Airgain Embedded Antenna
Product Datasheet

Ultra35DB

Model M2450DLCB Series

Coverage. Performance. Smart.

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Revision history

Revision	Date	Note
110-02-00-001-1 A	3 April 2009	Initial Draft
110-02-00-001-1 B	30 April 2009	Minor clean up
110-02-00-001-1 C	8 June 2009	Reformat Cover Sheet
110-02-00-001-1 D	10 July 2009	Update Figures
110-02-00-001-1 E	7 August 2009	Update Figure 3
110-02-00-001-1 F	October 6, 2009	Add pre applied tape to Top surface, –T suffix
110-02-00-001-1 H	August 11, 2011	Update Sec 8, Sec 9 and Sec 10 for colored cables

Table of Contents

Disclaimers

The information in this document is provided in connection with Airgain Antenna products and is proprietary and confidential. Airgain may make changes to at anytime, without notice. ***Please verify with Airgain before finalizing a product design.***

1. Model M2450DLCB Case Mounted Embedded Antenna

Based on Airgain's patented technology, the Model M2450DLCB Embedded Antenna provides a high efficiency, dual band, embedded antenna solution for Wi-Fi and ISM applications in the 2.4 GHz and 5 GHz bands. As efficient embedded antenna solutions become the focus of next generation wireless product design, the Model M2450DLCB 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. The M2450DLCB, optimized for mounting in a plastic case, can be easily integrated into an ID design.

2. Features

The Model M2450DLCB Embedded Antenna is defined by the following features:

- IEEE 802.11 a/b/g/n standard
- Case mounting
- 3.5 dBi @ 2.44GHz, 4 dBi @ 5.8GHz peak gain
- High efficiency
- Quick integration

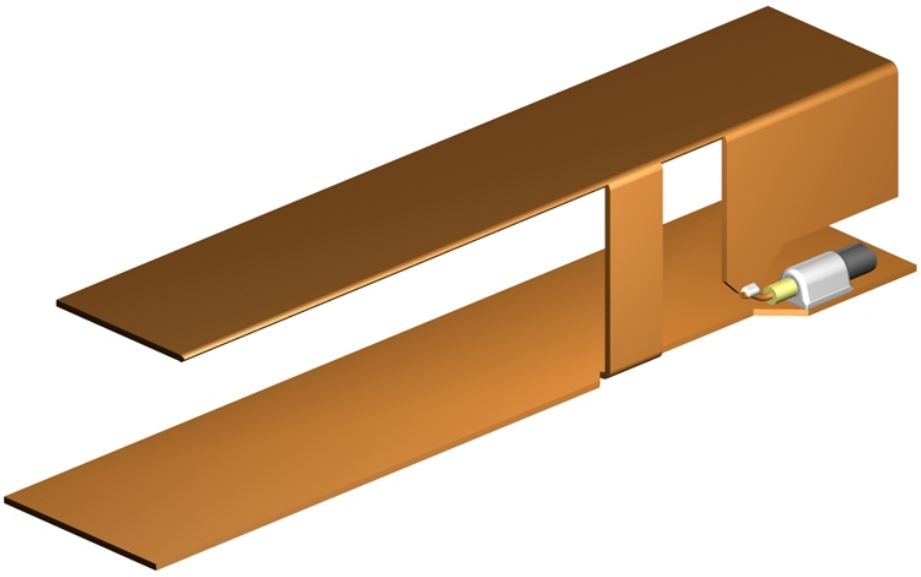


Figure 1
Model M2450DLCB Embedded Antenna

3. Specification and Interface

Standard	IEEE 802.11n and 802.11 a/b/g
Frequency Range	2.4 to 2.49 GHz, 4.9 to 5.9GHz
Peak Gain	3.5 dBi @2.44GHz, 4.0 dBi @ 5.2 GHz, 4.0 dBi @5.8 GHz
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 (LxWxH)	35.8 x 8.5 x 7.7 (mm)
Weight	1.7 g (0.06 oz)

