Airgain
Dual-band MIMO Antenna
Product Datasheet

MaxBeam80N

Model N2480

Coverage. Performance. Smart.

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Revision history

Revision	Date	Note
046-02-00-001-1 Rev X	04 JAN 2007	Initial Draft
046-02-00-001-1 Rev A	02 FEB 2007	Incorporate design review changes
046-02-00-001-1 Rev B	07 FEB 2007	Incorporate updated pictures and Model Name
046-02-00-001-1 Rev C	21 June 2007	Incorporate Chamber data for 5.2GHz operation
046-02-00-001-1 Rev D	27 June 2007	Correct Fig. 5
046-02-00-001-1 Rev E	19 July 2007	Update Fig. 14 dimensions
046-02-00-001-1 Rev F	30 November 2007	Update Model number, and minor corrections
046-02-00-001-1 Rev G	03 February 2009	Update dimensions with tolerances
046-02-00-001-1 Rev H	26 May 2009	Update Cover Sheet
046-02-00-001-1 Rev I	2 September 2011	Update Sec10, and Sec 9 for colored jacketed RF cables
046-02-00-001-1 Rev J	10 November 2011	Update figure1 and figure2

Table of Contents

Disclaimers

The information in this document is provided in connection with Airgain Antenna products and is proprietary and confidential. Airgain may make changes to at anytime, without notice. ***Please verify with Airgain before finalizing a product design.***

1. Model N2480 MIMO Antenna

The Model N2480 Dual Band, MIMO antenna utilizes patented beam forming technology to deliver up to 200 percent greater signal strength and receive sensitivity than conventional dipole solutions. The Model N2480's superior performance is derived by combining the benefits of three high gain directional antenna elements with high isolation between each beam. This directionality and high isolation improves the SNR in MIMO channels while enhancing channel modes, thereby increasing the range and throughput of WLAN, 802.11n, devices. The Model N2480 supports dual band operation in the 2.4GHz band and the 4.9 to 5.9GHz band and is compatible with existing draft-N systems in 2x3 and 3x3 configurations. The unique design of the Model N2480 also allows for integration inside access points, routers and gateways, eliminating the need for external antennas.

2. Features

- Dual-band, vertically polarized, antenna design for IEEE 802.11 a/b/g and 802.11n
- Three independent and highly directional beams with excellent front-to-back ratio
- High isolation between all the beams
- Wide Bandwidth
- Low profile with high peak gain (Higher SNR)
- Independent, pre-tuned, subsystem , easily integrated into new products
- Low Cost and High performance

3. Specification and Interface

Standard	IEEE 802.11n and 802.11 a/b/g
Frequency Range	2.4 to 2.49 GHz, 4.9 to 5.9 GHz
Peak Gain	5.5 dBi @2.44GHz, 5.1 dBi @5.2GHz, 8.0 dBi @5.8GHz
Antenna Isolation	S21 ANT 1 to ANT 3 > 15 db @ 2.44 GHz, and > 20 db in 5GHz band
VSWR	2:1
Feed Impedance	50 Ohms
Power Handling	30 dBm
Interface	Three 50 ohm, 1.13mm diameter, micro coax cables, U.FL compatible cable connector (optional) Cable mounted EMI ferrites (optional)
Antenna Dimensions	90 x 90 x 15 (mm)
PCB Dimension	55.5 x 55.5 (mm)
Weight	19 g (0.6oz)

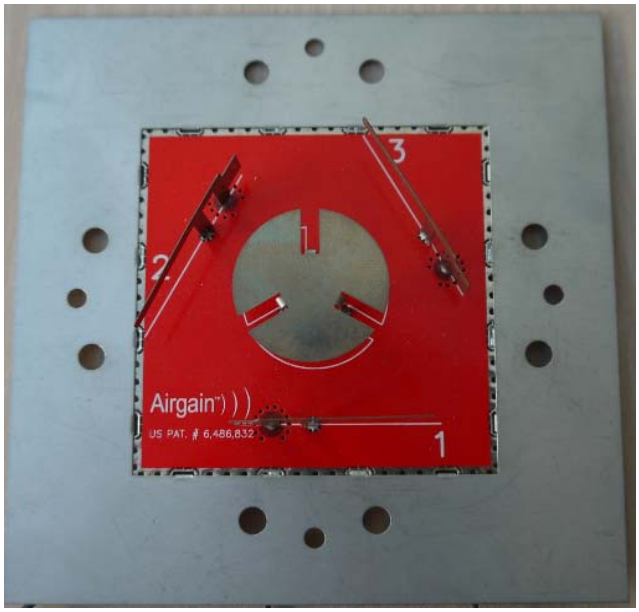


Figure 1
Model N2480 Antenna (Top)

