

# Honeywell Seychelles WIFI Antenna

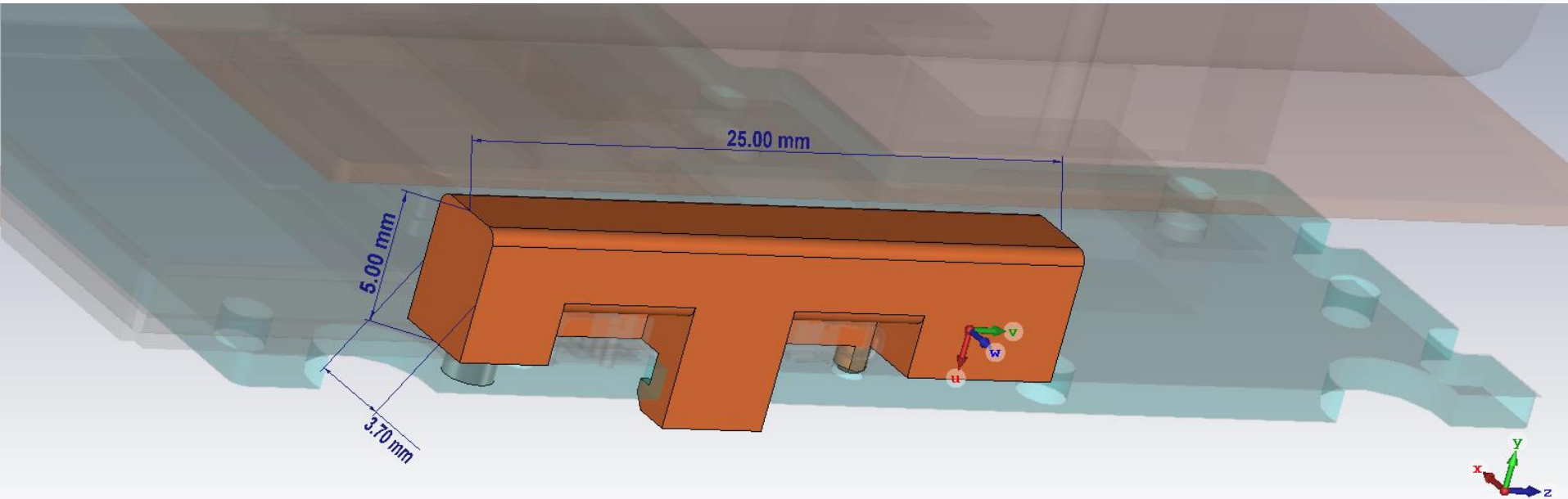
Feasibility Study: Customer Device Simulation with New Antenna Carrier Size

