**A screenshot of a video game

Description automatically generated with medium confidence**

**Joint response by Mobile Satellite Services Australia and Pivotel to ACMA’s *Variation to the Low Interference Potential Device Class Licence* consultation 35/2022 of October 2022**

**Background**

On 30 June 2021, Mobile Satellite Services Australia Pty Ltd (*MSSA*), a wholly owned subsidiary of Globalstar Inc. in the United States, acquired from Pivotel Group Pty Ltd (*Pivotel*) the three Australian gateway Earth stations that access Globalstar’s worldwide Mobile Satellite Service (*MSS*) network. MSSA has been operating the Australian wholesale satellite business for the past 18 months under its own carrier licence and eight apparatus licences, with Pivotel continuing to operate its Globalstar subscriber business at the retail customer level.

This joint submission responds to the latest ACMA proposals for the 5 150-5 250 MHz frequency band and follows our submissions in April 2021 and October 2021 to the earlier 12/2021 and 37/2021 consultations.

**Our position on outdoor RLANs in the 5 150-5 250 MHz band has not changed**

We continue to be fundamentally opposed to class licensed, outdoor RLANs in this band due to the high likelihood of generating significant aggregate noise in our licensed *MSS* feeder uplink satellite receivers over Australia. As previously submitted, our feeder uplinks have used the 5 091-5 250 MHz band for the past 23 years in complete harmony with the huge population of RLANs in the 5 150-5 250 MHz segment operating under the maximum 200mW (23 dBm) e.i.r.p., indoor only, rules.

We note and fully concur with the recent decisions of the CEPT in Europe (in its ECC/DEC/(04)08 of Jul, 2022), and of the United Kingdom’s OFCOM in its September, 2022 SRD decisions, to not allow fixed outdoor RLANs in this band due to the serious risk of causing harmful interference to incumbent, co-band services (including *MSS* feeder uplinks). We also note the decisions taken by the Arab States, the African nations and the RCC administrations due to the same interference concerns.

We further note that the two North American administrations (USA and Canada) which allowed 4W (36 dBm) e.i.r.p. outdoor RLANs to operate in the 5 150-5 250 MHz band under the NP/NIB provisions of **4.4** prior to WRC-19, are still to decide what to do with these legacy arrangements. These high power, outdoor RLANs, were comprehensively rejected by WRC-19 and continue to violate the **4.4** interference provisions of the Radio Regulations.

As noted in our previous submissions, Australia (along with a significant majority of nations in both the Asia-Pacific region and worldwide) had a firm position of No Change (*NOC*) on the 5 150-5 250 MHz band on Agenda item 1.16 at WRC-19. Australia’s *NOC* position followed an analysis of sharing and compatibility studies undertaken by the ITU-R, by the CEPT and by the RCC, as well as a review of Globalstar’s real-time satellite aggregate noise measurement program which clearly demonstrated the danger to incumbent satellite services of allowing outdoor RLANs in this band.

**What did WRC-19 decide on outdoor RLANs in the 5 150-5 250 MHz band?**

Firstly, we were surprised to see reference in the consultation paper to only two RLAN emission masks (deemed as ‘simple’ masks), rather than to the three available masks in Resolution 229 (**Rev. WRC-19**). As well as no mention in the paper of the requirement in the Resolution that ‘*administrations shall take all appropriate measures, such as those described in recognizing k), to control the number of these higher power outdoor WAS/RLAN stations up to 2 per cent of the estimated total amount of WAS/RLAN stations’*. We would therefore like to table a short summary of what we understand came out of WRC-19 and the unusual reasons for that output.

Right up to the final Agenda item 1.16 sessions in the last week of the Conference, WRC-19 was proposing to make no changes to the 200mW maximum e.i.r.p. and mandatory indoor requirements of the Resolution 229 rules that had worked well for RLANs, satellites and other incumbent services for some 2 decades.

However, in spite of all available sharing studies demonstrating that outdoor, high powered RLANs would be a serious problem for satellite and other co-band services, with just 3 days of the Conference remaining, the United States administration asked the WRC-19 chair to further consider the matter and a small group of experts (including Australia) was established to carry out a final review. USA had been allowing domestic RLANs to operate outdoors at up to 4W (36 dBm) e.i.r.p. (under the NP/NIB provisions of **4.4** as this was clearly outside the Radio Regulations) with effectively no limit on the number of high powered outdoor RLANs. Which, before WRC-19, had already resulted in a measured 2dB of additional aggregate noise in Globalstar’s 5 GHz satellite receivers when over North America, with no additional noise measured over Europe, Australia or anywhere else.

