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American Medical Response Inc. · ARINC
ARRL, The National Association for Amateur Radio · Astrolink International LLC
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Ellipso, Inc. · Ericsson Inc. · Garmin International, Inc.
General Aviation Manufacturers Association · Global Locate, Inc.
IntergriNautics Corporation · LocatorNet
Magellan Corporation · National Business Aviation Association
National Ocean Industries Association · NavCom Technology, Inc.
Nokia, Inc. · Nortel Networks, Inc. · NovAtel Inc. · Omnistar, Inc.
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Spatial Technologies Industry Association · Tendler Cellular, Inc.
Trimble Navigation Ltd. · United Airlines
US GPS Industry Council · WorldCom, Inc. · XM Radio Inc.

July 30, 2001

BY HAND DELIVERY

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
The Portals
445 Twelfth Street., S.W.
Washington, D.C. 20554

Re: IB Docket No. 98-153
Notice of Ex Parte Presentation

Dear Ms. Salas:

The undersigned and the individuals listed in the attached Table 1 met on July 26, 2001 with Commissioner Kevin J. Martin to discuss matters related to the above-referenced Notice of Proposed Rulemaking. The positions taken and issues discussed by the undersigned and individuals identified in the attached Table 1 have been previously put forward in writing and submitted for the record in the above-mentioned proceeding. The enclosed materials served as the basis for those discussions.

Pursuant to the Commission's Rules, 47 C.F.R. § 1.1206, an original and one copy of this letter have been submitted for inclusion in the public record.

Respectfully submitted,

Edward W. Correia

Edward W. Correia
of LATHAM & WATKINS

Enclosures
cc: Commissioner Kevin J. Martin

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Table 1

Participant	Representing
Nick Allard	Latham and Watkins
Rob Briskman	Sirius Satellite Radio
Edward W. Correia	Latham and Watkins
Jim Burkley	Raytheon
John Britigan	Raytheon
Raul Rodriguez	U.S. GPS Industry Council
Chris Imlay	ARRL **The National Association for Amateur Radio**
Paul Rinaldo	ARRL **The National Association for Amateur Radio**
Joe Cramer	Rockwell Collins, Inc.
Kris Hutchison	ARINC
Tony King	Delta Air Lines, Inc.
Bill Sears	Air Transport Association
Jeannie Mills	National Ocean Industries Association
Bob Moran	National Ocean Industries Association
Curt Sumner	American Congress on Surveying and Mapping
Tom Lindstrom	Ericsson, Inc.
Cecily Cohen	Nokia, Inc.
Dean Brenner	Qualcomm, Inc.
Scott Rafferty	SiRF Technology

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General Aviation Manufacturers Association · LocatorNet · Lockheed Martin Corporation
Magellan Corporation · Motorola, Inc. · National Business Aviation Association
Nokia, Inc. · Nortel Networks, Inc. · Omnistar, Inc. · Outreach
QUALCOMM Incorporated · Rockwell Collins · Satellite Industry Association
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Sprint Corporation · Trimble Navigation Ltd. · US GPS Industry Council
WorldCom, Inc. · XM Radio Inc.

June 6, 2001

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JUN 6 2001

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

VIA MESSENGER

Michael K. Powell
Chairman
Federal Communications Commission
The Portals
445 Twelfth St., SW
Washington, DC 20554

Re: ET Docket 98-153

Dear Mr. Chairman,:

Members of the UWB coalition met with you on May 30 to discuss matters raised in the joint ex parte letter to you filed on May 18, 2001 on behalf of 30 parties.[1] At that meeting, the coalition indicated that we would submit a more detailed summary of the views of the coalition as expressed at the meeting.

We identified three principal issues that needed to be addressed: (i) while ultra-wide band (UWB) devices provide promise for many services, tests by several government agencies and a broad range of industry have shown that these devices cause significant harmful interference with authorized spectrum users in the 1 to 6 GHz band, and, therefore, the Commission cannot overlay UWB in these bands under existing FCC Part 15 rules; (ii) the NPRM is deficient in that it contains only a single paragraph on the potential use of UWB devices in overlapping network communications; consequently the majority of testing to date focussed on an overly narrow interference profile; and (iii) the threat to the noise floor of unlicensed operations in the relevant spectrum needs to be carefully evaluated.

