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ACMA Consultation IFC 31/2022

The [Australian Communications and Media Authority](https://www.acma.gov.au/)¹ (ACMA) invited submissions from stakeholders in response to the [Proposed amateur class licensing arrangements and higher power operation - consultation 31/2022](https://www.acma.gov.au/consultations/2022-09/proposed-amateur-class-licensing-arrangements-and-higher-power-operation-consultation-31/2022)². This consultation included two (2) major topics:

- Operational arrangements to support the proposed amateur class licence
- Proposal for a staged implementation of higher power authorisation.

The closing date for submissions was given as 29th November 2022.

In support of the consultation the ACMA released two key documents:

- [Consultation paper: Proposed amateur class licence and considerations for higher power operation](https://www.acma.gov.au/sites/default/files/2022-09/Proposed%20amateur%20class%20licence%20and%20considerations%20for%20higher%20power%20operation.pdf)³
- [Draft Radiocommunications \(Amateur Stations\) Class Licence 2022](https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20(Amateur%20Stations)%20Class%20Licence%202022.docx)⁴

The ACMA invited comments from stakeholders on fifteen questions that were listed in the Consultation Paper.

Submissions could be made via email to SLPSConsultations@acma.gov.au or submitted online.

¹ ACMA home page:- <https://www.acma.gov.au/>

² Consultation IFC 31/2022 home page:- <https://www.acma.gov.au/consultations/2022-09/proposed-amateur-class-licensing-arrangements-and-higher-power-operation-consultation-31/2022>

³ Consultation paper:- <https://www.acma.gov.au/sites/default/files/2022-09/Proposed%20amateur%20class%20licence%20and%20higher%20power%20consultation%20paper%201.docx>

⁴ Draft Class Licence:- [https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20\(Amateur%20Stations\)%20Class%20Licence%202022.docx](https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20(Amateur%20Stations)%20Class%20Licence%202022.docx)

Structure of this Submission

The ACMA proposal includes additional red-tape, options that substantially increases costs and adds unnecessary complexity for individual licenced amateur operators and the Amateur Service as a whole. The ACMA consultation documentation is incomplete as it does not include a Regulation Impact Statement (RIS), any assessment of costs, or any projections for future Amateur Service cost increases.

Questions posed by the ACMA fail to include topics of concern to amateurs. To cover these additional areas adds complexity to answers to apparently simple questions. For example, the answer for the apparently simple Question 1 regarding an additional privilege for Standard amateurs (i.e. access to 50 – 52 MHz) then leads into the Agenda of WRC-23, changes to ITU Radio Regulations, etc. Other topics of concern (e.g. equipment standards) add complexity are related to other questions posed by the ACMA.

This submission includes a large number of extracts of varying size. These extracts will be incomplete and source documents should be accessed for the complete text. All extracts are indented while my comments, remarks at various locations within the extracts are not indented. All source documents should be known to ACMA staff. These extracts and references to source documents may be of assistance to other amateurs. Apologies up front to the ACMA staff who are going to have to wade through all the excessive verbiage.

Given the length of this document I am certain there will be formatting issues and text that I wish I had corrected or replaced prior to submission. A more detailed examination of the Standards referenced and Draft text is required but given the length of this document I'll have to leave that to others.

After a five (5) year Radio Technician-In-Training apprenticeship with the Department of Civil Aviation/Department of Transport I qualified as a Radio Technician and Radio Technical Officer in the Commonwealth Public Service. I currently hold the Advance Amateur Apparatus Licence VK3ZGP and the 2x1 contest call sign VK3Z. While licenced in the 1980s and a member of my local club I do not class myself as particularly active.

I do not have any legal training therefore opinions expressed in this submission are just my personal responses to the ACMA consultation document. There can be no reliance on the accuracy, or completeness of any information in this submission. Opinions expressed in this submission are as an individual and not as a member of any club or associations, etc. The author is wholly responsible for all remaining typos, errors and omissions as this document has not checked or reviewed by anyone else before submission. Do not rely on this document, consult a lawyer or the ACMA for an expert opinion. For these reasons, the information should not be relied on as legal advice or regarded as a substitute for legal advice in individual cases.

Given the range and impact of the proposed changes this has become a lengthy document and I do expect there will not be universal agreement with the opinions expressed.

External references and Uniform Resource Locators (URLs) were correct at the time they were included in this document. These are under the control of external entities and there is no guarantee how long these external references and URLs will remain active, how long they will remain current, how long legislation versions referenced will remain in force, or Standards remain current.

Extracts are being taken from the [Exposure Draft - WIA response to the ACMA consultation 31/2022](#)⁵ and they cannot be taken as the final text or position the WIA will submit to the ACMA. Therefore these WIA extracts and references should not be attributed to the WIA as their position on the ACMA consultation.

Garry Page – VK3ZGP/VK3Z
Hampton Park

⁵ <https://www.wia.org.au/newsevents/news/2022/20221114-40/documents/EXPOSURE%20DRAFT%20-%20WIA%20Response%20to%20ACMA%20Consultation%2031%202022%20-%20v1.0.pdf>

1. Do you see any reason for not extending secondary user access to the 50 – 52 MHz band for Standard amateurs? If yes, what is your reason?

Yes.

The Standard amateurs should be given Primary Service user access to the 50 – 54 MHz band. The Amateur Service should not be a secondary user in this band. What should have been the focus of this question is WRC-23 preparation, the Australian Band Plan and the ITU Radio Regulations. The extension of the Standard amateur privilege from 52 – 54 MHz to 50 – 54 MHz is a trivial matter in comparison. A lack of preparation for WRC-23 is the only reason to answer 'Yes' to this question.

In effect 50 – 52 MHz is unoccupied spectrum and the upgrade is just an extension to the existing 52 – 54 MHz allocation for Standard Amateurs.

Only for historical reasons is this spectrum reserved for broadcasting in the [Australian Radiofrequency Spectrum Plan 2021](#)⁶. There are no current Australian Broadcast (Primary Service allocation) users (i.e. transmitters) licenced, nor any other Broadcast users likely to be allocated a licence in the foreseeable future for this spectrum. A dedicated Broadcast Service allocation in this band is basically restricted to Australia and two other countries in Region 2 and 3. There are no international standards for a broadcast technology that is dedicated or limited to this band for Australia

The United Kingdom (Great Britain) date of entry into the [International Telecommunication Union](#)⁷ (ITU) was the 24th February 1871. Australia's date of entry was 27th May 1878⁸. Australia is a signatory to the Constitution and Conventions of the International Telecommunication Union.

[Radiocommunications Act 1992](#)⁹

Compilation No. 76, 1st September 2021

Chapter 6—Miscellaneous

299 International agreements etc.

- (1) A person or body exercising a power conferred under this Act (other than Part 4.4 or 5.5) must have regard to:
- (a) any agreement, treaty or convention, between Australia and another country or countries, that makes provision in relation to radio emission; and
 - (b) any instrument or writing specified in the regulations.

The International Telecommunication Union publishes the [Radio Regulations Articles 2020](#)¹⁰ which includes the allocation of frequencies for the three (3) regions the world has been divided into for the purpose of ITU regulation.

⁶ [Australian Radiofrequency Spectrum Plan](#)

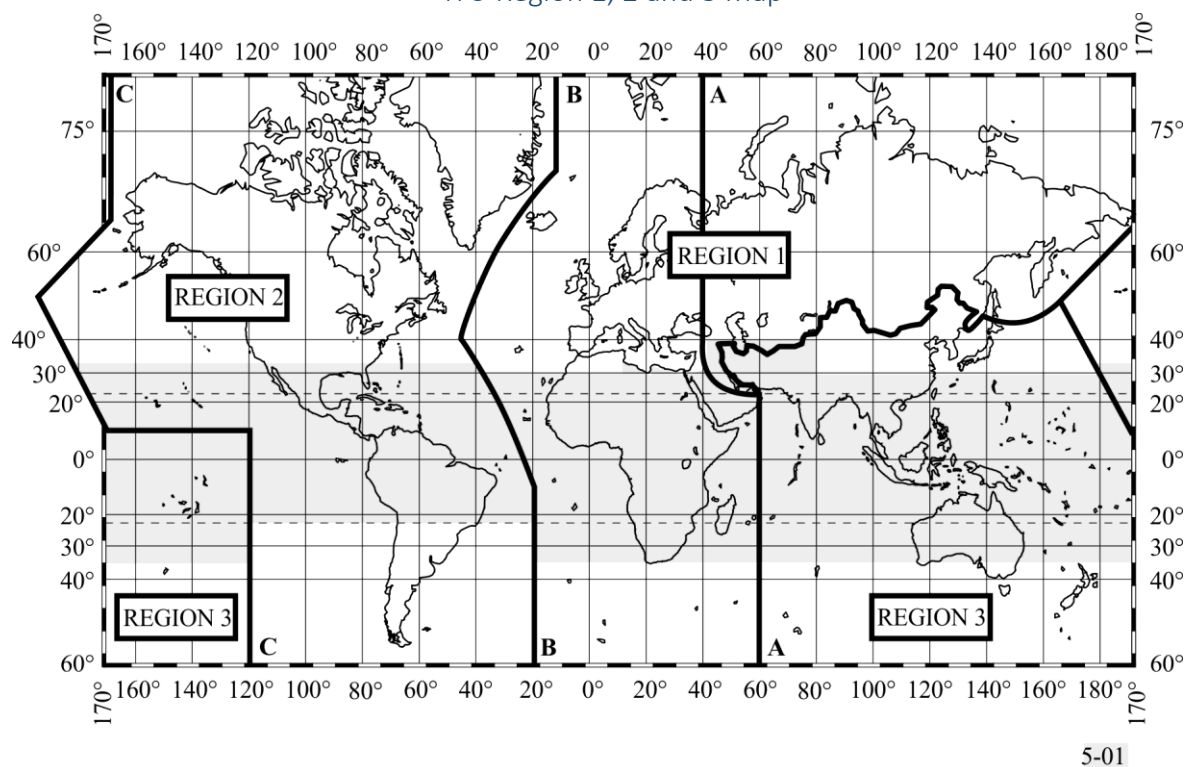
⁷ ITU home page:- <https://www.itu.int/en/Pages/default.aspx>

⁸ ITU list of member states:- <https://www.itu.int/online/mm/scripts/gensel8>

⁹ Radiocommunications Act 1992 in force during preparation of submission:- <https://www.legislation.gov.au/Details/C2021C00462>

¹⁰ ITU Radio Regulations downloads:- <https://www.itu.int/pub/R-REG-RR-2020>

ITU Region 1, 2 and 3 Map



ITU Table of Frequency Allocations for 47 – 75.2 MHz

Table 1 - ITU Region 3 Band Plan (47-75.2 MHz)

Allocation to services		
Region 1	Region 2	Region 3
47-50 BROADCASTING 5.162A 5.163 5.164 5.165	47-50 FIXED MOBILE	47-50 FIXED MOBILE BROADCASTING 5.162A
50-52 BROADCASTING Amateur 5.166A 5.166B 5.166C 5.166D 5.166E 5.169 5.169A 5.169B 5.162A 5.164 5.165	50-54 AMATEUR 5.162A 5.167 5.167A 5.168 5.170	
52-68 BROADCASTING 5.162A 5.163 5.164 5.165 5.169 5.169A 5.169B 5.171	54-68 BROADCASTING Fixed Mobile 5.172	54-68 FIXED MOBILE BROADCASTING 5.162A

¹¹ ITU Radio Regulations downloads:- <https://www.itu.int/pub/R-REG-RR-2020>

Allocation to services												
Region 1				Region 2				Region 3				
68-74.8 FIXED MOBILE except aeronautical mobile				68-72 BROADCASTING Fixed Mobile 5.173				68-74.8 FIXED MOBILE				
				72-73 FIXED MOBILE								
				73-74.6 RADIO ASTRONOMY 5.178								
				74.6-74.8 FIXED MOBILE								
5.149 5.175 5.177 5.179								5.149 5.176 5.179				
74.8-75.2				AERONAUTICAL RADIONAVIGATION 5.180 5.181								

Article 5 – Frequency Allocations

This ITU Article provides the Band plans for the whole world plus the following definitions and protections for radiocommunication services such as Broadcasting, Amateur, Mobile, etc.:

Section II – Categories of services and allocations

5.23 *Primary and secondary services*

5.24 1) Where, in a box of the Table in Section IV of this Article, a band is indicated as allocated to more than one service, either on a worldwide or Regional basis, such services are listed in the following order:

5.25 a) services the names of which are printed in “capitals” (example: FIXED); these are called “primary” services;

In the 47 – 75.2 MHz Frequency Allocation Table for the 50 - 54 MHz spectrum, the Primary Allocation for Regions 2 and 3 is the Amateur Service but not in Region 1.

5.26 b) services the names of which are printed in “normal characters” (example: Mobile); these are called “secondary” services (see Nos. 5.28 to 5.31).

In the 47 – 75.2 MHz Frequency Allocation Table for the 50-54 MHz spectrum, there are no Secondary services defined in the Table for Regions 2 and 3. In Region 1 the Amateur Service is the Secondary service.

5.27 2) Additional remarks shall be printed in normal characters (example: MOBILE except aeronautical mobile).

This Clause is not applicable for the 50 – 52 MHz band.

5.28 3) Stations of a secondary service:

In the 47 – 75.2 MHz Frequency Allocation Table for the 50-54 MHz spectrum, there are no Secondary Allocations for Regions 2 and 3.

- 5.29** *a)* shall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date;

In theory, the Amateur Service is the existing Primary service and newer allocations in this band cannot cause harmful interference to the Amateur Service. Past practice has shown this clause provides minimal to zero protection e.g. the introduction of the Low Interference Potential Devices (LIPD) class licence for the 70cm band

- 5.30** *b)* cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date;

The Amateur Service is the existing Primary Service and if there were to be additional Primary Service allocations introduced they cannot claim protection from harmful interference by the Amateur Service.

- 5.31** *c)* can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.

There are no Secondary Service allocations therefore this sub-clause is not applicable.

- 5.32** *4)* Where a band is indicated in a footnote of the Table as allocated to a service “on a secondary basis” in an area smaller than a Region, or in a particular country, this is a secondary service (see Nos. 5.28 to 5.31).

- 5.33** *5)* Where a band is indicated in a footnote of the Table as allocated to a service “on a primary basis”, in an area smaller than a Region, or in a particular country, this is a primary service only in that area or country.

In the [Australian Radiofrequency Spectrum Plan 2021](#)¹² the ACMA has modified the Primary and Secondary Service allocations in Australia compared to the ITU Table of Frequency Allocations for this band. The ACMA has the Amateur Service demoted to a Secondary Service and the Broadcasting Service (analogue television) was allocated as the Primary Service. By reversing the allocation in Australia and External Territories, then by default the Amateur Service was not permitted to interfere with the operation of the Broadcasting Service. With the final closure of the analogue television service in this band in 2013 the ACMA has the opportunity to unwind these allocations.

¹² [Australian Radiofrequency Spectrum Plan](#)

Australian Radiofrequency Spectrum Plan 2021¹³

Table of Frequency Allocations 44 – 75.2 MHz

MHz 44 – 75.2			
Column 1: ITU Radio Regulation Table of Allocations			Column 2:
Region 1	Region 2	Region 3	Australian Table of Allocations
44 – 47	FIXED MOBILE		44 – 45 FIXED MOBILE AUS57
	162 162A		45 – 50 BROADCASTING FIXED AUS100A MOBILE AUS100A
47 – 50 BROADCASTING	47 – 50 FIXED MOBILE	47 – 50 FIXED MOBILE BROADCASTING 162A	162
162A 163 164 165			
50 – 52 BROADCASTING Amateur 166A 166B 166C 166D 166E 169 169A 169B 162A 164 165	50 – 54 AMATEUR		50 – 52 BROADCASTING Amateur
			168
52 – 68 BROADCASTING	162A 167 167A 168 170		52 – 54 AMATEUR
	54 – 68 BROADCASTING Fixed Mobile	54 – 68 FIXED MOBILE BROADCASTING	54 – 56 FIXED MOBILE RADIOLOCATION AUS89
162A 163 164 165 169 169A 169B 171	172	162A	56 – 70 BROADCASTING FIXED AUS101A MOBILE AUS101A
			176

At the present time within Australia and External Territories the Amateur Service is a Secondary Service allocation and Broadcasting is the Primary Service allocation.

Radio Regulations Articles 2020

Article 5 – Frequency Allocations

Section II – Categories of services and allocations

5.34 *Additional allocations*

5.35 1) Where a band is indicated in a footnote of the Table as “also allocated” to a service in an area smaller than a Region, or in a particular country, this is an “additional” allocation, i.e. an allocation which is added in this area or in this country to the service or services which are indicated in the Table (see No. 5.36).

5.36 2) If the footnote does not include any restriction on the service or services concerned apart from the restriction to operate only in a particular area or country, stations of this service or these services shall have equality of right to operate with stations of the other primary service or services indicated in the Table.

Footnotes do exist for Regions 2 and 3 for the 50 – 54 MHz band. These Footnotes are 5.162A, 5.167, 5.167A, 5.168 and 5.170 and do define other primary and secondary services. These clauses will be discussed below.

¹³ [Australian Radiofrequency Spectrum Plan](#)

- 5.37** 3) If restrictions are imposed on an additional allocation in addition to the restriction to operate only in a particular area or country, this is indicated in the footnote of the Table.

There are no additional restrictions imposed on Amateur Service operations.

The five (5) footnotes (i.e. 5.162A, 5.167, 5.167A, 5.168 and 5.170) related to the 50 – 54 MHz band are now discussed.

5.162A *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, the Russian Federation, Finland, France, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland the frequency band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution 217 (WRC-97). (WRC-19)

This footnote creates a secondary allocation in the listed countries. By definition sub-clauses **5.29** and **5.30** apply to these Secondary Service users. Therefore they cannot cause interference to the Amateur Service nor claim protection from Amateur Service interference. China is the only Region 3 country in this footnote and distance from Australia provides adequate protection against any interactions with Australian amateurs.

5.167 *Alternative allocation:* in Bangladesh, Brunei Darussalam, India, Iran (Islamic Republic of), Pakistan and Singapore, the frequency band 50-54 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-15)

This is a primary allocation. By definition (sub-clause 5.36) the amateur service has equality of right to operate. Distance from Australia provides adequate protection against any interactions with Australian Amateurs.

5.167A *Additional allocation:* in Indonesia and Thailand, the frequency band 50-54 MHz is also allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-15)

This is a primary allocation. By definition (sub-clause 5.36) the amateur service has equality of right to operate. Advanced amateurs have had access to this spectrum, are permitted higher power limits than Standard amateurs and any interference complaints from neighbouring authorities should already be known to the ACMA. If there are no ongoing ACMA investigations associated with neighbouring authorities for this band, nor a history of interference complaints from Indonesia then there are no impediments to granting early access i.e. no potential to cause interference with a Primary Service user.

5.168 *Additional allocation:* in Australia, China and the Dem. People's Rep. of Korea, the band 50-54 MHz is also allocated to the broadcasting service on a primary basis.

Under the [Australian Radiofrequency Spectrum Plan 2021](#)¹⁴ the Amateur Service is a Secondary Service allocation and Broadcasting is a Primary Service allocation. This change in allocation priority is only in effect within Australia and External Territories. This Service allocation priority swap does not

¹⁴ [Australian Radiofrequency Spectrum Plan](#)

change the Amateur Service's Primary Service allocation status under the international allocations of the ITU for Region 3.

By definition (sub-clause 5.36) under the ITU Radio Regulations the Amateur Service has equality of rights to operate as a Primary Service. China and North Korea are the only other Region 3 countries in this footnote. Their distance from Australia provides adequate protection against any interactions from Australian amateurs.

5.170 *Additional allocation:* in New Zealand, the frequency band 51-54 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

This is a Primary Service allocation. By definition (sub-clause 5.36) under the ITU Radio Regulations the Amateur Service has equality of rights to operate. In this case 50% of the band under consideration (50 – 51 MHz) is outside this New Zealand additional allocation therefore no interactions are possible with the Amateur service. The other 50% (51 – 52 MHz) of this band plus the 52 – 54 MHz band do overlap the New Zealand allocation.

Advanced amateurs have had access to this spectrum, are permitted higher power limits than Standard amateurs and any current interference complaints from the New Zealand authority would already be known to the ACMA. If there are no ongoing ACMA investigations associated with New Zealand for this band, nor a history of interference complaints from New Zealand then there are no impediments to granting of early access i.e. no potential to cause interference with a Primary Service user.

In Region 3, in all cases under the ITU Radio Regulations the Australian Amateur Service has a Primary Service allocation in the 50 – 54 MHz band or has equal priority with any other service within any other country.

The ACMA publishes spectrum embargoes to prevent licence assignments within specific bands or for specific frequencies.

Radiocommunications Assignment and Licensing Instruction - Spectrum Embargoes

The current version is [RALI: MS03](#)¹⁵ date of effect 12/8/2022.

Embargo 67

Frequency Range(s):	45 – 52 MHz
Subject:	Embargo on new frequency assignments for broadcasting licence types
Date of Effect:	6 February 2014 (last revised 31 March 2017)
Coverage:	Australia-wide
Time Frame	Until further notice

INSTRUCTIONS

No new frequency assignments for any broadcasting licence types (including narrowcasting) are to be made in the above mentioned bands corresponding to former analog television channels 0, 1, 2, 3 (in part) and 5A Australia-wide.

¹⁵ ACMA Spectrum Embargoes, RALI:MS03:- <https://www.acma.gov.au/sites/default/files/2022-08/RALI%20MS03%20%282022%2008%2012%29.pdf>

An exemption applies to licences issued for 30 days or less to facilitate the use of this spectrum for special events.

Any applications for case-by-case exemptions are to be referred to the Manager, Spectrum Engineering Section for consideration.

REASONS

The purpose of the embargo is to preserve planning options for the future use of these bands while they are under review.

COMMENTS

The ACMA intends to undertake a review into future use of VHF broadcasting bands vacated by analog television services.

Non-broadcasting usage of these bands is permitted, consistent with the Australian Radiofrequency Spectrum Plan and any other planning and licensing requirements. Such use in each band is enabled by section 34 'drop throughs' (Broadcasting Services Act).

The embargo does not cover the 87.5–108 MHz FM radio broadcasting band in which a limited number of analog television services operated on channels 3, 4 and 5.

HISTORY

In March 2017, this embargo was revised to include the band 85–87.5 MHz. When the initial embargo was put in place this band was governed by a statutory band plan VHF mid band frequency band plan 1991 which limited the potential usage of this band for broadcasting. That frequency band plan has sunset and been replaced by RALI MS42 which under some circumstances would appear to permit broadcasting assignments. To clarify that broadcasting is not intended to occur in this band until a review is undertaken the embargo was extended to explicitly include the 85–87.5 MHz band.

In the current consultation paper the ACMA states:

The VHF Band I Channel 0 (45–52 MHz) was previously used for analog television services and additional restrictions to other uses of this band were put in place to manage potential interference risks to those services.

In 2013, the last analog television transmitters licensed to operate in Australia were switched off.

There has been an ACMA embargo in operation since 2014 preventing any new broadcast licence assignments in this band. As there are no other broadcasting primary users then by default amateurs have effectively been the Primary Service users for approximately ten (10) years. The Australian Radiofrequency Spectrum Plan, should be subject to review after the updating of ITU Radio Regulations, Clause **5.168** to remove Australia's reservation of a Broadcasting Service allocation for this band. At that point the Amateur Service for the 50 – 54MHz band could become the Primary allocation in Australia.

In all cases, if there are no ongoing ACMA investigations associated with this band that had been referred by an another countries radiocommunications authority, then there are no impediments to granting early access i.e. no potential to cause interference with any other primary user.

One reason to possibly deny early access would be on the grounds of maintaining a licence privilege for Advanced licence holders. Given the current excessive spectrum restrictions on Standard amateurs compared to other countries the minor extension of this allocation from 52 – 54 MHz to 50 – 54 MHz will not have a significant impact on the Standard vs Advanced privilege balance.

Advanced amateur privileges are not grounds to deny early access to the 50 – 52 MHz band. In the discussion paper the ACMA did not raise any issues related to the trade-off between Advanced and Standard licence privileges.

A past submission by the Wireless Institute of Australia (WIA) did discuss Standard licence privileges.

[WIA - LCD Submission re Amateur licence conditions: Standard licence](#)¹⁶

Part 3: Standard Licence Conditions

3.1.1 Access to more bands

Hence, in comparison to other countries' Intermediate licences:

- the Australian Standard licence has 10 frequency bands
- the UK Intermediate licence has 25 equivalent bands (4 m / 70 MHz is not available in Australia)
- Argentina's Intermedia has 21 equivalent bands
- Canada's Basic+ has 25 equivalent bands
- the USA's General has 24 equivalent bands
- Japan's 3rd Class has 20 equivalent bands

Australian Standard licence holders have far fewer bands in which to experiment and learn.

The WIA believes that, from the experiences of other countries, there is little evidence that providing access to more bands would act as a disincentive to Standard licensees upgrading to the Advanced licence.

[Country Comparison Table for Standard Equivalent Licence Privileges](#)

The WIA included a table comparing the number of bands permitted by the Standard Licence with the equivalent Licences in five (5) other countries. That table has been reproduced below with the addition of the Australian Advanced Licence which has been included to illustrate the difference between the privileges of these two Australian licences.

Table 2 - International Comparison Chart for the Standard Licence

Amateur Band	Australia Standard	Argentina Intermediate	Canada Basic+	Japan 3 rd Class	UK Intermediate	USA General	Australia Advanced
2200m			■	■	■		■
600m							■
160m			■	■	■	■	■
80m	■	■	■	■	■	■	■
80m DX			■	■		■	■
60m			■		■	■	
40m	■	■	■	■	■	■	■

¹⁶ [https://www.wia.org.au/newsevents/news/2018/20180612-1/documents/2018-06-12%20WIA%20-%20LCD%20Submission%20Part%203%20\(Standard\)%20V2.2.pdf](https://www.wia.org.au/newsevents/news/2018/20180612-1/documents/2018-06-12%20WIA%20-%20LCD%20Submission%20Part%203%20(Standard)%20V2.2.pdf)

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

Standard amateurs already have access to the 52 – 54 MHz sub-band so extending the 50 – 52 MHz access privilege to Standard Licence holders is not going to upset the balance of privileges.

At the time of the WIA submission the imbalance between Standard and Advanced Licence privileges was such that there appeared to be significant support for change within the Amateur Service.

3.1.2 WIA survey - Access to more bands

The number of permitted bands for the Australian Standard licence is quite restricted in comparison with the intermediate level licences in other countries.

The WIA advocates increasing the number of permitted bands for Standard licensees between 1.8 MHz and 28 MHz and, particularly, enabling access to 50-52 MHz. This would provide greater opportunities for learning experiences and inter-amateur communications.

Having more bands provides a wider range of opportunities for licensees to learn and gain experience across the radiofrequency spectrum and adds incentives for Foundation licensees to upgrade.

¹⁷ 52 – 54MHz sub-band only

Table 3 - Survey for Increasing Permitted Bands for Standard Licence

N=462	Totally in Favour	Generally in Favour	Undecided	Opposed
No.	221	168	24	49
%	47.8	36.4	5.2	10.6

An overwhelming 84% of respondents were in favour of an increase in permitted bands for Standard Licensees. Of the 36% Generally in Favour, views were expressed that additional bands should be limited so that an incentive to upgrade was maintained. Among those Opposed, the view was expressed that new privileges beyond what previous Novice licensees had should be 'earned'.

WIA Recommendation:

That the number of amateur bands for Standard licensees be increased to provide greater opportunities for learning experiences and inter-amateur communications and to harmonise better with those of other countries' intermediate level licences, while balancing incentives to upgrade.

The WIA is currently conducting a survey of amateurs. Results of the currently ongoing survey are not available therefore the report from the previous survey is presented. In this round of ACMA consultations the Amateur Service can be expected to provide a very high level of support for this change. Therefore Advanced Licence privileges are not grounds for preventing the immediate implementation of this change to the Standard Licence.

There is no requirement for any manufacturer to produce domestic broadcasting equipment or related devices for operation in this band in Australia. Therefore removing Australia from Footnote 5.168 does not require any consideration of commercial activities.

As a by-product of this change there may be some additional sales of station equipment to Standard amateurs after the implementation of this upgrade for Standard licenced amateurs.

World Radiocommunication Conference 2023 (WRC-23)

The ITU and Australian Bands Plans need to be updated to remove the Broadcasting Primary Service allocation in the 50 – 54 MHz band.

The ITU holds World Radiocommunication Conferences (WRC) every three (3) to four (4) years. Since 2013 there have been two conferences (WRC-15 and WRC-19). The next planned conference is WRC-23 due to be held from the 20th November 2023 to 15th December 2023 in Dubai, United Arab Emirates (UAE).

To date the ACMA has failed to resolve this allocation anomaly in the 50 – 54 MHz band at a WRC. The ACMA has released the Australia preliminary positions for WRC-23 and there is no indication Footnote 5.168 will be addressed.

Australian preliminary positions on WRC-23 agenda items¹⁸

Agenda item 8—Deletion of country footnotes

to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution 26 (Rev.WRC 19);

Australian preliminary position

Australia supports the principles and intent of Resolution 26 (Rev.WRC-07) and the WRC standing agenda item for administrations to remove their country footnotes or their country names associated with specific footnotes of the Table of Frequency Allocations in Article 5 of the Radio Regulations when no longer required.

Should there be contributions to WRC-23 under this standing agenda item for addition of a new footnote or modification of an existing footnote, such contributions should only be considered by the WRC consistent with the further resolves 1 of Resolution 26 (Rev.WRC-19) and the guidance provide in Annex 1 to the Resolution

The deletion of Australia from the Footnote 5.168 should be submitted for consideration at WRC-23 consistent with Resolves 1 of Resolution 26 (Rev.WRC-19) and the guidance provide in Annex 1 to the Resolution.

World Radiocommunication Conference 2019 (WRC-19) - Final Acts¹⁹

Resolution 26 (Rev.WRC-19)

Footnotes to the Table of Frequency Allocations in Article 5 of the Radio Regulations

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

h) that, in order to keep the footnotes to the Table of Frequency Allocations up to date, there should be clear and effective guidelines for additions, modifications and deletions of footnotes,

noting

d) that administrations need sufficient time to examine the potential consequences of changes to footnotes to the Table of Frequency Allocations;

The ACMA has had sufficient time since 2014 to note the obsolescence of the Australian country entry in Footnote 5.168 and examine the potential consequences of a deletion of the Australia entry. The consultation paper does not indicate the status of this work

e) the importance of coordination between countries before a WRC to agree on changes related to country footnotes,

further resolves

1 that any addition of a new footnote or modification of an existing footnote should be considered by a WRC only when:

¹⁸ <https://www.infrastructure.gov.au/departments/media/publications/australian-preliminary-positions-wrc-23-agenda-items>

¹⁹ https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.14-2019-PDF-E.pdf

c) the addition or modification of footnotes is specifically included in the agenda of WRC as a result of the consideration of proposals submitted by one or more interested administration(s);

The ACMA should specifically include a request for the deletion of Australia from Footnote 5.168 in the Agenda of WRC-23. Only the ACMA as the interested administration can request the modification of a footnote to be included in the agenda of a WRC i.e. under Clause 1c) the Amateur Service cannot directly request this correction of Footnote 5.168 to be included in the WRC-23 Agenda.

2 that recommended agendas for future WRCs should include a standing agenda item which would allow for the consideration of proposals by administrations for deletion of country footnotes, or country names in footnotes, if no longer required;

The ACMA should specifically include a request for the deletion of Australia from Footnote 5.168 in the appropriate standing agenda item of WRC-23.

urges administrations

1 to review footnotes periodically and to propose the deletion of their country footnotes or of their country names from footnotes, as appropriate;

The ITU has emphasised that administrations should be actively reviewing country footnotes. There is no indication that the ACMA has undertaken this activity since 2014. The frequency of footnote reviews by the ACMA, or alternatively, when the next review is scheduled has not been included in the consultation paper.

An internal review by the ACMA of Footnote 5.168 could have been completed. If a review of Footnote 5.168 has not been completed it is now appropriate for a review to be completed to enable inclusion in an agenda item for WRC-23.

2 to take account of *further resolves* above in making proposals to WRCs in relation to footnotes or country names in footnotes.

[Annex 1 To Resolution 26 \(Rev.WRC-19\)](#)

Previous WRCs have recognized that the scope of the standing agenda item is only related to requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required.

Taking into account the decisions of WRC-12, WRC-15 and WRC-19 on the same subject, it is suggested that future WRCs may apply a similar approach to previous WRCs.

There appears to be a long history of discussion and WRC decisions on this subject so the ACMA has sufficient notice to prepare for the deletion of Australia from Footnote 5.168 at WRC-23.

Future WRCs may consider the following guidance derived from the above-mentioned decisions.

A) The work of WRC on proposals submitted under the standing agenda item described in *further resolves* 2 of this Resolution may be based on the following:

iii) A deadline may also be established for proposals on the deletion of country names, if appropriate, taking into account that administrations require sufficient time to analyse the proposals.

The ACMA should submit the proposed deletion of Australia from Footnote 5.168 prior to any WRC deadline to ensure consideration of this update at WRC-23.

Administrations are invited to submit their proposals under relevant agenda items.

This is a standing invitation for the ACMA to submit the request for the deletion of Australia from Footnote 5.168 of the ITU Radio Regulations.

If the update of Footnote 5.168 is not going to be included in the Agenda of WRC-23 then the ACMA should provide the reasoning for not performing this update. This would then enable the Amateur Service to address this update through the appropriate ACMA consultation process. The ACMA could then indicate when the deletion of Australia from the Footnote 5.168 could be scheduled.

If the ACMA has made the appropriate preparations for WRC-23 to have Footnote 5.168 of the ITU Radio Regulations updated then there are no reasons not to extend Primary Service user access for both Standard and Advanced amateurs to the 50 – 54 MHz band.

2. What are your views on the proposed policy on call sign transfer?

The current proposal on call sign trades should be rejected. There should not be a general trade in call signs. All qualified individuals should have an equal opportunity to access one (2x1), two (2x2) or three (2x3) letter format call signs that are available or become available for assignment.

The ACMA should explicitly reserve the right to transfer an existing call sign, plus retain the rights to replace, extend, transfer, cancel or withdraw any call sign.

Call Signs of Deceased Amateur Operators

All call signs should be for the life of the operator. By default after death of an amateur operator their call sign is reserved for two (2) years before it is returned to the pool of available addresses for re-allocation. Any time during this two (2) year reservation period their executor can request the transfer of the call sign to a direct family member that is a child, sibling or partner (married or any recognized equivalent status). Alternatively, at any time during the two (2) year reservation period an executor can release the call sign back to the pool of addresses for immediate re-allocation. There would be so few instances per year where a family has a requirement to use this privilege that it would represent a negligible implementation costs. A family should not lose this small privilege to control the transfer of a call sign after death.

Call Signs of Disbanded Clubs and Other Entities

A similar, two (2) year reservation process should exist for disbanded clubs and other entities. A reservation process should be followed for the equivalent case impacting club call signs, club repeaters, club beacons, etc. On the termination of a club or an equivalent entity there should be an option for an official, receiver or appointed administrator of the former club or entity to request a licence transfer to an equivalent club, or entity.

A Ban on Call Sign Trading

Instead of taking the opportunity with the introduction of class licences to simplify the allocation and maintenance of call signs, the ACMA is taking a step backwards by including the unnecessary complexity and complications of call sign trading under a class licence.

Some call signs are more desirable than others and this will vary from person to person. For example, when selecting my call sign I was looking for my initials and selected VK3ZGP. Other Amateurs place a value on 2x2 format call signs. A scarce resource such as 2x2 format call signs can have a Dollar value and that is an invitation to a grey market for trading of call signs. This should be expressly forbidden and prevented by a ban on call sign trading.

All qualified individuals should have an equal opportunity to apply for any one (1), two (2) or three (3) letter call signs (i.e. 2x1, 2x2 or 2x3 formats) when they become available for assignment.

3. Will the proposed 'regular check' – to confirm whether a person is still using their call sign – be a sufficient method of ensuring there are enough call signs (in combination with other factors, for example, the high number of available call signs, deceased amateurs, most amateurs only wishing to hold one call sign)?

One (1) extremely glaring defect in the ACMA documentation and with the current **Exposure Draft Part 1 & 2** response by the Wireless Institute of Australia (as at 15/11/2022) is the concern expressed that there are not enough call signs and that a 'regular check' is required. In the consultation paper the ACMA has not provided any data or modelling to show that there will ever be an insufficient number of call signs.

Possibly due to the demand for 2x2 format call signs in NSW, Queensland and Victoria, the WIA appears to have accepted there are 'not enough' call signs and a 'regular check' is required for all assigned call signs.

The call for a proposed 'regular check' should be rejected. The current proposal by the WIA of a 5 Year limit defeats the purpose of a call sign for life.

Only if demand exceeds supply to the pool of call signs available for assignment will there be any danger of a pool being exhausted. Currently the pool of 2x2 format call signs is a significant issue in NSW, Queensland and Victoria.

If there is no possibility of a pool of unassigned, class licenced, call signs being exhausted such as 2x3 format call signs then the performance of a 'regular check' is a cost that will be borne by all amateurs assigned these call signs for absolutely no useful purpose.

The ACMA has failed to demonstrate that under a class licence with a call sign for life regime that a 'regular check' is required or warranted for all formats of call sign (e.g. 2x1, 2x2 and 2x3). Given the release of class based, amateur licences in the VJ, VK and VL series there should not be any requirement for the performance of a 'regular check'.

Potential Number of 2x1, 2x2 and 2x3 Call Signs

The maximum number of call sign combinations available can be calculated. This count will not take into account the relatively small number of licences that cannot be assigned as they are reserved (e.g. VK3SOS, VK3PAN, etc.), or temporarily unavailable due to the death of an amateur operator, etc.

Permanently assigned call signs for repeaters and beacons are not an issue as they keep their Apparatus Licences assigned call signs and will occupy the same reserved range of call signs after the introduction of Class licences for individuals.

Table 4 – Count of Potential 2x1, 2x2 and 2x3 Call Signs

Licence Format	Licence Count	Examples
2x1	780	VJ0A - VL9Z 3 Series (VJ, VK and VL) of 10 Prefixes for 26 combinations from 26 Letters

Licence Format	Licence Count	Examples
2x2	6760	VK0AA – VK9ZZ 1 series (VK) of 10 Prefixes for 676 Combinations from 26x26 Letters
2x3	175,760	VK0AAA – VK9ZZZ 1 series (VK) of 10 Prefixes for 17,576 Combinations from 26x26x26 Letters
Total	183,300	

As the number of call signs available is over the (10) times the actual number of call signs currently issued there is no possibility that call signs will be exhausted. The ACMA has not released the projected rate of licence demand given the change to a licence for life and the relaxed rules regarding the portability of licences between the States and Territories.

If the VJ and VL series were generally released for the 2x1, 2x2 and 2x3 call sign formats then the total number of licence combinations increases to 548,340²⁰. Given the limited churn for the currently assigned, approximately 15,000 existing Apparatus Licences for individuals then with either combination of 183,300 or 548,340 possible call signs it is extremely unlikely that the call sign pool of available licences could ever be exhausted. Therefore a 'regular check' is an unnecessary addition of red tape and cost to the Amateur Service.

Given the different pressures on the allocation of call signs for the different call sign formats (i.e. 2x2 and 2x3) these will be independently considered.

2x3 Call Signs

There is no point implementing a 'regular check' to confirm a person is still using a 2x3 call sign when the call sign is assigned for the life of the operator. Under the current licence regime where 2x3 licences are limited to the VK series there are 175,760 licence combinations.

Even with the reserved licence combinations subtracted, every existing amateur lived for 100 years and every new amateur operator was to live for 100 years the current call sign pool of licences could never be exhausted in that 100 years. In the unlikely scenario of a massive influx of immigrants instantly doubling the Australian population (i.e. ~30,000 licenced Amateurs) the pool of available call signs would still not be in any danger of being exhausted.

In the unlikely scenario that all possible VK call signs were assigned, the simple solution would be the release of the VJ and VL series for allocation as 2x3 format amateur licences to provide up to 527,280 possible call sign combinations.

With nearly 527,280 possible call sign combinations, even if every amateur has one (1) call sign assigned in each of these three (3) series (VJ, VK and VL) there are enough 2x3 call signs in these three (3) series to satisfy any future needs of Australia for centuries. Any proposed 'regular check' of the 2x3 format call signs is a pointless exercise that just raises costs to the Amateur Service without any real benefit.

²⁰ Total licence combinations = 3x(260+6760+175760)

Under the current Apparatus Licence regime there are in the VK series multiple, duplicated, call signs assigned to multiple licence types. The VK series is not assigned exclusively to the Amateur Service. This list contains a fraction of the actual number of Apparatus Licence call signs issued that duplicate various Amateur Service call signs. It is pointless to list every duplicated Apparatus Licence issued in this series. All that is required is to show that duplication of call signs already occurs.

Table 5 - VK Duplicated Call Signs for the Various Services

Licence/Call Sign	Type	Duplicated Amateur Call Sign
VK2F	Scientific Non-Assigned	
VK3N	Scientific Non-Assigned	Advanced
VK4F	Scientific Non-Assigned	Advanced
VK4S	Scientific Non-Assigned	Advanced
VK4N	Scientific Non-Assigned	Advanced
VK5E	Scientific Non-Assigned	
VK5Q	Scientific Non-Assigned	Advanced
VK6C	Scientific Non-Assigned	
VK6R	Scientific Non-Assigned	
VK7D	Scientific Non-Assigned	
VK7S	Scientific Non-Assigned	
VK7Z	Scientific Non-Assigned	
VK1SJA	Land Mobile	Advanced
VK2HHT	Narrowcasting Service (LPON)	
VK2HHW	Narrowcasting Service (LPON)	
VK2TEL	Point to Point	
VK3TEL	Point to Point	
VK3WBT	Limited Coast Marine Rescue	
VK4CUS	Point to Point	
VK4KGJ	Land Mobile	
VK4SJA	Land Mobile	Advanced
VK4TEL	Point to Point	
VK5SJA	Land Mobile	Advanced
VK5TEL	Point to Point	Advanced
VK6TEL	Point to Point	

As shown in the Table above, there are a number of Apparatus Licence call signs issued by the ACMA that duplicate the format of Amateur Service call signs. There are no restrictions on issuing these duplicated call signs across different Services types as they operate on different frequencies or bands and can never communicate with each other across the different Service types. The secrecy clauses of the ITU Radio Regulations ensure that unlicensed radiocommunications from one Service cannot be utilized by another Service e.g. the Amateur Service.

A high level, overview of the VJ3 series of Apparatus Licenced call signs that duplicate the Amateur Service formats is provide in the following Table.