09 October, 2017

# Description & Summary:

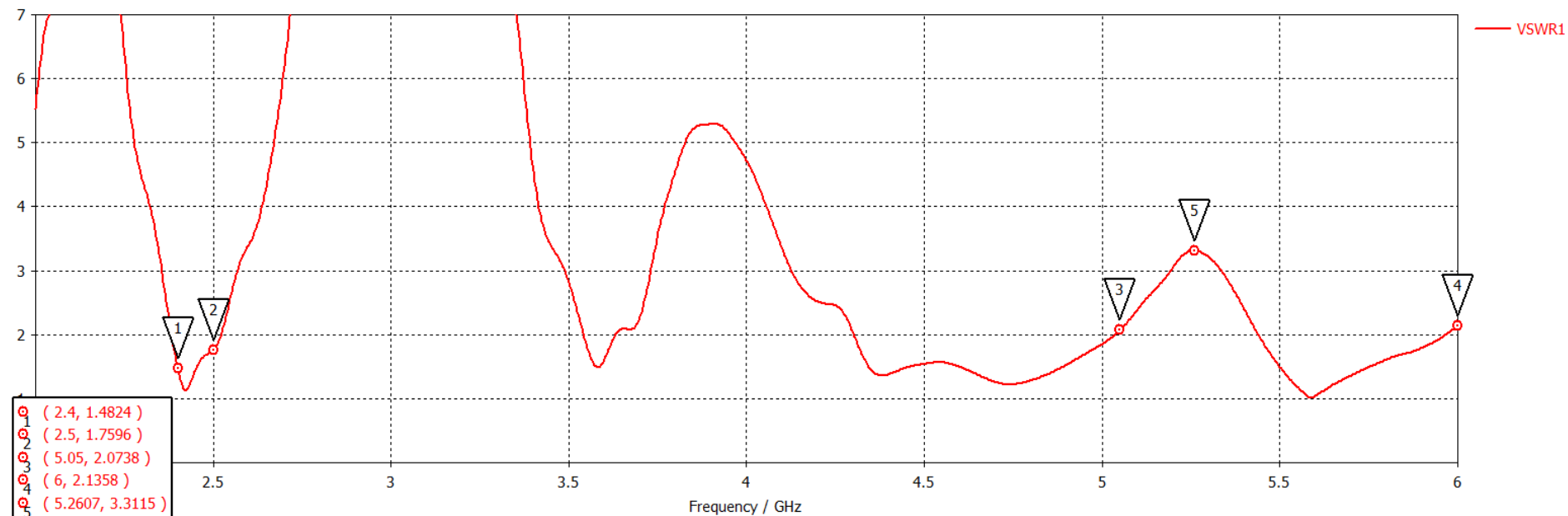
- Presented CST simulation base on customer provided 3D file (received 12 Sep 2017).
- In order to obtain 2.4GHz frequency band performance, the antenna plastic carrier size is increase for this simulation model (please refer to slide 5 for details).
- To fit in the new antenna carrier size; some modification was done on the middle cover (please refer to slide 6 for details).
- The simulation models including the main PCB POGO Pins and the battery pack contact points, one POGO Pin is shorting to device PCBA; the shorting POGO position is same as mentioned by customer during last conference call.
