INDEPENDENT QUALITY OF SERVICE SURVEY IN PAKISTAN – CITIES

FIRST QUARTER 2023

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 in Fourteen (14) x Cities of Sindh, Punjab and Khyber Pakhtunkhwa during 1st Quarter i.e. January~ March 2023. The names of cities along with survey dates are mentioned in **Table 1.1: QoS Survey Cities & Dates**:

S. #.	City	Province	Days	Survey Dates
1	KARACHI MALIR	SINDH	4	30th January ~ 2nd February 2023
2	KARACHI CENTRAL		4	25th January ~ 30th January 2023
3	KARACHI KEMARI		4	6th February ~ 9 February 2023
4	KARACHI WEST		4	13th February ~ 16th February 2023
5	KARACHI SOUTH		4	27th February ~ 2nd March 2023
6	NANKANA SAHIB	PUNJAB	4	30th January ~ 02nd February 2023
7	MURIDKE		3	6th February ~ 8th February 2023
8	DEPALPUR		3	13th February ~ 15th February 2023
9	CHICHAWATNI		4	27th February ~ 2nd March 2023
10	SHUJABAD		4	30th January ~ 02nd February 2023
11	KABIRWALA		4	6th February ~ 9th February 2023
12	NOWSHERA	KHYBER PAKHTUNKHWA	4	30th January ~ 02nd February 2023
13	SWABI		4	6th February ~ 9th February 2023
14	KARAK		4	13th February ~ 16th February 2023

Table 1.1: QoS Survey Dates and Samples

DRIVE TEST DETAILS

2.1. The QoS survey was carried out using Automated QoS Monitoring & Benchmarking Tool i.e. **"SMARTBENCHMARKER**". Drive test teams selected survey routes in such a manner to cover main roads, service roads and majority of sectors/colonies. During the survey, mobile handsets for Voice Calls, SMS were kept in technology auto detect mode, whereas, in case of Mobile Broadband/Data Sessions, the mobile handsets were kept both in auto detect and 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. City 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								
City	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	99.66%	99.10%	99.99%	99.96%	Yes	Yes	Yes	Yes
Karachi Kemari	99.35%	98.53%	97.44%	99.15%	Yes	Yes	Yes	Yes
Karachi Malir	93.77%	**88.65%**	94.10%	94.82%	Yes	**No**	Yes	Yes
Nankana Sahib	99.46%	95.36%	**82.91%**	99.81%	Yes	Yes	**No**	Yes
Nowshera	93.31%	91.18%	98.11%	96.50%	Yes	Yes	Yes	Yes
Muridke	98.90%	**86.78%**	92.67%	97.83%	Yes	**No**	Yes	Yes
Swabi	**89.47%**	95.86%	93.52%	97.16%	**No**	Yes	Yes	Yes

Karak	**88.60%**	91.30%	98.75%	95.28%	**No**	Yes	Yes	Yes
Depalpur	96.98%	**81.64%**	97.86%	98.37%	Yes	**No**	Yes	Yes
Karachi West	96.37%	99.15%	99.77%	99.83%	Yes	Yes	Yes	Yes
Karachi South	99.51%	97.67%	99.87%	98.79%	Yes	Yes	Yes	Yes
Shujabad	93.24%	**70.97%**	**80.84%**	96.37%	Yes	**No**	**No**	Yes
Kabirwala	99.93%	96.80%	95.88%	99.70%	Yes	Yes	Yes	Yes
Chichawatni	99.06%	**86.44%**	98.08%	97.47%	Yes	**No**	Yes	Yes

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								
City	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	99.59%	99.34%	99.38%	99.94%	Yes	Yes	Yes	Yes
Karachi Kemari	99.63%	99.62%	97.88%	98.91%	Yes	Yes	Yes	Yes
Karachi Malir	94.82%	**87.71%**	**89.13%**	95.22%	Yes	**No**	**No**	Yes
Nankana Sahib	99.79%	90.79%	**85.73%**	99.79%	Yes	Yes	**No**	Yes
Nowshera	94.60%	90.82%	98.92%	96.50%	Yes	Yes	Yes	Yes
Muridke	98.73%	**84.45%**	92.51%	96.00%	Yes	**No**	Yes	Yes
Swabi	91.41%	95.60%	95.31%	99.25%	Yes	Yes	Yes	Yes
Karak	90.63%	**89.32%**	98.21%	96.01%	Yes	**No**	Yes	Yes
Depalpur	98.91%	**87.02%**	98.02%	99.35%	Yes	**No**	Yes	Yes
Karachi West	97.56%	98.76%	99.88%	99.51%	Yes	Yes	Yes	Yes
Karachi South	99.90%	98.71%	99.41%	99.66%	Yes	Yes	Yes	Yes
Shujabad	99.78%	**83.26%**	93.11%	99.71%	Yes	**No**	Yes	Yes
Kabirwala	99.93%	98.63%	96.55%	99.83%	Yes	Yes	Yes	Yes
Chichawatni	98.59%	**88.58%**	98.58%	98.50%	Yes	**No**	Yes	Yes

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

3.2. 3G SIGNAL STRENGTH IN TECNHOLOGY AUTO DETECT MODE. During the survey, 3G signal strength samples were also 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. City 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								
City	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	**N/A**							
Karachi Kemari	**N/A**		100.00%	100.00%	**N/A**		Yes	Yes
Karachi Malir	100.00%	100.00%	100.00%	**N/A**	Yes	Yes	Yes	**N/A**
Nankana Sahib	**N/A**		100.00%	**N/A**			Yes	**N/A**
Nowshera	100.00%	100.00%	100.00%	99.16%	Yes	Yes	Yes	Yes
Muridke	**N/A**	100.00%	100.00%	100.00%	**N/A**	Yes	Yes	Yes
Swabi	**N/A**	98.41%	100.00%	**N/A**		Yes	Yes	**N/A**
Karak	100.00%	100.00%	100.00%	**N/A**	Yes	Yes	Yes	**N/A**
Depalpur	**N/A**		100.00%	**N/A**			Yes	**N/A**
Karachi West	**N/A**	100.00%	**N/A**			Yes	**N/A**	
Karachi South	**N/A**							
Shujabad	**N/A**	91.81%	99.96%	100.00%	**N/A**	Yes	Yes	Yes
Kabirwala	**N/A**							
Chichawatni								
Note: N/A means No Fallback to 3G Network								

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								
City	Signal Strength Percentage				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Karachi Kemari	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Karachi Malir	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Nankana Sahib	100.00%	99.90%	100.00%	100.00%	Yes	Yes	Yes	Yes
Nowshera	99.82%	99.99%	100.00%	99.91%	Yes	Yes	Yes	Yes
Muridke	99.91%	98.80%	98.97%	99.93%	Yes	Yes	Yes	Yes
Swabi	99.79%	100.00%	99.97%	99.99%	Yes	Yes	Yes	Yes
Karak	98.29%	97.51%	100.00%	100.00%	Yes	Yes	Yes	Yes
Depalpur	100.00%	100.00%	98.14%	100.00%	Yes	Yes	Yes	Yes
Karachi West	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Karachi South	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Shujabad	99.77%	96.92%	98.06%	100.00%	Yes	Yes	Yes	Yes
Kabirwala	100.00%	100.00%	99.94%	100.00%	Yes	Yes	Yes	Yes
Chichawatni	100%	100%	100%	100%	Yes	Yes	Yes	Yes

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

MOBILE BROADBAND SERVICE

4.1. **DATA SESSIONS IN TECHNOLOGY AUTO DETECT MODE & LOCKED MODE.** A series of data tests including Capacity Tests, Data Transfer Tests, Web Browsing and Ping were carried out wherein Key Performance Indicators (KPIs) of Upload and Download User Data Throughput (i.e. Speed), Webpage Loading Time and Latency have been measured. In Fixed Duration Testing, a File of 10GB was downloaded and Uploaded for 3 minutes duration whereas in Fixed Size Testing, a File of 5MB and 2MB was completely downloaded and uploaded respectively. In order to measure Webpage Loading Time, different national webpages were checked and in case of Latency international and national host were pinged to measure Round Trip Time (RTT)/Latency. The 4G/LTE, 3G and 2G signal strength, Number of Tests, Upload and Download User Data Throughput, Webpage Loading Time and Latency detail is mentioned in **Table4.1: Data Tests Statistics.**

DESCRIPTION					JAZZ	TELENOR	UFONE	ZONG
AUTO DETECT MODE	CAPACITY TEST	DOWNLOAD	ATTEMPTS		4293	3777	4288	4236
			SPEED (Mbps)		29	7.018	10.109	26.969
		UPLOAD	ATTEMPTS		4295	3779	4292	4239
			SPEED (Mbps)		25.393	6.704	17.056	20.862
	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS		4304	4019	4251	4244
			SPEED (Mbps)		10.976	6.056	7.246	10.743
		UPLOAD	ATTEMPTS		4310	4305	4308	4248
			SPEED (Mbps)		9.066	5.512	7.866	9.456
	BROWSING TEST	ATTEMPTS			17220	15153	17200	16982
		LOADING TIME (Seconds)			**5.96**	**7.15**	**6.85**	**6.19**
	PING TEST	ATTEMPTS			4312	4312	4312	4252
		LATENCY (msec)			**80.4**	**79.51**	68.54	58.38
	AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm				-83.8	-85.4	-82.3	-81.5
	AVERAGE 3G SIGNAL STRENGTH (RSCP) dBm				-76.11	-66.68	-70.51	-80.46
LOCKED MODE	4G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	2834	2834	2824	2831
				SPEED (Mbps)	19.232	5.927	9.732	22.33
			UPLOAD	ATTEMPTS	2832	2831	2822	2830
				SPEED (Mbps)	24.673	5.114	12.778	13.687
		PING TEST	ATTEMPTS		2844	2843	2844	2841
			LATENCY (msec)		**76.33**	62.39	58.34	53.67
		AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm			78.9	-85	-81.4	-78.4

DESCRIPTION					JAZZ	TELENOR	UFONE	ZONG
	3G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	1813	2398	2669	2671
				SPEED (Mbps)	2.41	2.508	3.656	2.864
			UPLOAD	ATTEMPTS	1707	2393	2667	2672
				SPEED (Mbps)	0.991	1.566	2.405	1.634
		PING TEST	ATTEMPTS		2708	2708	2711	2708
			LATENCY (msec)		**498.79**	**450.22**	**468.99**	112
		AVERAGE 3G SIGNAL STRENGTH (RSCP) dBm			-66.23	-69.42	-66.39	-63.71

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

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED DURATION)								
City	Download User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	41.47	12.28	14.18	28.66	First	Fourth	Third	Second
Karachi Kemari	24.78	9.90	12.16	25.70	Second	Fourth	Third	First
Karachi Malir	24.38	7.46	10.71	23.14	First	Fourth	Third	Second
Nankana Sahib	25.28	10.54	17.01	31.99	Second	Fourth	Third	First
Nowshera	26.39	5.60	5.87	19.80	First	Fourth	Third	Second
Muridke	19.65	8.13	14.90	23.22	Second	Fourth	Third	First
Swabi	26.08	3.81	5.17	21.56	First	Fourth	Third	Second
Karak	40.64	4.07	4.64	29.38	First	Fourth	Third	Second
Depalpur	21.71	5.11	17.25	28.79	Second	Fourth	Third	First
Karachi West	38.07	10.25	18.27	27.02	First	Fourth	Third	Second
Karachi South	25.93	11.05	9.28	31.18	Second	Third	Fourth	First
Shujabad	17.92	9.35	8.51	32.89	Second	Third	Fourth	First
Kabirwala	14.78	10.76	8.52	28.25	Second	Third	Fourth	First
Chichawatni	26.89	6.50	15.46	30.47	Second	Fourth	Third	First

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

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED SIZE)								
City	Download User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	17.01	9.44	11.28	14.55	First	Fourth	Third	Second
Karachi Kemari	13.06	7.79	8.98	13.59	Second	Fourth	Third	First
Karachi Malir	12.34	6.52	8.45	12.61	Second	Fourth	Third	First
Nankana Sahib	10.51	8.23	7.95	15.45	Second	Third	Fourth	First
Nowshera	12.50	5.67	5.92	8.61	First	Fourth	Third	Second
Muridke	10.98	6.34	8.66	13.29	Second	Fourth	Third	First
Swabi	10.47	4.65	5.67	10.54	Second	Fourth	Third	First
Karak	14.38	4.44	4.76	10.06	First	Fourth	Third	Second
Depalpur	11.31	5.70	11.04	14.05	Second	Fourth	Third	First
Karachi West	17.08	7.77	12.56	14.22	First	Fourth	Third	Second

Karachi South	13.35	7.48	7.68	14.16	Second	Fourth	Third	First
Shujabad	11.17	7.46	7.55	15.33	Second	Fourth	Third	First
Kabirwala	9.83	7.89	6.74	13.86	Second	Third	Fourth	First
Chichawatni	12.74	6.06	10.46	15.05	Second	Fourth	Third	First

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

DOWNLOAD USER DATA THROUGHPUT IN 4G/LTE TECHNOLOGY LOCKED MODE (FIXED DURATION)								
City	Download User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	30.30	11.74	13.42	19.17	First	Fourth	Third	Second
Karachi Kemari	17.58	8.61	8.97	18.87	Second	Fourth	Third	First
Karachi Malir	16.54	6.06	8.31	14.03	First	Fourth	Third	Second
Nankana Sahib	13.29	6.46	10.71	25.97	Second	Fourth	Third	First
Nowshera	17.92	2.89	3.95	16.42	First	Fourth	Third	Second
Muridke	16.07	5.38	15.26	21.89	Second	Fourth	Third	First
Swabi	21.76	**2.18**	3.68	17.97	First	**Fourth**	Third	Second
Karak	28.95	**2.73**	3.51	32.00	Second	**Fourth**	Third	First
Depalpur	11.23	3.47	13.74	25.13	Third	Fourth	Second	First
Karachi West	30.80	7.32	15.70	15.65	First	Fourth	Second	Third
Karachi South	24.28	9.40	8.39	26.19	Second	Third	Fourth	First
Shujabad	13.57	4.15	5.71	22.31	Second	Fourth	Third	First
Kabirwala	14.96	8.37	6.28	24.98	Second	Third	Fourth	First
Chichawatni	22.88	6.60	17.36	26.84	Second	Fourth	Third	First

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

DOWNLOAD USER DATA THROUGHPUT IN 3G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
City	Download User Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	3393.99	4443.91	5255.74	2109.3	Third	Second	First	Fourth
Karachi Kemari	2308.28	2468.72	3981.99	1999.77	Third	Second	First	Fourth
Karachi Malir	2373.41	2877.69	4423.65	2099.68	Third	Second	First	Fourth
Nankana Sahib	3359.08	3193.95	3066.48	3386.65	Second	Third	Fourth	First
Nowshera	2702.8	2049.17	2939.4	1957.11	Second	Third	First	Fourth
Muridke	1131.4	2445.87	4848.49	3478.68	Fourth	Third	First	Second
Swabi	2425.24	1595.21	2845.02	2045.36	Second	Fourth	First	Third
Karak	2688.54	2869.48	2300.43	3143.17	Third	Second	Fourth	First
Depalpur	3605.05	1449.93	5479.24	3716.06	Third	Fourth	First	Second
Karachi West	3628.18	2497.29	5947.02	2015.44	Second	Third	First	Fourth
Karachi South	1972.13	3377.41	3372.16	1619.51	Third	First	Second	Fourth
Shujabad	2292.99	2622.89	1776.08	3614.33	Third	Second	Fourth	First
Kabirwala	2625.52	2652.13	1972.59	3665.17	Third	Second	Fourth	First
Chichawatni	2611.62	3374.82	4147.75	3406.08	Fourth	Third	First	Second

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

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 786Kbps of 4G/LTE & 128Kbps 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] ≥ 768Kbps,** (ii). **Table 4.7: Upload User Data Throughput Technology Auto Detect Mode [Fixed Size] ≥ 768Kbps,** (iii). **Table 4.8: Upload User Data Throughput in 4G/LTE Technology Locked**

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

UPLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED DURATION)								
City	Upload User Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	30406.12	6388.44	23239.33	22085.14	First	Fourth	Second	Third
Karachi Kemari	27060.4	7088.09	20412.14	21124.78	First	Fourth	Third	Second
Karachi Malir	24759.97	6060.69	20383.61	22817.92	First	Fourth	Third	Second
Nankana Sahib	28426.61	10487.9	16104.42	18884.18	First	Fourth	Third	Second
Nowshera	25347.88	6374.91	16541.34	22181.44	First	Fourth	Third	Second
Muridke	25662.09	7969.82	19704.52	12045.78	First	Fourth	Second	Third
Swabi	19649.63	5127.31	15677.63	23113.48	Second	Fourth	Third	First
Karak	26379.4	7921.03	15840.94	22859.2	First	Fourth	Third	Second
Depalpur	27627.1	6824.65	20165.05	15428.62	First	Fourth	Second	Third
Karachi West	30540.5	7739.21	11046.53	23122.86	First	Fourth	Third	Second
Karachi South	27652.94	5679.64	19457.88	18169.97	First	Fourth	Second	Third
Shujabad	17554.09	5272.21	13425.98	18792.24	Second	Fourth	Third	First
Kabirwala	24872.94	4892.18	17125.22	14663.66	First	Fourth	Second	Third
Chichawatni	26473.1	5450.92	19440.25	25475.68	First	Fourth	Third	Second

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

UPLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED SIZE)								
City	Upload User Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	10643.65	5577.71	9605.32	8714.54	First	Fourth	Second	Third
Karachi Kemari	9158.96	5326.32	6974.23	6146.81	First	Fourth	Second	Third
Karachi Malir	8570.04	5363.18	8086.03	7215.77	First	Fourth	Second	Third
Nankana Sahib	7385.49	7079.52	7293.79	7569.03	Second	Fourth	Third	First
Nowshera	14103.14	9924.45	11919.5	15346.14	Second	Fourth	Third	First
Muridke	8377.86	5302.77	6439.53	5773	First	Fourth	Second	Third
Swabi	10046.95	8726.57	11153.8	15237.57	Third	Fourth	Second	First
Karak	14906.77	10626.6	10902.14	15831.5	Second	Fourth	Third	First
Depalpur	8102.06	4839.55	6402.35	6496.86	First	Fourth	Third	Second
Karachi West	10505.3	5577.75	6839.67	6713.75	First	Fourth	Second	Third
Karachi South	10001.13	4832.17	6915.82	6265.75	First	Fourth	Second	Third
Shujabad	12656.98	9823.41	13183.64	12453.28	Second	Fourth	First	Third
Kabirwala	12884.23	8314.92	12659.05	12099.25	First	Fourth	Second	Third
Chichawatni	7624.44	4354.03	6285.8	6296.47	First	Fourth	Third	Second

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

UPLOAD USER DATA THROUGHPUT IN 4G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
City	Upload User Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	29199.16	6497.95	23089.94	20797.17	First	Fourth	Second	Fourth
Karachi Kemari	27910.52	4880.88	12398.17	11616.64	First	Fourth	Second	Third
Karachi Malir	20068.82	4785.98	16469.01	17157.32	First	Fourth	Third	Second
Nankana Sahib	27812.03	8390.91	14039.86	12548.6	First	Fourth	Second	Third
Nowshera	26578.87	4906.47	15546.49	19994.7	First	Fourth	Third	Second
Muridke	24927.18	4333.3	13638.27	6449.46	First	Fourth	Second	Third

Swabi	21342.55	3489.51	10671.98	20884.06	First	Fourth	Third	Second
Karak	25256.02	5846.03	12291.38	20492.05	First	Fourth	Third	Second
Depalpur	25705.74	5429.01	14310.34	13141.29	First	Fourth	Second	Third
Karachi West	30745.65	5755.57	7651.81	15585.05	First	Fourth	Third	Second
Karachi South	27980.42	4360.51	12537.15	9953.77	First	Fourth	Second	Third
Shujabad	23267.01	4623.74	10924.35	12718.15	First	Fourth	Third	Second
Kabirwala	27600.05	3091.6	10026.3	7658.84	First	Fourth	Second	Third
Chichawatni	28983.01	4198.63	14118.11	11864.77	First	Fourth	Second	Third

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

UPLOAD USER DATA THROUGHPUT IN 3G TECHNOLOGY LOCKED MODE (FIXED DURATION)								
City	Upload User Data Throughput [Kbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	1104.29	1506.06	2770.69	2099.58	Fourth	Third	First	Second
Karachi Kemari	903.66	1623.64	2063.82	1384.62	Fourth	Second	First	Third
Karachi Malir	755.33	1217.21	2373.66	2270.8	Fourth	Third	First	Second
Nankana Sahib	695.94	1434.65	2146.87	1216.58	Fourth	Second	First	Third
Nowshera	900.27	1412.17	2027.06	1790.41	Fourth	Third	First	Second
Muridke	245.48	1142.97	2329.95	1182.1	Fourth	Third	First	Second
Swabi	979.45	1020.51	2176.1	1831.51	Fourth	Third	First	Second
Karak	1293.18	1531.47	1382.82	2093.89	Fourth	Second	Third	First
Depalpur	776.83	1281.6	2439.5	1551.51	Fourth	Third	First	Second
Karachi West	1296.74	1520.31	2263.27	1628.73	Fourth	Third	First	Second
Karachi South	754.78	1557.47	2010.1	1031.58	Fourth	Second	First	Third
Shujabad	1521.38	1948.9	1984.93	1086.78	Third	Second	First	Fourth
Kabirwala	1569.33	2270.17	2468.6	1255.38	Third	Second	First	Fourth
Chichawatni	683.83	1296.88	2861.84	1645.21	Fourth	Third	First	Second

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

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 IN CITIES								
City	Webpage Loading Time [seconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	4.18	4.77	**5.95**	**5.96**	Yes	Yes	**No**	**No**
Karachi Kemari	3.99	**5.06**	**5.42**	**5.07**	Yes	**No**	**No**	**No**
Karachi Malir	4.76	**5.56**	**6.29**	**6.26**	Yes	**No**	**No**	**No**
Nankana Sahib	**6.13**	**5.17**	**6.64**	4.44	**No**	**No**	**No**	Yes
Nowshera	**6.5**	**7.22**	**6.64**	**5.73**	**No**	**No**	**No**	**No**
Muridke	4.9	**5.65**	**5.16**	**5.09**	Yes	**No**	**No**	**No**
Swabi	**5.81**	**7.38**	**6.48**	**5.6**	**No**	**No**	**No**	**No**
Karak	**5.4**	**7.4**	**6.92**	**5.17**	**No**	**No**	**No**	**No**
Depalpur	4.72	**6.48**	4.53	**5.21**	Yes	**No**	Yes	**No**
Karachi West	3.47	**5.02**	**5.47**	4.82	Yes	**No**	**No**	Yes
Karachi South	4.16	**5.01**	**5.41**	4.8	Yes	**No**	**No**	Yes
Shujabad	**6.15**	**6.39**	**6.27**	**6.03**	**No**	**No**	**No**	**No**
Kabirwala	**5.76**	**6.49**	**6.14**	**5.65**	**No**	**No**	**No**	**No**
Chichawatni	4.91	**6.32**	4.98	4.58	Yes	**No**	Yes	Yes

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								
City	Latency [milliseconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	53	43	26	31	Yes	Yes	Yes	Yes
Karachi Kemari	65	43	30	38	Yes	Yes	Yes	Yes
Karachi Malir	**76**	49	33	32	**No**	Yes	Yes	Yes
Nankana Sahib	**76**	46	69	44	**No**	Yes	Yes	Yes
Nowshera	**79**	72	**129**	69	**No**	Yes	**No**	Yes
Muridke	**87**	48	52	47	**No**	Yes	Yes	Yes
Swabi	**96**	71	69	74	**No**	Yes	Yes	Yes
Karak	**94**	63	**88**	**76**	**No**	Yes	**No**	**No**
Depalpur	**84**	66	72	53	**No**	Yes	Yes	Yes
Karachi West	53	40	27	33	Yes	Yes	Yes	Yes
Karachi South	57	46	30	31	Yes	Yes	Yes	Yes
Shujabad	**84**	**91**	54	52	**No**	**No**	Yes	Yes
Kabirwala	**84**	**82**	39	51	**No**	**No**	Yes	Yes
Chichawatni	**89**	64	64	56	**No**	Yes	Yes	Yes

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

LATENCY IN 4G/LTE TECHNOLOGY LOCKED MODE								
City	Latency [milliseconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	55	42	27	35	Yes	Yes	Yes	Yes
Karachi Kemari	62	46	30	33	Yes	Yes	Yes	Yes
Karachi Malir	73	57	34	39	Yes	Yes	Yes	Yes
Nankana Sahib	**83**	47	55	46	**No**	Yes	Yes	Yes
Nowshera	71	**85**	**143**	**99**	Yes	**No**	**No**	**No**
Muridke	**83**	63	53	46	**No**	Yes	Yes	Yes
Swabi	**84**	67	74	**77**	**No**	Yes	Yes	**No**
Karak	**85**	**77**	**80**	**80**	**No**	**No**	**No**	**No**
Depalpur	**101**	63	**83**	44	**No**	Yes	**No**	Yes
Karachi West	52	39	30	35	Yes	Yes	Yes	Yes
Karachi South	55	42	30	26	Yes	Yes	Yes	Yes
Shujabad	**77**	**81**	37	53	**No**	**No**	Yes	Yes
Kabirwala	**81**	**81**	42	57	**No**	**No**	Yes	Yes
Chichawatni	**81**	74	71	58	**No**	Yes	Yes	Yes

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

LATENCY IN 3G TECHNOLOGY LOCKED MODE								
City	Latency [milliseconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	**515**	**614**	**419**	104	**No**	**No**	**No**	Yes
Karachi Kemari	**513**	**623**	**432**	77	**No**	**No**	**No**	Yes
Karachi Malir	**515**	**537**	**435**	65	**No**	**No**	**No**	Yes
Nankana Sahib	**598**	**501**	**478**	82	**No**	**No**	**No**	Yes
Nowshera	**506**	**377**	**539**	**176**	**No**	**No**	**No**	**No**
Muridke	**578**	**461**	**489**	103	**No**	**No**	**No**	Yes
Swabi	**525**	**283**	**482**	**178**	**No**	**No**	**No**	**No**
Karak	**547**	**467**	**499**	**181**	**No**	**No**	**No**	**No**
Depalpur	**571**	**373**	**468**	69	**No**	**No**	**No**	Yes

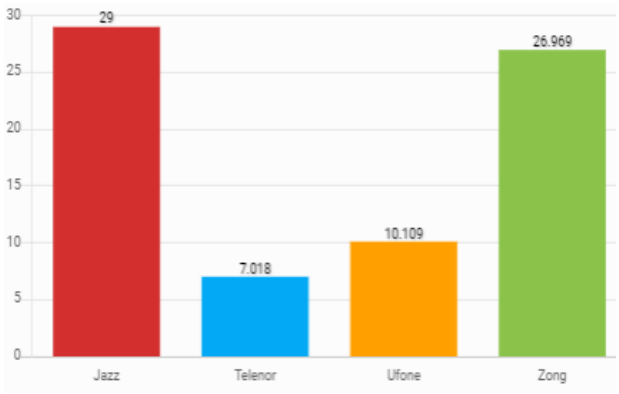
Karachi West	**478**	**650**	**448**	70	**No**	**No**	**No**	Yes
Karachi South	**494**	**648**	**414**	137	**No**	**No**	**No**	Yes
Shujabad	**227**	**841**	**452**	95	**No**	**No**	**No**	Yes
Kabirwala	**289**	**874**	**484**	96	**No**	**No**	**No**	Yes
Chichawatni	**566**	**616**	**503**	100	**No**	**No**	**No**	Yes

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

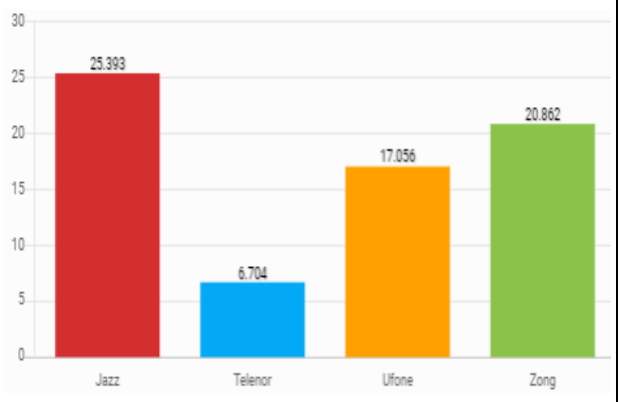
4.6. During the survey, the deployed technologies by Cellular Mobile Operators (CMOs), Success Rate of http Transfer Download Tests and Resource Block Utilization have been recorded. The details can be seen in attached graphs.

TECHNOLOGY AUTO DETECT MODE TESTING

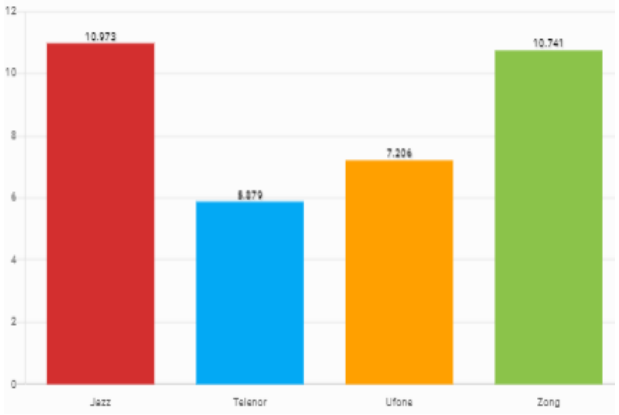
CAPACITY TEST DOWNLOAD SPEED (Mbps)



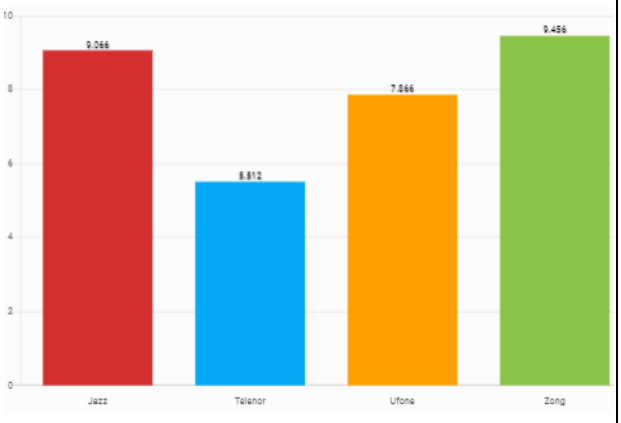
CAPACITY TEST UPLOAD SPEED (Mbps)



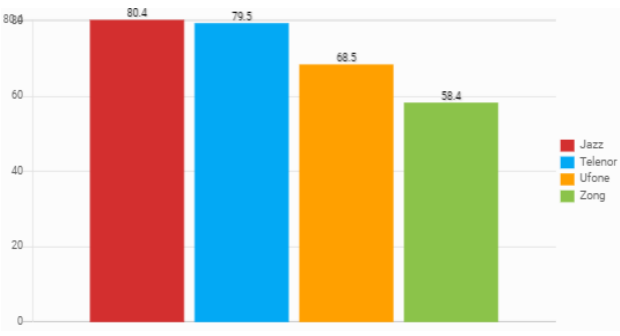
DATA TRANSFER DOWNLOAD SPEED (Mbps)



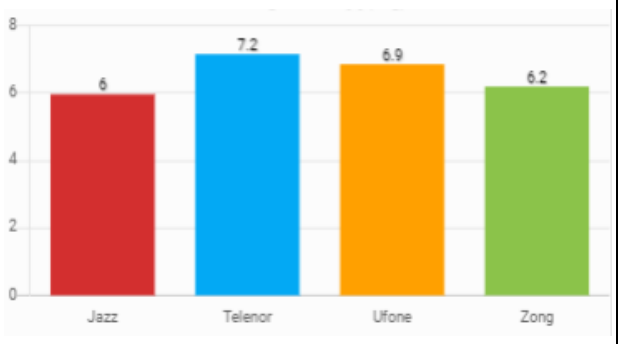
DATA TRANSFER UPLOAD SPEED (Mbps)



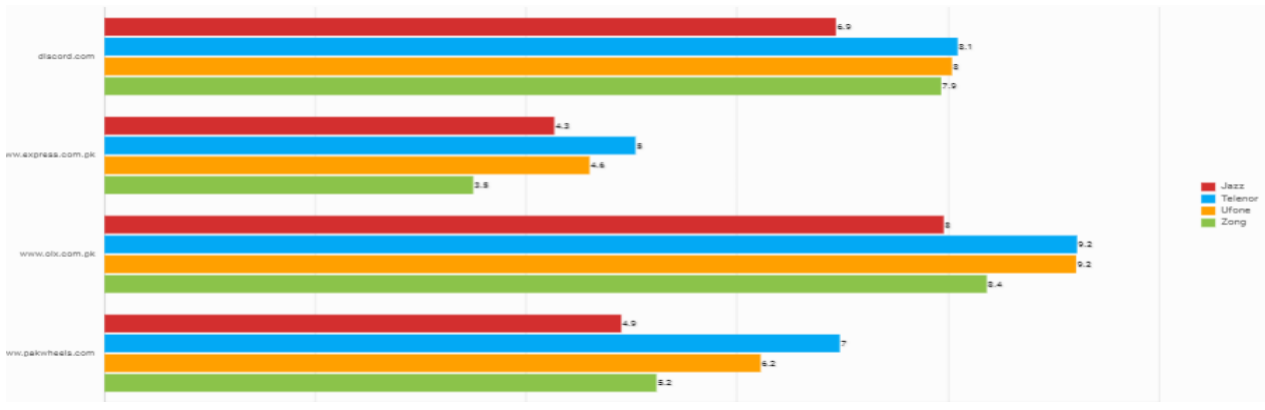
LATENCY (milliseconds)



WEBPAGE LOADING TIME (Seconds)

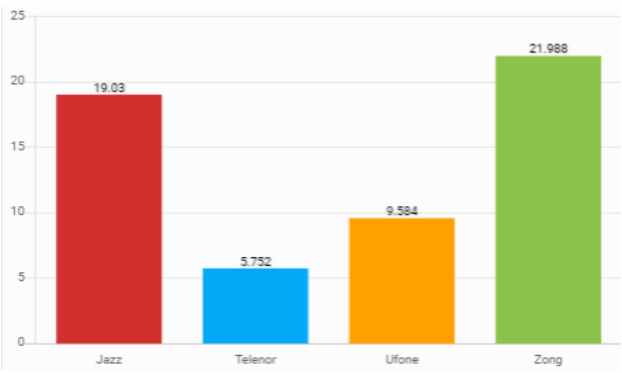


WEBPAGE LOADING TIME PER PAGE (Seconds)

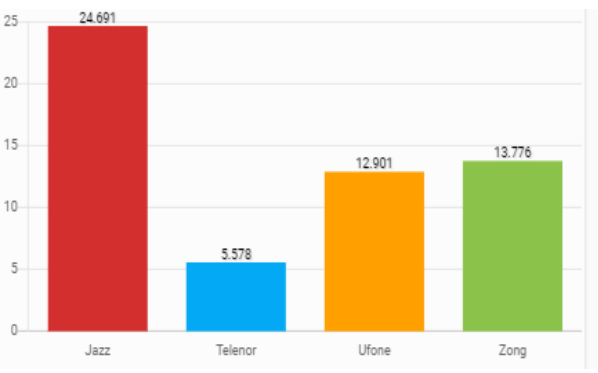


4G/LTE TECHNOLOGY LOCKED MODE

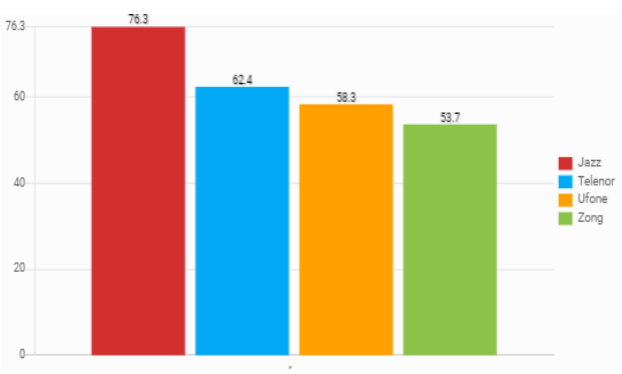
DATA TRANSFER DOWNLOAD SPEED (Mbps)



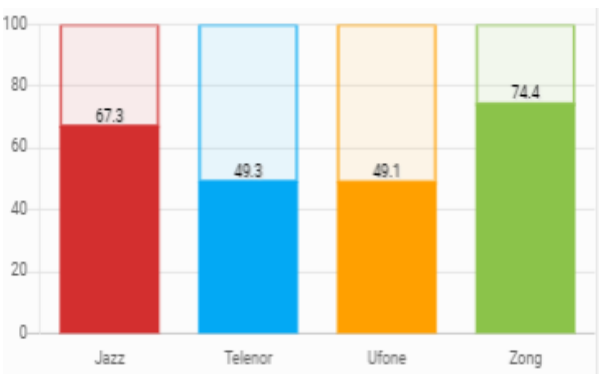
DATA TRANSFER UPLOAD SPEED (Mbps)



LATENCY (milliseconds)

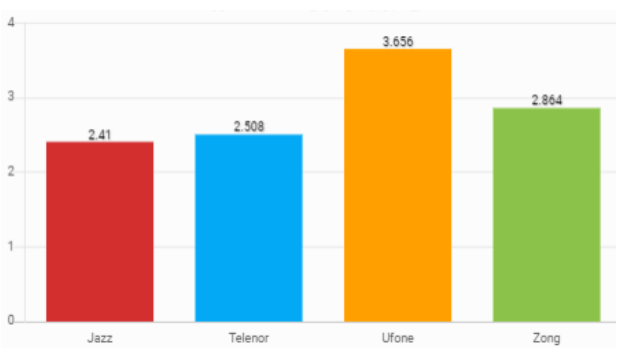


RESOURCE BLOCK USAGE DOWNLOAD

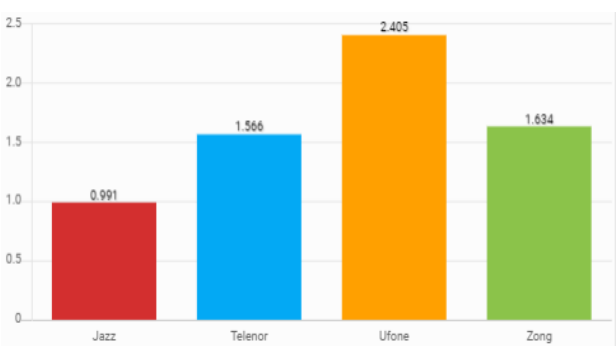


3G TECHNOLOGY LOCKED MODE

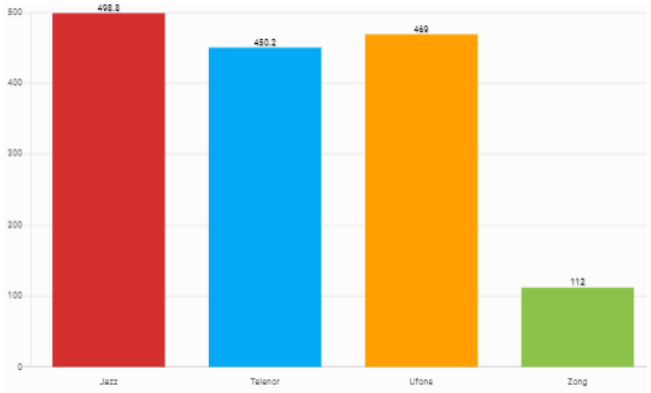
DATA TRANSFER DOWNLOAD SPEED (Mbps)



DATA TRANSFER UPLOAD SPEED (Mbps)



LATENCY (milliseconds)



VOICE SERVICE

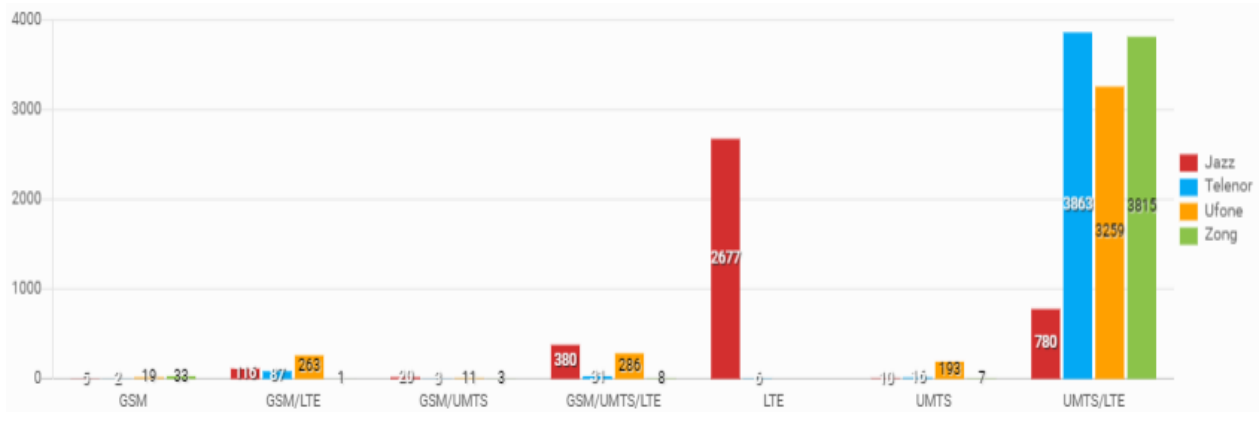
5.1. A total of **15,894 Call attempts** were made and out of which **245 were failed attempts**. In **15,649 successful call attempts**, **107 calls dropped** prior to completion of two minutes duration, whereas, **15,542 calls remained connected** for the complete duration of two minutes. The company wise call statistics is shown in **Table 5.1: Call Statistics.**

DESCRIPTION	JAZZ	TELENOR	UFONE	ZONG
TOTAL CALLS ATTEMPTS	3988	4008	4031	3867
FAILED CALLS ATTEMPTS	43	111	46	45
ESTABLISHED CALLS ATTEMPTS	3945	3897	3985	3822
DROPPED CALLS ATTEMPTS	19	44	29	15
COMPLETED CALLS ATTEMPTS	3926	3853	3956	3807
CALL SETUP SUCCESS RATE (%)	98.92	**97.23**	98.86	98.84
CALL SETUP TIME (Sec)	6.55	**9.77**	6.94	7.1
CALL COMPLETION RATE (%)	99.46	**96.57**	98.8	98.39
ISHO SUCCESS RATE (%)	98.63	-	98.85	-
RAB SETUP SUCCESS RATE (%)	100	100	99.98	100
MEAN OPINION SCORE	3.62	3.18	3.4	3.63
MEAN OPINION SCORE EXCESS RATIO – MOS <1.6 (%)	3.61	1.41	1.24	0.41
TOTAL SPEECH TEST	39463	38905	39836	38277

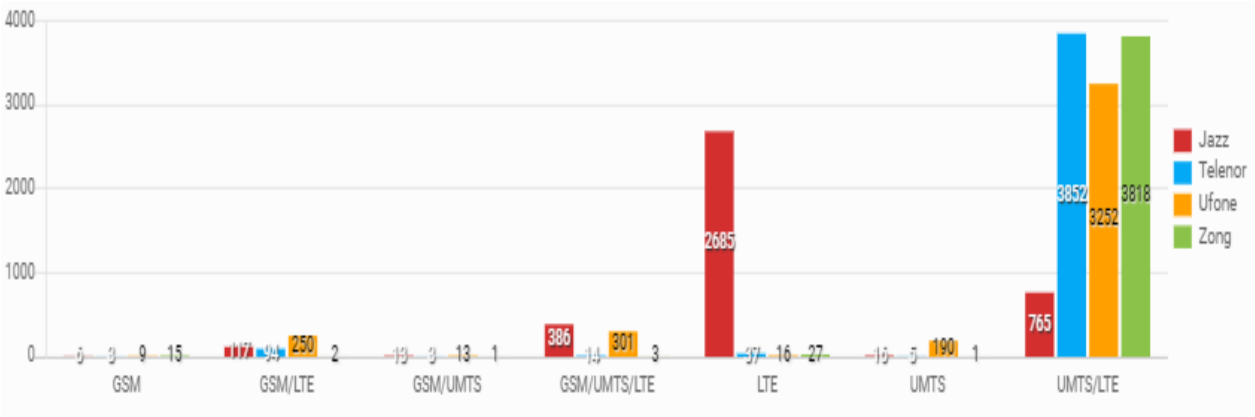
Table5.1: Call Statistics

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

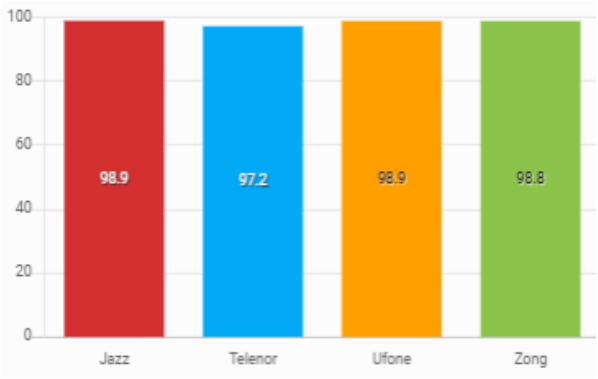
TECHNOLOGY WISE DISTRIBUTION OF CALLS – A PARTY



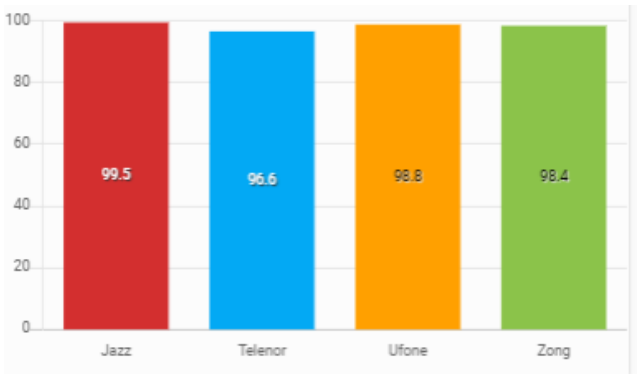
TECHNOLOGY WISE DISTRIBUTION OF CALLS – B PARTY



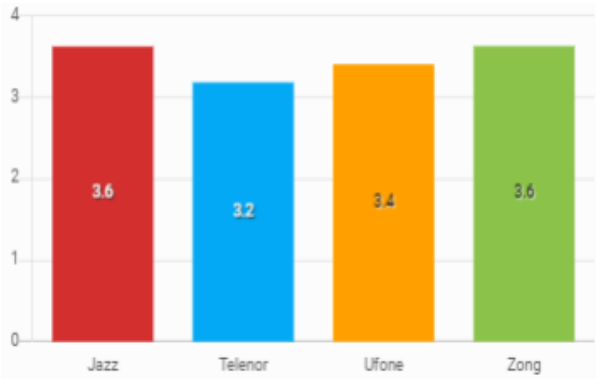
CALL SETUP SUCCESS RATE



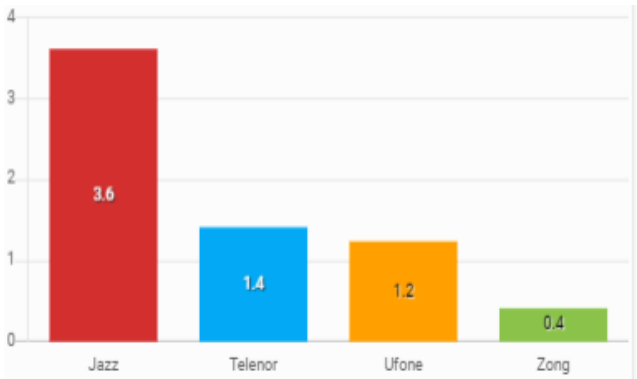
CALL RETAINABILITY



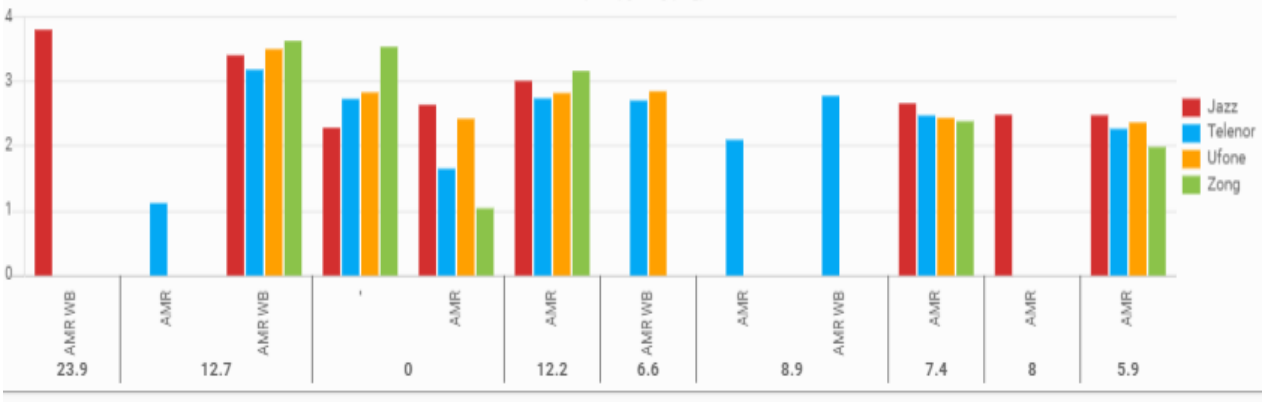
MEAN OPINION SCORE - AVERAGE



MEAN OPINION SCORE < 1.6 (PERCENTAGE)



MEAN OPINION SCORE – VOICE CODEC



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 **14 x surveyed cities** of Pakistan. The compliance level of threshold values of voice QoS KPIs is shown in each **Table 5.1: Voice QoS KPIs Compliance Level** and **Table 5.2: Voice QoS KPIs Compliance Level.**

CMO	KPIs	Threshold	KARACHI CENTRAL	KARACHI KEMARI	KARACHI MALIR	NANKANA SAHIB	NOWSHERA	MURIDKE	SWABI
Jazz	NA	≥ 99%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CSSR	≥ 98%	Yes	Yes	Yes	Yes	**No**	Yes	Yes
	CCT	≤ 7.5 sec	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	≥ 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ISHO	≥ 98%	N/A	Yes	Yes	N/A	Yes	Yes	Yes
	RSSR	> 98%	Yes	**No**	Yes	Yes	Yes	Yes	Yes
Telenor	NA	≥ 99%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CSSR	≥ 98%	Yes	Yes	Yes	Yes	**No**	**No**	**No**
	CCT	≤ 7.5 sec	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	> 98%	Yes	Yes	Yes	Yes	Yes	**No**	**No**
	MOS	≥ 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ISHO	≥ 98%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	RSSR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ufone	NA	≥ 99%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CSSR	≥ 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCT	≤ 7.5 sec	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	≥ 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ISHO	≥ 98%	N/A	N/A	N/A	N/A	**No**	N/A	N/A
	RSSR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ZonG	NA	≥ 99%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CSSR	≥ 98%	Yes	Yes	Yes	Yes	Yes	Yes	**No**
	CCT	≤ 7.5 sec	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	≥ 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ISHO	≥ 98%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	RSSR	> 98%	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

CMO	KPIs	Threshold	KARAK	DEPALPUR	KARACHI WEST	KARACHI SOUTH	SHUJABAD	KABIRWALA	CHICHAWATNI
Jazz	NA	≥ 99%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CSSR	≥ 98%	Yes	Yes	**No**	Yes	Yes	Yes	Yes
	CCT	≤ 7.5 sec	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	≥ 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ISHO	≥ 98%	Yes	N/A	Yes	N/A	N/A	N/A	N/A
	RSSR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Telenor	NA	≥ 99%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CSSR	≥ 98%	**No**	Yes	**No**	Yes	**No**	Yes	Yes
	CCT	≤ 7.5 sec	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	> 98%	**No**	Yes	**No**	Yes	**No**	Yes	Yes
	MOS	≥ 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ISHO	≥ 98%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	RSSR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ufone	NA	≥ 99%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CSSR	≥ 98%	**No**	Yes	Yes	Yes	**No**	**No**	Yes
	CCT	≤ 7.5 sec	Yes	Yes	Yes	Yes	**No**	**No**	Yes
	CCR	> 98%	**No**	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	≥ 3	**No**	Yes	Yes	Yes	Yes	**No**	Yes
	ISHO	≥ 98%	Yes	N/A	N/A	N/A	Yes	N/A	N/A
	RSSR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ZonG	NA	≥ 99%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CSSR	≥ 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCT	≤ 7.5 sec	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	> 98%	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	≥ 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ISHO	≥ 98%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	RSSR	> 98%	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 5.2: Voice QoS KPIs Compliance Level

SMS SERVICE

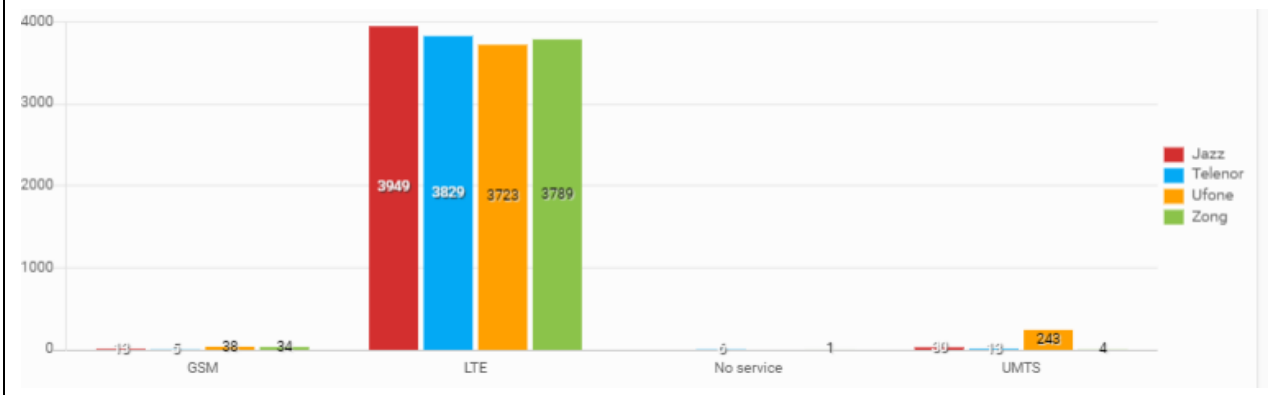
6.1. A total of **15,677 SMS sending attempts** were conducted, out of which **15,655 SMS** were **successfully transmitted** by A-Party while **15,430 SMS** were **successfully received** at B-Party. The company wise SMS Statistics are shown in **Table 6.1: SMS Statistics**

DESCRIPTION	JAZZ	TELENOR	UFONE	ZONG
SMS SEND REQUEST	3992	3853	4004	3828
SMS SUCCESSFULLY TRANSMITTED	3991	3835	4003	3826
SMS SUCCESSFULLY RECEIVED	3943	3691	3999	3797
SMS RECEIVE SUCCESS RATE (%)	**98.77**	**95.8**	99.88	99.19
END-TO-END DELIVERY TIME (Sec)	4.08	11.02	3.22	2.57

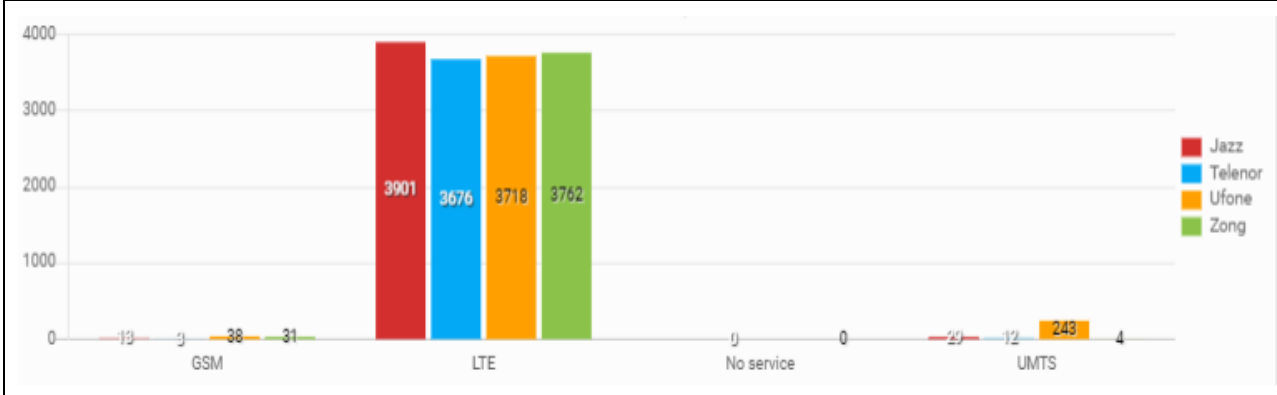
Table 6.1: SMS Statistics

6.2. The SMS Send Request & Successful Reception by Technology, Average Success Rate & End to End Delivery Time and Delivery Duration by Technology are shown in the graphs.

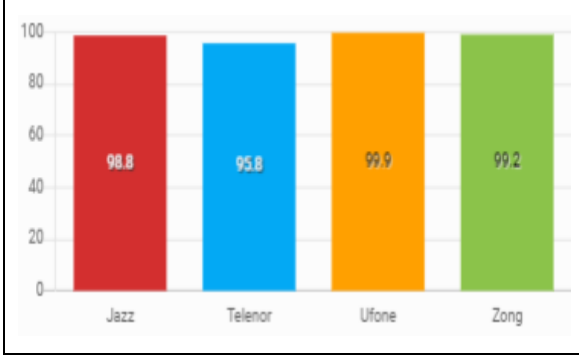
SMS SEND REQUEST BY TECHNOLOGY



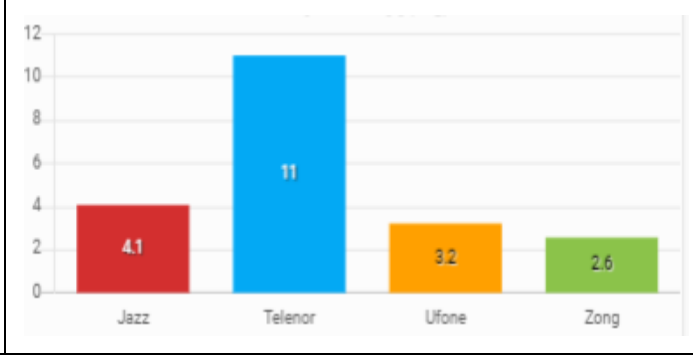
SMS SUCCESSFUL RECEPTION BY TECHNOLOGY



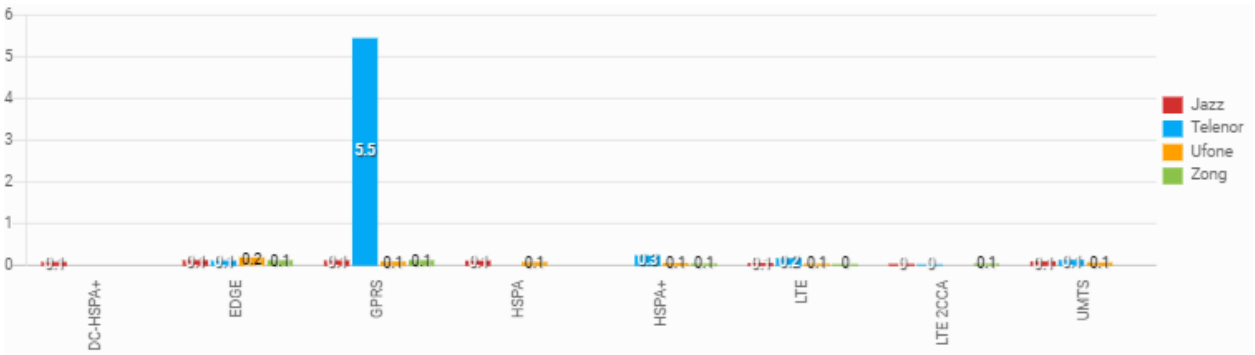
SMS RECEIVE SUCCESS RATE (%)



SMS END TO END DELIVERY TIME (SECONDS)



SMS DELIVERY DURATION BY TECHNOLOGY



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 14 x surveyed cities of Punjab, KPK and Balochistan.

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 Cities Technology Auto Detect Mode						Standing
		Compliant			Non-Compliant			
		4G	3G	Total	4G	3G	Total	
1.	ZonG	14	4	18	-	-	-	1st
2.	Ufone	12	9	17	2	-	2	2nd
3.	Jazz	12	3	15	2	-	2	3rd
4.	Telenor	9	7	16	5	-	5	4th

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

S. #.	Operator	Compliance Level – Number of Cities Technology Locked Mode						Standing
		Compliant			Non-Compliant			
		4G	3G	Total	4G	3G	Total	
1.	ZonG	14	14	28	-	-	-	1st
2.	Jazz	14	14	28	-	-	-	1st
3.	Ufone	12	14	26	2	-	2	2nd
4.	Telenor	8	14	22	6	-	6	3rd

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 Cities								Standing	
		Technology Auto Detect Mode								Fixed Duration	Fixed Size
		Fixed Duration				Fixed Size					
		1st	2nd	3rd	4th	1st	2nd	3rd	4th		
1.	ZonG	8	6	-	-	10	4	-	-	1st	1st
2.	Jazz	6	8	-	-	4	10	-	-	2nd	2nd
3.	Ufone	-	-	11	3	-	-	12	2	3rd	3rd
4.	Telenor	-	-	3	11	-	-	2	12	4th	4th

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

S. #.	Operator	Highest Download Throughput – Number of Cities								Standing	
										Fixed Duration	
		4G Locked Mode				3G Locked Mode				4G	3G
		Fixed Duration				Fixed Duration					
		1st	2nd	3rd	4th	1st	2nd	3rd	4th		
1.	ZonG	9	4	1	-	4	3	1	6	1st	2nd
2.	Jazz	5	8	1	-	-	4	8	2	2nd	4th
3.	Ufone	-	2	10	2	9	1	-	4	3rd	1st
4.	Telenor	-	-	2	12	1	6	5	2	4th	3rd

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 Cities								Standing	
		Technology Auto Detect Mode								Fixed Duration	Fixed Size
		Fixed Duration				Fixed Size					
		1st	2nd	3rd	4th	1st	2nd	3rd	4th		
1.	Jazz	12	2	-	-	9	4	1	-	1st	1st
2.	ZonG	2	7	5	-	4	2	8	-	2nd	2nd
3.	Ufone	-	5	9	-	1	8	5	-	3rd	3rd
4.	Telenor	-	-	-	14	-	-	-	14	4th	4th

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

S. #.	Operator	Highest Upload Throughput – Number of Cities								Standing	
		4G Locked Mode				3G Locked Mode					
		Fixed Duration				Fixed Duration					
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	4G	3G
1.	Jazz	14	-	-	-	-	-	2	12	1st	4th
2.	Ufone	-	8	6	-	13	-	1	-	2nd	1st
3.	ZonG	-	6	7	1	1	8	3	2	3rd	2nd
4.	Telenor	-	-	-	14	-	6	8	-	4th	3rd

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 Cities		Standing
		Compliant	Non-Compliant	
1.	Jazz	8	6	1st
2.	ZonG	4	10	2nd
3.	Ufone	2	12	3rd
4.	Telenor	1	13	4th

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 Cities								Standing
		Compliant				Non-Compliant				
		Auto	4G	3G	Total	Auto	4G	3G	Total	
1.	ZonG	13	11	11	35	1	3	3	7	1st
2.	Ufone	12	11	-	23	2	3	14	19	2nd
3.	Telenor	12	10	-	22	2	4	14	20	3rd
4.	Jazz	4	6	-	10	10	8	14	32	4th

Table 8.8: CMOs Standing in Latency

c. **VOICE SERVICE.** The categorization of each CMOs, as per the maximum compliant of Voice QoS KPIs is shown in **Table 8.9: CMOs Standing in Voice Service.**

S. #.	Operator	Voice QoS KPIs		Standing
		Compliant	Non-Compliant	
1.	ZonG	83	1	1st
2.	Jazz	88	3	2nd
3.	Ufone	78	9	3rd
4.	Telenor	73	11	4th

Table 8.9: CMOs Standing in Voice Service

d. **OVERALL STANDING.** The overall standing of each CMOs in different category of services is mentioned in **Table 8.10: CMOs Overall Standing in QoS Survey.**

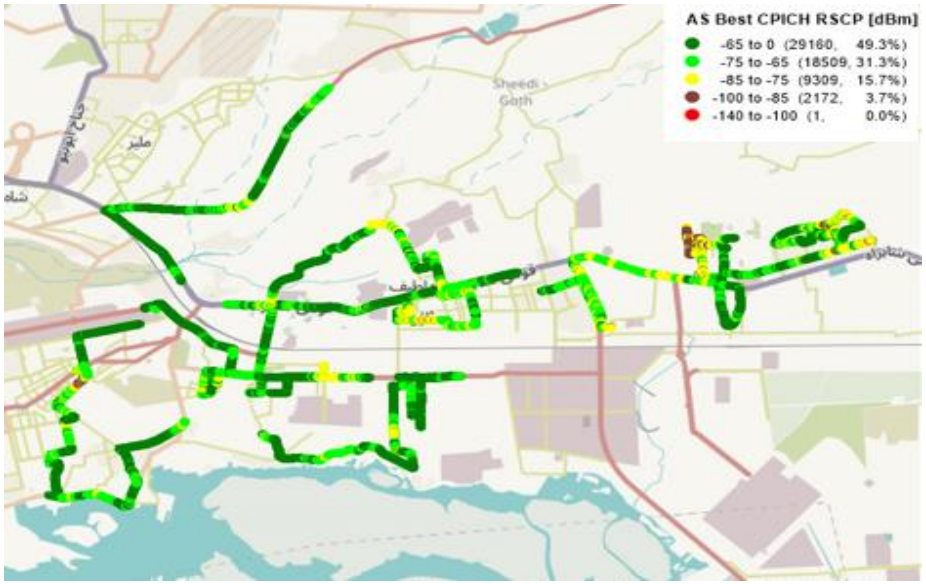
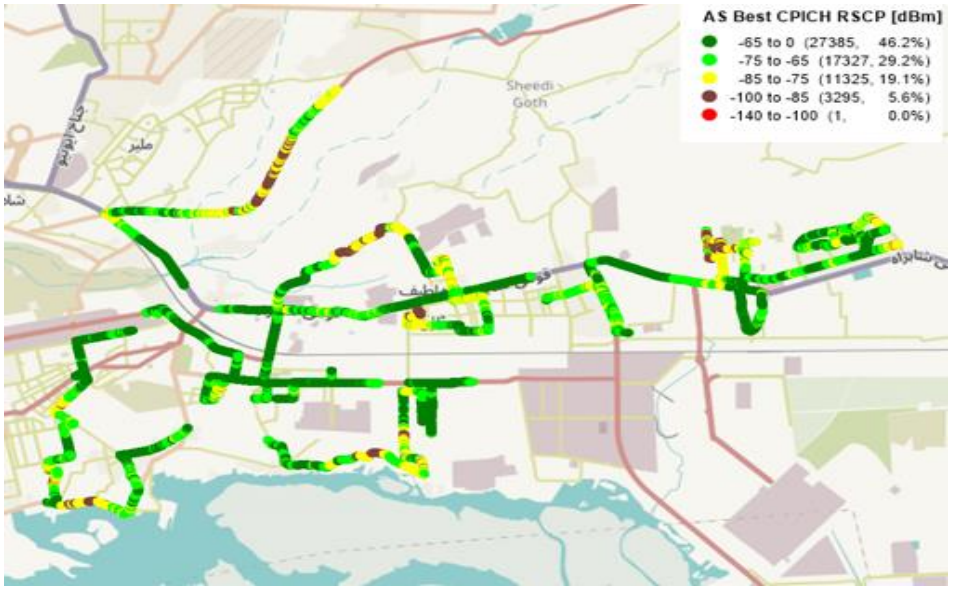
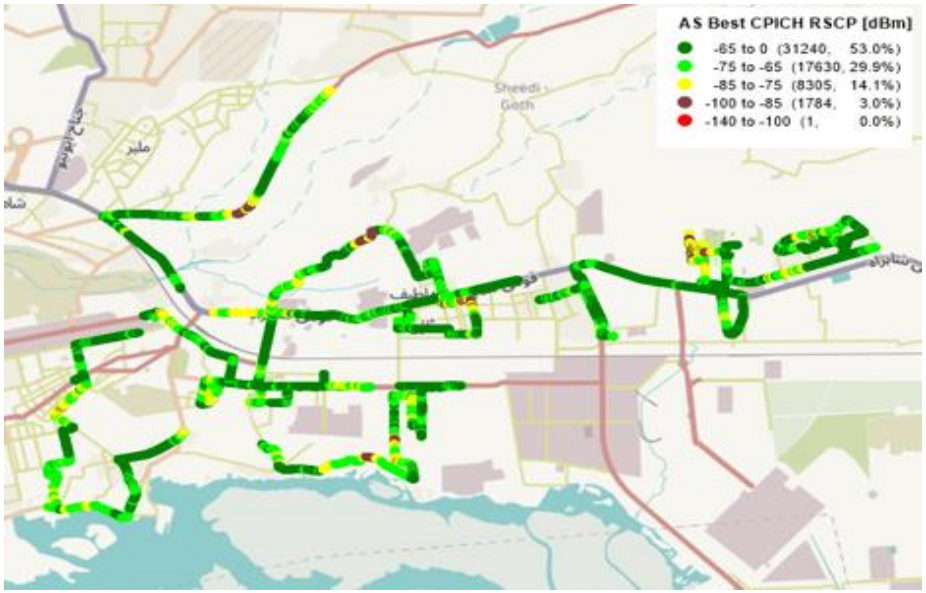
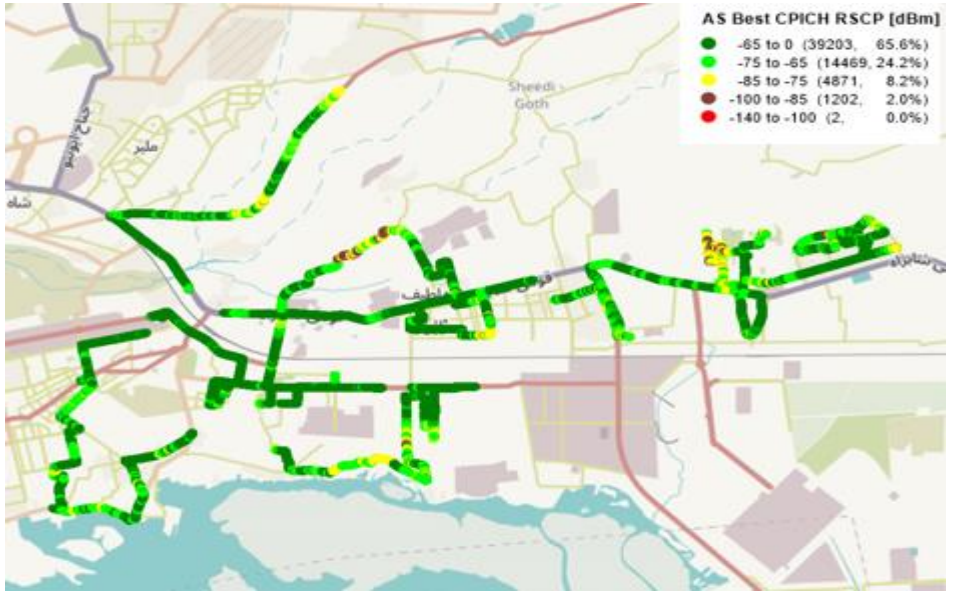
S. #.	Service				STANDING			
					1st	2nd	3rd	4th
1.	Mobile Network Coverage			Auto Mode	ZonG	Ufone	Jazz	Telenor
				Locked Mode	ZonG & Jazz	Ufone	Telenor	-
2.	Mobile Broadband	Fixed Duration	Download	Auto Mode	ZonG	Jazz	Ufone	Telenor
				4G	ZonG	Jazz	Ufone	Telenor
				3G	Ufone	ZonG	Telenor	Jazz
			Upload	Auto Mode	Jazz	ZonG	Ufone	Telenor
				4G	Jazz	Ufone	ZonG	Telenor
				3G	Ufone	ZonG	Telenor	Jazz
		Fixed Size	Download	Auto Mode	ZonG	Jazz	Ufone	Telenor
			Upload	Auto Mode	Jazz	ZonG	Ufone	Telenor
		Web Page Loading Time			Jazz	ZonG	Ufone	Telenor
		Latency			ZonG	Ufone	Telenor	Jazz
3.	Voice				ZonG	Jazz	Ufone	Telenor

Table 8.10: CMOs Overall Standing in QoS Survey

Annex-A (Coverage Maps)

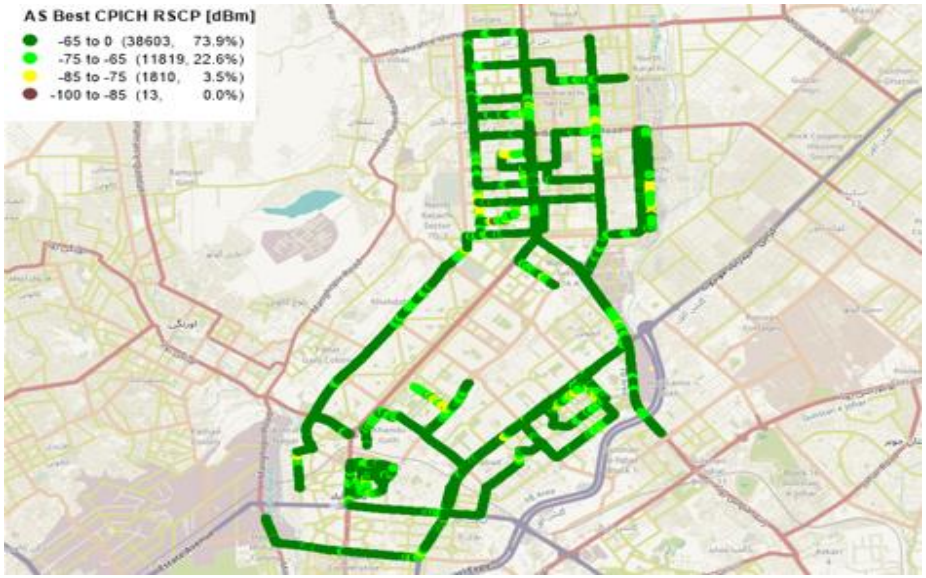
3G LOCK MODE

3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

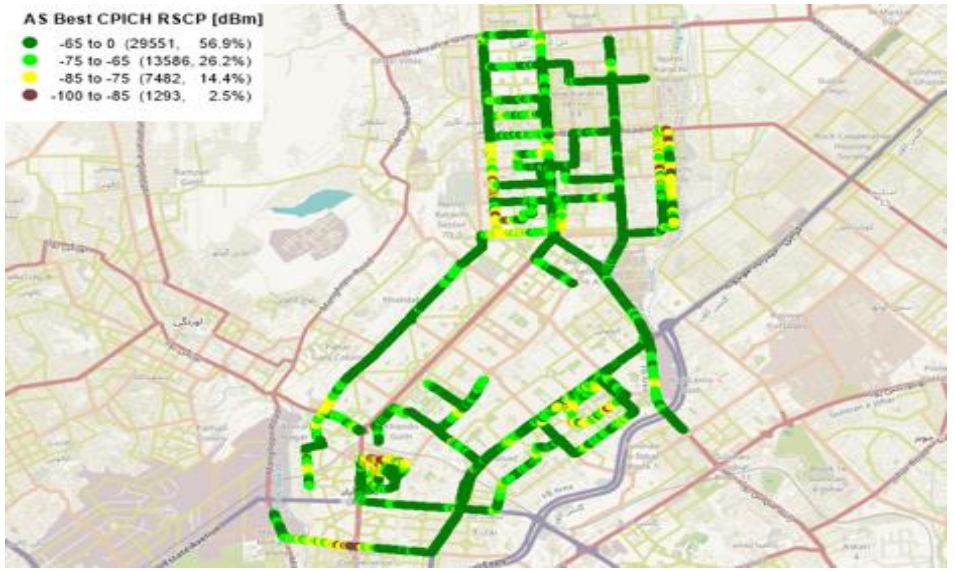
JAZZ 3G NETWORK COVERAGE – KARACHI MALIR	TELENOR 3G NETWORK COVERAGE – KARACHI MALIR
	
UFONE 3G NETWORK COVERAGE – KARACHI MALIR	**ZONG 3G NETWORK COVERAGE – KARACHI MALIR**
	

3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

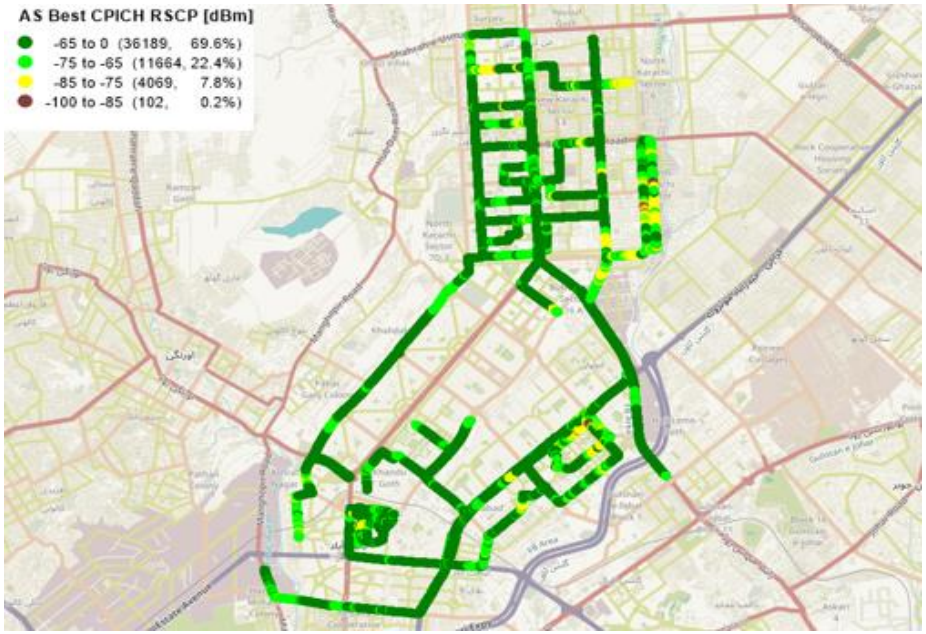
JAZZ 3G NETWORK COVERAGE – KARACHI CENTRAL



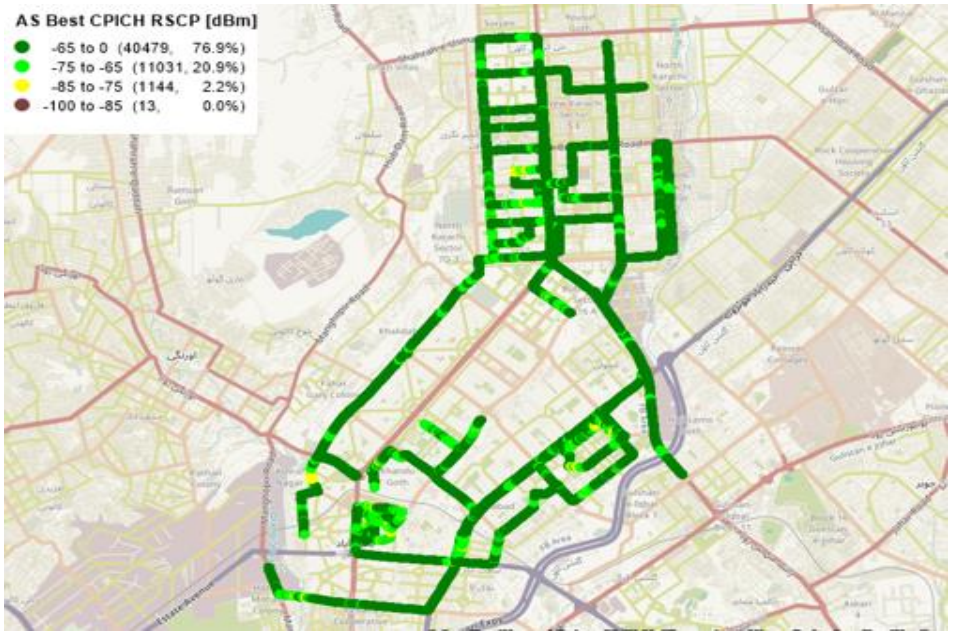
TELENOR 3G NETWORK COVERAGE – KARACHI CENTRAL



UFONE 3G NETWORK COVERAGE – KARACHI CENTRAL

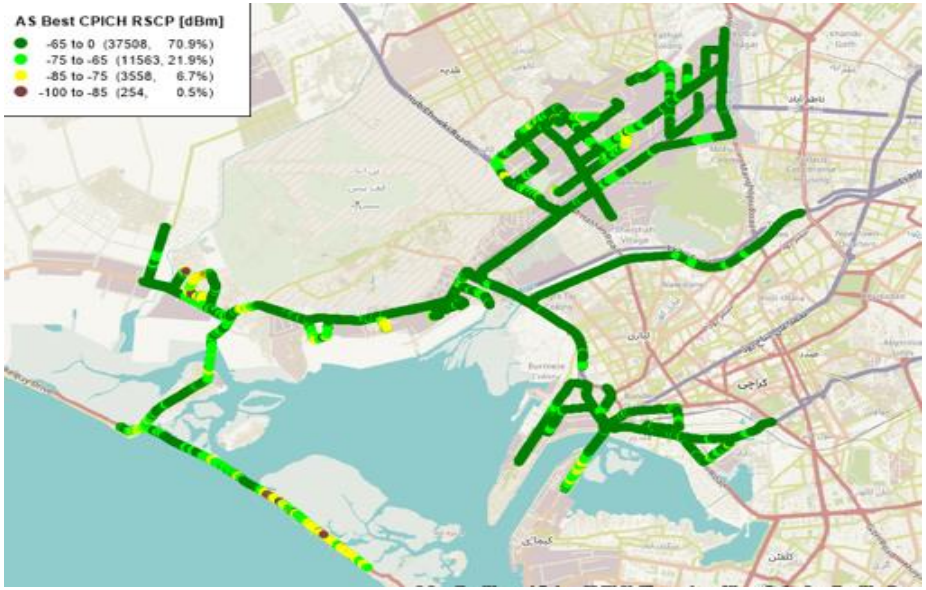


ZONG 3G NETWORK COVERAGE – KARACHI CENTRAL



3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

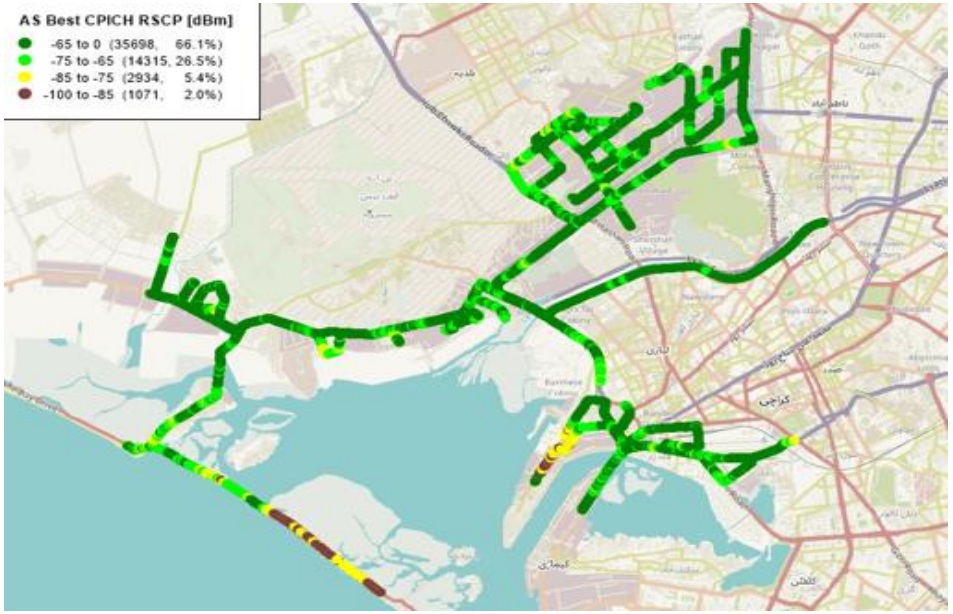
JAZZ 3G NETWORK COVERAGE – KARACHI KEMARI



