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 <u>Nineteen (19) x Cities of Balochistan, Khyber Pakhtunkhwa, Islamabad Capital Territory (ICT), Punjab and Sindh</u> during 2nd Quarter i.e. April~ June 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	QUETTA		3	8th/9th~16th May,2023
2	GAWADAR		2	15th ~16th May,2023
3	KUCHLAK	BALOCHISTAN	3	23rd ~25th May,2023
4	MACH		4	29th May ~ 1st June,2023
5	PISHIN		4	5th ~8th June,2023
6	CHARSADDA		4	2nd ~5th May,2023
7	HANGU		4	15th ~18th May,2023
8	LOWER DIR	KHYBER PAKHTUNKHWA	3	22nd ~24th May,2023
9	ABBOTTABAD		3	31st May ~2nd June,2023
10	MANSEHRA		3	5th ~7th June,2023
11	ISLAMABAD	ICT	6	2nd~5th,8th~9th May,2023
12	BAHAWALPUR		3	2nd ~ 4th May,2023
13	SHEIKHUPURA		3	3rd~5th May,2023
14	KOT RADHA KISHAN	PUNJAB	3	23rd~25th May,2023
15	PASROOR		3	8th~9th, 30th May,2023
16	SARGODHA		4	23rd~26th May,2023
17	SUKKUR		3	2nd~4th May,2023
18	MATIARI	SINDH	3	2nd~4th May,2023
19	UMERKOT		4	23rd~26th May,2023

Table 1.1: QoS Survey Dates

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 <u>the threshold of -100 dBm or above of Reference Signal Receive Power (RSRP) with 90% confidence level.</u> 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
SUKKUR	99.84%	93.97%	99.05%	99.84%	Yes	Yes	Yes	Yes
BAHAWALPUR	95.49%	91.74%	**87.36%**	98.81%	Yes	Yes	No	Yes
CHARSADDA	**84.52%**	**70.63%**	99.40%	98.68%	No	No	Yes	Yes
GWADAR	90.60%	96.57%	99.27%	96.38%	Yes	Yes	Yes	Yes
QUETTA	99.62%	97.04%	99.09%	99.61%	Yes	Yes	Yes	Yes
ISLAMABAD	97.47%	96.68%	99.71%	98.89%	Yes	Yes	Yes	Yes
KOT RADHA KISHAN	99.13%	**88.75%**	98.06%	99.20%	Yes	No	Yes	Yes
SHEIKHUPURA	99.64%	97.11%	98.57%	100.00%	Yes	Yes	Yes	Yes
HANGU	**87.46%**	**40.77%**	99.78%	**72.76%**	No	No	Yes	No
KUCHLAK	95.97%	**77.87%**	99.66%	98.49%	Yes	No	Yes	Yes
ABBOTTABAD	94.50%	96.16%	98.49%	97.70%	Yes	Yes	Yes	Yes
LOWER DIR	98.95%	98.56%	97.76%	**85.25%**	Yes	Yes	Yes	No
MANSEHRA	96.97%	98.46%	97.81%	98.84%	Yes	Yes	Yes	Yes
MATIARI	99.90%	**89.80%**	92.50%	95.66%	Yes	No	Yes	Yes
MACH	**83.20%**	90.99%	95.80%	90.04%	No	Yes	Yes	Yes
PASROOR	98.35%	97.82%	98.61%	98.40%	Yes	Yes	Yes	Yes
PISHIN	96.33%	**79.92%**	99.07%	98.64%	Yes	No	Yes	Yes
SARGODHA	97.61%	90.61%	96.28%	94.38%	Yes	Yes	Yes	Yes
UMERKOT	**89.76%**	98.32%	90.40%	97.26%	No	Yes	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
SUKKUR	99.76%	95.56%	98.94%	99.67%	Yes	Yes	Yes	Yes
BAHAWALPUR	99.10%	97.97%	94.41%	99.98%	Yes	Yes	Yes	Yes
CHARSADDA	**89.37%**	**81.52%**	98.78%	97.83%	No	No	Yes	Yes
GWADAR	96.74%	97.92%	99.48%	98.81%	Yes	Yes	Yes	Yes
QUETTA	99.71%	98.52%	99.11%	99.79%	Yes	Yes	Yes	Yes
ISLAMABAD	98.36%	96.05%	99.67%	99.30%	Yes	Yes	Yes	Yes
KOT RADHA KISHAN	99.71%	91.46%	99.13%	98.31%	Yes	Yes	Yes	Yes
SHEIKHUPURA	99.77%	94.19%	98.90%	99.87%	Yes	Yes	Yes	Yes
HANGU	93.52%	**69.50%**	99.99%	**80.27%**	Yes	No	Yes	No
KUCHLAK	97.31%	90.16%	99.81%	99.97%	Yes	Yes	Yes	Yes
ABBOTTABAD	96.84%	98.68%	97.88%	98.76%	Yes	Yes	Yes	Yes
LOWER DIR	99.20%	99.40%	98.67%	92.47%	Yes	Yes	Yes	Yes
MANSEHRA	97.43%	99.43%	97.46%	98.59%	Yes	Yes	Yes	Yes
MATIARI	99.53%	**86.01%**	**86.54%**	96.10%	Yes	No	No	Yes
MACH	**85.21%**	92.44%	93.85%	91.34%	No	Yes	Yes	Yes
PASROOR	98.19%	96.38%	97.90%	98.62%	Yes	Yes	Yes	Yes
PISHIN	97.61%	**83.29%**	99.13%	98.41%	Yes	No	Yes	Yes
SARGODHA	98.30%	95.14%	92.76%	97.56%	Yes	Yes	Yes	Yes
UMERKOT	92.07%	97.43%	93.19%	92.90%	Yes	Yes	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**