

Document No: PD-6723-9204	Issue: 01	Date: 02/10/2025
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Document Title: RUP60 Antenna Performance
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Summary / Scope: This document provides the details required by Type Approval Authorities to process the Radio Type Approval application for RUP60.
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Reason for Issue / Nature of Change: First issue.
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Distribution

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1 Antenna Design

The RUP60 antenna is a copper structure on the flexi-rigid PCB. A view of the layout design is given in Figure 1. The radio transceiver drives two parallel slot antennas. Each antenna is fed with a length of 50-Ohm microstrip transmission line. These two transmission lines join at a T-junction. A quarter wave transformer feeds the T-junction (from the perspective of the RF transceiver) to transform the impedance back to 50-Ohm. The RF transceiver drives into this transformer through a length of 50-Ohm microstrip transmission line.

The slot antennas are 66mm in total length.

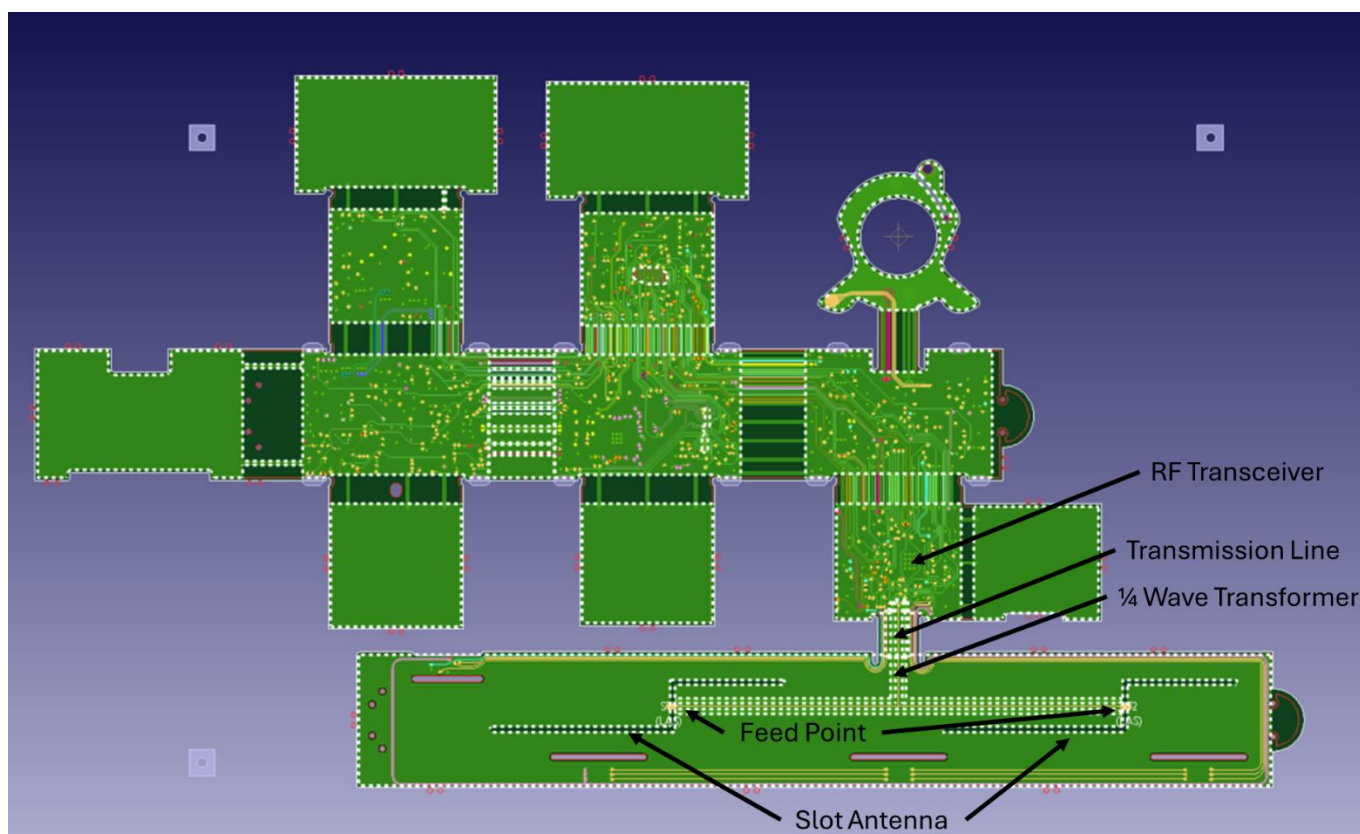
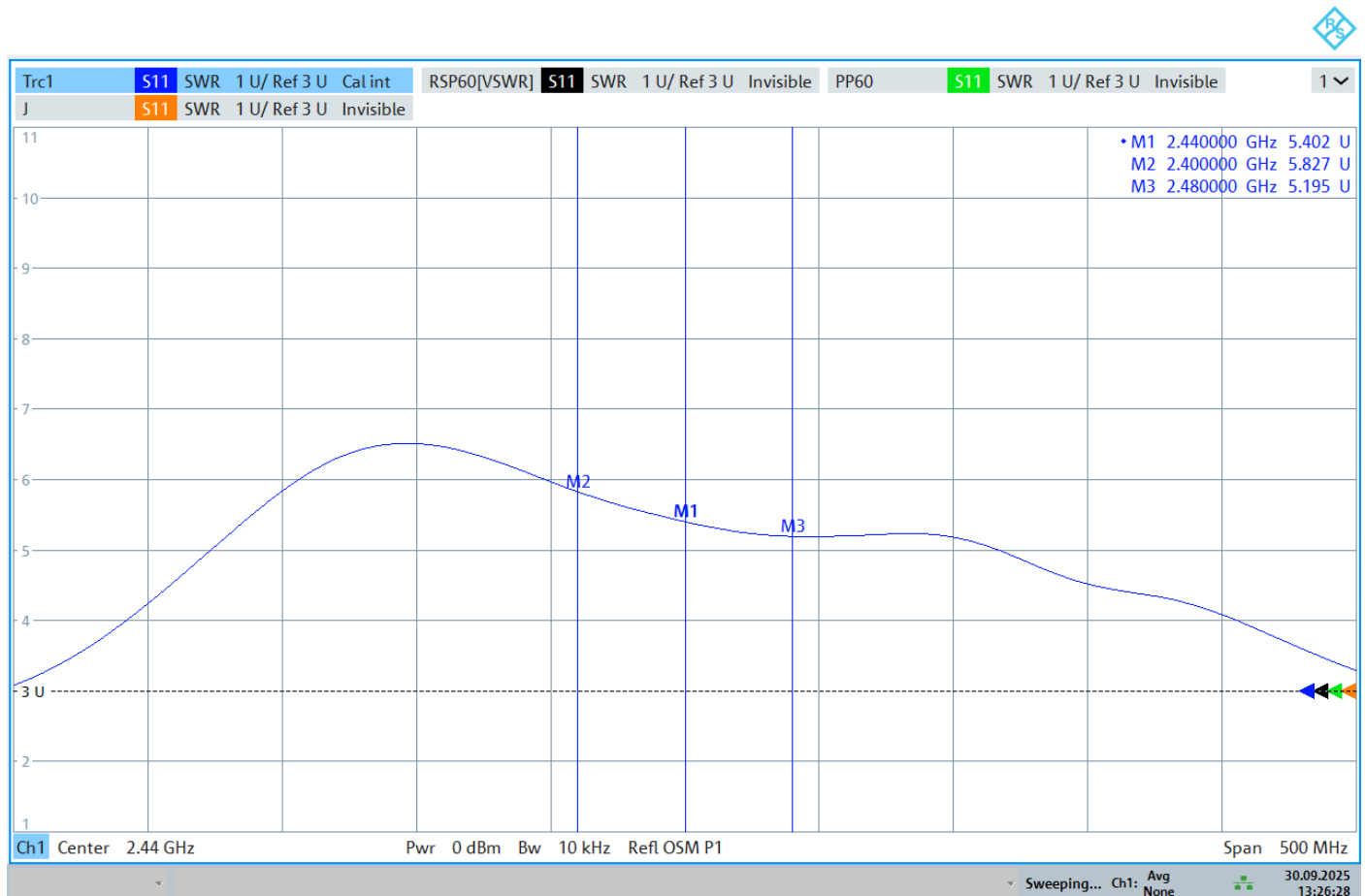


Figure 1. RUP60 PCB Antenna

2 Antenna Electrical Characteristics

Below is a VSWR plot of the antenna when it is fitted to a probe.



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Figure 2. Antenna VSWR

Below is a polar plot showing the antenna gain around 360 degrees in the horizontal plane. The gain values for the RUP60 antenna are relative to the reference antenna (3.0 dBd).