TELENOR 3G NETWORK COVERAGE – KARACHI KEMARI

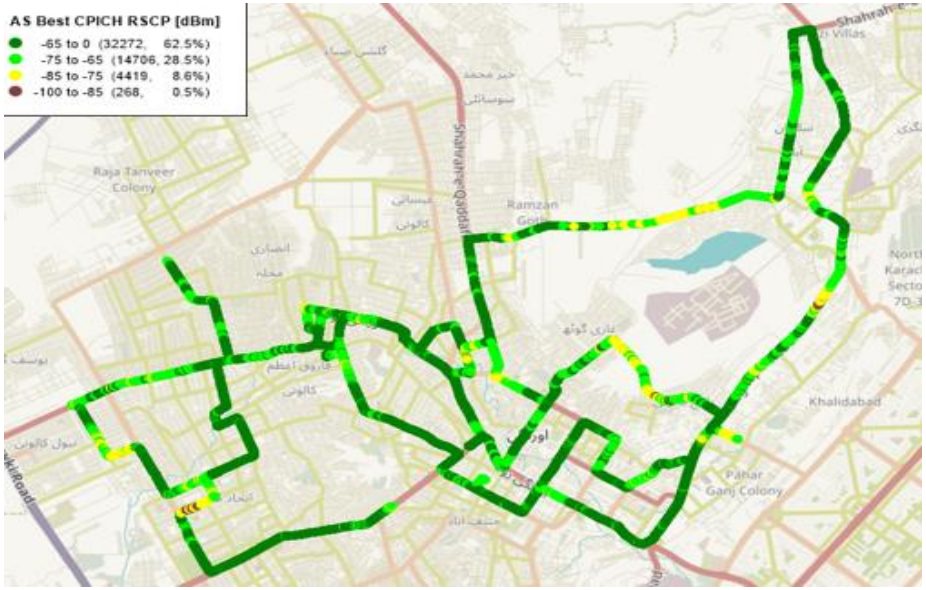
UFONE 3G NETWORK COVERAGE – KARACHI KEMARI

ZONG 3G NETWORK COVERAGE – KARACHI KEMARI

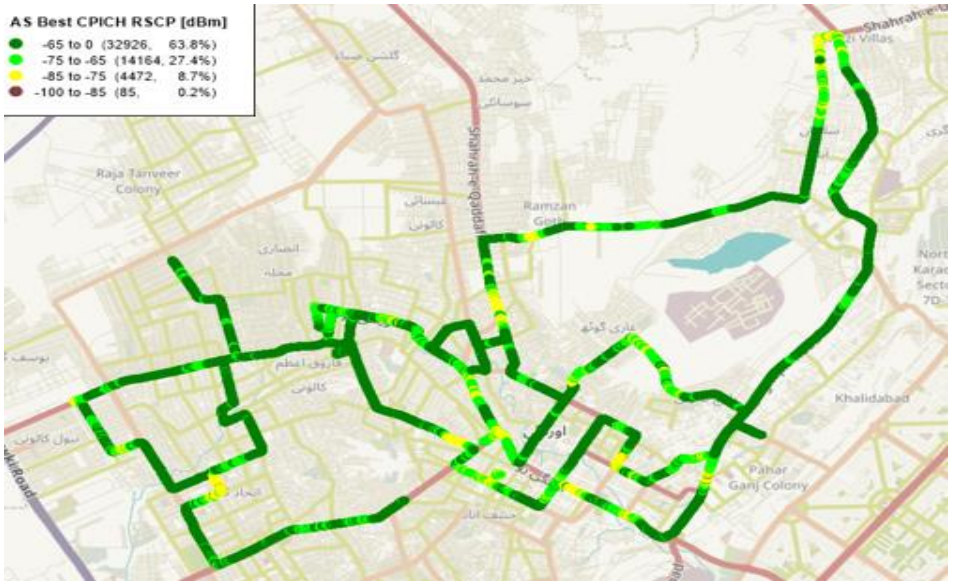


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

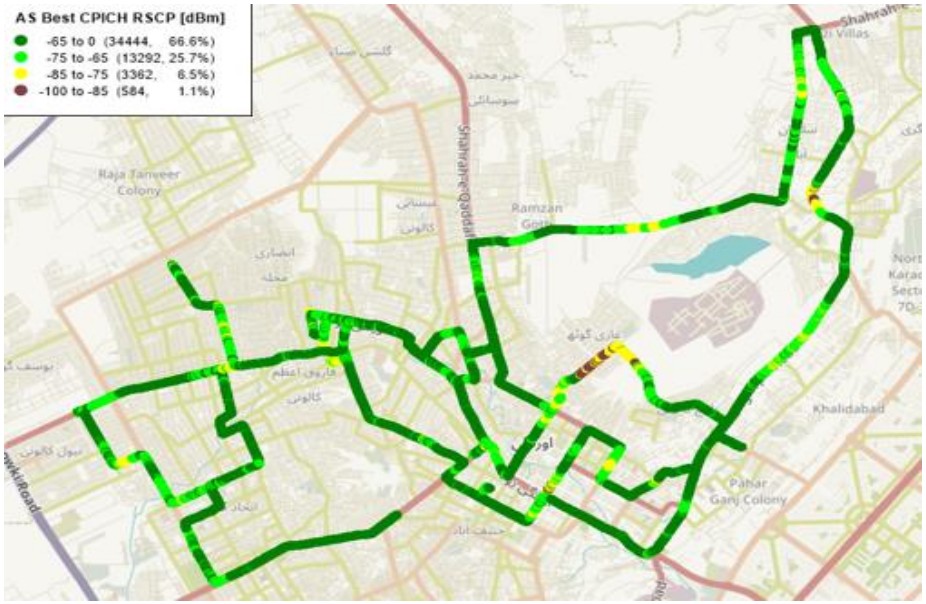
JAZZ 3G NETWORK COVERAGE – KARACHI WEST



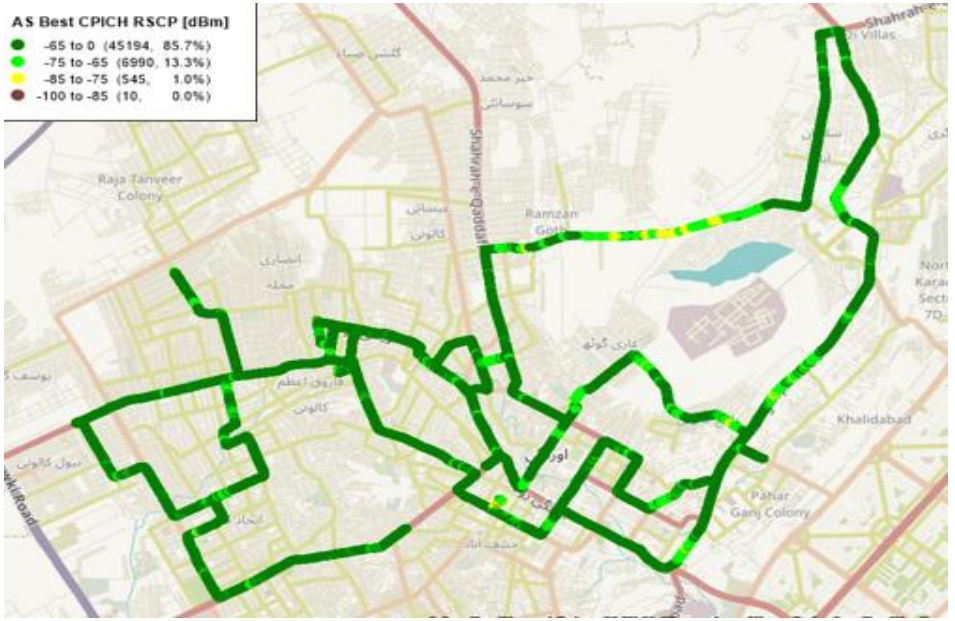
TELENOR 3G NETWORK COVERAGE – KARACHI WEST



UFONE 3G NETWORK COVERAGE – KARACHI WEST



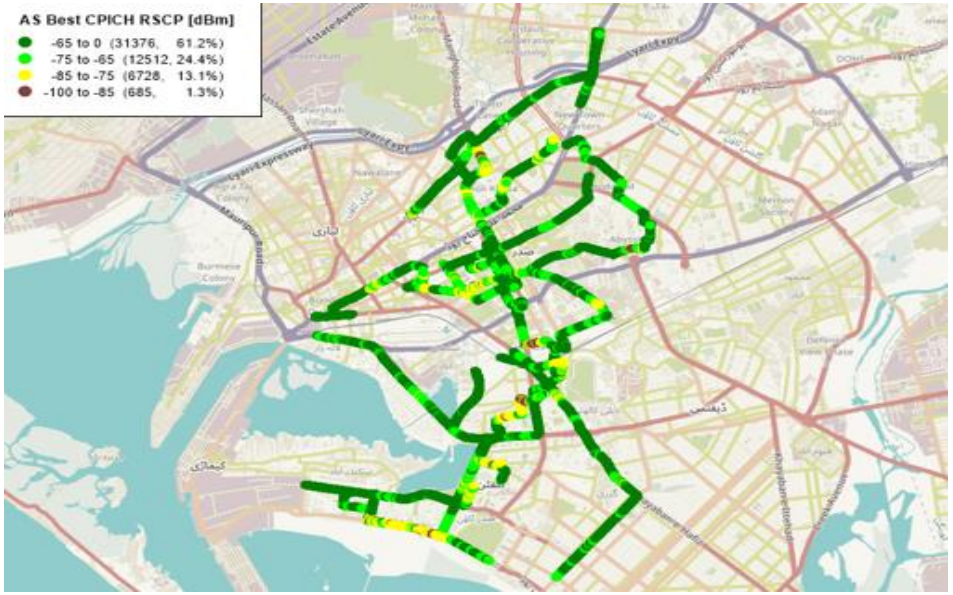
ZONG 3G NETWORK COVERAGE – KARACHI WEST



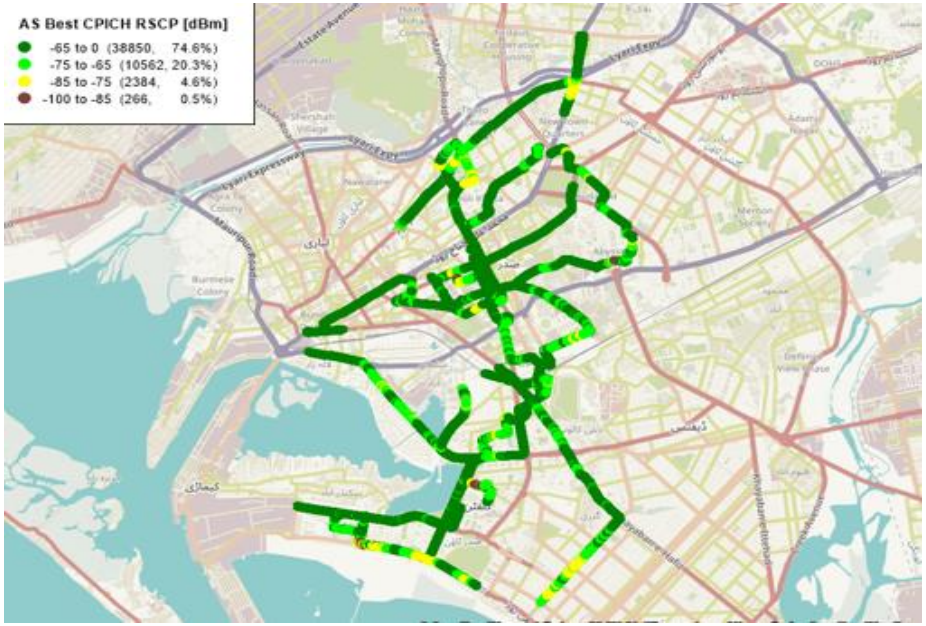
3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

JAZZ 3G NETWORK COVERAGE – KARACHI SOUTH

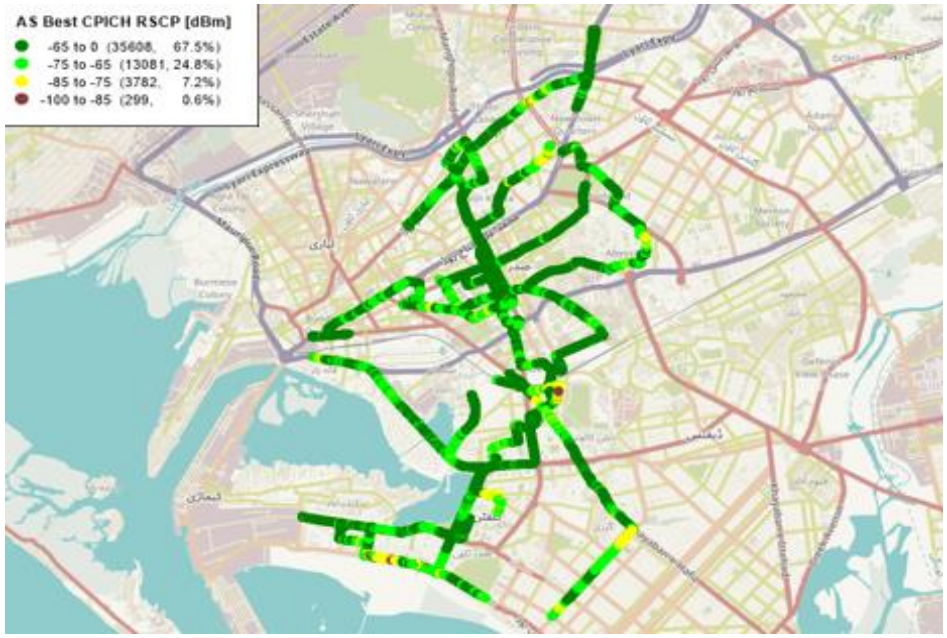
TELENOR 3G NETWORK COVERAGE – KARACHI SOUTH



UFONE 3G NETWORK COVERAGE – KARACHI SOUTH

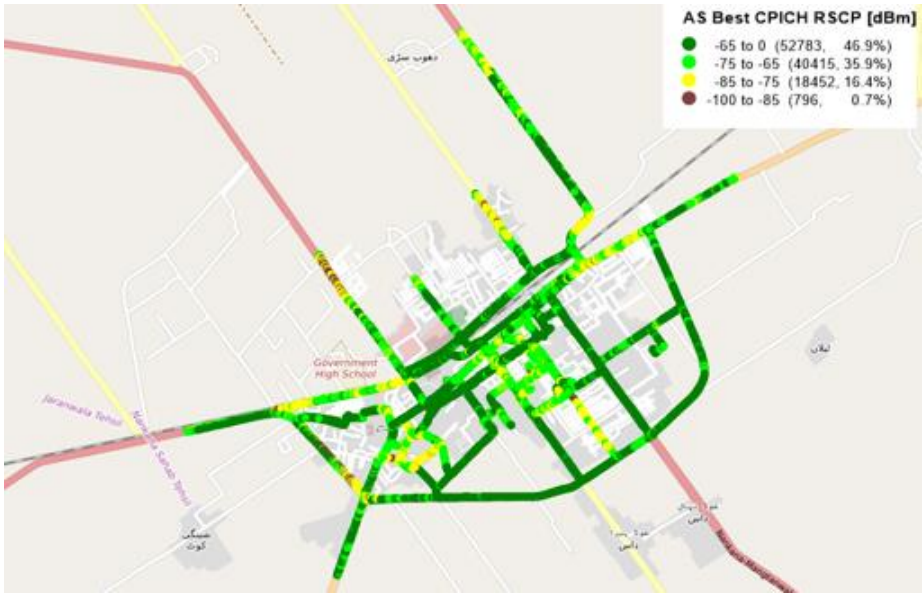


ZONG 3G NETWORK COVERAGE – KARACHI SOUTH

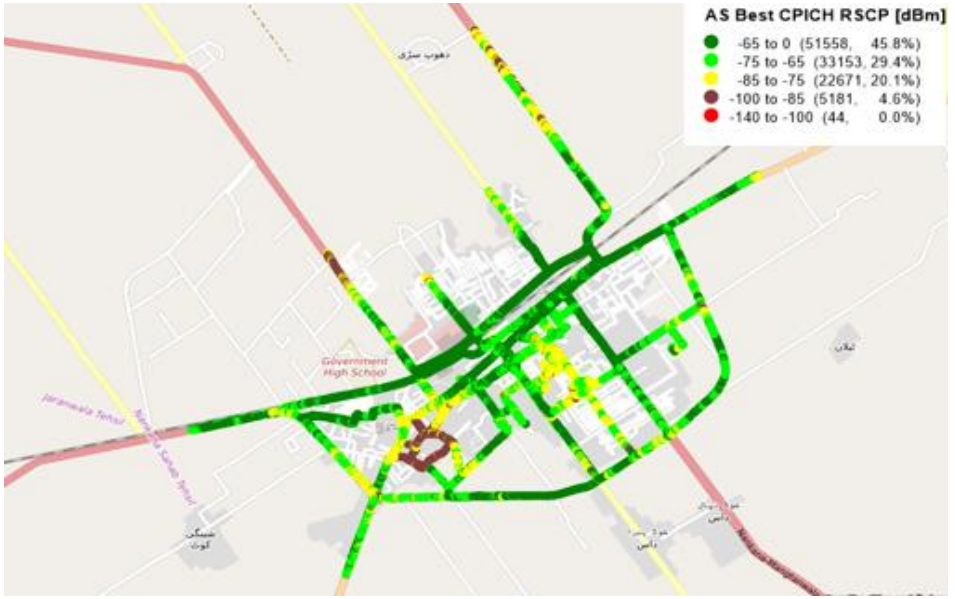


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

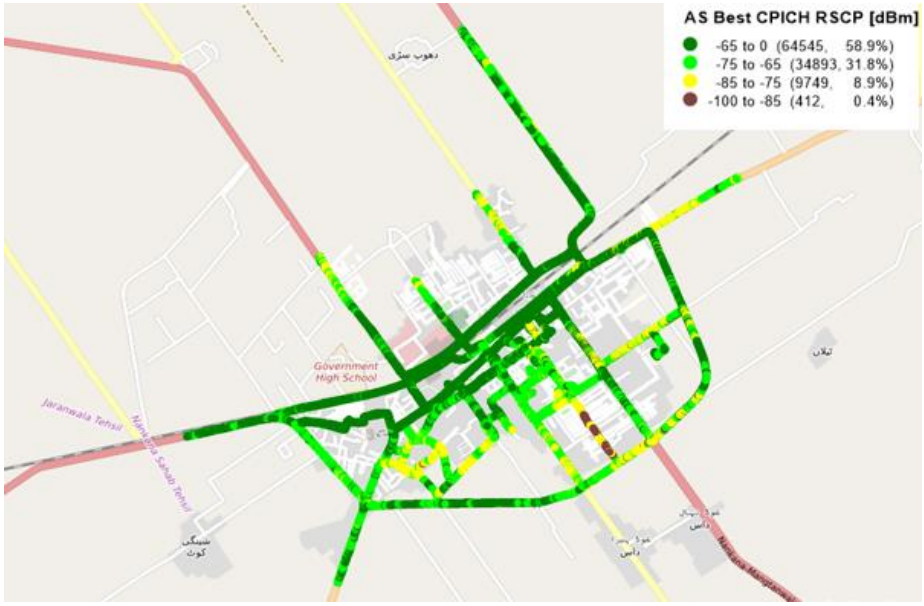
JAZZ 3G NETWORK COVERAGE – NANKANA SAHIB



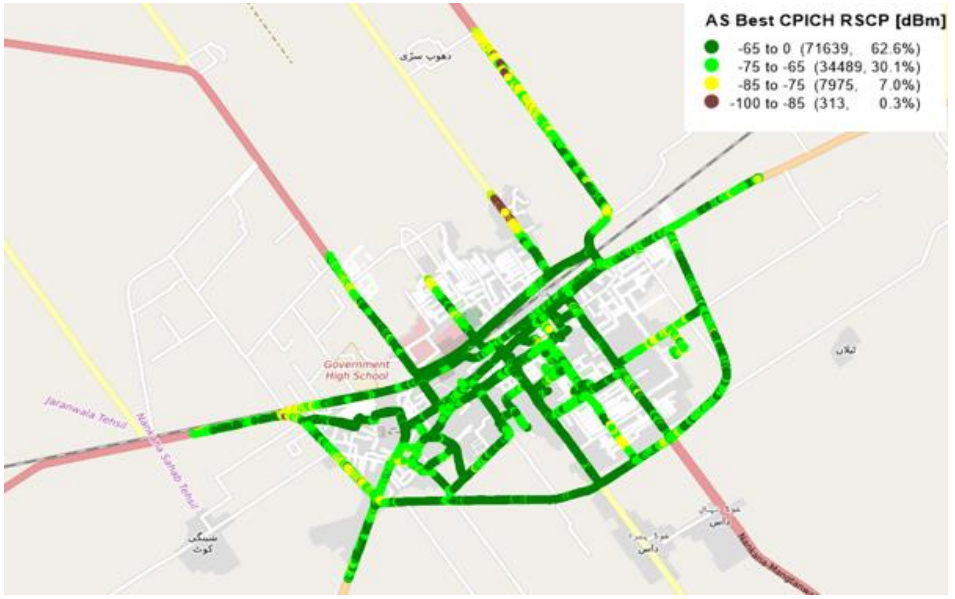
TELENOR 3G NETWORK COVERAGE – NANKANA SAHIB



UFONE 3G NETWORK COVERAGE – NANKANA SAHIB

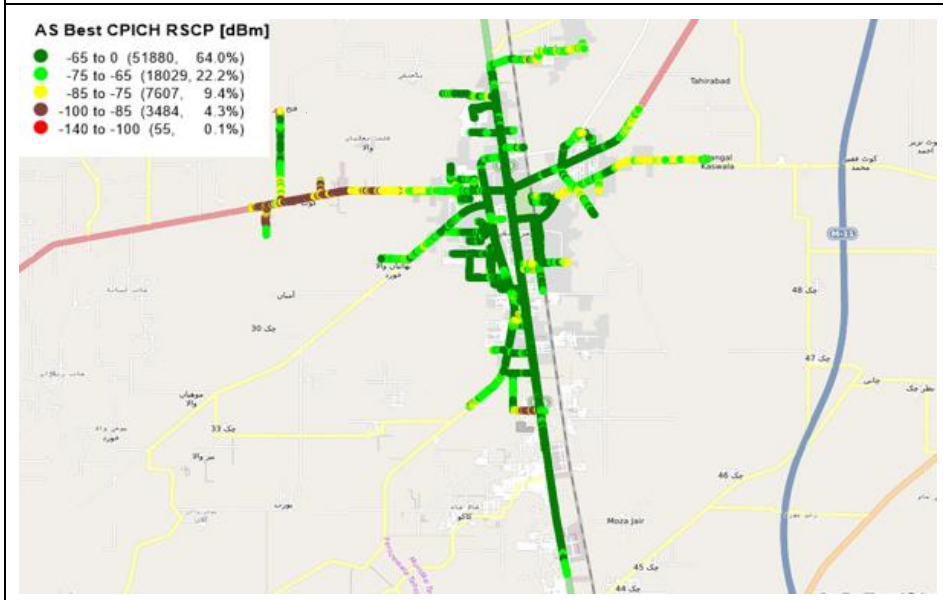


ZONG 3G NETWORK COVERAGE – NANKANA SAHIB

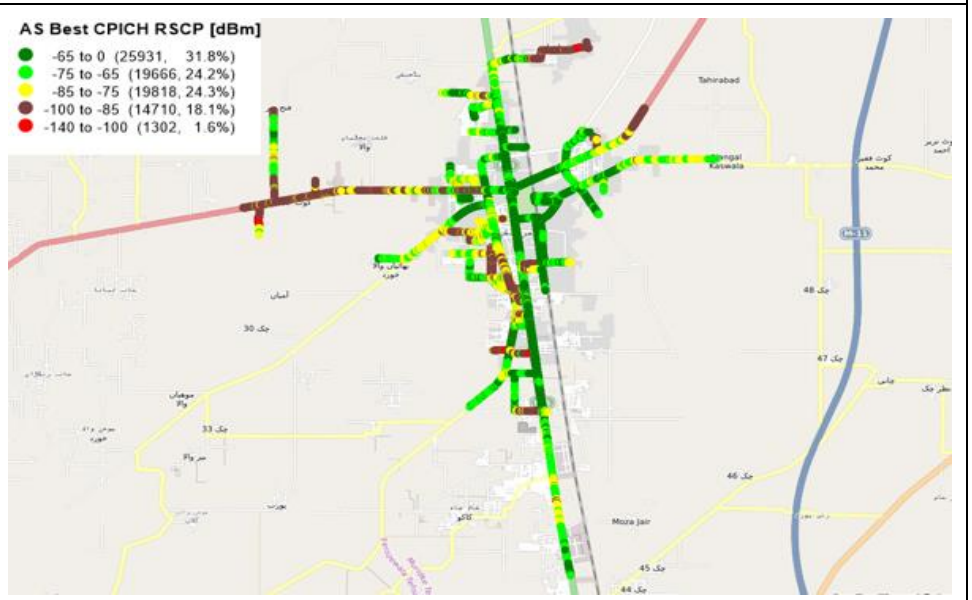


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

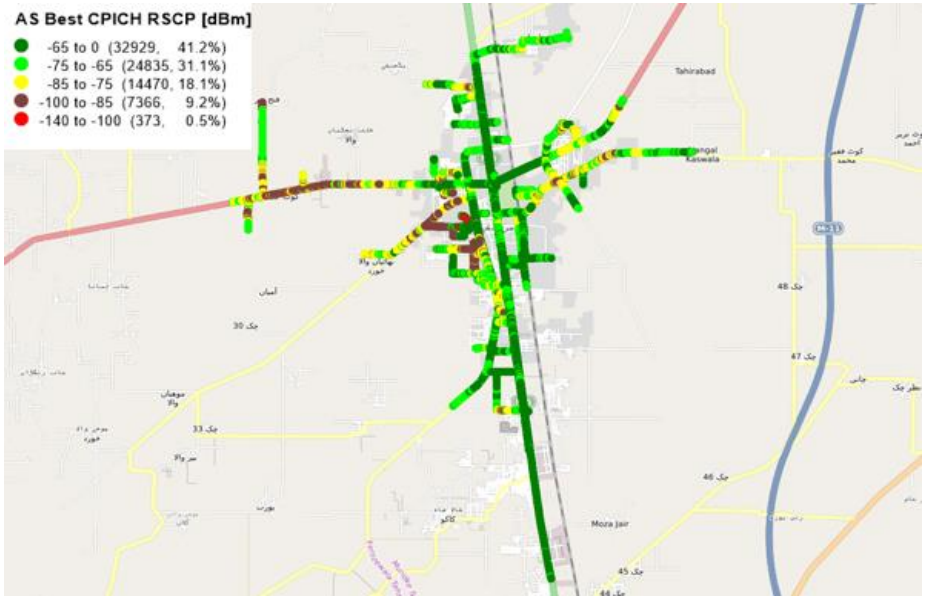
JAZZ 3G NETWORK COVERAGE – MURIDKE



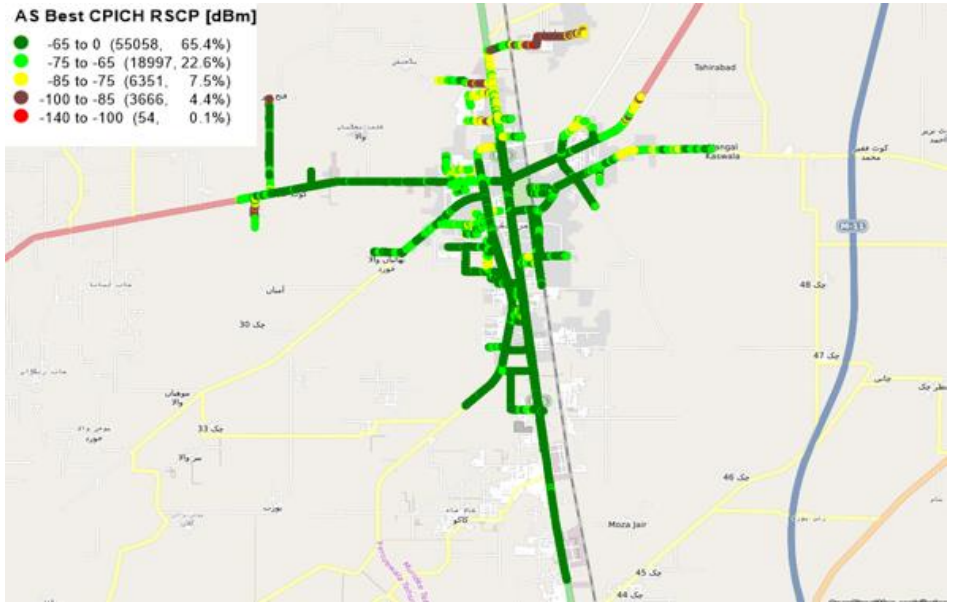
TELENOR 3G NETWORK COVERAGE –MURIDKE



UFONE 3G NETWORK COVERAGE – MURIDKE

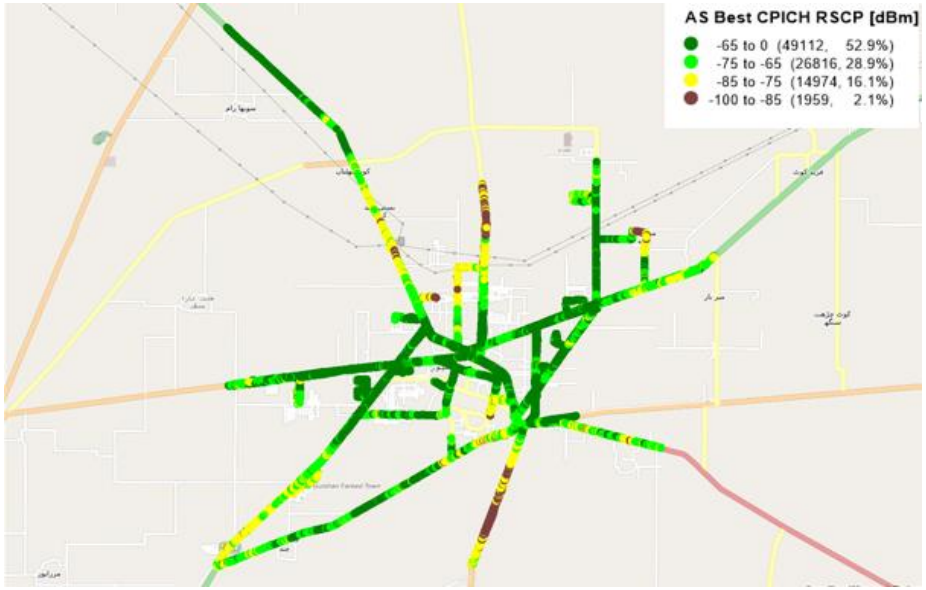


ZONG 3G NETWORK COVERAGE –MURIDKE

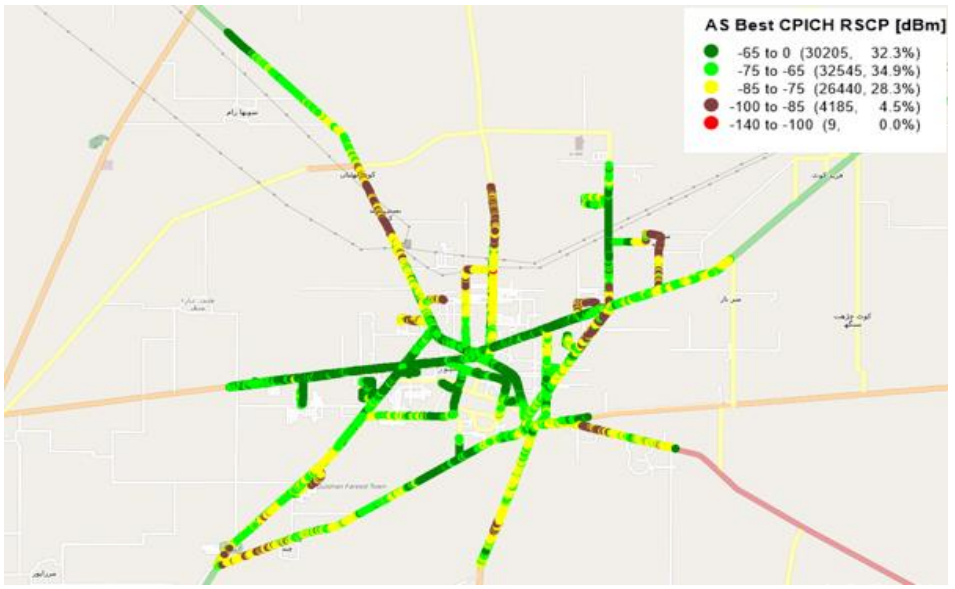


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

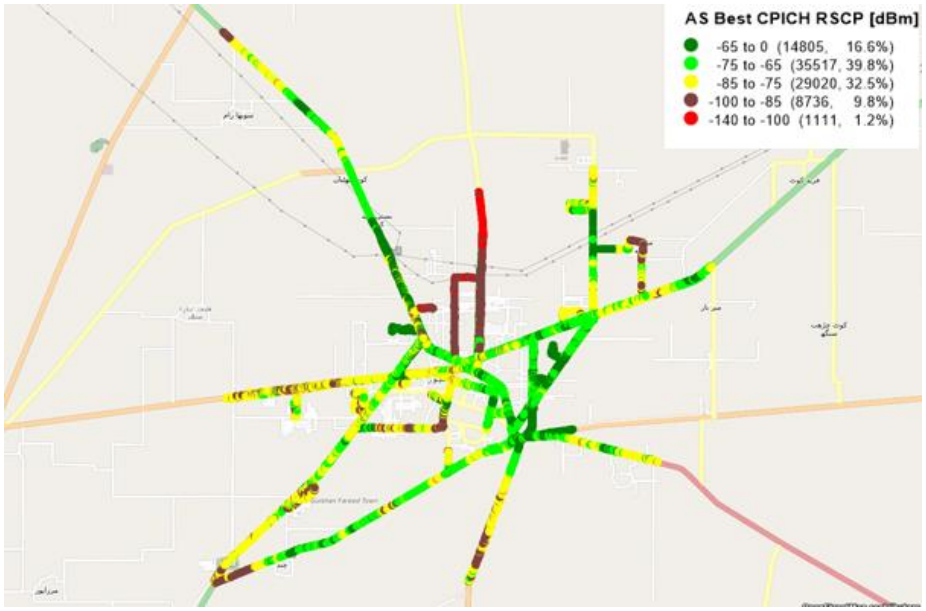
JAZZ 3G NETWORK COVERAGE – DEPALPUR



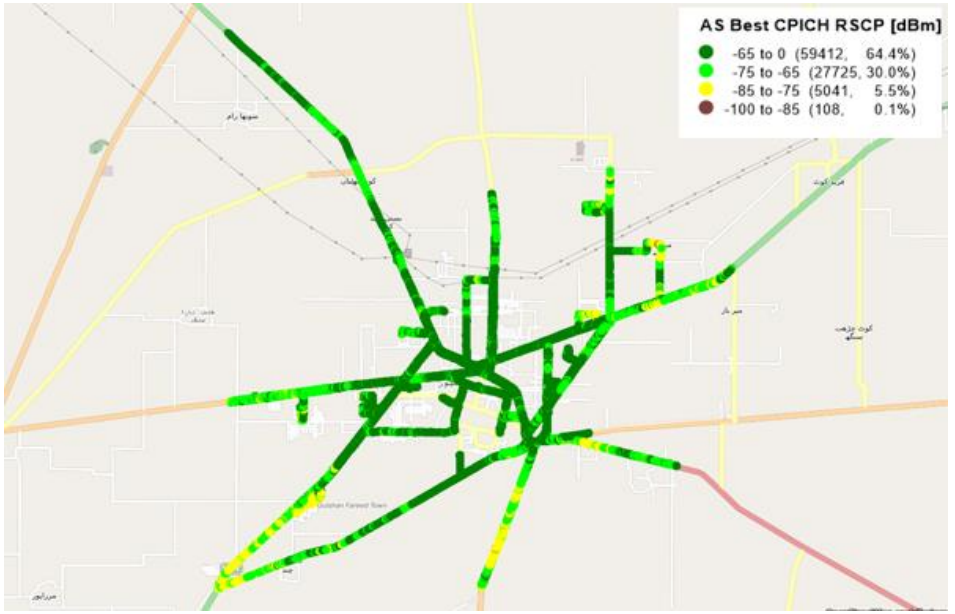
TELENOR 3G NETWORK COVERAGE – DEPALPUR



UFONE 3G NETWORK COVERAGE – DEPALPUR

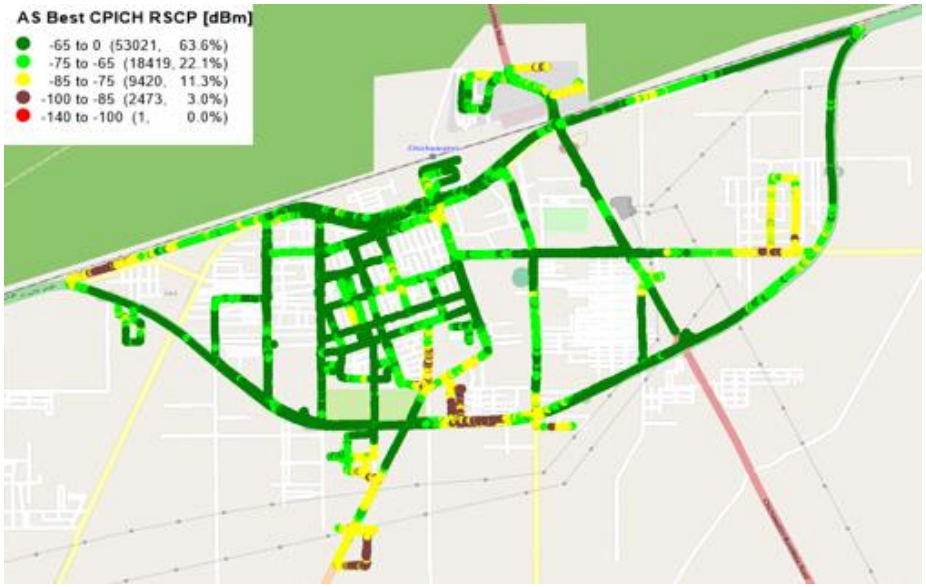


ZONG 3G NETWORK COVERAGE – DEPALPUR

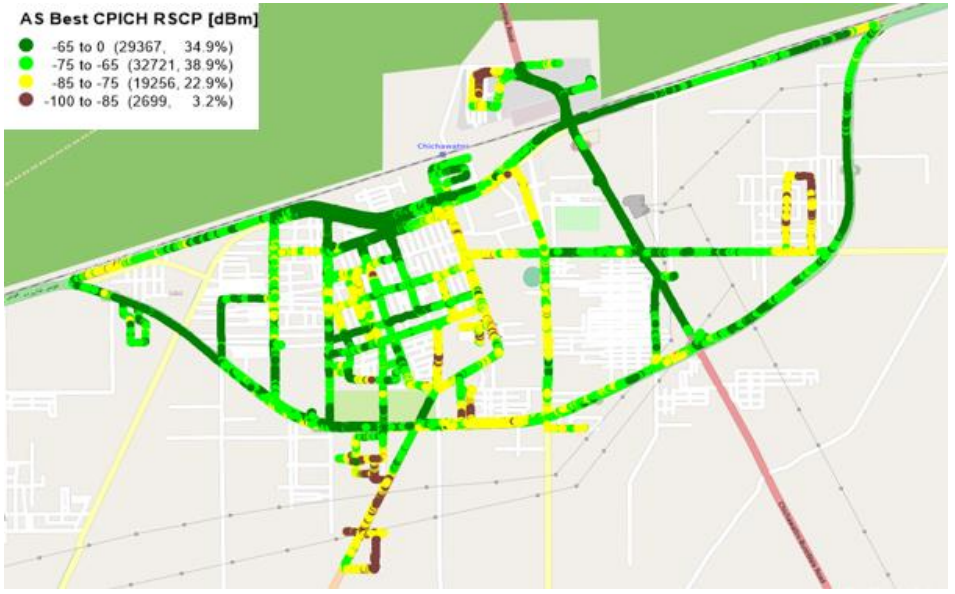


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

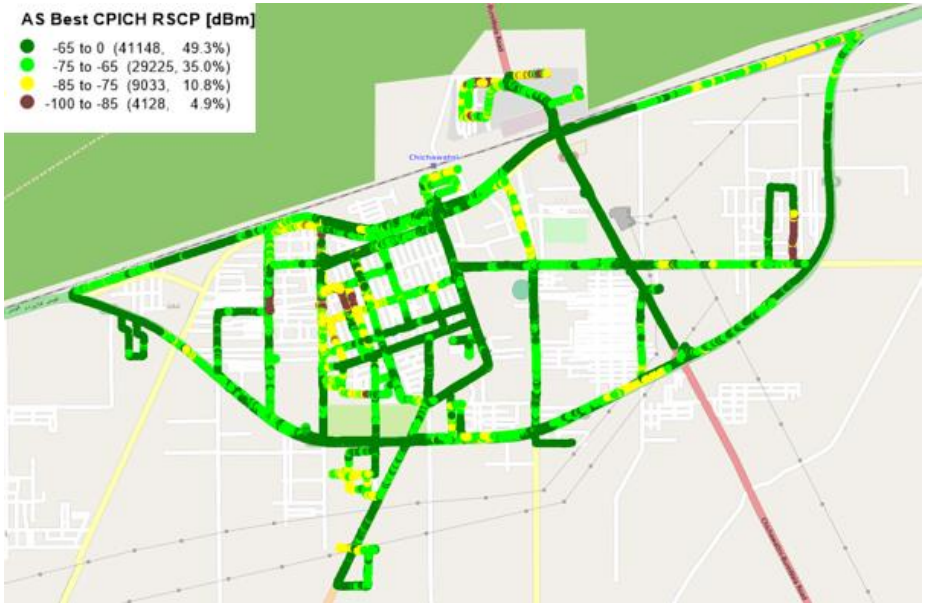
JAZZ 3G NETWORK COVERAGE – CHICHAWATNI



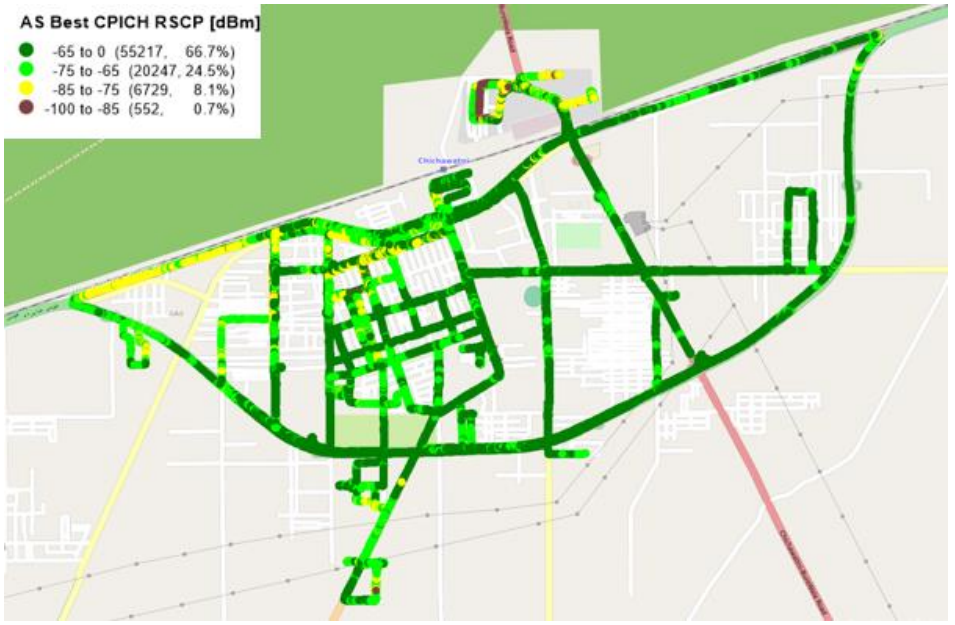
TELENOR 3G NETWORK COVERAGE –CHICHAWATNI



UFONE 3G NETWORK COVERAGE – CHICHAWATNI

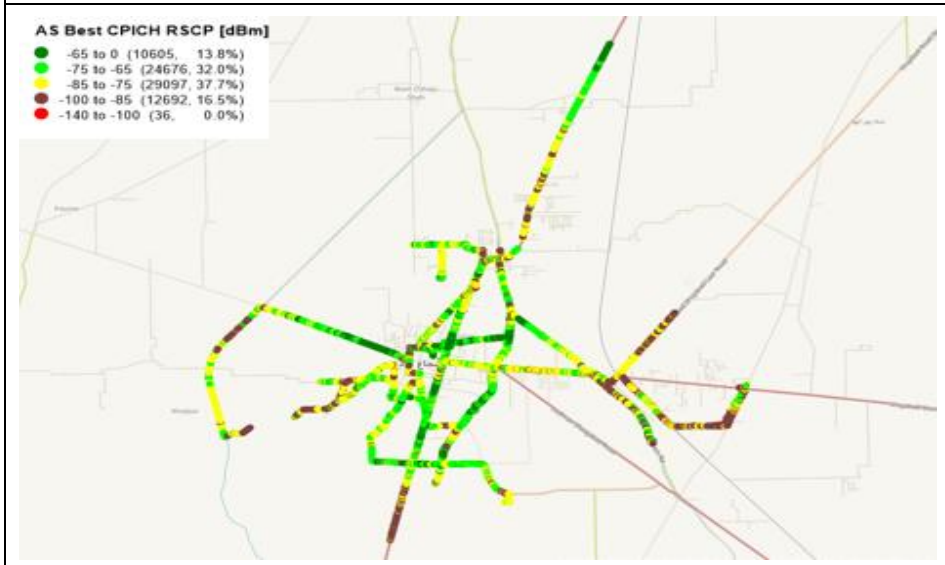


ZONG 3G NETWORK COVERAGE – CHICHAWATNI

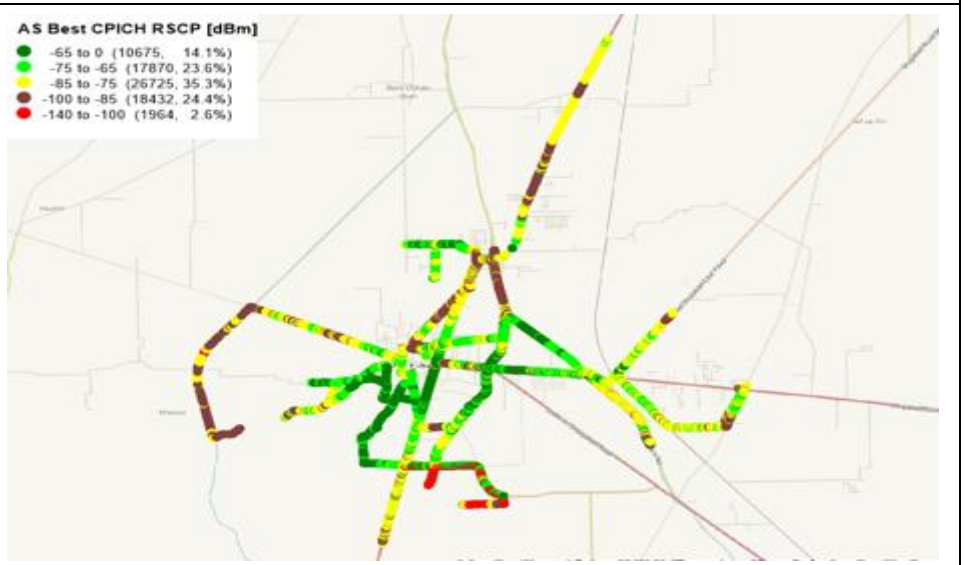


3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

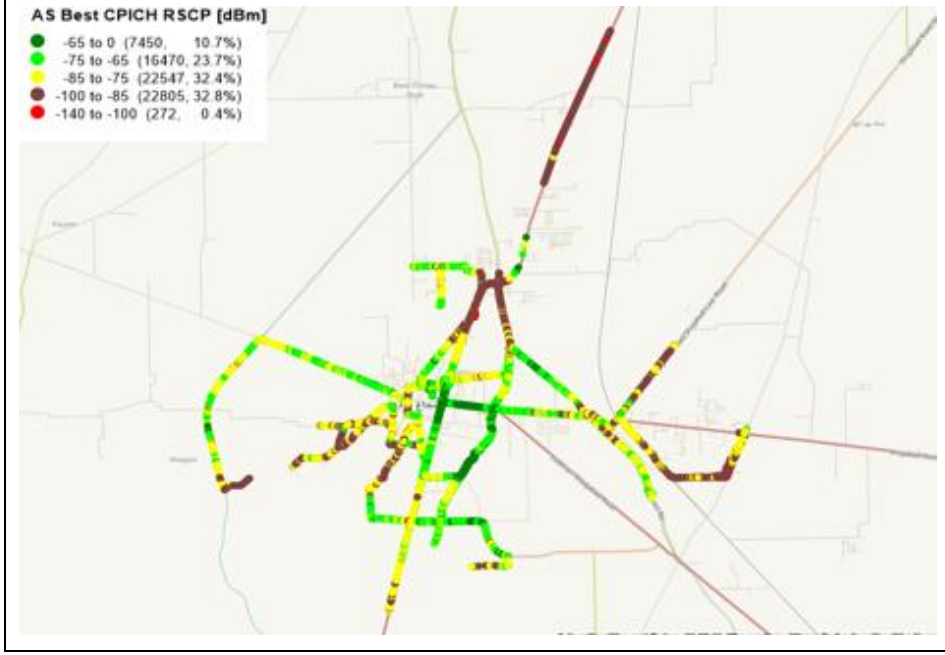
JAZZ 3G NETWORK COVERAGE – SHUJABAD



TELENOR 3G NETWORK COVERAGE – SHUJABAD



UFONE 3G NETWORK COVERAGE – SHUJABAD



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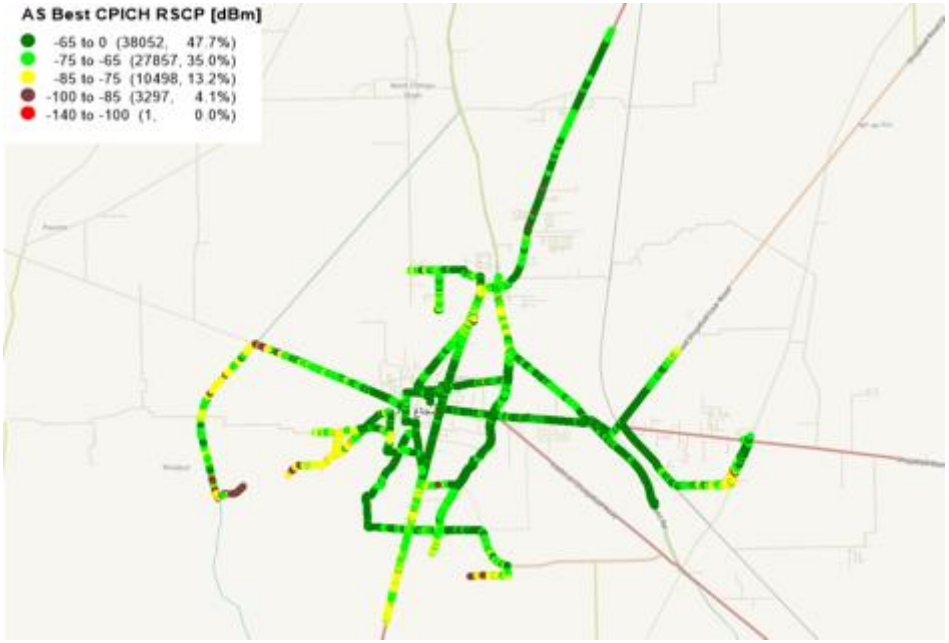
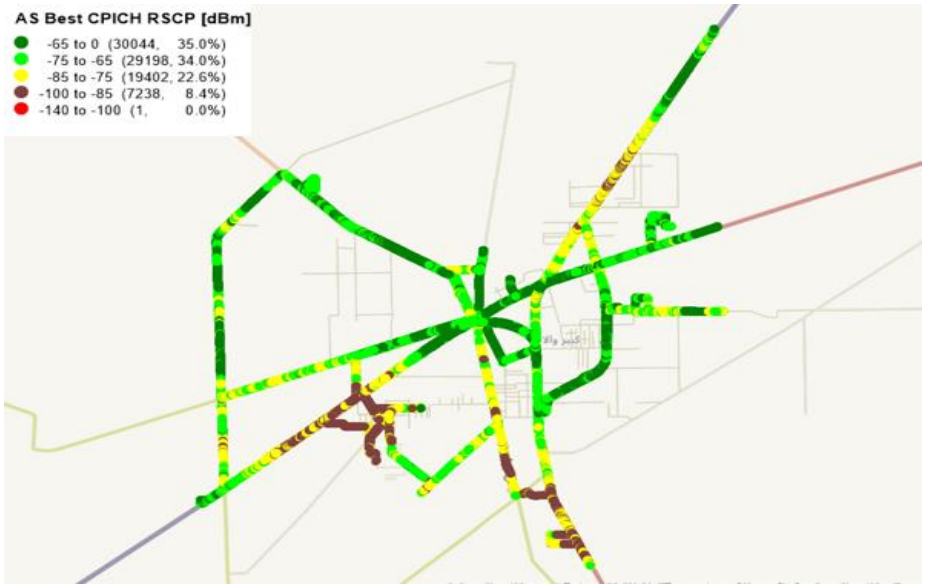


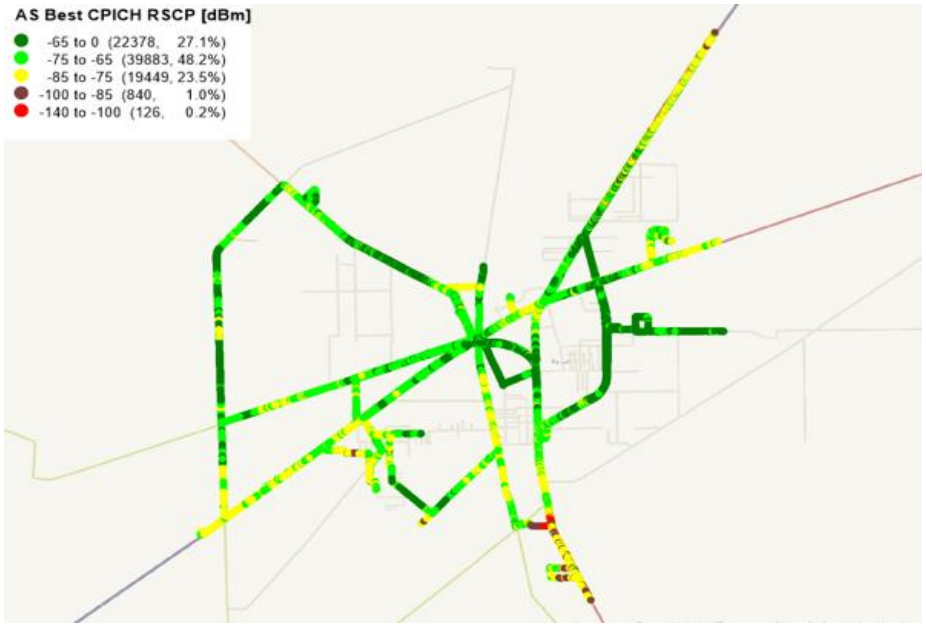
3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

JAZZ 3G NETWORK COVERAGE – KABIRWALA

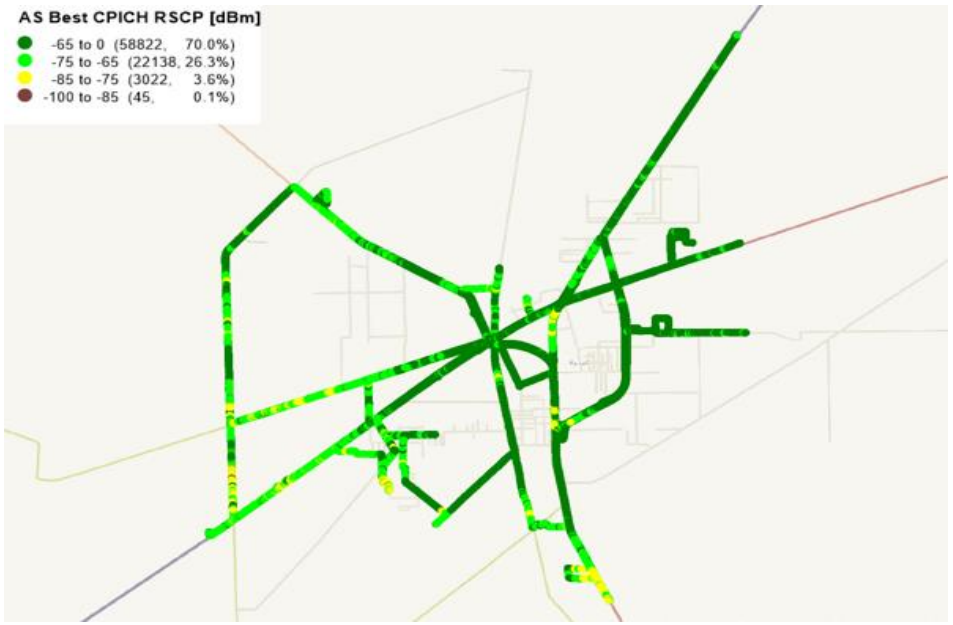


TELENOR 3G NETWORK COVERAGE – KABIRWALA

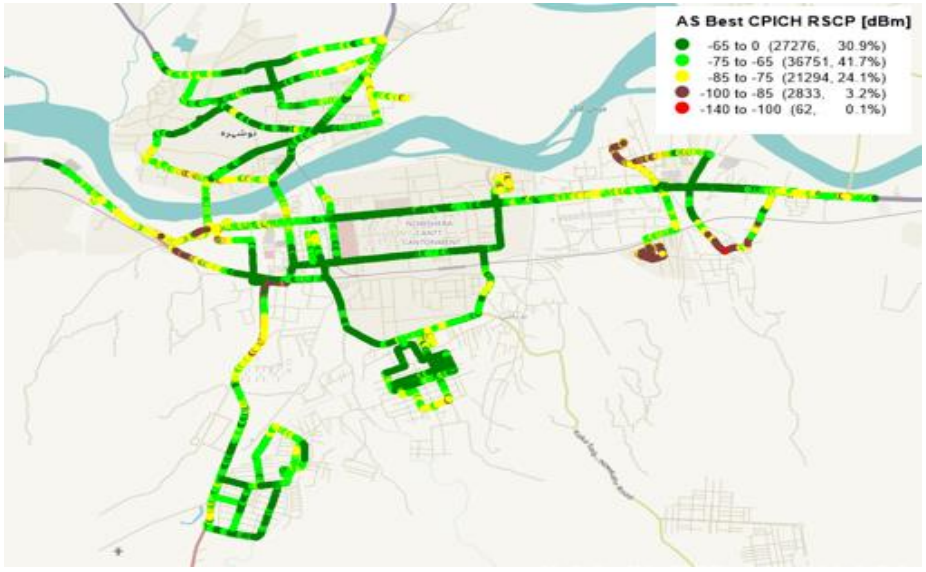
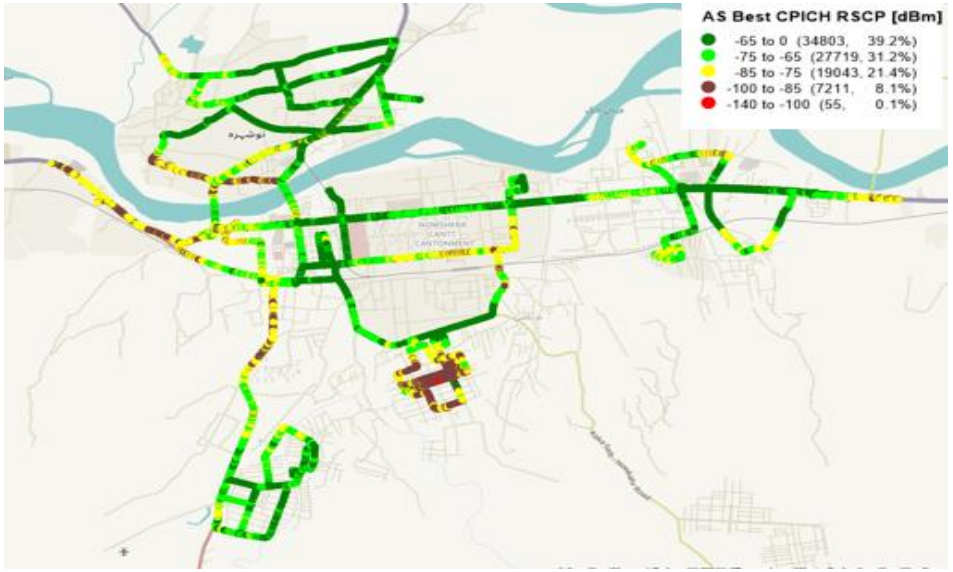
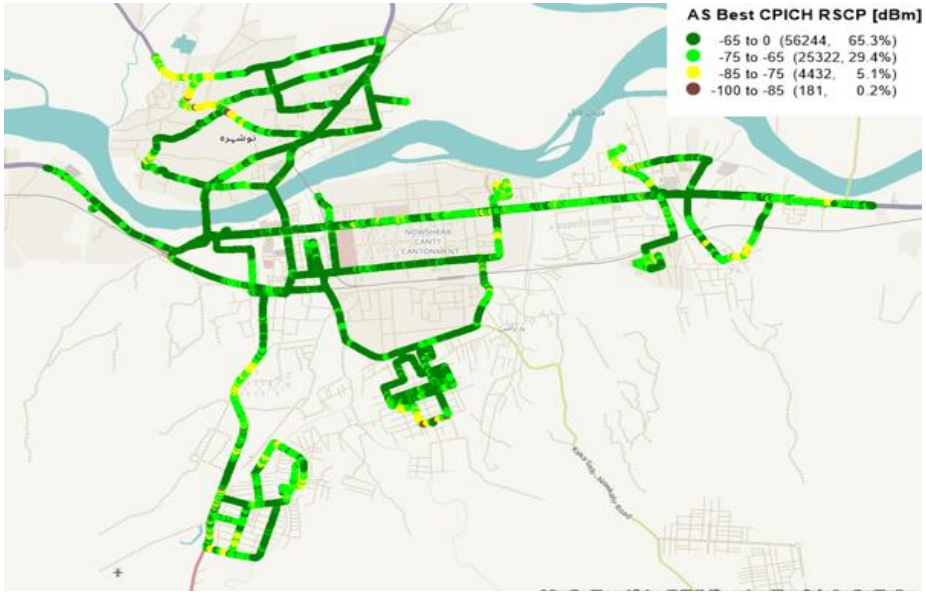
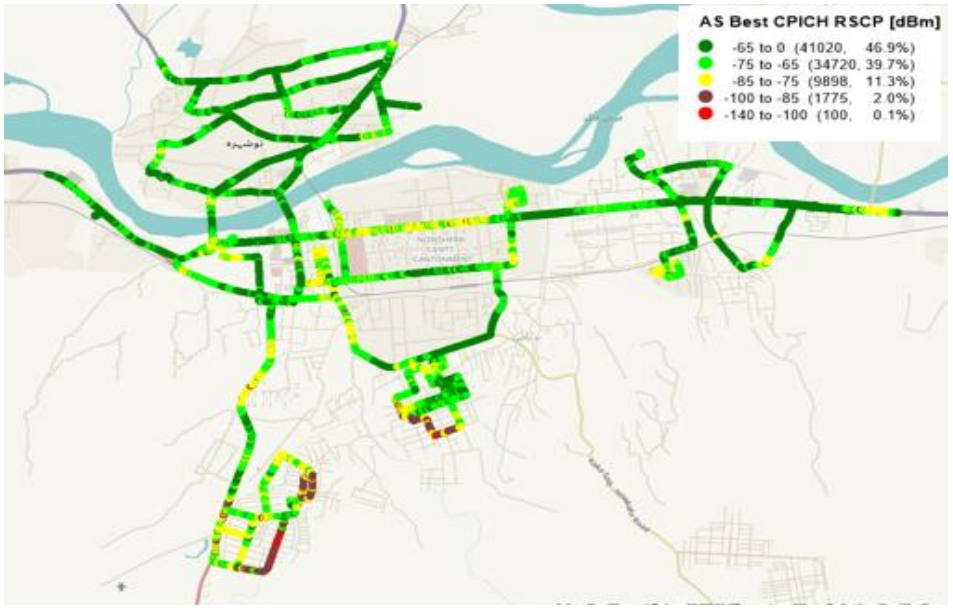
UFONE 3G NETWORK COVERAGE – KABIRWALA



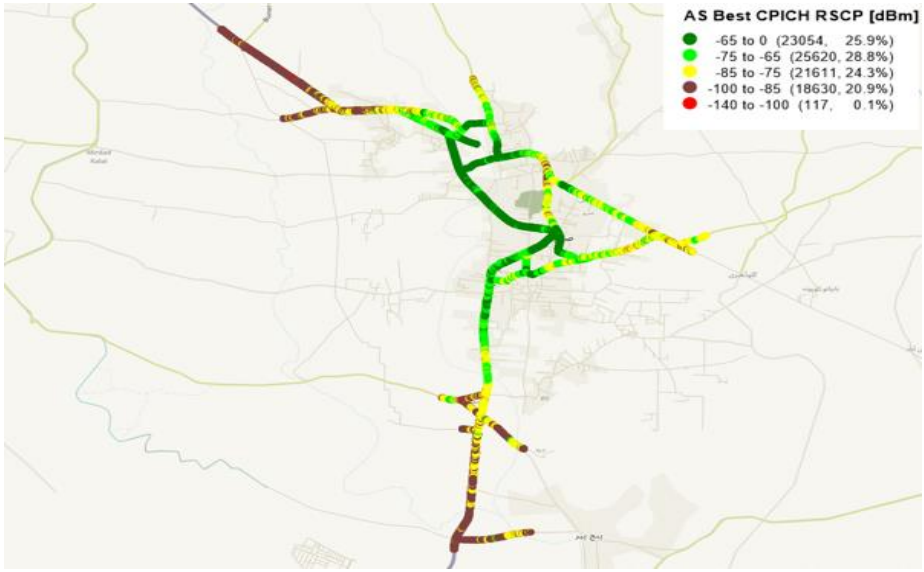
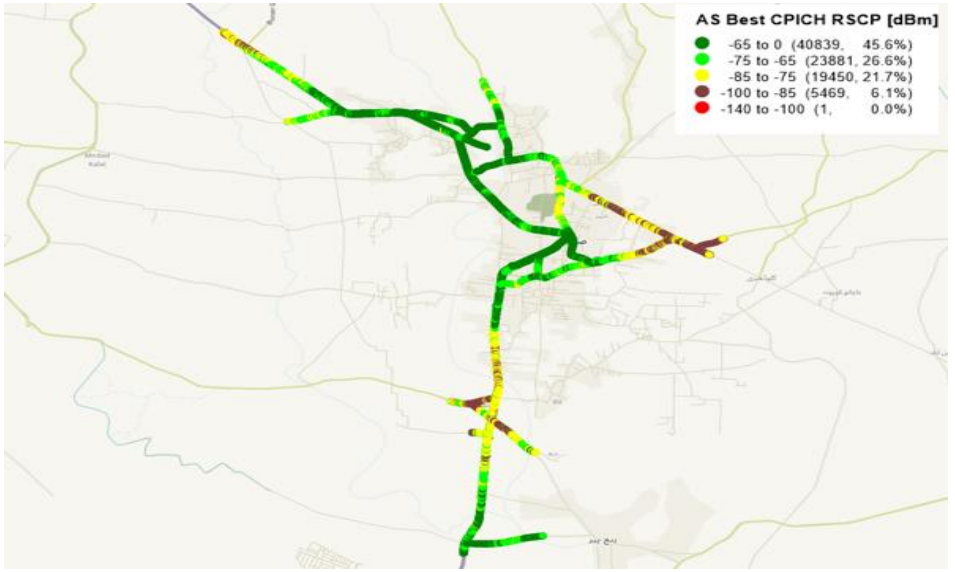
ZONG 3G NETWORK COVERAGE – KABIRWALA



3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

JAZZ 3G NETWORK COVERAGE – NOWSHERA	TELENOR 3G NETWORK COVERAGE – NOWSHERA
	
UFONE 3G NETWORK COVERAGE – NOWSHERA	**ZONG 3G NETWORK COVERAGE – NOWSHERA**
	

3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

JAZZ 3G NETWORK COVERAGE – SWABI	TELENOR 3G NETWORK COVERAGE – SWABI
	
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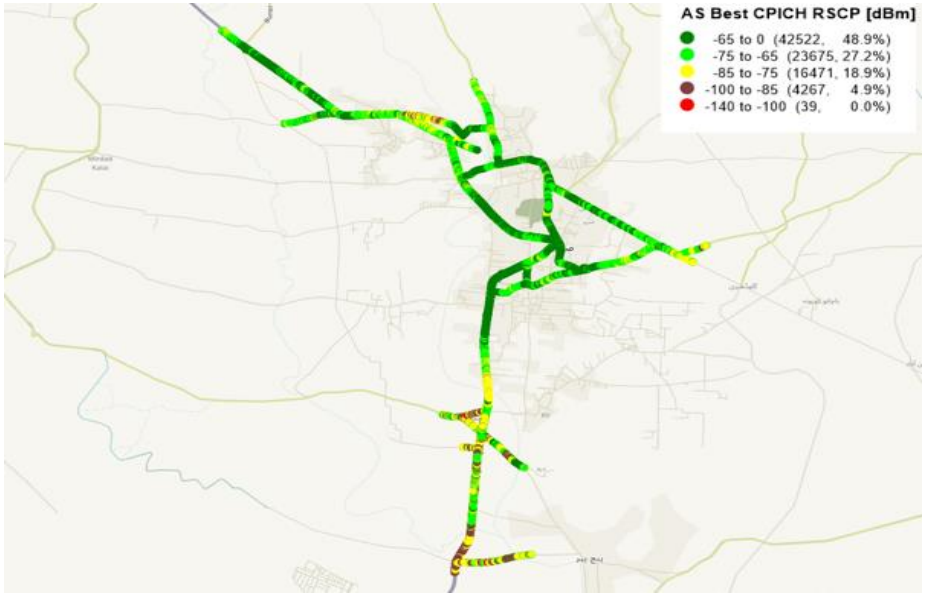
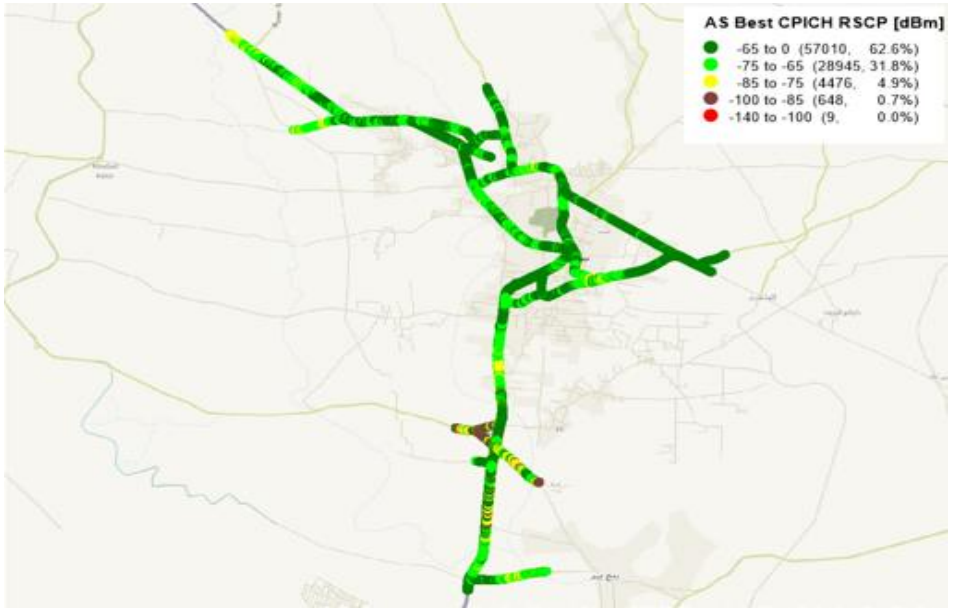
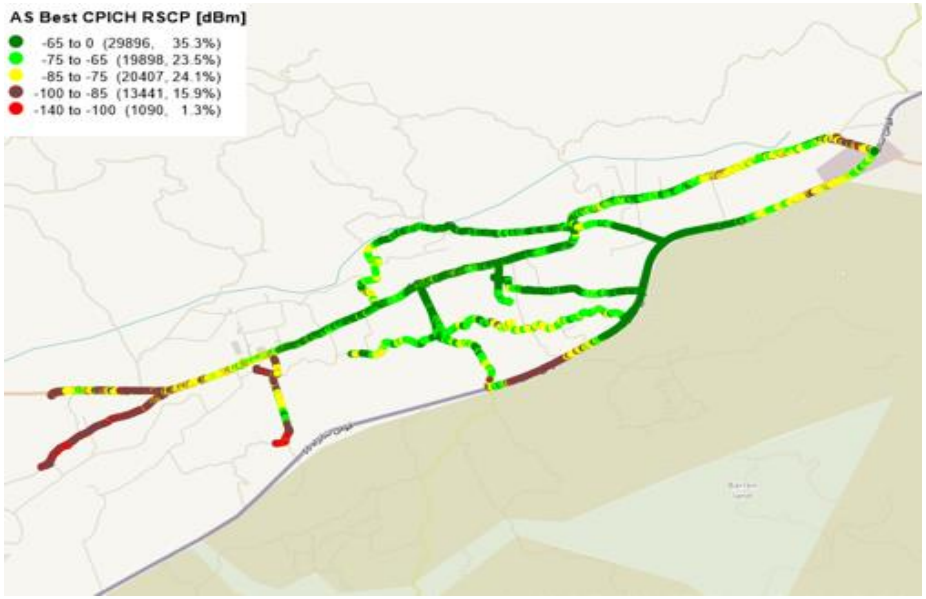
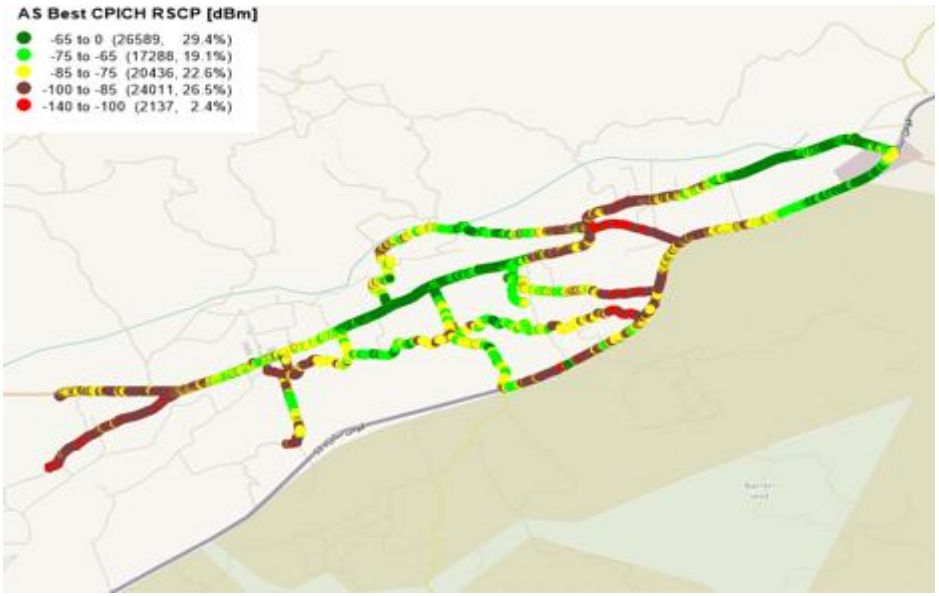
	

3G MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

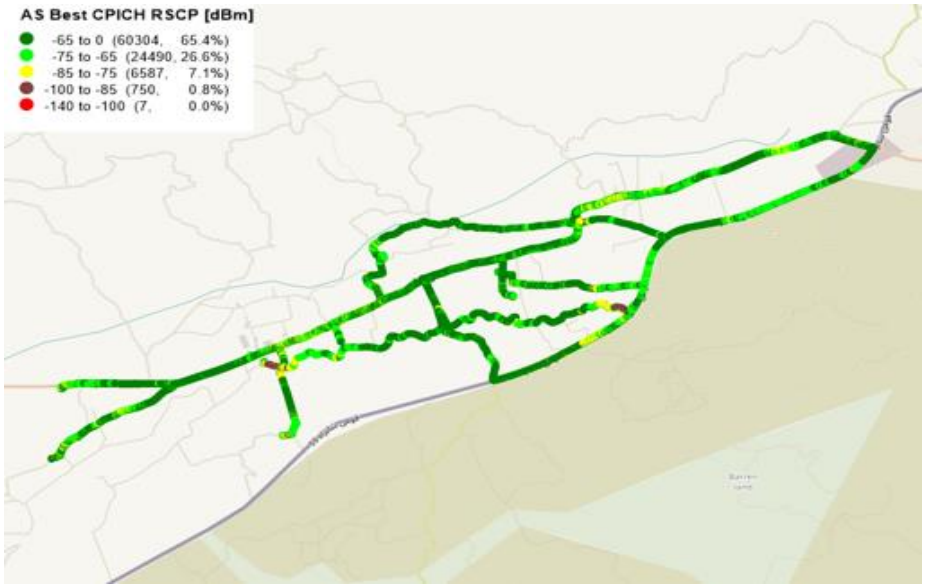
JAZZ 3G NETWORK COVERAGE – KARAK



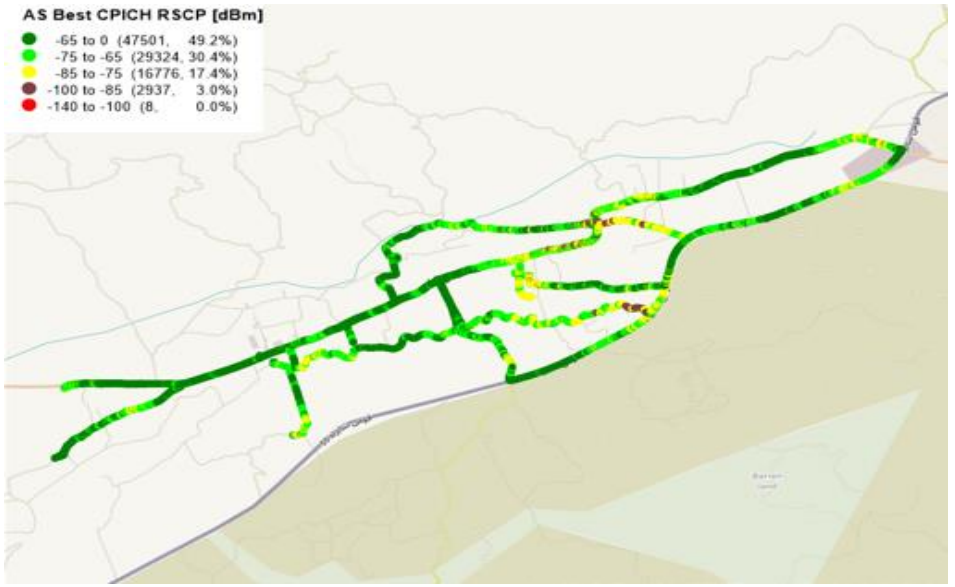
TELENOR 3G NETWORK COVERAGE – KARAK



UFONE 3G NETWORK COVERAGE – KARAK



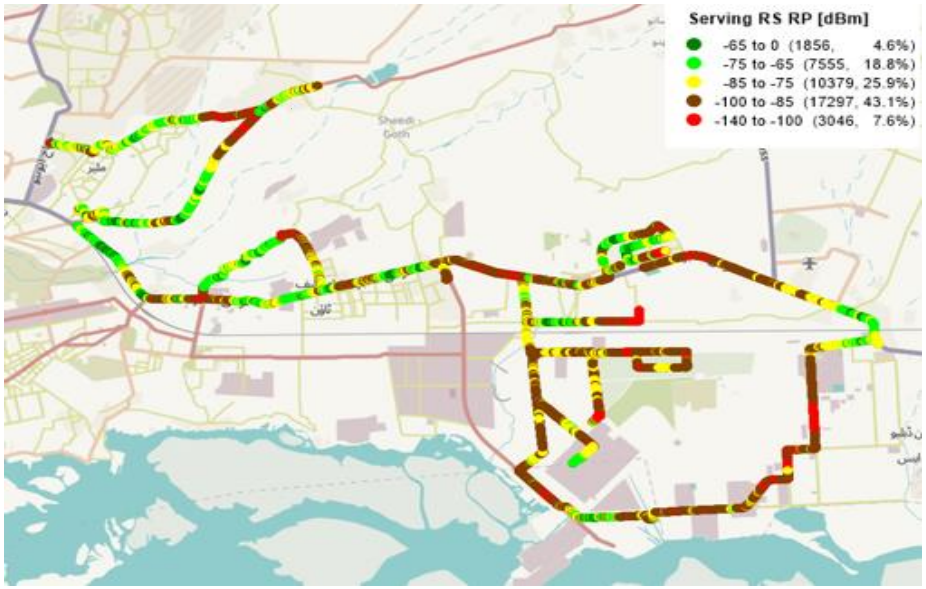
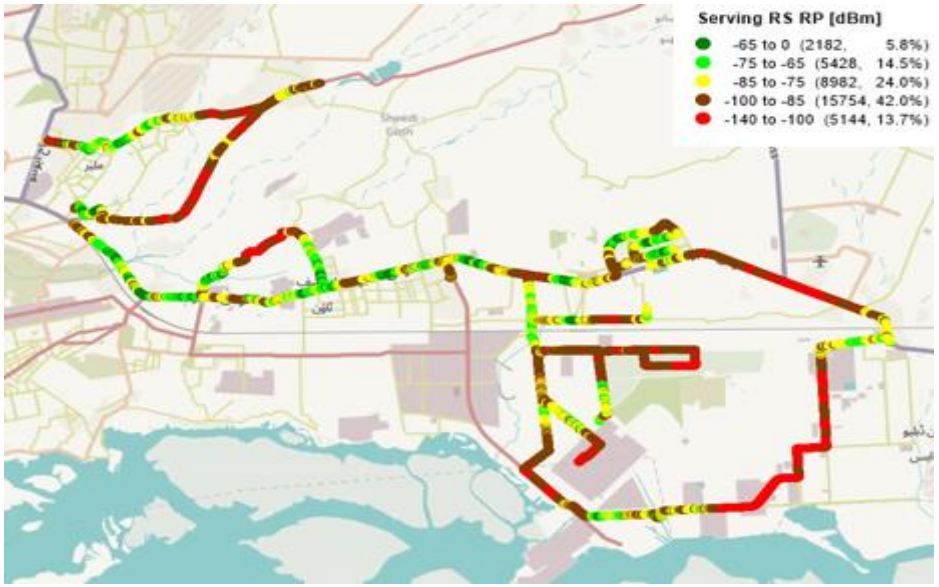
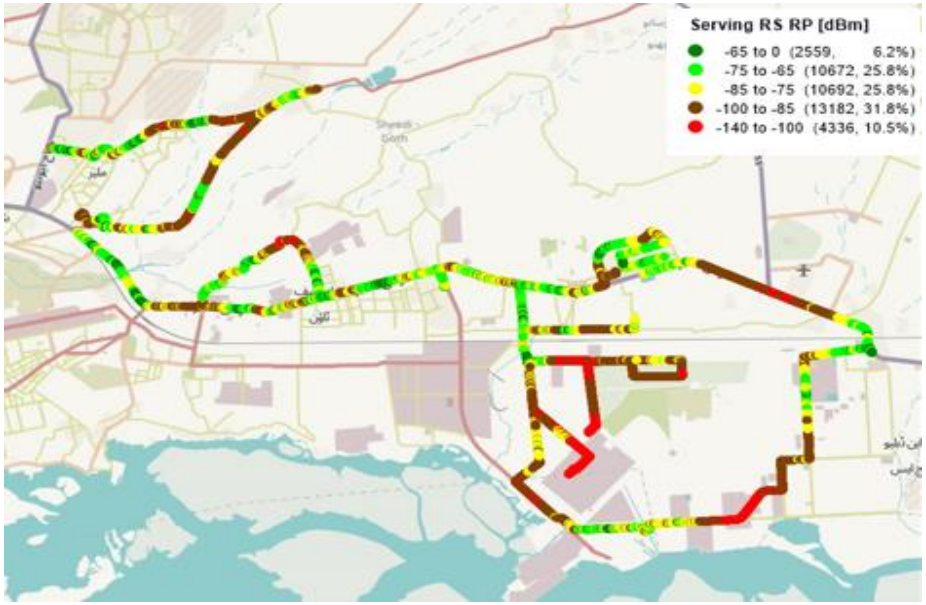
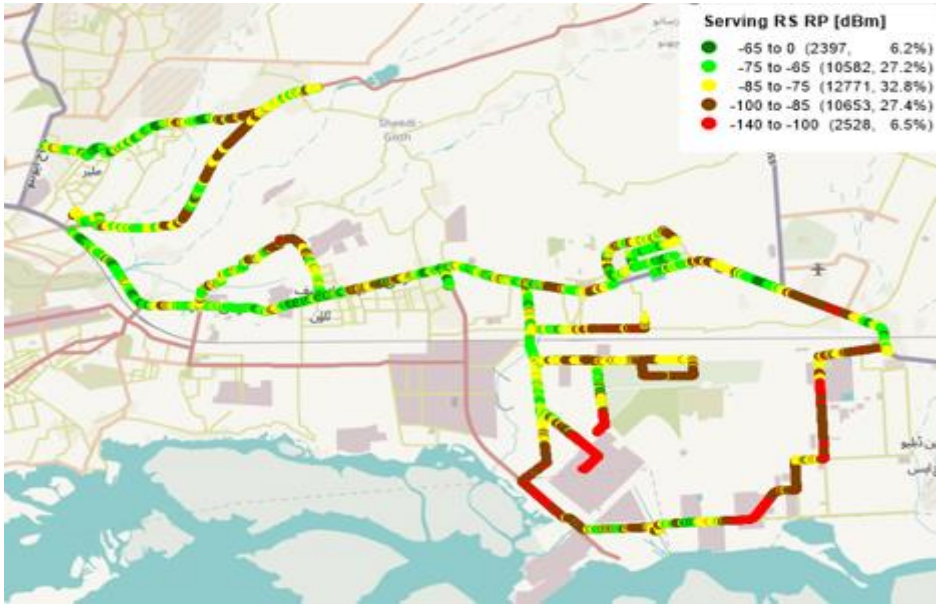
ZONG 3G NETWORK COVERAGE – KARAK



