

**PLENARY MEETING**

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**World Broadcasting Unions – technical committee (WBU-TC)<sup>1</sup>**

**PROPOSALS TO AMEND DRAFT CPM REPORT ON WRC-12 AGENDA ITEMS  
1.4, 1.13, 1.15, 1.17, AND 1.22**

As the technical arm of the World Broadcasting Unions, the Technical Committee (WBU-TC) is responsible for technical broadcasting issues of importance to the members of the World Broadcasting Unions. The work of the WBU-TC focuses on issues and areas to which all Unions are welcome to contribute to, and which materially affect broadcasting in all regions of the world.

The WBU-TC has been following, with great interest, the discussions in ITU-R Working Parties concerning the development of CPM text on the WRC-12. In general, the WBU-TC is concerned with the need to provide spectrum to the broadcasting services and methods to protect broadcasting services from potential interference that may be caused by emissions from other radiocommunication services.

This WBU-TC contribution outlines the WBU views on the CPM Draft Report dealing with WRC-12 Agenda items and makes several proposals for modifications to the CPM text as shown in the following pages.

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<sup>1</sup> The WBU-TC is the standing technical body of the World Broadcasting Unions, whose members are:

- Asia-Pacific Broadcasting Union (ABU)
- Arab States Broadcasting Union (ASBU)
- The African Union of Broadcasting (AUB)
- Caribbean Broadcasting Union (CBU)
- European Broadcasting Union (EBU)
- International Association of Broadcasting (IAB)
- North American Broadcasters Association (NABA)
- Organizacion de Telecomunicaciones Iberoamericanas (OTI)

## AGENDA ITEM 1.4

*1.4 to consider, based on the results of ITU-R studies, any further regulatory measures to facilitate introduction of new aeronautical mobile (R) service (AM(R)S) systems in the bands 112-117.975 MHz, 960-1 164 MHz and 5 000-5 030 MHz in accordance with Resolutions 413 (Rev.WRC-07), 417 (WRC-07) and 420 (WRC-07);*

At WRC-07 the allocation to the AM(R)S in the band 108-112 MHz was further limited only to ground based systems that transmit navigational information in support of air navigation functions, while the band 112-117.975 MHz was opened to all AM(R)S systems subject to Resolution **413 (Rev.WRC-07)**. Studies have been completed on the investigation of any compatibility issues between the analogue broadcasting and AM(R) services that may arise from the introduction of AM(R)S systems in the band 112-117.975 MHz. These studies indicate that no harmful interference will arise from the introduction of AM(R)S systems in the band 112-117.975 MHz into analogue FM broadcasting receivers below 108 MHz and that the both services can operate on a compatible basis. Hence no specific ITU material needs to be developed for the protection of analogue FM broadcasting receivers below 108 MHz from AM(R)S emissions in the band 112-117.975 MHz.

Regarding the compatibility with digital broadcasting service below 108 MHz, the matter will be pursued under traditional ITU-R activities and outside the WRC process. The method to satisfy this part of the Agenda item proposes modification to Resolution **413 (Rev.WRC-07)** in such a way that “*invites ITU-R 1*” is suppressed.

WBU in general supports the conclusions of the CPM Report. However in order to ensure the long term integrity of digital radio broadcasting in the 108-112 MHz band WBU proposes the addition of a new resolves to the example revisions to Resolution 413 (Rev.WRC-07) as outlined in the following.

“Start modifications to the draft CPM report on AI 1.4”

### **1/1.4/1.6.1 Method A: Resolution 413 (Rev.WRC-07) amendment**

MOD

### RESOLUTION 413 (Rev.WRC-12)

Use of the band 108-117.975 MHz by the aeronautical mobile (R) service

The World Radiocommunication Conference (Geneva, 2012),

*considering*

...

*h)* that the WRC-07 has modified the allocation of the band 112-117.975 MHz to the aeronautical mobile (R) services (AM(R)S) in order to make available this frequency band for new AM(R)S systems, and in doing so enabled further technical developments, investments and deployment;

...

*recognizing*

...

b) that, in accordance with Annex 10 to the Convention on International Civil Aviation, all aeronautical systems must meet standards and recommended practices (SARPs) requirements;

...

*resolves*

...

2 that any AM(R)S systems planned to operate in the frequency band 108-117.975 MHz shall, as a minimum, meet the FM broadcasting immunity requirements contained in Annex 10 to the Convention on International Civil Aviation for existing aeronautical radionavigation systems operating in this frequency band;

3 that any AM(R)S systems operating or planned to operate in the frequency band 108-117.975 MHz band shall place no additional constraints on digital broadcasting systems operating in the broadcasting service in the 87-108 MHz band;

...

5 that any AM(R)S operating in the frequency band 108-117.975 MHz shall meet SARPs requirements published in Annex 10 to the Convention on International Civil Aviation;

...

...

*invites ITU-R*

to study any compatibility issues between the broadcasting and AM(R) services in the band 108-117.975 MHz that may arise from the introduction of appropriate digital sound broadcasting systems, described in Recommendation ITU-R BS.1114, and to develop new or revised ITU-R Recommendations as appropriate,

“End modifications to the draft CPM report on AI 1.4”.

