

BroadSpec™ UWB Antenna

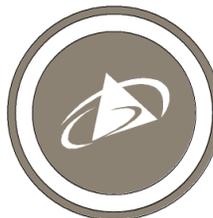
TIME DOMAIN®

Cummings Research Park
4955 Corporate Drive Suite 101
Huntsville, AL 35805 USA
<http://www.timedomain.com>

Tel: +1 256.922.9229

+1 888.826.8378

Fax: +1.256.922.0387



320-0385C
June 2017

Copyright

All rights reserved. Time Domain® 2001-2017. All rights reserved.

Trademarks

Time Domain®, PulsON®, and “PulsON Triangle” logo are registered trademarks of Time Domain. Any trademarks, trade names, service marks or service names owned or registered by any other company and used in this manual are the property of its respective company.

Rights

Rights to use this documentation are set forth in the PulsON Products Terms and Conditions of Sale.

Document Information

Time Domain reserves the right to change product specifications without notice. Any changes to the functionality or specifications will be issued as specific errata sheets or will be incorporated in new versions of this document. The latest version of this document and future documents can be found on the Time Domain website. The name/number and date of this document can be found on the left side of the cover page.

1 Summary

Time Domain's BroadSpec™ is a planar elliptical dipole UltraWideband (UWB) antenna. Its primary use is with the members of Time Domain's PulsON® 400 (P400) series of UWB modules. As of this date, the P400 family includes the P400, P410, P412, and P440. Members of this series are also referred to as P4xx platforms. The BroadSpec has a standard SMA connector that allows it to be connected to either port of a P4xx. It can also be used with Time Domain's PulsON 330 (P330) module.

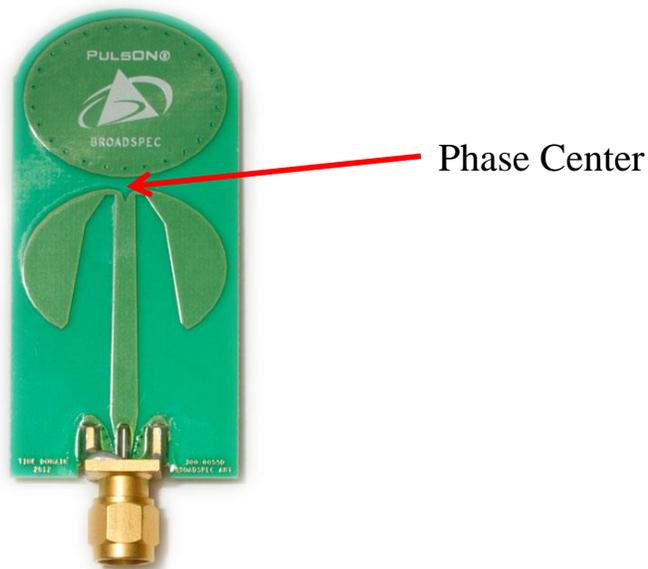


Fig. 1: BroadSpec™ antenna with phase center indicated

2 Performance Specification

Radiated Waveform:	500 ps Monocycle: 1 Ns waveform
Pattern:	Omni in azimuth to +/- 1.5dB
Polarization:	Vertical
VSWR:	~ 1.75:1
S11:	~12 dB
Gain:	Nominally ~3dBi (see Section 4)
Phase Response:	Linear
Efficiency:	Nominally ~90%

3 Mechanical Specification

Width:	1.15" (2.92 cm)
Height:	2.4" (6.1 cm)
Thickness:	0.065" (0.165 cm)

When mounted vertically on a SMA connector, the tip of the antenna will be within +/-1.5 mm from true vertical.

4 Range Measurement Applications

When using the BroadSpec antenna for Two-Way Time-of-Flight (TW-TOF) distance measurement, all range measurements are taken from the phase center of one antenna to the phase center of the second antenna. Note that there is only one phase center and the location is indicated in **Figure 1**. Ranges measured from the phase center of one antenna to the side opposite the phase center will be longer by 1.5 mm. This reflects the fact that the RF is passing through the antenna to reach the phase center.

4 Antenna Beam Patterns

Figure 2 below shows the antenna azimuth beam pattern. 0 and 180 degrees are perpendicular to the flat face of the antenna (“boresight”) while 90 and 270 degrees are at the edges of the antenna. Note that when two radiators at the same elevation are rotated so the flat sides of the antennas face one another, radio performance will be approximately 6 dB higher than when the antennas are edge-on.

