



CETECOM™

CETECOM ICT Services
consulting - testing - certification >>>

TEST REPORT

Test report no.: 1-3423/11-01-11



DAkkS
Deutsche
Akkreditierungsstelle
D-PL-12076-01-01

Testing laboratory

CETECOM ICT Services GmbH
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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

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Phone: +39 05 71 68 12 1
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e-mail: a.baroncelli@consilium.it
Phone: +39 05 71 68 12 71

Manufacturer

Consilium Italy S.r.l.
Via Romita 26
50025 Montagnana V.P. Montespertoli / ITALY

Test standard/s

CFR 47 Part 80 Stations in the maritime services

For further applied test standards please refer to section 4 of this test report.

Test Item

Kind of test item: **Shipborne Radar - S-Band Up Mast Transceiver**
Model name: **UP MAST/S-001**
FCC ID: **OD4-UPMASTS001**
Frequency range: 2.9 - 3.1 GHz
Tx power conducted: 30 kW
Power Supply: 100 - 240 V AC
Temperature Range: 0°C to +50°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:

Karsten Geraldý
Senior Testing Manager

Test performed:

Meheza Walla
Expert

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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.

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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:	2011-11-18
Date of receipt of test item:	2012-01-12
Start of test:	2012-01-16
End of test:	2012-01-19
Laboratory reference number:	005.12
Person(s) present during the test:	Mr. Simone Giachi and Mr. Marco Gimignani

3 Test location

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075

4 Test standard/s and Reference/s

Test standard/s	Date	Description
CFR 47 Part 80	2011-10	Stations in the maritime services

5 Test environment

Temperature:	T_{nom}	+22 °C during room temperature tests
Relative humidity:		45 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	115/230 V AC

6 Test laboratory/ies sub-contracted

none

7 Test item

7.1 General Description

Kind of test item	Shipborne Radar - S-Band Up Mast Transceiver
Type identification	UP MAST/S-001
S/N serial number	SRTS30UH01-AP101
Frequency band	2.9 - 3.1 GHz
TX output power conducted	30 kW (nominal peak power of magnetron)
Type of modulation	sequence of unmodulated pulses
Type of radio transmission	PON
Power supply	115/230 V AC
Temperature range	-25°C to +55°C

7.2 List of components

UP MAST/S-001 Shipborne Radar - S-Band Up Mast Transceiver equipped with:

- EEV Magnetron, Type MG5223, S/N 0016505 (30 kW magnetron)

7.3 Antenna system(s)

Antenna size	Concept	Manufacturer	Type	TX gain dBi (mid)	Polarization	pattern / test report
12'	slotted array	Consilium Selesmar	ANT12LP/S-0001	26.5	lin.-orth.	available

Note: Above listed antenna was tested by Selex Galileo / Italy, antenna report no. ANT12LP/S0001 of 2012-04-10.

7.4 Operating conditions

Operating condition 1: S-Band radar, 30 kW, EEV Magnetron, Type MG5223, S/N 0016505

