

## Bidirectional Remote Control Transceiver Module

The **RC-CC1310-XXX-TBLO** module is based on Texas Instruments CC1310 component. This device is equipped with a software application of Bidirectional Remote Control Long Range. This module can work with the Bidirectional Remote Control of RadioControlli denominated TBLO-869 and TBLO-915.



Module Information :

<b>RC-CC1310-869-TBLO</b>	869.5MHz work with TBLO-869
<b>RC-CC1310-915-TBLO</b>	915.0MHz work with TBLO-915

Long range bidirectional system, composed by a bidirectional remote control (TX unit) and a RX unit with the possibility of switching 4 relays.

**This bidirectional control system** has been designed for the various needs of installers and electricians, it can be used to activate all types of lighting, as well as other applications such as water games, electric gates and automatic doors.

The remote control (4 keys) has both the ability to transmit and receive (bidirectional), a feature that makes it unique compared to other radio controls, it allows the user to check the status of the relay even remotely (green indicator, relay switched, indicator red relay not switched) and even to switch the single relay.

Each time a relay activation command is sent, there is a visual confirmation as to whether the activation operation was successful or not (**return receipt**).

Distance: About 1000 meters in open field.

### Applications :

- Lighting
- Sistemi domotici
- Controllo Accessi
- Automazione Industriale
- Sistemi di Allarme

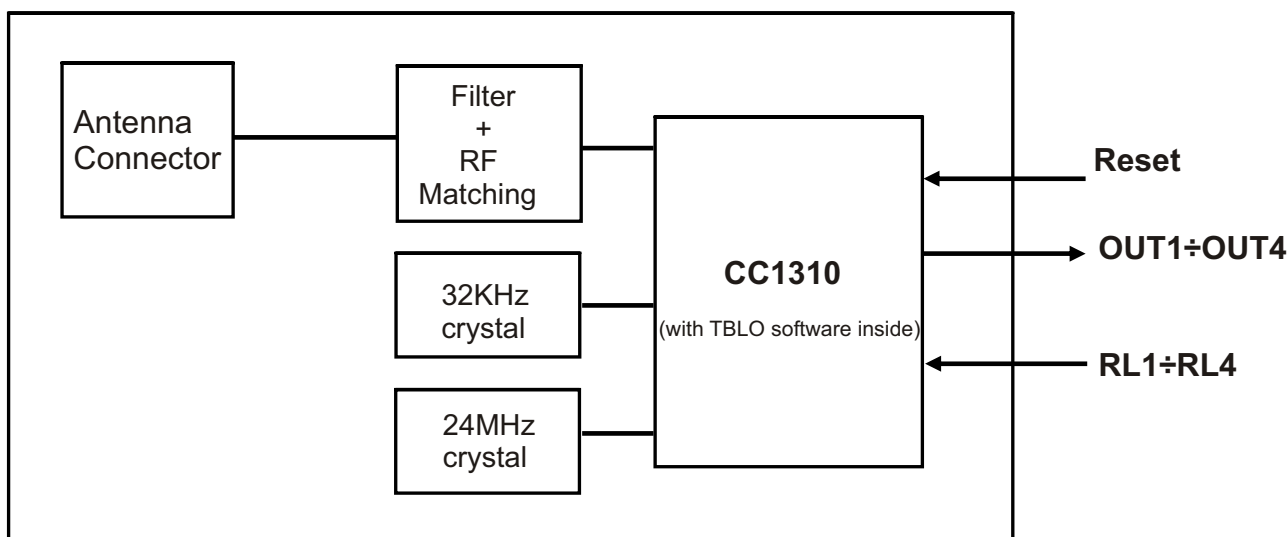
### Characteristics:

- Confirmation sent command (return receipt).
- Possibility to interrogate the RX unit and check the status of the 4 channels.
- GFSK modulation 19.2Kbps - Frequency 869.5MHz
- Distance: About 1000 meters in open field.

