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6 April 2016

Mr David Brumfield  
Executive Manager  
Communications Infrastructure Division  
Spectrum Management Policy  
PO Box 78  
BELCONNEN ACT 2616

Dear Mr Brumfield,

### **Future Amateur Licence Conditions**

As you would be aware from our various discussions over 2015 and more recently, the Wireless Institute of Australia (WIA) seeks a comprehensive review of the Amateur Licence conditions, focusing on the long-term view of amateur licensing, noting the imminent introduction of parameters-based licensing arising from the Spectrum Review process.

While mindful of the circumstances prevailing since early 2014, during which the government's Spectrum Review was under way, along with the necessary re-making of many sunseting regulatory instruments, the WIA wishes to express frustration at the delay in addressing even some of the outstanding priority issues concerning Amateur Licence Conditions. The delay has driven rising levels of frustration among the amateur radio community, which the WIA shares even more acutely, and there is considerable pressure to accelerate consideration of the proposals detailed here.

#### **Context: looking to the future**

ACMA Chairman, Chris Chapman, in his opening address to Senate Estimates recently, acknowledged that the critical infrastructure of our post-industrial society and economy is digital communications. Mr Chapman observed that traffic from wireless and mobile devices overtook traffic from wired devices in 2015. Hence, wireless technology is now central to the spread and development of digital communications.

To continue the establishment and maintenance of connectivity demanded in this era requires a pool of people having critical knowledge and skills. During the era when broadcast radio and television grew to be central to the Australian way of life, there was a parallel burgeoning of land mobile and satellite communications. Many young Australians with an interest in amateur radio at the time embarked on careers in these industries, a noteworthy number of them rising to prominent positions. The radio amateur community of today is positioned similarly to foster young Australians seeking careers in the flourishing wireless communications sector.

The ACMA's recent occasional paper, *The Connected Citizen*, highlights the centrality of the citizen, and citizen interests, to the ACMA's work. Amateur radio licensing is a direct expression of this concept. Throughout every era of development since the advent of radio technology, individuals and groups within society have sought to "conquer the aether" for themselves, to satisfy curiosity as well as to explore ideas and practical applications.

The Amateur Service provides a trained, regulated and disciplined outlet for those desires. Otherwise, that urge and the desire to experiment with communications might find expression in undisciplined, perhaps illegal, transmissions with potentially dangerous consequences. The continued existence of the Amateur Service provides a resource for the self-education of individuals through both peer-to-peer learning and formalised classes undertaken by those who wish to qualify as radio amateurs, providing a basic education in radio communication disciplines for many who would not otherwise acquire that knowledge.

As noted above, over many decades, an interest in amateur radio has served as a catalyst and motivation for many thousands of young people to enter scientific or technological careers. From that start, many individuals have gone on to forge outstanding careers and contributed to Australia's business, government, scientific and technological achievements.

In the current socio-political climate, in which an emphasis on science, technology, engineering and mathematics (STEM) in education at all levels is issuing from the academic, business and political spheres, developing an interest in amateur radio provides new avenues and a strong motivator for young Australians to explore and engage in STEM activities, education and careers.

The WIA notes that, in launching the Australian Government's *National Innovation and Science Agenda* recently, the Prime Minister, the Hon Malcolm Turnbull MP, emphasised "training our students for the jobs of the future", through "promoting coding and computing in schools, to ensure our students have the problem-solving and critical reasoning skills for the jobs of the future". At the same time, the Government has committed \$12 million in new funds to restore the focus on, and increase student take-up, of STEM subjects in primary and secondary schools.

Complementing this thrust, the WIA is actively working to forge links with curriculum-complementary and extra-curricular school programs and tertiary courses as a means of providing practical support for STEM activities and for recruiting new amateurs from the pool of students taking an interest in STEM pursuits.

### **Addressing licence conditions**

This submission updates and extends our proposal of July 2014, provided to Ms Anne Chadwick, then in the ACMA's Industry Partnerships Section (at [Attachment E](#)).

We note that, as the Radiocommunications Licence Conditions (Amateur Licence) Determination 1997 (LCD) was due to sunset on 1 October 2015, it was re-made with minor administrative amendments and came into effect on 30 June 2015, following a limited consultation process over March and April.

While the reform of amateur licensing over 2003-2005 was demonstrably an advance on the licence conditions prevailing previously, particularly the introduction of the Foundation licence, they generally served the amateur community well enough over most of the following decade. However, the interests and activities of radio amateurs, and the technologies available, have diversified and developed considerably over that period.

Advances in wireless technologies have outstripped many provisions of the current Amateur licence conditions. As a result, the current LCD is perceived to be unnecessarily restrictive and inflexible. Hence, as time goes on, the prevailing conditions will be increasingly unable to accommodate the relentless innovation in technologies and diversification of interests and activities engaging the radio amateur community now and in the foreseeable future. Software-defined radio (SDR) is in the ascendancy with both transmitting and receiving being increasingly software-defined; in fact, it is the hidden part of many consumer electronic devices that we take for granted these days.

In addressing future Amateur Licence conditions, the WIA wishes to reiterate the desire to reduce the regulatory burden for both licensees and the ACMA, and to establish amateur licensing so as to accommodate emerging innovation in radiocommunications technologies and applications, to enable the hobby to develop in whatever direction current and future generations of licensed radio amateurs might lead it.

