



LCIE SUD EST
Laboratoire de Moirans
Z.I. Centr'Alp
170, Rue de Chatagnon
38430 MOIRANS - FRANCE

GENERAL INFORMATION

FCCID: YCP-32WB1MMCH01

1.1. Product description

Features

- Integrated chip antenna, and option for external antenna
- Bluetooth® Low Energy 5.4 certified
- Supports 2 Mbits/s
- Frequency band: 2400 to 2483.5 MHz
- Advertising extension
- TX output power up to +5.5 dBm
- RX sensitivity: -96 dBm (1 Mbps)
- Range: TBD
- Dedicated Arm® Cortex®-M0+ for radio and security tasks
- Dedicated Arm® Cortex®-M4 CPU with FPU and ART (adaptive real-time accelerator), up to 64 MHz speed
- 320-Kbyte flash memory, 48-Kbyte SRAM
- Fully integrated BOM, including 32 MHz radio and 32 kHz RTC crystals
- Integrated SMPS
- Ultra-low power modes for battery longevity
- 27 GPIOs
- SWD, JTAG
- Integrated IPD for best-in-class and reliable antenna matching
- V_{DD} range: 1.71 to 3.6 V
- Temperature range: -40 to 85 °C
- Built-in security features, such as secure firmware installation (SFI) for radio stack, PKA, AES 256-bit, RNG, PCROP, CRC, 96-bit UID, possibility to derive 48-bit UEI

Description

The STM32WB1MMC is an ultralow power, small form factor, certified 2.4 GHz wireless module, supporting Bluetooth® Low Energy 5.4. Based on the STM32WB15CCY wireless microcontroller, it provides best-in-class RF performance thanks to its good receiver sensitivity and a high output power signal. Its low power features enable extended battery life time, small coin-cell batteries, or energy harvesting.

The STM32WB1MMC requires no RF expertise, and is the best way to speed up the application development and to reduce the associated costs. The module is completely protocol stack royalty-free.



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1.2. Tested System Details

Equipment information (Manufacturer Declaration):

| | | | | |
|------------------------------|--|--|---|---|
| Bluetooth LE Type: | <input checked="" type="checkbox"/> BLE | <input type="checkbox"/> v4.0 | <input type="checkbox"/> v4.2 | <input type="checkbox"/> v5.0 |
| Frequency band: | [2400 – 2483.5] MHz | | | |
| Spectrum Modulation: | <input checked="" type="checkbox"/> DSSS (Tested like it) | | | |
| Number of Channel: | 40 | | | |
| Spacing channel: | 2MHz | | | |
| Channel bandwidth: | <input checked="" type="checkbox"/> 1MHz | | <input checked="" type="checkbox"/> 2MHz | |
| Antenna Type: | <input type="checkbox"/> Integral | <input type="checkbox"/> External | <input type="checkbox"/> Dedicated | |
| Antenna connector: | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Temporary for test | |
| Transmit chains: | 1 | | | |
| | Single antenna | | | |
| | Gain: 1.9dBi | | | |
| Beam forming gain: | No | | | |
| Receiver chains | 1 | | | |
| Type of equipment: | <input checked="" type="checkbox"/> Stand-alone | <input type="checkbox"/> Plug-in | <input type="checkbox"/> Combined | |
| Ad-Hoc mode: | <input type="checkbox"/> Yes | | <input checked="" type="checkbox"/> No | |
| Adaptivity mode: | <input checked="" type="checkbox"/> Yes (Load Based) | <input type="checkbox"/> Off mode | <input type="checkbox"/> No | |
| | Clear Channel Assessment Time: | | | Xµs |
| Duty cycle: | <input checked="" type="checkbox"/> Continuous duty | <input type="checkbox"/> Intermittent duty | <input type="checkbox"/> 100% duty | |
| Equipment type: | <input checked="" type="checkbox"/> Production model | | <input type="checkbox"/> Pre-production model | |
| Operating temperature range: | Tmin: | <input type="checkbox"/> -20°C | <input type="checkbox"/> 0°C | <input checked="" type="checkbox"/> -40°C |
| | Tnom: | 20°C | | |
| | Tmax: | <input type="checkbox"/> 35°C | <input type="checkbox"/> 55°C | <input checked="" type="checkbox"/> 85°C |
| Type of power source: | <input type="checkbox"/> AC power supply | <input type="checkbox"/> DC power supply | <input type="checkbox"/> Battery | |
| Operating voltage range: | Vnom: | <input type="checkbox"/> 230V/50Hz | <input checked="" type="checkbox"/> 3Vdc | |
| Geo-location capability: | <input type="checkbox"/> Yes (The geographical location determined by the equipment is not accessible to the end user as defined in section 4.3.2.12.2 of ETSI EN 300 328 V2.2.2 standard) | | <input checked="" type="checkbox"/> No | |

1.3. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 or/and ANSI C63.10, FCC Part 15 SubPart 15C.

Radiated testing was performed at an antenna to EUT distance of 10 meters. During testing, all equipment's and cables were moved relative to each other in order to identify the worst case set-up.

1.4. Test facility

Tests have been performed: **February 13, 2023 to February 14, 2023**

This test facility has been fully described in a report and accepted by FCC as compliant with the radiated and AC line conducted test site criteria in ANSI C63.4 or/and ANSI C63.10.

This test facility has also been accredited by COFRAC (French accreditation authority for European Union test lab accreditation organization) according to NF EN ISO/IEC 17025, as compliant with test site criteria and competence in 47 CFR Part 15/ANSI C63.4 and EN55032/CISPR32 norms for 89/336/EEC European EMC Directive application. All pertinent data for this test facility remains unchanged.