

3G Signal Strength -100dBm with 90% Confidence Level – Technology Locked Mode								
City	Signal Strength Percentage				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Karachi Kemari	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Karachi Malir	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Nankana Sahib	100.00%	99.90%	100.00%	100.00%	Yes	Yes	Yes	Yes
Nowshera	99.82%	99.99%	100.00%	99.91%	Yes	Yes	Yes	Yes
Muridke	99.91%	98.80%	98.97%	99.93%	Yes	Yes	Yes	Yes
Swabi	99.79%	100.00%	99.97%	99.99%	Yes	Yes	Yes	Yes
Karak	98.29%	97.51%	100.00%	100.00%	Yes	Yes	Yes	Yes
Depalpur	100.00%	100.00%	98.14%	100.00%	Yes	Yes	Yes	Yes
Karachi West	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Karachi South	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Shujabad	99.77%	96.92%	98.06%	100.00%	Yes	Yes	Yes	Yes
Kabirwala	100.00%	100.00%	99.94%	100.00%	Yes	Yes	Yes	Yes
Chichawatni	100%	100%	100%	100%	Yes	Yes	Yes	Yes

**Table 3.4: 3G Signal Strength Technology Locked Mode -100 dBm with 90% Confidence Level**

## MOBILE BROADBAND SERVICE

**4.1. DATA SESSIONS IN TECHNOLOGY AUTO DETECT MODE & LOCKED MODE.** A series of data tests including Capacity Tests, Data Transfer Tests, Web Browsing and Ping were carried out wherein Key Performance Indicators (KPIs) of Upload and Download User Data Throughput (i.e. Speed), Webpage Loading Time and Latency have been measured. In Fixed Duration Testing, a File of 10GB was downloaded and Uploaded for 3 minutes duration whereas in Fixed Size Testing, a File of 5MB and 2MB was completely downloaded and uploaded respectively. In order to measure Webpage Loading Time, different national webpages were checked and in case of Latency international and national host were pinged to measure Round Trip Time (RTT)/Latency. The 4G/LTE, 3G and 2G signal strength, Number of Tests, Upload and Download User Data Throughput, Webpage Loading Time and Latency detail is mentioned in **Table4.1: Data Tests Statistics.**

DESCRIPTION				JAZZ	TELENOR	UFONE	ZONG		
AUTO DETECT MODE	CAPACITY TEST	DOWNLOAD	ATTEMPTS	4293	3777	4288	4236		
			SPEED (Mbps)	29	7.018	10.109	26.969		
		UPLOAD	ATTEMPTS	4295	3779	4292	4239		
			SPEED (Mbps)	25.393	6.704	17.056	20.862		
	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	4304	4019	4251	4244		
			SPEED (Mbps)	10.976	6.056	7.246	10.743		
		UPLOAD	ATTEMPTS	4310	4305	4308	4248		
			SPEED (Mbps)	9.066	5.512	7.866	9.456		
	BROWSING TEST	ATTEMPTS			17220	15153	17200	16982	
		LOADING TIME (Seconds)			5.96	7.15	6.85	6.19	
	PING TEST	ATTEMPTS			4312	4312	4312	4252	
		LATENCY (msec)			80.4	79.51	68.54	58.38	
AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm				-83.8	-85.4	-82.3	-81.5		
AVERAGE 3G SIGNAL STRENGTH (RSCP) dBm				-76.11	-66.68	-70.51	-80.46		
LOCKED MODE	4G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	2834	2834	2824	2831	
				SPEED (Mbps)	19.232	5.927	9.732	22.33	
			UPLOAD	ATTEMPTS	2832	2831	2822	2830	
				SPEED (Mbps)	24.673	5.114	12.778	13.687	
		PING TEST	ATTEMPTS			2844	2843	2844	2841
			LATENCY (msec)			76.33	62.39	58.34	53.67
		AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm				78.9	-85	-81.4	-78.4

