

RS-WC-201

Module Integration Guide

Version 2.6

October 2012

Redpine Signals, Inc.

2107 N. First Street, #680

San Jose, CA 95131.

Tel: (408) 748-3385

Fax: (408) 705-2019

Email: info@redpinesignals.com

Website: www.redpinesignals.com

Table of Contents

RS-WC-201	1
1 Reset Timing	4
2 Circuit and Layout Guidelines	6
3 u.FL Connector Recommendations	7
4 FCC and IC Declaration	8

List of Figures

Figure 1: Reset Timing	4
Figure 2: PCB Landing Pattern for RS-WC-201	5
Figure 3: Copper Etching Guidelines.....	6
Figure 4: uFL Connector and External Antenna	7

1 Reset Timing

Following diagram shows the timing requirement for Reset input in two scenarios.

- A. Power up
- B. Giving reset during module operation

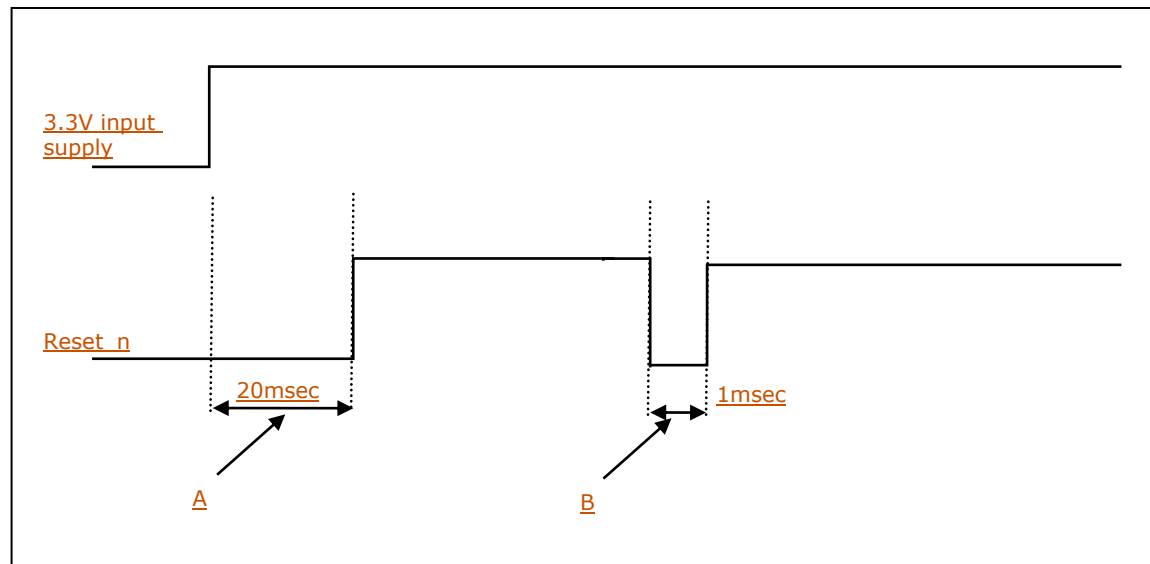


Figure 1: Reset Timing

RS-WC-201 PCB Landing Pattern

TOP VIEW

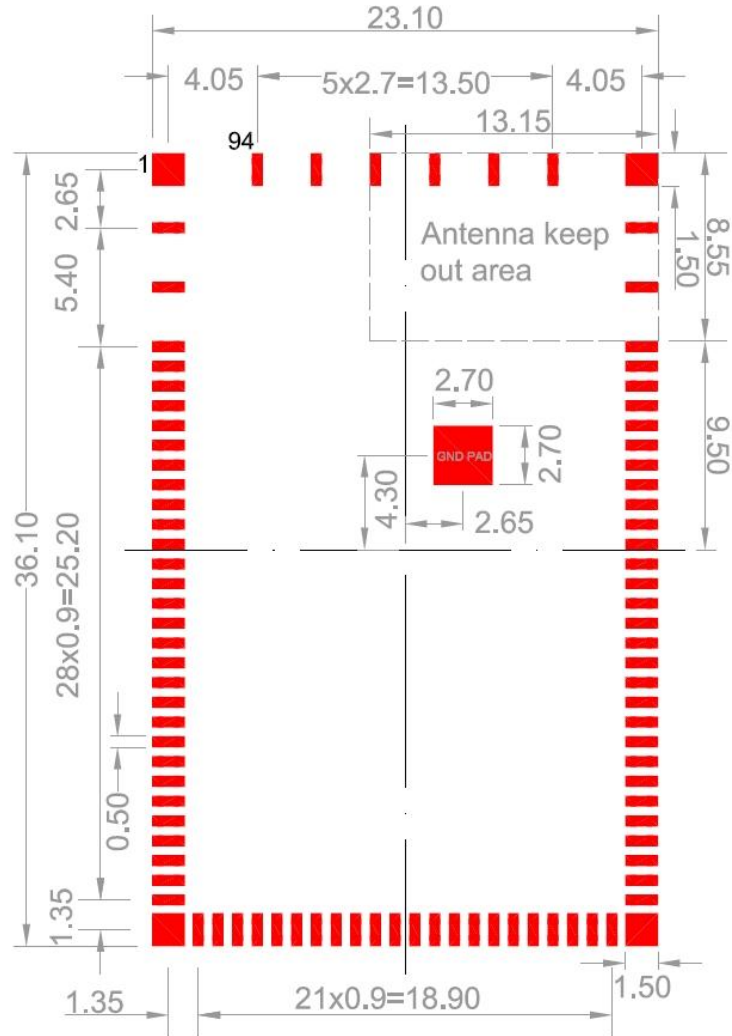


Figure 2: PCB Landing Pattern for RS-WC-201

2 Circuit and Layout Guidelines

The following are guidelines for integrating the RS-WC-201 module into a wireless LAN solution.

1. The module has a ground pad of size 2.7mm x 2.7mm. An application's layout must have a provision to include this.
 - a. Provide a 2.7 mm X 2.7 mm Copper pad on the Topside of the application board. Please open the solder mask in this area so that the Cu is exposed.
 - b. Provide a 2.7 mm X 2.7 mm or higher Copper pad on the bottom side of the application board. Please open the solder mask in this area so that the Cu is exposed.

The dimension of the ground pad is shown as 2.5mm x 2.5mm in the datasheet. However, the landing is shown as expanded to 2.7mm X 2.7mm in the module integration guide for it to act as a better thermal ground pad.

- c. Provide at least 12 via's to connect these pads to the Ground plane. It is recommended that the via's should be at least 10 mil x 18 mil.
2. The copper on the application board should be etched out on all the layers on the designated area shown in figure for the Landing Pattern. This is required for the Antenna Keep out area. An example is shown below.