- The simulation results DO NOT including any matching circuit.
- Adding a metal screw holding screw at antenna plastic carrier.
- The simulation results show the 2.4GHz frequency well match compare to previous simulation results.
- However, there have some frequency point s at 5GHz band were mismatch ( around 3.3:1 VSWR). But it still possible to tune the VSWR performance by changing the the flex PCB copper traces.
- All the presented results as reference and the results may have variances when the antenna apply to customer actual device.

## Antenna Plastic Carrier Size:



## VSWR Performance:

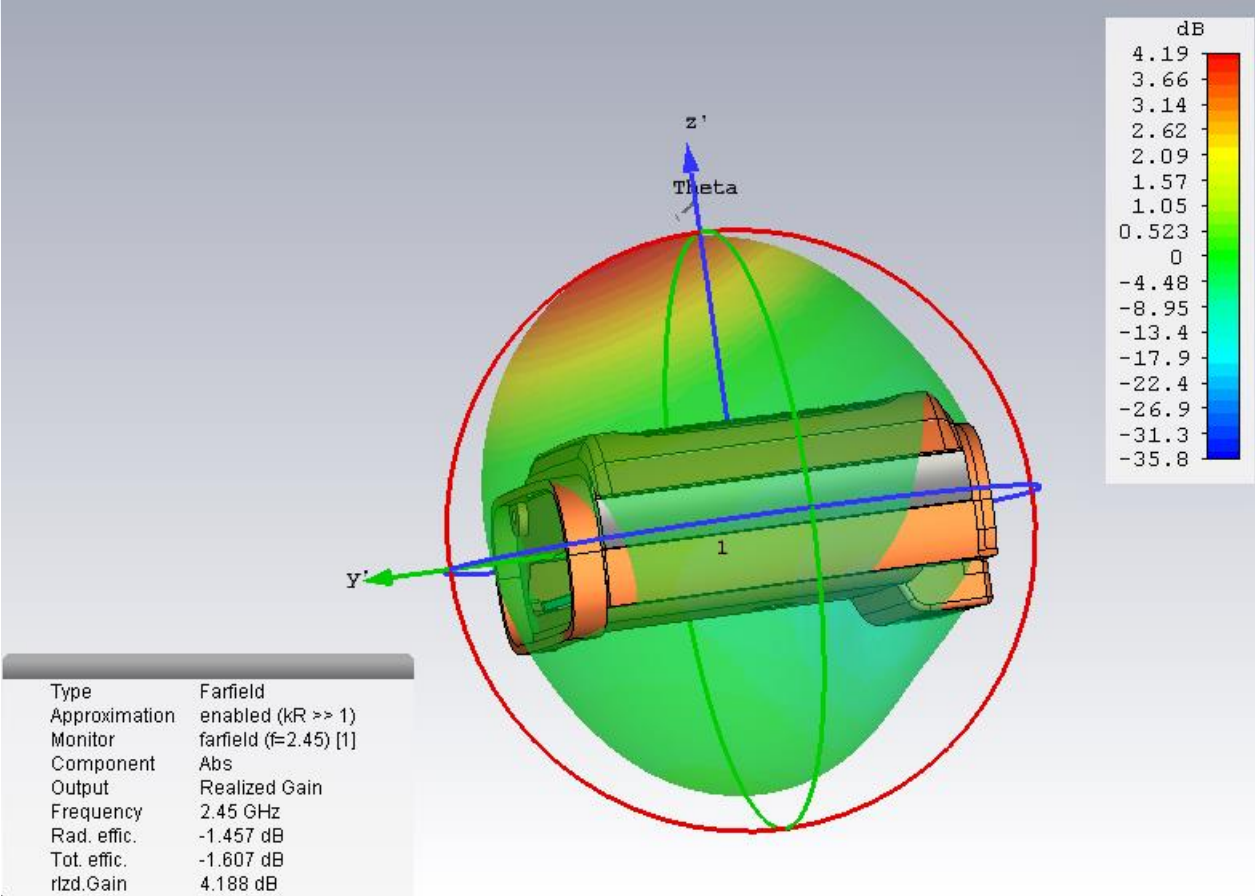
Voltage Standing Wave Ratio (VSWR)



