RDL-3000 Family

Broadband Wireless Systems

RDL-3000-RMF
Fixed TVBD
Radio Module

Product Manual

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1 Product Overview

The RDL-3000 Radio Module RDL-3000-RMF Fixed TVBD is comprised of a proprietary Media Access Control (MAC) protocol engine and Time Division Duplexing (TDD)/ Orthogonal Frequency Division Duplexing (OFDM) digital radio.

The RDL-3000-RMF module is not designed for stand-alone operation. The module is sold as one component of a packaged system which includes a suitable housing for the module connectors for required external components including a power supply and antenna system. This is afterwards referred to as the 'final product'. The final product may be designed and manufactured by Redline or a licensed third party.

Frequency settings within the specified frequency ranges are software keyed to be compliant with specific regulatory agency requirements in the region of deployment.

USA:	RDL-3000-RMF:	470 - 608 and 614 - 698 MHz band
Canada:	RDL-3000-RMF:	512 - 608 and 614 - 698 MHz band

Important: Read this entire document prior to installing or operating the RDL-3000-RMF module.

2 Conditions of Use

2.1 General Conditions

The RDL-3000-RMF is not provided for sale to the general public. The RDL-3000-RMF contains a proprietary radio interface and can not be directly connected to any standard telecommunications or computer devices.

This manual is provided as supplement to technical and operational documentation and training provided by Redline and its agents. Any operation or use of the RDL-3000-RMF in any manner not expressly specified within this manual or approved in writing by Redline (or its agents) is expressly forbidden and voids the user's right to operate the module. This includes, but is not limited to, any modification of the module hardware or software, installation of the module in a non approved enclosure, and use with non approved antennas.

2.2 Country of Use

Refer to the regulatory notices in this document before installing or operating the module.

Operation of the final product requires a software 'key' that is available exclusively from Redline or its authorized agents. The software key is unique to each module and must be installed and activated before the radio will operate. The key contains sufficient security features that the professional installer and operator can not decode, modify, substitute, or otherwise circumvent the operational restrictions imposed by the 'key'.

The software 'key' limits the transmit power, operating frequency range, and channel bandwidth per the regulator domain governing the location where the radio will be deployed. The operator does not have the option to select the country or regulatory region of operation.

The software 'key' limits the mode of operation as a master or client. The client mode is 'passive listener' and while in this mode the module can not initiate any transmission without first receiving and decoding a valid authorization message from the master. A module with a key for client operation can not be changed by the installer to enable master mode operation. A module with a key for master operation can operate in master or client (passive) mode.

Operation in the United States

The RDL-3000-RMF is certified with limited modular approval for use as an 'intentional radiator' in the United States as device FCC ID: QC8-RDL3000RMF.

When installed on this module, the software key region code 12 for United States restricts device operation to the FCC 470 - 608 and 614 - 698 MHz band on TV channels 14 - 35 and 39 - 51.

Table 1: Regional Identification Code 12: United States

Region Code	Band (MHz)	Chan. (MHz)	Freq. (MHz)	WSDB	Max. Tx Power (dBm)		
					Int. Ant.	HAZ	Ext. Ant.
Region 12							
US 470-698	470 to 698	6 6 Notch	473 to 599 623 to 695 602 to 620	Yes	N/A	18	18

Operation in Canada

The RDL-3000-RMF is certified with limited modular approval for use as an 'intentional radiator' in Canada as device IC: 4310A-RDL3000RMF.

When installed on this module, the software key region code 13 for Canada restricts device operation to the Industry Canada band RSS-196 512 - 608 MHz and 614 - 698 MHz for Rural Remote Broadband Systems (RRBS) on TV channels 21 - 35 and 39 - 51.

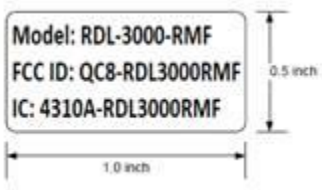
Table 2: Regional Identification Code 13: Canada

Region Code	Band (MHz)	Chan. (MHz)	Freq. (MHz)	WSDB	Max. Tx Power (dBm)		
					Int. Ant.	HAZ	Ext. Ant.
Region 13							
Canada 470-698	512 - 698	6 6 12 12 Notch	515 to 599 623 to 695 518 to 596 626 to 692 602 to 620		N/A	18	18

2.3 Product Labeling

Module Label

The RDL-3000-RMF modular transmitter will display a label referring to the FCC ID: QC8-RDL3000RMF registration number and the Industry Canada IC: 4310A-RDL3000RMF registration number. An information label is applied directly to the modular transmitter (example shown below).



