Product description
The NINA-W10 series are stand-alone multiradio MCU modules that integrate a powerful microcontroller (MCU) and a radio for wireless communication. With the open CPU architecture, customers can develop advanced applications running on the dual core 32-bit MCU. The radio provides support for Wi-Fi 802.11b/g/n in the 2.4 GHz ISM band, Bluetooth BR/EDR, and Bluetooth low energy communications.

The NINA-W10 includes the wireless MCU, flash memory, crystal, and components for matching, filtering, antenna and decoupling, making it a very compact stand-alone multiradio module. The module can be used to design solutions with top grade security, thanks to integrated cryptographic hardware accelerators. This enables secure boot, which ensures the module boots up only in the presence of authenticated software. The small size and the embedded security capabilities make NINA-W10 ideal for critical IoT applications where security is important. Intended applications include telematics, low power sensors, connected factories, connected buildings (appliances and surveillance), point-of-sales, and health devices.

Device design is simplified, as developers can choose to use an external antenna (NINA-W101) or take advantage of the internal antenna (NINA-W102 and NINA-W106). Additionally, the NINA-W10 modules are pin-compatible with other NINA modules, thus offering maximum flexibility for development of similar devices offering different radio technologies.

The NINA-W10 series is globally certified and this reduces time to market for the end product. To ensure operation in harsh professional environments, the modules are industrial grade and qualified according to ISO 16750, supporting an extended temperature range of –40 °C to +85 °C.
NINA-W10 series

**Features**
- **Wi-Fi standards**: 802.11b/g/n
- **Wi-Fi channels**: 2.4 GHz channels 1-13
- **Wi-Fi maximum transfer rates**:
  - 802.11b: 11 Mbit/s
  - 802.11g: 54 Mbit/s
  - 802.11n: 72 Mbit/s (20 MHz channel bandwidth), 150 Mbit/s (40 MHz channel bandwidth)
- **Output power**:
  - Wi-Fi: 18 dBm EIRP
  - Bluetooth BR/EDR: 8 dBm EIRP
  - Bluetooth low energy: 8 dBm EIRP
- **Sensitivity** (conducted):
  - Wi-Fi: –96 dBm
  - Bluetooth BR/EDR: –88 dBm
  - Bluetooth low energy: –88 dBm
- **Bluetooth** v4.2 (Bluetooth BR/EDR and Bluetooth Low Energy)
- **Antenna**: Internal antenna or antenna pin for connecting to the external antenna

**Electrical data**
- **Power supply**: 3.0 V to 3.6 V
- **Power consumption**:
  - Wi-Fi 16 dBm: 190 mA
  - Bluetooth BR/EDR 0 dBm: 130 mA
  - Bluetooth low energy 0 dBm: 130 mA
  - Modem-sleep mode: 30 mA

**Interfaces**
- All variants: UART, RMII, I2S, I2C, SPI, ADC, DAC, GPIO, SDIO host, CAN

**Package**
- **Dimensions**:
  - NINA-W101: 10.0 x 10.6 x 2.2 mm
  - NINA-W102: 10.0 x 14.0 x 3.8 mm
  - NINA-W106: 10.0 x 14.0 x 2.2 mm
- **Weight**: < 1 g
- **Mounting**: Machine mountable
- **Solder pins**:

**Environmental data, quality & reliability**
- **Operating temperature**: –40 °C to +85 °C
- **Storage temperature**: –40 °C to +85 °C
- **Humidity**: RH 5-90% non-condensing

**Certifications and approvals**
- **Type approvals**:
  - Europe (ETSI RED), US (FCC/CFR 47 part 15 unlicensed modular transmitter approval), Canada (IC RSS), Japan (MIC), Taiwan (NCC), South Korea (KCC), Australia (ACMA), New Zealand, Brazil (Anatel), South Africa (ICASA)
- **Medical Electrical Equipment**: IEC 60601-1-2
- **Bluetooth qualification**: v4.2

1 = NINA-W106 variant pending approvals

**Support products**
- **EVK-NINA-W101**: Evaluation kit for NINA-W101 module with antenna pin
- **EVK-NINA-W102**: Evaluation kit for NINA-W102 module with internal PIFA antenna
- **EVK-NINA-W106**: Evaluation kit for NINA-W106 module with internal PCB antenna

**Product variants**
- **NINA-W101**: Multiradio wireless MCU module with antenna pin
- **NINA-W102**: Multiradio wireless MCU module with internal PIFA antenna
- **NINA-W106**: Multiradio wireless MCU module with internal PCB antenna

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