

TEST REPORT

Test report no.: 1-4537/12-01-03-D



Deutsche
Akkreditierungsstelle
D-PL-12076-01-01

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
Internet: <http://www.cetecom.com>
e-mail: ict@cetecom.com

Accredited Testing Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS). The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01
Area of Testing: Radio/Satellite Communications

Applicant

Krohne S.A.S
Les Ors
26103 ROMANS Cedex / FRANCE
Phone: +33 4 75 05 44 00
Fax: +33 4 75 05 00 48
Contact: Vincent Pichot
e-mail: v.pichot@krohne.com
Phone: +33 4 75 05 70 35

Manufacturer

Krohne S.A.S
Les Ors
26103 ROMANS Cedex / FRANCE

Test standard/s

47 CFR Part 15

Title 47 of the Code of Federal Regulations; Chapter I
Part 15 - Radio frequency devices

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item: Tank level probe radar
Model name: OPTIWAVE 5200 C / OPTIWAVE 5200 F
FCC ID: Q6B-FMCW10G52
Frequency: 8.5 GHz – 10.6 GHz
Antenna: Metallic horn antenna (See Annex B, photo 9)
Wave horn antenna (See Annex B, photo 14)
Power Supply: 24 V DC
Temperature Range: -40 °C to +85 °C



This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:

Gerald Karsten

2013-01-21 Karsten Gerald

Test performed:

M. Walla

2013-01-21 Meheza Walla



1 Table of contents

1	Table of contents	2
2	General information	3
2.1	Notes and disclaimer	3
2.2	Application details	3
3	Test standard/s	3
4	Test environment.....	4
5	Test item	4
6	Test laboratories sub-contracted	4
7	Summary of measurement results	5
8	RF measurement testing.....	6
8.1	Description of test setup	6
8.1.1	Radiated measurements.....	6
8.1.2	Additional comments	7
9	Measurement results.....	8
9.1	Emission Bandwidth	8
9.2	Transmitter output power	11
9.3	Radiated spurious emissions.....	19
9.4	Conducted spurious emissions < 30 MHz	53
10	Test equipment and ancillaries used for tests	55
11	Observations	56
Annex A	Photographs of the test setup.....	57
Annex B	External photographs of the EUT	58
Annex C	Internal photographs of the EUT	64
Annex D	Document history	69
Annex E	Further information.....	69
Annex F	Accreditation Certificate	70

2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations 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 CETECOM ICT Services GmbH.

The testing service provided by CETECOM ICT Services GmbH has been rendered under the current "General Terms and Conditions for CETECOM ICT Services GmbH".

CETECOM ICT Services GmbH will not be liable for any loss or damage resulting from false, inaccurate, inappropriate or incomplete product information provided by the customer.

Under no circumstances does the CETECOM ICT Services GmbH test report include any endorsement or warranty regarding the functionality, quality or performance of any other product or service provided.

Under no circumstances does the CETECOM ICT Services GmbH test report include or imply any product or service warranties from CETECOM ICT Services GmbH, including, without limitation, any implied warranties of merchantability, fitness for purpose, or non-infringement, all of which are expressly disclaimed by CETECOM ICT Services GmbH.

All rights and remedies regarding vendor's products and services for which CETECOM ICT Services GmbH has prepared this test report shall be provided by the party offering such products or services and not by CETECOM ICT Services GmbH.

In no case this test report can be considered as a Letter of Approval.

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

Date of receipt of order:	2012-03-14
Date of receipt of test item:	2012-03-19
Start of test:	2012-03-19
End of test:	2013-01-10
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices

4 Test environment

Temperature:	T_{nom}	+22 °C during room temperature tests
Relative humidity content:		53 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	24.0 V DC

5 Test item

Kind of test item	:	Tank level probe radar
Type identification	:	OPTIWAVE 5200 C / OPTIWAVE 5200 F
S/N serial number	:	OPTIWAVE 5200 C: F121234567890123 OPTIWAVE 5200 F: F121234567890124
HW hardware status	:	Converter BOM4000342401F HMI BOM4000487601H μ C board BOM4001025501B μ W board BOM4000766101C Modbus sensor BOM 4000679801E Modbus converter BOM 4000664601D
SW software status	:	Converter software V0.01 PRE 40 HMI software V0.00 PRE 40 Sensor software V0.81 (radio approval)
Frequency band	:	8.5 GHz – 10.6 GHz
Type of modulation	:	FMCW
Number of channels	:	1
Antenna	:	Metallic horn antenna (See Annex B, photo 9) Wave horn antenna (See Annex B, photo 14)
Power supply	:	24 V DC
Temperature range	:	-40 °C to +85 °C

6 Test laboratories sub-contracted

None

7 Summary of measurement results



No deviations from the technical specifications were ascertained



There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	47 CFR Part 15	Passed	2013-01-21	-/-

Test specification clause	Test case	Temperature conditions	Power source voltages	Pass	Fail	NA	NP	Results (max.)
§15.503(d) §15.517(b) RSS210/A11.3	Emission Bandwidth	Nominal	Nominal	☒	☐	☐	☐	complies
RSS210/A11.3(c) RSS210/A11.2(c)	Transmitter Output Power	Nominal	Nominal	☒	☐	☐	☐	complies
§15.209(a) §15.517(c)(d)(e) RSS210/A11.3(d)	Radiated spurious emissions	Nominal	Nominal	☒	☐	☐	☐	complies
§15.207(a) ICES-003	Conducted emissions < 30 MHz	Nominal	Nominal	☒	☐	☐	☐	complies

Note: NA = Not Applicable; NP = Not Performed

8 RF measurement testing

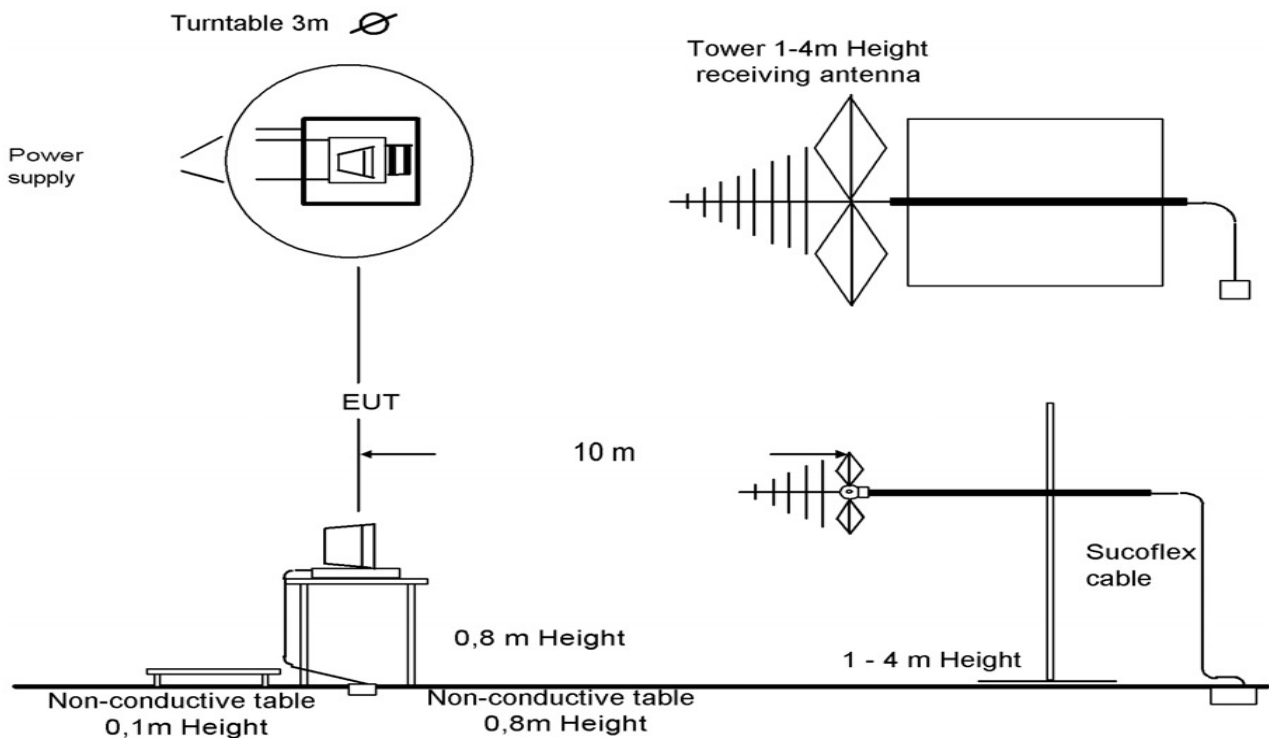
8.1 Description of test setup

8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 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 C63.4-2009 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 setups 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 analyzers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2009 clause 4.2.

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

Semi anechoic chamber



Picture 1: Diagram radiated measurements

9 kHz - 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna

The EUT is powered by an external power supply with nominal voltage

8.1.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

Test mode: ☒ Normal operation.

☒ Special software is used to stop FMCW-sweep at low/mid/high frequency.

The customer provided 2 Samples for the measurement: OPTIWAVE 5200 C and OPTIWAVE 5200 F. The RF part is identical for both samples.

2 antennas were also used: a metallic horn antenna (See Annex B, photo 9) tested with both sample and a wave horn antenna (See Annex B, photo 14) tested with the OPTIWAVE 5200 C.

OPTIWAVE 5200 C: The RF part, the user interface and the power supply are combined in the same housing.



OPTIWAVE 5200 F: The RF part and the user interface are in 2 separated housing and connected via RS485.



The full tests were performed on the OPTIWAVE 5200 C and some delta tests on the OPTIWAVE 5200 F.

9 Measurement results

9.1 Emission Bandwidth

- Metallic horn antenna

Test Conditions	99 % Occupied bandwidth [MHz]	
	OPTIWAVE 5200 C	OPTIWAVE 5200 F
Sweep mode	1879	1882
Measurement uncertainty	$\pm \text{span}/1000$	

- Wave horn antenna

Test Conditions	99 % Occupied bandwidth [MHz]	
	OPTIWAVE 5200 C	-/-
Sweep mode	1881	-/-
Measurement uncertainty	$\pm \text{span}/1000$	

Limits:

§ 15.503 (d)

Ultra-wideband (UWB) transmitter. An intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

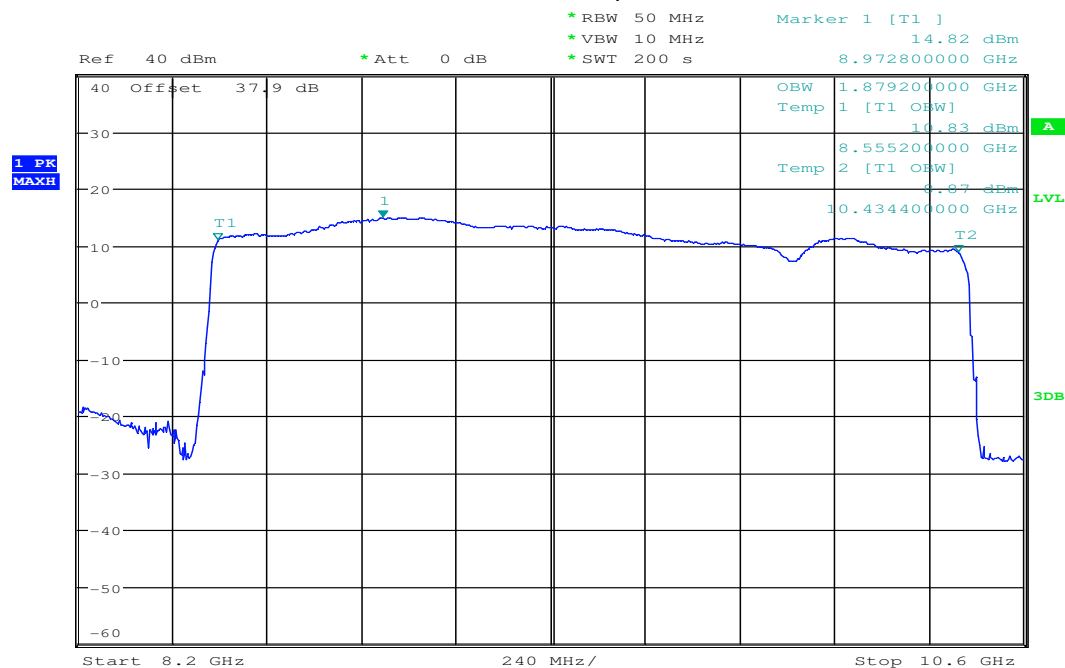
Limits:

§ 15.517 (b)

The UWB bandwidth of a UWB system operating under the provisions of this section must be contained between 3100 MHz and 10600 MHz.

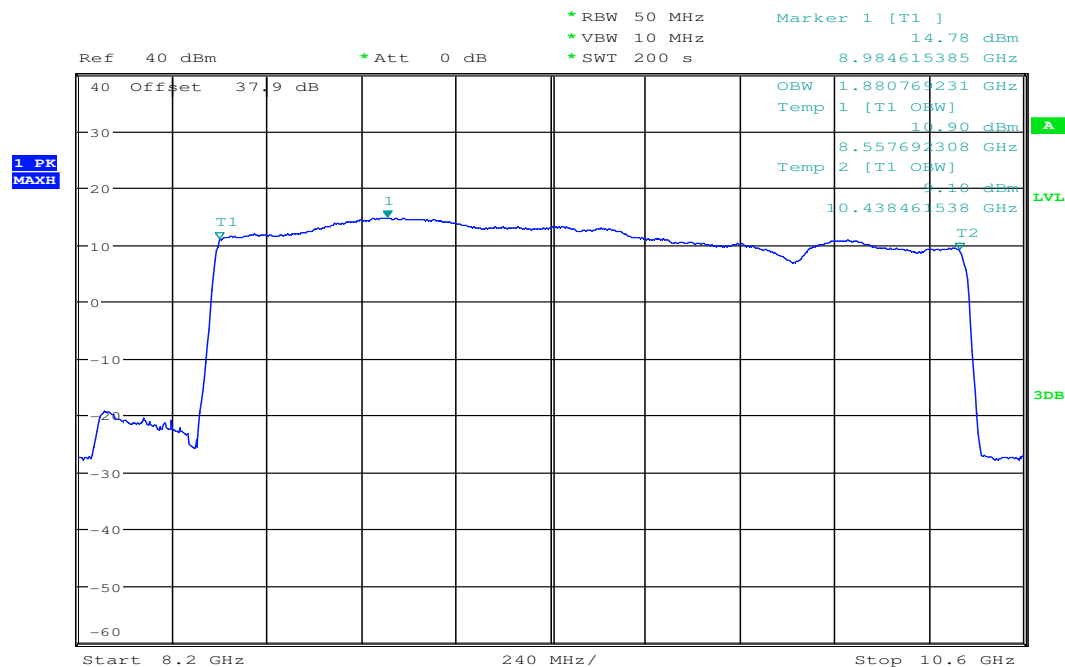
Result: The measurement is passed

Plot 1: Metallic horn antenna, OPTIWAVE 5200 C, sweep mode



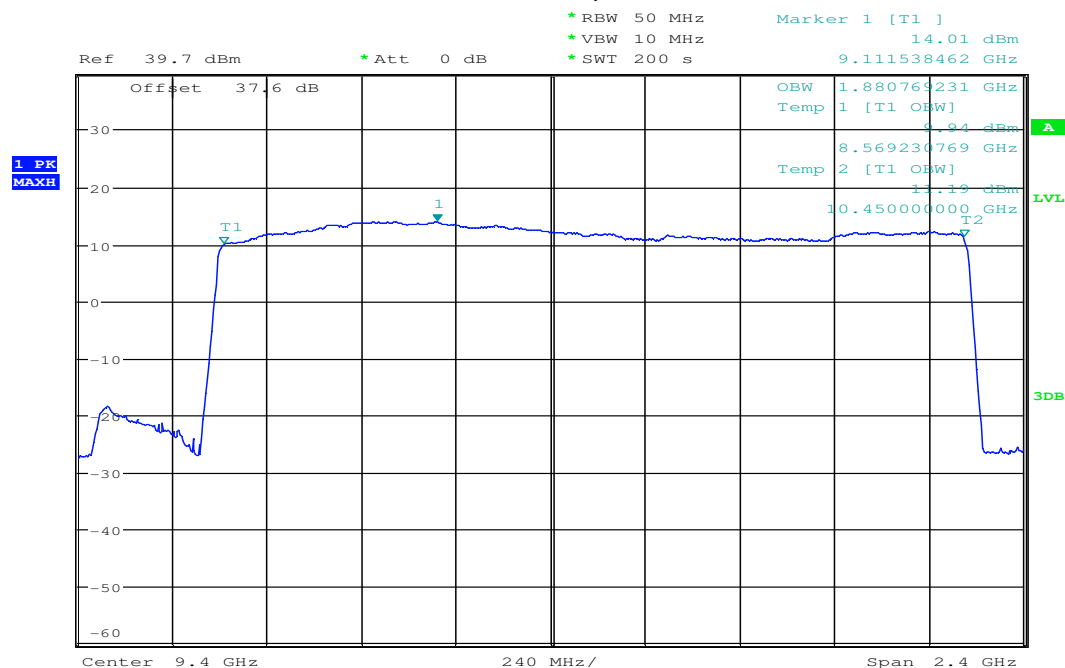
Date: 12.APR.2012 15:47:05

Plot 2: Metallic horn antenna, OPTIWAVE 5200 F, sweep mode



Date: 14.APR.2012 07:53:07

Plot 3: Wave horn antenna, OPTIWAVE 5200 C, sweep mode

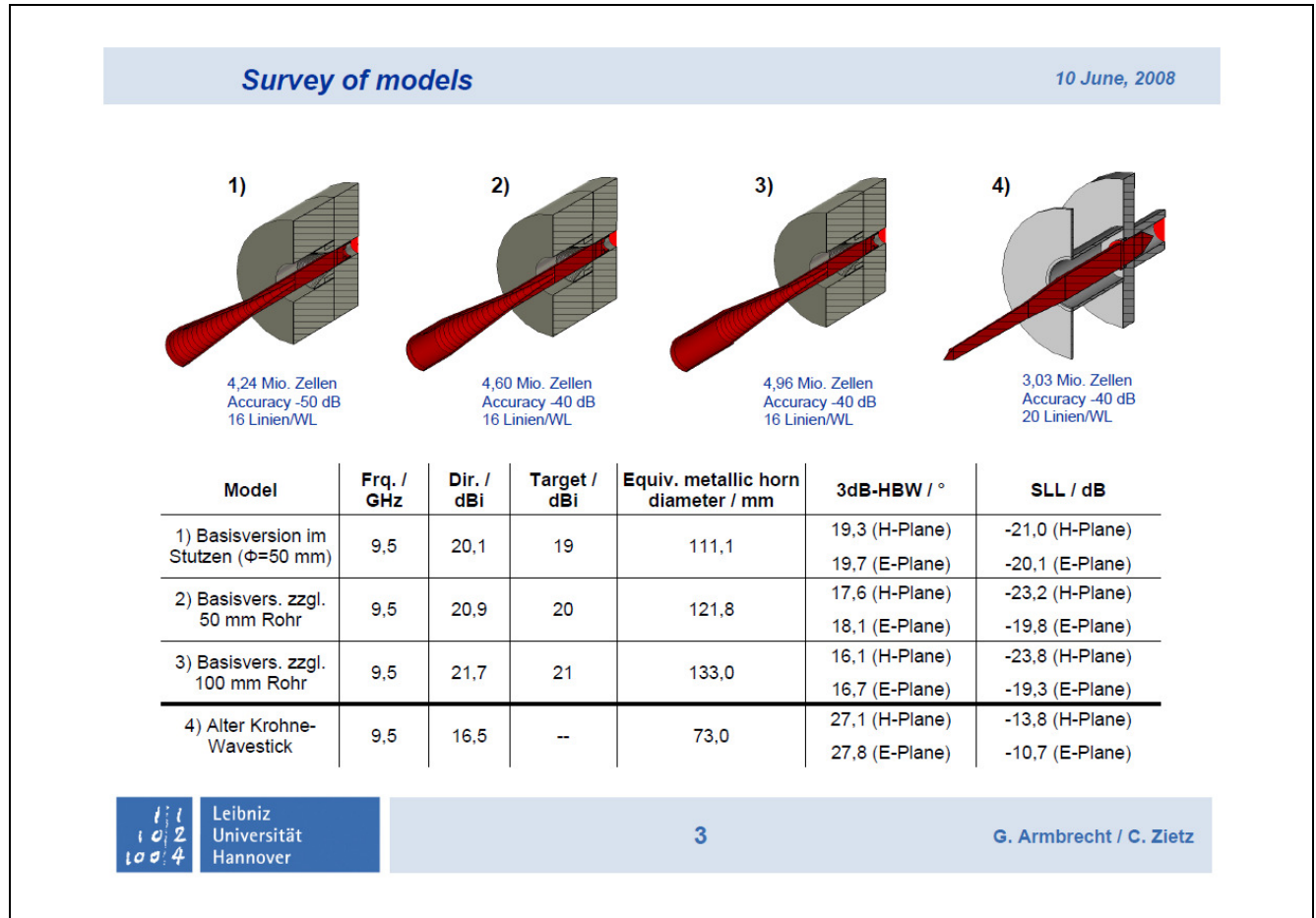


Date: 8.JAN.2013 14:53:45

9.2 Transmitter output power

Only for information!

The manufacturer declared an antenna gain of 21 dBi.



$$\text{Output Power Radiated (eirp)} = \text{Output Power Conducted} + \text{Antenna Gain}$$

$$\rightarrow \text{Output Power Conducted} = \text{Output Power Radiated (eirp)} - \text{Antenna Gain}$$

$$\rightarrow \text{Output Power Conducted} = \text{Output Power Radiated (eirp)} - 21 \text{ dBi}$$

- Metallic horn antenna

Measured:

Test Conditions	Transmitter output power radiated (Average)	
	OPTIWAVE 5200 C	OPTIWAVE 5200 F
Sweep mode	-32.21 dBm / 601.17 nW	-32.77 dBm / 528.45 nW
Low channel (Sweep stopped)	11.21 dBm / 13.21 mW	11.01 dBm / 12.62 mW
Middle channel (Sweep stopped)	12.02 dBm / 15.92 mW	11.66 dBm / 14.66 mW
High channel (Sweep stopped)	7.51 dBm / 5.64 mW	7.38 dBm / 5.47 mW
Measurement uncertainty	±3 dB	

Calculated:

Test Conditions	Transmitter output power conducted (Average)	
	OPTIWAVE 5200 C	OPTIWAVE 5200 F
Sweep mode	-53.21 dBm / 4.78 nW	-53.77 dBm / 4.20 nW
Low channel (Sweep stopped)	-9.79 dBm / 0.10 mW	-9.99 dBm / 0.10 mW
Middle channel (Sweep stopped)	-8.98 dBm / 0.13 mW	-9.34 dBm / 0.12 mW
High channel (Sweep stopped)	-13.49 dBm / 0.04 mW	-13.62 dBm / 0.04 mW
Measurement uncertainty	±3 dB	

- Wave horn antenna

Measured:

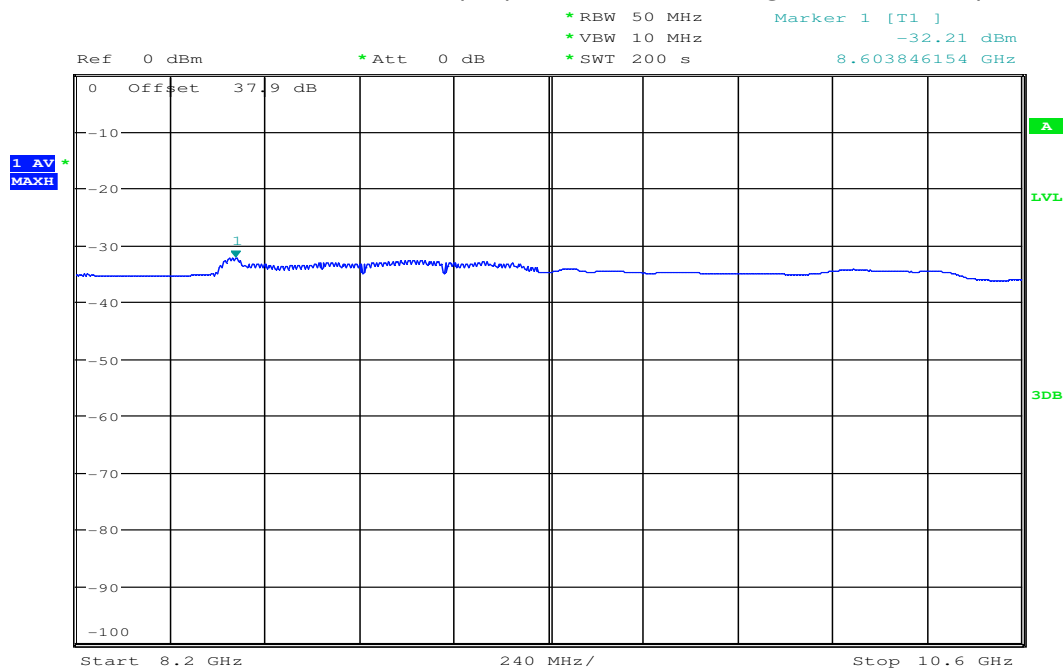
Test Conditions	Transmitter output power radiated (Average)	
	OPTIWAVE 5200 C	
Sweep mode	-33.16 dBm / 483.06 nW	-/-
Low channel (Sweep stopped)	9.72 dBm / 9.38 mW	-/-
Middle channel (Sweep stopped)	11.03 dBm / 12.68 mW	-/-
High channel (Sweep stopped)	9.51 dBm / 8.93 mW	-/-
Measurement uncertainty	±3 dB	

