

18 July 2023

Nova Systems**Canberra Office**

Level 2, 15 Lancaster Place
Majura Park ACT 2609

Telephone: +61 2 6239 2666

Web: www.NovaSystems.com.au

Our Reference:

The Manager

Frequency Planning Section
Australian Communications and Media Authority

Nova Systems Comment to: “Proposal to remake Public Safety and Emergency Response Class Licence”.

Nova Systems (Nova) would like to thank the Australian Communications and Media Authority (ACMA) for the opportunity to provide initial comment on the proposal to remake the Radiocommunications (Public Safety and Emergency Response) Class Licence 2013 (PSER Class Licence).

Nova has extensive experience in the radiocommunications engineering, spectrum management and regulatory areas that enable spectrum access to critically important band segments of spectrum like the 4940 – 4990 MHz band. Nova have been providing spectrum design, interference management, strategic and procurement technical related advice to Public Protection and Disaster Relief (aka emergency service) agencies for more than 20 years and understand the mission critical nature of accessing dedicated spectrum to meet their current and future communications system needs.

Nova strongly supports the need for continued access to the 4.9GHz band for emergency service agencies to support the existing high speed data services in operation, but also to support the future mission critical voice and data applications that are being planned for through new radio technologies such as mesh radio and 5G. Having continued access to the dedicated 4.9GHz band will be essential to enable emergency services operations:

- to provide flexible solutions that augment coverage and capacity when other networks fail or do not provide coverage or sufficient capacity.
- to better protect life and property through improving the situational awareness during operations in the future. Examples include accessing anywhere in real time data bases from the field and providing pictures and video from the field.

Nova is of the opinion that the current PSER Class Licence will need to be amended to include opportunity for future technologies, including those identified in the Five-Year Spectrum Outlook (5G etc) as well as consideration of the implications of mission critical systems in a class licensed, no-protection framework. Further, Nova is of the opinion that the ACMA could improve the functional use of the band by considering best practice national management techniques that will enable a risk reduction in the potential for interference and contention while improving spectral efficiencies by way of state and national coordinated

use. The USA provides a useful template, where the Federal Communications Commission has recently established a co-ordinated nationwide approach to managing the 4.9GHz band, in part through the addition of a nationwide band manager role.

Nova has provided specific responses to the questions that are contained within the consultation paper in the attached Annex 1.

Nova looks forward to the consultation and collaboration with the ACMA and is available to elaborate on our comments above should the ACMA require. Nova's point of contact is Mr Glenn Odium, [REDACTED].

Kind regards



Greg McKinnon

Electromagnetic Mission Engineering and Security Portfolio Manager



The smarts behind the solution.

Annex 1 – Response to Specific Questions in the Consultation

Question 1

Is the class licence still needed? Why or why not?

Nova supports access to the 4.9GHz Band for Public Safety (PS) and considers that a Class Licence for the Band provides the significant flexibility for the PS community to embrace current and modern technologies into the foreseeable future. Nova is further of the opinion that an Apparatus Licence framework is not likely to provide additional benefit without significant regulatory effort and specific technical frameworks.

Nova suggests that the PS community would benefit from some changes to the current class licence, encouraging/mandating the implementation of a more focussed management framework to enhance the spectrum access, increase visibility of use and enable technological change. More detail on this will be described within the following responses to questions.

Question 2

Is the class licence operating effectively and efficiently? Why or why not?

Nova is of the view that the current Class Licence is not operating as efficiently or effectively as it could as a result of the one fundamental element that relies on the concept of predominately using technical parameter limits to manage spectrum. Assuming that there will be an inherent level of protection due to the limits, but then not affording any protection to services that will be used for Public Safety. Nova considers that these further limits the use of the band as a result of critical PS users have little ability to mitigate interference and coordinate use. Nova suggests that without management and visibility of the band usage, there is little opportunity to manage (potential) interference to meet SLAs associated with 'high value' services such as 5G for Public Safety.

Nova is of the opinion that spectrum management is critically important to increase surety, improve spectrum efficiency and manage risk is held at the policy, procedure and technical level in a combination that needs to be a requirement going forward in the re-issue of the class licence. Nova proposes that having a Band Manager, preferably at a national level, with reduced technical limitations prescribed in the Class Licence would enable significantly greater use of the Band for Public Safety.

Question 3

How are PSBs currently using the class licence? Are the current authorised services fit-for-purpose?

Nova is not an operator of PS equipment, however anecdotal evident suggests video downlink (broadcast) from aeronautical platforms represents the main current usage of the 4.9GHz Band, noting these aeronautical platforms represent the largest interference risk to/from other service types, given the operating model of these systems.

The current (and proposed) definition of PSBs is open to interpretation. Improved use of the band would benefit from a better understanding so to who the class licence authorises, and how their spectrum use is to be managed. It is our understanding that some users would be seen as remotely related to undertaking the role of PSB and this devalues the access to the spectrum for the more specific users that this band is identified for.

Nova offers that there is no evidence of point-to-point links in operation in the band and suggest this service type be removed after investigation.

Question 4

Is the current class licensing model fit-for-purpose? Why or why not? How would any interference protection or hybrid class / apparatus licensing arrangements work?