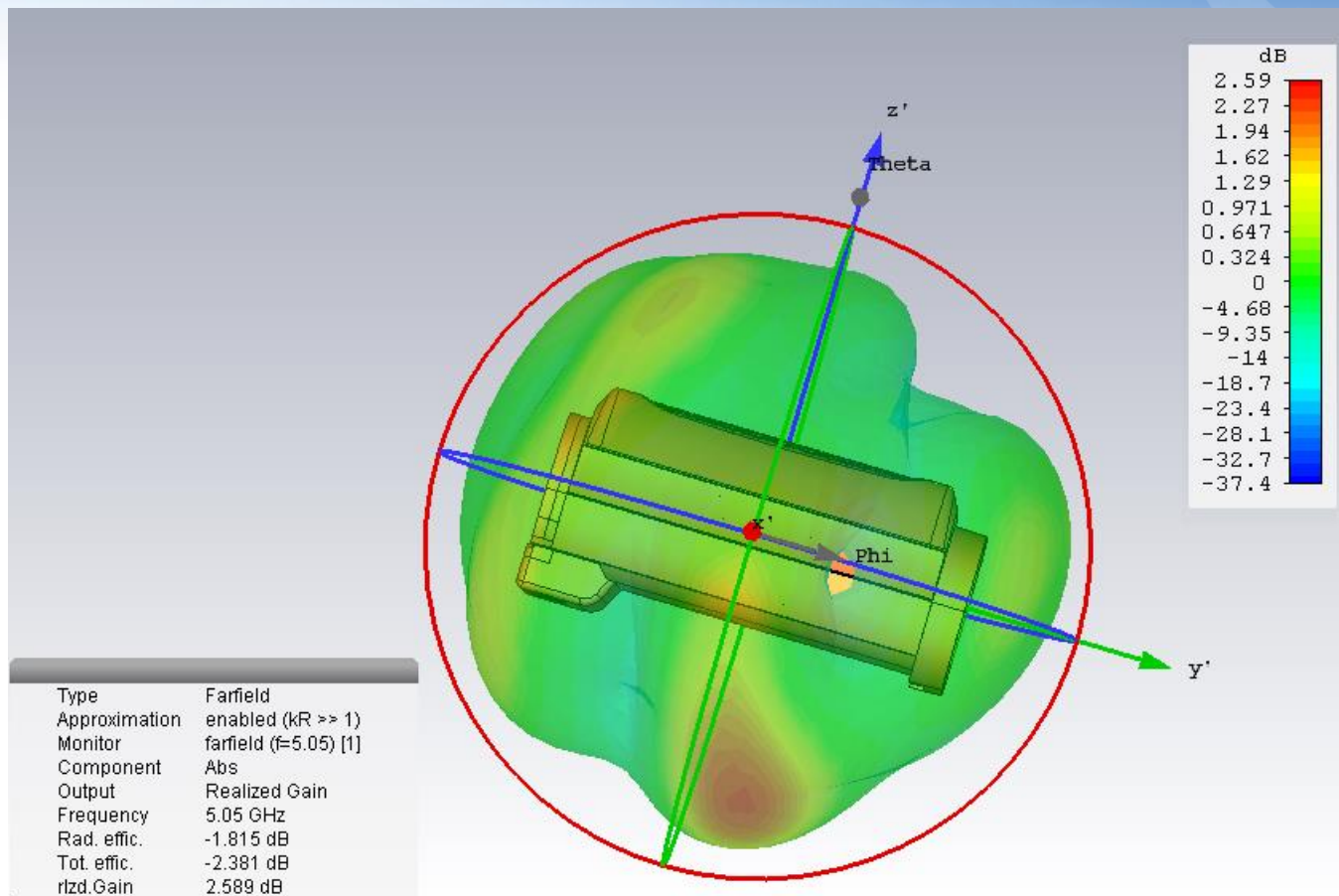


# **Simulation Radiation Pattern One POGO Pin short to main PCBA Ground**

