The Manager

Spectrum Planning Section

Australian Communications and Media Authority

**Ref: Intel’s comments on “Variation to the Low Interference Potential Device Class Licence**

**Consultation paper”**

Intel Corporation (“Intel”) welcomes the opportunity to deliver our views to the Australian ACMA on the Consultation on the Variation to the Low Interference Potential Device Class Licence (“Consultation”). Intel also appreciate ACMA invitation for suggestions from industry and individuals on devices and technologies for possible inclusion in the LIPD class licence in future variations. We commend the ACMA efforts to promote vital conversations that will improve and enrich Australian’s lives using ultra-fast wireless connectivity.

Our comments are delivered using electronic format and follow the guidance specified in Invitation to comment section of this consultation paper, “[Online submissions](https://www.acma.gov.au/have-your-say)”. We have divided our comments into two sections. In Section 1, we cover Intel’s general view and comments regarding possible inclusion in the LIPD class licence in future variations. In Section 2, we address specific sections and answers to question from the consultation. We are happy to provide any additional information or required clarifications.

**Section 1. Intel’s General Views and Comments**

Intel commends the ACMA’s designation of the 5925-6425 MHz band as LIPD Class License in March 2022 and for the efforts to accelerate the high-speed, high-quality wireless broadband in Australia and initiation of Consultation on the Variation to the Low Interference Potential Device Class Licence.

Intel is an industry leader in creating world-changing technology that enriches the live of every person on earth. We stand at the brink of several technology inflections—artificial intelligence (AI), 5G network transformation, and the rise of the intelligent edge—that together will shape the future of technology. Silicon and software drive these inflections, and Intel is at the heart of it all. Intel® Wi-Fi 6/6E and Wi-Fi 7 solutions enable the fastest wireless speeds for PCs, more responsive performance, with enhanced security and reliability, especially in dense environments.

Intel’s global broadband objectives are the same as that of most governments and consumers: we want to enable high-speed and high-quality, widespread, affordable broadband in all countries extending computing technology to connect and enrich the lives of every person on earth. We strongly encourage all Administrations to establish technology and service neutral policies, expeditiously assign spectrum, and permit compliance to globally recognized standards.

Intel supports allocating the full 6GHz band (5925-7125MHz) for unlicensed use in Australia and globally.

The connections provided by Wi-Fi technology through low-cost, license exempt devices are worth billions of dollars to the Australian economy and Wi-Fi is expected to contribute nearly $5 trillion USD to the global economy by 2025. We believe Australia should get maximum benefit from Wi-Fi 6 similar to the other countries around the world already authorized license-exempt operation in the entire 6GHz band. As it was noted in the ACMA March 2022 6GHz Outcomes paper, we propose that decisions on the future use of the upper 6GHz band to be made regardless of WRC-23 outcomes and as soon as possible.

Recognizing ACMA’s invitations for suggestions from industry for possible inclusion in the LIPD class licence in future variations, Intel would like to also use this opportunity to comment on Client-to-Client operation in LPI mode and Standard Power mode under supervision of Automated Frequency Control (AFC) System.

**6GHz Client to Client:** In its May 2021 response to ACMA consultation “Exploring RLAN use in the 5 GHz and 6 GHz bands”, Intel proposed authorizing Client to Client communication throughout the 6GHz band. Following up on that proposal, we suggest an explicit clarification in Item 63AA for Low Power Indoor operation that Low Power Indoor clients in this band can connect to an access point or another client device and may or may not be battery powered. This clarification is consistent with European Decision (20)01 and UK regulatory requirement for license-exempt operation in the 6 GHz band to enable Client to Client operation.

**Standard Power AFC:** Since early adoption of 6GHz band for license exempt operation by US FCC in April of 2020, countries and regions administrations are improving utilization of the band by authorizing addition or otherwise studying the Standard Power indoor and outdoor operation under supervision of AFC System. More specifically, USA, Canada and Brazil are in advance stages of enabling the mode in the 6GHz band and expected to have the system operational in 2023. Total of 13 AFC System applicants applied for US AFC System operation and were all granted conditional approval in Nov 2020.

During the past three years, industry forums including Wi-Fi Alliance and WInnForum, where Intel actively participate in, have been actively working on developing compliance recommendations (Table 1) to support AFC System certification. These specifications are in final stages of developments and are already adopted by many AFC system operators and receive recognition by US FCC as candidate for consideration in certification processes. These specifications are designed to be flexible and customizable to support regulatory requirements from various regions and countries.

