

## **Rabbit Semiconductor**

FCC ID: VCB-540d144

Request for transmitter modular approval

### **Transmitter Module Characteristics**

Item	Requirements	EUT
<b>1</b>	Have its own RF shielding	<b>Device is equipped with Metal shielding to cover RF section. Refer to attached photos</b>
<b>2</b>	Have buffered modulation/data inputs (if such inputs are provided),	<b>All inputs to the modules are buffered through logic or microprocessor inputs.</b>
<b>3</b>	Have it own power supply regulation	<b>Internal 2.8 and 2.9V power regulator. Refer to Block diagram</b>
<b>4</b>	Meet the antenna requirements of Section 15.203	<b>Device is equipped with unique antenna (RP-SMA) connector. Refer to attached photos</b>
<b>5</b>	Be tested in a stand-alone configuration, i.e., the antenna, AC or DC power and data input/output lines must be connected to the module but, the module must not be inside another case during testing	<b>Device was tested in stand-alone configuration Refer to setup photos.</b>
<b>6</b>	Be labeled with its own FCC ID number, <b>and</b> if the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module.	<b>Two proposed FCC ID label formats are included. One of label is to be placed on the module and the other label is to be placed on the outside of system. Refer to FCC ID label format and location information below.</b>
<b>7</b>	The modular transmitter is manufactured so that the user cannot influence the operation of the transmitter that will operate outside of the scope of the regulations.	<b>Refer to “OEM User’s Manual” Exhibit</b>
<b>8</b>	Address compliance with the Commission's RF exposure limits in Sections 1.1310 and 2.1093. In addition, spread spectrum transmitters operating under Section 15.247 are required to address RF exposure compliance in accordance with Section 15.247(b)(4).	<b>See MPE Calculation document.</b>



Figure 1. RCM4400W Showing RF shield and Omni-directional Antenna.



Figure 2. RCM4400W at a different angle.

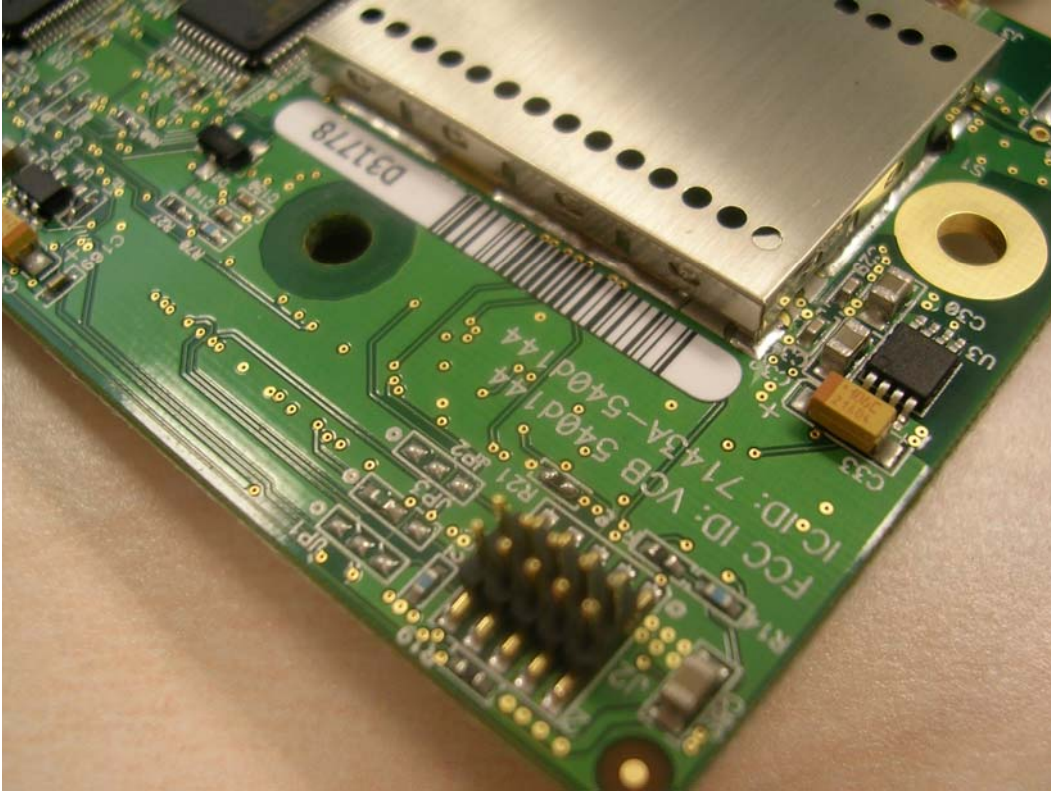


Figure 3. RCM4400W showing a close-up of the RF shield.