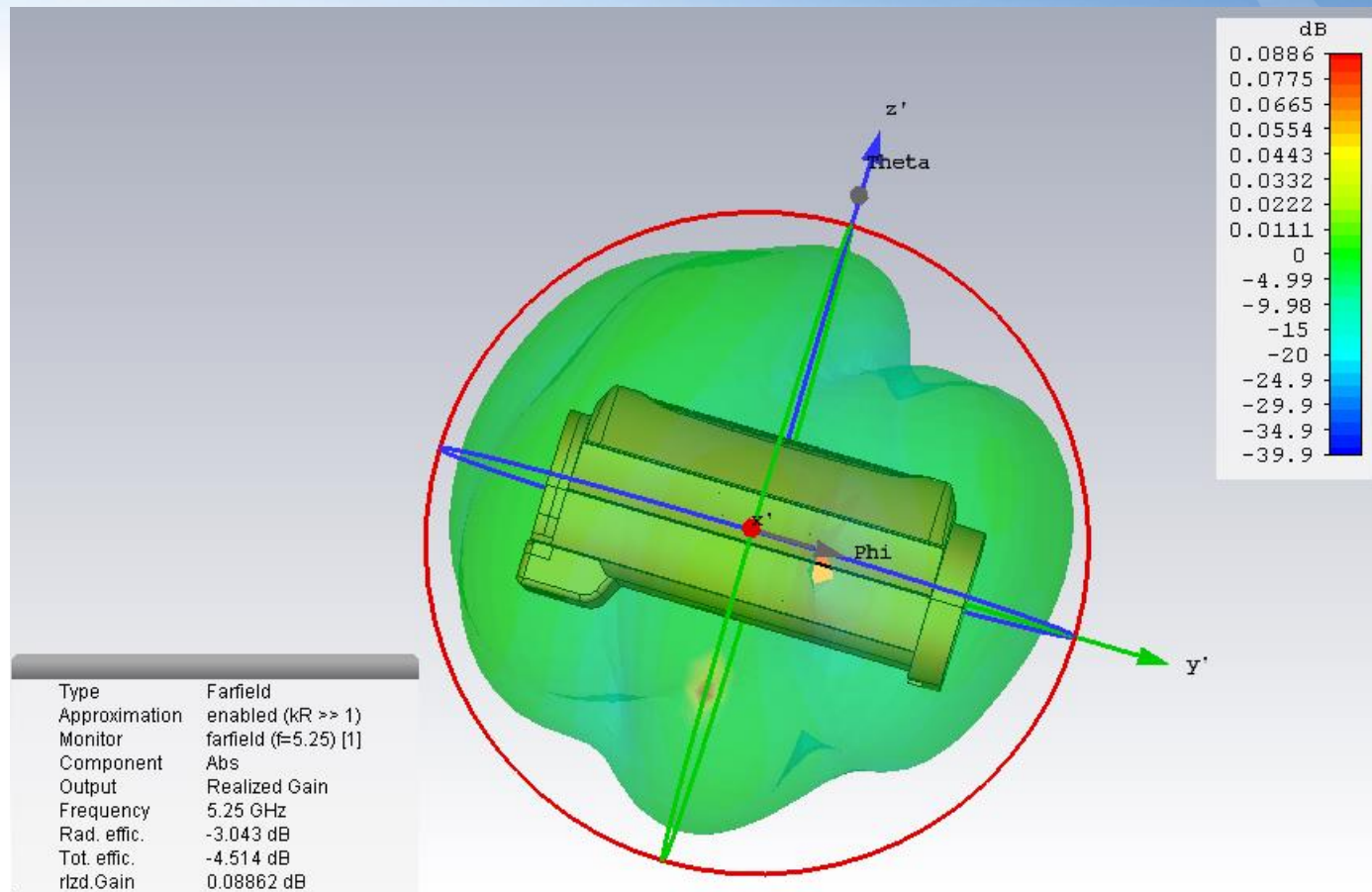
# 2450MHz\_3D Radiation Pattern\_ One POGO Pin short to main PCBA Ground



