

**Airgain™**



Coverage.  
Performance.  
Smart.

**Profile Series  
N02DMABA**

**Airgain  
Embedded  
Antenna  
Engineering  
Data Sheet**

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## Revision History

Revision	Date	Note
3172-02-00-002-1 Rev1.0	September 29, 2020	Initial Draft
3172-02-00-002-1 Rev1.1	March 19, 2021	Added peak gain and Pattern

## Disclaimers

The information in this document is provided in connection with Airgain Antenna products and is proprietary and confidential. Airgain may make changes at any time, without notice.

***Please verify with Airgain before finalizing a product design.***

## Contents

1. Airgain N02DMABA Embedded Antenna.....	4
2. Features.....	4
3. Specifications and Interface.....	5
4. Radiation Patterns.....	5
5. Dimensions .....	7
6. ROHS.....	7
7. Feature and Options Information.....	7
7.1 Part Number Conventions .....	8
7.2 Part Number Example .....	8
8. Cable Data Sheet .....	9

## Figures

<b>Figure 1:</b> Model N02DMABA Embedded Antenna.....	4
<b>Figure 2:</b> Model N02DMABA Measurement axes.....	5
<b>Figure 3:</b> Airgain N02DMABA radiation patterns at 5.2 GHz & 5.5 GHz & 5.8 GHz.....	6
<b>Figure 4:</b> N02DMABA Antenna dimensions .....	7
<b>Figure 5:</b> N02DMABA with connector or stripped cable.....	8

## 1. Airgain N02DMABA Embedded Antenna

The Model N02DMABA Embedded Antenna provides a high efficiency, 5GHz band embedded antenna solution for Wi-Fi and ISM band applications, such as WLAN products. As embedded antenna solutions become the focus of next generation wireless product design, the Model N02DMABA provides the flexibility of an embedded antenna with top performance. N02DMABA has a (patent pending) perfectly balanced design, which makes the antenna decoupled from the feeding cable, making its behaviors independent of the details of the cable routing and improving noise rejection.

## 2. Features

The Model N02DMABA Embedded Antenna is defined by the following features:

- IEEE 802.11 a/n/ac standards
- Case mount
- Single 5GHz Band operation
- Truly balanced operation
- 3.0 dBi @ 5.2 GHz; 2.8 dBi @ 5.5GHz; 3.6 dBi @ 5.8GHz
- High efficiency
- Quick integration



**Figure 1:** Model N02DMABA Embedded Antenna

### 3. Specifications and Interface

Standard	IEEE 802.11 a/n/ac
Frequency range	5.15 to 5.85 GHz
Peak gain	3.0 dBi @ 5.2 GHz; 2.8 dBi @ 5.5GHz; 3.6 dBi @ 5.8GHz
VSWR	< 2:1
Feed impedance	50 ohms
Power handling	30 dBm
Interface	50 ohms, 1.13 mm diameter, micro coax cable (available with optional U.FL-compatible cable connector and/or cable-mounted EMI ferrites)
Antenna dimensions	18.3 x 8 x 0.5 (mm)
Weight	0.39 g
Temperature range	Operating: -40° C to +75° C (-40° F to +167° F) Storage: -40° C to +85° C (-40° F to +185° F)
Humidity range	0% to 95% non-condensing

### 4. Radiation Patterns

Radiation patterns for the Airgain N02DMABA were measured with the antenna mounted on evaluation board (Antenna mounted on a 90 x 90 x 2.3mm ABS board, cable length of 55mm).

