



## ANTENNA OF THINGS

# WIFI7 SMART ANTENNA MODULE

- 2.4G 2 chains, 5G 4 chains, 6G 4 chains
- 2 BLE chains , and 1 dual band GPS

2025-06

# ANTENNA SOLUTION

The antenna is a high-performance, tri-band, omni-directional and directional switchable, indoor antenna ideally designed for multifunction access points that require an omnidirectional coverage pattern or directional coverage pattern for WLAN service delivery or air monitoring on the 2.4GHz, 4.9-5.9GHz and/or 5.9 to 7.125GHz bands. This unique design also allows for integration inside access points, routers and gateways, eliminating the need for external antennas.



- 2.4G - O 2.4GHz - 2.5GHz
- 5G - 2x2 - O 5.15GHz - 5.85GHz
- 6G - 2x2 - O 5.925GHz - 7.125GHz
- 5G - 4x4 - O 5.15GHz - 5.85GHz
- 6G - 4x4 - O 5.925GHz - 7.125GHz
- 2.4G - D 2.4GHz - 2.5GHz
- 5G - 2x2 - D 5.15GHz - 5.85GHz
- 6G - 2x2 - D 5.925GHz - 7.125GHz
- 5G - 4x4 - D 5.15GHz - 5.85GHz
- 6G - 4x4 - D 5.925GHz - 7.125GHz
- BLE\_1 2.400GHz - 2.500GHz
- BLE\_2 2.400GHz - 2.500GHz 5.5dBi

#### Polarization

- Mode 1 H/V polarization
- Mode 2  $\pm 45^\circ$  polarization

#### Input impedance

- 50 Ohms

#### Maximum input power

- 1 Watts

#### VSWR

- < 2:1 max

#### Material

- Plate: PCB
- Antenna: PCB + SUS304

#### Port isolation

- 33dB 5.8-6.2GHz

#### Dimensions

- 249.9\*159.8\*48.3mm

#### Weight

- 162g

#### Cable length & type / connector

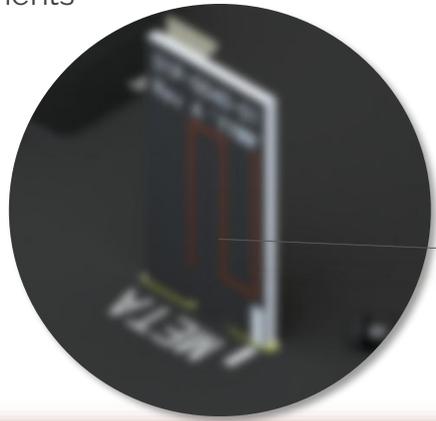
- 1.37mm Low-Loss Cable/MMCX Connector

#### Operating temperature range and relative humidity

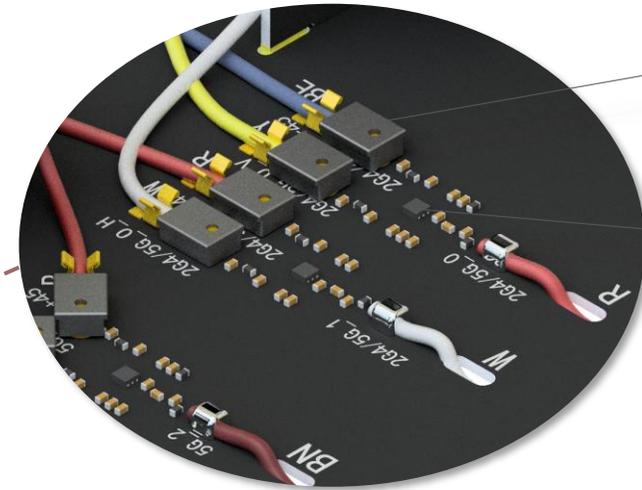
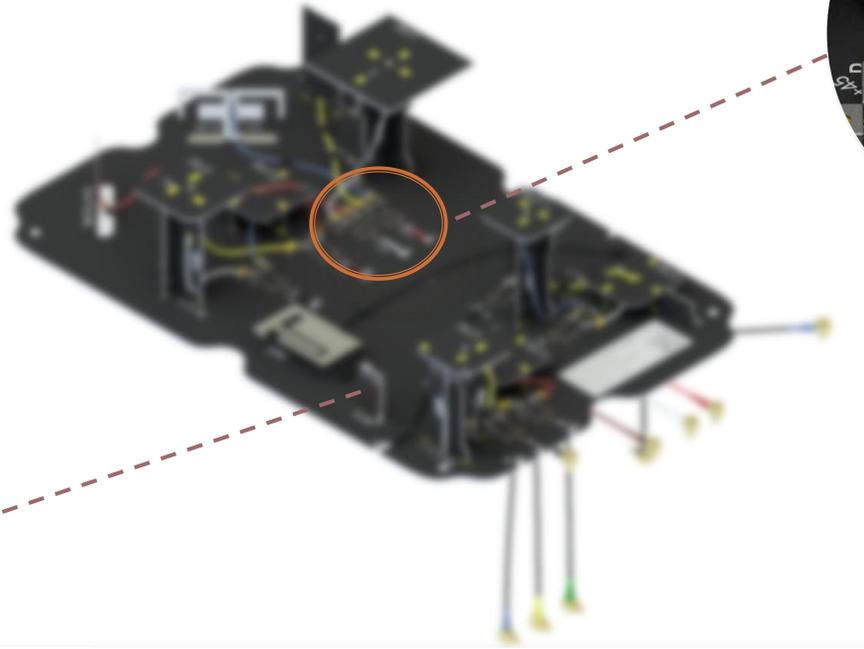
- -40°C to +95°C 0% to 95% non-condensing

