



Dated: August 5, 2025

**Subject:** Antenna Justification Letter for FCC Part 15 Compliance

**FCC ID:** 2BPMM-OSXXMHWC

**Model Number:** OS214W, OS537HW, OS537MHW, OS537MHWC

To Whom It May Concern,

This letter provides justification for the antenna configuration used in the above-referenced device, submitted for certification under **FCC Part 15**.

### **Radiated Measurement Justification**

All compliance testing, including fundamental and spurious emissions, was performed using **radiated measurement methods**. As such, antenna gain and performance characteristics were inherently captured in the test results. Therefore, no separate antenna gain documentation is required to demonstrate compliance with FCC limits.

This approach aligns with the guidance provided in the **FCC TCB Workshop (October 2022)** and **KDB 353028 D01**, which allows for a justification statement in lieu of antenna gain documentation when radiated measurements are used exclusively.

### **Antenna 1 – ESP32-C6-WROOM-1 (Wi-Fi/Bluetooth):**

- Antenna Type: PCB trace antenna (integrated)
- Location: Integrated on the ESP32-C6-WROOM-1 module mounted on the main PCB
- Dimensions: Approximately 25.5 mm × 18.0 mm × 3.3 mm (entire module)
- Estimated Peak Gain: 2.0 dBi (per Espressif datasheet)
- Polarization: Linear
- Orientation: Horizontal
- Frequency Bands Supported:
  - 2.4 GHz ISM (2400–2483.5 MHz) for Wi-Fi and BLE
  - Sub-GHz not supported on this module

### **Antenna 2 – BGT60LTR11AIP (Radar Sensor):**

- Antenna Type: Integrated patch antennas (Tx and Rx array embedded in package)

- Location: Internal to the BGT60LTR11AIP chip, surface-mounted on PCB
- Dimensions: Approx. 6.7 mm × 5.0 mm × 0.9 mm (package size)
- Estimated Peak Gain:
  - Tx: ~6.0 dBi
  - Rx: ~6.0 dBi
- Polarization: Linear
- Orientation: Vertical (relative to package mounting)
- Frequency Bands Supported: 60 GHz band (57–64 GHz, ISM)

## Supporting details and materials

### 1. Internal Photographs



### 2. PCB Layout Diagrams

- See above image



### **3. Antenna Specifications**

- Based on Espressif ESP32-C6-WROOM-1 datasheet and Infineon BGT60LTR11AIP product brief and application notes.

### **4. Estimated Gain Information**

- Taken from manufacturer data and simulation-based references. No additional passive gain structures are present.

### **Compliance Statement**

The antenna configuration has not been altered in a way that would affect radiated performance. No external gain-enhancing accessories (e.g., reflectors, lenses) are used. The antenna is permanently affixed and not user-accessible or replaceable.

Should you require any additional information or clarification, please do not hesitate to contact us.

Sincerely,

Steve Lupien

Chief Innovation and Technology Officer

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