

November 28 2022.

The Manager
Spectrum Licensing Policy
Australian Communications and Media Authority

Re: Invitation to Comment on Proposed Amateur Radio Class Licencing & High Power Operation

Thank you for the opportunity to provide comments on proposed regulatory arrangements for the operation of non-assigned amateur stations. Confidentiality is **not claimed** for this submission.

As a brief overview of this submission, I substantially agree with the revised Class Licencing proposal, with some concerns such as the fine detail on the creation, content and maintenance of a public register of callsigns. The high power question is one that particularly troubles me, primarily because the ACMA is proposing operation via a totally inappropriate Scientific Licence in the short term. I will present my solution to the thorny issue of ensuring compliance with the ARPANSA public safety emission limits and mitigation of interference to other spectrum users.

Set out hereunder are my responses to the ACMA's consultation questions

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? (See section 3.)

Not only do I agree with the proposed access by Standard amateurs, but see no reason for excluding Foundation Licence amateurs. The 6m band should not be subject to restricted access.

2. What are your views on the proposed policy on call sign transfer? (See section 4.)

I agree that call sign transfers between amateurs be permitted. However, with the proposed implementation of zero licence fees from July 1, 2023 there is a distinct possibility of call sign 'banking' and trading for financial reward. This is not desirable, therefore some limit must be imposed, particularly in respect to highly sought after '2 letter' call signs.

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)? (See section 4.)

The New Zealand experience with accuracy of data held in a call sign register is that the up-to-date status is going to be problematic - [personal correspondence with the President of the New Zealand Association of Radio Transmitters]. I would argue that the revalidation period of 5 years is too long to wait, and suggest perhaps an email sent to the amateur's email address held by the call sign entity be done every 2 years. A failure to respond, after a limited number of such emails would result in the call sign being flagged as 'dormant'. I do not see this accuracy issue being easily solved, particularly if there is an unreasonable cost burden placed on the call sign entity to maintain the register.

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? (See section 4.)

I have stated my view on this 'unlimited' banking of call signs as part of my response to Q2.

5. Do you have any concerns with the other proposed call sign management arrangements? If so, what are they? (See section 4.)

No doubt there are many concerns regarding the ACMA's proposal to leave it to the amateur community to maintain its own register/registers or use an existing voluntary register of assigned amateur call signs. Personally, I use the current ACMA RRL to check both the validity & licence class of operators, and would be alarmed if it were to be replaced by some other less accurate register.

I strongly urge the ACMA to mandate that a public database be maintained by the call sign entity, and at a minimum, ensure the call sign and level of qualification pertaining to that call sign be listed. I appreciate that privacy concerns may prevent an address for the holder of a call sign being publicly available, however a broad geographical identification such as a town/suburb within a state/territory should be visible. A 'last renewed' date could also be made visible.

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? (See section 5.)

There is a large register [named QRZ.com] hosted in the USA but data is typically inserted on a voluntary basis. Whilst useful for making email contact with other amateurs in the data base, it is a very poor substitute for the ACMA RRL. Indeed any voluntary opt-in data base for call sign holders is going to be quite unsatisfactory, and just this aspect alone underscores the need for the ACMA to mandate the keeping of a public register as said in my response to Q5 above.

7. Do you anticipate any difficulties operating your station in Conference of Postal and Telecommunications Administrations signatory countries? (See section 5.)

I do not expect to ever take advantage of this arrangement, but noting New Zealand has a perfectly workable solution whereby amateur radio certificates are created with forms of text that are acceptable to CEPT administrations, then an identical approach here should be quite satisfactory.

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? (See section 6.)

I find this proposal utterly impracticable as a solution to granting higher power outputs for any amateur radio purpose. It seems to me that the ACMA has very selectively chosen a very minor aspect of amateur radio activity [moon bounce and meteor scatter] as if it were an everyday pursuit by the majority of Advanced licence holders. In truth, perhaps one could count on two hands the number of amateurs whose interests extend to active engagement in these activities.

