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Profile Series
N02FVAAG

Airgain Embedded Antenna
Engineering Data Sheet

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Revision History

Revision	Date	Note
4180C-02-00-001-1 Rev 1.0	June 30, 2023	Preliminary Datasheet 1.0

Contents

1. Airgain N02FVAAG 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

Figure 1: Model N02FVAAG Embedded Antenna 4
Figure 2: Model N02FVAAG Measurement axes 5
Figure 3: Airgain N02FVAAG radiation patterns at 5.15 GHz & 5.5 GHz & 5.85 GHz 6
Figure 4: N02FVAAG Antenna dimensions 7
Figure 5: N02FVAAG with connector or stripped cable 8

1. Airgain N02FVAAG Embedded Antenna

The Model N02FVAAG 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 N02FVAAG provides the flexibility of an embedded antenna with top performance. N02FVAAG 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 N02FVAAG Embedded Antenna is defined by the following features:

- IEEE 802.11 a/n/ac standards
- Case mount
- Single 5GHz Band operation
- Truly balanced operation
- High efficiency
- Quick integration

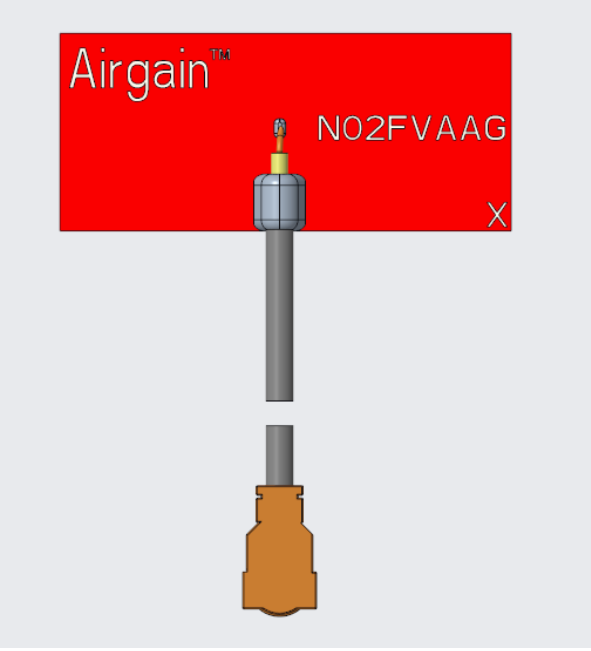


Figure 1: Model N02FVAAG Embedded Antenna

3. Specifications and Interface

Standard	IEEE 802.11 a/n/ac
Frequency range	5.15 to 5.85 GHz
Peak gain	5.0 dBi @ 5.5 GHz;
VSWR	< 1.5:1
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 8.0 x 0.5 (mm)
Weight	TBD
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

