Application Note

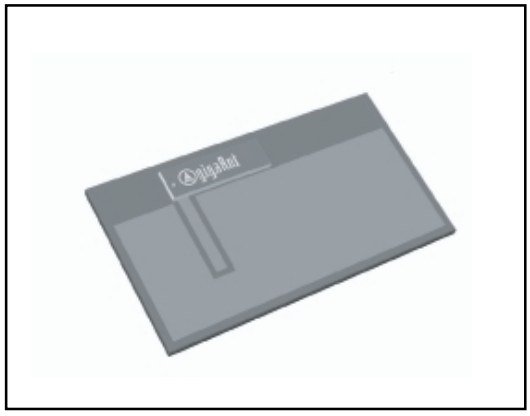
Rufa 2.4 GHz SMD Antenna

Application Note

Rev: AE020157-A/ July 10 2002

Features

- Designed for 2.4 GHz (Bluetooth™, WLAN 802.11b, Home RF)
- Intended for SMD mounting
- Supplied in tape on reel



Applications

- Mobile phones
- PDA's
- Headsets
- Laptops
- PC- Cards
- CF- Cards

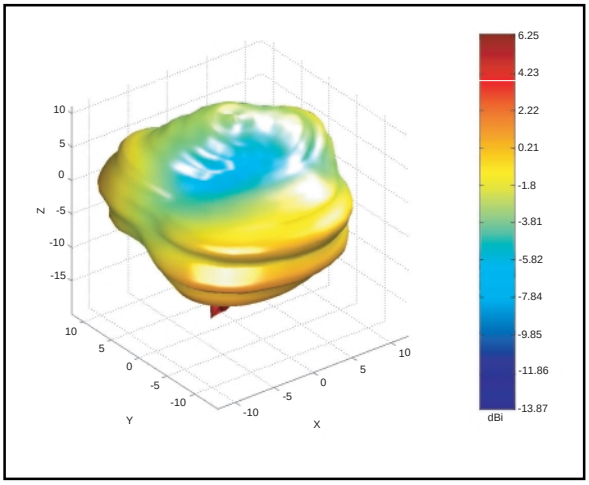
Description

The Rufa antenna is intended for use with all 2.4 GHz applications. The antenna requires a groundplane, i.e your device acts as an active part of the antenna and thus demand careful consideration concerning its placement

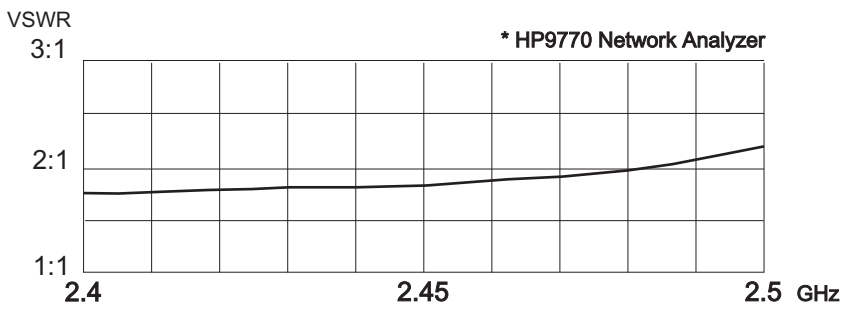
General data

Product name	Rufa 2.4 GHz
Article No	3030A5839-01 (Left)
Frequency	2.4-2.5 GHz
Polarization	Linear
Operating temperature	- 40 to 85 °C
Impedance	50 Ω
Weight	0.1 g
Antenna type	SMD
Peak Gain*	6 dBi
Efficiency*	55 %
VSWR*	<2.5:1
* Rufa reference board	

