

ODIN-W161 Antenna reference design

Topic :	ODIN-W161 Antenna reference design		
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1 Scope

This document is to define the essential specifications necessary to implement the ODIN-W161 antenna reference design using the solder land RF-port. The information contained herein and its references should be sufficient to guide a skilled person in an attempt to implement the ODIN-W161 antenna reference design on a host carrier. It will provide the designer with PCB layout details and expected performance specifications.

2 SMD Antenna

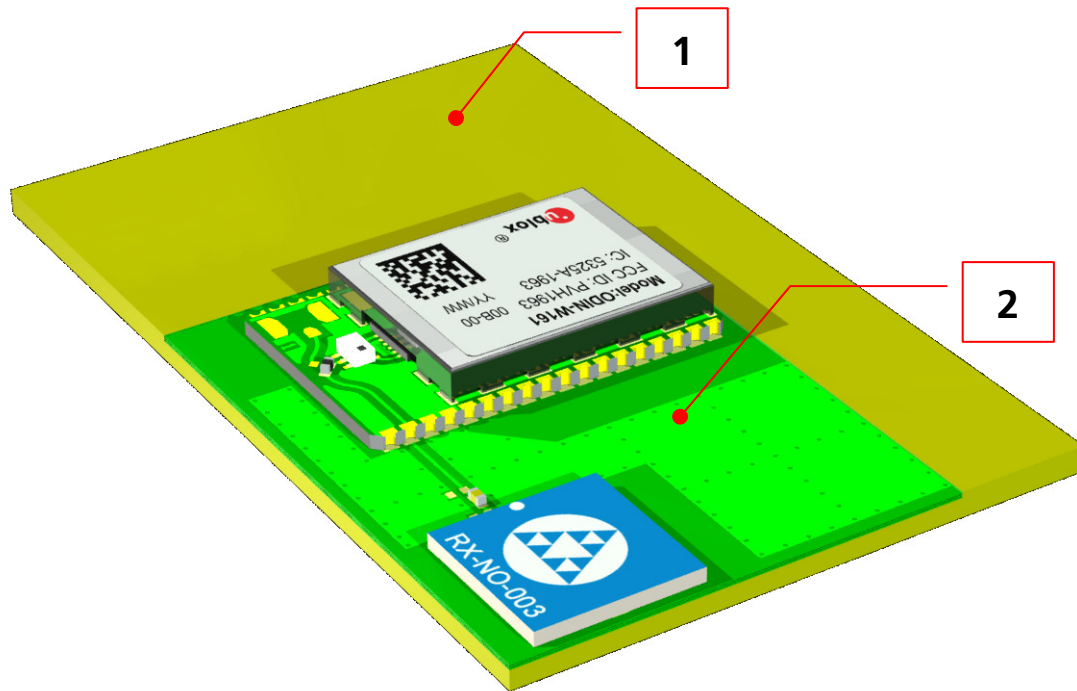
The reference design uses the Fractus type FR05-S1-NO-1-003 dual band antenna that is connected to the module RF-port via a microstrip transmission line.

2.1 SMD antenna characteristics

Parameter	Low-band	High-band	Unit
Frequency Range	2.4 – 2.5	4.9 – 5.875	GHz
Peak Gain	3	3	dBi
VSWR	< 2:1	< 2:1	-
Efficiency	75	74	%
Polarisation	Linear		-
Radiation pattern	Omnidirectional		-
Temperature range	-40 – +85		°C
Impedance	50		Ω
Dimension (L x W x H)	10.0 x 10.0 x 0.9		mm

3 PCB layout description

When using the ODIN-W161 together with this antenna reference design the circuit trace layout must be made in strict compliance with the instructions below.

