

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)	
)	
Unlicensed Operation in the TV Broadcast Bands)	ET Docket No. 04-186
)	
Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band)	ET Docket No. 02-380
)	

Shared Spectrum Company Ex-Parte Statement

Shared Spectrum Company is submitting this ex parte statement pursuant to §1.1206 of the Commission’s Rules in order to improve the completeness of the record in this proceeding.

The Eglin Air Force Base Anecdote

In their Joint Reply Comments, the Association For Maximum Service Television, Inc. and the National Association of Broadcasters (hereinafter “MST”) seek to make an argument that unlicensed devices can cause uncontrolled interference to existing users. It’s principal basis for the argument is anecdotal. Its anecdote, however, is inapposite and lacking in probative value. It relies (at p. 3) on a one-sentence newspaper quote by an Air Force master sergeant at Eglin Air Force Base and on an unidentified local official who suspects “people are firing up hotspots without licensing.” The lack of detail does not permit identification of the cause of the perceived interference. The one thing about the incident we can be sure about is that it did not involve dynamic frequency selection (“DFS”), since there is no equipment reflecting the Commission’s approved DFS standard yet on the U.S. market. Whatever is causing the Eglin problem is not DFS.

The technical question with regard to the Eglin Air Force Base report is whether some legacy 802.11(a) equipment may have caused the problem. Section 15.35(l) of the Commission's Rules requires that:

“U-NII equipment operating in the 5.25–5.35 GHz band for which applications for certification are filed on or after January 20, 2005 shall comply with the DFS and TPC requirements specified in § 15.407. U-NII equipment operating in the 5.25–5.35 GHz band that are imported or marketed January 20, 2006 shall comply with the DFS and TPC requirements in § 15.407.”

That means that there are two categories of legacy equipment which would have to be considered as possible sources. Equipment for which certification was filed prior to January 20, 2005 is grandfathered indefinitely. In Paragraph 29 of the Report and Order in Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) devices in the 5 GHz band, 18 FCC Rec, 24484 (2003), the Commission said so explicitly with respect to certain Arcwave equipment. The second legacy category, imported equipment, will be sunsetted on January 20, 2006 but is permitted to be used now. The main point is that any source of the reported interference could not have involved use of dynamic frequency selection and so the implied argument by AMST and NAB is invalid.

The DFS systems authorized in the 5 GHz U-NII Report and Order, are designed to ensure protection of Federal Government, generally military, radar systems. Such DFS systems are analogous to one of the three approaches proposed in the Notice for preventing unlicensed interference to the minority of households that receive over-the-air television. But these 5 GHz unlicensed devices are still not available and, hence, could not have been the cause of this interference. The Commission's recent Public Notice, DA 05-175 (January 26, 2005), entitled “OET Clarifies Equipment Authorization Policy for Unlicensed national Information Infrastructure (U-NII) Devices Operating in the 5 GHz Band” reports:

“The FCC, National Telecommunications & Information Administration (NTIA), the Department of Defense (DOD) and the industry have been developing the testing methodologies for ensuring that DFS adequately protects Federal Government radar systems. As a result measurement procedures for certifying U-NII devices containing DFS capabilities have not yet been finalized. All parties are currently working together to reach an agreement and expect that remaining issues will be resolved expeditiously.”

Thus, no U-NII equipment using DFS has been approved as yet and none will be approved until the testing methodology issue has been resolved. Whatever is causing problems at Eglin AFB at this time is clearly not a DFS-based unlicensed device.

MST Ignores Narrowband, Cyclostationary/Feature and Distributed Detectors

In contrast to the odd anecdote with which MST starts its Reply, it simply ignores the fundamental consideration of how interference can be avoided by narrowband detectors, cyclostationary/feature detectors, and distributed detectors, such as have been described in filings by Shared Spectrum, IEEE 802, Marcus, Adaptrum and New America Foundation. Very sensitive detectors using one or more of these technologies can reliably detect the presence of TV transmissions on a channel since the detector/detectors would be much more sensitive than the TV receiver that is being protected. Indeed, not only MST but all the parties opposed to the Commission’s proposal for unlicensed service in this proceeding simply ignore supersensitive detectors.

The public FCC tutorial on February 12, 2003 dealt with cyclostationary/feature detectors. Further in the NPRM in Docket 03-108 the Commission has made the following statement:

“There are techniques that can be used to increase the ability of an ensuing receiver to reliably detect other signals in a band which rely on the fact that it is not necessary to decode the information in a signal to

determine whether a signal is present. For example, the use of specialized detectors can improve the ability to sense the presence of other signals by 30-40 dB. Most applications of signal detection in commercial practice are based on “radiometric detectors” which only function if the signal is greater than the noise level in the receiver system. However, in the past decade information has become available about an alternative technology called cyclostationary detectors or feature detectors which use longer sensing times and internal computation to achieve signal sensitivities below the noise level for signals of known format. By processing a large number of transmitted symbols, without the need to demodulate them individually, such a feature detector can achieve a processing gain over a radiometric detector which does not use knowledge of the signal format. In practice, processing gains of 30-40 dB can be achieved with computation resources typical of today’s microprocessors. With such a detector capable of receiving signals more than 30 dB below the noise floor the hidden node problem. (Para. 25, Citations deleted)”

Conclusion

The Commission should focus its attention on these fundamental technological developments and not be diverted by irrelevant anecdotes.

William J. Byrnes

7921 Old Falls Road
McLean, VA 22102-2414
703-821-3242

Shared Spectrum Company

Mark A. McHenry

Michael W. Wellman

8133 Leesburg Pike, Suite 220
Vienna, VA 22182
703-761-2818 x 103

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