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SWLP.2450.12.4.B.02

Specification

Part No.	SWLP.2450.12.4.B.02
Product Name	12mm*12mm*4mm 2.4GHz SMD Patch Antenna
Feature	For Wi-Fi/WLAN/ISM/Zigbee Industrial Applications ROHS Compliant High Gain 2dBi

1. Introduction

This 12mm*12mm*4mm high gain 2.4GHz patch antenna is ideally suited for high performance industrial applications in Wi-fi, ISM, Zigbee bands.

This product has highest gain in the XZ (azimuth) plane direction, most suitable for fixed wireless applications where transmission and reception is focused to one hemisphere of the device, for example a wireless meter on a reinforced concrete wall.

It can also be placed anywhere on the device ground-plane, unlike most chip or loop antennas which need to be edge mounted.

2. Key Antenna Performance Indicators*

No.	Parameter	Specification
1	Range of Receiving Frequency	2400 MHz to 2500 MHz
2	Bandwidth	100 MHz @ -7dB
3	Polarization	Linear
	VSWR	3.0 max @ Center Frequency
	Peak Gain	+2 dBi typ.
	Impedance	50 Ohms
4	Dimensions	12mm x 12mm x 4mm
5	Operating Temperature	-40°C to +85°C
6	Storage Temperature	-40°C to +85°C
	Termination	Ag (Environmentally Friendly Pb Free)

Original Patch Specification measured on EVB 50*50mm, actual value depends on ground-plane and housing

