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Division: Medical Technology/ Communication Technology/ EMC

Department: Testing Body for Communication Technology/ EMC

TÜV®

TEST REPORT of the accredited test laboratory

TÜV Nr.:M/FG-12/102

Applicant:

AKG Acoustics GmbH

Lemböckgasse 21-25

A - 1230 Wien

Tested Product:

Receiver for wireless microphone set

FCC-ID:

V3TDSR70DUAL

Manufacturer:

VTech Communications Ltd.

23/F, Tai Ping Industrial Centre, Block 1,

57 Ting Kok Road, Tai Po, N.T. Hong Kong

Output power /

85,1 mW eirp

power supply:

100 - 240 VAC

field strength:

50 - 60 Hz

Frequency range:

2412 - 2462 MHz Channel separation:

26 / 24 MHz

Standard:

FCC: 47 CFR Part 15 (October 1, 2011 edition)

RSS-210 Issue 8, December 2010

TUV Austria Services GmbH Test laboratory for EMC

Deputy

Supervisor of EMC-laboratory:

Rundsiegel

Ing. Michael Emminger

25.01.2012

Ing. Stefan Matzner

File: 12-102.doc/25.01.2012

checked by:

Copy Nbr.:

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The results of this test report only refer to the provided equipment.

Testing Laboratory, Inspection Body, Certification Body, Calibration Laboratory

Notified Body 0408 IC 2932K-1

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Banking Connections BA CA 52949 001 066 IBAN AT1312000529490010 **BIC BKAUATWW** RBI 001-04.093.282 IBAN AT1531000001040932 **BIC RZBAATWW**

UID ATU63240488 DVR 3002476

Relative humidity: 26%



LIST OF MEASUREMENTS

The complete list of measurements called for in 47 CFR 15 and RSS-210 is given below.

SUBCLAUSE	PARAMETER TO BE MEASURED	
	Intentional Radiators	
	Test object data	3
2.1033	Number of channels and channel spacing	4
15.247(a)(2) A8.2 (a)	6 dB Bandwidth	5-7
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Relative humidity: 26%



TEST OBJECT DATA

General EUT Description

This digital audio receiver will be used for the reception of signals generated by wireless microphones. It is not only a receiver, but it has the capability for a two-way communication with the wireless microphones. It has no antenna connector, so all technical data were measured radiated.

- 2.1033 (c) Technical description
- 2.1033 (4) Type of emission: OFDM Channel bandwidth 16 MHz Channel spacing 26 / 24 MHz.
- 2.1033 (5) Frequency range: 2412; 2438 and 2462 MHz (channel center frequencies)
- 2.1033 (6) Power range and Controls: The maximum peak output power is 85,1 mW and there is no power regulation. There are two antennae used for MIMO and/or diversity operation.
- 2.1033 (7) Maximum output power rating: 85,1 mW eirp.
- 2.1033 (8) AC Voltage and Current: 100 240 V @ 50 60 Hz maximum current consumption: 74 mA
- RSS-135 This standard does not apply to:
 - 1.1.(a) a receiver that scans radio frequencies for the purpose of enabling its associated transmitter to avoid transmitting in an occupied frequency but which does not have the capability of decoding the message (e.g. converting it to audio voice) contained in the radio signal

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Relative humidity: 26%



Number of channels and channel spacing

§ 2.1033

Radiated Measurement

Rated output power: 85,1 mW



Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-126; NT-150; NT-207; NT-500; NT-520; NT-550

Relative humidity: 26%

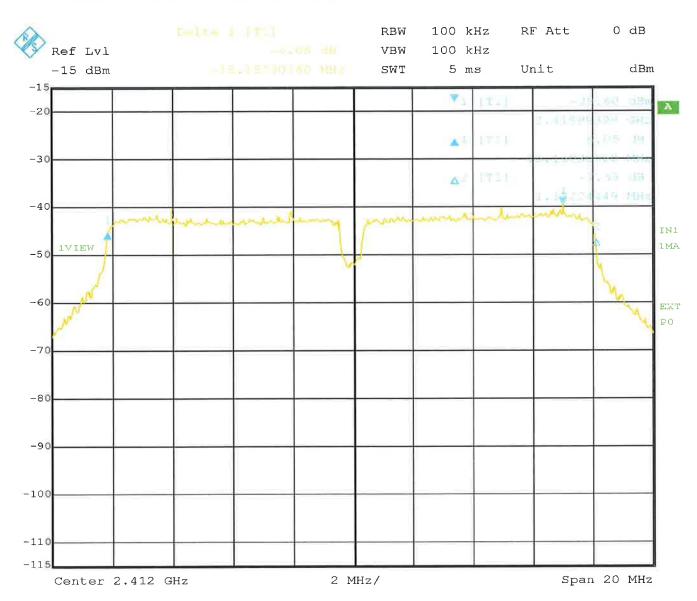


6dB Bandwidth

§ 15.247(a)(2) A8.2(a)

Radiated Measurement

Rated output power: 85,1 mW Channel 0 (2412 MHz)



Date:

16.JAN.2012 11:28:45

6dB Bandwidth:

16,353 MHz

LIMIT

SUBCLAUSE 15.247(e) - A8.2(b)

Under normal test conditons	6 dB Bandwidth at least 500 kHz

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-126; NT-150; NT-207; NT-500; NT-520; NT-550

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Relative humidity: 26%

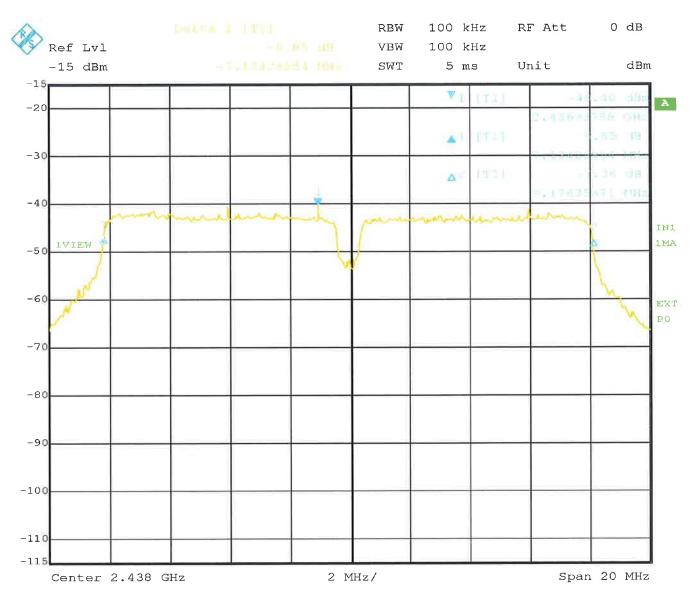


6dB Bandwidth

§ 15.247(a)(2) A8.2(a)

Radiated Measurement

Rated output power: 85,1 mW Channel 1 (2438 MHz)



Date:

16.JAN.2012 11:31:23

6dB Bandwidth:

16,353 MHz

LIMIT

SUBCLAUSE 15.247(e) - A8.2(b)

Under normal test conditons	6 dB Bandwidth at least 500 kHz

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-126; NT-150; NT-207; NT-500; NT-520; NT-550

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Relative humidity: 26%

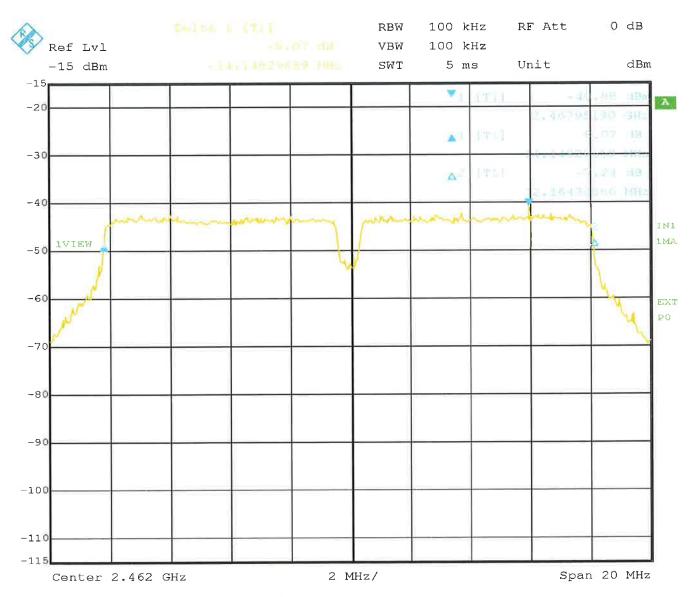


6dB Bandwidth

§ 15.247(a)(2) A8.2(a)

