

The Manager
Spectrum Licensing Policy
Australian Communications and Media Authority
PO Box 13122 Law Courts
Melbourne Victoria 3000

Dear Sir/Madam

Airservices Australia's response to the new arrangements for the banned equipment and exemptions framework consultation (23/2022).

Airservices Australia (Airservices) is a body corporate established by the Air Services Act 1995. Airservices has the principle function of providing services and facilities:

- I. for the purpose of Australia or another country giving effect to the Chicago Convention; or
- II. for the purpose of Australia or another country giving effect to another international agreement relating to the safety, regularity or efficiency of air navigation; or
- III. otherwise for purposes relating to the safety, regularity or efficiency of air navigation, whether in or outside Australia.

Services provided by Airservices are:

- I. air traffic services; and
- II. an aeronautical information service; and
- III. an aeronautical radio navigation service; and
- IV. an aeronautical telecommunications service; and
- V. rescue and fire fighting services.

Services provided are regulated under the Civil Aviation Act 1988 and Airservices has obligations from the Air Navigation Act 1920. In exercising its powers and performing its functions, Airservices must regard the safety of air navigation as the most important consideration.

Aviation application of GNSS

International aviation has adopted Global Navigation Satellite System (GNSS) as the enabling technology to support safety, efficient and accessible aeronautical navigation. The International Civil Aviation Organisation (ICAO) recognises four core constellations and satellite-based augmentation systems (SBAS) operating on L1 and L5 frequencies. The four constellations are Global Positioning Service (GPS), Global Navigation Satellite System (GLONASS), Galileo and BeiDou Navigation Satellite System (BDS). Airservices operates two Ground Based Augmentation System (GBAS) installations, one at Sydney and one at Melbourne. The GBAS is a precision approach system consisting of ground-based hardware and software that augments the GPS L1 Standard Positioning Service. The joint Australian and New Zealand SBAS, the South Positioning Augmentation network (SouthPAN) is being deployed to service both aviation and other industry sectors.

ICAO has established standards for the performance of the core constellations and SBAS. Conformance with these standards is essential for the integrity and continuity of services to support safe aviation navigation.

Radio frequency transmissions that deny access to the signals through jamming or create false signals through repeaters, translators, simulators or spoofers are a hazard to the safety of air navigation with the potential result of the loss of human life.

The interruption of GNSS services to aviation may require reversion to alternative means of navigation. The alternative means may result in reduced operational capacity and efficiency causing delays, diversions, and economic loss.

Comments on issues

Focus of comments

This response focuses on RNSS disruption as it applies to aviation GNSS. No comment is provided on PMTS or Wi-Fi disruption.

Exceptions and permanent bans

The current bans have been effective in limiting the availability of devices which have the potential to disrupt aviation GNSS.

The definition of banned devices should include all equipment and applications that have the ability either intentionally or inadvertently disrupt the integrity or continuity of services of GNSS. This includes repeaters, signal replay devices, signal generators/simulators, pseudolites and general test equipment configured to jam or mimic GNSS signals.

Where there is public benefit and not detrimental to safety, in excepting a device, the device should be individually licenced.

Legitimate Devices

Defence could be used as a legitimate need for devices to disrupt the GNSS in military operations and in the preparation for such activities. This legitimacy would flow to civilian contractors developing, maintaining, and testing devices for the Australian Defence Force.

Defence, CASA and Airservices have established protocols that allow Defence to conduct GNSS disruptive activity whilst preserving civil aviation safety. The protocol imposes areas where GNSS is not available to civilian air operations.

Procedures have also been arranged with police and security agencies where disruption of GNSS may occur. In many cases restrictions to airspace for civil operations in addition to the notification of GNSS service disruption.

Devices to provide position navigation and timing (PNT) services in GNSS deprived locations such as tunnels should be considered as legitimate applications. Such devices should not disrupt nor cause a safety hazard to navigation functioning on direct path observation of core constellation or SBAS satellites.

RNSS Retransmission technologies

Retransmission technology is taken to mean repeaters, signal replay devices, translators, signal generators/simulators, and pseudolites. Each of these devices has the ability to disrupt GNSS through jamming due to near-far transmitters and signals that are not representative of a directly observed signal from a core constellation or SBAS satellite. Deviations include changes to constellation time and pseudoranges.

The quoted example of the need for PNT services in a road tunnel is familiar to Airservices. Airservices with CASA have been collaborating with a Sydney proponent of such a scheme to allow a suitable solution to underground PNT whilst protecting aviation operations from disruption. In this case the adoption of a European standard and immediate problem response protocol has supported this activity. Airservices can quote international examples of poorly implemented repeaters have created safety incidents for aircraft in the landing phase of an approach.

Airservices supports the individual licencing of RNSS retransmission devices and the establishment of performance standards to protect users applying direct satellite observation from disruption.

Innovation and industry development framework

The current practices of containing test transmission signals within shielded enclosures is supported. Any open sky test should be conducted in accordance with Defence protocols with Defence supervision.

The notification of development and test locations to Airservices and CASA is considered valuable in isolating potential sources of report GNSS disruption.

Other issues

In the development of a framework for approval of devices that could disrupt the GNSS other regulatory provisions should be considered.

- Air Navigation Act 1920
- Convention on International Civil Aviation biz 3
- Navigation Act 2012
- Civil Aviation Act 1988
- ITU Radio Regulations Article 15.1 § 1

Please do not hesitate to contact me (matthew.kelly@airservicesaustralia.com) should you require any further information.

Yours sincerely

Matthew Kelly
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