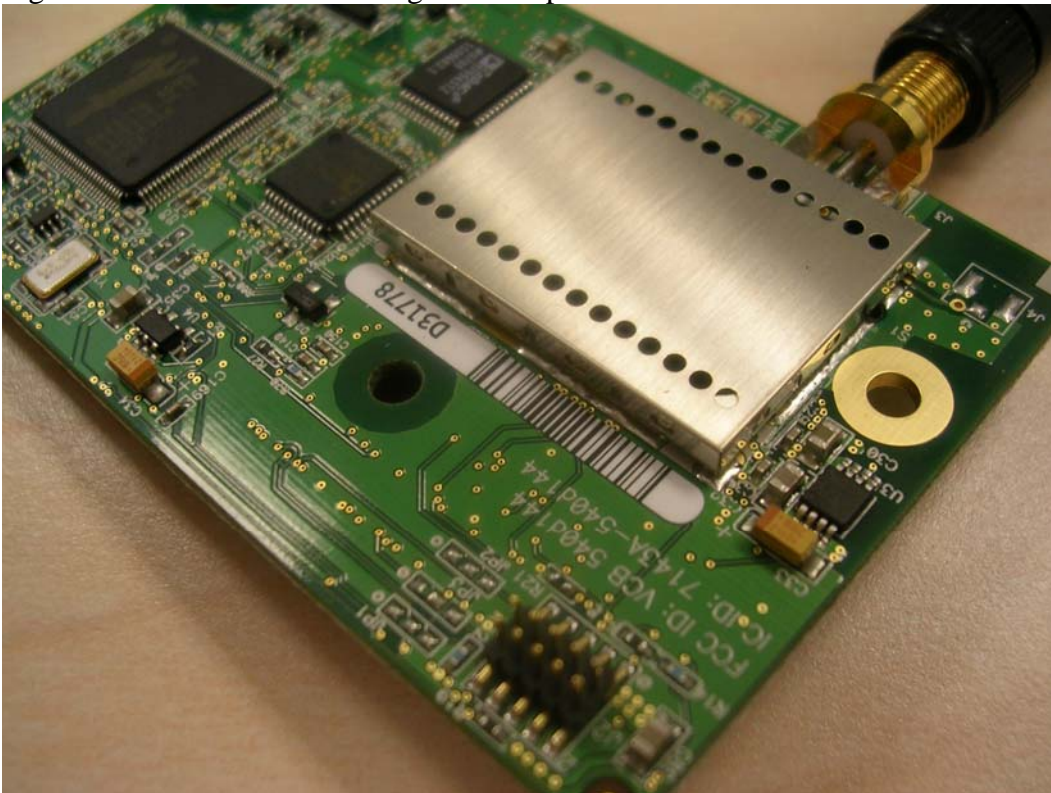


Figure 4. RCM4400W showing a close-up of the RF shield.



