

FPC 5G/4G LTE ANTENNA

Part Number: LK1830301

Description: Flexible PCB 5G/4G LTE Antenna

Frequency: 600-960MHz/1500-6000GHz

Size: 84 mm x 14.5 mm x 0.1 mm

Features:

- ✧ Support 5G FR1, 5G NTN n255/n256, 4G LTE, LTE CAT-M, NB-IOT and GPS/GNSS L1.
- ✧ Omni-directional radiation pattern
- ✧ Low Gain with high efficiency for easy certification
- ✧ Various cable lengths and connector options available

RoHS compliant



Revision: B

Jul 02, 2026

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1.0 Product Description

The LK1830301 series is a flexible PCB antenna with innovative antenna technology designed for global 5G FR1, 5G NTN n255/n256, GNSS/GPS L1, NB-IOT, LTE CAT-M and 4G LTE protocols. Its innovative design ensures exceptional antenna bandwidth to cover multiple bands. Moreover, its compact form factor enables easy integration into a wide range of products while maintaining superior wireless functionality.

This series offers a range of cable lengths and connector options to accommodate diverse application requirements. Additionally, it provides customization options for cable length and connector type to align with specific needs.

Features:

- Peel and stick mounting
- Low Gain for certification friendly
- Omni-directional radiation pattern
- Easy to integrate into devices

Applications:

- AGV
- Tracker
- Healthcare
- Smart homes

2.0 General Specification

Part Number	LK1830301			
Frequency (GHz)	600-960	1525-1610	1710-2690	3300-6000
S11 (Return Loss) (dB)	< -4.4	< -6.0	< -6.0	< -5.0
VSWR	< 4.0	< 3.0	< 3.0	< 3.6
Average Efficiency	> 40%	> 50%	> 50%	> 50%
Peak Gain (dBi)	1.75	0.7	2.75	5.3
Polarization	Linear			
Radiation Pattern	Omni-directional			
Antenna Type	Monopole			
Impedance	50 Ω			
Connector Type	LK18303010xx		LK18303011xx	
	Compatible MHF1 Plug		Compatible MHF4 Plug	
Cable Diameter	Ø1.13 mm			
Power Rating	5 Watts			
Operation Temperature	-40°C to +85°C			
Storage Temperature	-40°C to +85°C			

Notes:

1. The values above are typical performance measured on a PC/ABS plastic plank with a thickness of 1.5mm. All data presented in this document are derived from LK1830301001.

- When the antenna is placed parallel to the earth's plane, as shown in Figure 2.1.1, the polarization will be horizontal. Conversely, when the antenna is positioned vertically with respect to the earth's plane, as depicted in Figure 2.1.2, the polarization will be vertical. Linear polarization includes Horizontal and Vertical.

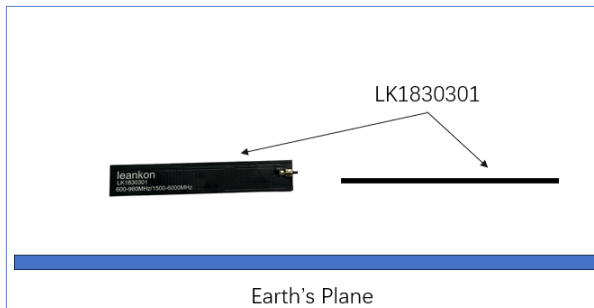


Figure 2.1.1

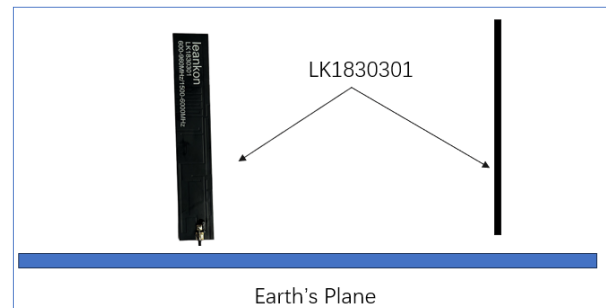
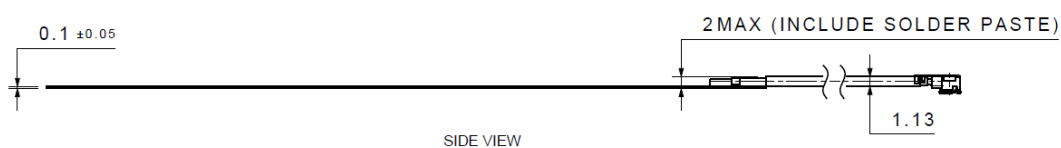
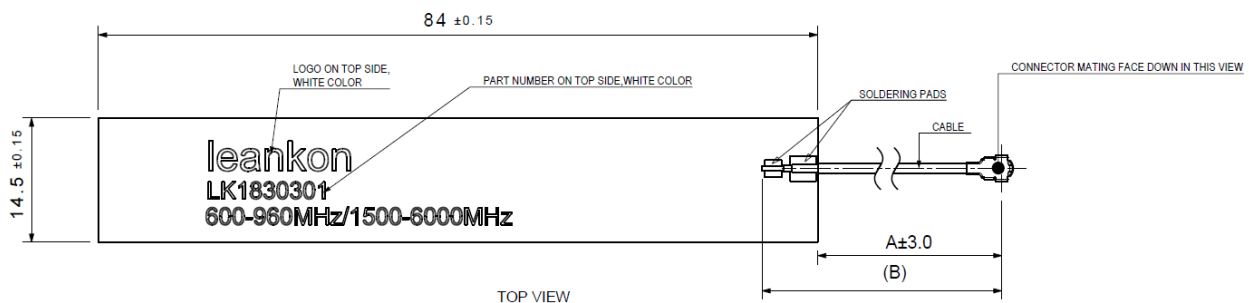


Figure 2.1.2

3.0 Mechanical and Part Number

3.1 Product Dimension



Dimensions: mm

3.2 Part Number

A range of cable lengths and connector options are available, as shown below.

Table 1: LK1830301 series part numbers

Part Number	Cable length	Connector Type	Cable Diameter	Cable Color
LK1830301001	150 mm	Compatible MHF1	1.13 mm	Black
LK1830301002	200 mm			
LK1830301003	250 mm			
LK1830301101	150 mm	Compatible MHF4	1.13 mm	Black
LK1830301102	200 mm			
LK1830301103	250 mm			

Notes:

- 1) For information on customizing other cable lengths, cable colors, and connector types, please contact:
Info@leankon.com

4.0 Electrical Characteristics

The electrical characteristics are measured on a PC/ABS plastic plank with a thickness of 1.5mm.

