

Airgain™



Coverage.
Performance.
Smart.

**Ultra Series
M03VMACE**

**Airgain
Embedded
Antenna
Engineering
Data Sheet**

3611 Valley Centre Drive, Suite 150
San Diego, CA 92130 USA
Tel: +1 760 579 0200
Fax: +1 760 579 0892
Information: info@airgain.com
Sales: sales@airgain.com
Support: support@airgain.com

Revision History (Required)

Revision	Date	Note
3818C-02-00-001-1 Rev.1.0	July 7,2022	Initial Draft
3818C-02-00-001-1 Rev.1.1	August 15,2022	Added peak gain and Radiation Patterns

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 M03VMACE Embedded Antenna	4
2. Features.....	4
3. Specifications and Interface.....	5
4. Radiation Patterns.....	5
5. Dimensions	8
6. ROHS.....	8
7. Feature and Options Information.....	8
7.1 Part Number Conventions	9
7.2 Part Number Example	9
8. Cable Data Sheet	10

Figures

Figure 1: Model M03VMACE Embedded Antenna.....	4
Figure 2: Model M03VMACE Measurement Axes.....	5
Figure 3: Model M03VMACE Radiation Patterns at at 2.4GHz & 2.44 GHz & 2.48GHz	6
Figure 4: Model M03VMACE Radiation Patterns at at 5.15GHz & 5.5 GHz & 5.85GHz	7
Figure 5: Model M03VMACE Dimensions.....	8
Figure 6: M03VMACE with connector or stripped cable.....	9

1. Airgain M03VMACE Embedded Antenna

The Model M03VMACE Embedded Antenna provides a high efficiency, embedded antenna solution for Wi-Fi and ISM applications in the dual band. As efficient embedded antenna solutions become the focus of next generation wireless product design, the Model M03VMACE antenna provides the combination of small size with top performance. This antenna was designed to accommodate most WLAN applications, such as access points, routers, and gateways. It is easily integrated into an ID design.

2. Features

The Airgain M03VMACE embedded antenna includes the following features:

- IEEE 802.11 a/b/g/n/ac standards
- Surface mount component
- High efficiency
- Quick integration

