

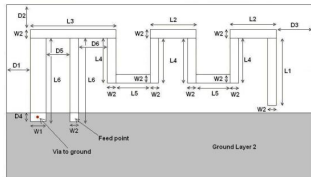
CP-1000 Antenna Specification Document V1.0

2026-4-24

I. Product Overview

This specification document describes a PCB-mounted antenna specifically designed for 2.4 GHz Bluetooth/BLE applications, supporting Bluetooth 5.3/5.4. It can be directly etched onto PCB boards and features low cost and compact size.

II. Basic Antenna Information

Project	Content Description	Remarks																												
Antenna type	PCB Antenna																													
Manufacturer	Shenzhen Jiuyida Electronics Co., Ltd.																													
Size dimension	15x6																													
Baseplate material	FR-4																													
PCB thickness	1.0mm																													
Antenna drawing	 Figure 3: Antenna Dimensions <table><tr><td>L1</td><td>3.94 mm</td></tr><tr><td>L2</td><td>2.70 mm</td></tr><tr><td>L3</td><td>5.69 mm</td></tr><tr><td>L4</td><td>2.64 mm</td></tr><tr><td>L5</td><td>2.00 mm</td></tr><tr><td>L6</td><td>4.90 mm</td></tr><tr><td>W1</td><td>0.90 mm</td></tr><tr><td>W2</td><td>0.50 mm</td></tr><tr><td>D1</td><td>0.50 mm</td></tr><tr><td>D2</td><td>0.30 mm</td></tr><tr><td>D3</td><td>0.30 mm</td></tr><tr><td>D4</td><td>0.50 mm</td></tr><tr><td>D5</td><td>1.40 mm</td></tr><tr><td>D6</td><td>1.70 mm</td></tr></table> Table 1: Antenna Dimensions		L1	3.94 mm	L2	2.70 mm	L3	5.69 mm	L4	2.64 mm	L5	2.00 mm	L6	4.90 mm	W1	0.90 mm	W2	0.50 mm	D1	0.50 mm	D2	0.30 mm	D3	0.30 mm	D4	0.50 mm	D5	1.40 mm	D6	1.70 mm
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III. Main Technical Parameters

(1) Table of Electrical Performance Parameters

Parameter	Representative value	Explain
Working frequency range	2400 MHz ~ 2483.5 MHz	Bluetooth ISM frequency band
Center frequency	2440 MHz / 2450 MHz	—
Impedance	50 Ω	Standard RF interface impedance
Echo loss (S11)	≤ -10 dB	—
Voltage Standing Wave Ratio (VSWR)	≤ 2.0	—
Tape width	≥ 80 MHz	Complete coverage in the 2.4 GHz frequency band
Gain (Gain)	1.6dBi	—
Efficiency	68%	—
Polarization Method	Linear polarization	—
Interiorinput power	≤ 20 dBm	—



(2) Antenna Matching Circuit Description

RF Filter Model F1: DEA162450BT-1260B2; DC blocking capacitance: C37/47 pF; π -type matching network: L2/2 nH, C38/NC, C39/NC.