DESCRIPTION				JAZZ	TELENOR	UFONE	ZONG	
	3G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	1813	2398	2669	2671
				SPEED (Mbps)	2.41	2.508	3.656	2.864
			UPLOAD	ATTEMPTS	1707	2393	2667	2672
				SPEED (Mbps)	0.991	1.566	2.405	1.634
		PING TEST	ATTEMPTS		2708	2708	2711	2708
			LATENCY (msec)		498.79	450.22	468.99	112
		AVERAGE 3G SIGNAL STRENGTH (RSCP) dBm				-66.23	-69.42	-66.39

**Table 4.1: Data Tests Statistics**

4.2. **DOWNLOAD USER DATA THROUGHPUT.** As per Next Generation Mobile Service (NGMS) licenses, licensees are required to meet the threshold of minimum of 3Mbps of 4G/LTE & 512Kbps of 3G Download User Data Throughput. The results of Data Service QoS KPI i.e. Download User Data Throughput is shown in (i). **Table 4.2: Download User Data Throughput Technology Auto Detect Mode [Fixed Duration]  $\geq$  3Mbps**, (ii). **Table 4.3: Download User Data Throughput Technology Auto Detect Mode [Fixed Size]  $\geq$  3Mbps**, (iii). **Table 4.4: Download User Data Throughput IN 4G/LTE Technology Locked Mode [Fixed Duration]  $\geq$  3Mbps & Table 4.5: Download User Data Throughput IN 3G Technology Locked Mode [Fixed Duration]  $\geq$  512Kbps.**

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED DURATION)								
City	Download User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	41.47	12.28	14.18	28.66	First	Fourth	Third	Second
Karachi Kemari	24.78	9.90	12.16	25.70	Second	Fourth	Third	First
Karachi Malir	24.38	7.46	10.71	23.14	First	Fourth	Third	Second
Nankana Sahib	25.28	10.54	17.01	31.99	Second	Fourth	Third	First
Nowshera	26.39	5.60	5.87	19.80	First	Fourth	Third	Second
Muridke	19.65	8.13	14.90	23.22	Second	Fourth	Third	First
Swabi	26.08	3.81	5.17	21.56	First	Fourth	Third	Second
Karak	40.64	4.07	4.64	29.38	First	Fourth	Third	Second
Depalpur	21.71	5.11	17.25	28.79	Second	Fourth	Third	First
Karachi West	38.07	10.25	18.27	27.02	First	Fourth	Third	Second
Karachi South	25.93	11.05	9.28	31.18	Second	Third	Fourth	First
Shujabad	17.92	9.35	8.51	32.89	Second	Third	Fourth	First
Kabirwala	14.78	10.76	8.52	28.25	Second	Third	Fourth	First
Chichawatni	26.89	6.50	15.46	30.47	Second	Fourth	Third	First

**Table4.2: Download User Data Throughput Technology Auto Detect Mode [Fixed Duration]  $\geq$  3Mbps**

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED SIZE)								
City	Download User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Karachi Central	17.01	9.44	11.28	14.55	First	Fourth	Third	Second
Karachi Kemari	13.06	7.79	8.98	13.59	Second	Fourth	Third	First
Karachi Malir	12.34	6.52	8.45	12.61	Second	Fourth	Third	First
Nankana Sahib	10.51	8.23	7.95	15.45	Second	Third	Fourth	First
Nowshera	12.50	5.67	5.92	8.61	First	Fourth	Third	Second
Muridke	10.98	6.34	8.66	13.29	Second	Fourth	Third	First
Swabi	10.47	4.65	5.67	10.54	Second	Fourth	Third	First
Karak	14.38	4.44	4.76	10.06	First	Fourth	Third	Second
Depalpur	11.31	5.70	11.04	14.05	Second	Fourth	Third	First
Karachi West	17.08	7.77	12.56	14.22	First	Fourth	Third	Second