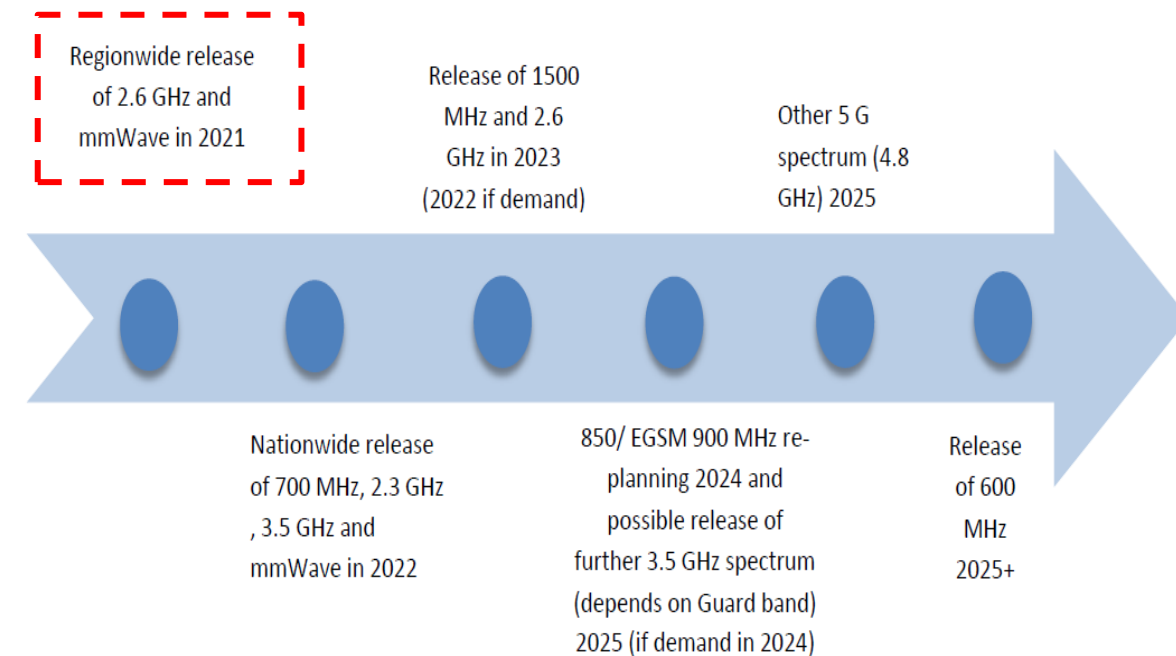




Consultation Response on PTD Spectrum Roadmap (2020)

RECAP_SUMMARY ON RELEASE OF MORE IMT SPECTRUM IN MYANMAR

- Acquiring suitable and promising spectrum bandwidth is very crucial for operators
- PTD has proposed to release at least 400MHz to the market by 2022, prioritizing spectrum capable of supporting 5G technology, including:
 - Part of 2.6GHz to be allocated in 2021; (Regional release)
 - 2x45MHz of 700MHz spectrum,
 - 90MHz 2.3GHz and 120MHz of 3.5GHz in 2022;
 - 200-400MHz of mmWave spectrum in the 28GHz band if in demand.
 - Further, release of 1500MHz, rest of 2.6GHz, 3.5GHz, 4.8GHz, 600MHz and the re-planning of 850MHz and EGSM900MHz between 2022-2025 and beyond may be considered based on market demand and market developments.



- 1) It is unclear on how much of spectrum will be allocated in 2021 & how much will be left for 2023?
- 2) mmWave is not required in 2021.



Regionwide release of 2.6 GHz and mmWave Spectrum in 2021

Highlights:

PTD is considering to release 2.6 GHz and mmWave spectrum:

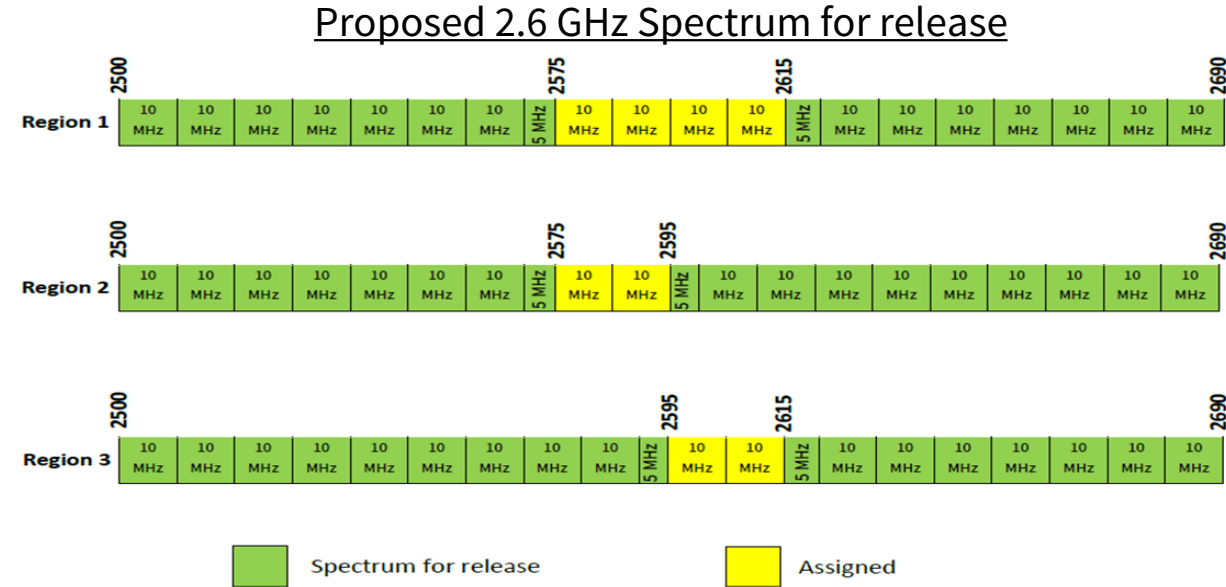
(a) Part of 2.6 GHz and mmWave spectrum are considered to release as Region-wide in 2021 and; both NFS(I) Licensees and MNOs can access to this band auction.

