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IMT – 2020: The Deployment and Adoption Journey in Nigeria

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Overview

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3. Network Deployment
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Spectrum Provision

The current Spectrum used for 5G deployment in Nigeria was previously not available for the services.

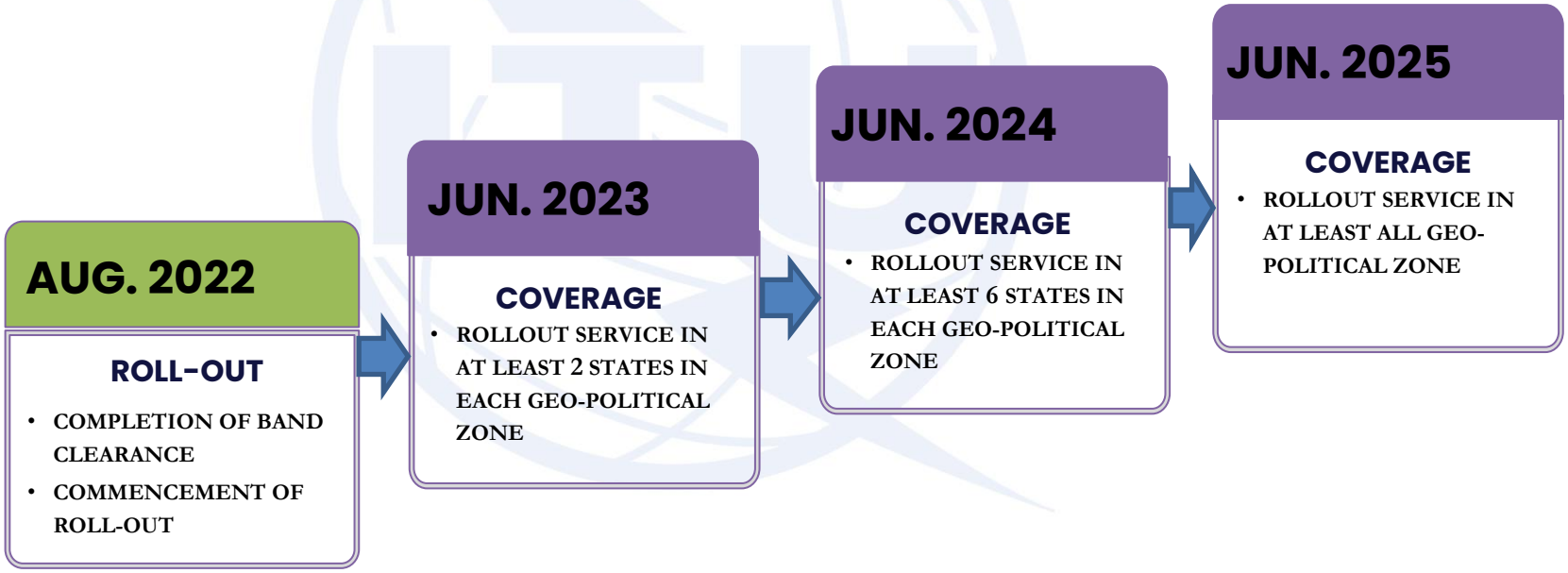
Following the resolutions of WRC-19, the Regulator engaged the Nigerian Communication Satellite agency to foster a way forward for the refarming of the Spectrums identified for IMT-2020 (5G).

The resolutions reached with the Satellite operator was the phased reconfiguration of their equipment in the lower C band (3500 – 3900).

The initial phased reconfiguration freed 3500 – 3600 MHz and 3700 – 3800 MHz.

The reserve price for the auction was set at $273.6 million. The Companies were given 3 months to complete payment as there was an interest fee of $19.7 million.

5G Deployment target in Nigeria



Network Deployment

As part of the developed information memorandum, the winning companies were expected to deploy 5G networks within a year of the auction.

Considering the two separate auction process, all three companies have currently deployed 5G networks across the country.

- There are currently 833 5G sites in Nigeria covering 33 cities across the country.

- This number is expected to go over 1000 by the end of the year.

Network Adoption

The key challenge experienced in Nigeria with regards to 5G adoption was in use of the services by Samsung and Apple devices within the Country.