Radiated Measurement

Rated output power: 85,1 mW Channel 2 (2462 MHz)



Date:

16.JAN.2012 11:33:14

6dB Bandwidth:

16,353 MHz

LIMIT

SUBCLAUSE 15.247(e) - A8.2(b)

Under normal test conditions 6 dB Bandwidth at least 500 kHz
--

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-126; NT-150; NT-207; NT-500; NT-520; NT-550

Relative humidity: 26%



Maximum Peak RF Power Output (EIRP)

§ 15.247(b)(3) A8.4(4)

Radiated Measurement

Rated output power: 85,1 mW

Test conditions		Transmitter power (mW) (eirp)		
		2412 MHz	2438 MHz	2462 MHz
T _{nom} (26)°C	Antenna 0	58,9	56,2	72,4
	Antenna 1	57,5	85,1	63,1
Maximum deviation from rated output power under normal test conditions (dB)		-2,3	-0,7	-1,4
Measurement uncertainty		<u>+</u> 0,75 dB		

LIMIT

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SUBCLAUSE 15.247(b)(3) - A8.4(4)

Under normal test conditons	1W conducted (4W eirp)

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-126; NT-150; NT-207; NT-500; NT-520; NT-550

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Relative humidity: 26%



Power spectral density (EIRP)

§ 15.247(e) A8.2(b)

Radiated Measurement

Rated output power: 85,1 mW

Test conditions		Power spectral density (dBm) (eirp)		
		2412 MHz	2438 MHz	2462 MHz
T _{nom} (26)°C	Antenna 0	-14,3	-14,5	-13,3
	Antenna 1	-14,4	-12,8	-14,0
Measurement uncertainty			<u>+</u> 0,75 dB	

LIMIT

SUBCLAUSE 15.247(e) - A8.2(b)

Under normal test conditons +8dBm in any 3 kHz band

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-126; NT-150; NT-207; NT-500; NT-520; NT-550

File: 12-102.doc/25.01.2012

Relative humidity: 26%

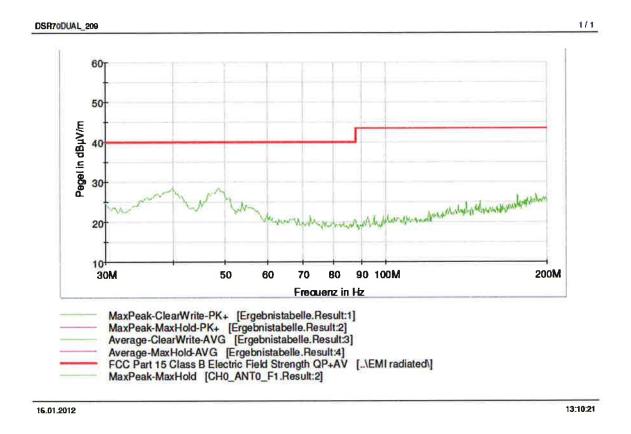


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2412 MHz - Antenna 0



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

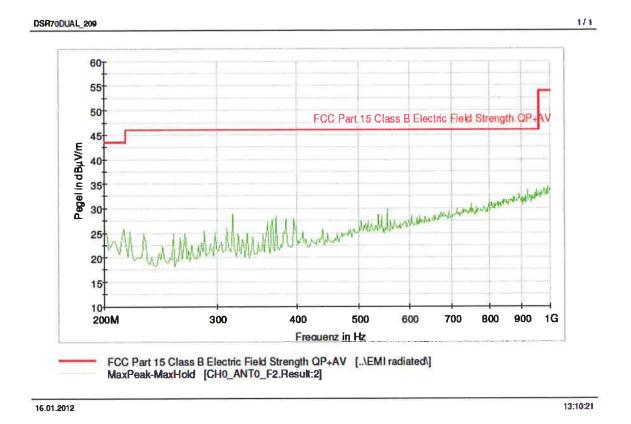


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2412 MHz - Antenna 0



LIMIT

Form: FCC15.DOT/1. 1. 2002

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

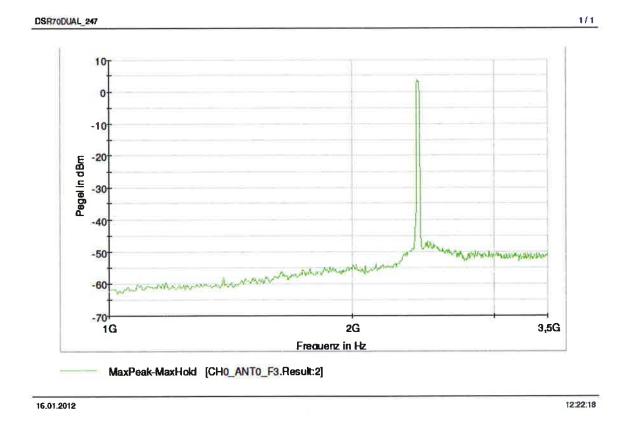


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2412 MHz - Antenna 0



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

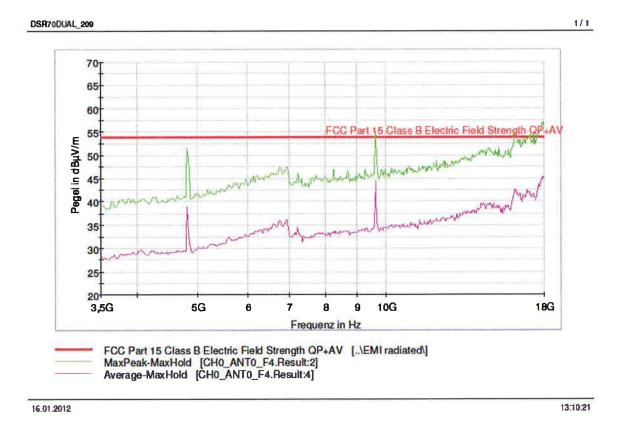


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector (green line):

Frequency: 2412 MHz - Antenna 0



LIMIT

SUBCLAUSE 15.247(d) – A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

Although the measurements were made up to the tenth harmonic, the curve above is ending at 18 GHz. The tests above 18 GHz are not automatized and therefore we were not able to plot the spectrum analyzer display. Above 18 GHz no emission above noise level were found.

Relative humidity: 26%

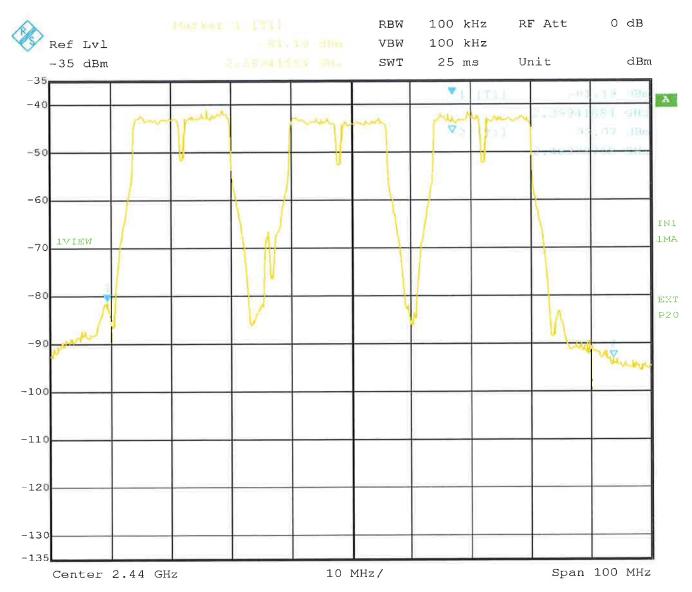


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2412 MHz - Band Edge measurement



Date:

16.JAN.2012 11:25:23

LIMIT

SUBCLAUSE 15.247(d) - A8.5

which the radio device is operating.

