

WITHINGS	BCM9Fractal 2.4 GHz PCB Antenna		
	Antenna Specification		
	CD:20220928	MD:20220928	Ver: 01

BCM9Fractal Antenna Specification

Subject	Broadcom BCM9Fractal 2.4 GHz PCB Antenna for Withings
Type	Specification
Written by	Victor Ting
Diffusion	Withings, Manufacturing Subcontractor, Certification Lab

I Purpose

This document describes the design and gain characteristics of the BCM9Fractal 2.4 GHz PCB antenna provided to Withings by Broadcom.

II Confidentiality

The gain information contained in this document may be made public for purposes of certification.

III Features

- Compact design
- 2.4 to 2.5 GHz operation
- 802.11b/g/n and Bluetooth applications
- VSWR better than 2:1
- Efficiency > 72%

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IV General Description

This compact high efficiency PCB antenna has been optimized for use on small form factor boards and modules using Broadcom 802.11b/g/n WLAN chipsets. It offers a good radiation pattern in all 3 planes, together with high efficiency. This design is provided to Withings under NDA and can be easily incorporated into the layouts of various types of PCB design.

V Antenna Gain Details

Type	Brand	Model	Max Antenna Gain (dBi)	Connector
PCB	Broadcom	BCM9Fractal	2.8	N/A

VI Construction

The following figure shows the design of the antenna to be implemented on the PCB.

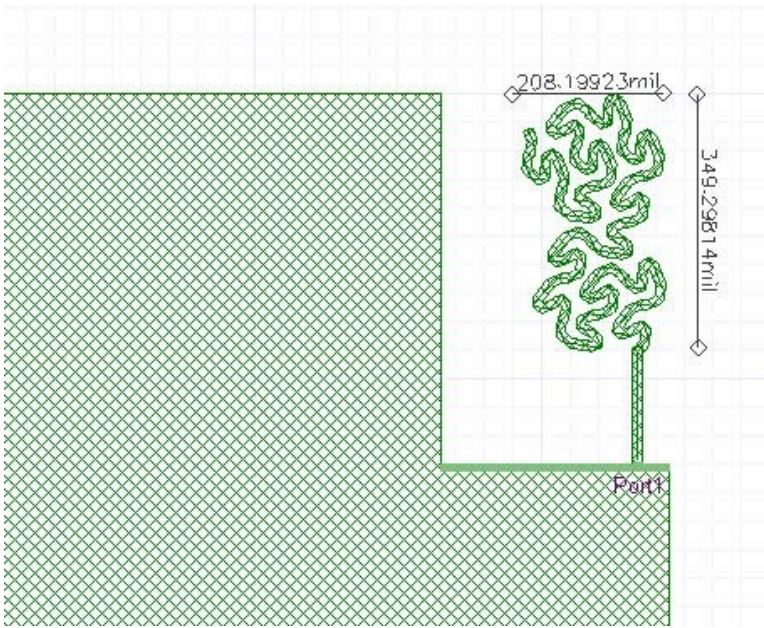


Figure 1: PCB layout design

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VII Measurements

The following diagram shows the orientation of the probes corresponding to the measurements made on the antenna.

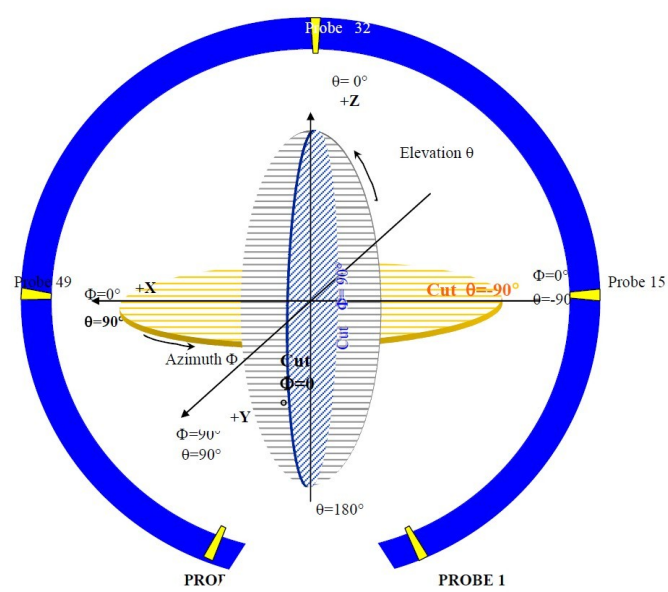


Figure 2: Measurement probe orientation

The subsequent graphs show the measurement results of the two cut planes:

