

# **INDEPENDENT QUALITY OF SERVICE** **SURVEY IN CITIES OF GILGIT BALTISTAN**

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THIRD QUARTER 2021

ENFORCEMENT WIRELESS – II DIRECTORATE  
PTA | F-5/1, ISLAMABAD

# 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 eight (08) cities of Gilgit Baltistan. The name of cities along with survey dates are shown in **Table 1.1: QoS Survey Cities & Dates:**

S. #.	Province	City	Survey Dates
1.	Gilgit Baltistan	Gilgit	26 <sup>th</sup> Aug ~ 9 Sep 2021
2.		Skardu	
3.		Gahkuch	
4.		Hunza	
5.		Jaglot	
6.		Astore	
7.		Khaplu	
8.		Shigar	

**Table 1.1: QOS Survey Cities & 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 main roads, service roads and majority of sectors/colonies. During Voice Calls and SMS Sessions, both A-Party and B-Party mobile handsets were kept in auto detect mode, whereas, in case of Data Sessions the mobile handset were locked in 4G/LTE and 3G mode.

## MOBILE NETWORK COVERAGE

3.1. **4G / LTE & 3G SIGNAL STRENGTH.** During the survey, 4G/LTE and 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 Reference Signal Receive Power (RSRP) with 90% confidence level & -100dBm or above of Received Signal Code Power (RSCP) with 90% confidence level.** Only SCOM is providing 4G/LTE and 3G data services in Gilgit Baltistan. The Confidence Level and Compliance of 4G and 3G signal strength is shown in **Table 3.1: 4G & 3G Signal Strength - 100dBm with 90% Confidence Level.**

Cities	SCOM SIGNAL STRENGTH			
	3G		4G	
	Average (-dBm)	Confidence (%)	Average (-dBm)	Confidence (%)
Gahkuch	-71.3	99.98	-82.1	89.93
Gilgit	-66.5	100	-79.90	98.99
Hunza	-75.30	95.07	-84.6	86.87
Jaglot	-76.2	100	-88.8	75.18
Astore	-75.5	100	-85.7	92.16
Khaplu	-78.8	98.23	-87.2	92.47
Shigar	-80.8	98.20	-92.4	85.20
Skardu	-73.6	100	-80.7	98.89

**Table 3.1: 4G & 3G Signal Strength -100dBm with 90% Confidence Level**

## MOBILE BROADBAND SERVICE

4.1. **4G & 3G 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**, & **minimum of 256Kbps of 3G User Data Throughput**. The results of Data Service QoS KPI i.e. User Data Throughput of SCOM is shown in **Table4.1: 4G & 3G User Data Throughput**

CITIES	SCOM USER DATA THROUGHPUT	
	3G ( $\geq 256$ Kbps)	4G ( $\geq 2$ Mbps)
Gahkuch	297.32	0.41
Gilgit	1400.79	1.73
Hunza	1710.02	1.04
Jaglot	679.89	0.54
Astore	1633.74	1.02
Khaplu	3332.96	4.25
Shigar	39991.61	2.84
Skardu	619.98	0.39

**Table4.1: 4G & 3G User Data Throughput**

## VOICE SERVICE

5.1. 7 x QoS KPIs have been measured while testing voice services in 8 x cities of Gilgit Baltistan. The compliance level of threshold values of voice QoS KPIs in each city is shown in **Table 5.1: Voice QoS KPIs Compliance Level**.

VOICE SERVICE GILGIT BALTISTAN – COMPLIANCE (YES/NO)									
Operator	* Voice QoS KPIs	Gahkuch	Gilgit	Hunza	Jaglot	Astore	Khaplu	Shigar	Skardu
Jazz	NA	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	SA	Yes	Yes	Yes	Yes	Yes	No	No	No
	CCT	No	Yes	No	Yes	Yes	Yes	No	Yes
	CCR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	No	No	No	No	No	Yes	No	No
Telenor	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SA	No	Yes	Yes	Yes	No	No	Yes	No
	CCT	No	No	No	No	No	No	No	No
	CCR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	No	No	No	No	No	No	No	No
Ufone	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SA	Yes	Yes	Yes	Yes	Yes	No	Yes	No
	CCT	No	No	No	No	No	No	No	No
	CCR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	Yes	No	Yes	Yes	No	Yes	Yes	No
ZonG	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SA	Yes	No	No	No	Yes	No	No	No
	CCT	No	No	No	No	No	No	No	No
	CCR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MOS	No	No	No	No	No	No	No	No
SCOM	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SA	Yes	Yes	No	Yes	Yes	No	Yes	No
	CCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CCR	Yes	No	Yes	No	Yes	Yes	Yes	No
	MOS	No	No	No	No	No	Yes	Yes	No
	RSSR	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
	NA	Yes	Yes	Yes	Yes	Yes	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 5.1: Voice QoS KPIs Compliance Level**

## SMS SERVICE

6.1. 2 x QoS KPIs i.e. “SMS Success Rate” and “SMS End to End Delivery Time” have been measured. The compliance level of threshold values of SMS QoS KPIs in each city is shown in **Table 6.2: SMS QoS KPIs Compliance Level**.

SMS SERVICE GILGIT BALTISTAN – COMPLIANCE (YES/NO)											
Operator	Jazz		Telenor		Ufone		ZonG		SCOM		
*SMS QoS KPI	SR	DT	SR	DT	SR	DT	SR	DT	SR	DT	
Cities	Gahkuch	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Gilgit	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
	Hunza	Yes	Yes	No	No	Yes	Yes	No	No	No	Yes
	Jaglot	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
	Astore	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
	Khaplu	No	Yes	No	No	No	No	No	No	No	Yes
	Shigar	Yes	Yes	No	No	Yes	Yes	N/A	N/A	Yes	Yes
	Skardu	No	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes

\* Note SMS QoS KPIs : SMS Success Rate (SR) ≥ 99% & SMS End to End Delivery Time (DT) ≤ 12 Seconds

**Table 6.2: SMS QoS KPIs Compliance Level**

## SURVEY RESULTS

7.1 The city wise survey results of Voice, SMS and Data QoS KPIs of CMOs in graphical form are shown at **Annex-A**.

## STANDING IN SURVEY

8.1. CMOs have been prioritized/ placed at 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> position in each category i.e. Mobile Network Coverage, Mobile Broadband Service, Voice Service and SMS Service, based upon the compliance level against each QoS KPI in each category in surveyed cities.