In any 100 kHz bandwidth outside the frequency band in At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

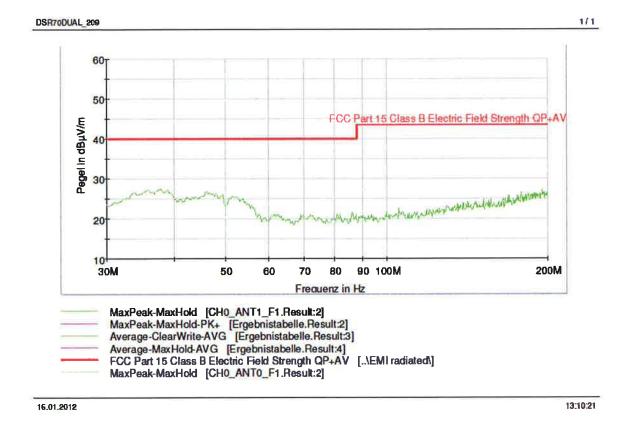


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2412 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

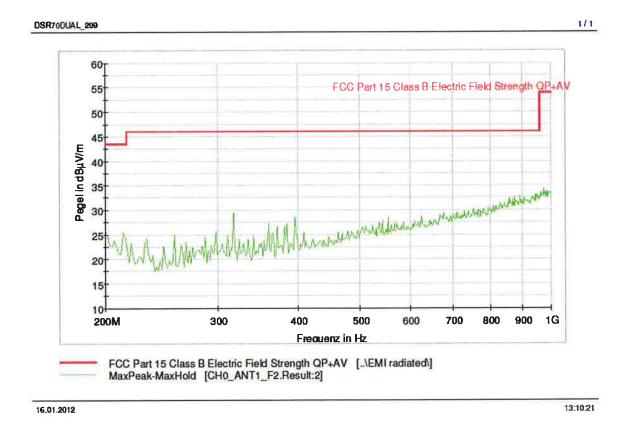


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2412 MHz - Antenna 1



LIMIT

Form: FCC15.DOT/1. 1. 2002

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below within the band to

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

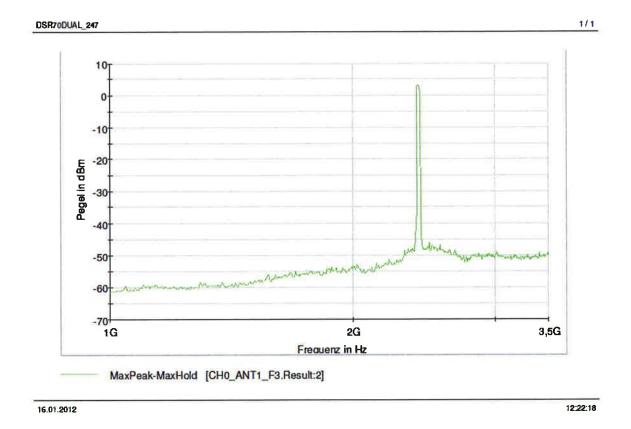


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2412 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

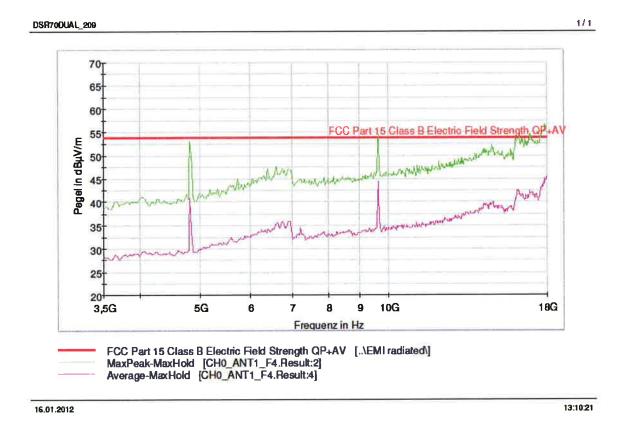


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector (green line):

Frequency: 2412 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

Although the measurements were made up to the tenth harmonic, the curve above is ending at 18 GHz. The tests above 18 GHz are not automatized and therefore we were not able to plot the spectrum analyzer display. Above 18 GHz no emission above noise level were found.

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Relative humidity: 26%

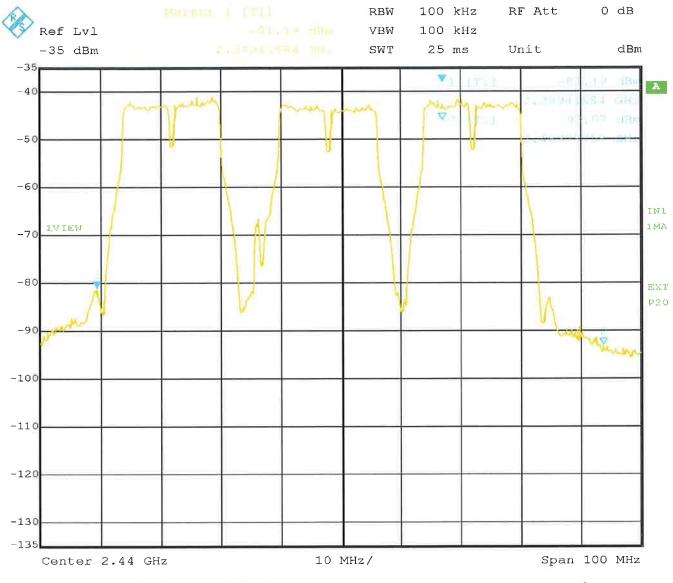


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2412 MHz - Band Edge measurement



Date:

16.JAN.2012 11:25:23

LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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Relative humidity: 26%

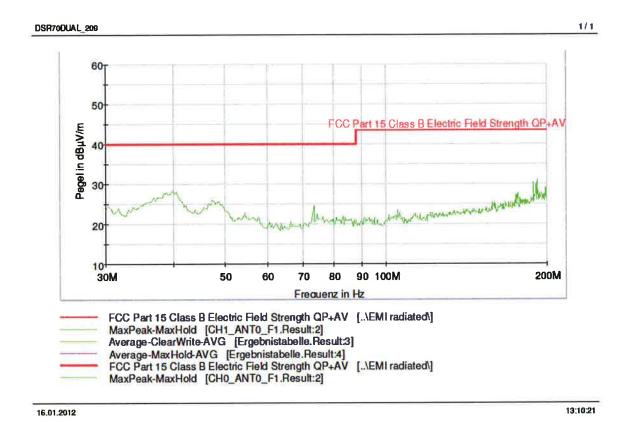


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2438 MHz - Antenna 0



LIMIT

Form: FCC15.DOT/1. 1. 2002

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

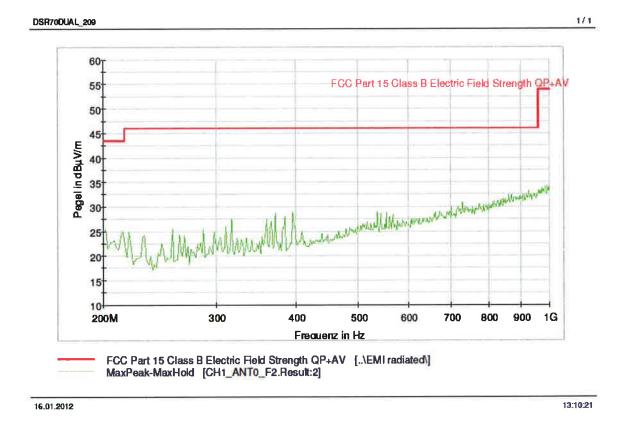


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2438 MHz - Antenna 0



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Test Report Reference: M/FG-12/102

