



## Accredited testing-laboratory

**DAR registration number: DAT-P-176/94-D1**

**Federal Motor Transport Authority (KBA)  
DAR registration number: KBA-P 00070-97**

**Recognized by the Federal Communications Commission**

**Anechoic chamber registration no.: 90462 (FCC)**

**Anechoic chamber registration no.: 3463A-1 (IC)**

**Certification ID: DE 0001**

**Accreditation ID: DE 0002**

**Accredited Bluetooth® Test Facility (BQTF)**

*The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by Cetecom ICT is under license*

**Test report no. : 2-4879-01-02/08**  
**Type identification : DCN-WDCS, DCN-WDDCS, DCN-WDVCS**  
**Applicant : Bosch Security Systems BV**  
**FCC ID : UX8DCNWDU02**  
**IC Certification No : 1249D-DCNWDU02**  
**Test standards : 47 CFR Part 15**  
**RSS - 210 Issue 7**

## Table of contents

<b>1</b>	<b>General information.....</b>	<b>3</b>
1.1	Notes .....	3
1.2	Testing laboratory .....	4
1.3	Details of applicant .....	4
1.4	Application details .....	4
<b>2</b>	<b>Test standard/s:.....</b>	<b>5</b>
<b>3</b>	<b>Technical tests.....</b>	<b>6</b>
3.1	Details of manufacturer.....	6
3.1.1	Test item.....	6
3.1.2	Additional EUT information For IC Canada (appendix 2).....	7
3.1.3	RF Technical Brief Cover Sheet acc. To RSS-102 .....	8
3.1.4	EUT operating modes.....	11
3.1.5	Extreme conditions testing values .....	11
<b>4</b>	<b>Summary of Measurement Results and list of all performed test cases .....</b>	<b>12</b>
<b>5</b>	<b>RF measurement testing .....</b>	<b>13</b>
5.1	Description of test set-up .....	13
5.1.1	Radiated measurements.....	13
5.1.2	Conducted measurements.....	13
5.2	Referenced Documents .....	14
5.3	Additional comments .....	14
5.4	Peak Power Spectral density (digitally modulated systems) §15.247(e).....	15
5.5	Spectrum Bandwidth of a OFDM System / 6 dB Bandwidth §15.247(a)(2).....	17
5.6	Occupied Bandwidth of a OFDM System / 20 dB Bandwidth.....	19
5.7	Maximum output power (conducted) §15.247 (b)(3).....	21
5.8	Max. peak output power (radiated) §15.247 (b)(3) .....	26
5.9	Band-edge compliance of conducted emissions §15.247 (d) .....	27
5.10	Band-edge compliance of radiated emissions §15.205 .....	29
5.11	Spurious Emissions - conducted (Transmitter) §15.247 (c) .....	39
5.12	Spurious Emissions - radiated (Transmitter) §15.209 .....	41
5.13	Spurious Emissions - radiated (Receiver) §15.109 / 209 .....	65
5.14	Spurious Emissions - radiated <30 MHz §15.209 .....	74
5.15	Conducted Emissions <30 MHz §15.107/207 .....	77
<b>6</b>	<b>Test equipment and ancillaries used for tests .....</b>	<b>78</b>
<b>7</b>	<b>Photographs of the Test Set-up.....</b>	<b>80</b>
<b>8</b>	<b>Photographs of the EUT .....</b>	<b>83</b>

## 1 General information

### 1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

#### Test laboratory manager:

2008-01-29

Jakob Reschke

A handwritten signature in black ink, appearing to read "Jakob Reschke", written over a horizontal line.

Date

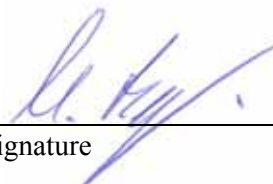
Name

Signature

#### Technical responsibility for area of testing:

2008-01-29

Michael Berg

A handwritten signature in blue ink, appearing to read "Michael Berg", written over a horizontal line.

Date

Name

Signature

## 1.2 Testing laboratory

**CETECOM ICT Services GmbH**

Untertürkheimer Straße 6 - 10

66117 Saarbrücken

Germany

Phone: + 49 681 5 98 - 0

Fax: + 49 681 5 98 - 9075

e-mail: [info@ICT.cetecom.de](mailto:info@ICT.cetecom.de)

Internet: <http://www.cetecom-ict.de>

State of accreditation: The test laboratory (area of testing) is accredited according to  
DIN EN ISO/IEC 17025  
DAR registration number: DAT-P-176/94-D1

Accredited by: Federal Motor Transport Authority (KBA)  
DAR registration number: KBA-P 00070-97

Testing location, if different from CETECOM ICT Services GmbH:

Name :  
Street :  
Town :  
Country :  
Phone :  
Fax :

## 1.3 Details of applicant

<b>Name:</b>	Bosch Security Systems BV
<b>Street:</b>	Kapittelweg 10
<b>Town:</b>	4827 HG Breda
<b>Country:</b>	The Netherlands
<b>Telephone:</b>	+31-76-5721-330
<b>Fax:</b>	+31-76-5716-626
<b>Contact:</b>	Mr. Yousef Mohammad Hosseini
<b>E-mail:</b>	<a href="mailto:MohammadHosseini@nl.bosch.com">MohammadHosseini@nl.bosch.com</a>
<b>Telephone:</b>	+31 (0)76 5721 661

## 1.4 Application details

<b>Date of receipt of order:</b>	2008-01-07
<b>Date of receipt of test item:</b>	2008-01-07
<b>Date of start test:</b>	2008-01-07
	2008-02-25 (DCN – WDVCS – D Sample 3)
<b>Date of end test</b>	2008-01-29
	2008-02-25 (DCN – WDVCS – D Sample 3)
<b>Persons(s) who have been present during the test:</b>	--

## 2 Test standard/s:

47 CFR Part 15	2007-09	Title 47 of the Code of Federal Regulations; Chapter I- Federal Communications Commission subchapter A - general, Part 15-Radio frequency devices
RSS - 210 Issue 7	2007-06	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

### 3 Technical tests

#### 3.1 Details of manufacturer

Name:	Bosch Security Systems S.A.
Street:	Lugar da Pardala
Town:	3880-728 Ovar
Country:	Portugal

##### 3.1.1 Test item

Kind of test item	:	W-LAN discussion unit
Type identification	:	DCN-WDCS, DCN-WDDCS, DCN-WDVCS
S/N serial number	:	DCN-WDCS: 0003BE DCN-WDDCS: 00039D DCN-WDVCS: 003CC9
HW hardware status	:	2.0 (with FPGA Code 2.0)
SW software status	:	2.0
Frequency Band [MHz]	:	ISM 2.400 - 2.483,5
Type of Modulation	:	OFDM
Number of channels	:	3
Antenna	:	Integrated antenna
Power Supply	:	115 V AC
Temperature Range	:	--°C to --°C

Max. power radiated: 23.46 dBm

Max. power conducted: 17.63 dBm

FCC ID: UX8DCNWDU02  
IC: 1249D-DCNWDU02

### 3.1.2 Additional EUT information For IC Canada (appendix 2)

IC Registration Number:	<b>1249D-DCNWDU02</b>
Model Name:	<b>DCN-WDCS, DCN-WDDCS, DCN-WDVCS</b>
Manufacturer (complete Address):	<b>Bosch Security Systems S.A. Lugar da Pardala 3880-728 Ovar Portugal</b>
Tested to Radio Standards Specification (RSS) No.:	<b>RSS-210 Issue 7</b>
Open Area Test Site Industry Canada Number:	<b>IC 3463A-1</b>
Frequency Range (or fixed frequency) [MHz]:	<b>2400 – 2483.5 MHz</b>
RF: Power [W] (max):	<b>WDCS:</b> <b>Rad. EIRP: 169.82 mW</b> <b>Conducted : 57.94 mW</b>  <b>WDDCS:</b> <b>Rad. EIRP: 178.24 mW</b> <b>Conducted : 57.94 mW</b>  <b>WDVCS-D:</b> <b>Rad. EIRP: 221.82 mW</b> <b>Conducted : n.a. (only delta tests)</b>
Antenna Type:	<b>Integrated antenna</b>
Occupied Bandwidth (99% BW) [MHz]:	<b>19.59</b>
Type of Modulation:	<b>OFDM</b>
Emission Designator (TRC-43):	<b>19M6G7D (OFDM)</b>
Transmitter Spurious (worst case) [ $\mu$ V/m in 3m]:	<b>127</b>
Receiver Spurious (worst case) [dB $\mu$ V/m in 3m]:	<b>40</b>

#### ATTESTATION:

I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned departmental standard(s), and that the radio equipment identified in this application has been subject to all applicable test conditions specified in the departmental standards and all of the requirements of the standards have been met.

Signature:



Test engineer: Jakob Reschke

Date: 2008-01-29

### 3.1.3 RF Technical Brief Cover Sheet acc. To RSS-102

#### WDCS:

All Fields must be completed with the requested information or the following codes: N/A for Not Applicable, N/P for Not Performed or N/V for Not Available. Where applicable, check appropriate box.

1. COMPANY NUMBER: **1249D**
2. MODEL NUMBER: **DCN-WDCS, DCN-WDDCS**
3. MANUFACTURER: **Bosch Security Systems BV**
4. TYPE OF EVALUATION: **--**

#### (c) RF Evaluation

- Evaluated against exposure limits: General Public Use ☒ Controlled Use ☐
- Duty cycle used in evaluation: 100 %
- Standard used for evaluation: RSS-102 Issue 2 (2005-11)
- Measurement distance: 20 cm
- RF value: 0.35 V/m ☐ A/m ☐ W/m<sup>2</sup> ☒

Measured ☐ Computed ☐ Calculated ☒

#### Declaration of RF Exposure Compliance

#### ATTESTATION:

I attest that the information provided in this test report are correct; that a Technical Brief was prepared and the information it contains is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR and/or RF exposure limits of RSS-102.



Name: Jakob Reschke  
Title: Engineer  
Company: Cetecom ICT Services GmbH



## WDDCS:

All Fields must be completed with the requested information or the following codes: N/A for Not Applicable, N/P for Not Performed or N/V for Not Available. Where applicable, check appropriate box.

1. COMPANY NUMBER: **1249D**
2. MODEL NUMBER: **DCN-WDCS, DCN-WDDCS**
3. MANUFACTURER: **Bosch Security Systems BV**
4. TYPE OF EVALUATION: **--**

### (c) RF Evaluation

- Evaluated against exposure limits: General Public Use ☒ Controlled Use ☐
- Duty cycle used in evaluation: 100 %
- Standard used for evaluation: RSS-102 Issue 2 (2005-11)
- Measurement distance: 20 cm
- RF value: 0.34 V/m ☐ A/m ☐ W/m<sup>2</sup> ☒

Measured ☐ Computed ☐ Calculated ☒

### Declaration of RF Exposure Compliance

### ATTESTATION:

I attest that the information provided in this test report are correct; that a Technical Brief was prepared and the information it contains is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR and/or RF exposure limits of RSS-102.



Name: Jakob Reschke  
Title: Engineer  
Company: Cetecom ICT Services GmbH

## WDVCS-D:

All Fields must be completed with the requested information or the following codes: N/A for Not Applicable, N/P for Not Performed or N/V for Not Available. Where applicable, check appropriate box.

1. COMPANY NUMBER: **1249D**
2. MODEL NUMBER: **WDVCS-D**
3. MANUFACTURER: **Bosch Security Systems BV**
4. TYPE OF EVALUATION: **--**

### (c) RF Evaluation

- Evaluated against exposure limits: General Public Use ☒ Controlled Use ☐
- Duty cycle used in evaluation: 100 %
- Standard used for evaluation: RSS-102 Issue 2 (2005-11)
- Measurement distance: 20 cm
- RF value: 0.44 V/m ☐ A/m ☐ W/m<sup>2</sup> ☒

Measured ☐ Computed ☐ Calculated ☒

### Declaration of RF Exposure Compliance

### ATTESTATION:

I attest that the information provided in this test report are correct; that a Technical Brief was prepared and the information it contains is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR and/or RF exposure limits of RSS-102.



Name: Jakob Reschke  
Title: Engineer  
Company: Cetecom ICT Services GmbH

### 3.1.4 EUT operating modes

EUT operating mode no. *)	Description of operating modes	Additional information
Op. 0	Normal mode	Normal temperature and power source conditions
Op. 1		low temperature, low power source conditions
Op. 2		low temperature, high power source conditions
Op. 3		high temperature, low power source conditions
Op. 4		high temperature, high power source conditions

\*) EUT operating mode no. is used to simplify the test plan

### 3.1.5 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T <sub>nom</sub>	°C	<b>22</b>
Nominal Humidity	H <sub>nom</sub>	%	<b>53</b>
Nominal Power Source	V <sub>nom</sub>	V	<b>115</b>

Type of power source: **AC**

Deviations from these values are reported in chapter 2

#### 4 Summary of Measurement Results and list of all performed test cases

- ☒ No deviations from the technical specifications were ascertained  
☐ There were deviations from the technical specifications ascertained

TC identifier	Description	verdict	date	Remark
RF-Testing	FCC Part 15 §15.247 - CANADA RSS-210	PASS	2008-01-29	PASS

Test Specification Clause	Test Case	Pass	Fail	Not applicable	Not performed
None	Antenna Gain	Yes			
§ 15.247 (e)	Peak power spectral density	Yes			
§ 15.247(a)(2)	Spectrum Bandwidth of a OFDM System / 6dB BW	Yes			
§ 15.247(a)(2)	Occupied Bandwidth of a OFDM System / 20 dB Bandwidth	Yes			
§ 15.247 (b)(3)	Maximum output power (conducted)	Yes			
§ 15.247 (b)(3)	Max. peak output power (radiated)	Yes			
§ 15.247 (d)	Band-edge compliance of conducted emissions	Yes			
§ 15.205	Band-edge compliance of radiated emissions	Yes			
§ 15.247 (d)	Spurious Emission - conducted (Transmitter)	Yes			
§ 15.209	Spurious Emission -radiated (Transmitter)	Yes			
§ 15.109	Spurious Emissions-radiated (Receiver)	Yes			
§ 15.209	Spurious Emissions-radiated <30 MHz	Yes			
§ 15.107/207	Conducted Emissions <30 MHz	Yes			

## 5 RF measurement testing

### 5.1 Description of test set-up

#### 5.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber.

The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test set-ups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.

The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.4-2003 clause 4.2.

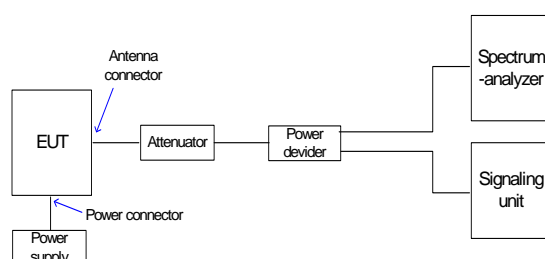
Antennas are confirmed with ANSI C63.2-1996 item 15.

9 kHz - 150 MHz: Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.  
150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, passive loop antenna.  
30 MHz - 200 MHz: Quasi Peak measurement, 120 kHz Bandwidth, bi-conical antenna  
200MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, log periodic antenna  
>1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.209 and 15.207

#### 5.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is connected to the spectrum analyzer. The specific losses for signal path are first checked within a calibration. The measurement readings on the spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



## **5.2 Referenced Documents**

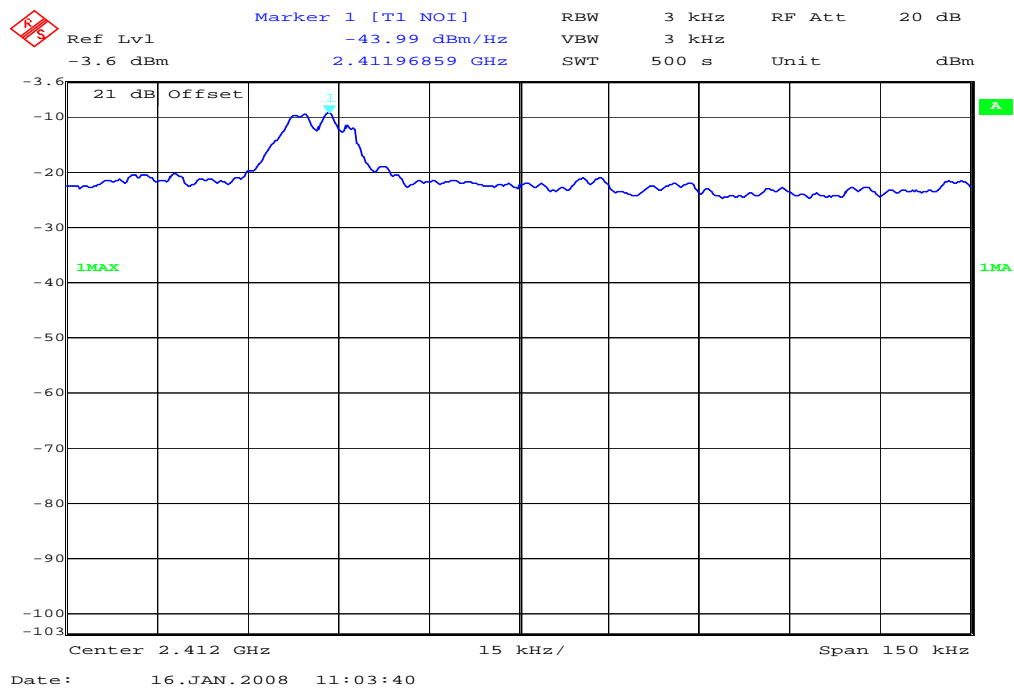
None

## **5.3 Additional comments**

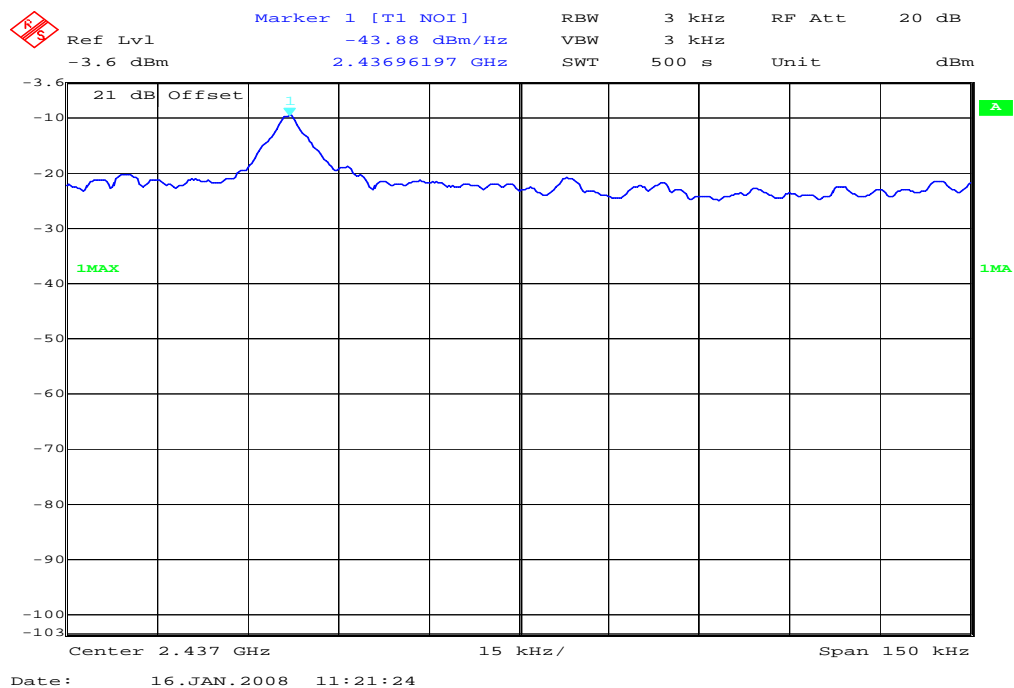
The RF part of all equipment is the same. For the WDCS only delta measurements were made. For the difference between the WDCS and WDVCS and the WDDCS please see EUT photos.

## 5.4 Peak Power Spectral density (digitally modulated systems) §15.247(e)

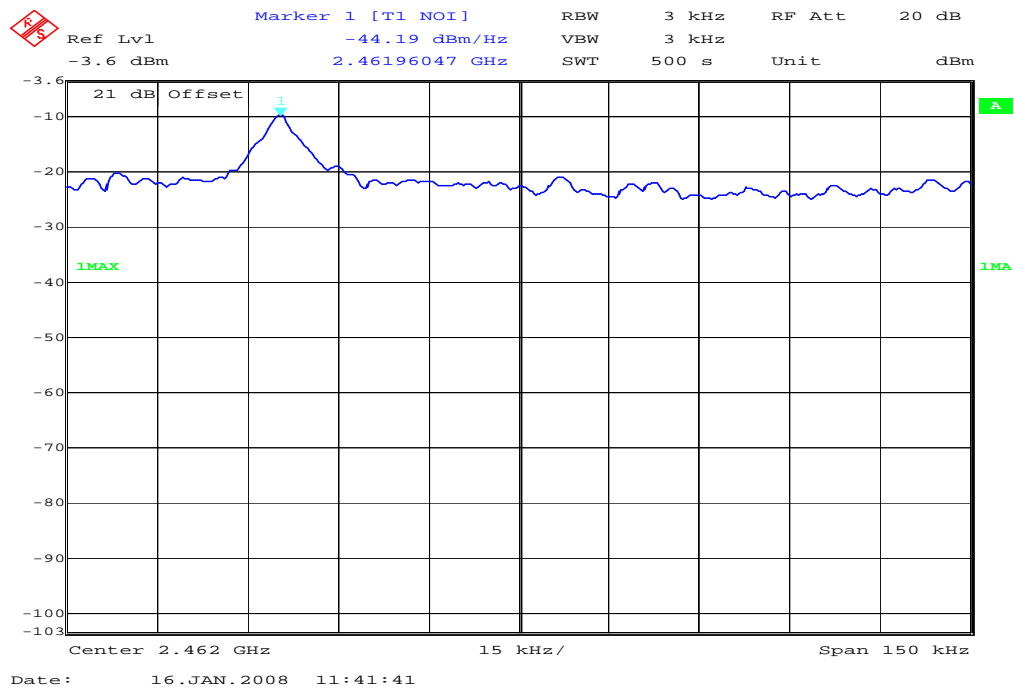
Plot 1: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)



Plot 2: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)



Plot 3: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)



Results: Plot 1: Power density: -43.99 dBm/Hz = -9.19 dBm / 3 kHz  
 Plot 2: Power density: -43.88 dBm/Hz = -9.08 dBm / 3 kHz  
 Plot 3: Power density: -44.19 dBm/Hz = -9.39 dBm / 3 kHz

Correction factor from dBm/Hz to dBm/3 kHz is +34,8 dB

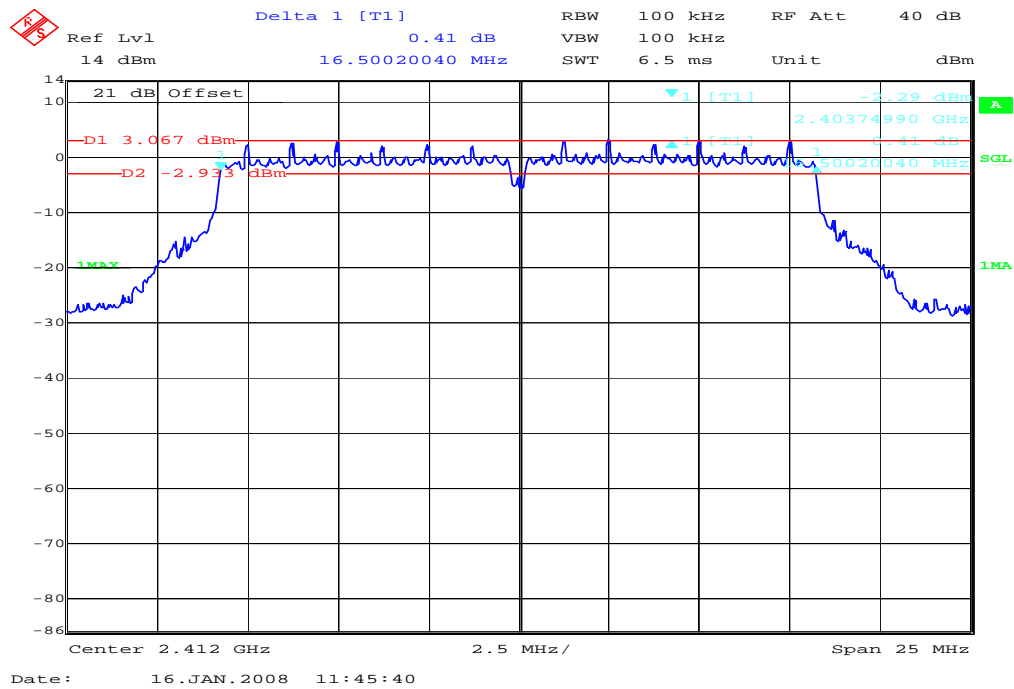
Limits :

