

TEST REPORT
of the accredited test laboratory

TÜV Nr.:M/FG-11/133

:
Deutschstraße 10
A-1230 Vienna
Tel.:
+43(0)1 610 91-0
pzw@tuv.at

Division:
Medical Technology/
Communication
Technology/ EMC

Department:
Testing Body for
Communication
Technology/ EMC

TÜV®

Applicant: AKG Acoustics GmbH
Lemböckgasse 21-25
A – 1230 Wien

Tested Product: Body-worn transmitter for wireless microphone set

FCC-ID: V3TDPT70

Manufacturer: AKG Acoustics GmbH
Lemböckgasse 21-25
A – 1230 Wien

Output power / 87,1 mW eirp **power supply:** 3 VDC
field strength: 2 x 1,5V battery

Frequency range: 2412 - 2462 MHz **Channel separation:** 26 / 24 MHz

Standard: FCC: 47 CFR Part 15 (October 1, 2010 edition)
RSS-210 Issue 8, December 2010



Testing Laboratory,
Inspection Body,
Certification Body,
Calibration Laboratory

Notified Body 0408
IC 2932K-1

Chairman of the
Supervisory Board:
KR Dipl.-Ing. Johann
MARIHART

Management:
Dipl.-Ing. Dr. Hugo
EBERHARDT
Mag. Christoph
WENNINGER

Registered Office:
Krugerstrasse 16
1015 Vienna/Austria

Branch Office:
Dornbirn, Graz,
Innsbruck, Klagenfurt,
Linz, Salzburg, St. Pölten,
Wels, Wien 1, Wien 2,
Wien 23, Brixen (I) and
Filderstadt (D)

Company Register
Court / - Number:
Vienna / FN 288476 f

Banking Connections
BA CA 52949 001 066
IBAN
AT131200052949001C
BIC BKAUATWW
RBI 001-04.093.282
IBAN
AT1531000001040932
BIC RZBAATWW

UID ATU63240488
DVR 3002476

TUV Austria Services GmbH
Test laboratory for EMC

Supervisor of EMC-laboratory:


Dipl.-Ing. Franz Fegerl



10.11.2011

Copy Nbr.: 01

checked by:


Ing. Michael Emminger

A publication of this test report is only permitted literally.

Copying or reproduction of partial sections needs a written permission of
TUV Austria Services GmbH.

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

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	PAGE
	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
15.247(b)(3) A8.4 (4)	Maximum Peak RF Power Output (eirp)	8
15.247(e) A8.2 (b)	Power Spectral Density	9
15.247(d) A8.5	Out-of-band Emissions	10-37
15.209(a)	Emissions in restricted bands	38-43
15.247(i)	Maximum permissible exposure	44

TEST OBJECT DATA

General EUT Description

This body-worn digital audio transmitter will be used as wireless microphone. 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 87,1 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: 87,1 mW eirp.

2.1033 (8) DC Voltage and Current: 3 V internal battery
maximum current consumption: 270 mA

RSS-135 This standard does not apply to:

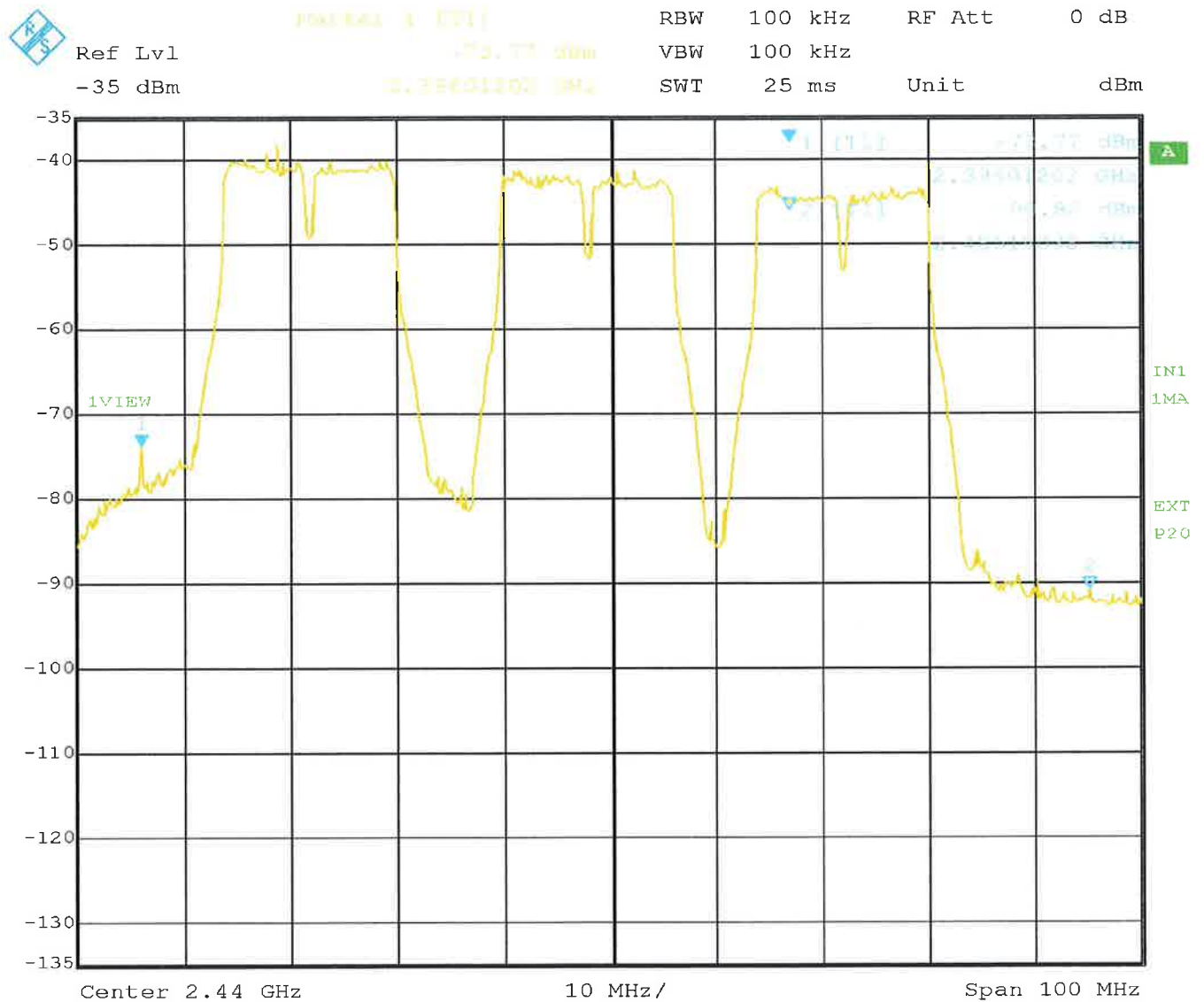
- 1.1.(a) a receiver that scans radio frequencies for the purpose of enabling its associated transmitter to avoid transmitting in an occupied frequency but which does not have the capability of decoding the message (e.g. converting it to audio voice) contained in the radio signal

Number of channels and channel spacing

§ 2.1033

Radiated Measurement

Rated output power: 87,1 mW



Date: 9.AUG.2011 15:57:38

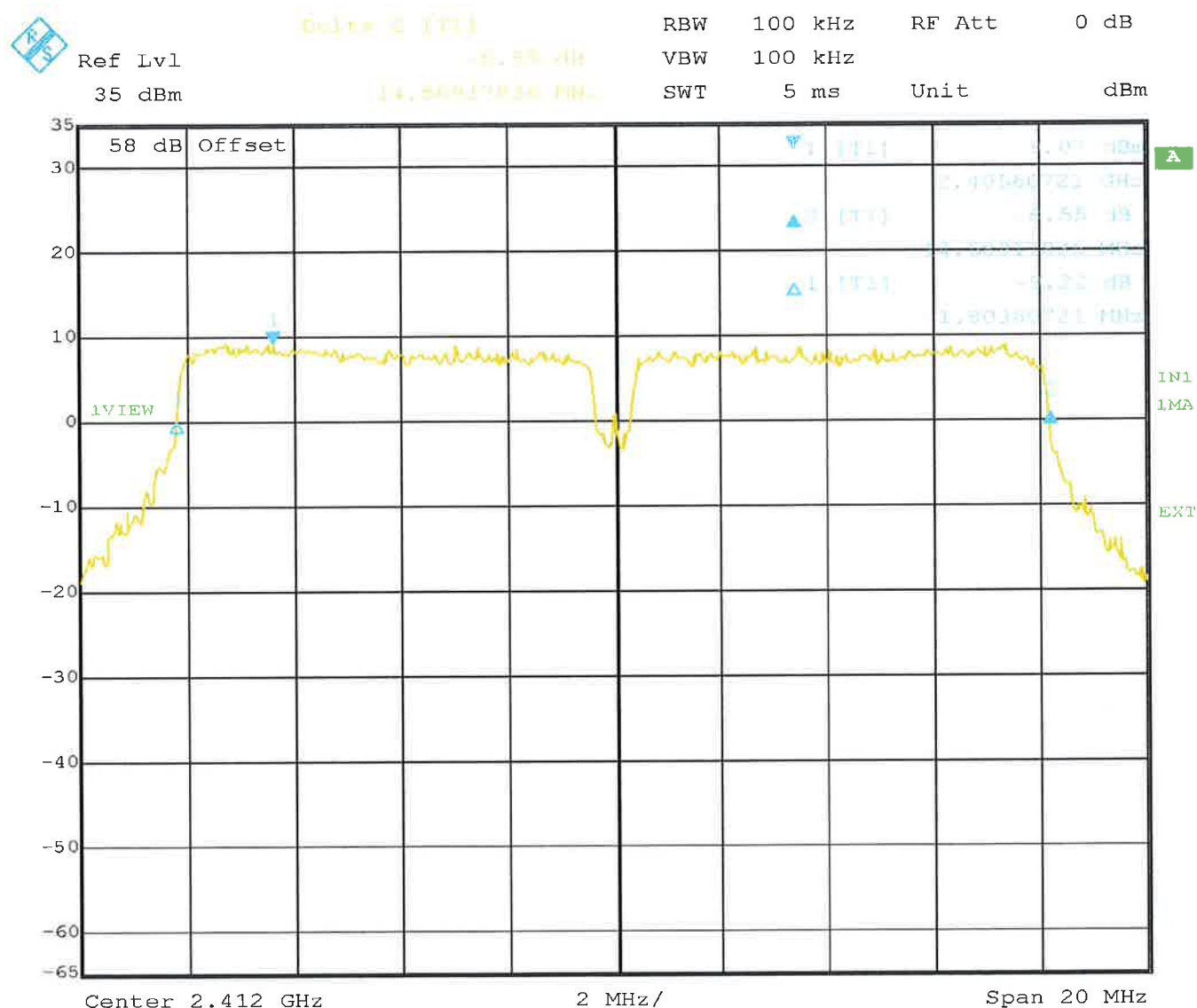
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-126; NT-150; NT-207; NT-500; NT-520; NT-550

6dB Bandwidth

§ 15.247(a)(2)
A8.2(a)

Radiated Measurement

Rated output power: 87,1 mW Channel 0 (2412 MHz)



Date: 18.AUG.2011 11:33:23

6dB Bandwidth: 16,393 MHz

LIMIT SUBCLAUSE 15.247(e) – A8.2(b)

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

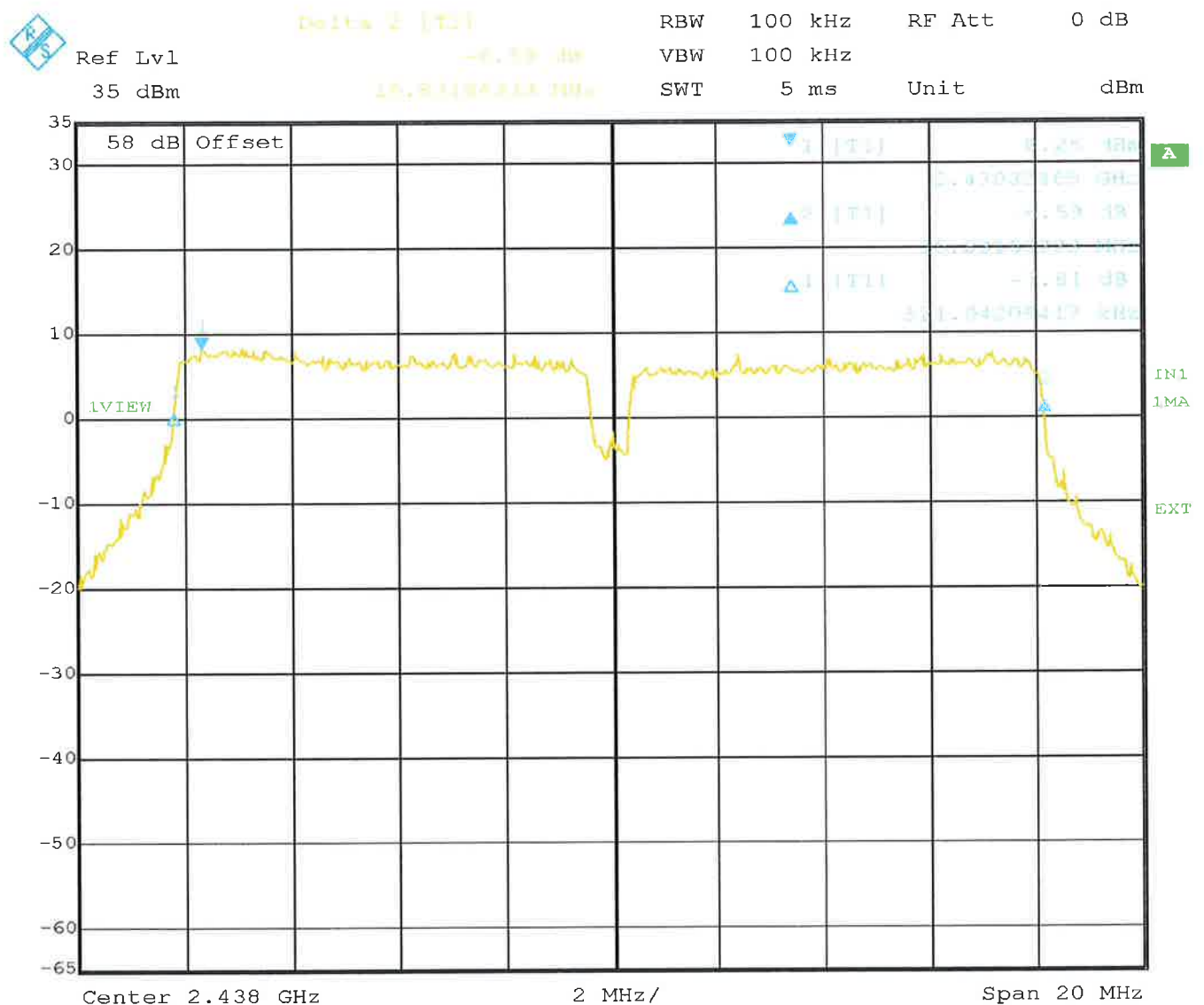
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-126; NT-150; NT-207; NT-500; NT-520; NT-550

