

# 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 on Sixteen (16) different Motorways / Highways / Inter Cities Roads of Punjab, Sindh and Khyber Pakhtunkhwa (KPK). The name of Motorways / Highways / Inter Cities Roads along with survey dates are shown in **Table 1.1: QoS Survey Dates:**

S. #	Province	Motorways / Highways / Inter Cities Roads
1.	Punjab	Rawalpindi to Attock
2.		M-3 Motorway (Lahore to Multan)
3.		Multan to Kot Addu
4.		Rawalpindi to Chakwal
5.		Multan to Abdul Hakeem
6.		Multan to Bahawalpur
7.		Lahore to Pattoki
8.		Lahore to Mianwali
9.		Lahore to Narowal
10.	Sindh	Karachi to Nawabshah
11.		Sukkur to Nawabshah
12.		Sukkur to Larkana
13.		Karachi to Sanghar
14.		Hyderabad to Badin
15.		Hyderabad to Mirpur Khas
16.	Khyber Pakhtunkhwa & Punjab	GT Road (Peshawar to Rawalpindi)

**Table 1.1: QoS Survey Dates and Samples**

## DRIVE TEST DETAILS

2.1. The QoS survey was carried out using the newly procured 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 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 analysis of recorded signal strength revealed following:

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

S. #.	Operator	Motorways / Highways / Inter Cities Roads	
		Count	Names
1.	Jazz	6	Karachi to Nawabshah, Hyderabad to Mirpur Khas, Multan to Bahawalpur, Multan to Abdul Hakeem, Lahore to Multan, Lahore to Pattoki
2.	Telenor	7	Hyderabad to Badin, Lahore to Multan, Lahore to Pattoki, Lahore to Narowal, Lahore to Mianwali, Rawalpindi to Chakwal, GT Road Peshawar to Rawalpindi
3.	Ufone	3	Rawalpindi to Chakwal, Rawalpindi to Attock, GT Road Peshawar to Rawalpindi
4.	ZonG	12	Karachi to Nawabshah, Hyderabad to Mirpur Khas, Hyderabad to Badin, Multan to Bahawalpur, Multan to Abdul Hakeem, Lahore to Multan, Lahore to Pattoki, Lahore to Narowal, Lahore to Mianwali, Rawalpindi to Chakwal, Rawalpindi to Attock, GT Road Peshawar to Rawalpindi

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

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

S. #.	Operator	Motorways / Highways / Inter Cities Roads	
		Count	Names
1.	Jazz	10	Sukkur to Larkana, Sukkur to Nawabshah, Karachi to Sanghar, Hyderabad to Badin, Multan to Kot Addu, Lahore to Narowal, Lahore to Mianwali, Rawalpindi to Chakwal, Rawalpindi to Attock, GT Road Peshawar to Rawalpindi
2.	Telenor	9	Sukkur to Larkana, Sukkur to Nawabshah, Karachi to Sanghar, Karachi to Nawabshah, Hyderabad to Mirpur Khas, Multan to Kot Addu, Multan to Bahawalpur, Multan to Abdul Hakeem, Rawalpindi to Attock
3.	Ufone	13	Sukkur to Larkana, Sukkur to Nawabshah, Karachi to Sanghar, Karachi to Nawabshah, Hyderabad to Mirpur Khas, Hyderabad to Badin, Multan to Kot Addu, Multan to Abdul Hakeem, Lahore to Multan, Lahore to Pattoki, Lahore to Narowal, Lahore to Mianwali, Multan to Bahawalpur
4.	ZonG	4	Sukkur to Larkana, Sukkur to Nawabshah, Karachi to Sanghar, Multan to Kot Addu

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

3.3. **3G SIGNAL STRENGTH.** During the survey 3G 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 analysis of recorded signal strength revealed that all CMOs remained compliant of the said threshold value at all 16 x surveyed Motorways / Highways / Inter Cities Roads.