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Spectrum Planning Section

Australian Communications and Media Authority

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**WIA Submission on “Future approach to the 3.6 GHz band” IFC: 9/2017**

The Wireless Institute of Australia (WIA) welcomes the opportunity to respond to the ACMA’s consultation on the *Future approach to the 3.6 GHz band*.

**About the WIA**

The WIA is the national organisation of licensed amateur radio operators (www.wia.org.au), the peak body representing the interests of the Australian radio amateur community nationally and internationally.

Founded in 1910, before passage of the *Wireless Telegraphy Act 1912*, the WIA is acknowledged as being one of the first radio societies in the world, and is the world’s oldest national amateur radio society. As such, the WIA has established a substantial heritage in advocacy for community involvement in radiocommunications and the use of spectrum.

The WIA represents the interests of the Australian radio amateur community through formal liaison with the ACMA, other government institutions and other organisations. A key role of the WIA is providing training and licence assessment services for people interested in obtaining their amateur licence, particularly young Australians.

WIA volunteer appointees participate in the work of spectrum management, consultative and standards bodies, including:

* Australian Radio Study Groups in preparatory work for World Radio Conferences (WRCs)
* Australian delegations to WRCs,
* Standards Australia’s standards committees, and
* the Radiocommunications Consultative Committee.

The WIA is a member of the International Amateur Radio Union (IARU, www.iaru.org), which represents the interests of the amateur and amateur satellite services internationally and is recognised by the International Telecommunications Union (ITU). Membership of the IARU is comprised of the national societies of each separate country or territory. The WIA was one of the first 14 national societies to become a member of the IARU when it was formed in 1925.

There is an IARU association in each of the three ITU regions across the world. The WIA is a founding member of the Region 3 association (www.iaru-r3.org), which serves the Asia-Pacific nations. A WIA volunteer currently serves as one of the six directors of the IARU Region 3 organisation.

The WIA is committed to maintaining Amateur service allocations across the radiofrequency spectrum, both primary and secondary. Over decades, the Institute has defended assiduously the retention of amateur access to frequency bands throughout the spectrum.

The ACMA’s Options paper, “Future use of the 3.6 GHz band”, identifies a range of possible replanning options to facilitate the 3.575-3.7 GHz band moving to its highest value use. The WIA acknowledges that the ACMA’s preferred option:

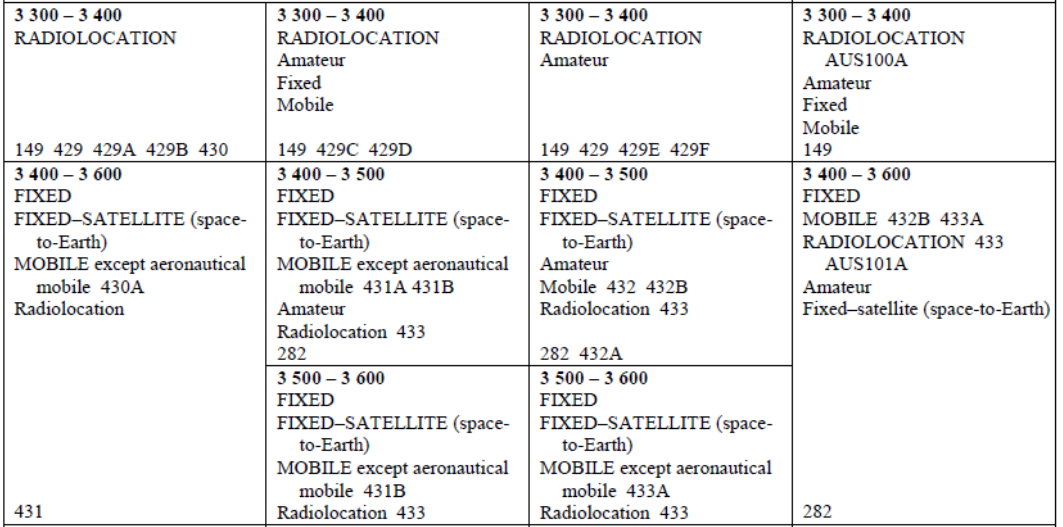
“. . *is to establish arrangements optimised for wide-area broadband deployments (be they mobile or fixed) over the entire 125 MHz of the 3.6 GHz band available in metro and regional areas. The expected licensing regime under this approach would be spectrum licences allocated via auction*.”

The WIA confines its response to issues most relevant to the amateur radio community.

**Background on the 3300-3600 MHz Amateur band**

The Australian Radiofrequency Spectrum Plan (ARSP) provides an allocation at 3300-3600 MHz for the

Amateur Service on a secondary basis, which Advanced amateur licensees are permitted to use, with substantial geographic restrictions set out in the *Radiocommunications Licence Conditions (Amateur Licence) Determination 2015*. As the ARSP extract here shows, in the 3400-3600 MHz segment, the current primary services are Fixed, Mobile and Radiolocation (with accompanying footnotes).