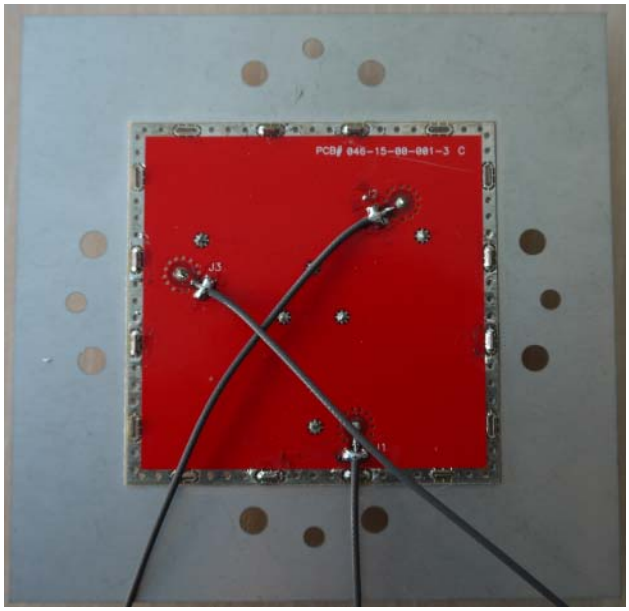


Figure 2
Model N2480 Antenna (Bottom)
Note the 1.13 mm Micro-coax cables shown, are customer selectable

