

ETNO Expert Contribution on GSM onboard aircraft (GSMOB aircraft)

Executive Summary:

ETNO generally supports the possibility to facilitate the use of mobile handsets onboard aircraft, but considers that a number of issues need to be solved before an introduction of GSMOB aircraft can take place. These issues comprise the technical coexistence with existing mobile networks, plus operational and regulatory aspects.

Coexistence studies shall take into account terrestrial mobile networks based upon existing technologies - as well as technologies most likely to be launched within a couple of years - within all relevant frequency bands. Airborne mobile communication systems shall not cause harmful interference to such networks.

A worldwide harmonised solution with regard to operation and regulation should be the aim.

Alternative technologies for airborne systems should also be studied. However, those studies should not delay the analysis of the requirements necessary to establish a viable coexistence between GSMOB and the terrestrial mobile networks.

Introduction

ETNO generally supports the idea of being able to use mobile handsets onboard aircraft to access public mobile services. However, it is of great importance to avoid interference with terrestrial networks. Therefore, the issues listed below have to be properly investigated before any final conclusion is made.

Interference related issues

The Network Control Unit (NCU) has not yet been specified. ETNO supports the development of an ETSI Harmonised Standard for the NCU,

provided that specific parameters coherent with GSM standards are used for the interference calculations.

As the NCU works partly as a jammer, appropriate provision should be adopted to restrict the use of such equipment to plane cabins.

The current studies in ECC PT SE7 only cover the GSM bands (900/1800 MHz) and the IMT-2000/UMTS FDD core band (2 GHz). If passengers would be allowed to switch on their mobile handsets on board aircraft flying over Europe, then also handsets operating in other bands will be switched on and easily access a ground network for roaming and carry on calls if not shielded off by adding artificial noise also in these mobile receive bands by the NCU.

ETNO's view is that the study should cover all related bands and technologies that might be concerned. Therefore, the following systems should also be incorporated in the study.

- CDMA and Flash OFDMA at 450 MHz
- UMTS at 900/1800/2600 MHz
- IEEE 802.16e

Another issue that concerns ETNO is the fact that the study is based on the assumption that all passengers turn off their handsets when the aircraft is below 3000 m. ETNO fears that these new capabilities will result in an additional number of passengers neglecting to turn off their handset, leading to possible interference with terrestrial networks.

ECC PT SE7 is currently also calculating and simulating the protection of ground BTS's. These studies show that the protection of the BTS's will only be fulfilled if the height of the aircraft above the BTS antenna is > 3 km. Since BTS antennas in Europe can be located up to 3 km above sea level, the minimum allowed altitude to operate GSMOB aircraft should be > 6 km above sea level. Some current test licenses for GSMOB aircraft allow usage > 6 km above sea level, considering some BTS antennas located at high altitudes.

User and operator related aspects

From a user perspective it is important that the same procedures for use of GSMOB apply worldwide. The procedures should not change during an intercontinental flight, depending where in the world the aircraft is at the moment. It is therefore important to find a worldwide agreement for these types of systems.

Airborne GSM usage is already today allowed for special search and rescue missions on a limited basis. The introduction of commercial use of airborne GSM might interfere with such usage. This issue should also be investigated before allowing the commercial use.

Regulatory related aspects

To avoid interference as much as possible ETNO proposes to identify a common band for the usage of GSM on board aircraft in Europe, when possible worldwide. In this context, ETNO urges International Authorities to seek agreement on the regulations and mechanisms to allow for frequencies to be used for GSMOB. One should take into account that sooner or later, mobile services on board will be provided for transatlantic routes, possibly by more than one operator, provided that air safety regulations allow for this.

If an overlap of GSMOB aircraft and terrestrial GSM network usage is unavoidable, then a maximum noise/interference rise should be stipulated. ETNO proposes a maximum total desensitisation of 1 dB at both BTS and MS, including multiple aircraft interference scenarios under study in ECC PT SE7.

After the requirements for the operation of GSMOB have been defined and the concept regionally or globally endorsed, they should not be subject to an undefined series of modifications as this would make it impossible to establish a viable business upon the GSMOB concept.

Conclusion

ETNO generally supports the idea of being able to use mobile handsets during flights to access public mobile services. ETNO considers that careful regulatory and technical studies are needed in order to establish an appropriate regulatory framework allowing the development of various communication solutions, including the proposed GSM on board aircraft. Harmonisation of frequency bands and regulations should be sought as much as possible.