- MOBILE NETWORK COVERAGE.** Only SCOM is providing 3G and 4G/LTE services
- MOBILE BROADBAND SERVICE.** Only SCOM is providing 3G and 4G/LTE services
- VOICE SERVICE.** The categorization of each CMOs, as per the maximum compliant of Voice QoS KPIs is shown in **Table 8.3: CMOs Standing in Voice Service**.

S. #.	Operator	Voice QoS KPIs		Standing
		Compliant	Non-Compliant	
1.	SCOM	43	13	1 <sup>st</sup>
2.	Ufone	27	13	2 <sup>nd</sup>
3.	Jazz	26	14	3 <sup>rd</sup>
4.	Telenor	20	20	4 <sup>th</sup>
5.	ZonG	18	22	5 <sup>th</sup>

**Table 8.3: CMOs Standing in Voice Service**

- SMS SERVICE.** The categorization of each CMOs, as per the maximum compliant of SMS QoS KPIs which is shown in **Table 8.4: CMOs Standing in SMS Service**

S. #.	Operator	SMS QoS KPIs		Standing
		Compliant	Non-Compliant	
1.	Ufone	14	2	1 <sup>st</sup>
2.	Jazz	13	3	2 <sup>nd</sup>

<i>S. #.</i>	Operator	SMS QoS KPIs		Standing
		Compliant	Non-Compliant	
3.	SCOM	13	3	2 <sup>nd</sup>
4.	ZonG	4	10	3 <sup>rd</sup>
5.	Telenor	3	13	4 <sup>th</sup>

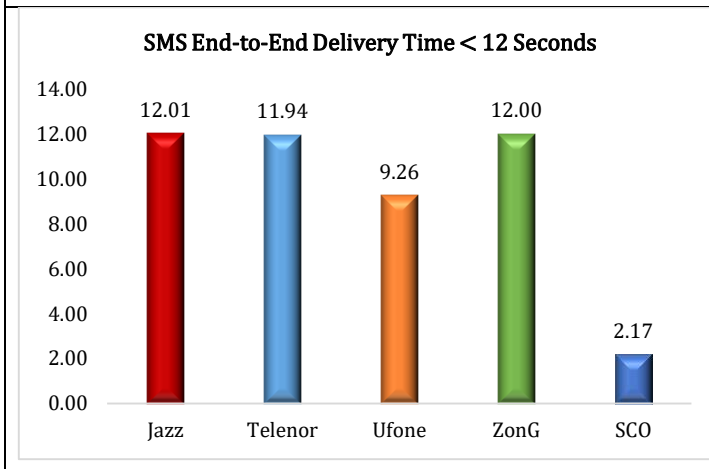
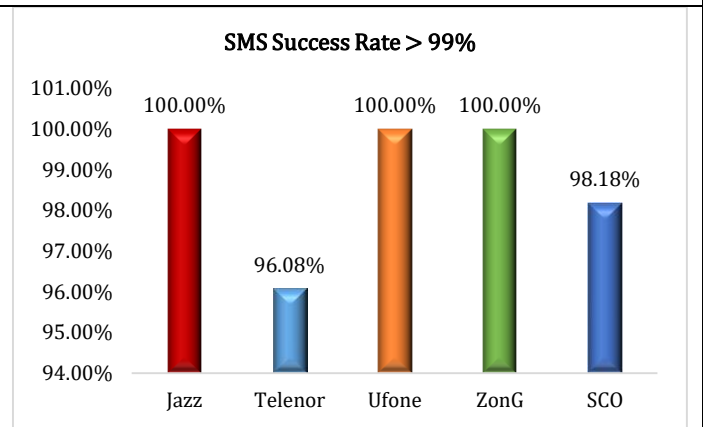
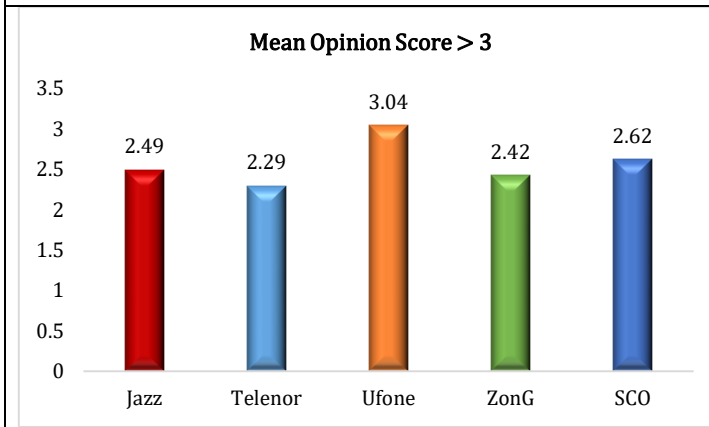
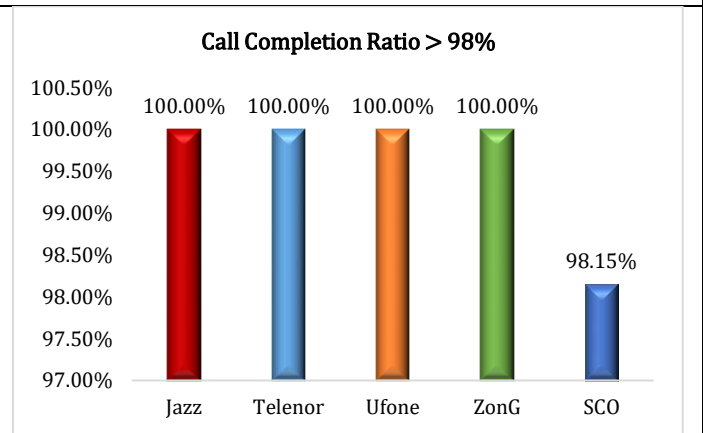
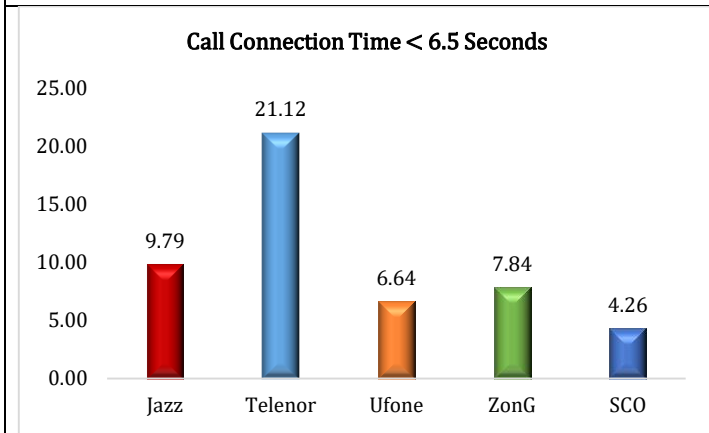
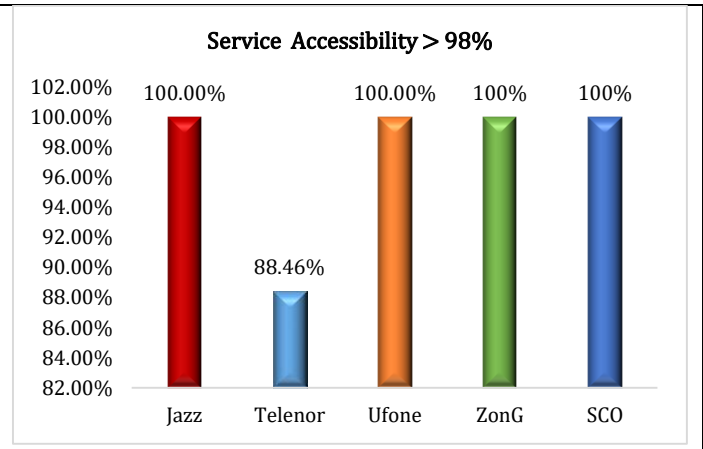
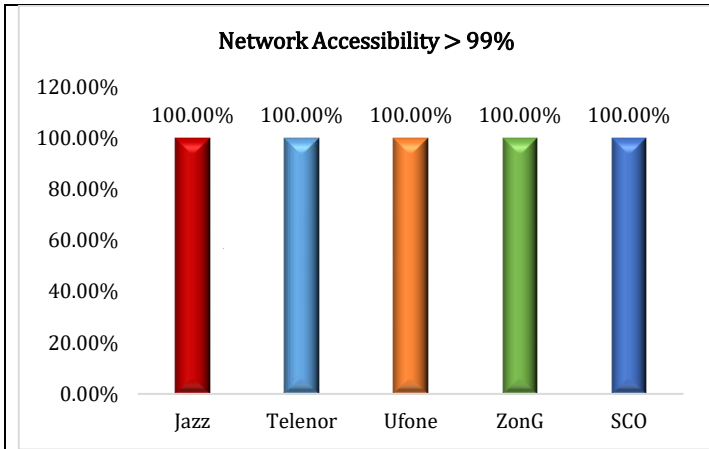
**Table 8.4: CMOs Standing in SMS Service**

