

Communication for All

1. BACKGROUND

Uganda Communications Commission (the Commission) was established by the Uganda Communications Act 2013 with the principal goal of developing a modern communications sector which includes telecommunications, broadcasting, radio communications, postal communications, data communication and infrastructure.

The functions of the Commission include promoting and safeguarding the interests of consumers and operators as regards the quality of communications services and equipment.

In the period from 15th August 2022 to 9th September 2022, the Commission conducted benchmark measurements of mobile voice telephony and data services in Uganda to assess the Quality of Service (QoS) received by users/consumers of these services. The operators whose services were considered under this exercise were Uganda Telecom Limited (UTL), MTN Uganda Limited (MTN), Airtel Uganda Limited (Airtel), and Tangerine Limited t/a Lycamobile.

The measurements were carried out from the end user perspective in twenty (20) towns (Kampala, Mukono, Entebbe, Mityana, Masaka, Mbarara, Ntungamo, Kabale, Masindi, Hoima, Fort Portal, Kasese, Gulu, Kitgum, Arua, Lira, Jinja, Tororo, Soroti and Mbale).

The summary of the findings of this exercise are hereby presented.

2. INTERPRETATION

The following information is provided to facilitate the consideration of the findings.

- Call Attempt** means an attempt to achieve a connection to one or more devices attached to a telecommunications network which commences when the destination address information required for setting up the call is sent by the user.
- Blocked call** means a call attempt that fails to achieve a connection to the destination party and therefore not receiving an alerting or ring tone, busy tone, answer signal or announcement.
- Dropped call** means a call terminated by the network before it is ended by either party participating in the call.
- Data** means the form in which information moves around the internet or in which information is processed or stored by a communication device.
- Data Throughput** means the amount of (number of data packets) that gets transferred from one point on the network to another in a given amount of time. It is measured in bits per second (bps).
- Latency** means the time taken for a packet of data to travel from a user's device to destination device.
- The Commission standard for QoS is as indicated below;**

SN	Parameter	Definition	Target
1.	Blocked Call Rate (BCR)	proportion of call attempts on the network that are blocked calls.	≤2%
2.	Dropped Call Rate (DCR)	proportion of call attempts on the network that are dropped calls.	≤2%
3.	Call Setup Success Rate (CSSR)	proportion of call attempts with an indication of call connection (alerting, busy tone or announcement) within 12 seconds from the instant the user initiates a request.	≥95%

3. SUMMARY OF THE FINDINGS

The findings are presented as follows:

Figure 1 through figure 3 show a summary of the QoS results for the mobile voice services.

Figure 4 through figure 6 show a summary of the average download throughput, average upload throughput and average latency.

Figure 7 shows the major causes of the network failures that were observed during the exercise.

Figure 1: Comparative results on the Call Setup Success Rate (CSSR)

