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| **Radiocommunication Advisory Group Geneva, 8-10 June 2011** |  |
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|  | **Document RAG11-1/23-E** |
| **1 June 2011** |
| **Original: English only** |
| Chairman, Study Group 5 | |
| Study resULt addressed in Recommendation iTU-R F.1502 responding to Resolution 124 (Rev.WRC-2000) | |
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# 1 Background

No. **5.462A** of the Radio Regulations specifies provisional power flux-density limits in the band 8025-8400 MHz for the Earth exploration-satellite service (EESS) using geostationary satellites in Regions 1 and 3 (except for Japan) , which are different from (more stringent to the EESS space stations than) the limits given in Table **21-4** in the RR. It is also stated in the same footnote that these pfd values are subject to study under Resolution **124 (WRC-97)**.

Resolution **124 (WRC-97)** approved at the WRC-97 invited the ITU-R to study, as a matter of urgency, the required pfd limits to be applied to the GSO EESS space stations in the band 8025‑8400 MHz where orbital avoidance had not been implemented by the fixed service sharing the same band.

This study was efficiently conducted by the former Study Group 9 in close collaboration with Study Group 7. The result was contained in Recommendation ITU-R F.1502, which was approved at the RA-2000. Following this result, WRC-2000 approved a revised version of Resolution 124, i.e. the current Resolution **124 (Rev. WRC-2000**), which resolved to invite a future competent world radiocommunication conference to review No.**5.462A**, taking into account Recommendation ITU-R F.1502 and to take appropriate action.

After the WRC-2000, however, no action was taken by the later Conferences (WRC-03 and WRC‑07). Therefore, the provisional pfd mask in No **5.462A** and the associated text reading “These pfd values are subject to study under Resolution **124 (WRC-97)**” are still valid, creating an inconsistency with the *resolves* part in Resolution **124 (Rev.WRC-2000)**.

**2 Suggested course of action**

As 11 years have passed since the development of Recommendation ITU-R F.1502, the Chairman of Study Group 5 is concerned that it may not be appropriate to leave the fruitful study result in this Recommendation yet to be reflected in the Radio Regulations. A possible way to solve this situation may be that the BR Director’s Report to the next WRC would include this issue in relation to Agenda item 8.1.2 (Difficulties or inconsistencies encountered in the application of the Radio Regulations) requesting possible regulatory action by the Conference as *resolved* in Resolution **124 (Rev. WRC-2000)**.

The RAG meeting in June 2011 is requested to consider this issue and provide appropriate advice to the Director.

The relevant texts are provided in Annexes 1 to 4 for information.

**Annexes: 4**

**Annex 1**

**Reproduction of the text in No.5.462A in the RR**

5.462A In Regions 1 and 3 (except for Japan), in the band 8 025-8 400 MHz, the Earth exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following provisional values for angles of arrival (θ), without the consent of the affected administration:

−174 dB (W/m2) in a 4 kHz band for  0 ≤ θ <    5º  
 –174 + 0.5 (θ – 5) dB (W/m2) in a 4 kHz band for  5º ≤ θ < 25º  
 –164 dB (W/m2) in a 4 kHz band for  25º ≤ θ ≤ 90º

These values are subject to study under Resolution **124 (WRC-97)[[1]](#footnote-1)\***.     (WRC-97)

**Annex 2**

RESOLUTION 124 (Rev.WRC-2000)

Protection of the fixed service in the frequency band 8 025-8 400 MHz  
sharing with geostationary-satellite systems of the Earth  
exploration-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

*a)* that prior to WRC-97, the band 8 025-8 400 MHz was allocated to the Earth exploration-satellite service (space-to-Earth) on a secondary basis in Regions 1 and 3, except for those countries listed in former No. **5.464**;

*b)* that the power flux-density limits given in Table **21-4** of Article **21** apply to emissions from space stations of the Earth exploration-satellite service (space-to-Earth);

*c)* that, for those administrations where the secondary allocation applied before WRC‑97, geostationary orbital avoidance was not required for the fixed service and, therefore, the power flux-density limits given in Table **21-4** of Article **21** may give rise to excessive interference to the fixed service;

*d)* that WRC‑97 adopted provisional power flux-density limits as specified in No. **5.462A** which are lower than those shown in Table **21-4** of Article **21** to protect the fixed service;

*e)* that, prior to WRC‑97, no studies had been conducted in this frequency band by ITU‑R on the power flux-density values to apply to space stations of geostationary-satellite systems in the Earth exploration-satellite service where geostationary orbital avoidance had not been implemented by stations of the fixed service,

considering further

*a)* that the band 8 025-8 400 MHz is used extensively by the fixed service in accordance with ITU‑R radio-frequency channel arrangements for the 8 GHz band (see Recommendation ITU‑R F.386) and is also used by some countries for television outside broadcast applications;

*b)* that Recommendation ITU‑R F.1502, which was developed in response to Resolution **124 (WRC‑97)** and approved by the Radiocommunication Assembly (Istanbul, 2000), recommends power flux-density limits different from those in No. **5.462A**,

resolves

to invite a future competent world radiocommunication conference to review No. **5.462A**, taking into account Recommendation ITU‑R F.1502, and to take appropriate action.

