

**Airgain™**



Coverage.  
Performance.  
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**Profile Series  
N2410CM3**

**Airgain  
Embedded  
Antenna  
Engineering  
Data Sheet**

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## Revision History (Required)

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542-02-00-001-1 Rev. 1.0	June 5, 2015	Initial Draft

## 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.***

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## 1. Airgain N2410CM3 Embedded Antenna

The Model N2410CM3 Embedded Antenna provides a high efficiency, embedded antenna solution for Wi-Fi and ISM band applications, such as WLAN products in Europe. As embedded antenna solutions become the focus of next generation wireless product design, the Model N2410CM3 provides the flexibility of an embedded antenna with top performance. The Model N2410CM3 Embedded Antenna was designed to accommodate most WLAN access point applications, such as routers and gateways. The product can be easily integrated into an ID package design.

## 2. Features

The Model N2410CM3 Embedded Antennas are defined by the following features:

- IEEE 802.11 b/g/n standards
- Case mount
- 0.7 dBi peak gain,
- High efficiency
- Quick integration



**Figure 1:** Model N2410CM3 Antenna

### 3. Specifications and Interface

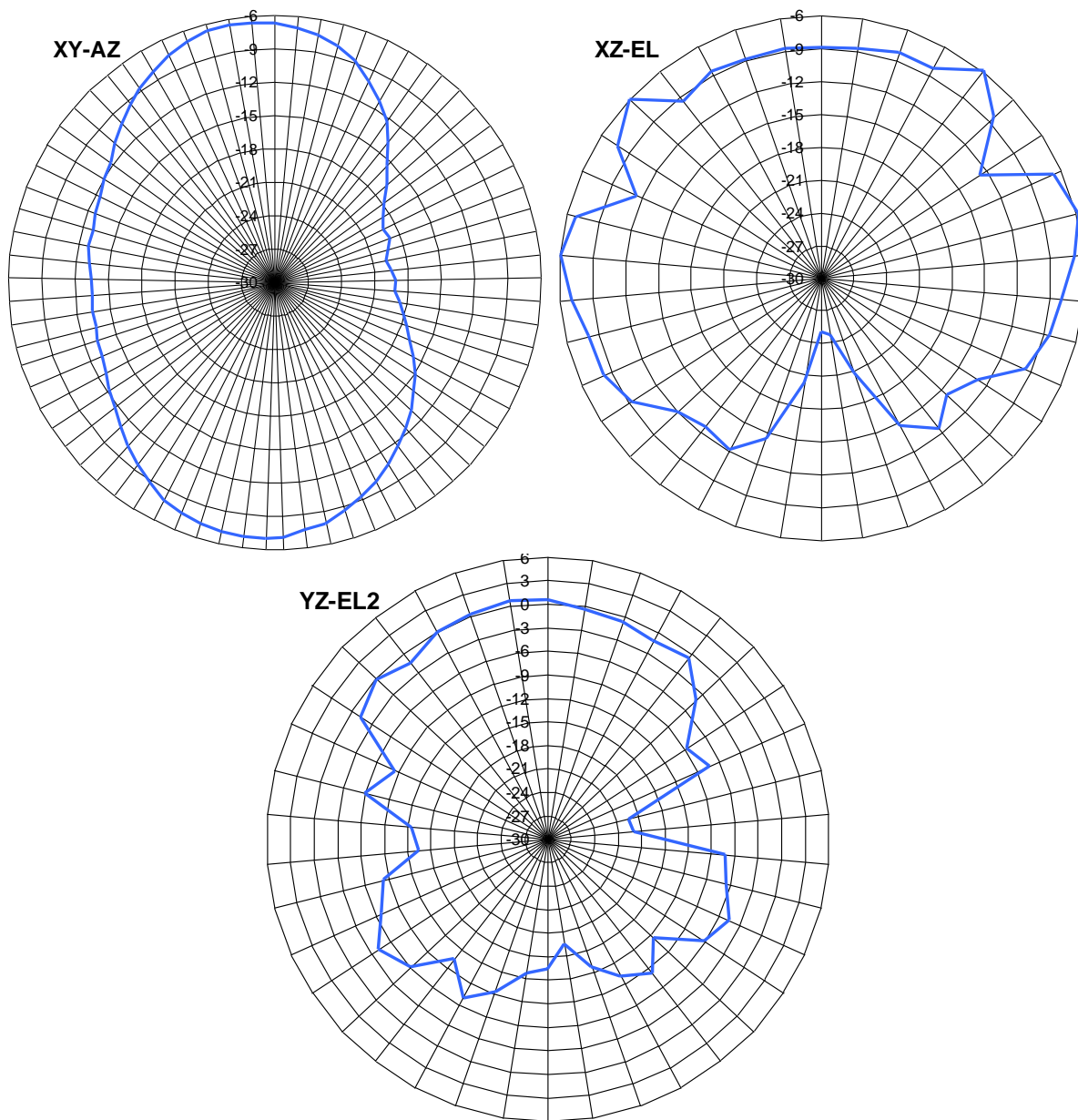
Standard	IEEE 802.11n and 802.11 b/g
Frequency range	2.4 to 2.49 GHz
Peak gain	0.7 dBi
VSWR	< 2:1
Feed impedance	50 ohms
Power handling	30 dBm
Interface	50 ohm, 1.13mm diameter, micro coax cable, U.FL compatible cable connector (optional), cable mounted EMI ferrites (optional)
Antenna dimensions	28.9 x 5 x 0.5 (mm)
Weight	0.158 g (0.0056 oz)
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 N2410CM3 were taken with the antenna mounted on a 90mm by 90mm by 2.2mm thick, ABS plastic sheet using 1.6mm double sided tape.