4. Radiation Patterns

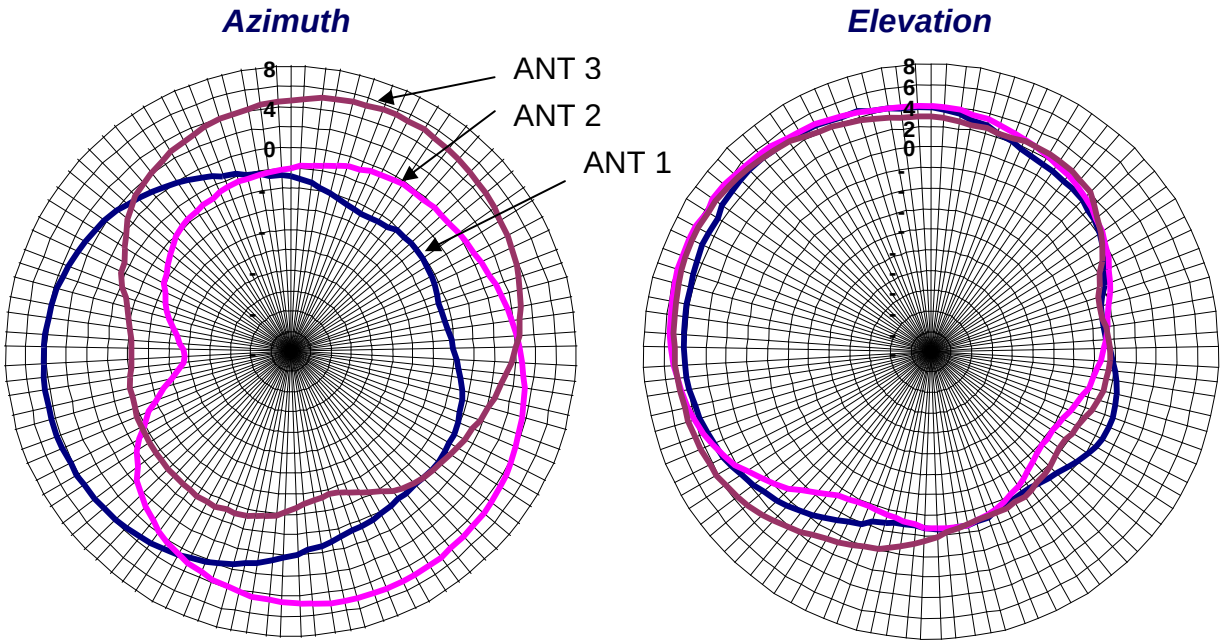


Figure 3
2.4GHz Radiation Patterns

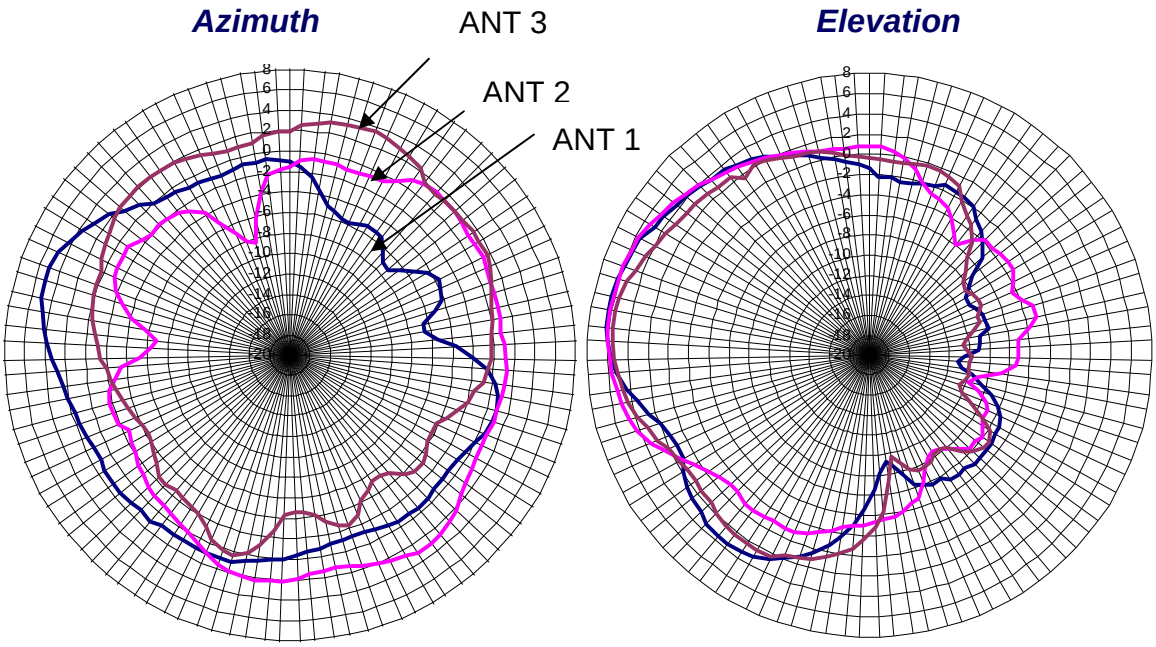


Figure 4
5.2GHz Radiation Patterns

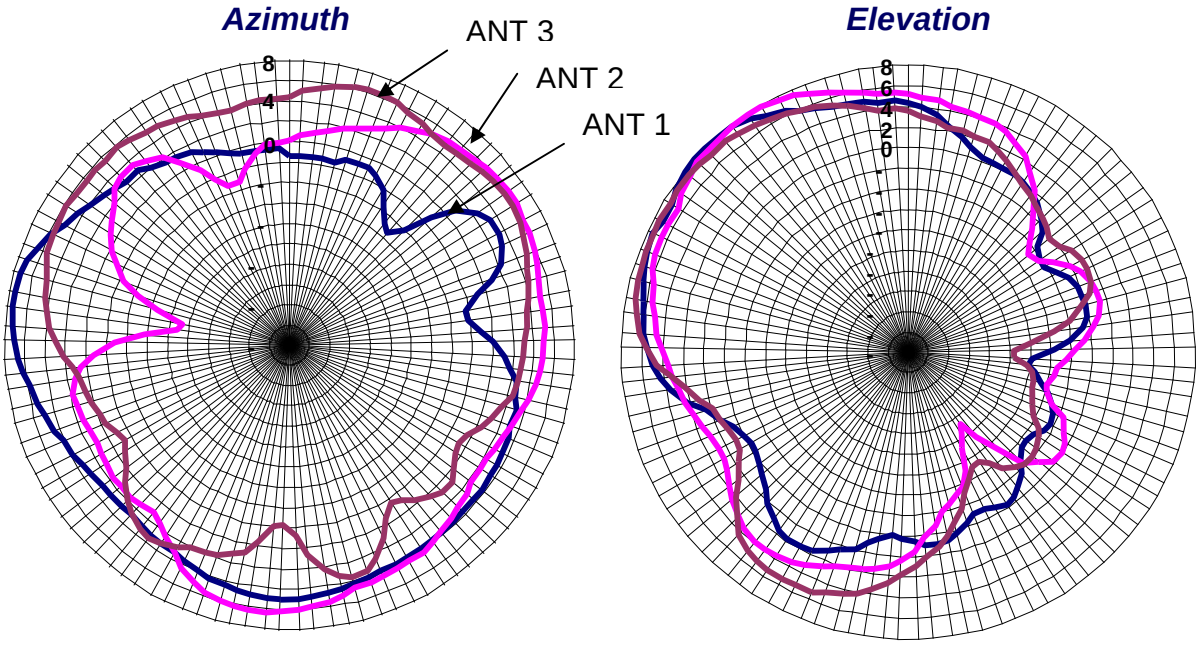


Figure 5
5.8GHz Radiation Patterns

