



TELSTRA CORPORATION LIMITED

New arrangements for low interference potential devices

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01 Introduction

We welcome the opportunity to provide our views on the ACMA's proposal for **New arrangements for low interference potential devices**, as outlined in ACMA consultation IFC 35/2022. In this consultation, the ACMA proposed several amendments to the Radiocommunications (Low Interference Potential Devices) Class Licence 2015 ("**LIPD class licence**").

In most cases, we agree with and support the ACMA's proposed amendments to the LIPD class licence. There are, however, three items where we urge changes to the ACMA's proposed approach:

- We strongly object to any changes that would introduce class licensed devices into IMT spectrum licensed bands for the purposes of providing IMT services, including for use in underground private networks, without the consent of the licensee.
- We consider that if higher powered Wireless Microphone and Audio Systems (WMAS) are to be introduced into the UHF band, they should be limited to frequencies below 612 MHz.
- There may have been a slight transcription error from ITU Resolution 229 into the proposed update to the LIPD class licence in relation to power limits for higher-powered devices in 5150-5250 MHz.

Finally, we re-state our suggestion from submissions to previous consultations on the lower 6 GHz band (5925-6425 MHz) that the maximum power for low-power indoor (LPI) devices could be increased to 30 dBm EIRP, so long as the current PSD of 11 dBm/MHz (25mW/MHz) is retained, and we now recommend that this change is introduced with the next round of changes to the LIPD class licence.

02 No class licensing for underground use in IMT bands

The ACMA's consultation canvasses views on amending the LIPD class licence to allow the use of wireless broadband in underground mines. Specifically, the ACMA is considering class licensing underground operation in the 700 MHz, 800 MHz and 900 MHz bands.

Issuing class licences across spectrum licensed space would undermine the value of the licences purchased through an auction process, given it was not foreshadowed in any auction instruments. The proposal amounts to the government diluting parts of our spectrum licence rights after the awarding of the licences. If the proposal is implemented, in our view it would be an inappropriate and unacceptable course of action.

The consultation paper observes "*Third parties are able to approach the holders of spectrum licences to seek access to this spectrum*"¹ and goes on to seek comment from spectrum licensees on whether secondary trading has been explored for underground communications. **C-I-C Begins** **C-I-C Ends**

The use of secondary trading or authorisations is the best method to allow private operators to gain access to spectrum licensed space, as it allows spectrum licensees to consider the impact of proposed operations within their spectrum space and withdraw the authorisation if there is a risk of interference to their networks and/or the third-party operation impedes the spectrum licensees network deployment plans. A class-licensed arrangement that permits other users to operate in any underground

¹ Consultation paper, p.19.



environment (as the ACMA proposes) could cause harmful interference to such cellular network coverage.

The ACMA notes that section 138 of the Radiocommunications Act (the Act) allows for the issuing of a class licence in spectrum space allocated for spectrum licences, provided certain conditions are met. Specifically, section 138(2)(a) of the Act requires two conditions are each met:

- (i) *issuing the class licence would not result in unacceptable levels of interference to the operation of radiocommunications devices operated, or likely to be operated, under spectrum licences; and*
- (ii) *issuing the class licence would be in the public interest;*

In this particular case, we fail to see how issuing a class licence that could only be used underground, and therefore by only a very small subset of the population with private commercial interests and authorised access to the mine, could satisfy the public interest criteria in section 138 of the Act. Such networks will not be accessible by the general public and provide no benefits to the public at large.

Finally, we are concerned that the class licence approach may be difficult to manage and may result in interference to public mobile networks operating on the same frequency. Private network operators deploying solutions using a class licence may deploy near the entrance to a mine, or even worse, may assume that because the spectrum is class licensed, they can deploy above ground.

03 WMAS power should not be increased above 612 MHz

Item 31 of the LIPD class licence currently allows WMAS systems of up to 100mW (~60.95 mW effective radiated power – ERP) to be used between 520-694 MHz. The ACMA observes that in the US, the FCC is considering increasing the power for WMAS operating in 520-694 MHz from 100mW to 250mW.² We anticipate that changing the LIPD class licence to allow more powerful wireless microphone technology could result in operators of such devices (professional audio service providers, community groups, schools, churches and the like) upgrading their equipment to adopt more powerful devices.

The Federal Government's 2021 Media Reform Green Paper³ kick-started the conversation about re-purposing the 600 MHz band through more efficient use of UHF spectrum to deliver broadcast television. We have expressed our support for this proposal, along with our willingness to support the Broadcast industry through a future transition in whatever way we can. Part of the genesis for the Media Reform Green Paper is the potential to use the 600 MHz band for IMT.

While transition to more efficient use of UHF spectrum for broadcast television will take several years, and the subsequent re-allocation of the band to IMT (assuming it transpires that IMT is the highest-value use for the band) will take at least another 1-2 years, it is not unreasonable to contemplate that the 600 MHz band could be reallocated for IMT use by the end of this decade.

