EUROFINS PRODUCT SERVICE GMBH

Testing Cert #1983.01

TEST - REPORT

FCC RULES PART 15 / SUBPART B
IC RSS-GEN ISSUE 3

Bluetooth Headphone for Audi

P102

FCC ID: T8GP102

IC: 6434A-P102

Test report no.: G0M21010-3770-C-1

Eurofins Product Service GmbH
Storkower Str. 38c, 15526 Reichenwalde,
Germany

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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.
The tests were carried out and passed in accordance to the standards:

FCC part 15B

IC RSS-Gen Issue 3

The results of this test report relate exclusively to the item tested as specified in chapter “Description of test item” and are not transferable to any other test items.
Eurofins Product Service GmbH is not responsible for any generalisations and conclusions drawn from this report. Any modification of the test item can lead to invalidity of test results and this test report may therefore be not applicable to the modified test item.
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Important Notes:

Proper labeling is required for each device. Devices shall be labeled in accordance with labeling requirements pursuant to section 15.19 and section 2.1074 of the FCC rules.

Devices subject to a Declaration of Conformity shall be uniquely identified by the responsible party. This identification shall not be of a format which could be confused with the FCC Identifier required on certified, notified type accepted or type approved equipment.

The responsible party shall maintain adequate identification records to facilitate positive identification for each device.

The user manual or instruction manual shall included also a warning statement that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Reference Section 15.21

Furthermore information to the user regarding to the interference potential of the device and about simple measures that can be taken to correct interference is required.

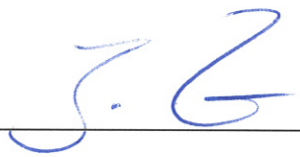
Reference Section 15.105

The responsible party must warrant that each unit of equipment marketed under a Declaration of Conformity is identical to the unit tested and found acceptable with the standards and that the records maintained by the responsible party continue to reflect the equipment being produced under the Declaration of Conformity within the variation that can be expected due to quantity production and testing on a statistical basis.

1.2 Operator:

Date	Eurofins -Lab.	Name	Signature
25.01.2011		M. Handrik	

Technical responsibility for area of testing:

Date	Eurofins	Name	Signature
25.01.2011		J. Zimmermann	

1.3 Testing laboratory

1.3.1 Location

EUROFINS PRODUCT SERVICE GMBH
STORKOWER STR. 38c
D- 15526 REICHENWALDE B. BERLIN
GERMANY
Telephone: + 49 33631 888-00
Telefax: + 49 33631 888-660

1.3.2 Details of accreditation status

DAR ACCREDITED TESTING LABORATORY
DAR-REGISTRATION NUMBER: DAT-P-268/08

RECOGNIZED NOTIFIED BODY EMC
REGISTRATION NUMBER: BNetzA-bS EMV-07/61

RECOGNIZED NOTIFIED BODY R&TTE
REGISTRATION NUMBER: BNetzA-bS-02/51-53

FCC FILED TEST LABORATORY
REG.-NO. 96970

A2LA ACCREDITED TESTING LABORATORY
CERTIFICATE NO. 1983.01

BLUETOOTH QUALIFICATION TEST FACILITY (BQTF)
ACCREDITED BY BLUETOOTH QUALIFICATION REVIEW BOARD

INDUSTRY CANADA FILED TEST LABORATORY
REG. NO. IC 3470A

1.3.3 Test location, where different

Name	: ./.
Street	: ./.
Town	: ./.
Country	: ./.
Telephone	: ./.
Fax	: ./.

1.4 Details of applicant

Name	:	HARMAN AUTOMOTIVE
Street	:	Becker-Göring-Str. 16
Town	:	76307 Karlsbad
Country	:	Germany
Telephone	:	+49 7248 71 3319
Contact	:	Herr Frank Weikelmann
E-mail	:	frank.weikelmann@harman.com

1.5 Application details

Date of receipt of application	:	07.10.2010
Date of receipt of test item	:	07.10.2010
Date of test	:	11.01.2011 – 13.01.2011

1.6 Test item

1.6.1 Description of test item

Type of product	:	Bluetooth Headphone for Audi	
Type identification	:	P102	
Serial number	:	without	
Hardware version	:	Rev 3.1	
Software version	:	0912	
Power supply	:	2.7VDC	120VAC/DC Adapter (Laptop)
Charging mode	:	mini USB connector	
Antenna type	:	internal antenna	Antenova 3030A5839-01
Antenna gain	:	4.4dBi	
Photos	:	Please find in Annex.	
Additional information	:	no data transfer (declared by customer)	

1.6.2 Manufacturer (if different from applicant in point 1.4)

Name	:	goertek
Street	:	5F, No.3 Building, Fortune Center No.18, Qinling Road, Laoshan Distr
Town	:	Qingdao, 266061
Country	:	China
Contact	:	Mr. Derek Wang
E-mail	:	derek.wang@goertek.com
Telephone	:	+86 49 7248 71 3319

1.6.3 Frequency behavior

Highest clock Frequency	26MHz *)

*) externe reference clock

1.7 Test standards

FCC part 15B
IC RSS-Gen Issue 3

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed. ☒

or

The deviations as specified in 2.3 were ascertained in the course of the tests performed. ☐

2.2 Test environment

Temperature	: 23 ° C	
Relative humidity content	: 44 %	
Air pressure	: 1017 hPa	
Details of Power supply	: 2.7VDC	120VAC/DC Adapter (USB Powered)
Other parameters	: ./.	

