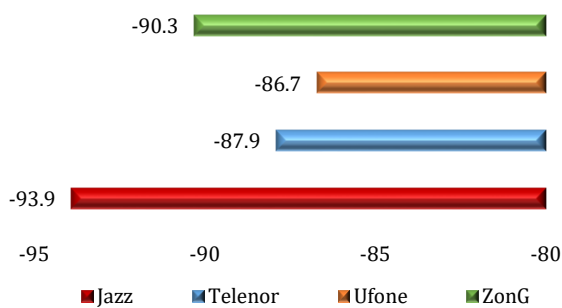
**User Data Throughput Download - Fixed Size
> 3 Mbps**



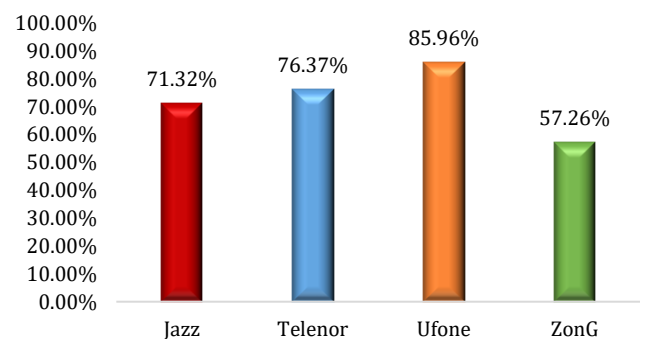
**User Data Throughput Upload - Fixed Size
> 768 Kbps**



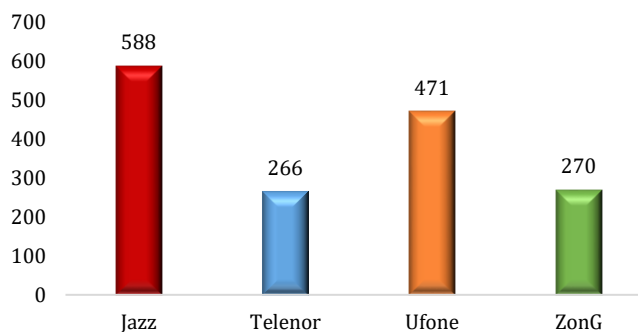
Signal Strength (RSRP) > -100dBm



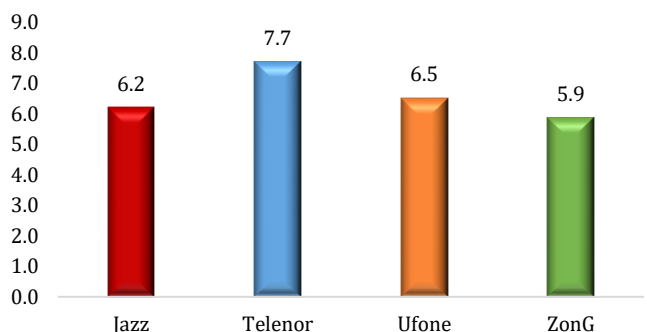
Signal Strength (RSRP) Confidencel Level > 90%



Latency <75 ms



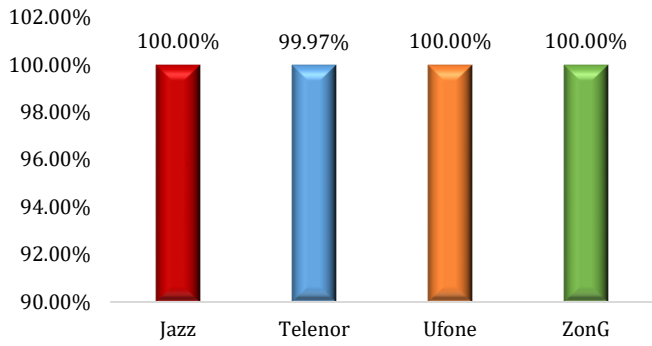
Webpage Loading Time < 5 Seconds



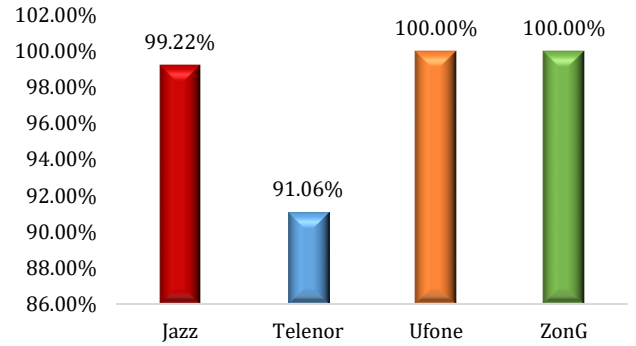
VOICE & SMS RESULT

QUALITY OF SERVICE SURVEY RESULTS – CHAK DHARA TO BAHRAIN (N-95)