Under normal test conditions only	For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission
-----------------------------------	---

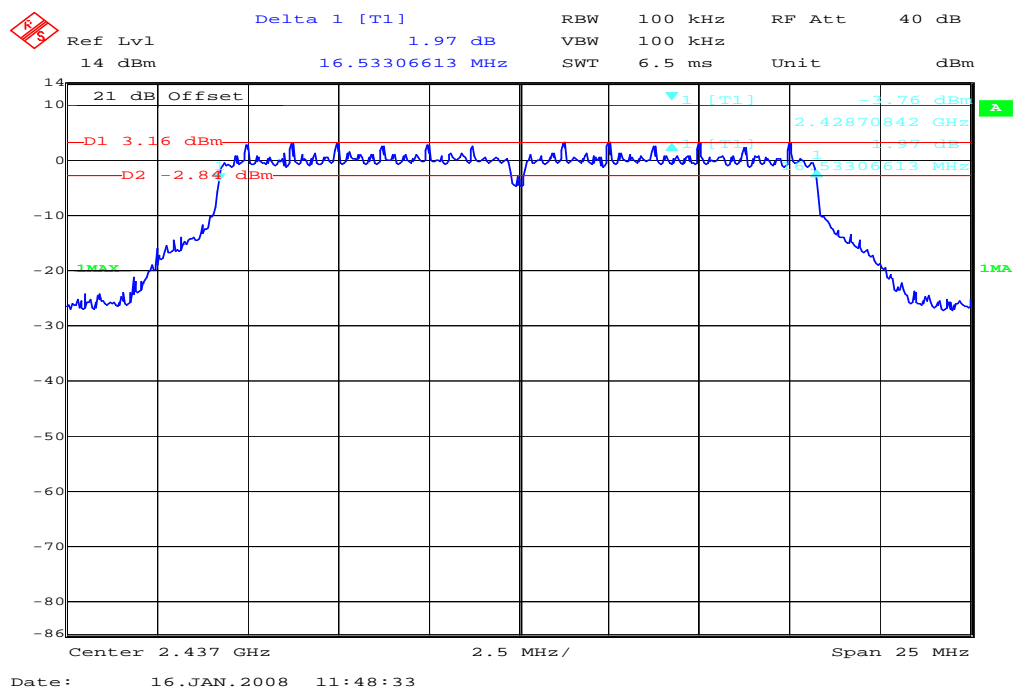


## 5.5 Spectrum Bandwidth of a OFDM System / 6 dB Bandwidth §15.247(a)(2)

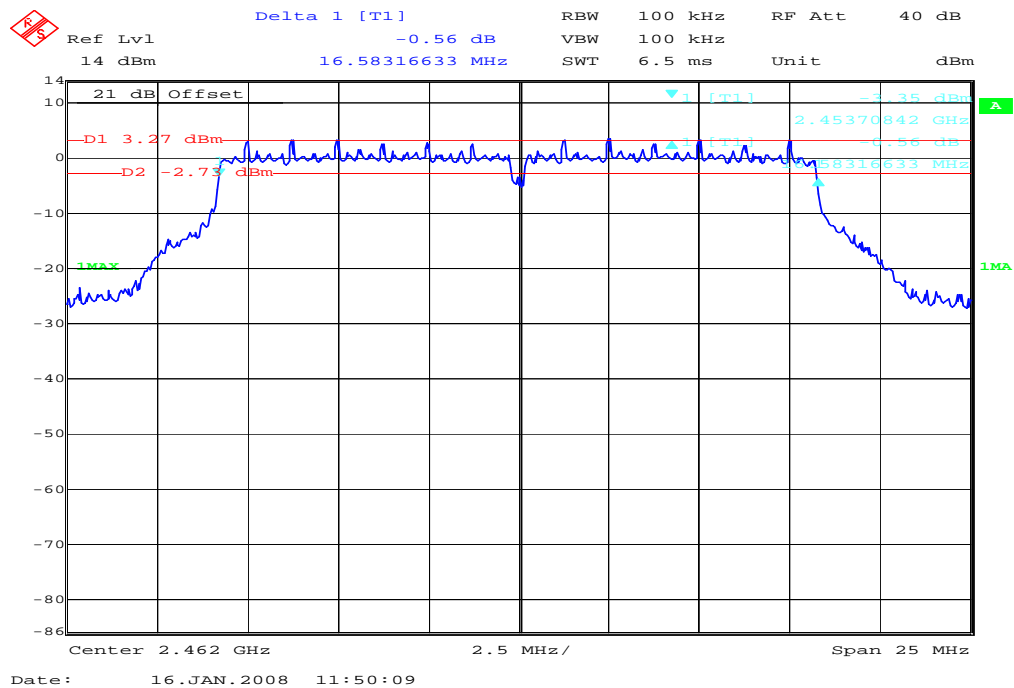
Plot 1:



Plot 2:



Plot 3:



## Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T <sub>nom</sub>	V <sub>nom</sub>	16.50	16.53	<b>16.58</b>
Measurement uncertainty		±1kHz		

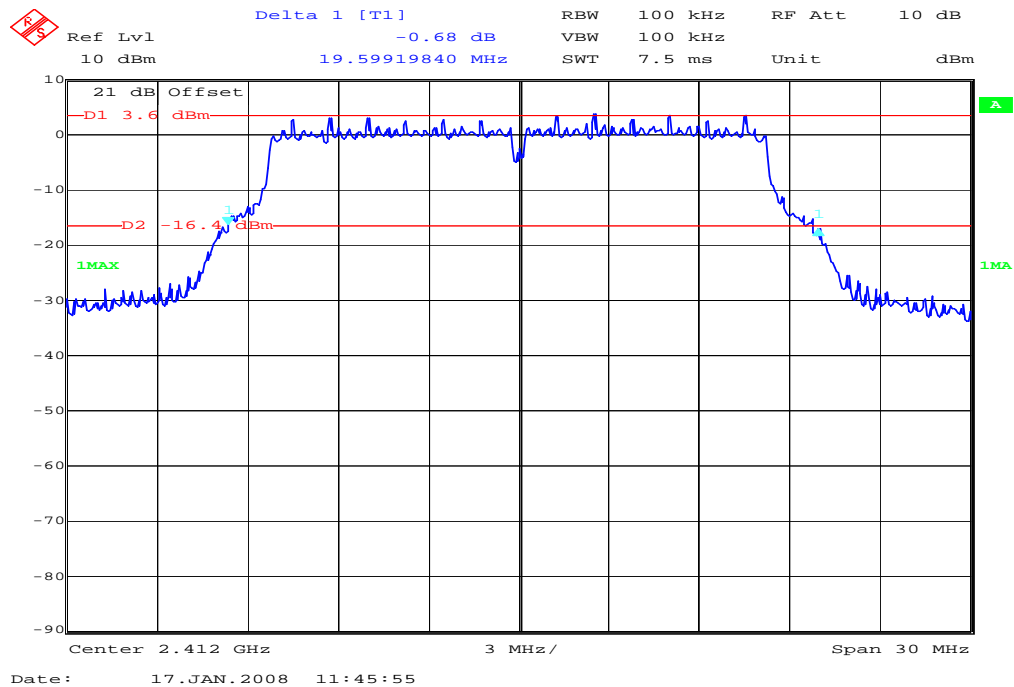
RBW: 100 kHz / VBW 100 kHz

## Limits:

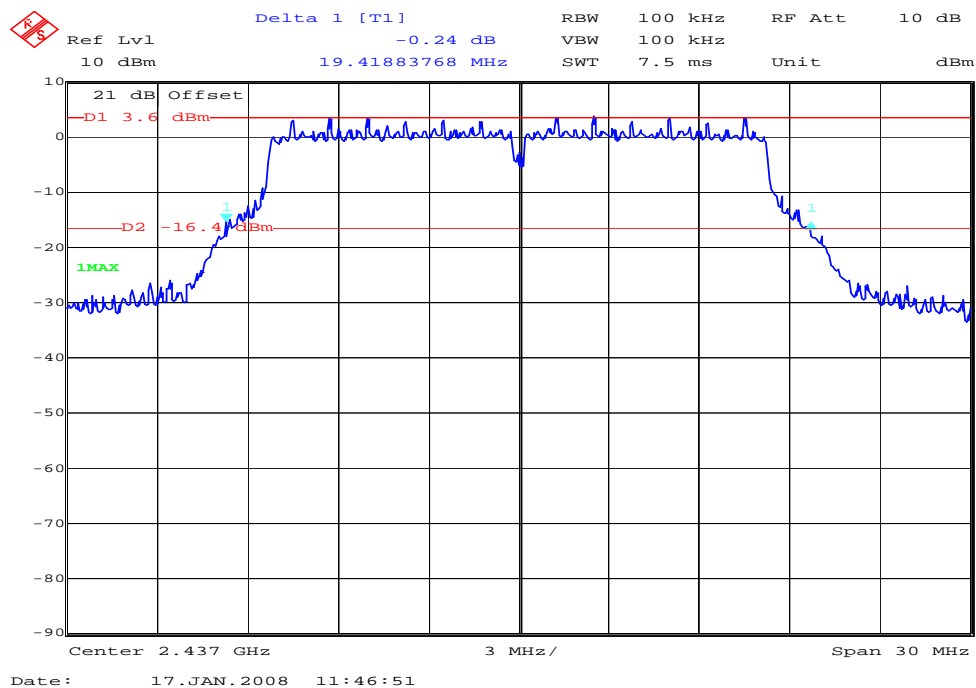
Under normal test conditions only	> 500 kHz
-----------------------------------	-----------

## 5.6 Occupied Bandwidth of a OFDM System / 20 dB Bandwidth

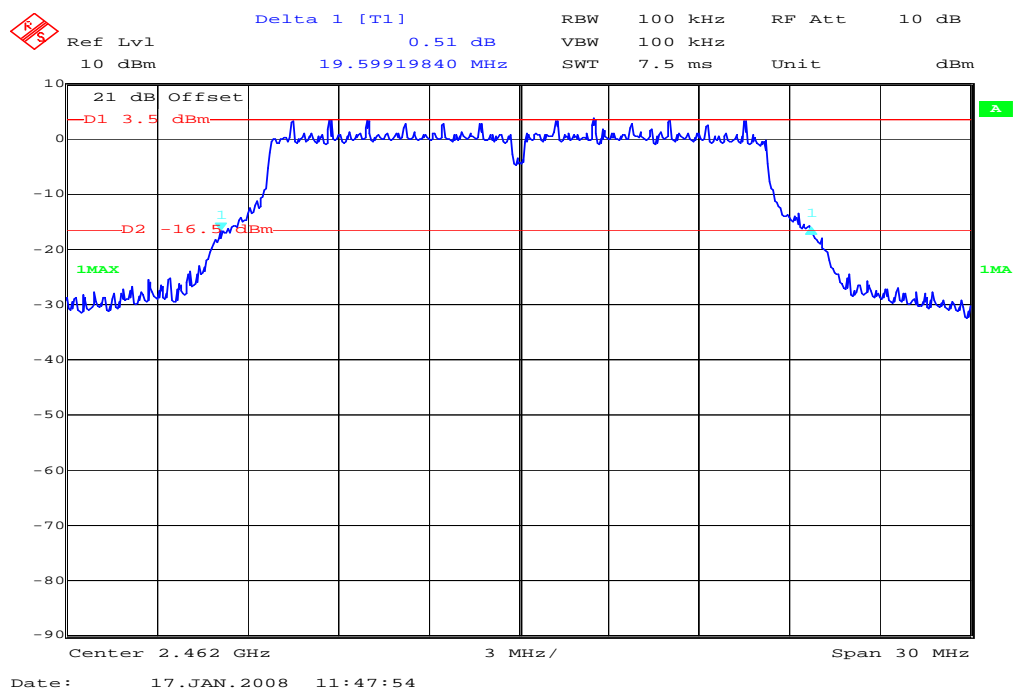
Plot 1



Plot 2



Plot 3



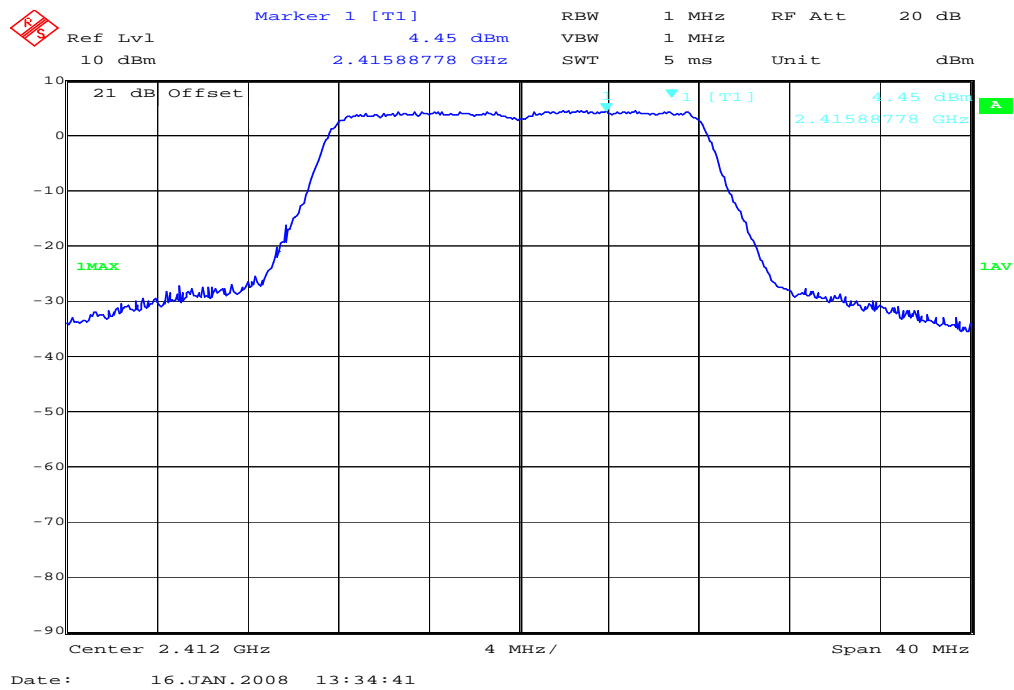
## Results:

Test conditions		20 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T <sub>nom</sub>	V <sub>nom</sub>	19.59	19.41	19.59
Measurement uncertainty		±1kHz		

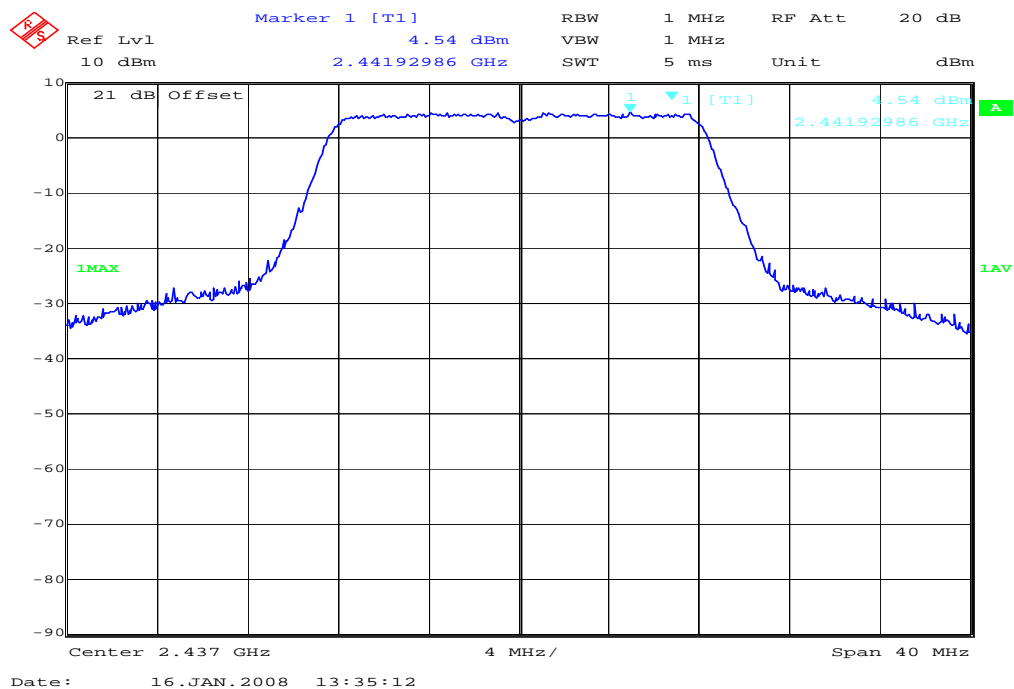
RBW: 100 kHz / VBW 100 kHz

## 5.7 Maximum output power (conducted) §15.247 (b)(3)

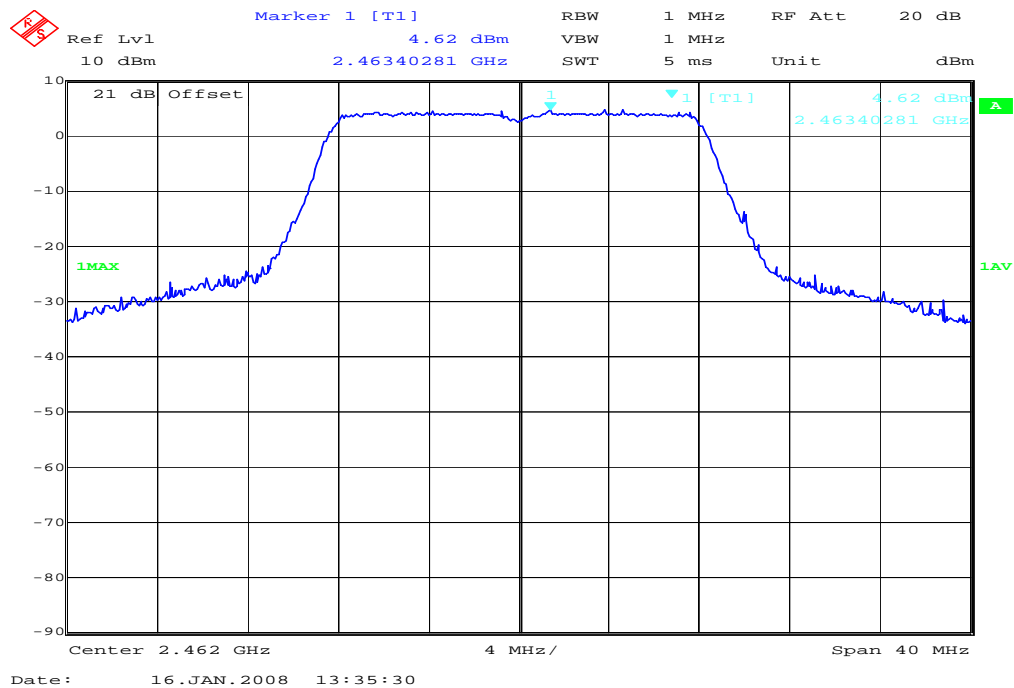
Plot 1:



Plot 2:



Plot 3:



## Results:

Test conditions		Max. peak output power [dBm]			
Frequency [MHz]		2412		2437	2462
T <sub>nom</sub>	V <sub>nom</sub>	PK	4.45	4.54	4.62
		Correction factor	13.01	13.01	13.01
Corrected Peak value [dBm]		17.46		17.55	<b>17.63</b>
Measurement uncertainty		±3dB			

RBW / VBW: 1 MHz

## Remark:

The correction factor is calculated by  $10 \times \log(\text{measured BW} / \text{used BW})$  [dB]

$$10 \times \log(20/1) = 13.01 \text{ dB}$$

## Limits:

Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt / 30 dBm
--	------------------------

---

**WDCS:****MPE calculation**

These equations are generally accurate in the far field of an antenna but will over predict power density in the near field, where they could be used for making a “worst case” prediction.

$$S = PG/4\pi R^2$$

where S = power density ( in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units e.g. mW)

G = power gain of the antenna in the direction of interest relative to the isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units e.g. cm)

Or

$$S = \text{EIRP}/4\pi R^2$$

where EIRP = equivalent isotropic radiated power

Calculation:

(Calculated for max. EIRP)

EIRP: 22.30 dBm (169.82 mW)

calculated at distance of 20 cm:

$$\text{power density} = 169.82/4\pi 20^2 = 0.034 \text{ mW/cm}^2$$

Limit:

1mW/ cm<sup>2</sup> is the reference level for general public exposure according to the OET Bulletin 65,  
Edition 97-01 Table 1.

**WDDCS:****MPE calculation**

These equations are generally accurate in the far field of an antenna but will over predict power density in the near field, where they could be used for making a “worst case” prediction.

$$S = PG/4\pi R^2$$

where S = power density ( in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units e.g. mW)

G = power gain of the antenna in the direction of interest relative to the isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units e.g. cm)

Or

$$S = \text{EIRP}/4\pi R^2$$

where EIRP = equivalent isotropic radiated power

Calculation:

(Calculated for max. EIRP)

EIRP: 22.51 dBm (178.24 mW)

calculated at distance of 20 cm:

$$\text{power density} = 178.24/4\pi 20^2 = 0.035 \text{ mW/ cm}^2$$

Limit:

1mW/ cm<sup>2</sup> is the reference level for general public exposure according to the OET Bulletin 65,  
Edition 97-01 Table 1.



**WDVCS-D:****MPE calculation**

These equations are generally accurate in the far field of an antenna but will over predict power density in the near field, where they could be used for making a “worst case” prediction.

$$S = PG/4\pi R^2$$

where S = power density ( in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units e.g. mW)

G = power gain of the antenna in the direction of interest relative to the isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units e.g. cm)

Or

$$S = \text{EIRP}/4\pi R^2$$

where EIRP = equivalent isotropic radiated power

Calculation:

(Calculated for max. EIRP)

EIRP: 23.46 dBm (221.82 mW)

calculated at distance of 20 cm:

$$\text{power density} = 221.82/4\pi 20^2 = 0.044 \text{ mW/ cm}^2$$

Limit:

1mW/ cm<sup>2</sup> is the reference level for general public exposure according to the OET Bulletin 65,  
Edition 97-01 Table 1.