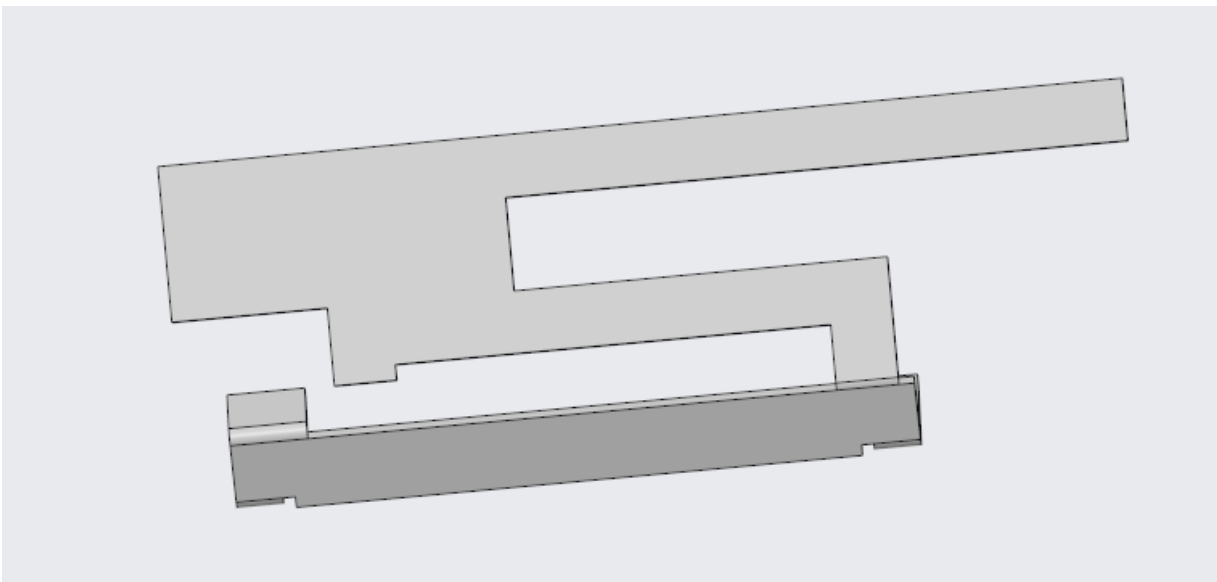


Figure 1: Model M03VMACE Embedded Antenna

3. Specifications and Interface

Standard	IEEE 802.11 a/b/g/n/ac standards
Frequency range	2.4 to 2.48GHz, 5.15 to 5.85 GHz
Peak gain	1.4 dBi@2.44GHz, 2.5 dBi@5.5GHz
VSWR	< 2:1
Feed impedance	50 ohms
Power handling	30 dBm
Interface	PCB surface mount
Antenna dimensions	31 x10.05 x5.49 mm
Weight	TBD 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