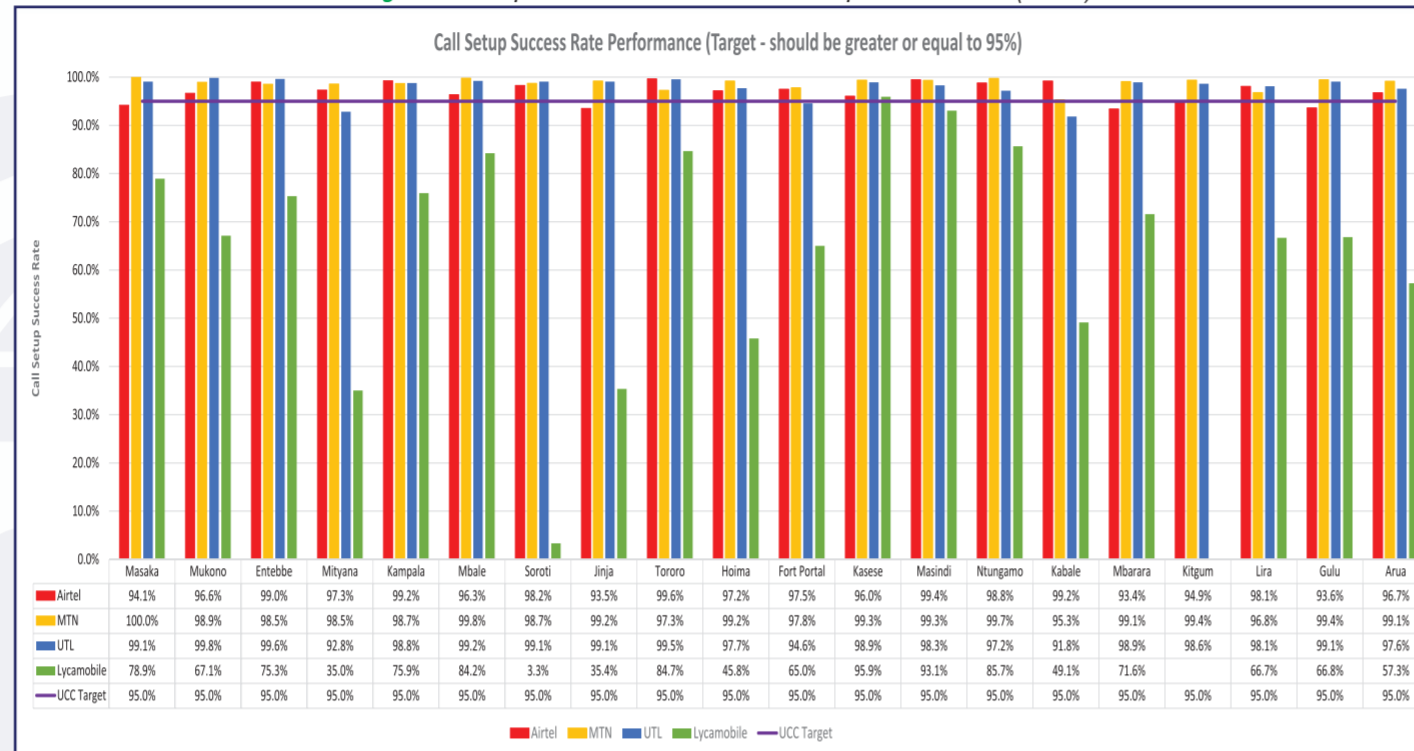


Figure 2: Comparative results on the Blocked Call Rate (BCR)

