

**ECP on agenda item 1.21**  
**(compatibility between the radio astronomy service and the active space services in accordance with Resolution 740 (WRC-03))**

**Introduction**

Resolution 740 (WRC-03) invites ITU-R to study the compatibility between the RAS and the corresponding active services as listed in the Table of this Resolution only, with a view to updating or developing ITU-R Recommendations, if appropriate.

The results of the studies should be considered in order to review and update, if appropriate, the tables of threshold levels for consultation in the Annex of Resolution 739 (WRC-03).

The ITU-R continues to conduct “band by band” studies in order to assess the compatibility between the RAS operating in identified bands and the active space services operating in adjacent or nearby bands. Based on these studies it is proposed to specify threshold limits for some bands where studies have concluded and included in the ITU-R Report SM.2091 that the RAS protection criteria may be met and that the limits would not unduly constrain the development of active services. These threshold levels should be incorporated in the update version of Annex of Resolution 739.

**Proposals**

**ARTICLE 5**  
**Frequency allocations**

**MOD EUR/XXA2/1**

**5.347A** In the bands:  
137-138 MHz,  
387-390 MHz,  
400.15-401 MHz,  
620-790 MHz,  
1 452-1 492 MHz,  
1 525-1 559 MHz,  
1 559-1 610 MHz,  
1 613.8-1 626.5 MHz,  
2 655-2 670 MHz,  
2 670-2 690 MHz,  
21.4-22 GHz,  
Resolution 739 (rev. WRC-07) applies.

*Reason: This footnote is related to Resolution 739. Taking into account that new frequency bands are added to this Resolution as proposed in EUR/XXA2/6 below this footnote shall be modified.*

Formatted: Font: Not Bold, Font color: Black

Formatted: Normal, Left, Space Before: 0 pt

Formatted

Deleted: ¶

Formatted: Font: Not Bold, Font color: Auto, Highlight

Deleted:

Deleted: ¶

Deleted:

Deleted: ¶

Deleted: ¶

Deleted: ¶

75.2-137.175 MHz

Allocation to services		
Region 1	Region 2	Region 3
137-137.025	SPACE OPERATION (space-to-Earth)	
	METEOROLOGICAL-SATELLITE (space-to-Earth)	
137.025-137.175	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 <b>5.347A</b>	
	SPACE RESEARCH (space-to-Earth)	
	Fixed	
	Mobile except aeronautical mobile (R)	
	5.204 5.205 5.206 5.207 5.208	
137.025-137.175	SPACE OPERATION (space-to-Earth)	
	METEOROLOGICAL-SATELLITE (space-to-Earth)	
137.025-137.175	SPACE RESEARCH (space-to-Earth)	
	Fixed	
	Mobile-satellite (space-to-Earth) 5.208A 5.209 <b>5.347A</b>	
	Mobile except aeronautical mobile (R)	
	5.204 5.205 5.206 5.207 5.208	

Formatted: French (France)

Formatted: Font: Bold, French (France)

Formatted: French (France)

Reason: This footnote is related to Resolution 739. Taking into account that frequency band 137 – 138 MHz is added to the Annex of this Resolution as proposed in EUR/XXA2/6 below this footnote shall be include to this Section of Article 5 RR.

137.175-148 MHz

Allocation to services		
Region 1	Region 2	Region 3
137.175-137.825	SPACE OPERATION (space-to-Earth)	
	METEOROLOGICAL-SATELLITE (space-to-Earth)	
137.175-137.825	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 <b>5.347A</b>	
	SPACE RESEARCH (space-to-Earth)	
	Fixed	
	Mobile except aeronautical mobile (R)	
	5.204 5.205 5.206 5.207 5.208	
137.825-138	SPACE OPERATION (space-to-Earth)	
	METEOROLOGICAL-SATELLITE (space-to-Earth)	
137.825-138	SPACE RESEARCH (space-to-Earth)	
	Fixed	
	Mobile-satellite (space-to-Earth) 5.208A 5.209 <b>5.347A</b>	
	Mobile except aeronautical mobile (R)	
	5.204 5.205 5.206 5.207 5.208	

Formatted: French (France)

Formatted: Font: Bold, French (France)

Formatted: French (France)

Formatted: Font: Bold, French (France)

Reason: This footnote is related to Resolution 739. Taking into account that frequency band 137 – 138 MHz is added to the Annex of this Resolution as proposed in EUR/XXA2/6 below this footnote shall be include to this Section of Article 5 RR.

