

Airgain™



Coverage.

Performance.

Smart.

**Profile Series
N03SGABA**

**Airgain
Embedded
Antenna**

**Engineering
Data Sheet**

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Revision History (Required)

Revision	Date	Note
3629-02-00-001-1 Rev 1.0	October 13,2021	Preliminary Datasheet 1.0

Disclaimers

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Please verify with Airgain before finalizing a product design.

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1. Airgain N03SGABA Embedded Antenna

The Model N03SGABA Embedded Antenna provides a high efficiency, dual 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 N03SGABA provides the flexibility of an embedded antenna with top performance. The Model N03SGABA Embedded Antenna is a center fed version of its predecessor, the N03SGABA, allowing it to fit in spaces where center feeding is better suited. It is designed to accommodate most WLAN access point applications, such as routers and gateways and can be easily integrated into an ID package design.

2. Features

The Airgain N03SGABA embedded antenna includes the following features:

- IEEE 802.11 a/b/g/n/ac standards
- dual Band operation
- Case mount
- 2.3 dBi peak gain @2.44 GHz; 3.05 dBi peak gain @ 5.2GHz;
- High efficiency
- Quick integration

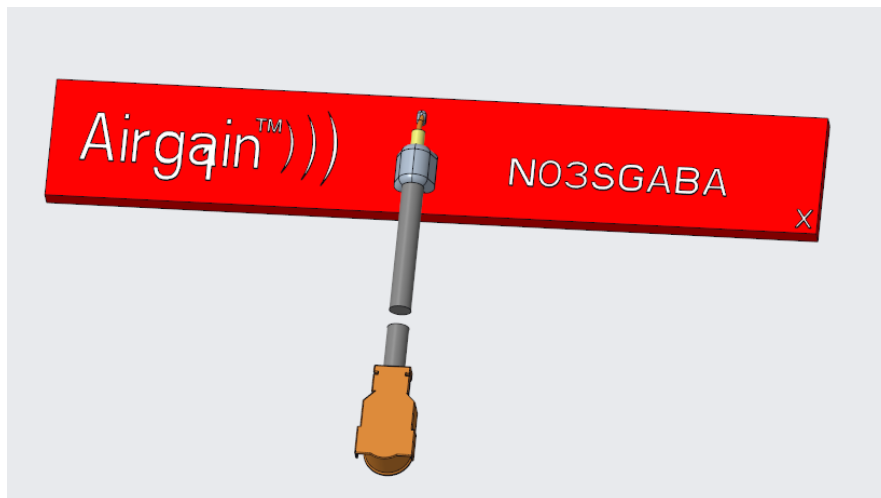


Figure 1: Model N03SGABA Embedded Antenna

3. Specifications and Interface

Standard	IEEE 802.11 a/b/g/n/ac
Frequency range	2.4 to 2.49 GHz, 5.15 to 5.85 GHz
Peak gain	2.3 dBi @2.44 GHz; 3.05 dBi @ 5.2GHz;
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	40 x 6.5 x 1.0 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

Radiation patterns for the Model N2420DG were taken with the antenna mounted on a 90 x 90x 2.2 mm thick ABS Plastic Sheet and covered with a 90 x 90 x 2.2 mm thick ABS Plastic Sheet spaced 3mm above the element, using 1.6mm thick double sided tape.