## 5.8 Max. peak output power (radiated) §15.247 (b)(3)

### WDCS:

Results:

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		2412	2437	2462
T <sub>nom</sub>	V <sub>nom</sub>	22.21	22.22	<b>22.30</b>
Measurement uncertainty		±3dB		

### WDDCS:

Results:

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		2412	2437	2462
T <sub>nom</sub>	V <sub>nom</sub>	22.23	22.46	<b>22.51</b>
Measurement uncertainty		±3dB		

### WDVCS:

Results:

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		2412	2437	2462
T <sub>nom</sub>	V <sub>nom</sub>	22.52	22.78	<b>23.46</b>
Measurement uncertainty		±3dB		

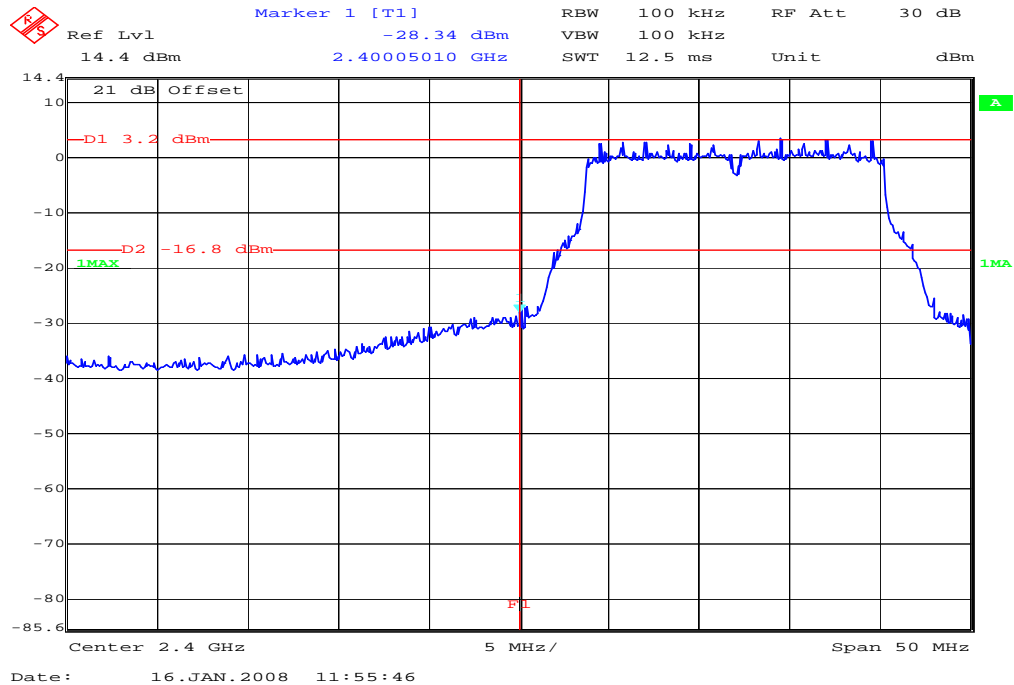
RBW / VBW: 10 MHz – Correction factors have been added  
Measured at a distance of 3m

Limits:

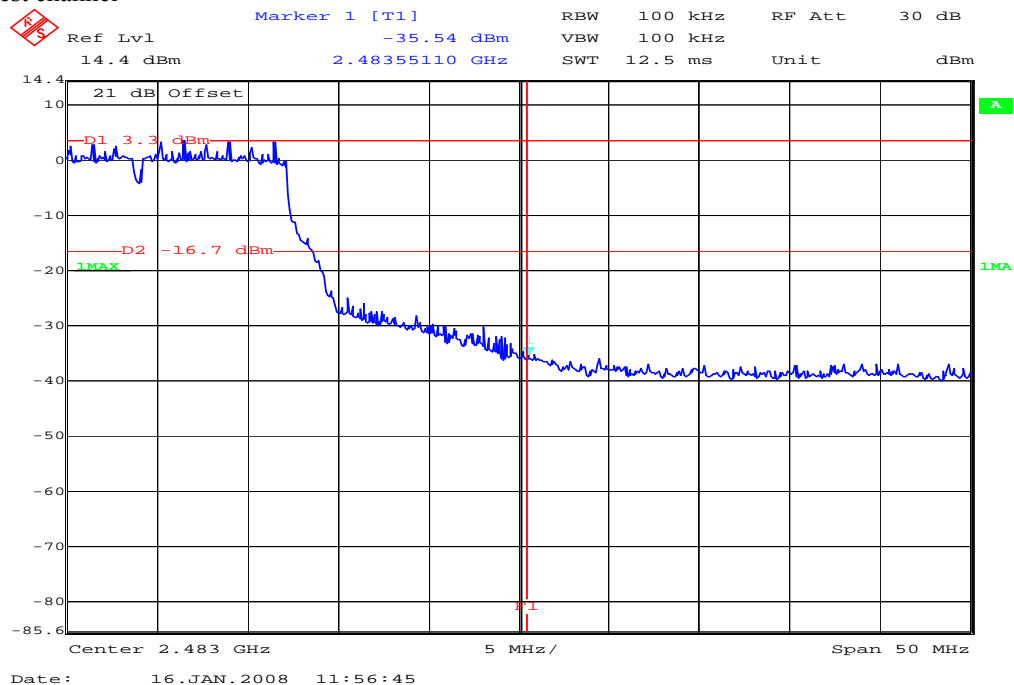
Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt
--	---------------

## 5.9 Band-edge compliance of conducted emissions §15.247 (d)

Plot 1, lowest channel



Plot 2, highest channel



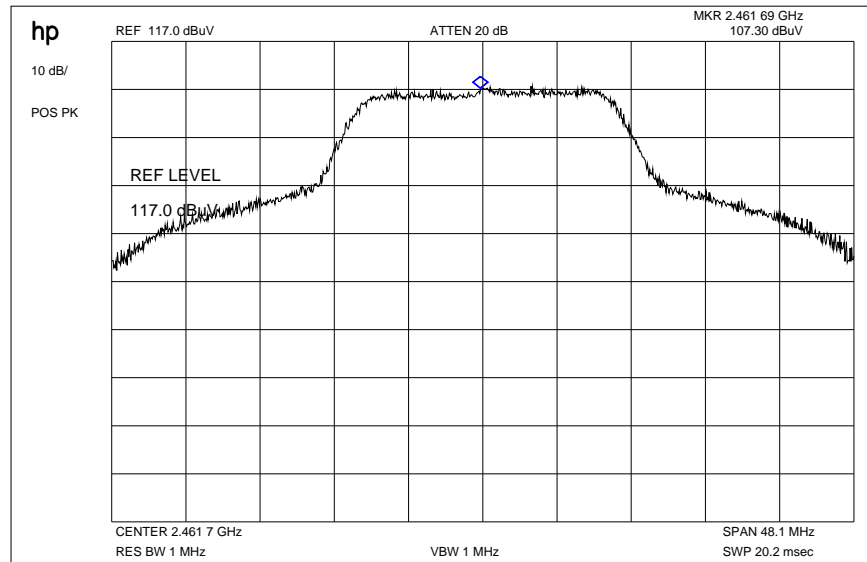
## Limits:

Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)).
-----------------------------------	--

## 5.10 Band-edge compliance of radiated emissions §15.205

### WDCS:

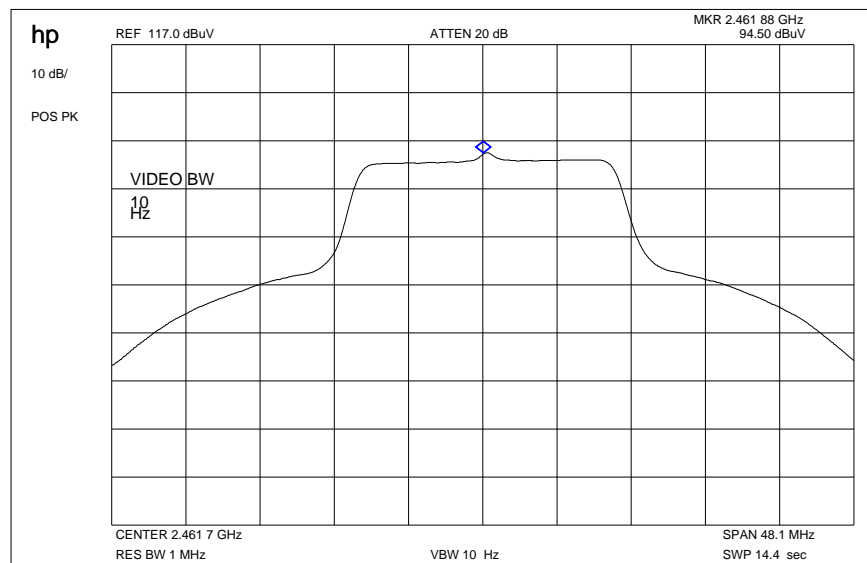
Plot 1: Max field strength in 3m distance (single frequency) peak



Result:

Frequency	Meter reading	Correction factor	Results
2462 MHz	107.30	-1.97 dB	105.33

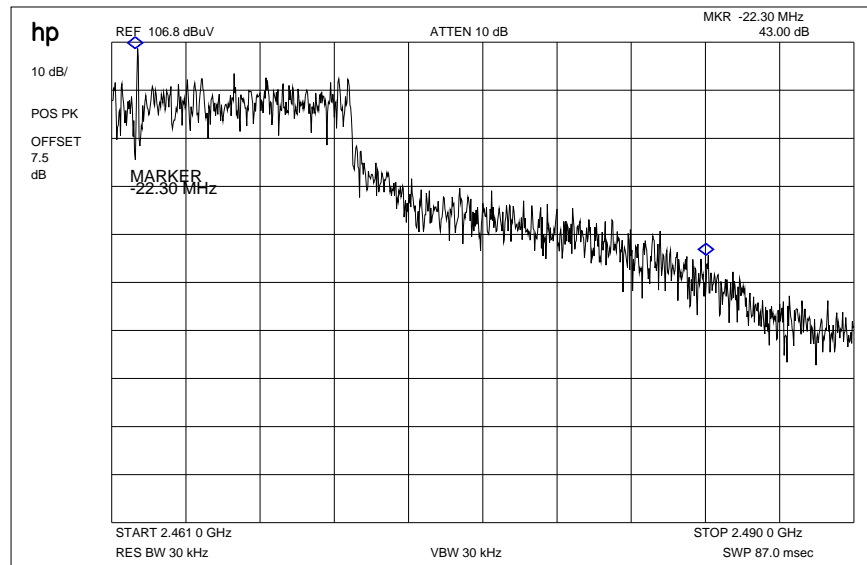
Plot 2 : Max field strength in 3m distance (single frequency) average



Result:

Frequency	Meter reading	Correction factor	Results
2462 MHz	94.50	-1.97 dB	92.53

Plot 3: Marker-Delta Method RBW/VBW = 30 kHz

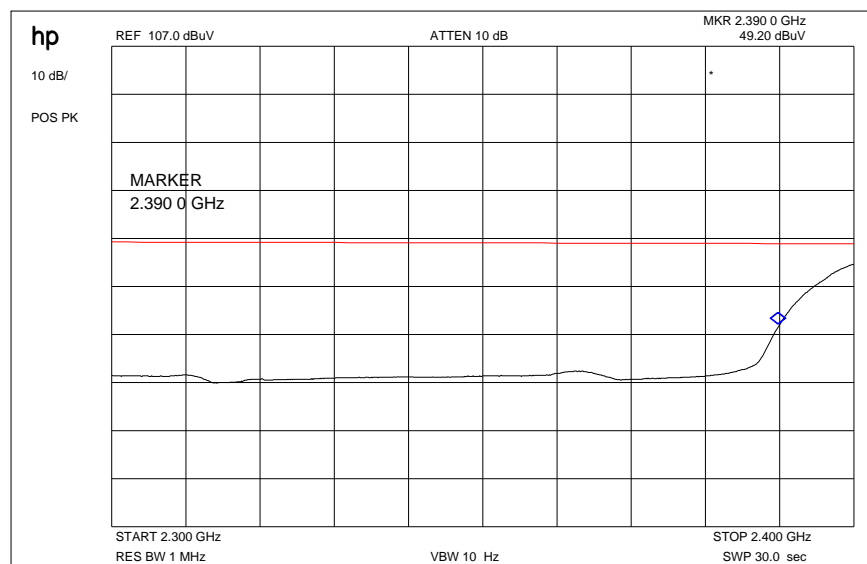


Result:

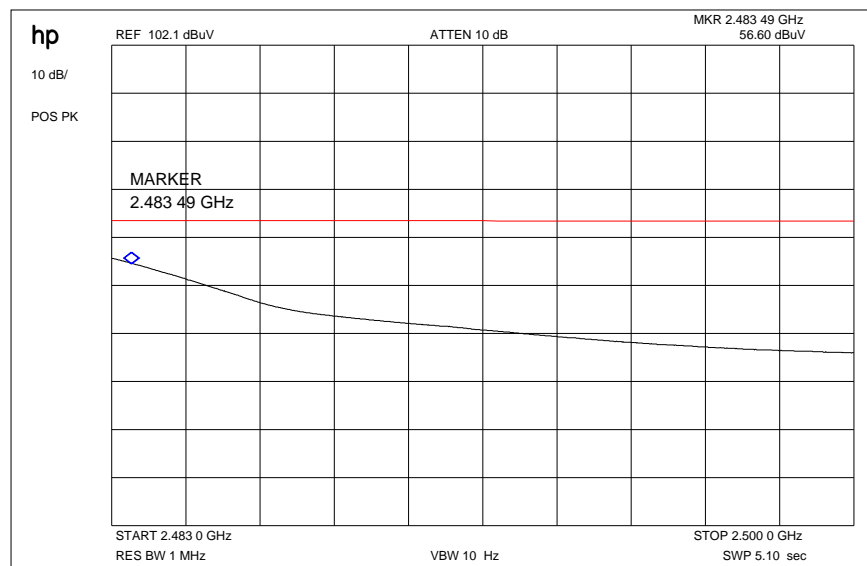
Marker-Delta-Value: 43.00 dB

This measurement was made to show that the behaviour of the system is conform to FCC 15.205 (restricted bands)

Plot 4: Restricted Band compliance – Lowest Frequency



## Plot 5: Restricted Band compliance – Highest Frequency



## Results &amp; Limits:

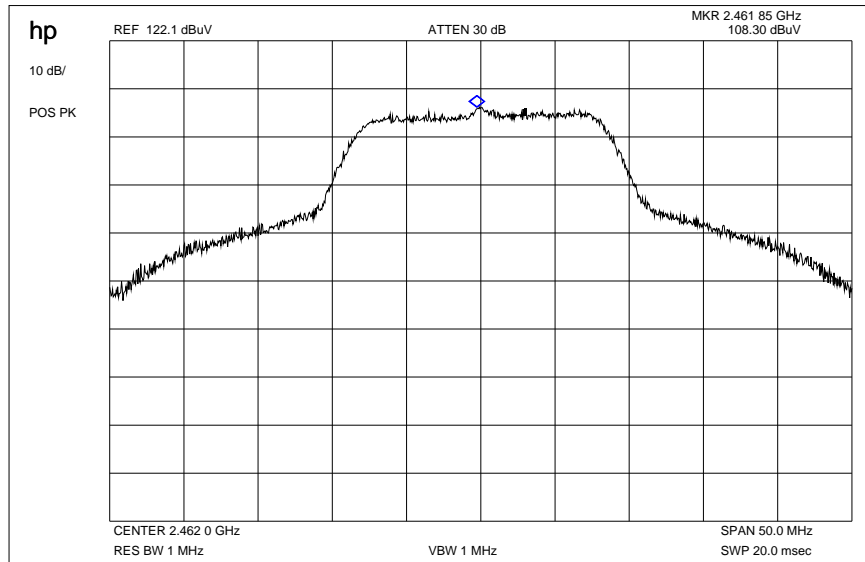
## Radiated field strength

The field strength was measured with an EMI measuring receiver and 1 MHz RBW / VBW for peak and with 1MHz RBW / 10Hz VBW for average at a distance of 3m.

high channel	setup	measured value (3m)	correction factor (3m)	calculated value (3m)
Max. peak value	1 MHz RBW 1 MHz VBW	107.30 dB $\mu$ V/m	-1.97 dB	105.33 dB $\mu$ V/m
Max. average value	1 MHz RBW 10 Hz VBW	94.50 dB $\mu$ V/m	-1.97 dB	92.53 dB $\mu$ V/m
Delta value	Peak 30 kHz RBW/VBW	43.00 dB		
Value at band edge	limit 54 dB $\mu$ V/m			49.53 dB $\mu$ V/m
Statement:				Complies

## WDDCS:

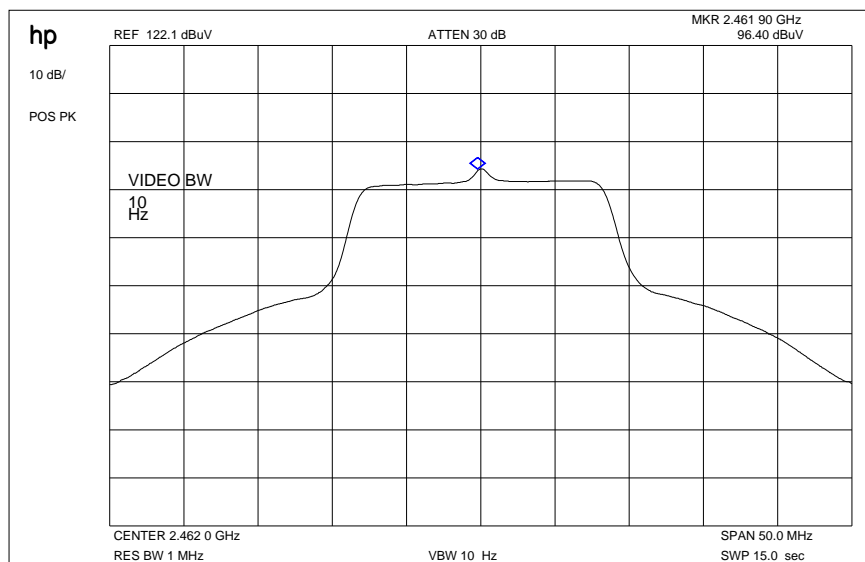
Plot 1: Max field strength in 3m distance (single frequency) peak



Result:

Frequency	Meter reading	Correction factor	Results
2462 MHz	108.30	-1.97 dB	106.33

Plot 2 : Max field strength in 3m distance (single frequency) average

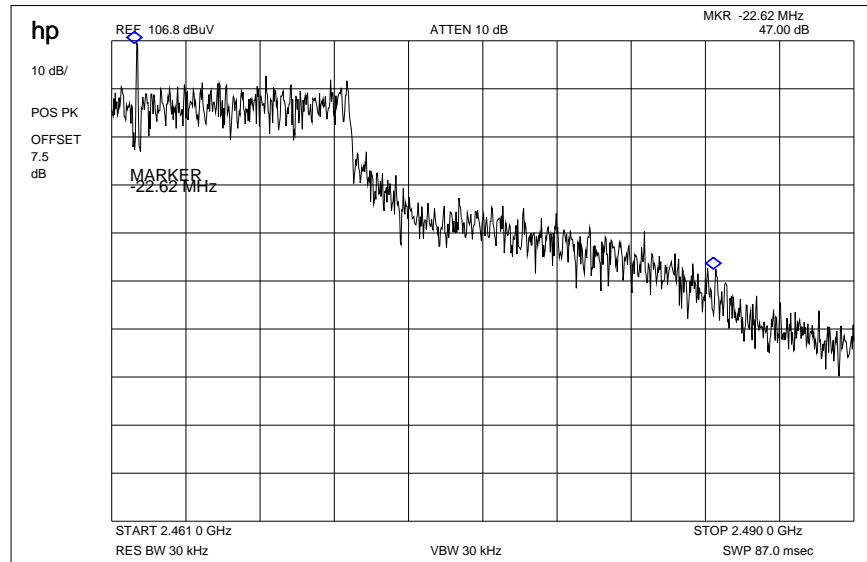


Result:

Frequency	Meter reading	Correction factor	Results
2462 MHz	96.40	-1.97 dB	94.43



Plot 3: Marker-Delta Method RBW/VBW = 30 kHz

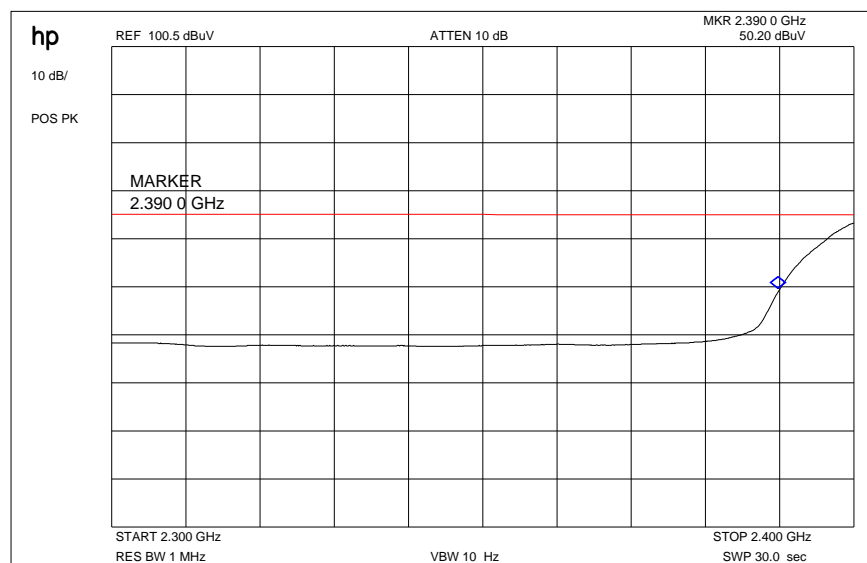


Result:

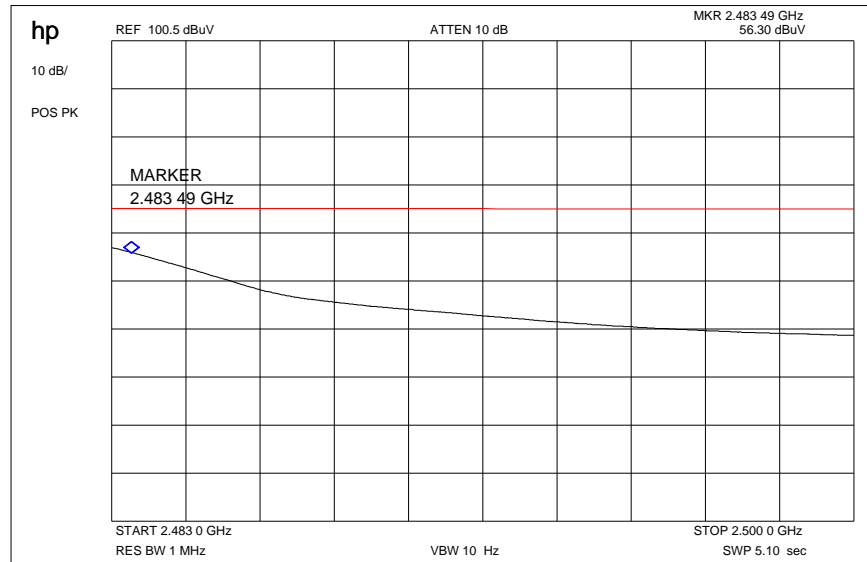
Marker-Delta-Value: 47.00 dB

This measurement was made to show that the behaviour of the system is conform to FCC 15.205 (restricted bands)

Plot 4: Restricted Band compliance – Lowest Frequency



## Plot 5: Restricted Band compliance – Highest Frequency



## Results & Limits:

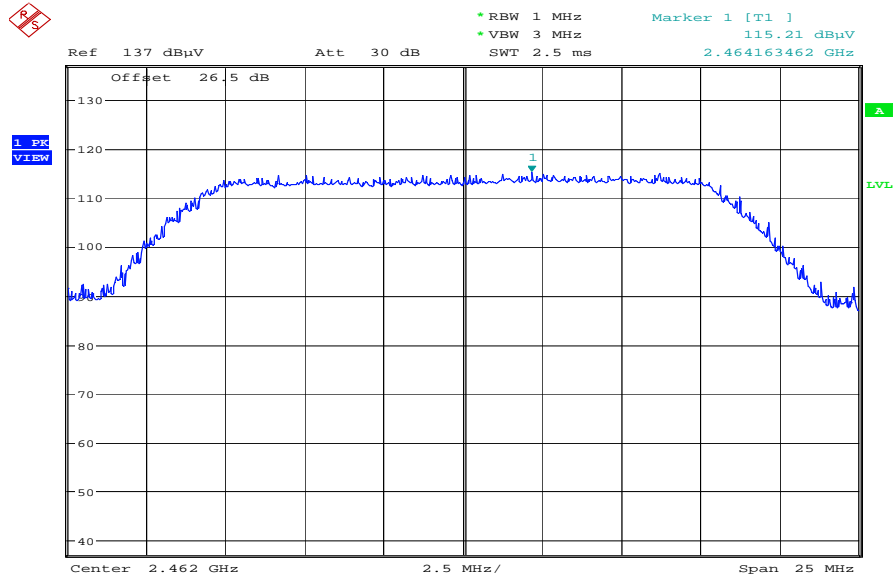
### Radiated field strength

The field strength was measured with an EMI measuring receiver and 1 MHz RBW / VBW for peak and with 1 MHz RBW / 10 Hz VBW for average at a distance of 3m.