MOD EUR/XXA2/4

335.4-410 MHz

Allocation to services		
Region 1	Region 2	Region 3
....		
387-390	FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.254 5.255	5.347A
....		
400.15-401	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264	5.347A

Reason: This footnote is related to Resolution 739. Taking into account that frequency bands 387 – 390 MHz and 400.15 – 401 MHz are added to the Annex of this Resolution as proposed in EUR/XXA2/6 below this footnote shall be include to these Sections of Article 5 RR.

MOD EUR/XXA2/5

460-890 MHz

Allocation to services		
Region 1	Region 2	Region 3
....		
470-790 BROADCASTING      5.149 5.291A 5.294 5.296 5.300 5.302 5.304 5.306 5.311 5.312 5.347A	470-512 BROADCASTING Fixed Mobile 5.292 5.293	470-585 FIXED MOBILE BROADCASTING  5.291 5.298
	512-608 BROADCASTING 5.297	585-610 FIXED MOBILE BROADCASTING
	608-614 RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)	RADIONAVIGATION 5.149 5.305 5.306 5.307
	614-806 BROADCASTING Fixed Mobile	610-890 FIXED MOBILE 5.317A BROADCASTING
790-862 FIXED BROADCASTING 5.312 5.314 5.315 5.316 5.319 5.321	5.293 5.309 5.311 5.347A	806-890 FIXED MOBILE 5.317A BROADCASTING

Formatted: French (France)

862-890 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322		
5.319 5.323	5.317 5.318	5.149 5.305 5.306 5.307 5.311 5.320 <u>5.347A</u>

Reason: This footnote is related to Resolution 739. Taking into account that frequency band 620 – 790 MHz may be added to the Annex of this Resolution as proposed in EUR/XXA2/6 below this footnote shall be include to this Section of Article 5 RR.

**MOD EUR/XXA2/5bis**

1 525-1 610 MHz		
Allocation to services		
Region 1	Region 2	Region 3
1 559-1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329A <u>5.347A</u> 5.341 5.362B 5.362C 5.363	

Reason: This footnote is related to Resolution 739. Taking into account that frequency band 1 559– 1 610 MHz may be added to the Annex of this Resolution as proposed in EUR/XXA2/6 below this footnote shall be include to this Section of Article 5 RR.

**MOD EUR/XXA2/6**

**RESOLUTION 739 (WRC-07)  
Compatibility between the radio astronomy service and the active  
space services in certain adjacent and nearby frequency bands**

The World Radiocommunication Conference (Geneva, 2007),

considering

- a) that adjacent or nearby primary service allocations have been made to the radio astronomy service, and to various space services, such as the fixed-satellite service (FSS), radionavigation-satellite service (RNSS), mobile-satellite service (MSS) and broadcasting satellite service (BSS), hereafter referred to as “active space services”;
- b) that, in many cases, the frequencies used by the radio astronomy service (RAS) are chosen to study natural phenomena producing radio emissions at frequencies fixed by the laws of nature, so shifting frequency to avoid or mitigate interference problems may not be possible;
- c) that Report ITU-R SM.2091 provides a methodology for conducting, and a framework for documenting the results of, compatibility studies between active space service and the radioastronomy service band-pairs;
- d) that Report ITU-R SM.2091 also provides the results of compatibility studies between the radioastronomy service and an active space service in certain adjacent and nearby bands;
- e) that appropriate consultation between administrations has the potential to lead to the development of innovative solutions and to the rapid deployment of systems;

Formatted: Font: 12 pt, Bold, French (France)

Formatted: Font: 12 pt, Bold, French (France)

Formatted: Font: 11 pt, Bold, Font color: Auto

Formatted: Font: 11 pt, Not Bold, Font color: Auto

Formatted: Font: 11 pt, Not Bold, Font color: Auto

Deleted: 5.347A

Formatted: Font: 11 pt, Not Bold, Font color: Auto

Formatted: Font: 11 pt, Not Bold, Font color: Auto

Formatted: Font: 11 pt

Deleted: ¶

Formatted: Font: 11 pt, Not Bold, Italic

Deleted: 03

Deleted: 2003

Formatted: Font: Italic

Deleted: commendation

Deleted: 1

Deleted: 633

Deleted: passive

Deleted: commendation

Deleted: 1

Deleted: 633

Deleted: a passive

f) that, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix 3 may be required to protect the RAS from active services in specific bands,