After much debate in the expert group, the following compromise package for the 5 150-5 250 MHz band was agreed:

• 200mW (23 dBm) maximum e.i.r.p. and mandatory indoor use would continue to be the cornerstone requirement for RLANs in this band.

• As a concession, administrations would be permitted to operate ‘limited’ numbers of

‘controlled’ RLANs outdoors, at the same 200mW (23 dBm) maximum e.i.r.p.

• As a further concession, for these ‘controlled’ outdoor RLANs (and also for indoor RLANs) up to 1W (30 dBm) e.i.r.p. could be used provided that a suitable RLAN antenna emission mask was employed. Australia was asked to nominate a mask to protect the worldwide feeder links and recommended 200mW (23 dBm) e.i.r.p. for all elevation angles above 5 deg. Which was unanimously agreed and accepted.

• Finally, to further ensure protection of incumbent services, administrations would be

required to limit the number of outdoor higher powered RLANs to ‘up to 2%’ of their

estimated RLAN population. Which, while not stated, was assumed to mean the population of 5 GHz RLANs.

Unfortunately, the package quickly unravelled when Russian Federation (on behalf of the entire RCC regional bloc of 17 nations) objected to the 1W (30dBm) e.i.r.p. concession going ahead and two further masks (one from Japan and one from USA) were then added to the Australian mask. Clearly, having a choice of three emission masks to choose from, as well as having to limit the number of outdoor, higher powered RLANs to 2% of the (5 GHz) RLAN population, would make it extremely difficult for administrations to implement and enforce. Particularly as the only practical way of limiting the number of outdoor RLANs in a country would be to introduce individual licensing/registration, which would be a significant departure from the licence exempt status of RLANs in most countries and class licensing in Australia.

Our responses to the three questions on the 5 150-5 250 MHz band, and to question 11, follow.

### Question 1

Should a separate new item be introduced to facilitate higher-power RLAN transmitters in 5150–5250 MHz, or should existing item 61 be modified?

**MSSA/Pivotel response**

As indicated in our earlier submissions and above, we do not support *any* outdoor RLANs in this band and would note the recent *NOC* position taken by the 48 countries of the CEPT and subsequently by the UK, by the RCC, by Arab States and by African nations on this matter.

We have also not seen any justification from any proponent on the actual need to operate outdoor RLANs in the 5 150-5 250 MHz band in Australia and we note that other 5 GHz band segments already support outdoor use. Hence, we don’t favour either of the Question 1 options.

Further, we note the simplistic and erroneous conclusion in the paper asserting that outdoor RLANs operating at up to 1W (30 dBm) e.i.r.p. with ‘*an appropriate emission mask*’ will ‘*provide protection to satellite receivers from aggregate emissions of RLAN transmitters’* and wish to point out that the amount of aggregate noise received in our co-band satellite receivers will depend in large part on the number of outdoor RLANs. We would strongly recommend that the ACMA revisit this assertion, as well as advise stakeholders how the required 2% statutory limit on outdoor RLANs would be applied and enforced in Australia.

### Question 2

Which of the 2 simple emission masks outlined in ITU Resolution 229 (Rev. WRC-19) should be implemented in Australia for 1 W RLAN transmitters in the 5150–5250 MHz band?

**MSSA/Pivotel response**

As mentioned above, Resolution 229 (**Rev. WRC-19**) nominates three emission masks. One from Australia, one from USA (in *resolves 3* of the Resolution) and one from Japan (in *resolves 5* of the Resolution).

If outdoor RLANs were to be permitted in Australia, with up to 1W (30 dBm) e.i.r.p., the amount of noise generated in the co-band *MSS* satellite receivers would clearly depend on the number of RLANs (which must be limited to a maximum 2% of the overall 5 GHz RLAN population), the actual e.i.r.p. of each RLAN and the emission mask employed.