high channel	setup	measured value (3m)	correction factor (3m)	calculated value (3m)
Max. peak value	1 MHz RBW 1 MHz VBW	108.30 dBμV/m	-1.97 dB	106.33 dBμV/m
Max. average value	1 MHz RBW 10 Hz VBW	96.40 dBμV/m	-1.97 dB	94.43 dBμV/m
Delta value	Peak 30 kHz RBW/VBW	47.00 dB		
Value at band edge	limit 54 dBμV/m			47.43 dBμV/m
Statement:				Complies

## WDVCS:

Plot 1: Max field strength in 3m distance (single frequency) peak

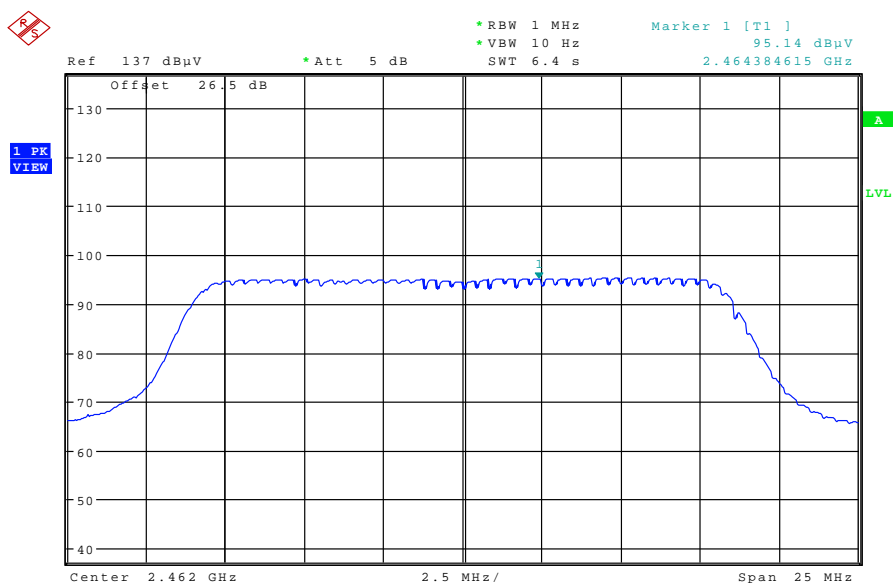


Date: 20.FEB.2008 14:11:45

Result:

Frequency	Meter reading	Correction factor	Results
2462 MHz	115.21	-1.97 dB	113.24

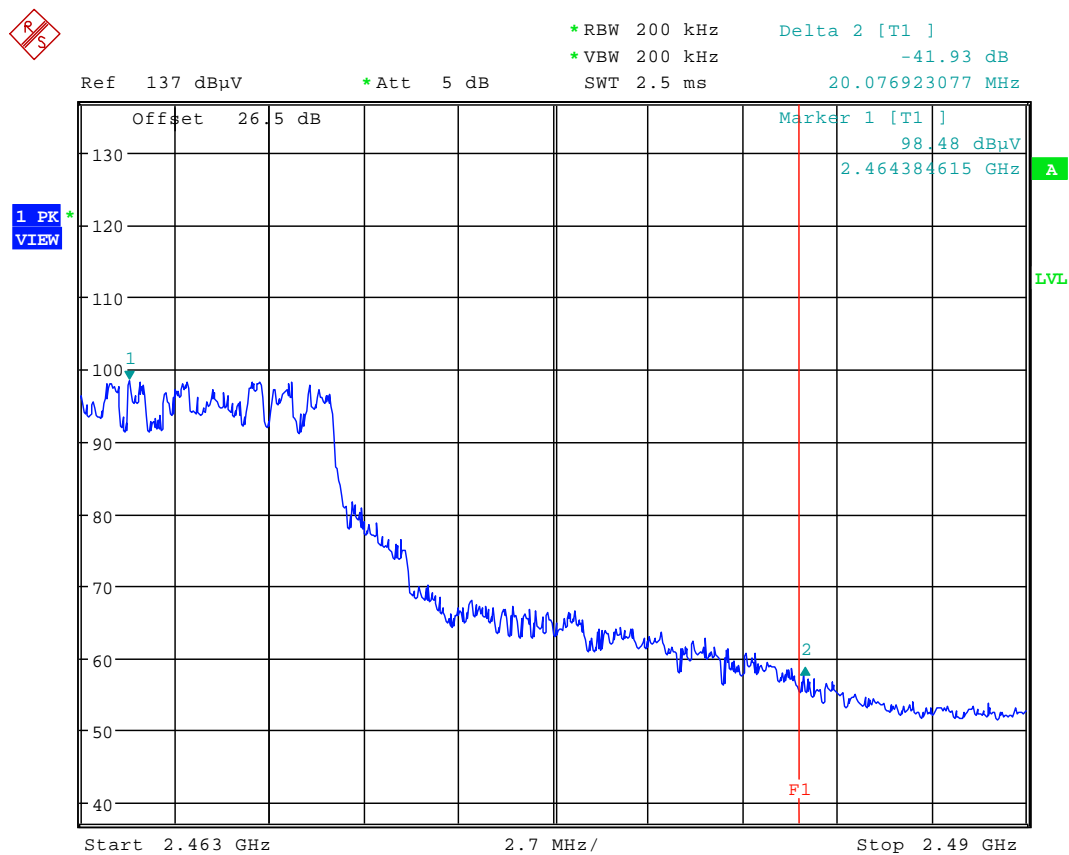
Plot 2 : Max field strength in 3m distance (single frequency) average



Result:

Frequency	Meter reading	Correction factor	Results
2462 MHz	95.14	-1.97 dB	93.17

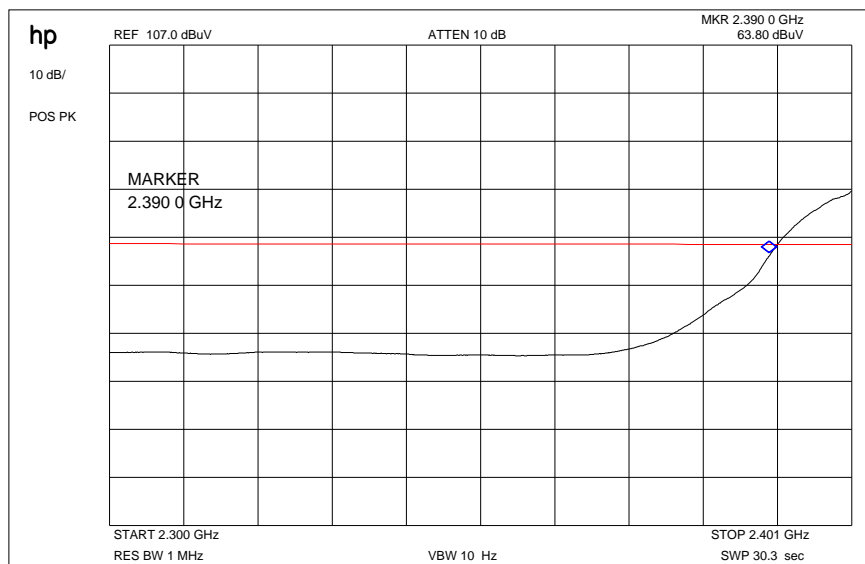
Plot 3: Marker-Delta Method RBW/VBW = 200 kHz



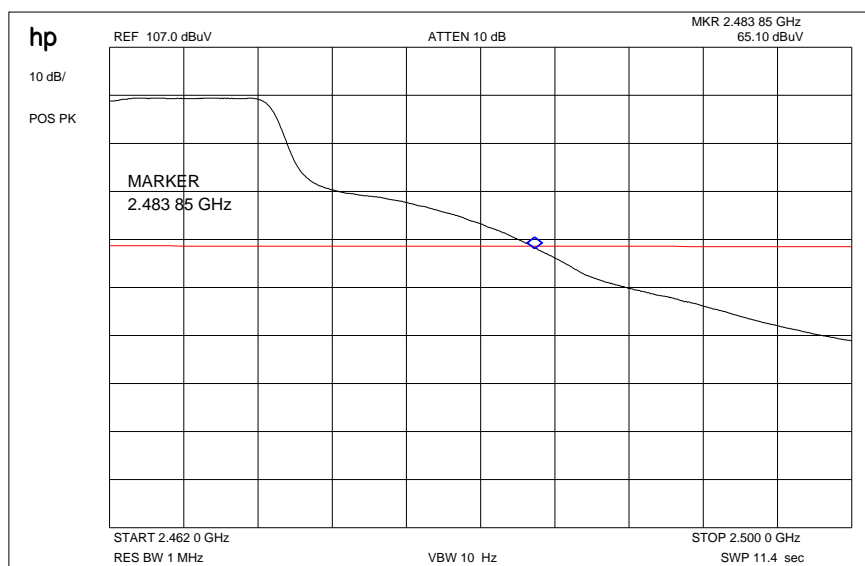
Marker-Delta-Value: 41.93 dB

This measurement was made to show that the behaviour of the system is conform to FCC 15.205 (restricted bands)

Plot 4: Restricted Band compliance – Lowest Frequency



Plot 5: Restricted Band compliance – Highest Frequency



## Results & Limits:

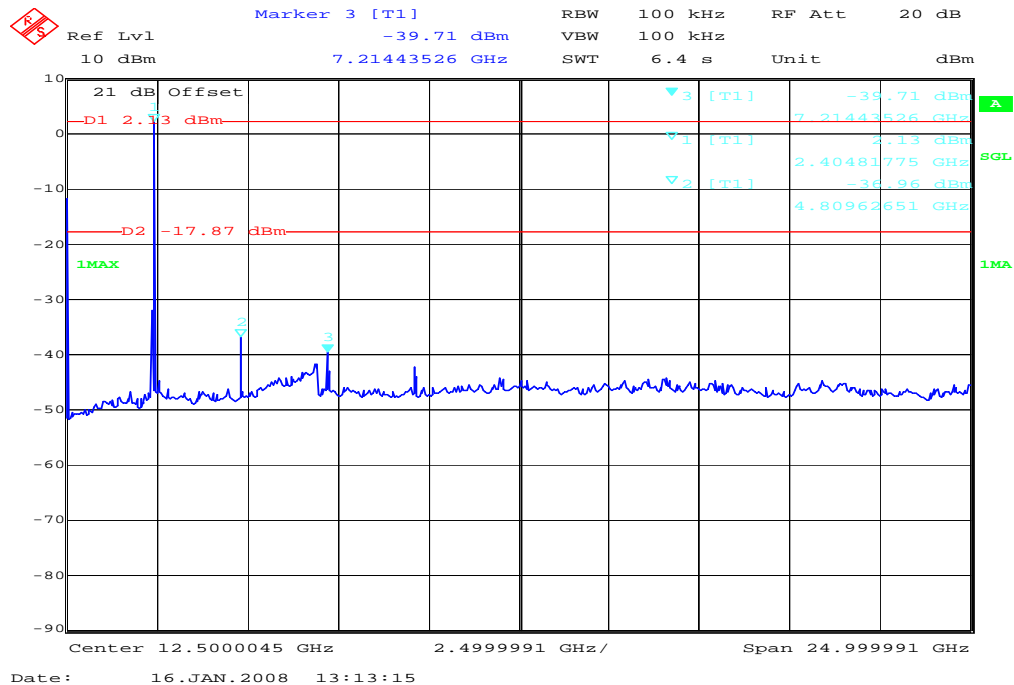
### Radiated field strength

The field strength was measured with an EMI measuring receiver and 1 MHz RBW / VBW for peak and with 1MHz RBW / 10Hz VBW for average at a distance of 3m.

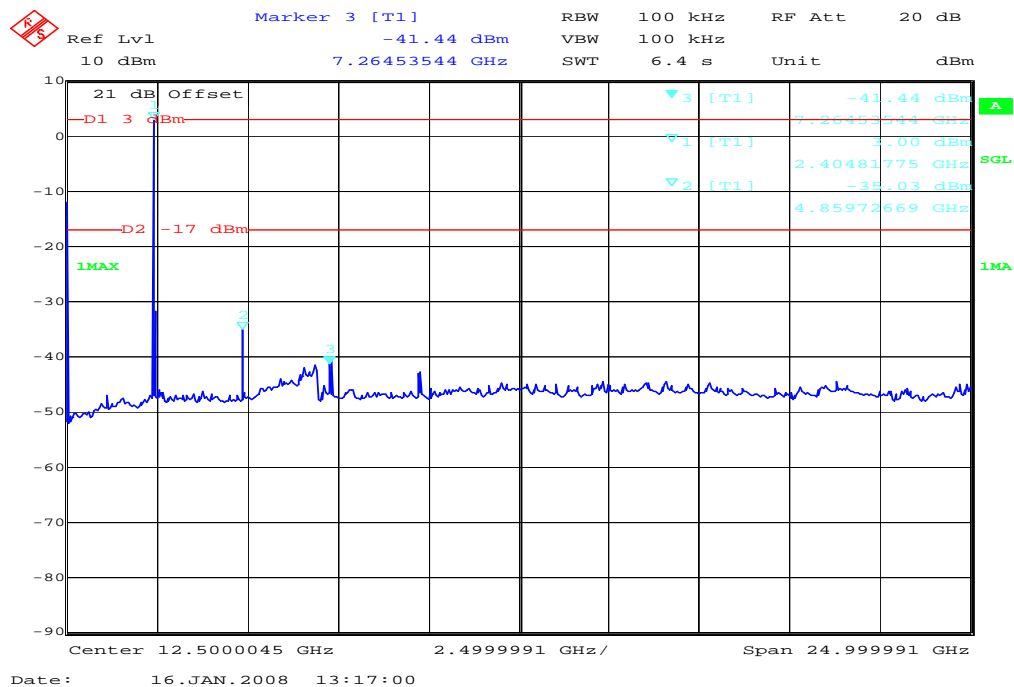
high channel	setup	measured value (3m)	correction factor (3m)	calculated value (3m)
Max. peak value	1 MHz RBW 3 MHz VBW	115.21dB $\mu$ V/m	-1.97 dB	113.24 dB $\mu$ V/m
Max. average value	1 MHz RBW 10 Hz VBW	95.14 dB $\mu$ V/m	-1.97 dB	93.17 dB $\mu$ V/m
Delta value	Peak 30 kHz RBW/VBW	41.93 dB		
Value at band edge	limit 54 dB $\mu$ V/m			51.24 dB $\mu$ V/m
Statement:				Complies

**5.11 Spurious Emissions - conducted (Transmitter) §15.247 (c)**

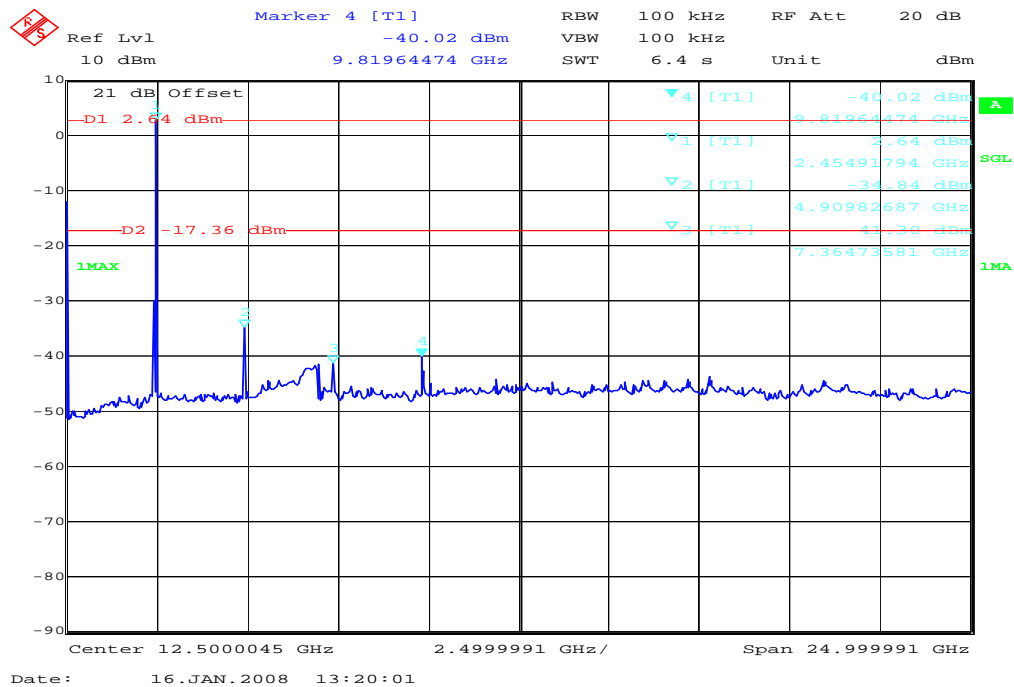
Plot 1:



Plot 2:



Plot 3:



All values above 1 GHz were recalculated from 100 kHz to 1 MHz with 10 x log (necessary BW / used BW).

## Result &amp; Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emmision power	actual attenuation below frequency of operation [dB]	results
2412		12.13	30 dBm		Operating frequency
4809		-26.96	-20 dBc	39.09	Pass
7214		-29.71		41.84	Pass
2437		13.00	30 dBm		Operating frequency
4859		-25.03	-20 dBc	38.03	Pass
7264		-31.44		44.44	Pass
2462		12.64	30 dBm		Operating frequency
4909		-24.84	-20 dBc	37.48	Pass
7364		-31.39		44.03	Pass
9819		-30.20		42.84	Pass
Measurement uncertainty		± 3dB			

F < 1 GHz: RBW: 100 kHz VBW: 100 kHz  
 F > 1 GHz: RBW: 1 MHz VBW: 1 MHz

Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
-----------------------------------	--

Note: For emissions that fall into restricted bands you find the radiated emissions later in the report.



## 5.12 Spurious Emissions - radiated (Transmitter) §15.209

### WDCS:

Plot 1: 0.03 - 1 GHz (lowest channel)

### Information

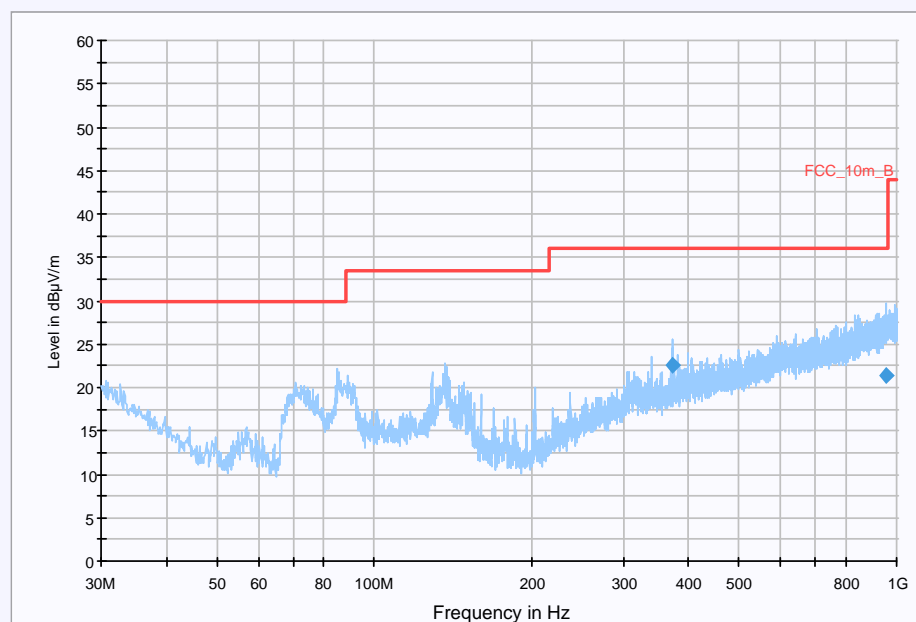
EUT:	DCN-WDCS + 03/00 649 + FW7650/09
Serial Number:	0003BE + none + none
Test Description:	FCC class B @ 10m
Operating Conditions:	TX - low channel
Operator Name:	WAL
Comment:	AC: 115 V / 60 Hz

### Scan Setup: STAN\_Fin [EMI radiated]

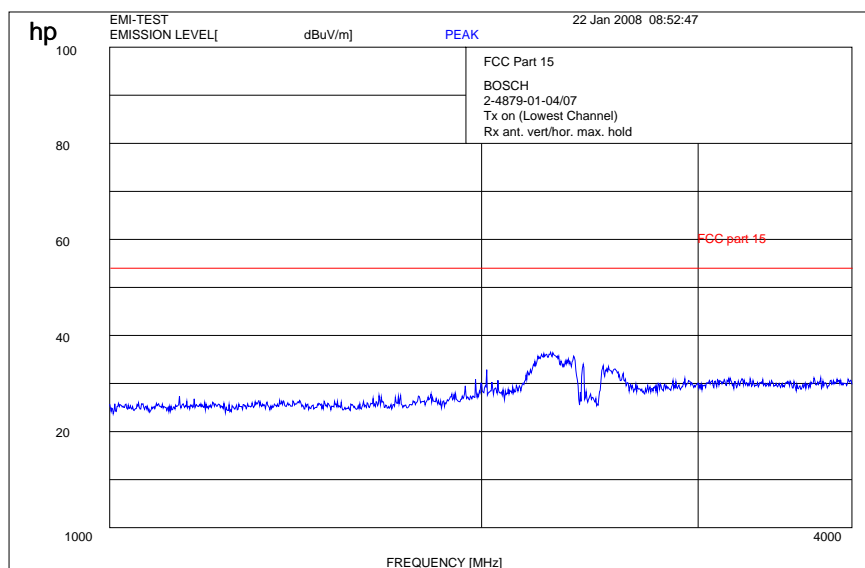
Hardware Setup:	EMI radiated\Electric Field (NOS)
Level Unit:	dB $\mu$ V/m

<b>Subrange</b>	<b>Detectors</b>	<b>IF Bandwidth</b>	<b>Meas. Time</b>	<b>Receiver</b>
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

### FCC\_10m\_Fast\_1GHz (B)

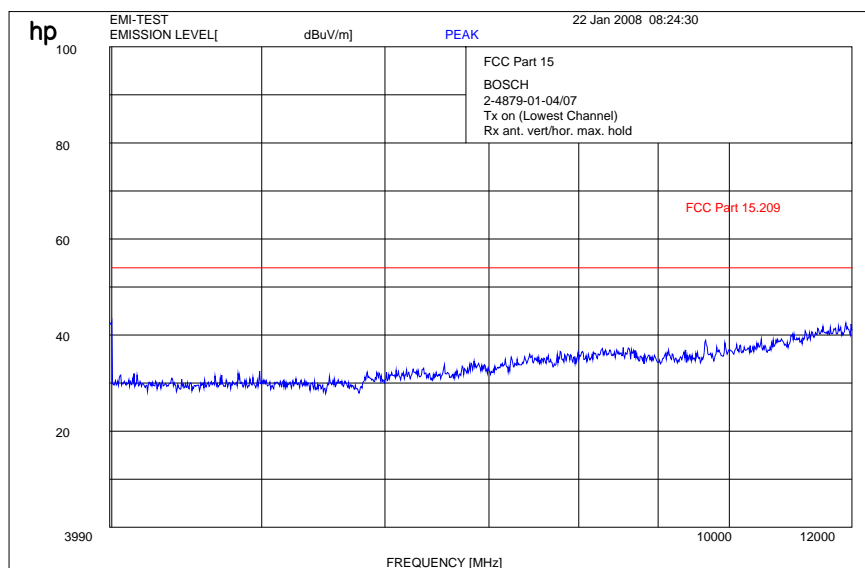


Plot 2: 1 - 4 GHz (lowest channel)

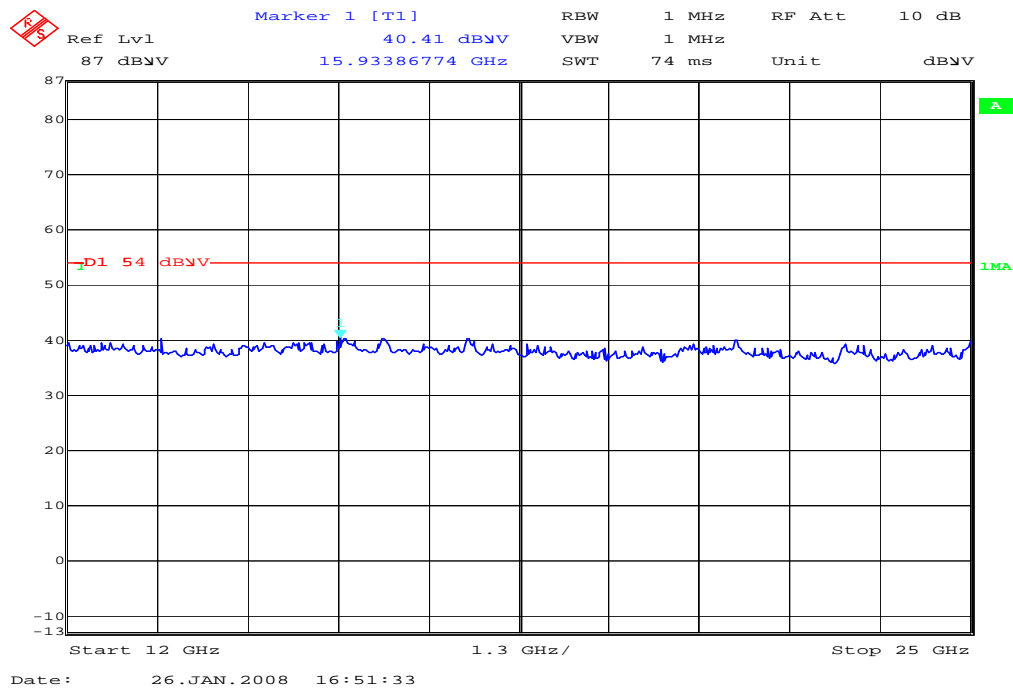


Carrier notched with rejection filter.

