

Test Report

Electromagnetic Compatibility



DAT- P-121 / 02-00

Test report file no: E-0053-1426-01 JP
Applicant: Funkwerk Enterprise Communications GmbH
Olgastrasse 152
89073 Ulm
Germany

Contact person: Mr. Rolf Leukel
Model: Core 11b
FCC ID: SPT-CM11B-01

Kind of Product: WLAN transmitter module

Manufacturer: Same as applicant

Test result Emission tests: Compliance with FCC Part 15 Subpart C

Date of issue: 2004-November-22

The testresult only responds to the tested sample.
It is not allowed to copy this report partly without the allowance of the test laboratory.

DIRECTORY

IDENTIFICATION OF THE TEST LABORATORY	3
DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT):	4
OPERATION MODES	5
ENVIRONMENTAL CONDITIONS.....	6
STATEMENT OF MEASUREMENT UNCERTAINTY	6
TEST SPECIFICATION.....	7
SUMMARY:.....	8
CONDUCTED EMISSION POWER LINE.....	9
MEASUREMENT SETUP CONDUCTED EMISSIONS POWER LINE	14
PHOTO TESTSETUP CONDUCTED EMISSIONS POWER LINE	14
RADIATED EMISSIONS	15
MEASUREMENT SETUP RADIATED EMISSIONS	43
PHOTO TESTSETUP RADIATED EMISSION.....	43
6DB BANDWIDTH	44
PEAK OUTPUT POWER	48
PEAK POWER SPECTRAL DENSITY	52
CONDUCTED SPURIOUS EMISSIONS	56
MEASUREMENT SETUP CONDUCTED EMISSIONS.....	63
PHOTO TESTSETUP CONDUCTED EMISSIONS	63
PHOTOS OF THE EUT	64

IDENTIFICATION OF THE TEST LABORATORY

Company name: *emitel AG*

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Fax.: +49 9421 9746-70
eMail: germany@emitel.de
Homepage: www.emitel.de

FCC Registration number: 765810

DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT):

Date of receipt of test sample: 2004-09-15

Testing Start Date: 2004-09-20

Testing End Date: 2004-09-23

Number of received/tested samples: 1

Serial Number:

FCC-ID: SPT-CM11B-01

Voltage consumption: 3.3V DC

Product status:

- ☐ Development Sample
- ☐ Preproduction Sample
- ☒ Production Sample

Dimensions: L x W x H: 50.95 mm x 59.75 mm x 8 mm

Following system devices are parts of the EUT and were connected during the measurement:

Rod antenna length: 10 cm

Following equipment were connected/used during the measurement:

Laboratory Power Supply; PS-302A; Conrad Electronic; Emitel Equipment ID: 01-05/04-01-003

WLAN Device; CPI-b-E-HO-PAC; artem GmbH; SN: 306000013; PN: 200180

Laptop; SP4600; Thoshiba; SN: 11129435G SS460-0; FCC ID: CJ6PS460WL

Mouse; Mouse 2.0; Microsoft; SN: 01729374; PN: 45717; FCC ID: C3KAZB1

OPERATION MODES

OPERATION MODES:

TX&RX-mode at:	CH1	lowest channel	2412 MHz
	CH6	middle channel	2437 MHz
	CH11	highest channel	2462 MHz

EUT MONITORING

Data transfer between Laptop and EUT observed at Laptop screen.

ENVIRONMENTAL CONDITIONS

Temperature 20 °C
Humidity 50 %
Atmospheric pressure: 860-1060 mbar

STATEMENT OF MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report according to NIS 81 /5.1994 „The Treatment of Uncertainty in EMC Measurements“ and is documented in the emitel quality system according to EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

TEST SPECIFICATION

The tests were performed according to the following specifications:

- | | | | |
|-------------------------------------|-----------------------|--|----------------|
| ☒ | FCC Part 15 Subpart A | Code of Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communication Commission (FCC) | December, 2003 |
| ☒ | FCC Part 15 Subpart C | Code of Regulations Part 15 (Radio Frequency Devices), Subpart C (Intentional Radiators) of the Federal Communication Commission (FCC) | December, 2003 |
| ☒ | ANSI C63.4 | American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz - 40 GHz | 2001 |

FCC Part 15 Subpart C

Specification	Result	Remarks
§15.207 Conducted emission (150kHz-30MHz)	limit kept	
§15.209 Radiated emission (150kHz-26GHz)	limit kept	
§15.247 Operation within the band 2400GHz-2483.5GHz	limit kept	

SUMMARY:

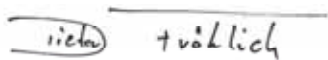
FINAL JUDGEMENT

The tested sample meets the requirements according to the technical regulations of

**Code of Regulations Part 15 Subpart C (intentional radiators)
of the Federal Communication Commission (FCC)**

Straubing, 2004-November-22

emitel AG



Dieter Fröhlich
Dipl. Ing. (FH)
Director

Test engineer:



Jürgen Pessinger

Conducted emission power line

(150 kHz - 30 MHz)

TEST CONDITIONS AND RESULTS:

Conducted emissions were measured in the frequency range 0.15 MHz to 30 MHz. The bandwidth of the EMI-Receiver was set to 10 kHz and the detector-function was set to CISPR quasi-peak and average.

The test setup was made in accordance with ANSI C63.4-2001.

Measurements were performed on phase and neutral lines of the power-cords of the tested system. Preliminary scans were taken with the detector-function of the EMI-receiver set to peak to determine the conducted EMI-profile of the EUT. At the final test the cables and equipment were placed and moved within the range of positions likely to find their maximum emissions.

The measurements were performed in a shielded room.

☐ Test not applicable

Testlocation: ☒ Shielded room 1
☐ Shielded room 2
☐ Shielded room 3
☐ Shielded room 4

Used test instruments and test accessories:

Test instrument	Type	Manufacturer	ID - No.
Test receiver	ESH 3	Rohde & Schwarz	01-01/01-01-065
LISN	ESH2-Z5	Rohde & Schwarz	01-01/01-01-041
LISN	NSLK 8128	Schwarzbeck	01-01/01-01-056
HF-cable	RG 223	Emitel	01-05/02-01-046
HF-cable	RG 214	Emitel	01-05/02-01-038

TEST RESULTS:

The requirements are: ☒ MET ☐ NOT MET

Remarks:

TEST CONDUCTED EMISSIONS POWER LINE:

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: Core11b
Date of test: 20.09.2004
Operator: Jürgen Pessinger

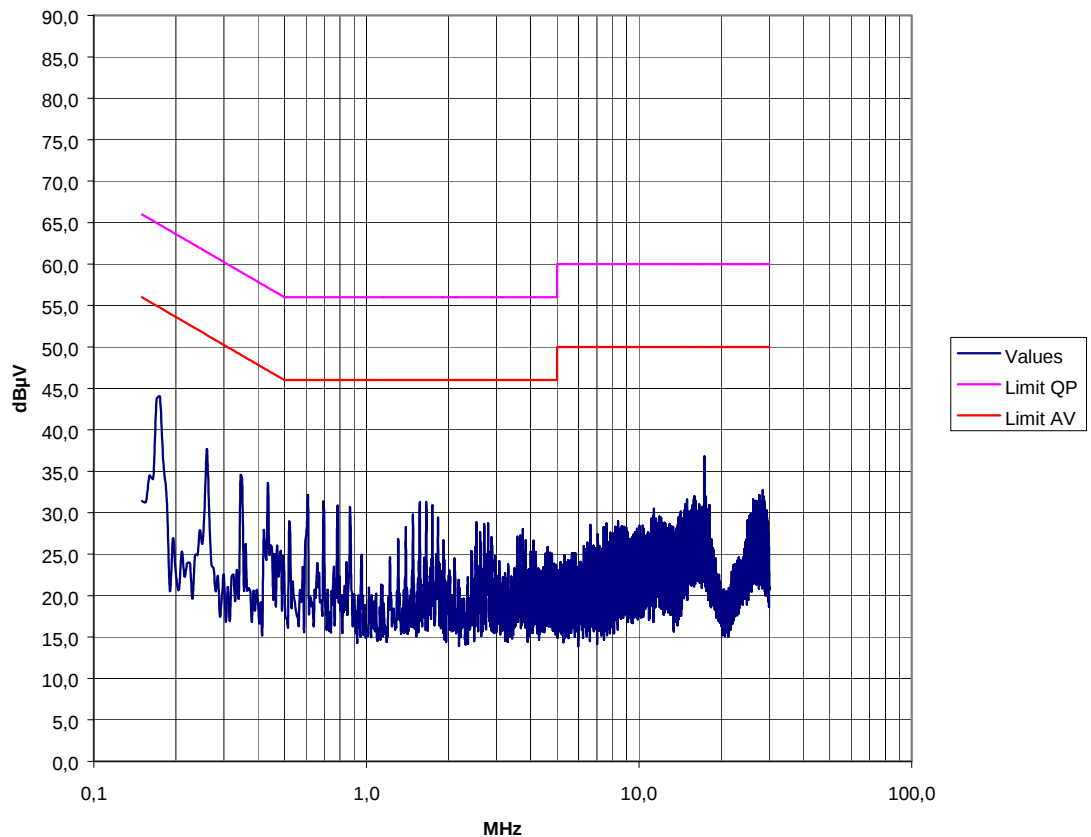
Mode:
TX & RX
CH06
Core Board built in in WLAN Device
CPI-b-E-HO-PAC for power supply
115V/60Hz

Detector: PEAK
Result: **SCAN**

FCC Part 15 Subpart C

Limit Class B

Phase L1



TEST CONDUCTED EMISSIONS POWER LINE:

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: Core11b
Date of test: 20.09.2004
Operator: Jürgen Pessinger

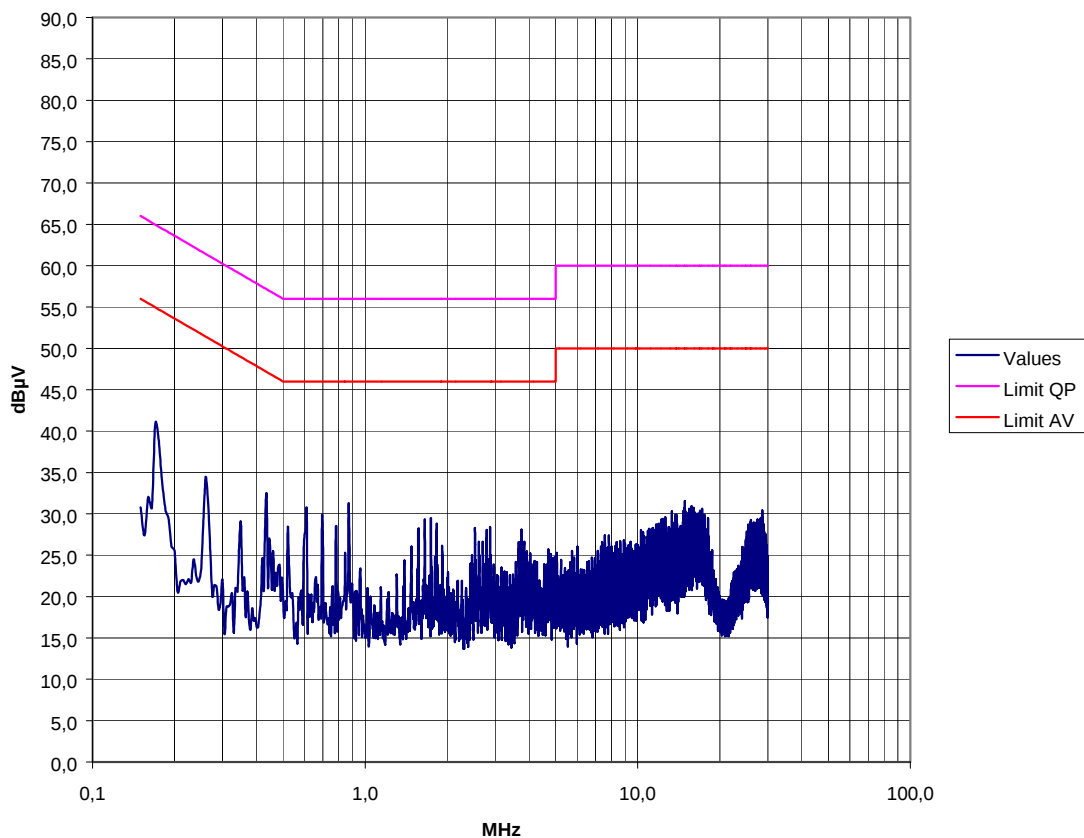
Mode:
TX & RX
CH06
Core Board built in in WLAN Device
CPI-b-E-HO-PAC for power supply
115V/60Hz

Detector: PEAK
Result: **SCAN**

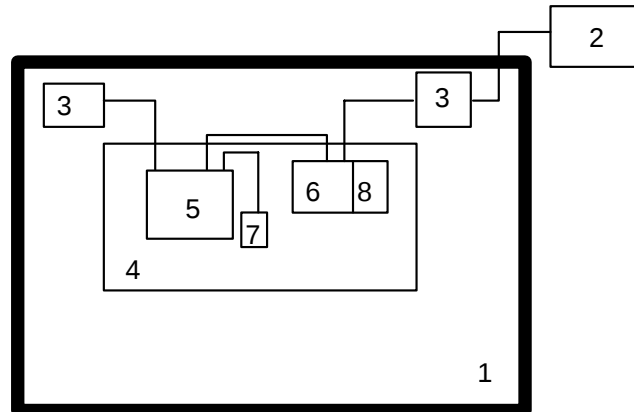
FCC Part 15 Subpart C

Limit Class B

Phase N



MEASUREMENT SETUP CONDUCTED EMISSIONS POWER LINE



- | | |
|-----------------|----------------------------------|
| 1 Shielded room | 2 Test receiver |
| 3 LISN | 4 Wooden table |
| 5 Laptop | 6 WLAN Device (for power supply) |
| 7 Mouse | 8 EUT |

PHOTO TESTSETUP CONDUCTED EMISSIONS POWER LINE



Radiated Emissions

(9 kHz – 30 MHz)

TEST CONDITIONS AND RESULTS:

Radiated emissions in the frequency range 9 kHz – 30 MHz will be measured initially at a distance of 3 meters. A prescan at 3 meter distance will be performed in a shielded room with the detector of the spectrum analyser or EMI Receiver set to peak. Final measurement is the performed at 30 meter distance. In case the regulation requires testing at other distances, the result will be extrapolated. The extrapolation factor will be determined by making a second measurement at 10 meter distance. The provisions of 15.31 (d) apply.

According to section 15.209 (d) final measurements performed with the detector set to Quasi Peak except for frequency bands 9-90 kHz and 110 – 490 kHz where average detector is employed.

Used test instruments and test accessories:

Test instrument	Type	Manufacturer	ID - No.
Test receiver	ESH 3	Rohde & Schwarz	01-01/01-01-065
Antenna	FMZB 1516	Schwarzbeck	01-01/01-01-050
HF-cable	RG 223	Emitel	01-05/02-01-046
HF-cable	RG 214	Emitel	01-05/02-01-038

TEST RESULTS:

The requirements are: ☒ MET ☐ NOT MET

Remarks: The test was performed in a frequency range 150 kHz – 30 MHz due to the lowest
Oscillator frequency in the EUT is 4.8 MHz.

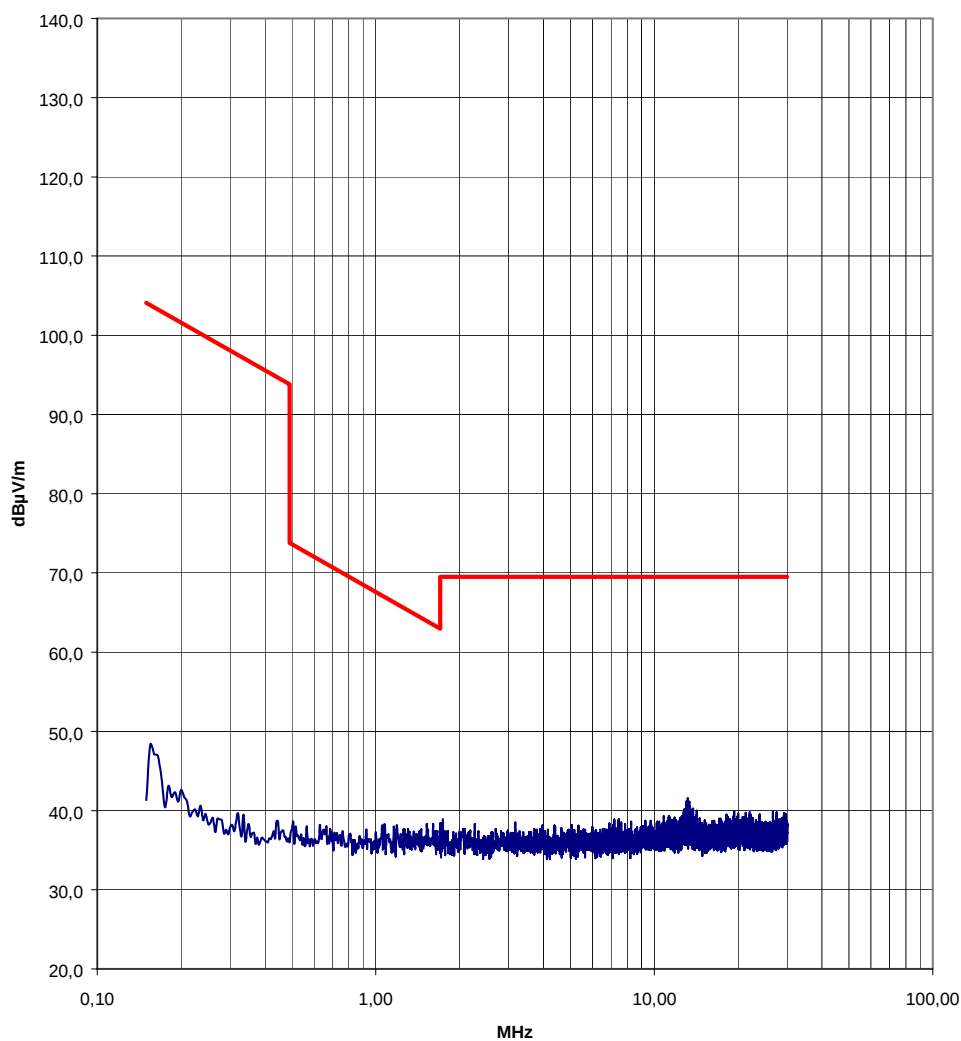
SCAN RADIATED EMISSIONS:

Test distance: 3 m

Project file:	E-0053-1426-00	Mode:	
Applicant:	Funkwerk GmbH	TX & RX	
Model:	Core Board	CH06	
Date of test:	21.09.2004	power supply	3.3V DC
Operator:	Jürgen Pessinger		
Detector:	PEAK		
Result:	SCAN		

FCC Part 15

Subpart C



FINAL TEST RADIATED EMISSION (TABLE):

Test distance: 3 m

Project file:	E-0053-1426-00	Mode:	
Applicant:	Funkwerk GmbH	TX & RX	
Model:	Core Board	CH06	
Date of test:	21.09.2004	power supply	3.3V DC
Operator:	Jürgen Pessinger		
Detector:	QP		
Result:	Limit kept		

FCC15C Limit Class B

Frequency [MHz]	Value QP [dBuV]	Limit QP [dBuV]			Limit exceeded [dB]

Remarks: Frequencies which are not listed have a margin more than 6dB to the limit.