## AGENDA ITEM 1.13

(WP 4A / WP 5C, WP 6B, (WP 3M), (WP 4B), (WP 5A), (WP 6A), (WP 7D))

*1.13 to consider the results of ITU-R studies in accordance with Resolution 551 (WRC-07) and decide on the spectrum usage of the 21.4-22 GHz band for the broadcasting-satellite service and the associated feeder-link bands in Regions 1 and 3;*

Resolution 551 (WRC-07): *Use of the band 21.4-22 GHz for broadcasting-satellite service and associated feeder-link bands in Regions 1 and 3*

“Start modification to the draft CPM text on AI1.13”

### 5/1.13/2 Background

WARC-92 allocated the band 21.4-22.0 GHz in Regions 1 and 3 to the BSS to be implemented after 1 April 2007. The use of the band since 1992 was subject to an interim procedure in accordance with Resolution 525 (WARC-92 and Rev.WRC-03).

In the interim procedures of Resolution 525 (Rev.WRC-07) it is indicated that after 1 April 2007 all services other than the BSS in the band 21.4-22.0 GHz in Regions 1 and 3 operating in accordance with the Table of Frequency Allocations may operate subject to not causing harmful interference to BSS (high-definition television (HDTV)) systems nor claiming protection from such systems.

Resolution 551 (WRC-07) *resolves* that ITU-R continue technical and regulatory studies on harmonization of spectrum usage, including planning methodologies, coordination procedures or other procedures, and BSS technologies, in preparation for WRC-12, in the 21.4-22 GHz band and the associated feeder-link bands in Regions 1 and 3, taking into account *considering h) and i)*. Resolution 551 (WRC-07) also *resolves* that WRC-12 review the results of the studies and decide the usage of the 21.4-22 GHz band and the associated feeder-link bands in Regions 1 and 3.

ITU-R [Working Party 6B] recognizes that, for Regions 1 and 3, the 21.4-22.0 GHz band will be the most favourable frequency band in which advanced digital satellite broadcasting applications which require larger bandwidth capacity than ever before can be successfully implemented. Those applications include UHDTV (Ultra High Definition Television), 3DTV (Three Dimensional Television), VIS (Digital Multimedia Video Information System), Multi-channel HDTV, LSDI (Large Screen Digital Imagery) and EHRI (Extremely High Resolution Imagery) which have been studied in Study Group 6 to enhance the broadcasting service.

### 5/1.13/4 Analysis of the results of studies

In analysing the results of the studies in preparation for WRC-12 Agenda item 1.13, the issues below were observed:

As of 14 June 2010, for BSS networks in the 21.4-22 GHz band, there were 23 networks for which the information on Resolution 49 (Rev.WRC-07) was received, 19 networks confirmed brought into use, 12 networks recorded in the Master Register, 22 networks at the stage of notification, 229 networks having sent coordination requests and 664 advance publication information submissions

have been received by the Bureau. In making the requisite provisions for the use of the 21.4-22 GHz band, it is essential to set up adequate measures ensuring equitable access to this spectrum for all the countries in Regions 1 and 3.

Review of the parameters/data elements relating to submissions received by the Bureau as of July 2010 under RR Articles 9 and 11 for the frequency band 21.4-22.0 GHz or described in relevant ITU-R Recommendations and Reports indicates that there are a wide range of differences between parameters submitted, e.g. space station e.i.r.p. density (14.3 to 80.6 dB(W/MHz)), receiving earth station antenna diameter (25 cm to 2.5 m) and required C/N (6 to 25 dB).

#### **5/1.13/4.2 Pfd value vs. availability**

The relationship between the power flux-density (pfd) value at the Earth's surface produced by emissions from a space station for BSS and the availability depends mainly on the rain rate intensity and due to the large variations within the ITU-R Regions, it is very difficult to define a unique pfd value for the entire Regions 1 and 3 area. In some cities with low rain rates (e.g. in Europe), a lower pfd value could be sufficient to ensure an adequate availability and no specific mitigation techniques for rain attenuation would need to be developed. Inversely, in some cities with high rain rates (e.g. in equatorial areas and in Region 3), a higher pfd value would be necessary to achieve an adequate availability and some specific mitigation techniques could also be necessary.

#### **5/1.13/4.3 Feeder links**

##### **5/1.13/4.3.1 Flexibility in choice of feeder link band**

To facilitate flexible and efficient spectrum utilization, it is desirable not to have any limitations on the FSS (Earth-to-space) bands which may be used for the associated feeder links. For these feeder-links, availability of a continuous band of 600 MHz for this purpose would be highly desirable, without adversely impacting the spectrum resources used by current satellite systems.

MOD

## **RESOLUTION 49 (Rev.WRC-12)**

### **Administrative due diligence applicable to some satellite radiocommunication services**

...