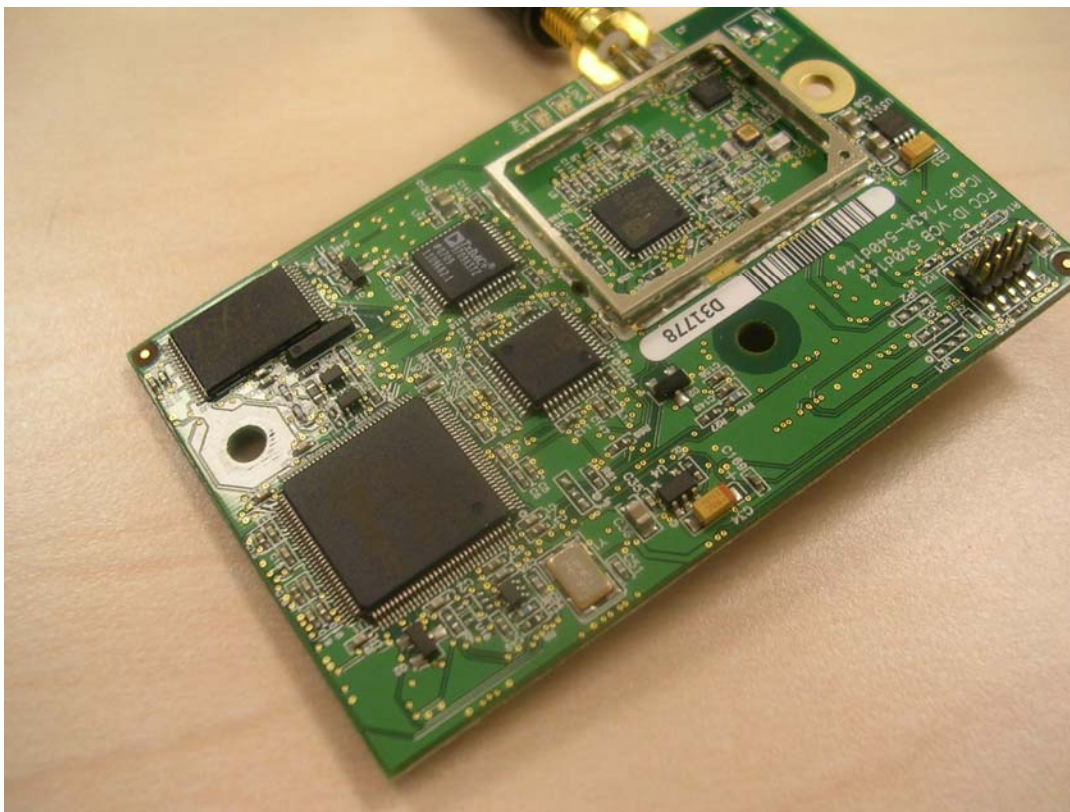


Figure 5. RCM4400W showing RF shield without cover

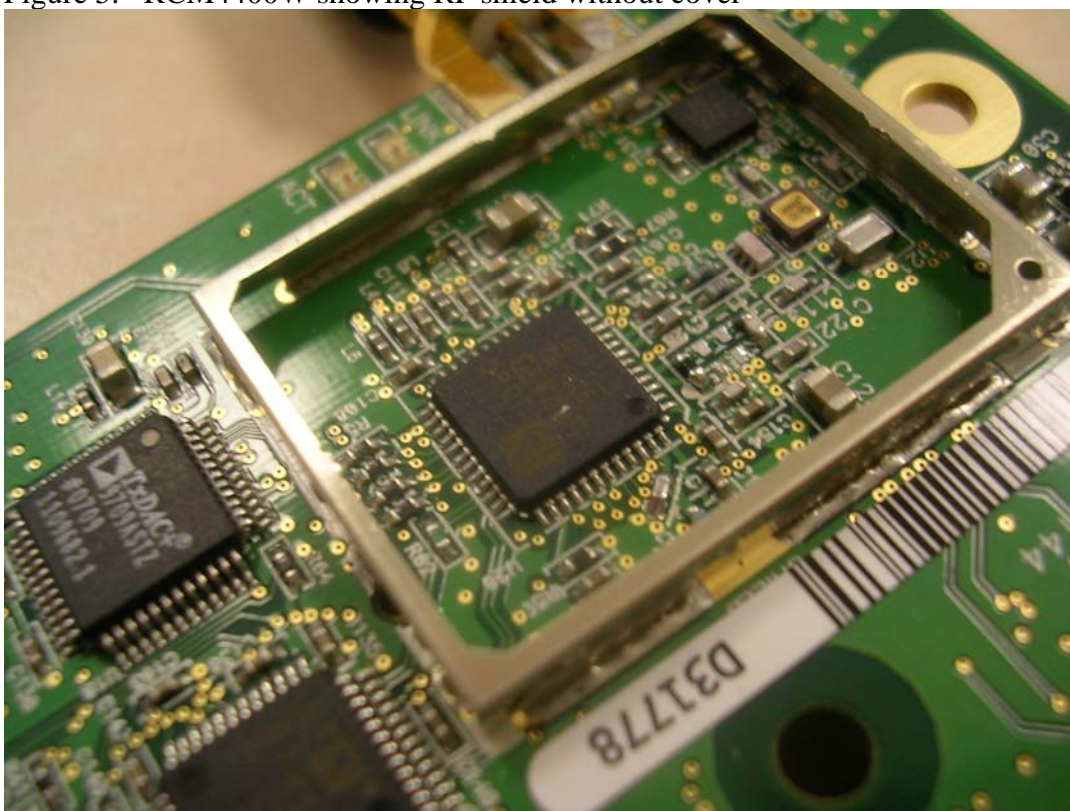