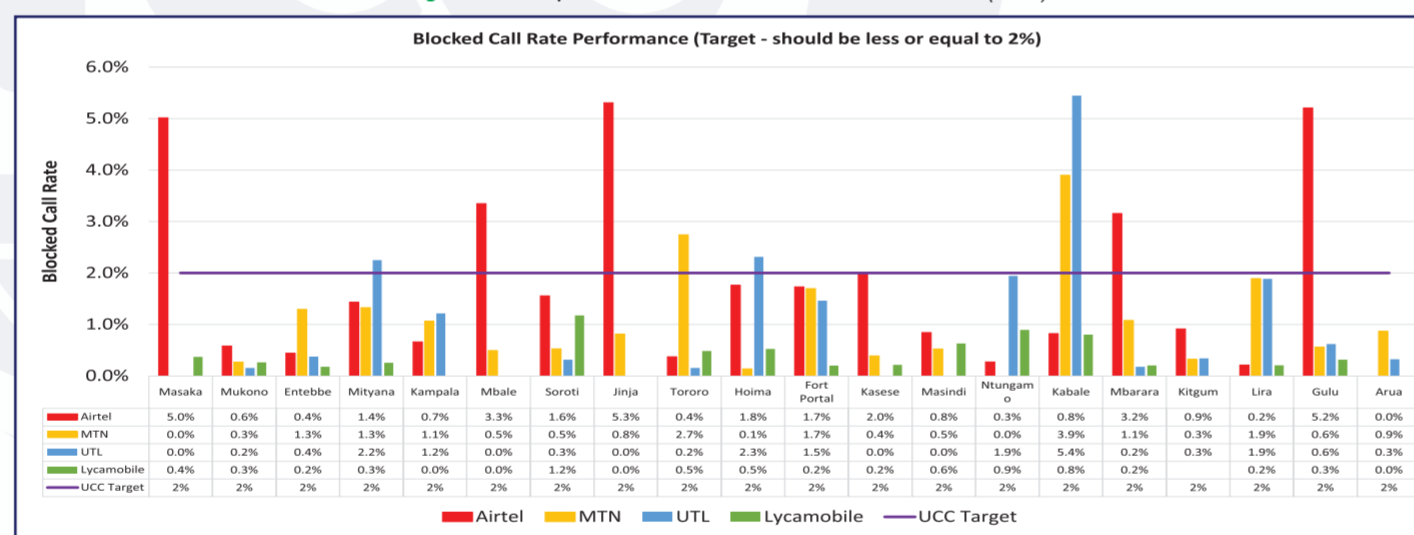


Figure 3: Comparative results on the Dropped Call Rate (DCR)

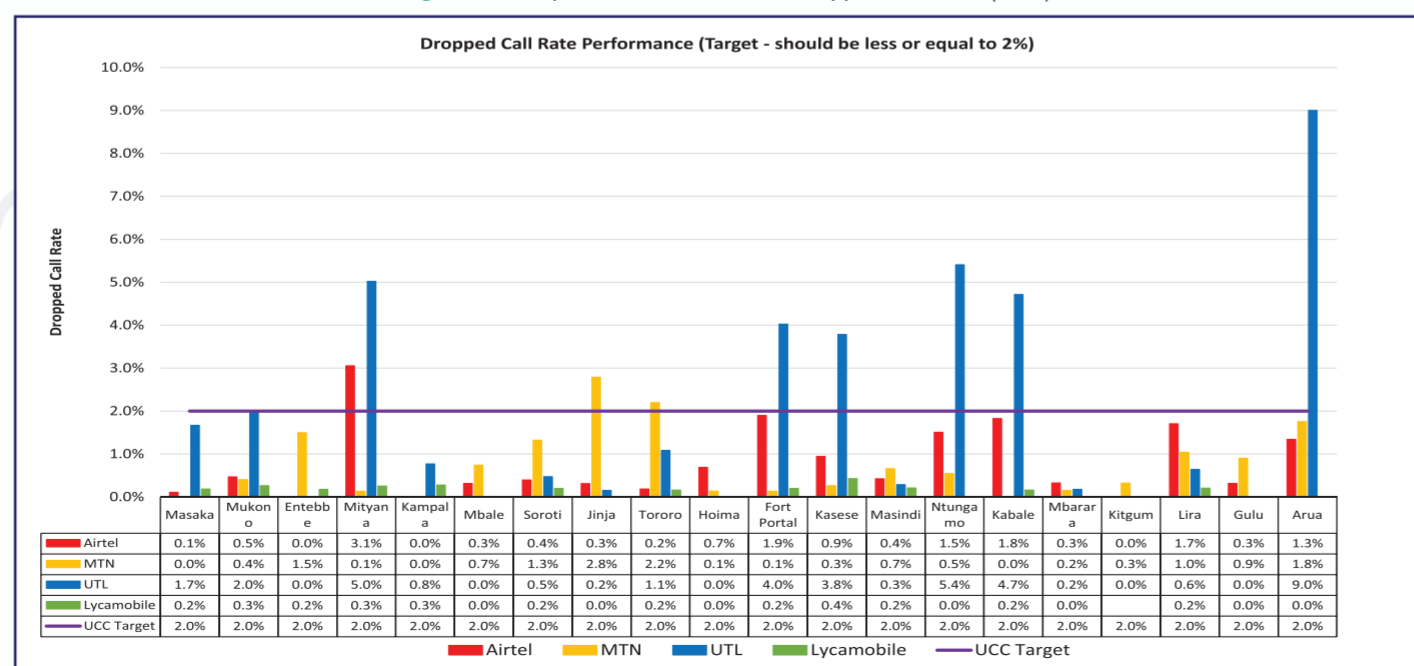


Figure 4: Average HTTP Download Throughput measured on the different operator's networks