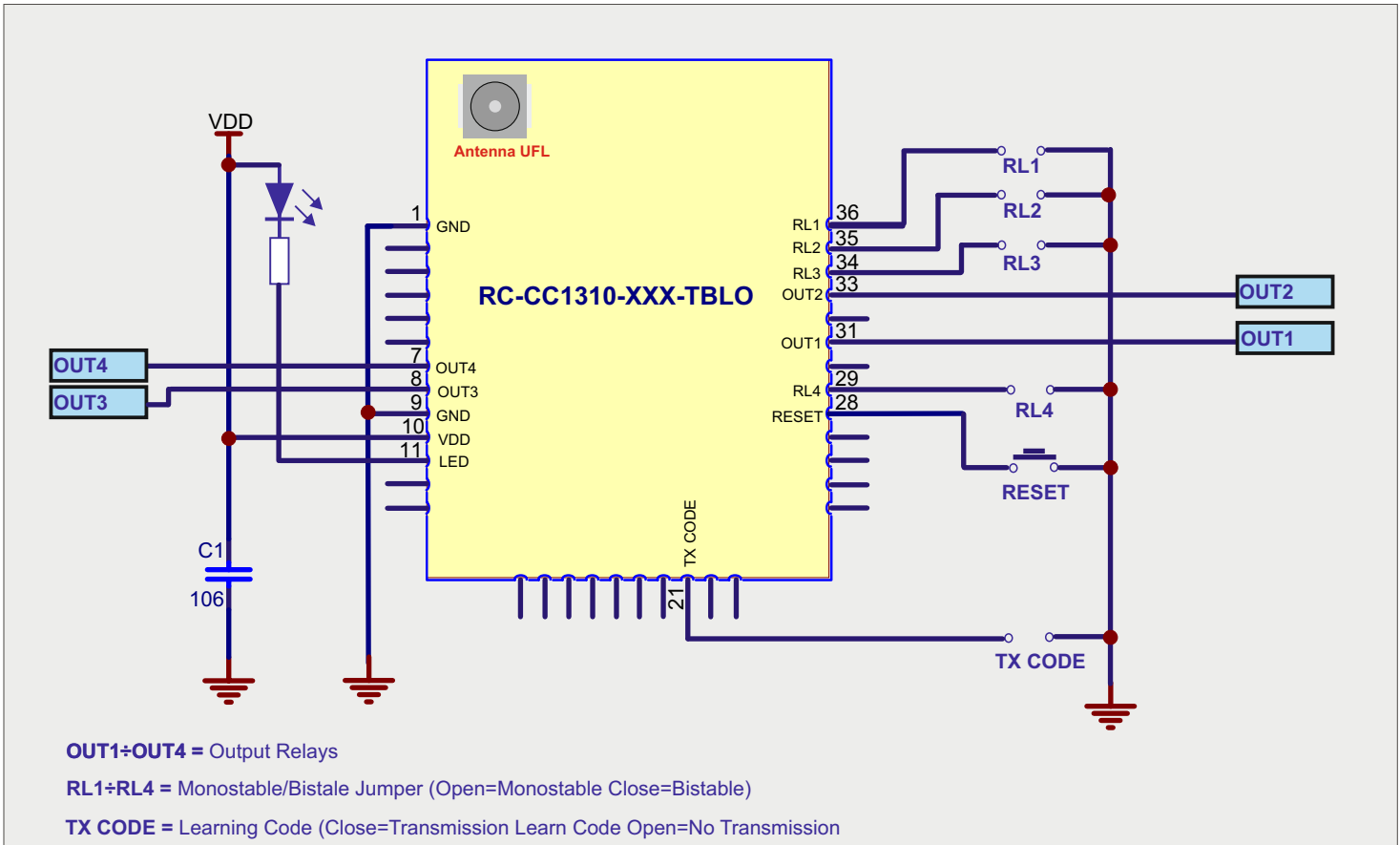
Technical Characteristics					
Parameter	Symbol	Min.	Typ.	Max.	Units
Operating Voltage	$V_{CC}$	1.8	3.00	3.8	VDC
Supply Current RX Mode	$I_{CRX}$		5.50		mA
Supply Current TX Mode +10dBm	$I_{CTX1}$		13.40		mA
Supply Current Standby Mode	$I_{CSTB}$		0,70		$\mu$ A
Supply Current Shut Down Mode	$I_{CSHU}$		185		nA
Operative Frequency	$F_{of}$		869.5(*)		MHz
Frequency Error	$F_{pp}$		$\pm 10$		ppm
RF Power Output 50ohm (*)	$P_{oo}$		+10.0		dBm
Type of Modulation	2-GFSK				
RF Sensibility Long Range Mode	$S_{LR}$		-124.0		dBm
Data Rate	$D_{CC}$	0,01		4.0	
Operative Temperature	$T_{LR}$	-30		+75	$^{\circ}$ C

(\*) On request is possible to change/modify the operative frequency (step of 100KHz).