Ambient temperature: 22°C

Relative humidity: 26%

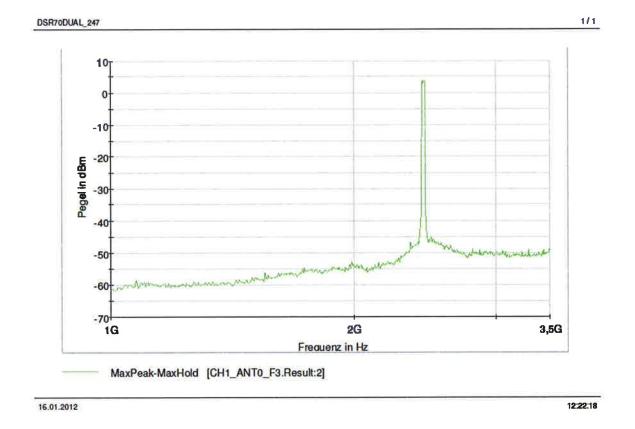


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2438 MHz - Antenna 0



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

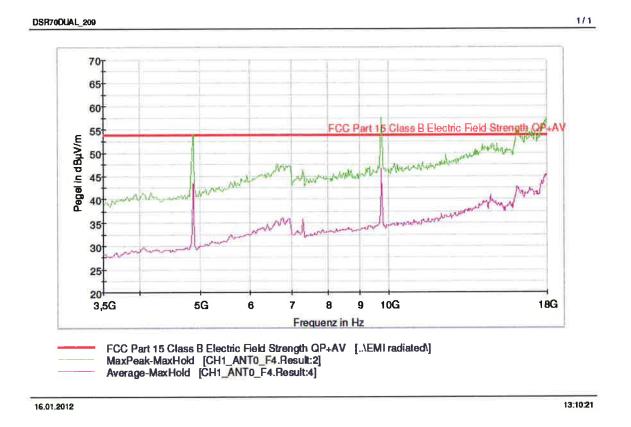


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector (green line):

Frequency: 2438 MHz - Antenna 0



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

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Relative humidity: 26%

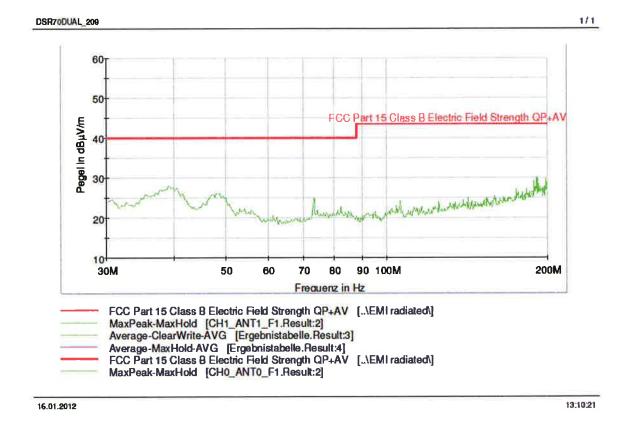


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2438 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

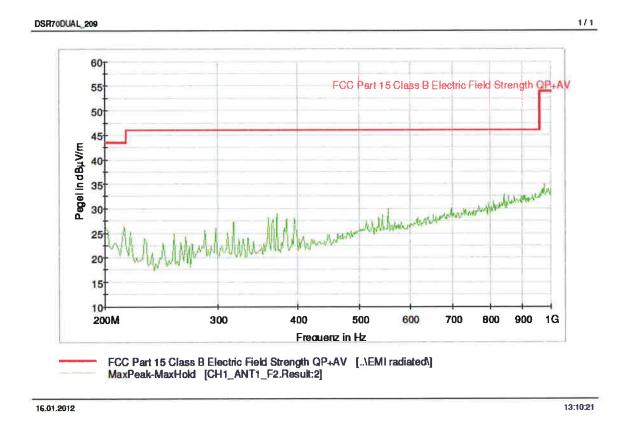


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2438 MHz - Antenna 1



LIMIT

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SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

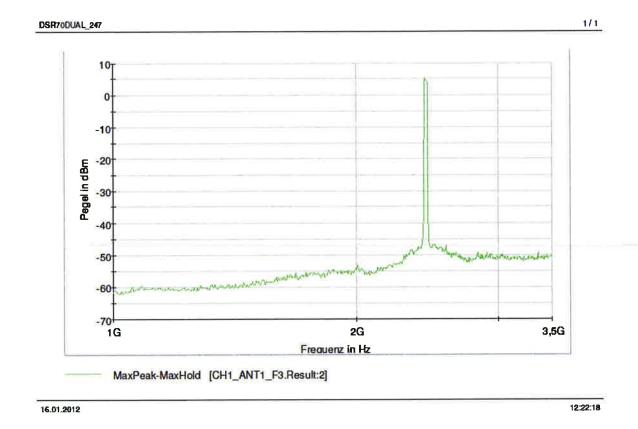


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2438 MHz - Antenna 1



LIMIT

Form: FCC15.DOT/1. 1. 2002

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

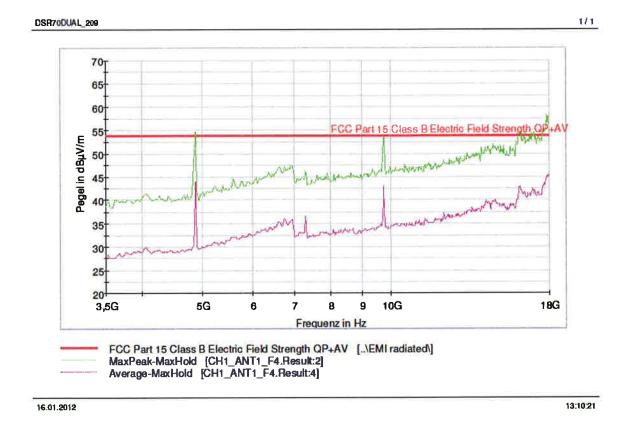


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector (green line):

Frequency: 2438 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

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Relative humidity: 26%

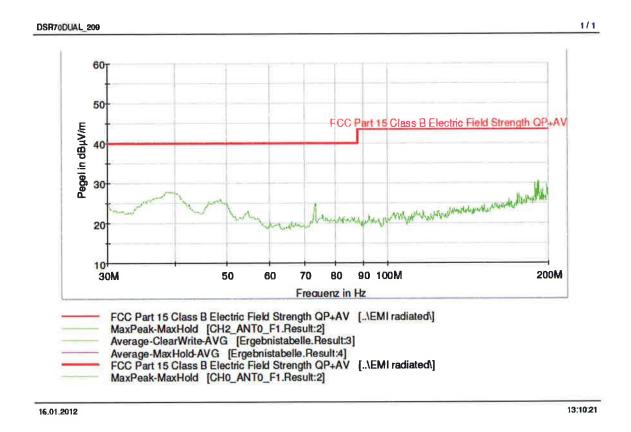


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2462 MHz - Antenna 0



LIMIT

Form: FCC15.DOT/1. 1. 2002

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

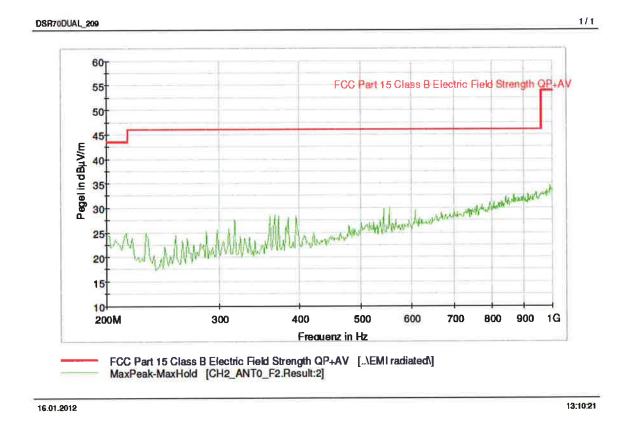


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2462 MHz - Antenna 0



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dE within the bandwidth outside the frequency band in within the bandwidth outside the bandwidth o

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

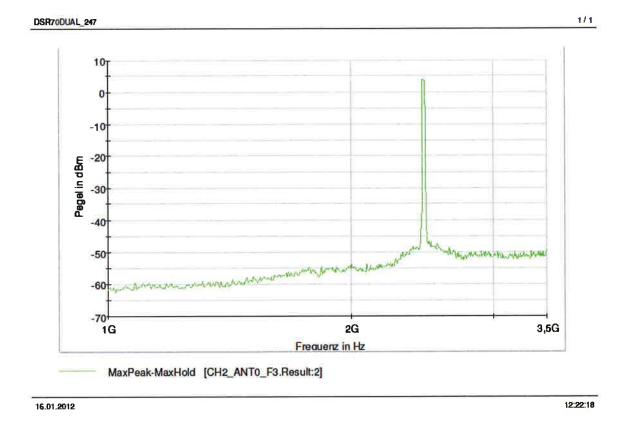


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2462 MHz - Antenna 0



LIMIT

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SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