(b) The rest of 2.6 GHz spectrum will be allocated as Nationwide in 2023.

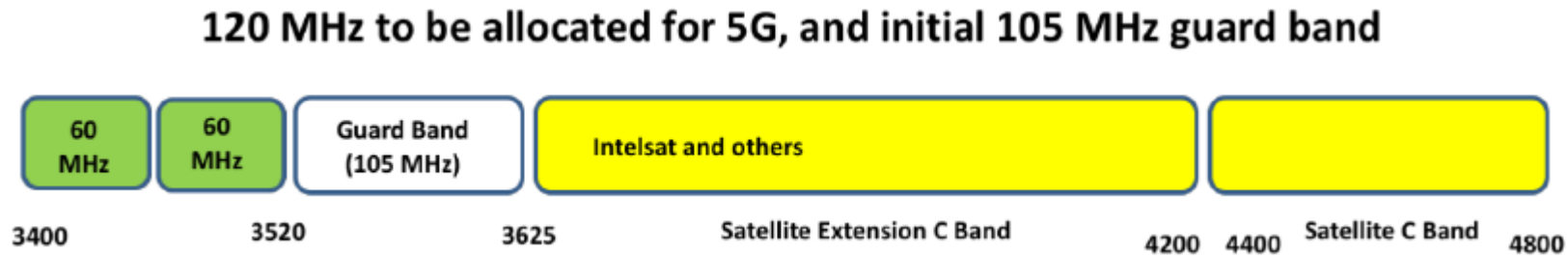
❖ All successful bidders of 2.6 GHz would be able to use the spectrum for both 4G/5G.

Telenor Myanmar Comments:

- 1) Spectrum in these capacity bands should be released on a nationally basis to support the acquisition of large, contiguous spectrum by operators.
- 2) Regional licenses creates risk for operators of not being able to acquire spectrum nationally as well as rollout nationally.
- 3) Regional lots would create additional interference challenges in border areas between regions.
- 4) Need justification from PTD for allocating regional 2.6GHz spectrum ahead of national 2.6GHz spectrum (in 2023).
- 5) Recommend to re-plan the current ISP licenses to top/bottom slot instead of allocated in middle slot to get better efficiency as contiguous spectrum allocation and avoid potential interference.



Release of 700MHz, 2.3GHz, 3.5GHz and mmWave in 2022



- 700 MHz, the 2.3 GHz (20 MHz in 2.3 GHz is reserved to allocate for government use), 3.5 GHz and mmWave spectrum will be auctioned (or offered by a beauty contest with price being a criterion depending on the level of demand).

Other proposed spectrum releases in 2023 and beyond

- If there is demand, then further capacity band spectrum could be offered (1500 MHz & the rest of 2.6 GHz in 2023 and 4.8 GHz spectrum in 2025).
- Release of 600 MHz (n71) would be post 2025 undertaking its analogue to digital television switchover etc..

Telenor Myanmar Comments:

- 700MHz will be important to extending and developing 4G network coverage and to support the transition to 5G subsequently.
- Capacity bands (2.3G/2.6G/3.5G) should be released based on capacity demand and simultaneously release in a multiband award process, i.e, for each operator to obtain 80-100MHz of contiguous spectrum.
- The award format and rules should support the acquisition of nationwide spectrum by mobile operators.
- mmWave spectrum should only be released when the market is ready for 5G



Summary

❑ ***Overall on the release of more IMT spectrum***

- No urgency for release of capacity bands - Capacity band spectrum should be released only when networks are more constrained.
- Allow market to mature to support 5G - Myanmar would benefit from allowing the 5G infrastructure device ecosystem to develop further, and for cost of devices to fall to more economical levels. Furthermore, viable business or industrial use cases for 5G in Myanmar will take some time to develop.
- 700MHz important for improving coverage. However, should be released based on market demand.
- Release the capacity band together as nationwide licences - The capacity bands should be released based on market demand. It is important to award these capacity bands together because of the need for large, contiguous spectrum blocks that offer greater spectral efficiency. Therefore, spectrum in these capacity bands should be released on a nationally basis.
- Millimetre wave spectrum - Millimetre wave (mmWave) spectrum should only be released when the market is ready for 5G.