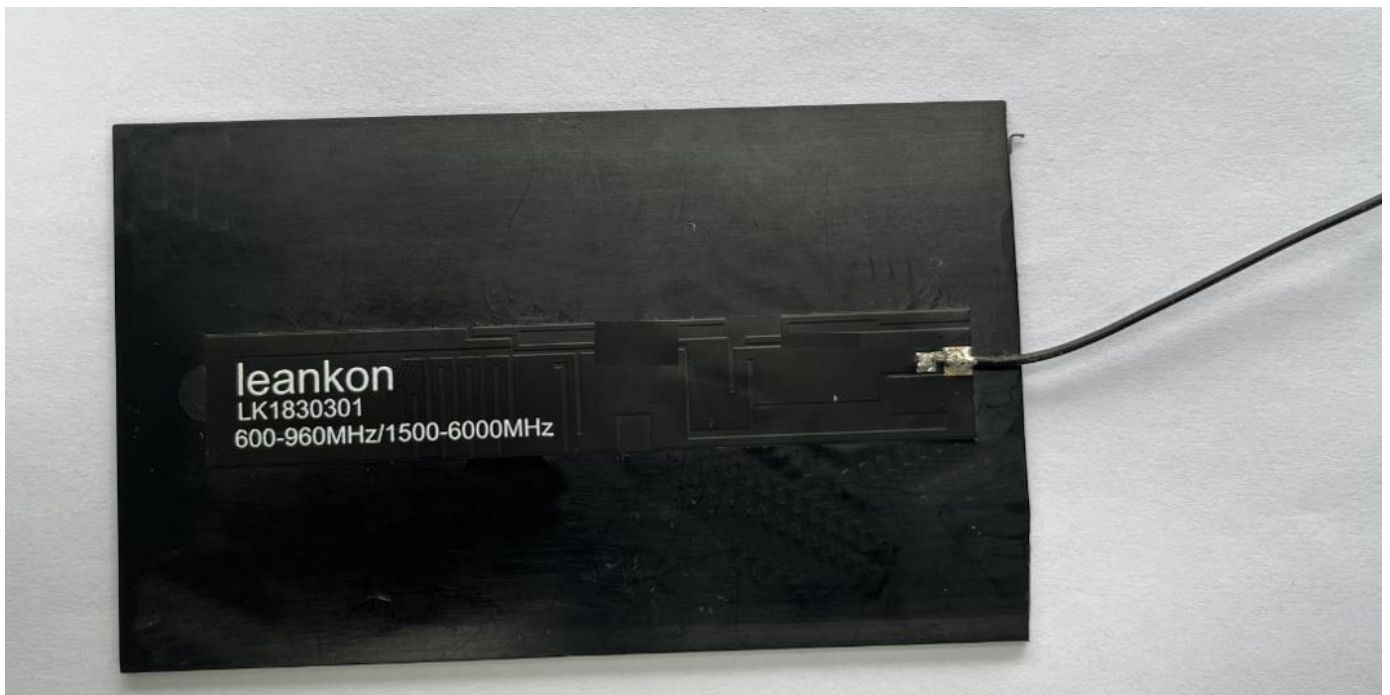


Figure 4.1: The measured plastic plank of LK1830301

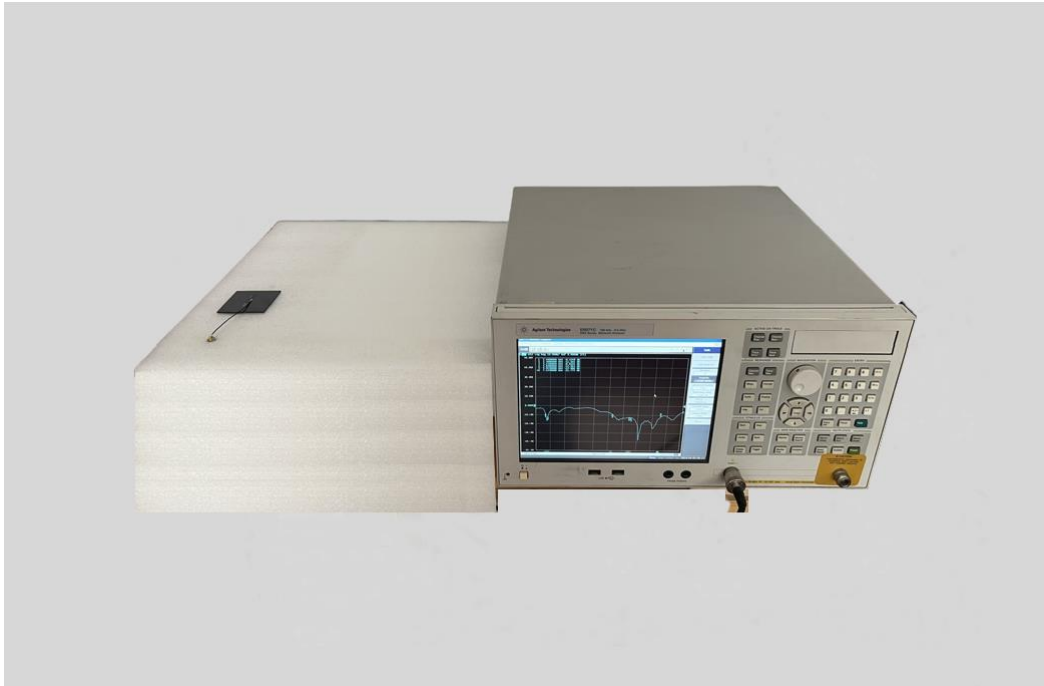


Figure 4.2: The free space test condition of Return Loss and VSWR

4.1 S11/Return Loss

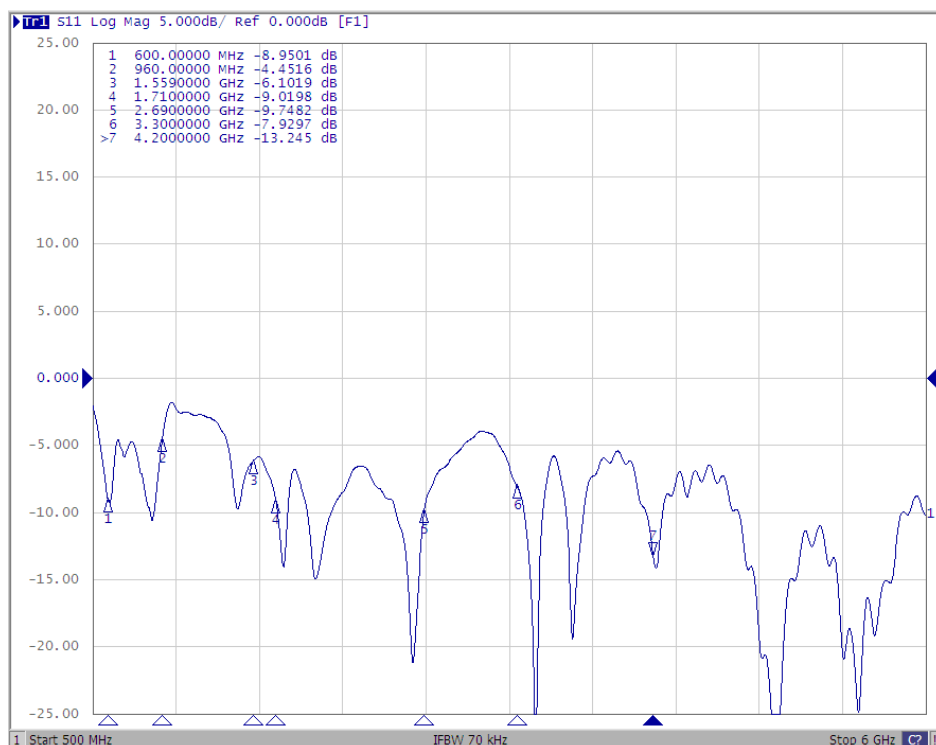


Figure 4.3 S11/Return Loss in free space

4.2 VSWR

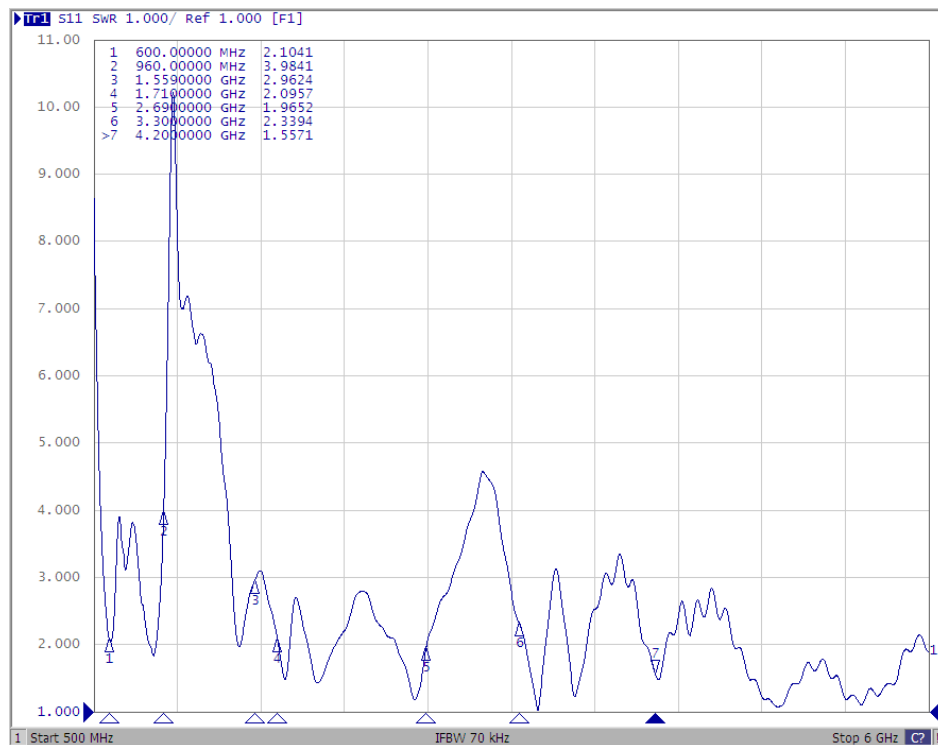


Figure 4.4 VSWR in free space

4.3 Efficiency