2.3 Test results

☒ 1st test ☐ test after modification ☐ production test

Test Emission / Immunity			Done	Test passed	Test failed
Conducted Emission	FCC part 15.107	RSS-Gen 7.2.4	☒	☒	☐
Radiated Emission	FCC part 15.109	RSS-Gen 6.1	☒	☒	☐

2.4 Test equipment utilized

No.	Test Equipmen	Type	Manufacturer
ETS 0001	ESD Gun	SESD 30000	Schlöder
ETS 0008	Antenna	Loop antenna	Siemens
ETS 0012	Biconical Antenna	HK 116	R & S
ETS 0013	LPD Antenna	HL 223	R & S
ETS 0014	Log Periodical Antenna	HL 025	R & S
ETS 0038	RF amplifier	150L	Amplifier Research
ETS 0032	Controller	HD 050	Heinrich Deisel
ETS 0039	Absorbing clamp	MDS 21	R & S
ETS 0040	Artificial Mains Network	ESH3-Z5	R & S
ETS 0041	T-Artificial Mains Network	ESH3-Z4	R & S
ETS 0042	Artificial Mains	ESH3-Z6	R & S
ETS 0045	Vehicle LISN	NNBM 8126D	Schwarzbeck
ETS 0052	Audio analyzer	UPA 4	R & S
ETS 0056	Ultra Compact Simulator	UCS 500 M4	EM Test
ETS 0057	Motor Variac	MV 2616	EM Test
ETS 0058	Capacitive coupling clamp	E 502 B	Keytek/ EMC
ETS 0059	Kikusui amplifier	PCR 2000L	Keytek/ EMC
ETS 0064	CDN IEC 61000-4-6		Keytek/ EMC
ETS 0066	EM Injection Clamp		FCC/ EMC
ETS 0076	Feeding bridge A	SBA 1000	ESP
ETS 0082	PC system		Esotronic
ETS 0085	Shielded room	SR 1	Frankonia
ETS 0086	Semi-Anechoic chamber	AC 1	Frankonia
ETS 0088	Color TV pattern Generator	PM 5518-TX VPS	Philips
ETS 0092	Power Amplifier	150W1000	AR Amplifier Research
ETS 0102	CDN	M3-801/6	MEB
ETS 0103	Magnetic field test set	MF1000	EMC-Partner
ETS 0148	RF Current Probe	F-65	FCC
ETS 0155	Signal Generator	SMG	R & S
ETS 0157	TV and Sat-Signalgenerator	VTG 700	Grundig
ETS 0161	Harmonic / Flicker Analyzer	HFA 3000	Schlöder
ETS 0178	Open area test side	10m	ETS
ETS 0233	Direction coupler	RK 100	MEB
ETS 0276	Audio Analyzer	UPL 16	R & S
ETS 0282	RF bridge 75 Ohm	86207 A	HP
ETS 0287	EMI Test receiver	ESHS10	R & S
ETS 0288	Artificial mains	ESH2-Z5	R & S
ETS 0292	RF Generator	SMHU	R & S
ETS 0348	RF Millivolt meter	URV 55	R & S
ETS 0300	RF amplifier	75 A 250	Ar
ETS 0348	RF Millivolt meter	URV 55	R & S
ETS 0401	MPEG2 Generator	DVG	R & S
ETS 0402	TV Messender	SFQ	R & S
ETS 0409	Stripline	DC220	Schwarzbeck
ETS 0428	4-WIRE ISN with B1	ENY41	R & S
ETS 0448	RF Power Amplifier	AR 60S1G3	AR Amplifier Research
ETS 0472	Antenna	BTA-H	Frankonia
ETS 0474	EMI Test Receiver	ESCS 30	R&S
ETS 0485	Radio Communication Tester	CMU 200	R&S

2.4.1 Conducted Emission

2.4.1.1 Test Equipment

- ETS 0040
- ETS 0085
- ETS 0474
- Software: Radimation Version 5.5.12

2.4.1.2 Test Procedures

- Test configuration

The test configuration is contained inside of a shielded chamber and corresponds to the standard ANSI C.63.4: 2003. The equipment under test is placed in the facility on a wooden table 0.8m high. The equipment under test is connected with the artificial mains network (AMN) in a distance of 0,8m and also 0,8m from other subassembly and metallic area. The measurement receiver is placed in a special room adjacent to the chamber. The observation of the equipment under test is realized by 3 video cameras and by a microphone.

- Test parameters and marginal conditions

The tests are carried out with nominal impedance by 50 Ω / 50 µH of the AMN in a frequency range 150 kHz to 30 MHz. This measurement was transacted first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector,
Further information please find in test report.

2.4.2 Spurious Emission

2.4.2.1 Test Equipment

- ETS 0012
- ETS 0013
- ETS 0086
- ETS 0474
- Software: Radimation Version 5.5.12

2.4.2.2 Test Procedures

- Test configuration

The test configuration corresponds to the standard ANSI C 63.4: 2003. The equipment under test is placed on a non metallic table with 0,8 m height. The power supply and the RF connection points are close to the equipment under test at the floor inside a connection box. The cables to this connection box are shielded and below the double floor. The receiving antenna is placed in a height at 1,0 to 4,0 m, in a distance of 3 m. The measurement receiver is placed in a special room. The observation of the equipment under test is realized by 3 video cameras and by a microphone.