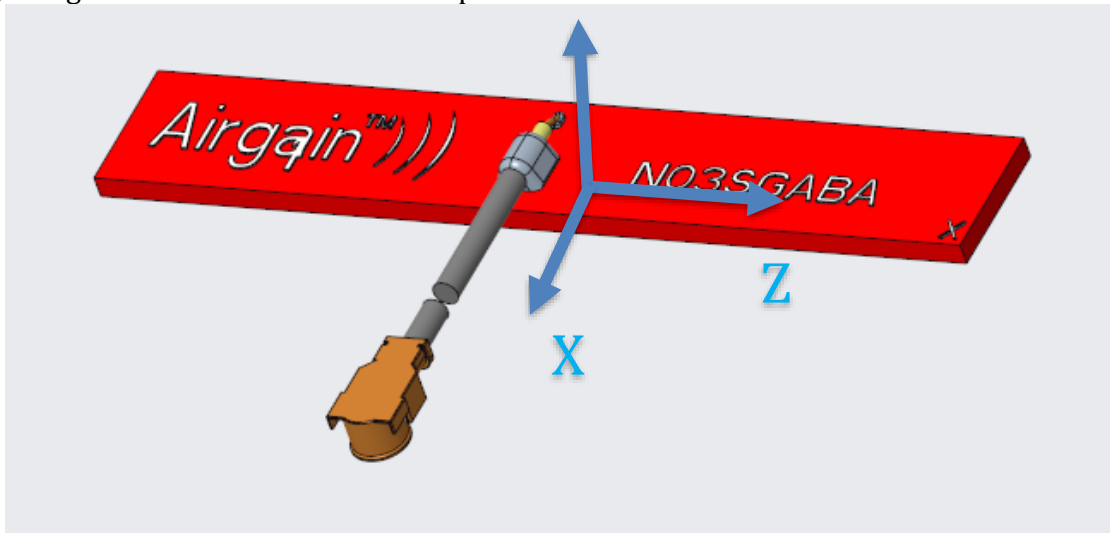


Figure 2: Model N03SGABA Measurement axes

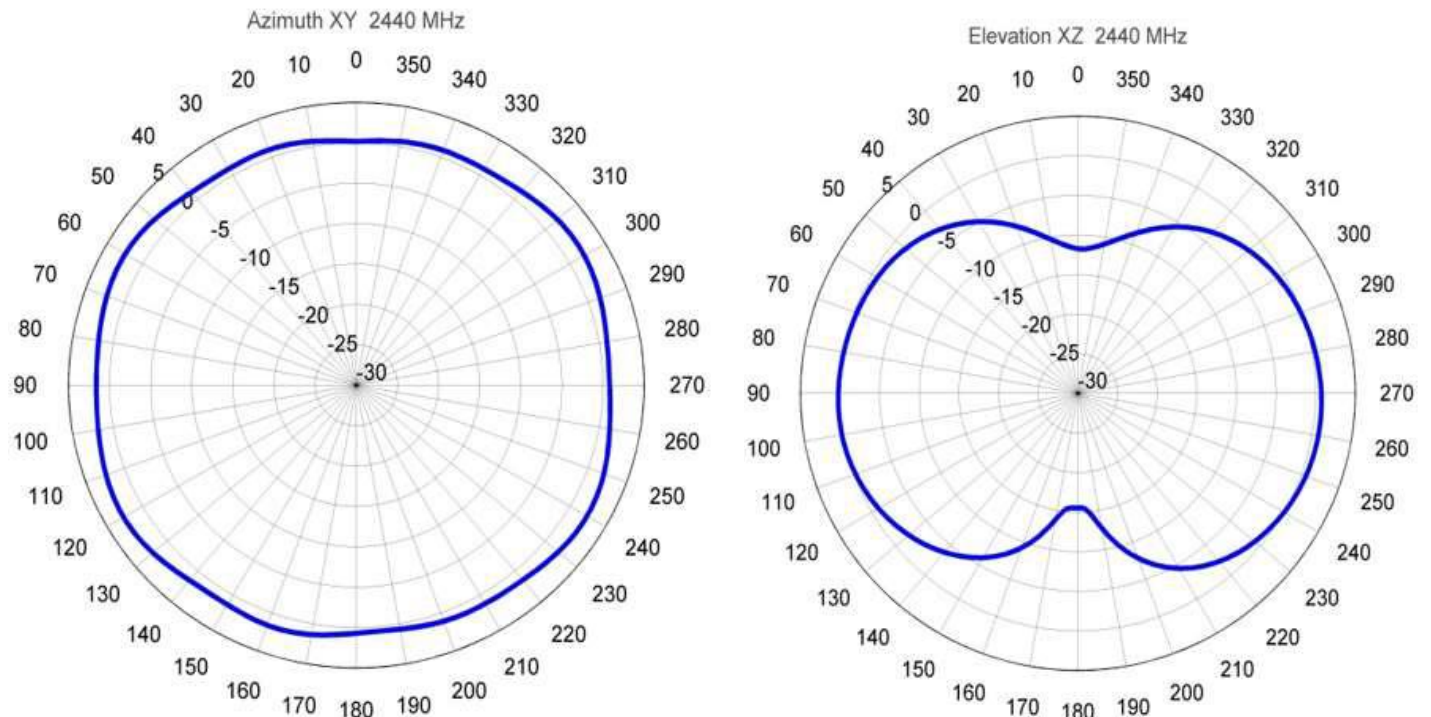


Figure 3: Model N03SGABA Radiation Patterns at 2.44 GHz

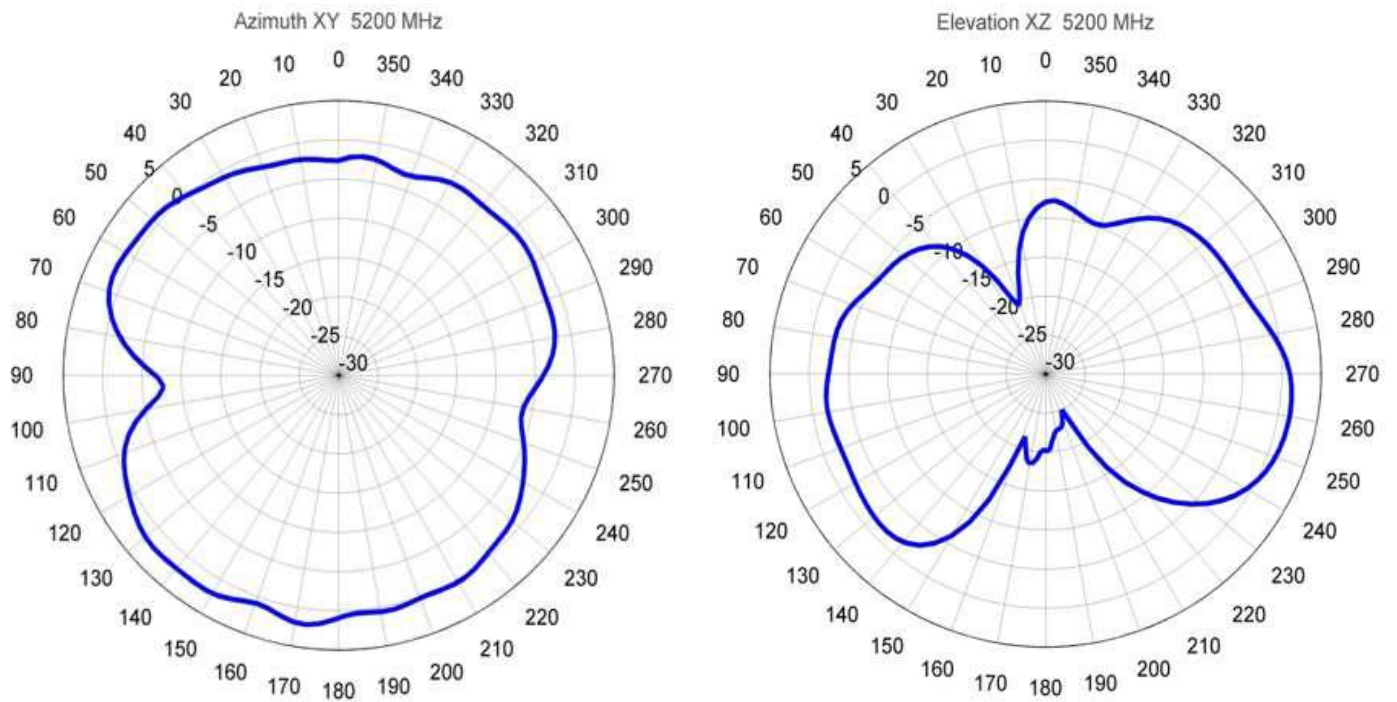


Figure 4: Model N03SGABA Radiation Patterns at 5.2 GHz

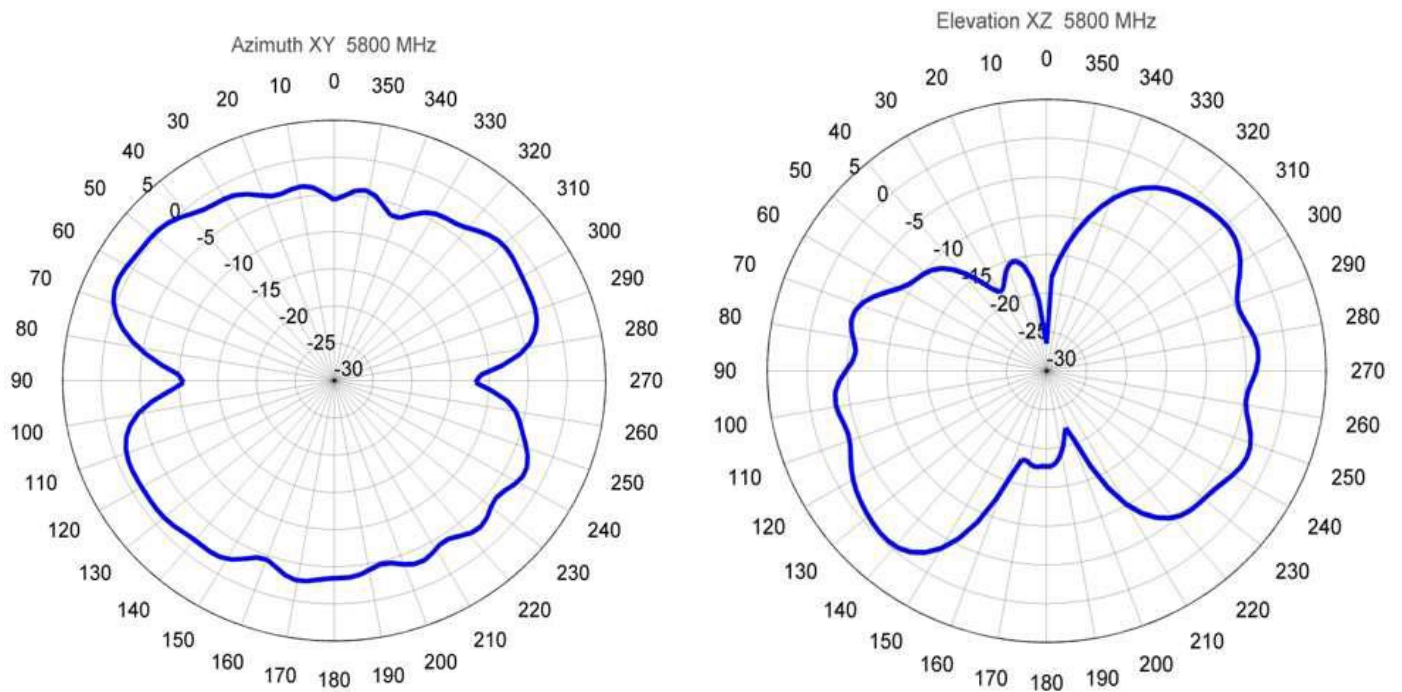


Figure 5: Model N03SGABA Radiation Patterns at 5.8 GHz

5. Dimensions