Table 6 – VJ3 Call Signs Across Various Services

Licence/Call Sign	Type
VJ3T	Scientific Non-assigned
VJ3BX	Land Mobile
VJ3CK	Limited Coast

Licence/Call Sign	Type
VJ3EG	Land Mobile
VJ3FM	Land Mobile
VJ3GC	Aeronautical Assigned
VJ3HA	Land Mobile
VJ3LX	Aeronautical Assigned
VJ3ND	Limited Coast
VJ3OI	Limited Coast
VJ3QA	Land Mobile
VJ3RP	Land Mobile
VJ3SW	Land Mobile
VJ3YE	Scientific Non-assigned
VJ3ZV	Land Mobile
VJ3ZZ	Limited Coast

There is no point extending this list to include any other VJ prefix series as these tables are only to illustrate call sign duplication across Services does not cause the collapse of call sign assignment.

There is one (1) significant advantage of removing Amateur call signs from the ACMA RRL. Future searches of the RRL will in the future will benefit from the elimination of Amateur call signs that duplicate call signs allocated to commercial and other Services.

There was no point assembling a similar list for the VL series as there appeared to be no rhyme or reason for the mixture of thousands of call signs for what appeared to be every possible Service and Sub-service types. It is a pointless exercise to attempt to list all these different Service types as they appeared to cover virtually every possible type of air, land and sea Apparatus licence.

With the removal of Amateur call signs from the ACMA RRL and their transfer to one or more databases exclusively for the Amateur Service there are no remaining restrictions on issuing VJ, VK and VL series Amateur Service call signs.

Under the ITU Radio Regulations, Appendix 42, [Table of International Call Sign Series](#)²¹, the allocation of call signs series listed for Australia does not include the numerical prefixes (0 – 9) required to construct Amateur call signs. For a single, ITU prefix allocation there are 182,780²² possible call sign combinations using the 2x1, 2x2 plus 2x3 call sign formats. The following ITU prefixes are allocated to Australia and the count of the possible Amateur style call signs (2x1 + 2x2 + 2x3 formats) is included:

ITU Allocation	Amateur Call Sign Count
AXA – AXZ	182,780
VHA – VHZ	182,780
VIA – VIZ	182,780
VJA – VJZ	182,780
VKA – VKZ	182,780
VLA – VLZ	182,780
VMA – VMZ	182,780
VNA – VNZ	182,780
VZA – VZZ	182,780

²¹ https://www.itu.int/en/ITU-R/terrestrial/fmd/Pages/call_sign_series.aspx

²² $2 \times 1 + 2 \times 2 + 2 \times 3 = 260 + 6760 + 175760 = 182,780$

ITU Allocation	Amateur Call Sign Count
Total	1,645,020

Duplicate call signs in other Service types already exist. Although there are 1,645,20 possible Amateur call sign combinations under the ITU allocations, it is obvious that there is no requirement to move beyond the current use of VJ, VK and VL series for the Amateur Service.

Amateur Service call signs have already been duplicated in the other Services types. Duplication of call signs has already occurred without any issues i.e. they operate on different frequencies or bands and can never communicate with a duplicated call sign issued in a different Service type.

What all this shows is the duplication of call signs across the various Services is not an issue. None of the duplicated call signs have access to the frequencies or bands used by another Service. Therefore once the Amateur Service call signs are converted to class licence call signs and are stripped from the ACMA RRL there are no reasons preventing the general release of VJ and VL call signs in 2x2 and 2x3 formats.

At this time there are is no point to a 'regular check' of 2x3 format call signs. Unlike Apparatus and Spectrum Licences, under the Act and Regulations there is no time limit on a class licence. Therefore a class licence call sign can be issued for the life of the operator. Once a call sign is assigned there is no requirement for any annual charge or fees. The concept of a class licence (e.g. LIPD, etc.) is there are no annual fees or charges required to be paid by a user operating under a class licence. Therefore class licences for the Amateur Service should not have any annual fees or charges.

The terms of the contract with the AMC is unknown therefore it is not possible to know or estimate the AMC charges or fees to implement a 'regular check'. Given the number of potential call signs available for assignment there should not be any 'regular check', or any charges or fees after the initial allocation of a 2x3 call sign for life.

When call signs are allocated for life there is no need to change the assigned call sign when a licence is upgraded. This change alone will significantly curtail the churn of call signs. Under the old Apparatus Licence system a person graduating from Novice/Foundation to Limited/Standard to Advanced could have required three or more call signs. Under the class system there would only be one (1) call sign required therefore the turnover of call signs has dropped by 1/3.

Now that a call sign does not need to be replaced when relocating interstate this change has removed yet another major reason for call sign churn.

Under these conditions the turnover of call signs will be so low that 2x3 call signs would not need to be returned to the pool of unallocated call signs for an extended period. The WIA proposal of a 5 Year term limitation on 2x3 call signs should be rejected as there is no demonstrated requirement for a 'Ready Check'.

Call Signs Issued For 99 Years

If a class licence for the amateur service is introduced there could be a termination date specified for all call sign assignments set with a term of 99 years. Obviously call signs do become available two (2) years after the death of an Amateur operator.

Currently under the Act and Regulations the maximum term of any Apparatus Licence will be 20 years while a class licence is for an unlimited period. Therefore if the ACMA is going to impose an arbitrary and artificial time limit the absolute minimum term should be 20 years for any call sign associated with a class licence.

Call signs assigned to clubs and other entities could be kept as Apparatus Licences to remain associated with repeater and beacon. Alternatively club call signs could be assigned under a class licence.

Therefore the minimum term requested is 99 years or the life of the call sign holder as the preferred option. Under these conditions the 'regular check' would be performed at 99 years and would not be required to be held any more frequently. The only exception could be 2x1 contest call signs that are discussed below.

2x3 call signs should be allocated for the lessor of the lifetime of an operator or a fixed term of 99 years. Even if the call sign of every deceased operator was not returned to the pool of unallocated call signs there are just so many available that the pool of unallocated call signs could not be exhausted due to any 99 year term limitation.

If the fixed term time limit was 99 years it will ensure all call signs will eventually be returned without a 'ready check'. To spread the termination date of call signs the fixed term time limit could be set to the lessor of the 120th birthday of an existing operator or 99 years. Under these conditions a call sign assignment really would be for life.

Without a 'ready check' there is no requirement for any annual call sign fees or charges. Optional changes of call sign details (e.g. change from a 2x3 to 2x2 format, request for a prefix numeral change, etc.) may still attract a processing charge levied by a call sign registrar.

2x2 Call Signs

Any 'regular check' should be based on demand outstripping supply. For example, currently in some states the demand for 2x2 call signs places a constant pressure on supply. Under the current Apparatus Licence regime if licence renewals are continuously paid these call signs are effectively allocated for the life of the operator. With the introduction of a class licence, call sign for life regime there should not be any change in the effective allocation of the 2x2 call sign for life with the transition from an Apparatus to Class licence.

There are 6,760 possible 2x2 call sign combinations for the VK series. Extending the 2x2 format call signs to the VJ and VL series increases the maximum possible call sign combinations to 20,280. This is significantly higher than the ~15,000 call signs currently assigned. Not every Amateur has an interest in 2x2 format call signs.

There were 2,569 unallocated 2x2 format call signs in the VK series when checked for this submission. The pressure on the allocation of 2x2 format call signs was limited to 3 States. NSW and Victoria had no available call signs while Queensland only had 3 unassigned call signs available for allocation. For all practical purposes Queensland has the same pressure on 2x2 format call signs. Reference is Question 4, Table 7. The inclusion of VJ and VL series triples the potential number of 2x2 call sign combinations and permanently solves the pressure on 2x2 format call signs.

With the removal of Amateur Service call signs under a class licence from the ACMA RRL then duplication of call signs with other Services is not an issue. By removing assignment restrictions there is no requirement for 'regular checks' and all 2x2 call signs can be issued for life or 99 years.

As the VJ, VK and VL series have now been released for the 2x1 call sign format variant these three (3) series should be extended to include the 2x2 format. With a potential call sign pool of triple the number of current 2x2 call signs, the Advanced licence allocation restriction, minimal churn, plus the effective removal of State based prefixes there is no requirement to implement any 'regular check'.

There will be a gradual reduction in the utility of State based call signs prefixes by dilution. This will be inevitable when amateurs keep their call signs after relocating within Australia and External Territories. With the constant movement of Australians in the medium to long term call sign prefixes will lose their State based relationship to such an extent that this facility becomes irrelevant. If VK0, VK1, VK2, VK3, ..., VK9 call signs are all valid and active in every State and Territory (e.g. NSW) then call sign numerical identifiers become irrelevant. Effectively all call signs have now been released for use in any Australian State or Territory and can be assigned to any amateur in any State or Territory.

If somebody would like a 2x2 call sign in Victoria or NSW when none are available all they have to do is move to another State for work or pleasure. While in their accommodation such as a rental or Airbnb they apply for their 2x2 call sign. The [Radiocommunications Licence Conditions \(Amateur Licence\) Determination 2015](#)²³, Part 2 Conditions for every amateur licence, 10 Portable operation of an amateur station, sub-clause (b) specifies a maximum continuous period of operation of four (4) months at another location but does not set a minimum residence period to apply for a transfer of their call sign to another State or Territory.

When a person moves to NSW, Victoria, etc. they can keep their interstate 2x2 licence. Although an initial licence is tied to a residential State it appears there is a loophole that allows access to a 2x2 call sign in some other States without joining a queue of applicants for a 2x2 format call sign. It appears if you can afford or are required to travel interstate there may be options to bypass queues. The AMC Level 2 Callsign Recommendation Form requests a postal address (e.g. P.O. Box) but it doesn't require a station address i.e. a Post Office Box is acceptable. It would appear there is little justification required on the application for an interstate 2x2 licence as a replacement for an existing licence.

The assignment of an unallocated 2x2 call sign from another prefix series is currently possible under an Apparatus Licence therefore the same ability is likely to be possible under a class licence. Basically if somebody can afford the interstate relocation they can afford a 2x2 licence.

Call signs with interstate prefixes cannot be issued directly by the AMC under the current set of rules. Amateurs with enough financial resources could literally buy a 2x2 licence while interstate for a period. Catch is the minimum length of that period is not specified in weeks, days, hours or minutes. While the Amateurs without the financial resources to relocate interstate for a period do not have the same access to a 2x2 call sign. Eventually the mixture of prefixes operating in a State will reach the point where the rules could be updated to allow the AMC to issue any prefix in any State or Territory.

[Consultation paper: Proposed amateur class licence and considerations for higher power operation](#)²⁴

Call sign administration

Table 1: Assignment of call signs

Activity/Issue

Numerical identifiers to indicate state/territory of residence

Current arrangement

²³ <https://www.legislation.gov.au/Details/F2020C00376>

²⁴ Consultation paper:- <https://www.acma.gov.au/sites/default/files/2022-09/Proposed%20amateur%20class%20licence%20and%20higher%20power%20consultation%20paper%201.docx>

The call sign template in the Deed enables call signs to have numerical identifiers that align with the state/territory of residence of the applicant/amateur.

The alignment of the numerical identifier to the State/Territory is 'enabled' but not stated as mandatory.

Applicants could request a call sign that does not align with their state/territory of residence, but would need to justify why such a call sign should be assigned.

The range of acceptable justifications that enables an applicant to request a call sign that does not align with their State/Territory of residence is not defined. Is the fact that there are no 2x2 call signs available in the State of residence a justification for an application of a 2x2 format call sign from a State/Territory with unassigned 2x2 call signs acceptable to the ACMA?

There is no regulatory requirement for amateurs changing their state/territory of residence on a permanent basis to obtain a new call sign with a new numerical identifier.

If there is no regulatory requirement for their numerical State/Territory identifier to align with their State/Territory of residence, what is the ACMA's objection to an Amateur request for an available call sign with a numeric identifier that does not align?

Proposed new Arrangement

No change.

Included in the proposed class licence?

No.

This will be included in the assignment policy published on the ACMA website.

Does the ACMA really intend to keep the ability to submit an application for a call sign that is not aligned to their State/Territory of residence available with class licences? Will the AMCA modify the deed with the AMC to prevent this ability?

[Australian Amateur Callsign policy and procedure](#)²⁵

1. Amateur Callsign Structure

Note: State/Territory indicators (\$) are used to indicate a station's licensed location on initial callsign issue.

It is mandatory for the numeric State/Territory indicator to match the actual station location on initial assignment. Subsequent use of call signs does not require the initial State/Territory numeric indicator of the call sign to match later operations in any other State/Territory.

Given the pressure on 2x2 call signs in NSW, Queensland and Victoria a grey market could be created if call sign trading is permitted. For example, somebody with higher than average mobility such as an interstate driver or grey nomad who does not have a permanent residence could use their ability to apply for 2x2 licences then establish a grey market with the trading of 2x2 call signs between States

²⁵ AMC Amateur call sign policy and procedures document:-
https://www.amc.edu.au/data/assets/pdf_file/0008/1292453/Australian-Amateur-Callsign-Policy-and-Procedures.pdf

for a profit. If call sign trading is legal then what is to stop an Amateur using eBay, Amazon, Gumtree or similar to advertise 2x2 call signs for sale?

The ACMA has to ban call sign trading and address any loopholes in the allocation of 2x2 call signs. Even if call sign trading is banned the interstate transfer of 2x2 call sign could remain. The solution for the 2x2 call sign trading may be as simple as acknowledging the existence of the loophole and permit the AMC to issue any call sign prefix to any State or Territory. This would eliminate the advantages available to the Amateurs who can afford to game the system for 2x2 call signs.

This does have an impact on some Amateur operators as contest rules can rely on the State based prefixes for scoring purposes. Given the current situation where every VK prefix can be validly operated in any and every State and Territory then those contests scoring multipliers that used VK numeric identifies may have to treat all Australian and territory call signs as being the one (1), continent sized, territory i.e. Australian contestants could lose the ability to have their call sign prefixes used as multipliers. Alternative such as Maidenhead Locator, ITU Zones, CQ Zones, etc., would have to be used. This may represent a significant penalty for some amateurs that can never be costed. This is not a trivial consideration when you consider the radiocommunication activity based upon contacts for the 720 contests listed in **Appendix 1 – Contests**.

2x1 Call Signs

2x1 contest call signs have been limited to a one (1) year assignment. There is insufficient demand across Australia to exhaust all 2x1 contest call signs. Refer to the count of unallocated 2x1 call signs in Question 4, Table 7 which demonstrates there were over 300 unallocated 2x1 call signs currently available for assignment. In effect these hundreds of unassigned 2x1 call signs demonstrate supply has exceeded demand. A one (1) year assignment limit on 2x1 contest call signs is too short and just raises maintenance costs for no benefit.

2x1 Call Signs Allocated for a Longer Term

If the one (1) year time limit for 2x1 contest call signs was totally removed and they converted to a contest call sign assignment for life then there would still only be a very small increase in total demand due to the contest use requirement. The vast majority of amateurs who would gain a benefit from the allocation of a second 2x1 format contest call sign will have already taken advantage of this facility. Therefore the one year time limit should be scrapped and the existing call sign assignments extended.

A fixed term of 99 years for such a small pool of addresses is premature given the limited experience with 2x1 contest call signs and the pressure from 2x2 and 2x3 call sign transfers. Therefore a 'regular check' should be introduced only for the 2x1 format.

WIA Exposure Draft

4.0 Call Sign Administration

4.1 Renewal Management of Callsigns

Recommendation 1:

To minimise the cost burden of administration, the WIA encourages ACMA to place the following conditions on the revalidation of callsigns:

A. The responsibility for call sign renewal be placed on the qualified person in circumstances where:

- a. The last time the renewal was made was more than 5 years ago

Five (5) years is too short for the 2x2 and 2x3 call signs as 99 years is more appropriate. If the ACMA is going to introduce an arbitrary and artificial term limit then the current 20 year limit for an Apparatus licence should be applied to class licenced call signs.

2x1 contest call signs should have a five (5) year renewal period as stated in the WIA Exposure Draft

b. The qualification holder has had a change of address

A change of address is not a call sign renewal activity but something that must be a mandatory requirement on all licence holders. The ACMA should explicitly state that it is a mandatory requirement to maintain a current address and this activity should not appear as a secondary activity associated with call sign renewal. A failure to maintain a current station address could include some form of a penalty. It is not an issue where the WIA position is wrong, it is just a case of placing a greater emphasis on this activity by the ACMA.

B. The call sign entity be required to provide an online portal that a qualified person can use to update their contact details and confirm their use of the callsign at a period of their choosing, but at no less than 5 year intervals.

Five (5) years to generally too short and there should be a longer period such as 20 or 99 years except for 2x1 format call signs where five (5) years is the appropriate period. The online portal should be though the existing myGov portal.

C. The call sign entity is responsible for managing the renewal process and to maintain a private register of contact details for the person to whom each callsign is allocated and their associated qualification.

The renewal process should be limited to the 2x1 format call signs

The privacy of those contact details would need to be maintained, although there may be value in allowing them to be accessed by various branches of law enforcement.

The privacy consent and level of that consent by the call sign holder or guardian should also be recorded in the database. Refer to Question 6 for the Privacy Act discussion in this submission for details and recommendations. The default position is the contact details are private but consent can be given to permit various levels of information release.

At a minimum the call sign and qualification of the holder should be public information released under the Commonwealth's data.gov.au²⁶, [Creative Commons Attribution 3.0 Australian Licence](https://creativecommons.org/licenses/by/3.0/au/)²⁷. Although a call sign under some circumstances may be considered personal information there is nothing that personally identifies the person holding the call sign. Therefore the release of the call sign alone should not trigger a Privacy Act issue.

Consent for the publication of the operator's name should be recorded then the person's call sign, qualifications and name should available to be published in an annual call book

Consent for the publication of the operator's postal address should be recorded then the person's call sign, qualifications, name and postal address should be available to be published in an annual call book.

²⁶ Australian Government, data.gov.au home page:- <https://data.gov.au/>

²⁷ Australian Government, Terms of Use, Copyright:- <https://creativecommons.org/licenses/by/3.0/au/>

Given the sensitivity of the information being stored, the online system should capture and validate the format of the supplied information but it should not be possible to access the backend database from the internet. The priority in the system architecture and design should be to prevent details being exposed to the internet.

This online system should be linked through the Australian Government's [myGov](#)²⁸ portal. As entities such as Medicare, Australian Taxation Office, etc., using the myGov portal need to know if a person is dead or alive there may be an option to receive a notification of the death of a person through their status on the myGov portal. It would have the advantage of linking a licence and call sign to a secure, confirmed account for a person.

The AMC should be able to produce a CEPT Licence document equivalent to New Zealand's Radio Operators Certificate of Competency from the details required to be stored for each call sign holder:

- Height
- Complexion
- Colour of Eyes
- Colour of Hair
- Date of Birth
- Place of Birth
- Country of Birth
- Address
- Passport standard Photograph

If the AMC is unable to produce the required CEPT Licence then the ACMA must provide this service. Therefore the ACMA should be explicitly allowed to access all call sign holder details as well as the "various branches of law enforcement" implied by the WIA draft.

Given the heightened level of cyber threats to Australian online systems and the personal information stored it is appropriate for the ACMA to seek assistance from the security agencies within the Commonwealth Government. Advice should be sought on system architecture, hardening of the networks, the personal information required to be stored, the length of time personal information should be retained, development environments and quality assurance testing, storage and backup requirements, attack mitigation, incident reporting, etc. [Information Technology Infrastructure Library](#) (ITIL) qualified professionals to drive Problem Management and Change Management functions, service level requirements, etc.

If the AMC is required to implement, manage and maintain a complex online database system to support the Amateur Service then the Amateur Service is going to have to pay to support AMC costs.

D. The call sign entity to be authorised by ACMA to use the contact details provided, solely for the purpose of providing a callsign revalidation reminder notice (preferably by electronic means).

WIA Recommendation 1D. should be rejected. A level of privacy consent should be recorded for each call sign and the AMC should publish those details permitted by the appropriate supplied consent or if appropriate implied consent. For example a call sign holder could consent to their postal or station address being published in the public domain so that it could be released to be published in a call book

²⁸ <https://my.gov.au/>

of Amateur operators under the Commonwealth's data.gov.au²⁹, [Creative Commons Attribution 3.0 Australian Licence](https://creativecommons.org/licenses/by/3.0/au/)³⁰.

E. Call signs that are not revalidated after 5 years, including a 3-month renewal reminder period, to be flagged as dormant.

Only 2x1 call signs should have to be revalidated after five (5) years and a three (3) month renewal reminder period is appropriate only for the 2x1 call signs. All other call signs should have a term of 99 years.

F. Dormant callsign allocations that are not revalidated after a further 5 years to be automatically released back to the call sign pool.

A 2x1 contest call sign is not issued for life. If there is a failure to revalidate then a further five (5) years is too long a holding period. For the 2x1 call signs there should not be a holding period. Any and all holding periods that have to be implemented should be equivalent to the two (2) year holding period for the call sign of a deceased amateur is more appropriate.

G. This same portal could be used, when additional evidence is provided (e.g. death certificate provided by an executor or next of kin), to quarantine callsigns of deceased operators

As discussed above, the first preference is access through the myGov portal, the second preference is an AMC maintained portal.

Contest Only Use Requirement

If the contest only use requirement was removed with the conversion to a lifetime assignment of 2x1 call signs then demand will trigger a wave of requests for transfers from existing 2x2 and 2x3 call signs to 2x1 call signs. There are only 780 possible call sign combinations, therefore the contest only use limitation must remain. The 2x1 contest call signs are the only format that may benefit from some form of 'regular check' but that should be on the basis of contest performance.

With over 300 unassigned 2x1 format calls signs a shortage does not exist if the numerical identifier does not align with the State/Territory of residence. Under a relaxed regime of numeric identifiers a shortage of 2x1 call signs has not been demonstrated by the ACMA. The period a 2x1 format call sign is assigned should be extended longer than one (1) year. There are a number of options by extending to five (5), ten (10), 20 or 99 years. Obviously the default position will include a life of the amateur test. An initial 5 years period is the absolute minimum period acceptable, there is a preference for ten (10) or 20 years as the default period.

Test of Active Contest Participation

Under the current contest call sign assignment regime the proof of contest participation is so weak as to be meaningless. To give one (1) example, a Digital mode contest restricted to the FT8 digital mode was held in the 3rd week of October 2022.

*YBDXPI FT8 Contest*³¹

Date

YBDXPI FT8 Contest would be held on October, 22nd 2022; 00:00 UTC – October, 23rd 2022; 23:59 UTC. (3rd week October)

²⁹ Australian Government, data.gov.au home page:- <https://data.gov.au/>

³⁰ Australian Government, Terms of Use, Copyright:- <https://creativecommons.org/licenses/by/3.0/au/>

³¹ YBDXPI contest rules:- <https://contest.ybdxpi.net/rules/>

Objective

For amateurs around the world to contact as many other amateurs in as many Maidenhead Grid Fields as possible using the FT8 modes.

Band

All Amateur Radio Band from 160m – 10m Excluding WARC.

Mode

Mode in use only FT8.

FT8 recommended sub-bands:

- 1.844-1.848
- 3.590-3.600
- 7.090-7.100
- 14.090-14.100
- 21.090-21.100
- 28.090-28.100

Contest Exchange

4-character Grid Square.

Scoring

The final score is the sum of QSO points across all bands multiplied by multiplier across all bands. Every station can only have 1 QSO on each band with the same station;

For DX Station:

- QSO with same country, 0 point, but still can get a multiplier
- QSO with different country, 1 point
- QSO with Indonesian Station, 2 point
- QSO with YBDXPI member, 5 point regardless his country

All Australian stations would have been classified as DX stations. In effect any FT8 contacts in this period on any of the listed HF bands would qualify as a contest contact i.e. under these contest conditions any FT8 contact would be legitimately claimed as a Contest Contact with impunity. Therefore free use of the 2x1 call sign has been granted.

For this contest, I did not log any calls during this contest period. I effectively 'heard' an initial CQ from YB1KEL (Maidenhead OI33) but they did not return my call but exchanged reports with JF2OHQ. As I could not complete an exchange with an Indonesian station I continued to monitor the output of the WSJT-X v2.5.4 application for Indonesian stations until the end of the contest period. If I had worked any Indonesian station during the contest period I would have felt justified in working any and all other stations using the FT8 mode. I only briefly 'heard' the one (1) Indonesian station during the period I was operating. Therefore the most significant issues preventing my participation was the lack of an Indonesian station worked.

Hand on heart, I can state I participated in a contest using my 2x1 call sign even if there was no result recorded. Contest participation can also include submitting check logs and then there is no contest score recorded or reported. Trivial errors can also result in no contest score. For example, log errors such as a Daylight Saving offset conversion error instead of the correct UTC times can result in no contest result. There can be multiple reason when there may be nothing published for 2x1 contest activity.

Admittedly I face significant problems for HF operations with limitations due to power transmission lines as well as power line noise. My 'backyard' has 2x 500kV plus 2x 220kV transmission lines occupying a transmission line easement over 90% of my land area. The distance from my house to the transmission line easement is measured in centimetres. The location and height of surrounding structures and trees are added complications. There are antenna restrictions due to the existence and orientation of this power line easement, and don't talk to me about power line noise.

This was not the first contest where I failed to make even one (1) contact over many hours when one (1) or more bands were open. Admittedly I hear more call signs than can hear me so the option of higher power could significantly assist.

For that weekend my 2x1 call sign was used for FT8 contesting. In theory I could have used my 2x1 call sign to contact any station using the FT8 mode. A 2x1 call sign contest requirement is pointless if the call sign can be effectively used without limitation. This was just one (1) contest using one (1) mode as an example. Other contests may implement similar conditions that allow unrestricted contacts using other modes e.g. CW, SSB, etc.

Following on from the failure to make a contest exchange using a digital weak signal mode it should come as no surprise that I failed to make a single contact when I attempted to participate in the next major contest, the [CQ Worldwide DX Contest, SSB](#)³² held 00:00 UTC, October 29th, 2022 to 23:59 UTC, Oct 30th 2022. Admittedly one of the reasons I requested VK3Z is related to the transmission lines at my QTH, I typically have about the lowest Australian score in contests i.e. I would be last.

Minimum Requirement for Contest Activity

Given the miserable contest performance results this year it begs the question, what is the minimum performance level required to keep a 2x1 contest call sign?

There is no meaningful, measurable, minimum contest participation requirements for the allocation or renewal of 2x1 contest call signs. Renewal of my 2x1 call sign was based on naming one (1) contest where the 2x1 call sign would be used. In my case I unfortunately nominated a contest in which I participated but failed to make even one (1) contest contact.

In practice there appears to be no minimum contest, performance requirements for 2x1 call signs and effectively in practice the contest condition requirement of the call sign assignment has been overridden. To justify the allocation of 2x1 contest call signs there should be a published list of major qualifying contests and some minimum performance requirements such as the number of Cabrillo format logs to be submitted to the AMC to justify continued allocation of a 2x1 call sign. Given my contest performance so far it is hard to see how my use of a 2x1 call sign can be justified if all 2x1 call signs for Victoria have been assigned.

As discussed above, what is the minimum acceptable performance level required to keep a 2x1 contest call sign?

Appendix 1 – Contests contains a table of 720 contests for the 2022 – 2023 period. With entries for contests that run over days there would be on average more than two (2) contests per day for every day of the year. Obviously this table will contain many contest of little or no interest to Australian operators. Given the portability of CEPT licences, Australian amateurs will be operating in many countries around the globe and it is not possible to know in advance their contest activity, therefore difficult to determine all of the 720 entries that have no validity.

³² Contest rules:- <https://www.cqww.com/rules.htm>

Nevertheless it should be possible to provide a list of contests that validate the contest requirements for the AMC to renew an allocation of a 2x1 call sign. Submission of Cabrillo format logs to the AMC could provide confirmation of performance. The AMC would not be required to analyse the log results, just acknowledge receipt. If logs from other contests are submitted then those contests should be added to a list of temporarily validated contests. If there are enough logs submitted over some years for a temporarily validated contest then that contest should be added to the permanent contest list.

The ACMA should adopt a longer allocation period for 2x1 contest call signs. The absolute minimum fixed term should be five (5) with other options considered such as 10, or even 20 years which is equivalent to the maximum possible term for an Apparatus Licence.

[‘Regular Checks’ Not Required – 2x2 & 2x3 Formats](#)

With the release of the VJ, VK and VL series for the amateur service there is no foreseeable exhaustion of 2x3 format call signs and no requirement for a ‘regular check’ of these 2x3 call signs. To expand the availability of 2x2 call signs both the 2x2 and 2x3 formats should be extended to the VJ and VL series.

[‘Regular Checks’ Required – 2x1 Format](#)

The current contest use restrictions on 2x1 call signs should be tightened. If there is a failure to tighten the contest requirements to keep a 2x1 call sign then just remove the contest requirements in their entirety. There is a demonstrated demand for 2x1 call signs but under the present one (1) year call sign assignment rules supply exceeds demand. Under these circumstances the assignment period needs to be extended. Under any of these conditions a ‘regular check’ of 2x1 format call signs is required.

[Amateur Service Reviews](#)

A future review of the operation of the Amateur Service should include call signs as there would be further experience to inform the appropriate licence and call sign rules, etc. If appropriate, the ACMA may be able to extend the period a 2x1 call sign is allocated or even remove the current time limit.

Removal of the contest use limitation to simplify 2x1 call sign maintenance activities and eliminate their associated costs may be an option. Currently this simplification would provide minimal benefit and the pressure on 2x1 format call signs would be extremely high.

The ACMA should publish a commitment to a timetable or specify a sunset clause to trigger a future review by the ACMA. There would be cost savings and reduced red tape by eliminating all the requirements for a ‘regular check’. Once class licence call signs are allocated the ACMA sees no requirement for them to be tracked in the Register of Radiocommunication Licences. The operation of call sign database(s) should be subject of a review.

[Summary](#)

The ACMA consultation document stated:

Applicants could request a call sign that does not align with their state/territory of residence, but would need to justify why such a call sign should be assigned.

This breaks the linkage between call sign prefix and State. The ACMA needs to clarify if this change of the call sign allocation rules permit 2x2 call signs to be move/relocated to the States where all 2x2 call signs have been assigned.

There is no regulatory requirement for amateurs changing their state/territory of residence on a permanent basis to obtain a new call sign with a new numerical identifier.

Effectively VJ0 to VL9 call signs have been released for use in any Australian State or external territory and can be assigned to any amateur in any State or territory. Justification for use of a call sign that does not align with their state/territory of residence could be simply justified on the lack of availability of a call sign with the preferred numerical identifier. The assignment of an unallocated call sign from another prefix series is theoretically possible therefore the same ability should be possible under a class licence. By removing these assignment restrictions there is no requirement for 'regular checks' and all 2x1 call signs can be assigned for five (5) years.

By eliminating the overhead of 'regular checks' there are no maintenance costs required therefore no need for renewal costs. There would still be a requirement for processing costs for the initial assignment of a call sign plus any optional changes or modifications to a call sign's registration details. When implementing call signs (e.g. 2x3 format) assigned for life they should have a maximum term of 99 years. The allocation of 2x2 format call signs should be extended to the VJ and VL series and have their maximum term set to 99 years.

Under the Act and Regulations for an apparatus or spectrum licence there are fixed, maximum term limits. Under the Act and Regulations there is no specified time limit for Class Licences. Therefore when issuing a call sign under a Class Licence there is no requirements to collect annual licence taxes, etc. Under the Act Class Licences do not have a term limit and the ACMA proposal of an artificial 'regular check' is not provided under the Act.

Given the ACMA does not require call signs to be tracked in their database there does not appear to be any impediment to assigning a call sign for life without any requirement for renewal or maintenance costs. Unfortunately the 2x1 contest call signs are the exception.

Call Sign Prefix Portability Solution

The current ability for call sign prefix portability does have a significant impact on Amateur Service radiocommunication activity. The ability to operate in any State or Territory with any call sign prefix impacts Amateur Service Contests. Refer to **Appendix 1 – Contests** which indicates on average there are 2 or more contests per day for every day of the year. This demonstrates they form a significant activity worldwide for the Amateur Service.

Contests can rely on prefixes being related to a fixed area such as a State/Territory. Therefore call sign prefix portability is a major concern and there will be requests to return to a process of call sign prefixes tied to a specific State or Territory.

Given the introduction of class licences there is an option to overhaul call sign prefixes to totally eliminate any call sign portability issues. Introduce a new call sign allocation process based on the VJ or VL series. A newly licenced operator would be issued a call sign from a series starting for example at VJ-AAA i.e. a numeric prefix is not allocated. The next person would be allocated VJ-AAB and so forth. An operator would then use whatever was the appropriate State or Territory prefix numeral.

For example a Victorian resident would use the call sign VJ3AAA. If they visited NSW their call sign would be VJ2/VJ3AAA with their option to use the call sign VJ2AAA. If they permanently relocated their residence to NSW they would have the option to use the call sign VJ2AAA. Therefore a person could relocate to any state or Territory and there would be no requirement to apply for a new call sign and no duplication of call signs under any circumstances. The current relationship between numerical identifier and locality would not be broken by portability.

Existing call signs in the VK series could be kept but no new licences in the VK series would be allocated. Existing licence holders could have the option to enter a lottery for their existing call sign in the new

series if there was a duplication of call signs across the States/Territories or just remain using their VK call sign.

Station Address Records

There should be a requirement for Amateurs to update a record of their station address in a designated database so that the ACMA can contact an operator if and when required. For example a station address would be required for the investigation of interference reports. Designated database(s) could be maintained by a call sign registrar or others.

Unfortunately a voluntary system could be treated as optional and invites failures to perform station address updates in a timely manner. There can be no guarantee a database maintained outside of Australia by a foreign entity will maintain an appropriate level of security or there won't be future attempts to monetize the use of the platform by membership costs, or charges to suppress annoying advertisements, etc. There are no performance guarantees and no oversight by Australian authorities. If people suspect the level of security is too low they may refuse to perform updates.

At the present time there are two organizations representing amateurs in Australia and a database maintained by only one of these entities may encounter resistance by some members of the other organization. If voluntary databases are envisaged then operation of a joint Australian database may be the appropriate option.

People refuse to access untrusted systems. For example, I only left a placeholder account on Facebook when I stopped using that platform. While the RRL maintained by the ACMA may be trusted, a move to an untrusted platform invites failure. 'Regular Checks' may not be required but an accurate record of station addresses needs to be maintained on an appropriate platform for the ACMA's management of the Amateur Service.

4. What are the benefits or disadvantages of our proposal not to limit the number of call signs that may be assigned to a person?

The current proposal on an unlimited number of call signs to be allocated to a person as proposed by the ACMA should be rejected.

The current proposal adds unnecessary red tape and complications to call sign allocations. With a move to a class licence for life model there should be a limit of two call signs per person per call sign registrar where a second call sign must be a 2x1 format, contest call sign. Note the addition of a “per registrar” condition to be discussed below.

While preparing this document the following call signs appeared to be available for allocation.

Table 7 - Unallocated Call Signs

	VJ (2x1)	VK (2x1)	VL (2x1)	VK (2x2)
Australian Capital Territory	6	19	20	488
New South Wales	4	1	6	0
Northern Territory	16	25	26	600
Queensland	0	1	15	3
South Australia	0	13	16	237
Tasmania	0	21	25	421
Victoria	0	0	0	0
Western Australia	0	13	20	173
Australian External Territories	26	25	16	647
Total Free	52	118	143	2,569

Please note, these statistics were collected approximately one (1) month apart and were only valid at the time they were collected. Although there should not have been any significant or dramatic changes over this period.

It is difficult to determine the exact number of 2x1 call signs in use. For example, the [current list](#)³³ of assigned call signs does not include VJ3M, VJ3S, VK3B, VK3D, VK3G, VK3I, VK3L, VK3T, VL3B, VL3C, VL3H, VL3P, VL3U, VL3W, VL3Z but at the same time there are no available 2x1 call signs listed for Victoria. There would appear to have been approximately 313 unallocated and available 2x1 contest call signs, plus an unknown number not in use but also not available for allocation.

When checked there were 2,569 unallocated 2x2 call signs. Only in NSW, Queensland and Victoria was the pool of 2x1 contest call signs basically exhausted. Given the lack of 2x1 call sign take up then having

³³ List dated 14/11/2022:- https://www.amc.edu.au/data/assets/pdf_file/0003/1549821/2x1-callsign-register-14-november-2022.pdf

2x1 call signs allocated for only one year appears to be inappropriate and wasteful. The current 2x1 contest call sign allocation rules appear to require review.

The failure to assign hundreds of 2x1 call signs is a waste of call signs that should have a higher value in the Amateur Service. Therefore the 2x1 call signs could be converted to permanent call signs based on a call sign for life model³⁴. If a call sign for life is not acceptable then the absolute minimum term should be five (5) years, preferably longer. Refer to the Question 1 - 3 answers for further details and recommendations.

Existing call sign holders with more than 2 call signs should be given the choice between their 2x1 and 2x2 or 2x3 call signs. If multiple call sign registrars are engaged then holders of 2x1 call signs in the VJ and VL series should have the option to keep two existing call signs then apply the per registrar rule. Refer to the discussion below regarding multiple call sign registrars.

ITU [Radio Regulations Articles 2020](#)³⁵

Article 19 - Identification of stations

Section II – Allocation of international series and assignment of call signs

- (a) § 11A 1) For the purpose of the supply of identification signals, a territory or geographical area shall be understood to mean the territory within the limits of which the station is located. For mobile stations, it shall be understood to mean the territory within the limits of which the responsible administration is located. A territory which does not have full responsibility for its international relations shall also be considered as a geographical area for this purpose.

Prior to federation Australian States did have full responsibility for their international relations (e.g. the Victorian Navy was independent from NSW) and were considered as independent geographical areas. ITU Radio Regulations require that call sign assignments provide the identification of a territory or geographical area.

19.67 Amateur and experimental stations

19.68 § 30 1)

- one character (provided that it is the letter B, F, G, I, K, M, N, R or W) and a single digit (other than 0 or 1), followed by a group of not more than four characters, the last of which shall be a letter, or
- two characters and a single digit (other than 0 or 1), followed by a group of not more than four characters, the last of which shall be a letter.⁵ (WRC-03)

19.69 2) However, the prohibition of the use of the digits 0 and 1 does not apply to amateur stations.

The current implementation of call sign portability effectively changes the ITU region/territory definition for Australia from a series of States and External Territories into Australia plus the External Territories as a single, region/territory for call sign assignments. If this ITU territory change removes the State level ITU region/territory coding in call signs then Victorian amateurs could easily be issued any available 2x1 call signs from the pool of unallocated call signs.

³⁴ It should be noted that I currently hold a 2x1 call sign so there is a conflict of interest.

³⁵ ITU Radio Regulations downloads:- <https://www.itu.int/pub/R-REG-RR-2020>

Given the release of these 2x1 series (VJ, VK, VL) for the amateur service it is appropriate to consider releasing two letter call signs in these new series with all allocated on a permanent basis. A ballot of the 2x1 call signs could be held. Once those 2x1 call signs have been allocated then perform a ballot of the 2x2 call signs. Admittedly this call sign conversions would have to be on the basis of full cost recovery given the AMC workload.

Each ballot for 2x1 and 2x2 call signs would be resolved in phases with the initial phase of the ballots would be for existing 2x1 call sign holders followed by a ballot of other Advanced licenced amateurs. Then ballots for 2x3 call signs would be held for Standard finally followed by Foundation Licence holders. Allow one (1) month for submitting applications for each phase via online, email or a hardcopy preference application so that nobody is disadvantaged. Perform a random draw and each person is allocated a call sign from their submitted preference list. Nobody is forced to change their existing, allocated call sign.

Increasing the Number of Call Sign Registrars

With the general release of the new VJ and VL series it is appropriate to consider increasing the number ACMA Registrars performing the task of call sign allocation in line with the ACMA administered Registered Cabler scheme. Open up the process to registrar competition to ensure amateurs have a choice and a monopoly is not created or maintained. This would encourage competition on cost and performance. Certainly a number of organizations are capable of performing this role and the release of three (3) call sign blocks (VJ, VK and VL) would neatly fit three registers. Registrars could be allocated in the following ranges.

- Registrar #1:- VJ0A – VJ9ZZZ
- Registrar #2:- VK0A – VK9ZZZ
- Registrar #3:- VL0A – VL9ZZZ

Each registrar could be responsible for maintaining their own online database or a combined online database could be maintained.

Alternatively, an even more radical solution would be to engage up to 10 registrars that could be allocated a VK number series so that all new licences would be allocated from their series starting with VJ(n)A to VL(n)ZZZ depending on the number of registrars. Each registrar would be responsible for maintenance of their VJ, VK and VL prefix number series in a shared online database.

As in the Registered Cabler scheme a person could hold one (1) independent registration with one or more registrars.

Once the initial allocation of call signs has been completed the priority order for processing of applications would be Advanced, Standard then Foundation.

This has the advantage of simplifying the allocation of call signs by eliminating the cost of the yearly workload handling the renewal of 2x1 call signs. Plus once the initial churn of call signs has completed this has the advantage that basically everybody has equal access to any eligible 2x3 call sign. While Advanced Licenced amateurs basically have equal access to any eligible 2x1 and 2x2 call signs.

Under a class licence system with call signs issued for life that is based upon:

- AMC remains the only registrar,
- No changes to current fee schedule,
- Change of all format call signs (i.e. 2x1, 2x2 plus 2x3) to an allocation for life i.e. no annual renewal fees,

Under these conditions the yearly income stream for the current registrar (AMC) would basically consist of the limited number of new licences, the limited turnover of 2x1 and 2x2 call signs, etc. That is the income stream for the AMC would for all practical purpose be zero (\$0). While if the 2x1 call sign holders were required to renew call signs every five (5) years then they would effectively be required to cross-subsidise the operation of the AMC for all other amateurs. If the income for the AMC is basically limited to once every five year the intermittent income will be extremely stressful on the organization. If the number of 2x1 call signs issued falls then the annual income stream for the AMC decreases and the renewal costs of 2x1 call signs has to increase to cover AMC costs. Increased 2x1 call sign renewal costs will increase the downward pressure on the number of 2x1 call signs.

Under these conditions the annual income stream for the AMC plummets to virtually zero. The ACMA consultation documentation does not discuss in detail the current and future AMC cost recovery or proposed fee schedules. What is the plan if the AMC cannot recover costs under the new class licence structure? What if the AMC increases costs in response, or withdraws from the contract due to these material changes in the amateur licence scheme, or the AMC lets their existing contract lapse?

By creating a monopoly registrar the ACMA proposal does not provide any business case modelling to show how there is any benefit from the creation of a new monopoly in the form of the contract with the AMC. Nor does the ACMA provide any business case modelling to show the financial impact or risks associated with the proposed changes from an apparatus licence to a class licence scheme.

