

ENG harmonisation and BSS usage of spectrum are key WRC agendas

BY DR ALI R EBADI

Among the more specific agenda items related to TV broadcasting that will be discussed by the World Radiocommunication Conference 2012 (WRC-12) next year are on the harmonisation of spectrum for electronic newsgathering (ENG) and the spectrum usage of the band 21.4-22GHz for Broadcasting Satellite Service (BSS).

The WRC-12 is an international forum organised by the International Telecommunication Union (ITU) which will be held from January 23 to February 17 in Geneva, Switzerland.

Harmonisation of spectrum for ENG

ENG is the use of terrestrial portable radio equipment by services ancillary to broadcasting, to provide the coverage of breaking news, disasters and emergencies. As these events are often unpredictable, ENG applications can occur at any time and location. ENG systems operate in the bands allocated to broadcasting—fixed and mobile services. Currently, the frequency spectrum for the use of ENG is regulated on a national basis.

With the rise in demand for the applications of ENG, the management of the frequency spectrum for ENG has become more challenging. It is further complicated by the trend towards cross-border operation of ENG equipment due to the increased portability of these systems.

The WRC in 2003 initiated some studies pertaining to the spectrum usage and operational characteristics of ENG systems on a global basis.

The summary of the studies indicated that the existing spectrum is insufficient to meet the demands of ENG. In addition, there has been substantial growth in the use of frequency bands between 500MHz and 1GHz for a myriad of radiocommunication services, which has further reduced the spectrum available for ENG.

Consequently, the WRC in 2007 adopted Resolution 954 (WRC-07), which calls out for studies to determine whether global or regional harmonisation of spectrum usage and user requirements for ENG in specific bands is feasible.

In addition, the following studies are also being undertaken:

- **Method A:** To approve WRC Resolution encouraging development of a frequency database used for ENG in each country.

- **Method B:** To develop, maintain and verify the accuracy of such database.

- **Method C:** To include in a WRC Recommendation/Resolution a list of frequency bands for harmonisation of tuning ranges for ENG use on a regional/worldwide basis.

- **Method D:** To identify in a WRC Recommendation, a list of frequency bands/tuning ranges for ENG, to harmonise its use on a regional/worldwide basis. In addition, to approve a WRC Resolution encouraging the development of a database on ENG frequencies used in each country. The Recommendation and Resolution encourage further studies in the ITU-R on ENG.

This method, which is a combination of Methods A, B and C, would present similar advantages and disadvantages as mentioned in the three Methods.

There is increasing demand from the audiences for the quantity and quality of coverage of sound and TV ENG. To encourage the growth in ENG applications, the harmonisation of frequency spectrum for ENG on a regional or global basis, as advocated in Methods B, C or D, could be supported. In this regard, Method B or C could potentially address this issue.



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- **Method B:** To include in a WRC Recommendation/Resolution a list of frequency bands for harmonisation of tuning ranges for ENG use on a regional/worldwide basis.

The proposed list of tuning ranges/frequency bands may encourage administrations/manufacturers to deploy and develop ENG systems in the harmonised bands. However, as the list of bands can only be modified by a future WRC, the deployment of ENG in these limited bands may lead to congestion.

- **Method C:** To develop ITU-R Recommendation(s) and/or reports listing the preferred tuning ranges/frequency bands on a regional/worldwide basis.

- **Method D:** To identify in a WRC Recommendation, a list of frequency bands/tuning ranges for ENG, to harmonise its use on a regional/worldwide basis. In addition, to approve a WRC Resolution encouraging the development of a database on ENG frequencies used in each country. The Recommendation and Resolution encourage further studies in the ITU-R on ENG.

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Spectrum usage of 21.4-22GHz for BSS

In view of the advancements achieved in video encoding/modulation standards, rain fade mitigation techniques as well as other satellite technological aspects, there has been an increasing level of interest in satellite broadcasting at the Ka-band frequencies.

The World Administrative Radio Conference in 1992 (WARC-92) allocated the band 21.4-22GHz in the ITU Regions 1 and 3 (Europe, Middle East and Oceania)

2007. After this date, all services other than BSS operating in this band in Regions 1 and 3 shall not cause harmful interference to BSS, nor will it claim protection from such systems.

At WRC-07, Resolution 551 (WRC-07) was adopted for the ITU-R to carry out technical and regulatory studies on the use of the band 21.4-22GHz for BSS in Regions 1 and 3 which encompasses three main issues.

The first is the regulatory procedures for the use of the band 21.4-22GHz between BSS networks. Eight methods have been identified to address the regulatory treatment of BSS networks:

- **Method A:** is based on the first-come-first-served principle. Under this method, the satellite filing is processed in the order it is received by the ITU.

- **Methods B-H:** are supplementary to Method A, but with some additional measures intended at promoting the equitable access to spectrum and orbital resources in this band.

- **Method B:** proposes improvements to the due diligence information contained in Resolution 49 (Rev. WRC-07) to provide more information on the real satellites in operation.

- **Method C:** proposes the reduction of coordination arc to facilitate the coordination of BSS networks.

- **Method D:** proposes that administrations that fulfil certain conditions could request for special submission in this band. The special submission will receive priority in processing by the ITU.

- **Method E:** is in essence similar to Method D, but with variations in the conditions to use this method and in the ITU processing procedure of the submission.

- **Method F:** proposes a resolution to urge administrations to review and limit their submissions in this band.

- **Method G:** proposes the submission of homogenous parameters to facilitate the coordination of BSS networks.

- **Method H:** is in principle similar to Method C, but varies in terms of the proposed technical parameters for BSS networks.

The second issue is regulatory procedures for the sharing between BSS and terrestrial services—the possible options include retaining the current primary status of BSS (and secondary status on terrestrial services) or providing equal status to BSS and terrestrial services.

And, lastly, the allocation of specific frequency bands for feeder link of the BSS, where potential uplink frequency bands have been proposed as feeder links for the band 21.4-22GHz in ITU Regions 1 and 3.

To encourage the development of the BSS (HDTV) systems in the band 21.4-22GHz, the regulatory aspects should be implemented in a flexible and equitable manner, taking into account the real-world demand and the latest technological developments.

For the regulation between BSS networks, Methods A and B could provide the flexibility required in the design and implementation of BSS systems. On the issue of sharing between terrestrial services and BSS in Regions 1 and 3, it would be best to retain the current primary status of BSS as the change in the status of terrestrial services in Regions 1 and 3 will impose limitations on the design and deployment of BSS systems.

By having additional feeder link allocations in Regions 1 and 3, it could be ensured that there is sufficient spectrum in the uplink to support the BSS systems in the band 21.4-22GHz.

All in all, the WRC-12 aims at addressing more than 30 agenda items pertaining to the regulatory/technical procedures and frequency allocations, which concern all types of services including, of course, TV broadcasting. **APB**

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