



Independent Quality of Service Survey in Pakistan – Cities

Second Quarter 2025

Enforcement Division
PTA | F-5/1, Islamabad

Executive Summary

1. QUALITY OF SERVICE SURVEY

Pakistan Telecommunication Authority (PTA) has carried out independent Quality of Service (QoS) Survey in 19x cities of Pakistan during 2nd Quarter 2025. During the survey, the performance of Cellular Mobile Operators (CMOs) has been assessed in accordance with the Cellular Mobile Network QoS Regulations 2021. Survey comprised of approximately 43000 Voice Calls and SMS while 0.34 million samples were checked to measure the broadband performance of CMOs. Summary of the drive, city wise and overall results are below:



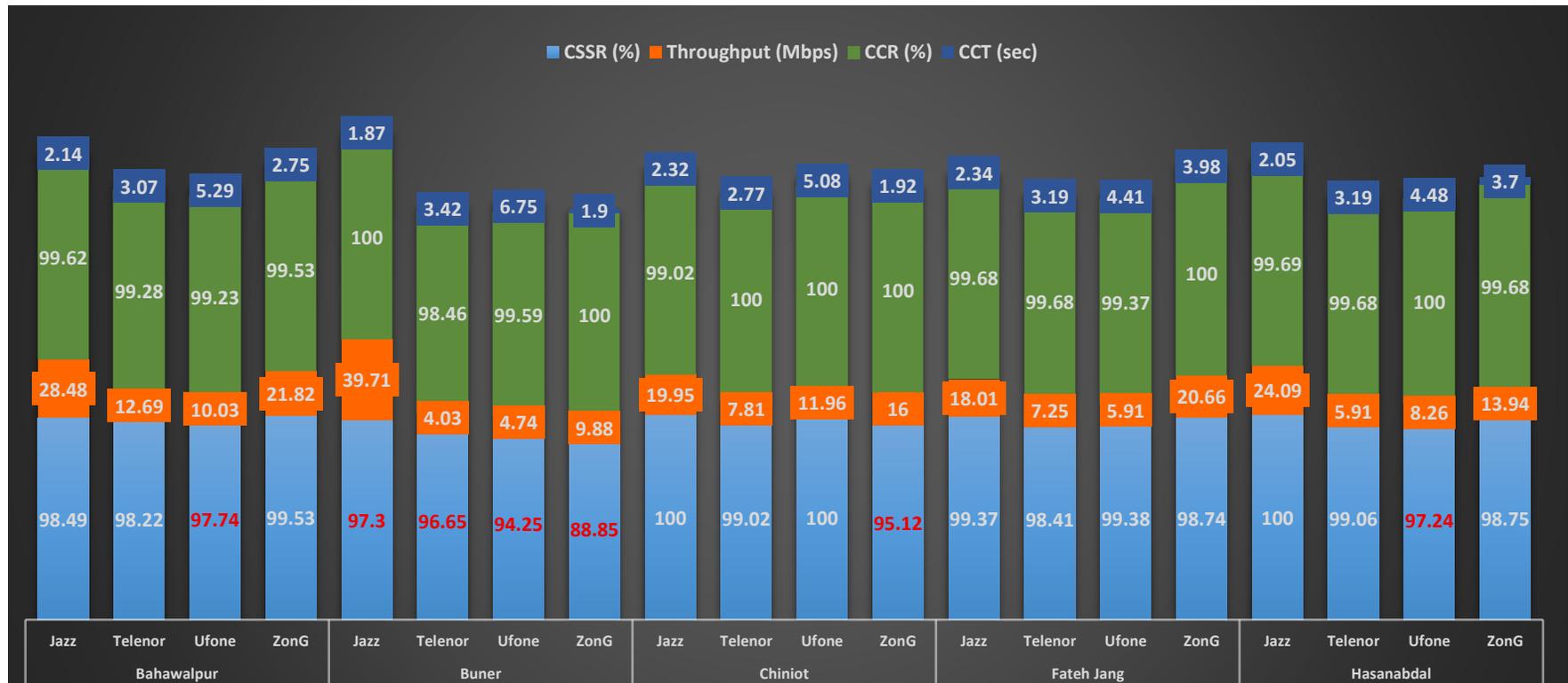
2570 KMs
Travelled



70 Days
Survey

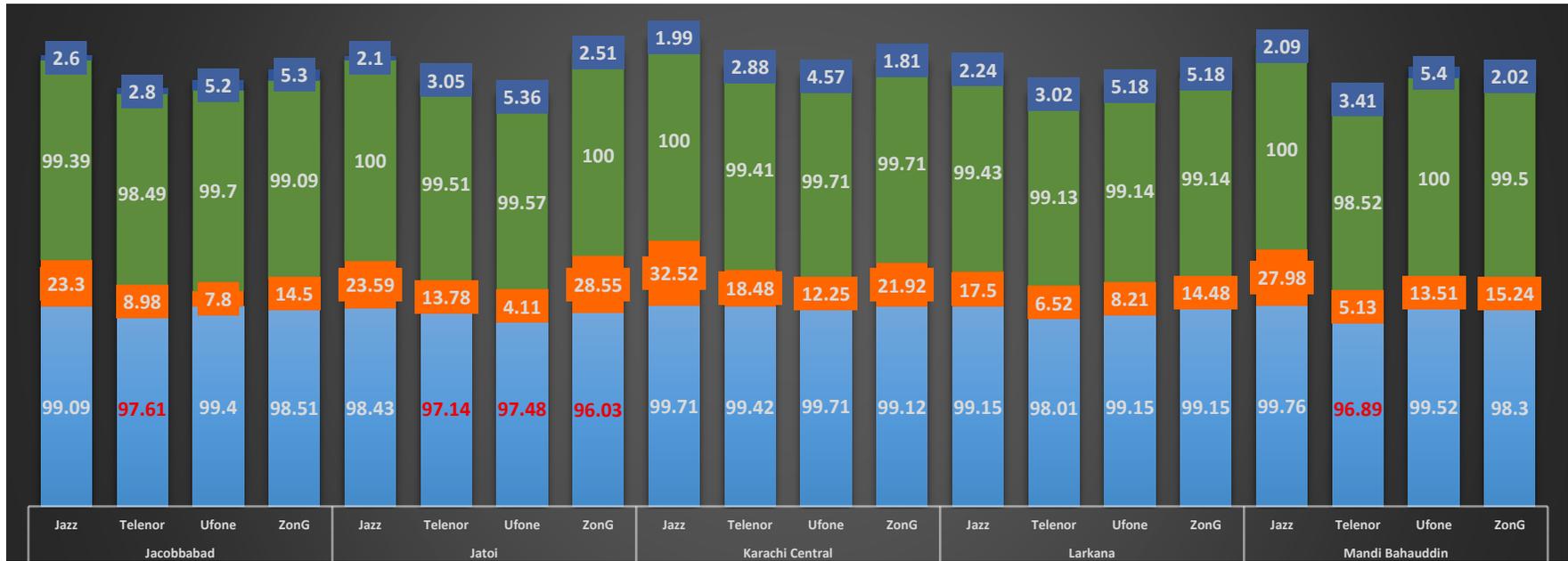


19 Cities
Tested

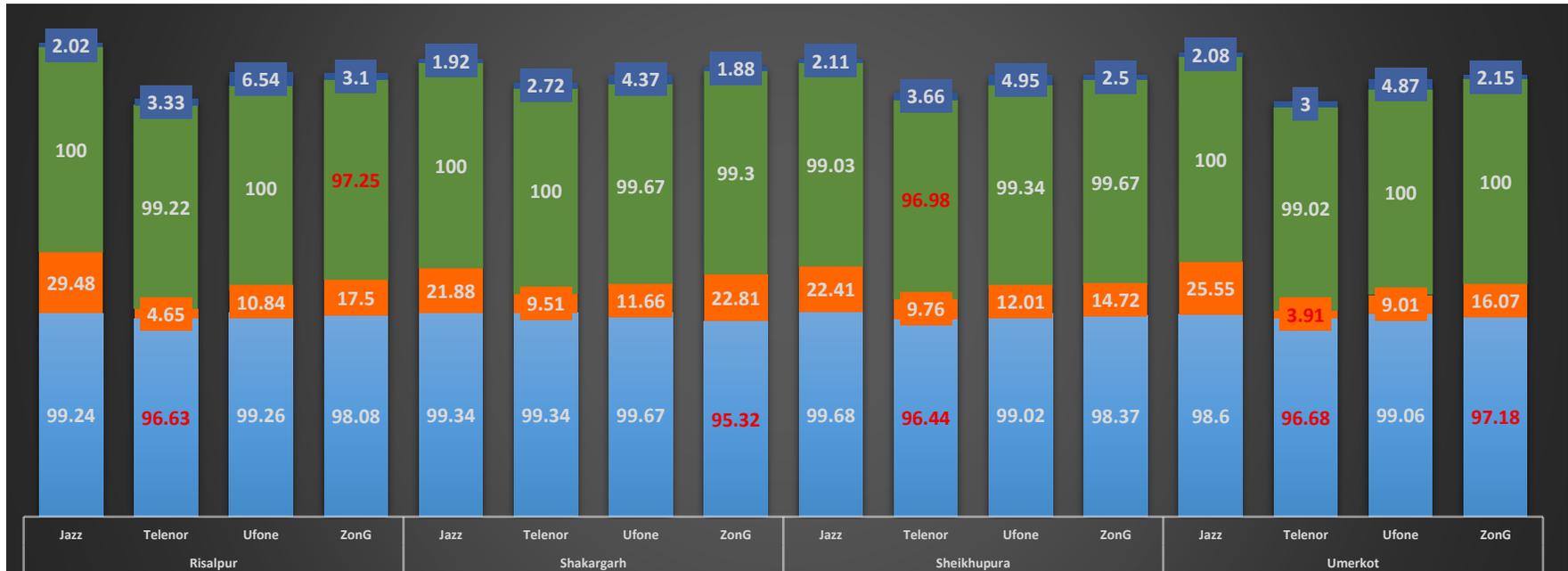


Non-compliant KPIs are highlighted in **Red**

CSSR = Call Setup Success Rate, CCT = Call Connect Time, CCR = Call Completion Ratio



Non-compliant KPIs are highlighted in Red



Non-compliant KPIs are highlighted in **Red**

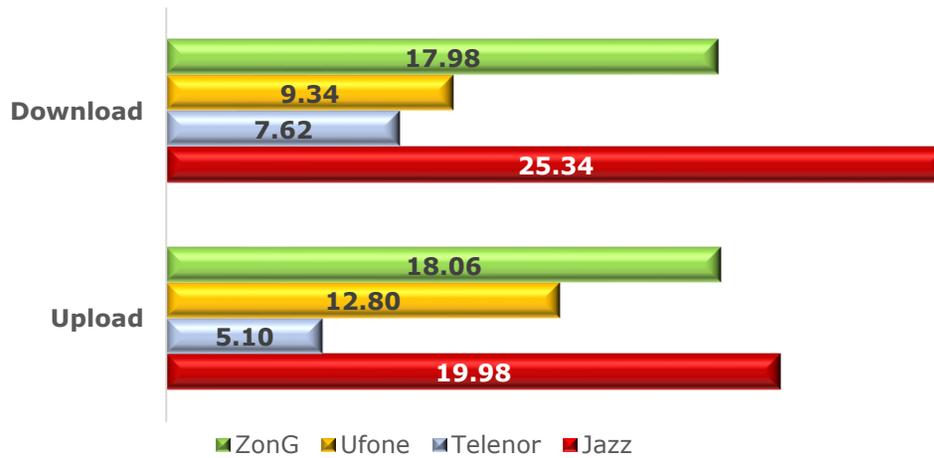
City	Jazz			Telenor			Ufone			ZonG		
	Voice (%)	Data (%)	4G Coverage (%)	Voice (%)	Data (%)	4G Coverage (%)	Voice (%)	Data (%)	4G Coverage (%)	Voice (%)	Data (%)	4G Coverage (%)