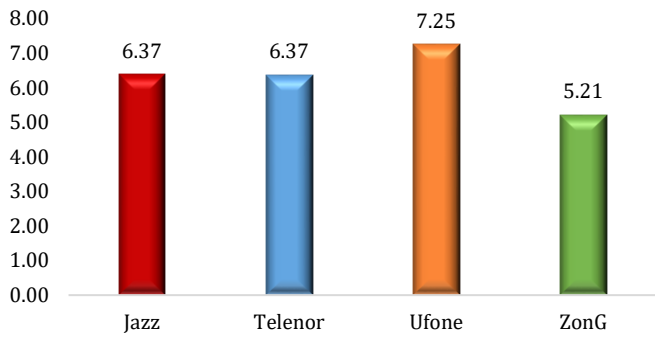
Network Accessibility $\geq 99\%$



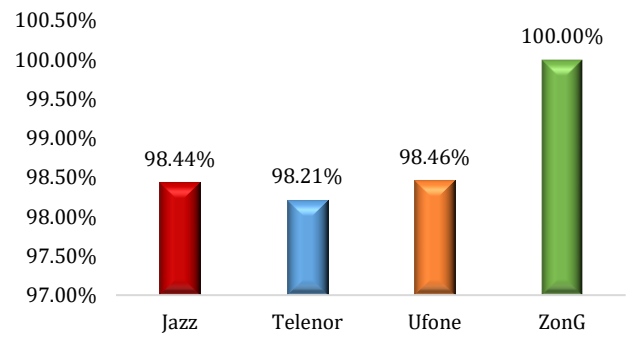
Call Setup Success Rate $\geq 98\%$



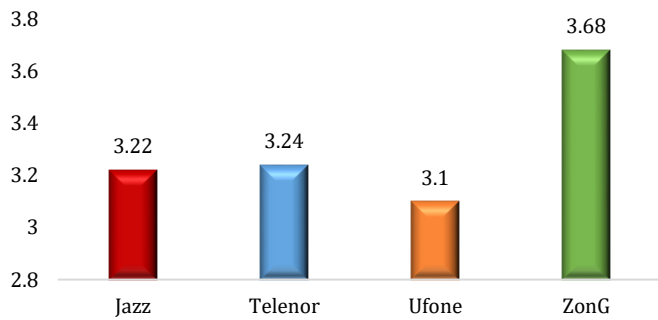
Call Connection Time < 7.5 Seconds



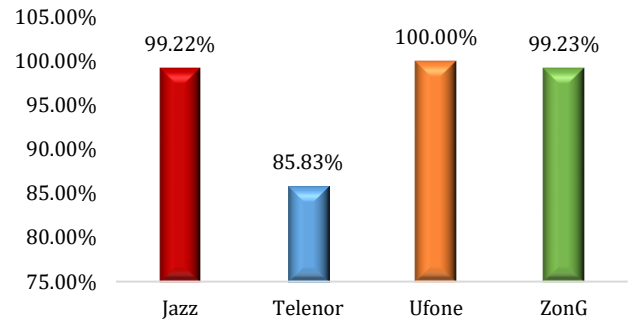
Call Completion Ratio $> 98\%$



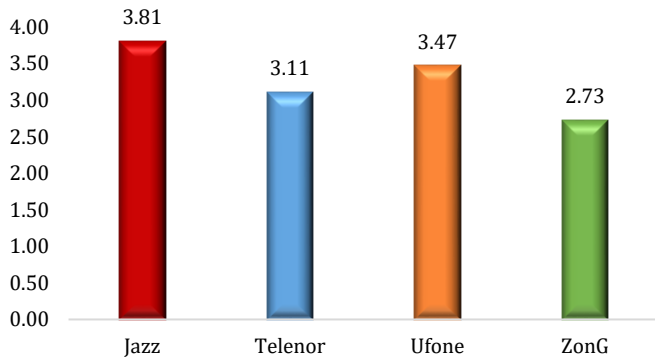
Mean Opinion Score > 3



SMS Success Rate $\geq 99\%$

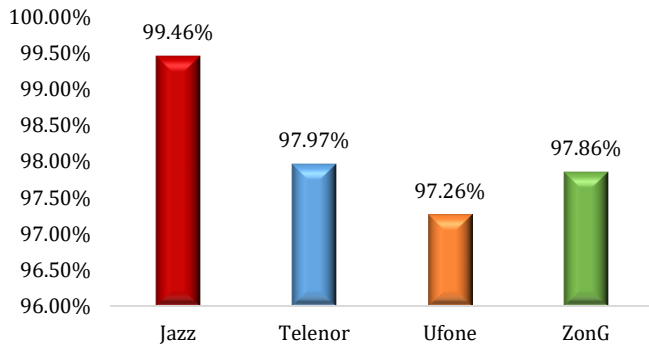


SMS End-to-End Delivery Time ≤ 12 Seconds

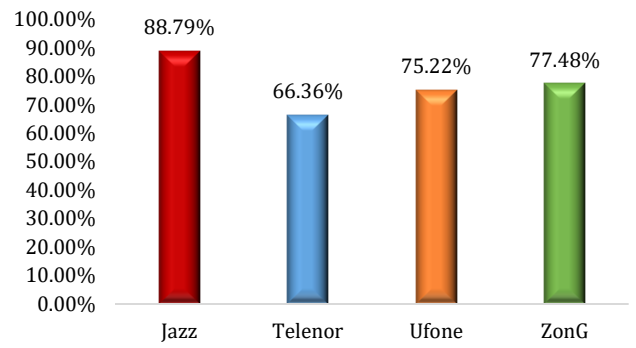


QUALITY OF SERVICE SURVEY RESULTS – ISLAMABAD TO DI KHAN (M-14)

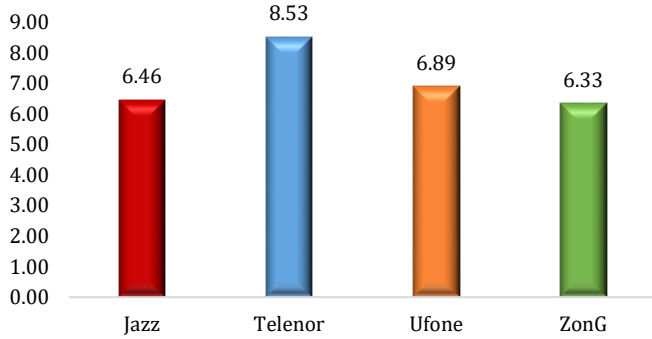
Network Accessibility ≥ 99%



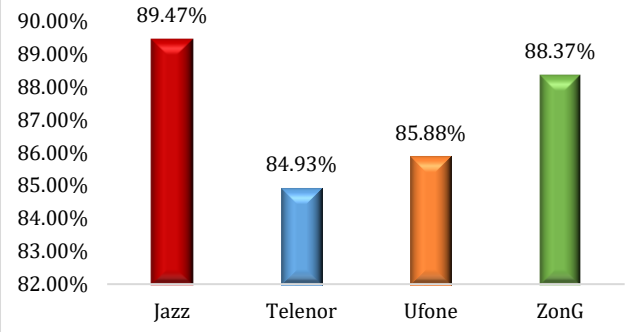
Call Setup Success Rate ≥ 98%



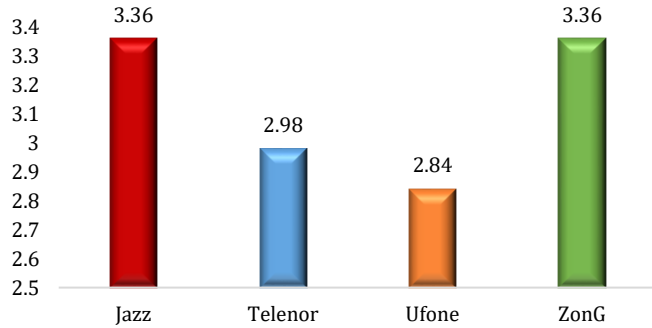
Call Connection Time < 7.5 Seconds



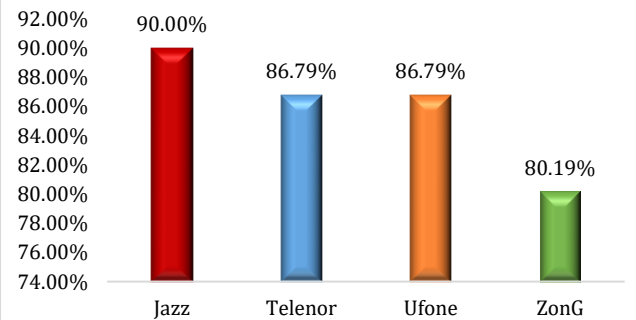
Call Completion Ratio > 98%



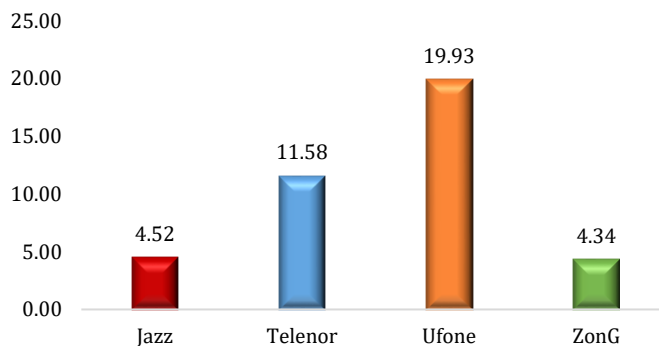
Mean Opinion Score > 3



SMS Success Rate ≥ 99%

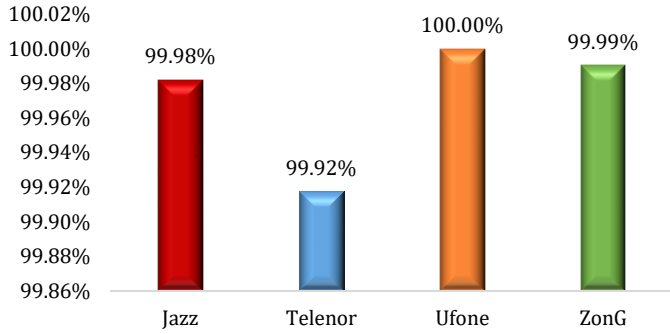


SMS End-to-End Delivery Time ≤ 12 Seconds

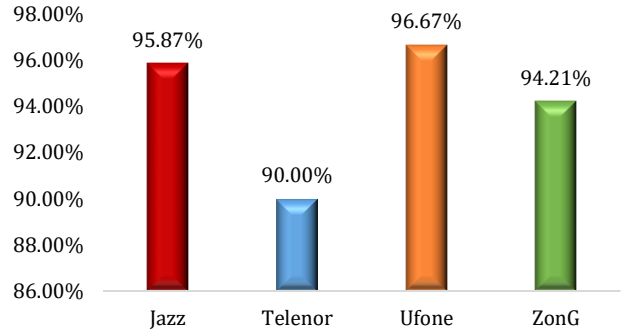


QUALITY OF SERVICE SURVEY RESULTS – ISLAMABAD TO KOHAT (N-80)

