Tested Products.

Antenna 1: PCB antenna.

• Frequency = 2.400GHz.
• Frequency = 2.450GHz.

• Frequency = 2.500GHz.

Manufacturer :SHENZHEN SHIXINZHONGXIN TECHNOLOGY CO., LTD.

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Community, Xixiang Street, Bao'an District, Shenzhen

Product：ANTENNA 2.4GHz

ITEM	SPEC.	
Model Name	F-9688	
Center Frequency	2400 MHz	0 dbi
	2450 MHz	-0.57 dbi
	2500 MHz	-1.04 dbi
MAX. GAIN	0dbi	
Polarization	Linear, Vertical	
Azimuth Beam Pattern	Omni-directional	
Impedance	50Ω	
Antenna Length	10.8mm	

Since the impedance of the Inverted F Antenna is matched directly to 50 ohm no external matching components are needed.

Implementation of the Inverted F Antenna

It is important to make an exact copy of the antenna dimensions to obtain optimum performance. The easiest approach to implement the antenna in a PCB CAD tool is to import the antenna layout from either a gerber or DXF file. Such files are included in CC2430DB reference design [1]. The gerber file is called "Inverted_F_Antenna.spl" and the DXF file is called "Inverted_F_Antenna.dxf". If the antenna is implemented on a PCB that is wider than the antenna it is important to avoid placing components or having a ground plane close to the end points of the antenna. If the CAD tool being used doesn't support import of gerber or DXF files, Figure 1 and Table 1 can be used.
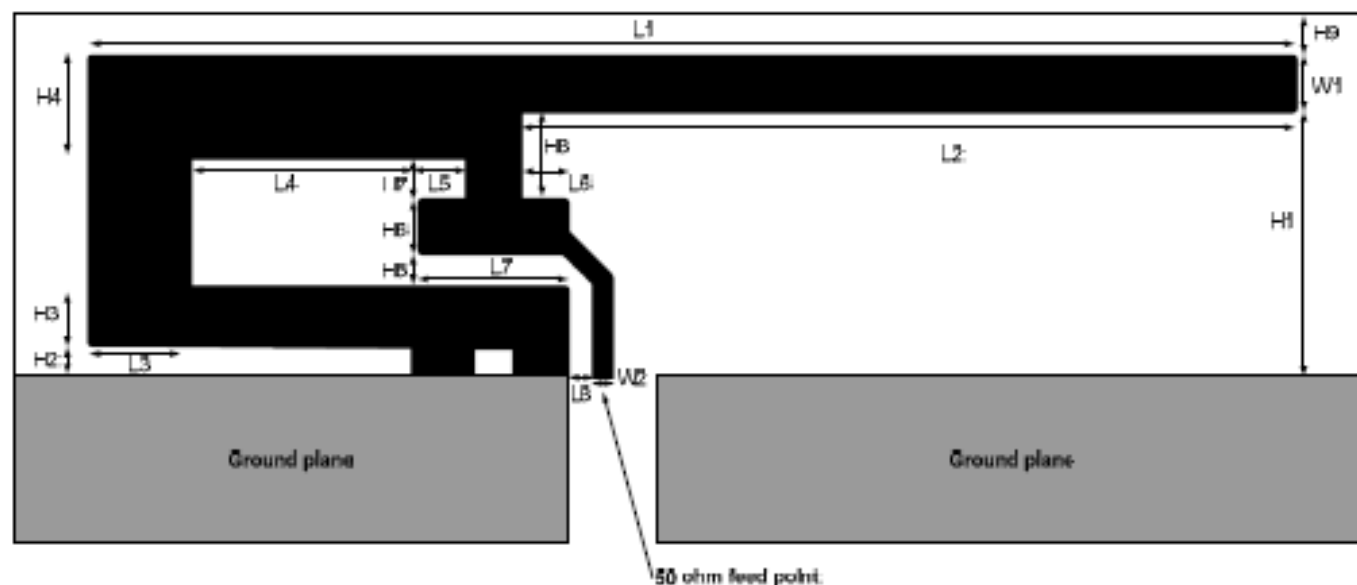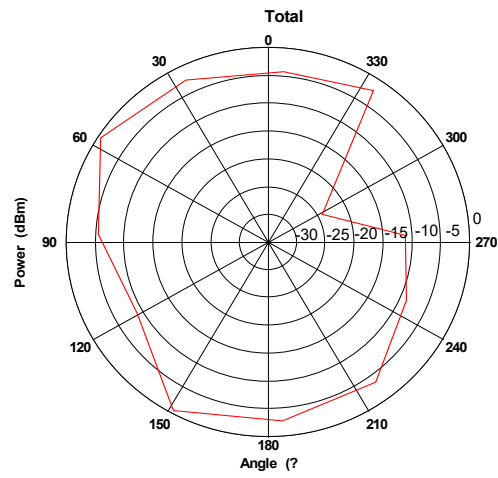