Application Note AN043

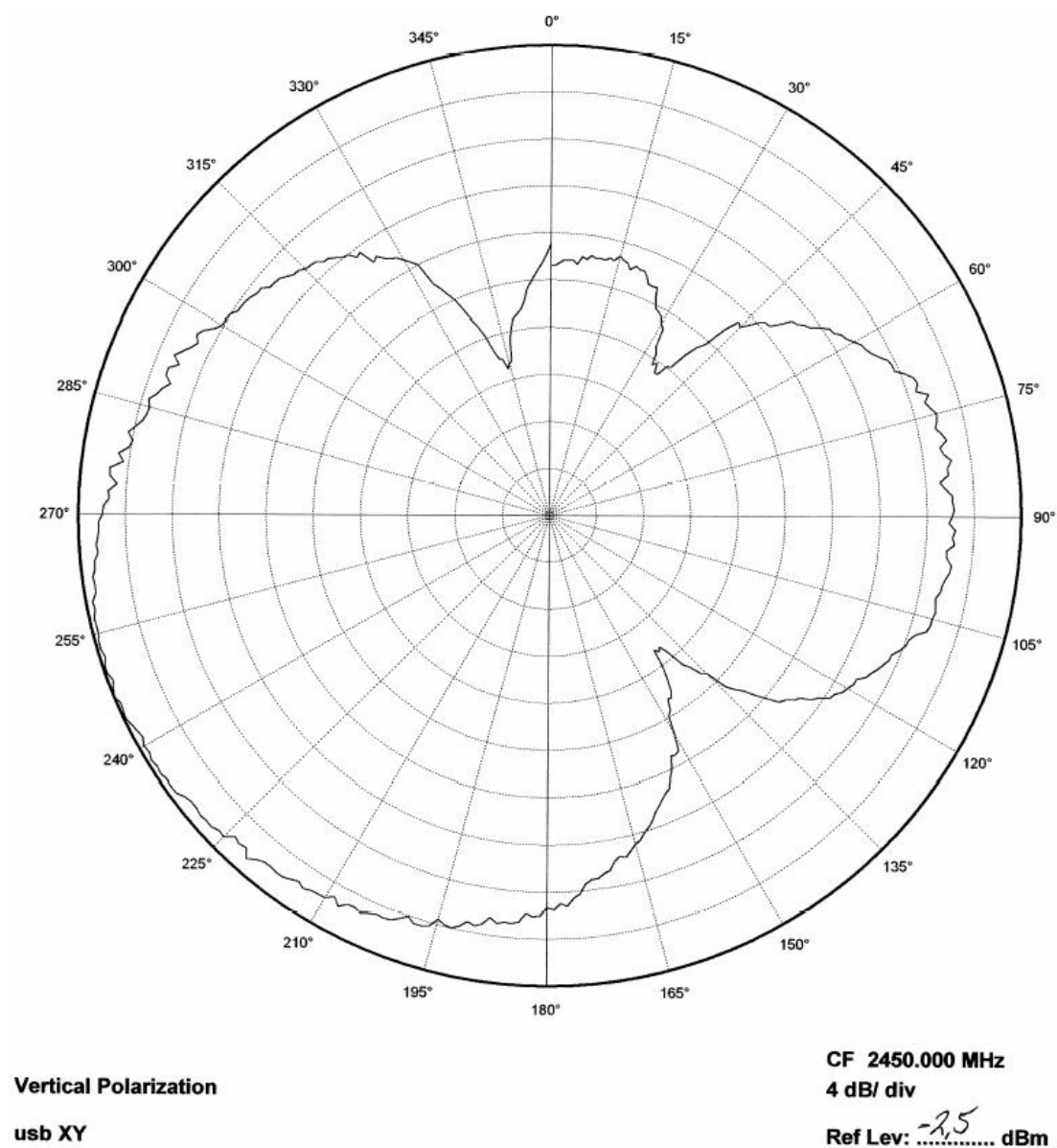


Figure 7: USB Dongle XY Plane

Application Note AN043

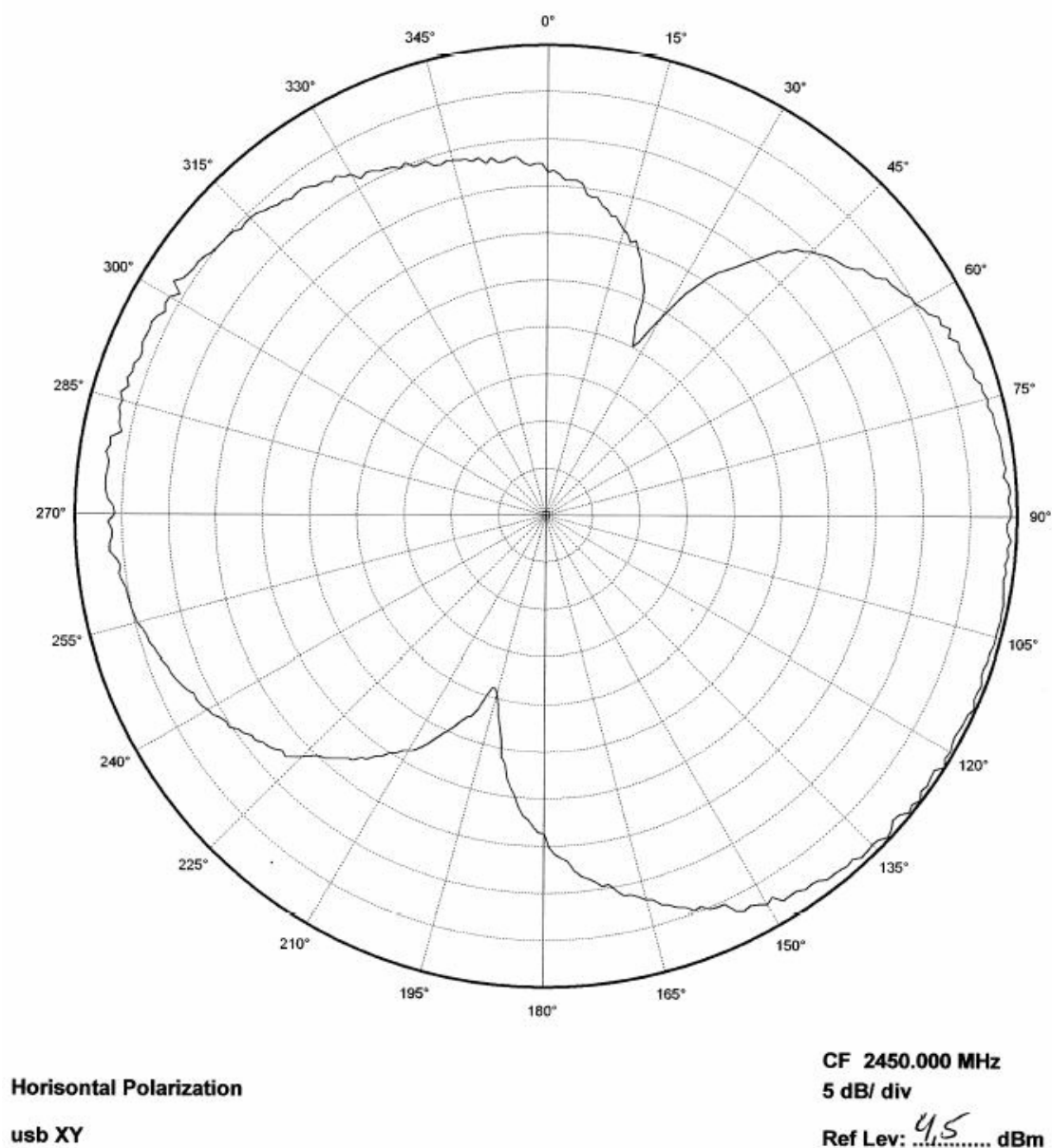


Figure 8: USB Dongle XY Plane

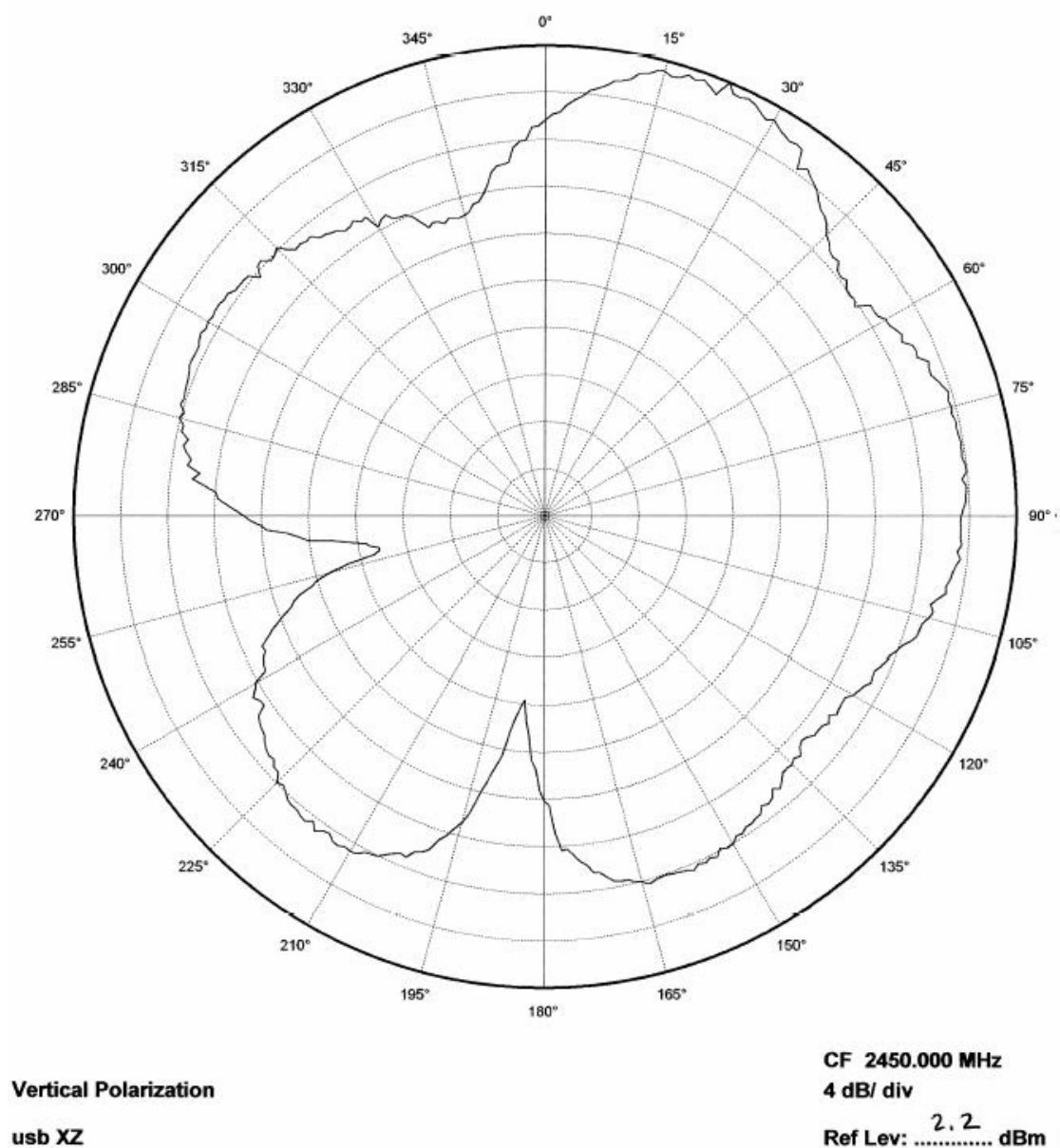