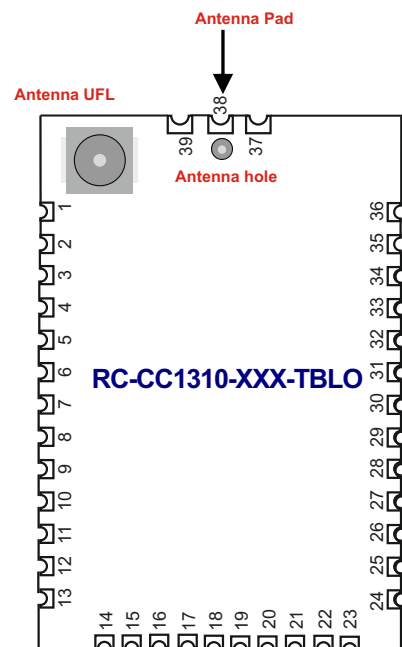
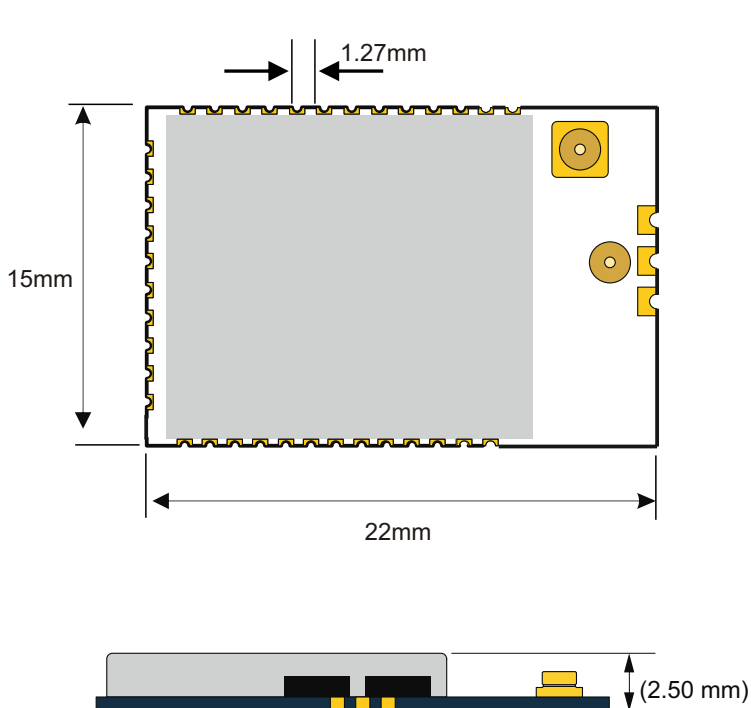
### Block Diagram Receiver