7.5 Additional information

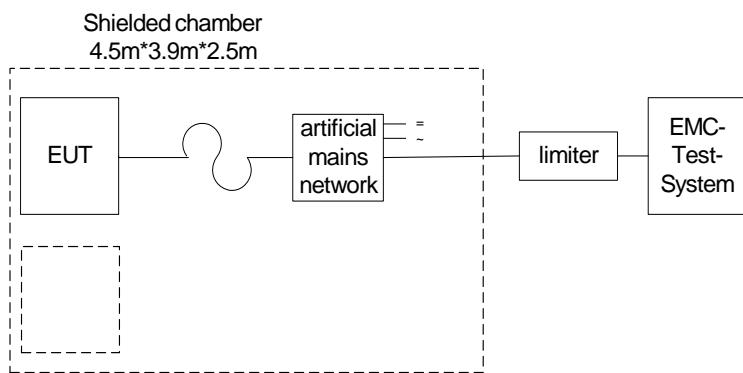
-/-

8 RF measurements

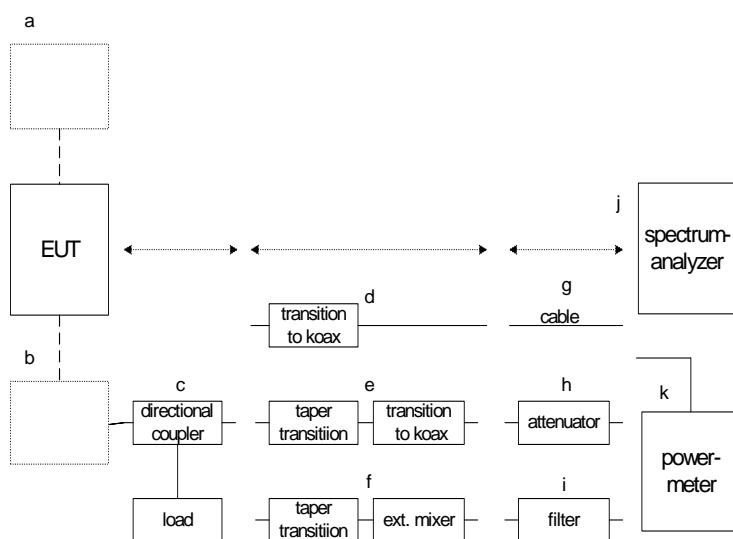
8.1 Description of test setup

Following diagrams show possible test setups. They can be considered as applicable in general. Depending on the tests performed and/or depending on the EUT configuration (e.g. amount of different components, setup, ...) the real test setup may vary slightly from the diagrams shown below.

