

WLT8266BM antenna

Small Size 2.4 GHz PCB antenna

1 INTRODUCTION

The PCB antenna used on the **WLT8266BM** reference design is described in this application note. Even if the antenna presented is for a WLT8266BM it can be used in all 2.4 GHz designs, especially where small space is required for the antenna.

This application note describes the antenna dimensions, the RF performance

and considerations for complying with regulatory limits when using this design.

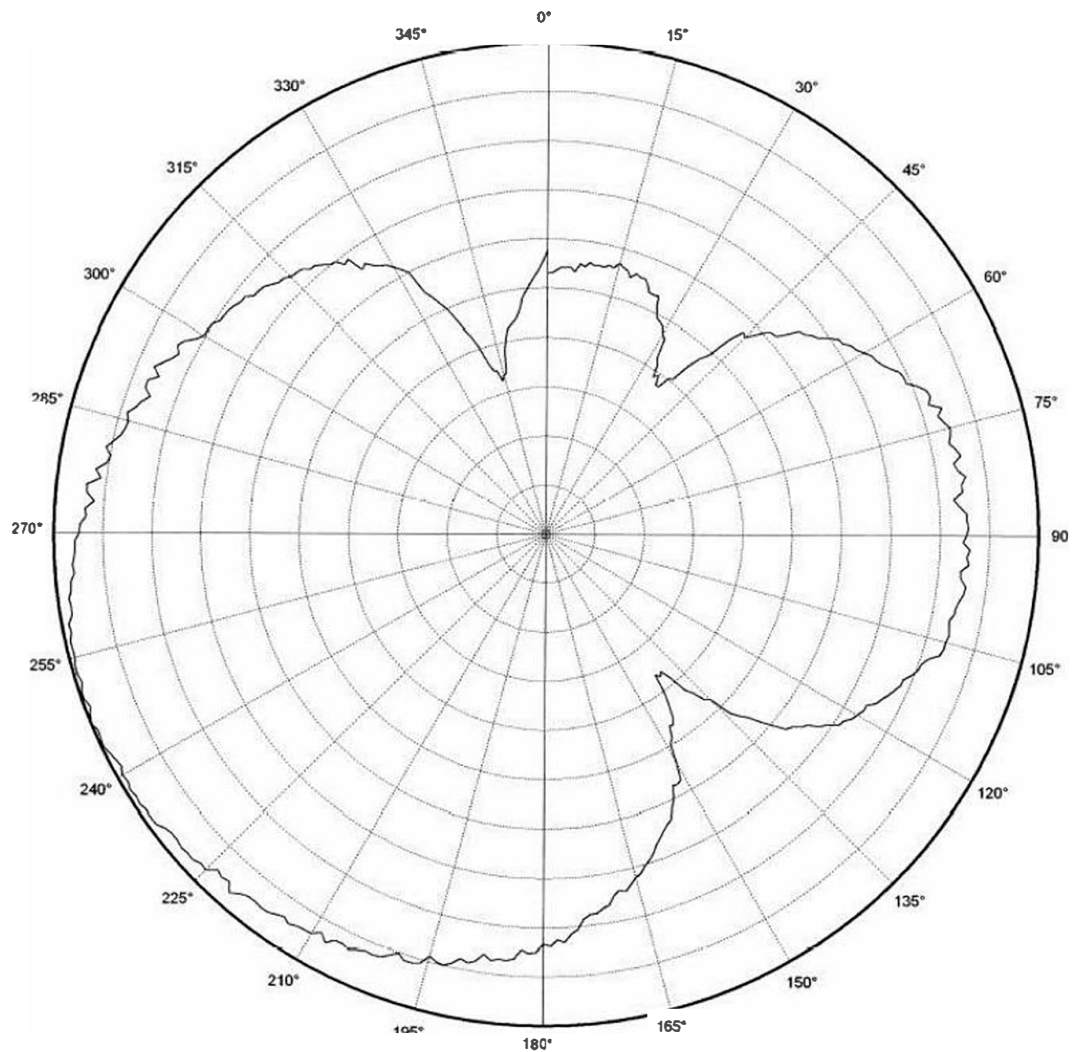
The suggested antenna design requires no more than 13.2 x 4.6 mm of space and ensures a VSWR ratio of less than 2 across the 2.4 GHz ISM band when connected to a 50 ohm source.

