

## EUROPEAN COMMON PROPOSAL

Proposal submitted by the following administrations

[....., ....., .....]

### Agenda Item 1.20

#### **Agenda item 1.20**

*to consider the results of studies, and proposals for regulatory measures regarding the protection of the Earth exploration-satellite service (passive) from unwanted emissions of active services in accordance with Resolution 738 (WRC-03)*

#### **Introduction**

ITU-R Task Group 1/7 conducted studies between the EESS (passive) and active services in certain adjacent or nearby bands, the results are contained in Recommendation ITU-R SM.1633. The results of this work were considered by WRC-03 under agenda item 1.8.2.

CEPT made proposals to WRC-03 for the inclusion in the Radio Regulations of limits on the unwanted emissions of active services to protect the EESS (passive) in the bands 31.3-31.5 GHz and 52.6-54.25 GHz, and for continued studies on other specific bands with the results to be considered at WRC-07.

Many administrations supported regulatory measures for the protection of passive services, including EESS, at WRC-03; however, after difficult discussions up to the last few days of the conference there was no agreement to take such action. The compromise solution was to continue the studies according to Resolution 738 and re-visit the issue at WRC-07.

Within WRC-07 Agenda Item 1.20 covered by Resolution 738, a total of five EESS (passive) bands need to be addressed, i.e.

1400 – 1427 MHz

23.6 – 24.0 GHz

31.3 – 31.5 GHz

50.2 – 50.4 GHz

52.6 – 54.25 GHz

The ECP on Agenda Item 1.20 builds upon the results of work within TG 1/9 and has been split into two parts :

Contents

Sub-Part 20A - Protection of EESS(passive) from unwanted emissions within the band 1400-1427 MHz.....3

Sub-Part 20B - Protection of EESS(passive) from unwanted emissions within the bands 23.6-24GHz, 31.3 – 31.5 GHz, 50.2 – 50.4 GHz and 52.6 – 54.25 GHz.....6

**Sub- Part 20A**

**Protection of EESS(passive) from unwanted emissions  
within the band 1400-1427 MHz**

**Introduction**

This sub-part deals with the issues under agenda item 1.20 addressing the EESS (passive) band 1400 – 1427 MHz.

The results of the compatibility analyses are mentioned in Table 1. It should be noted that in most cases equipment complying with relevant widely accepted standard, when available, or category B spurious limits of ITU-R Recommendation SM.329 would also comply with the **limits of the table above.**

Formatted: Highlight

Deleted: ¶

TABLE 1

**Results of the band-by-band studies**

Passive band	Active band	Active service	Measure to protect passive band (*)
1400 – 1427 MHz	1350 – 1400 MHz	RL	Limit unwanted emissions of radiolocation stations into the passive band to -29 dBW/27 MHz
1400 – 1427 MHz	1350 – 1400 MHz	FS	Limit unwanted emissions of FS stations into the passive band to -45 dBW/27MHz
1400 – 1427 MHz	1350 – 1400 MHz	MS	Limit unwanted emissions of MS stations into the passive band to -60 dBW/27MHz except transportable radio relays <sup>1</sup> limited to -45dBW/27 MHz
1400 – 1427 MHz	1427 – 1429 MHz	SO (E to s)	Limit unwanted emissions of SO Earth stations into the passive band to -36 dBW/27MHz
1400 – 1427 MHz	1427 – 1452 MHz	MS	Limit unwanted emissions of MS stations into the passive band to -60 dBW/27MHz except transportable radio relays <sup>1</sup> limited to -45dBW/27 MHz and aeronautical

			telemetry <sup>2</sup> limited to -28 dBW/27MHz
1400 – 1427 MHz	1427 - 1452 MHz	FS	Limit unwanted emissions of FS stations into the passive band to -45 dBW/27MHz

(\* ) The unwanted emission power level should be understood as that level prior at the antenna port of the active service station (i.e. not including the antenna gain).

(1): some administrations operate transportable radio relay systems in the mobile service, while others operate such systems in the fixed service.

(2): The band 1 429-1 435 MHz is also allocated to the aeronautical mobile service in eight Region 1 administrations on a primary basis exclusively for the purposes of aeronautical telemetry within their national territory (RR No. 5.342).

## **Proposal**

### **Issue (A)        *resolves 1 & 3 (Resolution 738)***

Resolves 1 reads as follows: “to invite ITU-R to continue or to initiate studies on the compatibility analyses between EESS (passive) and the corresponding active services as listed in the Table with a view to updating Recommendation ITU-R SM.1633 or developing additional Recommendations”, whereas resolves 3 is on the consideration of regulatory measures for WRC-07 based on the previous resolves.