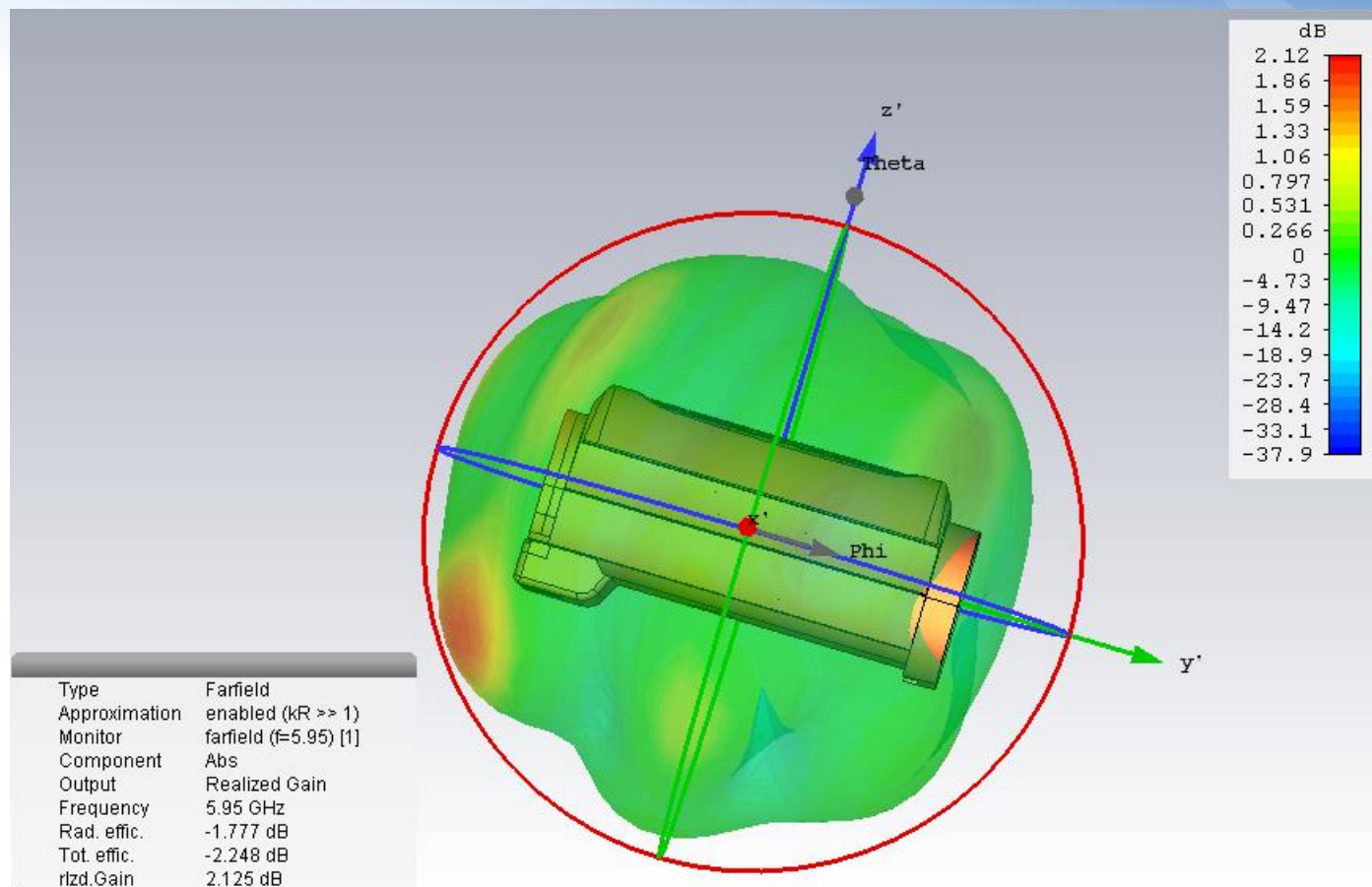
# 5050MHz\_3D Radiation Pattern\_One POGO Pin short to main PCBA Ground



