

Received: 7 April 2010

Document 6A/315-E
8 April 2010
English only

References: Annex 6 to Document 6A/196, Annex 13 to Document 6A/285, Document 6A/301, Annex 3 to Document 1A/252

Source: Question ITU-R 32/6

North American Broadcasters Association (NABA)

SUPPORT FOR THE PDNR ITU-R BT.[PLT REC]

PROTECTION REQUIREMENTS FOR BROADCASTING SYSTEMS OPERATING IN THE LF, MF, HF AND VHF BANDS AGAINST THE RADIATION FROM PLT SYSTEMS

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 notes that in Annex 6 of the Chairman's report (Document 6A/196) for the May 2009 meeting of WP 6A, the preliminary draft new Recommendation ITU-R BT.[PLT REC] concerning the protection requirements for broadcasting systems operating in the LF, MF, HF and VHF bands against the radiation from Power Line Telecommunication (PLT) systems was further developed. NABA also notes that with the emergence of the ITU-T Recommendation G.9960 Working Party 6A needs to clearly state its position on a protection criterion through an appropriate Recommendation. NABA fully supported and continues to support the preliminary draft new Recommendation ITU-R BT.[PLT REC].

NABA notes further that Working Party 1A has made significant progress towards its PDNR on PLT (Document 6A/301 and Annex 3 to Document 1A/252). This progress was made possible by a compromise to bring the protection criterion for the broadcasting service, against interference from PLT systems, in line with other radiocommunication services. The compromise involved the relaxation of the protection criterion from 0.05 dB to 0.5 dB. Initially, all members were in

agreement with the 0.5 dB criterion. Unfortunately, Japan reversed its position since its national regulation allows “the same levels as actual ambient noises”, *i.e.*, 3 dB (Appendix 3 of Annex 3 to Document 1A/252).

NABA has considered the impact of various protection criteria on the broadcasting service. Annex 1 to this document illustrates the loss of coverage area for broadcasters as the protection criterion is relaxed. For the ideal case, in free space, a 0.05 dB protection criterion results in the loss of coverage area of 1.1 percent. A 3 dB protection criterion permits the destruction of the broadcast coverage area by 50 percent! Annex 1 is submitted for inclusion in the preliminary draft new Report ITU-R BT/BS.[PROTECT-WIRED] (Annex 13 to Document 6A/285).

Since in-house PLT devices, such as those addressed in ITU-T Recommendation G.9960, are localized, NABA is able to support the 0.5 dB compromise reached in Working Party 1A. NABA asks that Working Party 6A reconsider Annex 6 to Document 6A/196 with the above criterion. NABA further suggests that Working Party 6A respond with its support to Working Party 1A with the draft liaison statement found in Annex 2 of this document.

Annexes: 2

Annex 1

Impact of various protection criteria on coverage are for the Broadcasting Service

Various protection criteria are used to determine the impact of interference on the Broadcasting Service. Recommendation ITU-R BT.1786, “Criterion to assess the impact of interference to the terrestrial broadcasting service (BS)”, states that for devices with emissions from applications not having a corresponding frequency allocation in the Radio Regulations, that may occur in the frequency bands allocated to the broadcasting services the total interference, from all sources of interference, should at no time exceed one per cent of the total receiving system noise power (*i.e.*, 0.05 dB). On the other hand, Report ITU-R BT.2075, “Protection requirements for terrestrial television broadcasting services in the 620-790 MHz band against potential interference from GSO and non-GSO broadcasting-satellite systems and networks”, recognizes 0.5 dB as the criterion for services sharing the frequency bands.

A direct consequence of permitting interference at any level is the reduction of coverage area for the broadcasting service. Since the broadcasting service is a single point transmitter to multi-point receivers, operating on a noise-limited basis, any interference at the receiver decreases the probability of reception and reduces the actual coverage area. For the ideal case, consider the impact of interference on free-space propagation. (The impact of interference on propagation involving terrain obstructions and indoor reception only exacerbates this loss of coverage.) The free-space path attenuation between isotropic antennas, α (in dB) is given by:

$$\alpha \text{ (dB)} = 40.7 + 20 \log f + 20 \log d$$

where f is the frequency in MHz and d is the path distance in km.

The introduction of additional noise at the broadcast receiver essentially reduces the overall coverage area for the broadcasting service. Figure 1 illustrates the loss of coverage area as the protection criterion for interference is increased. A protection criterion of 0.05 dB results in a 1.1 percent loss of coverage area. A protection criterion equal to the ambient noise, or 3 dB, destroys 50 percent of the broadcasting coverage area. Figure 2 illustrates the coverage area impact for various protection criteria between 0.05 dB and 3 dB.