*noting*

- a) that the additional burden of undertaking any technical examination should not be placed on the Radiocommunication Bureau;
- b) that a consultation procedure, as contained in this Resolution, would not place an additional burden on the Bureau;
- c) that Recommendation ITU-R M.1583 provides a methodology based on the equivalent power flux-density (epfd) concept for calculation of interference resulting from unwanted emissions from non-geostationary (non-GSO) satellite systems of the MSS or RNSS into radio astronomy stations;
- d) that Recommendation ITU-R S.1586 provides a methodology based on the epfd concept for calculation of interference resulting from unwanted emissions from non-GSO systems of the FSS into radio astronomy stations;

e) that the methodology described in these Recommendations may also be used to study the case of non-GSO systems in the BSS.

f) that Recommendation ITU-R RA.1631 provides antenna patterns to be used for compatibility analyses between non-GSO systems and RAS stations, based on the epfd concept;

g) that Recommendation ITU-R RA.1513 provides acceptable levels of data loss to radio astronomy observations, stating in particular that the percentage of data loss caused by any system should be lower than 2%;

h) that some of the results documented in the Report ITU-R SM.2091 may be used as threshold levels to initiate the consultation procedure;

i) that the results of successful consultation between concerned administrations would ensure that the interests of both the active and radioastronomy services are considered;

j) that measures taken by active space services to protect radio astronomy stations from interference may result in increased costs and/or reduced capabilities for those services;

k) that conversely, not taking such measures may result in additional operating costs and reduced operational effectiveness for the radio astronomy stations concerned;

l) that the implementation of additional interference mitigation measures at the radio astronomy station may increase operating costs and reduce observational effectiveness;

m) that conversely, not implementing such measures may impose upon the active space services an additional cost burden and reduction in service capability;

*recognizing*

a) that unwanted emissions produced by stations of the active space services may cause unacceptable interference to stations of the RAS;

b) that, although some unwanted emissions from transmitters on space stations can be controlled through careful design methods and appropriate testing procedures, other unwanted emissions, such as narrowband spurious emissions, generated by uncontrollable and/or unpredictable physical mechanisms, may only be detected after the spacecraft is launched;

c) that there is an uncertainty in the pre-launch assessment of the levels of unwanted emissions;

d) that it is necessary to ensure an equitable sharing of burden for achieving compatibility between the active space services and the RAS;

e) that for those cases where difficulties are encountered in meeting the values in the Annex, a consultation procedure could be used to resolve the difficulties,

*resolves*

Formatted: Font: **Italic**

Deleted: e

Deleted: f

Deleted: g

Deleted: commendation

Formatted: **Highlight**

Deleted: l

Deleted: 633

Deleted: h

Deleted: passive

Deleted: i

Deleted: j

Deleted: k

Deleted: l

Deleted: m

Deleted: ) that studies for some of the band-pairs listed in Recommendation ITU-R SM.1633 are still in progress,¶

Formatted: Font: **Italic**

1 that an administration takes all reasonable steps to ensure that any space station or satellite system being designed and constructed to operate in the bands in the Annex 1 meet the values given therein at any radio astronomy station operating in the corresponding bands identified in this Annex;

Deleted: s  
Formatted: Not Highlight

2 that in the event that during construction and prior to launch it is determined that, after having considered all reasonable means, the unwanted emissions from the space station cannot meet the values given in the Annex 1, the administration that notified the satellite system contacts, as soon as possible, the administration operating the radio astronomy station to confirm that resolves 1 has been fulfilled, and the concerned administrations enter into a consultation process in order to identify all practicable steps with a view to achieving a mutually acceptable solution;

Deleted: space station

3 that in the event, following the space station launch, an administration operating a radio astronomy station determines that, due to unexpected circumstances, a space station or satellite system does not meet the values for unwanted emissions given in the Annex 1 at that radio astronomy station, it contacts the administration that notified the satellite system so that the administration that notified the satellite system confirms that resolves 1 has been fulfilled, and the concerned administrations enter into a consultation process in order to identify further steps with a view to achieving a mutually acceptable solution;