- e. **OVERALL STANDING.** The overall standing of each CMOs in each category of service is mentioned in **Table 8.5: CMOs Overall Standing in QoS Survey.**

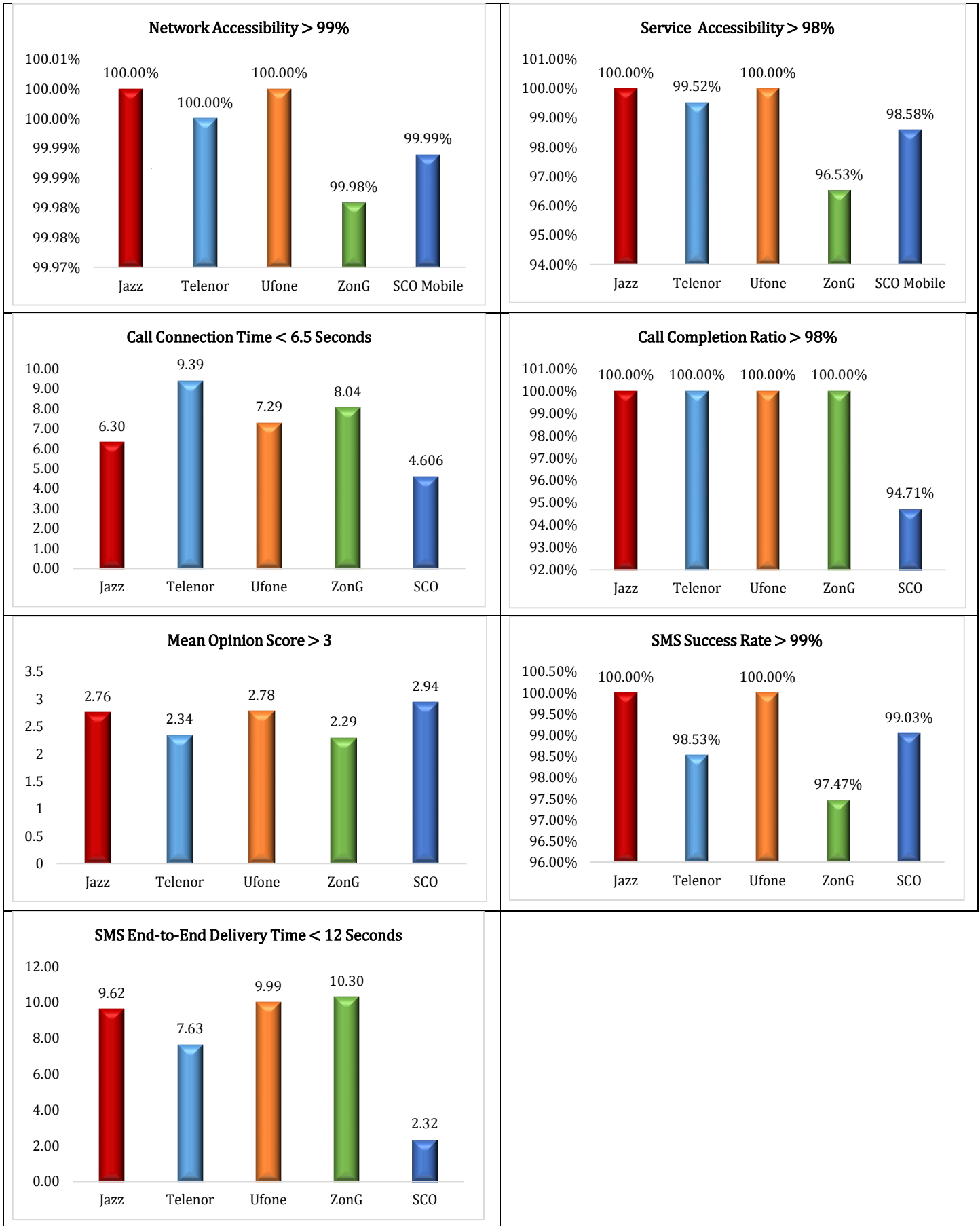
<i>S. #.</i>	Service		STANDING				
			1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
1.	Mobile Network Coverage		SCOM	N/A			
2.	Mobile Broadband	3G	SCOM	N/A			
		4G	SCOM	N/A			
3.	Voice		SCOM	Ufone	Jazz	Telenor	ZonG
4.	SMS		Ufone	Jazz & SCOM	ZonG	Telenor	-