Radiated emission

(30 MHz – 1000 MHz)

TEST CONDITIONS AND RESULTS:

Radiated emissions are measured over the frequency range from 30 MHz to 1 GHz. The bandwidth of the EMI-receiver is set to 120 kHz and the detector-function is set to CISPR quasi-peak.

The test setup is made in accordance with ANSI C63.4-2001. Measurements are made in both the horizontal and vertical planes of polarization. Preliminary scans are taken in a full-anechoic room using a spectrum analyzer with the detector function set to peak. This preliminary scans were performed at the lowest, middle and highest channel to find the worst case. Final measurement was performed with in this worst case. Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing.

All tests are performed at a test-distance of 3 meters. For final testing an open-area test-site is used. During the tests the EUT is rotated all around and the receiving-antenna is raised and lowered from 1 meter to 4 meters to find the maximum levels of emissions. The cables and equipment is placed and moved within the range of position likely to find their maximum emissions.

☐ Test not applicable

Test location: ☒ Shielded room 2, Pretest
☒ Open site, Final test

Antenna EuT distance: ☒ 3 m, Pretest
☒ 3 m, Final test

Used test instruments and test accessories:

Test instrument	Type	Manufacturer	ID - No.
Spectrum Analyser	FSP 30	Rohde & Schwarz	01-01/01-01-063
Antenna	3142 B	EMCO	01-01/01-01-067
HF-Cable	RG 213	Suhner	01-05/02-01-043
HF-Cable	RG 213	Emitel	01-05/02-01-038
Preamplifier	TVV 695	MTS	01-05/02-01-016
Receiver	ESVP	Rohde & Schwarz	01-01/01-01-035
Antenna	VULB 9163	Schwarzbeck	01-01/01-01-059
HF-Cable	RG 217	Suhner	01-05/02-01-048
HF-Cable	RG 214	Emitel	01-05/02-01-050

TEST RESULTS:

The requirements are: ☒ MET ☐ NOT MET

Remarks:

FINAL TEST RADIATED EMISSIONS:

Horizontal Antenna Polarization

Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: Core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger

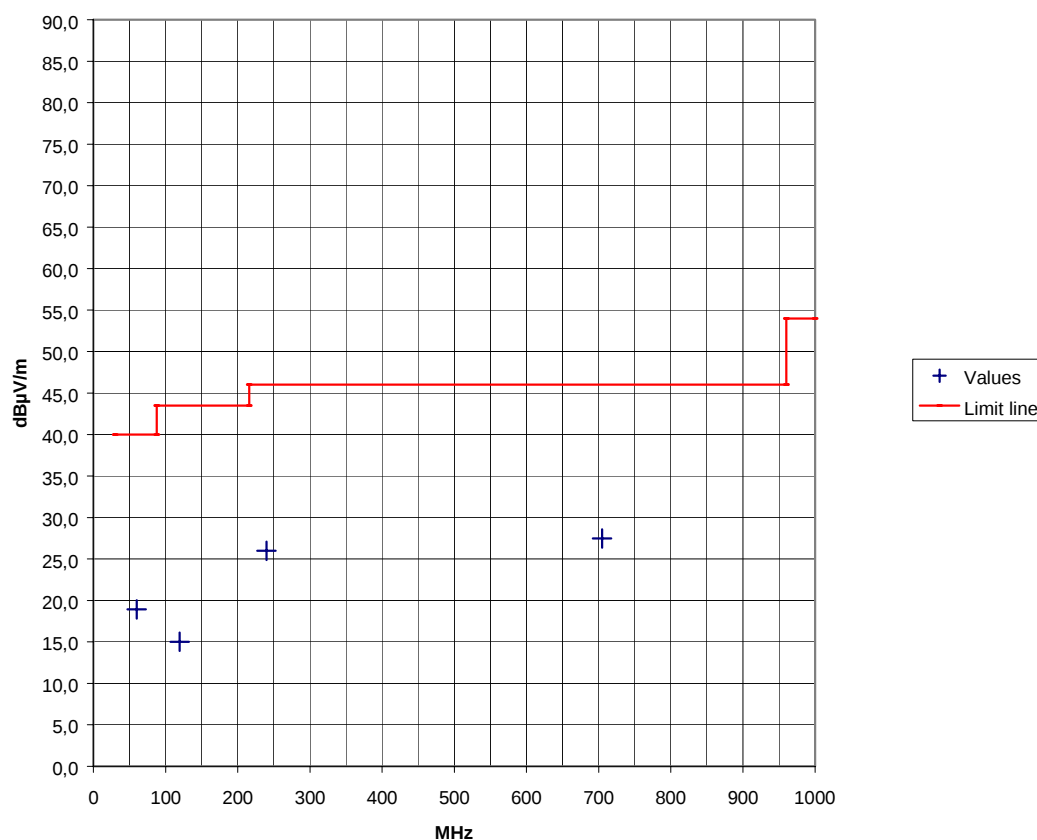
Mode:
TX- & RX-mode
CH6
worst case situation
115V/60Hz

Detector: QuasiPeak
Result: Limit kept

FCC Part 15

Subpart C, Limit QP

Horizontal Polarization



FINAL TEST RADIATED EMISSION (TABLE):

Horizontal Antenna Polarization

Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: Core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger

Mode:
 TX- & RX-mode
 CH6
 worst case situation
 115V/60Hz

Detector: QuasiPeak
Result: Limit kept

FCC Part 15

Subpart C, Limit QP

Horizontal Polarization

Frequency [MHz]	Reading [dBμV]	Correction [dB]	Value [dBμV/m]	Limit [dBμV/m]	Limit exceeded [dB]
60,0	5,1	13,8	18,9	40,0	
119,5	2,9	12,1	15,0	43,5	
240,0	10,8	15,2	26,0	46,0	
705,0	2,4	25,1	27,5	46,0	

Remarks: Frequencies which are not listed have a margin more than 6dB to the limit.

FINAL TEST RADIATED EMISSION:

Vertical Antenna Polarization

Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: Core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger

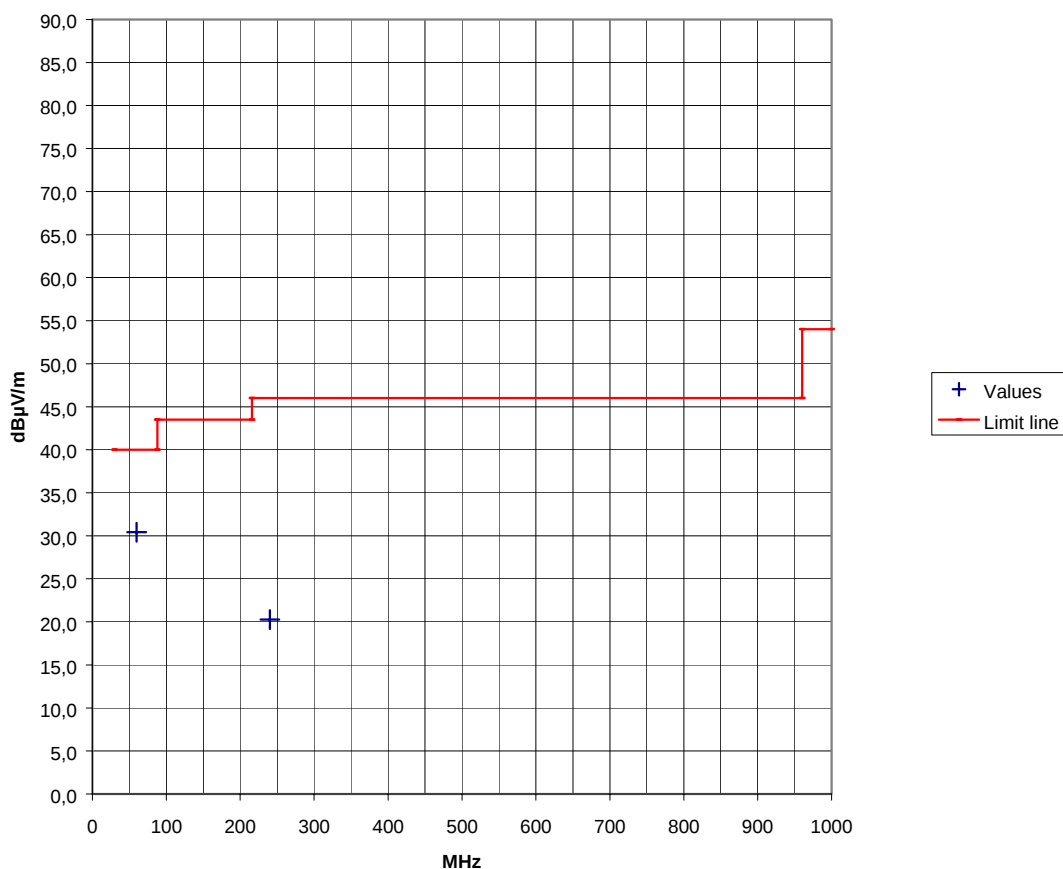
Mode:
TX- & RX-mode
CH6
worst case situation
115V/60Hz

Detector: QuasiPeak
Result: Limit kept

FCC Part 15

Subpart C, Limit QP

Vertical Polarization



FINAL TEST RADIATED EMISSIONS (TABLE):

Vertical Antenna Polarization

Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: Core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger

Mode:
 TX- & RX-mode
 CH6
 worst case situation
 115V/60Hz

Detector: QuasiPeak
Result: Limit kept

FCC Part 15

Subpart C, Limit QP

Vertical Polarization

Frequency [MHz]	Reading [dBμV]	Correction [dB]	Value [dBμV/m]	Limit [dBμV/m]	Limit exceeded [dB]
60,0	16,6	13,8	30,4	40,0	
240,0	5,1	15,2	20,3	46,0	

Remarks: Frequencies which are not listed have a margin more than 6dB to the limit.

Radiated emission

(1 GHz – 26 GHz)

TEST CONDITIONS AND RESULTS:

Radiated emissions are measured over the frequency range from 1 GHz to 26 GHz. The bandwidth of the spectrum analyser is set to 1 MHz and the detector-function is set to average.

The test setup is made in accordance with ANSI C63.4-2001. Measurements are made in both the horizontal and vertical planes of polarization. Preliminary scans are taken in a full-anechoic room using a spectrum analyzer with the detector function set to peak. This preliminary scans were performed at the lowest, middle and highest channel to find the worst case. Final measurement was performed with in this worst case. Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing.

All tests are performed at a test-distance of 3 meters. For final testing an open-area test-site is used. During the tests the EUT is rotated all around and the receiving-antenna is raised and lowered from 1 meter to 4 meters to find the maximum levels of emissions. The cables and equipment is placed and moved within the range of position likely to find their maximum emissions.

☐ Test not applicable

Test location: ☒ Shielded room 2, Pretest
☒ Open site, Final test

Antenna EuT distance: ☒ 3 m, Pretest
☒ 3 m, Final test

Used test instruments and test accessories:

Test instrument	Type	Manufacturer	ID - No.
Spectrum Analyser	FSP 30	Rohde & Schwarz	01-01/01-01-063
Preamplifier	AMF-40-005-180-24-10P	MITEQ Inc.	01-02/01-02-005
Antenna Horn 1-18GHz	3115	ETS EMC Systems LP	01-01/01-01-062
Antenna Horn 18-26,5GHz	3160-09	ETS EMC Systems LP	01-05/02-01-002
HF-cable	FA210A0050M	Anritsu GmbH	01-05/02-01-034

TEST RESULTS:

The requirements are: ☒ MET ☐ NOT MET

Remarks: _____

FINAL TEST RADIATED EMISSIONS:

Horizontal Antenna Polarization

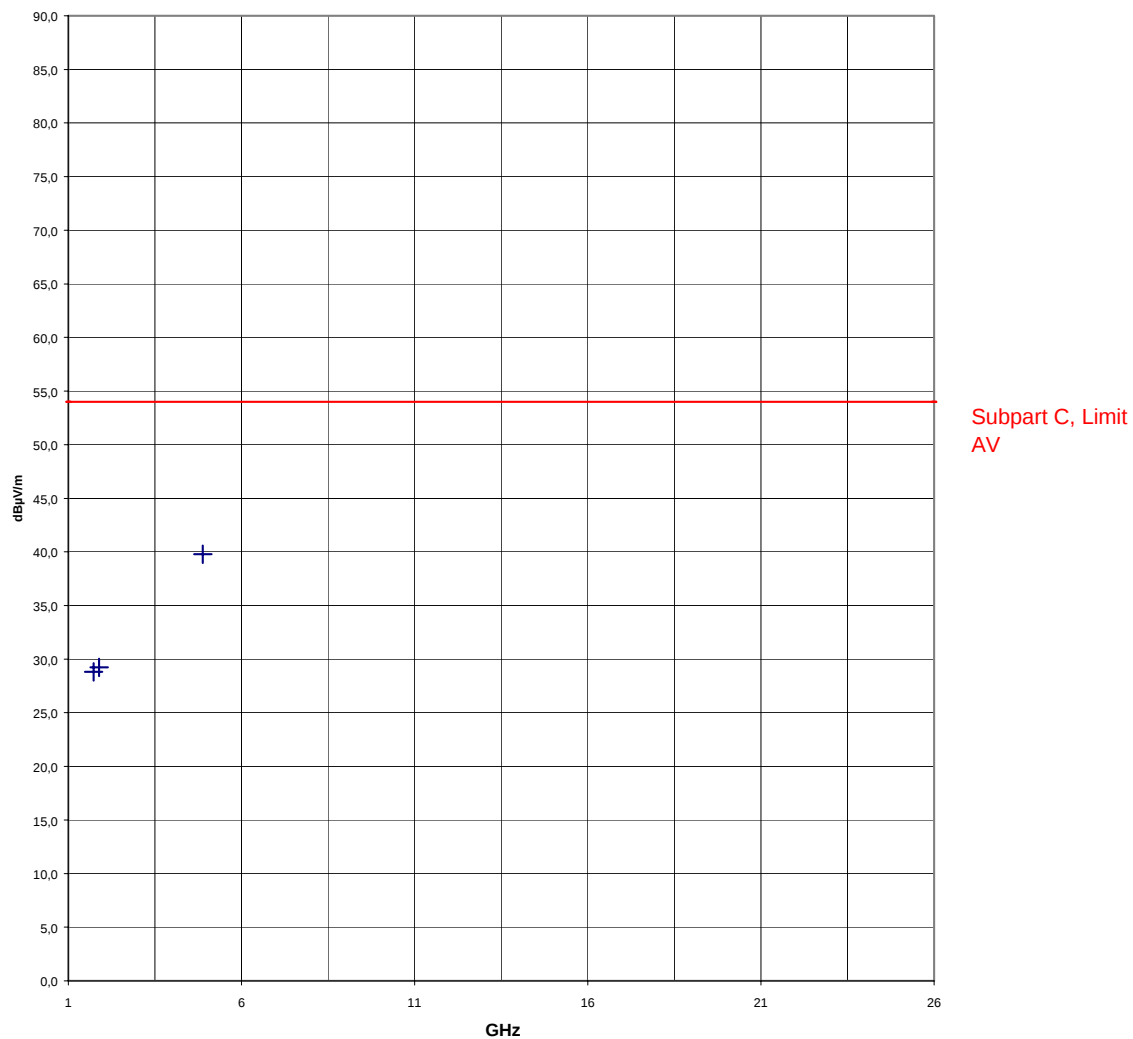
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core 11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: AV
Result: Limit kept

Mode:
TX- & RX-mode
CH6
worst case situation
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Horizontal Polarization



FINAL TEST RADIATED EMISSION (TABLE):

Horizontal Antenna Polarization

Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core 11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: AV
Result: Limit kept

Mode:
 TX- & RX-mode
 CH6
 worst case situation
 115V/60Hz

FCC Part 15 Subpart C, Limit AV

Horizontal Polarization

Frequency [GHz]	Reading [dBμV]	Correction [dB]	Value [dBμV/m]	Limit [dBμV/m]	Limit exceeded [dB]
1,73	35,4	-6,6	28,8	54,0	
1,89	34,8	-5,6	29,2	54,0	
4,88	34,6	5,2	39,8	54,0	

Remarks: Frequencies which are not listed have a margin more than 6dB to the limit.