Since the advent of wireless experimenters over 100 years ago, there has always been a vanguard of radio amateurs who seek to explore and experiment with new technologies. In this era, that includes such things as coding digital systems in communications circuitry, employing computer-aided design, or deploying complex digital signal processing in radiocommunications experiments. Nevertheless, many licensees also retain an interest in, and continued use of, technologies of the past, albeit in a modern context. All these areas provide learning opportunities for self-training, intercommunication and technical investigations, in keeping with the ITU definition of the Amateur Service.

The WIA advocates strongly that future Amateur Licence conditions should serve to both encourage and support every opportunity for licensees to explore and experiment with radiocommunications and associated technologies, with the least possible hindrance or impediment, balanced with responsible use of the radiofrequency spectrum and respect for other users.

Accordingly, the WIA wishes to re-state the policy principles declared previously, that future amateur licensing:

- A. should not limit or hinder experimentation with, or adaptation of, emerging technologies and applications – particularly digital transmission technologies – including those not yet invented;
- B. is not reduced or downgraded from the current principles embodied in Apparatus licensing;
- C. incorporates flexibility for licensees to pursue their interests in communications technologies and applications as a self-regulating service within the framework of the licensing privileges and conditions.

We propose that consideration of future Amateur Licence conditions be addressed in two stages:

- 1) proposed priority changes to licence conditions, and
- 2) proposed changes to and additional amateur band frequencies, excepting the 5351.5 – 5366.5 kHz band allocated at WRC-15, which we have included with (1).

It is proposed that Stage 2 is addressed during the upcoming consultation process for updating the *Australian Radiofrequency Spectrum Plan*.

The WIA welcomes this opportunity to set out a vision for future Amateur Licence conditions and looks forward to working with the ACMA to design and implement new regulations that provide continuity and certainty to meet the challenges of change and innovation propagating through all reaches of the radiocommunications sector.

Yours sincerely



Phil Wait VK2ASD  
President

**Attached:**

Stage 1: proposed priority changes to licence conditions

Appendix 1: about the Amateur Radio Service and the role of the WIA.

## **Stage 1: proposed priority changes to licence conditions**

With this submission, the WIA seeks to explore ways and means to implement, at the earliest opportunity, the proposed changes to the Radiocommunications Licence Conditions (Amateur Licence) Determination 2015, or whatever similar instrument is to be enacted under the foreshadowed new Radiocommunications Act.

In particular, the WIA wishes to see the permitted powers for all licence grades reviewed in a sensible, pragmatic approach to enable licensees to pursue their interests commensurate with their established knowledge (demonstrated in licence assessment) and within reasonable bounds of public and personal safety considerations. The WIA is aware of differing views on the issue and notes the disparity in current permitted powers of all three Australian licence grades compared to the similar licence grades in other countries.

Further, the Institute seeks a relaxation of permitted bandwidths on the amateur bands from 1800 kHz through 430 MHz, with the aim of enabling the exploration and use of a wider range of technologies as well as emerging and future innovations. While this provision is being sought for all licensees, it is not suggested that it be *carte blanche*. Rather, permitted bandwidths should be regulated in a staged manner for each licence grade.

### **Priority 1. Allocation of the 5351.5 – 5366.5 kHz band (60m)**

Although the World Radio Conference 2015 agreed on a global Amateur Service secondary allocation of 5351.5-5366.5 kHz (Agenda Item 1.4), to be available from 1 January 2017, the WIA proposes that immediate access to this band could be provided under **Article 4.4** of the ITU Radio Regulations, which provides that operations do not cause harmful interference to the radio services or communications of other ITU Members that operate in accordance with the provisions of the ITU Radio Regulations, and that the possibility of harmful interference from such services and communications is accepted.

As you are aware, it has been the practice that various allocations in the *Australian Radiofrequency Spectrum Plan* are made on this basis, as noted in Part 1, Section 3 of the ARFSP. In the past, the amateur bands allocated by the ITU at WARC 1979 (10, 18 and 24 MHz) were first allocated to Australian amateurs under this provision.

The WIA understands that the 5351.5 – 5366.5 kHz is generally committed with allocations throughout Australia, principally held by government agencies.

In the first instance, the WIA seeks the retention of the current channels assigned for specific amateur use, for the time being, and to work with the ACMA and other stakeholders to achieve institution of the ITU allocation at the earliest opportunity, with conditions appropriate to the prevailing circumstances, and in keeping with the power limit conditions set out in the WRC-15 decision.

### **Priority 2. Proposed Foundation Licence conditions**

Set out in Attachment A.

### **Priority 3. Proposed Standard Licence conditions**

Set out in Attachment B.

### **Priority 4. Proposed Advanced Licence conditions**

Set out in Attachment C.

### **Priority 5. Addressing outstanding issues with licence conditions**

Set out in Attachment D.

## ATTACHMENT A

### Priority 2

#### 2.0 Proposed changes to Foundation Licence conditions

##### 2.1 Permitting use of digital modes

It is anachronistic in this era, when digital communications is the underlying infrastructure to daily life, that Foundation licensees are denied the opportunity to learn and experience for themselves the use and applications of digital communications.

The WIA seeks the inclusion in Foundation licensee conditions of a range of digitally-produced data modes, including (but not limited to) text transmission (eg. RTTY, PSK-31), digitally-mediated voice transmission (eg. CFM, D-Star, DMR, FreeDV etc) and image transmission modes (eg. facsimile, video, CGI etc).

It is observed that the entry-level licence conditions in a number of other countries have included digital modes and image transmissions since inception, without evidence of noteworthy issues or incidents reported. The entry-level licences in Argentina, Canada, Japan, USA and the UK are cases in point.

