



The evolution of technology has brought the need to communicate everywhere and at all times without being confined to one space. Our antennas feature wide bandwidth to enhance the performance and application of portable wireless devices based on standards such as 802.11 and Bluetooth®. The antennas are specifically designed to be embedded inside devices for aesthetically pleasing integration with high durability.

#### Features and Benefits

- Versatile, easy-to-use for 2.4 to 2.5 GHz Bluetooth® and IEEE 802.11 devices
- Designed for an easy connection to radio cards
- Has a ground plane incorporated into the resonator structure – no additional ground plane is required to radiate efficiently
- Uses patented PCB Microsphere technology

| Electrical Specifications |               |
|---------------------------|---------------|
| Operating Frequency (MHz) | 2.4 - 2.5 GHz |
| VSWR - Max                | <2.5:1        |
| Peak Gain - Max (dBi)     | 2             |
| Nominal Impedance (Ohms)  | 50            |
| Polarization              | Linear        |

| Mechanical Specifications |   |
|---------------------------|---|
| Dimensions - mm (in.)     | $44.45 \times 12.7 \times 0.81 \text{ mm} (1.75 \times 0.5 \times 0.032 \text{ in.})$ |
| Weight – g (oz.)          | 2 g (0.071 oz.)   |

#### **CONFIGURATION**

| Part Number                       | Cable Length      | Connector        |  |
|-----------------------------------|-------------------|------------------|--|
| MAF94045                          | 100 mm, Ø 1.13 mm | IPEX MHF         |  |
| MAF94102 100 mm, RG178 Flying Lea |                   | Flying Lead      |  |
| MAF95096                          | 100 mm, RG178     | Right Angle MMCX |  |
| EBL2400A1-10MH4L                  | 100 mm, Ø 1.13 mm | MHF4             |  |
| EBL2400R1-20MHF4                  | 200 mm, Ø 1.13 mm | MHF4             |  |

**Note**: Specifications are based on the 100mm cable length, standard antenna version with MHF1 / U.FL connector. Varying the cable length or type or connector will cause variations in these antenna specifications.

Ezurio's products are subject to standard Terms & Conditions.



## Flat Surface Antenna Measurements

Flat surface measurements were performed with the antenna in free space.

#### **VSWR**

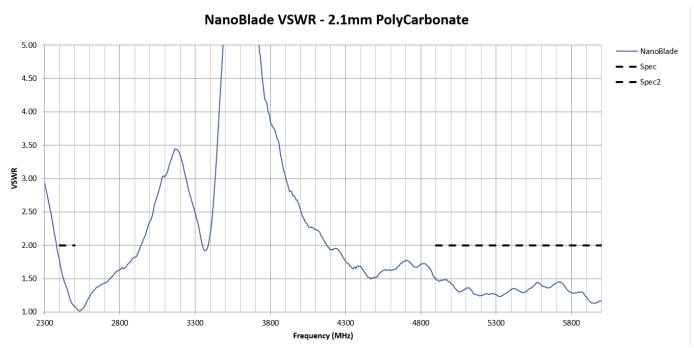


Figure 1: Antenna VSWR measured in free space

### **RETURN LOSS**

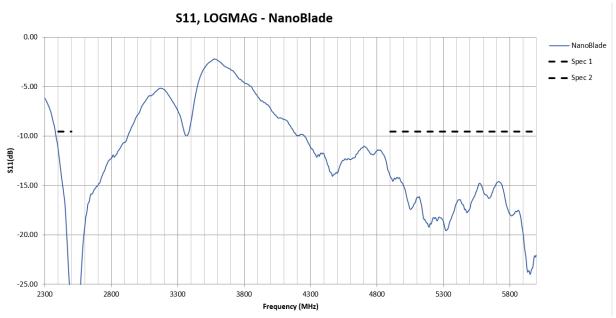


Figure 2: Antenna Return Loss measured in free space



# Antenna Chamber Test Setup

Antenna measurements such as VSWR and S11 were measured with an Agilent E5071C vector network analyzer. Radiation patterns were measured with a Rohde & Schwarz ZNB8-4PORT vector network analyzer in a Howland Company 3100 chamber equivalent. Phase center is nine inches above the Phi positioner.