## Reference Schematics

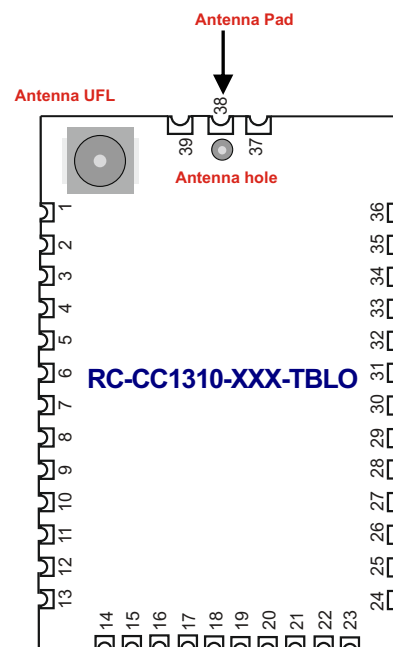


## Mechanical Dimension



## Terminal description RC-CC1310-XXX-TBLO

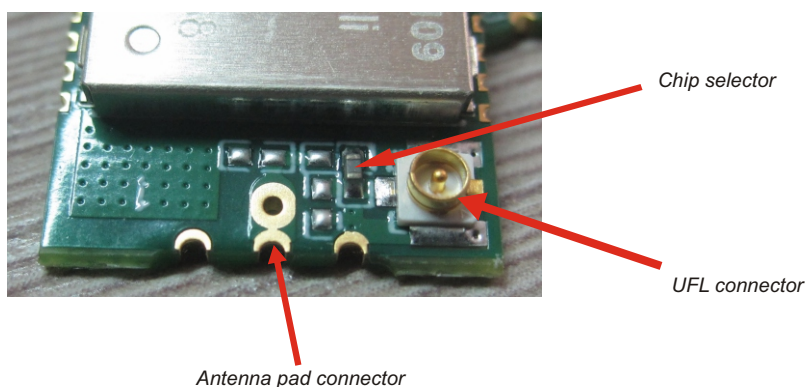
Pads	Name	Description
1,9	GND	Ground
2,3,4,5,6	NU	Not Used
7	OUT4	Output Relay number 4
8	OUT3	Output Relay number 3
10	VDD	Power 3Volt
11	LED	Led TX Code
12,13,14,15,16,17	NU	Not Used
18,19,20	NU	Not Used
21	TX CODE	TX Code Transmission
22,23,24,25,26,27	NU	Not Used
28	RESET-N	RESET (Active Low)
29	RL4	GPIO
30	NU	Not Used
31	OUT1	Output Relay number 1
32	NU	Not Used
33	OUT2	Output relay number 2
34	RI3	GPIO
35	RI2	GPIO
36	RI1	GPIO



