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Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington DC 20554

Re: Interference by UWB and Unlicensed Devices to C-Band EarthStation Receivers *Ex Parte* Presentation; ET Docket Nos. 98-153 and 02-380

Dear Ms. Dortch:

As the principal trade association of the cable television industry in the United States, NCTA represents cable operators serving more than 90% of the nation's cable television subscribers, more than 200 cable programming networks, and suppliers of equipment and services to the cable industry.

In its Memorandum Opinion and Order and Further Notice of Proposed Rule Making, the Commission identified a need for "more experience with UWB devices."[1] It also stated its intent "to continue our review of the UWB standards to determine where additional changes warrant consideration." In response, the Coalition of C-Band Constituents ("Coalition") has been evaluating the potential threat of Ultra Wideband ("UWB") interference to the 3.7 – 4.2 GHz ("C-Band") frequency band, and thus the capability of cable program networks and cable operators to continue to distribute high quality video via satellite. NCTA submits this *ex parte* letter in support of the Coalition's position.

National cable program networks use satellite relay for distribution of their programming services. These program networks are received at more than 9,000 cable television "headends," most of which use C-Band antennas and receivers. Satellite distribution is a core technology of the cable television industry, and is the primary method for distribution of high quality video signals. Any degradation of these signals could have an impact on subscribers of cable television. Consequently, the Commission should carefully consider the implications of using UWB within the C-Band frequency spectrum.

[1] Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems, *Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, 18 FCC Rcd 3857, 3858 (2003).

Users of C-Band spectrum have already achieved many of the goals set forth by the Commission's Spectrum Policy Task Force[2] ("Task Force"), which was formed to assist the Commission in the identification of changes in spectrum policy that will increase the public benefits derived from the use of radio spectrum. Part of the Task Force's efforts focused on improving spectral efficiency in temporal "white space," where the spectrum lies fallow in between communications uses. In the case of the 3.7 – 4.2 GHz C-Band, the spectrum is in continuous use 24 hours a day, 7 days per week, and there is very little free spectrum that is not used on a continuous basis. In addition, this C-Band spectrum heavily utilizes efficient modulation schemes such as QPSK, which already challenge link budgets and satellite transponder capacity. The planned use of less robust, higher-capacity modulation schemes (such as 8-PSK) that are needed for data-intensive services, such as high-definition television, will be further susceptible to interference. Moreover, C-Band spectrum usage is maximized by satellites that are spaced two degrees apart using earth station antenna technology that can discriminate between these closely spaced satellites. These factors suggest that Commission goals would be better served through the use of the 5.925 – 6.425 GHz uplink spectrum for UWB while reducing the use of the 3.7 – 4.2 GHz downlink band by 21 dB as suggested by the Coalition in its recommendations.[3]

Television signals received in the 3.7 – 4.2 GHz C-Band must remain error-free. Cable television programs received via C-Band signals at the cable headend are retransmitted through the cable system to the subscriber. Even a slightly degraded signal due to increased noise will reduce satellite link margins, system availability and ultimately can lower the quality of services that are provided to consumers.

UWB has been authorized for use in the C-Band assuming that if each individual UWB emitter operates within current Part 15 power limits, then there will be minimal degradation of the satellite signals received by C-Band earth stations. The concern with this approach is that there is no limitation on the number of UWB emitters. Indeed, advocates of UWB state that the use of this technology will become widespread. As a result, it is possible that the aggregation of emissions of the UWB emitters will create an effective noise floor greater than currently is the case with Part 15 devices. If the noise floor becomes great enough, it will degrade the signals received by C-Band earth station antennas. Under the current rules, cable operators and cable programmers have no guarantee that satellite distribution systems will remain free from interference.

Finally, since the mid-1970's when satellite distribution of television signals proved technologically and economically viable, program distribution by satellite to cable has had significant growth. With that growth has come 30 years of operational experience and efficiencies in equipment design. Many of these increases in efficiency have inevitably been

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[2] "FCC Spectrum Policy Task Force," Report of the Unlicensed Devices and Experimental License Working Group, ET Docket No. 02-135, Nov. 15, 2002.

[3] Coalition of C-Band Constituents, Ex Parte Presentation in ET Docket No. 98-153, Feb. 18, 2004.

based upon the logical assumption of stability of the radio frequency channel characteristics in the C-Band satellite downlink. One of the most important of these characteristics is channel noise floor. Reception of C-Band satellite signals by cable operators should not be placed at risk due to additions to the noise floor resulting from UWB device emissions.

There are potential public benefits of UWB. However, because of its unique property of exploiting spectrum already occupied, its success depends upon a well engineered integration to successfully co-exist with other communications systems. Due to the potential problems that could be created within the C-Band spectrum, a cautious approach should be taken. The Coalition has made recommendations how UWB can co-exist with C-Band while minimizing the risk of interference, including urging the Commission to modify its rules for UWB devices within the C-Band spectrum. NCTA urges the Commission to adopt those recommendations.

Sincerely,

/s/ William A. Check

William A. Check, Ph.D.
Senior Vice President
Science & Technology

cc: Chairman Michael K. Powell
Commissioner Kathleen Q. Abernathy
Commissioner Michael J. Copps
Commissioner Kevin J. Martin
Commissioner Jonathan S. Adelstein
Ed Thomas
Julius P. Knapp
Donald Abelson
W. Kenneth Ferree