FINAL TEST RADIATED EMISSION:

Vertical Antenna Polarization

Test distance:

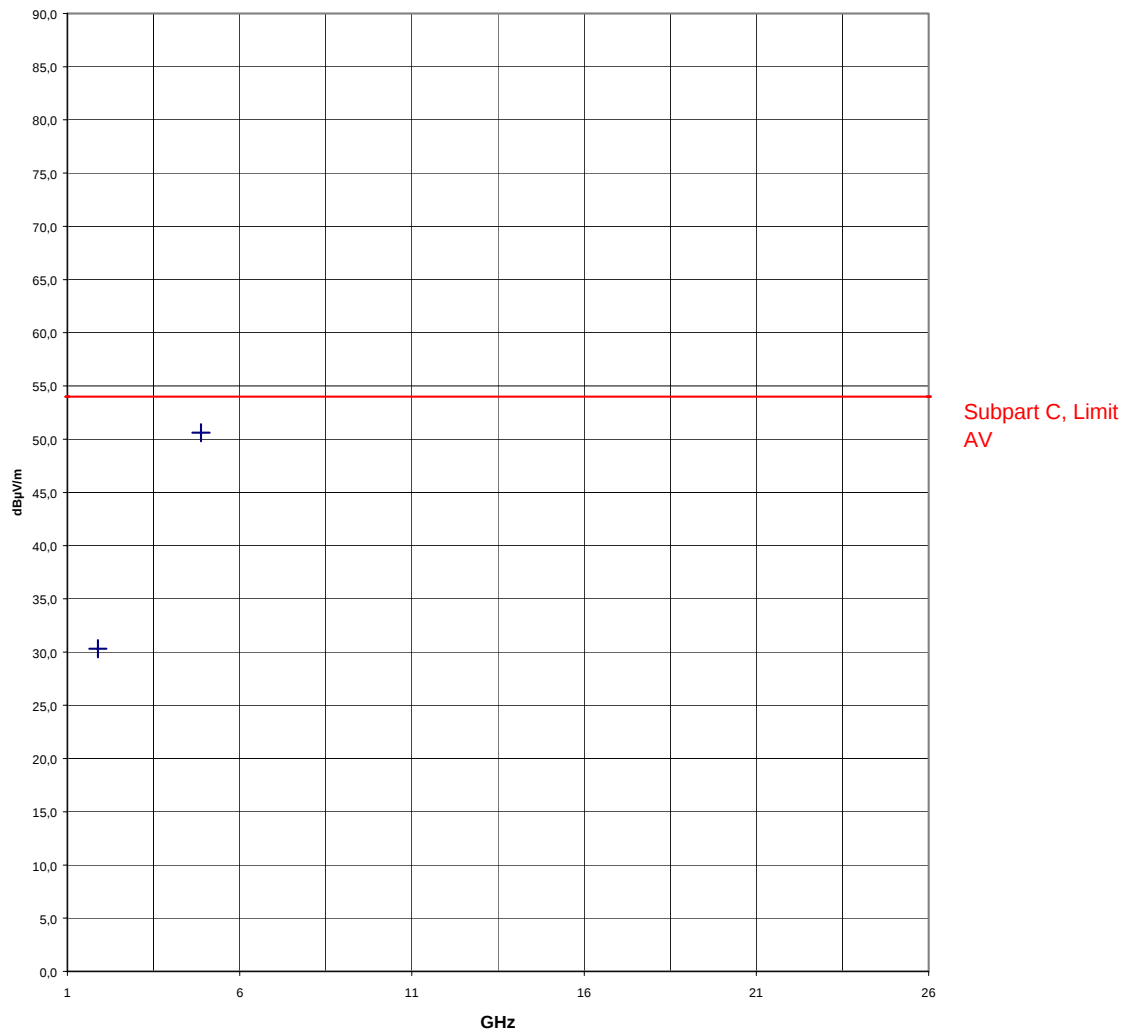
3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core 11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: AV
Result: Limit kept

Mode:
TX- & RX-mode
CH6
worst case situation
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Vertical Polarization



FINAL TEST RADIATED EMISSIONS (TABLE):

Vertical Antenna Polarization

Test distance:

3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core 11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: AV
Result: Limit kept

Mode:
 TX- & RX-mode
 CH6
 worst case situation
 115V/60Hz

FCC Part 15 Subpart C, Limit AV

Vertical Polarization

Frequency [GHz]	Reading [dBμV]	Correction [dB]	Value [dBμV/m]	Limit [dBμV/m]	Limit exceeded [dB]
1,89	35,9	-5,6	30,3	54,0	
4,88	45,4	5,2	50,6	54,0	

Remarks: Frequencies which are not listed have a margin more than 6dB to the limit.

Restricted Bandedges

(2310 MHz – 2390 MHz and 2483,5 MHz – 2500 MHz)

Test location: ☒ Shielded room 2, Pretest
☒ Open site, Final test

Antenna EuT distance: ☒ 3 m, Pretest
☒ 3 m, Final test

Used test instruments and test accessories:

Test instrument	Type	Manufacturer	ID - No.
Spectrum Analyser	FSP 30	Rohde & Schwarz	01-01/01-01-063
Preamplifier	AMF-40-005-180-24-10P	MITEQ Inc.	01-02/01-02-005
Antenna Horn 1-18GHz	3115	ETS EMC Systems LP	01-01/01-01-062
Antenna Horn 18-26,5GHz	3160-09	ETS EMC Systems LP	01-05/02-01-002
HF-cable	FA210A0050M	Anritsu GmbH	01-05/02-01-034

TEST RESULTS:

The requirements are: ☒ MET ☐ NOT MET

Remarks: If the results of the max peak prescan were below the AV limits no final measurement
were performed.

SCAN RESTRICTED BANDEDGES (2310 MHz – 2390 MHz):

Horizontal Antenna Polarization

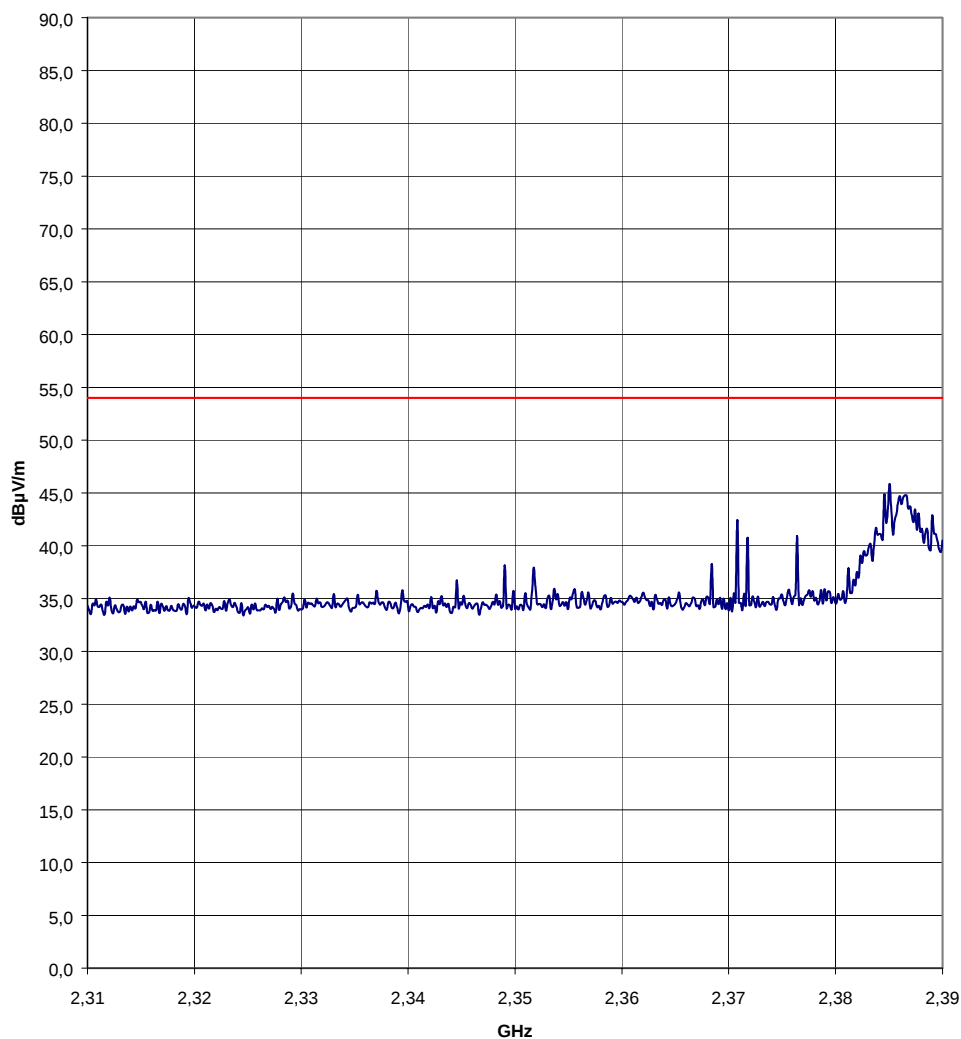
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH1
Restricted Band 2310-2390MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Horizontal Polarization



SCAN RESTRICTED BANDEDGES (2310 MHz – 2390 MHz):

Vertical Antenna Polarization

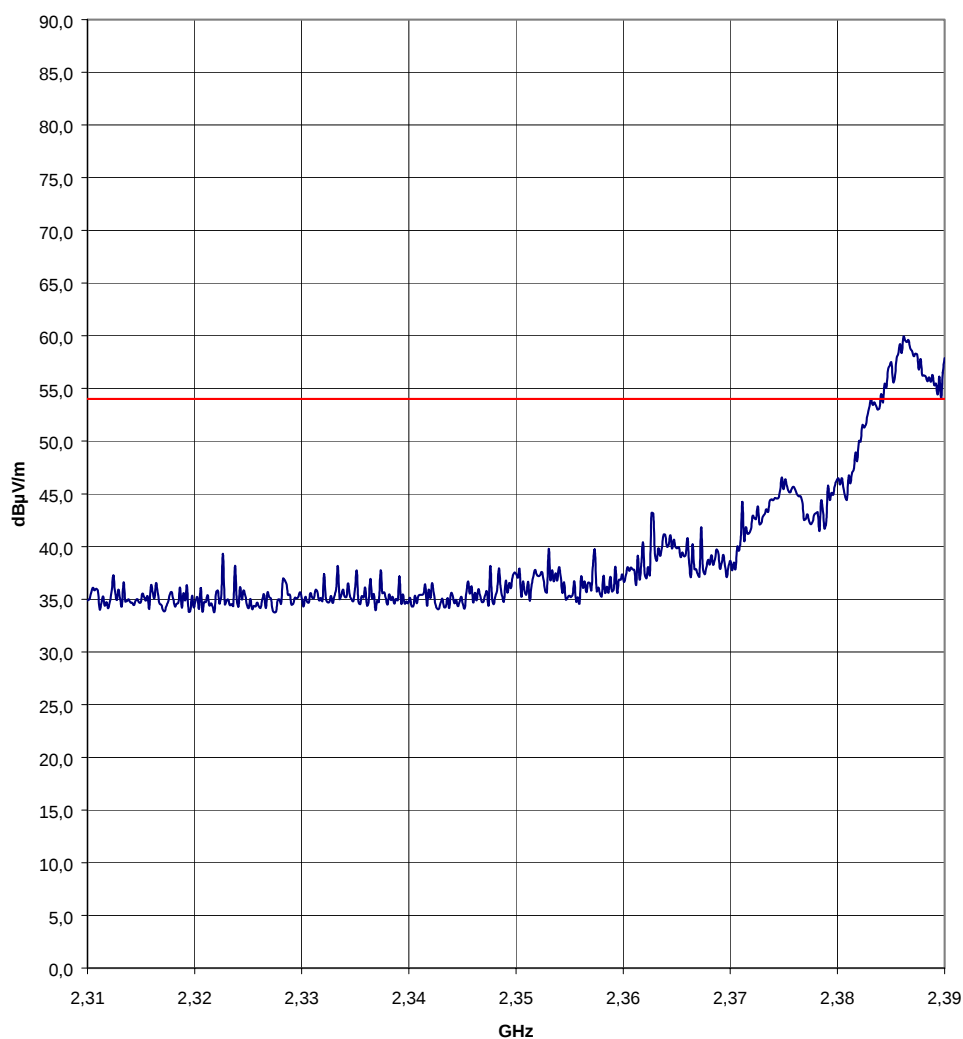
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH1
Restricted Band 2310-2390MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Vertical Polarization



Subpart C,
Limit AV

FINAL TEST RESTRICTED BANDEDGES (2310 MHz – 2390 MHz):

Horizontal Antenna Polarization

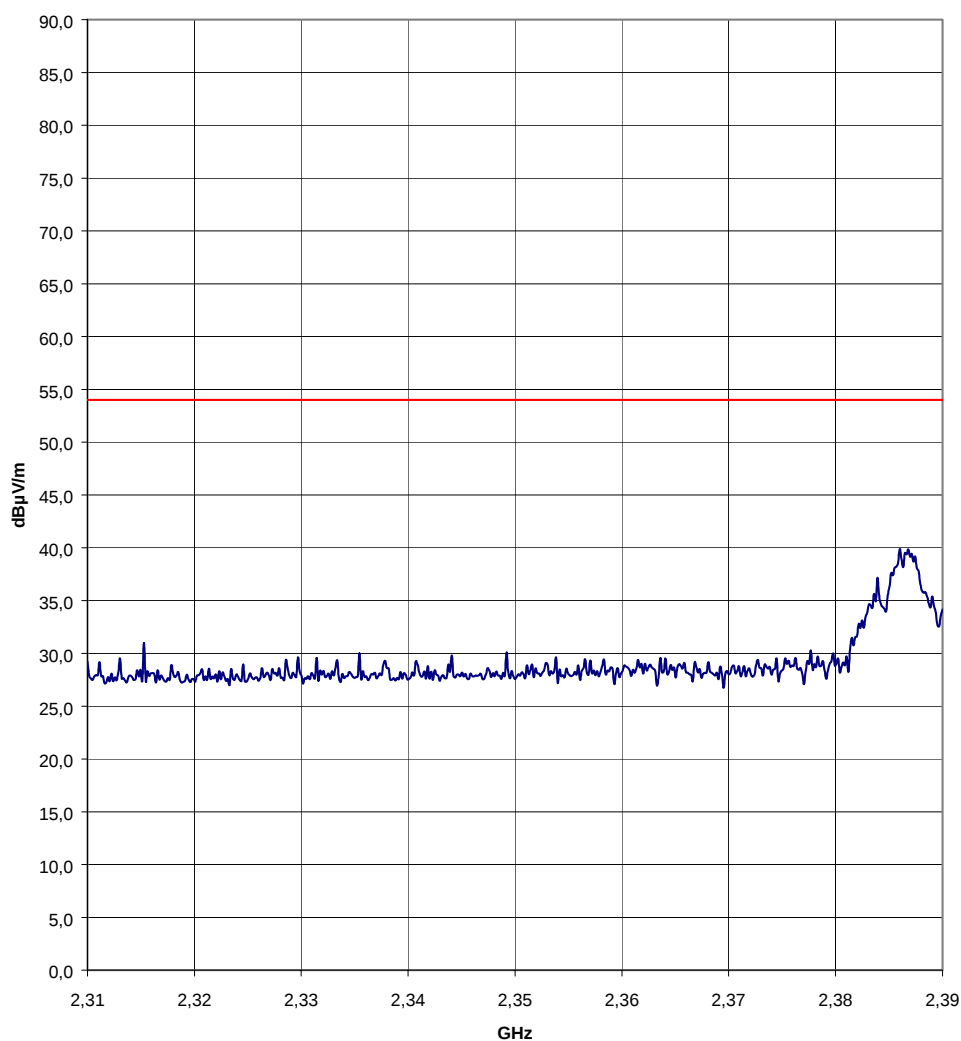
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: AV
Result: **Limit kept**

Mode:
TX- & RX-mode
CH1
Restricted Band 2310-2390MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Horizontal Polarization



Subpart C,
Limit AV

FINAL TEST RESTRICTED BANDEDGES (2310 MHz – 2390 MHz):

Vertical Antenna Polarization

Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: AV
Result: **Limit kept**

Mode:
TX- & RX-mode
CH1
Restricted Band 2310-2390MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Vertical Polarization



Subpart C,
Limit AV

SCAN RESTRICTED BANDEDGES (2310 MHz – 2390 MHz):