The ACMA will recall the 700 MHz band (first digital dividend) and the effort required to work with operators of wireless microphones, to alert them to the interference issues they may experience and

² Consultation paper, bottom of p.16: "The FCC has proposed to allow WMAS devices to operate at up to the same maximum power as other wireless audio devices ... in the US, the maximum EIRP is 250 mW".

³ <https://www.infrastructure.gov.au/have-your-say/media-reform-green-paper-proposals-modernise-television-regulation-australia>



encourage them to move their equipment to different band(s). This normally required these users to purchase new equipment at their own expense, and took several years to achieve.

We note 3GPP band n71 is defined as 617-698 MHz, however, the Asia-Pacific Telecommunity (APT) adopted a new band n105 in March 2022 that extends the frequency range down to 612 MHz. n105 is now being standardised by 3GPP. It seems short sighted to potentially open the door to more powerful wireless microphones above 612 MHz if there is a reasonable prospect that any such devices would have to exit the band less than 7 years later. The users of such devices would likely be extremely dissatisfied that their relatively new equipment has been rendered obsolete in such a short time. If the more powerful devices were only permitted to operate below 612 MHz, it could start the transition to clear the 600 MHz band of wireless microphone technology by providing an incentive to voluntarily move to frequencies below 612 MHz.

04 Higher-powered RLAN devices in 5150-5250 MHz

The ACMA proposes to introduce higher-powered RLAN devices into the LIPD class licence, up from the current maximum power limit of “200 mw (averaged over the entire transmission burst)” to “1 W (averaged over the entire transmission burst)”. We agree with and support this change. However, we suspect there may have been a mistake in articulating the limit above the elevation restriction as a Power Spectral Density (PSD) limit rather than an e.i.r.p. limit.

We note in the two proposed elevation restriction options, the ACMA has defined a PSD limit above a certain elevation; 23 dBm if a 5° elevation is chosen, or 21 dBm if a 30° elevation is chosen. It would appear the ACMA has attempted to align with “Resolves 3” of ITU Resolution 229 (Rev. WRC-19),⁴ which we support, however, as the following table shows, there appears to have been a slight transcription error from ITU Resolution 229 into the proposed update to the LIPD class licence, where “**maximum e.i.r.p.**” from ITU has changed into “**power spectral density**”.

Option	ITU-R WRC-19 description	ACMA description
Option 1 (5° elevation)	The maximum e.i.r.p. at any elevation angle above 5 degrees as measured from the horizon shall not exceed 200 mW (23 dBm)	The power spectral density of the transmitter must not exceed 200 mW (23 dBm) EIRP, in any direction, above 5 degrees of elevation.
Option 2 (30° elevation)	The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon shall not exceed 125 mW (21 dBm)	The power spectral density of the transmitter must not exceed 125 mW (21 dBm) EIRP, in any direction, above 30 degrees of elevation.

Table 1: Comparison of ITU-R WRC-19 description of power limits and ACMA's proposed definition (*emphasis added*).

We recommend “**maximum e.i.r.p.**” is used to describe the power limit in relation to the elevation angle in the final drafting of the LIPD class licence.

The ACMA also seeks views on which of the two options industry prefers. Many countries, including the USA, Canada and Japan, have adopted the second option (RAN transmitter limit at 125 mW (21 dBm)

⁴ ITU Resolution 229 (Rev. WRC-19) is available at https://www.itu.int/dms_pub/itu-r/oth/0a/06/R0A0600009D0001MSWE.docx



EIRP above 30° elevation) for protection of the Mobile Satellite Service feeder-links. Harmonizing Australia's regulations with this limit would facilitate equipment commonality and operational compatibility.

05 5925-6425 MHz

5.1. RLAN in 5925-6425 MHz

We agree with and support the ACMA's proposed amendment to implement out-of-band emission limits of -37 dBm/MHz for very low-power (VLP) devices and -27 dBm/MHz for low-power indoor RLAN devices operating in this band.

In our submission to the ACMA's April 2021 consultation on **RLAN use in the 5 GHz and 6 GHz bands** (IFC 12/2021)⁵ and again in response to the ACMA's October 2021 consultation on **Proposed updates to the LIPD Class Licence for 6 GHz RLANs** (IFC 37/2021),⁶ we proposed that in the medium term, the power limit for class licensed RLAN devices could be increased to a maximum power 30 dBm EIRP for low-power indoor (LPI) devices, so long as the current PSD of 11 dBm/MHz (25mW/MHz) was retained. We noted the benefit an extra 6 dB would make to coverage in a typical brick home, and the potential avoidance of a Wi-Fi range extender in the house. We also noted that every extender adds to the general Wi-Fi noise (which in turn further reduces Wi-Fi capacity and to some extent defeats the purpose of adopting a lower general power limit), additional cost to the consumer, more points of failure in the home LAN, additional power use and eventual e-waste creation.

While we acknowledged there are potential concerns of interference to fixed links operating in the 6 GHz band, we felt this could be partly mitigated through the introduction of a definition of "indoor", such that device manufacturers would be able to provide guidance to consumers, and we are pleased the ACMA has introduced the definition of "indoor" into this update of the LIPD class licence.