Bahawalpur	100	100	99.03	100	75	92.7	75	75	86.22	100	100	98.46
Buner	75	75	86.27	75	100	90.99	75	100	94.11	75	75	82.43
Chiniot	100	100	100	100	75	100	100	100	100	75	100	100
Fateh Jang	100	75	92.13	100	100	66.3	100	75	96.28	100	100	97.58
Hasanabdal	100	100	99.66	100	100	90.4	75	100	91.65	100	100	98.53
Jacobabad	100	100	97.11	75	75	98.24	100	75	98.65	75	75	99.46
Jatoi	100	100	98.65	75	75	74.94	75	75	93.61	75	100	90.3
Karachi Central	100	100	98.19	100	100	95.28	100	100	98.93	100	100	99.15
Larkana	100	100	99.67	100	100	92.27	100	75	98.65	100	75	99.61
Mandi Bahauddin	100	100	94.65	75	100	95.85	100	100	98.38	100	75	97.41
Mansehra	100	100	95.31	50	75	97.52	100	100	96.26	75	75	98.76
Mardan	100	100	92.88	75	100	91.14	75	75	99.54	100	50	99.29
Matiari	100	100	99.82	50	100	52.42	100	75	92.07	100	100	90.36
Multan	100	100	99.18	100	75	91.78	100	75	99.22	100	100	99.29
Pindi Bhattian	100	75	99.78	100	75	90.13	75	75	99.22	75	100	99.19
Risalpur	100	100	93	75	100	66.09	100	100	91.5	75	75	77.15
Shakargarh	100	100	99.51	100	100	72.39	100	100	92.33	75	100	98.3
Sheikhupura	100	100	99.09	50	100	90.4	100	100	99.19	100	100	99.31
Umerkot	100	100	95.96	75	50	97.37	100	75	94.13	75	100	94.6

Voice compliance is the collective compliance of 4x KPIs i.e. MOS, CCT, CSSR and CST.