Horizontal Antenna Polarization

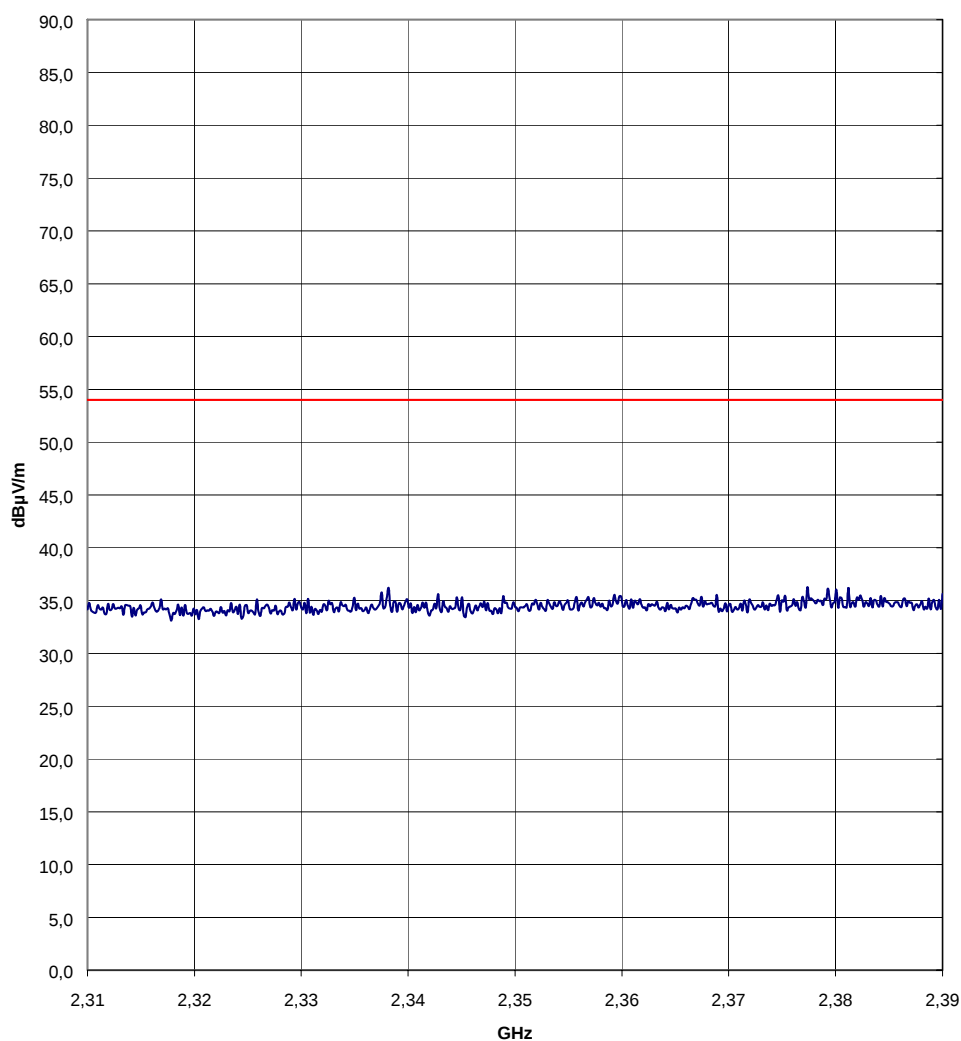
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH6
Restricted Band 2310-2390MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Horizontal Polarization



SCAN RESTRICTED BANDEDGES (2310 MHz – 2390 MHz):

Vertical Antenna Polarization

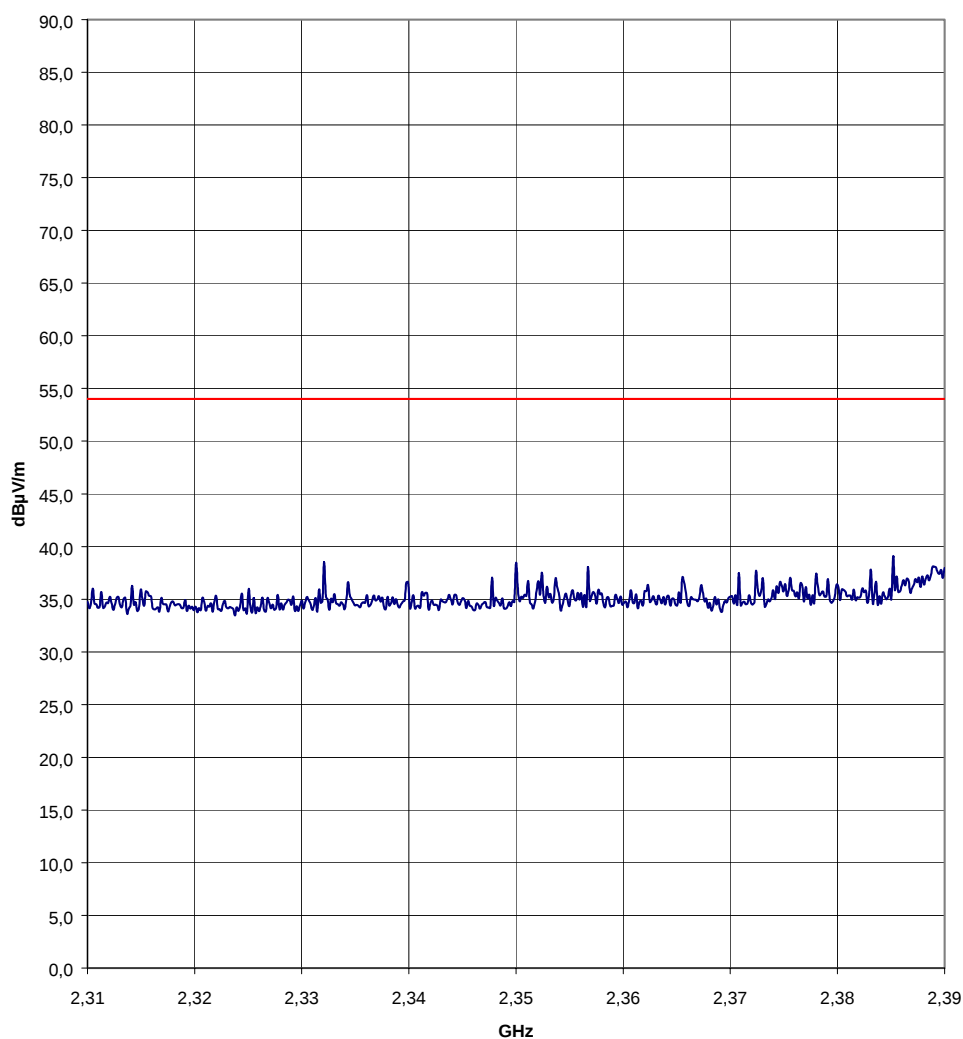
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH6
Restricted Band 2310-2390MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Vertical Polarization



Subpart C,
Limit AV

SCAN RESTRICTED BANDEDGES (2310 MHz – 2390 MHz):

Horizontal Antenna Polarization

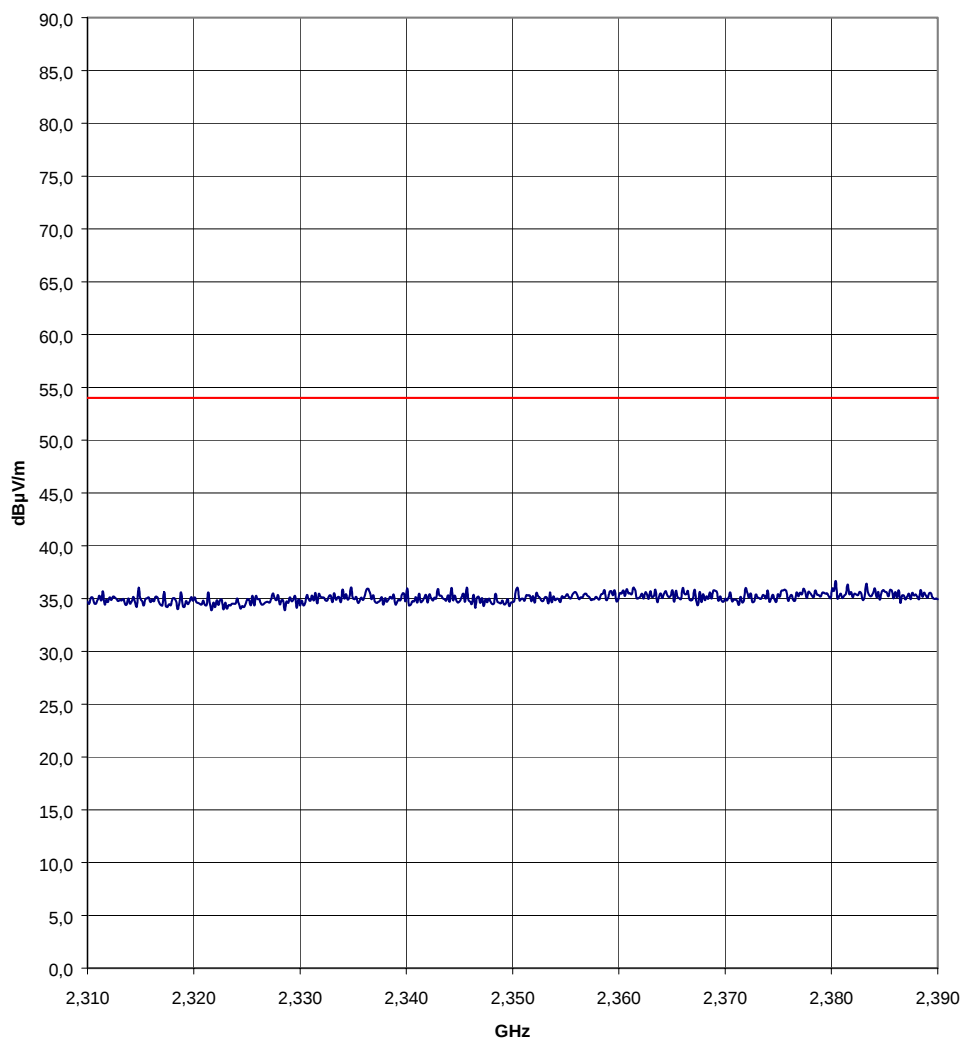
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH11
Restricted Band 2310-2390MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Horizontal Polarization



Subpart C,
Limit AV

SCAN RESTRICTED BANDEDGES (2310 MHz – 2390 MHz):

Vertical Antenna Polarization

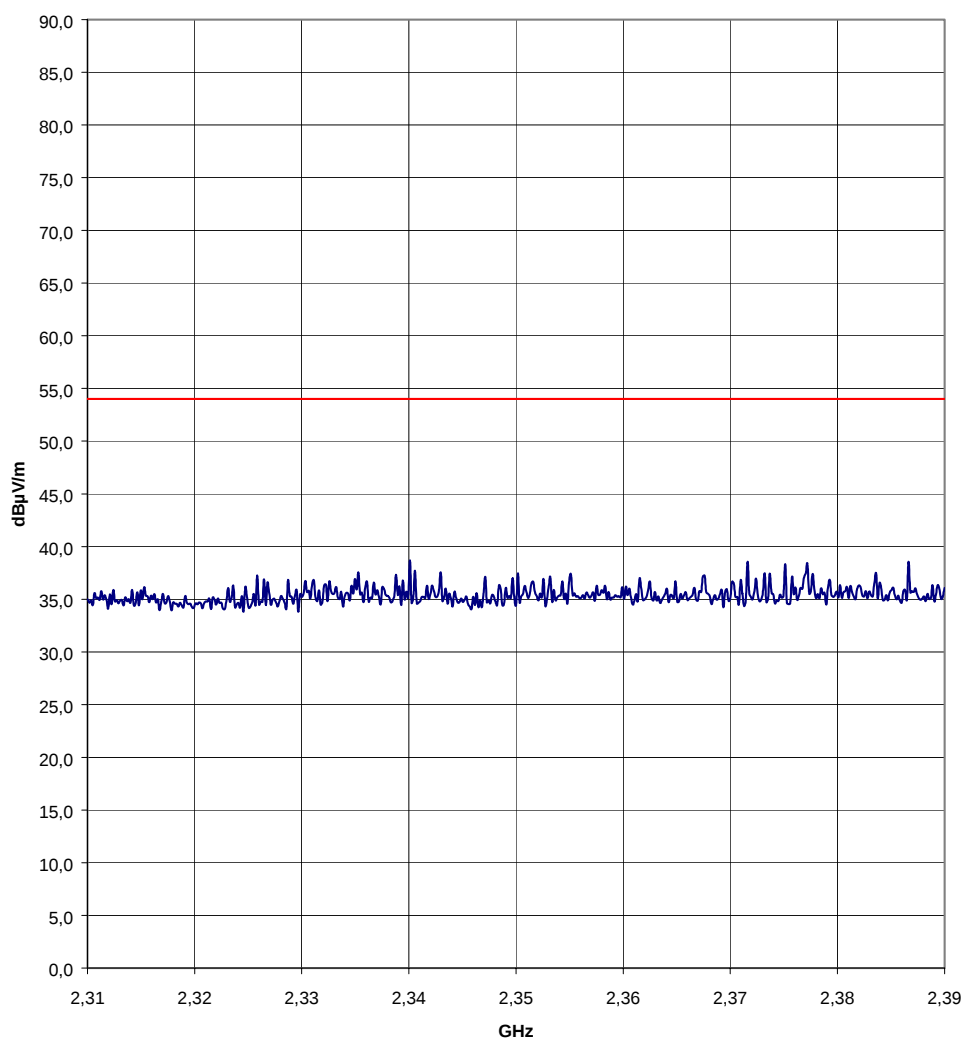
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH11
Restricted Band 2310-2390MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Vertical Polarization



SCAN RESTRICTED BANDEDGES (2483,5 MHz – 2500 MHz):

Horizontal Antenna Polarization

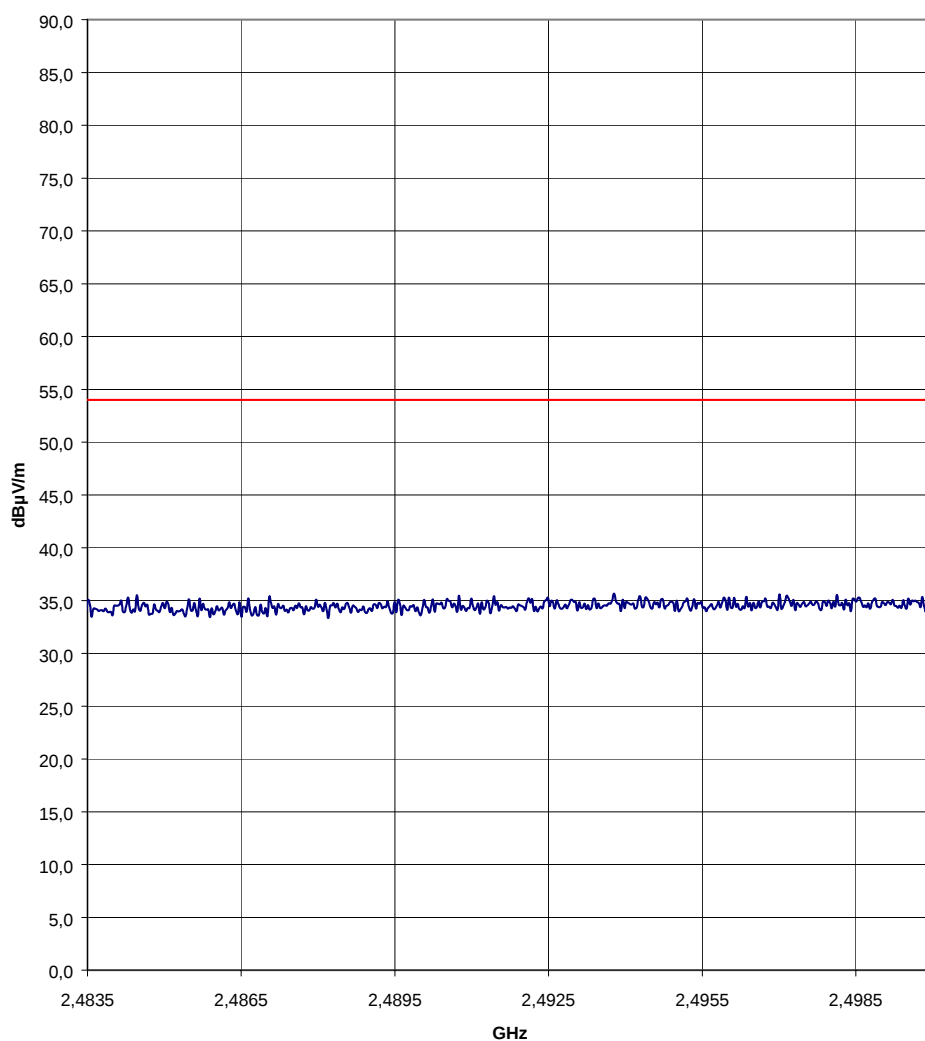
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH1
Restricted Band 2483,5-2500 MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Horizontal Polarization



Subpart C,
Limit AV

SCAN RESTRICTED BANDEDGES (2483,5 MHz – 2500 MHz):