- Test parameters and marginal conditions

The tests are carried out with horizontal and vertical polarization of the antenna in a frequency range of 30 MHz to 1000MHz. Further information please find in the test protocol.

2.5 Test protocols

Conducted Emission

Emission

Standard : FCC part 15.107; RSS-Gen 7.2.4
Reg.-no. : G0M21010-3770-C-1
Device : Bluetooth Headphone for Audi / P102
Date : 25.01.2011
Class : B

Frequency Range	Limit dBµV		Passed	Failed	Number of rechecks
	Quasi-peak	Average			
150 kHz - 500 kHz AC	66 to 56*	56 to 46*	☒	☐	0
500 kHz - 5 MHz AC	56	46	☒	☐	0
5 MHz - 30 MHz AC	60	50	☒	☐	0

* Decreases with logarithm of the frequency

Uncertainty: $U_{lab(cond)}$ = 3.8 dB.

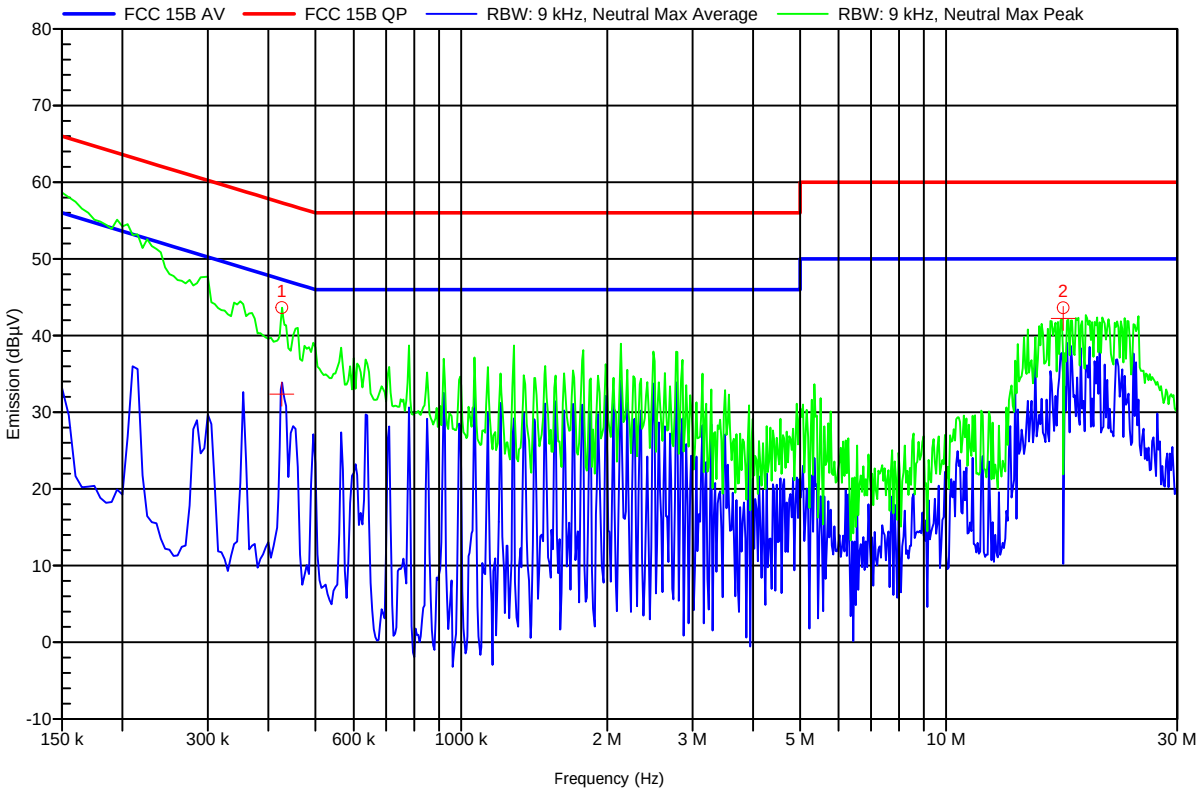
Comment: See attached diagrams.

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

EMI voltage test in the ac-mains according to FCC 15B

Ordernumber: G0M21010-3770

Manufacturer:	HARMAN AUTOMOTIVE
EUT Name:	Bluetooth Headphone for Audi
Model:	P102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 23°C, Unom: 2 x 1.5 V DC
LISN:	ESH2-Z5 L
Mode:	charge with USB (Samsung X 20)
Test Date:	13.01.2011



