

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
)
Revision of Part 15 of the Commission's Rules) ET Docket No. 98-153
Regarding Ultra-Wideband Transmission)
Systems)

To: The Commission

RESPONSE OF CINGULAR WIRELESS LLC TO NTIA REPORTS

Cingular Wireless LLC (“Cingular”)¹ hereby comments in response to the National Telecommunications and Information Administration’s (“NTIA”) reports analyzing data it collected regarding the potential for ultra-wideband (“UWB”) transmission systems to cause harmful interference to U.S. Government radio operations between 400 MHz and 6000 MHz.² Upon review of these reports, Cingular continues to be concerned about the harmful interference potential of UWB technology. Furthermore, Cingular suggests that once the test results are in related to GPS interference,³ the Commission should commence a further notice of proposed rulemaking with specific proposals keyed to the test results.

¹ Cingular Wireless LLC previously filed comments and reply comments in this proceeding under its former name, Alloy LLC.

² Lawrence K. Brunson, *et al.*, ASSESSMENT OF COMPATIBILITY BETWEEN ULTRAWIDEBAND DEVICES AND SELECTED FEDERAL SYSTEMS, NTIA Special Publication 01-43 (Jan. 2001) (filed, ET Docket No. 98-153, Jan. 18, 2001); William A. Kissick, *ed.*, THE TEMPORAL AND SPECTRAL CHARACTERISTICS OF ULTRAWIDEBAND SIGNALS, NTIA Report 01-383 (Jan. 2001) (filed, ET Docket No. 98-153, Jan. 18, 2001); *see* Public Notice, *Comments Requested on Test Data Submitted by the National Telecommunications and Information Administration Regarding Potential Interference from Ultra-Wideband Transmission Systems (ET Docket No. 98-153)*, DA 01-171 (OET Jan. 24, 2001) (*Public Notice*).

³ The Public Notice states: “[T]hese reports do not encompass study of potential interference to Global Positioning Systems (GPS). NTIA and other parties have indicated that further test data and analyses of UWB to GPS interference will be submitted to the Commission in the near future. We will issue a Public Notice seeking comment on those reports when they have been filed with the Commission.”

I. THE PRESENCE OF HARMFUL INTERFERENCE

As NTIA noted, “operations of UWB devices below 3.1 GHz will be quite challenging.”⁴ Cingular’s own analysis shows that interference between UWB devices and cellular/PCS networks will likely occur. For example, taking the NTIA’s maximum power spectral density for UWB devices of -39.2 dBm/MHz EIRP (below 960MHz),⁵ the separation between a single UWB device and a cellular base station must be as large as over one (1) kilometer to meet a 1dB noise floor degradation protection criteria for the base station.⁶ Even greater distances are required if multiple UWB devices are operating. Based on this analysis, Cingular believes that there are a number of factors that must be taken into account in order to reduce the interference potential. These factors were outlined in Cingular’s (Alloy) Reply Comments in ET Docket No. 98-153, and are summarized below.

II. LICENSED, NOT UNLICENSED OPERATION

Cingular continues to oppose unlicensed operation at this point as it is unnecessary and would be very unwise. Licensing is eminently practical in the near term, given that the first wave of UWB applications will be ground and wall penetrating radars to be used mostly by professionals, not mass-marketed consumer applications. Licensing is also essential, at least until this new technology has been proven to be non-interfering in practice. Furthermore, the

⁴ NTIA Special Publication 01-43 at x.

⁵ *See id.* at 2-2, Table 2-1 (EIRP of -49.2 dBm in Table 2-1 for 100 kHz bandwidth represents power density of -39.2 dBm/MHz).

⁶ Cingular arrived at this conclusion as follows: Assuming a thermal noise level of -114 dBm/MHz, a noise figure for the cellular base station of 4 dB, and cellular antenna gain (maximum, boresight) of 15 dBi, the interference level for 1 dB noise floor degradation (*i.e.*, level where interference is 6 dB below the noise floor) is:

$$-114 \text{ dBm/MHz} + 4 \text{ dB noise floor} - 15 \text{ dBi antenna gain} - 6 \text{ dB} = -131 \text{ dBm/MHz.}$$

The required propagation loss is then:

$$-39.2 \text{ dBm/MHz} - -131 \text{ dBm/MHz} = 91.8 \text{ dB}$$

Free space loss at 840 MHz requires approximately 1.1 km to reach 91.8 dB.

cumulative interference effect of multiple UWB devices needs to be monitored. Unlicensed operation would be disastrous when and if there are interference problems, because there would be no central repository of information concerning who has the devices and is using them, and no ready method for tracking usage or compiling interference data.

III. COORDINATION IS NEEDED

Whether UWB is licensed or unlicensed, coordination of UWB devices should be required until sufficient data has been collected to understand the real world UWB interference potential. The very nature of UWB devices requires a coordination process before deployment — conventional licensees and other users of UWB technology need to be able to determine who is using UWB devices, and where, to avoid causing interference and tracking any interference that occurs. The Commission has previously required coordination of unlicensed Part 15 devices. After initial deployment, if the results show that interference is not a serious concern in practice, it may be appropriate to eliminate the coordination requirement for devices within a defined technical threshold.

CONCLUSION

Cingular remains concerned about the interference potential of UWB devices. Once the study has been completed regarding the potential interference to GPS, the Commission should commence a further notice of proposed rulemaking with specific rule proposals keyed to the test results.

Respectfully submitted,

CINGULAR WIRELESS LLC

/S/ J.R. Carbonell

By:

J. R. Carbonell
Carol L. Tacker
5565 Glenridge Connector
Suite 1200
Atlanta, GA 30342
(404) 236-6030

Its attorneys.

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