6dB Bandwidth

§ 15.247(a)(2)
A8.2(a)

Radiated Measurement

Rated output power: 87,1 mW Channel 1 (2438 MHz)



Date: 18.AUG.2011 11:35:21

6dB Bandwidth: 16,352 MHz

LIMIT SUBCLAUSE 15.247(e) – A8.2(b)

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

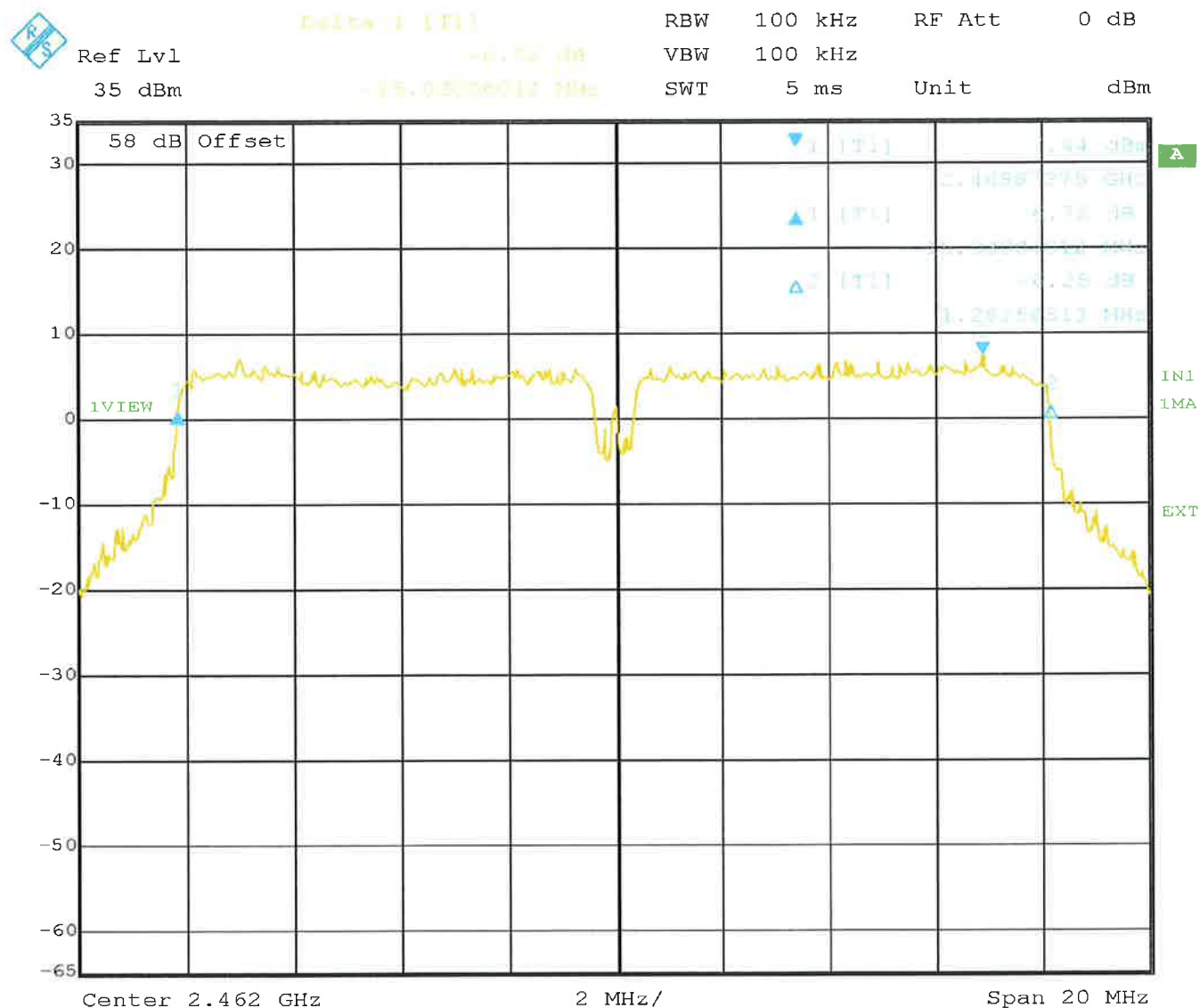
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-126; NT-150; NT-207; NT-500; NT-520; NT-550

6dB Bandwidth

§ 15.247(a)(2)
A8.2(a)

Radiated Measurement

Rated output power: 87,1 mW Channel 2 (2462 MHz)



Date: 18.AUG.2011 11:46:05

6dB Bandwidth: 16,313 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

Maximum Peak RF Power Output (EIRP)

**§ 15.247(b)(3)
A8.4(4)**

Radiated Measurement

Rated output power: 87,1 mW

Test conditions		Transmitter power (mW) (eirp)		
		2412 MHz	2438 MHz	2462 MHz
T _{nom} (26)°C	Antenna 0	87,1	56,2	46,8
	Antenna 1	60,3	87,1	53,7
Maximum deviation from rated output power under normal test conditions (dB)		-1,6	-1,9	-2,7
Measurement uncertainty		± 0,75 dB		

LIMIT

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

Power spectral density (EIRP)

**§ 15.247(e)
A8.2(b)**

Radiated Measurement

Rated output power: 87,1 mW

Test conditions		Power spectral density (dBm) (eirp)		
		2412 MHz	2438 MHz	2462 MHz
T _{nom} (26)°C	Antenna 0	-12,6	-14,1	-15,8
	Antenna 1	-13,9	-12,5	-15,2
Measurement uncertainty		± 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

Out-of-band Emission

§ 15.247(d)
A8.5

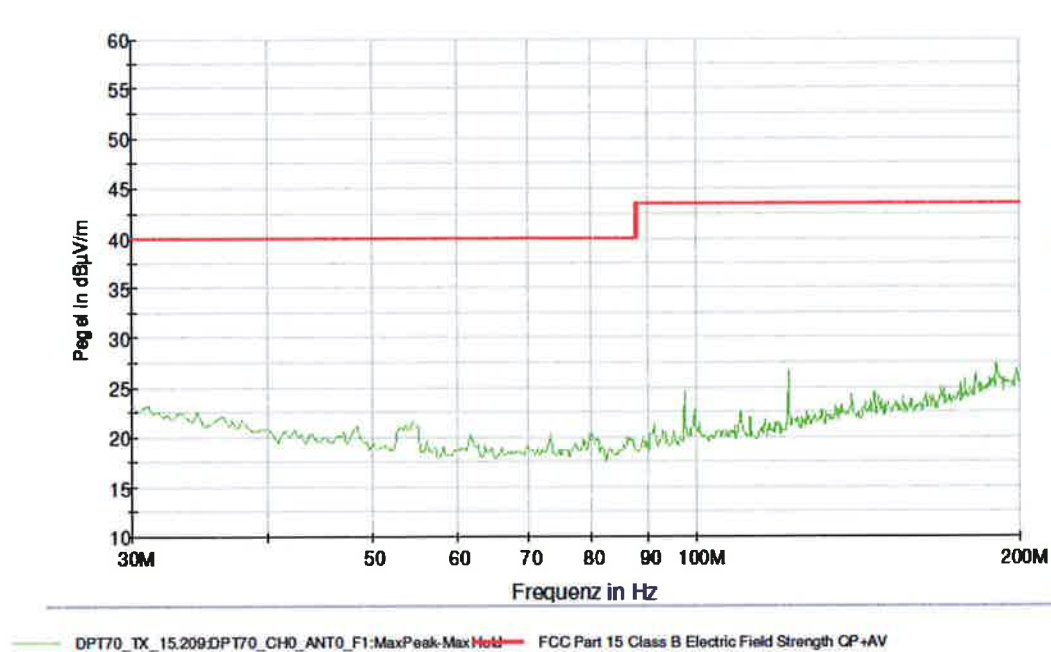
Measurement with Peak-Detector:

Frequency: 2412 MHz – Antenna 0

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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

Out-of-band Emission

§ 15.247(d)
A8.5

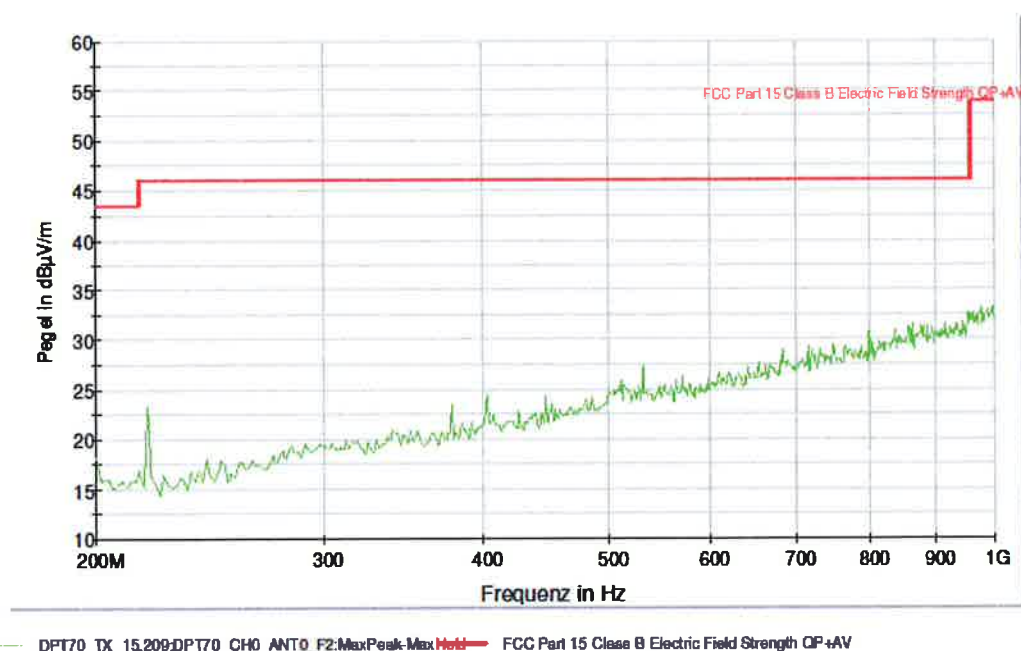
Measurement with Peak-Detector:

Frequency: 2412 MHz – Antenna 0

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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.

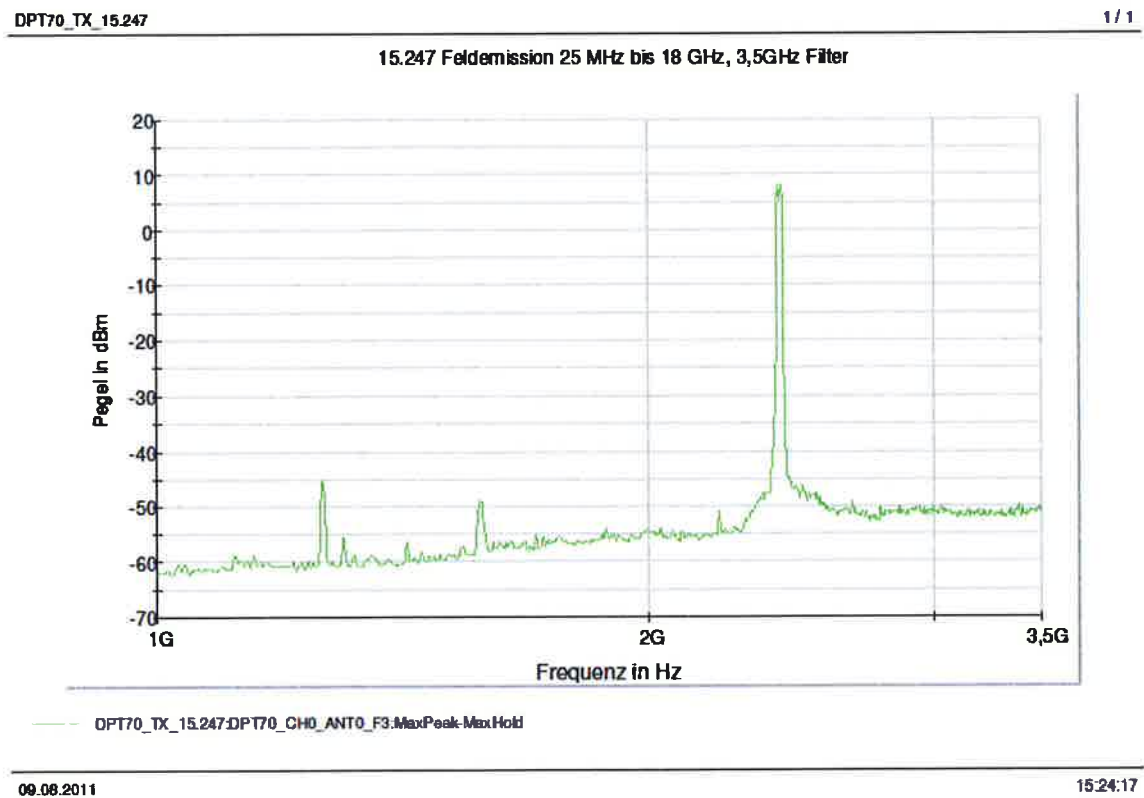
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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.