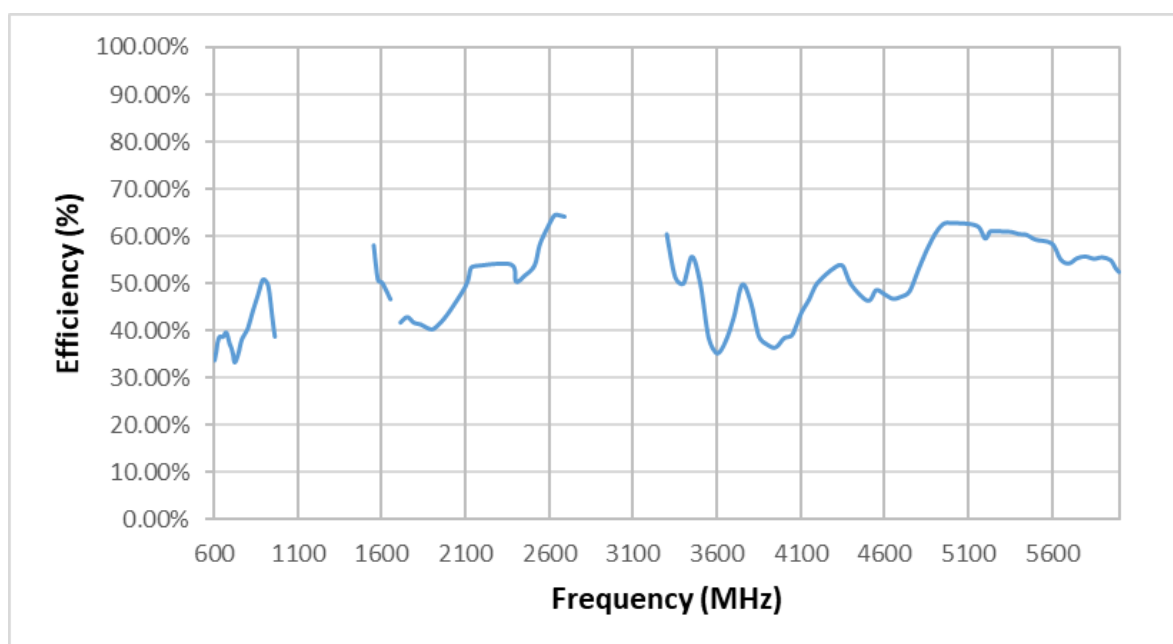


Figure 4.5 Efficiency in free space

4.4 Peak Gain

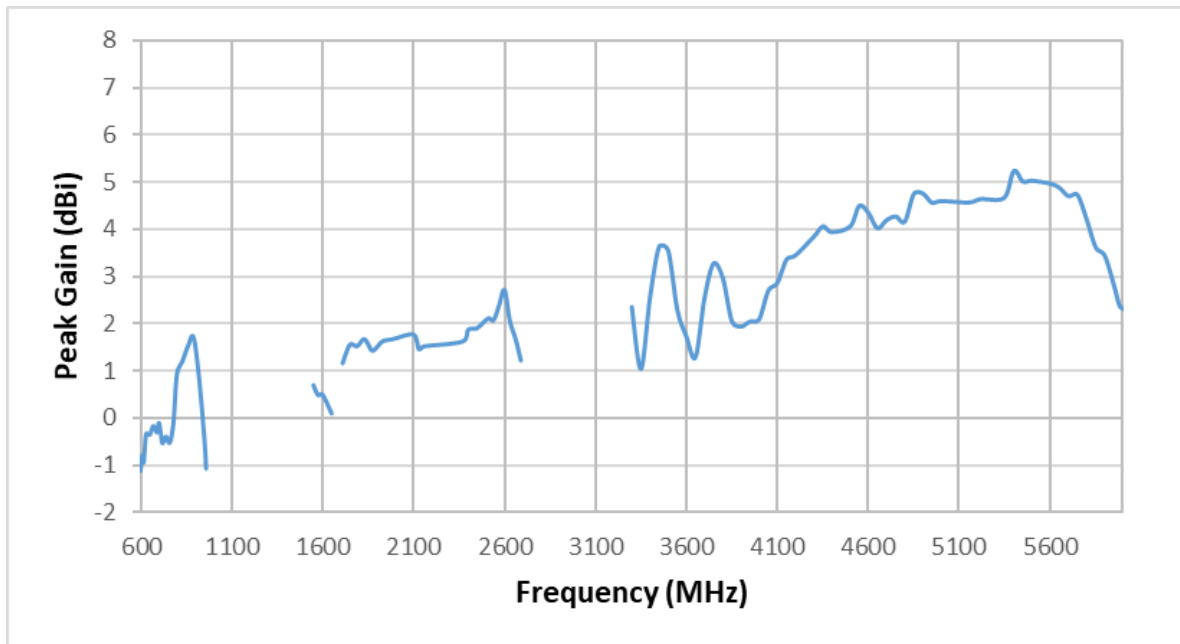


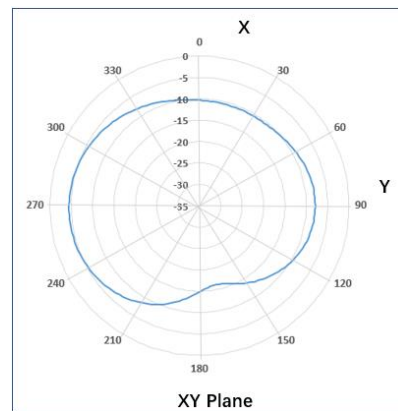
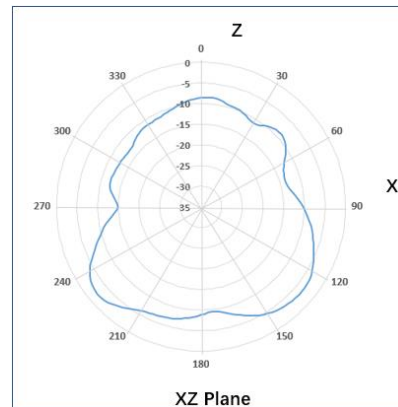
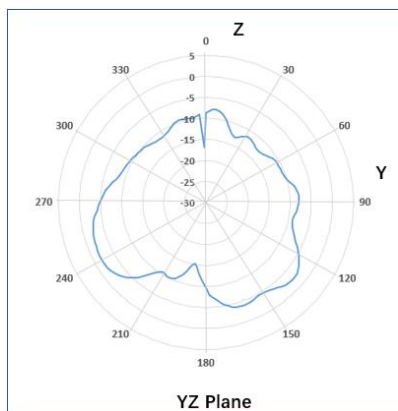
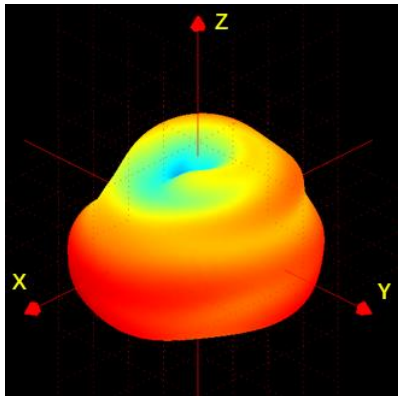
Figure 4.6 Peak Gain in free space

4.5 Radiation Pattern

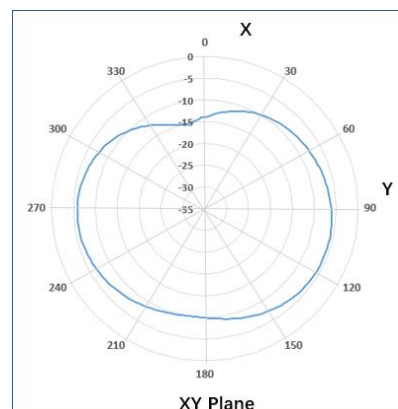
