

any further requirement to vary supply voltage.

[58 FR 59180, Nov. 8, 1993; 59 FR 15269, Mar. 31, 1994. Redesignated at 59 FR 32852, June 24, 1994, as amended at 59 FR 32853, June 24, 1994; 59 FR 40835, Aug. 10, 1994; 59 FR 55373, Nov. 7, 1994; 60 FR 3303, Jan. 13, 1995]

Subpart E—Unlicensed National Information Infrastructure Devices

§ 15.401 Scope.

This subpart sets out the regulations for unlicensed National Information Infrastructure (U-NII) devices operating in the 5.15–5.35 GHz, 5.47–5.725 GHz and 5.725–5.825 GHz bands.

[69 FR 2686, Jan. 20, 2004]

§ 15.403 Definitions.

(a) *Access Point (AP)*. A U-NII transceiver that operates either as a bridge in a peer-to-peer connection or as a connector between the wired and wireless segments of the network.

(b) *Available Channel*. A radio channel on which a *Channel Availability Check* has not identified the presence of a radar.

(c) *Average Symbol Envelope Power*. The average symbol envelope power is the average, taken over all symbols in the signaling alphabet, of the envelope power for each symbol.

(d) *Channel Availability Check*. A check during which the U-NII device listens on a particular radio channel to identify whether there is a radar operating on that radio channel.

(e) *Channel Move Time*. The time needed by a U-NII device to cease all transmissions on the current channel upon detection of a radar signal above the DFS detection threshold.

(f) *Digital modulation*. The process by which the characteristics of a carrier wave are varied among a set of predetermined discrete values in accordance with a digital modulating function as specified in document ANSI C63.17–1998.

(g) *Dynamic Frequency Selection (DFS)* is a mechanism that dynamically detects signals from other systems and avoids co-channel operation with these systems, notably radar systems.

(h) *DFS Detection Threshold*. The required detection level defined by de-

tecting a received signal strength (RSS) that is greater than a threshold specified, within the U-NII device channel bandwidth.

(i) *Emission bandwidth*. For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

(j) *In-Service Monitoring*. A mechanism to check a channel in use by the U-NII device for the presence of a radar.

(k) *Non-Occupancy Period*. The required period in which, once a channel has been recognized as containing a radar signal by a U-NII device, the channel will not be selected as an available channel.

(l) *Operating Channel*. Once a U-NII device starts to operate on an Available Channel then that channel becomes the Operating Channel.

(m) *Peak Power Spectral Density*. The peak power spectral density is the maximum power spectral density, within the specified measurement bandwidth, within the U-NII device operating band.

(n) *Peak Transmit Power*. The maximum transmit power as measured over an interval of time of at most 30/B (where B is the 26 dB emission bandwidth of the signal in hertz) or the transmission pulse duration of the device, whichever is less, under all conditions of modulation. The peak transmit power may be averaged across symbols over an interval of time equal to the transmission pulse duration of the device or over successive pulses. The averaging must include only time intervals during which the transmitter is operating at its maximum power and must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level.

(o) *Power Spectral Density.* The power spectral density is the total energy output per unit bandwidth from a pulse or sequence of pulses for which the transmit power is at its peak or maximum level, divided by the total duration of the pulses. This total time does not include the time between pulses during which the transmit power is off or below its maximum level.

(p) *Pulse.* A pulse is a continuous transmission of a sequence of modulation symbols, during which the average symbol envelope power is constant.

(q) *RLAN.* Radio Local Area Network.

(r) *Transmit Power.* The total energy transmitted over a time interval of at most 30/B (where B is the 26 dB emission bandwidth of the signal in hertz) or the duration of the transmission pulse, whichever is less, divided by the interval duration.

(s) *Transmit Power Control (TPC).* A feature that enables a U-NII device to dynamically switch between several transmission power levels in the data transmission process.

(t) *U-NII devices.* Intentional radiators operating in the frequency bands 5.15-5.35 GHz and 5.470-5.825 GHz that use wideband digital modulation techniques and provide a wide array of high data rate mobile and fixed communications for individuals, businesses, and institutions.

[69 FR 2687, Jan. 20, 2004]

EFFECTIVE DATE NOTE: At 69 FR 54036, Sept. 7, 2004, § 15.403 was amended by revising paragraph (n), removing paragraph (r), and redesignating paragraphs (s) and (t) as paragraphs (r) and (s), effective Oct. 7, 2004. For the convenience of the user, the revised text is set forth as follows:

§ 15.403 Definitions.

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(n) *Maximum Conducted Output Power.* The total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the high-

est total transmit power occurring in any mode.

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§ 15.405 Cross reference.

(a) The provisions of subparts A, B, and C of this part apply to unlicensed U-NII devices, except where specific provisions are contained in subpart E. Manufacturers should note that this includes the provisions of §§ 15.203 and 15.205.

(b) The requirements of subpart E apply only to the radio transmitter contained in the U-NII device. Other aspects of the operation of a U-NII device may be subject to requirements contained elsewhere in this chapter. In particular, a U-NII device that includes digital circuitry not directly associated with the radio transmitter also is subject to the requirements for unintentional radiators in subpart B.

[63 FR 40835, July 31, 1998]

§ 15.407 General technical requirements.

(a) *Power limits:*

(1) For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the peak transmit power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.