Do not to remove any labels from the module.

External Label

An information label is applied to the outside of the chassis of the final product device/enclosure into which the module is installed. This label will display the FCC ID: QC8-RDL3000RMF registration number and the Industry Canada IC: 4310A-RDL3000RMF registration number for the enclosed RDL-3000-RMF module (example shown below).

Contains	FCC ID:QC8-RDL3000RMF
Contains	IC: 4310A-RDL3000RMF

Do not to remove any labels from the final product.

3 Module Installation and Service

3.1 Installation Into a Final Product

Redline shall retain complete control over the final installation of the module and will ensure compliance of the end product to all applicable FCC regulations. The module must be installed only into an approved enclosure (see Conditions of Use) and only at an approved manufacturing facility or service depot.

Redline licensing of the modular transmitter includes monitoring to ensure compliance in the operation and use of the RDL-3000-RMF as expressly specified within this manual. This includes restrictions against modification of the module hardware, approval of the final enclosure, operational restrictions for installers and end-users, and approval of antennas provided for use with the product.

Operation of the final product requires the 'key' be controlled exclusively by the manufacturer. The 'key' must be unique to each module and must be installed and activated before the radio will operate. The key must contain sufficient security features to the professional installer and operator can not decode, modify, substitute, or otherwise circumvent the operational restrictions imposed by the 'key'.

The software 'key' must limit the transmit power, operating frequency range, and channel bandwidth per the regulator domain governing the location where the radio will be deployed. The operator does not have the option to select the country or regulatory region of operation.

The software 'key' must limit the mode of operation as a master or client. The client mode is 'passive listener' and while in this mode the module can not initiate any transmission without first receiving and decoding a valid authorization message from the master. A module with a key for client operation can not be changed by the installer to enable master mode operation.

To operate in the TV Whitespaces frequency range, the final product must be capable of contacting and registering with the WSDB database server. The final product is <u>not</u> allowed to transmit on any channels before registering with the WSDB database server and obtaining a list of available channels or after the expiry time has elapsed.

Following WSDB registration, the final product is restricted to transmitting <u>only</u> on channels indicated as 'available' by the WSDB database. In congested areas, the number of available channels may be zero. Channel assignments are temporary and the final product must periodically contact the WSDB to refresh the channel list. The final product must vacate a channel in-use immediately when a WSDB database status update indicates the channel is no longer available.

The WSDB server URL is programmed into the the final product. To register, the final product <u>must</u> contain a record of the following device, location and contact information. The registration process will fail if the request is submitted with any blank, incomplete or invalid fields.

Redline will review all final products for compliance to regulatory restrictions.

The manufacturer must meet all labeling described in section 2.3.

3.2 Module Servicing

The RDL-3000-RMF is not intended to be field serviceable, and contains no field serviceable or field replaceable parts. The module must be serviced only at an approved manufacturing facility or service depot.

Warning: The RDL-3000-RMF is susceptible to damage from electrostatic charge. Electrostatic Discharge (ESD) must be avoided to prevent damaging or destroying the module. The module must always be store in an anti-static container/bag prior to installation and following removal from the product for servicing. Observe ESD precautions when handling the module.

3.3 Professional Installation

Devices containing the Redline RDL-3000-RMF require professional installation. The RDL-3000-RMF must only be installed by trained professional technicians authorized by Redline or its agents.

It is the responsibility of the installer to understand the product operation by attending training as required, reading and understanding the product documentation, and ensuring that all building, safety and regulatory codes are met and the installation is complete and secure.

3.4 Configuration for WSDB

IMPORTANT: This proceedure is intended for professional installers familiar with standard installation and configuration procedures using the RDL-3000-RMF module Web interface. This procedure assumes the basic product setup has been completed.

