

COALITION OF C-BAND CONSTITUENTS

June 4, 2004

VIA ELECTRONIC FILING

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

Re: ET Docket Nos. 98-153, 02-380 and 04-151
Critiques of Alion Study

Dear Ms. Dortch:

This letter is submitted on behalf of the Coalition of C-Band Constituents (“Coalition”) in response to *ex parte* documents submitted to the FCC in the above proceedings by Motorola on April 9, 2004 and by various companies including Alereon, Inc., Intel Corporation, Panasonic/Matsushita Electric Corp. of America and Samsung Electronics on April 12, 2004 (“OFDM Alliance”)¹. The Motorola and OFDM Alliance documents respond to the study conducted by Alion Science and Technology (“Alion Study”) and submitted for the record by the Coalition on February 19, 2004.² The Alion Study demonstrated that “the harm to C-band receivers by unlicensed UWB devices using the FCC’s designated power levels is real, and the potential impact to C-band satellite services, especially television and radio transmission services, will be severe.”³ As the attached response from Alion (“Alion Response”) demonstrates, the Motorola and OFDM Alliance *ex partes* in no way undermine the conclusions set forth in the Alion Study.

¹ The members of the OFDM Alliance are Alereon, Broadcom Corp., *femto* Devices, FOCUS Enhancements, General Atomic Corp., Hewlett-Packard Company, Intel Corp., Institute for Infocomm Research, Panasonic/Matsushita Electric Corp. of America, Philips, Samsung Electronics, Staccato Communications, STMicroelectronics, Texas Instruments, TRDA Inc., TDK R&D Corp., TZero Technologies, WiQuest Communications, Inc., and Wisair, Ltd.

² See Alion Science and Technology, Evaluation of UWB and Lower Adjacent Band Interference to C-Band Earth Station Receivers (Feb. 11, 2004). The Alion Study was submitted for the record by the Coalition on February 19, 2004, in ET Docket No. 98-153. Through this submission, the Coalition incorporates by reference the Alion Study into the record in ET Docket Nos. 02-380 and 04-151 as well.

³ *Id.* at p. 6.

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The Motorola and OFDM Alliance *ex partes* purport to critique the results of the Alion Study, but they find the same predicted levels of interference from UWB and unlicensed devices to C-band satellite receivers as Alion. Finding the Alion methodology unassailable, Motorola and OFDM Alliance resort to altering the assumptions underlying Alion's work in order to produce outcomes more in line with their predispositions. In the process, Motorola and OFDM Alliance misinterpret the Alion Study and oversimplify the potential impacts on C-band satellite receivers resulting from UWB and other unlicensed devices. The Alion Response also shows that Motorola and OFDM Alliance either challenge technical assumptions that were never made in the Alion Study or create assumptions that are inconsistent with the real world environment where UWB devices are predicted to be employed:

- Duty Cycle. Motorola and OFDM Alliance state that the Alion Study assumed that all UWB emitters were transmitting 100% of the time.
 - In fact, Alion assumed that 20% of emitters would be operating at any given time. This 20% duty cycle is conservative given that some devices have short duty cycles but others – such as consumer electronics and computer equipment interconnection devices – could be in operation 100% of the time.⁴ Indeed, Craig Barrett, CEO of Intel (an OFDM Alliance member), recently demonstrated a number of new consumer devices at the Intel Developer Forum that very clearly will employ a 100% duty cycle.⁵
- Density. Motorola and OFDM Alliance challenge Alion's assumptions of UWB emitter densities.
 - The Alion Study based its estimate of potential densities of UWB devices on popular consumer devices in the marketplace that are likely to employ UWB technology. Alrecon recently indicated, however, that "UWB companies could ship hundreds of millions of units within a few years. Eventually, every PC, camera, printer, camcorder, flat panel television, and mobile phone could have wireless USB connections."⁶ Alion's estimates of densities did not account for such ubiquitous deployment and, if anything, vastly underestimated the density of UWB devices.
- Line-of-Sight Model. Motorola and OFDM Alliance assert that the Alion model is a line-of-sight model.