Plot 3: 4- 12 GHz (lowest channel)



Plot 4: 12 - 25 GHz (valid for all channels)



Plot 5: 0.03 - 1 GHz (middle channel)

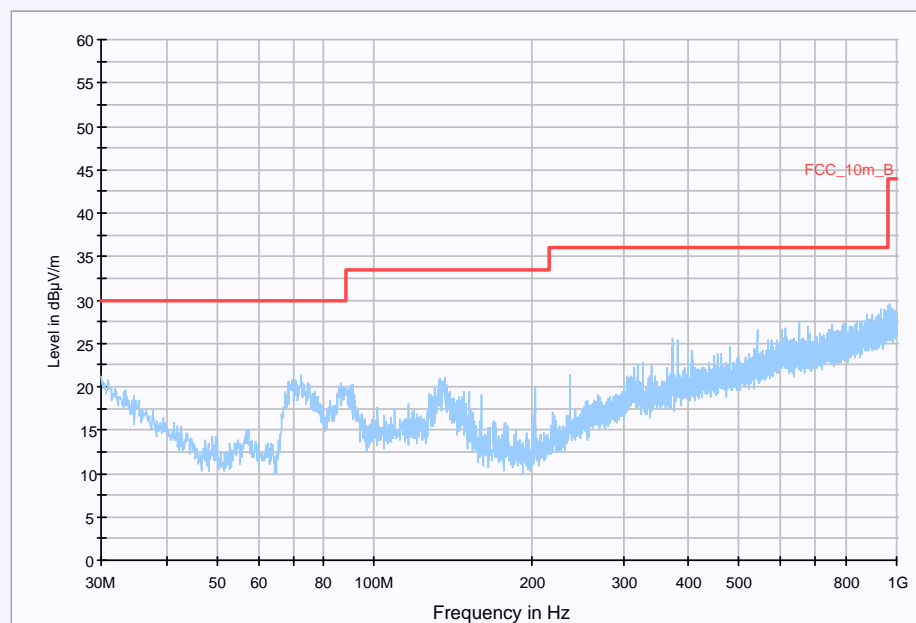
**Information**

EUT: DCN-WDCS + 03/00 649 + FW7650/09  
Serial Number: 0003BE + none + none  
Test Description: FCC class B @ 10m  
Operating Conditions: TX - middle channel  
Operator Name: WAL  
Comment: AC: 115 V / 60 Hz

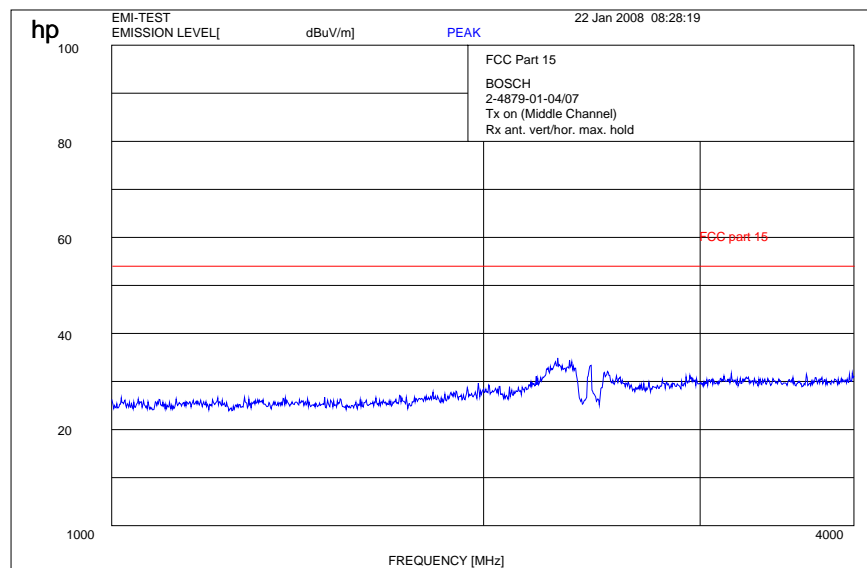
**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: EMI radiated\Electric Field (NOS)  
Level Unit: dB $\mu$ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

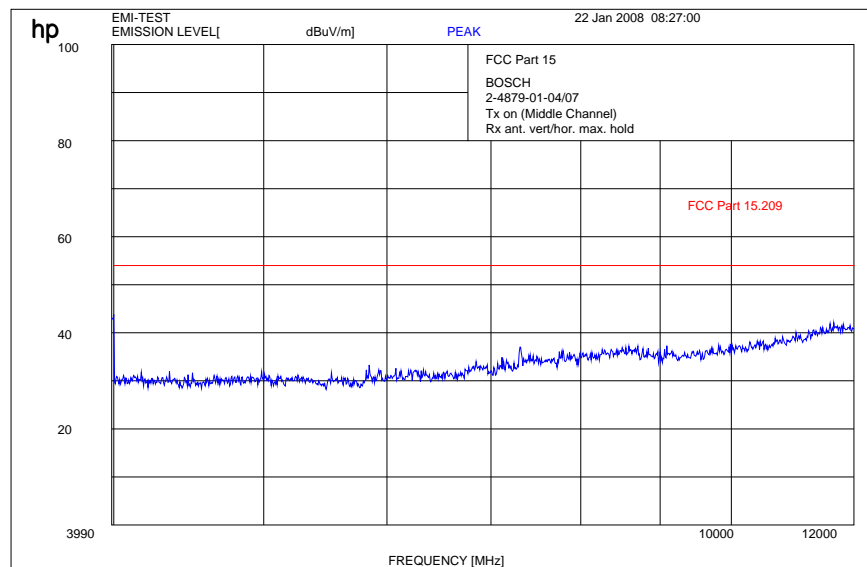
**FCC\_10m\_Fast\_1GHz (B)**

Plot 6: 1 - 4 GHz (middle channel)



Carrier notched with rejection filter.

Plot 7: 4- 12 GHz (middle channel)



Plot 8: 0.03 - 1 GHz (highest channel)

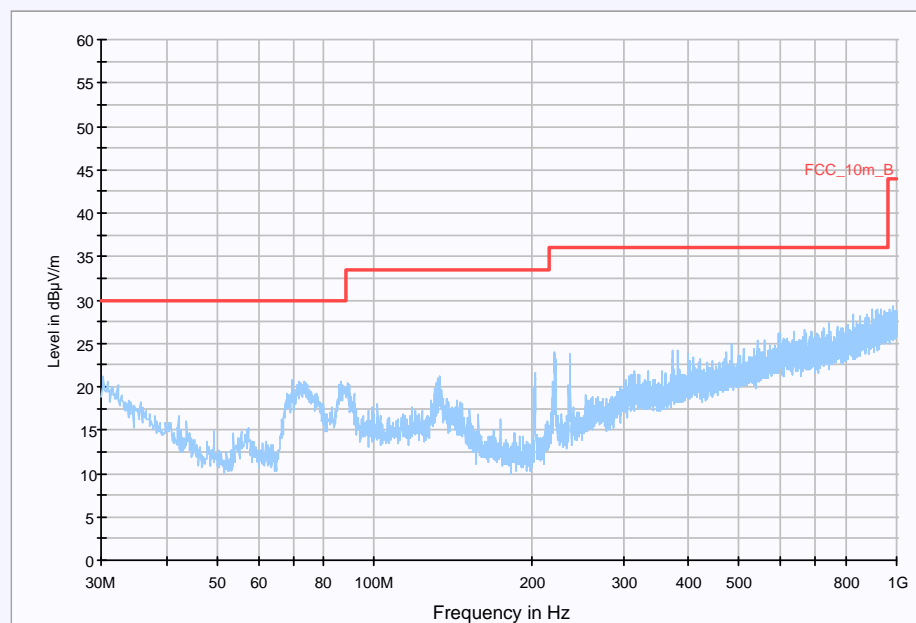
**Information**

EUT: DCN-WDCS + 03/00 647 + FW7650/09  
Serial Number: 0003BE + none + none  
Test Description: FCC class B @ 10m  
Operating Conditions: TX - high channel  
Operator Name: WAL  
Comment: AC: 115 V / 60 Hz

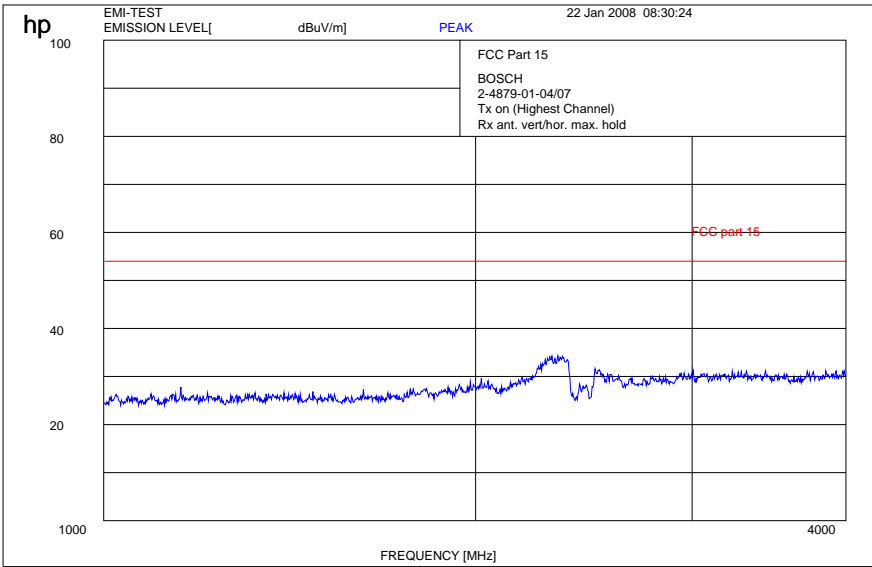
**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: EMI radiated\Electric Field (NOS)  
Level Unit: dB $\mu$ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

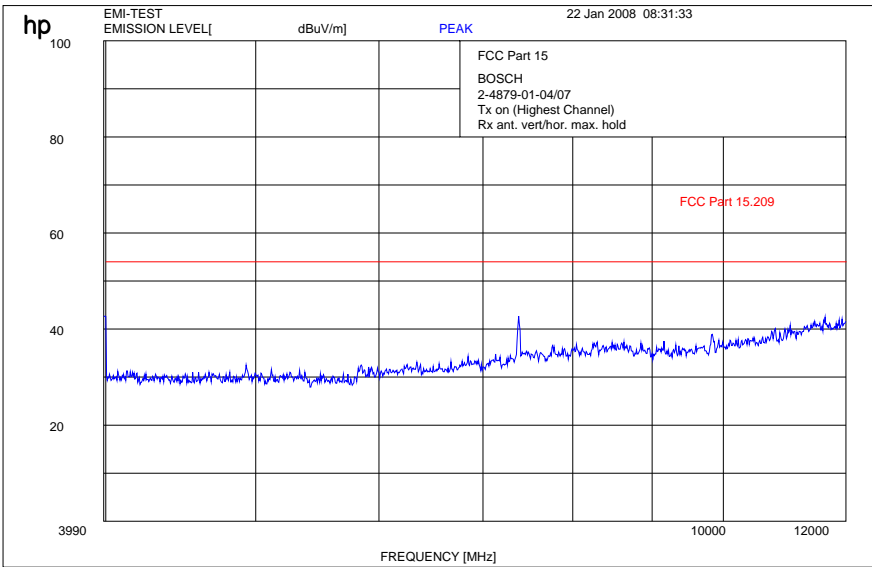
**FCC\_10m\_Fast\_1GHz (B)**

Plot 9: 1 - 4 GHz (highest channel)



Carrier notched with rejection filter.

Plot 10: 4- 12 GHz (highest channel)



Results:

SPURIOUS EMISSIONS LEVEL §15.209								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [dB $\mu$ V/m]
371.47	QP	22.6	No critical peaks found			7416	PK	42.14
954.32	QP	21.4						
Measurement uncertainty			$\pm 3$ dB					

 $f < 1$  GHz : RBW/VBW: 120 kHz $f \geq 1$  GHz : RBW/VBW: 1 MHz

Limits: § 15.247 (c)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Limits: § 15.209

Frequency [MHz]	Field strength [ $\mu$ V/m]	Measurement distance (m)
30 - 88	100	10
88 - 216	150	10
216 - 960	200	10
above 960	500	3



**WDDCS:**

Plot 1: 0.03 - 1 GHz (lowest channel)

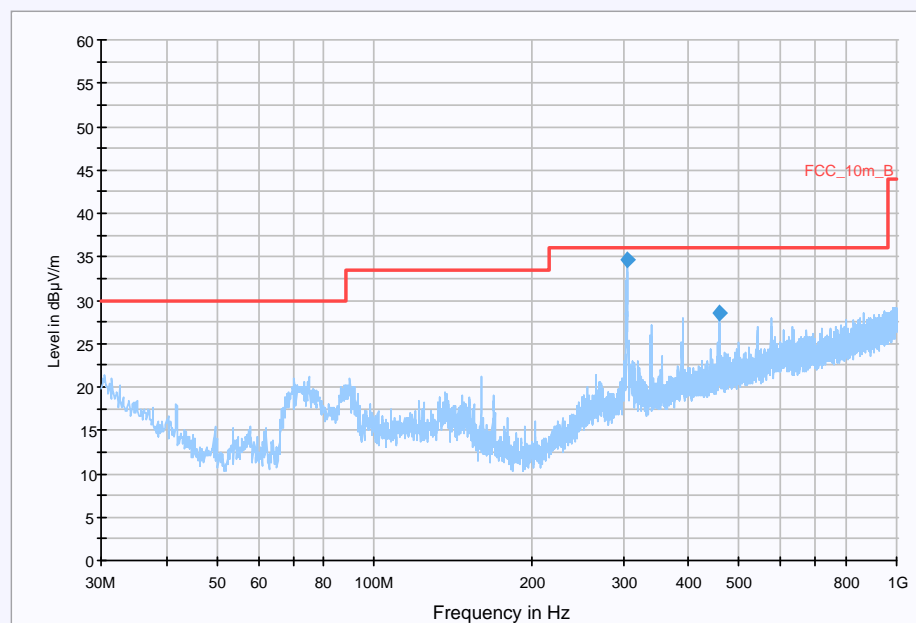
**Information**

EUT: DCN-WDDCS + 03/00 649 + FW7650/09  
Serial Number: 000390 + none + none  
Test Description: FCC class B @ 10m  
Operating Conditions: TX - low channel  
Operator Name: WAL  
Comment: AC: 115 V / 60 Hz

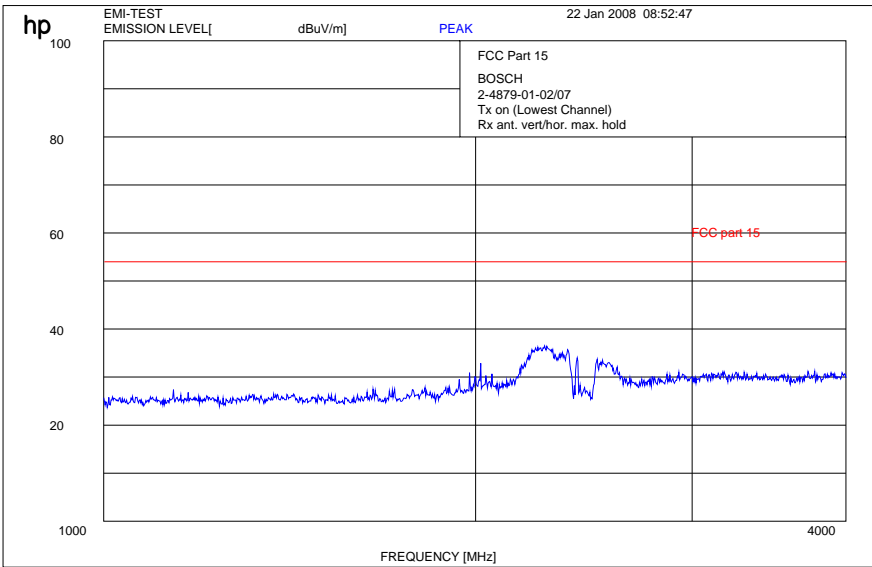
**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: EMI radiated\Electric Field (NOS)  
Level Unit: dB $\mu$ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

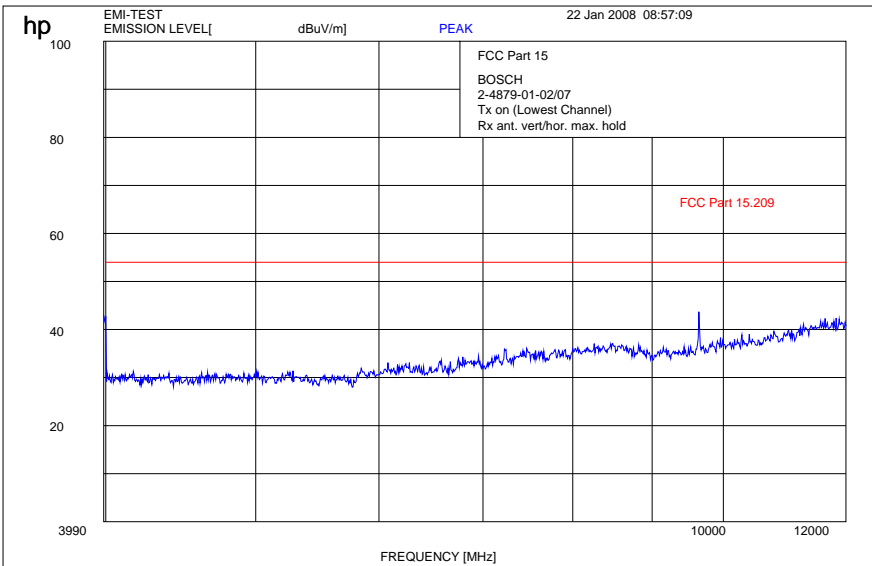
**FCC\_10m\_Fast\_1GHz (B)**

Plot 2: 1 - 4 GHz (lowest channel)

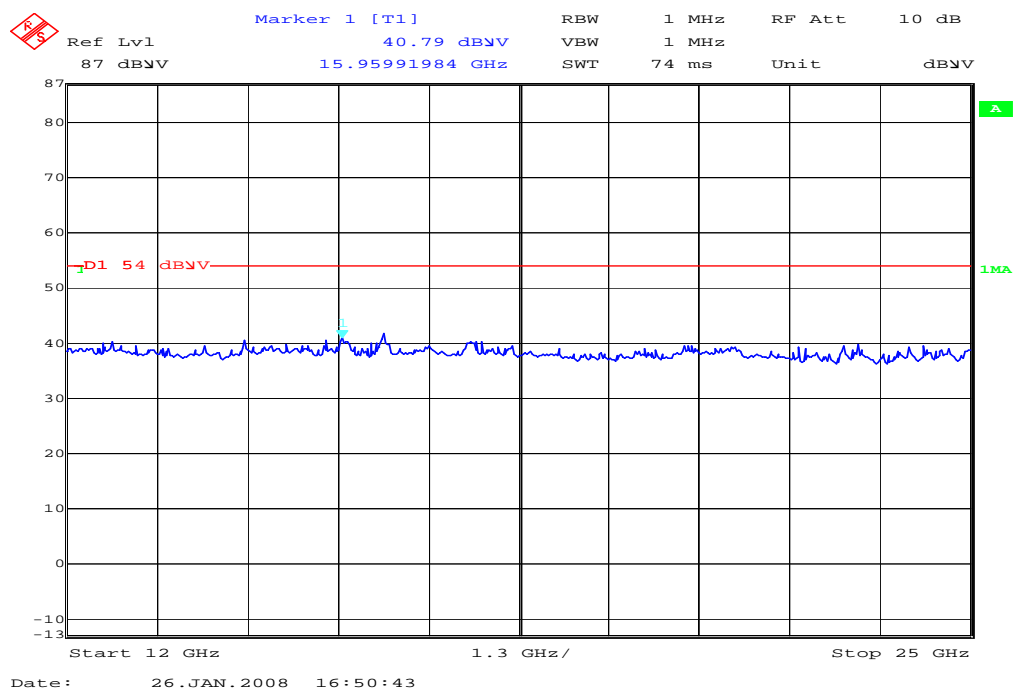


Carrier notched with rejection filter.