To operate in the TV Whitespaces frequency range, each sector controller and remote terminal (subscriber) must be capable of contacting and registering with the WSDB database server. The server URL is programmed into each RDL-3000-RMF module.

3.4.1 Options Key

Login to the web interface and click **Utilities -> Product Options** in the left hand menu to display the **Product Options** screen. Enter the Whitespaces enabled options key in the form and click Activate. Operation of the system requires a software options key. This key restricts device operation to the FCC 473-695 MHz band on TV channels 14 - 35 and 39 - 51. The professional installer and operator can not modify or otherwise circumvent these operational restrictions. It is recommended to reboot the device following activation of the options key.

3.4.2 WSDB Registration Form

Login to the Web interface and click **Configuration**->**WSDB Control** to display the WSDB registration screen. This screen is displayed only if FCC WSDB support is enabled by the options key ( ) (US only).

The WSDB registration form must be complete with all required device type, contact and location information prior to contacting the WSDB server. The registration process will fail if a form is submitted with any blank/empty field. Form fields may be configured using the the Web interface or Telnet.

Click **Apply & Save** to submit the form to the WSDB server.

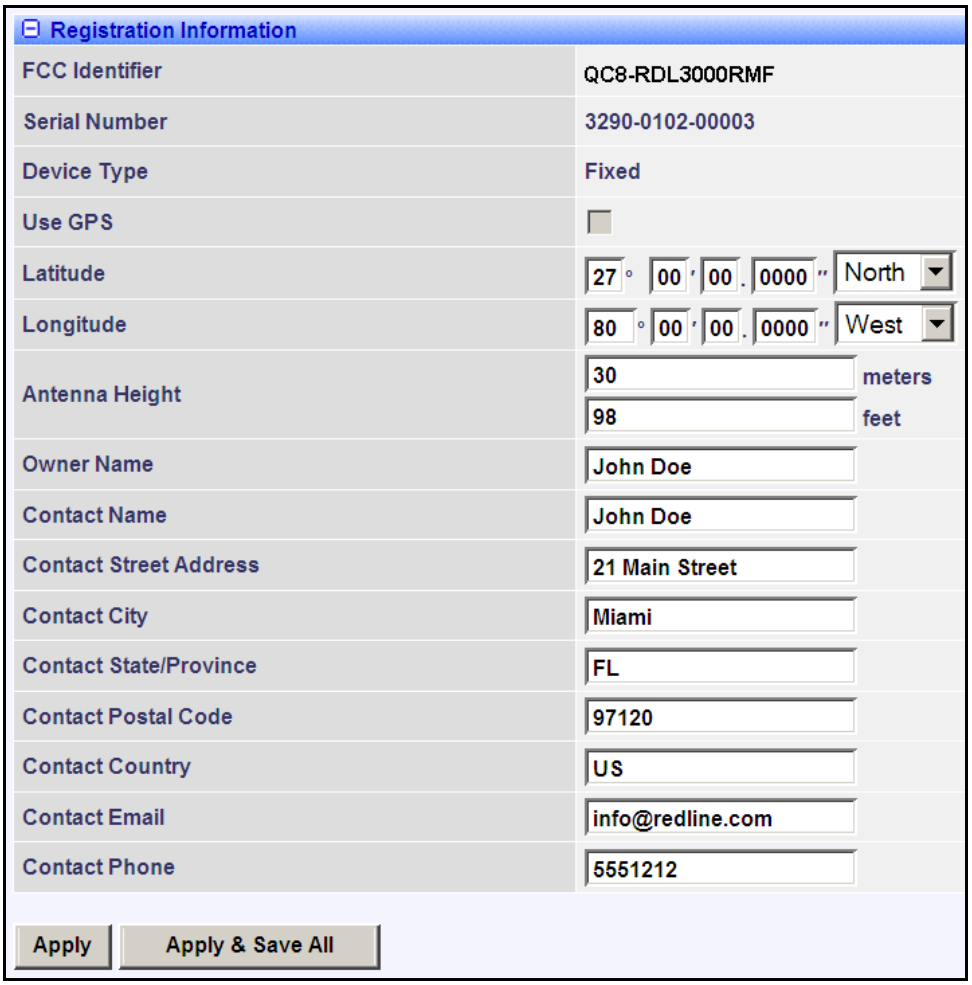


Fig. 1: Web - WSDB Configuration/Control Screen

FCC Identifier: (read only) The FCC assigned identifier for the radio type.