Figure 6. RCM4400W close-up of RF shield without cover



Figure 9. RCM4400W bottom side.

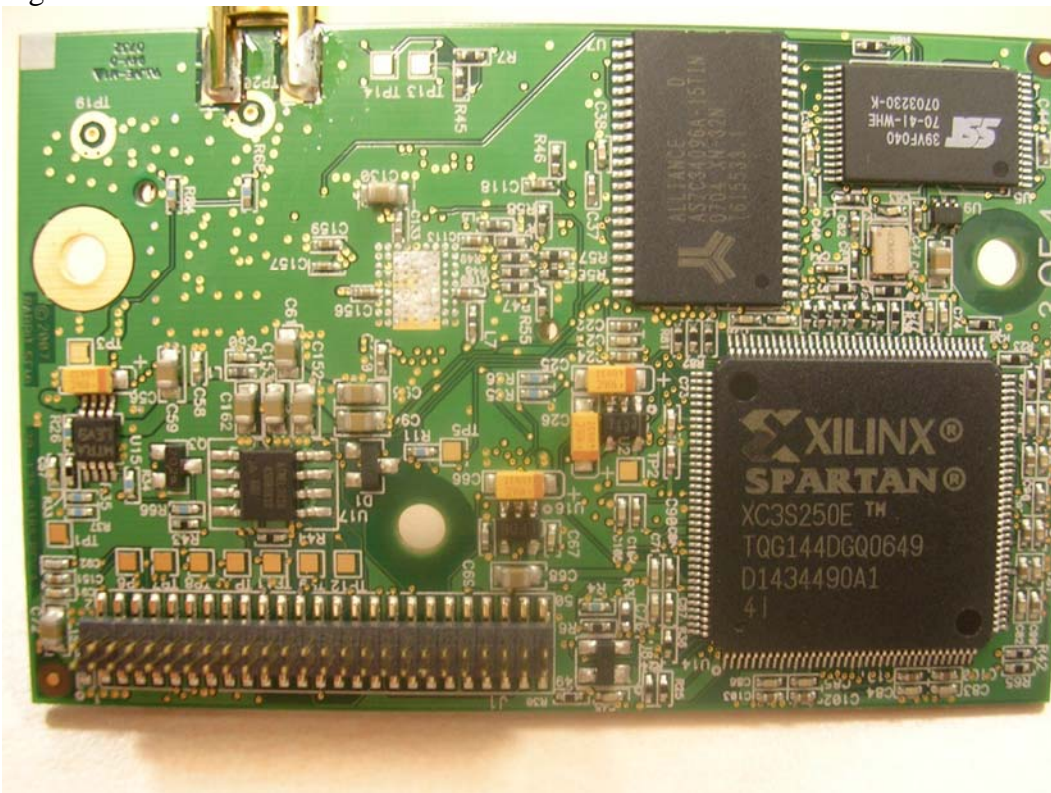


Figure 10. RCM4400W bottom side, closer.



