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1. Background

The Authority collects the monthly system generated Mobile Operating Support System (OSS) report from the Telecom Operators and does reviews on the average Mobile Quality of Service (QoS). Based on the system generated Mobile OSS reports, the Authority decides the locations of physical verification or a drive test and carries out the Mobile QoS drive test to monitor and report the QoS regularly. The Mobile OSS report contains the mobile QoS for both voice and data services which are based on and measured through the various parameters of key performance indicators (KPI) of Mobile services of the 20 dzongkhags.

These OSS reports contain both operator's averaged Operation Support system (OSS) reports for the month of November 2021.

2. Findings

The results and findings of OSS system generated reports submitted by both the telecom operators are presented below:

(i) B-Mobile OSS

BTL monthly OSS report for November 2021									
SI. No.	Location of Core Areas	CS drop rate(%)	PS drop rate(%)		CS success rate(%)	PS success rate(%)		DL user throughput(Mbps)	
		3G	3G	4G	3G	3G	4G	3G	4G
1	Thimphu	0.13	0.74	0.55	99.84	98.53	99.95	2.05	8.82
2	Paro	0.09	0.62	0.41	99.91	98.86	99.96	2.01	11.22
3	Haa	0.13	1.53	0.48	99.72	98.17	99.91	2.03	22.67
4	Wangdi	0.21	1.17	0.61	99.84	98.40	99.95	1.96	9.61
5	Gasa	0.08	1.89	0.48	99.95	98.90	99.95	2.19	29.43
6	Punakha	0.17	1.09	0.50	99.85	98.72	99.95	1.62	7.95
7	Chukha	0.27	0.83	0.75	99.81	98.55	99.93	2.85	16.93

8	Samtse	0.14	1.12	1.04	99.88	98.54	99.87	1.70	14.53
9	Sarpang	0.13	0.98	0.81	99.71	97.87	99.92	1.95	10.06
10	Dagana	0.05	0.93	0.84	99.89	97.00	99.89	1.58	16.57
11	Zhemgang	0.12	1.76	0.53	99.90	98.18	99.93	1.63	24.64
12	Tsirang	0.19	1.43	0.59	99.69	98.69	99.95	2.08	14.08
13	Trongsa	0.88	1.40	0.67	99.77	98.34	99.92	1.74	16.28
14	Bumthang	0.13	0.84	0.41	99.79	99.00	99.95	1.84	23.34
15	SJongkhar	0.15	0.86	0.74	99.88	98.33	99.92	1.96	11.09
16	Pgytsel	0.13	0.83	0.59	99.90	98.55	99.95	1.78	15.06
17	Trashigang	0.36	1.57	0.65	99.70	97.89	99.92	1.88	17.14
18	TYangtse	0.15	0.74	0.85	99.60	98.46	99.91	2.62	13.96
19	Mongar	0.13	1.14	0.65	99.93	98.57	99.91	2.38	14.68
20	Lhuntse	0.11	1.02	0.52	99.88	97.62	99.94	1.61	20.10

(ii) Tashi Cell OSS

TICL monthly OSS report for November 2021									
SI. No.	Region	CS drop rate(%)	PS drop rate(%)		CS RAB success rate(%)	PS RAB success rate(%)		DL user throughput(Mbps)	
		3G	3G	4G	3G	3G	4G	3G	4G
1	Bumthang	0.32	0.81	0.30	99.06	99.64	99.87	2.30	16.81
2	Chukha	0.12	0.70	0.55	99.33	99.42	99.78	2.07	13.39
3	Dagana	0.37	1.05	0.41	99.15	99.66	99.77	1.89	12.90
4	Gasa	0.52	1.28	0.34	99.46	99.76	99.86	1.82	10.35
5	Haa	0.42	1.16	0.25	98.94	99.22	99.86	2.02	19.23
6	Lhuntse	0.34	1.35	0.25	99.24	99.76	99.48	1.64	17.04
7	Mongar	0.31	1.39	0.35	99.32	99.69	99.73	1.82	14.47

8	Paro	0.39	0.64	0.27	99.29	99.71	99.87	2.08	14.29
9	Pemagatshel	0.34	0.96	0.26	99.29	99.72	99.63	1.73	13.52
10	Punakha	0.25	0.81	0.25	99.27	99.66	99.81	1.84	13.79
11	Samtse	0.23	1.20	0.47	99.09	99.10	99.75	1.61	11.38
12	Sarpang	0.29	1.23	0.22	99.05	99.10	99.71	1.70	11.87
13	Sjongkhar	0.21	1.01	0.46	99.30	99.69	99.75	2.11	14.08
14	Thimphu	0.27	0.69	0.37	99.27	99.72	99.88	2.22	14.00
15	Trashigang	0.37	1.67	0.39	99.32	99.64	99.61	2.19	17.45
16	Trongsa	0.19	0.90	0.16	99.32	99.76	99.80	1.87	16.96
18	Trashiyangtse	0.16	1.17	0.15	99.28	99.71	99.70	1.93	15.93
17	Tsirang	0.53	1.91	0.28	98.89	98.25	99.66	1.50	11.26
19	Wangdi	0.31	1.05	0.27	99.20	99.56	99.85	1.96	15.55
20	Zhemgang	0.25	1.00	0.36	99.30	99.74	98.86	1.70	14.45

3. Analysis

- a. For both the operators, there were no issues of circuit switch (CS) drop rate as well as for packet switch (PS) drop rate for all dzongkhags.
- b. The average download data throughputs (3G and 4G) of both the operators are meeting the standards for all the 20 dzongkhags.
- c. Meanwhile, wherever the 3G sites are co-located with the 4G sites, the QoS issues of 3G are taken care of by the presence of 4G services.

4. Recommendation/Follow up

Both the operators have maintained the QoS standards for this month. However, the individual BTS OSS reports of Zhemgang and Lhuentse for the months of September and October months showed that:

- a. There were no issues with the average Downlink throughput of 4G in all the BTS of Zhemgang and Lhuentse.
- b. There were issues in 4G PS drop rate for Tamala and Phawa sites, Zhemgang for BTL in the months of September and October.
- c. There was a problem in 4G downlink average for Singye Dzong site under Lhuentse and the Sorapong and Thajong site under Zhemgang Dzongkhag for TICL in the months of September and October 2021.

The operators were notified of the improvement of above issues.