Serial Number: (read only) The unique serial number for this system.

Device Type: (read only) The device type is always 'fixed'.

Use GPS: Check this field to read the location information directly from the internal GPS. (available only where GPS hardware is installed).

Latitude: Enter the latitude of this installation. Not required if the **Use GPS** feature is enabled and synchronized.

Longitude: Enter the longitude of this installation. Not required if the **Use GPS** feature is enabled and synchronized.

Antenna Height: Enter the height of the installed antenna system. Enter the height in feet or meters above local ground level (not sea level).

Owner Name: Enter the name of the registration owner of this system.

Contact Name: Enter the name of the registration contact person responsible for operation of the system.

Contact Street Address: Enter the contact street address.

Contact City: Enter the contact city.

Contact State/Province: Enter the contact state.

Contact Postal Code: Enter the contact zip code.

Contact Country: Enter the contact country.

Contact Email: Enter the contact email address.

Contact Phone: Enter the contact phone number.

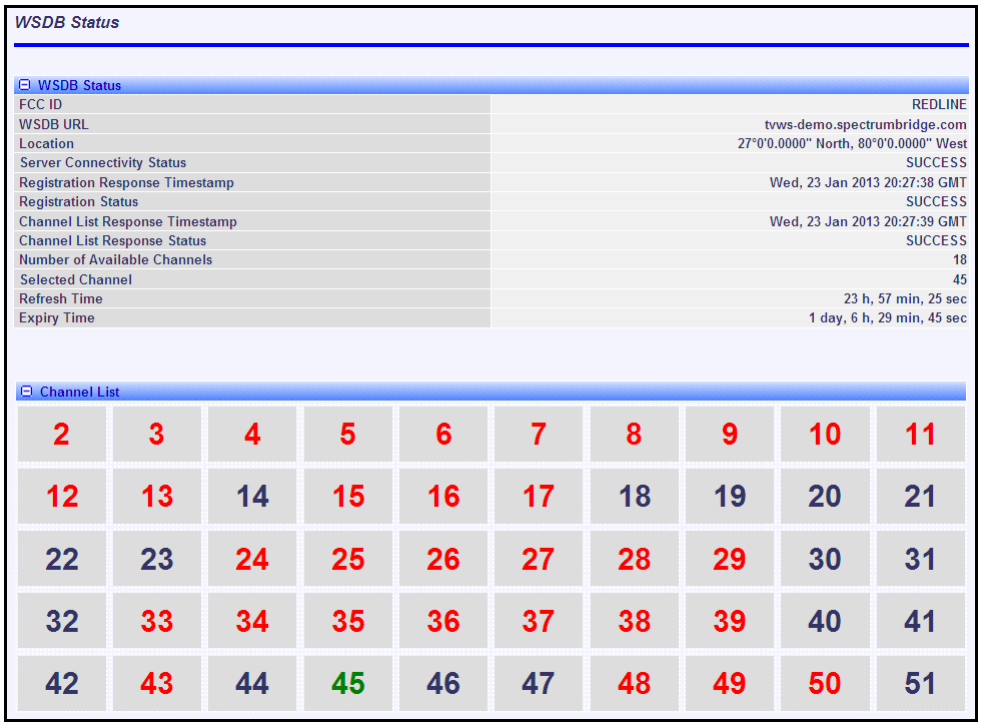
Apply: Click to activate the settings displayed on this screen. The form is transmitted to the WSDB server.

Apply & Save All: Click to activate and permanently save the settings on this screen. The form is transmitted to the WSDB server. Saved settings are restored on power-up, reboot, or at the end of a test cycle.

3.4.3 WSDB Registration Status

Click **Status**->**WSDB Status** to display the the status of the WSDB registration process. This screen is displayed only if WSDB support is enabled by the options key (US only). The channel list displays all channels in the TV Whitespaces database.

A successful registration request to the WSDB server returns a list of available channels. Available channels are displayed in blue and 'unavailable' channels are displayed in red. The final product is not allowed to transmit on the red channels. The final product may transmit only on channels indicated as 'available' by the WSDB database. In congested areas, the number of available channels may be zero.