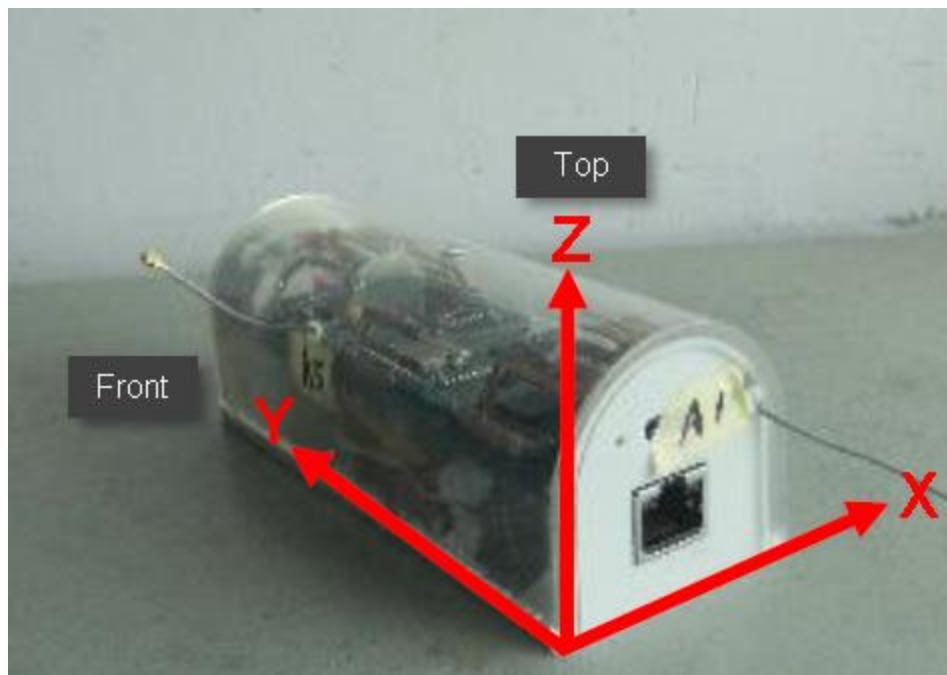


Figure 2: Model M03VMACE Measurement Axes

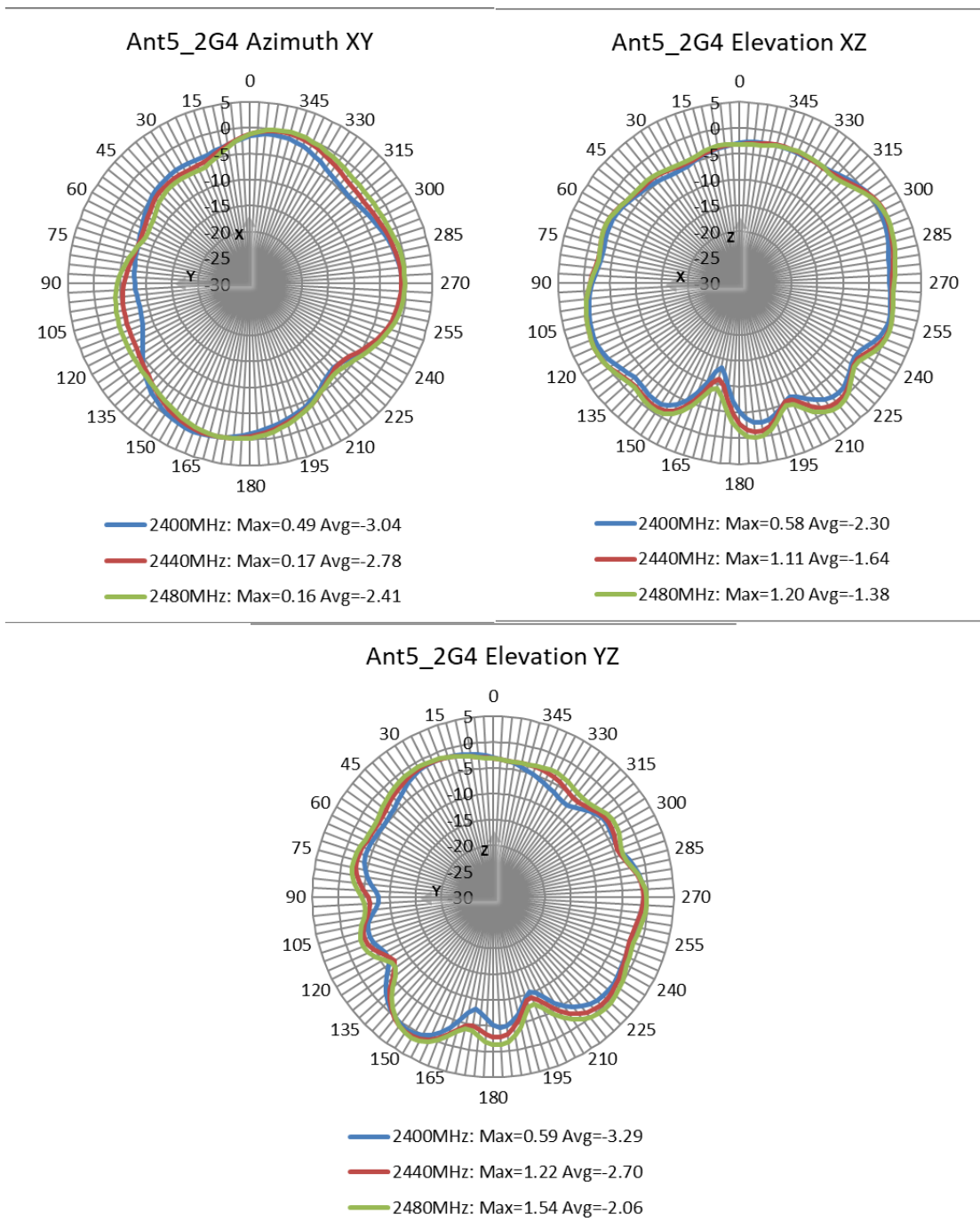


Figure 3: Model M03VMACE Radiation Patterns at at 2.4GHz & 2.44 GHz & 2.48GHz

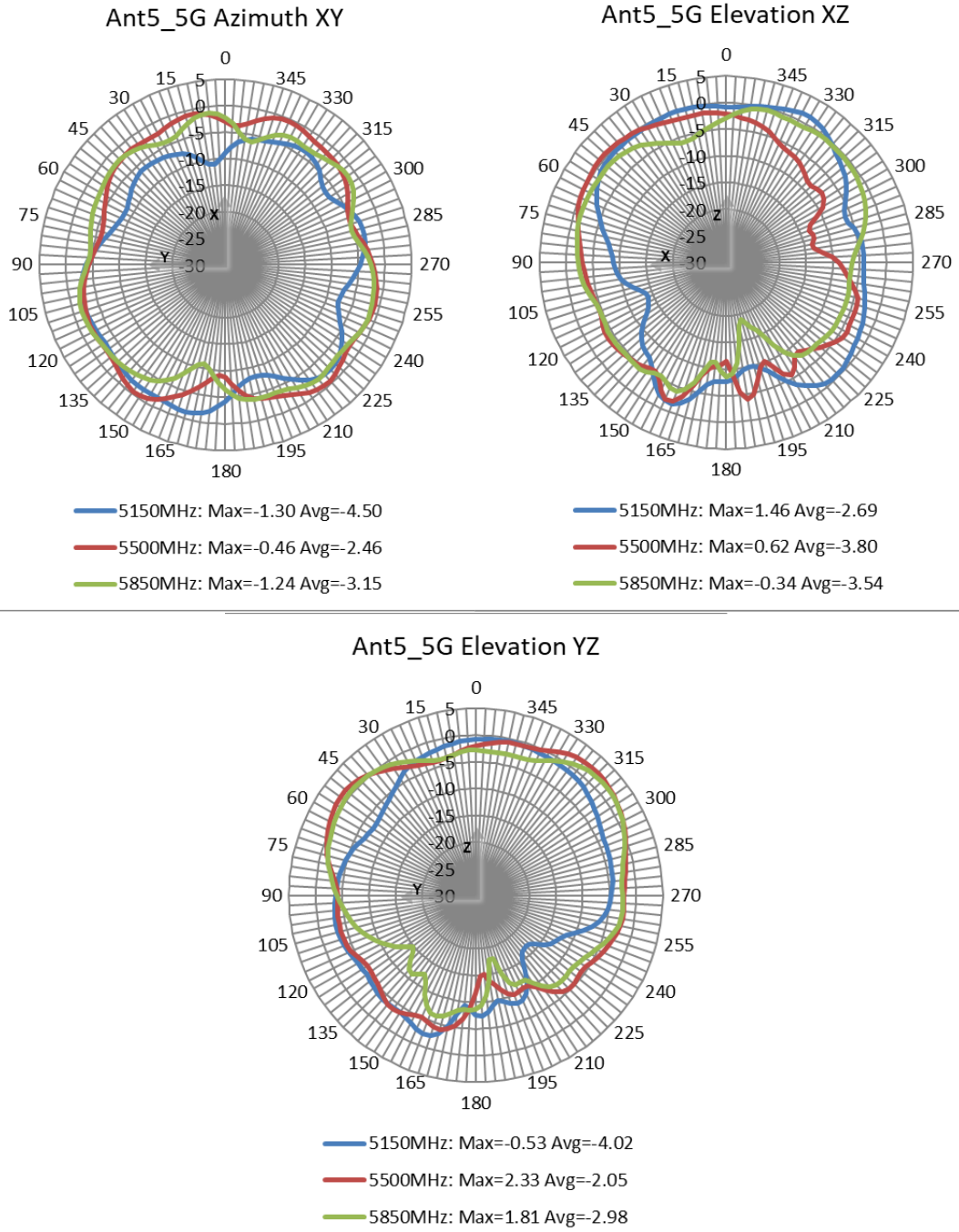


Figure 4: Model M03VMACE Radiation Patterns at at 5.15GHz & 5.5 GHz & 5.85GHz

5. Dimensions

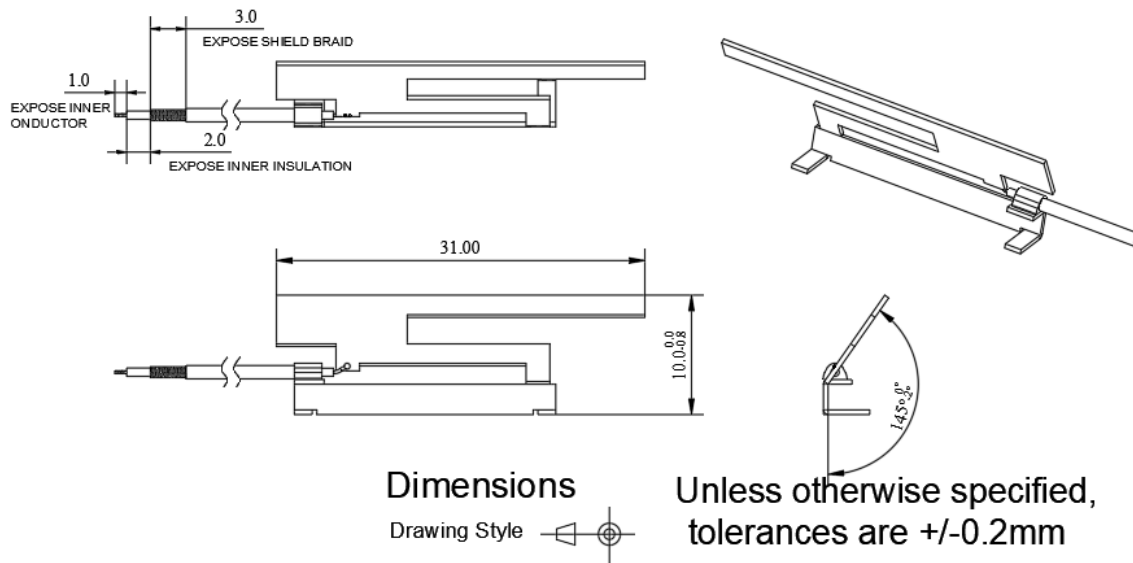


Figure 5: Model M03VMACE Dimensions

6. ROHS

Airgain M03VMACE embedded antennas are RoHS compliant.

7. Feature and Options Information

Airgain M03VMACE 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.

7.1 Part Number Conventions

Airgain uses a six-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)	Special type - XX	Cable type -X	Cable length - XXX	Connector type -XX (if required)
M03VMACE	Blank = No Tape T = Tape on bottom element T6 = 0.5mm Tape affixed to bottom surface of antenna	Blank= No holder PH = Plastic holder insert	G = Grey (Standard) B = Black (Non Standard) W = White (Non Standard) A = Blue(Non Standard) G1X= 1.37 mm OD, Tinned Grey RF Cable	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, 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

M03VMACE -G100U – M03VMACE antenna with 100-mm cable, and U.FL-compatible connector.