Manufacturer:

Company Name: Dongguan Xuancai Optoelectronics Technology Co., Ltd.

Company Address: No. 2 Gem Road, Jiaoyitang Town, Tangxia Town, moved to the 2nd floor, Unit 1, Building 1, Science and Technology Innovation Park.

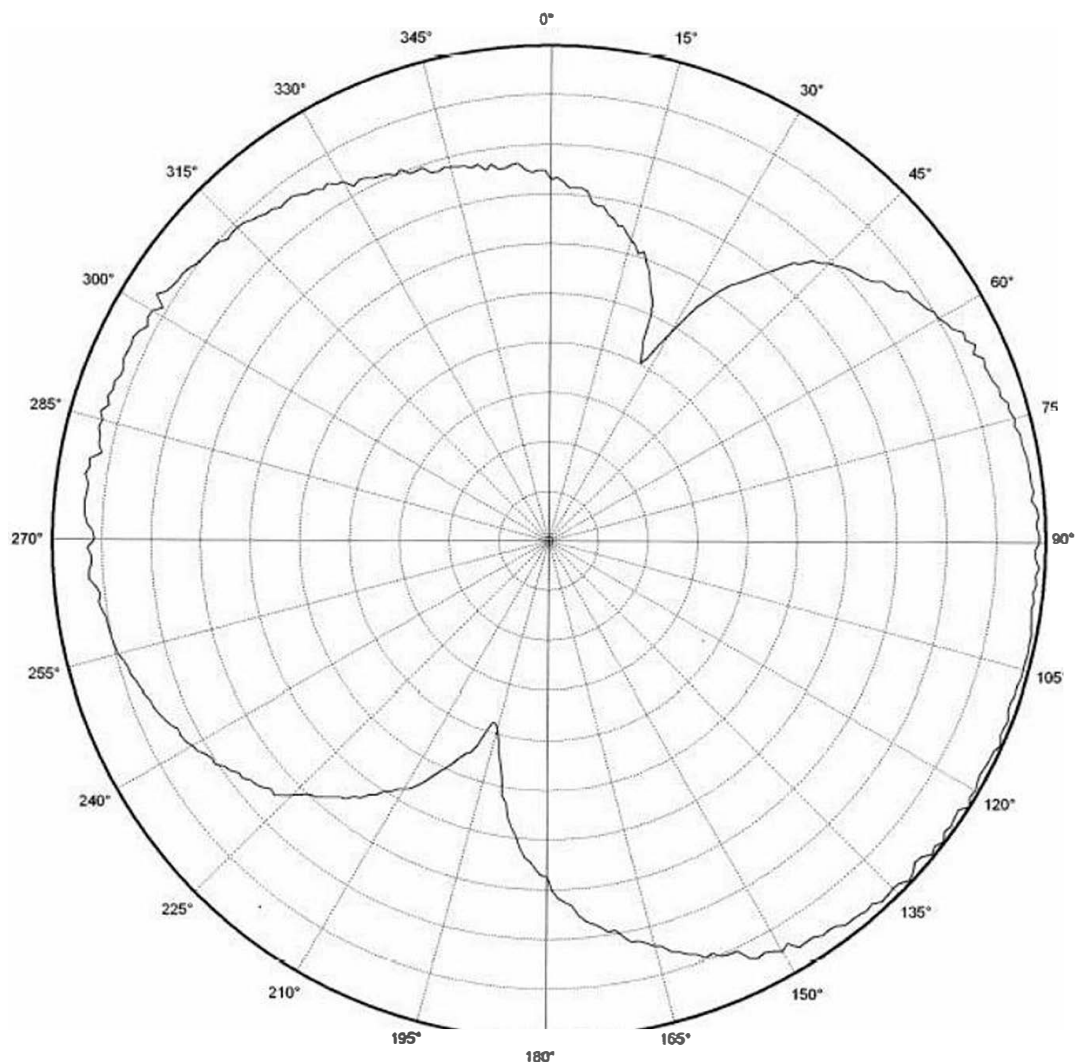
Figure 1 : WLT8266BM



Vertical Polarization
usb XY

CF 2450.000 MHz
4 dB/ div
Ref Lev: ^{-2.5} ... dBm