Radiation Pattern 2.45 GHz

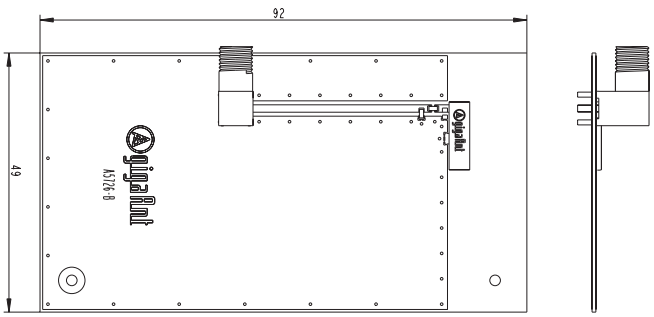


Voltage Standing Wave Ratio



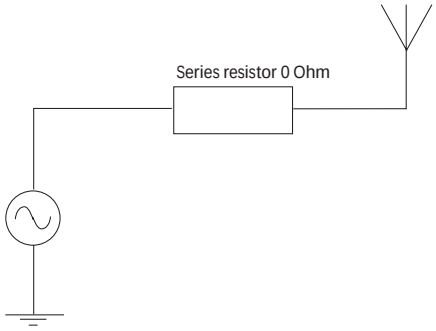
Rufa 2.4 GHz test board characteristics & RF performance

Test board dimensions (mm)



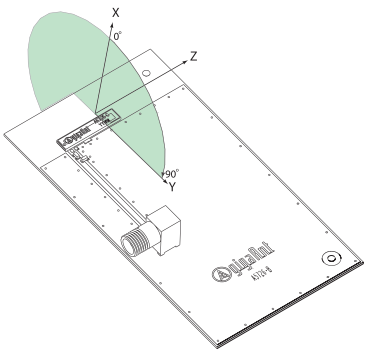
The testboard is designed for evaluation purposes for Rufa 2.4 GHz SMD antenna. The card has the same size as a typical PCMCIA card and is fitted with a SMA connector.

Test board matching

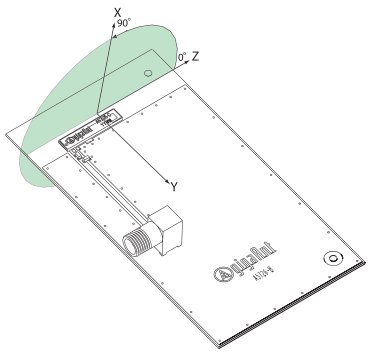


The antenna on the test board doesn't require any matching. A zero Ohm resistor is used as a series component.