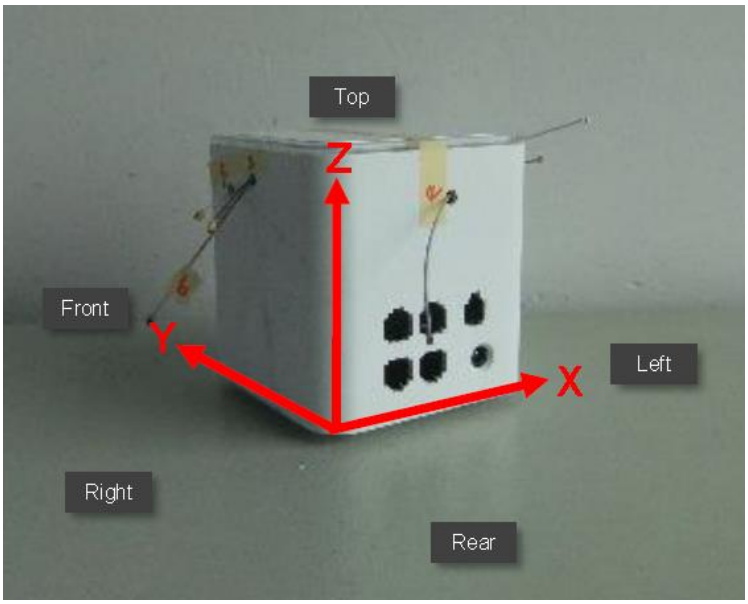


Figure 2: Model N02FVAAG Measurement axes

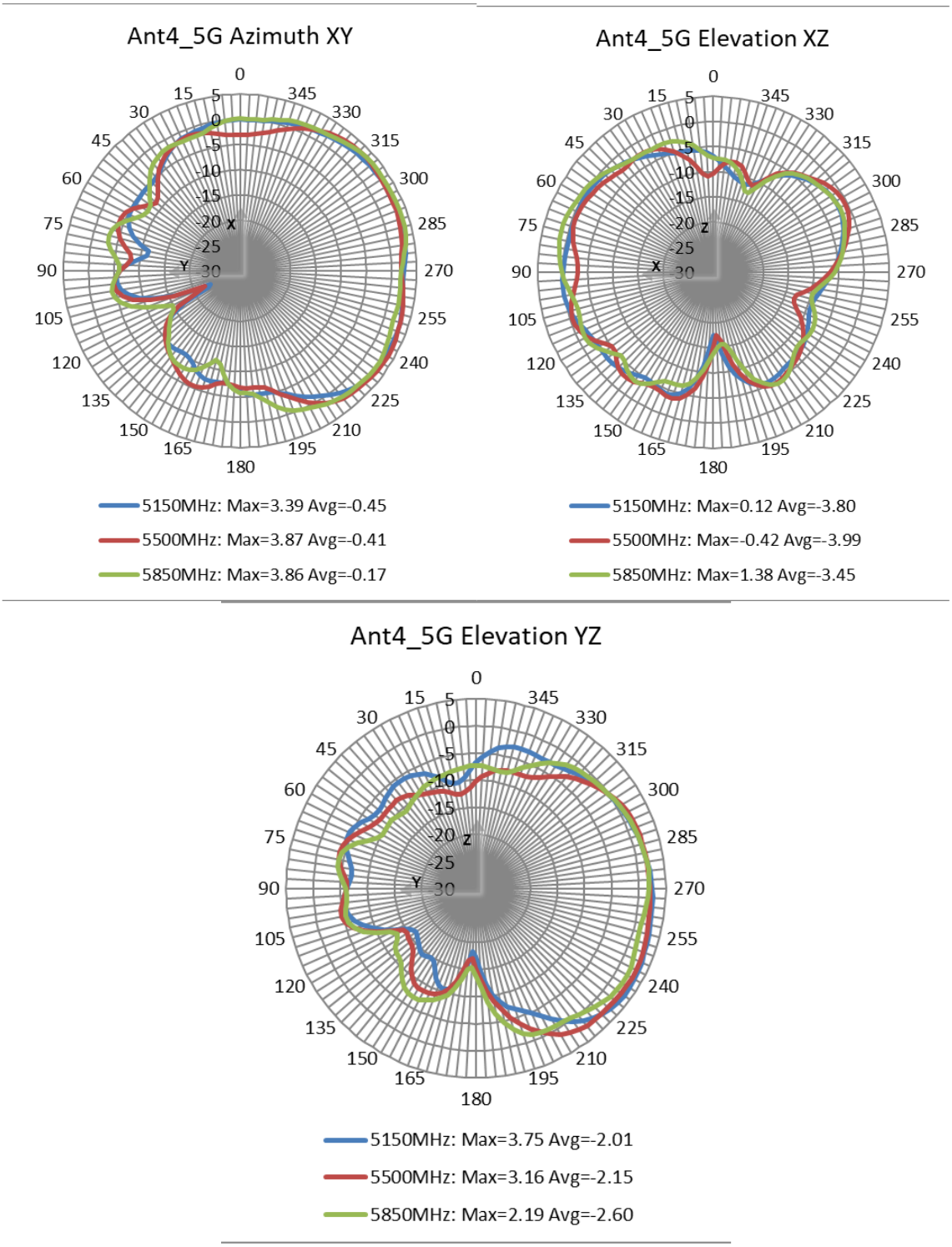


Figure 3: Airgain N02FVAAG radiation patterns at 5.15 GHz & 5.5 GHz & 5.85 GHz

5. Dimensions

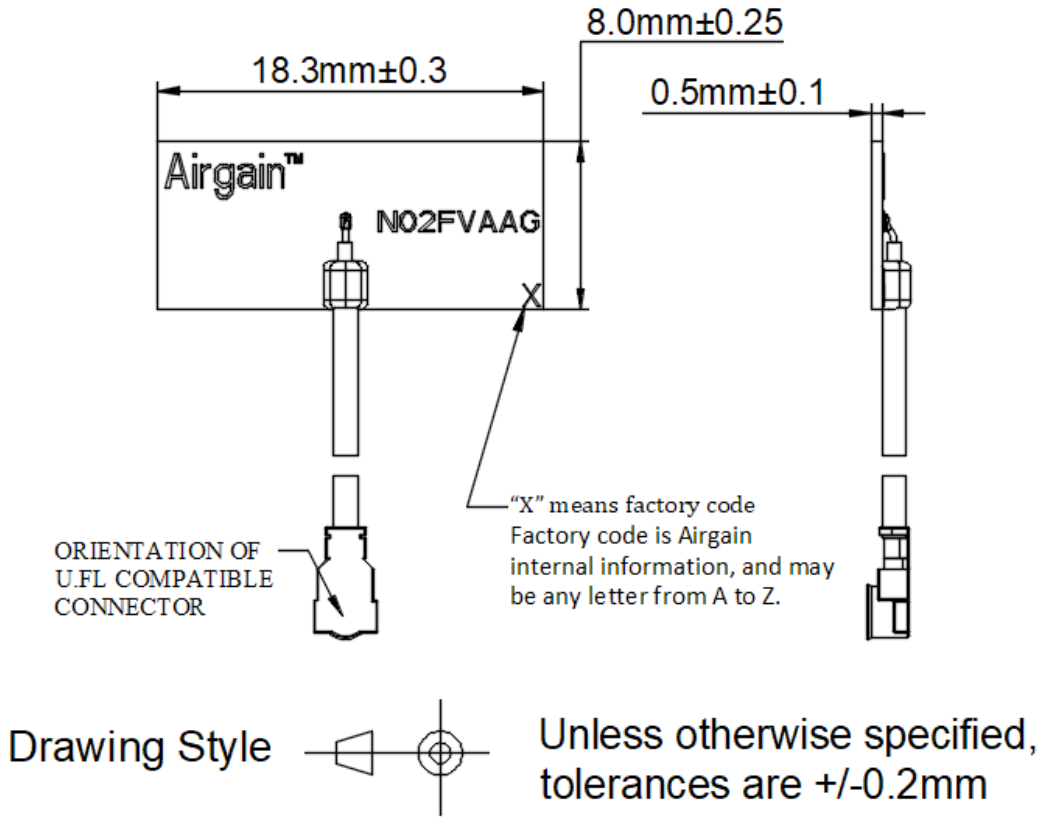


Figure 4:N02FVAAG Antenna dimensions

6. ROHS

Airgain N02FVAAG embedded antennas are RoHS compliant.

7. Feature and Options Information

Airgain N02FVAAG 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 N02FVAAG, pre-applied, double-sided adhesive tape is available on the N02FVAAG -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)