FIGURE 1

The loss of coverage area for the Broadcasting Service increases dramatically as the protection requirement is relaxed (increased)

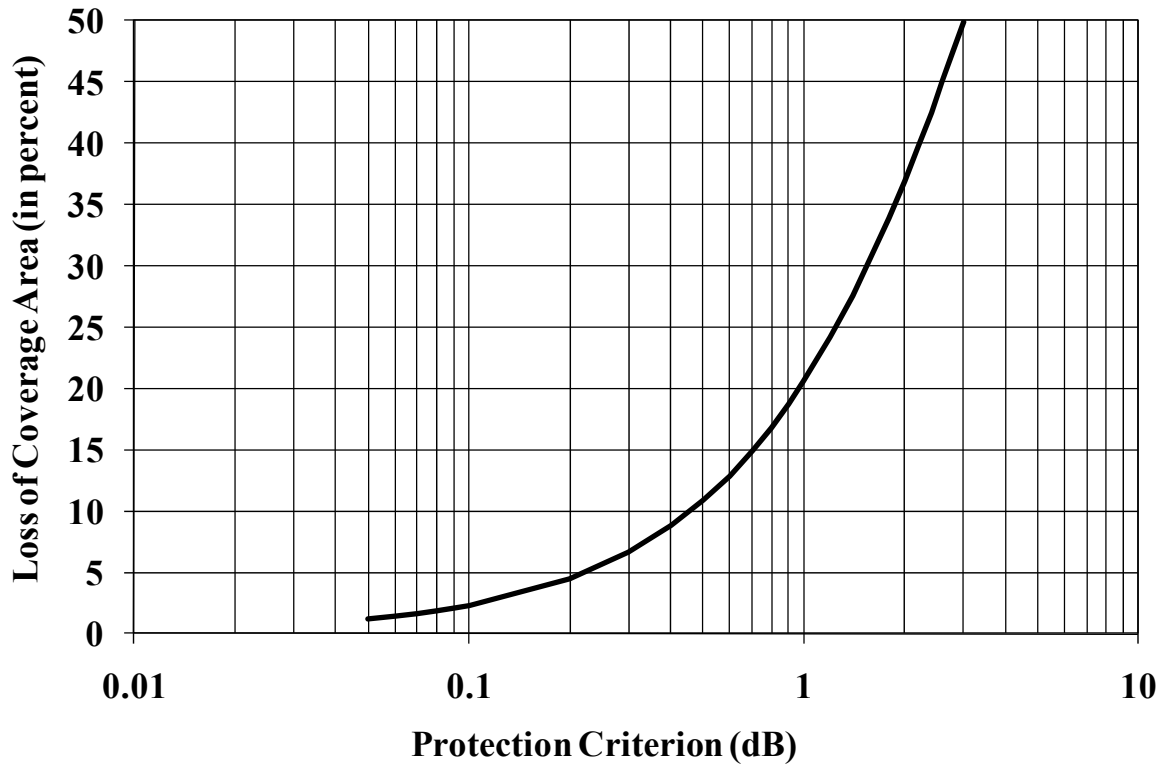


FIGURE 2
The impact of various protection criteria from 0.05 dB to 3 dB on the coverage area
for the broadcasting service resulting in the loss of coverage
from one percent to 50 percent, respectively

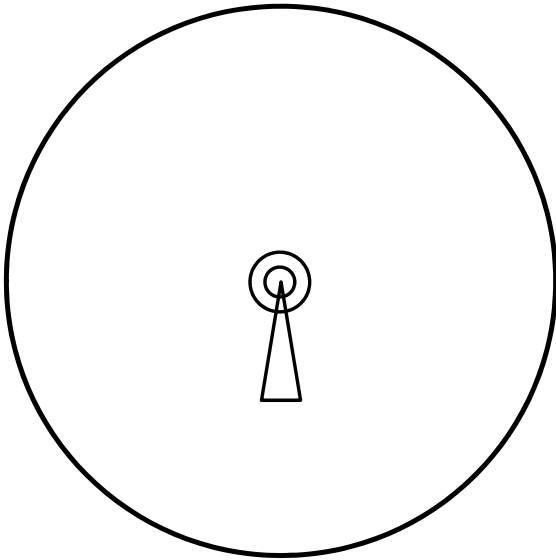


FIGURE 2a)

A 0.05 dB protection criterion results in a loss of coverage area of one percent (illustrated by the width of the outer circle – drawn to scale)

