Antenna Gain Report on PSN2-09S

Document Name

Antenna Gain Report

Document Description

For the specific project, eirp measurement and antenna gain characteristic calculation on 3 channels inside the 2.4GHz ISM frequency range

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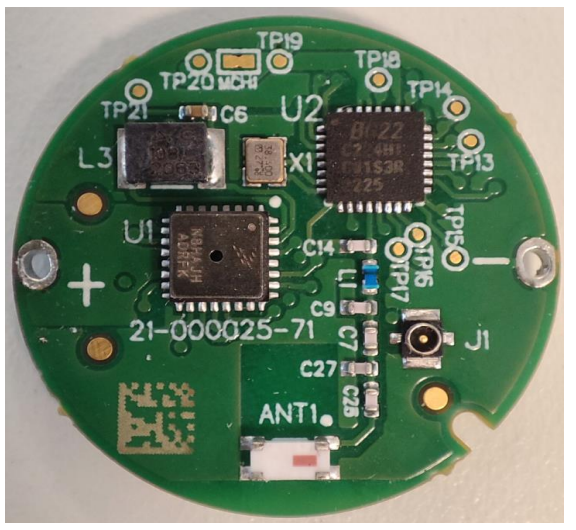
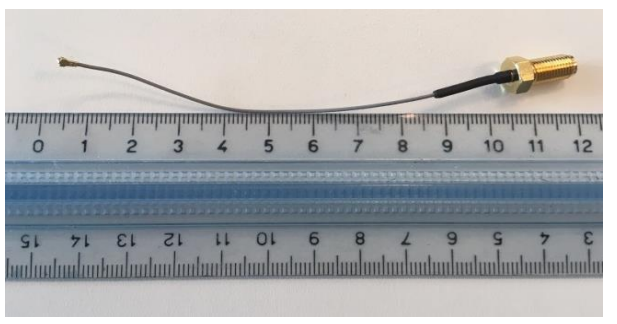
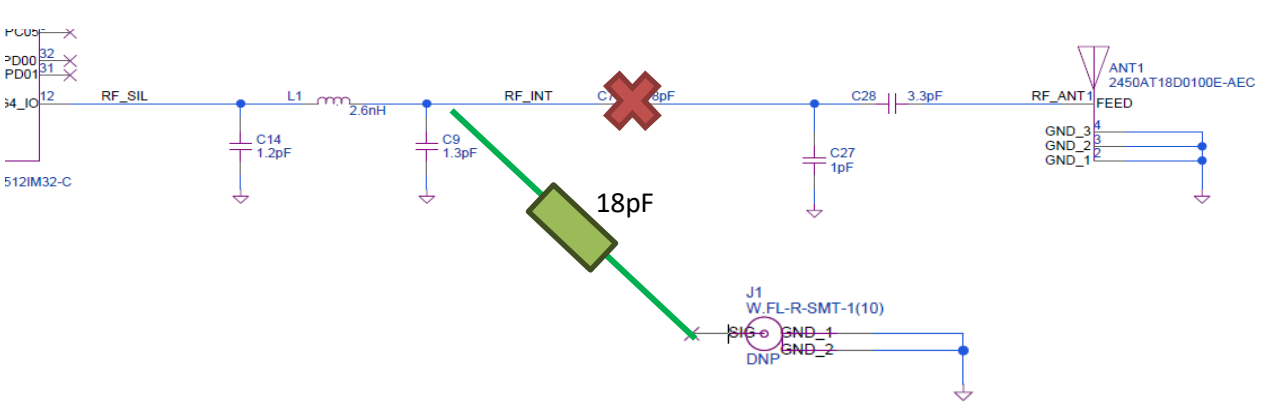
Change Log Author	Date	Version	Description of Changes
Edoardo Regini	05/04/2024	V1.0	First Version
Edoardo Regini	20/05/2024	V2.0	Correction of values according to final UL report

Set-up







Radiated Measurements:

HW used as it is in picture, with the antenna ANT1 connected to ERF32BG22 (U2) RF Out via matching network. In production w.fl connector J1 is not mounted.

HW is also connected to a the CR2032 Battery (with Depth of Discharge 0%) and incapsulated with potting and caps as in piacture in order to simulate the dielectric conditions as in field.

Measurements done in the anechoic diagnostic chamber in Pirelli Tyre lab

Conducted Measurements:

HW used is modified as following: R1 removed and a 0Ohm resistor added between C3 and J1. Antenna J2 is not connected to the RF out.

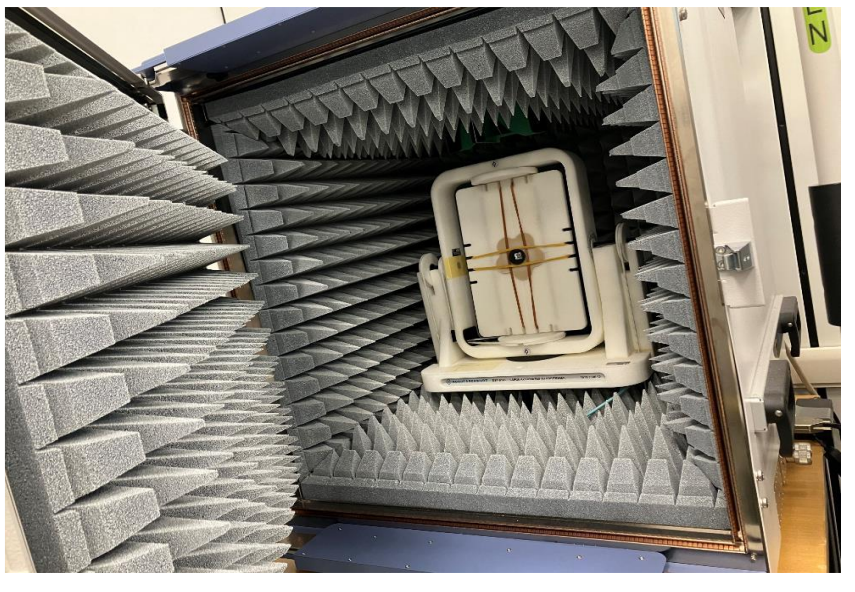
In order to connect the DuT to a Spectrum Analyzer, a 10cm w.fl - SMA cable as in picture is used. Insertion loss is minimum 1dB over the all BLE band.