**Table 8.5: CMOs Overall Standing in QoS Survey**

## QUALITY OF SERVICE SURVEY RESULTS – GAHKUCH



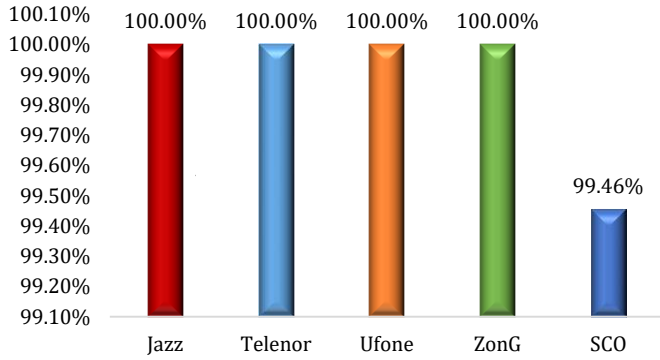
## QUALITY OF SERVICE SURVEY RESULTS – GILGIT



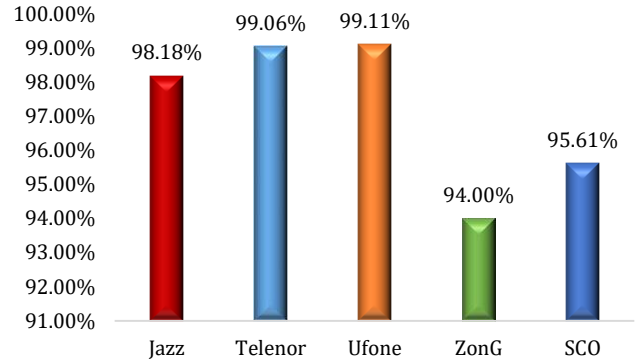


## QUALITY OF SERVICE SURVEY RESULTS – HUNZA

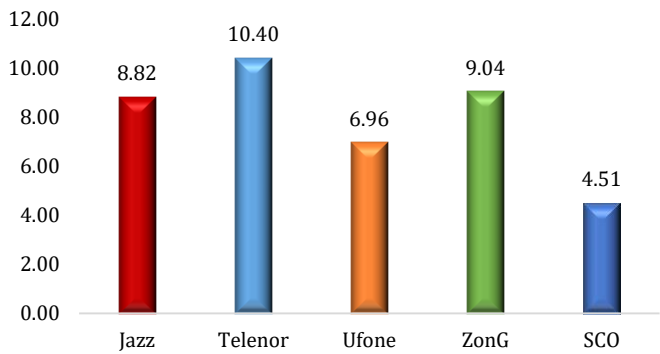