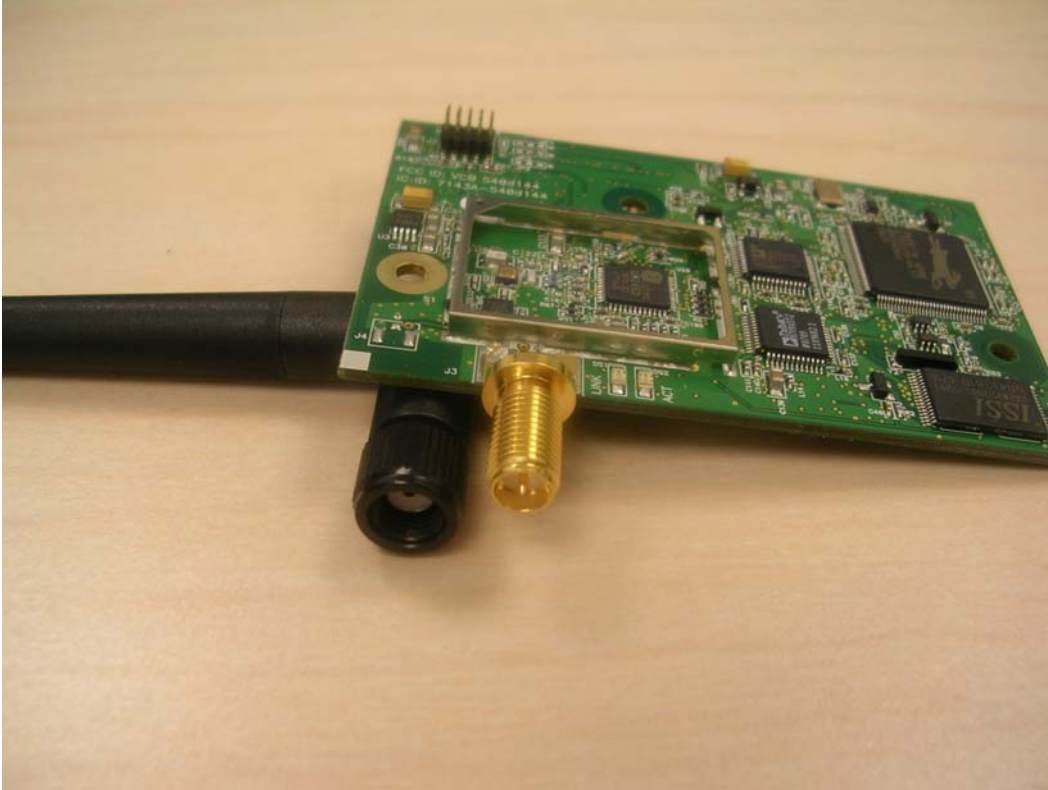


Figure 11. RCM4400W showing RP-SMA connector.



Figure 12. RCM4400W showing close-up of RP-SMA connector.

## Two proposed FCC ID label formats

The first one is for the outside of the device and is also described in the OEM manual.

This device complies with Part 15 of 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.

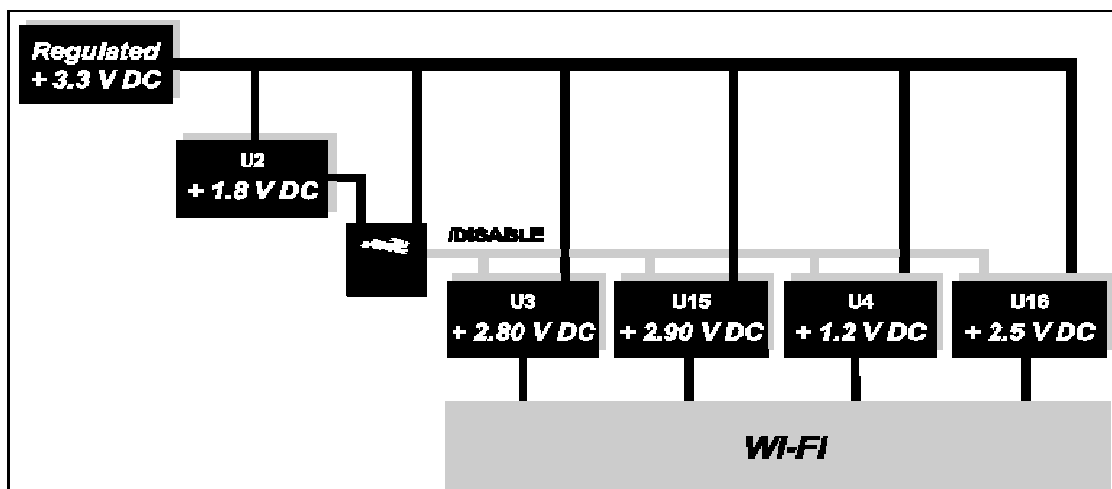
The second one is affixed to RF module itself.