4. Radiation Patterns

4.1. Patterns for Free Standing Antenna

Data taken with M2450DLCB mounted on 90 x 90 x 3 mm thick,
ABS Plastic Sheet

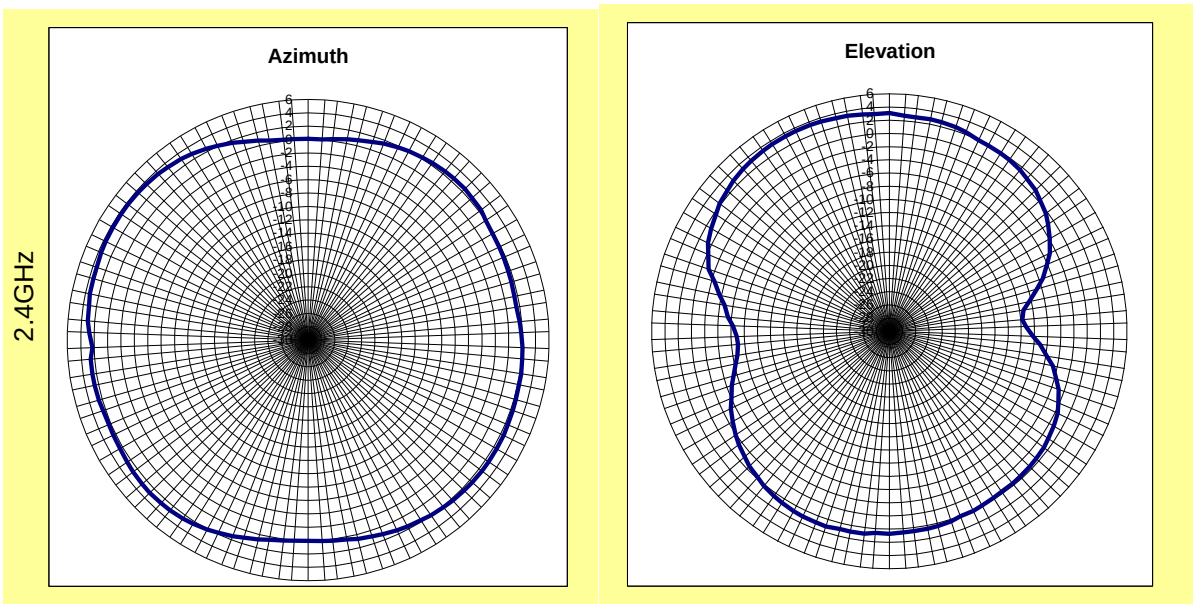


Figure 2

Model M2450DLCB Embedded Antenna