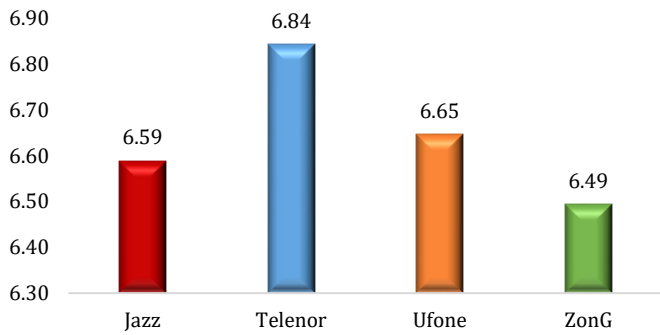
Network Accessibility \geq 99%



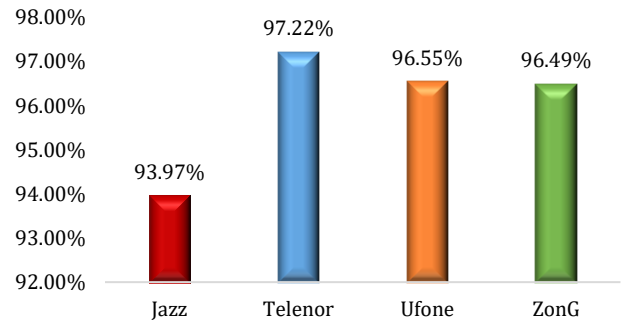
Call Setup Success Rate \geq 98%



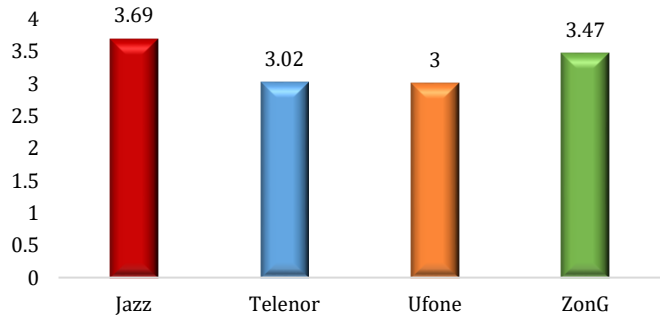
Call Connection Time $<$ 7.5 Seconds



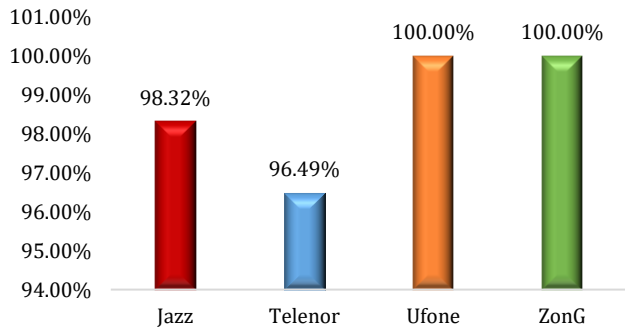
Call Completion Ratio $>$ 98%



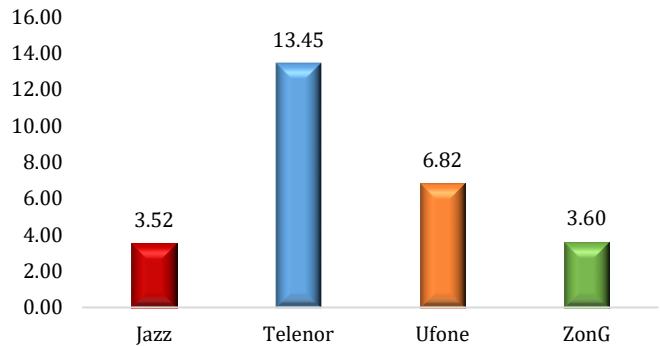
Mean Opinion Score $>$ 3



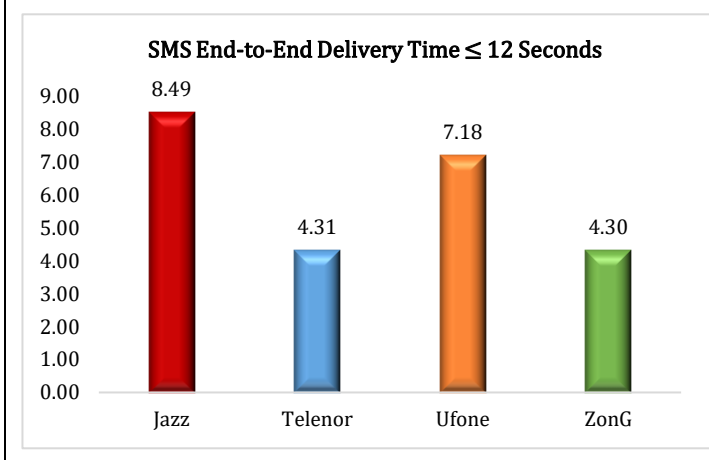
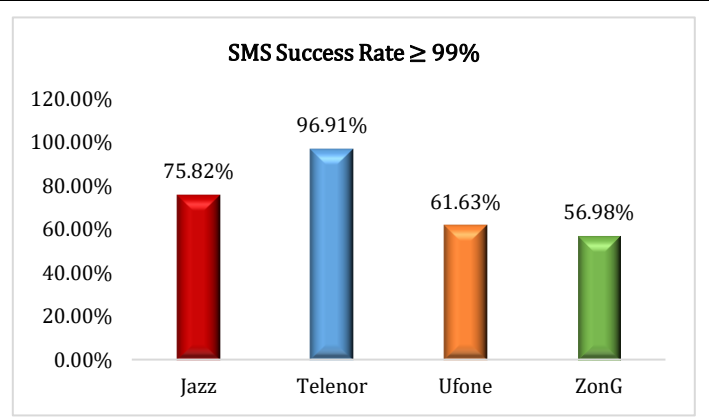
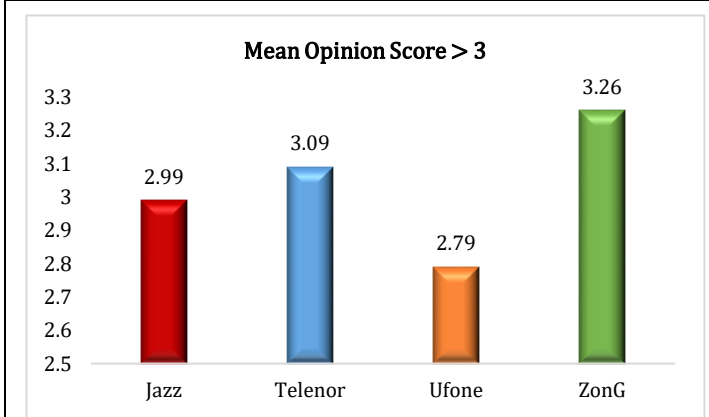
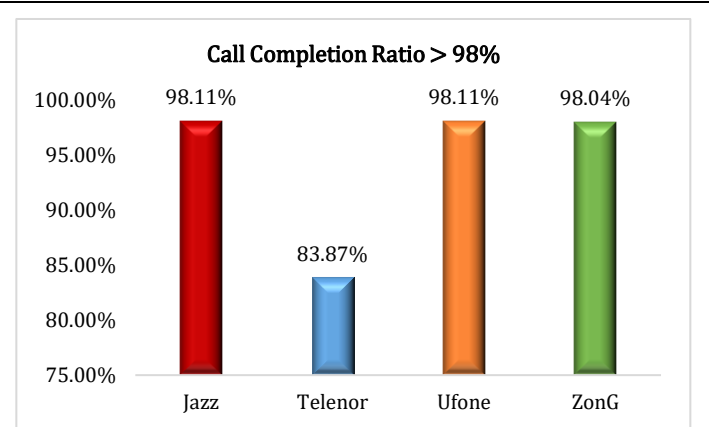
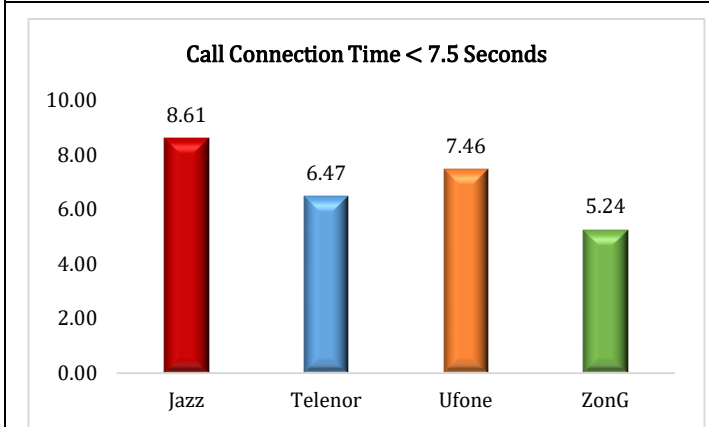
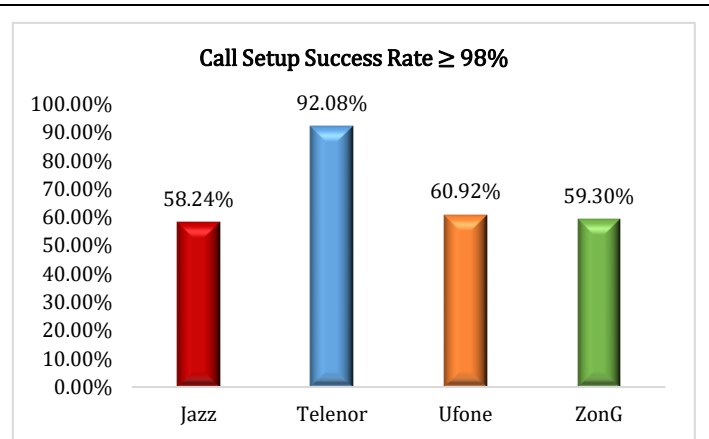
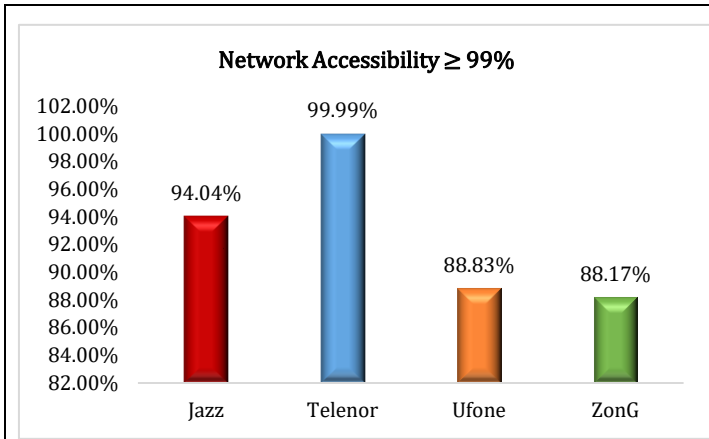
SMS Success Rate \geq 99%