Annex-A (Coverage Maps)

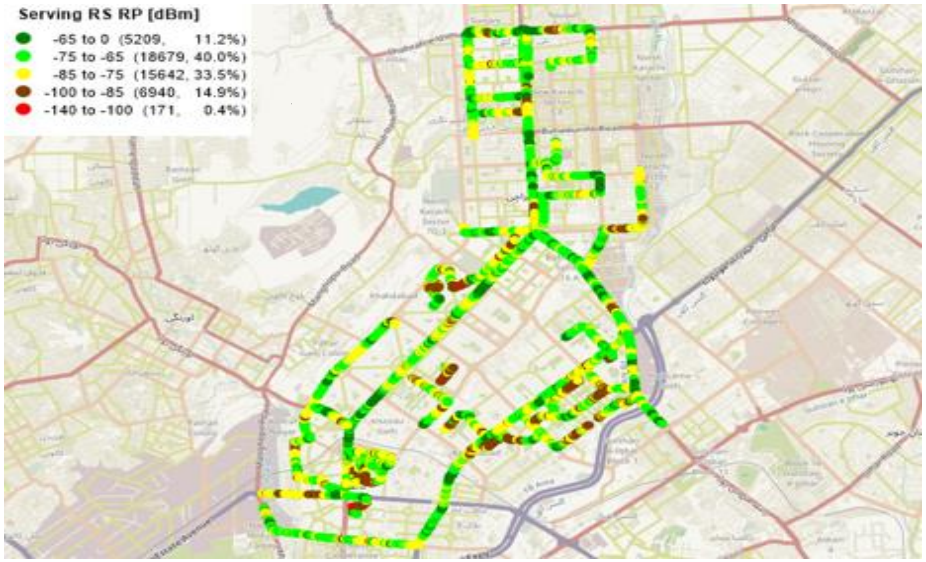
4G LOCK MODE

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

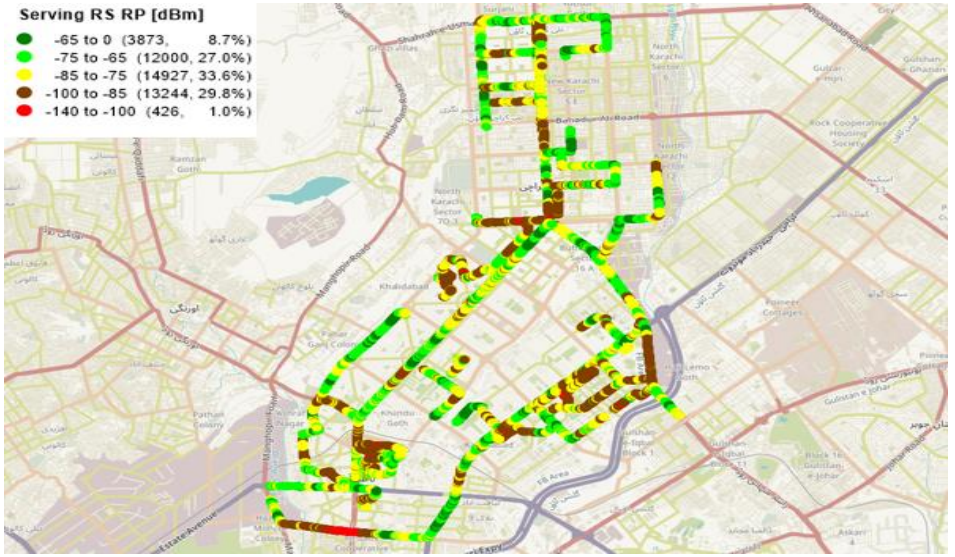
JAZZ 4G NETWORK COVERAGE – KARACHI MALIR	TELENOR 4G NETWORK COVERAGE – KARACHI MALIR
	
UFONE 4G NETWORK COVERAGE – KARACHI MALIR	**ZONG 4G NETWORK COVERAGE – KARACHI MALIR**
	

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

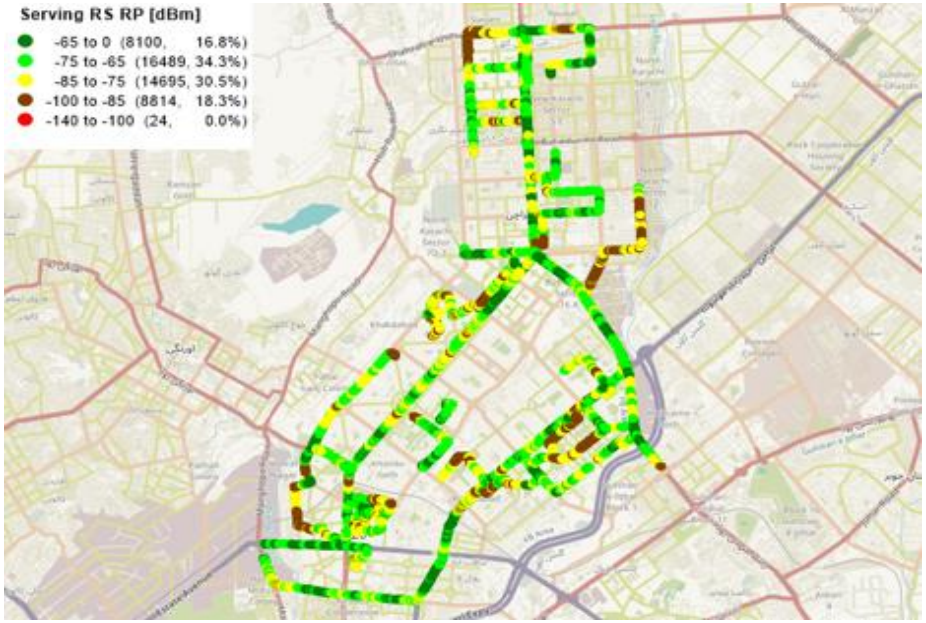
JAZZ 4G NETWORK COVERAGE – KARACHI CENTRAL



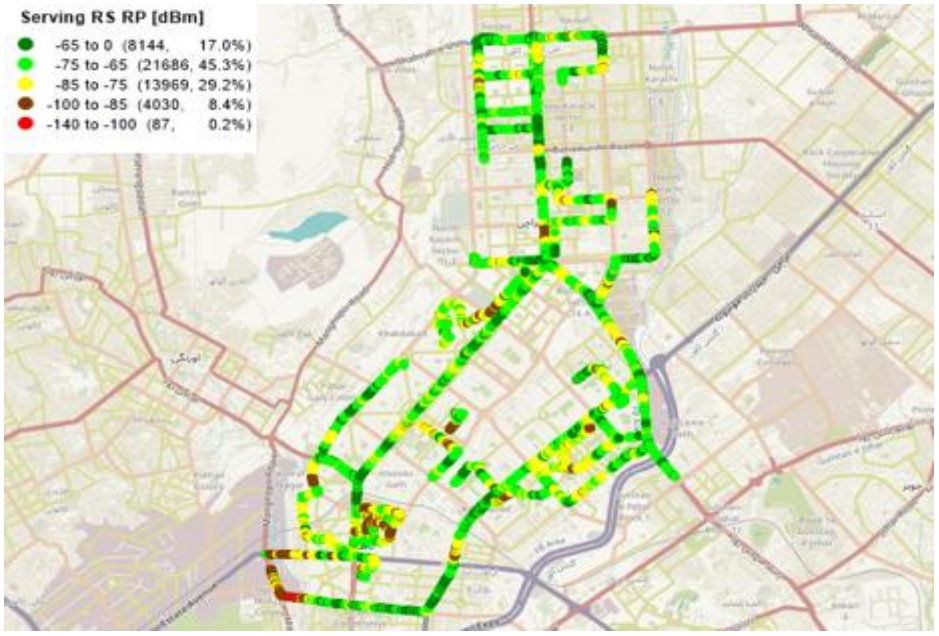
TELENOR 4G NETWORK COVERAGE – KARACHI CENTRAL



UFONE 4G NETWORK COVERAGE – KARACHI CENTRAL

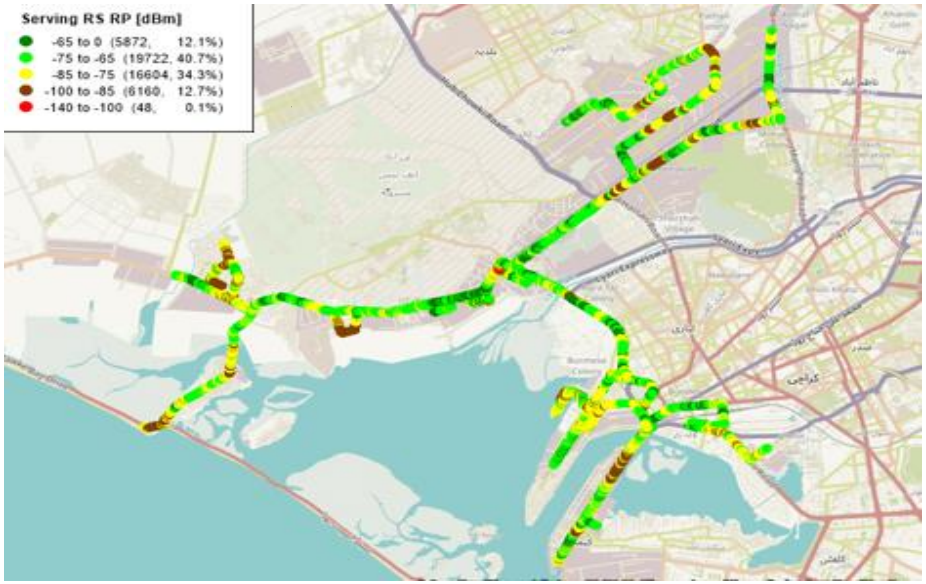


ZONG 4G NETWORK COVERAGE – KARACHI CENTRAL

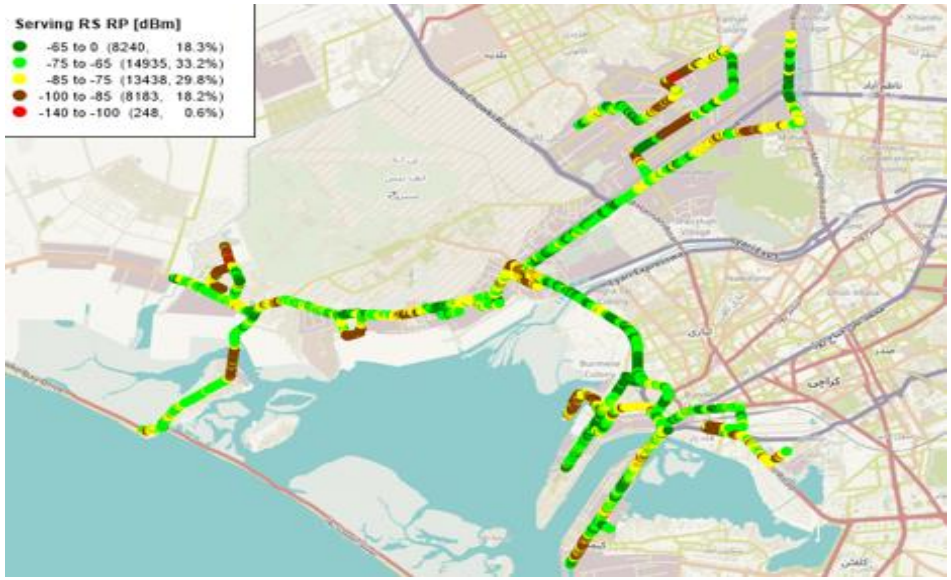


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

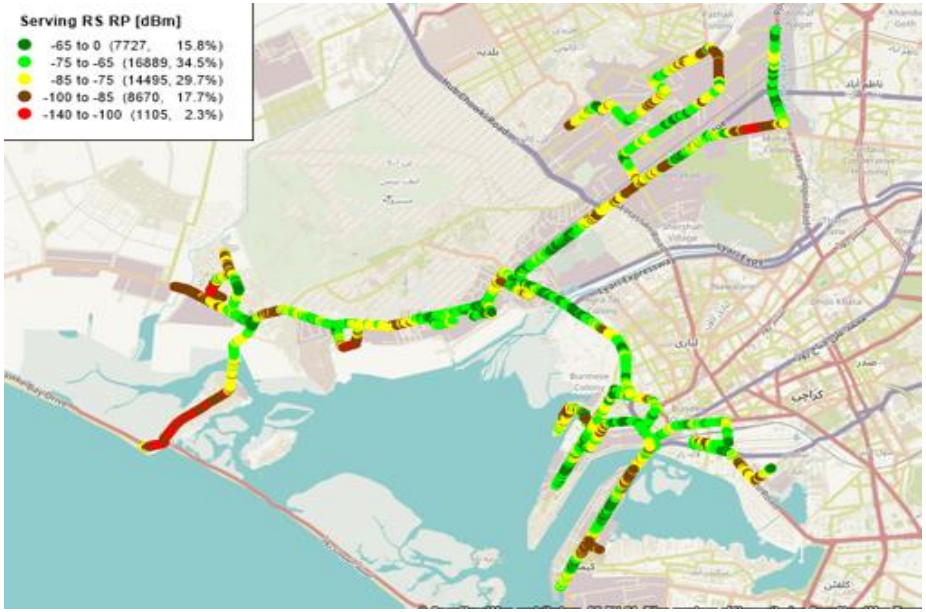
JAZZ 4G NETWORK COVERAGE – KARACHI KEMARI



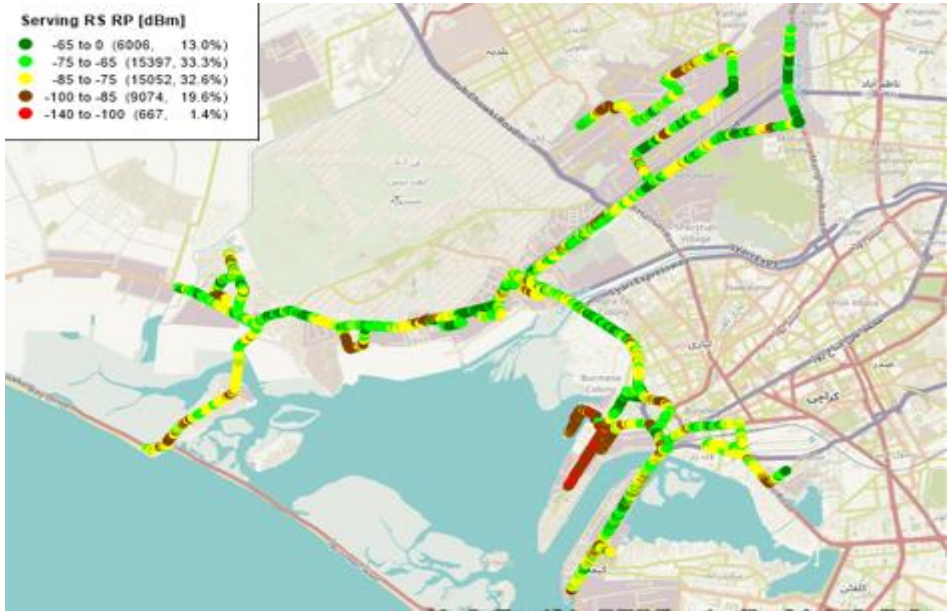
TELENOR 4G NETWORK COVERAGE – KARACHI KEMARI



UFONE 4G NETWORK COVERAGE – KARACHI KEMARI



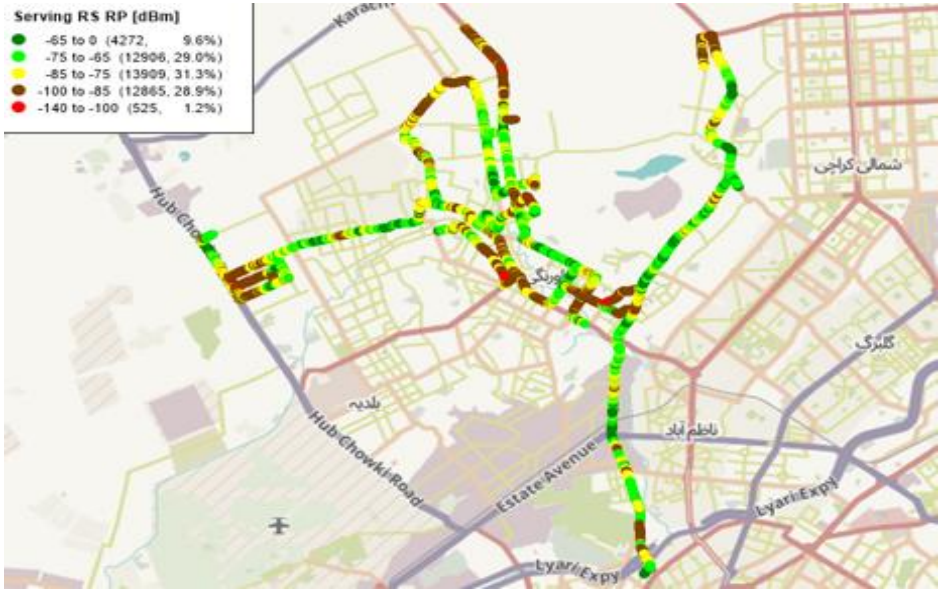
ZONG 4G NETWORK COVERAGE – KARACHI KEMARI



4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – KARACHI WEST

TELENOR 4G NETWORK COVERAGE – KARACHI WEST

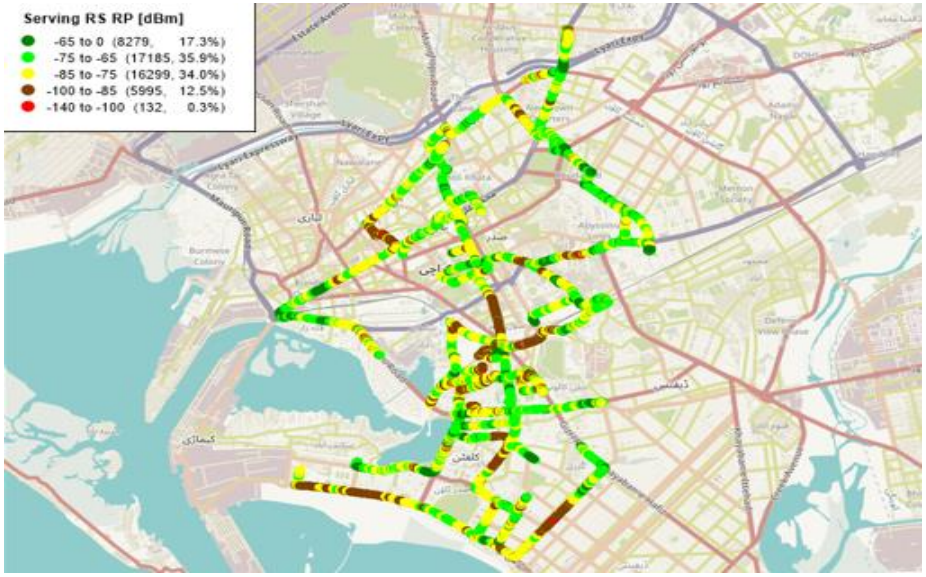


UFONE 4G NETWORK COVERAGE – KARACHI WEST

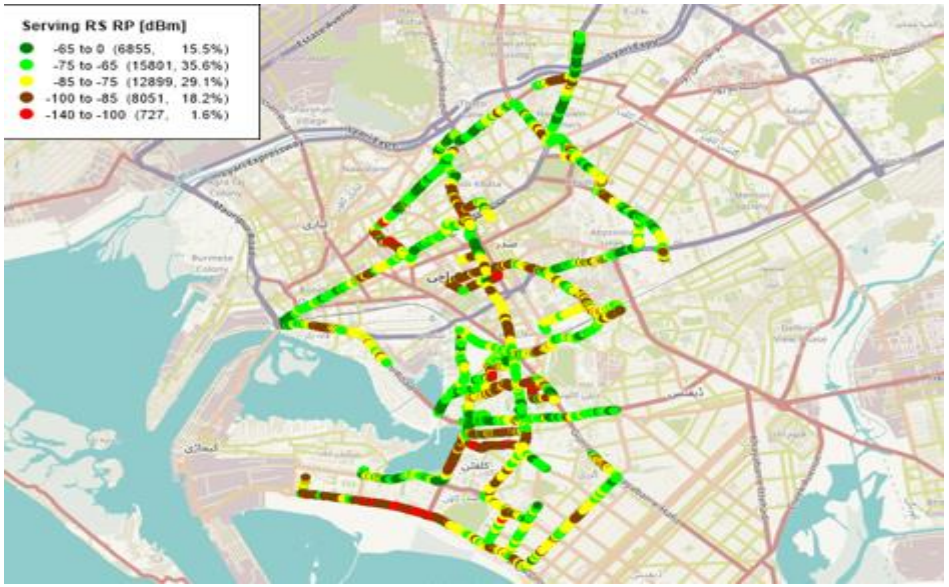
ZONG 4G NETWORK COVERAGE – KARACHI WEST

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

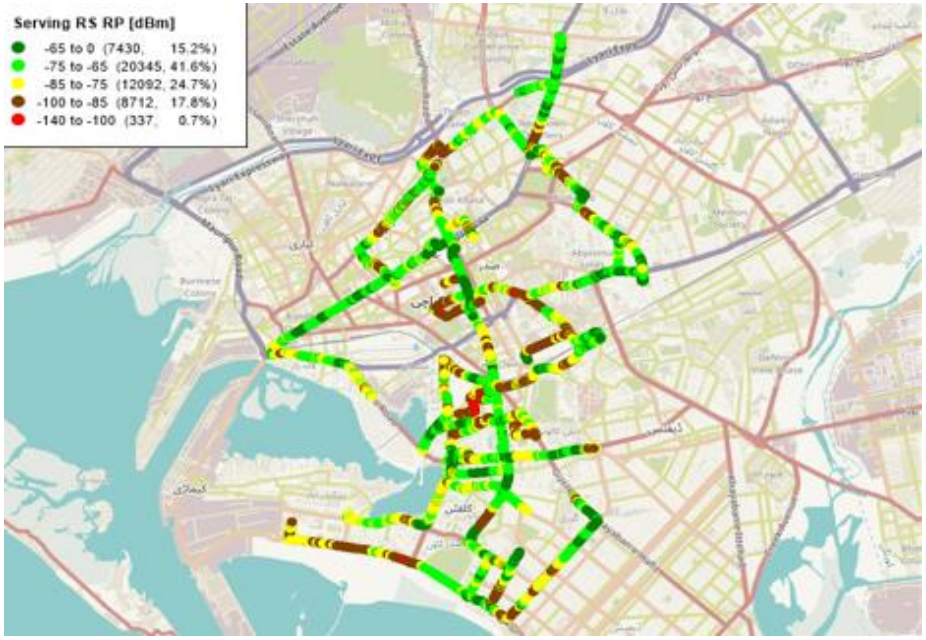
JAZZ 4G NETWORK COVERAGE – KARACHI SOUTH



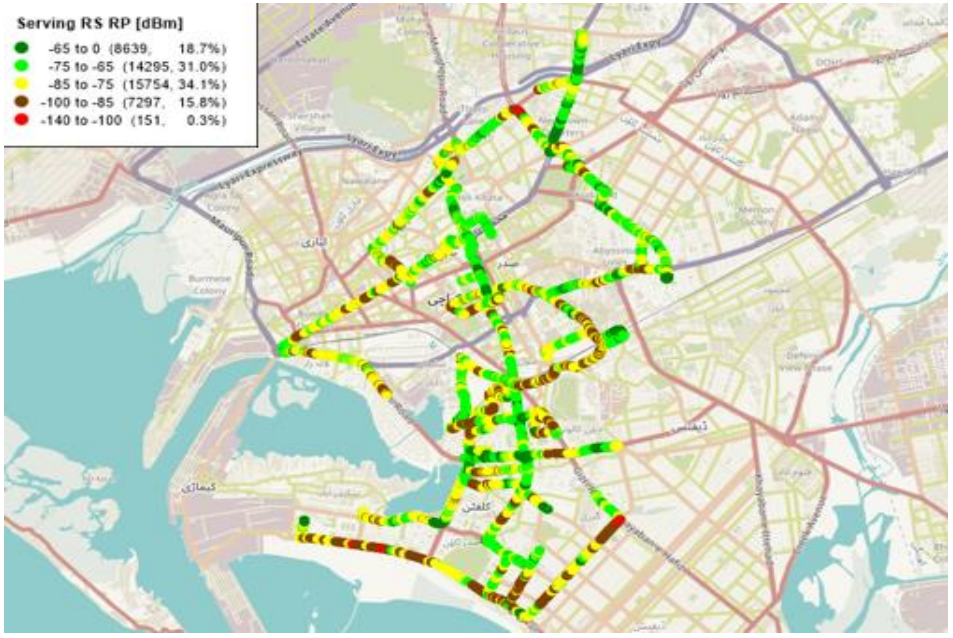
TELENOR 4G NETWORK COVERAGE – KARACHI SOUTH



UFONE 4G NETWORK COVERAGE – KARACHI SOUTH

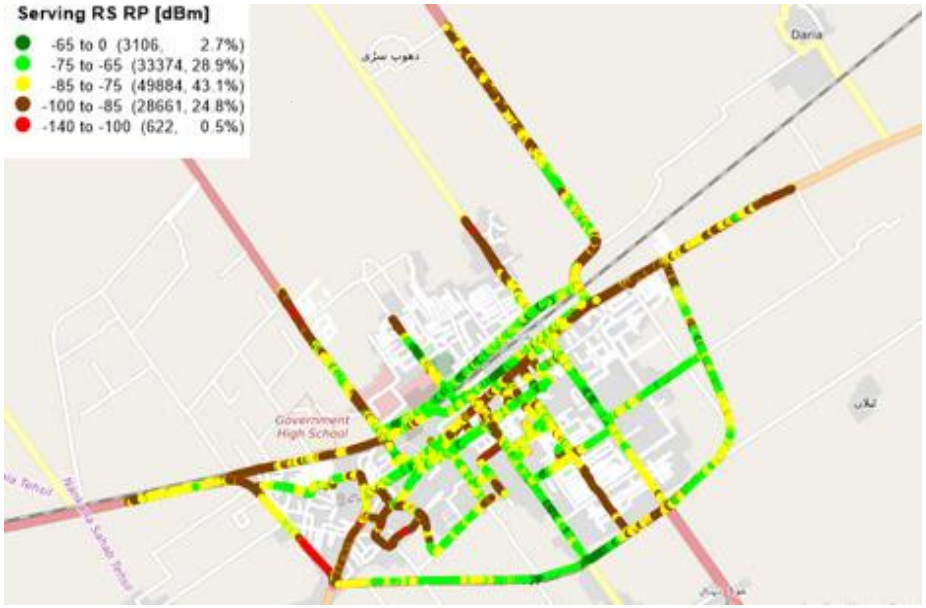


ZONG 4G NETWORK COVERAGE – KARACHI SOUTH



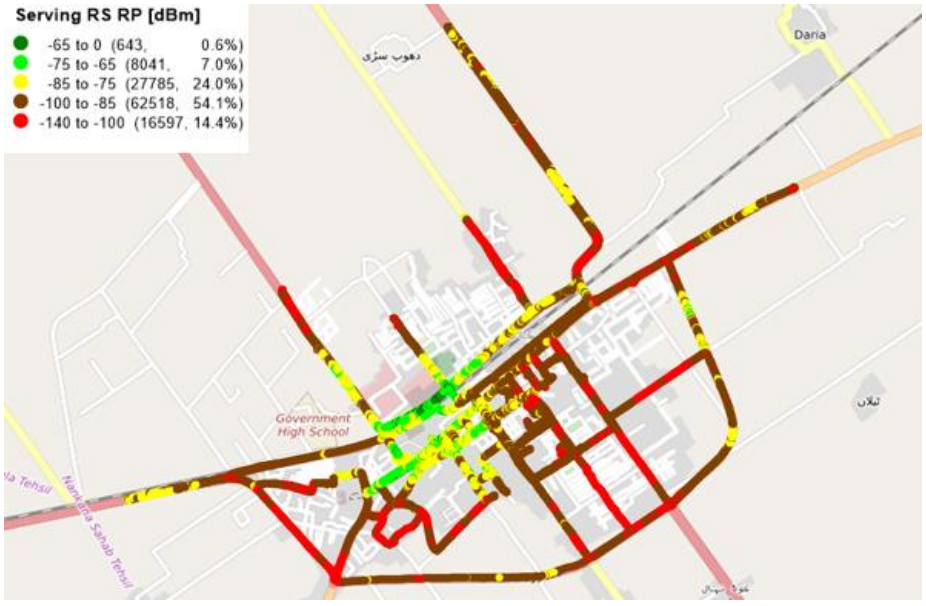
4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – NANKANA SAHIB

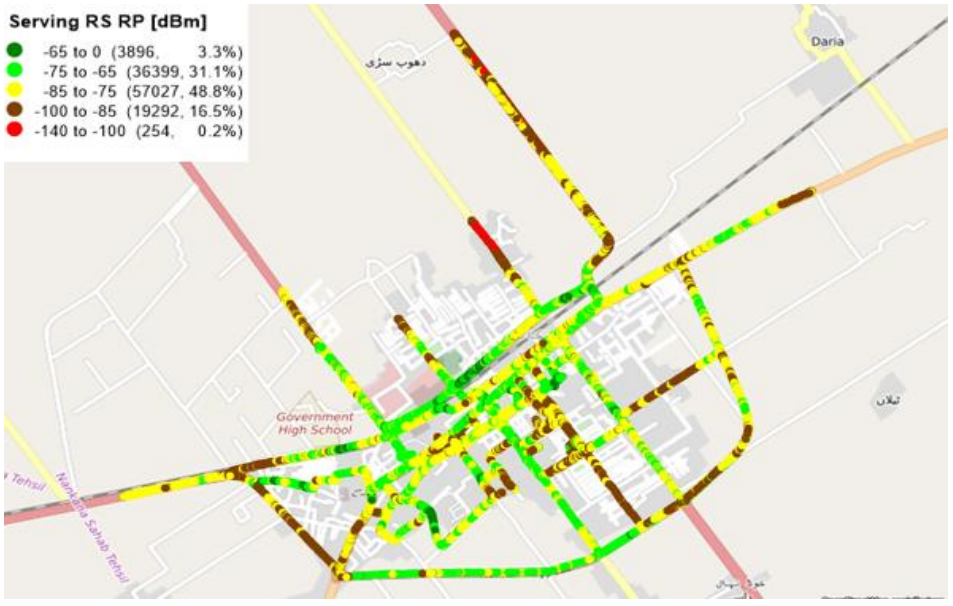


TELENOR 4G NETWORK COVERAGE – NANKANA SAHIB

UFONE 4G NETWORK COVERAGE – NANKANA SAHIB

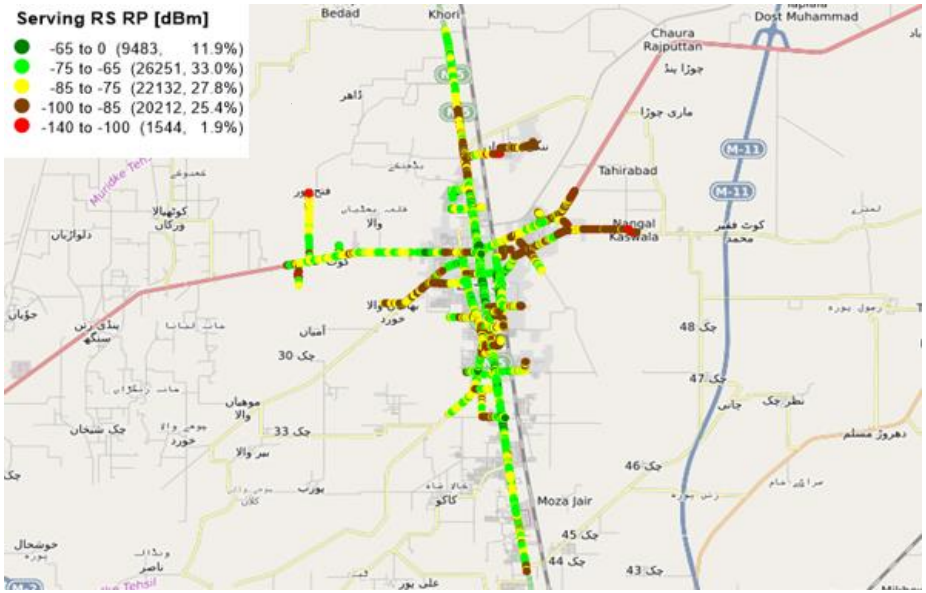


ZONG 4G NETWORK COVERAGE – NANKANA SAHIB

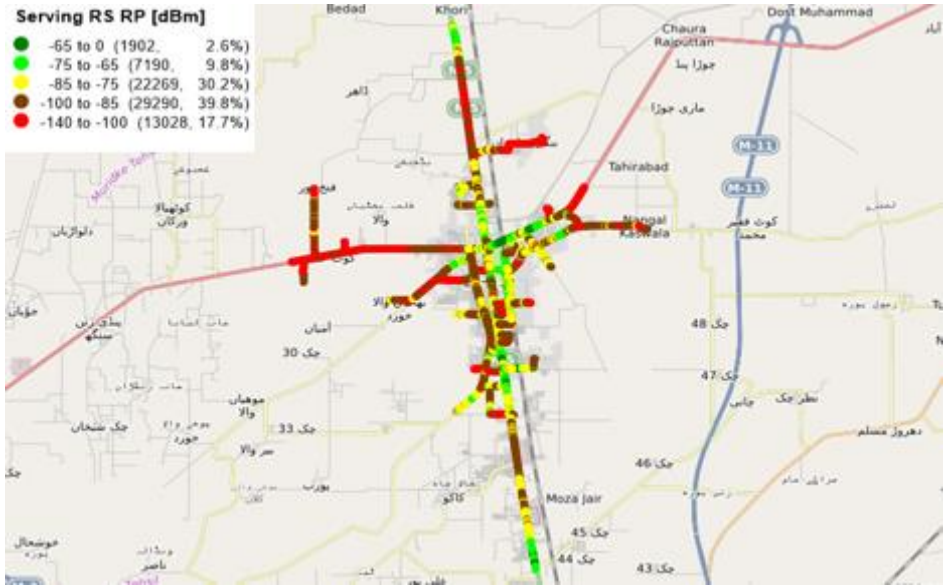


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

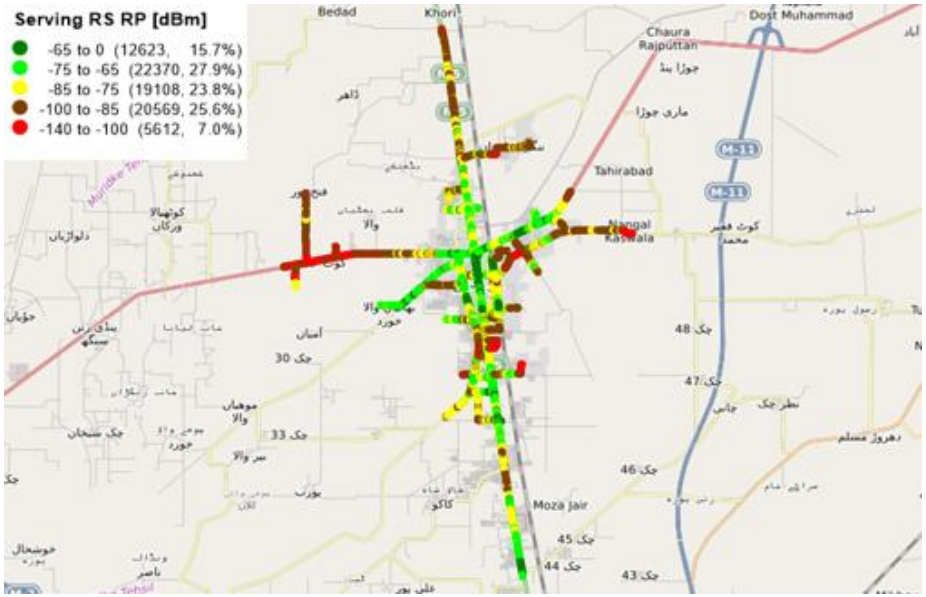
JAZZ 4G NETWORK COVERAGE – MURIDKE



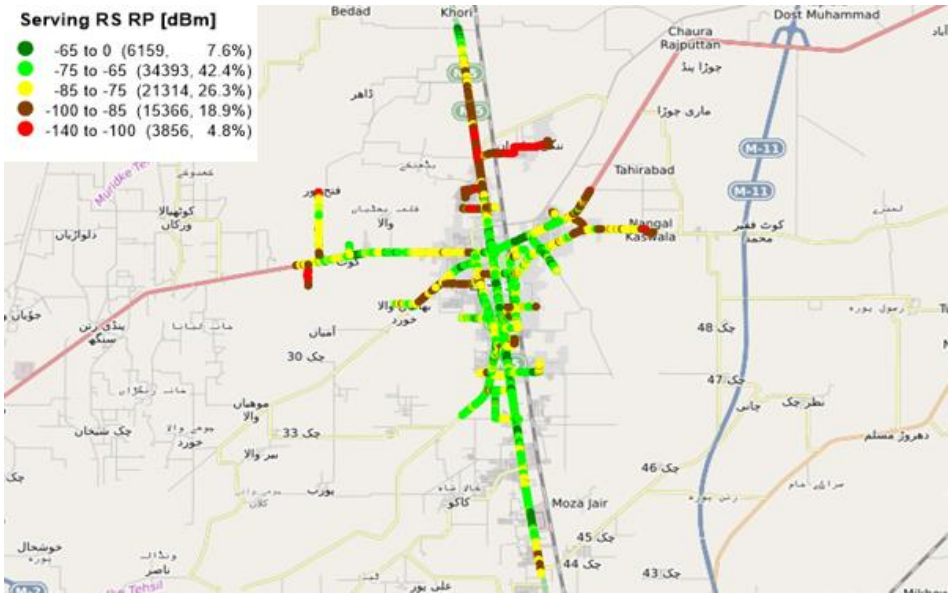
TELENOR 4G NETWORK COVERAGE –MURIDKE



UFONE 4G NETWORK COVERAGE – MURIDKE

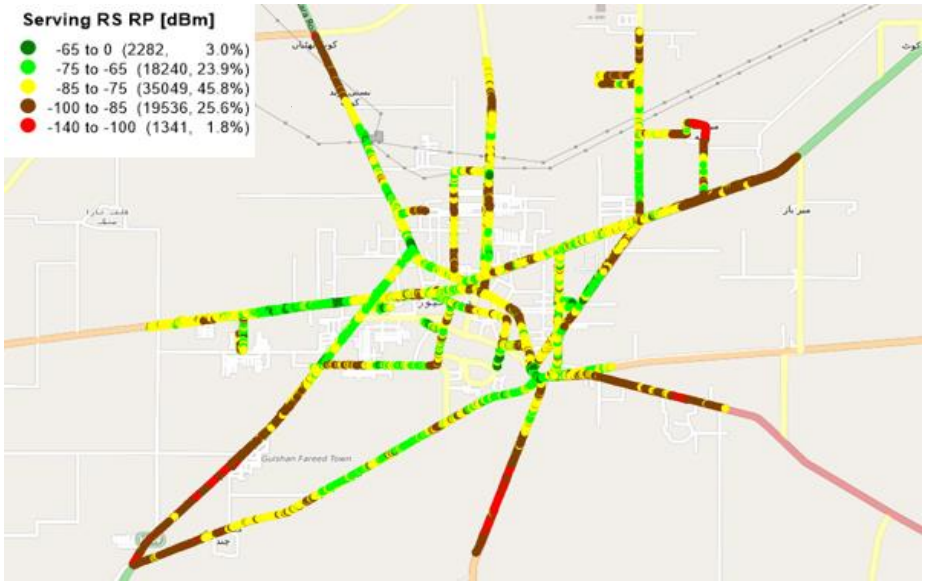


ZONG 4G NETWORK COVERAGE –MURIDKE

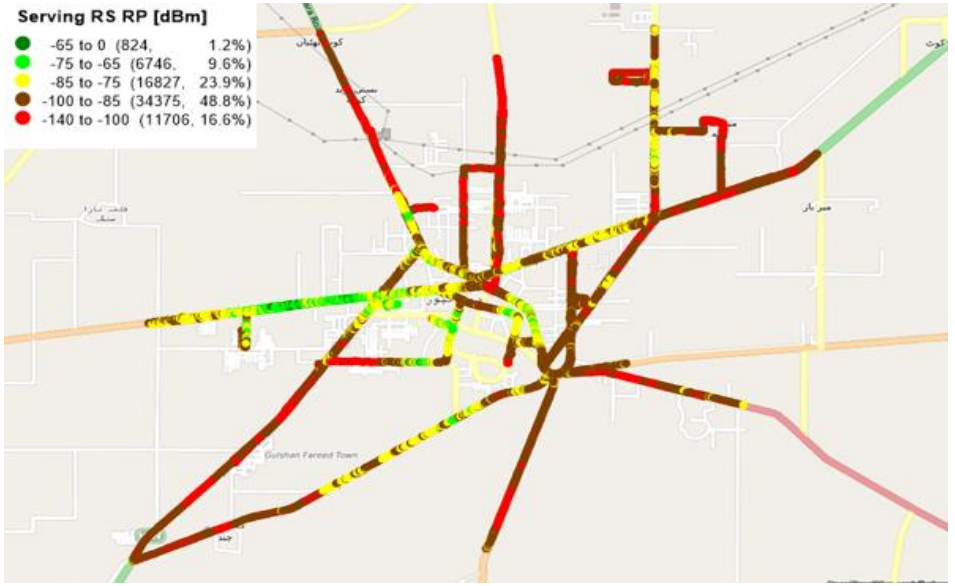


4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

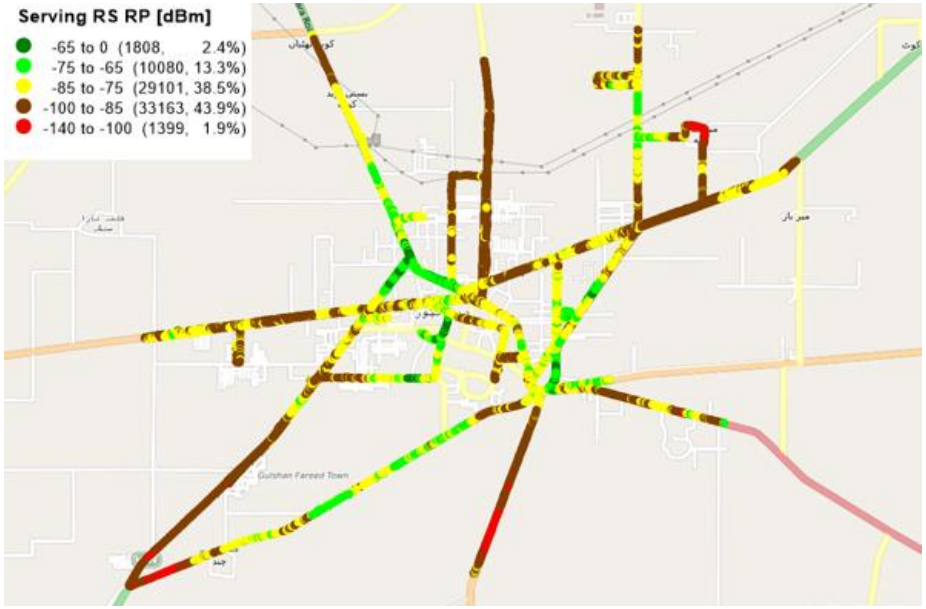
JAZZ 4G NETWORK COVERAGE – DEPALPUR



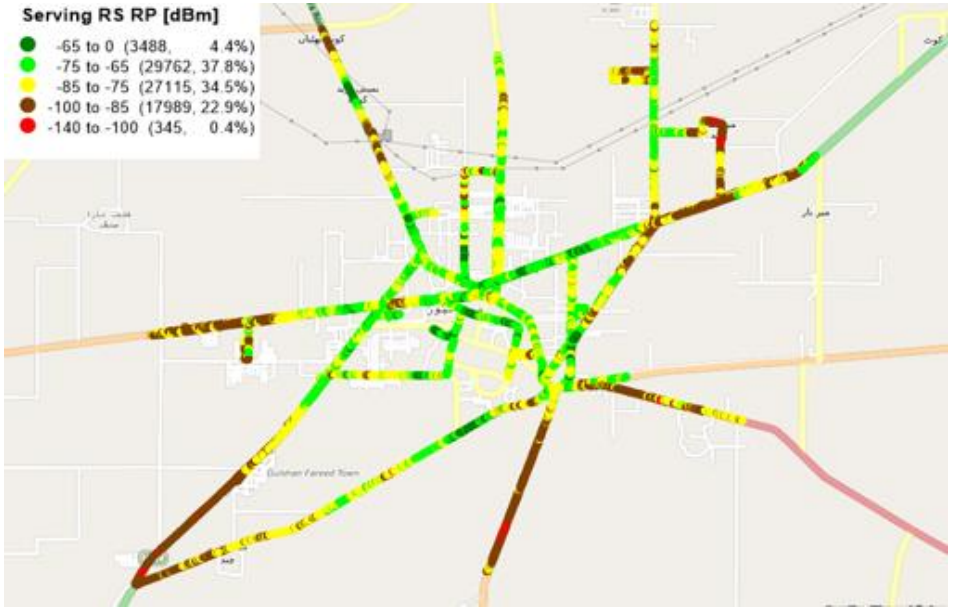
TELENOR 4G NETWORK COVERAGE – DEPALPUR



UFONE 4G NETWORK COVERAGE – DEPALPUR

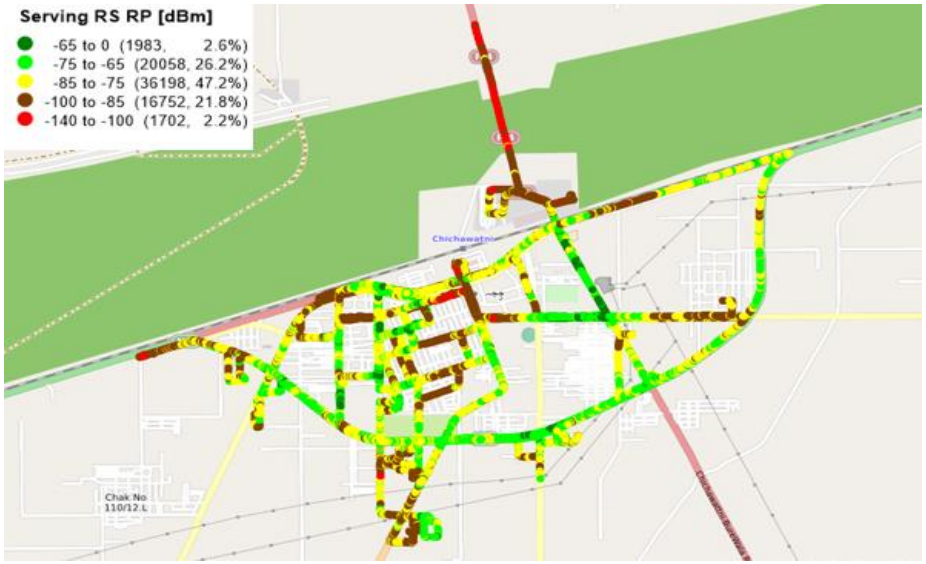


ZONG 4G NETWORK COVERAGE – DEPALPUR



4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – CHICHAWATNI

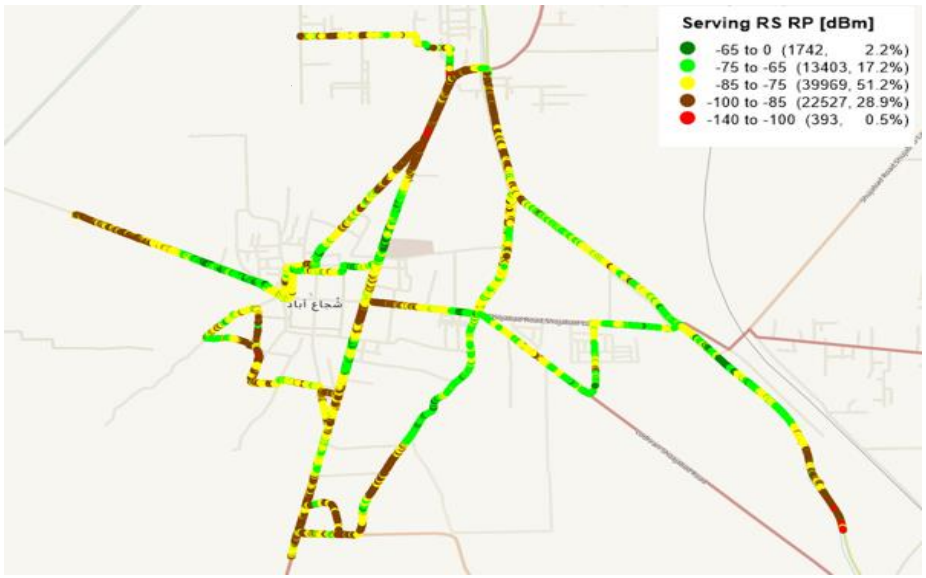
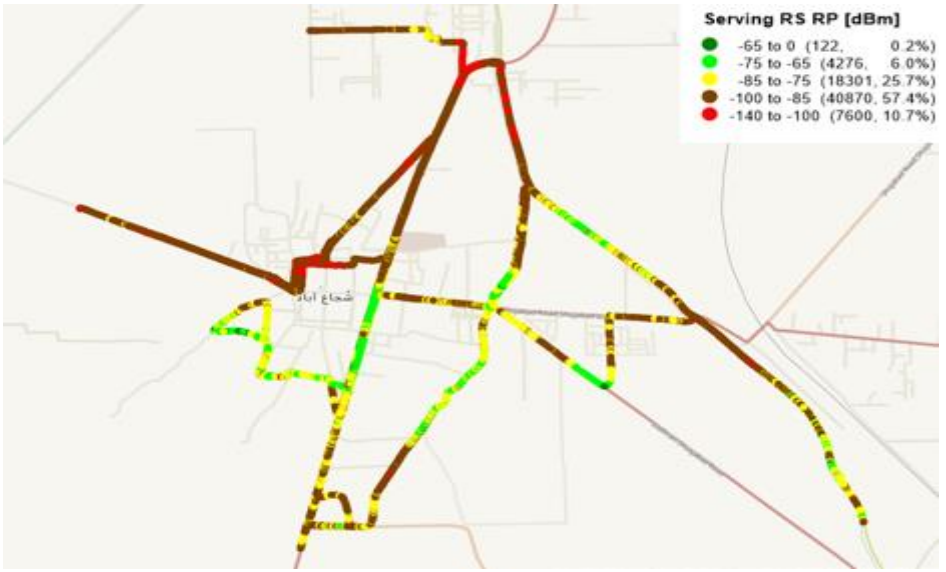
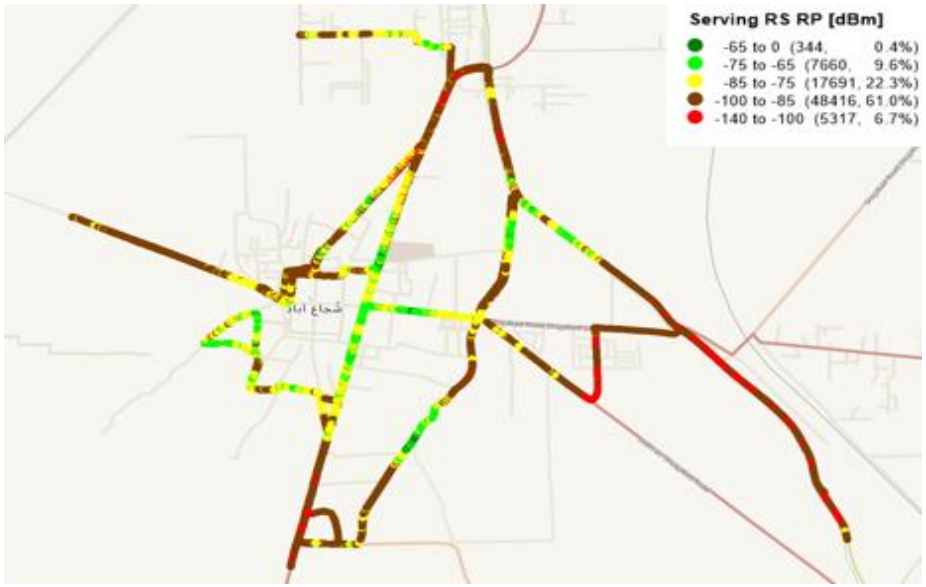
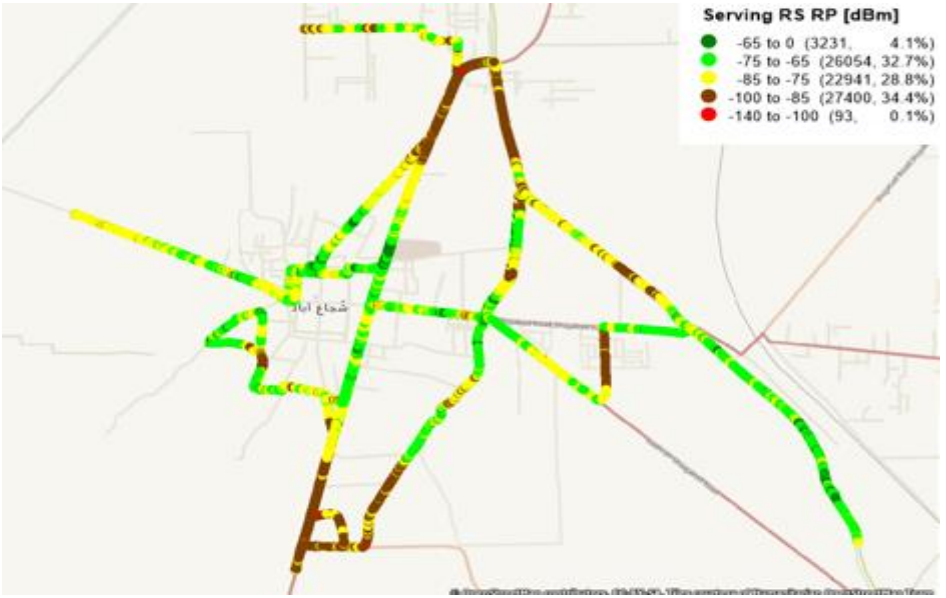


TELENOR 4G NETWORK COVERAGE –CHICHAWATNI

UFONE 4G NETWORK COVERAGE – CHICHAWATNI

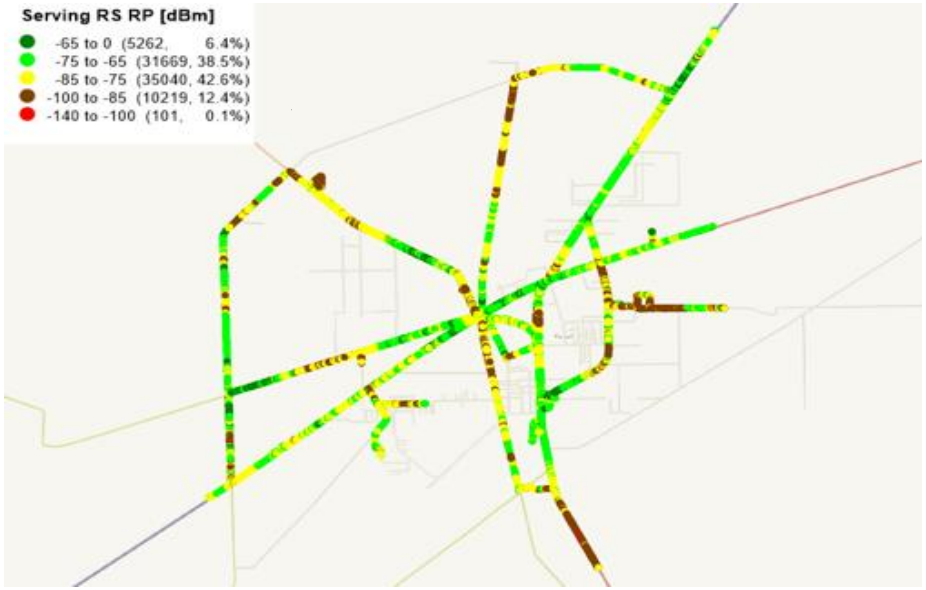
ZONG 4G NETWORK COVERAGE – CHICHAWATNI

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – SHUJABAD	TELENOR 4G NETWORK COVERAGE – SHUJABAD
	
UFONE 4G NETWORK COVERAGE – SHUJABAD	**ZONG 4G NETWORK COVERAGE – SHUJABAD**
	

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – KABIRWALA

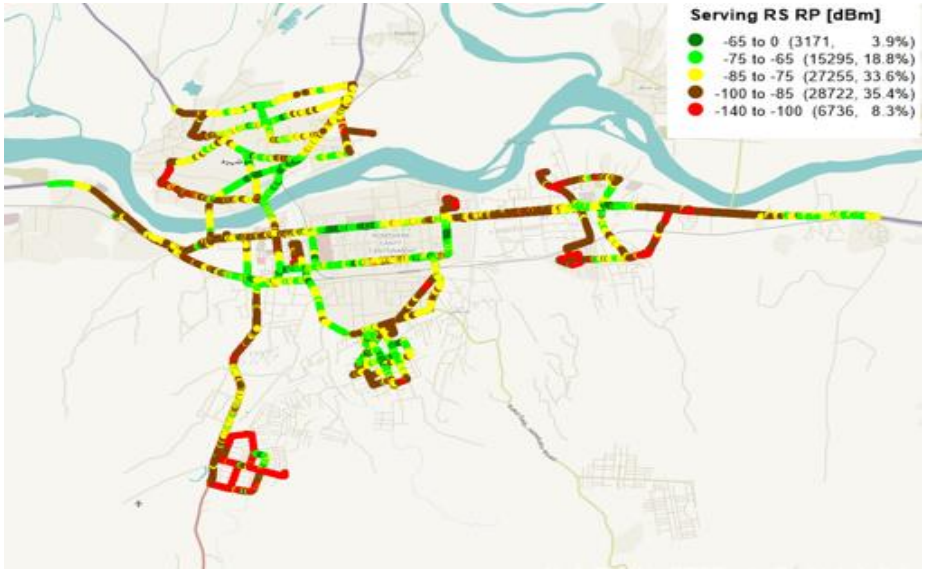
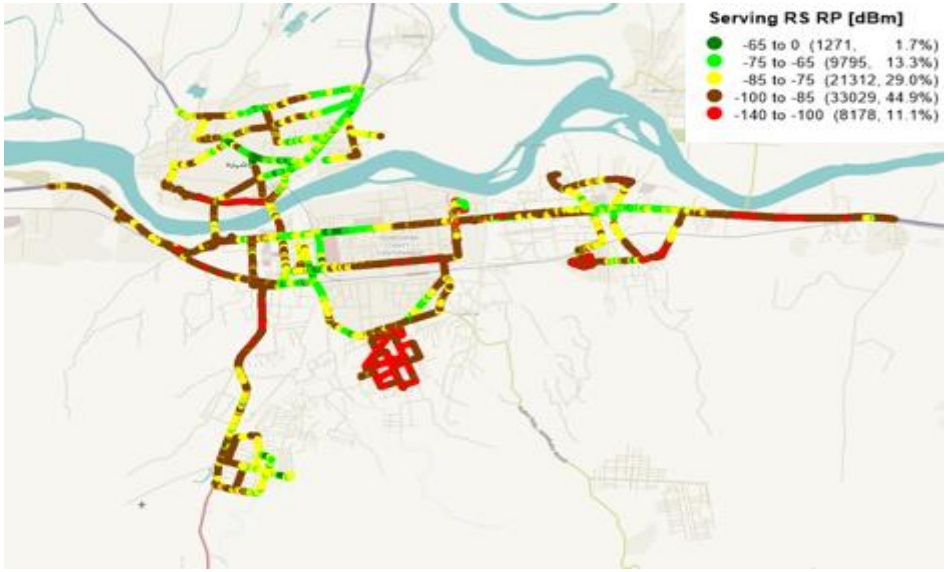
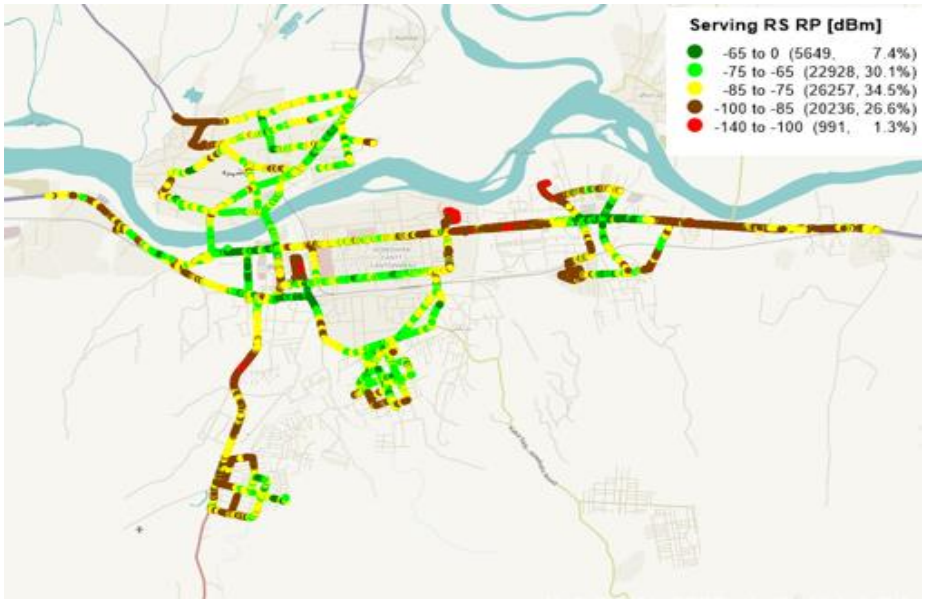
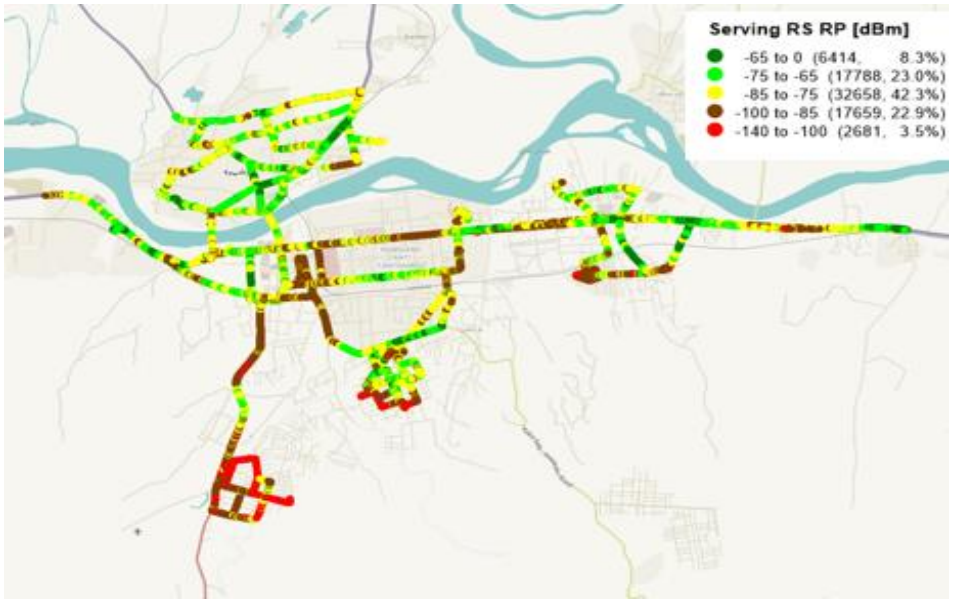


TELENOR 4G NETWORK COVERAGE – KABIRWALA

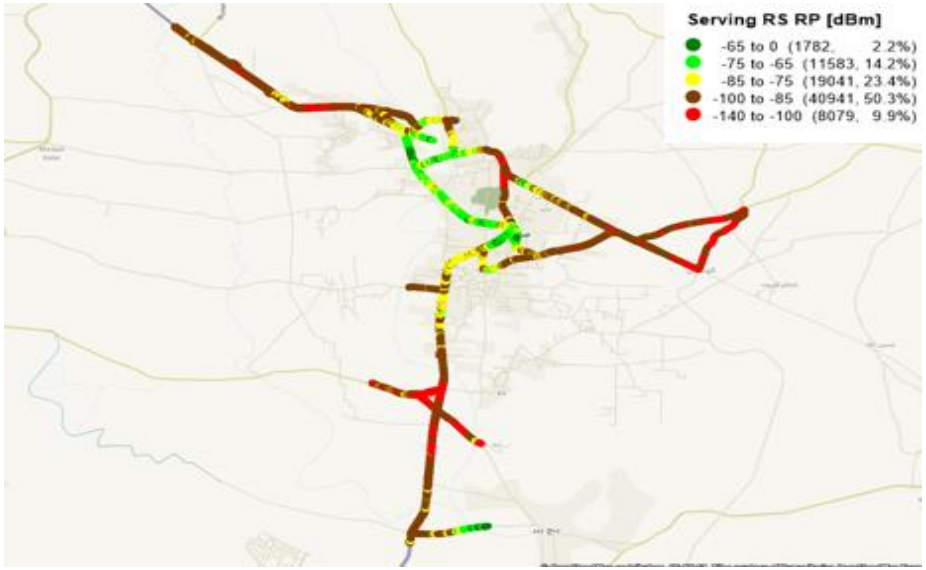
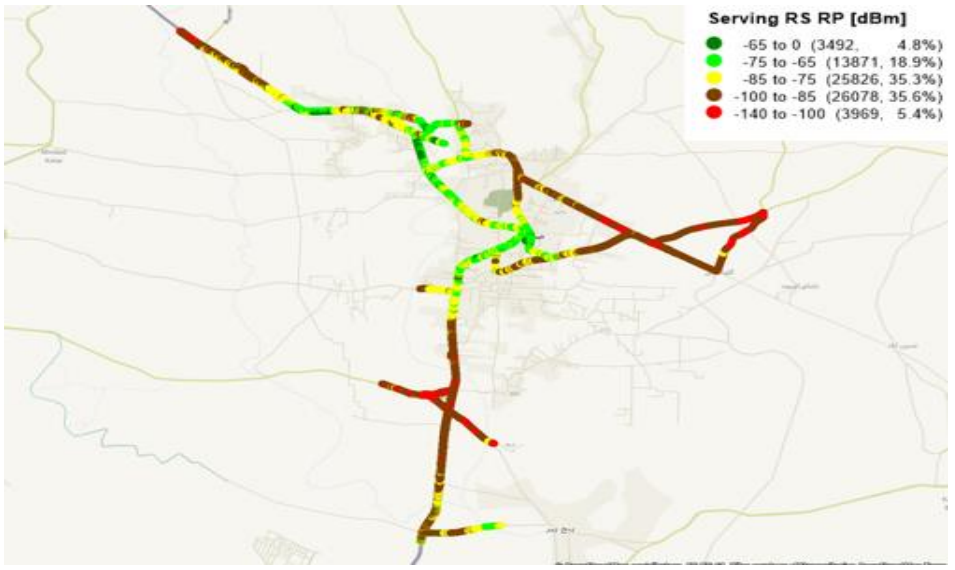
UFONE 4G NETWORK COVERAGE – KABIRWALA

ZONG 4G NETWORK COVERAGE – KABIRWALA

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – NOWSHERA	TELENOR 4G NETWORK COVERAGE – NOWSHERA
	
UFONE 4G NETWORK COVERAGE – NOWSHERA	**ZONG 4G NETWORK COVERAGE – NOWSHERA**
	

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ 4G NETWORK COVERAGE – SWABI	TELENOR 4G NETWORK COVERAGE – SWABI
	
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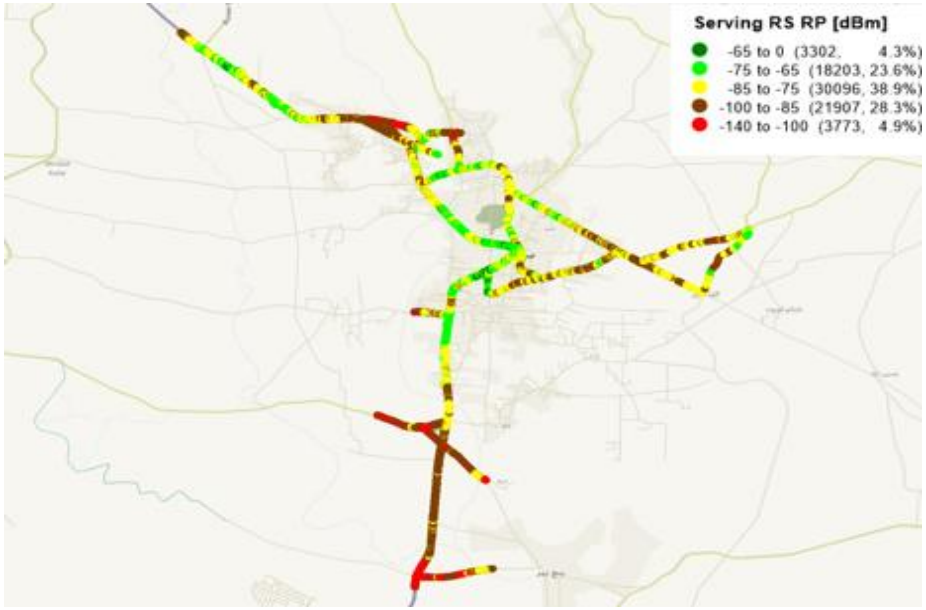
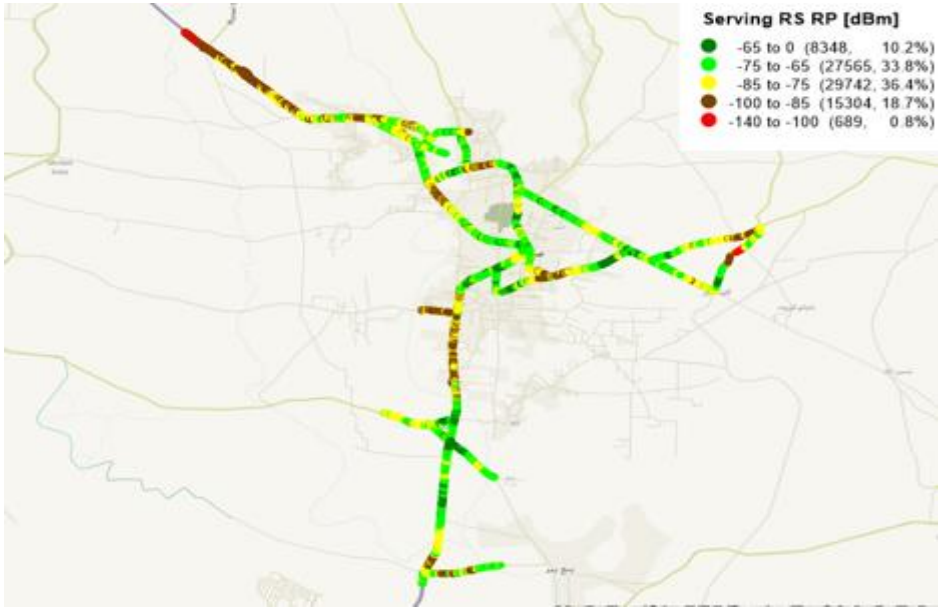
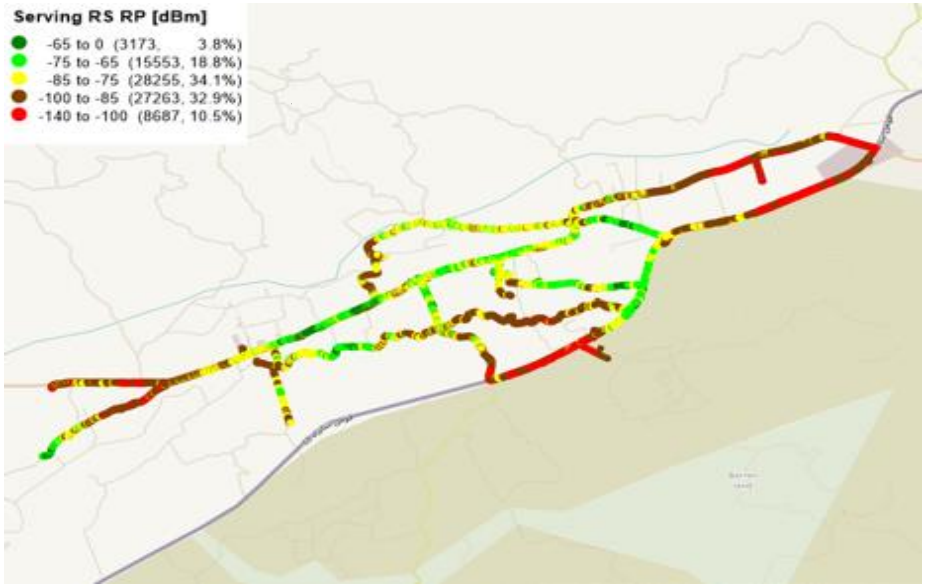
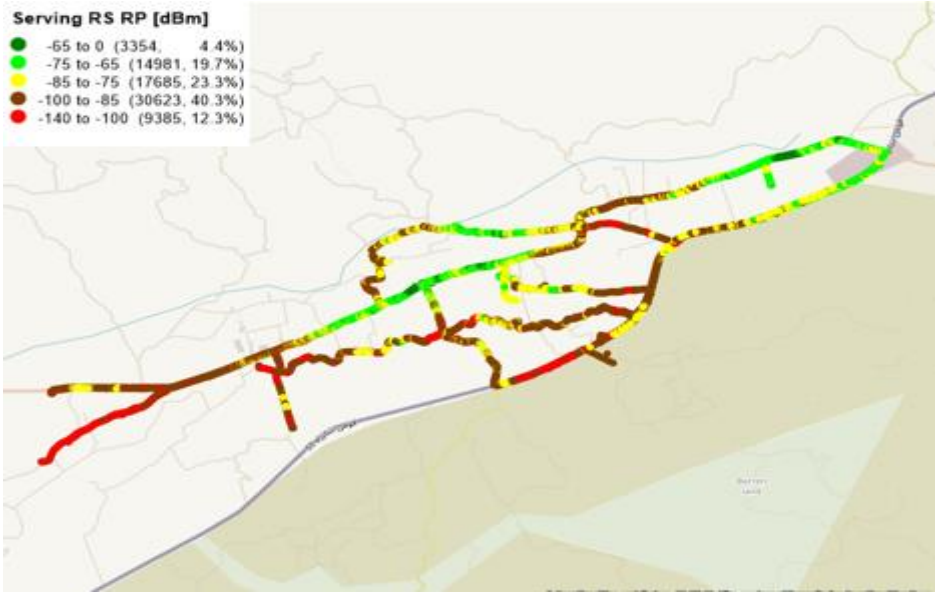
	