Measured 2.4 GHz Radiation Patterns

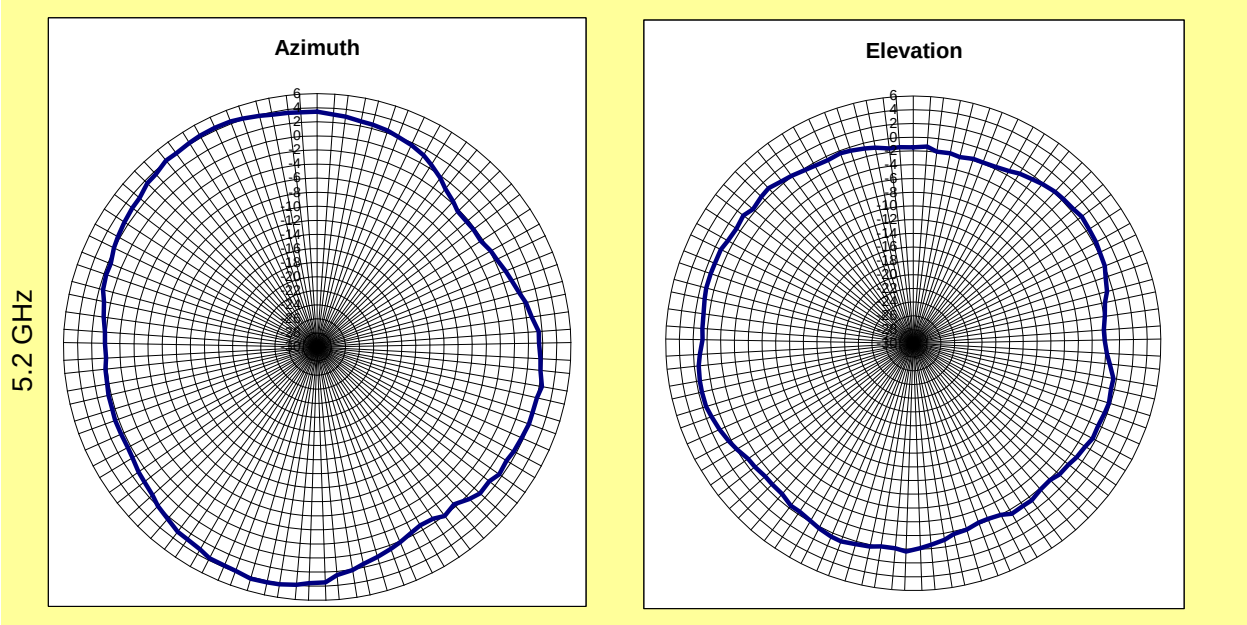


Figure 3
Model M2450DLCB Embedded Antenna
Measured 5.2 GHz Radiation Patterns

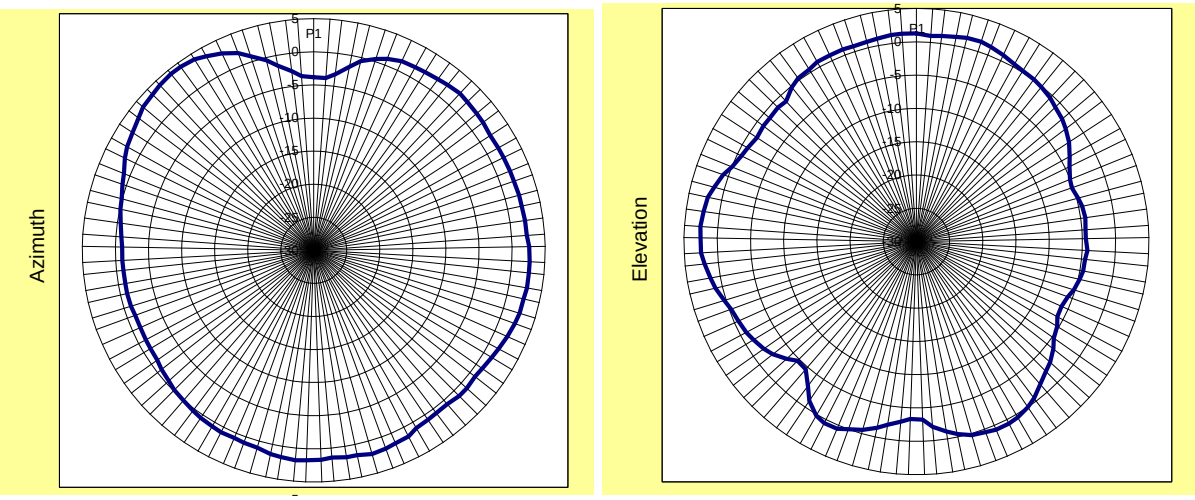
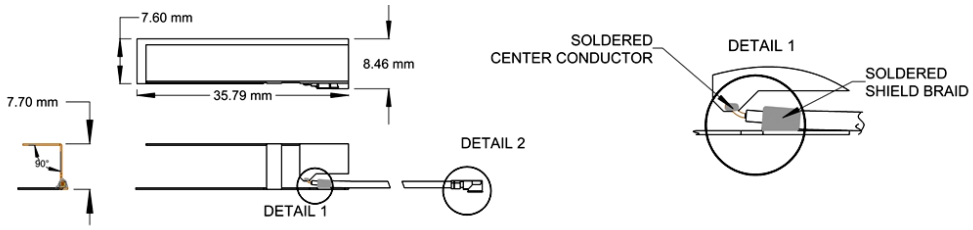


