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Reply to "Comment on 'A Wideband Wide-angle Ultra-thin Metamaterial Microwave Absorber' "

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The cross polarization analysis of the proposed design done in "Comment on 'A Wideband Wide-angle Ultra-thin Metamaterial Microwave Absorber" is similar to studies already conducted in [1, 2]. However, this analysis reveals that the design provides quite low absorption due to its diagonally symmetric geometry, but such various design configurations reported by different researchers [3-9] create the path to understand the importance of the requirement of polarization insensitive wideband/broadband metamaterial absorbers. Further, this importance enhances the in depth analysis of polarization sensitive multiband and wideband absorbers (so called) that are designed based on the studies and findings done at that time. Moreover, the very first perfect metamaterial absorber design reported in [7] is polarization sensitive, but it spawned great interest of researchers at the time due to its potential applications, and therefore, it becomes the motivation for today's absorbers. Similarly, the dual-band designs reported in [8, 9] are also polarization sensitive, but they give an idea to design multiband and wideband metamaterial absorbers. Hence, there is a requirement to develop new techniques for the design of polarization insensitive multiband and broadband absorbers which is observed missing in this study of comment on the proposed design. Moreover, it also proves that the proposed design is a good metamaterial based wideband rotator which makes it useful for other potential applications such as spatial filters [10, 11] and radomes [12].

Thus, it is concluded that the design of monolayer polarization insensitive metamaterial based multiband and wideband microwave absorbers is still a challenge, and the readers should take this as an opportunity to improve the existing polarization sensitive designs or develop some techniques to reduce cross polarization effects as reported in [13] rather than simply proving that which one is an absorber or not as reported in [1, 2, 14].

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