WSDB Status

WSDB Status

FCC ID	REDLINE
WSDB URL	tvws-demo.spectrumbridge.com
Location	27°0'0.0000" North, 80°0'0.0000" West
Server Connectivity Status	SUCCESS
Registration Response Timestamp	Wed, 23 Jan 2013 20:27:38 GMT
Registration Status	SUCCESS
Channel List Response Timestamp	Wed, 23 Jan 2013 20:27:39 GMT
Channel List Response Status	SUCCESS
Number of Available Channels	18
Selected Channel	45
Refresh Time	23 h, 57 min, 25 sec
Expiry Time	1 day, 6 h, 29 min, 45 sec

Channel List

2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21
22	23	24	25	26	27	28	29	30	31
32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51

Fig. 2: Web - WSDB Status Screen

FCC ID: FCC ID for this system.

WSDB URL: URL used to contact the WSDB server.

Location: Location where the final product is installed.

Server Connectivity Status: Status of the most recent attempt to contact the WSDB server.

Registration Response Timestamp: Time and date of the most recent registration response from the WSDB server.

Registration Status: Status of the most recent attempt to register with the WSDB server.

Channel List Response Timestamp: Time and date of the most recent channel list was downloaded from the WSDB server.

Channel List Response Status: Status of the Ellipses most recent request for a list of available channels.

Number of Available Channels: Available channels reported by the WSDB server.

Refresh Time: Time remaining before an updated available channel list must be obtained from the WSDB server.

Expiry Time: Time remaining before the current available channel list will expire. If this timer expires, the system must immediatelly stop transmitting on any WSDB channel.

Channel List: The channel list displays all channels in the TV Whitespaces database. Available channels are displayed in blue. The channel in-use is displayed in green. The final product is not allowed to transmit on channels displayed in red.

3.4.4 Channel Settings

Click Configuration->**Wireless** to display the **Wireless Configuration** screen. Use these settings to configure the channel center frequency, channel size and Tx power settings.

The channel selection is entered as a center frequency and channel size. The final product is not allowed to transmit on any channel before registering with the WSDB server. Following registration, the operator should review the channel list to confirm the sector controller is configured to operate on an 'available' channel (WSDB Status Screen).

If the configured channel is 'not available' the operator must select an 'available' channel from the channel list. For correct operation, it is important to select a channel that the WSDB reports as available at the sector controller location and at the locations for each remote terminal.

Click **Apply&Save** to activate the new settings. It is recommended to reboot following changes to the RF frequency and/or channel size.

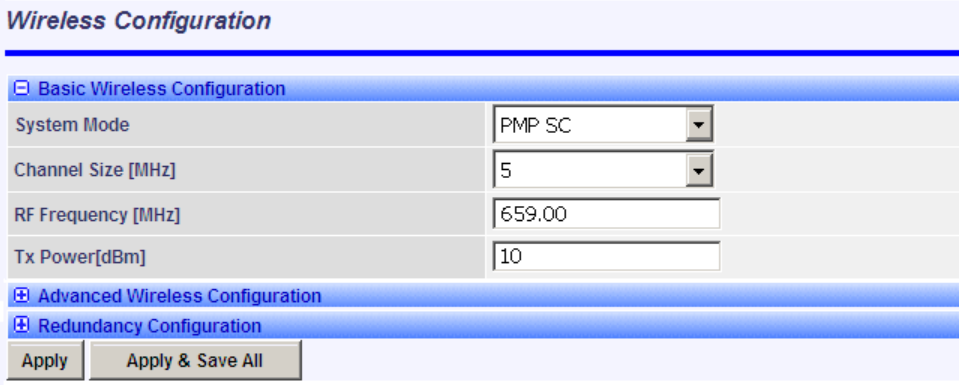


Fig. 3: Web - Wireless Configuration Screen -- Sector Controller

IMPORTANT: Channel assignments are temporary and the final product must renew its registration before the expiry time to receive an updated channel list. The final product must immediately vacate any in-use channel that is designated 'not available in a received list of available channels, or when the expiry time is reached.

