

1. Basic Antenna

Information

project	detailed information
name	ST25DV04KC PCB Ring Antenna
type	13.56MHz PCB etched loop antenna (near-field coupling type)
model	Corresponding hardware identifier: CMB-B REV01 (board-mounted antenna); Reference model: ANT7-T-ST25DV04K (ST official companion antenna)
manufacturer	The onboard antenna is custom-made by the PCB manufacturer; the chip and reference antenna are provided by **STMicroelectronics**.

II. Key Performance Parameters

Operating frequency: 13.56 MHz (compliant with ISO 14443/A)

Maximum gain value: NFC antennas are near-field coupling type, with magnetic field strength/coupling efficiency as the core metrics rather than far-field gain (far-field gain ≈ -25 to -30 dBi, which is not considered in practical applications).

Typical coupling distance: When paired with the ST25R3916B reader, the effective communication range is approximately 0-5 cm (depending on tag size and power supply).

III. Dimensions and Structure

1. 2D dimension diagram (using ANT7-T-ST25DV04K reference antenna as an example)

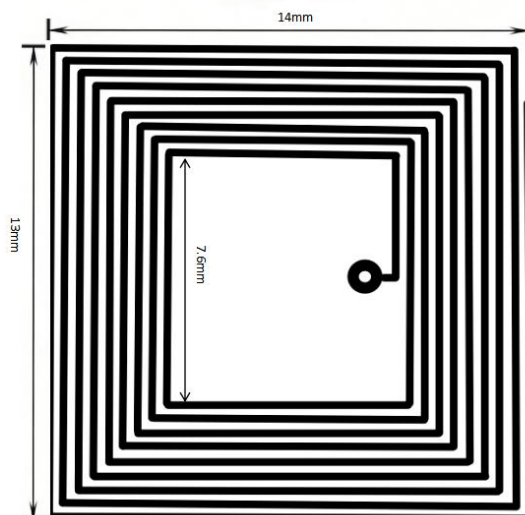
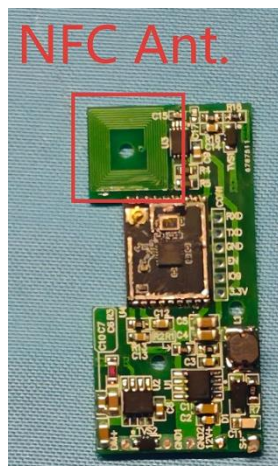
Antenna body dimensions: 14mm $\times$ 14mm (square PCB etched with circular ring)

Board-mounted antenna (CMB-B REV01): Designed for PCB board dimensions, featuring a ring coil width of approximately 1-2mm and an inner diameter of 5-8mm (specific dimensions subject to actual PCB layout).

2. Structure

Form: Double-layer PCB etched coil (top layer + bottom copper-clad layer, connected via vias)

Structure: Ring coil + tuning capacitor (board-mounted matching circuit), no additional packaging (integrated into the PCB)



IV. Test Chart Description

(Note: Actual test images should be obtained using electromagnetic simulation tools or vector network analyzers.)

2D simulation diagram: The HFSS/CST simulation can display the current distribution of the coil and the resonant frequency point (where the return loss S_{11} is $\leq -10\text{dB}$ at 13.56MHz).

3D test diagram: Near-field magnetic field distribution simulation (at 13.56 MHz, the magnetic field intensity at the coil center is the highest and decays exponentially with increasing distance)

