redline®
communications

September 9, 2014

Applicant: Redline Communications Inc.

FCC ID: QC8-RDL3000RMG
Model: RDL-3000-RMG

RDL-3000-RMG complies with the requirements of **KDB 594280 D02 UNII Device Security v01r01**.

Software Security Declaration

SOFTWARE SECURITY DESCRIPTION		
General Description	1. Describe how any software/firmware update will be obtained, downloaded, and installed.	The signed binary software image can only obtained through Redline's secure online portal which is only available to trained and certified partners. The software is either loaded in to the device through ftp or tftp protocol.
	2. Describe all the radio frequency parameters that are modified by any software/firmware without any hardware changes. Are these parameters in some way limited, such that, it will not exceed the authorized parameters?	Redline uses a secure, encrypted software license key that contains the region of operation. Without this license key, the radio is not functional. It can only be accessed through its secure Ethernet interface. Once the controlled license key is loaded in to the device, the user can only operate the radio with the authorized parameters in its authorized region.
	3. Are there any authentication protocols in place to ensure that the source of the software/firmware is legitimate? If so, describe in details; if not, explain how the software is secured from modification.	All firmware update files are embedded with a MD5 hash checksum value, which is validated during the upgrade procedure. If the validation fails, the flash image is invalidated. The binary image is signed by Redline.
	4. Are there any verification protocols in place to ensure that the software/firmware is legitimate? If so, describe in details.	All firmware update files are embedded with a MD5 hash checksum value, which is validated during the upgrade procedure. If the validation fails, the flash image is invalidated.

	5. Describe, if any, encryption methods used.	Device and manufacturer authentication is accomplished during subscriber registration via signed x509 certificate exchange. Data-layer encryption is done via FPGA-implemented AES-128/256 engine. User management security uses SSH, HTTPS, and SNMPv3 which is implemented using the standard OpenSSL libraries.
	6. For a device that can be configured as a master and client (with active or passive scanning), explain how the device ensures compliance for each mode? In particular if the device acts as master in some band of operation and client in another; how is compliance ensured in each band of operation?	Compliance with local regulatory requirements is enforced in all respects via license key. This key is unit-specific and controls all functionality of a given radio. The regulatory requirements of a specific region and operating band are verified by Redline and its certified partners before the operating parameters are selected and the license is generated.
Third Party Access Control	1. How are unauthorized software/firmware changes prevented?	Changes to the operating parameters of the radio are restricted based on user account security level. Unauthorized users cannot access the system.
	2. Is it possible for third parties to load device drivers that could modify the RF parameters, country of operation or other parameters which impact device compliance? If so, describe procedures to ensure that only approved drivers are loaded.	No. users and operators do not have direct access to the system. All interaction with all aspects of the system is done via Redline-implemented CLI and GUI interfaces, which restricts the possible actions a user can take. The radio is an embedded system, and does not need or permit the loading of any drivers, approved or otherwise.
	3. Explain if any third parties have the capability to operate a US sold device on any other regulatory domain, frequencies, or in any manner that is in violation of the certification	The radio itself does not function without the user loading a license key into the system. Licenses are regulatory region-specific. A radio purchased in the US and then transported to another region would have a license key generated suited for the region in which it was to be deployed.
	4. What prevents third parties from loading non-US versions of the software/firmware on the device?	The Redline Partner Certification programme is restricted by country code. There are no non-US versions of software.

	5. For modular devices, describe how authentication is achieved when used with different hosts.	The radio is a limited, proprietary modular transmitter and Redline Communications Inc. will retain complete control over the final installation of the module and will ensure compliance of the final integrated product to all applicable FCC regulations.
SOFTWARE CONFIGURATION DESCRIPTION		
User Configuration Guide	1. To whom is the UI accessible? (Professional installer, end user, other.)	The UI is accessible to both the professional installer and the end user
	a) What parameters are viewable to the professional installer/end-user?	Tx power, operating frequency and Ch BW are viewable to both the professional installer and end-user
	b) What parameters are accessible or modifiable to the professional installer?	Tx power, operating frequency, and Ch BW are all accessible and modifiable by the professional installer, within the limits imposed by the license key
	i) Are the parameters in some way limited, so that the installers will not enter parameters that exceed those authorized?	The license key limits Tx power, operating frequency and Ch BW as per the regulatory requirements specific to the location in which the radio is to be deployed. Neither the professional installer nor end-user have the ability to generate license keys or changed the regulatory limitations imposed by the license
	ii) What controls exist that the user cannot operate the device outside its authorization in the U.S.?	Operation of the final product requires a license key that is available exclusively from Redline or its authorized partners. The license is unique to each radio and must be installed and activated before the radio will operate.
	c) What configuration options are available to the end-user?	Tx power, operating frequency and Ch BW are available to the end user
	i) Are the parameters in some way limited, so that the installers will not enter parameters that exceed those authorized?	The license key limits Tx power, operating frequency and Ch BW
	ii) What controls exist that the user cannot operate the device outside its authorization in the U.S.?	Operation of the final product requires a license key that is available exclusively from Redline or its authorized partners. The license is unique to each radio and must be installed and activated before the radio will operate.

	d) Is the country code factory set? Can it be changed in the UI?	The country code is defined via license key, and cannot be modified in the unit. It can only be changed by Redline or its authorized partners, by obtaining a new license key
	i) If so, what controls exist to ensure that the device can only operate within its authorization in the U.S.?	N/A
	e) What are the default parameters when the device is restarted?	The device's configuration is persistent between restarts. The configuration is the same as the previous operating configuration, and is ensured to be within regulatory requirements via the license key.
	2. Can the radio be configured in bridge or mesh mode? If yes, an attestation may be required. Further information is available in KDB Publication 905462 D02.	No
	3. For a device that can be configured as a master and client (with active or passive scanning) If this is user configurable, describe what controls exist to ensure compliance.	The installed license key limits the mode of operation to either a master or a client. A radio with a key for client cannot be changed by the installer or end user to enable master mode operation, and vice versa. A radio in client mode is always 'passive listener' and cannot initiate any transmission without receiving and decoding a valid authorization message from a licensed master