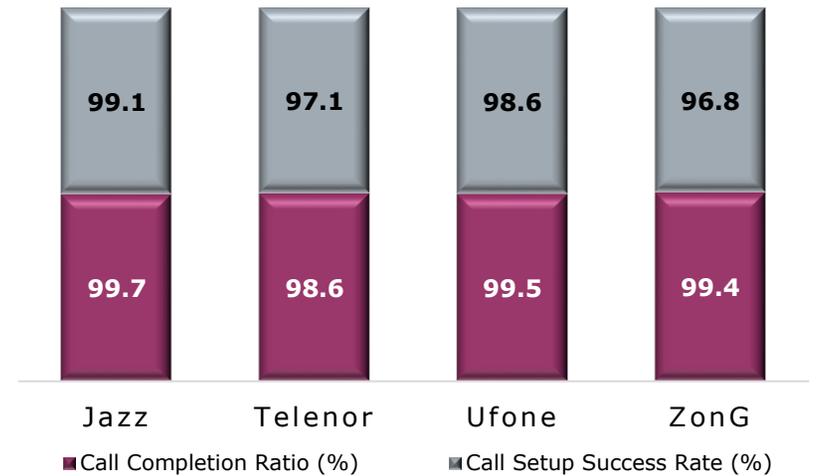
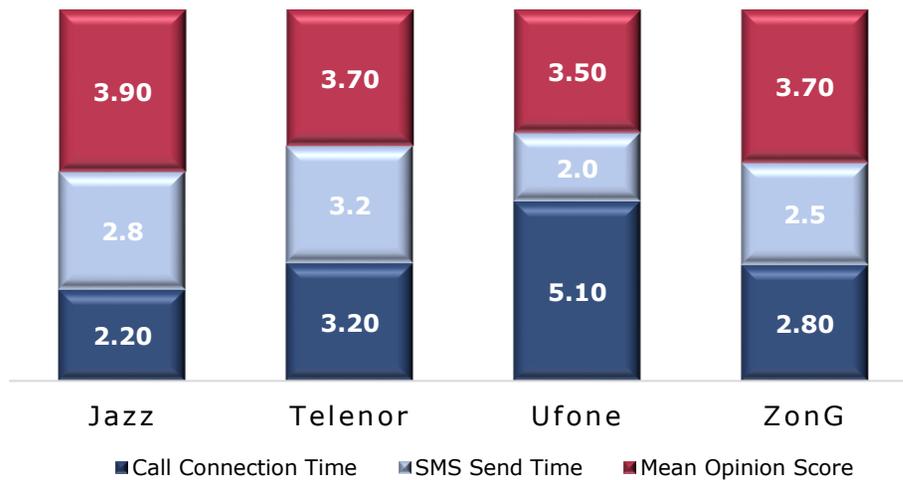
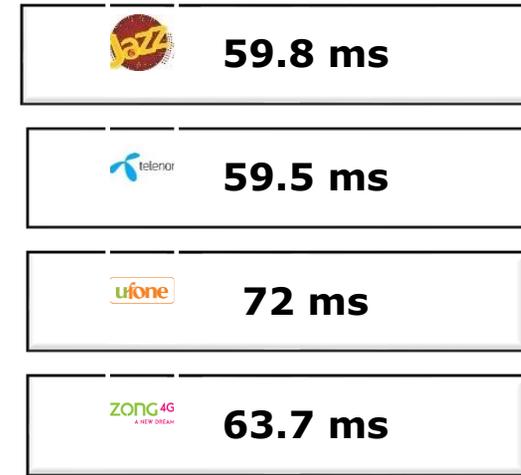
Data compliance is the collective compliance of 4x KPIs i.e. Automode Download, Upload, Latency and Webpage Loading Time.

Average Status - Overall Cities

Throughput (Mbps)



Latency (ms)



2. RANKING

Based upon the compliance level of each KPI in surveyed cities against threshold defined in QoS Regulations, CMOs have been ranked between 1st to 4th position in Mobile Network Coverage, Mobile Broadband, Voice and SMS Services as shown below:

Cellular Mobile Operator		Mobile Broadband								
		Throughput 				Latency 				Browsing 
		Auto Mode		3 rd Party App		Auto Mode	3 rd Party App			Auto Mode
										
	1 st	1 st	1 st	1 st	2 nd	1 st	1 st	1 st	1 st	3 rd
	2 nd	2 nd	2 nd	2 nd	1 st	3 rd	1 st	3 rd	3 rd	2 nd
	1 st	3 rd	3 rd	3 rd	3 rd	4 th	2 nd	1 st	2 nd	1 st
	3 rd	4 th	4 th	4 th	4 th	2 nd	2 nd	2 nd	4 th	4 th

Quality of Service Survey

1. KEY PERFORMANCE INDICATORS (KPIs)

All CMOs are required to meet or exceed the benchmark of QoS KPIs as provided in Cellular Mobile Network Quality of Service (QoS) Regulations 2021. To ensure accurate benchmarking, PTA is collecting and analyzing a statistically significant sample of minimum 200 calls and data sessions, enabling the evaluation of critical performance parameters.

2. SURVEY CITIES

Quality of Service Survey was conducted in 19x cities of Khyber Pakhtunkhwa, Punjab & Sindh during April to June 2025. Survey routes were selected in a manner to cover the maximum population area of the respective surveyed cities. The names of cities are mentioned in Table 1.1: QoS Survey Cities:

S. #.	City/Town	Province
1	Mardan	Khyber Pakhtunkhwa
2	Buner	
3	Mansehra	
4	Risalpur	
5	Fateh Jang	Punjab
6	Hasanabdal	
7	Jatoi	
8	Multan	
9	Chiniot	
10	Shakargarh	
11	Sheikhupura	
12	Pindi Bhattian	
13	Mandi Bahauddin	
14	Bahawalpur	Sindh
15	Karachi Central	
16	Larkana	
17	Umerkot	
18	Matiali	
19	Jacobbabad	

Table 1.1: QoS Survey Cities

3. TEST STATISTICS

During the survey, Quality of Services tests were conducted in the areas of Voice, Mobile Broadband (Throughput, Latency and Web Browsing) and Short Messaging Service (SMS). Service-wise tests conducted for each CMO are shown in Table 2.1: Test Statistics.

