

SMART SENSOR

BLE ANTENNA DATASHEET

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BLE Antenna Specifications :

Parameters	Values
Antenna dimension	18.7 x 16.7 mm
Antenna Gain	3.102 dBi
Return Loss max in band (S11)	-29.21 dB
Bandwidth	329 MHz
Efficiency (System total Efficiency)	- 0.89 dB (81.4 %)
Impedance	50 ohm
Antenna Diversity	No

Table 1 : Performance Specifications of BLE_Smart Sensor Antenna

BLE Antenna Design Model

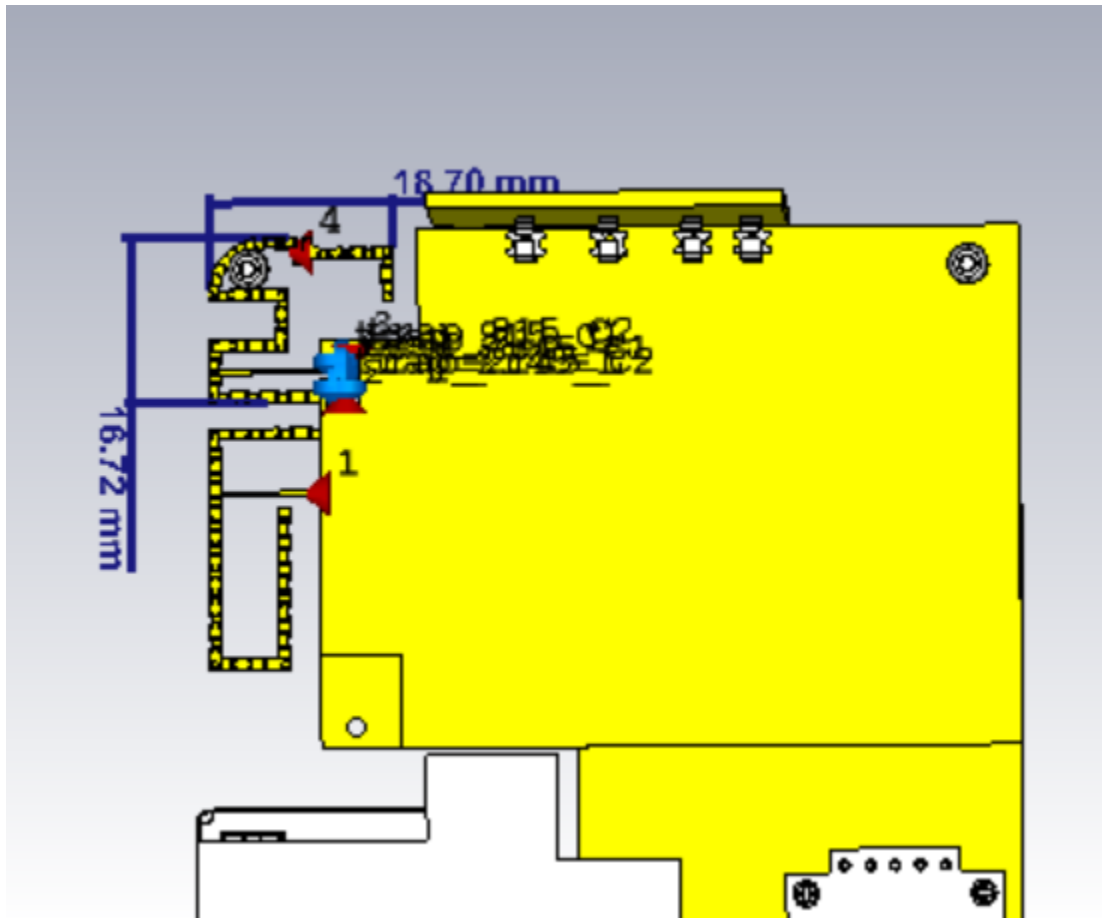


Figure 1 : Smart Sensor_BLE Antenna Design model

- In the Smart Sensor device , there are 2 different Antennas, out of which Antenna 1 is for both Sub GHz & BLE and Antenna 2 supports Sub GHz only
- Antenna for BLE is marked in the above model with a dimension of 18.7 x 16.72 mm

