



Ideas and Considerations for WBHF Channel Availability Measurement

WB Availability Group, San Diego, Feb. 11th, 2014

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Measuring ... to what end ?

- ◆ Several measurements campaign have been done in FR, SW, US and UK to learn more about usage in various parts of the world of HF frequencies
 - ◆ It seems that while US is not using so much the HF spectrum, European one is much more crowded
 - ◆ Performing comparable and more systematic measurements can allow to learn more on this occupancy ... with the obvious limits of such measurements:
 - Occupancy is likely to vary with season and year in the solar cycle
 - Authorizations to transmit will still have to be requested, except if international rules are changed
- ➔ **Occupancy measurement campaigns are a way to learn more on today's HF spectrum usage, but also learn more on capability to use wideband approaches**

Suggestions for the measures to be carried out (1)

- ◆ Experimentations in France and Belgium led us to observe significant difference on measured noise floor when using horizontally (H) or vertically (V) polarized reception antennas.
- ◆ Using only V polarized antenna such as recommended one from Clifton Labs will not allow gather elements for cases using H polarized antennas (eg. ground wave, NVIS, long range with log-P antenna ...)

→ We suggest to consider a set-up with two different reception antennas : one with H and one with V polarization, to have a more comprehensive set of measures.

Proposed Dipole Antennas :

◆ Make : Barker&Williamson

- Model : BWDS-90N
- specs : 1.8 - 54 MHz Folded Dipole, Stainless Steel, **90 ft (~27 m)**, N connector, 1 KW.
- Retail price : 810 US \$
- (only from US)
- E-shop and info : <http://www.bwantennas.com/pro/bwds.pro.htm>

◆ Make : WIMO

- Model : T2FD
- Specs : folded dipole Length **25m (~82 ft)**, puissance max. 150W PEP, TOS 2-18 MHz: < 2:1, 18-30 MHz: < 3:1.
- Retail price : 175 €
- (only from EU)
- E-shop and info : http://www.wimo.de/antenne-filaire_f.html

◆ Make : B² Engineering

- Model : Terminated Folded Dipole Antenna System **122 feet (~37m)**
- Specs : 1.5 ~ 30 MHz continuous coverage 600 watt SSB capacity (10~80 M) 300 watt SSB (160M) 800 ohm high impedance feed, 16:1 balun included.
- Retail price : \$335 USD
- (only from US)
- E-shop and info : <http://www.b-squareengineering.com/TerminatedFoldedDipole.htm2>

Suggestions for the measures to be carried out (2)

- ◆ **Noise levels are of primary importance when considering availability.**
 - Necessity to make sure the noise level is correct to avoid badly estimating availability
 - ◆ **Noise levels are of primary importance when trying to reach high Signal-to-Noise ratio**
 - ◆ **Noise impact, from the modem perspective, differs on the noise type: impulsive noise vs. white noise for instance.**
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- ➔ **We suggest to consider a set-up allowing to estimate the noise floor and compare it with predictions to ensure that the measurements made on availability are correct ...**
 - ➔ **We suggest also to evaluate the noise type (eg with a noise CCDF)**



Thanks for your attention

[catherine.lamy-bergot AT thalesgroup.com](mailto:catherine.lamy-bergot@thalesgroup.com)

<http://www.thalesgroup.com>

