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Resolution 956 (WRC-07)

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North American Broadcasters Association

ON THE STUDY OF COGNITIVE RADIO SYSTEMS FOR WRC-11 AGENDA ITEM 1.19

The North American Broadcasters Association (NABA, www.nabanet.com) is an association of broadcasters in Canada, Mexico, and the United States, and the NABA Technical Committee is its standing technical body. NABA is thus in a position to present the technical viewpoints of the most authoritative association of professional North American Broadcasters in television and sound programme production, post-production, and distribution for terrestrial, satellite, and cable broadcasting.

NABA is a Sector Member of ITU-R and a long-time participant in ITU-R Study Groups, Working Parties, Task Groups, Rapporteur groups, etc. NABA numbers among its members Chairmen, Vice-Chairmen and members of the above groups. NABA also participates widely in the ITU work on radio, television and multimedia services and has a strong interest in spectrum management studies including spectrum engineering techniques, spectrum management fundamentals, spectrum monitoring, and inter-service sharing, interference and compatibility.

NABA has been following, with great interest, the discussions in ITU-R Working Party 1B concerning WRC-11 Agenda item 1.19, Resolution **956 (WRC-07)** “Regulatory measures and their relevance to enable the introduction of software-defined radio and cognitive radio systems” as described in the Chairman’s Report (Doc. 1B/40). In general, NABA is concerned with the need and methods to protect broadcasting services from interference especially in areas of noise-limited reception.

In this context, NABA has noted that there is an interest in permitting the use of devices which would operate within the spectrum allocated in the ITU Radio Regulations to the Broadcasting Service. In particular, unlicensed devices, without an allocation in the RR, are proposed which would use frequencies within the TV bands that are temporally and/or geographically underutilized. These frequencies are being referred to as “white spaces” and the devices as “TVBDs” (TV Band Devices).

Although NABA recognizes the need to share the valuable resources of the RF spectrum, it should be done such that the interference levels permit a quality of service no lower than the one currently afforded by the Radio Regulations.

NABA notes that the Federal Communications Commission (FCC) in the United States has decided to permit the use of TVBDs and to require the use of spectrum sensing¹. The FCC has also continued its testing of the performance of prototype unlicensed radio transmitting devices that would operate on frequencies allocated to the broadcasting service. The study report can be found in Attachment 1.

The study recently involved the field testing of five devices to determine their cognitive ability for “spectrum sensing” in both indoor and outdoor environments. The FCC concludes in the Executive Summary of the report:

Quote:

We are satisfied that spectrum sensing in combination with geo-location and database access techniques can be used to authorize equipment today under appropriate technical standards and that issues regarding future development and approval of any additional devices, including devices relying on sensing alone, can be addressed.

Unquote

Unfortunately, the actual test data in the study fails to support the conclusions in the executive summary. The test data clearly documents the inability of TVBDs to reliably detect the status (either occupied or vacant) of a TV channel. The FCC test results showed that the TVBDs could not “sense” the presence or absence of an occupied TV channel 30 percent of the time.

In addition, two of the TVBDs were tested to see if they could detect the presence of wireless microphones in a sports venue and in a theatre venue. Wireless microphones are licensed in the United States to operate within the TV bands on a non-interference basis. The FCC test results showed that, in the sports venue, the TVBDs could not “sense” the presence of a wireless microphone 36 percent of the time. Although the Executive Summary of the report fails to mention it, the performance of the TVBDs at the theatre venue was a 100 percent total failure.

NABA is deeply concerned that the current state-of-the-art in cognitive radio technology does not provide adequate protection to a noise-limited radiocommunication service and, in particular, the Broadcasting Service. NABA requests that the CPM text addressing WRC-11 Agenda item 1.19 reflect the concern that SDR and CRS should not jeopardize the performance of the Broadcasting Service. NABA also expects that the application of SDR and CRS technologies within any radiocommunication service will not result in interference to the Broadcasting Service.

¹ “Second Report and Order and Memorandum Opinion and Order – Unlicensed Operation in the TV Broadcast Bands”, Federal Communications Commission (USA), 4 November 2008.
http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-260A1.pdf

Attachment 1

“Evaluation of the performance of prototype TV-band white space devices, Phase II”,
Office of Engineering and Technology, Federal Communications Commission (USA), OET
Report FCC/OET 08-TR-1005, 15 October 2008.²



FCC OET
08-TR-1005.PDF

² Appendices to Report FCC/OET 07-TR-1005 can be found at URLs:
http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-08-2243A4.doc through [DA-08-2243A10.doc](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-08-2243A10.doc).