Return Loss (RL) of BLE Antenna

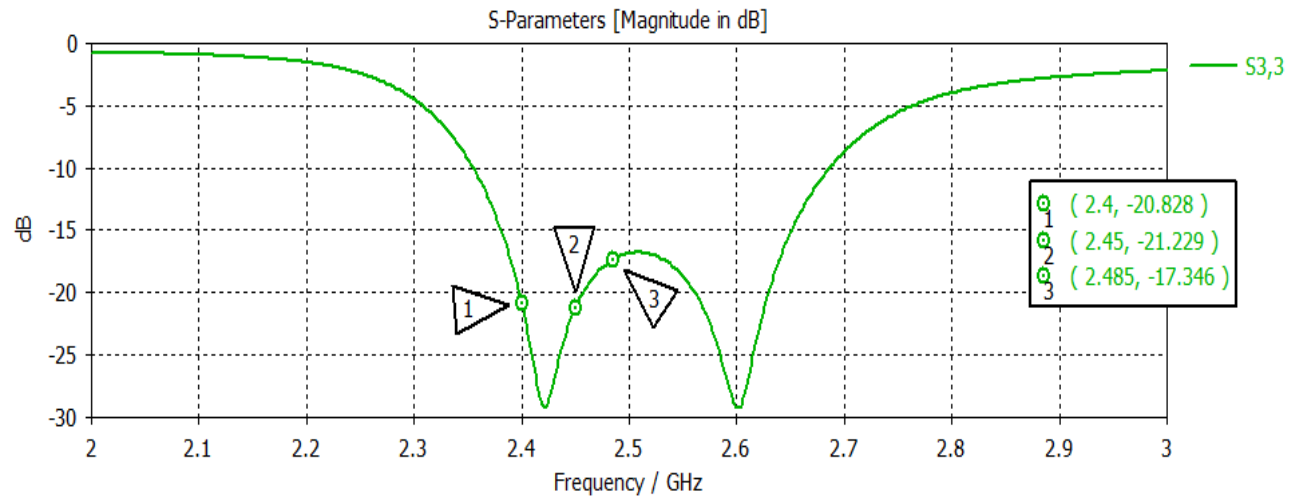


Figure 2 : Return loss plot of Smart Sensor_BLE Antenna

- The BLE Antenna Return loss plot is shown above , which has -10 dB bandwidth of 329 MHz , from 2.356 to 2.685 GHz
- The max Return loss is -29.21 dB
- The above RL plot is having 3 markers as 2.4, 2.45 & 2.485 GHz , with end & center frequency points in the BLE band