The fundamental reason amateurs seek authorisation to use high power is overwhelmingly to enhance high frequency communication over long distances in Australia as well as intercontinental working. Path losses together with a rising background noise floor due to the proliferation of digital devices with uncontrolled radiation of the products of high frequency switching necessitates power increases of the order of 4dB to 6dB. In practical terms, this translates to 1kW to 1.5kW pX, which are common high power limits [but not the highest] set by many administrations.

The purpose of the amateur service as defined by the ITU [International Telecommunications Union] in that body's Radio Regulation 1.56 is "**A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly**

authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.”

A Scientific Licence **does not support inter-communication** as a primary activity and thus is not really ‘fit for purpose’. Furthermore, application costs are an exorbitant and unfair financial barrier.

It is my conclusion that the ACMA’s option for Scientific Licencing should be seen for what it really is - firstly, a clumsy attempt to limit access to higher power operation by way of a huge monetary impost, and secondly, to misleadingly suggest there is very little interest by amateurs in accessing higher power operation due to the clear lack of applications that will flow from the implementation of such a policy. It is out of kilter with management of high power operation elsewhere. **This proposal should be confined to the Extremely Bad Policy bin and never see the light of day again!**

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? (See section 6.)

As said in response to Q8 above, Scientific Licencing is not appropriate for any amateur radio purpose. The amateur radio licence has been created to cover specific activities and therefore is the only appropriate vehicle for enhancing those defined activities.

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. (See section 6.)

The ACMA need only look across the Tasman Sea to New Zealand to see how it is possible to **seamlessly move** from 400W pX to a higher power output without compromising public safety. But firstly, I would like to examine why 400W pX has been set as the highest power level in Australia.

The 400W pX limit is a remnant of an approach by the British Post Office [BPO] to setting a power limit for amateur radio operation in the UK. Prior to the increased usage of single sideband, amplitude modulation was the principle mode for voice communication and the BPO limited power input to the final stage of a transmitter to 150W DC. Noting that under full modulation the DC power input rises to 4 x 150W to 600W, and assuming an efficiency of 67% in the final stage, the power output becomes an effective 400W pX. This formula was adopted slavishly by former colonies of the UK, namely South Africa, India, Ceylon [now Sri Lanka], Malaysia, Singapore, New Zealand and Australia. That limit may have been viewed as reasonable for a small geographic entity like the UK, but Australia is a continent, mostly very sparsely populated, quite remote from densely populated Europe and not comparable with limitations deemed desirable and appropriate for the UK.

Time has since marched on and for many of those Commonwealth countries, administrations have implemented different power limits. South Africa, Sri Lanka and New Zealand have increased power limits to 1kW pX. India sets the limit to 400W DC input – effectively 1kW pX, and Singapore specifies 300W DC input or effectively 800W pX.

The ACMA should note how effortlessly (and without a whiff of paranoia) other administrations have set their high power limits – I have more to say on this in my response to Q15. It then becomes a matter for amateurs to be compliant with the ARPANSA public safety emission limits. **It works for New Zealand and in dozens of other countries, and there is no clearly obvious reason why it should not work here.** I have been in contact with Radio Spectrum Management [RSM] which is the New Zealand regulator, in regard to their experience with a 1kW pX limit that was introduced ten

years ago in November 2012. **Their response is attached to this submission**, but in essence RSM have had very few complaints of amateur caused interference. RSM have said one particular brand of TV was susceptible to interference – not an amateur caused problem, but a manufacturing design defect. Also stated was that a number of complainants were vindictive where neighbours were using any excuse to be rid of masts and antennae on an adjoining property. Amateur equipment was tested and proven not to be creating interference.