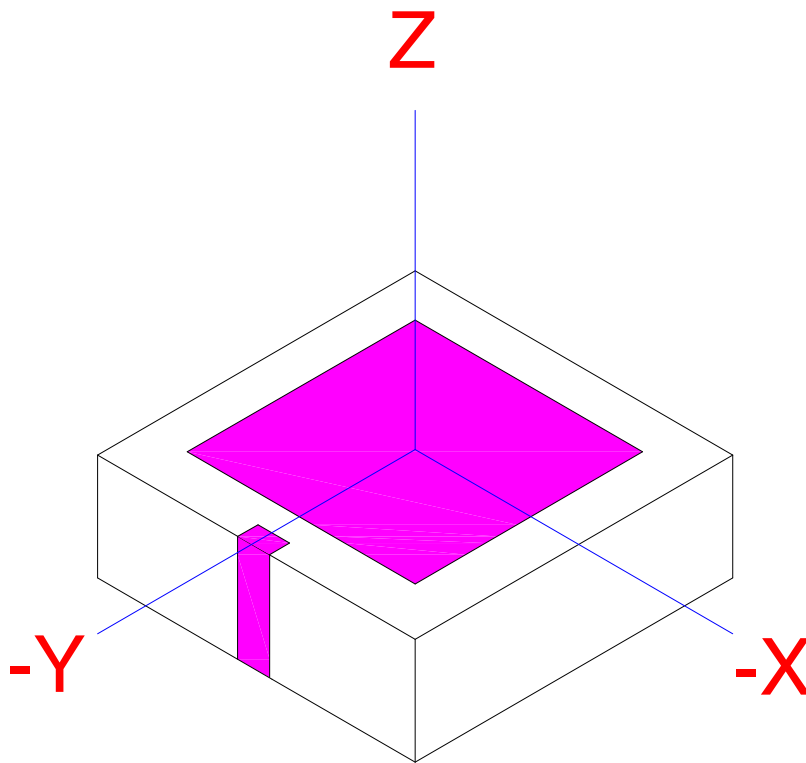
3. Mechanical Specifications

3.1 Return Loss



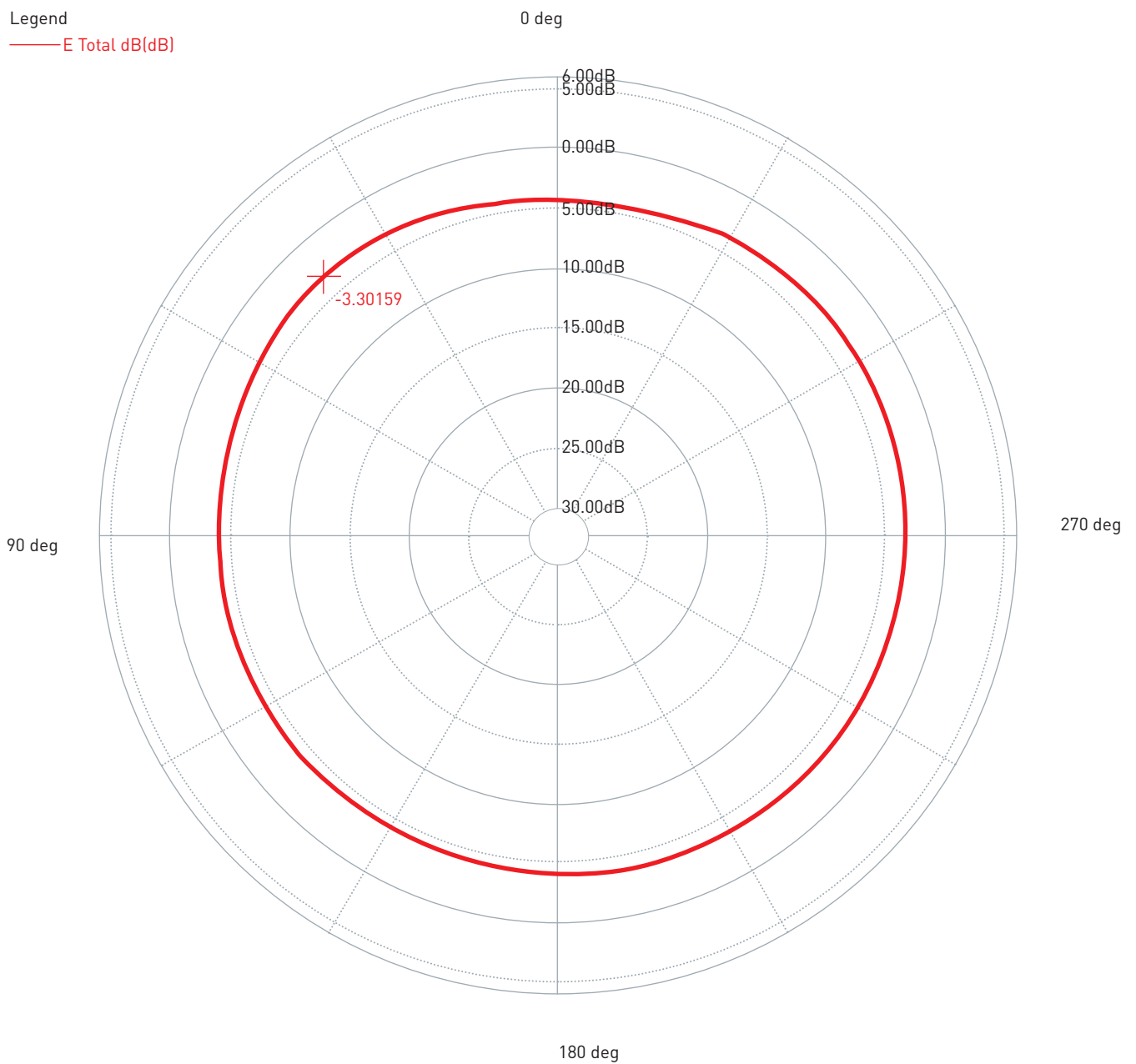
