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

Submission Title: Scope and Work Plan of the Science Committee on THz Communications”

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Re: n/a

Abstract: This document describes the scope and the work plan of the science committee on THz Communications

Purpose: Information of the THz-IG about the activities of the science committee

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Outline

- General Scope of the Science committee
- Working methods
- E-Mail questionnaire
- Next steps

General Scope of the Science Committee

- The science committee provides a platform to bring together the science community currently working on THz communications yielding input documents which contribute to turn the interest group into a study group.
- The committee will work on
 - an overview on technology trends
 - channel models
 - will provide input to the ongoing discussion on spectrum allocation beyond 275 GHz by providing technical contributions to 802.18 in regard to 18's engagement with the ITU and future THz spectrum allocations and considerations by the ITU - WRC .

Working Methods

- E-Mail-discussion
- Meeting at plenaries
- compile a living document, where we put together all information we collected to fulfill the goals above
- Report to IEEE802.15-THzIG via input documents at plenaries

E-Mail Questionnaire to start discussion

- In order to get started in January a questionnaire has been sent out to all colleagues indicated their interest in joining the SC
- So far responses from eight colleagues have been received
- Apart from organisational matters, the questionnaire includes questions about
 - Technical background/experience
 - Involvement in projects on THz communications
 - Involvement in regulatory/spectrum issues
 - Expectations on Science Committee
- The following slides provide a summary on the key results from the questionnaire

Responses received from

- David M. Britz (AT&T)
- Thomas Kürner (TUBS)
- Mohammed-Slim Alouini (Texas A&M Univ. Qatar)
- Jifeng Liu (MIT)
- Young Chai Ko (Korea University)
- Jae-Sung Rieh (Korea University)
- Leo Razoumov (AT&T)
- Dan Lubar (Relay Services)

Some key results from the answers

- Technical Background / Experience
 - Widespread experience is available including
 - Systems concept design and applications development.
 - FSOC laser communications
 - Propagation and channel modeling
 - Modeling and simulation of wireless communication systems
 - Communication theory, wireless communication system modeling, design, and performance analysis
 - Optoelectronic materials and devices; integrated photonics
 - High speed semiconductor devices and circuits
 - Quantum Mechanics, RF Propagation, Digital Signal Processing
 - All members are involved somehow in projects on THz communications
 - A couple of members have experience with spectrum issues and/or contacts to their national regulator

Some key results from the answers II

- Expectations to the Science Committee meeting
 - To provide the technical and structural foundation to move verify the feasibility of THz based communication systems and identify necessary operational system and device standards
 - Propose possible approaches for the development of THz wireless technology.
 - Define and detail conceptual THz communications spectrum, device and system infrastructure, device and system interoperable requirements
 - Engage with other 802 groups to identify and utilize and incorporate suitable device standards ie device interoperability
 - Engage with 802.18 to define and detail IEEE 802 position on THz spectrum allocation
 - Offer THz technical contributions to suitable ITU working groups
 - Develop channel models as well as schemes and techniques for THz communications
 - Discussing and defining the physical layer issues

Some key results from the answers II

- Offer an opportunity to network and collaborate with other researchers in the field
- Move Science Committee to a THz Study Group in 2009
- Besides the obvious sharing of science & research science should somehow stay grounded in practice influences such as use-cases and market requirements.
- The group also might undertake to present at a future 802 tutorial session to bring the 802 membership up to date with where THz technology is currently.

Some key results from the answers III

- Comments on goals/working methods
 - Probably an own list-server independent of IEEE802.15 should be established in order to enable participation of people outside this group.
 - THz Science Committee work some what independently of the 802 structure, meeting regularly and primarily on line -and presenting the committees goals and achievements at following Plenary meetings
 - Some sort of summed activity document should be forwarded to 802.15 list server on a regular basis for greater community comment
 - Member to member direct email contacts and emails regarding detail resolution is ok as long as the issue resolution is presented to the SC membership as a whole
 - Delegation of issues to be resolved, fact checking and contributions to the SC agenda will be expected of all science committee members
 - workshop or seminar among the THz Science committee can be held during the year of 2009.

Next steps

- Providing input to spectrum discussion WRC 2011, see IEEE 802.15-09-0230-00-thz
- Start to produce the the living document on state-of-the-art in THz Communications
 - In this plenary: presentation on channel models see IEEE 802.15-09-0152-01-0thz
- Starting activities to turn the IG into a SG