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| **World Radiocommunication Conference (WRC-15) Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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|  | **Addendum 1 to Document 66(Add.23)-E** |
|  | **15 October 2015** |
|  | **Original: Spanish** |
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| Cuba | |
| Proposals for the work of the conference | |
|  | |
| Agenda item 9.1(9.1.1) | |

9 to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:

9.1 on the activities of the Radiocommunication Sector since WRC‑12;

9.1(9.1.1) Resolution **205 (Rev.WRC-12)** − Protection of the systems operating in the mobile-satellite service in the band 406-406.1 MHz

Introduction

The frequency band 406-406.1 MHz is allocated exclusively to the MSS and accommodates the Cospas-Sarsat system, which has been used in extremely vital search-and-rescue missions, facilitating the rescue of over 36 900 persons by the end of 2013 through the issuing of alerts and provision of accurate, timely and reliable location data.

Spectrum monitoring data show that interference near the 406-406.1 MHz frequency band originating in multiple regions of the world has adversely affected the effective noise floor for distress radio beacon transmissions, and it is essential to ensure that distress signals from all 406 MHz beacons can continue to be detected and successfully processed by the Cospas-Sarsat system.

It is necessary to prevent transmissions from other services from occurring in the band 406-406.1 MHz, and to have in place measures to reduce the effects produced by transmissions on frequencies close to the band in question.

On the basis of the foregoing, and in view of the need to ensure adequate protection for the reception of signals from 406 MHz beacons in the Cospas-Sarsat system, the Administration of Cuba submits the following proposals to WRC-15.

Proposals

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations  
(See No. 2.1)

MOD CUB/66A23A1/1

335.4-410 MHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 403-406 METEOROLOGICAL AIDS  Fixed  Mobile except aeronautical mobile  ADD 5.A911 | | |
| 406-406.1 MOBILE-SATELLITE (Earth-to-space)  5.266 5.267 ADD 5.A911 | | |
| 406.1-410 FIXED  MOBILE except aeronautical mobile  RADIO ASTRONOMY  5.149 ADD 5.A911 | | |

ADD CUB/66A23A1/2

5.A911 In the frequency band 403-410 MHz, Resolution **205 (Rev.WRC-15)** applies.

**Reasons:** Inclusion in a footnote to the Table of Frequency Allocations of a reference to Resolution 205 revised by WRC-15 to ensure greater protection of the Cospas-Sarsat system.

MOD CUB/66A23A1/3

RESOLUTION 205 (Rev.WRC‑15)

Protection of the systems operating in the mobile-  
satellite service in the band 406-406.1 MHz

The World Radiocommunication Conference (Geneva, 2015),

considering

*a)* that WARC‑79 allocated the frequency band 406-406.1 MHz to the mobile-satellite service (MSS) in the Earth-to-space direction;

*b)* that No. **5.266** limits the use of the frequency band 406-406.1 MHz to low-power satellite emergency position-indicating radiobeacons (EPIRBs);

*c)* that WARC Mob-83 made provision in the Radio Regulations for the introduction and development of a global distress and safety system;

*d)* that the use of satellite EPIRBs is an essential element of this system;

*e)* that, like any frequency band reserved for a distress and safety system, the frequency band 406-406.1 MHz is entitled to full protection against all harmful interference;

*f)* that Nos. **5.267** and **4.22** and Appendix **15** (Table **15-2**) require the protection of the MSS within the frequency band 406-406.1 MHz from all emissions of systems, including systems operating in the lower and upper adjacent bands;

*g)* that Recommendation ITU‑R M.1478 provides protection requirements for the various types of instruments mounted on board operational satellites receiving EPIRB signals in the frequency band 406‑406.1 MHz against both broadband out-of-band emissions and narrowband spurious emissions;

*h)* that ITU-R has conducted studies covering various scenarios between the MSS and other relevant active services operating in the frequency bands 390-406 MHz and 406.1- 420 MHz or in separate parts of these frequency bands;

*i)* that unwanted emissions from services outside the frequency band 406-406.1 MHz have the potential to cause interference to the MSS receivers within that band;

*j)* that long-term protection against harmful interference of the Cospas-Sarsat satellite system operating in the MSS in the frequency band 406-406.1 MHz is vital to the response times of emergency services;

*k)* that in most cases, the frequency bands adjacent or near to those used by the Cospas-Sarsat system will continue to be used for various applications in the services to which they are allocated,

considering further

*a)* that some administrations have initially developed and implemented an operational low-altitude, near-polar orbiting satellite system (Cospas-Sarsat) operating in the frequency band 406-406.1 MHz to provide alerting and to aid in the locating of distress incidents;

*b)* that thousands of human lives have been saved through the use of spaceborne distress-beacon detection instruments, initially on 121.5 MHz and 243 MHz, and subsequently in the frequency band 406‑406.1 MHz;

*c)* that the 406 MHz distress transmissions are relayed through many instruments mounted on geostationary, low-Earth and medium-Earth satellite orbits;

*d)* that the digital processing of these emissions provides accurate, timely and reliable distress alert and location data to help search and rescue authorities assist persons in distress;

*e)* that the International Maritime Organization (IMO) has decided that satellite EPIRBs operating in the Cospas-Sarsat system form part of the Global Maritime Distress and Safety System (GMDSS);