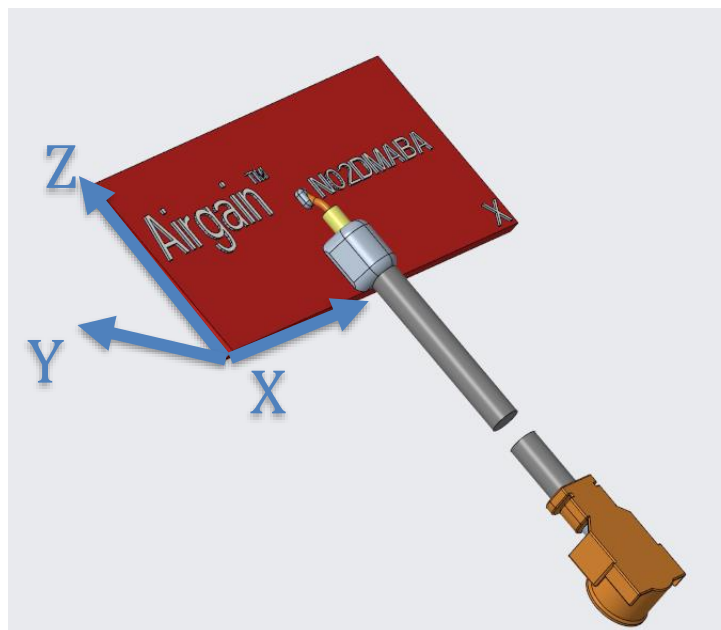


Figure 2: Model N02DMABA Measurement axes

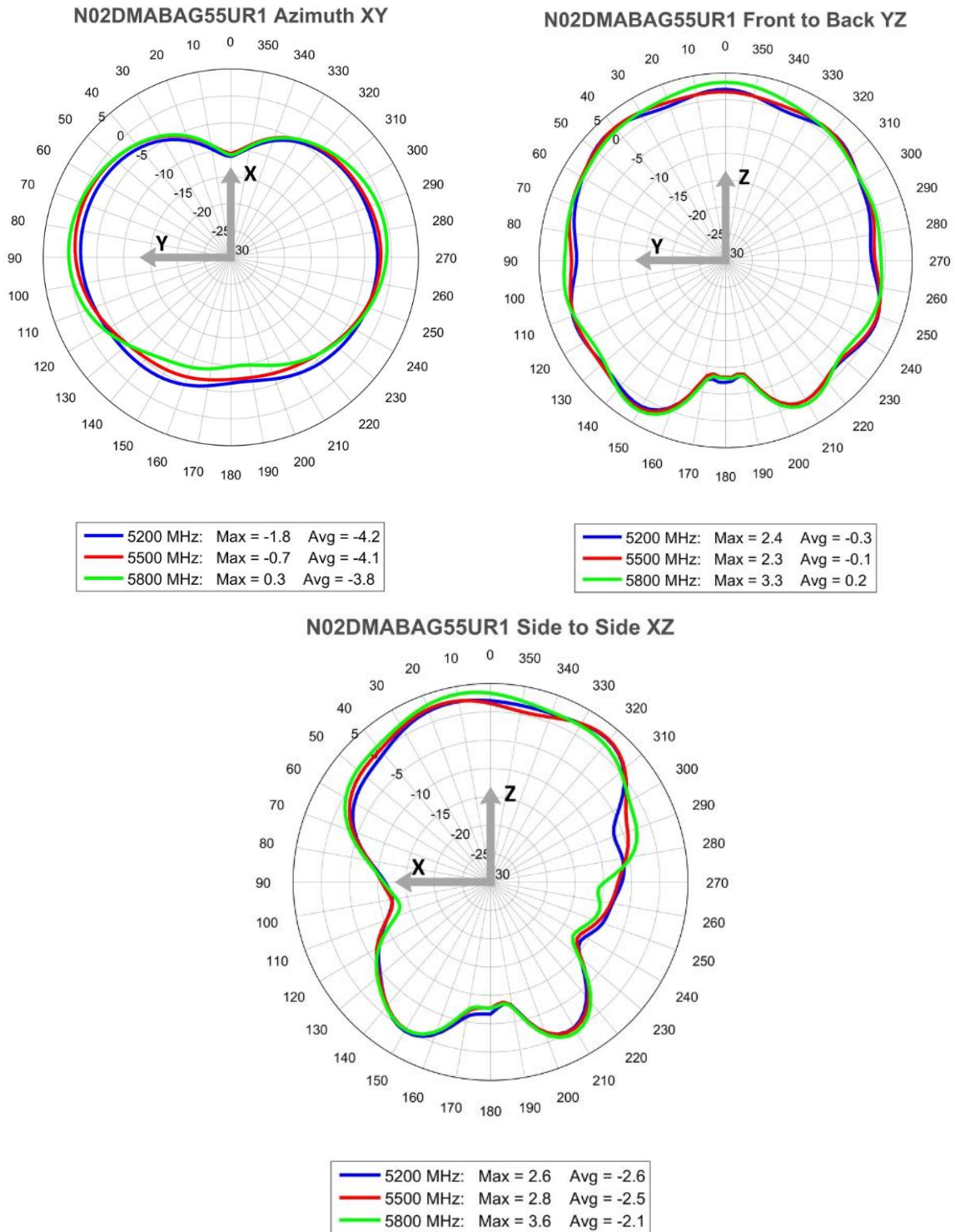


Figure 3: Airgain N02DMABA radiation patterns at 5.2 GHz & 5.5 GHz & 5.8 GHz

## 5. Dimensions

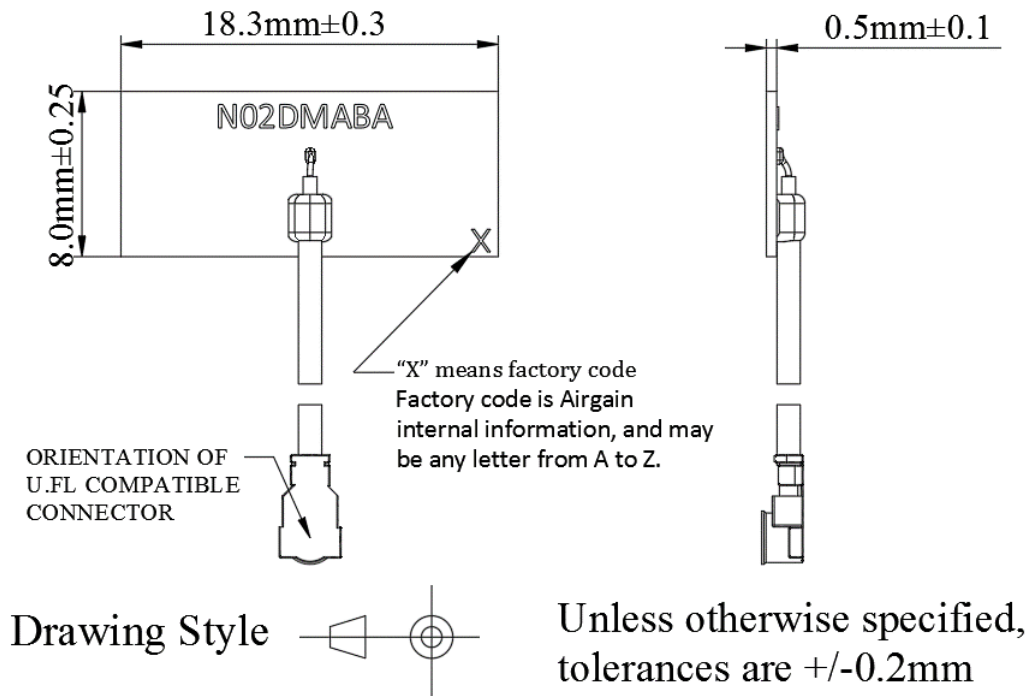


Figure 4: N02DMABA Antenna dimensions

## 6. ROHS

Airgain N02DMABA embedded antennas are RoHS compliant.

## 7. Feature and Options Information

Airgain N02DMABA antennas are equipped with an RF cable I/O interface. Optional cable termination such as U.FL-compatible micro coax connectors and cable mounted EMI ferrite cores are available. To aid mounting the N02DMABA, pre-applied, double-sided adhesive tape is available on the N02DMABA -T Series.

### 7.1 Part Number Conventions

Airgain uses a three-staged standard number system for our part numbers, which serially define the antenna type, tape type, cable type/length, and connector type/interface, as described below:

Antenna #	Tape type -XX (if required)	Packaging type -xx	Cable Assembly Type -xxxxxx		
			Cable color -X	Cable length XXX	Connector type XX (if required)
N02DMABA	Blank = No tape T = Tape on bottom of element	PK1= singulated (individual) antennas (PK1 is mandatory)	G = Grey (Standard) B = Black (Non Standard) W = White (Non Standard) A = Blue (Non Standard) E = Green (Non Standard)	Cable length in millimeters (mm)  Commonly used Lengths*: 65, 100, 130, 150, 190, 230, 250, 300,400, etc.	Blank = Stripped Cable U = U.FL connector C = U.FL connector plus Ferrite Core, core size: 3.5mm * 9.0mm * 1.5mm CS = stripped cable plus Ferrite Core, core size: 3.5mm * 9.0mm * 1.5mm UR1 = U.FL compatible connector, rotated cw 90° UR2 = U.FL compatible connector, rotated cw 180° UR3 = U.FL compatible connector, rotated cw 270°

\* Standard cable lengths listed in RF Cable Datasheet

### 7.2 Part Number Example

**N02DMABA-T-PK1-G100U** – N02DMABA antenna with 1.6-mm double-sided adhesive tape, 100-mm cable, and U.FL-compatible connector.

