IEEE P802.18
Radio Regulatory Technical Advisory Group (RR-TAG)

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| Proposed Response to UAE TDRA’s consultation on UWB and SRDs |
| Date: 2023-06-13 |
| Author(s): |
| Name | Company | Address | Phone | email |
| David Goodall | Morse Micro |  |  | dave@morsemicro.com |
| David Halasz | Morse Micro |  |  |  |
| Dries Neirynck | Ultra-radio, UWB Alliance |  |  |  |
| Benjamin Rolfe | BCA, UWB Alliance |  |  | Ben.Rolfe @ ieee.org |

This document drafts a proposed response to the UAE TDRA’s consultation “TDRA Regulations– Ultra Wide Band and Short Range Devices”.

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Electronic filing July 7, 2023

Re: Consultation “TDRA Regulations– Ultra Wide Band and Short Range Devices”

Dear Sir/Madam,

IEEE 802 LAN/MAN Standards Committee (LMSC) thanks the Telecommunications and Digital Government Regulatory Authority (TDRA) of the United Arab Emirates (UAE) for issuing the consultation “TDRA Regulations– Ultra Wide Band and Short Range Devices v4.0” and for the opportunity to provide feedback on this topic.

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 also produce standards for wired Ethernet networks, and technologies produced by implementers of our standards are critical for all networked applications today.

IEEE 802 LMSC 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 400,000 members in over 160 countries. IEEE’s core purpose is to foster technological innovation and excellence for the benefit of humanity. In submitting this document, IEEE 802 LMSC acknowledges and respects that other components of IEEE Organizational Units may have perspectives that differ from, or compete with, those of IEEE 802 LMSC. Therefore, this submission should not be construed as representing the views of IEEE as a whole[[1]](#footnote-1).

Please find below the responses of IEEE 802 LMSC to this consultation.

**Current and future state of IEEE 802 wireless technology development**

Significant economic value is provided by IEEE 802-based systems today. Wi-Fi technology, based on the IEEE 802.11 standard, has an estimated 18 billion devices in use worldwide, with over 4 billion devices added annually [1]. The current deployments of IEEE 802.15 devices are found in markets ranging from consumer devices to smart gird/smart city, large scale IoT, industrial plants, automobiles to buildings and agriculture to space. IEEE 802 wireless technologies are a critical part of the modern communications infrastructure, benefiting billions of people, governments, and businesses every day. Underserved communities stand to gain from IEEE 802 wireless technologies. They are used in community networks both to empower and provide an opportunity for education. IEEE 802 wireless technologies are in the forefront as an enabler of emerging applications such as the Internet of Things (IoT).

IEEE 802.11

Today, Wi-Fi networks based on IEEE 802.11 standards are found in residential, office, and industrial environments, in public and private settings. Users in an array of industries rely on these cost-effective, energy-efficient technologies. Each new generation of IEEE 802.11 technologies continues to improve efficiency, reliability, latency, throughput and determinism. IEEE 802.11 supports operation in several frequency bands [2], including the sub-1 GHz, 2.4 GHz, 5 GHz, and 6 GHz (5925 MHz to 7125 MHz) bands, with significant global deployments [3].

IEEE 802.15

Technologies based on IEEE 802.15 standards and projects are embedded in billions of devices worldwide and the in particular IEEE 802.15.4 UWB is prevalent in consumer devices such as smart phones and accessories, vehicles, and is being added to an increasing number of devices. For some applications, such as cars or utilities, industry consortia exist to build on the standard(s) and provide the support ecosystem to enable very large scale deployments. For other applications, proprietary protocols are used in conjunction with IEEE 802 standards. IEEE 802.15.4 can operate in many frequency ranges [2] including sub-1GHz bands and UWB bands. 802.15.4 Supports data communication, location discovery and device ranging. IEEE P802.15.6ma is specialized for short range communication in the vicinity of, or inside, a human body. For high-speed, low-latency media transfers, IEEE 802.15.3 provides a specialty solution. IEEE P802.15.16t accommodates the needs of some utility networks.

Technologies and industry specifications based upon IEEE 802.15.4 operating in sub-1 GHz spectrum are widely used in industrial and metro-area IoT and are the dominant wireless technologies for low data rate IoT such as smart grid uses such as metering and monitoring, and in smart city uses such as environmental monitoring and street light controls.