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

Out-of-band Emission

§ 15.247(d)
A8.5

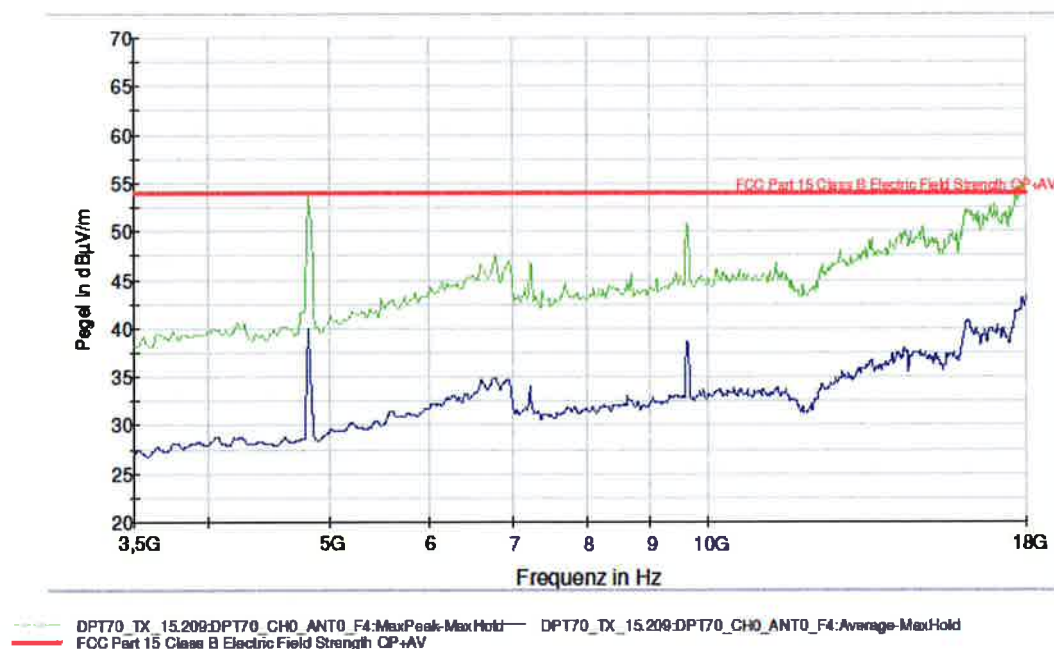
Measurement with Peak-Detector (green line):

Frequency: 2412 MHz – Antenna 0

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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

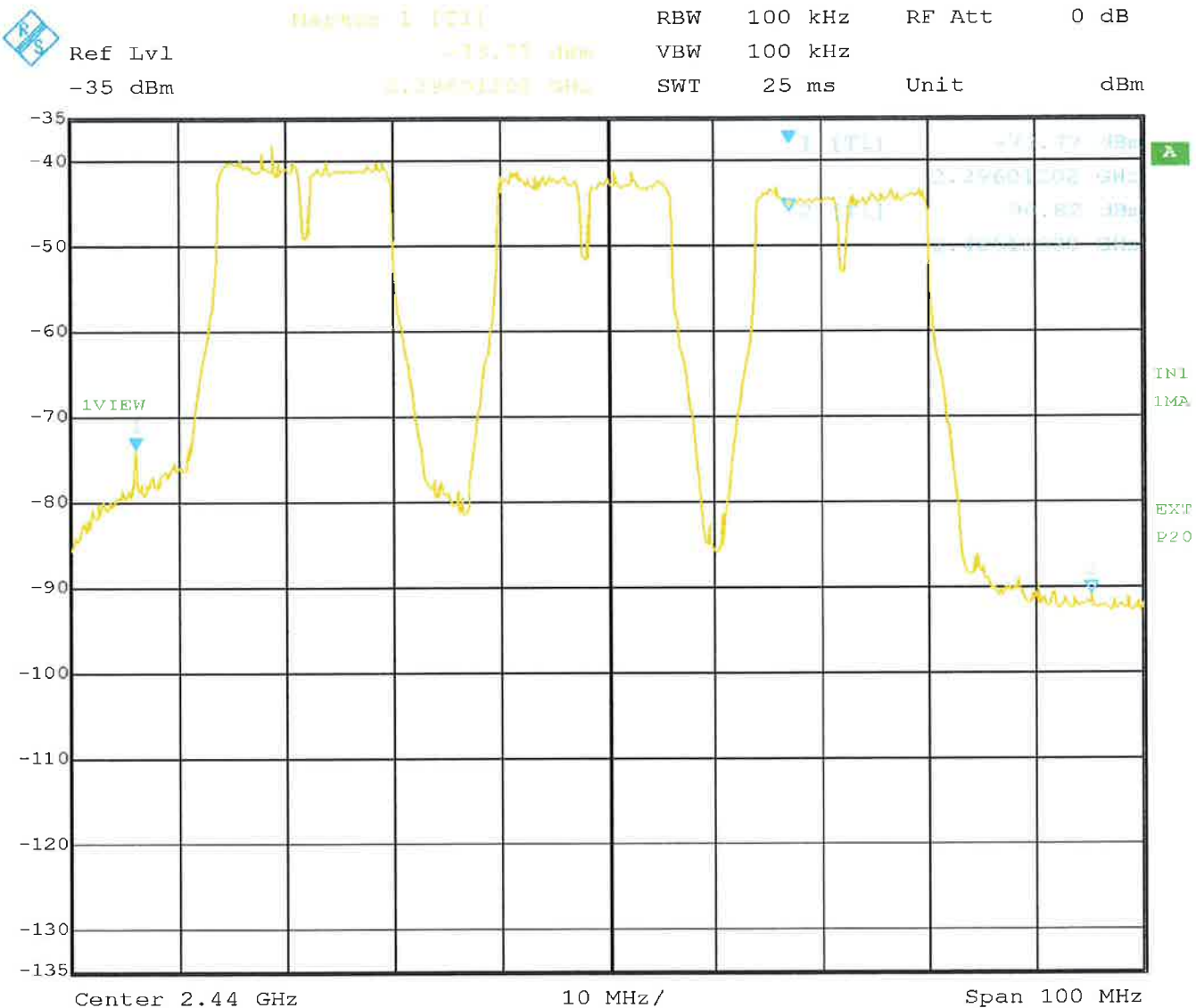
Although the measurements were made up to the tenth harmonic, the curve above is ending at 18 GHz. The tests above 18 GHz are not automatized and therefore we were not able to plot the spectrum analyzer display. Above 18 GHz no emission above noise level were found.

Out-of-band Emission

**§ 15.247(d)
A8.5**

Measurement with Peak-Detector:

Frequency: 2412 MHz – Band Edge measurement



Date: 9.AUG.2011 15:57:38
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.
---	--

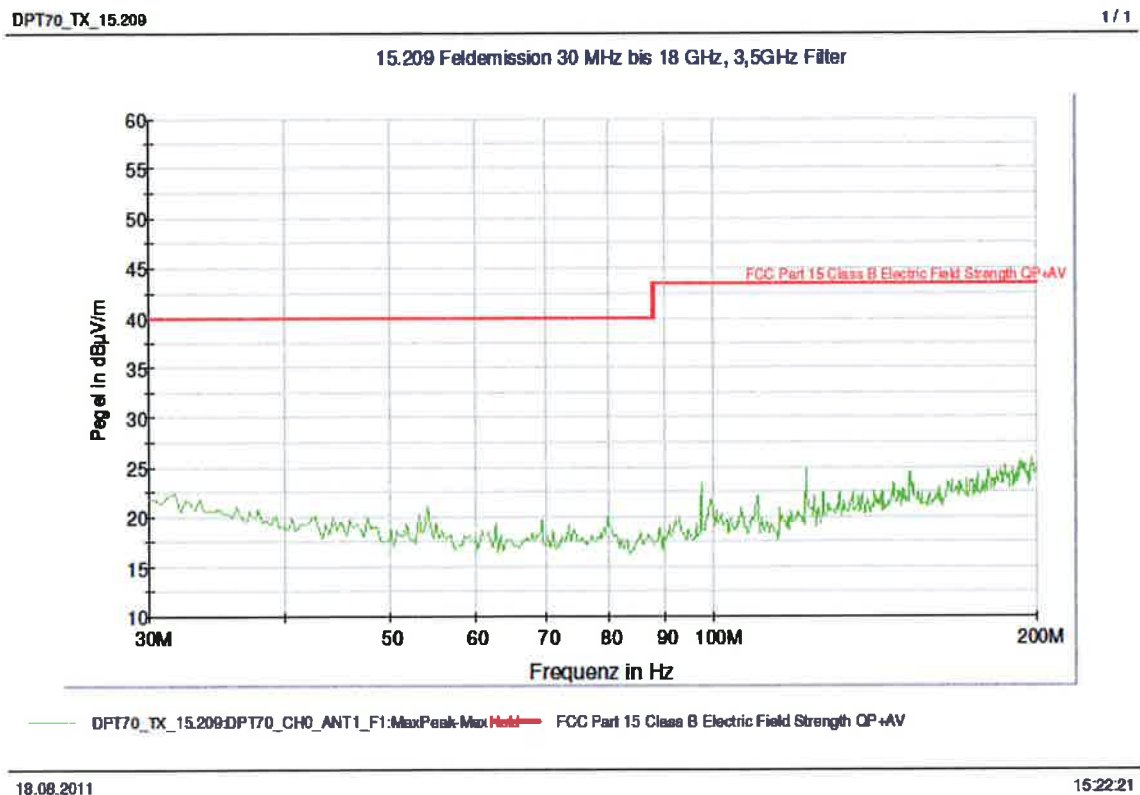
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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.

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

Out-of-band Emission

§ 15.247(d)
A8.5

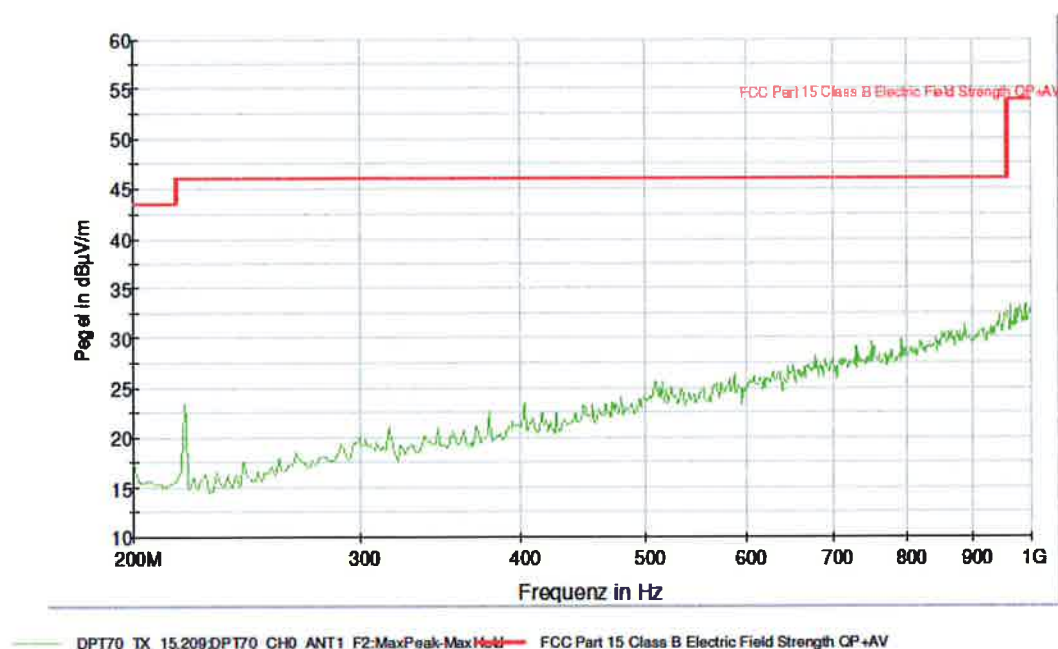
Measurement with Peak-Detector:

Frequency: 2412 MHz – Antenna 1

DPT70_TX_15.209

1/1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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.

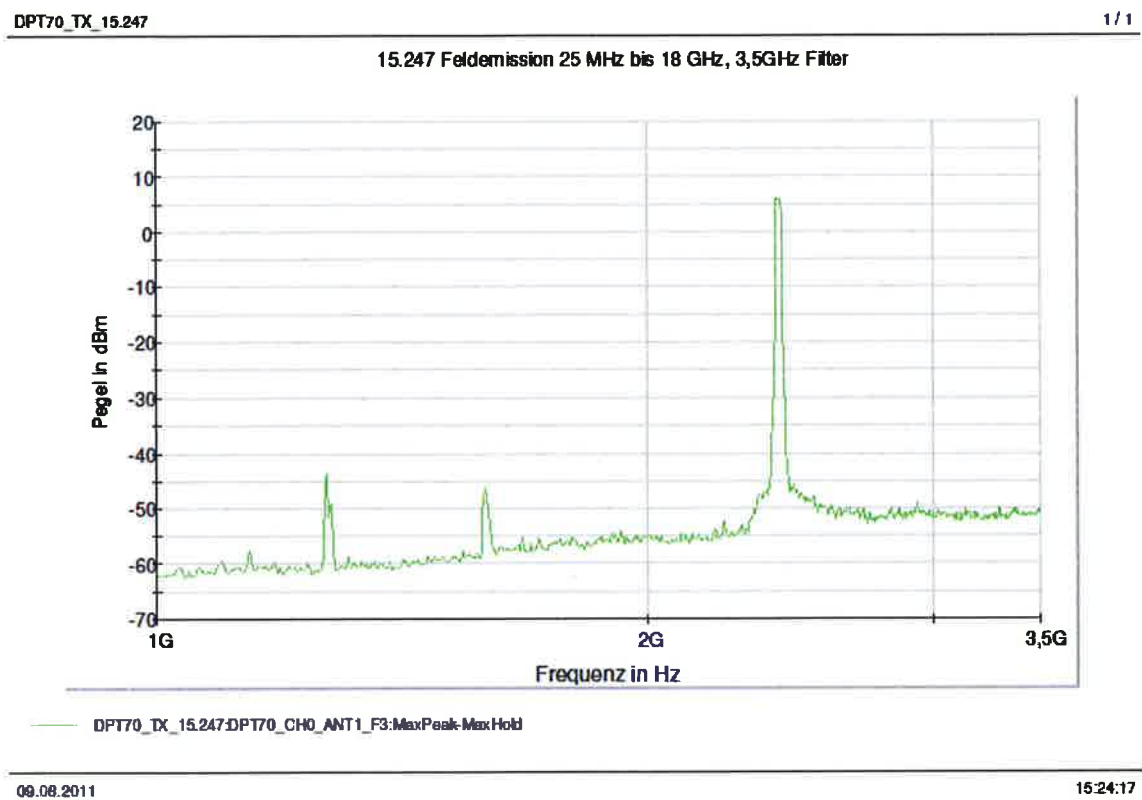
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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.
---	--

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

Out-of-band Emission

§ 15.247(d)
A8.5

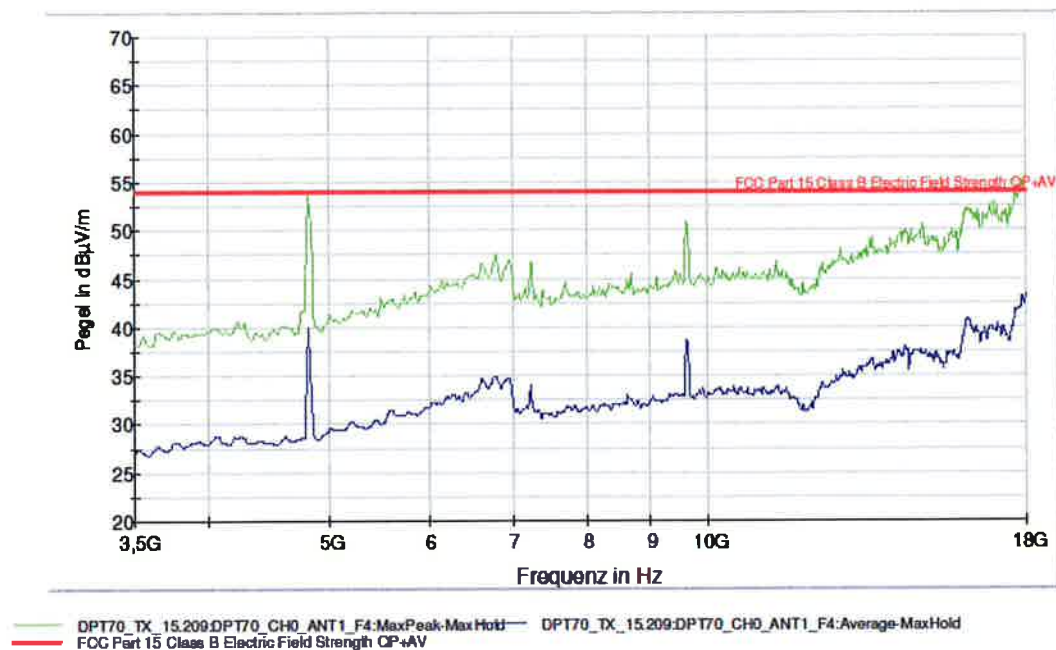
Measurement with Peak-Detector (green line):