Over the past 25 years, the WIA notes that there has been withdrawal of segments from amateur allocations originally at 420-450 MHz (70 cm), 1215-1300 MHz (23 cm), 2300-2450 MHz (13 cm), and 3300-3600 MHz (9 cm), resulting from re-allocation to new services. The 70 cm band has lost 10 MHz (420-430 MHz), the 23 cm band has lost 25 MHz (1215-1240 MHz), the 13 cm band lost 98 MHz (2302-2400 MHz) – with 2300-2302 MHz still ‘on notice’ to be withdrawn and re-allocated for future spectrum licensing.

From 2015, the segment 3400-3575 MHz (designated by the ACMA as the “3.4 GHz band”), became restricted for amateur access across substantial geographical areas around state and territory capital cities (except for the Northern Territory), along with major regional cities in the four eastern states, arising from Apparatus licensing of fixed wireless access systems for the NBN, as primary users (co-primary with Radiolocation and Mobile). The amateur allocation throughout the most-populated areas of Australia contracted to 3300-3400 MHz and 3575-3600 MHz.

In consultation with the Australian radio amateur community, and with reference to the International Amateur Radio Union (IARU), the WIA develops band plans for each amateur frequency allocation across the spectrum, as set out in the ARSP. The WIA’s band plan for 3300-3600 MHz (the “9 cm band”) is attached at **Appendix 1**. It sets out the suggested divisions of amateur uses across the band.

Amateurs using, or interested in using, the 9 cm band have to design, build, test and refine a complex communications system. The microwave bands attract highly motivated individuals skilled in a variety of disciplines, ranging over system design and development, computer-aided design, RF and electronics design and construction, mechanical and electromechanical equipment development and construction. In recent years the amateur community has developing wideband digital system, eg, digital amateur television. Such people engage in significant self-development and technical experimentation, in keeping with the ITU definition of the Amateur Service and the objects of the *Radiocommunications Act 1992*.

The WIA notes that high performance microwave system self-construction kits for the 9 cm band are currently available in Australia from Minikits (www.minikits.com.au), in addition to a variety of online suppliers located in Europe and the USA. The availability of kits for self-assembly serves to encourage the use of the 9 cm band, self-training and technical investigation by amateurs, in keeping with the ITU definition of the Amateur Service and the objects of the Radiocommunications Act. In addition, the repurposing of ex-commercial equipment is also serves to encourage use of the 9 cm band, as this example demonstrates: http://vk3atl.org/3.4GHz%20surplus%20panel%20transverter%20V1.0.pdf

The WIA notes that the 9 cm band is free of interference from the ubiquitous Class-licensed wideband services (predominantly WiFi network devices) operating in the 13 cm and 6 cm (5650-5850 MHz) amateur bands. This pervasive interference serves as an impediment to weak-signal beyond line-of-sight communications that many amateurs seek to explore in the microwave spectrum.

Over-the-horizon propagation modes that amateurs seek to explore on the microwave bands include tropospheric scatter, rain storm scatter, tropospheric refraction and ducting, scatter from high flying aircraft (‘aircraft enhancement’), knife-edge diffraction and earth-moon-earth reflection (EME, or Moonbounce).

These pursuits are explored predominantly by using narrowband technologies (hand-keyed Morse,

SSB voice and digital transmissions). However, amateurs also seek to explore wideband technologies, including image and video transmission. A number of amateurs and groups of amateurs have constructed, installed and maintain repeaters (which are listed in the RRL). Over recent years, this technology experimentation has moved on to the use of digital video broadcasting (DVB). The WIA’s 9 cm band plan (Appendix 1) reflects these developments.

The WIA is aware that a small number of amateurs have established use of 3575-3600 MHz. However, because their use does not require frequency coordination as do repeaters and beacons, they do not appear in the RRL.

**The issues**

Australian amateurs now face the prospect of further reduction of access that will reduce the 3300-3600 MHz band by a further 25 MHz, leaving 3300-3400 MHz. Where access was once 300 MHz, successive re-allocation is reducing that to 100 MHz.

The WIA is concerned that spectrum licensing will effectively embargo secondary users, in particular the Amateur Service, from access to 3575-3600 MHz across the most populous areas, where radio amateurs predominantly live and conduct their activities.

**WIA response**

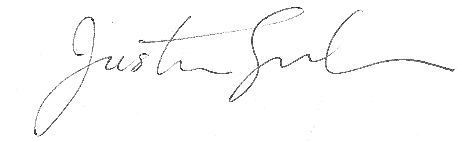
The WIA seeks to preserve the opportunities for amateurs to explore communications technologies and techniques on the allocated Amateur Service frequency bands throughout the spectrum, along with the ability to experiment with, or adapt, both existing and emerging technologies and application, including those not yet invented, all of which is in keeping with the ITU definition of the Amateur Service and the objects of the Radiocommunications Act.

In keeping with established policy, the WIA seeks retention of amateur access to 3575-3600 MHz outside the specific geographic areas 1, 2, and 3, where future licensed services are deployed.

The WIA is available to discuss any aspect of its submission and would be pleased to meet with staff from the Spectrum Planning Section to provide a wider briefing on contemporary developments of Amateur Radio in Australia and overseas pertinent to the Options paper's proposals.

The contact person for the WIA will be Mr Peter Young, WIA Regulatory Counsel, who can be contacted on 0438 212 368, or by email at petervk3mv@tpg.com.au.

Yours sincerely



**Justin Giles-Clark**

President, Wireless Institute of Australia

**Appendix 1**