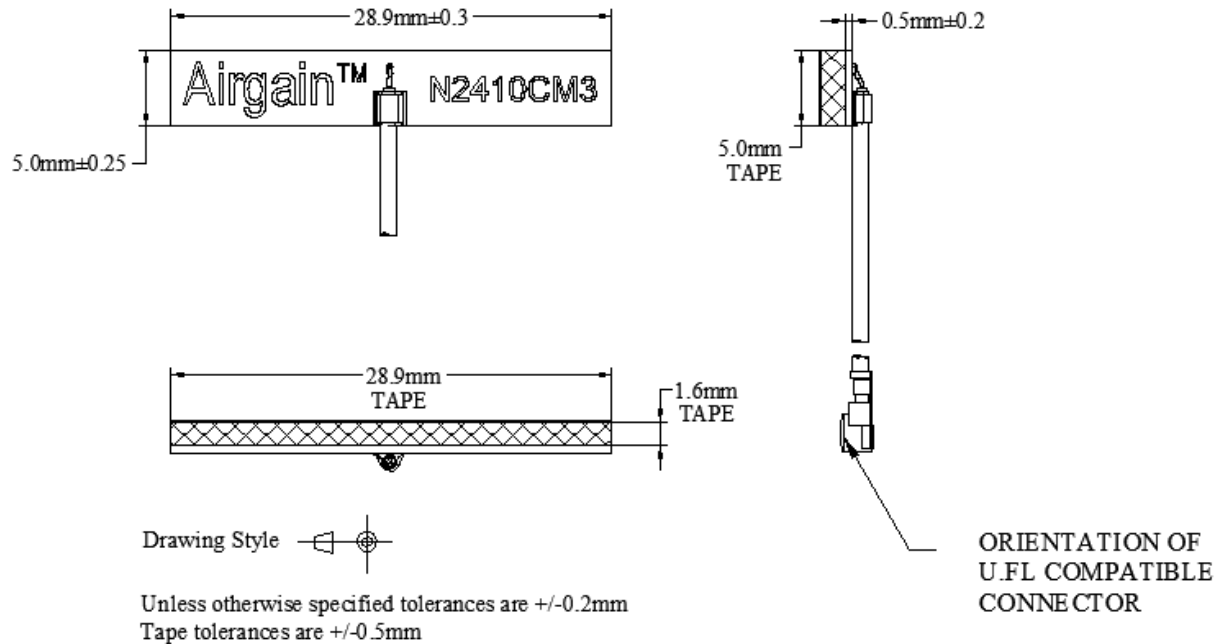


**Figure 2:** Model N2410CM3 Measurement axes



**Figure 3:** Model N2410CM3 Measured 2.4 GHz Radiation Patterns

## 5. Dimensions



**Figure 4:** Model N2410CM3-T Pre-applied Tape Dimensions

## 6. ROHS

Model N2410CM3 Embedded Antennas are RoHS compliant.

