

EUROPEAN COMMON PROPOSALS

PART 28

Agenda Item 1.28 RNSS differential correction signals at 108-117.975 MHz

Introduction

A new aviation requirement has emerged for the transmission of augmentation data for the Global Navigation Satellite Service (GNSS) to be used by aircraft receivers to satisfy the stringent accuracy and integrity requirements for GNSS applications such that they can be used for precision approach and landing. This new Ground-Based Augmentation System (GBAS) is planned to operate in the frequency band 108-117.975 MHz. The systems, that currently use this band, are ILS and VOR.

ICAO has developed international standards for a surveillance system in which data derived from navigation systems on board an aircraft is transmitted over a data link to other aircraft and to air traffic control. This system supports navigation and surveillance functions and is intended to operate also in the frequency band 108-117.975 MHz.

Compatibility of the new navigation and surveillance systems with FM broadcasting stations will be secured by ensuring that the new systems do not cause interference to the reception of FM broadcasting signals or impose constraints to the Broadcasting Service, operating in the band 87.5-108 MHz. These concerns have already been addressed during the development of GBAS as regards coordination with the current use of the bands and the standards set by ICAO for the aircraft receivers.

The situation is more complicated in respect of the navigational and surveillance systems being developed because these involve transmissions from aircraft, whereas GBAS operates from known locations at airports in a similar way to the current use by ILS and VOR. Recommendation ITU-R SM.1009-1 governs the conditions to be applied in respect of compatibility between Band II FM broadcasting and ILS/VOR operation.

In order to avoid making the introduction of new navigational and surveillance systems dependent on a complex analysis and assessment of new interference possibilities inherent in ubiquitous airborne transmissions, the proposal here builds on ICAO studies and existing experience in developing and applying ITU-R SM.1009-1 by limiting initial use by new systems to frequencies in the band 108 – 117.975 MHz above 112 MHz. Such a solution is possible because the guard band is sufficient to ensure that interaction between the services involved can be discounted and the ICAO immunity standards for the new receivers represent an improvement on the current standards for ILS/VOR

The situation in the range 108 – 112 MHz is more problematic because of heavy continuing use by the ILS and its proximity to FM broadcasting in the band 87.5 – 107.9 MHz and will require further study to be certain of the conditions under which the new aeronautical systems can be introduced in the portion of the band below 112 MHz.

The selected band is currently allocated to the aeronautical radionavigation service. The new navigation and surveillance applications envisaged for implementation in this band do not fall within the definition of a radionavigation service (i.e., using the propagation properties of radio waves) and that an amendment to the allocation of this band is required. An appropriate additional allocation would, therefore, need to be made to allow for these systems to operate in the band 108-117.975 MHz. These navigation and surveillance applications are compliant with the definition of the aeronautical mobile (R) service. Therefore, the additional allocation of this AM(R)S must be made in the relevant frequency band to introduce these systems.

This proposal therefore introduces a footnote to the Table of Frequency Allocation, supported by a new WRC Resolution, that permits the use of this band by ICAO standard systems that support navigation and surveillance functions through the addition of a footnote to this band. ICAO is establishing standards, which will ensure compatibility between these systems and the ICAO standard ILS/VOR systems. These compatibility Standard and Recommended Practices will be incorporated, with the necessary Guidance Material, in Annex 10 to the ICAO Convention.

Proposal

ADD EUR/1.28/1

ADD 5.YYY The band 108-117.975 MHz may also be used by aeronautical mobile (R) service on a primary basis, limited to international aeronautical standard systems that transmit navigational information in support of air navigation and surveillance functions in accordance with recognized international aviation standards. Such use shall be in accordance with Resolution **[EUR/XXX] (WRC-03)** and, however shall not cause harmful interference to nor claim protection from stations operating in the aeronautical radionavigation service, which operate in accordance with international aeronautical standards.

RESOLUTION [EUR/XXX] (WRC-03)

Use of the band 108-117.975 MHz by aeronautical services other than the aeronautical radionavigation service

The World Radiocommunication Conference (Geneva, 2003),

considering

- a) the current allocation of the frequency band 108-117.975 MHz to the aeronautical radionavigation service;
- b) the current requirements of the broadcasting service operating in the frequency band 87 - 108 MHz;
- c) the need for the aeronautical community to provide additional services in order to enhance navigation and surveillance systems through a communications datalink,

recognizing

- a) that precedence must be given to the aeronautical radionavigation service operating in the frequency band 108 - 117.975 MHz;
- b) that, in accordance with Annex 10 of the Convention of the International Civil Aviation Organization (ICAO), all aeronautical systems must meet Standards and Recommended Practices (SARPs) requirements;
- c) that within the ITU-R, compatibility criteria between the broadcast service operating in the frequency band 87 - 108 MHz and the aeronautical radionavigation service operating in the frequency band 108 - 117.975 MHz already exist as indicated in Recommendation ITU-R SM 1009;
- d) that all compatibility issues between FM broadcasting systems and ICAO standard ground-based systems for the transmission of radionavigation-satellite differential correction signals have been addressed

noting

- a) that aeronautical systems are converging towards a communications datalink environment to support aeronautical navigation and surveillance functions, which need to be accommodated in existing radio spectrum;
- b) that no compatibility criteria currently exist between the broadcast service operating in the frequency band 87-108 MHz and the planned additional aeronautical systems in the adjacent band 108-117.975 MHz using aircraft transmission;
- c) that studies by ICAO have confirmed that the planned additional aeronautical systems are compatible with the existing use of the band 108 - 117.975 MHz,

resolves

1 that the provisions of this Resolution and of No. 5.YYY shall enter into force on [4 July 2003];

2 that any additional aeronautical systems planned to operate in the frequency band 108 - 117.975 MHz shall, as a minimum, meet the FM broadcast immunity requirements contained in Annex 10 of the Convention of the International Civil Aviation Organization (ICAO) for existing aeronautical radionavigation systems operating in this frequency band;

3 that additional aeronautical systems operating in the band 108-117.975 MHz shall place no additional constraints on stations of the broadcast service operating in the bands allocated to this service in the frequency range 87 - 108 MHz ;

4 that frequencies below 112 MHz shall not be used for these additional aeronautical systems until all compatibility issues with the lower adjacent frequency band 87 - 108 MHz have been considered,

invites ITU-R

1 to study any compatibility issues between the broadcast and aeronautical services that may arise from the introduction of these additional aeronautical systems as referenced in *noting b)* and to develop new or revised ITU-R Recommendations as appropriate;

2 to bring the results of these studies, if necessary, to the attention of a future competent WRC to determine any further action required,

requests the Secretary-General

to bring this Resolution to the attention of ICAO.