Frequency: 2412 MHz – Antenna 1

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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

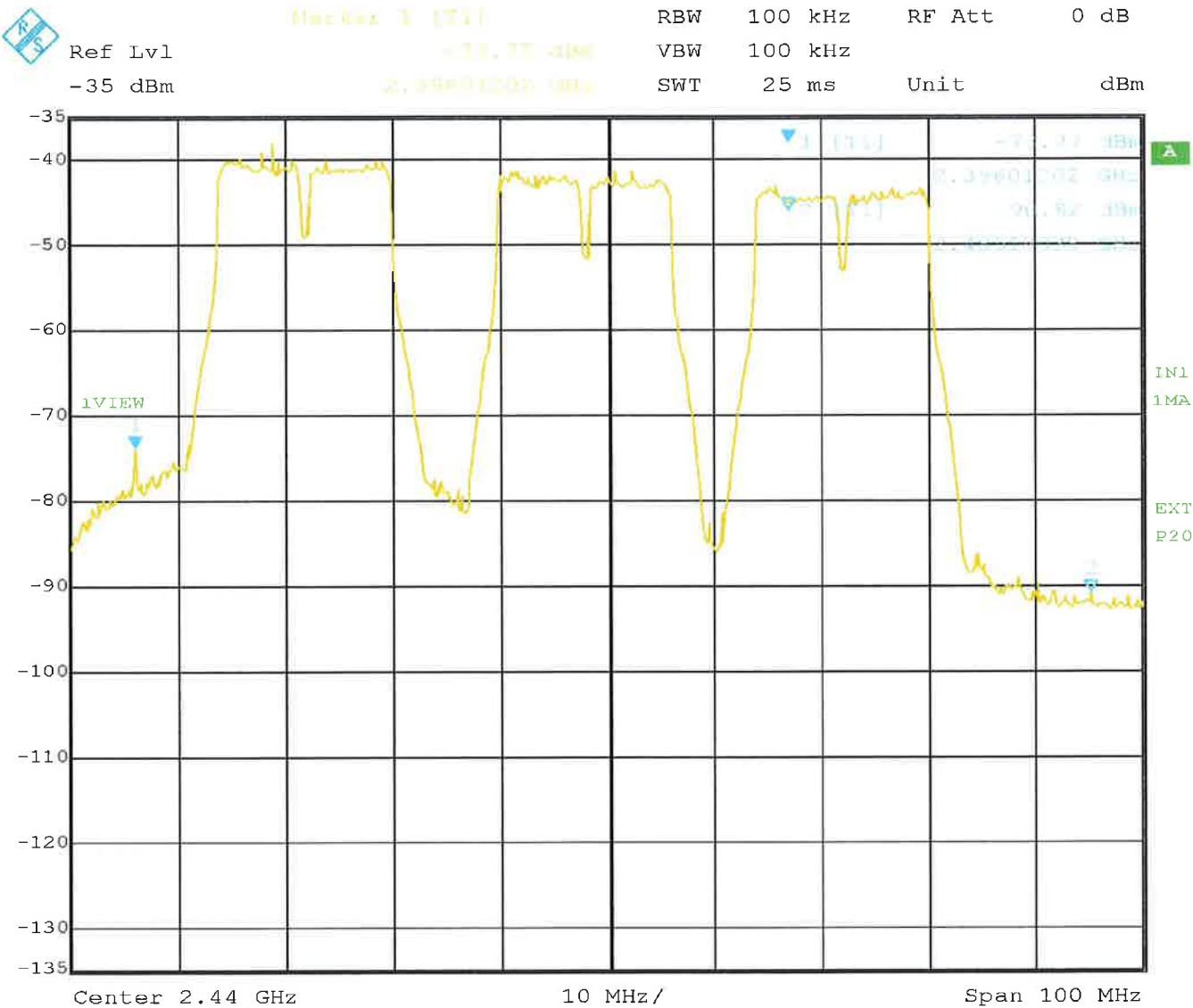
Although the measurements were made up to the tenth harmonic, the curve above is ending at 18 GHz. The tests above 18 GHz are not automatized and therefore we were not able to plot the spectrum analyzer display. Above 18 GHz no emission above noise level were found.

Out-of-band Emission

§ 15.247(d)
A8.5

Measurement with Peak-Detector:

Frequency: 2412 MHz – Band Edge measurement



Date: 9.AUG.2011 15:57:38
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.

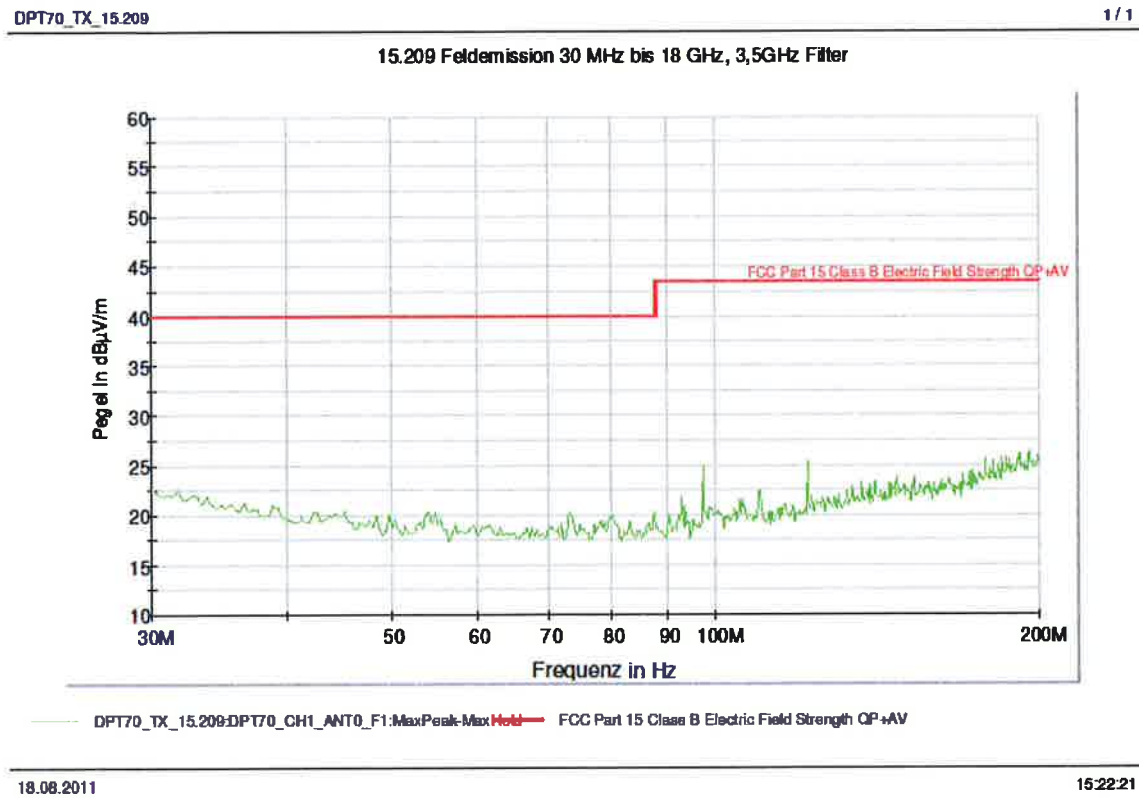
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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

Out-of-band Emission

§ 15.247(d)
A8.5

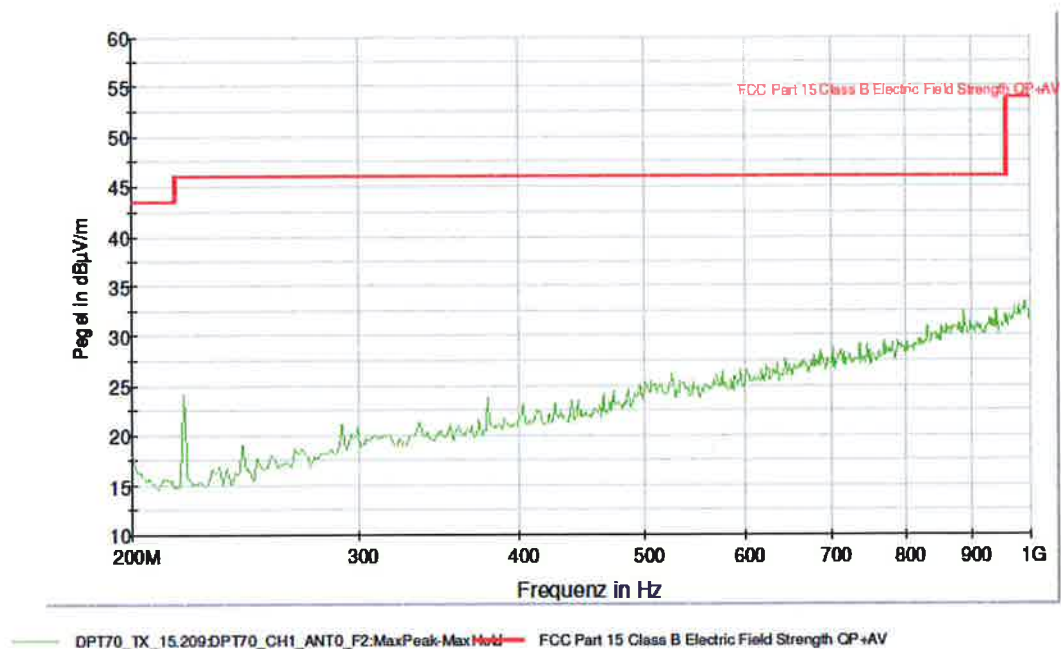
Measurement with Peak-Detector:

Frequency: 2438 MHz – Antenna 0

DPT70_TX_15.209

1/1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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.

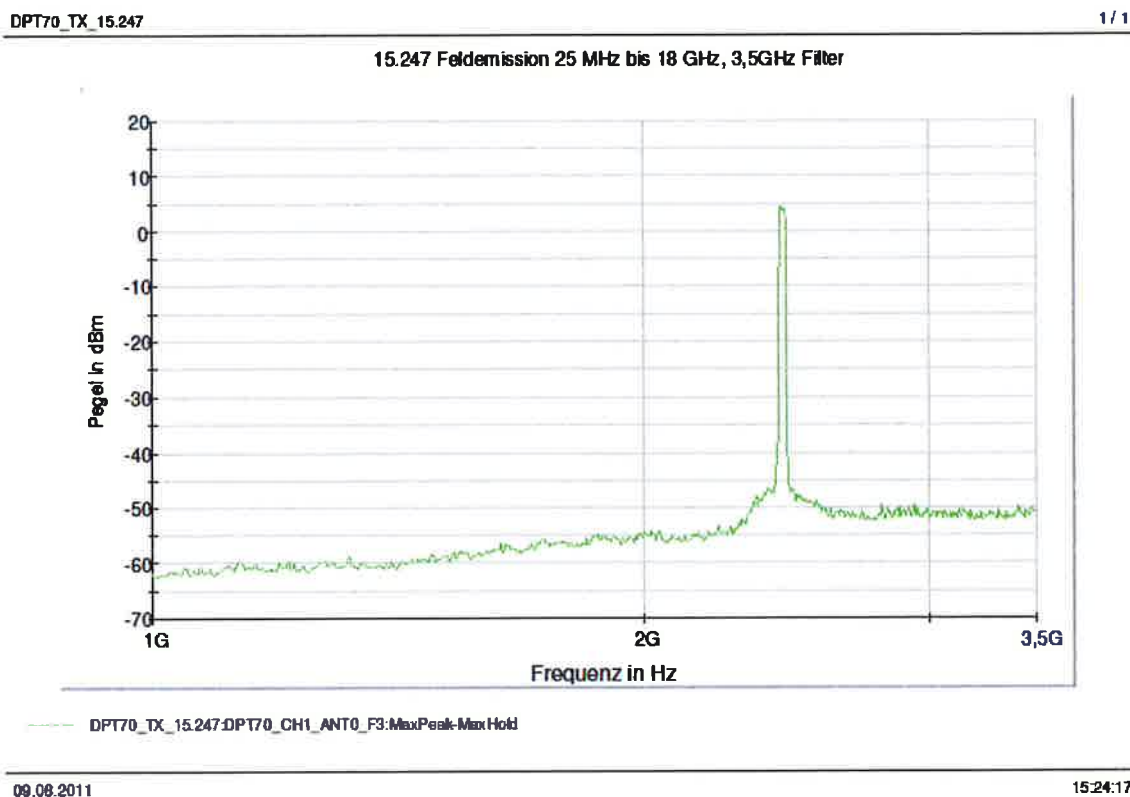
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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

Out-of-band Emission

§ 15.247(d)
A8.5

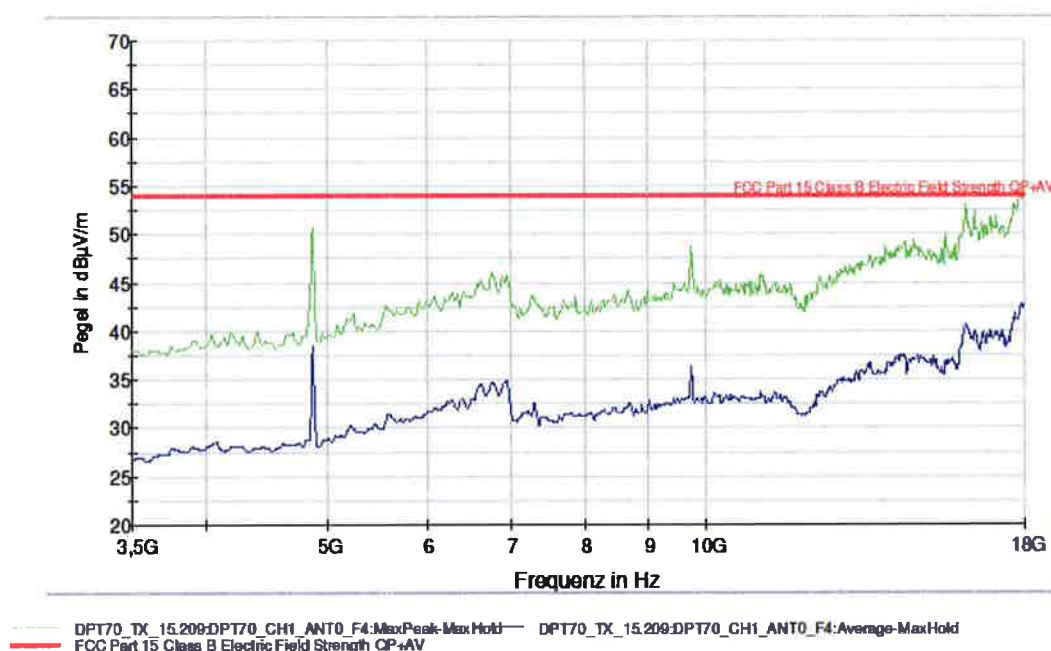
Measurement with Peak-Detector (green line):

Frequency: 2438 MHz – Antenna 0

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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.