3.4.5 Safety Precautions

Installation and service must be done by personnel having technical training and experience necessary to be aware of hazards during installation and/or service of RF equipment. The installation and/or service must be done using procedures designed to minimize any danger to technical personnel or any other person.

3.4.6 Radio Frequency Safety

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF fields in excess of the general population limits as defined by FCC CFR 47, Part 2.1091 and OET Bulletin 65, Radio frequency radiation exposure evaluation for fixed devices & Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website:

http://www.gpo.gov/fdsys/pkg/CFR-2009-title47-vol1/pdf/CFR-2009-title47-vol1-sec2-1091.pdf

http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65c.pdf

http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guide-lignes_direct-eng.php

Refer to the regulatory statements included in this document.

4 Final Product Requirements

The following requirements apply to all final products incorporating the RDL-3000-RMF.

4.1 Frequency Bands

Operation in the United States

Operation of the final product requires a software 'key' that is available exclusively from Redline. This key restricts device operation to the FCC 473-695 MHz band on TV channels 14 - 35 and 39 - 51. The professional installer and operator can not modify or otherwise circumvent these operational restrictions.

To operate in the TV Whitespaces frequency range, the final product must contact and register with the WSDB database server (server URL is programmed into the final product). The final product may only transmit on channels indicated as 'available' by the WSDB database. Channel assignments are temporary and the final product must periodically contact the WSDB to refresh the channel list. The final product vacates a channel in-use immediately when a WSDB database status update indicates the channel is no longer available or the expiry time for an obtained list has elapsed.

The final product operating as a PMP Sector Controller/PTP Master (PMP-SC) is not allowed to transmit on any channel before registering with the WSDB database and obtaining a list of available channels for its location. The final product operating as a PMP Subscriber/PTP Slave (PMP-SS) is allowed to transmit on the channel currently being used by the PMP-SC initially only for the purpose of registering with the WSDB database and obtaining a list of available channels for its location. If the channel in-use is not available, the PMP-SS notifies the PMP-SC and stops transmitting. The PMP-SS may register and obtain the current channel list once per hour.

Table 3: Region 12 FCC White Space Channel Definitions

Channel Number	Center Frequency (MHz)	Channel Number	Center Frequency (MHz)
14	473.00	32	581.00
15	479.00	33	587.00
16	485.00	34	593.00
17	491.00	35*	598.50
18	497.00	39*	623.50
19	503.00	40	629.00
20	509.00	41	635.00
21	515.00	42	641.00
22	521.00	43	647.00
23	527.00	44	653.00
24	533.00	45	659.00
25	539.00	46	665.00
26	545.00	47	671.00
27	551.00	48	677.00
28	557.00	49	683.00
29	563.00	50	689.00
30	569.00	51	695.00
31	575.00		

* Note: Channels 35 and 39 Tx power limits are 2 dBm lower (16 dBm).

Operation in Canada

Operation of the final product requires a software 'key' that is available exclusively from Redline. This key restricts device operation to the Industry Canada band RSS-196 512 - 608 MHz and 614 - 698 MHz for Rural Remote Broadband Systems (RRBS) on TV channels 21 - 35 and 39 - 51.

Table 4: Region 13: Canada IC RRBS Channel Definitions

Channel Number	Center Frequency (MHz)	Channel Number	Center Frequency (MHz)
21+22	518.00	34+35	596.00
22+23	524.00	39+40	626.00
23+24	530.00	40+41	632.00
24+25	536.00	41+42	638.00
25+26	542.00	42+43	644.00
26+27	548.00	43+44	650.00
27+28	554.00	44+45	656.00
28+29	560.00	45+46	662.00
29+30	566.00	46+47	668.00
30+31	572.00	47+48	674.00
31+32	578.00	48+49	680.00
32+33	584.00	49+50	686.00
33+34	590.00	50+51	692.00

4.2 Antenna Use and Transmit Power

The RDL-3000-RMF module supports operation with 2x2 MIMO antenna systems with two transmit chains and two receive chains. The RDL-3000-RMF module must be used only with certified antennas and using the channel size and output power level specified by the local and regional regulations.

Certified Antennas

This device has been designed to operate with the antennas listed in the following table. Any additional antennas will be used only after authorization is obtained through Class II permissive change. Antennas having a gain higher than 13 dBi are strictly prohibited.