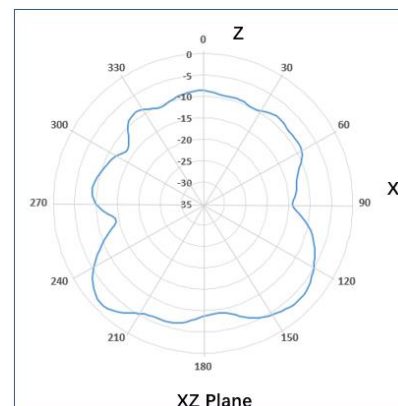
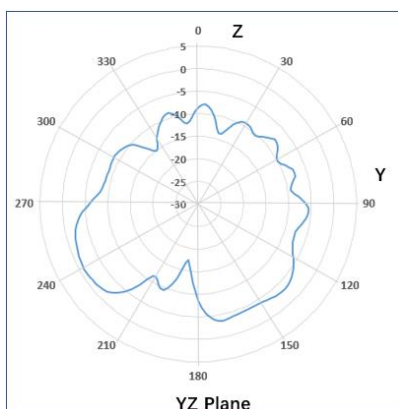
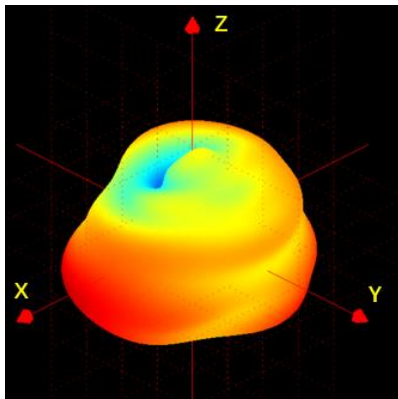
The picture below illustrates the antenna radiation patterns measured in an anechoic chamber.



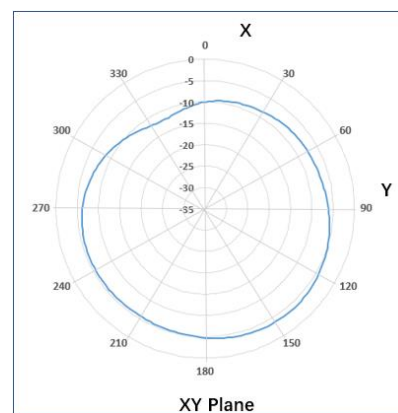
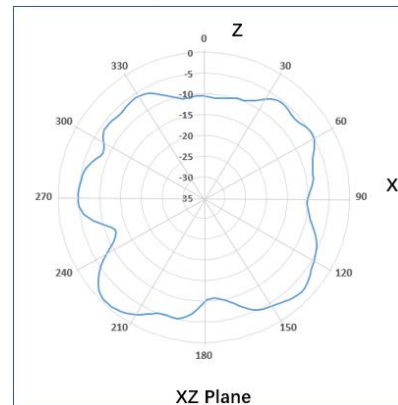
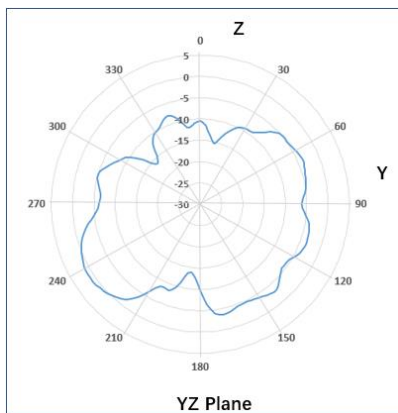
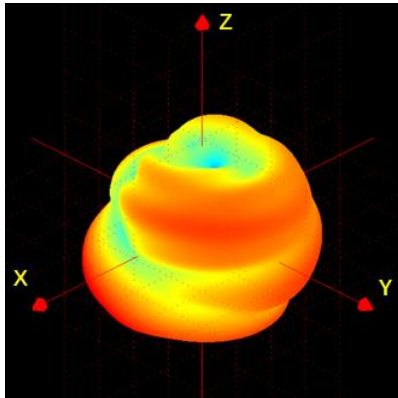
■ 620MHz Radiation Pattern