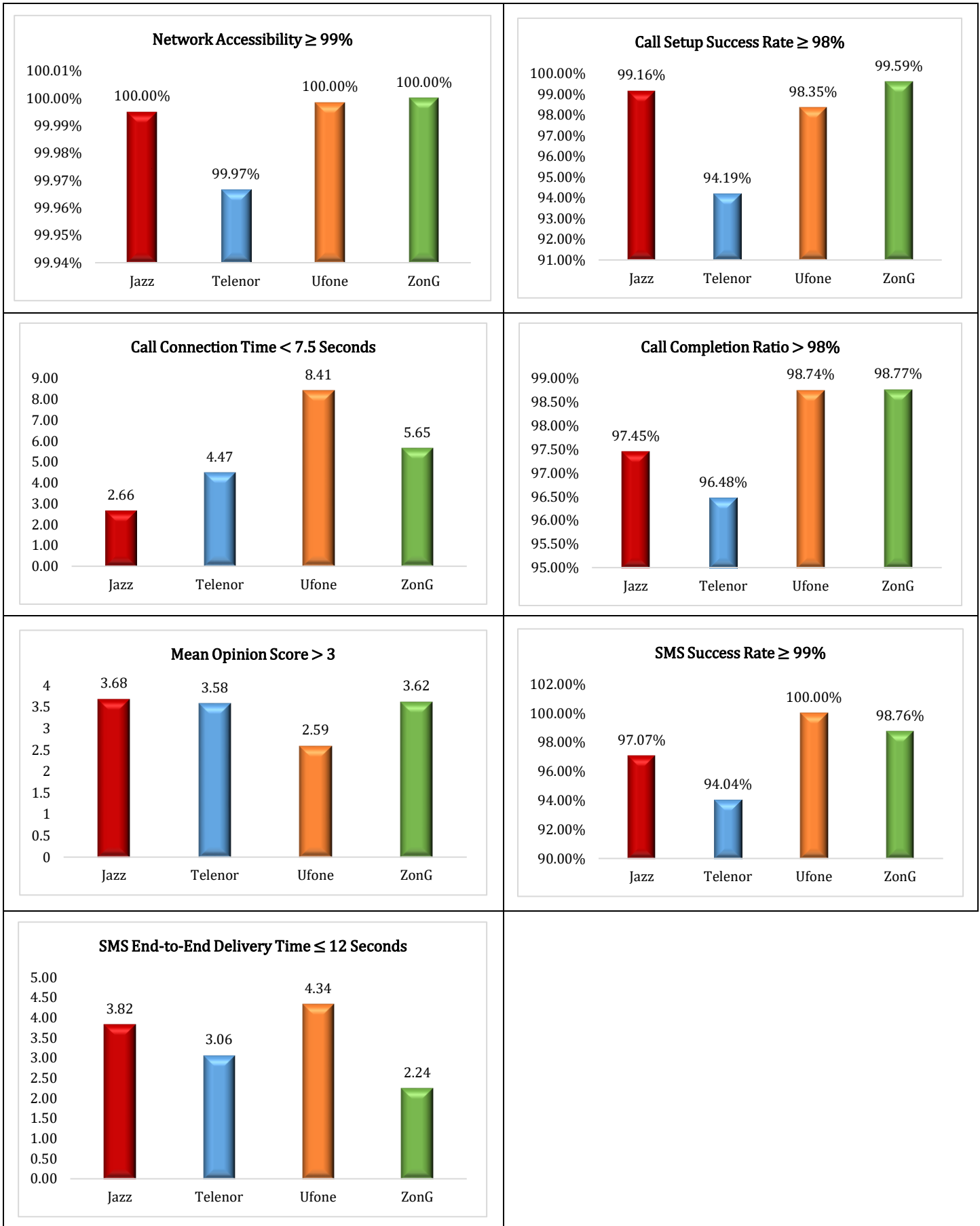
SMS End-to-End Delivery Time \leq 12 Seconds



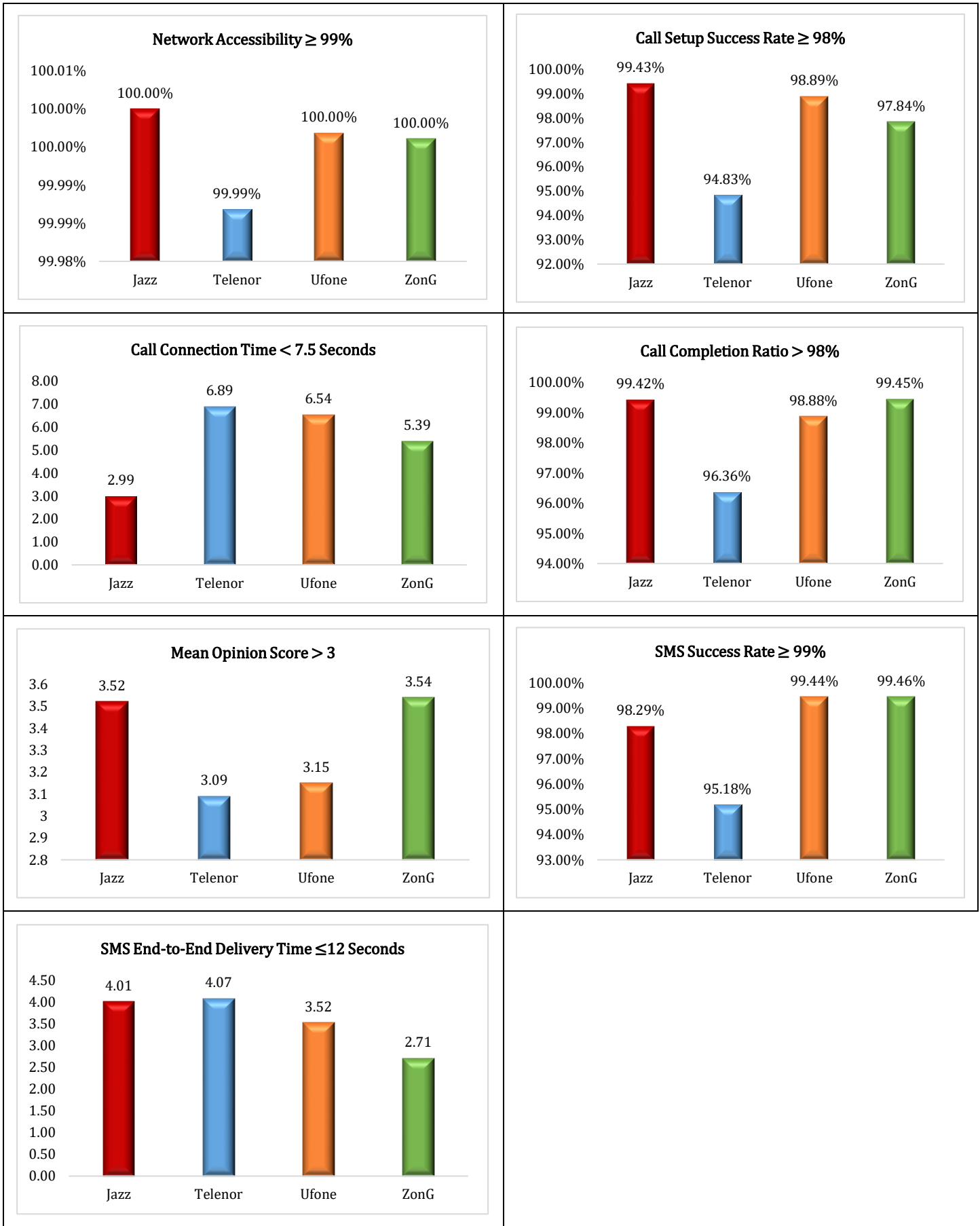
QUALITY OF SERVICE SURVEY RESULTS – KHAWAZ KHEL TO BEHSAM (N-90)