By appointing only one (1) registrar it creates a monopoly with no competition on costs, performance, etc. An amateur should only hold one (1) main call sign issued by one (1) registrar in a similar fashion to the ACMA's Registered Cabler scheme. The number of call signs assigned is then determined by the number of registrars. Each registrar only has to track one (1) person and their one (1) main call sign and possibly one (1) contest call sign.

5. Do you have any concerns with the other proposed call sign management arrangements? If so, what are they?

The change from an Apparatus Licence to a Class Licence for management of call signs is currently unworkable and should not be implemented as currently proposed by the ACMA.

[Radiocommunications Act 1992](#)³⁶

Compilation No. 76, 1st September 2021

Chapter 3—Licensing of radiocommunications

Part 3.3—Apparatus licences

Division 1—Kinds of apparatus licences

97 Transmitter licences and receiver licences

(2) A transmitter licence authorises:

- (a) the person specified in the licence as the licensee; and
- (b) subject to Division 4, any person authorised by that person under section 114;

to operate:

- (c) specified radiocommunications transmitters; or
- (d) radiocommunications transmitters of a specified kind; or
- (e) if neither paragraph (c) nor (d) applies—

radiocommunications transmitters of any kind.

An Apparatus Licence under this clause may permit an Amateur Operator to operate a radiocommunications transmitter under one (1) of the three (3) detailed descriptions. The sub-clause 97(2)(e) includes a catch all description of “transmitter of any kind”. Currently in the amateur service are transmitters, transceivers, amplifiers, etc., that have been home-built, assembled from kits and commercial purchases. The consultation paper discusses EMC and EME requirements but didn’t address the implications for non-commercial equipment, equipment imported for modification for the Amateur Service, etc.

In the consultation paper the ACMA stated in Section 3 regarding Class licensing arrangements and other regulatory matters:

[Application of radiocommunications standards to amateur equipment](#)

The equipment rules applying to radiocommunications equipment are made under section 156 of the Act. Section 158 of the Act provides that the equipment rules may prescribe standards for equipment. The ACMA has made the [Radiocommunications Equipment \(General\) Rules 2021](#)³⁷ (the Equipment Rules), which include standards for equipment.

The standards prescribed in the Equipment Rules fall into 3 broad categories:

- general standards – standards made under the Act, which are intended to apply to specific types of equipment (for example, UHF CB radios, or Satellite Distress Beacons)
- the electromagnetic compatibility (EMC) standard – that is, the Radiocommunications (Electromagnetic Compatibility) Standard 2017

³⁶ <https://www.legislation.gov.au/Details/C2021C00462>

³⁷ <https://www.legislation.gov.au/Details/F2021C01207>

- the EME standard – that is, the requirements set out in Schedule 4 to the Equipment Rules.

Proposed arrangements

There are no general standards specific to devices used for amateur services only.

The EMC standard applies to a device that is manufactured in, or imported into, Australia for supply unless the device is mentioned in Schedule 2 to the Radiocommunications (Electromagnetic Compatibility) Labelling Notice 2017 (the Labelling Notice). Devices used to provide amateur services are unlikely to be exempt from the Labelling Notice (see Schedule 2 to the Labelling Notice). Accordingly, such devices need to comply with a standard in the list of ACMA-mandated EMC standards (Mandated EMC standards). For amateur stations that are manufactured in, or imported into, Australia for supply, Part 1 of the list of Mandated EMC standards applies.

As stated by the ACMA there are no general standards specific for the amateur services. The ACMA appears to have made a statement regarding EMC standards that appears to be in error:

Devices used to provide amateur services are unlikely to be exempt from the Labelling Notice (see Schedule 2 to the Labelling Notice).

It would appear a significant number of devices used in the amateur service are exempt from the Labelling Notice.

Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2017³⁸

made under subsection 182 of the Radiocommunications Act 1992
Compilation No. 1, 17th November 2021

Note: Even where this Notice does not apply to a device, section 197 of the Act will still prohibit the user of a device from knowingly or recklessly causing substantial interference to radiocommunications.

Part 1—Preliminary

1.1 Name of Notice

This is the Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2017.

6 Authority

This Notice is made under section 182 of the Act.

Part 2—Application of Notice

2.2 Devices to which this Notice does not apply—general

This Notice does not apply to a device that is mentioned in Schedule 2.

Schedule 2—Devices to which this Notice does not apply

3 A device that is a prototype.

By definition a one off device such as a transmitter in the amateur service for research and development is a prototype and not required to be labelled for Electromagnetic Compatibility. A device such as a transmitter that has been constructed of parts for research and development in the

³⁸ <https://www.legislation.gov.au/Details/F2021C01287>

amateur service and not manufactured for sale to another person is a prototype and not required to be labelled for Electromagnetic compatibility. Therefore devices that have been constructed exclusively for the amateur service are generally exempt from EMC standards. What is the status of prototype devices constructed from a kit of parts? What is the status of prototype devices constructed from assemblies as opposed to those construction from individual parts?

There are no definitions under the Radiocommunications Act for a prototype. Definitions are given in dictionaries and the following are extracts:

Definitions of 'Prototype'

Collins dictionary

1. COUNTABLE NOUN

A prototype is a new type of machine or device which is not yet ready to be made in large numbers and sold.

He built a prototype of a machine called the wave rotor.

...the first prototype aircraft.

Synonyms: original, model, precedent, first

2. COUNTABLE NOUN

If you say that someone or something is a prototype of a type of person or thing, you mean that they are the first or most typical one of that type.

He was the prototype of the elder statesman.

Prototype in British English

NOUN

1. one of the first units manufactured of a product, which is tested so that the design can be changed if necessary before the product is manufactured commercially
2. a person or thing that serves as an example of a type

Oxford Advanced Learner's Dictionary

prototype (for/of something) the first design of something from which other forms are copied or developed

- *the prototype of the modern bicycle*
- *Scientists have developed a working prototype for the machine.*

Commonwealth Legislation does not appear to provide a definition of **Prototype**. Although the production of prototypes is an activity defined under the definition of **Research and Development**.

[Commonwealth Procurement Rules](#)³⁹

14 December 2020

ISBN: 978-1-925537-45-1

³⁹ <https://www.finance.gov.au/sites/default/files/2020-12/Commonwealth%20Procurement%20Rules%20-%202014%20December%202020.pdf>

Appendix B: Definitions

The following definitions apply for the purposes of these CPRs:

Research and development – research is described as systematic enquiry or investigation into a subject in order to discover facts or principles. Research includes surveys, market research, scientific research and educational research. Development applies to the function of creating/producing new and improved products, devices, processes or services. Development also extends to design, proof of concept and the production of prototypes.

Therefore under the Commonwealth Procurement Rules the production of prototypes is defined as a research and development activity. Components, kits and most assemblies do not generally have to comply with EMC standards or have any form of EMC label.

It would appear mass produced devices such as transceivers that have been manufactured for supply to amateurs would generally be required to be tested and have an EMC label before sale. This certification for the Australian market has the potential to increase costs of new equipment but the ACMA consultation does not state what the potential financial impact will be on the Amateur Service if any.

It would appear a device such as a transceiver that is modified exclusively for the amateur service by an individual amateur for their own use for radiocommunications research has created a prototype that is exempt from EMC labels. At what point do modifications produce a prototype?

For example, what is required if EMC and/or EME labels are affixed to the case or chassis then all components and assemblies are stripped from the chassis or case then used to construct multiple prototype devices? What determines if any of these prototype devices may or may not require the original EMC and/or EME labels? What determines which if any prototypes require new labels? Who can legally affix labels? Does this activity need to be documented, if so, how?

At the other extreme if all the components are stripped from a chassis or case which has EMC and/or EME labels and the components are used to construct a prototype device with identical functionality exclusively for the Amateur Service in a new chassis, must the labels from the original chassis or case be transferred to the new chassis? Do labels need to be affixed? Who can legally affix the original EMC and/or EME labels onto the new chassis or case? Who can legally affix new labels and under what conditions to the prototype device? Does this activity need to be documented, if so, how?

Radiocommunications (Compliance Labelling – Devices) Notice 2014⁴⁰

made under subsection 182(1) of the Radiocommunications Act 1992

Compilation No. 6, 17th November 2021

Part 1 Preliminary

4 Definitions

1 In this Notice:

applicable standard, for a device, means a standard prescribed by equipment rules mentioned in Schedule 2 that apply to the device.

For the Amateur Service there are no applicable standards in Schedule 2.

⁴⁰ <https://www.legislation.gov.au/Details/F2021C01208>

Class Licence means the Radiocommunications (Low Interference Potential Devices) Class Licence 2015 as in force from time to time.

Note 1: The Radiocommunications (Low Interference Potential Devices) Class Licence 2015 is registered on the Federal Register of Legislation kept under the Legislation Act 2003. See www.legislation.gov.au.

Note 2: For incorporation of an instrument as in force from time to time, see subsection 314A(2) of the Act.

By definition an Amateur Service class licence is out of scope of this Act.

5 Application

- (1) Subject to subsections (2) and (3), this Notice applies to a device that:
- (a) is manufactured in or imported into Australia for supply; and
 - (b) is a device to which an applicable standard applies.

There are no applicable standards for the Amateur Service.

7 Relationship between this Notice and instruments made under section 182 of the Act

If a device to which this Notice applies is also a device to which another notice made under section 182 of the Act applies, the requirements in this Notice are additional to the requirements under that notice.

Note: An effect of section 7 is that a compliance mark can only be applied to a device if it complies with the requirements of this Notice and any other notice made under section 182 of the Act.

Schedule 2 Applicable standards and compliance levels

(subsection 4(1), definition of applicable standard; subsection 12(1))

Table 8 - Applicable Standards for Compliance Labelling

Item	Applicable standard	Compliance Level
1	<i>Radiocommunications (Devices Used in the Inshore Boating Radio Services Band) Standard 2017</i>	2
2	<i>Radiocommunications (HF CB and Handphone Equipment) Standard 2017</i>	2
4	<i>Radiocommunications (118MHz to 137MHz Amplitude Modulated Equipment—Aeronautical Radio Service) Standard 2012</i>	2
5	<i>Radiocommunications (MF and HF Radiotelephone Equipment—International Maritime Mobile Service) Standard 2014</i>	2
6	<i>Radiocommunications (Paging Service Equipment) Standard 2014</i>	2
7	<i>Radiocommunications (121.5 MHz and 243.0 MHz Emergency Position Indicating Radio Beacons) Standard 2014</i>	2
8	<i>Radiocommunications (MF and HF Equipment—Land Mobile Service) Standard 2014</i>	2
10	<i>Radiocommunications (Short Range Devices) Standard 2014</i>	1
11	<i>Radiocommunications (UHF CB Radio Equipment) Standard 2011 (No. 1)</i>	2
12	<i>Radiocommunications (VHF Radiotelephone Equipment—Maritime Mobile Service) Standard 2018</i>	2
13	<i>Radiocommunications (Analogue Speech (Angle Modulated) Equipment) Standard 2014</i>	2

14	<i>Radiocommunications (406 MHz Satellite Distress Beacons) Standard 2014</i>	2
15	<i>Radiocommunications (Digital Cordless Communications Devices—DECT Devices) Standard 2017</i>	2
16	<i>Radiocommunications (Intelligent Transport Systems) Standard 2018</i>	1

By definition none of the standards listed in this schedule apply to the Amateur Service. Some standard give the appearance of possibly applying to the Amateur Service but under those standards the Amateur Service is out of scope, for example:

- Radiocommunications (MF and HF Equipment—Land Mobile Service) Standard 2014. By definition a Land Mobile Licence for the Land Mobile Service utilizing Land Mobile Frequencies does not permit operation on Amateur Frequencies. By Definition an Amateur Licence for the Amateur Service utilizing Amateur Band Frequencies does not permit operation on Land Mobile Frequencies. Equipment standards for operation on Land Mobile Frequencies do not appear applicable to the Amateur Service. For example, as well as different frequencies in use, the radiated power and the bandwidth of transmissions utilized may differ from Land Mobile Standards.
- Radiocommunications (Analogue Speech (Angle Modulated) Equipment) Standard 2014. By definition of the associated Australian/New Zealand Standard the Amateur Bands are out of scope.

A compliance mark can only be applied to a device if it complies with the requirements of this Notice. As there may be no applicable standards under this notice a compliance mark cannot be applied. The ACMA needs to clarify under what conditions Compliance Marks and Compliance Notices are required on Amateur Service devices.

By definition there are no amateur radio general rules and EMC rules have restricted applicability for the amateur service.

[Radiocommunications Labelling \(Electromagnetic Compatibility\) Notice 2017⁴¹](#)

Made under subsection 182 of the Radiocommunications Act 1992

Compilation No. 1, 17th November 2021

Part 4—Prohibitions and obligations relating to EME standard

20 Prohibition – causing emissions and the EME standard

- (1) A person must not, for the purposes of or in connection with radiocommunications, cause a radio emission to be made by a radiocommunications transmitter that does not comply with the EME standard.
- (3) Subsection (1) does not apply if an exemption applies.

21 Prohibition – possession and the EME standard

- (1) A person must not possess a device that does not comply with the EME standard, if the possession is for the purpose of operation.
- (6) Subsection (1) does not apply if an exemption applies.

22 Prohibition – supply and the EME standard

- (1) A person must not supply a device that does not comply with the EME standard.
- (4) Subsection (1) does not apply if an exemption applies.

⁴¹ <https://www.legislation.gov.au/Details/F2021C01287>

Part 8—Exemptions

47 Object of this Part

(1) The object of this Part is to provide for exemptions to do an act otherwise prohibited by equipment rules, or not to comply with an obligation that is otherwise required by equipment rules.

51 Exemption – supply for modification

A person does not contravene a prohibition in Part 2, Part 3 or Part 4 of this instrument that relates to supply of a device if the supply was for the purpose of modifying or altering the device so that the device would comply with all standards applicable to it at the time of the alteration or modification.

An amateur purchasing non-compliant equipment for modification for an amateur licenced station appears to have an unlimited right under this exemption if there are no applicable Standards.

53 Exemption – persons acting in relation to particular devices exempt from prohibitions in Part 4

A person does not contravene a prohibition in Part 4 of this instrument that relates to:

- (a) causing radio emission to be made by a device; or
- (b) possession of a device for the purpose of operation; or
- (c) supply of a device;

if the device is:

- (h) used by a body that:
 - (i) is not mentioned in paragraph (f) or (g); and
 - (ii) performs functions related to the investigation, prevention and prosecution of serious crime, or of corruption (whether or not the body also performs other functions); and
 - (iii) is covered by a written determination made by the ACMA under paragraph 27(1)(be) of the Act;solely for the investigation, prevention and prosecution activities of that body;
or
- (i) a fire fighting, civil defence or rescue organisation; or
- (j) an ambulance service; or
- (k) any other organisation whose sole or principal purpose involves securing the safety of persons during an emergency.

It would appear under Clause 53(k) devices used by organisations such as the Wireless Institute Civil Emergency Network (WICEN) may be exempt from EME standards.

WICEN Australia

WICEN consists of a number of state or territory based volunteer emergency communications service organisations whose members are primarily licensed amateur radio operators. Members are accredited to assist in emergency situations and are able to provide emergency and safety communications for other agencies when conventional communications networks fail or are inadequate. Emergency radio networks can be assembled quickly, taking advantage of both amateur radio frequencies and services and licenced non-amateur frequency allocations.

Each WICEN entity operates independently under appropriate local, state, or other disaster plans.

Key objectives of WICEN are to provide:

- communications support for emergency services operating in areas where infrastructure has failed or in remote areas where there is no suitable communications infrastructure
- communications support for community and charitable events needing communications networks beyond regular mobile phone services
- operators for emergency operations centres

WICEN members undertake additional formal training, supplementing the knowledge required to hold an amateur radio licence from the Australian Communications and Media Authority.

[Wireless Institute of Australia Submission to the Productivity Commission Review of the RadioCommunications Acts and the role of the Australian Communications Authority, 12 October 2001](#)⁴²

3.1 Wireless Institute Civil Emergency Network (WICEN)

WICEN has been specifically included in various State and Regional Disaster plans to undertake specific tasks. WICEN has in the past been involved in a number of emergency situations including the Darwin Cyclone, the Newcastle earthquake, a number of major bush fires including Ash Wednesday in 1983, as well as flood related incidents.

Is the equipment of members of volunteer emergency services such as a State Emergency Service (SES) or similar organizations exempt from this equipment standard? The ACMA should refer to the [Ofcom](#)⁴³ documentation for suggested wording for [emergency operation EME guidance](#)⁴⁴.

The proposal by the ACMA lacks clarity on the application of EMC and EME exemptions, regulations and equipment standards for devices in the amateur service.

[Recommendation ITU-R M.1043-2](#)⁴⁵

Scope

This Recommendation encourages administrations to facilitate the amateur and amateur-satellite services to include developing operator skills, training of technicians, and deployment of amateur stations in rural areas and in emergency situations. It encourages the use of volunteers and to accommodate the particular needs of developing countries.

Recommends

1. that administrations encourage and facilitate the amateur and amateur-satellite services to:
 - 1.1 develop radio operator skills;
 - 1.2 train engineers and technicians to design, construct and maintain radio equipment and systems;

⁴² <https://www.pc.gov.au/inquiries/completed/radiocommunication/submissions/sub015/sub015.pdf>

⁴³ <https://www.ofcom.org.uk/>

⁴⁴ Ofcom guidance on EMF compliance and enforcement:-
<https://www.ofcom.org.uk/spectrum/emf/compliance-and-enforcement-guidance>

⁴⁵ <https://www.itu.int/rec/R-REC-M.1043-2-200306-I/en>

The ITU Recommendation explicitly states “to design, construct and maintain radio equipment”. Radio equipment and prototypes constructed by an amateur cannot have a type approval.

Common text books for Amateurs such as the [Radio Society of Great Britain](#)⁴⁶ (RSGB) [Radio Communication Handbook](#)⁴⁷, [Design Ideas for Radio Amateurs](#)⁴⁸, the [American Radio Relay League](#)⁴⁹ (ARRL) [ARRL The ARRL Handbook of Radio Communications](#)⁵⁰, magazines such [QEX: A Forum for Communications Experimenters](#)⁵¹ or [AR Magazine](#)⁵² can all include design articles. All contain design ideas for transmitters specifically for the Amateur Service. With an Apparatus Licence construction and modification of transmitters is permitted. Under class licences there needs to be clarification of equipment regulations, exemptions, etc.

[Radiocommunications Act 1992](#)⁵³

Compilation No. 76, 1st September 2021

Part 3.4—Class licences

Division 1—General

132 ACMA may issue class licences

- (1) The ACMA may, by legislative instrument, issue class licences.

Note: For variation and revocation, see subsection 33(3) of the Acts Interpretation Act 1901.

- (2) A class licence authorises any person:
 - (a) to operate a radiocommunications device of a specified kind; or
 - (b) to operate a radiocommunications device for a specified purpose; or
 - (c) to operate a radiocommunications device of a specified kind for a specified purpose.
- (3) Operation of a radiocommunications device is not authorised by a class licence if it is not in accordance with the conditions of the licence.

Prototypes do appear to be authorized as the class licence appears to generally authorize operation of any device under 132(2)(b) and that would include home-built, assembled kits and modified devices from other classes of service, etc., without necessarily requiring compliance labels.

Electromagnetic Energy (EME) compliance is another problematic area of concern.

⁴⁶ <https://rsgb.org/>

⁴⁷ <https://www.rsgbshop.org/acatalog/RSGB-Radio-Communication-Handbook-Hardback-edition-1870.html#SID=6>

⁴⁸ <https://www.rsgbshop.org/acatalog/Design-Ideas-for-Radio-Amateurs-1804.html#SID=6>

⁴⁹ <https://www.arrl.org/>

⁵⁰ <https://home.arrl.org/action/Store/Product-Details/productId/2003373095>

⁵¹ <https://home.arrl.org/action/Store/Product-Details/productId/113926>

⁵² <https://www.wia.org.au/members/armag/about/>

⁵³ <https://www.legislation.gov.au/Details/C2021C00462>

Recommendation ITU-R SM.326-7

Determination and Measurement of the Power of Amplitude-Modulated Transmitters

Annex 1 – Conversion factors between the peak envelope power (P_X or p_X), the *mean power* (P_Y or p_Y) and *carrier power* (P_Z or p_Z) of a radio transmitter

1 Conversion factors with respect to the peak envelop power

1.1 Table 1 gives the conversion factors applicable when the peak envelope power is taken as unity.

1.2 Column 5 gives the theoretical values of the mean power which would be obtained, with linear transmitters for amplitude modulation. In practice, the imperfect linearity of the transmitter and other causes may increase the mean power above the figures shown in Table 1.

1.3 As the conversion factors depend on the modulating signal, one or more examples described in column 2 have been chosen to enable representative values for the factors in column 5 to be determined.

1.4 Similarly, column 4 gives the theoretical carrier power in the specific conditions of no-modulation described in column 3, and chosen so as to make that carrier power easily measurable.

1.5 Unless otherwise specified, the expression “sinusoidal oscillation” in this Recommendation means an “audio-frequency periodic sinusoidal oscillation”.

Table 1

Class of emission (1)	Modulating signal (2)	Condition of no-modulation (3)	Conversion factor	
			Carrier power	Mean power
			Peak envelope power (4)	Peak envelope power (5)
Amplitude-modulation double-sideband A1A, A1B Telegraphy without modulation by a periodic oscillation	Series of rectangular dots; equal alternating marks and spaces; no emission during space periods (Note 1)	Continuous emission	1	0.500 (–3.0 dB) (Note 1)
A3E Double-sideband telephony, full carrier (see Table 2)	a) single sinusoidal oscillation modulating the carrier at 100% b) smoothly read text (Note 2)	Carrier only Carrier only	0.250 (–6.0 dB) 0.250 (–6.0 dB)	0.375 (–4.3 dB) 0.262 (–5.8 dB)
Amplitude-modulation television C3F Television, vestigial sideband, picture only	a) <i>All white</i> – 625 lines, 50 fields, negative modulation b) <i>All black</i> – 625 lines, 50 fields, negative modulation	(Note 4) (Note 4)		0.177 (–7.5dB) 0.542 (–2.7 dB)
J3E Single-sideband telephony, suppressed carrier	a) two sinusoidal oscillations modulating transmitter to peak envelope power b) smoothly read text (Note 2)	Suppressed carrier Suppressed carrier	< 0.0001 (< –40 dB) < 0.0001 (< –40 dB)	0.500 (–3.0 dB) 0.100 (–10 dB)

Class of emission (1)	Modulating signal (2)	Condition of no-modulation (3)	Conversion factor	
			Carrier power	Mean power
			Peak envelope power (4)	Peak envelope power (5)
R3E Single-sideband telephony, reduced carrier	a) two sinusoidal oscillations modulating transmitter to peak envelope power	Reduced carrier only	0.025 (-16.0 dB)	0.379 (-4.2 dB)
			0.0025 -26 dB)	0.454 (-3.4 dB)
	b) smoothly read text (Note 2)	Reduced carrier only	0.025 (-16.0 dB)	0.096 (-10.2 dB)
			0.0025	0.093
			-26 dB)	(-10.3)

C3F amplitude-modulation TV is only included here as the Draft references that emission type. The Amateur Service in Victoria utilize Digital TV standards for Standard and Advanced amateurs.

Various conversion factors will be applied in the EME calculations by calculators such as the one supplied by the ARRL and RSGB where it will be called the Mode factor (RSGB) or Mode Duty Cycle (ARRL).

Table 9 - Suggested Modulation Mode Factors / Mode Duty Cycle

Mode	ITU	RSGB	ARRL
Analog TV (ITU C3F)	-2.7 dB to -7.5 dB	-2.3 dB	100%
CW (ITU A1A)	-3.1 dB	-4.0 dB	40%
DMR 1 slot		-3.4 dB	100%
DMR both slots		-0.4 dB	100%
FT8/FT4		-3.8 dB	100%
JT65		-4.1 dB	100%
SSB (J3E)	-10.0 dB	-7.0 dB	20%
SSB Processed		-3.0 dB	50%
Other WSJT sub-modes		-4.0 dB	100%

2 Conversion factors with respect to the carrier power

2.1 Table 2 gives the conversion factors applicable when the carrier power is taken as the unit, as is the common practice at least for the two classes of amplitude-modulated emissions A2A, A2B and A3E.

2.2 Column 5 gives the theoretical mean power obtained with the modulating signals described in column 2, with practically linear transmitters. The conversion factors shown are the quotients of the corresponding factors in columns 5 and 4 of Table 1.

2.3 Similarly, column 4 gives the theoretical peak envelope power. The conversion factors shown are the reciprocals of the corresponding factors in column 4 of Table 1.

2.4 Column 3 gives the conditions of no-modulation from which the carrier power chosen as the unit can be determined and measured.

Table 2

Class of emission	Modulating signal	Condition of no-modulation	Conversion factor	
			Peak envelope power	Mean power
			Carrier power	Carrier power (5)
(1)	(2)	(3)	(4)	
A3E Double-sideband telephony, full carrier	a) single sinusoidal oscillation modulating the carrier at 100%	Carrier only	0.250 (−6.0 dB)	0.375 (−4.3 dB)
	b) smoothly read text (Note 2)	Carrier only	0.250 (−6.0 dB)	0.262 (−5.8 dB)

3 Explanatory notes

NOTE 1 – When the modulating signal, instead of consisting of a series of alternating marks and spaces, is coded with the help of a telegraph alphabet, the conversion factors in column 5 should be multiplied by the following coefficients:

- Morse alphabet: $0.49/0.50 = 0.98$ (−0.1 dB).
- International telegraph alphabet No. 2: $0.58/0.50 = 1.16$ (+0.6 dB).
- Seven-unit alphabet as in Recommendation ITU-R F.342: $0.5/0.5 = 1$.

NOTE 2 – It is assumed that for smoothly read text the mean power level of the speech signal is 10 dB lower than the power level of a reference sinusoidal oscillation. The conversion factors in column 5 are based on this ratio which can be considered as a practical value for telephony except for sound transmissions in the broadcasting service.

For the classes of emission to which this note applies, the reference level of this sinusoidal oscillation is determined as follows:

- A3E, H3E and R3E emissions: the level of a sinusoidal oscillation which would modulate the transmitter to a modulation factor of 100%;
- single-channel R3E and J3E emissions: the level of a sinusoidal oscillation which would modulate the transmitter to its peak envelope power;
- multi-channel R3E, B8E and J3E emissions: the level of a sinusoidal oscillation which would modulate the transmitter to one quarter (−6 dB) of its peak envelope power.

Although these assumptions do not in all cases correspond to the practice adopted by some administrations, they result in practical average values in column 5.

NOTE 4 – The condition of no-modulation cannot be defined exactly because of the highly complex and asymmetric nature of the modulation; the figures given in column 5 are average figures which may vary according to the tolerance in width of the synchronizing pulses and of the black level.

This was to illustrate that

Draft Radiocommunications (Amateur Stations) Class Licence 2022⁵⁴

Schedule 1—Conditions about electromagnetic energy

1 Interpretation

Far field, of an antenna, means the region from the antenna that is beyond the larger of:

- (a) $2D^2/\lambda$;
- (b) 0.5λ ;
- (c) Where:
- (d) λ is the wavelength of the radiofrequency field produced by a transmission using the antenna; and
- (e) D is the maximum lineal dimension of the antenna.

A lineal dimension is a measurement of the horizontal or vertical dimension. Lineal dimensions may not represent the true distance between beginning and end dimension points because they do not take into account angles away from the horizontal or vertical into account.

AS/NZS 2772.2 notes D is the largest linear dimension across the effective aperture of the antenna. A common approximation for D is to use the largest linear dimension of the radiating antenna.

Only for distances beyond $r = D^2/\lambda$ does the radiated phase front from an aperture antenna begin to become spherical. For most purposes the far-field of antenna arrays or an aperture antenna⁵⁵ is defined as occurring at distances r such that $r > 2D^2/\lambda$

While AS/NZS 2772.2 defines the far-field as $r > 2D^2/\lambda + \lambda/4$

The obvious question is what is meant by an aperture antenna. This could include a skeleton slot, various horns and dishes.

⁵⁴ Draft Class Licence:- <https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20%28Amateur%20Stations%29%20Class%20Licence%202022.docx>

⁵⁵ Equation 3.3.18 :- https://ocw.mit.edu/courses/6-661-receivers-antennas-and-signals-spring-2003/10025a78ab17e1e0866126246b751d11_ch3new.pdf



For a long-wire the maximum linear dimension is the length of the antenna. For a 40m long-wire antenna radiating a frequency in the 10m band the calculated radiating far-field distance using the draft formula is 320m⁵⁶. Refer to Appendix 2 Compliance Calculations, Long-Wire Antennas for other lengths of Long-Wire antennas and far-field distances for various Amateur bands.

A 40m Long-Wire antenna with a calculated 'far-field' distance of 320m can include multiple neighbouring properties inside the far-field where the Draft states for a Low Risk Station a measurement is required in the far-field.

IEEE Standard C95.3 (2021)

Annex A (informative)

A.5 Source-environment plane

A.5.2 Distance from the source

c. *Far-field* region:

...

Although the transition from the non-radiating near-field region is a gradual one, the far-field region is commonly understood to begin at a distance of about $2a^2/\lambda$ for antennas with equiphase excitation and extends to infinity (a is the largest linear dimension of the source and λ is the wavelength at the frequency of interest). This criterion is not adequate for all types of antennas and should not be applied indiscriminately.

The Draft needs to correct the definition and formula for the calculation of *far-field* as antennas in the Amateur Service can start as simple as End-Fed or Long-Wire through simple to complex, experimental

⁵⁶Distance = $2 * (40)^2/10 = 2 * (40 * 40)/10 = 2 * 1600/10 = 3200/10 = 320m$

designs. This is especially true for the case of variants of End-Fed and Long-Wire antennas are common, low cost, entry level designs implemented in the Amateur Service.

When the requirement to measure in the 'far-field' is calculated as greater than 2.13km or 355.6λ for the 6m band then the formulae in the Draft and AS/NZS 2772.2 is not adequate. Refer to Appendix 2 Compliance Calculations, 40m & 80m Long-Wire section for further details. Therefore the Draft text and formula needs revision.

The WIA has suggested high power operation which is covered by the Draft, Section **4 Condition – measurements or calculations of electromagnetic energy – higher risk stations** should be confined to rural and low density areas. For a staged rollout of a high power upgrade there needs to be an assessment of a station with a relatively low antenna such as a long-wire antenna in suburbia for example may also have to comply with the higher risk station requirements.

Reference levels has the meaning given by sections 2 and 3 of the APANSA standard.

The *reference level* definition requires compliance to the APANSA standard which requires compliance down to 100 kHz.

2 Condition – compliance with electromagnetic energy standard

Condition – general case

- (1) A person must not operate an amateur station if the radiofrequency field produced by the station exceeds the reference level for general public exposure at a place accessible to a member of the general public.

In the Draft by definition the *reference level* is a direct reference to the APANSA standard that specifies compliance down to 100 kHz.

Measuring compliance with the condition

- (2) For the purposes of subclauses 3(3), 3(4) and 4(3):
 - (a) if the station operates on a frequency in the frequency band 10 MHz to 30 MHz, only one of the following properties needs to be measured or calculated to show compliance with subclause (1) at places in the far field of the antenna:
 - (i) incident electric field strength;
 - (ii) incident magnetic field strength;

The lower limit of 10 MHz appears to make no logical sense given there are multiple Amateur bands below 10MHz. An Amateur approaching the issue of compliance is going to expect the Draft to be explicit down to 100kHz as the APANSA standard requires compliance down to 100 kHz.

The far field distance was calculated as 320m for a 40m long-wire on the 10m band. The WIA proposal that a rural setting implies the nearest neighbour are more than 50 – 100m away is not necessarily true as houses have tended to be built near fence lines to maximize usable land area.

4 Condition – measurements or calculations of electromagnetic energy – higher risk stations

General requirement to measure or calculate radiofrequency fields

- (2) Subject to subclauses (4), (6), (7) and (8), a person must not operate an amateur station unless the person has measured or calculated the radiofrequency fields produced by the station in accordance with one or more of the following:

- (a) if AS/NZS 2772.2 applies in relation to the station – [AS/NZS 2772.2](#)⁵⁷;

The Standard is [AS/NZS 2772.2:2016](#) incorporating the 2018 update [AS/NZS 2772.2:2016 Amd 1:2018](#)⁵⁸

It is extremely unlikely that the average amateur will be capable of complying with AS/NZS 2772.2 as required by the Draft. For example this Standard has as a starting point competency requirements for the assessor.

AS/NZS 2772.2

Radiofrequency fields Part 2: Principles and methods of measurement and computation – 3 kHz to 300 GHz

Section 3 General Assessment Processes

3.2 Assessor Competency

The level of understanding necessary depends on the detail of the assessment performed. Generally, a higher level of mathematical and physical understanding would be required for a computational assessment than for a measurement. A higher level of relevant practical experience and familiarity with the source of the RF fields would be required for a near-field hazard assessment than for an environmental measurement at a distance.

Given the limitations of suburban installations it is likely that the amateur performing measurements is working in the near-field as the far-field may be on a neighbours property.

If the assessment is performed by a team, no single individual need have all the necessary skills. For example, the uncertainty analysis may be performed by someone with the necessary mathematical understanding not held by other members of the team.

In order that an assessment can be performed in accordance with this Standard, there shall exist appropriate records of educational qualifications, training, experience and other competencies to be able to demonstrate that the people involved are able to perform and understand the necessary processes.

Therefore my educational qualifications: I left school to do a five (5) year apprenticeship as a 15 year old at the end of Year 10. I vaguely remember quadratic equations from High School. On that basis it probably means a record of my educational qualifications is not going to be appropriate to demonstrate the ability to perform and understand the necessary process such as AS/NZS 2772.2, **Appendix D – Uncertainty Estimates**. For the ACMA will it be sufficient to record an Advanced amateur call sign to demonstrate educational qualifications, training, experience and other competencies require to complete a high risk assessment?

It is extremely unlikely that the average amateur working by themselves has an understanding of the uncertainty estimate and the conditions under which it may be applied.

- (b) if C95.3 applies in relation to the station – [C95.3](#)⁵⁹;
- (c) if IEC 62232 applies in relation to the station – [IEC 62232](#)⁶⁰;

⁵⁷ <https://store.standards.org.au/product/as-nzs-2772-2-2016>

⁵⁸ <https://store.standards.org.au/product/as-nzs-2772-2-2016-amd-1-2018>

⁵⁹ <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9444273>

⁶⁰ <https://store.standards.org.au/product/iec-62232-2022>

The Standard is [IEC 62232:2022](#) with an associated Technical Report of case studies supporting IEC 62232.

- (d) if IEC 62577 applies in relation to the station – [IEC 62577](#)⁶¹.

The Standard is [IEC 62577:2009](#)

The use of the words “in accordance with one or more” in regard to standards is too vague. It will require an Amateur Operator to engage professionals to ensure compliance with every standard even when this is an unnecessary expense to duplicate the compliance tasks required to satisfy all standards. The consultation documents are silent on the compliance costs for high power operation that will be in addition to the cost of Scientific Licences.

Measurements and calculations before 1 March 2003

Measurements and calculations on or after 1 March 2003 and before commencement of instrument

Both these sections should be deleted. Any measurements or calculations before February 2021 should be considered obsolete and not valid as they cannot be assumed to meet the requirements of the current APANSA and other relevant, updated standards. All measurements and calculations should be repeated to meet current standards.

The conditions in both these sections may be appropriate to commercial installations where commercial considerations have ensured access controls and/or distance (e.g. rural or non-residential installations) from the general public. It can be assumed that the existing access controls for commercial installations ensures that the general public are not endangered by obsolete standards, or improved knowledge of risks.

Measurements and calculations before relevant document amended

Measurements and calculations after relevant document amended

The ACMA should directly advise every member of the amateur service by mail/email whenever a standard is revised so that amateurs can update their documentation, measurements and/or their calculations. The ACMA is responsible for regulating RF fields for consumer radiocommunications devices. To make sure RF exposure is kept low, the ACMA applies the ARPANSA RF exposure limits contained in the appropriate Standards.

The ACMA is not an expert body on the possible health effects of human exposure to RF and is not responsible for investigating possible health effects. Therefore the ACMA should not be taking decisions to ignore possible health effects impacting the general public. When a Standard is updated with improved knowledge of risks and/or risk management the ACMA should ensure that the Amateur Service is appropriately advised of a requirement to update their station risk management documentation by updating appropriate measurements and/or performing new or additional calculations. A notice on the ACMA website or publication of a notice in a gazette or the media is not appropriate if the issue could affect the general public's health or the changes alter the risk of RF exposure to the health of the general public.

Therefore it is not appropriate to accept any measurements and/or calculations that are not based on current Standards.

⁶¹ <https://store.standards.org.au/product/iec-62577-2009>

5 Compliance with the condition in subclause 2(1) – change to station

- (1) If an amateur station in relation to which clause 3 applies is changed so that the clause no longer applies in relation to it, clause 4 applies in relation to the station from the time the change occurs.

There should be a subclause that if an amateur station is modified such that clause 3 applies and clause 4 no longer applies then clause 3 and its requirements will apply. At the present time there is a one way transition to clause 4 but no explicit return to clause 3.

6 Condition – record-keeping

- (2) A person must not operate an amateur station unless the person has in their possession the following records:

- (a) a declaration, made by the person, for the station that includes the information mentioned in subclause (3);

The ACMA has not provided a sample of the form or wording for an acceptable statement. Would a scrawl on a soggy beer coaster satisfy the requirements of this subclause? What forms or format of computer files are an acceptable record of a declaration? Must the declaration be witnessed? Is a Justice of the Peace or similar required to witness the declaration?

- (c) a statement that the operation of the station complies with subclause 2(1);
and

The ACMA has not provided a sample of the form or wording for an acceptable declaration. Would a scrawl on a soggy beer coaster satisfy the requirements of this subclause? What forms or format of computer files are an acceptable record of a statement?

- (f) the details of the station, including its power level, gain, size, tilt, manufacturer, model number and emission mode.

This appears to be a cut and paste from the requirements of a commercial service such as a mobile carrier, etc. There should be a details of all possible emission modes (e.g. CW, SSB, SSB heavily compressed, digital modes, FM, etc.) so that all appropriate measurements and/or calculations will be performed to satisfy compliance requirements. The gain of an antenna can be frequency dependent but nowhere is there a requirement to state frequency of operation. For example the gain of a long wire antenna at 1.8 MHz will be less than at 7 MHz which will be less than at 28 MHz and 50 MHz therefore compliance calculations should be performed for all bands of operation.

- (3) For the purposes of paragraph (2)(a), the information is:

- (b) details of the station, including its location, antenna type and height above the ground or other accessible surface;

For locations in residential localities (i.e. not rural), will the location recorded as a suburban, residential street address satisfy the location requirements? Should the location of trees, houses, other structures on the property plus neighbouring properties be recorded? Is a map required? What forms or format of computer files are acceptable records?

- (4) If a matter included in a declaration made for the purposes of paragraph (2)(a) changes or becomes incorrect, a new declaration must be made.

When must a new declaration be made, for example, is a new declaration required before operation or within 3 months of the implementation of a change?

(5) For the purposes of subclause (2), a record:

(c) may be a copy of an original document;

Does this have to be a true copy certified by a Justice of the Peace, etc., or can it just be a photocopy, or a scan recorded in an electronic form. What forms or format of computer files are acceptable records?

(d) may be kept in electronic form.

What forms or format of computer files are acceptable records? Is it OK to hand over or submit encrypted files or an obscure format that the ACMA will not be able to read? Is it just a requirement of subclause 5 that the original text is in English and anything is acceptable as the electronic form? For example records could be stored in electronic form on an 'Exatron Stringy Floppy'⁶², but this data could never be read or accessed by the ACMA. If ACMA or other regulatory officers attend a base station what facilities must be provided to permit access to records held in an electronic form? What documentation is required to be carried for mobile or portable operation?

What happens if there is an equipment failure and the electronic form is lost? What penalties will apply if the records cannot be accessed? Typical amateur operators are unlikely to have a secure, off site backup arranged. A [Redundant Array of Independent Disks](#)⁶³ (RAID) is not a backup and [Network-Attached Storage](#)⁶⁴ (NAS) is not a secure backup. Will the ACMA provide secure off site storage for all amateur operator electronic forms?

[Australian Radiation Protection and Nuclear Safety Agency](#)⁶⁵ (ARPANSA)

The draft refers to the standard published by APANSA. The following are some extracts for comment and these extracts do not include any of the exposure values which will be accepted without comment.

[Standard for Limiting Exposure to Radiofrequency Fields – 100 kHz to 300 GHz](#)⁶⁶

Radiation Protection Series S-1, February 2021

Foreword

This Standard for Limiting Exposure to Radiofrequency Fields – 100 kHz to 300 GHz (hereafter referred to as 'the Standard') sets limits for human exposure to radiofrequency (RF) electromagnetic fields in the frequency range 100 kHz to 300 GHz. The Standard includes:

- Mandatory basic restrictions for both occupational and general public exposure involving all or part of the human body.
- Corresponding reference levels for measurable quantities derived from the basic restrictions.
- Approaches for verification of compliance with the Standard.
- Requirements for management of risk in occupational exposure and measures for protection of the general public.

This Standard is based on the 2020 guidelines of the International Commission on Non-ionizing Radiation Protection (ICNIRP) for RF electromagnetic fields. ICNIRP is the peak

⁶² https://en.wikipedia.org/wiki/Exatron_Stringy_Floppy

⁶³ <https://en.wikipedia.org/wiki/RAID>

⁶⁴ https://en.wikipedia.org/wiki/Network-attached_storage

⁶⁵ ARPANSA home page:- <https://www.arpansa.gov.au/>

⁶⁶ https://www.arpansa.gov.au/sites/default/files/rps_s-1.pdf

international body developing and disseminating science-based advice on health protection in relation to exposure to non-ionising radiation and is recognised by the World Health Organization for its independence and expertise in this area. The ICNIRP guidelines reflect international best practice on what constitutes a high level of protection for all people against substantiated adverse health effects from exposures to both short- and long-term, continuous and discontinuous RF fields. Further, the principles for protection against adverse health effects of exposure to RF fields in this Standard are based on the ICNIRP Principles for Non-ionising Radiation Protection, published in 2020.

The Draft specifies a lower limit of 10 MHz but the APANSA standard enforces compliance down to 100 kHz.

It is recognised that the Standard does not operate in isolation from the legal framework within Australia. Relevant Australian occupational, health, safety, and environmental laws provide obligations on employers, and the designers, manufacturers and suppliers of plant or equipment, to ensure that their activities, or their plant and equipment, do not represent a risk to the health and safety of their employees or third parties who may be affected by them. In effect, such laws require relevant parties to continually assess and improve the safety and health impact of their activities.