*resolves*

1 that the administrative due diligence procedure contained in Annex 1 to this Resolution shall be applied as from 22 November 1997 for a satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service, except the broadcasting-satellite service in the band 21.4-22.0 GHz in Regions 1 and 3 for which the advance publication information under No. 9.2B, or for which the request for modifications of the Region 2 Plan under Article 4, § 4.2.1 *b*) of Appendices 30 and 30A that involve the addition of new frequencies or orbit positions, or for which the request for modifications of the Region 2 Plan under Article 4, § 4.2.1 *a*) of Appendices 30 and 30A that extend the service area to another country or countries in addition to the existing service area, or for which the request for additional uses in Regions 1 and 3 under § 4.1 of Article 4 of Appendices 30 and 30A, or for which the submission of information under supplementary provisions applicable to additional uses in the planned bands as defined in Article 2

of Appendix **30B** (Section III of Article 6) has been received by the Bureau from 22 November 1997, or for which submission under Article 6 of Appendix **30B (Rev.WRC-07)** is received on or after 17 November 2007, with the exception of submissions of new Member States seeking the acquisition of their respective national allotments<sup>1</sup> for inclusion in the Appendix **30B** Plan;

#### ANNEX 1 TO RESOLUTION 49 (Rev.WRC-12)

1 Any satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service with frequency assignments that are subject to coordination under Nos. **9.7, 9.11, 9.12, 9.12A** and **9.13** and Resolution **33 (Rev.WRC-03)** , with the exception of broadcasting-satellite service submissions in the band 21.4-22.0 GHz **in Regions 1 and 3,** shall be subject to these procedures.

**Reasons:** Due diligence requirements for BSS networks in the 21.4-22 GHz band will be under the new resolution. Consequently, Resolution **49 (Rev.WRC-12)** will no longer be applicable for BSS networks in this band.

“End modifications to the draft CPM text on AI1.13”.

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<sup>1</sup> See § 2.3 of Appendix **30B (Rev.WRC-07)**.

## AGENDA ITEM 1.15

(WP 5B / WP 5C, WP 6D, (WP 5A), (WP 7B), (WP 7D))

*1.15 to consider possible allocations in the range 3-50 MHz to the radiolocation service for oceanographic radar applications, taking into account the results of ITU-R studies, in accordance with Resolution 612 (WRC-07);*

**Resolution 612 (WRC-07):** *Use of the radiolocation service between 3 and 50 MHz to support high-frequency oceanographic radar operations*

The WBU-TC would like to propose some additional text on draft CPM text under WRC-12 Agenda Item 1.15. Under Agenda item 1.15 Methods A and C provide new primary allocations to RLS in RR Article 5 in all, some, or portions of the HF bands.

The WBU-TC would like to point out that in HF bands some ENG applications as described in ITU-R Recommendation M.1824 are deployed in some administrations in Region 3 for emergency case such as disaster relief and mitigation.

In Section 2/1.15/4 it is reported that regarding ground-wave propagation model Report ITU-R M.[RLS 3-50 MHz SHARING] shows that separation distances between 320 km and 950 km for frequencies below 30 MHz are required in order to protect FS and MS systems from interference from oceanographic radars across sea paths.

Regarding the sky-wave interference path into FS and MS, it is also pointed out that periodic, but manageable interference may occur between that radar and existing fixed and mobile systems.

Although the studies are continued in ITU-R WP5B, WBU-TC believes that since the ENG applications in HF bands must be protected sufficiently in emergency case, taking into account the separation distance of more than hundreds of km it will be desirable that the some ENG bands which are quoted in ITU-R Recommendation M.1824 are excluded from the new primary allocations for RLS from practical point of view.

“Start modifications to the draft CPM report on AI 1.15”

### **2/1.15/5 Methods to satisfy the agenda item**

#### **2/1.15/5.1 Method A**

Add new primary allocations to RLS in RR Article 5 in all, some, or portions of the frequency bands 3 155-3 200 kHz, 4 438-4 650 kHz, 5 060-5 450 kHz, 7 450-8 100 kHz, 9 040-9 400 kHz, 9 900-9 995 kHz, 12 100-12 230 kHz, 13 410-13 570 kHz, 13 870-14 000 kHz, 14 350-14 990 kHz, 15 800-16 350 kHz, 22 855-23 200 kHz, 24 000-24 890 kHz, 25 010-25 070 kHz, 25 210-25 550 kHz, 39-39.986 MHz and 40.02-40.98 MHz. Each allocation would be subject to Resolution 612 (Rev.WRC-12) and a new RR No. 5.A115 would apply to each new allocation.

#### **Advantages:**

- Provides spectrum for operation of oceanographic radar for measurement of coastal surface conditions to support environmental, oceanographic, meteorological, climatological, maritime and disaster relief operations.

- Identifies areas of the spectrum in the range 3 to 50 MHz where oceanographic radars may operate on a shared basis with existing allocated services.
- The level of compatibility with incumbent services is improved through a resolution and footnote, which includes technical and operational constraints.

**Disadvantages:**

- Increases congestion in the bands due to the need for existing allocated users to share spectrum with oceanographic radar locations.
- Some frequency bands are extensively used by terrestrial radiocommunication services in some geographical areas for land and sea applications. Sufficient protection of existing services or stable operation of oceanographic radar in these bands may be difficult.
- May not fully satisfy the oceanographic potential functions for long range observation of sea conditions by limiting the output power of the oceanographic radar in the Resolution.

**2/1.15/5.3 Method C**

Allocate all, some, or portions of the frequency bands 3 155-3 200 kHz, 4 438-4 650 kHz, 5 060-5 450 kHz, 7 450-8 100 kHz, 9 040-9 400 kHz, 9 900-9 995 kHz, 12 100-12 230 kHz, 13 410-13 570 kHz, 13 870-14 000 kHz, 14 350-14 990 kHz, 15 800-16 350 kHz, 22 855-23 200 kHz, 24 000-24 890 kHz, 25 010-25 070 kHz, 25 210-25 550 kHz, 39-39.986 MHz and 40.02-40.98 MHz on primary and/or secondary basis to the RLS. Each new primary allocation could be subject to Resolution **612 (Rev.WRC-12)** and/or a new RR No. **5.A115** would apply to each new primary allocation.