3D Farfield Radiation Pattern

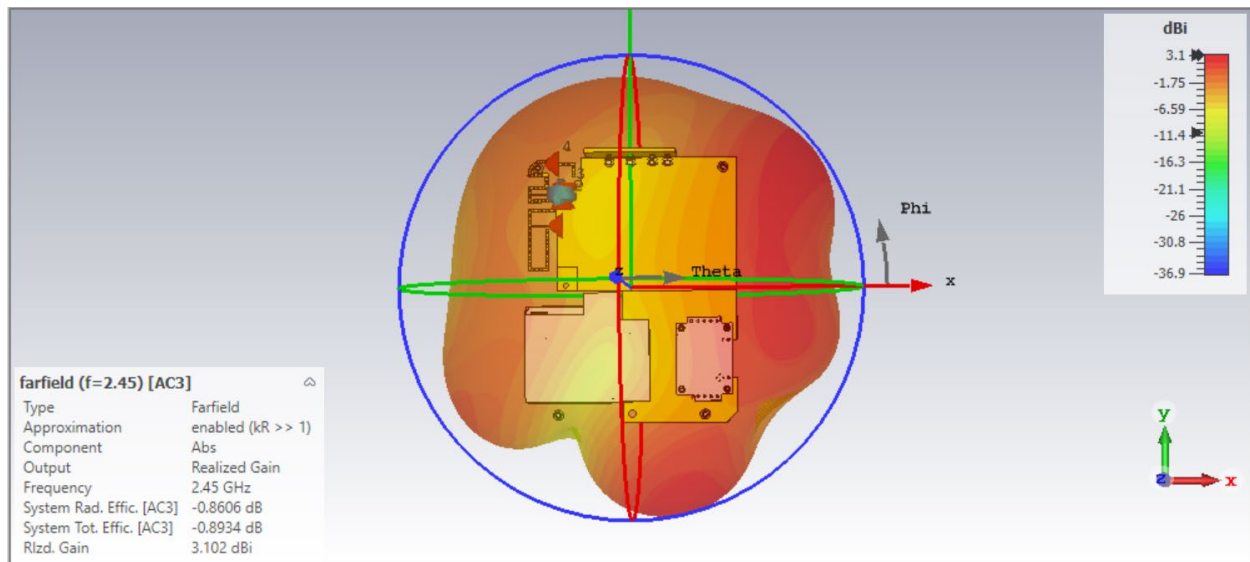


Figure 3 : 3D Radiation Pattern Plot of Smart Sensor_BLE Antenna

- In the 3D Radiation Pattern shown in Figure 3 , the Realized Gain is 3.102 dBi with a Quasi Omni directional pattern coverage
- The Antenna efficiency is -0.89 dB

2D Farfield Radiation Pattern

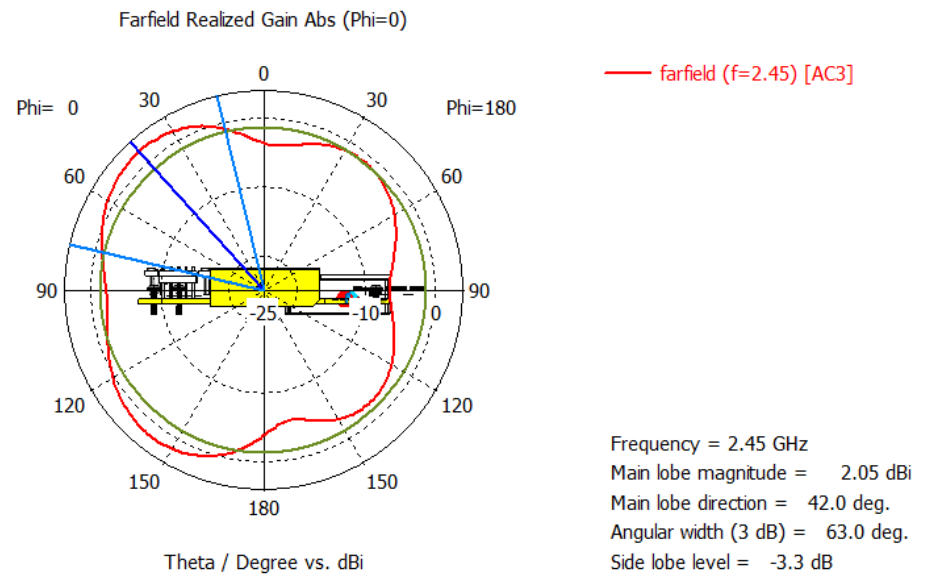


Figure 4 : 2D Radiation Pattern Plot of Smart Sensor_BLE Antenna (Phi = 0 degree)

