

16/05/2025



AMTA Submission

Australian Communications & Media Authority

Remaking the low interference potential devices class licence— consultation



About AMTA

The Australian Mobile Telecommunications Association (AMTA) is the peak industry body representing Australia's mobile telecommunications industry. Its mission is to promote an environmentally, socially and economically responsible, successful and sustainable mobile telecommunications industry in Australia, with members including the mobile network operators and service providers, handset manufacturers, network equipment suppliers, retail outlets and other suppliers to the industry. For more details about AMTA, see <http://www.amta.org.au>.



Introduction

AMTA welcomes the opportunity to provide its views on the ACMA's consultation on remaking the Low Interference Potential Devices (LIPD) Class Licence, which sunsets in October this year. We support to the ACMA's proposal to re-make the instrument as the *Radiocommunications (Low Interference Potential Devices) Class Licence 2025* ("the LIPD 2025").

However, we strongly object to the LIPD 2025 including provisions for radio local area network (RLAN) transmitters in the range 6425-6585 MHz in the initial re-making of this instrument (i.e. this calendar year), due to the potential impacts on the utility of spectrum above 6585 MHz, which the ACMA has earmarked for wireless broadband (WBB) networks using International Mobile Telecommunications (IMT) technologies (i.e. 5G NR and in the future, 6G).

AMTA has two main concerns about proceeding prematurely with RLAN provisions in the range 6425-6585 MHz in 2025:

1. It will lock in a frequency boundary for which an international device ecosystem may not emerge, requiring costly bespoke solutions for Australia.
2. Adjacent-band coexistence under the proposed conditions has neither been studied internationally nor consulted on domestically. Any requirements that RLAN devices would need to meet, to ensure compatibility with adjacent-band WBB networks, would not be possible to apply retrospectively to RLAN devices already widely proliferated in Australia.

Therefore, the introduction of RLAN into 6425-6585 MHz *at the very least* needs to be **paused** until adjacent-band coexistence can be considered in further detail, which will also allow the international market to develop further. Allocating this additional spectrum to RLAN ahead of completing coexistence studies may lead to sub-optimal outcomes which fail to maximise the public benefit derived from this valuable spectrum.

As we've submitted in previous submissions to the Upper 6 GHz process¹—and leaving aside our more general opposition to introducing class-licensed RLAN above 6425 MHz at all—**there is no urgent need** to make 6425-6585 MHz available in 2025. The 500 MHz of spectrum recently allocated to these RLAN in "lower 6 GHz" (i.e. 5925-6425 MHz) remains largely underutilised, according to crowd-sourced data².

To be clear, the LIPD 2025 can be made this calendar year, with 6425-6585 MHz omitted, and can be amended in a later year if necessary following completion of the technical work discussed here.

¹ ACMA, June 2024, Planning options in the upper 6 GHz band, available here:

<https://www.acma.gov.au/consultations/2024-05/planning-options-upper-6-ghz-band>

² GSMA Intelligence analysis of data provided by Ookla.

International device ecosystem

A market the size of Australia cannot afford to implement unique solutions. International developments may reveal arrangements and solutions which may represent a higher-efficiency approach for Australia to adopt. Australia's market size also means it is imperative that the ACMA take note of and follow other jurisdictions to ensure we leverage global device economies of scale. This is applicable to both the WBB infrastructure and user equipment (UE) and to the RLAN equipment. The most relevant jurisdiction to the Australian case is the European Conference of Postal and Telecommunications Administrations (CEPT), as they have previously allocated the 'lower' 6 GHz (5925-6425 MHz) to RLAN and have conducted co-existence studies which will inform efficient use of the 'upper' 6 GHz band (6425-7125 MHz). Further information on these studies is provided below, but CEPT has not made a decision on how the band should be used.

European developments

ECC PT1 sharing studies

At its recent meeting of 5-9 May in Budapest, Hungary, Sub-Working Group A (SWG A) of ECC PT1—the Project Team dealing with IMT matters—had on its agenda the finalisation for publication of Draft ECC Report 366—*Feasibility and sharing studies on the potential shared use of 6425-7125 MHz frequency band between MFCN and Wireless Access Systems including Radio Local Area Networks (WAS/RLAN)*³. However, this work was focused on investigating the mechanisms which could be used to allow a certain part of the band to be used by both applications (i.e. WBB and RLAN), and the impacts on the performance of both systems if such co-channel / same-area use were adopted.

In section 6.5.1 “*Potential band split approaches and their development*” (the penultimate section of the body of the report), the report provides a high-level summary that—in the same frequency band and geographical area—a very low percentage of indoor locations could be successfully used for RLAN within the cell of a full-power WBB base station. On the other hand, reducing the EIRP of the WBB base station improved the usability of the area for RLAN, but had negative impacts on the WBB network coverage and capacity (in particular for indoor WBB UEs). It then concludes “*Therefore, in order to enable full power MFCN BS and WAS/RLAN use in the Upper 6 GHz band, additional frequency or geographical separation between MFCN and WAS/RLAN may be considered*”. This potential inclination towards a band split approach would align with what the ACMA has adopted. However, throughout the report, ECC PT1 SWG A makes it abundantly clear that “*potential issues of adjacent band coexistence should be investigated in a band split approach... These issues and how to address them have not been considered in this Report*”.