QUALITY OF SERVICE SURVEY RESULTS – KOT SABZAL MULTAN (N-5)

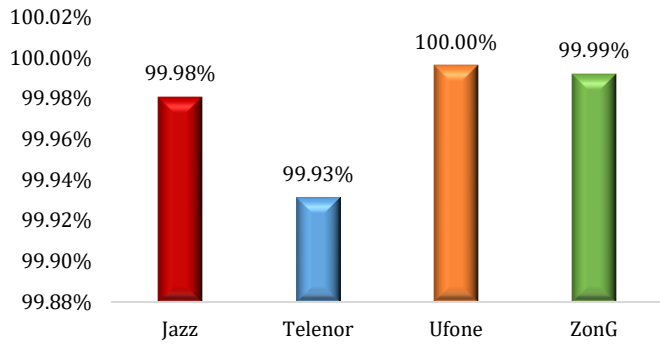


QUALITY OF SERVICE SURVEY RESULTS – LAHORE TO MULTAN (N-5)

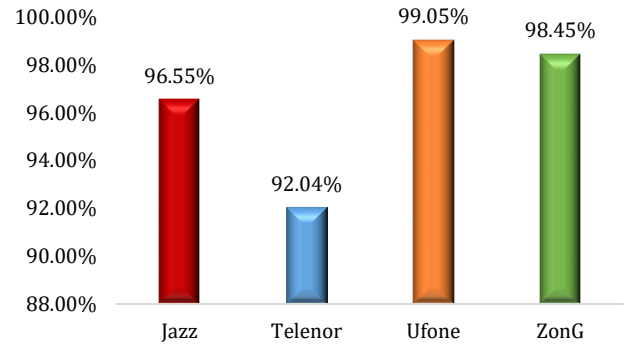


QUALITY OF SERVICE SURVEY RESULTS – LAHORE TO RAWALPINDI (N-5)

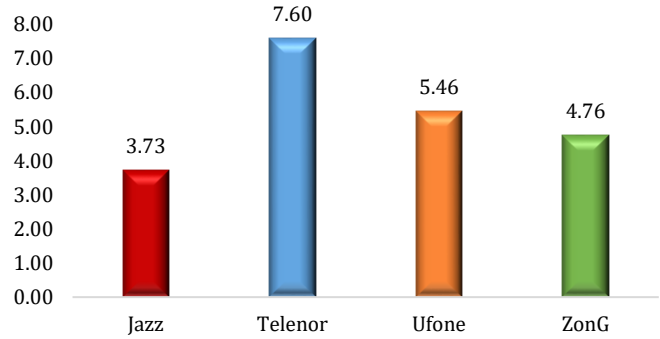
Network Accessibility \geq 99%



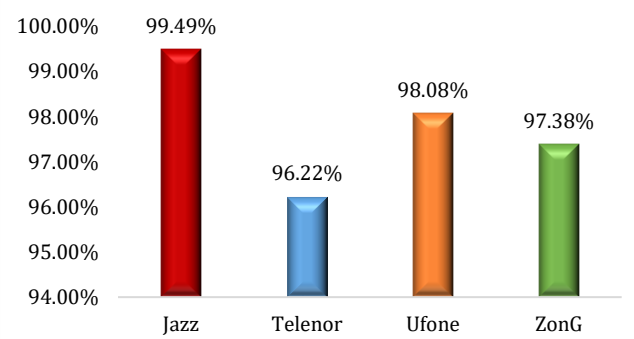
Call Setup Success Rate \geq 98%



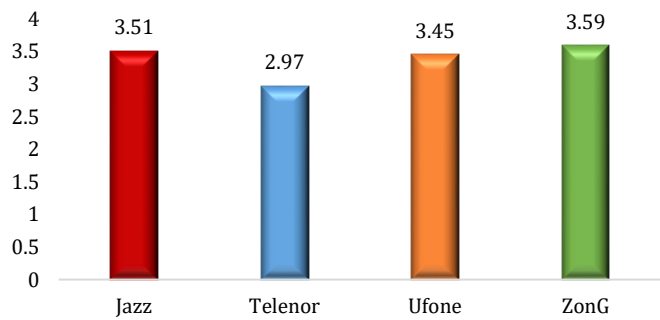
Call Connection Time 7.5 Seconds



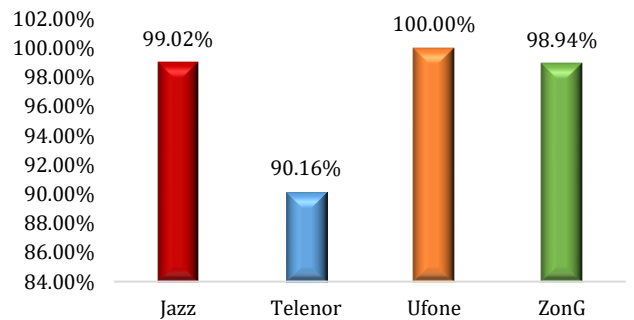
Call Completion Ratio 98%



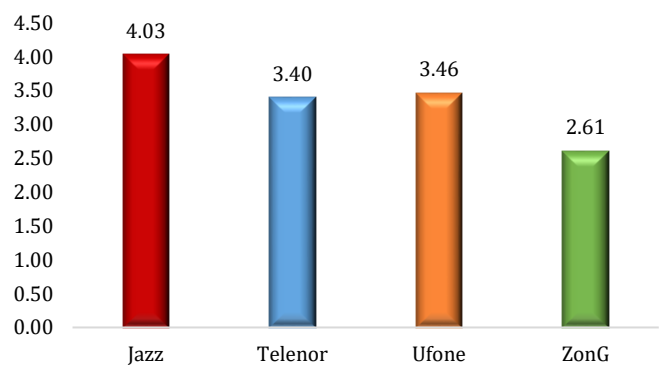
Mean Opinion Score $>$ 3



SMS Success Rate \geq 99%

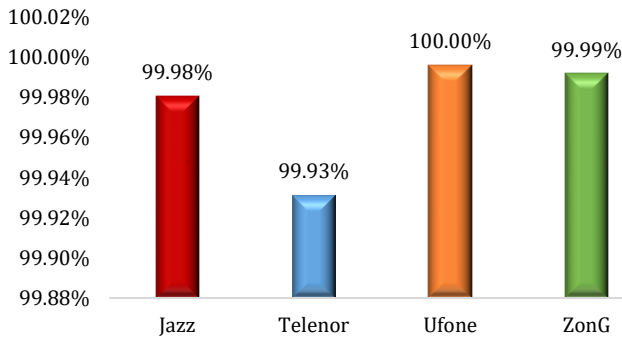


SMS End-to-End Delivery Time \leq 12 Seconds

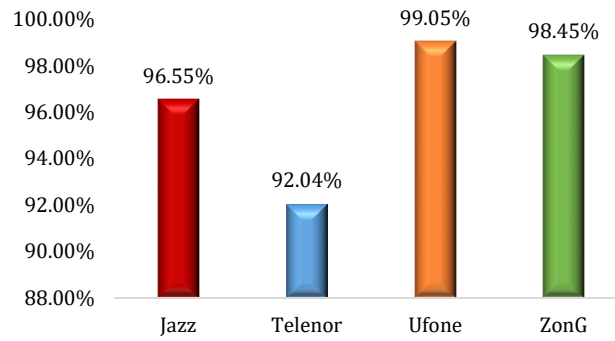


QUALITY OF SERVICE SURVEY RESULTS – LAHORE TO SARGODHA (N-60)

