

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 nine (09) Motorways / Highways / Inter Cities Roads of Punjab, Khyber Pakhtunkhwa (KPK) and Balochistan. The name of roads along with survey dates are shown in **Table 1.1: QoS Survey Roads & Dates**:

S. #.	Province	Road	Survey Dates
1.	Punjab	Multan to Muzaffargarh Road	11 th Oct 2021
2.		Multan to Khanewal Road	25 th Oct 2021
3.		Lahore to Sargodha Road	11 th Nov 2021
4.		Lahore to Gujrat Road	15 th Nov 2021
5.	Khyber Pakhtunkhwa	Peshawar to Mardan Road	1 st Nov 2021
6.		Abbottabad to Battagram Road	29 th Nov 2021
7.	Balochistan	Quetta to Mastung Road	18 th Oct 2021
8.		Quetta to Loralai Road	25 th Oct 2021
9.		Quetta to Dera Murad Jamali Road	1 st Nov 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". Drive test teams covered Motorway / Highway/Inter Cities Roads from one Toll Plaza to another Toll Plaza. During the survey, mobile handsets for Voice Calls, SMS and Data Sessions, were kept in auto detect mode.

NETWORK COVERAGE

3.1. **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 Confidence Level and Compliance of signal strength is shown in **Table 3.1: 4G Signal Strength -100dBm with 90% Confidence Level.**

Road Name	4G Signal Strength Confidence Level				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Multan to Khanewal	94.54%	84.33%	62.49%	97.37%	Yes	No	No	Yes
Multan to Muzaffargarh	90.15%	84.89%	62.36%	91.59%	Yes	No	No	Yes
Quetta to Mastung	93.09%	88.55%	92.38%	94.74%	Yes	No	Yes	Yes
Quetta to Loralai	78.89%	89.88%	88.35%	92.48%	No	No	No	Yes
Quetta to Dera Murad Jamali	92.66%	97.06%	96.85%	81.32%	Yes	Yes	Yes	No
Peshawar to Mardan	61.59%	79.98%	70.87%	85.53%	Yes	No	No	No

<i>Lahore to Sargodha</i>	96.83%	94.23%	34.47%	88.59%	Yes	Yes	No	No
<i>Lahore to Gujrat</i>	92.63%	92.24%	85.82%	96.69%	Yes	Yes	No	Yes
<i>Abbottabad to Battagram</i>	84.73%	92.05%	77.51%	90.70%	No	Yes	No	Yes

Table 3.2: 4G Signal Strength -100dBm with 90% Confidence Level.

3.2. **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 Confidence Level and Compliance of signal strength is shown in Table 3.2: 3G Signal Strength -100dBm with 90% Confidence Level.

Road Name	3G Signal Strength Confidence Level				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
<i>Multan to Khanewal</i>	N/A	N/A	100.00%	N/A	N/A	N/A	Yes	N/A
<i>Multan to Muzaffargarh</i>	N/A	96.59%	88.19%	97.36%	N/A	Yes	No	Yes
<i>Quetta to Mastung</i>	96.81%	75.00%	95.30%	96.53%	Yes	No	Yes	Yes
<i>Quetta to Loralai</i>	68.64%	99.48%	90.18%	57.55%	No	Yes	Yes	No
<i>Quetta to Dera Murad Jamali</i>	66.30%	77.87%	75.56%	84.51%	No	No	No	No
<i>Peshawar to Mardan</i>	93.18%	N/A	99.63%	100.00%	Yes	N/A	Yes	Yes
<i>Lahore to Sargodha</i>	N/A	100.00%	99.26%	95.45%	N/A	Yes	Yes	Yes
<i>Lahore to Gujrat</i>	N/A	100%	100%	N/A	N/A	Yes	Yes	N/A
<i>Abbottabad to Battagram</i>	53.88%	45.73%	94.13%	85.42%	No	No	Yes	No

Table 3.2: 3G Signal Strength -100dBm with 90% Confidence Level

MOBILE BROADBAND SERVICE

4.1. A total of **4937 http download test attempts** made, out of which **1925 were successful** and rest of **3012 were failed**. The company wise detail is mentioned in **Table4.1: Data Tests Statistics**.

Description	Jazz	Telenor	Ufone	ZonG
<i>TOTAL DATA TEST ATTEMPTS</i>	1336	1235	1139	1227
<i>SUCCESSFUL DATA TEST ATTEMPTS</i>	480	549	509	387
<i>FAILED DATA TEST ATTEMPTS</i>	856	686	630	840
<i>TEST ATTEMPTS SUCCESS RATIO</i>	35.93%	44.45%	44.69%	31.54%
<i>USER DATA THROUGHPUT</i>	7.351 Mbps	2.036 Mbps	2.71 Mbps	10.38 Mbps

Table4.1: Data Tests Statistics

4.2. **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. The results of Data Service QoS KPI i.e. User Data Throughput on **9 x surveyed roads** is shown in **Table4.2: 4G User Data Throughput \geq 2 Mbps.**