Figure 4
Model M2450DLCB Embedded Antenna
Measured 5.8 GHz Radiation Patterns

5. Dimensions



Detail 1 shows correct cable soldering

Detail 2 shows correct cable and connector orientation

Figure 5a

Model M2450DLCB Dimensions

Unless otherwise specified, dimension tolerances are +/- 0.2 mm

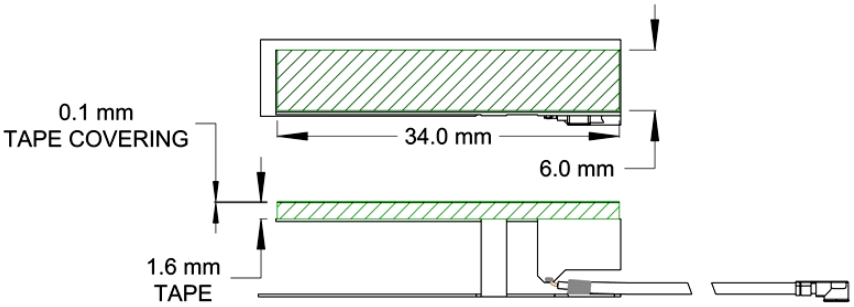


Figure 5b

Model M2450DLCB-T: Pre-applied Tape Dimensions

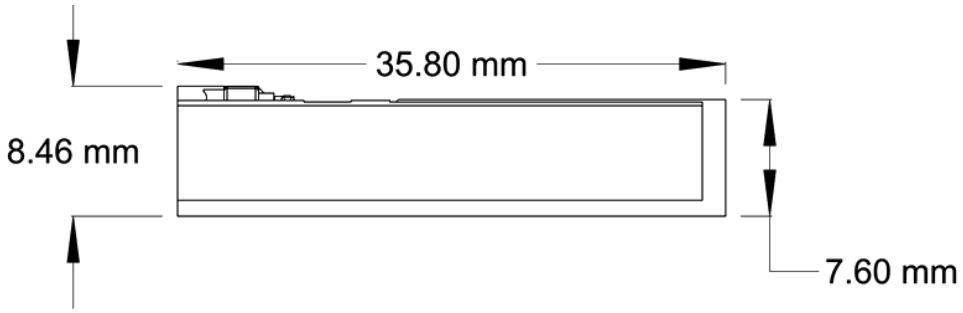


Figure 6

Model M2450DLCB Footprint

Unless otherwise specified, dimension tolerances are +/- 0.1 mm

6. ROHS

Model M2450DLCB Embedded Antennas are RoHS compliant.

7. Mounting Guidelines

Model M2450DLCB antennas can be easily mounted to the plastic base in a product enclosure. This simplifies ID design and shortens product cycle.

7.1. Mounting to Case Bottom with double sided tape

Use a piece of 1.6 mm thick double sided tape placed underneath the lowest horizontal antenna feature, as shown in Figure 7a, 7b and 7c.
A space of 10 mm is recommended between the PCB edge near the M2450DLCB and the mounting location to minimize bending stress on the RF cable (Figure 7a).