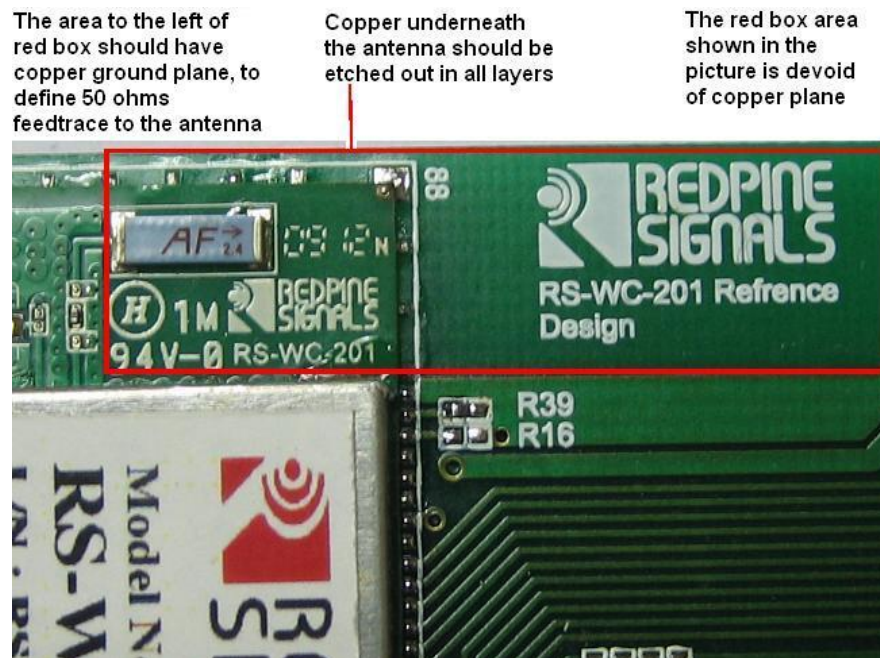


Figure 3: Copper Etching Guidelines

3 u.FL Connector Recommendations

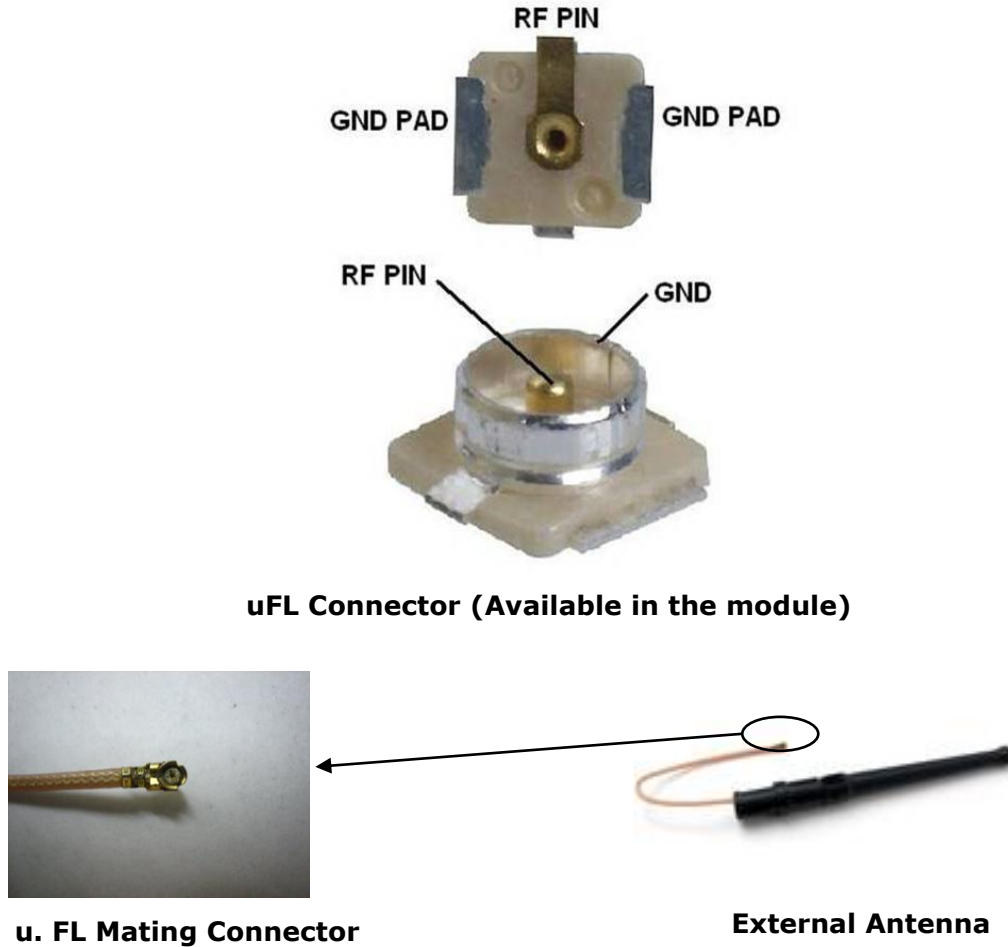


Figure 4: uFL Connector and External Antenna

The RS-WC-201 module comes with an integrated chip antenna, and also a u.FL connector where an external antenna can be connected. A choice between the chip antenna and the external antenna can be made through a software command (Below mentioned in the table). The figures show the u.FL connector integrated on the module. The connector on the external antenna should be pushed down to fit into the u.FL connector connected to the module. Some reference part numbers for external antenna are given below. This is for general guidance only, as the choice of the antenna will depend on the application.