5. RF S11 Measurements

2.4 – 2.48 GHz

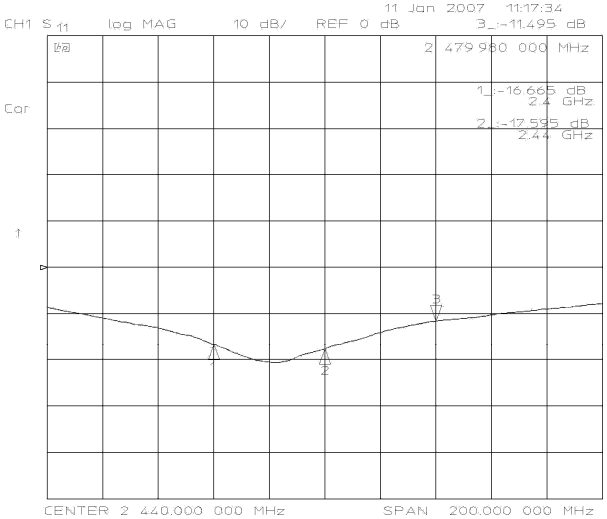


Figure 6
ANTENNA 1 S11

2.4 – 2.48 GHz continued

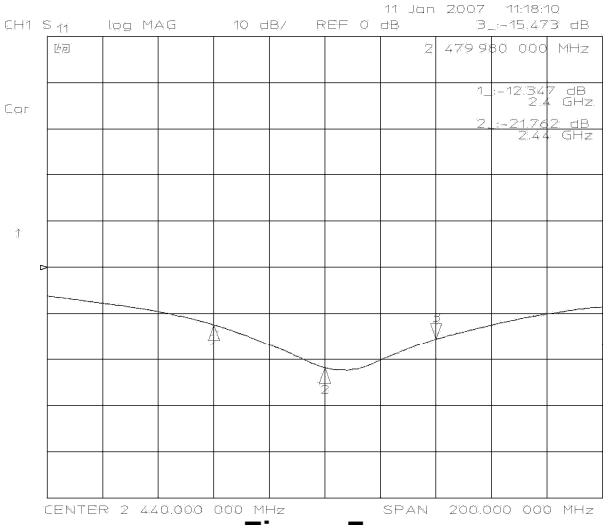


Figure 7
ANTENNA 2 S11

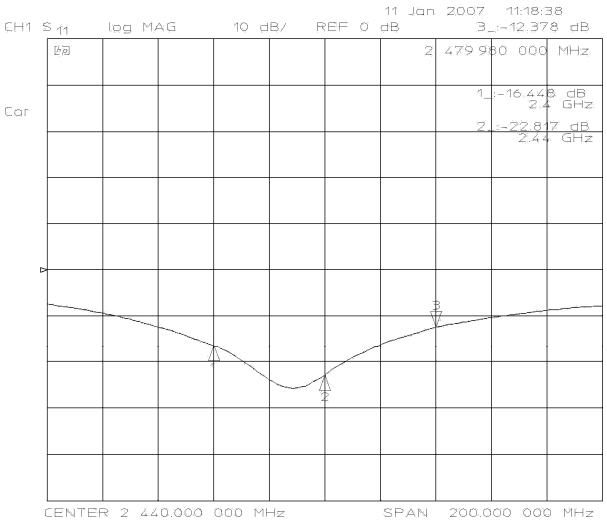


Figure 8
ANTENNA 3 S11