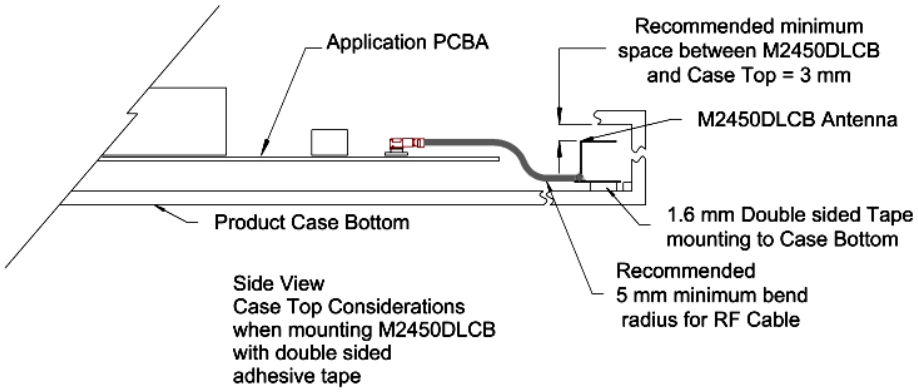


Figure 7a

Case Top Considerations for a Case bottom mounted Model M2450DLCB

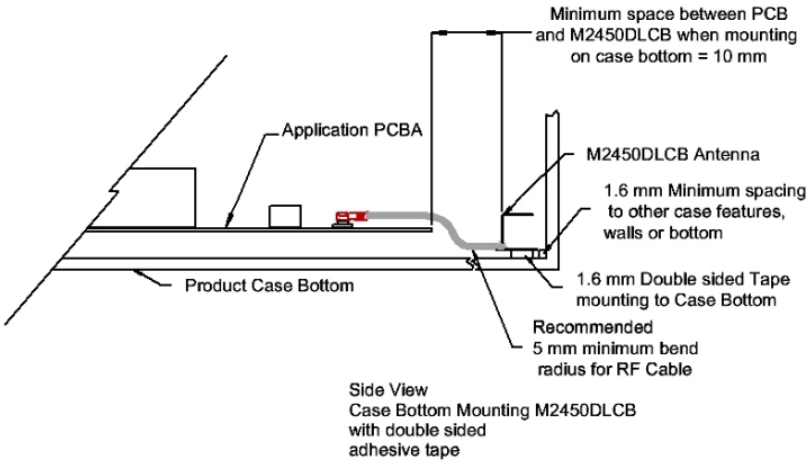


Figure 7b

A side view illustration of bottom mounted
Model M2450DLCB with double sided adhesive tape

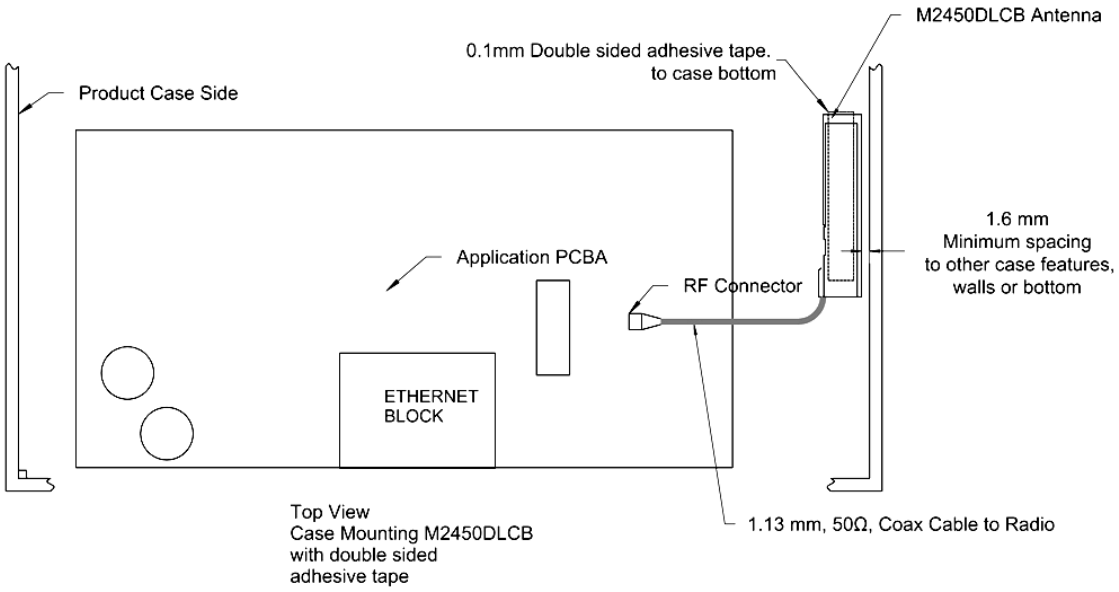


Figure 7c

A top view illustration of a Case bottom mounted
Model M2450DLCB with double sided adhesive tape

7.2. Mounting to Case Side Wall with double sided tape

The model M2450DLCB-T is provided 1.6mm double sided tape with a protective covering, pre-applied to the element top surface; as shown in Figure 5b. It is intended for applications where mounting to the case side wall is preferred.

The mounting constraints are the same as detailed in Section 7.1. Case side wall mounting illustrations are shown in Figure 7d and Figure 7e below.