##### 2.2 Access to more bands

Table 1 provides a comparison with eight entry level licences in other countries. The UK Foundation licence, on which the Australian Foundation licence was modelled, provides access to 16 bands, covering LF through to UHF and microwaves. With only six permitted bands, the current Australian Foundation licence band access conditions are readily seen as unnecessarily restrictive when viewed in the context of other countries' entry level licences.

The WIA notes that the exception among the eight other countries in **Table 2.1** (following page) with a similar or equivalent entry-level in their licensing structure, is the Malaysian Class B category, with only four permitted bands. However, the WIA understands that a recent review of amateur licensing in Malaysia may see this change.

The diversity of band access provisions in entry-level amateur licences across the world is well-illustrated in Table 1, further bolstered by recently-obtained information about amateur licence conditions of other nations. Denmark, for example, has a non-technical entry-level licence category that provides access to five amateur bands above 50 MHz (6m, 4m, 2m, 70cm and 23 cm).

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**Table 2.1. Entry level licences – band access in different countries.**

■ = access to part or all of the nominated band

Amateur Band	Australia Foundation	Argentina Novicio	Canada Basic	India Restricted	Japan 4th Class	Malaysia Class B	Sth Africa Class B	UK Foundation	USA Technician
2200m					■			■	
600m									
160m				■	■			■	
80m	■	■		■	■		■	■	■
60m				■				■	
40m	■	■			■		■	■	■
30m								■	
20m		■		■				■	
17m		■		■				■	
15m	■	■		■	■			■	■
12m		■		■	■			■	
10m	■	■		■	■	■		■	■
6m		■	■	■	■	■	■	■	■
4m							■	■	
2m	■	■	■	■	■	■	■	■	■
1.25m		■	■						■
70cm	■	■	■	■	■	■	■	■	■
33cm			■						■
23cm		■	■		■		■		■
13cm		■	■		■		■		
9cm		■	■		■				
6cm		■	■		■		■		
3cm		■	■		■		■	■	
12.5mm		■	■		■		■		
6.38mm		■	■		■		■		
4.0mm		■	■		■		■		
2.5mm			■						
2.24mm		■	■		■		■		
1.25mm		■	■		■				

Enabling access to more bands provides a wider range of opportunities for Foundation licensees to learn and gain experience in communications across the radiofrequency spectrum.

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### 2.3 Increased power

A decade's experience with the current permitted power of 10 W pX for the Foundation licence demonstrates that it is at a distinct disadvantage in today's urban RF noise environment on the HF and VHF bands – locally and globally.

Foundation station signals often struggle to rise above the prevailing RF noise levels experienced both in Australia and by amateurs in other countries. Competing with urban noise levels is exacerbated in mobile situations, particularly on the bands above 30 MHz.

The WIA notes that the permitted power for entry level licences varies widely around the world:

- 10 W pX (UK - Foundation)
- 50 W pX (Argentina: Inicial. Denmark: Kategori D. Swiss: Konzession 3, VHF-UHF. Mexico - Restrungido)
- 100 W pX (South Africa – Class B; Swiss – Konzession 3, HF)
- 50 W dc input (India – Restricted Grade II; assessed equivalent to ~160 W pX)
- 200 W pX (Argentina – Novicio; USA - Technician)

While the WIA initially proposed (in 2014) raising the permitted power to 25 W pX, having considered the conditions prevailing in other countries it is suggested that 50 W pX would better address this issue under Australian conditions:

- (i) Many commercial transceivers currently available (HF and VHF-UHF) afford operation at the suggested 50 W pX, more so than those that conform to the current permitted power of 10 W.
- (ii) On the VHF and UHF bands, two impediments arise: the “tyranny of distance” and the fact that amateurs are located across scattered population centres. These obstacles dominate the ability of Foundation licensees to communicate with other stations, particularly for mobile operations, even via repeaters.
- (iii) A change to 25 W pX offers an increase in signal-to-noise ratio of just 4 dB, while a change to 50 W pX offers an increase of 7 dB, which provides a more practical advantage.

There is no extant evidence to suggest that operating at the proposed 50 W pX power level, 7 dB above the current 10 W pX limit, creates any particular safety issues regarding management of electromagnetic emissions (EME). The experience of entry-level licensee operations in other countries tends to support this.

However, should Foundation licensees be authorised to use bands above 430 MHz, the permitted power may need some practical, pragmatic consideration of power limits in the interests electromagnetic radiation safety. There is wide disparity in the regulations for entry-level licence condition of other countries in this regard.

### 2.4 Relaxing restriction on use of commercially manufactured transceiver equipment.

The WIA seeks relaxation of the restriction on Foundation licensees to the use of commercially manufactured transceivers, which includes the microphone.

The objective here is to enable Foundation licensees to broaden their range of learning experiences and for their conditions to more closely match those applicable to like or similar entry-level licences overseas, in particular, in the UK.

It is suggested that Foundation licensees be permitted to:

- (i) assemble and use commercially available receiver and transmitter kits. The WIA notes that the UK Foundation licence has permitted this for some years, with little or no evidence of notable incidents or issues reported;
- (ii) connect personal computers for the purpose of using digital transmission modes;
- (iii) use microphones other than standard microphone provided by the transceiver manufacturer;
- (iv) use of commercially manufactured transceivers for non-amateur band applications, but converted for operation on permitted amateur bands.

Such conditions have applied to the UK Foundation licence for some years, and no evidence has emerged of compliance issues requiring regulatory action or management.

### 2.5 Relaxation of permitted bandwidths

In keeping with the principle of enabling licensees to explore the use of more transmission modes, whether extant or yet to emerge, the WIA suggests that permitted bandwidths be reviewed so as to reduce prescriptive specifications where practicable. This works in conjunction with 1.1 above (digital modes) and concurs with the general vision of expanding operators' learning opportunities.

