

User Manual

GSRMI24-1

1. Operating description

The EM198850AW IC is a low-cost, fully integrated CMOS radio frequency (RF) transceiver, combined with dual 64-byte buffered framer block. The RF transceiver is a self-contained, fast-hopping FL- data modem, data rate can be operated up to 1.6Mbps in buffer mode or 2Mbps in direct mode, optimised for use in the widely available 2.4GHz ISM band. It consists of a fully integrated frequency synthesizer, a power amplifier, a crystal oscillator, a demodulator, modulator, and Auto-ACK protocol engine. A reduced off chip filter is realized by the low IF RX architecture, minimizing the need for external components,

The transceiver utilizes extensive digital processing for excellent overall performance, even in the presence of interference and transmitter impairment. Typical transmit power is 0dBm and digitally controlled, low-IF receiver architecture results in sensitivity to -92dBm or better, with impressive selectivity. User can program transmitter output power. Frequency channels, and protocol setup easily through a SPI interface.

In normal application. The on-chip framer processes and stores the RF data in the background, unloading this critical timing function from the MCU. This lowers MCU speed requirements, expedites product development time, and frees the MCU for implementing additional product features.

Many configurations are possible, depending on the user's specific needs. Transmit data is easily sent over-the-air as a complete frame of data, with syncword, SOF, address, payload, and CRC. Receiving data is just the opposite, using the syncword to train the receiver clock recovery then the address is checked, then the data is reserved formatted for receive, followed by CRC. All of this is done in hardware to ease the programming and overhead requirements of the baseband MCU.

For longer battery life, power consumption is minimized by automatic enabling of the various transmit, receive, PLL, and PA sections, depending on the instantaneous state of the chip. An idle mode is also provided for ultra low current consumption.

This product is available in 24-lead 4*4mm JEDEC standard QFN package and Lead-free RoHS compliant. Featuring an exposed pad on the bottom for best RF characteristics.

2. Specification :

- Frequency : 2402~2480MHz
- Channel Spacing : 1MHz
- Channel Switching Speed : <125uS
- Modulation Type : FSK
- Operation Voltage : 1.8~3.6V
- Output Power : +0dBm
- Sensitivity : -90dBm / -85dBm @0.1% BER 1Mbps / 1.6Mbps(w/o ant.)
- Data Rate : 1Mbps / 1.6Mbps
- Operating Temperature : -40~+85 degree C
- Built-in Antenna : -5dBi
- TDD full-duplex, including decoder, encoder and 64byte FIFO data buffer.
- Supports Auto ACK and & Retransmit
- Supports Star-Network with 6 channels
- Supports CRC
- 4-wire digital interface (SPI)
- Small footprint size : 16.0 * 19.0 * 3.8mm.

3. Application :

- Wireless mouse, keyboard, joystick
- Keyless entry
- Alarm and security system
- Home automation
- Surveillance
- Automotive
- Telemetry
- Industrial sensors
- Wireless data communication
- Toys

FCC Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This Device may not cause harmful interface, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna.
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.