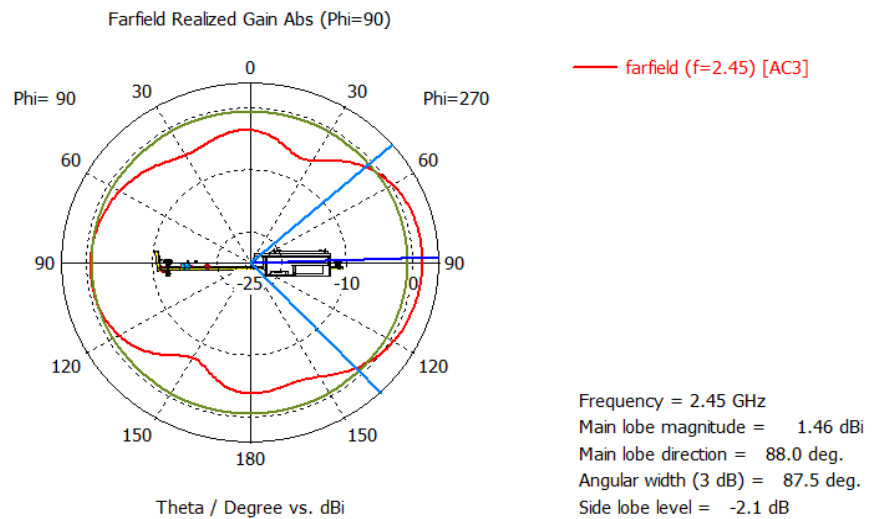


Figure 5 : 2D Radiation Pattern Plot of Smart Sensor_BLE Antenna (Phi = 90 degree)

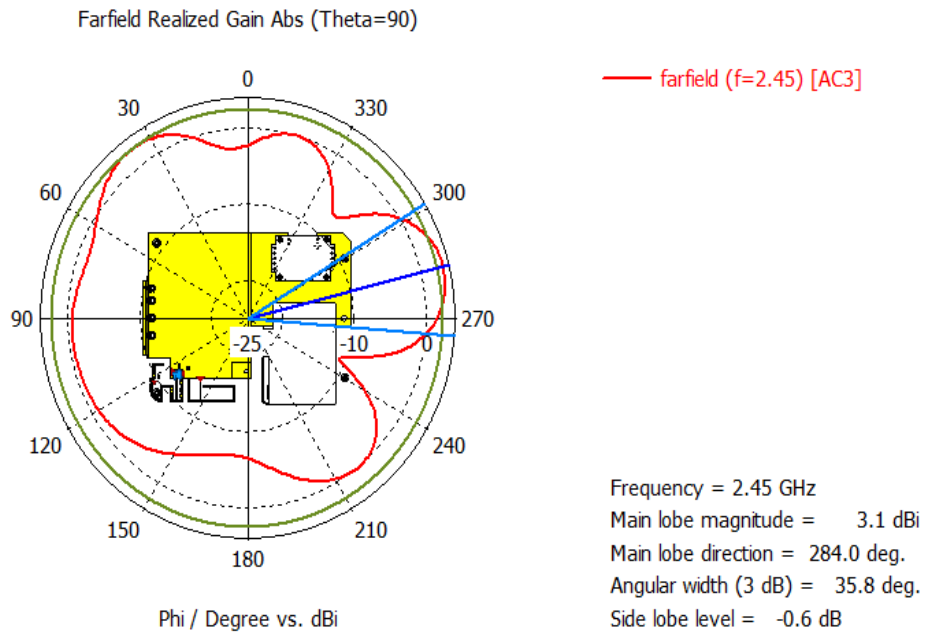


Figure 6 : 2D Radiation Pattern Plot of Smart Sensor_BLE Antenna (Theta = 90 degree)

- The 2D Radiation Pattern plots are shown in Fig 4 to 6 , in 3 different cut planes : Phi = 0 degree , Phi = 90 degree and Theta = 90 degree
- The frequency of reference used is 2.45 GHz (BLE Center Frequency)

Design Summary

- The BLE Antenna used is a PCB Printed , Inverted F type antenna of 18.7 x 16.7 mm dimension
- It has a Partial Omni directional pattern
- It uses a single antenna without diversity with a bandwidth of 329 MHz & has a efficiency of -0.89 dB