The proposal is based on a single entry unwanted emission mandatory power limit applicable to a reference bandwidth in the EESS (passive) band for each corresponding active service taking into account the results of the compatibility analyses: those operational limits are proposed to be included into a footnote in Article 5 similar to No. 5.482. Those limits are derived from part or all of Table 1 depending on the result of studies documented in the ITU-R report SM.2092.

In most cases, these studies have included equipments whose compliance with relevant widely accepted standard, when available, or category B spurious limits of ITU-R Recommendation SM.329, when applicable ensure the compliance with the limits in most cases. They have also included mitigation assumptions when needed, therefore providing an equitable burden sharing between active and passive services

## ARTICLE 5

### **Frequency allocations**

**MOD** EUR/1.20/1

**1 300-1 525 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
.....		
<b>1 350-1 400</b> FIXED <a href="#">5.XXA</a> MOBILE <a href="#">5.XXB</a> RADIOLOCATION <a href="#">5.XXC</a> 5.149 5.338 5.339 5.339A	<b>1 350-1 400</b> RADIOLOCATION <a href="#">5.XXC</a> 5.149 5.334 5.339 5.339A	
<b>1 400-1 427</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341		
<b>1 427-1 429</b> SPACE OPERATION (Earth-to-space) <a href="#">5.XXD</a> FIXED <a href="#">5.XXA</a> MOBILE except aeronautical mobile <a href="#">5.XXB</a> 5.341		
<b>1 429-1 452</b> FIXED <a href="#">5.XXA</a> MOBILE except aeronautical mobile <a href="#">5.XXB</a> 5.339A 5.341 5.342	<b>1 429-1 452</b> FIXED <a href="#">5.XXA</a> MOBILE 5.343 <a href="#">5.XXB</a> 5.339A 5.341	
.....		

ADD EUR/1.20/2

**5.XXA**

Unwanted emissions from stations of the fixed service brought into use after [date of entry into force of the revised Radio Regulations (WRC-07)] shall be limited to a maximum unwanted emission power supplied at the antenna port of -45 dBW within the passive band 1400-1427 MHz. The Bureau shall make no examination or finding with respect to this limit under article 9 and 11.

**5.XXB**

Unwanted emissions from stations of the mobile service (except transportable radio relays and aeronautical telemetry) brought into use after [date of entry into force of the revised Radio Regulations (WRC-07) ] shall be limited to a maximum unwanted emission power supplied at the antenna port of -60 dBW within the passive band 1400-1427 MHz. Unwanted emissions

from transportable radio relays and aeronautical telemetry brought into use after [date of entry into force of the revised Radio Regulations (WRC-07)] shall be limited respectively to a maximum unwanted emission power supplied at the antenna port of -45 dBW and -28 dBW within the passive band 1400-1427 MHz. The Bureau shall make no examination or finding with respect to these limits under article 9 and 11.

5.XXC

The mean power of unwanted emissions of stations of the radiolocation service, operating in the band 1215 – 1400 MHz and brought into use after 1<sup>st</sup> January 2015 shall be limited to a maximum of -29 dBW /27 MHz in the band 1400-1427 MHz. Mean power is to be understood here as the total power measured at the antenna port (or an equivalent thereof) in the band 1400 - 1427 MHz, averaged over a period in the order of 5 seconds. The Bureau shall make no examination or finding with respect to this limit under article 9 and 11.

5.XXD

Unwanted emissions from stations of the space operations service brought into use after [date of entry into force of the revised Radio Regulations (WRC-07)] shall be limited to a maximum unwanted emission power supplied at the antenna port of -36dBW within the passive band 1400-1427 MHz . The Bureau shall make no examination or finding with respect to this limit under article 9 and 11.

Sub-Part 20B

Protection of EESS(passive) from unwanted emissions

within the bands 23.6-24GHz, 31.3 – 31.5 GHz, 50.2 – 50.4 GHz and 52.6 – 54.25 GHz

**Introduction**

THIS SUB-PART DEALS WITH THE ISSUES UNDER AGENDA ITEM 1.20 COVERING THE BANDS FROM 23.6 – 24 GHz TO 52.6-54.25 GHz TABLE 1

**Results of the band by band studies**

Passive band	Active band	Active service	Measure to protect passive band (*)
23.6 – 24.0 GHz	22.55 – 23.55 GHz	ISS	Limit unwanted emissions of ISS space stations into the passive band to -46dBW/200

