

# 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 three (03) x cities of Azad Jammu & Kashmir (AJK), in Fourth Quarter 2023. The name of cities along with survey dates are mentioned in **Table 1.1: QoS Survey Cities & Dates:**

S. #.	City	Days	Survey Dates
1.	KOTLI	4	21 <sup>st</sup> ~24 <sup>th</sup> November 2023
2.	MUZAFFARABAD	6	31 <sup>st</sup> Oct~1 <sup>st</sup> ,6 <sup>th</sup> ,7 <sup>th</sup> ,8 <sup>th</sup> &10 <sup>th</sup> Nov, 2023
3.	MIRPUR	4	14 <sup>th</sup> ~18 <sup>th</sup> November 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 and Data Sessions, were kept in Auto Detect and 3G Locked modes.

## MOBILE NETWORK COVERAGE

3.1. **4G SIGNAL STRENGTH.** During the survey, while conducting data test in auto mode, 4G/LTE signal strength samples were recorded on survey routes. As per Next Generation Mobile Service (NGMS) licenses and Cellular Mobile Network Quality of Service (QoS) Regulations 2021, 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 in AJK**

4G Signal Strength -100dBm with 90% Confidence Level										
City	Confidence Level					Compliant (Yes/No)				
	Jazz	Telenor	Ufone	ZonG	SCOM	Jazz	Telenor	Ufone	ZonG	SCOM
MUZAFARABAD	96.95	97.03	99.69	99.11	92.64	Yes	Yes	Yes	Yes	Yes
MIRPUR	93.73	92.62	94.73	94.62	81.39	Yes	Yes	Yes	Yes	No
KOTLI	92.82	91.91	93.67	100.00	86.84	Yes	Yes	Yes	Yes	No

**Table 3.1: 4G Signal Strength -100dBm with 90% Confidence Level in AJK**

3.1. **3G SIGNAL STRENGTH.** Special Communication Organization (SCOM) is the only Cellular Mobile Operator (CMO) offering 3G services in Azad Jammu & Kashmir. As per Next Generation Mobile Service (NGMS) licenses and Cellular Mobile Network Quality of Service (QoS) Regulations 2021, licensees are required to meet the threshold of -100dBm or above of Reference 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 -100dBm with 90% Confidence Level		
City	Confidence Level	Compliant (Yes/No)
	SCOM	SCOM
MUZAFARABAD	96.57%	Yes
MIRPUR	96.71%	Yes
KOTLI	99.40%	Yes

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

Voice Service Cities - Compliance (Yes/No)					
Operator	Voice KPIs	THRESHOLD	KOTLI	MUZAFFARBAD	MIRPUR
	CCR	> 98%	Yes	Yes	Yes
	MOS	≥ 3	Yes	Yes	Yes
	ISHO	≥ 98%	Yes	Yes	Yes
	RSSR	> 98%	Yes	Yes	Yes
ZonG	NA	≥ 99%	Yes	Yes	Yes
	CSSR	≥ 98%	Yes	No	No
	CCT	≤ 7.5 sec	No	No	Yes
	CCR	> 98%	Yes	No	No
	MOS	≥ 3	Yes	Yes	Yes
	ISHO	≥ 98%	N/A	N/A	N/A
	RSSR	> 98%	N/A	N/A	Yes
SCOM	NA	≥ 99%	Yes	Yes	Yes
	CSSR	≥ 98%	No	No	Yes
	CCT	≤ 7.5 sec	Yes	Yes	Yes
	CCR	> 98%	Yes	No	No
	MOS	≥ 3	Yes	Yes	Yes
	ISHO	≥ 98%	Yes	Yes	No
	RSSR	> 98%	Yes	Yes	Yes
* Note Voice QoS KPIs: Network Accessibility (NA) > 99%, Service Accessibility (SA) > 98%, Call Connection Time (CCT) ≤ 7.5 Seconds, Call Completion Ratio (CCR) ≥ 98%, Mean Opinion Score (MOS) > 3, Inter System Hand Over (ISHO) > 98% & RAB Setup Success Rate (RSSR) > 98%					

Table 5.3: Voice QoS KPIs Compliance Level

## SMS SERVICE

6.1. A total of 3,500 SMS sending attempts conducted, out of which 3,364 SMS successfully received at B-Party. The company wise SMS Statistics are shown in Table 6.1: SMS Statistics, wherein city wise compliance is shown in Table 6.2: City Wise SMS Compliance

DESCRIPTION	JAZZ	SCOM	TELENOR	UFONE	ZONG
SMS SEND REQUEST	688	709	678	714	711
SMS SUCCESSFULLY RECEIVED	645	689	616	711	703
SMS RECEIVE SUCCESS RATE %	93.75	97.18	90.86	99.58	98.87
END-TO-END DELIVERY TIME (s)	3.85	2.6	3.34	2.92	2.93

Table 6.1: SMS Statistics

SMS KPI		Muzaffarabad		Mirpur		Kotli	
		Success Rate	Delivery Time	Success Rate	Delivery Time	Success Rate	Delivery Time
Operator	Jazz	No	Yes	No	Yes	No	Yes
	Telenor	No	Yes	No	Yes	No	Yes
	Ufone	Yes	Yes	Yes	Yes	Yes	Yes
	Zong	No	Yes	No	Yes	Yes	Yes
	SCOM	No	Yes	No	Yes	No	Yes

Table 6.2: City Wise SMS Compliance

6.2. The SMS Send Request & Successful Reception by Technology, Average Success Rate & End to End Delivery Time and Delivery Duration by Technology are shown in the graphs.