RF S11 Measurements

4.9 – 5.9 GHz

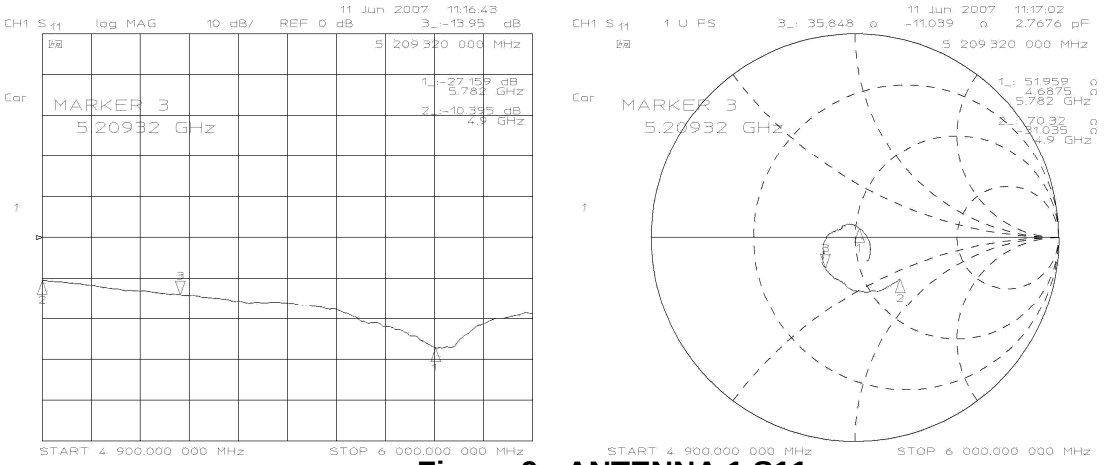


Figure 9 - ANTENNA 1 S11

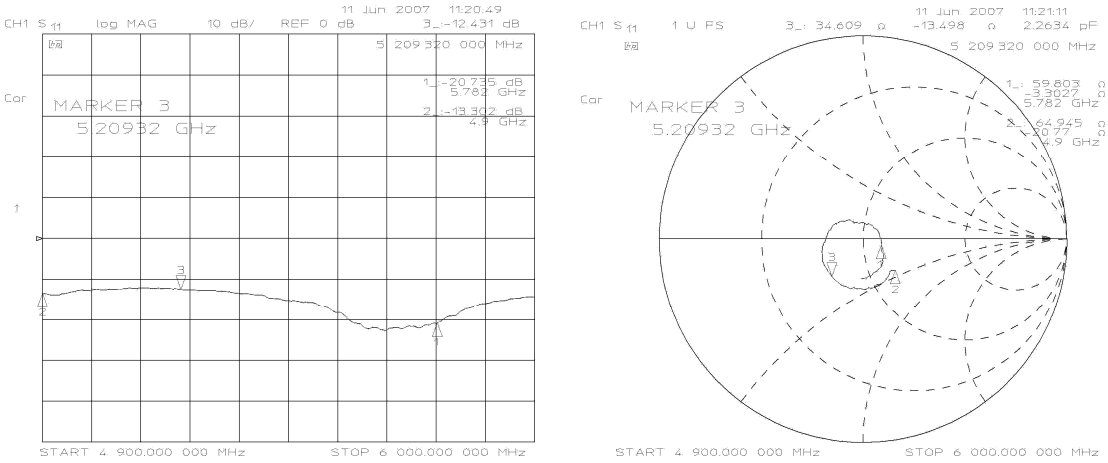


Figure 10 - ANTENNA 2 S11

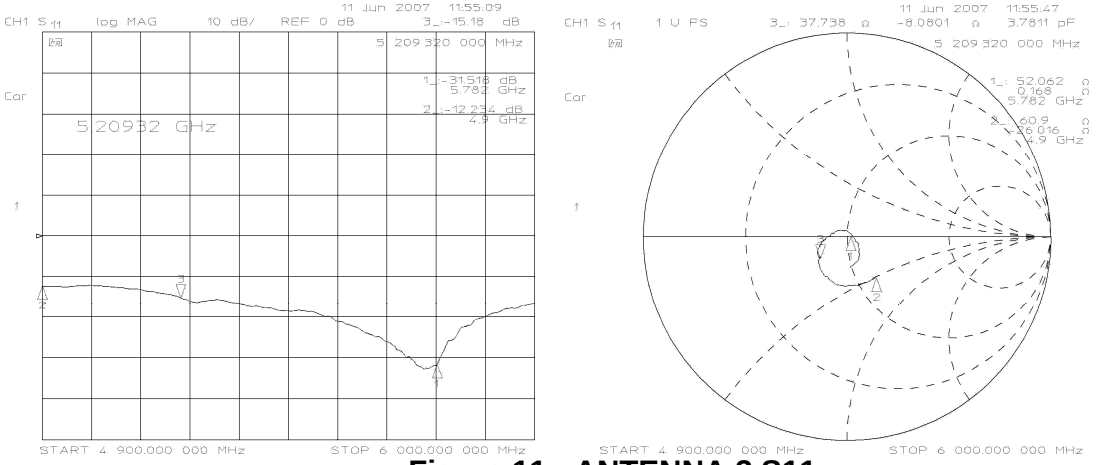


Figure 11 - ANTENNA 3 S11

6. Design Recommendation

Airgain Model N2480 antenna provides flexibility to integrate with 2X2, 2X3, and 3X3 MIMO solutions. Two typical design configurations for the 2X2 and 3X3 systems with Airgain Model N2480 are illustrated in the Figure 12 and Figure 13 respectively.

