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**English only**

## **North American Broadcasters Association (NABA)**

### PROPOSED REPLY LIAISON STATEMENT TO WORKING PARTY 1A

#### IMPACT OF POWER LINE TELECOMMUNICATION SYSTEMS ON RADIOCOMMUNICATION SYSTEMS OPERATING IN THE LF, MF, HF AND VHF BANDS BELOW 80 MHz

The North American Broadcasters Association (NABA, [www.nabanet.com](http://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.

Working Party 1A in its liaison statement to Working Party 6A has noted that a contribution (Document 1A/117) questioning “whether the general protection criteria for the broadcasting service versus non-broadcasting radiocommunication devices as stipulated in Recommendation ITU-R BT.1786 is appropriate for the specific case of PLT systems working in the HF band with its specific characteristics.” NABA notes here that PLT systems do not have a frequency allocation in the Radio Regulations, and especially not in the frequency bands allocated to the Broadcasting Service. Consequently, Recommendation ITU-R BT.1786 is appropriate for PLT systems. This point has been clearly stated by Working Party 6A in its liaison statements to WP 1A (see Documents 1A/45 and 1A/84).

NABA appreciates that WP 1A has made WP 6A aware of Document 1A/117 entitled “Experimental results of the subjective assessment test on HF broadcast reception interfered with by PLT”. Unfortunately, based on the technical information contained in the document, NABA is not convinced that sufficient evidence has been revealed to change the position of WP 6A relative to BT.1786 and PLT. Annex 1 provides a detailed discussion of NABA’s concerns for the test procedure and the experimental results. Annex 2 offers a proposed reply liaison statement for consideration of WP 6A.

## **Annex 1**

### **Analysis of Document 1A/117**

#### **1 Test methodology**

##### **1.1 GTEM Cell**

Document 1A/117 describes the test methodology as using an Elena Electronics EGT 1100 GTEM cell. The EGT-1100 has a maximum size limit for precise measurements specified as 667 mm width (W), 334 mm height (H), and 667 mm depth (D). The test antenna was an active Sony AN-LP1 antenna. It is noted that the AN-LP1 has specified dimensions WxHxD of 490 mm x 480 mm x 17.8 mm clearly exceeding the height requirement for precise measurements.

Document 1A/117 notes that the noise floor of the GTEM cell is 0 dB $\mu$ V/m or less. The EGT-1100 specification, however, shows that the field strength characteristic in the cell may vary by at least  $\pm 2$ .

##### **1.2 Subjective assessment**

###### **Statistical methods**

Document 1A/117 notes that the subjective assessment test was performed according to methods described in Recommendation ITU-R BS.1284-1. BS.1284-1 states:

“In general, statistical expertise will be required to design the test. This would include the determination of the number of observations needed, the statistical methods for analysing the data and the correct interpretation of the outcomes of the statistical analysis, including a check of the validity of the model assumptions.”

“Details should be given of listening conditions and sound levels; any statistical methods used to analyse the test results should be described.”

Document 1A/117, however, does not provide any information on the statistical methods of analysis or details on the listening conditions.

###### **Listening panel**

BS.1284-1 states:

“Expert listeners are always preferred to non-expert listeners. It has been argued that non-experts may be representative of the general population, and that experts may be excessively critical. However, with long-term exposure to artefacts, in time some non-experts become experts. Therefore, tests using experts give a better and quicker indication of the likely results in the long term. In cases of doubt, the relationship between expert and non-expert opinion should be investigated.”

Non-expert listeners were used for the test reported in Document 1A/117, but no information is provided on the relationship between the non-experts and the results that would be obtained with expert listeners.

## **2 Test Results**

BS.1284-1 states:

“Significance levels should be stated, as well as other details about statistical methods and outcomes that will facilitate understanding by the reader. Such details might include confidence intervals or error bars in graphs.”

The results shown in Document 1A/117 do not report any statistical information such as confidence intervals or whether the reported data points are mean or median values. Without this information it is impossible to determine if the data is statistically significant.

The results are subject to question since the PLT noise level is shown to extend below the noise level (0 dB $\mu$ V/m) of the GTEM cell. The figures in Document 1A/117 also show a decrease in the subjective score as the PLT noise level is decreased. This slope reversal in the degradation curve is not explained.

## **3 Conclusion**

The effort to subjectively test PLT interference into an HF broadcast receiver using AM modulation is to be commended. Unfortunately, the test is subject to numerous questions upon closer scrutiny. The test, furthermore, has not considered other broadcast modulations nor have they considered the potential for interference from conductive sources. In conclusion, it remains appropriate for Working Party 6A to continue to consider the application of Recommendation ITU-R BT.1786 to the protection requirement for the broadcasting service as it would for any device that does not have a corresponding frequency allocation in the Radio Regulations.

## Annex 2

Source: Document 6A/141

### Working Party 6A

#### LIAISON STATEMENT TO WORKING PARTY 1A

#### IMPACT OF POWER LINE TELECOMMUNICATION SYSTEMS ON RADIOCOMMUNICATION SYSTEMS OPERATING IN THE LF, MF, HF AND VHF BANDS BELOW 80 MHZ

Working 6A wishes to thank Working Party 1A for their liaison statement given in Document 6A/141. Working Party 6A appreciates being made aware of the subjective assessment of PLT interference reported in Document 1A/117. Working Party 6A during its 27 April - 4 May 2009 meeting has reviewed the test report and offers the following examples of concerns raised:

- 1) The antenna under-test exceeds the height requirement of the GTEM cell for precise measurements.
- 2) Non-expert listeners were used for the test rather than expert listeners as preferred by Recommendation ITU-R BS.1284-1.
- 3) The reported test results do not show any information that may indicate the statistical significance of the data.
- 4) The PLT signal levels extend below the noise floor of the GTEM cell.
- 5) The subjective degradation data shows a reversal in its slope for lower PLT levels that is unexplained.
- 6) The test did not include modulation techniques beyond AM.
- 7) The test did not consider the potential for interference from conductive sources.

Based upon these concerns, Working Party 6A is not convinced that this test warrants reconsideration of Recommendation ITU-R BS.1786. Working Party 6A, consequently, reaffirms its previous position stated in Document 1A/84:

“Since PLT devices have been shown to have emissions in the frequency bands allocated to the broadcasting service and do not have a corresponding frequency allocation in the RR, the protection requirements are clearly stated in Rec. ITU-R BT.1786.”