IEEE 802.15.4 UWB is the only widely used industry standard for UWB currently, being the foundation of specifications from the Connected Car Consortium, FiRa, Omlox, and CSA. Use of UWB in location based services and secure access is widespread today; Uwe UWB is a rapidly growing with new applications such as sensing and presence detection, and very low latency moderate data rate communications such as high definition, low latency audio. Current projects in 802.15 are addressing these rapidly growing areas of innovation.

IEEE 802.19

Many IEEE 802.15 standards, as well as the IEEE 802.11 standard, support operation on frequencies lower than 1 GHz. The IEEE 802.19 Wireless Coexistence Working Group published best practice coexistence mechanisms for sub-1 GHz technologies in 2021 [4].

**IEEE 802 LMSC’s response to Question 4**

Do you agree with the above frequency bands? Do you have any proposed modifications/additions/suppressions to these frequency bands?

For wideband non-specific short range devices, we recommend that UAE adopt either Proposal 1 or Proposal 2 below. Proposal 2 is preferred as it is likely to support a greater variety of IoT applications in the sub-1 GHz band and support a greater variety of wireless technologies.

Proposal 1: Adopt latest recommendations for wideband SRDs in CEPT 70-03

In recognition of the growing demand for Internet of Things (IoT) applications in the sub-1 GHz band

CEPT 70-03 (Relating to the use of Short Range Devices (SRD)) contains recommendations that allow wideband SRDs to operate in the 863-868 MHz and 915.8-919.4 MHz bands with maximum 1 MHz operating channels, transmit power of 25 mW ERP and a duty cycle of 2.8% for stations and 10% for access points. See Table 3 in CEPT 70-03 <https://docdb.cept.org/document/845>

These recommendations reflect the decisions in the following documents:

* Commission Implementing Decision (EU) 2017/1483 of 8 August 2017 amending Decision 2006/771/EC on harmonization of the radio spectrum for use by short-range devices and repealing Decision 2006/804/EC (notified under document C(2017) 5464)
	+ See Table 8, Band 84 for 863-868 MHz in document: [https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32017D1483#:~:text=Commission%20Implementing%20Decision%20(EU)%202017,(Text%20with%20EEA%20relevance.%20)](https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32017D1483" \l ":~:text=Commission%20Implementing%20Decision%20(EU)%202017,(Text%20with%20EEA%20relevance.%20))
* Commission Implementing Decision (EU) 2018/1538 of 11 October 2018 on the harmonization of radio spectrum for use by short-range devices within the 874-876 and 915-921 MHz frequency bands
	+ See Band 2 for 919.4-919.4 MHz in document: [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018D1538#:~:text=Commission%20Implementing%20Decision%20(EU)%202018,(Text%20with%20EEA%20relevance.)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018D1538" \l ":~:text=Commission%20Implementing%20Decision%20(EU)%202018,(Text%20with%20EEA%20relevance.))
	+ Note that CEPT 70-03 recommends a wider band, i.e. 915.8-919.4 MHz

Proposal 2: Allow wideband SRDs to operate in the 915-925 MHz band

The requirements for wideband SRDs in Europe mean that IoT applications are restricted to those that can work with a duty cycle, such as sensor and meter applications. It is difficult to support mesh topologies when duty cycles are required. To support a much wider range of current and future IoT applications, that may combine sensors with video for example, UAE could allow wideband SRDs to operate in 915-925 MHz, with higher power, wider operating channels and without duty cycle restrictions, coexisting with other wireless technologies such as RFID and LoRaWAN.

**IEEE 802 LMSC’s response to Question 5**

Kindly propose any addition technical details (reference EN standard) if required for the above table. Please specify if any.

For Proposal 1 above there are two EN test documents:

EN 304 220-1 Wideband data transmission SRD operating in the frequency range 25 MHz to 1 000 MHz; Harmonised Standard for access to radio spectrum; Part 1: Wideband data transmission devices: network access points operating in designated bands:

* <https://www.etsi.org/deliver/etsi_en/304200_304299/30422001/01.01.00_20/en_30422001v010100a.pdf>

EN 304 220-2 Wideband data transmission SRD operating in the frequency range 25 MHz to 1 000 MHz; Harmonised Standard for access to radio spectrum; Part 2: Wideband data transmission devices: terminal node operating in designated bands:

* <https://www.etsi.org/deliver/etsi_en/304200_304299/30422002/01.01.00_20/en_30422002v010100a.pdf>

For the preferred alternate Proposal 2, relevant documents are FCC Part 15 §15.249 and ANSI C63.10.

Question 6: Do you believe that the current regulations covers all regulatory framework in the UAE?

No comments.

Question 7: Any proposal to add more references or standard to the regulations?

No comments.