8.1.1 Conducted measurements



Setup 1.1

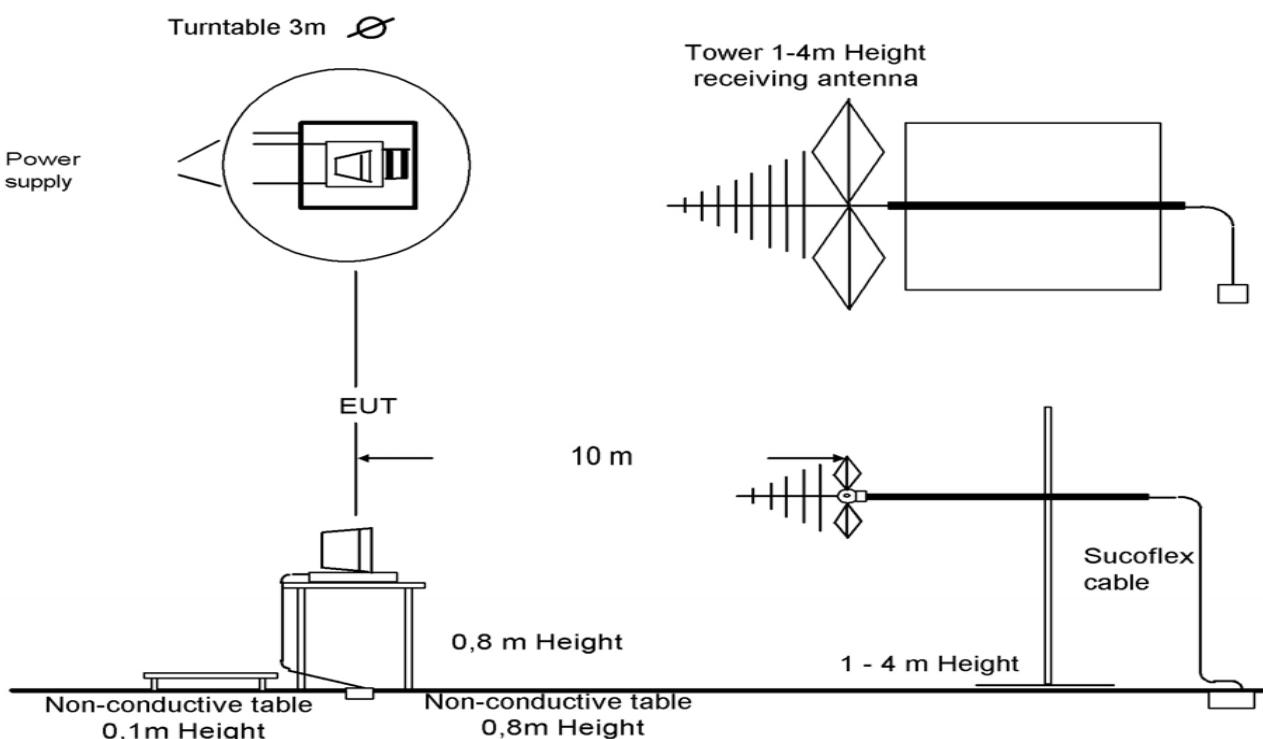


8.1.2 Radiation measurements

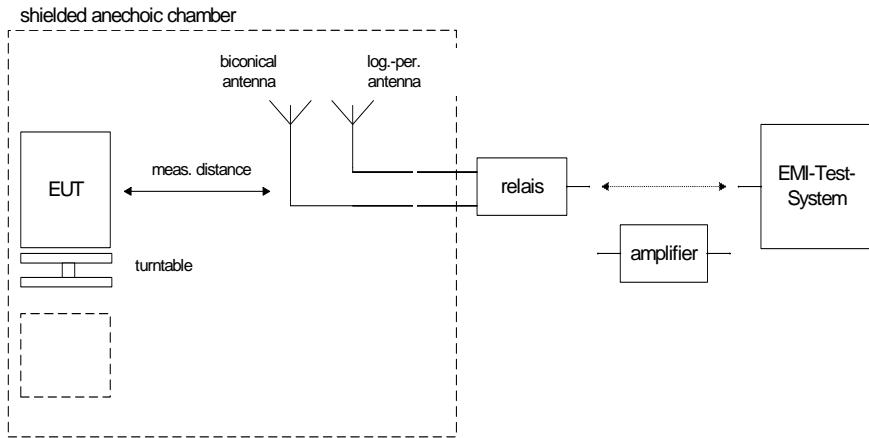
The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 12 GHz in a semi-anechoic chamber. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas 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 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 C63.4-2003 clause 4.2.

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

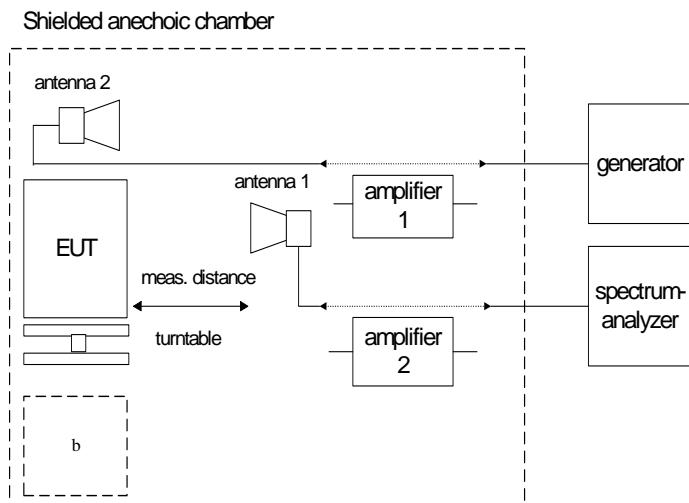
Setup 2.0: Radiated measurements (semi-anechoic chamber)



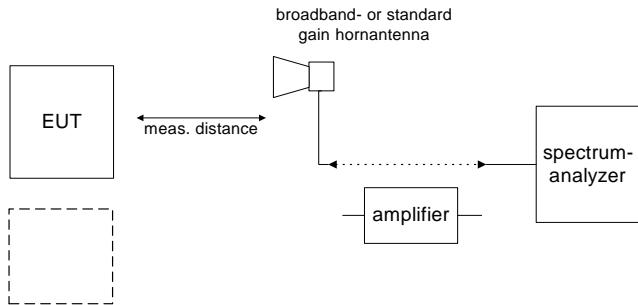
9 kHz - 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna