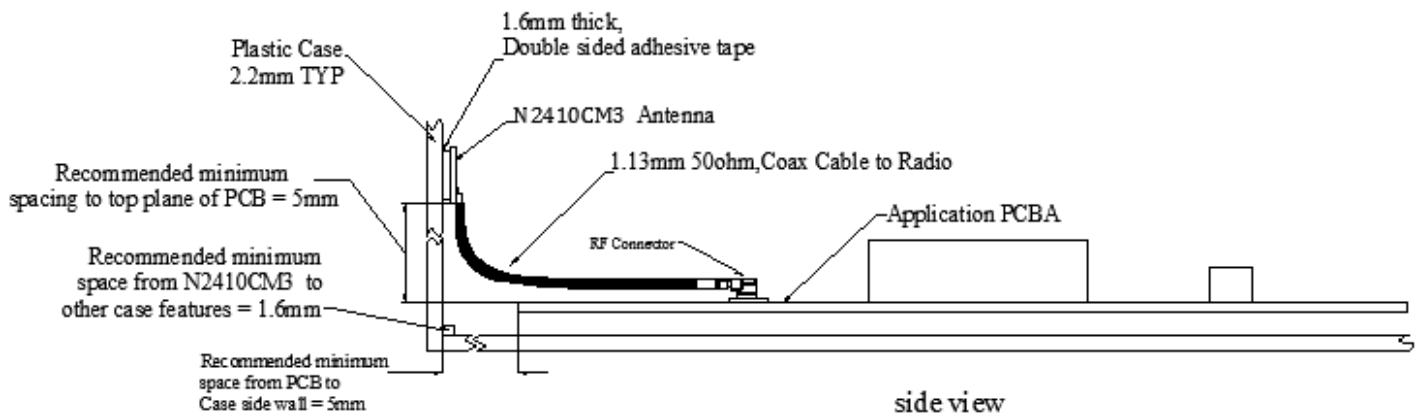
## 7. Mounting Guidelines

The model N2410CM3 embedded antenna can be simply mounted on the interior of an ABS Plastic case using double sided adhesive tape. This can simplify the industrial design process and can also shorten the product development cycle.

The N2410CM3 is mildly loaded (detuned) if it is not properly spaced away from the ABS Plastic mounting surface. Airgain recommends mounting the N2410CM3 antenna onto a 2.2mm thick ABS Plastic case with 1.6mm double sided tape for optimum performance. Mounting the N2410CM3 to case walls of different thicknesses may be considered, but optimum separation between the N2410CM3 and the case wall would need to be determined on a case by case basis. Airgain has observed that as the case material becomes thicker, the loading effect becomes more pronounced, which is offset by a larger tape thickness.

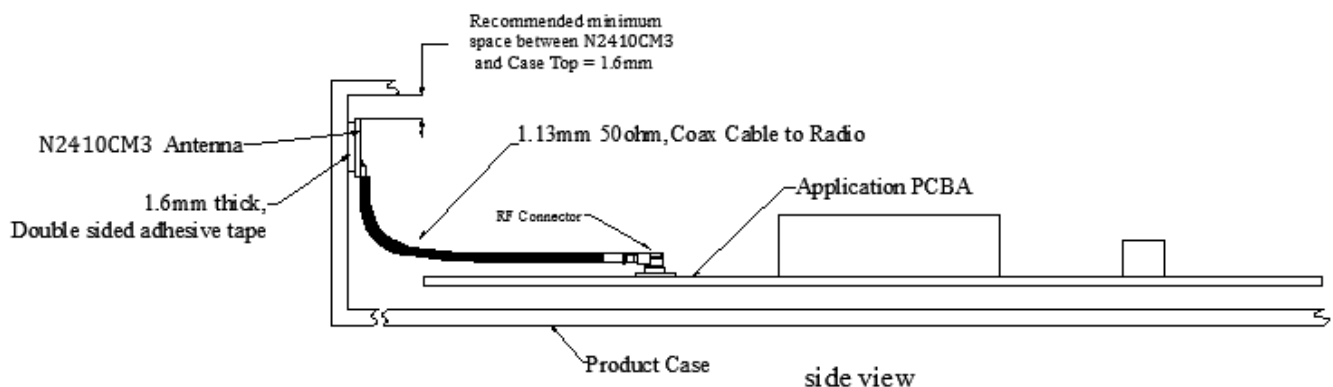
## Case Mounting the N2410CM3 using Double Sided Tape