**Advantages:**

- Advantages as found in Method A (2/1.15/5.1) would be appropriate for primary allocations.
- Advantages as found in Method B (2/1.15/5.2) would be appropriate for secondary allocations.

**Disadvantages:**

- Disadvantages as found in Method A (2/1.15/5.1) would be appropriate for primary allocations.
- Disadvantages as found in Method B (2/1.15/5.2) would be appropriate for secondary allocations.

“End modifications to the draft CPM report on AI 1.15”.



## AGENDA ITEM 1.17

(JTG 5-6 / -)

*1.17 to consider results of sharing studies between the mobile service and other services in the band 790-862 MHz in Regions 1 and 3, in accordance with Resolution 749 (WRC-07), to ensure the adequate protection of services to which this frequency band is allocated, and take appropriate action;*

**Resolution 749 (WRC-07):** *Studies on the use of the band 790-862 MHz by mobile applications and by other services*

This part contains the modifications proposed by the WBU-TC to the CPM text on Agenda Item 1.17 (section 3/1.17/6 - Regulatory and procedural considerations). The proposed modifications are highlighted in green in the following pages.

The first modification aims to improve the identification of the mobile stations that should be considered in order to take into account the cumulative effect of interference.

This modification is justified by the fact that the channel bandwidth used by the mobile service may be smaller than a broadcasting channel bandwidth. In this case, the cumulative effect of interference should be assessed by taking into account all the channels of the mobile service which overlap with the concerned broadcasting channel.

The second modification proposes a procedure regarding the possible role of the BR in option II. Option II is described as follows:

“Optional arrangements to take account of a potential impact of the cumulative effect of interference from the MS to the BS. The cumulative effect of interference to the BS from the identified MS could be addressed in a draft Resolution 749 (Rev. WRC-12)”

As this option consists in optional arrangements that the concerned Administrations would decide to apply or not, it is proposed that the BR informs these Administrations about the station(s) generating a cumulative interference exceeding the coordination trigger field strength. This information is intended to help the concerned Administrations to identify the relevant case(s), while leaving to them the freedom to raise the(se) case(s) during the bi or multi-lateral coordination or not. This information does not imply a mandatory coordination of the concerned station(s).

Finally, in order to help the Administrations to consider the cumulative interference when they so wish, it is proposed that the WRC12 tasks the ITU-R to develop an ITU-R Recommendation describing a methodology that administrations could apply in their bi- and multilateral coordination to take account of this cumulative effect of interference.

“Start modifications to the draft CPM report on AI 1.17”

### 3/1.17/2 Background

The services currently allocated in the frequency band 790-862 MHz in Regions 1 and 3 are the BS, FS and MS.

The frequency range 790-862 MHz is also allocated to the ARNS on a primary basis in nineteen countries of Region 1 (RR No. **5.312**).

In Region 3 as well as in a number of countries of Region 1 the band 790-862 MHz has been allocated for MS for many years prior to WRC-07. WRC-07 via footnote RR No. **5.316B**, allocated this band to the mobile, except aeronautical mobile, service on a primary basis for the whole of Region 1 effective from 17 June 2015.

Any new arrangement that may be instituted, needs to protect reception of broadcasting services in the relevant bands, retain ability to expand coverage of broadcasting services with population growth and retain the ability to improved quality services, additional services (e.g., mobile TV with current ITU-R standards), future broadcasting services such as 3DTV and broadcasting ancillary services (BAS) such as use of wireless microphones.

In accordance with RR Nos. **5.316** and **5.316A** sixty-seven Region 1 administrations have a primary MS allocation, which is effective until 16 June 2015, under the conditions stipulated in these footnotes. See also RR No. **5.317A**, which makes reference to Resolution **224 (Rev.WRC-07)**.

Resolution **749 (WRC-07)** was adopted to address the protection of the services to which the band 790-862 MHz is currently allocated.

The frequency band 790-862 MHz is used for the GE06 Plan and the List.

#### 3/1.17/6.4 Methods A1 (Options II and III), B1, B1bis

MOD

#### RESOLUTION 749 (Rev.WRC-12)<sup>1</sup>

Use of the band 790-862 MHz in countries of Region 1 and the Islamic Republic of Iran by mobile applications and by other services<sup>2</sup>

The World Radiocommunication Conference (Geneva, 2012),

*considering*

- a) that the favourable propagation characteristics of the band 470-806/862 MHz are beneficial to provide cost-effective solutions for coverage, including large areas of low population density;
- b) that the operation of broadcasting stations and base stations of the mobile service in the same geographical area may create incompatibility issues;

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<sup>1</sup> The Syrian Arab Republic objects to the modifications proposed in this resolution.

<sup>2</sup> See also draft Resolution [JTG5-6] (WRC-12).

