64seconds Coriandolo Radio RE1 Module User's Manual

RE1 Specification for the Designer

Product Summary

The RE1 is a hybrid, frequency hopping / spread spectrum radio module that operates in the unlicensed 2.4 GHz frequency band. It is based on the nRF51822 IC (*Nordic Semiconductor*). The RE1 is installed on a host PCB as a solder-down module. It is programmable by the designer of the host PCB and has FCC modular approval for use in the U.S. when used with the software library for the *Coriandolo Radio Protocol*, provided by 64seconds.
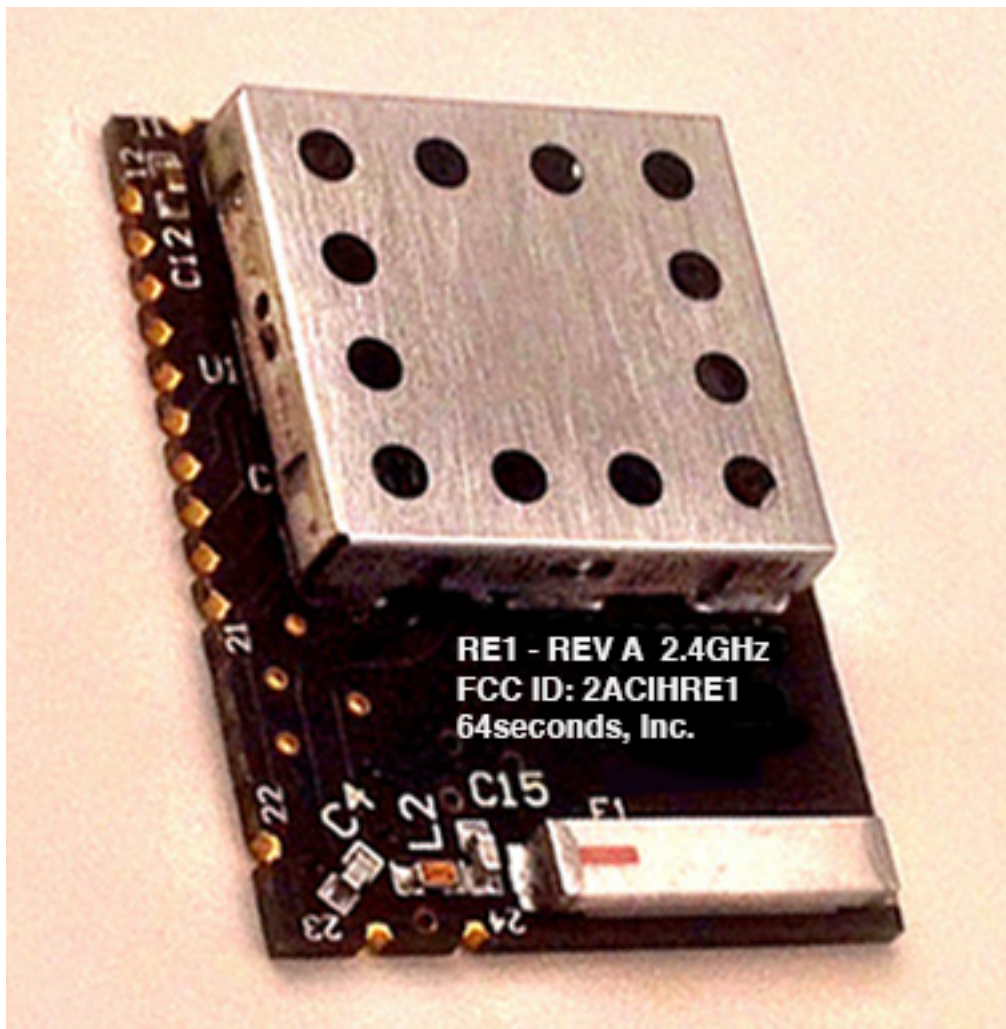
Features

System:

System-on-Chip, nRF51822, (*Nordic Semiconductor*)
AMR M0 processor and 2.4 GHz radio transceiver
Technical specifications: See the nRF51822 Product Specification
On-board IC antenna

Coriandolo Radio Protocol:

5 frequency channels, hopping sequence: 2472, 2402, 2422, 2446, and 2480 MHz
Over-the-air data rate of 1 Mbps
Coriandolo Radio Protocol for sending and receiving data
Transmit power of -30 to +4 dBm
Fixed modulation: GFSK, 500 kHz 6 dB bandwidth, 1 MHz 20 dB bandwidth
Modular approval under FCC rules Part 15.247 when used with the Coriandolo Radio
software library