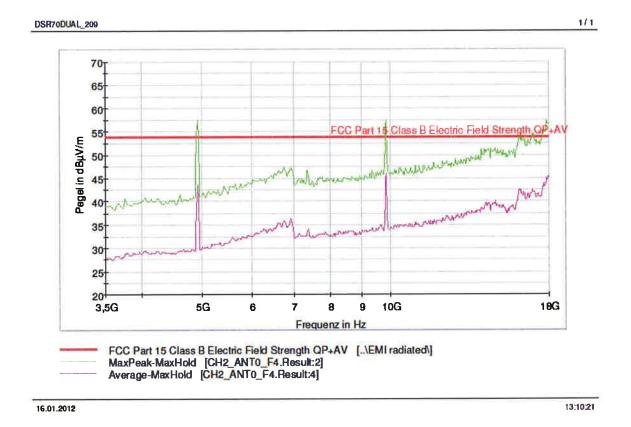


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector (green line):

Frequency: 2462 MHz - Antenna 0



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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Relative humidity: 26%

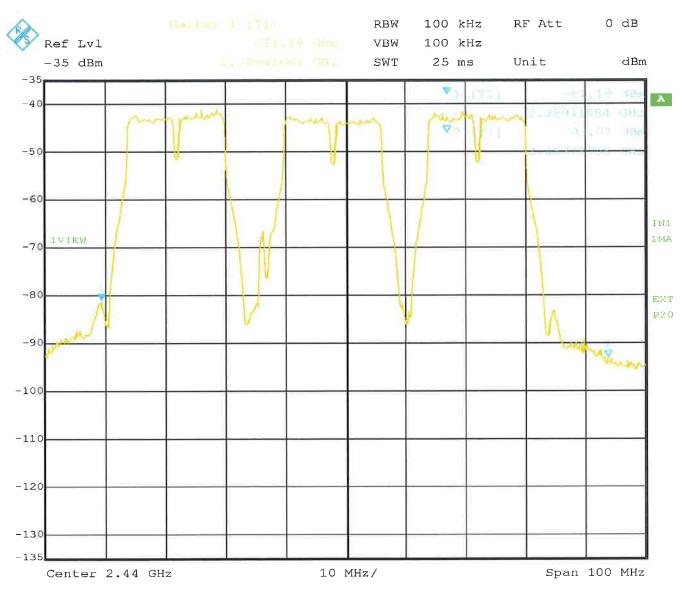


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2462 MHz - Band Edge measurement



Date:

16.JAN.2012 11:25:23

LIMIT

SUBCLAUSE 15.247(d) – A8.5

which the radio device is operating.

In any 100 kHz bandwidth outside the frequency band in At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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Relative humidity: 26%

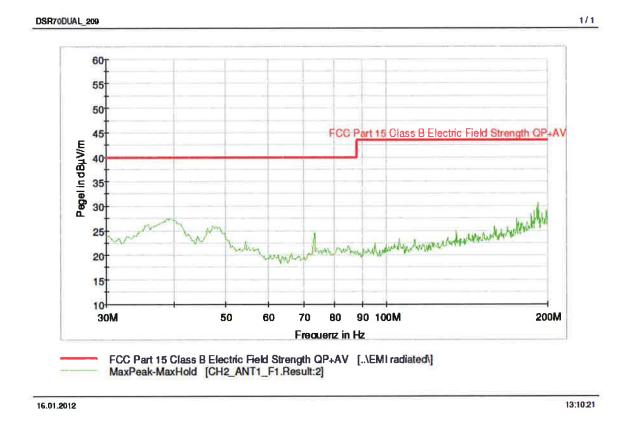


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2462 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

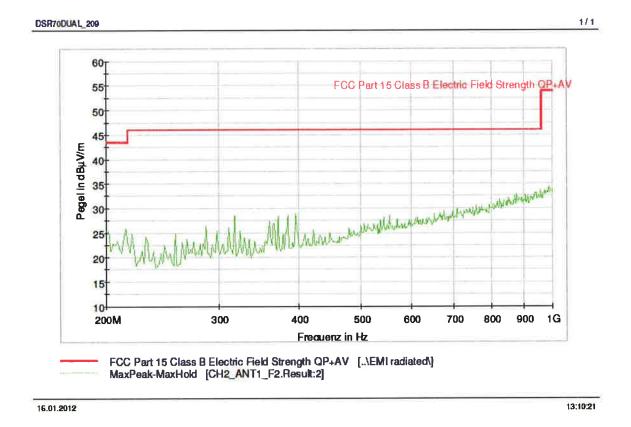


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2462 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

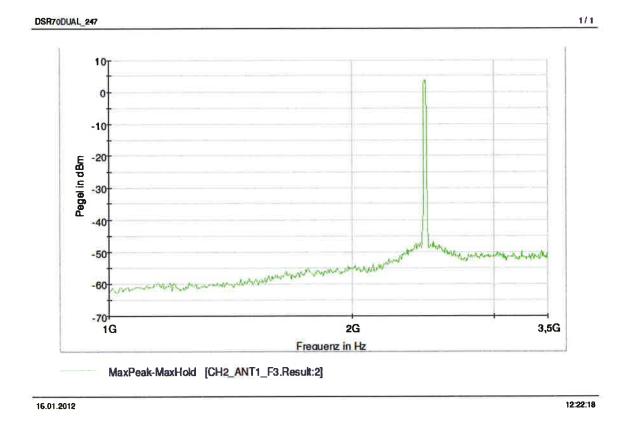


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2462 MHz - Antenna 1



LIMIT

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SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Relative humidity: 26%

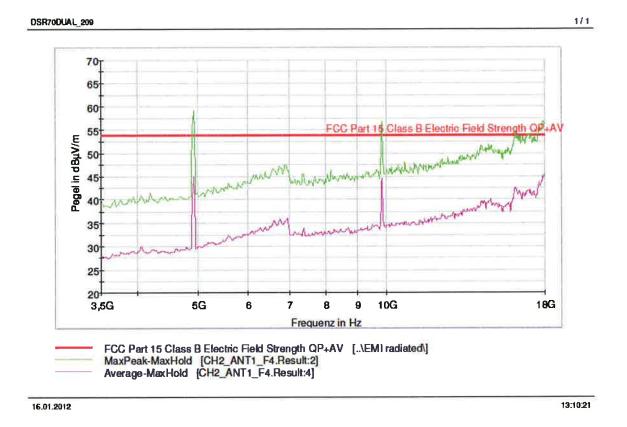


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector (green line):

Frequency: 2462 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.247(d) - A8.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.

At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

Although the measurements were made up to the tenth harmonic, the curve above is ending at 18 GHz. The tests above 18 GHz are not automatized and therefore we were not able to plot the spectrum analyzer display. Above 18 GHz no emission above noise level were found.

Relative humidity: 26%

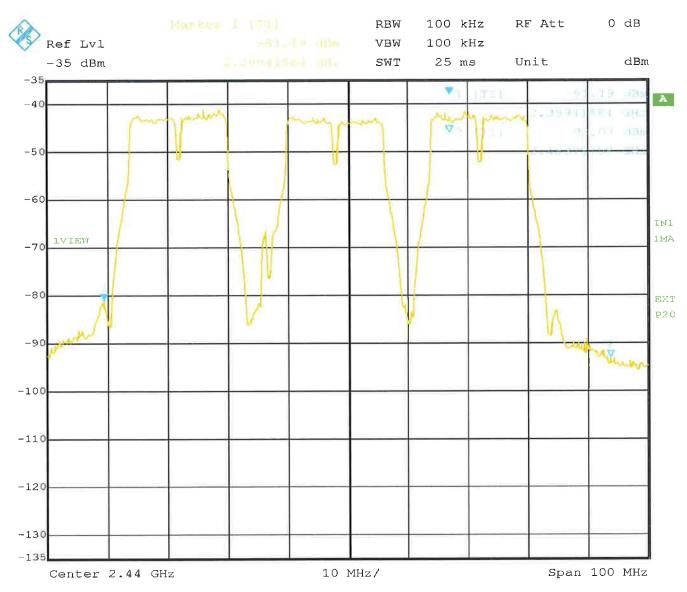


Out-of-band Emission

§ 15.247(d) A8.5

Measurement with Peak-Detector:

Frequency: 2462 MHz - Band Edge measurement



Date:

16.JAN.2012 11:25:23

LIMIT

SUBCLAUSE 15.247(d) - A8.5

which the radio device is operating.

