HARMAN AUTOMOTIVE DIVISION
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To whom it may concern,

Karlsbad, 2024.03.25

FCC - Wi-Fi Operations declaration

Ref: Attestation letter regarding WIFI without radar detection capability for:

Type of equipment:	Automotive headunit
Brand name:	BMW
FCC ID:	T8GIDC23H

Dear Ladies and Gentleman,

we 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.

5 GHz 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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Software security description per KDB 594280 D02:

General Description	1. 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.	MGU22H will be installed within car by OEM customer. Service (as SW updates) will be executed by car service garages or Over-The-Air from OEM customer server. End customer has no possibility to do SW update. Additionally, all SW update packages are signed and the signature is verified on the system before new SW can be installed.
	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?	RF Parameters are determined by the binary image. The end user cannot modify RF parameters.
	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.	All software is signed by using public-private key signatures. No software is installed without valid signatures. The installed SW is verified on each boot using the Secure Boot mechanism which ensures that the SW has not been altered/changed. No port available/open to install any software or do changes on the existing one.
	4. Describe in detail any encryption methods used to support the use of legitimate RF-related software/firmware.	The SW is checked on each startup using Secure Boot with digital signatures and a fused public key (not changeable). The update/installation data of RF parameters is encrypted and secure by the secure SW update process. Changes in the RF parameters at runtime are only done by SW covered by secure boot.
	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?	Device is master and Client. By configuration file which is written during production and protected it is ensured that only allowed channels and modes are used. EndCustomer has no possibility to change that configuration file.

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	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.	Not possible for 3rd parties to load any software or drivers. Country settings can only be changed by BMW and authorized service garages. System is bind to car and cannot be used outside its regulatory domain. Option is not provided for any third party usage.
Third-Party Access Control	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.	Not possible for 3rd parties to load any software or drivers.
	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.	The parameters are adjusted during manufacturing process and cannot be changed at later time.

Sincerely,

_____
(signature & companystamp)
Name: Voegele Simon
Title: Regulatory Product Compliance Expert

_____
(signature & companystamp)
Name: Blaschek Stefan
Title: Regulatory Product Compliance Expert

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