			MHz
31.3 – 31.5 GHz	30.0 – 31.0 GHz	FSS (E to s)	Limit unwanted emissions of FSS Earth stations into the passive band to -20 dBW/200 MHz
31.3 – 31.5 GHz	31 – 31.3 GHz	FS	Limit unwanted emissions of FS stations into the passive band to -38 dBW/100 MHz according to Res.738 (WRC03)
50.2 – 50.4 GHz	47.2 – 50.2 GHz Regions 2 and 3, 49.44 – 50.2 GHz  Region 1	FSS (E to s)	Limit unwanted emissions of the FSS Earth stations into the passive band to -20dBW/200MHz
50.2 – 50.4 GHz	50.4 – 51.4 GHz	FSS (E to s)	Limit unwanted emissions of the FSS Earth stations into the passive band to -20dBW/200MHz
52.6 – 54.25 GHz	51.4 – 52.6 GHz	FS	Limit unwanted emissions of FS stations into the passive band to -33 dBW/100 MHz (from Res.738)

(\* ) The unwanted emission power level should be understood as that level supplied to the antenna port of the active service station (i.e. not including the antenna gain).

Note 1 : It should be noted that in most cases equipment complying with relevant widely accepted standard, when available, or category B spurious limits of ITU-R Recommendation SM.329 would also comply with the limits of the table above.

### **Proposal**

#### **Issue (A) resolves 1 & 3 (Resolution 738)**

Resolves 1 reads as follows: “to invite ITU-R to continue or to initiate studies on the compatibility analyses between EESS (passive) and the corresponding active services as listed in the Table with a view to updating Recommendation ITU-R SM.1633 or developing additional Recommendations”, whereas resolves 3 is on the consideration of regulatory measures for WRC-07 based on the previous resolves.

The proposal is based on a single entry unwanted emission mandatory power limit applicable to a reference bandwidth in the EESS (passive) band for each corresponding active service taking into account the results of the compatibility analysis: those operational limits are proposed to be included in the Radio Regulations through a Resolution. A footnote in Article 5 similar to No. 5.347A would direct towards this Resolution. It is to be noted that the regulatory conditions of those operational limits (non-retroactivity and non examination by the BR) would also be included in this Resolution. Those limits are derived from part or all of Table 1 depending on the result of studies documented in the ITU-R report SM.2092.

These studies have included equipments whose compliance with relevant widely accepted standard, when available, or category B spurious limits of ITU-R Recommendation SM.329 ensure the compliance with the limits in most cases. They have also included mitigation assumptions when needed, therefore providing an equitable burden sharing between active and passive services

*Note: In addition, this Resolution could also include all the band pairs for the 1.4 GHz issue where mandatory limits exists applying the same regulatory and procedural considerations.*

**MOD EUR/1.20/1  
22-24.75 GHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
....		
<b>22.55-23.55</b> FIXED INTER-SATELLITE <a href="#">5.RES</a> MOBILE 5.149		
<b>23.55-23.6</b> FIXED MOBILE		
<b>23.6-24</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		
....		

ADD EUR/1.20/2

5.RES In the bands:

22.55 – 23.55 GHz,

30 – 31 GHz,

31 – 31.3 GHz,

50.4 – 51.4 GHz,

47.2 – 50.2 GHz (Region 2 and 3),

49.44 – 50.2 GHz (Region 1)

51.4 – 52.6 GHz,

Resolution XXX (WRC-07) applies.

MOD EUR/1.20/3  
**29.9-34.2 GHz**

Allocation to services		
Region 1	Region 2	Region 3
....		
<b>30-31</b> FIXED-SATELLITE (Earth-to-space) <a href="#">5.RES</a> MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542		
....		
<b>31.3-31.5</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		
....		

MOD EUR/1.20/4  
**40-47.5 GHz**

Allocation to services		
Region 1	Region 2	Region 3
....		
<b>47.2-47.5</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 <a href="#">5.RES</a> MOBILE 5.552A		



**47.5-51.4 GHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>47.5-47.9</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 <a href="#">5.RES</a> (space-to-Earth) 5.516B 5.554A MOBILE	<b>47.5-47.9</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 <a href="#">5.RES</a> MOBILE	
<b>47.9-48.2</b>  5.552A	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 <a href="#">5.RES</a> MOBILE	
<b>48.2-48.54</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 <a href="#">5.RES</a> (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	<b>48.2-50.2</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.552 <a href="#">5.RES</a> MOBILE	
<b>48.54-49.44</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 <a href="#">5.RES</a> MOBILE 5.149 5.340 5.555	5.149 5.340 5.555	
<b>49.44-50.2</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 <a href="#">5.RES</a> (space-to-Earth) 5.516B 5.554A 5.555B MOBILE		
<b>50.2-50.4</b> EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340		
<b>50.4-51.4</b> FIXED FIXED-SATELLITE (Earth-to-space) <a href="#">5.RES</a> MOBILE Mobile-satellite (Earth-to-space)		

**Issue (B) resolves 2 & 3 (Resolution 738)**

Resolves 2 reads as follows: “to invite ITU-R to further study the impact of implementing the values provided in considering f) and g) for unwanted emissions of fixed-service systems operating in Regions 2 and 3, taking into account that the impact on fixed-service systems in Region 1 has already been investigated”, whereas resolves 3 is on the consideration of regulatory measures for WRC-07 based on the previous resolves.