In any 100 kHz bandwidth outside the frequency band in At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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Relative humidity: 26%



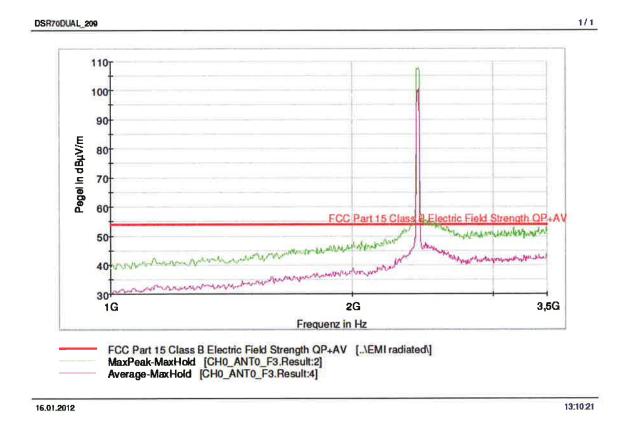
Emissions in restricted bands

§ 15.209(a)

As the limit 15.209 was checked during "Out-of-band Emission" measurements for frequencies below 1 GHz and also above 3,5 GHz, only the frequency range between 1 GHz and 3,5 GHz was checked.

Measurement with Average-Detector (violet line):

Frequency: 2412 MHz - Antenna 0



LIMIT

SUBCLAUSE 15.209

≥ 1GHz	54 dBμV/m average

Relative humidity: 26%



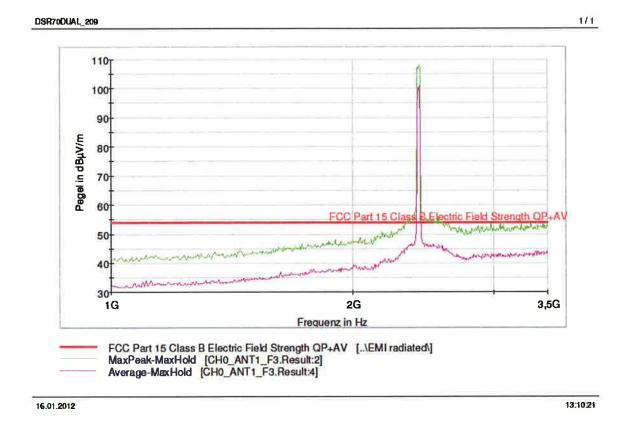
Emissions in restricted bands

§ 15.209(a)

As the limit 15.209 was checked during "Out-of-band Emission" measurements for frequencies below 1 GHz and also above 3,5 GHz, only the frequency range between 1 GHz and 3,5 GHz was checked.

Measurement with Average-Detector (violet line):

Frequency: 2412 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.209

> 1GHz	54 dBμV/m average
≥ IGHZ	J4 dbµ v/iii average

Relative humidity: 26%



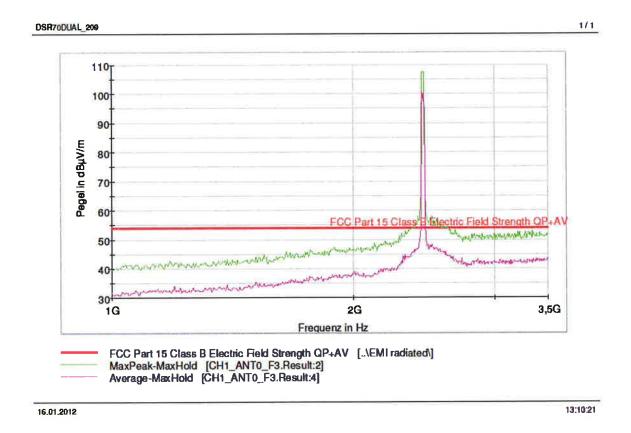
Emissions in restricted bands

§ 15.209(a)

As the limit 15.209 was checked during "Out-of-band Emission" measurements for frequencies below 1 GHz and also above 3,5 GHz, only the frequency range between 1 GHz and 3,5 GHz was checked.

Measurement with Average-Detector (violet line):

Frequency: 2438 MHz - Antenna 0



LIMIT SUBCLAUSE 15.209

≥ 1GHz	54 dBμV/m average

Relative humidity: 26%



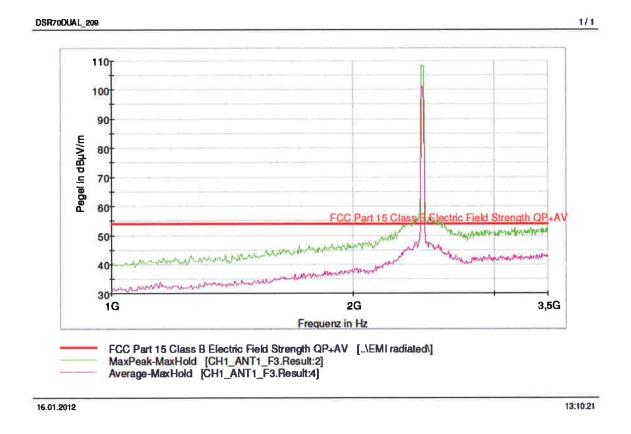
Emissions in restricted bands

§ 15.209(a)

As the limit 15.209 was checked during "Out-of-band Emission" measurements for frequencies below 1 GHz and also above 3,5 GHz, only the frequency range between 1 GHz and 3,5 GHz was checked.

Measurement with Average-Detector (violet line):

Frequency: 2438 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.209

≥ 1GHz	54 dBμV/m average

Relative humidity: 26%



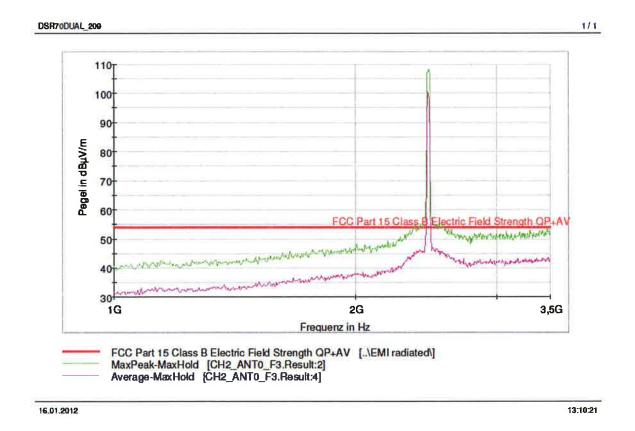
Emissions in restricted bands

§ 15.209(a)

As the limit 15.209 was checked during "Out-of-band Emission" measurements for frequencies below 1 GHz and also above 3,5 GHz, only the frequency range between 1 GHz and 3,5 GHz was checked.

Measurement with Average-Detector (violet line):

Frequency: 2462 MHz - Antenna 0



LIMIT SUBCLAUSE 15.209

≥ 1GHz 54 dBµV/m average	

Relative humidity: 26%



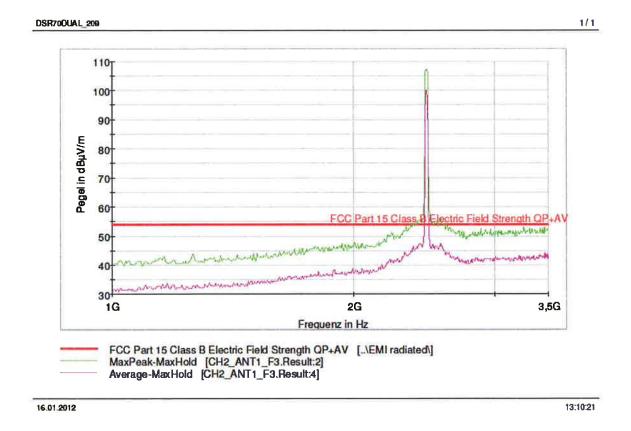
Emissions in restricted bands

§ 15.209(a)

As the limit 15.209 was checked during "Out-of-band Emission" measurements for frequencies below 1 GHz and also above 3,5 GHz, only the frequency range between 1 GHz and 3,5 GHz was checked.

Measurement with Average-Detector (violet line):

Frequency: 2462 MHz - Antenna 1



LIMIT

SUBCLAUSE 15.209

≥ 1GHz	54 dBμV/m average
_ 10112	C , 42p , 47 6. 496

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Ambient temperature: 22°C

Relative humidity: 26%



Maximum permissible Exposure

§ 15.247(i)

This kind of radio equipment is categorically excluded from routine environmental evaluation.

