12/12/2022

Australian Mobile Telecommunications Association

AMTA Submission

Australian Communications & Media Authority

Variation to the Low Interference Potential Device Class Licence—Consultation paper

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 appreciates the ACMA's initiative in consulting on the draft variation to the *Radiocommunications (Low Interference Potential Devices) Class Licence 2015* ("the LIPD").

We have no objection to the changes proposed for *this* variation of the LIPD, namely the authorisation of:

a) earth station receivers in the 900 MHz and 2.4 GHz bands, but only where the corresponding space station transmitter also complies with the conditions of the LIPD;
b) frequency hopping transmitters in the 5925-6425 MHz band; and
c) radio local area network (RLAN) transmitters in the 5150-5250 MHz.

Our submission focuses on the *potential future* variations discussed in the second part of the consultation paper. We offer some views regarding provisions for wireless multi-channel audio systems (WMAS) and earth station receivers—where the corresponding space station transmitters *do not* necessarily comply with the conditions of the LIPD. In general, we recommend against the introduction of class-licensed provisions in the 600 MHz band which is under review and for higher power satellite downlinks such that the ACMA can continue to regulate these.

We are however strongly opposed to the introduction of provisions for underground transmitters in spectrum-licensed spectrum space. Class-licensed provisions for underground transmitters in city areas certainly presents an unacceptable interference risk since telcos already deploy repeaters to extend coverage to these areas, while at remote mines (a) these class-licensed provisions would be of a commercial interest rather than in the public interest, (b) undermine spectrum licensee's rights and (c) there is a high potential for unintended consequences which could lead to interference to coverage-layer MNO networks.

WMAS technologies for wireless audio transmitters

As an introduction to AMTA's response to Questions 4 to 9, we note that our main interest is primarily with respect to adjacent-band compatibility with spectrum licensed receivers in the 700 MHz and 2 GHz bands. Furthermore—and while we note that this issue is not being discussed in this consultation—the mobile industry in interested in the 600 MHz band for future wireless broadband (WBB) networks using 5G or 6G IMT technology. Noting that the spectrum available for digital terrestrial television broadcasting (DTTB) services, and the wireless audio devices that operate in the "white spaces" between television coverage areas, may be significantly reduced, we would support any technological solution that may facilitate higher spectral efficiency of any services seeking to continue operation with the remaining 'broadcasting' spectrum from 520 MHz to the lower edge of the "second digital dividend".

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

Noting that the power limits in Europe are lower/more stringent than those in Australia, AMTA does not support an increase in total EIRP.

In the 1785-1800 MHz band, considering (a) that WMAS are already supported in this band, and (b) the proximity to the 1800 MHz base receive sub-band (1 MHz guard band from 1785 MHz), we don't support any increase in total EIRP.

In the 520-694 MHz, we believe that any updates to provisions for wireless audio devices should be limited to *below* the 600 MHz band being considered for a "second digital dividend". The programme making and special events (PMSE) industry should be starting to think about how to operate within a smaller post-transition quantum of spectrum, at this point nominally below 610 MHz[1]. Making new provisions that will allow new equipment to operate in the 600 MHz band—without at least flagging that this band is being considered for re-planning for IMT—is imprudent, as the PMSE industry may invest in equipment that won't be able to be utilised for its full lifespan.

In the 520-610 MHz band, considering (a) that WMAS are not currently supported outdoors, (b) the larger guard band to the 700 MHz base receive sub-band (although the guard band to the future 600 MHz band would be TBD), and (b) that WMAS would support at least 3 audio channels—each of which would be permitted to operate at 100 mW EIRP under the current arrangements—corresponding to an aggregation factor of 4.77 dB, an increase in total EIRP to max. 250 mW may be more feasible (compared to a similar increase at 1800 MHz). However, this higher EIRP limit of 250 mW would have to be restricted to WMAS systems compliant with ETSI EN 300 422 and supporting a minimum of 3 audio channels per MHz (as per the proposed FCC requirement).

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

No view on this item.

Question 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 view on this item.

[1] Based on four UHF channel blocks of three 7 MHz channels each, starting from UHF Channel 28 (i.e. 526 MHz upwards). The ACMA's Five Year Spectrum Outlook refers to the 600 MHz Band as 617-694 MHz.

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

Yes, a minimum spectral efficiency limitation should be adopted for any provisions where the operation of WMAS devices is associated with an increase in the permitted EIRP limit. For example, three (3) individual audio channels each operating at 100 mW EIRP would have greater aggregate EIRP than a single WMAS operating at 250 mW EIRP. However, this aggregate EIRP is only maintained if a restriction of at least 3 audio channels per MHz—as per the FCC proposal—is implemented.

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

No view on this item.

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

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.

Because we are proposing to limit any changes to provisions for UHF wireless audio devices to below 610 MHz, the simplest approach would be to:

- add a new item replicating item 31;
- removal of the word 'indoor';
- permitted operating frequency band of 520-610 MHz; and
- replacing condition (a) *"The transmitter must only be operated indoors"* with the spectral efficiency requirement.