Deleted: space station

Deleted: space station

4 that the radio astronomy stations to be taken into account in applying resolves 1, 2 and 3 are those which are operating in the frequency band(s) identified in the Annex 1 and which are notified before the date of reception of the advance publication information of the satellite system to which this Resolution applies;

Deleted: space station

5 that the satellite system to be considered in the application of the above resolves are those designed to operate in the space service frequency bands listed in the Tables of Annex 1 for which advance publication information (API) is received by the Bureau following on 1<sup>st</sup> January 2005 or the entry into force of the Final Acts of this conference as specified in these Tables;

Deleted: space stations

Formatted: Font: Italic

Formatted: Superscript

6 that the objective of the consultation process in resolves 1, 2 and 3 is to achieve a mutually acceptable solution, using as guidance the Report ITU-R SM.2091 and any other ITU-R Recommendations deemed relevant by the concerned administrations;

Deleted: commendation

Formatted: Highlight

7 that the Bureau shall make no examination or finding with respect to this Resolution under either Article 9 or 11,

Deleted: 1633

#### *invites administrations*

1 to take all appropriate and practicable steps, from the design phase onward, to ensure that unwanted emissions are minimized from space stations that are planned to operate in one or more space service allocations, in order to avoid exceeding the threshold levels of unwanted emissions identified in the Annex 1 at any radio astronomy station;

2 to take all practicable steps, from the design phase onward, to minimize the sensitivity of radio astronomy stations to interference and to take into account the need to implement interference mitigation measures.

## ANNEX 1 TO RESOLUTION 739 (WRC-07)

### Unwanted emission threshold levels

Deleted: 3

Formatted: Font: 14 pt, Not Bold

The unwanted emission threshold levels applicable to geostationary space stations are given in Table 1-1 in terms of power flux-density (pfd) in a reference bandwidth produced at a radio astronomy station by any geostationary space station.

In Table 1-1 the unwanted emission threshold levels given in the fourth, sixth and eighth columns (associated with the reference bandwidth contained in the adjacent columns) should be met by any geostationary space stations operating in the bands indicated in the second column at the radio astronomy station operating in the band mentioned in the third column.

The unwanted emission threshold levels applicable to space stations of non-geostationary systems are given in Table 1-2 in terms of the equivalent power flux-density (epfd), produced at a radio astronomy station in a reference bandwidth by all non-geostationary space stations in visibility of the considered radioastronomy station, not to be exceeded during a given percentage of time, over the whole sky.

In Table 1-2 the epfd value given in the fourth, sixth and eighth columns (associated with the reference bandwidths contained in the adjacent column) should be met by non-geostationary space systems operating in the bands indicated in the second column at the radio astronomy station operating in the band mentioned in the third column. The epfd value at a given radio astronomy station shall be evaluated by using the antenna pattern and the RAS maximum antenna gain given in Recommendation ITU-R RA.1631. Guidance on the calculation of epfd can be found in Recommendations ITU-R S.1586 and ITU-R M.1583. The elevation angles of the radio astronomy stations to be taken into account in the epfd calculation are those higher than the minimum elevation angle  $\theta_{min}$  of the radio telescope. In the absence of such information a value of  $5^\circ$  shall be taken. The percentage of time during which the epfd level shall not be exceeded is mentioned in Note (1) of Table 1-2.

Deleted: stations

The unwanted emission threshold levels applicable to any space station of non-geostationary systems in the RNSS are given in Table 1-3 in terms of power flux-density (pfd) in a reference bandwidth produced at a radio astronomy station by any non-geostationary space station.

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

In Table 1-3 the unwanted emission threshold levels given in the fourth, sixth and eighth columns (associated with the reference bandwidth contained in the adjacent columns) should be met by any non-geostationary space station operating in the bands indicated in the second column at the radio astronomy station operating in the band mentioned in the third column.

