

Overview

The EUT is a Radar Sensor mounted in the Ground Pad module of the Tesla Wireless Charging System. The main RF circuitry involves TI's AWR6843 RF transceiver IC. The AWR6843 is an integrated single chip mmWave sensor based on FMCW radar technology capable of operation in the 60 GHz to 64 GHz band.

Functional Description:

The radar sensor in the Tesla's Wireless Charging System is utilized for Living Object Detection (LOD), leveraging the Doppler radar principle to enhance intrusion detection by detecting any movements within the keep-out zone. The mmWave radar sensor functions as a proximity sensor, automatically disabling wireless charging when people or pets approach the keep-out zone. This sensor remains continuously active, terminating the charging session if any movement is detected. Four radar sensor modules are installed on each side of the Ground Pad module to ensure comprehensive coverage of Living Object Detection (LOD).

Product Specifications

PERFORMANCE SPECIFICATIONS	
Frequency range	60 – 64 GHz
Number of receivers	4
Number of transmitters	1
Modulation	FMCW
Maximum Antenna Gain	8.6 dBi
EUT DIMENSIONS	
Length (L)	8.4 cm
Width (W)	12 cm
Height (H)	5.2 cm
Weight	0.3 Kg
COMPLIANCE INFORMATION	
EMC/EMI	FCC Part 15.255c
RF/Human Exposure	FCC 47 CFR 1.1310, 2.1091 Meets applicable limits for RF Exposure

Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) This device may not cause interference, and(2) this device must accept any interference, including interference that may cause undesired operation. Modifications not expressly approved by Tesla., Inc. could void the user's authority to operate this equipment. Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:(i) Reorient or relocate the receiving antenna.(ii) Increase the separation between the equipment and receiver.(iii) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.(iv) Consult the dealer or an experienced radio/TV technician for help.

Installation:

This Radar is factory install only and not end-user accessible. And the radar sensor is not used to transmit data. EUT (mmWave Radar Sensor) is installed in 4 locations of the Host module as shown in below Figure 1 to increase the coverage area.

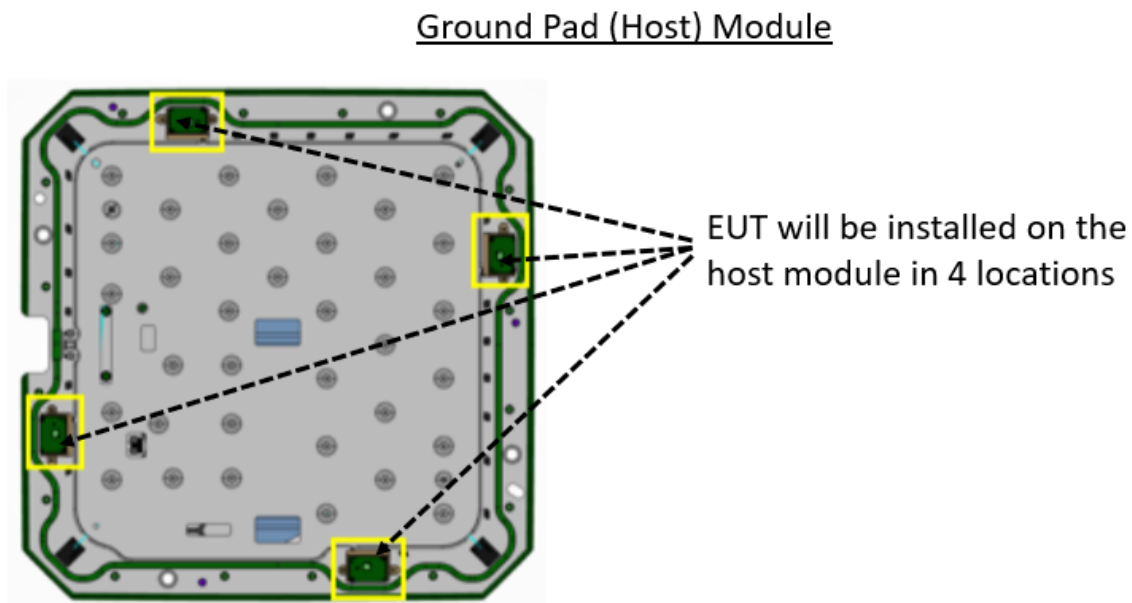


Figure 1: Installation location of EUT (mmWave Radar Sensor)

As shown in the below two figures 2 and 3, the PCB is attached to the metal housing using Thermal Interface Material (TIM) and screws

mmWave Radar Sensor (EUT)

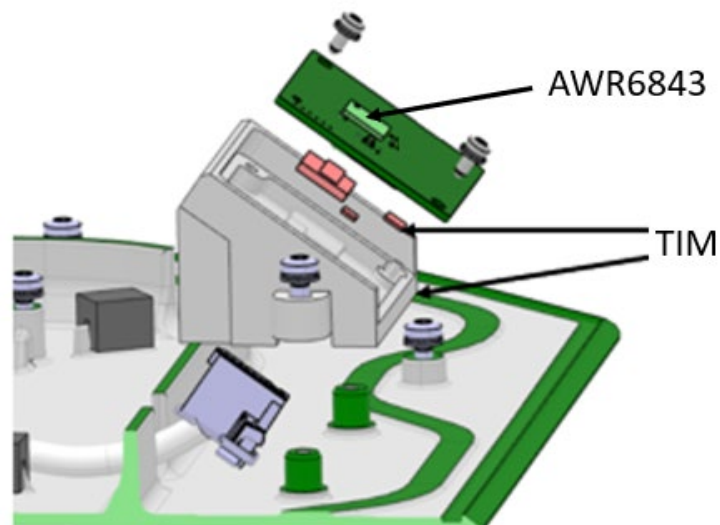


Figure 2: Integration of PCB onto metal housing using TIM and screws

EUT



Figure 3: Finished picture of the EUT