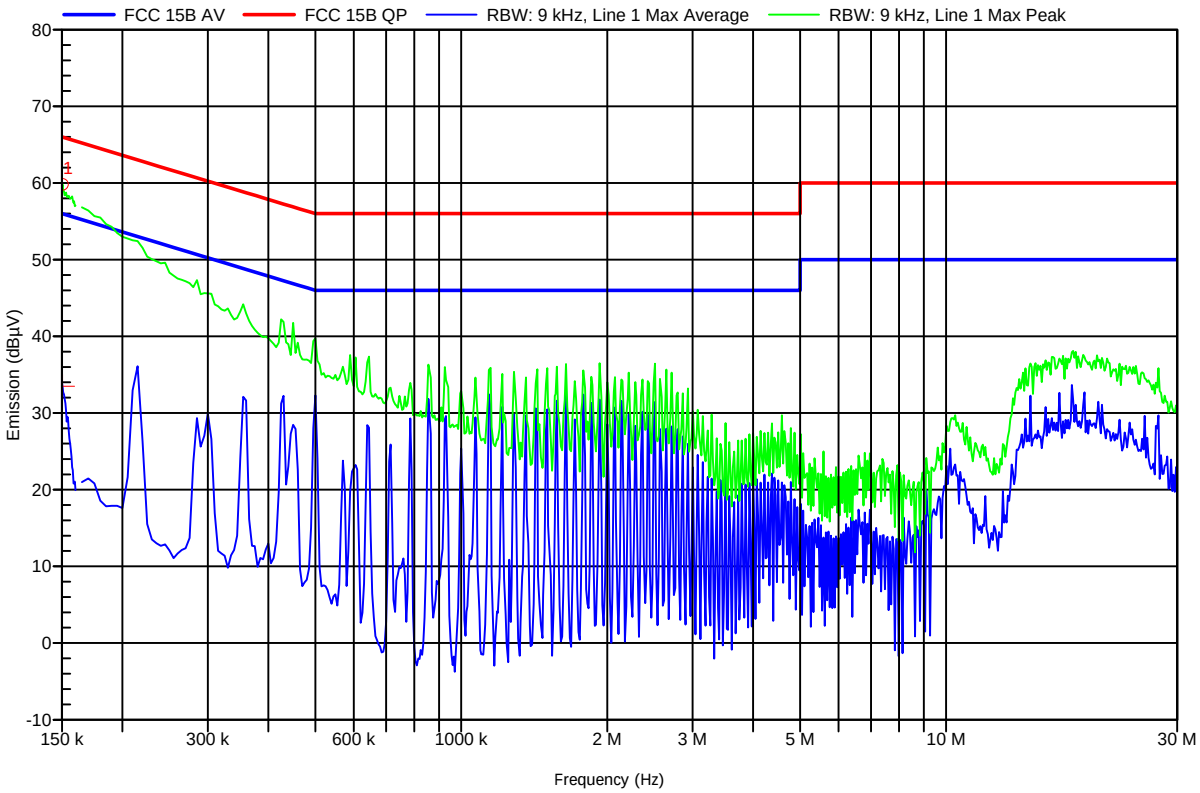
Frequency	Status
426.5 kHz	Pass
17.445 MHz	Pass

Frequency	Average	Average Limit	Average Difference	Status
426.5 kHz	32.36 dBµV	47.32 dBµV	-14.96 dB	Pass
17.445 MHz	42.23 dBµV	50 dBµV	-7.77 dB	Pass

EMI voltage test in the ac-mains according to FCC 15B

Ordernumber: G0M21010-3770

Manufacturer:	HARMAN AUTOMOTIVE
EUT Name:	Bluetooth Headphone for Audi
Model:	P102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 23°C, Unom: 2 x 1.5 V DC
LISN:	ESH2-Z5 L
Mode:	charge with USB (Samsung X 20)
Test Date:	13.01.2011



Frequency	Status
150.5 kHz	Pass

Frequency	Average	Average Limit	Average Difference	Status
150.5 kHz	33.48 dBµV	55.97 dBµV	-22.49 dB	Pass

Radio Noise Field Strength

Emission

Standard : FCC part 15.109; RSS-Gen 6.1
Reg.-no. : G0M21010-3770-C-1
Device : Bluetooth Headphone for Audi P102
Date : 25.01.2011
Class : B

Frequency Range Polarization	Limit µV/m	Passed	Failed	Number of rechecks
30 MHz - 88 MHz	100	☒	☐	0
88 MHz - 216 MHz	150	☒	☐	0
216 MHz - 960 MHz	200	☒	☐	0
960 MHz - 1000 MHz	500	☒	☐	0

