Manager, Spectrum Policy Department of Communications GPO Box 2154 CANBERRA ACT 2601

Submission concerning "Consultation on draft Direction to use 3.5 GHz band spectrum for the National Broadband Network spectrum gap"

I welcome the opportunity for stakeholders in the 3.5 GHz band spectrum to comment on the draft <u>Australian Communications and Media Authority (3.5 GHz frequency band) Direction 2014</u>, issued by the Minister for Communications, the Hon Malcolm Turnbull MP.

I am a licensed radio amateur, and have held a licence for 50 years; holding an Advanced licence since 2004. Under the *Radiocommunications Act 1992*, Amateur licensing is regulated by the *Radiocommunications Licence Conditions (Amateur Service) Determination No. 1 of 1997* (2013 update), known as the Amateur LCD.

The Radiocommunications Act embodies the definition of the Amateur Service, defined in the International Telecommunications Union (ITU) Regulations as:

1.56 amateur service: A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

1.57 amateur-satellite service: A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.

I have maintained an interest, both personal and professional, in radiocommunications technology and techniques over that time. I studied radiocommunications at RMIT over 1964-1969 and subsequently worked at Australia's world-renowned space weather agency, IPS Radio & Space Services in Sydney from 1971 through 1977, first for a few years in the Low Latitude Section, then later in the Engineering Branch.

Since the 1970s, I have written and published many technical articles on radiocommunications technology, as well as providing consulting services to clients in the industry. Over the 1980s, I served as Editor of the technical magazines Electronics Today International and Australian Electronics Monthly. During the 1990s, I served as Editor of leading industry magazines Manufacturers' Monthly and Electronics News. More recently, I have conducted research into radiocommunications propagation at VHF, publishing articles on original new discoveries resulting from my research in local and international magazines.

I am a member of the Wireless Institute of Australia (WIA), the national organisation of licensed amateur radio operators (www.wia.org.au), the peak body representing the interests of the Australian radio amateur community.

I note that the Direction proposes to allocate two blocks of spectrum for the NBN:

- 1) 25 MHz spanning 3400 MHz up to and including 3425 MHz; and
- **2)** 50 MHz spanning 3492.5 MHz up to and including 3542.5 MHz.

The Amateur LCD sets out the frequency bands and other conditions of operation for the Amateur Service. There is an allocation at 3300-3600 MHz (the 9 cm band), where Advanced licensees are permitted to operate as a Secondary Service. The two blocks of spectrum proposed in the Direction directly impact radio amateurs' access in the 9 cm band.

I understand that NBN Co has identified a "spectrum gap" that acts as an impediment to installing fixed wireless services to NBN customers in the metro fringe and hard to service areas of the mainland major cities. In this regard, I also note that the ACMA has suggested that area-wide apparatus licences within the 3.5 GHz frequency band (3400-3600 MHz) may be suitable for the purposes of NBN Co.

Many countries around the world provide an Amateur Service allocation between 3300 MHz and 3600 MHz.

Some Amateur Service allocations in ITU Region countries	
Region 3	Allocation
India, Sri Lanka	3300-3400 MHz
Bangladesh, New Zealand	3300-3410 MHz
China, Indonesia, Malaysia, Singapore, Vietnam	3300-3500 MHz
Pakistan, Philippines, South Korea	3400-3500 MHz
Japan, Chinese Taipei	none
Region 2	
Argentina	3300-3400 MHz
IARU-R2; Canada, USA, Venezuela	3300-3500 MHz
Region 1	
Albania, Denmark, Estonia, Poland, UK (future)	3400-3410 MHz
Germany, Israel, UK (present)	3400-3475 MHz
Bulgaria	3400-3500 MHz

Table 1 (courtesy of WIA)

The International Amateur Radio Union (IARU) has consistently maintained an active policy to achieve harmonisation of the 10 MHz segment of 3400-3410 MHz as an amateur allocation across the world for both earth-to-space and space-to-earth satellite operation as well as terrestrial amateur operations. I am aware that in the CEPT radiofrequency allocations in Region 1, a footnote – EU17 – encourages CEPT administrations to afford some consideration to amateur weak-signal operations in the band. The footnote says:

EU17: In the sub-bands 3400-3410 MHz, 5660-5670 MHz, 10.36-10.37 GHz and 10.45-10.46 GHz, the amateur service operates on a secondary basis. In making assignments to other services, CEPT administrations are requested wherever possible to maintain these sub-bands in such a way as to facilitate the reception of amateur emissions with minimal power flux densities.

To my knowledge, amateur radio operations in Australia substantially mirror those in other nations across the world, and the 3400-3410 MHz segment is used for international station-to-station contacts by exploiting surface propagation conditions (Australia to New Zealand, for example) and Earth-Moon-Earth reflection (known as EME, or "moonbounce").

Any amateurs interested in experimenting in the use of the 9 cm band have to design, build, test and hone a complex communications system. Highly motivated individuals are attracted to using the Amateur microwave bands, often skilled in a variety of disciplines, ranging over computer-aided design, system development, RF and electronics design and construction, mechanical and electromechanical equipment development. 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.

Radio amateurs with such interests represent a highly-skilled resource within the community.

My Proposal

I wish to see that Amateur Service access to 3400-3410 MHz is retained and suggest that another 25 MHz block could be readily found above 3410 MHz. Retention for amateur use would maintain the IARU objective of international harmonisation of 3400-3410 MHz.

Given that fixed wireless access to the NBN is predicated to be deployed in limited areas, I also suggest that Amateur Service access affected by the 50 MHz block 3492.5-3542.5 MHz be permitted outside the geographic areas where it needs to be used by the NBN. Similarly, this principle could also be applied wherever the additional 25 MHz block is deployed for the NBN.

The Amateur LCD sets out a number of geographic restrictions for several segments of the 9 cm amateur band and the above suggestion is consistent with this.

I support the submission provided by the WIA concerning the Minister's Direction.

I look forward with interest to the outcome of the Department of Communications' considerations.

Yours sincerely

Roger Hann

Roger Harrison