



## Radiocommunication Bureau (BR)

Circular Letter  
**CR/488**

8 July 2022

### To Administrations of Member States of the ITU

Subject:           **Prevention of harmful interference to Radio Navigation Satellite Service Receivers in the 1559 – 1610 MHz frequency band**

Following its initial report to the 2019 World Radiocommunication Conference, the Radiocommunication Bureau has been informed of a significant number of cases of harmful interference to the radionavigation-satellite service (RNSS) in the 1 559 – 1 610 MHz frequency band affecting receivers onboard aircrafts and causing degradation or total loss of the service for passenger, cargo and humanitarian flights. In some cases, this has also led to misleading information provided by RNSS receivers to pilots. Based on in-flight monitoring of air transport category aircraft GNSS receivers by one major aircraft manufacturer, 10 843 radio-frequency interference events were detected globally in 2021. The majority of these events occurred in the Middle East region, but several events were also detected in the European, North American and Asian regions.

The Bureau has noted with great concern the increasing number and range of impact of such harmful interference on safety-of-life radiocommunication services used for the navigation of aircraft (see No. **4.10<sup>1</sup>**). In accordance with RR No. **13.2**, the Bureau reported such cases to the Radio Regulations Board (RRB), together with its recommendations.

At its 89<sup>th</sup> meeting in March 2022, the ITU Radio Regulations Board (RRB) considered the situation and instructed the Bureau to issue a circular letter to the Member States to disseminate its decisions and other background information about the prevention of harmful interference to RNSS receivers.

Following this instruction, the Bureau has prepared the present circular letter. It summarizes the RRB's decisions on the issue, formulates recommendations concerning mitigation of harmful interference to the radionavigation-satellite service and provides the list of the relevant ITU-R reference documents.

---

<sup>1</sup> “Member States recognize that the safety aspects of radionavigation and other safety services require special measures to ensure their freedom from harmful interference; it is necessary therefore to take this factor into account in the assignment and use of frequencies.”

### **The relevant decisions of the 89<sup>th</sup> RRB meeting**

In accordance with No. 13.2, the Board decided to request Member States to ensure that their operating agencies complied with the applicable provisions of the ITU legal instruments, as emphasized below:

- *“All stations, whatever their purpose, must be established and operated in such a manner as not to cause harmful interference to the radio services or communications of other Member States or of recognized operating agencies, or of other duly authorized operating agencies which carry on a radio service, and which operate in accordance with the provisions of the Radio Regulations.”* (Article 45 of the ITU Constitution)

- *“to take the steps required to prevent the transmission or circulation of false or deceptive distress, urgency, safety or identification signals, and to collaborate in locating and identifying stations under their jurisdiction transmitting such signals.”* (Article 47 of the ITU Constitution)

- *“1 Member States retain their entire freedom with regard to military radio installations.  
2 Nevertheless, these installations must, so far as possible, observe statutory provisions relative to giving assistance in case of distress and to the measures to be taken to prevent harmful interference, and the provisions of the Administrative Regulations concerning the types of emission and the frequencies to be used, according to the nature of the service performed by such installations.*

- *3 Moreover, when these installations take part in the service of public correspondence or other services governed by the Administrative Regulations, they must, in general, comply with the regulatory provisions for the conduct of such services.”* (Article 48 of the ITU Constitution)

- *“Recognizing that transmissions on distress and safety frequencies and frequencies used for the safety and regularity of flight (see Article 31 and Appendix 27) require absolute international protection and that the elimination of harmful interference to such transmissions is imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference.”* (RR No. **15.28**)

The Board further decided to request Member States to continue to exercise their utmost goodwill and mutual assistance in the application of the provisions of Article 45 of the Constitution and of Section VI of Article **15** of the Radio Regulations.

### **Recommendations on prevention and mitigation of harmful interference to RNSS**

With respect to unnecessary transmissions, which represent one of the important sources of interference to RNSS, the Bureau would like to point out that the use of devices commonly referred as “GNSS jammers” or any other illegal interfering equipment, which may cause harmful interference to aircraft, are prohibited by provision No. **15.1** of the Radio Regulations:

*15.1 § 1 All stations are forbidden to carry out unnecessary transmissions, or the transmission of superfluous signals, or the transmission of false or misleading signals, or the transmission of signals without identification (except as provided for in Article 19).*

In addition, the administrations are encouraged to consider the following additional measures to address this critical issue:

- a) reinforcing navigation systems resilience to interference;
- b) increasing collaboration between radio regulatory and enforcement authorities;
- c) reinforcing civil-military coordination to address interference risks associated with RNSS testing and conflict zones;
- d) increasing coordination between aviation, military and radio-regulatory authorities;
- e) retaining essential conventional navigation infrastructure for contingency support in case of RNSS outages, and developing mitigation techniques for loss of services.

The above measures were decided by the International Civil Aviation Organization (ICAO) at its 40<sup>th</sup> Assembly in October 2019 and disseminated by ICAO State Letter AN 7/5-20/89 dated 28 August 2020.

### **Relevant ITU-R reference documents**

In order to get an overview of the usage and protection requirements of systems operating in the radionavigation-satellite service, administrations may consult the following ITU-R Recommendations and Reports:

- [Recommendation ITU-R M.1787-4 – Description of systems and networks in the radionavigation-satellite service \(space-to-Earth and space-to-space\) and technical characteristics of transmitting space stations operating in the bands 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559-1 610 MHz](#)
- [Recommendation ITU-R M.1901-3 – Guidance on ITU-R Recommendations related to systems and networks in the radionavigation-satellite service operating in the frequency bands 1 164-1 215 MHz, 1 215-1 300 MHz, 1 559-1 610 MHz, 5 000-5 010 MHz and 5 010-5 030 MHz](#)
- [Recommendation ITU-R M.1903-1 – Characteristics and protection criteria for receiving earth stations in the radionavigation-satellite service \(space-to-Earth\) and receivers in the aeronautical radionavigation service operating in the band 1 559-1 610 MHz](#)
- [Report ITU-R M.2458-0 – Radionavigation-satellite service applications in the 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559-1 610 MHz frequency bands](#)

The Bureau thanks Administrations for disseminating this information among their different operating agencies to raise awareness of the situation and to remind them of their obligation to prevent any harmful interference in accordance with ITU's Legal Instruments.

Mario Maniewicz  
Director

### **Distribution:**

- Administrations of ITU Member States
- Members of the Radio Regulations Board