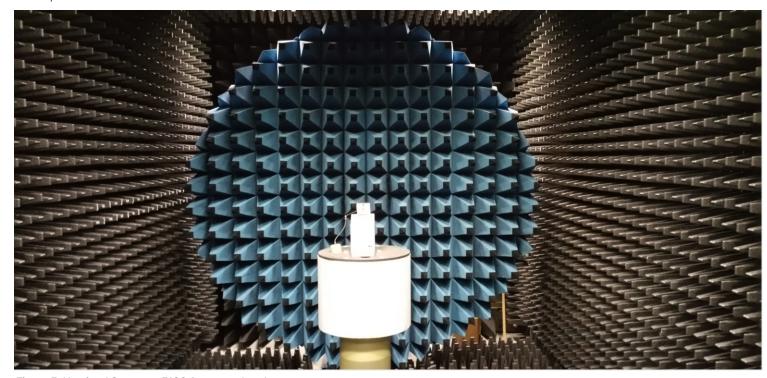


Figure 3: Howland Company 3100 Antenna chamber



## Antenna Radiation Performance

## NanoBlue centered in free space or on polycarbonate

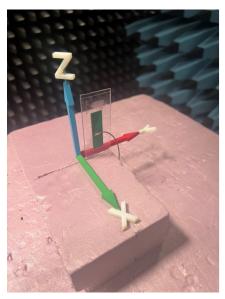
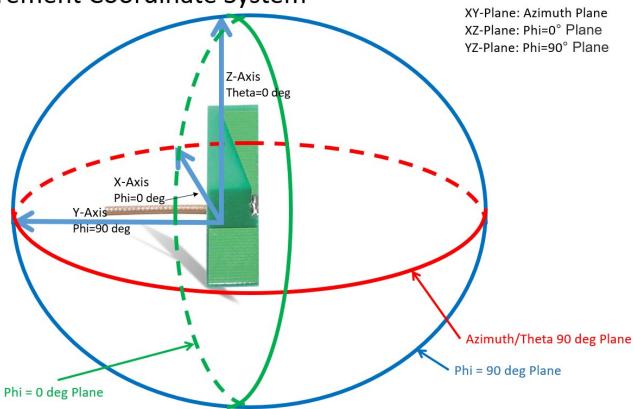


Figure 4: Flat surface setup

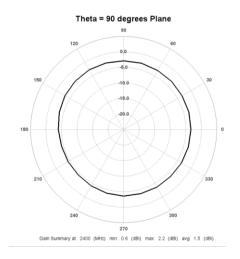


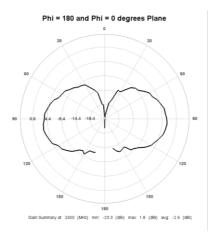


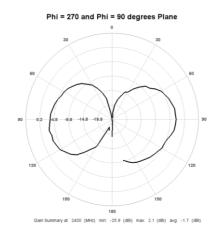


#### **RADIATION PATTERNS - 2D Plots**

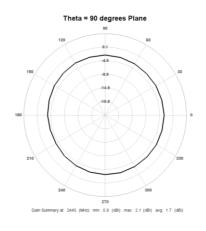
#### 2D Plots at 2400 MHz

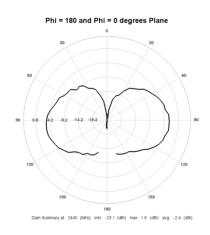


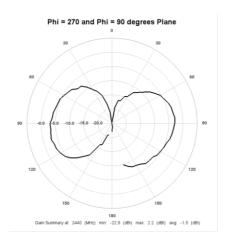




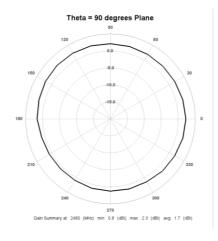
#### 2D Plots at 2440 MHz

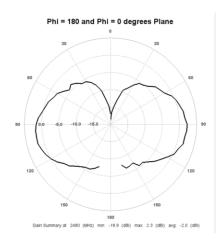


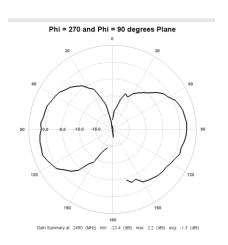




#### 2D Plots at 2480 MHz









## **RADIATION PATTERNS - 3D Plots**

#### 3D Plots at 2400 MHz

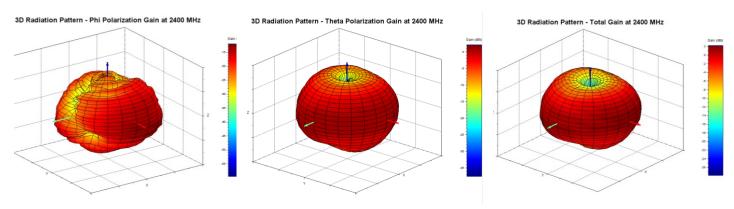


Figure 5: Phi polarization, Theta polarization and, and total gain plots - 2400 MHz

#### 3D Plots at 2440 MHz

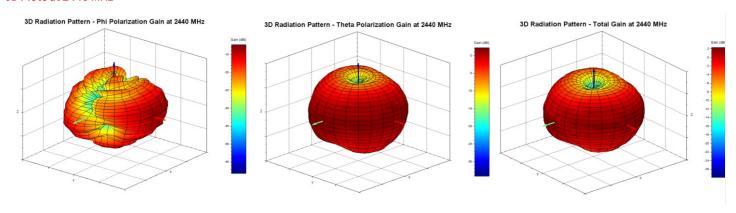


Figure 6: Phi polarization, Theta polarization and, and total gain plots - 2440 MHz

