

**Inmarsat response to the**  
**draft RSPG Opinion on the**  
**ITU World Radiocommunication Conference 2019**  
**20 July 2018**

**1. Introduction**

Inmarsat thanks the RSPG for the opportunity to comment on the draft RSPG Opinion on the ITU-R World Radiocommunication Conference 2019.

Inmarsat generally supports the draft recommendations. However, Inmarsat notes that one particular agenda item which is relevant to EU policies is omitted from the draft Opinion and considers it should be included. In particular, Inmarsat considers that agenda item 9.1, issue 9.1.1 is of very high significance to the EU and hence must be included in the Opinion as explained in more detail below.

**2. Use of the bands 1980-2010 MHz and 2170-2200 MHz in Europe**

WRC-19 agenda item 9.1, issue 9.1.1 relates to the frequency bands 1980-2010 MHz and 2170-2200 MHz. These bands are harmonised for MSS operations in the EU through Commission Decision 2007/98/EC and any other use of these bands in Europe is on condition of not causing harmful interference to mobile satellite services and not claiming protection from harmful interference from mobile satellite services. Other Decisions have been published related to the selection of the MSS operators and deployment of MSS services. Inmarsat is one of the two operators that were selected in a Commission-led process to operate in these bands. European Union Member States have subsequently adapted their national regulatory framework to license the selected MSS operators including the terrestrial component.

Inmarsat has deployed a MSS system in Europe in these bands. It is composed of a space segment and a terrestrial complementary network ("complementary ground component"). The system is called the European Aviation Network (EAN), which will provide European aircraft passengers with high quality broadband Internet connectivity. The Inmarsat S-band satellite, "Europasat" is currently in operation in these bands, a Europe-wide ground station network has been deployed, and aircraft equipment is being installed. Commercial arrangements have been made with a number of airlines who are preparing their services to their customers on a pan-European basis.

The successful operation of the EAN is at risk of interference from incompatible terrestrial operations outside of Europe. These frequency bands are allocated to terrestrial services and are identified in the Radio Regulations for both the satellite component of IMT and the terrestrial component of IMT. In accordance with the EC Decision, terrestrial service deployment in these bands in Europe is effectively limited to a complementary ground component to mobile satellite services, but outside of Europe some countries may allow deployment of independent terrestrial operations in these bands rather than satellite operations. Outside of the EU, countries are free to deploy terrestrial systems with no significant restrictions and this presents a major interference risk, especially with regard to interference to MSS satellite receivers in the MSS uplink band, 1980-2010

MHz, which can be aggravated depending the channelling arrangements used by the terrestrial operator. The Radio Regulations, as they currently stand, do not provide adequate limits or any mechanism to prevent such interference.

### 3. ITU-R Studies

The ITU-R studies for this agenda item have examined all the different potential interference scenarios considering the situation where terrestrial IMT is deployed in one country and satellite IMT is deployed in another country. The results of the studies are summarised as follows:

- For scenarios between ground based stations (i.e. between terrestrial IMT base station or user equipment and satellite IMT Mobile Earth Station (MES)), cross-border coordination could be necessary, and in the EU context, this could impact on the countries at the periphery of the EU. However the current cross-border coordination procedures in the Radio Regulations are considered adequate and no action by WRC-19 is necessary.
- For the scenario of potential interference from satellite IMT to terrestrial IMT in the band 2170-2200 MHz, the studies show that some satellite IMT systems would need to slightly reduce their downlink emissions to meet the protection requirements of terrestrial IMT systems. For other satellite IMT systems, no reduction is necessary. Hence this interference issue is not significant and minor changes to the RR may be considered by WRC-19 to ensure that the current pfd threshold values continue to apply.
- ITU-R studies have considered potential interference from terrestrial IMT systems to satellite IMT systems. For this scenario, the studies have shown that deployment of terrestrial IMT systems with certain configurations could cause extremely high levels of interference to MSS satellites - around 50 dB above the protection criterion in some cases. In particular, the use of the band 1980-2010 MHz by mobile service base stations in one country could cause harmful interference to MSS operations in another country.

The ITU-R studies have identified that the most effective means to avoid interference to MSS satellite receivers is to ensure that the band 1980-2010 MHz, if used for terrestrial IMT systems, is used for uplinks only (i.e. for mobile terminal transmit/base station receive). The potential interference from mobile user equipment is much more benign and should be possible to mitigate if it does occur. This would allow for a paired arrangement for terrestrial IMT using FDD, using the band 1980-2010 MHz for terrestrial uplinks and the band 2170-2200 MHz for the corresponding terrestrial downlinks.