- c) that many communities are particularly underserved compared to urban centres;
- d) that applications ancillary to broadcasting are sharing the band 470-862 MHz with the broadcasting service in all three Regions, and are expected to continue their operations in this band;
- e) that it is necessary to adequately protect, *inter alia*, terrestrial television broadcasting and other systems in this band,

*recognizing*

- a) that, in Article 5 of the Radio Regulations, the band 790-862 MHz, or parts of that band, is allocated, and is used on a primary basis for services including broadcasting;
- b) that the GE06 Agreement applies in Region 1 countries except Mongolia and one country in Region 3 in the frequency band 174-230 and 470-862 MHz;
- c) that the transition from analogue to digital television is expected to result in situations where the band 790-862 MHz will be used for both analogue and digital terrestrial transmission; and the demand for spectrum during the transition period may be even greater than the stand-alone usage of analogue broadcasting systems;
- d) the switch-over to digital may result in spectrum opportunities for new applications;
- e) the timing of the switch-over to digital is likely to vary from country to country;
- f) that the use of spectrum for different services should take into account the need for sharing studies;
- g) that the Radio Regulations provide that the identification of a given band for IMT does not preclude the use of that band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations;
- h) that the GE06 Agreement contains provisions for the terrestrial broadcasting service and other terrestrial services, a Plan for digital TV, and the List of other primary terrestrial services,

*further recognizing*

- a) that the frequency band 790-862 MHz, as part of a wider frequency band, was allocated to mobile service in Region 3 (including the Islamic Republic of Iran) since 1971 (prior to WRC-07);
- b) that the use of the above-mentioned frequency band in Region 3 (including the Islamic Republic of Iran) is only subject to the conformity examination with respect to the Table of Frequency Allocations (No. **11.31** examination) by the Bureau;
- c) that the Radio Regulations do not contain any regulatory provisions requiring the seeking of agreement by Region 3 countries under No. **9.21** from the countries mentioned in No. **5.312**;
- d) that the GE06 Agreement, in its relevant Annexes, establishes the relation between the digital terrestrial broadcasting, on the one hand, and other primary terrestrial services, including the aeronautical radionavigation service in the countries mentioned in No. **5.312**, on the other hand;
- e) that WRC-07, under No. **5.316B**, allocated the frequency band 790-862 MHz in Region 1 to the mobile, except aeronautical mobile, service on a primary basis, and this allocation shall come into effect as of 17 June 2015 and shall be subject to agreement obtained under No. **9.21** with respect to the aeronautical radionavigation service in countries mentioned in No. **5.312**;
- f) that the band 790-862 MHz in Region 1 and the band 790-806 MHz in Region 3 were identified by the WRC-07 for use by administrations wishing to implement International Mobile

Telecommunications (IMT), whereas the band 806-960 MHz in Region 3 was identified for IMT in the WRC-2000;

g) that for Contracting Members to the GE06 Agreement, the use of stations of the mobile service in relation to the broadcasting services is also subject to the successful application of the procedures of the GE06 Agreement;

h) that Resolution **749 (WRC-07)** resolved to invite ITU-R to conduct sharing studies for Regions 1 and 3 in the band 790-862 MHz between the mobile service and other services in order to protect the services to which the frequency band is currently allocated and to report the results of the studies for consideration by WRC-12 to take appropriate action;

**(Relevant to Method A1 Option III)**

i) that the potential impact of the cumulative effects of interference of the mobile service to the broadcasting service has not been duly addressed in the coordination procedures (in particular, in the coordination trigger field-strength thresholds) contained in the GE06 Agreement,  
**(End of relevance to Method A1 Option III)**

*noting*

that Resolution ITU-R 57 provides principles for the process of development of IMT-Advanced and this process had already started after WRC-07,

*emphasizing*

a) that the use of the band 470-862 MHz by broadcasting and other primary services is also covered by the GE06 Agreement;

b) that the requirements of the different services to which the band is allocated, including the mobile, aeronautical radionavigation and broadcasting services, shall be taken into account,

*taking into account*

a) that the results of the studies carried out by ITU-R pursuant to Resolution **749 (WRC-07)** indicates that there is a need to protect certain other primary terrestrial services from the newly allocated mobile service in Region 1;

**(Relevant to Method A1 Option III)**

b) that there is a need to establish an additional arrangement for the protection of the primary digital terrestrial broadcasting services in countries, which are contracting members to the GE06 Agreement, from the cumulative interference effect of the allocated mobile service,  
**(End of relevance to Method A1 Option III)**

*resolves*

1 that in Region 1:

**(Relevant to Method B1)**

1.1 the mobile service in Region 1 needs to seek agreement under No. **9.21** as per Nos. **5.316A** and **5.316B** with respect to the aeronautical radionavigation services in the countries mentioned in No. **5.312** of the Radio Regulations using the criteria, which are based on the results of ITU-R studies, as contained in Annex 1 to this Resolution;

**(End of relevance to Method B1)**

**(Relevant to Method B1bis)**

1.2 the assignments to the mobile service in the frequency band 790-862 MHz in Region 1 need to seek agreement under No. **9.21**, in application of Nos. **5.316A** and **5.316B**, with respect to the assignments to the aeronautical radionavigation service of countries mentioned in No. **5.312** of

the Radio Regulations, using the criteria, which are based on the results of ITU-R studies, as contained in Annex 1 to this Resolution. When seeking the above-mentioned agreement only the ARNS assignments of countries mentioned in No. 5.312 of the Radio Regulations in the frequency band 790-862 MHz, to be taken into account, which are operating in accordance with the Radio Regulations, or to be so operated prior to the date of bringing into use the assignments to the mobile service, or for which coordination procedure under Article 4 of the GE06 Agreement has been initiated or within the next three months from the date the objection under No. 9.21 has been made by any country mentioned in No. 5.312, whichever is the longer;