With 50×50mm² Evaluation board

3.2 Definition of X-Y-Z Plane



3.3 Radiation Patterns

XY Plane

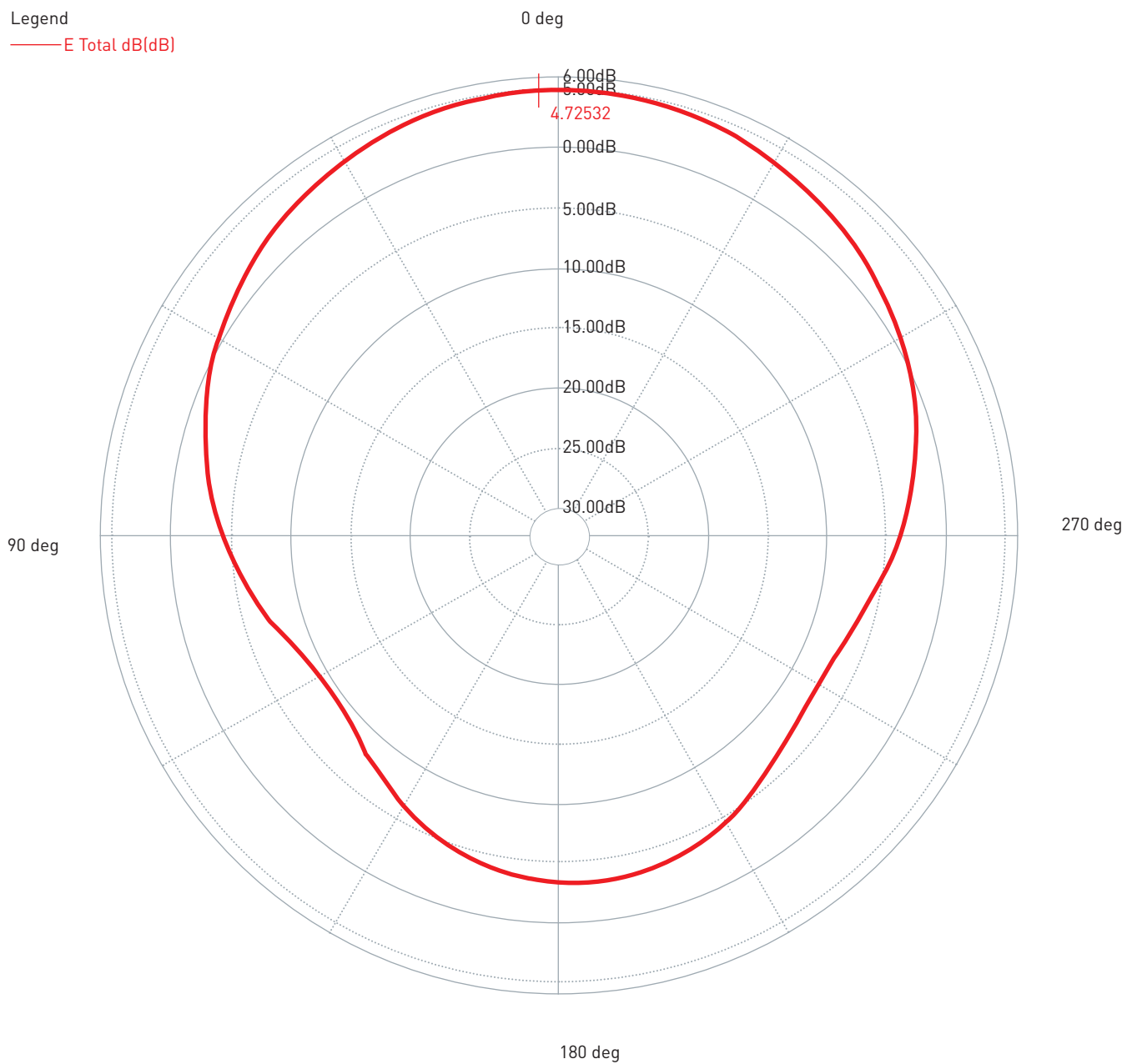


3.3 Radiation Patterns

XZ Plane

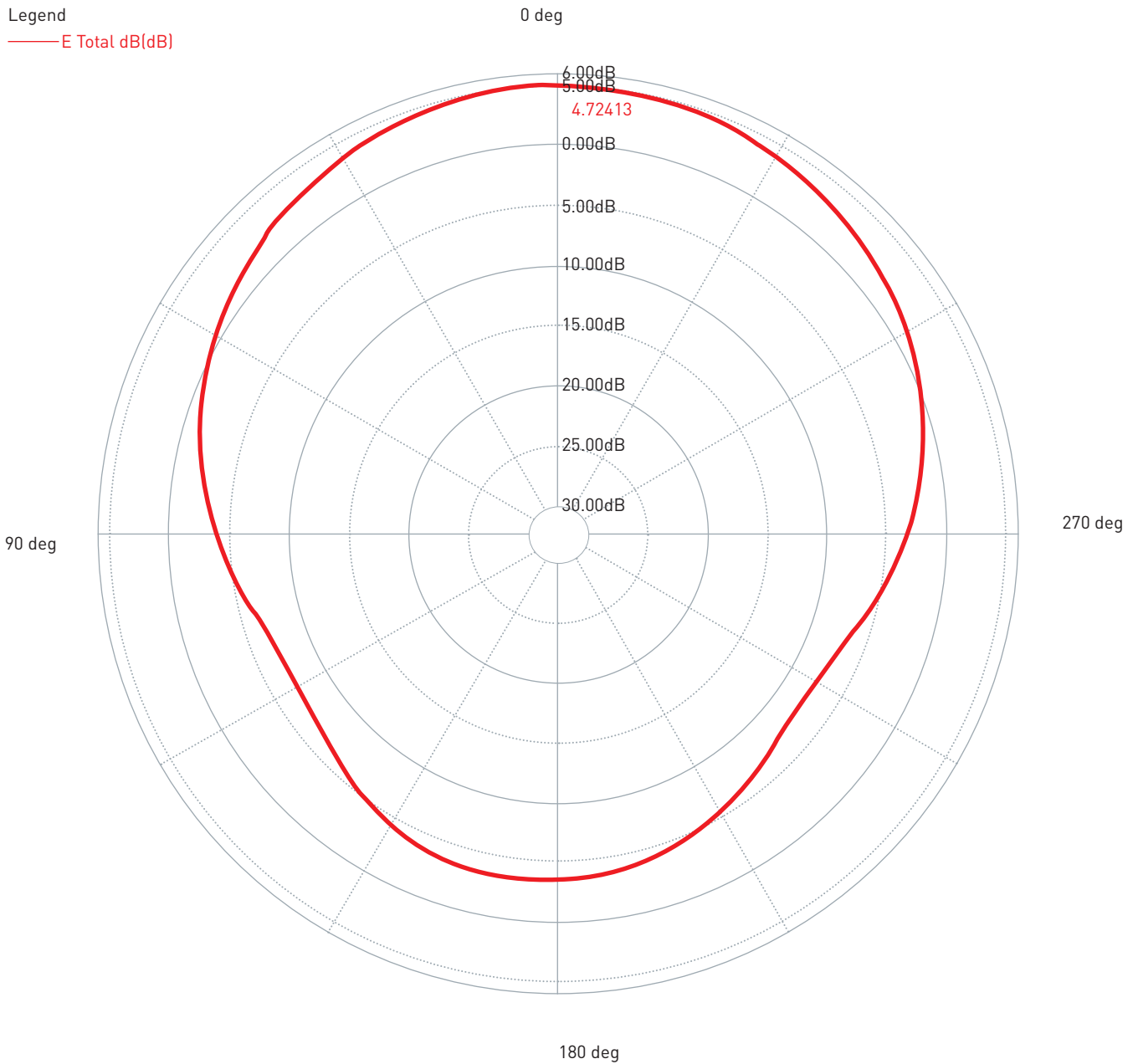
Legend

— E Total dB(dB)