The ACMA is not an expert body on the possible health effects of human exposure to RF and is not responsible for investigating possible health effects. In the Draft the ACMA is taking this responsibility as mobile stations do not have to comply with the antenna and documentation requirements of a base station. The listed IEC Standards referenced are applicable to base stations and handheld devices but not mobile installations. The APANSA Standard considers vehicles as an environmental issue that prevents type test results being applicable and that leaves measurement as the only option for compliance. The ACMA consultation documents are silent on the impact of relevant Australian occupational, health, safety, and environmental laws.

This Standard is intended to complement the requirements of the relevant Work Health and Safety legislation in each jurisdiction. The relevant regulatory authority should be contacted should any conflict of interpretation arise. A listing of such authorities is provided at www.arpansa.gov.au/Regulation/Regulators.

1. Introduction

1.2 Background

It is Australian Government Policy to implement international best practice and to adopt international standards where they exist and can be applied to the Australian regulatory environment. This Standard is based on the ICNIRP (2020) recommendations for RF fields (ICNIRP 2020a).

1.4 Scope

This Standard is applicable:

- Wherever the general public (including persons of any age or health status) may be exposed to RF fields and whenever employees may be exposed in the course of their work.

In the Draft mobile stations are explicitly removed from requirements that are mandatory for base stations. Even though base stations may be on private property with controlled access while a mobile stations can be parked in a public space with no controls on the movement of the public.

- To continuous and discontinuous RF electromagnetic fields exposure at single or multiple frequencies within the range 100 kHz to 300 GHz.

An obvious example is SSB where a discontinuous field exposure can occur such that the 100 Watt, time averaged, power limit can permit transmissions from devices rated at more the 100 Watts PEP.

The definition of mean power p_Y refers to an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions. Whereas the Standards refer to time intervals of six (6) or 30 minutes. Under these longer intervals with short transmission bursts an adjustment for the transmit % in a 6 minutes window can reduce the time averaged power and permit higher peak powers. There is some guidance from ITU-R recommendations but little guidance on the Transmit % in 6 minutes.

The typical online calculators leave issues that impact on the time average power with the person performing the assessment and provide little guidance.

- To situations where RF fields are produced, either deliberately or incidentally, by the operation of equipment or devices. It is the responsibility of the manufacturer/supplier, installer, employer/service provider and user to ensure that all devices and installations are operated in such a way as to achieve compliance with the requirements of this Standard.

Even though the Draft differentiates between base and mobile stations the APANSA standard still applies. The Draft is silent regarding portable stations. There is the requirement by an Amateur operator as the user to ensure compliant operation of all devices and installations i.e. base, mobile and portable devices and installations have to comply with the APANSA standard even though the ACMA Draft is silent on portable operation or explicitly states mobile installations do not have to comply with the same set of conditions as a base station.

1.5 Principles for protection

The principles for protection against adverse health effects of exposure to RF fields in this Standard are based on the ICNIRP principles for non-ionising radiation protection (ICNIRP 2020b).

1.7 Interpretation

In interpreting the provisions of the Standard, the words 'must' and 'should' have particular meanings. The presence of the word 'must' indicates that the requirement to which it refers is mandatory. The presence of the word 'should' indicates a recommendation - that is, a requirement that is to be applied as far as is practicable in the interests of reducing risk.

As the Draft, Schedule 1 applies this standard then the mandatory requirements must be met.

2. Basic restrictions and reference levels for exposure to RF fields between 100 kHz and 300 GHz

2.2 Basic restrictions and reference Levels

The mandatory basic restrictions are specified as quantities that are often impractical to measure. Therefore, reference levels utilising quantities that are more practical to measure, are provided as an alternative means of showing compliance with the mandatory basic restrictions. The relevant reference level quantities are incident electric field strength (Einc), incident magnetic field strength (Hinc), incident power density (Sinc), plane-wave equivalent incident power density (Seq), incident energy density (Uinc), and plane-wave equivalent

incident energy density (U_{eq}), all measured outside the body, and electric current inside the body (I). To be compliant with the present standard, for each exposure quantity (e.g., E-field, H-field, SAR), and temporal and spatial averaging condition, either the basic restriction or corresponding reference level must be adhered to; compliance with both is not required.

2.3 Basic restrictions

The basic restrictions are specified in Tables 1-2. A description of their derivation is provided in the ICNIRP guidelines (2020).

Different criteria were used in the development of basic restrictions for various frequency ranges:

- (a) Between 100 kHz and 10 MHz, basic restrictions on E_{ind} are provided to prevent electrostimulation of excitable tissue (see Table 3).

This requirement for 100kHz to 10 MHz is missing from the Draft.

- (b) Between 100 kHz and 300 GHz, basic restrictions on whole body average SAR are provided to prevent whole-body heat stress (see Table 1).
- (c) Between 100 kHz and 6 GHz, basic restrictions on local SAR (head/torso and limbs) are provided to prevent excessive localised temperature rise in tissue (see Table 1).

2.4 Reference levels

Reference levels have been derived from a combination of computational modelling and experimental measurement studies to provide a means of demonstrating compliance using quantities that are more-easily assessed than basic restrictions, but that provide an equivalent level of protection to the basic restrictions for worst-case exposure scenarios. However, as the derivations rely on conservative assumptions, in most exposure scenarios the reference levels will be more conservative than the corresponding basic restrictions. Further detail regarding the reference levels is provided in the ICNIRP guidelines (2020a).

Amateurs will be required to use computational modelling to demonstrate compliance as the purchase cost for appropriate test equipment with the costs of ensuring maintenance (equipment alignment, NATA traceability, etc.) cannot be justified. Catch is computational modelling for compliance may not be acceptable when there is Environmental Clutter.

4. Verification of compliance with the basic restrictions and reference levels

4.1 General

Compliance with the requirements in Sections 2 and 3 must be verified by direct measurements or by computation in accordance with AS/NZS 2772.2 or relevant International Electrotechnical Commission (IEC) or Institute of Electrical and Electronics Engineers (IEEE) standards. In case of any differences in limit values or requirements for evaluation (for example, time or spatial averaging) the requirements specified in RPS S1 shall have priority. The only exception is for devices that are not capable of exceeding the exposure limits under any conditions of use; supplementary guidance on how this is determined is provided in the RPS S-1 Advisory Note: Compliance of mobile or portable transmitting equipment (100 kHz to 300 GHz).

There are various online calculators available such as the RSGB's [EMF Calculator v2.0.1 20/9/2022](#)⁶⁷ or ARRL's [RF Exposure Calculator](#)⁶⁸. The RSGB online calculator provides compliance calculations that includes a result based upon ICNIRP guidelines (2020). The APANSA Standards are also based on the same ICNIRP guidelines. Is this calculator relevant for compliance calculations in Australia or does 4.2 Type testing/RF site evaluation, subclause (b) invalidate the calculator? Given the calculator are unable to provide uncertainty values that is mandatory under the AS/NZS 277.2 Standard.

Measurements or computations to prove compliance with this Standard must be made by an appropriately qualified and experienced person or organisation (testing authority) in accordance with relevant AS/NZS, IEC or IEEE standards. It is at the discretion of the testing authority whether direct measurement or computation is the appropriate methodology to be used. Following such measurements or computations, and where exposure levels are not increased, the results will remain valid for a period set by the testing authority.

The requirement to prove compliance must be made by “an appropriately qualified and experienced person or organisation (testing authority)”. Under this standard **Amateur radio operators** are defined as **Aware Users** “who is appropriately trained to use two-way radios ...” but are not recognized as an appropriately qualified and experienced person.

Accreditation of Testing Authorities and Signatories is performed by the [National Association of Testing Authorities](#)⁶⁹ (NATA). NATA also provides a search facility for accredited organisations which returned two (2) organizations that could prove compliance by measurement. Obviously a much more expensive than compliance by computation. It is at the discretion of the person providing the compliance service to determine if measurement or computation is the method to be used. If the person can only perform compliance by measurement then there is no choice. 30 MHz was the lowest frequency available for compliance by computation.

Verification of compliance must be based on conditions leading to the highest RF field exposure emitted under normal operating conditions. Further assessment must be made after any modification that may increase the level of human exposure.

The amateur service performs radiocommunication experiments. Before any experiment changes the station configuration (e.g. antenna modifications, change in mode or power) a qualified person has to perform an assessment. If this requires compliance by measurement then for a retired person such as myself the costs could possibly lead to bankruptcy.

Measurements or computations of occupational exposure must be made in areas accessible to workers to ensure that the relevant basic restrictions of Section 2 are not exceeded. Where the field level is variable from day to day and may exceed the occupational basic restrictions, a measurement or computation must be performed under those conditions which are most likely to represent the maximum exposures. As necessary, additional protective measures described in Section 5 must be implemented.

The standard states as necessary additional protective measure “must be implemented”.

⁶⁷ <https://rsgb.org/main/technical/emc/emf-exposure/>

⁶⁸ <http://arrl.org/rf-exposure-calculator>

⁶⁹ NATA home page:- <https://nata.com.au/An>

In areas that are accessible to the general public, measurements or computations of exposure must be undertaken to ensure compliance with the general public basic restrictions of Section 2.

The draft does not include portable stations or apply conditions to a mobile station that are mandatory for a base station.

4.2 Type testing/RF site evaluation

Type testing of RF sources or RF site evaluation may be used to demonstrate compliance with Sections 2 and 3, provided that a minimum of three similar sources or sites have been measured and the relevant levels shown to be comparable within 3 dB of incident power density.

Initially this demonstration of compliance appears quickest, cheapest and simplest to perform. Until the next subclause invalidates this approach for stations in suburbia.

Type testing or RF site evaluation must not be used where the RF levels are unpredictable e.g.

- (b) Antenna structures where the RF field pattern is likely to be significantly influenced by the local ground plane conditions or 'environmental clutter'. Environmental clutter refers to buildings, vehicles, trees/vegetation or other structures that have an influence on the measured levels of RF by introducing reflections, scattering or absorption that is difficult to predict.

In a suburban setting buildings, vehicles, trees/vegetation or other structures will be present therefore type testing is not an option. How will environmental clutter in a suburban environment be taken into account when attempting to use computation to complete compliance calculations? Is measurement the only option given the random nature of the environmental clutter?

Environmental clutter by definition includes vehicles. Type testing of antennas cannot be used therefore measurement is the only option for compliance.

Where are costs for the Amateur Service to perform the measurements/calculations/estimations for completing compliance measurements when multiple bands, multiple transmission modes, multiple antennas and multiple transmitters will comprise a station? Why wasn't a Regulation Impact Statement (RIS) or even some simple financial calculations included in the consultation documentation when there will be such a significant measure being formally included into legislation?

Is it appropriate to approach the [Department of Finance](https://www.finance.gov.au/)⁷⁰ or [Department of the Prime Minister and Cabinet](https://www.pmc.gov.au/)⁷¹ regarding the lack of a RIS given the extreme cost increases to be imposed on retirees, pensioners and other individuals that are not engaged in commercial activities?

Will the ACMA staff perform the required measurements if there are no qualified people or NATA registered laboratories able to perform the required measurements for compliance? Amateurs are located in all states and territories and it is likely that it will be impossible for measurements to be taken for all remote amateur stations, or the travel and accommodation costs in addition to cost of the professional services to perform measurements/calculations and provide the compliance documentation will be unaffordable to pensioners and people on fixed or low incomes. What will be the cost of ACMA staff performing the required measurements for compliance?

⁷⁰ <https://www.finance.gov.au/>

⁷¹ <https://www.pmc.gov.au/>

4.3 Records

An up-to-date log of measurements or computations for the site configuration must be kept by the site owner and be available for inspection by relevant radiation protection authorities (see Appendix 2) and/or persons authorised to access the site or their representatives.

What format of computer files and on what media will be accepted?

5. Protection—occupational and general public exposure

This section prescribes processes to ensure that:

- (a) No occupationally exposed person (as defined below), is exposed to RF fields that exceed the occupational exposure limits; and
- (b) No member of the general public is exposed to RF fields in excess of the general public exposure limits.

The occupational and general public exposure limits are specified in Section 2. Occupational exposure is only permitted under controlled conditions. In particular, a thorough risk analysis must be performed, and an appropriate risk management regimen implemented, prior to the exposure occurring.

There are no model rules or documentation available to amateurs for risk analysis or risk management.

5.1 Definitions

5.1.1 Occupational exposure

Occupational exposure is the exposure of workers incurred in the course of their work. For the purposes of this Standard, occupational exposure is defined as potential exposure above the general public exposure limits in a workplace. This includes the following groups of persons:

- (b) Controlled Area Worker: A person, other than an RF Worker, who may be required to work in a Controlled Area (see 5.1.2).

This could be somebody who is not technical such as a gardener.

- (c) Aware User: A person who is appropriately trained to use two-way radios and other portable wireless devices which expose the user to levels likely to exceed the basic restrictions for general public exposure. Appropriate training includes awareness of the potential for exposure and measures that can be taken to control that exposure. Persons in the Aware User group may include, but are not limited to, the following categories:

- (ii) amateur radio operators

Under this standard **Amateur radio operators** are defined as **Aware Users** “who is appropriately trained to use two-way radios ...” but are not recognized as an appropriately qualified and experienced person.

- (d) Supervised Visitor: Supervised Visitors to RF sites who are under the direct supervision of a Responsible Person/RF Worker/Controlled Area Worker and may be exposed above general public limits but below occupational limits while transiting Controlled Areas.

The Amateur operator would be the Responsible Person.

5.1.2 Controlled Area

A Controlled Area is an area or place in which exposure to RF fields may reasonably be expected to exceed general public exposure limits, and with the following characteristics:

- (a) The area is under the management of a Responsible Person (see 5.1.3) who must ensure that exposures do not exceed occupational exposure limits.
- (b) The area is only to be entered by persons who have been provided with information, training and instruction on RF safety appropriate to the nature of their proposed activity within the Controlled Area.

It is unclear what information, training and instruction must be provided to non-technical individuals working in a controlled area.

- (c) There is documentation or signage to clearly indicate:
 - (i) areas above occupational exposure limits
 - (ii) areas above general public exposure limits
 - (iii) the Responsible Person and contact details.

In a suburban setting there is no indication from the ACMA what signage is required to meet these requirements. If a controlled area is behind suburban fences what signage is required (e.g. what distance between signage? How large and detailed is the signage? Are there minimum fencing requirements such as height or standard of gates controlling access to the area? In suburbia children can scale fences to retrieve balls, will play or transit areas of private property, how is this to be managed? In a rural area chain-link fences with additional measures can be used to keep individuals out of controlled areas around broadcast facilities but that is not the standard of fencing in suburbia where low, front fences tend to be the norm. What happens if the demand is to place signage on all external fences and the neighbours refuse access to place signage or remove the signage that is on their property?

Given the sensitivities of some people to potential exposure to RF fields the addition of signage is likely to generate disputation which is not warranted.

5.1.3 Responsible Person

A Responsible Person is responsible for the overall management of a Controlled Area with respect to persons who need to work in or transit the area.

A Responsible Person is to be appointed by the person conducting a business or undertaking, manager or owner of the facility containing the relevant RF sources. The name and contact details of the Responsible Person are to be readily available to persons seeking access to the Controlled Area.

There are power transmission line, sewage, stormwater plus gas pipeline easements on my property. Individual workers from various authorities and companies have the right to enter my property without notice. Is the fact that the various authorities have my name on record plus a known address sufficient to consider my name and contact details as a Responsible Person are readily available to all their employees? If not what is the expectation?

The Responsible Person is responsible for the following:

- (a) Ensure up to date documentation regarding exposures associated with all RF sources affecting the work area is available.

- (b) Ensure signage and markings or other measures delineate areas exceeding public and occupational exposure limits.

What is the ACMA's expectations for suburban installations regarding signage, markings and other measures?

- (c) Ensure persons are familiarized with any RF sources and the associated public and occupational access areas, relevant to their activity.
- (d) Ensure persons are aware of appropriate safe working practices.
- (e) Ensure security of access to the Controlled Area.

In suburbia, what is considered adequate security of access? The consultation documentation is silent on these considerations.

To enable the Responsible Person to meet their obligations the following parties are required to consult, cooperate and co-ordinate with the Responsible Person:

- (a) The person conducting a business or undertaking, owner or operator of the RF sources, and
- (b) Visitors, contractors or other workers who need to access the area.

In suburbia if these parties fail to consult, cooperate and coordinate with the amateur operator as the Responsible Person what is required to satisfy the duty of care?

The appointment of a Responsible Person does not replace or lessen the duty of care required of a person conducting a business or undertaking, facility manager or facility owner under the relevant work health and safety (WHS) or occupational health and safety (OHS) laws.

5.2 Managing risk in occupational exposure

The management of risks in occupational exposure must comply with the relevant Commonwealth or State/Territory Work Health and Safety legislation⁷².

No information has been supplied in the ACMA consultation documentation. The ACMA is the authority on RF installations and must detail these requirements.

The following duty holders must ensure that the hazards associated with exposure to RF fields are managed: persons conducting a business or undertaking (for example, employers, people in control of workplaces; designers, manufacturers and suppliers of RF generating equipment; self-employed persons); owners and operators of RF generating equipment.

The duty holders listed above are to ensure that the hazards associated with exposure to RF fields and RF-generating plant are identified and managed by a risk management process as listed below.

5.2.1 Workplace policy

The risk management process must be implemented and should be clearly documented in a written workplace policy that expresses the commitment of all parties. The policy should address duties including identifying the hazards and assessing the risks. The workplace policy should specify the procedures that must be implemented to control workplace risks, the

⁷² Occupational Health and Safety legislation in Victoria, and Occupational Safety and Health legislation in Western Australia

monitoring and review schedule of the implemented control measures to ensure effectiveness and identify those responsible for that implementation.

The ACMA has not produced a model risk management process that must be implemented by amateur operators.

5.2.2 Risk management process

The risk management process should be undertaken in consultation with workers and must include:

- (a) Identification of the hazards. This step should include identification of the primary RF source/s and also sources of re-radiation, where currents are induced on conductive objects, and are potential sources of shock and burns.
- (b) Assessment of the risk. This step includes assessment of exposure levels, and comparison to the relevant exposure limits. Advice on measurement or calculation of exposures relevant to the limits is given in AS/NZS 2772.2 or relevant IEC and IEEE standards.
- (c) Choice of the most appropriate control measures to eliminate or minimise the level of risk (see 5.1.3). The control/s chosen must consider any hazards they may introduce.
- (d) Implementation of the chosen control measures. This step must include maintenance requirements to ensure the ongoing effectiveness of the control/s and training on the control measures for workers potentially exposed to RF fields.
- (e) Monitoring and reviewing the effectiveness of the control measures. The monitoring and review process must assess whether the chosen controls have been implemented as planned and that the control measures remain effective.

Amateur operators are not a business and do not have exposure or access to appropriate documentation to implement this risk management process. The ACMA needs to produce a model set of documents that amateur operators can complete to satisfy these requirements.

5.2.3 Hierarchy of control measures

Where there is potential for exposure above the limits, the hazard should be managed through application of the most appropriate control priorities as indicated below. The measures higher in the control priorities are usually more effective than those lower, and should be given greater consideration. In order of priority, the Control Priorities are:

- (a) Elimination of the hazard. If this is not reasonably practicable, exposure to the risk, where appropriate, must be minimised by one or a combination of the following control measures.

As generation of RF is a requirement of amateur service communications it is not possible to eliminate all RF hazards.

- (b) Substitution with a less hazardous process or less hazardous plant.

Substitutions with a less hazardous process is not an option.

- (c) Engineering controls including redesign of equipment or work processes. Examples include: barriers to access, building in shielding, fail-safe interlocks,

earthing of large metallic objects, built-in leakage detectors and alarms or utilising waveguide below cut-off shielding techniques.

Do suburban fences form an acceptable barrier to access? Given low front fences it may be possible for children to climb over those or the paling fences that are typical in Australian property fences in some circumstances. What is the acceptable minimum standard for a barrier to access? What about post and wire fences (with or without barb-wire), are these acceptable, if so what is the minimum acceptable construction?

(d) Introduction of administrative controls such as signage restricting access or defining exposure limit boundaries, safe work systems including down-powering or outages. Administrative controls may be used in combination with higher level controls.

Restrictions on access is going to be limited to property boundary fencing therefore powering off of equipment can be the only response. The ACMA has not specified fencing requirements or any other access controls appropriate for suburban properties.

(e) Personal issue RF alarms which are designed to alert the worker to the presence of RF fields above the exposure limits. Training is essential for proper use and safety benefits.

Amateur operators will not have personal issue RF alarms therefore no training requirements.

(f) Use of other appropriate personal protective equipment (PPE). All users of PPE must be provided with the appropriate PPE and trained and supervised in its use to ensure that they have a clear understanding of its correct usage and limitations and they must use it accordingly. In addition, the PPE must be maintained and replaced as specified by the manufacturer to ensure it is kept in good condition so that its effectiveness as a control is not compromised (For more information on PPE see IEEE C95.7).

Amateur operators are not going to have any appropriate personal protective gear therefore there can be no training role, supervision or maintenance requirements for PPE.

5.2.4 Training and supervision

Occupationally exposed persons must be provided with suitable training and supervision taking into account the nature of the work being carried out, the nature of the risk associated with the work and the control measures and safe work practices that have been implemented. They must be trained in the controls implemented to manage the potential RF hazard, including isolation, engineering and administrative controls, personal issue RF alarms and PPE as appropriate. There must be appropriate procedures in place to ensure that the safe systems of work are utilised. Occupationally exposed persons should be supervised when appropriate.

If direct supervision and not generating any RF (i.e. turn/power off equipment) are the only controls implemented does this allow an amateur operator to ignore training, PPE requirements, etc.

5.2.5 Provision of information to occupationally exposed persons

Occupationally exposed persons must be informed about the following:

(a) The known health effects of RF fields as summarised by the International Commission on NonIonizing Radiation Protection (ICNIRP 2020a).

- (b) Safe working practices, (see 5.1.3).
- (c) The procedures to be followed in the event of any over-exposure (see 5.5).
- (d) The precautions and procedures to be followed if they are or become pregnant (see 5.3) during the time they are engaged in RF work.
- (e) The precautions and procedures to be followed if they have/receive metallic implants or medical devices (see 5.2.6) during the time they are engaged in RF work.

If powering off equipment and direct supervision are the methods being employed by an amateur operator to ensure no RF is generated, can all these other provisions be ignored? If these provisions cannot be ignored, what are the minimum acceptable standards?

5.2.6 Medical assessment

There must be procedures in place to ensure that persons who are occupationally exposed above basic restrictions for the public and who have medical devices susceptible to RF interference or metallic implants are not put at risk by their exposure. It is advisable that persons who may be occupationally exposed to RF fields are subject to a placement assessment (Hocking and Mild 2008). The IEEE Standard C95.1 (Sections B.2.2.4 and B.7.8) provides practical advice for the assessment of medical devices and makes comment on metallic implants. This advice should be sufficient for most cases and no further steps would be required such as performing computational analysis, which is unlikely to be an option for many persons.

An Amateur operator will be unable to perform a placement assessment

5.3 Pregnancy

Occupationally exposed women who are pregnant should advise their employers when they become aware of their pregnancy. After such notification, they must not be exposed to RF fields exceeding the general public exposure limits. Pregnancy should lead to implementation of relevant personnel policies. These include, but are not limited to, reasonable accommodation/adjustment or temporary transfer to non-RF work without loss of employment benefits. Additional guidance may be found in the Pregnancy Guidelines produced by the Australian Human Rights and Equal Opportunity Commission (HREOC 2001).

An Amateur operator is unlikely to be employing pregnant women and even then they are unlikely to be ever aware of their pregnancy. As the ACMA is the responsible authority for consumer RF devices what are the requirements regarding pregnancy that should be imposed on the Amateur Service?

5.4 Records

Records should be kept of the results of all assessments of RF sources and steps to mitigate fields.

The aim of radiocommunications experimentation in the Amateur Service is to typically maximize fields to improve the reliability and quality of their radiocommunications. There is typically no mitigation and no steps may be taken to mitigate fields. This is contrary to the requirements of the Standard.

The personnel files of workers who are occupationally exposed to RF fields should be maintained and identify that the worker is occupationally exposed to RF fields. Such

files should be retained for the full duration of, and after termination of employment as required by law.

An amateur will be typically engaging independent contractors (e.g. a gardener) to perform a limited range of activities. There will be no personal files nor identity records. A contractor I engaged to perform some work refused to provide their address as they considered this personal information given the nature of the tasks to be performed. An amateur operator is unlikely to have personal files of workers. What are the record requirements for independent contractors or others that may not be considered employees, etc.?

5.5 Post incident exposure management

(a) A plan for management of any incident of confirmed or suspected over-exposure should be developed in advance. An over-exposure will not necessarily lead to harm because the exposure limits of the Standard are set well below where harm has been shown to occur. The following plan of action is suggested: First aid treatment should be obtained from the nearest first aider, doctor or hospital as required for burns or other injuries.

The ACMA should be providing model, draft or sample documentation for Amateur station records. As Amateurs are not businesses and do not have access to lawyers to have suitable documentation created the ACMA needs to provide guidance on what is going to be an acceptable standard for a plan of action.

(b) Employers should arrange for employees suspected or confirmed as over-exposed to RF fields to be medically assessed as soon as practical after the over-exposure. The employer/site operator should provide information regarding the characteristics of the RF fields. The paper by Hocking and Gobbo (2011) provides information for doctors on the medical management of acute over-exposure.

Over exposure is an unlikely event and an amateur operator is unlikely to access the paper by [Hocking and Gobbo](#)⁷³. There is no guarantee that a medical doctor will know of the existence of this paper or consult it on presentation of a patient.

(c) The incident must be investigated and corrective actions taken. Where confirmed to be an overexposure incident, it must be reported and managed as per relevant Commonwealth or State/Territory Work Health and Safety legislation. A confirmed incident must be reported by the relevant radiation protection authority to the Australian Radiation Incident Register (see Appendix 2).

5.6 Protection of the general public

Measures for the protection of members of the general public who may be exposed to RF fields due to their proximity to antennas or other RF sources must include the following:

(d) Determination of the boundaries of areas where general public exposure limits levels may be exceeded.

The ACMA has regulated base stations but does not require the determinations of the boundaries of areas for the protection of the general public who may be exposed to RF fields from mobile and portable stations.

⁷³ https://www.arpansa.gov.au/sites/default/files/legacy/pubs/rps/rps3_hocking.pdf

(b) Restriction of public access to those areas where the general public exposure limits may be exceeded.

Are standard, residential boundary fences (paling fences and low front fences) an acceptable standard for restricting access? If not acceptable, what standard of fencing is required to restrict access? Are rural style, post and wire fences with, without or with partial/mixed barbed-wire acceptable? What is proposed for mobile and portable stations.

(e) Appropriate provision of signs or notices complying with AS 1319 (Standards Australia 1994).

The ACMA requires Australian Standard [AS 1319-1994 Safety Signs For The Occupational Environment](#)⁷⁴ to be used in a residential, non-occupational environment with implementation managed by Amateur operators who do not have any experience or knowledge in the application of industrial, occupational signage. The ACMA has to provide additional guidance or direction on the application of signage appropriate for RF fields.

- What does “appropriate provision” mean?
- Where and how many signs are required?
- What is the quantity, placement and location of the signs?
- What is the actual text that the ACMA requires on signs?
- What symbolic shape is required:
 - Regulatory Prohibition
 - Regulatory Mandatory
 - Regulatory Restriction
 - Hazard Warning
 - Hazard Danger
 - Emergency Information

Amateurs operators are private individuals who do not have access to the appropriate experts to enable appropriate provision of signage. The ACMA is the appropriate authority for radiocommunications and needs to ensure stations signage is fit for purpose.

(d) In the event of the exposure exceeding the occupational exposure limits the following plan of action is suggested:

(i) First aid treatment should be obtained from the nearest first aider, doctor or hospital as required for burns or other injuries.

(ii) Members of the general public suspected or confirmed as over-exposed to RF fields should be medically assessed as soon as practical after the over-exposure. The site operator should provide information regarding the characteristics of the RF fields. The paper by Hocking and Gobbo (2011) referred to in 5.5(b) provides information for doctors on the medical management of acute over-exposure.

What is the procedure if the contact details for the member of the general public is not known or they refuse to be medically assessed?

⁷⁴ https://infostore.saiglobal.com/preview/825391963983.pdf?sku=99237_SAIG_AS_AS_270559

(iii) The incident must be investigated and appropriate corrective actions taken. Where confirmed to be an over-exposure incident, it must be reported to the relevant radiation protection authority (see Appendix 2). A confirmed incident must be reported by the relevant radiation protection authority to the Australian Radiation Incident Register referred to in 5.5(c)

Who performs the investigation? Do they have to be an independent, qualified and experienced expert? Who documents what is the appropriate actions to be taken to address an overexposure incident? Who ensures corrective actions are taken to a satisfactory standard?

Appendix 2

Radiation Protection and Regulatory Authorities

Regulatory Authorities

The following organisations regulate various aspects of the use of RF fields:

Commonwealth	Contact	Contact Details
(i) for communications	Operations, Services and Technologies Branch Australian Communications and Media Authority PO Box 78 Belconnen ACT 2616 Email: info@acma.gov.au	Tel: (02) 6219 5555 Fax: (02) 6219 5353

The Australian Communications and Media Authority (ACMA) is responsible for regulating RF fields for consumer radiocommunications devices (for example, mobile phones) and telecommunications facilities (for example, mobile phone towers). To make sure RF exposure is kept low, the ACMA applies the ARPANSA RF exposure limits contained in this Standard. The ACMA is not an expert body on the possible health effects of human exposure to RF and is not responsible for investigating possible health effects. For more information on how the ACMA regulates RF fields for radiocommunication devices and telecommunications facilities see <https://www.acma.gov.au>.

The Australian Radiation Incident Register (ARIR) is Australia's national database of incidents and events, where radiation was implicated. The purpose of the ARIR is to raise awareness on where, how and why incidents and events occur, and how they can be best prevented. Reports are provided by Commonwealth, state and territory radiation protection authorities. For more information see <https://www.arpansa.gov.au/regulation-and-licensing/safety-security-trans port/australian-radiationincidents-register>

The information on radiation protection and regulatory authorities was correct at the time of publication but is subject to change from time to time. For the most up to date list the reader is advised to consult the ARPANSA web site at www.arpansa.gov.au.

Glossary

Further information on many of the quantities defined in the Glossary is provided in the ICNIRP (2020) guidelines

Basic restrictions

The mandatory limiting values of exposure expressed in terms of selected quantities that closely match all known biophysical interaction mechanisms that may lead to health effects.

Over-exposure

Exposure exceeding the relevant local or whole-body basic restrictions taking into account the appropriate averaging time (e.g. 6 minutes or 30 minutes). A short-term exposure to a level exceeding the basic restriction typically does not lead to an over-exposure unless the time-averaged level is above the relevant limit.

Reference levels

Practical or ‘surrogate’ parameters that may be used for determining compliance with the basic restrictions.

References/ Bibliography

Australian/New Zealand Standard (AS/NZS), 2016. Radiofrequency fields Principles and methods of measurement and computation - 3 kHz to 300 GHz, Standards Australia, AS/NZS 2772.2:2016.

[[https://shop.standards.govt.nz/catalog/2772.2:2016\(AS%7CNZS\)/scope?](https://shop.standards.govt.nz/catalog/2772.2:2016(AS%7CNZS)/scope?)]

International Commission on Non-Ionizing Radiation Protection (ICNIRP), 2020a. ICNIRP guidelines for limiting exposure to electromagnetic fields (100 KHz to 300 GHz), Health Physics, 118(5):483–524.

[<https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf>]

International Commission on Non-Ionizing Radiation Protection (ICNIRP), 2020b. ICNIRP Statement Principles for Non-ionizing Radiation Protection, Health Physics, 118(5):477–482.

[<https://www.icnirp.org/cms/upload/publications/ICNIRPprinciples2020.pdf>]

International Electro-technical Commission (IEC), 2018. Determination of RF field strength, power density and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure, AS IEC 62232:2018.

[<https://www.standards.org.au/standards-catalogue/sa-snz/communication/te-007/as--iec--62232-colon-2018>]

Institute of Electrical and Electronics Engineers (IEEE), 2014. Recommended Practice for Radio Frequency Safety Programs, 3 kHz to 300 GHz, IEEE Std, C95.1.

[<https://ieeexplore.ieee.org/document/6874474>]

Draft Radiocommunications (Amateur Stations) Class Licence 2022⁷⁵

Schedule 1—Conditions about electromagnetic energy

3 Presumptions about compliance with the condition in subclause 2(1) – low risk stations

Application

- (1) This clause applies in relation to an amateur station (other than a mobile station):

⁷⁵ Draft Class Licence:- <https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20%28Amateur%20Stations%29%20Class%20Licence%202022.docx>

A mobile station is not generally required to comply with the following conditions that are mandatory for a base station. The power limit is the exception with all stations restricted to a time averaged 100W to be considered as a low risk station. For this clause mobile stations are explicitly excluded. The Draft is silent regarding portable stations therefore subclause 2(1) applies.

(a) for which:

(i) the average total power supplied by the station to all antennas fed by the station is not more than 100 watts; and

A mobile station is also required to comply with the time averaged 100 Watt limit. For 2m FM the transmitter the mode factor is 100% i.e. the transmitter is assumed to be capable of transmitting for 6 minutes and the time average power is simply the rated transmitted power. For conversational SSB with no speech processing an accepted duty cycle is 20% (mode factor 20% over a 6 minute period). A 500W SSB transmitter with a Mode Factor of 20% will deliver a time average 100W to the antenna mounted on the vehicle. For conversational SSB with heavy speech processing the duty cycle increases to 50% i.e. a 200W transmitter will deliver the time averaged 100W. Conversational CW uses a 40% duty cycle or a 250W CW transmitter will supply a time averaged 100W to an antenna mounted on the vehicle. Digital modes will have mode factors of 39% to 100%. If the duty cycle is unknown then the mode factor is 100%.

(ii) each antenna fed by the station is installed so that it is inaccessible to a member of the general public; or

By default a mobile station is accessible to the general public if the vehicle is stationary in traffic or parked in a public place. This restriction on a base station does not exist for a mobile station. By definition a portable station is very likely to have an antenna that is accessible to a member of the general public.

(b) for which:

(i) the base of the lowest antenna fed by the station is at least 10 metres above ground level; and

Another base station restriction that is absent from the mobile station clause. It is extremely unlikely that a mobile antenna would be this height above ground level when State registration vehicle dimension limits prohibit an attachment on a vehicle of such a height. The maximum height of any vehicle is 4.6m. The [National Heavy Vehicle Regulator](https://www.nhvr.gov.au/)⁷⁶ provides guidance and the [National Heavy Vehicle General Dimension Requirements](https://www.nhvr.gov.au/files/201602-0113-general-dimension-requirements.pdf)⁷⁷, General Dimensions, Height section provide the height limit for the largest road vehicles. For a portable station it is practically impossible to place the antenna 10m above ground level. This subclause will virtually forbid any operation of a handheld transceiver in a public place.

(ii) the average total EIRP of all antennas fed by the station is not more than 3200 watts in any direction.

⁷⁶ <https://www.nhvr.gov.au/>

⁷⁷ <https://www.nhvr.gov.au/files/201602-0113-general-dimension-requirements.pdf>

A HF mobile antenna or any portable station antenna will not deliver 15 dBi gain. Manufacturers such as Cushcraft (MFJ) can rate their multi-element 70cm Yagi antennas (e.g. [CSH-A719B](#)⁷⁸) over 15 dBi. It is unlikely such a 70cm antenna would be mounted on a vehicle but certainly not impossible.

(2) This clause also applies to an amateur station that is a mobile station for which the average total power supplied by the station to all antennas fed by the station is not more than 100 watts.

The [Radiocommunications \(Interpretation\) Determination 2015](#)⁷⁹ provides a definition for a mobile station but does not describe the vehicle that enables a station to be considered a mobile station. Therefore an amateur station installed on or in any vehicle is a mobile station.

The [Road Safety Act 1986](#)⁸⁰ definitions include “**vehicle** means a conveyance that is designed to be propelled or drawn by any means, whether or not capable of being so propelled or drawn, and includes bicycle or other pedal-powered vehicle, trailer, tram-car and air-cushion vehicle but does not include railway locomotive or railway rolling stock;”. Anything except railway locomotives or rolling stock that is designed to move is a vehicle. The vehicle does not even have to be capable of moving, just designed to be moved by any means.

To take an extreme case, a trailer is classified as a vehicle. If the trailer is sitting on bricks and has its wheels removed so that it cannot move and a fence is constructed around the trailer it is still classified as a vehicle as it is designed to be drawn. A mobile station on this trailer is not required to have an antenna 10m above ground level.

To take this trailer example to the other extreme. If the trailer is complete and parked in a public place with an amateur station installed on or in this vehicle it is also a mobile station that is not required to have an antenna 10m above ground level to be classified as a low risk station.

Park the trailer on private property at the location a base station would be required to install a tower to raise the antenna 10m above ground level and now the antenna no longer has to be raised 10m as it is classified as a mobile station.

The Draft requirement for a base station to have an antenna a minimum 10m above ground level on private property to be considered low risk when the mobile station using the same transmitter installed on or in a trailer parked in a public place does not have to comply to a 10m requirement is illogical and the ACMA must provide needs further clarification of ‘low risk’.

Presumptions

(3) A person is presumed, unless the contrary is proved, not to have operated an amateur station in contravention of the condition in subclause 2(1) if the person has a document that:

(4) A person is presumed, unless the contrary is proved, not to have operated an amateur station in contravention of the condition in subclause 2(1) if:

There are no corresponding requirements in the Draft regarding mobile stations as they are defined in subclause 2(2). The ACMA is responsible for regulating RF fields for consumer radiocommunications

⁷⁸ <https://www.dxengineering.com/parts/csh-a719b#overview>

⁷⁹ Federal Register of Legislative Instruments, In Force:- <https://www.legislation.gov.au/Details/F2021C00635>

⁸⁰ <https://content.legislation.vic.gov.au/sites/default/files/2022-10/86-127aa217%20authorised.pdf>

devices, then why does the ACMA not provide or produce the minimum standards of access control standard, etc., required to regulate amateur operators and ensure public safety?

RPS S-1 Advisory Note: Compliance of mobile or portable transmitting equipment
(100 kHz to 300 GHz)

The evaluation of mobile or portable transmitting equipment for compliance with RPS S-1 is not required when the nominal mean power output delivered to the antenna does not exceed the Low Power Exclusion (LPE) Level as listed in Table 1 for the appropriate exposure condition. These values have been determined from the Basic Restrictions of RPS S-1 for local specific energy absorption rate (SAR, up to 6 GHz) and local absorbed power density (Sab above 6 GHz).

The low power exclusion level has an upper limit of 100mW so it would appear the standard handheld transceivers used in the amateur service with 5W RF output cannot rely on this Advisory Note to show compliance to APANSA's Standard for Limiting Exposure to Radiofrequency Fields – 100 kHz to 300 GHz RPS S-1⁸¹.

Draft Radiocommunications (Amateur Stations) Class Licence 2022⁸²

Schedule 1—Conditions about electromagnetic energy

3 Presumptions about compliance with the condition in subclause 2(1) – low risk stations
Application

- (1) This clause applies in relation to an amateur station (other than a mobile station):
- (a) for which:
- (i) the average total power supplied by the station to all antennas fed by the station is not more than 100 watts; and
- (ii) each antenna fed by the station is installed so that it is inaccessible to a member of the general public; or

The definition or meaning of this restriction/condition is unclear. It appears the test condition is that a member of the general public does not physical access to the antenna to satisfy (1)(a)(ii). It is possible for an antenna to be on private property, behind fences so that a member of the general public cannot gain physical access i.e. satisfy (1)(a)(ii) but with a base height less than 10m and/or the EIRP is more than 3,200 Watts.

Refer to Appendix 2 Compliance Calculations for details. By using a 3m base height for an antenna the horizontal separation distance for compliance dominates. Calculations were performed for the 10m and 40m bands using a time-averaged 100W transmitter power. The horizontal separation distance for compliance is shown.

Table 10 - Horizontal Separation for Compliance (10m and 40m Bands)

Antenna	10m Band Distance	40M Band Distance
3 Element Yagi	7.6m	2.8m

⁸¹ https://www.arpana.gov.au/sites/default/files/rps_s-1.pdf

⁸² Draft Class Licence:- <https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20%28Amateur%20Stations%29%20Class%20Licence%202022.docx>

Antenna	10m Band Distance	40M Band Distance
4 Element Yagi	8.1m	2.7m
40m Long Wire	7.4m	1.4m
Half-Wave Dipole	3.7m	1.2m
Hustler 4BTV	5.5m	No Calc.
Quarter-Wave Vertical	5.3m	1.1m
Trapped Vertical	3.5m	0.6m

Some antennas in the 10m band can require a significant horizontal buffer while the 'lower gain/efficiency' of the 40m band antennas significantly reduce/shrink their horizontal buffer distances.

Therefore a neighbour or other members of the general public could be exposed to a level above the general public compliance limit. Although a member of the general public may be outside the controlled area surrounding an antenna in a suburban environment, for their own safety they may also need to increase their physical separation from the antenna. As the general public is assumed to have no understanding of the risks the ACMA need to revise these clauses. If the general public in question are neighbours there is no possibility of them increasing their distance from the antenna.

Clause (1)(a)(ii) text needs expansion to ensure a member of the public is excluded from any area where the EMF field exceeds the compliance limit for members of the general public. Refer to Appendix 2 Compliance Calculations.

(b) for which:

- (i) the base of the lowest antenna fed by the station is at least 10 metres above ground level; and
- (ii) the average total EIRP of all antennas fed by the station is not more than 3200 watts in any direction.

(2) This clause also applies to an amateur station that is a mobile station for which the average total power supplied by the station to all antennas fed by the station is not more than 100 watts.

The low standard requires a minimum antenna base height of 10m without any justification as to why the limit is 10m and not 0, 2, 3, 4, 5, 6, 8, 10 or 12 metres. The RSGB EMF calculator includes an EMF calculator that includes modelling using [ITU-T K.52 Guidance on complying with limits for human exposure to electromagnetic fields](https://www.itu.int/rec/T-REC-K.52-202106-I/en)⁸³ (ICNIRP 2020 Limits). Results for transmission of a Carrier is used with a Mode Factor of 100% so that there is no confusion between peak and average power. The modelling output will be the maximum, safe, transmitter power output that does not require any horizontal separation distance from the antenna by a 1.8m tall member of the general public. A number of antenna will be modelled.

- 3 element yagi
- 4 element yagi
- 40m long wire as the typical suburban block would be unlikely to accommodate any longer lengths.
- Half wave dipole

⁸³ <https://www.itu.int/rec/T-REC-K.52-202106-I/en>

- Hustler 4BTV. Four (4) band HF vertical for 10, 15, 20 and 40m bands.
- Quarter wave vertical
- Trapped vertical

In a suburban location it will not be normally be possible to physically construct all antenna combinations for all bands. Alternatively some antennas are not designed for operation on all bands. In these cases an entry will be "No Calc."

