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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**RAUL R. RODRIGUEZ**  
(202) 416-6760

Ms. Magalie R. Salas  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.

**Re: Ex Parte Presentation; ET Docket 98-153**

Dear Ms. Salas:

The U.S. GPS Industry Council hereby submits for consideration by the Commission as part of the referenced proceeding the attached proposed new draft rule to govern the introduction of Ultra Wide-Band "UWB" devices. The Council believes the approach set out in the proposed rules will facilitate the deployment of UWB devices while providing for protection to existing services operating in the same frequency bands as UWB devices. The attachment setting out these proposed rules is intended to serve as the basis for a new part to the Commission's rules governing UWB devices.

In brief summary, the attached proposed rules provide for:

1. The licensing of UWB ground penetrating radars operating below 1 GHz, subject to enumerated conditions;
2. The unlicensed deployment of UWB devices operating in the 6 to 12 GHz frequency band;
3. The appointment of a "band manager" to oversee the deployment of unlicensed UWB devices, whose responsibilities would include promoting competition among providers of UWB devices, promoting the development and use of UWB devices, managing the noise floor of the affected frequencies and settling disputes of interference from existing users of the spectrum, thus freeing the Commission from dispute resolution and other administrative burdens associated with the introduction of a new technology, with the Commission's remaining nonetheless the final arbiter of these issues;
4. The formation of a private sector operated and funded consortium of entities engaged in the deployment of UWB devices; the band manager would head this consortium; and
5. The initiation of a comprehensive study or series of studies to determine the baseline noise floor level in the affected spectrum, subject to Commission-appointed peer group review and comment on study results.

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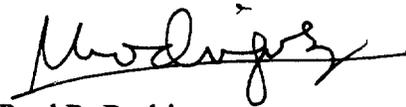
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The Council believes adoption of these proposed rules by the Commission would facilitate a speedy introduction of UWB devices while limiting the potential for disruption of existing services. The Council is prepared to work with the staff of the Office of Engineering and Technology, Commissioners and their staff and interested parties to explain the operation of these proposed rules and to respond to questions or concerns.

An original and one copy of this letter are being submitted for inclusion in the record of the subject proceeding.

Respectfully submitted,



Raul R. Rodriguez  
Stephen D. Baruch  
Counsel to the U.S. GPS Industry Council

**Attachment**

**cc w/ attachment:**

Chairman Michael K. Powell  
Commissioner Gloria Tristani  
Commissioner Kathleen Q. Abernathy  
Commissioner Michael J. Copps  
Commissioner Kevin J. Martin  
Mr. Bruce Franca  
Mr. Julius Knapp  
Ms. Lisa Gaisford  
Mr. Michael Marcus  
Mr. John Reed  
Ms. Karen Rackley  
Mr. Ron Chase

## **PART XX – ULTRA WIDE-BAND DEVICES**

### **§XX.aa Scope.**

This part sets out the regulations for operation of ultra wide-band (UWB) devices.

### **§XX.ab Definitions.**

#### **(a) Band manager.**

An ultra-wideband (UWB) frequency band manager is a private sector entity, organization or consortium, certified by the Commission to coordinate use of spectrum by entities operating UWB devices on an unlicensed basis pursuant to the rules of this Part. Entities operating UWB devices in these bands will be required to participate as members in the UWB consortium administered by the certified UWB band manager.

#### **(b) Ground penetrating radar.**

A ground penetrating radar is a radar signal that is directed at the ground and is capable of detecting the location of objects below the ground's surface.

#### **(c) UWB Ground penetrating radar device.**

A UWB ground penetrating radar device is an ultra wide-band device that is expressly and exclusively used to transmit and receive UWB ground penetrating radar signals.

#### **(d) Ultra wide-band transmission.**

An ultra wide-band transmission is defined as transmission bandwidth either greater than 500 MHz or greater than twenty-five per cent of center frequency.

#### **(e) Ultra wide-band device.**

An ultra wide-band device is a device that intentionally generates and emits and/or receives UWB transmissions.