Figure 7: WLT8266BM XV Plane



Horizontal Polarization

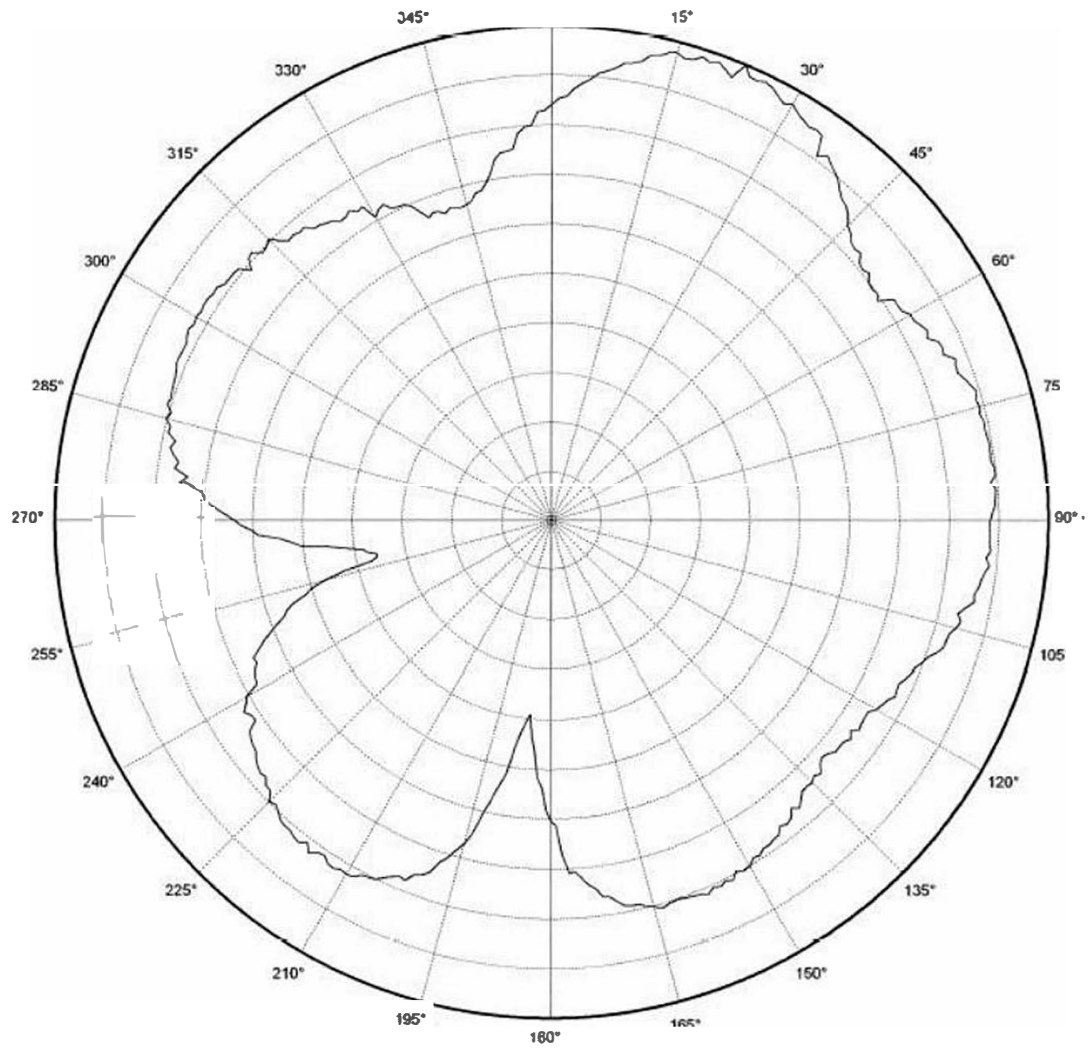
usb XY

CF 2450.000 MHz

5 dB/ div

Ref Lev: 4.5 dB

Figure 8: WLT8266BM XV Plane