Out-of-band Emission

§ 15.247(d)
A8.5

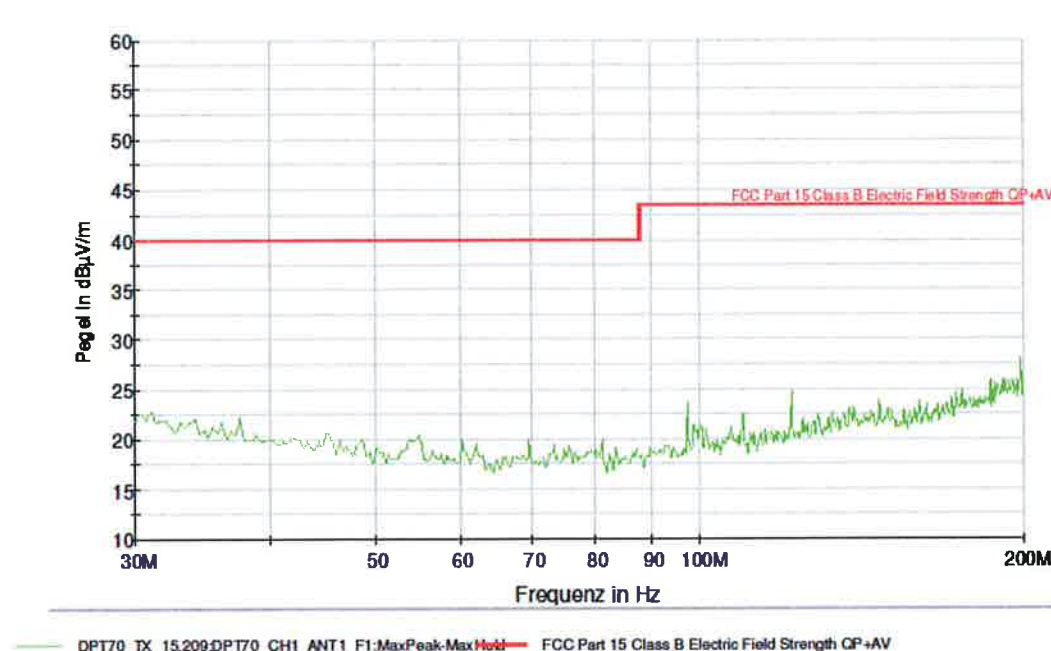
Measurement with Peak-Detector:

Frequency: 2438 MHz – Antenna 1

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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.

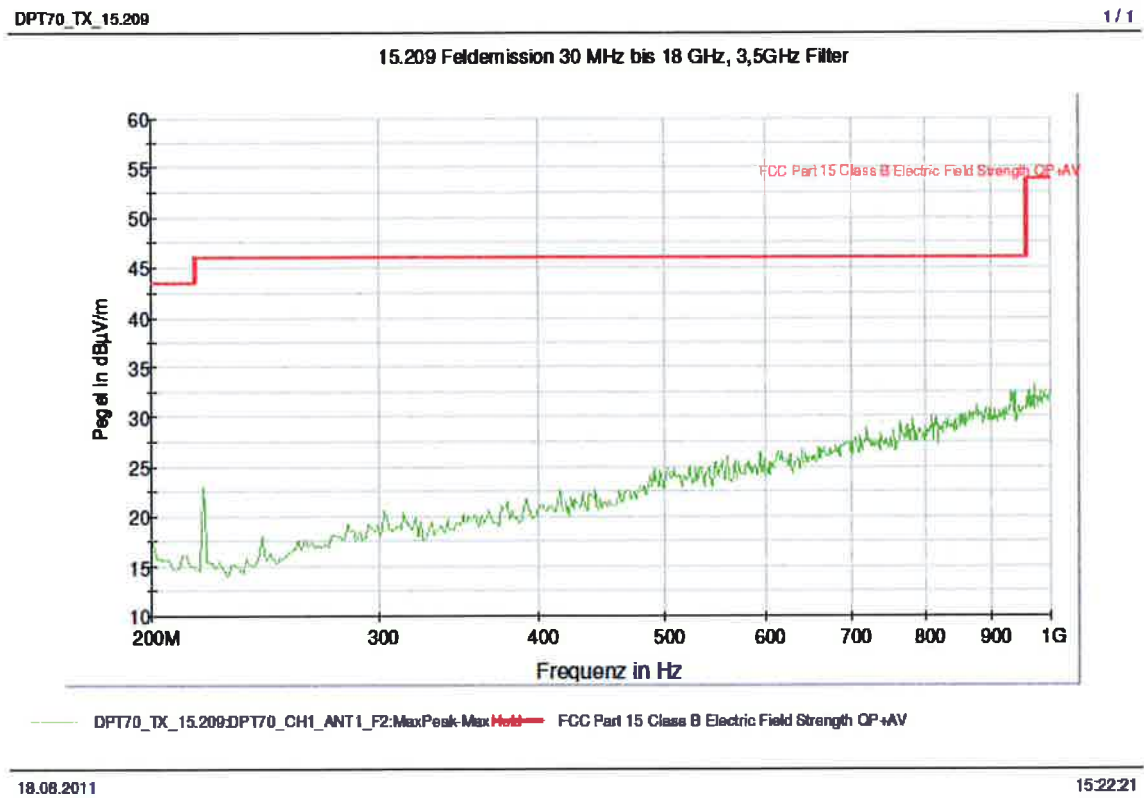
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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.

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

Out-of-band Emission

§ 15.247(d)
A8.5

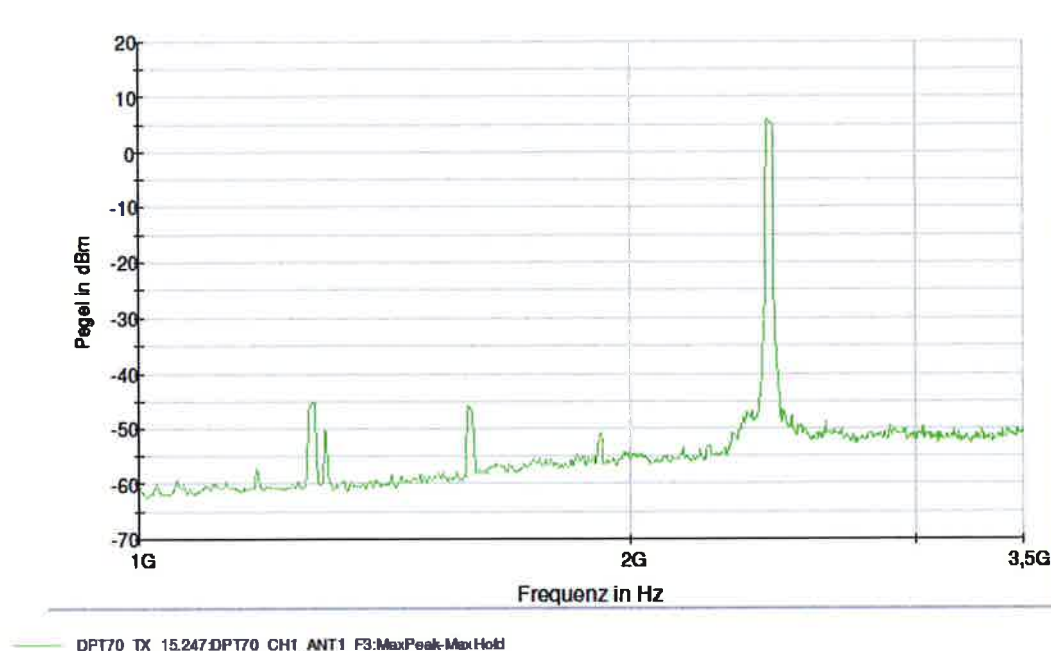
Measurement with Peak-Detector:

Frequency: 2438 MHz – Antenna 1

DPT70_TX_15.247

1 / 1

15.247 Feldemission 25 MHz bis 18 GHz, 3,5GHz Filter



09.08.2011

1524:17

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

Out-of-band Emission

§ 15.247(d)
A8.5

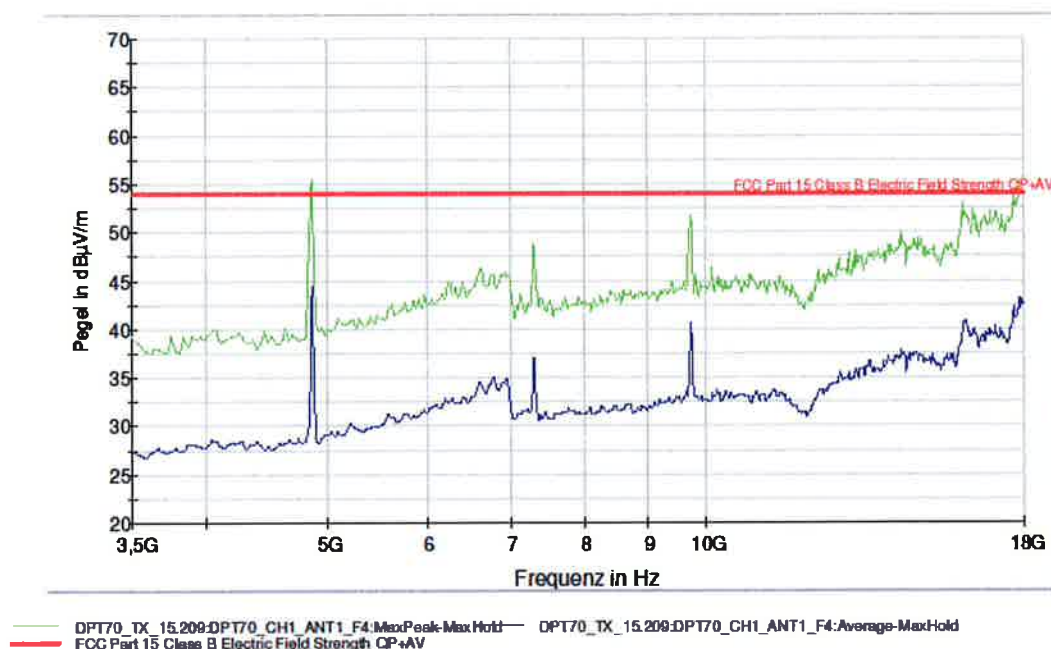
Measurement with Peak-Detector (green line):

Frequency: 2438 MHz – Antenna 1

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15.22.21

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

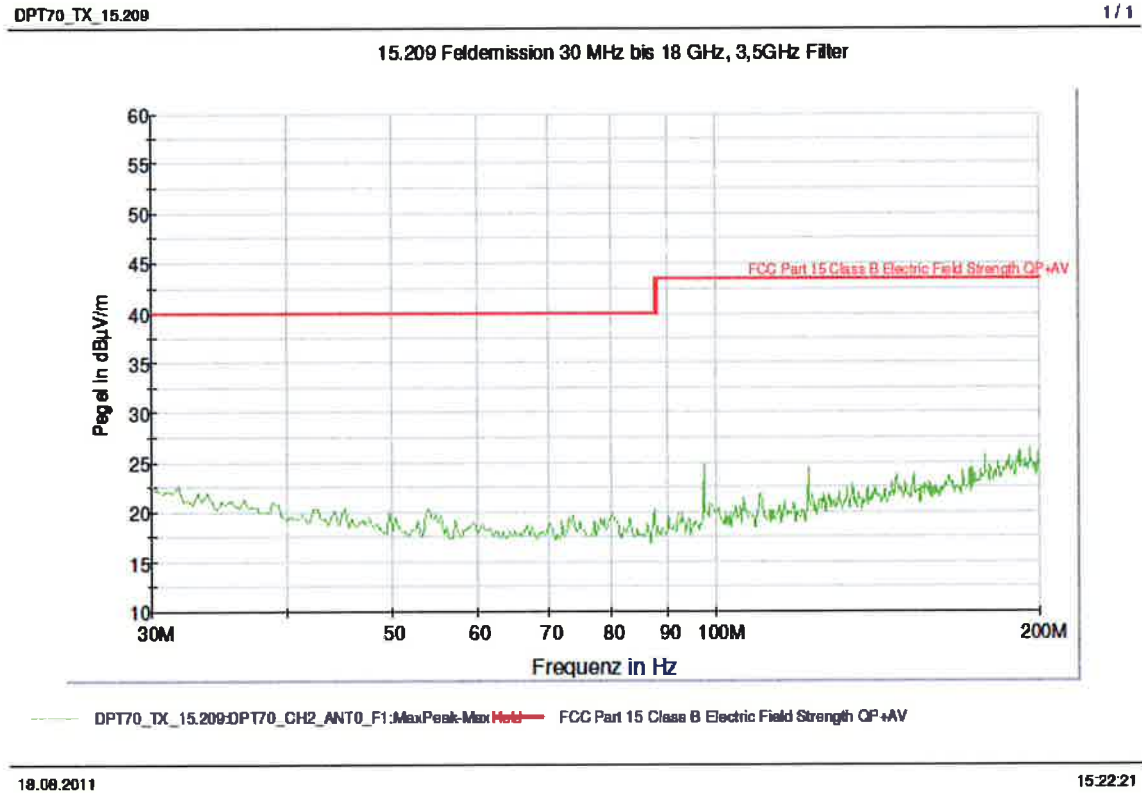
Although the measurements were made up to the tenth harmonic, the curve above is ending at 18 GHz. The tests above 18 GHz are not automatized and therefore we were not able to plot the spectrum analyzer display. Above 18 GHz no emission above noise level were found.

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 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

Out-of-band Emission

§ 15.247(d)
A8.5

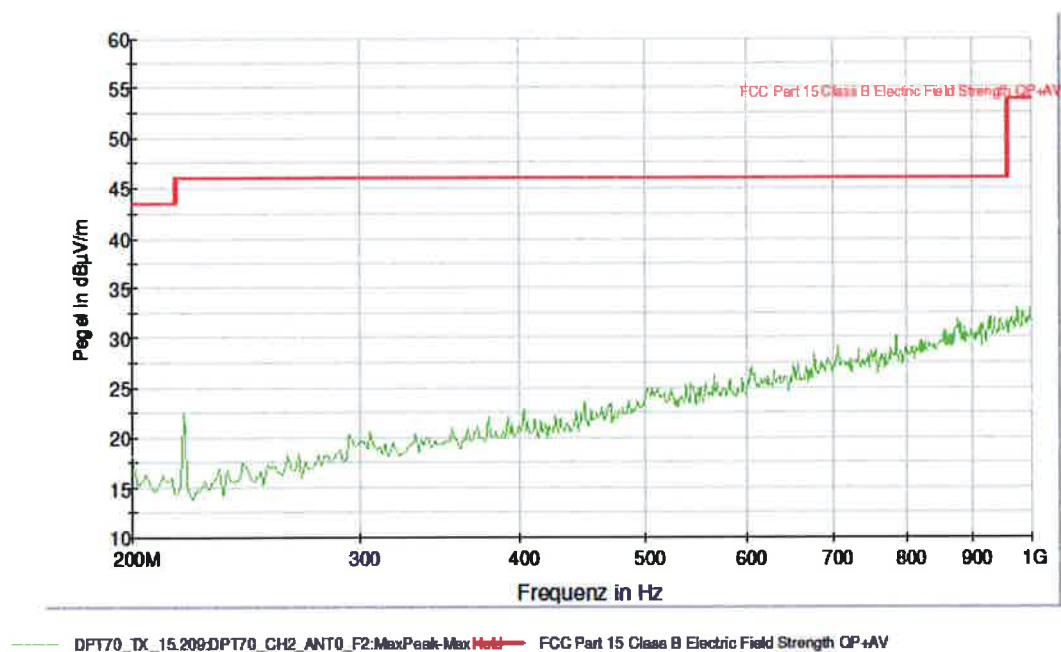
Measurement with Peak-Detector:

Frequency: 2462 MHz – Antenna 0

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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.