#### **(f) [other definitions as necessary]**

### **§XX.ac Prohibited operations.**

(a) No ultra-wide band device shall have a transmission bandwidth that includes all or any part of any of the frequency bands listed as restricted bands for safety-of-life operations under the provisions of §15.205(a) of this chapter.

(b) UWB devices shall not cause harmful interference to, and shall accept all interference from, the operation of any authorized radio station; any other intentional radiator; unintentional or incidental radiators; or industrial, scientific and medical equipment.

(c) UWB devices shall not be operated once notified by a Commission representative that the device is causing harmful interference. Once such a notification has been received, UWB devices may not resume operation until the condition causing the harmful interference has been corrected.

**§XX.ad Permitted operations.**

(a) Except as provided in §XX.ac, an ultra wide-band device with a transmission bandwidth that falls entirely within the frequency bands between 6.0 and 12.0 GHz (see Note) may be operated without a license.

- (1) Persons operating ultra wide-band devices without a license pursuant to this subsection shall not be deemed to have any vested or recognizable right to continued use of any given frequency.
- (2) Operation of an ultra-wide band device without a license is subject to the conditions that no harmful interference is caused and that interference must be accepted that may be caused by the operation of an authorized radio station.
- (3) The operator of an ultra wide-band device without a license shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected.
- (4) In addition to the prohibitions, conditions, and requirements in §§XX.ac, XX.ae, and XX.af, operation of UWB devices pursuant to this subsection is subject to the conditions of operation and other rules or regulations as may be established by the band manager and accepted by the Commission.

(b) Except as provided in §XX.ac, a UWB ground-penetrating radar device with UWB ground-penetrating radar signals that have transmission bandwidths that are entirely within frequency bands below 1 GHz may be permitted on a licensed basis.

- (1) The operation of each such UWB ground-penetrating radar device must be licensed pursuant to the provisions of section 301 of the Communications Act of 1934, as amended, and must meet each of the following conditions of operation:
  - (i) [operate exclusively with a to-be-determined set of technical characteristics from comprehensive testing, for example, including, but not limited to, a PRF/duty cycle/peak power limit, etc.;
  - (ii) a UWB ground penetrating radar device licensed under this section must include a switch or other mechanism to ensure that operation occurs only when it is activated by

an operator and the unit is aimed directly down at the ground;

- (iii) adaptive power control for UWB ground penetrating radar devices that automatically ensures that these devices use only the power necessary for the type of material being penetrated;
- (iv) licensed use shall be restricted to situations directly involving public safety and/or protection of life or property and scientific research by accredited academic institutions; and
- (v) all devices must meet the National Telecommunications and Information Administration ("NTIA") waiver-order conditions regarding FCC certifications and lab confirmations.

*Note: The lower end of the frequency band range for unlicensed operation of UWB devices has been set at 6.0 GHz based on the fact that bands restricted under Section 15.205 of the Commission's Rules for safety-of-life applications exist in the frequency range up to approximately 5.5 GHz (see 47 C.F.R. § 15.205(a)). Given the importance of protecting safety-of-life services and the uncertainties of UWB transmission systems, an additional guard band of 500 MHz has been included, leading to the establishment of the lower end of the unlicensed band for UWB devices at 6.0 GHz. See also the Response of Multispectral Solutions, Inc. to NPRM in ET Docket No. 98-153, at 17, (filed Sept. 12, 2000) (indicating that, at a minimum, UWB transmissions should be permitted in the band 5.46 – 7.25 GHz).*

**§XX.ae General technical requirements.**

(a) An ultra wide-band device shall be constructed in accordance with sound engineering and manufacturing practice. Emissions from the device shall be suppressed as much as practicable, but in no case shall the emissions exceed the levels specified in these rules.

(b) An ultra wide-band device must be constructed such that the adjustments of any control that is readily accessible by or intended to be accessible to the user will not cause operation of the device in violation of these regulations.