Figure 9: USB Dongle XZ Plane

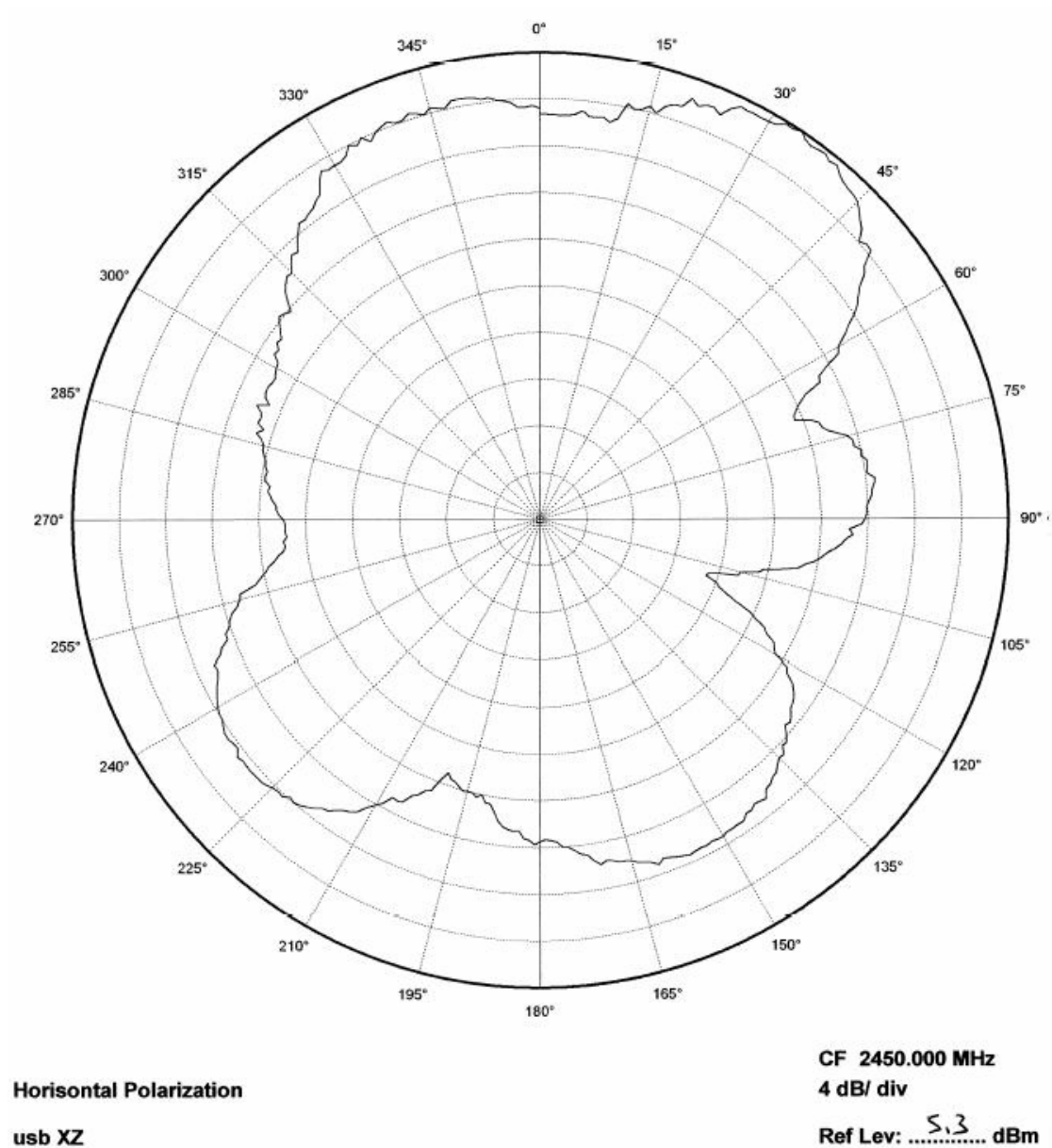


Figure 10: USB Dongle XZ Plane

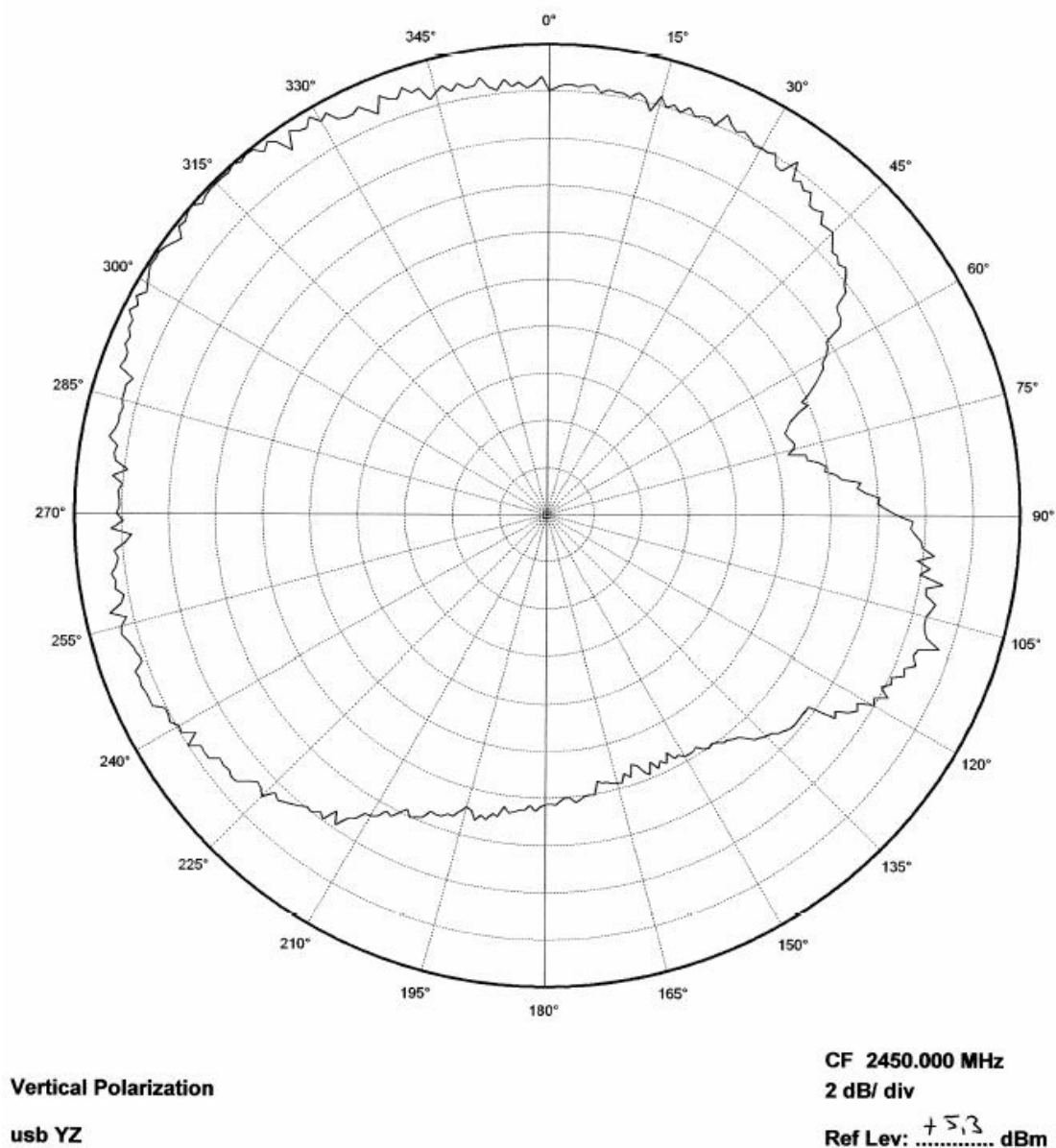


Figure 11: USB Dongle YZ Plane

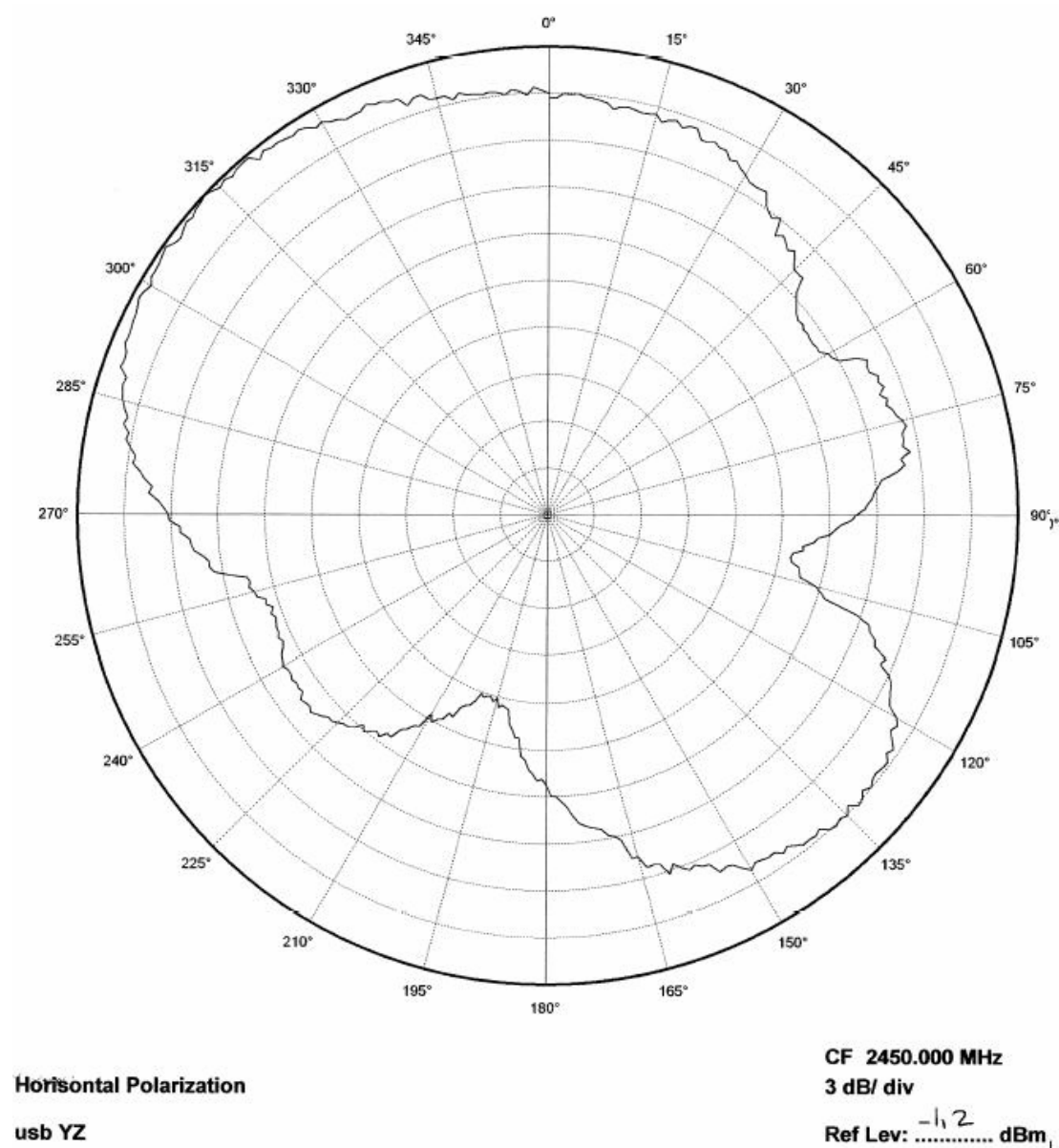


Figure 12: USB Dongle YZ Plane