### 2.6 Review of Foundation licensee callsigns

The four-character suffix of the Australian Foundation licence callsign format is unique in the world for ordinary station callsigns. Despite a decade's use, along with widespread promotion and education about the callsign format, recognition of it is low among the worldwide radio amateur community.

A majority of the available range of computer-mediated digital transmission modes cannot accommodate a four-character suffix callsign. If our Foundation licensees are permitted use of digital transmission modes, their callsigns would preclude using them.

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## ATTACHMENT B

### Priority 3

#### 3.0 Proposed changes to Standard Licence conditions

The WIA advocates strongly the raising of Standard licence conditions to better match similar licence grades in other countries, with particular reference, for example, to the Canadian Basic licence, the US General licence and the Japanese Second-class Operator licence.

Apart from improving parity, raising licence conditions for the Standard licence affords licensees a greater range of opportunities for learning and gaining experience, in keeping with the general theme of the WIA's policy principles A and C, set out in our covering letter.

#### 3.1 Access to more bands

The Standard licence's permitted bands are quite restricted when viewed in the context of the intermediate level licences designations in other countries, as evidenced from **Table 3.1**. The WIA wishes to discuss the possibility of increasing the number of permitted bands for Standard licensees between 1.8 MHz and 28 MHz and, particularly, access to 50-52 MHz.

- (i) The WIA notes that the Australian Standard licence's progenitor in the UK has considerably more band access across the spectrum, and no evidence has emerged regarding notable complaints or issues.
- (ii) Likewise, Argentina, Canada, Japan, the UK and the USA also provide wide access to bands across the spectrum, for which no evidence of complaints or issues has emerged.

The WIA believes that, from the experiences of other nations, there is little evidence to be found that permitting access to more bands would act as a disincentive to Standard licensees to upgrade to the Advanced licence.

As noted regarding the Foundation licence, having more bands provides a wider range of opportunities for licensees to learn and gain experience across the radiofrequency spectrum.

#### 3.2 Relaxation of permitted bandwidths

The WIA seeks a relaxation of the permitted bandwidths relating to the Standard licence, where practicable on identified bands below 1 GHz, and on all bands above 1 GHz to allow the use of wideband digital and image transmission modes.

#### 3.3 Increased power

The WIA notes that the permitted power of 100 W pX for Standard licensees was a carryover from the former Novice licence. The WIA suggests that, for the future, a permitted power of 200 W pX would be a sensible, pragmatic provision for the Standard licence.

- (i) The permitted power suggested affords Standard licensees the opportunity to explore and experiment with RF technologies and on-air operations at this power level in context with the urban RF noise environment on the HF and VHF bands now being experienced both within Australia and across the world.
- (ii) Many commercial transceivers currently available, and others produced over the last decade and generally available on the second-hand market, provide output power at this level, which were manufactured to suit amateurs in the Japanese and North American markets, in particular.

Across the world, there is wide disparity in permitted powers for intermediate level licences (as the various regulatory authorities assign them; they are not necessarily equivalent to the Australian Standard licence). The range of this disparity is illustrated in **Table 3.2**.

**Table 3.1. Intermediate level licences – band access in different countries.**

■ = access to part or all of the nominated band

Amateur Band	Australia Standard	Argentina Intermedia	Canada Basic +	Japan 3rd Class	UK Intermediate	USA General
2200m			■	■	■	
600m						
160m			■	■	■	■
80m	■	■	■	■	■	■
80m DX			■	■		■
60m			■		■	■
40m	■	■	■	■	■	■
30m			■		■	■
20m	■	■	■		■	■
17m		■	■		■	■
15m	■	■	■	■	■	■
12m		■	■	■	■	■
10m	■	■	■	■	■	■
6m		■	■	■	■	■
4m					■	
2m	■	■	■	■	■	■
1.25m		■	■			■
70cm	■	■	■	■	■	■
33cm			■			■
23cm	■	■	■	■	■	■
13cm	■	■	■	■	■	■
9cm		■	■	■	■	■
6cm	■	■	■	■	■	■
3cm		■	■	■	■	■
12.5mm		■	■	■	■	■
6.38mm		■	■	■	■	■
4.0mm		■	■	■	■	■
2.5mm			■		■	■
2.24mm		■	■	■	■	■
1.25mm		■	■	■	■	■

**Table 3.2. Permitted power levels for intermediate level licences in different countries**

COUNTRY	MAX. PERMITTED POWER (W)	pX / pY	Licence class
Argentina	500	pY	Intermedia
Austria	200	pX	Class B
Canada	560 / 190	pX / pY	Basic+
Chile	1200	pX	General & Novicio
Denmark	100	pY	Category B
France	120	pX	Classe 2
Indonesia	<30 MHz: 150 >30 MHz: 75	pX	General
Israel	250	pX	General
Italy	50	pX	Classe B
Japan	200	pX, pY	2nd Class Operator
Malaysia	50	pX	(new proposal)
Mexico	500	pX, pY	Clase II Aficionado
Peru	250	pY	Intermedia
Portugal	750	pX	Class B ( ½ Class A pwr)
South Africa	100 (20 dBW)	pX	Class B
UK	50 (17 dBW)	pX	Intermediate
USA	1500	pX	General

There is no extant evidence to suggest that, for Standard licensees operating at the proposed 200 W pX power level, 3 dB above the current 100 W pX limit, creates any additional safety issues concerning managing compliance with electromagnetic emissions (EME) prevailing now. The experience of similar intermediate level licensee operations in other countries tends to support this.