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Appendix 1 Test equipment used



Anechoic Chamber with 3m measurement distance	NT-100	ESVP - Test receiver 20 - 1000 MHz	NT-201
Stripline according to ISO 11452-5	NT-108	ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1
MA 240 - Antenna mast 1 - 4 m height	NT-110	ESI26 – Test receiver 20 Hz – 26,5 GHz	NT-207
DS 412 - Turntable 0 - 400 ° Azimuth	NT-111	Digital Radio Tester CTS55	NT-208
HD 100 Controller Mast+Turntable	NT-112	Noise-gen., ITU-R 559-2 20 Hz – 20 kHz	NT-209
HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	CMTA - Radiocommunication analyzer; 0,1 - 1000 MHz	NT-210
HFH-Z2 - Loop Antenna 9 kHz - 30 MHz	NT-122	3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211
HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	Digital Radio Tester Aeroflex 3920	NT-212/1
3121C - Dipole Antenna 28 - 1000 MHz	NT-124	2855S - Communication analyzer	NT-213
3115 - Horn Antenna 1 - 18 GHz (immunity)	NT-125	Mixer M28HW 26,5 GHz - 40 GHz	NT-214
3116 - Horn Antenna 18 - 40 GHz	NT-126	Diode Detector 0,01 GHz - 26,5 GHz	NT-215
SAS-200/543 - Bicon. Antenna 20 MHz - 300 MHz	NT-127	RubiSource T&M Timing reference	NT-216
AT-1080 - Log. Per. Antenna 80 - 1000 MHz	NT-128	Radiocommunicationanalyzer SWR 1180 MD	NT-217
HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-129	Mixer M19HWD 40 GHz – 60 GHz	NT-218
HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-130	Mixer M12HWD 60 GHz – 90 GHz	NT-219
3146 - Log. Per. Antenna 200 – 1000 MHz	NT-131	DSO9104 Digital scope	NT-220/1
Loop Antenna H-Field	NT-132	TPS 2014 Digital scope	NT-222
Horn Antenna 500 MHz - 2900 MHz	NT-133	Artificial Ear according to IEC 60318	NT-224
Horn Antenna 500 MHz - 6000 MHz	NT-133/1	1 kHz Sound calibrator	NT-225
Log. per. Antenna 800 MHz - 2500 MHz	NT-134	B10 - Harmonics and flicker analyzer	NT-232
Log. per. Antenna 800 MHz - 2500 MHz	NT-135	SRM-3000 Spectrumanalyzer	NT-233
BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	SRM-3006 Spectrumanalyzer	NT-233/1a
Conical Dipol Antenna PCD8250	NT-138	E-field probe SRM 75 MHz – 3 GHz	NT-234
HF 906 - Horn Antenna 1 - 18 GHz (emission)	NT-139	Field Meter NBM-500 incl. E- and H-Field probes	NT-240a-d
HZ-1 Antenna tripod	NT-150	Hall-Teslameter ETM-1	NT-241
BN 1500 Antenna tripod	NT-151	EFA-3 H-field- / E-field probe	NT-243
Ant. tripod for EN61000-4-3 Model TP1000A	NT-156	Field Meter EMR-200 100 kHz – 3 GHz	NT-244
Power quality analyzer Fluke 1760 (complete set)	NT-160 - NT-172	E-field probe 100 kHz – 3 GHz	NT-245
Spectrumanalyzer – FSP7 9 kHz – 7 GHz	NT-200	H-field probe 300 kHz – 30 MHz	NT-246

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Appendix 1 (continued) Test equipment used



	E-field probe 3 MHz – 18 GHz	NT-247	VCS 500-M6 Surge-Generator	NT-326	Di [*]
	H-field probe 27 MHz – 1 GHz	NT-248	BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W	NT-330	Te
	ELT-400 1 Hz – 400 kHz	NT-249	T82-50 RF-Amplifier 2 GHz – 8 GHz	NT-331	De
	MDS 21 - Absorbing clamp 30 - 1000 MHz	NT-250	500W1000M7 - RF-Amplifier 80 - 1000 MHz / 500 W	NT-332	Te M/
	FCC-203I EM Injection clamp	NT-251	AS0102-65R - RF-Amplifier 1 GHz - 2 GHz	NT-333	Pa
	FCC-203I-DCN Ferrite decoupling network	NT-252	APA01 – RF-Amplifier 0,5 GHz – 2,5 GHz	NT-334	Da Ch
	PR50 Current Probe	NT-253	Preamplifier 1 GHz - 4 GHz	NT-335	O.
	PR630 Current Probe	NT-254	Preamplifier for GPS MKU 152 A	NT-336	
	Fluke 87 V True RMS Multimeter	NT-260	Preamplifier 100 MHz – 23 GHz	NT-337	
	Model 2000 Digital Multimeter	NT-261	DC Block 10 MHz – 18 GHz Model 8048	NT-338	
	Fluke 87 V Digital Multimeter	NT-262/1	2-97201 Electronic load	NT-341	
	ESH2-Z5-U1 Artificial mains network 4x25A	NT-300	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-344	
	ESH3-Z5-U1 Artificial mains network 2x10A	NT-301	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-345	
	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302	VDS 200 Mobil-impuls-generator	NT-350	
	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302a	LD 200 Mobil-impuls-generator	NT-351	
	PHE 4500/B Power amplifier	NT-304	MPG 200 Mobil-Impuls-Generators	NT-352	
	EZ10 T-Artificial Network	NT-305	EFT 200 Mobil-impuls-generator	NT-353	
	SMG - Signal generator 0,1 - 1000 MHz	NT-310	AN 200 S1 Artificial Network	NT-354	
	SMA100A - Signal generator 9 kHz - 6 GHz	NT-310/1	FP-EFT 32M 3 ph. Coupling filter (Burst)	NT-400/1	
	PM 5518 TXVPS Video generator	NT-311	PHE 4500 - Mains impedance network	NT-401	
	RefRad Reference generator	NT-312	IP 6.2 Coupling filter for data lines (Surge)	NT-403	
	SMP 02 Signal generator 10 MHz - 20 GHz	NT-313	TK 9421 High Power Volt. Probe 150 kHz - 30 MHz	NT-409	
	40 MHz Arbitrary Generator TGA1241	NT-315	ESH2-Z3 - Probe 9 kHz - 30 MHz	NT-410	
	Artificial mains network NSLK 8127-PLC	NT-316	IP 4 - Capacitive clamp (Burst)	NT-411	
	PEFT - Burst generator up to 4 kV	NT-320	Highpass-Filter 100 MHz – 3 GHz	NT-412	
	ESD 30 System up to 25 kV	NT-321	Highpass-Filter 600 MHz – 4 GHz	NT-413	
	PSURGE 4.1 Surge generator	NT-324	Highpass-Filter 1250 MHz – 4 GHz	NT-414	
	TRANSIENT 1000 Immunity test system	NT-325	Highpass-Filter 1800 MHz – 16 GHz	NT-415	

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Appendix 1 (continued) Test equipment used