Formatted: Not Highlight

TABLE 1-1

pfd thresholds for unwanted emissions from geostationary space stations at a radio astronomy station

Space service	Space service bands	Radio astronomy band	Single dish continuum		Single dish spectral lines		VLBI		Condition of application API is received by the Bureau following the entry into force of the Final Acts of:
			pfd <sup>(1)</sup>	Reference bandwidth	pfd <sup>(1)</sup>	Reference bandwidth	pfd <sup>(1)</sup>	Reference bandwidth	
			MHz	MHz	dB(W/m <sup>2</sup> )	MHz	dB(W/m <sup>2</sup> )	kHz	
MSS (s-to-E)	387 – 390	322 – 328.6	-189	6.6	-204	10	-177	10	WRC-07
BSS	620 – 790	608 – 614	-185	6	NA	NA	-172	10	WRC-07
BSS	1 452 – 1 492	1 400 – 1 427	-180	27	-196	20	-166	20	01/01/2005
MSS (s-to-E)	1 525 – 1 559	1 610.6 – 1 613.8	NA	NA	-194	20	-166	20	01/01/2005
MSS (s-to-E)	1 613.8 – 1 626.5	1 610.6 – 1 613.8	NA	NA	-194	20	-166	20	WRC-07
RNSS (s-to-E)	1 559 – 1 610	1 610.6 – 1 613.8	NA	NA	-194	20	-166	20	WRC-07
BSS	2 655 – 2 670	2 690 – 2 700	-177	10	NA	NA	-161	20	01/01/2005
FSS (s-to-E)	2 670 – 2 690	2690-2700 (in Regions 1 and 3)	-177	10	NA	NA	-161	20	01/01/2005
	GHz	GHz	-	-	-	-	-	-	
BSS	21.4-22.0	22.21-22.5	-146	290	-162	250	-128 <sup>(2)</sup>	250	WRC-07 <sup>(2)</sup>

NA: Not applicable, measurements of this type are not made in this band.

(1) Integrated over the reference bandwidth with an integration time of 2 000 s.

(2) This pfd threshold applicable for the protection for VLBI observations shall apply for any space stations of geostationary system of the relevant space services for which API was received by Bureau after 1<sup>st</sup> January 2005.

Deleted: <sup>(1)</sup>

Formatted ... [1]

Formatted Table ... [2]

Formatted ... [3]

Formatted ... [4]

Deleted: <sup>2</sup>...

Formatted ... [5]

Formatted ... [6]

Formatted ... [7]

Formatted ... [8]

Formatted Table ... [9]

Formatted ... [10]

Deleted: -147

Formatted ... [11]

Formatted ... [12]

Formatted ... [13]

Formatted ... [14]

Deleted: -143

Formatted ... [15]

Formatted ... [16]

Formatted ... [17]

Formatted ... [18]

Deleted: (s-to-E)

Formatted ... [19]

Formatted ... [20]

Formatted ... [21]

Formatted ... [22]

Formatted ... [23]

Formatted ... [24]

Formatted ... [25]

Formatted ... [26]

Formatted ... [27]

Formatted ... [28]

Formatted ... [29]

Formatted ... [30]

Formatted ... [31]

Deleted: (s-to-E)

Formatted ... [32]

Formatted ... [33]

Deleted: NR

Formatted ... [34]

Formatted ... [35]

Formatted ... [36]

Formatted ... [37]



**TABLE 1-2**  
**epfd thresholds\* for unwanted emissions from non-GSO satellite systems at a radio astronomy station**

Space service	Space service bands	Radio astronomy band	Single dish continuum		Single dish spectral lines		VLBI		Condition of application: The API is received by the Bureau following the entry into force of the Final Acts of:
			epfd <sup>(1)</sup>	Reference bandwidth	epfd <sup>(1)</sup>	Reference bandwidth	epfd <sup>(1)</sup>	Reference bandwidth	
	MHz	MHz	dB(W/m <sup>2</sup> )	MHz	dB(W/m <sup>2</sup> )	kHz	dB(W/m <sup>2</sup> )	kHz	
MSS (s-to-E)	137 – 138	150.05 – 153	-238	2.95	NA	NA	NA	NA	WRC-07
MSS (s-to-E)	387 – 390	322 – 328.6	-240	6.6	-255	10	-228	10	WRC-07
MSS (s-to-E)	400.15 – 401	406.1 – 410	-242	3.9	NA	NA	NA	NA	WRC-07
BSS (s-to-E)	620 – 790	608 – 614	-241	6	NA	NA	-229	10	WRC-07
MSS (s-to-E)	1 525 – 1 559	1 400 – 1 427	-243	27	-259	20	-229	20	WRC-07
MSS (s-to-E)	1 525 – 1 559	1 610.6 – 1 613.8	NA	NA	-258	20	-230	20	WRC-07
MSS (s-to-E)	1 613.8 – 1 626.5	1 610.6 – 1 613.8	NA	NA	-258	20	-230	20	01/01/2005

NA: Not applicable, measurements of this type are not made in this band.