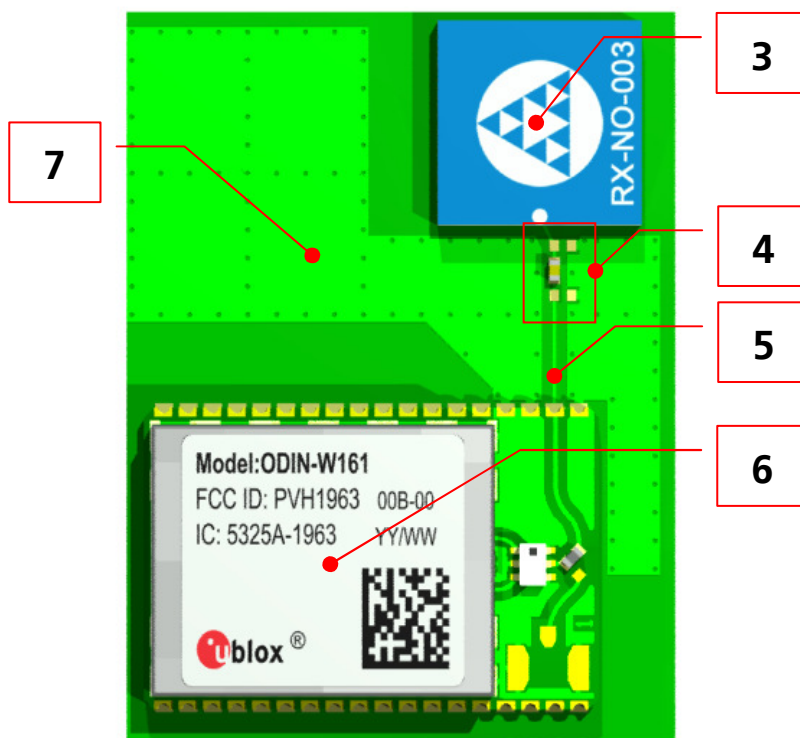


Picture 1 - Antenna Reference design embedded in a host carrier PCB

Reference	Description
1	Host carrier PCB
2	Antenna reference design

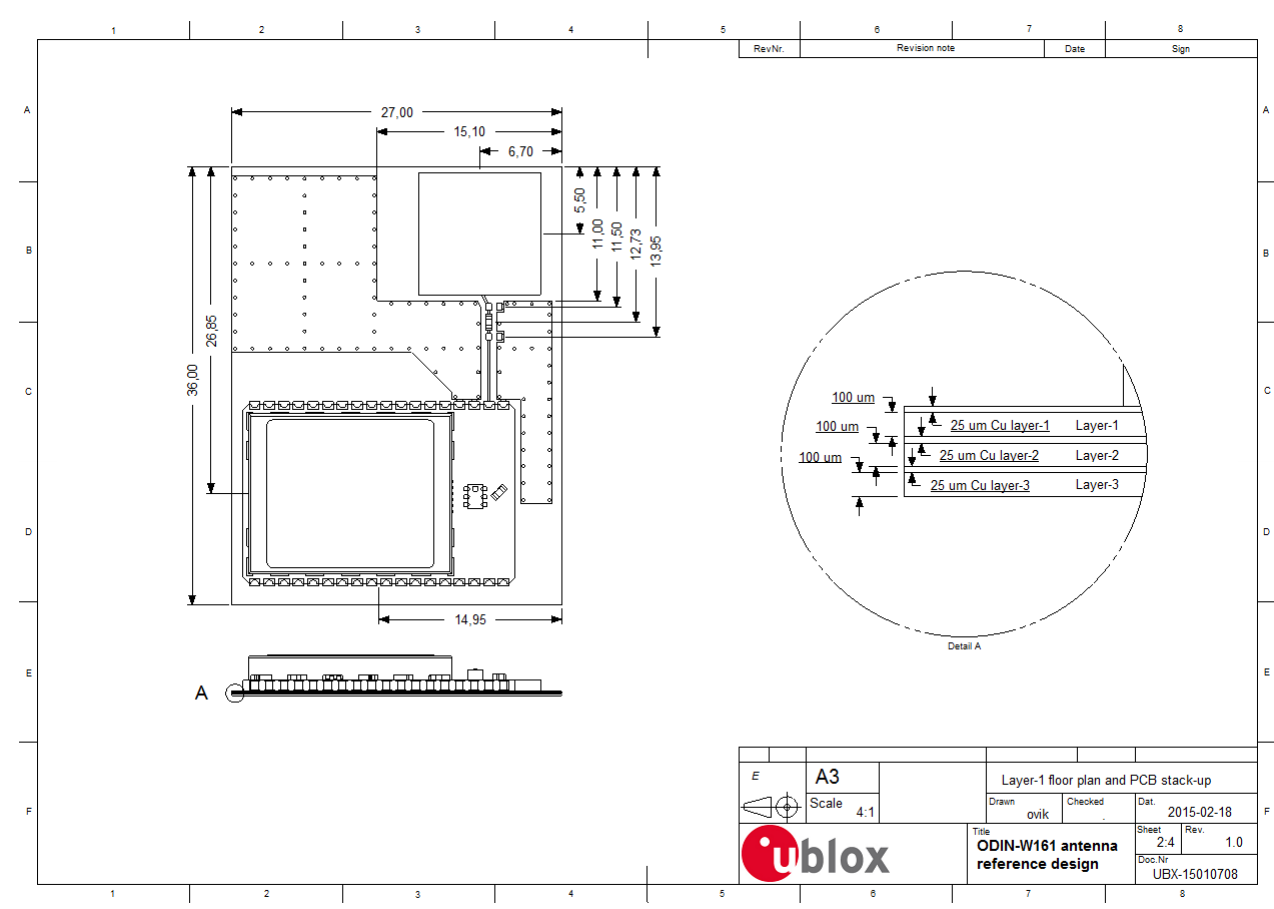
3.1 Floor plan and PCB stack-up

This section describes the where the critical components are positioned on the reference design. It also presents the stack-up of the three first layers of the PCB.



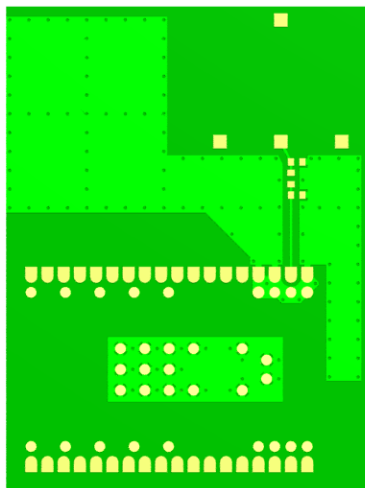
Picture 2 ODIN-W161 antenna reference design

Reference	Description
3	SMD antenna, FR05-S1-NO-1-003
4	Antenna impedance matching network
5	Antenna stripline, matched to 50 ohms
6	ODIN-W161
7	Top layer GND-plane

