

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of)	
)	
Expanding Flexible Use in Mid-Band Spectrum)	GN Docket No 17-183
Between 3.7 and 24 GHz)	

REPLY COMMENTS OF

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1. INTRODUCTION

Agilion GmbH is an SME located in Chemnitz, Germany. Agilion provides the below reply comments to *the Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz Notice of Inquiry* adopted by the Commission on 8 August 2017 (the “NOI”), specifically potential WiFi services in the 3.7-4,2 GHz and 5.925-7.125 GHz bands.

Agilion develops Real Time Location Systems (RTLS) with applications in many industries such as automotive, healthcare, worker safety, first responders, public transportation and logistics. These systems are predominantly intended for positioning in indoor environments and GPS denied or encumbered areas. Agilion products are deployed worldwide including the United States of America.

2. TECHNOLOGICAL ASPECTS

Unlike satellite based navigation systems, indoor positioning systems suffer from multipath propagation inside buildings. Therefore the utilized active reflector ranging needs large bandwidths to resolve multipath components. IEEE802.15.4-2012 IR-UWB is used by Agilion as a dedicated technology for the solution of this problem. In the United States such systems can be operated under the conditions of FCC PART 15 Subpart C and F. Due to its extremely low power levels, this technology can make use of large bandwidths of 500MHz or 1000MHz while not interfering with other radio services or electronic devices. This is especially important in healthcare and safety relevant applications such as on-board aircraft applications. The comparatively low center frequencies allow for non-line-of-sight conditions. These properties make this technology unique for indoor ranging scenarios.

The upcoming standard IEEE 802.11az will incorporate ranging capabilities without using the spectrum in question. It is still unknown whether this technology can fulfill the real-time and accuracy requirements e.g. for tool tracking, which is a major business field of Agilion. Tool tracking is used by many industries for worker guidance and quality assurance. Due to the higher transmit power, IEEE

802.11az will consume more energy in comparison to IEEE 802.15.4-2012, resulting in a shorter battery life of connected devices. The latter is a critical point too for many positioning applications.

3. IMPACT OF THE RELAXATION OF THE RULES FOR THE 3.7-4.2 GHZ AND 5.925-7.125 GHZ BANDS ON UWB POSITIONING

Since 2006, Agilion has spent approximately 250 man-years on the development of aforementioned real-time location systems. To a large extent, these resources have been spent on IEEE 802.15.4-2012 UWB technology. The business of our worldwide customers relies on this technology. They require investment protection for decades. A disruption or deterioration of these services due to new unlicensed U-NII transmitters would have a severe impact on their business as well as on ours.

Yet it is not clear whether the location quality, real-time capability and energy efficiency of IEEE 802.15.4-2012 can be attained by U-NII type technologies for the aforementioned reasons. In the long term, the business model of the whole indoor radio location industry would be put into question for the US market, as there is currently no adequate replacement for IR-UWB technology according to FCC PART 15 Subpart C and F, be it IEEE 802.15.4-2012 compliant or other proprietary systems.

4. CONCLUSION

Agilion requests the Commission to consider the 3.7 to 4.2 GHz band and 5.925 to 7.125 GHz band not to be opened to U-NII usage due to the likely RF interference these new transmitters will cause to existing deployed systems unlicensed under FCC PART 15 Subparts C and F. Or, any new unlicensed users allowed should also be subject to the -41.3 dBm/MHz power limit so those who invested in these regulations presently are not put in a position where such technologies are put in a competitive disadvantage to higher transmit power products.

As a globally operating company, it is important to Agilion to rely on a worldwide harmonized regulation as it is the case for IR-UWB Systems under FCC PART 15 Subpart C and F.



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