Action could be considered under this agenda item to limit the future use of the band 1980-2010 MHz to terrestrial IMT uplinks only - excluding the possible deployment of terrestrial IMT downlinks. Such action may not be a significant constraint on the use of these bands by other countries - allowing countries outside of the EU to deploy terrestrial IMT systems if they wish to do so - but it would avoid major risk of interference to mobile satellite services in the future.

### 4. Significance for Europe

The RSPG has previously considered the matter of extension of the harmonization of MSS spectrum beyond EU territories<sup>1</sup>. The need for coordination with non EU countries was already foreseen but it was understood that the probability of deployment of terrestrial IMT systems in non EU countries

---

<sup>1</sup> Radio Spectrum Committee RSCOM 06-68, 20 September 2006. Final report from CEPT in response to the Mandate on 2 GHz MSS

in these bands was low and the need of international coordination with non EU neighbour countries to protect MSS services in Europe was left without conclusion. The final report from CEPT in response to the Mandate on 2 GHz MSS reads: *“The sharing situation is such that terrestrial systems (fixed or mobile) could cause significant interference to MSS operations in the same geographic area in which the terrestrial systems operate, and also in adjacent geographical areas, possibly in different countries. Hence, if the 2 GHz bands are to be made available for the MSS, it is essential that **sufficiently robust international harmonisation measures** are put into place to ensure that MSS systems can operate without harmful interference”*.

The ITU-R studies under this agenda item support this view of the RSPG and show that certain deployment of terrestrial IMT in countries outside of the EU have the potential to prevent MSS operations in the band 1980-2010 MHz throughout Europe. For example, if a single country in Africa was to deploy terrestrial IMT systems with the base stations transmitting in the band 1980-2010 MHz, that could cause interference sufficient to prevent the use of the same band for MSS operations in Europe.

Today, very few countries have deployed terrestrial IMT systems in the bands 1980-2010 MHz and 2170-2200 MHz. One exception is the United States, where one operator has started to deploy terrestrial IMT systems with transmitting base stations in the band 1980-2010 MHz. This should not affect current European MSS systems, since the United States is not visible from the satellite locations in the geostationary arc where satellites have been deployed to serve Europe. But if other countries were to follow the same plan as the United States, the situation could be potentially disastrous for the European use of the same band.

Hence, through this agenda item there is a valuable opportunity to significantly reduce this risk of serious harm to European interests - an opportunity that might never be repeated. Inmarsat considers that the CEPT and EU should grasp this opportunity.

## 5. Proposal

Inmarsat proposes that this agenda item be included in the RSPG Opinion. Inmarsat believes that given the clear harmonisation of these bands for MSS in Europe, and the history of these bands, this agenda item should be placed in the “Case a)” category, i.e. one which requires an EU position to be proposed by the European Commission for adoption by the Council because a WRC decision may affect common rules.

To assist the RSPG in making this consideration, we have prepared draft text for this agenda item in the format used in the draft Opinion.

#### **4.X WRC-19 Agenda Item 9.1 issue 9.1.1**

This agenda item relates to sharing between the satellite component of IMT and the terrestrial component of IMT in the bands 1980-2010 MHz and 2170-2200 MHz. In Europe, these bands are used by two MSS operators to provide mobile satellite services, however other countries outside of Europe have already deployed, or are considering deploying, terrestrial IMT systems in these bands.

Certain types of terrestrial IMT deployments outside of Europe have the potential to cause significant interference to MSS operations in Europe.

##### **4.X.1 Link with EU policies:**

These bands are harmonised for mobile satellite services in the EU through Commission Decision of 14 February 2007, European Parliament and Council Decision 2007/98/EC. Two MSS operators, selected at the EU level, are currently deploying MSS systems in these bands, in one case to provide broadband connectivity to aircraft passengers in Europe.

One of the two MSS operators using these bands in Europe is providing broadband Internet connectivity to aircraft passengers throughout the EU. European electronic communication policy aims to deliver broadband connectivity to European citizens also while they are in motion as outlined in the EC Communications on the Gigabit society and a 5G Action plan<sup>10</sup>. MSS operations in this band would contribute to that goal.

##### **4.X.2 Relevant spectrum harmonisation decisions:**

2007/98/EC - Commission Decision of 14 February 2007 on the harmonised use of radio spectrum in the 2 GHz frequency bands for the implementation of systems providing mobile satellite services.

##### **4.X.3 Recommendation:**

The RSPG recommends that the European Commission propose an EU position to the Council supporting action at WRC-19 to ensure the prevention of harmful interference to MSS operations in Europe from future deployment of terrestrial IMT systems.

This recommendation is falling under case a).

## **6. Concluding comments**

There appears to be a strong case for inclusion of agenda item 9.1 issue 9.1.1 in the RSPG Opinion and Inmarsat urges the RSPG to include this agenda item along the lines suggested above.