Vertical Antenna Polarization

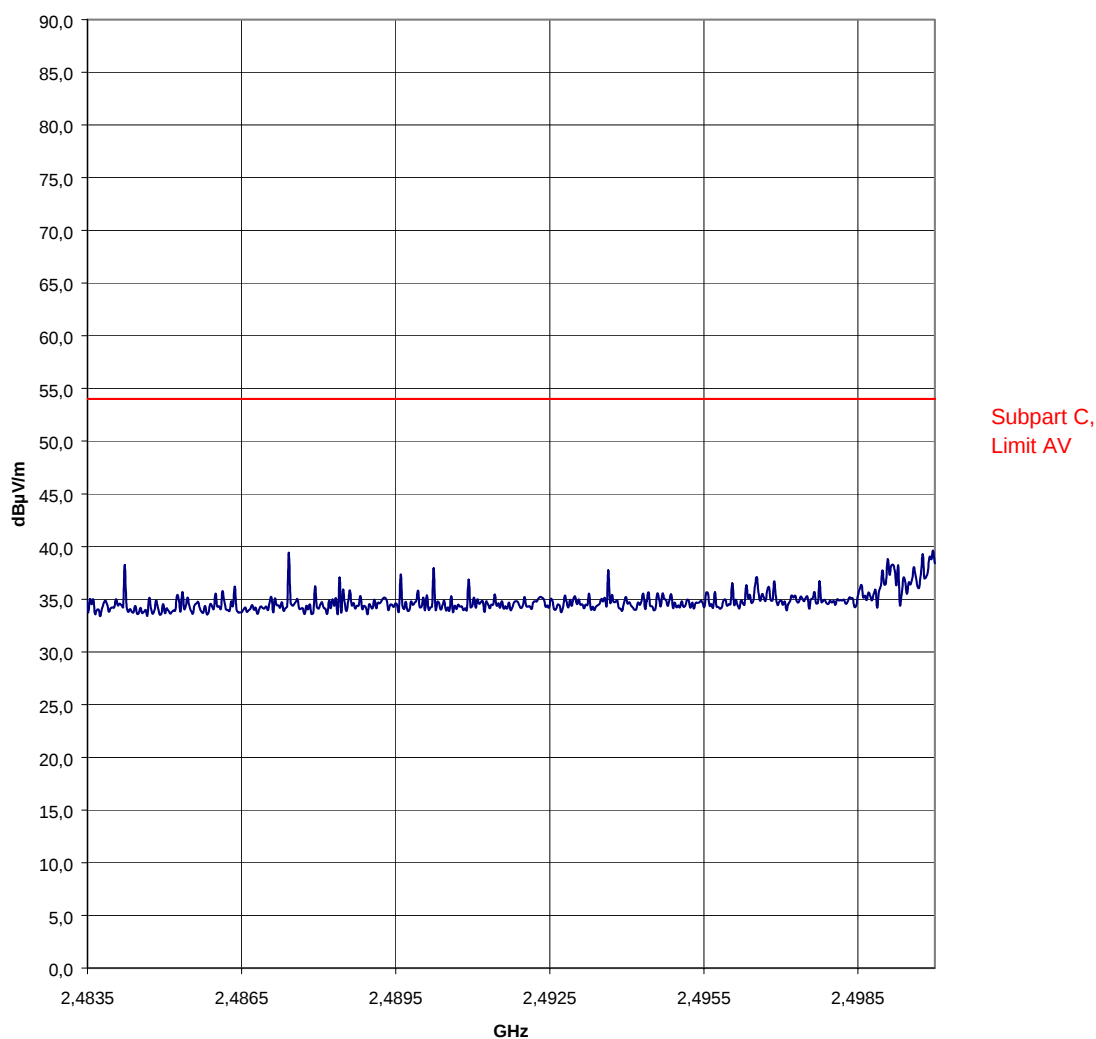
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH1
Restricted Band 2483,5-2500 MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Vertical Polarization



SCAN RESTRICTED BANDEDGES (2483,5 MHz – 2500 MHz):

Horizontal Antenna Polarization

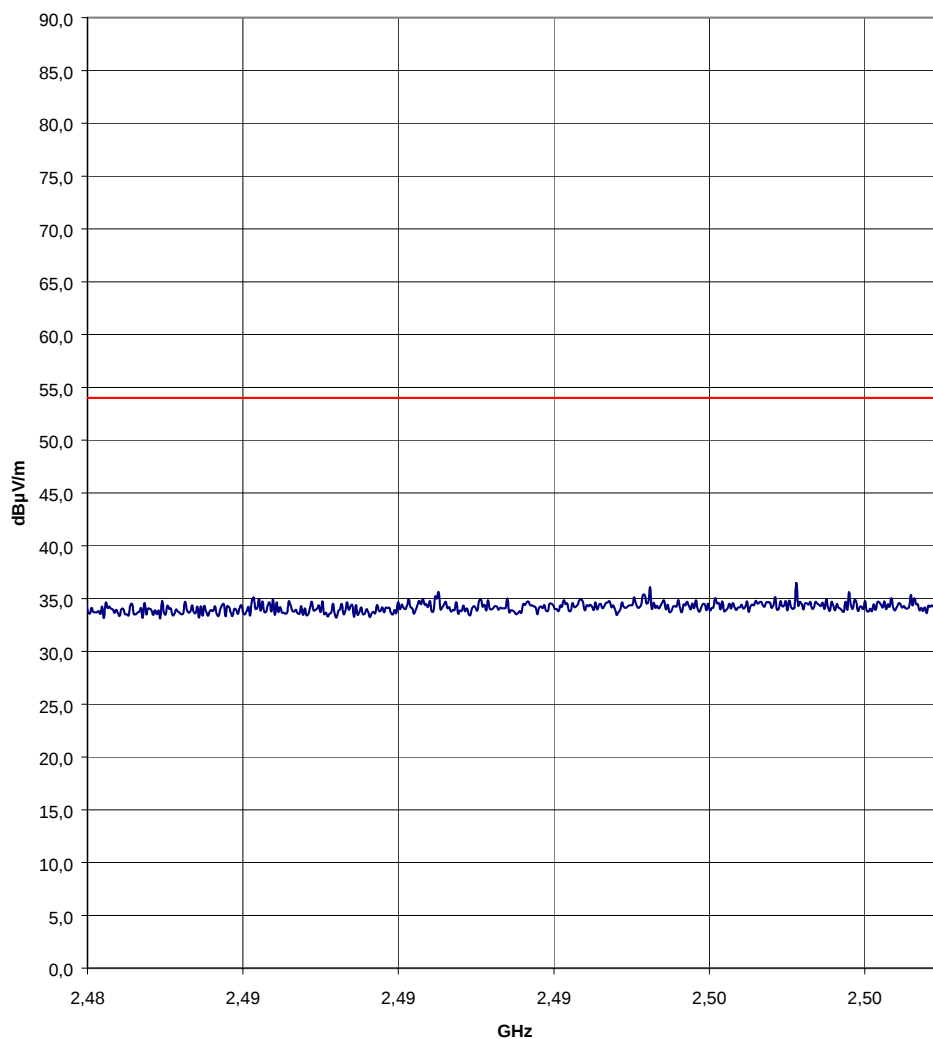
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH6
Restricted Band 2483,5-2500 MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Horizontal Polarization



Subpart C,
Limit AV

SCAN RESTRICTED BANDEDGES (2483,5 MHz – 2500 MHz):

Vertical Antenna Polarization

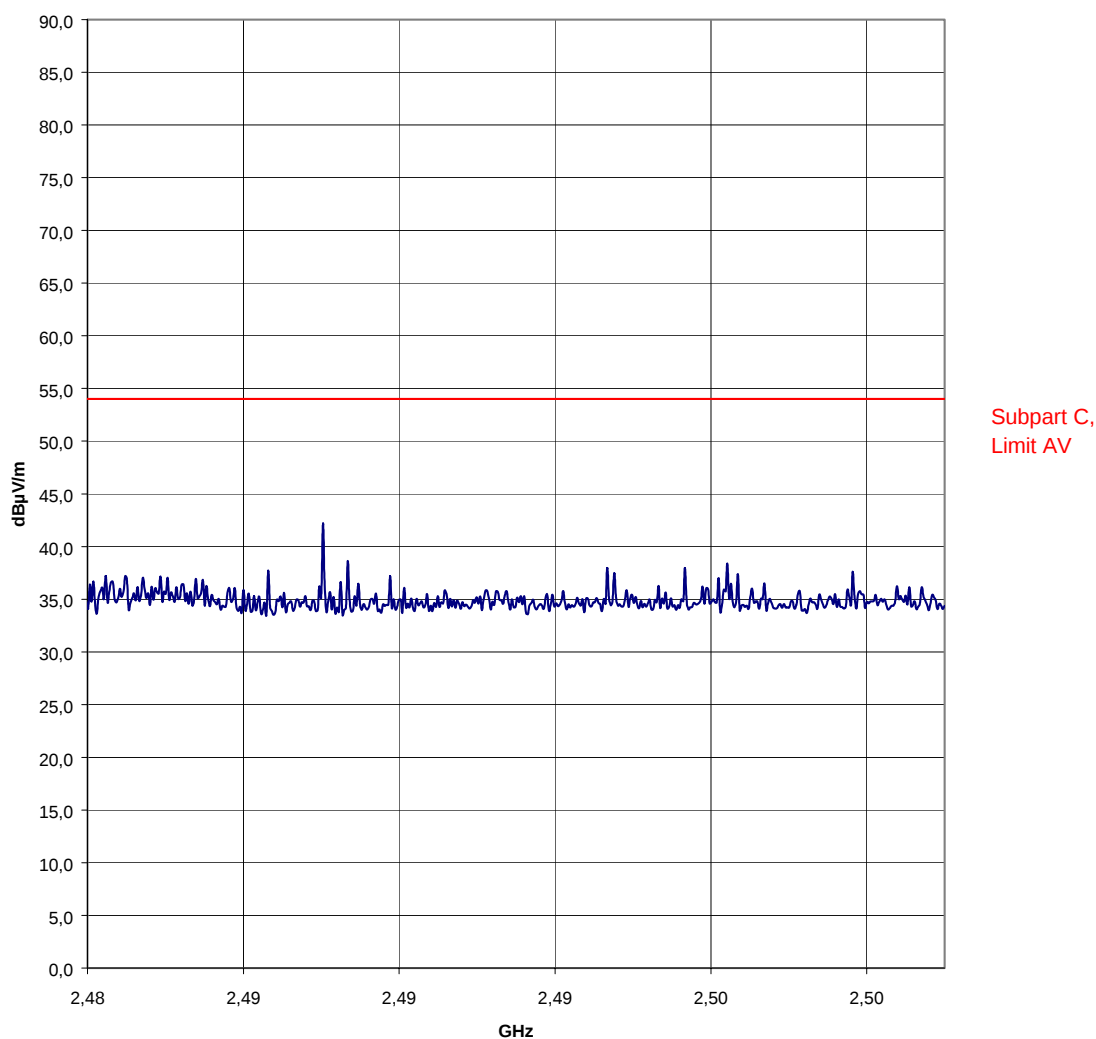
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH6
Restricted Band 2483,5-2500 MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Vertical Polarization



SCAN RESTRICTED BANDEDGES (2483,5 MHz – 2500 MHz):

Horizontal Antenna Polarization

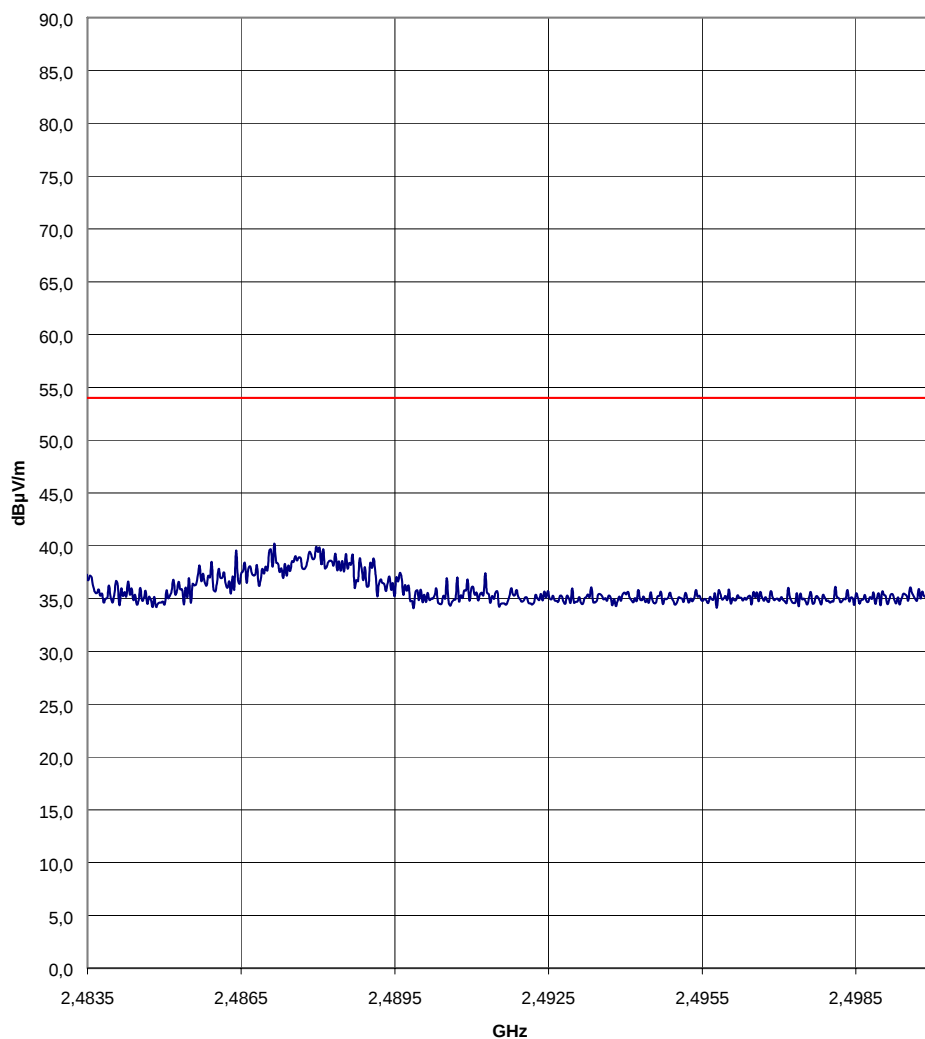
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

Mode:
TX- & RX-mode
CH11
Restricted Band 2483,5-2500 MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Horizontal Polarization



Subpart C,
Limit AV

SCAN RESTRICTED BANDEDGES (2483,5 MHz – 2500 MHz):

Vertical Antenna Polarization

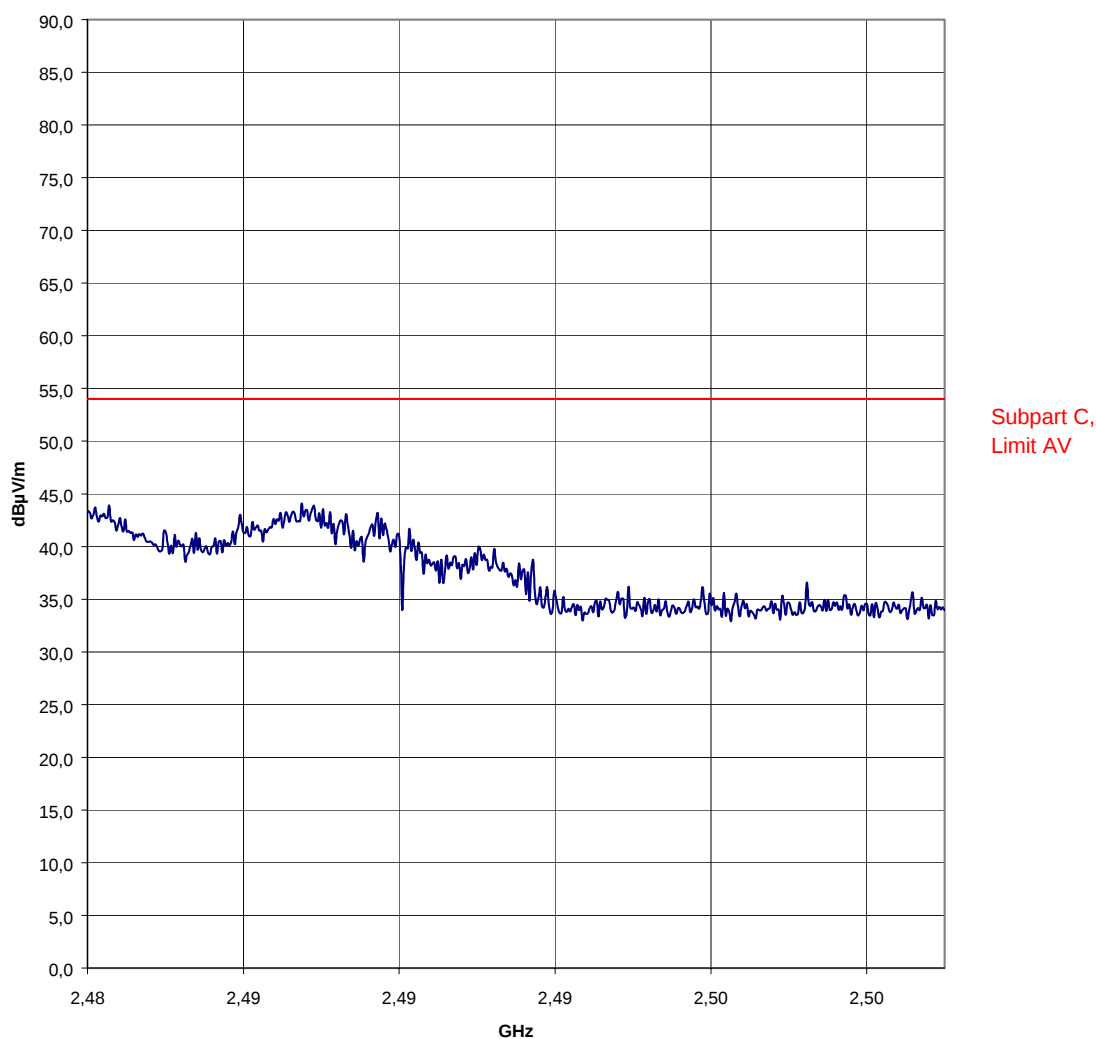
Test distance: 3 m

Project file: E-0053-1426-00
Applicant: Funkwerk GmbH
Model: core11b
Date of test: 21.09.2004
Operator: Jürgen Pessinger
Detector: MaxPeak
Result: **SCAN**

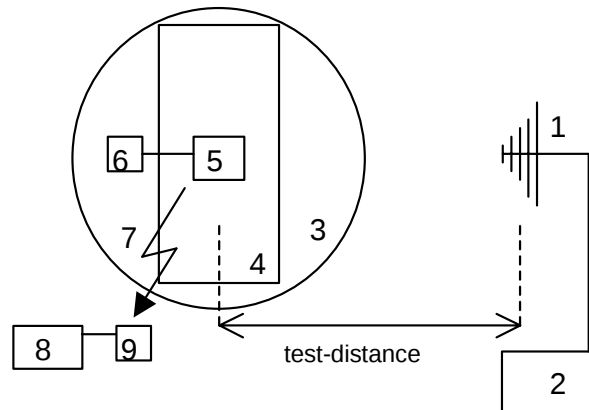
Mode:
TX- & RX-mode
CH11
Restricted Band 2483,5-2500 MHz
115V/60Hz

FCC Part 15 Subpart C, Limit AV

Vertical Polarization



MEASUREMENT SETUP RADIATED EMISSIONS



- 1 Measurement antenna
- 3 Turn table
- 5 EUT
- 7 Observed data transmission
- 9 WLAN Device

- 2 Test receiver
- 4 Wooden table
- 6 3.3V DC Powersupply
- 8 Laptop

PHOTO TESTSETUP RADIATED EMISSION



6dB Bandwidth

TEST CONDITIONS AND RESULTS:

The transmitter output is connected to a spectrum analyser. The RBW is set to 100 kHz and the VBW is set to 100kHz.