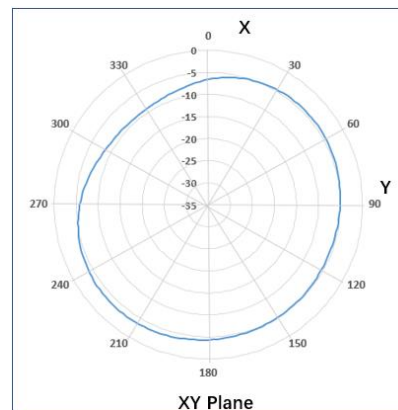
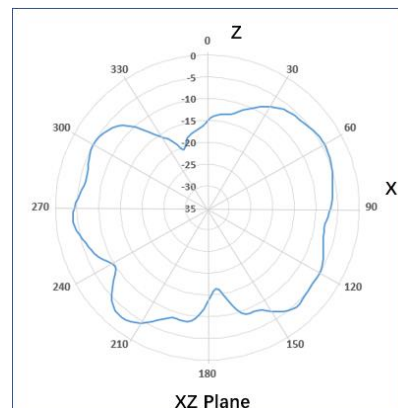
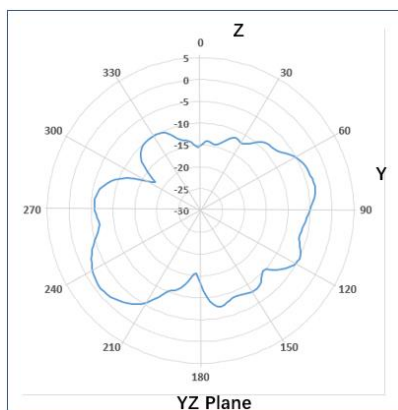
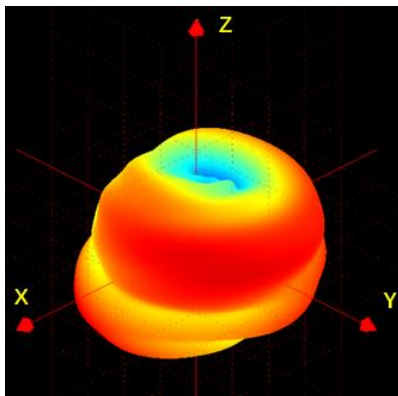
■ 700MHz Radiation Pattern



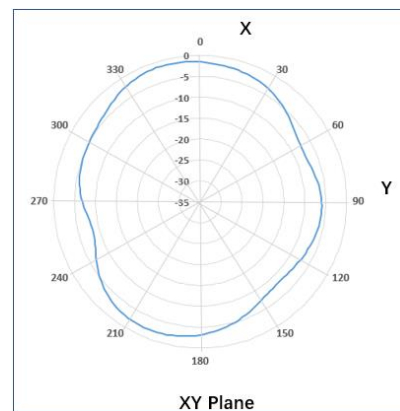
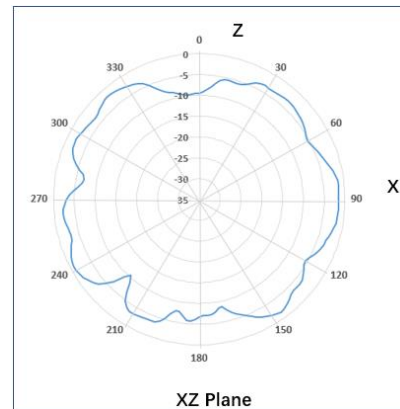
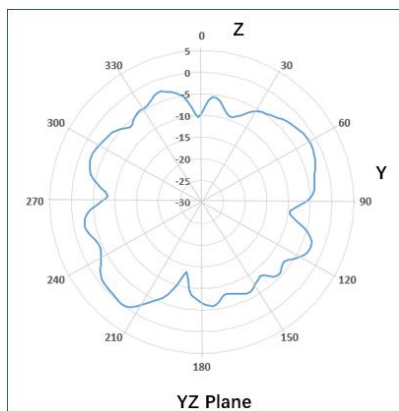
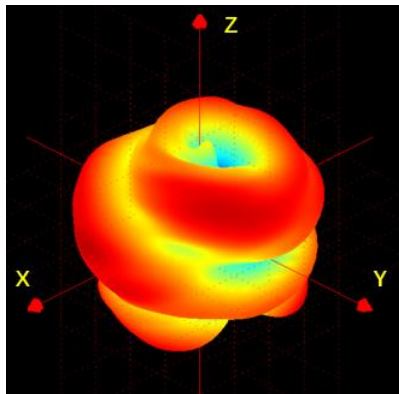
■ 830MHz Radiation Pattern



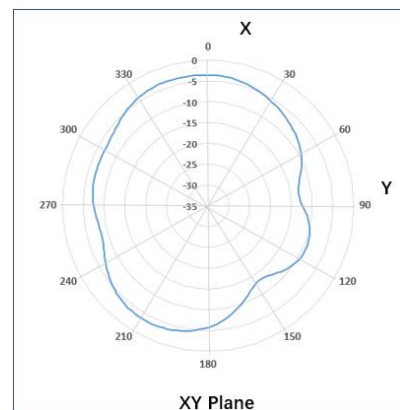
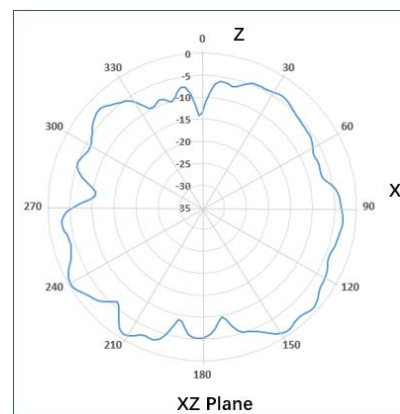
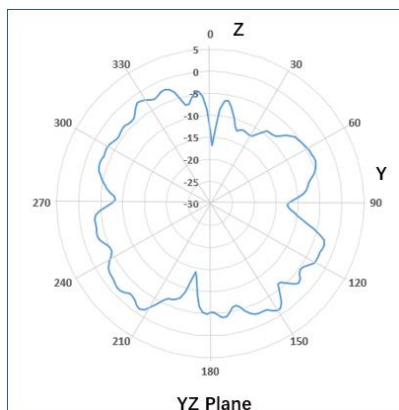
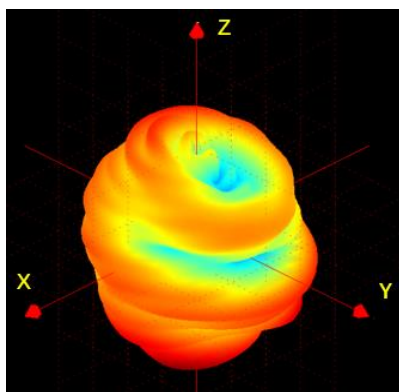
■ 960MHz Radiation Pattern



