

16F-5 No. 736, Zhongzheng Road,
Zhonghe Dist, New Taipei City,
23511 Taiwan R.O.C.
Phone : +886-2-8227 3585
Fax : +886-2-8227 3590

Modular Approval Request FCC (KDB 996369 D01 & Part 15.212)

FCC ID: 2AKZA-IW416

| <i>Items to be covered by Single modular transmitters.</i> | <i>Answer from applicant</i> |
|---|--|
| <p>1. The radio elements must have the radio frequency circuitry shielded. Physical components and tuning capacitor(s) may be located external to the shield, but must be on the module assembly.</p> | <p>Yes. The EUT provides the RF shielding. See EUT photo.</p> |
| <p>2. The module must have buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.</p> | <p>Yes. The EUT has buffered modulation. Please see the Schematic Diagram.</p> <p>U1 RF IC: Wi-Fi baseband</p> <ul style="list-style-type: none"> • Bandwidth supported: <ul style="list-style-type: none"> - 20 MHz - 20 in 40 MHz (upper and lower) - 40 MHz - 20 MHz duplicate • 802.11n modulation coding scheme (MCS) 0-7 and MCS 32 (HT duplicate mode) <p>Bluetooth baseband</p> <ul style="list-style-type: none"> • Baseband and radio Basic Data Rate (BDR)/Enhanced Data Rate (EDR) packet types <ul style="list-style-type: none"> - 1 Mbit/s (GFSK), 2 Mbit/s ($\pi/4$-DQPSK), and 3 Mbit/s (8DPSK) • Fully functional Bluetooth baseband—Adaptive Frequency Hopping (AFH), forward error correction, header error control, access code correlation, Cyclic Redundancy Check (CRC), encryption bit stream generation, and whitening • BLE shared RF with BDR/EDR • BLE Baseband and radio <ul style="list-style-type: none"> - 1 Mbps, 2 Mbps <p>U4 PMIC:</p> <ul style="list-style-type: none"> • Supports 2.7 V~5.5 V operating voltage • Two 1.5 A synchronous buck converters • Single LDO supports up to 525 mA • Ultra low 15 μA sleep current • 3 MHz switching frequency • High output voltage accuracy • Supports both DVS and AVS • Single wire proprietary serial interface |
| <p>3. The module must contain power supply regulation on the module</p> | <p>Yes. The EUT has own power supply regulation, please see the Schematic Diagram.</p> <p>U1 RF IC: Wi-Fi baseband</p> <ul style="list-style-type: none"> • Bandwidth supported: <ul style="list-style-type: none"> - 20 MHz |

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| | <ul style="list-style-type: none"> - 20 in 40 MHz (upper and lower) - 40 MHz - 20 MHz duplicate • 802.11n modulation coding scheme (MCS) 0-7 and MCS 32 (HT duplicate mode) <p>Bluetooth baseband</p> <ul style="list-style-type: none"> • Baseband and radio Basic Data Rate (BDR)/Enhanced Data Rate (EDR) packet types <ul style="list-style-type: none"> - 1 Mbit/s (GFSK), 2 Mbit/s ($\pi/4$-DQPSK), and 3 Mbit/s (8DPSK) • Fully functional Bluetooth baseband—Adaptive Frequency Hopping (AFH), forward error correction, header error control, access code correlation, Cyclic Redundancy Check (CRC), encryption bit stream generation, and whitening • BLE shared RF with BDR/EDR • BLE Baseband and radio <ul style="list-style-type: none"> - 1 Mbps, 2 Mbps <p>U4 PMIC:</p> <ul style="list-style-type: none"> • Supports 2.7 V~5.5 V operating voltage • Two 1.5 A synchronous buck converters • Single LDO supports up to 525 mA • Ultra low 15 μA sleep current • 3 MHz switching frequency • High output voltage accuracy • Supports both DVS and AVS • Single wire proprietary serial interface |
| <p>4. The module must contain a permanently attached antenna, or contain a unique antenna connector, and be marketed and operated only with specific antenna(s), per §§ 15.203, 15.204(b), 15.204(c), 15.212(a), 2.929(b).</p> | <p>Yes. The EUT meets the FCC antenna requirements; unique antenna connector and photo of antenna are shown in the test report.</p> |
| <p>5. The module must demonstrate compliance in a stand-alone configuration.</p> | <p>Yes. The EUT was tested with a test board, please see the report.</p> |
| <p>6. The module must be labeled with its permanently affixed FCC ID label, or use an electronic display (see KDB Publication 784748).</p> | <p>Yes. Please see exhibition label sample for the FCC ID of this module.</p> |
| <p>7. The module must comply with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.</p> | <p>Yes. The EUT is compliant with all applicable FCC rules. Details instructions for maintaining compliance are give in the User Manual.</p> |
| <p>8. The module must comply with RF exposure requirements.</p> | <p>Yes. The EUT complies RF exposure requirement.</p> |

| Items to be covered by <i>Split modular transmitters</i>. | Answer from applicant |
|---|------------------------------|
| <p>1. The modular transmitter must comply with all requirements of a single modular transmitter except for items (1) & (5) of the above single modular approval requirements.</p> | <p>Yes.</p> |
| <p>2. Only the radio front end must be shielded. The physical crystal and tuning</p> | <p>Yes.</p> |

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| capacitors may be located external to the shielded radio elements. The interface between the split sections of the modular system must be digital with a minimum signalling amplitude of 150 mV peak-to-peak. | |
| 3. Control information and other data may be exchanged between the transmitter control elements and radio front end. | Yes. |
| 4. The sections of a split modular transmitter must be tested installed in a host device(s) similar to that which is representative of the platform(s) intended for use. | Yes. |
| 5. Manufacturers must ensure that only transmitter control elements and radio front end components that have been approved together are capable of operating together. The transmitter module must not operate unless it has verified that the installed transmitter control elements and radio front end have been authorized together. Manufacturers may use means including, but not limited to, coding in hardware and electronic signatures in software to meet these requirements, and must describe the methods in their application for equipment authorization. | Yes. |

Note: A limited modular approval (LMA) may be granted for *single* or *split* modular transmitters that comply partially with the requirements above.

Name and surname of applicant (or authorized representative): Marcel vandenHeuvel

Date: September 18, 2023

Signature:

