DESCRIPTION OF AIRVALENT BLUETOOTH ANTENNA

The Bluetooth Low Energy antenna of AIRVALENT is based on microstrip Meander Inverted-F (MIFA) design as described in Infineon application note AN91445 [1] section 7.1. The antenna is implemented using 0.5 mm wide microstrip trace on 0.8 mm thick FR4 dielectric material. Antenna is optimised for operation in 2402 – 2480 MHz ISM band. Additional components in antenna path include 50 Ohm coplanar microstrip transmission line, DC block capacitor and lumped element low pass filter and matching circuit.

The proximate dimensions of antenna footprint are 15x8 mm. Antenna is positioned in upper left corner of the device when looking towards front of the device. The antenna path section of PCB layout is shown in Figure 1. The physical implementation view of antenna part of PCB is shown Figure 2.

According to [1], typical gain of the antenna is 1.6 dBi, with maximum of radiation pattern is directed along the MIFA meander direction (south direction when looking at Figure 1). It is expected that actual antenna gain is less than assumed maximum value due to the influence of metal enclosure and proximity of components such as battery and display.

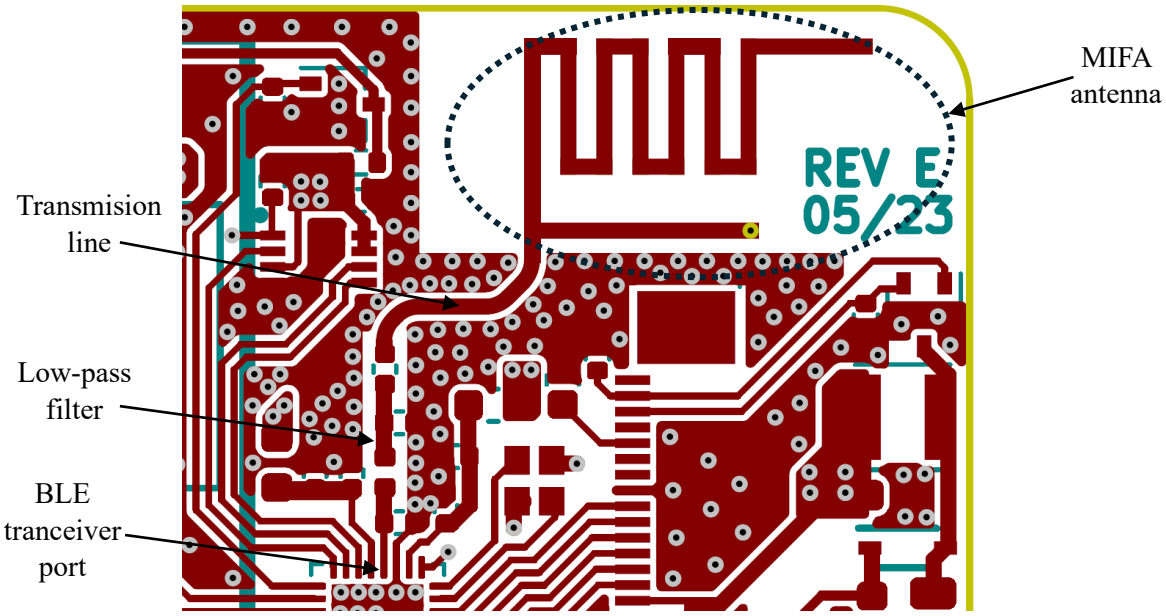

Figure 1. The layout of AIRAVELNT antenna path.

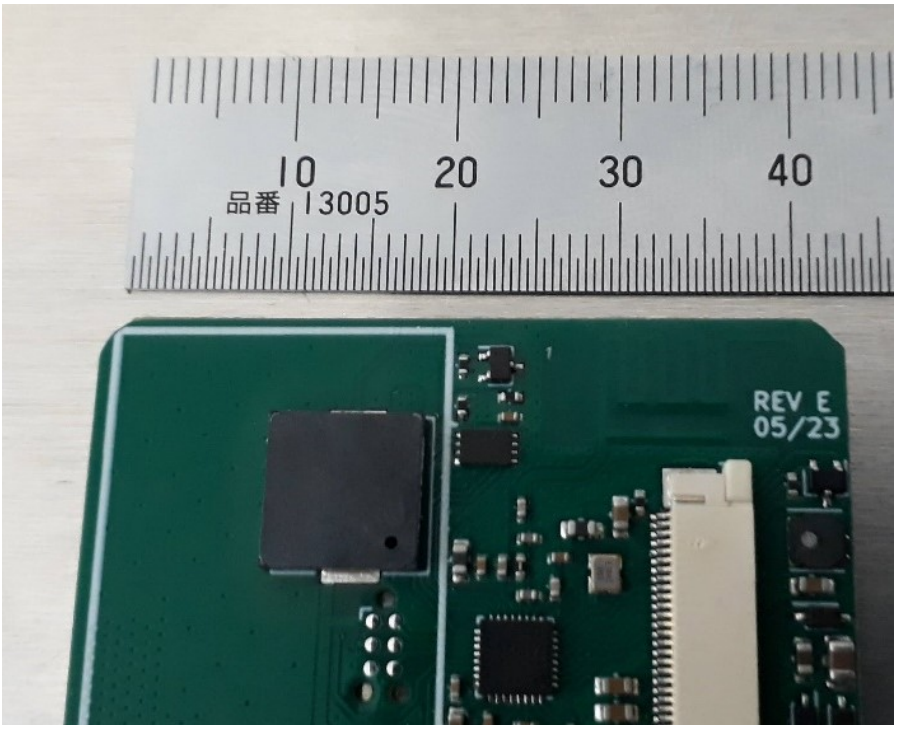

Figure 2. Physical PCB view of antenna path.

REFERENCES

1. https://www.infineon.com/dgdl/Infineon-AN91445_Antenna_Design_and_RF_Layout_Guidelines-ApplicationNotes-v09_00-EN.pdf?fileId=8ac78c8c7cdc391c017d073e054f6227