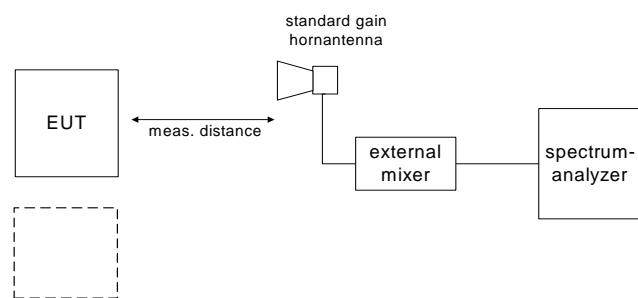
Setup 2.1



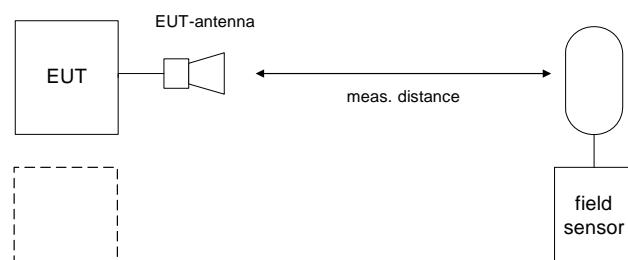
Setup 2.2



Setup 2.3



Setup 2.4



Setup 2.5

8.2 Test environment

The environment conditions are documented with each tests (see Annex B Measurement results).

8.3 Measurement uncertainties

The measurement and test setup is in accordance to the specification and schematically shown in 8.1. The reference to each test is shown in annex B.

Measurement uncertainties: Potential error sources/effects in that setup:

- mismatch HF Cable - RF Input of Analyzer
- mismatch Waveguide Adaptor - HF Cable
- mismatch Waveguide Adaptor - Directional Coupler
- mismatch Pedestal Flange - Directional Coupler
- Spectrum Analyzer frequency response
- Spectrum Analyzer IF gain uncertainty
- HF-Cable frequency response calibration uncertainty
- HF-Cable frequency response data conversion uncertainty
- Directional Coupler frequency response calibration uncertainty
- Directional Coupler frequency response data conversion uncertainty
- Attenuator frequency response calibration uncertainty
- Attenuator frequency response data conversion uncertainty

Our total uncertainty for above listed factors with a 95% confidence level (acc. UKAS, ETSI) is $\leq \pm 1.5\text{dB}$.

9 Test results

9.1 Summary

<input checked="" type="checkbox"/>	No deviations from the technical specifications were ascertained
<input type="checkbox"/>	There were deviations from the technical specifications ascertained

The present test report:

<input checked="" type="checkbox"/>	describes the first test
<input type="checkbox"/>	describes an additional test
<input type="checkbox"/>	is a verification of documents
<input type="checkbox"/>	is only valid with the test report no.:

TC identifier	Description	Verdict	Date	Remark
RF-Testing	CFR 47 Part 80	PASS	2012-08-10	-/-

Test Specification Clause	Test Case	Pass	Fail	N/A	N/P	Results
§2.1046 / §80.215	Measurements required: RF power output / Transmitter power.	X				pk: 73.4 dBm avg: 41.3 dBm
§2.1047 / §80.213	Measurements required: Modulation characteristics / Modulation requirements	X				complies
§2.1049	Measurements required: Occupied bandwidth	X				max 59 MHz
§2.1051 / §80.211	Measurements required: Spurious emissions at antenna terminals / Emission limitations (conducted emissions)	X				complies
§2.1053 / §80.211	Measurements required: Field strength of spurious radiation / Emission limitations (radiated emissions)	X				complies
§2.1055 / §80.209	Measurements required: Frequency stability / Transmitter frequency tolerances	X				-746 ppm / +299 ppm

N/A: Not Applicable

N/P: Not Performed

9.2 Overview

I.	Transmitter characteristics / output power	13
II.	Modulation requirements.....	14
III.	Occupied bandwidth.....	15
IV.	Emission limits (RF spectrum mask).....	16
V.	Emissions limits (conducted emissions).....	17
VI.	Emissions limits (radiated emissions)	18
VII.	Transmitter frequency tolerance.....	19

I. Transmitter characteristics / output power

Description / Limit:

§ 80.215

(a) Transmitter power shown on the radio station authorization is the maximum power the licensee is authorized to use. Power is expressed in the following terms:

(3) For PON and F3N emission: Mean power.