I would submit that the RSM response is convincing evidence that amateur operation using more than 400W pX can be carried out in urban settings. But precisely just how much more power over and above 400W pX can be safely used is ultimately determined by software modelling to ensure the ARPANSA public safety emission limits are not exceeded. Two particularly ‘fit for purpose’ software packages are freely available. Locally, there is the VK3UM V7.12 program downloadable from the WIA website -

www.wia.org.au/members/technical/emr/

The Radio Society of Great Britain has an EMR modelling program (web app) on their website –

rsgb.org/main/technical/emc/emf-exposure/

11. Is a 1kW power limit appropriate? Why or why not? If not, what alternative do you propose and why?

I have set out reasons in responding to Q8 as to why more than 400W pX is needed in an Australian context in particular circumstances. At this juncture it is important to clarify the quantum of power that an amateur station needs to use at any point in time, because it will almost certainly not be the maximum permitted value. To quantify this, I suggest the class licence should include words [example, a new Section 16 (4)] to the effect -

“An amateur station must use the minimum transmitter power necessary to carry out the desired communications”.

So, within the power output available to a given station up to the maximum permitted level, under favourable propagation conditions amateurs will generally be using **substantially less** than the maximum power. I trust this is clearly understood by the ACMA.

Australia lies within ITU Region 3, and by way of examples, permitted maximum powers [pX] range from 2kW in the Philippines, 1.5kW in South Korea and Taiwan, 1kW in the Peoples Republic of China, Indonesia, Thailand, Sri Lanka, India and New Zealand and 800W in Singapore. Australia and Malaysia permit a substantially lower 400W.

It is reasonable to have a power limit up to 1.5kW pX for intercontinental working or for long distance working within Australia under difficult propagation conditions. Again, such power output must be constrained by compliance with the ARPANSA public safety emission limit.

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?

I believe that the bands from 160m to 10m except the 30m band should be accessed for higher power operation. Some administrations, eg FCC USA limit 30m power to 200W pX as the amateur service is a secondary one and the band is relatively narrow. For the remainder of bands from 6m

and higher in frequency, 1kW pX is probably sufficient. The two allocations at 137kHz and 476kHz have special technical requirements which should exclude them from higher power access.

13. What use-cases would require stations to operate at power limits for Advanced amateurs higher than the 400W currently permitted?

See my response to Q14

14. What use-cases would require stations to operate at power limits for Advanced amateurs higher than the 400W currently permitted? (See section 6.)

For each use-case mentioned in 13, please briefly answer:

- a. **Why is a higher power limit needed?**
- b. **What are the specific limitations of the current power limit?**
- c. **What power level is required?**
- d. **What is the technical description of these power level requirements (for example, transmitter output power, emission mode)?**
- e. **What amateur service frequency bands would be used?**
- f. **How often will a higher power level be required?**
- g. **What is the location of the station?**

I do not intend on wasting an enormous amount of time on providing excruciating detail for each of the several bands and or modes for which I would use power greater than the current 400W pX limit. Please refer to my response to Q8 – I think it is quite sufficient to say yet again that higher power operation would be used as needed whenever poor propagation conditions dictate it, or higher noise levels at the receiving station make it clearly necessary. It is hardly different to driving a motor vehicle; the speed at which you do so is determined by road conditions up to a legal limit. We do not need a commentary on every gear change, application of brakes or speed attained on a journey!

15. Should potential higher power authorisations be limited by:

location?

position?

event?

something else?

Please provide details to support your answer.

This is a very pertinent question to ask and goes to the heart of constraints that may be necessary to ensure firstly, public safety is not jeopardised and secondly, to lessen potential interference to other spectrum users.

Clearly, EME must meet the current ARPANSA standard AS/NZS 2772.2 and **it is acknowledged that some amateur radio stations may well not be able to do so using high power in closely settled urban environments**. Conversely, stations operating from rural locations or smaller acreage blocks located at the fringe of urban areas should have no difficulty meeting the ARPANSA standard. A balance needs to be struck between ACMA reservations and the assurance of public safety.

