SOFTWARE SECURITY FOR U-NII DEVICES

Date: 6 September 2017

FCC ID: NDD9574791704

Pursuant to FCC Part 15E 15.407(i) and KDB 594280 D02 U-NII Device Security, applicant must describe the overall security measures and systems that ensure that only:

1. Authenticated software is loaded and operating the device.
2. The device is not easily modified to operate with RF parameters outside of the authorization

The description of the software must address the following questions in the operational description for the device and clearly demonstrate how the device meets the security requirements.

SOFTWARE SECURITY DESCRIPTION	
General Description	1. Q: Describe how any software/firmware updates for elements than can affect the device's RF parameters will be obtained, downloaded, validated and installed. For software that is accessed through manufacturer's website or device's management system, describe the different levels of security as appropriate. A: Firmware can only be obtained by downloading them from official website and user can upgrade/install firmware via GUI
	2. Q: Describe the RF parameters that are modified by any software/firmware without any hardware changes. Are these parameters in some way limited such that any other software/firmware changes will not allow the device to exceed the authorized RF characteristics? A: All the parameters are Transmit power, operating channel, bandwidth. Only authorized parameters are viewable and can be set in software ,it will not allow the device to exceed the authorized RF characteristics
	3. Q: Describe in detail the authentication protocols that are in place to ensure that the source of the RF-related software/firmware is valid. Describe in detail how the RF-related software is protected against modification. A: We check header and check sum of the firmware
	4. Q: Describe in detail any encryption methods used to support the use of legitimate RF-related software/firmware. A: WEP, WPA-PSK, WPA2-PSK

	5. Q: 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? A: The device support master mode,and there is a country code regulatory parameter to limit product to operate the device under its authorization in U.S. The regulatory parameter would define which channel would be availabe to operate in master to meet UNII requirments
Third-Party Access Control	1. Q: Explain if any third parties have the capability to operate a U.S.-sold device on any other regulatory domain, frequencies, or in any manner that may allow the device to operate in violation of the device's authorization if activated in the U.S. A: Any third parties will not have the capability to do so.
	2. Q: Describe, if the device permits third-party software or firmware installation, what mechanisms are provided by the manufacturer to permit integration of such functions while ensuring that the RF parameters of the device cannot be operated outside its authorization for operation in the U.S. In the description include what controls and/or agreements are in place with providers of third-party functionality to ensure the devices' underlying RF parameters are unchanged and how the manufacturer verifies the functionality A: The device does not permit third party software or firmware installation. The device will reject any third party software or firmware of which attempt to install.
	3. Q: For Certified Transmitter modular devices, describe how the module grantee ensures that host manufacturers fully comply with these software security requirements for U-NII devices. If the module is controlled through driver software loaded in the host, describe how the drivers are controlled and managed such that the modular transmitter RF parameters are not modified outside the grant of authorization. A: This is not a modular device.

SOFTWARE CONFIGURATION DESCRIPTION GUIDE	
USER CONFIGURATION GUIDE	1. Q: Describe the user configurations permitted through the UI. If different levels of access are permitted for professional installers, system integrators or end-users, describe the differences. A: There is only one level, end-users.
	a) Q: What parameters are viewable and configurable by different parties? A: The RF channel and Tx power level are viewable and configurable by different parties
	b) Q: What parameters are accessible or modifiable by the professional installer or system integrators? A: The RF channel can only be set to FCC approved channels. The Tx power level can be set up to approved RF power level(or less)
	i) Q: Are the parameters in some way limited, so that the installers will not enter parameters that exceed those authorized? A: Yes, all parameters are limited by WEB UI and CGI.
	ii) Q: What controls exist that the user cannot operate the device outside its authorization in the U.S.? A: WEB UI and CGI
	c) Q: What parameters are accessible or modifiable by the end-user? A: Not available to end user
	i) Q: Are the parameters in some way limited, so that the user or installers will not enter parameters that exceed those authorized? A: Yes, all parameters are limited by WEB UI and CGI.
	ii) Q: What controls exist so that the user cannot operate the device outside its authorization in the U.S.?

	A: WEB UI and CGI
	d) Q: Is the country code factory set? Can it be changed in the UI? A: Yes, the county code is factory set. NO, it can't be changed in UI
	i) Q: If it can be changed, what controls exist to ensure that the device can only operate within its authorization in the U.S.? A: The country code cannot be changed in UI
	e) Q: What are the default parameters when the device is restarted? A: The device will get a default (approved) Tx channel and power level based on factory country setting
	2. Q: 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. A: No, EUT only operate in master mode
	3. Q: 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, within the UI, to ensure compliance for each mode. If the device acts as a master in some bands and client in others, how is this configured to ensure compliance? A: There is a country code regulatory parameter to limit product to operate the device under its authorization in U.S. The regulatory parameter would define which channel would be availabe to operate in master to meet UNII requirments
	4. Q: For a device that can be configured as different types of access points, such as point-to-point or point-to-multipoint, and use different types of antennas, describe what controls exist to ensure compliance with applicable limits and the proper antenna is used for each mode of operation. (See Section 15.407(a)) A: EUT is only in master mode, professional installer cannot modify antenna type or number