



**REPORT ON THE MOBILE QUALITY OF SERVICES  
(JANUARY- MARCH, 2020)**

འབྲུག་བཅད་དོན་བརྒྱུད་འགྲེལ་དང་བཅད་བརྒྱུད་དཔང་འཛིན།

**Bhutan InfoComm and Media Authority**

**Royal Government of Bhutan**

## 1. Drive Test Result

### 1.1 Phuentsholing January\_2020

#### 1.1.1 Mobile Voice Services

##### a. 3G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score
TashiCell	0	7.45	3.27
B-Mobile	0	8.72	3.39

##### b. 4G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score
TashiCell	0	10.54	3.26
B-Mobile	3.85	9.50	3.30

#### 1.1.2 Mobile Data Services

##### 1.1.2.1 Data Completion Rate (%)

##### a. 3G

Operators	File Transfer Protocol		Hyper Text Transfer Protocol	
	Upload	Download	Upload	Download
TashiCell	100	100	100	93.75
B-Mobile	45.72	40	87.5	30

##### b. 4G

Operators	File Transfer Protocol		Hyper Text Transfer Protocol	
	Upload	Download	Upload	Download
TashiCell	100	100	0	100
B-Mobile	81.82	46.21	0	100

### 1.1.2.2 Data Throughput (Mbps)

#### a. 3G

Operators	File Transfer Protocol Test (FTP) ( $\geq 1.5$ Mbps)		Hyper Text Transfer Protocol Test (HTTP) ( $\geq 1.5$ Mbps)	
	Upload Data Throughput	Download Data Throughput	Upload Data Throughput	Download Data Throughput
TashiCell	1.08	3.92	1.09	4.01
B-Mobile	0.75	1.08	0.81	1.44

#### b. 4G

Operators	File Transfer Protocol Test (FTP) ( $\geq 6.5$ Mbps)		Hyper Text Transfer Protocol Test (HTTP) ( $\geq 6.5$ Mbps)	
	Upload Data Throughput	Download Data Throughput	Upload Data Throughput	Download Data Throughput
TashiCell	12.58	11.69	0	11.68
B-Mobile	10.76	7.52	0	16.74

## 1.2 Jungshina \_Thimphu (January)

### 1.2.1 Mobile Voice Services

#### a. 3G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<120ms)
TICL	0	5.3	3.41	15.1
BTL	0	6.1	3.22	13.3

#### b. 4G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<60ms)
TICL	0	7.44	3.29	17.4
BTL	0	6.1	3.4	13.38

### 1.2.2 Mobile Data Services

### 1.2.2.1 Data Completion Rate (%)

#### a. 3G

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	90.91%	100%	100%	100%
BTL	71.43%	75%	85.71%	100%

#### b. 4G

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	100%	100%	100%	100%
BTL	100%	100%	100%	100%

### 1.2.2.2 Data Throughput (Mbps)

#### a. 3G

Operators	FTP Test ( $\geq 1.5$ Mbps)		HTTP Test( $\geq 1.5$ Mbps)	
	Upload	Download	Upload	Download
TICL	0.93	3.62	1.04	4.7
BTL	0.9	1.67	0.94	3.2

#### b. 4G

Operators	FTP Test ( $\geq 6$ Mbps)		HTTP Test( $\geq 6$ Mbps)	
	Upload	Download	Upload	Download
TICL	9.09	9.85	11.13	10.23
BTL	8.85	2.46	17.96	11.33

## 1.3 Taba\_Thimphu (March)

### 1.4 1.3.1 Mobile Voice Services

#### a. 3G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<120ms)
TICL	0	5.12	3.33	18.3
BTL	0	6.16	3.31	15.2

**b. 4G**

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<60ms)
TICL	0	7.93	3.29	18.9
BTL	0	6.14	3.3	13.2

**1.4.2 Mobile Data Services**

*1.3.2.1 Data Completion Rate (%)*

**a. 3G**

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	94.47%	100%	100%	100%
BTL	100%	90.31%	100%	100%

**b. 4G**

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	100.00%	72.73%	100%	81.82%
BTL	100%	83.33%	100%	100%

*1.4.2.2 Data Throughput (Mbps)*

**a. 3G**

**b.**

Operators	FTP Test (≥1.5Mbps)		HTTP Test(≥1.5Mbps)	
	Upload	Download	Upload	Download
TICL	1.33	4.55	1.32	4.78
BTL	0.95	1.67	1.05	3.43

c. 4G

Operators	FTP Test (≥6Mbps)		HTTP Test(≥6Mbps)	
	Upload	Download	Upload	Download
TICL	11.48	11.95	8.46	10.58
BTL	25.61	17.22	16.53	31.36

## 1.5 Dechencholing\_Thimphu (January)

### 1.4.1 Mobile Voice Services

a. 3G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<120ms)
TICL	0	1.23	3.31	15.6
BTL	0	0.99	3.21	13.0

b. 4G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<60ms)
TICL	0	1.18	3.29	16.1
BTL	0	1.12	3.41	13.5