³ ECC PT1 meeting documents can be found here: <https://www.cept.org/ecc/groups/ecc/ecc-pt1/client/meeting-documents>

Ofcom proposals

We note that Ofcom has also recently announced proposals for the Upper 6 GHz band to be made available and shared between mobile WBB services and RLAN⁴. In our assessment, Ofcom's proposal appears to be imprudent. It permits unrestricted Wi-Fi access across the entire Upper 6 GHz band within the current year, while simultaneously anticipating that services already deployed will subsequently scale back—either by discontinuing operations or by retrospectively implementing sharing mechanisms that have yet to be defined.

Section 5.28 of Ofcom's paper acknowledges this risk, stating *"The main risk with this approach is that some "legacy" Wi-Fi devices, deployed before European harmonisation concludes, may not have implemented some features agreed as part of the harmonisation that could help reduce the risk of interference with mobile later, such as "enhanced sensing". We explain later in this section why we believe this risk is manageable"*. Ofcom is confident that any requirements on RLAN decided as part of a European decision could be added to the UK licence exemption (the equivalent of Australian Class Licence) later, and that existing RLAN equipment (e.g. that created for WiFi use in the USA and elsewhere) could still be used, while prioritising mobile uses when and where required. For this prioritisation to work in practice, Ofcom appears to be relying quite heavily on the following:

- a) European cross-technology awareness to be based on mobile networks having to transmit a Wi-Fi-like signal so that existing Wi-Fi devices can successfully decode them—something that Europe has not decided on yet. With this cross-technology awareness approach, Wi-Fi devices would likely only need software updates to avoid mobile networks, rather than hardware updates (e.g. to be able to decode 3GPP synchronisation signal block (SSB) signals or to comply with a database-based approach).
- b) Short overlap between the lifetime of 'legacy' Wi-Fi devices (i.e. those introduced between 2025 and the updating of rules based on European harmonisation decisions) and the widespread proliferation of IMT networks and devices in the Upper 6 GHz band.
- c) Other technical solutions, e.g. requiring 'legacy' Wi-Fi access points to have to consult a web interface to confirm whether or not they can comply with sharing requirements.

Ofcom states that one benefit of its approach is that it can *"help inform and drive the international process with the UK's practical experience"*. This sounds like Ofcom is happy to be the guinea pig for the rest of the world in terms of testing sharing mechanisms in the valuable Upper 6 GHz spectrum of great importance for the mobile industry. AMTA is not as enthusiastic about crucial Australian mobile spectrum being used as a testing ground.

⁴ Ofcom, February 2025, *Expanding access to the 6 GHz band for mobile and Wi-Fi services*, available here: <https://www.ofcom.org.uk/spectrum/innovative-use-of-spectrum/ofcom-pioneers-sharing-of-upper-6-ghz-spectrum-between-mobile-and-wi-fi-services>

Again, while Ofcom has considered and discussed measures to facilitate co-channel sharing in the same geographical area (assuming the cross-technology awareness measure works well in practice), they have not discussed the adjacent-band coexistence.

European operators

Notwithstanding Ofcom's proposals, the ACMA should not take for granted that there will be sharing between mobile and RLAN in the Upper 6 GHz band, and that the UK will still rely on the arrangements harmonised across Europe more broadly. In this regard, it should be noted that the European mobile industry is continuing to seek access to the entire Upper 6 GHz band for IMT, as stated in a recent joint letter from European Telecom operators⁵.

Adjacent-band coexistence

As outlined in the previous section, adjacent-band coexistence between RLAN and WBB below and above (respectively) a frequency boundary as part of a band split approach, has **not** been studied in Europe.

Here in Australia,

- Adjacent-band coexistence between RLAN below 6585 MHz and WBB networks above 6585 MHz, using IMT technologies, has not been consulted on by the ACMA.
- The ACMA is not proposing to specify out-of-band emission (OOBE) limits on these RLAN transmitters
- The ACMA is not proposing to specify receiver performance (e.g. adjacent-channel selectivity or blocking) requirements on RLAN receivers

All three factors above need to be considered such that the spectrum both below and above the 6585 MHz boundary can be used effectively.

While the Draft ECC Report 366 did not consider adjacent-band coexistence, in section 3.3.4 it does state that *"Experience has also shown that mobile network operation in bands adjacent to WAS/RLAN can lead to interference issues"*. Here in Australia, some of AMTA's members carried out preliminary tests confirming additional mutual impact between WiFi and WBB equipment when WiFi operates below 6585 MHz, compared to when it operates below 6425 MHz. The tests were preliminary, and were not modelling worst-case scenarios (i.e. RLAN and WBB radios both operating in the same indoor environment), but even so demonstrated some negative impacts. The cause of the impacts needs to be investigated further, and whether they are mostly due to receiver selectivity, or transmitter unwanted emissions, or genuinely a combination of both.