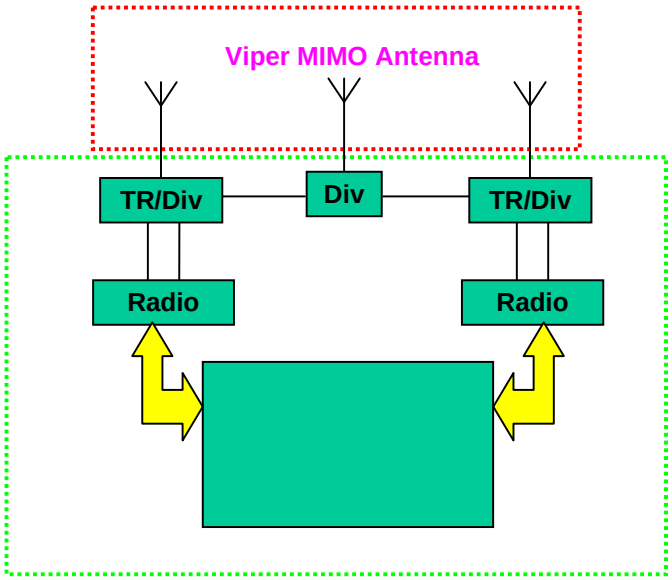


Figure 12.
Model N2480 antenna for 2X2 MIMO

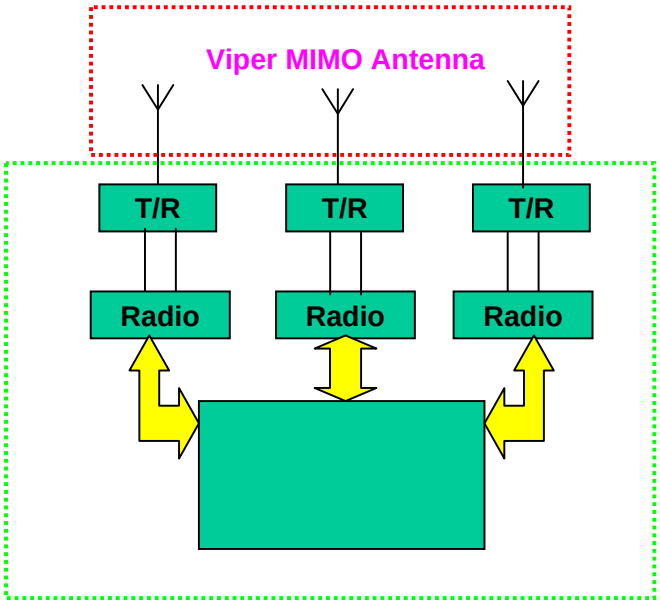
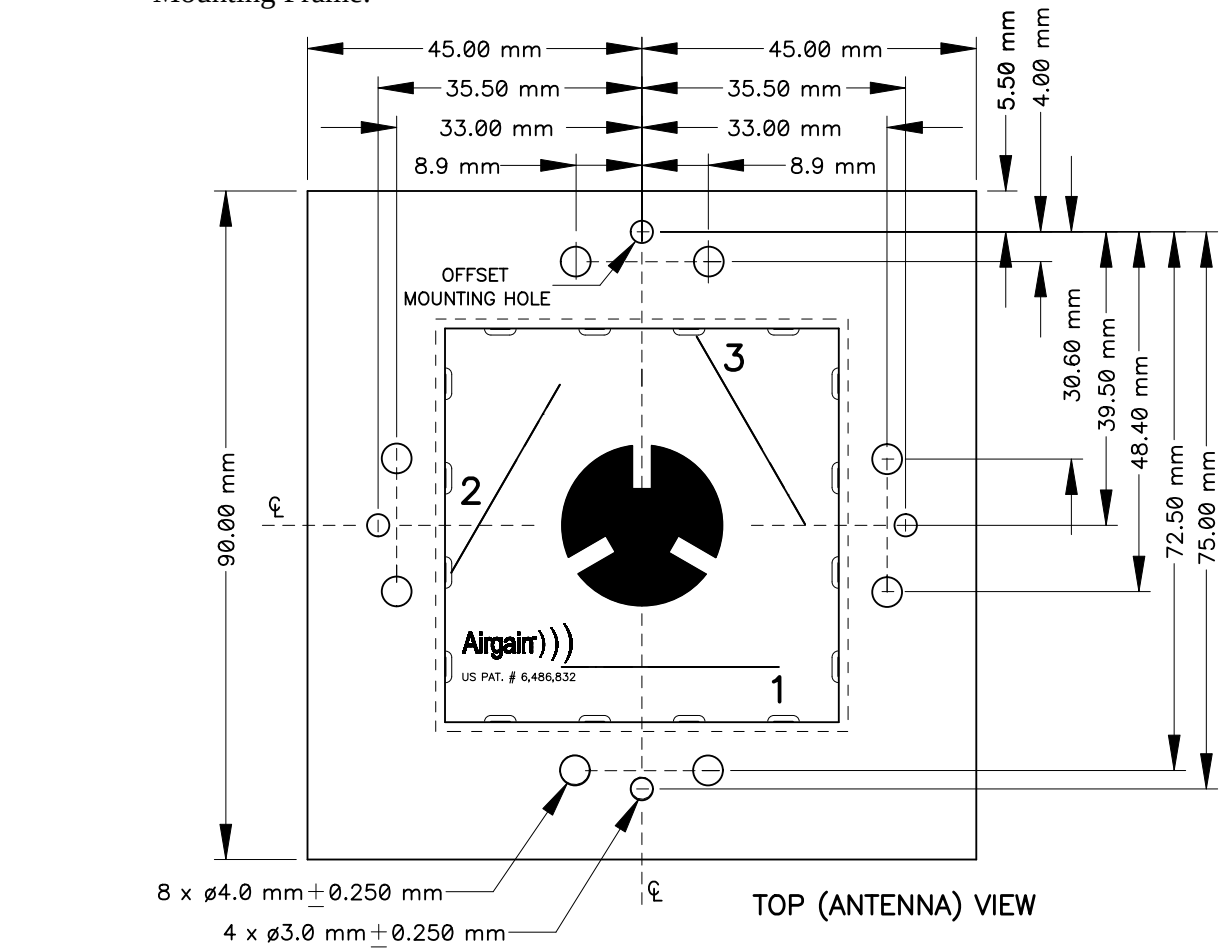
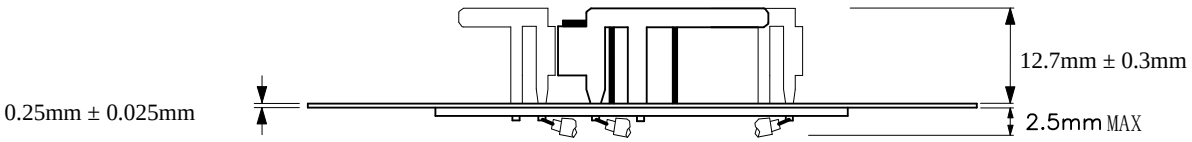


Figure 13.
Model N2480 antenna for 3X3 MIMO

7. Mounting and ID Design

The footprint of the Model N2480 Antenna is 90 mm by 90 mm as illustrated in Figure 14. The Model N2480 antenna should be mounted higher than the Ethernet connector block, or any other component outside the perimeter of Model N2480 Mounting Frame.