**Network Accessibility > 99%**



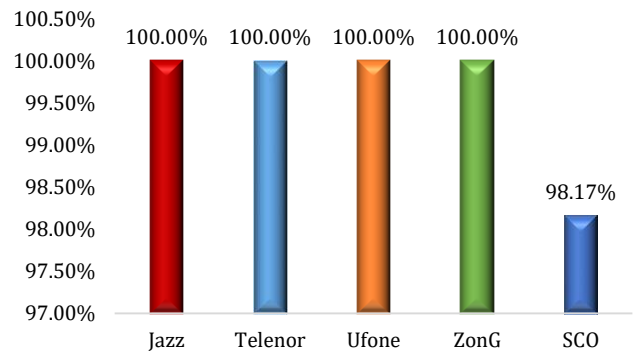
**Service Accessibility > 98%**



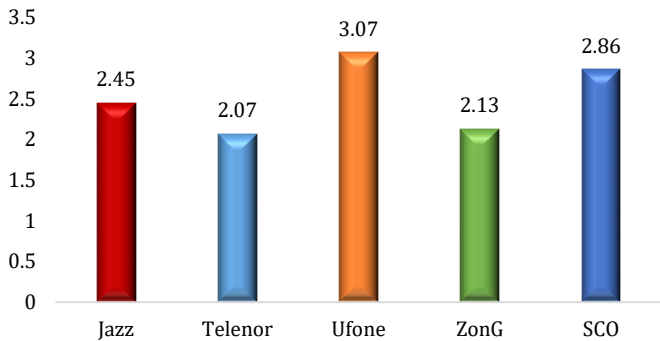
**Call Connection Time < 6.5 Seconds**



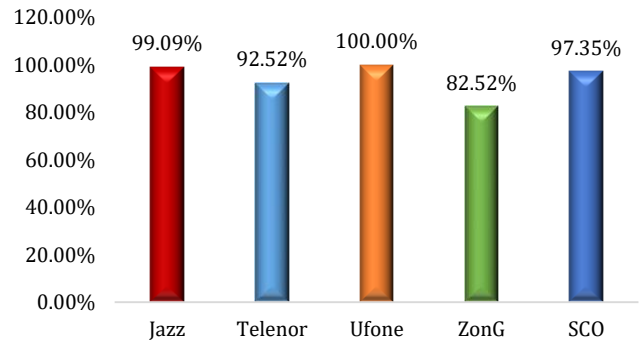
**Call Completion Ratio > 98%**



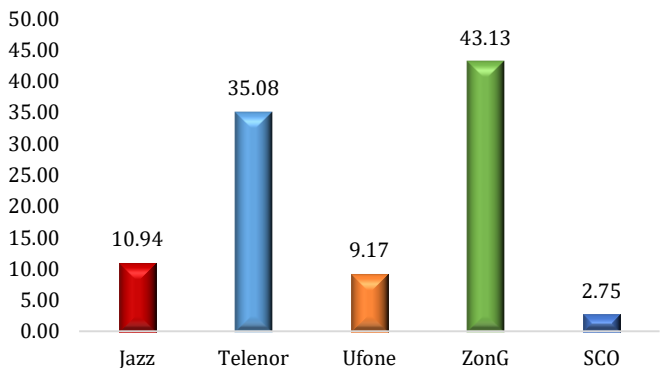
**Mean Opinion Score > 3**



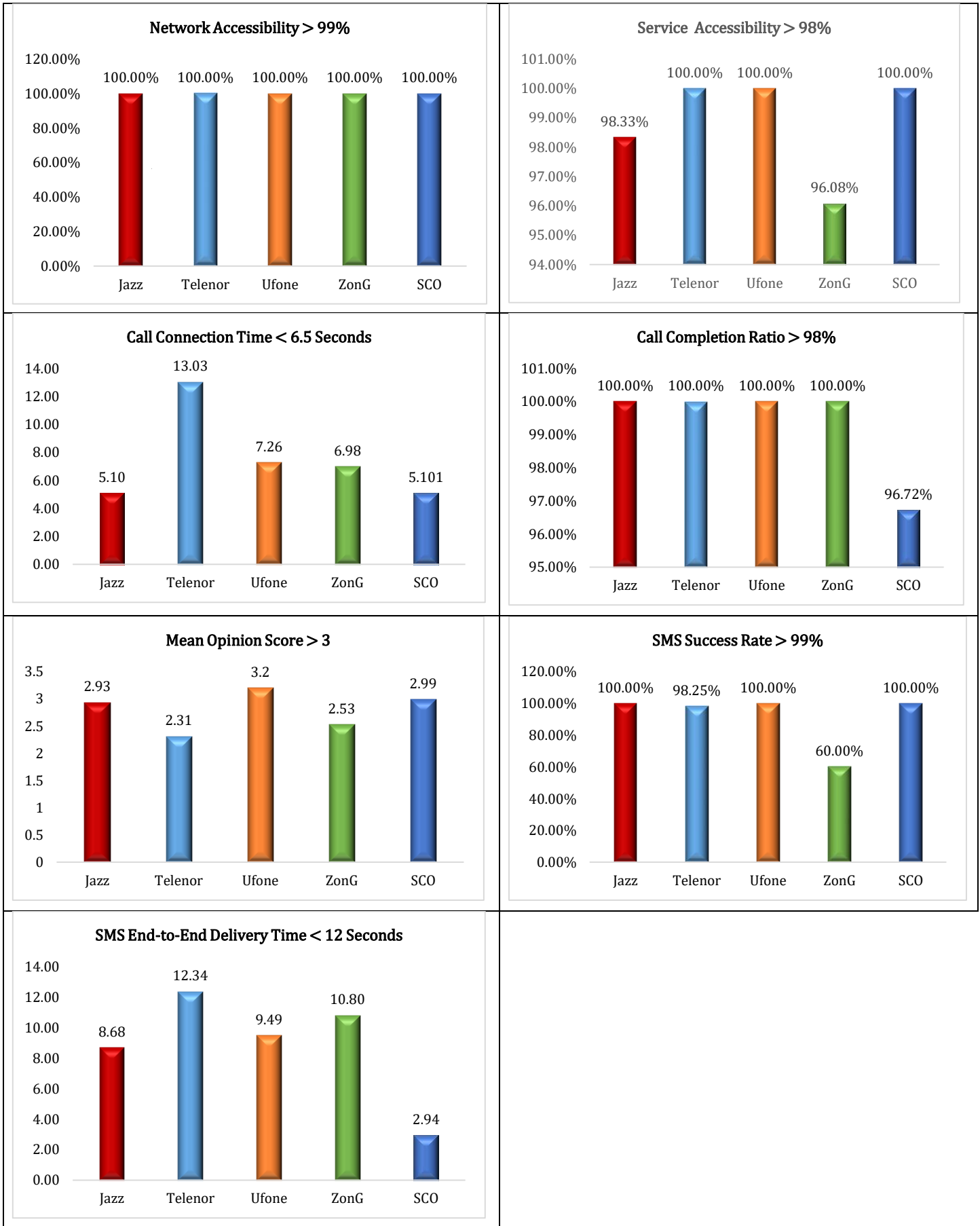