FCC ID: VCB-540d144  
IC ID: 7143A-540d144

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label electronically or permanently referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: VCB-540d144” or “Contains FCC ID: VCB-540d144.” Any similar wording that expresses the same meaning may be used.

## Regulator Operation

The +3.3 V supplied to the RCM4400W via header J1 powers most of the onboard circuits. In addition, there is a +1.8 V DC linear regulator that provides the core voltage to the Rabbit 4000 microprocessor. Other linear regulators supply the additional voltage levels needed by the Wi-Fi circuits. A /DISABLE line from the Rabbit 4000 can be used to disable all of the Wi-Fi linear regulators, essentially turning off the Wi-Fi circuits. See figure 13 and Table 2 below.



**Figure 13. RCM4400W Onboard Power Supplies**

Voltage	Power Supply Use
+2.90 V DC	VDD_PA
+2.80 V DC Dual Out	VDD_VCO VDD_XCVR
+2.50 V DC	FPGA VCCAUX
+1.2 V DC	FPGA VCCINT

***Table 2. Power Supply Net Names***



## Stand Alone Operation picture

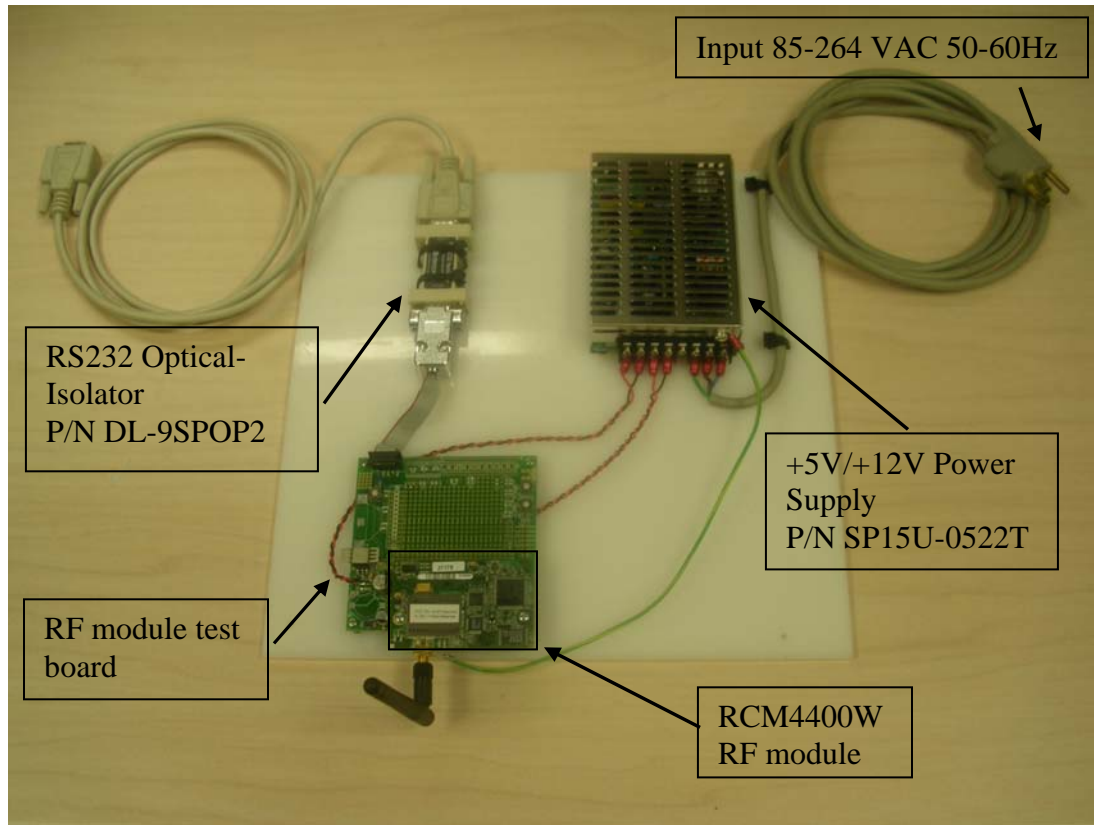


Figure 14. RCM4400W showing test setup.