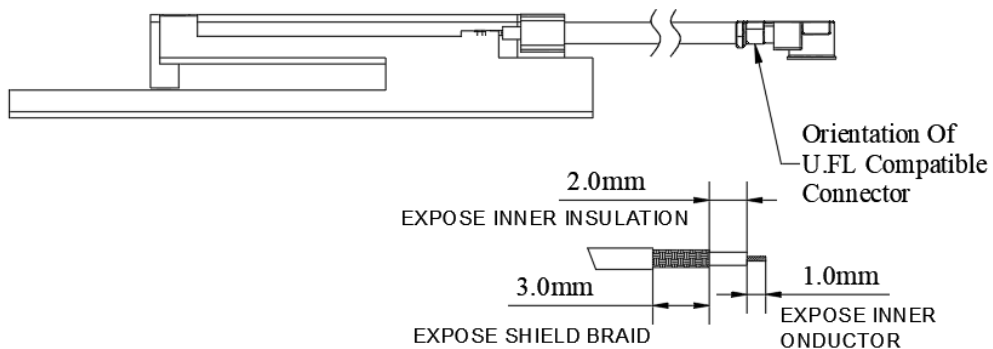
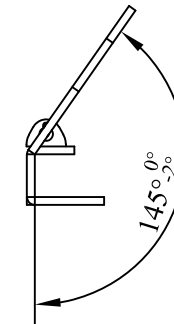
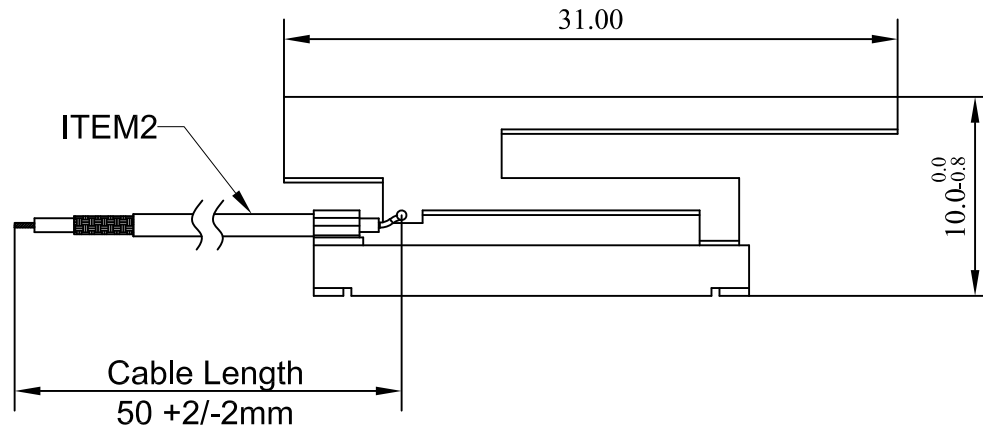
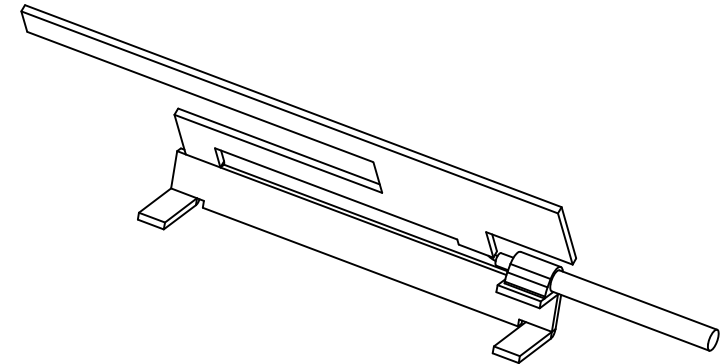
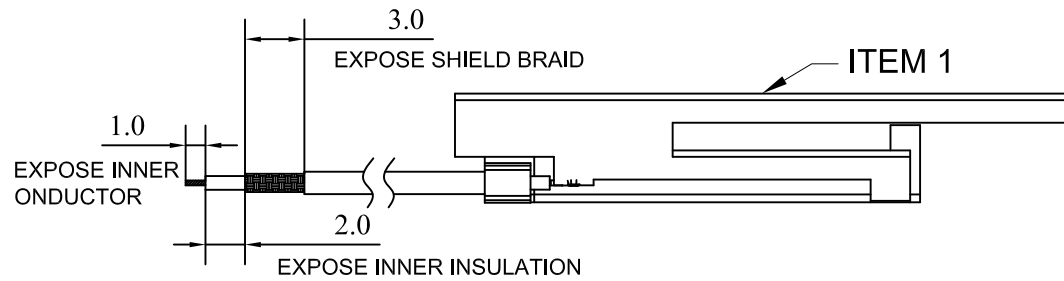


Figure 6: M03VMACE with connector or stripped cable

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°C~+150°C	

REV	DESCRIPTION	BY	DATE
V1	INITIAL DESIGN	BWU	7/JULY/2022



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.

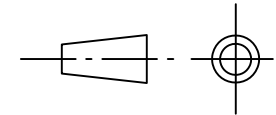
2. Bom: use the bom file for assembling the antenna. this table is provided for reference only.

3. Unless otherwise specified dimension, tolerances are +/-0.2mm, tape tolerances are +/-0.5mm

ITEM#	DESIGNATOR	QUANTITY	NOTE
1	Antenna	1	Material: Copper-Nickel-Zinc Alloy C7701-H 0.4mm thickness
2	Coax Cable	1	Cable color is Grey

THIS DOCUMENT IS PROPRIETARY AND CONFIDENTIAL PROPERTY OF AIRGAIN INC.

DRAWING STYLE



BOM No. 3818C-06-00-001-1		3611 Valley Centre Drive, Suite 150 San Diego, CA 92130 USA		Airgain)))	
PCB No.		Project ULTRA EMBEDDED ANTENNA			
Drawn by BWU	Date 7/JULY/2022	Title M03VMACE-G50			
Checked by	Date	Size B	Number 3818C-07-00-001-3	Rev. V1	
Approved by	Date	Layer	Scale		
		File	Sheet 1 of 1		