The proposed method for Issue (B) is in line with the part related to these bands for the European Common Proposal at WRC-03 for Agenda Item 1.8.2 (WRC-03) with the exception of that the limits are now proposed to be included in a resolution.

**ARTICLE 5**

**Frequency allocations**

**MOD** EUR/1.20/5

**29.9-34.2 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>31-31.3</b> FIXED 5.543A <u>5.RES</u> MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149		

Deleted: ADD 5.XX1

**MOD** EUR/1.20/6

**51.4-55.78 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>51.4-52.6</b> FIXED <u>5.RES</u> MOBILE 5.547 5.556		

Deleted: ADD 5.XX2

**ADD** EUR/1.20/7

**RESOLUTION XXX (WRC-07)**

**Compatibility analyses between the Earth exploration-satellite service (passive) and active services**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that primary allocations have been made to various space services in the Earth-to-space direction such as the fixed-satellite service (FSS), inter-satellite service (ISS) and/or to terrestrial services such as the fixed service (FS) hereafter referred to as “active services”, in bands adjacent or nearby to bands allocated to the Earth Exploration-Satellite Service (EESS) (passive);
- b) that unwanted emissions from active services may cause unacceptable interference to the EESS (passive);
- c) that for technical or operational reasons, the general limits in Appendix 3 may be insufficient in protecting the EESS (passive) in specific bands;
- d) that, in many cases, the frequencies used by the EESS (passive) sensors are chosen to study natural phenomena producing radio emissions at frequencies fixed by the laws of nature, and therefore shifting frequency to avoid or mitigate interference problems may not be possible;
- e) that it is necessary to ensure an equitable burden sharing for achieving compatibility between active and passive services operating in adjacent or nearby bands,

*noting*

- a) that frequency bands covered by RR Article 5.340 which prohibits all emissions need to be fully protected as they are unique natural resources;
- b) that Report ITU-R SM.2092 provides a methodology for conducting the compatibility studies between active and passive services operating in adjacent and nearby bands and develops all relevant scenarios;
- c) that Recommendation ITU-R RS.1029-2 provides the interference criteria for satellite passive remote sensing;

*resolves*

- 1 that unwanted emissions from stations, brought into use after the [date of entry into force of the revised Radio Regulations (WRC-07)], in the bands and services listed in Table 1-1 below, shall not exceed the corresponding limits in the table.
- 2 that the Bureau shall make no examination or finding with respect to this Resolution under either Article 9 or 11,

TABLE 1-1

Passive band	Active band	Active service	Measure to protect passive band(*)
--------------	-------------	----------------	------------------------------------

23.6 – 24.0 GHz	22.55 – 23.55 GHz	ISS	Limit unwanted emissions of ISS space station into the passive band to -46 dBW in 200 MHz
31.3 – 31.5 GHz	30.0 – 31.0 GHz	FSS (E to s)	Limit unwanted emissions of FSS Earth stations into the passive band to -20 dBW/200 MHz
31.3 – 31.5 GHz	31 – 31.3 GHz	FS	Limit unwanted emissions of FS stations into the passive band to -38 dBW/100 MHz
50.2 – 50.4 GHz	47.2 – 50.2 GHz Regions 2 and 3, 49.44 – 50.2 GHz Region 1	FSS (E to s)	Limit unwanted emissions of the FSS Earth stations into the passive band to -20dBW/200MHz
50.2 – 50.4 GHz	50.4 – 51.4 GHz	FSS (E to s)	Limit unwanted emissions of the FSS Earth stations into the passive band to -20dBW/200MHz
52.6 – 54.25 GHz	51.4 – 52.6 GHz	FS	Limit unwanted emissions of FS stations into the passive band to -33 dBW/100 MHz

\* The unwanted emission power level is defined as the level at the antenna port of the active service station (i.e. not including the antenna gain).

SUP EUR/1.20/8

RESOLUTION 738 (WRC-03)

**Compatibility analyses between the Earth exploration-satellite service (passive) and active services**