Vertical Polarization

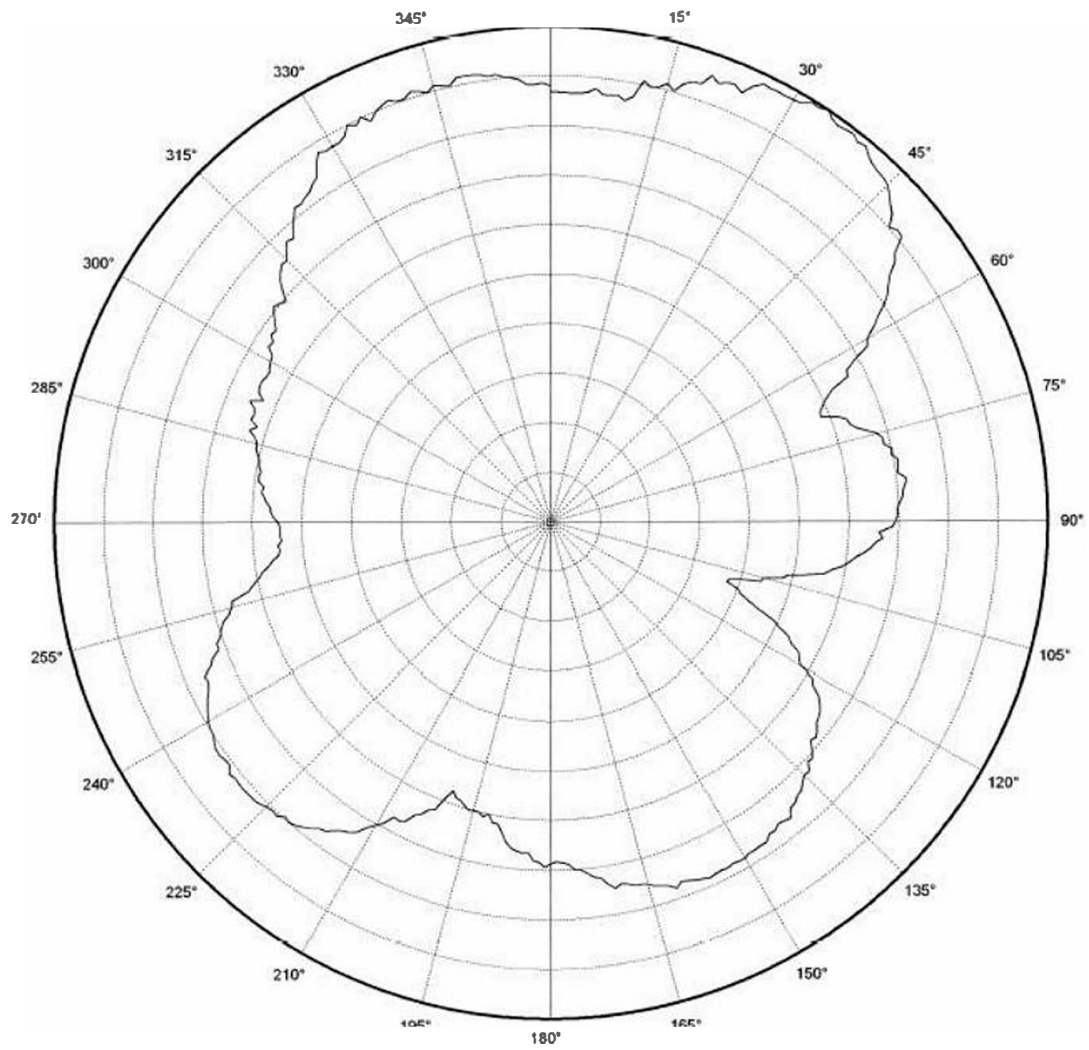
usb XZ

CF 2450.000 MHz

4 dB/ div

Ref Lev: 2.2 dBm

Figure 9: WLT8266BM XZ Plane



Horizontal Polarization