ARM M0 32-bit Processor:

Fully programmable by the host designer
16.00 MHz and 32.768 kHz quartz crystal oscillators
Peripherals available in the nRF51822 IC
16 KB RAM
128 KB flash

Transparent Interface:

16 general purpose input/output ports, with pin selectable special functions
Analog interface: ADC, voltage reference, and low-power comparator
Serial interface: SPI, I2C, and UART
Serial Wire Debugging (SWD) 2-wire interface for programming

Pinout

| Pin	nRF51822 Name	Type	Description
1	GND	Ground	
2	GND	Ground	
3	VCC	Power	1.8 - 3.6 VDC
4	P0.00 / AREF0	GPIO	Alternate function: Voltage reference 0
5	P0.01 / AIN2	GPIO	Alternate function: Analog input 2
6	P0.02 / AIN3	GPIO	Alternate function: Analog input 3
7	P0.03 / AIN4	GPIO	Alternate function: Analog input 4
8	P0.04 / AIN5	GPIO	Alternate function: Analog input 5
9	P0.05 / AIN6	GPIO	Alternate function: Analog input 6 / voltage reference 1
10	P0.06 / AIN7	GPIO	Alternate function: Analog input 2
11	P0.07	GPIO	
12	P0.08	GPIO	
13	P0.09	GPIO	
14	P0.10	GPIO	
15	P0.11	GPIO	
16	P0.12	GPIO	
17	P0.13	GPIO	
18	P0.14	GPIO	
19	P0.15	GPIO	
20	SWDIO / nRESET	SWD	Serial Wire Debug I/O: reset line
21	SWDCLK	SWD	Serial Wire Debug Clock
22	GND	Ground	
23	GND	Ground	
24	GND	Ground	
25	GND	Ground	
26	GND	Ground	

Package Outline

The figure below shows an outline of the RE1 module, with a view of the component placements and antenna trace.
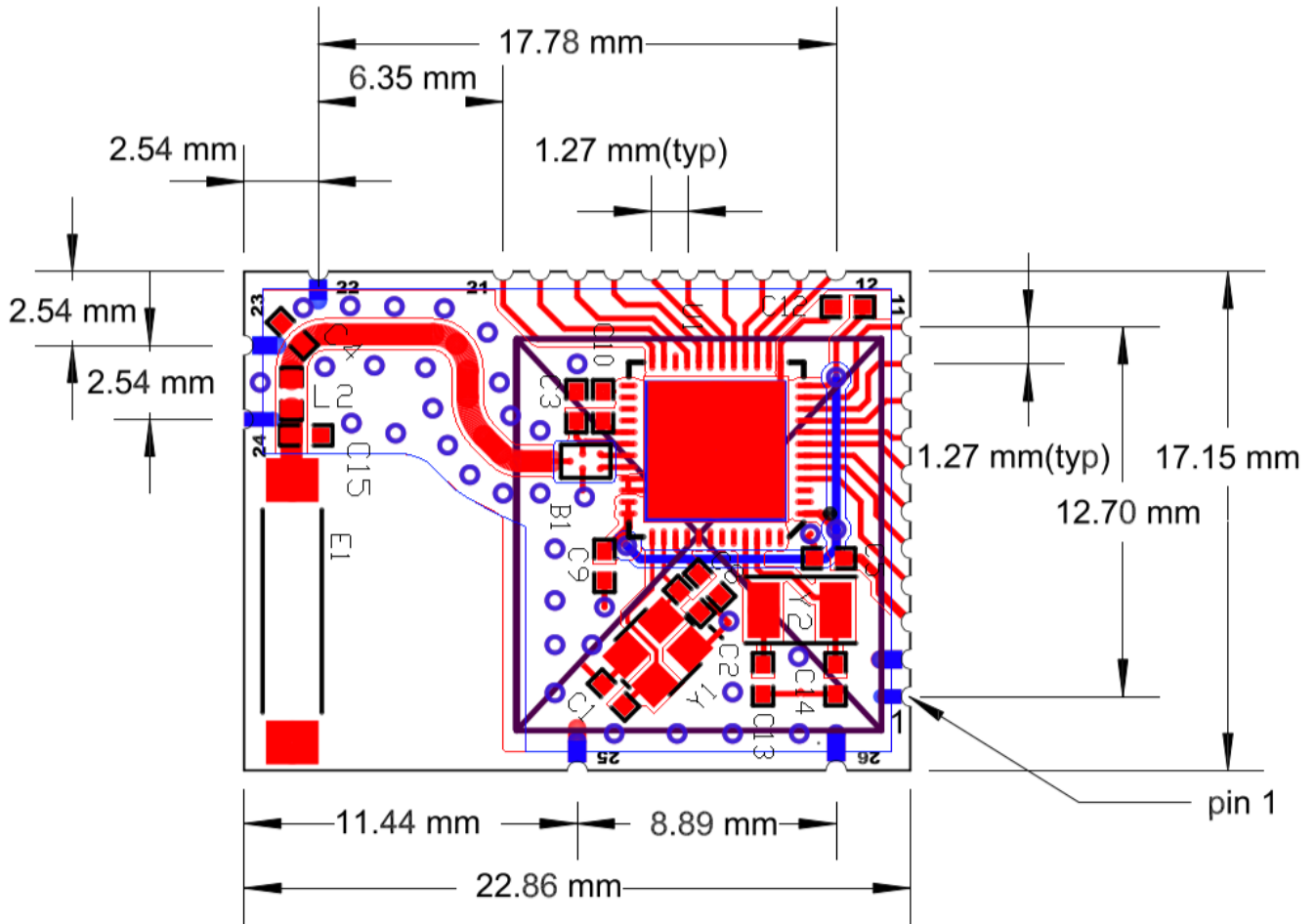
Recommended Footprint

