

Abbottabad	100.00%	100.00%	100.00%	N/A	Yes	Yes	Yes	N/A
Haripur	99.97%	N/A	N/A		Yes	N/A	N/A	
Khanewal	N/A	100.00%			N/A	Yes		
Note: N/A means No Fallback to 3G Network								

Table 3.3: 3G Signal Strength Technology Auto Detect Mode -100 dBm with 90% Confidence Level

3G Signal Strength -100dBm with 90% Confidence Level – Technology Locked Mode								
City	Operators				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Batkhela	33.11%	99.88%	99.87%	99.86%	No	Yes	Yes	Yes
Mingora	99.98%	99.99%	99.97%	99.99%	Yes	Yes	Yes	Yes
Mardan	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Faisalabad	99.99%	100.00%	99.83%	100.00%	Yes	Yes	Yes	Yes
Mastung	N/A	100.00%	100.00%	100.00%	N/A	Yes	Yes	Yes
Gojra	98.93%	99.99%	99.78%	100.00%	Yes	Yes	Yes	Yes
Multan	100.00%	99.91%	98.45%	100.00%	Yes	Yes	Yes	Yes
Ziarat	N/A	100.00%	99.35%	100.00%	N/A	Yes	Yes	Yes
Khuzdar	N/A	100.00%	100.00%	99.98%	N/A	Yes	Yes	Yes
Usta Muhammad	99.94%	99.81%	100.00%	100.00%	Yes	Yes	Yes	Yes
Sibbi	98.27%	99.99%	100.00%	100.00%	Yes	Yes	Yes	Yes
Abbottabad	100.00%	100.00%	100.00%	100.00%	Yes	Yes	Yes	Yes
Haripur	100.00%	99.92%	100.00%	100.00%	Yes	Yes	Yes	Yes
Khanewal	99.99%	100.00%	99.14%	100.00%	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 **Table 4.1: Data Tests Statistics.**

DESCRIPTION				JAZZ	TELENOR	UFONE	ZONG
NUMBER OF DATA SESSIONS				5717	5722	5494	5712
AUTO DETECT MODE	CAPACITY TEST	DOWNLOAD	ATTEMPTS	5643	5639	5436	5647
			SPEED (Mbps)	16.506	5.915	11.428	17.511
		UPLOAD	ATTEMPTS	5656	5648	5443	5653
			SPEED (Mbps)	16.220	6.148	19.879	19.144
	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	5715	5721	5490	5710
			SPEED (Mbps)	8.562	5.812	7.999	9.425
		UPLOAD	ATTEMPTS	5706	5700	5483	5701
			SPEED (Mbps)	4.696	5.410	7.748	6.348
	BROWSING TEST	ATTEMPTS		28402	28390	27335	28381
		LOADING TIME (Seconds)		9.4	10.4	7.4	8.7
	PING TEST	ATTEMPTS		169576	167143	157738	170072
		LATENCY (msec)		292	236.6	217.4	245.6

DESCRIPTION				JAZZ	TELENOR	UFONE	ZONG	
		AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm		-83.4	-82.7	-80.6	-81.1	
		AVERAGE 4G SIGNAL STRENGTH (RSCP) dBm		-79.22	-65.04	-73.65	-65.03	
		AVERAGE 4G SIGNAL STRENGTH (RXLEV) dBm		-58.75	-76.24	-69.28	-70.68	
LOCKED MODE	4G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	2856	2856	2856	2856
				SPEED (Mbps)	12.482	4.446	12.141	14.390
			UPLOAD	ATTEMPTS	2826	2824	2824	2824
				SPEED (Mbps)	8.908	4.406	15.991	12.479
		PING TEST	ATTEMPTS		64890	68991	68723	65989
			LATENCY (msec)		107.6	87.9	88.7	106.6
		AVERAGE 4G SIGNAL STRENGTH (RSRP) dBm		-82.9	-83.2	-80.7	-80.5	
	3G	DATA TRANSFER TEST	DOWNLOAD	ATTEMPTS	3045	3044	3040	3045
				SPEED (Mbps)	2.710	1.935	3.173	1.764
			UPLOAD	ATTEMPTS	3018	3018	3014	3015
				SPEED (Mbps)	0.898	1.508	2.332	1.395
		PING TEST	ATTEMPTS		56710	67139	66069	73857
			LATENCY (msec)		354.5	506.1	476.1	168.3
		AVERAGE 3G SIGNAL STRENGTH (RSCP) dBm		-71.65	-68.77	-65.43	-66.67	

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 2Mbps of 4G/LTE & 256Kbps 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 2Mbps, (ii). Table 4.3: Download User Data Throughput Technology Auto Detect Mode [Fixed Size] \geq 2Mbps, (iii). Table 4.4: Download User Data Throughput IN 4G/LTE Technology Locked Mode [Fixed Duration] \geq 2Mbps & (iv). Table 4.5: Download User Data Throughput IN 3G Technology Locked Mode [Fixed Duration] \geq 256Kbps.

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED DURATION)								
City	User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Batkheela	11.20	1.82	1.67	17.48	Second	Third	Fourth	First
Mingora	13.88	1.96	10.83	14.43	Second	Fourth	Third	First
Mardan	16.27	3.47	12.93	11.06	First	Fourth	Second	Third
Faisalabad	8.57	6.51	20.01	17.58	Third	Fourth	First	Second
Mastung	18.99	7.83	6.77	14.93	First	Third	Fourth	Second
Gojra	7.49	3.73	16.15	12.45	Third	Fourth	First	Second
Multan	13.14	7.64	22.12	30.58	Third	Fourth	Second	First
Ziarat	N/A	9.92	12.84	27.69	N/A	Third	Second	First
Khuzdar	26.74	3.94	4.91	16.65	First	Fourth	Third	Second
Usta Muhammad	7.85	5.55	4.31	12.72	Second	Third	Fourth	First
Sibbi	17.44	9.24	6.60	13.67	First	Third	Fourth	Second
Abbottabad	13.45	4.86	11.03	11.41	First	Fourth	Third	Second
Haripur	15.77	4.06	10.97	12.52	First	Fourth	Third	Second
Khanewal	5.47	4.72	8.88	4.62	Second	Third	First	Fourth

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

DOWNLOAD USER DATA THROUGHPUT IN TECHNOLOGY AUTO DETECT MODE (FIXED SIZE)								
City	User Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Batkheela	5.65	3.58	2.66	10.02	Second	Third	Fourth	First
Mingora	7.75	3.53	8.1	8.77	Third	Fourth	Second	First