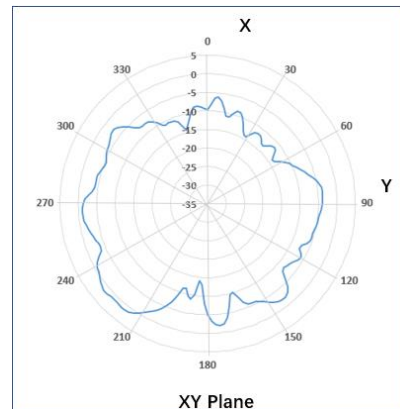
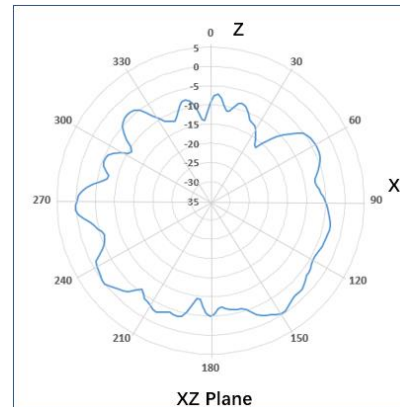
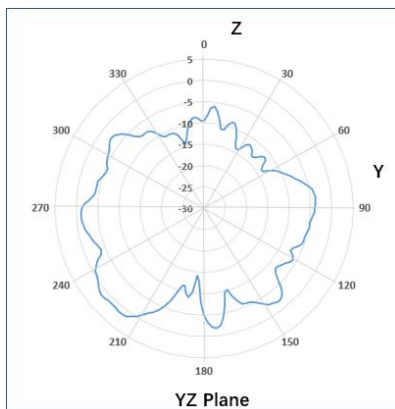
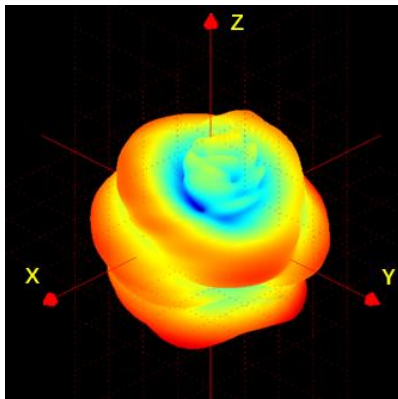
■ 1.575GHz Radiation Pattern



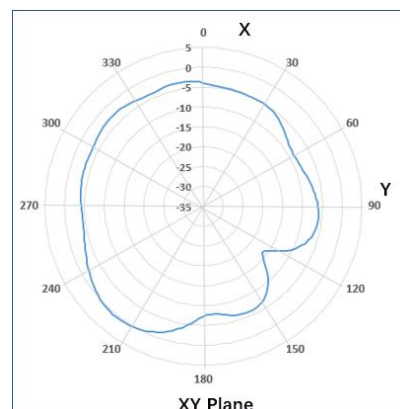
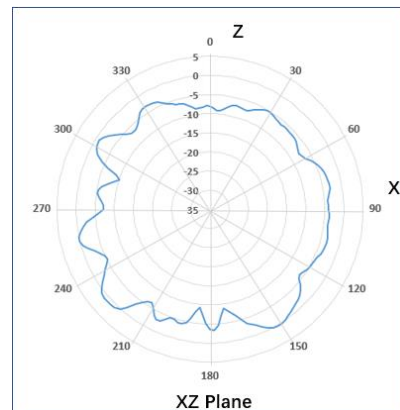
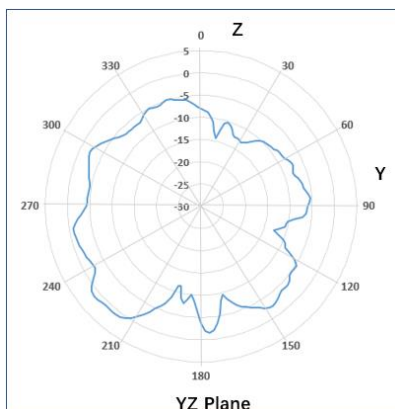
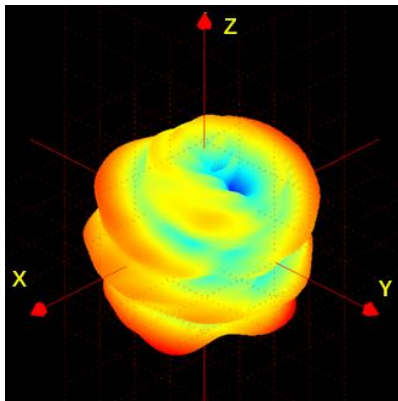
■ 1.75GHz Radiation Pattern



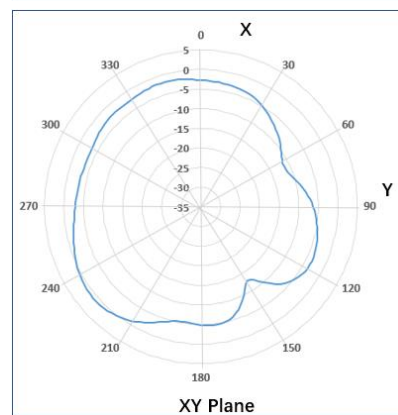
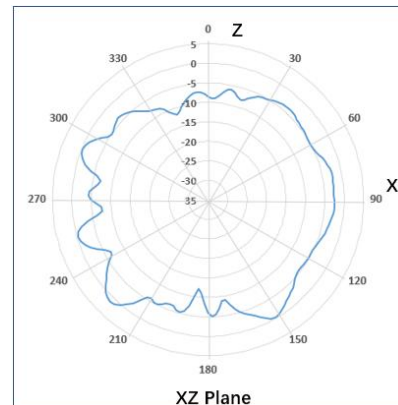
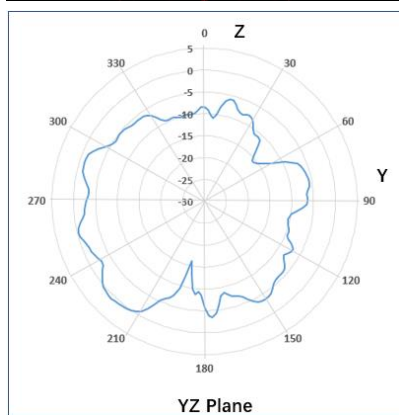
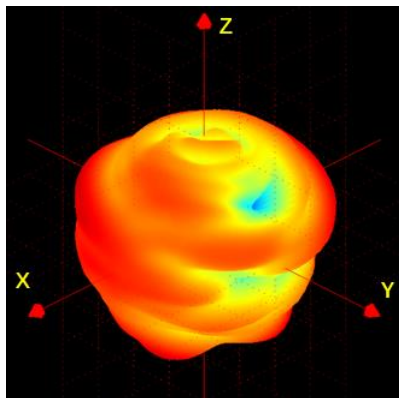
■ 1.93GHz Radiation Pattern



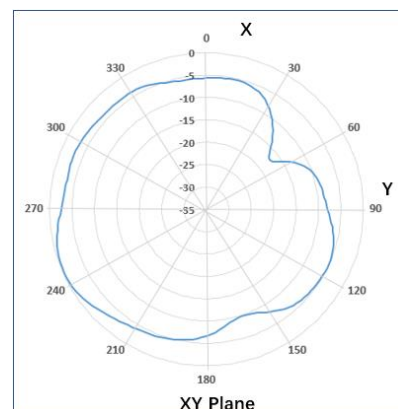
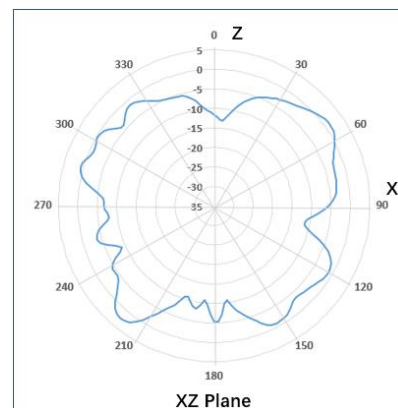
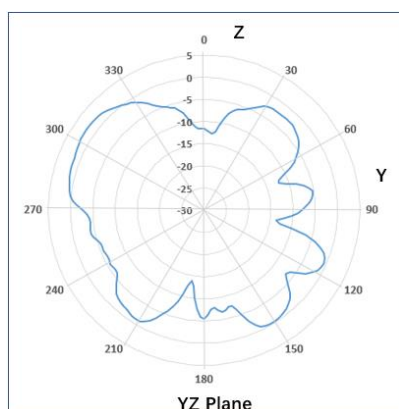
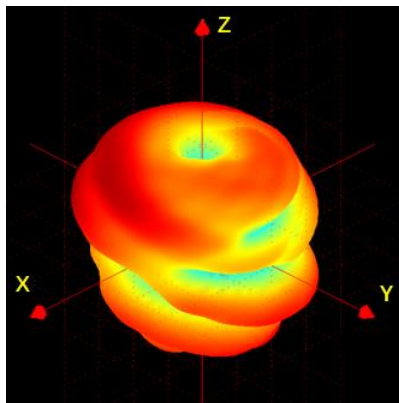
■ 2.16GHz Radiation Pattern