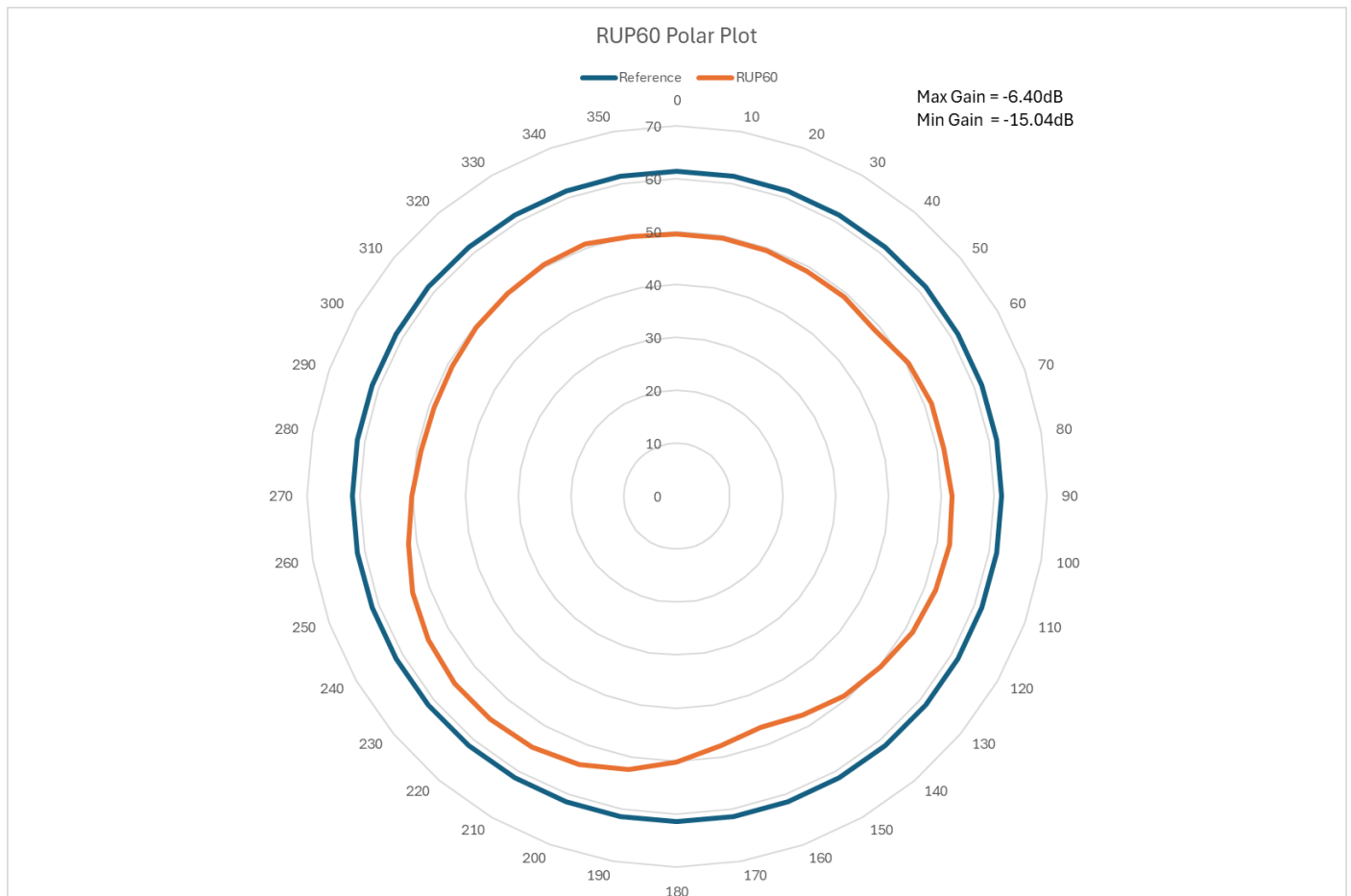


Figure 3. Antenna directional gain plot

The antenna has a peak gain of -7.25dBi.

3 Test Equipment

R&S ESR 26 EMI Test Receiver - Serial Number: RUK21686

R&S ZNLE6 Vector Network Analyser – Serial Number 1323.0012K56-101490-GL

Teseq Bilog antenna : Model CBL 6144 (26MHz-3GHz) - Serial Number 24722

MTP Small Turntable

2.4GHz $\lambda/4$ Reference Antenna

RF Anechoic Chamber