Highpass-Filter 3500 MHz – 18 GHz	NT-416	FCC-801-S25 Coupling decoupling network	NT-462
RF-Attenuator 10 dB DC – 18 GHz / 50 W	NT-417	FCC-801-T4 Coupling decoupling network	NT-463
RF-Attenuator 6 dB DC – 18 GHz / 50 W	NT-418	FCC-801-C1 Coupling decoupling network	NT-464
RF-Attenuator 3 dB DC – 18 GHz / 50 W	NT-419	F-16A - Current probe 1kHz - 70MHz	NT-465
RF-Attenuator 20 dB DC - 1000 MHz / 25 W	NT-421	95242-1 – Current probe 1 MHz – 400 MHz	NT-468
RF-Attenuator 30 dB DC - 1000 MHz / 1 W	NT-423	94106-1L-1 – Current probe 100 kHz – 450 MHz	NT-471
RF-Attenuator 30 dB	NT-424	GA 1240 Power amplifier according to EN 61000-4-16	NT-480
RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-425	Coupling networks according to EN 61000-4-16	NT-481 - NT-483
RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-426	Van der Hoofden Test Head	NT-484
RF-Attenuator 6 dB	NT-428	PC P4 3 GHz Test computer	NT-500
RF-Attenuator 0 dB - 81 dB	NT-429	PC P4 1700 MHz Notebook	NT-505
WRU 27 - Band blocking 27 MHz	NT-430	Monitoring camera with Monitor	NT-511
WHJ450C9 AA - High pass 450 MHz	NT-431	ES-K1 Version 1.71 SP2 Test software	NT-520
WHJ250C9 AA - High pass 250 MHz	NT-432	EMC32 Version 8.52 Test software	NT-520/1
RF-Load 150 W	NT-433	SRM-TS Version 1.3 software for SRM-3000	NT-522
Impedance transducer 1:4; 1:9; 1:16	NT-435	SPS-PHE Test software V2.5 voltage fluctuations/harmonics	NT-525
RF-Attenuator DC – 18 GHz 6 dB	NT-436	SPS-EM Test software V4.0 EN61000-4-11	NT-527
RF-Attenuator DC – 18 GHz 6 dB	NT-437	Noise power test apparatus according to EN 55014	NT-530
RF-Attenuator DC – 18 GHz 10 dB	NT-438	Vertical coupling plane (ESD)	NT-531
RF-Attenuator DC – 18 GHz 20 dB	NT-439	Test cable #4 for EN 61000-4-6	NT-553
I+P 7780 Directional coupler 100 - 2000 MHz	NT-440	Test cable #3 for conducted emission	NT-554
ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz	NT-441	Test cable #5+#6 ESD-cable (2x470k)	NT-555 + NT-556
Power Divider 6 dB/1 W/50 Ohm	NT-443	Test cable #8 Sucoflex 104EA	NT-559
Directional coupler 0,1 MHz – 70 MHz	NT-444	Test cable #9 (for outdoor measurements)	NT-580
Directional coupler 0,1 MHz – 70 MHz	NT-445	Test cable #10 (for outdoor measurements)	NT-581
Tube imitations according to EN 55015	NT-450	Test cable #13 Sucoflex 104PE	NT-584
FCC-801-M3-16A Coupling decoupling network	NT-458	Test cable #21 for SRM-3000	NT-592
FCC-801-M2-50A Coupling decoupling network	NT-459	Shield chamber	NT-600
FCC-801-M5-25 Coupling decoupling network	NT-460	Climatic chamber	M-1200
FCC-801-AF10 Coupling decoupling network	NT-461		

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Description: Front view

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Description: Backside view

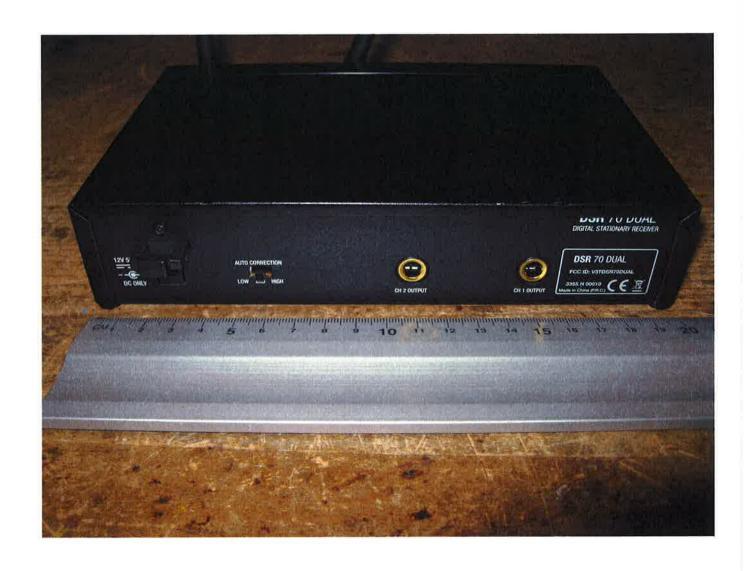
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Description: Lower side

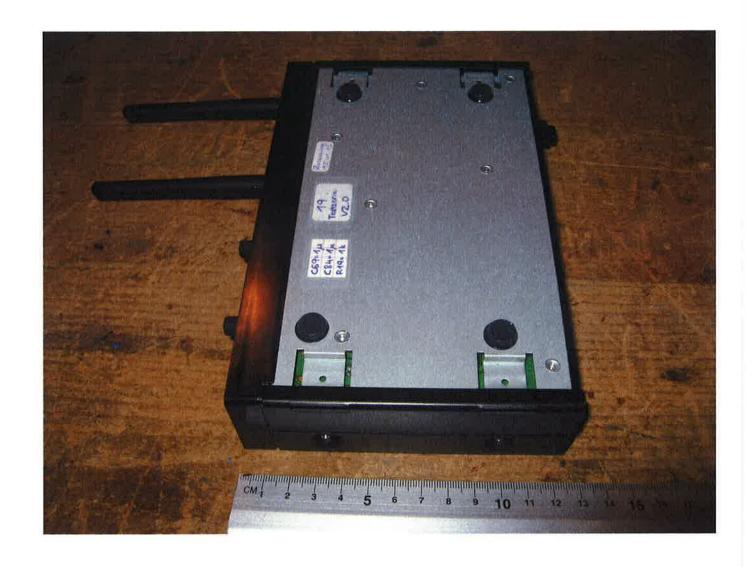
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Description: Label

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Description: Case opened

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Description: Mainboard view #1

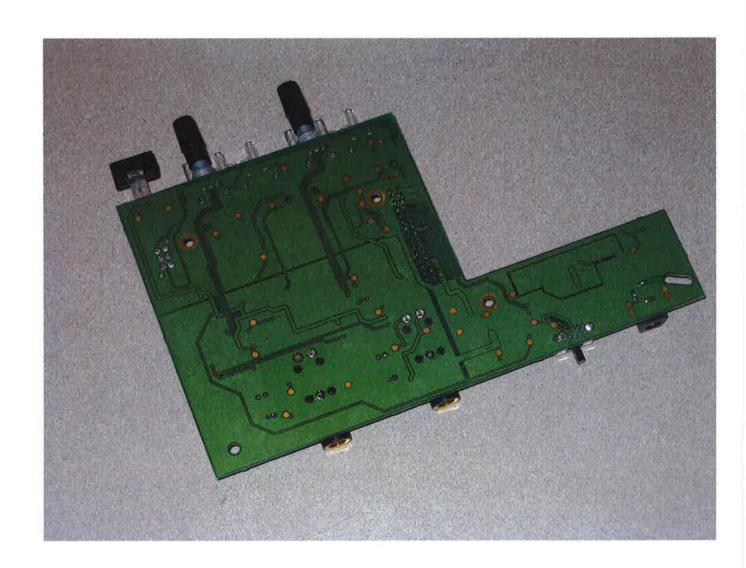
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Description: Mainboard view #2

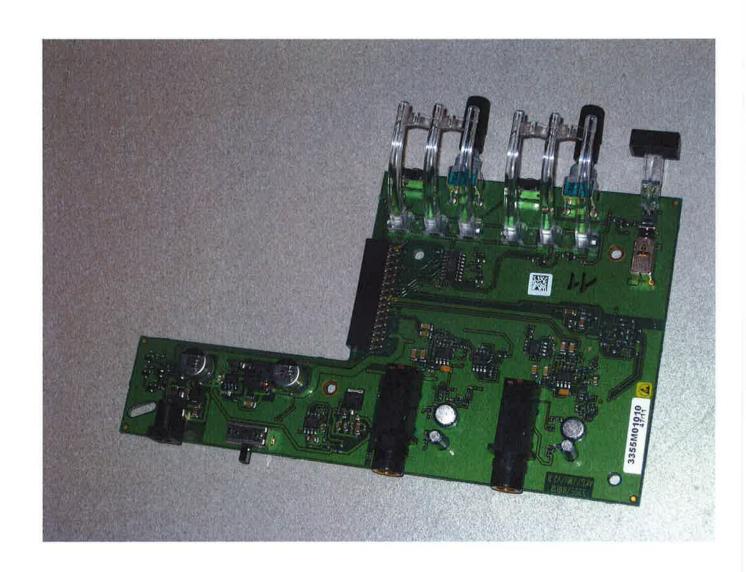
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Description: RF-board view #1

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Description: RF-board view #2

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Description: Test setup



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