Uncertainty: $U_{lab(rad)}$ = 5.3 dB

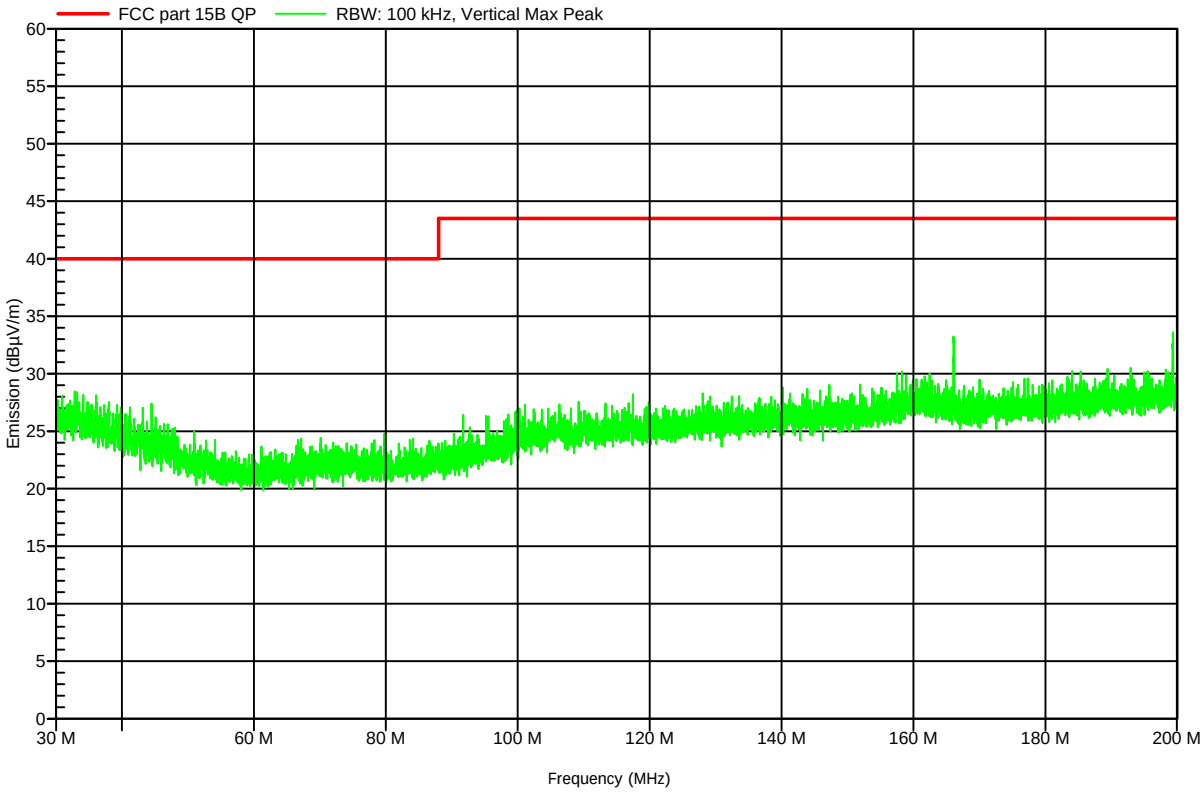
Comment: See attached diagrams.

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions under normal conditions according to FCC 15B

Order number: G0M21010-3770

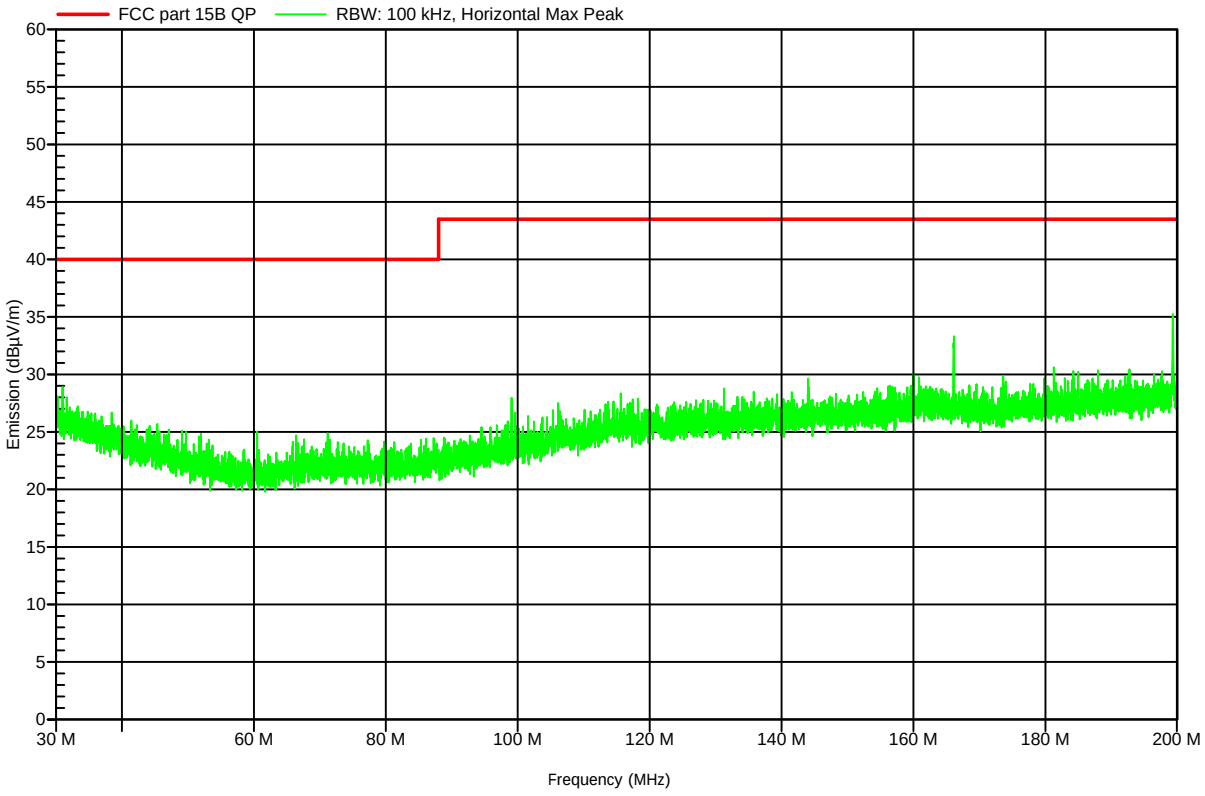
Manufacturer:	HARMAN AUTOMOTIVE
EUT Name:	Bluetooth Headphone for Audi
Model:	P102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 23°C, Unom: 2x1.5 V DC (battery) charging with USB
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement Distance:	3 m
Mode:	charging
Test Date:	11.01.2011