[1] See Notice of Ex Parte Presentation, ET Docket 98-153, May 31, 2001.

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In response to your question about test results, members of our group enumerated the tests in the record to this proceeding that demonstrated UWB interference. We also briefly described the type of spectrum arrangements that would be necessary to permit the orderly use of UWB communications devices, which would require as a minimum an active frequency manager for the segment of spectrum allocated to UWB above 6 GHz.

We further suggested the following elements of a proposed solution: (i) the Commission should identify specific categories of UWB devices and establish proposed rules for licensing these categories;[2] (ii) the Commission should identify spectrum above 6 GHz, other than spectrum in restricted bands, where UWB devices can be used without creating harmful interference to spectrum users; (iii) the Commission should codify the existing UWB ground penetrating radar application below 1 GHz with licensing rules appropriate to unintended emissions; (iv) the Commission should study the issue of the noise floor increase by UWB devices over the relevant spectrum; and (v) the Commission's proposed rules for each UWB category should be incorporated into a licensing scheme, and not Part 15, and industry members should be given an opportunity to comment on the Commission's proposed rules and regulatory framework prior to their adoption. We believe that this proposed solution would not result in significant delay to implementation of most UWB categories.

In the event there are any questions concerning our presentation, please feel free to contact me. An original and one copy of this letter are submitted for inclusion in the record of the above-referenced proceeding.

Sincerely,

Robert D. Briskman

Robert D. Briskman
On behalf of the parties listed above

cc: Peter Tenhula
Ms. Magalie R. Salas, Secretary

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[2] The following UWB categories were suggested: Communications; Ground Penetrating Radars, Automotive Collision Radars, and Experimental Devices.

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Magellan Corporation · Motorola, Inc. · National Business Aviation Association
Nokia, Inc. · Nortel Networks, Inc. · Omnistar, Inc. · Outreach
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May 18, 2001

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MAY 18 2001

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Michael K. Powell
Chairman
Federal Communications Commission
The Portals
445 Twelfth St., SW
Washington, DC 20554

Re: ET Docket 98-153

Dear Chairman Powell,

The Signatories listed above provide the following joint comments to the Commission in the above proceeding.

As a preliminary matter, many of the entities listed on this letterhead have filed individual comments with the Commission, reflecting their individual interests. However, all the Signatories to this letter have certain fundamental principles and conclusions in common. These are as follows:

FIRST, ultra-wideband (UWB) devices may offer a promising technology that could provide new and innovative services. However, test results to date demonstrate that such devices have unique transmission characteristics that produce intentional transmissions that cause significant harmful interference to GPS, other safety-of-life services, wireless services such as PCS, as well as to satellite services such as DARS. These tests show that other characteristics of the proposed UWB signals also vary greatly from the characteristics of unintentional emitters. Consequently, the signatories recommend that UWB devices be limited to spectrum above 6 GHz, not be allowed to operate in any restricted band, including safety-of-life service bands, and be subject to a licensing regime.

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List A B C D E

SECOND, to the extent the Commission considers permitting the deployment of UWB devices consistent with the foregoing, the Commission should identify specific categories of UWB devices and establish proposed rules for licensing these categories based on either actual tests of individual UWB waveforms or measurements using UWB simulators. This differentiated approach is appropriate and necessary because of the facts that: (i) there are a wide range of potential UWB devices, with differing characteristics, (ii) only a very small number of UWB devices have been tested (and not against many FCC-licensed receivers that will be affected), and (iii) many proposed UWB applications are in the concept stage. This differentiated approach is critical to assure that a particular class of UWB device may be safely introduced above 6 GHz without causing harmful interference to licensed and unlicensed services authorized to use these frequency bands, and without unwanted emissions causing harmful interference to licensed and unlicensed services operating below 6 GHz.

