Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [Report from ITU-R TG1/8 meeting, Boston, 8-18 June 2004]
Date Submitted: [7 July, 2004]
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Re: [ITU-R TG1/8]

Abstract: [ITU-R TG1/8 held their Third Meeting on UWB in Boston on 8-18 June, 2004. This document presents results of that meeting and UWB Exhibition from the perspective of the United States Delegation.]

Purpose: [This material is intended to inform P802.15 about the status of ITU-R TG1/8 "On the compatibility between ultra-wideband devices (UWB) and radio-communications services," to report on the UWB Exhibition, and to recommend that the IEEE individuals consider presenting contributions to the ITU through State and Sector Members. The ITU and USTG 1/8 are seeking technical contributions which show the compatibility of UWB with existing services.]

Report from ITU-R TG1/8 Meeting and UWB Exhibition, Boston, 8-18 June 2004

"Coexistence of UWB with other Wireless Services"

About ITU and ITU-R

International Telecommunications Union (ITU) Headquartered in Geneva, Switzerland

- Established 17 May 1865 in Paris by the 20 founding members
- Became UN specialized agency 15 October 1947 "where governments and the private sector coordinate global telecommunication networks and services"
- Leading publisher of telecommunication technology, regulatory and standards information

ITU-R (Radiocommunications) Mission

- To ensure rational, equitable, efficient and economical use of the radiofrequency spectrum by all radiocommunication services, including those using satellite orbit
- Carry out studies and adopt recommendations on radiocommunication matters

Third Meeting of ITU-R TG 1/8 and UWB Exhibition, Boston, MA

- **TG 1/8 met over a 10 day span**
- **Vendors exhibited UWB-related wares:**
  - Aether Wire showed static displays of DS-UWB locator devices
  - Agilent showed array of test equipment displaying MB-OFDM signals
  - Elanix showed an array of system simulation toolboxes capable of simulating DS-UWB, MB-OFDM and suitable for CSM
  - Freescale/Motorola demonstrated wireless DS-UWB piconet transferring an HDTV channel
  - Pulse~LINK demonstrated large array of operating impulse UWB demos:
    - UWB over CATV in presence of TV channels: 1 UWB HDTV signal
    - Wireless UWB: two HDTV channels, one in each direction, transmitted and received
    - One UWB HDTV signal over local powerline
  - SARA (Short-range Automotive Radar Allocation) demonstrated several 22-29 GHz band UWB radars operating in several automobiles
  - Staccato showed MB-OFDM transmitter (only) cabled into test equipment
  - Wisair showed MB-OFDM transmitter (only) cabled into test equipment
- ***A rich abundance and variety of UWB technologies were demonstrated to a world-wide audience of ITU-R delegates***

"The ITU-R TG 1/8 meeting in Boston was a huge success in regard to the global adoption of UWB. The Delegates saw firsthand and many for the first time, the successes we've achieved in the development of UWB. This came at a critical juncture as many administrations have or will shortly begin their rule making processes. These delegates were genuinely impressed by what they experienced and will no doubt evangelize our message to the masses. It should also be noted that the IEEE's involvement in this process as a Regional International Member of the ITU-R speaks volumes to their commitment to reach beyond the U.S. borders and recognizes that any standard accepted here must also have a universal appeal in order to be adopted worldwide."

– G. Smith Anderson, CEO Uraxs
Host ITU-R TG 1/8 Boston

ITU-R TG 1/8 (UWB) Meetings Boston, MA

- <u>TG 1/8</u>: "On the compatibility between ultra-wideband devices (UWB) and radio-communications services"

- <u>TG 1/8 comprises four Working Groups</u> tasked with generating Report and Recommendations on UWB
  - WG1 – UWB Characteristics
  - WG2 – UWB Compatibility (*broken into 14 subgroups*)
  - WG3 – Spectrum Management Framework
  - WG4 – Measurement Techniques

WG 2 Drafting Groups

mini-glossary:

DG – drafting group
EESS – Earth exploration service
FS – Fixed service
FSS – Fixed satellite service
MS – Mobile service
MSS – Mobile satellite service
PDNR – preliminary draft new
    recommendation
RAS – Radio astronomy service
RNSS – Radionavigation satellite
    system
SG – study group
TG – task group
WG – working group
WP – working party

		Mainbody PDNR	DG 2-9
	Report Chapter		
	1	Background	DG 2-8
	1.1	Introduction	
	1.2	UWB applications	
	1.3	UWB mitigation techniques for compatibility	
	2	Characteristics, methodologies, scenarios	DG 2-8
	3	Individual studies	
	4	Aggregate Interference Analysis	DG 2-8

WG 2: more detail

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SG – study group
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WP – working party