Limit: no limitations

Test setup: no. 3

Measurement results:

Mode	T _{pulse} [ns]	T _{rise} [ns]	T _{fall} [ns]	PRF [Hz]	P _{out peak} [dBm]	P _{out mean} [dBm]
short pulse	63.9	12.8	60.1	3000	72.5	35.3
medium	288	19.2	66.6	1500	73.3	39.7
long pulse	825	20.9	69.6	750	73.4	41.3

Note:

P_{out mean} is calculated based on P_{out peak} and duty cycle of transmitter.
see also Annex A, plots 1 - 6

Result: The measurement is passed.

II. Modulation requirements

Description / Limit:

§ 80.213

(a) Transmitters must meet the following modulation requirements:

(g) Radar stations operating in the bands above 2.4 GHz may use any type of modulation consistent with the bandwidth requirements in § 80.209(b).

§ 80.209

(b) When pulse modulation is used in land and ship radar stations operating in the bands above 2.4 GHz the frequency at which maximum emission occurs must be within the authorized bandwidth and must not be closer than $1.5/T$ MHz to the upper and lower limits of the authorized bandwidth where "T" is the pulse duration in microseconds.

Test setup: no. 3

Measurement results:

see page 19, VII Transmitter frequency tolerance

Result: The measurement is passed.

III. Occupied bandwidth

Description / Limit:

§ 2.1049

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

Limit: no limitations

Test setup: no. 3

Measurement results:

Mode	occupied bandwidth [MHz]	see annex B, plot no.
short pulse	59.0	7
medium pulse	27.5	8
long pulse	12.5	9

Note:

see also annex B, plots 7 - 9

Result: The measurement is passed.

IV. Emission limits (RF spectrum mask)

Description / Limit:

§ 80.212

The emissions must be attenuated according to the following schedule:

(f) The mean power when using emissions other than those in paragraphs (a), (b), (c) and (d) of this section:

- (1) On any frequency removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: At least 25 dB;
- (2) On any frequency removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: At least 35 dB; and
- (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 plus $10\log_{10}$ (mean power in watts) dB.

Test setup: no. 3

Measurement results:

Mode	see following plots
short pulse	10
medium pulse	11
long pulse	12

Result: The measurement is passed.

V. Emissions limits (conducted emissions)

Description / Limit:

§ 80.212

The emissions must be attenuated according to the following schedule:

(f) The mean power when using emissions other than those in paragraphs (a), (b), (c) and (d) of this section:

- (1) On any frequency removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: At least 25 dB;
- (2) On any frequency removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: At least 35 dB; and
- (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 plus $10\log_{10}$ (mean power in watts) dB.

Test setup: no. 3

Measurement results:

Conducted Spurious Emissions [dBm]								
short pulse			medium pulse			long pulse		
F [GHz]	Detector	Level [dBm]	F [GHz]	Detector	Level [dBm]	F [GHz]	Detector	Level [dBm]
2.68	peak	-25.4	2.69	peak	-25.3	2.69	peak	-25.6
3.38	peak	-23.9	3.38	peak	-22.1	3.38	peak	-23.9
5.97	peak	-31.3	6.10	peak	-29.1	6.10	peak	-22.1
9.16	peak	-30.7	9.16	peak	-24.4	9.15	peak	-17.3
12.2	peak	-45.1	12.2	peak	-44.7	12.2	peak	-41.7
15.2	peak	-32.5	15.2	peak	-32.4	15.2	peak	-28.7
37.8	peak	-24.7	30.5	peak	-37.4	30.5	peak	-27.3
Measurement uncertainty			± 1.5 dB					

n.f. = nothing found

Note:

see also Annex B, plots 13 - 39

Result: The measurement is passed.

VI. Emissions limits (radiated emissions)

Description / Limit:

§ 80.212

The emissions must be attenuated according to the following schedule:

(f) The mean power when using emissions other than those in paragraphs (a), (b), (c) and (d) of this section:

- (1) On any frequency removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: At least 25 dB;
- (2) On any frequency removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: At least 35 dB; and
- (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 plus $10\log_{10}$ (mean power in watts) dB.