**SMS Success Rate > 99%**



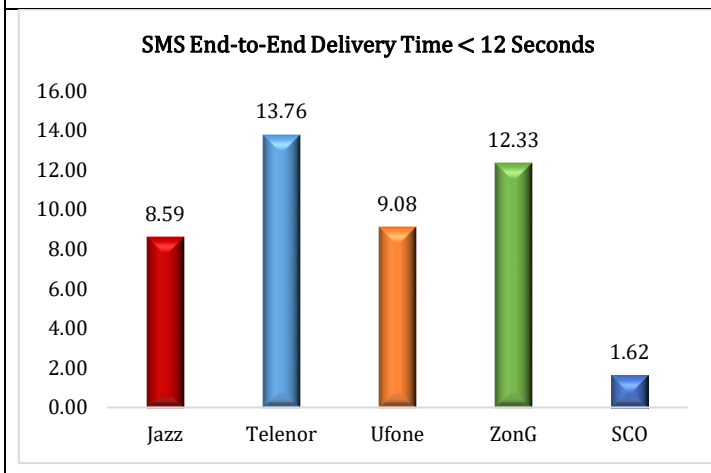
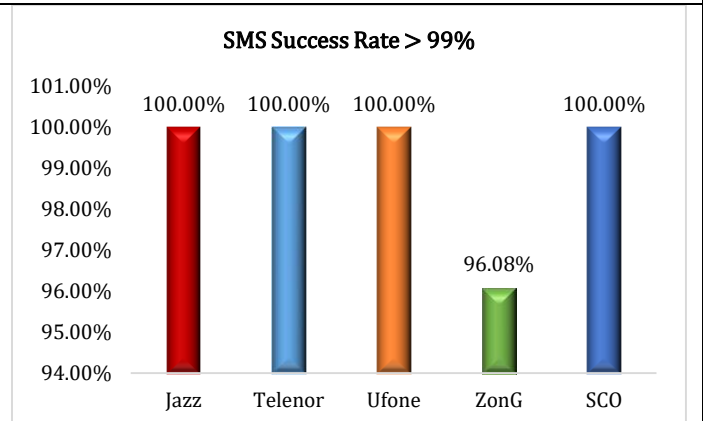
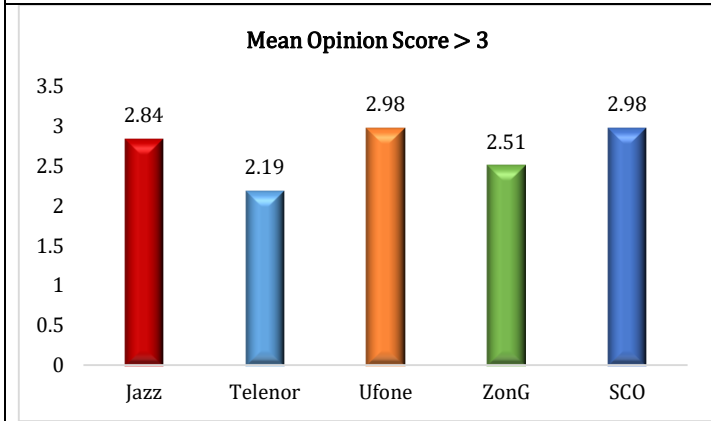
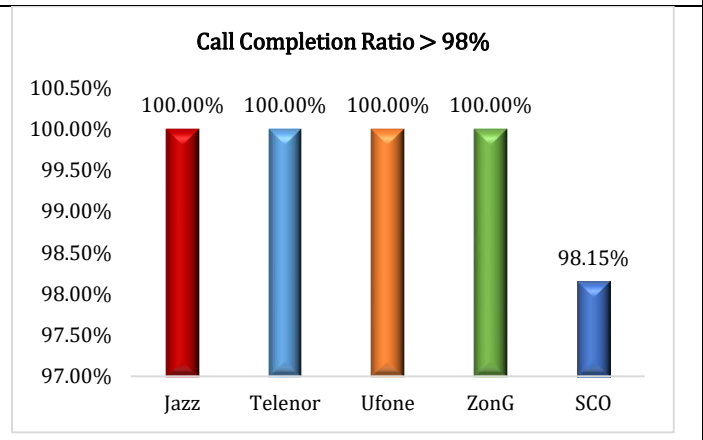
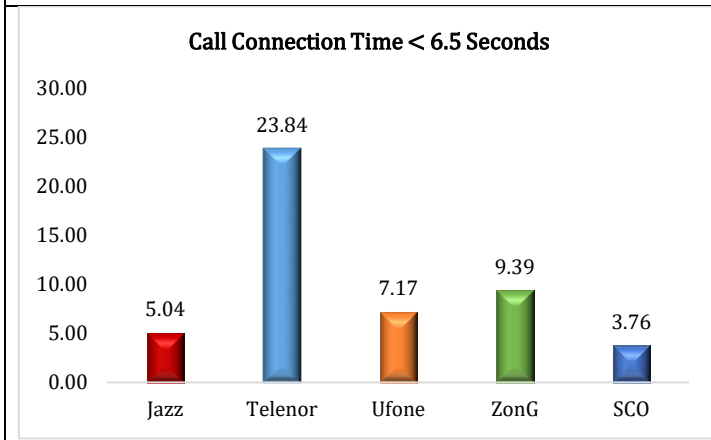
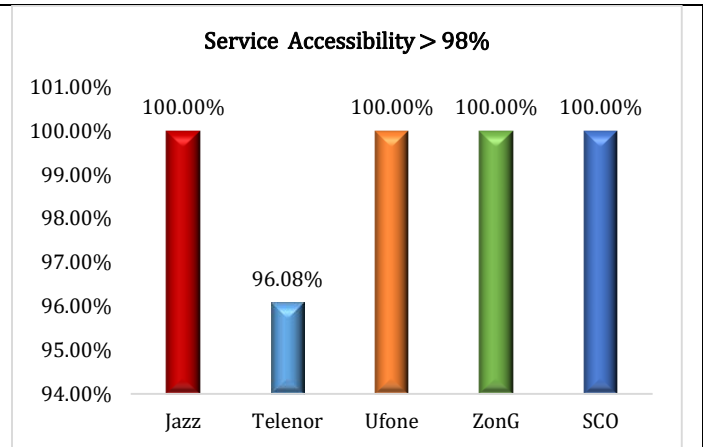
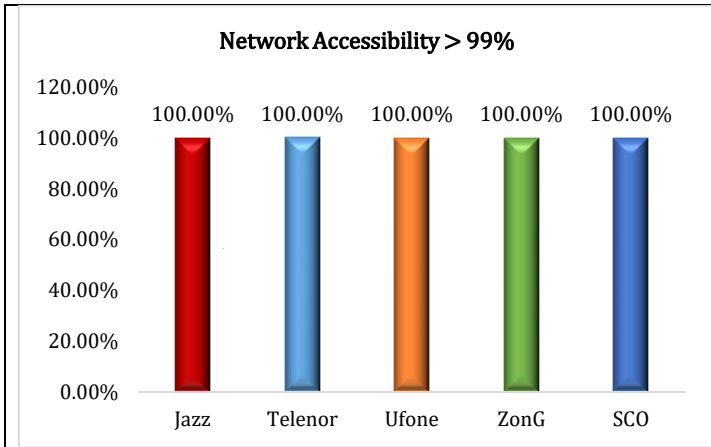
**SMS End-to-End Delivery Time < 12 Seconds**