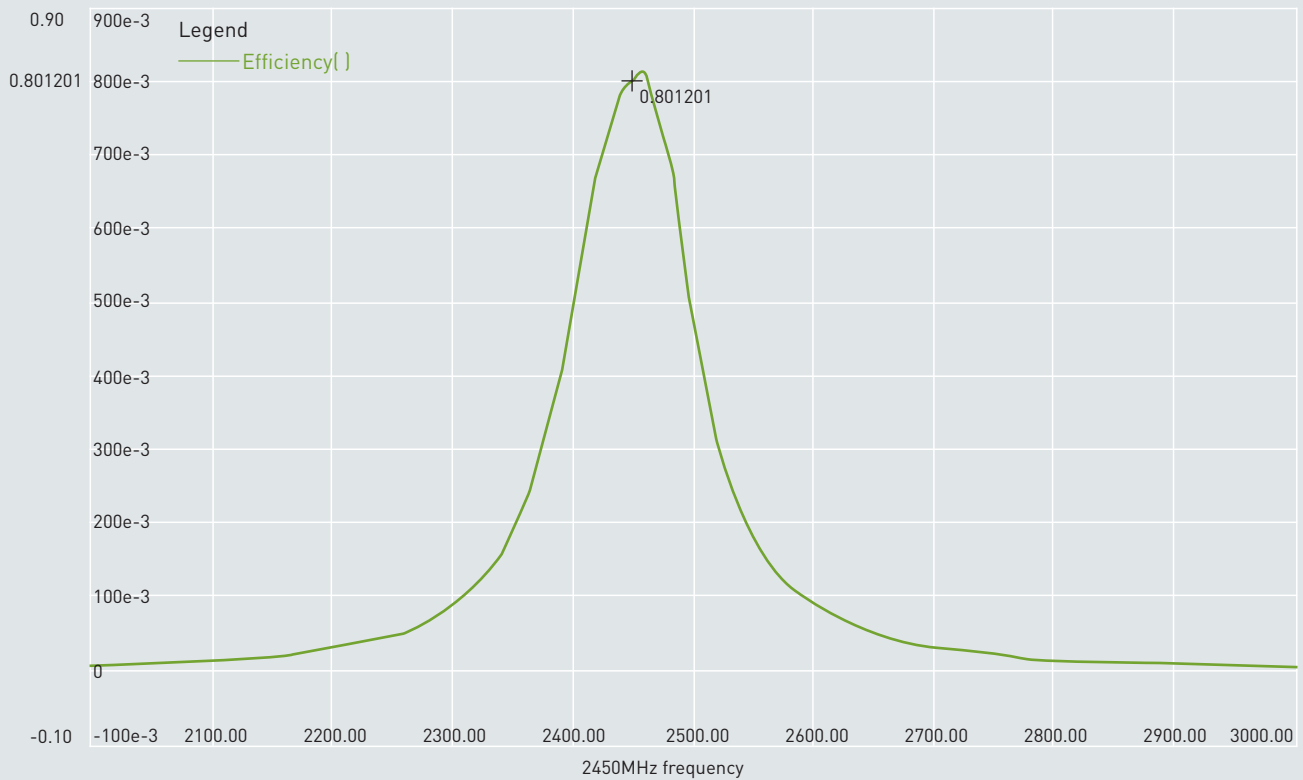


3.3 Radiation Patterns

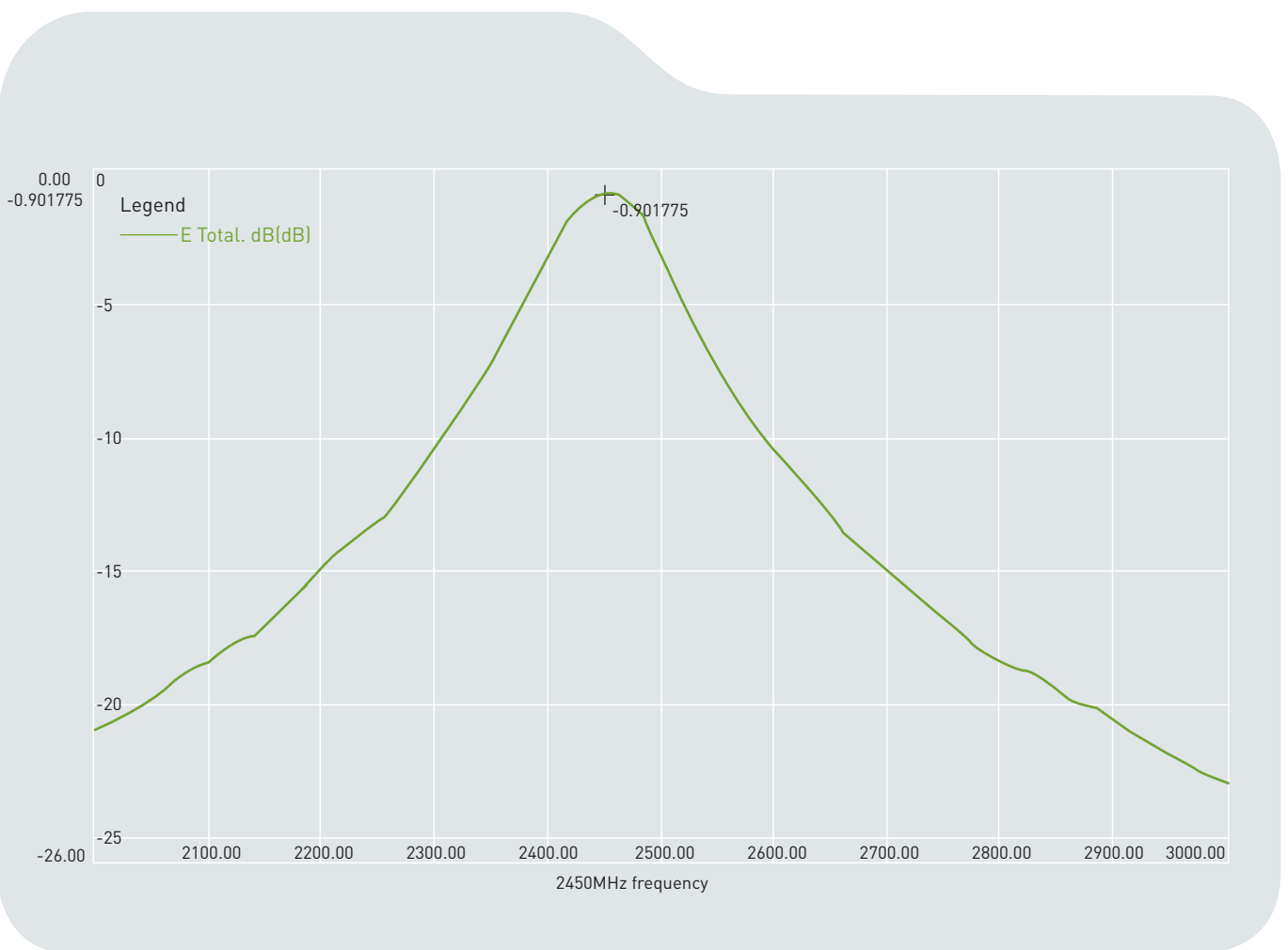
YZ Plane



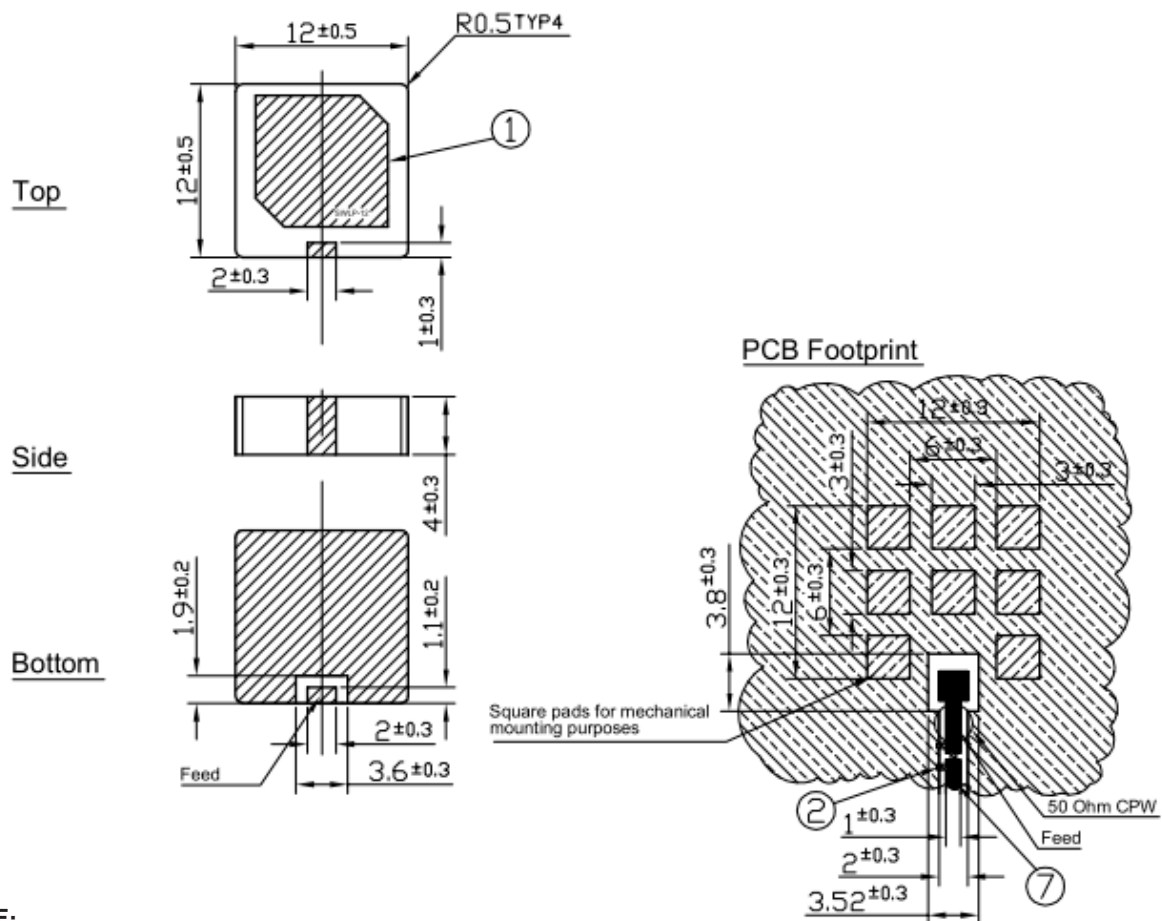
3.4 Efficiency Chart



3.5 Average Gain



4. Shape and Dimensions

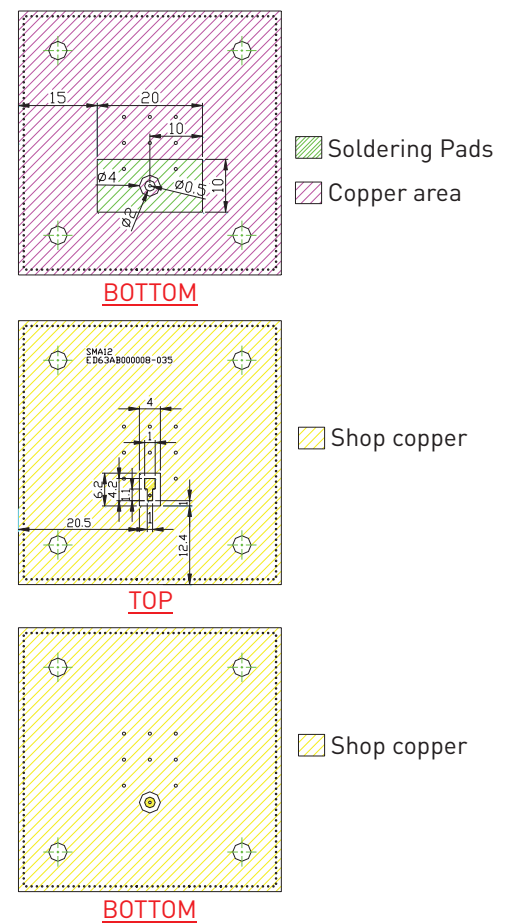
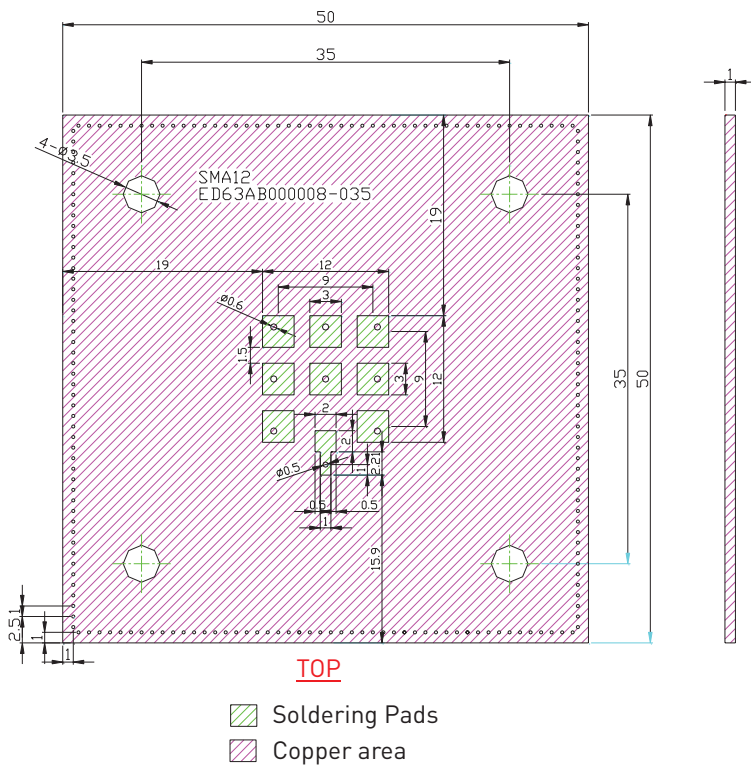


NOTE:

1. Silver area 
2. Solder mask 
3. Area to be soldered 
4. Feed area 
5. Clearance area 
6. Match Component (Capacitor) 
