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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

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

In the Matter of	)	
	)	
Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems	)))	ET Docket 98-153

REPLY COMMENTS OF AT&T WIRELESS SERVICES, INC.

Pursuant to the Commission's Notice of Proposed Rulemaking, AT&T Wireless Services, Inc. ("AT&T") hereby submits its reply comments in the above-captioned proceeding.[1/] While ultra-wideband (UWB) technology has the potential to provide exciting new services and applications for consumers,[2/] it plainly would be premature to attempt to craft rules for a technology that has barely reached its nascent stage. Given the uncertainty surrounding UWB technology, its applications, and its interference potential, the Commission should refrain from adopting any rules for UWB devices until more is known about both the advantages and the disadvantages of the technology.

I. FURTHER TESTING OF UWB DEVICES IS REQUIRED

As the Commission recognizes, UWB devices may cause harmful interference to existing radio applications and services.[3/] While the Notice acknowledges that testing is being conducted

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1/ Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems, ET Docket No. 98-153, Notice of Proposed Rulemaking (rel. May 11, 2000) ("Notice").

2/ See Delphi Automotive Systems Corp. Comments (outlining the development of vehicular radar systems using UWB technology); Kohler Co. Comments (explaining the uses of UWB technology as plumbing devices); Comments of Various Public Safety Organizations (stressing the need for UWB devices in emergency situations).

3/ See Notice at ¶ 7.

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today,[4/] the Commission fails to take into account that a more detailed and thorough look at potential interference problems is necessary before UWB rules are adopted. The testing currently being performed by the National Telecommunications Information Association (NTIA), the United States Department of Transportation, Stanford University, the Ultrawideband Consortium, as well as certain private parties, is focused primarily on the effects of UWB interference in the GPS band.[5/] It is clear, however, that UWB devices may have a detrimental effect on many other services.[6/] Indeed, AT&T and other carriers use the cellular, PCS, WCS, and fixed microwave bands to provide valuable voice and data services to millions of consumers, all of which may be subject to unacceptable UWB interference. As one of the testers itself acknowledges, the current tests will not provide an adequate basis for major decision making.[7/] Accordingly, before the Commission proceeds further with this rulemaking, UWB devices should be tested against all licensed commercial radio systems.

In addition, the effects of cumulative UWB interference must be thoroughly tested and analyzed. The Commission, based on information from its Technology Advisory Committee, notes that the aggregate effect of UWB devices "appear to be negligible."[8/] As some commenters explain, however, this information is not a sufficient indicator of potential problems because the findings were based on information supplied by the leading advocates of UWB

4/ Id.

5/ See National Association of Broadcasters Comments at 5; Sirius Satellite Radio Comments at 25.

6/ The Notice ignores most other potential interference problems other than those that may occur in the GPS band. See Notice at ¶ 24.

7/ See GPS Research Laboratory at Stanford Comments.

8/ See Notice at ¶ 47.

technology.[9/] In fact, the available evidence indicates that cumulative use could significantly harm existing services in the GPS band,[10/] the PCS band,[11/] the Amateur Radio Service band,[12/] and the Mobile Satellite Service band.[13/] Because UWB devices are only used sporadically today, real-world experience cannot predict potential interference problems. Given the Commission's and the industry's goals of making UWB devices widely available on a mass-market basis, more in-depth testing and analysis must be conducted to determine the effects of aggregate interference.

The Commission notes that UWB systems appear to fall into two categories: those that use radar techniques to measure distance and detect and image objects, and those that are used for communications purposes.[14/] Some commenters argue that UWB technology has been in use for some time for ground penetrating radar ("GPR") applications, and that GPRs and other radar applications should be treated differently than communications services. They contend that the risk of interference from radar devices is minimal because their emitted energy is focused in one direction (with GPRs, toward the ground), they only operate for brief intervals, and they are not mass marketed.[15/]

[9/] See Lockheed Martin Comments at 6; Nortel Networks Comments at 3; Rockwell Collins Comments; Satellite Industry Association Comments at 6; U.S. GPS Industry Council Comments at 33-35.

[10/] See GPS Industry Council Comments at 34-35.

[11/] See Nortel Networks Comments at 3-4.

[12/] See National Association for Amateur Radio Comments at 13-14.

[13/] See Rockwell Collins Comments.

[14/] Notice at ¶ 9.

[15/] See Comments of A. Peter Annan at 2-3; Lockheed Martin Comments at 7; Satellite Industry Association Comments at 6; Sirius Satellite Radio Comments at 15.

AT&T agrees that the likelihood of harmful interference from communications systems is probably greater than would be the case with radar devices. Nevertheless, as the Commission acknowledges, GPRs have been used only in limited numbers to date,[16/] and very little is known about the potential for interference to existing services as their use proliferates.[17/] In addition, at this point, it cannot be predicted what other types of radar applications will be developed, or whether they will all share similar technical characteristics. It is possible that testing will show that UWB technology that uses radar techniques is compatible with licensed services, in which case, AT&T urges the Commission to amend its rules and authorize its use expeditiously. Before taking this step, however, further testing to assess interference problems, especially aggregate interference, is necessary.

