

GHz and 5.47–5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems. The minimum DFS detection threshold for devices with a maximum e.i.r.p. of 200 mW to 1 W is –64 dBm. For devices that operate with less than 200 mW e.i.r.p. the minimum detection threshold is –62 dBm. The detection threshold is the received power averaged over 1 microsecond referenced to a 0 dBi antenna. The DFS process shall be required to provide a uniform spreading of the loading over all the available channels.

(i) Operational Modes. The DFS requirement applies to the following operational modes:

(A) The requirement for channel availability check time applies in the master operational mode.

(B) The requirement for channel move time applies in both the master and slave operational modes.

(ii) Channel Availability Check Time. A U-NII device shall check if there is a radar system already operating on the channel before it can initiate a transmission on a channel and when it has to move to a new channel. The U-NII device may start using the channel if no radar signal with a power level greater than the interference threshold values listed in paragraph (h)(2) of this part, is detected within 60 seconds.

(iii) Channel Move Time. After a radar's presence is detected, all transmissions shall cease on the operating channel within 10 seconds. Transmissions during this period shall consist of normal traffic for a maximum of 200 ms after detection of the radar signal. In addition, intermittent management and control signals can be sent during the remaining time to facilitate vacating the operating channel.

(iv) Non-occupancy Period. A channel that has been flagged as containing a radar system, either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected.

[63 FR 40836, July 31, 1998, as amended at 69 FR 2687, Jan. 20, 2004; 69 FR 54036, Sept. 7, 2004]

## Subpart F—Ultra-Wideband Operation

SOURCE: 67 FR 34856, May 16, 2002, unless otherwise noted.

### § 15.501 Scope.

This subpart sets out the regulations for unlicensed ultra-wideband transmission systems.

### § 15.503 Definitions.

(a) *UWB bandwidth*. For the purpose of this subpart, the UWB bandwidth is the frequency band bounded by the points that are 10 dB below the highest radiated emission, as based on the complete transmission system including the antenna. The upper boundary is designated  $f_H$  and the lower boundary is designated  $f_L$ . The frequency at which the highest radiated emission occurs is designated  $f_M$ .

(b) *Center frequency*. The center frequency,  $f_C$ , equals  $(f_H + f_L)/2$ .

(c) *Fractional bandwidth*. The fractional bandwidth equals  $2(f_H - f_L)/(f_H + f_L)$ .

(d) *Ultra-wideband (UWB) transmitter*. An intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

(e) *Imaging system*. A general category consisting of ground penetrating radar systems, medical imaging systems, wall imaging systems through-wall imaging systems and surveillance systems. As used in this subpart, imaging systems do not include systems designed to detect the location of tags or systems used to transfer voice or data information.

(f) *Ground penetrating radar (GPR) system*. A field disturbance sensor that is designed to operate only when in contact with, or within one meter of, the ground for the purpose of detecting or obtaining the images of buried objects or determining the physical properties within the ground. The energy from the GPR is intentionally directed down into the ground for this purpose.

(g) *Medical imaging system.* A field disturbance sensor that is designed to detect the location or movement of objects within the body of a person or animal.

(h) *Wall imaging system.* A field disturbance sensor that is designed to detect the location of objects contained within a “wall” or to determine the physical properties within the “wall.” The “wall” is a concrete structure, the side of a bridge, the wall of a mine or another physical structure that is dense enough and thick enough to absorb the majority of the signal transmitted by the imaging system. This category of equipment does not include products such as “stud locators” that are designed to locate objects behind gypsum, plaster or similar walls that are not capable of absorbing the transmitted signal.

(i) *Through-wall imaging system.* A field disturbance sensor that is designed to detect the location or movement of persons or objects that are located on the other side of an opaque structure such as a wall or a ceiling. This category of equipment may include products such as “stud locators” that are designed to locate objects behind gypsum, plaster or similar walls that are not thick enough or dense enough to absorb the transmitted signal.

(j) *Surveillance system.* A field disturbance sensor used to establish a stationary RF perimeter field that is used for security purposes to detect the intrusion of persons or objects.

(k) *EIRP.* Equivalent isotropically radiated power, i.e., the product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna. The EIRP, in terms of dBm, can be converted to a field strength, in dBuV/m at 3 meters, by adding 95.2. As used in this subpart, EIRP refers to the highest signal strength measured in any direction and at any frequency from the UWB device, as tested in accordance with the procedures specified in §15.31(a) and 15.523 of this chapter.

(l) *Law enforcement, fire and emergency rescue organizations.* As used in this subpart, this refers to those parties eligible to obtain a license from the FCC under the eligibility require-

ments specified in §90.20(a)(1) of this chapter.

(m) *Hand held.* As used in this subpart, a hand held device is a portable device, such as a lap top computer or a PDA, that is primarily hand held while being operated and that does not employ a fixed infrastructure.

**§ 15.505 Cross reference.**

(a) Except where specifically stated otherwise within this subpart, the provisions of subparts A and B and of §§15.201 through 15.204 and 15.207 of subpart C of this part apply to unlicensed UWB intentional radiators. The provisions of §15.35(c) and 15.205 do not apply to devices operated under this subpart. The provisions of Footnote US 246 to the Table of Frequency Allocations contained in §2.106 of this chapter does not apply to devices operated under this subpart.

(b) The requirements of this subpart apply only to the radio transmitter, i.e., the intentional radiator, contained in the UWB device. Other aspects of the operation of a UWB device may be subject to requirements contained elsewhere in this chapter. In particular, a UWB device that contains digital circuitry not directly associated with the operation of the transmitter also is subject to the requirements for unintentional radiators in subpart B of this part. Similarly, an associated receiver that operates (tunes) within the frequency range 30 MHz to 960 MHz is subject to the requirements in subpart B of this part.

**§ 15.507 Marketing of UWB equipment.**

In some cases, the operation of UWB devices is limited to specific parties, e.g., law enforcement, fire and rescue organizations operating under the auspices of a state or local government. The marketing of UWB devices must be directed solely to parties eligible to operate the equipment. The responsible party, as defined in §2.909 of this chapter, is responsible for ensuring that the equipment is marketed only to eligible parties. Marketing of the equipment in any other manner may be considered grounds for revocation of the grant of certification issued for the equipment.