

Circular Remote Control PCB Antenna Specification

Item	4-Button Circular Remote Control
Antenna Name	4-Button Circular Remote Control Meander-Line Circular PCB Antenna
Model	ANT-CIR-10-173
Manufacturer	Dongguan Ruida E-commerce Co., Ltd.
Manufacturer Address	Room 201, No. 31, Hadi Daxin Road, Nancheng Subdistrict, Dongguan City, Guangdong Province
Version	V1.0
Date of Preparation	January 1, 2026
Application Scenario	433.92 MHz RF Communication Equipment

1. Basic Information

2. Mechanical Dimensions and Structure

2.1 Outline Dimensions

- Substrate Shape: Circular
- Outer Diameter: 52 mm
- Substrate Material: FR-4
- Board Thickness: 1.2 mm (1.0 mm / 2.0 mm customizable)
- Copper Foil Thickness: 1 oz (35 μm)
- Surface Finish: HAL (Hot Air Solder Leveling)
- Solder Mask / Silkscreen: Green solder mask + white silkscreen

2.2 Antenna Conductor Parameters

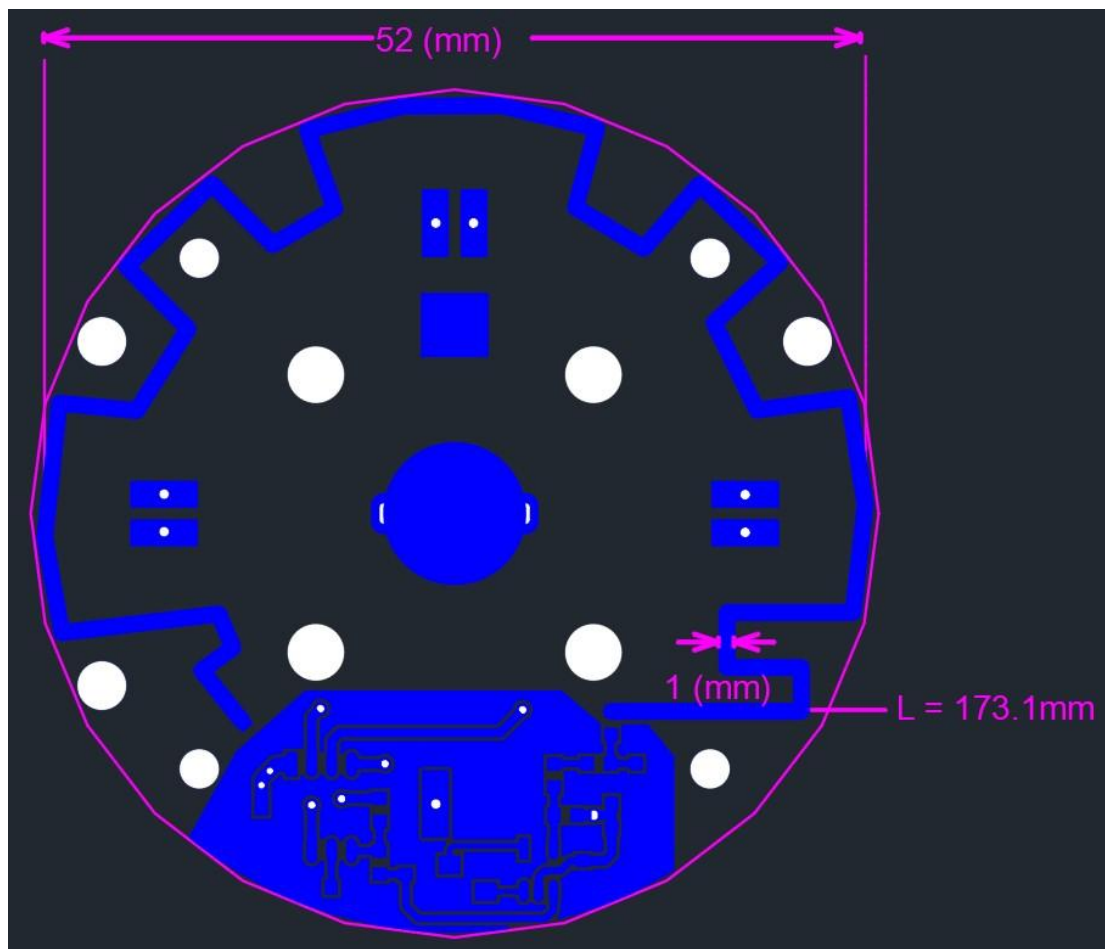
- Conductor Line Width: 1 mm
- Effective Electrical Length: 173.1 mm
- Routing Form: Meander bent routing, evenly distributed along the PCB edge
- Central Structure:
- Central ground pad: approx. 10 mm in diameter
- Mounting holes: 8 pieces, approx. 3 mm in diameter, evenly distributed around the circumference
- Feed pads: 3 groups (2 via pads per group)

2.3 Layout Constraints

- No copper pouring in the antenna routing area to ensure radiation performance.
- Matching network and ground layer integrated in the bottom area.

3. Antenna Design Drawing

Figure 1: Antenna PCB Layout Design Drawing



- Marked Dimensions: Outer diameter 52 mm,
- line width 1 mm,
- effective electrical length 173.1 mm
- Blue area: Antenna copper foil; White holes: Mounting holes

4. Electrical Performance Indicators

Parameter	Typical Value	Remarks
Target Frequency	433.92 MHz	Matched to the corresponding frequency band by 173.1 mm line length
Impedance	50 Ω	Standard RF impedance after matching
VSWR	≤2.0:1	Within target frequency band
Return Loss	≤ -10 dB	Within target frequency band
Gain	0 ~ 2 dBi	Omnidirectional radiation characteristic
Radiation Efficiency	≥60%	Within target frequency band
Polarization	Linear Polarization	-

5. Materials and Manufacturing Specifications

5.1 Bill of Materials (BOM)

Material	Specification	Application
Substrate	FR-4	Mechanical support and insulation
Copper Foil	1 oz (35 μm)	Antenna conductor and signal routing

Material	Specification	Application
Solder Mask	Green / Black (optional)	Protect copper foil, anti-oxidation
Silkscreen Layer	White	Mark model, pin functions

5.2 Manufacturing Requirements

1. Line width tolerance: ± 0.1 mm to ensure 1 mm line width accuracy
2. Flatness: PCB warpage $\leq 0.5\%$
3. Environmental Compliance: Compliant
4. Soldering Resistance: Withstand reflow / wave soldering below 260°C

6. Testing and Verification

6.1 Test Environment

- Test Site: Standard 5 m RF Anechoic Chamber
- Environmental Conditions: Temperature $25 \pm 2^{\circ}\text{C}$, Relative Humidity 45~75% RH