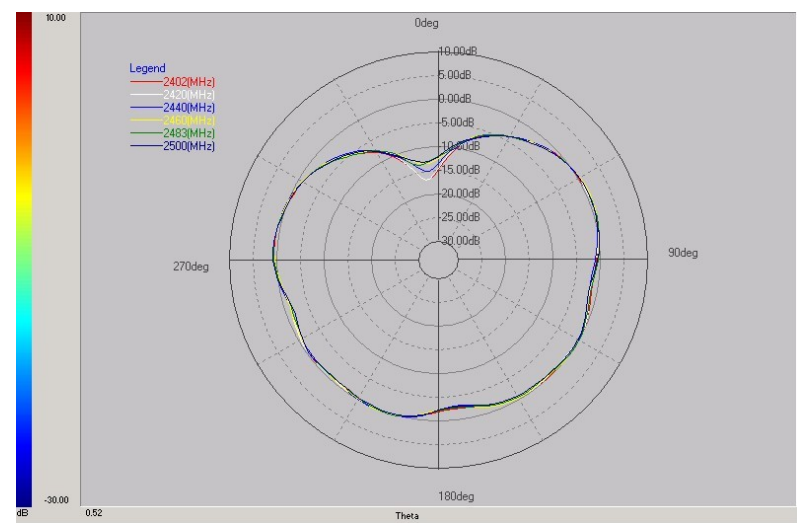


Figure 3: Plane A: Phi 0

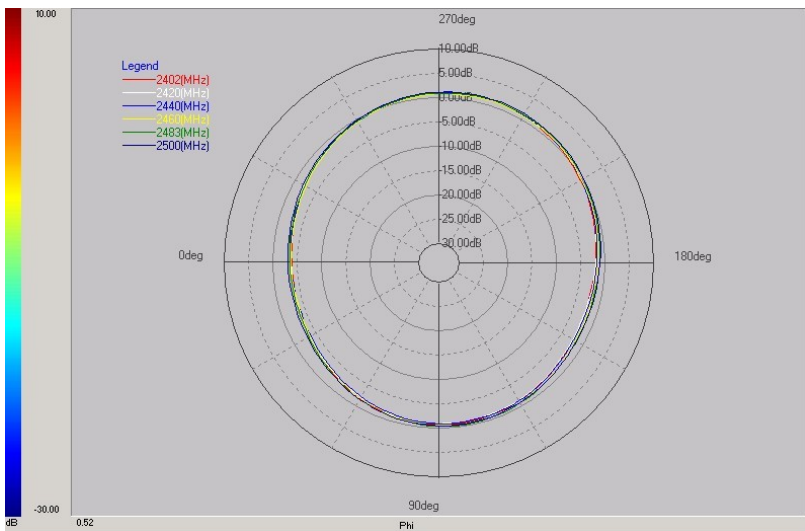


Figure 4: Plane A: Phi 90

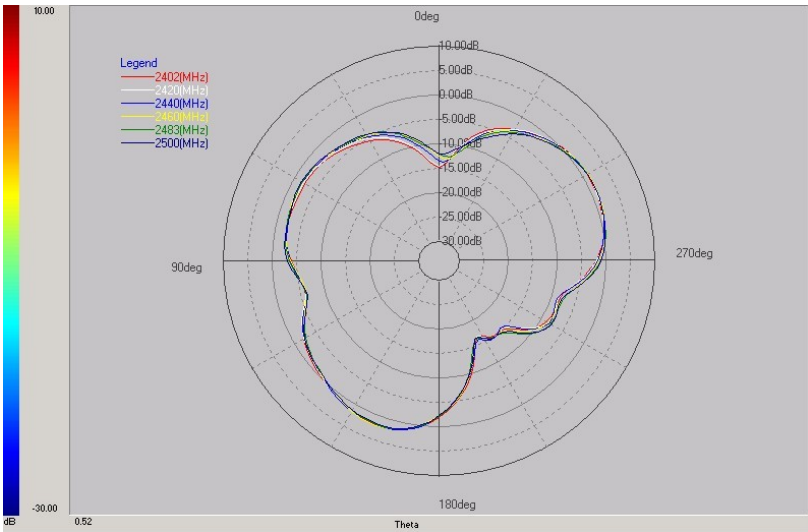


Figure 5: Plane A: Theta 90