4G MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

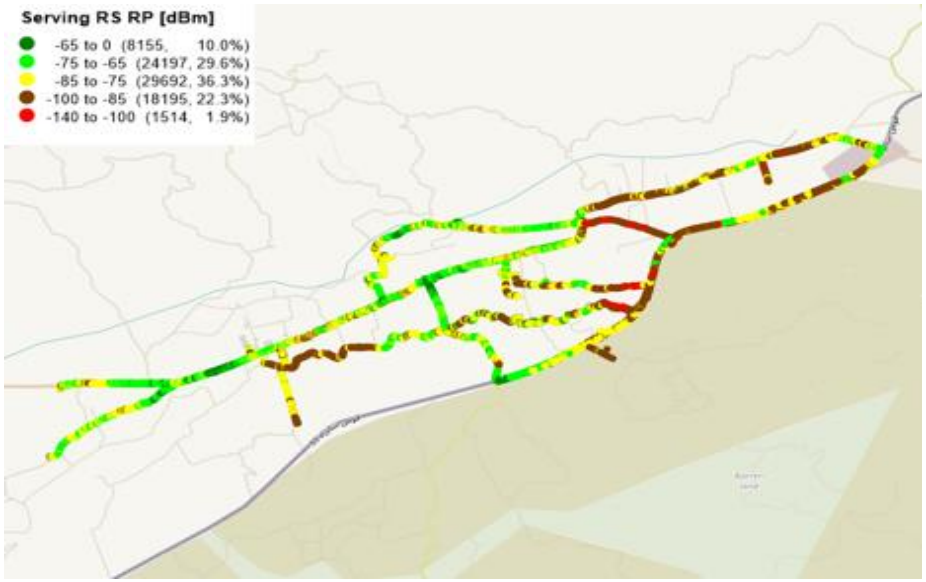
JAZZ 4G NETWORK COVERAGE – KARAK



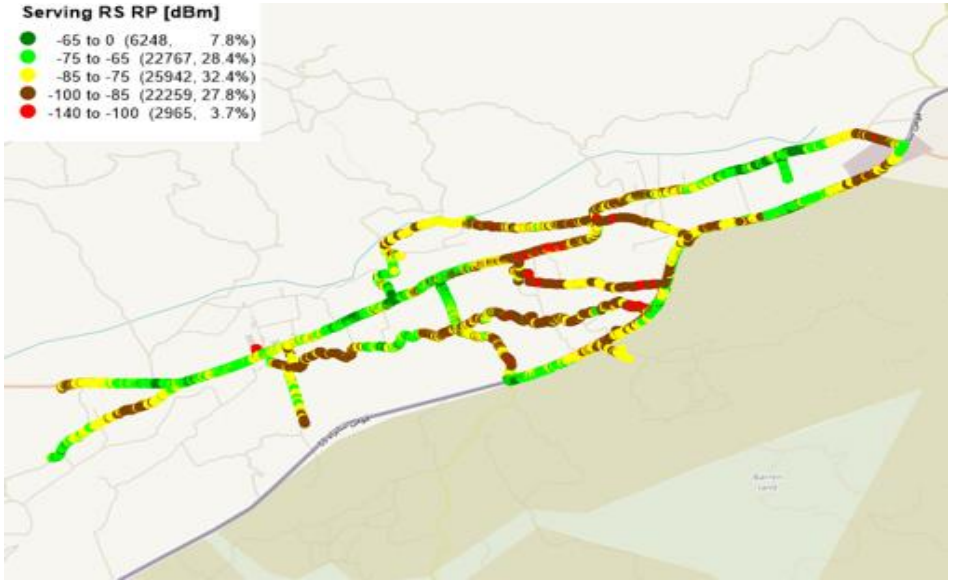
TELENOR 4G NETWORK COVERAGE – KARAK



UFONE 4G NETWORK COVERAGE – KARAK



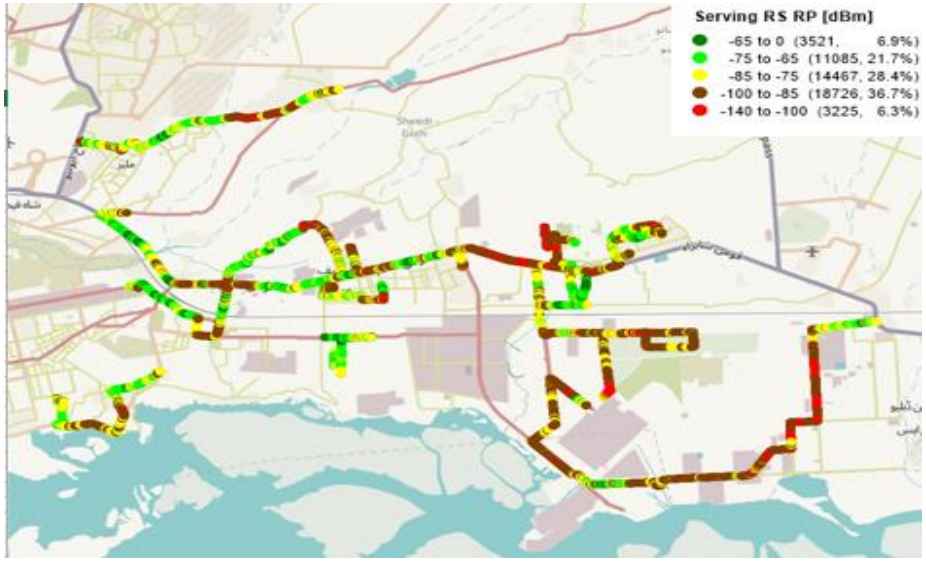
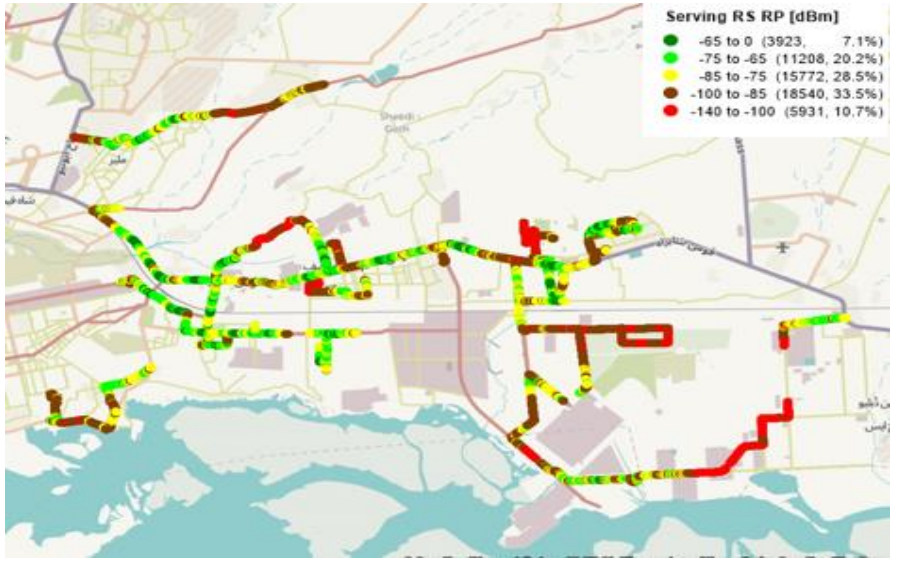
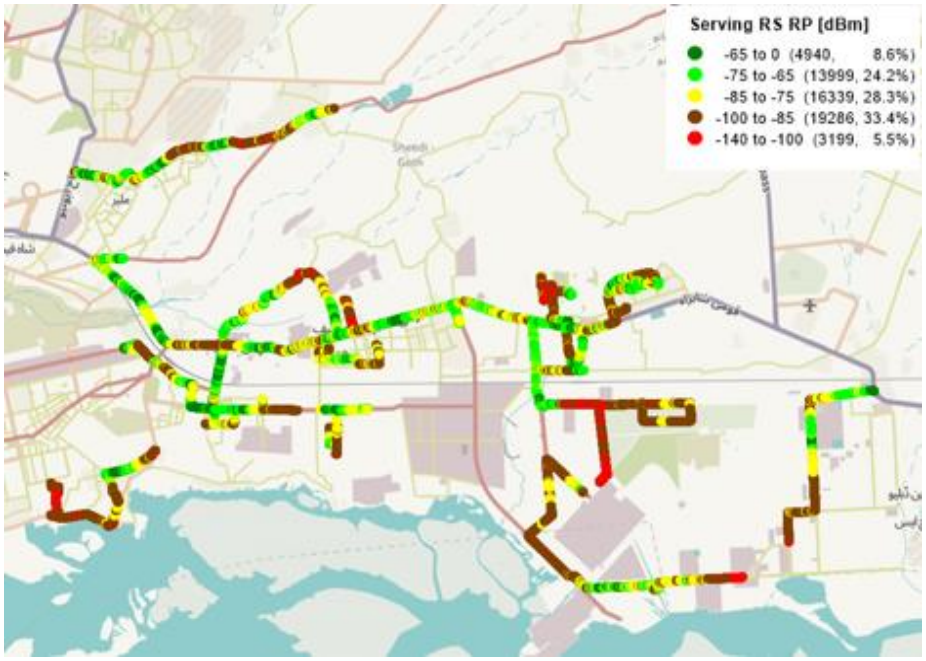
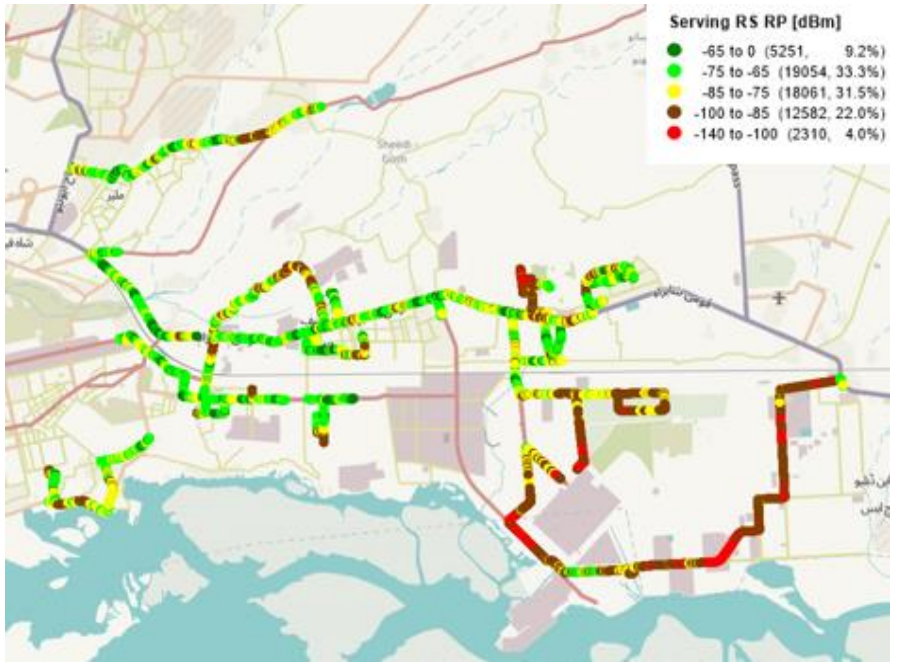
ZONG 4G NETWORK COVERAGE – KARAK



Annex-A (Coverage Maps)

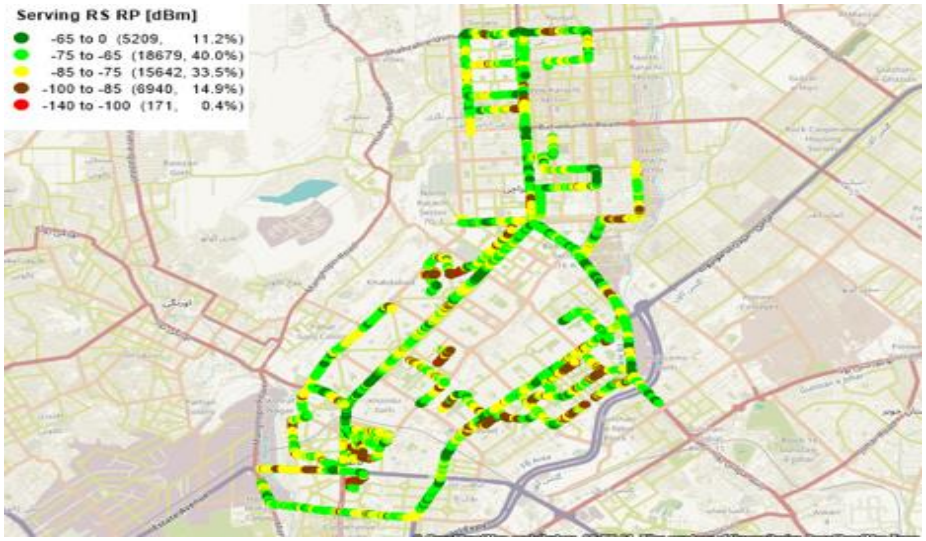
AUTOMODE

AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

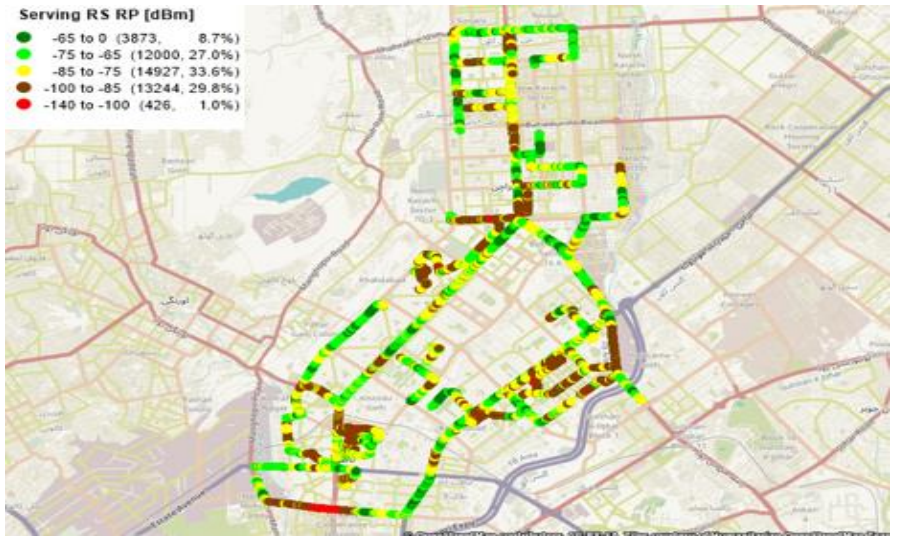
JAZZ AUTOMODE NETWORK COVERAGE – KARACHI MALIR	TELENOR AUTOMODE NETWORK COVERAGE – KARACHI MALIR
	
UFONE AUTOMODE NETWORK COVERAGE – KARACHI MALIR	**ZONG AUTOMODE NETWORK COVERAGE – KARACHI MALIR**
	

AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

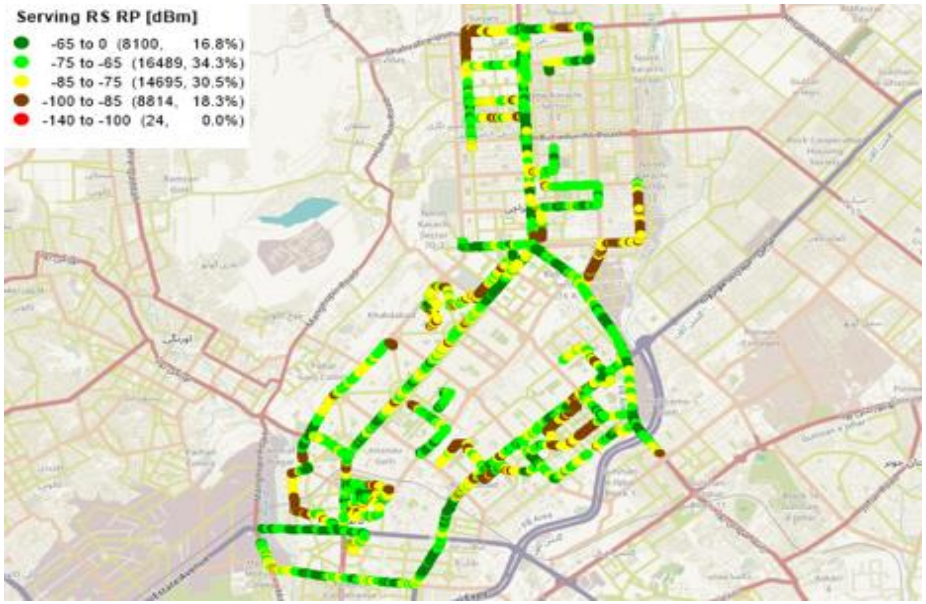
JAZZ AUTOMODE NETWORK COVERAGE – KARACHI CENTRAL



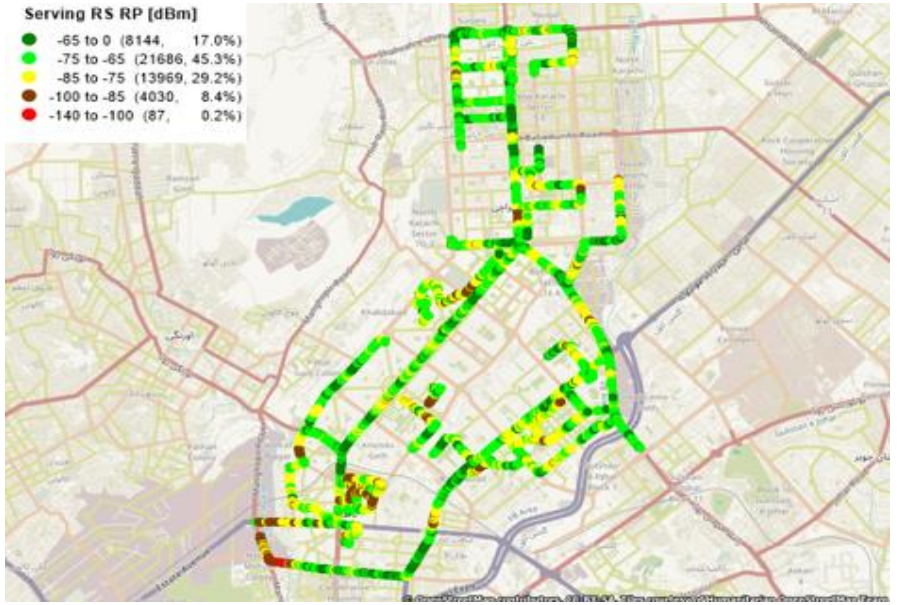
TELENOR AUTOMODE NETWORK COVERAGE – KARACHI CENTRAL



UFONE AUTOMODE NETWORK COVERAGE – KARACHI CENTRAL

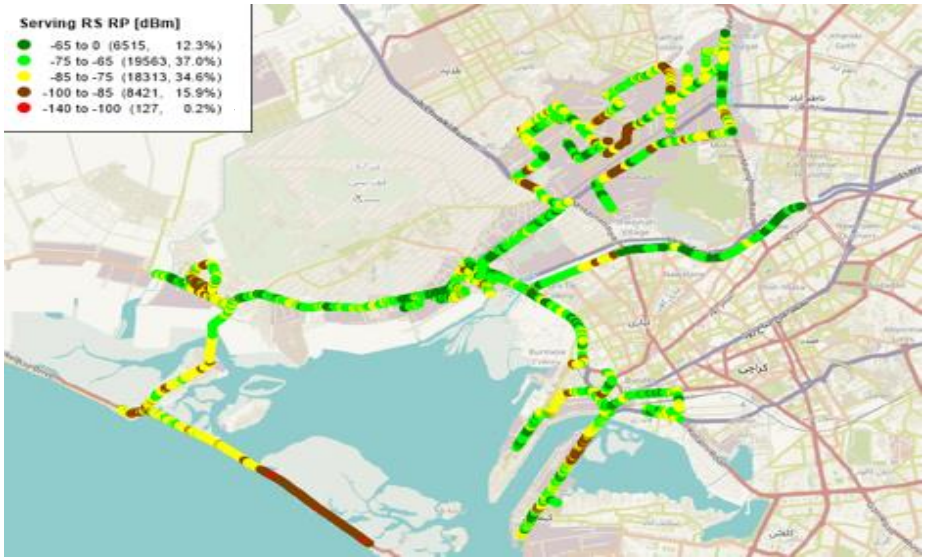


ZONG AUTOMODE NETWORK COVERAGE – KARACHI CENTRAL

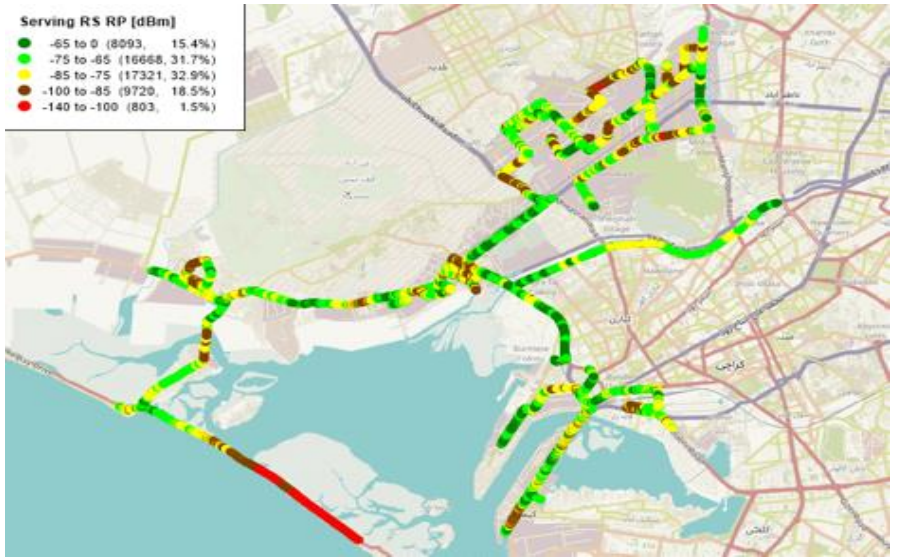


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

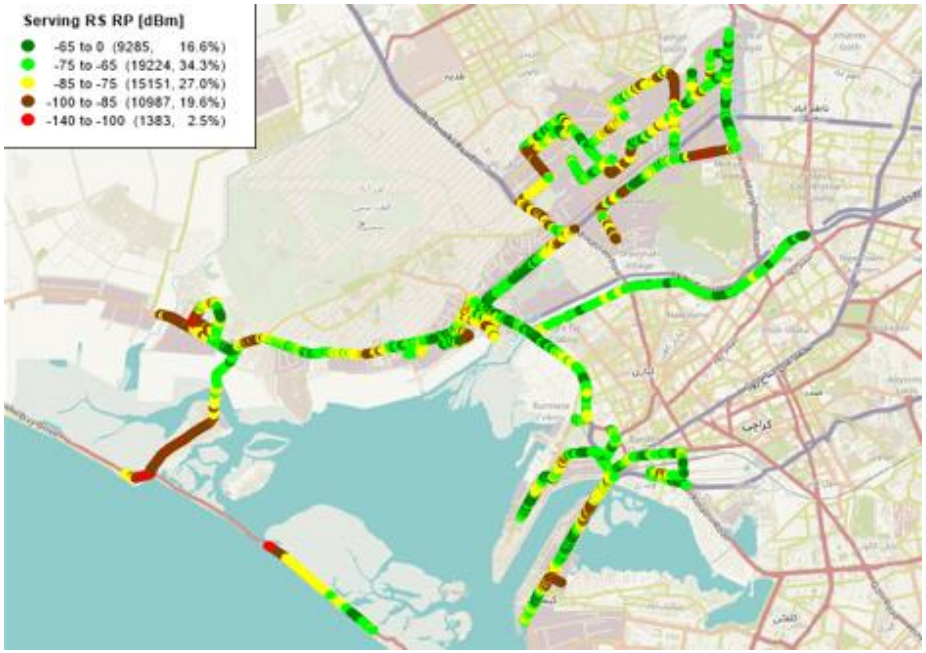
JAZZ AUTOMODE NETWORK COVERAGE – KARACHI KEMARI



TELENOR AUTOMODE NETWORK COVERAGE – KARACHI KEMARI



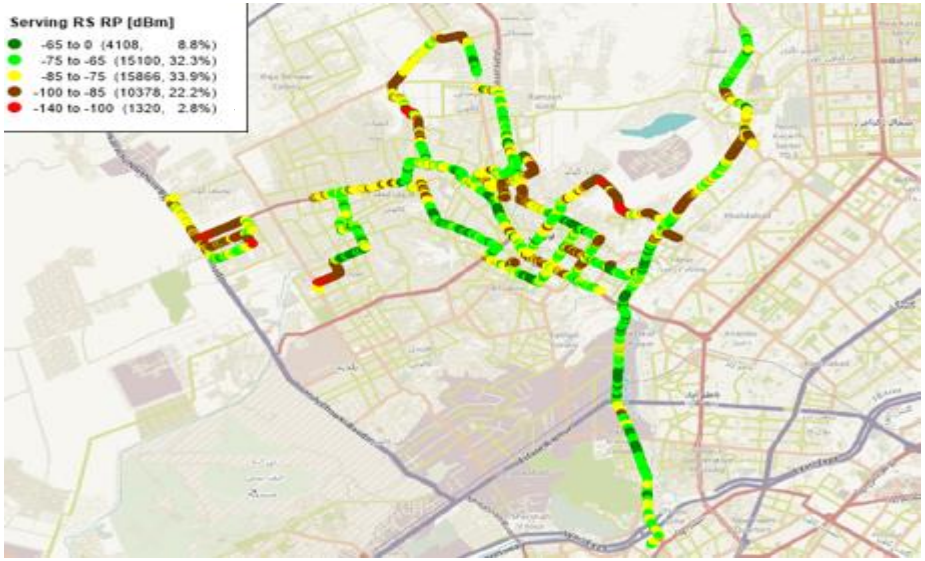
UFONE AUTOMODE NETWORK COVERAGE – KARACHI KEMARI



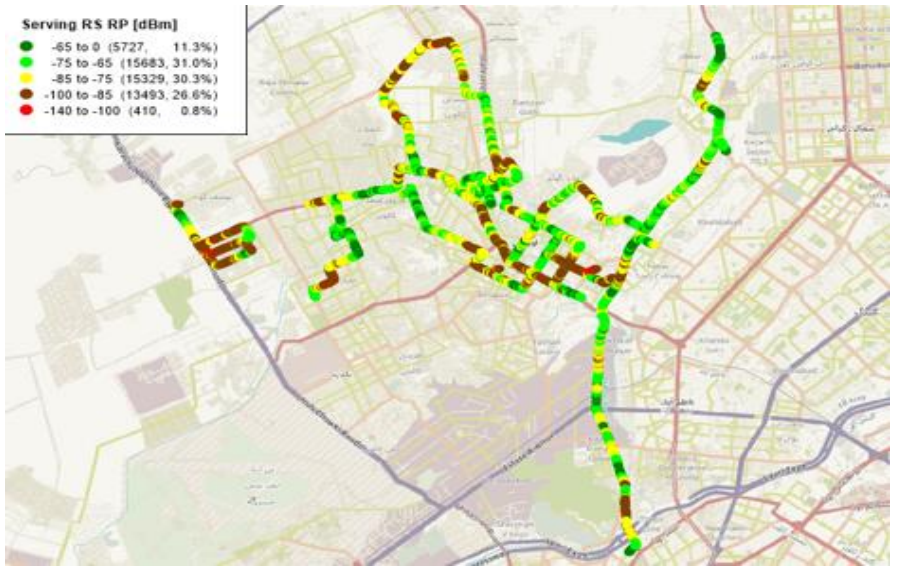
ZONG AUTOMODE NETWORK COVERAGE – KARACHI KEMARI

AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

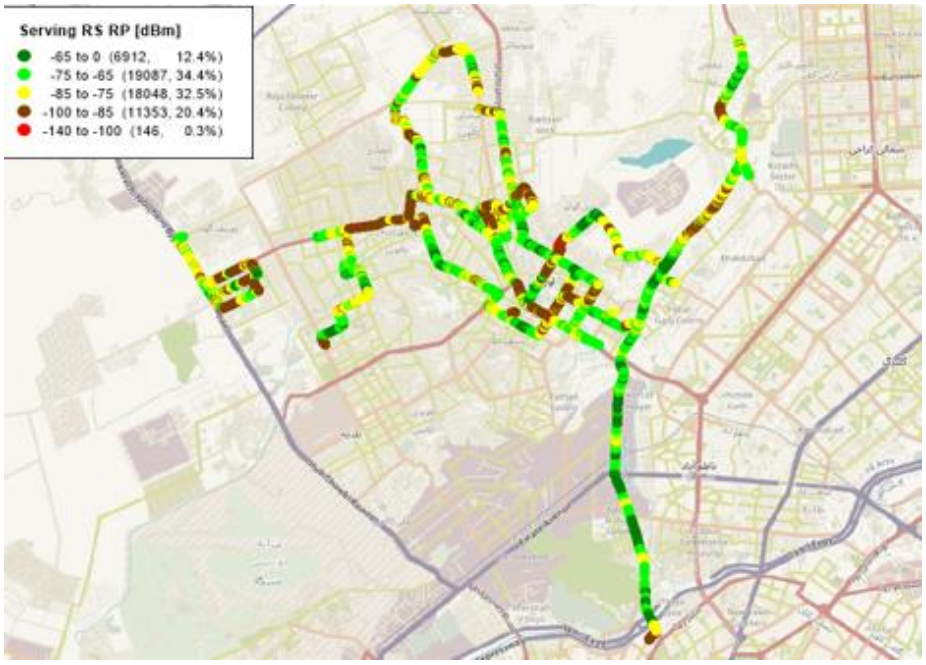
JAZZ AUTOMODE NETWORK COVERAGE – KARACHI WEST



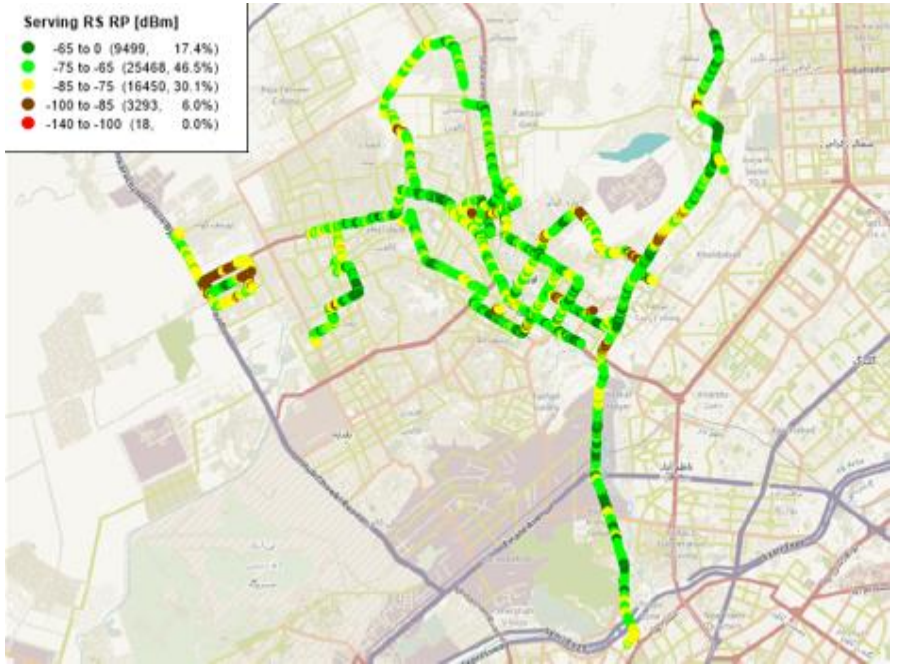
TELENOR AUTOMODE NETWORK COVERAGE – KARACHI WEST



UFONE AUTOMODE NETWORK COVERAGE – KARACHI WEST

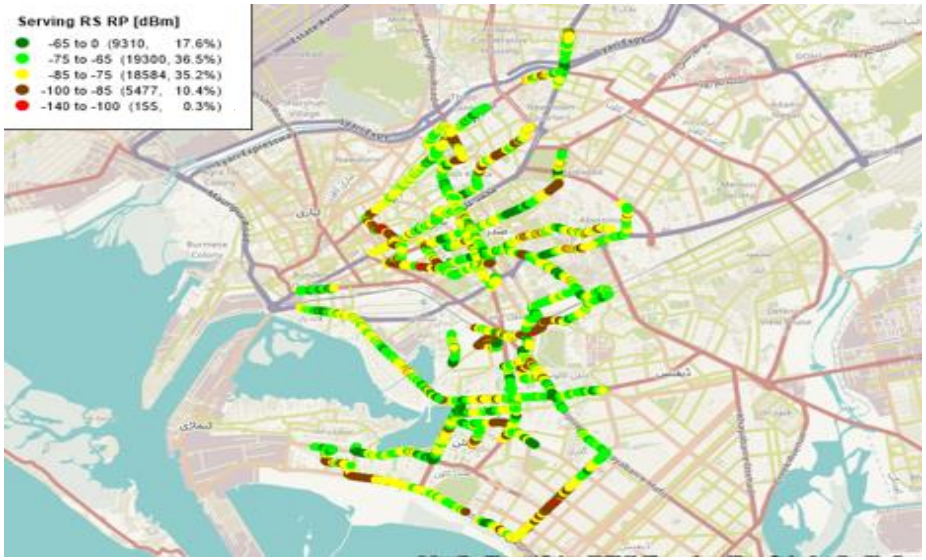


ZONG AUTOMODE NETWORK COVERAGE – KARACHI WEST

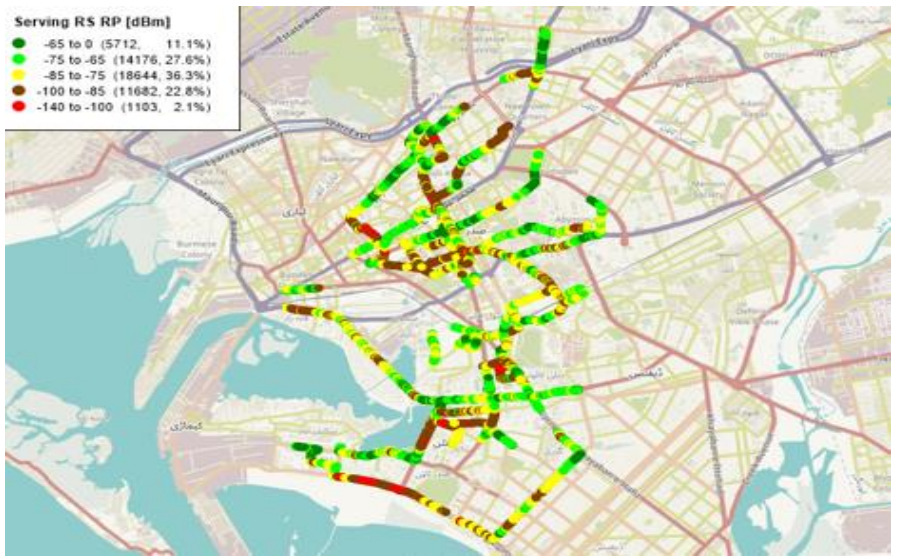


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

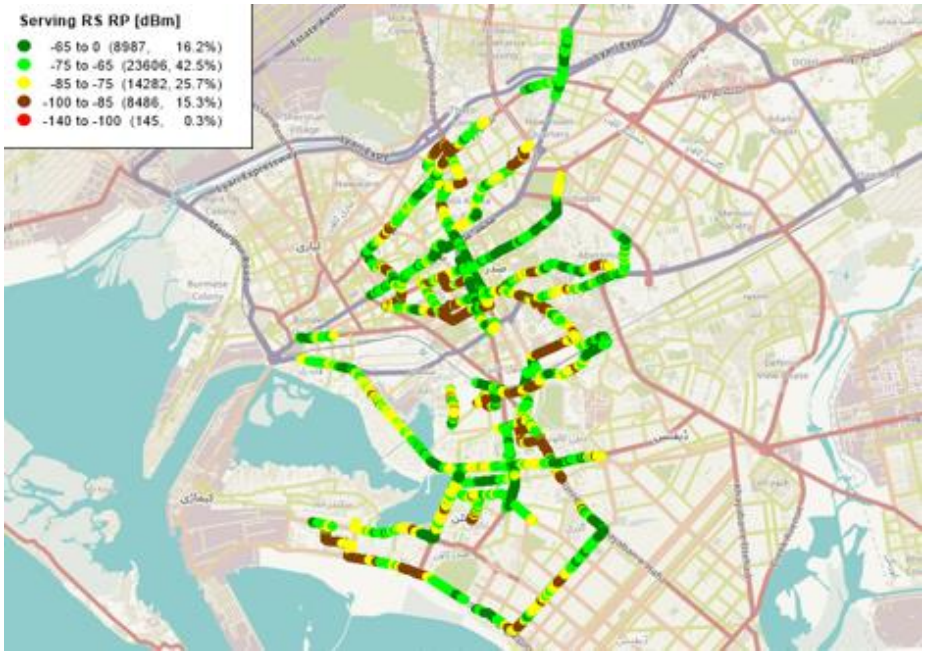
JAZZ AUTOMODE NETWORK COVERAGE – KARACHI SOUTH



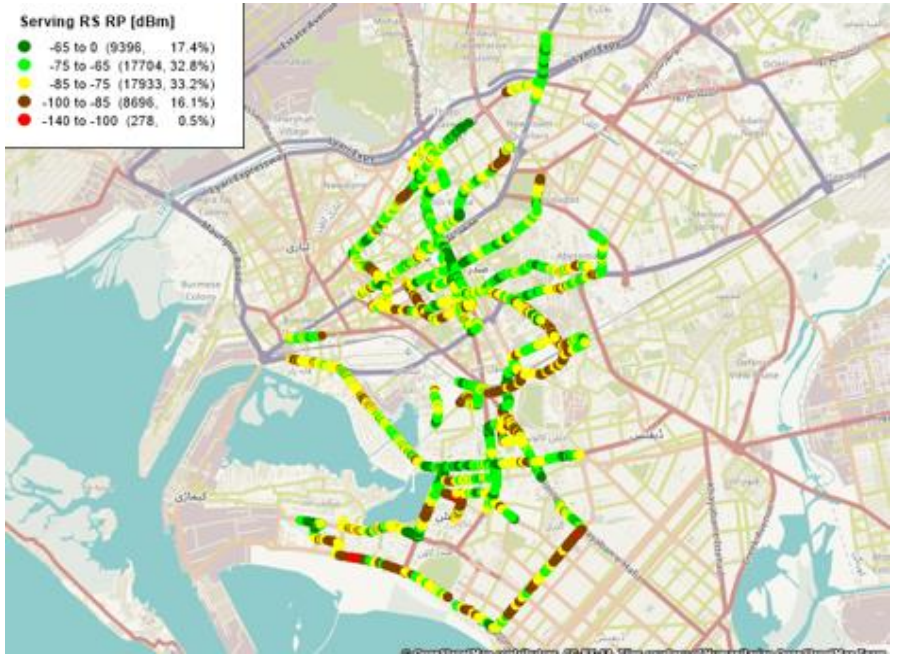
TELENOR AUTOMODE NETWORK COVERAGE – KARACHI SOUTH



UFONE AUTOMODE NETWORK COVERAGE – KARACHI SOUTH

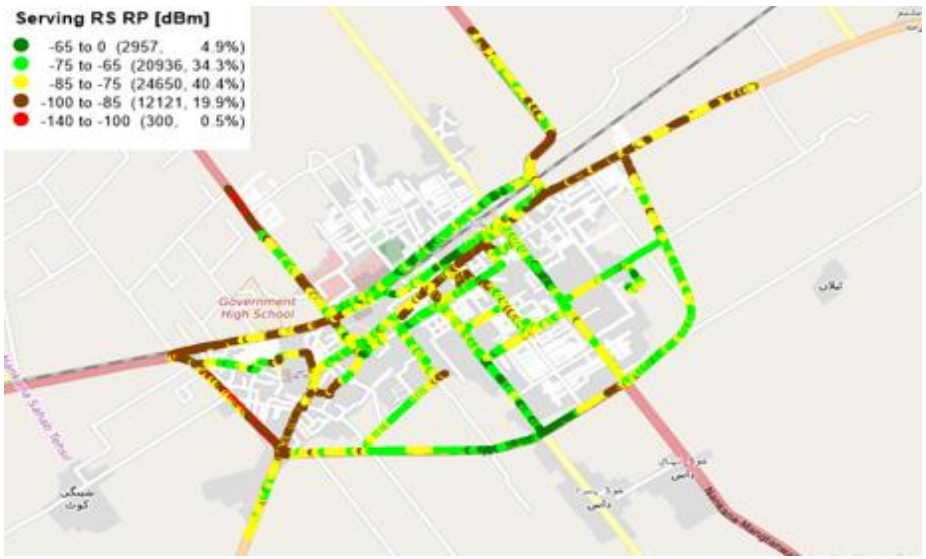


ZONG AUTOMODE NETWORK COVERAGE – KARACHI SOUTH



AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ AUTOMODE NETWORK COVERAGE – NANKANA SAHIB



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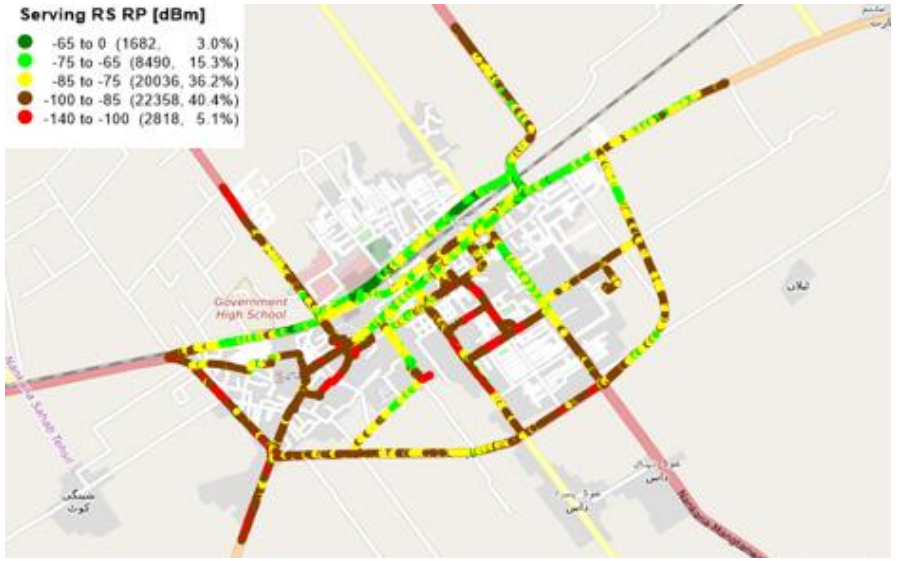
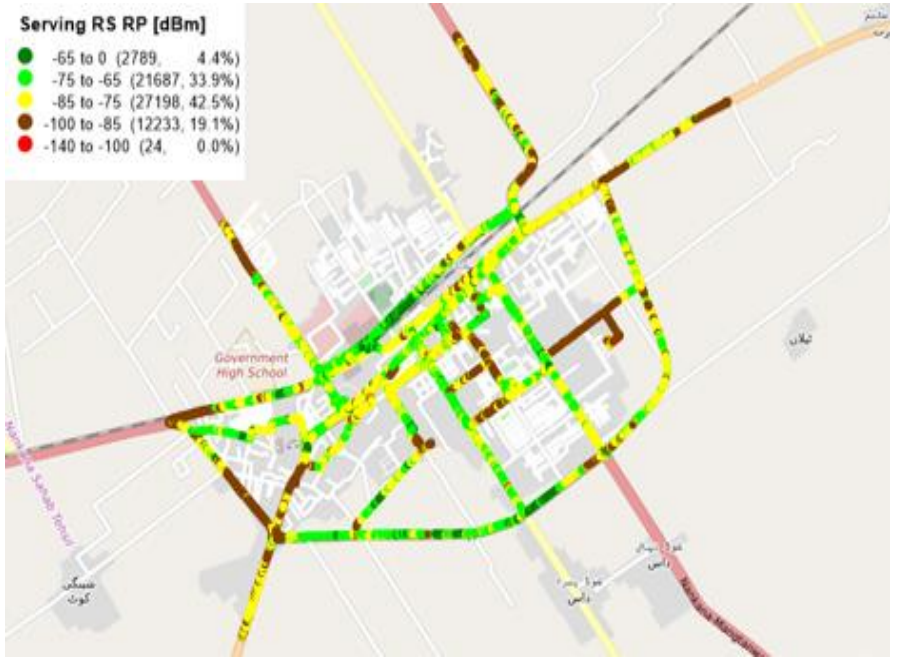


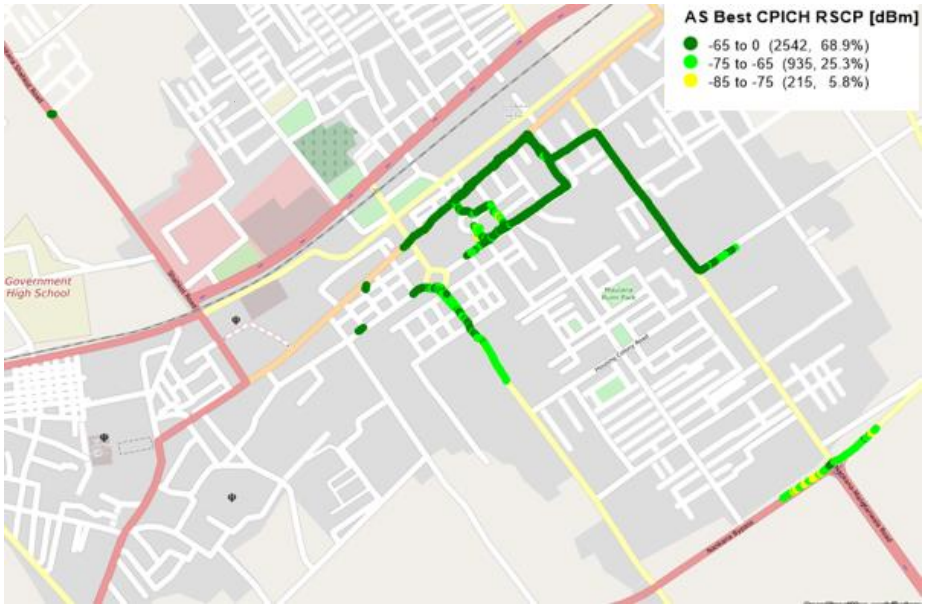
UFONE AUTOMODE NETWORK COVERAGE – NANKANA SAHIB

ZONG AUTOMODE NETWORK COVERAGE – NANKANA SAHIB



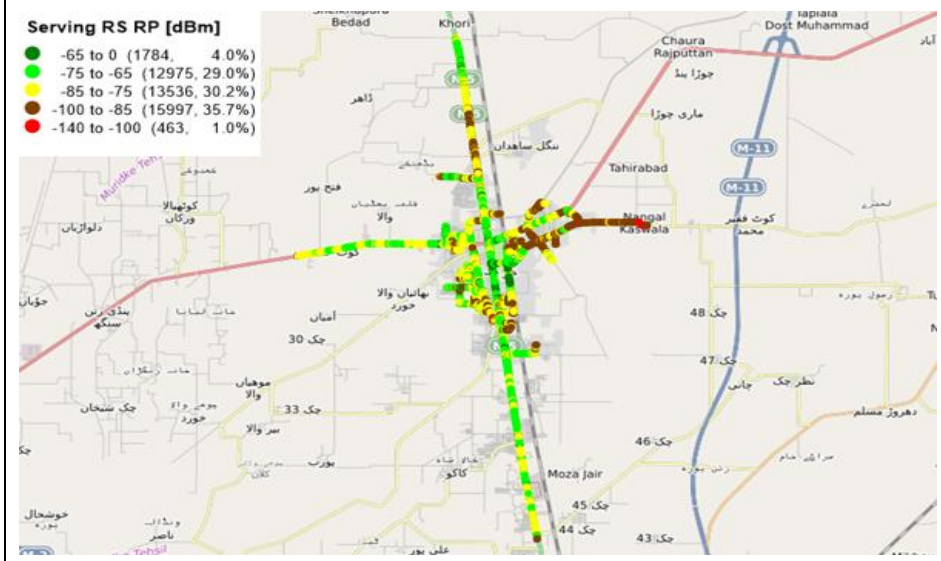
AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSCP)

UFONE AUTOMODE 3G NETWORK COVERAGE – NANKANA SAHIB

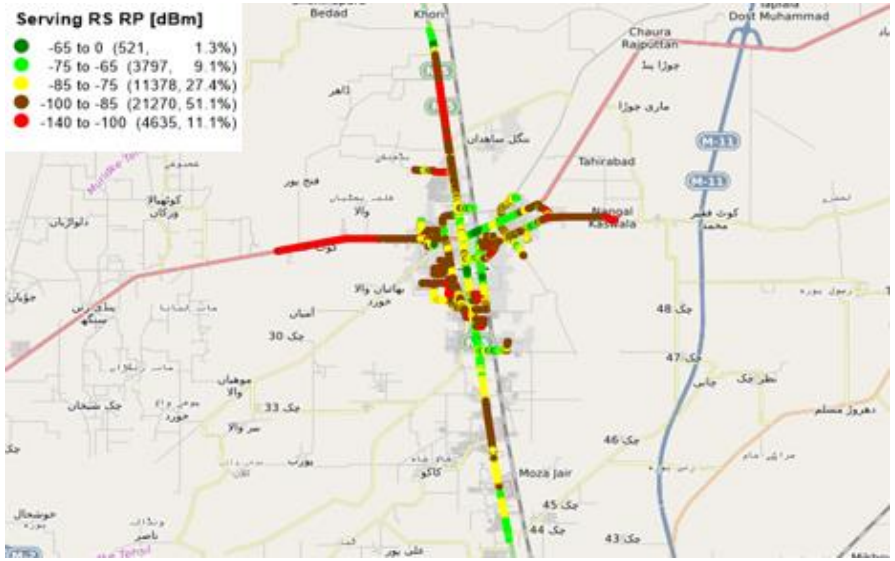


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

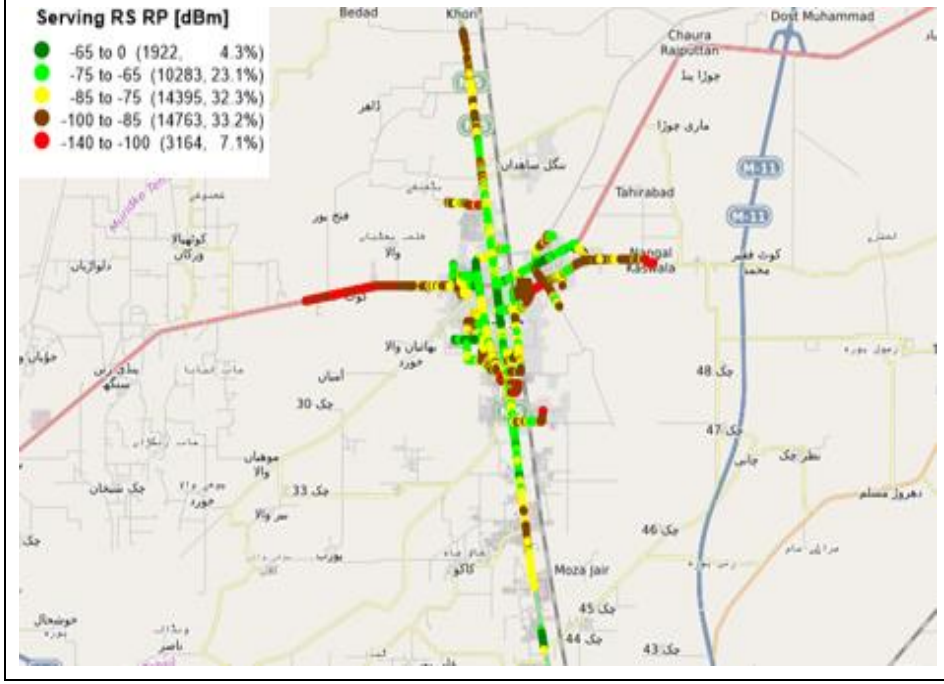
JAZZ AUTOMODE NETWORK COVERAGE – MURIDKE



TELENOR AUTOMODE NETWORK COVERAGE – MURIDKE



UFONE AUTOMODE NETWORK COVERAGE – MURIDKE



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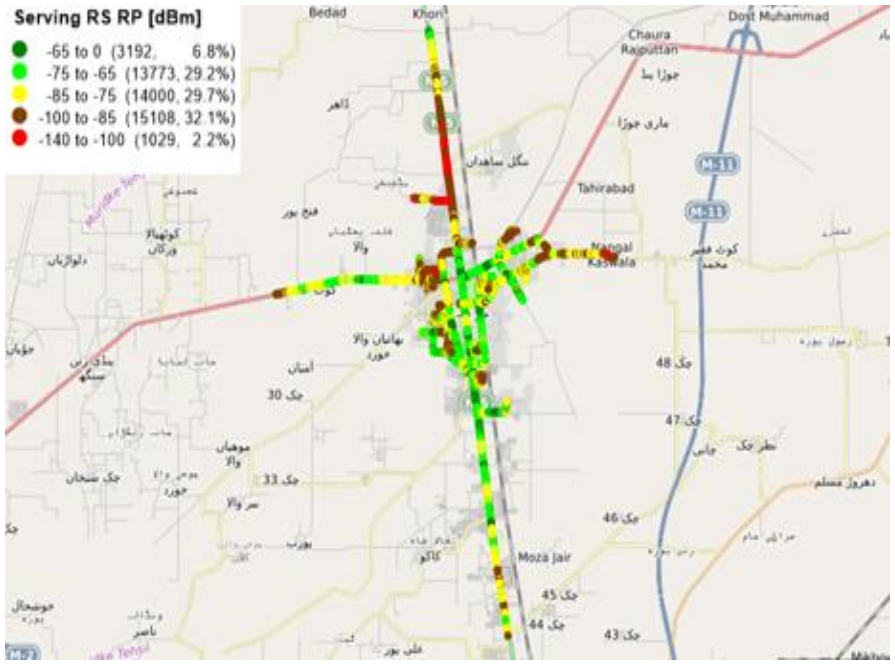


AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ AUTOMODE NETWORK COVERAGE – CHICHAWATNI

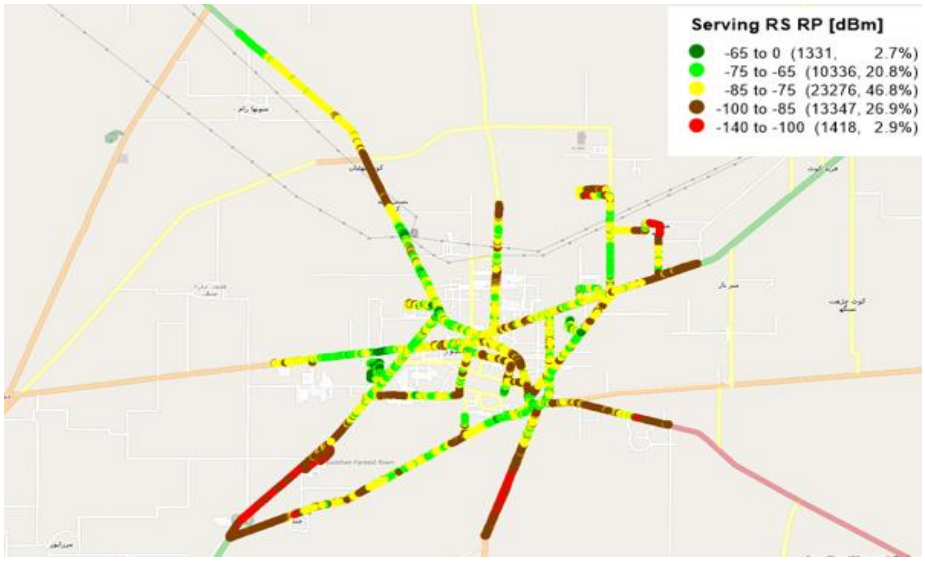
TELENOR AUTOMODE NETWORK COVERAGE – CHICHAWATNI

UFONE AUTOMODE NETWORK COVERAGE – CHICHAWATNI

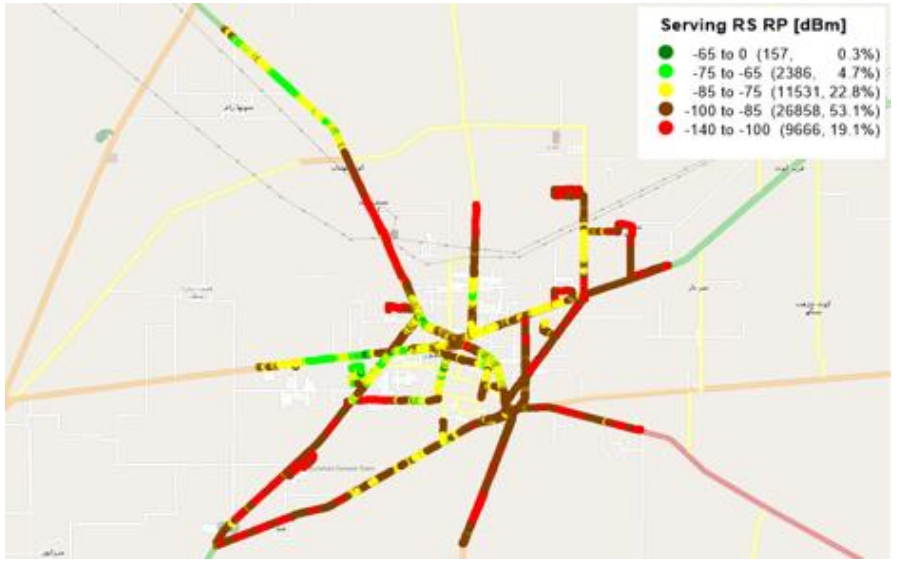
ZONG AUTOMODE NETWORK COVERAGE – CHICHAWATNI

AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ AUTOMODE NETWORK COVERAGE – DEPALPUR



TELENOR AUTOMODE NETWORK COVERAGE – DEPALPUR



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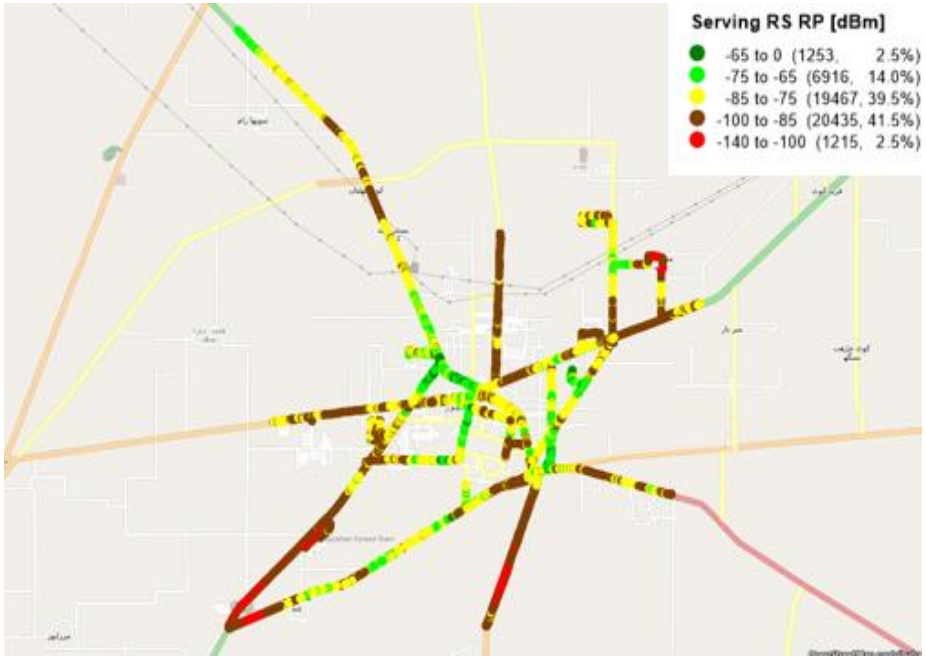

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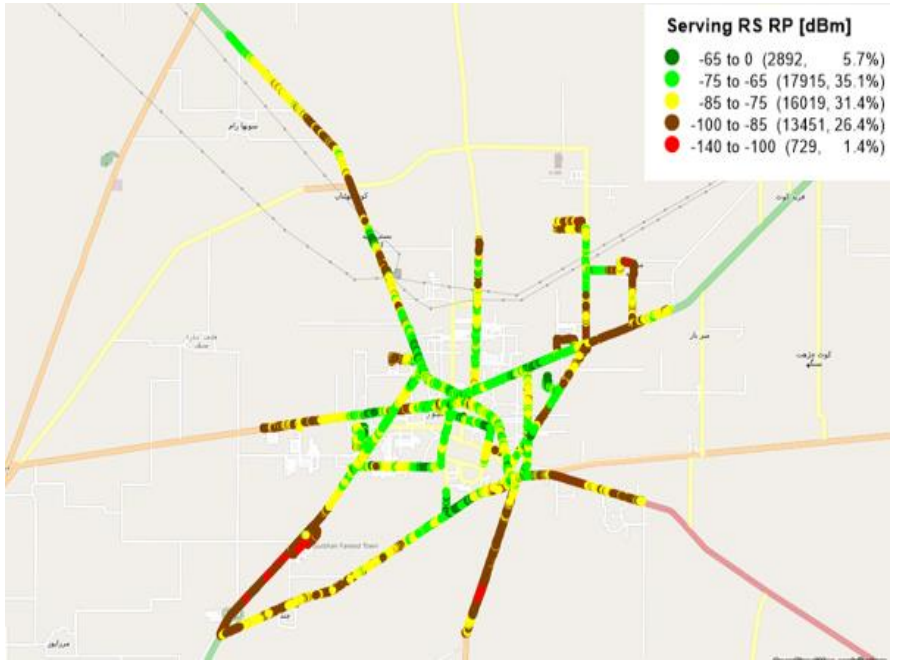

AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

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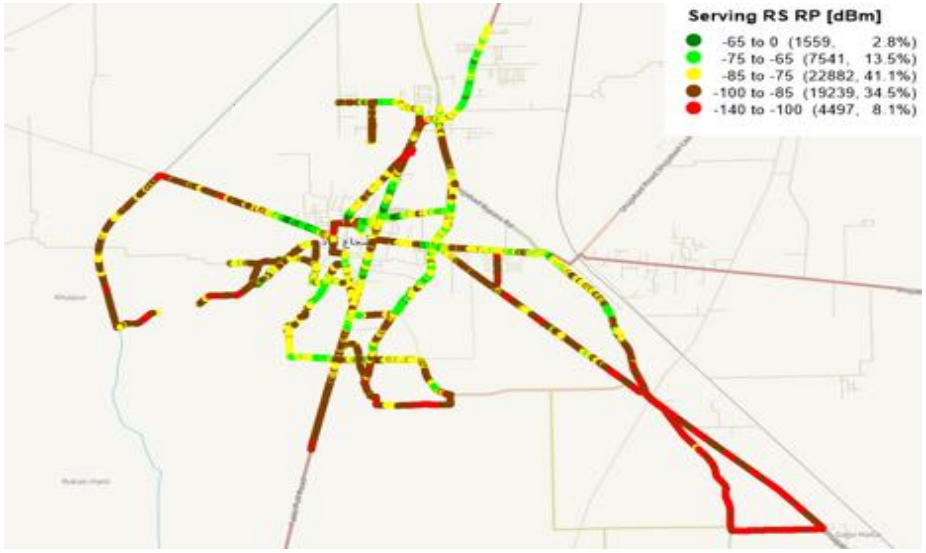	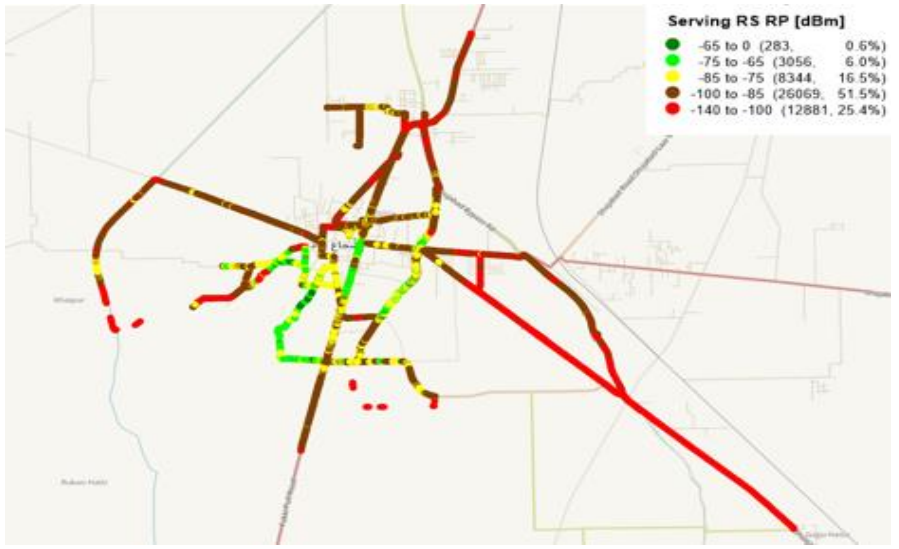
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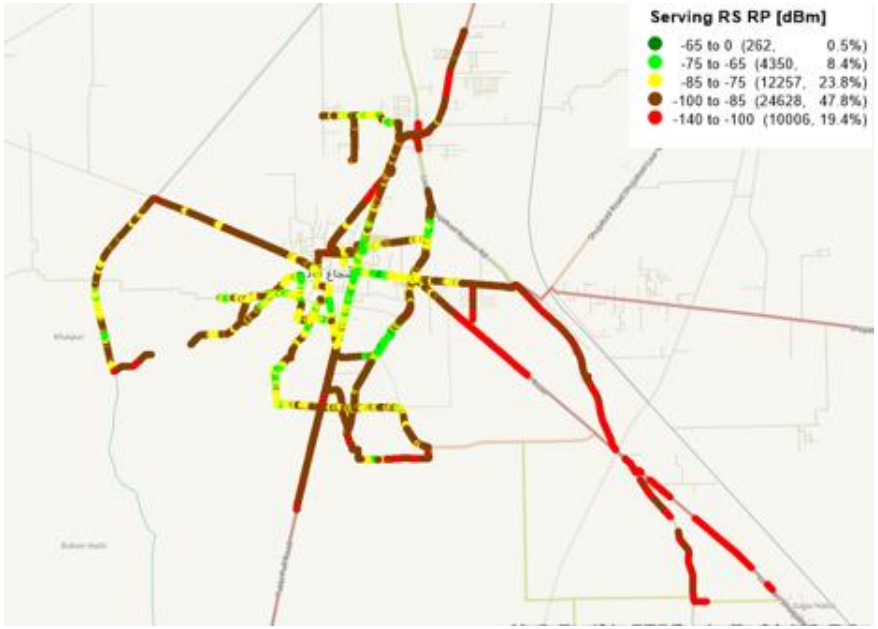
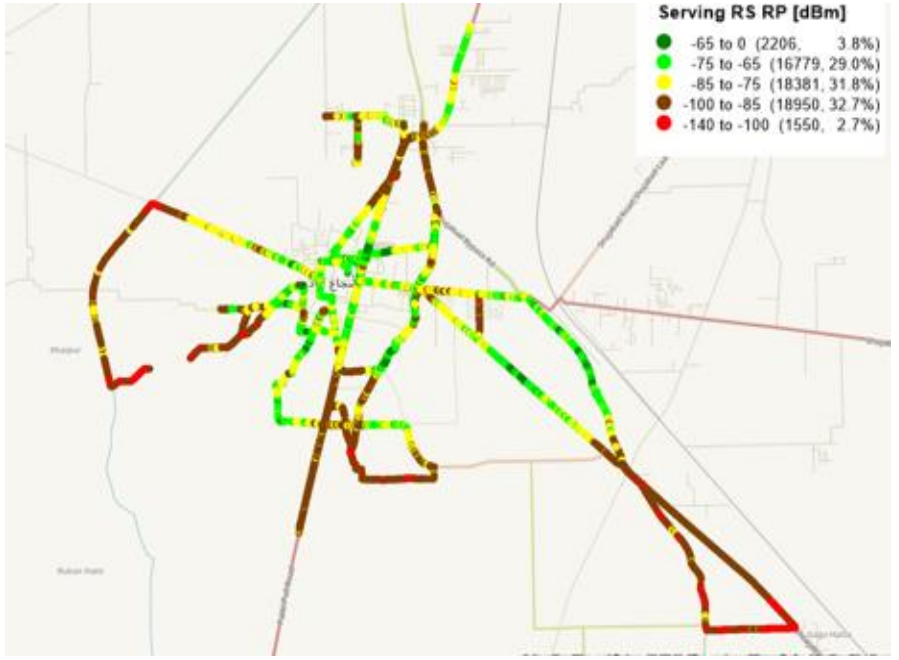
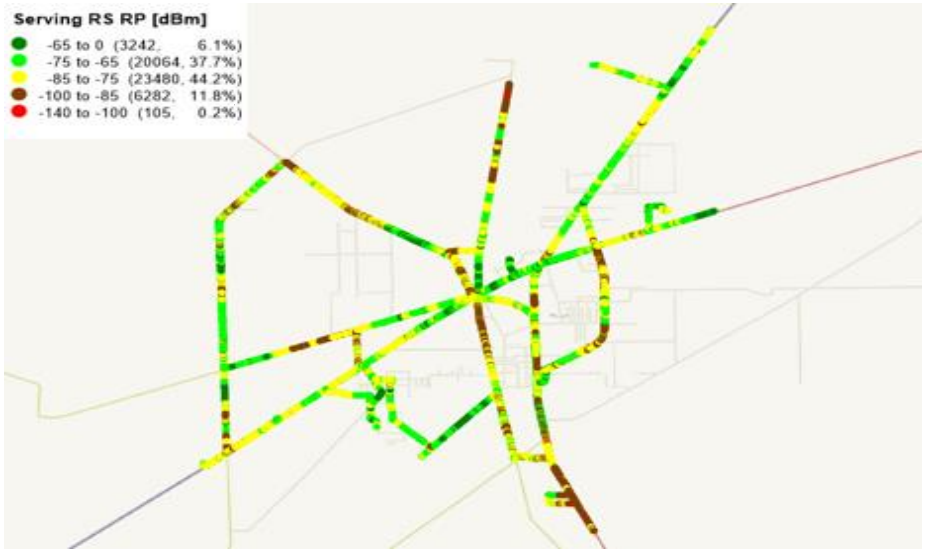
	

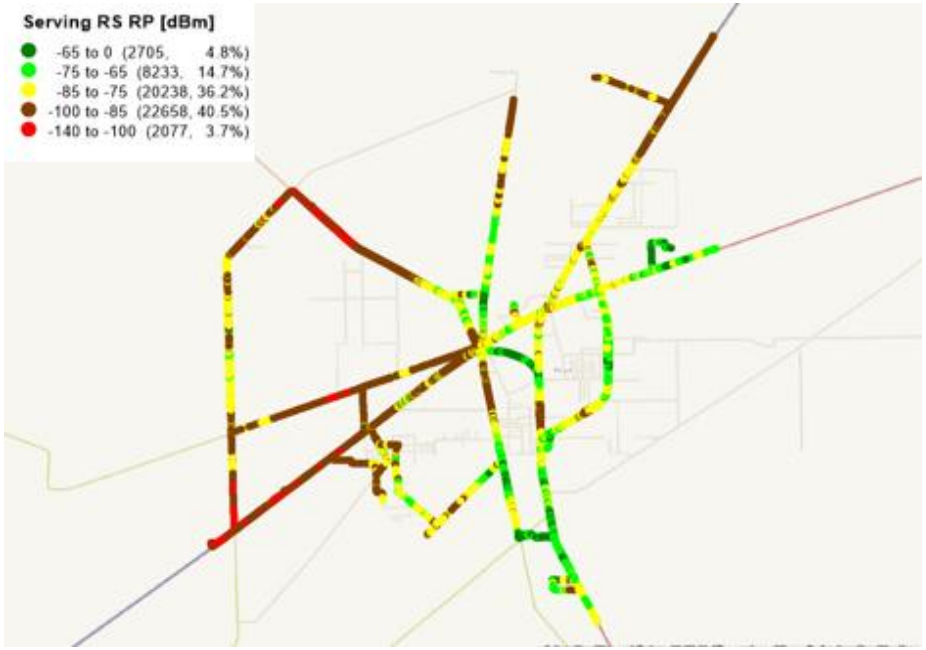
AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ AUTOMODE NETWORK COVERAGE – KABIRWALA



TELENOR AUTOMODE NETWORK COVERAGE – KABIRWALA

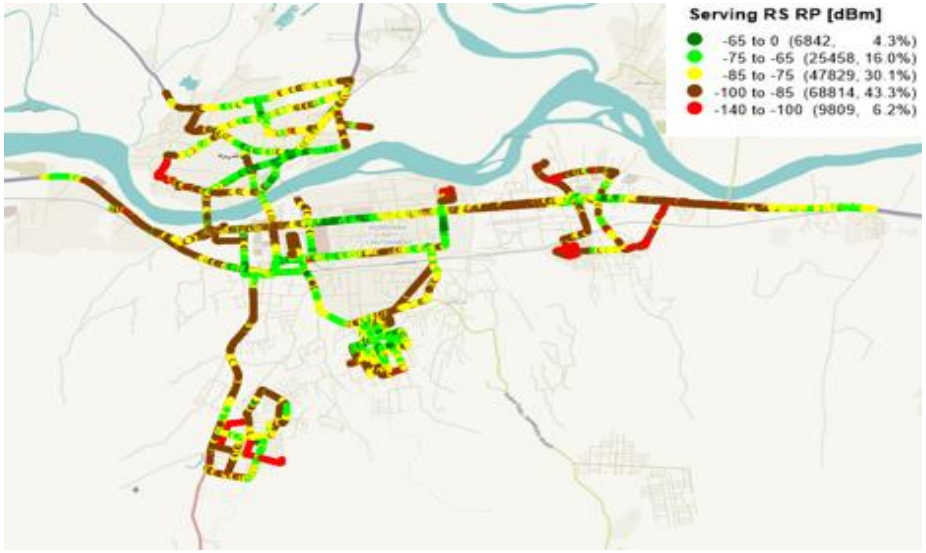
UFONE AUTOMODE NETWORK COVERAGE – KABIRWALA



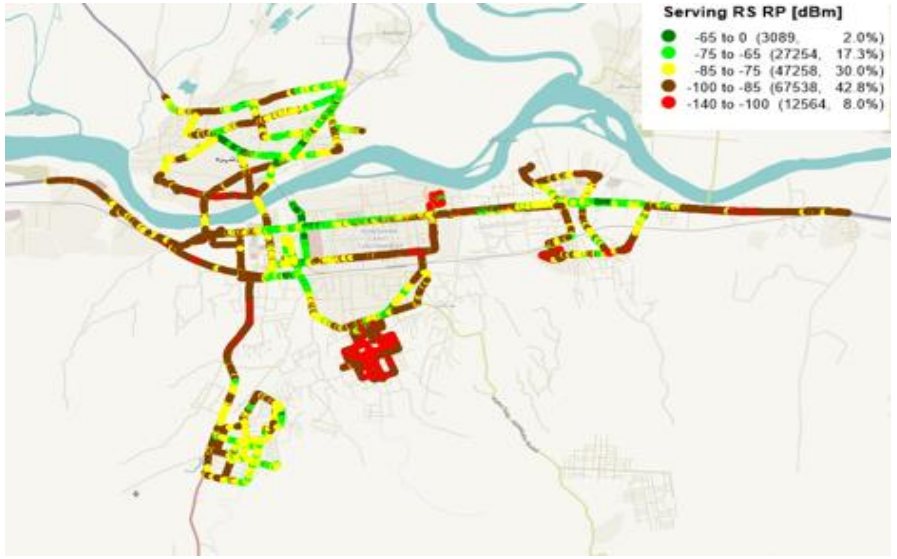
ZONG AUTOMODE NETWORK COVERAGE – KABIRWALA

AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ AUTOMODE NETWORK COVERAGE – NOWSHERA



TELENOR AUTOMODE NETWORK COVERAGE – NOWSHERA



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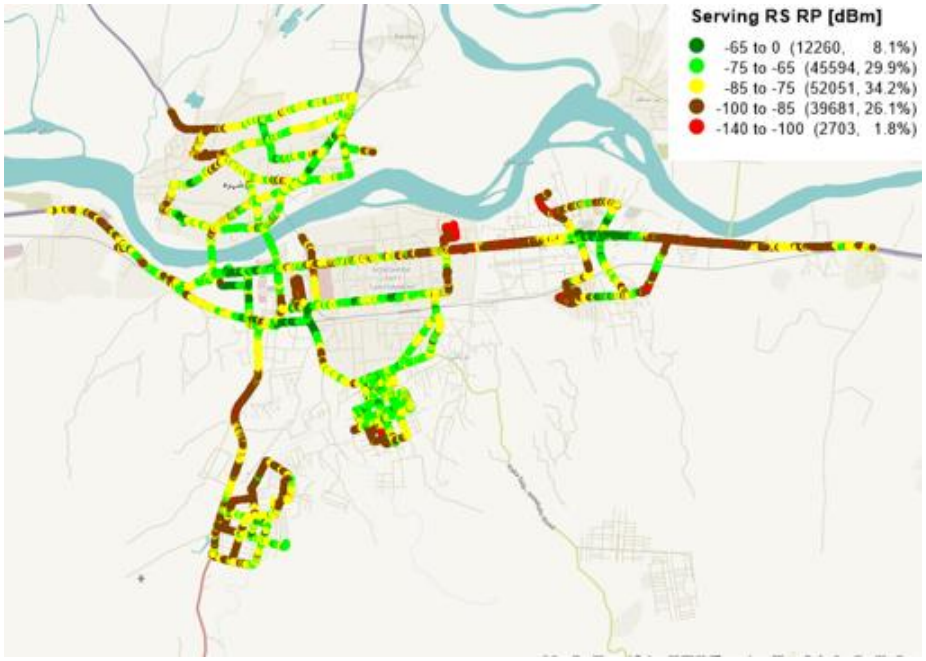
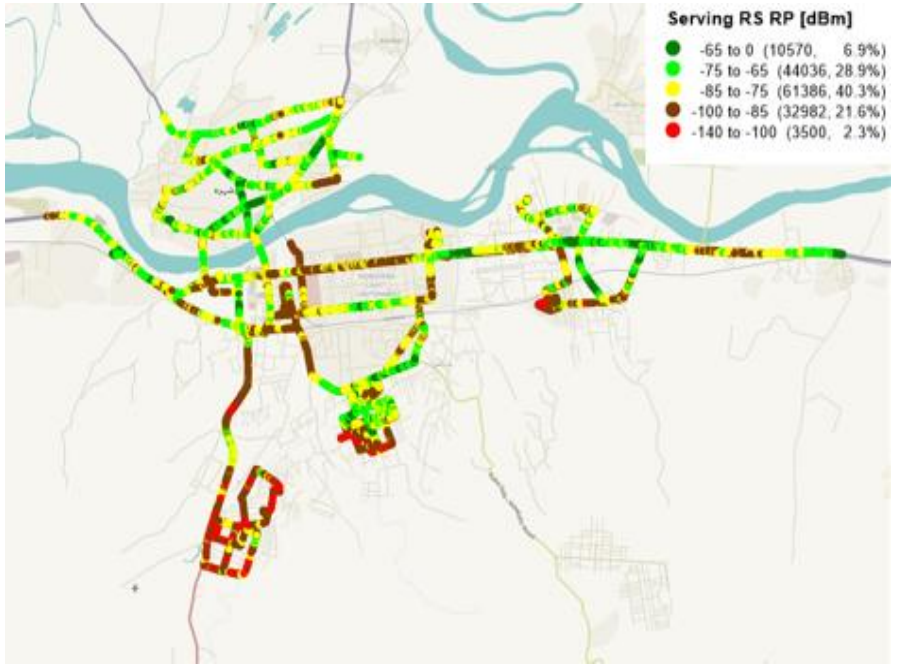
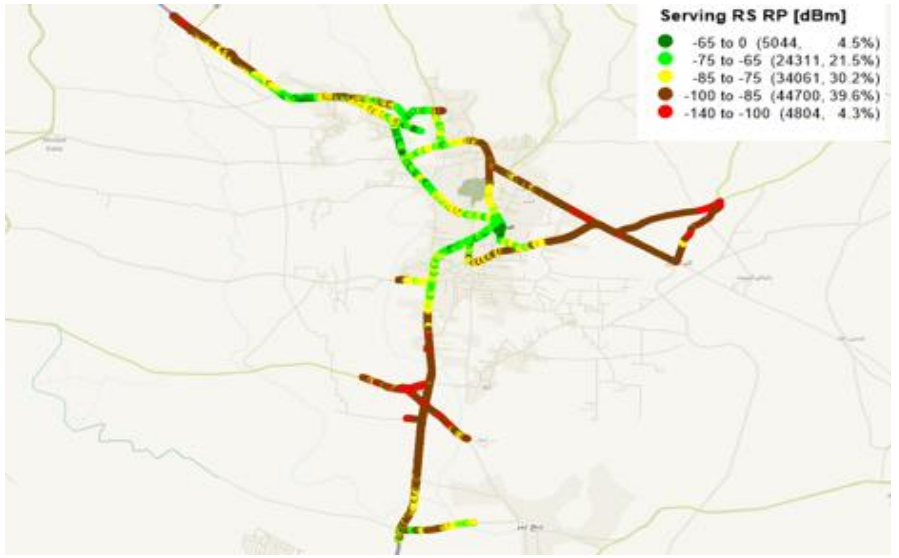


ZONG AUTOMODE NETWORK COVERAGE – NOWSHERA



AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ AUTOMODE NETWORK COVERAGE – SWABI	TELENOR AUTOMODE NETWORK COVERAGE – SWABI
	
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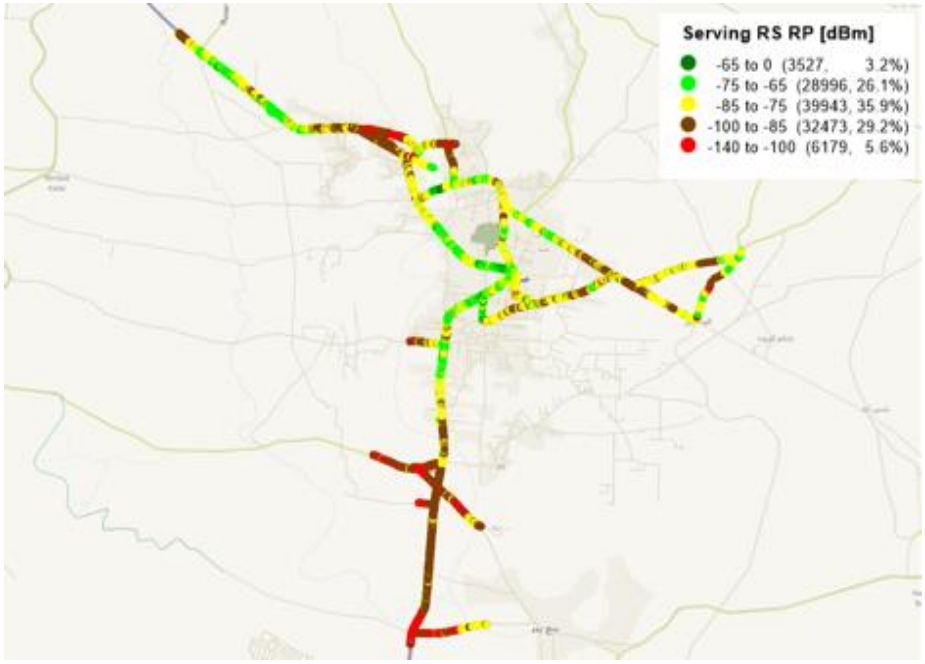
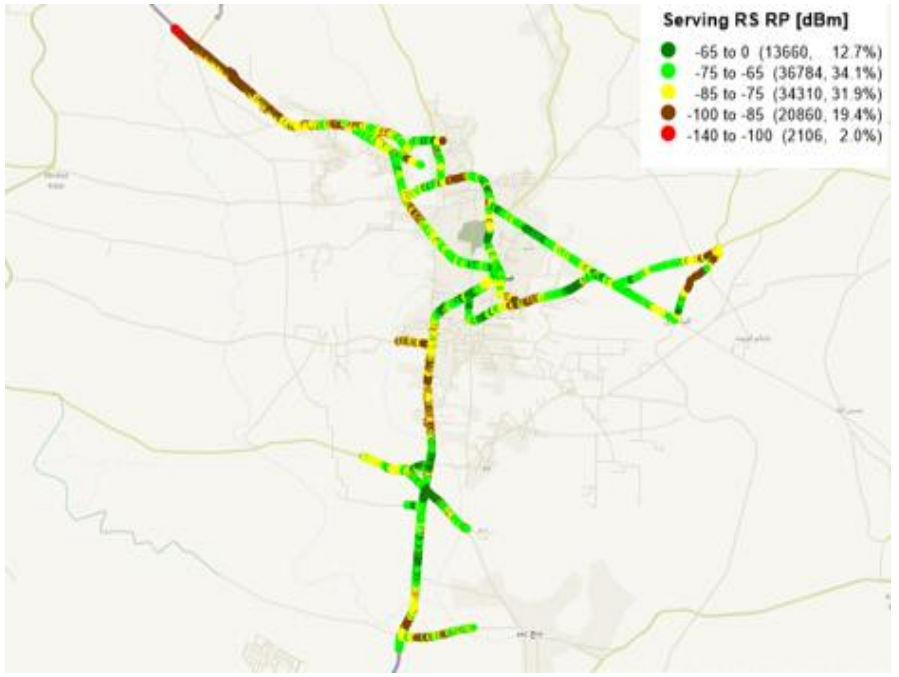
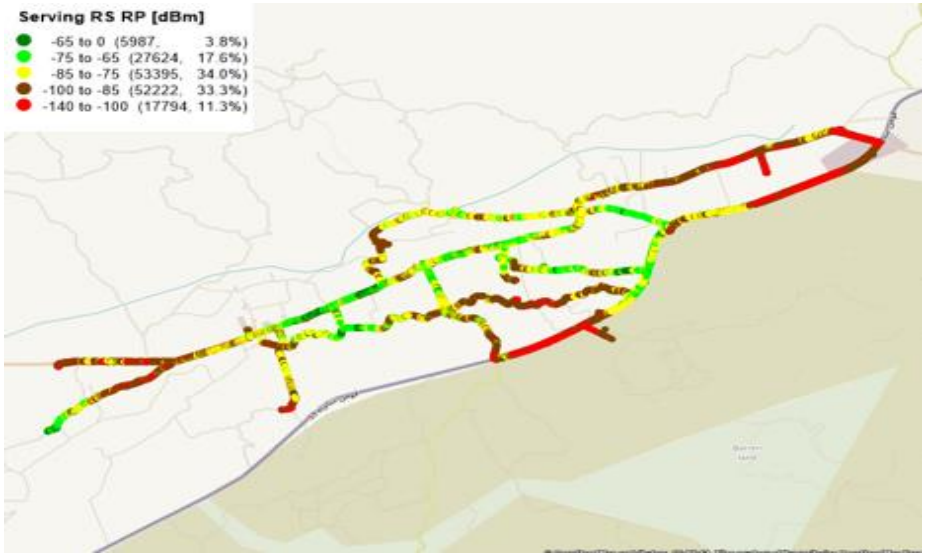
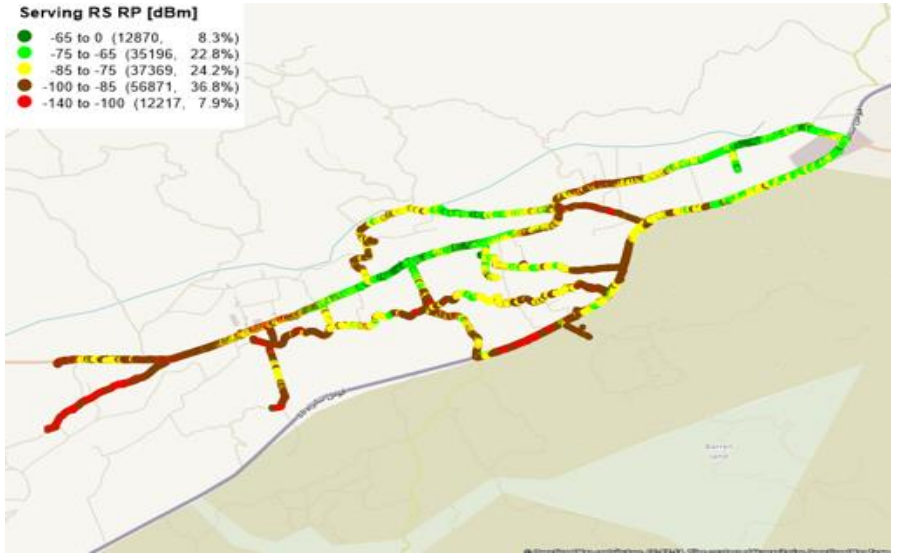
	