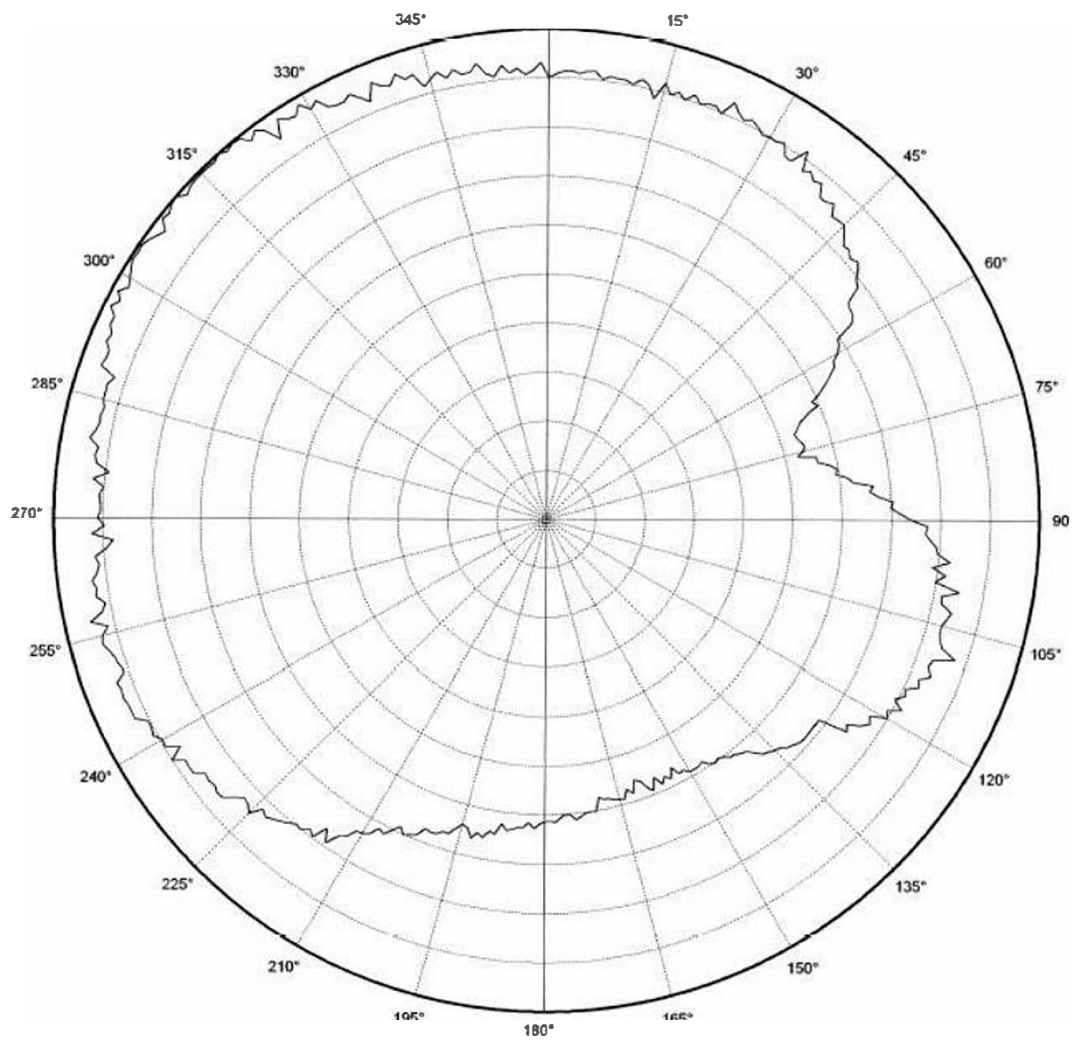
XZ

CF 2450.000 MHz

4 dB/div

Ref Lev: 5.3 dBm

Figure 10: WLT8266BM XZ Plane



Vertical Polarization

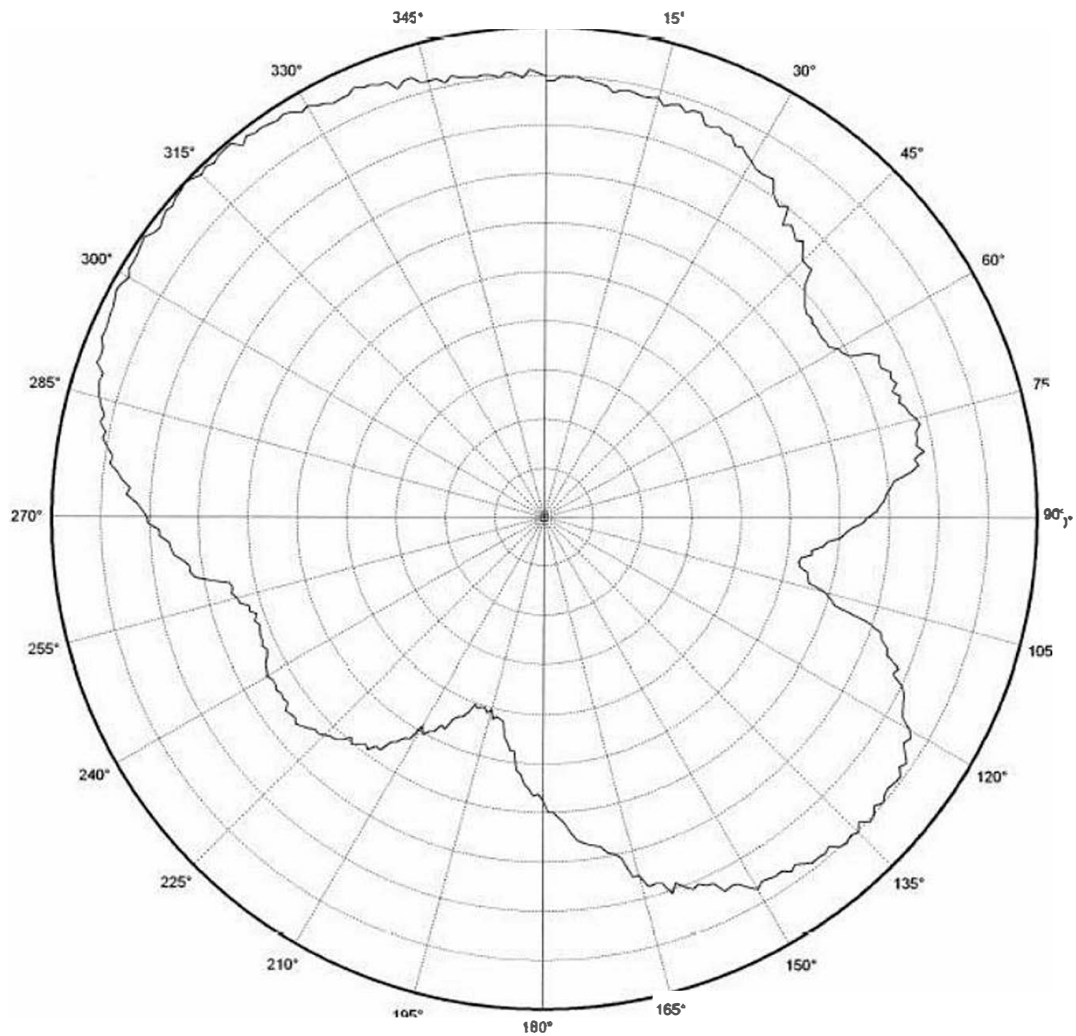
VZ

CF 2450 000 MHz;