**Annex 3**

RECOMMENDATION ITU-R F.1502[[2]](#footnote-2)\*, [[3]](#footnote-3)\*\*

Protection of the fixed service in the frequency band 8 025-8 400 MHz  
sharing with geostationary-satellite systems of the Earth  
exploration-satellite service (space-to-Earth)

(Question ITU-R 113/9)

(2000)

The ITU Radiocommunication Assembly,

considering

a) that prior to WRC-97, the band 8 025-8 400 MHz was allocated to the Earth exploration-satellite service (EESS) (space-to-Earth) on a secondary basis in Regions 1 and 3, except for those countries listed in No. 5.464 of the Radio Regulations (RR);

b) that the power flux-density (pfd) limits given in Table 21-4 of RR Article 21 apply to emissions from space stations of the EESS (space-to-Earth);

c) that, for those administrations where the secondary allocation applied before WRC‑97, geostationary orbital avoidance was not required for the fixed service and, therefore, the pfd limits given in Table 21‑4 of the RR will give rise to excessive interference to the fixed service;

d) that provisional pfd limits in RR No. 5.462A are lower than those shown in Table 21‑4 of the RR to protect the fixed service;

e) that the band 8 025-8 400 MHz is used extensively by the fixed service in accordance with ITU‑R channel arrangements for the 8 GHz band (see Recommendation ITU‑R F.386) and is also used by some countries for television outside broadcast applications;

f) that it is expected that the main application for the EESS in this band is for non-geostationary satellites (non‑GSO), however there may be some geostationary satellite (GSO) applications;

g) that WRC‑97, in its Resolution 124 (WRC‑97), resolved to invite ITU‑R to study, as a matter of urgency, the required pfd limits to be applied to space stations of GSO systems in the EESS (space-to-Earth) in the frequency band 8 025-8 400 MHz where orbital avoidance has not been implemented by the fixed service sharing the band,

recommends

**1** that, in the frequency band 8 025-8 400 MHz shared between GSO systems in the EESS (space-to-Earth) and radio-relay systems in the fixed service, the spectral pfd produced at the surface of the Earth (Regions 1 and 3 only) by emissions from a satellite, for all conditions and methods of modulation, should not exceed (see Notes 1 and 2):

–135 dB(W/m2) in any 1 MHz band for  0 ≤ θ <  5

–135  0.5(θ – 5) dB(W/m2) in any 1 MHz band for  5 ≤ θ  25

–125 dB(W/m2) in any 1 MHz band for 25 ≤ θ ≤ 90

where  is the angle of arrival of the radio-frequency wave (degrees above the horizontal plane);

**2** that the aforementioned limits relate to the pfd and angles of arrival which would be obtained under free-space propagation conditions.

NOTE 1 – The pfd limits in *recommends* 1 have been derived in response to the request stated in Resolution 124 (WRC‑97) and are intended for consideration by a future world radio­communication conference which may wish to use this Recommendation in order to replace the limits contained in RR No. 5.462A. For Region 2 and for non-GSO systems in Regions 1 and 3 in the band 8 025-8 400 MHz, the pfd limits in Table 21-4 of the RR will continue to apply.

NOTE 2 – In deriving the pfd limits in *recommends* 1, consideration was given to the fact that many fixed wireless systems in Regions 1 and 3 had been established before 1997 when GSO orbital avoidance was not required and, therefore, it was found that if the pfd limits given in Table 21‑4 of the RR are applied without change, an excessive interference will be caused to fixed wireless systems at low angles of arrival.

**Annex 4**

**CPM Report to the WRC-12 (Chapter 6, Agenda item 4)**

| Res. No. | Subject | Remark | Possible follow-up |
| --- | --- | --- | --- |
| 124 | Sharing FS/EESS in 8 GHz | Still relevant; it requested that ITU-R study required pfd limits for the GSO EESS in the band 8 025-8 400 MHz; the ITU-R studied this and approved Recommendation ITU-R F.1502; WRC‑2000 revised this Resolutionand considering that Recommendation ITU-R F.1502 contains pfd limits different from those referred to in No. **5.462A**, it resolved to invite a future WRC to review No. **5.462A**; as no further studies on the issue are expected, such a review could be considered under Agenda item 8.1.2 of WRC-12. | NOC |
| SUP (after the review of No.5.462A) |

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1. \* *Note by the Secretariat:*  This Resolution was revised by WRC-2000. [↑](#footnote-ref-1)
2. \* This Recommendation should be brought to the attention of Radiocommunication Study Group 7. [↑](#footnote-ref-2)
3. \*\* Radiocommunication Study Group 9 made editorial amendments to this Recommendation in 2004. [↑](#footnote-ref-3)