For a case wall mount, the N2410CM3 can be mounted in an application case by using a 40mm by 5.7mm piece of double sided adhesive tape placed behind the antenna PCB, as shown in Figure 5 and Figure 8. Place the N2410CM3 on the case side wall at a height where the lowest antenna PCB edge is 5 mm above the application PCBA top plane. A space of 5mm is recommended between the PCBA edge near the N2410CM3 and the case wall mounting location. (Figure 5)



**Figure 5:** Side View of Case side wall mounting considerations for Model N2410CM3

For a case top location, ensure that a space of 1.6 mm minimum is maintained between any other case walls, case features, or cases top, which are near the N2410CM3 antenna mounting location as shown in Figure 6 and Figure 7.



**Figure 6:** Case top considerations when mounting Model N2410CM3 on case side wall



In Figure 7, a tall component keepout area is defined beneath the N2410CM3 antenna. No portion of any tall components on the application PCBA should come within 5mm of the N2410CM3. This helps assure maximum antenna performance.

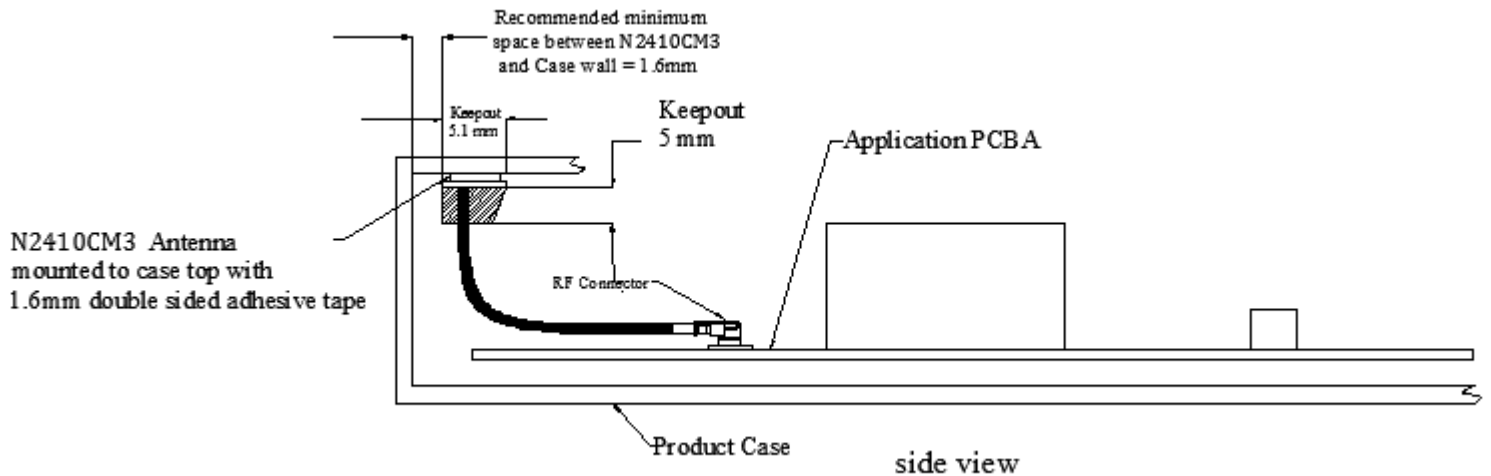


Figure 7: Side View: Clearance considerations when case top mounting Model N2410CM3