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## ATTACHMENT C

### Priority 4

#### 4.0 Proposed changes to Advanced Licence conditions

In keeping with the themes outlined in our covering letter of:

- encouraging and providing a framework for STEM learning, and
- removing identifiable barriers for amateurs to explore current, emerging and future radiocommunications and associated technologies,

the WIA recommends in the strongest terms that the licence conditions for Advanced licensees should represent ‘light touch’ regulation, balanced with responsible use of the radiofrequency spectrum and respect for other stakeholders.

#### 4.1 Frequency bands – continuing access and proposed new bands

As already foreshadowed in our covering letter, this is to be addressed during the ACMA’s consultation concerning a review and updating of the *Australian Radiofrequency Spectrum Plan*.

#### 4.2 Relaxation of permitted bandwidths

The WIA seeks relaxation of permitted bandwidths for Advanced licensees on all the amateur bands from 1.8 MHz to 430 MHz, with the aim of enabling the exploration and use of emerging and newly developed technologies, for the following reasons:

- (i) future developments in technologies and applications are undefined.
- (ii) the parallel development of software defined radio and sophisticated signal processing software over the past decade has enjoyed significant uptake across the amateur radio community globally. While these developments have been built on exploiting extant narrowband transmission modes within permitted bandwidths, foreseeable development in the mid-term, for example, will likely involve low spectral density transmissions of wider bandwidth, or dynamically variable bandwidths, able to co-exist with other transmissions in overlapping spectrum spaces while providing robust information exchange.

#### 4.3 Increase in maximum permitted power

It is unfortunate that the regime for regulating electromagnetic emissions (EME) in Australia has conflated the compliance accountability with regulatory responsibility for the radiocommunications sector. In this, Australia is unique in the world.

Since the end of the High Power Trial in 2013, the WIA has conducted an education campaign to raise awareness in the Australian radio amateur community of licensees’ responsibility in EME compliance, publishing material in our journal *Amateur Radio* magazine and on the website, as well as delivering presentations and encouraging affiliated clubs to educate their members. It is fair to say that awareness of EME compliance is now much greater as a result. In addition, awareness of EME compliance is now incorporated in the licence examination syllabuses.

However, compliance with the Apparatus LCD (remade in 2015) is “invisible” within the Amateur LCD (also remade in 2015), only brought to amateurs’ attention on their license documents. The WIA wishes to see EME compliance clearly highlighted in future Amateur Licence conditions. This issue is addressed in Priority 5 at Attachment D.

However, the WIA is mindful that, as the Apparatus LCD 2015 is in force, the nexus between EME compliance and radiocommunications regulation remains and the ACMA is accountable in ensuring compliance. Given this, the WIA is committed to working with the ACMA to develop a protocol to enable those Advanced licensees who wish to experiment with transmitter powers above 400 W pX and up to 1000 W pX provide suitable documentary evidence demonstrating that they have addressed compliance with the Apparatus LCD 2015.

To reduce the regulatory workload on the ACMA, it is proposed that the WIA conduct an application and validation process on behalf of the ACMA and then make a recommendation to the ACMA. The approval for high power would then become part of the Advanced licensees' individual licence conditions.

As noted with other licence grades, the disparity in maximum permitted powers around the world very wide, as **Table 4.1** demonstrates. The 32 nations in the table would represent the majority of the world's amateurs licensed at the top level. The median maximum permitted power in this list is 1250 W pX.

**Table 4.1. Maximum permitted power in different countries.**

COUNTRY	MAX. PERMITTED POWER (W)	pX / pY	Notes
Somalia	3000	pX, pY	
Canada	2250	pX	CITEL
Chile	2000 1200	pX pX	CITEL Mobile station, Superior grade; Fixed station, Superior grade
Argentina	1500	pY	CITEL
Chinese Taipei	1500	pX, pY	
Hungary	1500	pX, pY	For CW, AM, FM, SSB, digital CEPT
Israel	1500	pX, pY	
Portugal	1500	pX	CEPT
South Sudan	1500	pX, pY	
USA	1500	pX	CITEL
Mexico	1250	pX, pY	CITEL
Austria	1000	(pX, pY)	CEPT
Belgium	1000	pX	CEPT
Denmark	1000	pY	CEPT
Indonesia	1000	pX	
Japan	1000	pX, pY	
Malaysia	1000	pX	New limit proposed
New Zealand	1000	pY	Seeking 1500 W
Norway	1000	pY	CEPT
Peru	1000	pY	CITEL
Spain	1000	pX, pY	CEPT
Sweden	1000	pX	CEPT (From PTSFS 2014:5)
Switzerland	1000	pY	CEPT
Germany	750	pX	CEPT
France	500	pX	CEPT
Greece	500	pX, pY	CEPT
Italy	500	pX	CEPT
Ireland	400	pX, pY	
India	400	pX, pY	DC input to final stage
Malaysia	400	pX	Past limit; new conditions to come
South Africa	400	pX	
UK	400	pX	CEPT

## **ATTACHMENT D**

### **Priority 5**

#### **5.0 Addressing outstanding issues with licence conditions**

##### 5.1 Clarifying definitions and intent of some current provisions

The WIA seeks clarification of the following provisions in the Amateur LCD 2015:

- Clause 7 – interference
- Clause 8 (1) – brief transmissions, station identification requirements
- Clause 8 (6) – retransmission
- Clause 9 (1) – operation of repeaters

As there is a level of uncertainty and confusion within the amateur radio community concerning these provisions, we feel that these issues, with these provisions, need to be resolved before being incorporated in future Amateur Licence conditions.

