

The Manager  
Licence Allocation Section  
Australian Communications and Media Authority  
PO Box Q500  
Sydney NSW 1230

**Dear Sir/Madam**

**Airservices response to the Allocation of AWLs in the 3.4–4.0 GHz band in remote Australia - IFC 11/2022 Consultation.**

Thank you for the opportunity to provide comments on the Allocation of area-wide apparatus licences (AWLs) in the 3.4–4.0 GHz band in remote Australia consultation paper. Radio altimeters are critical sensors on many aircraft used to enable safety and navigation functions, throughout all phases of flight. It is paramount that the introduction of wireless broadband in the 3400–4000 MHz band does not cause harmful RF interference to radio altimeter systems operating in the adjacent band 4200–4400 MHz.

Airservices Australia (Airservices) is a government-owned organisation providing safe, secure, efficient and environmentally responsible services to the aviation industry. Airservices provides an Aeronautical Radio Navigation service to the aviation industry and community. This service is regulated under the Civil Aviation Safety Regulations Part 171 and the Manual of Standards (MOS) Part 171. Airservices owns and operates Instrument Landing Systems (ILS) installed on runways across the country. To use these landing systems aircraft must be equipped with the appropriate avionics. Aircraft approaches using higher category ILS that allow for Low Visibility Operations and Auto Land, are reliant on the radio altimeter and associated systems functioning correctly and without interruption.

Radio altimeters are critical sensors onboard aircraft that are capable of providing a direct measurement of the clearance height above terrain and any obstacles that may protrude above the terrain. The radio altimeters are integrated into other aircraft systems to enable and enhance several different safety and navigation functions on aircraft. The above ground level altitude of the aircraft is measured in the radio altimeter by transmitting radio frequency (RF) energy down to the ground and receiving a portion of this energy back through reflection off the terrain or other obstacles and determining the round-trip propagation time of the RF energy. The radiated power levels are low, and thus highly sensitive receivers are required for radio altimeters to function properly. As such, radio altimeters are highly susceptible to RF interference entering the receiver, which can negatively impact their performance.

In September 2019, Airservices responded to the Discussion paper, "*Planning of the 3700-4200 MHz band*". In September 2020 Airservices provided comments to the Consultation paper, "*Replanning of the 3700-4200 MHz band: Options paper*". Airservices has also been an active member of the 3.4–4.0 GHz Technical Liaison Group (TLG) and the Radio Altimeter Co-ordination Group (RA-CG). In these groups Airservices has been representing civil aviation's position that the introduction of additional services below 4200 MHz must be done with the utmost of caution due to the potential impacts on the radio altimeters.

## **Technical Framework**

Airservices is of the view that to ensure compatibility with radio altimeters is maintained, mitigations need to be applied to the deployment of services in the 3700–4200 MHz band. The mitigations included in draft RALI MS47 are based on controls implemented by other administrations and the ACMA Wireless Broadband and Radio Altimeter Study conducted as part of the TLG.

Airservices agrees with the proposed dimensions of the Exclusion zone. The proposed dimensions of the Restricted zone do not match the dimensions from France or Canada and are not justified in the conclusions from the technical studies. We recommend aligning the dimensions of the Restricted zone to the dimensions of the French Precaution zone. Airservices suggests that the Exclusion and Restricted zones only apply to runways in Australia fitted with either an ILS or GNSS Landing System (GLS) approach procedure (including Category I runways). There should also be a process established to apply Exclusion and Restricted zones to runways that have new ILS and GLS approach procedures.

Airservices agrees with the proposal in the draft RALI MS47 4.6.2.1 that transmitters operating above 3700 MHz are not located in the exclusion zone and the restriction that the transmitter antenna systems boresight is to be below the horizon.

The derivation of the limits applied to the Effective Isotropic Radiated Power (EIRP) and Power Flux Density (PFD) in the registration requirements of the draft RALI MS47 need to be justified before we can accept that they will protect the operation of the radio altimeter. In addition, the ACMA Wireless Broadband and Radio Altimeter Study (December 2021), that a number of these limits have been derived from makes the statement that a fail rate of 0.1% of test points is an acceptably small amount. It is our view that 0.1% is not an acceptable failure rate for safety of life services.

The registration requirements of the draft RALI MS47 provide different limits or conditions depending on the antenna system implemented by the AWL transmitter. Appendix D of the TLG report contains a wireless broadband and radio altimeter study. For Active Antenna Systems (AAS) base station parameters there is a note that only a single beam is modelled due to a limitation in the modelling software. Given this limitation, the impact of grating lobes on the result is not included and therefore the restrictions that apply to non-AAS base stations should also apply to AAS base stations. This approach is also consistent with the implementations of other administrations considering this issue.

A set of worst-case circumstances leading to an aircraft accident could conceivably exist in the real world due to the uncontrolled nature of reflection planes near 5G base stations. With an increasing number of 5G base stations, there is a higher probability of this worst-case scenario occurring. Faulty radio altimeters have led to aircraft accidents and subsequent loss of life in incidents such as [Turkish Airlines Flight 1951](#) on approach to Amsterdam Airport in 2009.

Please do not hesitate to contact Matthew Kelly ([matthew.kelly@airservicesaustralia.com](mailto:matthew.kelly@airservicesaustralia.com)) should you require any further information.

Yours sincerely

**Graceson Scariah**  
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