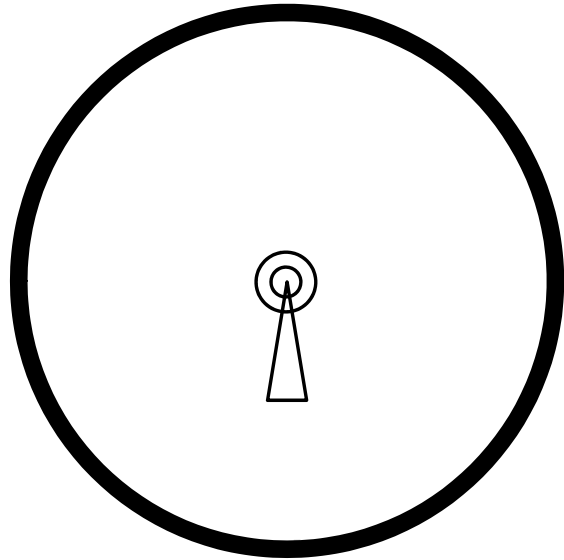


FIGURE 2b)

A 0.5 dB protection criterion results in a loss of coverage area of 11 percent (illustrated by the width of the outer circle – drawn to scale)

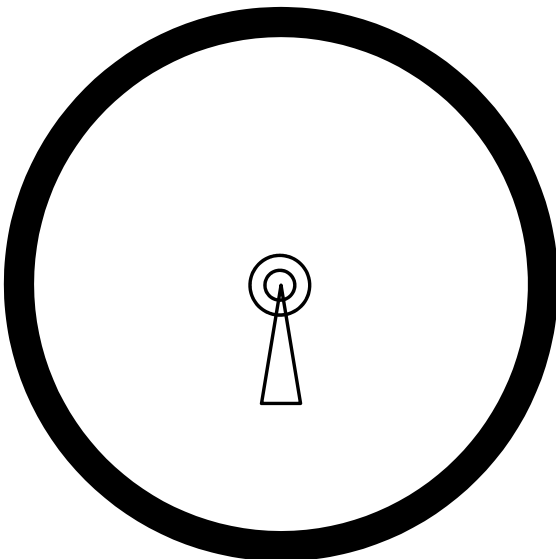


FIGURE 2c)

A 1.0 dB protection criterion results in a loss of coverage area of 21 percent (illustrated by the width of the outer circle – drawn to scale)

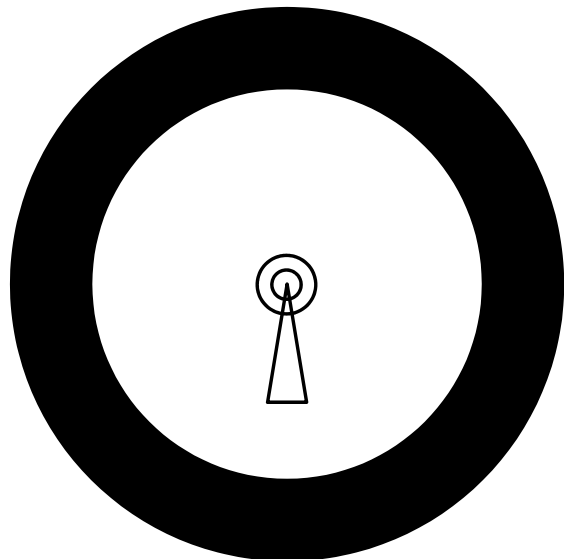


FIGURE 2d)

A 3 dB protection criterion results in a loss of coverage area of 50 percent (illustrated by the width of the outer circle – drawn to scale)

Annex 2

Draft Liaison to Working Party 1A

Source: Document 6A/301

Reference Annex 3 to Document 1A/252

Working Party 6A

LIAISON STATEMENT TO WORKING PARTY 1A

FURTHER WORK ON POWER LINE TELECOMMUNICATIONS

Working 6A wishes to thank Working Party 1A for their liaison statement given in Document 6A/301. Working Party 6A appreciates being kept informed of the progress being made in Working Party 1A and the effort being undertaken to resolve the serious issues with ITU-T Study Group 15 concerning ITU-T Recommendation G.9960.

Working Party 6A during its 20 to 28 April 2010 meeting has reviewed the preliminary draft new Recommendation ITU-R SM.[PLT] in Annex 3 to Document 1A/252. Working Party 6A understands and agrees with the difficult compromise reached in drafting the document relative to the 0.5 dB protection criterion for the broadcasting service.