Manufacturer	Part No
Antenna Factor (Chip Antenna)	ANT-2.4-CHP-X
Pulse (External Antenna)	W1043

4 FCC and IC Declaration

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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the 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 instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject to the Following two conditions : (1) this device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAUTION: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

End Product Labelling

This Module is labelled with its own FCC ID. If the FCC ID Certification Number is not visible while installed inside another device, then the device should display the label on it referring the enclosed module. In that case, the final end product must be labelled in a visible area with the following:

"Contains Transmitter Module FCC ID: XF6-RSWC201"

OR

"Contains FCC ID: XF6-RSWC201"

The OEM should not provide information to the end user regarding installation or removal of this RF module or change RF related parameters in the user manual of the end product.

The OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

This Module is labelled with its own IC ID. If the IC ID Certification Number is not visible while installed inside another device, then the device should display the label on it referring the enclosed module. In that case, the final end product must be labelled in a visible area with the following:

“Contains Transmitter Module IC ID: 80407A-RSWC201”

OR

“Contains IC ID: 80407A-RSWC201”

Ce module est étiqueté avec son propre ID IC. Si le numéro de certification IC ID n'est pas visible lorsqu'il est installé à l'intérieur d'un autre appareil, l'appareil doit afficher l'étiquette sur le module de référence ci-joint. Dans ce cas, le produit final doit être étiqueté dans un endroit visible par le texte suivant:

“Contains Transmitter Module IC ID: 80407A-RSWC201”

OR

“Contains IC ID: 80407A-RSWC201”

énoncé de la FCC (états-Unis seulement) Cet équipement a été testé et jugé conforme aux limites de Classe B pour un appareil numérique, en vertu de l'article 15 de la réglementation de la FCC. Ces limites ont été instaurées pour fournir une protection raisonnable contre toute interférence nuisible dans une installation résidentielle. Cet équipement génère, utilise et peut émettre de l'énergie radiofréquence. S'il n'est pas installé et utilisé conformément aux instructions, il peut provoquer des interférences sur les communications radio. Cependant, il n'est pas garanti que des interférences ne se produiront pas dans certaines installations. Si cet équipement cause des interférences à la réception radio ou télévisée (ce qui peut être vérifié en éteignant l'appareil puis en le remettant sous tension), l'utilisateur peut tenter de résoudre en suivant une ou plusieurs des mesures ci-après : Réorienter ou déplacer l'antenne réceptrice. Augmenter l'espace entre l'appareil et le récepteur. Brancher l'appareil à une prise de courant différente de celle sur laquelle le récepteur est branché. Pour obtenir de l'aide, contacter le vendeur ou un technicien radio/television expérimenté.

REMARQUE: Toute modification non autorisée expressément par le fabricant responsable de la conformité peut annuler le droit de l'utilisateur à faire fonctionner le produit.

Document History:

Rev.	Ver. No.	Date	Changes
1.	0.1	10, Feb 2012	Initial version.
2.	1.0	27 Mar, 2012	Merged schematics for UART and SPI
3.	2.0	8 May, 2012	Added antenna keep-out area for the module, put in Rev 2.0 schematics. Added details about pin settings for SPI/UART interface selection
4.	2.1	13 Jul,2012	USB interface added
5.	2.2	17 July, 2012	Added new schematics to match the datasheet version 1.4
6.	2.3	20 July, 2012	Changed peak current to 400mA
7.	2.4	1 Aug, 2012	Removed statement that WAKEUP is not supported
8.	2.5	30 Aug, 2012	USB interface added
9.	2.6	5 Oct, 2012	Connections for pin 13 and 14 are changed. Now they are connected to the MCU for wireless firmware upgrade

Review History

Ver. No.	Date	Reviewer	Comments	Action
2.0	01 May, 2012	Suresh		Closed version 2.0 after review completion