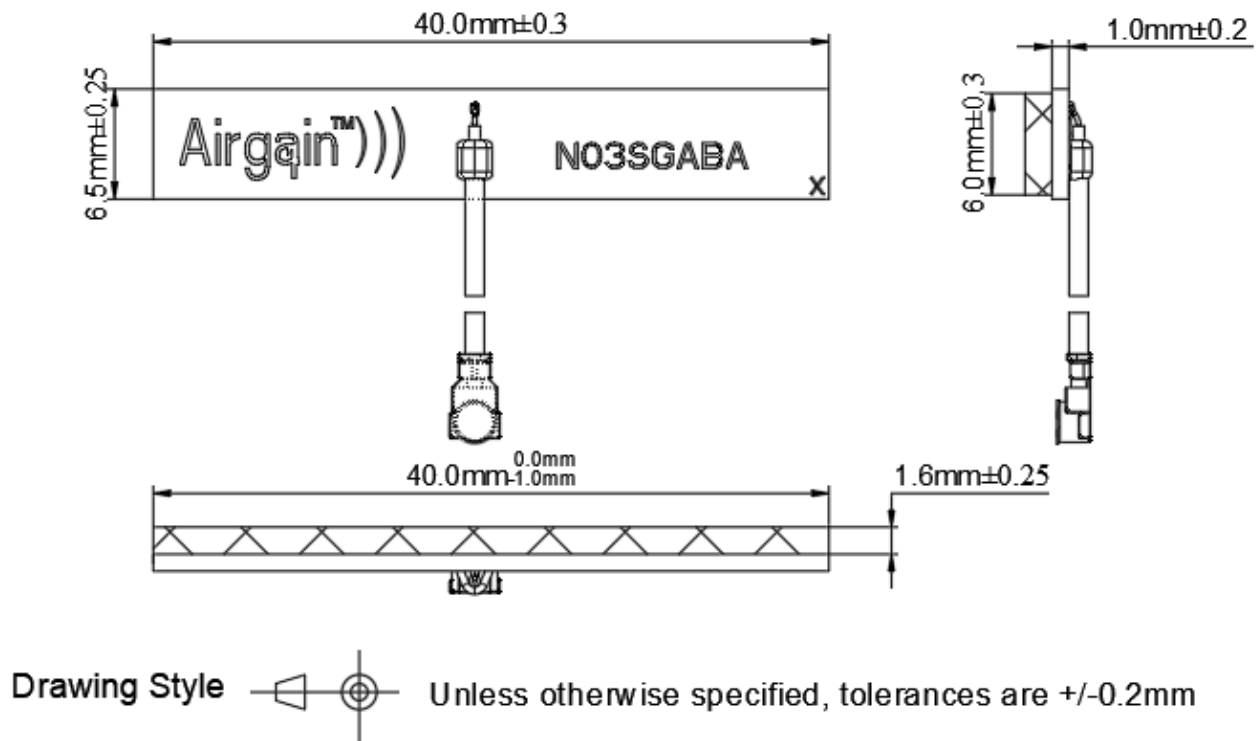


Figure 6: Model N03SGABA Pre-applied Tape Dimensions

6. ROHS

Airgain N03SGABA embedded antennas are RoHS compliant.

7. Feature and Options Information

Airgain N03SGABA 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 N03SGABA, pre-applied, double-sided adhesive tape is available on the N03SGABA -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)