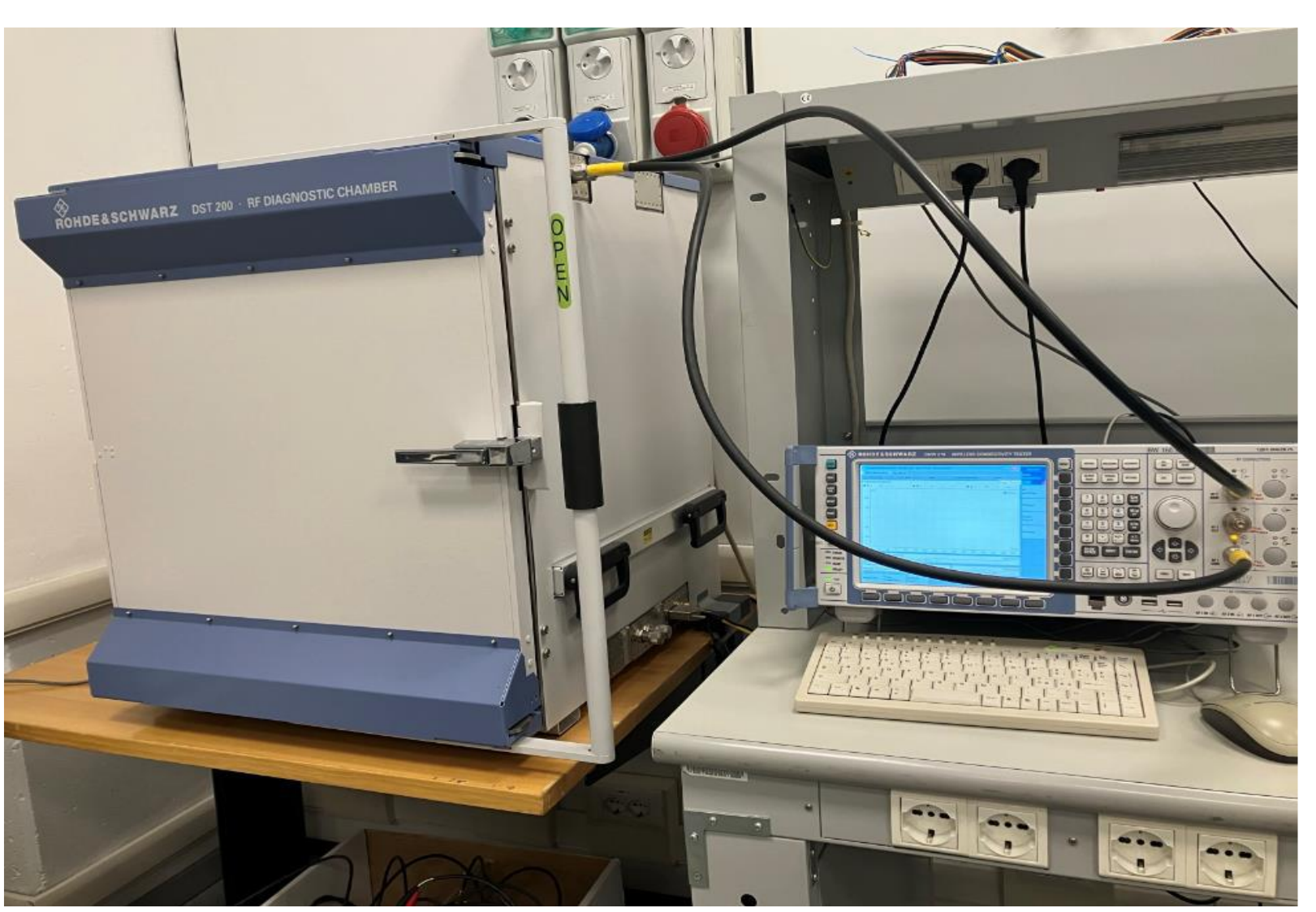
Measurements done in UL as from report UL-RPT-RP-15081798-216-FCC

Similar results have been achieved in Pirelli with a similar set-up

Test Bench

The test system is composed by Rohde&Schwarz DST200 (RF Diagnostic Chamber) and CMW 270 (Wireless Connectivity Tester).
The DST200 is a compact, RF shielded anechoic chamber with an integrated broadband cross-polarized test antenna for the frequency range from 400 MHz to 18 GHz. Free-space conditions are achieved through the optimized design and layout of the pyramidal RF absorbers.
EuT is positioned in a 2 axial rotating fixture so that the system can perform a TRP (Total Radiated Power) in the complete sphere with the desired accuracy. The test SW at the end of the suite can show the obtained eirp power in a 3D plot, reporting also the max eirp value and calculating the directivity of the antenna gain pattern.
Here below some pictures of the test set-up





List of Test Equipment

Equipment	Type	Manufacturer	Serial Number	Last Cal Date	Cal Due Date(*)
RF Diagnostic Chamber	DST 200	Rohde&Schwarz	101490	15/03/2024	15/03/2026
Wireless Connectivity Tester	CMW 270	Rohde&Schwarz	102149	15/03/2024	15/03/2026