National Information and Communications Technology Authority

BACKGROUND
2600 MHz BAND

Papua New Guinea

The Radio Frequency Spectrum 2500 - 2690 MHz, also known as 2600 MHz Band or 2.6 GHz band was identified globally for International Mobile Telecommunications (IMT) service in the World Radio Conference 2007 (WRC-07) of the International Telecommunications Union (ITU). This essentially allows countries to update their National Plans to make this spectrum available for Mobile Broadband Services including 4G and 5G. The Benefits of having a common global band for IMT band across all three ITU regions raises the prospect of equipment makers being able to produce network infrastructure and devices that can be deployed across the world. By being able to generate global economies of scale, equipment providers will be able to maximise cost-efficiencies and ultimately make mobile broadband accessible to everyone, everywhere

This frequency band was previously used for Multichannel Multipoint Distribution service (MMDS), a fixed wireless technology for Television in Papua New Guinea. MMDS operates between 2.5GHz and 2.7GHz and is used for broadcasting, personal communications and interactive media services.

NICTA released the 2.6 GHz band plan for Mobile Broadband in PNG in August 2021. While the band plan fully outlined the channeling arrangement, the synchronization was left out so that the operators can select an appropriate scheme to implement. However, NICTA has now revised the band plan to include Synchronization which is the subject of this consultation. The 2600 MHz Band plan in PNG is based on TDD scheme that is quite different from the FDD Scheme which was adopted in many prior band plans released by NICTA. FDD stands for Frequency Division Duplex, where each FDD bands consist of a pair of frequencies, one for the uplink and another for the downlink. TDD (Time Division Duplex) Bands require only a single band which is used for both the uplink and downlink.

Operators who deploy TDD networks in the same frequency band (including co-channel and adjacent channel deployment) and same area will face the issue of network synchronization (synchronized, unsynchronized or semi-synchronized). Cross link interference, e.g. Downlink (DL) to Uplink (UL) or Uplink (UL) to Downlink (DL), may happen if unsynchronized or semi-synchronized operation is used, using different DL/UL time slot ratio and/or unaligned transmission frame structures. Solutions, such as guard band, stricter RF emission requirements or isolation distance, could mitigate the cross-link interference to a certain extent, but it also comes with a price of sacrificing the spectrum efficiency, costlier equipment or site coordination and isolation. A synchronized operation can avoid cross link interference and spectrum waste, but requires neighboring operators to coordinate to select a compatible frame structure, and a common phase clock reference (e.g. UTC) with a requirement on the accuracy/performance, and a common understanding about the start of the frame with regards to the common phase clock reference.