

# 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 Twelve (12) different Motorways / Highways / Inter Cities Roads of Punjab, Khyber Pakhtunkhwa (KPK) and Balochistan. The name of Motorways / Highways / Inter Cities Roads along with survey dates are shown in **Table 1.1: QoS Survey Roads & Dates**:

S. #.	Province	City	Survey Dates
1.	Punjab	Lahore to Gujranwala	24 <sup>th</sup> May 2021
2.		Lahore to Kasur	31 <sup>st</sup> May 2021
3.		Lahore to Faisalabad	7 <sup>th</sup> June 2021
4.		Multan to Rahim Yar Khan	21 <sup>st</sup> June 2021
5.	Khyber Pakhtunkhwa	Peshawar to Kohat	24 <sup>th</sup> May 2021
6.		Peshawar to Swabi	31 <sup>st</sup> May 2021
7.		Peshawar to Haripur	7 <sup>th</sup> June 2021
8.		Peshawar to Abbottabad	14 <sup>th</sup> June 2021
9.	Balochistan	Quetta to Pishin	24 <sup>th</sup> May 2021
10.		Quetta to Sibbi	31 <sup>st</sup> May 2021
11.		Quetta to Noshki	7 <sup>th</sup> June 2021
12.		Quetta to Khuzdar	14 <sup>th</sup> June 2021

Table 1.1: QoS Survey Roads & Dates

## DRIVE TEST DETAILS

2.1. The QoS survey was carried out using Automated QoS Monitoring & Benchmarking Tool i.e. "SMARTBENCHMARKER". During Voice Calls, SMS and Data Sessions, both A-Party and B-Party mobile handsets were kept in auto detect mode. A Call of 120 seconds was made followed by an SMS from Party-A to Party-B.

## MOBILE NETWORK COVERAGE

3.1. Mobile Network Signal Strength is measured in decibels (dBm). Signal Strength can range from approximately -30 dBm upto -120 dBm. The closer that number is to zero, the stronger the signal. In general, anything better than -100 decibel is considered a usable signal. The different ranges of signal strength and its effects on broadband speed and sustainability can be seen in **Table3.1: Signal Strength and Broadband Speed**.

S. #.	Signal Strength (dBm)	Signal Strength
1.	-65 to 0	Strong Signal with Maximum Data Speed
2.	-75 to -65	Strong Signal with Good Data Speed
3.	-85 to -75	Fair, Useful & Reliable Data Speed is Attainable
4.	-100 to -85	Marginal Data Speed with Possibility of Drop-Out
5.	-140 to -100	Performance will Drop Drastically

Table3.1: Signal Strength and Broadband Speed

3.2. **4G / LTE SIGNAL STRENGTH**. During the survey 4G/LTE signal strength samples 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 analysis of recorded signal strength revealed following:

- a. **COMPLIANCE.** The Motorways / Highways / Inter Cities Roads where CMOs remained compliant are mentioned in **Table 3.2: Compliance of 4G/LTE (RSRP) Signal Strength**.

S. #.	Operator	Motorways / Highways / Inter Cities Roads	
		Count	Names
1.	Jazz	7	Lahore to Gujranwala, Lahore to Kasur, Lahore to Faisalabad, Multan to Rahim Yar Khan, Quetta to Pishin, Quetta to Sibbi & Quetta to Noshki
2.	Telenor	4	Lahore to Gujranwala, Lahore to Faisalabad, Quetta to Pishin & Quetta to Noshki,
3.	Ufone	5	Lahore to Gujranwala, Peshawar to Kohat, Peshawar to Haripur, Quetta to Pishin & Quetta to Sibbi
4.	ZonG	5	Lahore to Gujranwala, Lahore to Kasur, Lahore to Faisalabad, Multan to Rahim Yar Khan & Quetta to Pishin

**Table 3.2: Compliance of 4G/LTE (RSRP) Signal Strength**

- b. **NON-COMPLIANCE.** The Motorways / Highways / Inter Cities Roads where CMOs remained non-compliant are mentioned in **Table 3.3: Non-Compliance of 4G/LTE (RSRP) Signal Strength**.

S. #.	Operator	Motorways / Highways / Inter Cities Roads	
		Count	Names
1.	Jazz	5	Peshawar to Kohat, Peshawar to Swabi, Peshawar to Haripur, Peshawar to Abbottabad & Quetta to Khuzdar
2.	Telenor	8	Lahore to Kasur, Multan to Rahim Yar Khan, Peshawar to Kohat, Peshawar to Swabi, Peshawar to Haripur, Peshawar to Abbottabad, Quetta to Sibbi & Quetta to Khuzdar
3.	Ufone	7	Lahore to Kasur, Lahore to Faisalabad, Multan to Rahim Yar Khan, Peshawar to Swabi, Peshawar to Abbottabad, Quetta to Noshki & Quetta to Khuzdar
4.	ZonG	7	Peshawar to Kohat, Peshawar to Swabi, Peshawar to Haripur, Peshawar to Abbottabad, Quetta to Sibbi, Quetta to Noshki & Quetta to Khuzdar

**Table 3.3: Non-Compliance of 4G/LTE (RSRP) Signal Strength**

3.3. In case of Jazz, Telenor and ZonG, the mobile handset majority of the time remained on 4G network, while in case of Ufone the mobile handset kept switching between 4G/LTE and 3G Networks based upon its availability on the surveyed Motorways/Highways/Inter Cities Roads.

## **MOBILE BROADBAND SERVICE**

4.1. **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 and 256Kbps of 3G User Data Throughput. The analysis User Data Throughput revealed following.

- a. **COMPLIANCE.** The Motorways / Highways / Inter Cities Roads where CMOs remained compliant are mentioned in **Table 4.1: Compliance of 4G User Data Throughput > 2 Mbps**.