N02FVAAG	Blank = No tape T = Tape on bottom of element T10 = 1mm thick PE Tape affixed to bottom surface of antenna	PK1= singulated (PK1 is mandatory)	G = Grey (Standard) R = Red (Non Standard) Y = Yellow (Non Standard) K = Orange(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

** Standard cable lengths listed in RF Cable Datasheet*

7.2 Part Number Example

N02FVAAG-T-PK1-G100U – N02FVAAG antenna with 1.6-mm double-sided adhesive tape, 100-mm cable, and U.FL-compatible connector.

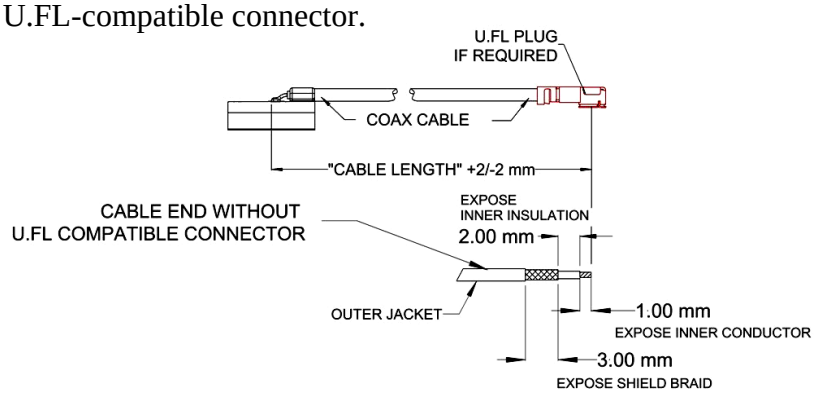
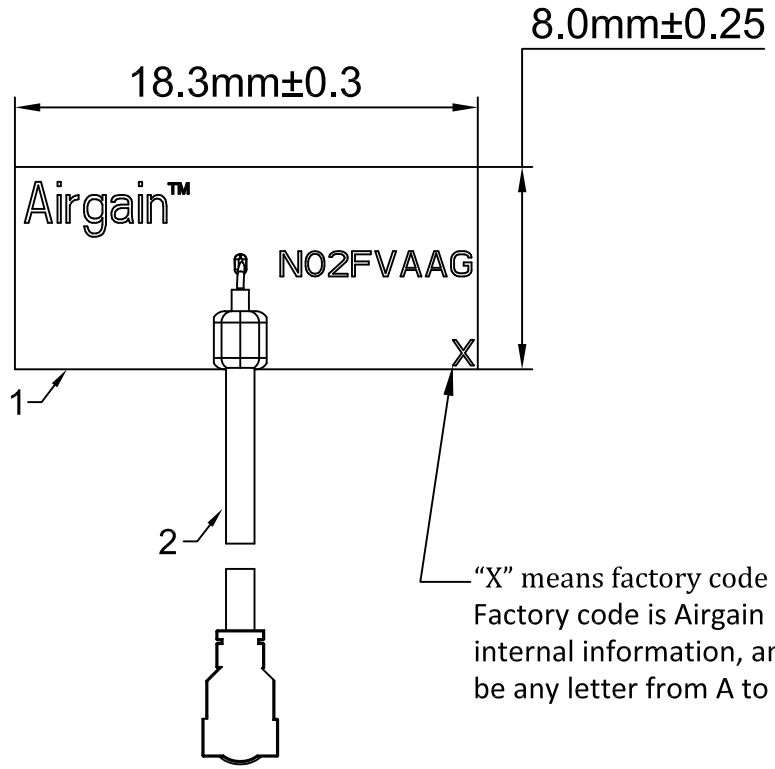