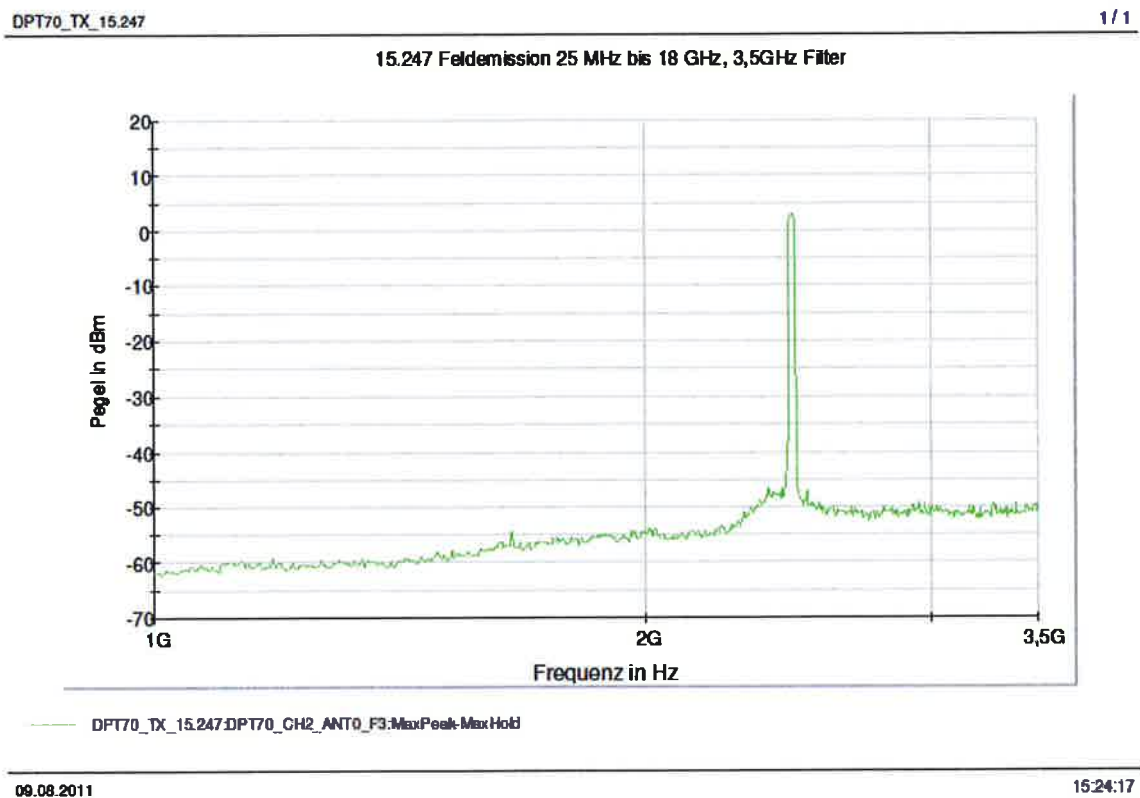
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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 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

Out-of-band Emission

§ 15.247(d)
A8.5

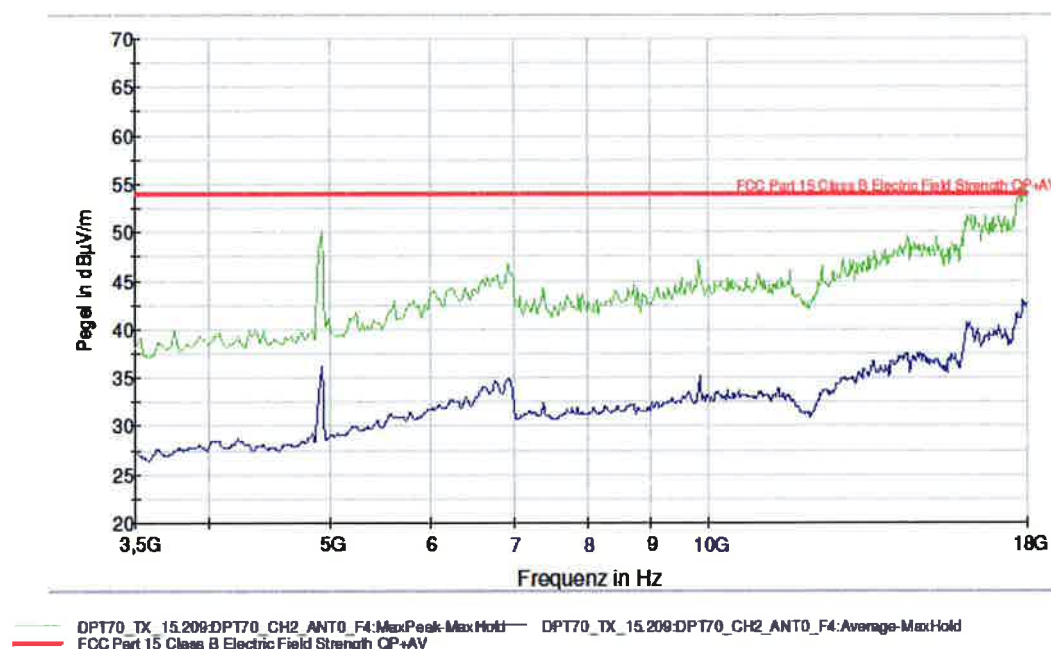
Measurement with Peak-Detector (green line):

Frequency: 2462 MHz – Antenna 0

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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

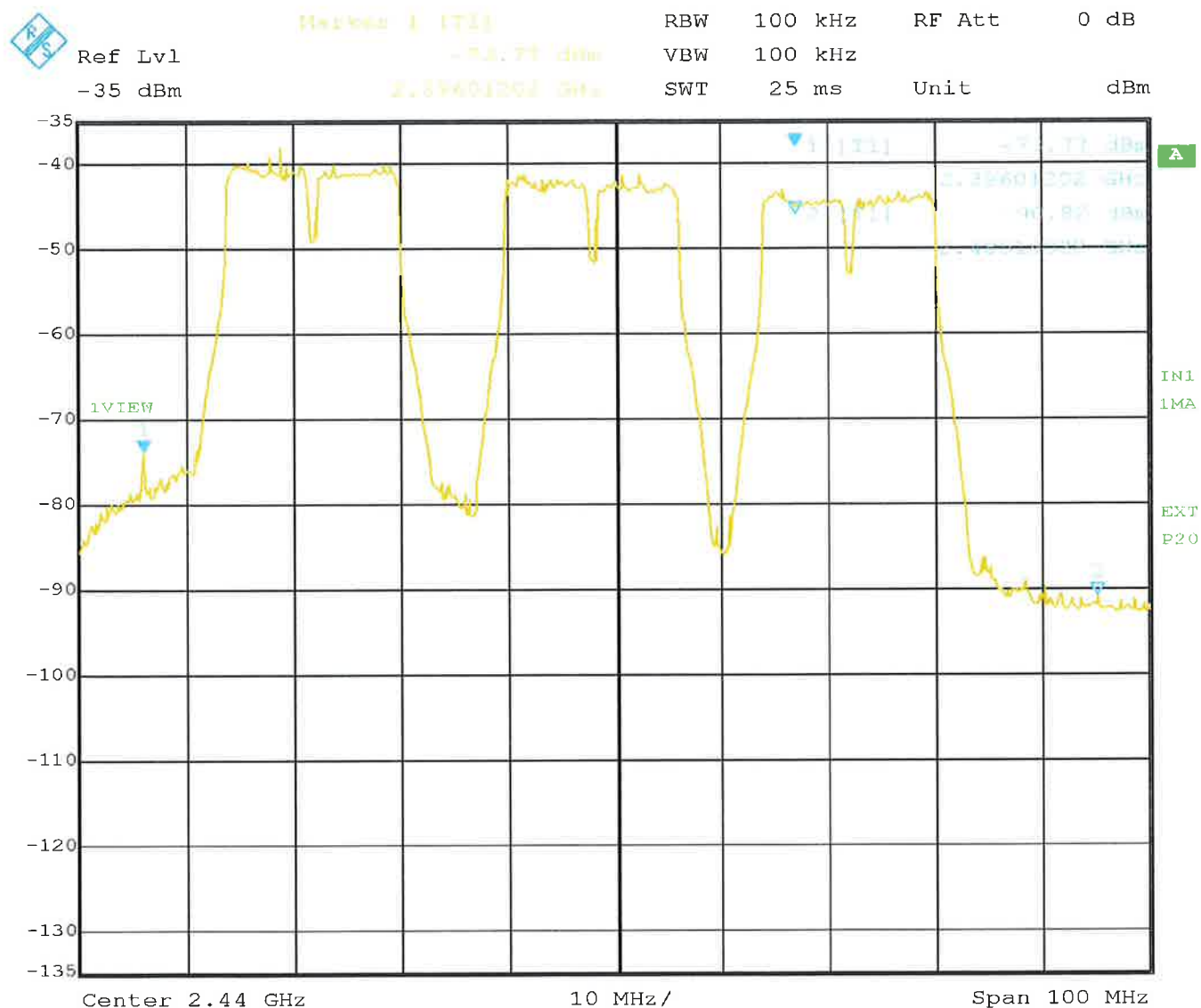
Although the measurements were made up to the tenth harmonic, the curve above is ending at 18 GHz. The tests above 18 GHz are not automatized and therefore we were not able to plot the spectrum analyzer display. Above 18 GHz no emission above noise level were found.

Out-of-band Emission

**§ 15.247(d)
A8.5**

Measurement with Peak-Detector:

Frequency: 2462 MHz – Band Edge measurement



Date: 9.AUG.2011 15:57:38

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

Out-of-band Emission

§ 15.247(d)
A8.5

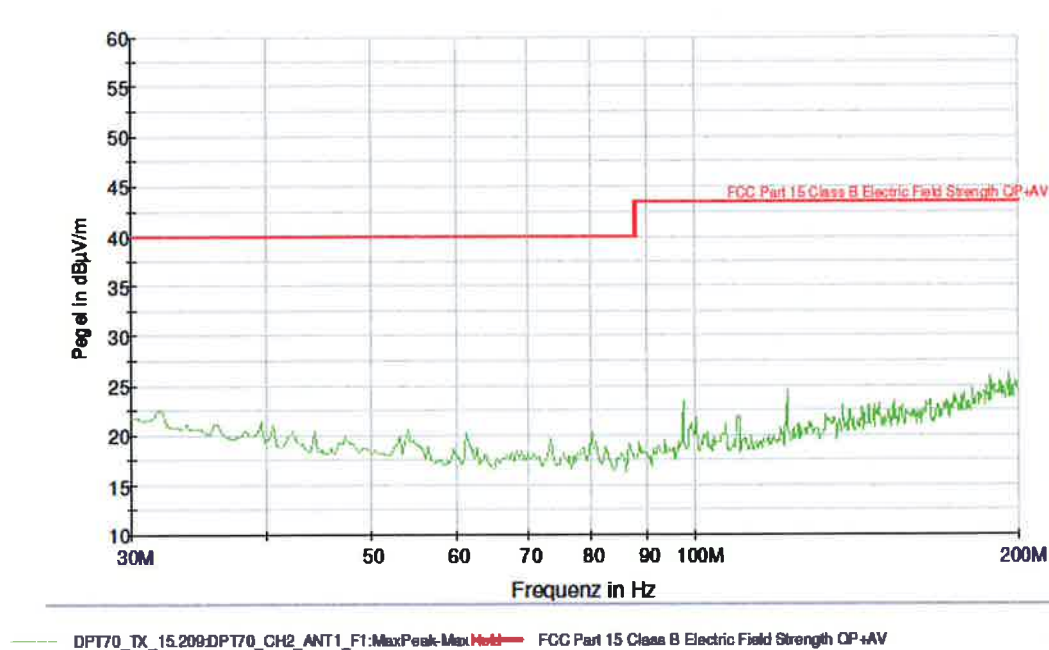
Measurement with Peak-Detector:

Frequency: 2462 MHz – Antenna 1

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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

Out-of-band Emission

§ 15.247(d)
A8.5

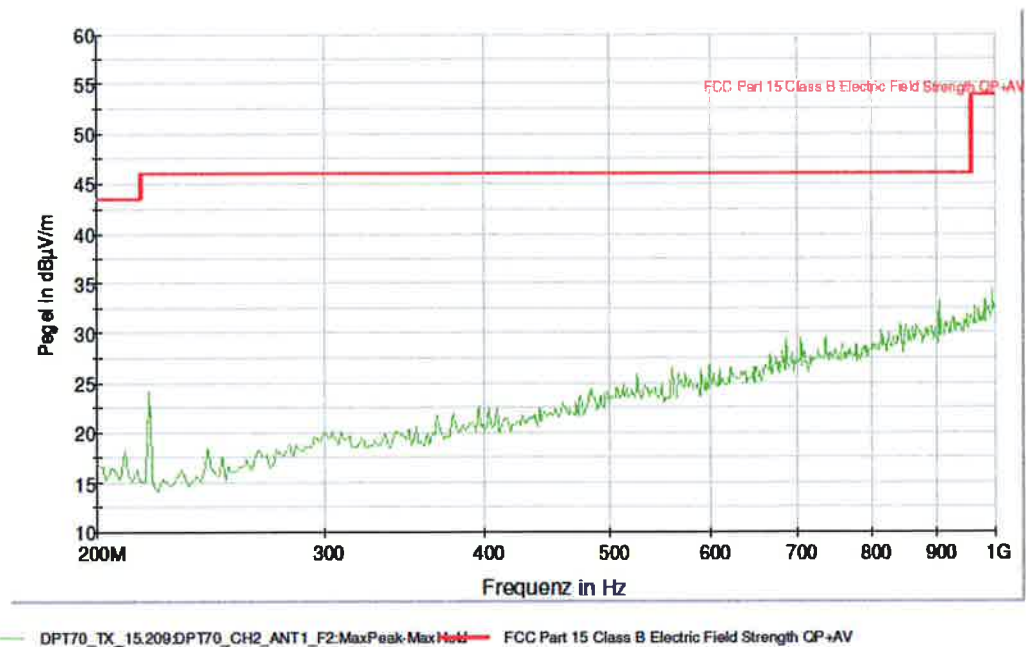
Measurement with Peak-Detector:

Frequency: 2462 MHz – Antenna 1

DPT70_TX_15.209

1/1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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.