Question 8: Do you agree to include 49 MHz under inductive applications or it should be under Nonspecific SRD or under medical implants?

No comments.

**IEEE 802 LMSC’s response to Question 9**

Question 9: Do you have any proposal to update the format and the information related to UWB in the above table?

We would like to suggest that similar to LPR devices, both the ETSI harmonised standard and the relevant ECC Decision are mentioned:

4.2 Generic UWB devices shall comply with EN 302 065 -1 and ECC/DEC/(06)04.

**IEEE 802 LMSC’s response to Question 10**

No comments.

**IEEE 802 LMSC’s response to Question 11**

Question 11: Do you have any proposal to update the format and the information related to UWB in the above table?

EN 302 500-1 is no longer maintained by ETSI nor the applicable harmonised standard at European level. We would suggest updating to refer to the EN 302 065 family of standards:

4.3 UWB devices for location tracking shall comply with EN 302 065.

**IEEE 802 LMSC’s response to Question 12**

Question 12: Do you have any proposal to update the format and the information related to UWB in the above table?

The minus sign before the zero in the rows for 6.0 – 8.5 GHz and 8.5 – 9.0 GHz could be removed.

There appears to be a superfluous line break in the note between the words ‘the’ and ‘following’.

The requirements to protect the radio astronomy service do not specify that the -65 dBm/MHz limit is a mean EIRP spectral density value. Once this is taken into account, the conditions in 4.3.3 will be automatically fulfilled by applications meeting the requirements in 4.3.1 and there is no more need for a separate 4.3.3.

**IEEE 802 LMSC’s response to Question 13**

Question 13: Do you have any proposal to update the format and the information related to UWB in the above table?

EN 302 435-1 is no longer maintained by ETSI nor the applicable harmonised standard at European level. We would suggest updating to refer to EN 302 065-4:

4.4 UWB devices for building material analysis shall comply with EN 302 065-4.

In addition, note 1 and 2 are applicable to all UWB devices and all frequency ranges. All standards in the EN 302 065 family refer to EN 303 883 for the actual measurement techniques. Clause 5.8, ‘other emissions’, explains the procedure summarised in notes 1 and 2. We would therefore suggest deleting notes 1 and 2.

**IEEE 802 LMSC’s response to Question 14**

Question 14: Do you have any proposal to update the format and the information related to UWB in the above table?

The first row in the table in 4.5.1 suggests the specification applies to all frequency ranges below 230 MHz. This is not consistent with EN 302 066, where the first row is for 30 – 230 MHz. We would suggest modifying the first line to be consistent with EN 302 066.

**IEEE 802 LMSC’s response to Question 17**

Question 17: Do you believe that the current regulations covers all regulatory framework in the UAE?

We would like to make TDRA aware that in November last year, ECC updated its decision on UWB, ECC/DEC/(06)04. This latest update added A1.2.3, ‘other vehicular applications, including applications involving infrastructure to vehicle and vehicle to vehicle communications in 6-8.5 GHz’, A1.3.1 ‘Specific applications involving fixed outdoor installations’ and A1.3.2 ‘Specific applications involving enhanced indoor devices’.

ETSI ERM TGUWB is developing harmonised standards for these applications as part of its effort to update the EN 302 065 family of standards.

**Conclusion**

IEEE 802 LMSC thanks TDRA for the opportunity to provide this submission and kindly requests TDRA to consider our responses in its future decisions.

Respectfully submitted

By: /ss/.

Paul Nikolich

IEEE 802 LAN/MAN Standards Committee Chairman

em: p.nikolich@ieee.org

References:

[1] Wi-Fi Alliance: Value of Wi-Fi. Available online [accessed: 14 June 2023]

[2] IEEE 802.18 Wireless Standards Table of Frequency Ranges, 27 Sep 2022. Available online [accessed: 14 June 2023]

[3] https://wifinowglobal.com/news-and-blog/momentum-builds-19-5-billion-wi-fi-devices-will-be-in-use-this-year-wi-fi-alliance-says/

[4] “IEEE Recommended Practice for Local and Metropolitan Area Networks—Part 19: Coexistence Methods for IEEE 802.11 and IEEE 802.15.4 Based Systems Operating in the Sub-1 GHz Frequency Bands,” in IEEE Std 802.19.3-2021, vol., no., pp.1-79, 26 April 2021, doi: 10.1109/IEEESTD.2021.9416944.

1. This document solely represents the views of IEEE 802 LMSC and does not necessarily represent a position of either the IEEE or the IEEE Standards Association. [↑](#footnote-ref-1)