Spurious emissions under normal conditions according to FCC 15B

Order number: G0M21010-3770

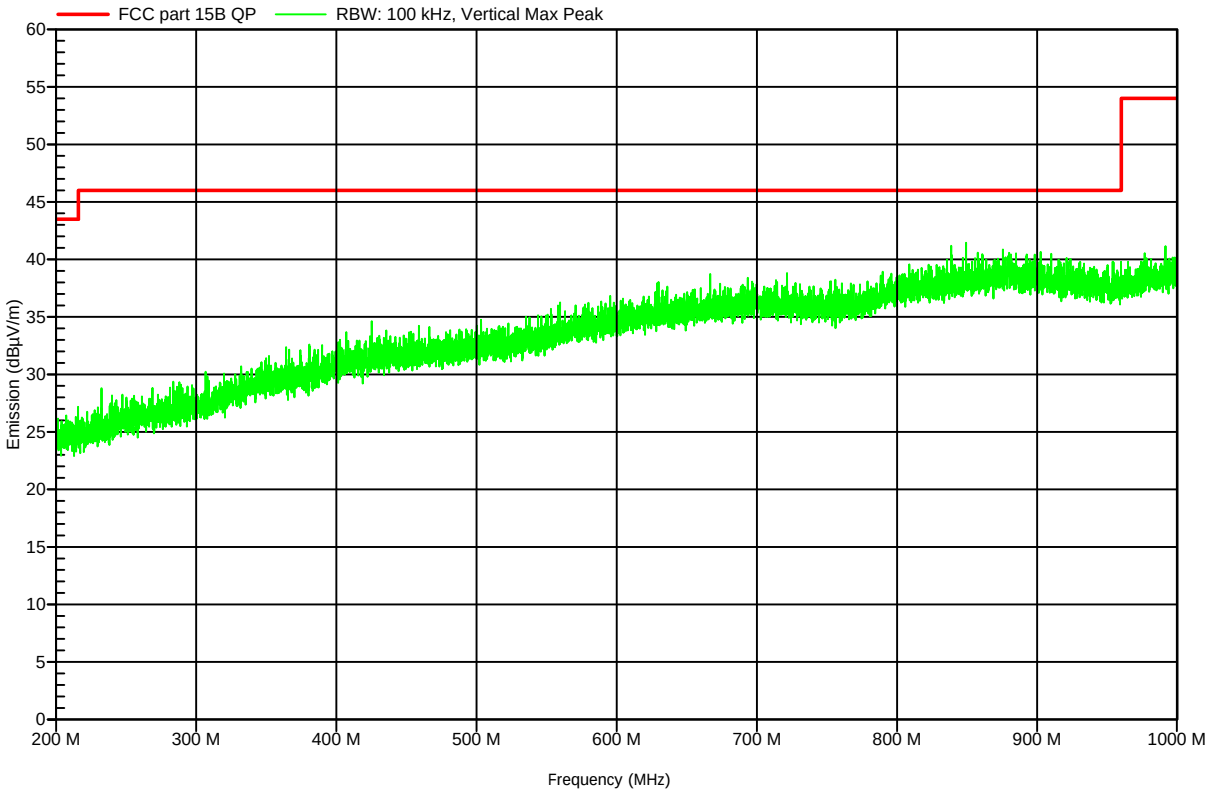
Manufacturer:	HARMAN AUTOMOTIVE
EUT Name:	Bluetooth Headphone for Audi
Model:	P102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 23°C, Unom: 2x1.5 V DC (battery) charging with USB
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement Distance:	3 m
Mode:	charging
Test Date:	11.01.2011