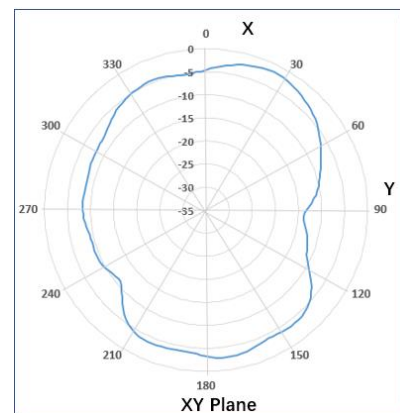
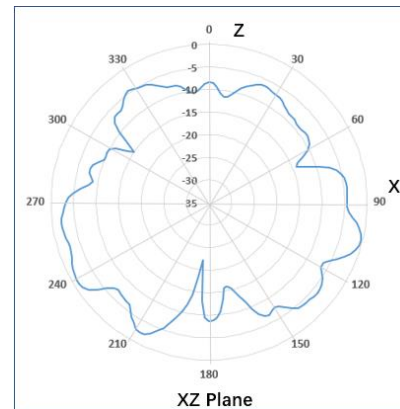
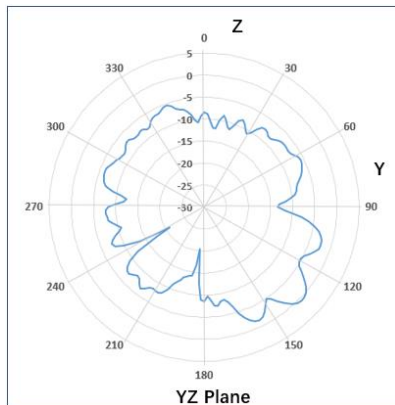
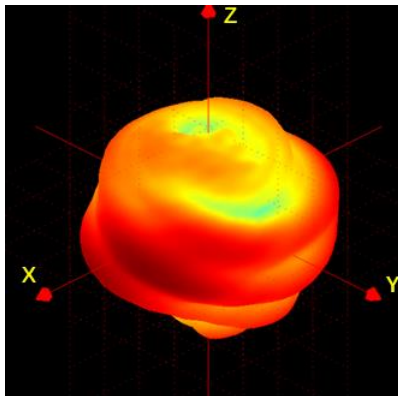
■ 2.35GHz Radiation Pattern



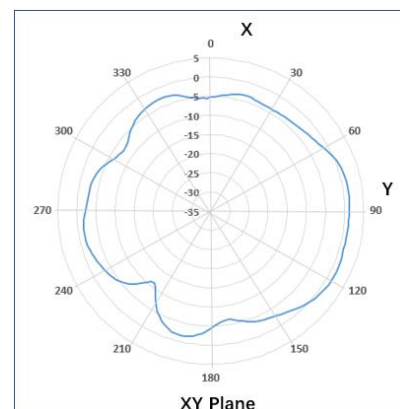
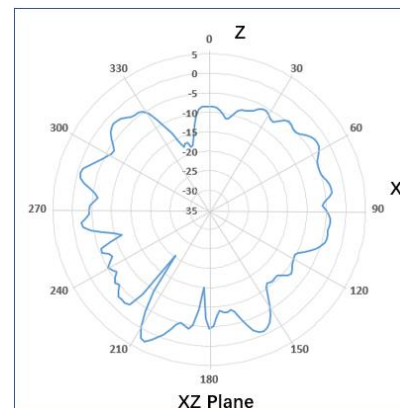
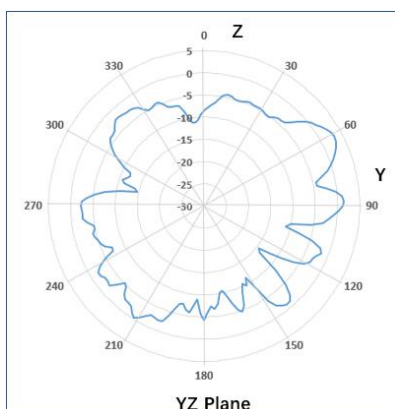
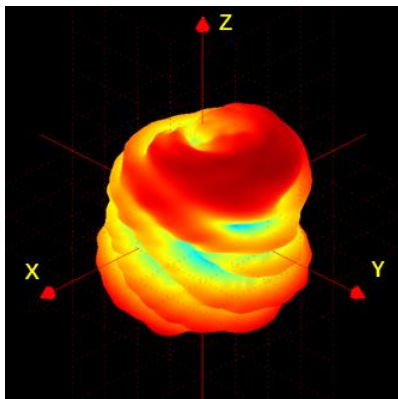
■ 2.6GHz Radiation Pattern



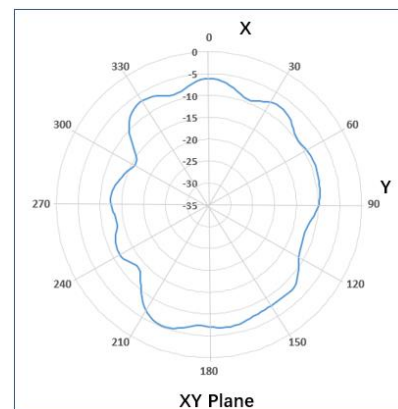
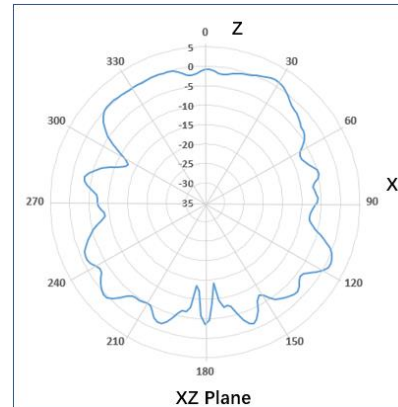
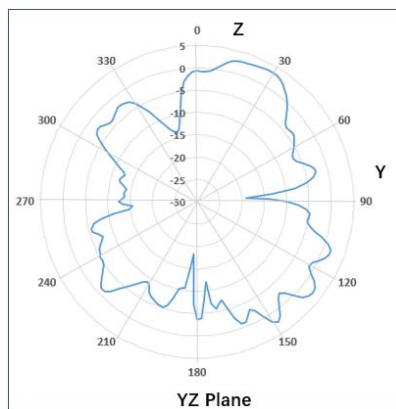
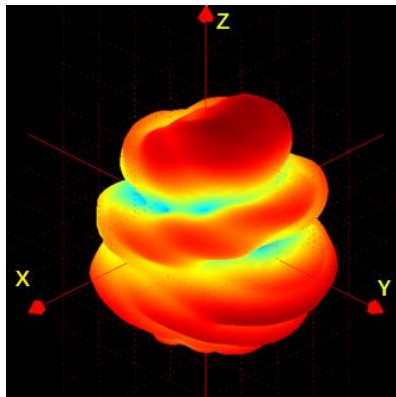
■ 3.6GHz Radiation Pattern



■ 4.15GHz Radiation Pattern



■ 5.5GHz Radiation Pattern



5.0 Application Guides

5.1 Recommended Distance Away from Metallic Structure

To achieve promising antenna performance, a series of applications related to metallic structures will be investigated. Corresponding recommended distances will be provided as well to maintain good antenna performance despite the presence of surrounding metallic structures, which would otherwise degrade antenna performance.