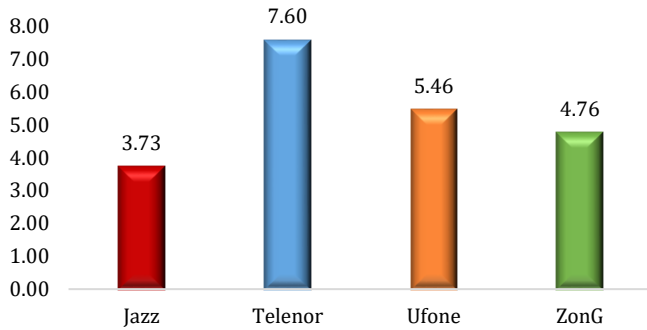
Network Accessibility \geq 99%



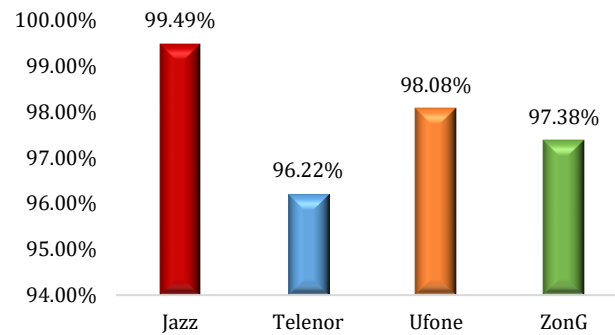
Call Setup Success Rate \geq 98%



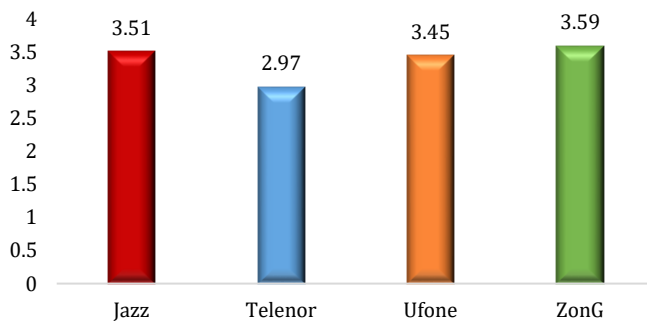
Call Connection Time $<$ 7.5 Seconds



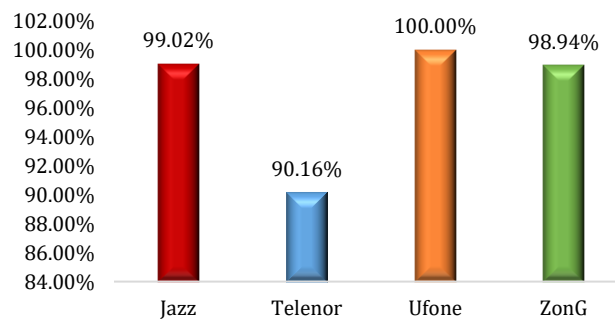
Call Completion Ratio $>$ 98%



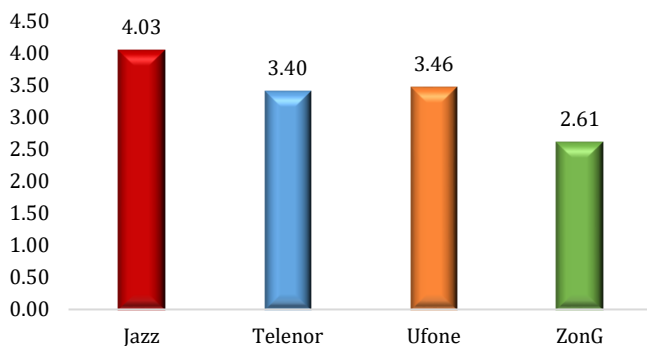
Mean Opinion Score $>$ 3



SMS Success Rate \geq 99%

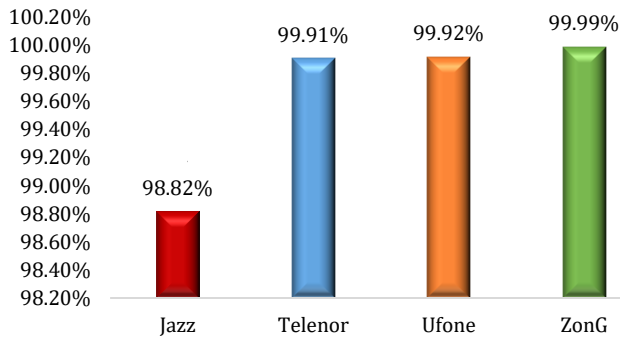


SMS End-to-End Delivery Time \leq 12 Seconds

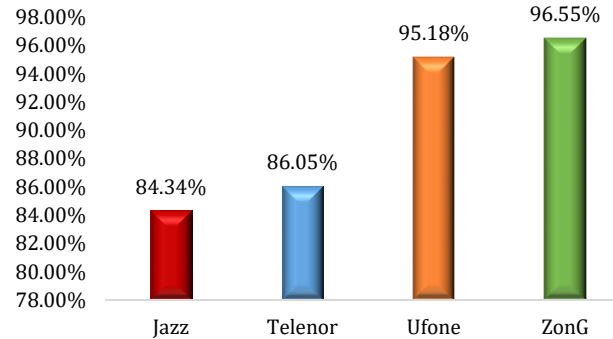


QUALITY OF SERVICE SURVEY RESULTS – MIANWALI TO BHAKKAR (N-130)