Figure 1. IFA Dimensions

H1	5.70 mm	W2	0.46 mm
H2	0.74 mm	L1	25.58 mm
H3	1.29 mm	L2	16.40 mm
H4	2.21 mm	L3	2.18 mm
H5	0.66 mm	L4	4.80 mm
H6	1.21 mm	L5	1.00 mm
H7	0.80 mm	L6	1.00 mm
H8	1.80 mm	L7	3.20 mm
H9	0.61 mm	L8	0.45 mm
W1	1.21 mm		

Table 1. IFA Dimensions

Since there is no ground plane beneath the antenna, PCB thickness will have little effect on the performance. The results presented in this design note are based on an antenna implemented on a PCB with 1 mm thickness.
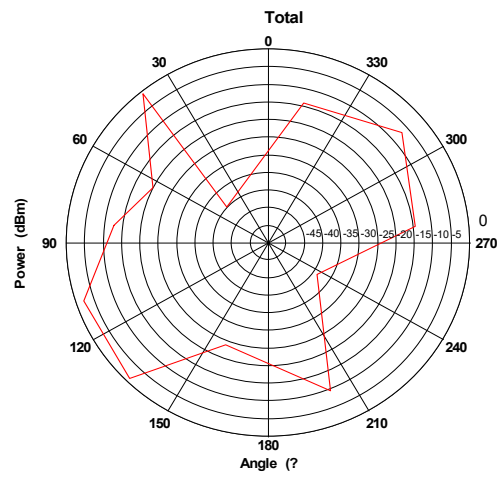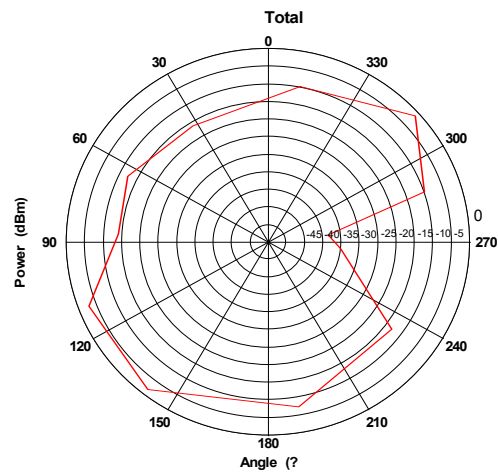
ANTENNA RADIATION PATTERN

YZ Plane at f = 2.400GHz

Total

Power (dBm)

Angle (?

2400MHz

XZ Plane at f = 2.400GHz

Total

Power (dBm)

Angle (?

2400MHz

XY Plane at f = 2.400GHz

Total

Power (dBm)

Angle (?

