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Comment on “Proposed Rulemaking above 95 GHz”

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To whom it may concern,

at Technische Universität Braunschweig, Germany, we have worked on THz Communications for more than 13 years. In this period, we have not only contributed to the scientific community but have also influenced standardization and regulation of THz communication systems for example by leading the Task Group IEEE 802.15.3d. In addition, we also actively contribute to the preparatory work for agenda item 1.15 of the World Radio Conference (WRC) 2019.

With regard to the proposed rulemaking above 95 GHz, we would like to bring a few points to your attention for information or action as appropriate:

- Recently, the new standard IEEE 802.15.3d-2017 has been finalized. It is the first wireless communication standard operating at carrier frequencies between 252 and 325 GHz with bandwidths in the range of two to seventy gigahertz. Frequencies beyond 325 GHz may be considered in the future for further extensions of the standard.
- Four applications are targeted:
 - wireless front- and backhaul links (FS) for mobile networks over distances up to several 100 m especially in urban environments
 - additional wireless links in data centers (MS)
 - intra device communications (MS)
 - close-proximity links, e.g. for kiosk downloading (MS)
- WRC 2015 decided to establish Agenda Item 1.15 for WRC 2019 (Res. 767 WRC-15) to identify frequency bands for (active) land mobile and fixed services operating in the frequency range 275-450 GHz.
- ITU-R studied applications and the technical and operational parameters of these active services. The new reports ITU-R M.2417 and ITU-R F.2416 have become available. Sharing and compatibility studies with the passive services are still under development in ITU-R WP 1A.
- The parameters are in line with the IEEE Standard and can therefore be extended to the frequency range 252-275 GHz.
- The ITU-R studies and the IEEE 802 standard assume the use of

bandwidths of at least 2 GHz and expect devices to typically use 20 to 50 GHz.

- Preliminary sharing study results of WP 1A indicate e.g. that the frequency range 296-306 GHz cannot be shared. Therefore, the bandwidth below 275 GHz should not be limited to less than 500 MHz in order to achieve a contiguous bandwidth of 44 GHz for MS and FS applications.
- The ITU-R studies include outdoor deployment of devices though they operate in the passive bands. Actually, the sharing studies do not include clutter losses or building entry losses because according to ITU-R SG3 the average loss can be extrapolated to the higher frequencies but the statistical distributions are unknown.
- For the fixed services an unlicensed deployment may not be appropriate in order to prevent harmful interference to the passive services (EESS and RAS).
- For the mobile services an unlicensed band may very beneficial since most applications target rather transmission short ranges. Nevertheless, EIRP limits are required.

We appreciate the opportunity to comment on the FCC proposed rulemaking.

Yours sincerely



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