

HARMAN AUTOMOTIVE DIVISION

HARMAN BECKER AUTOMOTIVE SYSTEMS GMBH
BECKER-GÖRING-STRASSE 16
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Software security description

Date: 12/12/2024

Federal Communications Commission
Equipment Authorization Branch
7435 Oakland Mills Rd.
Columbia MD 21046

FCC ID: T8GSPACE4B11

To whom it may concern:

We,

Harman Becker Automotive Systems GmbH,
Becker-Göring-Straße 16,
Karlsbad 76307, Germany,

hereby declare that above mentioned device is programmed to operate only in the following frequencies:

- 2.4 GHz Band,** Channels 1-11, Frequency Range 2.412 - 2.462 GHz
The final user in North America cannot use the channels 12 and 13,
and cannot change the configuration.
- 5GHz Band,** Channels 36-48, Frequency Range 5.180 – 5.240 GHz
-For IEEE 802.11a, all the channels operates in 20MHz
-For IEEE 802.11n, all the channels operates in 20MHz and 40MHz
-For IEEE 802.11ac, all the channels operates in 20MHz, 40MHz and 80MHz.
- Channels 149-165, Frequency Range 5.745 – 5.825 GHz
-For IEEE 802.11a, all the channels operates in 20MHz
-For IEEE 802.11n, all the channels operates in 20MHz and 40MHz
-For IEEE 802.11ac, all the channels operates in 20MHz, 40MHz and 80MHz.

Operation modes, DFS and TPC

This device does not support DFS, and limited to the channels listed above in Client and Access point mode, thus the criteria for FCC are the same.

Future changes in this device will not change theses operational characteristics, in any mode of operation.

As client device, this product does not initiate transmission of any probes, beacons and does not initiate Ad-Hoc operations when not associated with and under the control of a certified master device, according to Section 15.202 of FCC rules

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as per KDB 594280 D02 hereby declare:

General Description	<p>1. Describe how any software/firmware updates for elements that 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.</p>	<p>The RF level parameters are governed mainly by 3 parts. Firmware, NVRAM and CLM Blob. The RF settings in these parts are one time configured and are not changed throughout the lifecycle. In case there is a change in RF level parameters we take the confirmation from the Hardware team on the Homologation requirements.</p> <p>The NVRAM has the RF parameters, for 2.4, 5 and 6 GHz (if applicable) and COEX settings. This is very specific to the Hardware in use.</p> <p>The CLM Blob has country specific regulatory settings. This does not change once homologation is complete.</p> <p>Firmware is a generic file and after the initial bringups the fixes are taken mainly for the functionality issues and not really the RF configuration settings.</p> <p>For BT: as such there is no change in software which would fiddle around with the RF configurations.</p>
	<p>2. 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?</p>	<p>The Host could configure the driver load for WiFi to use the MIMO or the SISO configurations. But for the Base this is not applicable as the chip only supports the SISO configuration.</p>
	<p>3. 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.</p>	<p>The update package is encrypted with aes-256-cbc encryption. This symmetric key is then encrypted with an rsa-4096 public key and appended to the update package. Further digest is created for the package to ensure integrity, and this is part of the update package.</p> <p>The rsa-4096 private key is provisioned on the device securely during production and it is used to decrypt the aes-256-cbc symmetric key, which is in turn used to decrypt the package. This mechanism ensures package is authentic and integrity protected.</p>
	<p>4. Describe in detail any encryption methods used to support the use of legitimate RF-related software/firmware.</p>	<p>As described above, rsa-4096 and aes-256-cbc algorithms are used.</p>

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	<p>5. 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?</p>	<p>The roles supported by us is hotspot (Access point) and station. These roles are exclusive to each other. When one role is enabled, other is disabled. Both cannot be operated on different bands at same time. Hence this is Not applicable.</p>
Third-Party Access Control	<p>1. 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.</p>	<p>Not possible for 3rd parties to load any software or drivers. Country settings can only be changed by OEM. The system is bind to car and cannot be used outside its regulatory domain. Option is not provided for any third-party usage.</p>
	<p>2. 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.</p>	<p>Not possible for 3rd parties to load any software or drivers.</p>
	<p>3. 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.</p>	<p>The parameters are adjusted during manufacturing process and cannot be changed at later time.</p>

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User configuration guide	1. 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.	No user configuration changes are allowed through UI
	a. What parameters are viewable and configurable by different parties?	No user configuration changes are allowed through UI
	b. What parameters are accessible or modifiable by the professional installer or system integrators?	No user configuration changes are allowed through UI
	(1) Are the parameters in some way limited, so that the installers will not enter parameters that exceed those authorized?	No user configuration changes are allowed through UI
	(2) What controls exist that the user cannot operate the device outside its authorization in the U.S.?	No user configuration changes are allowed through UI
	c. What parameters are accessible or modifiable by the end-user?	No user configuration changes are allowed through UI
	(1) Are the parameters in some way limited, so that the user or installers will not enter parameters that exceed those authorized?	No user configuration changes are allowed through UI
	(2) What controls exist so that the user cannot operate the device outside its authorization in the U.S.?	No user configuration changes are allowed through UI
	d. Is the country code factory set? Can it be changed in the UI?	No user configuration changes are allowed through UI
	(1) If it can be changed, what controls exist to ensure that the device can only operate within its authorization in the U.S.?	No user configuration changes are allowed through UI
	e. What are the default parameters when the device is restarted?	No user configuration changes are allowed through UI
	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.	bridge or mesh mode are not supported

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	<p>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, 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?</p>	<p>The roles supported by us is hotspot (Access point) and station. These roles are exclusive to each other. When one role is enabled, other is disabled. Both cannot be operated on different bands at same time. Hence this is Not applicable.</p>
	<p>4. 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))</p>	<p>Only Tetherable mode is supported</p>

Sincerely,

HARMAN AUTOMOTIVE DIVISION
Harman Becker Automotive Systems GmbH
Becker-Göring-Straße 16
76307 Karlsbad, Germany

(signature & company stamp)

Stefan Blaschek
Regulatory Compliance Management

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