



ISED LISTED
REGISTRATION NUMBER
4621A-4

Test report No:
NIE: 56848RRF.005

Test report

USA FCC Part 15.407, 15.209

CANADA RSS-247, RSS-Gen

Unlicensed National Information Infrastructure (U-NII) Devices.

General technical requirements.

Radiated emission limits; general requirements.

Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

General Requirements and Information for the Certification of Radio Apparatus.

Identification of item tested	Automotive infotainment System.
Trademark	Mercedes-Benz.
Model and /or type reference	NTG6N ENTRY/MID.
Other identification of the product	HW Version: D4. SW Version: E412.007. FCC ID: T8GNTG6NEM. IC: 6434A-NTG6NEM. S/N: HBM246JB000724.
Features	FM, AM, DAB, USB, Bluetooth, WLAN, GPS.
Applicant	HARMAN BECKER AUTOMOTIVE SYSTEMS GMBH BECKER-GOERING-STR. 16; 76307 KARLSBAD GERMANY
Test method requested, standard	USA FCC Part 15.407 10-1-18 Edition: Unlicensed National Information Infrastructure (U-NII) Devices. General technical requirements. USA FCC Part 15.209 10-1-18 Edition: Radiated emission limits; general requirements. CANADA RSS-247 Issue 2 (February 2017). CANADA RSS-Gen Issue 5 (April 2018). Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017. ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

Summary	IN COMPLIANCE		
Approved by (name / position & signature)	A. Llamas RF Lab. Manager		Firmado digitalmente por ALEJANDRO LLAMAS RODRIGUEZ Fecha: 2019.06.05 12:01:31 +02'00'
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Index

Competences and guarantees	4
General conditions	4
Uncertainty	4
Data provided by the client.....	4
Usage of samples	5
Test sample description	6
Identification of the client.....	7
Testing period and place.....	7
Document history	7
Environmental conditions	8
Remarks and comments	8
Testing verdicts.....	9
Summary	9
Appendix A: Test Common requirements for all bands	11
Appendix B: Test result for 5.15GHz – 5.25GHz.	34
Appendix C: Test result for 5.725GHz – 5.850GHz.	64

Competences and guarantees

DEKRA Testing and Certification is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification is a FCC-recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report.

DEKRA Testing and Certification is a laboratory with a measurement site in compliance with the requirements of RSS 212, Issue 1 (Provisional) and has been added to the list of filed sites of the Canadian Certification and Engineering Bureau. Reference File Number: ISED 4621A-4.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification at the time of performance of the test.

DEKRA Testing and Certification is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Testing and Certification internal document PODT000.

Data provided by the client

The test sample consist of an automotive head unit to be installed in cars with the following features: FM, AM, DAB, USB, Bluetooth, WLAN and GPS

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: the client.

- Sample S/01 is composed of the following elements:

Control N°	Description	Model	Serial N°	Reception
56848G/079	Automotive Infotainment System	NTG6N ENTRY/MID	HBM246JB000724	2019/01/11
56848G/132	CAN Box	--	H0034722	2019/01/11
56848G/88	Ethernet Harness	--	--	2019/01/11
56848G/117	Harness	--	--	2019/01/11
56848G/020	Dual BT/WLAN antenna	---	---	2019/01/10
56848G/103	BT/WLAN antenna	---	---	2019/01/11

Sample S/01 has undergone the following test(s): All RADIATED tests indicated in Appendixes B and C.

- Sample S/02 is composed of the following elements:

Control N°	Description	Model	Serial N°	Reception
56848G/079	Automotive Infotainment System	NTG6N ENTRY/MID	HBM246JB000724	2019/01/11
56848G/132	CAN Box	--	H0034722	2019/01/11
56848G/088	Ethernet Harness	--	--	2019/01/11
56848G/117	Harness	--	--	2019/01/11

Sample S/02 has undergone the following test(s): All CONDUCTED tests indicated in Appendixes A, B and C.

Test sample description

Ports..... :	Port name and description		Cable				
			Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾	
	Car Connector A		>3m ^(x1)	☒	☐	☐	
	Car Connector B		>3m ^(x1)	☒	☐	☐	
	Display Connector CID/PIP / RVC		>3m ^(x1)	☒	☒	☐	
	USB Connector		<3m ^(x2)	☒	☒	☐	
	Eth Connector		>3m ^(x1)	☒	☒	☐	
	BT/WLAN-Antenna		>3m ^(x1)	☒	☒	☐	
	FM/AM, TV/SDARS Ant		>3m ^(x1)	☒	☒	☐	
	GPS Antenna		>3m ^(x1)	☒	☒	☐	
Supplementary information to the ports..... :	For EMC-Testing all cables should be connected to the connectors.						
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☐	AC:	☐	☐	☐	☐	☐
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: 12V Car battery / attenuator (9,5-15,5V normal operation)					
☐	DC:						
Rated Power	9,5-15,5V normal operation						
Clock frequencies.....	see schematics						
Other parameters	FCC ID: T8GNTG6NH / IC: 6434A-NTG6NH						
Software version	E412.007						
Hardware version	D4						
Dimensions in cm (W x H x D)	182 x 78 x 160 mm						
Mounting position	☐	Table top equipment					
	☐	Wall/Ceiling mounted equipment					