Report Chapter	ITU SG, WP	Radio Service	Drafting Group
3.1	7C	EESS	DG 2-1
3.2	7D	RAS	DG 2-2
3.3	SG9, 9A, 9B, 9D	FS	DG 2-3
3.4	SG8	MS	
3.4.1	8A	Land Mobile	DG 2-4-1
3.4.2	8B	Aeronautical, Maritime and Radiodetermination Services	DG 2-4-2
3.4.2.1	8B	Maritime mobile service	
3.4.2.2	8B	Aeronautical service	
3.4.2.3	8B	Radiodetermination	
3.4.3		MS	
3.4.3.1	8D	Mobile satellite	DG 2-4-3
3.4.3.2	8D	RNSS	DG 2-4-6
3.4.4	8F	IMT 2000	DG 2-4-4
3.4.5	8A-9B	Wireless Access	DG 2-4-5
3.4.6	8D	RNSS	DG 2-4-6
3.4.6.1	8D	GPS	
3.4.6.2	8D	Galileo	
3.4.6.3	8D	GLONASS	
3.5	SG 6	Broadcasting	
3.5.1	6E	Terrestrial Broadcasting	DG 2-5-1
3.5.2	6S	Satellite Broadcasting	DG 2-5-2
3.6	8A	Amateur Service	DG 2-6
3.7	SG 4	FSS	DG 2-7

The ITU-R process

- Documents are contributed to ITU-R in Geneva by ITU-R Members

- Assigned to the 4 Working Groups (WG)

- "TEMP" documents created by WGs
  - Considered by Chairman and group
  - Edited and included in the Chairman's Report

- Become Basis for "Report" and then "Recommendations"

The ITU-R Contributions

- Documents are contributed to ITU-R
  - From the 189 State Delegations (like USTG 1/8)
    - US input papers must conform to US position
    - Vetted by FCC / NTIA / State Department / White House
  - From the 640+ Sector Members and 90 Associates
    - Corporations (... Motorola, TI, ...)
    - IEEE (Regional International Organization)
- Documents then assigned to Working Groups
- "TEMP" docs generated and presented for inclusion in the Chairman's Report of the Meeting

The ITU-R Process in Boston

- Approximately 100 contribution papers were considered

- Meeting spanned 10 days: 9-18 June 2004

- More than 53 "TEMP" docs created, edited and included in Chairman's Report

- At least 2 more meetings deemed necessary for completion of the "Draft Report" by November 2005

- Perhaps 2 additional meetings before "Recommendations" generated (end of 2006)

Sample "Issue" from a Drafting Group: RAS

mini-glossary:

RAS – Radio astronomy service

"TEMP"
Generation

Sample Excerpts from a "TEMP": FSS

"LIAISON STATEMENT TO WORKING PARTY 4A COMPATIBILITY BETWEEN ULTRA-WIDEBAND (UWB) AND FSS SYSTEMS"

ITU-R Recommendations

- Chairman's Report basis for "Report" and "PDNR"

- "Recommendations" (PDNR) are the key document

- PDNR to be the basis for implementation of UWB regulations by individual Nations

- US Position: Don't want "Recommendations" to result in any restrictions of existing US rules on UWB

mini-glossary:

PDNR – preliminary draft new
   recommendation

IEEE Role in ITU

- IEEE is "Regional International Member" in ITU-R (Radiocommunications Sector)
  - IEEE can contribute documents directly to ITU-R (but with lots of bylaw and bureaucratic obstacles)
  - Another route for IEEE wireless standards to enter the international community
- IEEE also works closely with the ITU Telecommunication Standardization Sector (ITU-T)
  - IEEE recognized in 2000 by ITU-T as an international organization whose work is referenced in ITU-T Recommendations following procedures developed by ITU-T
- *IEEE802 individuals can work through their State or Sector*

IEEE UWB Opportunity in ITU-R

- ITU and USTG 1/8 are seeking technical contributions which show the compatibility of UWB with existing services

- IEEE is "Regional International Member" of ITU-R, can directly contribute to TG 1/8 meetings (bylaws govern how IEEE can act)

- IEEE, as "RIM", can use own criteria for compatibility

- *IEEE802 individuals should seek out State and Sector Members as routes for contributions*

Resources and Information

- <u>Boston Organizer, Uraxs Communications</u>:
  http://uraxs.com/ITU-R_Boston_2004/TG_1-8_Boston.htm

- <u>Signature Sponsor: Pulse~LINK</u>
  http://pulselink.net

- <u>ITU</u>:
  http://www.itu.int/ITU-R/study-groups/rsg1/rtg1-8/index.asp

- <u>US Task Group 1/8 on UWB</u>:
  http://www.fcc.gov/oet/info/TG-18/

- <u>IEEE</u>:
  http://standards.ieee.org/announcements/pr_itumem.html