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COMMAND, CONTROL,
COMMUNICATIONS, AND
INTELLIGENCE

November 19, 2001

Mr. William T. Hatch
Associate Administrator, Office of Spectrum Management
National Telecommunications and Information Administration
HCH Building, Room 4099A, 1401 Constitution Avenue NW
Washington, DC 20230

Dear Mr. Hatch:

The preliminary draft ultra wideband (UWB) rules provided by the Federal Communications Commission (FCC) have been reviewed and determined to be inadequate to protect critical DoD systems. The enclosure provides technical limits and operating conditions necessary to protect DoD systems from non-licensed UWB use. Please work with the FCC to ensure that the enclosed limitations are incorporated into the UWB proceeding.

Sincerely,

Badri A. Younes
Director, Spectrum Management

Enclosure
As stated



Recommended Provisional Rules Governing Non-Federal UWB Devices

Definitions:

UWB transmission systems — are defined as intentional radiators that use a series of very short duration (normally in the nanosecond range) electrical impulse-like signals to provide a wide array of sensing and communications applications. Although other methods for generating wide bandwidth signals exist, such as frequency hopping, linear frequency modulation, or pseudo-noise coded spreading, these methods and devices using them must be authorized under separate provisions.

Intentional emissions — from a UWB device shall be determined by measuring the emissions between the outermost points on an ultra wide band transmitter spectrum that are 10 dB down relative to the maximum EIRP level. Determination of the intentional emissions is based on the use of measurement instrumentation employing a RMS detector function.

Non-licensed Indoor Use

Indoor use precludes the operation of UWB transmission systems operating as part of an outdoor infrastructure, including an outdoor communications network, and does not permit the mounting of UWB transmission systems on poles, antenna towers, or any other outdoor fixed structure.

1. Intentional emissions below 3100 MHz, and preferably below 4200 MHz, are prohibited, except for devices covered under paragraphs 8 through 10.
2. Maximum Average EIRP will not exceed -41.3 dBm/MHz (RMS) at frequencies of 3100 MHz or greater, and preferably 4200 MHz or greater, when measured in a 1 MHz bandwidth with an integration time of 1 msec. or less.
3. Emissions limits below 4200 MHz shall conform to the following:

Frequency (MHz)	Emission Limits (dBm/MHz, RMS) ^{Note 1}		
3100 – 4200	-51.3		
1610 – 3100	-56.3		
960-1610	PRF > 200 kHz	PRF < 200 kHz	Maximum Permissible Power In Spectral Line <small>NOTE 2</small>

1559 - 1610	-75	-56.3	-85 dBm (RMS)
1249 -1559	-75	-56.3	N/A
1164 – 1249	-75	-56.3	-85 dBm (RMS)
960 - 1164	-75	-56.3	N/A
335.4 – 960	-45.3		

NOTE 1: Measured in a 1 MHz bandwidth with an integration time of 1 msec. or less

NOTE 2: As measured in a bandwidth of 1kHz or greater. Specific levels still under study

4. UWB antennas shall be an integral part of the UWB device and be designed to prevent deformation or alteration of the transmitted spectrum if the antenna is altered
5. Medical imaging systems may be operated indoors by qualified health care practitioners, provided that their emissions conform to the provisions of paragraphs 2 and 3.

Non-licensed Outdoor Use

6. Outdoor use of non-licensed UWB devices is limited to surface vehicles, except for those specific devices covered under paragraphs 8 through 10 below. For surface vehicular operations of UWB devices, intentional emissions must be located above 6 GHz.
7. Operation of non-licensed UWB devices in an airborne environment is not permitted.

Ground Penetrating Radar (GPR) and imaging systems

Note: Use by state/local authorities, qualified medical professionals, and qualified industrial contractors

8. All emissions of ground penetrating radars (GPRs), wall imaging, and through wall imaging systems in the range 335.4-7250 MHz must be licensed or must conform to the provisions of paragraphs 2 through 4.
9. For GPRs, wall imaging and through wall imaging systems, applicants shall include in their application for equipment authorization a description of how the requirements described in paragraphs 2 through 4 are met. These devices should also include a switch or other mechanism to ensure that operation occurs only when it is activated by

a trained operator and the unit is aimed directly at the object (ground or other structure) being imaged.

10. Operation of through-wall imaging systems used for the purposes of locating people inside structures is limited to parties eligible for licensing under the Public Safety Pool of frequencies in Part 90 of this chapter.