N03SGABA	Blank = No Tape T = Tape on bottom of element T2M48 = 3M 9448A , 0.15mm thickness Tape affixed to bottom surface of antenna	PK1= singulated (individual) antennas (PK1 is mandatory)	G = Grey (Standard) B = Black (Non Standard) W = White (Non Standard) A = Blue(Non Standard) ↓ *1X = 1.37mm OD Tinned 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 B = U.FL compatible connector for 1.37OD cable UR1 = U.FL compatible connector, rotated 90° UR2 = U.FL compatible connector, rotated 180° UR3 = U.FL compatible connector, rotated 270°

* Standard cable lengths listed in RF Cable Datasheet

7.2 Part Number Example

N03SGABA-T-PK1-G100U – N03SGABA antenna with 1.6-mm double-sided adhesive tape, 100-mm cable, and U.FL-compatible connector.

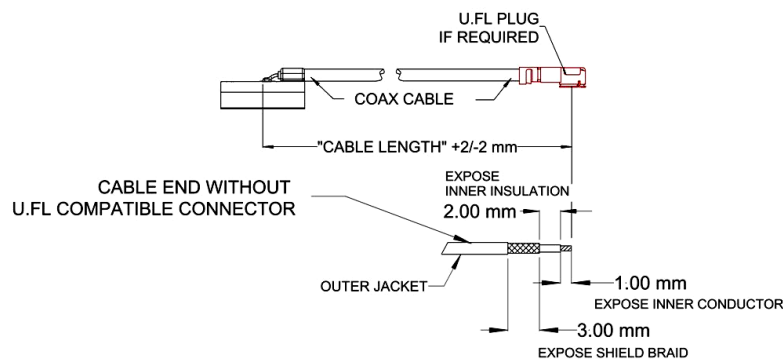
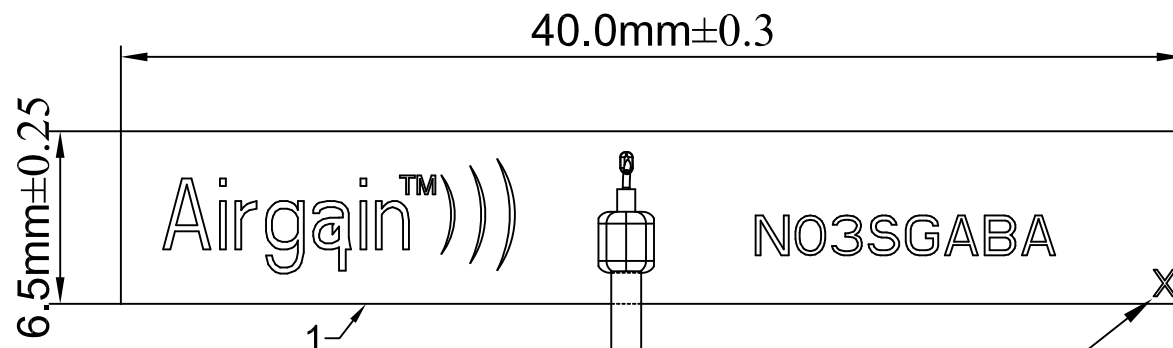