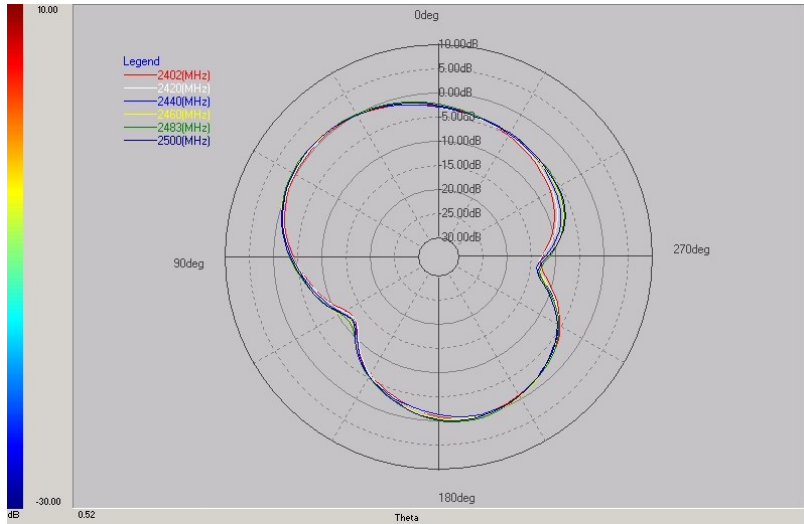


Figure 6: Plane B: Phi 0

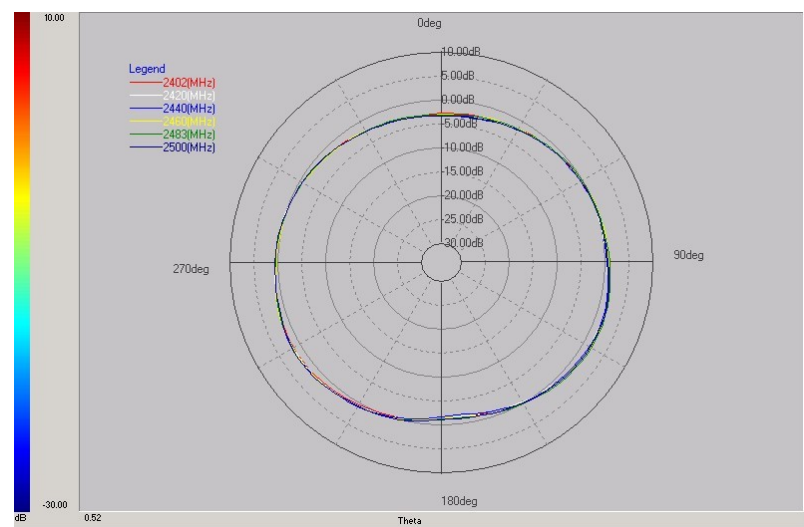


Figure 7: Plane B: Phi 90

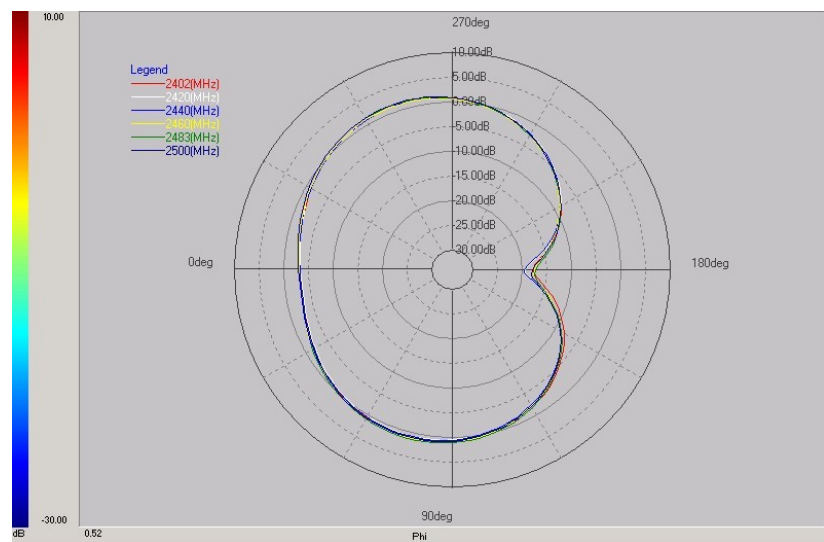


Figure 8: Plane B: Theta 90