Service	Jazz	ZonG	Telenor	Ufone
3 rd Party App (Throughput + Latency)	30903	31005	31083	31209
Automode (Throughput + Latency)	40620	38055	39080	39670
Webpage Loading	11359	9966	10913	10943
Voice Calls	5422	5404	5438	5388
SMS	5401	5384	5412	5411

Table 2.1: Test Statistics

4. NETWORK COVERAGE – 4G

During the survey, while conducting data test in technology auto detect mode, 4G/LTE signal strength samples were recorded on survey routes. City wise compliance of 90% Confidence Level of signal strength is shown in Table 4.1: 4G Signal Confidence Level- Technology Auto Detect Mode.

4G Signal Confidence Level- Technology Auto Detect Mode								
City	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Fateh Jang	92.13	66.30	96.28	97.58	Yes	No	Yes	Yes
Hasanabdal	99.66	90.4	91.65	98.53	Yes	Yes	Yes	Yes
Jatoi	98.65	74.94	93.61	90.3	Yes	No	Yes	Yes
Karachi Central	98.19	95.28	98.93	99.15	Yes	Yes	Yes	Yes
Mardan	92.88	91.14	99.54	99.29	Yes	Yes	Yes	Yes
Matiari	99.82	52.42	92.07	90.36	Yes	No	Yes	Yes
Multan	99.18	91.78	99.22	99.29	Yes	Yes	Yes	Yes
Risalpur	93.0	66.09	91.5	77.15	Yes	No	Yes	No
Shakargarh	99.51	72.39	92.33	98.30	Yes	No	Yes	Yes
Sheikhupura	99.09	90.40	99.19	99.31	Yes	Yes	Yes	Yes
Larkana	99.67	92.27	98.65	99.61	Yes	Yes	Yes	Yes
Umerkot	95.96	97.37	94.13	94.60	Yes	Yes	Yes	Yes
Buner	86.27	90.99	94.11	82.43	No	Yes	Yes	No
Mansehra	95.31	97.52	96.26	98.76	Yes	Yes	Yes	Yes
Chiniot	100	100	100	100	Yes	Yes	Yes	Yes
Pindi Bhattian	99.78	90.13	99.22	99.19	Yes	Yes	Yes	Yes
Jacobbabad	97.11	98.24	98.65	99.46	Yes	Yes	Yes	Yes
Bahawalpur	99.03	92.70	86.22	98.46	Yes	Yes	No	Yes
Mandi Bahauddin	94.65	95.85	98.38	97.41	Yes	Yes	Yes	Yes

N/A indicates 4G services not available.

Table 4.1: 4G Signal Confidence Level 90%- Technology Auto Detect Mode

5. NETWORK COVERAGE – 3G

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. City wise compliance of 90% Confidence Level of signal strength is shown in Table 5.1: 3G Signal Confidence Level - Technology Auto Detect Mode.

3G Signal Confidence Level - Technology Auto Detect Mode								
City	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Fateh Jang	N/A	87.50	100	100	N/A	No	Yes	Yes
Hasanabdal	N/A	N/A	100	100	N/A	N/A	Yes	Yes
Jatoi	N/A	100	N/A	N/A	N/A	Yes	N/A	N/A
Karachi Central	N/A	100	99.98	100	N/A	Yes	Yes	Yes
Mardan	N/A	100	100	100	N/A	Yes	Yes	Yes
Matiari	N/A	99.81	99.99	84.53	N/A	Yes	Yes	No
Multan	N/A	100	100	100	N/A	Yes	Yes	Yes
Risalpur	N/A	N/A	100	92.82	N/A	N/A	Yes	Yes
Shakargarh	N/A	N/A	100	100	N/A	N/A	Yes	Yes
Sheikhupura	N/A	N/A	N/A	100	N/A	N/A	N/A	Yes
Larkana	N/A	N/A	100	100	N/A	N/A	Yes	Yes
Umerkot	N/A	100	98.09	N/A	N/A	Yes	Yes	N/A
Buner	N/A	N/A	100	100	N/A	N/A	Yes	Yes
Mansehra	N/A	N/A	N/A	100	N/A	N/A	N/A	Yes
Chiniot	N/A	N/A	100	N/A	N/A	N/A	Yes	N/A
Pindi Bhattian	N/A	N/A	N/A	100	N/A	N/A	N/A	Yes
Jacobbabad	N/A	N/A	100	N/A	N/A	N/A	Yes	N/A
Bahawalpur	N/A	100	90.1	100	N/A	Yes	Yes	Yes
Mandi Bahauddin	N/A	100	100	100	N/A	Yes	Yes	Yes

N/A indicates services did not fallback to 3G and remained connected to 4G services.

Table 5.1: 3G Signal Confidence Level - Technology Auto Detect Mode

6. MOBILE BROADBAND SERVICE – DATA SPEED

Automode Testing. In order to measure the performance of Mobile Broadband Services, Data Download and Upload tests were performed. During the test, a File of 10GB was downloaded and uploaded for 3 minutes duration. The Download and Upload Speed Results are shown in Table 6.1: Download Data Throughput and Table 6.2: Upload Data Throughput.

Download Data Throughput >4Mbps								
City	Download Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Fateh Jang	18.01	7.25	5.91	20.66	Second	Third	Fourth	First
Hasanabdal	24.09	5.91	8.26	13.94	First	Fourth	Third	Second
Jatoi	23.59	13.78	4.11	28.55	Second	Third	Fourth	First
Karachi Central	32.52	18.48	12.25	21.92	First	Third	Fourth	Second
Mardan	20.75	7.02	6.07	13.40	First	Third	Fourth	Second
Matiari	29.99	4.45	15.45	26.70	First	Fourth	Third	Second
Multan	26.01	8.82	12.39	21.03	First	Fourth	Third	Second
Risalpur	29.48	4.65	10.84	17.50	First	Fourth	Third	Second
Shakargarh	21.88	9.51	11.66	22.81	Second	Fourth	Third	First
Sheikhupura	22.41	9.76	12.01	14.72	First	Fourth	Third	Second