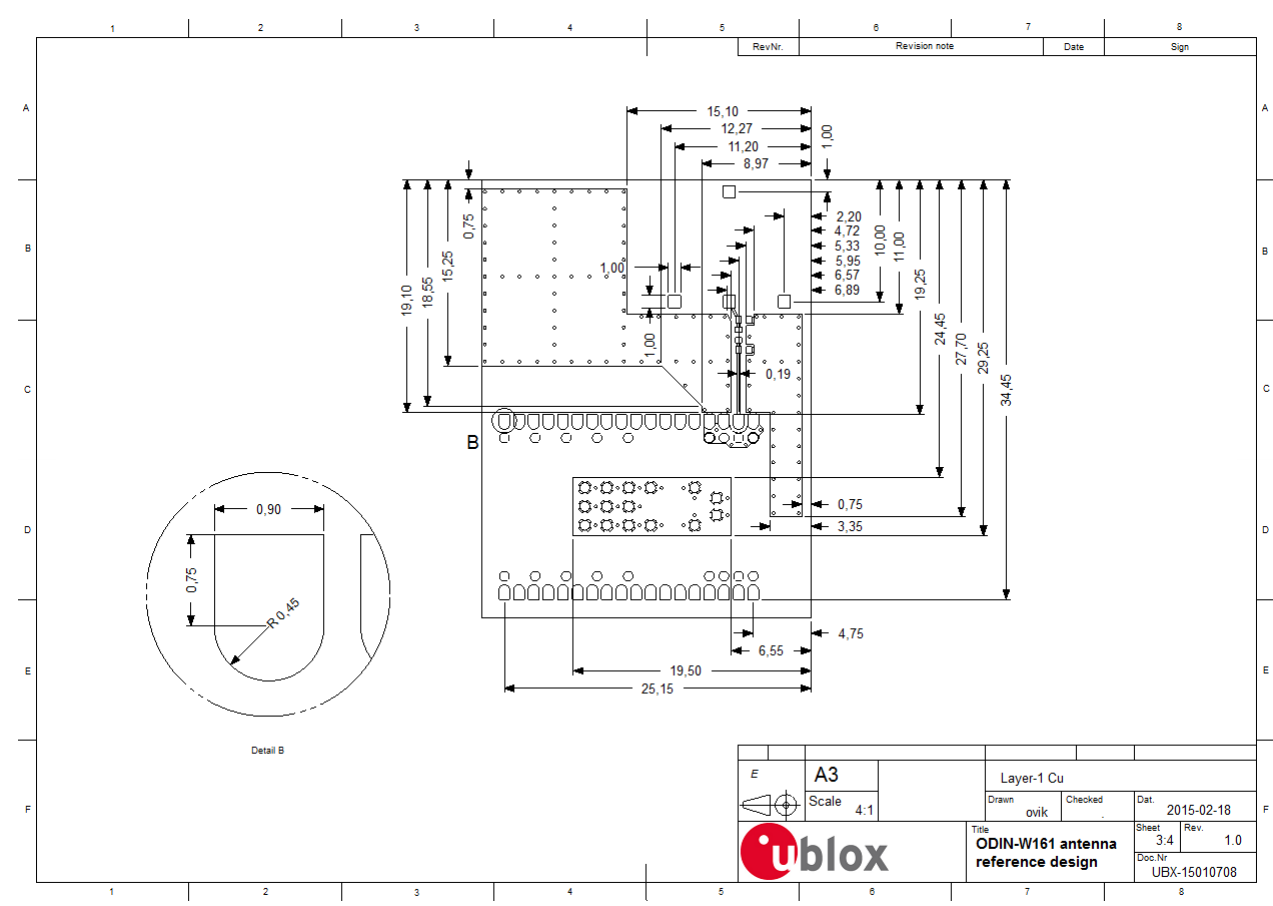


Picture 3 ODIN-W161 Floor plan measurements and PCB stack-up

3.2 Layer-1

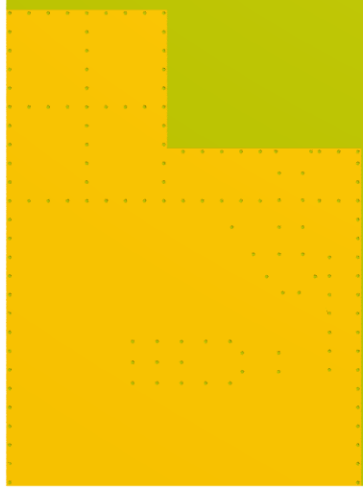


Picture 4 Top layer overview



Picture 5 Mechanical measures of top layer

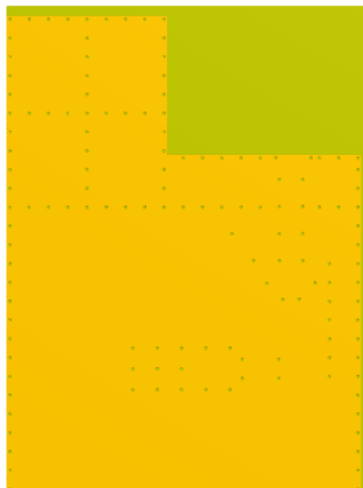
3.3 GND plane layer-2