⁴ Alion Response at 2.

⁵ See *Communications Daily*, Vol. 24, No. 32 at p. 12 (Wednesday, February 18, 2004) (referring to, among other things, "[a] high-resolution, LCOS (liquid crystal on silicon) projection display with plug-&-play 480 Mbps short-range connectivity using USB over UWB.") See also *Letter from Coalition of C-Band Constituents to Marlene H. Dortch, Secretary, Federal Communications Commission*, ET Docket Nos. 98-153 and 02-380, at 2 (March 5, 2004) ("Coalition March Ex Parte").

⁶ See *Coalition March Ex Parte Letter* at 2.

- The Alion model is not a line-of-sight model.⁷ Rather, Alion used an area model that utilizes three different propagation factors that are weighted and applied according to the distance from the UWB emitter to the victim receiver.⁸
 - Motorola questions the validity of the Alion model to the extent that it includes emitters which are above ground and have line-of-sight to the receiver. As the Alion Response demonstrates, the small number of emitters that Motorola focuses on were located between 150 meters and 2800 meters from the earth station and represent less than 0.5% of all emitters out to 3000 meters.⁹ (Contrary to Motorola's suggestion, the Alion model does not permit a building to be so close to an earth station that it could block the earth station from viewing the satellite¹⁰). The few emitters that had line-of-site characteristics simulated devices in apartments or offices operating near a window facing the earth station. This is hardly an unrealistic assumption given the projected uses of UWB devices, including wireless devices for computer peripherals, which often are located on desktops near windows.¹¹
- Elevation Angles. OFDM Alliance states that the Alion Study was based on a five-degree main beam elevation angle for the Galaxy series of satellites.
 - In fact, Alion used a range of elevation angles from 5 to 15 degrees covering operations by Galaxy satellites and other satellites that are used extensively for program network distribution.¹²
- Antenna Mask. OFDM Alliance suggests that Alion should have used a different antenna to perform its simulations.
 - Disputing Alion's use of the peak sidelobe antenna mask for C-band antennas set forth in the FCC's rules, the OFDM Alliance ran another simulation using a different commercial antenna with a mask exceeding the minimum performance required by the FCC.¹³ Apart from being a rather transparent attempt to bias its results, OFDM Alliance ignores the practical reality that the performance of all antennas degrades over time due to rain, snow and wind effects, dirt, and maintenance.¹⁴ In any event, given that one cannot assume that commercial

⁷ Alion Response at 3-4.

⁸ *Id.* at 4.

⁹ *Id.* at 4-5.

¹⁰ *Id.* at 1.

¹¹ *Id.* at 4.

¹² *Id.*

¹³ *Id.* at 3.

¹⁴ *Id.*

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antennas will *outperform* the FCC's requirements, there is no basis for disputing Alion's assumptions based on the FCC's rules.

In the final analysis, Motorola and OFDM Alliance resort to mischaracterizations of the Alion Report, given that they *agree* with the methodology Alion used. The Commission should not permit obfuscation to guide its policy decisions. In sum, nothing in the *ex partes* submitted by Motorola or the OFDM Alliance undermines the analysis in the Alion Report demonstrating that UWB devices operating in the C-band under current FCC rules will cause harmful interference to C-band earth station receivers.

If you have any questions about the attached response to the Motorola and OFDM Alliance study, please contact the undersigned.

Respectfully submitted,

/s/ Benjamin J. Griffin

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*Counsel for Coalition Members Fox Broadcasting
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Enclosure

* Except for Fox Broadcasting Company and Fox Cable Networks.

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Commissioner Jonathan S. Adelstein
Commissioner Michael J. Copps
Commissioner Kevin J. Martin
Ron Chase
Rosalee Chiara
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