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Abstract: [This short contribution discusses briefly the current status in the development of THz communication systems and points out the possible next steps towards standardization of THz communications]

Purpose: [Supporting the discussion within IG THz on the next steps towards standardization of THz communications]

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Current Situation in the Development of THz Communications

- Since 2008, when the IG THz was established, many technology and market boundary conditions have improved:
 - Progress in semiconductor technology
 - see e.g. [1] where data rates of 25 Gbit/s over a distance of 0.5 m have been demonstrated using MMIC technology
 - WRC 2012 resulted in a stable situation in terms of spectrum activity
 - Worldwide many research projects on THz communications have been started ,
 - E. g. big Government funded projects are currently running in Germany, Korea, and Japan
 - Industry shows some interest now
 - Recently the International Wireless Industry Consortium (IWPC) has established a Millimeter and sub-Millimeter Wave Nanocell Working Group (<http://www.iwpc.org/WorkingGroups.aspx>)

Heading towards a Standard on THz Communications

- It's time to think about triggering the process of generating standards for THz Communications
- Presentations on possible applications [2],[3],[4] have clearly shown that the various applications require also solutions with different technical complexities
- As a consequence instead of a single standard rather a set or a family of individually applicable standards may be required
- A reasonable starting point is to begin with an application that requires less complex solutions, e. g. a kiosk downloading application

Pre-requisites to start a Study Group

- To start a study group, a more expanded engagement and commitment with appropriate industry and industry groups such as the IWPC would be beneficial.
- Current contributions in the IG THz are focussing on PHY issues. More participants with expertise on MAC are welcome.
- How to achieve enhancing awareness on THz Communications and increase participation from industry and experts on MAC?
 - The following measures are suggested:
 - Offering of a tutorial at the July plenary
 - Mailing CfA both inside and outside IEEE 802

References

- [1] I. Kallfass, J. Antes, D. Lopez-Diaz, S. Diebold, H. Massler, A. Leuther, A. Tessmann, “All Active MMIC Based Wireless Communication at 220 GHz,” IEEE Trans. on Terahertz Science and Technology, vol. 1, no. 2, pp. 477-487, Nov. 2011
- [2] T. Kürner, “Scenarios for the Application of THz Communications”; Document 15-11-0749-00-0thz
- [3] H.-J. Song, “Some consideration on KIOSK downloading model of THz communications”; Document 15-12-0135-00-0thz
- [4] A. Kasamatsu, “Preliminary Proposal of Usage model for THz communication in WLAN”; Document 15-12-0133-00-0thz