#### 3D Plots at 2480 MHz

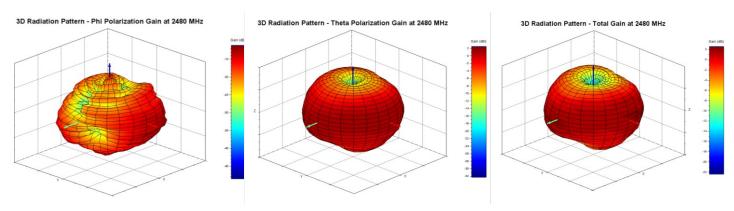


Figure 7: Phi polarization, Theta polarization and, and total gain plots - 2480 MHz



#### **EFFICIENCY**

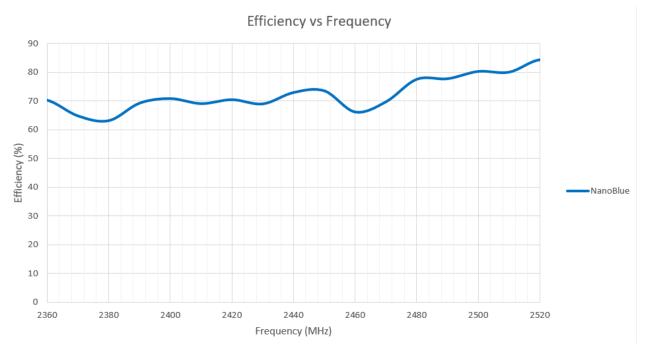


Figure 8: Antenna efficiency measured in free space with a nominal value of -1.5dB across the operating frequency

#### **ANTENNA GAIN**

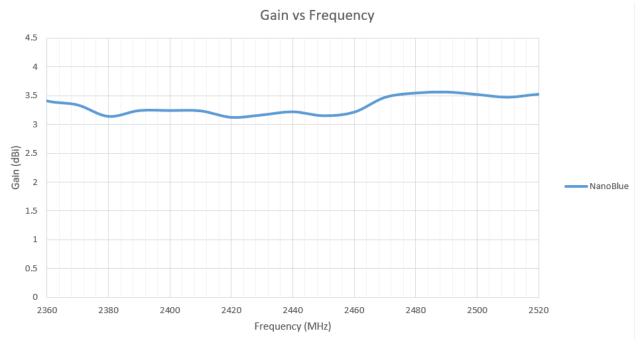
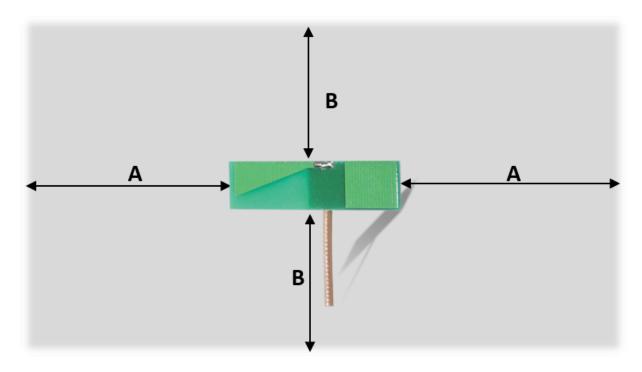
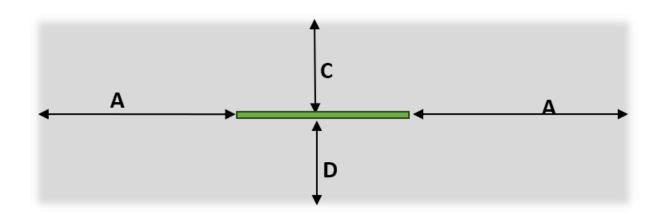


Figure 9: Antenna gain measured in free space



# Antenna Placement & Keep Out Region





| Keep Out Region Distance (mm) |   |    |    |  |
|-------------------------------|---|----|----|--|
| Α                             | В | C  | D  |  |
| 5                             | 5 | 10 | 10 |  |

#### Notes:

- Antenna can be mounted on polycarbonate with a nominal thickness of 2.25mm (1.5mm 3mm)
- Diagram is not to scale



## **Additional Information**

Please contact your local sales representative or our support team for further assistance:

| Headquarters      | Ezurio<br>50 S. Main St. Suite 1100<br>Akron, OH 44308 USA |
|-------------------|--|
| Website           | http://www.ezurio.com                                      |
| Technical Support | http://www.ezurio.com/resources/support                    |
| Sales Contact     | http://www.ezurio.com/contact                              |

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