AUTOMODE MOBILE COVERAGE – SIGNAL STRENGTH (RSRP)

JAZZ AUTOMODE NETWORK COVERAGE – KARAK



TELENOR AUTOMODE NETWORK COVERAGE – KARAK



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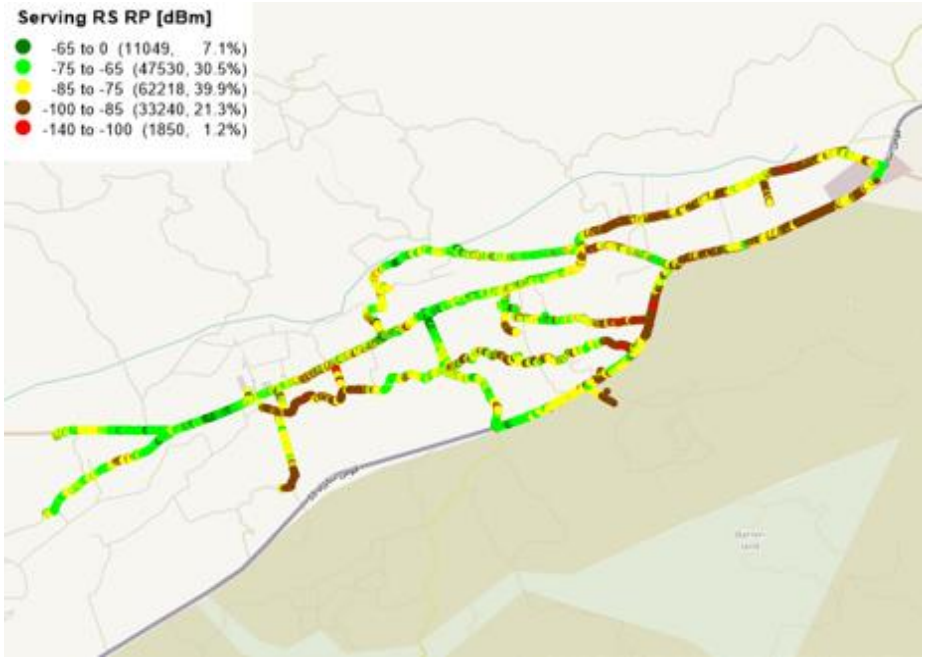
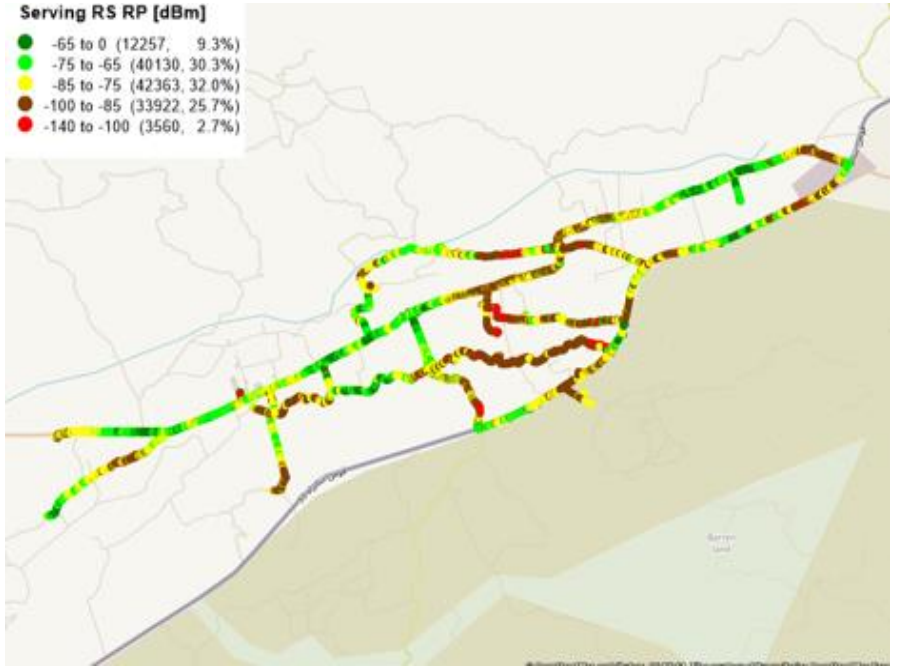


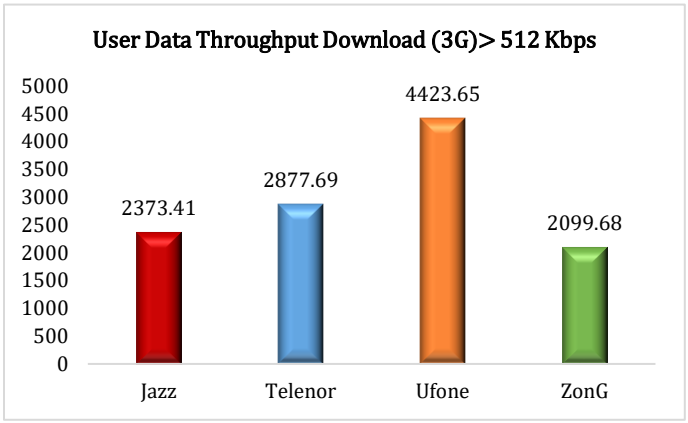
ZONG AUTOMODE NETWORK COVERAGE – KARAK

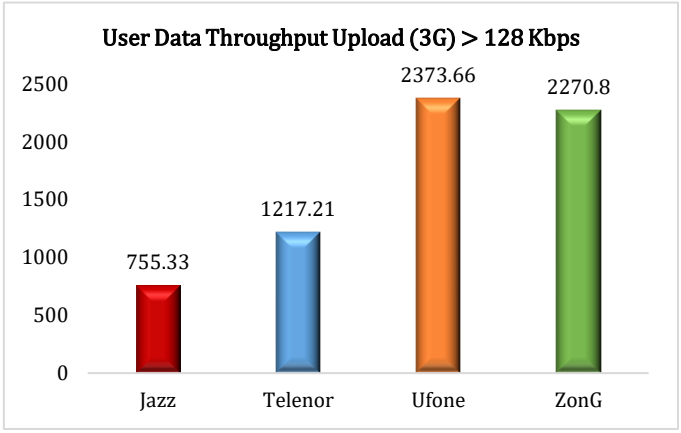


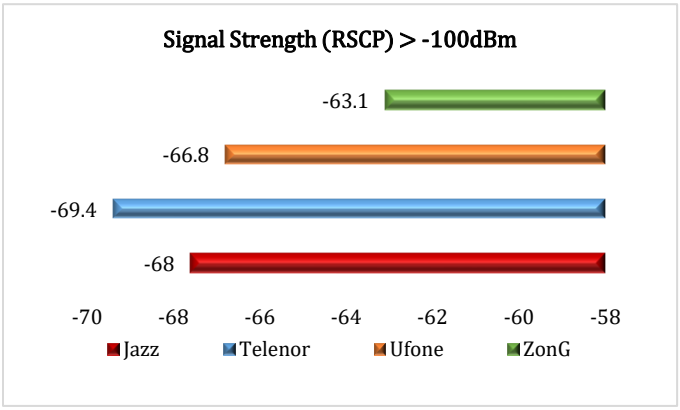
Annex-B (Data QoS Results)

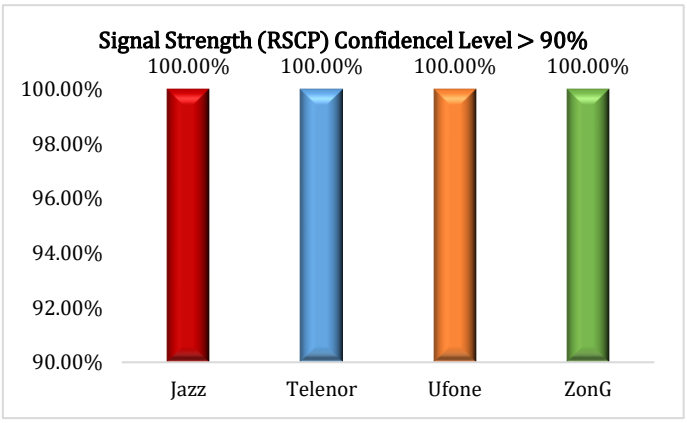
3G LOCK MODE

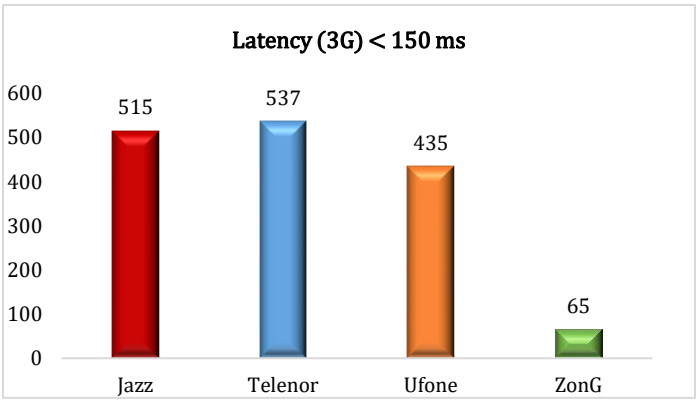
QUALITY OF SERVICE SURVEY RESULTS (3G) – KARACHI MALIR



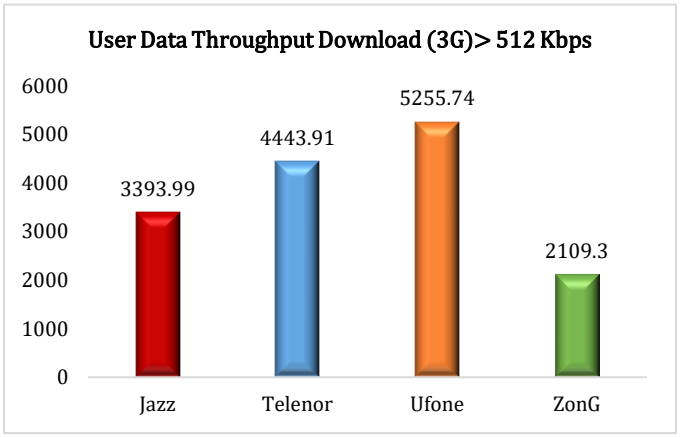


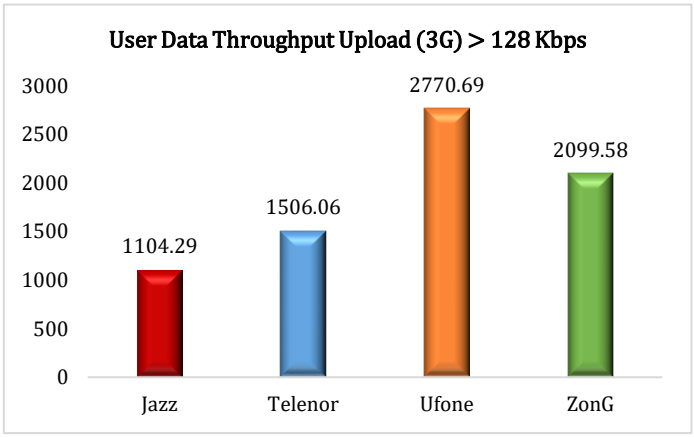


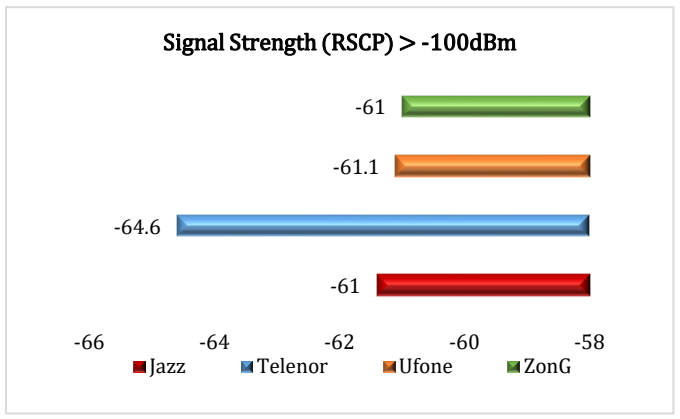


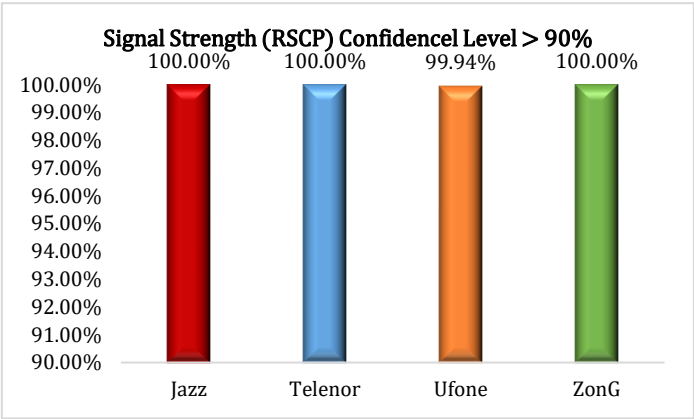


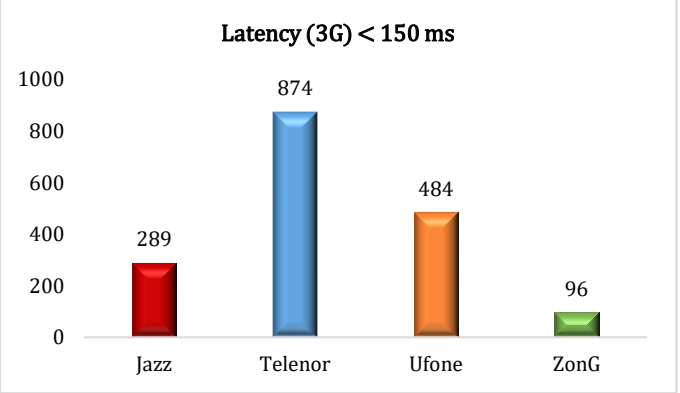
QUALITY OF SERVICE SURVEY RESULTS (3G) –KARACHI CENTRAL



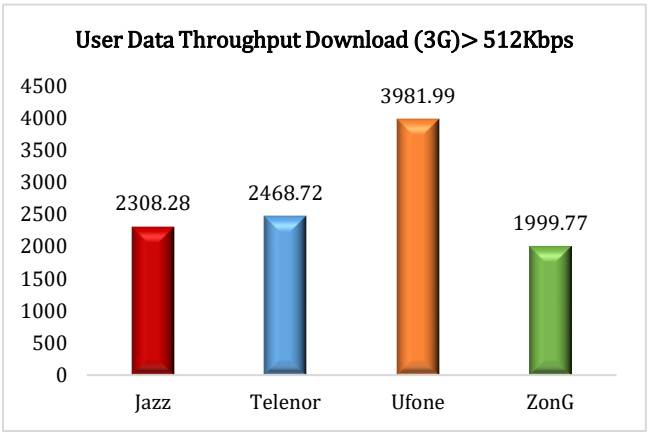


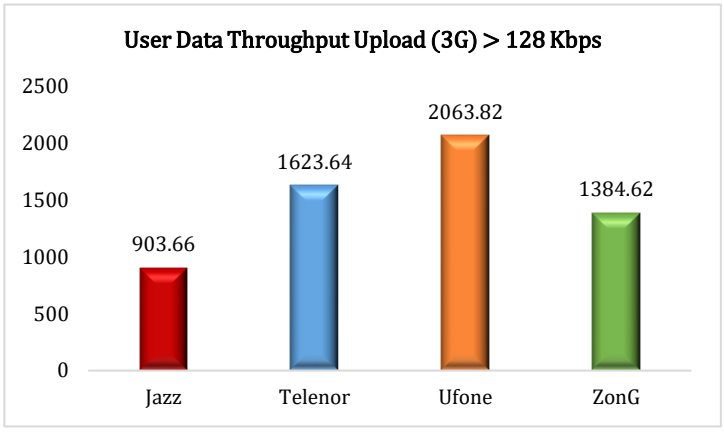


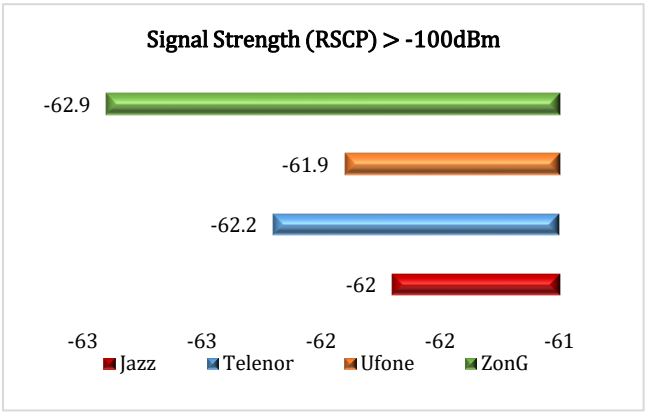


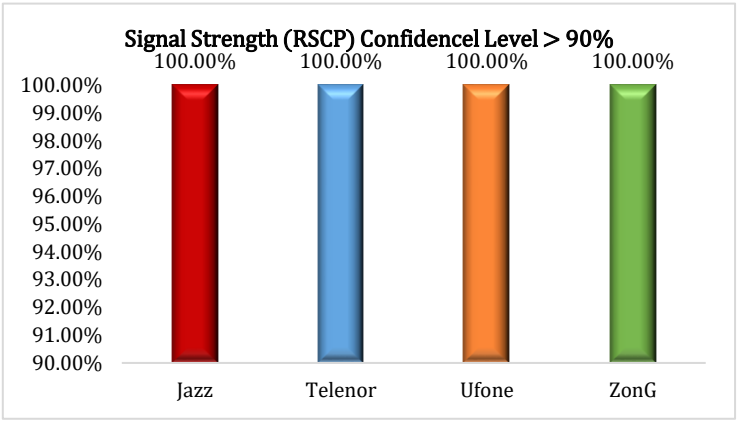


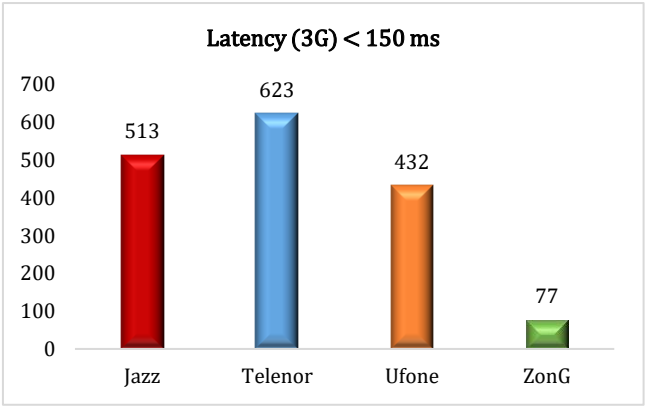
QUALITY OF SERVICE SURVEY RESULTS (3G) – KARACHI KEMARI



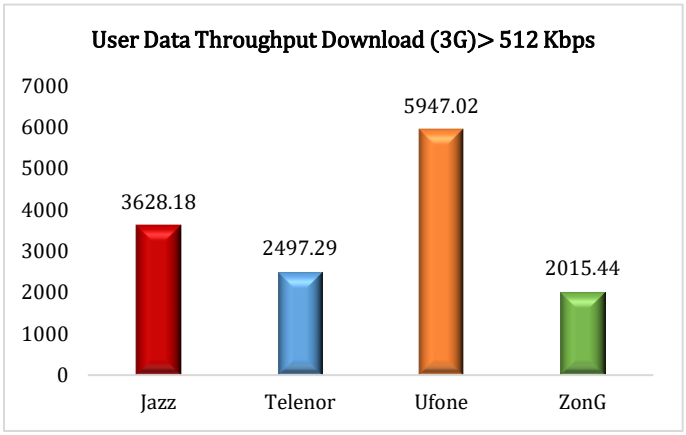


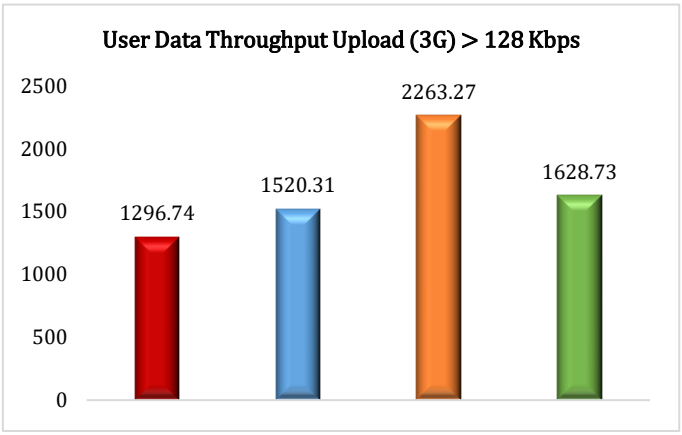


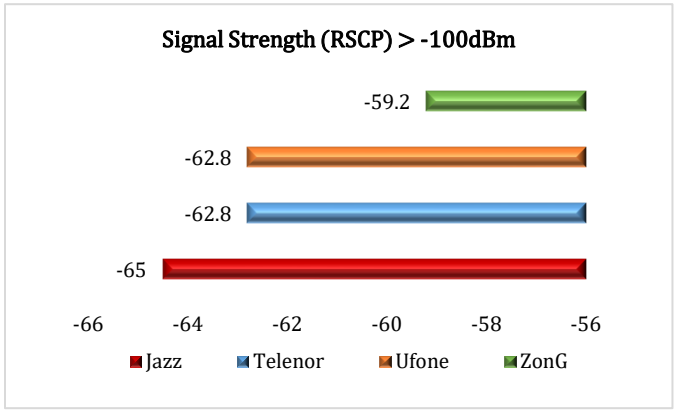


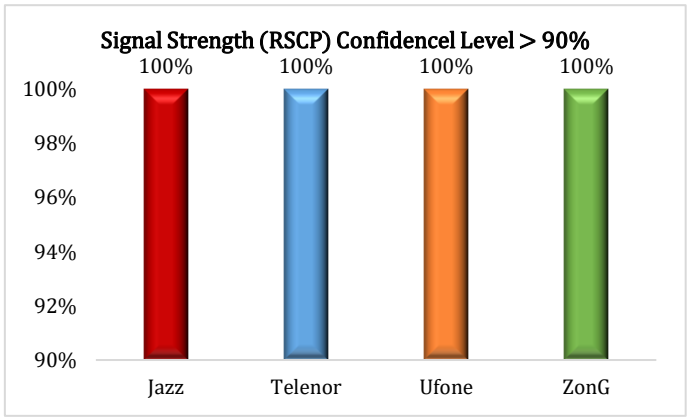


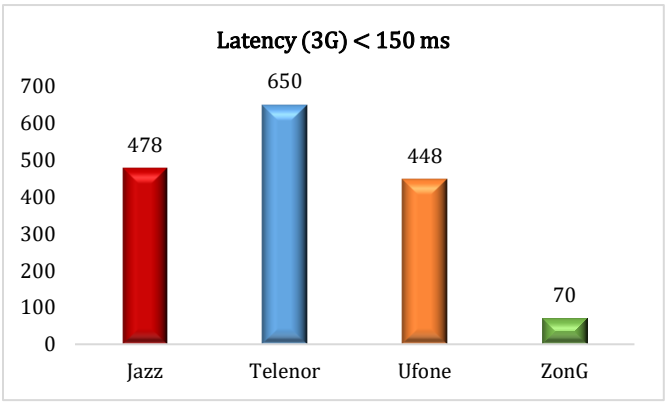
QUALITY OF SERVICE SURVEY RESULTS (3G) – KARACHI WEST



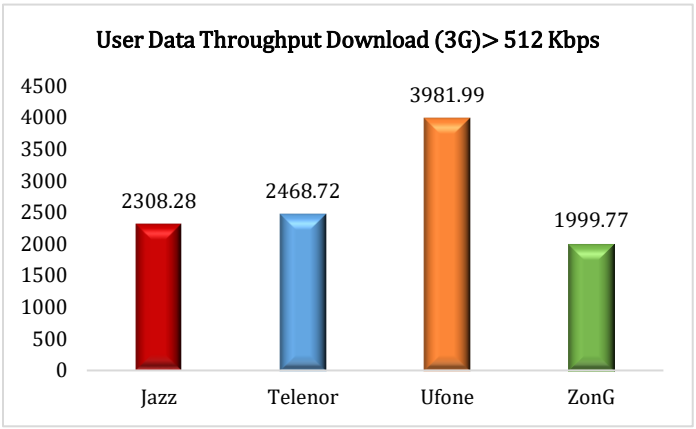


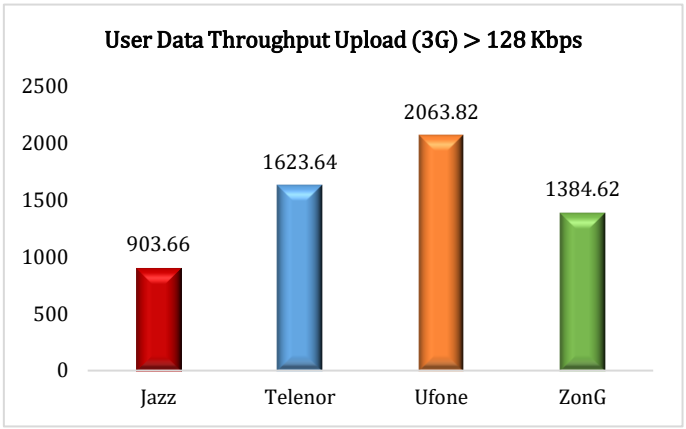


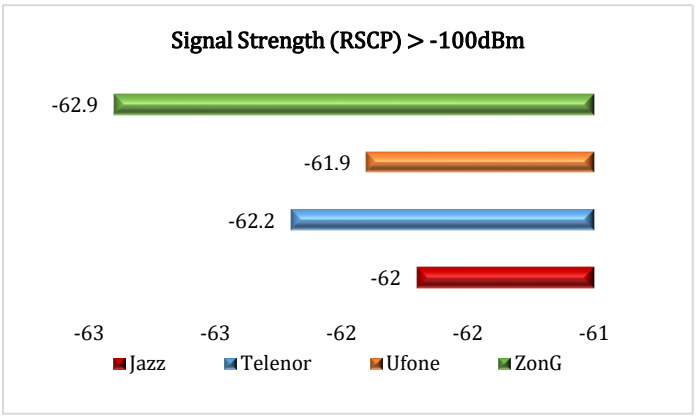


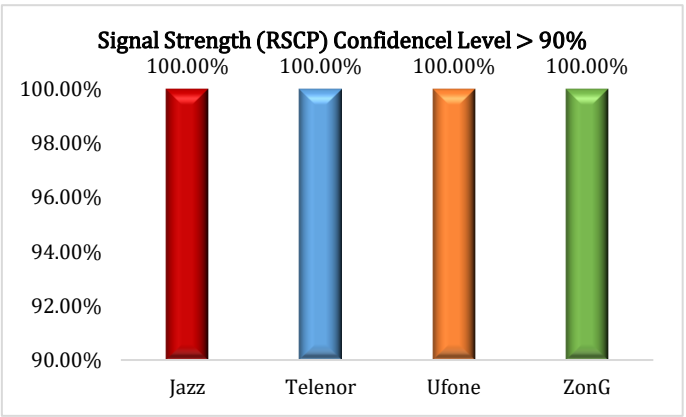


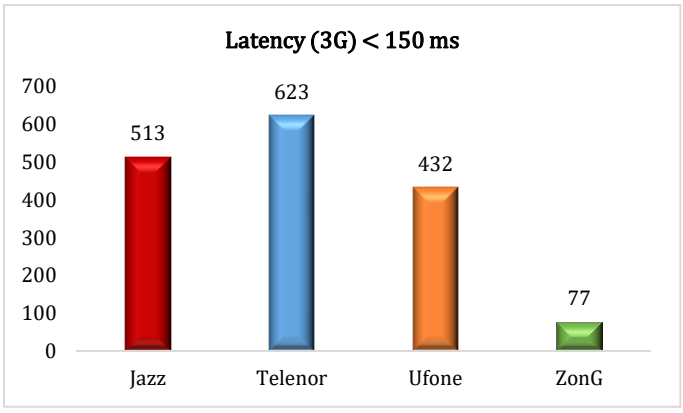
QUALITY OF SERVICE SURVEY RESULTS (3G) – KARACHI SOUTH



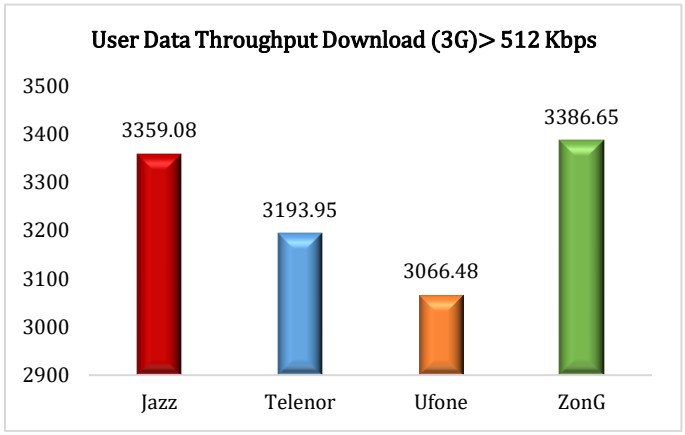


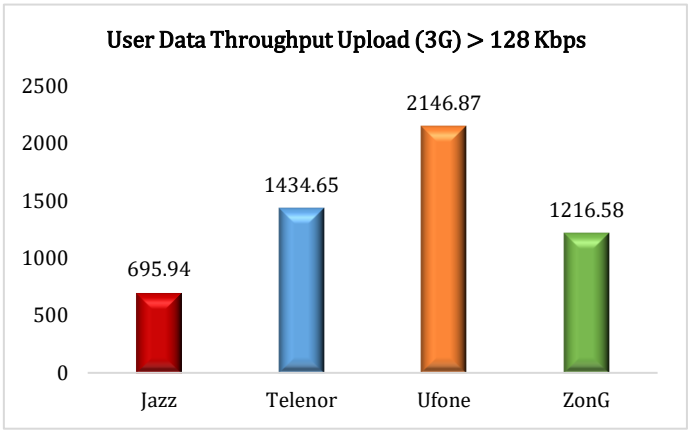


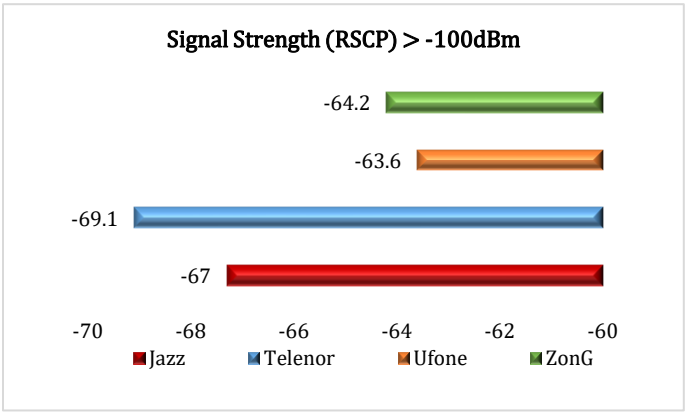


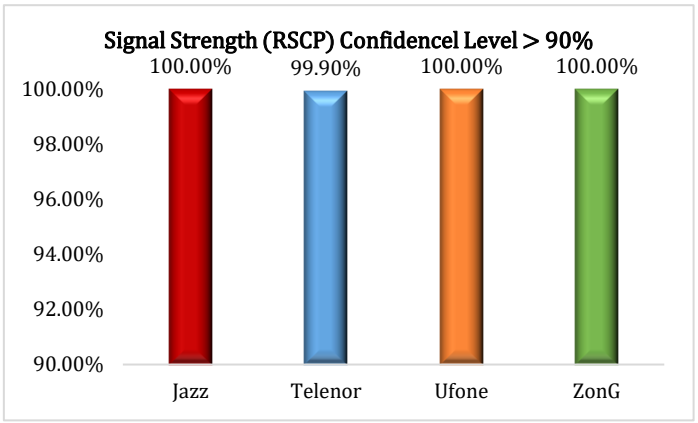


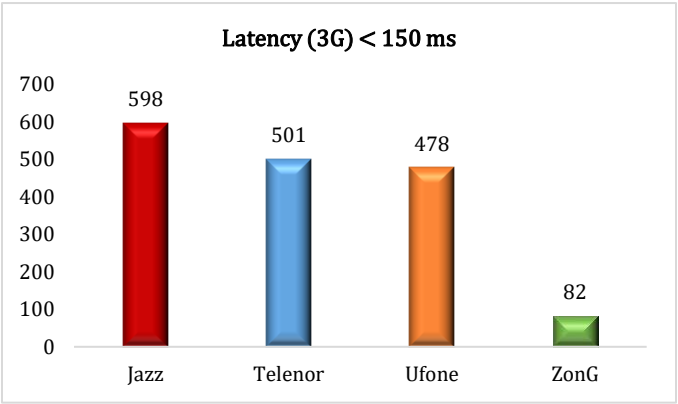
QUALITY OF SERVICE SURVEY RESULTS (3G) – NANKANA SAHIB



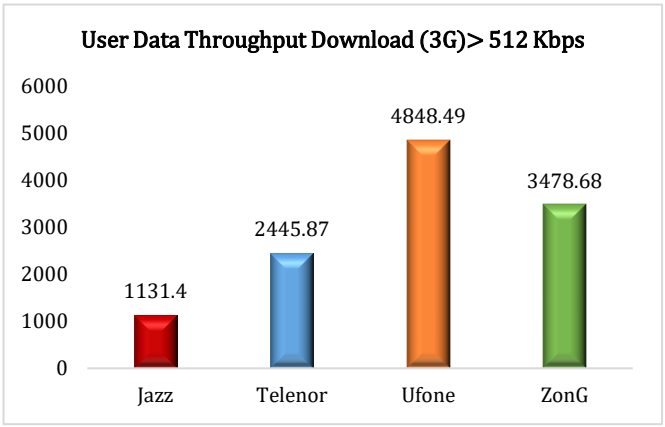


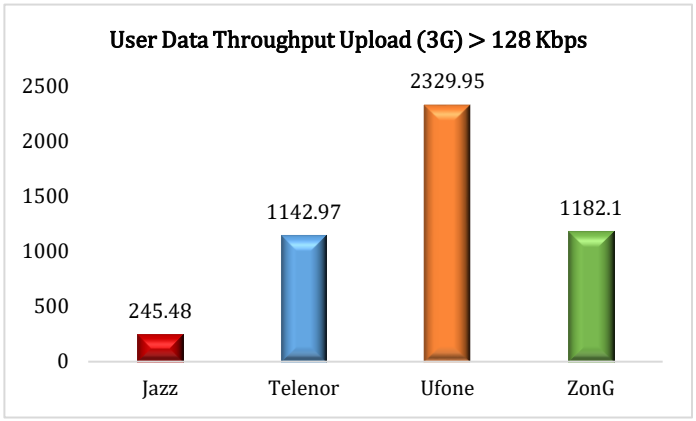


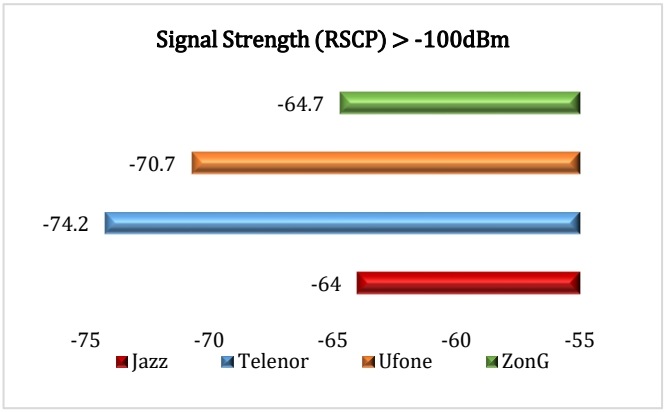


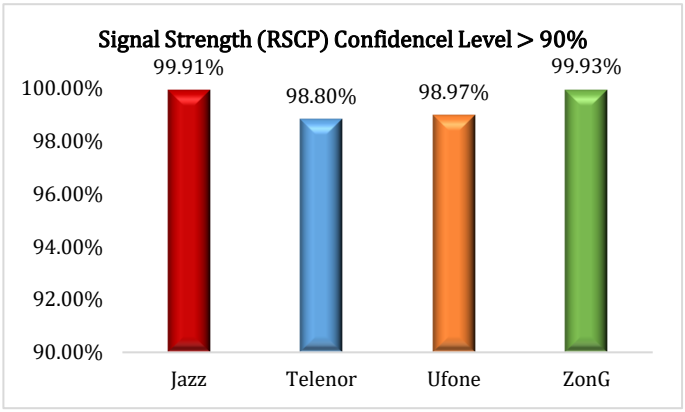


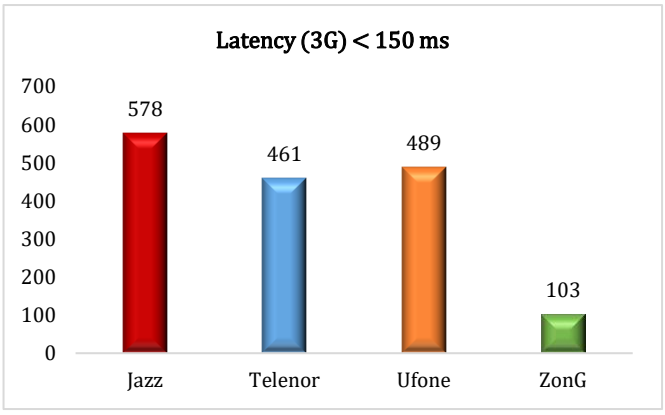
QUALITY OF SERVICE SURVEY RESULTS (3G) – MURIDKE



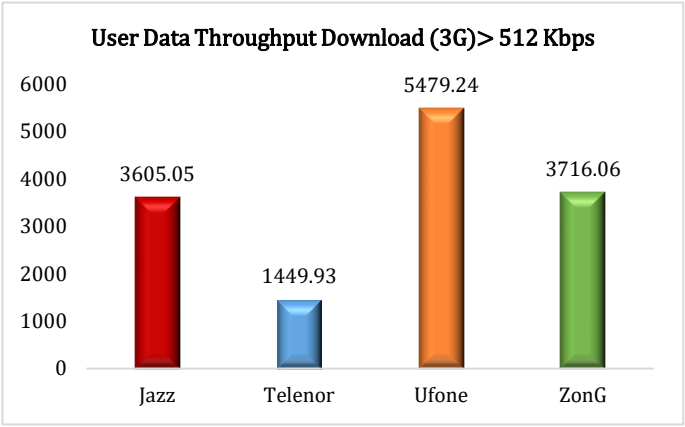


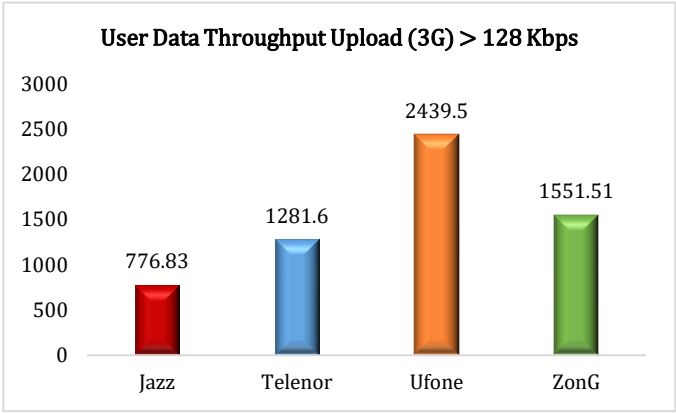


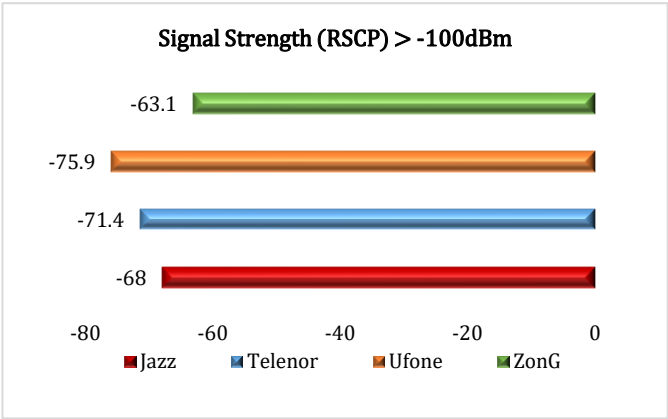


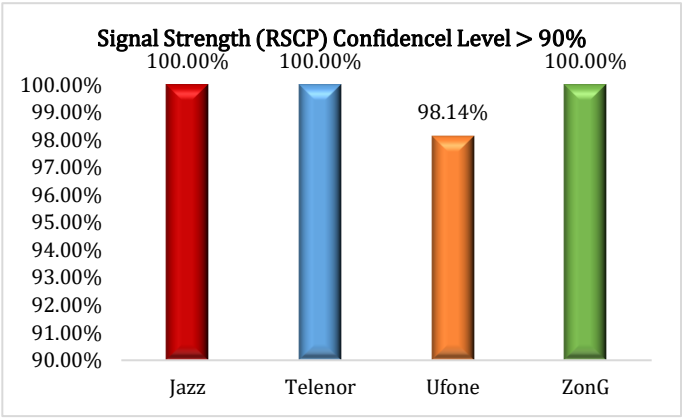


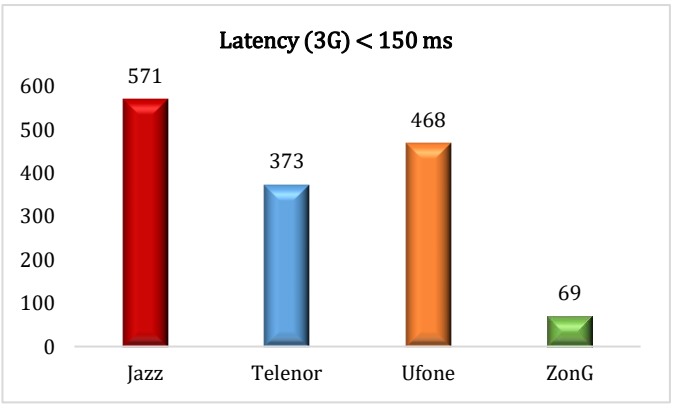
QUALITY OF SERVICE SURVEY RESULTS (3G) –DEPALPUR



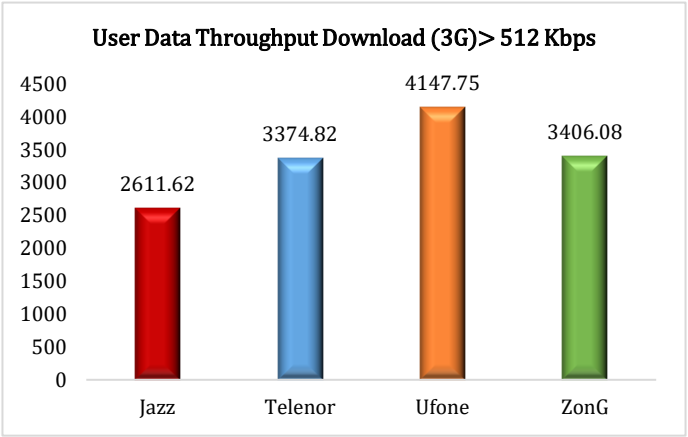


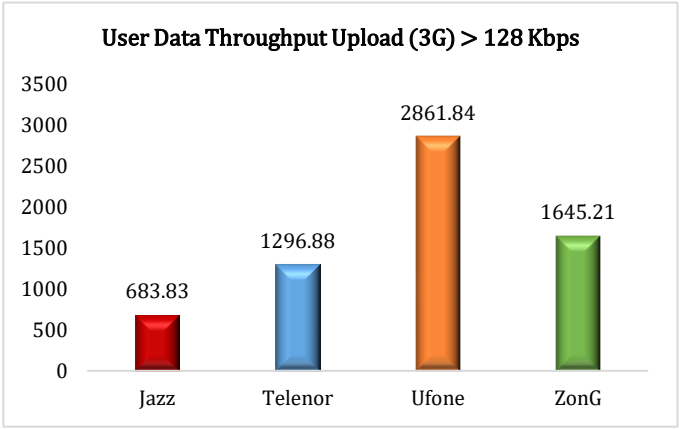


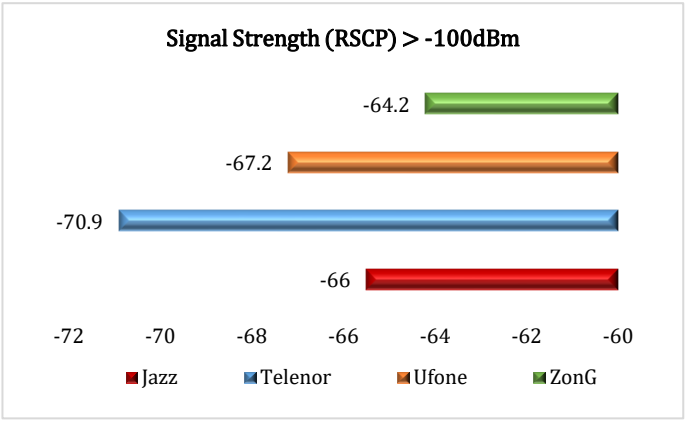


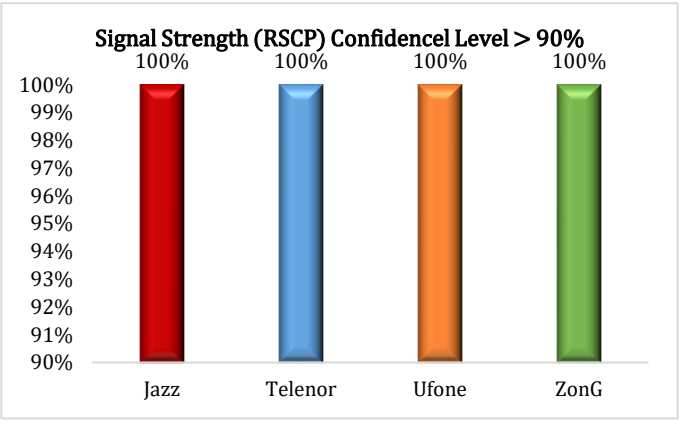


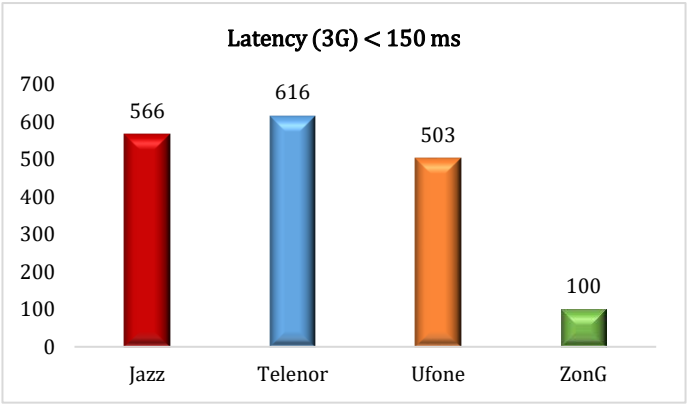
QUALITY OF SERVICE SURVEY RESULTS (3G) – CHICHAWATNI



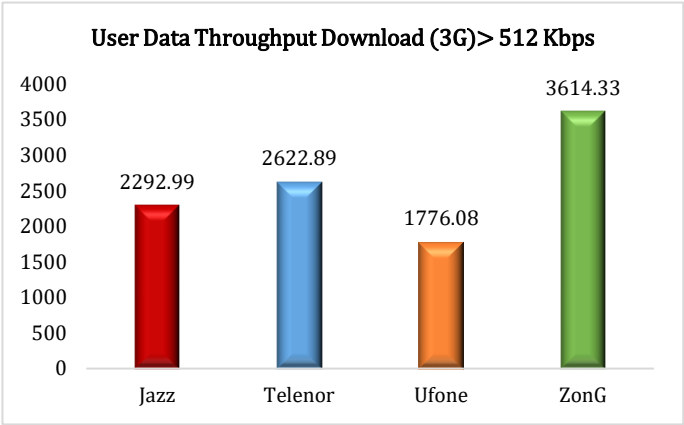


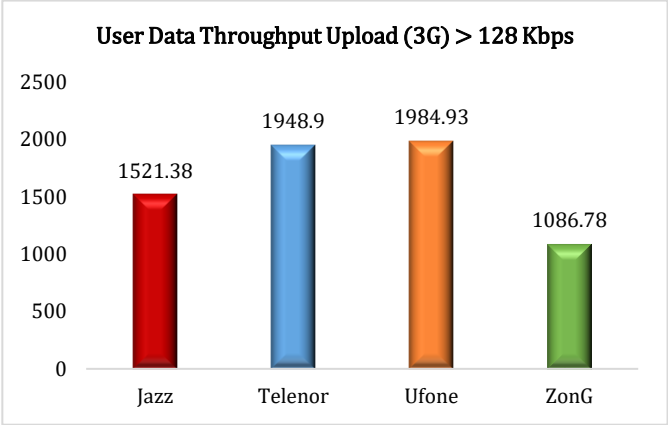


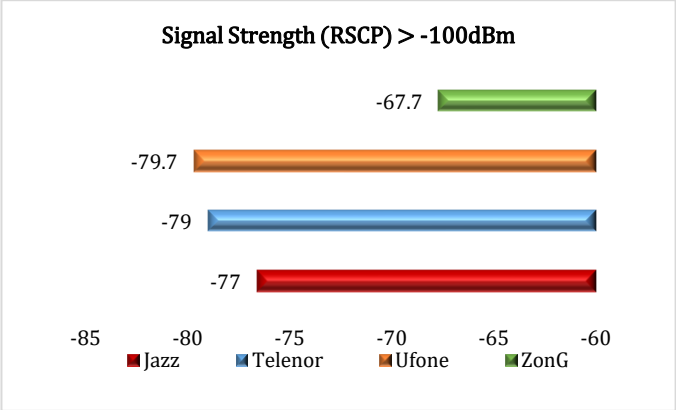


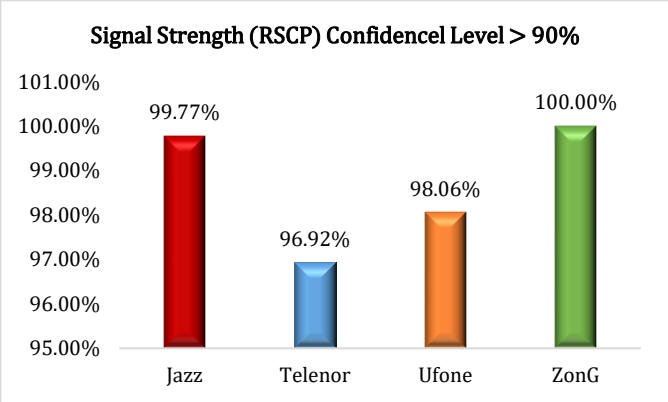


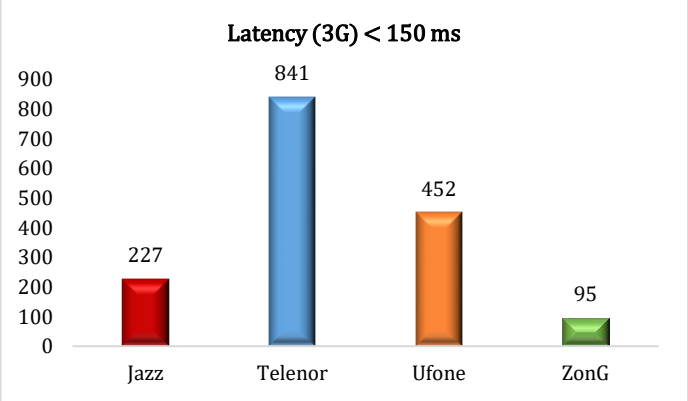
QUALITY OF SERVICE SURVEY RESULTS (3G) – SHUJABAD



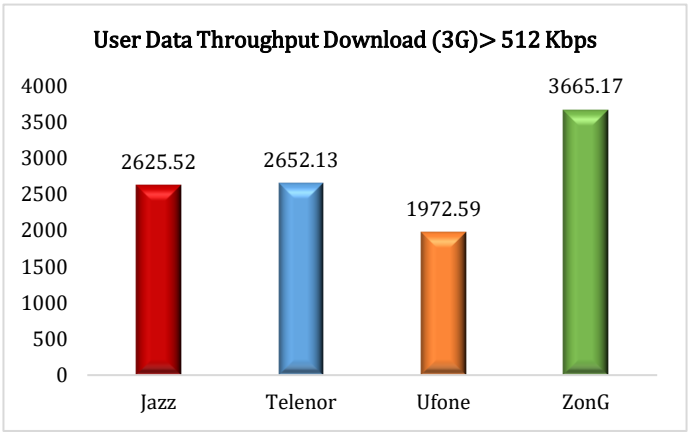


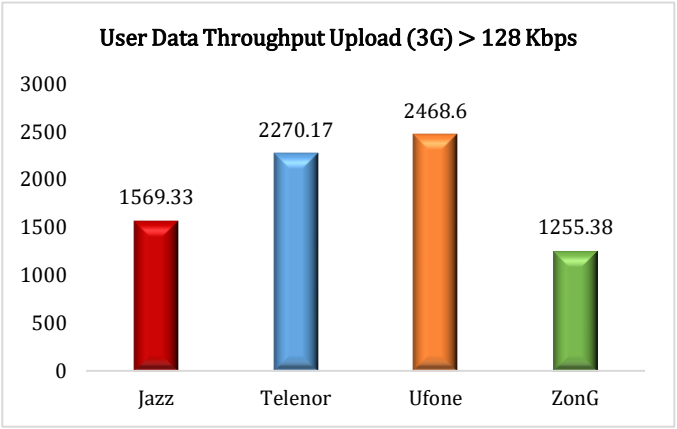


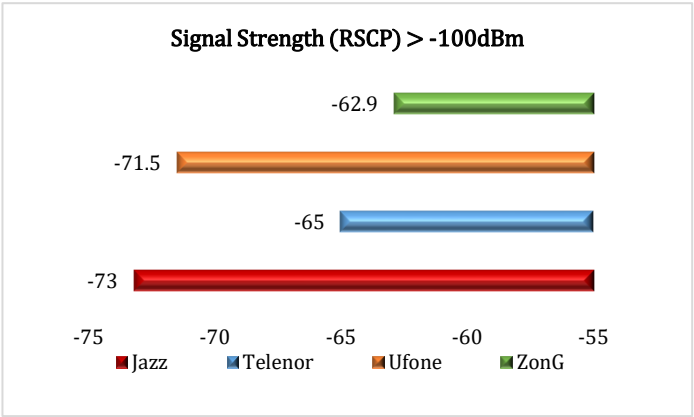


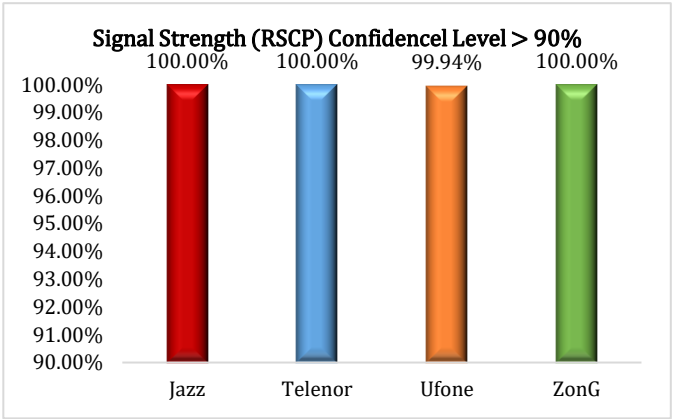


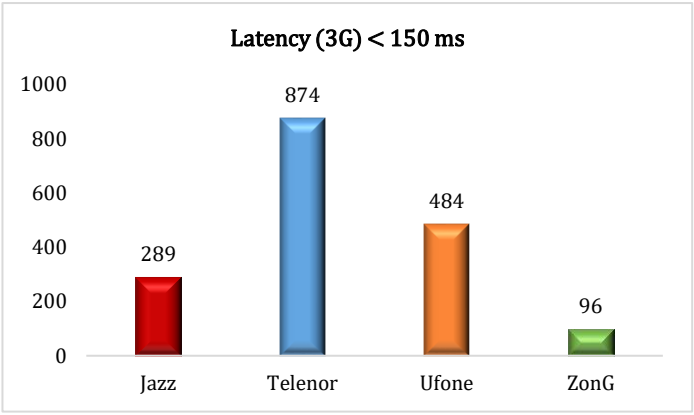
`QUALITY OF SERVICE SURVEY RESULTS (3G) – KABIRWALA



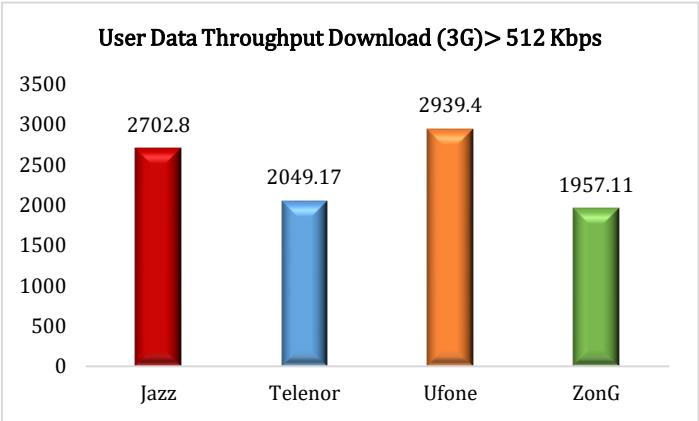


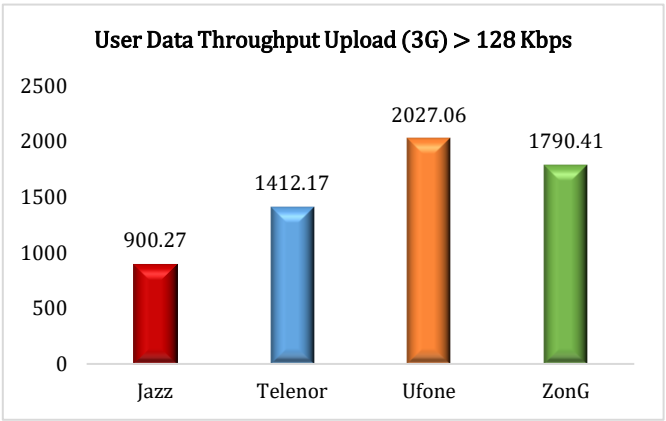


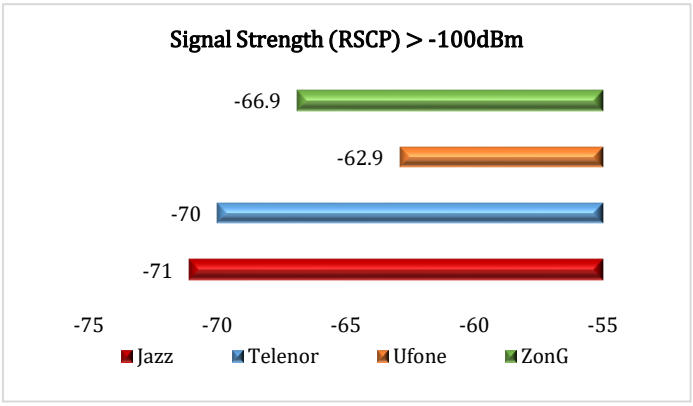


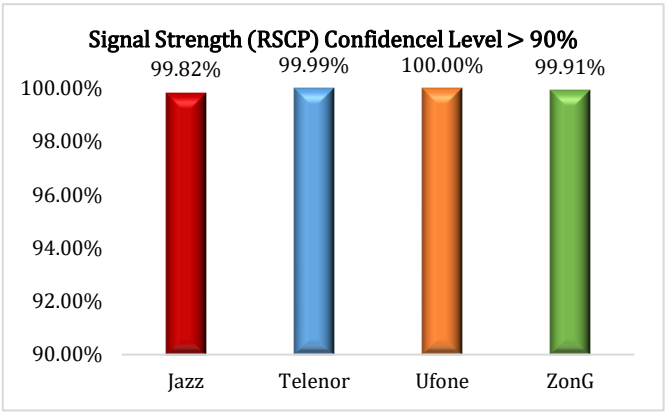


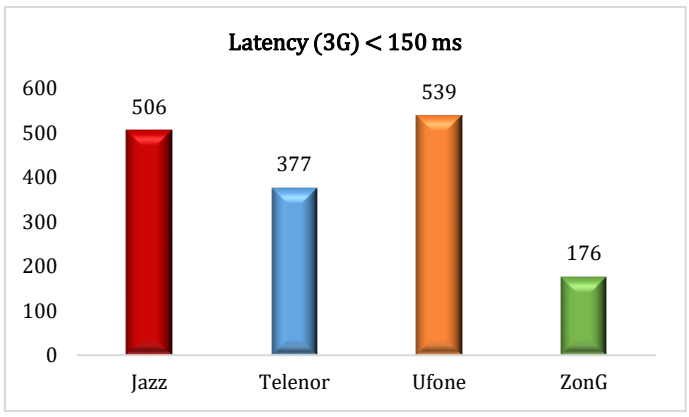
QUALITY OF SERVICE SURVEY RESULTS (3G) – NOWSHERA



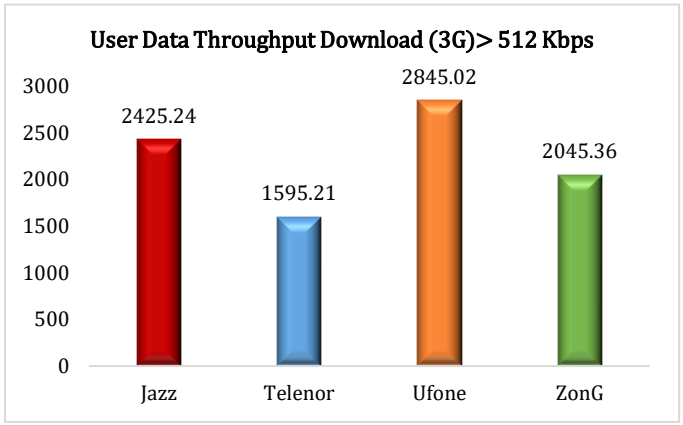


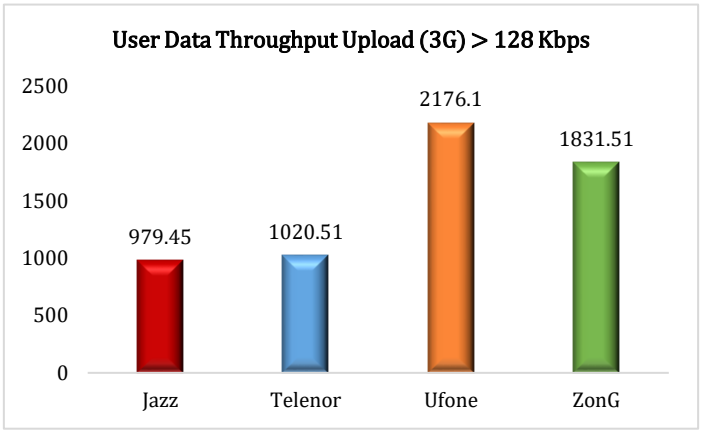


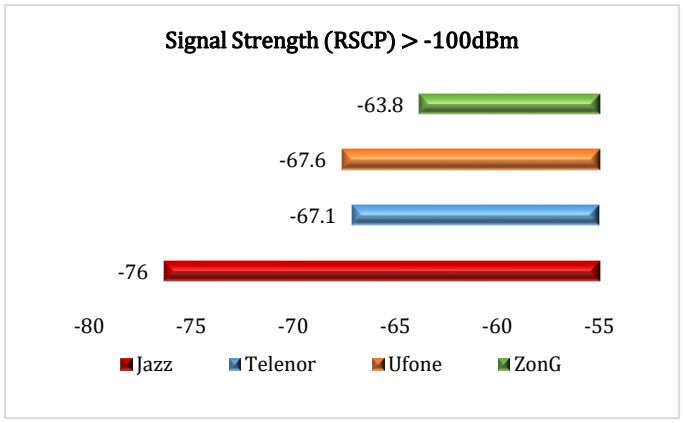


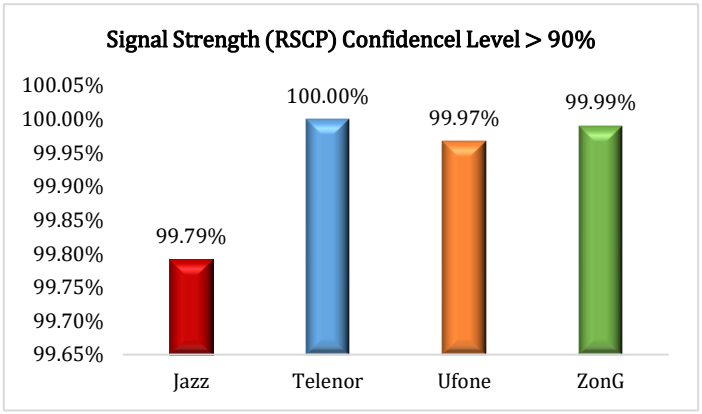


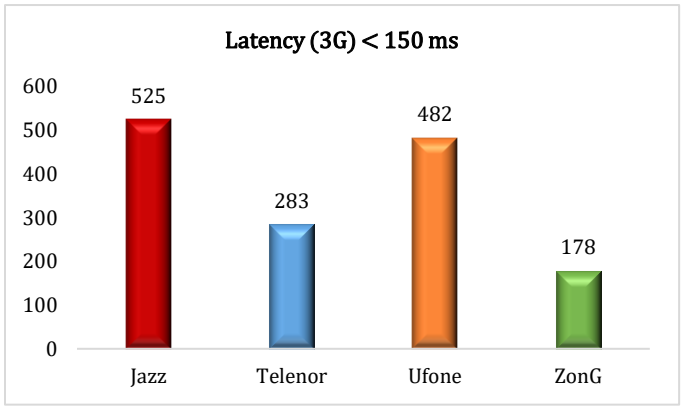
QUALITY OF SERVICE SURVEY RESULTS (3G) – SWABI



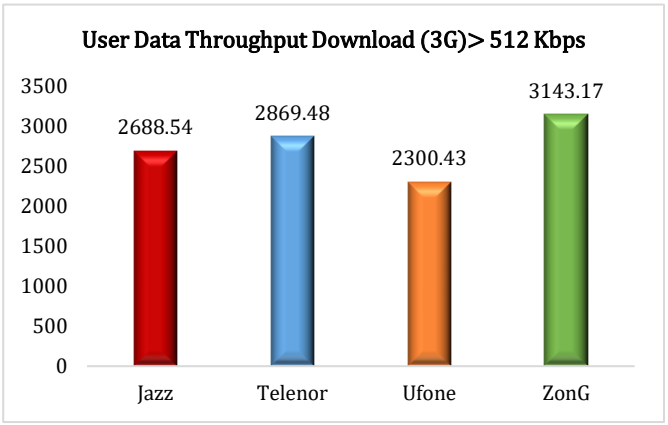


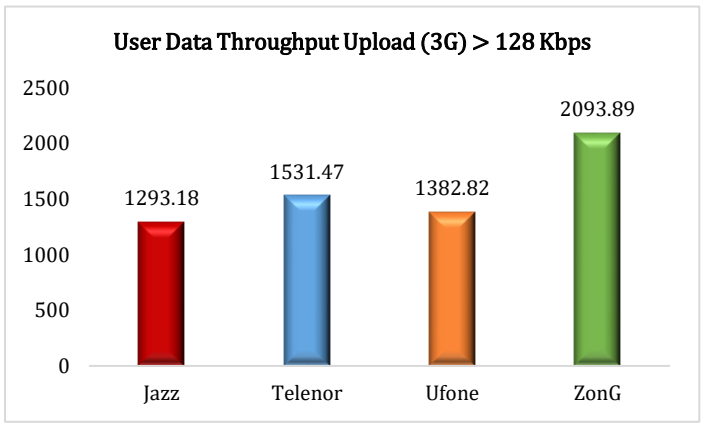


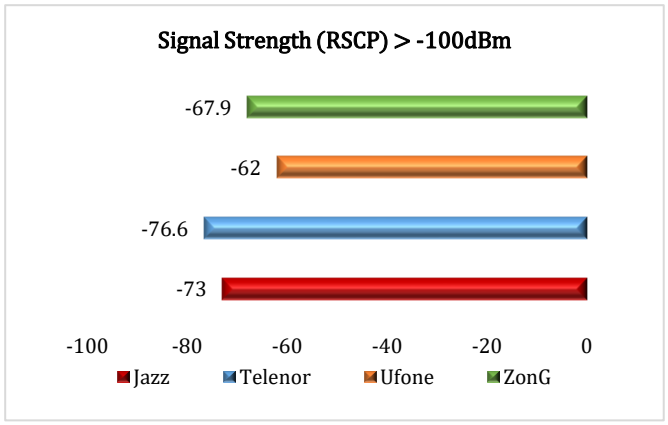


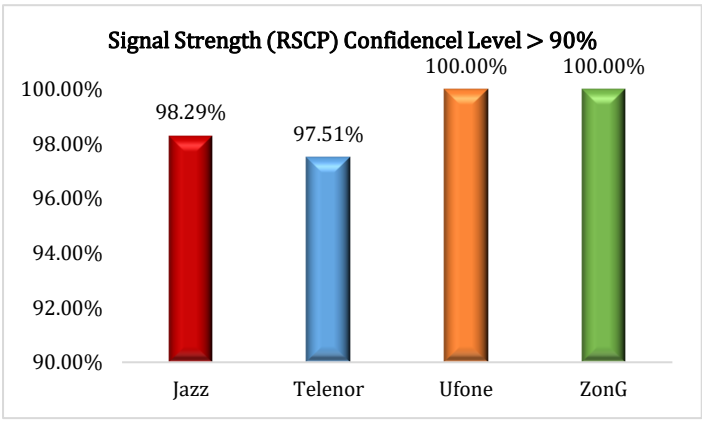


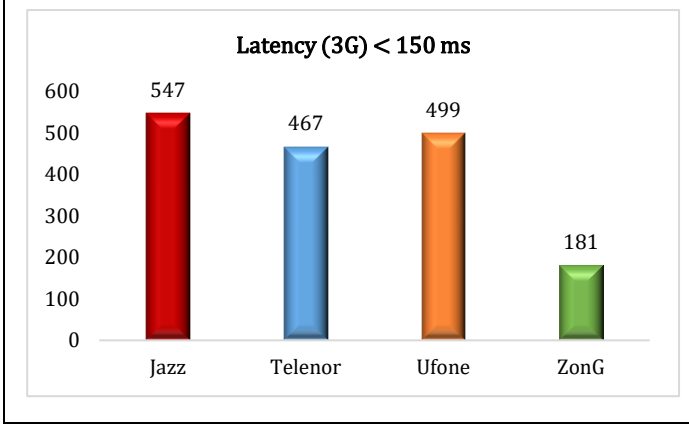
QUALITY OF SERVICE SURVEY RESULTS (3G) – KARAK







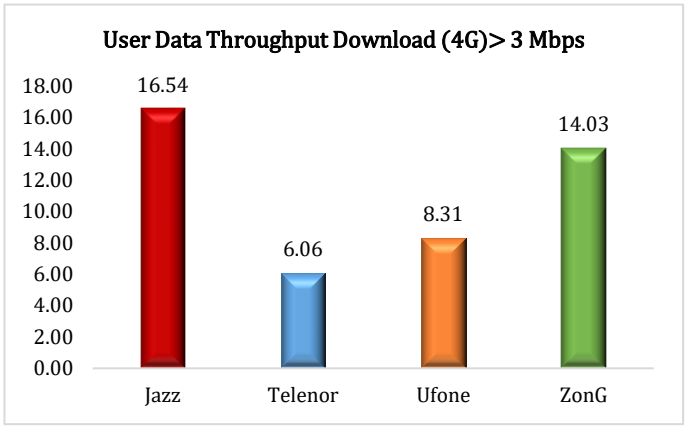


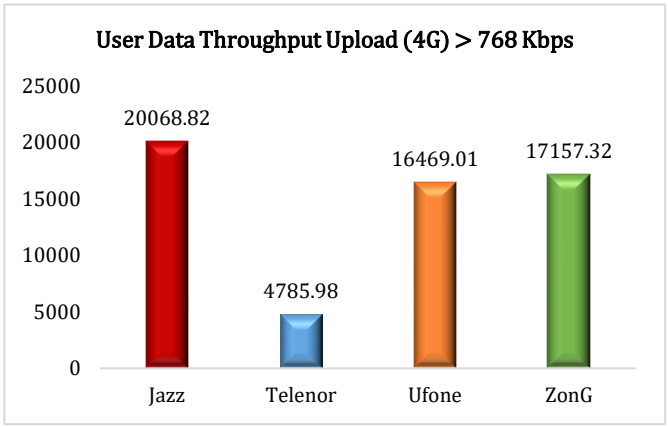


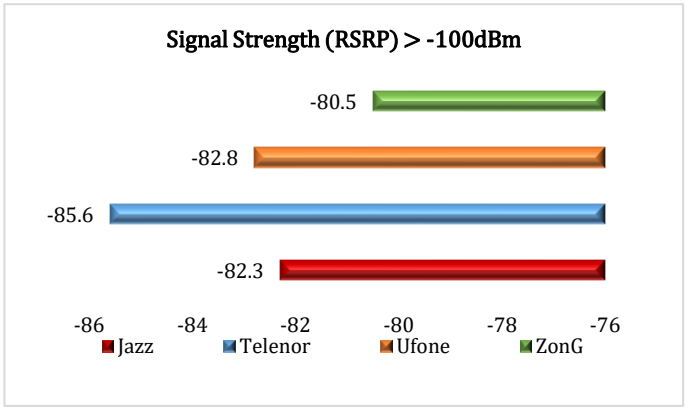
Annex-B (Data QoS Results)