2400MHz

YZ Plane at f = 2.450GHz

Total

Power (dBm)

Angle (?
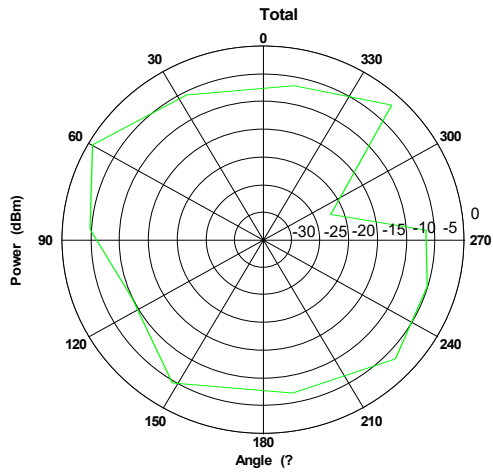
2450MHz

XZ Plane at f = 2.450GHz

Total

Power (dBm)

Angle (?
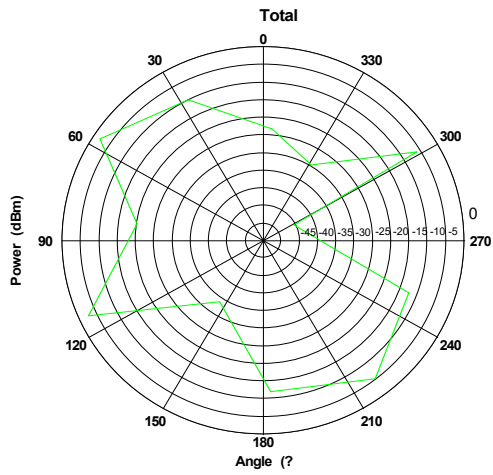
2450MHz

XY Plane at f = 2.450GHz

Total

Power (dBm)

Angle (?
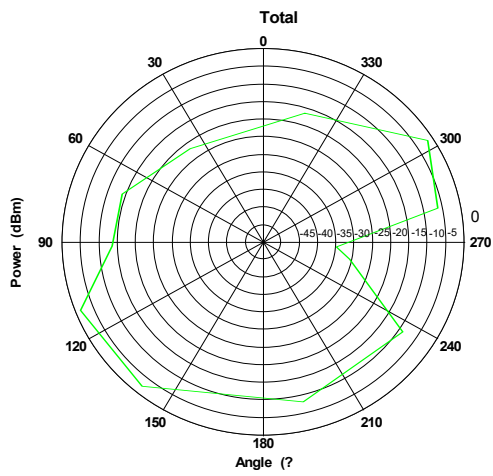
2450MHz

YZ Plane at f = 2.500GHz

Total

Power (dBm)

Angle (?
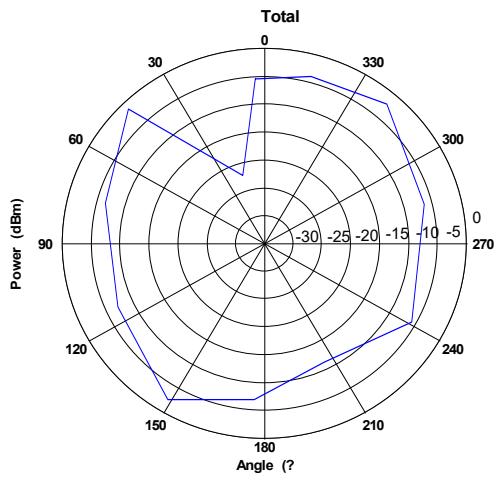
2500MHz

XZ Plane at f = 2.500GHz

Total

Power (dBm)

Angle (?
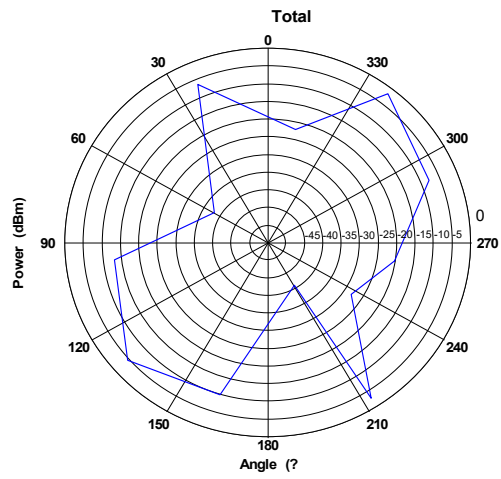
2500MHz

XY Plane at f = 2.500GHz

Total

Power (dBm)

Angle (?

2500MHz