As we are now coming up on two years since our original (April 2021) proposal for an increase in the maximum power of 6 GHz RLAN devices, what was then the "medium term" is now the "near term". We request that in the next period update to the LIPD, the ACMA explores an increase in the maximum power 30 dBm EIRP for LPI devices.

5.2. Frequency hopping devices in 5925-6425 MHz

We agree with and support the insertion of the item 57A into schedule 1 of the LIPD class licence to support frequency hopping devices in the 5925-6425 MHz band.

⁵ <https://www.acma.gov.au/consultations/2021-04/rfan-use-5-ghz-and-6-ghz-bands-consultation-122021>

⁶ <https://www.acma.gov.au/consultations/2021-10/radio-local-area-networks-rfans-6-ghz-band-consultation-372021>



06 Other matters

6.1. Definition of indoor

We agree with and support the ACMA's definition of "indoor" and the proposed introduction of this definition into the LIPD class licence.

6.2. Satellite receivers in 915-928 MHz and 2400-2483.5 MHz

We agree with and support the ACMA's preferred approach of creating a new schedule in the LIPD class licence for the introduction of radiocommunications receivers communicating with satellites in the 915-928 MHz and 2400-2483.5 MHz bands. We note that earth-based transmitters (earth stations) in the earth-to-satellite direction are already licensed under item 54 of Schedule 1 to the LIPD class licence, and that the ACMA's proposed amendment is to introduce earth-based receivers (earth-receive stations) into the LIPD class licence.

6.3. Power increase for WMAS operating in 1785-1800 MHz

WMAS are already permitted in the 1785-1800 MHz band, under item 30. We don't believe any changes are required to this item or this band.



07 Appendix 1: Answers to consultation questions

This appendix contains our answers to the specific questions asked by the ACMA in the consultation.

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

We consider the existing item should be “modified”, in other words, omit the current entry at item 61 and replace it with the new entry proposed in the draft amendment instrument. There is no need to separately introduce a new item 61A to cover higher powered devices (in addition to the existing entry for normal-powered devices), as the normal-powered devices will readily fall within the higher limits.

2. 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?

Many countries, including the USA, Canada and Japan, have adopted the RLAN transmitter limit at 125 mW (21 dBm) EIRP above 30° elevation for protection of the Mobile Satellite Service feeder-links. Harmonizing Australia's regulations with this limit would facilitate equipment commonality and operational compatibility.

3. 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.

We consider there is no need for a device registration system in the 5150-5250 MHz band.

4. What should be the maximum EIRP for WMAS devices in the 520–694 MHz and 1785–1800 MHz bands?

We recommend the EIRP for WMAS devices operating above 612 MHz is not increased from its current maximum of 100mW EIRP. For devices operating below 612 MHz, we have no concerns regarding an increase in the limit. See section 03 of our submission for more details.

WMAS are already permitted in the 1785-1800 MHz band, under item 30. We don't believe any changes are required to this item or this band.

5. Should a maximum bandwidth limitation be implemented for WMAS devices? If so, what should the maximum emission bandwidth be?

No comment.



6. Should a WMAS emission in 520–694 MHz be limited to fall entirely within a single TV channel? For emissions greater than a single TV channel, should a whole number of TV channels be required (for example, emission bandwidths of 7 MHz or 14 MHz)? Should any other limitations regarding the relative positioning of WMAS emissions with respect to the TV channel raster be implemented?

No comment.

7. Should a minimum spectral efficiency limitation be implemented for WMAS devices? If so, what should the minimum spectral efficiency be?

No comment.

8. Should WMAS devices be required to comply with ETSI Standard EN 300 422?

No comment.

9. Should new items be added to Schedule 1 of the LIPD class licence to facilitate WMAS, or should existing items be modified?

In line with our answer to Question 1, we consider the existing item should be “modified”, rather than a new entry added alongside the existing entry. There is no need to separately introduce a new entry to cover higher powered devices (in addition to the existing entry for normal-powered devices), as the normal-powered devices will readily fall within the higher limits.

10. Have third-party access arrangements to spectrum-licensed bands been explored? Should we consider the introduction of arrangements in the LIPD class licence to facilitate underground communications in the 700 MHz, 800 MHz and/or 900 MHz bands? What technical limitations should be included in these arrangements if they are introduced?

We are strongly opposed to any changes that would introduce class licensed devices into IMT bands for the purposes of providing IMT services, including for use in underground private networks. See section 02 for further details.

11. Radiocommunications receivers communicating with satellites in the 915–928 MHz and 2400–2483.5 MHz bands.

We support the Wi-Fi Alliance position in response to this question. In short, we agree with the Wi-Fi Alliance’s observation that commercially available LIPDs generally implement energy detect levels that are lower than levels prescribed by the IEEE standards. We consider that a regulatory framework for space-based transmitters in the 915–928 MHz and 2400–2483.5 MHz bands, at a minimum, must include a stringent power-flux density regulatory limit regime (e.g., mask) that ensures coexistence with terrestrial based technologies.

Further details on this position are included in the Wi-Fi Alliance’s response to Q11.