Calculated:

Test Conditions	Transmitter output power conducted (Average)	
	OPTIWAVE 5200 C	
Sweep mode	-54.16 dBm / 3.84 nW	-/-
Low channel (Sweep stopped)	-11.28 dBm / 0.07 mW	-/-
Middle channel (Sweep stopped)	-9.97 dBm / 0.10 mW	-/-
High channel (Sweep stopped)	-11.49 dBm / 0.07 mW	-/-
Measurement uncertainty	±3 dB	

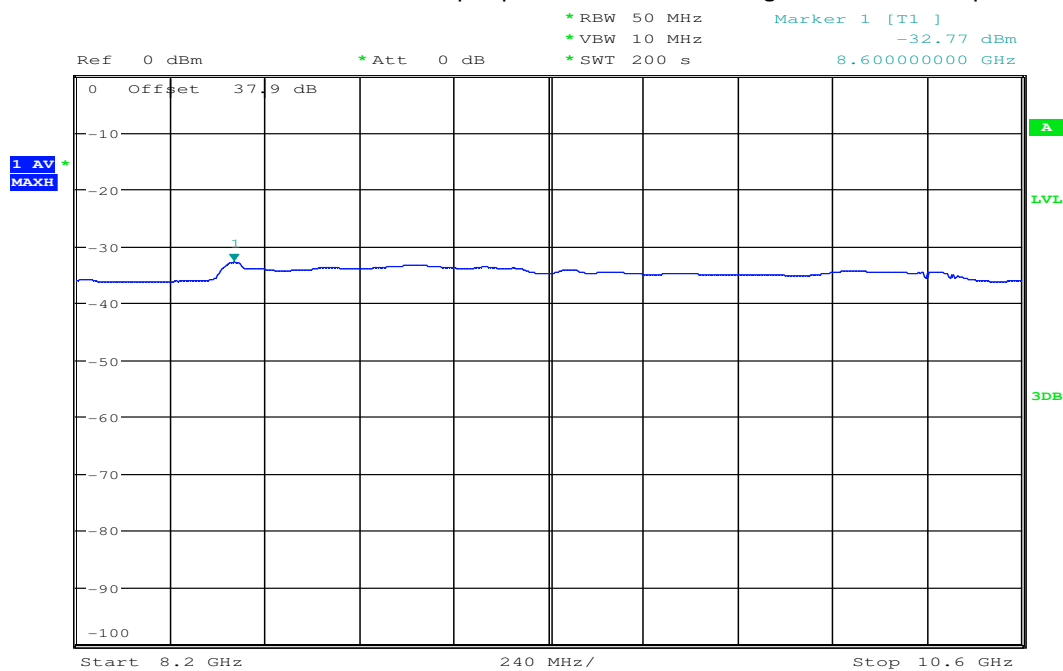
- **Metallic horn antenna**

Plot 4: OPTIWAVE 5200 C, Transmitter output power radiated, Average detector, sweep mode



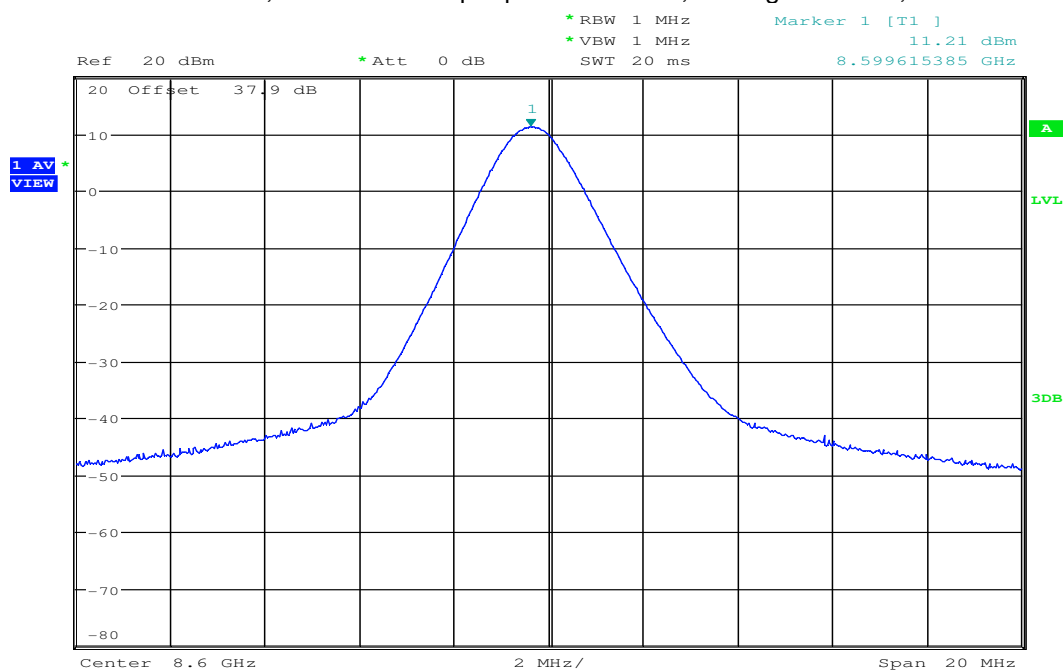
Date: 21.JUN.2012 10:33:39

Plot 5: OPTIWAVE 5200 F, Transmitter output power radiated, Average detector, sweep mode



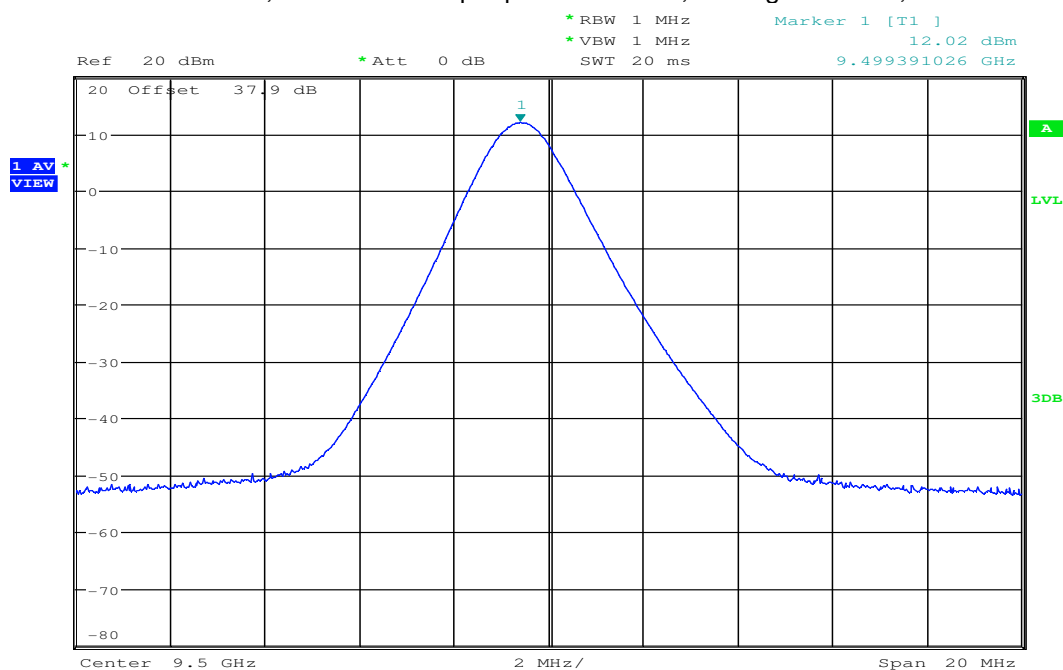
Date: 21.JUN.2012 11:05:04

Plot 6: OPTIWAVE 5200 C, Transmitter output power radiated, Average detector, low channel



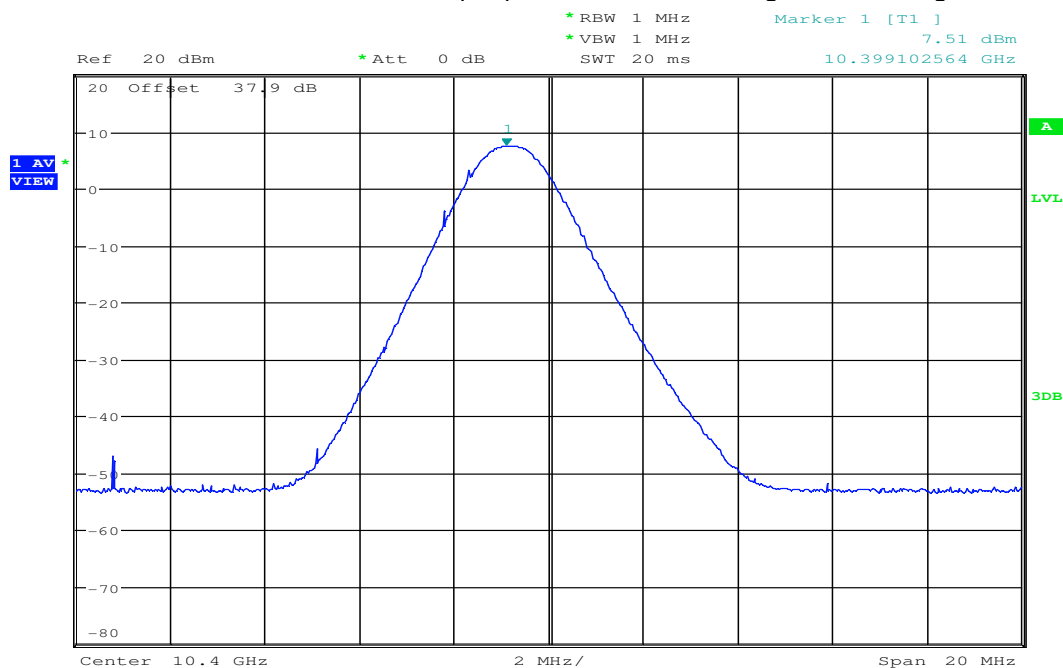
Date: 21.JUN.2012 10:36:27

Plot 7: OPTIWAVE 5200 C, Transmitter output power radiated, Average detector, middle channel



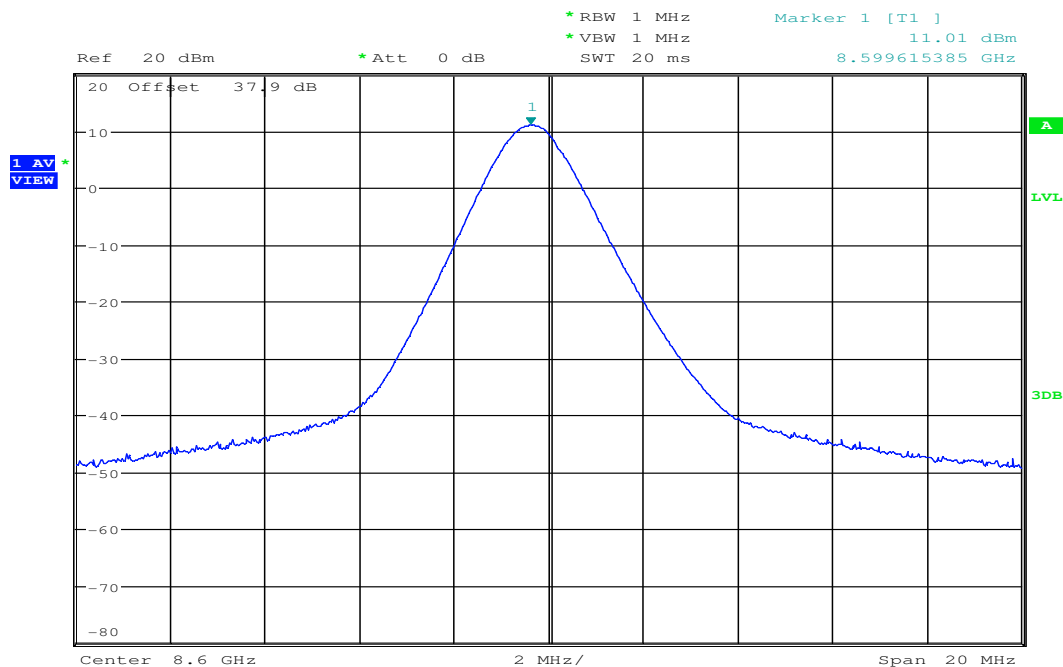
Date: 21.JUN.2012 10:41:04

Plot 8: OPTIWAVE 5200 C, Transmitter output power radiated, Average detector, high channel



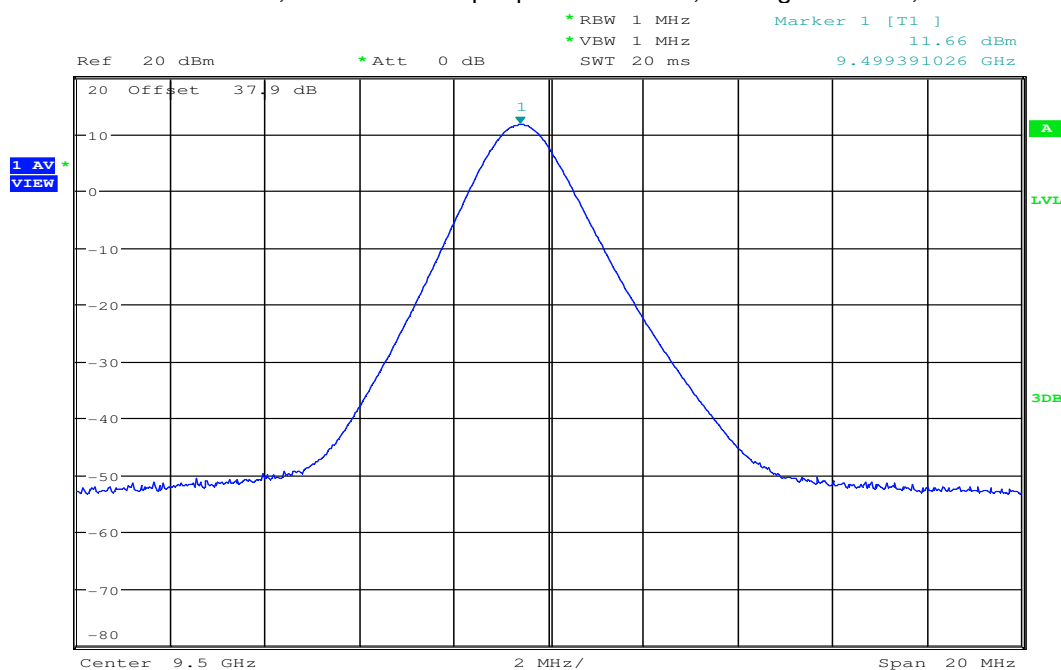
Date: 21.JUN.2012 10:45:01

Plot 9: OPTIWAVE 5200 F, Transmitter output power radiated, Average detector, low channel



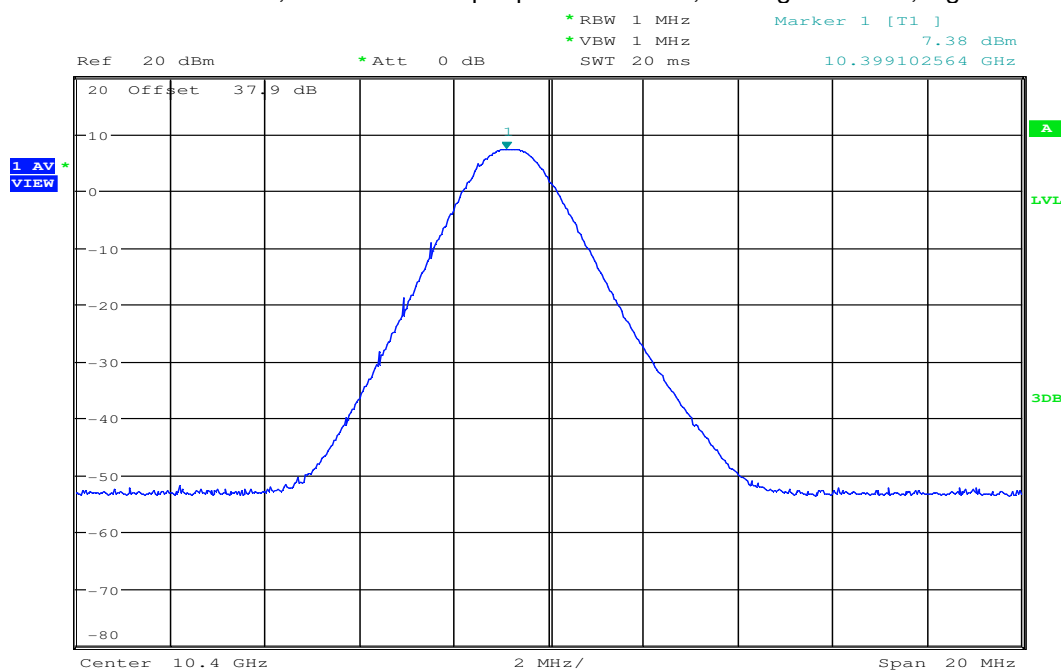
Date: 21.JUN.2012 10:49:32

Plot 10: OPTIWAVE 5200 F, Transmitter output power radiated, Average detector, middle channel



Date: 21.JUN.2012 10:47:54

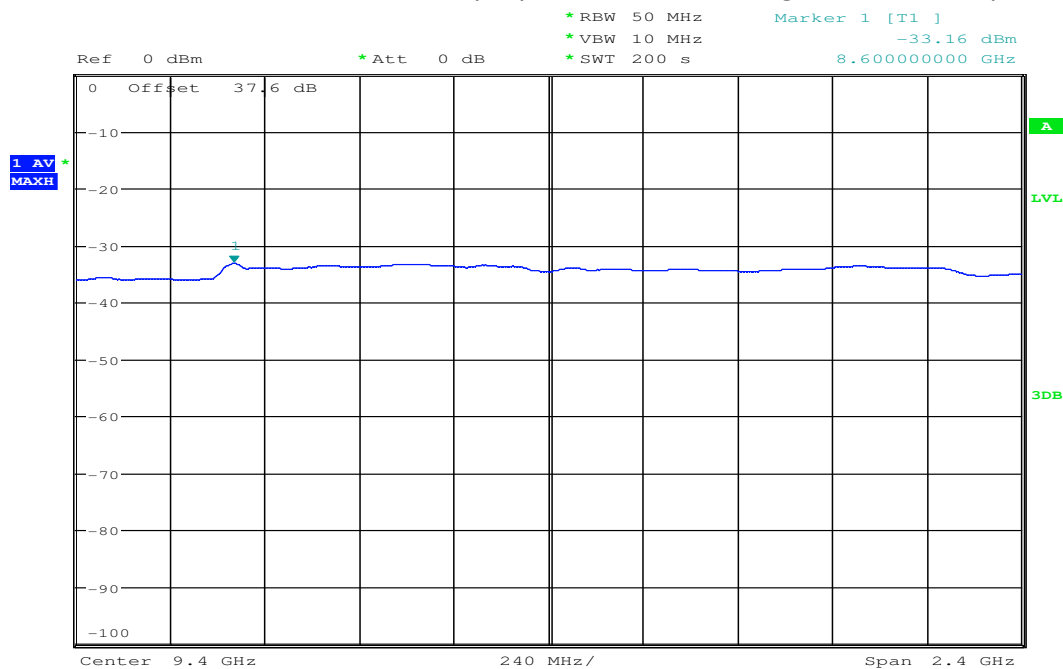
Plot 11: OPTIWAVE 5200 F, Transmitter output power radiated, Average detector, high channel



Date: 21.JUN.2012 10:45:52

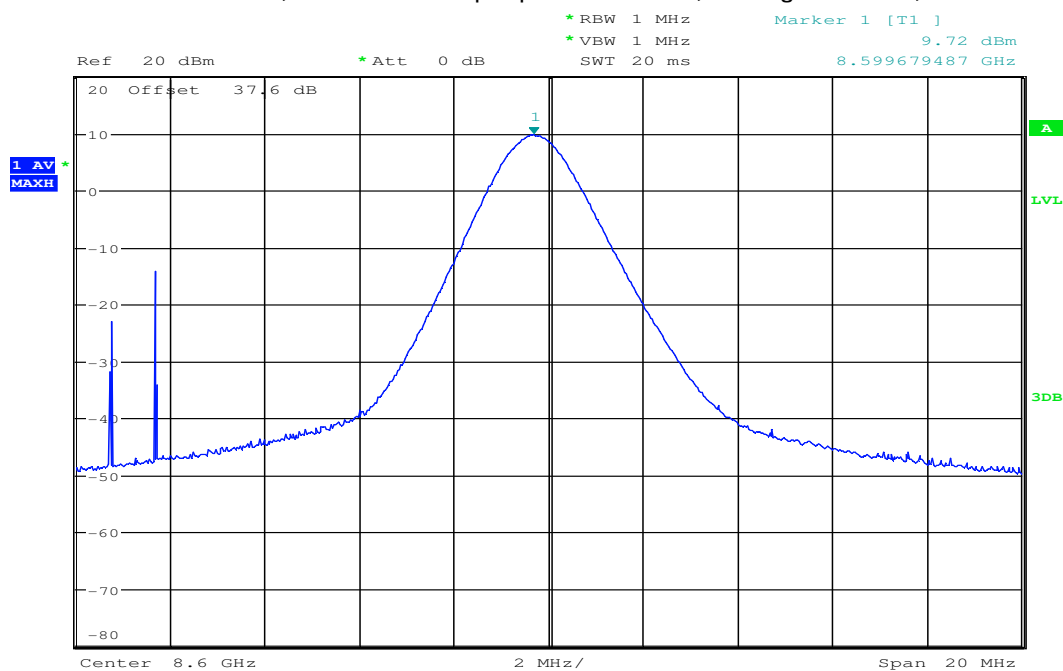
- Wave horn antenna

Plot 12: OPTIWAVE 5200 C, Transmitter output power radiated, Average detector, sweep mode



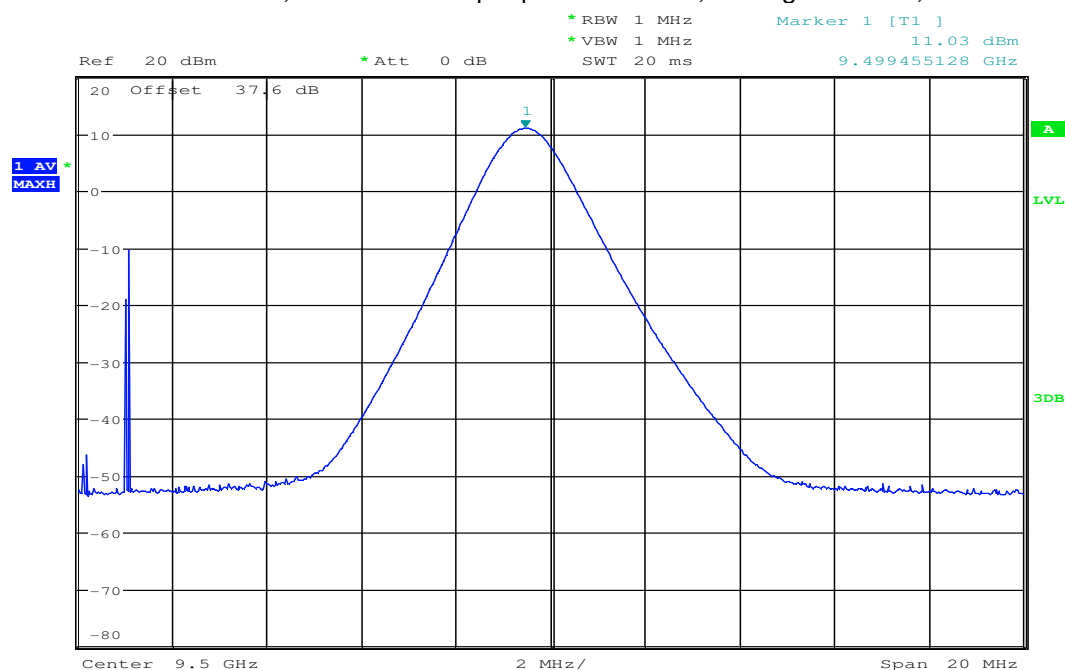
Date: 8.JAN.2013 15:14:32

Plot 13: OPTIWAVE 5200 C, Transmitter output power radiated, Average detector, low channel



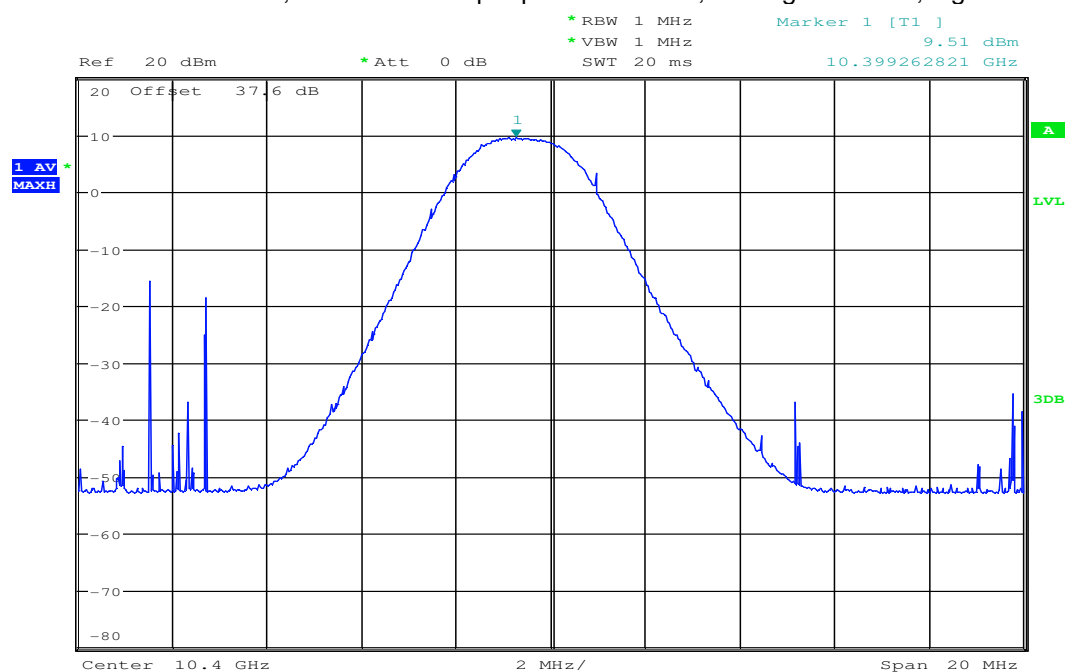
Date: 8.JAN.2013 15:35:22

Plot 14: OPTIWAVE 5200 C, Transmitter output power radiated, Average detector, middle channel



Date: 8.JAN.2013 15:40:42

Plot 15: OPTIWAVE 5200 C, Transmitter output power radiated, Average detector, high channel



Date: 8.JAN.2013 16:00:30

9.3 Radiated spurious emissions

Description:

Measurement of the radiated spurious emissions in transmit mode.

