**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 |
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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

This contribution was developed by IEEE Project 802®, the Local and Metropolitan Area Network Standards Committee (“IEEE 802”), an international standards development committee organized under the IEEE and the IEEE Standards Association (“IEEE-SA”).

The content herein was approved for submission by the IEEE 802.15™ Working Group for WPAN, the IEEE 802.18 Radio Regulatory Technical Advisory Group, and the IEEE 802 Executive Committee, in accordance with the IEEE 802 policies and procedures, and represents the view of IEEE 802.

# 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[[1]](#footnote-1) and F.2416[[2]](#footnote-2) 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[[3]](#footnote-3), [[4]](#footnote-4), but the technical and operational characteristics in those Reports are maintained as it was before.

In IEEE Std 802.15.3dTM-2023 the frequency bands have been up to 450 GHz [[5]](#footnote-5). The additional characteristics for PHY specification for THz in IEEE Std 802.15.3TM-2023 are summarized in the following table. These characteristics could be added in Tables 2, 3 and 4 in Report ITU-R M.2417 and Table 2 in Report ITU-R F.2416.

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| Additional frequency range (GHz) | 325-450 |
| 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.

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1. https://www.itu.int/pub/R-REP-M.2417-2017 [↑](#footnote-ref-1)
2. <https://www.itu.int/pub/R-REP-F.2416-2018> [↑](#footnote-ref-2)
3. https://www.itu.int/pub/R-REP-M.2417-1-2022 [↑](#footnote-ref-3)
4. https://www.itu.int/dms\_ties/itu-r/md/23/sg05/c/R23-SG05-C-0033!R1!MSW-E.docx [↑](#footnote-ref-4)
5. <https://ieeexplore.ieee.org/document/10443750> or <https://standards.ieee.org/ieee/802.15.3/10801/> [↑](#footnote-ref-5)