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FEDERAL COMMUNICATIONS COMMISSION
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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of the	)	
	)	
Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems	)	ET Docket No. 98-153
	)	
Comments Requested on Reports Addressing Potential Interference From Ultra-Wideband Transmission Systems	)	DA 01-753

REPLY COMMENTS OF XM RADIO INC.

XM Radio Inc. ("XM Radio") hereby files these reply comments in response to comments filed on April 25, 2001 regarding five reports[1] addressing the potential interference from the operation of Ultra-Wideband ("UWB") transmission systems to licensed radio operations.[2]

Background

In 1995, the Commission allocated spectrum in the 2.3 GHz band ("S-band") to the satellite Digital Audio Radio Service ("DARS"). XM Radio and Sirius Satellite Radio Inc. ("Sirius") were the winning bidders in the DARS licensing auction in April 1997, together committing nearly $170 million to the U.S. Treasury. In October 1997, the Commission licensed

[1]Reports were filed by Qualcomm; Time Domain, Inc. through the University of Texas and Johns Hopkins University; National Telecommunications and Information Administration ("NTIA"); and two from the Department of Transportation.

[2]Comments Requested on Reports Addressing Potential Interference from Ultra-Wideband Transmission Systems, *Public Notice*, ET Docket No. 98-153, DA 01-753 (March 26, 2001).

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XM Radio and Sirius to provide DARS in the United States.[3] DARS will provide high-quality, continuous, nationwide multichannel audio service. The availability of DARS will increase the variety of programming available to the listening public, offering an unprecedented variety of music and information, including in areas of the country that have traditionally been underserved by terrestrial radio stations.[4]

In its comments on the Commission's Notice of Proposed Rulemaking ("NPRM")[5] in this proceeding, XM Radio urged the Commission to prohibit UWB operations below 3 GHz. If the Commission does allow UWB operations below 3 GHz, then XM Radio urged the Commission to limit emissions from such devices into the DARS band to a field strength level of 18 uV per meter at 3 meters in order to ensure that UWB transmissions do not cause harmful interference to DARS receivers.[6] While the Commission proposed that its rules for UWB operations be more restrictive below 2 GHz than above 2 GHz,[7] XM Radio urged the Commission to modify this proposal to protect consumers of DARS in the 2.3 GHz band in the same manner as the Commission proposed to protect consumers of broadcast TV and radio and other pervasive communications services that operate below 2 GHz.

In January 2001, the Commission asked for comment on two reports issued by the National Telecommunications and Information Administration ("NTIA") containing analyses of

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[3]American Mobile Radio Corporation, 13 FCC Rcd 8829 (Int'l Bur., 1997); Satellite CD Radio, 13 FCC Rcd 7971 (Int'l Bur., 1997).

[4]Report and Order, Memorandum Opinion and Order, Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band, 12 FCC Rcd 5754, ¶ 1 (1997) ("*DARS Order*").

[5]Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems, *Notice of Proposed Rulemaking*, ET Docket No. 98-153 (May 11, 2000) ("*UWB NPRM*").

[6]Comments of XM Radio Inc., ET Docket No. 98-153 (September 12, 2000).

[7]*UWB NPRM* ¶¶ 27-30, 39.

the potential for harmful interference caused by the operation of UWB transmission technology to U.S. Government operations between 400 MHz and 6000 MHz.[8] In this report, the NTIA concluded that "[o]perations of UWB devices below 3.1 GHz will be quite challenging."[9] XM Radio filed reply comments in that proceeding concurring with those who argued that the NTIA report demonstrated that UWB operations should not be permitted below 3.1 GHz.[10]

In the present proceeding, the Commission asks for comments on five reports, four of which address the potential interference from UWB operations on Global Positioning System ("GPS") operations and one which addresses interference on Personal Communications Services ("PCS") operations. Comments were filed on April 27, 2001.

Discussion

XM Radio continues to urge the Commission to prohibit UWB operations below 3 GHz. XM Radio agrees with those commenters who argue that the tests considered in this proceeding demonstrate that UWB operations can cause interference with licensed services, including GPS and PCS systems.[11] Of the reports considered in this proceeding, the Qualcomm report is the most relevant for XM Radio and its DARS operations. The Qualcomm report establishes that UWB devices will cause harmful interference to PCS. XM Radio's receivers are somewhat

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[8]Comments Requested on Test Data Submitted by the National Telecommunications and Information Administration Regarding Potential Interference from Ultra-Wideband Transmission Systems, Public Notice, *Public Notice*, DA 01-171 (January 24, 2001).

[9]Assessment of Compatibility Between Ultrawideband Devices and Selected Federal Systems, NTIA Special Publication 01-43 (January 2001) ("*NTIA Report 01-43*"), at x.