Considering the economic impact of the use of 5G on individuals, not all devices are 5G compliant within the market.

In Nigeria, the following are some of the OEMs with 5G compliant devices in the market:

- Nokia
- Infinix
- Xiamo
- ZTE
- Huawei

Network Standardization

The Issues experienced with Apple and Samsung devices brings to bear the inherent challenges and importance of Standardization for developing nations.

From our experience, both OEMs were engaged to identify and understand what the drawbacks were in terms of their device's acceptability for the 5G networks deployed within the country.

Both Apple and Samsung are currently in engagement with the Mobile Network Operators within the country to foster a way forward.

These updates tend to have mitigated the problem for the devices it has been released for.

Network Standardization

Furthermore, we looked at different aspects of the network to foster and ensure a standardized deployment and experience.

1. Studies and investigation to establish radiation characteristics of the devices.
2. QoS and QoE systems deployment.
3. Experimental work for the exploitation of the sub 6GHz and 28 GHz.

Studies on the Radiation Characteristics of 5G

The conduct of Electromagnetic Frequency Radiation in Nigeria covered the deployment by 3 different OEMs for the Mobile Network Operators.

In Nigeria different parts of the country are divided into clusters. With the clusters, these allow the deployment of different OEM's radios in the different clusters.

The primary OEM equipment used in Nigeria are for 5G deployment:

- Ericsson
- Huawei
- ZTE

The investigation is still on going

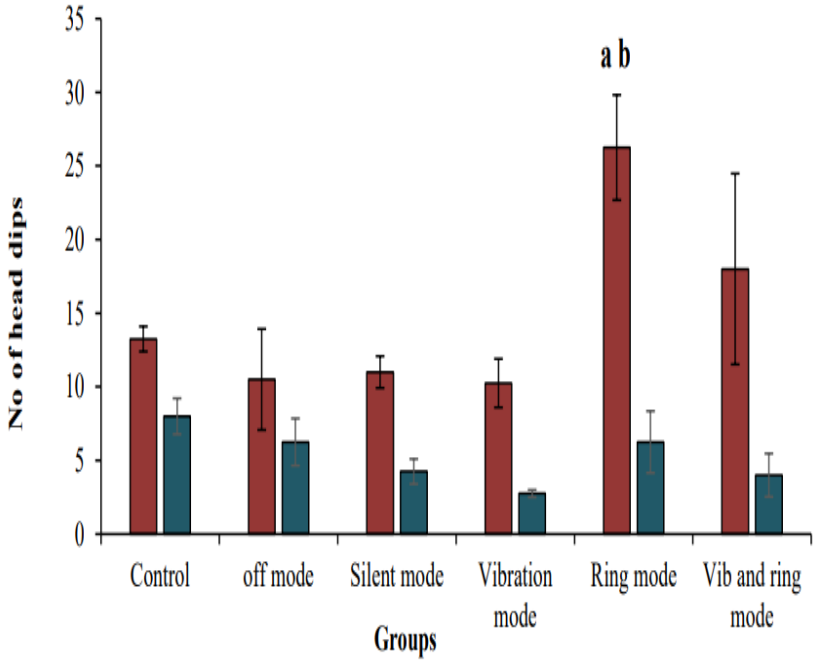
Further Studies on Radiation

Neuroendocrine and metabolic studies of mobile phone radiation was carried out in the country.