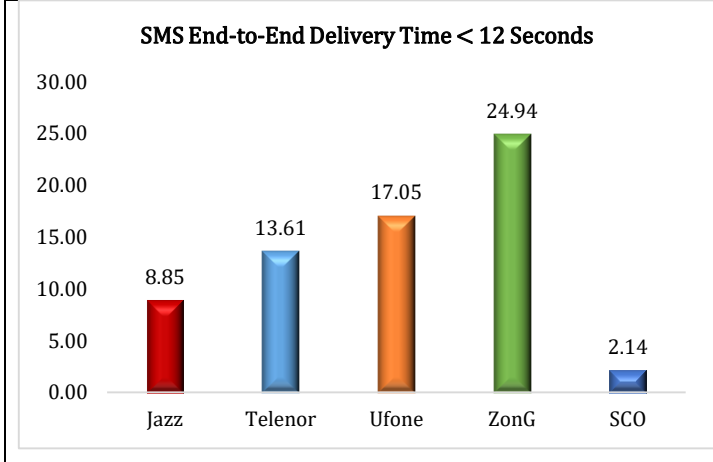
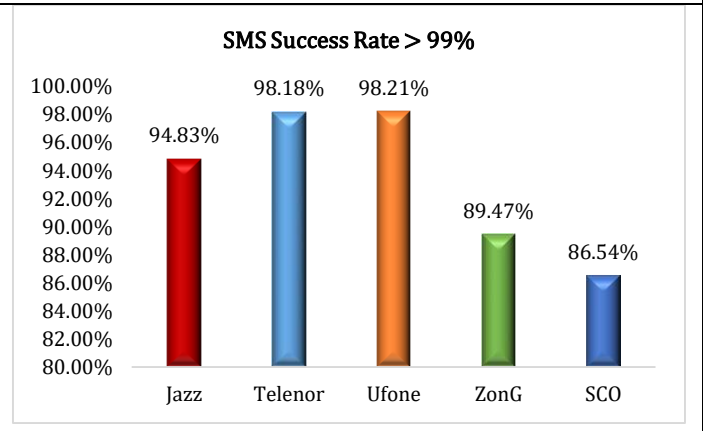
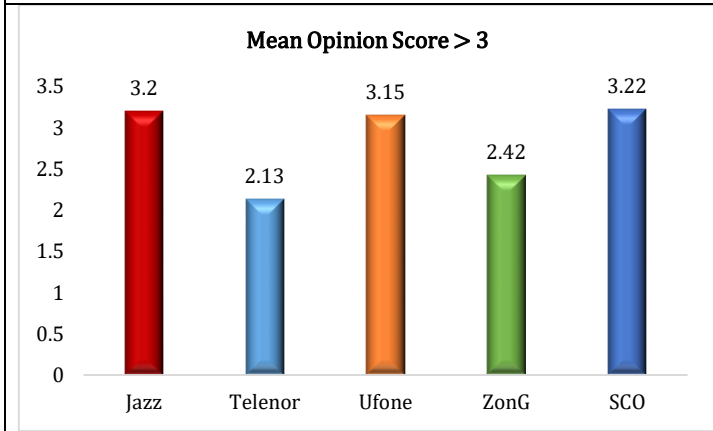
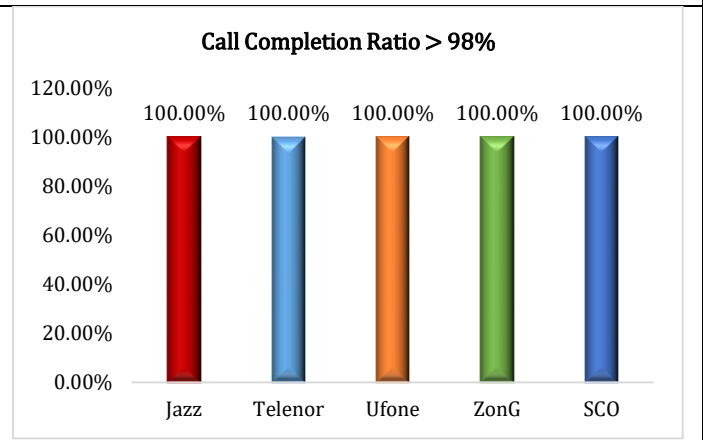
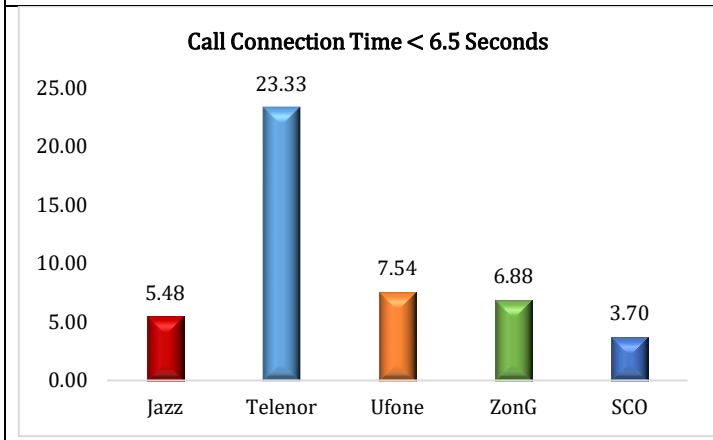
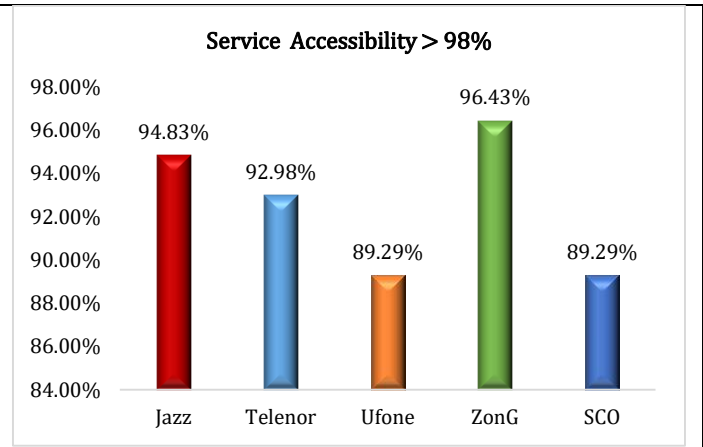
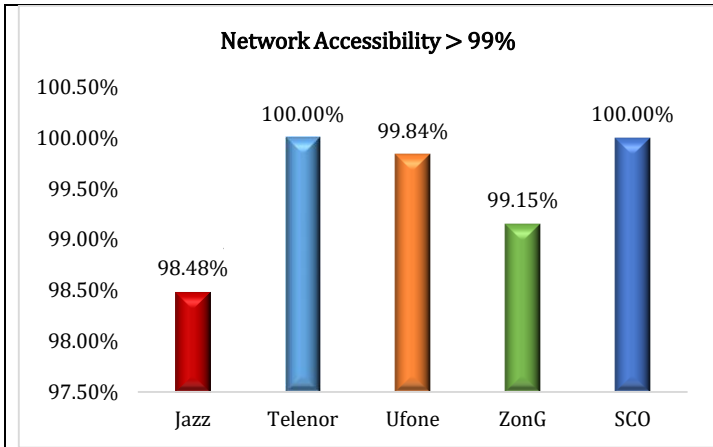
## QUALITY OF SERVICE SURVEY RESULTS – JAGLOT