Table 5: Approved Antennas

Supplier	Part #	Gain	Frequency Range (MHz)	Application	Size	Beamwidth / Polarity
Redline	AFS-VH-60060-01	13 dBi	470-698	Sector	122 cm (48 in)	60 deg vpol & hpol
Redline	AFS-SB-60055-01	11 dBi	470-698	Log-P Directional	122 cm (48 in)	55 deg vpol & hpol
Redline	AFD-DB-600-2ft-01	11 dBi	470-698	Directional	60cm (19in)	48 deg, vpol & hpol
Redline	AFS-DBG-60090-01	11 dBi	470-698	Sector	1.5m (5 ft)	90 deg, vpol & hpol
Redline	eLTE-MT-8dBi-Int-Ant*	8 dBi	470-698	Directional	200 mm (8 in)	68-88 deg, vpol & hpol

* With or without integrated GPS antenna.

Operation in United States

The RDL-3000-RMF module must be used only with certified antennas and using the channel size and output power level specified by the FCC regulations.

Table 6: Transmit Power for FCC Regulations in the United States	
Channel #	Tx Power (dBm)
14-34 40-51	+18
35, 39	+16

Operation in Canada

The RDL-3000-RMF module must be used only with certified antennas and using the channel size and output power level specified by IC regulations.

Table 7: Subscriber (CPE) Transmit Power for IC Regulations in Canada							
BW	**Freq (MHz)**	**RF1 Pwr (dBm)**	**RF2 Pwr (dBm)**	**Comb Pwr (dBm)**	**Ant Gain Max* (dBi)**	**EIRP (dBm)**	**EIRP Limit (dBm)**
5 MHz	515	21.93	21.83	24.89	11	35.89	36
	557	21.94	21.81	24.89	11	35.89	36
	599	21.89	21.98	24.95	11	35.95	36
	623	21.94	22.00	24.98	11	35.98	36
	659	21.98	21.91	24.96	11	35.96	36
	695	21.92	21.96	24.95	11	35.95	36
10 MHz	518	21.83	21.92	24.89	11	35.89	36
	557	21.97	21.76	24.88	11	35.88	36
	596	21.90	21.93	24.93	11	35.93	36
	626	21.95	21.85	24.91	11	35.91	36
	659	21.88	21.95	24.93	11	35.93	36
	692	21.78	21.95	24.88	11	35.88	36

*If the antenna used exceeds maximum specified, the power settings must be reduced by the same amount in dB that the gain exceeds maximum allowed.

Table 8: Base Station Transmit Power for IC Regulations in Canada							
BW	**Freq (MHz)**	**RF1 Pwr (dBm)**	**RF2 Pwr (dBm)**	**Comb Pwr (dBm)**	**Ant Gain Max* (dBi)**	**EIRP (dBm)**	**EIRP Limit (dBm)**
5 MHz	515	21.93	21.83	24.89	13	37.89	57
	557	21.94	21.81	24.89	13	37.89	57
	599	21.89	21.98	24.95	13	37.95	57
	623	21.94	22.00	24.98	13	37.98	57
	659	21.98	21.91	24.96	13	37.96	57
	695	21.92	21.96	24.95	13	37.95	57
10 MHz	518	21.83	21.92	24.89	13	37.89	57
	557	21.97	21.76	24.88	13	37.88	57
	596	21.90	21.93	24.93	13	37.93	57
	626	21.95	21.85	24.91	13	37.91	57
	659	21.88	21.95	24.93	13	37.93	57
	692	21.78	21.95	24.88	13	37.88	57

5 Regulatory Notices

FCC Notices: Deployment in USA

The following notices about deployment in the USA are included in training and documentation provided to professional installers and operators of the final product:

1. The final product must be professionally installed.
2. WARNING -- FCC RF Exposure Warnings

   To satisfy FCC RF exposure requirements for RF transmitting devices, a minimum distance of 40 cm (15 3/4") should be maintained between the antenna of this device and persons during device operation:

   To ensure compliance, operation at closer than these distances is not recommended. The antenna used for this transmitter must not be collocated in conjunction with any other antenna or transmitter.
3. FCC Information to Users @ FCC 15.706:

   This equipment has been tested and found to comply with the rules for TV bands devices, pursuant to part 15 of the FCC rules. These rules are designed to provide reasonable protection against harmful interference. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

   (1) Reorient or relocate the receiving antenna.