Measurement:

Measurement parameter	
Detector:	Average
Sweep time:	Auto
Video bandwidth:	Auto
Resolution bandwidth:	100 kHz (F < 1 GHz) 1 MHz (F > 1 GHz)
Frequency range:	30 MHz to 50 GHz
Trace-Mode:	Max Hold

Limits:

§ 15.209 (a)

FCC		IC
CFR Part 15.209(a)		RSS - GEN
Radiated Spurious Emissions		
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.		
Frequency (MHz)	Field Strength (dBμV/m)	Measurement distance
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Limits:

§ 15.517 (c)

Frequency in MHz	EIRP in dBm
960–1610	–75.3
1610–1990	–53.3
1990–3100	–51.3
3100–10600	–41.3
Above 10600	–51.3

Limits:

§ 15.517 (d)

Frequency in MHz	EIRP in dBm
1164–1240	–85.3
1559–1610	–85.3

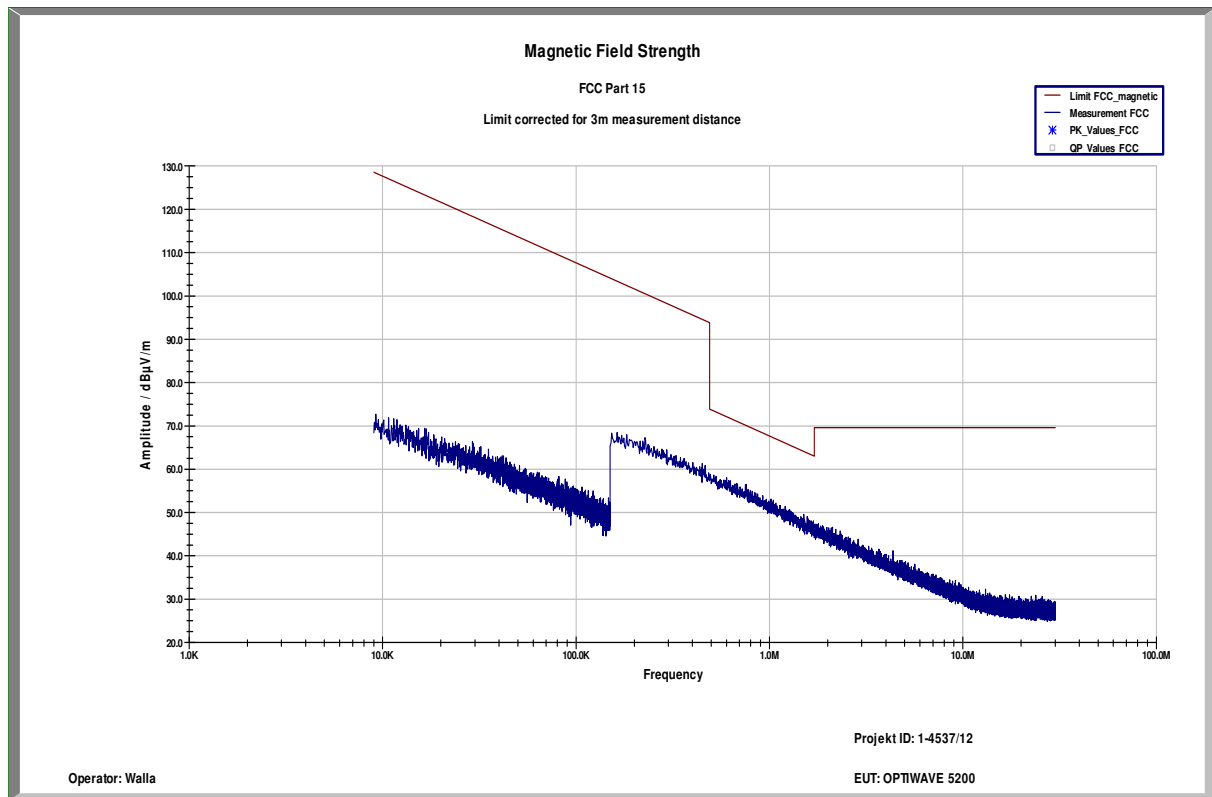
Limits:

§ 15.517 (e)

There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, fM. That limit is 0 dBm EIRP. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures described in §15.521.

Result: The measurement is passed

Plot 16: 0.009 MHz – 30 MHz, Magnetic (Valid for all Samples, all antennas and all Channels)



- Wave horn antenna

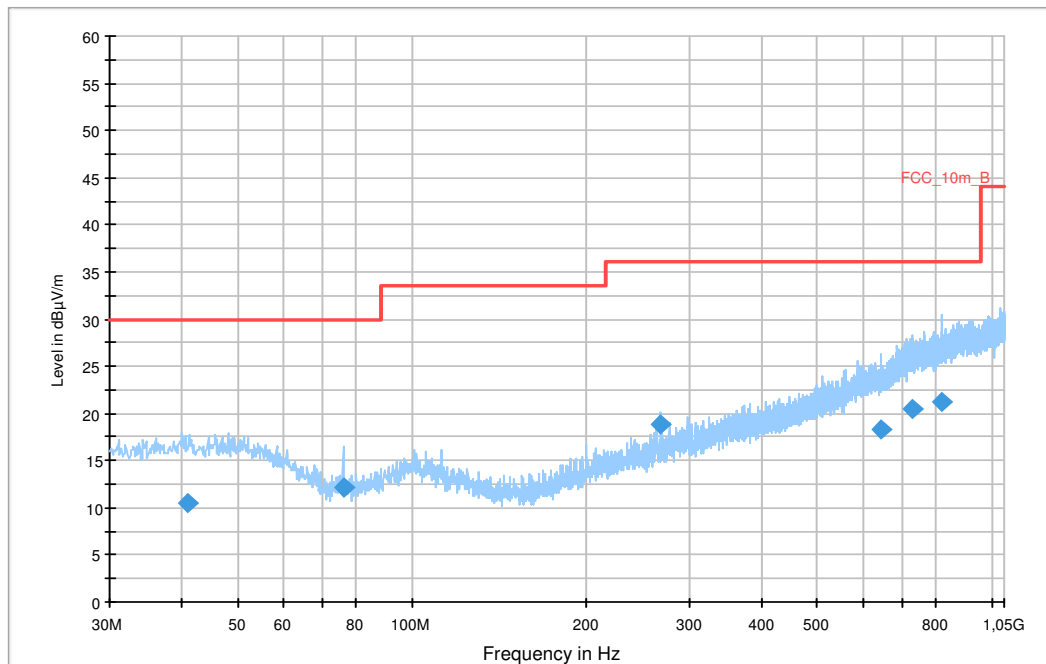
Plot 17: 30 MHz – 960 MHz, low channel, horizontal / vertical polarisation

EUT:	Optiwave 5200
Serial Number:	-/-
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	low channel
Operator Name:	Wolsdorfer
Comment:	DC: 24V

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

FCC_10m(B)



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
40.827600	10.5	1000.0	120.000	379.0	V	27.0	13.4	19.5	30.0
75.940650	12.1	1000.0	120.000	400.0	V	279.0	9.2	17.9	30.0
268.796100	18.9	1000.0	120.000	200.0	V	41.0	13.8	17.1	36.0
644.212350	18.4	1000.0	120.000	200.0	V	115.0	21.1	17.6	36.0
726.646650	20.5	1000.0	120.000	387.0	V	276.0	23.1	15.5	36.0
815.960100	21.2	1000.0	120.000	200.0	V	44.0	24.0	14.8	36.0

Ref 20 dBm * Att 0 dB * RBW 50 MHz Marker 1[T1] -30.25 dBm
 * VBW 1 MHz SWI 20 ms 8.590865385 GHz

20 Offset 31.9 dB

1 PK
MAXH

0 dBm

1

3dB

Start 8.5 GHz 210 MHz/ Stop 10.6 GHz

Date: 8.JAN.2013 19:46:33

* RBW 1 MHz
 * VBW 1 MHz
 * SWT 100 ms

Marker 1[T1]
 -46.18 dBm
 8.606153846 GHz

Ref -20 dBm
 * Att 0 dB

1 AV
 MAXH

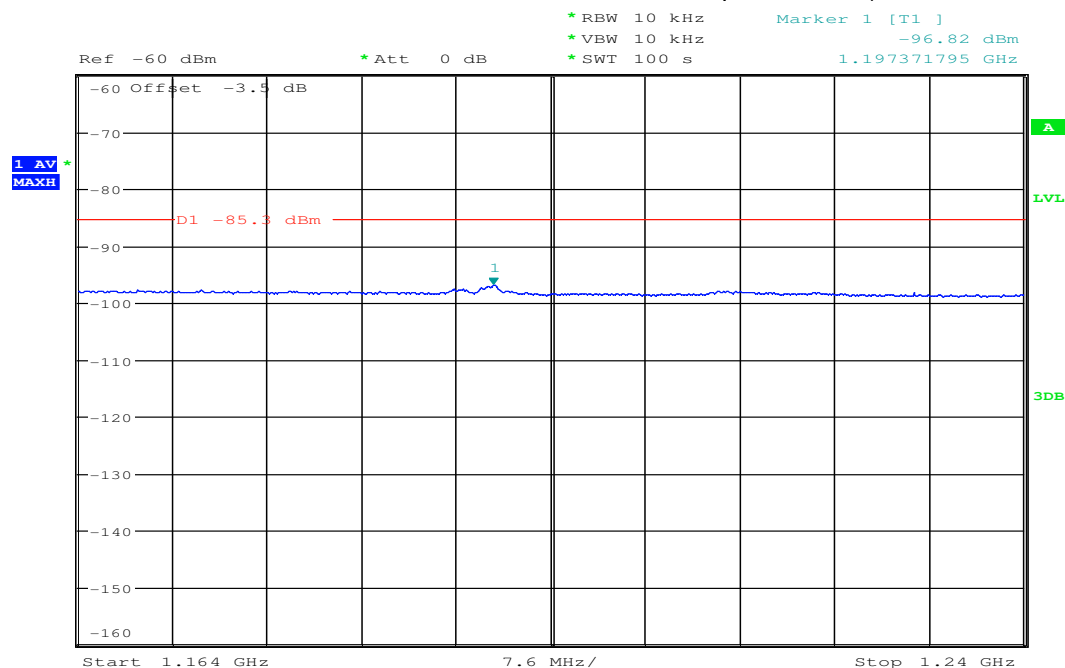
FCC517

1

Start 960 MHz
 1.704 GHz/
 Stop 18 GHz

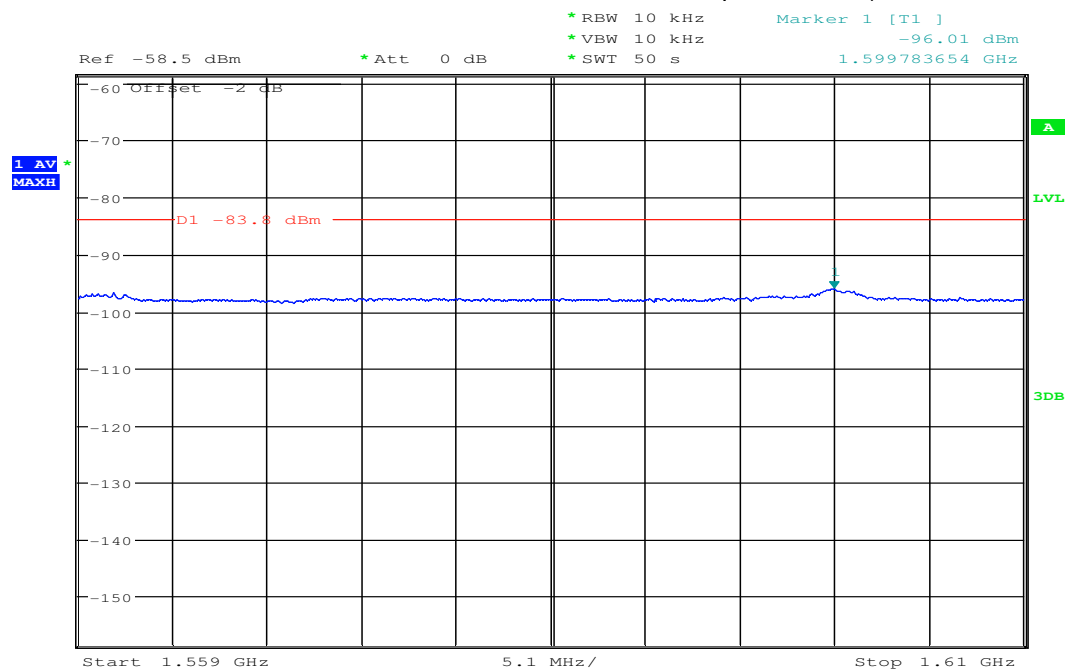
Date: 9.JAN.2013 18:47:05

Plot 20: 1164 MHz – 1240 MHz, low channel, horizontal / vertical polarisation (OPTIWAVE 5200 C)



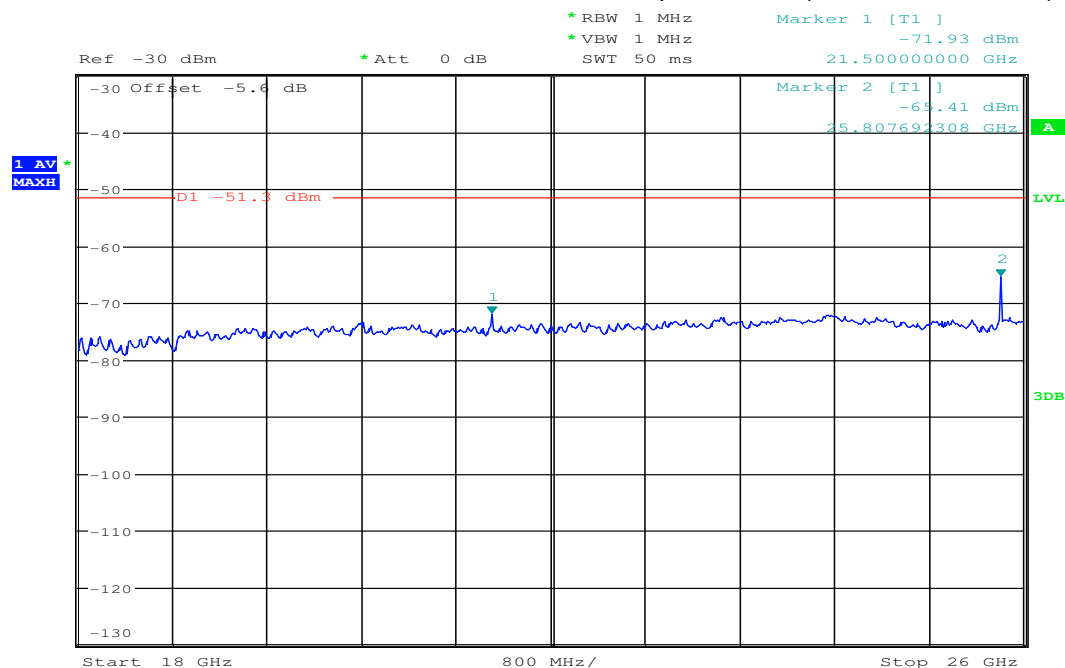
Date: 8.JAN.2013 20:23:58

Plot 21: 1559 MHz – 1610 MHz, low channel, horizontal / vertical polarisation (OPTIWAVE 5200 C)



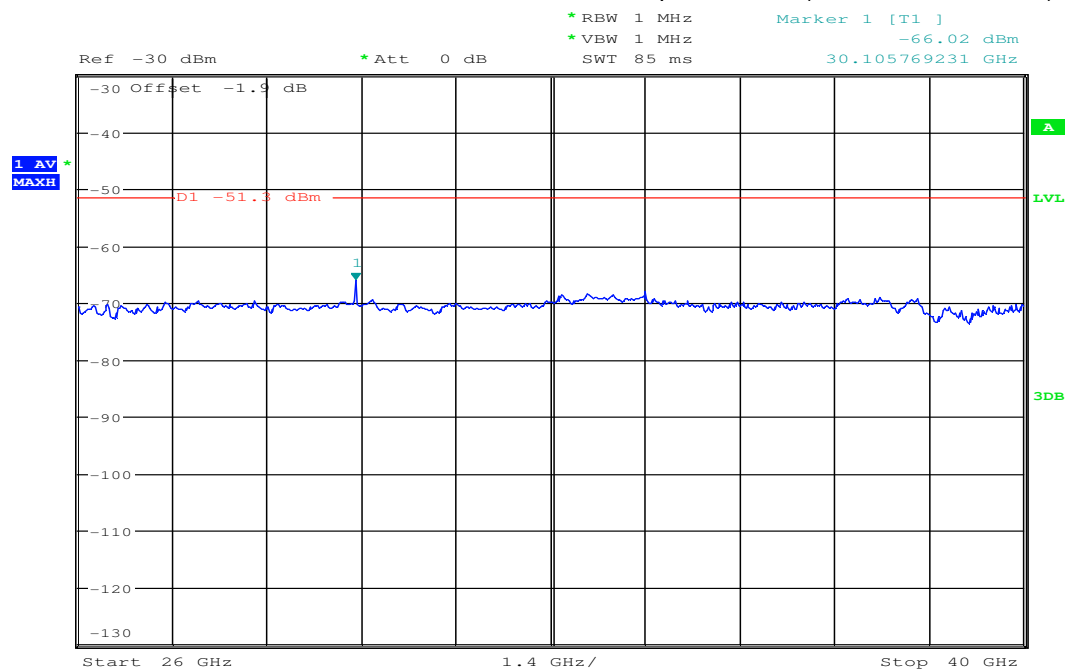
Date: 8.JAN.2013 20:26:35

Plot 22: 18 GHz – 26 GHz, low channel, horizontal / vertical polarisation (OPTIWAVE 5200 C)



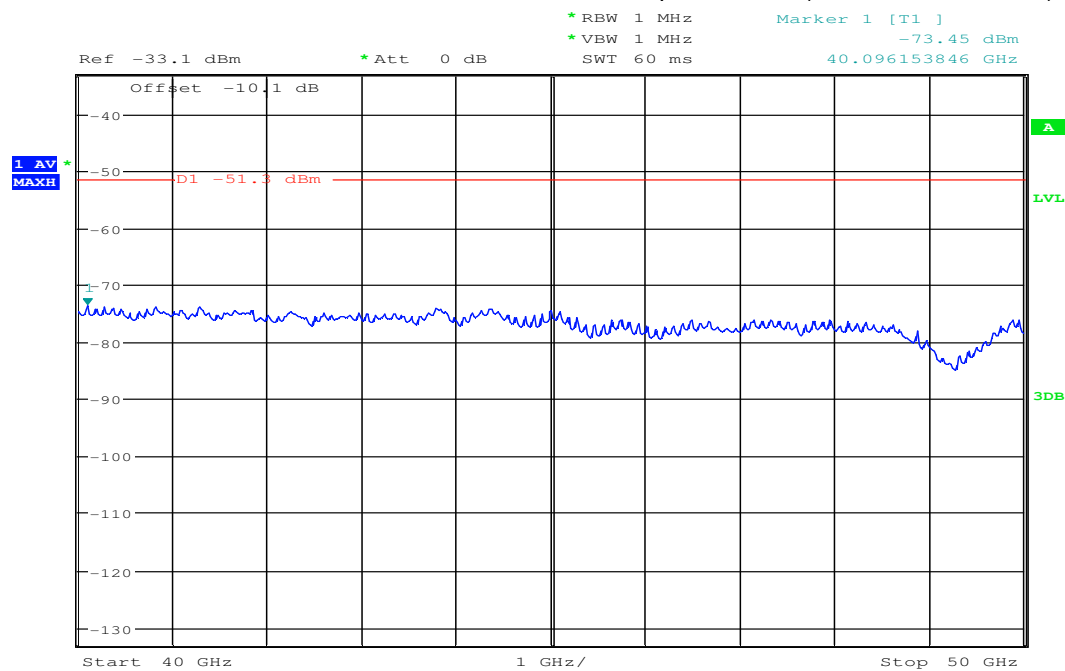
Date: 8.JAN.2013 18:37:01

Plot 23: 26 GHz – 40 GHz, low channel, horizontal / vertical polarisation (OPTIWAVE 5200 C)



Date: 8.JAN.2013 18:40:10

Plot 24: 40 GHz – 50 GHz, low channel, horizontal / vertical polarisation (OPTIWAVE 5200 C)



Date: 10.JAN.2013 18:54:30

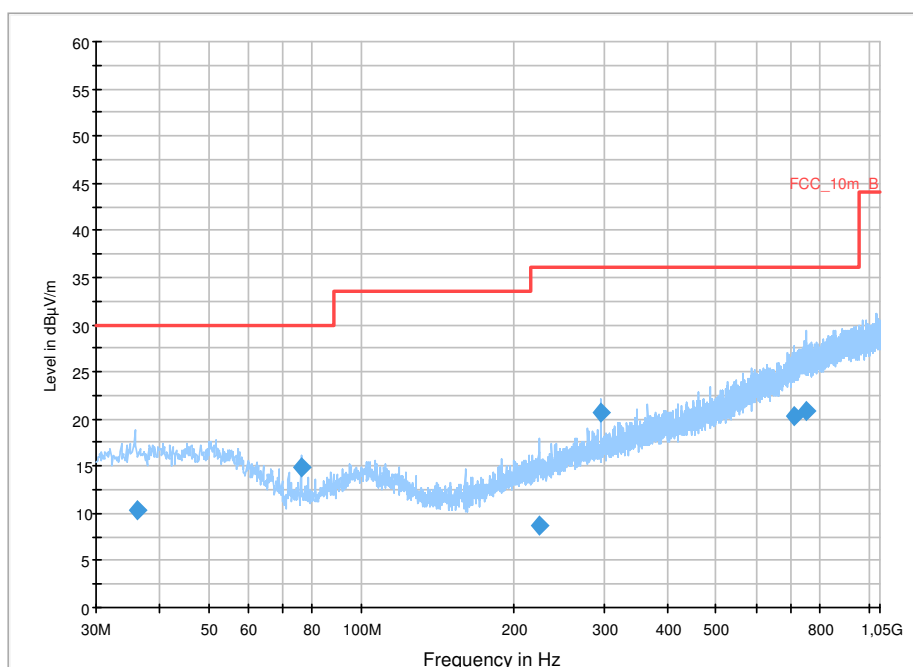
Plot 25: 30 MHz – 960 MHz, middle channel, horizontal / vertical polarization (OPTIWAVE 5200 C)

EUT:	Optiwave 5200
Serial Number:	-/-
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	middle channel
Operator Name:	Wolsdorfer
Comment:	DC: 24V

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dB μ V/m

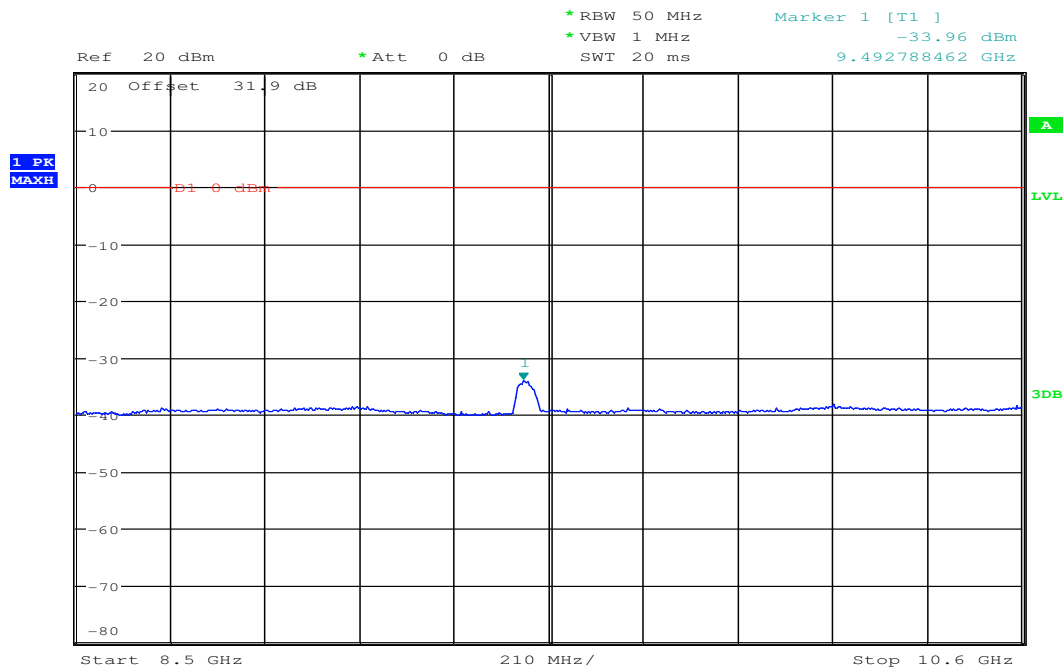
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