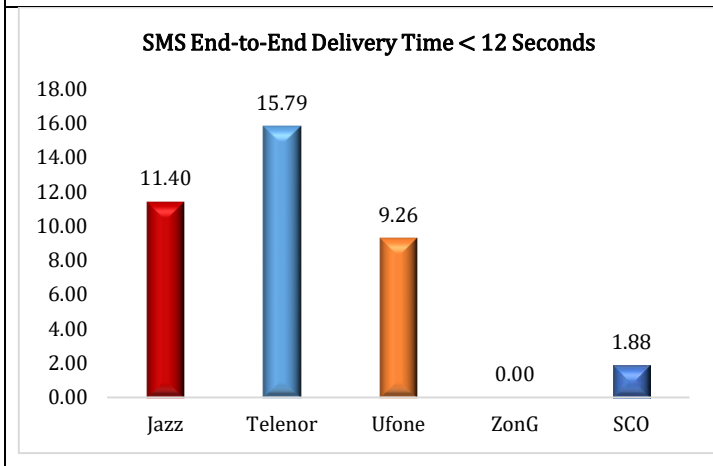
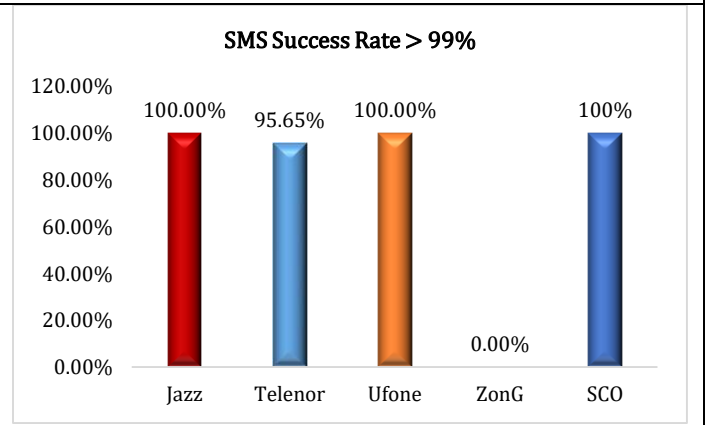
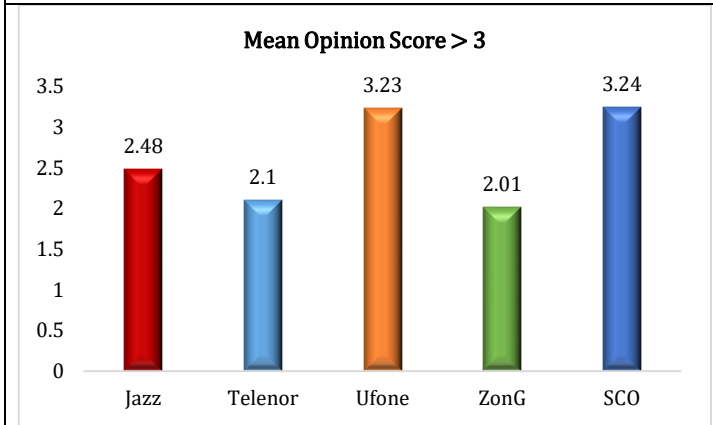
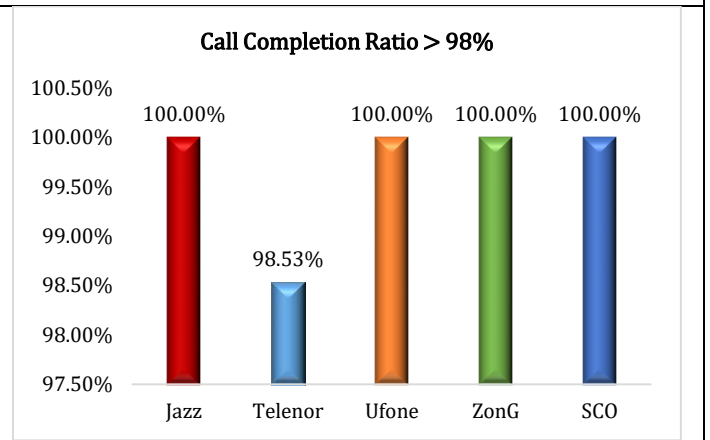
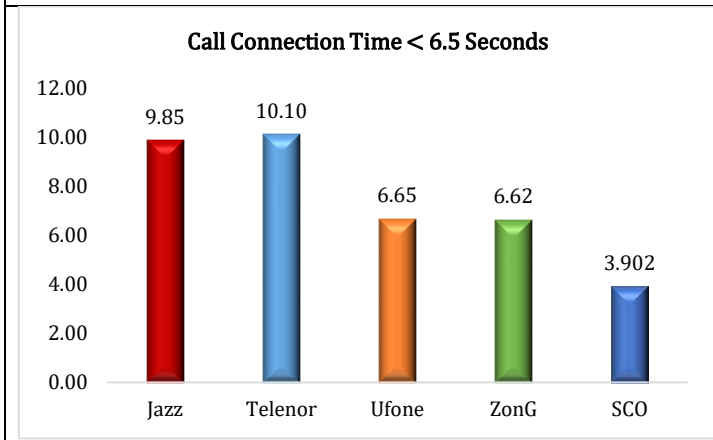
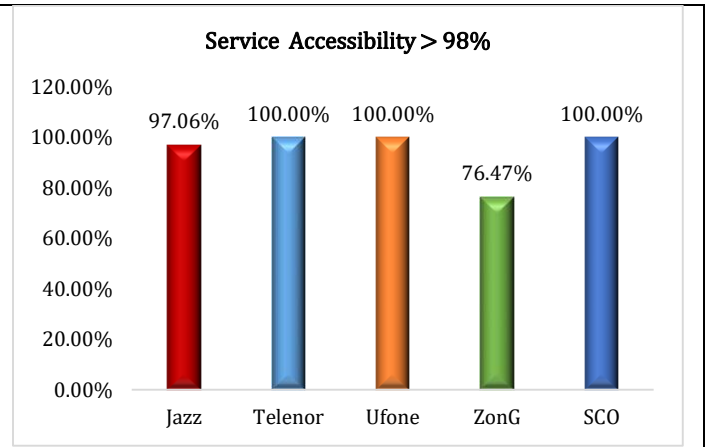
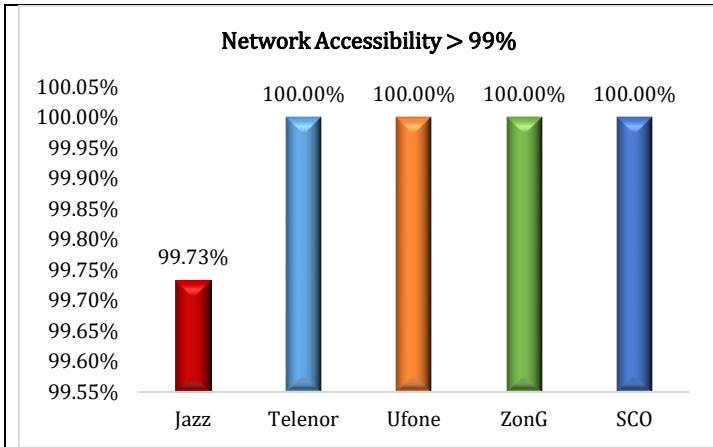
## QUALITY OF SERVICE SURVEY RESULTS – ASTORE



## QUALITY OF SERVICE SURVEY RESULTS – KHAPLU



## QUALITY OF SERVICE SURVEY RESULTS – SHIGAR



## QUALITY OF SERVICE SURVEY RESULTS – SKARDU