Used test instruments and test accessories:

Test instrument	Type	Manufacturer	ID - No.
Spectrum analyzer	FSP	Rhode & Schwarz	01-01/01-01-063
HF cable	RG 223	Emitel AG	01-05/02-02-102

TEST RESULTS:

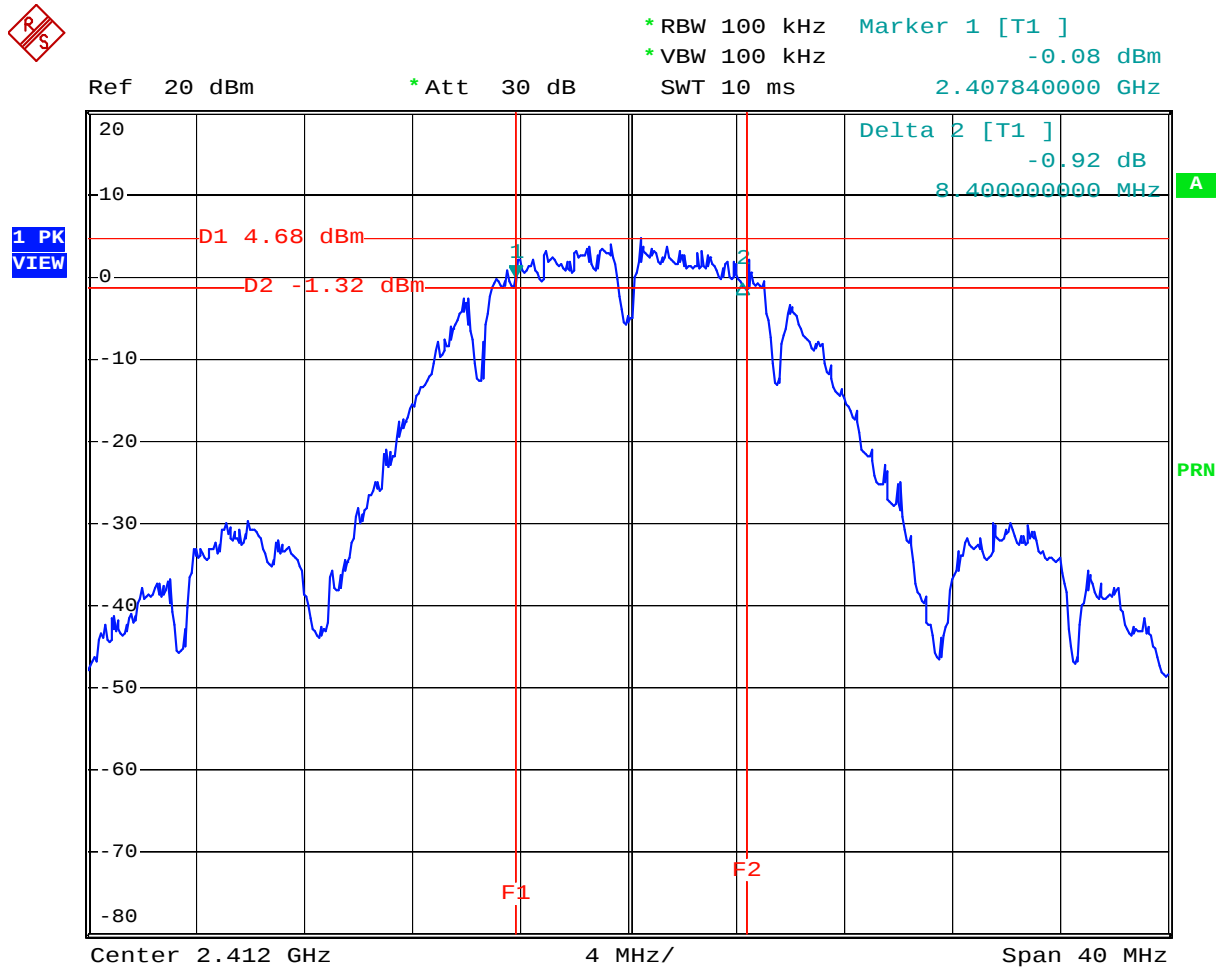
The requirements are: ☒ MET ☐ NOT MET

Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Result
CH1	2412	8400	500	Limit kept
CH6	2437	7040	500	Limit kept
CH11	2462	7680	500	Limit kept

Remarks:

6 dB Bandwidth (Plot):

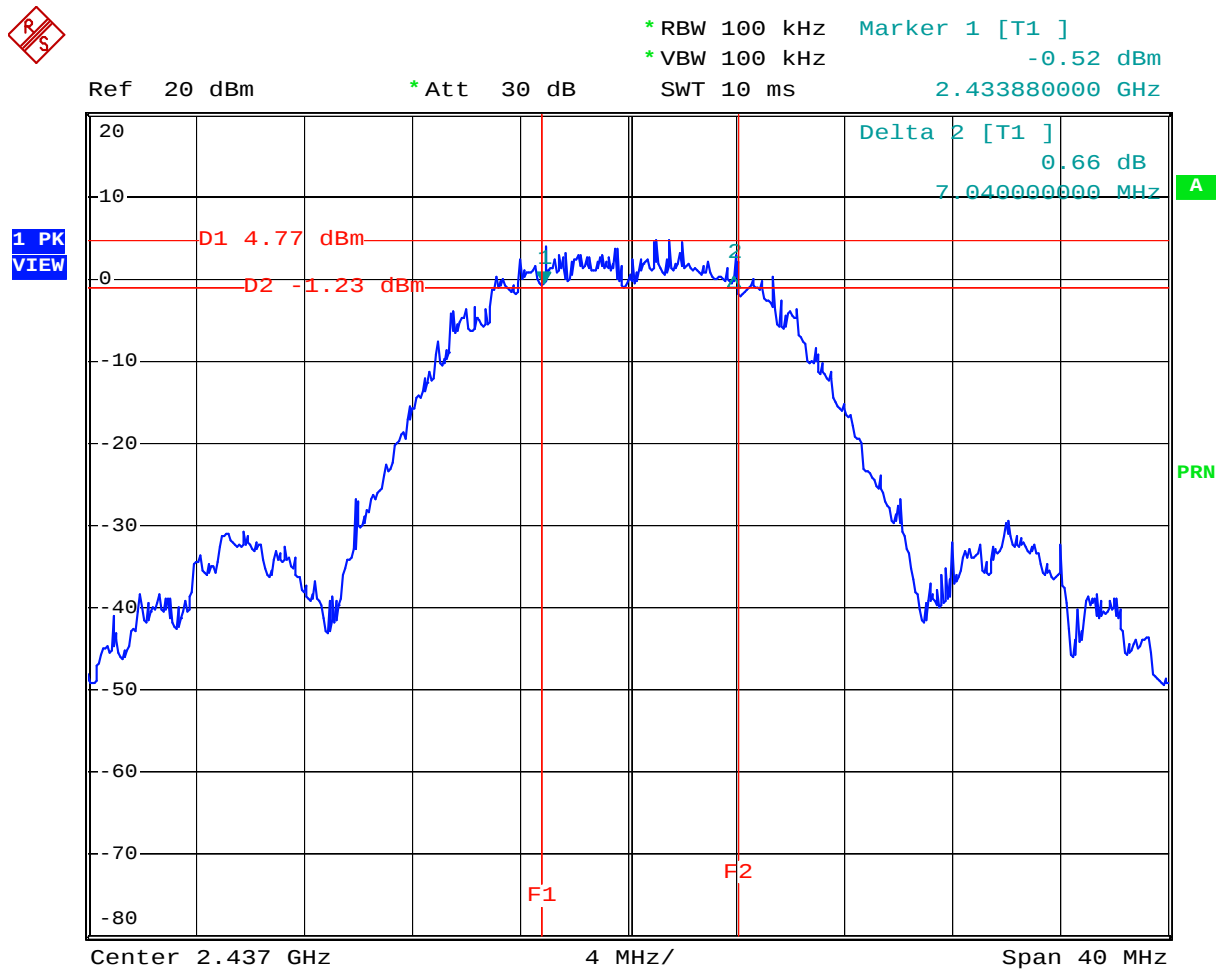
Channel 1



Date: 20.SEP.2004 13:49:36

6 dB Bandwidth (Plot):

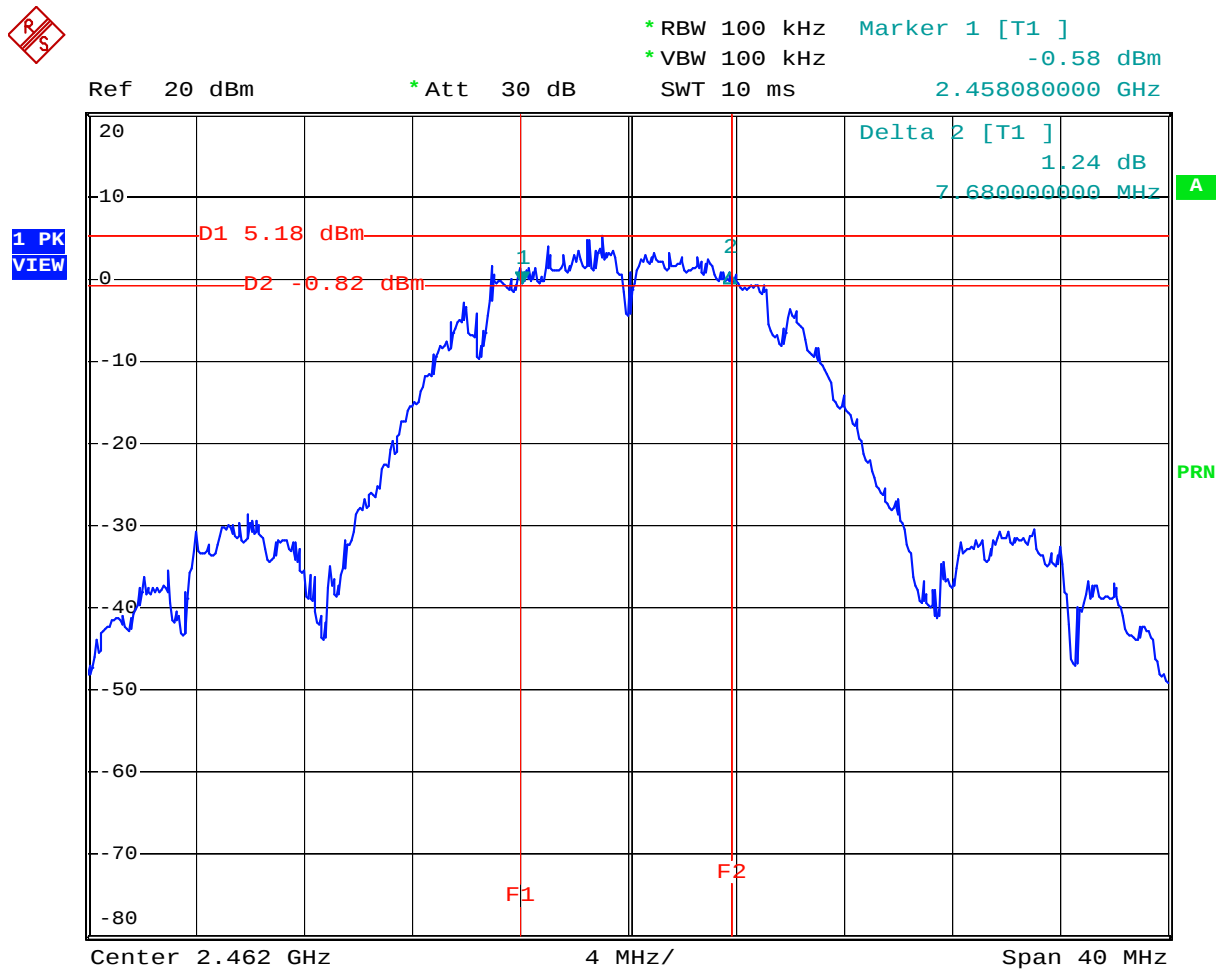
Channel 6



Date: 20.SEP.2004 13:57:06

6 dB Bandwidth (Plot):

Channel 11



Date: 20.SEP.2004 14:04:37

Peak Output Power

TEST CONDITIONS AND RESULTS:

The transmitter output is connected to a spectrum analyser. The bandwidth of the fundamental frequency was measured by spectrum analyser with 1 MHz RBW and 1 MHz VBW. The peak Power was measured and recorded.

Used test instruments and test accessories:

Test instrument	Type	Manufacturer	ID - No.
Spectrum analyzer	FSP	Rhode & Schwarz	01-01/01-01-063
HF cable	RG 223	Emitel AG	01-05/02-02-102

TEST RESULTS:

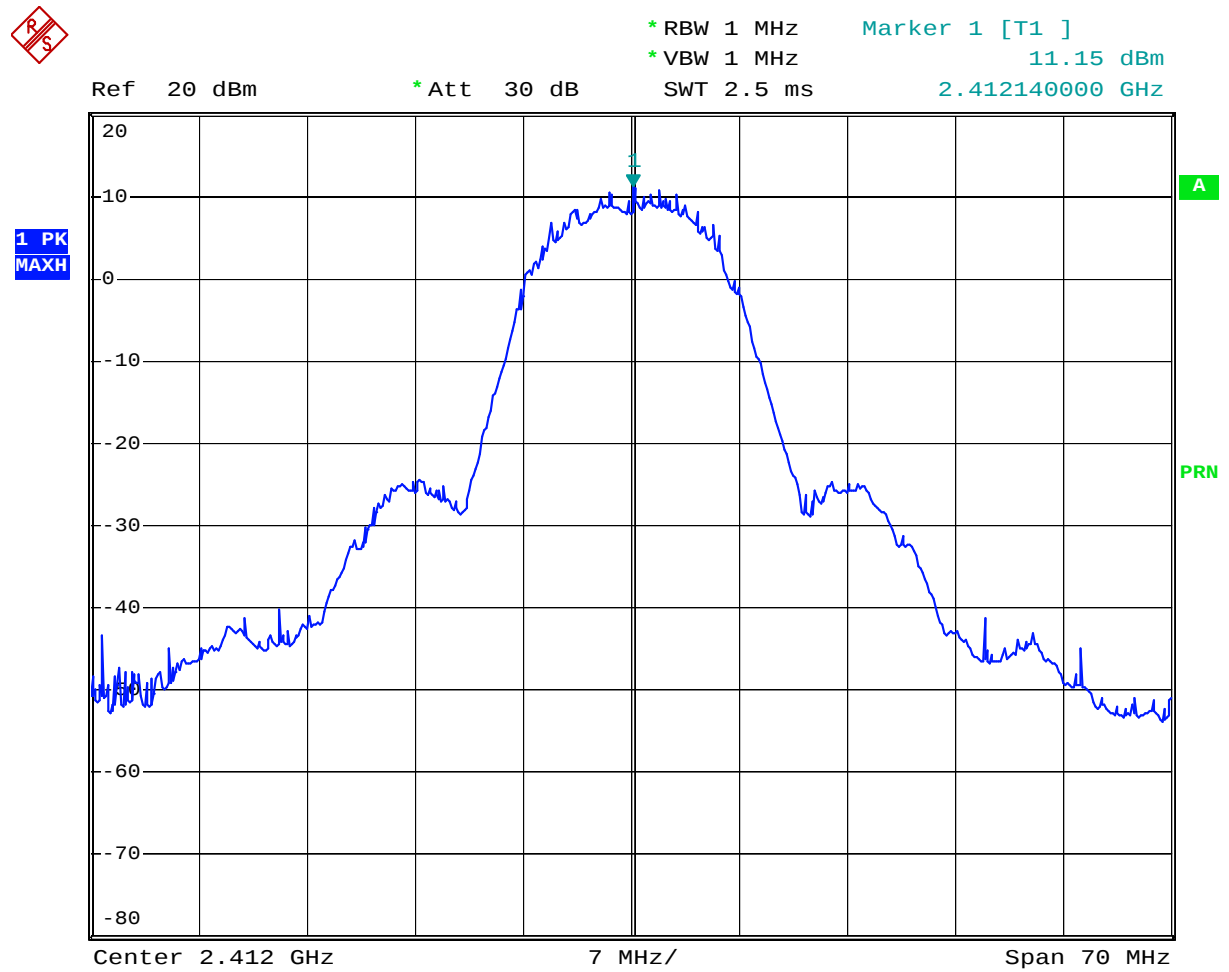
The requirements are: ☒ MET ☐ NOT MET

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
CH1	2412	11,15	30	Limit kept
CH6	2437	10,82	30	Limit kept
CH11	2462	11,00	30	Limit kept