FCC_10m(B)



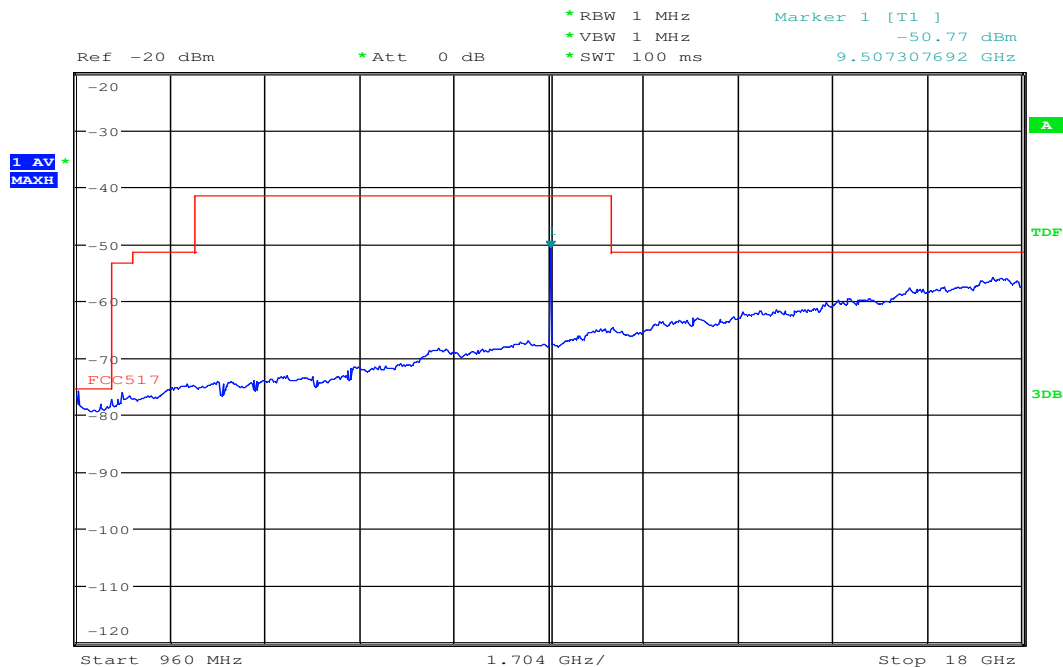
Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
36.025800	10.4	1000.0	120.000	346.0	H	90.0	13.1	19.6	30.0
75.981900	14.8	1000.0	120.000	200.0	V	85.0	9.2	15.2	30.0
224.693700	8.6	1000.0	120.000	400.0	H	99.0	12.5	27.4	36.0
296.922150	20.7	1000.0	120.000	100.0	V	83.0	14.4	15.3	36.0
714.867000	20.2	1000.0	120.000	192.0	V	45.0	22.9	15.8	36.0
751.893750	20.9	1000.0	120.000	153.0	V	332.0	23.7	15.1	36.0

Plot 26: 8.5 GHz – 10.6 GHz, middle channel, horizontal / vertical polarisation (OPTIWAVE 5200 C)



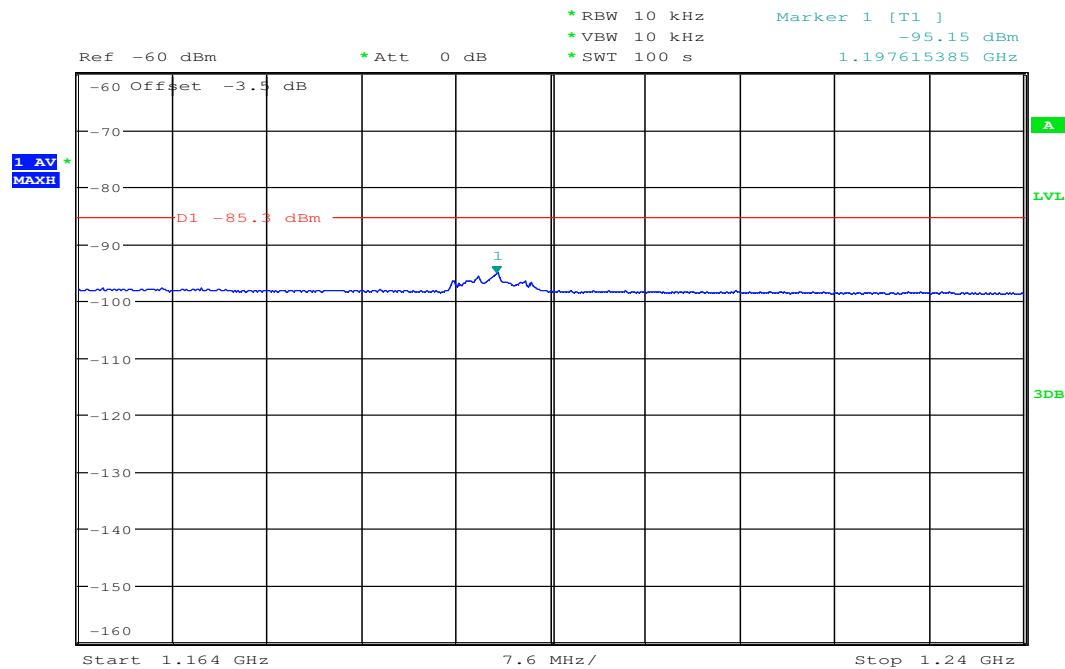
Date: 8.JAN.2013 19:45:30

Plot 27: 960 MHz – 18 GHz, middle channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



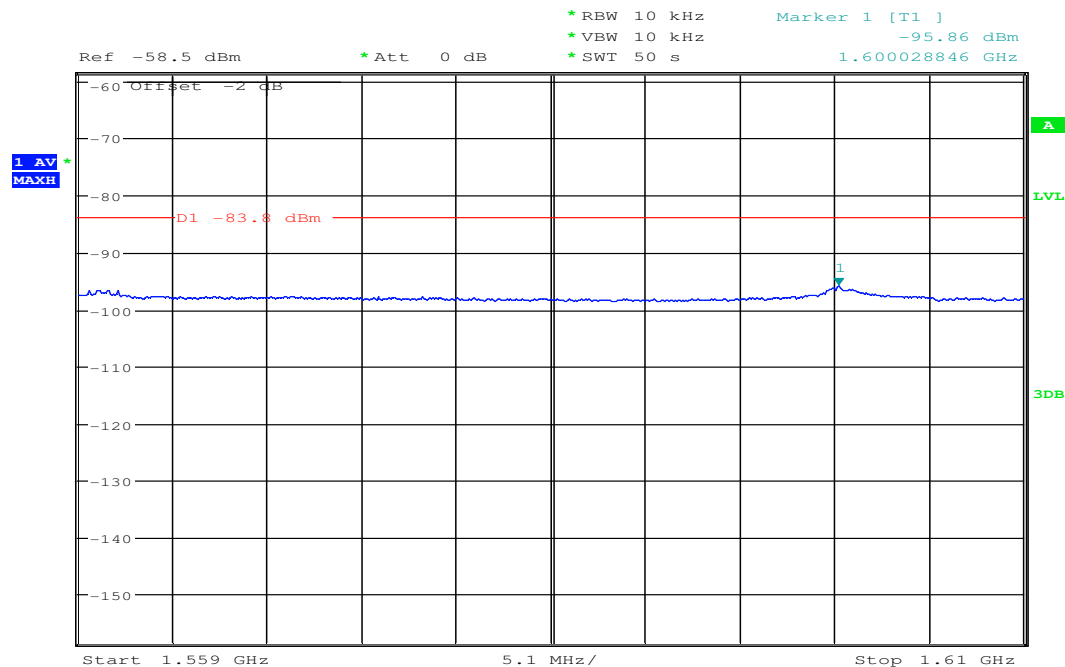
Date: 9.JAN.2013 18:45:57

Plot 28: 1164 MHz – 1240 MHz, middle channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Date: 8.JAN.2013 20:21:26

Plot 29: 1559 MHz – 1610 MHz, middle channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Date: 8.JAN.2013 20:28:07

* RBW 1 MHz
 * VBW 1 MHz
 SWT 50 ms
 Marker 1[T1]
 -61.35 dBm
 19.00000000 GHz

Ref -30 dBm
 * Att 0 dB

-30 Offset -5.6 dB
 -40
 -50
 -60
 -70
 -80
 -90
 -100
 -110
 -120
 -130

1 AV
 MAXR

D1 -51.3 dBm

1

Start 18 GHz
 800 MHz/
 Stop 26 GHz

Date: 8.JAN.2013 18:34:42

Ref -30 dBm

* Att 0 dB

* RBW 1 MHz

* VBW 1 MHz

SWT 85 ms

Marker 1[T1]

-61.37 dBm

28.490384615 GHz

-30 Offset -1.9 dB

-40

-50

-60

-70

-80

-90

-100

-110

-120

-130

Start 26 GHz

1.4 GHz/

Stop 40 GHz

1 AV MAXR

D1 -51.3 dBm

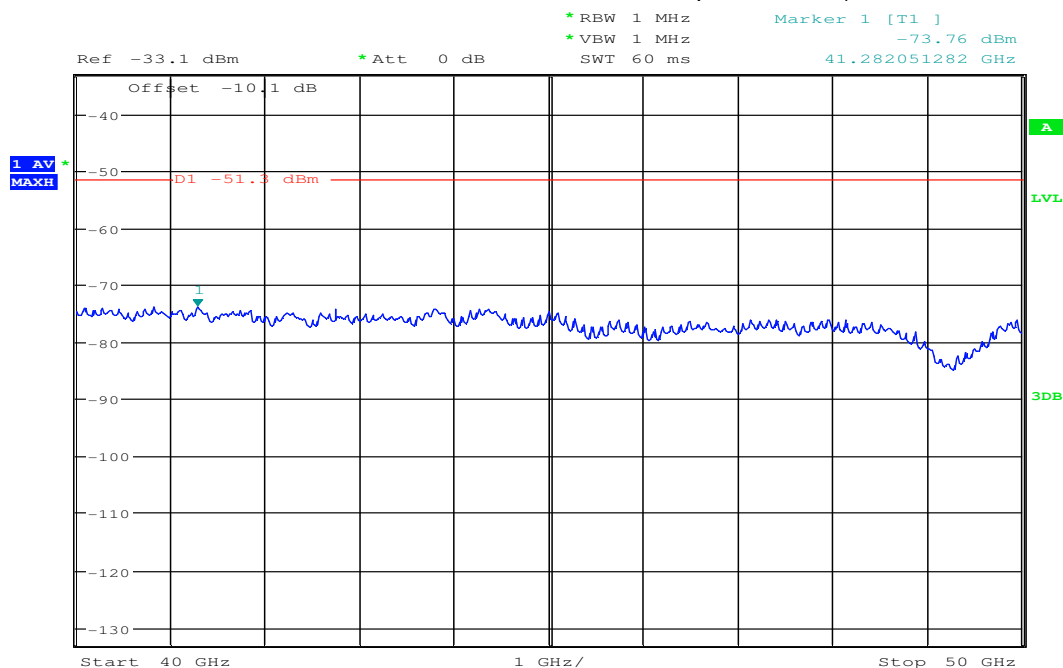
1

3DB

LVL

Date: 8.JAN.2013 18:41:32

Plot 32: 40 GHz – 50 GHz, middle channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Date: 10.JAN.2013 18:56:39

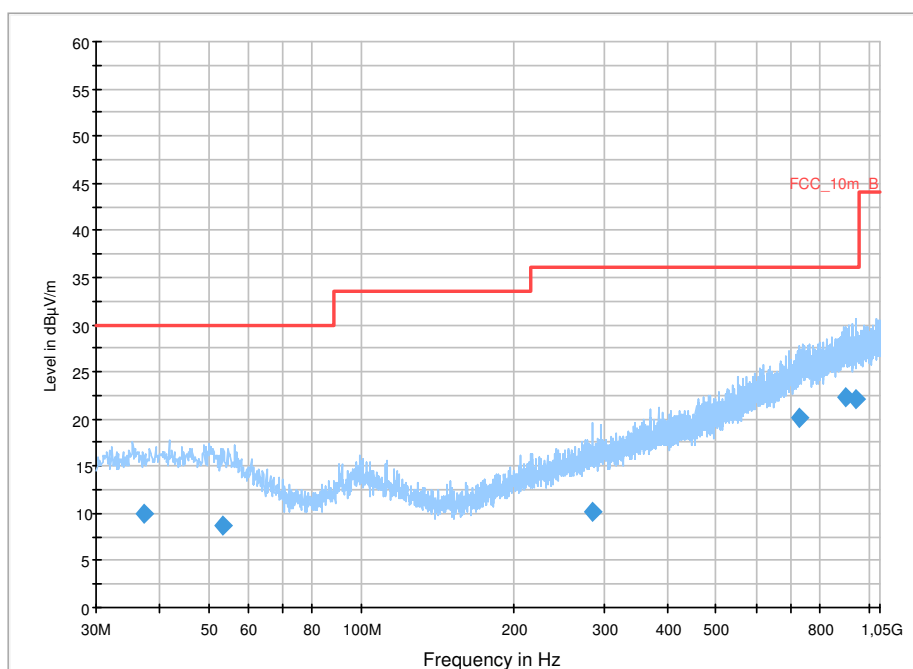
Plot 33: 30 MHz – 960 MHz, high channel, horizontal / vertical polarization (OPTIWAVE 5200 C)

EUT:	Optiwave 5200
Serial Number:	-/-
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	high channel
Operator Name:	Wolsdorfer
Comment:	DC: 24V

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dB μ V/m

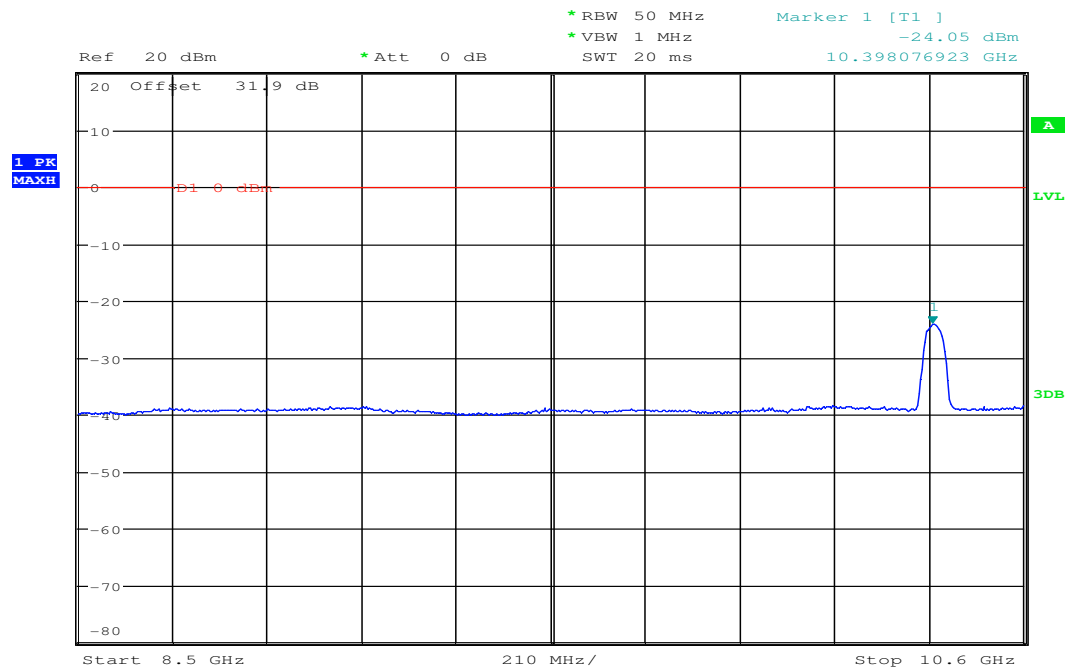
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

FCC_10m(B)



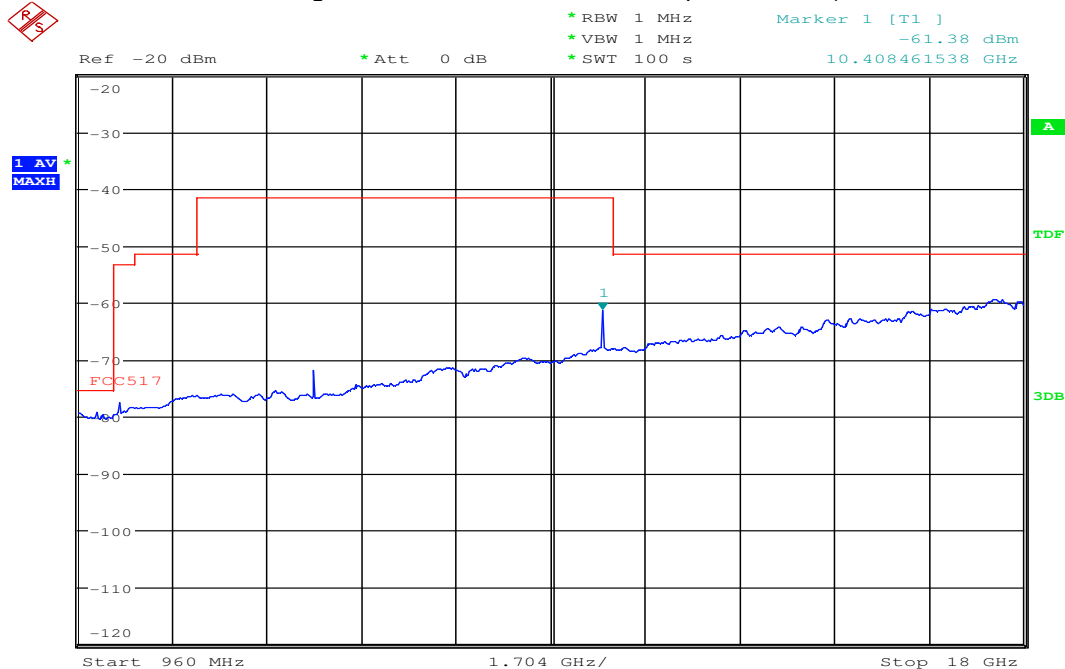
Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
37.42800	10.0	1000.0	120.000	213.0	V	48.0	13.2	20.0	30.0
53.19015	8.8	1000.0	120.000	338.0	V	156.0	13.1	21.2	30.0
284.50635	10.2	1000.0	120.000	289.0	H	240.0	14.2	25.8	36.0
726.91410	20.1	1000.0	120.000	213.0	H	275.0	23.1	15.9	36.0
902.23635	22.2	1000.0	120.000	200.0	V	50.0	25.2	13.8	36.0
944.79510	22.2	1000.0	120.000	200.0	V	292.0	25.3	13.8	36.0

Plot 34: 8.5 GHz – 10.6 GHz, high channel, horizontal / vertical polarisation (OPTIWAVE 5200 C)

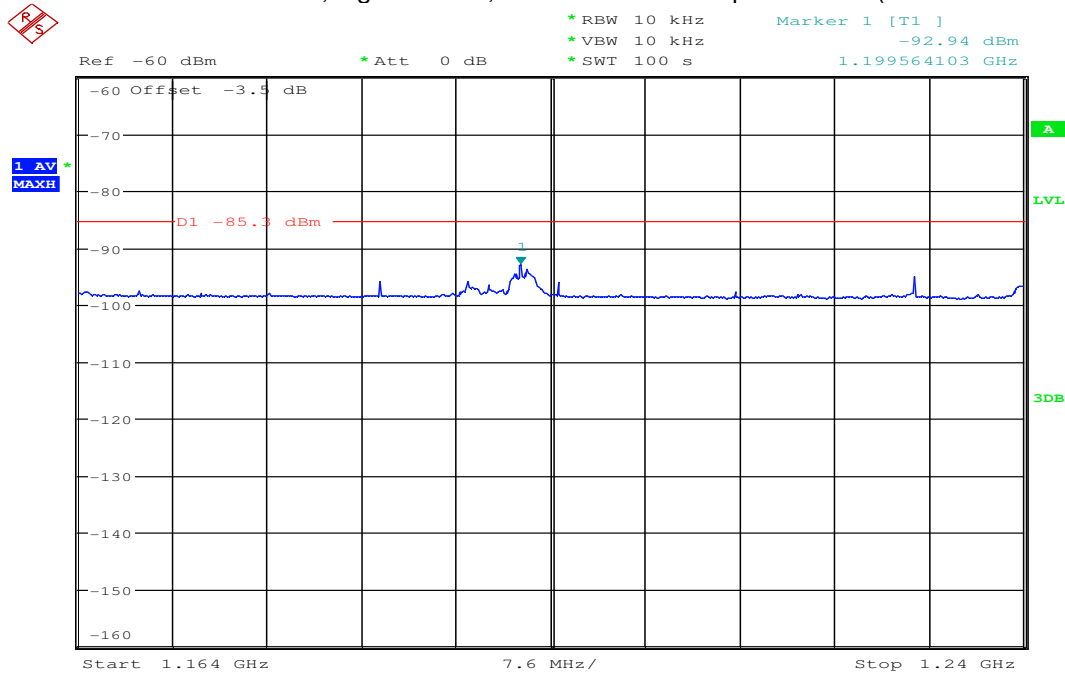


Date: 8.JAN.2013 19:44:12

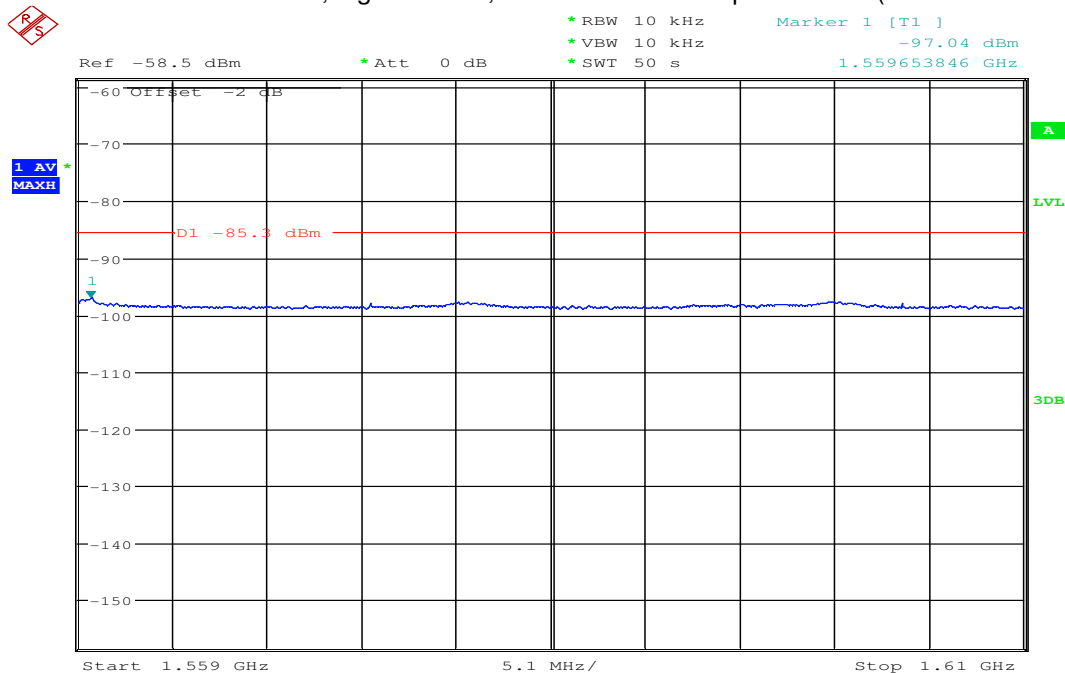
Plot 35: 960 MHz – 18 GHz, high channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



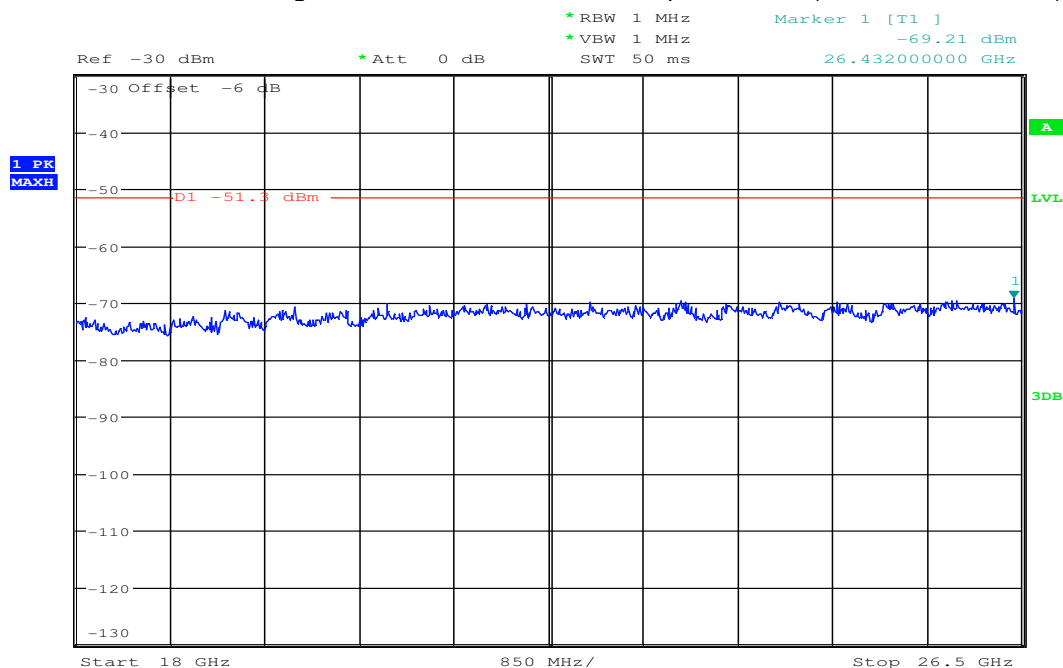
Plot 36: 1164 MHz – 1240 MHz, high channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



