ASSOCIATION FOR **MAXIMUM SERVICE TELEVISION, INC.**

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September 14, 2010

Ms. Eloise Gore
Mr. Louis Peraertz
Office of the Honorable Mignon Clyburn
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Ex Parte Submission
ET Docket Nos. 04-186 and 02-380

Dear Ms. Gore and Mr. Peraertz:

On September 9, 2010, representatives of the National Association of Broadcasters (NAB) and the Association for Maximum Service Television, Inc. (MSTV) met with Commissioner Clyburn's staff regarding issues in the above two proceedings.

At that meeting, Mr. Louis Peraertz asked about the interference potential of TV White Space (TVWS) devices to TV reception. Mr. Peraertz asked if MSTV could supply specific information with regard to the OET testing. The following materials are provided to address this question. Interference testing was included in the OET Report on TVWS devices and that the potential for co-channel interference to TV reception can occur over significant distances. A TVWS portable device at 100 mW had the potential to cause co-channel interference over significant distances (a kilometer or more) and therefore ensuring that the device did not operate on an occupied channel is very important and can be best accomplished using both database and sensing approaches. During OET testing of TVWS devices, tests showed that a TVWS transmitter operating at about 5 mW caused interference (complete loss of picture and sound) to a DTV receiver at a distance of 360 meters or 1180 feet. Interference from a TVWS device at 100 mW or 4 Watts would be significantly greater.

As requested, attached are the relevant sections of the OET Report (FCC/OET 08-TR-1005), entitled *Evaluation of the Performance of Prototype White Space Devices Phase II*, October 15, 2008. Relevant language is highlighted in some sections.

We trust this is responsive to your request. Please do not hesitate to contact us if any additional information or explanation is needed. A copy of this correspondence has been filed with the secretary of the FCC.

Respectfully submitted,

David Donovan
President

Attachment: OET Report (FCC/OET 08-TR-1005), entitled *Evaluation of the Performance of Prototype White Space Devices Phase II*, October 15, 2008.

Excerpt from Executive Summary
Page vii of the Executive Summary contains the following bulleted language:

- The Adaptrum device's transmitter was characterized in the laboratory and was used to investigate interference potential to DTV signal reception. Anecdotal tests demonstrated that co-channel interference would occur at line-of-sight distances of up to 360 meters at an EIRP of approximately +7 dBm when the DTV was receiving a weak signal using a receive antenna at a height of 9.3 meters …

Excerpts from Report
Pages 27-28 and 31-32 of the Report describe the test and results:

Pages 27 and 28 are as follows:

1.1 Channel Interference Potential to DTV

The objective of this test was to examine interference distances between the prototype WSD transmitter and a typical consumer-installed DTV receiving system, with WSD transmissions either on the same or on an adjacent channel relative to a weak-signal DTV signal. The co-channel scenario is one that should be avoided by the WSD channel detection scheme, but is investigated as a part of this effort in order to provide an estimate of the interference distance in the case where the detection scheme fails to identify a weak-signal occupied channel.

1.1.1 Undesired Signal (U) Transmission System

The undesired signal was produced by the Adaptrum transmitter coupled with an external 21 dB gain wideband amplifier. The WSD is capable of transmitting an OFDM signal with a signal bandwidth adjustable from 0.5 to 18 MHz. A vertically-polarized planar bi-conical transmit antenna at a height of 2 meters (6.6 feet) above ground level (AGL) was used to radiate the signal generated by the transmitter. The EIRP of the WSD prototype transmitter was measured in the semi-anechoic chamber and determined to nominally be +22 dBm (~150 mW). …

Page 31-32 describe results, as follows:

- The transmitter was activated at full power. Interference was immediately observed in the form of complete loss of the television picture.
- …
- The maximum distance that could be practically obtained between the transmitter system and the receiver system while staying within the receive antenna

mainbeam was 360 meters (1180 feet). The transmitter was again activated at full power within a 4.5-MHz bandwidth and co-tuned with the desired signal (on channel 30). Interference was once again observed as a complete loss of picture. The desired signal level was measured on channel 30 and determined to be -76.9 dBm and the undesired signal level was measured on channel 31 and determined to be -77.4 dBm (D/U = 0.5 dB)

- Since no greater distance separation could be practically realized, a step attenuator was placed between the transmitter amplifier and antenna and used to further attenuate the undesired signal until the interference was eliminated. It was found that an additional 15 dB of attenuation was required to resolve the interference (D/U = 15.5 dB). The results of this test are summarized in Table 4-1.

[MSTV Note: Transmitter output had to be reduced to 5 mW or less. 22 dBm – 15 dB = 7dBm or 5 milliwatts (mW).]

- The test was repeated with the WSD transmitter located to the side and behind the DTV receive antenna, in order to observe the variation in interference level as the WSD was moved off boresight of the receive antenna (away from the axis of symmetry of the mainbeam). The resulting data are summarized in Table 4-2. …

TABLE 4-1. Co-Channel Interference Test Results in Rx Antenna Mainbeam.

Tx Location (WGS-84)	Rx Location (WGS-84)	Path Length (m)	Bearing w.r.t. Rx MB axis (degrees)	Ix ?	Required Attenuation (dB)
39°10.098'N 076°49.445'W	39° 10.098'N 076° 49.445'W	360	0	Y	15
Receive antenna oriented at a bearing of 239° relative to North.					

FIGURE 4-4. Site Orientation for Co-Channel Interference Tests in Rx Back- and Side-Lobes.

TABLE 4-2. Co-Channel Interference Test Results in Rx Back-Lobe and Side-Lobes.

Tx Site	Coordinates (WGS-84)	Path Length (m)	Bearing w.r.t. Rx MB axis (degrees)	IX	Required Attenuation (dB)
1	39° 10.100'N 076° 49.441'W	370	180.0	Y	3
2	39° 10.161'N 076° 49.554'W	340	147.8	Y	14
3	39° 10.096'N 076° 49.801'W	270	72.7	Y	27
4	39° 10.024'N 076° 49.808'W	220	43.7	Y	24
Receive system located at 39°10.098'N; 076°49.445'W with antenna oriented at a bearing of 239° relative to North.					

[MSTV Note: Results from Table 4-1 were used in Executive Summary. Actual worst case might be Tx Site 3 in Table 4-2 where interference was caused over a 270 meter distance with a TVWS transmitter output of only – 5dBm or less than ½ mW.]