

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 ten (10) cities of Punjab, Khyber Pakhtunkhwa (KPK) and Sindh. The name of cities along with survey dates are mentioned in **Table 1.1: QoS Survey Cities & Dates:**

S. #	Province	City	Survey Dates
1.	Punjab	Jhang	27 th ~ 29 th July 2021
2.		Sialkot	2 nd ~ 5 th Aug, 2021
3.		Vehari	30 th Aug ~ 3 rd Sep, 2021
4.		Dera Ghazi Khan	6 th ~ 10 th Sep, 2021
5.	Khyber Pakhtunkhwa	Bannu	27 th ~ 29 th July 2021
6.		Dera Ismail Khan	2 nd ~ 5 th Aug, 2021
7.	Sindh	Thatta	27 th ~ 29 th July 2021
8.		Tando Allah Yar	2 nd ~ 5 th Aug, 2021
9.		Korangi	23 rd ~ 27 th Aug, 2021
10.		Malir	30 th Aug ~ 3 rd Sep, 2021

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 Voice Calls and SMS Sessions, both A-Party and B-Party mobile handsets were kept in auto detect mode, whereas, in case of Data Sessions the mobile handset were locked in 4G/LTE and 3G mode.

MOBILE NETWORK COVERAGE

3.1. **4G / LTE SIGNAL STRENGTH.** During the survey, 4G/LTE signal strength samples were recorded on survey routes. As per Next Generation Mobile Service (NGMS) licenses awarded, licensees are required to meet **the threshold of -100dBm or above of Reference Signal Receive Power (RSRP) with 90% confidence level**. The Confidence Level and Compliance of signal strength is shown in **Table 3.1: 4G Signal Strength -100dBm with 90% Confidence Level**.

4G COVERAGE								
City	OPERATORS				COMPLIANT (YES/NO)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Jhang	99.09%	99.24%	100.00%	99.73%	Yes	Yes	Yes	Yes
Sialkot	98.78%	97.67%	99.03%	98.69%	Yes	Yes	Yes	Yes
Vehari	99.15%	96.93%	75.47%	99.40%	Yes	Yes	No	Yes
Dera Ghazi Khan	94.59%	95.05%	99.76%	99.91%	Yes	Yes	Yes	Yes
Bannu	53.66%	91.47%	99.95%	93.33%	No	Yes	Yes	Yes
Dera Ismail Khan	93.90%	98.08%	98.34%	98.35%	Yes	Yes	Yes	Yes
Thatta	93.31%	95.55%	N/A	98.99%	Yes	Yes	N/A	Yes
Tando Allah Yar	94.35%	88.76%	88.44%	99.12%	Yes	No	No	Yes
Korangi	99.20%	97.63%	92.43%	99.85%	Yes	Yes	Yes	Yes
Malir	98.10%	90.98%	95.11%	98.93%	Yes	Yes	Yes	Yes

Table 3.1: 4G Signal Strength -100dBm with 90% Confidence Level.

3.2. **3G SIGNAL STRENGTH.** During the survey 3G signal strength samples were recorded on survey routes. As per Next Generation Mobile Service (NGMS) licenses awarded, licensees are required to meet the threshold of -100dBm or above of Received Signal Code Power (RSCP) with 90% confidence level. The Confidence Level and Compliance of signal strength is shown in **Table 3.2: 3G Signal Strength -100dBm with 90% Confidence Level.**

3G COVERAGE								
City	OPERATORS				COMPLIANT (YES/NO)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Jhang	99.97%	100.00%	99.98%	100.00%	Yes	Yes	Yes	Yes
Sialkot	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Vehari	100.00%	99.99%	100.00%	100.00%	Yes	Yes	Yes	Yes
Dera Ghazi Khan	98.53%	99.99%	100.00%	100.00%	Yes	Yes	Yes	Yes
Bannu	99.49%	99.95%	100.00%	99.99%	Yes	Yes	Yes	Yes
Dera Ismail Khan	100.00%	99.99%	100.00%	100.00%	Yes	Yes	Yes	Yes
Thatta	94.50%	99.11%	96.20%	99.95%	Yes	Yes	Yes	Yes
Tando Allah Yar	100.00%	99.74%	99.91%	100.00%	Yes	Yes	Yes	Yes
Korangi	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Malir	100.00%	99.93%	100.00%	100.00%	Yes	Yes	Yes	Yes

Table 3.2: 3G Signal Strength -100dBm with 90% Confidence Level

MOBILE BROADBAND SERVICE

4.1. A total of 24,772 http download test attempts made, out of which 19,296 were successful attempts and rest of the 5,476 were failed. The company wise detail is mentioned in **Table4.1: Data Tests Statistics.**

Description	Jazz	Telenor	Ufone	ZonG
TOTAL DATA TEST ATTEMPTS	5498	6665	7360	5249
SUCCESSFUL DATA TEST ATTEMPTS	5152	4731	4333	5080
FAILED DATA TEST ATTEMPTS	346	1934	3027	169
TEST ATTEMPTS SUCCESS RATIO	93.71%	70.98%	58.87%	96.78%

Table4.1: Data Tests Statistics.

4.2. **4G USER DATA THROUGHPUT.** As per Next Generation Mobile Service (NGMS) licenses awarded, licensees are required to meet the threshold of minimum of 2Mbps of 4G User Data Throughput. The results of Data Service QoS KPI i.e. User Data Throughput is shown in **Table4.2: 4G User Data Throughput \geq 2 Mbps.**

4G DATA								
City	Throughput (In Mbps)				Highest Throughput			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Jhang	20.91	4.33	N/A	18.03	First	Third	N/A	Second
Sialkot	12.11	6.74	3.73	19.48	Second	Third	Fourth	First
Vehari	7.50	13.77	9.12	18.20	Fourth	Second	Third	First
Dera Ghazi Khan	9.25	4.07	2.25	12.48	Second	Third	Fourth	First
Bannu	2.56	2.96	1.43	14.03	Third	Second	Fourth	First
Dera Ismail Khan	9.93	2.54	2.97	16.77	Second	Fourth	Third	First
Thatta	5.88	10.54	N/A	8.57	Third	First	N/A	First
Tando Allah Yar	5.58	2.80	10.50	9.61	Third	Fourth	First	Second
Korangi	17.86	9.99	4.22	15.95	First	Third	Fourth	Second
Malir	20.58	12.39	4.83	17.51	First	Third	Fourth	Second

Table4.2: 4G User Data Throughput \geq 2 Mbps