

Dear FCC,

please find enclosed some comments regarding your NPRM FCC 00-163 for UWB devices.

In general we agree to your proposals and want to make some additional remarks on some topics.

Preamble:

Siemens automotive, a worldwide supplier for automotive electronics, is actually works on new safety devices and driver assistance functions that need near distance sensing systems with high distance resolution. We fully agree to your item 11 results that UWB technology can be used for automotive functions like forward looking and lane change collision avoidance systems, backup warning systems, airbag proximity measurement, etc. We also think, that due to the huge proliferation of UWB radar systems in the automotive mass market, accommodation within Part 15 of the FCC rules is only feasible on an unlicensed basis.

Page 2, footnote 8:

We propose to measure the max. peak value by stepping up the resolution bandwidth (RBW) of a spectrum analyser up to its max. RBW and determine the RMS value of the true peak by interpolating the RMS increase at each RBW to an RBW of 50 MHz, which corresponds to a victim receiver BW

Page 8, Item 18:

We fully agree that for mass market products individual licensing is impractical and should be avoided

Page 9, Item 19:

We propose to create a common frequency release procedure for devices that operate both in a UWB mode and with higher power in small frequency bands according to the prevailing limits in these bands. Looking upon the automotive market we have to recognise, that narrow band devices are already on the market or at least visible for the near future. Examples are Adaptive Cruise Control / Collision Warning radars in the 76 ... 77 GHz band (FCC paragraph 215.253) or Remote Door Lock / Immobiliser devices in the 24.00 ... 24.25 GHz band (FCC paragraph 215.249). In addition to those we now may expect UWB devices on the cars. We easily envision more than one of those functions based on GHz technology appearing in one box due to cost and space

reasons. Assuming each of those functions being licensable on their own we ask the FCC to define a viable release regulation for units which contain two or more functions in probably different frequency and power ranges.

Page 9, Item 21:

We propose to determine the bandwidth of an UWB by direct measurement of the occupied bandwidth with a spectrum analyser, whatever kind of source has generated the bandwidth. This avoids the bottleneck to limit UWB only for short pulsed systems and gives chance also to other principles like FSK, PSK, FHSS, etc. As the pulse width of very short pulses is difficult to measure with standard equipment, calculation of the BW by the formula of footnote 8 is not a practical way for BW determination. We propose to classify UWB systems by a fractional BW of 15 percent up to 6 GHz and over 6 GHz by 1 GHz BW at the - 10 dB points

Page 10, Item 22:

We think that spurious emissions should be permitted in restricted bands if they fall below the general emission limits of paragraph 215.209.

Page 13, Item 27:

We support your proposal to make no restrictions for UWB devices operating above 2 GHz. We like to call attention to the fact that the interference potential of a radiator decreases with the square of the wavelength because of the decreasing antenna aperture of the victim receivers. The table of general emissions in paragraph 215.209(a) already takes care of this fact for frequencies up to 960 MHz. We propose to extend this table to higher frequencies at least for UWB applications as follows:

from 960 MHz to 20 GHz	500 microvolt per meter
from 20 GHz to 200 GHz	5000 microvolt per meter

The FCC may consider to extend the table in paragraph 215.209(a) as well.

Page 15, Item 34:

Regarding the emission limits, we agree that a limit on the total peak level should apply to UWB devices. We think that no operational restrictions should be made for UWB devices

Page 20, Item 43:

We agree with the formula for the peak emission level extending the

Part 15
average emission limit. We also agree with the upper limit of 60 dB

Page 24, Item 52:

We propose to use a microwave receiver for peak emission level
measurement
if the spectral measurement methods proposed in the comments to
footnote 8
are insufficient.

Page 26, Item 58:

See item 19.