Spurious emissions under normal conditions according to FCC 15B

Order number: G0M21010-3770

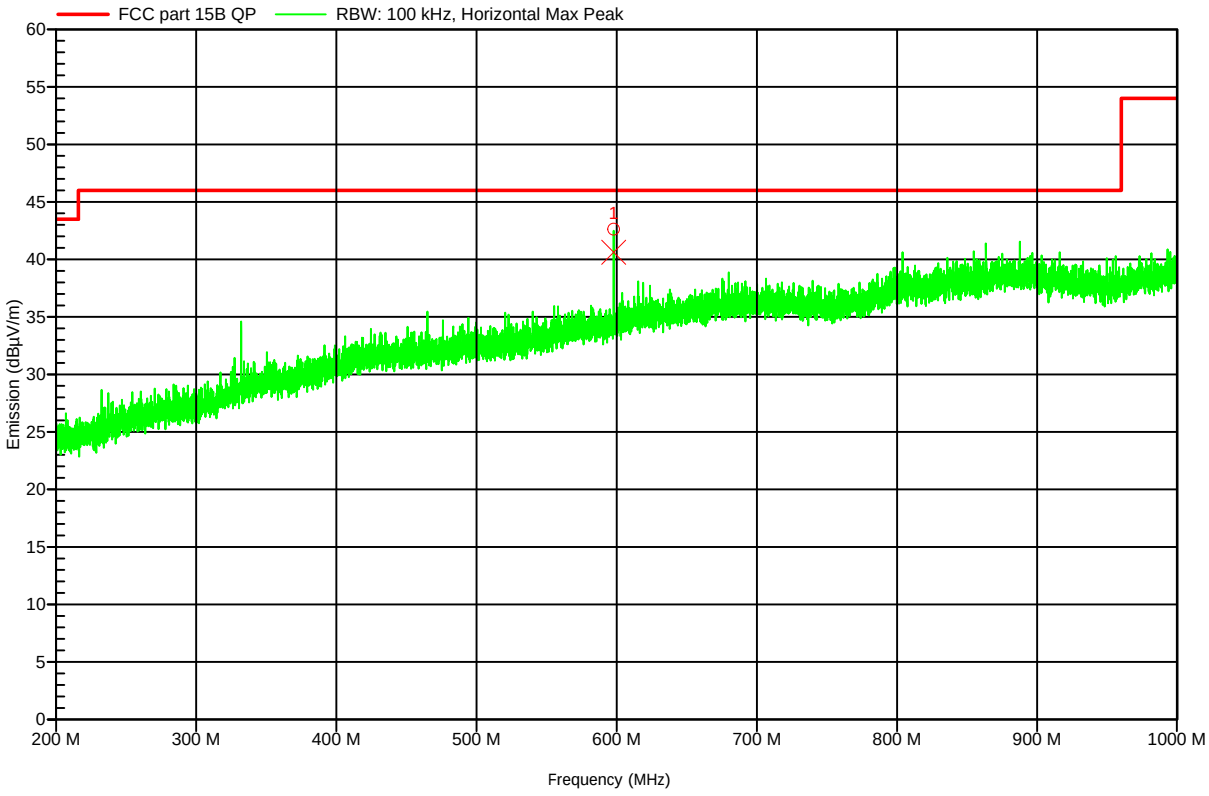
Manufacturer:	HARMAN AUTOMOTIVE
EUT Name:	Bluetooth Headphone for Audi
Model:	P102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 23°C, Unom: 2x1.5 V DC (battery) charging with USB
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement Distance:	3 m
Mode:	charging
Test Date:	11.01.2011



Spurious emissions under normal conditions according to FCC 15B

Order number: G0M21010-3770

Manufacturer:	HARMAN AUTOMOTIVE
EUT Name:	Bluetooth Headphone for Audi
Model:	P102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 23°C, Unom: 2x1.5 V DC (battery) charging with USB
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement Distance:	3 m
Mode:	charging
Test Date:	11.01.2011



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference
597.888 MHz	40.62 dBµV/m	46 dBµV/m	-5.38 dB

3 Normative references

/1/ FCC part 15
Radio Frequency Devises

/2/ CISPR 22
Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

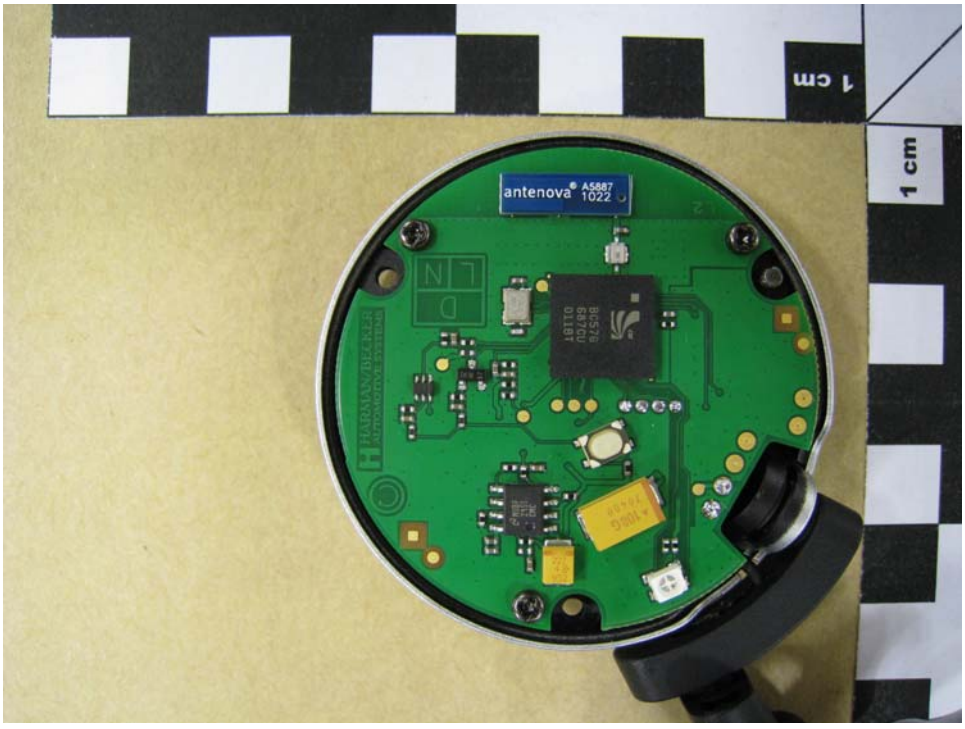
/3/ ANSI C 63.4
American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

