

Description

The 915 MHz RF Module is designed to operate in the US markets. The 915 MHz radio supports two operational modes: 1) a fixed frequency mode with four distinct channels and 2) a Frequency Hopping Spread Spectrum (FHSS) mode with 47 active channels. The transmission mode is controlled wireless by the network master along with the channel or sequence of channels used.

The RF Module has a 27 MHz crystal oscillator which enables different channel spacing and overall number of channels to be generated. The TI CC1110 transceiver is the sole controller of the wireless proprietary network operation. A wireless link is established between the network master and a device via an enrollment process utilizing a device Enrollment Switch. See User Guide for Enrollment procedure. The LED status indicates enrollment status in the network.

The sensor device provides direct event driven status lines of alarm, tamper, low battery, and/or device fault – trouble condition. Upon activation the CC1110 transmits the proper device status wireless for further processing. The matching circuitry provides a 50 ohm match to the onboard chip antenna. In addition, the CC1110 chip receives network message via the same antenna circuit into its receive registers. As OTA is support on the RF Module it is limited to the wireless network and not the sensor. RF transmit power is firmware controlled which are parameter(s) stored in non-volatile memory. Power level is set to be within the FCC Limits for fixed frequency and FHSS operational modes.

In FHSS mode.....

Each transmitter hops to a pseudo-random channel list of 47 channels. The transmitters shall remain on a channel for 400 ms. Transmitters shall hop to each channel in the pseudo-random list before starting a new channel hop sequence. In FHSS mode the system does not use continuous data streams. All communications are transmitted in message structures of 10 ms or less sent while in a given channel of the pseudo-random channel list. Messages can be transmitted or received on any FHSS channel. Multiple messages may be transmitted on a single FHSS channel but channel dwell time in not exceeded.

This is a proprietary wireless network for both fixed and FHSS modes. The system does not recognize any other products within the defined spectrum band. Nor does it individually and independently chooses and adapts its pseudo-random channel list to avoid hopping on occupied channels. It does listen before talk to avoid collisions. The system does not coordinate in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

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