(c) Because the operators of ultra wide-band devices are required to cease operation should harmful interference occur to authorized users of the radio frequency spectrum, the parties responsible for equipment compliance must employ the minimum field strength necessary to provide greater attenuation of unwanted emissions than required by these regulations, and to advise the user as to how to resolve harmful interference problems.

**§XX.af Radiated emission limits.**

(a) The emissions from an ultra wide-band device operating pursuant to this part shall not exceed the field strength levels specified at §15.209 of this chapter.

(b) Out-of-band emissions (OOBE) produced into any bands restricted for safety-of-life shall not exceed field strength levels that are 35 dB below the corresponding field strength limit specified in the table in §15.209(a) of this chapter.

**§XX.ag Band manager.**

(a) The Commission shall designate a band manager to monitor noise floor levels and other matters affecting interference to operations in the frequency bands in which the use of ultra wide-band devices is permitted.

(b) The band manager for UWB devices operating in the 6 to 12 GHz frequency range will develop an approach to monitoring the noise floor that may include, but is not limited to, UWB product certification, methods of revising specifications for devices to be operated in the band and power density limits.

(c) The UWB band manager will cooperate with other frequency coordinators as appropriate and will abide by consensus policies and procedures governing coordination. Government use of UWB devices shall be coordinated through NTIA.

(d) Responsibilities of the UWB band manager include, but are not limited to, providing coordination of technical standards for maintaining a stable noise floor, including but not limited to, on a non-discriminatory basis: modulation techniques, bandwidth, individual unit power level, and composite network power and power density; reviewing the type approval application forms for completeness and correctness; handling conflicts involving network interactions; recommending the most appropriate standards and infrastructure deployments to minimize overall rise in the noise floor; establishing a single point of contact nationally; adjudicating and settling disputes resulting from degradation of the noise floor caused by UWB devices and facilitating the use of new technologies.

(e) The band manager shall promote competition in the shared use of spectrum while ensuring a stable noise floor.

**§XX.ah Consortium; formation and general requirements.**

(a) All parties operating or intending to operate in the unlicensed frequency bands shall form a consortium to address claims regarding interference from an ultra wide-band operator or operators into an authorized radio service operator. Membership in the consortium shall be mandatory and subject to payment of a reasonable membership fee on a sliding scale.

(b) The UWB band manager designated by the Commission pursuant to §XX.ag shall be the director of the consortium. Decisions of the band manager on all matters affecting spectrum use that come before the consortium shall be final subject to review by the Commission.

**(c) The consortium shall be a non-profit organization with open membership to all entities who intend to operate ultra-wideband technologies, devices, systems, services, and networks in the frequency bands in the 6-12 GHz range. The consortium will develop a membership structure, including fees, that is equitable, accessible, and that promotes competition and the rapid, safe introduction of UWB into the spectrum between 6 to 12 GHz. The consortium will develop technical standards, product certification requirements, including emission masks for UWB transmissions operating in and across the radio frequency spectrum in the 6 to 12 GHz range on a non-interfering basis with existing services.**

**(d) The consortium shall provide for a comprehensive study or series of studies, as necessary, to determine the baseline noise floor level, and to then monitor it, in the 6-12 GHz frequency band.**

**(1) Baseline study of the noise floor level is to be undertaken by the Band Manager within sixty days upon publication of a final rule. The Band Manager shall not approve UWB device operations prior to acceptance of a defined noise floor by the FCC and NTIA.**

**(2) Additional studies shall be conducted upon the request of the FCC to verify that the band manager is maintaining a stable noise floor.**

**(3) Before the results of any study or studies are accepted by the FCC, the study or studies shall be subject to peer review by an outside group comprised of public and private sector representatives approved by the FCC and NTIA. Peer review members shall be announced by the FCC within thirty days after publication of the final rule.**

**(e) Money to compensate existing radio service operators and to fund noise floor studies shall be supplied by consortium members on a sliding scale to be established by the band manager in consultation with all consortium members and subject to review by the Commission.**