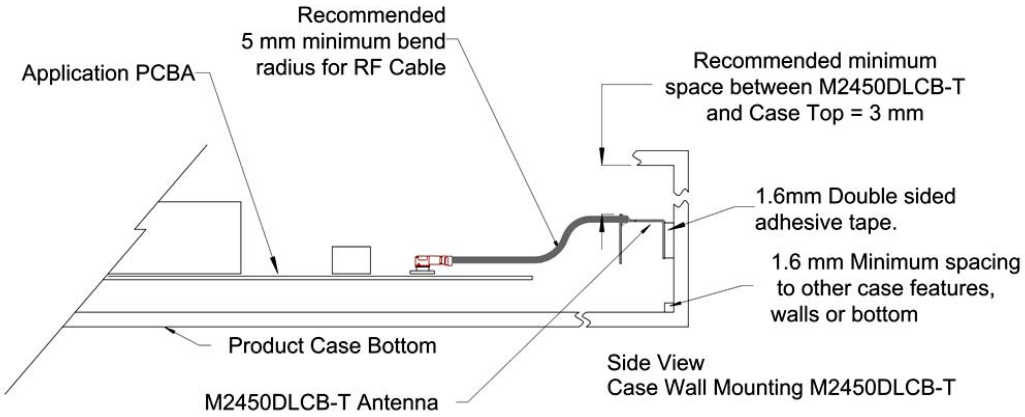


Figure 7d

A side view illustration of a side wall mounted Model M2450DLCB-T

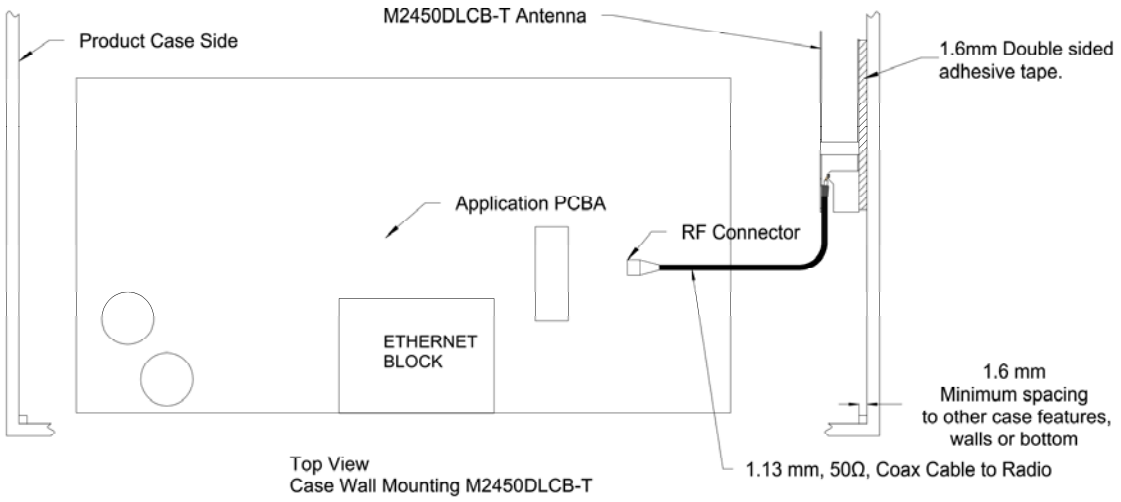


Figure 7e

A top view illustration of a side wall mounted
Model M2450DLCB-T

8. Supporting Documents

The following design documents are used as references for design implementation of Airgain Model M2450DLCB Embedded Antenna products:

Dimension Drawing	110-07-00-001-1_A_ASSEMBLY.PDF
Cable Datasheet	000-22-00-006-1D RF Cable Datasheet.pdf

9. Feature and Options Information

The Model M2450DLCB series antennas are equipped with an RF cable I/O interface attached to the antenna. Airgain standard RF cables use 1.13 mm diameter, micro coax cables, and are available in a variety of lengths and interface options.

Airgain uses a standard numbering system for our products, which serially define the antenna type, tape placement, foam inserts, cable length and connector type/interface, as detailed below:

Antenna #	Tape Type -XX (if required)	Cable Type –X	Cable Length - XXX	Connector Type -XX (if required)
M2450DLCB	Blank = No Tape T = Tape on top element T2 = Tape on bottom element	G = Grey (Standard) B = Black (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 CS = stripped cable plus Ferrite Core

** Standard Cable Lengths listed in RF Cable Datasheet*

Example part number:

M2450DLCB-T-G100U - M2450DLCB stamped metal antenna with 1.6mm double-sided adhesive tape mounted on top element, with 100mm cable plus u.fl connector.