*f)* that observations of the use of frequencies in the band 406-406.1 MHz show that they are being used by stations other than those authorized by No. **5.266**, and that these stations have caused harmful interference to the MSS, and particularly to the reception of satellite EPIRB signals by the Cospas-Sarsat system;

*g)* that the results of spectrum monitoring and ITU-R studies indicate that emissions from stations operating in the frequency bands 405.9-406 MHz and 406.1-406.2 MHz have the potential to severely impact the performance of the MSS systems in the frequency band 406-406.1 MHz;

*h)* that the results of ITU-R studies indicate that increased deployment of land mobile systems operating in the vicinity of the 406-406.1 MHz frequency band may degrade the receiver performance of the mobile-satellite systems operating in that frequency band;

*i)* that the maximum permissible level of interference to the MSS in the 406-406.1 MHz frequency band may be exceeded due to frequency drift of the radiosondes operating above 405 MHz,

recognizing

*a)* that it is essential for the protection of human life and property that frequency bands allocated exclusively to a service for distress and safety purposes be kept free from harmful interference;

*b)* that mobile systems operating near the frequency band 406‑406.1 MHz are currently deployed and that more such systems are envisaged;

*c)* that increased deployment raises significant concerns on the reliability of future distress and safety communications due to the increases in the noise level measured in many areas of the world for the frequency band 406-406.1 MHz;

*d)* that it is essential to preserve the MSS frequency band 406-406.1 MHz free from out-of-band emissions that would degrade the operation of the 406 MHz satellite transponders and receivers, with the risk that satellite EPIRB signals would go undetected,

noting

*a)* that the 406 MHz search and rescue system will be enhanced by placing 406‑406.1 MHz transponders on global navigation satellite systems such as Galileo, GLONASS and GPS, relaying search and rescue emissions at 406 MHz, in addition to already operational and future low-Earth orbiting and geostationary satellites, thus providing a large constellation of satellites relaying search and rescue messages;

*b)* that this enhanced constellation of spaceborne search and rescue instruments was designed to improve geographic coverage and reduce distress-alert transmission delays by means of larger uplink footprints, an increased number of satellites and improvement in the accuracy of the location of the distress signal;

*c)* that the characteristics of these spacecraft with larger footprints, and the low power available from satellite EPIRB transmitters, means that aggregate levels of electromagnetic noise, including noise from transmissions in adjacent frequency bands, may present a risk of satellite EPIRB transmissions being undetected, or delayed in reception, or lead to reduced accuracy of the calculated locations, thereby putting lives at risk,

noting further

*a)* that the mobile-satellite systems contributing to the Cospas-Sarsat emergency location system provide a worldwide emergency location system that benefits all countries, even if those mobile-satellite systems are not operated by their country;

*b)* that many Cospas-Sarsat satellites implement efficient out-of-band filtering, which could be further improved in upcoming satellites,

resolves

1 to request administrations not to make new frequency assignments within the frequency bands 405.9-406.0 MHz and 406.1-406.2 MHz under the mobile and fixed services;

2 that administrations take into account frequency drift characteristics of radiosondes when selecting their operating frequencies above 405 MHz to avoid transmitting in the 406‑406.1 MHz frequency band, and that they take all practical steps to avoid frequency drifting close to 406 MHz,

instructs the Director of the Radiocommunication Bureau

1 to continue to organize monitoring programmes in the frequency band 406-406.1 MHz in order to identify the source of any unauthorized emission in that band;

2 to organize monitoring programmes on the impact of the unwanted emissions from systems operating in the frequency bands 405.9-406 MHz and 406.1-406.2 MHz on the MSS reception in the frequency band 406-406.1 MHz in order to assess the effectiveness of this Resolution, and to report to subsequent world radiocommunication conferences,

encourages administrations

to take measures such as making new assignments to stations in the fixed and mobile services in priority in channels with greater frequency separation from the 406-406.1 MHz frequency band and ensuring that the e.i.r.p. of new fixed and mobile systems at all but low elevation angles is kept to the minimum required level,

urges administrations

1 to take part in monitoring programmes referred to in the *instructs the Director of the Radiocommunication Bureau* above;

2 to ensure that stations other than those operated under No. **5.266** abstain from using frequencies in the frequency band 406-406.1 MHz;

3 to take the appropriate measures to eliminate harmful interference caused to the distress and safety system;

4 to take all practical steps to limit the levels of unwanted emissions of stations operating within the 403-406 MHz and 406.1-410 MHz frequency ranges in order not to cause harmful interference to mobile-satellite systems operating in the 406-406.1 MHz frequency band;

5 when providing Cospas-Sarsat satellite receiver payloads in the 406-406.1 MHz frequency band, to make possible improvement of out-of-band filtering of such receivers, in order to reduce constraints to adjacent services while preserving the ability of the Cospas-Sarsat system to detect all kinds of emergency beacons and to maintain an acceptable rate of detection, which is vital to search and rescue missions;

6 to actively cooperate with the administrations participating in the monitoring programme and with the Radiocommunication Bureau to resolve reported cases of interference to the Cospas-Sarsat system.

**Reasons:** Updating of Resolution 205 in line with the results of the ITU-R studies and spectrum monitoring and in view of the need to protect the Cospas-Sarsat system.

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