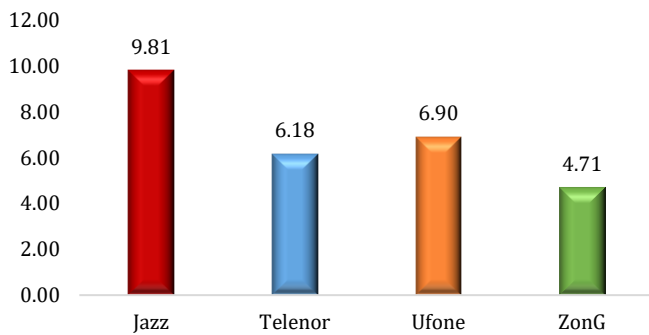
Network Accessibility \geq 99%



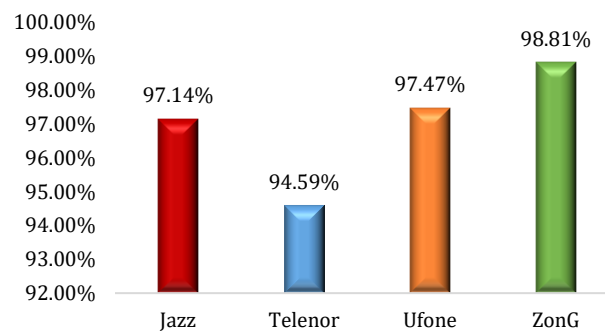
Call Setup Success Rate \geq 98%



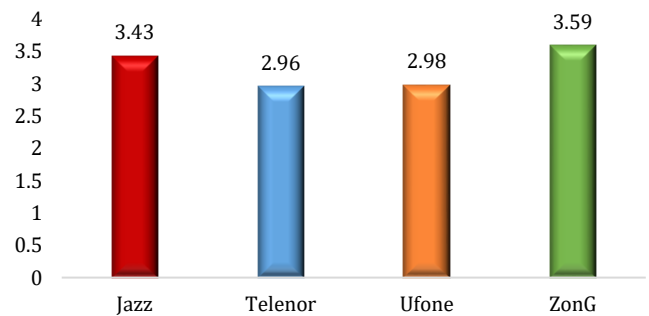
Call Connection Time $<$ 7.5 Seconds



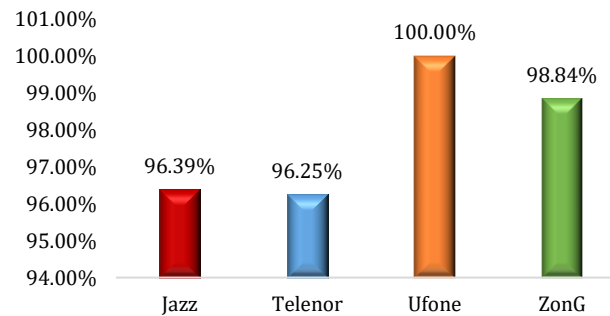
Call Completion Ratio $>$ 98%



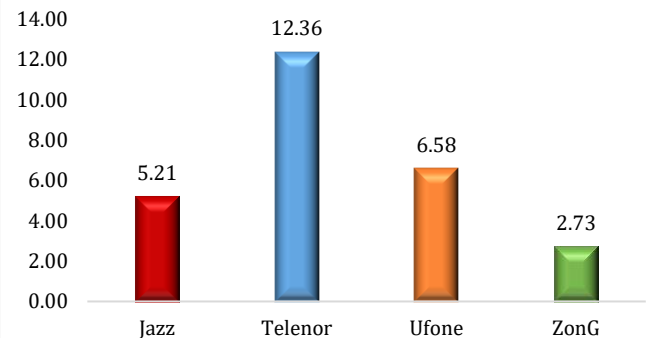
Mean Opinion Score $>$ 3



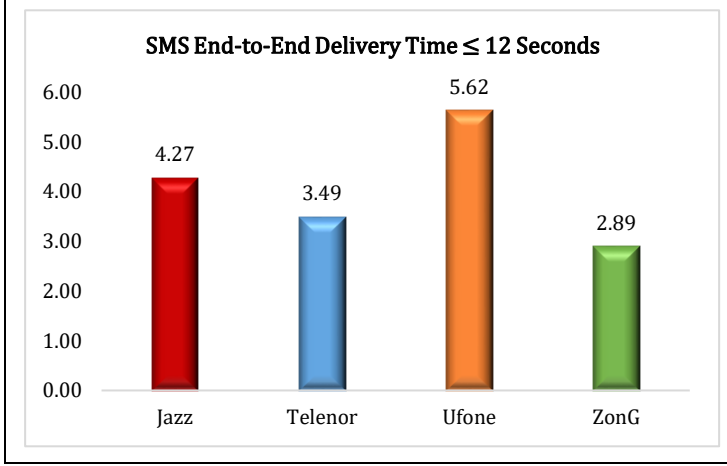
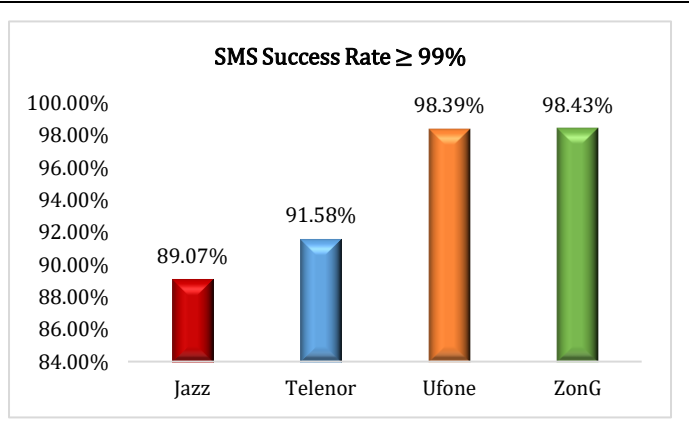
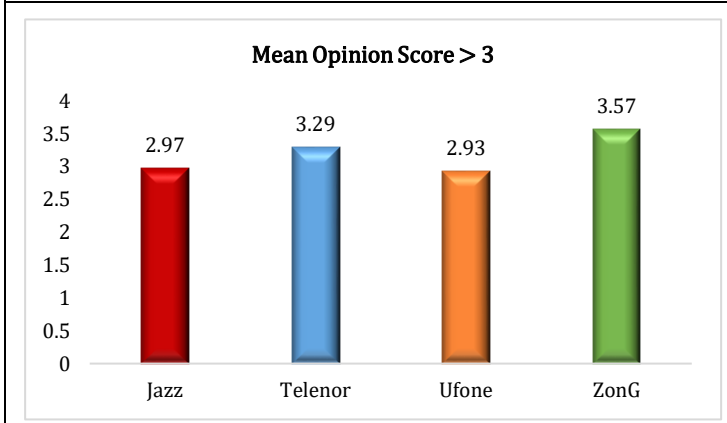
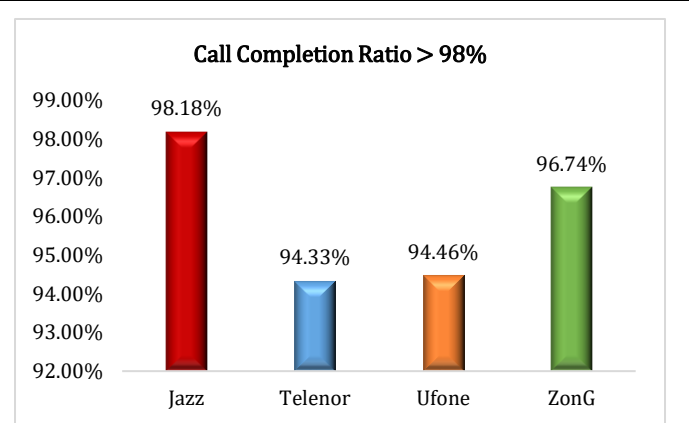
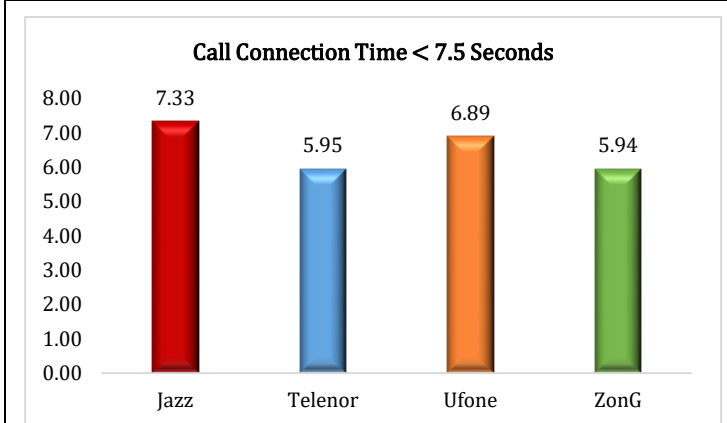
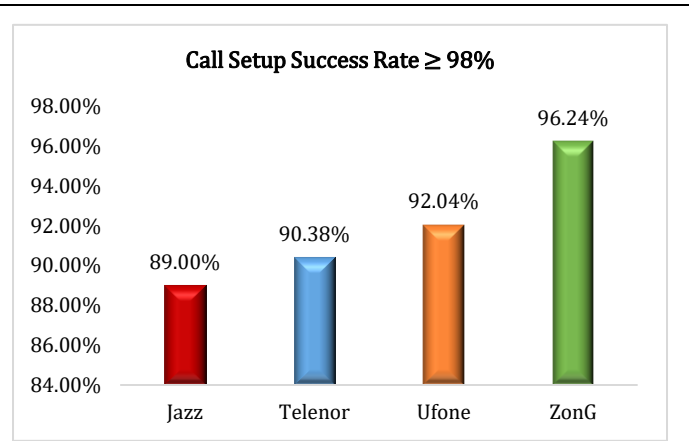
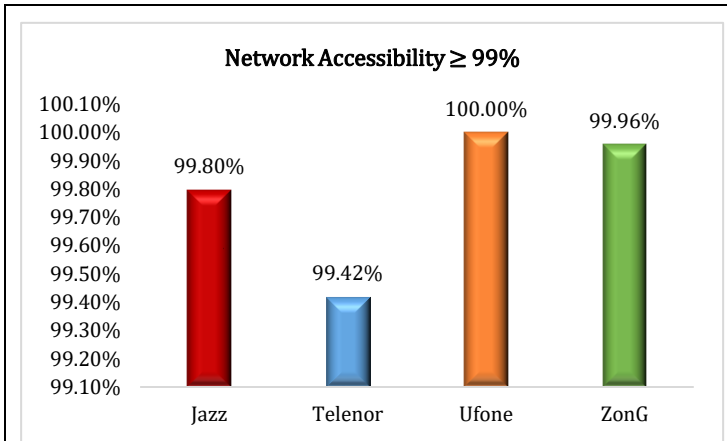
SMS Success Rate \geq 99%



SMS End-to-End Delivery Time \leq 12 Seconds

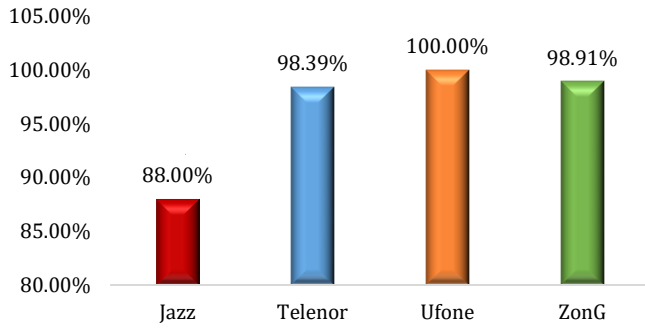


QUALITY OF SERVICE SURVEY RESULTS – PESHAWAR TO DG KHAN (N-55)