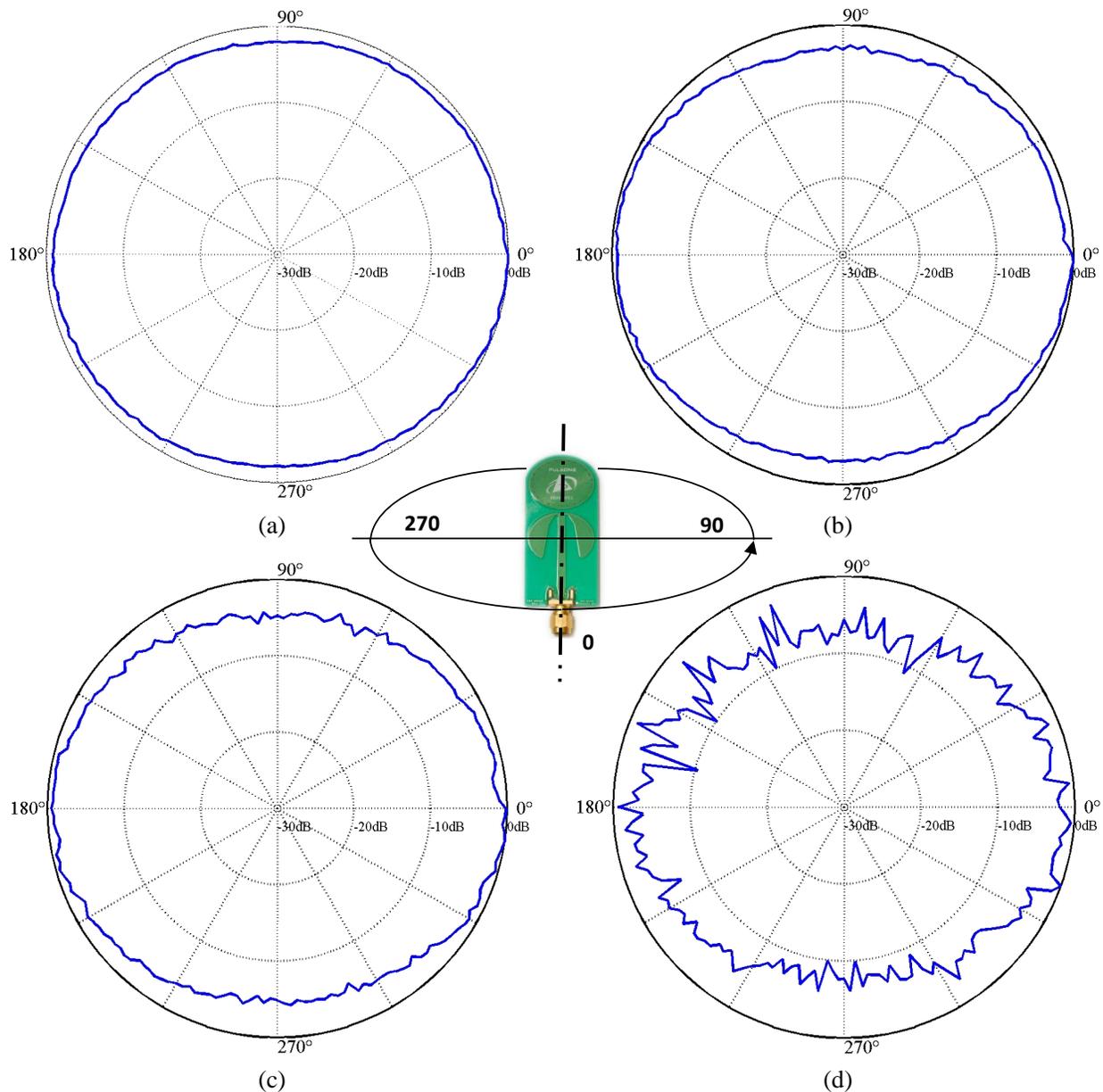


Fig. 2: Azimuth Beam Pattern for (a) 3 GHz, (b) 4 GHz, (c) 5 GHz, and (d) 6 GHz