\* These epfd thresholds should not be exceeded for more than 2% of time.

<sup>(1)</sup> Integrated over the reference bandwidth with an integration time of 2 000 s.

- Formatted ... [42]
- Formatted ... [43]
- Formatted ... [44]
- Deleted: <sup>(1)</sup>
- Formatted ... [45]
- Formatted ... [46]
- Formatted ... [47]
- Formatted Table ... [48]
- Deleted: <sup>2</sup>
- Formatted ... [49]
- Deleted: <sup>2</sup>
- Formatted ... [50]
- Deleted: <sup>2</sup>
- Formatted ... [51]
- Formatted ... [52]
- Formatted ... [53]
- Formatted ... [54]
- Formatted ... [55]
- Formatted ... [56]
- Formatted ... [57]
- Formatted ... [58]
- Deleted: -198
- Formatted ... [59]
- Formatted ... [60]
- Formatted ... [61]
- Formatted ... [62]
- Formatted ... [63]
- Formatted ... [64]
- Deleted: -199
- Formatted ... [65]
- Formatted ... [66]
- Formatted ... [67]
- Formatted ... [68]
- Formatted ... [69]
- Formatted ... [70]
- Formatted ... [71]
- Formatted ... [72]
- Formatted ... [73]
- Formatted ... [74]
- Formatted ... [75]
- Formatted ... [76]
- Formatted ... [77]
- Formatted ... [78]
- Formatted ... [79]

**TABLE 1-3**  
pfd thresholds for unwanted emissions from any space station of non-GSO satellite systems at a radio astronomy station

<u>Space service</u>	<u>Space service bands</u>	<u>Radio astronomy band</u>	<u>Single dish continuum</u>		<u>Single dish spectral lines</u>		<u>VLBI</u>		<u>Condition of application:</u> The API is received by the Bureau following the entry into force of the Final Acts of: <u>WRC-07</u>
	<u>MHz</u>	<u>MHz</u>	<u>pfd<sup>(1)</sup></u> <u>dB(W/m<sup>2</sup>)</u>	<u>Reference bandwidth</u> <u>MHz</u>	<u>pfd<sup>(1)</sup></u> <u>dB(W/m<sup>2</sup>)</u>	<u>Reference bandwidth</u> <u>kHz</u>	<u>pfd<sup>(1)</sup></u> <u>dB(W/m<sup>2</sup>)</u>	<u>Reference bandwidth</u> <u>kHz</u>	
<u>RNSS (s-to-E)</u>	<u>1 559 - 1 610</u>	<u>1 610.6 – 1 613.8</u>	<u>NA</u>	<u>NA</u>	<u>-194</u>	<u>20</u>	<u>-166</u>	<u>20</u>	

NA: Not applicable, measurements of this type are not made in this band.

(1) Integrated over the reference bandwidth with an integration time of 2 000 s.

*Reason: The result of studies in relation to Resolution 740 (WRC-03) should be considered WRC-07 in order to review and update, if appropriate, the tables of threshold levels for consultation in the Annex of Resolution 739 (WRC-03) (see “resolves 2” of Resolution 740 (WRC-03)).*

- Formatted: Not Highlight
- Formatted: Not Highlight
- Formatted: Font: Not Bold
- Formatted: Font: Bold
- Formatted: Font: 12 pt, Not Highlight
- Formatted: Font: Bold
- Formatted: Font: 12 pt, Not Highlight
- Formatted: Centered
- Formatted: Font: 12 pt, Not Highlight
- Formatted: Not Highlight
- Formatted: Centered
- Formatted: Font: 11 pt
- Formatted: Font: 11 pt, Not Highlight
- Formatted: Font: 11 pt, Not Highlight
- Formatted: Font: 11 pt, Not Highlight

**RESOLUTION 740 (WRC-03)**

**Future compatibility analyses between the radio astronomy service and active space services in certain adjacent and nearby frequency bands**

*Reasons: Studies have been completed for all frequency band pairs contained in Resolution 740 for which contributions have been received.*