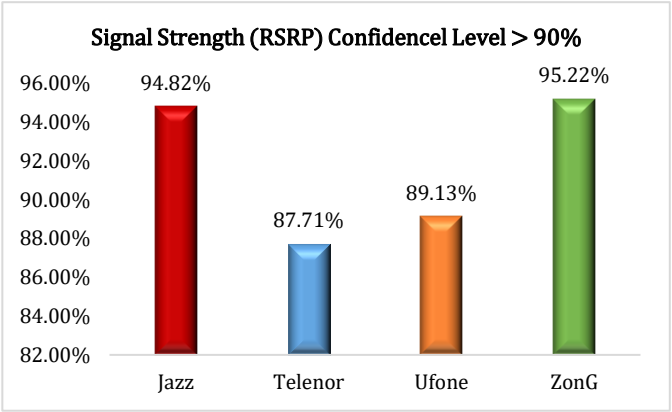
4G LOCK MODE

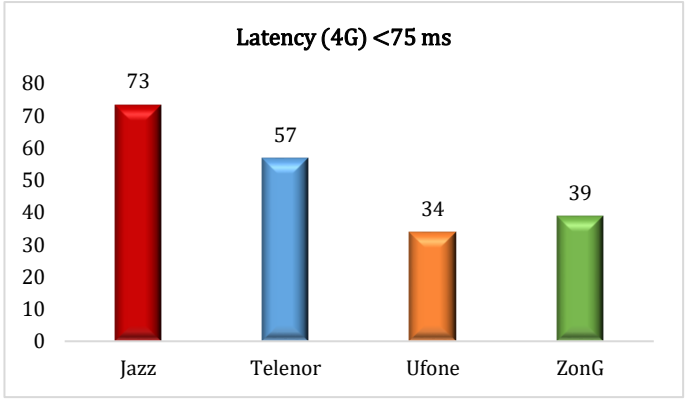
QUALITY OF SERVICE SURVEY RESULTS (4G) –KARACHI MALIR



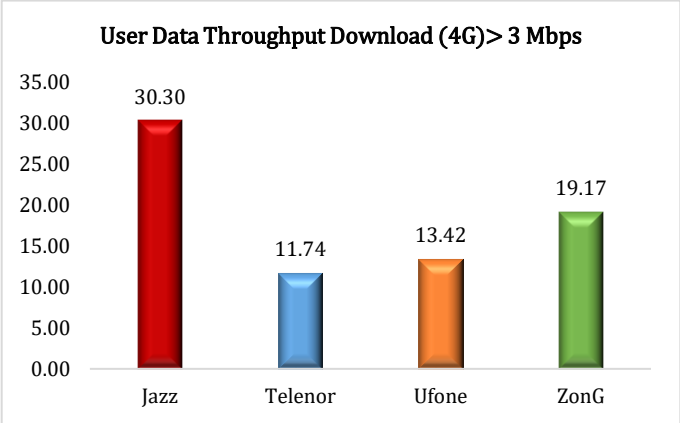


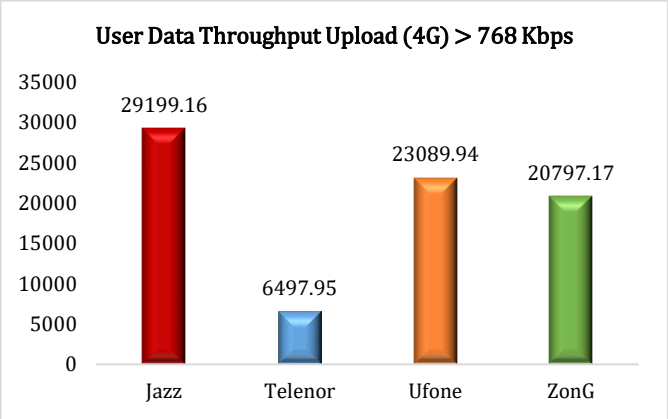


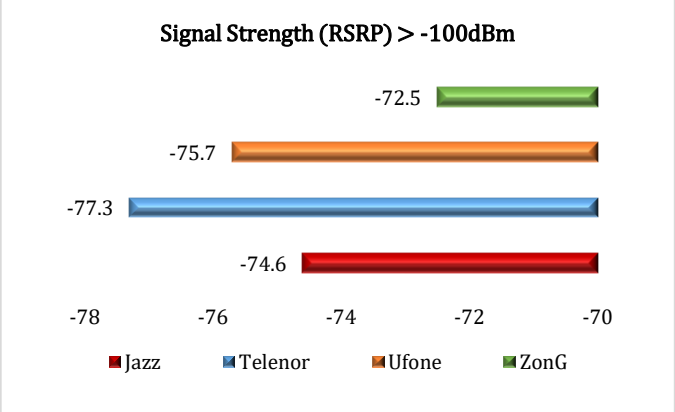


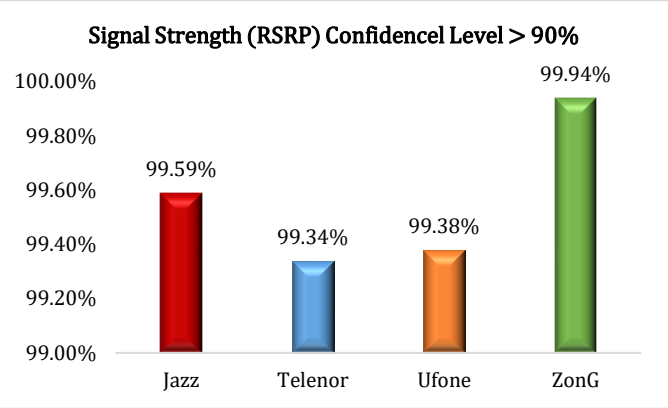


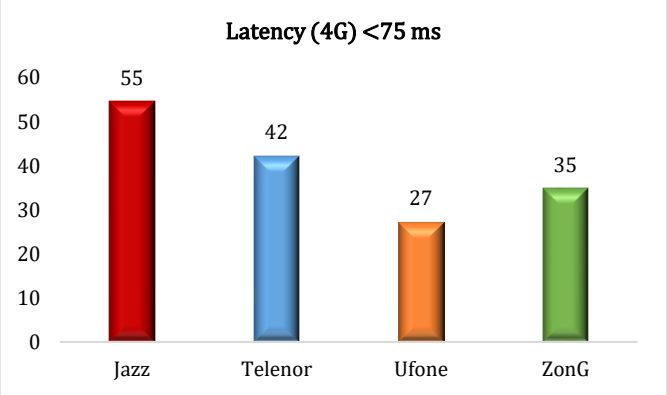
QUALITY OF SERVICE SURVEY RESULTS (4G) –KARACHI CENTRAL



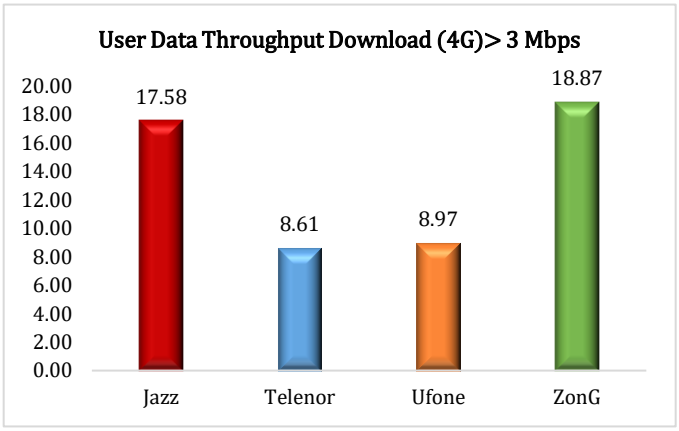


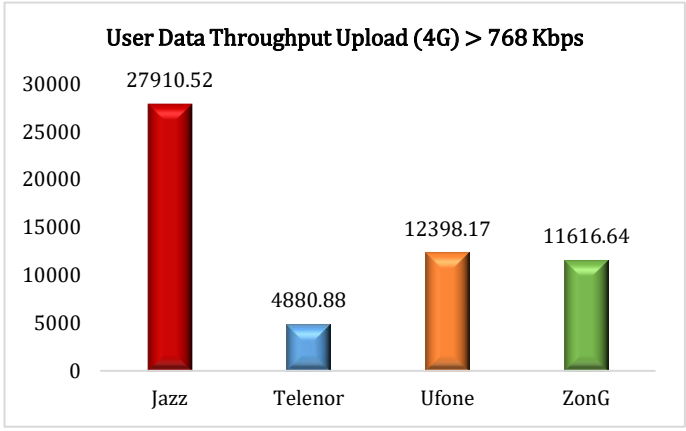


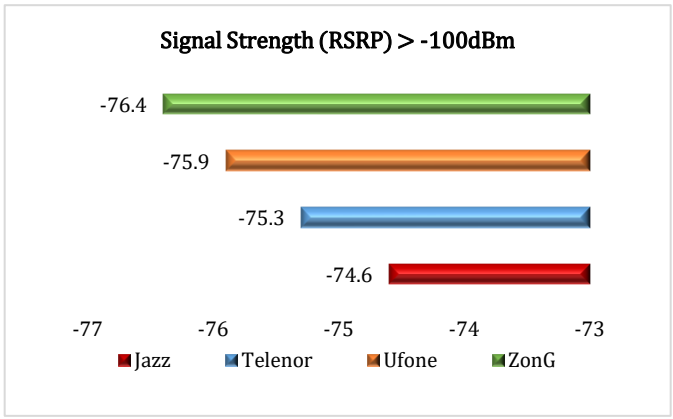


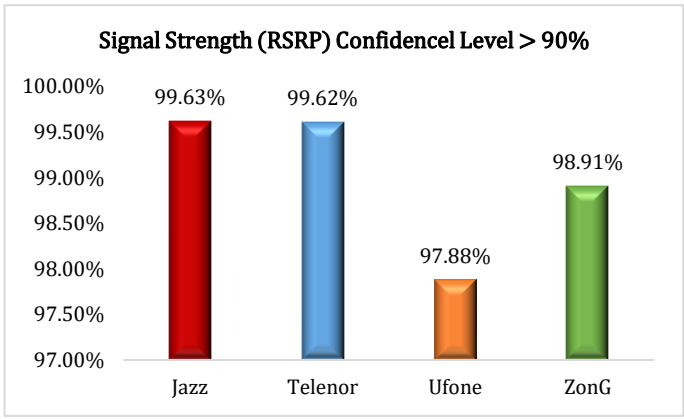


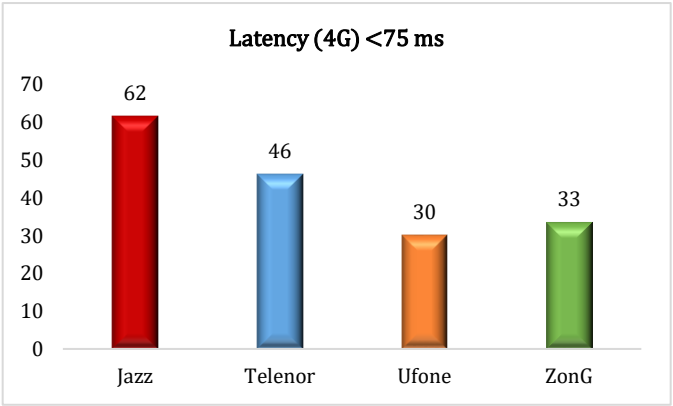
QUALITY OF SERVICE SURVEY RESULTS (4G) – KARACHI KEMARI



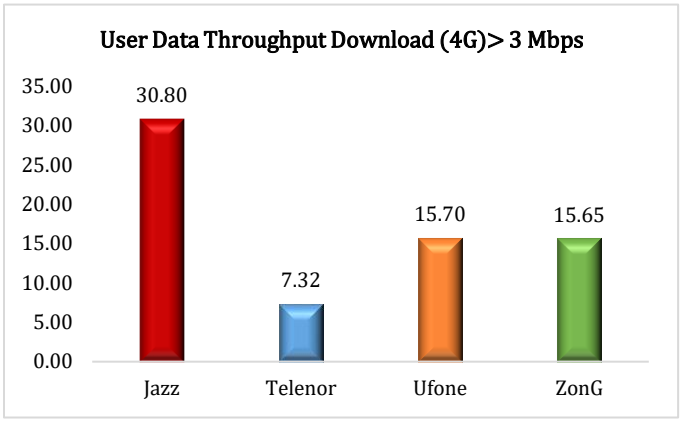


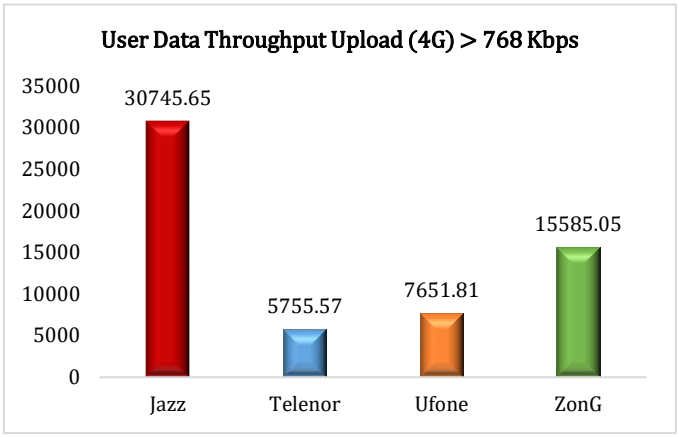


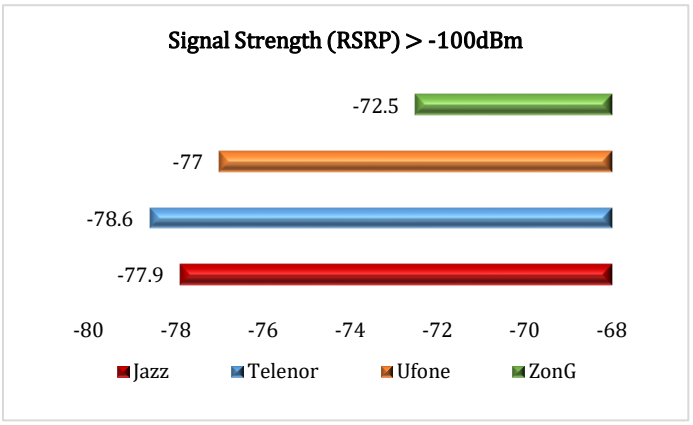


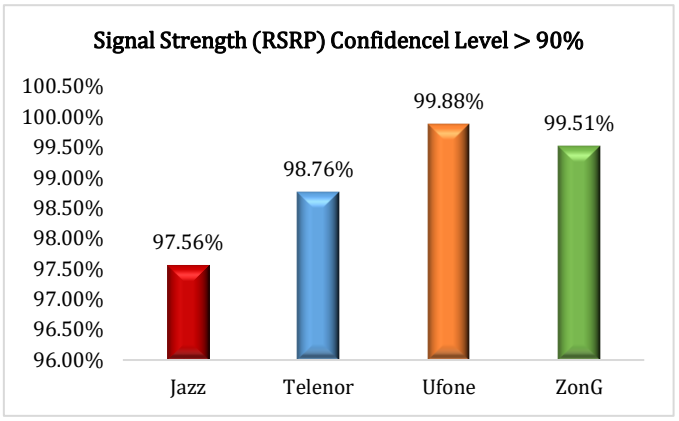


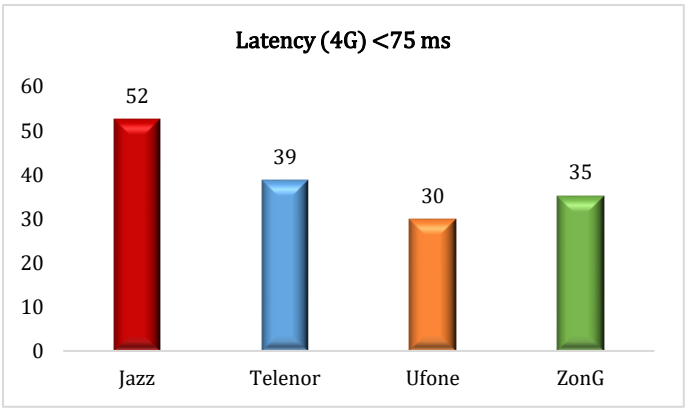
QUALITY OF SERVICE SURVEY RESULTS (4G) – KARACHI WEST



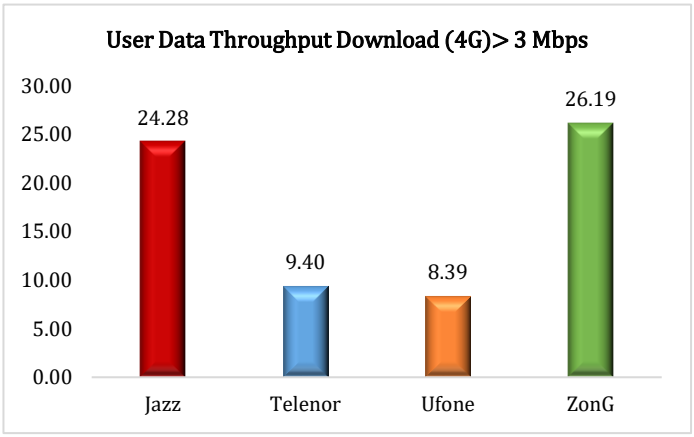


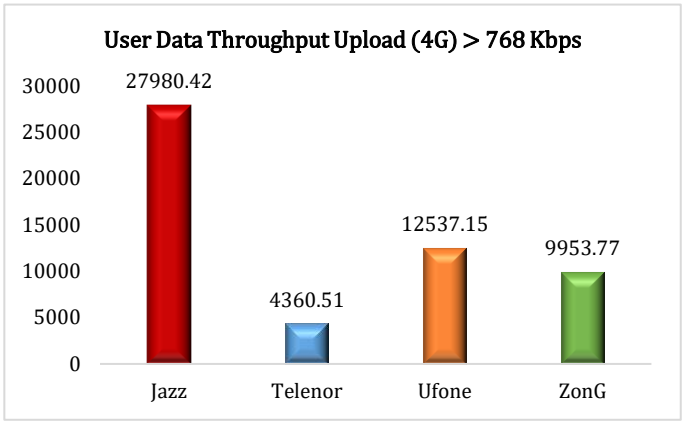


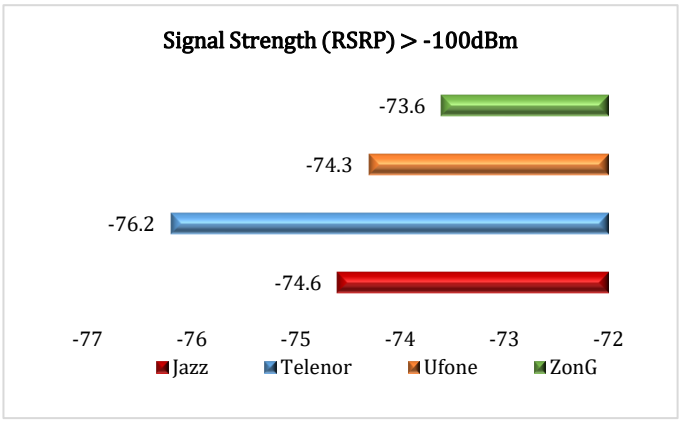


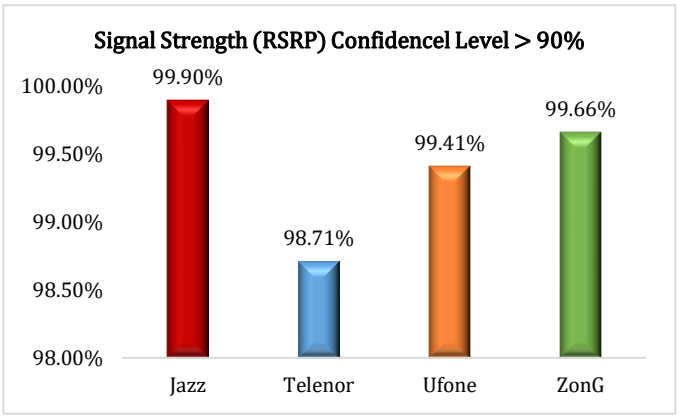


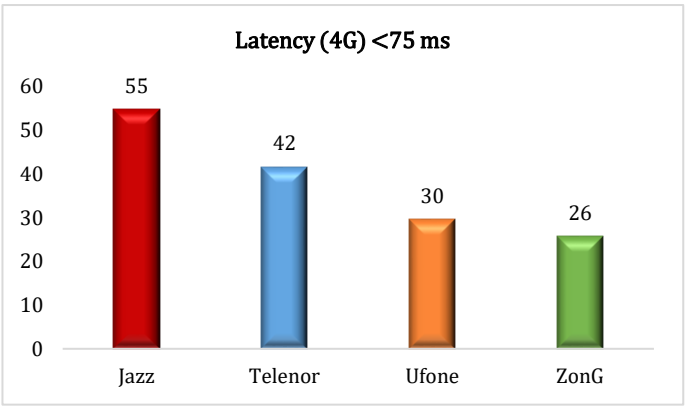
QUALITY OF SERVICE SURVEY RESULTS (4G) – KARACHI SOUTH



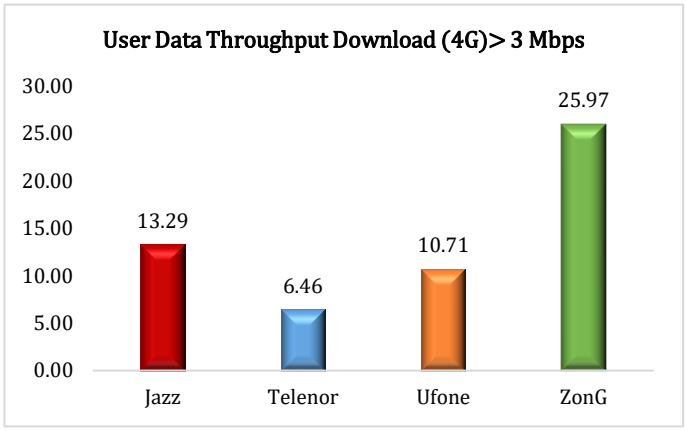


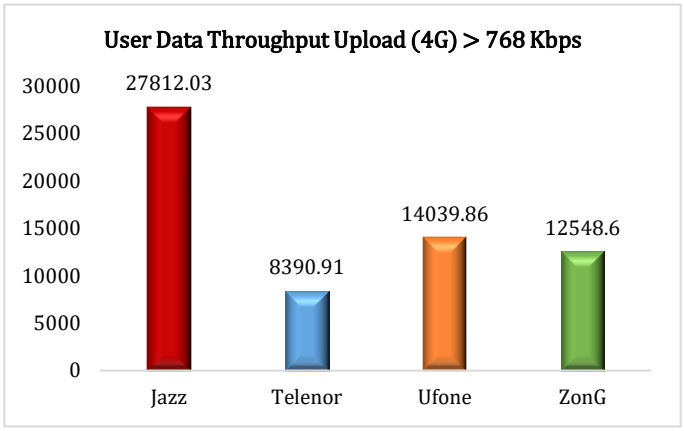


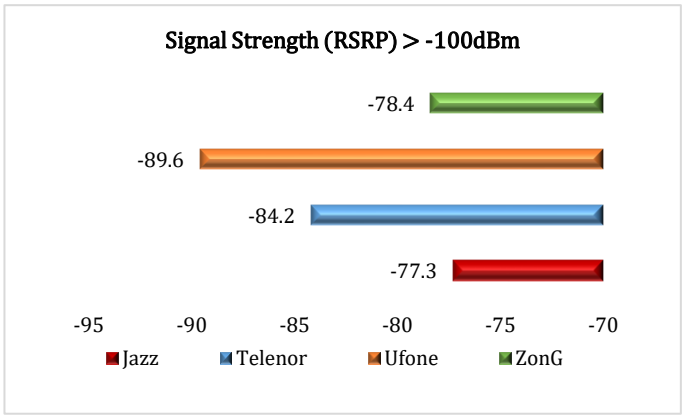


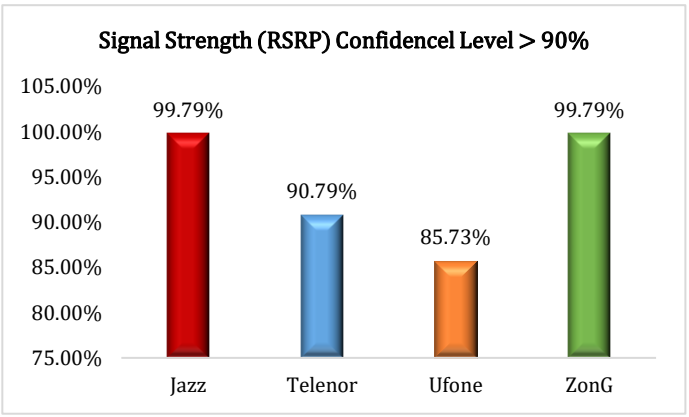


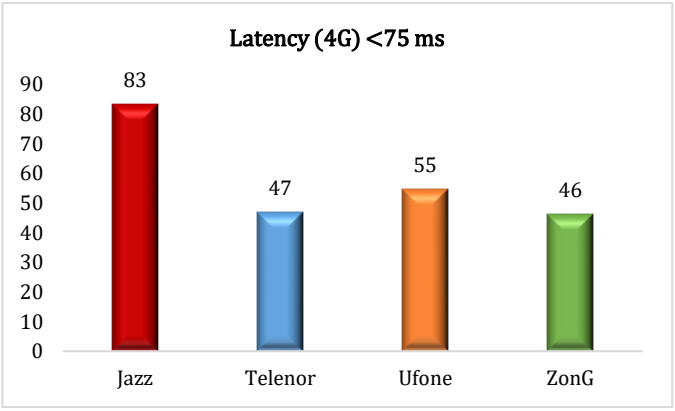
QUALITY OF SERVICE SURVEY RESULTS (4G) – NANKANA SAHIB



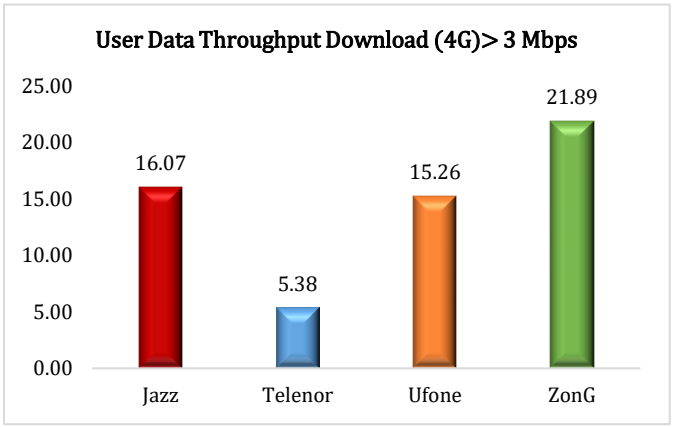


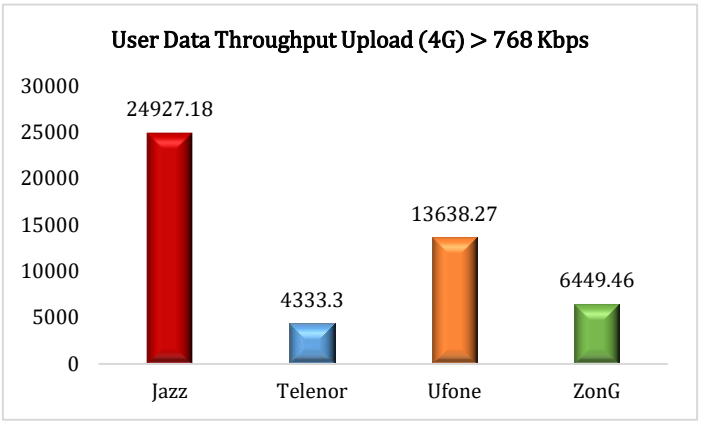


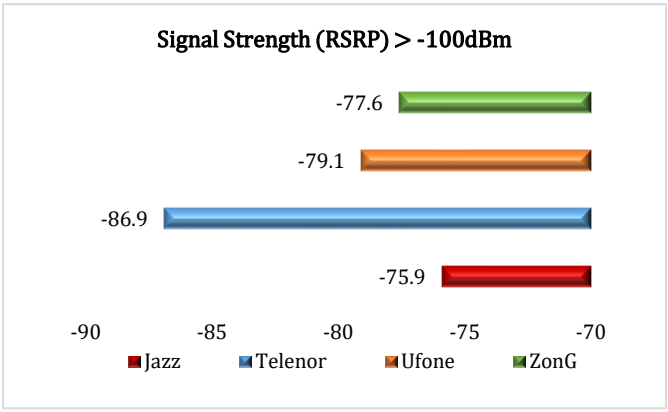


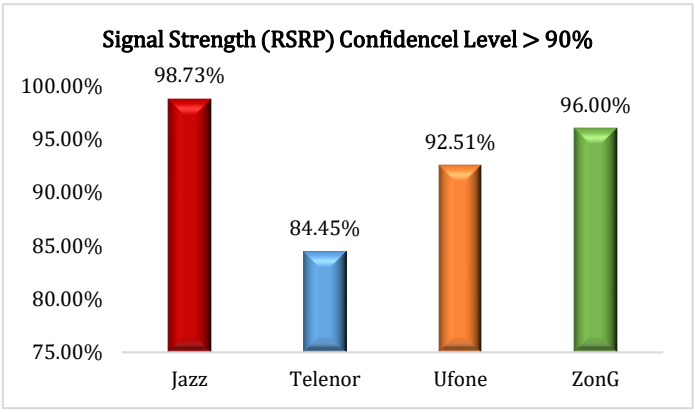


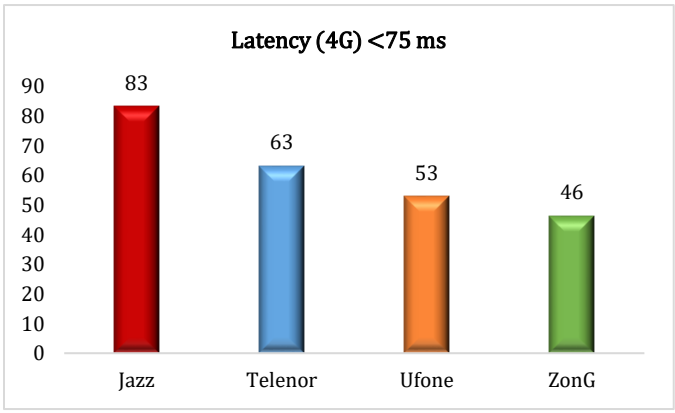
QUALITY OF SERVICE SURVEY RESULTS (4G) – MURIDKE



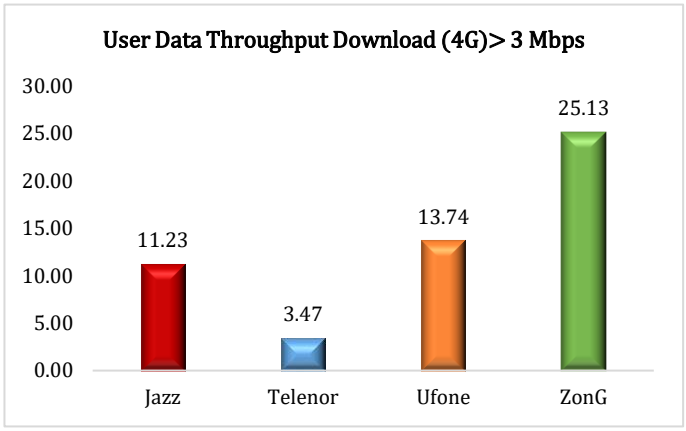


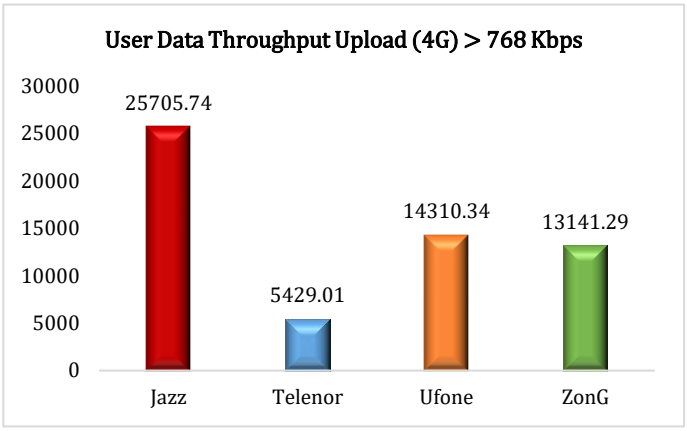


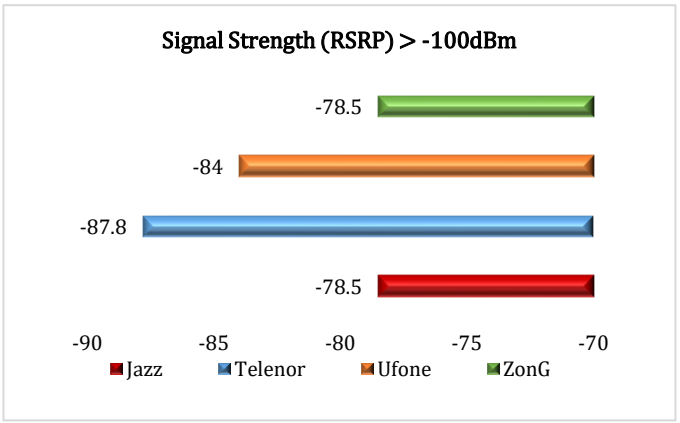


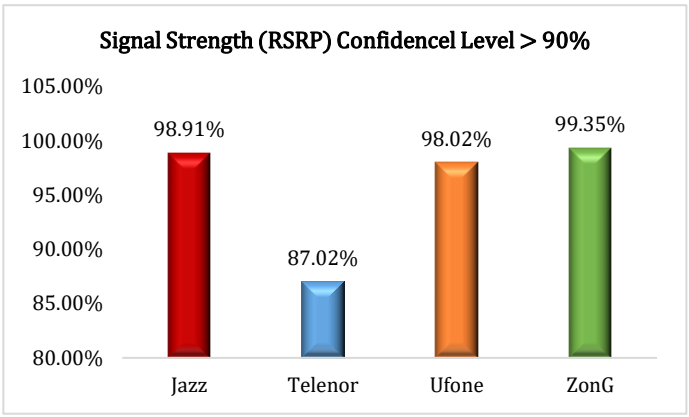


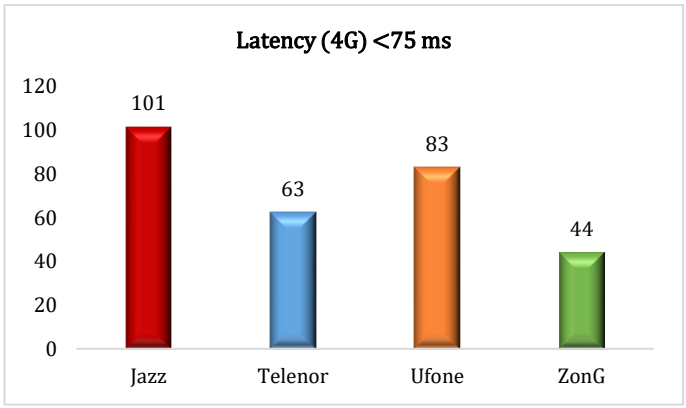
QUALITY OF SERVICE SURVEY RESULTS (4G) –DEPALPUR



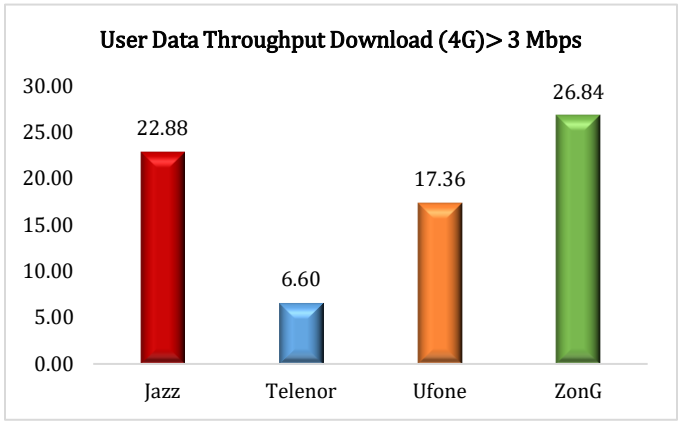


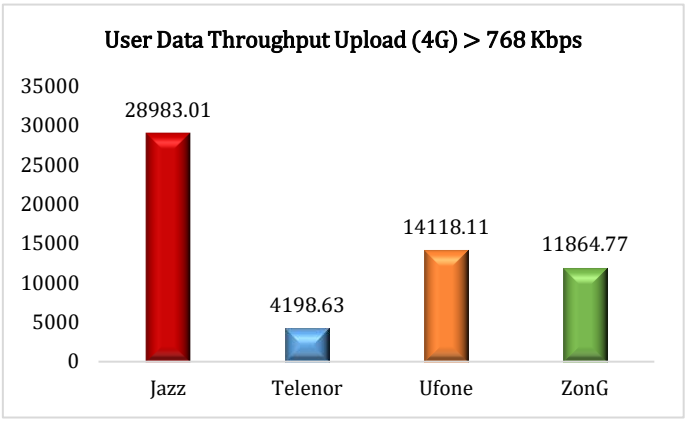


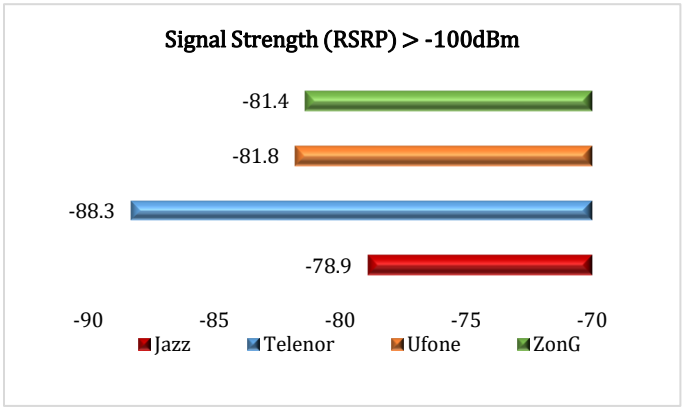


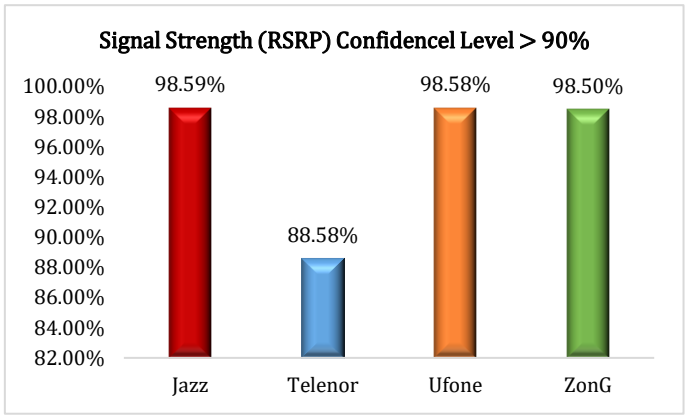


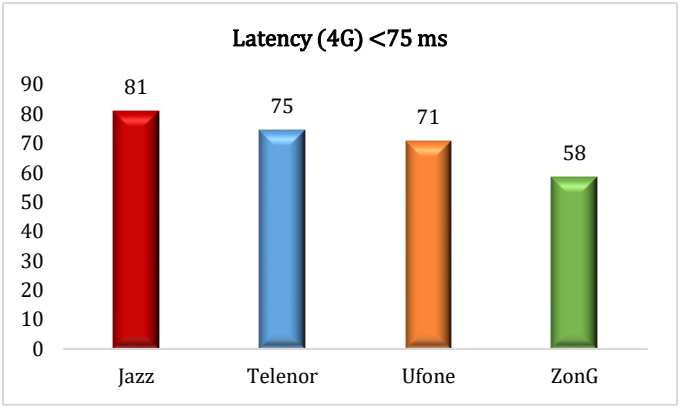
QUALITY OF SERVICE SURVEY RESULTS (4G) – CHICHAWATNI



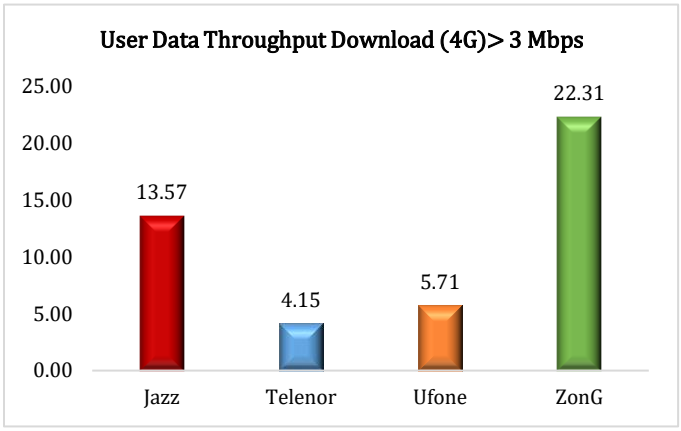


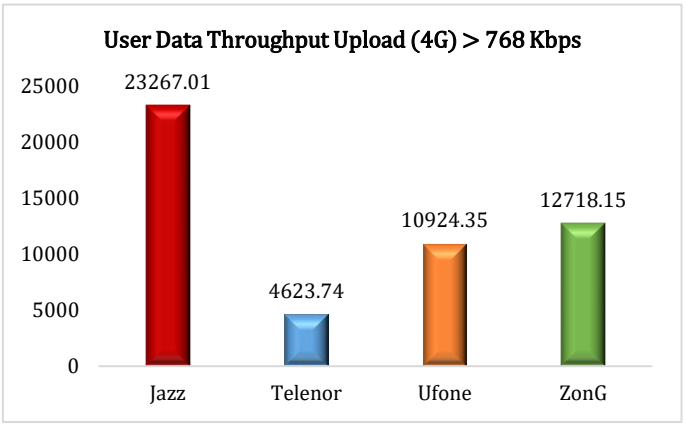


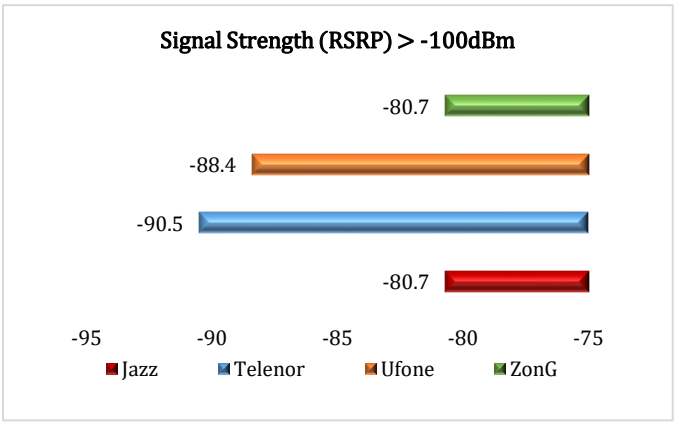


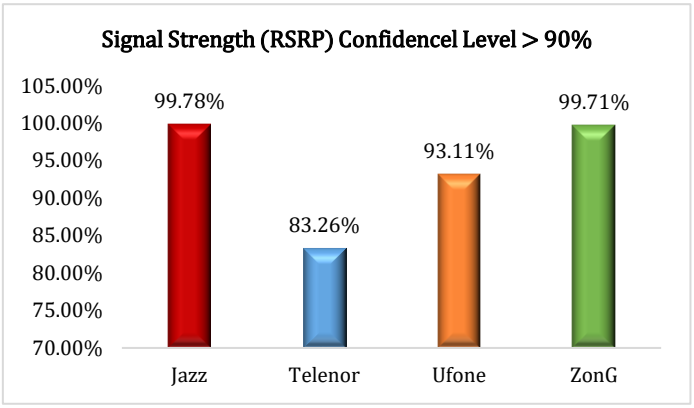


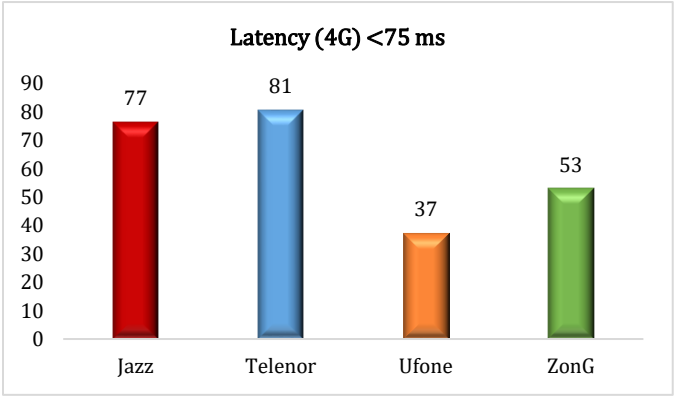
QUALITY OF SERVICE SURVEY RESULTS (4G) – SHUJABAD



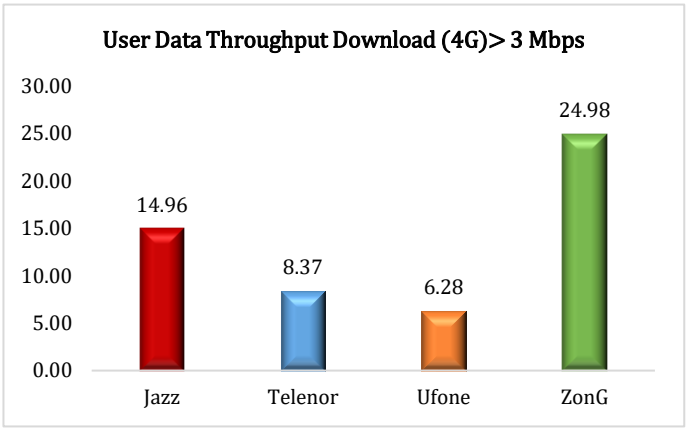


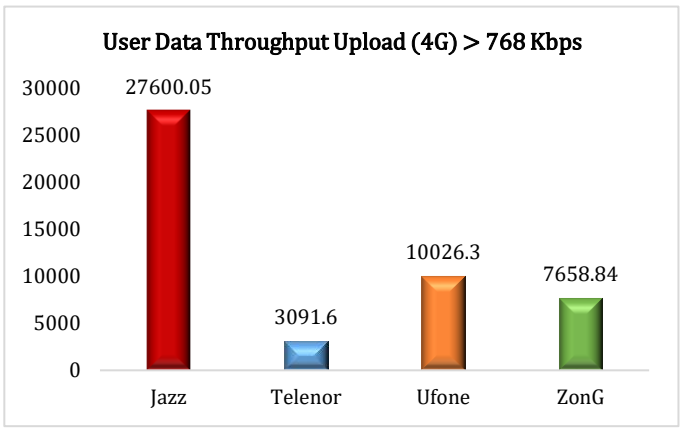


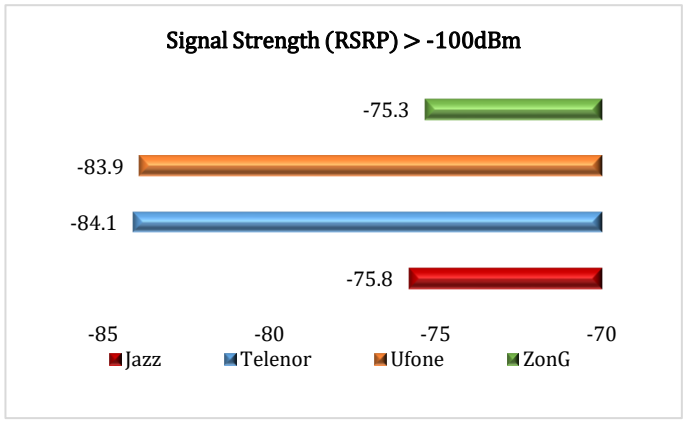


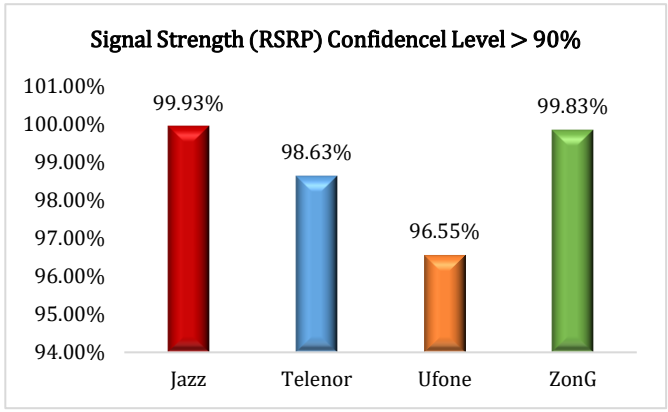


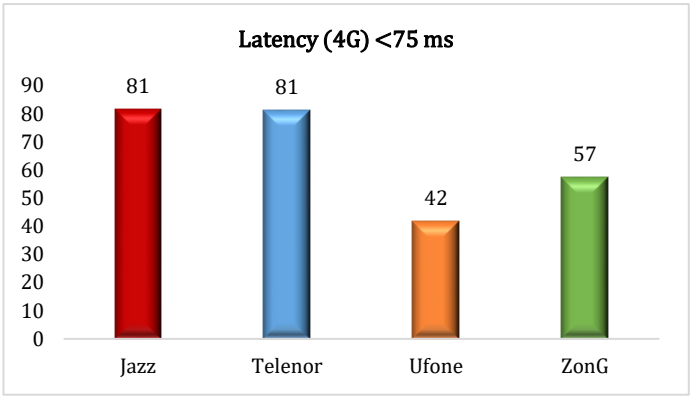
QUALITY OF SERVICE SURVEY RESULTS (4G) – KABIRWALA



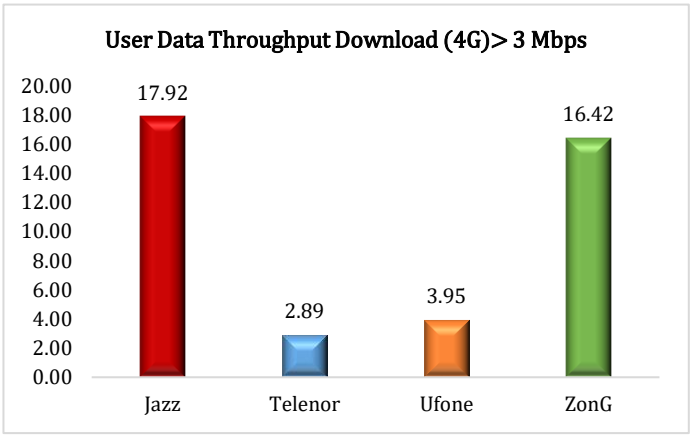


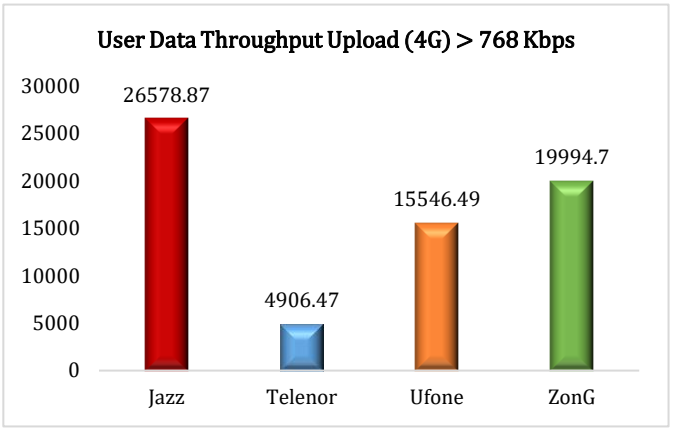


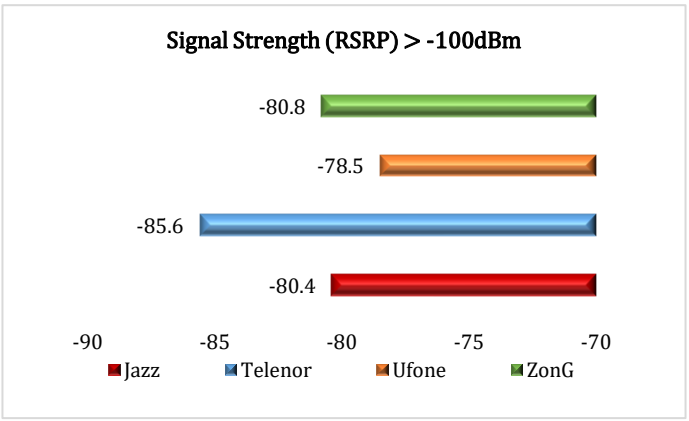


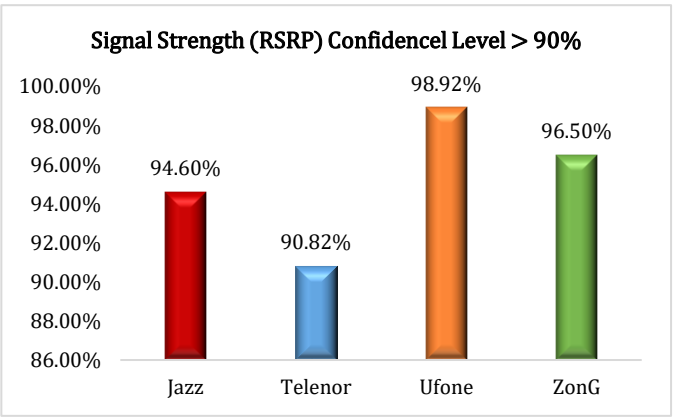


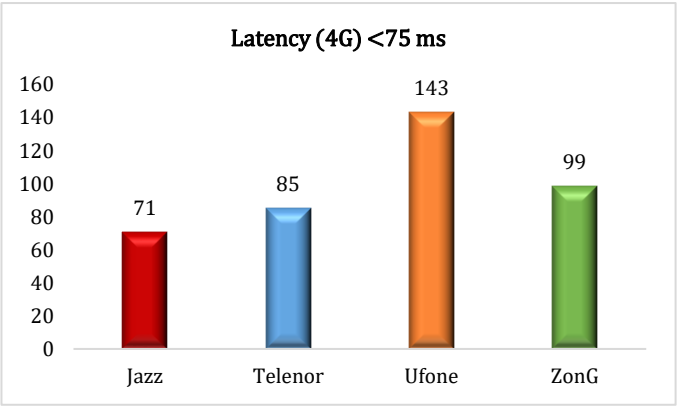
QUALITY OF SERVICE SURVEY RESULTS (4G) – NOWSHERA



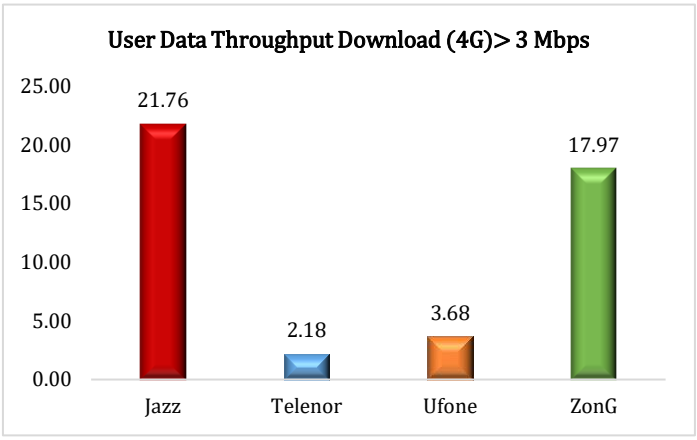


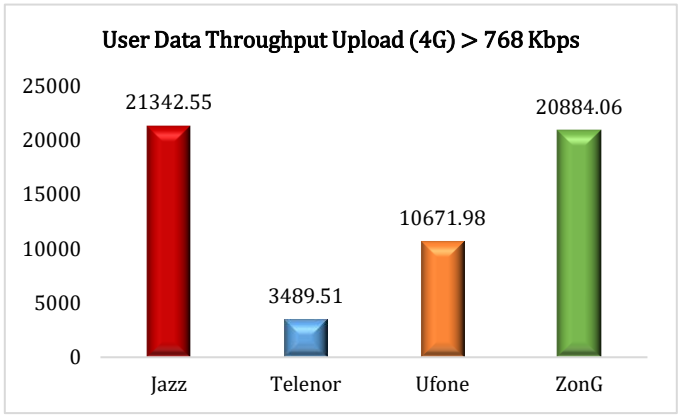


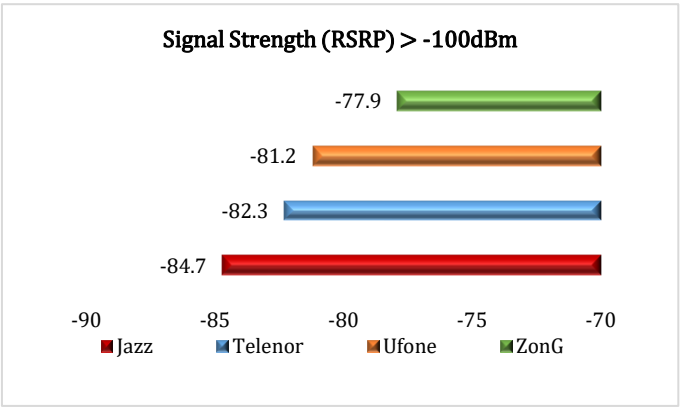


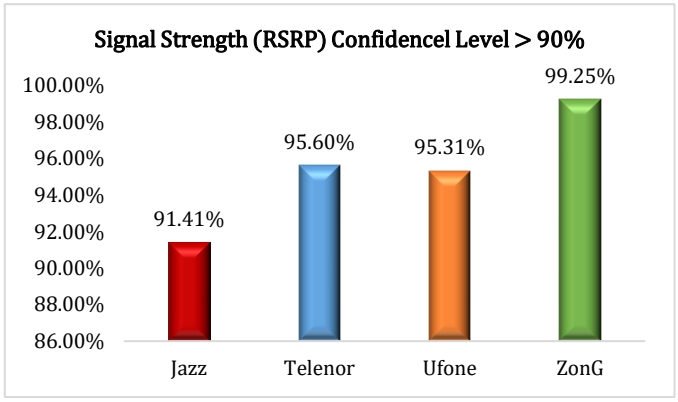


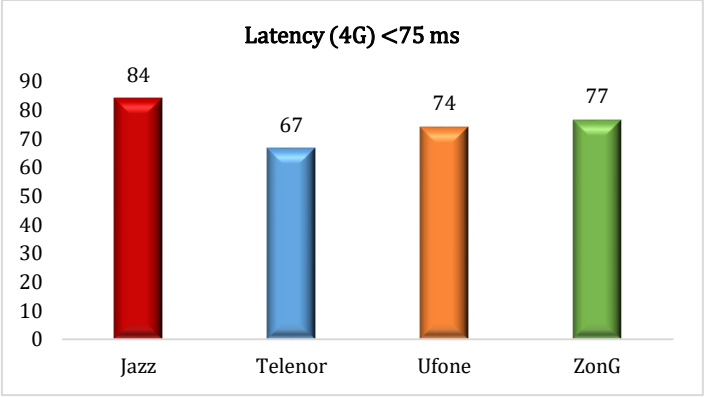
QUALITY OF SERVICE SURVEY RESULTS (4G) – SWABI



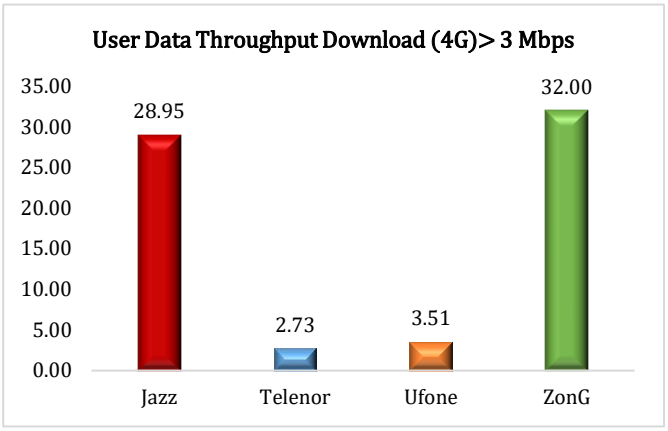


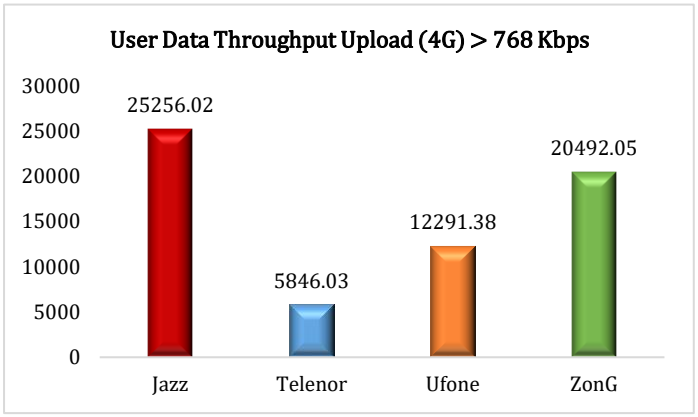


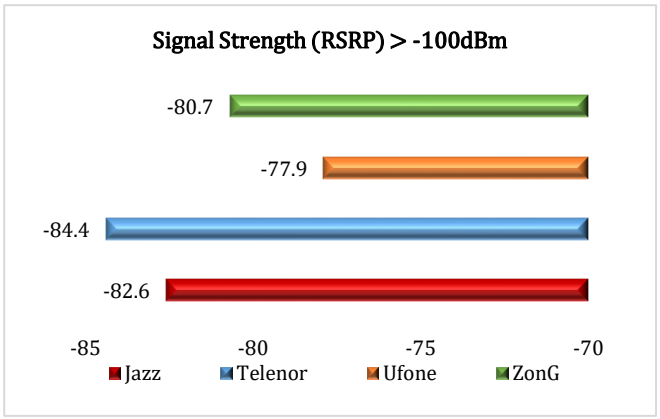


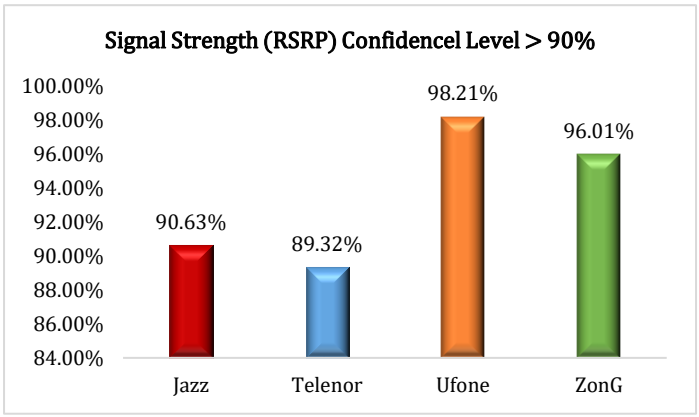


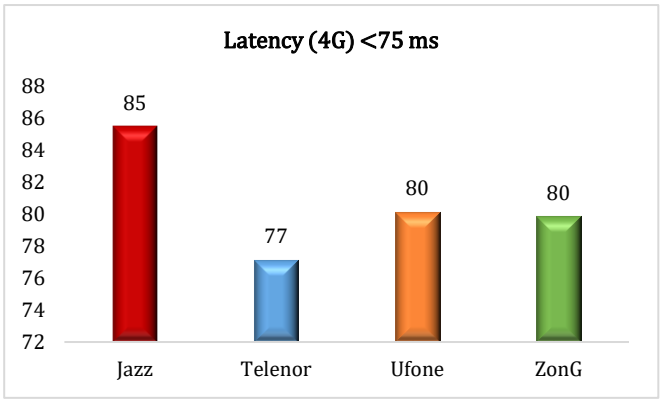
QUALITY OF SERVICE SURVEY RESULTS (4G) – KARAK







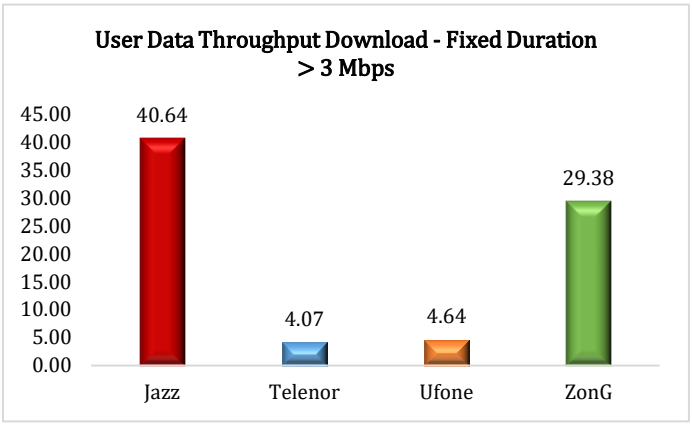


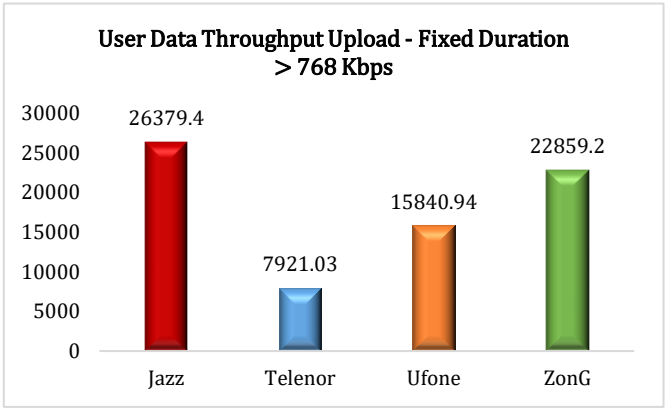


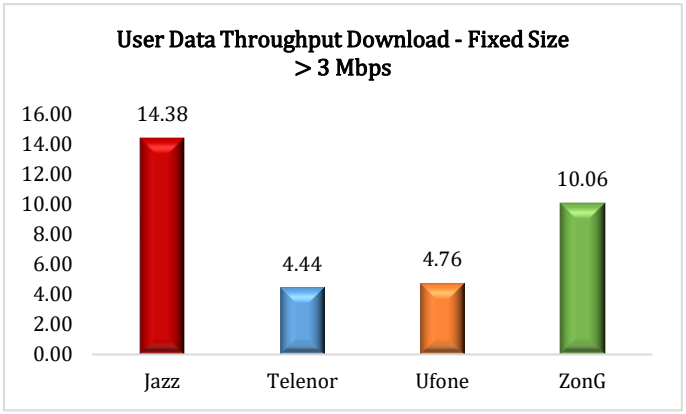
Annex-B (Data QoS Results)

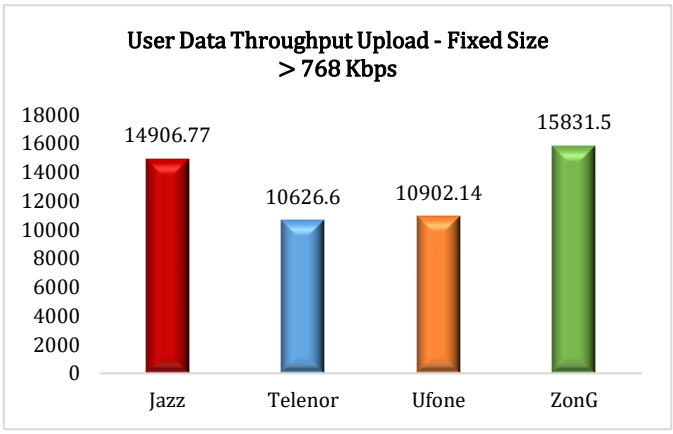
AUTOMODE

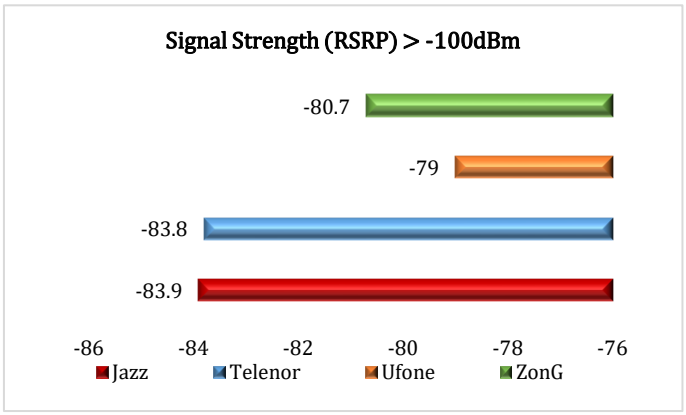
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – KARACHI MALIR

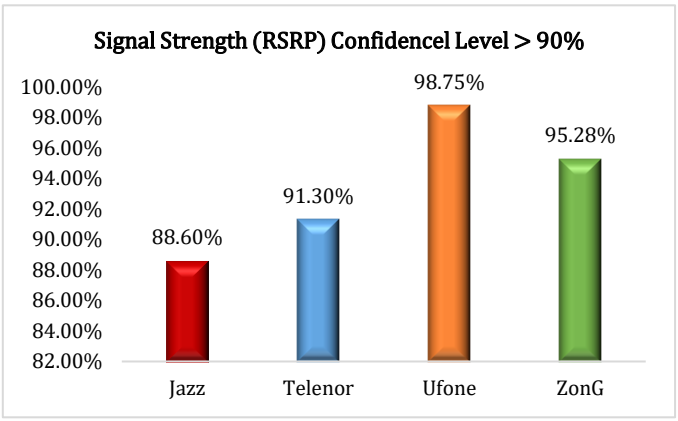


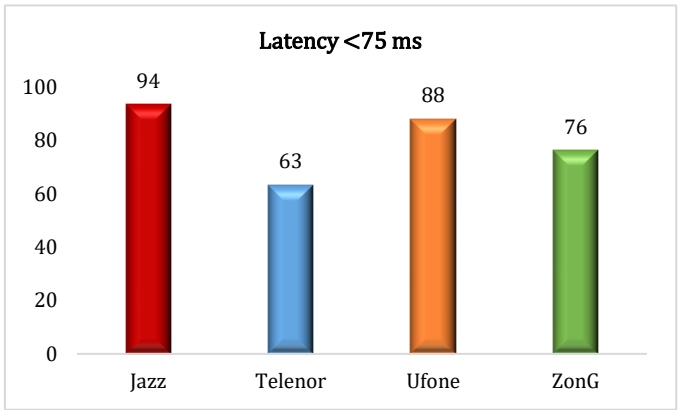


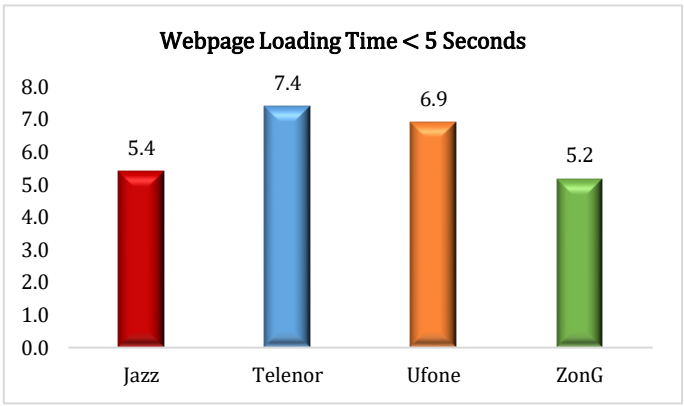




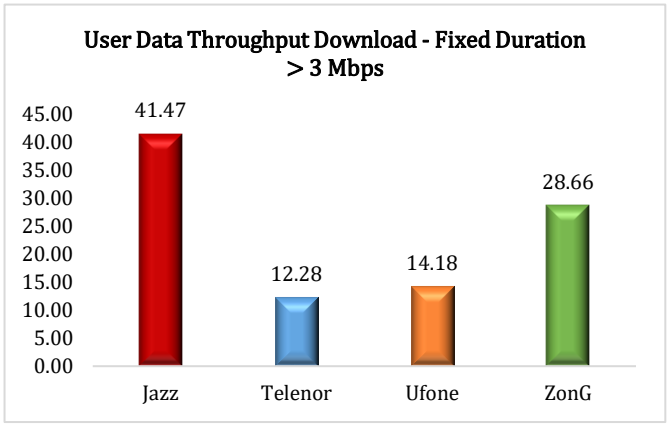


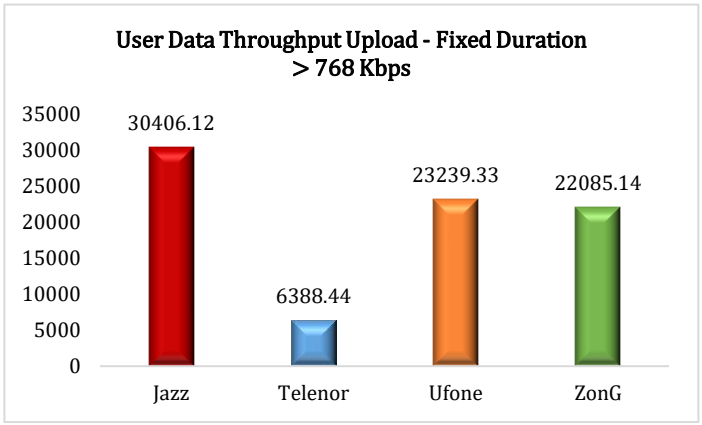


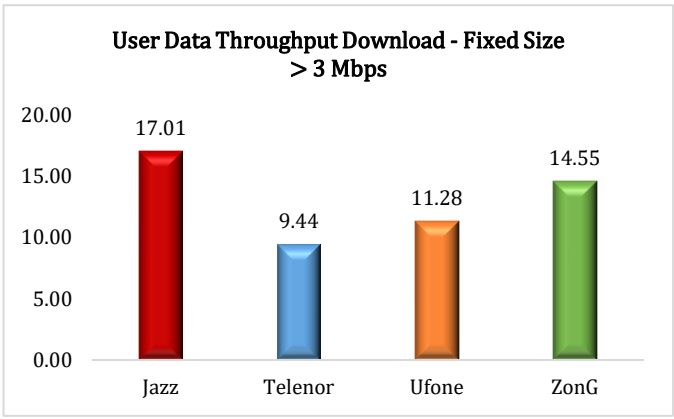


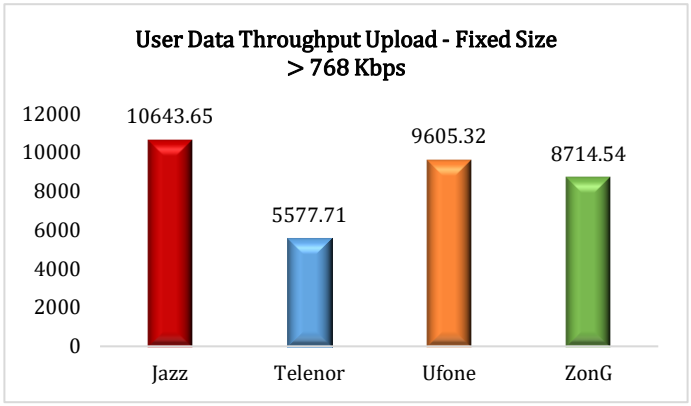


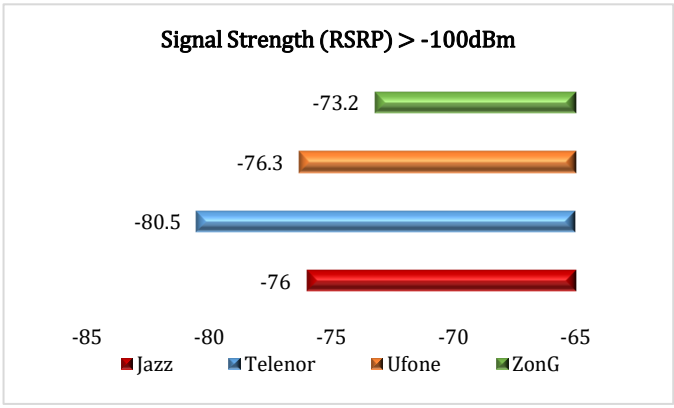
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – KARACHI CENTRAL

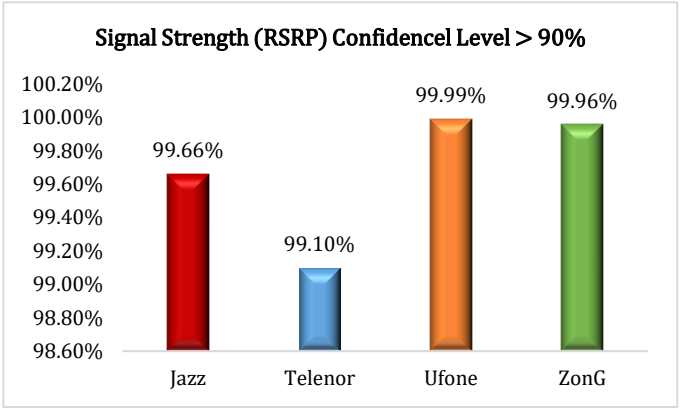


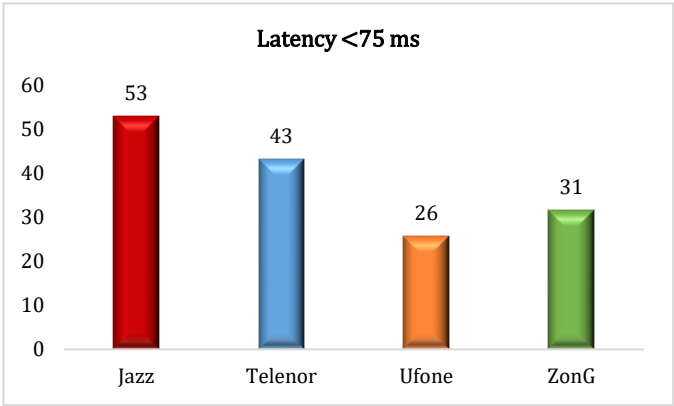


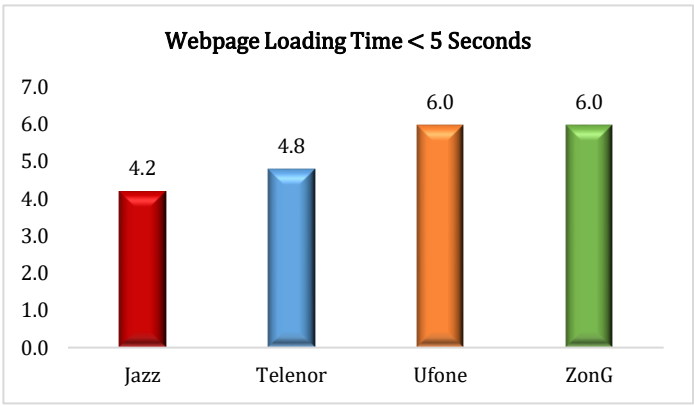




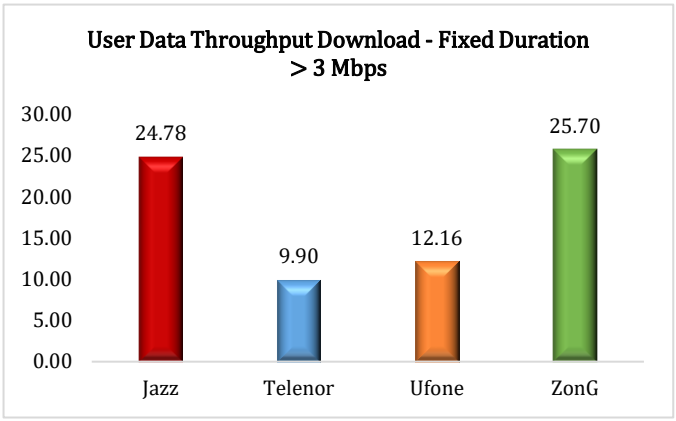


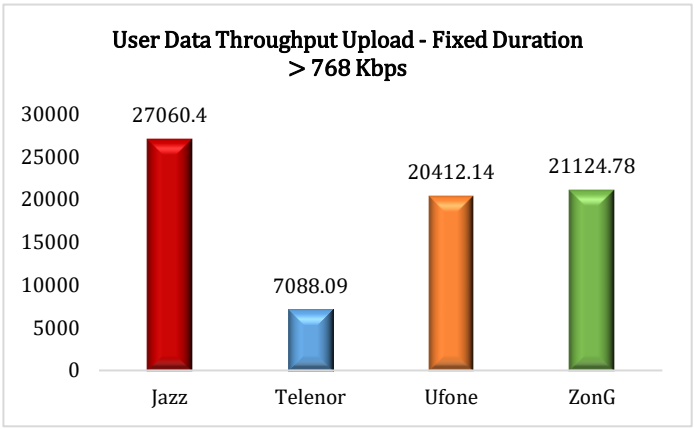


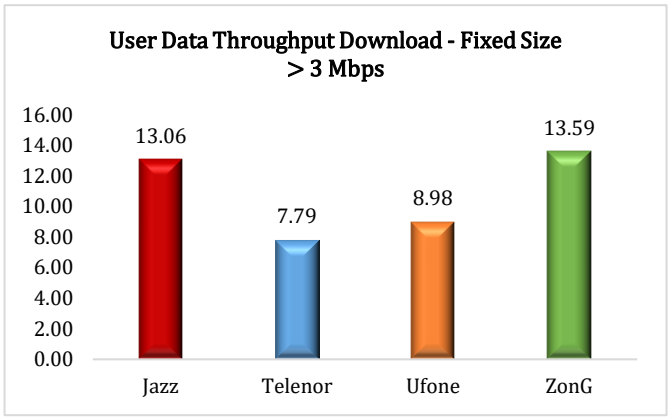


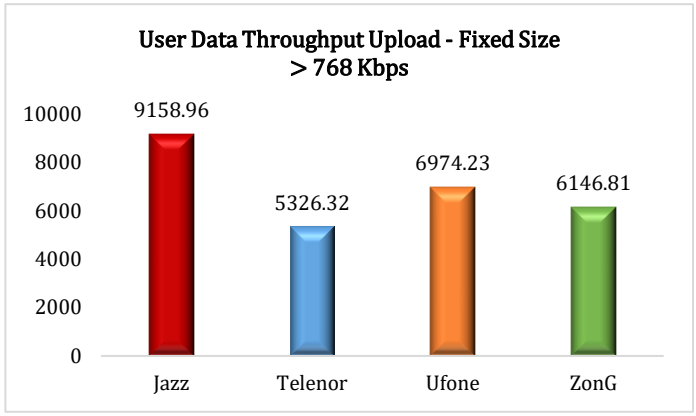


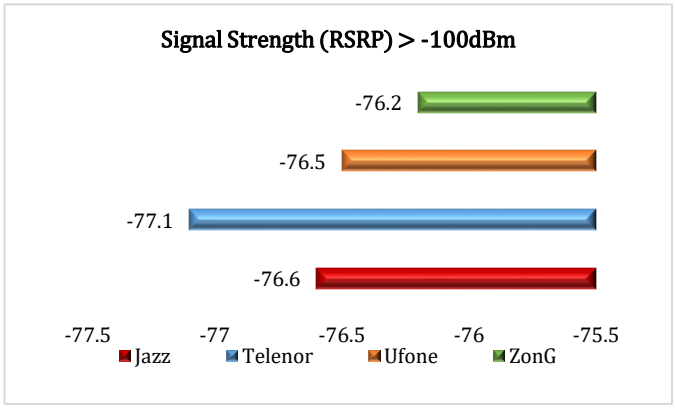
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – KARACHI KEMARI

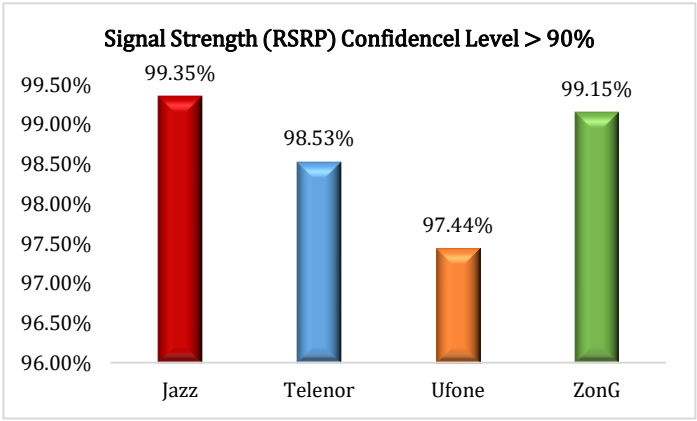


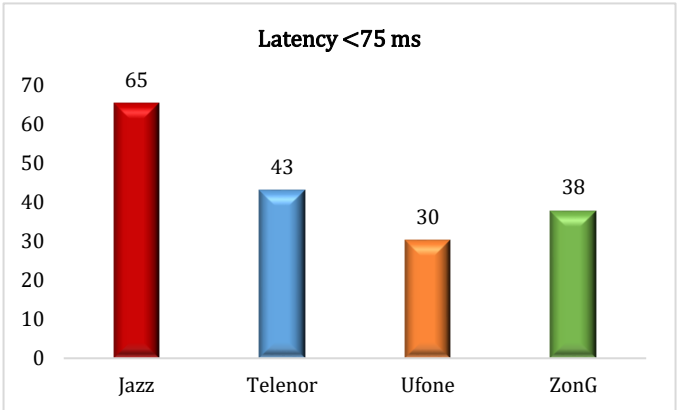


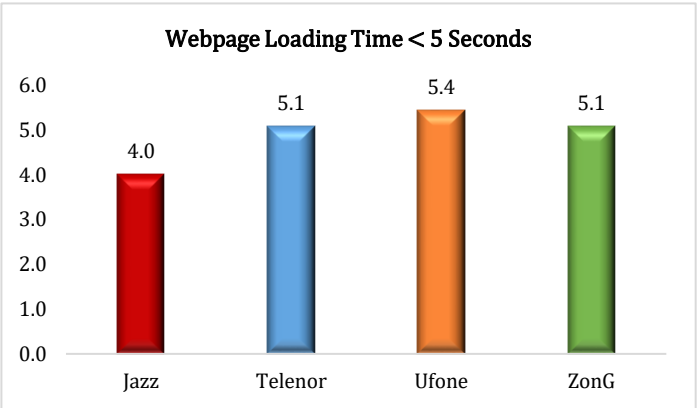




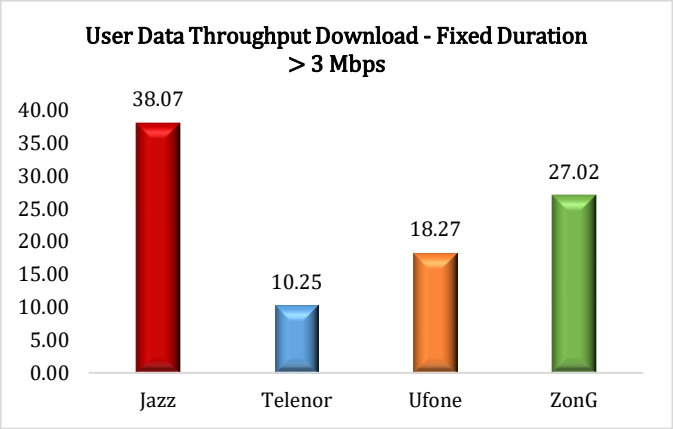


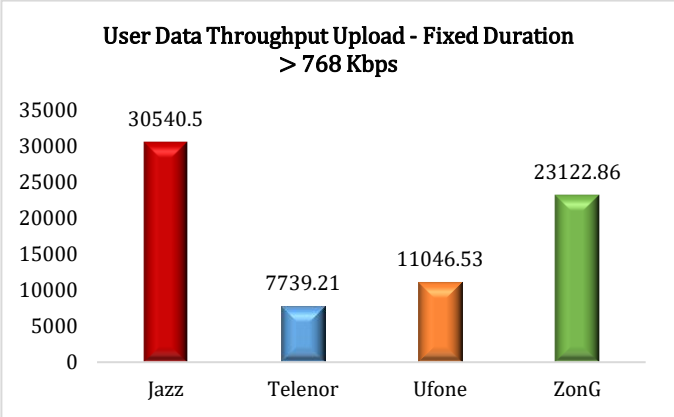


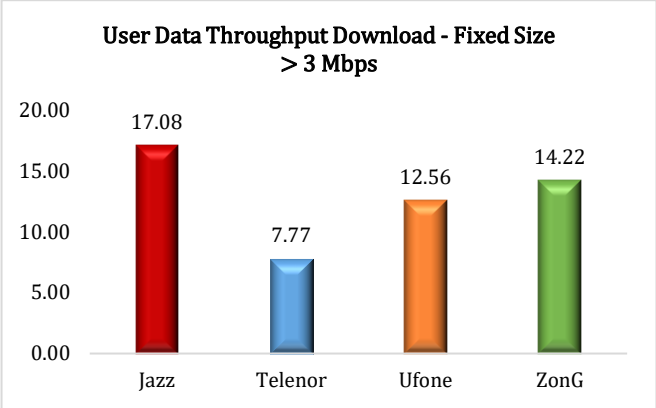


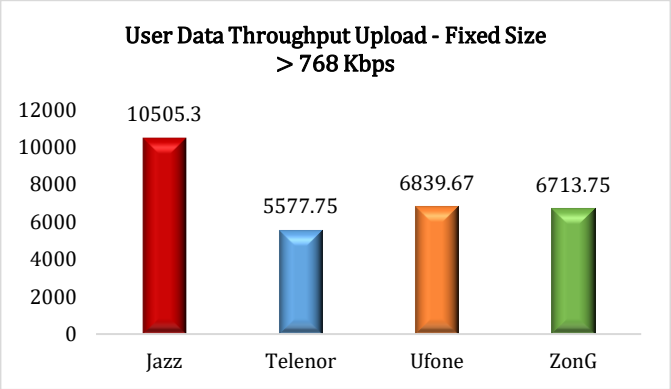


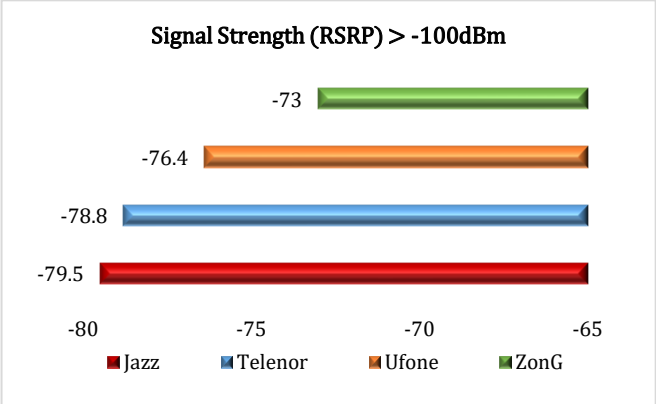
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – KARACHI WEST

