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EDITORIAL

EuMA special issue on 60 GHz communication systems

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Associate Editors

New applications such as HDTV-streaming over the internet and emerging 3D movies demand portable and mobile devices supporting wireless connectivity with extremely high data rates. From a technical point of view, the storage of the data in these devices is facilitated by the growing capacity of solid-state memories. Equally, technological progress does allow using advanced modulation and coding schemes in new mm-Wave frequency bands at reasonable cost.

In this context, the definition of a very broad industrial, scientific, medical (ISM) band around 60 GHz in virtually all regions of the world offered a unique opportunity to fulfill many user demands by supporting very high data rate wireless communication at affordable prices with little regulatory limitations. Because of the requirement of data rate, the availability of bandwidth and the progress of technologies using the 60 GHz band, a number of standardization bodies have defined communication systems operating at 60 GHz. Currently, there are two released standards, ECMA387 and the IEEE802.15.3c standard. A third standard IEEE802.11ad will be released soon.

All three aspects (a) the requirements for higher data rates, (b) the frequency regulation and standardization processes, and (c) the progress in mm-Wave circuits and technologies also lead to strong academic and industrial interest in 60 GHz communication systems. This trend is supported by publicly funded research projects such as "EASY-A" supported by the German Ministry of Education and Research (BMBF) or "QSTREAM" funded by the European Commission.

This special issue summarizes current research results on 60 GHz communication systems. The contributions published in this issue span the entire range of 60 GHz communications, from channel measurement and modeling, through antenna and front-end design, analog and digital baseband processing, medium access control processing to aspects of system implementations in several scenarios.

We are convinced that within the next few years, 60 GHz communication systems will gain a significant market share. They will be integrated into most wireless local area network (WLAN) access points and into virtually all portable and mobile devices. We hope that this special issue, containing contributions from industry as well as academia can support this development and guide engineers in designing efficient wireless communication systems exploiting the vast opportunities of this exciting and challenging frequency band.

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