Plot 3: 4- 12 GHz (lowest channel)



Plot 4: 12- 25 GHz (valid for all channels)



Plot 5: 0.03 - 1 GHz (middle channel)

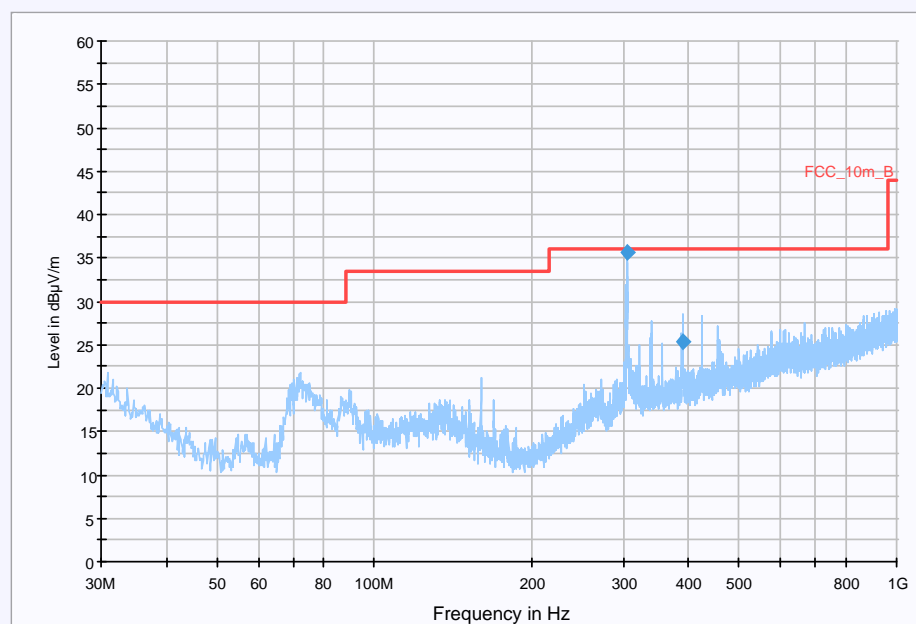
**Information**

EUT: DCN-WDDCS + 03/00 649 + FW7650/09  
Serial Number: 000390 + none + none  
Test Description: FCC class B @ 10m  
Operating Conditions: TX - middle channel  
Operator Name: WAL  
Comment: AC: 115 V / 60 Hz

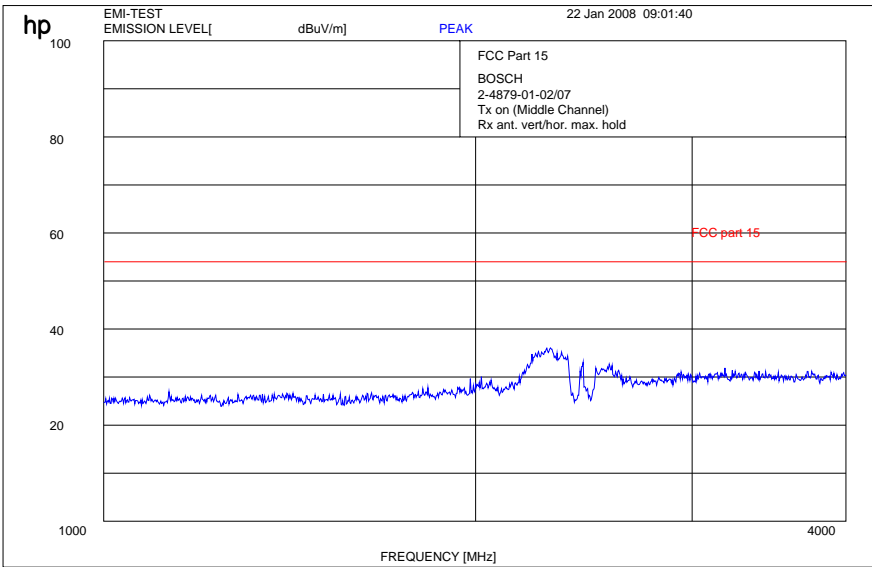
**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: EMI radiated\Electric Field (NOS)  
Level Unit: dB $\mu$ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

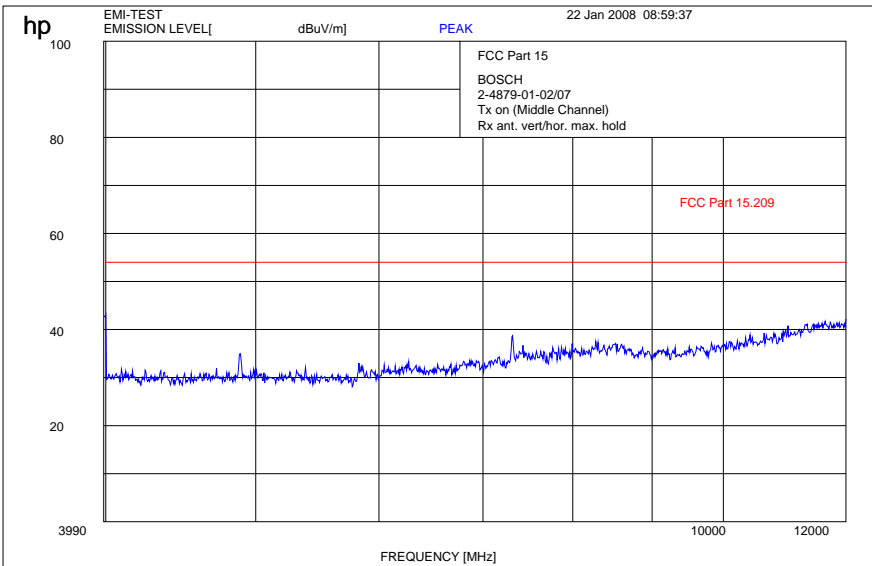
**FCC\_10m\_Fast\_1GHz (B)**

Plot 6: 1 - 4 GHz (middle channel)



Carrier notched with rejection filter

Plot 7: 4 - 12 GHz (middle channel)



Plot 8: 0.03 - 1 GHz (highest channel)

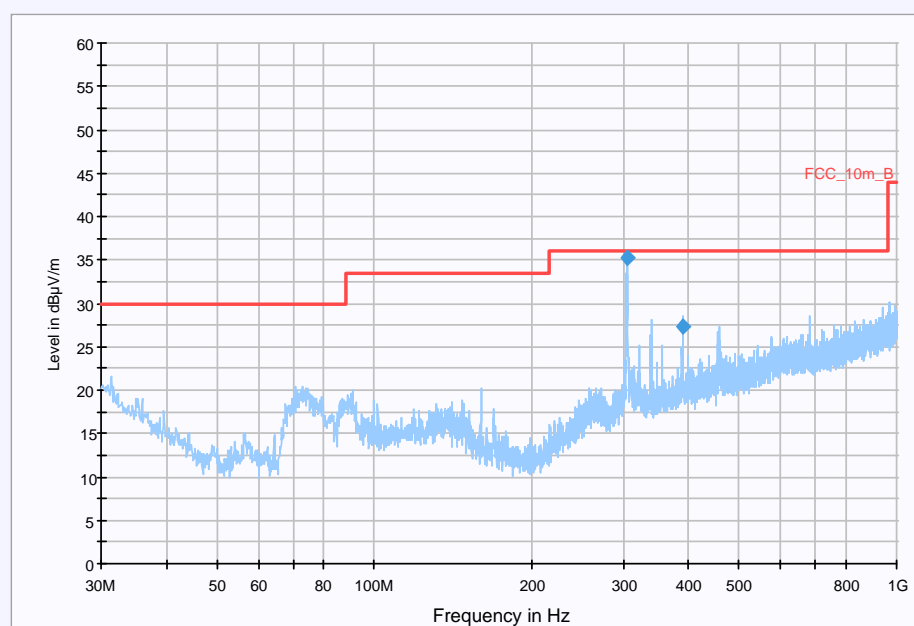
**Information**

EUT: DCN-WDDCS + 03/00 649 + FW7650/09  
Serial Number: 000390 + none + none  
Test Description: FCC class B @ 10m  
Operating Conditions: TX - high channel  
Operator Name: WAL  
Comment: AC: 115 V / 60 Hz

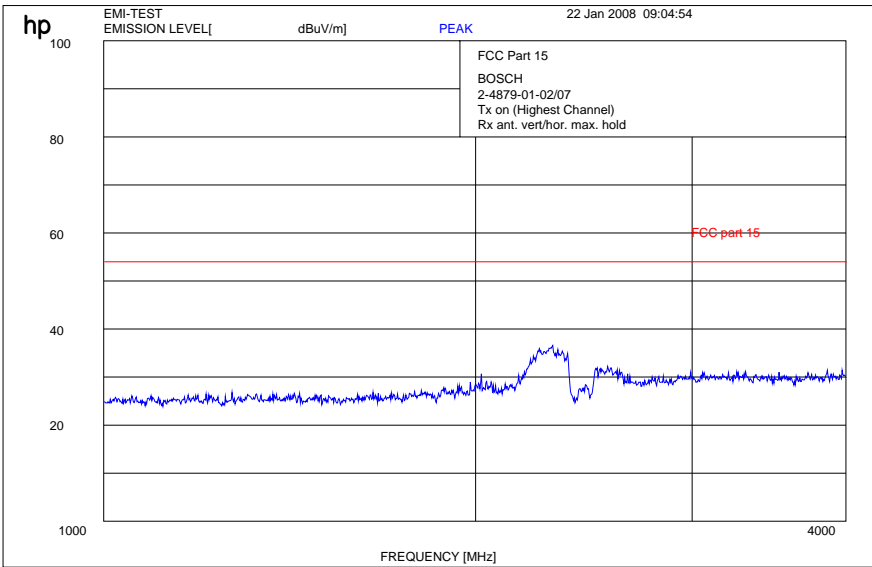
**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: EMI radiated\Electric Field (NOS)  
Level Unit: dB $\mu$ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

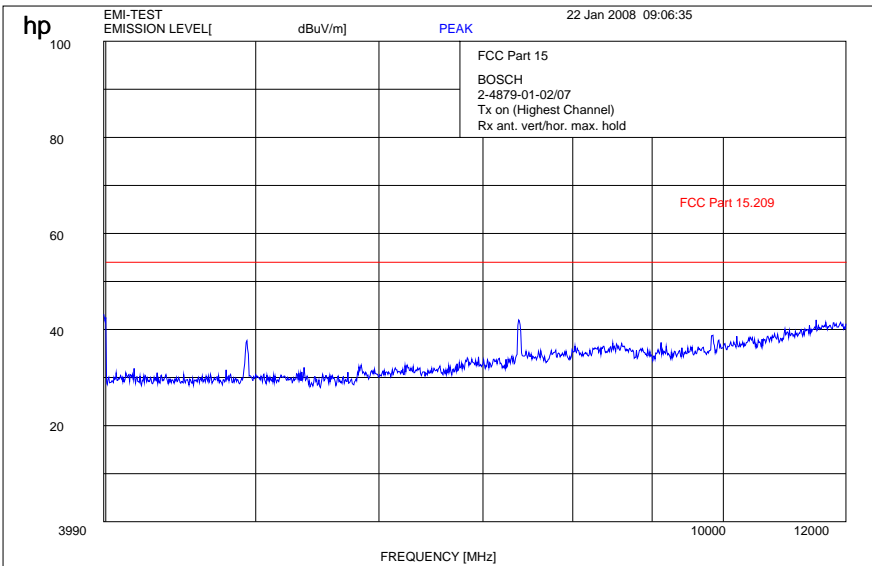
**FCC\_10m\_Fast\_1GHz (B)**

Plot 9: 1 - 4 GHz (highest channel)



Carrier notched with rejection filter

Plot 10: 4- 12 GHz (highest channel)



Results:

SPURIOUS EMISSIONS LEVEL §15.209								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]
305.08	QP	34.7	305.10	QP	35.7	305.06	QP	35.3
457.65	QP	28.5	389.15	QP	25.3	389.86	QP	27.4
Measurement uncertainty			±3 dB					

f &lt; 1 GHz : RBW/VBW: 120 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

Limits: § 15.247 (c)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Limits: § 15.209

Frequency [MHz]	Field strength [ $\mu\text{V/m}$ ]	Measurement distance (m)
30 - 88	100	10
88 - 216	150	10
216 - 960	200	10
above 960	500	3



**WDVCS:**

Plot 1: 0.03 - 1 GHz (lowest channel)

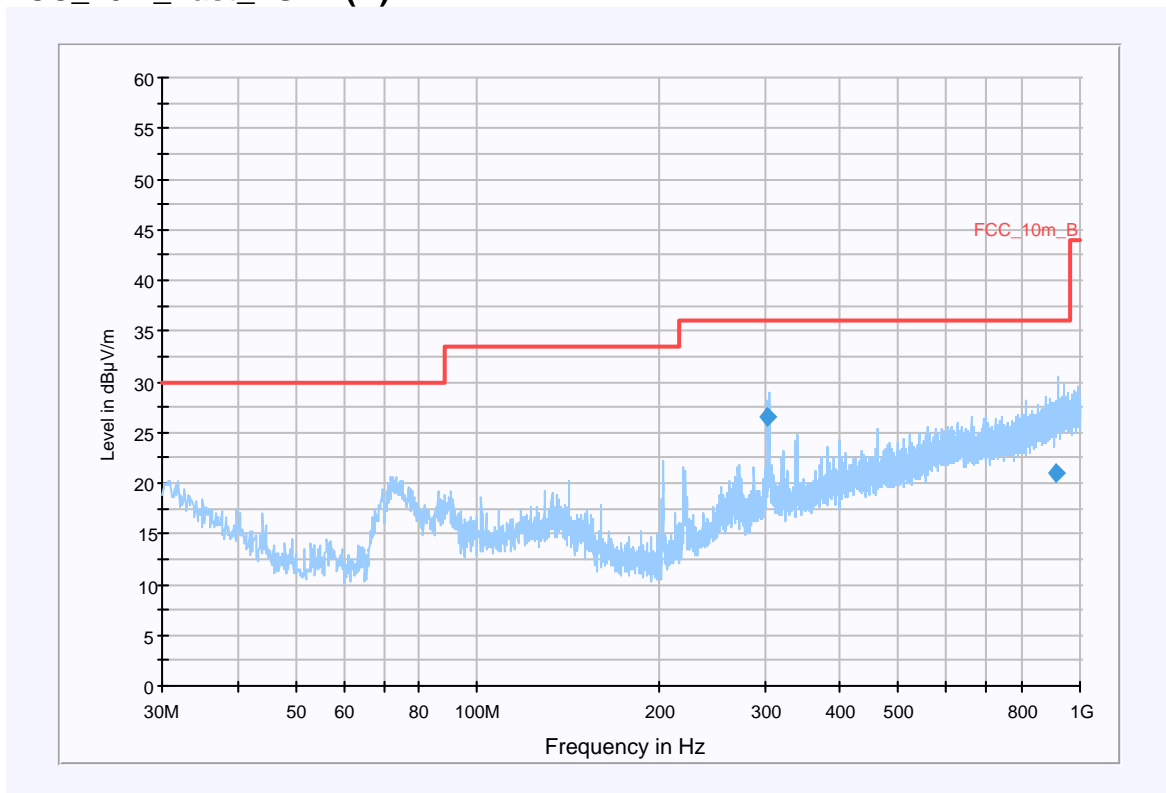
**Information**

EUT: DCN-WDVCS + 03/00 647 + FW7650/09  
Serial Number: 0003B9 + none + none  
Test Description: FCC class B @ 10m  
Operating Conditions: TX - low channel  
Operator Name: WAL  
Comment: AC: 115 V / 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

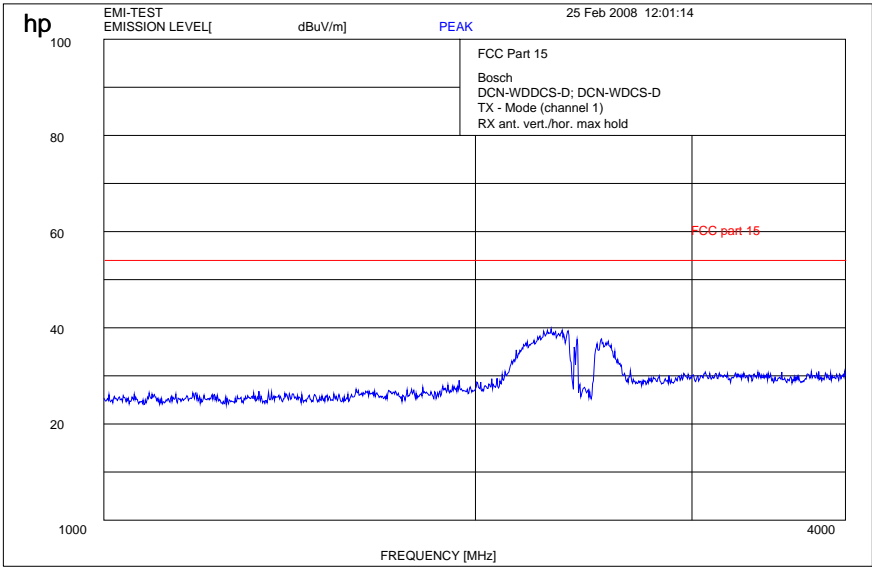
Hardware Setup: EMI radiated\Electric Field (NOS)  
Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

**FCC\_10m\_Fast\_1GHz (B)****Final Measurement Detector 1**

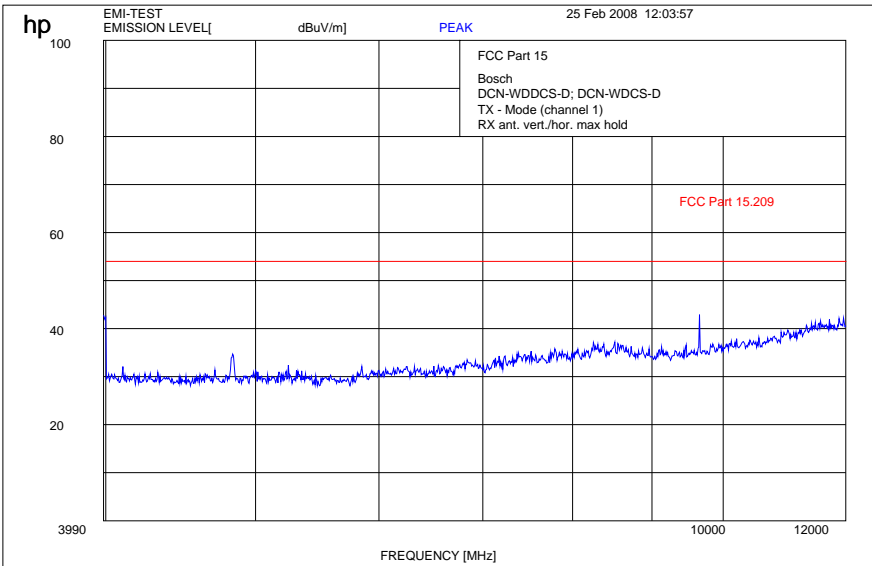
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
303.930600	26.6	15000.000	120.000	400.0	H	91.0	16.1	9.4	36.0	
915.494150	21.0	15000.000	120.000	250.0	V	85.0	24.2	15.0	36.0	

Plot 2: 1 - 4 GHz (lowest channel)

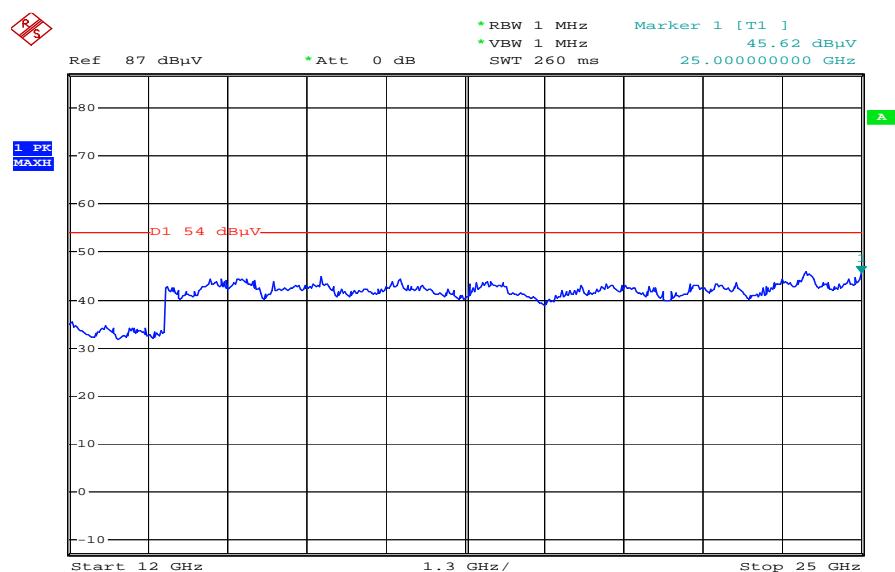


The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 3: 4 - 12 GHz (lowest channel)



Plot 4: 12 - 25 GHz (valid for all channels)



Date: 25.FEB.2008 15:45:34

Plot 5: 0.03 - 1 GHz (middle channel)

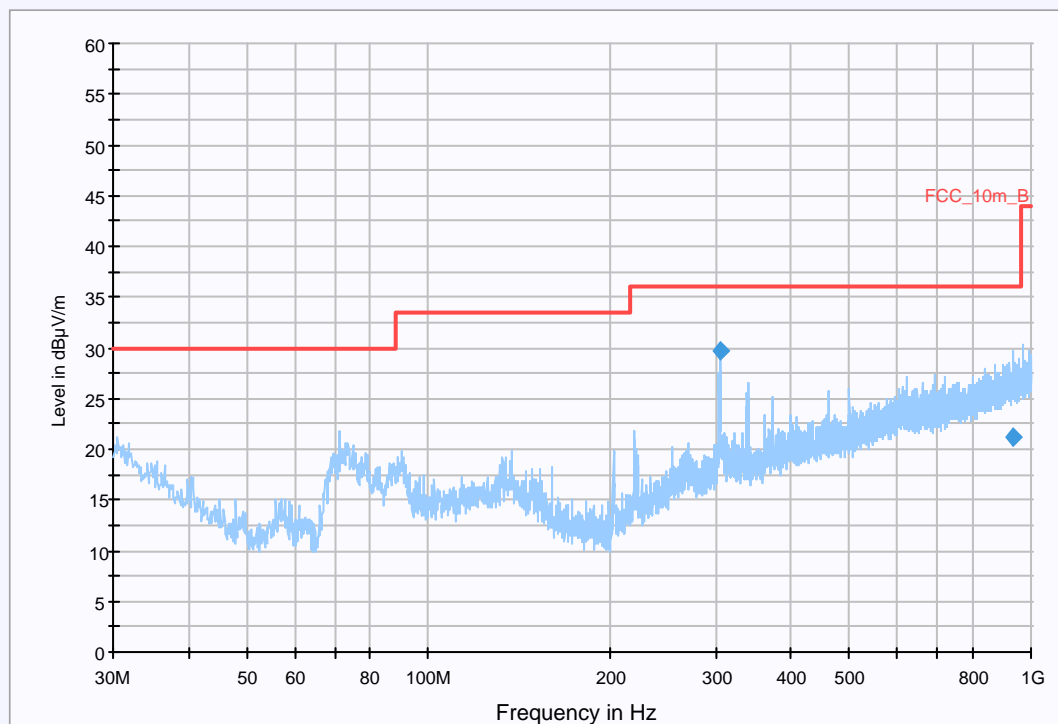
**Information**

EUT: DCN-WDVCS + 03/00 647 + FW7650/09  
 Serial Number: 0003B9 + none + none  
 Test Description: FCC class B @ 10m  
 Operating Conditions: TX - middle channel  
 Operator Name: WAL  
 Comment: AC: 115 V / 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

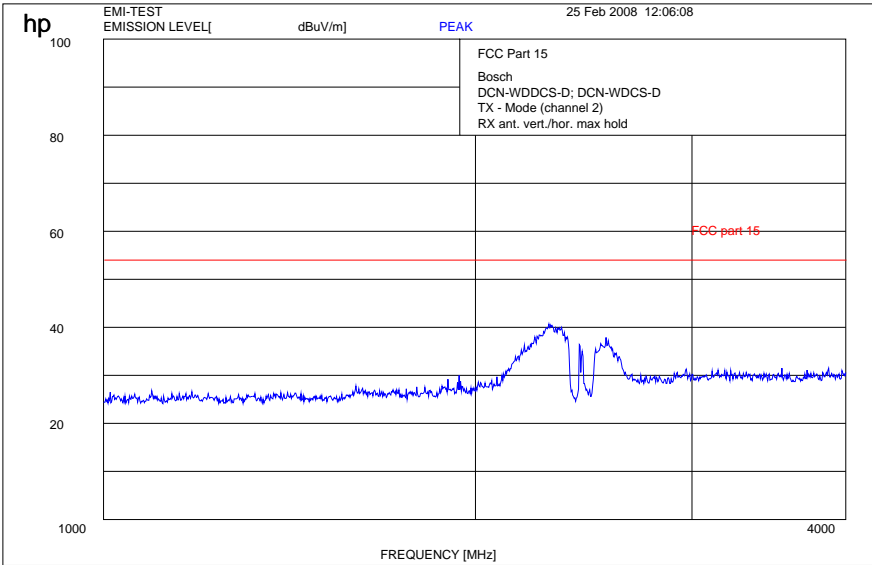
Hardware Setup: EMI radiated\Electric Field (NOS)  
 Level Unit: dB $\mu$ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