2 dB/ div

Ref Lev: +5.3 Bm

Figure 11: WLT8266BM VZ Plane



Horizontal Polarization

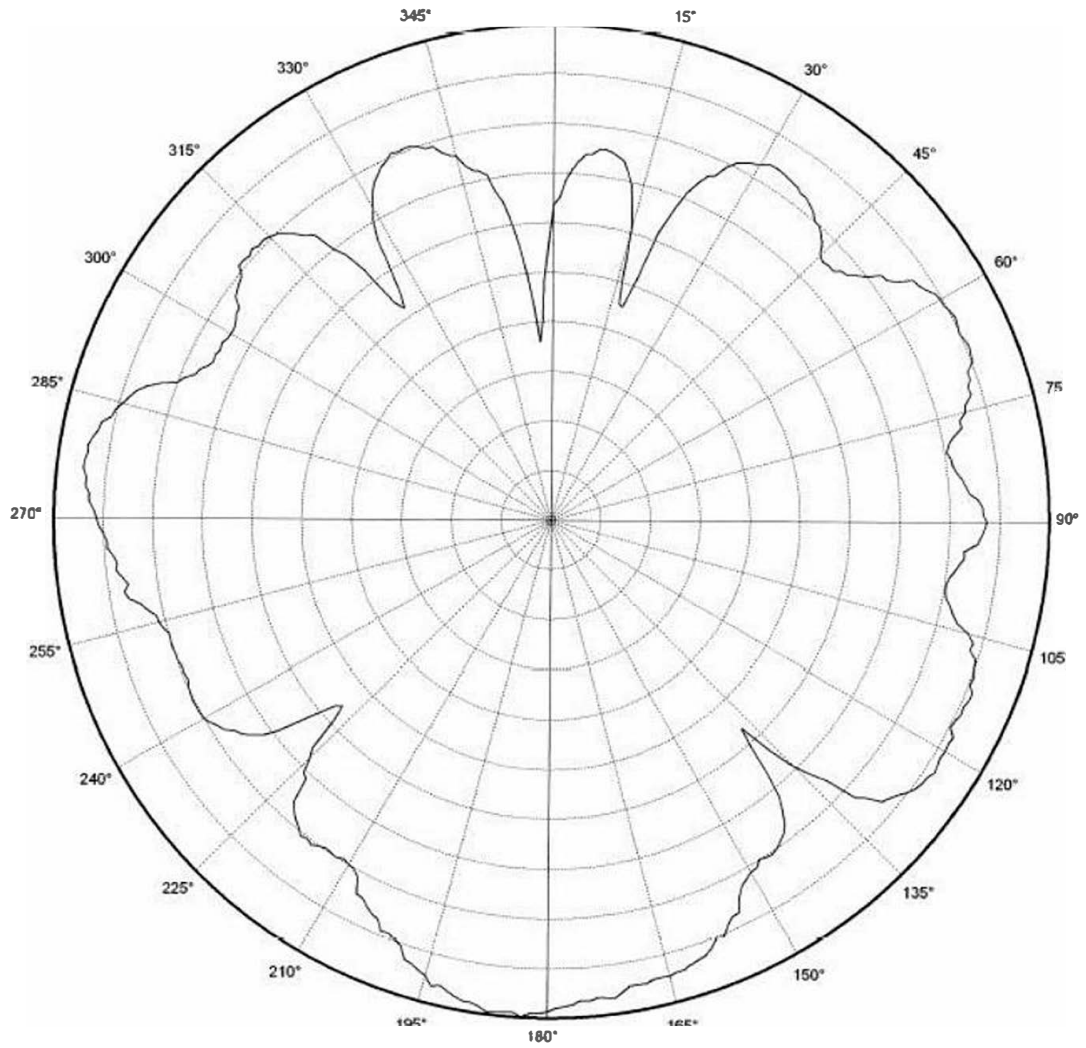
YZ

CF 2450.000 MHz

3 dB/ div

Ref Lev: -1.2 dBm

Figure 12:WLT8266BM VZ Plane



Vertical Polarization

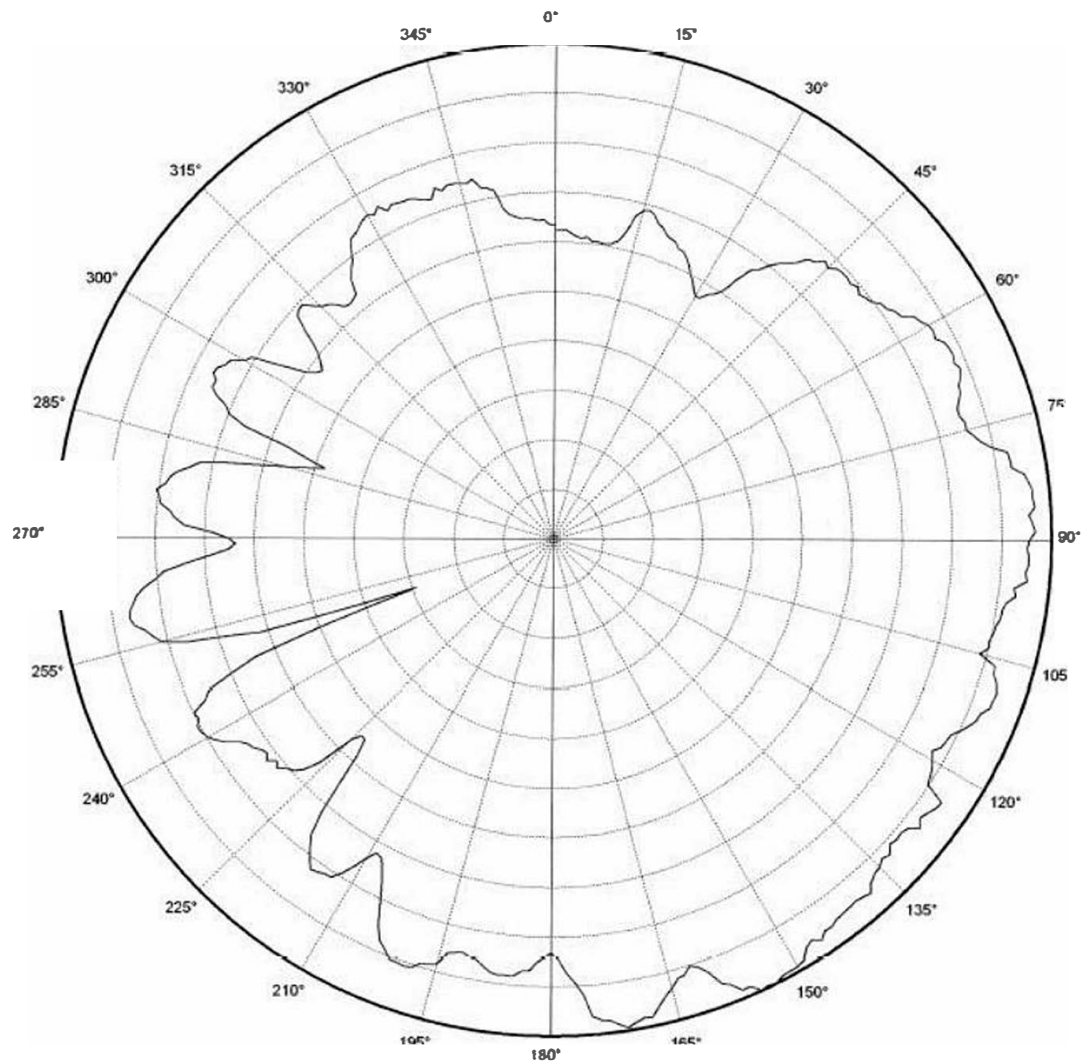
Laptop XY

CF 245 000 MHz

5 dB/ d

Ref Lev ⁻²⁰ dBm

Figure 13: WLT8266BM XV Plane



Horizontal Polarization

Laptop XY

CF 2450.000 MHz

4 dB/ div

Ref Lev: 3.3 dBm

Figure 14: WLT8266BM XV Plane

4 CONCLUSION

This application note shows that it is possible to implement a 2.4 GHz antenna on a small area and still achieve good performance. Table 6 lists the most important properties of the Inverted F Antenna, described in this document. The free line of sight (LOS) range was measured with 250 kbps and 1 % PER.

Gain in XY plane	4.5 dB
Gain in XZ plane	5.3 dB
Gain in YZ plane	5.3 dB
Gain in XY plane, connected to laptop	3.3 dB
LOS range	240 m
Antenna size	13.2x 4.6 mm