

## EUROPEAN COMMON PROPOSALS

### PART 36

#### **Agenda Item 1.36 - HF broadcasting from about 4 MHz to 10 MHz**

##### **Introduction**

It has been evident for several decades that the spectrum available to the broadcasting service between 4 and 10 MHz is inadequate.

In common with all other services using the HF spectrum for beyond line-of-sight skywave transmissions, ionospheric conditions constrain broadcasting to the lower bands during periods of low to mid sunspot activity particularly during local winter.

WRC-97 adopted a new regulatory procedure for the broadcasting service using the HF bands. The new Procedure of Article **12**, came into force in 1999 and replaced Article **17**, which had essentially been in force from around 1959 with little change.

Under Article **12**, broadcasters are encouraged to coordinate their frequency usage to reduce mutual interference. This coordination is currently achieved in 2 HF Coordination Groups recognised by the ITU: **HFCC/ASBU** and **ABU-HFC** which collectively coordinate over 80% of the broadcasting requirements worldwide.

The statistics also show that around 250 kHz to 800 kHz of additional spectrum is needed to clear co-channel and adjacent channel collisions. This conclusion is also in line with proposals to WARC-92, which identified a spectrum shortfall of around 700 kHz for HF broadcasting below 10 MHz.

The results of the summer, 2001, monitoring campaign of 25 monitoring stations of administrations in 15 European countries confirm the highly congested situation in the 7 MHz broadcast band. The preliminary results of the winter 2001 campaign confirm this and confirms the congestion in the 6 and 9 MHz broadcasting bands.

Congestion in the bands below 10MHz will increase as sunspot activity declines and broadcasters are forced to use the lower bands to maintain viable transmissions. The next sunspot minimum is predicted to occur around 2006/7 and so it is inevitable that the congestion in the bands below 10MHz will increase to worst case figures around that time.

From a theoretical analysis, it is apparent that congestion is further exacerbated by the fact that the present broadcasting bands between 4 and 10 MHz are not optimally spaced, so as to allow frequency changes to take place that will maintain service to target areas on frequencies close to 85% of the MUF.

The results of the studies on spectrum requirements and optimum band location show that only the following parts of the HF spectrum need to be studied further with a view to identifying suitable additional spectrum that would be effective in reducing the present deficiencies:

<b>Band</b>	<b>Considerations</b>
4 MHz	Review the current position in the band 4 500-4 650 kHz currently allocated to the Fixed and Mobile services. The potential problems with these displaced services will need careful investigation.
5 MHz	Review the current position on the band 5 060-5 250 kHz, which was proposed by several European countries as a source of additional spectrum for broadcasting at WARC-92. Again, the potential problems with displaced services will need careful investigation. Furthermore, the national footnote <b>5.133</b> gives primary status, over part of the band, to the mobile services in a number of countries. This band is adjacent to an existing tropical broadcasting band.
6 MHz	Review the current position on the band 5 840-5 900 kHz as a matter of urgency noting the potential problems with the displaced services. This band is adjacent to a existing broadcasting band.
7 MHz	As the first priority, study whether an extension of the 7 MHz allocation to the broadcasting service by up to 300 kHz is possible. This should be compatible with any changes agreed under agenda item 1.23 and should be implemented within a timeframe starting at the end of WRC-07 and ending at 25 October 2009 so that the totality of the changes needed around 7 MHz are implemented in an orderly manner, thus giving confidence to all the services involved. The potential problems with the displaced services will need careful investigation.
9 MHz	consider extending the present 9 MHz broadcasting band downwards by 110 kHz, i.e., 9 290-9 400 kHz and upwards by 40 kHz, i.e., 9900-9940 kHz. The potential problems with the displaced services will need careful investigation.

#### **Further considerations:**

- The selected bands avoid spectrum allocated on an exclusive basis to the maritime mobile, aeronautical mobile (OR), aeronautical mobile (R) services and the bands allocated to the tropical broadcasting service.
- This pre selection intends to focus attention on parts of the bands from which broadcasting needs could be satisfied in order to facilitate the necessary studies.
- The proposed spectrum for consideration at 6, 7 and 9 MHz is adjacent to existing HF broadcast bands.
- The proposed spectrum for consideration at 4 and 5 MHz is required to support broadcasting over short distances.
- The additional spectrum results in a more optimum distribution of the broadcasting bands below 10 MHz. This will lead to better reliability of the transmissions.
- These bands were included in the original CEPT proposal for WARC-92.

## Potential constraints

- Changes in the allocations below 10 MHz shall take into account the need of the fixed and mobile services operating in this frequency range and shall be made only on a balanced basis between all services in the range between about 4-10 MHz.

## Proposals

**ADD EUR/1.36/1**

RESOLUTION [EUR/1.36/1] (WRC-03)

### **Identification of additional spectrum for the broadcasting service in the HF bands**

The World Radiocommunication Conference (Geneva, 2003),

*considering*

- a) that the spectrum allocated to the broadcasting service from 4 MHz to 10 MHz is about 25 % of the all spectrum allocated to HF broadcasting bands;
- b) that WARC-79 allocated only an additional 125 kHz of spectrum to the HF broadcasting service below 10 MHz (9 775-9 900 kHz);
- c) that WARC-92 allocated an additional 200 kHz HF to the broadcasting service consisting of 100 kHz at 9 MHz, 50 kHz at 7 MHz and 50 kHz at 6 MHz. This additional spectrum will become available to the broadcasting service from 1<sup>st</sup> April 2007;
- d) that the agenda for WRC-07 includes the revision of allocations to the services in HF bands;
- e) that the results of co-ordination under Article 12 demonstrate that the broadcast bands below 10 MHz are congested, even with high levels of sunspot activity, with little more than half of the broadcasting requirements being satisfied;
- f) that in the most recent schedule periods, the statistics show that around 250 kHz of additional spectrum is needed to clear the co-channel collisions and up 800 kHz to clear both the co-channel and adjacent channel collisions in the bands below 10 MHz;
- g) that the introduction and promotion of the new digital technology, that improves spectrum utilisation and efficiency, cannot completely solve current congestion problem;
- h) that the broadcasting service, in an era of convergence, will play an increased socio-political role.

*invites ITU-R*

- 1 to carry out technical studies on this matter, taking into account technical, operational, economic and other relevant factors;
- 2 to bring the results of these studies to the attention of WRC-07,

*urges administrations*

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

*resolves*

that the following conference should take into account and conclude on additional spectrum requirements for the broadcasting service by making sufficient allocations from the following preferred bands:

4.500-4.650 kHz  
5.060-5.250 kHz  
5.840-5.900 kHz (\*)  
7.350-7.650 kHz (\*)(\*\*)  
9.290-9.400 kHz (\*)  
9.900-9.940 kHz (\*)

(\*) *Bands adjacent to the HF broadcasting bands governed by Article 12.*

(\*\*)

*Band location may need to be revised in light of actions decided in respect of WRC-03 Agenda Item 1.23. The changes relating to this band should be implemented within a timeframe starting at the end of WRC-07 and ending at 25 October 2009.*

***Reason:*** *As it is unlikely that the studies required can be completed for action by WRC-03, this Resolution ensures the conclusion of this work at the following conference.*