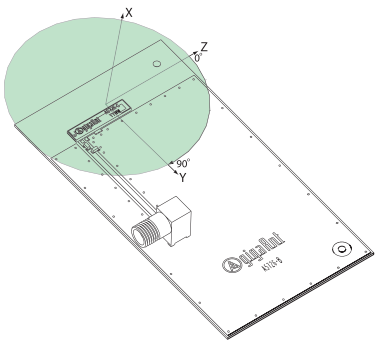
Radiation patterns



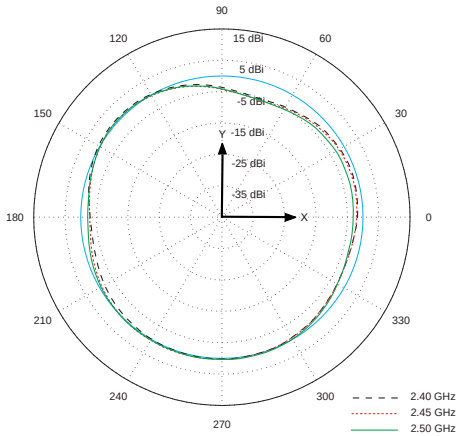
XY- Plane

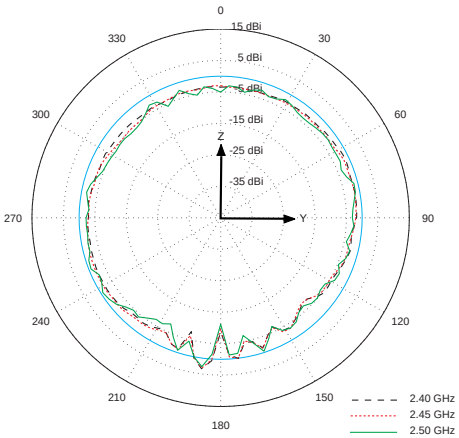


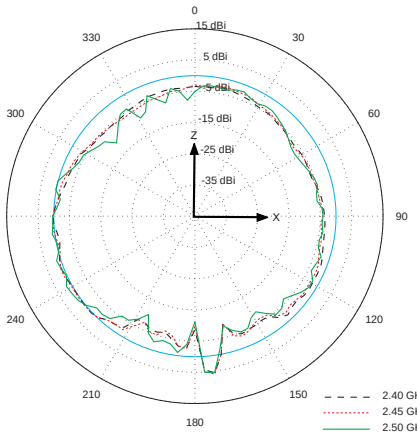
XZ- Plane



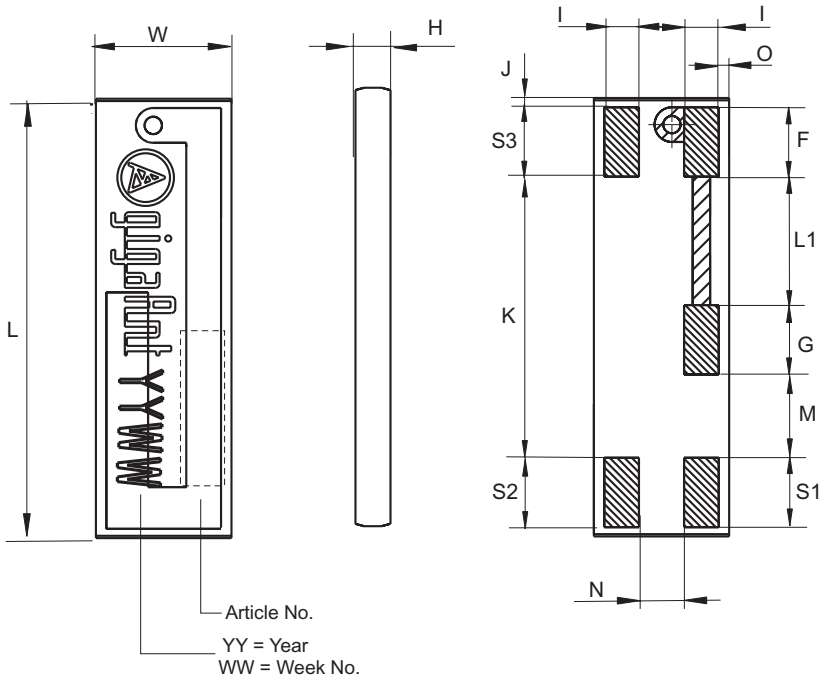
YZ- Plane







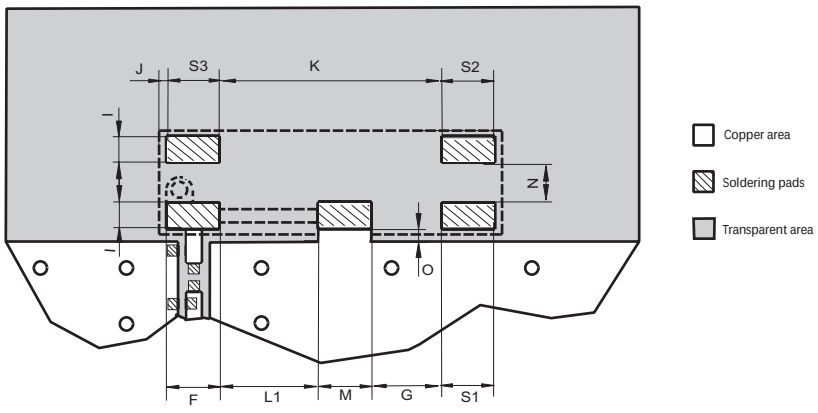
Antenna Dimensions



L	W	H	G	F	S1 S2 S3	I	J	K	L1	M	N	O
Length	Width	Height	Ground	Feed	Solder							
12.6 ±0.2	3.9 ±0.1	1.0 ±0.15	2.0 ±0.1	2.0 ±0.1	2.0 ±0.1	1.0±0.1	0.25±0.1	8.1 ±0.1	3.7±0.1	2.4±0.1	1.3±0.1	0.3±0.15