The blue blocks below represent the metallic structure including PCBA board. For optimal performance, avoid mounting the antenna directly onto metal surfaces; it is designed for plastic mounting. Keep the antenna away from metallic components as far as possible to maximize antenna performance.

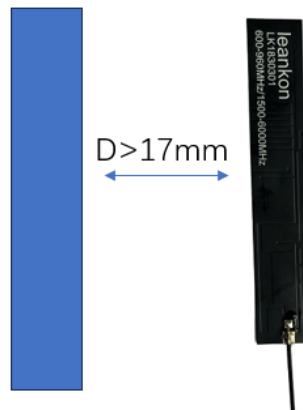


Figure 5.1.1: The recommended distance of Scenario 1



Figure 5.1.2: The recommended distance of Scenario 2



Figure 5.1.3: The recommended distance of Scenario 3

6.0 Matching Network

The LK1830301 series is designed to match 50 Ohm impedance across the operational frequency bands. While it performs well in most applications, in some cases, the antenna impedance may be detuned by surrounding components, leading to suboptimal antenna performance. We recommend reserving a "π" shaped matching network close to the RF connector on the PCBA board to compensate for such applications. The recommended schematic of the matching network and PCB layout is shown below.

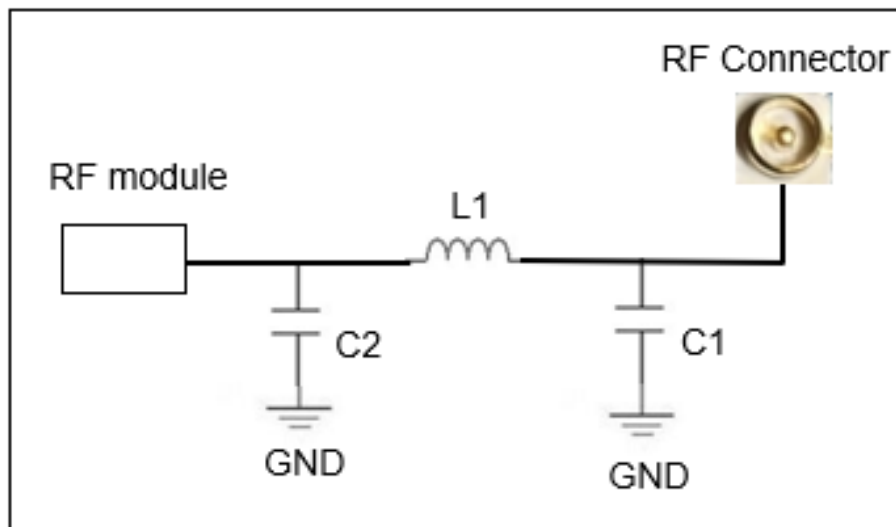


Figure 6.1: The matching circuit schematics



Figure 6.2: The reference PCB layout of matching network

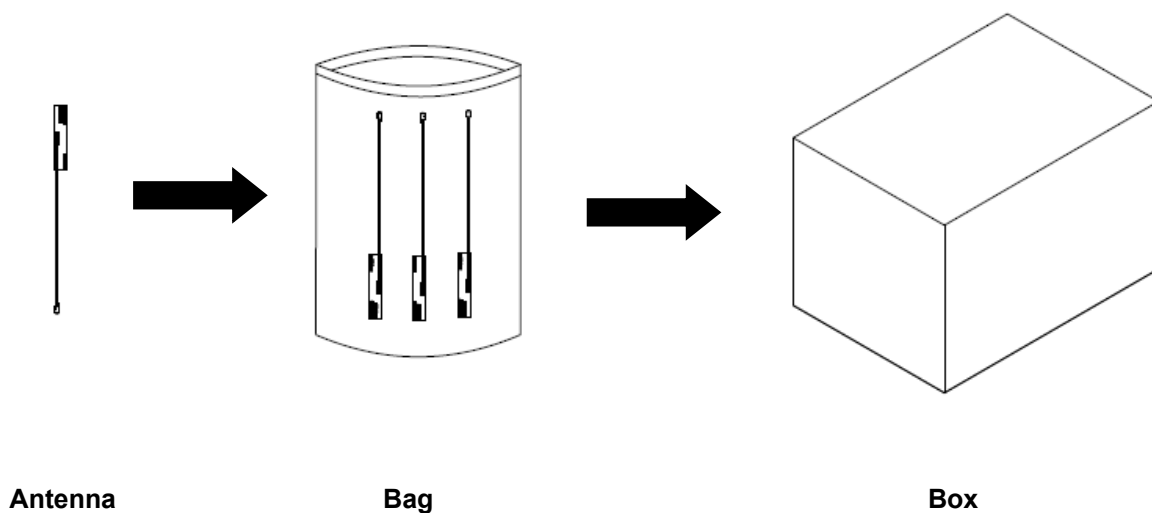
Table 2: Defaulted matching circuit values

Matching circuit	Value	Component size	Part number
C1	NA	0402	Not Applicable
L1	0 Ohm	0402	No Specific
C2	NA	0402	Not Applicable

Leankon offers free technical support to designers in order to streamline the development process, which includes:

- a) Early-phase antenna selection and placement recommendations.
- b) Antenna PCB layout evaluation and recommendations.
- c) Antenna performance evaluation based on actual applications.
- d) Matching network optimization in actual devices.
- e) Passive antenna parameter measurements in actual devices, such as Return loss, Gain, Efficiency, and Radiation pattern, among others.
- f) Active antenna measurements in actual devices, such as OTA (Over The Air) tests for both TRP (Total Radiation Power) and TIS (Total Isotropic Sensitivity) to reduce the certification risks.
- g) Leankon also offers the custom design services for specific applications where off-the-shelf products are not suitable.
- h) For more information or technical support, please contact info@leankon.com to speak directly with engineering team.

7.0 Packaging



8.0 Website and Company Address

Website: www.leankon.com

Address: B1337 1F, Building 3, 5018 Hutai Road, Baoshan District, Shanghai China.

9.0 Revision History

Revision	Date	Description	Issued by:
A	2023-09-20	Initial release	Tony Fu
B	2026-07-02	Updated the RF connector information	Tony Fu

NOTE:

Leankon makes no warranties as to the accuracy of the contents addressed in this document and reserves the right to make changes to enhance design or performance without prior notice.

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