The figure below shows the recommended footprint - or land pattern - on the host PCB, together with keep-out areas for ground plane, traces, and vias.
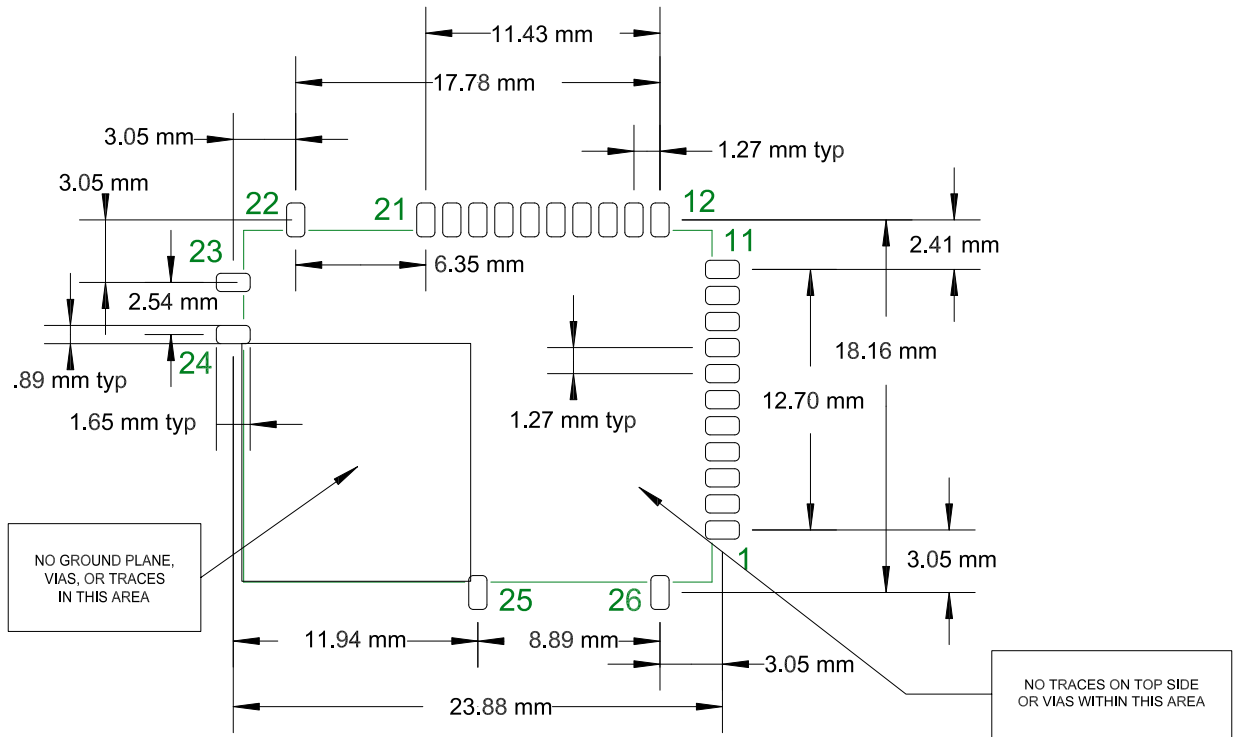
Regulatory Notices

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 interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications to the RE1 module hardware or to the Coriandolo Radio Protocol software that are not expressly approved in writing by 64seconds could void the user's authority to operate the equipment.