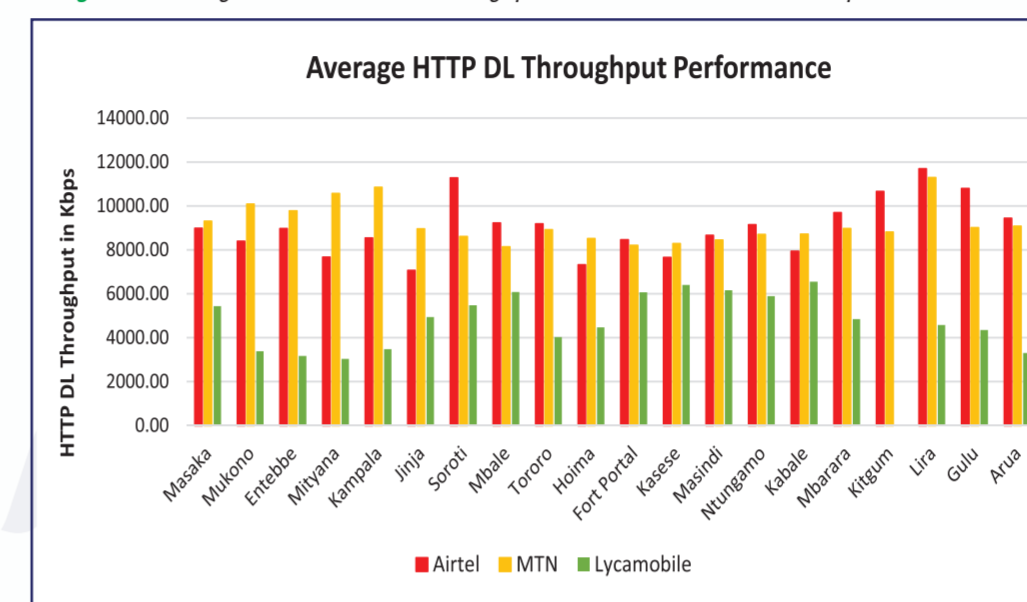


Figure 5: Average HTTP Upload Throughput measured on the different operator's networks per operator in the twenty towns

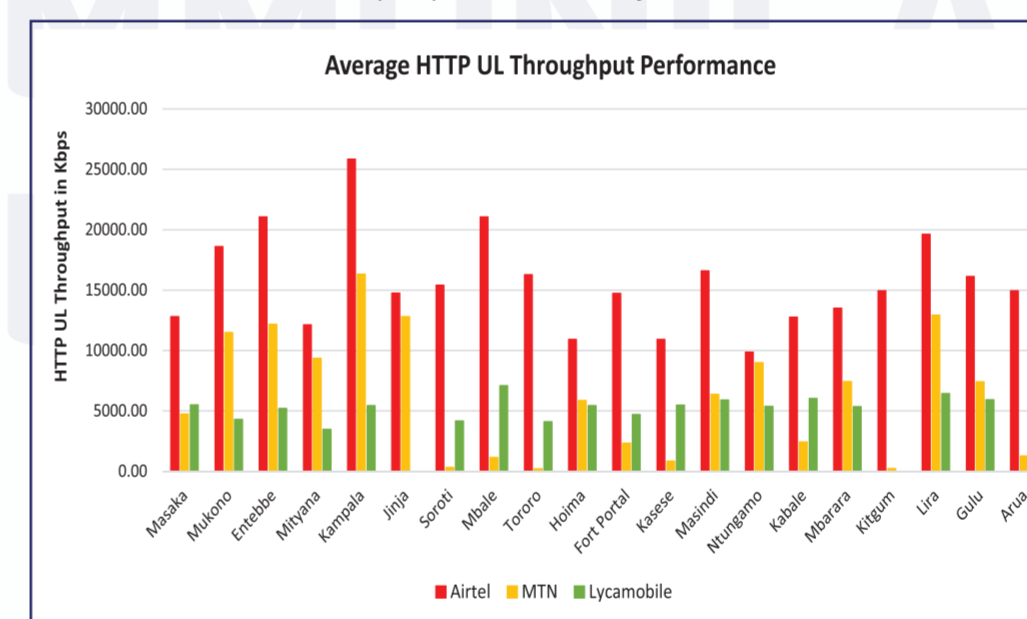


Figure 6: Average Latency in milliseconds measured on the different operator's networks Operators