Remarks:

Peak output power (Plot):

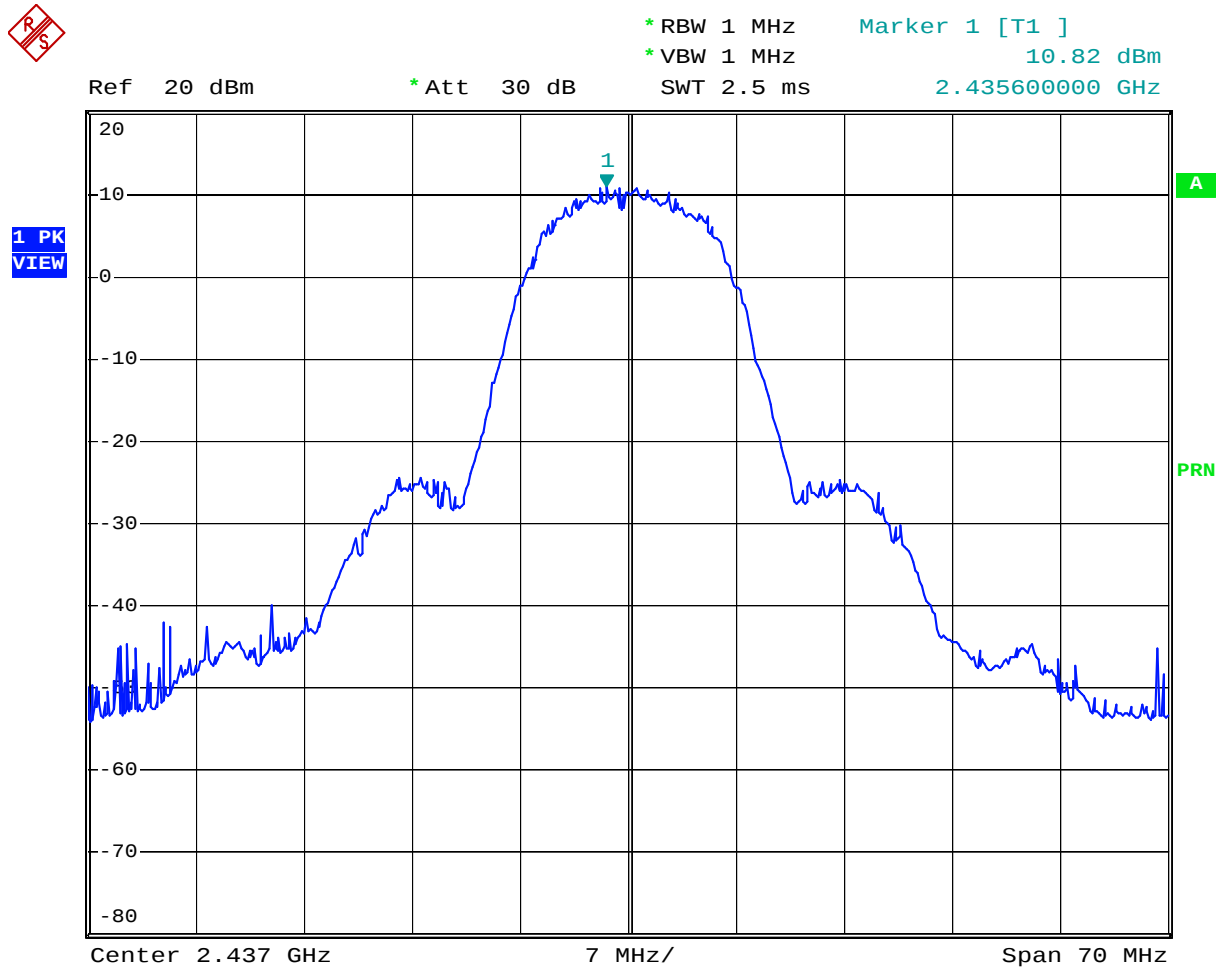
Channel 1



Date: 20.SEP.2004 14:36:13

Peak output power (Plot):

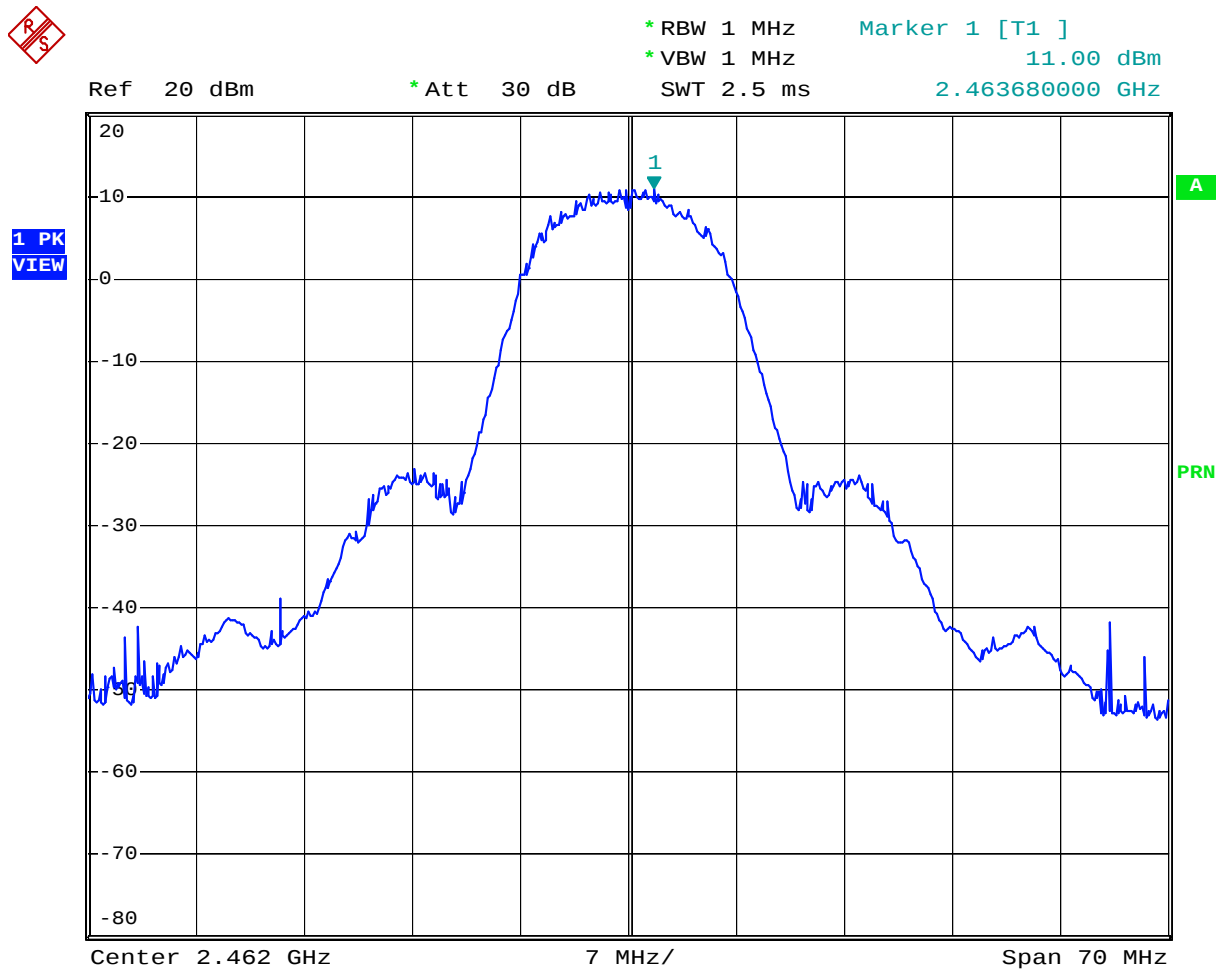
Channel 6



Date: 20.SEP.2004 14:26:07

Peak output power (Plot):

Channel 11



Date: 20.SEP.2004 14:17:54

Peak Power Spectral Density

TEST CONDITIONS AND RESULTS:

The transmitter output is connected to a spectrum analyser, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyser using RBW = 3 kHz and VBW > 3 kHz. The PPSD is the highest level found across the emission in any 3 kHz band.

Used test instruments and test accessories:

Test instrument	Type	Manufacturer	ID - No.
Spectrum analyzer	FSP	Rhode & Schwarz	01-01/01-01-063
HF cable	RG 223	Emitel AG	01-05/02-02-102

TEST RESULTS:

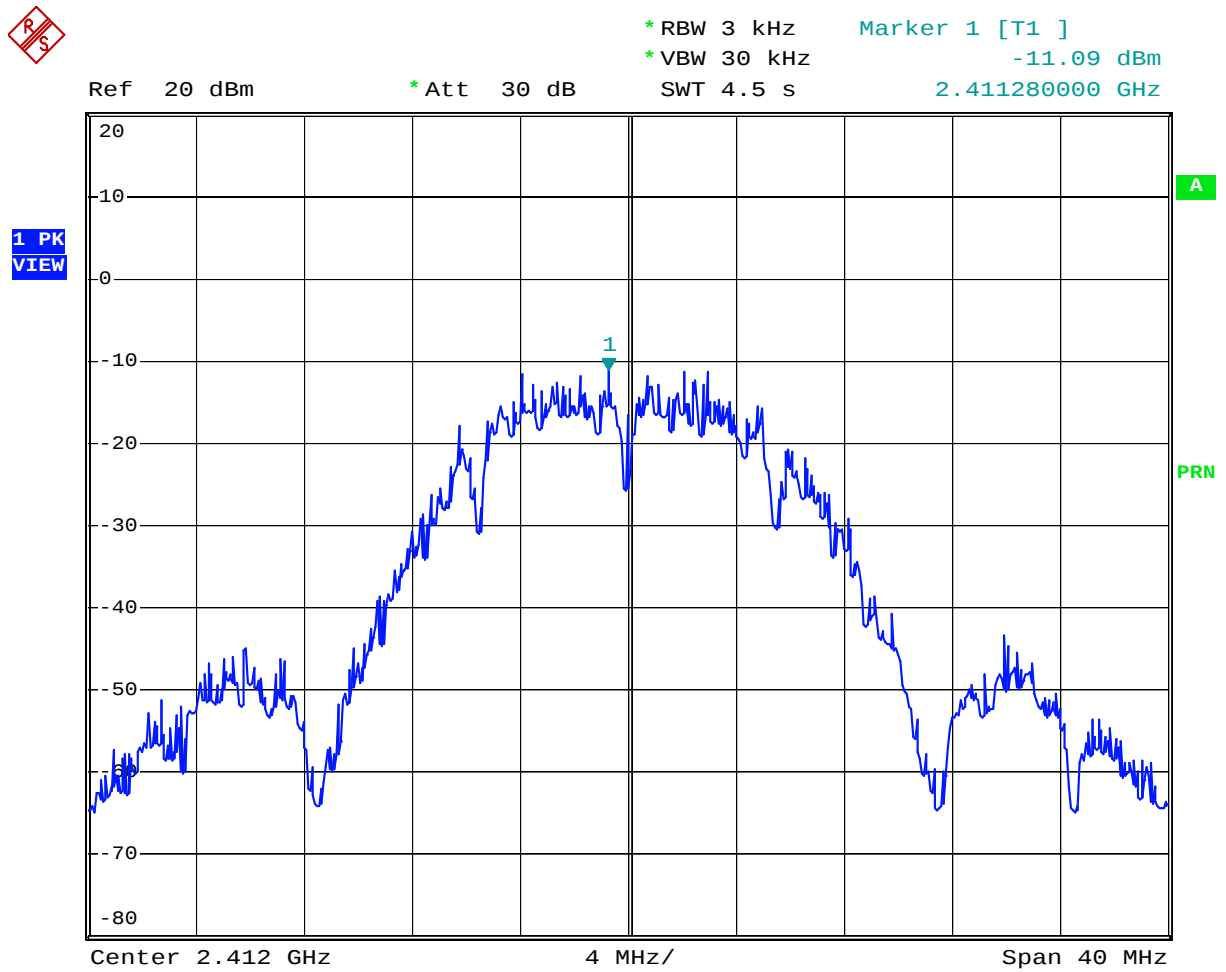
The requirements are: ☒ MET ☐ NOT MET

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
CH1	2412	-11,09	8	Limit kept
CH6	2437	-10,57	8	Limit kept
CH11	2462	-8,30	8	Limit kept

Remarks:

Peak power spectral density (Plot):

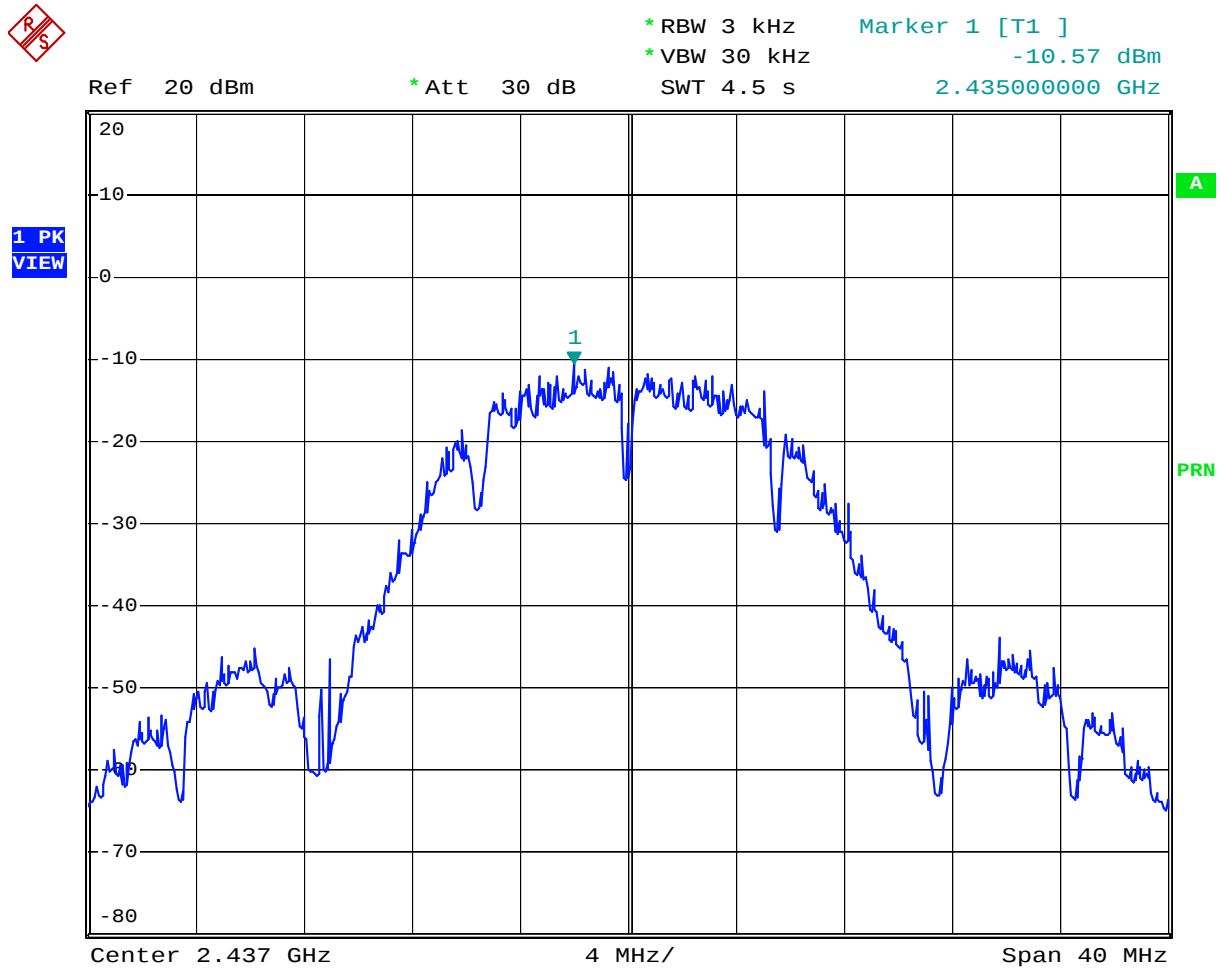
Channel 1



Date: 20.SEP.2004 14:43:42

Peak power spectral density (Plot):