7. Unique dimensioning according to your PCB inductor and capacitor values according to your specific device
8. Dimensions of 50 Ohm CPW dependent on individual board
9. Matching circuit capacitor and inductor values dependent on individual environment

	Name	Material	Finish	QTY
1	SWLP.12 Patch 12x12x4	Ceramic	Clear	1
2	Match Component (Capacitor)	Ceramic	White	3

Evaluation Board Dimension



6. Recommended Reflow Temperature Profile

The SWLP.12 can be assembled following either Sn-Pb or Pb-Free assembly processes.

According to the Standard IPC/JEDEC J-STD-020C, the recommended soldering temperatures are as follows:

Phase	Profile Features	Sn-Pb Assembly	Pb-Free Assembly (SnAgCu)
Ramp-Up	Avg. Ramp-Up Rate (T_{smax} to T_p)	3°C/second (max)	3°C/second (max)
Preheat	Temperature Min (T_{smin})	100°	100°
	Temperature Max (T_{smax})	150°	150°
	Time (t_{smin} to t_{smax})	60-120 seconds	60-120 seconds
Reflow	Temperature (T_L)	183°C	217°C
	Total Time Above T_L (t_L)	60-150 seconds	60-150 seconds
Peak	Temperature (T_p)	235°C	260°C
	Time (t_p)	10-30 seconds	20-40 seconds
Ramp-Down	Rate	6°C/second (max)	6°C/second (max)
Time from 25°C to peak Temperature		6 minutes max	8 minutes max

Temperature profile – (green area) for the assembly process in reflow ovens