Table 1. Industry Compliance Specifications for 6GHz AFC System

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| --- | --- |
| **Specifications** | **Available for download at**  WFA: <https://www.wi-fi.org/file/afc-specification-and-test-plans>  WInnForum: [Work Group Products (wirelessinnovation.org)](https://6ghz.wirelessinnovation.org/work-group-products) |
| WFA: AFC System-Device Interface (SDI) Specification | Provides interface specifications between an AFC System (SUT) and an AFC Device (DUT), including the generic message (JSON objects) structure (transported by using HTTPS (HTTP plus TLS)) which can accommodate both vendor-specific extensions and future standardized extensions to baseline signaling protocols |
| WFA: AFC System (SUT) Compliance Test Plan   * AFC SUT Compliance Test Vectors (Requests & Responses) & Test Harness | Provides a compliance test program for the AFC System (SUT) that uses location information reported from an AFC Device, cross referencing it against a universal licensing system database and delivers instructions back to the AFC Device on allowable channels it may use |
| WFA: AFC Device (DUT) Compliance Test Plan   * AFC DUT Compliance Test Vectors (Requests & Responses) & Test Harness | Provides a compliance test program for an AFC Device (Access Point) communication with an AFC System, including location information it must report to the AFC System, and in turn implement the instructions received from the AFC System |
| WInnForum: AFC Technical Specification WINNF-TS-1014 | Technical specification for AFC System operation including detailed requirements |
| WInnFurum: Supplemental Databases TS-5008 | Supplemental databases (beyond ULS) required to implement AFC System technical specification |

Other countries and regions including EU, Korea, Japan, Saudi Arabia and UAE have also started studying or considering enablement of Standard Power mode through consultations.

Intel recommends ACMA to include Standard Power mode in the LIPD class licence in future variations.

**Section 2. Intel’s answers to the Consultation specific Sections and Questions**

**Regarding Frequency hopping radiocommunications transmitters in the 5925–6425 MHz band**

While Intel supports revision of the regulations for 6GHz VLP mode to accommodate wider range of applications and technologies, we believe that inclusion of narrow band operation with higher power spectral density still benefits from additional studies. More specifically, we believe that more studies are required to address efficient and effective use of the band and co-existence of narrow band operation with Wi-Fi. As a related note, we would like to mention that the work in ETSI BRAN to develop compliance specification (in EN 303 687) for narrow band operation is not completed yet and further studies are expected to be considered as input into a future revision of the specification. One possible solution for consideration is to limit the narrow band operation to a portion of the allocated band in 6GHz.

Intel recommends further studies on narrow band frequency-hopping before a decision is made on authorizing the operation in VLP mode in 6GHz band.

**Q1**

Should a separate new item be introduced to facilitate higher-power RLAN transmitters in 5150–5250 MHz, or should existing item 61 be modified?

Intel supports allowing outdoor use with a maximum EIRP of 1 W (30 dBm) in line with ITU Resolution 229 (Rev. WRC-19). Intel does not recommend adding a separate new item and proposes to modify the existing item 61 with maximum EIRP of 1 W (30 dBm) and other required changes.

**Q2**

Which of the 2 simple emission masks outlined in ITU Resolution 229 (Rev. WRC-19) should be implemented in Australia for 1 W RLAN transmitters in the 5150–5250 MHz band?

From the two options proposed in ITU Resolution 229 (Rev. WRC-19) for 5150–5250 MHz band, the option with 21 dBm for elevations higher than 30 degree is used by other regional regulatory bodies in the 5150–5250 MHz band. The same requirements are also applied for 6GHz outdoor Standard Power devices in US and Canada. Intel recommends AMCA to choose “the maximum EIRP at any elevation angle above 30 degrees, as measured from the horizon shall not exceed 125 mW (21 dBm)”.

**Q3**

Subject to which emission mask is implemented (see Question 2), would a device registration system (or similar – see Canadian approach above) be needed for outdoor deployments exceeding 200 mW (23 dBm) transmission power? Note that such a regime would require further regulatory development. Accordingly, a decision to implement such a regime may delay access under those arrangements.

Intel believes that no additional restrictions are needed in addition to the radiation mask subject of Question 2 for outdoor deployments exceeding 23 dBm.