1.2**bis** assignments to the mobile service mentioned above, which have not successfully completed the seeking agreement procedure mentioned above with respect to the assignments to the ARNS referred to *resolves* 3.1 above shall not cause unacceptable interference to nor claim protection from assignments to the ARNS;

1.2**ter** (Option 1) the ARNS assignments, which are brought into operation after three months objection period under No. 9.21, are subject to bi- and multilateral coordination between the administrations concerned based on the provisions of Radio Regulations in force. To this effect, administrations responsible for ARNS assignments are urged to take into account the assignments to the mobile service in the frequency band 790-862 MHz, for which the agreement seeking procedure under No. 9.21 has been successfully completed or initiated with respect to the ARNS administration(s);

[1.2**ter** (Option 2) the ARNS assignments, which are brought into operation after three months objection period under No. 9.21 excluding the assignments for which coordination procedure under Article 4 of GE06 has been initiated before the date of application of No. 9.21 for respective assignments of mobile service and successfully completed, shall not cause harmful interference to nor claim protection from the assignments into the mobile service successfully recorded as described in *resolves* 1.1, unless otherwise agreed;

*or*

1.2**ter** (Option 3) the ARNS assignments other than those which were taken into account in seeking agreement process of mobile service assignments which were successfully recorded as described in *resolves* 1.1 shall not cause harmful interference to nor claim protection from these mobile service assignments, unless otherwise agreed;]

**(End of relevance to Method B1bis)**

1.3 for countries of that Region which are Contracting Members of the GE06 Agreement, the coordination of the mobile service with digital terrestrial broadcasting service of that Region, and the digital terrestrial broadcasting service of the Islamic Republic of Iran (Contracting Members to the GE06 Agreement) is covered by the procedure contained in that Agreement;

**(Relevant to Method A1 Option III)**

1.4 in addition, for stations in the mobile service having frequency overlap in that television channel with which the submitted station has the largest degree of frequency overlap, Article 4 of the GE06 Agreement shall be applied in the same way as for stations of the broadcasting service forming a single-frequency network (i.e. Section I of Annex 4 of the GE06 Agreement, § 4.3) in order to take account of the effect of cumulative interference;

**(End of relevance to Method A1 Option III)**

1.5 when the coordination between administrations is being effected, the protection ratios applicable to the generic case NB contained in the GE06 Agreement for the broadcasting service shall be used only for mobile systems with a bandwidth of 25 kHz. If another bandwidth is used, the relevant protection ratios are to be found in Recommendation ITU-R BT.1368;

2 that for the Islamic Republic of Iran;

2.1 the coordination between the digital terrestrial broadcasting service in that country and the primary mobile service in Region 1 (Contracting Members to the GE06 Agreement) is covered by the procedure contained in that Agreement. See also paragraph 2.4 below;

**(Relevant to Method A1 Option III)**

2.2 in addition, for stations in the mobile service having frequency overlap in that television channel with which the submitted station has the largest degree of frequency overlap, Article 4 of the GE06 Agreement shall be applied in the same way as for stations of the broadcasting service forming a single-frequency network (i.e. Section I of Annex 4 of the GE06 Agreement, § 4.3);

**(End of relevance to Method A1 Option III)**

2.3 when the coordination between administrations is being effected, the protection ratios applicable to the generic case NB contained in the GE06 Agreement for the broadcasting service shall be used only for mobile systems with a bandwidth of 25 kHz. If another bandwidth is used, the relevant protection ratios are to be found in Recommendation ITU-R BT.1368;

2.4 on the other hand, the mobile service in the Islamic Republic of Iran, which was allocated by previous conferences, prior to WRC-07, does not need to seek agreement, in applying No. 9.21 from the countries mentioned in No. 5.312 of the Radio Regulations with respect to the aeronautical radionavigation service in those countries;

2.5 the coordination between terrestrial services (fixed, mobile and broadcasting) in the frequency band 790-862 MHz between the Islamic Republic of Iran, on the one hand, and the other countries of Region 3, on the other hand, is a matter to be left to administrations concerned, based on bilateral or multilateral negotiations, if it is mutually agreed by the administrations concerned;

3 that with respect to adjacent channel interference;

3.1 that in the band 790-862 MHz, adjacent channel interference within a given country is a national matter and needs to be dealt with by each administration as a national matter;

3.2 that adjacent band interference (below 790 MHz and above 862 MHz) should be treated by administrations concerned, using mutually agreed criteria or those contained in relevant ITU-R Recommendations (tbd),

**(Relevant to Method A1 Option II)**

*further resolves*

1 When a mobile station is submitted to be processed according to Article 4 of GE06 the BR shall carry out two calculations: The first calculation treats the new station individually according to Article 4 of GE06 and Section I of Annex 4 of the GE06 Agreement together with Rules of Procedure Part A10/GE06 pertaining to other primary services, resulting in a list of administrations with which coordination is required.

Using the same trigger field strength values in accordance with Article 4 of GE06, a second calculation is carried out to determine the cumulative interference of the new station together with other stations of the requesting administration, having frequency overlap in that television channel with which the submitted station has the largest degree of frequency overlap, consisting of:

- all other stations already included in the List;
- all other stations already submitted for coordination and inclusion in the List.