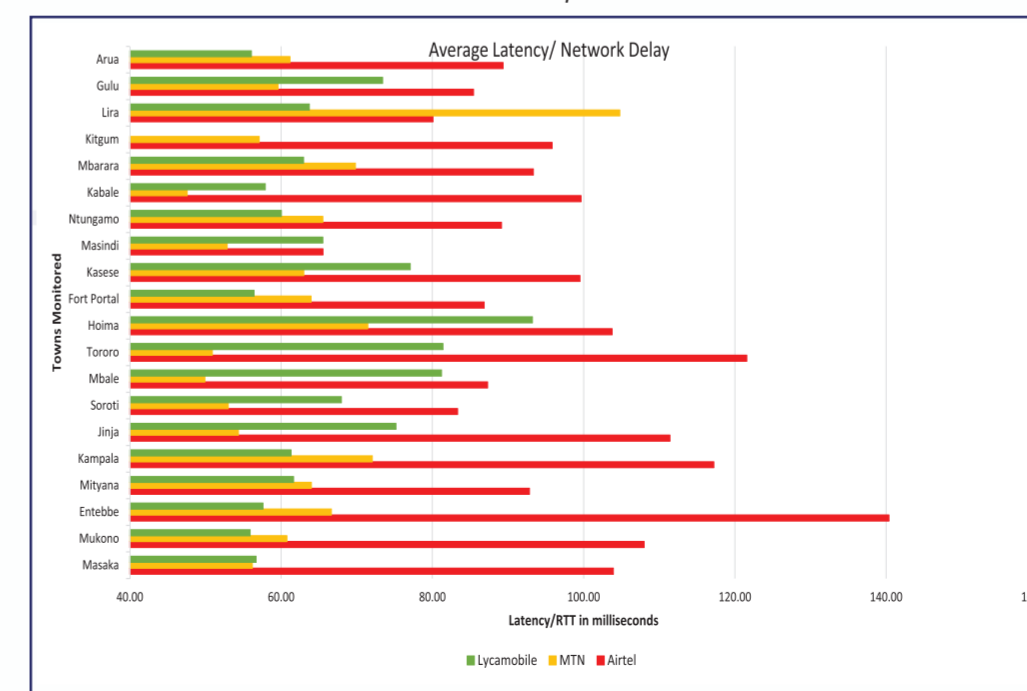
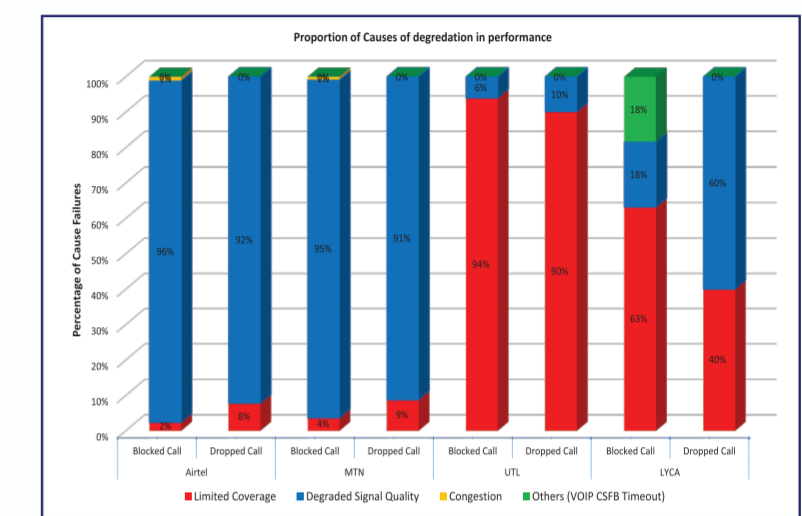


Figure 7: Proportion of causes of inadequate or degradation in performance observed



Major causes of inadequate or degraded voice performance

The following were the top contributors to the performance degradation observed:

- Degraded signal quality:** Degradation in the quality of the network signal due to interference to the radio signal originating from either a radio emitter in the same network using the same frequency or due to another radio systems in the area. Sources of such interference include signal boosters.