	☐	Floor standing equipment	
	☐	Hand-held equipment	
	☒	Other: automotive headunit	
Modules/parts.....:	Module/parts of test item	Type	Manufacturer
	n/a		
Accessories (not part of the test item)	Description	Type	Manufacturer
	Display	A247 905 69	Daimler OEM Displ.
	CAN-Box	-	HBAS
	Cable harness	-	HBAS
	BT/WLAN-Antenna	A247 905 83	Hirschmann
Documents as provided by the applicant.....:	Description	File name	Issue date
	Technical Description		

Identification of the client

HARMAN BECKER AUTOMOTIVE SYSTEMS GMBH
BECKER-GOERING-STR. 16; 76307 KARLSBAD GERMANY

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2019-01-21
Date (finish)	2019-04-03

Document history

Report number	Date	Description
56848RRF.005	2019-06-05	First release

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 35 %

Remarks and comments

The tests have been performed by the technical personnel: Ignacio Cabra, Carolina Postigo, José Alberto Aranda Bayona and Miguel Angel Torres.

Used instrumentation:

Radiated Measurements:

	Last Calibration	Due Calibration
1. Semianechoic Absorber Lined Chamber ETS FACT3 200STP	N.A.	N.A.
2. EMI Test Receiver R&S ESR7	2017/08	2019/08
3. BiconicalLog antenna ETS LINDGREN 3142E	2017/09	2020/09
4. RF pre-amplifier 30-6 GHz Bonn Elektronik BLMA 0360-01N	2018/07	2019/07
5. Spectrum analyser Rohde & Schwarz FSV40	2018/02	2020/02
6. RF pre-amplifier 1-18 GHz Bonn Elektronik BLMA 0118-3A	2019/04	2020/04
7. Double-ridge Guide Horn antenna 1-18 GHz SCHWARZBECK BBHA 9120 D	2018/01	2021/01
8. RF pre-amplifier 18-40 GHz NARDA JS44-18004000-33-8P	2019/02	2020/02
9. Double-ridge Guide Horn antenna 1-18 GHz SCHWARZBECK BBHA 9120 D	2018/01	2021/01
10. Broadband Horn antenna 18-40 GHz SCHWARZBECK BBHA 9170	2018/07	2021/07
11. DC Power Supply Rohde and Schwarz NGPE 40/40	2018/02	2021/02

Conducted Measurements

		Last Cal. date	Cal. due date
1.	Spectrum analyser Rohde & Schwarz FSV40	2017/07	2019/07
2.	DC Power Supply Rohde and Schwarz NGPE 40/40	2018/02	2021/02
3.	Spectrum analyser Rohde & Schwarz FSW50	2018/02	2020/02

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

A. Common requirements for all bands

FCC PART 15 PARAGRAPH / RSS-247			
Requirement – Test case		Verdict	Remark
RSS-Gen 6.6 / RSS-247 6.2.	Transmitter 99% Occupied Bandwidth	P	
FCC 15.403 (i)	Transmitter 26 dB Emission Bandwidth (EBW)	P	
FCC 15.35 (c) / RSS-Gen 6.10	Duty Cycle	P	
FCC 15.407 (g) / RSS-Gen 6.11	Transmitter Frequency Stability (Temperature & Voltage Variation)	N/M	See (1)
<u>Supplementary information and remarks:</u> (1) The manufacturer is responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user manual.			

B. 5.15 GHz – 5.25 GHz Band

FCC PART 15 PARAGRAPH / RSS-247			
Requirement – Test case		Verdict	Remark
FCC 15.407 (a) (1) (iv)	Transmitter Maximum conducted Output Power	P	
RSS-247 6.2.1.1	Transmitter Maximum Equivalent Isotropically Radiated Power EIRP	P	
FCC 15.407 (a) (1) (iv)	Transmitter Maximum Power Spectral Density	P	
RSS-247 6.2.1.1	Transmitter EIRP Spectral Density	P	
FCC 15.407 (b) (1) / RSS-247 6.2.1.2	Transmitter Band Edge Radiated Emissions	P	
FCC 15.407 (b) (1) (6) / RSS-247 6.2.1.2	Transmitter Out of Band Radiated Emissions	P	
<u>Supplementary information and remarks:</u>			
None			

C. 5.725 GHz – 5.85 GHz Band

FCC PART 15 PARAGRAPH / RSS-247			
Requirement – Test case		Verdict	Remark
FCC Part 15.407 (a) (3) / RSS-247 6.2.4.1	Transmitter Maximum conducted Output Power	P	
FCC 15.407 (e) / RSS-247 Clause 6.2.4.1	6 dB bandwidth.	P	
FCC 15.407 (a) (3) / RSS-247 Clause 6.2.4.1	Transmitter Maximum Power Spectral Density	P	
FCC 15.407 (b) (4) / RSS-247 6.2.4.2	Transmitter Band Edge Radiated Emissions	P	
FCC 15.407 (b) (4) (6) / RSS-247 6.2.4.2	Transmitter Out of Band Radiated Emissions	P	
<u>Supplementary information and remarks:</u>			
None			