## 5250MHz\_3D Radiation Pattern\_One POGO Pin short to main PCBA Ground



# 5950MHz\_3D Radiation Pattern\_One POGO Pin short to main PCBA Ground



D

C

B

A

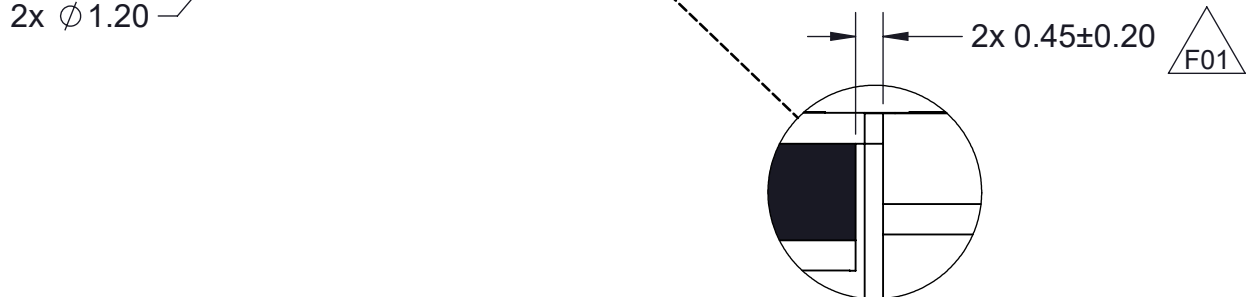
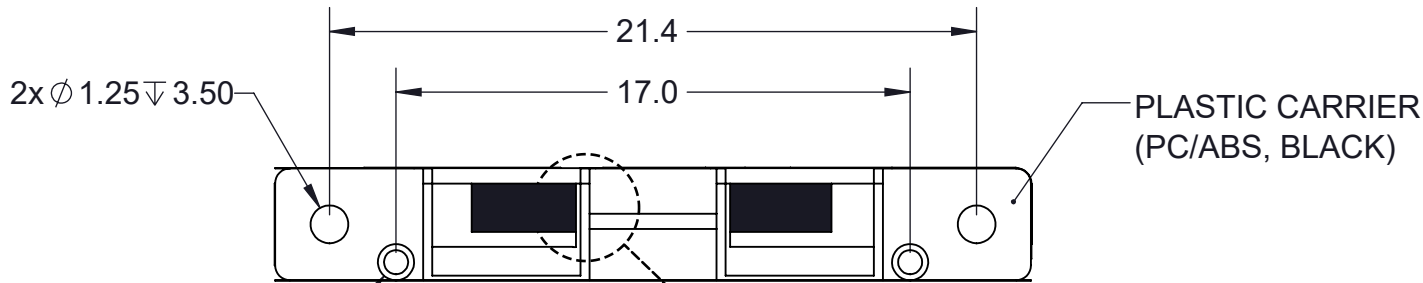
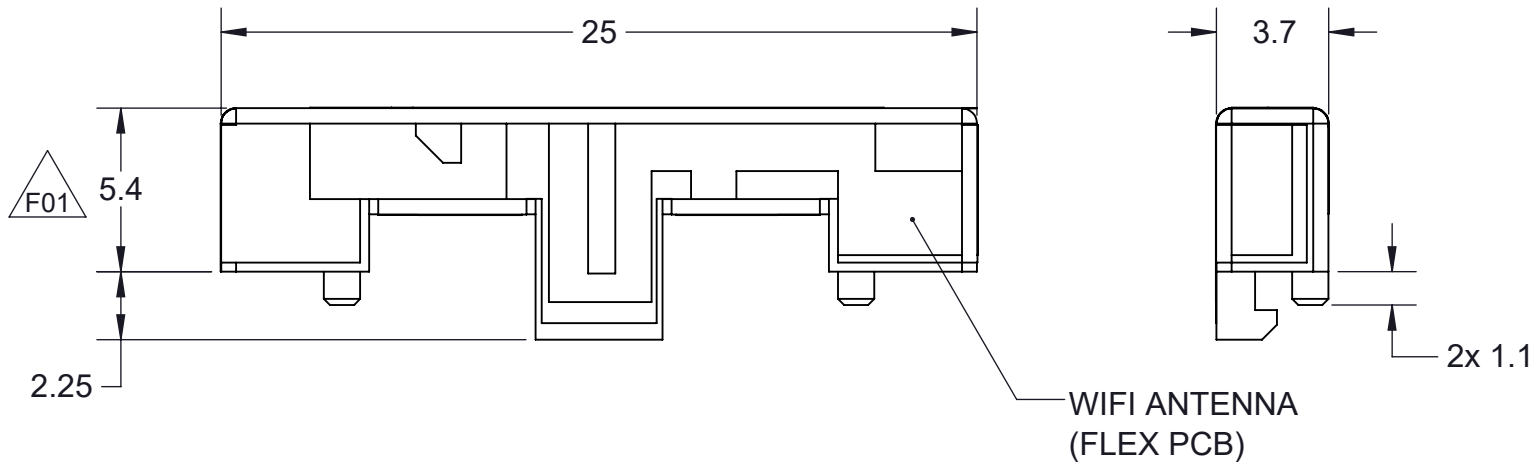
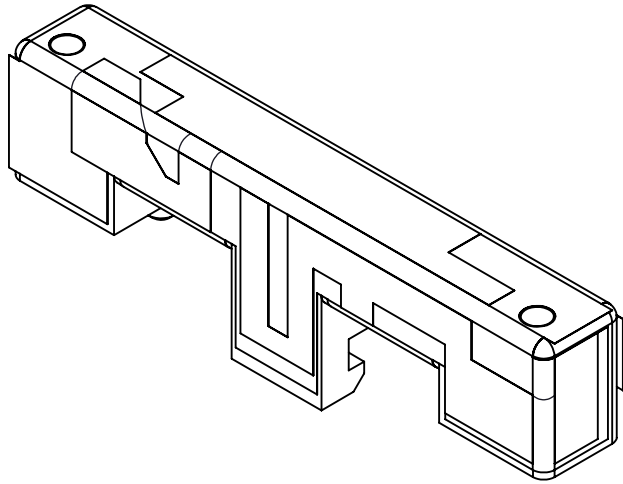
D

C

B

A

UNLESS OTHERWISE NOTED, THIS DOCUMENT CONTAINS LAIRD CONFIDENTIAL INFORMATION. REPRODUCTION, USE, DISCLOSURE OR TRANSMITTAL OF ALL OR ANY PART OF THIS DOCUMENT IS PROHIBITED EXCEPT TO THE EXTENT APPROVED IN WRITING BY AN AUTHORIZED REPRESENTATIVE OF LAIRD. LAIRD RESERVES ALL RIGHTS UNDER PATENTS, TRADEMARKS, COPYRIGHTS AND TRADE SECRETS. COPYRIGHT, LAIRD 2017, ALL RIGHTS RESERVED.