In my particular case, I reside on a 4 hectare property, surrounded by acreage blocks. I participated in the 1kW trial in 2012/2013 and my station was determined by the ACMA to be Level 1 compliant. I would have no difficulty in being Level 1 compliant at the 1.5kW pX power level.

I note that the WIA is proposing a staged implementation of a high power limit, commencing with a trialled relatively easy-to-achieve compliance in rural settings. If that approach satisfies the ACMA's reservations then I would be agreeable to such a process of 'testing the waters'.

Also noted is the likelihood of a **formal assessment procedure** to ensure Advanced licence holders are competent enough to manage their use of higher power privileges in a fully compliant manner. The format of such an assessment needs to be firmed up, and I believe the best two parties to develop this are the ACMA and the WIA. Again, I have no difficulty accepting this so long as **it is incorporated in the Class Licence as a prerequisite to operating at a proposed high power limit.**

A Pragmatic Solution for Implementation of High Power Operation

I propose that the ACMA create a “High Power” variant of the Advanced Licence (along the lines suggested by the WIA) and incorporate that variant into the proposed new Class Licence, Section 9 part 1 – Recognised Qualifications.

The resulting minor redrafting would appear similar to this

9 Recognising qualifications

- (1) The ACMA may, in writing, declare a qualification or overseas licence to be one or more of the following:
 - (a) a recognised qualification (Advanced - High Power Type);
 - (b) a recognised qualification (Advanced Type);
 - (c) a recognised qualification (Foundation Type);
 - (d) a recognised qualification (Standard Type).

Only those amateurs who have completed and have been deemed competent in a proposed formal assessment process will be eligible to use output power beyond 400W pX as authorised under [my] section 9 (1) (a).

In **Schedule 2**, a new **Table D** would need to be created – **Recognised Qualification** (new name eg Advanced – High Power Type) and the high power limit would then be specified in Column 2 (Power Limits) against Column1 (Frequency Bands). As suggested examples, 400W pX would become 1.5kW pX and 120W pY would become 500W pY.

This would go well beyond the approach taken by other administrations - I do not believe that to be a bad thing - and at the same time must be able to be implemented without unnecessary regulatory burden on both the amateur service and the ACMA. Indeed, the ACMA [which needs certainty that amateurs will show compliance with the ARPANSA standard and maintain required record keeping] would then be seen to be ‘showing the way forward’ in ensuring amateurs do have the necessary quantifiable understanding of working with high power together with the requisite competence to set up their station for safe operation.

This proposal does have merit, is workable and should not be dismissed lightly by the ACMA.

(CJ Bourke) VK4YE/AG5US

Email address: [REDACTED]

AMA Client: [REDACTED]

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Attachment – Email Correspondence With RSM New Zealand

From: [REDACTED]

Sent: Thursday, 20 October 2022 11:45 PM

To: [REDACTED]

Subject: Amateur Radio Compliance Matters.

Madam/Sir,

My name is Christopher Bourke, a licenced Amateur Radio operator, resident in the State of Queensland, Australia.

The purpose of this correspondence is to gather information regarding any incidence of radio frequency interference by New Zealand Amateur Radio operators that has been notified to the RSM since the time that the maximum permitted power output was raised to 1kW PEP around ten years ago.

Currently the Australian regulator, the Australian Communications and Media Authority (ACMA) is seeking public comment on a proposal to permit Australian Amateur Radio operators to use up to 1kW PEP output power. One concern raised is the potential for increased interference to other spectrum users. I am therefore seeking information on the extent of reported instances (if any) of such interference since New Zealand raised the maximum permitted output power from 400W PEP to 1kW PEP.