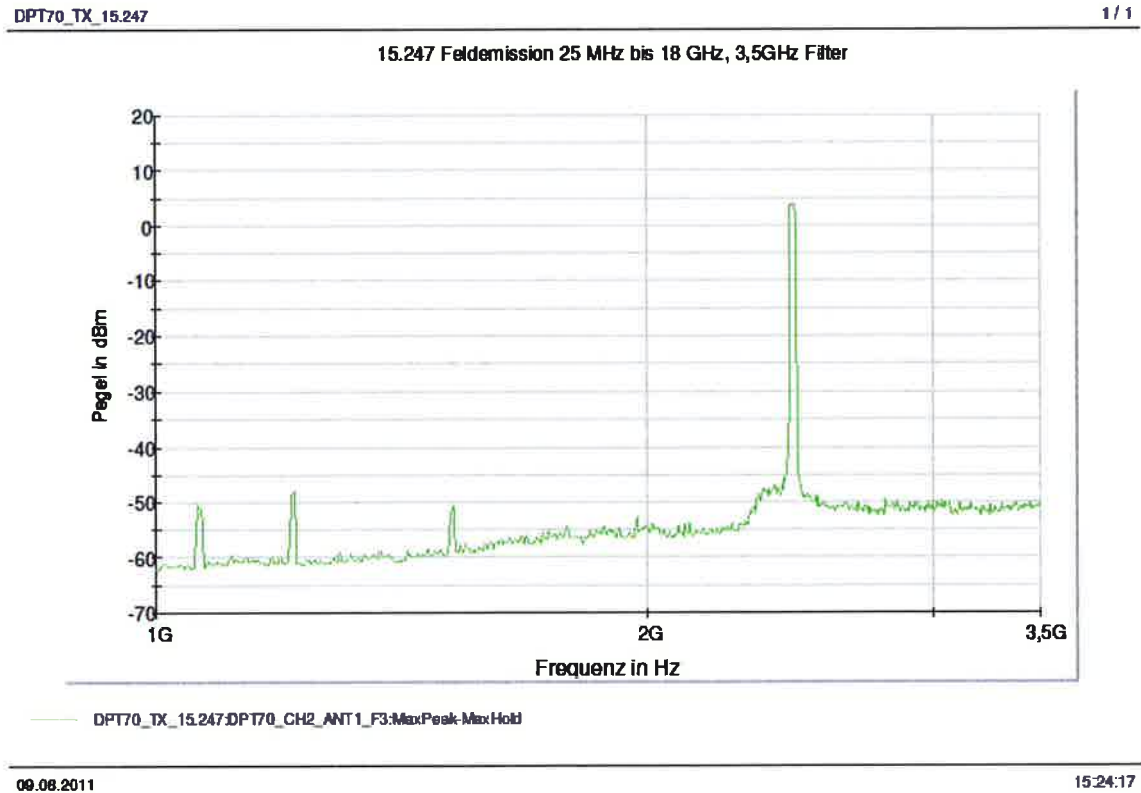
Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-207

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.
---	--

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

Out-of-band Emission

§ 15.247(d)
A8.5

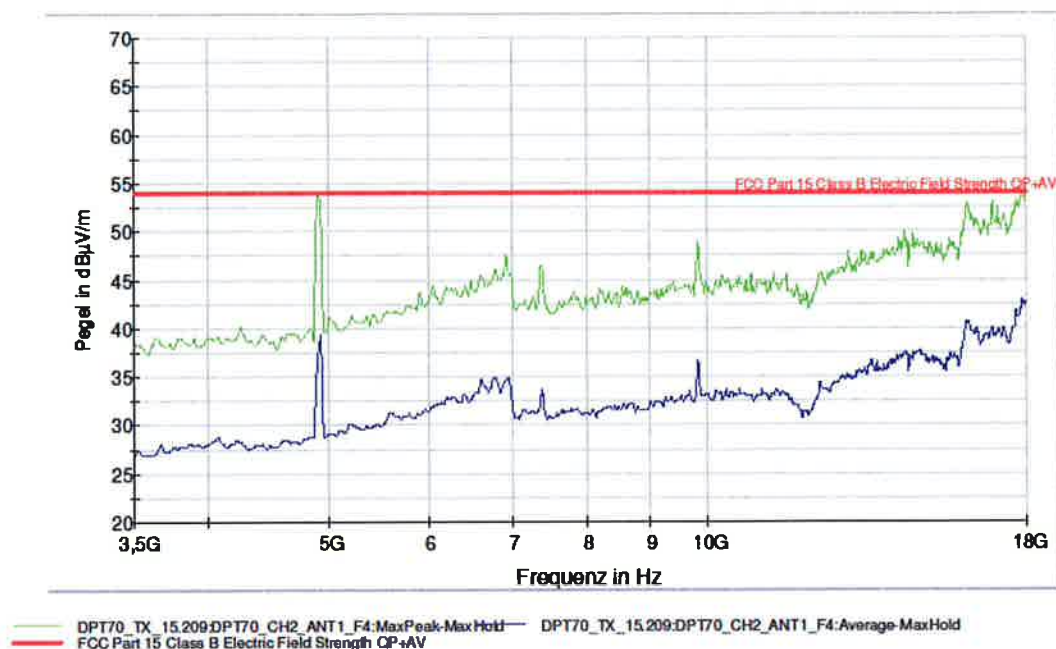
Measurement with Peak-Detector (green line):

Frequency: 2462 MHz – Antenna 1

DPT70_TX_15.209

1/1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

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

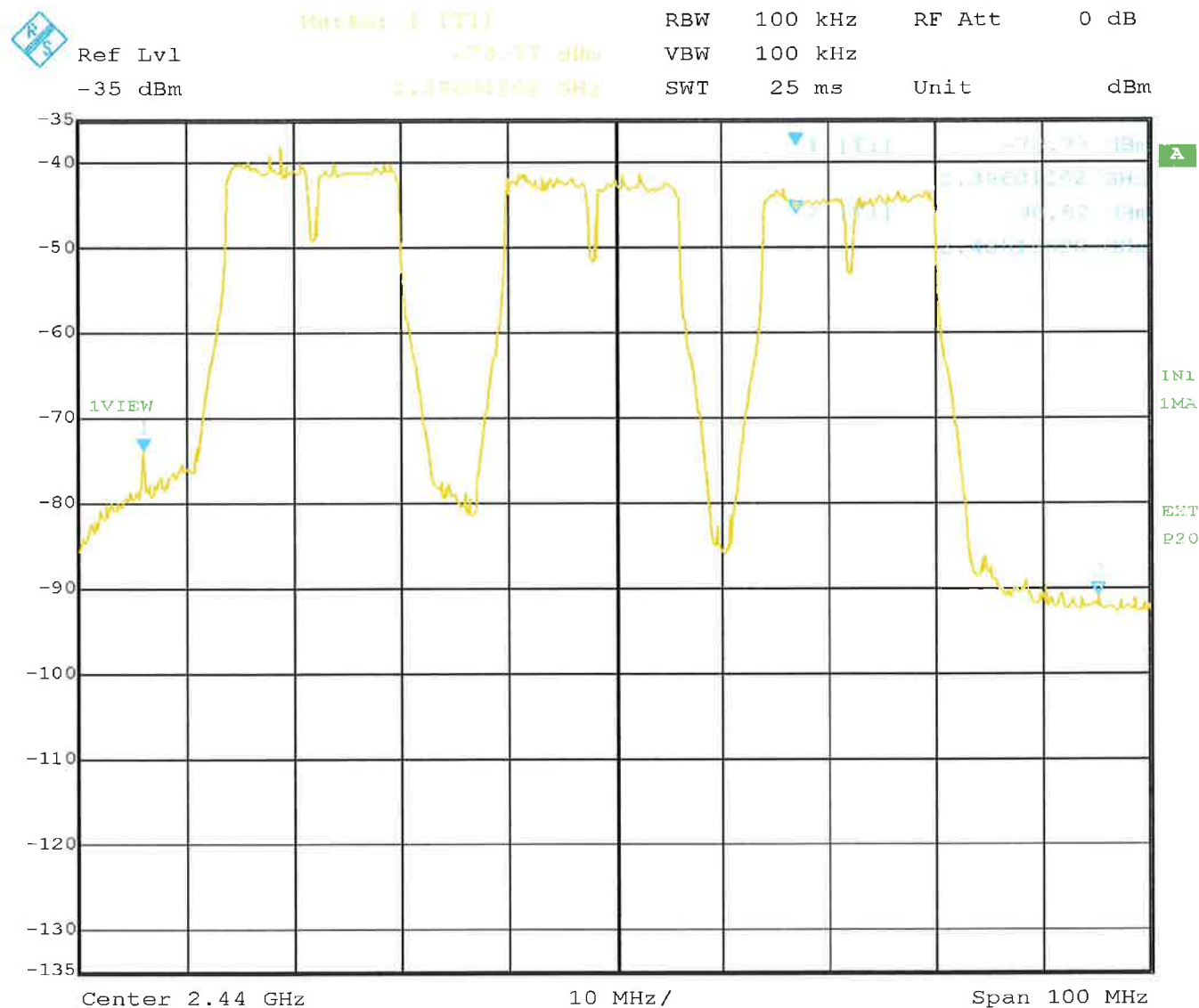
Although the measurements were made up to the tenth harmonic, the curve above is ending at 18 GHz. The tests above 18 GHz are not automatized and therefore we were not able to plot the spectrum analyzer display. Above 18 GHz no emission above noise level were found.

Out-of-band Emission

§ 15.247(d)
A8.5

Measurement with Peak-Detector:

Frequency: 2462 MHz – Band Edge measurement



Date: 9.AUG.2011 15:57:38

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

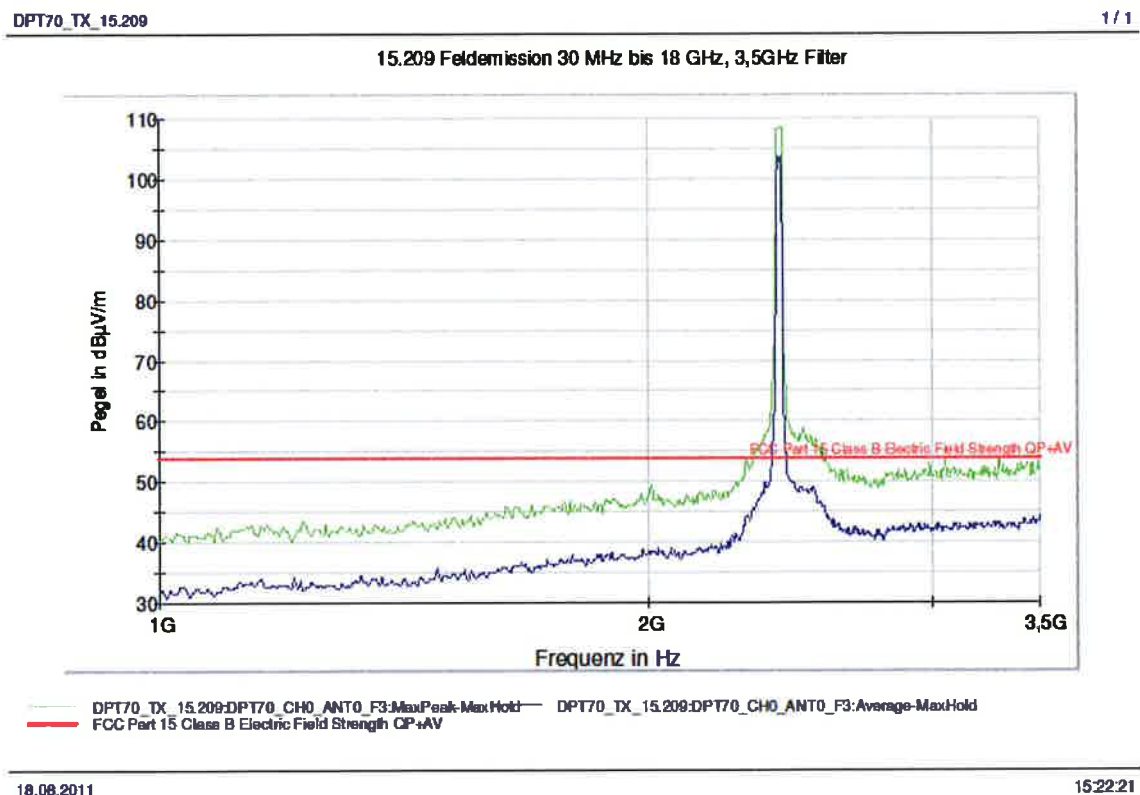
Emissions in restricted bands

§ 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

$\geq 1\text{GHz}$	54 dBμV/m average
--------------------	-------------------

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

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.

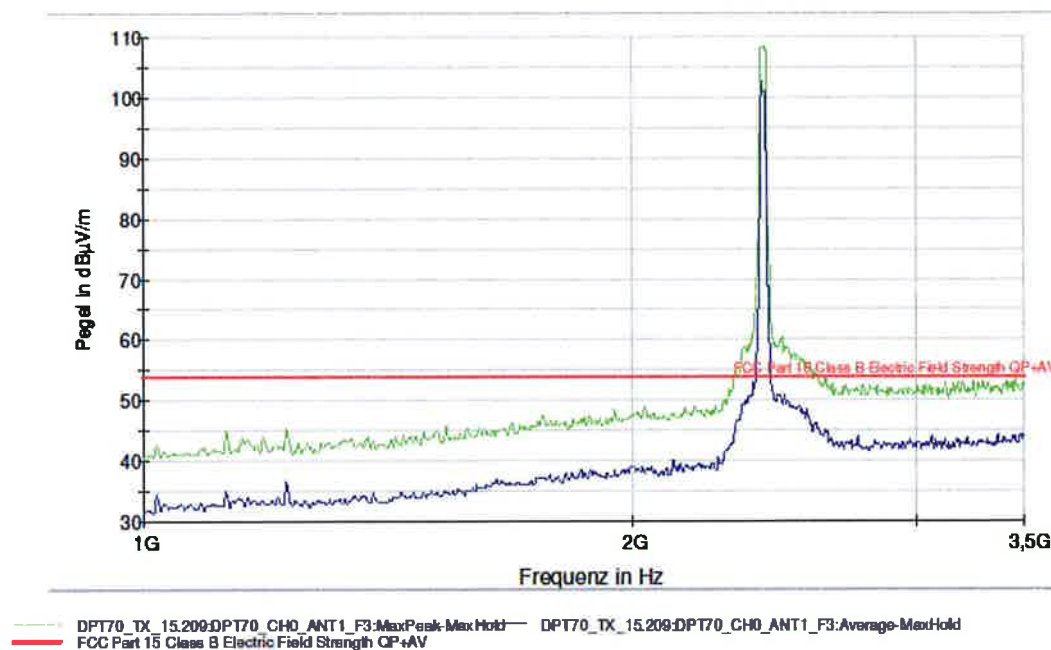
Measurement with Average-Detector (violet line):

Frequency: 2412 MHz – Antenna 1

DPT70_TX_15.209

1/1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

LIMIT

SUBCLAUSE 15.209

$\geq 1\text{GHz}$	54 dBµV/m average
--------------------	-------------------

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

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.