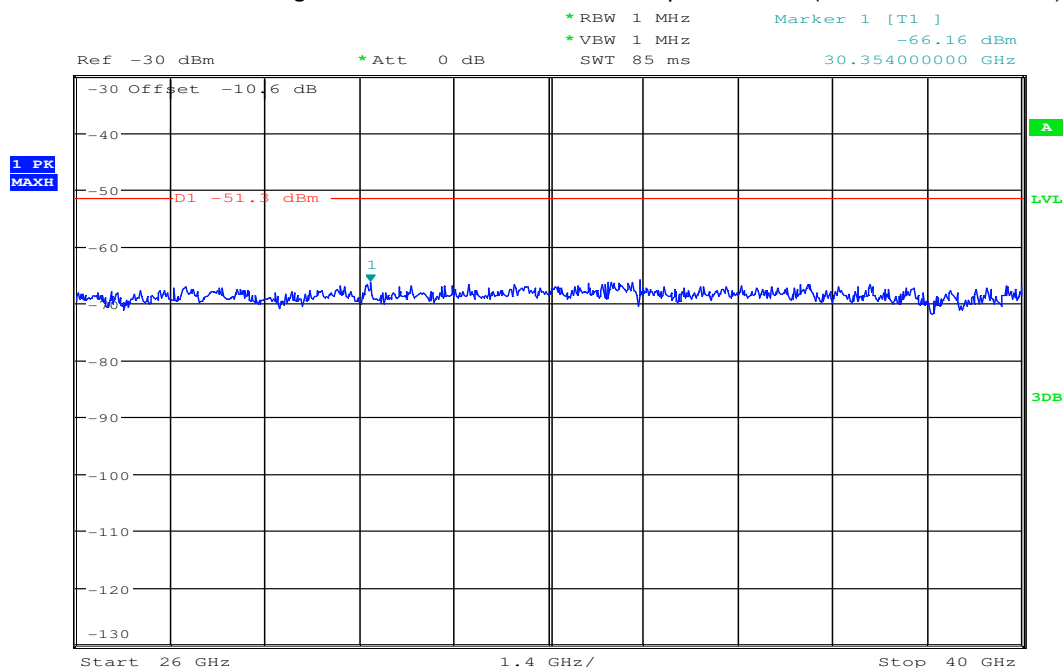
Plot 37: 1559 MHz – 1610 MHz, high channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



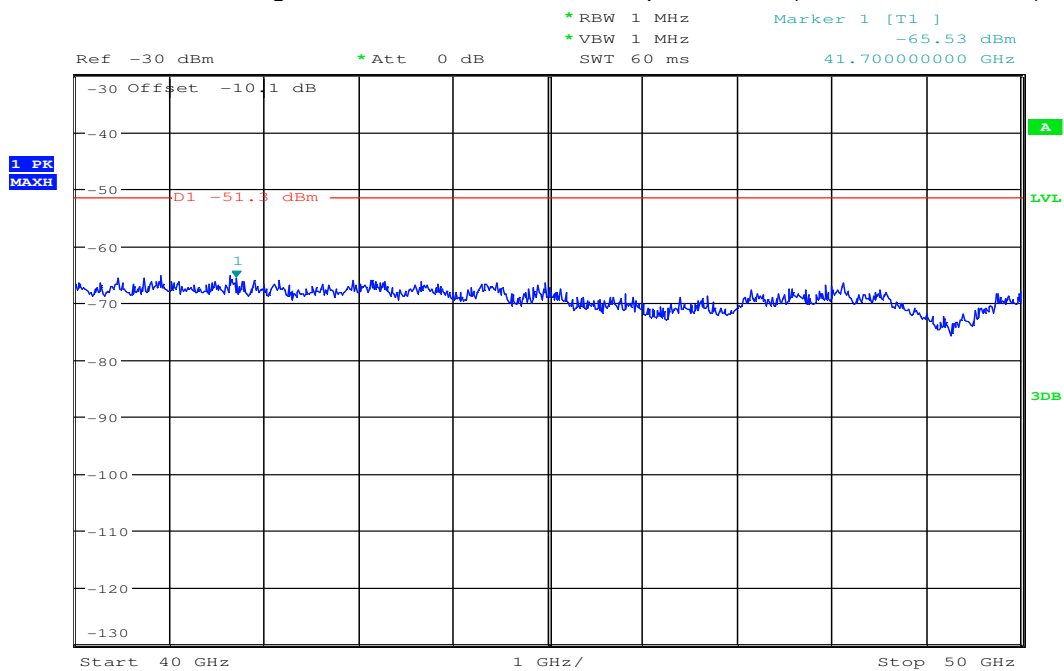
Plot 38: 18 GHz – 26 GHz, high channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Plot 39: 26 GHz – 40 GHz, high channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Plot 40: 40 GHz – 50 GHz, high channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



- **Metallic horn antenna**

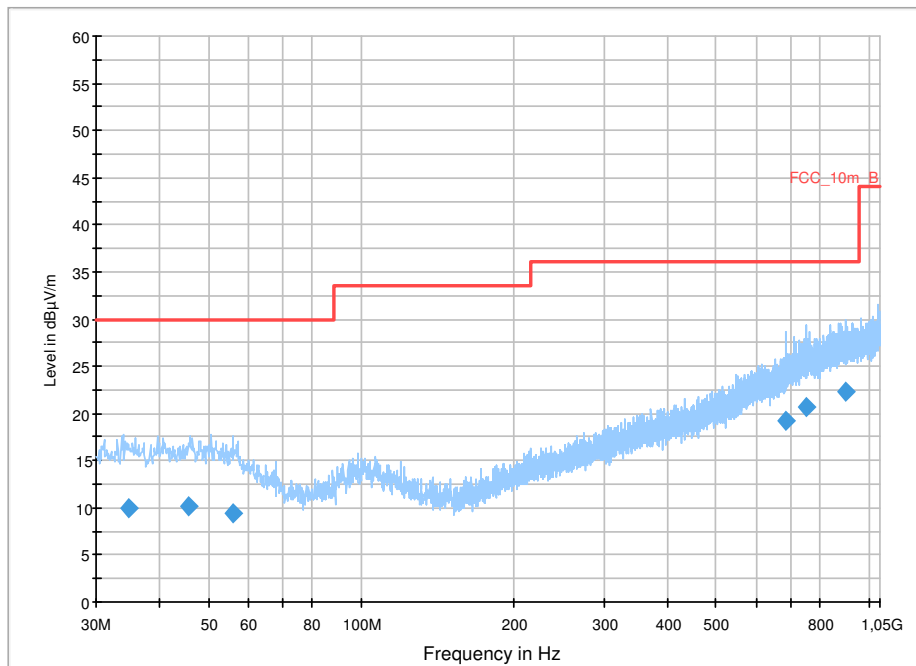
Plot 41: 30 MHz – 960 MHz, Low Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)

EUT:	Optiwave 5200 C
Serial Number:	F121234567890123
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	Low Channel
Operator Name:	Kraus
Comment:	DC: 24V

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBμV/m

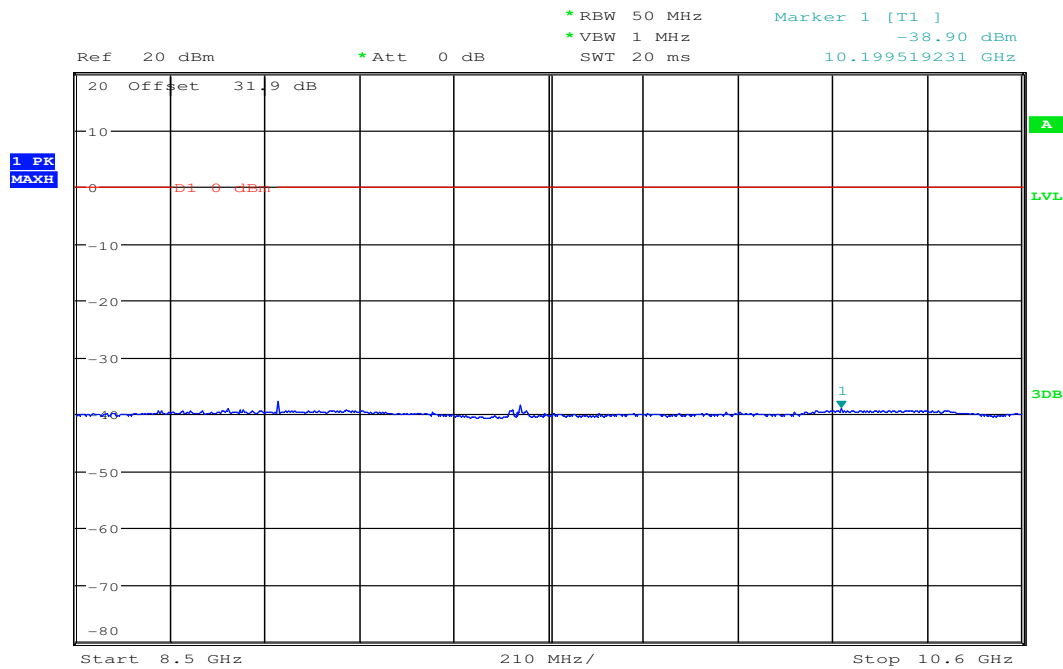
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamplifier
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

FCC_10m(B)



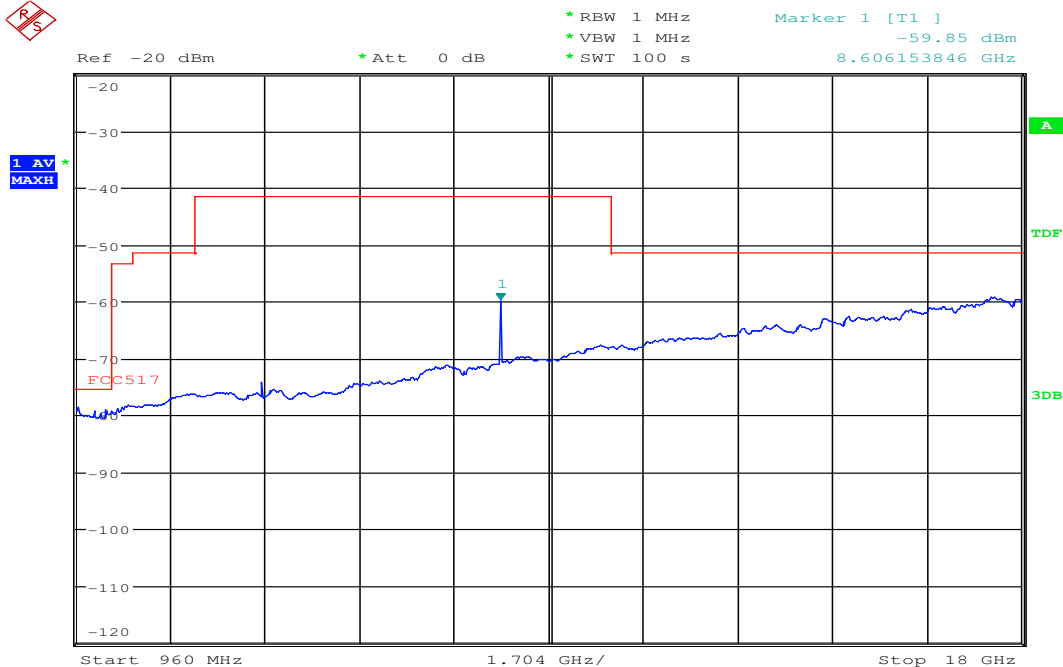
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
34.85025	10.0	1000.0	120.000	132.0	V	10.0	13.0	20.0	30.0
45.76290	10.2	1000.0	120.000	357.0	H	350.0	13.3	19.8	30.0
55.70070	9.4	1000.0	120.000	302.0	H	0.0	12.7	20.6	30.0
686.15535	19.2	1000.0	120.000	266.0	H	153.0	22.1	16.8	36.0
750.16980	20.7	1000.0	120.000	121.0	V	249.0	23.7	15.3	36.0
902.46870	22.2	1000.0	120.000	98.0	V	220.0	25.2	13.8	36.0

Plot 42: 8.5 GHz – 10.6 GHz, Low Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



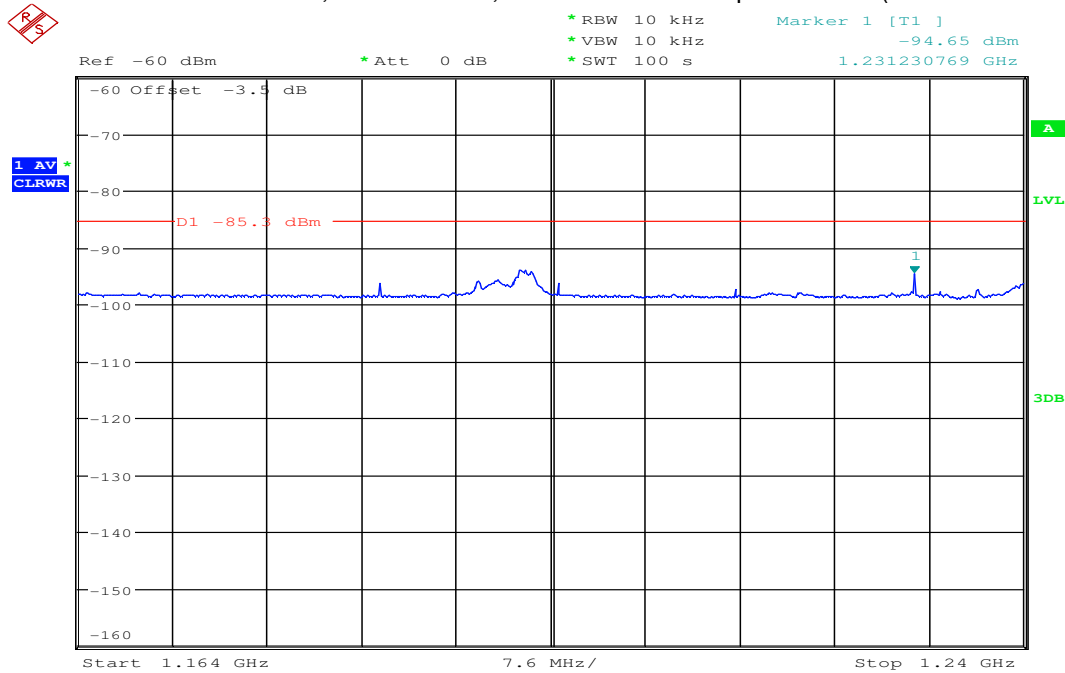
Date: 14.APR.2012 09:15:23

Plot 43: 960 MHz – 18 GHz, Low Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



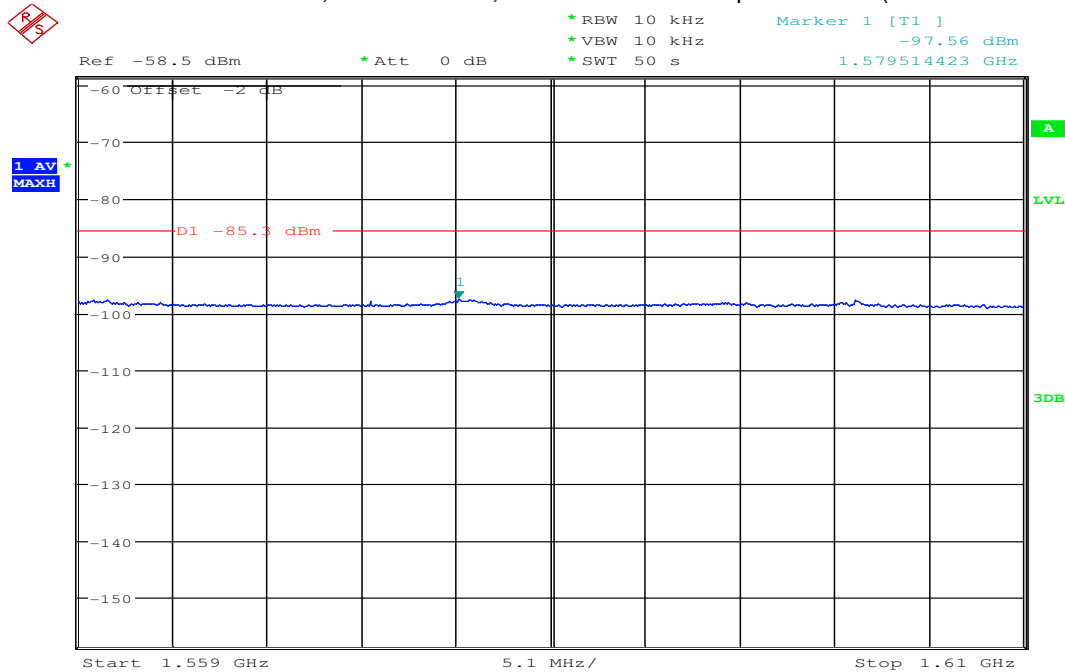
Date: 7.MAY.2012 17:35:33

Plot 44: 1164 MHz – 1240 MHz, Low Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



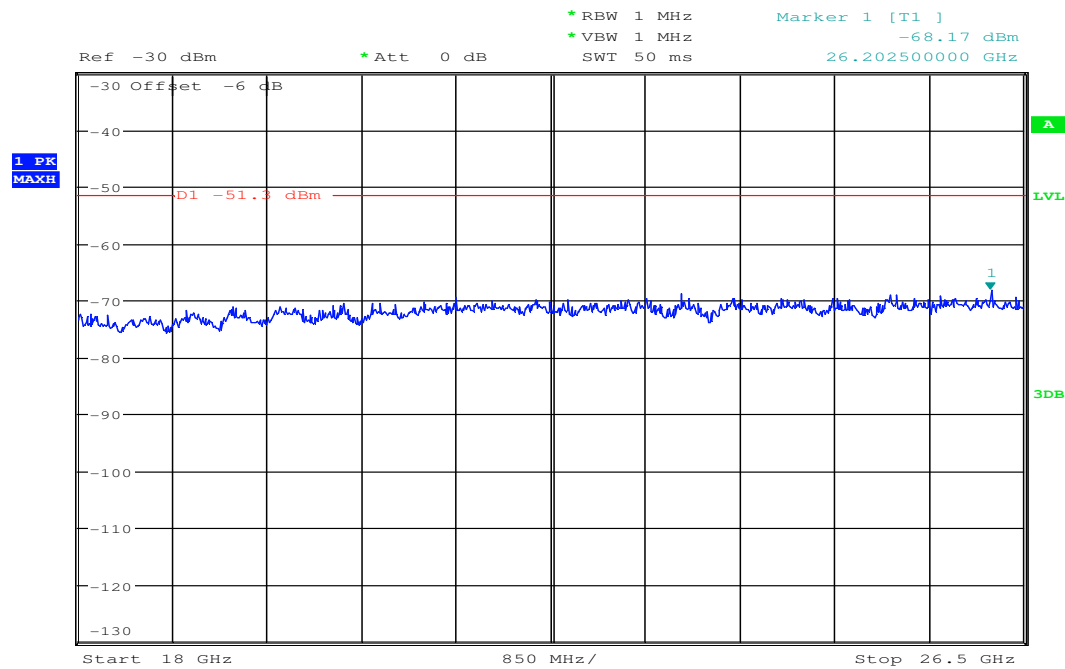
Date: 7.MAY.2012 18:09:56

Plot 45: 1559 MHz – 1610 MHz, Low Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



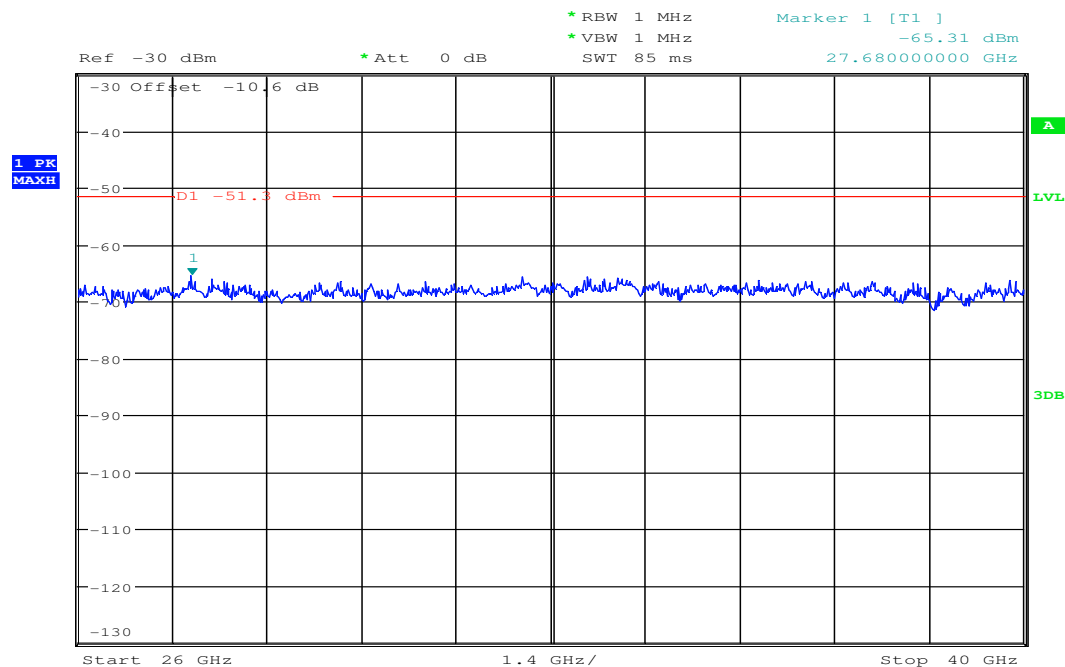
Date: 7.MAY.2012 18:28:50

Plot 46: 18 GHz – 26 GHz, Low Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



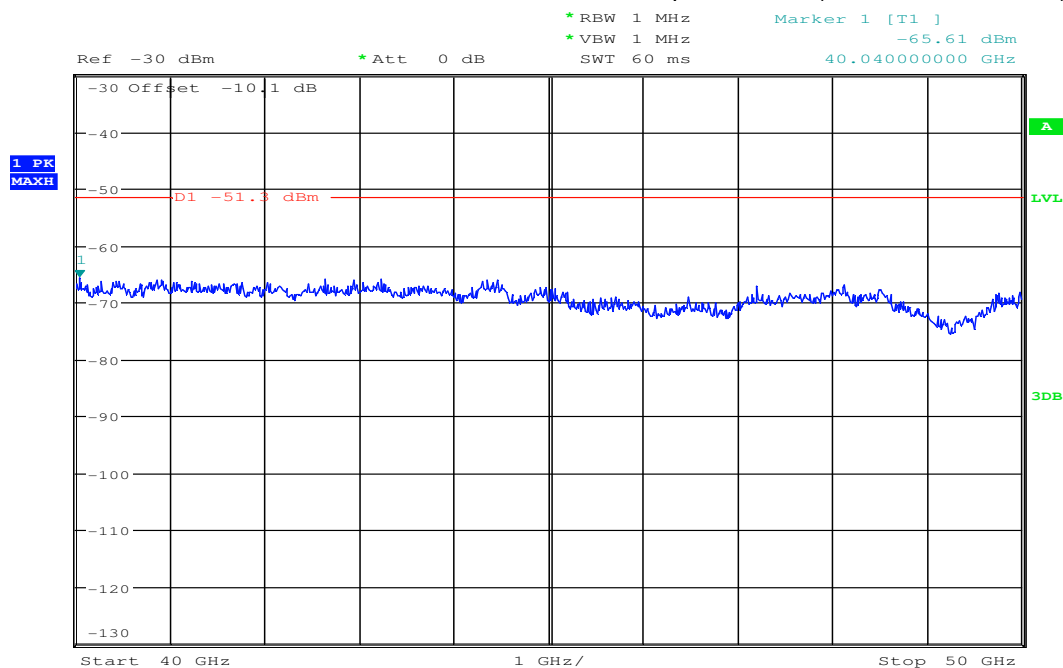
Date: 13.APR.2012 12:51:51

Plot 47: 26 GHz – 40 GHz, Low Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Date: 13.APR.2012 15:54:34

Plot 48: 40 GHz – 50 GHz, Low Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Date: 13.APR.2012 16:05:49