In Clause 9 (1), the WIA notes that the examples relating to (c) and (d) refer to older technology and would be better if these examples were re-worded to include more recent and emerging technologies.

##### 5.2 Use of internet-connected repeater systems by Foundation licensees

Internet-connected Amateur repeater systems have proliferated across Australia over the past decade.

The WIA believes that the Amateur LCD 2015 does not adequately cover this issue. Hence, we seek clear provisions to be incorporated in future Amateur Licence conditions, in keeping with the general principle of ensuring licensees' ability to explore and experiment with the least impediment, balanced with responsible use of the spectrum and respect for other stakeholders.

##### 5.3 Clear visibility of licensees' EME compliance responsibility

As highlighted in Priority 4 at 4.3, the connection to the Apparatus LCD 2015 is "invisible" within the Amateur LCD 2015.

The WIA advocates that the future Amateur Licence conditions incorporate provisions that clearly set out a licensee's accountability for meeting EME compliance requirements. In addition, a review of the existing published guidelines would aid licensees meeting compliance.

##### 5.4 Callsigns – prefix and suffix patterns, and special callsigns

While supporting retention of the present general allocation and use of amateur callsigns, the WIA requests a review of the patterns of use of prefixes and suffixes to determine if they remain fit for purpose, and including custom and practice to-date concerning special event and special callsigns, which are generally obtained and used for defined or limited-period occasions.

This review would include the issue of Foundation Licence callsigns, as highlighted in Priority 2 at 2.6.

## ATTACHMENT E

Extract from WIA letter to the ACMA of 7 July 2014  
to Ms Anne Chadwick, Industry Partnerships Section, ACMA.

### 1.0 GENERAL ISSUES

**1.1** Lack of clarity, in terms of definitions and intent, in a number of provisions in the current LCD; for example: clause 7 [interference], clause 8 (6) [retransmission], clause 9 (1) [operation of repeaters].

**1.2** Station identification requirements in clause 8 (1), in relation to brief transmissions.

**1.3** EME compliance: the Apparatus LCD 2003 (due to sunset 1 April 2015 and now being remade) is “invisible” within the Amateur LCD, only brought to amateurs’ attention on their licenses. In order to better ensure licensees’ compliance with the EME requirements, the WIA wishes to see prominent reference to this within the LCD. In addition, accompanying documentation (“guidelines”) needs to be updated and clarified, and also referenced within the LCD.

#### Foundation Licence

**1.4** Lack of ability for Foundation licensees to use digital modes (designated as “data” in other countries’ licences) and other computer- or digitally-produced modes, including voice, Morse, RTTY, facsimile and image transmissions. The WIA seeks the inclusion of digital or data modes in the permitted modes for Foundation licensees. The WIA notes that the entry level licences in Argentina, Canada, Japan, USA and the UK have included data and image modes since its inception, without notable incidents or issues reported.

**1.5** The WIA seeks relaxation of the restriction on Foundation licensees to using commercially manufactured transceivers, which includes the microphone. The objective is to enable foundation licensees to:

- (i) assemble and use commercially available receiver and transmitter kits. The WIA notes that the UK Foundation licence has permitted this for some years, without notable incidents or issues reported;
- (ii) connect personal computers for the purpose of using digital transmission modes;
- (iii) use microphones other than standard microphone provided by the transceiver manufacturer;
- (iv) use of commercially manufactured transceivers for non-amateur band applications, but converted for operation on permitted amateur bands.

**1.6** The WIA seeks permission for unattended and remote control of Foundation licensee stations. The WIA notes that this is not restricted for entry level licence’s in other countries, and has been part of the UK Foundation licence terms and conditions for some years, without notable incidents or issues reported.

**1.7** The WIA seeks clarification of the use of internet-connected repeater systems by Foundation licensees.

#### Standard Licence

**1.8** The WIA seeks to raise Standard licence conditions to better match similar licence grades in other countries, with particular reference, for example, to the Canadian Basic licence, the US General licence and the Japanese Second-class Operator.

## 2.0 ACCESS TO FREQUENCY BANDS

**2.1 Foundation Licence:** The Foundation licence's permitted bands are quite restricted when viewed in the context of other entry level licence's across the world, except for the Malaysian Class B licence, as evidenced in **Tab A**. The WIA wishes to discuss increasing the number of permitted frequency bands for Foundation licensees.

**2.2 Standard Licence:** The Standard licence's permitted bands are quite restricted when viewed in the context of like or similar intermediate level licence's in other countries, as evidenced in **Tab B**. The WIA wishes to discuss the possibility of increasing the number of permitted bands for Standard licensees between 1.8MHz and 28MHz, and particularly access to 50-52 MHz.

(i) The WIA notes that the Australian Standard licence's progenitor in the UK has considerably more band access across the spectrum, which has not occasioned notable complaints or issues. Likewise, Argentina, Canada, Japan, the UK and the USA also provide wide access to bands across the spectrum.

**2.3** The WIA seeks access to the 5 MHz (60m) band for Australian amateurs, subject to the outcome of WRC-15. It would be advantageous if such an allocation were aligned, at least in part, if not entirely, with other 5 MHz allocations across the Asia-Pacific region within Region 3.

**2.4** Continued access to 50-52 MHz, preferably on a primary basis, in line with previous WIA representations.

**2.5** Consideration of Amateur access to a band at 70 MHz (4m), preferably congruent with, or overlapping, allocations in other countries (eg. Region 1).