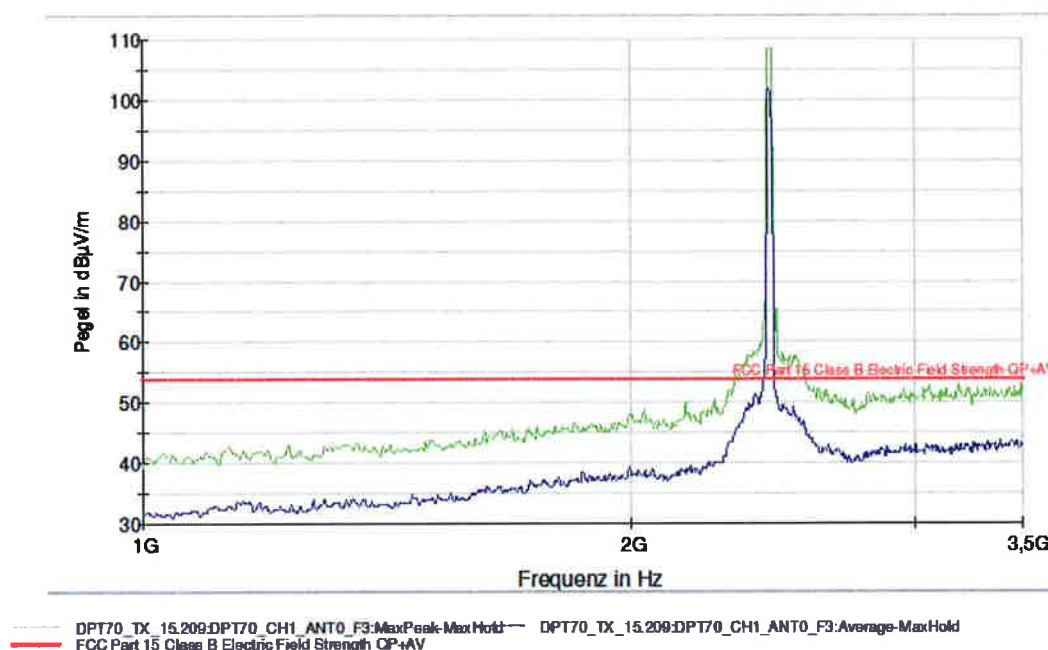
Measurement with Average-Detector (violet line):

Frequency: 2438 MHz – Antenna 0

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

LIMIT

SUBCLAUSE 15.209

$\geq 1\text{GHz}$	54 dBµV/m average
--------------------	-------------------

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

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.

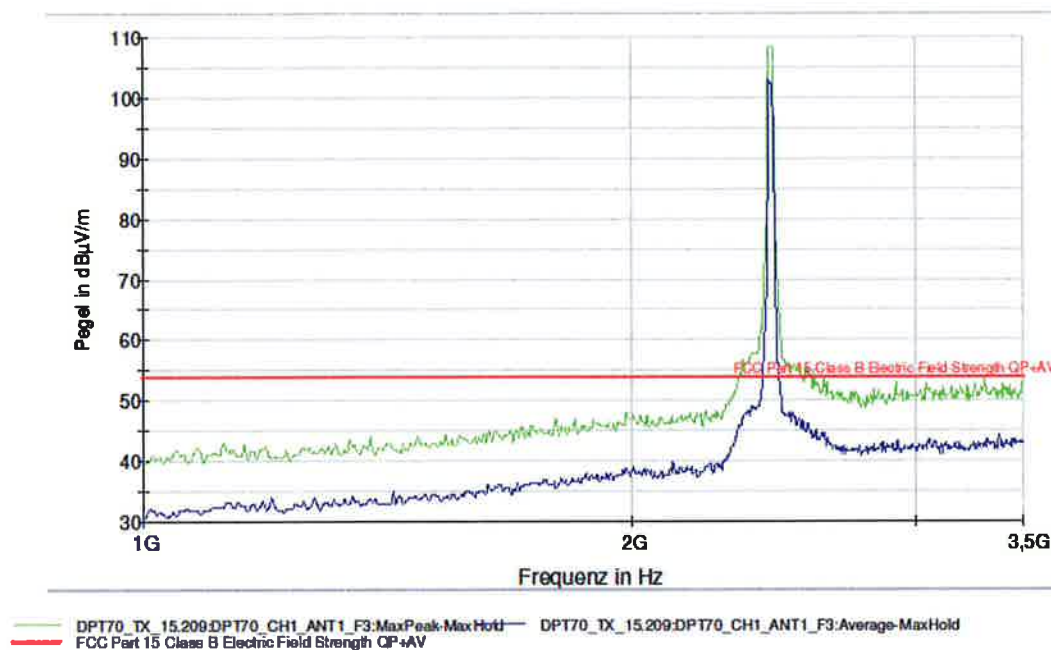
Measurement with Average-Detector (violet line):

Frequency: 2438 MHz – Antenna 1

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

LIMIT

SUBCLAUSE 15.209

$\geq 1\text{GHz}$	54 dBµV/m average
--------------------	-------------------

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

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.

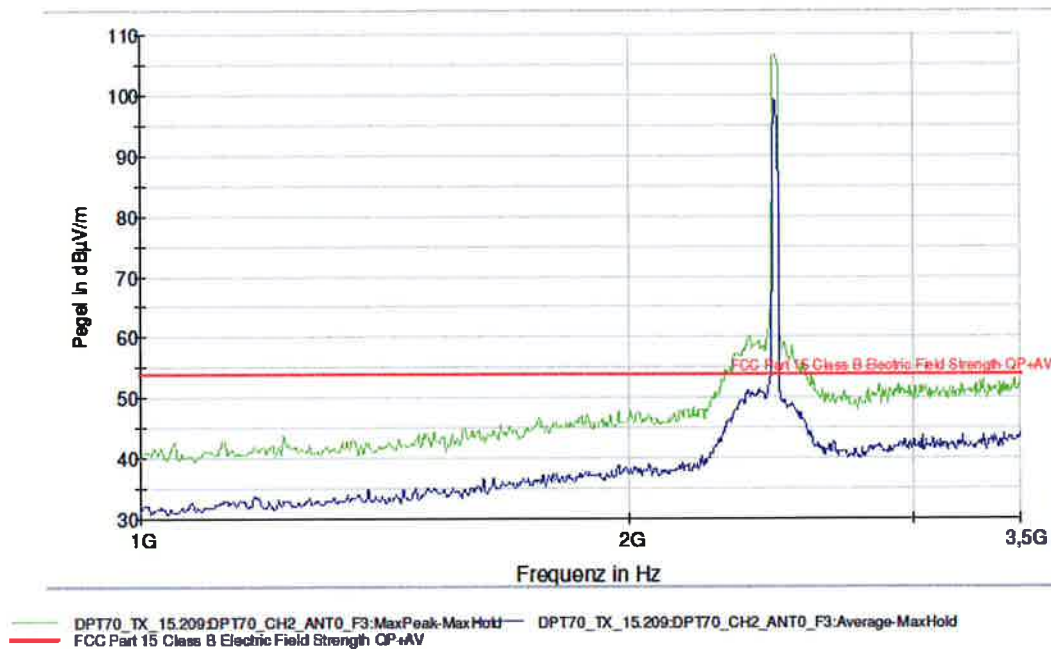
Measurement with Average-Detector (violet line):

Frequency: 2462 MHz – Antenna 0

DPT70_TX_15.209

1/1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

LIMIT

SUBCLAUSE 15.209

$\geq 1\text{GHz}$	54 dBµV/m average
--------------------	-------------------

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

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.

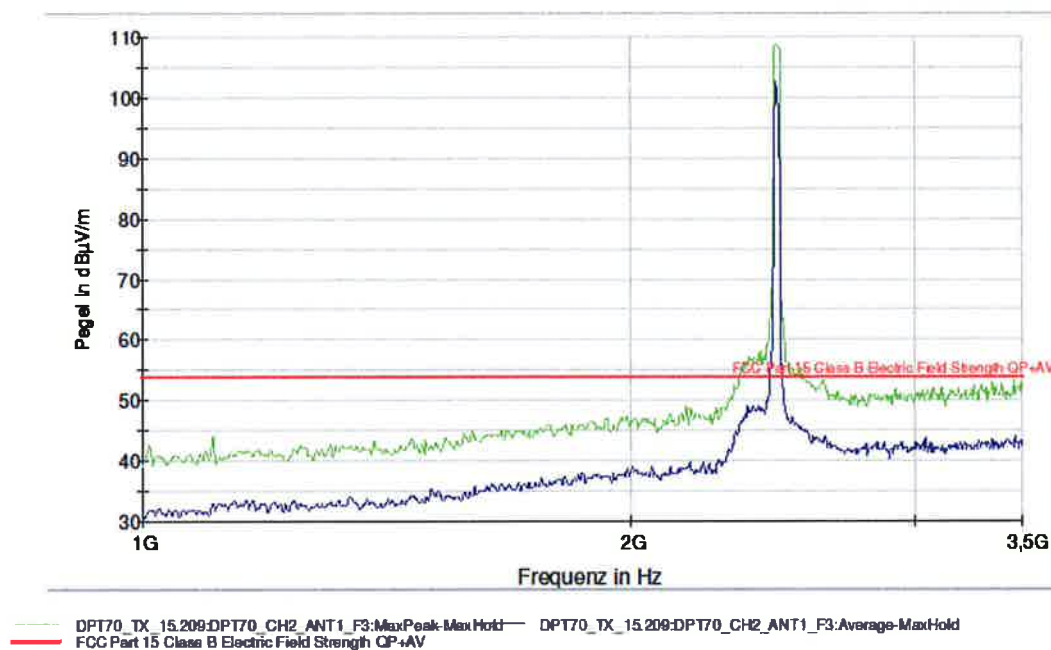
Measurement with Average-Detector (violet line):

Frequency: 2462 MHz – Antenna 1

DPT70_TX_15.209

1 / 1

15.209 Feldemission 30 MHz bis 18 GHz, 3,5GHz Filter



18.08.2011

15:22:21

LIMIT

SUBCLAUSE 15.209

$\geq 1\text{GHz}$	54 dBµV/m average
--------------------	-------------------

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

Maximum permissible Exposure

§ 15.247(i)

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

Appendix 1

Test equipment used

☐	Anechoic Chamber with 3m measurement distance	NT-100	☐	Spectrum analyzer – FSP7 9 kHz – 7 GHz	NT-200
☐	Stripline according to ISO 11452-5	NT-108	☐	ESVP - Test receiver 20 - 1000 MHz	NT-201
☐	MA 240 - Antenna mast 1 - 4 m height	NT-110	☐	ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1
☐	DS 412 - Turntable 0 - 400 ° Azimuth	NT-111	☐	ESI26 – Test receiver 20 Hz – 26,5 GHz	NT-207
☐	HD 100 Controller Mast+Turntable	NT-112	☐	Digital Radio Tester CTS55	NT-208
☐	HUF-Z2 - Bicon. Antenna 20 - 300 MHz	NT-120	☐	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	☐	Radiocommunication analyzer 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 Spectrum analyzer	NT-233
☐	BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	☐	SRM-3006 Spectrum analyzer	NT-233/1a
☐	Conical Dipole 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

Division Medical
Technology/
Communication
Technology/ EMC

Department: FG

Test report number:
M/FG-11/133

Page: 1 of 3

Date: 10.11.2011

Checked by: 

Appendix 1 (continued)

Test equipment used

☐	H-field probe 300 kHz – 30 MHz	NT-246	☐	PSURGE 4.1 Surge generator	NT-324
☐	E-field probe 3 MHz – 18 GHz	NT-247	☐	TRANSIENT 1000 Immunity test system	NT-325
☐	H-field probe 27 MHz – 1 GHz	NT-248	☐	VCS 500-M6 Surge-Generator	NT-326
☐	ELT-400 1 Hz – 400 kHz	NT-249	☐	BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W	NT-330
☐	MDS 21 - Absorbing clamp 30 - 1000 MHz	NT-250	☐	T82-50 RF-Amplifier 2 GHz – 8 GHz	NT-331
☐	FCC-203I EM Injection clamp	NT-251	☐	500W1000M7 - RF-Amplifier 80 - 1000 MHz / 500 W	NT-332
☐	FCC-203I-DCN Ferrite decoupling network	NT-252	☐	AS0102-65R - RF-Amplifier 1 GHz - 2 GHz	NT-333
☐	PR50 Current Probe	NT-253	☐	APA01 – RF-Amplifier 0,5 GHz – 2,5 GHz	NT-334
☐	PR630 Current Probe	NT-254	☐	Preamplifier 1 GHz - 4 GHz	NT-335
☐	Fluke 87 V True RMS Multimeter	NT-260	☐	Preamplifier for GPS MKU 152 A	NT-336
☐	Model 2000 Digital Multimeter	NT-261	☐	Preamplifier 100 MHz – 23 GHz	NT-337
☐	Fluke 87 V Digital Multimeter	NT-262/1	☐	DC Block 10 MHz – 18 GHz Model 8048	NT-338
☐	ESH2-Z5-U1 Artificial mains network 4x25A	NT-300	☐	2-97201 Electronic load	NT-341
☐	ESH3-Z5-U1 Artificial mains network 2x10A	NT-301	☐	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-344
☐	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302	☐	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-345
☐	ESH3-Z4 T-Artificial network	NT-303	☐	VDS 200 Mobil-impuls-generator	NT-350
☐	PHE 4500/B Power amplifier	NT-304	☐	LD 200 Mobil-impuls-generator	NT-351
☐	EZ10 T-Artificial Network	NT-305	☐	MPG 200 Mobil-Impuls-Generators	NT-352
☐	ENY22 Artificial Network	NT-308	☐	EFT 200 Mobil-impuls-generator	NT-353
☐	ENY41 Artificial Network	NT-309	☐	AN 200 S1 Artificial Network	NT-354
☐	SMG - Signal generator 0,1 - 1000 MHz	NT-310	☐	FP-EFT 32M 3 ph. Coupling filter (Burst)	NT-400/1
☐	SMA100A - Signal generator 9 kHz - 6 GHz	NT-310/1	☐	PHE 4500 - Mains impedance network	NT-401
☐	PM 5518 TXVPS Video generator	NT-311	☐	IP 6.2 Coupling filter for data lines (Surge)	NT-403
☐	RefRad Reference generator	NT-312	☐	TK 9421 High Power Volt. Probe 150 kHz - 30 MHz	NT-409
☐	SMP 02 Signal generator 10 MHz - 20 GHz	NT-313	☐	ESH2-Z3 - Probe 9 kHz - 30 MHz	NT-410
☐	40 MHz Arbitrary Generator TGA1241	NT-315	☐	IP 4 - Capacitive clamp (Burst)	NT-411
☐	Artificial mains network NSLK 8127-PLC	NT-316	☐	Highpass-Filter 100 MHz – 3 GHz	NT-412
☐	PEFT - Burst generator up to 4 kV	NT-320	☐	Highpass-Filter 600 MHz – 4 GHz	NT-413
☐	ESD 30 System up to 25 kV	NT-321	☐	Highpass-Filter 1250 MHz – 4 GHz	NT-414

Division Medical
Technology/
Communication
Technology/ EMC

Department: FG

Test report number:
M/FG-11/133

Page: 2 of 3

Date: 10.11.2011

Checked by: 

Appendix 1 (continued)

Test equipment used

☐	Highpass-Filter 1800 MHz – 16 GHz	NT-415	☐	FCC-801-AF10 Coupling decoupling network	NT-461
☐	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

Division Medical
Technology/
Communication
Technology/ EMC

Department: FG

Test report number:
M/FG-11/133

Page: 3 of 3

Date: 10.11.2011

Checked by: 