# Design Highlights

- Use of metamaterial absorber (MA) to achieve high isolation between 2- antenna elements



META

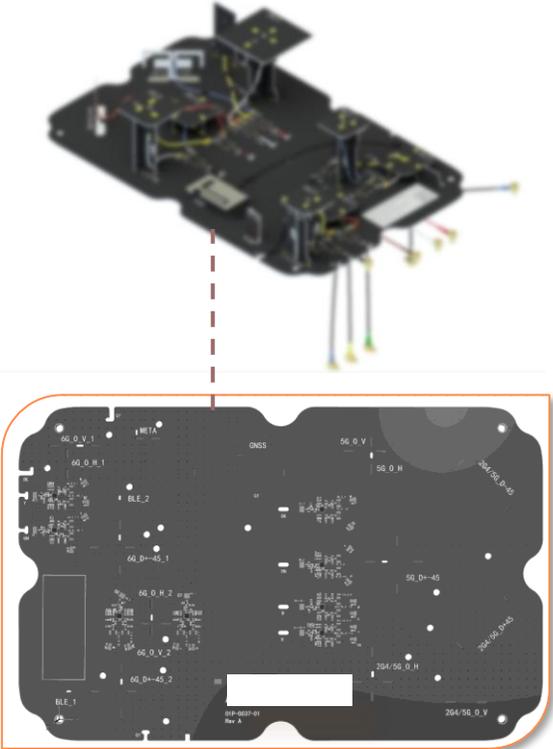


Connector locker

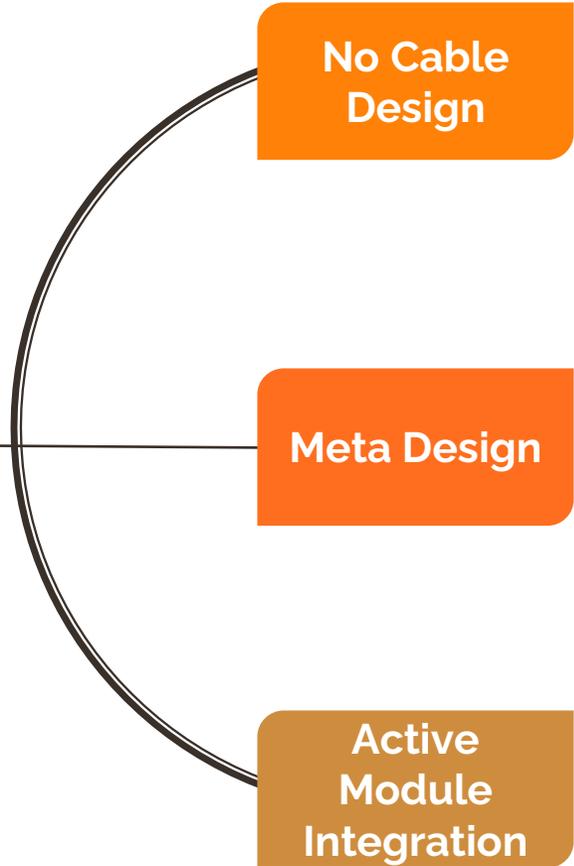
RF switching circuit

- The RF switching circuit was integrated on the antenna reflector
- The novel connector locker design ensures the explosion-proof capability of the antenna system

# Design Highlights

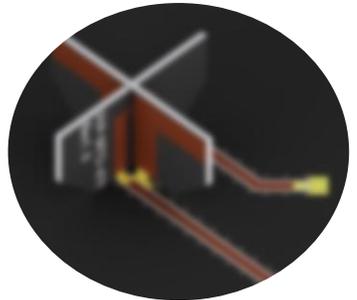


Based on the current antenna design concept, we will continue to study new antenna designs, mainly in three design directions.



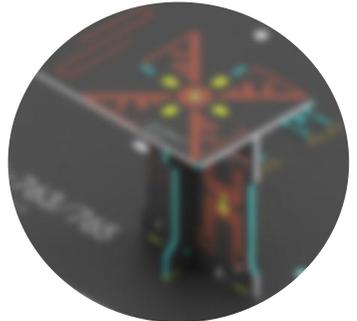
**No Cable Design**

Design a trace line to cancel the cable connection



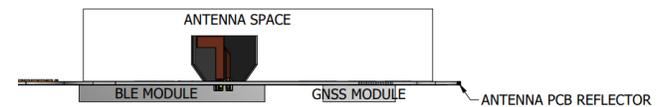
**Meta Design**

Introduce metamaterial elements to reduce the space of multiple antennas and enhance the isolation between antennas



**Active Module Integration**

Integrate the module designs such as Bluetooth, GPS and SPI onto the antenna reflector



# Design Highlights

## Wave Soldering Process

Adopt the wave soldering process to solder all the antenna elements to the reflector plate at one time, ensuring the consistency and reliability of the solder joints.