## Type of Antenna connection

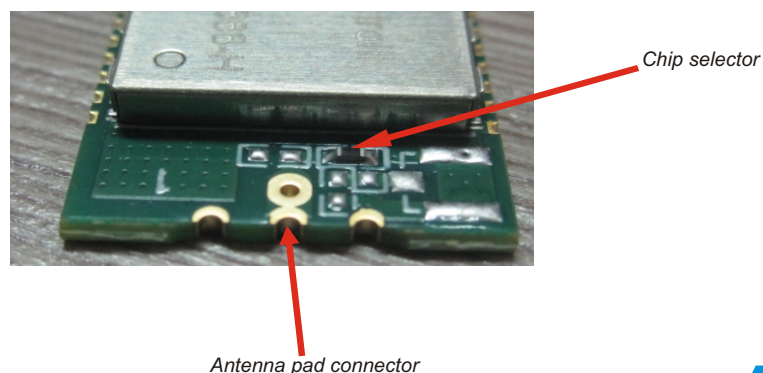
### Standard Version

- Antenna connection to the UFL connector

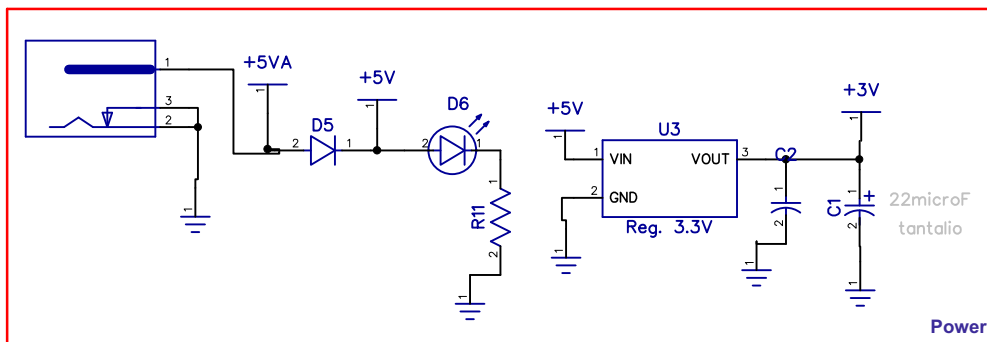
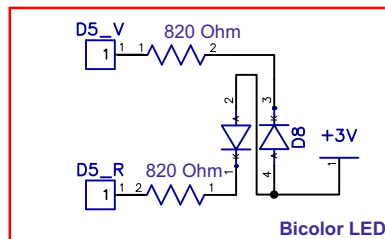
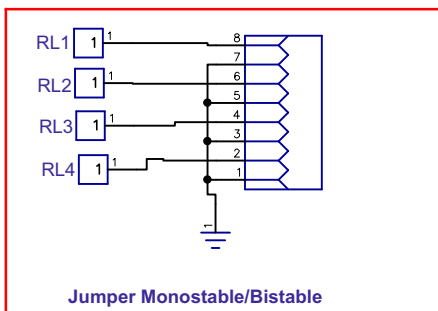
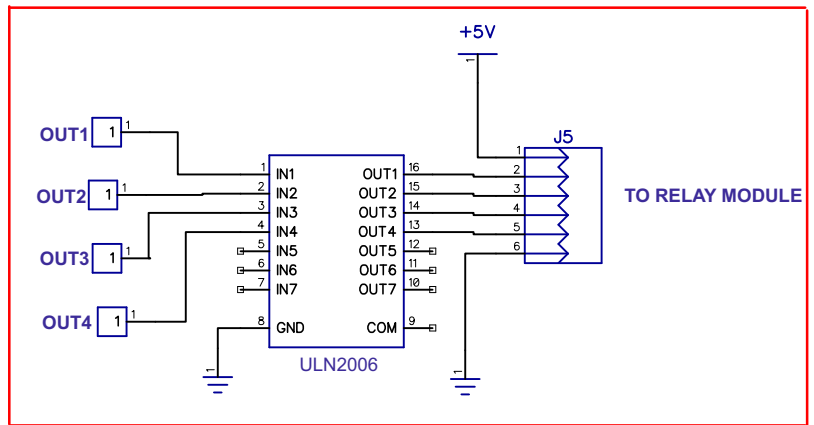
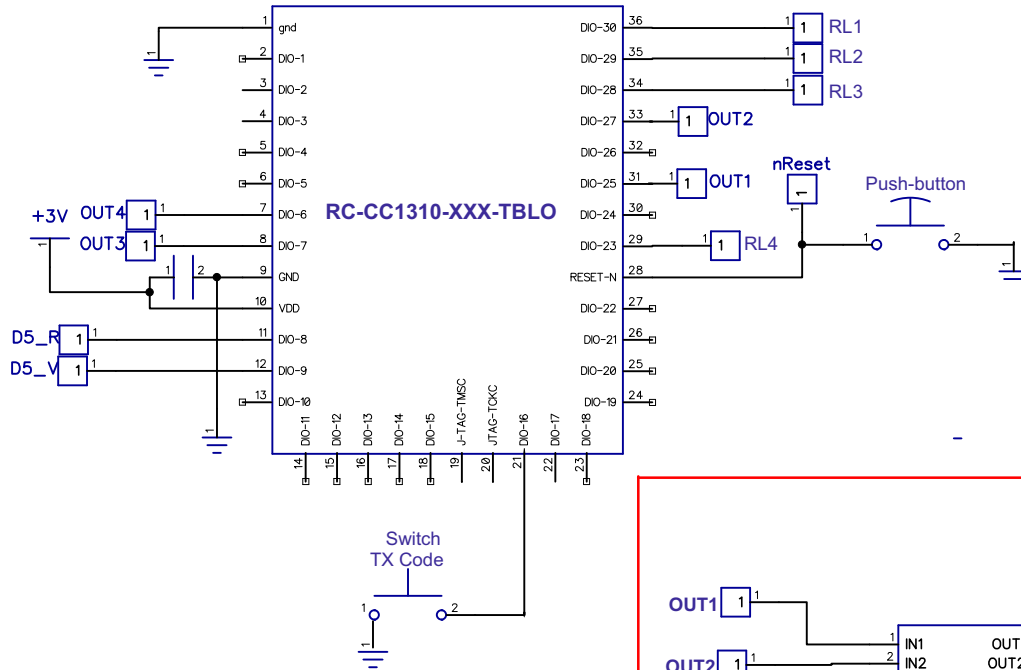


### PCB Version

-Antenna connection to hole and pad



## Application Note (schematic RCAT-XXX)



## Recommended Hardware design

### 1) Hardware

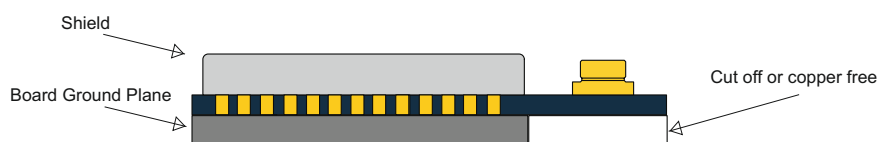
All unused pins should be left floating; do not ground.  
All GND pins must be well grounded.  
Traces should not be routed underneath the module.

### 2) Power Supply

The transceiver module must be powered from a regulated voltage.  
It is recommended to keep the power supply line for VCC as short and low impedance as possible. Near the power pins it is recommended to insert a ceramic the decoupling capacitor (100nF).