THIRD, in light of the above, the Signatories propose that the Commission take the following steps to implement a licensing regime separate and apart from Part 15:

(i) identify spectrum above 6 GHz, other than spectrum in restricted bands, where UWB devices can be used without creating harmful interference to users of that spectrum;

(ii) define specific categories of UWB devices, along with the technical and operational characteristics of each category, so that the Commission is in a position to identify appropriate regulation for specific categories of devices;

(iii) identify areas where further testing and/or analysis is needed, including the aggregate effects of multiple UWB devices, and take action to ensure that these tests or analysis are completed expeditiously;

(iv) based on steps (i)-(iii) above, devise specific rules for each category of UWB device. These rules should govern the application of the category of UWB device and its mode of operation, by providing allowable average and peak power levels, the allowable ranges of pulse characteristics in the time domain, allowable spectrum masks, and other appropriate limits which govern its introduction.

(v) incorporate these specific rules in a new, UWB-specific licensing system that would allow UWB devices to operate in the non-restricted bands specified above 6 GHz. The Commission should request comments from interested parties on any such proposed rules and the proposed licensing system before issuing a final rule.

(vi) should new categories of UWB devices be developed, the Commission should generally follow the procedure outlined above in order to enable the safe deployment of such new UWB categories.

The Signatories hope that these joint suggestions will assist the Commission in reaching satisfactory and expeditious resolution of this matter.

Respectfully submitted,

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cc: Commissioner Susan Ness
Commissioner Harold Furchtgott-Roth
Commissioner Gloria Tristani
Ms. Magalie R. Salas, Secretary

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March 27, 2001

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Michael K. Powell
Chairman
Federal Communications Commission
The Portals
445 Twelfth St., SW
Washington, DC 20554

Dear Chairman Powell:

Joint Industry Filing on UWB NPRM (ET Docket No. 98-153):

Need for Further NPRM Prior to Adoption of Final Rule

1. Introduction and Summary

The plethora of devices at issue in the Commission's above-referenced ultra-wideband ("UWB") rulemaking are proposed to operate throughout most of the radio spectrum that is heavily used by licensed services today. The Signatories below represent a broad range of interests that potentially would be adversely affected by the operation of UWB devices.

From the outset of this rulemaking proceeding, the Commission has been mindful of the lack of information regarding UWB devices and the potential impact of their operation on existing radio services authorized throughout the spectrum bands. As a consequence, the Notice of Proposed Rulemaking ("NPRM") in this docket declined to include any specific proposed rule text, as is customary. Similarly, on most issues, the NPRM did not even reach tentative

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conclusions. Although the Commission established a pleading cycle, it also recognized that *subsequent to that pleading cycle*, test results would be submitted by, among others, the National Telecommunications and Information Administration ("NTIA") evaluating the potential impact that the UWB devices would have on existing, authorized radio operations. Some of those test results have been submitted. Other significant studies are yet to be completed, and the Commission thus far received public comment on only one of the studies, that submitted by the NTIA in January. This study was limited to an examination of the impact on federal non-Global Positioning System ("non-GPS") operations, and reached what it described as preliminary results making clear the need for more study before the Commission acts. The study confirmed, however, that UWB devices need to be regulated different from Part 15 devices if existing radio operations are to be adequately protected.

Despite the preliminary and incomplete nature of the information before the Commission and the lack of public comment on much of that information, it has come to our attention that the FCC may be considering as its next procedural step the adoption of a final order regarding the operation of UWB equipment under Part 15 of its Rules. Needless to say, the signatories to this letter are concerned that any final action by the FCC on the current record would be seriously premature, for the reasons noted above, especially because the UWB proponents seek unprecedented changes in the way the FCC manages the spectrum and because of the potentially adverse impact those changes may have on the broad array of licensed radio services. Indeed, the NPRM itself, reflecting the fact that the Commission did not have before it adequate information, was general and ambiguous concerning exactly what the scope of any final rules would be (e.g., the parameters of the UWB definition, the limits on power, the types of modulation, the permitted bands of operation, etc.) and what existing radio services would be affected. Thus, it would be fair to say that there has been a complete lack of opportunity, let alone adequate opportunity, for comment on any Commission "proposed rules," as required by the Administrative Procedure Act.