The calculator has a hard limit, maximum power set at 2,000W. To indicate the hard limit of the calculator has been exceeded the entry will be ">2,000". The transmit mode of 'Carrier' has been selected to ensure peak power and average power are equal

6. In the absence of amateur and station information being contained in the Register of Radiocommunications Licences, are there any amateur-operated registers or other existing voluntary registers that you would use?

Not on a regular basis. About five (5) years ago (2018) and earlier I did regularly access the eQSL online database. Various international databases (e.g. do exist for specific purposes such as contests or exchange of online QSLs) but none have universal acceptance. There are membership databases for the Amateur community groups but by definition they will only have a subset of amateur operators registered.

All online registers of amateur licences even including the ACMA's current Register of Radiocommunications Licences are not fit for purpose. An amateur operator can be mobile, located portable on a mountain top, or in a remote area without any local communications infrastructure or internet access. Therefore it is impossible to rely on any online database. Historically⁸⁴ amateur operators have always relied upon station lists (1912) and printed callbooks (1914 - 2019). Due to the ACMA restrictions on publication of station/licence information from the ACMA Register of Radiocommunication Licences the ability to publish a hardcopy of amateur Stations/Licences has been lost on the false grounds of privacy. The failure to capture consent is a system design choice by the ACMA and not an impediment of the Privacy Act.

Without a printed call book it is now impossible to differentiate between the licenced and unlicensed. Any register of amateur operator licences should not be restricted by copyright or privacy considerations but the relevant station/licence information should be released under the Commonwealth's data.gov.au⁸⁵, [Creative Commons Attribution 3.0 Australian Licence](https://creativecommons.org/licenses/by/3.0/au/)⁸⁶.

The Privacy Act 1988 is not an impediment to the release of the relevant personal information for the publication of a callbook. Extracts below are taken from the current (as at 20/10/2022) in force version of the Act:

Privacy Act 1988, No.119, 1988, Compilation No. 91, 1st July 2022.

Part I—Preliminary

2A *Objects of this Act*

The objects of this Act are:

- (a) to promote the protection of the privacy of individuals; and
- (b) to recognise that the protection of the privacy of individuals is balanced with the interests of entities in carrying out their functions or activities; and
- (c) to provide the basis for nationally consistent regulation of privacy and the handling of personal information; and
- (d) to promote responsible and transparent handling of personal information by entities; and

⁸⁴ History of WIA callbooks:-

<https://www.wia.org.au/members/history/callbooks/#::~:~:text=About%20WIA%20Callbooks,in%20Australia%20at%20the%20time.>

⁸⁵ Australian Government, data.gov.au home page:- <https://data.gov.au/>

⁸⁶ Australian Government, Terms of Use, Copyright:- <https://creativecommons.org/licenses/by/3.0/au/>

- (h) to implement Australia's international obligation in relation to privacy.

This is the relevant Act governing privacy and dealing with user information.

4 Act to bind the Crown

- (2) This Act binds the Crown in right of the Commonwealth, of each of the States, of the Australian Capital Territory and of the Northern Territory.

This is a relevant Act for the Commonwealth.

Part II—Interpretation

Division 1—General definitions

6 Interpretation

- (1) In this Act, unless the contrary intention appears:

agency means:

- 1.a Minister; or
- 2.a Department; or
- 3.a body (whether incorporated or not), or a tribunal, established or appointed for a public purpose by or under a Commonwealth law, not being:

The ACMA is an agency under the Act.

collects: an entity **collects** personal information only if the entity collects the personal information for inclusion in a record or generally available publication.

Personal information could be collected for inclusion in a generally available publication such as a callbook or register of amateur licences.

Commonwealth contract means a contract, to which the Commonwealth or an agency is or was a party, under which services are to be, or were to be, provided to an agency.

Note: See also subsection (9) about provision of services to an agency.

contracted service provider, for a government contract, means:

- (a) an organisation that is or was a party to the government contract and that is or was responsible for the provision of services to an agency or a State or Territory authority under the government contract; or
- (b) a subcontractor for the government contract.

consent means express consent or implied consent.

de-identified: personal information is **de-identified** if the information is no longer about an identifiable individual or an individual who is reasonably identifiable.

enforcement body means:

- (f) another agency, to the extent that it is responsible for administering, or performing a function under, a law that imposes a penalty or sanction or a prescribed law; or

The ACMA is an enforcement body

enforcement related activity means:

- (a) the prevention, detection, investigation, prosecution or punishment of:
 - (i) criminal offences; or
 - (ii) breaches of a law imposing a penalty or sanction; or
- (b) the conduct of surveillance activities, intelligence gathering activities or monitoring activities; or
 - (i) the prevention, detection, investigation or remedying of misconduct of a serious nature, or other conduct prescribed by the regulations; or
 - (ii) the preparation for, or conduct of, proceedings before any court or tribunal, or the implementation of court/tribunal orders.

The ACMA has enforcement activities.

generally available publication means a magazine, book, article, newspaper or other publication that is, or will be, generally available to members of the public:

- (a) whether or not it is published in print, electronically or in any other form; and
- (b) whether or not it is available on the payment of a fee.

government related identifier of an individual means an identifier of the individual that has been assigned by:

- (a) an agency; or
- (b) a State or Territory authority; or
- (c) an agent of an agency, or a State or Territory authority, acting in its capacity as agent; or
- (d) a contracted service provider for a Commonwealth contract, or a State contract, acting in its capacity as contracted service provider for that contract.

For example a callsign is a **government related identifier**.

identification information about an individual means:

- (a) the individual's full name; or
- (b) an alias or previous name of the individual; or
- (c) the individual's current or last known address, and 2 previous addresses (if any); or

identifier of an individual means a number, letter or symbol, or a combination of any or all of those things, that is used to identify the individual or to verify the identity of the individual, but does not include:

- (a) the individual's name; or
- (c) anything else prescribed by the regulations.

Includes the format of a callsign.

personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable:

- (a) whether the information or opinion is true or not; and
- (b) whether the information or opinion is recorded in a material form or not.

Note: Section 187LA of the Telecommunications (Interception and Access) Act 1979 extends the meaning of personal information to cover information kept under Part 5-1A of that Act.

sensitive information means:

- (a) information or an opinion about an individual's:
 - (i) racial or ethnic origin; or
 - (ii) political opinions; or
 - (iii) membership of a political association; or
 - (iv) religious beliefs or affiliations; or
 - (v) philosophical beliefs; or
 - (vi) membership of a professional or trade association; or
 - (vii) membership of a trade union; or
 - (viii) sexual orientation or practices; or
 - (ix) criminal record;that is also personal information; or
- (b) health information about an individual; or
- (c) genetic information about an individual that is not otherwise health information; or
- (d) biometric information that is to be used for the purpose of automated biometric verification or biometric identification; or
- (e) biometric templates.

The information that would be published in a callbook would be classified as **personal information**. None of the information printed in a callbook contains any **sensitive information** as defined under the Privacy Act.

6AA Meaning of responsible person

(1) A responsible person for an individual is:

- (ii) a parent of the individual; or
- (iii) a child or sibling of the individual if the child or sibling is at least 18 years old; or
- (iv) a spouse or de facto partner of the individual; or
- (v) a relative of the individual if the relative is:
 - i. at least 18 years old; and
 - ii. (ii) a member of the individual's household; or
- (vi) a guardian of the individual; or
- (vii) a person exercising an enduring power of attorney granted by the individual that is exercisable in relation to decisions about the individual's health; or
- (viii) a person who has an intimate personal relationship with the individual; or
- (ix) a person nominated by the individual to be contacted in case of emergency.

(2) In this section:

child: without limiting who is a child of an individual for the purposes of subsection (1), each of the following is a **child** of an individual:

- (a) an adopted child, stepchild, exnuptial child or foster child of the individual;
- (b) someone who is a child of the individual within the meaning of the Family Law Act 1975.

parent: without limiting who is a parent of an individual for the purposes of subsection (1), someone is a **parent** of an individual if the individual is his or her child because of the definition of **child** in this subsection.

stepchild: without limiting who is a stepchild of an individual, someone is a stepchild of an individual if he or she would be the individual's stepchild except that the individual is not legally married to the individual's de facto partner.

Consent is a significant issue. An amateur licence can be held by an individual who is incapable of giving consent e.g. due to age, etc. This will be explored further.

Schedule 1—Australian Privacy Principles

5 Australian Privacy Principle 5—notification of the collection of personal information

5.1 At or before the time or, if that is not practicable, as soon as practicable after, an APP entity collects personal information about an individual, the entity must take such steps (if any) as are reasonable in the circumstances:

- (a) to notify the individual of such matters referred to in subclause 5.2 as are reasonable in the circumstances; or
- (b) to otherwise ensure that the individual is aware of any such matters.

5.2 The matters for the purposes of subclause 5.1 are as follows:

- (a) the identity and contact details of the APP entity;
- (b) if:
 - (i) the APP entity collects the personal information from someone other than the individual; or
 - (ii) the individual may not be aware that the APP entity has collected the personal information;

the fact that the entity so collects, or has collected, the information and the circumstances of that collection;

- (c) if the collection of the personal information is required or authorised by or under an Australian law or a court/tribunal order—the fact that the collection is so required or authorised (including the name of the Australian law, or details of the court/tribunal order, that requires or authorises the collection);
- (d) the purposes for which the APP entity collects the personal information;
- (e) the main consequences (if any) for the individual if all or some of the personal information is not collected by the APP entity;
- (f) any other APP entity, body or person, or the types of any other APP entities, bodies or persons, to which the APP entity usually discloses personal information of the kind collected by the entity;
- (g) that the APP privacy policy of the APP entity contains information about how the individual may access the personal information about the individual that is held by the entity and seek the correction of such information;
- (h) that the APP privacy policy of the APP entity contains information about how the individual may complain about a breach of the Australian Privacy Principles, or a registered APP code (if any) that binds the entity, and how the entity will deal with such a complaint;
- (i) whether the APP entity is likely to disclose the personal information to overseas recipients;

- (j) if the APP entity is likely to disclose the personal information to overseas recipients—the countries in which such recipients are likely to be located if it is practicable to specify those countries in the notification or to otherwise make the individual aware of them.

Part 3—Dealing with personal information

6 Australian Privacy Principle 6—use or disclosure of personal information

Use or disclosure

6.1 If an APP entity holds personal information about an individual that was collected for a particular purpose (the primary purpose), the entity must not use or disclose the information for another purpose (the secondary purpose) unless:

- 9.1 the individual has consented to the use or disclosure of the information; or

If an individual has given consent then the station/licence information can be released for publication in a callbook or contained in an online database established by the ACMA or contractor. The ACMA has designed, engineered and implemented its systems, processes and procedures so that they do not collect consent. This design choice not to collect consent is not a legislative requirement.

9 Australian Privacy Principle 9—adoption, use or disclosure of government related identifiers

Use or disclosure of government related identifiers

9.2 An organisation must not use or disclose a government related identifier of an individual unless:

- (a) the use or disclosure of the identifier is reasonably necessary for the organisation to verify the identity of the individual for the purposes of the organisation's activities or functions; or
- (b) the use or disclosure of the identifier is reasonably necessary for the organisation to fulfil its obligations to an agency or a State or Territory authority; or
- (c) the use or disclosure of the identifier is required or authorised by or under an Australian law or a court/tribunal order; or
- (e) the organisation reasonably believes that the use or disclosure of the identifier is reasonably necessary for one or more enforcement related activities conducted by, or on behalf of, an enforcement body; or

Amateur call signs are a **government related identifier** required to be broadcast under the Act. Disclosure is also a necessary use for the enforcement related activities of the ACMA.

Australian Privacy Principles guidelines

*Chapter B: Key concepts*⁸⁷

22 July 2019

Consent

B.34 Consent is relevant to the operation of a number of APPs. In some, consent is an exception to a general prohibition against personal information being handled in a particular way (for example, APPs 3.3(a) and 6.1(a)). In others, consent provides

⁸⁷ Key Concepts page

authority to handle personal information in a particular way (for example, APPs 7.3, 7.4 and 8.2(b)).

B.35 Consent means 'express consent or implied consent' (s 6(1)). The four key elements of consent are:

- the individual is adequately informed before giving consent
- the individual gives consent voluntarily
- the consent is current and specific, and
- the individual has the capacity to understand and communicate their consent

Express or implied consent

B.36 Express consent is given explicitly, either orally or in writing. This could include a handwritten signature, an oral statement, or use of an electronic medium or voice signature to signify agreement.

B.37 Implied consent arises where consent may reasonably be inferred in the circumstances from the conduct of the individual and the APP entity.

B.38 An APP entity should not assume that an individual has consented to a collection, use or disclosure that appears to be advantageous to that person. Nor can an entity establish implied consent by asserting that if the individual knew about the benefits of the collection, use or disclosure, they would probably consent to it.

B.39 Generally, it should not be assumed that an individual has given consent on the basis alone that they did not object to a proposal to handle personal information in a particular way. An APP entity cannot infer consent simply because it provided an individual with notice of a proposed collection, use or disclosure of personal information. It will be difficult for an entity to establish that an individual's silence can be taken as consent. Consent may not be implied if an individual's intent is ambiguous or there is reasonable doubt about the individual's intention.

B.40 Use of an opt-out mechanism to infer an individual's consent will only be appropriate in limited circumstances, as the individual's intention in failing to opt-out may be ambiguous. An APP entity will be in a better position to establish the individual's implied consent the more that the following factors, where relevant, are met:

- the opt out option was clearly and prominently presented
- it is likely that the individual received and read the information about the proposed collection, use or disclosure, and the option to opt out
- the individual was given information on the implications of not opting out
- the opt out option was freely available and not bundled with other purposes
- it was easy for the individual to exercise the option to opt out, for example, there was little or no financial cost or effort required by the individual
- the consequences of failing to opt out are not serious
- an individual who opts out at a later time will, as far as practicable, be placed in the position as if they had opted out earlier

- B.41 APP entity should generally seek express consent from an individual before handling the individual's sensitive information, given the greater privacy impact this could have.
- B.42 An APP entity should as far as practicable implement procedures and systems to obtain and record consent. This may resolve any doubt about whether consent was given (either on the basis of express or implied consent).

Voluntary

- B.43 Consent is voluntary if an individual has a genuine opportunity to provide or withhold consent. Consent is not voluntary where there is duress, coercion or pressure that could overpower the person's will.
- B.44 Factors relevant to deciding whether consent is voluntary include:
- the alternatives open to the individual, if they choose not to consent
 - the seriousness of any consequences if an individual refuses to consent
 - any adverse consequences for family members or associates of the individual if the individual refuses to consent

Bundled consent

- B.45 Bundled consent refers to the practice of an APP entity 'bundling' together multiple requests for an individual's consent to a wide range of collections, uses and disclosures of personal information, without giving the individual the opportunity to choose which collections, uses and disclosures they agree to and which they do not.
- B.46 This practice has the potential to undermine the voluntary nature of the consent. If a bundled consent is contemplated, an APP entity could consider whether:
- it is practicable and reasonable to give the individual the opportunity to refuse consent to one or more proposed collections, uses and/or disclosures
 - the individual will be sufficiently informed about each of the proposed collections, uses and/or disclosures
 - the individual will be advised of the consequences (if any) of failing to consent to one or more of the proposed collections, uses and/or disclosures (see also, discussion of 'informed' below)

Informed

- B.47 An individual must be aware of the implications of providing or withholding consent, for example, whether access to a service will be denied if consent is not given to collection of a specific item of personal information. An APP entity should ensure that an individual is properly and clearly informed about how their personal information will be handled, so they can decide whether to give consent (see also, discussion of 'capacity' below). The information should be written in plain English, without legal or industry jargon.

Current and specific

- B.48 An APP entity should generally seek consent from an individual for collection and proposed uses and disclosures of personal information at the time the information is collected. Alternatively, if consent was not sought at the time of

collection, or that consent did not cover a proposed use or disclosure, an entity should seek the individual's consent at the time of the use or disclosure.

- B.49 Consent given at a particular time in particular circumstances cannot be assumed to endure indefinitely. It is good practice to inform the individual of the period for which the consent will be relied on in the absence of a material change of circumstances.
- B.50 An APP entity should not seek a broader consent than is necessary for its purposes, for example, consent for undefined future uses, or consent to 'all legitimate uses or disclosures' (see also, discussion of 'bundled consent' above). When seeking consent, an entity should describe the purpose to which it relates. The level of specificity required will depend on the circumstances, including the sensitivity of the personal information.
- B.51 An individual may withdraw their consent at any time, and this should be an easy and accessible process. Once an individual has withdrawn consent, an APP entity can no longer rely on that past consent for any future use or disclosure of the individual's personal information. Individuals should be made aware of the potential implications of withdrawing consent, such as no longer being able to access a service.

Capacity

- B.52 An individual must have the capacity to consent. This means that the individual is capable of understanding the nature of a consent decision, including the effect of giving or withholding consent, forming a view based on reasoned judgement and how to communicate a consent decision. An APP entity can ordinarily presume that an individual has the capacity to consent, unless there is something to alert it otherwise, for example, the individual is a child or young person (see below). If an entity is uncertain as to whether an individual has capacity to consent at a particular time, it should not rely on any statement of consent given by the individual at that time.
- B.53 Issues that could affect an individual's capacity to consent include:
- Age
 - physical or mental disability
 - temporary incapacity, for example during a psychotic episode, a temporary psychiatric illness, or because the individual is unconscious, in severe distress or suffering dementia
 - limited understanding of English
- B.54 An APP entity should consider whether any such issue could be addressed by providing the individual with appropriate support to enable them to have capacity to consent. If an individual does not have capacity to consent, even with support or the provision of additional resources such as an interpreter or alternative communication methods, and consent is required, an entity should consider who can act on the individual's behalf. Options include:
- a guardian
 - someone with an enduring power of attorney
 - a person recognised by other relevant laws, for example in NSW, a 'person responsible' under the Guardianship Act 1987 (NSW) (this may be an individual's spouse, partner, carer, family member or close friend), or

- a person who has been nominated in writing by the individual while they were capable of giving consent

B.55 An individual who lacks the capacity to consent should nevertheless be involved, as far as practicable, in any decision-making process. To the extent practicable in the circumstances, an APP entity should ensure that privacy issues are discussed with individuals who have impaired decision-making capacity in a way that is understandable and comprehensible.

Children and young people

B.56 The Privacy Act does not specify an age after which individuals can make their own privacy decisions. An APP entity will need to determine on a case-by-case basis whether an individual under the age of 18 has the capacity to consent.

B.57 As a general principle, an individual under the age of 18 has capacity to consent when they have sufficient understanding and maturity to understand what is being proposed. In some circumstances, it may be appropriate for a parent or guardian to consent on behalf of a young person, for example, if the child is young or lacks the maturity or understanding to do so themselves.

Due to the nature of the personal information to be published it is appropriate to assume a person the age of 18 and over has the capacity to consent. The [Radiocommunications \(Minimum Age for Issue of Certificates of Proficiency\) Declaration 2015](#)⁸⁸ does not set a minimum age for a Certificate of Proficiency for the Amateur Service. For individuals under the age of 18 it would be a requirement for a guardian or parent to give consent.

B.58 If it is not practicable or reasonable for an APP entity to assess the capacity of individuals under the age of 18 on a case-by-case basis, the entity may presume that an individual aged 15 or over has capacity to consent, unless there is something to suggest otherwise. An individual aged under 15 is presumed not to have capacity to consent.

Due to the nature of the personal information to be published it is not appropriate to assume any person under the age of 18 has the capacity to consent.

[Chapter 6: APP 6 — Use or disclosure of personal information](#)⁸⁹

22 July 2019

Using or disclosing personal information with the individual's consent

6.16 APP 6.1(a) permits an APP entity to use or disclose personal information for a secondary purpose where the individual has consented to the use or disclosure.

6.17 Consent is defined in s 6(1) as 'express consent or implied consent' and is discussed in Chapter B (Key concepts). The four key elements of consent are:

- the individual is adequately informed before giving consent
- the individual gives consent voluntarily
- the consent is current and specific, and
- the individual has the capacity to understand and communicate their consent

⁸⁸ <https://www.legislation.gov.au/Details/F2015L01286>

⁸⁹ Chapter 6 page:- <https://www.oaic.gov.au/privacy/australian-privacy-principles-guidelines/chapter-6-app-6-use-or-disclosure-of-personal-information>

Using or disclosing personal information where reasonably expected by the individual and related to the primary purpose of collection

6.18 APP 6.2(a) permits an APP entity to use or disclose personal information for a secondary purpose if the individual would reasonably expect the entity to use or disclose the information for that secondary purpose, and:

if the information is sensitive information, the secondary purpose is directly related to the primary purpose of collection, or

Callbooks should not contain sensitive information therefore the secondary purpose does not have to be directly related to the primary purpose.

if the information is not sensitive information, the secondary purpose is related to the primary purpose of collection

6.19 This exception creates a two-limb test which focuses both on the reasonable expectations of the individual, and the relationship between the primary and secondary purposes.

Reasonably expect

6.20 The 'reasonably expects' test is an objective one that has regard to what a reasonable person, who is properly informed, would expect in the circumstances. This is a question of fact in each individual case. It is the responsibility of the APP entity to be able to justify its conduct.

6.21 An APP entity should consider whether an individual would reasonably expect it to use or disclose for a secondary purpose only some of the personal information it holds about the individual, rather than all of the personal information it holds. The entity should only use or disclose the minimum amount of personal information sufficient for the secondary purpose. For example, an individual may not reasonably expect an entity that is investigating their complaint against a contractor to disclose the individual's residential address and home contact details to the contractor as part of its investigation. The individual would reasonably expect the entity to give the contractor only the minimum amount of personal information necessary to enable them to respond to the complaint.[7]

6.22 Examples of where an individual may reasonably expect their personal information to be used or disclosed for a secondary purpose include where:

- the entity has notified the individual of the particular secondary purpose under APP 5.1 (see Chapter 5 (APP 5))

Relationship between the primary and secondary purpose

6.23 This exception is limited to using or disclosing personal information for a secondary purpose that is 'related', or for sensitive information 'directly related', to the primary purpose of collection.

Related secondary purpose

6.24 A related secondary purpose is one which is connected to or associated with the primary purpose. There must be more than a tenuous link.⁹⁰

⁹⁰ For examples of where disclosure of personal information for a secondary purpose is not related to the primary purpose of collection, see *B v Hotel* [2008] PrivCmrA 2, Australasian Legal Information Institute website <www.austlii.edu.au/>. *E v Insurance Company* [2011] PrivCmrA 5, Australasian Legal Information Institute website <www.austlii.edu.au/>.

6.25 Examples of where a secondary purpose is related to the primary purpose of collection include:

- An organisation collects personal information about an individual for the primary purpose of collecting a debt. A law firm, acting on behalf of that organisation in relation to the debt collection, contacts the individual's neighbour and seeks information from the neighbour about the individual's whereabouts (but does not disclose any specific information about the debt). This disclosure to the neighbour, for the secondary purpose of locating the individual, is related to the primary purpose of debt collection and would be within the individual's reasonable expectations
- An agency collects personal information to include in an employee's personnel file for the primary purpose of administering that individual's employment. It then uses this personal information as part of an investigation into complaints by the individual about working conditions. In these circumstances, the use for the secondary purpose of investigating a complaint in the workplace is related to the primary purpose of collection, and would be within the individual's reasonable expectations
- An APP entity uses personal information for the purpose of de-identifying the information.

Directly related secondary purpose

6.26 For the use or disclosure of sensitive information, the secondary purpose must be 'directly related' to the primary purpose of collection. A directly related secondary purpose is one which is closely associated with the primary purpose, even if it is not strictly necessary to achieve that primary purpose. This requirement for a direct relationship recognises that the use and disclosure of sensitive information can have serious ramifications for the individual or their associates, including humiliation, embarrassment or loss of dignity.

The publication of station/licence information online or in a callbook is a related secondary purpose

6.27 An example of where a secondary purpose is directly related to the primary purpose of collection is:

- A health service provider collects health information about an individual for the purpose of providing treatment, and then decides, for ethical and therapeutic reasons, that they cannot treat the individual. The health service provider then advises another provider at the medical clinic of the individual's need for treatment and of the provider's inability to provide that treatment. This disclosure to the other provider is directly related to the purpose for which the information was collected, and would be within the individual's reasonable expectations.

6.28 The use of sensitive information for the purpose of de-identifying the information will also be directly related to the primary purpose of collection.

The ACMA and/or contractors could publish full station/licence information (entries) online or for the production of a callbook. All that is required is an appropriate level of consent. An individual giving or withholding consent should be given the ability to suppress an address or name, etc.

Membership of one or more of the groups formed to promote the hobby of amateur radio is not sensitive information as defined in the Act. Therefore the ACMA or contractors could capture this information and with consent enable this personal information to be published online or in a callbook.

The Wireless Institute of Australia

Corporations Act 2001

Constitution of the Wireless Institute of Australia

A company limited by Guarantee

1 Name

The name of the company is The Wireless Institute of Australia (the "Institute").

2 Capacity

Subject to the Corporations Act, the Institute has the legal capacity of a natural person including the capacity to exercise the powers set out in section 124 of the Corporations Act.

It is the intention that this Constitution will not restrict or prohibit the exercise by the Institute of any of these powers.

3 Objects

The objects for which the Institute is established are:

- to promote, advance and represent in any way it thinks fit Amateur Radio and the interests of Radio Amateurs, and without limiting the generality of the forgoing,
- to protect and enhance the privileges of Radio Amateurs,
- to encourage an awareness of the value of Amateur Radio,
- to educate and encourage potential Radio Amateurs,
- to represent Radio Amateurs both nationally and internationally,
- to provide services for Radio Amateurs and those interested in Amateur Radio, and
- to do all other lawful things as are incidental or conducive to the attainment of these objects
- or any of them or which may be calculated to advance directly or indirectly the interests of the Institute.

WIA membership is information that could be collected and with consent published online or in a callbook.

Radio Amateur Society of Australia

Consumer Affairs Victoria

Associations Incorporation Reform Act 2012

Rules for the Radio Amateur Society of Australia inc. (RASA), April 5, 2018

Associations Incorporation Reform Regulations 2012

Rules for this Incorporated Association

Note

The persons who from time to time are members of the Association are an incorporated association by the name given in rule 1 of these Rules.

Under section 46 of the **Associations Incorporation Reform Act 2012**, these Rules are taken to constitute the terms of a contract between the Association and its members.

Introduction by the General Secretary

These rules of Incorporation are based upon the Model Rules as provided by Consumer Affairs Victoria.

By its nature, the members of RASA, chiefly licensed Amateur Radio Operators, are spread widely around Australia. Its operation will be heavily reliant upon the Internet for providing information to its members and collecting their responses, as physical meetings will be impractical and infrequent.

All variations to the Model Rules within this document reflect the minimum changes required to retain the integrity of this Association while taking the greatest advantage of contemporary communications technologies.

This dynamic differs from how most local community groups and sporting clubs operate, but the principle of a democratically elected committee representing its members in a fair and transparent way remains paramount.

Part 1—Preliminary

1 Name

The name of the incorporated association is:

"Radio Amateur Society of Australia Incorporated".

Note Under section 23 of the Act, the name of the association and its registration number must appear on all its business documents.

2 Purposes

The purposes of the association are:

Promotes the hobby of Amateur Radio in Australia.

- provide evidence based research and strategic direction for issues related to Amateur Radio to third parties involved in the administration, management and regulation of the hobby;
- promote Amateur Radio and its role in facilitating emerging communication technologies;
- educate and encourage the next generation of Radio Amateurs; and
- lobby the regulator in order to protect and enhance the privileges of Australian Radio Amateurs.

RASA membership is information that could be collected and with consent published online or in a callbook.

As seen above, the introduction of the appropriate tools to record consent could enable:

- the ACMA, a contractor or interested party (e.g. the WIA, RASA, etc.) to collect then publish online personal information related to a station/licence.
- the production of a callbook by any interested party .eg. WIA or RASA

The ACMA, contractors and interested parties have to implement systems to capture consent. They should make appropriate changes in the way they collect then distribute personal and sensitive information. This requires a modification to the ACMA processes, the ACMA Register of Radiocommunication licences, and any systems that are established to replace the current systems.

The assumption by the ACMA that it does not have capacity to hold or publish with consent personal information under the current or future class licencing system is incorrect. The Privacy Act does include provisions for collection of consent, publication, etc.

[ITU Radio Regulations Articles 2020⁹¹](#)

Chapter IV - Interferences

ARTICLE 15 - Interferences

Section VI – Procedure in a case of harmful interference

15.28 § 20 Recognizing that transmissions on distress and safety frequencies and frequencies used for the safety and regularity of flight (see Article 31 and Appendix 27) require absolute international protection and that the elimination of harmful interference to such transmissions is imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference. (WRC-07)

15.37 § 29 An administration receiving a communication to the effect that one of its stations is causing harmful interference to a safety service shall promptly investigate the matter and take any necessary remedial action and respond in a timely manner. (WRC-2000)

With a class licence and call sign for life the ACMA has made no provision for maintaining a mandatory register of currently assigned call signs with current station addresses and/or postal addresses for contact, notices, etc. Under ITU Radio Regulations the ACMA is required to act immediately to remedy harmful interference. Without knowledge of the allocated call signs under class licences, or any details concerning the location of base, mobile or portable amateur stations and no contact details the ACMA cannot perform its role and responsibilities under the ITU international Code and Conventions.

Dismantling the RRL records and not implementing a suitable replacement under a class licence is not appropriate given the responsibilities of the ACMA. An unregulated, voluntary database cannot be guaranteed to contain accurate information. Under the proposed class licence the AMC will be the only organisation with a record of assigned call signs but the ACMA only requires the AMC to make available a database of unallocated call signs.

The ACMA has not made any provision for the maintenance of an online database of assigned call signs. As discussed above the ACMA is capable of maintaining a public register of assigned call signs with a requirement for all Amateurs to maintain accurate station details plus the recording of consent under the Privacy Act.

⁹¹ ITU Radio Regulations downloads:- <https://www.itu.int/pub/R-REG-RR-2020>

7. Do you anticipate any difficulties operating your station in Conference of Postal and Telecommunications Administrations signatory countries?

Yes.

The current proposal from the ACMA needs to be modified to correct deficiencies in the implementation of Class Licences for the Amateur Service in Australia.

[CEPT Radio Amateur Licence](#)⁹²
[CEPT](#)⁹³, [ECO](#)⁹⁴, [Electronic Communications Committee](#)⁹⁵

Recommendation T/R 61-01

Annex 1: General Conditions For The Issue Of The "CEPT Radio Amateur Licence"

1. General Provisions Relating To "CEPT Radio Amateur Licence"

The "CEPT radio amateur licence" can be included in the national licence or be a special document issued by the same authority, and will be drafted in the national language and in German, English and French;

There is no provision for an Australian class licence for the Amateur Service to be drafted in German, English and French. In the current proposal under a class licence there is not going to be an individual licenced issued to each amateur operator. Without a national licence the ACMA needs to issue an appropriate "CEPT Radio amateur Licence" to each licenced amateur. Refer to the New Zealand sample licence in the WIA submission.

The minimum requirements for a "CEPT radio amateur licence" includes:

- indication that the document is a CEPT amateur licence;
- a declaration according to which the holder is authorised to utilise an amateur radio station in accordance with this Recommendation in countries where the latter applies;
- the name and address of the holder;
- the call sign;
- the validity;
- the issuing authority.

The issue of a call sign from the AMC will not indicate the document is a CEPT amateur Licence fulfilling all the requirements for a "CEPT radio amateur licence".

A list may be added or provided indicating the administrations applying the Recommendation.

⁹² <https://docdb.cept.org/document/related/925>

⁹³ **Conférence Européenne des administrations des Postes et des Télécommunications (CEPT)** is known in English as the **European Conference of Postal and Telecommunications Administrations (CEPT)**:- <https://www.cept.org/>

⁹⁴ European Communications Office:- <https://www.cept.org/eco>

⁹⁵ <https://www.cept.org/ecc/>

2. Conditions Of Utilisation

- 2.1 On request the licence holder shall present his CEPT radio amateur licence to the appropriate authorities in the country visited.

Under the current ACMA proposal an Australian amateur will not be issued an individual "CEPT radio amateur licence" that can be presented.

Annex 3: Participation Of Non-CEPT Administrations In The "CEPT Radio Amateur Licence" According To This Recommendation

1. Application

1.1 Administrations, not being members of CEPT, may apply to the CEPT for participation in the CEPT radio amateur licencing systems regulated by this Recommendation. Applications should be addressed to CEPT Electronic Communications Committee (ECC), through the Office European Communications Office (ECO), Nyropsgade 37,4, DK-1602 Copenhagen V, Denmark).

A non-CEPT Administration in joining this Recommendation enters into an agreement with all CEPT countries having implemented this Recommendation or will do so in the future. It should be noted that non-CEPT countries wishing to implement this Recommendation between them should do so by separate agreement.

Australia has given a commitment to implement this recommendation.

- 1.2 An application from a non-CEPT administration shall include a Statement of Conformity (SOC) which confirms that following a comparative assessment of their national amateur radio examination syllabuses and licence classes with Annex 6 of CEPT Recommendation T/R 61-02 (HAREC), which particular national licence classes are considered to be equivalent to the CEPT licence. A list of these licence classes and their privileges (if such privileges are substantially different to the CEPT licence) shall be included in the SOC, see paragraphs 8 and 11 of ANNEX 5. All the details mentioned above must be submitted in one of the official languages of the CEPT (English, French or German).

The ACMA consultation implies that Australian Amateurs are incapable of operating stations of more than 400W under the Advanced amateur examination and that a non-CEPT licence is required to operate an amateur station at any higher power levels. Although Australia has updated the national radio examination syllabus to conform to the required standard, the actual examination implemented does not ensure an Advanced amateur qualification is at the required level for CEPT recognition. If a foreign agency decides to stop recognition it will be outside the control of an individual amateur.

- 1.3 The applying Administration shall also provide the call sign prefix (see paragraph 10 of Annex 5) to be used by visiting radio amateurs in the SOC and details of any special conditions relating to the implementation of this Recommendation in the country concerned. Special conditions or restrictions should be confined to a minimum, and should not be imposed unless absolutely necessary, and shall be included in a footnote in Annex 4.

On occasion Australia amateurs may use AX, VI, VJ, VK or VL call sign prefixes. In Annex 4 only the VK call sign prefix is documented for use by Australia amateurs. The ACMA needs to update this entry or provide advice to the amateur service as this is not a document commonly read by Australian amateurs. For example, what are the appropriate call signs to be used in other countries, when and where the AX, VI, VJ, VK and VL prefixes will be used.

Annex 4: Table Of Equivalence Between National Licences Of Non-CEPT Countries And The CEPT Licence And Operating Privileges In Non-CEPT Countries Valid For Holders Of Licences Issued By CEPT Administrations In Conformity With This Recommendation

Table 2: Non-CEPT countries

Table 11 - Comparison of Australian Licence with CEPT Licence

Table Non-CEPT countries	Call sign prefix(es) to be used in visited countries	National licences of non-CEPT countries equivalent to the CEPT licence	The operating privileges issued by non-CEPT administrations to holders of the CEPT licence
1	2	3	4
Australia	VK	Amateur Licence (Amateur Advanced station) or Amateur Operator's Certificate of Proficiency (Advanced) ¹⁷	Part 3, Divisions 1 and 2 of the Radiocommunications (Overseas Amateurs Visiting Australia) Class Licence 2015

17 Australia is currently reviewing licensing arrangements and until a decision is made both are considered valid. The AOCP-A is issued by the Australian Maritime College. Older Advanced-level certificates issued in Australia are equivalent to the AOCP-A. The Australian Communications and Media Authority confirms equivalency in writing to operators on request.

What is not stated in the ACMA consultation is the cost of applying for this document in the Cost Recovery Implementation Statement – fees for radiocommunications, telecommunications and broadcasting services, Budget year 2022–23 would be \$38.00

Under the class licence proposal an amateur will not be issued an Amateur Licence. The current entry for Australia lists the Amateur Operator's Certificate of Proficiency (Advanced) but does not list:

- Amateur Operator's Certificate of Proficiency (AOCP)
- Amateur Operator's Limited Certificate of Proficiency (AOLCP)

The footnote states older certificates are equivalent but does not state which certificates would be classed as equivalent. For example, an AOLCP might be mistaken or misinterpreted as a Standard level qualification. Customs Officials tend to be inflexible if documentation does not appear to be current or applicable. For example references to the title of the Limited Certificate are not consistent.

The ACMA [states](#)⁹⁶:

We may give you a foundation, standard or advanced licence if you have one of these

- Radio general certificate of proficiency (any country)
- First or second class commercial operator's certificate of proficiency (any country)
- Senior coast or coast station operator's certificate of proficiency

⁹⁶ <https://www.acma.gov.au/amateur-radio-qualifications>

Once the Apparatus Licence of Amateur Operators holding these alternate certificates has expired holders of these certificates of proficiency would lose their ability to operate VK call signs as their certificates are not recognised for Australia.

The AMC also lists a number of other certificates of proficiency that may be acceptable but are not detailed by the AMCA.

On the introduction of a class licence for the Amateur Service the ACMA should provide an appropriate individual, "CEPT radio amateur licence" for every qualified individual. Considering this would be an automatically generated document based on existing data the implementation cost should be minimal as the ACMA will be required to notify all Apparatus Licence holders of the change to a Class Licence and the option of refunds.

[Harmonised Amateur Radio Examination Certificate \(HAREC\)](#)⁹⁷

[Recommendation T/R 61-02](#)⁹⁸

Introduction

The Recommendation as approved in 1990 makes it possible for CEPT administrations to issue a Harmonised Amateur Radio Examination Certificate (HAREC). The HAREC document shows proof of successfully passing an amateur radio examination which complies with the Examination Syllabus for the HAREC. It facilitates the issuing of an individual licence to radio amateurs who stay in a country for a longer term than that mentioned in CEPT Recommendation T/R 61-01.

[Recommendation T/R 61-02 of February 2004 on Harmonised Amateur Radio Examination Certificate \(T/R 61-02\)](#)

recommends

2. that administrations, not being members of CEPT, accepting the provisions of this Recommendation, may apply for participation in accordance with the conditions laid down in ANNEX 3: and ANNEX 4:;
5. that administrations shall ensure that the information shown in ANNEX 2: and ANNEX 4: (licence classes equivalent to the CEPT examination level) is kept up-to-date when national legislation is amended.

As discussed above, the information in Annex 2 and Annex 4 is incomplete.

[Annex 1: Conditions For Issuing of the Harmonised Amateur Radio Examination Certificate \(HAREC\)](#)

- 1.b A HAREC will be issued by non-CEPT administrations to persons who have passed a national examination for radio amateurs that meets the criteria set out in paragraph 2 below. (The national licences corresponding to such examinations are set out ANNEX 4:.

With the introduction of class licences the ACMA should issue a Harmonised Amateur Radio Examination Certificate (HAREC) to every qualifying Amateur Operator currently issued an Apparatus Licence. Alternatively the ACMA should publicise how a qualify Amateur Operator can obtain their HAREC.

⁹⁷ <https://docdb.cept.org/document/925>

⁹⁸ <https://docdb.cept.org/document/926>

1.e National licences corresponding to HAREC and licences administrations will issue to holders of the HAREC from other countries are shown in ANNEX 2: and ANNEX 4:.

2. Criteria for national examinations

National examinations which qualify the examinee for a HAREC certificate shall cover the subjects that a radio amateur may encounter in conducting tests with an amateur station and with its operation.

They must include at least technical, operational and regulatory matters (see the examination syllabus).

3. The HAREC document

The Harmonised Amateur Radio Examination Certificate shall contain at least the following information in the language of the country of issue as well as in English, French and German:

- a) a statement to the effect that the holder has passed an examination, meeting the requirements described in this recommendation;
- b) the holder's name and date of birth;
- c) the date of issue;
- d) the issuing authority.

The necessary information can be included in the national certificate or in a special document as set out in ANNEX 5:.

Under the proposed class licence the ACMA is not issuing a Certificate of Proficiency in the appropriate form to be a HAREC or the special document in Annex 5.

International reciprocity arrangements for Australian amateurs with Advanced qualifications travelling overseas

Proposed arrangements

Currently, this means that Advanced amateurs can produce either their licence or their certificate to overseas regulators or customs officials. A note in the documents reads:

Australia is currently reviewing licensing arrangements and until a decision is made both are considered valid. The AOCP-A is issued by the Australian Maritime College. Older Advanced certificates issued in Australia are equivalent to the AOCP-A. The Australian Communications and Media Authority confirms equivalency in writing to operators on request.

Anyone holding older certificates of proficiency can contact us for letters confirming equivalence of older certificates, if necessary.

The ACMA assumption is that original certificates were issued, currently exist and can be produced for international authorities and customs officials. The ACMA cannot rely on these mistaken assumptions to satisfy the documentary requirements of international regulators and Custom Officials.

Currently an Apparatus Licence can be produced that documents an appropriate regulatory authority (i.e. the ACMA) has issued the document to the identified individual. A current Apparatus Licence states the individual has:

- Sat and passed examinations that meet the requirements of H..
- Been issued valid call sign that meets the requirements of the ITU Radio Regulations by the Australian regulatory authority.

After passing the examinations for the Amateur Operator's Limited Certificate of Proficiency an actual certificate was not issued. The only paperwork that confirms I hold a HAREC equivalent licence is the Apparatus Licence that will expire after the introduction of Class Licences. Production of an expired Apparatus Licence to an international regulators and Customs Officials will not be acceptable.

Letters from the ACMA confirming the equivalence of older certificates is useless if the older certificate was never issued or has been lost. The consultation paper does not indicate how an amateur operator can receive an a replacement certificate of proficiency from organizations that have ceased to exist or has no responsibility to supply certificates e.g. The Postmaster-General's Department (PMG) and its successors that existed prior to the ACMA.

With the introduction of class licences every current holder of an Apparatus Licence has to be issued an appropriate Certificate with a letter confirming equivalent to HAREC from the ACMA when the call sign is valid for the life of the individual.

8. What are your views on the proposal to allow Advanced amateurs to apply for assigned scientific licences for certain experimentation uses, such as reflecting signals from a celestial body as well as inter-continental ionospheric and trans-equatorial propagation experiments?

Assigned scientific licencing arrangements are not relevant to amateur service operations. Previous variations to Advanced amateur licences have permitted high power operation. The prohibitions on the issue of a [Scientific Licence](#)⁹⁹ published by the ACMA includes:

- Equipment that uses amateur frequencies.
- A scientific licence is appropriate where radiocommunications equipment cannot be more appropriately licensed for long-term operation by another licence type.
- The scientific non-assigned licensing option will be used for scientific licences where:
 - i. Standard frequencies apply; or
 - ii. b) A screened room is used; or
 - iii. c) Testing takes place into a non-radiating dummy load.

