

# 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 Nine (09) x cities of Punjab and Sindh during 3<sup>rd</sup> Quarter i.e. July ~ September 2022. The name of cities along with survey dates are mentioned in **Table 1.1: QoS Survey Cities & Dates:**

S. #.	Province	City	Days	Survey Dates
1.	Punjab	Lodhran	4	18~21 July, 2022
2.		Rawalpindi	4	19~22 July, 2022
3.		Hafizabad	3	25~27 July, 2022
4.		Khanpur	4	25~28 July, 2022
5.		Attock	4	25~28 July, 2022
6.		Wazirabad	3	01~03 August, 2022
7.		Pakpattan	5	15~19 August, 2022
8.	Sindh	Hyderabad	5	18~22 July, 2022
9.		Karachi East	4	20~23 September, 2022

**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 auto detect mode whereas in case of 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	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Attock	96.55%	93.32%	93.93%	97.84%	Yes	Yes	Yes	Yes
Hafizabad	97.18%	98.49%	90.75%	96.82%	Yes	Yes	Yes	Yes
Rawalpindi	97.96%	96.12%	99.44%	99.40%	Yes	Yes	Yes	Yes
Hyderabad	97.46%	<b>88.56%</b>	91.71%	98.17%	Yes	<b>No</b>	Yes	Yes
Karachi East	98.98%	97.22%	99.22%	99.67%	Yes	Yes	Yes	Yes
Pakpattan	96.58%	<b>85.39%</b>	<b>89.43%</b>	98.64%	Yes	<b>No</b>	<b>No</b>	Yes
Khanpur	95.64%	<b>88.61%</b>	95.61%	98.37%	Yes	<b>No</b>	Yes	Yes
Lodhran	97.17%	<b>60.62%</b>	<b>N/A</b>	98.72%	Yes	<b>No</b>	<b>N/A</b>	Yes
Wazirabad	99.28%	97.54%	98.44%	96.19%	Yes	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	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Attock	95.45%	92.65%	91.08%	96.58%	Yes	Yes	Yes	Yes
Hafizabad	98.82%	98.70%	88.86%	97.96%	Yes	Yes	No	Yes
Rawalpindi	97.45%	95.50%	99.55%	99.43%	Yes	Yes	Yes	Yes
Hyderabad	97.46%	88.65%	92.05%	98.16%	Yes	No	Yes	Yes
Karachi East	99.74%	98.55%	99.02%	99.55%	Yes	Yes	Yes	Yes
Pakpattan	98.69%	91.56%	85.88%	99.01%	Yes	Yes	No	Yes
Khanpur	92.58%	95.04%	93.75%	99.18%	Yes	Yes	Yes	Yes
Lodhran	99.26%	76.85%	62.37%	99.67%	Yes	No	No	Yes
Wazirabad	98.42%	95.13%	99.16%	97.27%	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 TECHNOLOGY AUTO DETECT MODE.** During the survey, the signal strength samples were recorded on survey routes, wherever network switched to 3G while keeping the mobile handset in technology auto detect mode and also in technology locked mode. As per Next Generation Mobile Service (NGMS) licenses, licensees are required to meet the threshold of -100 dBm or above of Received Signal Code Power (RSCP) with 90% confidence level. 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	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Attock	100%	N/A	100%	N/A	Yes	N/A	Yes	N/A
Hafizabad	97%	98%	91%	97%	Yes	Yes	Yes	Yes
Rawalpindi	N/A	100%	100%	N/A	N/A	Yes	Yes	N/A
Hyderabad	N/A							
Karachi East	100%	100%	100%	100%	Yes	Yes	Yes	Yes
Pakpattan	N/A	N/A	100%	N/A	N/A	N/A	Yes	N/A
Khanpur	99%	N/A	N/A	N/A	Yes	N/A	N/A	N/A
Lodhran	100%	94%	100%	N/A	Yes	Yes	Yes	N/A
Wazirabad	N/A							
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	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Attock	100.00%	99.88%	99.21%	99.99%	Yes	Yes	Yes	Yes
Hafizabad	99.97%	100.00%	98.64%	100.00%	Yes	Yes	Yes	Yes
Rawalpindi	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Hyderabad	100.00%	99.48%	99.89%	100.00%	Yes	Yes	Yes	Yes
Karachi East	99.83%	99.94%	100.00%	100.00%	Yes	Yes	Yes	Yes
Pakpattan	100.00%	99.27%	98.40%	100.00%	Yes	Yes	Yes	Yes
Khanpur	100.00%	99.93%	99.96%	100.00%	Yes	Yes	Yes	Yes
Lodhran	99.60%	98.22%	98.58%	100.00%	Yes	Yes	Yes	Yes
Wazirabad	100.00%	100.00%	100.00%	100.00%	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