Figure 7: N03SGABA with connector or stripped cable

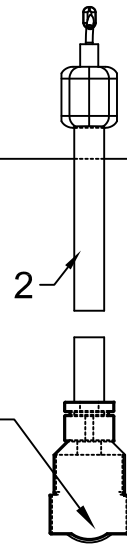
8. Cable Data Sheet

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	

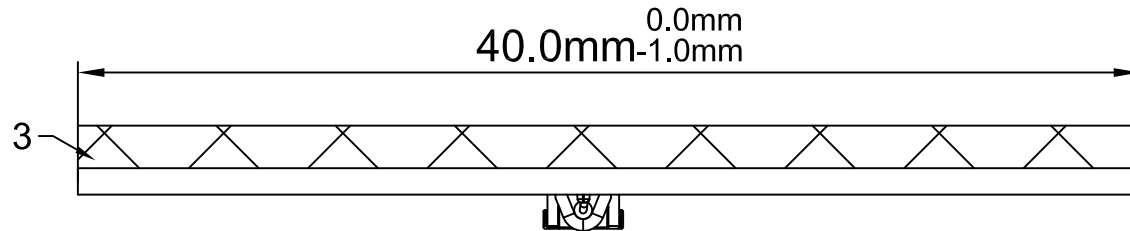
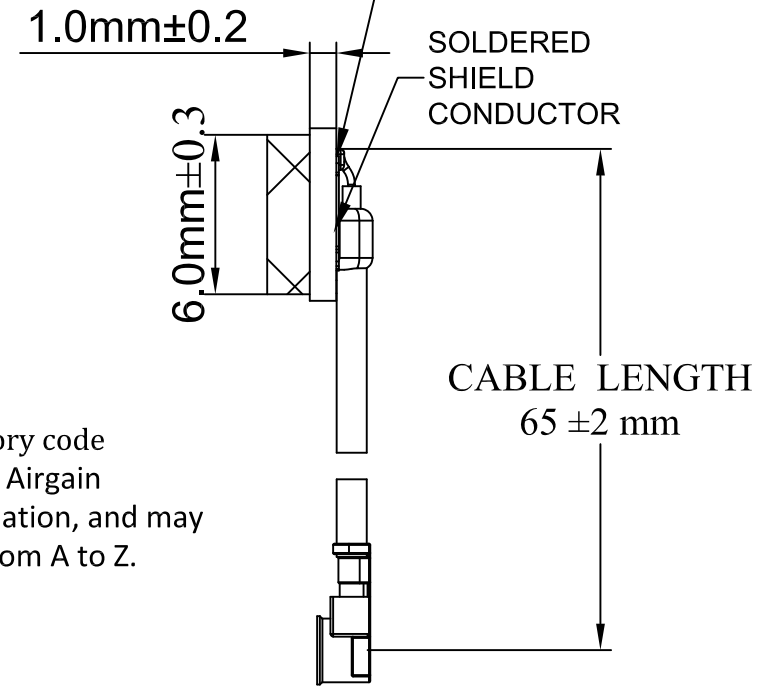
REV	DESCRIPTION	BY	DATE
A	Initial Design	BWU	13/OCT/2021



Orientation Of
U.FL Compatible
Connector



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

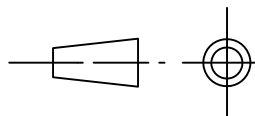


Notes:

- The processes used to assemble this antenna shall comply with the following specifications, unless otherwise specified.
- Solder: use lead free solder if applies for lead free soldering process to assemble the antenna, unless otherwise specified.
- Bom: use the bom file for assembling the antenna. this table is provided for reference only.
- Unless otherwise specified dimension, tolerances are $\pm 0.2\text{mm}$.
- Packaging type: break up panel packaging

ITEM#	DESIGNATOR	QUANTITY	NOTE
1	Antenna	1	
2	Coax Cable	1	1.13mm OD, Grey RF Cable
3	Tape	1	

DRAWING STYLE



BOM No. 3629-06-00-001-1	3611 Valley Centre Drive, Suite 150 San Diego, CA 92130 USA		Airgain™
PCB No. 3629-12-00-001-1	Project	PROFILE EMBEDDED ANTENNA	
Drawn by BWU	Date 13/OCT/2021	Title	N03SGABA-T-PK1-G65U
Checked by	Date	Size	Number
		B	3629-07-00-001-3
Approved by	Date	Layer	Scale
		File	Sheet 1 of 1

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