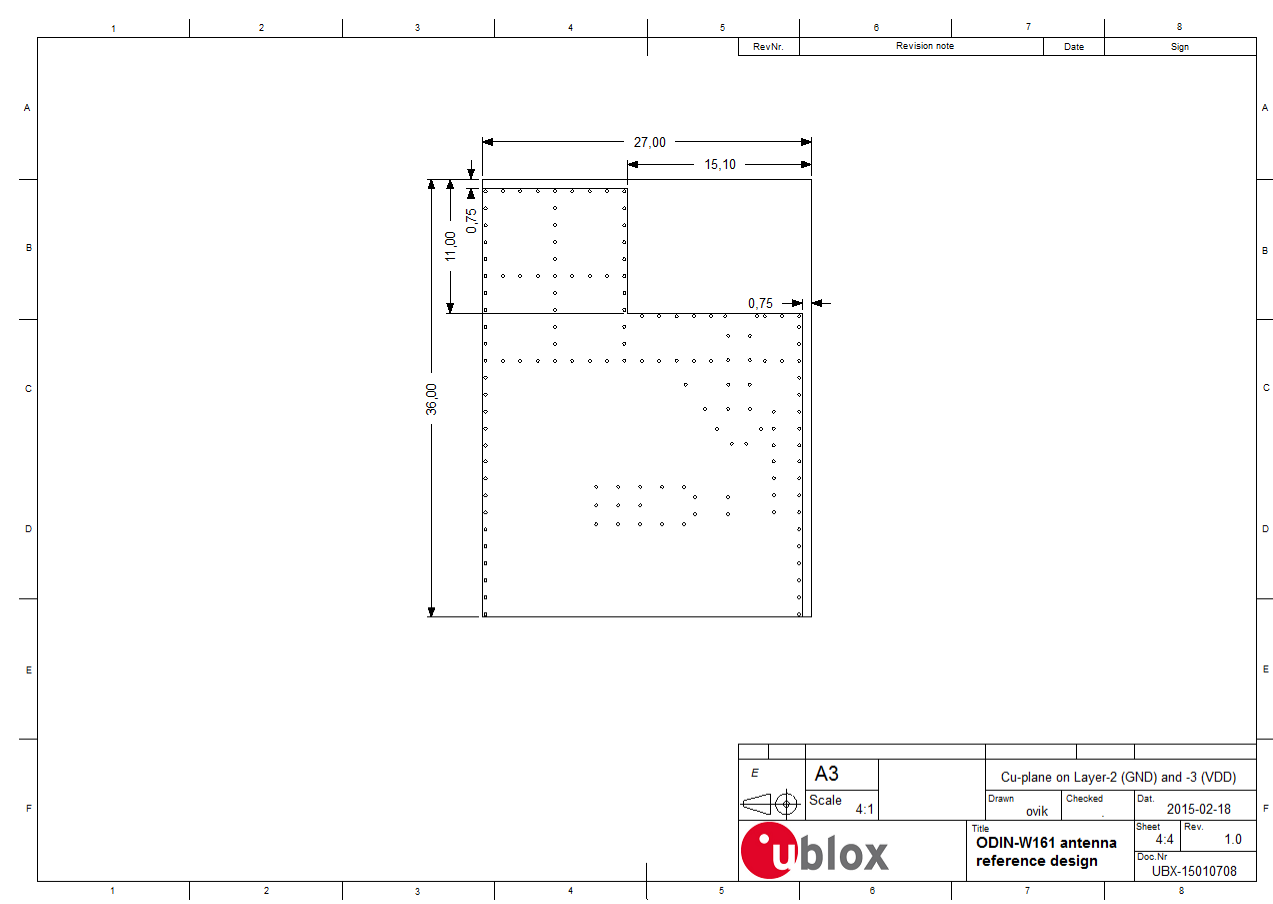
Picture 6 overview of GND plane on layer-2

3.4 Power plane layer-3

The mechanical measures of the power plane on layer-3 is identical to the GND-plane on layer-2



Picture 7 overview of power plane on layer-3



Picture 8 Mechanical measures of GND and power plane on layer-2 and-3