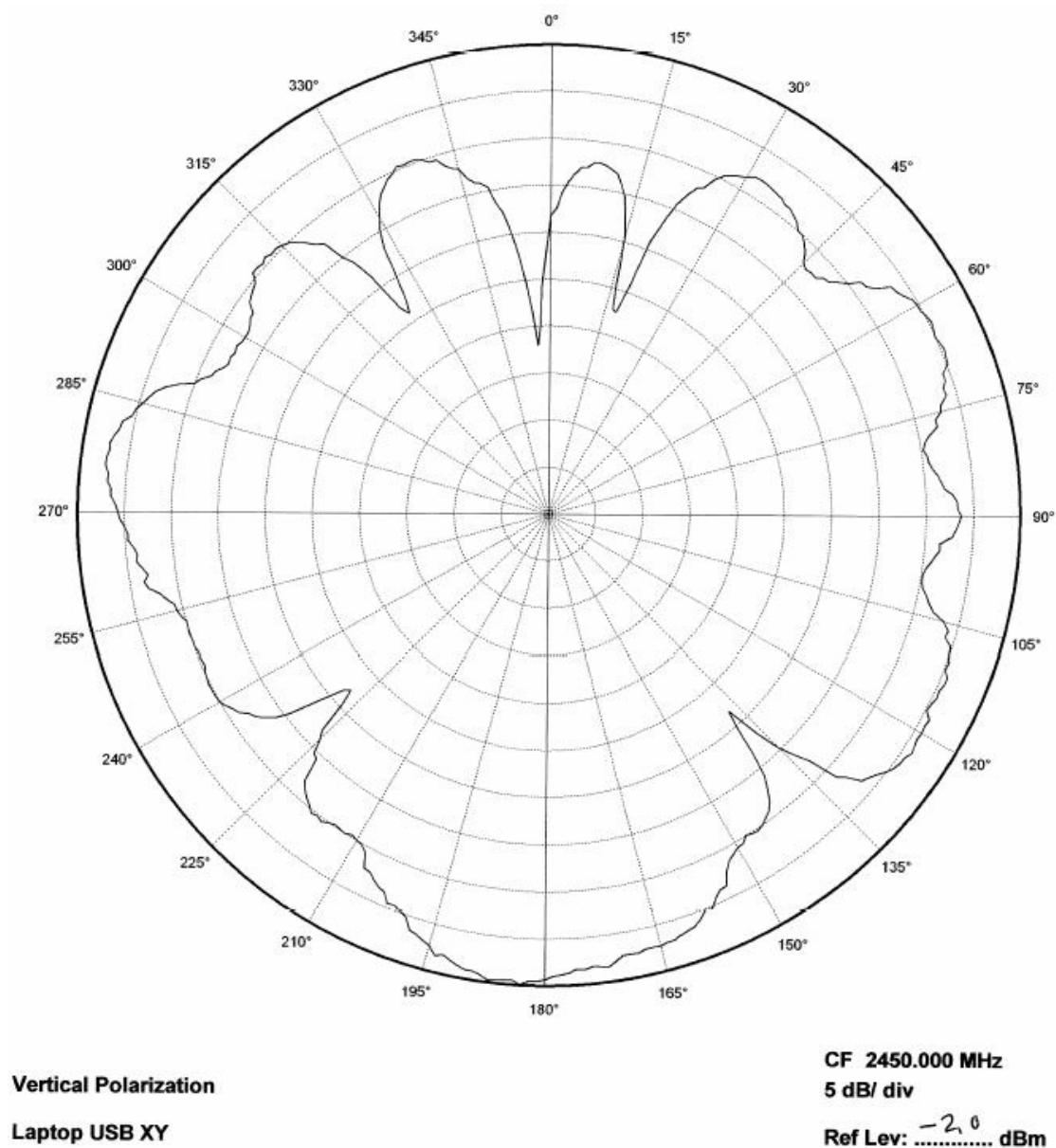


Figure 13: USB Dongle in Laptop XY Plane

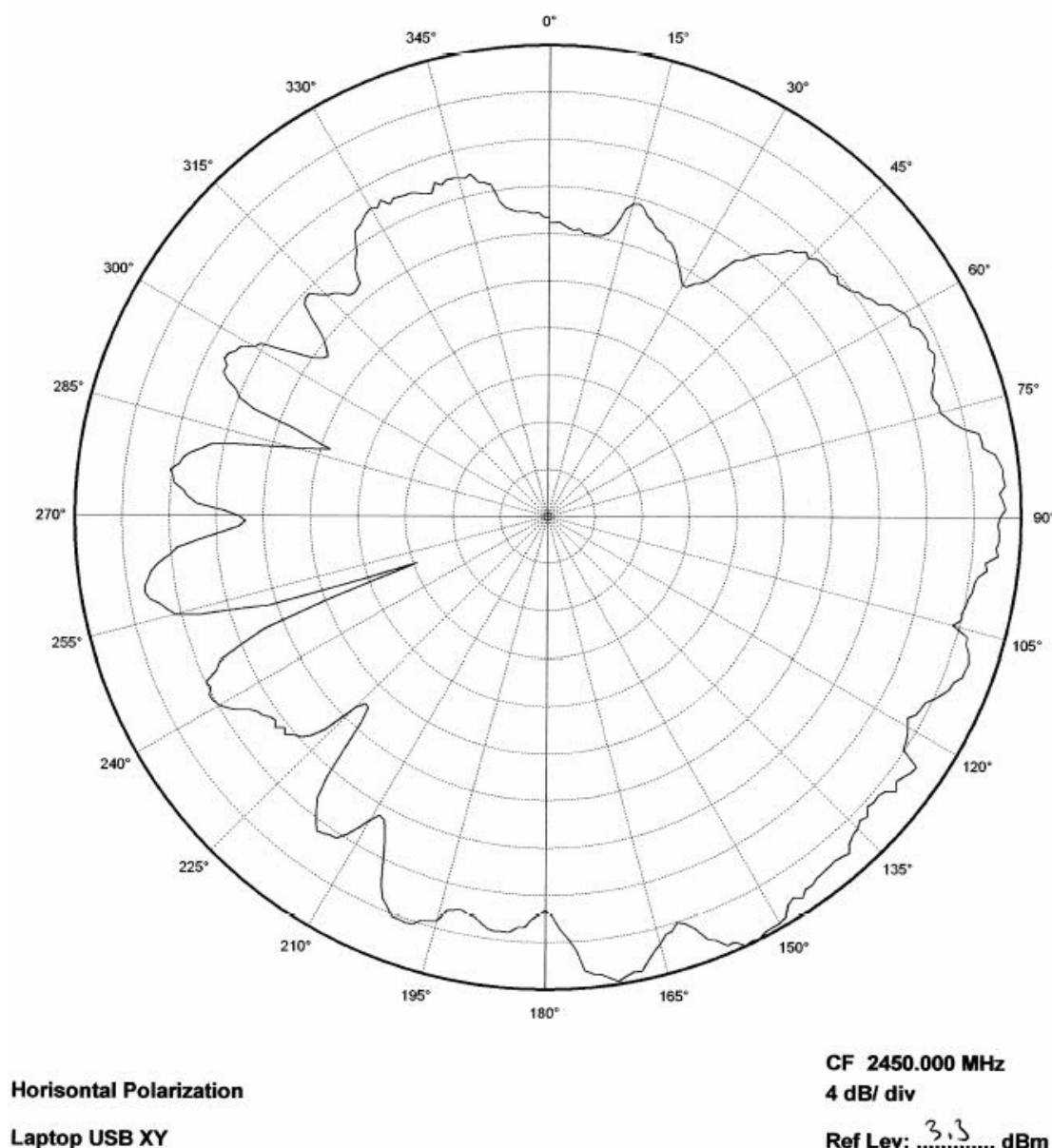


Figure 14: USB Dongle in Laptop XY Plane

5.3 Output Power

To make a realistic bandwidth measurement of the antenna a small test program was used. The test program stepped the center frequency of a carrier from 2.3 to 2.8 GHz. This bandwidth measurement was also done to verify the result from the reflection measurements, described in section 5.1. The output power was measured using max hold on a spectrum analyzer. CC2511 was programmed for 0 dBm output power and the antenna was horizontally oriented and directed towards the receiving antenna. This corresponds to 0° in the XY plane on Figure 6. The bandwidth measurements were not performed with a correction factor on the spectrum analyzer. Thus, the results in Figure 15 and Figure 16 only show the relative changes in output power and not the actual level.

Figure 15 shows the bandwidth of the antenna when the dongle is not connected to a computer. The result shows that the antenna has a variation in output power of less than 3 dB across a frequency band of more than 350 MHz. This demonstrates that the antenna has a