For this calculation, the power sum method defined in the GE06 Agreement (Chapter 3 of Annex 2, section 3.5) should be applied.

This second calculation leads to a list of administrations that may be potentially affected due to the cumulative effect of interference. The BR shall inform these administrations of this fact so that they can, on an optional basis, contact the submitting administration.

2 to invite administrations of Region 1 and Region 3, which are Contracting Members of the GE06 Agreement, to consider, *inter alia*, the results of the sharing studies conducted by ITU-R in response to Resolution 749 (WRC-07), on an optional basis and, with mutually agreed criteria, in their bilateral and/or multilateral negotiations/coordination<sup>3</sup> with respect to the potential impact of the cumulative effect of interference from the mobile service to the broadcasting service,

3 to invite ITU-R to develop a Recommendation describing a methodology that administrations could apply in their bi- and multilateral coordination to take account of the cumulative effect of interference from the Mobile Service to the Broadcasting Service.

**(End of relevance to Method A1 Option II)**

*instructs the Director of Radiocommunication Bureau*

to implement this Resolution and report the results of implementation to WRC-[15].

“End modifications to draft CPM report on AI 1.17”.

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<sup>3</sup> This is not a formal ITU type coordination.

## AGENDA ITEM 1.22

**(WP 1A / SG 3, WP 4A, WP 4B, WP 4C, WP 5A, WP 6A, WP 7D, (WP 1C), (WP 5B), (WP 5C), (WP 5D), (WP 7B), (WP 7C))**

*1.22 to examine the effect of emissions from short-range devices on radiocommunication services, in accordance with Resolution 953 (WRC-07);*

Resolution **953 (WRC-07)** and WRC-12 Agenda item 1.22 invite the ITU-R to study emissions from short-range devices (SRDs), in particular radio frequency identification devices (RFIDs), operating inside and outside the frequency bands designated for ISM applications (RR No. **5.138** and No. **5.150**) to ensure adequate protection of radiocommunication services. This Resolution considers the deployment of SRDs, which can typically cross borders, such as RFIDs and ultra-wideband (UWB) devices, across various frequency bands and recognizes the work already carried out on UWB by ITU-R.

Four methods have been identified to satisfy this Agenda item:

- Method A proposes to keep the current practice with solutions from national or regional regulations and from relevant ITU-R Recommendations and Reports, as appropriate;
- Method B proposes to develop a general WRC Resolution inviting the ITU-R to study the regional and global harmonization of SRDs;
- Method C proposes to recognize a limited number of harmonized frequency bands, emission levels and other relevant technical characteristics for SRD applications, either by a WRC Resolution or regulatory changes in RR Article **5** for SRDs, similar to those in specific bands for ISM applications, including limits on the aggregated use of SRDs or total radiation of SRDs;
- Method D proposes to add RR provisions to define SRD applications and their conditions of operation.

In order to satisfy this Agenda item WBU supports methods that are limited to studies by the ITU-R without requiring regulatory action by WRC-12, or any future conference (Method A or B).

In other to highlight the fact that SRDs operate without status in the International Radio Regulations, and to ensure allocated services are adequately protected from ubiquitously deployed SRDs, WBU is proposing a number of changes to the CPM text as outlined in the following.

“Start modifications to the CPM report on AI 1.22”

### **3/1.22/2 Background**

Resolution **953 (WRC-07)**:

- a) resolves that to ensure that radiocommunication services are adequately protected, further studies are required on emissions from SRDs, inside and outside the frequency bands designated in the Radio Regulations (RR) for industrial, scientific and medical (ISM) applications;
- b) describes short-range devices as radio transmitters or receivers or both that generate and use radio frequencies locally. Short-range devices operate in various frequency bands, including the ISM bands, under various national rules. While SRDs can operate in ISM bands, they are not considered ISM applications. RR No. **1.15** defines ISM applications



(of radio frequency energy) as: operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications<sup>2</sup>;

- c) describes SRDs and recognizes that they hold promise for an array of new applications that may provide benefits for users. Certain types of SRDs, such as medical SRDs, have allowed for huge improvements in the health and quality of life of citizens, while RFIDs have created significant benefits in numerous sectors of the economy. SRDs have fostered economic productivity, which in turn generates cost-savings in commerce, health care, education, and government. Such productivity gains have greatly benefitted consumers. SRDs such as radio local area networks (RLANs) have also enabled tremendous growth in the delivery of broadband wireless access.

SRD applications have been introduced in various ways in order to meet national requirements. For example, some SRD systems may operate on a non-interference and non-protected basis<sup>3</sup> in ISM bands and non ISM bands, whereas, other SRDs may operate under a particular service.

In some countries, a flexible national regulatory regime in which devices are exempt from licensing has been implemented in the ISM bands. The essence of such a regime is twofold: i) access to non-exclusive spectrum for certified devices is provided, and ii) basic technical requirements for devices are minimal. Such a regime facilitates spectrum sharing among devices while minimizing constraints on product designs. Moreover, barriers to entry are low in such regimes, thereby facilitating the development of a large eco-system of license-exempt devices, including short-range devices such as cordless telephones, wireless access systems, RFID, push-to-talk walkie-talkie like products, alarm systems and baby monitors.

