

# 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 Fourteen (14) x Cities of Sindh, Punjab and Khyber Pakhtunkhwa during 1<sup>st</sup> Quarter i.e. January~ March 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	KARACHI MALIR	SINDH	4	30 <sup>th</sup> January ~ 2 <sup>nd</sup> February 2023
2	KARACHI CENTRAL		4	25 <sup>th</sup> January ~ 30 <sup>th</sup> January 2023
3	KARACHI KEMARI		4	6 <sup>th</sup> February ~ 9 February 2023
4	KARACHI WEST		4	13 <sup>th</sup> February ~ 16 <sup>th</sup> February 2023
5	KARACHI SOUTH		4	27 <sup>th</sup> February ~ 2 <sup>nd</sup> March 2023
6	NANKANA SAHIB	PUNJAB	4	30 <sup>th</sup> January ~ 02 <sup>nd</sup> February 2023
7	MURIDKE		3	6 <sup>th</sup> February ~ 8 <sup>th</sup> February 2023
8	DEPALPUR		3	13 <sup>th</sup> February ~ 15 <sup>th</sup> February 2023
9	CHICHAWATNI		4	27 <sup>th</sup> February ~ 2 <sup>nd</sup> March 2023
10	SHUJABAD		4	30 <sup>th</sup> January ~ 02 <sup>nd</sup> February 2023
11	KABIRWALA	KHYBER PAKHTUNKHWA	4	6 <sup>th</sup> February ~ 9 <sup>th</sup> February 2023
12	NOWSHERA		4	30 <sup>th</sup> January ~ 02 <sup>nd</sup> February 2023
13	SWABI		4	6 <sup>th</sup> February ~ 9 <sup>th</sup> February 2023
14	KARAK		4	13 <sup>th</sup> February ~ 16 <sup>th</sup> February 2023

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 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 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	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	99.66%	99.10%	99.99%	99.96%	Yes	Yes	Yes	Yes
Karachi Kemari	99.35%	98.53%	97.44%	99.15%	Yes	Yes	Yes	Yes
Karachi Malir	93.77%	<b>88.65%</b>	94.10%	94.82%	Yes	<b>No</b>	Yes	Yes
Nankana Sahib	99.46%	95.36%	<b>82.91%</b>	99.81%	Yes	Yes	<b>No</b>	Yes
Nowshera	93.31%	91.18%	98.11%	96.50%	Yes	Yes	Yes	Yes
Muridke	98.90%	<b>86.78%</b>	92.67%	97.83%	Yes	<b>No</b>	Yes	Yes
Swabi	<b>89.47%</b>	95.86%	93.52%	97.16%	<b>No</b>	Yes	Yes	Yes

Karak	<b>88.60%</b>	91.30%	98.75%	95.28%	<b>No</b>	Yes	Yes	Yes
Depalpur	96.98%	<b>81.64%</b>	97.86%	98.37%	Yes	<b>No</b>	Yes	Yes
Karachi West	96.37%	99.15%	99.77%	99.83%	Yes	Yes	Yes	Yes
Karachi South	99.51%	97.67%	99.87%	98.79%	Yes	Yes	Yes	Yes
Shujabad	93.24%	<b>70.97%</b>	<b>80.84%</b>	96.37%	Yes	<b>No</b>	<b>No</b>	Yes
Kabirwala	99.93%	96.80%	95.88%	99.70%	Yes	Yes	Yes	Yes
Chichawatni	99.06%	<b>86.44%</b>	98.08%	97.47%	Yes	<b>No</b>	Yes	Yes

**Table 3.1: 4G Signal Strength Technology Auto Detect Mode -100 dBm with 90 Confidence Level**

<b>4G Signal Strength -100dBm with 90% Confidence Level – Technology Locked Mode</b>								
<i>City</i>	<b>Confidence Level (%)</b>				<b>Compliant (Yes/No)</b>			
	<b>Jazz</b>	<b>Telenor</b>	<b>Ufone</b>	<b>ZonG</b>	<b>Jazz</b>	<b>Telenor</b>	<b>Ufone</b>	<b>ZonG</b>
Karachi Central	99.59%	99.34%	99.38%	99.94%	Yes	Yes	Yes	Yes
Karachi Kemari	99.63%	99.62%	97.88%	98.91%	Yes	Yes	Yes	Yes
Karachi Malir	94.82%	<b>87.71%</b>	<b>89.13%</b>	95.22%	Yes	<b>No</b>	<b>No</b>	Yes
Nankana Sahib	99.79%	90.79%	<b>85.73%</b>	99.79%	Yes	Yes	<b>No</b>	Yes
Nowshera	94.60%	90.82%	98.92%	96.50%	Yes	Yes	Yes	Yes
Muridke	98.73%	<b>84.45%</b>	92.51%	96.00%	Yes	<b>No</b>	Yes	Yes
Swabi	91.41%	95.60%	95.31%	99.25%	Yes	Yes	Yes	Yes
Karak	90.63%	<b>89.32%</b>	98.21%	96.01%	Yes	<b>No</b>	Yes	Yes
Depalpur	98.91%	<b>87.02%</b>	98.02%	99.35%	Yes	<b>No</b>	Yes	Yes
Karachi West	97.56%	98.76%	99.88%	99.51%	Yes	Yes	Yes	Yes
Karachi South	99.90%	98.71%	99.41%	99.66%	Yes	Yes	Yes	Yes
Shujabad	99.78%	<b>83.26%</b>	93.11%	99.71%	Yes	<b>No</b>	Yes	Yes
Kabirwala	99.93%	98.63%	96.55%	99.83%	Yes	Yes	Yes	Yes
Chichawatni	98.59%	<b>88.58%</b>	98.58%	98.50%	Yes	<b>No</b>	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, 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 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	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	N/A							
Karachi Kemari	N/A		100.00%	100.00%	N/A		Yes	Yes
Karachi Malir	100.00%	100.00%	100.00%	N/A	Yes	Yes	Yes	N/A
Nankana Sahib	N/A		100.00%	N/A			Yes	N/A
Nowshera	100.00%	100.00%	100.00%	99.16%	Yes	Yes	Yes	Yes
Muridke	N/A	100.00%	100.00%	100.00%	N/A	Yes	Yes	Yes
Swabi	N/A	98.41%	100.00%	N/A		Yes	Yes	N/A
Karak	100.00%	100.00%	100.00%	N/A	Yes	Yes	Yes	N/A
Depalpur	N/A		100.00%	N/A			Yes	N/A
Karachi West	N/A	100.00%	N/A			Yes	N/A	
Karachi South	N/A							
Shujabad	N/A	91.81%	99.96%	100.00%	N/A	Yes	Yes	Yes
Kabirwala	N/A							
Chichawatni								
Note: N/A means No Fallback to 3G Network								

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**Table 3.3: 3G Signal Strength Technology Auto Detect Mode -100 dBm with 90% Confidence Level**