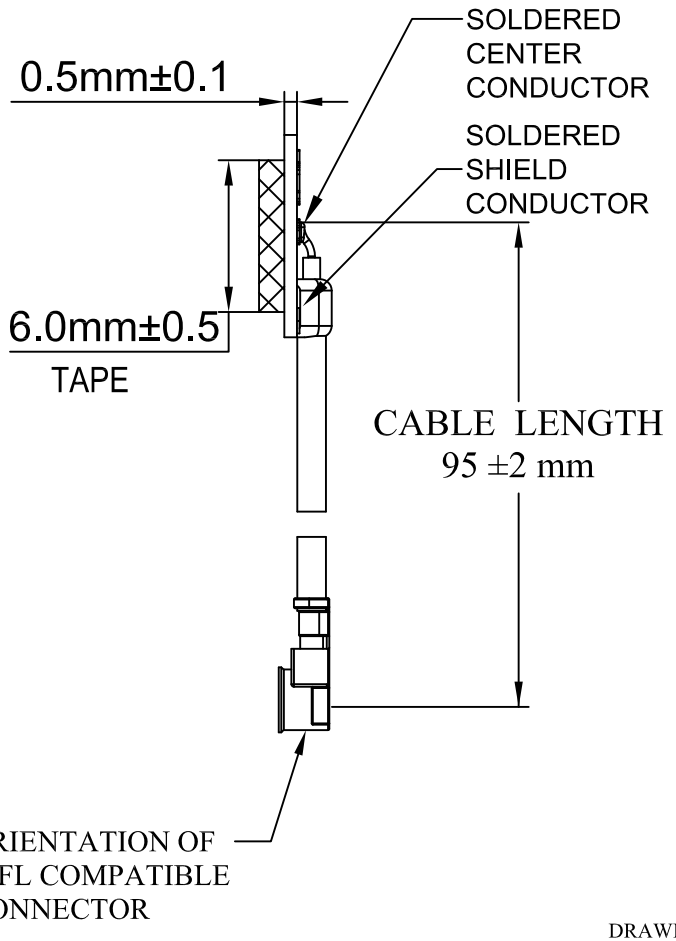
Figure 5:N02FVAAG with connector or stripped cable

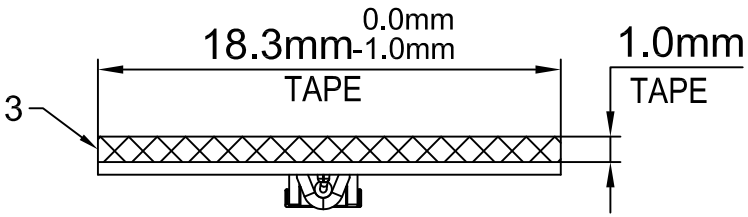
8. Cable Data Sheet

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
	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℃~+150℃	

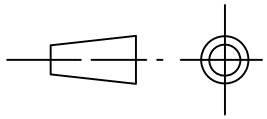
REV	DESCRIPTION	BY	DATE
A	Initial Design	BWU	30/June/2023







DRAWING STYLE



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,tape's tolerances are +/-0.5mm
4.Packaging type: break up panel packaging

ITEM#	DESIGNATOR	QUANTITY	NOTE
1	Antenna	1	
2	Coax Cable	1	1.13mm OD,Grey Cable
3	Tape	1	Size:18.3 x 6 x 1.0 mm

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BOM No. 4180C-06-00-001-1		3611 Valley Centre Drive, Suite 150 San Diego, CA 92130 USA	Airgain™
PCB No. 4180C-12-00-001-1		Project	PROFILE EMBEDDED ANTENNA
Drawn by BWU	Date 30/June/2023	Title	N02FVAAG-T10-PK1-G95U
Checked by	Date	Size B / Number 4180C-07-00-001-3	Rev. A
Approved by	Date	Layer	Scale
		File	Sheet 1 of 1