

## § 15.521 Technical requirements applicable to all UWB devices

(a) UWB devices may not be employed for the operation of toys. Operation onboard an aircraft, a ship or a satellite is prohibited.

[R] this statement is reported in the User Manual.

(b) Manufacturers and users are reminded of the provisions of §§ 15.203 and 15.204.

[R] § 15.203: the antenna is integral, not detachable (for details, see document "LT102XK\_AntennaReport").  
§ 15.204: neither radio frequency power amplifiers, or any kind of antenna modification are allowed by design

(c) Emissions from digital circuitry used to enable the operation of the UWB transmitter shall comply with the limits in § 15.209, rather than the limits specified in this subpart, provided it can be clearly demonstrated that those emissions from the UWB device are due solely to emissions from digital circuitry contained within the transmitter and that the emissions are not intended to be radiated from the transmitter's antenna. Emissions from associated digital devices, as defined in § 15.3(k), e.g., emissions from digital circuitry used to control additional functions or capabilities other than the UWB transmission, are subject to the limits contained in Subpart B of this part.

[R] for the emissions from digital circuitry used to enable the operation of the UWB transmitter, see the test report n. 462409-2TRFWL issued by Nemko S.p.A., § 7.6 "Radiated emissions".  
For the emissions from digital circuitry, see the test report n. 462409-2TRFEMC issued by Nemko S.p.A..

(d) Within the tables in §§ 15.509, 15.511, 15.513, 15.515, 15.517, and 15.519, the tighter emission limit applies at the band edges. Radiated emission levels at and below 960 MHz are based on measurements employing a CISPR quasi-peak detector. Radiated emission levels above 960 MHz are based on RMS average measurements over a 1 MHz resolution bandwidth. The RMS average measurement is based on the use of a spectrum analyzer with a resolution bandwidth of 1 MHz, an RMS detector, and a 1 millisecond or less averaging time. Unless otherwise stated, if pulse gating is employed where the transmitter is quiescent for intervals that are long compared to the nominal pulse repetition interval, measurements shall be made with the pulse train gated on. Alternative measurement procedures may be considered by the Commission.

[R] § 15.519(c) is applicable: CISPR quasi-peak detector at and below 960 MHz has been used for radiated emissions, as well as an RMS detector with 1 MHz RBW for measurements above 960 MHz, with tighter emission limits adopted at the band edges (for details, see the test report n. 462409-2TRFWL issued by Nemko S.p.A., § 7.6 "Radiated emissions").

(e) The frequency at which the highest radiated emission occurs, fM, must be contained within the UWB bandwidth.

[R] the frequency at which the highest radiated emission occurs is contained within the UWB bandwidth (the allowed frequency band is 3100-10600 MHz according to § 15.519(b)) – see Table 7.5-2 of the test report n. 462409-2TRFWL issued by Nemko S.p.A..

(f) Imaging systems may be employed only for the type of information exchange described in their specific definitions contained in § 15.503. The detection of tags or the transfer of data or voice information is not permitted under the standards for imaging systems.

[R] not applicable.

(g) When a peak measurement is required, it is acceptable to use a resolution bandwidth other than the 50 MHz specified in this subpart. This resolution bandwidth shall not be lower than 1 MHz or greater than 50 MHz, and the measurement shall be centered on the frequency at which the highest radiated emission occurs, fM. If a resolution bandwidth other than 50 MHz is employed, the peak EIRP limit shall be  $20 \log(\text{RBW}/50)$  dBm where RBW is the resolution bandwidth in megahertz that is employed. This may be converted to a peak field strength level at 3 meters using  $E(\text{dBuV/m}) = P(\text{dBm EIRP}) + 95.2$ . If RBW is greater than 3 MHz, the application for certification filed with the Commission must contain a detailed description of the test procedure, calibration of the test setup, and the instrumentation employed in the testing.

[R] see § 7.5 of the test report n. 462409-2TRFWL issued by Nemko S.p.A..

(h) The highest frequency employed in § 15.33 to determine the frequency range over which radiated measurements are made shall be based on the center frequency, fC, unless a higher frequency is generated within the UWB device. For measuring emission levels, the spectrum shall be investigated from the lowest frequency generated in the UWB transmitter, without going below 9 kHz, up to the frequency range shown in § 15.33(a) or up to  $f_C + 3/(\text{pulse width in seconds})$ , whichever is higher. There is no requirement to measure emissions beyond 40 GHz provided fC is less than 10 GHz; beyond 100 GHz if fC is at or above 10 GHz and below 30 GHz; or beyond 200 GHz if fC is at or above 30 GHz.

[R] see § 7.1 of the test report n. 462409-2TRFWL issued by Nemko S.p.A..

(i) The prohibition in § 2.201(f) and 15.5(d) of this chapter against Class B (damped wave) emissions does not apply to UWB devices operating under this subpart.

[R] considered.

(j) Responsible parties are reminded of the other standards and requirements cross referenced in § 15.505, such as a limit on emissions conducted onto the AC power lines.

[R] § 15.505(a) considered:

- . § 15.201(b) applicable and adopted
- . § 15.202 not applicable
- . § 15.203: the antenna is integral, not detachable (for details, see document "LT102XK\_AntennaReport")
- . § 15.204: neither radio frequency power amplifiers, or any kind of antenna modification are allowed by design
- . § 15.207 not applicable