Download Data Throughput >4Mbps								
Larkana	17.50	6.52	8.21	14.48	First	Fourth	Third	Second
Umerkot	25.55	3.91	9.01	16.07	First	Fourth	Third	Second
Buner	39.71	4.03	4.74	9.88	First	Fourth	Third	Second
Mansehra	21.58	2.49	5.39	13.83	First	Fourth	Third	Second
Chiniot	19.95	7.81	11.96	16.00	First	Fourth	Third	Second
Pindi Bhattian	28.75	3.56	7.87	18.54	First	Fourth	Third	Second
Jacobabad	23.30	8.98	7.80	14.50	First	Third	Fourth	Second
Bahawalpur	28.48	12.69	10.03	21.82	First	Third	Fourth	Second
Mandi Bahauddin	27.98	5.13	13.51	15.24	First	Fourth	Third	Second

Table 6.1: Download Data Throughput

Upload Data Throughput ≥ 1Mbps								
City	Upload Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Fateh Jang	17.50	4.75	11.15	18.28	Second	Fourth	Third	First
Hasanabdal	24.85	4.73	13.82	17.49	First	Fourth	Third	Second
Jatoi	22.23	6.52	10.04	21.67	First	Fourth	Third	Second
Karachi Central	23.26	8.73	17.68	17.70	First	Fourth	Third	Second
Mardan	17.36	5.32	12.71	18.05	Second	Fourth	Third	First
Matari	26.17	2.90	14.76	24.97	First	Fourth	Third	Second
Multan	15.24	6.24	14.74	15.47	Second	Fourth	Third	First
Risalpur	27.44	4.59	14.69	16.33	First	Fourth	Third	Second
Shakargarh	22.47	5.74	14.92	18.33	First	Fourth	Third	Second
Sheikhupura	17.32	6.64	15.15	15.09	First	Fourth	Second	Third
Larkana	16.56	4.73	11.95	17.25	Second	Fourth	Third	First
Umerkot	15.43	3.63	7.07	19.18	Second	Fourth	Third	First
Buner	15.16	3.96	12.43	16.08	Second	Fourth	Third	First
Mansehra	22.54	3.19	13.85	16.62	First	Fourth	Third	Second
Chiniot	21.30	5.02	16.74	24.03	Second	Fourth	Third	First
Pindi Bhattian	25.87	3.92	0.97	18.79	First	Third	Fourth	Second
Jacobabad	14.67	6.22	12.88	15.57	Second	Fourth	Third	First
Bahawalpur	16.26	6.67	12.30	17.11	Second	Fourth	Third	First
Mandi Bahauddin	18.03	3.47	15.39	15.15	First	Fourth	Second	Third

Table 6.2: Upload Data Throughput

3rd Party Application. Upload and Download Throughputs were tested using a 3rd Party Network Testing Application. The Download and Upload Speed Results are shown in Table 6.3: Download Data Throughput and Table 6.4: Upload Data Throughput respectively.

3 rd Party App Download Data Throughput >4Mbps								
City	Download Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Fateh Jang	22.47	5.74	8.51	28.73	Second	Fourth	Third	First
Hasanabdal	30.88	5.88	10.75	21.81	First	Fourth	Third	Second
Jatoi	29.39	21.36	7.09	36.83	Second	Third	Fourth	First
Karachi Central	39.64	22.32	15.07	39.16	First	Third	Fourth	Second
Mardan	26.84	7.74	6.23	22.04	First	Third	Fourth	Second
Matiari	34.57	5.57	17.07	37.04	Second	Fourth	Third	First
Multan	39.29	12.51	16.42	34.49	First	Fourth	Third	Second
Risalpur	28.98	2.42	7.09	24.25	First	Fourth	Third	Second
Shakargarh	26.25	7.97	14.17	36.09	Second	Fourth	Third	First
Sheikhupura	28.78	9.90	20.19	29.16	Second	Fourth	Third	First
Larkana	24.82	9.50	10.38	27.31	Second	Fourth	Third	First
Umerkot	35.74	6.58	9.92	31.65	First	Fourth	Third	Second
Buner	63.81	5.69	6.24	31.49	First	Fourth	Third	Second
Mansehra	20.40	2.45	6.92	24.33	Second	Fourth	Third	First
Chiniot	27.01	7.61	5.85	25.01	First	Third	Fourth	Second
Pindi Bhattian	36.62	5.47	9.99	31.30	First	Fourth	Third	Second
Jacobbabad	25.80	11.58	10.81	26.35	Second	Third	Fourth	First
Bahawalpur	40.42	17.07	14.68	33.39	First	Third	Fourth	Second
Mandi Bahauddin	33.38	5.75	12.37	29.03	First	Fourth	Third	Second

Table 6.3: 3rd Party App Download Data Throughput

3 rd Party App Upload Data Throughput ≥ 1Mbps								
City	Upload Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Fateh Jang	19.83	4.76	7.39	25.65	Second	Fourth	Third	First
Hasanabdal	30.04	3.82	9.79	23.60	First	Fourth	Third	Second
Jatoi	18.36	6.94	10.24	25.47	Second	Fourth	Third	First
Karachi Central	23.96	9.15	20.46	23.80	First	Fourth	Third	Second
Mardan	18.38	5.71	8.21	21.47	Second	Fourth	Third	First
Matiari	24.57	4.05	16.85	30.18	Second	Fourth	Third	First
Multan	23.60	5.82	17.83	24.24	Second	Fourth	Third	First
Risalpur	27.42	3.37	7.84	19.58	First	Fourth	Third	Second
Shakargarh	22.56	4.53	15.74	33.72	Second	Fourth	Third	First
Sheikhupura	17.84	6.85	15.13	24.89	Second	Fourth	Third	First
Larkana	15.54	5.12	13.74	23.60	Second	Fourth	Third	First
Umerkot	21.67	5.04	10.83	27.45	Second	Fourth	Third	First
Buner	15.42	4.70	9.60	22.31	Second	Fourth	Third	First
Mansehra	23.68	2.66	10.47	24.50	Second	Fourth	Third	First
Chiniot	25.98	4.90	5.42	33.45	Second	Fourth	Third	First
Pindi Bhattian	8.49	4.22	1.93	14.79	Second	Third	Fourth	First
Jacobbabad	16.57	6.00	15.28	22.20	Second	Fourth	Third	First
Bahawalpur	23.60	5.82	17.83	24.24	Second	Fourth	Third	First
Mandi Bahauddin	20.48	4.01	12.82	24.84	Second	Fourth	Third	First

Table 6.4: 3rd Party App Upload Data Throughput

7. MOBILE BROADBAND SERVICE – LATENCY

Latency, while not a traditional KPI (non-service KPI), is a vital metric for Mobile Broadband Performance, as it directly affects user experience. During the survey, Network Latency was measured by calculating the ping between different websites and 3rd Party Test servers. Results are shown in Table 7.1: Automode Latency and Table 7.2: 3rd Party App Latency.