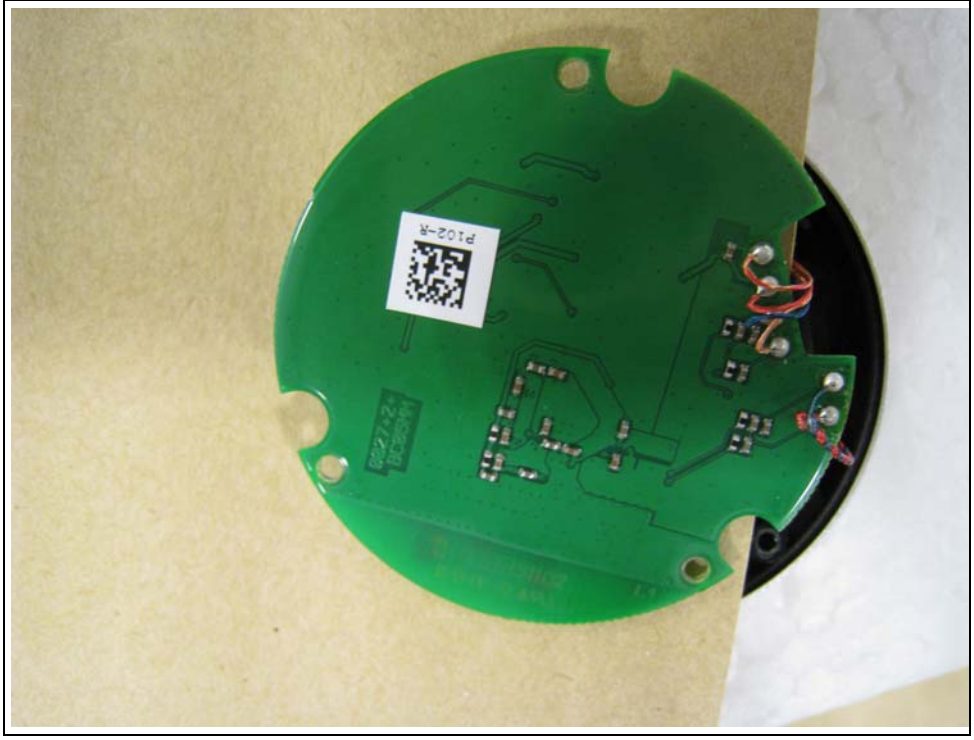
/4/ IC RSS-Gen Issue 3
General Requirements and Information for the Certification of Radio communication Equipment

Annex A Photos

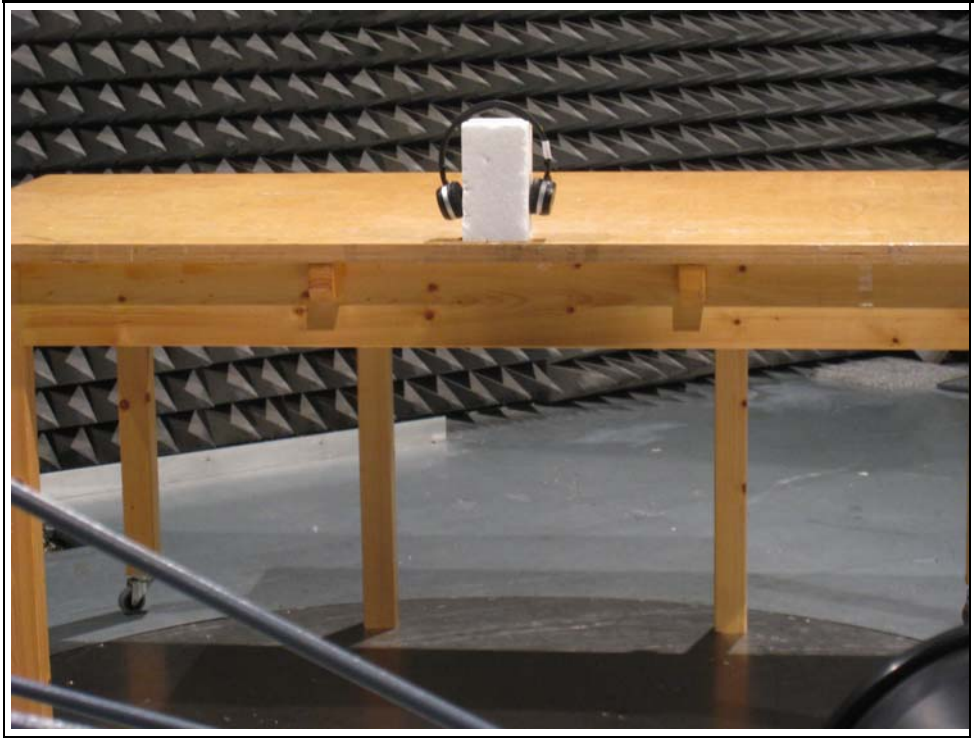
EUT Front


EUT Back


EUT PCB Front


EUT PCB Back


Test setup radiated measurements



Test setup conducted measurements