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Commissioner's Secretary
Magalie Roman Salas
Office of the Secretary
Federal Communications Commission
445 12th Street, SW, TW-A325
Washington, DC 20554

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September 12, 2000

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Dear Ms. Salas:

Re: NOTICE OF PROPOSED RULE MAKING
ET-Docket 98-153; May 11, 2000
Revision of Part 15 regarding UWB

ANRO Engineering, Inc. (ANRO) is pleased to respond to FCC ET-Docket 98-153, NOTICE OF PROPOSED RULEMAKING, Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems. ANRO has consistently taken the position that UWB signals are noninterfering with other devices located in the bands from 1 – 3 GHz because the signals are either below the noise level of the receivers in the field, or can not be detected by conventional receivers because of their relatively narrow passbands.

The following specific comments are keyed to the paragraphs in the NOTICE.

Paragraph 21. ANRO agrees that the general definition of UWB based on a certain fractional bandwidth or occupancy of 1.5 GHz or more of spectrum constitutes one possible appropriate approach. Further, we agree that using a –10 dB bandwidth measurement rather than the –20 dB bandwidth is a useful modification. We believe, however, that the delimiting fractional bandwidth should be 0.20 rather than 0.25, commensurate with the reduction in the measurement points.

There are three common methods to provide a measurement of the center frequency of a UWB transmission: a) the average of the upper and lower bounds (e.g., -10 dB points), b) measurement of the apparent peak of the signal spectrum as viewed on an appropriate spectrum analyzer, and c) the inverse of a measurement of the zero crossings of a cycle of the waveform as viewed on an appropriate sampling oscilloscope. The three methods almost never provide the same result for a number of reasons. For the purposes of the regulation of UWB transmissions under Part 15 of the Rules, we consider that the average of the upper and lower –10 dB bounds of the transmission is a reasonable choice.

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Paragraph 27. We agree that, subject to the emission limits specified in later sections, further restrictions on UWB operations above 2 GHz (including the signal spectrum to the –10 dB bandwidth level) are not required due to the high propagation losses in this region.

Paragraph 39. ANRO agrees that an average emission level limit of 500 microvolts/meter measured at 3 meters for UWB transmissions is conservative and reasonable for the region above 2 GHz, with provision for subsequent relaxation in the light of experience with this rule.

Paragraph 42. We give preference to the second recommended method of measurement of the peak emissions be implemented for the Part 15 applications. That is, the measurement of the absolute peak over its entire bandwidth be accomplished using an appropriate sampling oscilloscope. A peak emission measurement over a bandwidth of 50 MHz may be more difficult and less effective to apply for extremely wide bandwidth signals. There is uncertainty in where within the UWB signal bandwidth the 50 MHz bandwidth measurement is to be made. It would be necessary to define the portion(s) of the spectrum in which the licensed equipment is operating to evaluate specifically the potential for interference within a particular 50 MHz bandwidth.

Paragraph 44. The provisions to limit the peak emission level of UWB transmissions as contained in the NOTICE appear reasonable for systems employing non-directional antennas. Certain types of UWB systems (e.g., intrusion detection radars) that may be included within the Part 15 rules emit higher peak emission levels by using directional antennas or arrays. Confining the emission to narrow azimuth and elevation patterns limits the possibility of interference to other licensed operations. ANRO suggests that a factor be incorporated in the peak emission level limitation to permit higher emission levels within directional patterns. As indicated in our earlier comments on ET-153, we suggest that the peak effective radiated power might be limited to 2 kW in a trial phase.

Paragraph 50. Measurement of the average emission levels above 1 GHz should be made using an appropriate spectrum analyzer with established measurement techniques. It seems reasonable to assume that every potential applicant for licensing of UWB devices, as well as qualification laboratories, will have access to the necessary spectrum analyzer, thus not placing an undue burden on them.

Paragraph 57. We agree that the definition of UWB as contained in the NOTICE does not place this type of transmission in the category of Class B, damped wave emissions, and consequently is not prohibited.

Paragraph 59. ANRO Engineering suggests that the transition period be changed to 90 days to provide adequate time for review and comments on the final version of the Rule Making. In addition, the results of the several interference quantification tests that are now ongoing may be pertinent to the formulation of the regulations.

Again, we thank you for the opportunity to provide comments regarding the NOTICE, and look forward to participating in the rapid expansion of UWB devices for the benefit of the public through the sharing of spectrum with other services on a non-interference basis.

Sincerely,

Lee R. Cain
President