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**Via email:** [Consultation@imda.gov.sg](mailto:Consultation@imda.gov.sg)

**Subject:** Comments to IMDA consultation paper on proposed policy frameworks for the allocation of 800 MHz, TDD 1900 MHz and FDD 2100 MHz spectrum bands.

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## COMMENTS OF IEEE 802

1. IEEE 802 LAN/MAN Standards Committee (LMSC) respectfully submits these responses to the Singapore Info-communications Media Development Authority (IMDA). IEEE 802 is a committee of the IEEE Standards Association and Technical Activities, two of the Major Organizational Units of the Institute of Electrical and Electronics Engineers (IEEE). IEEE has about 420,000 members in about 190 countries and supports the needs and interests of engineers and scientists broadly. In submitting this document, IEEE 802 acknowledges and respects that other components of IEEE Organizational Units may have perspectives that differ from, or compete with, those of IEEE 802. Therefore, this submission should not be construed as representing the views of IEEE as a whole<sup>1</sup>

2. IEEE 802 LMSC commends the IMDA on its ongoing work in the area of spectrum management and recognizes the inherent difficulty of balancing the interests of all the various parties who have spectrum needs.

### Summary of Major Points

3. With respect to proposed changes to 800 MHz spectrum allocation:
- a. After 2022 the available spectrum for Short Range Devices (SRDs) in the 800 MHz band in Singapore (868 – 869 MHz) will no longer align with any spectrum allocated for SRDs in Europe (863 – 868 MHz and 917.4 – 919.4 MHz), which may cause some products designed for Europe to become unavailable in Singapore.
4. Eventual removal of SRDs from 866 – 869 MHz almost halves the bandwidth available for certain SRDs in Singapore, from 8 MHz to 5 MHz. This will cause more interference and

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<sup>1</sup> This document solely represents the views of the IEEE 802 LAN/MAN Standards Committee and does not necessarily represent a position of either the IEEE, the IEEE Standards Association or IEEE Technical Activities.

congestion in the 920 – 925 MHz band resulting in some IoT applications, for example those based on low power, low duty cycle SRDs, becoming unviable.

5. Allocation of another 5 MHz of spectrum for SRDs in the 915 – 920 MHz band in addition to the current 920 – 925 MHz band would address both of the above points.

## Statement of Interest

6. IEEE 802 LMSC is a leading consensus-based industry standards body, producing standards for wireless networking devices, including wireless local area networks (“WLANs”), wireless specialty networks (“WSNs”), wireless metropolitan area networks (“Wireless MANs”), and wireless regional area networks (“WRANs”). We appreciate the opportunity to provide these comments to IMDA.

## Comments

7. Comments on Question 1: IMDA seeks views on the proposed allocation approach for the 800 MHz spectrum band.

a. We recognize and appreciate that SRDs will be given a period of time to migrate from the 866 – 869 MHz band to the 920 – 925 MHz band. We have concerns that there will be no alignment with European SRD channels in the 863 - 868 MHz and 917.4 – 919.4 MHz bands after 2022, which may lead to European SRD products being unavailable in Singapore after that date.

8. Other comments on Section 2, 800 MHz Spectrum Band.

a. In addition to the SRDs mentioned in Section 2.2, i.e. RFID and car remote control devices, there could be many other types of SRDs in the 866 – 869 MHz band

including SRDs based on IEEE 802.15.4g, IEEE 802.11ah, LoRa and SigFox. Industrial sensors, building automation and remote metering of water, electricity, gas and other utilities are important applications for these types of SRDs. The removal of SRDs from the 866 – 869 MHz band means that many more SRDs will be competing for the 920 – 925 MHz band, leading to increased interference and congestion and higher noise floors. Low power, low duty cycle SRDs may not be able to operate in such conditions. In addition to this, the current IMDA regulations<sup>2</sup> in the 920 – 925 MHz band allow only RFID systems to transmit between 500 mW and 2000 mW (e.r.p.) and approved on an exceptional basis, while all the other SRDs are limited to transmit at or below a limit of 500 mW (e.r.p.). With this the other SRDs will be subject to more interference from the higher power RFID devices in the band.

b. It should be noted that other countries are increasing the spectrum available for such SRD applications as a result of increasing demand and resulting congestion and higher noise floors in existing bands. For example Australia now supports SRDs in the 915 - 928 MHz band (<https://www.legislation.gov.au/Details/F2018C00500>) and is providing for an additional 7 MHz of spectrum in the 928 – 935 MHz band from 2021 for low power and low duty cycle SRD use (<https://www.acma.gov.au/Industry/Spectrum/Spectrum-projects/800-and-900-MHz-bands/803-960-mhz-milestone-transition-timeline>).

c. Europe has also recently allocated another 2 MHz of spectrum to SRDs in the 917.4 – 919.4 MHz band ([https://eur-lex.europa.eu/eli/dec\\_impl/2018/1538/oj](https://eur-lex.europa.eu/eli/dec_impl/2018/1538/oj)).

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<https://www.imda.gov.sg/~media/imda/files/regulation%20licensing%20and%20consultations/ict%20standards/telecommunication%20standards/radio-comms/imdatssrd.pdf>

## Conclusion

9. IEEE 802 LMSC appreciates IMDA's consultative process and the scarcity of spectrum in the bands below 1 GHz. Our recommendation is to allocate more spectrum for SRDs in the sub 1 GHz band rather than less. Allocation of another 5 MHz of spectrum for SRDs in the 915 – 920 MHz band would provide additional spectrum that would alleviate potential crowding in the 920 – 925 MHz band and which would overlap with the latest allocation in Europe, as mentioned in paragraph 8.c, and allow equipment designed for Europe to be more easily available in Singapore.

Respectfully submitted

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