Page 8: [1] Formatted	G. LAPIERRE	23-02-2007 19:19:00
<b>Font: 11 pt</b>		
Page 8: [2] Change	G. LAPIERRE	23-02-2007 19:22:00
<b>Formatted Table</b>		
Page 8: [3] Formatted	G. LAPIERRE	23-02-2007 19:19:00
<b>Font: Not Bold</b>		
Page 8: [4] Formatted	G. LAPIERRE	23-02-2007 19:04:00
<b>Table_text, Centered</b>		
Page 8: [5] Deleted	G. LAPIERRE	23-02-2007 18:25:00
2		
Page 8: [5] Deleted	G. LAPIERRE	23-02-2007 18:25:00
2		
Page 8: [5] Deleted	G. LAPIERRE	23-02-2007 18:25:00
2		
Page 8: [6] Formatted	G. LAPIERRE	23-02-2007 19:05:00
<b>Font: Not Bold</b>		
Page 8: [7] Formatted	G. LAPIERRE	23-02-2007 18:24:00
<b>Centered</b>		
Page 8: [8] Formatted	G. LAPIERRE	23-02-2007 19:19:00
<b>English (Canada), Not Superscript/ Subscript</b>		
Page 8: [9] Change	G. LAPIERRE	23-02-2007 19:22:00
<b>Formatted Table</b>		
Page 8: [10] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Superscript</b>		
Page 8: [10] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 8: [10] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: Not Bold</b>		
Page 8: [11] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: Not Bold</b>		
Page 8: [12] Formatted	G. LAPIERRE	23-02-2007 18:24:00
<b>Centered</b>		
Page 8: [13] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt, Not Bold</b>		
Page 8: [13] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Not Highlight</b>		
Page 8: [14] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Superscript</b>		
Page 8: [14] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 8: [14] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: Not Bold</b>		
Page 8: [15] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 8: [15] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: Not Bold</b>		

Page 8: [16] Formatted Centered	G. LAPIERRE	23-02-2007 18:24:00
Page 8: [17] Formatted Font: 11 pt, Not Highlight	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [17] Formatted Not Highlight	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [18] Formatted Font: 11 pt	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [19] Formatted English (U.K.), Superscript	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [20] Formatted Font: 11 pt	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [21] Formatted Font: Not Bold	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [22] Formatted Centered	G. LAPIERRE	23-02-2007 18:24:00
Page 8: [23] Formatted Font: 11 pt, Not Highlight	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [23] Formatted Not Highlight	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [24] Formatted Font: 11 pt	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [24] Formatted English (U.K.), Superscript	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [25] Formatted Font: 11 pt	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [25] Formatted English (U.K.), Superscript	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [26] Formatted Font: 11 pt	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [27] Formatted Font: Not Bold	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [28] Formatted Centered	G. LAPIERRE	23-02-2007 18:24:00
Page 8: [29] Formatted Font: 11 pt, Not Highlight	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [29] Formatted Not Highlight	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [30] Formatted Font: 11 pt	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [30] Formatted English (U.K.), Superscript	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [31] Formatted Font: 11 pt, Not Bold	G. LAPIERRE	13-03-2007 11:16:00
Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00

Font: 11 pt, Not Bold

Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt, Not Bold

Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt, Not Bold

Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt, Not Bold

Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt, Not Bold

Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt, Not Bold

Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt, Not Bold

Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt, Not Bold

Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Not Highlight

Page 8: [31] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt, Not Highlight

Page 8: [32] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

English (U.K.), Superscript

Page 8: [33] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt

Page 8: [34] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Not Highlight

Page 8: [34] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt

Page 8: [35] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: Not Bold

Page 8: [36] Formatted	G. LAPIERRE	23-02-2007 18:24:00
------------------------	-------------	---------------------

Centered

Page 8: [37] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt, Not Highlight