Nova considers that the Class licensing type is the correct model for this band, but with modifications. The Class licence needs to identify the need for an appointed national band manager to undertake development of policy, procedures and technical frameworks, that manage the overall access to the band for the purposes of mitigating interference and improving both surety and spectrum efficiency. It would need to be considered a hybrid where the band manager would manage on behalf of the state licensee but on a national basis.

While there are already examples of Apparatus licenses in this Class licence band, Nova have not seen any evidence of this being an issue due to the small number of apparatus licences and the current limited use of the 4.9GHz Class license.

Implementing a hybrid approach with a large number of apparatus licenced devices under an Areawide License would add significant complexity to managing the 4.9GHz band, as the AWL licensee would have to accept the risk of interference from unknown sources and would place the management overhead back onto ACMA

Question 5

Should specific provisions for cellular mobile technologies be included in the class licence? Why or why not?

The initial intent for the 4.9GHz Class licence was to provide a shared 'Private Park' access arrangements for Public Safety consistent with arrangements in similar international jurisdictions.

Given that these jurisdictions are now looking to use 5G (and beyond) services in the 4.9GHz band, with for example the United States implementing a national band manager, Nova feels it is appropriate to similarly update the class licence to enable 5G for Public Safety with a national band manager requirement.

Question 6

Are the proposed emission mask, power limit and EIRP limit for cellular mobile BS appropriate? Does emission mask P, in conjunction with other proposed measures, sufficiently mitigate the risk of adjacent channel interference to other devices authorised under the class licence?

The technical parameters proposed in the class licence reduces utility of the band and will not lead to a 'self-managed' band. Mitigating interference to co-channel and adjacent channels can only be achieved when the location and time of usage is known by a designated band manager. Current frameworks, and implementation of the band across all states do not have visibility of the time and location of users.

Question 7

Are the proposed emission mask, power limit and EIRP limit for cellular mobile user equipment appropriate?

From a technical perspective, Nova is of the opinion that the EIRP limits proposed are not consistent with 5G Base Stations currently licenced in the 3.4-3.6GHz range. We note the proposed maximum EIRP for the class licence is ~50dBm/50MHz which only allows 13dBi antenna, whereas a typical 5G Base Station listed on the ACMA RRL (Ericsson AIR6468) has a maximum EIRP for ~73dBm – of which antenna is ~26dBi.

Nova would like to re-iterate that the inclusion of technical parameters in the class licence does little to improve the useability and versatility of the band without the other spectrum management elements mentioned earlier in our responses.

Question 8

Are the emission masks, power limits and EIRP limits for existing services appropriate?

The existing power limits for low and high-power WiFi like systems and airborne platforms seems appropriate.

Question 9

Do the technical parameters proposed in the draft class licence restrict the use of any other technologies required by PSBs?

No comment

Question 10

Do the current definitions of 'public safety bodies' and 'public safety or emergency response function' remain fit-for-purpose? Do the authorisation arrangements for other bodies remain appropriate? Why or why not?

Nova is of the opinion that the definitions need to be more explicit, and less subject to interpretation. The current definitions have led to a user group that is broad and varied in across states, and this leads to a potentially unknown number of user groups that cannot be managed by technical parameter limits alone. If the definitions are to remain broad, then the requirement for a band management function is increased significantly.

Question 11

Is the 6-month limit for fixed point-to-point services appropriate? Why or why not? Does the 6-month limit prevent deployments of networks aligned with the purpose of the class licence?

Nova is of the opinion that this band should not be used for longer duration network reticulation through permanent fixed point to point bands. These functions should be directed to Apparatus licensing schemes that are more appropriate for the application.

With respect to the definition of the fixed service under Part 17 of the class licence, the use of specific terminology will always bring confusion to users that are not familiar with the global use of such regulatory language. Effort to define, explain and clarify these uses of terminology should be made to reduce the likelihood of confusion or misinterpretation.

Question 12

Which channel plan should be adopted in the class licence? Why?

Nova is of the opinion that the class licence should press for a national band manager that works with the regulator and PSB's to implement the most usable, flexible framework for the variety of technologies both available and desirable. By implementing a channel plan into the Class licence, there is an immediate limitation applied to what technologies and applications can be included in the band.

Given the use of the band at present has a significant use of downlink video – one such example is whether any of the proposed band plans enable the use of such systems, and if so, is this in the most efficient way of allocating the band for those applications.

It is well understood that if the preference is to continue to manage the band in a light touch manner, with limited regulatory intervention, that channel plans are necessary, Nova would question the value in 1MHz channels at all and would support overlaid channel rasters for variable bandwidths.

Question 13

Are the current interference protection measures for radio astronomy sites fit-for-purpose?
Are the proposed protection measures from cellular mobile BS and user equipment appropriate?

Nova is of the opinion that the protection of RAS sites is important for current future RAS operations. Nova understands that current RALI protects the RAS facilities from Fixed Service applications but does not apply to itinerant applications. Nova acknowledges the additional risk of airborne emitters in the band to RAS and agrees this is necessary to protection RAS missions.

Nova is of the opinion that the description and instruction within the class licence is confusing again due to the use of internationally recognised language in the regulatory environment. Nova feels that the language should be improved to ensure misinterpretation is avoided.