Test setup: no. 1, 4 and 5

Measurement results:

Radiated Spurious Emissions [dBm]								
short pulse			medium pulse			long pulse		
F [GHz]	Detector	Level [dBm]	F [GHz]	Detector	Level [dBm]	F [GHz]	Detector	Level [dBm]
0.041	peak	-31.7				0.035	peak	-27.1
3.85	peak	-31.1				3.99	peak	-38.5
6.09	peak	-26.9				6.10	peak	-16.2
						9.15	peak	-25.1
12.2	peak	-45.5	12.2	peak	-38.0	12.2	peak	-29.8
18.2	peak	-54.0	18.3	peak	-51.3	18.3	peak	-37.3
21.4	peak	-51.2	21.4	peak	-36.3	21.4	peak	-34.3
27.5	peak	-56.6	30.5	peak	-54.4	24.4	peak	-35.9
						27.5	peak	-47.8
Measurement uncertainty			± 3 dB					

n.f. = nothing found

v / h = vertical / horizontal

Note:

see also Annex B, plots 40 - 60

Result: The measurement is passed.

VII. Transmitter frequency tolerance

Description / Limit:

§ 80.209

(b) When pulse modulation is used in land and ship radar stations operating in the bands above 2.4 GHz the frequency at which maximum emission occurs must be within the authorized bandwidth and must not be closer than $1.5/T$ MHz to the upper and lower limits of the authorized bandwidth where "T" is the pulse duration in microseconds.

Mode	T_{pulse} [ns]	$1.5/T$ [MHz]	f_{min} [GHz]	f_{max} [GHz]
short pulse	63.9	23.47	3.0085	3.0615
medium pulse	288	5.21	2.9902	3.0798
long pulse	825	1.82	2.9868	3.0832

Note:

f_{min} and f_{max} are based on a centre frequency of 3.035 GHz and an authorized bandwidth of 100 MHz.

Test setup: no. 3

Measurement results:

Temperature [°C]	Voltage [V AC]	Reference Frequency [GHz]	Measured Frequency [GHz]	Deviation [MHz]	Deviation [ppm]
-30	115	3.0475090	3.0454745	-2.034	-667.6
-20	115	3.0475090	3.0452350	-2.274	-746.2
-10	115	3.0475090	3.0453200	-2.189	-718.3
0	115	3.0475090	3.0484195	0.911	298.8
10	115	3.0475090	3.0482745	0.766	251.2
20	115	3.0475090	3.0475090	0.000	0.0
20	115	3.0475090	3.0475090	0.000	0.0
20	98	3.0475090	3.0475090	0.000	0.0
30	132	3.0475090	3.0475245	0.016	5.1
40	115	3.0475090	3.0471295	-0.379	-124.5
50	115	3.0475090	3.0454745	-2.034	-667.6

lowest measured frequency:

3.045235 GHz

highest measured frequency:

3.048420 GHz

maximum deviation:

-2.274 MHz (-746 ppm)

(based on normal temp.)

+0.911 MHz (+299 ppm)

Result: The measurement is passed.