Latency In Automode Testing								
City	Latency [milliseconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Fateh Jang	99.60	34.17	82.52	55.19	No	Yes	No	Yes
Hasanabdal	40.24	47.42	43.58	63.02	Yes	Yes	Yes	Yes
Jatoi	54.00	81.31	94.03	32.12	Yes	No	No	Yes
Karachi Central	34.00	45.00	34.00	37.00	Yes	Yes	Yes	Yes
Mardan	55.07	53.27	115.78	114.46	Yes	Yes	No	No
Matiari	43.00	67.00	77.00	46.00	Yes	Yes	No	Yes
Multan	62.84	76.70	78.17	33.11	Yes	No	No	Yes
Risalpur	50.71	39.85	38.98	172.90	Yes	Yes	Yes	No
Shakargarh	66.80	33.76	48.35	38.16	Yes	Yes	Yes	Yes
Sheikhupura	70	44	46	58	Yes	Yes	Yes	Yes
Larkana	57.53	58.90	125.36	136.55	Yes	Yes	No	No
Umerkot	35.67	99.68	143.68	40.33	Yes	No	No	Yes
Buner	116.00	53.00	60.00	82.00	No	Yes	Yes	No
Mansehra	56	73	57	51	Yes	Yes	Yes	Yes
Chiniot	57.27	116.53	39.92	43.98	Yes	No	Yes	Yes
Pindi Bhattian	82.55	38.78	46.57	47.90	No	Yes	Yes	Yes
Jacobbabad	53.00	45.00	94.00	91.00	Yes	Yes	No	No
Bahawalpur	56.70	83.17	81.47	39.33	Yes	No	No	Yes
Mandi Bahauddin	45.83	40.78	65	78	Yes	Yes	Yes	No

Table 7.1: Automode Latency

Latency in 3 rd Party App Testing								
City	Latency [milliseconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Fateh Jang	22.90	28.86	24.63	17.45	Yes	Yes	Yes	Yes
Hasanabdal	21.81	35.50	22.09	23.61	Yes	Yes	Yes	Yes
Jatoi	23.14	51.30	29.05	15.09	Yes	Yes	Yes	Yes
Karachi Central	22.00	35.00	21.00	18.00	Yes	Yes	Yes	Yes
Mardan	27.42	33.46	36.05	22.91	Yes	Yes	Yes	Yes
Matiari	29.31	42.05	28.88	38.07	Yes	Yes	Yes	Yes
Multan	29.87	73.76	45.27	20.18	Yes	Yes	Yes	Yes
Risalpur	29.25	56.44	27.03	26.53	Yes	Yes	Yes	Yes
Shakargarh	43.52	25.16	48.09	22.90	Yes	Yes	Yes	Yes
Sheikhupura	34.68	44.14	39.97	16.14	Yes	Yes	Yes	Yes
Larkana	35.10	42.06	47.48	32.02	Yes	Yes	Yes	Yes
Umerkot	29.11	49.48	82.36	27.26	Yes	Yes	No	Yes
Buner	30.20	42.48	32.45	25.75	Yes	Yes	Yes	Yes

Mansehra	23.25	40.89	30.66	19.69	Yes	Yes	Yes	Yes
Chiniot	23.45	44.55	56.46	21.90	Yes	Yes	Yes	Yes
Pindi Bhattian	60	37.77	55.08	23.34	Yes	Yes	Yes	Yes
Jacobbabad	32.50	46.68	40.18	28.50	Yes	Yes	Yes	Yes
Bahawalpur	27.35	71.45	66.61	24.03	Yes	Yes	Yes	Yes
Mandi Bahauddin	62	96	61.62	29.33	Yes	No	Yes	Yes

Table 7.2: 3rd Party App Latency

8. MOBILE BROADBAND SERVICE – WEB PAGE LOADING

Web Page Loading Time is an important Quality of Experience (QoE) metric, which, although not a traditional service KPI (non-service), provides valuable insights into the performance of CMOs in delivering seamless web browsing experiences. Results of testing are shown in Table 8.1: Web Page Loading Time.

Webpage Loading Time in Technology Auto Detect Mode								
City	Webpage Loading Time [seconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Fateh Jang	2.83	0.77	1.11	4.90	Yes	Yes	Yes	Yes
Hasanabdal	2.40	0.82	0.86	4.52	Yes	Yes	Yes	Yes
Jatoi	2.06	1.70	1.19	3.47	Yes	Yes	Yes	Yes
Karachi Central	3.07	0.40	0.94	3.39	Yes	Yes	Yes	Yes
Mardan	2.69	0.66	1.28	6.17	Yes	Yes	Yes	No
Matiari	2.69	1.33	0.81	4.40	Yes	Yes	Yes	Yes
Multan	2.08	1.79	0.93	3.69	Yes	Yes	Yes	Yes
Risalpur	1.96	0.70	0.85	4.37	Yes	Yes	Yes	Yes
Shakargarh	2.89	1.03	0.96	4.09	Yes	Yes	Yes	Yes
Sheikhupura	3.12	1.29	0.92	3.69	Yes	Yes	Yes	Yes
Larkana	2.79	0.93	1.35	3.85	Yes	Yes	Yes	Yes
Umerkot	2.64	1.80	2.06	4.63	Yes	Yes	Yes	Yes
Buner	2.19	0.76	1.70	4.60	Yes	Yes	Yes	Yes
Mansehra	2.9	1.1	1.6	5.3	Yes	Yes	Yes	No
Chiniot	3.10	1.61	0.95	3.71	Yes	Yes	Yes	Yes
Pindi Bhattian	2.75	1.55	1.22	3.93	Yes	Yes	Yes	Yes
Jacobbabad	2.70	6.60	1.30	3.90	Yes	No	Yes	Yes
Bahawalpur	2.16	1.70	1.01	3.81	Yes	Yes	Yes	Yes
Mandi Bahauddin	2.82	1.79	1.06	4.43	Yes	Yes	Yes	Yes

Table 8.1: Web Page Loading Time

9. VOICE SERVICE

5 x QoS KPIs (i.e. Network Accessibility, Call Setup Success Rate, Call Setup Time, Call Completion Rate and Mean Opinion Score) have been measured while testing voice services in the surveyed cities. Compliance in each surveyed city is shown in Table 9.1: Voice QoS KPIs Compliance Level, Table 9.2: Voice QoS KPIs Compliance Level, Table 9.3: Voice QoS KPIs Compliance Level and Table 9.4: Voice QoS KPIs Compliance Level.