Virtually every radio service operating below 6 GHz, as well as many above, could be affected by the rules the FCC ultimately adopts in this proceeding. This proceeding uniquely raises the prospect of permitting intentional radiation by unlicensed devices in the restricted Part 15 bands in a manner that would be to the potential detriment of all licensed and unlicensed users. The Commission must take appropriate care to ensure that potentially affected parties are given an opportunity to comment on something far more concrete than has occurred to date. The Commission should exercise due caution before deciding whether and how to act.

Accordingly, the Commission should (1) provide an opportunity for comment and reply comment on any further test results submitted, once they are received, in addition to the comment cycle it recently established on the University of Texas, Johns Hopkins Applied Physics Laboratory, Stanford University, Department of Transportation and NTIA tests, and (2) based on the record developed in this proceeding last year as well as the comments on the studies, formulate proposed rule text and issue a further notice of proposed rulemaking to ensure

a meaningful and adequate opportunity for all interested parties to comment. In that way, the Commission will be able to take specific views of affected interests on concrete proposals into account in formulating its final order, the only result that is in the public interest.

2. Enormous Range of Devices Seeking UWB Status

During the NPRM proceedings, parties have proposed and discussed an enormous range of potential UWB devices and applications, some of which are anticipated to have important safety and law enforcement applications, and which taken individually may pose different issues (because they occupy different bands of the spectrum, are more susceptible to filtering and notching, or utilize different modulation techniques) and offer different solutions regarding compatibility with existing operations. The large number of potential UWB devices, coupled with the issues that need to be addressed for each category of devices, means that there are many significant policy issues where it is essential to be able to comment on a specific proposed Commission approach. Among the proposed devices are: ground penetration radars; through-the-wall imaging systems; automotive sensors; medical monitors; communications and network devices; home safety systems; commercial monitoring of fluid levels; and as camera auto-focus devices.

3. Diversity of Incumbent Interests

The use of the candidate UWB devices briefly described above would affect the incumbent interests of a very large number of existing uses, operational services and technologies in a vast array of fields and industries. Affected parties include: entities delivering satellite radio services; entities and persons providing or relying on Global Positioning System ("*GPS*") devices, including aeronautical, marine, and land-based navigation and other safety-of-life services, network synchronization (telecommunications, banking, and power distribution); commercial location and tracking, geological and seismic surveying, air traffic control, E911 paramedic response, mobile emergency response systems ("*E-911*") and consumer medical location services; entities providing and relying on FAA radar systems; entities engaged in radio astronomy; entities operating fixed satellite earth stations; entities and persons relying on mobile services; broadcasters; entities operating under Part 15; and even entities that see the potential benefits of using certain UWB devices (because of the potential for interference among such UWB devices).

4. Impact of UWB Devices on Incumbent Interests

The broad range of prospective UWB devices includes many different types of signals in many potential frequency bands, and their measurement and analysis is very complex. However, effective and reliable measurement of the emissions from these devices is critical to assess whether and how UWB pulse position modulation technologies can be successfully and safely introduced into the frequency domain without life-threatening or other adverse effects on

existing operations. Of the large number of potential UWB devices and applications, NTIA and others have tested only a small number, and those test results cannot be extrapolated to include, for example, the total power of a UWB communications network, or the aggregate, cumulative effect of UWB devices. So, despite the testing done to date, adequate measurement and analysis of the effect of the full range of potential UWB devices on other spectrum users has not yet been done. However, even the limited tests to date show significant harmful interference.

5. Commission Action Requested

As noted, the Commission itself recognized the uncertainties outlined above in its NPRM, where it emphasized at a minimum, the need for further testing and information as well as subsequent comment thereon; for this reason, the Commission did not propose specific rules when it issued the NPRM in May 2000. Subsequently, the Commission has received the submission of certain test analyses and results; in some cases, the Commission has expressly solicited comment on those submissions in this proceeding. However, the interested parties can not logically extrapolate from the various test submissions any comprehensive picture of the direction of the Commission's final thinking with respect to a potential regulatory framework for UWB operations. Therefore, at such time as the Commission believes that it has sufficient information before it to articulate prospective final rules, it should issue the text of the proposed rules in a further NPRM, allowing all interested parties to identify themselves and have a meaningful opportunity to review and comment on such rules.. *See, e.g., Fertilizer Institute v. E.P.A.*, 935 F.2d 1303, 1131, (D.C. Cir. 1991) (final rule is the logical outgrowth of a proposed rule if a new round of notice and comment would not provide commenters with "their first occasion to offer new and different criticisms which the agency might find convincing); *National Tour Brokers Assoc. v. U.S.*, 591 F.2d 896, 902 n.2 (D.C. Cir. 1978) (interested parties should have an opportunity to "address a proposal before, not after," it is implemented). Such action here would allow affected parties to focus on specific language, definitions, operational rules and restraints, and other concepts, enabling such parties to evaluate whether the proposed rules ensure that UWB operations would not harmfully interfere with existing radio operations.