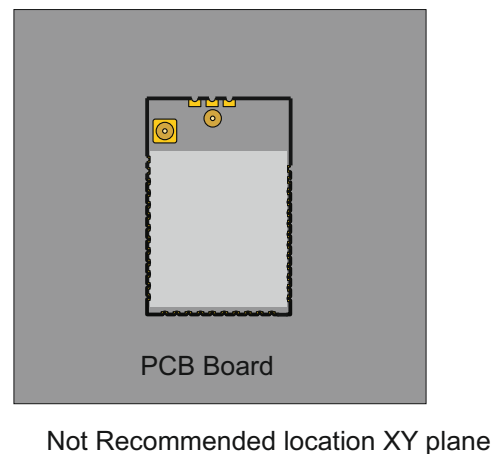
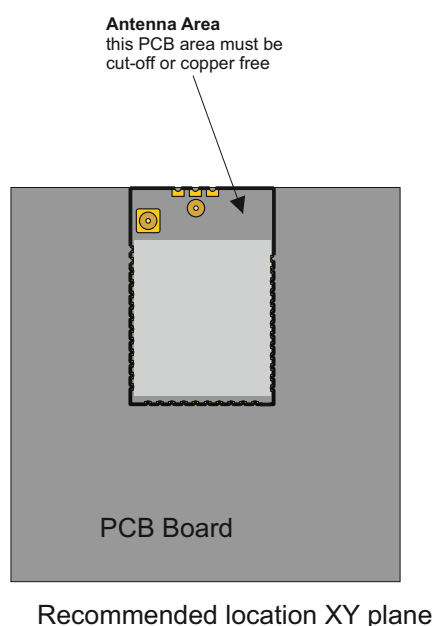
### 3) Ground Plane

It is recommended to have a copper ground plane under the shielded zone of the module. The ground plane should be unbroken.

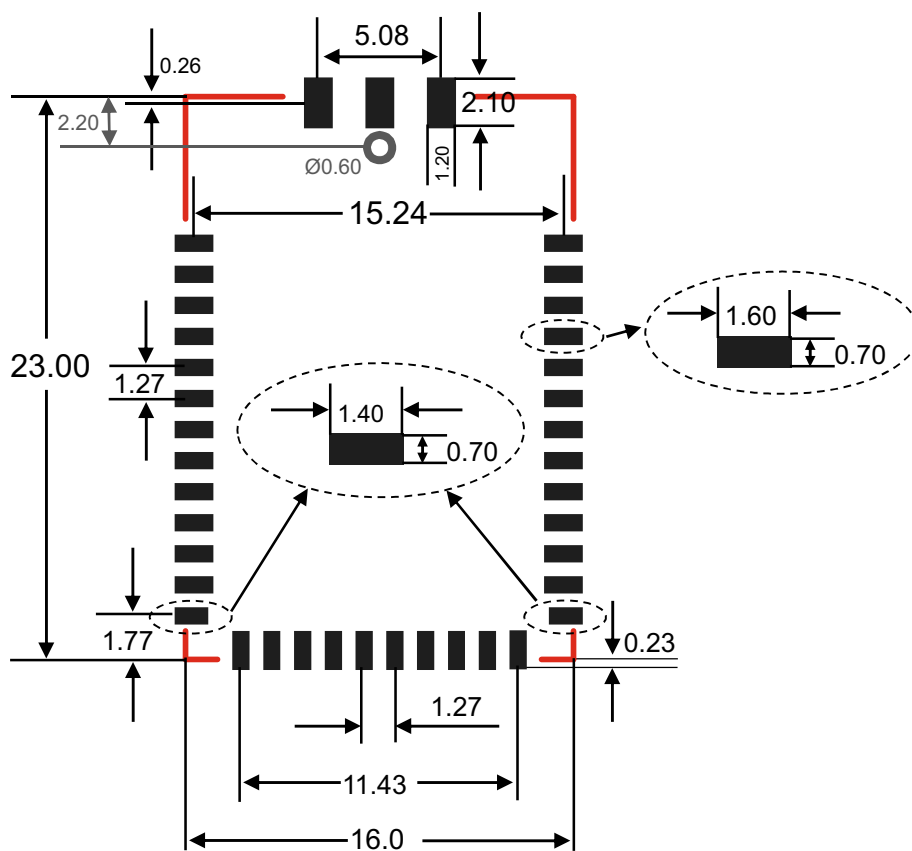


### 4) Module Placement

The antenna on the PCB has an omnidirectional radiation pattern. To maximize antenna efficiency, an adequate grounding plane must be provided under the module. Instead the areas underneath and surrounding the antenna area must be free of copper.



**Recommended PCB Layout**



**Recommended Reflow Profile for Lead Free Solder**