DETAIL A  
SCALE 8 : 1

| REVISIONS |              |      |                                                                         |                 |                  |
|-----------|--------------|------|-------------------------------------------------------------------------|-----------------|------------------|
| REV.      | ECN#         | ZONE | DESCRIPTION                                                             | CHANGED BY/DATE | APPROVED BY/DATE |
| 1         |              |      | PRELIMINARY COPY                                                        | YS TAN 12DEC17  | WT NG 12DEC17    |
| 2         |              |      | UPDATE PARAMETER TABLE                                                  | YS TAN 07MAR18  | WT NG 07MAR18    |
| 3         |              |      | UPDATE THE FLEX ANTENNA ILLUSTRATION DUE TO DESIGN CHANGES              | YS TAN 22MAR18  | WT NG 22MAR18    |
| F01       | ECO-18-00221 |      | DESIGN CHANGED; ADD IN DIMENSION FOR CONTACT AREAS; PRODUCTION RELEASED | YS TAN 31MAY18  | WT NG 31MAY18    |

|                      |                                                                                            |
|----------------------|--------------------------------------------------------------------------------------------|
| Product type         | PCB Antenna                                                                                |
| Trademark            | Laird                                                                                      |
| Manufacturer         | TE Connectivity Operation Sdn. Bhd.                                                        |
| Manufacturer Address | Plot No.522 Lorong Perusahaan Baru 3, Prai Industrial Estate 13600, Prai, Penang, Malaysia |

|                       |              |           |
|-----------------------|--------------|-----------|
| Laird Part Number     | EMM00145-HN1 |           |
| Customer Part Number  | 50140346-001 |           |
| Antenna               | WLAN         |           |
| Frequency, MHz        | 2400-2500    | 4900-5800 |
| VSWR                  | 2.0:1        | 3.0:1     |
| Max Gain, dBi         | 4.3          | 2.7       |
| Average Efficiency, % | 40           | 39        |

2

|            |              |         |                                                                                                                                                                                                 |  |                                                                           |                                               |                               |
|------------|--------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------|-----------------------------------------------|-------------------------------|
| MATERIAL:  |              |         | THIRD ANGLE PROJECTION                                                                                                                                                                          |  | <div>Laird™</div> <div>IAS, PENANG<br/>MALAYSIA</div>                     |                                               |                               |
| FINISH:    |              |         | <div></div> <div>DO NOT SCALE DRAWING</div>                                                                                                                                                     |  |                                                                           |                                               |                               |
| APPROVALS  |              | DATE    | <div>INTERPRET DIMENSIONING<br/>AND TOLERANCING IN<br/>ACCORDANCE WITH<br/>ASME Y14.5M-2009</div> <div>TOLERANCES UNLESS<br/>OTHERWISE SPECIFIED</div> <div>DIMENSIONS ARE IN MILLIMETERS</div> |  | <div>TITLE:</div> <div>MOUNTING AND OUTLINE</div> <div>EMM00145-HN1</div> |                                               |                               |
| DRAWN BY   | YS TAN       | 12DEC17 |                                                                                                                                                                                                 |  |                                                                           |                                               |                               |
| ELEC. ENG. | TH LEE       | 12DEC17 |                                                                                                                                                                                                 |  |                                                                           |                                               |                               |
| MECH. ENG. | YS TAN       | 12DEC17 |                                                                                                                                                                                                 |  |                                                                           |                                               |                               |
| MFG./OPS.  | MATTHEW CHEN | 12DEC17 |                                                                                                                                                                                                 |  |                                                                           |                                               |                               |
|            |              |         | <div>ANGLE: ±30'</div> <div>0 PLACE DECIMAL: ±0.5</div> <div>1 PLACE DECIMAL: ±0.25</div> <div>2 PLACE DECIMAL: ±0.13</div> <div>SURFACE ROUGHNESS </div>                                       |  | <div>SIZE</div> <div>A3</div>                                             | <div>DWG. NO.</div> <div>EMM00145-HN1MO</div> | <div>REV</div> <div>F01</div> |
|            |              |         | SCALE: 4:1                                                                                                                                                                                      |  | PREVIOUS#                                                                 |                                               | SHEET 1 OF 1                  |