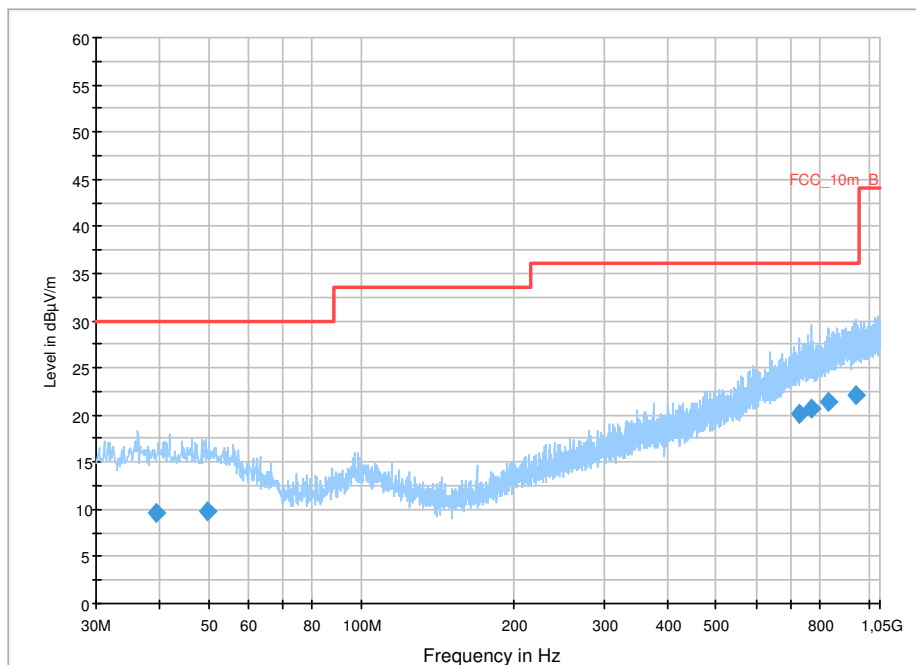
Plot 49: 30 MHz – 960 MHz, Middle Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)

EUT:	Optiwave 5200 C
Serial Number:	F121234567890123
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	Middle Channel
Operator Name:	Kraus
Comment:	DC: 24V

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBμV/m

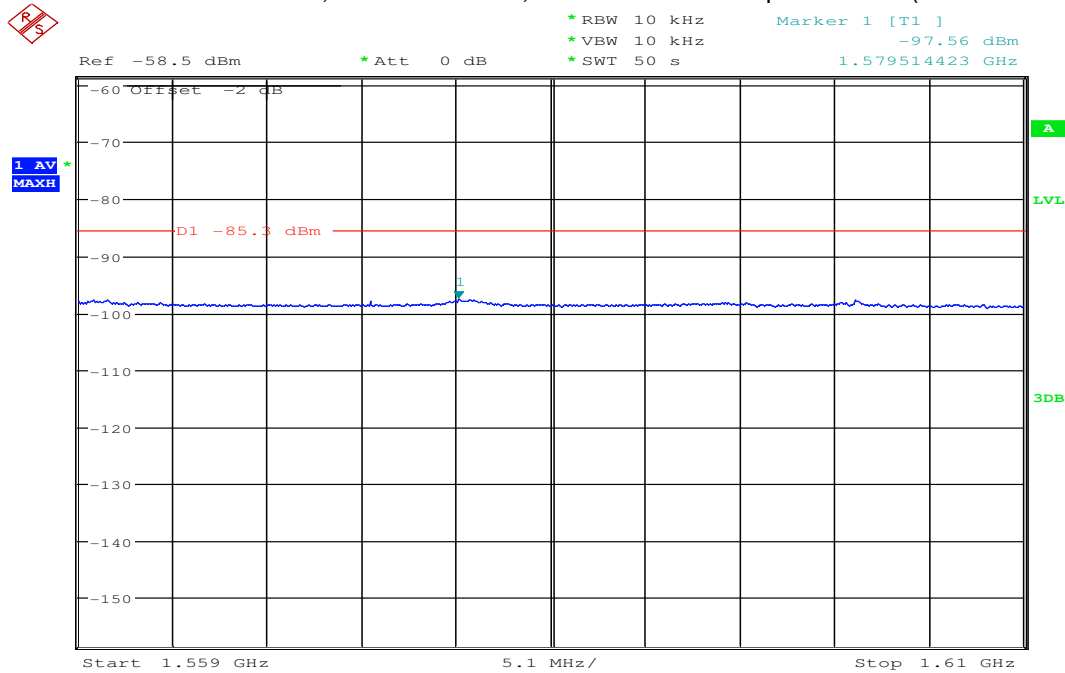
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

FCC_10m(B)



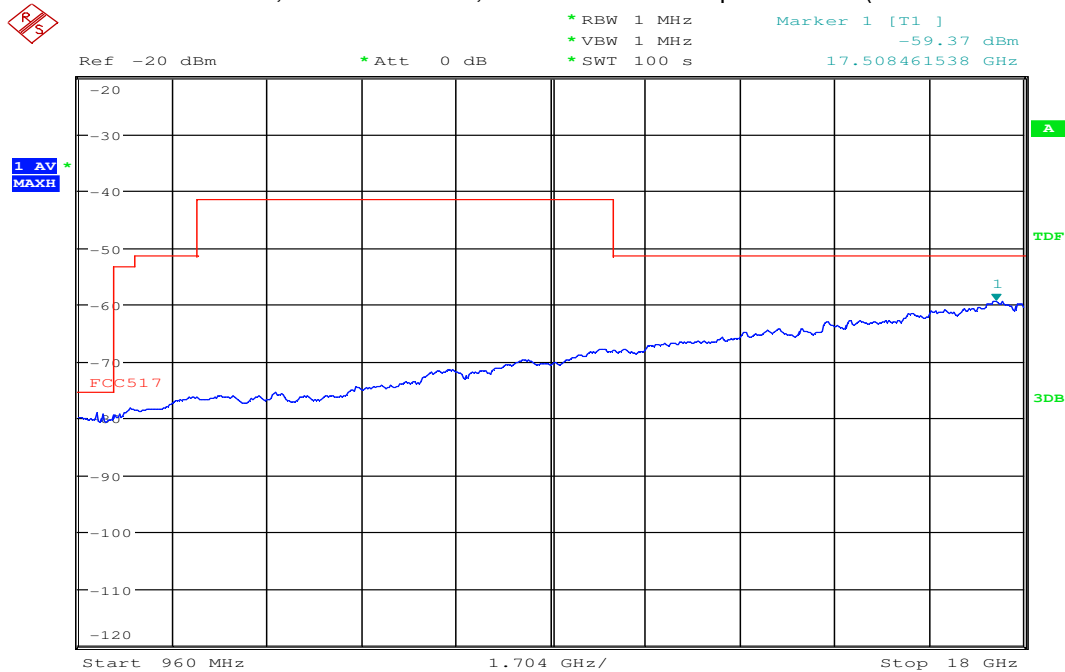
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
39.29070	9.6	1000.0	120.000	389.0	V	224.0	13.4	20.4	30.0
49.84215	9.8	1000.0	120.000	200.0	H	339.0	13.4	20.2	30.0
727.64760	20.2	1000.0	120.000	123.0	H	254.0	23.1	15.8	36.0
768.46500	20.6	1000.0	120.000	200.0	H	131.0	23.7	15.4	36.0
832.28955	21.3	1000.0	120.000	317.0	H	-5.0	24.3	14.7	36.0
944.62425	22.1	1000.0	120.000	383.0	H	48.0	25.3	13.9	36.0

Plot 50: 1559 MHz – 1610 MHz, Middle Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



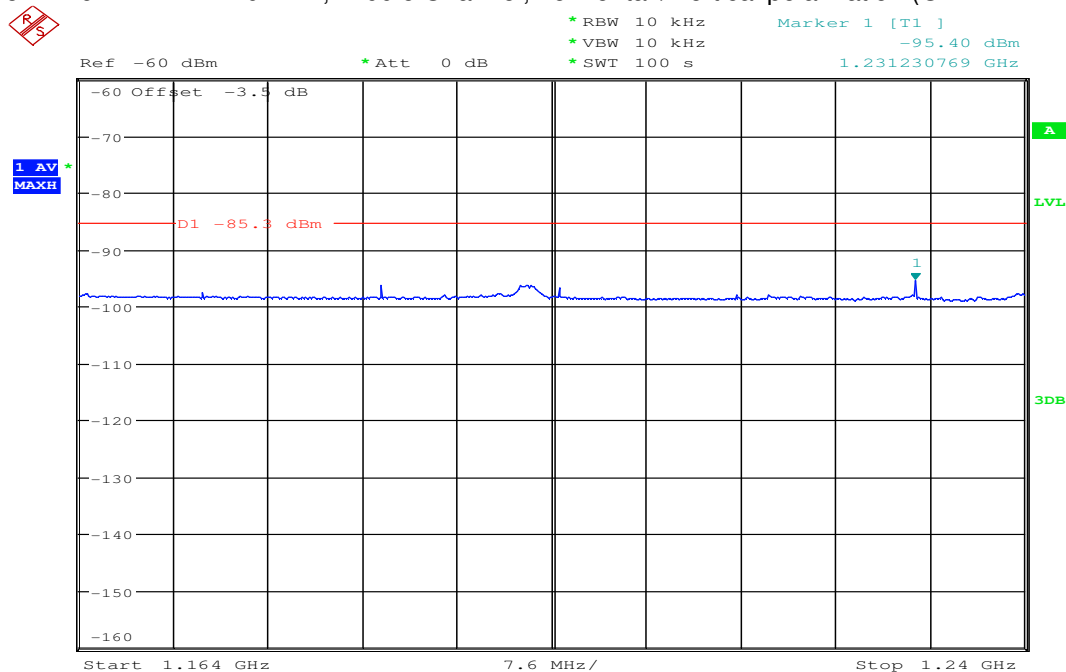
Date: 7.MAY.2012 18:28:50

Plot 51: 960 MHz – 18 GHz, Middle Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



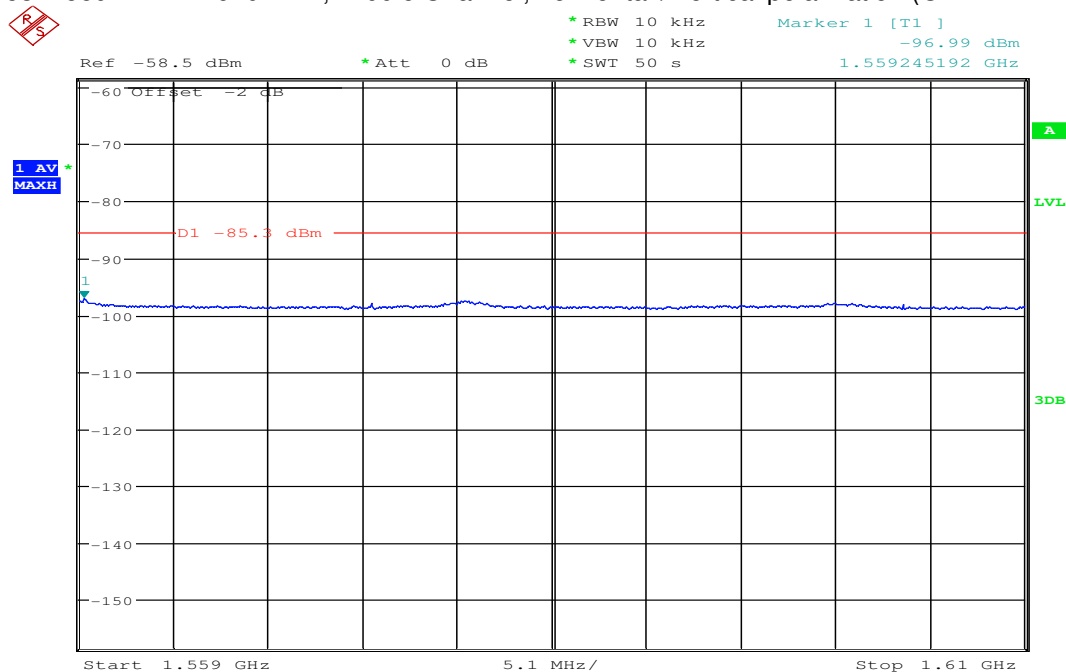
Date: 7.MAY.2012 17:43:53

Plot 52: 1164 MHz – 1240 MHz, Middle Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



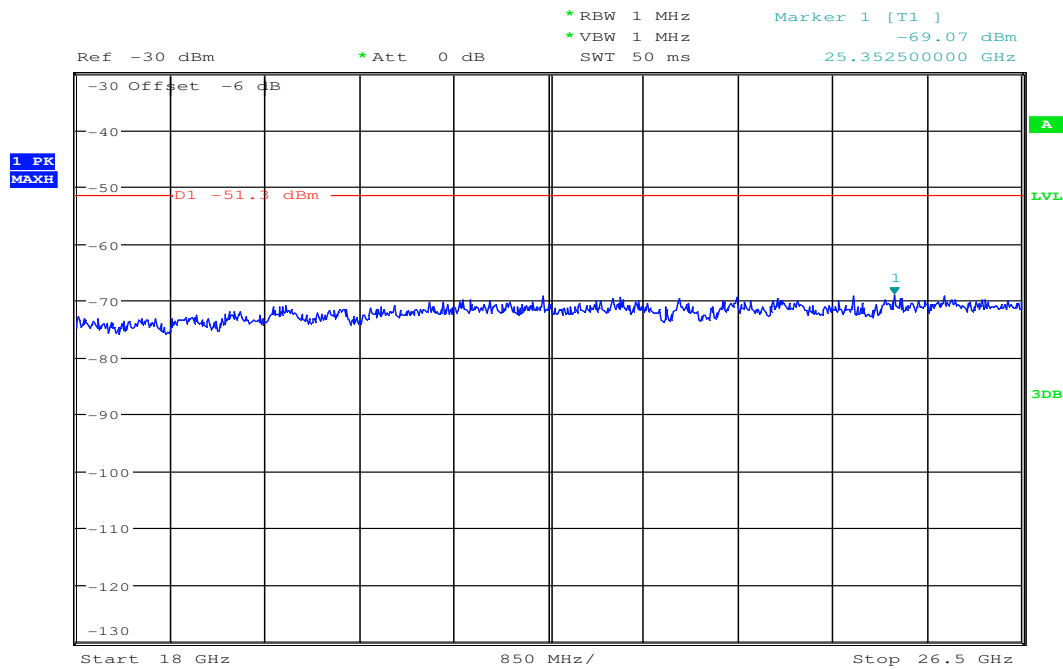
Date: 7.MAY.2012 18:12:36

Plot 53: 1559 MHz – 1610 MHz, Middle Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



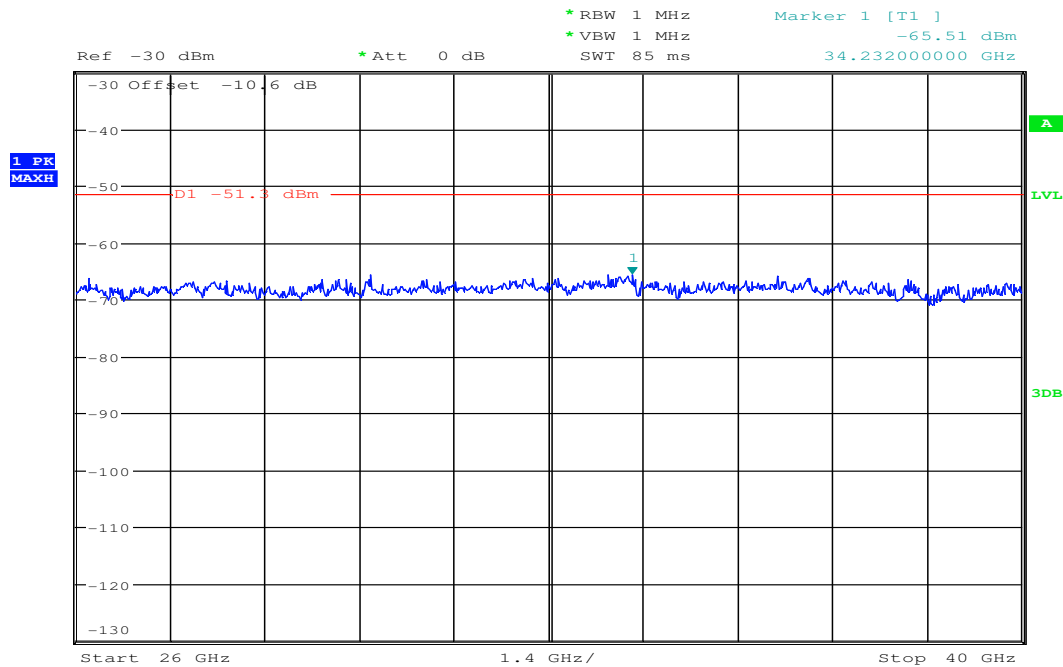
Date: 7.MAY.2012 18:30:35

Plot 54: 18 GHz – 26 GHz, Middle Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



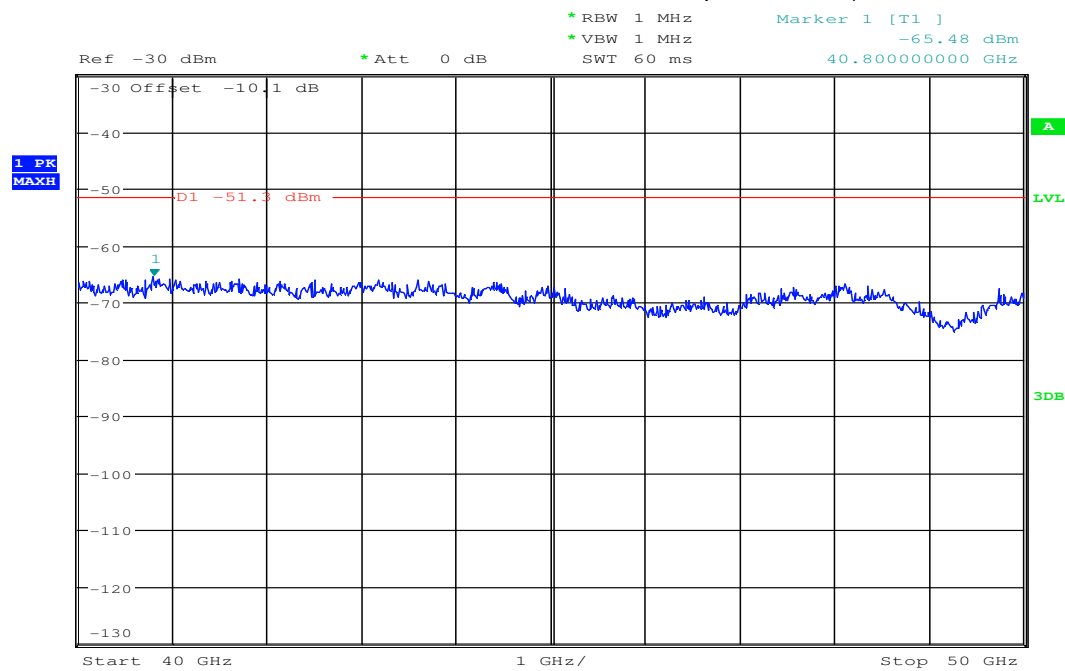
Date: 13.APR.2012 12:53:47

Plot 55: 26 GHz – 40 GHz, Middle Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Date: 13.APR.2012 15:56:27

Plot 56: 40 GHz – 50 GHz, Middle Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Date: 13.APR.2012 16:03:51

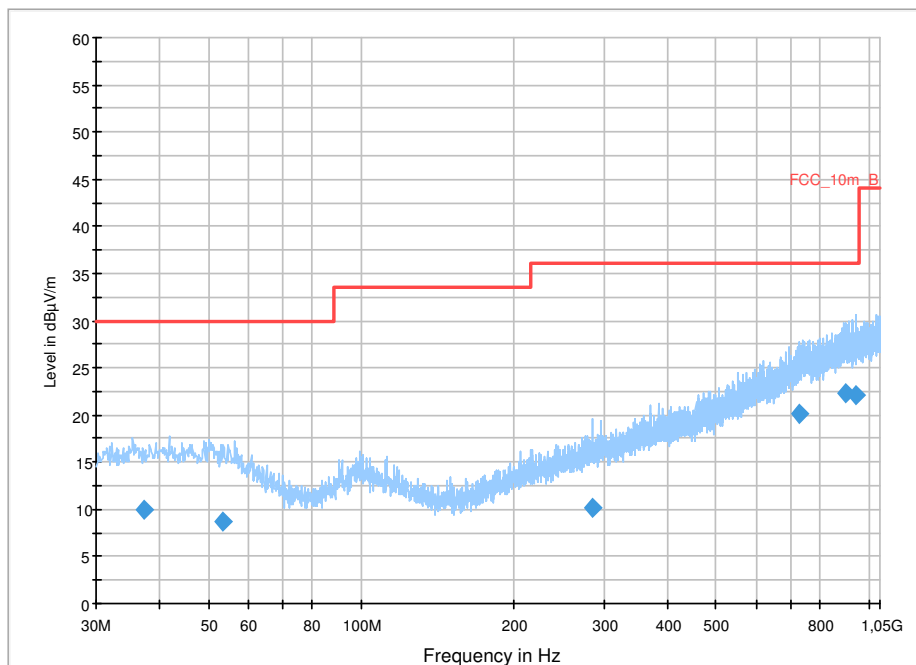
Plot 57: 30 MHz – 960 MHz, High Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)

EUT:	Optiwave 5200 C
Serial Number:	F121234567890123
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	High Channel
Operator Name:	Kraus
Comment:	DC: 24V

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dB μ V/m

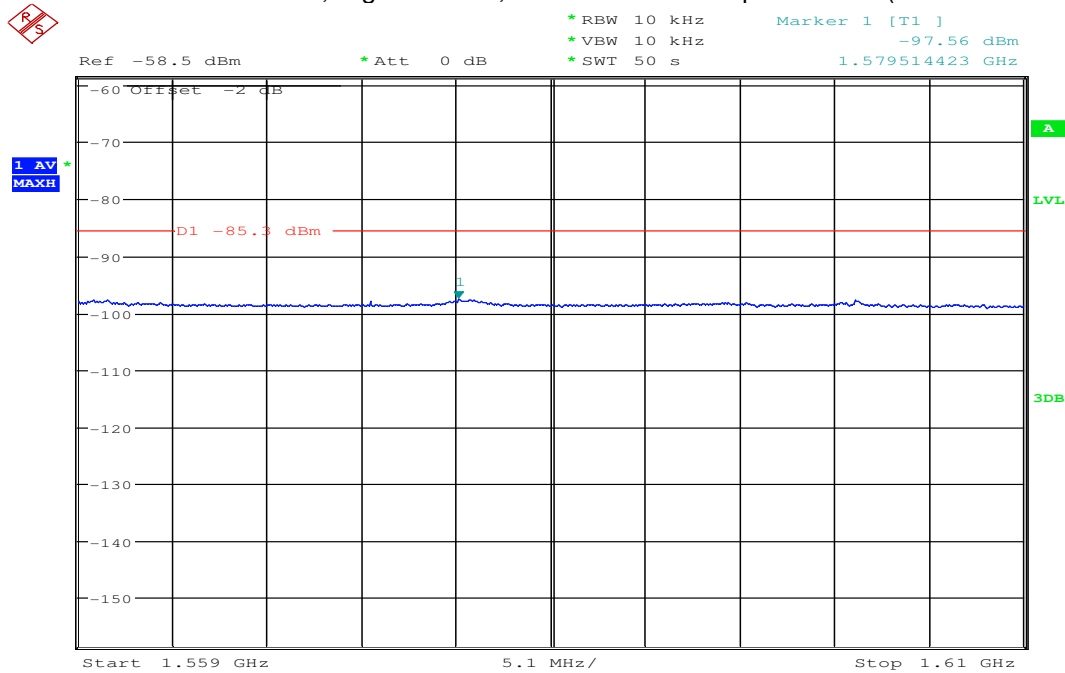
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

FCC_10m(B)



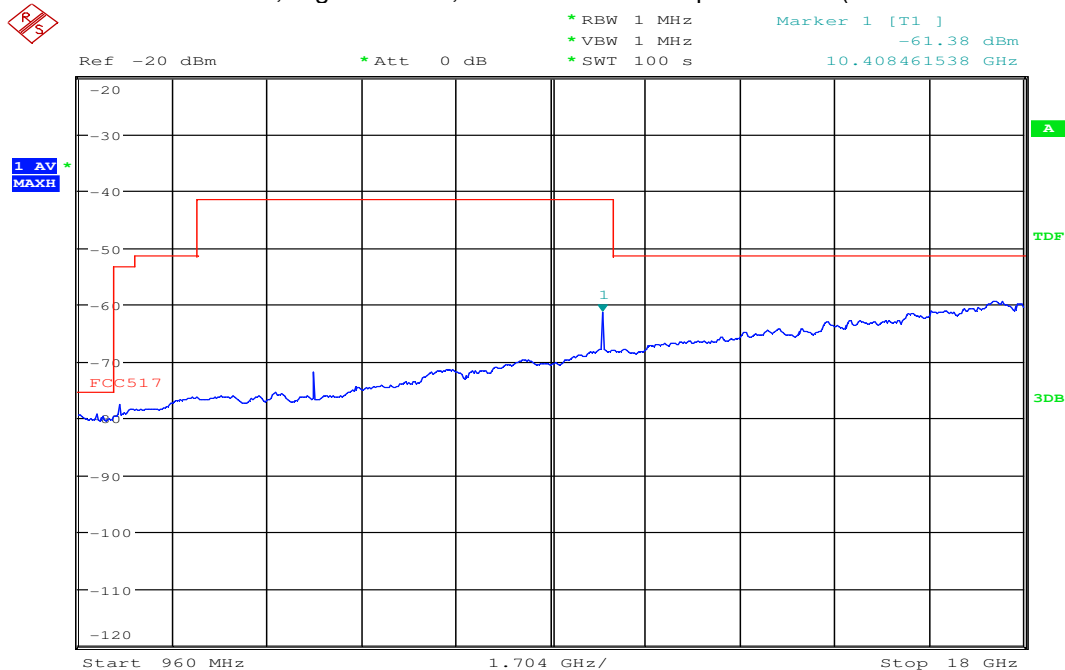
Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
37.42800	10.0	1000.0	120.000	213.0	V	48.0	13.2	20.0	30.0
53.19015	8.8	1000.0	120.000	338.0	V	156.0	13.1	21.2	30.0
284.50635	10.2	1000.0	120.000	289.0	H	240.0	14.2	25.8	36.0
726.91410	20.1	1000.0	120.000	213.0	H	275.0	23.1	15.9	36.0
902.23635	22.2	1000.0	120.000	200.0	V	50.0	25.2	13.8	36.0
944.79510	22.2	1000.0	120.000	200.0	V	292.0	25.3	13.8	36.0

