**IEEE 802.15**

**Wireless Specialty Networks**

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| Project | IEEE P802.15 Working Group for Wireless Specialty Networks (WSNs) |
| Title | Proposal of a liaison statement to ITU-R Working Parties 5A and 5C |
| Date Submitted | 06 February 2025 |
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| Re: |  |
| Abstract | This document proposes a liaison statement to ITU-R WPs 5A and 5C informing updates of IEEE Std 802.15.3dTM-2017 (IEEE Standard for High Data Rate Wireless Multi-Media Networks--Amendment 2: 100 Gb/s Wireless Switched Point-to-Point Physical Laye). |
| Purpose | To provide updated information on technical and operational characteristics in the frequency range 275-450 GHz based on IEEE 802.15.3TM-2023 (IEEE Standard for Wireless Multimedia Network). |
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**Proposal of a liaison statement to ITU-R Working Parties 5A and 5C**

ITU-R WPs 5A and 5C requested IEEE 802 to provide technical and operational characteristics for the preparation of WRC-19 agenda item 1.15 [1]-[6]. IEEE 802 provided ITU-R WPs 5A and 5C these characteristics based on IEEE Std 802.15.3dTM-2017 - IEEE Standard for High Data Rate Wireless Multi-Media Networks - Amendment 2: 100 Gb/s Wireless Switched Point-to-Point Physical Layer [7]-[10] and ITU-R WPs 5A and 5C published Reports ITU-R M.2417 [11] and F.2416 [12] in 2017, respectively. The frequency bands 275-296 GHz, 306-313 GHz, 318 333 GHz and 356-450 GHz were identified for use by administrations for the implementation of land mobile and fixed service applications at WRC-19. These Reports were revised according to the results of WRC-19 [13][14], but the technical and operational characteristics in those Reports are maintained as it was before.

IEEE Std 802.15.3dTM-2017 - IEEE Standard for High Data Rate Wireless Multi-Media Networks - Amendment 2: 100 Gb/s Wireless Switched Point-to-Point Physical Layer was amended to extend the upper limit of the frequency from 325 GHz to 450 GHz and published as a part of IEEE Std 802.15.3TM-2023 - IEEE Standard for Wireless Multimedia Networks. This information, specifically THz related matters, has not been informed ITU-R WPs 5A and 5C because no liaison between IEEE 802 and ITU-R WPs 5A and 5C has been exchanged since 2018.

NICT proposes to send a liaison statement to ITU-R WPs 5a and 5C to inform the most recent version of technical and operational characteristics in the frequency range 275-450 GHz standardized by IEEE 802 (see Attachment).

**Reference**

[1] <https://mentor.ieee.org/802.18/dcn/16/18-16-0047-00-0000-itu-r-wp-5a-tech-op-lms-275-450-ghz.docx>

[2] <https://mentor.ieee.org/802.18/dcn/16/18-16-0048-00-0000-itu-r-wp-5a-pdnr-m-300ghz-ms-char.docx>

[3] <https://mentor.ieee.org/802.18/dcn/16/18-16-0059-00-0000-liaison-fixed-service-applications-spectrum-needs-for-wrc-19-1-15.docx>

[4] <https://mentor.ieee.org/802.18/dcn/17/18-17-0008-00-0000-technical-and-operational-characteristics-of-digital-land-mobile-radios-for-specific-use.docx>

[5] <https://mentor.ieee.org/802.18/dcn/17/18-17-0012-02-0000-preliminary-information-on-land-mobile-service-applications-associated-with-work-on-wrc-19-agenda-item-1-15.docx>

[6] <https://mentor.ieee.org/802.18/dcn/17/18-17-0016-00-0000-preliminary-information-on-fixed-service-applications-associated.docx>

[7] <https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R15-WP5A-C-0225>

[8] <https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R15-WP5A-C-0375>

[9] <https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R15-WP5C-C-0140>

[10] <https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R15-WP5C-C-0236>

[11] https://www.itu.int/pub/R-REP-M.2417-2017

[12] <https://www.itu.int/pub/R-REP-F.2416-2018>

[13] https://www.itu.int/pub/R-REP-M.2417-1-2022

[14] https://www.itu.int/dms\_ties/itu-r/md/23/sg05/c/R23-SG05-C-0033!R1!MSW-E.docx