As high power operation can be licenced with an Advanced amateur licence a Scientific Licence is not applicable. The amateur service uses bands of frequencies and as standard frequencies do not apply the use of a screened room or non-radiating dummy load defeats the purpose of the amateur service. This does not even cover equipment standards and other problematic issues. Scientific Licences are inappropriate for amateur service.

[Radiocommunications \(Interpretation\) Determination 2015](#)¹⁰⁰

Made under subsection 64(1) of the Australian Communications and Media Authority Act 2005.

Compilation No. 5

Compilation date: 17 June 2021, Includes amendments up to: F2021L00737

Schedule 1 – Dictionary

amateur advanced station means an amateur station where:

- (a) the holder of the transmitter licence that relates to the station is a person to whom:
 - (i) a certificate of proficiency has been granted in relation to the Advanced Amateur Operator's Examination, which is a category of approved examination for the purposes of subsection 122(2) of the Act; or
 - (ii) a certificate of proficiency has been granted in relation to the Unrestricted Amateur Operator's Examination, which is a category of approved examination for the purposes of subsection 122(2) of the Act; or
 - (iii) a certificate of proficiency has been granted in relation to the Limited Amateur Operator's Examination, which is a category of approved examination for the purposes of subsection 122(2) of the Act; or
- (b) either:
 - (i) the holder of the transmitter licence that relates to the station; or

⁹⁹ ACMA issued Scientific Licence:- <https://www.acma.gov.au/licences/scientific-licence>

¹⁰⁰ Federal Register of Legislative Instruments, In Force:- <https://www.legislation.gov.au/Details/F2021C00635>

- (ii) a person operating the station under the Radiocommunications (Overseas Amateurs Visiting Australia) Class Licence 2015;

holds:

- (iii) an amateur licence, issued by the administration of another country, that is listed in Table A or Table B of the Tables of Equivalent Qualifications and Licences for the purpose of operating an amateur advanced station in Australia; or
- (iv) an amateur qualification, issued by the administration of another country, that is listed in Table A or Table B of the Tables of Equivalent Qualifications and Licences as equivalent to a qualification mentioned in paragraph (a).

amateur frequencies means frequencies specified in the spectrum plan that may be used for the purposes of amateur services.

amateur licence means a licence issued for a station that:

- (a) is operated for the purposes of self-training in radiocommunications, intercommunication using radiocommunications, and technical investigation into radiocommunications, by persons:
 - (i) who do so solely with a personal aim; and
 - (ii) who have no pecuniary interest in the outcome of the operation of the station; and
- (b) is operated on amateur frequencies or amateur frequency bands; and
- (c) may participate in the amateur-satellite service.

amateur service means a radiocommunications service for self-training in radiocommunications, intercommunication using radiocommunications, and technical investigation into radiocommunications, by persons:

- (a) who are licensed under the Act to do so; and
- (b) who do so solely with a personal aim; and
- (c) who have no pecuniary interest in the outcome of the operation of the service.

amateur station means a station that:

- (a) is operated for the purposes of self-training in radiocommunications, intercommunication using radiocommunications, and technical investigation into radiocommunications, by persons:
 - (i) who do so solely with a personal aim; and
 - (ii) who have no pecuniary interest in the outcome of the operation of the station; and
- (b) is operated on amateur frequencies or amateur frequency bands; and
- (c) may participate in the amateur-satellite service.

land station means a station that is established at a fixed point on land.

By definition an **amateur station** can also be a **land station**, but a **land station** is not necessarily an **amateur station**.

mobile station means a station that is established for use:

- (a) while the station is in motion on land, on water or in the air; or

There is no description or restriction on how or the means the station moves. Therefore a transmitter and mounted on a wheel barrow can be said to be used

- (b) in a stationary position at unspecified points on land, on water or in the air.

By definition an **amateur station** can also be a **mobile station**, but a **mobile station** is not necessarily an **amateur station**.

scientific assigned station means a station that:

- (a) is operated under a scientific licence; and
- (b) is operated on a frequency or frequencies that are specified in the transmitter licence that relates to the station.

An **amateur station** operated primarily for the purposes of self-training plus intercommunicating on amateur frequencies are both purposes that are incompatible with a **scientific licence** therefore by definition a **scientific assigned station** cannot be operated as an amateur station.

scientific licence means a licence issued for a station, which operates primarily to perform any of the following activities:

- (a) research into radiocommunications;
- (b) investigation of radiocommunications;
- (c) instruction in radiocommunications;
- (d) demonstration of equipment;
- (e) testing of equipment;
- (f) trials of new radiocommunication operated primarily for the purposes of self-training plus intercommunicating on amateur frequencies are both purposes that are incompatible with a **scientific licence**.

scientific non assigned station means a station that:

- (a) is operated under a scientific licence; and
- (b) is operated:
 - (i) on a non assigned basis; or
 - (ii) on frequencies specified for the operation of scientific non assigned stations in a licence conditions determination.

By definition an **Amateur service** operation is incompatible with operation of a **scientific licence** therefore by definition operation of a **scientific non assigned station** is incompatible with an operation of an **amateur station**.

scientific station means:

- (a) a scientific assigned station; or
- (b) a scientific non assigned station.

By definition an **Amateur station** is incompatible with operation of either type of **scientific station**.

[Radiocommunications Licence Conditions \(Scientific Licence\) Determination 2015¹⁰¹](#)

Compilation No. 1, 23 November 2017

¹⁰¹ Federal Register of Legislation, In Force:- <https://www.legislation.gov.au/Details/F2018C00076>

Part 2 Conditions for every scientific licence

6 Conditions

Every scientific licence is subject to the conditions in this Part relating to the operation of any scientific station under the licence by the licensee.

7 Use of stations under other licences

A scientific station may be operated by the licensee if the station is operated primarily to perform any of the following activities:

- (a) research into radiocommunications;
- (b) investigation of radiocommunications;
- (c) instruction in radiocommunications;
- (d) demonstration of equipment;
- (e) testing of equipment;
- (f) trials of new radiocommunications technology;
- (g) radio propagation path testing.

Note The issue of a scientific licence does not mean that an assigned frequency or any other frequency will be available to the licensee beyond the expiry date of the licence or under any other licence type for any purpose.

An **amateur station** operated primarily for the purposes of self-training plus intercommunicating on amateur frequencies are both purposes incompatible with a **scientific licence**.

Part 3 Conditions for scientific licence (scientific non assigned station)

9 Conditions

Every scientific licence (scientific non assigned station) is subject to the additional conditions in this Part relating to the operation of any scientific non assigned station under the licence by the licensee.

10 Technical performance of a scientific non assigned station

- (2) If a scientific non assigned station includes analogue speech (angle modulated) equipment operated:
 - (a) on a transmitter frequency in the frequency band 29.7 MHz to 520 MHz; and
 - (b) on a frequency channel with a bandwidth of 12.5 kHz, 20 kHz or 25 kHz;

the equipment must comply with the requirements of AS/NZS 4295.

Amateur service equipment is out of scope by definition of AS/NZS 4295 therefore the amateur service equipment can not comply with AS/NZS 4295.

11 Permitted frequencies

- (1) If the licensee operates under the licence a scientific non assigned station that is also a land station and a scientific non assigned station that is also a mobile station operated on a frequency mentioned in column 2 or 3 of an item in Schedule 1:

Amateur service does not operate on any of the frequencies listed in column 2 or 3 of an item in Schedule 1 therefore the provisions of this clause does not apply.

- (2) However, the licensee may operate a scientific non assigned station on any frequency without complying with subsection (1), if:

- a. all emissions of electromagnetic energy from the station that the licensee intends the station to emit are dissipated into a non-radiating dummy load; or
- b. radiofrequency transmissions from the station are confined by means of a screened room that provides attenuation that reduces the level of transmissions to the mean level of noise in the surrounding area.

Transmissions in a screen room or the use of a termination using a dummy load are incompatible with the Intercommunication operations of the amateur service. Therefore the amateur service cannot comply with subsection 1 nor subsection 2. Therefore these provisions are incompatible with the amateur service.

12 Permitted frequencies

If the licensee operates under the licence a scientific non assigned station that is also an ultra wideband station, the ultra wideband station is authorised to be operated:

- (a) within the range of frequencies mentioned in column 2 of an item in Table 1 of Schedule 2, if the emissions comply with the conditions mentioned in column 3 of the item; and

For the amateur HF bands the distance limitation is 30m while for the 50 - 54 MHz amateur bands and above the distance limitation is 3m. The amateur service is incompatible with the Scientific Licence.

- (b) in accordance with any other conditions specified in the licence.

13 Interference

The licensee must not operate a scientific non assigned station if its operation causes harmful interference to a service provided by another station (other than another scientific non assigned station).

Note It is the responsibility of a licensee of a scientific non assigned station to coordinate the operation of the station with the operation of nearby scientific non assigned stations to reduce any interference between the stations.

Given the number of intercommunicating amateur stations operating with the option of mobile and portable it is impossible to comply with this provision.

The requirements of section 10 to use of AS/NZS 4295 standard equipment cannot be applied to the amateur service due to the requirements contained in this standard.

[AS/NZS 4295:2004](#)¹⁰²

Analogue speech (angle modulated) equipment operating in land mobile and fixed services bands in the frequency range 29.7 MHz to 1 GHz

Section 1 General

1.1 Scope

This Standard applies to analogue speech (angle modulated) equipment operating in the VHF and UHF land mobile and fixed service radiofrequency bands in the range 29.7 MHz to 1 GHz that are not subject to spectrum licensing arrangements.

¹⁰² Standards Australia/Standards New Zealand:-

[https://www.saiglobal.com/PDFTemp/Previews/OSH/as/as4000/4200/4295-2004\(+A1\).pdf](https://www.saiglobal.com/PDFTemp/Previews/OSH/as/as4000/4200/4295-2004(+A1).pdf)

Under class licences the amateur service is not subject to a spectrum licensing arrangement therefore amateur equipment may only be considered in scope of this standard if other conditions are met.

Categories of equipment within this range include—

- (a) base, mobile, personal mobile and RF control stations operating in the designated land mobile bands in the frequency range 29.7 MHz to 1 GHz with channel spacings of 12.5 kHz, 20 kHz (in Australia see Clause 3.1.10) or 25 kHz;

Amateur bands are not designated land mobile bands therefore amateur equipment is out of scope for AS/NZS 4295. Channel spacings do not apply.

- (b) fixed point to point and point to multipoint equipment operating in the designated single channel fixed service bands in the frequency range 29.7 MHz to 1 GHz with channel spacings of 12.5 kHz or 25 kHz. The labelling arrangements however, must still meet the requirements of clause 3.1.2;

Amateur equipment does not operate in designated single channel fixed service bands therefore amateur equipment is out of scope for AS/NZS 4295. Channel spacings do not apply

- (c) personal mobile, fixed and repeater equipment operating in the maritime mobile service and used for on-board communications in the frequency band 450 MHz to 470 MHz; and

Amateur equipment does not operate in the maritime frequency band 450 MHz to 470 MHz therefore amateur equipment is out of scope for AS/NZS 4295.

- (d) Narrowband Area Service (NAS) transmitters used in Australia, with performance requirements identical to LMRS Base stations.

Amateur equipment does not operate Narrowband Area Service (NAS) transmitters therefore amateur equipment is out of scope for AS/NZS 4295.

By definition amateur service equipment is not in scope of this standard therefore a scientific licence is not appropriate. Ultra wideband operation is severely range limited with a 3m or 30m maximum range both limits that is exceeded by the amateur service.

ACMA requirements state that equipment operated under a class licence cannot be operated under a Scientific Licence.

Costs

The costs of a Scientific Licence are not appropriate for the Amateur service.

[Application Form for Scientific Non-Assigned apparatus licence\(s\)](#)¹⁰³

Section C – Site location details and licence Details

Licences are usually issued for 1 year. If licences are required for periods other than 1 year, please specify the period: (up to 5 years).

¹⁰³ https://www.acma.gov.au/sites/default/files/2020-06/Scientific-Non-Assigned-Application-for-apparatus-licences_0.doc

Section D – Payment of fees

Licences can be paid for in full or by annual instalments.

The current charge for a Scientific Licence for a non-assigned station is \$520.00 and would be the annual charge. Multiple that by 10 and that could represent an additional cost of \$5,200 over ten years. This does not include any application charges or reference to the GST.

Important notes on payment of fees:

- Consideration of an application attracts an administration charge, even if the ACMA refuses to issue the licence.

The current charge just for the consideration of an Amateur Apparatus or a Scientific Licence for a non-assigned station is \$36. For two the combination of these two (2) licences an amateur might be charged twice that current fee. Catch is the current consultation paper does not consider costs to the individual.

Guidance Notes

A scientific licence is appropriate where radiocommunications equipment is only used for a purpose listed above and cannot be more appropriately licensed for long-term operation by another licence type.

Amateur licences are a more appropriate, long-term licence that invalidates an application for a Scientific Licence.

[Radiocommunications \(Charges\) Determination 2022](#)¹⁰⁴

Schedule 1—Charges

2.2.1 \$177 Amateur

2.28 \$520 Scientific

Under the existing Apparatus Licence regime an approval for higher power operation was at zero incremental cost. A Scientific Licence would be an additional \$520 for one year. All Amateur Service activities are for personal, non-commercial use and this is an unreasonable increase. The increased costs to the Amateur Service created by the implementation of Scientific Licences was not costed in the current consultations.

[Regulation Impact Statement](#)¹⁰⁵

The increase in costs from \$177 to \$520 per year represents a significant burden on individuals who have no opportunity to offset this change. As a retired person on a pension I have been unwilling to spend money on equipment upgrades that could not be used after the short-term trial in 2012. Given a potential 15,000 Apparatus Licences that could be impacted it is surprising that some form of Regulation Impact Statement (RIS) has not been included.

¹⁰⁴ <https://www.legislation.gov.au/Details/F2022L01245>

¹⁰⁵ Regulation Impact Statement Guidance Note for individuals:- [\(03:39\) Hinokawu: 39.32B Tinkker-Primal Instincts-507.69B](#)

The [Office of Best Practice Regulation](#)¹⁰⁶ (OBPR) provides RIS documentation with an [Impacts on Individuals](#)¹⁰⁷ Guidance Note web page.

28 June 2022

The Australian Government Guide to Regulatory Impact Analysis identifies that the Government's regulatory impact analysis requirements apply to regulatory proposals that affect individuals, reflecting the significant regulatory burden experienced by individuals and the Government's objective of reducing it.

The purpose of this guidance note is to help agencies to understand when a RIS may be required for proposals that affect individuals and provide guidance on how to quantify the regulatory costs on individuals.

The following is an extract from the Individuals Guidance Note.

[Individuals](#)¹⁰⁸

March 2020

The trigger for preparing a Regulation Impact Statement (RIS) includes impacts on individuals, reflecting the significant regulatory burden experienced by individuals and the Government's objective to reduce that burden.

The purpose of this guidance note is to assist you to interpret the Australian Government Guide to Regulatory Impact Analysis by providing guidance on when a RIS may be required for proposals that affect individuals and on how to quantify the regulatory costs on individuals.

Definitions

An **individual** is a person who is subject to Australian law, whose activities have an impact in Australia and who either:

- interacts with the Australian Government, or
- is impacted by an Australian Government regulation.

All activities of individuals are included in the scope of a RIS, including those that are income-generating, such as meeting licensing requirements for employment, and those that do not relate to income, such as obtaining visas and passports.

When is a RIS required?

A RIS is also required for all non-Cabinet decisions made by the Australian Government and its agencies (for example, decisions arising through correspondence with the Prime Minister, decisions made by departmental heads, and those made by statutory agencies and boards) that are likely to have a regulatory impact on businesses, community organisations or individuals, unless the regulatory impact is of a minor or machinery nature and does not substantially alter existing arrangements. For example, changes to administrative processes that do not substantially alter existing requirements, such as offering improved service levels through a digital channel to a significant number of customers, do not require a RIS.

¹⁰⁶ <https://obpr.pmc.gov.au/>

¹⁰⁷ <https://obpr.pmc.gov.au/resources/guidance-assessing-impacts/impacts-individuals>

¹⁰⁸ <https://obpr.pmc.gov.au/sites/default/files/2022-06/individuals-mar20-2.pdf>

The introduction of charges for Scientific Licences under a Class Licence is hardly a minor regulatory change. No costing of these changes has been included with the current consultation documentation.

The compliance documentation required to be created by measurement potentially after with every station alteration to antennas, time average power level, etc. could be thousands of Dollars every year. The impact of such a change on individuals is substantial as the proposed regulation results in a significant change.

A minor change is a change that does not substantially alter the existing regulatory arrangements for individuals. Minor and machinery changes are discussed further in the User Guide to the Australian Government Guide to Regulatory Impact Analysis. An impact on individuals is considered more than minor where the proposed regulation results in a significant change to either behaviour or compliance costs. In analysing whether a proposal is significant, the size of the impact and the size of the affected population need to be considered, including whether a significant number of people are involved.

The Office of Best Practice Regulation (OBPR) does not define 'a significant number of individuals'.

Depending on the programme or policy area, the number can vary widely. OBPR will rely on you to demonstrate whether the number of people affected by a proposed regulation is significant for the particular programme or area.

Given Apparatus Licences for the Amateur Service represents the second largest number of Apparatus Licences on issue and 100% of the Amateur Operator population this does represent a significant number.

For instance, a regulation that requires every prospective construction worker in Australia to obtain a three-year degree in construction work would affect a relatively small number of people, compared to a regulation that requires every taxpayer to provide information on their children's earnings as part of their tax return, but both proposals would likely require a RIS because the changes in arrangements are likely to be more than minor. On the other hand, a proposal that requires individuals receiving financial assistance from the Government to provide their name in an online form would not be likely to require a RIS because the compliance cost impact would be small, even though it would affect a significant number of individuals.

Even if a RIS is not required for a proposal, you will still be required to quantify the regulatory costs imposed on business, community organisations and/or individuals, using the Commonwealth's Regulatory Burden Measurement framework (see the Regulatory Burden Measurement framework guidance note for further information).

The Draft references multiple Standards and purchasing these standards for compliance purposes is a significant burden on individuals.

Table 12 - Cost of Standards

Standard	Cost	Pages	Title
AS 1319:1994 ¹⁰⁹	\$155.55	35	Safety signs for the occupational environment
AS/NZS 2772.2:2016 ¹¹⁰	\$286.99	132	Radiofrequency fields, Principles and methods of measurement and computation – 3 kHz to 300 GHz
IEC 62232:2022 ¹¹¹	\$716.12	342	Determination of RF field strength, power density and SAR in the vicinity of base stations for the purpose of evaluating human exposure
IEC 62577:2009 ¹¹²	\$273.25	50	Evaluation of human exposure to electromagnetic fields from a stand-alone broadcast transmitter (30 MHz – 40 GHz)
IEC TR 62669:2020 ¹¹³	\$234.45	112	Technical Report of case studies supporting IEC 62232
Total	\$1,666.45	671	

Add the current cost of a Scientific Licence of \$570 the total cost for the first year of high power operation increases to \$2,236.45 and while it is possible to access Standards by appointment at ACMA offices this is not a practical solution for Amateurs that are remotely located.

The other Standards are available online for nil cost. Given the purchased Standards total 671 pages plus [IEEE Std. C95.3](#)¹¹⁴ has 238 pages, the 909 page count makes it impractical for Amateurs to use multiple visits to ACMA offices during business hours to work through this much technical information.

These Standards can refer to other Standards that have not been listed above. For instance IEEE Standard C95.3 refers to ANSI/NCSL Z540-2, IEC 61566, 61786, 62209, 62369, IEEE Std. 149, 644, 1308, MPR 1990:10, etc. This is just one Standard calling up some other Standards. The final cost just to determine the relevant Standards is thousands of Dollars.

For a regulatory change to increase costs from \$177 to \$2,236.45 in the first year of operation appears to warrant an RIS. There are no estimates for the additional cost of site measurements for compliance purposes. Up to this point the Amateur Service has operated in such a manner that they have complied by default. For example antennas are constructed on private property behind fences and structures that prevent access by the general public with stations that do not exceed time averaged power of 100W.

There is no indication the ACMA has quantified the regulatory costs imposed on individuals and their community organisations. The ACMA consultation paper should have included financial impact details for a 10 year period.

¹⁰⁹ https://infostore.saiglobal.com/en-au/standards/as-1319-1994-99237_saig_as_as_270559/

¹¹⁰ https://infostore.saiglobal.com/en-au/standards/as-nzs-2772-2-2016-100844_saig_as_as_211887/

¹¹¹ https://infostore.saiglobal.com/en-au/standards/iec-62232-2022-566894_saig_iec_iec_3192249/

¹¹² https://infostore.saiglobal.com/en-au/standards/iec-62577-2009-566508_saig_iec_iec_1292664/

¹¹³ https://infostore.saiglobal.com/en-au/standards/sa-tr-iec-62669-2020-1197286_saig_as_as_2881490/

¹¹⁴ An account under the IEEE Get Program needs to be created for free access:-

<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9444273>

ITU Radio Regulations Articles 2020¹¹⁵

Article 17 - Secrecy

17.1 In the application of the appropriate provisions of the Constitution and the Convention, administrations bind themselves to take the necessary measures to prohibit and prevent:

17.2 a) the unauthorized interception of radiocommunications not intended for the general use of the public;

17.3 b) the divulgence of the contents, simple disclosure of the existence, publication or any use whatever, without authorization of information of any nature whatever obtained by the interception of the radiocommunications mentioned in No. 17.2.

Article 25 - Amateur services

Section I – Amateur service

25.1 § 1 Radiocommunication between amateur stations of different countries shall be permitted unless the administration of one of the countries concerned has notified that it objects to such radiocommunications. (WRC-03)

The ITU Radio Regulations only permit radiocommunications between amateur stations. The communications from a station operating under a Scientific Licence is not authorised to communicate with an Amateur station under international radio regulations. The requirements of the Secrecy provisions of the ITU Radio Regulations prevents an operator of an amateur station from any use of transmissions received from a Scientific Licenced station.

¹¹⁵ ITU Radio Regulations downloads:- <https://www.itu.int/pub/R-REG-RR-2020>

9. Noting the proposal mentioned in 8, are there other amateur experimentation uses that require higher power that you think should also be considered under assigned scientific licensing arrangements?

Under no circumstances should scientific licensing be used for any amateur experimentation. All amateur experimentation with high power should be made by modification of Amateur Service permitted power levels.

A CEPT licence amateur under ITU rules does not have any maximum specified power limits except for some very limited exceptions (e.g. LF band arrangements). Therefore there are no ITU rules that require the use of higher power arrangements to be considered under an assigned scientific licensing arrangement. A CEPT licenced amateur in Canada has a 2,250W PEP limit while many other countries using CEPT licences permit a 1,500W PEP limit or higher.

The source for the following table was information downloaded from the Deutscher Amateur Radio Club (DARC) in Germany, plus information from countries with reciprocal rights with Australia, etc.:-
<https://files.darc.de/index.php/s/CKT38kZP6miK7xf>

Table 13 - pX Limits for CEPT and Non-CEPT Countries

No.	Country	HF – W PEP (CEPT Licence)	HF – W PEP (non-CEPT Licence)
1	Canada	2,250	
2	Philippines		2,000
3	Albania	1,500	
4	Belgium	1,500	
5	Bosnia and Hercegovina	1,500	
6	Brazil		1,500
7	Croatia	1,500	
8	Hungary	1,500	
9	Finland	1,500	
10	Montenegro	1,500	
11	North Macedonia	1,500	
12	Portugal	1,500	
13	Serbia	1,500	
14	Slovenia	1,500	
15	Taiwan		1,500
16	United States	1,500	

17	United States ITU Region 3	1,500	
18	Mexico		1,250 W
19	Curaçao	1,000	
20	China		1,000 W
21	Denmark	1,000	
22	Greenland	1,000	
23	Iceland	1,000	
24	Japan		1,000 W (Antenna)
25	Latvia	1,000	
26	Liechtenstein	1,000	
26	Lithuania	1,000	
28	New Zealand	1,000	
29	Norway	1,000	
30	Peru	1,000	
31	Russia	1,000	
32	South Africa	1,000	
33	Spain	1,000	
34	Switzerland	1,000	
35	India		800 W (PEP)
36	Czechia	750	
37	Germany	750	
38	Slovakia	750	
39	Belarus	500	
40	France	500	
41	France ITU Region 3	500	
42	Greece	500	
43	Indonesia		500
44	Italy	500	
45	Poland	500	
46	Australia	400	

At 46th in the table the ACMA cannot claim to be implementing world's best practice for the Amateur Service.

To use an extreme example, if there was a proposal from a licenced amateur to experiment with a high power (1 MW), over the horizon, spread spectrum, RADAR system using a 22 MHz frequency then the amateur licence is irrelevant to the application. This application would proceed and be assessed (hopefully rejected) under an assigned scientific licencing arrangement without any reference to amateur radio. But if use of higher power on an amateur band is required this can be regulated and should be a permitted activity under the Class Licence.

10. What are your views on the medium-term proposal to allow Advanced amateurs to apply for authorisation for other higher power use-cases under certain conditions? Please provide brief information to help us understand your view.

All Advanced amateurs should be authorised for higher power without having to apply or justify operations with any use case. The Draft should be updated with the higher power level as per ITU recommendations. The medium term proposal should allow Advanced Amateurs authorisation for higher power use under all circumstances complying with EME provisions of Schedule 1 of the Draft.

11. Is a 1kW power limit appropriate? Why or why not? If not, what alternative do you propose and why?

The current 1kW power limit proposal is not appropriate as it is too low.

The ITU maximum transmitter power recommendations for the Amateur Service is for a higher transmitter power level than the 1kW power limit proposed by the ACMA.

[Recommendation ITU-R M.1732-2](#)¹¹⁶

Characteristics of systems operating in the amateur and amateur-satellite services for use in sharing studies

Scope

This Recommendation documents the technical and operational characteristics of systems used in the amateur service and amateur-satellite services for the purposes of carrying out sharing studies. The systems and their characteristics described in this Recommendation are considered representative of those operating in the frequency bands available to these services ranging from 135.7 kHz through 250 GHz.

Annex 1

Characteristics of systems operating in the amateur and amateur-satellite services for use in sharing studies

3 Technical characteristics

Tables 1 to 8 contain technical characteristics of representative systems operating in the amateur and amateur-satellite services.

...

Another factor to consider is that various transmissions modes have significantly different duty cycles and this affects the average power that is actually radiated. For continuous-carrier modes, e.g. F3E (FM), the power shown is constant for the duration of the transmission. For duty-cycle transmission modes, e.g. A1A (CW), the power shown is during key-down and the average power during a transmission is approximately 45% of the value shown. For single-sideband (SSB) voice, Emission Class J3E, the power shown is expressed as peak envelope power (PEP). The average power per transmission depends upon the characteristics of the operator's voice and is typically 30 to 40% of the value shown. For emission class A3E (AM), the power shown is PEP and the average power per transmission is about 80% of the value shown. Narrow-bandwidth digital modes, e.g. J2B (PSK31), typically operate at far less than the maximum power authorized.

The Technical Characteristics section contains approximately one (1) page of text with eleven tables (Tables 1A, 1B, 2A, 2B, 3A, 3B and 4 to 8). These ITU tables have been simplified to the following table for the maximum recommended transmitter power limits for this ACMA question. Refer to the ITU tables for details of each ITU recommendation.

¹¹⁶ <https://www.itu.int/rec/R-REC-M.1732-2-201701-I/en>

Table 14 - ITU Recommended Transmitter Power Limits

Frequency Range	Transmitter Power (W ¹¹⁷)	ITU Table(s)	Emission Modes
135.7 – 137.8 kHz	100	4	A1A, A1B, A1D, F1D, J2A, J2B, J2D
472 - 479 kHz	100	4	A1A, A1B, A1D, F1D, J2A, J2B, J2D
1.8 – 7.3 MHz	1,5kW	1A, 2A, 3A	A1A, A1D, F1D, J2A, J2B, J2E, J3E
7 – 29.7 MHz	1,5kW	1A, 2A, 3A, 6	A1A, A1D, F1D, F3E, J2A, J2B, J2E, J3E
50 – 54 MHz	1,5kW	1A, 2A, 3A	A1A, A1D, F1D, F1E, F3E, G1E, J2A, J2B, J2E, J3E
144 – 450 MHz	1,5kW	1A, 2A, 3A, 5, 6	A1A, A1D, F1D, F1E, F3E, G1E, J2A, J2B, J2E, J3E

Preference would be to match the Canadians power limits as world's best practice. Unfortunately world's best practice is not under consideration by the ACMA therefore Canadian power limits are not under consideration.

The Australian standard should be the ITU, maximum Transmitter power recommendations of [Recommendation ITU-R M.1732-2](#)¹¹⁸ as applied to the antenna i.e power measured at the antenna.

¹¹⁷ In the ITU Tables, Transmitter power is expressed in dBW i.e absolute power level with respect to 1W expressed in decibels. Table entries were 31.7dBW = 1,479.1W = 1.5kW and 20dBW = 100W

¹¹⁸ <https://www.itu.int/rec/R-REC-M.1732-2-201701-I/en>

12. Are there particular bands that you consider should or should not be able to be accessed for Advanced amateur higher power operations? Which band(s) and why?

All [Recommendation ITU-R M.1732-2](#)¹¹⁹ maximum power limits for the Amateur Service should be observed as detailed in Question 11 above.

¹¹⁹ <https://www.itu.int/rec/R-REC-M.1732-2-201701-I/en>

13. What use-cases would require stations to operate at power limits for Advanced amateurs higher than the 400W currently permitted?

ITU Power Recommendations for a Satisfactory Service

There are amateur operator transmissions occurring 24 hours of a day, 365 days a year, throughout the solar cycles, spanning the world.

ITU Radio Regulations Articles 2020¹²⁰

25.1 § 1 Radiocommunication between amateur stations of different countries shall be permitted unless the administration of one of the countries concerned has notified that it objects to such radiocommunications. (WRC-03)

25.2 § 2 1) Transmissions between amateur stations of different countries shall be limited to communications incidental to the purposes of the amateur service, as defined in **No. 1.56** and to remarks of a personal character. (WRC-03)

By default the ITU regulations permits an amateur service to perform intercommunication and transmit remarks of a personal nature between Australia and other countries in addition to radiocommunication experimentation. Australia (i.e. the ACMA) has not objected to amateur communications to the majority of countries e.g. communications are permitted to Canadian amateurs. Therefore the ITU Radio Regulations have a requirement for permitted radiocommunications to amateur stations in different countries.

The amateur service is defined by the ITU as a radiocommunications service.

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.

HF conditions vary significantly and daily will experience poor conditions. The current 400W limit does not permit a satisfactory service to be maintained under marginal conditions where reliability or readability will be compromised. For the amateur service the ITU Radio Regulations state:

15.2 § 2 Transmitting stations shall radiate only as much power as is necessary to ensure a satisfactory service.

To ensure a satisfactory Australian amateur service within Australia and to other countries there is an ITU requirement to only radiate as much power as is necessary to ensure a satisfactory service. To ensure a satisfactory amateur service under marginal conditions there is a requirement to increase the Australian permitted power levels.

An Australian amateur transmitting to Canada has a limit of 400W while the Canadian amateur is permitted 2,250W. All other things being equal this represents a 7.5db difference and with marginal conditions this can represent the difference between an intelligible and unintelligible communication. Under marginal conditions the Canadian amateur transmitting can provide a satisfactory service while the Australian amateur cannot provide a satisfactory service.

¹²⁰ ITU Radio Regulations downloads:- <https://www.itu.int/pub/R-REG-RR-2020>

This unbalanced situation is further highlighted if a Canadian amateur visits Australia and an Australian amateur visits Canada. Now the permitted power limits are reversed and the Australian Advanced amateur is permitted 2,250W PEP and the Canadian amateur is restricted to 400W. As each country has implemented CEPT licences these limits apply for 90 days without a need for an examination or other regulatory impediments.

The ITU does publish recommendations for power limits for the Amateur Service in [Recommendation ITU-R M.1732-2](#)¹²¹ and for the HF bands that is 1,500 W.

Natural Disasters

The Amateur operators have a long history of responding to community needs during natural disasters and other emergencies. There has been an increasing frequency of natural disasters in Australia associated with climate change impacts i.e. floods, grassfires, bushfires, etc. Other natural disasters such as tsunami, earthquakes, etc., also need a Natural Disaster response by amateur operators. The Australian Bureau of Meteorology publishes a state of the climate publication. Below are extracts from their most recent report.

[Australia's Changing Climate 2020](#)¹²²

Temperature

Australia's weather and climate are changing in response to a warming global climate. Australia has warmed on average by 1.44 ± 0.24 °C since national records began in 1910, with most warming occurring since 1950 and every decade since then being warmer than the ones before. Australia's warmest year on record was 2019, and the seven years from 2013 to 2019 all rank in the nine warmest years. This long-term warming trend means that most years are now warmer than almost any observed during the 20th century

In summer we now see a greater frequency of very hot days compared to earlier decades. In terms of national daily average maximum temperatures, there were 33 days that exceeded 39 °C in 2019, more than the number observed from 1960 to 2018 combined, which totalled 24 days.

Fire weather

There has been an increase in extreme fire weather, and in the length of the fire season, across large parts of Australia since the 1950s, especially in southern Australia.

Fire weather is largely monitored in Australia using the Forest Fire Danger Index (FFDI). The FFDI indicates the fire danger on a given day based on observations of temperature, rainfall, humidity and wind speed. The frequency of the most dangerous 10 per cent of fire weather days has increased significantly in recent decades across many regions of Australia, especially in the south and east. These increases are particularly evident during spring and summer and are associated with an earlier start to the southern fire weather season.

There is a significant trend in some regions of southern Australia towards more days with weather conditions conducive to extreme bushfires that can generate thunderstorms within their smoke plumes. These fire-generated thunderstorms can lead to extremely dangerous fire conditions, as observed during the 2019–20 summer, and for the Canberra (2003) and

¹²¹ <https://www.itu.int/rec/R-REC-M.1732-2-201701-I/en>

¹²² <http://www.bom.gov.au/state-of-the-climate/references.shtml>

Victorian Black Saturday (2009) fires. In some cases, the lightning strikes produced from the smoke plumes generate new fires

Increased frequency and intensity of extreme heat as a result of climate change can also worsen extreme fire weather risk.

Compound extreme events

Extreme events are more likely when natural climate variability acts to amplify the background influence of climate change. For example, record-breaking extreme heat and record-breaking fire weather are more likely when the El Niño–Southern Oscillation or the Indian Ocean Dipole favour warmer and drier conditions in Australia, since this reinforces warming and drying trends.

Multiple lines of evidence, including from observations and future climate change projections, point to a continuing trend of more frequent compound extreme events. Projecting the occurrence and severity of extreme events is therefore essential for current and future risk assessments, and for climate adaptation strategies and responses.

The Electricity Sector Climate Information (ESCI) project was funded by the Department of Industry, Science, Energy and Resources (DISER) and was a collaboration between the Bureau of Meteorology (BOM), the Commonwealth Scientific & Industrial Research Organisation (CSIRO) and the Australian Energy Market Operator (AEMO). The ESCI website is at: www.climatechangeinaustralia.gov.au/esci¹²³

The Electricity Sector Climate Information (ESCI) project has produced a case study fact sheet.

Bushfire risk for transmission networks¹²⁴

Increasing risk from exposure to bushfires associated with climate change may have implications for the safe and efficient operation of Australia's electricity networks.

These risks should be assessed, and strategies for mitigation and adaptation should be integrated within ongoing planning and operational decision-making frameworks.

...

There has been an observed trend towards more dangerous weather conditions for bushfires in Australia over the past 70 years with climate change (Figure 4) ... Despite this, a bad bushfire season, such as the 2019–2020 season can have a significant impact on network performance.

For the period from November 2019 to March 2020, the number of unplanned outages was significantly higher than in the previous summer, particularly in New South Wales (NSW) (Figure 6), with the increase mainly due to bushfires between November 2019 and January 2020.

With the loss of local infrastructure the Australian amateur service can provide national and international emergency communications. The ACMA documents fail to address power requirements and disaster preparation in this review of the Australian amateur service. The ITU regulations

¹²³ <http://www.climatechangeinaustralia.gov.au/esci>

¹²⁴ ESCI's Bushfire risk for transmission network report:-
https://www.climatechangeinaustralia.gov.au/media/ccia/2.2/cms_page_media/720/Download_pack_User_CS3_Bushfire_%26_Transmission_1.zip

encourage administrations such as the ACMA to take the necessary steps to prepare and meet the communication needs in support of disaster relief.

The ITU references to regulations are:

[Radio Regulations Articles 2020](#)¹²⁵

25.3 2) Amateur stations may be used for transmitting international communications on behalf of third parties only in case of emergencies or disaster relief. An administration may determine the applicability of this provision to amateur stations under its jurisdiction. (WRC-03)

25.9A § 5A Administrations are encouraged to take the necessary steps to allow amateur stations to prepare for and meet communication needs in support of disaster relief. (WRC-03)

To ensure a satisfactory service other authorities recognize that the power limit required for their amateur services must be higher than the 400W permitted for Australian Advanced amateurs. For simplicity I'll just use PEP in the following table and not differentiate between aerial/non-aerial values, etc.

The source for the following table was information downloaded from the Deutscher Amateur Radio Club (DARC) in Germany <https://files.darc.de/index.php/s/CKT38kZP6miK7xf>¹²⁶, plus information from countries with reciprocal rights with Australia, etc.:-

Table 15 - International HF pX Limits (W PEP)

No.	Country	HF – W PEP
1	Canada	2,250
2	Philippines	2,000
3	Albania	1,500
4	Bosnia and Hercegovina	1,500
5	Brazil	1,500
6	Croatia	1,500
7	Hungary	1,500
8	Finland	1,500
9	Montenegro	1,500
10	North Macedonia	1,500
11	Portugal	1,500
12	Serbia	1,500
13	Slovenia	1,500

¹²⁵ ITU Radio Regulations downloads:- <https://www.itu.int/pub/R-REG-RR-2020>

¹²⁶ <https://files.darc.de/index.php/s/CKT38kZP6miK7xf>

No.	Country	HF – W PEP
14	Taiwan	1,500
15	United States	1,500
16	United States, ITU Region 3 e.g. Guam Island	1,500
17	Mexico	1,250
18	Belgium	1,000
19	Curaçao	1,000
20	China	1,000
21	Denmark	1,000
22	Greenland	1,000
23	Iceland	1,000
24	Japan	1,000
25	Latvia	1,000
26	Liechtenstein	1,000
27	Lithuania	1,000
28	New Zealand	1,000
29	Norway	1,000
30	Peru	1,000
31	Russia	1,000
32	South Africa	1,000
33	Spain	1,000
34	Switzerland	1,000
35	India	800
36	Germany	800
37	Czechia	750
38	Slovakia	750
39	Belarus	500
40	France	500
41	France, ITU Region 3 e.g. New Caledonia	500

No.	Country	HF – W PEP
42	Greece	500
43	Indonesia	500
44	Italy	500
45	Poland	500
46	Australia	400

Australia is not implementing world's best practice regulation nor responding appropriately to ITU recommendations.

In many respects Canada is comparable to Australia with many similarities from land mass to a comparable amateur licence regime i.e. both implement a CEPT Licence, etc. An Australian Advanced amateur is permitted to operate a high power station in Canada without an additional examination. As a CEPT Licenced country Canada could be described as having the world's best practice and Australian amateurs should be requesting a legal limit of 2,250W PEP (or equivalent).

A request for the same 1kW privileges as permitted in New Zealand and 33 other countries is under discussion and represents less than 50% of the Canadian limit. This reduces the disparity between the Canadian and Australian amateur services to 3.52dB a significant improvement to the current 7.5dB. Personally I would like to see these two amateur services that implement equivalent CEPT licences share the same regulatory conditions and equivalent privileges i.e. a common 2,250W PEP limit.

A request for 2,250W PEP does not appear to be a realistic option given the ACMA position therefore it is pointless to further discuss emission modes, transmitter output power, etc.

Given HF band conditions become marginal every day then it is appropriate for the amateur service to have access to a higher power limit on a daily basis.

[Recommendation ITU-R M.1042-3](#)

[Disaster communications in the amateur and amateur-satellite services](#)

Scope

This Recommendation provides guidance on the development of amateur and amateur-satellite service networks supporting preparedness and radiocommunications during disaster and relief operations.

The ITU Radiocommunication Assembly,

considering

- (a) Resolution 36 of the Plenipotentiary Conference (Kyoto, 1994);
- (b) Resolution 644 (Rev.WRC-2000) concerning telecommunications resources for disaster mitigation and relief operations;
- (c) the entry into force of the Tampere Convention on the provision of telecommunications resources for disaster mitigation and relief operations by the Intergovernmental Conference (1998) on 8 January 2005;
- (d) ITU-D Resolution 34 (Doha, 2006) (Rev. WTDC-06) on telecommunication resources in the service of humanitarian assistance;

- (e) Recommendation ITU-D 13.1 (Geneva, 2006) regarding effective utilization of the amateur services in disaster mitigation and relief operations;
- (f) that No. 25.9A of the Radio Regulations states that administrations are encouraged to take the necessary steps to allow amateur stations to prepare for and meet communication needs in support of disaster relief;
- (g) that the amateur service provides valuable training for radio operators,

There is no shortage of recommendations encouraging administrations such as the ACMA to encourage development of the Amateur Service

recommends

- 1 that administrations encourage the development of amateur service and amateur-satellite service networks capable of providing radiocommunications in the event of natural disasters;

By limiting the Amateur Service to the current power limits when propagation changes on a daily basis the ACMA is crippling the Amateur Service by requiring unnecessary red-tape and costs of Scientific Licences for any proposed higher power operation.

- 2 that such networks be robust, flexible and independent of other telecommunications services and capable of operating from emergency power;

Networks cannot be robust if the current power limits reduce reliability. Under the current proposal, access to higher power operation would be restricted to those that could fund a Scientific Licence for some other purpose as natural disasters are not listed as a current permitted use for an application for a Scientific Licence.

- 3 that amateur organizations be encouraged to promote the design of robust systems capable of providing radiocommunications during disasters and relief operations.

As the impacts of climate change intensifies the impact of Australian and regional natural disasters such as bush fires, floods, storms, etc., disrupt and disable other communication services the Amateur Service needs to prepare for and meet these communication needs.

[Royal Commission into National Natural Disaster Arrangements Report](#)¹²⁷

These power outages caused significant disruptions to telecommunications services. The Australian Communications and Media Authority's review into the impacts of the 2019-2020 bushfires on the telecommunications network found that, of 888 telecommunication outages observed between December 2019 and January 2020, 779 – or 88% – were caused by mains power outages. In comparison, fire damage accounted for only one per cent of telecommunications outages. The remaining 11% of outages were caused by a variety of other factors (eg damage to an upstream facility in the telecommunications provider's network). Telecommunications providers including Telstra, Optus, NBN Co, and Vodafone confirmed that telecommunications outages were predominantly caused by mains power failures.