Plot 58: 1559 MHz – 1610 MHz, High Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



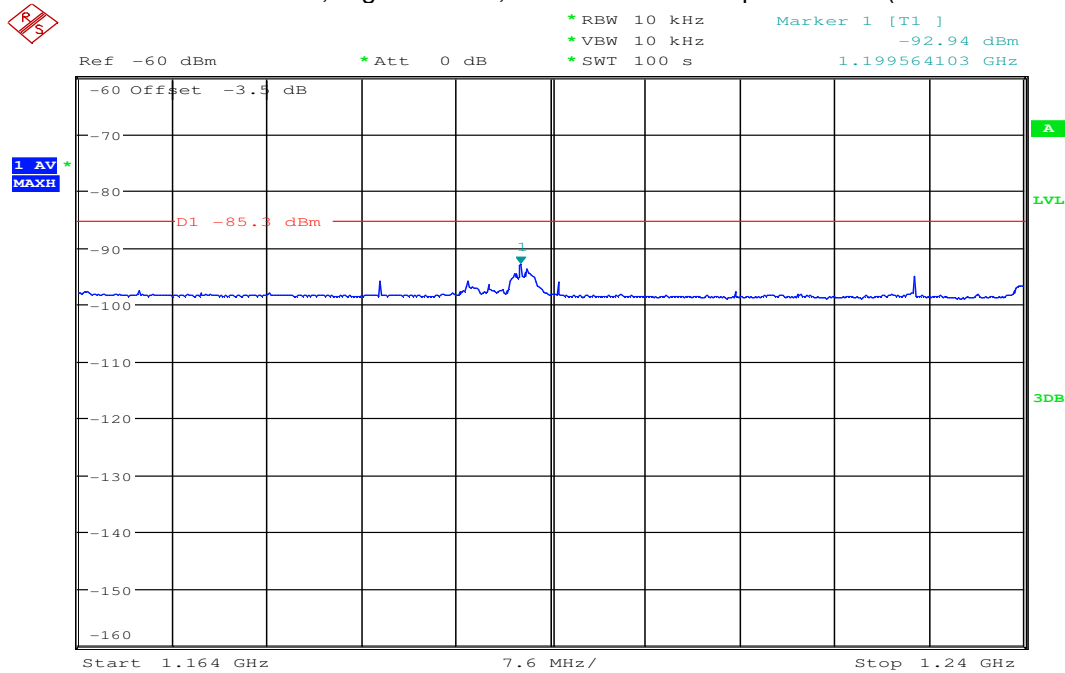
Date: 7.MAY.2012 18:28:50

Plot 59: 960 MHz – 18 GHz, High Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



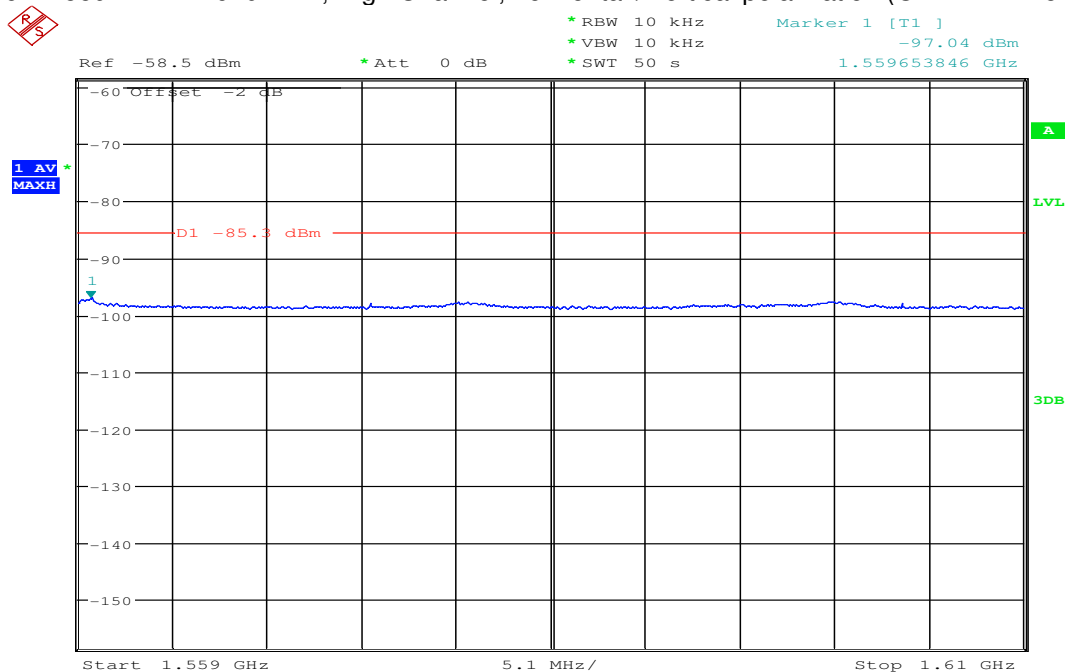
Date: 7.MAY.2012 17:49:45

Plot 60: 1164 MHz – 1240 MHz, High Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



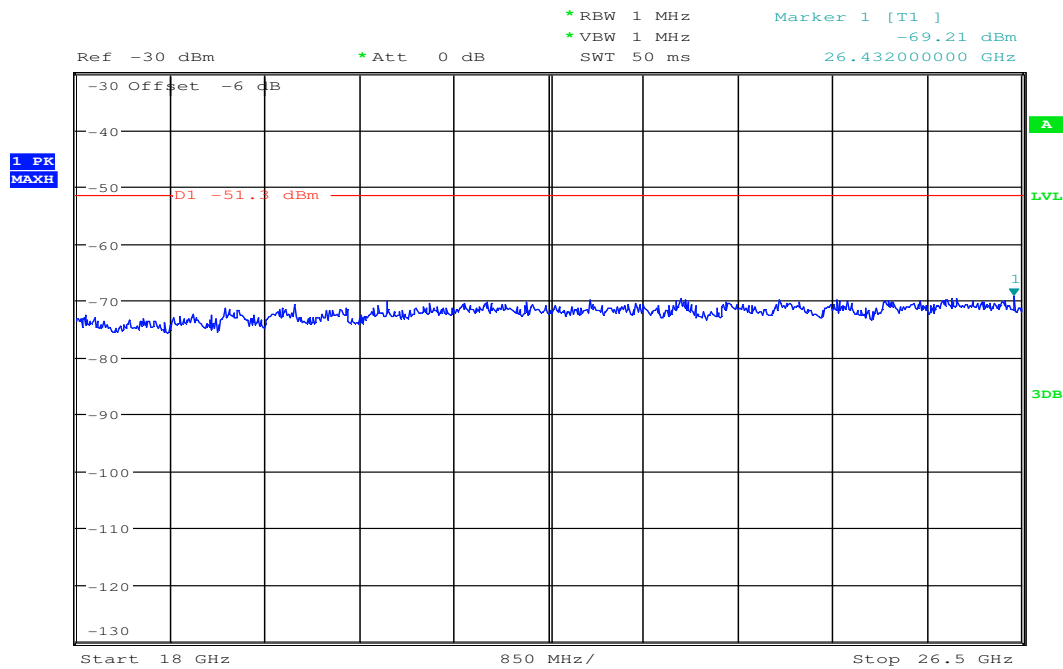
Date: 7.MAY.2012 18:15:29

Plot 61: 1559 MHz – 1610 MHz, High Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



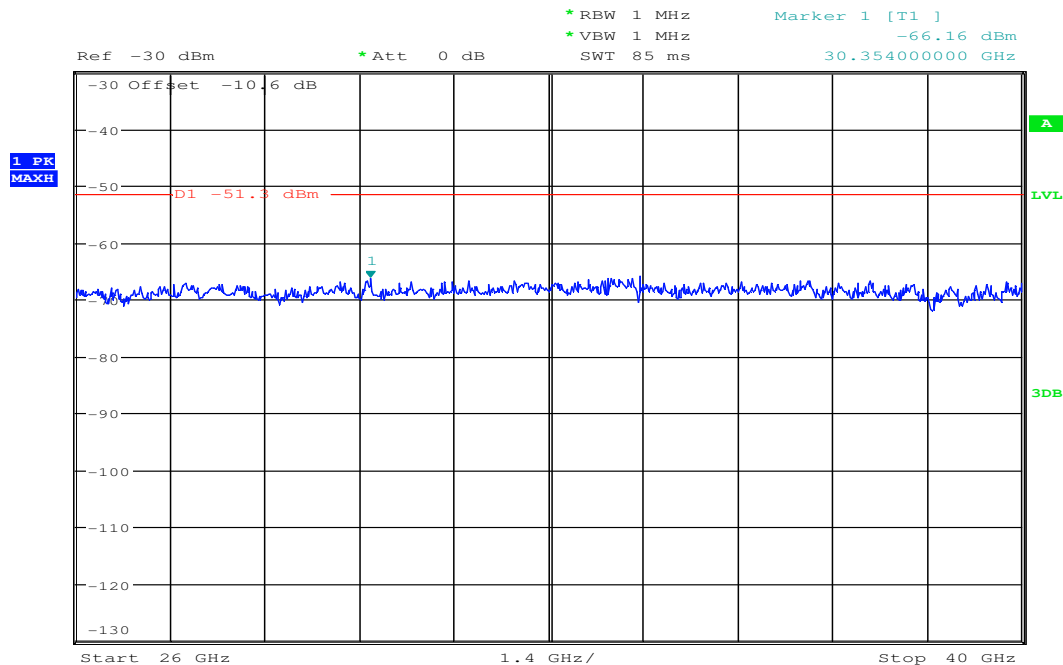
Date: 7.MAY.2012 18:32:26

Plot 62: 18 GHz – 26 GHz, High Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



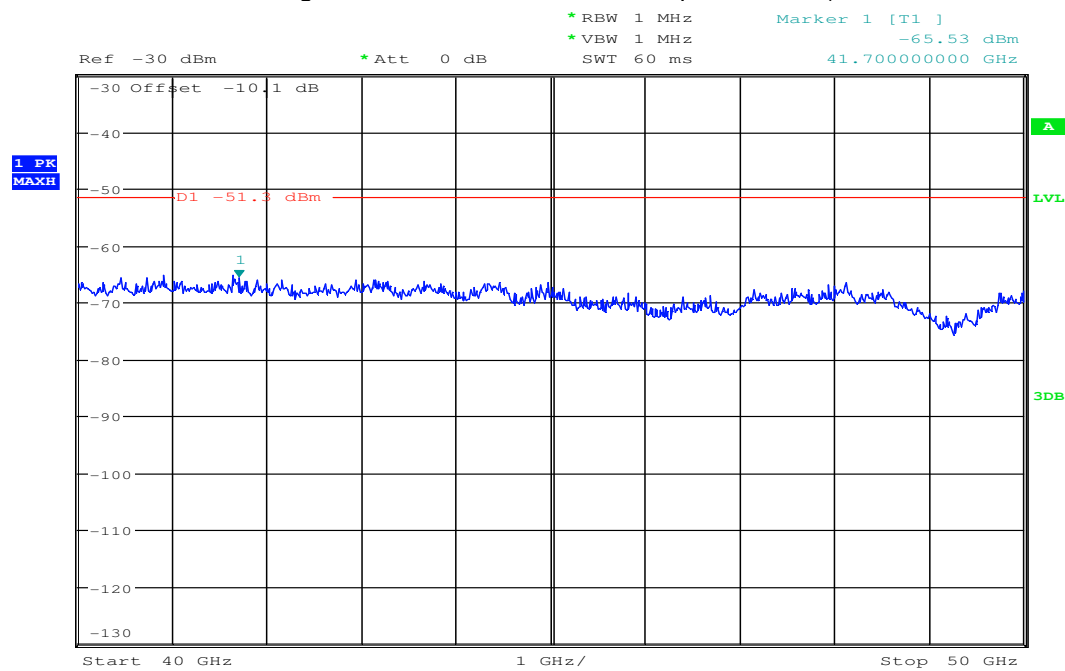
Date: 13.APR.2012 12:55:21

Plot 63: 26 GHz – 40 GHz, High Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Date: 13.APR.2012 15:57:19

Plot 64: 40 GHz – 50 GHz, High Channel, horizontal / vertical polarization (OPTIWAVE 5200 C)



Date: 13.APR.2012 16:02:34

The full tests were performed on the OPTIWAVE 5200 C and some delta tests on the OPTIWAVE 5200 F.

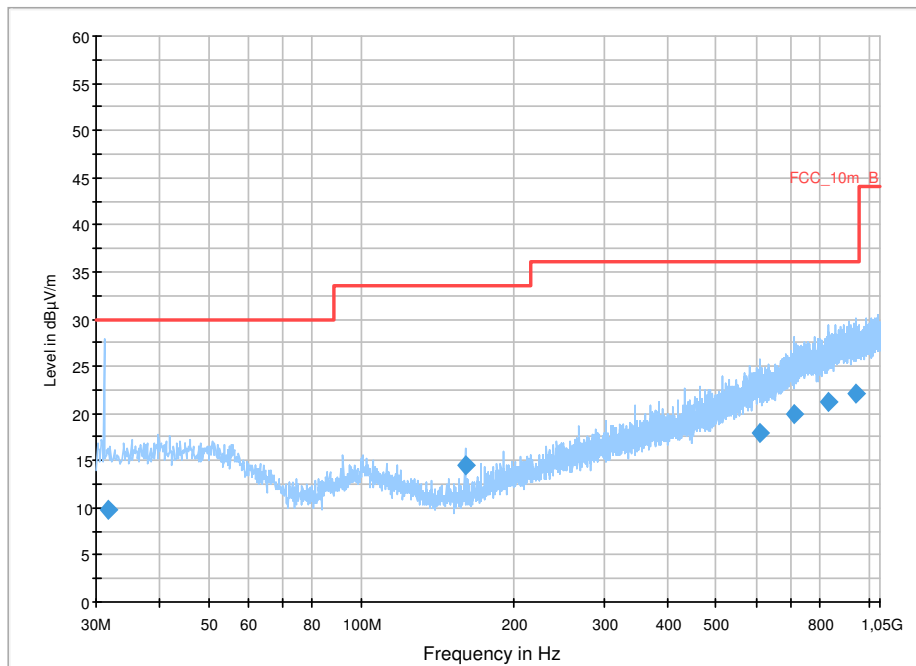
Plot 65: 30 MHz – 1 GHz, Idle-Mode, horizontal / vertical polarization (OPTIWAVE 5200 F)

EUT:	Optiwave 5200 F
Serial Number:	F121234567890124
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	Idle-Mode
Operator Name:	Kraus
Comment:	DC: 24V

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBμV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

FCC_10m(B)



Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
31.743750	9.8	1000.0	120.000	200.0	V	275.0	12.7	20.2	30.0
159.999300	14.4	1000.0	120.000	113.0	V	50.0	9.2	19.1	33.5
610.442550	17.9	1000.0	120.000	200.0	V	50.0	20.9	18.1	36.0
709.966200	19.9	1000.0	120.000	400.0	V	240.0	22.7	16.1	36.0
828.929100	21.3	1000.0	120.000	100.0	H	275.0	24.2	14.7	36.0
940.830300	22.2	1000.0	120.000	400.0	H	275.0	25.3	13.8	36.0

9.4 Conducted spurious emissions < 30 MHz

Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. Both power lines, phase and neutral line, are measured. Found peaks are re-measured with average and quasi peak detection to show compliance to the limits.

Measurement:

Measurement parameter	
Detector:	Peak - Quasi Peak / Average
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max Hold

Limits:

FCC		IC	
CFR Part 15.207(a)		ICES-003, Issue 4	
Conducted Spurious Emissions < 30 MHz			
Frequency (MHz)	Quasi-Peak (dBμV/m)	Average (dBμV/m)	
0.15 – 0.5	66 to 56*	56 to 46*	
0.5 – 5	56	46	
5 – 30.0	60	50	

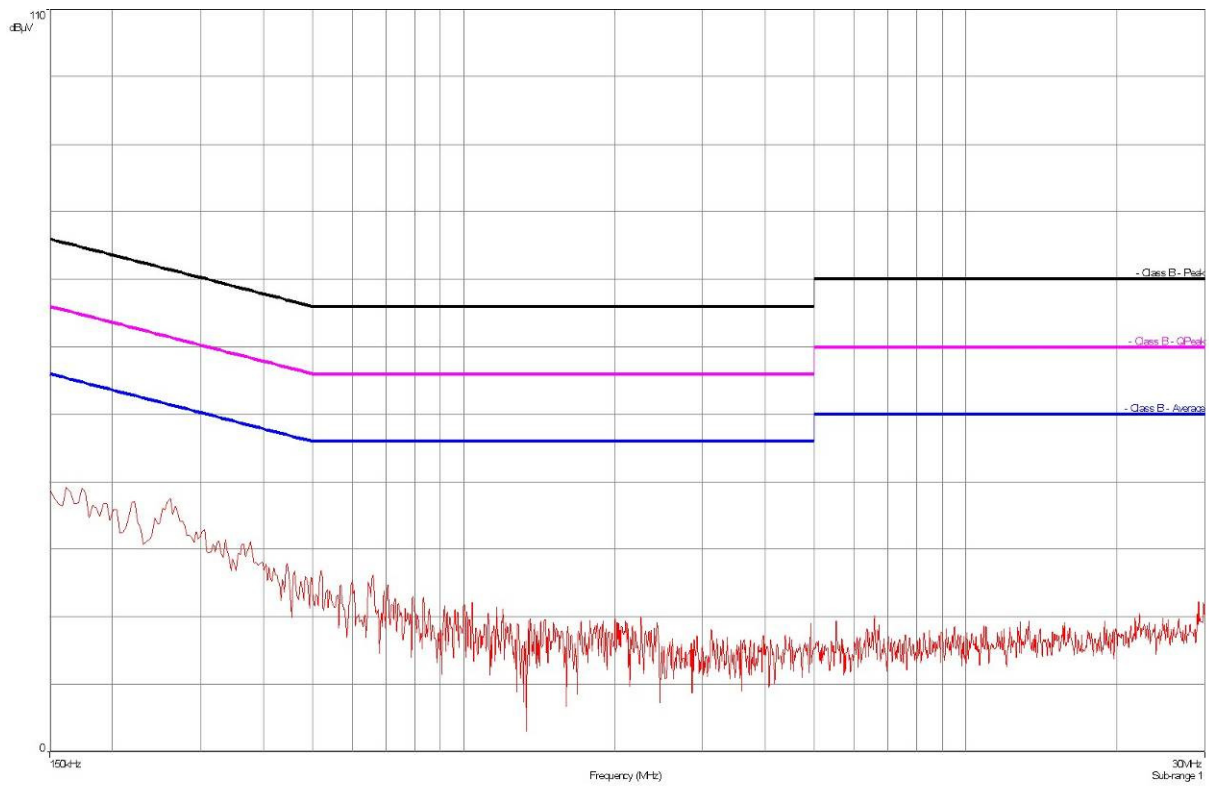
*Decreases with the logarithm of the frequency

Results:

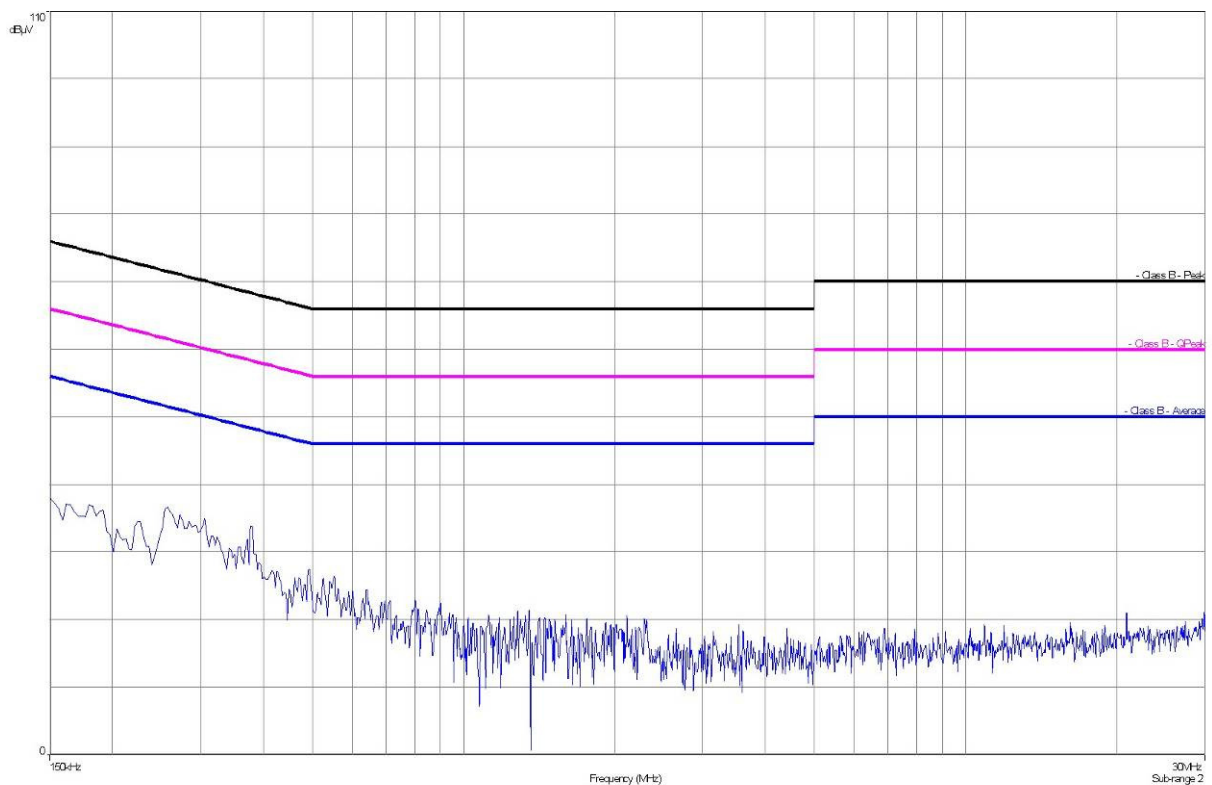
Conducted Spurious Emissions < 30 MHz [dBμV/m]		
F [MHz]	Detector	Level [dBμV/m]
No critical peaks found		
Measurement uncertainty	± 3 dB	

Result: The measurement is passed.

Plot 66: Phase line (valid for both Samples, both antennas and all Channels)



Plot 67: Neutral line (valid for both Samples, both antennas and all Channels)



10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
2	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	12.01.2012	12.01.2015
3	n. a.	Coaxial Attenuator 30dB/500W	8325	Bird	1530	300001595	ev		
4	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKI	11.05.2011	11.05.2013
5	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
6	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
7	Spec.A. 2_e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
8	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2012	06.01.2014
9	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
10	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
11	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
12	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
13	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
14	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
15	n. a.	Band Reject filter	WRCG185 5/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
16	n. a.	Band Reject filter	WRCG240 0/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
17	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
18	n. a.	Highpass Filter	WHKX2.9/1 8G-12SS	Wainwright	1	300003492	ev		
19	n. a.	Highpass Filter	WHK1.1/15 G-10SS	Wainwright	3	300003255	ev		
20	n. a.	Highpass Filter	WHKX7.0/1 8G-8SS	Wainwright	18	300003789	ne		
21	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
22	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Technologies	MY47420220	300003813	k	13.09.2010	13.09.2012

23	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	vkl!	08.09.2010	08.09.2012
24	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vkl!	14.10.2011	14.10.2014
25	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
26	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
27	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B597 9	300000210	ne		
28	n. a.	EMI Test Receiver	ESCI 1166.5950. 03	R&S	100083	300003312	k	04.01.2012	04.01.2014
29	n. a.	Analyzer- Reference- System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	14.07.2011	14.07.2013
30	n. a.	Amplifier	JS42- 00502650- 28-5A	MITEQ	1084532	300003379	ev		
31	n. a.	Antenna Tower	Model 2175	ETS- LINDGREN	64762	300003745	izw		
32	n. a.	Positioning Controller	Model 2090	ETS- LINDGREN	64672	300003746	izw		
33	n. a.	Turntable Interface-Box	Model 105637	ETS- LINDGREN	44583	300003747	izw		
34	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k		
35	n. a.	Spectrum- Analyzer	FSU26	R&S	200809	300003874	k	10.01.2011	10.01.2013
36	5	DC Power Supply, 60V, 10A	6038A	HP Meßtechnik	2848A07027	300001174	Ve	05.01.2012	05.01.2015
37	n. a.	Spectrum Analyzer 20 Hz - 50 GHz	FSU50	R&S	200012	300003443	ve	01.07.2010	01.07.2012
38	11b	Microwave System Amplifier, 0.5- 26.5 GHz; 25 dB gain	83017A	HP Meßtechnik	00419	300002268	ev		
39	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000787	ne		
40	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002442	ne		
41	A021	Std. Gain Horn Antenna 26.4- 40.1 GHz	2224-20	Flann	233	300001973	ne		
42	n. a.	Std. Gain Horn Antenna 33-50 GHz	2324-20	Flann	57	-/-	ne		

Agenda: Kind of Calibration

k	calibration / calibrated		EK	limited calibration
ne	not required (k, ev, izw, zw not required)		zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification		izw	internal cyclical maintenance
Ve	long-term stability recognized		g	blocked for accredited testing
vkl!	Attention: extended calibration interval			
NK!	Attention: not calibrated		*)	next calibration ordered / currently in progress

11 Observations

No observations exceeding those reported with the single test cases have been made.