Underground Wireless Broadband

Question 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?

AMTA strongly rejects this proposal. Spectrum licence rights must not be undermined by issuing class licences across spectrum licensed space, as this 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 the spectrum licensees' rights after the awarding of the licences.

Where the underground operations can truly coexist without interference to the above-ground network, mining operators can currently operate devices via third-party authorisations which can be issued by the spectrum licensees (or possibly through secondary trading, as the consultation paper suggests). This 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. In particular, it should be considered that mobile network operators may also wish to extend their network coverage below ground, for example to provide seamless cellular network coverage in tunnels.

A class-licensed arrangement that permits other users to operate in any underground environment could cause harmful interference to such cellular network coverage. The LIPD doesn't currently define any 'areas' and it would may be difficult to clearly define what would constitute a remote mining facility as opposed to a tunnel or a car park in a metropolitan setting. Furthermore, mines are changing environments; changes in the mine's topography may result in any 'underground' comms systems becoming 'above-ground' and therefore able to cause interference, particularly if the mining operator has an expectation to be able to continue operating equipment to get ROI. There is a high risk that users unfamiliar with licensing and radiocommunications regulation see a provision for 'underground' communications and lack the experience to appropriately determine that the above-ground emissions will be kept to negligible levels, which creates a serious—and potentially widespread—compliance & enforcement problem for MNOs and the ACMA alike. In short, the class-licensing of 'underground' communications has a high potential for unintended consequences which could lead to interference to critical coverage-layer 4G and 5G networks.

The ACMA notes that section 138 of the Radiocommunications 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 the context of an underground mine (e.g., in a remote part of Australia) we fail to see how issuing a class licence that could only be used underground (i.e., by only a very small subset of the population with private commercial interests) 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. Similarly, in the case of a metropolitan tunnel (i.e., "underground"), the risk of interference would arguably be detrimental to the public interest.

The ACMA seeks comment from spectrum licensees on whether secondary trading (and presumably, third-party authorisation) has been explored for underground communications. AMTA members will respond to this question in their individual submissions, due to the confidential commercial nature of such arrangements.

Earth station receivers

Question 11

Should we consider the introduction of arrangements to facilitate systems that utilise space-based transmitters that operate in the bands 915–928 MHz and 2400–2483.5 MHz at power levels higher than currently permitted under the LIPD class licence? If so, what matters should be considered in the regulatory framework? In particular, comment is sought on:

- ***What is an appropriate power for such services so that there is no impact on other services? While some might operate at power levels slightly higher than those currently supported under the LIPD class licence, others could at operate higher levels. The impact also depends on other technical parameters such the orbital characteristics, number of satellites and what types of services are sharing the band. Such considerations suggest a case-by-case approach (more akin to an apparatus licensing regime) may be required.***
- ***What effect, if any, will the proposed use have on existing services such as the amateur-satellite services and services authorised under the LIPD class licence? For example, Wi-Fi, Bluetooth and radio frequency identification devices (RFID).***
- ***Do systems need to be brought under the scope of the Radiocommunications Act via variations to the Radiocommunications (Australian Space Objects) Determination 2014 or the Radiocommunications (Foreign Space Objects) Determination 2014?***
- ***Is the LIPD class licence or the communication with space objects (CSO) class licence the appropriate legislative instrument to be used to facilitate such systems?***
- ***If apparatus licensing is used, are the current apparatus licence fees and taxes appropriate? (Assuming the entire band is licensed, for the 915–928 MHz band, the annual tax for an Australia-wide space licence is estimated as $36,673; for the 2400–2483.5 MHz band, the annual tax for an Australia-wide space licence is $235,194.)***

Considering the proximity of the proposed operating bands to spectrum licensed bands of 900 MHz and 2.3 GHz, AMTA believes it's safer to adopt a more regulated approach based on a combination of apparatus licensing (Space/Space Receive for the satellite transmitters/receivers) and class licensing (earth stations authorised by the CSO Class Licence). This will require new entrants to think carefully about how its system will coexist with existing services in the band (and adjacent bands) and provide assurances to the ACMA regarding the "no interference" operating condition. It will also greatly facilitate interference tracing in such an event. Similar to other satellite service bands where the satellite system is constrained by "no protection" conditions, the ACMA can make an exception in the relevant Tax Determination instrument to exempt the Space/Space Receive licence from the standard (and expensive) ACMA licence tax rate.

For example, in the ACMA's *Apparatus Licence Fee Schedule*, *"The minimum tax amount applies to spectrum access under space licences in the following frequency ranges: 10.7 GHz–11.7 GHz, 18.2 GHz–18.8 GHz and 19.3 GHz–19.7 GHz. These changes in taxes are to complement new licensing arrangements in the Radiocommunications (Communication with Space Object) Class Licence 2015, which will allow for the use of uncoordinated, unprotected earth station receivers."*

Australian Mobile
Telecommunications Association

PO Box 1507, North Sydney, NSW 2059

50 Berry St, Suite 504, Level 5, North Sydney NSW 2060

www.amta.org.au