CMO	KPI	Fateh Jang	Hasanabdal	Jatoi	Karachi Central	Mardan
Jazz	NA	99.99	99.99	100	99.99	100
	CSSR	99.37	100	98.43	99.71	99.22
	CCT	2.34	2.05	2.10	1.99	1.97
	CCR	99.68	99.69	100	100	99.21
	MOS	3.81	3.91	3.92	3.99	3.91
Telenor	NA	99.98	99.99	100	99.99	99.99
	CSSR	98.41	99.06	97.14	99.42	97.07
	CCT	3.19	3.19	3.05	2.88	3.26
	CCR	99.68	99.68	99.51	99.41	99.45
	MOS	4.24	4.23	3.71	3.72	3.44
Ufone	NA	99.99	99.99	100	100	100
	CSSR	99.38	97.24	97.48	99.71	99.48
	CCT	4.41	4.48	5.36	4.57	5.56
	CCR	99.37	100	99.57	99.71	97.64
	MOS	3.71	3.72	3.43	3.54	3.56
ZonG	NA	99.99	99.99	100	100	100
	CSSR	98.74	98.75	96.03	99.12	98.95
	CCT	3.98	3.70	2.51	1.81	2.19
	CCR	100	99.68	100	99.71	98.41
	MOS	3.75	3.46	3.99	3.78	3.69

Table 9.1: Voice QoS KPIs Compliance Level

CMO	KPI	Matiari	Multan	Risalpur	Shakargarh	Sheikhupura
Jazz	NA	99.99	100	100	99.99	99.99
	CSSR	99.54	98.71	99.24	99.34	99.68
	CCT	2.22	2.75	2.02	1.92	2.11
	CCR	100	99.57	100	100	99.03
	MOS	3.92	3.92	3.91	3.78	3.70
Telenor	NA	99.98	100	99.97	100	99.91
	CSSR	91.82	99.18	96.63	99.34	96.44
	CCT	4.57	3.05	3.33	2.72	3.66
	CCR	92.08	99.18	99.22	100	96.98
	MOS	3.30	3.61	3.77	3.77	3.31
Ufone	NA	99.99	99.98	99.98	99.99	99.99
	CSSR	99.55	99.18	99.26	99.67	99.02
	CCT	4.34	4.86	6.54	4.37	4.95
	CCR	100	99.59	100	99.67	99.34
	MOS	3.48	3.54	3.48	3.38	3.40
ZonG	NA	99.75	99.96	99.95	100	100
	CSSR	98.17	98.47	98.08	95.32	98.37
	CCT	2.74	2.89	3.10	1.88	2.50
	CCR	99.07	100	97.25	99.30	99.67
	MOS	3.65	3.85	3.73	3.79	3.69

Table 9.2: Voice QoS KPIs Compliance Level

CMO	KPI	Larkana	Umerkot	Buner	Mansehra	Chiniot
Jazz	NA	100	99.98	99.99	100	100
	CSSR	99.15	98.60	97.30	98	100
	CCT	2.24	2.08	1.87	1.92	2.32
	CCR	99.43	100.00	100	100	99.02
	MOS	4.15	3.98	4.02	3.87	3.80
Telenor	NA	99.98	99.98	99.99	100	100
	CSSR	98.01	96.68	96.65	87.14	99.02
	CCT	3.02	3.00	3.42	3.28	2.77
	CCR	99.13	99.02	98.46	94.54	100
	MOS	3.70	3.58	3.65	3.58	3.87
Ufone	NA	100	100	100	100	100
	CSSR	99.15	99.06	94.25	98.17	100
	CCT	5.18	4.87	6.75	5.53	5.08
	CCR	99.14	100	99.59	98.13	100
	MOS	3.55	3.44	3.52	3.5	3.29
ZonG	NA	100	99.94	99.81	99.97	100
	CSSR	99.15	97.18	88.85	90.65	95.12
	CCT	5.18	2.15	1.90	2.91	1.92
	CCR	99.14	100	100	98.97	100
	MOS	3.55	3.74	3.93	3.54	3.89

Table 9.3: Voice QoS KPIs Compliance Level

CMO	KPI	Pindi Bhattian	Jacobabad	Bahawalpur	Mandi Bahauddin
Jazz	NA	100	100	100	99.99
	CSSR	100	99.09	98.49	99.76
	CCT	2.24	2.60	2.14	2.09
	CCR	100	99.39	99.62	100
	MOS	3.89	3.98	3.88	3.82
Telenor	NA	100	99.98	100	99.96
	CSSR	100	97.61	98.22	96.89
	CCT	2.78	2.80	3.07	3.41
	CCR	100	98.49	99.28	98.52
	MOS	3.37	3.74	3.68	3.42
Ufone	NA	100	99.99	99.99	100
	CSSR	97	99.40	97.74	99.52
	CCT	5.00	5.20	5.29	5.40
	CCR	99	99.70	99.23	100
	MOS	3.17	3.59	3.51	3.41
ZonG	NA	100	99.99	100	99.98
	CSSR	91	98.51	99.53	98.30
	CCT	1.85	5.30	2.75	2.02
	CCR	100	99.09	99.53	99.50
	MOS	3.84	2.89	3.80	3.85

* Note Voice QoS KPIs: Network Accessibility (NA >99%), Call Setup Success Rate (CSSR >=98%), Call Connection Time (CCT <=7.5), Call Completion Ratio (CCR > 98), Mean Opinion Score (MOS >=3)

*Non-Compliant KPI's are highlighted"

Table 9.4: Voice QoS KPIs Compliance Level

10. SMS SERVICE

2 x SMS QoS KPIs (i.e. Success Rate and Delivery Time) have been measured while testing SMS services in the surveyed cities. The compliance in each surveyed city is shown in Table 10.1: SMS QoS KPIs Compliance Level.

Operator	Jazz		Telenor		Ufone		ZonG	
	SR	DT	SR	DT	SR	DT	SR	DT
Fateh Jang	97.78	2.68	99.37	3.16	100	2.00	100	2.44
Hasanabdul	98.13	2.59	97.49	3.08	100	2.19	99.38	2.52
Jatoi	100	3.02	100	3.20	99.16	1.86	100	2.04
Karachi Central	100	3.22	99.42	3.47	98.83	1.83	100	2.18
Mardan	97.84	2.61	97.56	2.82	99.73	2.07	99.20	2.43
Matiari	100	3.16	89.04	4.97	100	1.79	98.64	2.15
Multan	99.57	3.18	99.59	3.22	99.60	1.80	99.24	2.66
Risalpur	98.06	2.55	98.84	3.08	99.62	1.80	98.83	2.51
Shakargarh	98.03	2.44	98.68	2.80	98.68	2.57	100	2.12
Sheikhupura	96.77	2.60	98.69	3.38	99.35	1.88	99.03	2.76
Larkana	99.72	3.09	99.72	3.41	99.43	1.80	98.30	3.57
Umerkot	100	3.01	99.07	3.36	99.53	1.97	99.53	2.60
Buner	98.81	2.67	95.13	2.94	99.61	2.24	98.90	2.10
Mansehra	99.06	2.51	98.10	3.05	100	1.74	99.06	2.21
Chiniot	99.51	2.89	99.51	2.86	99.51	2.02	99.51	2.49
Pindi Bhattian	100	2.87	98.63	2.64	99.09	1.86	98.64	2.58
Jacobabad	99.70	3.25	99.70	3.18	99.40	1.96	100	3.00
Bahawalpur	100	3.16	99.64	3.00	100	1.93	100	2.50
Mandi Bahauddin	98.56	2.40	98.32	3.07	99.51	1.75	99.52	2.29