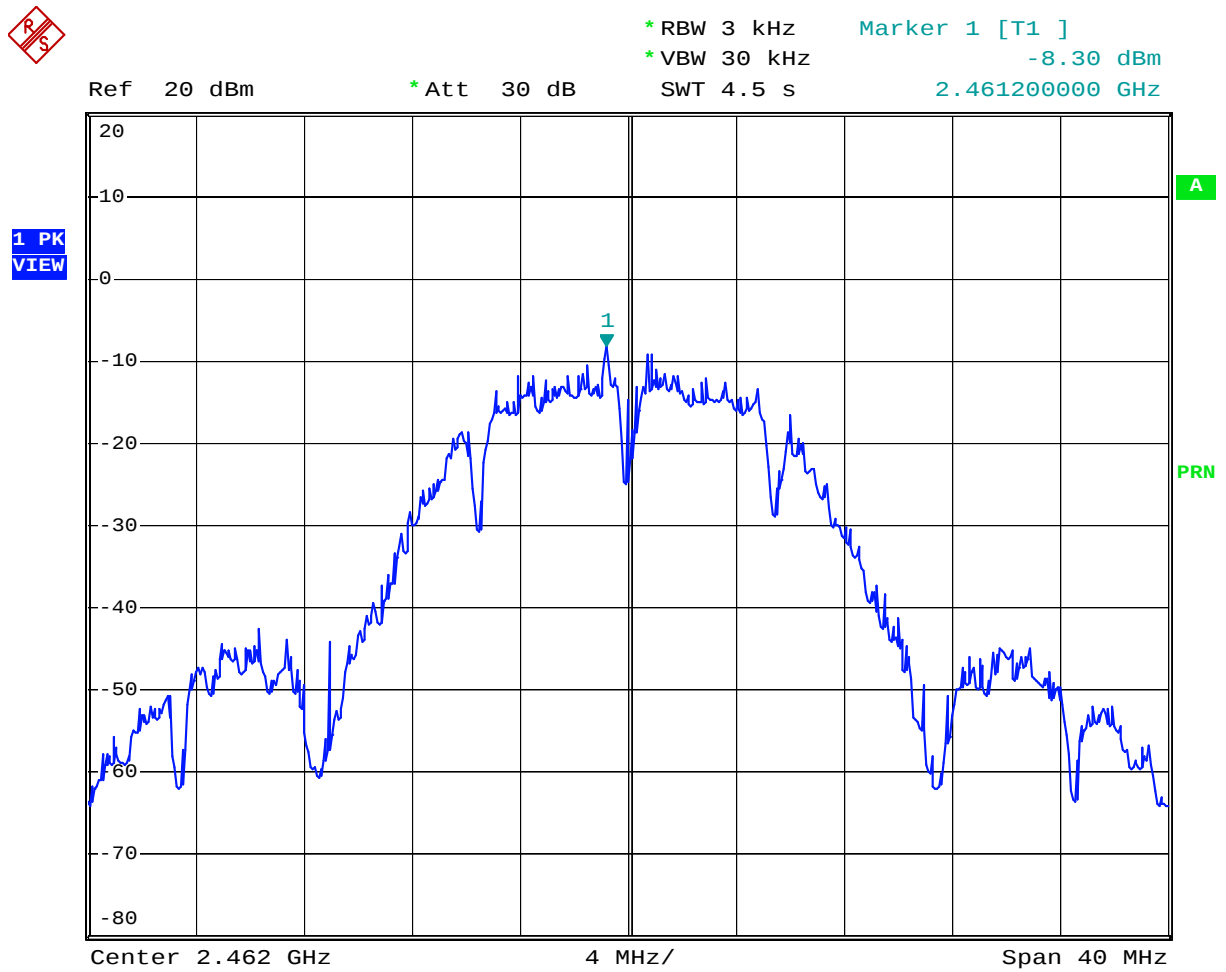
Channel 6



Date: 20.SEP.2004 15:01:11

Peak power spectral density (Plot):

Channel 11



Date: 20.SEP.2004 15:25:24

Conducted Spurious Emissions

TEST CONDITIONS AND RESULTS:

The transmitter output is connected to a spectrum analyser. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to lowest, middle and highest channel.

Used test instruments and test accessories:

Test instrument	Type	Manufacturer	ID - No.
Spectrum analyzer	FSP	Rhode & Schwarz	01-01/01-01-063
HF cable	RG 223	Emitel AG	01-05/02-02-102

TEST RESULTS:

The requirements are: ☒ MET ☐ NOT MET

Remarks:

Conducted Spurious Emissions (Plot):

Channel 1

low Bandedge / Reference



* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz 5.53 dBm
SWT 10 ms 2.415120000 GHz



Date: 22.SEP.2004 15:51:06

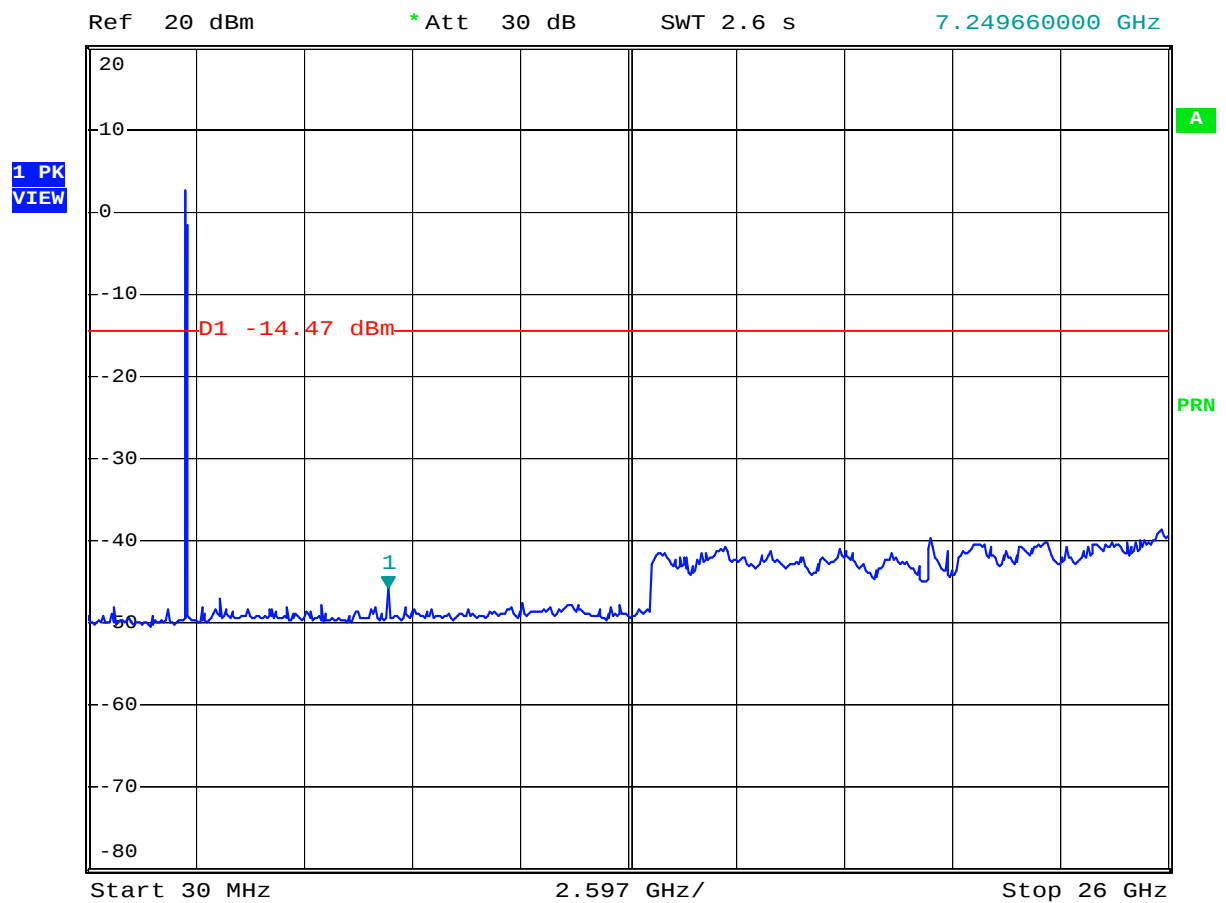
Conducted Spurious Emissions (Plot):

Channel 1

Spurious Emissions



* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz -45.81 dBm
SWT 2.6 s 7.249660000 GHz



Date: 22.SEP.2004 16:07:42

Conducted Spurious Emissions (Plot):

Channel 6

Reference



* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz 3.38 dBm
SWT 10 ms 2.438680000 GHz



Date: 22.SEP.2004 16:17:22

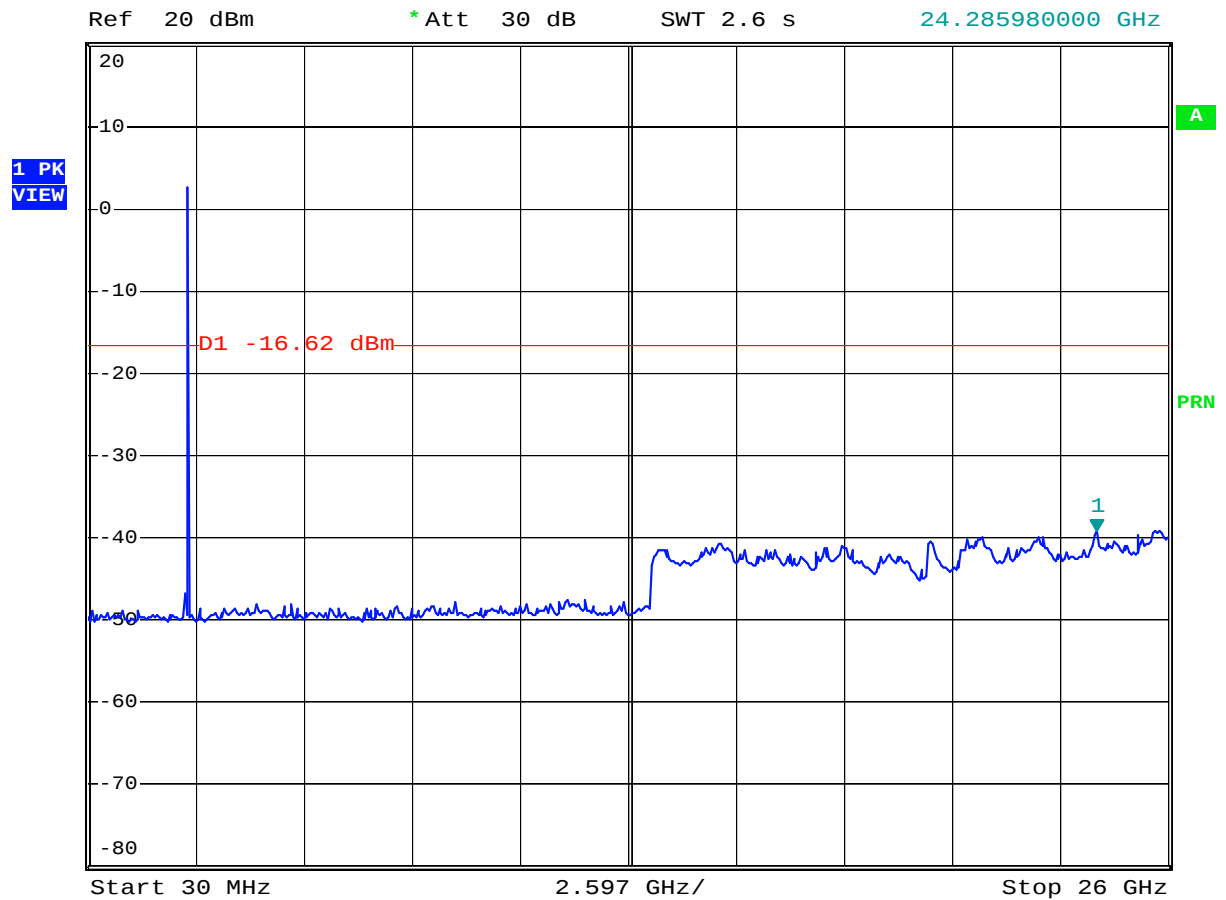
Conducted Spurious Emissions (Plot):

Channel 6

Spurious Emissions



* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz -39.09 dBm
SWT 2.6 s 24.285980000 GHz



Date: 22.SEP.2004 16:29:04

Conducted Spurious Emissions (Plot):

Channel 11

high Bandedge / Reference



* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz 3.80 dBm
SWT 10 ms 2.460960000 GHz

Ref 20 dBm

* Att 30 dB

SWT 10 ms

2.460960000 GHz

1 PK
VIEW



Center 2.4835 GHz

7 MHz/

Span 70 MHz

Date: 22.SEP.2004 16:33:24

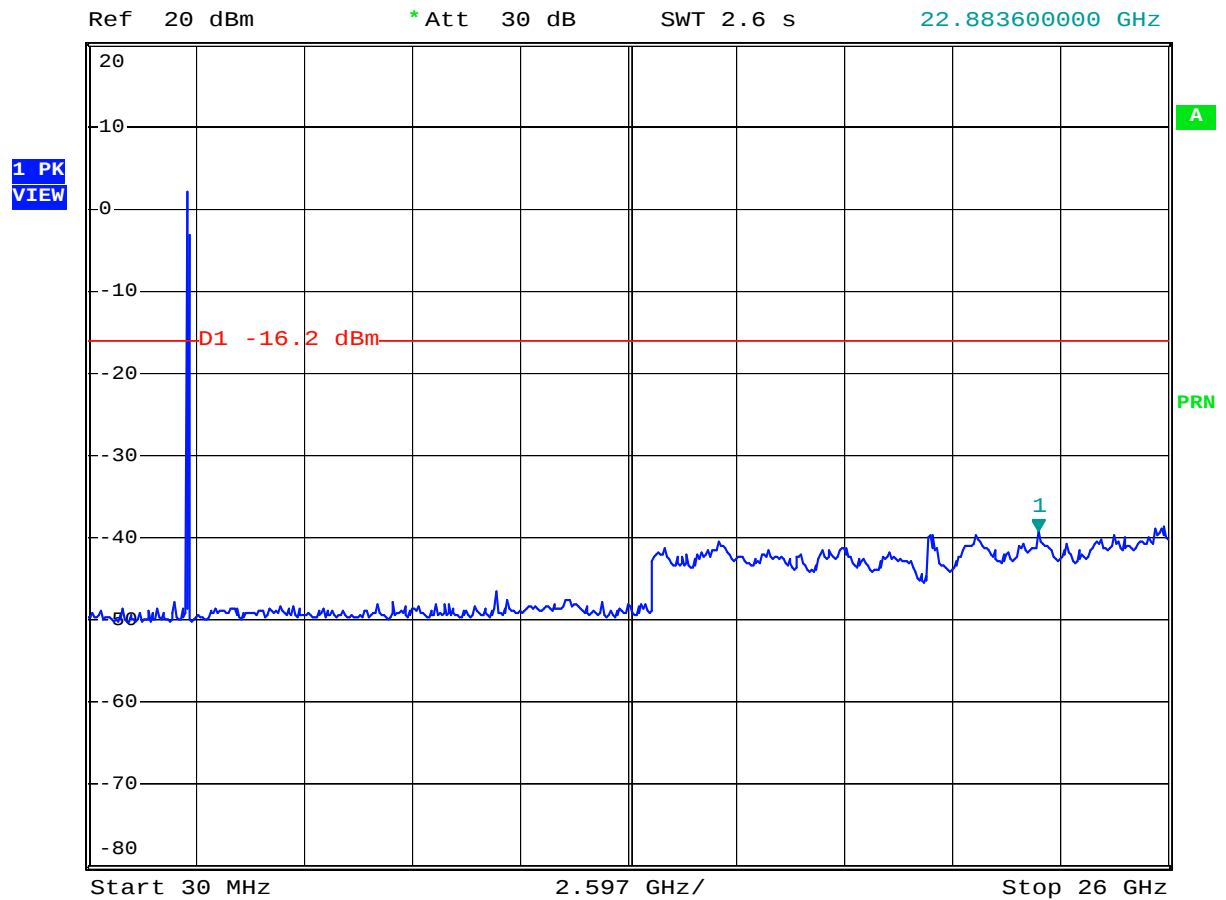
Conducted Spurious Emissions (Plot):

Channel 11

Spurious Emissions

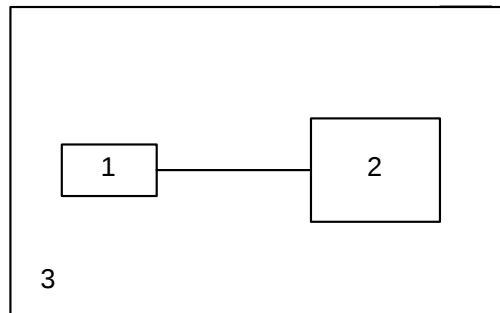


* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz -39.28 dBm
SWT 2.6 s 22.883600000 GHz



Date: 22.SEP.2004 16:45:48

MEASUREMENT SETUP CONDUCTED EMISSIONS



1 EUT
3 Wooden table

2 Spectrum analyzer

PHOTO TESTSETUP CONDUCTED EMISSIONS



PHOTOS OF THE EUT

EUT TOPVIEW



EUT BOTTOMVIEW



ANTENNA