Dimensions in millimeters

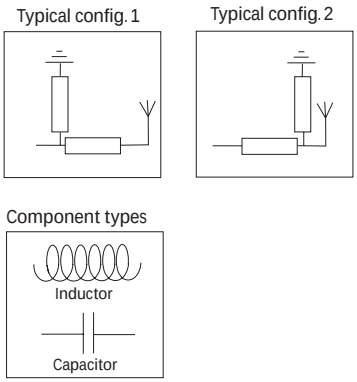
Antenna Foot print



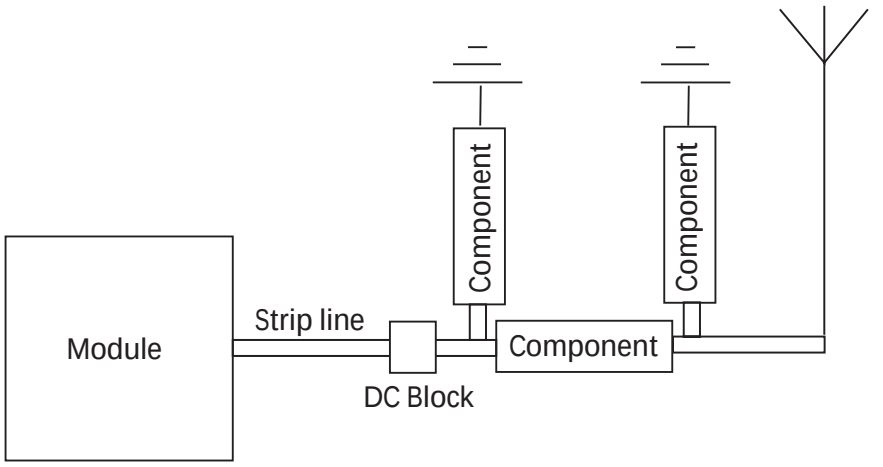
G	F	S1 S2 S3	I	J	K	L1	M	N	O
Ground	Feed	Solder							
2.0 ±0.1	2.0 ±0.1	2.0 ±0.1	1.0 ±0.1	0.25 ±0.1	8.1 ±0.1	3.7 ±0.1	8.3±0.1	1.3±0.1	0.5±0.1

Dimensions in millimeters

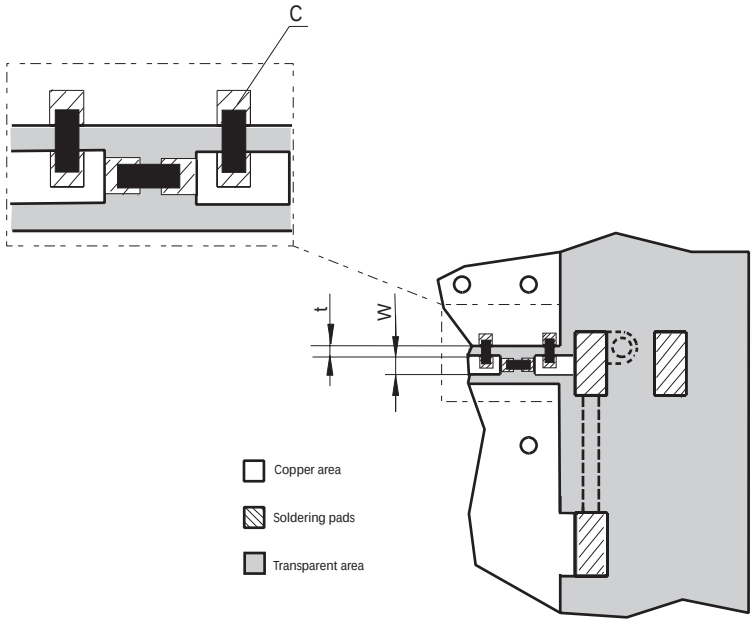
Electrical interface



The matching network has to be individually designed using one, two or three components.