**FCC\_10m\_Fast\_1GHz (B)****Final Measurement Detector 1**

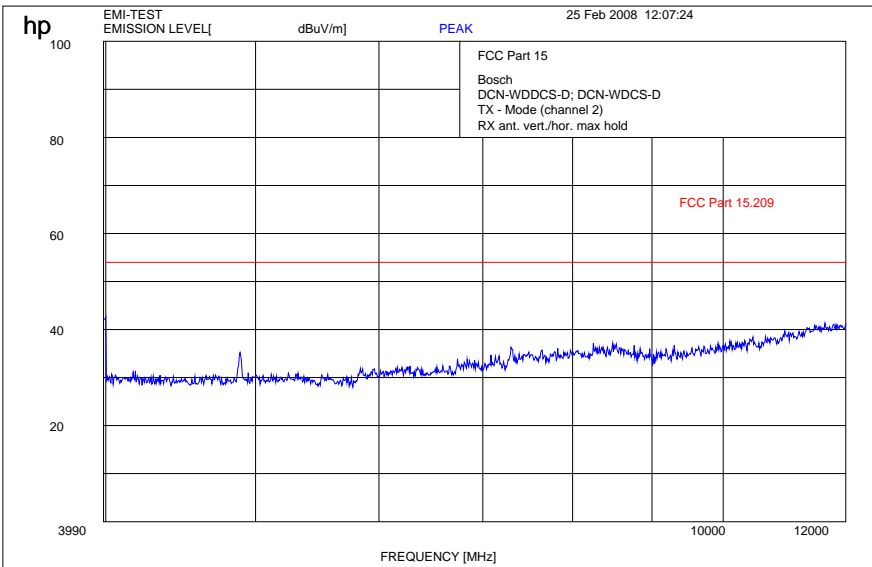
Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)	Comment
305.094800	29.7	15000.000	120.000	340.0	H	271.0	16.1	6.3	36.0	
935.206700	21.2	15000.000	120.000	169.0	H	292.0	24.4	14.8	36.0	

Plot 6: 1 - 4 GHz (middle channel)



The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 7: 4 - 12 GHz (middle channel)



Plot 8: 0.03 - 1 GHz (highest channel)

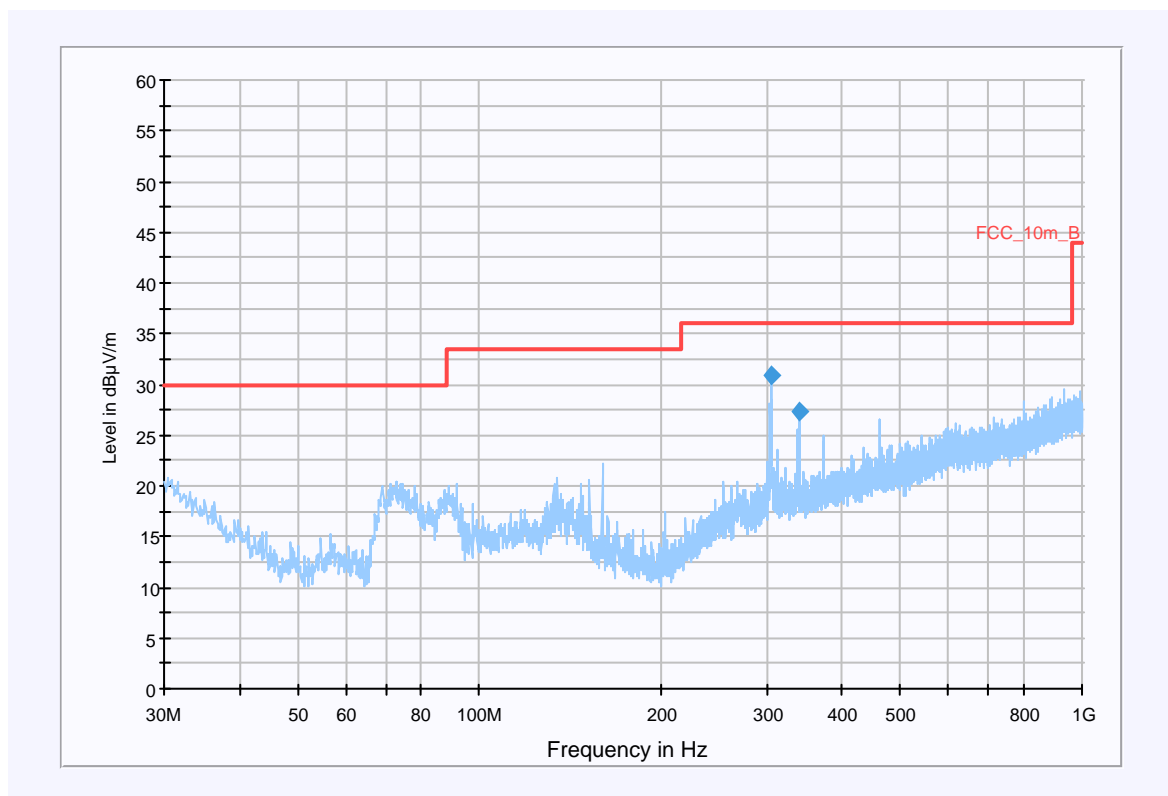
**Information**

EUT: DCN-WDVCS + 03/00 649 + FW7650/09  
 Serial Number: 0003B9 + none + none  
 Test Description: FCC class B @ 10m  
 Operating Conditions: TX - high channel  
 Operator Name: WAL  
 Comment: AC: 115 V / 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

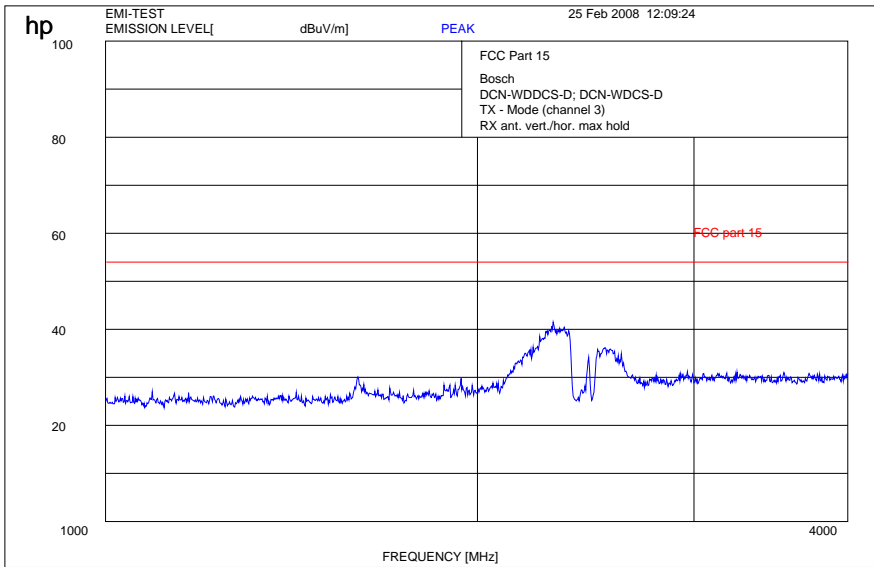
Hardware Setup: EMI radiated\Electric Field (NOS)  
 Level Unit: dB $\mu$ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

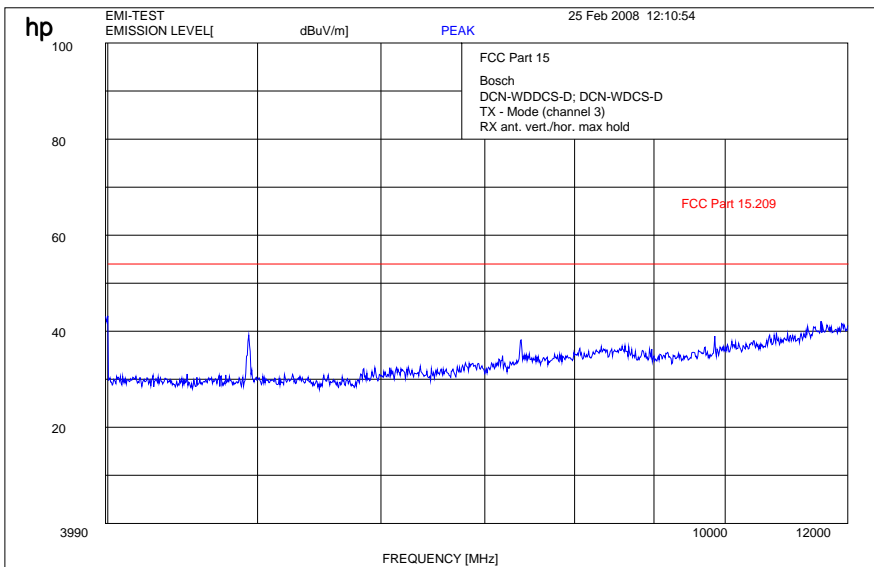
**FCC\_10m\_Fast\_1GHz (B)****Final Measurement Detector 1**

Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)	Comment
305.099900	30.9	15000.000	120.000	325.0	H	272.0	16.1	5.1	36.0	
339.031150	27.3	15000.000	120.000	205.0	H	111.0	16.9	8.7	36.0	

Plot 9: 1 – 4 GHz (highest channel)



Plot 10: 4 – 12 GHz (highest channel)



Results:

SPURIOUS EMISSIONS LEVEL §15.209								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]
No critical peaks detected.			No critical peaks detected.			No critical peaks detected.		
Measurement uncertainty			±3 dB					

f &lt; 1 GHz : RBW/VBW: 120 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

Limits: § 15.247 (c)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Limits: § 15.209

Frequency [MHz]	Field strength [μV/m]	Measurement distance (m)
30 - 88	100	10
88 - 216	150	10
216 - 960	200	10
above 960	500	3



**5.13 Spurious Emissions - radiated (Receiver) §15.109 / 209****WDCS:**

Plot 1: 0.03 - 1 GHz (receiver)

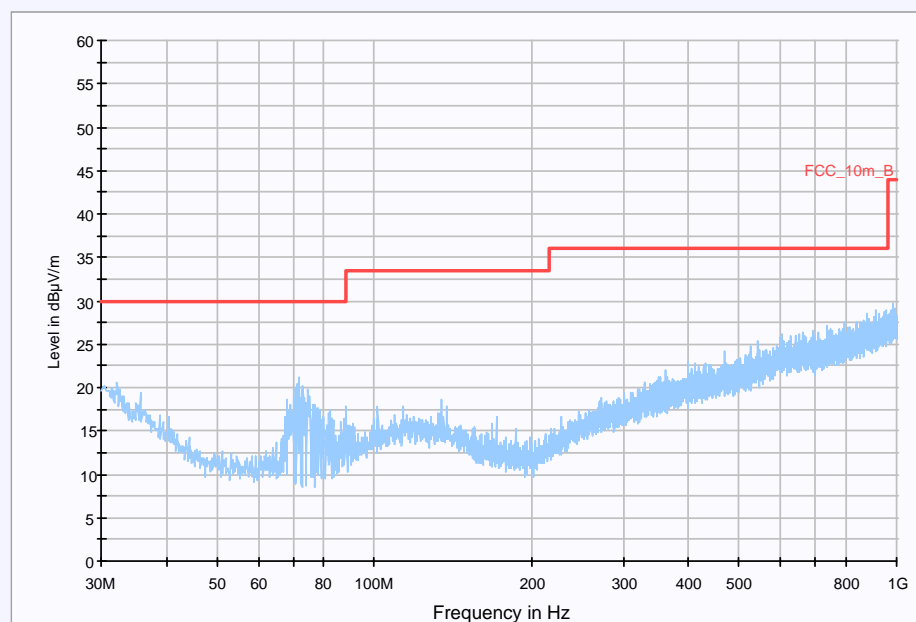
**Information**

EUT:	DCN-WDCS + 03/00 647 + FW7650/09
Serial Number:	0003BE + none + none
Test Description:	FCC class B @ 10m
Operating Conditions:	RX
Operator Name:	WAL
Comment:	AC: 115 V / 60 Hz

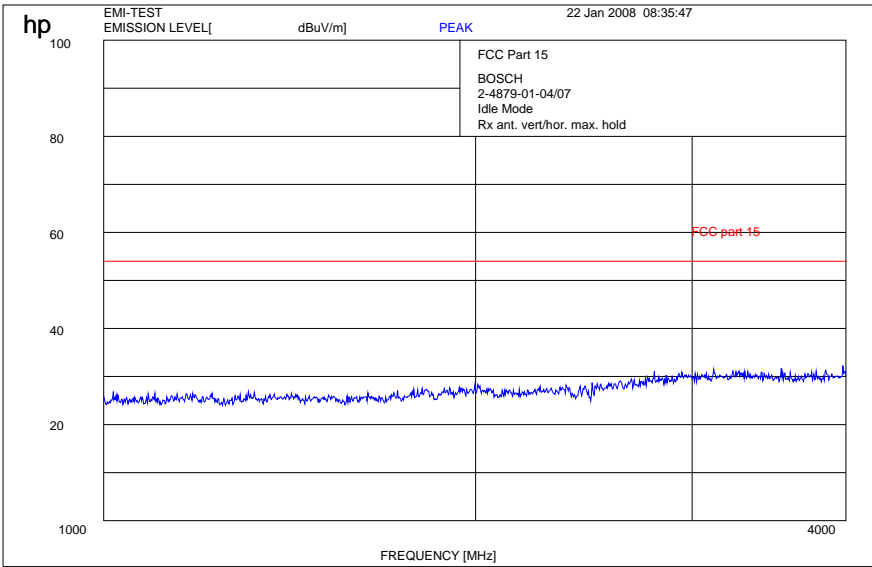
**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup:	EMI radiated\Electric Field (NOS)
Level Unit:	dB $\mu$ V/m

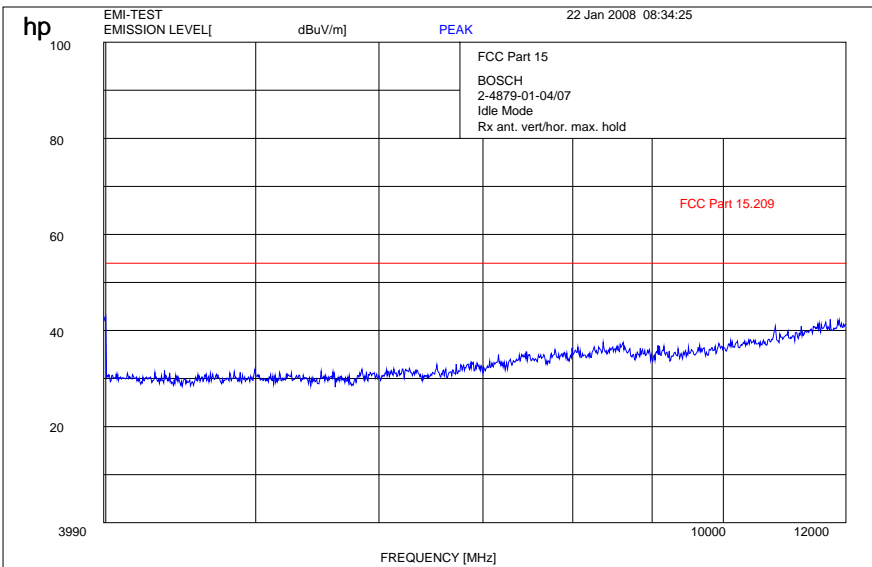
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

**FCC\_10m\_Fast\_1GHz (B)**

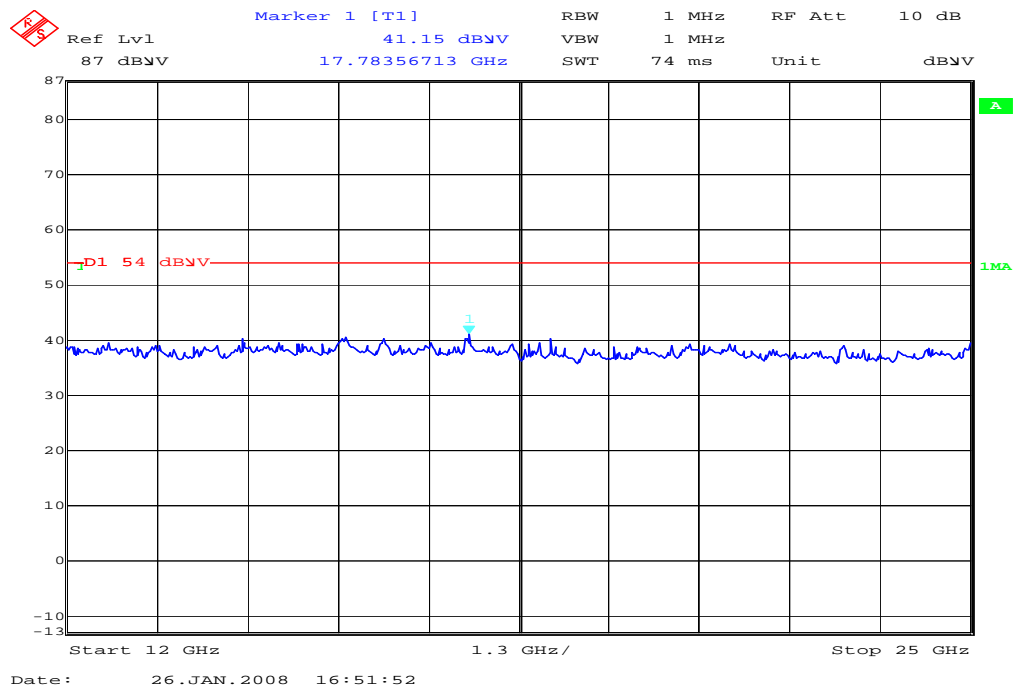
Plot 2: 1 - 4 GHz (receiver)



Plot 3: 4 - 12 GHz (receiver)



Plot 4: 12 - 25 GHz (receiver)



## Results:

Spurious Emissions level [dBμV/m]		
f[MHz]	Detector	Level [dBμV/m]
No critical peaks found		
Measurement uncertainty		±3 dB

f &lt; 1 GHz : RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

See above plots

Measurement distance see table

Limits: § 15.109 / 209

Frequency (MHz)	Field strength (μV/m)	Measurement distance (m)
30 - 88	100 (40 dBμV/m)	3
88 - 216	150 (43.5 dBμV/m)	3
216 - 960	200 (46 dBμV/m)	3
above 960	500 (54 dBμV/m)	3

**WDDCS:**

Plot 1: 0.03 - 1 GHz (receiver)

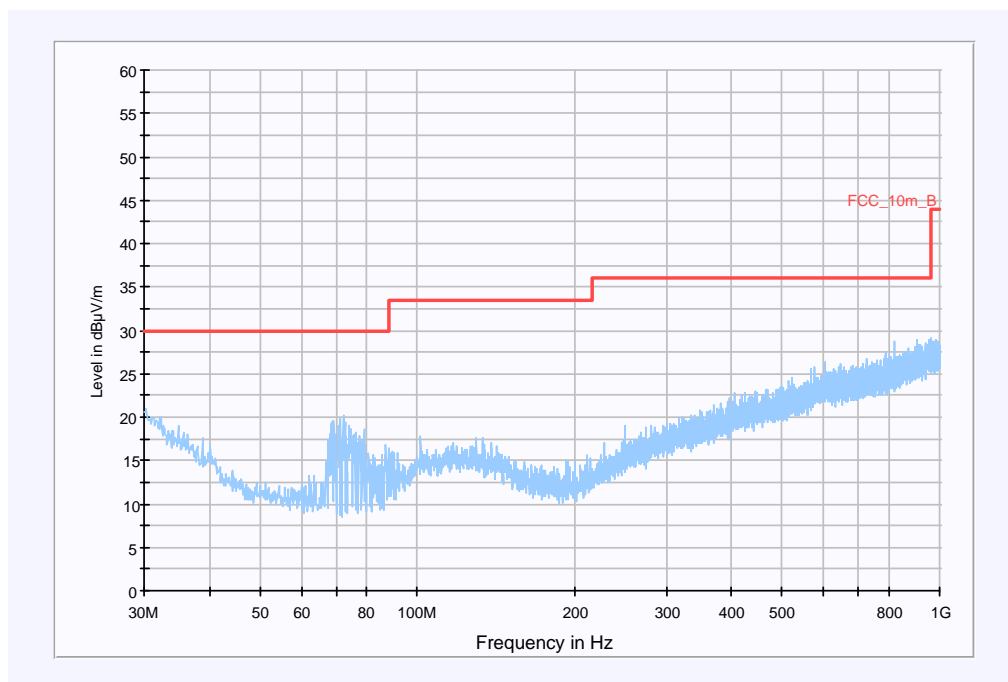
**Information**

EUT: DCN-WDDCS + 03/00 647 + FW7650/09  
Serial Number: 00039D + none + none  
Test Description: FCC class B @ 10m  
Operating Conditions: RX  
Operator Name: WAL  
Comment: AC: 115 V / 60 Hz

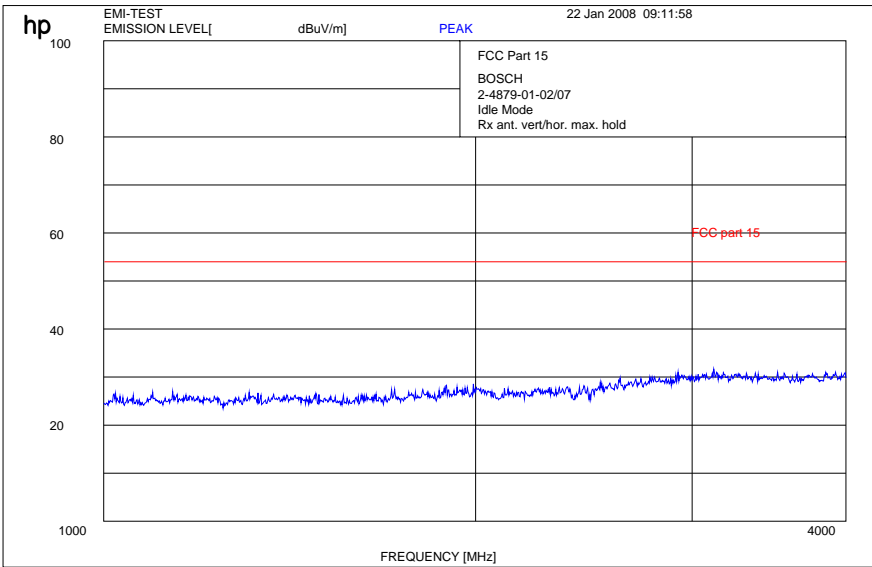
**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: EMI radiated\Electric Field (NOS)  
Level Unit: dB $\mu$ V/m

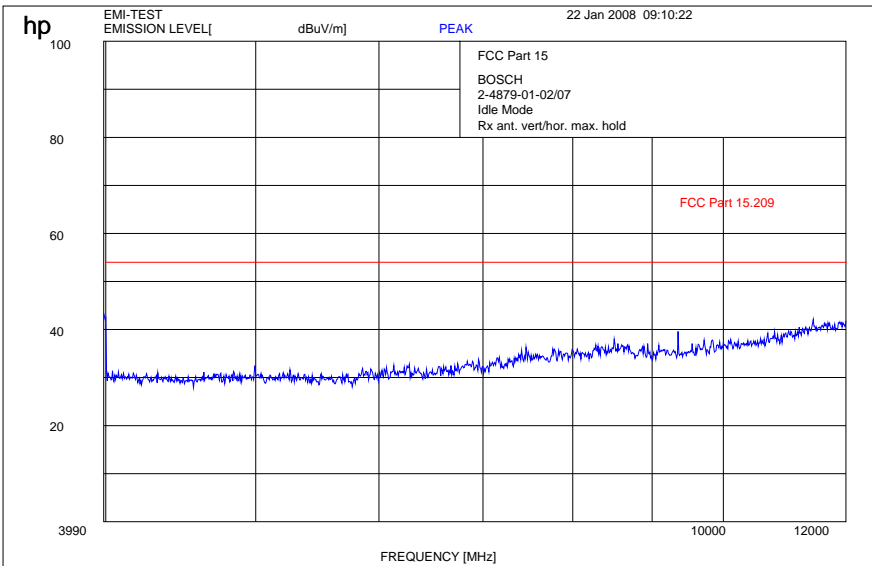
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