   (2) Increase the separation between the equipment and receiver.

   (3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

   (4) Consult the manufacturer, dealer or an experienced radio/TV technician for help.
4. FCC Information to Users @ FCC 15.19:

   Operation is subject to the following two conditions:

   (1) This device may not cause harmful interference.

   (2) This device must accept any interference received, including interference that may cause undesired operation.
5. FCC Information to Users @ FCC 15.21:

   Warning: Changes or modifications not expressly approved by Redline Communications could void the user's authority to operate the equipment.

Industry Canada Notices

Deployment in Canada:

This Class B Digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment.

The following notices about deployment in Canada are included in training and documentation provided to professional installers and operators of the final product:

1. The final product must be professionally installed.
2. WARNING -- IC RF Exposure Warnings

   To satisfy IC RF exposure requirements for RF transmitting devices, the following distances should be maintained between the antenna of this device and persons during device operation:

Table 9: RDL-3000-RMF Recommended Safe Distances	
Frequency (MHz)	**Separation Distance**
512 - 608 MHz 614 - 698 MHz	40 cm (15.6") or more

   To ensure compliance, operation at closer than these distances is not recommended. The antenna used for this transmitter must not be collocated in conjunction with any other antenna or transmitter.

The RDL-3000-RMF has been designed to operate with an antenna having a maximum gain of 13 dBi. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

This device has been designed to ensure that radio frequency emissions are maintained within the band of operation under all normal operating conditions listed in this manual.

This device complies with Industry Canada RSS standard(s) for licensed bands. Operation is also 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.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropic radiated power (EIRP) is not more than that required for successful communication.

IC regulations governing operation in the Industry Canada band RSS-196 512 - 608 MHz and 614 - 698 MHz band for Rural Remote Broadband Systems (RRBS) are subject to licensing, pursuant to subsection 4(1) of the Radiocommunication Act.

Déploiement aux le Canada

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

Les avis suivants à propos du déploiement au Canada sont inclus dans la formation et la documentation fournies aux installateurs professionnels et les opérateurs du produit final:

1. Le produit final doit être installé par un professionnel.
2. AVERTISSEMENT - IC avertissements d'exposition RF

   Pour satisfaire les exigences d'IC en ce qui a trait aux expositions aux RF pour RF dispositifs de transmission, les distances suivantes doit être maintenue entre l'antenne de ce dispositif et des personnes pendant le fonctionnement du dispositif:

Table 10: RDL-3000-RMF distances de sécurité recommandées

Fréquence (MHz)	Distance de Séparation
512 - 608 MHz 614 - 698 MHz	40 cm (15.6") ou plus

   Pour assurer la conformité , l'operation à une distance moindre que celles-ci n'est pas recommandé. L'antenne utilisée pour ce transmetteur ne doit pas être co-localisé avec une autre antenne ou transmetteur.

Le RDL-3000-RMF a été conçu pour fonctionner avec une antenne ayant un gain maximal de 13 dBi. Antenne ayant un gain plus élevé est strictement interdite par les règlements d'Industrie Canada. L'impédance d'antenne requise est de 50 ohms.

Ce dispositif a été conçu pour veiller à ce que les émissions de radiofréquences sont maintenus dans la bande de fonctionnement dans toutes les conditions normales de fonctionnement figurant dans ce manuel.

Cet appareil est conforme aux normes industrielles RSS Canada (s) pour les bandes sous licence. L'opération est également soumise aux deux conditions suivantes:

1. Cet appareil ne peut pas causer d'interférences, et
2. Cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement de l'appareil.

Pour réduire le potentiel d'interférence radio sur d'autres utilisateurs, le type d'antenne et son gain doivent être choisies tel que la Puissance Isotrope Rayonnée Equivalente (PIRE) ne dépasse pas le niveau nécessaire pour une communication efficace.

Cet équipement est conforme à de RSS-196 pour systèmes à large bande en régions rurales éloignées (SLBRRE) fonctionnant dans la bande 512-698 MHz (canaux de télévision 21 à 51).

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