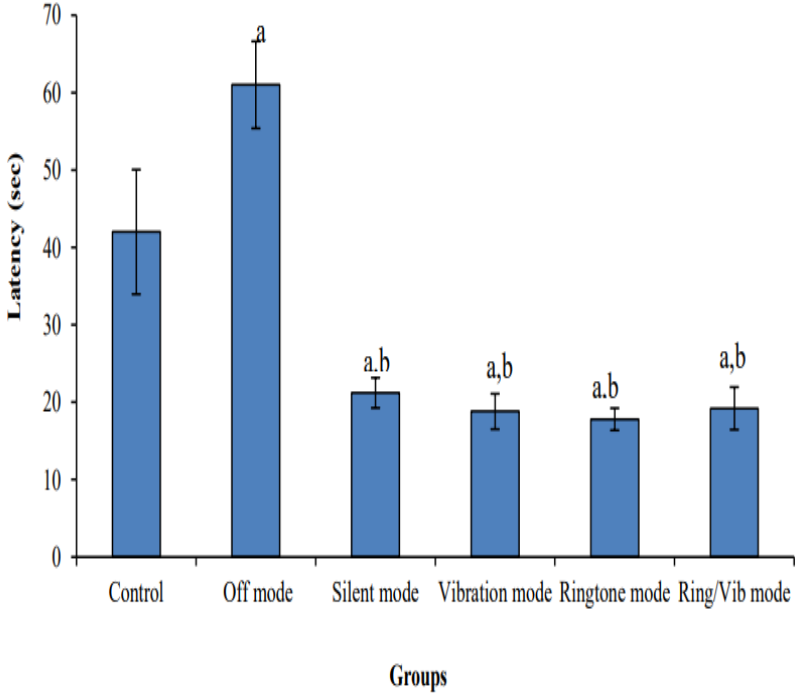
The studies were carried out using mice as test subjects. The studies utilized the different experimental infrastructures:

i. Beam walk test Apparatus: A model for the assessment of Motor Coordination (human movement).
ii. Hang test Apparatus: A model that tests muscle strength (human movement).
iii. Barnes's Maze Apparatus: A dry maze for the assessment of learning and memory (cognition/memory retention).