### 1.5.2 Mobile Data Services

#### 1.4.2.1 Data Completion Rate (%)

a. 3G

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	100%	100%	100%	100%
BTL	100%	100%	100%	100%

b. 4G

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	100%	100%	100%	100%
BTL	100%	15.38%	100%	100%

#### 1.4.2.2. Data Throughput (Mbps)

##### a. 3G

Operators	FTP Test (≥1.5Mbps)		HTTP Test(≥1.5Mbps)	
	Upload	Download	Upload	Download
TICL	3.41	1.3	1.35	3.17
BTL	1.68	0.94	0.99	4.5

##### b. 4G

Operators	FTP Test (≥6Mbps)		HTTP Test(≥6Mbps)	
	Upload	Download	Upload	Download
TICL	13.19	12.97	13.42	12.95
BTL	16.77	19.44	18.97	36.57

## 1.6 Motithang \_Thimphu (February)

### 1.5.1 Mobile Voice Services

#### a. 3G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<120ms)
TICL	0	1.06	3.16	20.7
BTL	0	0.08	3.34	12.9

#### b. 4G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<60ms)
TICL	0	7.45	3.11	32.7
BTL	0	17.12	3.37	12.8

## 1.6.2 Mobile Data Services

### 1.5.3.1 Data Completion Rate (%)

#### a. 3G

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	90%	90.91%	90%	100%
BTL	98.90%	100%	90%	100%

#### b. 4G

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	97.06%	100%	100%	100%
BTL	100%	100%	100%	100%

### 1.5.3.2 Data Throughput (Mbps)

#### a. 3G

Operators	FTP Test ( $\geq 1.5$ Mbps)		HTTP Test( $\geq 1.5$ Mbps)	
	Upload	Download	Upload	Download
TICL	0.89	3.26	0.87	3
BTL	0.8	1.6	0.7	2.4

#### b. 4G

Operators	FTP Test ( $\geq 6$ Mbps)		HTTP Test( $\geq 6$ Mbps)	
	Upload	Download	Upload	Download
TICL	8.33	7.29	7.67	10.09
BTL	2.33	4.77	9.63	15.57

## 1.7 Expressway\_Thimphu (March)

### 1.6.1 Mobile Voice Services

#### a. 3G



Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<120ms)
TICL	0	1.27	3.36	15.4
BTL	0	1.09	3.2	13.6

**b. 4G**

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<60ms)
TICL	0	0.95	3.25	17.0
BTL	0	1.13	3.17	13.9

**1.7.2 Mobile Data Services**

**1.6.2.1 Data Completion Rate (%)**

**a. 3G**

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	100%	100%	93.75%	100%
BTL	100%	100%	66.67%	89.89%

**b. 4G**

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	100%	100%	100%	100%
BTL	100%	15.38%	100%	100%

**1.7.2.2 Data Throughput (Mbps)**

**a. 3G**

Operators	FTP Test (≥1.5Mbps)		HTTP Test(≥1.5Mbps)	
	Upload	Download	Upload	Download
TICL	1.08	4.06	1.14	3.72
BTL	0.77	1.2	0.94	3.74

b. 4G

Operators	FTP Test (≥6Mbps)		HTTP Test(≥6Mbps)	
	Upload	Download	Upload	Download
TICL	7.89	7.93	8.62	9.36
BTL	8.73	2.61	11.51	15.95

## 1.8 Chanjiji\_Thimphu (March)

### 1.7.1 Mobile Voice Services

a. 3G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<120ms)
TICL	0	1.23	3.2	14.2
BTL	0	1.28	3.27	15.8

b. 4G

Operators	Call-Drop Rate (<2%)	Call-Setup Time (<6.5sec)	Mean Opinion Score	Latency (<60ms)
TICL	0	0.06	2.95	31.9
BTL	0	0.13	3.01	32.7

### 1.8.2 Mobile Data Services

#### 1.7.2.1 Data Completion Rate (%)

a. 3G

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	83.33%	50%	33.33%	50%
BTL	0%	0%	0%	0%

b. 4G

Operators	FTP		HTTP	
	Upload	Download	Upload	Download
TICL	44.44%	100%	55.56%	0%
BTL	33.33%	100%	43%	14.29%

1.8.2.2 *Data Throughput (Mbps)*

a. 3G

Operators	FTP Test ( $\geq 1.5$ Mbps)		HTTP Test( $\geq 1.5$ Mbps)	
	Upload	Download	Upload	Download
TICL	1.06	2.24	0.9	1.34
BTL	0	0	0	0

b. 4G

Operators	FTP Test ( $\geq 6$ Mbps)		HTTP Test( $\geq 6$ Mbps)	
	Upload	Download	Upload	Download
TICL	10.5	2.30	6.5	0
BTL	16.12	2.61	12.85	12.07