In short, since the NPRM (i) has not defined the UWB devices in question, (ii) has not measured their impact on existing incumbent users, and (iii) has not determined the bands of operation, the emission limits or other regulatory provisions necessary to support UWB deployment in a manner that protects those users, it is premature and inappropriate for the Commission to adopt any final rules at this time.

6. A Further NPRM Is Required, Both As a Matter of Fairness and Under the APA

Cases consistently hold that, in circumstances similar to the present proceeding, an agency's omission of critical issues or substantive language in an NPRM deprives interested parties of the opportunity to participate meaningfully in the rulemaking process and is reversible. *See, e.g., Chocolate Mfr's. Assoc. v. Block*, 755 F.2d 1098 (4th Cir. 1985) ("the essential inquiry…'is

whether the commenters have had a fair opportunity to present their views on the contents of the final plan.'") By failing to include a proposed rule, the Commission has ensured that parties would not be able to respond specifically to the data or technical assumptions, positions, or policies reflected in the proposed rule. In fact, the Commission has created the distinct risk that interested parties will have to confront possibly harmful rules, factual assumptions, or critical data for the first time when the final rule is proposed, in violation of the Administrative Procedure Act. *See, e.g., American Medical Assoc. v. U.S.*, 887 F.2d 760 (7th Cir. 1989) (stating that rule will be invalidated if no notice was given of an issue addressed by the final rule, or where an issue is addressed only in general terms in the initial proposal); *Fertilizer Institute,* 935 F.2d at 1131; *National Tour Brokers,* 591 F.2d at 902.

The NPRM also failed to indicate the possible impact to some parties (state agencies, consumer groups, etc.) who might not have the specialized expertise to realize what the FCC's general intentions might mean to them. *See Wagner Electric Corp. v. Volpe,* 466 F.2d 1013, 1018 (3rd Cir. 1972) (reversing rule in part because although certain manufacturers may have appreciated that standards not discussed in NPRM would be affected by proposed rule changes, other interested parties might not have appreciated the connection and therefore had insufficient notice). Furthermore, the Commission will have harmed not only the interested parties, but the rulemaking process itself. *See, e.g., MCI Telecomm. Corp. v. F.C.C.*, 57 F.3d 1136, 1141 (D.C. Cir. 1995) (notice requirement seeks to assure agency will have before it all facts and information relative to particular administrative problem); *National Tour Brokers,* 591 F.2d at 902. Failing to propose a specific, substantive rule means that the Commission will be exposed to a narrower range of constructive and potentially instructive comments. Finally, review by a court (in the event of challenge) will be much more difficult.

7. <u>No Evidence Suggests that Precipitous FCC Action is Warranted.</u>

The record before the Commission does not provide any evidence or external circumstance warranting precipitous FCC action in the adoption of final rules and the denial to the affected parties – in this case most current users of the radio spectrum - of an opportunity to comment on those rules prior to their final adoption. This is especially the case given that test results from several government-sponsored programs are revealing harmful interference.

* * *

For the reasons given above, the signatories respectfully request the Commission to issue a further NPRM containing the proposed text and rationale of any proposed rule in this proceeding, for comment by all interested parties prior to final adoption by the Commission.

Respectfully submitted,

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Ultra Wide Band Is A Threat to Safety of Life Aviation Operations Because It Interferes with GPS-WAAS-LAAS

WAAS is the most susceptible because its signal is 11-13 DB down from a nominal GPS signal

Multiple ultra-wide band transmitters will raise the noise floor

Over 600 million passengers will fly in America in 2001