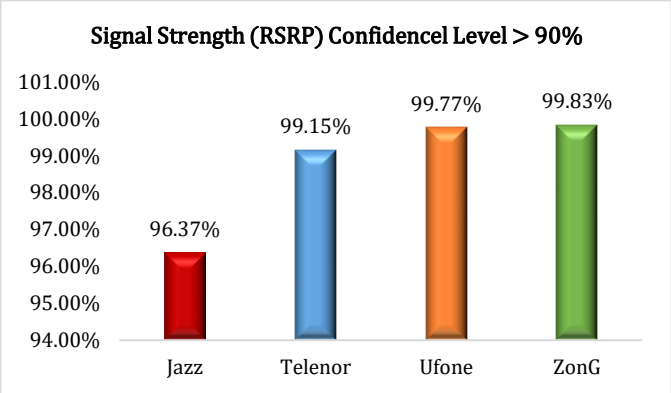


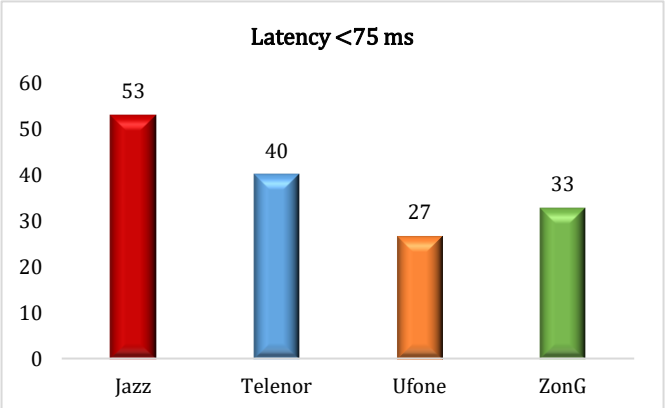


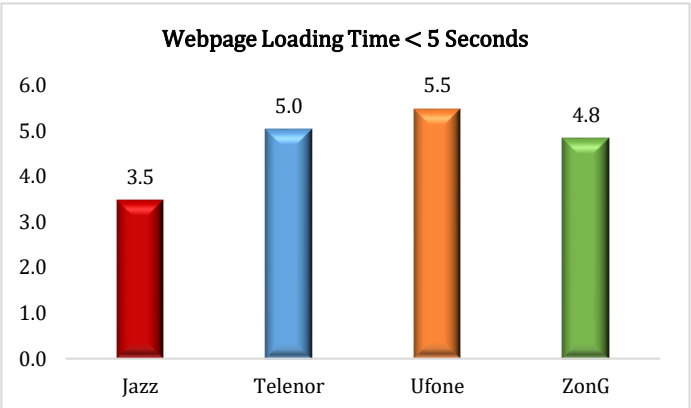




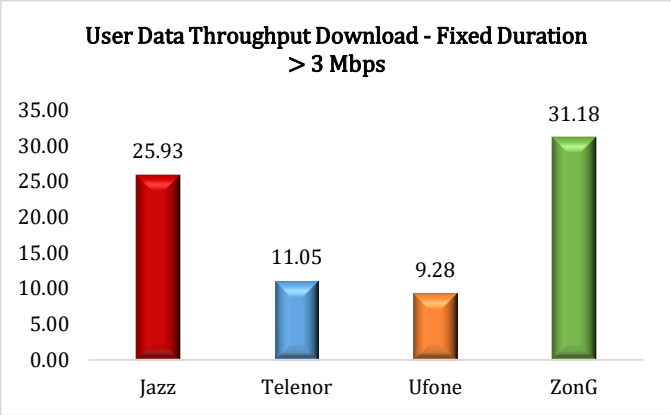


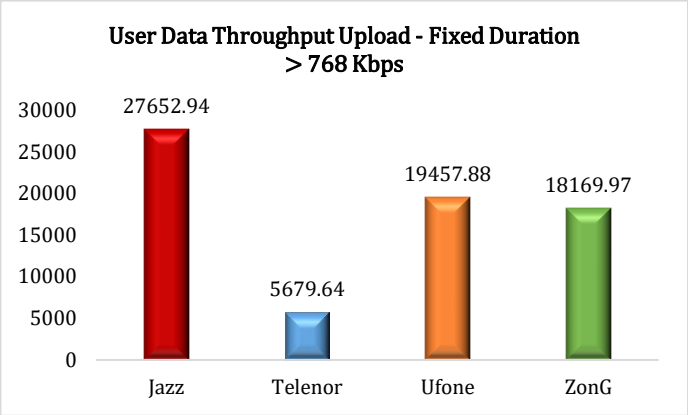


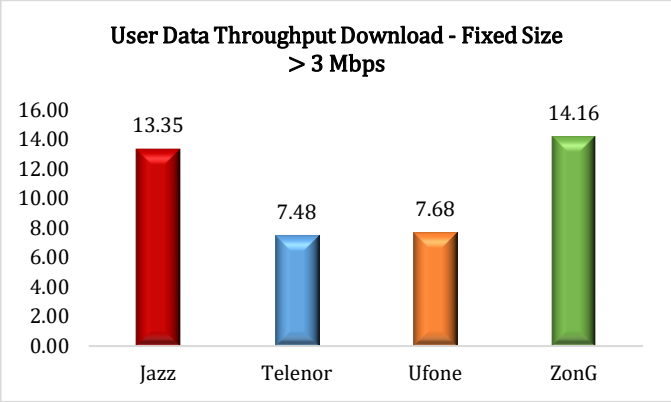


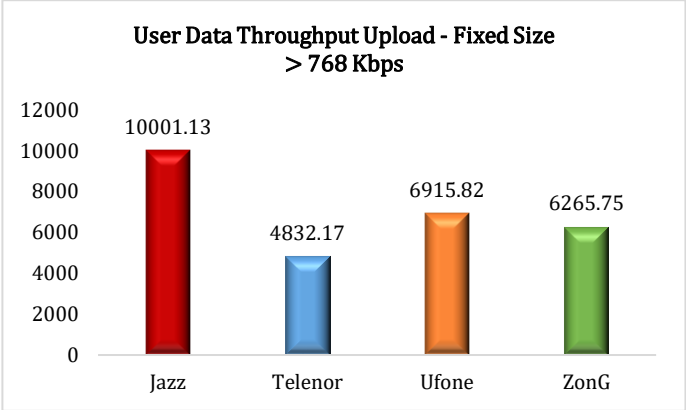


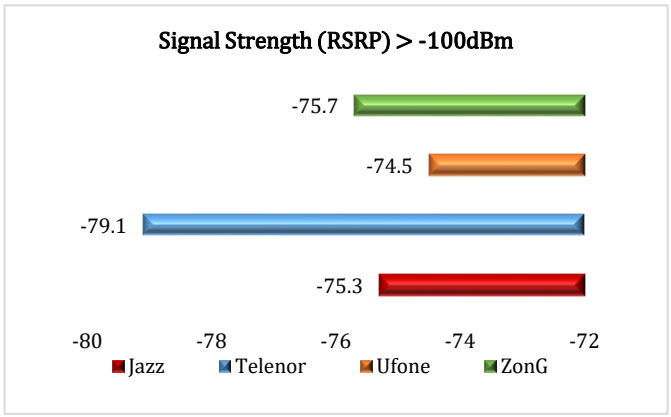
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – KARACHI SOUTH

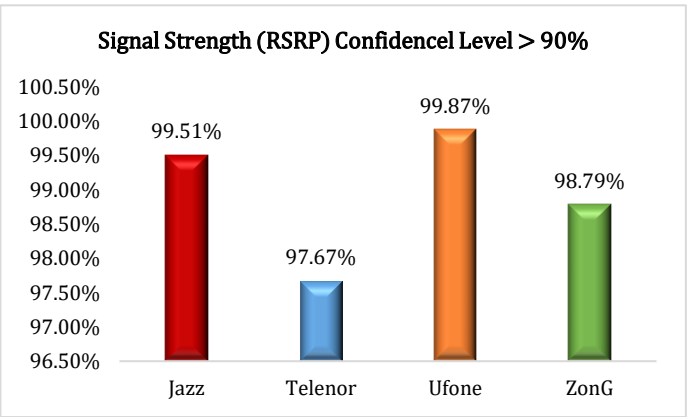


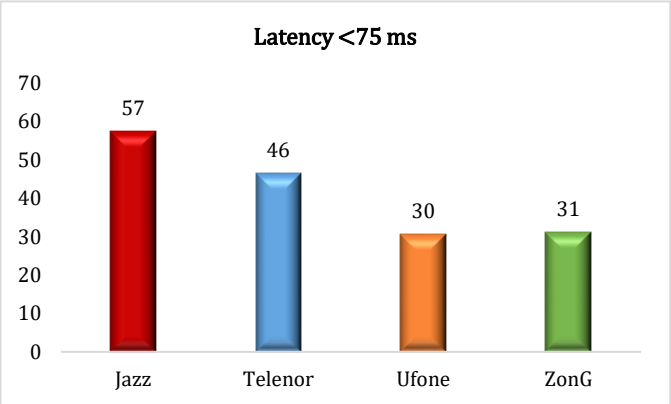


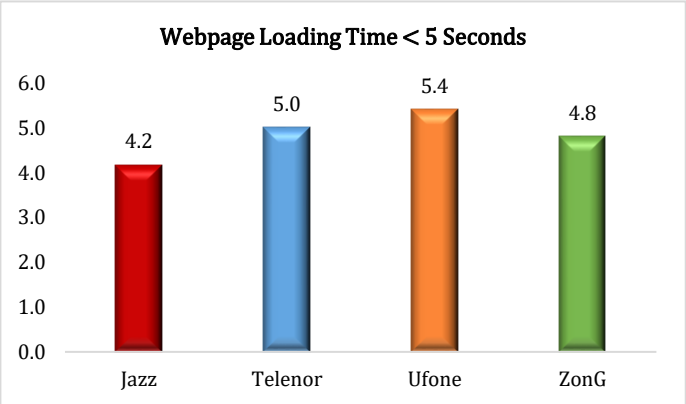




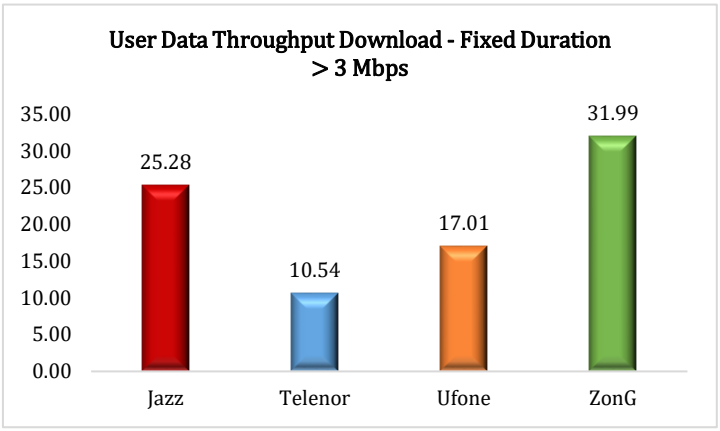


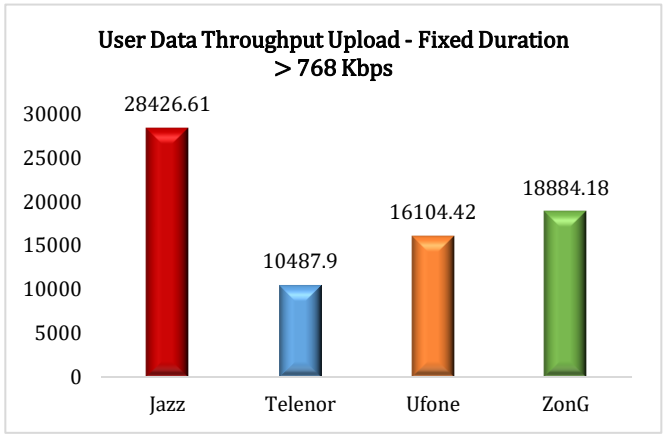


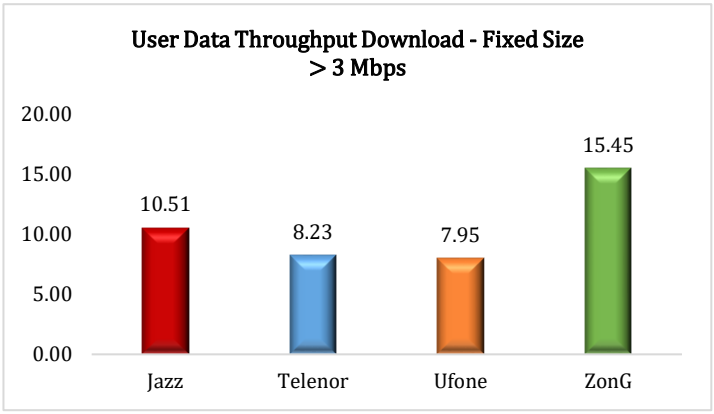


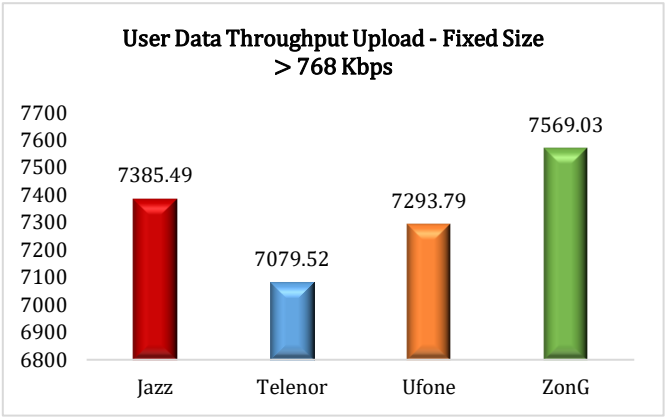


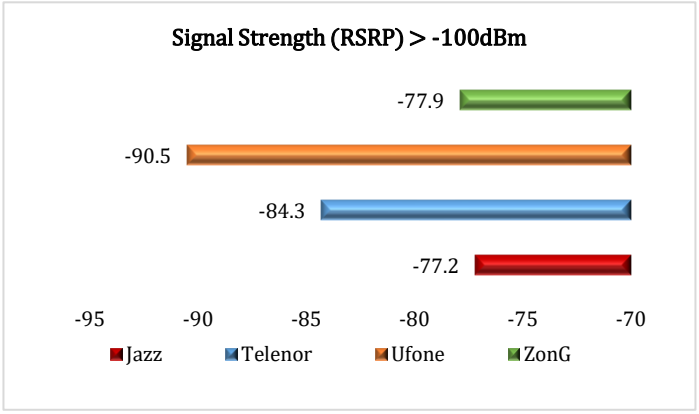
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – NANKANA SAHIB

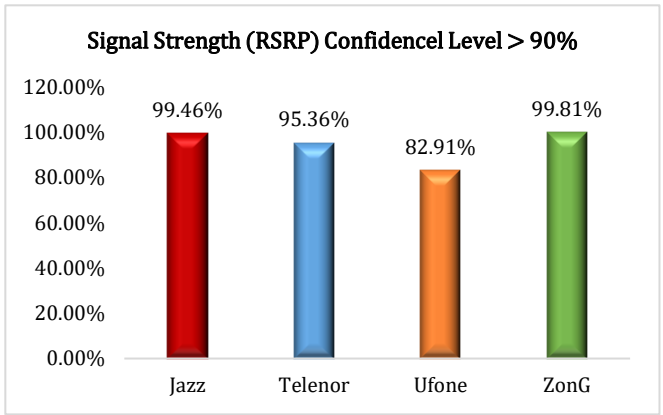


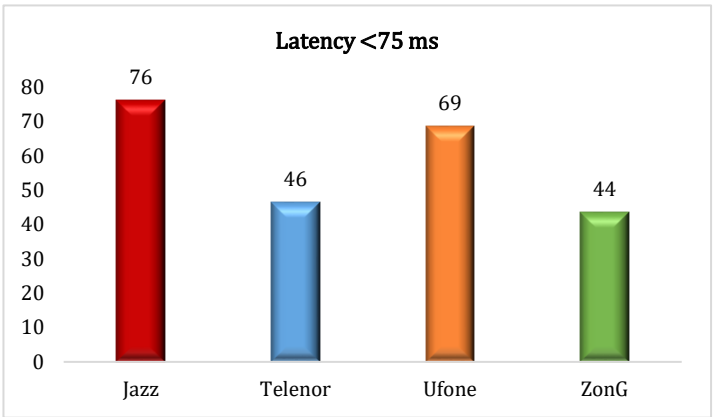


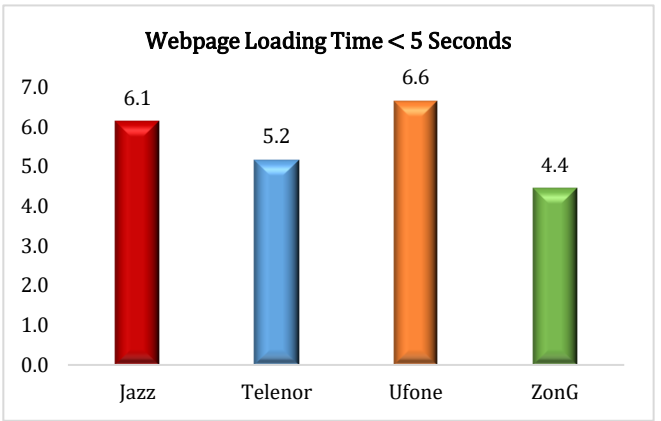




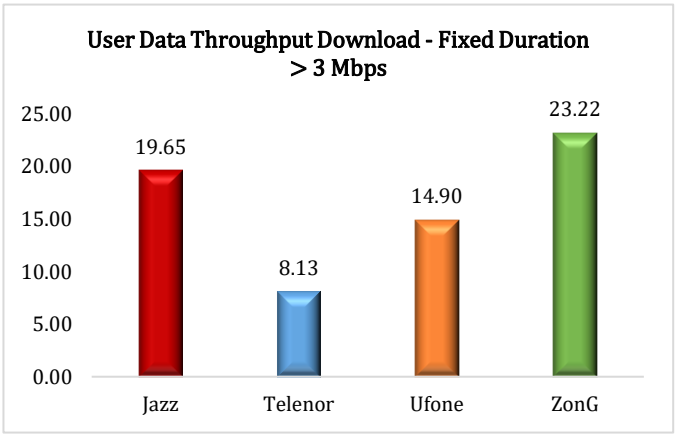


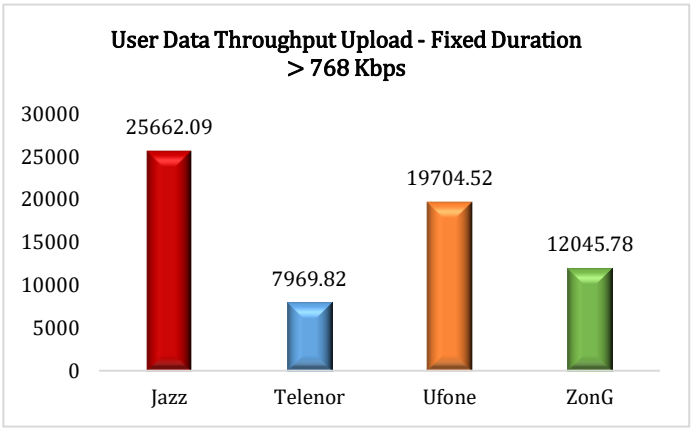


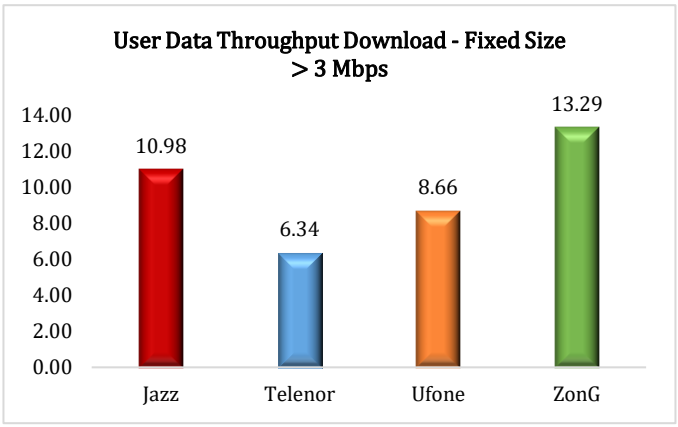


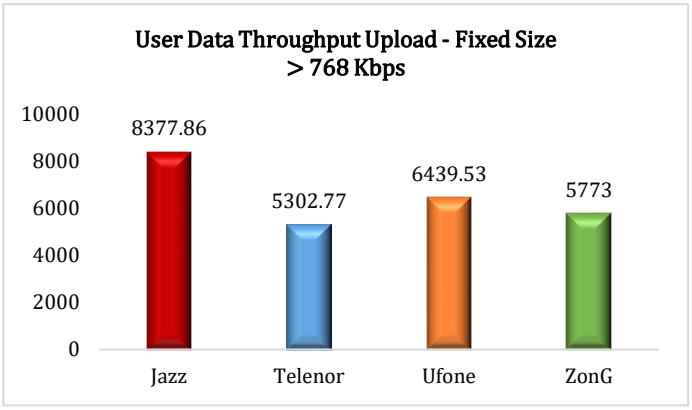


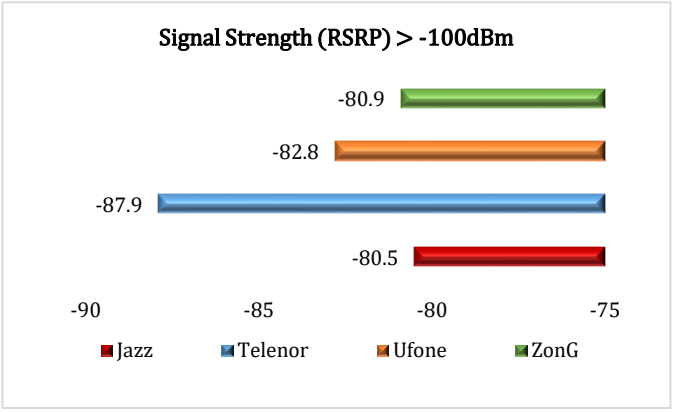
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – MURIDKE

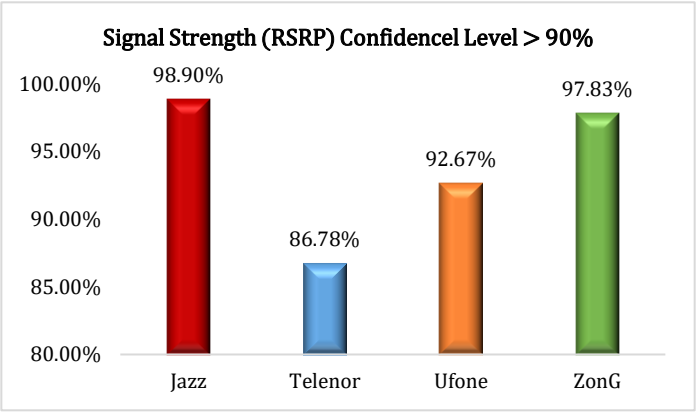


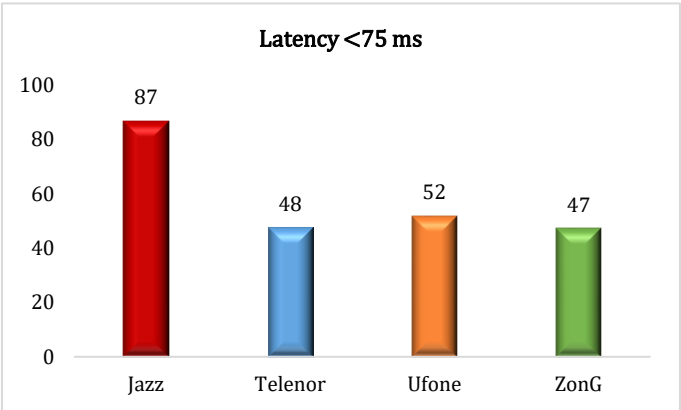


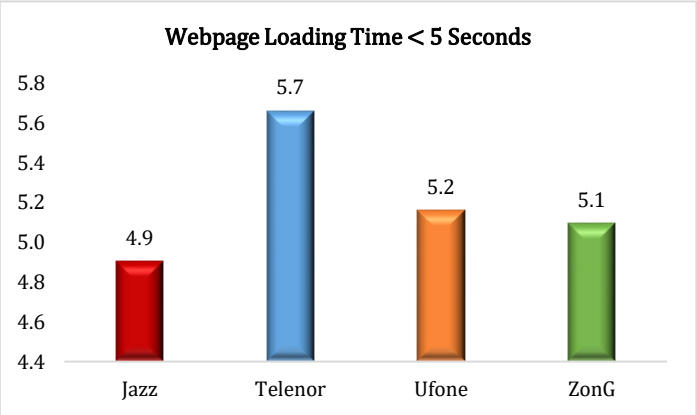




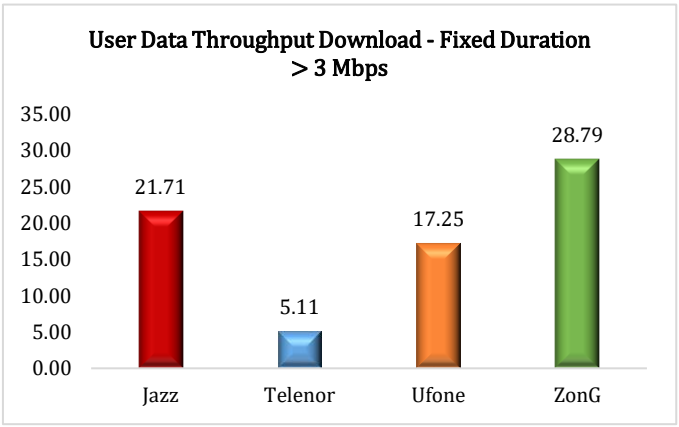


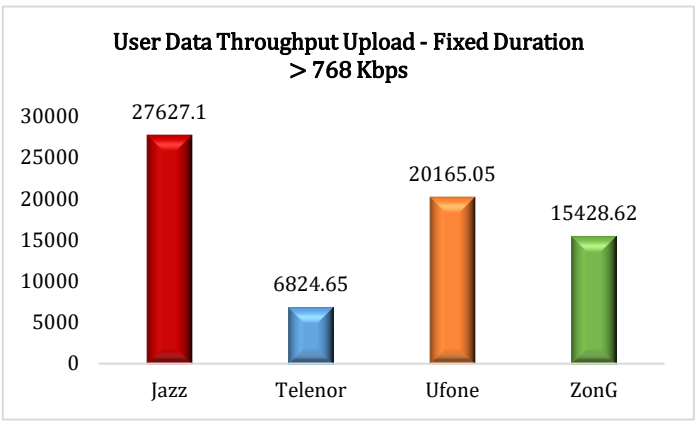


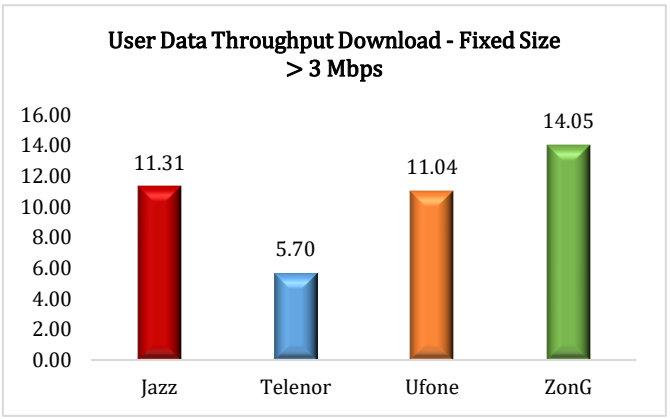


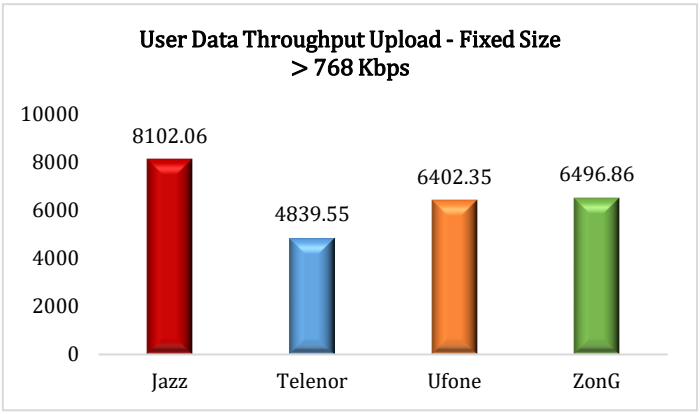


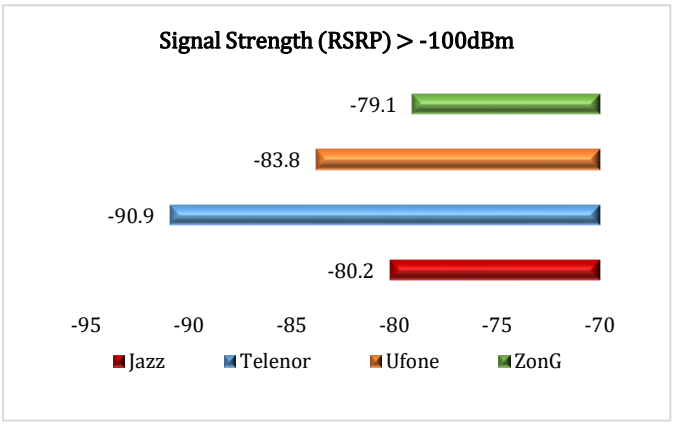
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – DEPALPUR

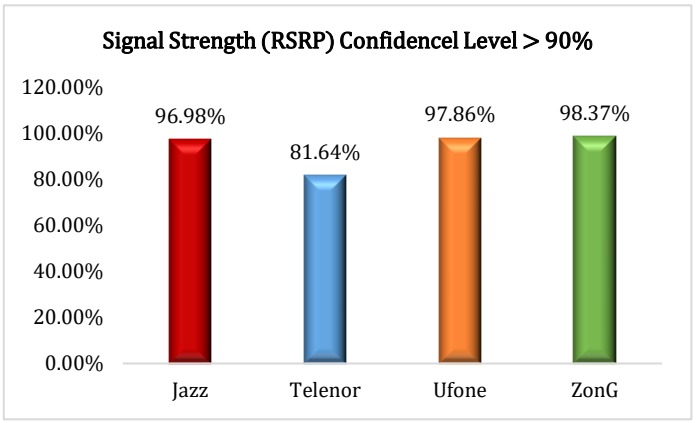


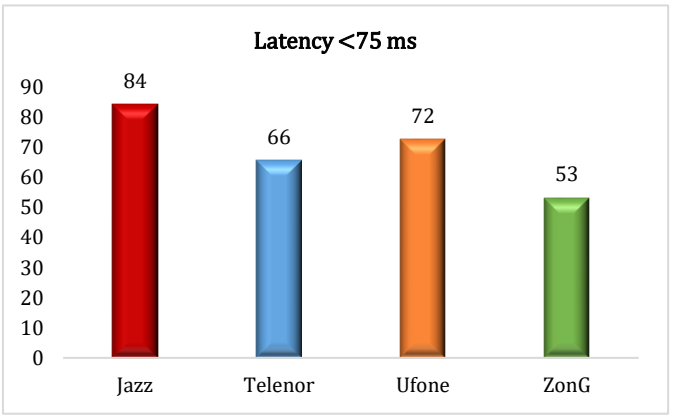


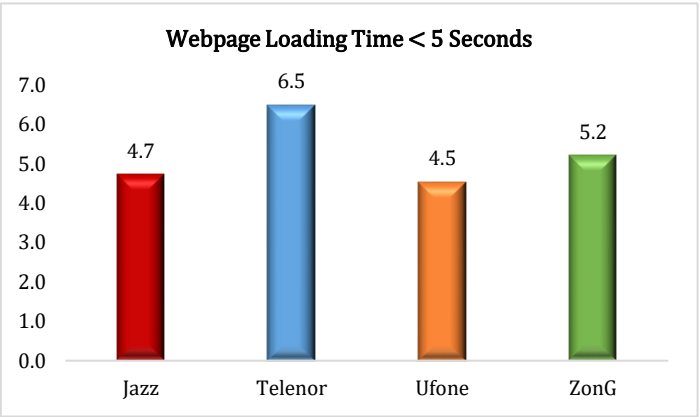




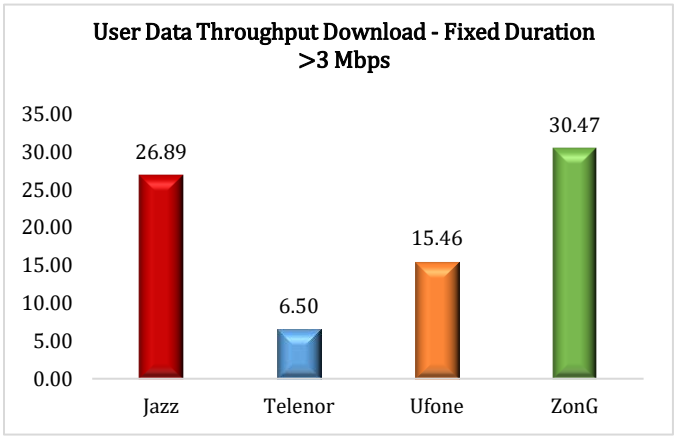


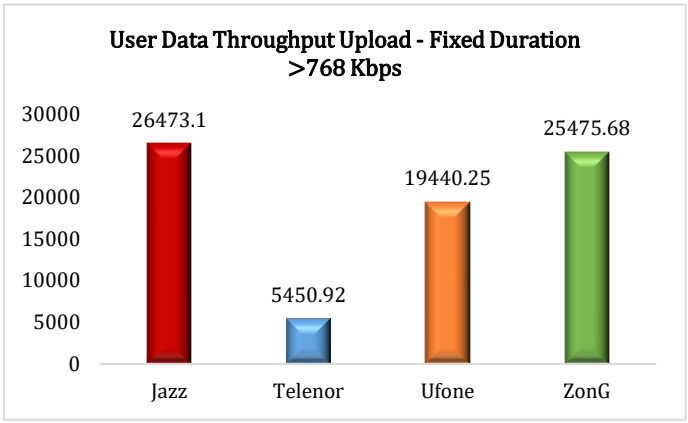


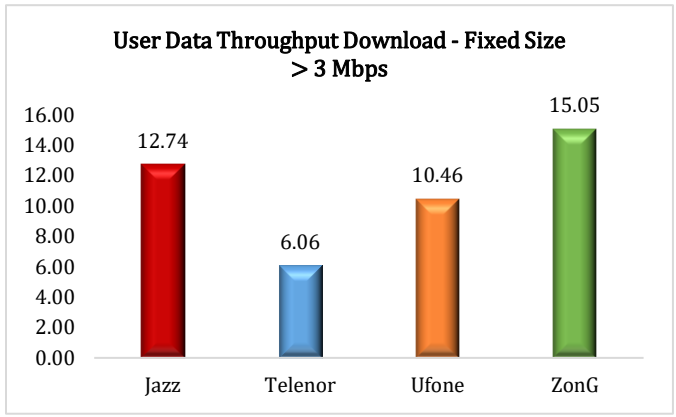


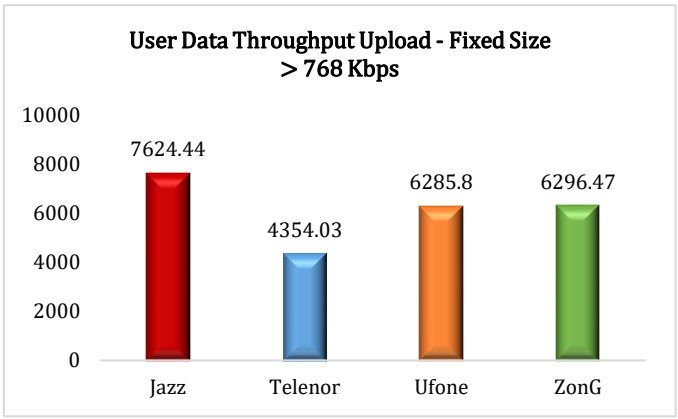


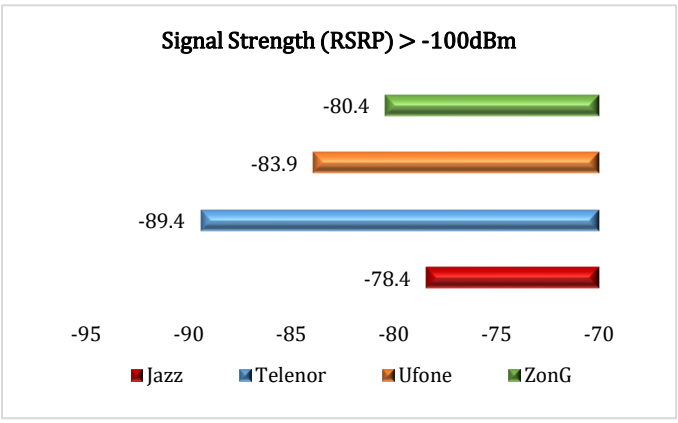
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – CHICHAWATNI

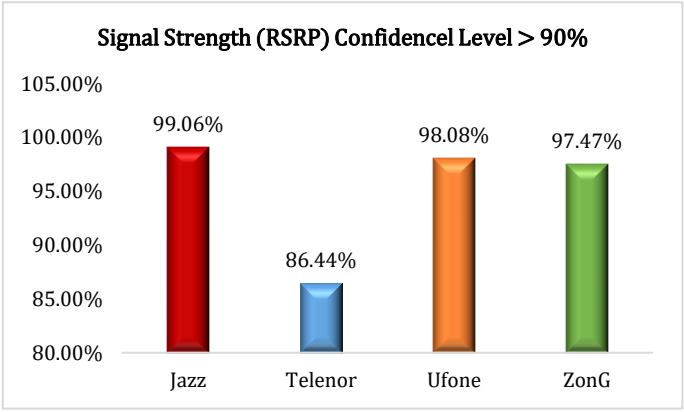


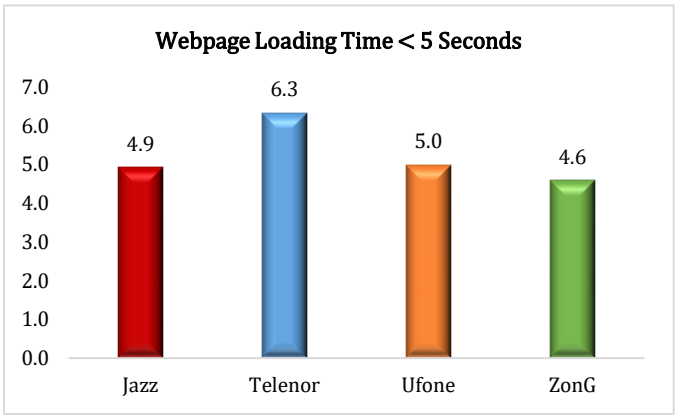


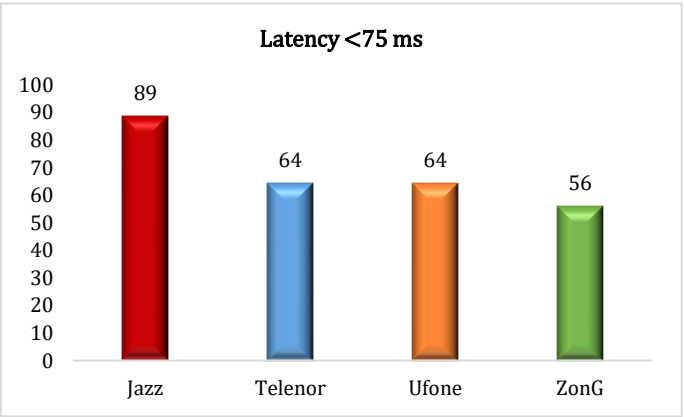




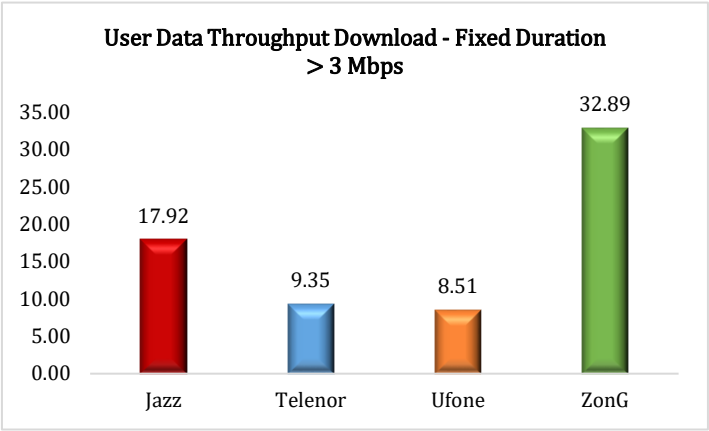


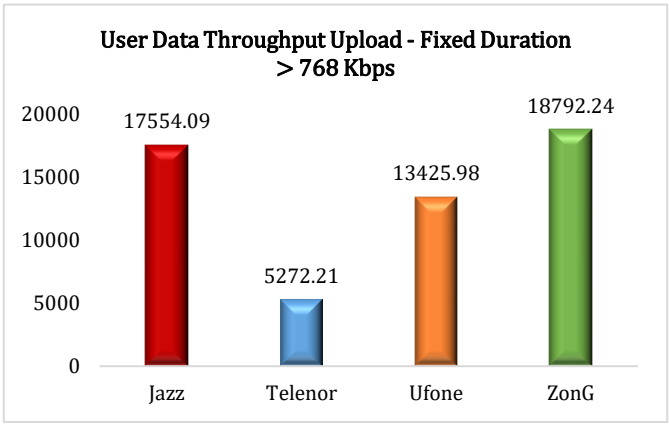


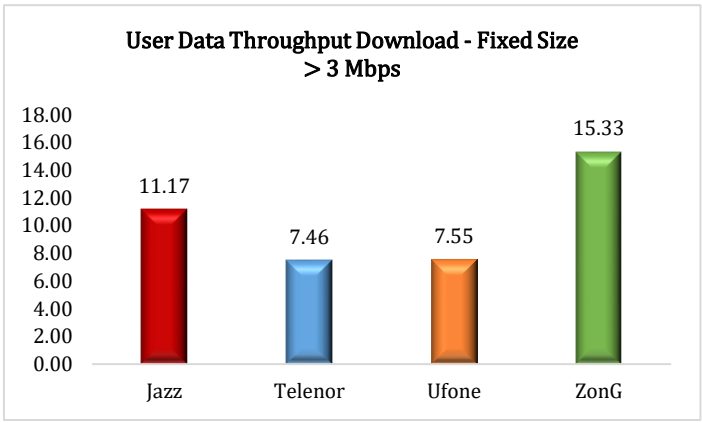


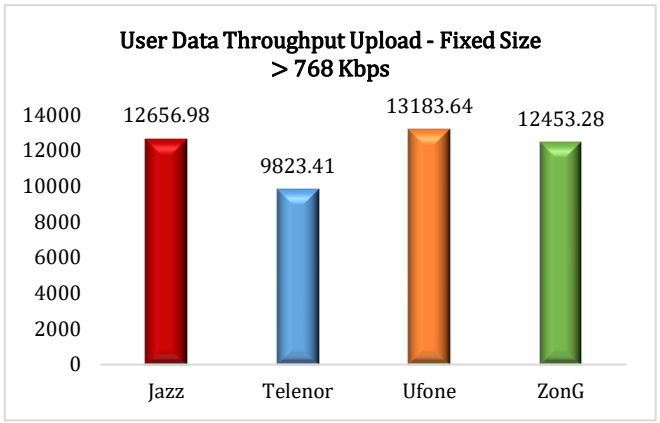


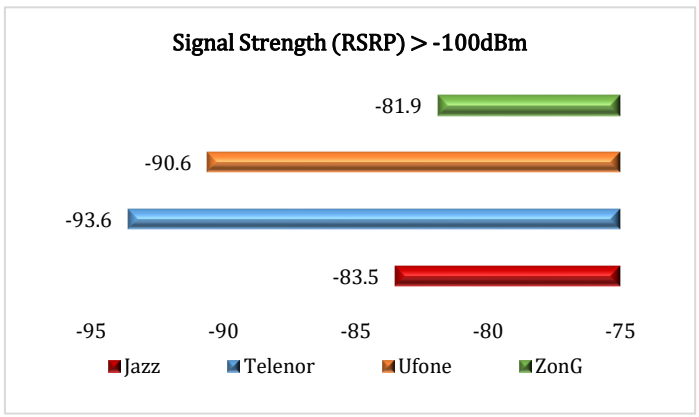
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – SHUJABAD

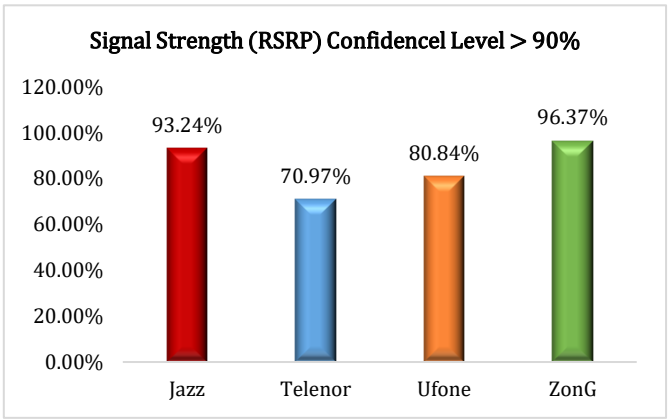


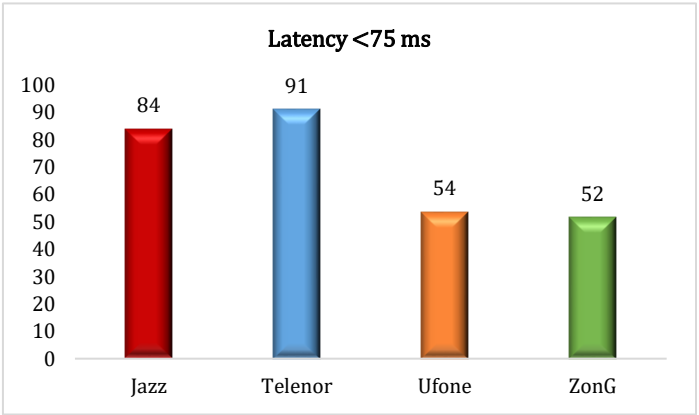


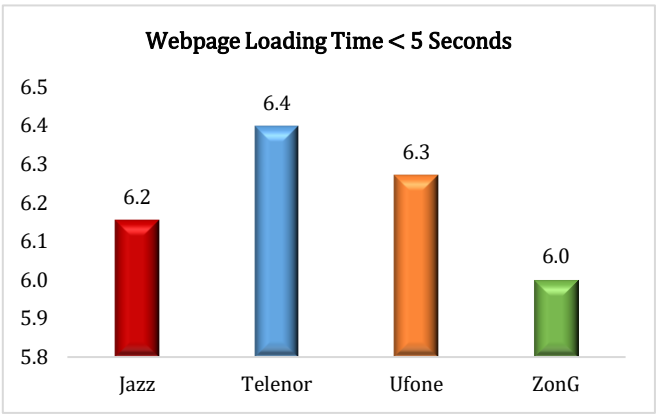




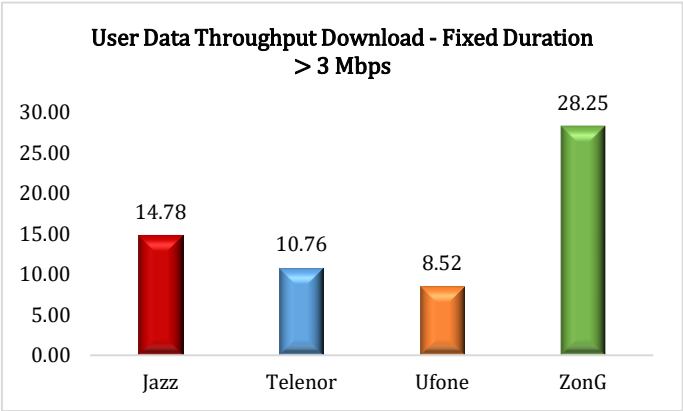


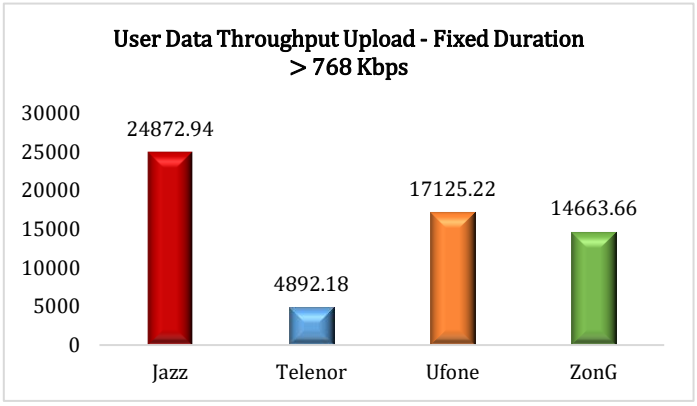


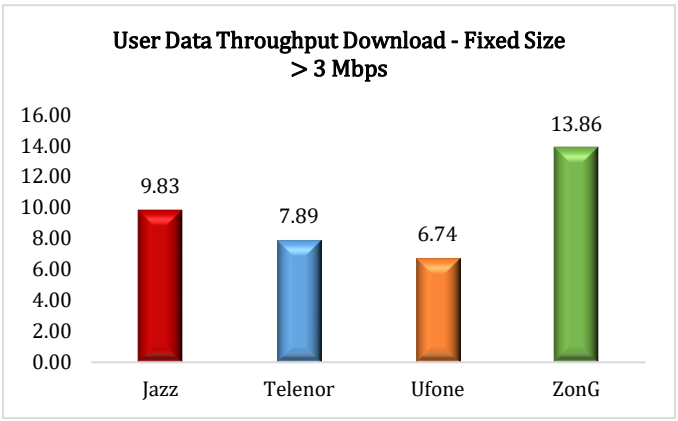


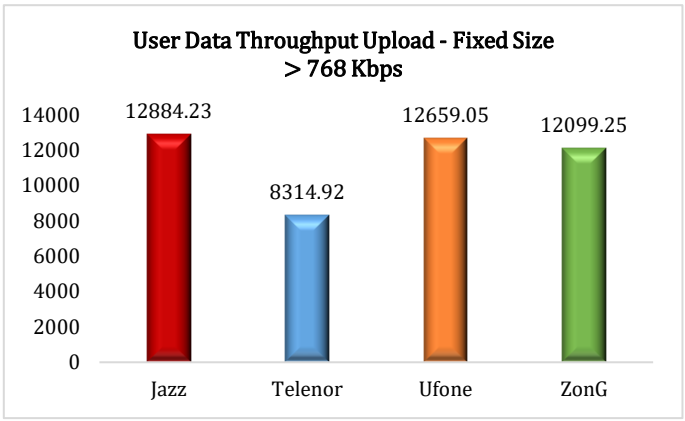


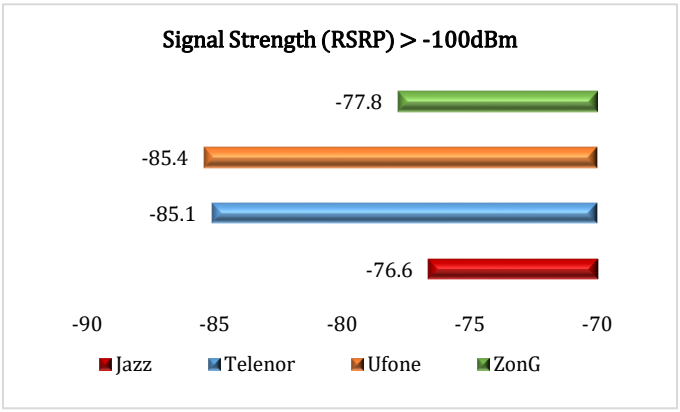
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – KABIRWALA

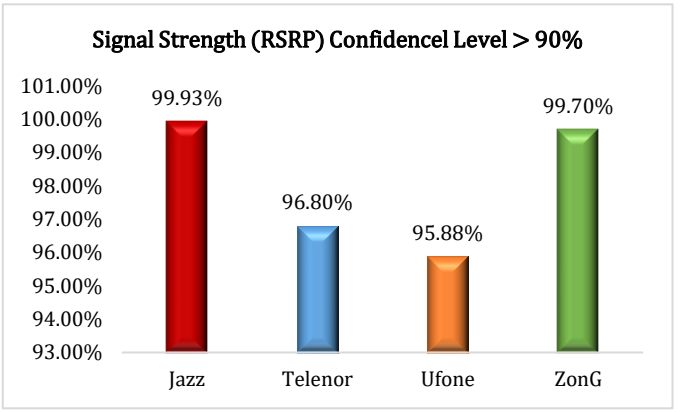


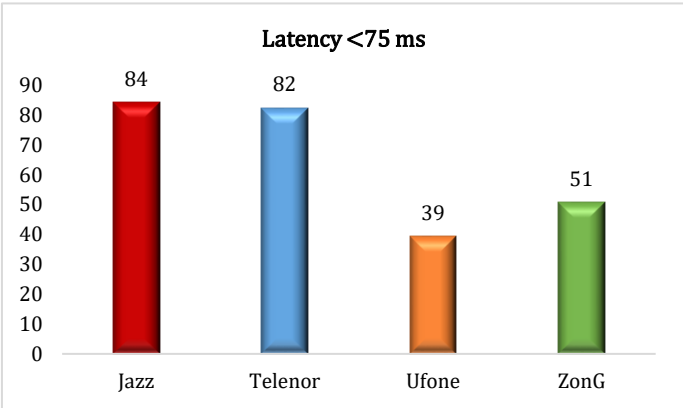


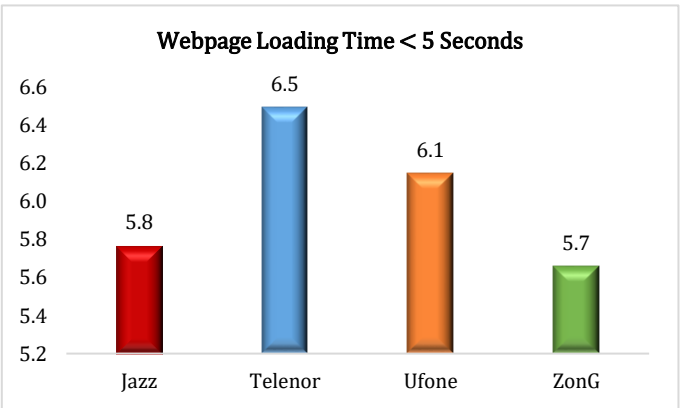




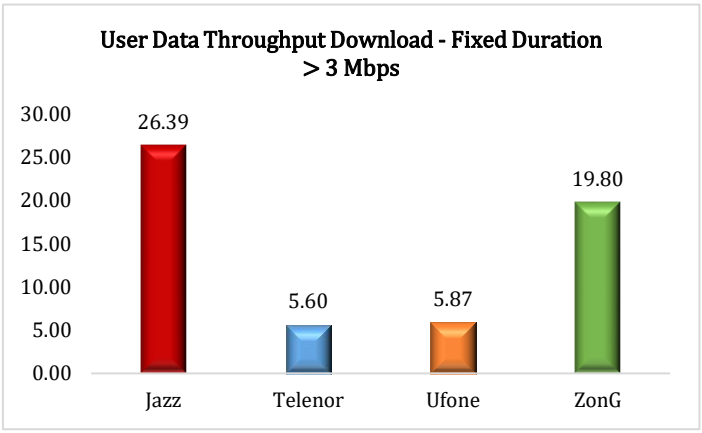


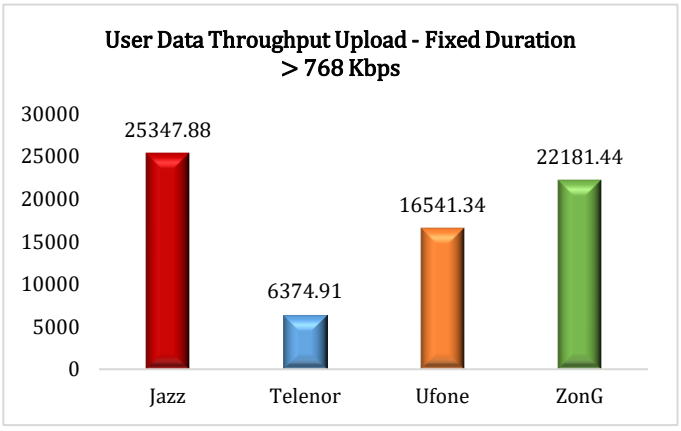


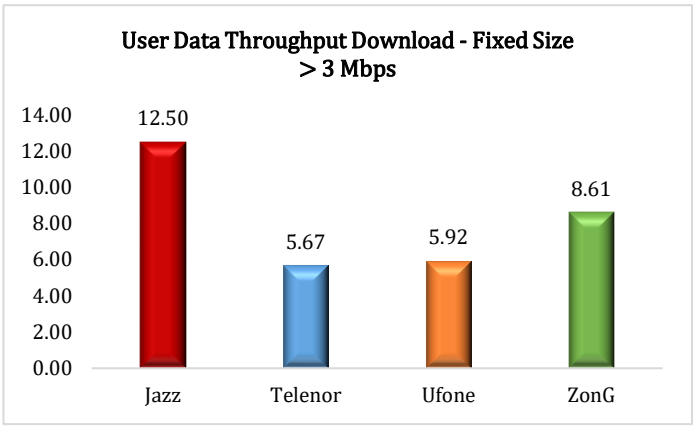


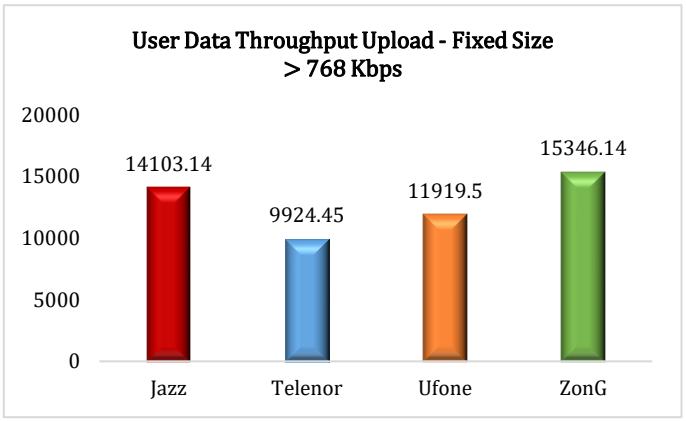


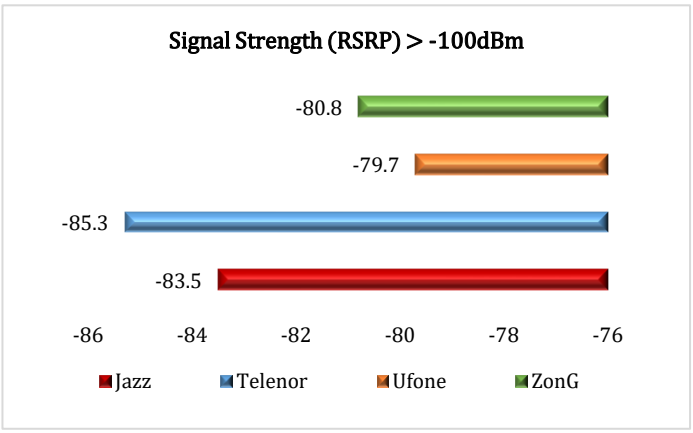
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – NOWSHERA

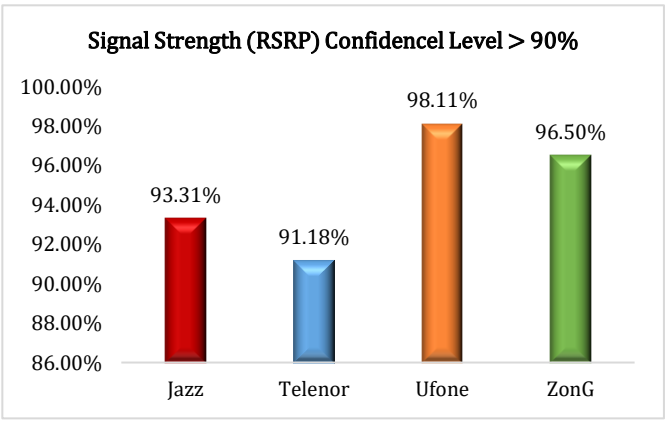


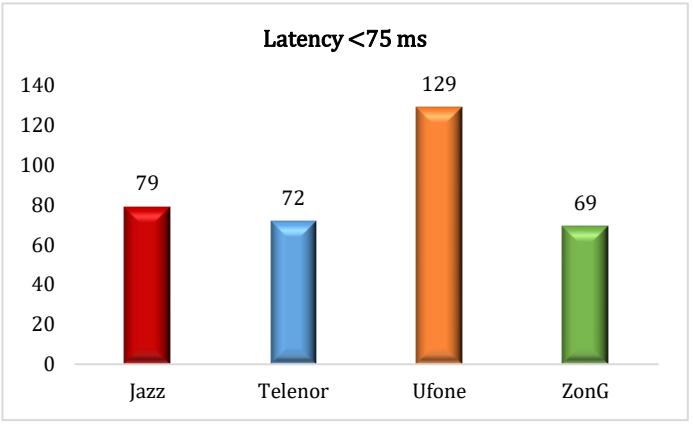


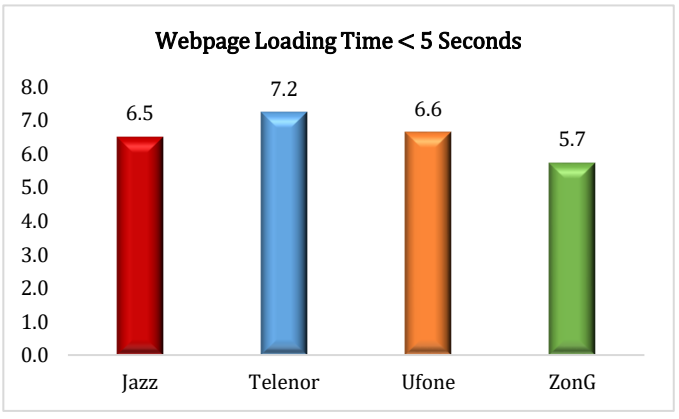




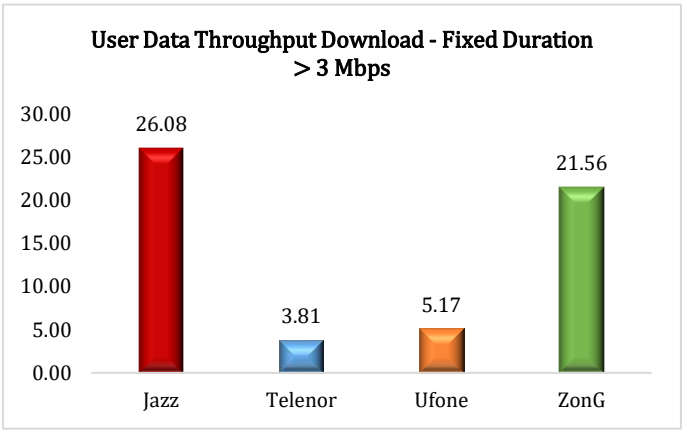


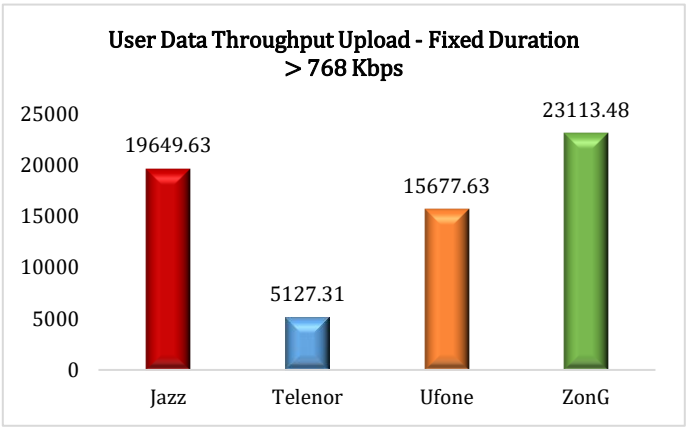


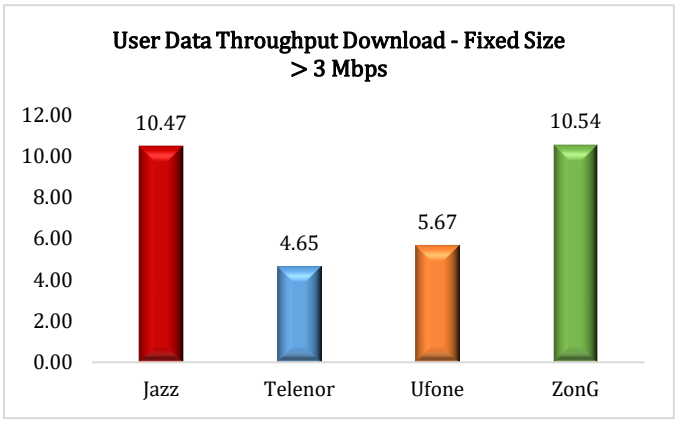


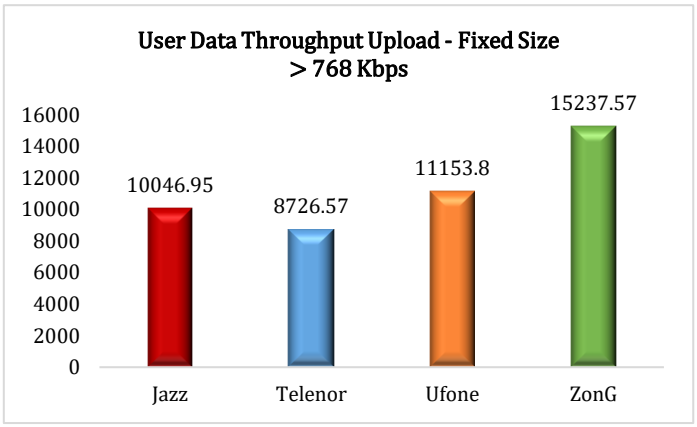


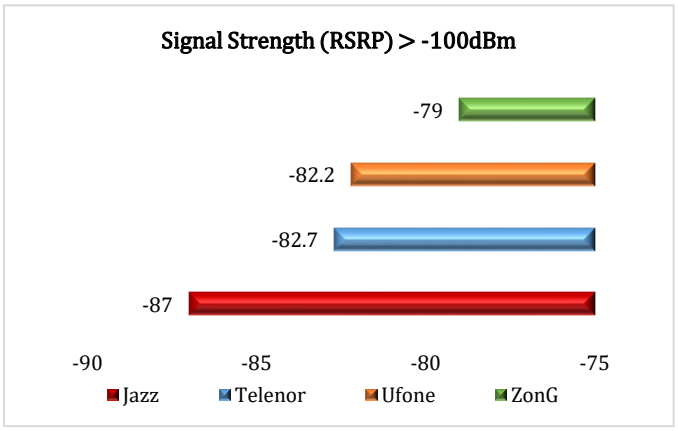
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) – SWABI

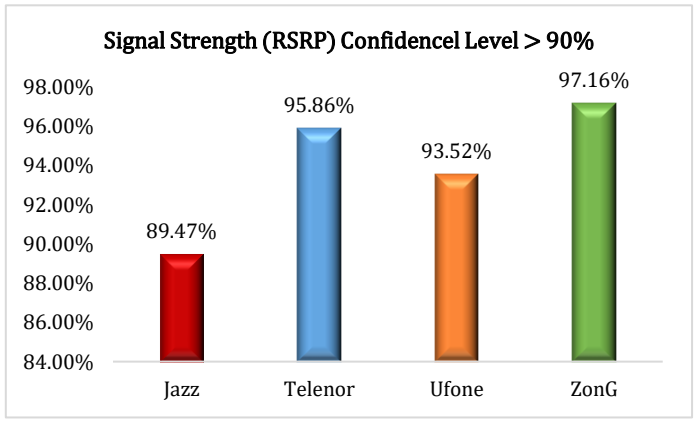


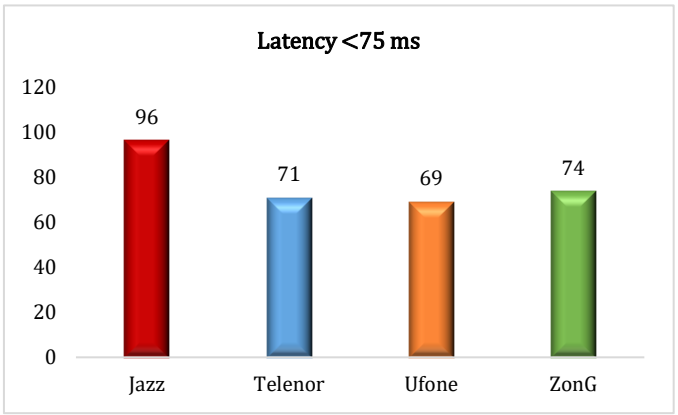


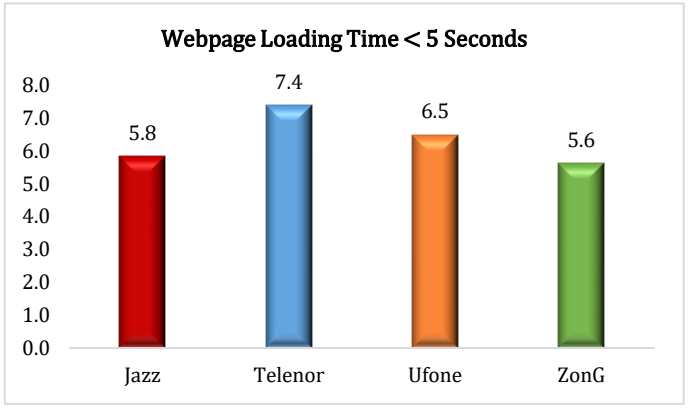




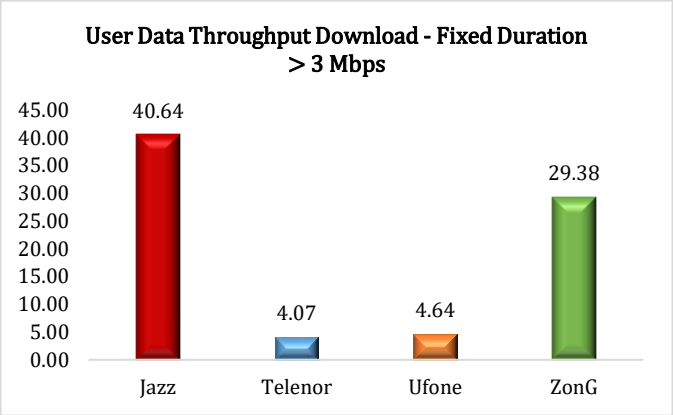


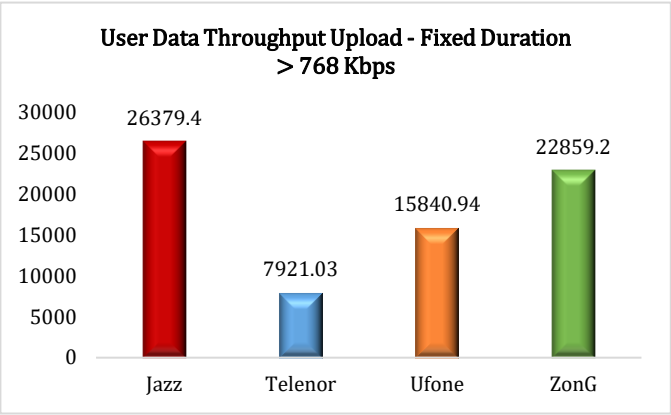


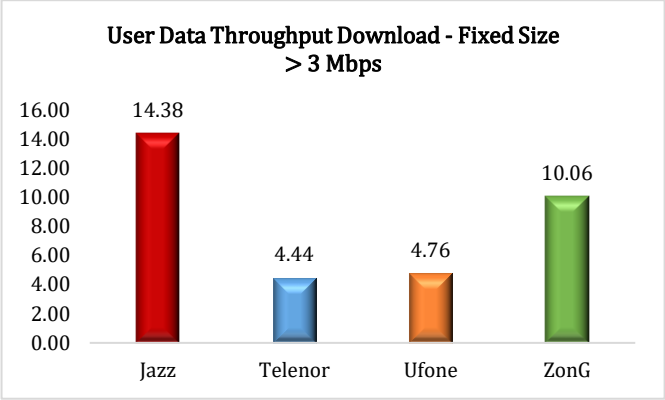


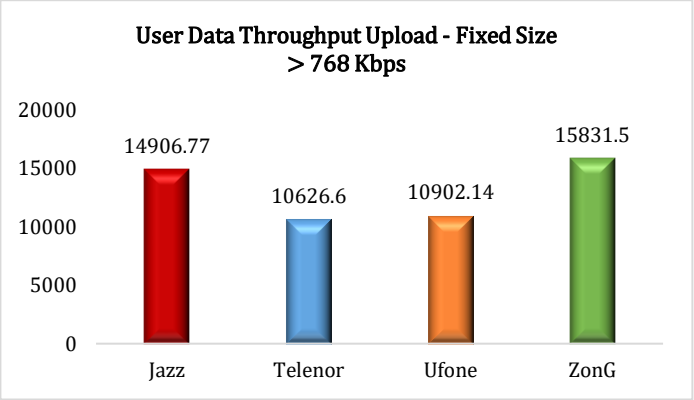


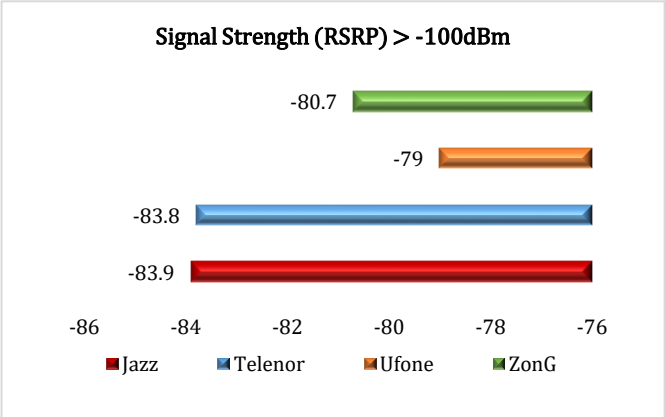
QUALITY OF SERVICE SURVEY RESULTS (AUTOMODE) –KARAK

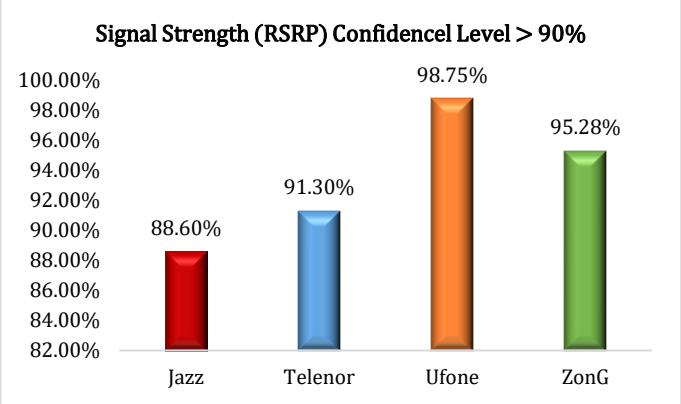


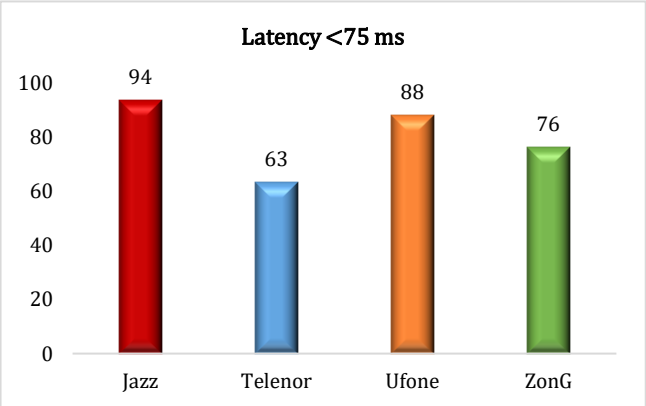


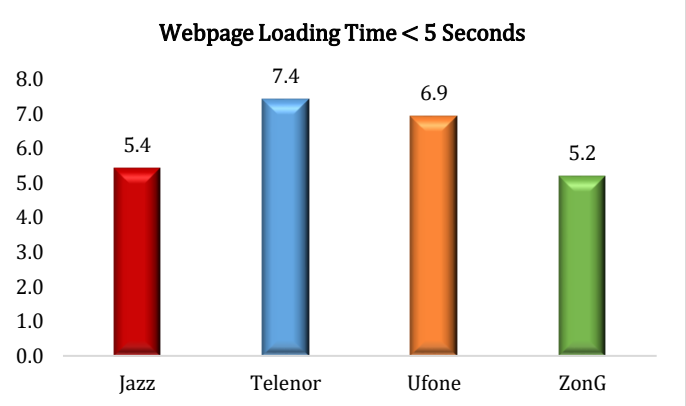








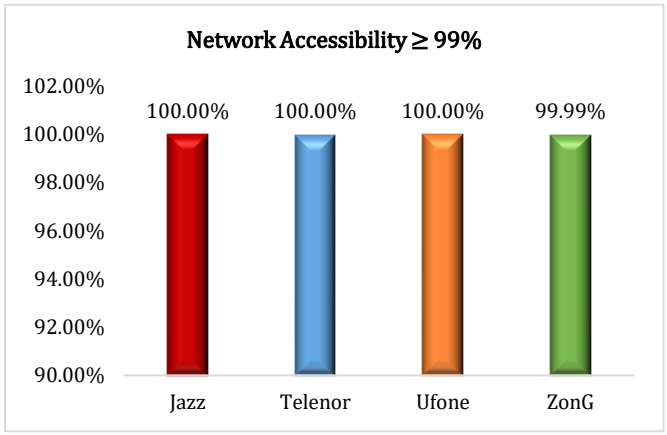


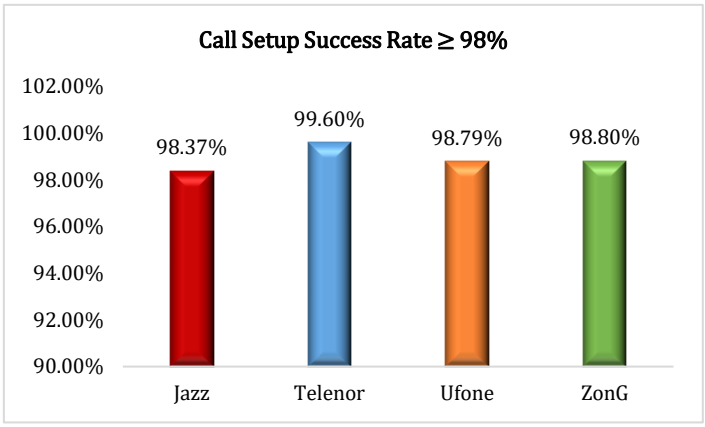


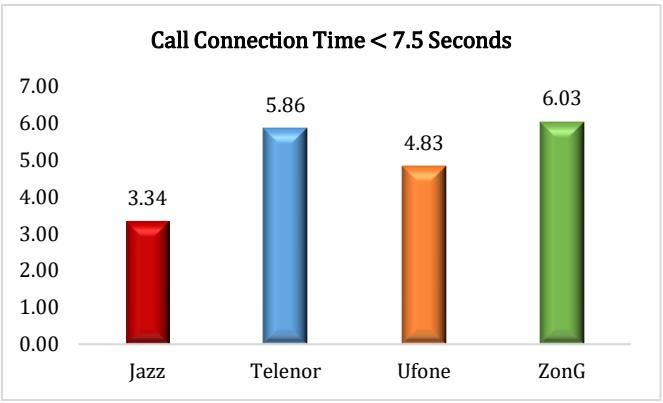
Annex-C (Voice & SMS Results)

