

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 eight (08) Motorways / Highways / Inter Cities Roads of Punjab, Khyber Pakhtunkhwa (KPK) and Sindh. 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	Lahore to Jhang	26 th July 2021
2.		Lahore to Sialkot	2 nd August 2021
3.		Multan to Vehari	30 th August 2021
4.		Multan to Dera Ghazi Khan	5 th September 2021
5.	Khyber Pakhtunkhwa	Peshawar to Bannu	26 th July 2021
6.		Bannu to Dera Ismail Khan	2 nd August 2021
7.	Sindh	Karachi to Thatta	26 th July 2021
8.		Karachi to Tando Allah Yar	2 nd August 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 selected survey routes in such a manner to cover Motorway / Highway/Inter Cities Roads from one Toll Plaza to another Toll Plaza. During Voice Calls, SMS and Data Sessions, all the mobile handsets were kept in auto detect mode.

MOBILE 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.**

4G SIGNAL STRENGTH ROADS – COMPLIANT (YES/NO)								
Road Name	OPERATORS				COMPLIANT (YES/NO)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Lahore to Jhang	96.86%	97.34%	83.60%	93.80%	Yes	Yes	No	Yes
Lahore to Sialkot	99.16%	99.14%	68.93%	98.40%	Yes	Yes	No	Yes
Multan to Vehari	90.64%	81.84%	48.71%	92.34%	Yes	No	No	Yes
Multan to Dera Ghazi Khan	93.13%	94.20%	87.76%	90.38%	Yes	Yes	No	Yes
Peshawar to Bannu	81.72%	82.15%	94.26%	84.05%	No	No	Yes	No
Bannu to Dera Ismail Khan	76.17%	91.59%	95.81%	87.56%	No	Yes	Yes	No
Karachi to Thatta	91.02%	86.71%	83.13%	96.72%	Yes	No	No	Yes
Karachi to Tando Allah Yar	90.69%	83.80%	88.84%	86.70%	Yes	No	No	No

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**.

3G SIGNAL STRENGTH ROADS – COMPLIANT (YES/NO)								
Road Name	OPERATORS				COMPLIANT (YES/NO)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Lahore to Jhang	100.00%	100.00%	97.69%	N/A	Yes	Yes	Yes	N/A
Lahore to Sialkot	N/A	100.00%	99.94%	N/A	N/A	Yes	Yes	N/A
Multan to Vehari	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Multan to Dera Ghazi Khan	100.00%	98.64%	93.29%	99.24%	Yes	Yes	Yes	Yes
Peshawar to Bannu	99.00%	52.00%	98.96%	97.90%	Yes	No	Yes	Yes
Bannu to Dera Ismail Khan	98.43%	100.00%	97.25%	N/A	Yes	Yes	Yes	N/A
Karachi to Thatta	N/A	N/A	94.12%	N/A	N/A	N/A	Yes	N/A
Karachi to Tando Allah Yar	N/A	100.00%	92.83%	100.00%	N/A	Yes	Yes	Yes

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

MOBILE BROADBAND SERVICE

4.1. A total of 24,772 http download test attempts made, out of which 19,296 were successful attempts and rest of the 5,476 were failed. The company wise detail is mentioned in **Table4.1: Data Tests Statistics**.

Description	Jazz	Telenor	Ufone	ZonG
TOTAL DATA TEST ATTEMPTS	3286	15364	2439	1034
SUCCESSFUL DATA TEST ATTEMPTS	685	652	654	640
FAILED DATA TEST ATTEMPTS	2601	14712	1785	394
TEST ATTEMPTS SUCCESS RATIO	20.85%	4.24%	26.81%	61.9%

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 is shown in **Table4.2: 4G User Data Throughput \geq 2 Mbps**.

4G DATA THROUGHPUT ROADS								
Road Name	Operators				Highest Throughput			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Lahore to Jhang	8.03	1.46	2.03	8.87	Second	Fourth	Third	First
Lahore to Sialkot	3.21	1.94	1.98	6.52	Second	Fourth	Third	First
Multan to Vehari	2.97	5.55	1.41	14.88	Third	Second	Fourth	First
Multan to Dera Ghazi Khan	9.18	2.47	1.52	11.10	Second	Third	Fourth	First
Peshawar to Bannu	6.95	1.81	2.31	10.10	Second	Fourth	Third	First
Bannu to Dera Ismail Khan	9.53	2.43	2.56	14.69	Second	Fourth	Third	First
Karachi to Thatta	9.95	3.34	3.52	7.82	First	Fourth	Third	Second
Karachi to Tando Allah Yar	8.43	3.94	3.95	14.71	Second	Fourth	Third	First

Table4.2: 4G User Data Throughput \geq 2 Mbps

4.3. During the survey, the deployed technologies by Cellular Mobile Operators (CMOs), Success Rate of http Transfer Download Tests, Data Technologies during the Data Sessions alongwith Technology Bands have been recorded. The details can be seen in attached graphs.