Antenna Design for Multistandard Transponder ICs

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Abstract

This paper presents an antenna for a Multistandard RFID transponder IC. The IC is capable of communicating at 13.56 and 868MHz. Additionally a FMCW functionality is implemented at 2.45GHz. Therefore the antenna has to provide multiband functionality for all frequency bands. The multiband functionality is achieved by designing two geometrically separated structures that resonate at different frequencies. The HF structure consists of two single layer inductances and a single layer capacitance. The UHF structure can be described as a modified dipole antenna. The maximum geometrical size of the transponder is restricted to the ID1 format. Consequently the available space for the antenna design is limited. Thus the antenna design is focused to the minimization of the HF and UHF structures assuring high performance in all frequency bands with regard to read rate and read range.