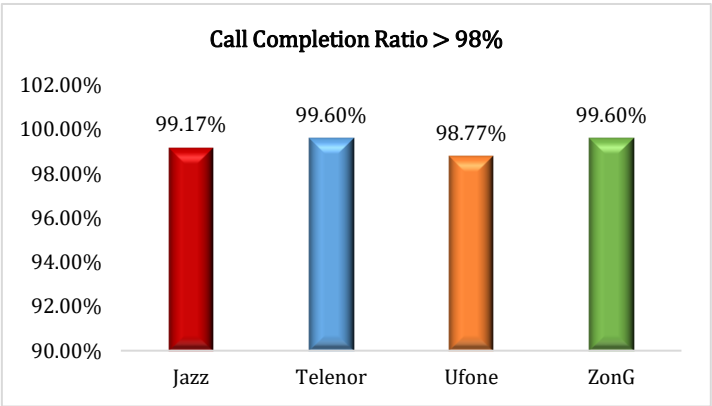
VOICE AUTOMODE

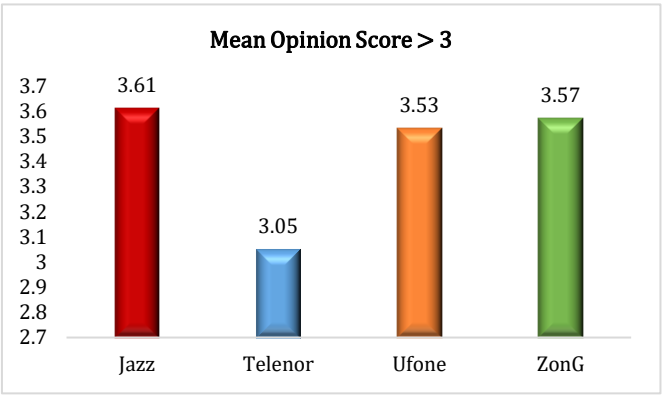
QUALITY OF SERVICE SURVEY RESULTS –KARACHI MALIR

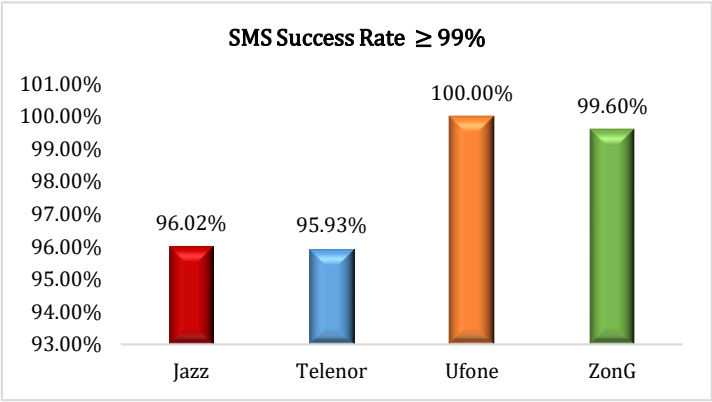


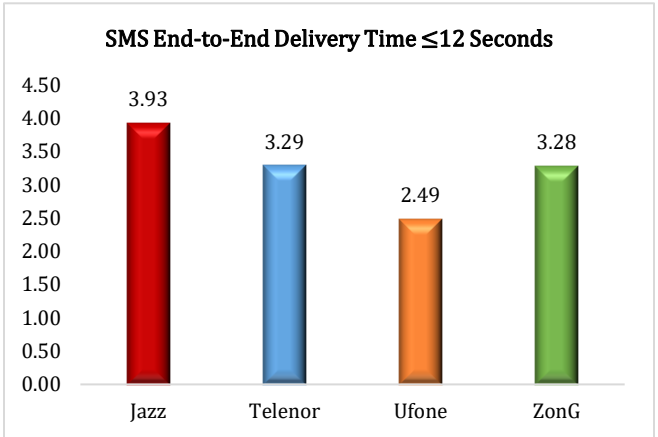




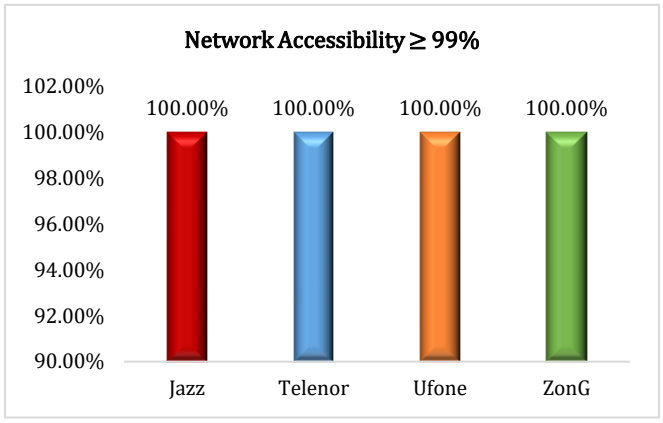


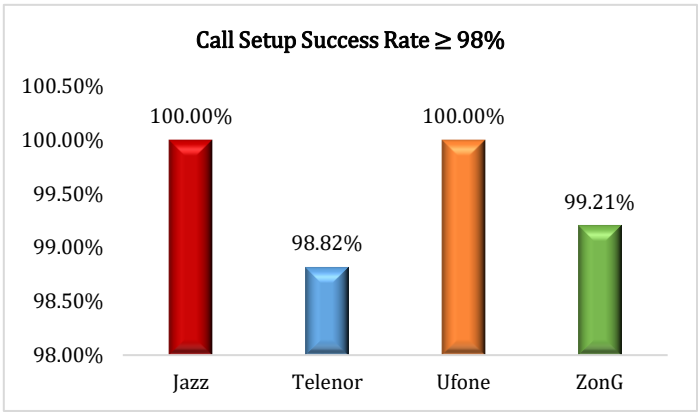


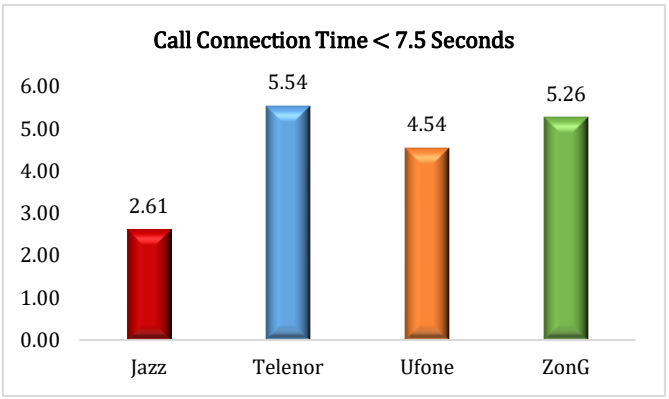


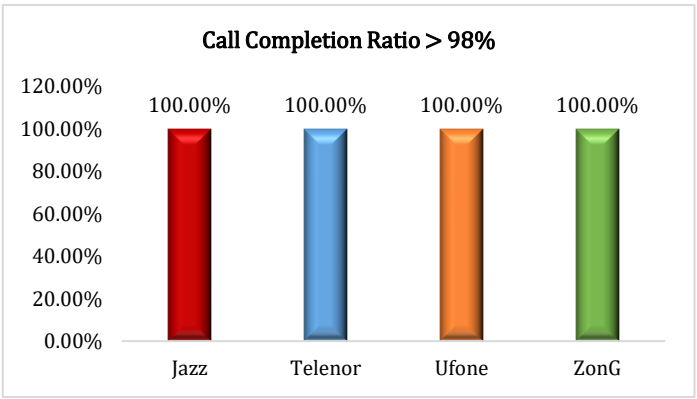


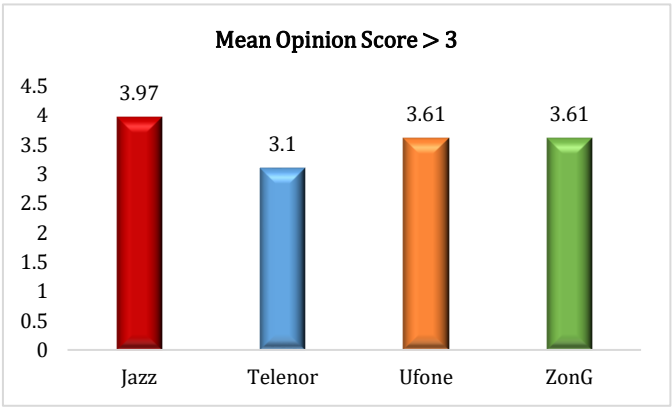
QUALITY OF SERVICE SURVEY RESULTS – KARACHI CENTRAL

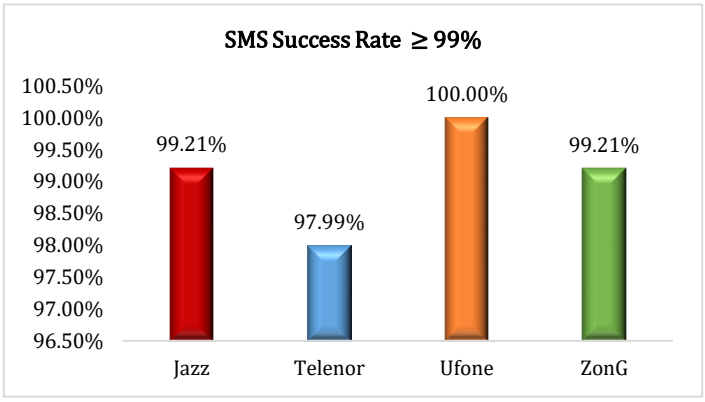


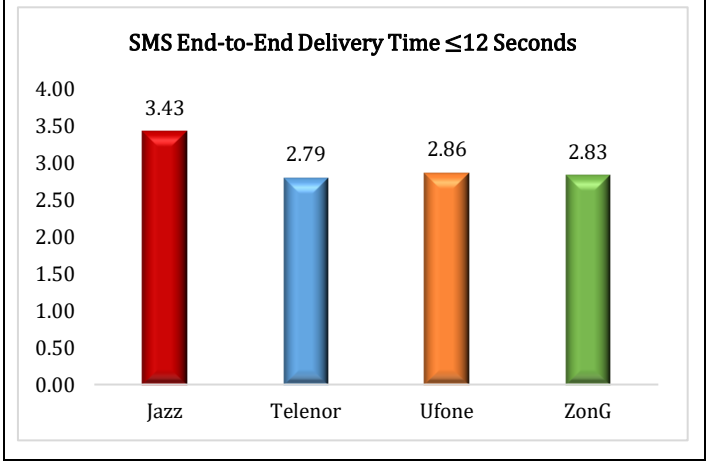




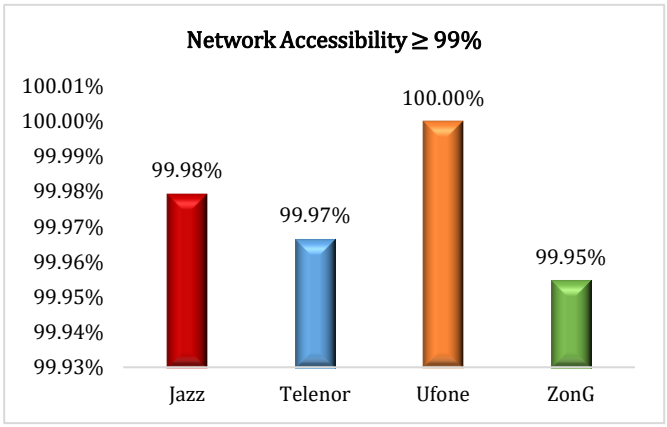


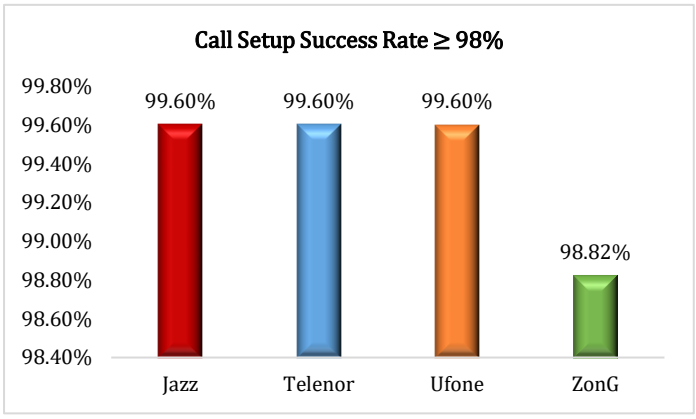


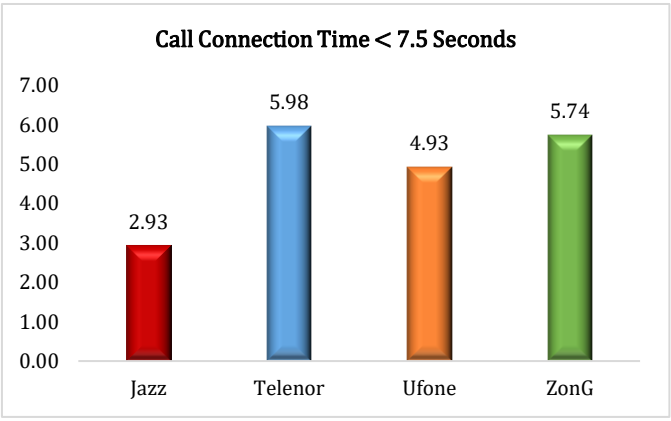


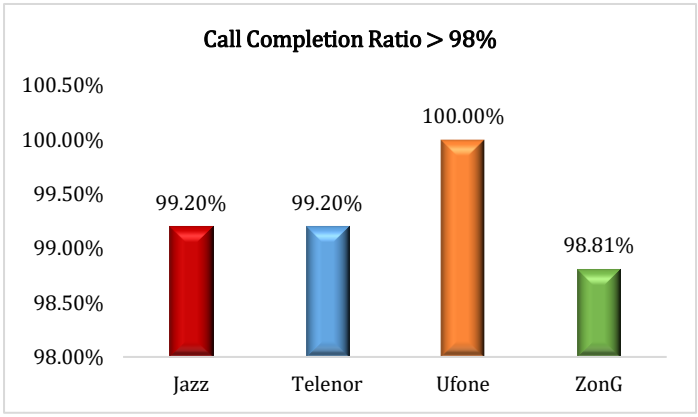


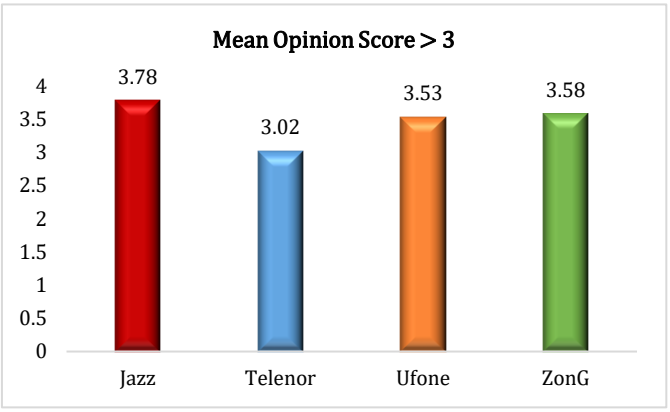
QUALITY OF SERVICE SURVEY RESULTS – KARACHI KEMARI

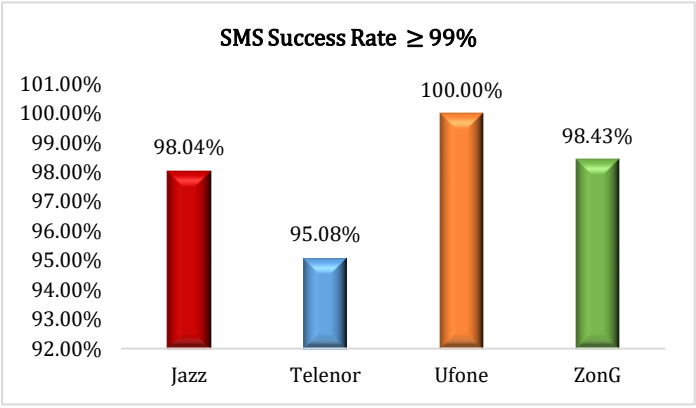


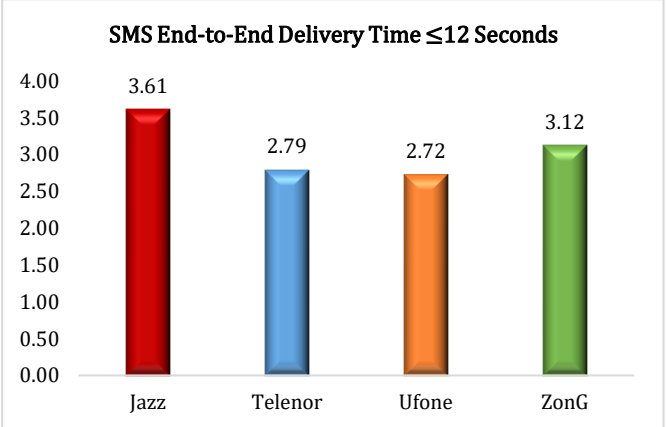




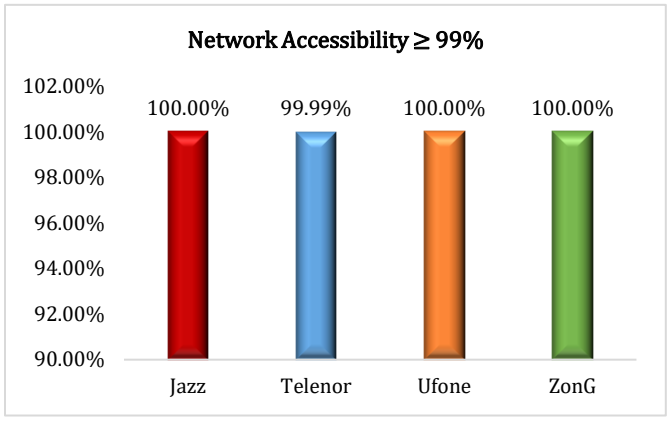


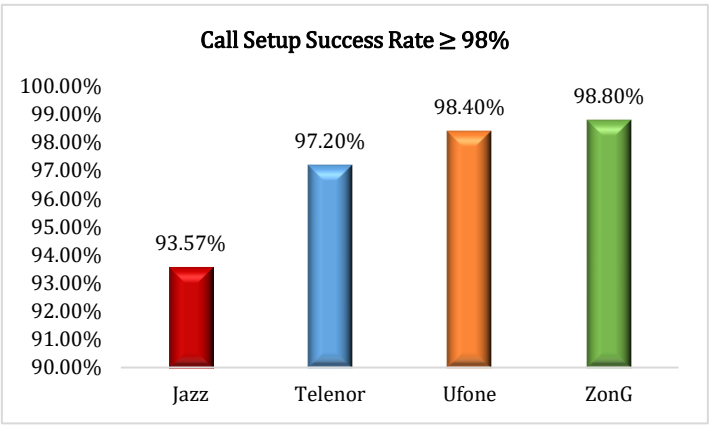


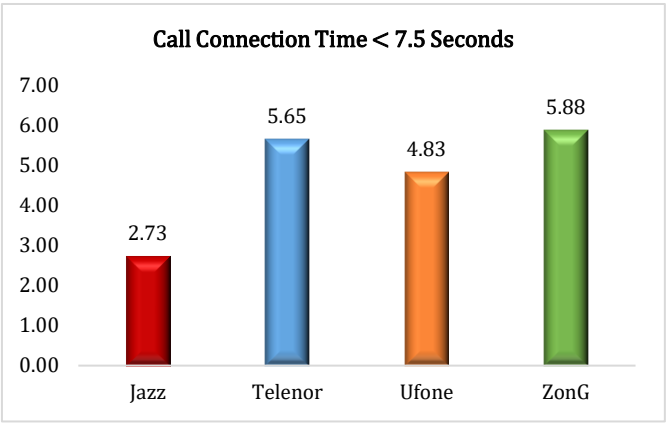


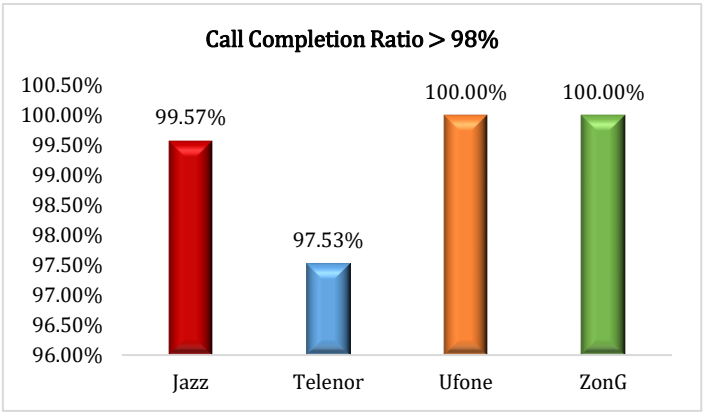


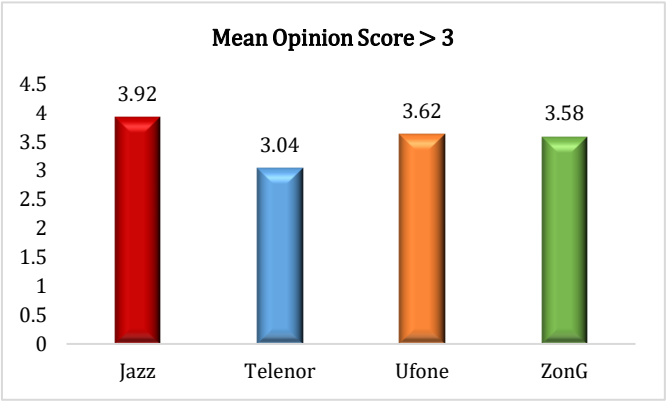
QUALITY OF SERVICE SURVEY RESULTS – KARACHI WEST

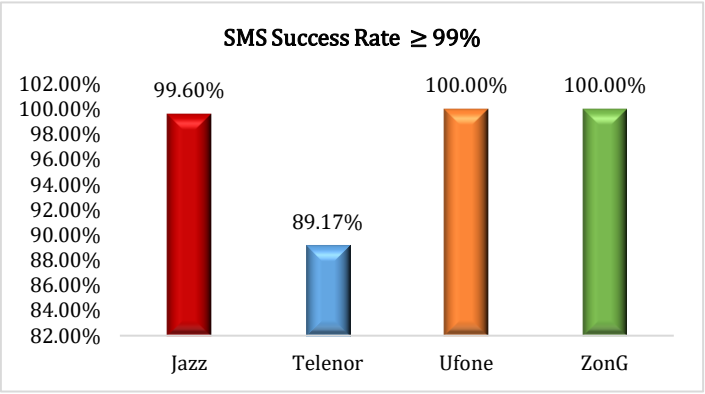


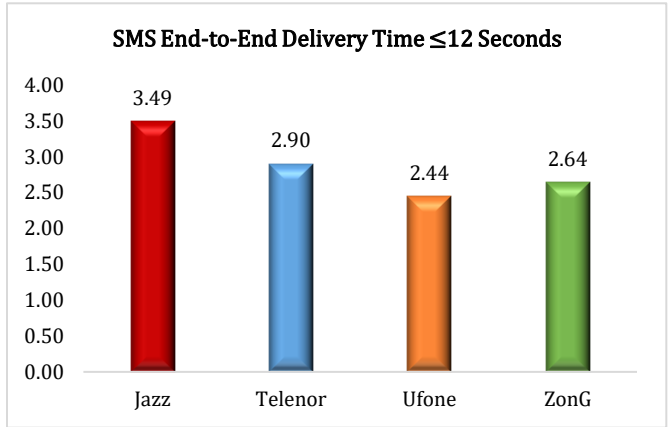




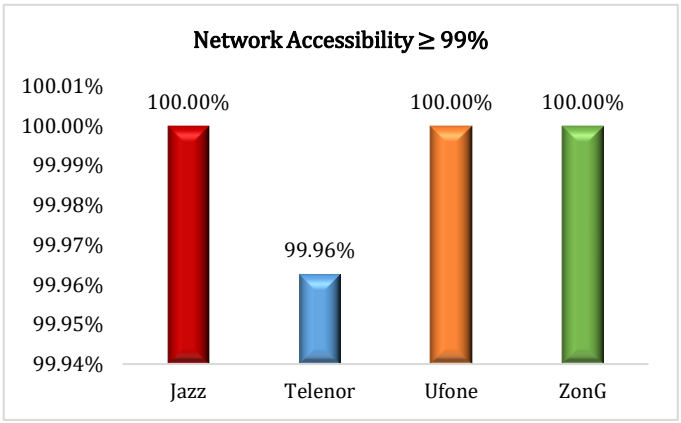


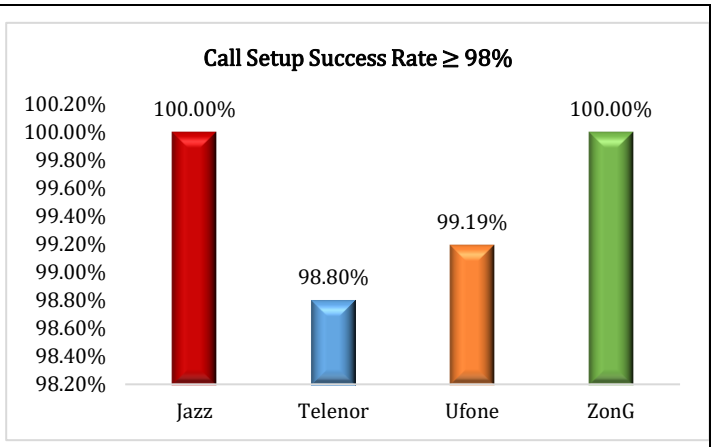


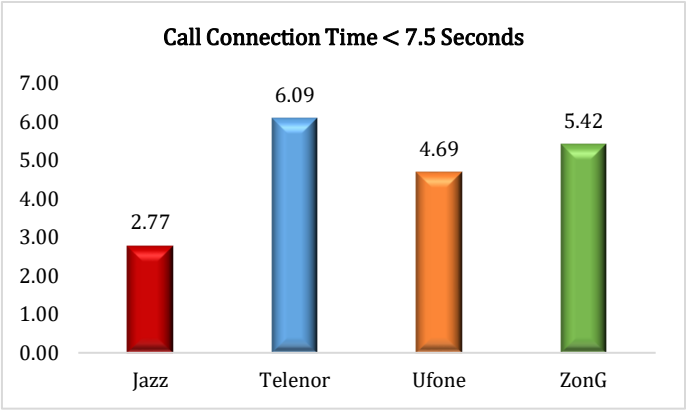


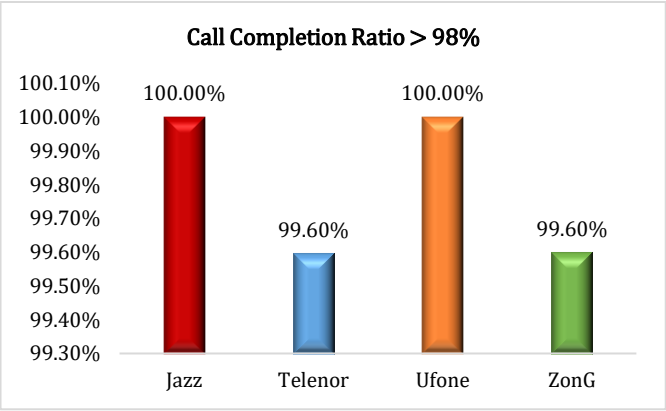


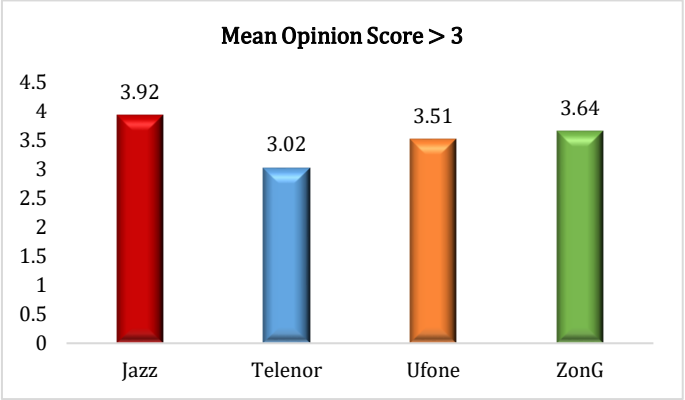
QUALITY OF SERVICE SURVEY RESULTS – KARACHI SOUTH

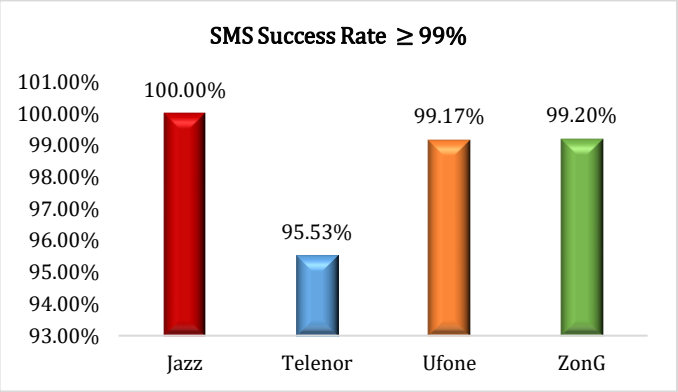


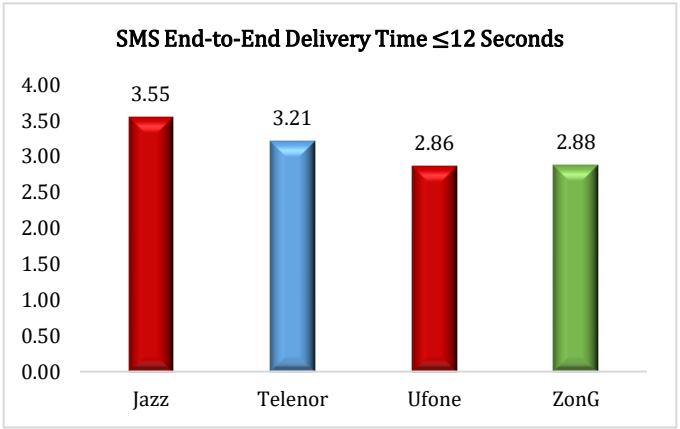




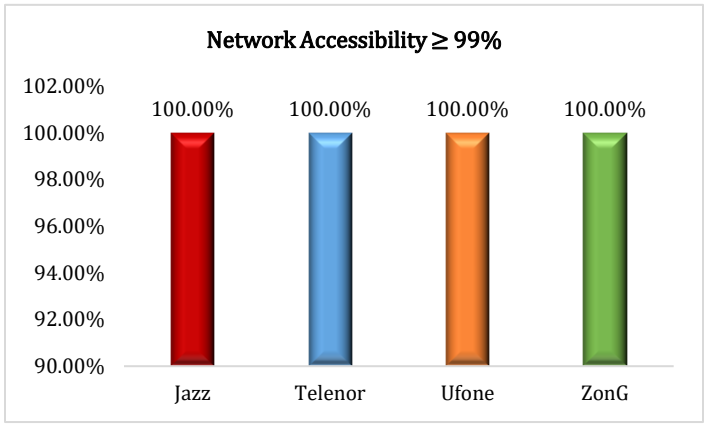


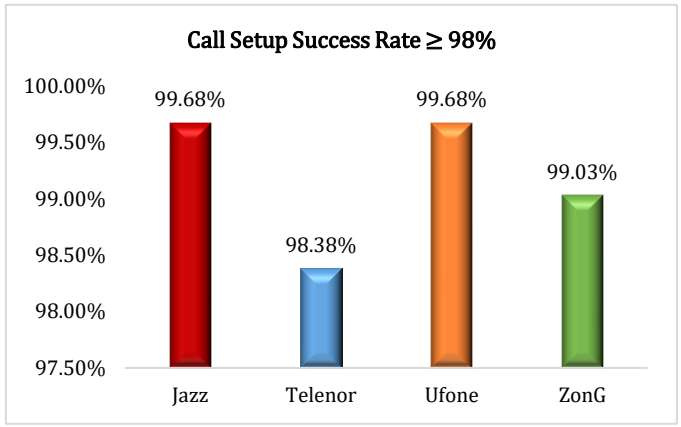


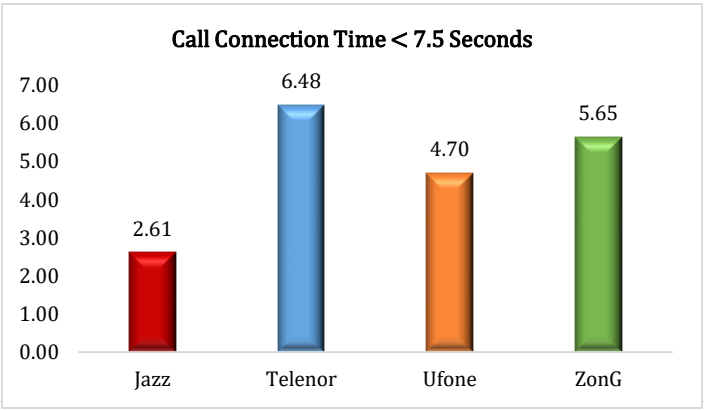


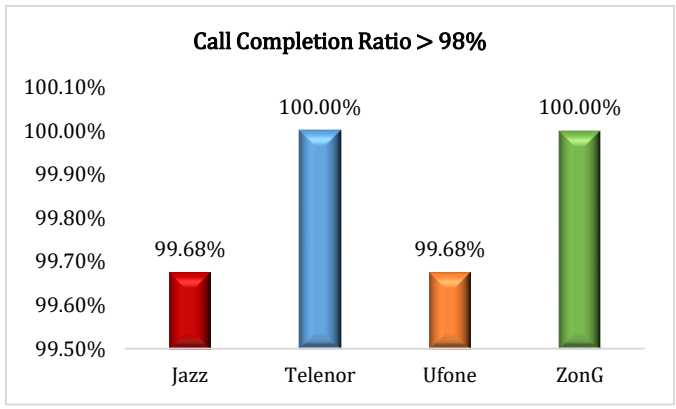


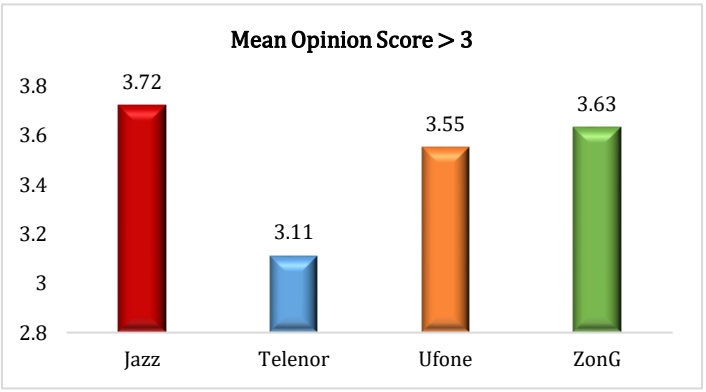
QUALITY OF SERVICE SURVEY RESULTS – NANKANA SAHIB

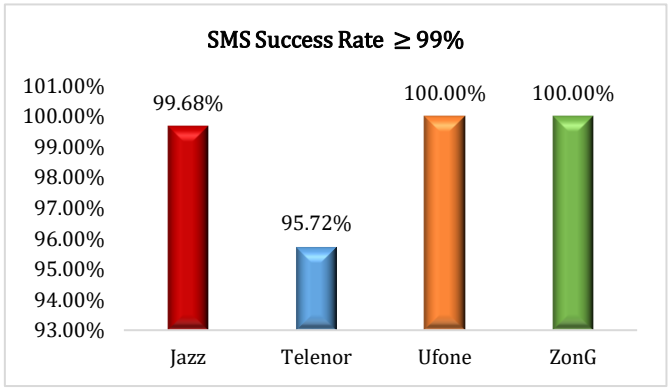


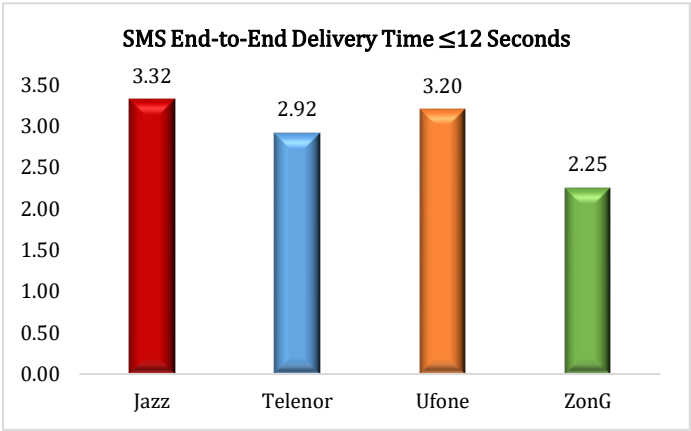




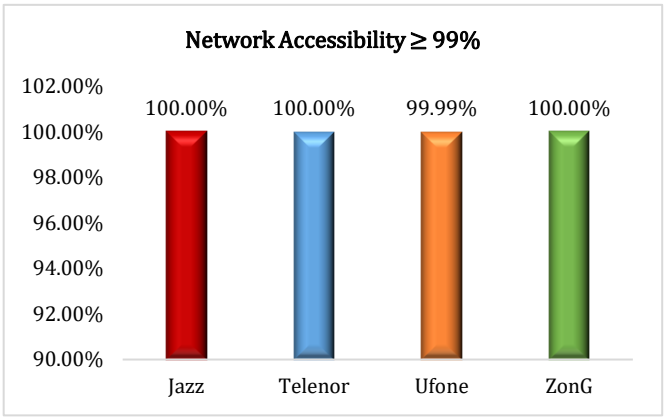


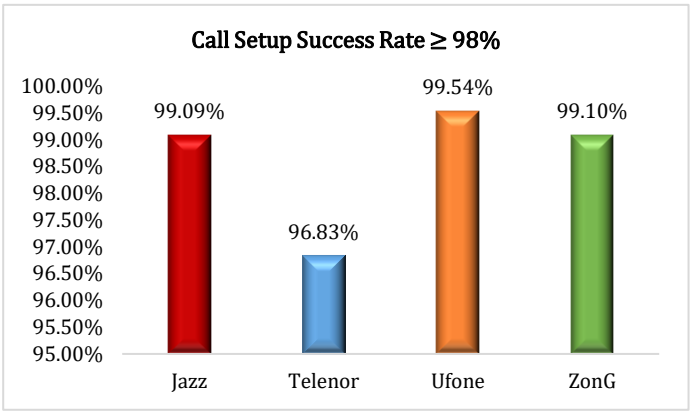


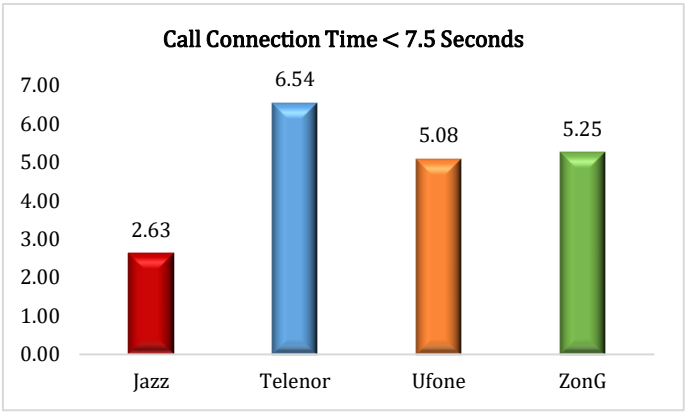


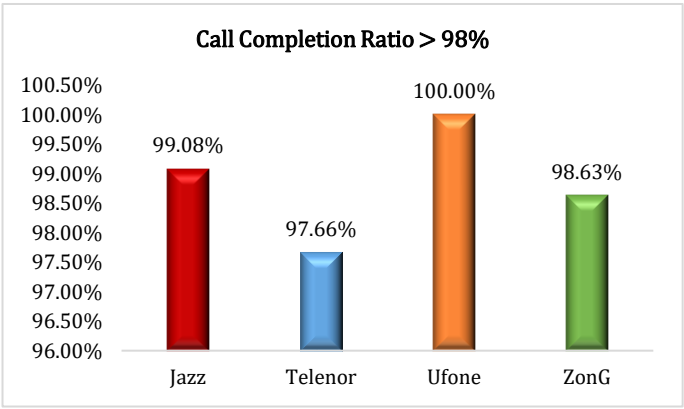


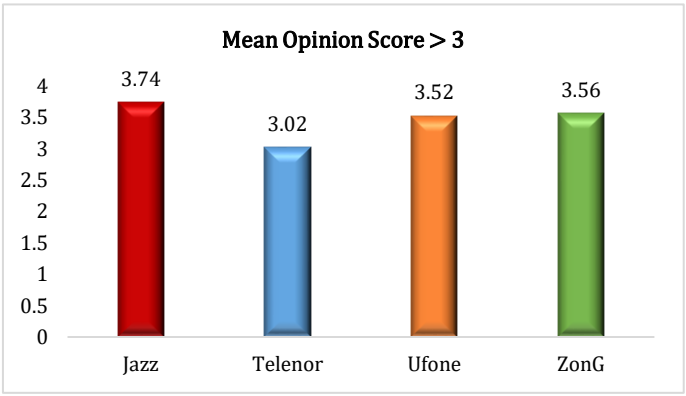
QUALITY OF SERVICE SURVEY RESULTS – MURIDKE

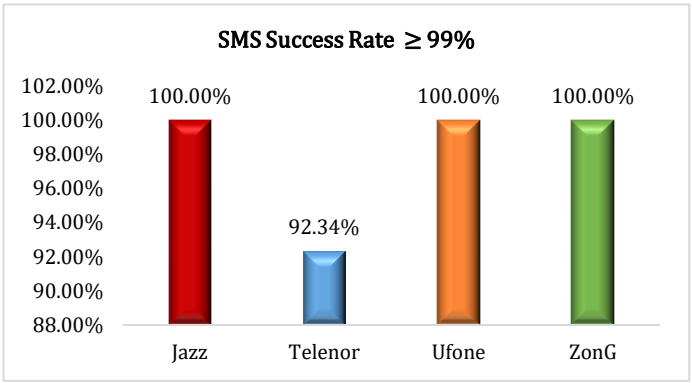


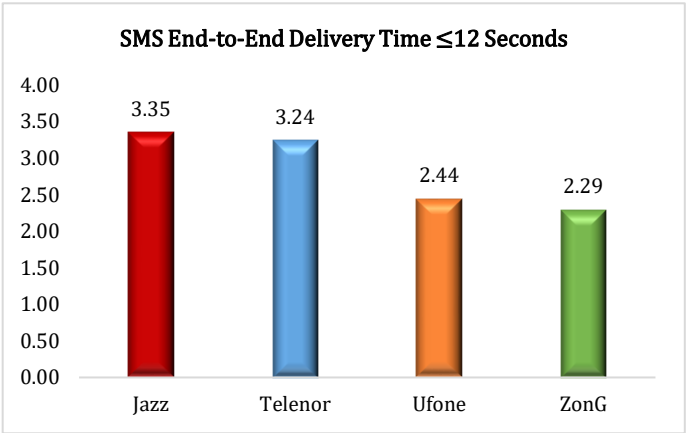




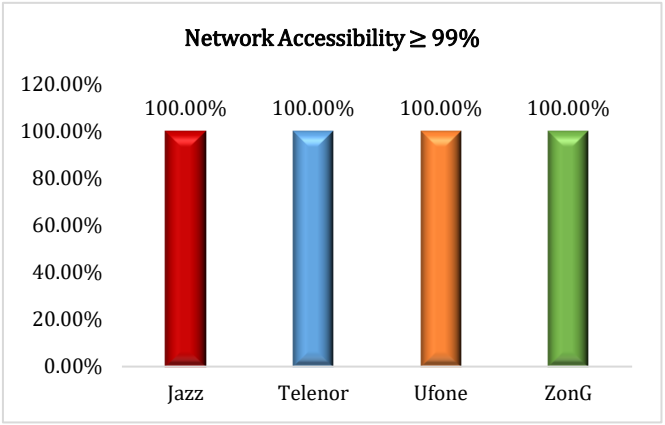


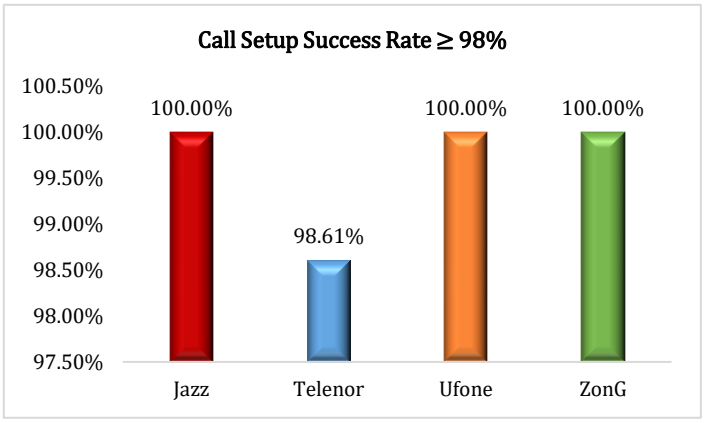


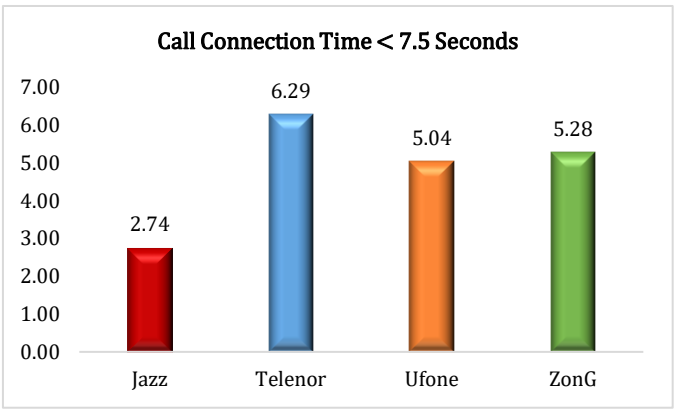


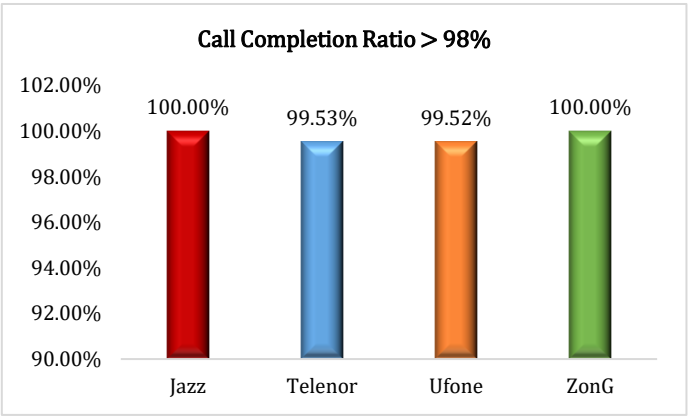


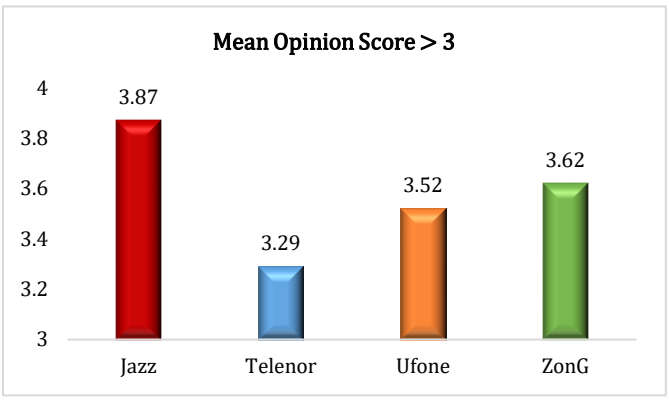
QUALITY OF SERVICE SURVEY RESULTS – CHICHAWATNI

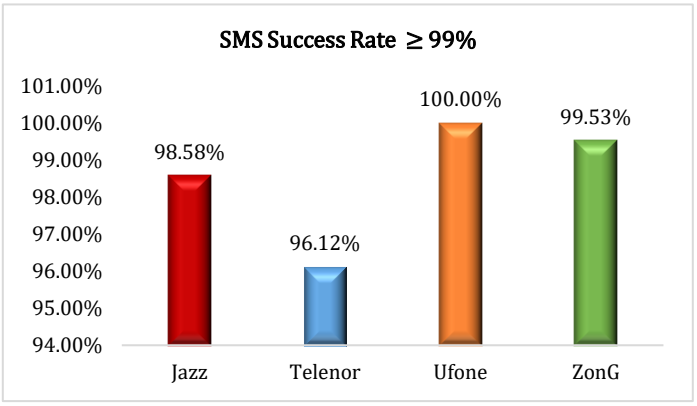


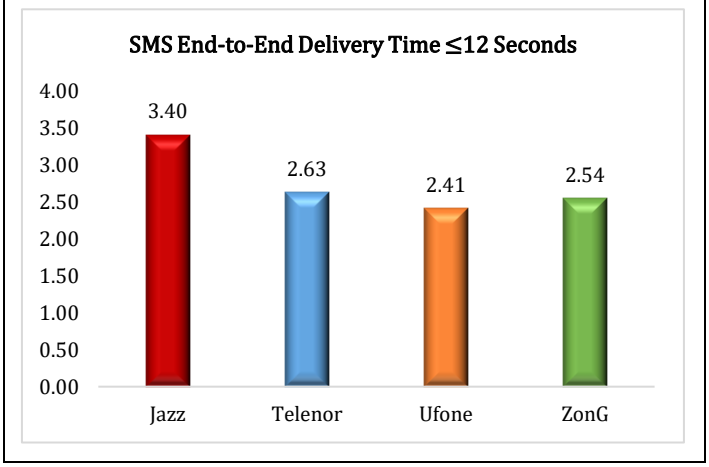




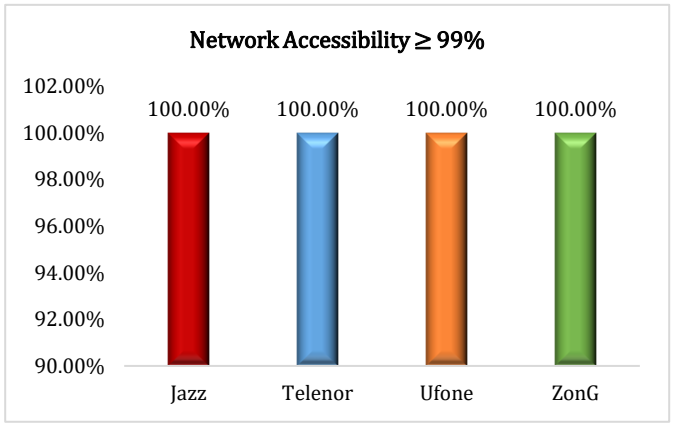


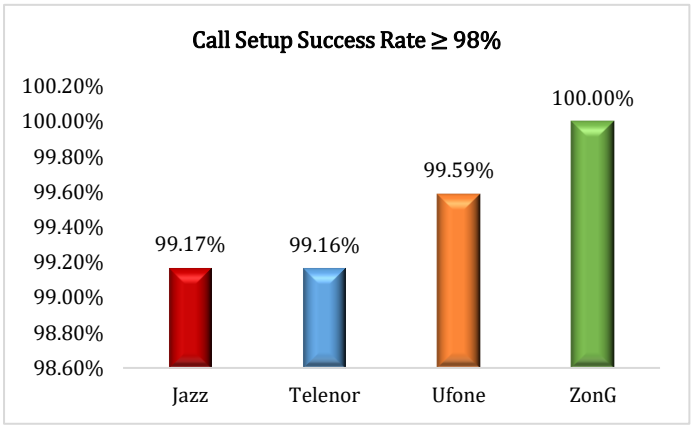


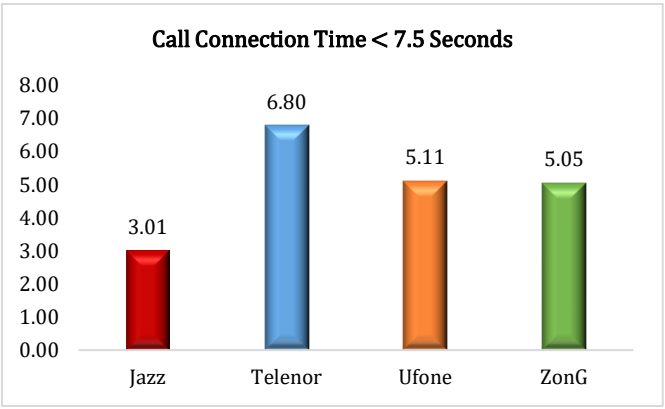


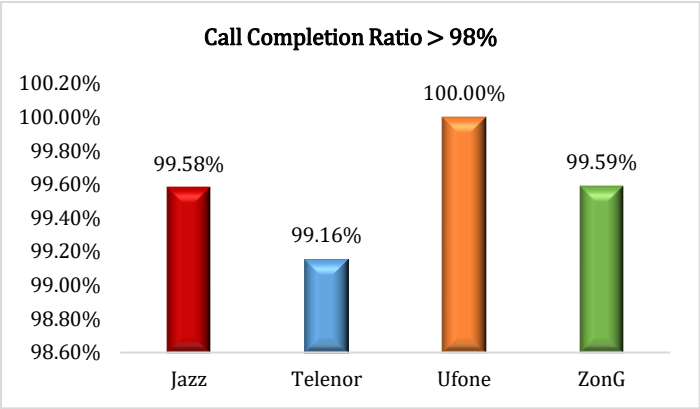


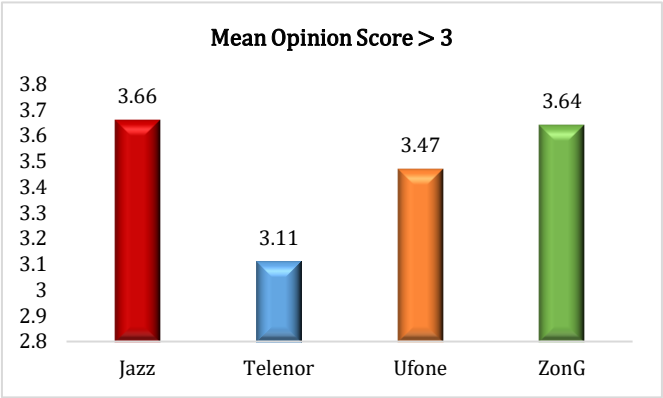
QUALITY OF SERVICE SURVEY RESULTS – DEPALPUR

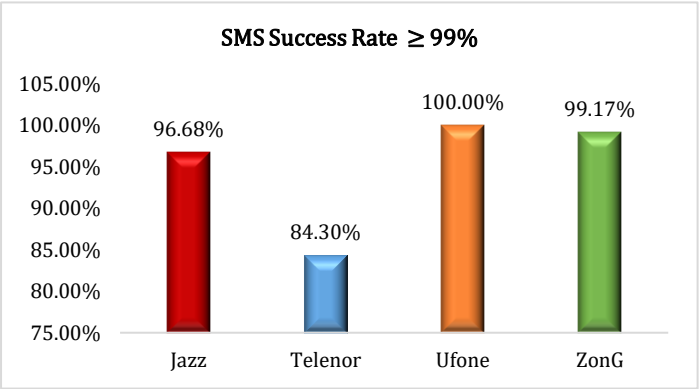


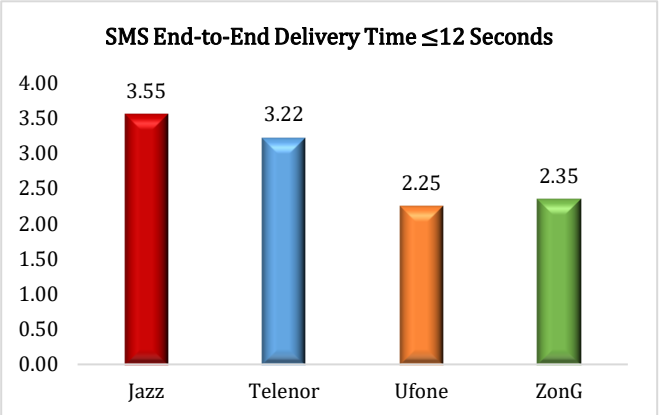




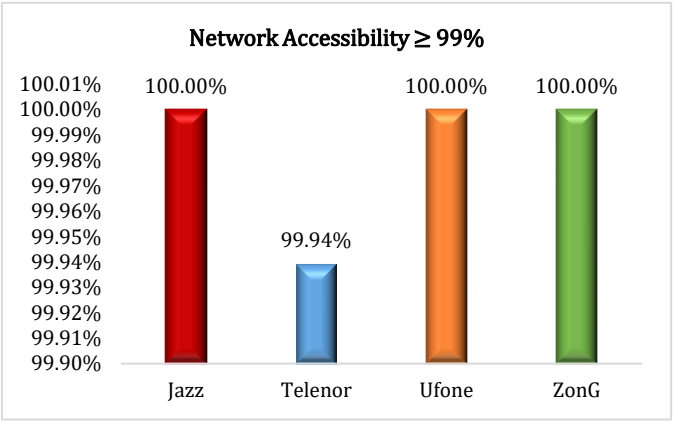


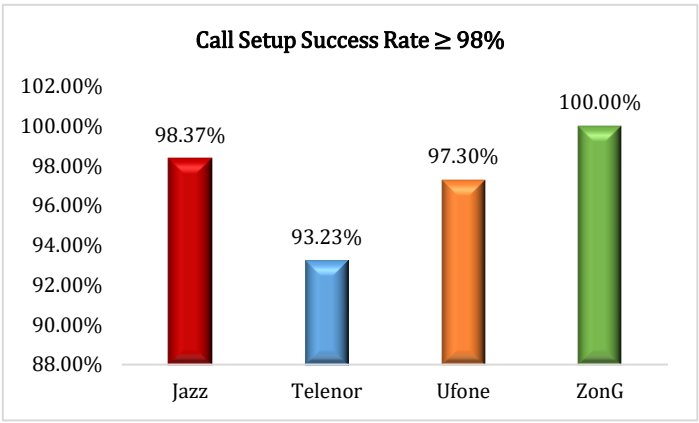


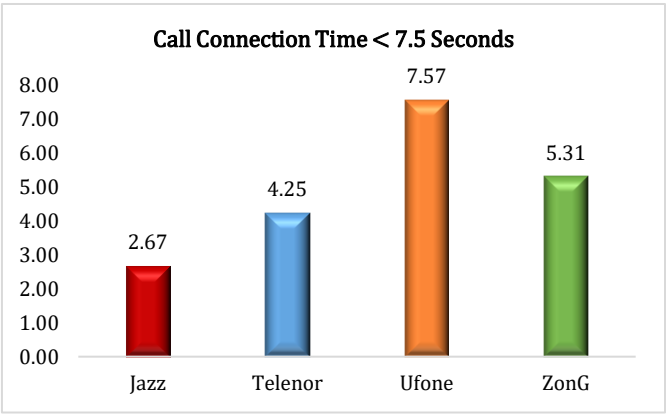


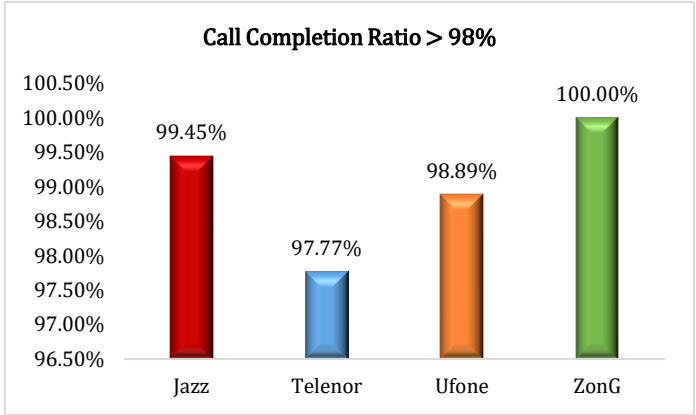


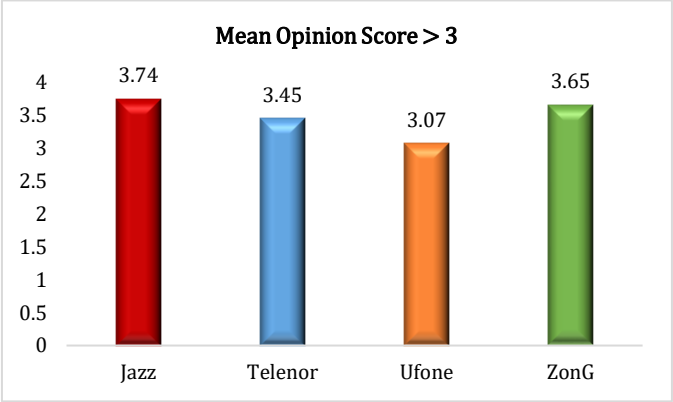
QUALITY OF SERVICE SURVEY RESULTS – SHUJABAD

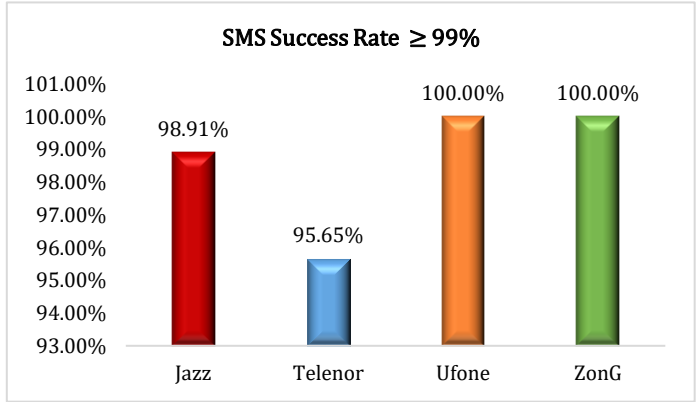


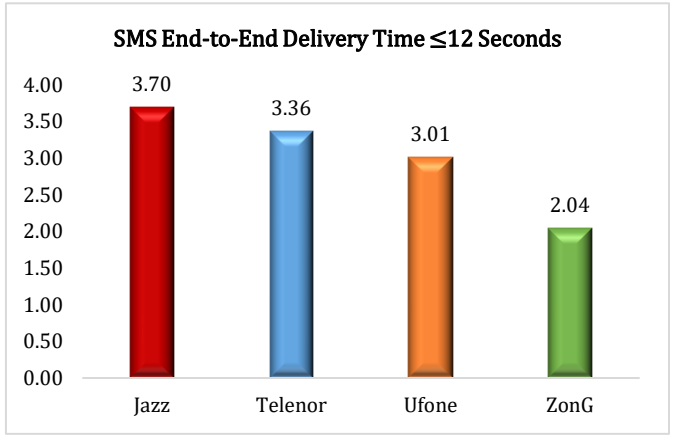




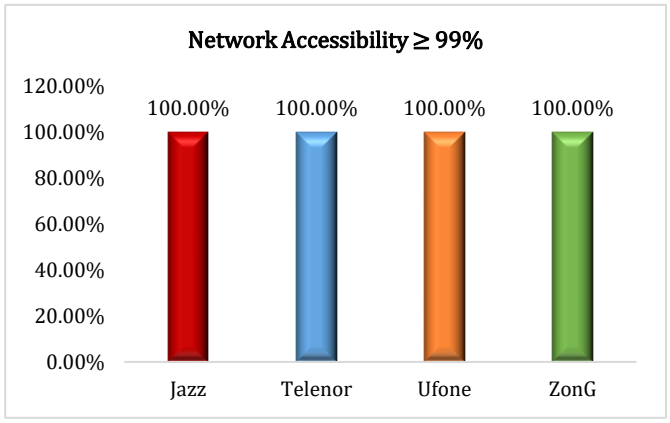


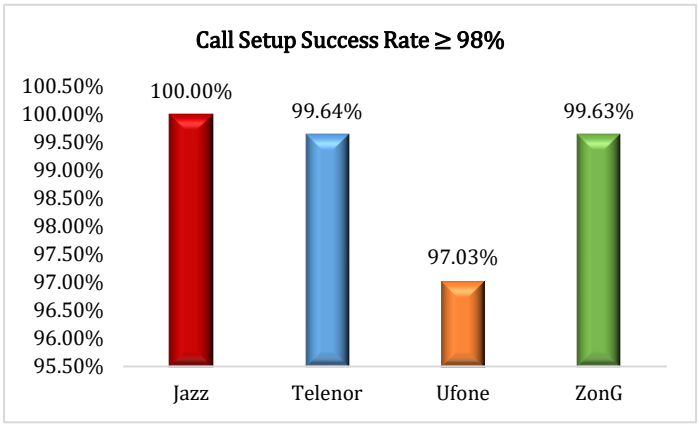


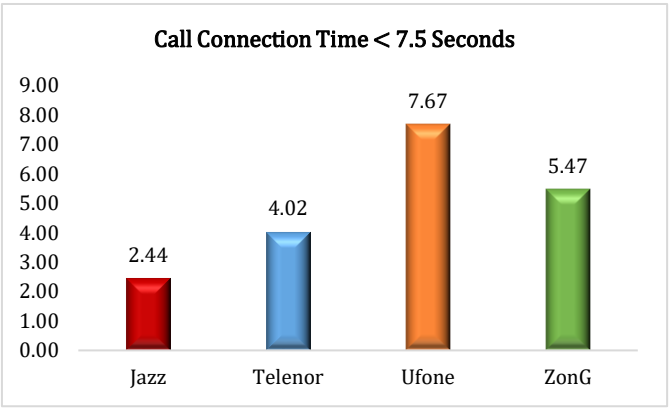


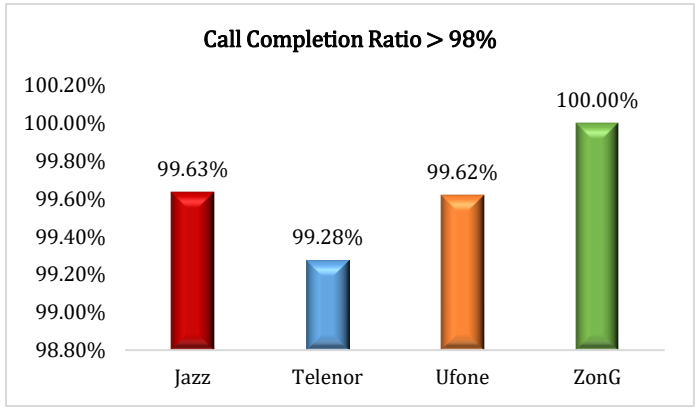


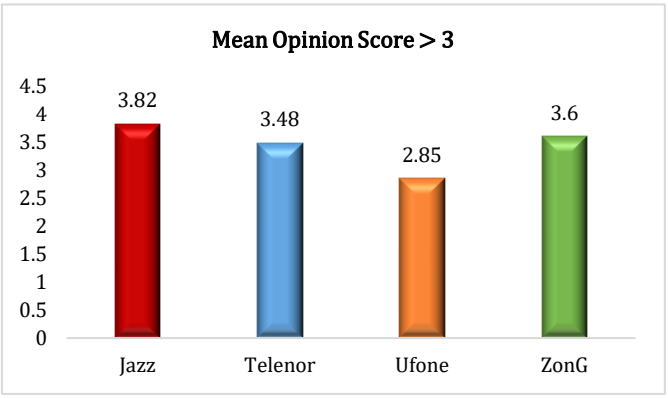
QUALITY OF SERVICE SURVEY RESULTS – KABIRWALA

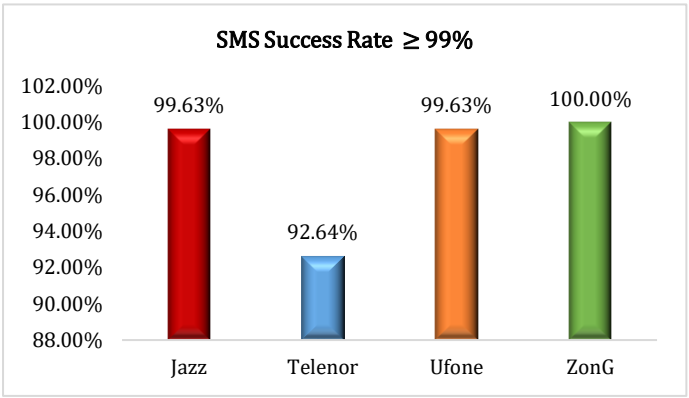


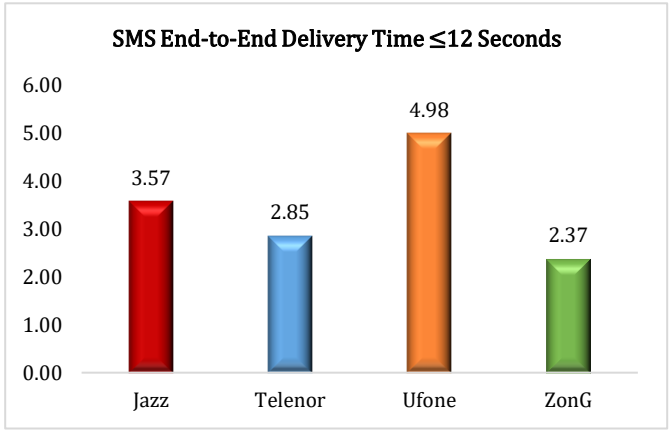




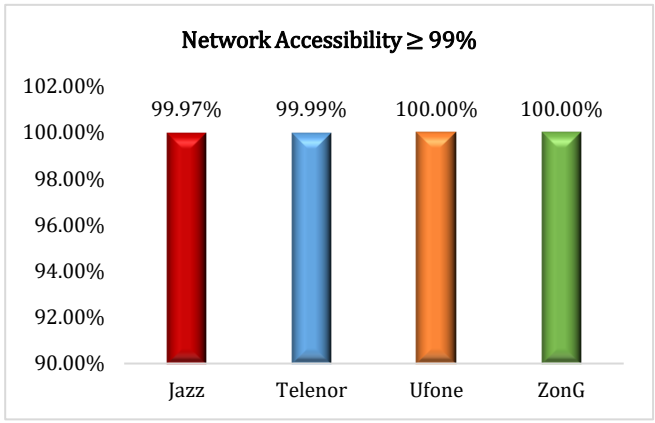


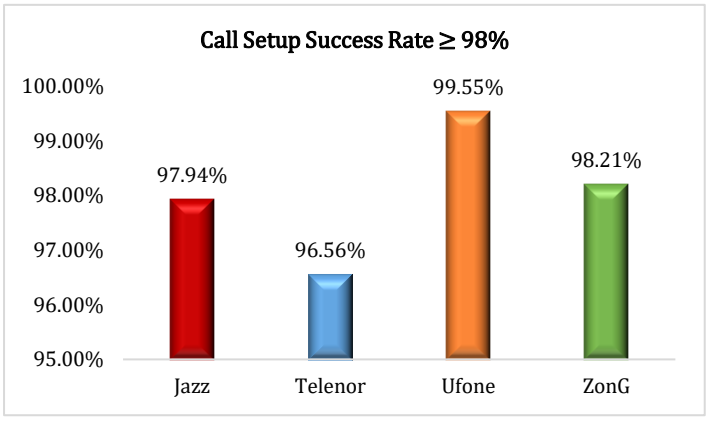


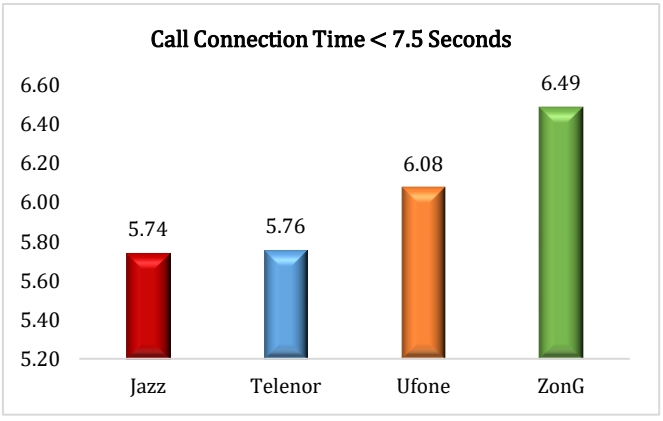


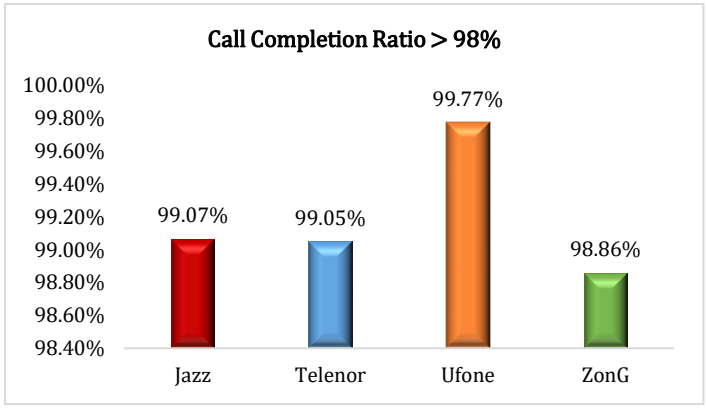


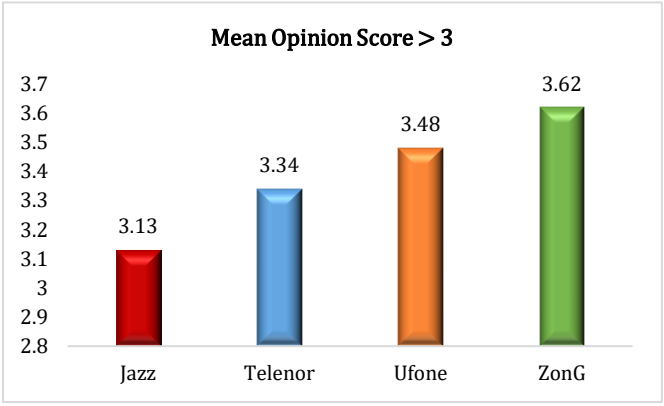
QUALITY OF SERVICE SURVEY RESULTS – NOWSHERA

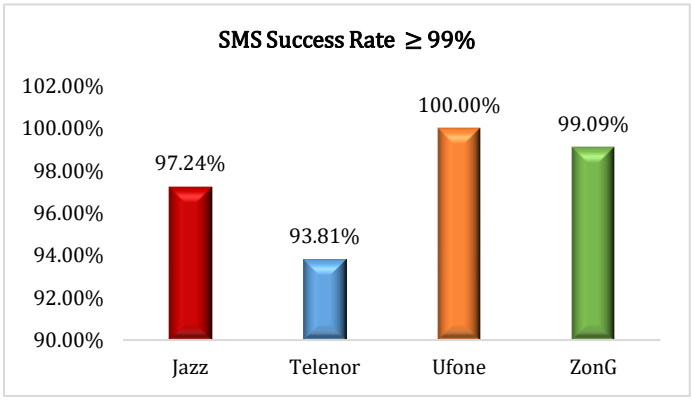


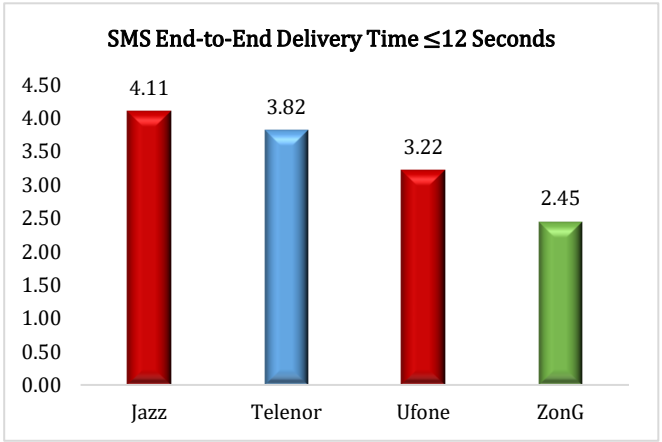




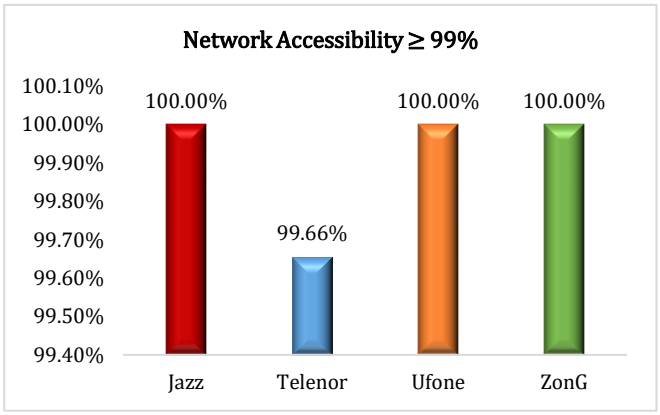


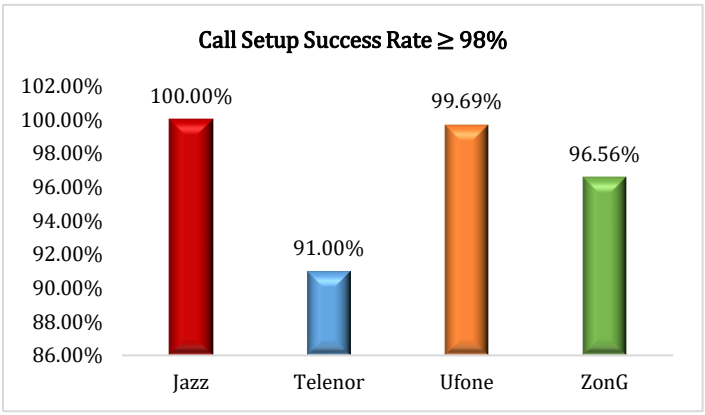


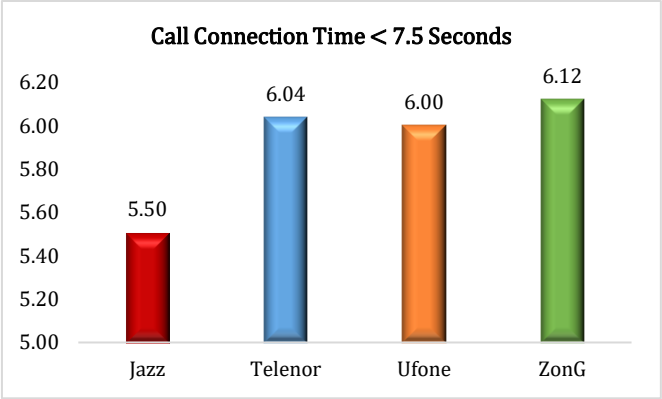


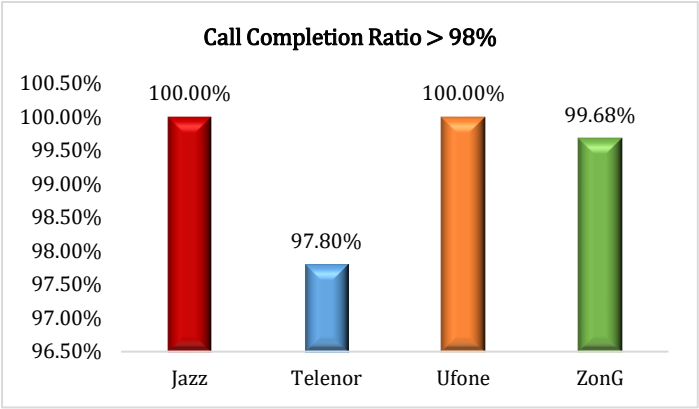


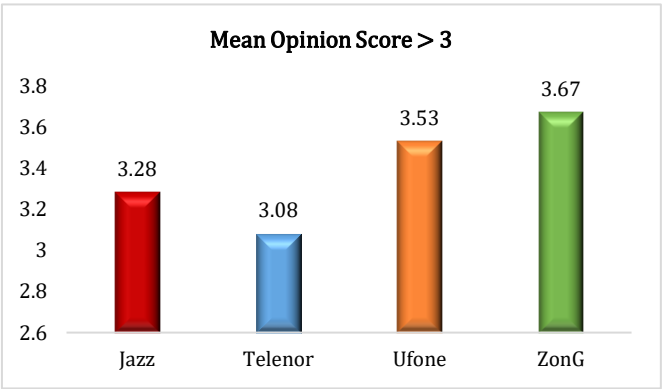
QUALITY OF SERVICE SURVEY RESULTS – SWABI

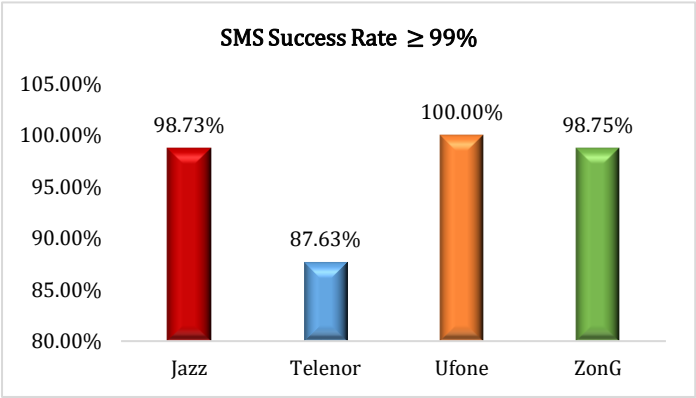


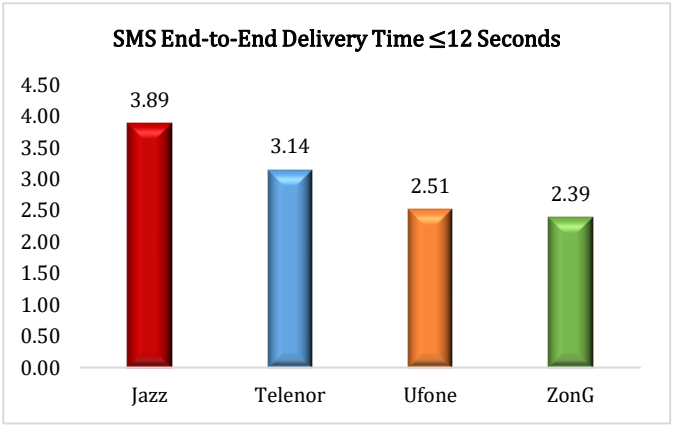
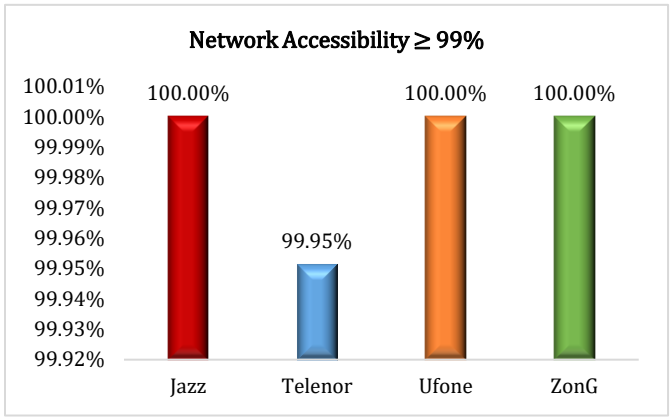
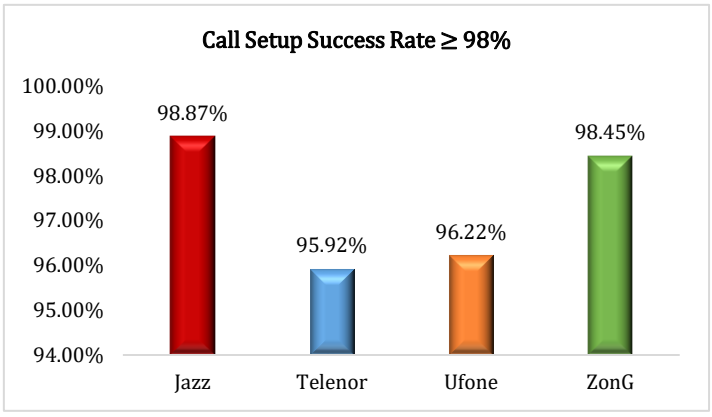
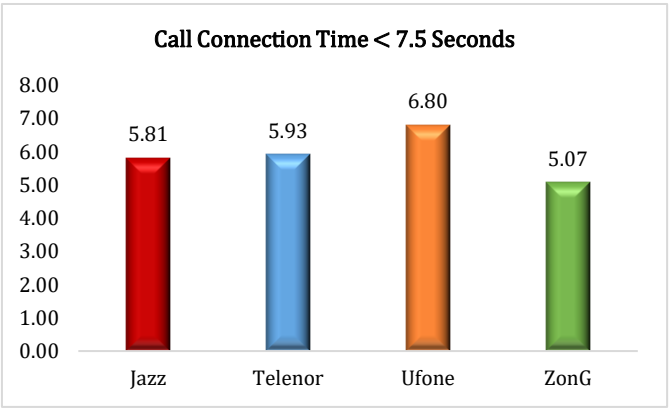
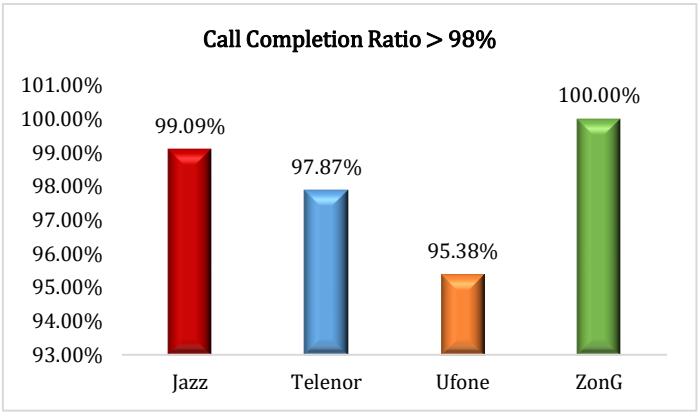
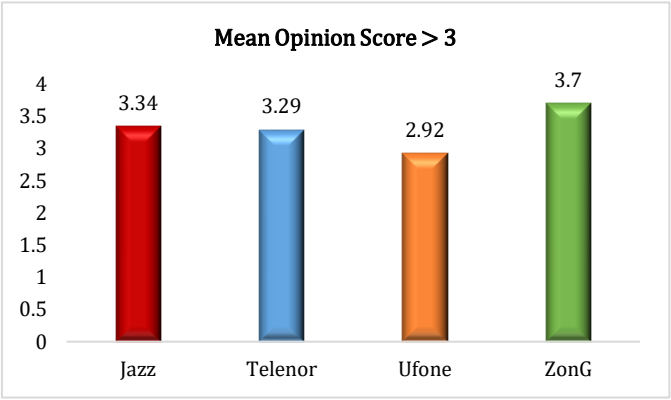
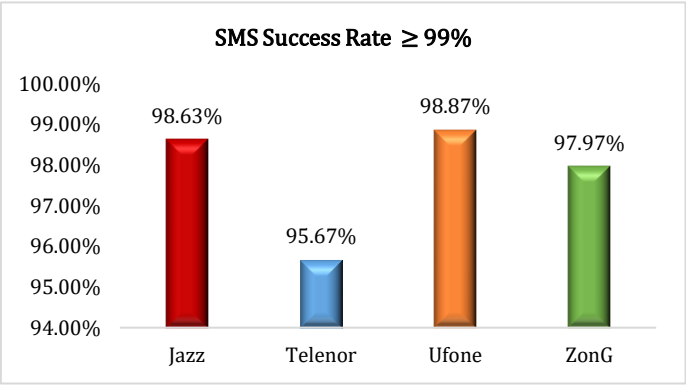
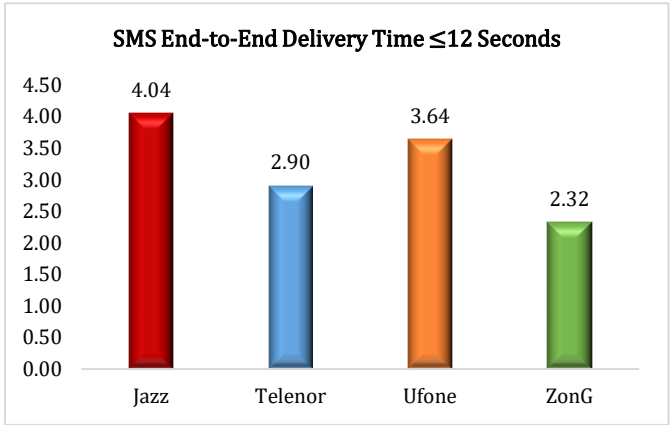












QUALITY OF SERVICE SURVEY RESULTS – KARAK