**FCC\_10m\_Fast\_1GHz (B)**

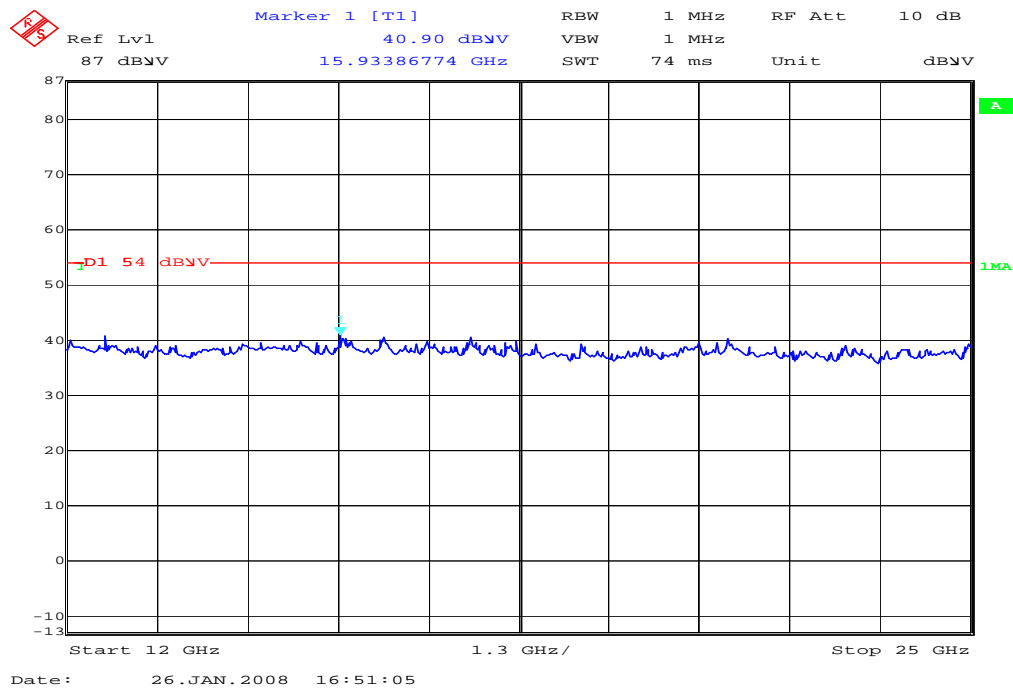
Plot 2: 1 - 4 GHz (receiver)



Plot 3: 4 - 12 GHz (receiver)



Plot 4: 12- 25 GHz (receiver)



## Results:

Spurious Emissions level [dBμV/m]		
f[MHz]	Detector	Level [dBμV/m]
No critical peaks found		
Measurement uncertainty		±3 dB

f &lt; 1 GHz : RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

See above plots

Measurement distance see table

Limits: § 15.109 / 209

Frequency (MHz)	Field strength (μV/m)	Measurement distance (m)
30 - 88	100 (40 dBμV/m)	3
88 - 216	150 (43.5 dBμV/m)	3
216 - 960	200 (46 dBμV/m)	3
above 960	500 (54 dBμV/m)	3

**WDVCS:**

Plot 1: 0.03 - 1 GHz (receiver)

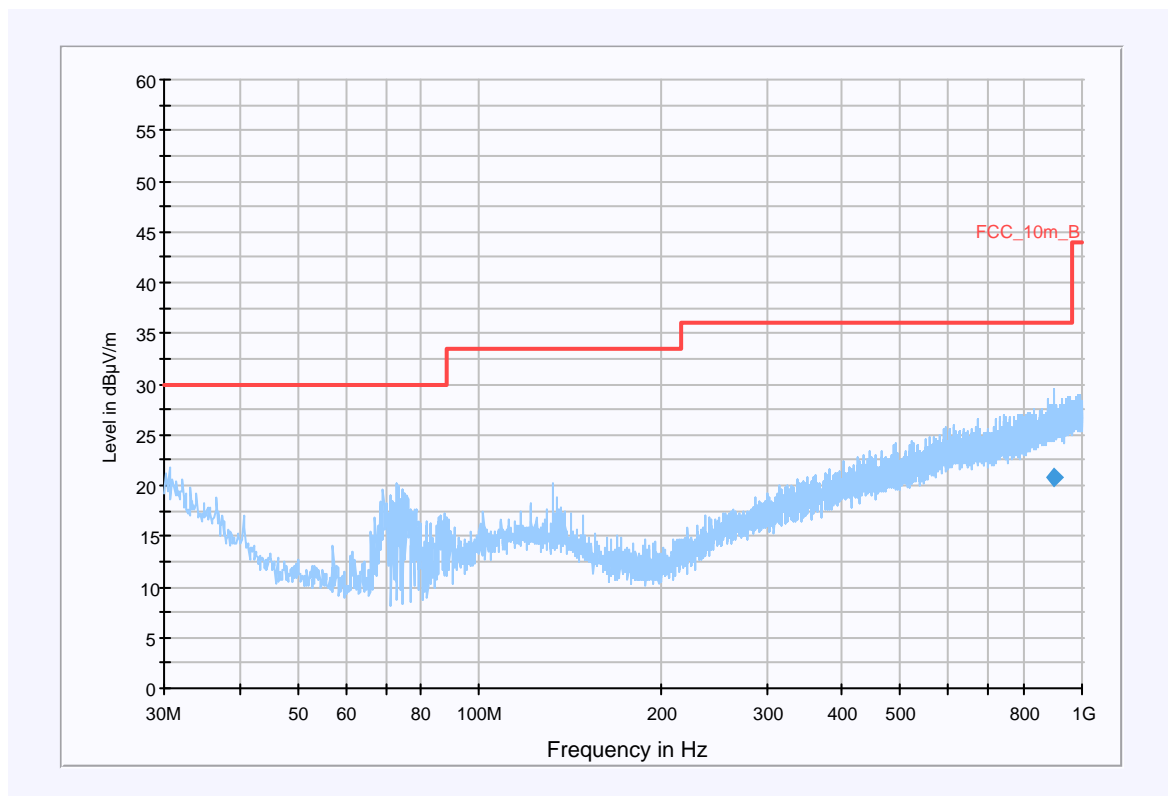
**Information**

EUT: DCN-WDVCS + 03/00 649 + FW7650/09  
Serial Number: 0003B9 + none + none  
Test Description: FCC class B @ 10m  
Operating Conditions: RX  
Operator Name: WAL  
Comment: AC: 115 V / 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

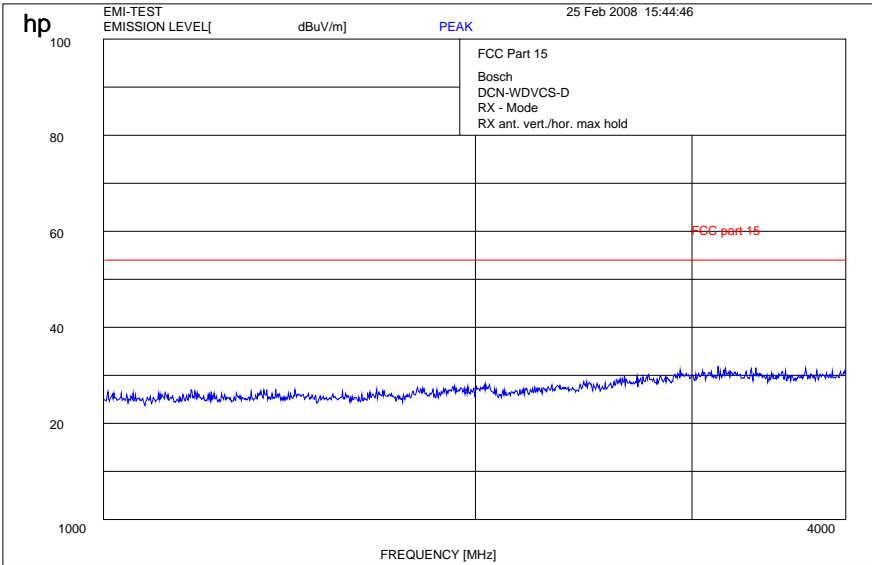
Hardware Setup: EMI radiated\Electric Field (NOS)  
Level Unit: dB $\mu$ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

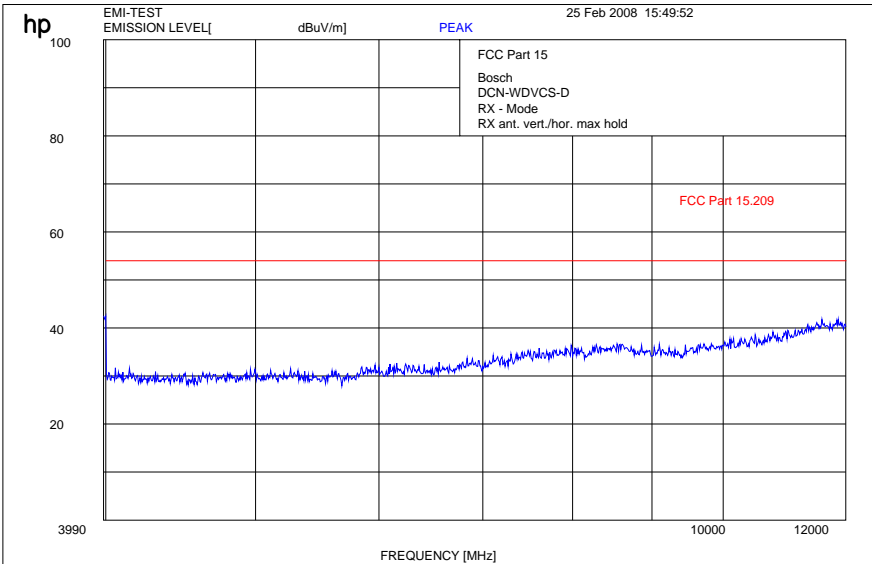
**FCC\_10m\_Fast\_1GHz (B)****Final Measurement Detector 1**

Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)	Comment
898.165800	20.8	15000.000	120.000	250.0	H	-1.0	24.0	15.2	36.0	

Plot 2: 1 - 4 GHz (receiver)

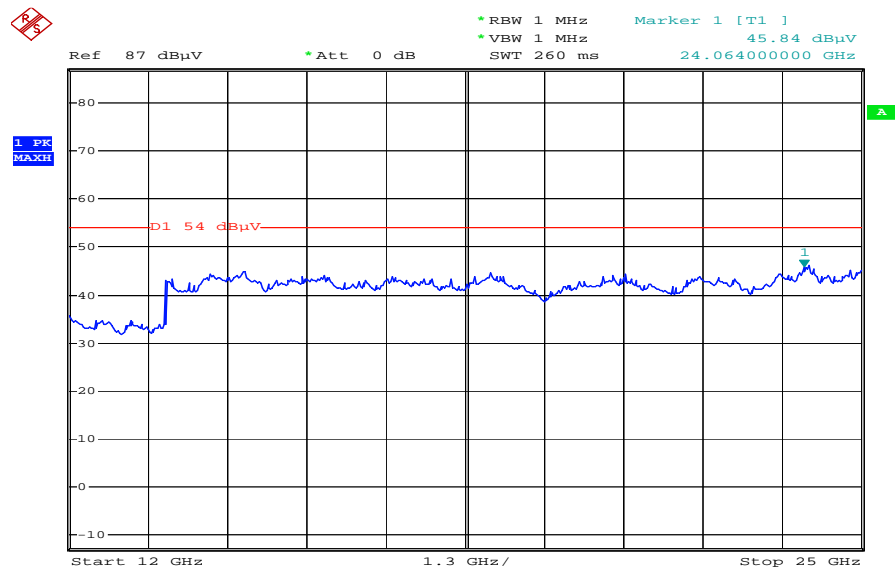


Plot 3: 4 - 12 GHz (receiver)





Plot 4: 12 - 25 GHz (receiver)



Date: 25.FEB.2008 15:45:00

## Results:

Spurious Emissions level [dBμV/m]		
f[MHz]	Detector	Level [dBμV/m]
No critical peaks detected		
Measurement uncertainty		±3 dB

 $f < 1 \text{ GHz}$  : RBW/VBW: 100 kHz $f \geq 1 \text{ GHz}$  : RBW/VBW: 1 MHz

See above plots

Measurement distance see table

Limits: § 15.109 / 209

Frequency (MHz)	Field strength (μV/m)	Measurement distance (m)
30 - 88	100 (40 dBμV/m)	3
88 - 216	150 (43.5 dBμV/m)	3
216 - 960	200 (46 dBμV/m)	3
above 960	500 (54 dBμV/m)	3

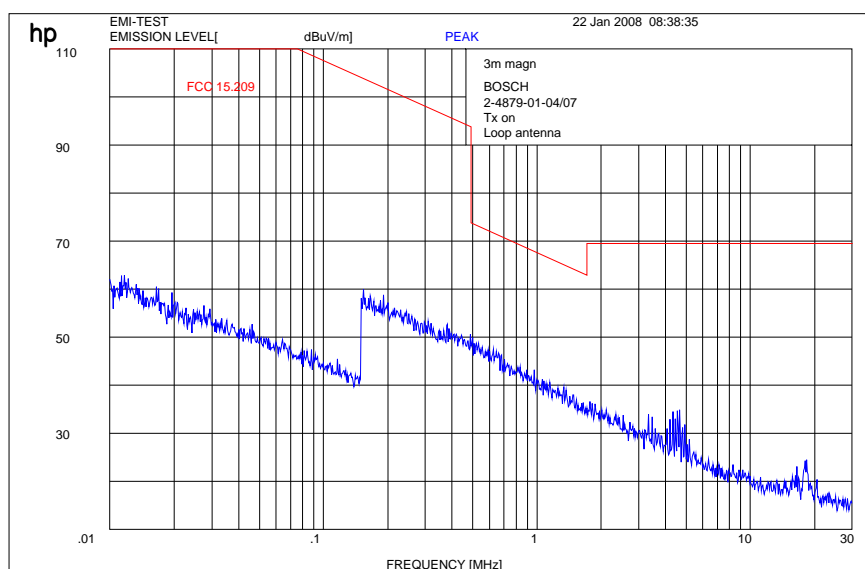
## 5.14 Spurious Emissions - radiated <30 MHz §15.209

Measured at 10 m distance.

Values recalculated with 40 dB/decade according to FCC rules.

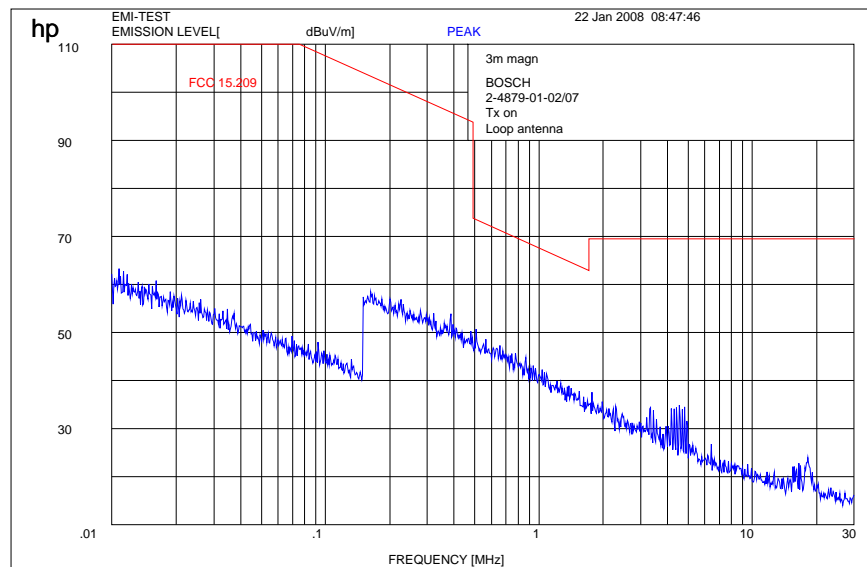
WDCS:

Plot 1:



**WDDCS:**

Plot 1:

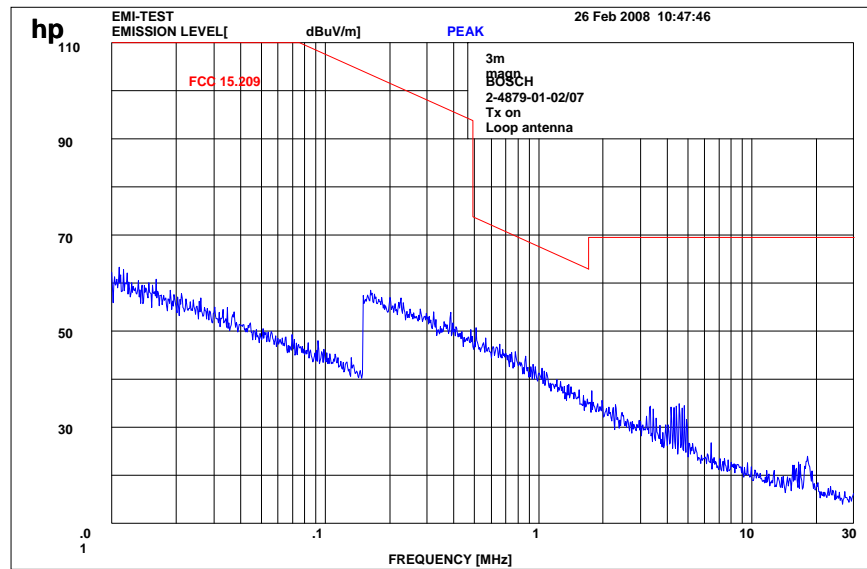


Limits:

Frequency (MHz)	Field strength ( $\mu\text{V/m}$ )	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dB $\mu\text{V/m}$	30
30 - 88	100 / 40 dB $\mu\text{V/m}$	3
88 - 216	150 / 43.5 dB $\mu\text{V/m}$	3
216 - 960	200 / 46 dB $\mu\text{V/m}$	3
above 960	54 dB $\mu\text{V/m}$	3

**WDVCS:**

Plot 1:



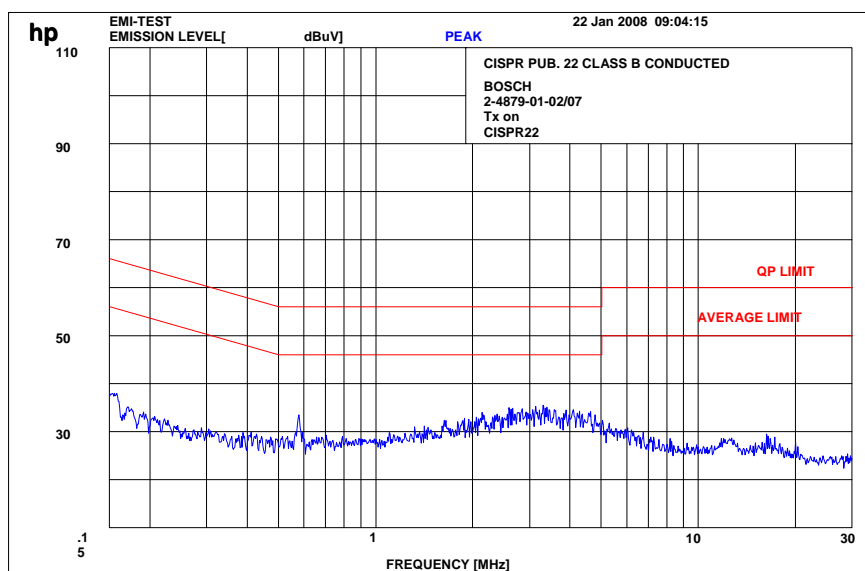
Limits:

Frequency (MHz)	Field strength ( $\mu\text{V/m}$ )	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dB $\mu\text{V/m}$	30
30 - 88	100 / 40 dB $\mu\text{V/m}$	3
88 - 216	150 / 43.5 dB $\mu\text{V/m}$	3
216 - 960	200 / 46 dB $\mu\text{V/m}$	3
above 960	54 dB $\mu\text{V/m}$	3

## 5.15 Conducted Emissions <30 MHz §15.107/207

WDCS:

Plot 1: CISPR 22



## 6 Test equipment and ancillaries used for tests

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

### *Anechoic chamber C:*

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Anechoic chamber	MWB	87400/02	300000996	Monthly verification		
2	System-Rack 85900	HP I.V.	*	300000222	n.a.		
3	Measurement System 1						
4	Spektrum Analyzer 8566B	HP	2747A05306	300001000	05.10.2006	24	05.10.2008
5	Spektrum Analyzer Display 85662A	HP	2816A16541	300002297	05.10.2006	24	05.10.2008
6	Quasi-Peak-Adapter 85650A	HP	2811A01131	300000999	05.10.2006	24	05.10.2008
7	RF-Preselector 85685A	HP	2837A00779	300000218	08.11.2006	24	08.11.2008
8	PC Vectra VL	HP		300001688	n.a.		
9	Software EMI	HP		300000983	n.a.		
10	Measurement System 2						
11	FSP 30	R&S	100623	ICT 300003464	05.10.2007	24	15.10.2009
12	PC	F+W			n.a.		
13	TILE	TILE			n.a.		
14	Biconical antenna	EMCO	S/N: 860 942/003		Monthly verification (System cal.)		
15	Log. Period. Antenna 3146	EMCO	2130	300001603	Monthly verification (System cal.)		
16	Double Ridged Antenna HP 3115P	EMCO	3088	300001032	Monthly verification (System cal.)		
17	Active Loop Antenna 6502	EMCO	2210	300001015	Monthly verification (System cal.)		
18	Power Supply 6032A	HP	2818A03450	300001040	12.05.2007	36	12.05.2010
19	Busisolator	Kontron		300001056	n.a.		
20	Leitungsteiler 11850C	HP		300000997	Monthly verification (System cal.)		
21	Power attenuator 8325	Byrd	1530	300001595	Monthly verification (System cal.)		
22	Band reject filter WRCG1855/1910	Wainwright	7	300003350	Monthly verification (System cal.)		
23	Band reject filter WRCG2400/2483	Wainwright	11	300003351	Monthly verification (System cal.)		

### *Sytem Rack Room 005 :*

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	FSP 30	R&S		300003575	02.04.2007	24	02.04.2009
2	CBT	R&S	100313	300003516	24.10.2006	24	24.10.2008
3	Switch Matrix	HP		300000929	n.a.		
4	Power Supply	HP	3041A00544	300002270	13.05.2007	36	13.05.2010
5	Signal Generator	R&S	836206/0092	300002680	30.05.2007	36	30.05.2010

*Anechoic chamber F:*

No.	Instrument/Ancillary	Manufacturer	Type	Serial-No.	Internal identification
<b>Radiated emission in chamber F</b>					
F-1	Control Computer	F+W		FW0502032	300003303
F-2	Bilog antenna	Chase	CBL 6112A	2110	300000573
F-3a	Amplifier	Veritech Microwave Inc.	0518C-138	- / -	- / -
F-4b	Switch	HP	3488A	- / -	300000368
F-5	EMI Test receiver	R&S	ESCI	100083	300003312
F-6	Turntable Controller	EMCO	1061 3M	1218	300000661
F-7	Tower Controller	EMCO	1051 Controller	1262	300000625
F-8	Tower	EMCO	1051 Tower	1262	300000625
F-9	Ultra Notch-Filter Rejected band Ch. 62	WRCD		9	
<b>Radiated immunity in chamber F</b>					
F-10	Control Computer	F+W		FW0502032	300003303
F-11	Signal Generator	R&S	SML 03	102519	300003407
F-12	RF-Amplifier	ar	50W1000	12932	300001438
F-13	Directional Coupler	ar	DC 3010	12708	300001428
F-14	Logper Antenna	R&S	HL023A1	323704/016	300001476
F-15	RF-Amplifier	ar	60S1G3	313649	300003410
F-16	Directional Coupler	ar	DC7144A	312786	300003411
F-17	Horn Antenna	ar	AT 4002	19739	300000633
F-18	Power Meter	R&S	NRV	860327/024	F033
F-19	Power sensor	R&S	URV5-Z2	839080/005	300002844.02
F-20	Power sensor	R&S	URV5-Z2	830755/057	F032
<b>Harmonics and flicker in front of chamber F</b>					
F-21	Flicker and Harmonics Test System	Spitzenberger & Spies	PHE4500/B I PHE4500/B II	B5983 B5984	300000210
F-22	Control Unit	Spitzenberger & Spies	STE	B5980	300000210
F-23	Power Amplifier	Spitzenberger & Spies	EP 4500/B	B5976	300000210
F-24	Conect Panel	Spitzenberger & Spies	Conect panel	B5982	300000210
F-25	Power Supply	Spitzenberger & Spies	NT-EP 4500	B3977	300000210
F-26	Additional transformer	Spitzenberger & Spies	UT-EP 4500	B5978	300000210
F-27	Analyzer Reference System	Spitzenberger & Spies	ARS 16/1	A3509 07/0 0205	300003314
F-26	Power Supply	Hewlett Packard	6032 A	2920 A 04466	300000580