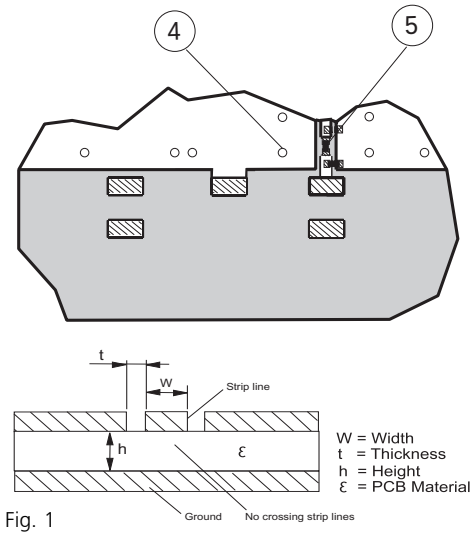


Proposed land dimensions



t	Transmission line: Unique dimensioning according to your PCB *
W	Transmission line: Unique dimensioning according to your PCB *
C	Component matching: Inductor and capacitor values according to your specific device*
	*Dimension to be decided. (See item 3 Application example)

Application example



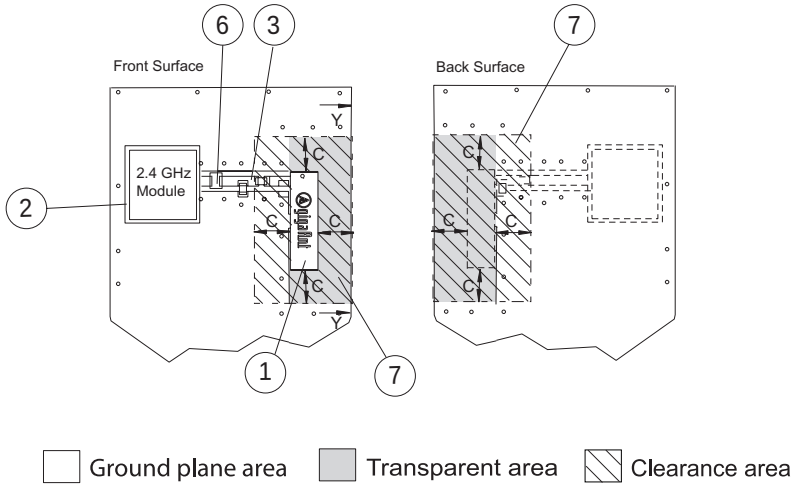


Fig. 1

General
The antenna is of a quarter wave type and is dependent of the groundplane area to complete the antenna function. The antenna performance is also dependent of the size of the groundplane and the tranparent area.

1. Placment of the antenna
The antenna shall be placed on a transparent area without underlying groundplane at the edge of the PCB oriented as above. Groundplane area surrounding the antenna should be with a clearence of C= 5-10 mm. No ground allowed in the Y- direction.

2. Placement of 2.4 GHz module
To avoid losses in the strip line, the module shall be placed as close to the antenna as possible.

3. Strip line
The strip line must be dimensioned according to your specific PCB. (see fig 1). No crossing strip lines are allowed between the strip line and its ground plane.

4. Via Connections
To avoid spurious effects via connections must be made to analogue ground.

5. Component matching
Component values are depending on antenna placement, PCB dimensions and location of other components.

6. DC Block
Might be needed depending on RF Module configuration.

7. Clearence
Front surface : Minimum clearence to other components, C= 5-10 mm
Back surface: No components allowed within the clearence area

8. Casing material
No metal casing or plastics using metal flakes should be used, avoid also metallic based paint or laquer.

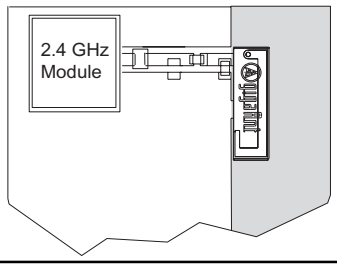
Note ! Incorrect implementation of the antenna will affect the performance.
Contact gigaAnt for implementation services.

Packaging

The antenna is supplied in Tape on reel.

Product Variants

Left feeding Art No . 3030A5839-01



Ordering Code

30 30 A5839 - 01

- **Drawing No.**
- **Technology** -PCB
- **Antenna Family** -SMD

Contact information

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Rev : AE020157-A / July 10 2002