Notes:

1. Dimensions are in millimeters
2. Unless otherwise specified, tolerances are +/- 0.25mm.

Figure 14

Mounting Information for Model N2480 MIMO antenna

To maximize performance, a gap of 1.5mm between the top of customer plastic and Model N2480 antenna Elements is required when the top of mounting case is 3mm thick. If the mounting case top is 2mm thick, a 0.75mm gap is required. Conceptual drawings of these two configurations are shown in Figures 15 and 16 below. The important dimensions are shown

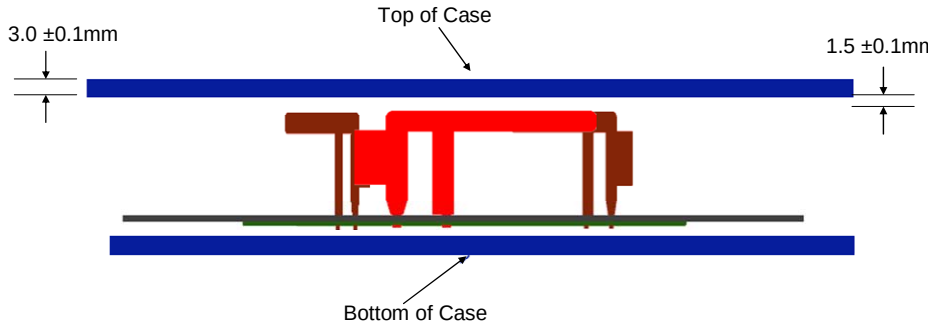


Figure 15

Side-view of Model N2480 antenna in an AP, m with a 3mm thick mounting case top and a 1.5mm gap

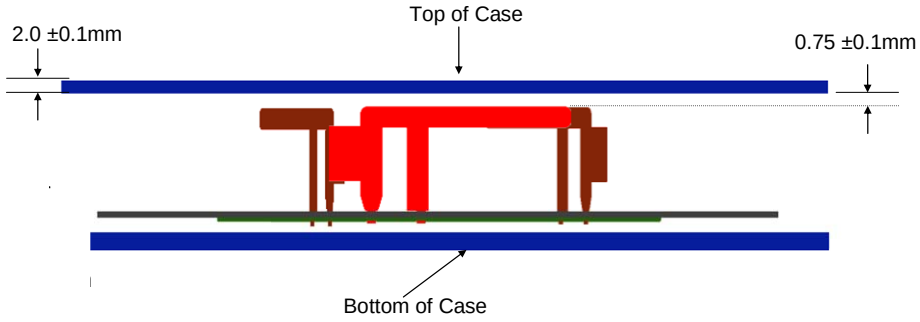


Figure 16

Side-view of Model N2480 antenna in an AP, with a 2mm thick mounting case top and a 0.75mm gap

8. RoHS

Airgain Model N2480 MIMO Antennas are RoHS compliant

9. Supporting Documents

The following design documents may be used as references for design implementation of Airgain MODEL N2480 Antenna products:

Top assembly drawing	046-07-00-001-1_B_ MODEL N2480_ASSEMBLY DRAWING.pdf

10. Feature and Options Information

10.1. Part number information

Airgain Model N2480 Series antennas are equipped with three RF cable I/O interface cables attached. In the table below, part numbers are listed for several feature options.

Antenna #	**Tape Type** -XX (if required)	**Cable Type** –X	**Cable Length** - XXX	**Connector Type** -XX (if required)
N2480	Blank = No Tape	G = Grey (Standard) B = Black (Non Standard	Cable length in millimeters (mm) Sample Lengths*: 65, 100, 130, 150, 190, 230, 250, 300,400	Blank = Stripped Cable U = U.FL connector C = U.FL connector plus Ferrite Core CS = stripped cable plus Ferrite Core

** Standard Cable Lengths listed in RF Cable Datasheet*

Example part number:

N2480-G100U – N2480 antenna with 100mm cables plus U.FL compatible connector.

（1 of 3 cables shown）