The failure of communication service can cause significant outages impacting a wide area. If a remote telecommunication site is lost or fails during a natural disaster repair teams cannot be dispatched until

¹²⁷ <https://naturaldisaster.royalcommission.gov.au/system/files/2020-11/Royal%20Commission%20into%20National%20Natural%20Disaster%20Arrangements%20-%20Report%20%20%5Baccessible%5D.pdf>

it has been declared safe to do so. During this period volunteers such as the Amateur Service provide the emergency communication services to the community and emergency services.

This is not a Service where the operator has no control over power, mode, and other station operating parameters. As required by ITU Radio Regulations amateurs vary their power levels and emissions based on need. Advanced amateurs have demonstrated they can responsibly operate under the current regulatory environment. An extension of Advanced amateurs licences for high power operation will not change the performance of responsible licenced amateurs.

The recommendation is the Amateur Service should be generally permitted high power operation.

There are various approaches for the introduction of a high power privilege:

- Single stage approach:
 - High power is incorporated into the current Draft and available to all Advanced amateurs with the introduction of the Class Licences. Basically a crash through approach.
 - Introduction of an Advanced(Extra) grade amateur qualification based on an examination of APANSA, AS/NZS 2772.2 Standards, plus practical operation of a high power base station.
- Multiple stage approach where the high power privilege is implemented in multiple steps. This could be mandatory compliance to APANSA RS1 plus:
 - Increments in power over time e.g. 500W, 1kW then 1.5kW.
 - Decrements in minimum land area 10Ha, 1Ha, 0.1Ha, no minimum land area.
 - Demonstration of educational standard such as completion of a mandatory course or appropriate qualification. Completion of approved self-learning module(s). Successful self-assessment of a base station.
 - Combination approach e.g. WIA trial approach.

The three (3) problems with the WIA approach. First problem is the question of land areas where there are currently gaps between suggested areas. Second problem is there no timetable attached. Their submission has not included long-wire and the related end-fed antennas in their discussions. For amateurs with limited resources the simple construction techniques and limited materials costs means these long-wire antenna need more consideration. All these issues are trivial to address and not a reason to dismiss the WIA approach.

The current ACMA consultation has not taken Climate Change into account nor addressed preparation of the Amateur Service for Emergency Responses and Natural Disasters.

14. For each use-case mentioned in 13, please briefly answer:

As discussed under Question 13 the use cases are disaster recovery and intercommunications as per ITU Radio Regulations and are included in the following areas.

a. Why is a higher power limit needed?

To provide a satisfactory service as per ITU Radio Regulations.

b. What are the specific limitations of the current power limit?

Under marginal conditions the current power limit is too low to permit satisfactory intercommunications.

c. What power level is required?

Wishful thinking would be world's best practice of 2,250W PEP power level to have equivalence to Canadian operators. Given the stated position concerning high power operation in the ACMA consultation documents then a recommendation here for 2.25kW PEP is going to be dismissed by the ACMA when considering high power requests.

ITU Radio Regulations Articles 2020¹²⁸

Article 1 – Terms and definitions

Section VI – Characteristics of emissions and radio equipment

1.156 *power*: Whenever the power of a radio transmitter, etc. is referred to it shall be expressed in one of the following forms, according to the class of *emission*, using the arbitrary symbols indicated:

- *peak envelope power* (PX or pX);
- *mean power* (PY or pY);
- *carrier power* (PZ or pZ).

For different *classes of emission*, the relationships between *peak envelope power*, *mean power* and *carrier power*, under the conditions of normal operation and of no modulation, are contained in ITU-R Recommendations which may be used as a guide.

For use in formulae, the symbol *p* denotes power expressed in watts and the symbol *P* denotes power expressed in decibels relative to a reference level.

1.157 *peak envelope power* (of a radio transmitter): The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions.

1.158 *mean power* (of a radio transmitter): The average power supplied to the antenna transmission line by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions.

1.159 *carrier power* (of a radio transmitter): The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle taken under the condition of no modulation.

¹²⁸ ITU Radio Regulations downloads:- <https://www.itu.int/pub/R-REG-RR-2020>

Clause 1.156 refers to ITU-R Recommendations for the relationship between peak envelope power, mean power and carrier power. The Draft explicitly states for an Advanced amateur qualification if the station uses C3F, J3E or R3E the power limit is 400 Watts pX and all other modes the power limit is 120 Watts pY

The defined relationship between peak envelope power (pX) and mean power (pY) is related to an interval of time sufficiently long compared with the lowest frequency encountered in the modulation.

For AS/NZS 2772.2 and the APANSA Standards the concept is time-averaged power which means there can be compensations for operations over longer periods e.g. 6 minutes.

One issue with the ACMA consultation documentation is there is no detailed specification of what exactly the ACMA has designated as high power. There is mention of 1kW but nowhere does the ACMA specify the emissions and transmitter power output levels that are associated in the format required by ITU Radio Regulations, Clause 1.156, i.e:

- pX
- pY
- pZ

Amateurs are going to respond with what they assume the ACMA means by the rubbery figure of 1kW. Making assumptions in these circumstances is not acceptable.

d. What is the technical description of this power level requirements (for example, transmitter output power, emission mode)?

1.5kW pY, for appropriate emission modes with the conversions for pX and pZ refer to the tables included with Question 5 above. Note: this was not a typo.

e. What amateur service frequency bands would be used?

MF, HF, VHF, UHF bands would be used. Maximum power limits determined by ITU recommendation.

f. How often will a higher power level be required?

Daily

g. What is the location of the station?

Any permitted by the Draft [Radiocommunications \(Amateur Stations\) Class Licence 2022](#)¹²⁹, **Clause 15 Operation of station – electromagnetic energy requirements** which references **Schedule 1 – Conditions about electromagnetic energy**.

¹²⁹ <https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20%28Amateur%20Stations%29%20Class%20Licence%202022.docx>

15. Should potential higher power authorisations be limited by location, position, event or something else?

Higher power authorisations should not be limited by location, position or event as it should be limited by compliance to the APANSA RS1 Standard or any other safety considerations. The process employed by the ASCMA to introduce high power operation into the Amateur Service is independent of these conditions or restrictions on authorisations.

Higher power stations should be limited by Electromagnetic Energy (EME) compliance calculations or measurements as required by the Draft [Radiocommunications \(Amateur Stations\) Class Licence 2022](#)¹³⁰, **Clause 15 Operation of station – electromagnetic energy requirements** which references **Schedule 1 – Conditions about electromagnetic energy**. Compliance with every safety requirement, including the mandatory compliance to the APANSA Standard would ensure everybody from the Advanced amateur operators of every station to all members of the general public are safe.

When the conditions and requirements of **Schedule 1** are in effect for any operation of a high power station in the Amateur Service then both the general public and amateurs will not be exposed to harm. As this requirement is mandatory for all locations, positions or events then any additional controls related to the ARPANSA RS1 Standard are just red-tape and expense for no benefit.

The Consultation document states, the Amateur Service represents the second largest number of Apparatus Licence holders in Australia. The transfer to a class licence will have a measureable impact on ACMA revenue. By imposing the costs of a Scientific Licence onto the Amateur Service the ACMA stands to gain income to replace the income lost by the conversion to a class licence.

There could be a suggestion that the additional layers of red-tape in the ACMA's proposal are just a technique to increase Amateur Service costs based on the requirement of Scientific Licences for high power operation. Then the proposed changes would just be a revenue raising techniques to replace the Apparatus Licence revenue that the ACMA will lose with the implementation of class licences. As the ACMA consultation does not include a Regulatory Impact Statement (RIS) or included any form of cost benefit analysis, then it is impossible to know what percentage of Advanced amateurs the ACMA estimates are likely to gain approval for high power under the restrictive operating conditions of Scientific Licences and what financial benefits would be gained by the AMCA and AMC.

Given the costs, time and material required to establish a station capable of Earth-Moon-Earth (EME) experiments, only a tiny proportion of Advanced amateurs are going to be interested in EME experiments. Other use cases proposed by the ACMA are similarly restrictive on conditions and limit the percentage of Advanced amateur that will be interested in these niche areas of experimentation. As the ACMA consultation proposes to have such restrictive conditions to justify an application for a Scientific Licence then there will be relatively few applications for Scientific Licences. Therefore the ACMA will generate little revenue and the introduction of Scientific Licences is not capable of replacing the lost revenue i.e. the proposed changes are not to raise revenue for the ACMA.

Given Amateur repeaters and beacons are to remain under Apparatus licences then an Apparatus Licences could be issued for high power operation by the Amateur Service. As an example of high power operation there is a 50 kW pZ transmitter power, 17,6247 W EIRP Apparatus Licence for the ABC. There is effectively no upper limit on high power operations possible with an Apparatus Licence. Therefore Amateur Service Apparatus Licences could be issued for high power operation by the ACMA

¹³⁰ <https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20%28Amateur%20Stations%29%20Class%20Licence%202022.docx>

instead of Scientific Licences. The ACMA consultation documents are silent on why an Apparatus Licence cannot be issued for high power, Advanced amateur licencing and operations.

Given such restrictive conditions for Scientific Licences then the aim of the ACMA proposal appears to be to deny the Amateur Service access to high power operation by excessive red-tape and excessive costs to prevent amateurs upgrading their stations for high power operation.

As the stated position of the ACMA position is to only approve high power operation on a case by case basis this assumption should have been explicitly stated in the missing Regulatory Impact Statement (RIS) to justify cost escalation to the Amateur Service and projected AMCA and AMC revenue.

The high power operation under discussion is actually less than the heating value of a one (1) bar, electric radiator. The move to Scientific Licences puts a red-tape roadblock to discourage Amateur operators from upgrading their stations for higher power. There was no Regulation Impact Statement (RIS), no details of the likely increase in compliance costs to the Amateur Service with no consultation concerning any of the likely changes in costs.

Obviously if the aim of the ACMA is to delay and restrict access to high power operation, now the most likely response by the ACMA is to delay implementation by requiring further work on the proposal possibly with another round of consultation on high power operation. It is over ten (10) years since the last high power trial so this process to access high power operation for Advance amateurs is now measured in decades. If the aim of the ACMA is to delay introduction of high power operation then the ACMA can claim to be very highly successful in achieving this aim.

Regulatory Burden

One topic that has received little attention in the ACMA consultation is the experience of regulatory authorities in countries that permit high power operation.

- New Zealand with similar language, culture, legislation and Standards (AS/NZS Standards, etc.) and can just about be considered another State of Australia given the unrestricted travel between our two countries.
- Canada which permits a much high power limit (2.25kW PEP) with similar range of population densities and similar land area.
- Japan with a much higher population and much smaller land area.
- USA with a long history of high power operation.
- United Kingdom that is grappling with similar compliance issues for the Amateur Service.

The ACMA consultation is silent on the regulatory burden on the Amateur Service in other countries and the response of other authorities to the question of compliance. For example the United Kingdom response by Ofcom and the RSGB to the question of compliance. Would the ACMA accept a compliance calculator that is an adaption of the RSGB calculator but based on AS/NZS 2772.2, APANSA RS1, and the ICNIRP 2020 Standards?

Secondary issues such as interference have not been demonstrated to be an issue in Australia or other countries. The Amateur Service has a long history of resolving interference issues at a local level and not requiring responses from the ACMA. Any response that a responsible Amateur takes at a local level to resolve interference issues may never reported to the ACMA. The ACMA consultation document is silent on the ACMA's experiences resolving interference issues generated by the Amateur Service in comparison to other Services, pirates, non-licenced Commercial users, etc. What has been the regulatory experience with the Amateur Service compared to pirates and the other Services (e.g.

Citizen Band operators) with penalties up to the confiscation of station equipment, fines, etc. The Amateur Service has a long history of responding appropriately to interference issues and the ACMA has not demonstrated in the consultation documentation why that should change with high power operation. The regulatory burden with the addition of the Scientific Licence red-tape and costs has not been justified.

Aerodromes

Interference causing disruption to aeronautical services by high power operation on the site of an aerodrome may contribute to an incident causing a loss of life. Such interference does not permit any time for the ACMA to respond to an interference incident. Therefore high power operation at locations within a fixed distance (e.g. 250m) of aerodromes sites should be forbidden on the grounds of safety.

Summary

The highest priority must be safety and compliance to Standards such as APANSA RS1, and a focus on safety must override the considerations of location, position or event.

A submission by
Garry Page, VK3ZGP/VK3Z
Hampton Park

Appendix 1 – Contests

Contests are a significant amateur service radiocommunication activity and the multiple, state based call sign prefixes can be a significant factor in successful results.

An incomplete list of active 2022-2023 contests that appear in the [WA7BNM Contest Calendar](#) 1998-2022 Bruce Horn, WA7BNM. Cancelled contests have been deleted and there may be an unknown number of active contests missing from this list.

With 720 entries in this table including contests that can run over days there would on average be more than two (2) contests per day for every day of the year.

Table 16 - List of Contests 2022-2023

Number	Contest	Date
1	CWops Test	0300Z-0400Z, Sep 1 and 0700Z-0800Z, Sep 1
2	NRAU 10m Activity Contest	1700Z-1800Z, Sep 1 (CW) and 1800Z-1900Z, Sep 1 (SSB) and 1900Z-2000Z, Sep 1 (FM) and 2000Z-2100Z, Sep 1 (Dig)
3	RTTYOPS Weeksprint	1700Z-1900Z, Sep 1
4	SKCC Sprint Europe	1900Z-2100Z, Sep 1
5	G3ZQS Memorial Straight Key Contest	2300Z, Sep 1 to 2300Z, Sep 3
6	NCCC RTTY Sprint	0145Z-0215Z, Sep 2
7	NCCC Sprint Ladder	0230Z-0300Z, Sep 2
8	K1USN Slow Speed Test	2000Z-2100Z, Sep 2
9	Russian RTTY WW Contest	0000Z-2359Z, Sep 3
10	CWops CW Open	0000Z-0359Z, Sep 3
11	All Asian DX Contest, Phone	0000Z, Sep 3 to 2400Z, Sep 4
12	Wake-Up! QRP Sprint	0600Z-0629Z, Sep 3 and 0630Z-0659Z, Sep 3 and 0700Z-0729Z, Sep 3 and 0730Z-0800Z, Sep 3
13	SARL Field Day Contest	0800Z, Sep 3 to 1000Z, Sep 9
14	CWops CW Open	1200Z-1559Z, Sep 3
15	RSGB SSB Field Day	1300Z, Sep 3 to 1300Z, Sep 4
16	AGCW Straight Key Party	1300Z-1600Z, Sep 3
17	IARU Region 1 Field Day, SSB	1300Z, Sep 3 to 1259Z, Sep 4
18	Colorado QSO Party	1300Z, Sep 3 to 0400Z, Sep 4

Number	Contest	Date
19	IARU Region 1 145 MHz Contest	1400Z, Sep 3 to 1400Z, Sep 4
20	CWOps CW Open	2000Z-2359Z, Sep 3
21	PODXS 070 Club Jay Hudak Memorial 80m Sprint	2000Z, Sep 3 to 2000Z, Sep 4
22	WAB 144 MHz QRO Phone	1000Z-1400Z, Sep 4
23	Tennessee QSO Party	1800Z, Sep 4 to 0300Z, Sep 5
24	K1USN Slow Speed Test	0000Z-0100Z, Sep 5
25	ICWC Medium Speed Test	1300Z-1400Z, Sep 5
26	OK1WC Memorial	1630Z-1729Z, Sep 5
27	RSGB 80m Autumn Series, SSB	1900Z-2030Z, Sep 5
28	ICWC Medium Speed Test	1900Z-2000Z, Sep 5
29	MI QRP Labor Day CW Sprint	2300Z, Sep 5 to 0300Z, Sep 6
30	Worldwide Sideband Activity Contest	0100Z-0159Z, Sep 6
31	ARS Spartan Sprint	0100Z-0300Z, Sep 6
32	ICWC Medium Speed Test	0300Z-0400Z, Sep 6
33	RTTYOPS Weeksprint	1700Z-1900Z, Sep 6
34	Phone Weekly Test	0230Z-0300Z, Sep 7
35	A1Club AWT	1200Z-1300Z, Sep 7
36	CWops Test	1300Z-1400Z, Sep 7
37	Mini-Test 40	1700Z-1759Z, Sep 7
38	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Sep 7
39	Mini-Test 80	1800Z-1859Z, Sep 7
40	CWops Test	1900Z-2000Z, Sep 7
41	UKEICC 80m Contest	2000Z-2100Z, Sep 7
42	Walk for the Bacon QRP Contest	0000Z-0100Z, Sep 8 and 0200Z-0300Z, Sep 9
43	CWops Test	0300Z-0400Z, Sep 8 0700Z-0800Z, Sep 8
44	RTTYOPS Weeksprint	1700Z-1900Z, Sep 8
45	EACW Meeting	1900Z-2000Z, Sep 8
46	NCCC RTTY Sprint	0145Z-0215Z, Sep 9

Number	Contest	Date
47	NCCC Sprint Ladder	0230Z-0300Z, Sep 9
48	K1USN Slow Speed Test	2000Z-2100Z, Sep 9
49	FOC QSO Party	0000Z-2359Z, Sep 10
50	YB7-DX Contest	0000Z, Sep 10 to 2359Z, Sep 11
51	WAE DX Contest, SSB	0000Z, Sep 10 to 2359Z, Sep 11
52	SKCC Weekend Sprintathon	1200Z, Sep 10 to 2400Z, Sep 11
53	Ohio State Parks on the Air	1400Z-2200Z, Sep 10
54	Russian Cup Digital Contest	1500Z-1859Z, Sep 10 and 0600Z-0959Z, Sep 11
55	Alabama QSO Party	1500Z, Sep 10 to 0300Z, Sep 11
56	ARRL September VHF Contest	1800Z, Sep 10 to 0300Z, Sep 12
57	North American Sprint, CW	0000Z-0400Z, Sep 11
58	K1USN Slow Speed Test	0000Z-0100Z, Sep 12
59	4 States QRP Group Second Sunday Sprint	0000Z-0200Z, Sep 12
60	ICWC Medium Speed Test	1300Z-1400Z, Sep 12
61	OK1WC Memorial	1630Z-1729Z, Sep 12
62	ICWC Medium Speed Test	1900Z-2000Z, Sep 12
63	Worldwide Sideband Activity Contest	0100Z-0159Z, Sep 13
64	ICWC Medium Speed Test	0300Z-0400Z, Sep 13
65	RTTYOPS Weeksprint	1700Z-1900Z, Sep 13
66	Phone Weekly Test	0230Z-0300Z, Sep 14
67	A1Club AWT	1200Z-1300Z, Sep 14
68	CWops Test	1300Z-1400Z, Sep 14
69	Mini-Test 40	1700Z-1759Z, Sep 14
70	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Sep 14
71	Mini-Test 80	1800Z-1859Z, Sep 14
72	RSGB 80m Autumn Series, CW	1900Z-2030Z, Sep 14
73	CWops Test	1900Z-2000Z, Sep 14
74	NAQCC CW Sprint	0030Z-0230Z, Sep 15
75	CWops Test	0300Z-0400Z, Sep 15

Number	Contest	Date
76	CWops Test	0700Z-0800Z, Sep 15
77	RTTYOPS Weeksprint	1700Z-1900Z, Sep 15
78	BCC QSO Party	1800Z-1959Z, Sep 15
79	NTC QSO Party	1900Z-2000Z, Sep 15
80	NCCC RTTY Sprint	0145Z-0215Z, Sep 16
81	NCCC Sprint Ladder	0230Z-0300Z, Sep 16
82	K1USN Slow Speed Test	2000Z-2100Z, Sep 16
83	AGB NEMIGA Contest	2100Z-2400Z, Sep 16
84	ARRL EME Contest	0000Z, Sep 17 to 2359Z, Sep 18
85	SARL VHF/UHF Digital Contest	0300Z-0500Z, Sep 17 (6m) and 0500Z-0700Z, Sep 17 (2m) and 0700Z-0900Z, Sep 17 (70cm) and 0300Z-0500Z, Sep 18 (2m) and 0500Z-0700Z, Sep 18 (6m) and 0700Z-0900Z, Sep 18 (70cm)
86	ARRL 10 GHz and Up Contest	0600 local, Sep 17 to 2400 local, Sep 18
87	Iowa QSO Party	1400Z, Sep 17 to 0200Z, Sep 18
88	Texas QSO Party	1400Z, Sep 17 to 0200Z, Sep 18 and 1400Z-2000Z, Sep 18
89	QRP Afield	1500Z-2100Z, Sep 17
90	Wisconsin Parks on the Air	1600Z-2300Z, Sep 17
91	Washington State Salmon Run	1600Z, Sep 17 to 0700Z, Sep 18 and 1600Z-2400Z, Sep 18
92	New Jersey QSO Party	1600Z, Sep 17 to 0359Z, Sep 18
93	New Hampshire QSO Party	1600Z, Sep 17 to 0400Z, Sep 18 and 1600Z-2200Z, Sep 18
94	Feld Hell Sprint	1800Z-1959Z, Sep 17
95	North American Sprint, RTTY	0000Z-0400Z, Sep 18
96	BARTG Sprint PSK63 Contest	1700Z-2059Z, Sep 18
97	Run for the Bacon QRP Contest	2300Z, Sep 18 to 0100Z, Sep 19
98	K1USN Slow Speed Test	0000Z-0100Z, Sep 19

Number	Contest	Date
99	ICWC Medium Speed Test	1300Z-1400Z, Sep 19
100	OK1WC Memorial	1630Z-1729Z, Sep 19
101	ICWC Medium Speed Test	1900Z-2000Z, Sep 19
102	144 MHz Fall Sprint	1900 local - 2300 local, Sep 19
103	Worldwide Sideband Activity Contest	0100Z-0159Z, Sep 20
104	ICWC Medium Speed Test	0300Z-0400Z, Sep 20
105	RTTYOPS Weeksprint	1700Z-1900Z, Sep 20
106	Phone Weekly Test	0230Z-0300Z, Sep 21
107	A1Club AWT	1200Z-1300Z, Sep 21
108	CWops Test	1300Z-1400Z, Sep 21
109	Mini-Test 40	1700Z-1759Z, Sep 21
110	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Sep 21
111	Mini-Test 80	1800Z-1859Z, Sep 21
112	CWops Test	1900Z-2000Z, Sep 21
113	Walk for the Bacon QRP Contest	0000Z-0100Z, Sep 22 and 0200Z-0300Z, Sep 23
114	CWops Test	0300Z-0400Z, Sep 22
115	CWops Test	0700Z-0800Z, Sep 22
116	RTTYOPS Weeksprint	1700Z-1900Z, Sep 22
117	RSGB 80m Autumn Series, Data	1900Z-2030Z, Sep 22
118	NCCC RTTY Sprint	0145Z-0215Z, Sep 23
119	NCCC Sprint Ladder	0230Z-0300Z, Sep 23
120	K1USN Slow Speed Test	2000Z-2100Z, Sep 23
121	CQ Worldwide DX Contest, RTTY	0000Z, Sep 24 to 2400Z, Sep 25
122	Maine QSO Party	1200Z, Sep 24 to 1200Z, Sep 25
123	Masonic Lodges on the Air	1400Z-2200Z, Sep 24
124	AGCW VHF/UHF Contest	1400Z-1700Z, Sep 24 (144) and 1700Z-1800Z, Sep 24 (432)
125	AWA Amplitude Modulation QSO Party	2200Z, Sep 24 to 2200Z, Sep 25
126	UBA ON Contest, 6m	0700Z-1000Z, Sep 25

Number	Contest	Date
127	K1USN Slow Speed Test	0000Z-0100Z, Sep 26
128	ICWC Medium Speed Test	1300Z-1400Z, Sep 26
129	QCX Challenge	1300Z-1400Z, Sep 26
130	OK1WC Memorial	1630Z-1729Z, Sep 26
131	RSGB FT4 Contest	1900Z-2030Z, Sep 26
132	ICWC Medium Speed Test	1900Z-2000Z, Sep 26
133	QCX Challenge	1900Z-2000Z, Sep 26
134	Worldwide Sideband Activity Contest	0100Z-0159Z, Sep 27
135	ICWC Medium Speed Test	0300Z-0400Z, Sep 27
136	QCX Challenge	0300Z-0400Z, Sep 27
137	RTTYOPS Weeksprint	1700Z-1900Z, Sep 27
138	222 MHz Fall Sprint	1900 local - 2300 local, Sep 27
139	SKCC Sprint	0000Z-0200Z, Sep 28
140	Phone Weekly Test	0230Z-0300Z, Sep 28
141	A1Club AWT	1200Z-1300Z, Sep 28
142	CWops Test	1300Z-1400Z, Sep 28
143	Mini-Test 40	1700Z-1759Z, Sep 28
144	Mini-Test 80	1800Z-1859Z, Sep 28
145	CWops Test	1900Z-2000Z, Sep 28
146	UKEICC 80m Contest	2000Z-2100Z, Sep 28
147	CWops Test	0300Z-0400Z, Sep 29 0700Z-0800Z, Sep 29
148	RTTYOPS Weeksprint	1700Z-1900Z, Sep 29
149	NCCC RTTY Sprint	0145Z-0215Z, Sep 30
150	NCCC Sprint Ladder	0230Z-0300Z, Sep 30
151	K1USN Slow Speed Test	2000Z-2100Z, Sep 30
152	Collegiate QSO Party	0000Z, Oct 1 to 2359Z, Oct 2
153	Oceania DX Contest, Phone	0600Z, Oct 1 to 0600Z, Oct 2
154	Worked All Provinces of China DX Contest	0600Z, Oct 1 to 0559Z, Oct 2
155	TRC DX Contest	Cancelled for 2022

Number	Contest	Date
156	Russian WW Digital Contest	1200Z, Oct 1 to 1159Z, Oct 2
157	IARU Region 1 UHF/Microwaves Contest	1400Z, Oct 1 to 1400Z, Oct 2
158	EU Sprint, SSB	1500Z-1859Z, Oct 1
159	International HELL-Contest	1600Z-1800Z, Oct 1 (80m) and 0900Z-1100Z, Oct 2 (40m)
160	California QSO Party	1600Z, Oct 1 to 2200Z, Oct 2
161	SKCC QSO Party	1800Z, Oct 1 to 1800Z, Oct 2
162	RSGB DX Contest	0600Z-1800Z, Oct 2
163	UBA ON Contest, SSB	0600Z-0900Z, Oct 2
164	Peanut Power QRP Sprint	2200Z-2359Z, Oct 2
165	K1USN Slow Speed Test	0000Z-0100Z, Oct 3
166	German Telegraphy Contest	0700Z-1000Z, Oct 3
167	ICWC Medium Speed Test	1300Z-1400Z, Oct 3
168	OK1WC Memorial	1630Z-1729Z, Oct 3
169	ICWC Medium Speed Test	1900Z-2000Z, Oct 3
170	RSGB 80m Autumn Series, CW	1900Z-2030Z, Oct 3
171	ARS Spartan Sprint	0100Z-0300Z, Oct 4
172	Worldwide Sideband Activity Contest	0100Z-0159Z, Oct 4
173	ICWC Medium Speed Test	0300Z-0400Z, Oct 4
174	RTTYOPS Weeksprint	1700Z-1900Z, Oct 4
175	Phone Weekly Test	0230Z-0300Z, Oct 5
176	A1Club AWT	1200Z-1300Z, Oct 5
177	CWops Test	1300Z-1400Z, Oct 5
178	Mini-Test 40	1700Z-1759Z, Oct 5
179	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Oct 5
180	Mini-Test 80	1800Z-1859Z, Oct 5
181	CWops Test	1900Z-2000Z, Oct 5
182	432 MHz Fall Sprint	1900 local - 2300 local, Oct 5
183	UKEICC 80m Contest	2000Z-2100Z, Oct 5

Number	Contest	Date
184	Walk for the Bacon QRP Contest	0000Z-0100Z, Oct 6 and 0200Z-0300Z, Oct 7
185	CWops Test	0300Z-0400Z, Oct 6 0700Z-0800Z, Oct 6
186	NRAU 10m Activity Contest	1700Z-1800Z, Oct 6 (CW) and 1800Z-1900Z, Oct 6 (SSB) and 1900Z-2000Z, Oct 6 (FM) and 2000Z-2100Z, Oct 6 (Dig)
187	RTTYOPS Weeksprint	1700Z-1900Z, Oct 6
188	SARL 80m QSO Party	1700Z-2000Z, Oct 6
189	SKCC Sprint Europe	1900Z-2100Z, Oct 6
190	NCCC RTTY Sprint	0145Z-0215Z, Oct 7
191	NCCC Sprint Ladder	0230Z-0300Z, Oct 7
192	K1USN Slow Speed Test	2000Z-2100Z, Oct 7
193	Makrothen RTTY Contest	0000Z-0800Z, Oct 8 and 1600Z-2400Z, Oct 8 and 0800Z-1600Z, Oct 9
194	QRP ARCI Fall QSO Party	0000Z-2359Z, Oct 8
195	Nevada QSO Party	0300Z, Oct 8 to 2100Z, Oct 9
196	Oceania DX Contest, CW	0600Z, Oct 8 to 0600Z, Oct 9
197	Microwave Fall Sprint	0800 local - 1400 local, Oct 8
198	SKCC Weekend Sprintathon	1200Z, Oct 8 to 2400Z, Oct 9
199	Scandinavian Activity Contest, SSB	Cancelled for 2022
200	Arizona QSO Party	1500Z, Oct 8 to 0500Z, Oct 9
201	Pennsylvania QSO Party	1600Z, Oct 8 to 0400Z, Oct 9 and 1300Z-2200Z, Oct 9
202	South Dakota QSO Party	1800Z, Oct 8 to 1800Z, Oct 9
203	PODXS 070 Club 160m Great Pumpkin Sprint	2000Z, Oct 8 to 2000Z, Oct 9
204	UBA ON Contest, CW	0600Z-0900Z, Oct 9
205	K1USN Slow Speed Test	0000Z-0100Z, Oct 10
206	4 States QRP Group Second Sunday Sprint	0000Z-0200Z, Oct 10
207	10-10 Int. 10-10 Day Sprint	0001Z-2359Z, Oct 10

Number	Contest	Date
208	ICWC Medium Speed Test	1300Z-1400Z, Oct 10
209	OK1WC Memorial	1630Z-1729Z, Oct 10
210	ICWC Medium Speed Test	1900Z-2000Z, Oct 10
211	Worldwide Sideband Activity Contest	0100Z-0159Z, Oct 11
212	ICWC Medium Speed Test	0300Z-0400Z, Oct 11
213	RTTYOPS Weeksprint	1700Z-1900Z, Oct 11
214	NAQCC CW Sprint	0030Z-0230Z, Oct 12
215	Phone Weekly Test	0230Z-0300Z, Oct 12
216	A1Club AWT	1200Z-1300Z, Oct 12
217	CWops Test	1300Z-1400Z, Oct 12
218	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Oct 12
219	Mini-Test 40	1700Z-1759Z, Oct 12
220	Mini-Test 80	1800Z-1859Z, Oct 12
221	CWops Test	1900Z-2000Z, Oct 12
222	RSGB 80m Autumn Series, Data	1900Z-2030Z, Oct 12
223	CWops Test	0300Z-0400Z, Oct 13 0700Z-0800Z, Oct 13
224	RTTYOPS Weeksprint	1700Z-1900Z, Oct 13
225	EACW Meeting	1900Z-2000Z, Oct 13
226	NCCC RTTY Sprint	0145Z-0215Z, Oct 14
227	NCCC Sprint	0230Z-0300Z, Oct 14
228	K1USN Slow Speed Test	2000Z-2100Z, Oct 14
229	JARTS WW RTTY Contest	0000Z, Oct 15 to 2400Z, Oct 16
230	ARRL EME Contest	0000Z, Oct 15 to 2359Z, Oct 16
231	10-10 Int. Fall Contest, CW	0001Z, Oct 15 to 2359Z, Oct 16
232	New York QSO Party	1400Z, Oct 15 to 0200Z, Oct 16
233	Worked All Germany Contest	1500Z, Oct 15 to 1459Z, Oct 16
234	Feld Hell Sprint	2000Z-2359Z, Oct 15
235	Argentina National 7 MHz Contest	2130Z-2230Z, Oct 15
236	Asia-Pacific Fall Sprint, CW	0000Z-0200Z, Oct 16

Number	Contest	Date
237	UBA ON Contest, 2m	0700Z-1000Z, Oct 16
238	Illinois QSO Party	1700Z, Oct 16 to 0100Z, Oct 17
239	RSGB RoLo CW	1900Z-2030Z, Oct 16
240	Run for the Bacon QRP Contest	2300Z, Oct 16 to 0100Z, Oct 17
241	K1USN Slow Speed Test	0000Z-0100Z, Oct 17
242	ARRL School Club Roundup	1300Z, Oct 17 to 2359Z, Oct 21
243	ICWC Medium Speed Test	1300Z-1400Z, Oct 17
244	OK1WC Memorial	1630Z-1729Z, Oct 17
245	ICWC Medium Speed Test	1900Z-2000Z, Oct 17
246	RSGB FT4 Contest	1900Z-2030Z, Oct 17
247	Worldwide Sideband Activity Contest	0100Z-0159Z, Oct 18
248	ICWC Medium Speed Test	0300Z-0400Z, Oct 18
249	RTTYOPS Weeksprint	1700Z-1900Z, Oct 18
250	Phone Weekly Test	0230Z-0300Z, Oct 19
251	A1Club AWT	1200Z-1300Z, Oct 19
252	CWops Test	1300Z-1400Z, Oct 19
253	Mini-Test 40	1700Z-1759Z, Oct 19
254	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Oct 19
255	Mini-Test 80	1800Z-1859Z, Oct 19
256	AGCW Semi-Automatic Key Evening	1900Z-2030Z, Oct 19
257	CWops Test	1900Z-2000Z, Oct 19
258	Walk for the Bacon QRP Contest	0000Z-0100Z, Oct 20 and 0200Z-0300Z, Oct 21
259	CWops Test	0300Z-0400Z, Oct 20 0700Z-0800Z, Oct 20
260	RTTYOPS Weeksprint	1700Z-1900Z, Oct 20
261	NTC QSO Party	1900Z-2000Z, Oct 20
262	NCCC RTTY Sprint	0145Z-0215Z, Oct 21
263	NCCC Sprint	0230Z-0300Z, Oct 21
264	Telephone Pioneers QSO Party	1700Z-2000Z, Oct 21 (CW/Dig) and 2200Z, Oct 21 to 0100Z, Oct 22 (SSB)

Number	Contest	Date
		and 1700-2000Z, Oct 22 (SSB) and 2200Z, Oct 22 to 0100Z, Oct 23 (CW/Dig)
265	K1USN Slow Speed Test	2000Z-2100Z, Oct 21
266	YBDXPI FT8 Contest	0000Z, Oct 22 to 2359Z, Oct 23
267	UK/EI DX Contest, SSB	1200Z, Oct 22 to 1200Z, Oct 23
268	YLRL DX/NA YL Anniversary Contest	1400Z, Oct 22 to 0200Z, Oct 24
269	Stew Perry Topband Challenge	1500Z, Oct 22 to 1500Z, Oct 23
270	North American SSB Sprint Contest	0000Z-0400Z, Oct 23
271	Classic Exchange, CW	1300Z, Oct 23 to 0700Z, Oct 24 and 1300Z, Oct 25 to 0700Z, Oct 26
272	K1USN Slow Speed Test	0000Z-0100Z, Oct 24
273	ICWC Medium Speed Test	1300Z-1400Z, Oct 24
274	OK1WC Memorial	1630Z-1729Z, Oct 24
275	ICWC Medium Speed Test	1900Z-2000Z, Oct 24
276	Worldwide Sideband Activity Contest	0100Z-0159Z, Oct 25
277	ICWC Medium Speed Test	0300Z-0400Z, Oct 25
278	RTTYOPS Weeksprint	1700Z-1900Z, Oct 25
279	SKCC Sprint	0000Z-0200Z, Oct 26
280	Phone Weekly Test	0230Z-0300Z, Oct 26
281	A1Club AWT	1200Z-1300Z, Oct 26
282	CWops Test	1300Z-1400Z, Oct 26
283	Mini-Test 40	1700Z-1759Z, Oct 26
284	Mini-Test 80	1800Z-1859Z, Oct 26
285	CWops Test	1900Z-2000Z, Oct 26
286	UKEICC 80m Contest	2000Z-2100Z, Oct 26
287	CWops Test	0300Z-0400Z, Oct 27 0700Z-0800Z, Oct 27
288	RTTYOPS Weeksprint	1700Z-1900Z, Oct 27
289	RSGB 80m Autumn Series, SSB	1900Z-2030Z, Oct 27

Number	Contest	Date
290	NCCC RTTY Sprint	0145Z-0215Z, Oct 28
291	NCCC Sprint	0230Z-0300Z, Oct 28
292	Zombie Shuffle	1600-2400 local, Oct 28
293	K1USN Slow Speed Test	2000Z-2100Z, Oct 28
294	CQ Worldwide DX Contest, SSB	0000Z, Oct 29 to 2359Z, Oct 30
295	Ham Spirit Contest, CW	0600Z, Oct 29 to 0559Z, Oct 30
296	K1USN Slow Speed Test	0000Z-0100Z, Oct 31
297	ICWC Medium Speed Test	1300Z-1400Z, Oct 31
298	QCX Challenge	1300Z-1400Z, Oct 31
299	OK1WC Memorial	1630Z-1729Z, Oct 31
300	ICWC Medium Speed Test	1900Z-2000Z, Oct 31
301	QCX Challenge	1900Z-2000Z, Oct 31
302	Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 1
303	ICWC Medium Speed Test	0300Z-0400Z, Nov 1
304	QCX Challenge	0300Z-0400Z, Nov 1
305	Silent Key Memorial Contest	0600Z-0859Z, Nov 1
306	RTTYOPS Weeksprint	1700Z-1900Z, Nov 1
307	Phone Weekly Test	0230Z-0300Z, Nov 2
308	A1Club AWT	1200Z-1300Z, Nov 2
309	CWops Test	1300Z-1400Z, Nov 2
310	Mini-Test 40	1700Z-1759Z, Nov 2
311	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Nov 2
312	Mini-Test 80	1800Z-1859Z, Nov 2
313	CWops Test	1900Z-2000Z, Nov 2
314	UKEICC 80m Contest	2000Z-2100Z, Nov 2
315	Walk for the Bacon QRP Contest	0000Z-0100Z, Nov 3 and 0200Z-0300Z, Nov 4
316	CWops Test	0300Z-0400Z, Nov 3 0700Z-0800Z, Nov 3
317	RTTYOPS Weeksprint	1700Z-1900Z, Nov 3

Number	Contest	Date
318	NRAU 10m Activity Contest	1800Z-1900Z, Nov 3 (CW) and 1900Z-2000Z, Nov 3 (SSB) and 2000Z-2100Z, Nov 3 (FM) and 2100Z-2200Z, Nov 3 (Dig)
319	SKCC Sprint Europe	2000Z-2200Z, Nov 3
320	NCCC RTTY Sprint	0145Z-0215Z, Nov 4
321	NCCC Sprint	0230Z-0300Z, Nov 4
322	K1USN Slow Speed Test	2000Z-2100Z, Nov 4
323	Gunung Jati DX Contest	0000Z, Nov 5 to 2359Z, Nov 6
324	ARRL Sweepstakes Contest, CW	2100Z, Nov 5 to 0300Z, Nov 7
325	EANET Sprint	0800Z-1200Z, Nov 6
326	High Speed Club CW Contest	1400Z-1700Z, Nov 6
327	K1USN Slow Speed Test	0000Z-0100Z, Nov 7
328	ICWC Medium Speed Test	1300Z-1400Z, Nov 7
329	OK1WC Memorial	1630Z-1729Z, Nov 7
330	ICWC Medium Speed Test	1900Z-2000Z, Nov 7
331	RSGB 80m Autumn Series, Data	2000Z-2130Z, Nov 7
332	Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 8
333	ARS Spartan Sprint	0200Z-0400Z, Nov 8
334	ICWC Medium Speed Test	0300Z-0400Z, Nov 8
335	RTTYOPS Weeksprint	1700Z-1900Z, Nov 8
336	Phone Weekly Test	0230Z-0300Z, Nov 9
337	A1Club AWT	1200Z-1300Z, Nov 9
338	CWops Test	1300Z-1400Z, Nov 9
339	Mini-Test 40	1700Z-1759Z, Nov 9
340	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Nov 9
341	Mini-Test 80	1800Z-1859Z, Nov 9
342	CWops Test	1900Z-2000Z, Nov 9 0300Z-0400Z, Nov 10 0700Z-0800Z, Nov 10
343	RTTYOPS Weeksprint	1700Z-1900Z, Nov 10

Number	Contest	Date
344	EACW Meeting	1900Z-2000Z, Nov 10
345	NCCC RTTY Sprint	0145Z-0215Z, Nov 11
346	NCCC Sprint	0230Z-0300Z, Nov 11
347	K1USN Slow Speed Test	2000Z-2100Z, Nov 11
348	PODXS 070 Club Triple Play Low Band Sprint	0000Z, Nov 12 to 2359Z, Nov 14
349	WAE DX Contest, RTTY	0000Z, Nov 12 to 2359Z, Nov 13
350	ARRL EME Contest	0000Z, Nov 12 to 2359Z, Nov 13
351	10-10 Int. Fall Contest, Digital	0001Z, Nov 12 to 2359Z, Nov 13
352	SARL VHF/UHF Analogue Contest	0300Z-0500Z, Nov 12 (6m) and 0501Z-0700Z, Nov 12 (2m) and 0701Z-0900Z, Nov 12 (70cm) and 0300Z-0500Z, Nov 13 (6m) and 0501Z-0700Z, Nov 13 (2m) and 0701Z-0900Z, Nov 13 (70cm)
353	JIDX Phone Contest	0700Z, Nov 12 to 1300Z, Nov 13
354	SKCC Weekend Sprintathon	1200Z, Nov 12 to 2400Z, Nov 13
355	OK/OM DX Contest, CW	1200Z, Nov 12 to 1200Z, Nov 13
356	FISTS Saturday Sprint	1600Z-1800Z, Nov 12
357	CQ-WE Contest	1900Z-2300Z, Nov 12 (CW/Digital) and 0100Z-0500Z, Nov 13 (Phone) and 1900Z-2300Z, Nov 13 (Phone) and 0100Z-0500Z, Nov 14 (CW/Digital)
358	AWA Bruce Kelley 1929 QSO Party	2300Z, Nov 12 to 0300Z, Nov 14 and 2300Z, Nov 19 to 0300Z, Nov 21
359	FIRAC HF Contest	0700Z to 1700Z, Nov 13
360	Classic Exchange, Phone	1400Z, Nov 13 to 0800Z, Nov 14 and 1400Z, Nov 15 to 0800Z, Nov 16
361	K1USN Slow Speed Test	0000Z-0100Z, Nov 14
362	4 States QRP Group Second Sunday Sprint	0100Z-0300Z, Nov 14
363	ICWC Medium Speed Test	1300Z-1400Z, Nov 14
364	OK1WC Memorial	1630Z-1729Z, Nov 14
365	ICWC Medium Speed Test	1900Z-2000Z, Nov 14
366	Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 15