Page 8: [37] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Not Highlight

Page 8: [38] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt

Page 8: [38] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

English (U.K.), Superscript

Page 8: [39] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt

Page 8: [39] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Superscript

Page 8: [40] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt

Page 8: [41] Formatted	G. LAPIERRE	13-03-2007 11:16:00
Font: 11 pt		
Page 9: [42] Formatted	kai	13-04-2006 12:18:00
Font: Not Bold, English (U.S.)		
Page 9: [43] Formatted	G. LAPIERRE	23-02-2007 18:12:00
Font: Bold		
Page 9: [44] Formatted	G. LAPIERRE	23-02-2007 18:12:00
Centered		
Page 9: [45] Formatted	G. LAPIERRE	23-02-2007 18:28:00
Tabs: 63 pt, Left		
Page 9: [46] Formatted	G. LAPIERRE	23-02-2007 18:49:00
Centered		
Page 9: [47] Formatted	G. LAPIERRE	23-02-2007 18:13:00
Font: Bold		
Page 9: [48] Change	G. LAPIERRE	23-02-2007 19:21:00
Formatted Table		
Page 9: [49] Formatted	G. LAPIERRE	13-03-2007 10:58:00
Font: Bold		
Page 9: [50] Formatted	G. LAPIERRE	13-03-2007 10:58:00
Font: Bold		
Page 9: [51] Formatted	G. LAPIERRE	13-03-2007 10:58:00
Font: Bold		
Page 9: [52] Formatted	G. LAPIERRE	23-02-2007 18:49:00
Centered		
Page 9: [53] Formatted	G. LAPIERRE	23-02-2007 19:19:00
Not Highlight		
Page 9: [54] Formatted	G. LAPIERRE	13-03-2007 11:16:00
Font: 11 pt		
Page 9: [54] Formatted	G. LAPIERRE	13-03-2007 11:16:00
Superscript		
Page 9: [54] Formatted	G. LAPIERRE	13-03-2007 11:16:00
Font: 11 pt		
Page 9: [55] Formatted	G. LAPIERRE	13-03-2007 11:16:00
Font: 11 pt		
Page 9: [56] Formatted	G. LAPIERRE	23-02-2007 18:28:00
Centered		
Page 9: [57] Formatted	G. LAPIERRE	13-03-2007 11:16:00
Font: 11 pt		
Page 9: [58] Formatted	G. LAPIERRE	13-03-2007 11:16:00
Superscript		
Page 9: [58] Formatted	G. LAPIERRE	13-03-2007 11:16:00
Font: 11 pt		
Page 9: [59] Formatted	G. LAPIERRE	23-02-2007 18:28:00
Centered		
Page 9: [60] Formatted	G. LAPIERRE	13-03-2007 11:16:00
Font: 11 pt		

Page 9: [61] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Superscript</b>		
Page 9: [61] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [62] Formatted	G. LAPIERRE	23-02-2007 18:28:00
<b>Centered</b>		
Page 9: [63] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [64] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Superscript</b>		
Page 9: [64] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [65] Formatted	G. LAPIERRE	23-02-2007 18:28:00
<b>Centered</b>		
Page 9: [66] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [67] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Superscript</b>		
Page 9: [67] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [68] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Not Highlight</b>		
Page 9: [68] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [69] Formatted	G. LAPIERRE	23-02-2007 18:28:00
<b>Centered</b>		
Page 9: [70] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [71] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Superscript</b>		
Page 9: [71] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [72] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [73] Formatted	G. LAPIERRE	23-02-2007 18:28:00
<b>Centered</b>		
Page 9: [74] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [75] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt, Not Highlight</b>		
Page 9: [75] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [76] Formatted	G. LAPIERRE	13-03-2007 11:16:00
<b>Font: 11 pt</b>		
Page 9: [76] Formatted	G. LAPIERRE	13-03-2007 11:16:00



## Superscript

Page 9: [76] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt

Page 9: [77] Formatted	G. LAPIERRE	13-03-2007 11:16:00
------------------------	-------------	---------------------

Font: 11 pt

Page 9: [78] Formatted	G. LAPIERRE	23-02-2007 18:28:00
------------------------	-------------	---------------------

Centered

Page 9: [79] Formatted	G. LAPIERRE	23-02-2007 18:38:00
------------------------	-------------	---------------------

Font: 11 pt

Page 9: [80] Deleted	G. LAPIERRE	23-02-2007 18:28:00
----------------------	-------------	---------------------

(1) The reference bandwidth used for spectral line observations has also been used as reference bandwidth for VLBI observations. In VLBI bands, where no spectral line observations are conducted, the reference bandwidth for VLBI observations has been determined using the assumption of Recommendation ITU-R RA.769 for a typical spectrometer channel (3 km/s).

Page 9: [80] Deleted	G. LAPIERRE	23-02-2007 18:28:00
----------------------	-------------	---------------------

2

Page 9: [81] Formatted	G. LAPIERRE	23-02-2007 19:20:00
------------------------	-------------	---------------------

English (Canada)