**2.6** Consideration of Amateur access to a band at, or within, 918-926 MHz (33cm), preferably congruent with, or overlapping, allocations in other countries (eg. Region 2).

**2.7** Retention of access at 2300 MHz (2300-2300.15 MHz), as per the WIA's submission to the 2.3 GHz band review in 2013.

**2.8** Retention of access in the 3300-3600 MHz band. The WIA is developing a submission to the ACMA's review of the 3.5 GHz band.

**2.9** Retention of primary access in 77.5 – 78 GHz, coincident with global ITU allocations.

## 3.0 PERMITTED BANDWIDTHS

**3.1 Advanced Licence:** The WIA seeks relaxation of permitted bandwidths on the amateur bands from 1.8 MHz to 430 MHz, with the aim of enabling the exploration and use of emerging and newly developed technologies, for the following reasons:

(i) future developments in technologies and applications are undefined.

(ii) the parallel development of software defined radio and sophisticated signal processing software over the past decade has enjoyed significant uptake across the amateur radio community globally. While these developments have been built around extant narrowband transmission modes and permitted bandwidths, future development will likely centre around low spectral density transmissions of wider bandwidth able to co-exist with other transmissions in overlapping spectrum spaces, yet providing robust information exchange.

**3.2 Standard Licence:** The WIA seeks a relaxation of the permitted bandwidths relating to the Standard licence on all bands over 1 GHz, to allow the use of wideband digital and image transmission modes by that licence grade.

**3.3 Foundation Licence:** The WIA seeks a relaxation of the permitted bandwidths relating to the Foundation licence, in order to allow Foundation licensees the ability to take up the use of more recently developed technologies, and those to emerge in the future.

## 4.0 PERMITTED POWERS

**4.1** The WIA wishes to see the permitted powers for all licence grades reviewed in a sensible, pragmatic approach to enable licensees to pursue their interests commensurate with their established knowledge (demonstrated in licence assessment) and within reasonable bounds of public safety considerations. The WIA is aware of differing views on the issue and notes the disparity in current permitted powers of all three Australian licence grades compared to similar licence grades in other countries.

**4.2 Foundation Licence:** The current permitted power of 10 W pX for the Foundation licence is experienced to be at a distinct disadvantage in today's urban RF noise environment on the HF and VHF bands – locally and globally – and in mobile applications on the bands above 30 MHz.

The WIA suggests 25 W pX would better address this issue under Australian conditions.

- (i) Many commercial transceivers currently available (HF and VHF-UHF) afford operation at the suggested 25 W pX, more so than those that conform to the current permitted power of 10 W.
- (ii) On the VHF and UHF bands, the “tyranny of distance” and scattered population centres dominate the ability of Foundation licensees to operate, particularly for mobile operations.

**4.3 Standard Licence:** The WIA notes that the permitted power of 100 W pX for Standard licensees was a carryover from the former Novice licence. The WIA suggests that a permitted power of 200 W pX would be a sensible, pragmatic provision for the Standard licence, going forward.

- (i) The permitted power suggested affords Standard licensees the opportunity to explore RF technologies and on-air operations at this power level, in context with the urban RF noise environment on the HF and VHF bands now being experienced.
- (ii) Many commercial transceivers currently available, and others produced over the last decade, provide output power at this level, manufactured to suit amateurs in the Japanese and North American markets, in particular.

**4.4 Advanced licensees:** The WIA seeks a permitted power of 1000 W pX without necessitating a separate permit, which is supported by improved awareness of EME requirements (now incorporated in the licence examination syllabuses) and visibility in the LCD, as per 1.2 above.

**TAB A**

**Entry level licences – band access in different countries**

■ = access to part or all of the nominated band

Amateur Band	Australia Foundation	Argentina Novicio	Canada Basic	India Restricted	Japan 4th Class	Malaysia Class B	Sth Africa Class B	UK Foundation	USA Technician
2200m					■			■	
600m									
160m				■	■			■	
80m	■	■		■	■		■	■	■
60m				■				■	
40m	■	■			■		■	■	■
30m								■	
20m		■		■				■	
17m		■		■				■	
15m	■	■		■	■			■	■
12m		■		■	■			■	
10m	■	■		■	■	■		■	■
6m		■	■	■	■	■	■	■	■
4m							■	■	
2m	■	■	■	■	■	■	■	■	■
1.25m		■	■						■
70cm	■	■	■	■	■	■	■	■	■
33cm			■						■
23cm		■	■		■		■		■
13cm		■	■		■		■		
9cm		■	■		■				
6cm		■	■		■		■		
3cm		■	■		■		■	■	
12.5mm		■	■		■		■		
6.38mm		■	■		■		■		
4.0mm		■	■		■		■		
2.5mm			■						
2.24mm		■	■		■		■		
1.25mm		■	■		■				

**TAB B**

**Intermediate level licences – band access in different countries**

■ = access to part or all of the nominated band

Amateur Band	Australia Standard	Argentina Intermedia	Canada Basic +	Japan 3rd Class	UK Intermediate	USA General
2200m			■	■	■	
600m						
160m			■	■	■	■
80m	■	■	■	■	■	■
80m DX			■	■		■
60m			■		■	■
40m	■	■	■	■	■	■
30m			■		■	■
20m	■	■	■		■	■
17m		■	■		■	■
15m	■	■	■	■	■	■
12m		■	■	■	■	■
10m	■	■	■	■	■	■
6m		■	■	■	■	■
4m					■	
2m	■	■	■	■	■	■
1.25m		■	■			■
70cm	■	■	■	■	■	■
33cm			■			■
23cm	■	■	■	■	■	■
13cm	■	■	■	■	■	■
9cm		■	■	■	■	■
6cm	■	■	■	■	■	■
3cm		■	■	■	■	■
12.5mm		■	■	■	■	■
6.38mm		■	■	■	■	■
4.0mm		■	■	■	■	■
2.5mm			■		■	■
2.24mm		■	■	■	■	■
1.25mm		■	■	■	■	■