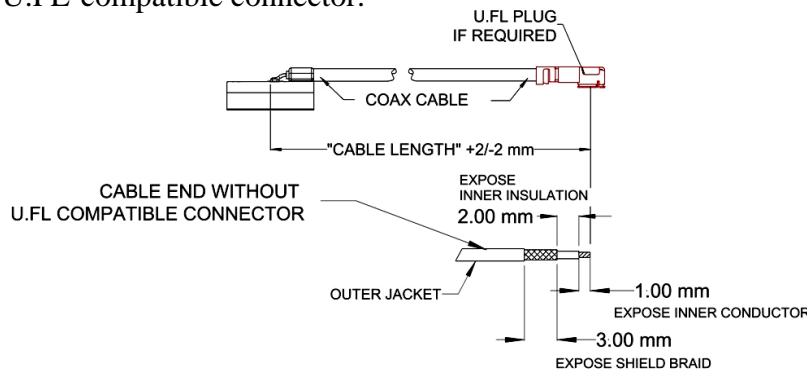


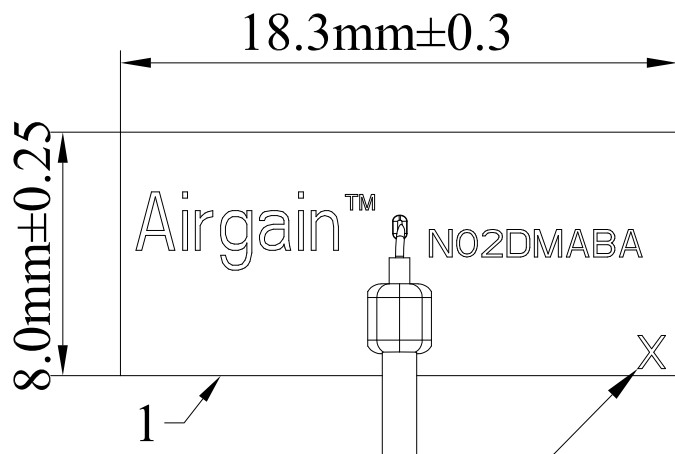
Figure 5:N02DMABA with connector or stripped cable



## 8. Cable Data Sheet

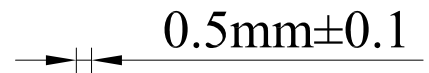
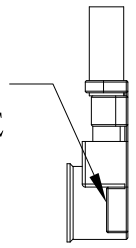
Item	Specification	
Cable type	OD1.13	
Impedance	50 ± 3 ohms	
Inner conductor	Material	Tin-coated copper
	Conductor numbers	7
	Conductor size	0.08 mm
	Outer diameter	0.24 ± 0.02 mm
Dielectric layer	Material	FEP
	Color	Clear
	Average thickness	0.22 mm
	Diameter	0.7 ± 0.03 mm
Braid (shielding)	Material	Tin-coated copper
	Conductor size :total / O.D. of every wire(mm)	16*4/0.05 mm
	Coverage	90%± 5%
	Diameter	0.92 ± 0.05 mm
Outer cover	Material	FEP
	Color	Black / white / grey / blue
	Average thickness	0.10 mm
	Diameter	1.13 ± 0.05 mm
VSWR testing	< 1.3@0~6GHz	
Attenuation (dB/1meter)	1GHz	≤2.2
	2GHz	≤3.1
	3GHz	≤3.8
	4GHz	≤4.4
	5GHz	≤4.9
	6GHz	≤5.4
Operating temperature	-55°C~+150°C	

REV	DESCRIPTION	BY	DATE
A	Initial Design	BWU	29/SEP/2020

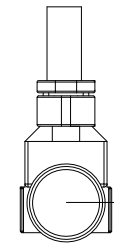


"X" means factory code  
 Factory code is Airgain  
 internal information, and may  
 be any letter from A to Z.

ORIENTATION OF  
 U.FL COMPATIBLE  
 CONNECTOR

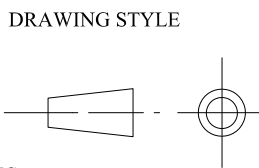


CABLE LENGTH  
 55 ± 2 mm



- Notes:  
 The processes used to assemble this antenna shall comply with the following specifications ,unless otherwise specified.  
 1.Solder:use lead free solder if applies for lead free soldering process to assemble the antenna , unless otherwise specified.  
 2.Bom:use the bom file for assembling the antenna.this table is provided for reference only.  
 3.Unless otherwise specified dimension, tolerances are +/-0.2mm  
 4.Packaging type: break up panel packaging

ITEM#	DESIGNATOR	QUANTITY	NOTE
1	Antenna	1	
2	Coax Cable	1	1. 13mm OD, Grey RF Cable



BOM No. 3172-06-00-001-1	3611 Valley Centre Drive, Suite 150 San Diego, CA 92130 USA		Airgain™))	
PCB No. 3172-12-00-001-1	Project	PROFILE EMBEDDED ANTENNA		
Drawn by BWU	Date 29/SEP/2020	Title	N02DMABA-PK1-G55UR1	
Checked by	Date	Size B	Number 3172-07-00-001-3	Rev. A
Approved by	Date	Layer File	Scale	
			Sheet 1 of 1	

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