[10]Comments of XM Radio Inc., ET Docket No. 98-153, at 2 (March 12, 2001) (citing Comments of Sirius Satellite Radio (Feb. 23, 2001) at 3 ("Sirius supports NTIA's position that the cut-off frequency should be 3.1 GHz."); Comments of the U.S. GPS Industry Council (Feb. 23, 2001) at 3 (stating that the NTIA tests results "reveal the existence of an interference problem of sufficient magnitude to preclude all UWB transmissions below 3.1 GHz")).

[11]*See, e.g.*, Comments of the ARRL, the National Association for Amateur Radio, ET Docket 98-153 (April 25, 2001); Comments of The Boeing Company (April 23, 2001);

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similar to PCS handsets in terms of the use of omnidirectional antennas, operations below 3 GHz, the need to receive relatively weak signals, and low link margins. XM Radio believes that the Qualcomm report demonstrates that UWB will likely cause interference to DARS receivers as well. *See* Sirius at 2-5.

XM Radio also notes that testing to date has only focused on a few UWB devices and that the full panoply of UWB devices has not been sufficiently considered. In addition, testing to date has focused primarily on governmental and GPS operations, whereas assessment of the effects of UWB on commercial systems has been minimal. *See* Sirius at 13-14. XM Radio further notes that the aggregate effect of multiple UWB devices operating simultaneously on licensed devices still has not been adequately addressed. *See* Sprint at 4. For XM Radio and the other Commission licensees who paid millions of dollars at auction for their exclusive licensed spectrum, the potential impact of unlicensed UWB operations is a significant issue. Before the Commission can considering allowing the use of UWB technology, it must develop a complete technical record, which includes an assessment of the aggregate effects of UWB as well as the effects of UWB on commercial operations.

Finally, XM Radio agrees with those commenters who note that UWB remains an undefined technology with key operating parameters still unknown. *See* AARL at 4. The reports considered in this proceeding demonstrate that interference from UWB devices depends upon a number of factors, such as frequency range, average and peak power levels, pulse duration, and duty cycle, which vary based on the device. *See* Boeing at 6. In order to adequately assess the potential interference from UWB operations to licensed services, these parameters must be

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Comments of Sirius Satellite Radio Inc.(April 25, 2001); Comments of Lockheed Martin

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specified. Without adequate specification of UWB operating parameters, such an assessment becomes an open-ended and near impossible task.

Conclusion

Based on the foregoing, XM Radio urges the Commission to prohibit UWB operations below 3 GHz, to encourage more testing of UWB devices, particularly the effects of UWB on commercial operations, and to issue a further Notice of Proposed Rulemaking which contains the actual rules proposed for UWB operations.

Respectfully submitted,

XM RADIO INC.

Bruce D. Jacobs
David S. Konczal
SHAW PITTMAN
2300 N St., N.W.
Washington, D.C. 20037
(202) 663-8000

Lon C. Levin
Senior Vice President, Regulatory
XM Radio Inc.
1500 Eckington Place, N.E.
Washington, D.C. 20002
(202) 380-4000

May 10, 2001

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Corporation (April 25, 2001); Comments of Sprint Corporation (April 25, 2001).

CERTIFICATE OF SERVICE

I, Sylvia A. Davis, a secretary to the law firm of ShawPittman, hereby certify that on this 10th day of May 2001, served a true copy of the foregoing **"REPLY COMMENTS OF XM RADIO INC."** by first class United States Mail, postage prepaid, upon the following:

Nicholas W. Allard
David Leive
Arthur S. Landerholm
Oliver P. Strauch
Latham & Watkins
555 11th Street, NW
Suite 1000
Washington, D.C. 20004

Luisa L. Lancetti
Vice President, PCS Regulatory Affairs
Sprint Corporation
401 9th Street, NW – Suite 400
Washington, DC 20004

Charles McKee
General Attorney, Sprint PCS
6160 Sprint Parkway
Overland Park, KS 66251

Gerald Musarra
Vice President
Trade and Regulatory Affairs
Lockheed Martin Corporation
1725 Jefferson Davis Highway, Suite 403
Arlington, VA 22202

Sheldon R. Bentley
Manager
Frequency Management Services
Shared Services Group
The Boeing Company
Seattle, Washington

Christopher D. Imlay
Booth Freret Imlay & Tepper, P.C.
5101 Wisconsin Avenue, NW, Suite 307
Washington, DC 20016-4120

Robert L. Petit
Counsel for Time Domain
Wiley, Rein & Fielding
1776 K Street, NW
Washington, DC 20006

Sylvia A. Davis

Document #: 1112721 v.1