## **Appendix 1**

### **The Amateur Service**

**ITU definition.** Formally, the Amateur Service is defined in the International Telecommunications Union (ITU) Regulations as follows:

**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.

The Amateur Service exists to meet the needs of the community for public access to the radiofrequency spectrum for self-training, experimentation and self-development. These purposes clearly fall within the objects of the Radiocommunications Act 1992, in particular, the object to:

*(b) make adequate provision of the spectrum . . . for use by other public or community services; but not diminishing the other equal objects.*

It is understood that the same or similar objects will be preserved in a new Act resulting from the current Spectrum Review.

### **Value of the Amateur Service to the community**

The licensing of qualified people to use Amateur Service frequency bands throughout the spectrum has created an invaluable public good which, of itself, carries an intrinsic worth, an “intangible” community asset that cannot be reduced to a monetary value as is spectrum sought and used by for-profit commercial interests.

**A community resource.** The Amateur Service represents a large resource of qualified and experienced radio operators and equipment dispersed throughout the community and world-wide. Radio amateurs seek to explore and experiment with new technologies, yet retain an interest in, and continued use of, technologies of the past, albeit in a modern context.

The 14,000 strong radio amateur population in Australia is relatively stable, with younger Foundation grade licensees replacing the numbers of older radio amateurs lost to age. Currently, there are approximately three million radio amateurs world-wide.

**Community service.** Month-in, month-out, year after year, amateurs across Australia use their skills, assets and resources to provide radiocommunications support for organised community events, generally through local radio clubs and groups working with community event organisers.

Community activities involving radio amateurs range across all sorts of sporting rallies, scout and guide camps and jamborees – including the global "Jamboree of the Air", held annually since 1957 – bush walks, marathon runs, walk-a-thons, bike-a-thons, horse enduros, boating and canoeing events, community celebrations and parades.

In addition, radio amateur groups and clubs engage in development, promotion and running of community and school education programs in basic electronics and radiocommunications, including demonstrations of space science and communications via Low Earth Orbit satellites (FUNcube, etc) and the Amateur Radio in the International Space Station (ARISS) program, in which students get to ask questions and talk to ISS astronauts.

**Achievement.** While commercial and defence operations focus on reliable, high signal-to-noise ratio communications, radio amateurs deliberately seek to explore testing and establishing communications under difficult circumstances where weak-signal reception is the norm, rather than the exception. The amateur radio community in Australia, and globally, has built up a commendable record of investigation and achievement in advancing the state of the art with weak-signal communications technologies and techniques.

**Innovation.** Innovation in the use of radio/wireless technologies in increasingly diverse applications continues relentlessly, both within and beyond the sphere of amateur radio activities, and the WIA sees that it is important to facilitate radio amateurs' ability to adopt or adapt innovations without unnecessary impediments.

**Technological leadership.** The amateur radio community stimulates technological leadership within its ranks. Radio amateurs have made significant technical contributions to the understanding and use of electromagnetic propagation, single-sideband radio, high frequency data communication systems, digital radio protocols and communications satellite design, among other things.

It is widely acknowledged and understood that “disruptive” technologies and innovations drive the advancement of technological industries, particularly the IT sector. The same is true for the wireless / radiocommunications sector, and amateur radio has played a role over every decade across the past 100 years; increasingly so over the past two decades.

**Education and research.** Additionally, the WIA believes that, given the correct policy and regulatory settings, there could be an expanding role for amateur radio to play in Australian education and research, albeit through a fairly rigorous set of entry criteria.

There are many examples from over the decades where amateurs have explored radio communications concepts that have been subsequently developed (ex-Amateur Service) into successful commercial technologies.

If the licensing conditions permitted, amateur radio spectrum could be used to a much greater degree by educational organisations for teaching and research purposes – the so-called ‘sand-pit’ concept, and contributing to the increased educational focus on STEM – science, technology, engineering and mathematics.

**When all else fails.** Amateur radio continues to play an important role in disaster communications and has a unique ability to provide radio communications independent of the telephone network or other radio services.

Although emergency services in Australia are now well equipped with modern communications infrastructure, amateur radio has proved to be of value in the first few hours of an emergency as “first/early responders”, before other services have time to respond, and in a back-up communications role when all else fails.

In addition, radio amateurs are able to provide a skilled manpower resource, which can be drawn on in emergency situations. Use of amateur radio capability is still part of disaster planning in Australia and many other countries, particularly across our neighbouring regions of South and South East Asia.

Recent examples of where radio amateurs provided first-response communications services following natural disasters or emergencies include: the Victorian Black Saturday bushfires of February 2009, the Queensland floods in January 2011, the 2004 Boxing Day Indian Ocean tsunami, and Typhoon Haiyan of 2013 that devastated the Philippines.

## **About the WIA**

Founded in 1910, the WIA ([www.wia.org.au](http://www.wia.org.au)) is acknowledged as being one of the first radio societies in the world, and is the world's oldest national amateur radio society. 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 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 Council.

The WIA is a member of the International Amateur Radio Union ([www.iaru.org](http://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.

The IARU is a Sector Member of the ITU Radiocommunications Sector and actively participates in many ITU meetings, including the WRCs. 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](http://www.iaru-r3.org)).