

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 eighteen (18) x cities of Punjab, Khyber Pakhtunkhwa (KPK), Balochistan 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	Muzaffargarh	11 th ~ 14 th Oct 2021
2.		Khanewal	26 th ~ 28 th Oct 2021
3.		Abdul Hakeem	1 st ~ 3 rd Nov 2021
4.		Sargodha	9 th ~ 11 th Nov 2021
5.		Gujrat	15 th ~ 17 th Nov 2021
6.		Narowal	15 th ~ 17 th Dec 2021
7.	Khyber Pakhtunkhwa	Mansehra	25 th ~ 27 th Oct 2021
8.		Mardan	3 rd ~ 4 th Nov 2021
9.		Nowshera	8 th ~ 9 th Nov 2021
10.		Kohat	15 th ~ 17 th Nov 2021
11.		Charsadda	24 th ~ 25 th Nov 2021
12.		Battagram	29 th ~ 30 th Nov 2021
13.	Balochistan	Mastung	18 th ~ 21 st Oct 2021
14.		Loralai	25 th ~ 27 th Oct 2021
15.		Dera Allah Yar	8 th ~ 10 th Nov 2021
16.		Dera Murad Jamali	2 nd ~ 4 th Nov 2021
17.		Pishin	15 th ~ 17 th Nov 2021
18.	Sindh	Mirpur Khas	23 rd ~ 25 th Nov 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 the survey, mobile handsets for Voice Calls, SMS and Data Sessions, were kept in auto detect mode.

MOBILE NETWORK COVERAGE

3.1. **4G / LTE SIGNAL STRENGTH.** During the survey, while conducting data test in auto mode, 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 Signal Strength -100dBm with 90% Confidence Level								
City	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Khanewal</i>	98.97%	97.73%	100.00%	99.86%	Yes	Yes	Yes	Yes
<i>Muzaffargarh</i>	98.60%	94.57%	0.28%	99.15%	Yes	Yes	No	Yes
<i>Mastung</i>	93.97%	97.60%	99.69%	97.70%	Yes	Yes	Yes	Yes
<i>Loralai</i>	97.01%	96.28%	99.49%	96.44%	Yes	Yes	Yes	Yes
<i>Mansehra</i>	96.44%	98.39%	89.84%	99.06%	Yes	Yes	No	Yes
<i>Dera Allah Yar</i>	73.25%	99.62%	91.32%	98.94%	No	Yes	Yes	Yes
<i>Dera Murad Jamali</i>	91.22%	99.12%	89.92%	91.94%	Yes	Yes	No	Yes
<i>Mardan</i>	87.38%	91.76%	93.68%	98.49%	No	Yes	Yes	Yes
<i>Sargodha</i>	99.56%	99.45%	95.52%	98.30%	Yes	Yes	Yes	Yes
<i>Gujrat</i>	99.38%	99.63%	87.51%	99.41%	Yes	Yes	No	Yes
<i>Charsadda</i>	79.63%	78.21%	87.47%	98.18%	No	No	No	Yes
<i>Battagram</i>	96.89%	94.16%	70.15%	98.82%	Yes	Yes	No	Yes
<i>Abdul Hakeem</i>	98.09%	93.66%	91.16%	99.43%	Yes	Yes	Yes	Yes
<i>Kohat</i>	89.74%	96.19%	99.75%	97.66%	No	Yes	Yes	Yes
<i>Mirpur Khas</i>	94.29%	98.47%	84.87%	99.24%	Yes	Yes	No	Yes
<i>Nowshera</i>	93.65%	94.64%	97.88%	97.09%	Yes	Yes	Yes	Yes
<i>Pishin</i>	99.03%	95.02%	98.69%	97.41%	Yes	Yes	Yes	Yes
<i>Narowal</i>	95.77%	98.39%	92.17%	94.90%	Yes	Yes	Yes	Yes

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

3.2. **3G SIGNAL STRENGTH.** During the survey, while conducting data test in auto mode, wherever network switched to 3G, the 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 Signal Strength -100dBm with 90% Confidence Level								
City	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Khanewal</i>	99.99%	99.96%	99.79%	100.00%	Yes	Yes	Yes	Yes
<i>Muzaffargarh</i>	99.99%	99.41%	100.00%	100.00%	Yes	Yes	Yes	Yes
<i>Mastung</i>	N/A	N/A	100.00%	100.00%	N/A	N/A	Yes	Yes
<i>Loralai</i>	N/A	N/A	100.00%	89.87%	N/A	N/A	Yes	No
<i>Mansehra</i>	N/A	N/A	98.82%	N/A	N/A	N/A	Yes	N/A
<i>Dera Allah Yar</i>	100.00%	N/A	N/A	N/A	Yes	N/A	N/A	N/A
<i>Dera Murad Jamali</i>	N/A	N/A	100.00%	100.00%	N/A	N/A	Yes	Yes
<i>Mardan</i>	99.97%	N/A	99.41%	N/A	Yes	N/A	Yes	N/A
<i>Sargodha</i>	99.97%	100.00%	99.53%	100.00%	Yes	Yes	Yes	Yes
<i>Gujrat</i>	100.00%	100.00%	99.90%	100.00%	Yes	Yes	Yes	Yes
<i>Charsadda</i>	98.52%	N/A	99.99%	N/A	Yes	N/A	Yes	N/A
<i>Battagram</i>	N/A	N/A	99.67%	N/A	N/A	N/A	Yes	N/A