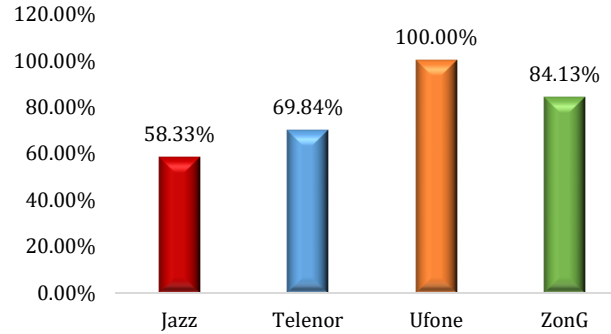


QUALITY OF SERVICE SURVEY RESULTS – QUETTA TO ZHOB (N-50)

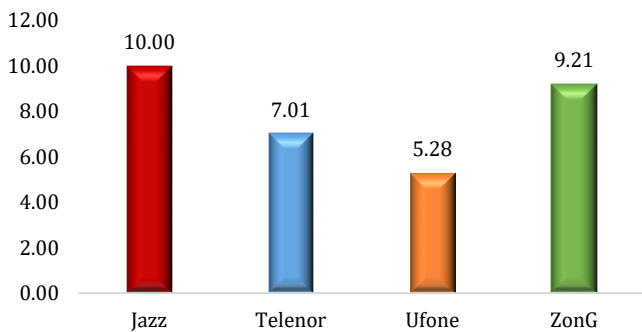
Network Accessibility $\geq 99\%$



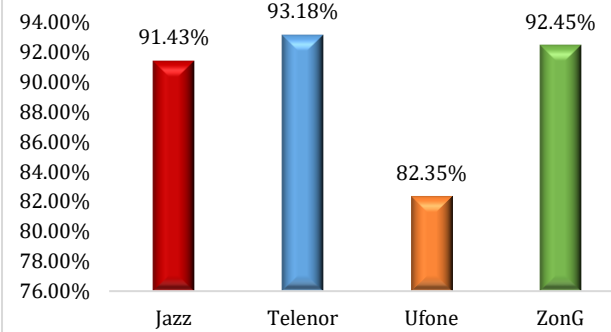
Call Setup Success Rate $\geq 98\%$



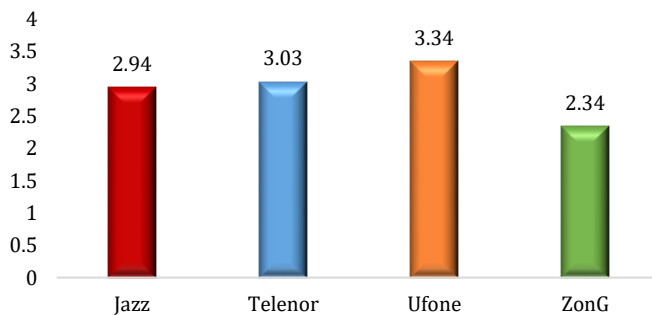
Call Connection Time < 7.5 Seconds



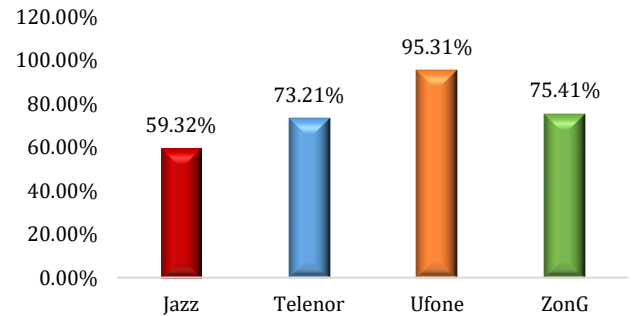
Call Completion Ratio $> 98\%$



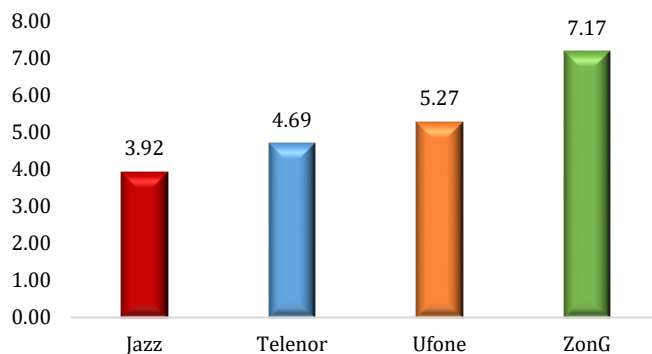
Mean Opinion Score > 3



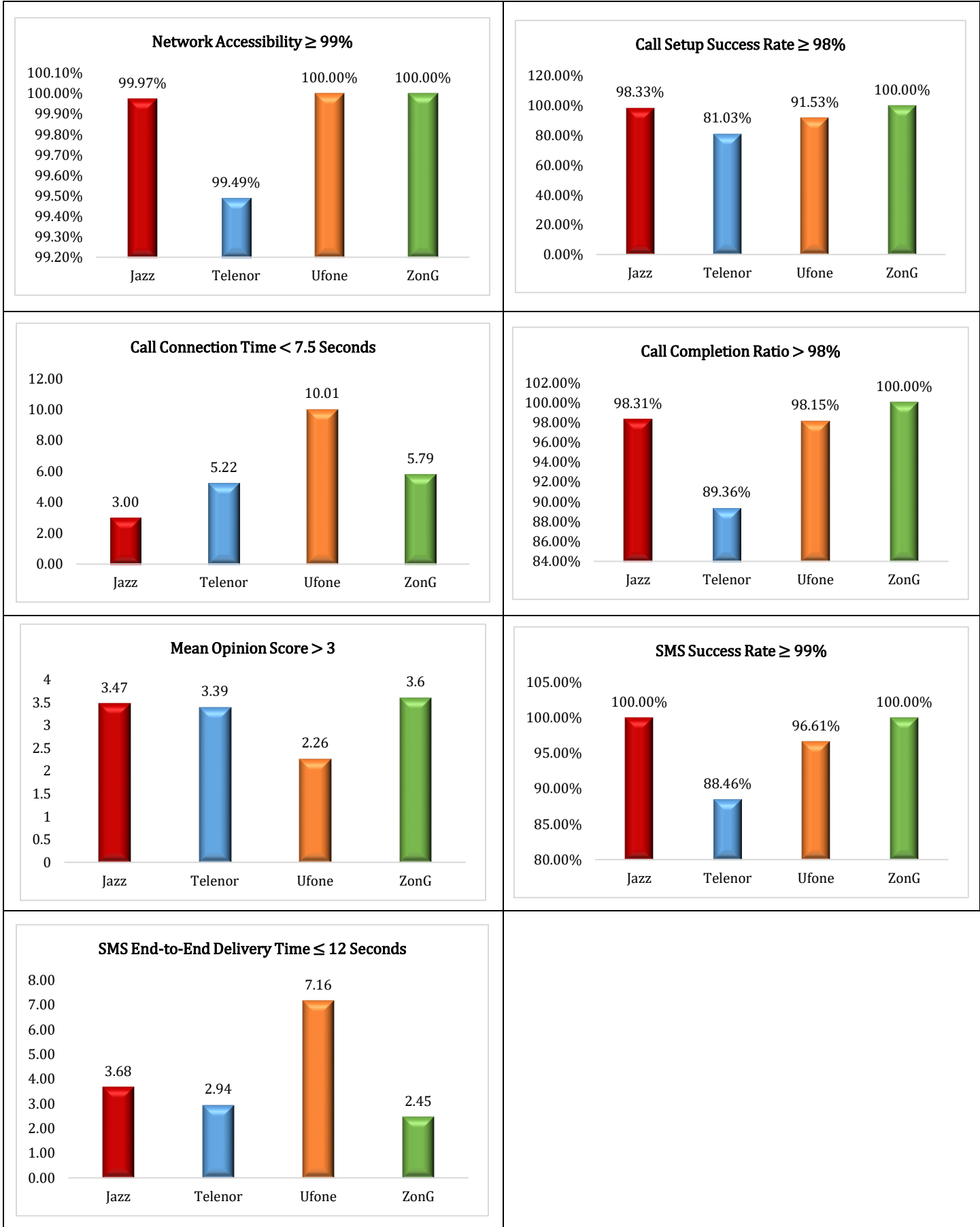
SMS Success Rate $\geq 99\%$



SMS End-to-End Delivery Time ≤ 12 Seconds



QUALITY OF SERVICE SURVEY RESULTS – TARANDA MUHAMMAD PANAH TO JALALPUR PIRWALA (N-115)



QUALITY OF SERVICE SURVEY RESULTS – ZHOB TO QUETTA (N-50)