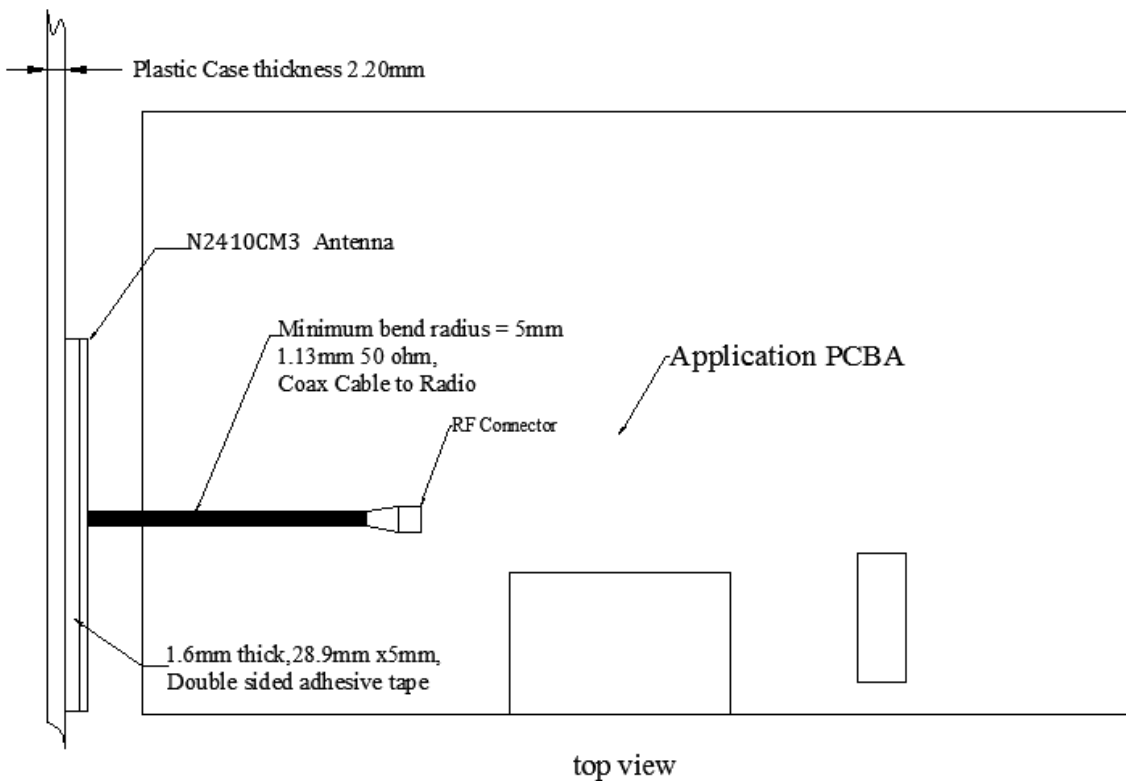


Figure 8: Top View: Case side wall mounting considerations when mounting Model N2410CM3

## 8. Feature and Options Information

Airgain N2410CM3 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 N2410CM3, pre-applied, double-sided adhesive tape is available on the N2410CM3 -T Series.

### 8.1 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)	Packaging type -XX	Cable Assembly Type -xxxxxx		
			Cable Color -x	Cable length XXX	Connector type XX (if required)
N2410CM3	Blank = No Tape T = Tape on bottom of element	Blank= parts shipped in panels of 45pieces PK1= singulated (individual) antennas	G = Grey (Standard) B = Black (Non Standard) W = White (Non Standard) A = Blue(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, 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

### 8.2 Part Number Example

**N2410CM3-T-G100U** – N2410CM3 antenna with 1.6-mm double-sided adhesive tape, 100-mm cable, and U.FL-compatible connector.

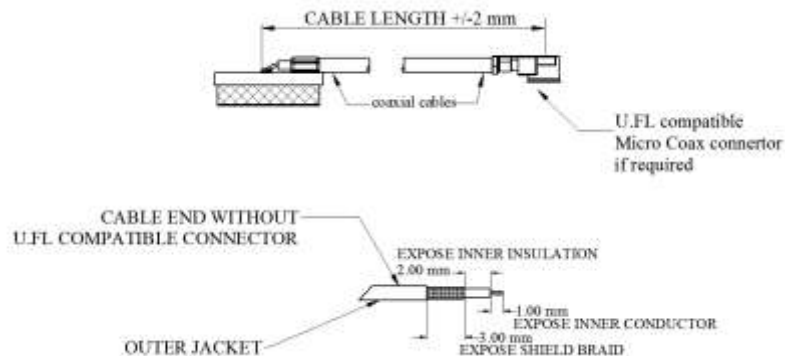


Figure 9: N2410CM3 with connector or stripped cable

## 9. 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	