**SMS QoS KPIs: Success Rate (SR =>99%), Delivery Time (DT<=12)*

Table 10.1: SMS QoS KPIs Compliance Level

11. SURVEY STANDING - MOBILE NETWORK COVERAGE

The categorization of CMOs in Mobile Network Coverage i.e. Signal Strength of 4G/LTE and 3G Networks (in case of fallback) measured in Technology Auto Detect Mode is shown in Table 11.1: CMOs Standing in Mobile Network Coverage – Technology Auto Detect.

S.No	Operator	Mobile Network Coverage Auto Detect Mode						Standing
		Compliant			Non-Compliant			
		4G	3G	Total	4G	3G	Total	
1.	Ufone	18	15	33	1	-	1	1 st
2.	Jazz	18	-	18	1	-	1	1 st
3.	Zong	17	14	31	2	1	3	2 nd
4.	Telenor	14	8	22	5	8	13	3 rd

Table 11.1: CMOs Standing in Mobile Network Coverage – Technology Auto Detect Mode

12. SURVEY STANDING - MOBILE BROADBAND SERVICE

The categorization of each CMO in Mobile Broadband Service is as under:

- i. Download Data Throughput (Auto Mode). The Download Data Throughput, as per the highest to lowest obtained results, is shown in Table 12.1: CMOs Standing in Download Data Throughput – Auto Mode Testing.

S. #	Operator	Highest Download Throughput – Number of Cities (Automode)				Standing
		1 st	2 nd	3 rd	4 th	
1.	Jazz	16	3	-	-	1 st
2.	Zong	3	16	-	-	2 nd
3.	Ufone	-	-	13	6	3 rd
4.	Telenor	-	-	6	13	4 th

Table 12.1: CMOs Standing in Download Data Throughput– Auto Mode Testing

- ii. Upload Data Throughput (Auto Mode). The Upload Data Throughput, as per the highest to lowest obtained results, is shown in Table 12.2: CMOs Standing in Upload Data Throughput – Auto Mode Testing.

S. #	Operator	Highest Upload Throughput – Number of Cities (Automode)				Standing
		1 st	2 nd	3 rd	4 th	
1.	Jazz	10	9	-	-	1 st
2.	Zong	9	8	2	-	2 nd
3.	Ufone	-	2	16	1	3 rd
4.	Telenor	-	-	1	18	4 th

Table 12.2: CMOs Standing in Download Data Throughput– Auto Mode Testing

- iii. Webpage Loading Time. The categorization of each CMOs, as per the maximum compliant of Webpage Loading Time, is shown in Table 12.3: CMOs Standing in Webpage Loading Time.

S. #	Operator	Webpage Loading Time – Number of Cities		Standing
		Compliant	Non-Compliant	
1.	Jazz	19	-	1 st
2.	Ufone	19	-	1 st
3.	Telenor	18	1	2 nd
4.	Zong	17	2	3 rd

Table 12.3: CMOs Standing in Webpage Loading Time

- iv. Latency (3rd Party App). The categorization of each CMOs, as per the maximum compliant of cities in terms of Latency, is shown in Table 12.4: CMOs Standing in Latency (3rd Party App).

S. #	Operator	Latency - Number of Cities		Standing
		Compliant	Non-Compliant	
1.	Jazz	19	-	1 st
2.	Zong	19	-	1 st
3.	Ufone	18	1	2 nd
4.	Telenor	18	1	2 nd

Table 12.4: CMOs Standing in Latency (3rd Party App)

- v. Latency (Automode). The categorization of each CMOs, as per the maximum compliant of cities in terms of Latency, is shown in Table 12.5: CMOs Standing in Latency (Automode).

S. #	Operator	Latency - Number of Cities		Standing
		Compliant	Non-Compliant	
1.	Jazz	16	3	1 st
2.	Telenor	14	5	2 nd
3.	Zong	13	6	3 rd
4.	Ufone	10	9	4 th

Table 12.5: CMOs Standing in Latency (Automode)

- vi. Download Data Throughput (3rd Party App). 3rd Party App Download Throughput, as per the highest to lowest obtained results, is shown in Table 12.6: CMOs Standing in Download Throughput – 3rd Party App.

S. #	Operator	Highest Download Throughput – Number of Cities				Standing
		1 st	2 nd	3 rd	4 th	
1.	Jazz	11	8	-	-	1 st
2.	Zong	8	11	-	-	2 nd
3.	Ufone	-	-	13	6	3 rd
4.	Telenor	-	-	6	13	4 th

Table 12.6: CMOs Standing in Download Throughput – 3rd Party App

- vii. Upload Data Throughput (3rd Party App). 3rd Party App Upload Throughput, as per the highest to lowest obtained results, is shown in Table 12.7: CMOs Standing in Upload Throughput – 3rd Party App.

S. #	Operator	Highest Upload Throughput – Number of Cities				Standing
		1 st	2 nd	3 rd	4 th	
1.	Zong	16	3	-	-	1 st
2.	Jazz	3	16	-	-	2 nd
3.	Ufone	-	-	18	1	3 rd
4.	Telenor	-	-	1	18	4 th

Table 12.7: CMOs Standing in Upload Throughput – 3rd Party App

13. SURVEY STANDING – VOICE & SMS SERVICE

The categorization of each CMOs, as per the maximum compliant of Voice and SMS QoS KPIs are shown in (i) Table 13.1: CMOs Standing in Voice Service & (ii) Table 13.2: CMOs Standing in SMS.

S.#	Operator	Voice QoS KPIs		Standing
		Compliant	Non-Compliant	
1.	Jazz	94	1	1 st
2.	Ufone	89	6	2 nd
3.	Zong	86	9	3 rd
4.	Telenor	82	13	4 th

Table 13.1: CMOs Standing in Voice Service

S. #	Operator	SMS QoS KPIs		Standing
		Compliant	Non-Compliant	
1.	Ufone	36	2	1 st
2.	Zong	33	5	2 nd
3.	Jazz	30	8	3 rd
4.	Telenor	28	10	4 th

Table 13.2: CMOs Standing in SMS Service