Annex A Photographs of the test setup

Photo 1: OPTIWAVE 5200 C

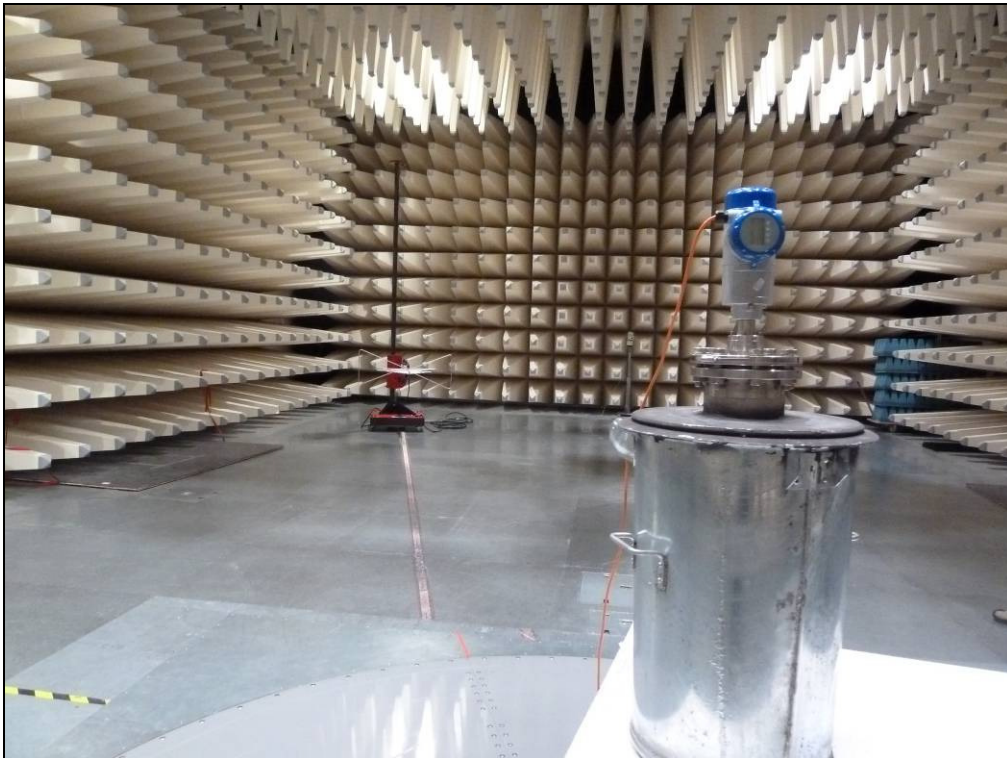
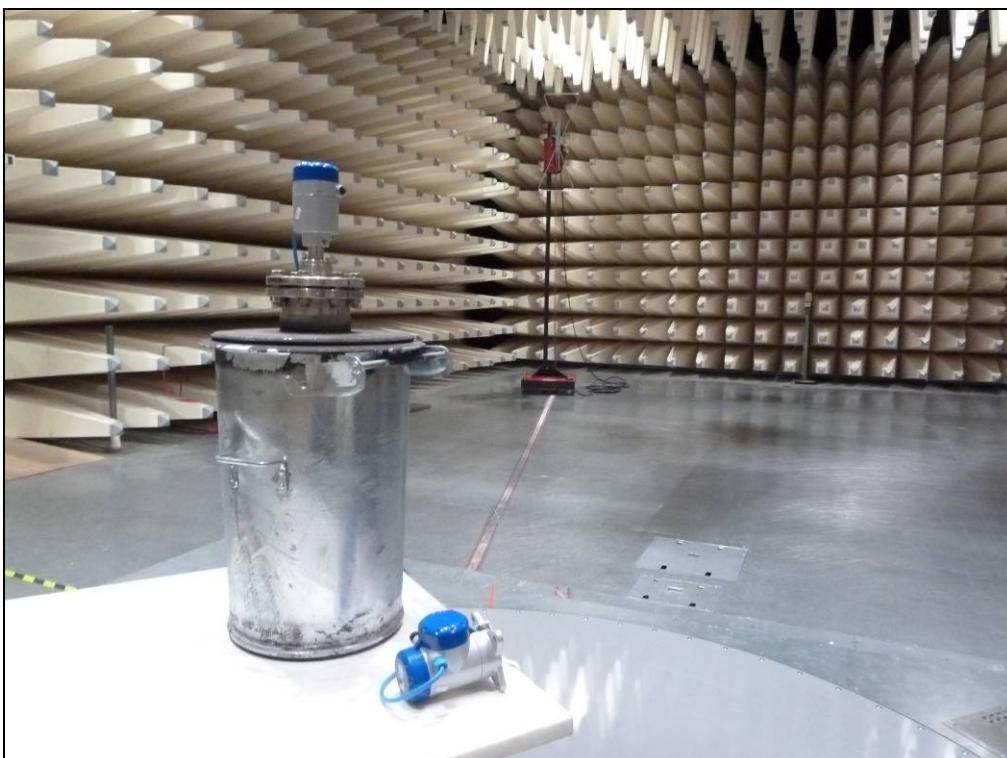


Photo 2: OPTIWAVE 5200 F



Annex B External photographs of the EUT

Photo 3: OPTIWAVE 5200 C + Metallic Horn Antenna



Photo 4: OPTIWAVE 5200 C



Photo 5: OPTIWAVE 5200 C

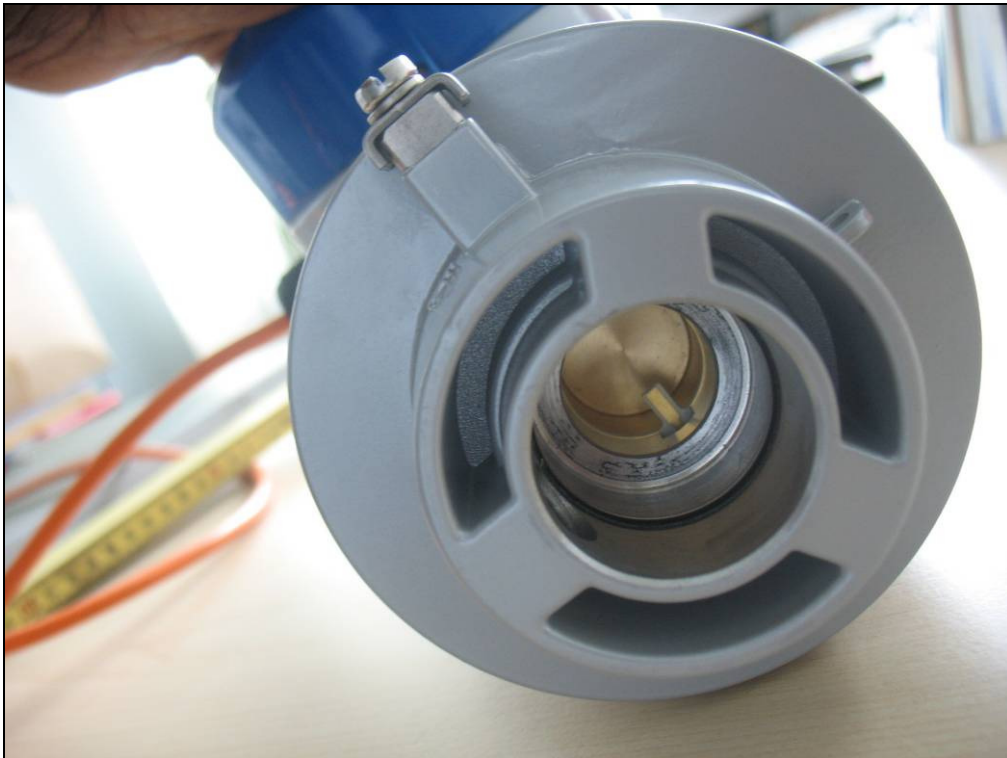


Photo 6: OPTIWAVE 5200 C



Photo 7: OPTIWAVE 5200 F



Photo 8: OPTIWAVE 5200 F



Photo 9: Metallic Horn Antenna

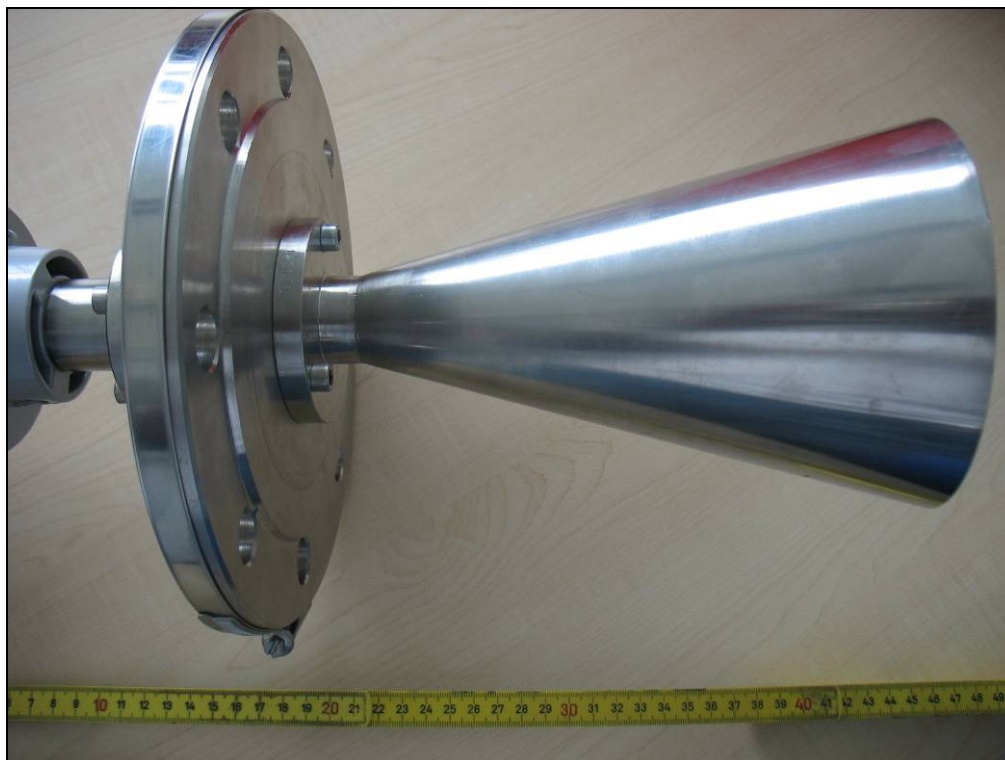


Photo 10: Metallic Horn Antenna

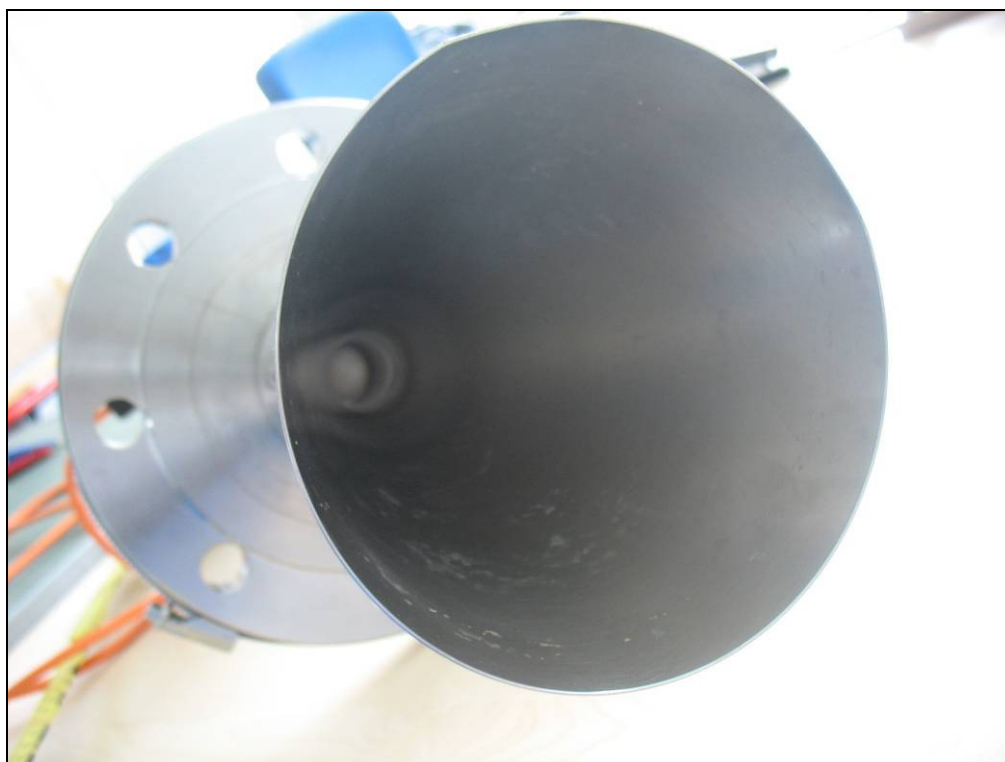


Photo 11: Metallic Horn Antenna



Photo 12: Metallic Horn Antenna



Photo 13: Metallic Horn Antenna



Photo 14: Wave Horn Antenna



Annex C Internal photographs of the EUT

Photo 15:



Photo 16:



Photo 17:



Photo 18:

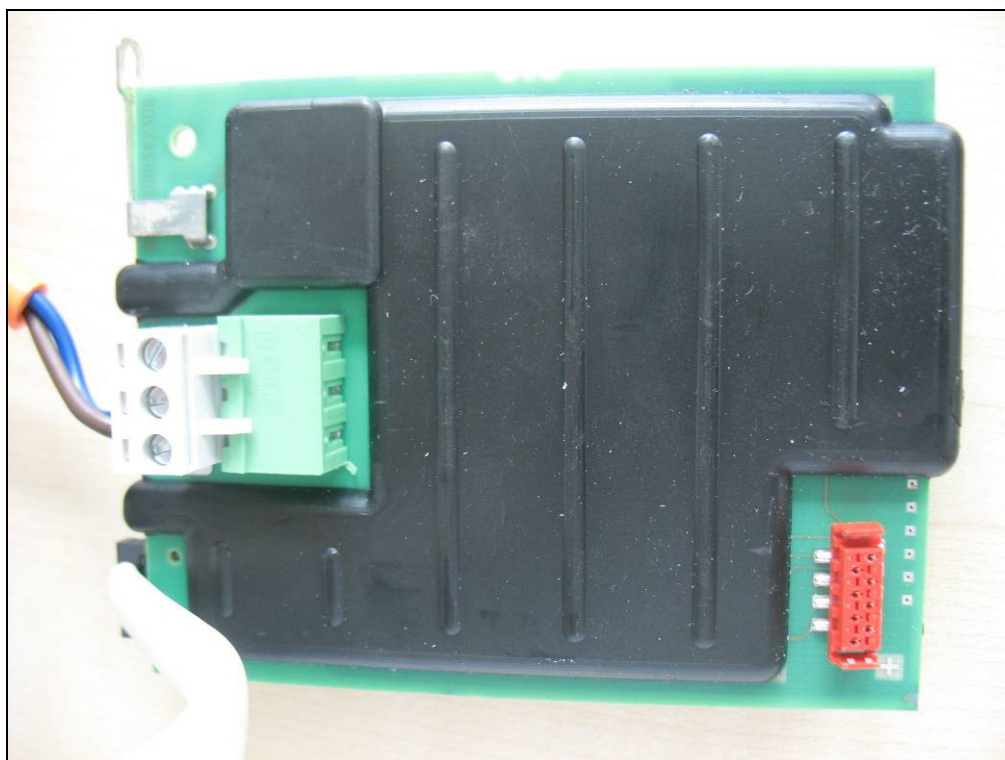


Photo 19:



Photo 20:

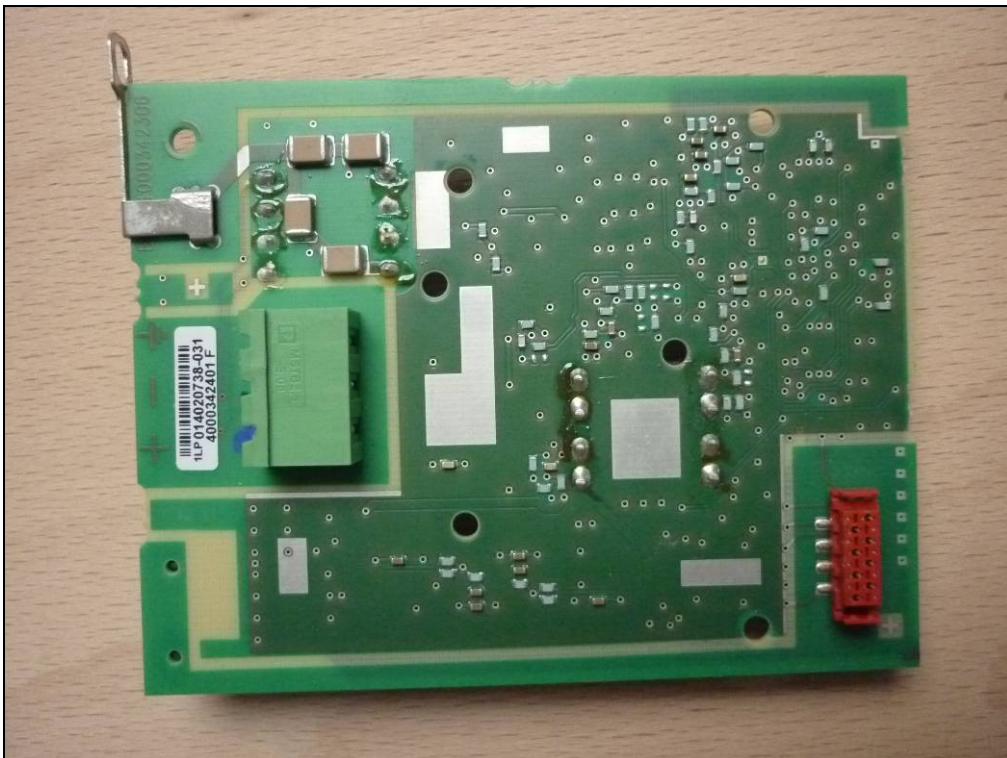


Photo 21:

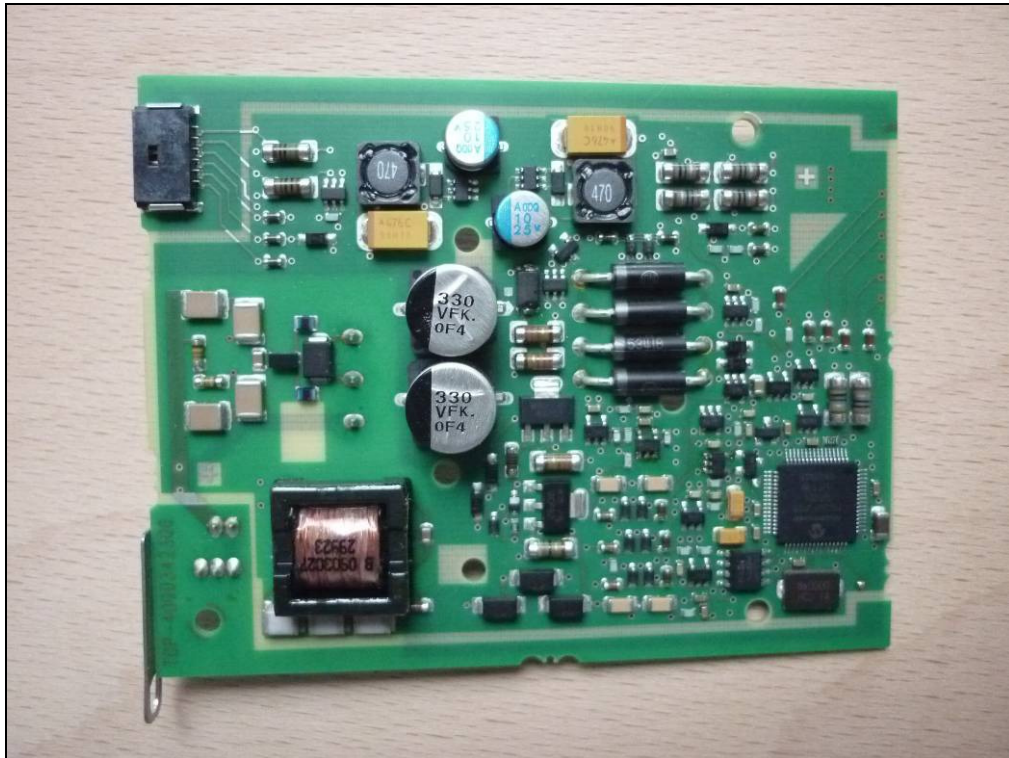


Photo 22:

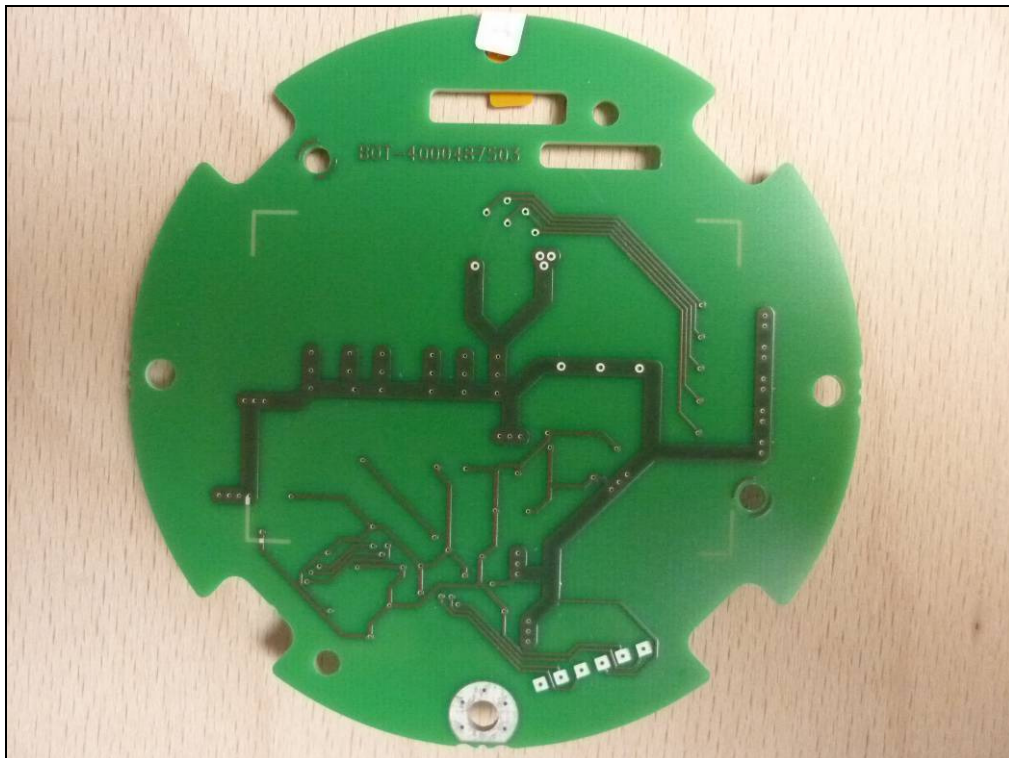


Photo 23:



Annex D Document history

Version	Applied changes	Date of release
-B	Initial release	2012-10-22
-D	Additional measurements with Wave horn antenna	2013-01-21

Annex E Further information**Glossary**

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software

Annex F Accreditation Certificate



Deutsche Akkreditierungsstelle GmbH
German Accreditation Body

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV
Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition

Accreditation



The Deutsche Akkreditierungsstelle GmbH (German Accreditation Body) attests that the testing laboratory

CETECOM ICT Services GmbH
Untertürkheimer Straße 6-10
66117 Saarbrücken

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields:

Wired communications and DECT
Acoustic
Radio
Short Range Devices (SRD)
RFID
WiMax and Richtfunk
Mobile radio (GSM / DCS), Over the Air (OTA) Performance
Electromagnetic Compatibility (EMC) incl. Automotive
Product safety
SAR and Hearing Aid Compatibility (HAC)
Environmental simulation
Smart Card Terminals
Bluetooth
Wi-Fi-Services

The accreditation certificate shall only apply in connection with the notice of accreditation of 13.04.2011 with the accreditation number D-PL-12076-01 and is valid until 03.09.2014. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 82 pages.

Registration number of the certificate: D-PL-12076-01-01

Frankfurt am Main, 13.04.2011


Dipl.-Ing. (FH) Dr. Egner
Head of Division 2

This document is a translation. The definitive version is the original German accreditation certificate.
See notes overleaf.

Deutsche Akkreditierungsstelle GmbH

Office Berlin
Spittelmarkt 10
10117 Berlin

Office Frankfurt am Main
Gartenstraße 6
60594 Frankfurt am Main

Office Braunschweig
Bundesallee 100
38116 Braunschweig

The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAKKS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAKKS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAKKS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:

EA: www.european-accreditation.org
ILAC: www.ilac.org
IAF: www.iaf.nu

Front side of certificate

Back side of certificate

Note:

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

http://www.cetecom.com/fileadmin/de/CETECOM_D_Saarbruecken/accreditations_Jan_2010/DAKKS_Akkredi_Urk_EN17025-En_incl_Annex.pdf