**Attachment**

**Institute of Electrical and Electronics Engineers, Inc.**

DRAFT Liaison statement to itu-r working parties 5A and 5C

**Technical and operational characteristics in the frequency range 275-450 GHz**

# 1 Source information

IEEE 802 LMSC is a leading consensus-based open standards development committee for networking standards that are used by industry globally. It produces standards for networking devices, including wired and wireless local area networks (“LANs” and “WLANs”), wireless specialty networks (“WSNs”), wireless metropolitan area networks (“Wireless MANs”), and wireless regional area networks (“WRANs”). Technologies produced by implementers of our standards are a critical element for all networked applications today.

IEEE 802 LMSC is a committee of the IEEE Standards Association and of Technical Activities, two of the Major Organizational Units of the IEEE. IEEE has over 460,000 members in more than 190 countries and its core purpose is to foster technological innovation and excellence for the benefit of humanity. IEEE is also a major accredited standards development organization whose standards are recognized worldwide. 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[[1]](#footnote-1).

# 2 Discussion

In 2017, IEEE 802 provided ITU-R WPs 5A and 5C with the technical and operational characteristics based on IEEE Std 802.15.3dTM—2017 - IEEE Standard for High Data Rate Wireless Multi-Media Networks - Amendment 2: 100 Gb/s Wireless Switched Point-to-Point Physical Layer. WPs 5A and 5C published Reports ITU-R M.2417[[2]](#footnote-2) and F.2416[[3]](#footnote-3) in 2017, respectively. The frequency bands 275 GHz to 296 GHz, 306 GHz to313 GHz, 318 GHz to 333 GHz and 356 GHz to 450 GHz were identified for use by administrations for the implementation of land mobile and fixed service applications at WRC-19. These Reports were revised according to the results of WRC-19[[4]](#footnote-4), [[5]](#footnote-5), but the technical and operational characteristics in those Reports are maintained as it was before.

In IEEE Std 802.15.3TM—2023 the frequency bands have been extended up to 450 GHz.[[6]](#footnote-6)The additional characteristics for PHY specification for THz in IEEE Std 802.15.3TM2023 are summarized in Table 1 . The characteristics from Table 1 could be added in Tables 2, 3 and 4 in Report ITU-R M.2417 and Table 2 in Report ITU-R F.2416.

**Table 1 New operational PHY characteristics**

|  |  |
| --- | --- |
| New characteristics | Value |
| Additional frequency range (GHz) | 325 GHz to 450 GHz |
| Additional bandwidth (GHz) | 34.56 |
| Additional modulation scheme | 16-APSK, 32-APSK |

IEEE 802 would appreciate if ITU-R WPs 5A and 5C keep it informed on the progress of the work.

# 3 Summary

We applaud the efforts of the participants in ITU-R WPs 5A and 5C for undertaking this work and giving IEEE 802 the opportunity to exchange information on the terahertz related matters.

Respectfully submitted

By: /ss/.

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1. This document solely represents the views of IEEE 802 LMSC and does not necessarily represent a position of either IEEE or the IEEE Standards Association or IEEE Technical Activities. [↑](#footnote-ref-1)
2. https://www.itu.int/pub/R-REP-M.2417-2017 [↑](#footnote-ref-2)
3. <https://www.itu.int/pub/R-REP-F.2416-2018> [↑](#footnote-ref-3)
4. https://www.itu.int/pub/R-REP-M.2417-1-2022 [↑](#footnote-ref-4)
5. https://www.itu.int/dms\_ties/itu-r/md/23/sg05/c/R23-SG05-C-0033!R1!MSW-E.docx [↑](#footnote-ref-5)
6. <https://ieeexplore.ieee.org/document/10443750> or <https://standards.ieee.org/ieee/802.15.3/10801/> [↑](#footnote-ref-6)