

High-Performance , Low-Current Sub-GHz RF System-on-Chip(SOC)

- Wireless System-on-Chip

- Core:32-bit ARM[®] Cortex™-M0+ CPU
 - 24 MHz maximum frequency
 - support 0 wait state access
- Memories
 - 64K bytes ROM / 4K bytes SRAM
- Sub-GHz radio operation
- TX power up to +23dbm

- RF Features

- Frequency Range
 - 778MHz<->1020MHz
 - 389MHz<->510MHz
 - 194.5MHz<->255MHz
 - 97.25MHz<->127.5MHz
- Separate TX and RX 128 byte FIFO
- Extendable FIFO up to 2047 byte
- Wake on RX (WOR)
- Automatic clear channel assessment for listen before talk system
- CRC filtering
- Automatic frequency control (AFC)
- Auto gain control (AGC)
- 1 dB RSSI resolution
- On-chip DC-DC bulk converter

-Multimode Wireless Protocols

- Data rate: 1.25Kbps ~2Mbps GFSK
- NFC ISO/IEC 14443-3 standard (Type A)

-High RF Sensitivity

- Best-in-class receive sensitivity
 - -122dBm at 1.25Kbps GFSK 915MHz, MI=1
 - -110dBm at 12.5Kbps GFSK 868MHz, MI=0.5
 - -102dBm at 100kbps GFSK 868MHz, MI=0.5

- Max Output Power & Consumption

- Max output power: +23dbm
- RF active mode
 - 12mA RX (915MHz@100kbps)
 - High Power PA 80mA TX @ 20dBm, 160mA TX @ 23dBm
 - Low Power PA 18mA TX@ 10dBm
- System standby mode
 - Deep Sleep mode: 3.05uA
 - Idle mode (Xtal on): 4.3mA

-Operating Condition

- Power supply voltage 2.5V to 3.6V
- Operating temperature range -40°C to 85°C

General Description

ER81WX is a family of high performance, high flexibility, low power RF transceiver SOC for IOT applications. ER81WX covers 127/433/470/510/868/915MHz ISM bands in sub-GHz frequency spectrum. In addition to supporting Sub-GHz band for long range connectivity, the product also comes with NFC, which is compliant with ISO/IEC 14443-3 standard (Type A), to provide contactless short range connectivity to mobile device.

The EliteRadio-ER81WX transceiver SOC realizes long range wireless data communication with high data rate up to 2Mbps. Its proprietary on-chip power amplifier optimizes power consumption for applications that require high output power up to +23dBm. ER81WX has excellent Rx performance in sensitivity (-102dbm sensitivity @ 100Kbps/ 915Mhz/ FSK). It provides multiple working power management modes with low RF receive current (Rx: 16mA@915MHz) as well as wake on RX (WOR) without MCU involvement to extend the lifespan of battery operated devices such as electronic shelf labels, smart meters and disposable wireless sensors.

-MCU Peripherals

- Low Voltage Detector/ Voltage Comparator
- Clock management
 - 4 ~24MHz Internal high speed clock(HSI)
 - 32.768KHz External low speed clock(LSE)
 - 38.4/32.768KHz Internal low speed clock(LSI)
- 8 GPIO ports
- 3 Communication interfaces
 - 1 UART
 - 1 LPUART
 - 1 I2C
- Debug mode
 - Serial wire debug (SWD)
 - 2 watch points/4 break points
- Up to 10 timers
- RTC clock counter(record the year, month, day, hour, minute and second)
- One 12-bit ADC(SAR)
 - 2 channel, Max convert rate: 1Msp/s
- CRC-16 calculation Unit

- Developer Friendly RF functions

- RSSI measurement
- Battery detector
- LBT(Listen Before Talk)
- Sleep timer
- Configurable FIFO packet format

-SDK

- Proprietary protocol
- NFC TAG mode and simple data link
- Application development

-Development Tool Kit

- EliteRadio Evaluation Bundle
 - EliteRadio PC UI
 - EliteRadio Evaluation Board
 - Test Fixture

-Applications

- Automated meter reader (AMR)
- Electronic shelf labels (ESL)
- Environmental monitoring devices
- Logistic tracking
- Industrial control
- Wireless sensor networks
- Building automation

-Package

- QFN32(4x4)

Product Selections

IC Product	PA Type	Max Output Power	NFC Support
ER81W0	Low Power	+10dbm	No
ER81W1	Low Power	+10dbm	Yes
ER81W2	High Power	+23dbm	No
ER81W3	High Power	+23dbm	Yes