⁵ Joint letter from European Telecom operators, available here: <https://www.gsma.com/about-us/regions/europe/whats-new/essential-action-for-europes-mobile-future/>

In particular, we wish to highlight the current standardised parameters for RLAN equipment, specified in ETSI EN 303 687⁶:

- The *transmitter unwanted emissions within the 6 GHz WAS/RLAN band* in clause 4.3.4.3 the OOB are required to drop to -20 dB (relative to in-band levels) within 1 MHz of the channel edge, but then take an entire channel width to reduce to -40 dB.
- Receiver selectivity parameters show that an adjacent-band interfering signal up to $P_{min} + 26$ dB needs to be tolerated, although it doesn't specify a co-channel requirement to compare this to, to be able to derive a single adjacent-channel selectivity (ACS) ratio value.

Section 8.3.1.2 of ECC Report 310⁷ has measured ACS values for 5 GHz RLAN devices, showing ACS for the first-adjacent channel of just 0-13 dB for all but the best-performing device, and ACS for the second-adjacent channel improving to 20-35 dB for all but the best- and worst-performing devices (out of a total of 13 measured).

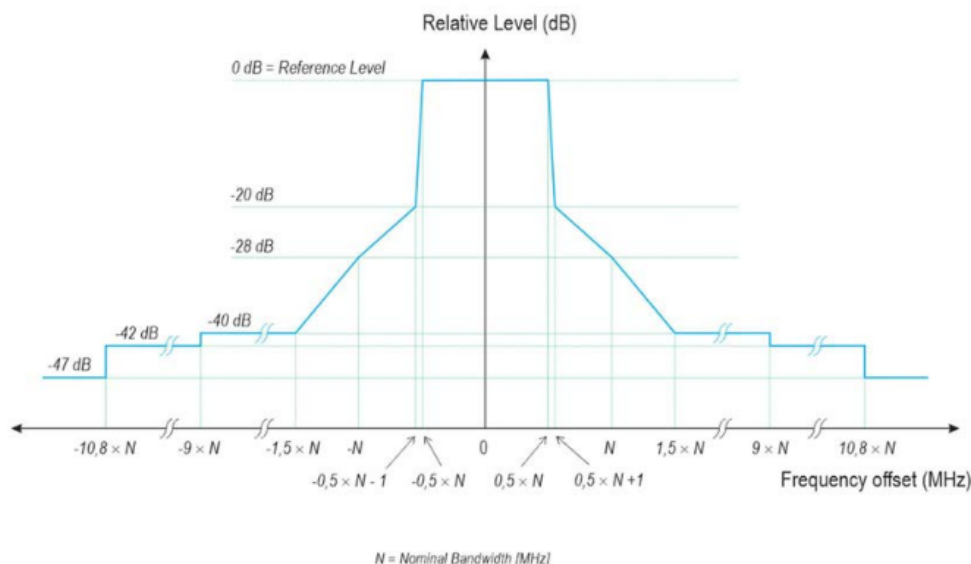


Figure 1—Transmit spectral power mask for 6 GHz WAS/RLAN [source: ETSI EN 303 687]

We note that the ACMA is not even proposing to specify OOB or receiver performance requirements in clauses 48 and 49 of the draft LIPD Class licence 2025. While we believe that they should be specified, we are not endorsing the current ETSI standardised values outlined in the dot

⁶ ETSI, June 2023, ETSI EN 303 687—6 GHz WAS/RLAN; *Harmonised Standard for access to radio spectrum*, available here:

https://www.etsi.org/deliver/etsi_en/303600_303699/303687/01.01.01_60/en_303687v010101p.pdf

⁷ ECC Report 310—*Evaluation of receiver parameters and future role of receiver characteristics in spectrum management, including in sharing and compatibility studies*, available here:

<https://docdb.cept.org/document/13606>

points above. Rather, these would need to be the output of international standardisation efforts, in turn following international studies on adjacent-band coexistence.

In contrast, 3GPP base stations have an adjacent-channel leakage ratio (ACLR) of 38 dB⁸ and an adjacent-channel selectivity (ACS) of 42 dB⁹, in the immediately-adjacent channel. Under such parameters, any adjacent-band interference between WBB and RLAN would be dominated by the frequency-dependent characteristics of the RLAN transmitters and receivers.

In conclusion, adjacent-band coexistence, and the resulting OOB limits and receiver performance requirements, need to be investigated internationally, and subsequently consulted on within a Technical Liaison Group (TLG) domestically as part of the broader re-planning process on Upper 6 GHz. Clearly, the required work will not be completed before the LIPD 2025 needs to be made (i.e. well before 1 October 2025).

⁸ Parameter assumed in Draft ECC Report 366. However, it should be noted that in the 3.4 GHz spectrum licences, the unwanted emission limits in the core conditions require the unwanted emission power spectral density (PSD) to be more than 47 dB below the maximum in-band level, beyond an offset of just 10 MHz.

⁹ Parameter assumed in Draft ECC Report 366.

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