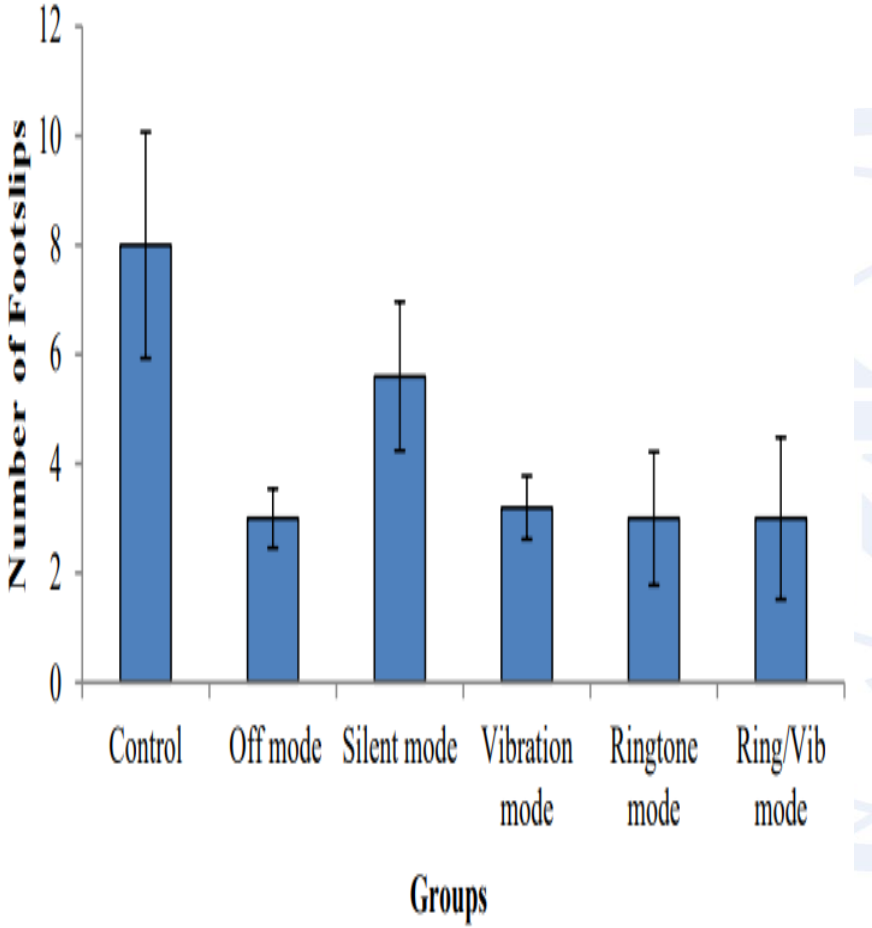
Some Results from the Studies



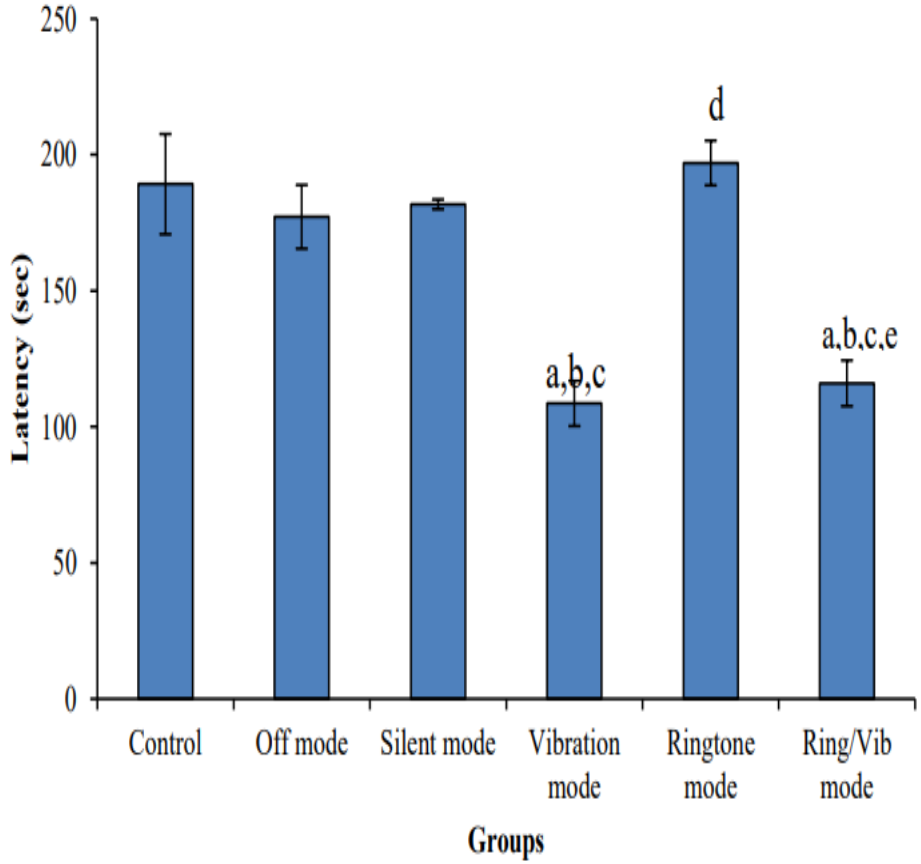
Effects of Mobile Phone Radiation on the Number of Head Dips in Barnes Maze on the Probe Day in Mice



Effect of Mobile Phone Radiation on Latency in Beam Walk in Mice



Effects of Mobile Phone Radiation on Number of Foot slips in Beam walk in Mice



Effect of Mobile Radiation on Latency in Hang Test in Mice

Results summary and Recommendation From the experiment

It can be concluded that mobile phone radiation impairs learning and memory this is as a result of increase latency (mice spent more time on familiar object than the novel object).

Mobile phones should be kept on silent mode this is because phones on ring tone, ring and vibration mode and vibration mode is seen to emit more radiation.

Minimize hours spent on phones (mostly on social media and the internet) as long hours spent could expose one to cell phone radiation.

The research is still ongoing

QoS and QoE Deployments

The issue of Quality of Service (QoS) is very important to the standardization of IMT-2020. However, the nature of the network makes for newer classification of network measuring and monitoring tools.

The Key challenge for the sector in Nigeria are:

- Degradation of Quality-of-Service delivery due to installation of Boosters across the country.
- Fibre cuts due to road construction/reconstruction.

Work is on going for the development of both QoS and QoE metrics and measurement procedures in Nigeria.

Conclusion

- From experiences, in Nigeria, it is important that the issues of awareness for IMT2020 is taken seriously.
- The common misconceptions of this can be seen from the Covid-19 experiences and general misunderstandings about IMT-2020.
- The advantages of these should be promoted.

THANK YOU ALL