Number	Contest	Date
367	ICWC Medium Speed Test	0300Z-0400Z, Nov 15
368	RTTYOPS Weeksprint	1700Z-1900Z, Nov 15
369	Phone Weekly Test	0230Z-0300Z, Nov 16
370	A1Club AWT	1200Z-1300Z, Nov 16
371	CWops Test	1300Z-1400Z, Nov 16
372	Mini-Test 40	1700Z-1759Z, Nov 16
373	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Nov 16
374	Mini-Test 80	1800Z-1859Z, Nov 16
374	CWops Test	1900Z-2000Z, Nov 16
376	RSGB 80m Autumn Series, SSB	2000Z-2130Z, Nov 16
377	Walk for the Bacon QRP Contest	0000Z-0100Z, Nov 17 and 0200Z-0300Z, Nov 18
378	NAQCC CW Sprint	0130Z-0330Z, Nov 17
379	CWops Test	0300Z-0400Z, Nov 17 0700Z-0800Z, Nov 17
380	RTTYOPS Weeksprint	1700Z-1900Z, Nov 17
381	NTC QSO Party	1900Z-2000Z, Nov 17
382	NCCC RTTY Sprint	0145Z-0215Z, Nov 18
383	NCCC Sprint	0230Z-0300Z, Nov 18
384	YO International PSK31 Contest	1600Z-2200Z, Nov 18
385	K1USN Slow Speed Test	2000Z-2100Z, Nov 18
386	SARL Field Day Contest	1000Z, Nov 19 to 1000Z, Nov 20
387	LZ DX Contest	1200Z, Nov 19 to 1200Z, Nov 20
388	All Austrian 160-Meter Contest	1600Z-2359Z, Nov 19
389	REF 160-Meter Contest	1700Z, Nov 19 to 0100Z, Nov 20
390	South American Integration Contest CW	1800Z, Nov 19 to 2100Z, Nov 20
391	RSGB 1.8 MHz Contest	1900Z-2300Z, Nov 19
392	Feld Hell Sprint	1900Z-2059Z, Nov 19
393	ARRL Sweepstakes Contest, SSB	2100Z, Nov 19 to 0300Z, Nov 21
394	Homebrew and Oldtime Equipment Party	1300-1500Z, Nov 20 (40m) and 1500-1700Z, Nov 20 (80m)

Number	Contest	Date
395	FISTS Sunday Sprint	2100Z-2300Z, Nov 20
396	Run for the Bacon QRP Contest	2300Z, Nov 20 to 0100Z, Nov 21
397	K1USN Slow Speed Test	0000Z-0100Z, Nov 21
398	ICWC Medium Speed Test	1300Z-1400Z, Nov 21
399	OK1WC Memorial	1630Z-1729Z, Nov 21
400	ICWC Medium Speed Test	1900Z-2000Z, Nov 21
401	Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 22
402	ICWC Medium Speed Test	0300Z-0400Z, Nov 22
403	RTTYOPS Weeksprint	1700Z-1900Z, Nov 22
404	SKCC Sprint	0000Z-0200Z, Nov 23
405	Phone Weekly Test	0230Z-0300Z, Nov 23
406	A1Club AWT	1200Z-1300Z, Nov 23
407	CWops Test	1300Z-1400Z, Nov 23
408	Mini-Test 40	1700Z-1759Z, Nov 23
409	Mini-Test 80	1800Z-1859Z, Nov 23
410	CWops Test	1900Z-2000Z, Nov 23 0300Z-0400Z, Nov 24 0700Z-0800Z, Nov 24
411	RTTYOPS Weeksprint	1700Z-1900Z, Nov 24
412	RSGB 80m Autumn Series, CW	2000Z-2130Z, Nov 24
413	NCCC RTTY Sprint	0145Z-0215Z, Nov 25
414	NCCC Sprint	0230Z-0300Z, Nov 25
415	K1USN Slow Speed Test	2000Z-2100Z, Nov 25
416	CQ Worldwide DX Contest, CW	0000Z, Nov 26 to 2400Z, Nov 27
417	Ham Spirit Contest, SSB	0600Z, Nov 26 to 0559Z, Nov 27
418	K1USN Slow Speed Test	0000Z-0100Z, Nov 28
419	QCX Challenge	1300Z-1400Z, Nov 28
420	ICWC Medium Speed Test	1300Z-1400Z, Nov 28
421	OK1WC Memorial	1630Z-1729Z, Nov 28
422	ICWC Medium Speed Test	1900Z-2000Z, Nov 28

Number	Contest	Date
423	QCX Challenge	1900Z-2000Z, Nov 28
424	RSGB FT4 Contest	2000Z-2130Z, Nov 28
425	Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 29
426	ICWC Medium Speed Test	0300Z-0400Z, Nov 29
427	QCX Challenge	0300Z-0400Z, Nov 29
428	RTTYOPS Weeksprint	1700Z-1900Z, Nov 29
429	Phone Weekly Test	0230Z-0300Z, Nov 30
430	A1Club AWT	1200Z-1300Z, Nov 30
431	CWops Test	1300Z-1400Z, Nov 30
432	Mini-Test 40	1700Z-1759Z, Nov 30
433	Mini-Test 80	1800Z-1859Z, Nov 30
434	CWops Test	1900Z-2000Z, Nov 30
435	UKEICC 80m Contest	2000Z-2100Z, Nov 30
436	QRP ARCI Topband Sprint	0000Z-0300Z, Dec 1
437	Walk for the Bacon QRP Contest	0000Z-0100Z, Dec 1 and 0200Z-0300Z, Dec 2
438	CWops Test	0300Z-0400Z, Dec 1 0700Z-0800Z, Dec 1
439	RTTYOPS Weeksprint	1700Z-1900Z, Dec 1
440	NRAU 10m Activity Contest	1800Z-1900Z, Dec 1 (CW) and 1900Z-2000Z, Dec 1 (SSB) and 2000Z-2100Z, Dec 1 (FM) and 2100Z-2200Z, Dec 1 (Dig)
441	SKCC Sprint Europe	2000Z-2200Z, Dec 1
442	NCCC RTTY Sprint	0145Z-0215Z, Dec 2
443	NCCC Sprint	0230Z-0300Z, Dec 2
444	K1USN Slow Speed Test	2000Z-2100Z, Dec 2
445	ARRL 160-Meter Contest	2200Z, Dec 2 to 1600Z, Dec 4
446	Wake-Up! QRP Sprint	0600Z-0629Z, Dec 3 and 0630Z-0659Z, Dec 3 and 0700Z-0729Z, Dec 3 and 0730Z-0800Z, Dec 3

Number	Contest	Date
447	PRO CW Contest	1200Z, Dec 3 to 1159Z, Dec 4
448	INORC Contest	1400Z, Dec 3 to 1359Z, Dec 4
449	FT Roundup	1800Z, Dec 3 to 2359Z, Dec 4
450	K1USN Slow Speed Test	0000Z-0100Z, Dec 5
451	ICWC Medium Speed Test	1300Z-1400Z, Dec 5
452	OK1WC Memorial	1630Z-1729Z, Dec 5
453	ICWC Medium Speed Test	1900Z-2000Z, Dec 5
454	Worldwide Sideband Activity Contest	0100Z-0159Z, Dec 6
455	ARS Spartan Sprint	0200Z-0400Z, Dec 6
456	ICWC Medium Speed Test	0300Z-0400Z, Dec 6
457	RTTYOPS Weeksprint	1700Z-1900Z, Dec 6
458	Phone Weekly Test	0230Z-0300Z, Dec 7
459	A1Club AWT	1200Z-1300Z, Dec 7
460	CWops Test	1300Z-1400Z, Dec 7
461	Mini-Test 40	1700Z-1759Z, Dec 7
462	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Dec 7
463	Mini-Test 80	1800Z-1859Z, Dec 7
464	CWops Test	1900Z-2000Z, Dec 7 0300Z-0400Z, Dec 8 0700Z-0800Z, Dec 8
465	RTTYOPS Weeksprint	1700Z-1900Z, Dec 8
466	EACW Meeting	1900Z-2000Z, Dec 8
467	NCCC RTTY Sprint	0145Z-0215Z, Dec 9
468	NCCC Sprint	0230Z-0300Z, Dec 9
469	K1USN Slow Speed Test	2000Z-2100Z, Dec 9
470	PODXS 070 Club Triple Play Low Band Sprint	0000Z, Dec 10 to 2359Z, Dec 12
471	ARRL 10-Meter Contest	0000Z, Dec 10 to 2400Z, Dec 11
472	SKCC Weekend Sprintathon	1200Z, Dec 10 to 2400Z, Dec 11
473	ARI 40/80 Contest	1300Z, Dec 10 to 1300Z, Dec 11
474	International Naval Contest	1600Z, Dec 10 to 1559Z, Dec 11

Number	Contest	Date
475	QRP ARCI Holiday Spirits Sprint	2000Z-2300Z, Dec 11
476	CQC Great Colorado Snowshoe Run	2100Z-2259Z, Dec 11
477	K1USN Slow Speed Test	0000Z-0100Z, Dec 12
478	4 States QRP Group Second Sunday Sprint	0100Z-0300Z, Dec 12
479	ICWC Medium Speed Test	1300Z-1400Z, Dec 12
480	OK1WC Memorial	1630Z-1729Z, Dec 12
481	ICWC Medium Speed Test	1900Z-2000Z, Dec 12
482	Worldwide Sideband Activity Contest	0100Z-0159Z, Dec 13
483	ICWC Medium Speed Test	0300Z-0400Z, Dec 13
484	RTTYOPS Weeksprint	1700Z-1900Z, Dec 13
485	NAQCC CW Sprint	0130Z-0330Z, Dec 14
486	Phone Weekly Test	0230Z-0300Z, Dec 14
487	A1Club AWT	1200Z-1300Z, Dec 14
488	CWops Test	1300Z-1400Z, Dec 14
489	Mini-Test 40	1700Z-1759Z, Dec 14
490	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Dec 14
491	Mini-Test 80	1800Z-1859Z, Dec 14
492	CWops Test	1900Z-2000Z, Dec 14
493	Walk for the Bacon QRP Contest	0000Z-0100Z, Dec 15 and 0200Z-0300Z, Dec 16
494	CWops Test	0300Z-0400Z, Dec 15 0700Z-0800Z, Dec 15
495	RTTYOPS Weeksprint	1700Z-1900Z, Dec 15
496	NTC QSO Party	1900Z-2000Z, Dec 15
497	NCCC RTTY Sprint	0145Z-0215Z, Dec 16
498	NCCC Sprint	0230Z-0300Z, Dec 16
499	AGB-Party Contest	1600Z-1700Z, Dec 16
500	Russian 160-Meter Contest	1800Z-2200Z, Dec 16
501	K1USN Slow Speed Test	2000Z-2100Z, Dec 16
502	RAC Winter Contest	0000Z-2359Z, Dec 17

Number	Contest	Date
503	Feld Hell Sprint	0000Z-2359Z, Dec 17
504	OK DX RTTY Contest	0000Z-2400Z, Dec 17
505	Croatian CW Contest	1400Z, Dec 17 to 1400Z, Dec 18
506	Stew Perry Topband Challenge	1500Z, Dec 17 to 1500Z, Dec 18
507	ARRL Rookie Roundup, CW	1800Z-2359Z, Dec 18
508	Run for the Bacon QRP Contest	2300Z, Dec 18 to 0100Z, Dec 19
509	K1USN Slow Speed Test	0000Z-0100Z, Dec 19
510	ICWC Medium Speed Test	1300Z-1400Z, Dec 19
511	OK1WC Memorial	1630Z-1729Z, Dec 19
512	ICWC Medium Speed Test	1900Z-2000Z, Dec 19
513	Worldwide Sideband Activity Contest	0100Z-0159Z, Dec 20
514	ICWC Medium Speed Test	0300Z-0400Z, Dec 20
515	RTTYOPS Weeksprint	1700Z-1900Z, Dec 20
516	NAQCC CW Sprint	0130Z-0330Z, Dec 21
517	Phone Weekly Test	0230Z-0300Z, Dec 21
518	A1Club AWT	1200Z-1300Z, Dec 21
519	CWops Test	1300Z-1400Z, Dec 21
520	Mini-Test 40	1700Z-1759Z, Dec 21
521	VHF-UHF FT8 Activity Contest	1700Z-2100Z, Dec 21
522	Mini-Test 80	1800Z-1859Z, Dec 21
523	CWops Test	1900Z-2000Z, Dec 21 0300Z-0400Z, Dec 22 0700Z-0800Z, Dec 22
524	RTTYOPS Weeksprint	1700Z-1900Z, Dec 22
525	NCCC RTTY Sprint	0145Z-0215Z, Dec 23
526	NCCC Sprint	0230Z-0300Z, Dec 23
527	K1USN Slow Speed Test	2000Z-2100Z, Dec 23
528	CW QRS Xmas Activity	0000Z, Dec 24 to 2359Z, Dec 31
529	RAEM Contest	0000Z-1159Z, Dec 25
530	K1USN Slow Speed Test	0000Z-0100Z, Dec 26

Number	Contest	Date
531	DARC Christmas Contest	0830Z-1059Z, Dec 26
532	ICWC Medium Speed Test	1300Z-1400Z, Dec 26
533	QCX Challenge	1300Z-1400Z, Dec 26
534	OK1WC Memorial	1630Z-1729Z, Dec 26
535	ICWC Medium Speed Test	1900Z-2000Z, Dec 26
536	QCX Challenge	1900Z-2000Z, Dec 26
537	Worldwide Sideband Activity Contest	0100Z-0159Z, Dec 27
538	ICWC Medium Speed Test	0300Z-0400Z, Dec 27
539	QCX Challenge	0300Z-0400Z, Dec 27
540	RTTYOPS Weeksprint	1700Z-1900Z, Dec 27
541	SKCC Sprint	0000Z-0200Z, Dec 28
542	Phone Weekly Test	0230Z-0300Z, Dec 28
543	A1Club AWT	1200Z-1300Z, Dec 28
544	CWops Test	1300Z-1400Z, Dec 28
545	Mini-Test 40	1700Z-1759Z, Dec 28
546	Mini-Test 80	1800Z-1859Z, Dec 28
547	CWops Test	1900Z-2000Z, Dec 28 0300Z-0400Z, Dec 29 0700Z-0800Z, Dec 29
548	RTTYOPS Weeksprint	1700Z-1900Z, Dec 29
549	NCCC RTTY Sprint	0145Z-0215Z, Dec 30
550	NCCC Sprint	0230Z-0300Z, Dec 30
551	YOTA Contest	1200Z-2359Z, Dec 30
552	K1USN Slow Speed Test	2000Z-2100Z, Dec 30
553	Bogor Old and New Contest	0900Z-2359Z, Dec 31
554	AGB New Year Snowball Contest	0000Z-0100Z, Jan 1
555	SARTG New Year RTTY Contest	0800Z-1100Z, Jan 1
556	AGCW Happy New Year Contest	0900Z-1200Z, Jan 1
557	AGCW VHF/UHF Contest	1400Z-1800Z, Jan 1
558	WW PMC Contest	1200Z, Jan 7 to 1200Z, Jan 8

Number	Contest	Date
559	ARRL RTTY Roundup	1800Z, Jan 7 to 2400Z, Jan 8
560	ARRL Kids Day	1800Z-2359Z, Jan 7
561	EUCW 160m Contest	2000Z, Jan 7 to 0700Z, Jan 8
562	DARC 10-Meter Contest	0900Z-1059Z, Jan 8
563	Midwinter Contest	1000Z-1400Z, Jan 8
564	YB DX Contest	0000Z-2359Z, Jan 14
565	UBA PSK63 Prefix Contest	1200Z, Jan 14 to 1159Z, Jan 15
566	North American QSO Party, CW	1800Z, Jan 14 to 0600Z, Jan 15
567	NRAU-Baltic Contest, CW	0630Z-0830Z, Jan 15
568	NRAU-Baltic Contest, SSB	0900Z-1100Z, Jan 15
569	Hungarian DX Contest	1200Z, Jan 21 to 1200Z, Jan 22
570	PRO Digi Contest	1200Z, Jan 21 to 1159Z, Jan 22
571	North American QSO Party, SSB	1800Z, Jan 21 to 0600Z, Jan 22
572	ARRL January VHF Contest	1900Z, Jan 21 to 0359Z, Jan 23
573	CQ 160-Meter Contest, CW	2200Z, Jan 27 to 2159Z, Jan 29
574	REF Contest, CW	0600Z, Jan 28 to 1800Z, Jan 29
575	BARTG RTTY Sprint	1200Z, Jan 28 to 1200Z, Jan 29
576	UBA DX Contest, SSB	1300Z, Jan 28 to 1300Z, Jan 29
577	Winter Field Day	1700Z, Jan 28 to 1700Z, Jan 29
578	Vermont QSO Party	0000Z, Feb 4 to 2400Z, Feb 5
579	10-10 Int. Winter Contest, SSB	0001Z, Feb 4 to 2359Z, Feb 5
580	European Union DX Contest	1200Z, Feb 4 to 1200Z, Feb 5
581	Mexico RTTY International Contest	1200Z, Feb 4 to 2359Z, Feb 5
582	Minnesota QSO Party	1400Z-2400Z, Feb 4
583	FYBO Winter QRP Sprint	1400Z-2400Z, Feb 4
584	AGCW Straight Key Party	1600Z-1900Z, Feb 4
585	British Columbia QSO Party	1600Z, Feb 4 to 2400Z, Feb 5
586	North American Sprint, CW	2300Z, Feb 4 to 0300Z, Feb 5
587	CQ WW RTTY WPX Contest	0000Z, Feb 11 to 2400Z, Feb 12
588	SARL Field Day Contest	1000Z, Feb 11 to 1000Z, Feb 12

Number	Contest	Date
589	Asia-Pacific Spring Sprint, CW	1100Z-1300Z, Feb 11
590	KCJ Topband Contest	1200Z, Feb 11 to 1200Z, Feb 12
591	Dutch PACC Contest	1200Z, Feb 11 to 1200Z, Feb 12
592	ARRL School Club Roundup	1300Z, Feb 13 to 2359Z, Feb 17
593	PODXS 070 Club Valentine Sprint	0000Z-2359Z, Feb 14
594	AGCW Semi-Automatic Key Evening	1900Z-2030Z, Feb 15
595	ARRL Inter. DX Contest, CW	0000Z, Feb 18 to 2400Z, Feb 19
596	CQ 160-Meter Contest, SSB	2200Z, Feb 24 to 2159Z, Feb 26
597	REF Contest, SSB	0600Z, Feb 25 to 1800Z, Feb 26
598	UBA DX Contest, CW	1300Z, Feb 25 to 1300Z, Feb 26
599	North American QSO Party, RTTY	1800Z, Feb 25 to 0600Z, Feb 26
600	High Speed Club CW Contest	1400Z-1700Z, Feb 26
601	North Carolina QSO Party	1500Z, Feb 26 to 0100Z, Feb 27
602	Novice Rig Roundup	0000Z, Mar 4 to 2359Z, Mar 12
603	ARRL Inter. DX Contest, SSB	0000Z, Mar 4 to 2400Z, Mar 5
604	Wake-Up! QRP Sprint	0600Z-0800Z, Mar 4
605	Open Ukraine RTTY Championship	1800Z, Mar 4 to 1359Z, Mar 5
606	SARL Hamnet 40m Simulated Emerg Contest	1200Z-1400Z, Mar 5
607	AGCW YL-CW Party	1900Z-2100Z, Mar 7
608	YB DX RTTY Contest	0000Z-2359Z, Mar 11
609	RSGB Commonwealth (BERU) Contest	1000Z, Mar 11 to 1000Z, Mar 12
610	AGCW QRP Contest	1400Z-2000Z, Mar 11
611	Oklahoma QSO Party	1400Z, Mar 11 to 2100Z, Mar 12
612	Stew Perry Topband Challenge	1500Z, Mar 11 to 1500Z, Mar 12
613	EA PSK63 Contest	1600Z, Mar 11 to 1600Z, Mar 12
614	Idaho QSO Party	1900Z, Mar 11 to 1900Z, Mar 12
615	North American Sprint, RTTY	2300Z, Mar 11 to 0300Z, Mar 12
616	Wisconsin QSO Party	1800Z, Mar 12 to 0100Z, Mar 13
617	BARTG HF RTTY Contest	0200Z, Mar 18 to 0200Z, Mar 20
618	Russian DX Contest	1200Z, Mar 18 to 1200Z, Mar 19

Number	Contest	Date
619	AGCW VHF/UHF Contest	1400Z-1800Z, Mar 18
620	Bucharest Digital Contest	1800Z-2059Z, Mar 20
621	FOC QSO Party	0000Z-2359Z, Mar 25
622	CQ WW WPX Contest, SSB	0000Z, Mar 25 to 2400Z, Mar 26
623	PODXS 070 Club PSK 31 Flavors Contest	1000Z, Apr 1 to 0400Z, Apr 2
624	Louisiana QSO Party	1400Z, Apr 1 to 0200Z, Apr 2
625	SP DX Contest	1500Z, Apr 1 to 1500Z, Apr 2
626	SARL 80m QSO Party	1700Z-2000Z, Apr 6
627	QRP ARCI Spring QSO Party	0000Z-2359Z, Apr 8
628	JIDX CW Contest	0700Z, Apr 8 to 1300Z, Apr 9
629	IG-RY World Wide RTTY Contest	1200Z, Apr 8 to 1800Z, Apr 9
630	New Mexico QSO Party	1400Z, Apr 8 to 0200Z, Apr 9
631	EU Sprint, SSB	1500Z-1859Z, Apr 8
632	Georgia QSO Party	1800Z, Apr 8 to 2359Z, Apr 9
633	Hungarian Straight Key Contest	1500Z-1700Z, Apr 9
634	Holyland DX Contest	2100Z, Apr 14 to 2100Z, Apr 15
635	ES Open HF Championship	0500Z-0859Z, Apr 15
636	Worked All Provinces of China DX Contest	0600Z, Apr 15 to 0559Z, Apr 16
637	YU DX Contest	0700Z, Apr 15 to 0659Z, Apr 16
638	QRP to the Field	0800 local-1800 local, Apr 15
639	CQMM DX Contest	0900Z, Apr 15 to 2359Z, Apr 16
640	Michigan QSO Party	1600Z, Apr 15 to 0400Z, Apr 16
641	Ontario QSO Party	1800Z, Apr 15 to 1800Z, Apr 16
642	ARRL Rookie Roundup, SSB	1800Z-2359Z, Apr 16
643	SP DX RTTY Contest	1200Z, Apr 22 to 1200Z, Apr 23
644	10-10 Int. Spring Contest, Digital	0001Z, Apr 29 to 2359Z, Apr 30
645	Helvetia Contest	1300Z, Apr 29 to 1259Z, Apr 30
646	Florida QSO Party	1600Z, Apr 29 to 2159Z, Apr 30
647	AGCW QRP/QRP Party	1300Z-1900Z, May 1
648	MIE 33 Contest	2300Z, May 4 to 0300Z, May 5

Number	Contest	Date
649	10-10 Int. Spring Contest, CW	0001Z, May 6 to 2359Z, May 7
650	RCC Cup	0300Z-0859Z, May 6
651	SBMS 2.3 GHz and Up Contest and Club Challenge	0600 local, May 6 to 2359 local, May 7
652	ARI International DX Contest	1200Z, May 6 to 1159Z, May 7
653	7th Call Area QSO Party	1300Z, May 6 to 0700Z, May 7
654	Indiana QSO Party	1600Z, May 6 to 0400Z, May 7
655	Delaware QSO Party	1700Z, May 6 to 2359Z, May 7
656	New England QSO Party	2000Z, May 6 to 2400Z, May 7
657	VOLTA WW RTTY Contest	1200Z, May 13 to 1200Z, May 14
658	CQ-M International DX Contest	1200Z, May 13 to 1159Z, May 14
659	NZART Sangster Shield Contest	0800Z, May 20 to 1100Z, May 21
660	His Maj. King of Spain Contest, CW	1200Z, May 20 to 1200Z, May 21
661	Arkansas QSO Party	1400Z, May 20 to 0200Z, May 21
662	Baltic Contest	2100Z, May 20 to 0200Z, May 21
663	QRP ARCI Hootowl Sprint	0000Z-0100Z, May 22
664	CQ WW WPX Contest, CW	0000Z, May 27 to 2400Z, May 28
665	10-10 Int. Open Season PSK Contest	0001Z, Jun 3 to 2359Z, Jun 4
666	Wake-Up! QRP Sprint	0600Z-0800Z, Jun 3
667	Tisza Cup CW Contest	1200Z, Jun 3 to 1159Z, Jun 4
668	Kentucky QSO Party	1300Z, Jun 3 to 0100Z, Jun 4
669	ARRL Inter. Digital Contest	1800Z, Jun 3 to 2400Z, Jun 4
670	VK Shires Contest	0600Z, Jun 10 to 0600Z, Jun 11
671	Asia-Pacific Sprint, SSB	1100Z-1300Z, Jun 10
672	Portugal Day Contest	1200Z, Jun 10 to 1159Z, Jun 11
673	GACW WWSA CW DX Contest	1500Z, Jun 10 to 1500Z, Jun 11
674	REF DDFM 6m Contest	1600Z, Jun 10 to 1600Z, Jun 11
675	ARRL June VHF Contest	1800Z, Jun 10 to 0300Z, Jun 12
676	All Asian DX Contest, CW	0000Z, Jun 17 to 2400Z, Jun 18
677	SMIRK Contest	0000Z, Jun 17 to 2359Z, Jun 18

Number	Contest	Date
678	AGCW VHF/UHF Contest	1400Z-1800Z, Jun 17
679	IARU Region 1 50 MHz Contest	1400Z, Jun 17 to 1400Z, Jun 18
680	Stew Perry Topband Challenge	1500Z, Jun 17 to 1500Z, Jun 18
681	West Virginia QSO Party	1600Z, Jun 17 to 0400Z, Jun 18
682	ARRL Kids Day	1800Z-2359Z, Jun 17
683	Ukrainian DX DIGI Contest	1200Z, Jun 24 to 1200Z, Jun 25
684	His Maj. King of Spain Contest, SSB	1200Z, Jun 24 to 1200Z, Jun 25
685	ARRL Field Day	1800Z, Jun 24 to 2100Z, Jun 25
686	Venezuelan Ind. Day Contest	0000Z-2359Z, Jul 1
687	RAC Canada Day Contest	0000Z-2359Z, Jul 1
688	NZART Memorial Contest	0800Z, Jul 1 to 1100Z, Jul 2
689	DL-DX RTTY Contest	1100Z, Jul 1 to 1059Z, Jul 2
690	Marconi Memorial HF Contest	1400Z, Jul 1 to 1400Z, Jul 2
691	IARU HF World Championship	1200Z, Jul 8 to 1200Z, Jul 9
692	QRP ARCI Summer Homebrew Sprint	2000Z-2300Z, Jul 9
693	IARU Region 1 70 MHz Contest	1400Z, Jul 15 to 1400Z, Jul 16
694	North American QSO Party, RTTY	1800Z, Jul 15 to 0600Z, Jul 16
695	CQ Worldwide VHF Contest	1800Z, Jul 15 to 2100Z, Jul 16
696	RSGB IOTA Contest	1200Z, Jul 29 to 1200Z, Jul 30
697	ARS Flight of the Bumblebees	1700Z-2100Z, Jul 30
698	Batavia FT8 Contest	0000Z, Aug 5 to 2359Z, Aug 6
699	10-10 Int. Summer Contest, SSB	0001Z, Aug 5 to 2359Z, Aug 6
700	European HF Championship	1200Z-2359Z, Aug 5
701	North American QSO Party, CW	1800Z, Aug 5 to 0600Z, Aug 6
702	ARRL 222 MHz and Up Distance Contest	1800Z, Aug 5 to 1800Z, Aug 6
703	SARL HF Phone Contest	1300Z-1630Z, Aug 6
704	WAE DX Contest, CW	0000Z, Aug 12 to 2359Z, Aug 13
705	Maryland-DC QSO Party	1400Z, Aug 12 to 0400Z, Aug 13
706	SARTG WW RTTY Contest	0000Z, Aug 19 to 1600Z, Aug 20
707	ARRL 10 GHz and Up Contest	0600 local, Aug 19 to 2400 local, Aug 20

Number	Contest	Date
708	North American QSO Party, SSB	1800Z, Aug 19 to 0600Z, Aug 20
709	CVA DX Contest, CW	2100Z, Aug 19 to 2100Z, Aug 20
710	NJQRP Skeeter Hunt	1700Z-2100Z, Aug 20
711	ARRL Rookie Roundup, RTTY	1800Z-2359Z, Aug 20
712	Hawaii QSO Party	0400Z, Aug 26 to 0400Z, Aug 28
713	ALARA Contest	0600Z, Aug 26 to 0559Z, Aug 27
714	W/VE Islands QSO Party	1200Z, Aug 26 to 0300Z, Aug 27
715	World Wide Digi DX Contest	1200Z, Aug 26 to 1200Z, Aug 27
716	YO DX HF Contest	1200Z, Aug 26 to 1200Z, Aug 27
717	Kansas QSO Party	1400Z, Aug 26 to 2000Z, Aug 27
718	Ohio QSO Party	1600Z, Aug 26 to 0400Z, Aug 27
719	CVA DX Contest, SSB	2100Z, Aug 26 to 2100Z, Aug 27
720	SARL HF CW Contest	1400Z-1600Z, Aug 27

Appendix 2 – Compliance Calculations

There are various online calculators available for ElectroMagnetic Energy (EME) compliance calculations. The RSGB's [EMF Calculator v2.0.1 20/9/2022](#)¹³¹ will be used to provide compliance calculations based upon ICNIRP guidelines (2020). The APANSA Standard is also based on these same ICNIRP guidelines. Obviously this calculator is not specified as AS/NZS 2772.2:2016 compliant only that it is ITU-T K,52 (ICNIRP 2020 Limits) compliant.

The calculator includes a wide selection of antenna and the calculation results for the following antenna will be included in tables below.

- 3 element Yagi
- 4 element Yagi
- 40m long wire as the typical suburban block would be unlikely to accommodate any longer lengths.
- Half wave dipole
- Hustler 4BTV. Four (4) band HF vertical for 10, 15, 20 and 40m bands.
- Quarter wave vertical
- Trapped vertical

Calculations are performed for the 160m, 80m, 40m, 20m, 15m, and 10m bands. The base heights of the antenna in the calculations are 3m, 4m, 5m, 8m, 10m and 12m.

Results are for transmission mode of a Carrier or FM as this is used with a Mode Factor of 100% with a Transmit Percentage pf 100% in six (6) minutes. With this configuration there can be no confusion between peak and average power. The modelling assumptions are the output will be the maximum, safe, time-averaged transmitter power output that does not require any horizontal separation distance from the antenna by a 1.8m tall member of the general public. That is a member of the general public could walk up to the antenna (at 0 metres) and still not exceed the exposure limit for the general public.

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Schedule 1—Conditions about electromagnetic energy

3 Presumptions about compliance with the condition in subclause 2(1) – low risk stations

Application

- (1) This clause applies in relation to an amateur station (other than a mobile station):
- (a) for which:
- (i) the average total power supplied by the station to all antennas fed by the station is not more than 100 watts; and
- (ii) each antenna fed by the station is installed so that it is inaccessible to a member of the general public; or
- (b) for which:

¹³¹ <https://rsgb.org/main/technical/emc/emf-exposure/>

¹³² Draft Class Licence:- <https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20%28Amateur%20Stations%29%20Class%20Licence%202022.docx>

(i) the base of the lowest antenna fed by the station is at least 10 metres above ground level; and

(ii) the average total EIRP of all antennas fed by the station is not more than 3200 watts in any direction.

The calculations in the tables below are based on the (1)(b)(ii) limit of 3,200 Watts EIRP. When the transmitter power is restricted by this EIRP limit the cell will have a light grey background colour. The height of the test subject used as a substitute for a human is 1.8 metres. Therefore the vertical separation distances between the antenna and the test subject varies from 1.2m (i.e. 3m – 1.8m) to 10.2m (12m – 1.8m).

Some antennas are not designed for operation on all bands. In those cases the entries will be set to “No Calc.”.

This first set of calculations indicates that every antenna is compliant when the base height is 10m and the time-averaged transmitter power level is 100W (or higher) for all bands.

Safe Transmitter Power Level

Table 17 – Maximum Safe Tx Power - 3 Element Yagi

Band (m)	Height 3m	Height 4m	Height 5m	Height 8m	Height 10m	Height 12m
160	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
80	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
40	15	52	112	420	609	609
20	7	24	50	190	333	516
15	4	13	29	111	194	300
10	2	8	17	65	114	176

If standing at the base of the antenna, a 3m base antenna height with a 3 element Yagi would only be compliant at low QRP power. Obviously a 1.2m vertical separation distance provides a minimal buffer. At such low antenna base heights even QRP power levels (< 10W) would not be compliant at 0m from the antenna.

Table 18 – Maximum Safe Tx Power – 4 Element Yagi

Band (m)	Height 3m	Height 4m	Height 5m	Height 8m	Height 10m	Height 12m
160	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
80	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
40	16	55	117	440	638	638
20	8	20	44	166	290	449
15	3	11	24	90	157	244
10	2	7	15	57	100	155

This is the only antenna in this subset of antennas that is compliant at exactly 100W at 10m antenna base height. Possibly just a coincidence, alternatively this is why the ACMA has specified 10m as the minimum antenna base height.

Table 19 – Maximum Safe Tx Power – 40m Long Wire

Band (m)	Height 3m	Height 4m	Height 5m	Height 8m	Height 10m	Height 12m
160	57	192	406	1,526	>2,000	>2,000
80	52	175	370	1,392	>2,000	>2,000
40	42	142	301	1,131	1,641	1,641
20	13	44	94	355	621	961
15	5	17	37	139	244	378
10	2	8	17	67	118	182

This 40m Long Wire antenna has such low gain at 80m and 160m that the RSGB calculator is unable to provide results for the 10m and 12m heights. A 40m Long Wire Antenna at 4m height that is only used on the 40m or 80m bands with a time averaged 100W transmitter output power would be not exceed the general public compliance level.

Table 20 – Maximum Safe Tx Power – Half wave dipole

Band (m)	Height 3m	Height 4m	Height 5m	Height 8m	Height 10m	Height 12m
160	50	169	358	1,345	1,950	1,950
80	50	169	358	1,345	1,950	1,950
40	50	169	358	1,345	1,950	1,950
20	25	84	178	669	1,170	1,810
15	14	47	101	380	665	1,029
10	9	31	66	247	433	671

This calculator essentially performs its calculations in a black box so that the basis for its results are unknown. For instance, these results for the Half-Wave Dipole are the only ones where the 160m, 80m and 40m are identical. For this set of calculations the antenna height is $\frac{1}{4}\lambda$ or less therefore it appears a rule of thumb for antenna gain has been applied.

Table 21 – Maximum Safe Tx Power – Hustler 4BTV

Band (m)	Height 3m	Height 4m	Height 5m	Height 8m	Height 10m	Height 12m
160	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
80	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
40	47	158	334	1,255	1,820	1,820
20	21	71	151	569	996	1,541
15	9	31	67	247	433	671
10	4	15	32	120	210	325

Table 22 – Maximum Safe Tx Power – Quarter wave vertical

Band (m)	Height 3m	Height 4m	Height 5m	Height 8m	Height 10m	Height 12m
160	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
80	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
40	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
20	28	96	204	766	1,340	>2,000
15	7	26	55	209	366	567
10	4	16	34	129	225	348

Table 23 – Maximum Safe Tx Power – Trapped vertical

Band (m)	Height 3m	Height 4m	Height 5m	Height 8m	Height 10m	Height 12m
160	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
80	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.	No Calc.
40	100	271	574	>2,000	>2,000	>2,000
20	28	95	202	759	1,328	>2,000
15	14	49	104	393	688	1,689
10	10	35	75	281	492	1,101

For every band all these antennas would be compliant with 100W time averaged power at an antenna base height of 10m. The requirement for Clause 1(a) is a maximum time-average power of 100W and the general public does not have access to the antenna.

10m and 40m Frequency Band – Horizontal Separation For Compliance

By using a 3m base height for an antenna the horizontal separation distance for compliance dominates. Calculations were performed for the 10m and 40m bands using a time-averaged 100W transmitter power. The horizontal separation distance for compliance is shown.

Table 24 - Horizontal Separation for Compliance

Antenna	10m Band Distance	40M Band Distance	80M Band Distance	160m Band Distance
3 Element Yagi	7.6m	2.8m	No Calc.	No Calc.
4 Element Yagi	8.1m	2.7m	No Calc.	No Calc.
40m Long Wire	7.4m	1.4m	1.1m	1.0m
Half-Wave Dipole	3.7m	1.2m	1.2m	1.2m
Hustler 4BTV	5.5m	No Calc.	No Calc.	No Calc.
Quarter-Wave Vertical	5.3m	1.1m	1.1m	No Calc.
Trapped Vertical	3.5m	0.6m	No Calc.	No Calc.

Some antennas in the 10m band can require a significant horizontal buffer while the 'lower gain/efficiency' of the 40m band antennas significantly reduce/shrink their horizontal buffer distances.

70cm Longer Yagi

A 70cm, longer Yagi (18dBi Antenna Gain) at 10m height with the main Lobe limited to 3,200 Watts EIRP (at 50 W time-average transmitter power) requires a horizontal separation distance of 15.1m

Long-Wire (40m & 80m)

A lineal dimension is a measurement of the horizontal or vertical dimension. Lineal dimensions may not represent the true distance between beginning and end dimension points because they do not take into account angles away from the horizontal or vertical into account.

AS/NZS 2772.2 notes **D** is the largest linear dimension across the effective aperture of the antenna. A common approximation for **D** is to use the largest linear dimension of the radiating antenna.

For stacked arrays and aperture antennas only for distances beyond $r = D^2/\lambda$ does the radiated phase front from these antenna begin to become spherical. For most purposes the far-field of antenna arrays or an aperture antenna¹³³ is defined as occurring at distances r such that $r > 2D^2/\lambda$

While AS/NZS 2772.2 simply defines the far-field as $r > 2D^2/\lambda + \lambda/4$ with the additional $\lambda/4$ having the largest impact at low frequencies (longest wavelength) and for electrically short antennas. Note: an End-fed Wire antenna less than 1λ cannot be described as a [Long-Wire antenna](#)¹³⁴. This AS/NZS 2772.2 Standard formula is without a reference to Long-Wire and End-Fed antennas.

The Draft document requires measurements in the Far-Field and provides a formula to enable calculation for the distance from the antenna. The RSGB compliance calculator reports compliance distances less than 10m for the 40m Long-Wire antenna for all bands between 160m and 10m.

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Schedule 1—Conditions about electromagnetic energy

1 Interpretation

Far field, of an antenna, means the region from the antenna that is beyond the larger of:

- (a) $2D^2/\lambda$;

The following table is the calculated far-field distance for four (4) Long-Wire antennas over the HF bands. A Yaesu FT-897D has two antenna connectors 160m – 6m plus 2m -70cm, therefore calculations were performed for the 160m – 6m bands. The Draft requires measurements in the far-field. Catch is the far-field calculations can be sensitive to the wire length, frequency and the Standard chosen.

Table 25 - Long-Wire Far-Field Distances – ACMA Draft Formula

Band	Long-Wire Far-Field 10m	Long-Wire Far-Field 20m	Long-Wire Far-Field 40m	Long-Wire Far-Field 80m
160m	1.25m	5m	20m	80m
80m	2.50m	10m	40m	160m
40m	5.00m	20m	80m	320m
20m	10.00m	40m	160m	640m
15m	13.33m	53m	213m	853m
10m	20.00m	80m	320m	1,280m
6m	33.33m	133m	533m	2,133m

As the length of the Long-Wire antenna doubles the distance to the far-field using this formula increase by a factor of 4. The calculation for 10m band returns distances of approximately 1/3 km of for the 40m Long-Wire and over 1.2km for the 80m long-Wire.

¹³³ Equation 3.3.18 :- https://ocw.mit.edu/courses/6-661-receivers-antennas-and-signals-spring-2003/10025a78ab17e1e0866126246b751d11_ch3new.pdf

¹³⁴ <http://on5au.be/content/a10/wire/lw1.html>

¹³⁵ Draft Class Licence:- <https://www.acma.gov.au/sites/default/files/2022-09/Draft%20Radiocommunications%20%28Amateur%20Stations%29%20Class%20Licence%202022.docx>

A relatively low gain, 40m Long-Wire antenna with a far-field at 320m on the 10m band does not appear reasonable when the compliance distance is calculated as 7.4m for the general public compliance to ICNIRP 2020 Limits.

This is without considering the case for a requirement to measure in a 'far-field' of 2.13km for the 6m band. That puts the calculated 'far-field' at 355.6λ

Table 26 - 160m Band Far-Field Calculations

Band	Long-Wire Far-Field 10m	Long-Wire Far-Field 20m	Long-Wire Far-Field 40m	Long-Wire Far-Field 80m
Draft, Schedule 1	1.25m	5m	20m	80m
AS/NZS 2772.2	41.25m	45m	60m	120m

Table 27 - 80m Band Far-Field Calculations

Band	Long-Wire Far-Field 10m	Long-Wire Far-Field 20m	Long-Wire Far-Field 40m	Long-Wire Far-Field 80m
Draft, Schedule 1	2.5m	10m	40m	160m
AS/NZS 2772.2	20.5m	30m	60m	180m

Table 28 - 40m Band Far-Field Calculation

Band	Long-Wire Far-Field 10m	Long-Wire Far-Field 20m	Long-Wire Far-Field 40m	Long-Wire Far-Field 80m
Draft, Schedule 1	5m	20m	80m	320m
AS/NZS 2772.2	15m	30m	90m	330m

IEEE Standard C95.3 (2021)

Annex A (informative)

A.5 Source-environment plane

A.5.2 Distance from the source

d. Far-field region:

...

Although the transition from the non-radiating near-field region is a gradual one, the far-field region is commonly understood to begin at a distance of about $2a^2/\lambda$ for antennas with equiphase excitation and extends to infinity (a is the largest linear dimension of the source and λ is the wavelength at the frequency of interest). This criterion is not adequate for all types of antennas and should not be applied indiscriminately.

The Draft needs to correct the definition and formula for the calculation of *far-field* as antennas in the Amateur Service can start as simple as End-Fed or Long-Wire through simple to complex, experimental designs. This is especially true for the case of variants of End-Fed and Long-Wire antennas are common, low cost, entry level designs implemented in the Amateur Service.