According to Mark Gooding, President of NZART (the national representative body for Radio Amateurs in New Zealand), there have been no publicised cases of radio frequency interference, and if complaints were made, they were dealt with and resolved expeditiously. It is worth noting at this point that both Australia and New Zealand use the same standard, namely AS/NZS 2772.2, for setting maximum electromagnetic field exposure levels for humans. Indeed the ACMA has made numerous references to the manner in which the Amateur Radio service is administered in New Zealand, and may well model some of the proposed Class Licencing on it.

Australia and New Zealand have similar settlement patterns; relatively densely populated urban environments and sparsely populated rural communities. Therefore I would expect to see a far higher incidence of radio frequency interference in an urban area where the distance from an antenna to neighbouring properties is quite short. Also, I would suspect that the replacement of analogue TV with digital TV technology would lessen the propensity for the most common type of potential interference.

I thank you in advance for any information and guidance you may be able to provide to me.

Regards,

Christopher Bourke

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Kia Ora Christopher

Thank you for your enquiry.

While it is difficult to obtain exact figures, to my knowledge there have only been a handful of interference cases over the last 10 years which were directly related to Amateur installations.

Most of these cases involved TV reception disruption caused by adjacent (geographically) Amateur transmissions. We found that often the cause was poor equipment setup or some TV's being susceptible to overload – one brand in particular was known for it. Most of the time the issue was able to be resolved quickly with assistance from the Amateur operator. From memory I recall in one case the Amateur contributed to the cost of a new TV for the neighbour.

Overall I don't believe that there are wide spread issues, the examples we have seen had specific functions that led to the interference. Every now and then we do get reports from people who live next to Amateurs with large installations but on investigation we can't see any issues, its more often they are offended by the antenna masts and looking for any excuse to get them removed

Regards

Nathan Schaffer

From: [REDACTED]
Sent: Tuesday, 8 November 2022 5:29 AM
To: [REDACTED]
Subject: RE: Amateur Radio Compliance Matters. [IN-CONFIDENCE:RELEASE EXTERNAL] [IN-CONFIDENCE: RELEASE-EXTERNAL]

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From: [REDACTED]
Sent: Tuesday, 8 November 2022 11:25 am
To: Nathan Schaffer [REDACTED]

Subject: RE: Amateur Radio Compliance Matters. [IN-CONFIDENCE:RELEASE EXTERNAL] [IN-CONFIDENCE: RELEASE-EXTERNAL]

Nathan,

Thank you for the very prompt reply to my enquiry regarding instances of Amateur Radio interference issues.

What you have said pretty much aligns with my thoughts as well as comments from NZART, the national representative body for Amateur Radio operators in New Zealand. Interference these days really is a double edged sword. On one hand there is a failure on the part of some manufacturers of consumer electronics to ensure their product has a sufficiently robust EMC (electromagnetic compatibility) to be able to adequately reject the unintentional reception of electromagnetic energy. The other side of the issue is the generation and radiation of electromagnetic energy in the form of radio frequencies which appear in the pass bands of amateur receiving equipment. On this side of the Tasman we are witnessing high levels of radio frequencies being radiated from LED lighting systems as well as roof mounted PV panels. In the latter case, it is due to the clear lack of a well-designed filtering system to remove radio frequencies from fast switching in the inverter component of the system. It is probably a fair comment to say that the Amateur Radio fraternity is more sinned against than having sinned in respect to radio interference.

I would like to include your email as part of my submission to our regulator, the ACMA (Australian Communications and Media Authority) which is currently seeking comments in regard to proposed Class Licencing of Radio Amateurs as well as higher power operation of transmitting equipment. Do you envisage any unintended breach of protocol should I do so!

Regards,

Chris Bourke

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From: [REDACTED]
Sent: Tuesday, 8 November 2022 10:06 AM
To: [REDACTED]
Subject: RE: Amateur Radio Compliance Matters. [IN-CONFIDENCE: RELEASE EXTERNAL] [IN-CONFIDENCE: RELEASE-EXTERNAL]

Hi Chris,

I see no issues with including my email into your submission.

Thanks

Nathan

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