A number of SRDs have also been introduced on a licence-exempt basis in non-ISM bands and operate on a non-interference, non-protected basis with licensed services. Such operation is premised on the fact that these SRDs have been certified based upon emissions of very low signal levels. Radiation limits and other technical/operating rules are usually established as a result of compatibility studies. For example, operating parameters can include the specification of indoor-use only, the requirement for an enabling signal prior to transmission, and a prohibition against configuring external antennas for permanent outdoor use. Technical parameters can include the specification of radiated power levels, duty-cycles, and threshold power detection capability; and the inclusion of listen-before-talk techniques.

UWB devices were studied extensively in the ITU-R; the relevant Recommendations and Reports can be found in Section 3/1.22/3.

When deploying SRDs, Administrations should take into consideration the protection criteria and service quality objectives provided in the Recommendations listed in Section 3/1.22/3.

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<sup>2</sup> NOTE – There is a view, however, that many applications using ISM bands are no more covered by this definition and that the term ‘household’ is more appropriate than ‘domestic’.

<sup>3</sup> Non-interference and non-protected basis means that that no harmful interference shall be caused to any radiocommunication service (including the radio astronomy service, see RR No. 4.6), and that no claim shall be made for protection of these devices against harmful interference originating from radiocommunication services. Harmful interference for the purposes of the CPM Report on Agenda item 1.22 is defined as any interference level which degrades the performance of a radiocommunication service beyond the recommended protection levels in the relevant ITU-R Recommendations.

### 3/1.22/6 Regulatory and procedural considerations

#### 3/1.22/6.1 Method A

NOC to the Radio Regulations.

#### 3/1.22/6.2 Method B

An example of a draft general WRC Resolution [A122-SRD-METHOD-B] (WRC-12) on the use of the radio-frequency spectrum by short-range radio devices is provided below.

ADD

#### EXAMPLE DRAFT RESOLUTION [A122-SRD-METHOD-B] (WRC-12)

##### Use of the radio-frequency spectrum by short-range radio devices (SRDs)

The World Radiocommunication Conference (Geneva, 2012),

*considering*

- a) that some administrations and regional administrations have introduced SRD applications in the bands used for industrial, scientific and medical (ISM) applications, as well as in various other bands, on a national and regional level;
- b) that SRD applications are not considered ISM applications;
- c) that SRD applications are not defined as radiocommunication services in the Radio Regulations;
- d) that these administrations and regional administrations have developed national rules and approaches for managing the regulation and certification of SRD applications;
- dbis*) that there are a number of ITU-R Recommendations defining the protection of radiocommunication services from devices and applications without a corresponding allocation in the RRs;
- e) that *taking into account considering dbis*), SRDs use the radio spectrum on a non-interference non-protected basis, i.e. they shall not cause interference to, and shall not claim protection from interference caused by, radiocommunication services;
- f) that appropriate techniques and spectrum access methods will have to be developed so that SRDs do not cause interference to radiocommunication services;
- g) that there is a huge growth forecast for wireless devices, including SRDs, for both the end-user and the industrial markets; therefore access to spectrum is critical for meeting the connectivity requirements of SRDs;
- h) that SRDs will continue to use frequency bands already allocated to radiocommunication services;
- i) that appropriate spectrum, harmonized for regional or global use, would need to be identified for the use of SRDs;

j) that many SRDs can be carried by travellers across national boundaries, increasing the density of devices, and thereby creating the potential for interference from SRDs to radiocommunication services,

*recognizing*

a) the benefits of harmonization for end users, manufacturers, and regulators such as:

- greater end-user confidence in the reliable functioning of devices when travelling abroad;
- a broader manufacturing base and increased volume of devices (globalization of markets) resulting in economies of scale and expanded equipment availability;
- improved spectrum management;

b) that encouraging SRD operation in harmonized frequency bands would reduce the potential for interference from SRDs to radiocommunication services;

c) that globally harmonized bands could reduce the influx of non-conforming SRDs into the marketplace of countries;

d) that ITU-R provides administrations, standards bodies and manufacturers an opportunity to share technical information on SRD deployments,

*noting*

a) that frequency bands commonly used for the deployment of SRDs are listed in Table 1 of Report ITU-R SM.2153, Technical and operating parameters and spectrum use for short-range radiocommunication devices;

b) that not all of these bands are harmonized for SRD use either regionally or globally;

c) Recommendation ITU-R SM.[SRD] on frequency bands regionally or globally identified for short-range devices (SRDs);

d) that the ISM bands are becoming congested due to the use of these bands by SRDs,

*resolves*

that SRDs shall not cause interference to, and shall not claim protection from harmful interference caused by, radiocommunication services,

*invites ITU-R*

1 to study, in collaboration with other relevant organizations, in particular ISO/IEC (see Resolution ITU-R 9-3), the regional and global harmonization of technical and operating parameters for SRD applications, such as those that are portable across borders and also those that have the potential to cause interference to radiocommunication services;

2 to consider further technical studies to:

a) determine the impact of SRD applications under *resolves 1* above on radiocommunication services;

b) in accordance with Resolution ITU-R 54, enable implementation of advanced technologies for SRDs,

*invites*

administrations and interested parties to participate actively in these studies by submitting contributions to ITU-R,

*instructs the Director of the Radiocommunication Bureau*

to bring this Resolution to the attention of ITU-T, ISO/IEC and other relevant organizations in accordance with Resolution ITU-R 9-3.

“End modifications to the CPM report on AI 1.22”

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