- Limited coverage:** Areas where there is no signal or the signal strength/level is too low for a phone to connect to the mobile network.

- Congestion:** This occurs in a network when or where there is a higher number of users trying to access network services (e.g. making calls), at the same time than the capacity available on the network in that location at that particular time.

- Others:** There are several 'other' factors that impact network performance such as inadequacies in network planning as well as equipment failures/outages.

4. CONCLUSION

It was noted that coverage remains a significant factor with a number of blackspots (geographical areas with poor or no communication coverage) especially for UTL and Lyc. The causes of these blackspots include;

- geographical terrain – valleys and sides of hills.
- placement of tower/mast relative to location – the radio or phone signal reduces with distance away from the towers.
- physical obstructions (e.g buildings and trees).
- dense and metallic building material impacting signal penetration and in turn indoor coverage is affected.

The QoS was also significantly affected by the interference to the cellular networks caused by illegally installed signal boosters. Public is urged to always contact your mobile network operator to assist with proper installation of signal enhancements equipment or apparatus.

The Commission in its effort to ensure improvement in QoS;

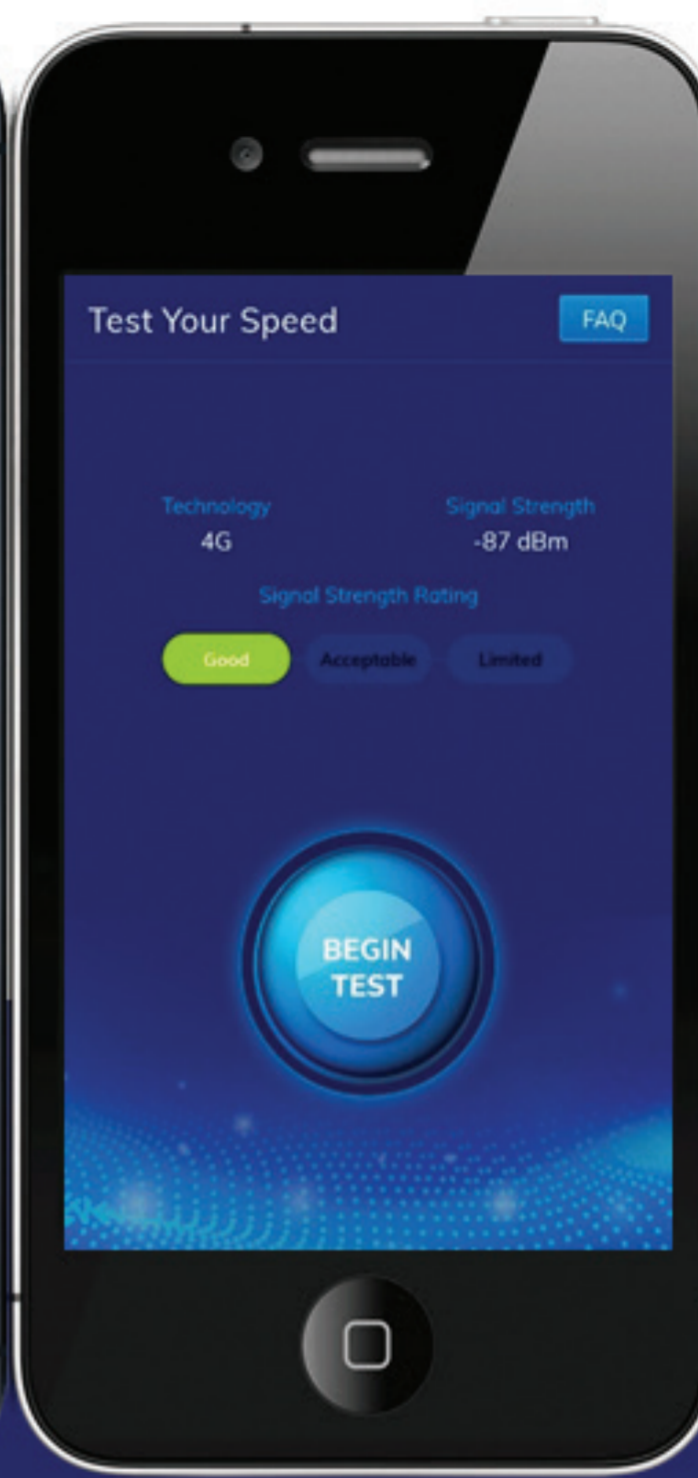
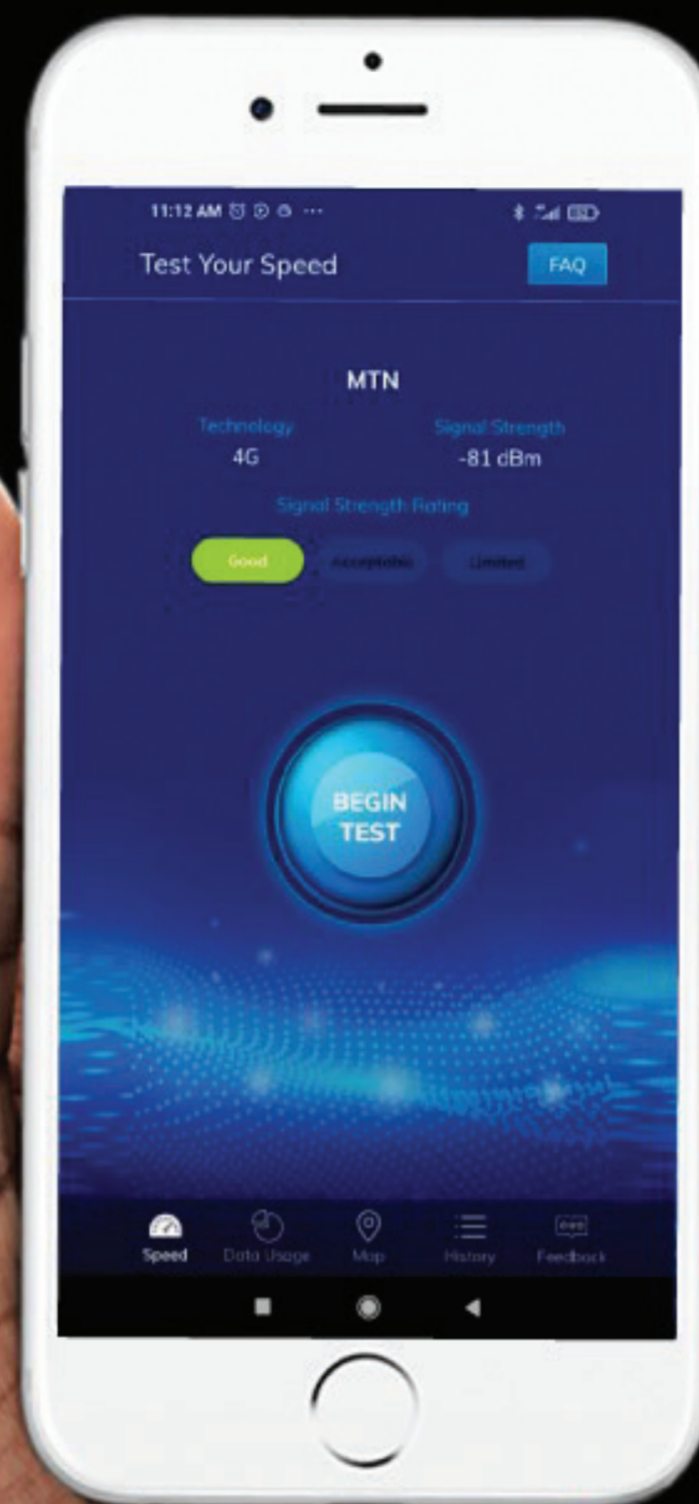
- has engaged the operators on remedial plans to address the observed causes of deterioration in service.
- is monitoring implementation by the operators of their licence obligation to rollout their respective networks to 90% of the geographical coverage of Uganda within 5 years.
- is clamping down and confiscating illegal signal boosters.

The Commission remains committed to empowering consumers to exercise choice of provider and ensuring the availability of quality and modern communication services to foster the realisation of the transformation of Uganda into a modern and prosperous country.

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