Turning to the emission masks in Question 2, the USA mask only specifies an e.i.r.p. level above 30 degrees and so will not protect the co-band *MSS* feeder uplinks which operate from as low as 5 degrees above the horizon. This fundamental point was made in numerous ITU-R meetings before WRC-19 and during the Conference, particularly by France, Russian Federation, China and Australia, but the United States was not able to provide an answer on where their mask came from or how it could provide protection below 30 degrees.

To this day, Globalstar’s real-time satellite aggregate noise measurement program continues to measure some 2dB of additional aggregate noise in its 5 GHz satellite receivers over North America, compared to no additional noise measured over Australia or anywhere else.

### Question 3

Subject to which emission mask is implemented (see Question 2), would a device registration system (or similar – see Canadian approach above) be needed for outdoor deployments exceeding 200 mW (23 dBm) transmission power? Note that such a regime would require further regulatory development. Accordingly, a decision to implement such a regime may delay access under those arrangements.

**MSSA/Pivotel response**

We are concerned to see that the ACMA has apparently concluded that neither individual registration nor individual licensing would be necessary to limit the number of outdoor RLANs and therefore the amount of harmful aggregate noise received by co-band satellite receivers. As well as to meet the Resolution 229 (**Rev. WRC-19**) requirement that the number of outdoor RLANs does not exceed the 2% limit, at any time in the future.

Our firm view is that, if outdoor RLANs were ever permitted in the 5 150-5 250 MHz band, it would be essential to control their number via individual registration or individual licensing to both limit aggregate noise and comply with the 2% statutory limit. Which would clearly require an accurate, ongoing knowledge of the total number of (5 GHz) RLANs deployed in Australia so that the 2% figure could be derived and continuously enforced.

### Question 11

Should we consider the introduction of arrangements to facilitate systems that utilise space-based transmitters that operate in the bands 915–928 MHz and   
2400–2483.5 MHz at power levels higher than currently permitted under the LIPD class licence? If so, what matters should be considered in the regulatory framework? In particular, comment is sought on:

* What is an appropriate power for such services so that there is no impact on other services? While some might operate at power levels slightly higher than those currently supported under the LIPD class licence, others could at operate higher levels. The impact also depends on other technical parameters such the orbital characteristics, number of satellites and what types of services are sharing the band. Such considerations suggest a case-by-case approach (more akin to an apparatus licensing regime) may be required.
* What effect, if any, will the proposed use have on existing services such as the amateur-satellite services and services authorised under the LIPD class licence? For example, Wi-Fi, Bluetooth and radio frequency identification devices (RFID).
* Do systems need to be brought under the scope of the Radiocommunications Act via variations to the Radiocommunications (Australian Space Objects) Determination 2014 or the Radiocommunications (Foreign Space Objects) Determination 2014?
* Is the LIPD class licence or the communication with space objects (CSO) class licence the appropriate legislative instrument to be used to facilitate such systems?
* If apparatus licensing is used, are the current apparatus licence fees and taxes appropriate? (Assuming the entire band is licensed, for the 915–928 MHz band, the annual tax for an Australia-wide space licence is estimated as $36,673; for the 2400–2483.5 MHz band, the annual tax for an Australia-wide space licence is $235,194.)

**MSSA/Pivotel response**

We operate Australia wide space-to-Earth service links in the 2 483.5-2 500 MHz band and would ask that those links be fully taken into account if any changes were proposed in the adjacent 2 400-2 483.5 MHz band.

**Summary and conclusion**

As a major licensed user of the 5 091-5 250 MHz band in Australia for the past 23 years our firm view is that, if outdoor RLANs were ever permitted in the 5 150-5 250 MHz band, it would be essential to control their number via individual registration or individual licensing to both limit the aggregate noise in our satellite receivers and comply with the 2% statutory limit in Resolution 229 (**Rev. WRC-19**). Which we would see as being extremely difficult (if not impossible) to implement and adequately enforce.

Our strong preference would be for the ACMA to now abandon the proposal to allow outdoor RLANs in the 5 150-5 250 MHz band and follow the lead of the very large number of nations around the world who have already decided to adopt a *NOC* position post WRC-19.

Bill McDonald

Director,

**Mobile Satellite Services Australia Pty Ltd**

L. Barbee Ponder 1V

Director,

**Mobile Satellite Services Australia Pty Ltd**

Peter Bolger

CEO

**Pivotel Group Pty Ltd**

19 December, 2022