In this regard, the Commission's October 30, 2000 deadline to submit test results simply is not realistic. First, ongoing studies will not be completed by that time. AT&T, for example, is currently initiating its plan to test UWB devices with cellular and PCS receivers. Other carriers, as indicated in their comments, also are testing UWB devices for interference to non-GPS systems.[18/] While preliminary findings on some systems may be available by October 30, concrete and definitive results will not. Second, given the amount of information that still must be gathered about UWB devices and the interference they may cause to existing services, including commercial radio services, it is obvious that the studies being conducted are not comprehensive enough. There are many potential applications that have yet to be studied at all.

[16/] Notice at ¶ 25.

[17/] Moreover, as Multispectral Solutions states, GPR devices typically utilize very high powers, which could make them inappropriate for Part 15 unlicensed use. See Multispectral Solutions Comments at 12.

[18/] See Metricom Comments at 3; Multispectral Solutions Comments at 2; QUALCOMM Comments at 1; Sprint PCS Comments.

Therefore, AT&T supports the proposals of a number of commenters to extend the deadline for test results.[19/] At a minimum, parties will need at least nine months to engage in the comprehensive testing that the introduction of this new technology requires. Once studies are completed, additional time will be required to analyze and evaluate the results.

II. THE COMMISSION SHOULD ADOPT A PHASED APPROACH TO THE INTRODUCTION OF UWB DEVICES UNTIL TESTING IS COMPLETE

If the Commission nevertheless feels that it must take some action in this proceeding, it should begin with a measured approach until additional information becomes available. In particular, as a number of commenters suggest, the Commission should adopt emission restrictions in all areas until more is known about the interference effects of UWB devices. As AT&T noted, frequencies above 2 GHz are currently being used by WCS and considered for use by third generation wireless services. In addition, possible interference to the U-NII band at 5 GHz should be considered.[20/] Other parties also point to several services above 2 GHz, such as MMDS/ITFS service and Satellite Digital Audio Radio Service, which must be protected from harmful interference.[21/]

These commenters dispute the Commission's assertion that UWB signals will quickly fall off below background noise in the higher bands and that the directional antennas used by most

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[19/] See Boeing Corporation Comments at 5; Metricom Comments at 7; XM Radio Comments at 12; Rockwell Collins Comments.

[20/] AT&T Wireless Comments at 8. AT&T Wireless supports a cut-off point for above-below treatment of emissions limits at no lower than 2600 MHz. It recognizes, however, that there are a number of services in the higher bands, that could be subject to harmful interference, and, therefore, it concurs with other commenters that no cut-off is appropriate until additional testing is complete.

[21/] See Cisco Comments at 3; Lockheed Martin Comments at 4; Motorola Comments at 36.

radio services in these bands will mitigate the reception of undesired signals. Indeed, according to Cisco Systems, the Commission must consider interference above 2 GHz because there is only a slight difference between the levels of background noise at 2 GHz and 2.5 GHz.[22/] In addition, as Cisco argues, a significant number of communications systems will soon utilize omni-directional antennas for services above 2 GHz.[23/]

For the past 30 years, the Commission has encouraged the development of low-cost RF solutions by opening bands at higher frequencies. For example, the use of wideband, low energy density emissions in the Part 15 unrestricted band (5.46 to 7.25 GHz) is currently permitted (e.g., U-NII, spread spectrum waveforms, Industrial Scientific and Medical Services, and Intelligent Transportation Systems). As Multispectral Solutions points out, moving next generation, high speed wireless communications to these bands has not prevented engineers from developing viable wireless LANs and dedicated short range communications.[24/] Therefore, until further testing is completed, there is no reason to permit unrestricted UWB use in the lower frequencies. If such testing indicates the interference potential of UWB devices is low, the Commission can eliminate those restrictions, as it deems necessary. Using a phased approach would promote the deployment of UWB technology while helping to protect existing systems.

CONCLUSION

There is no question that UWB technology holds great promise and will significantly benefit consumers through innovative new services and public safety enhancements. The effect of UWB interference on existing services, however, has not yet been determined. Critical

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[22/] Cisco Comments at 5.

[23/] Id.

[24/] See Multispectral Solutions Comments at 12.

emergency operations, as well as traditional wireless services that consumers have come to rely upon, could be put at risk by premature efforts to craft rules without more thorough testing. AT&T understands the Commission's desire to spur the development of new technologies and services, and it intends to be fully involved in this endeavor. Nevertheless, until testing is completed and the industry has been given an opportunity to analyze and comment on the results, rules based on guesswork can only harm consumers of both existing and future services.

Respectfully submitted,

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Dated: October 27, 2000

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