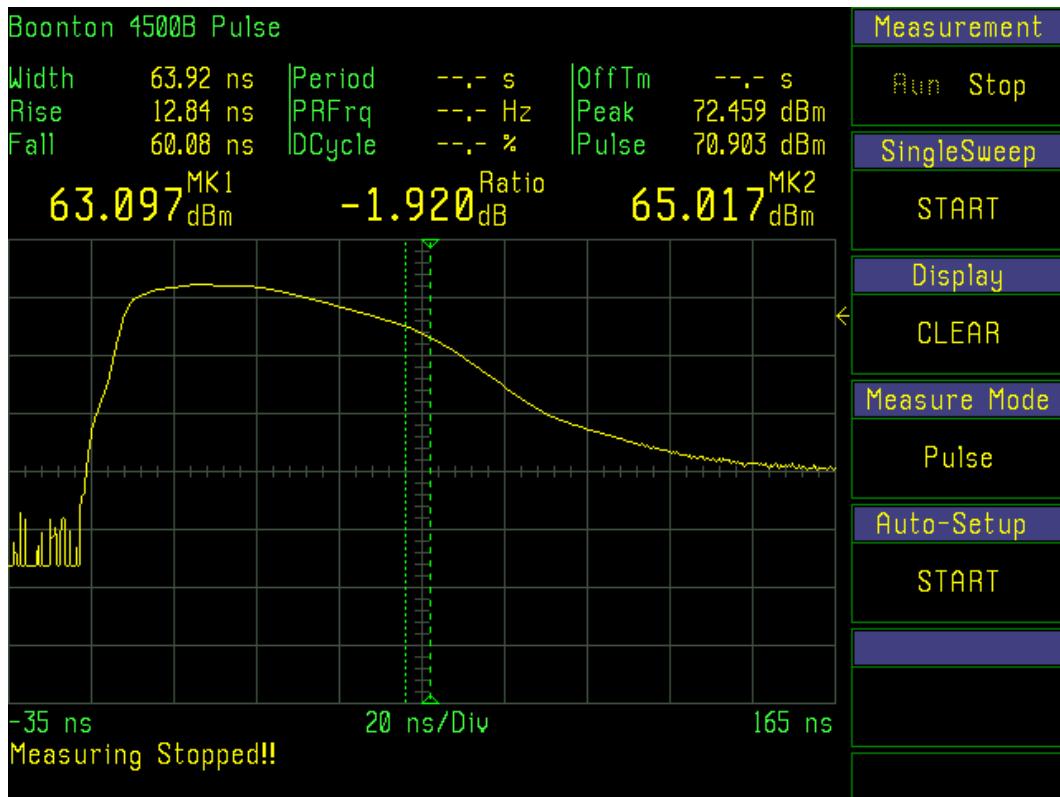
Annex A Measurement results, part 1

Annex A consists of 4 pages including this page.

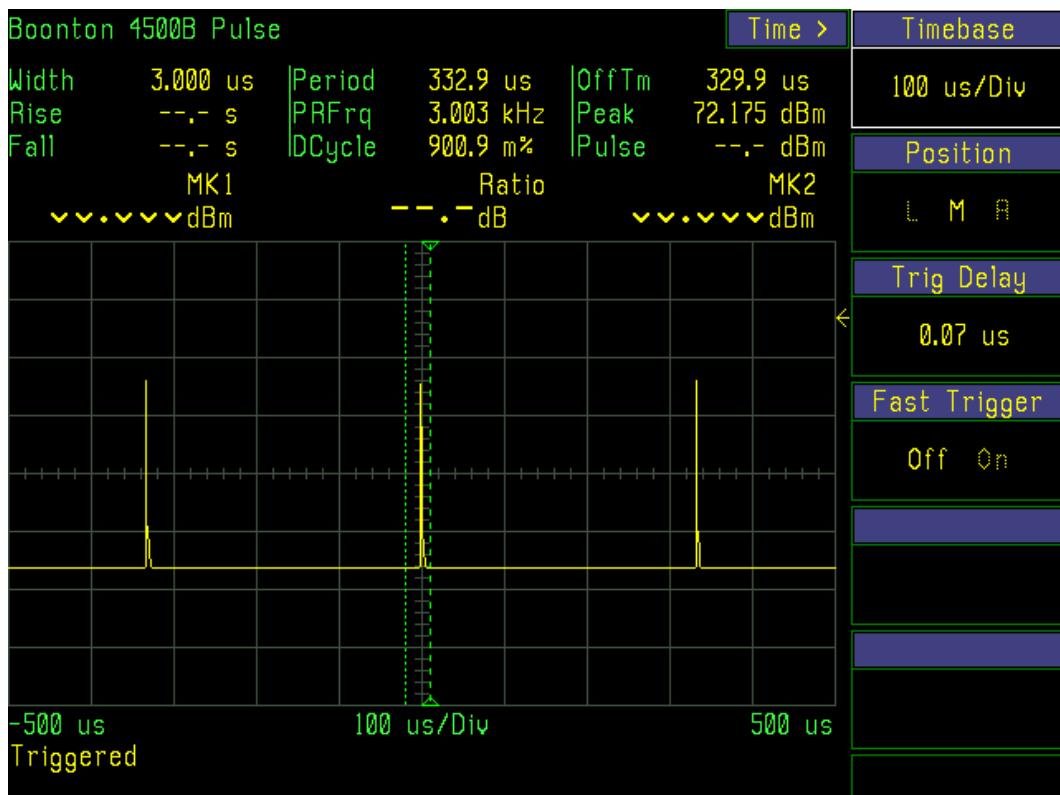
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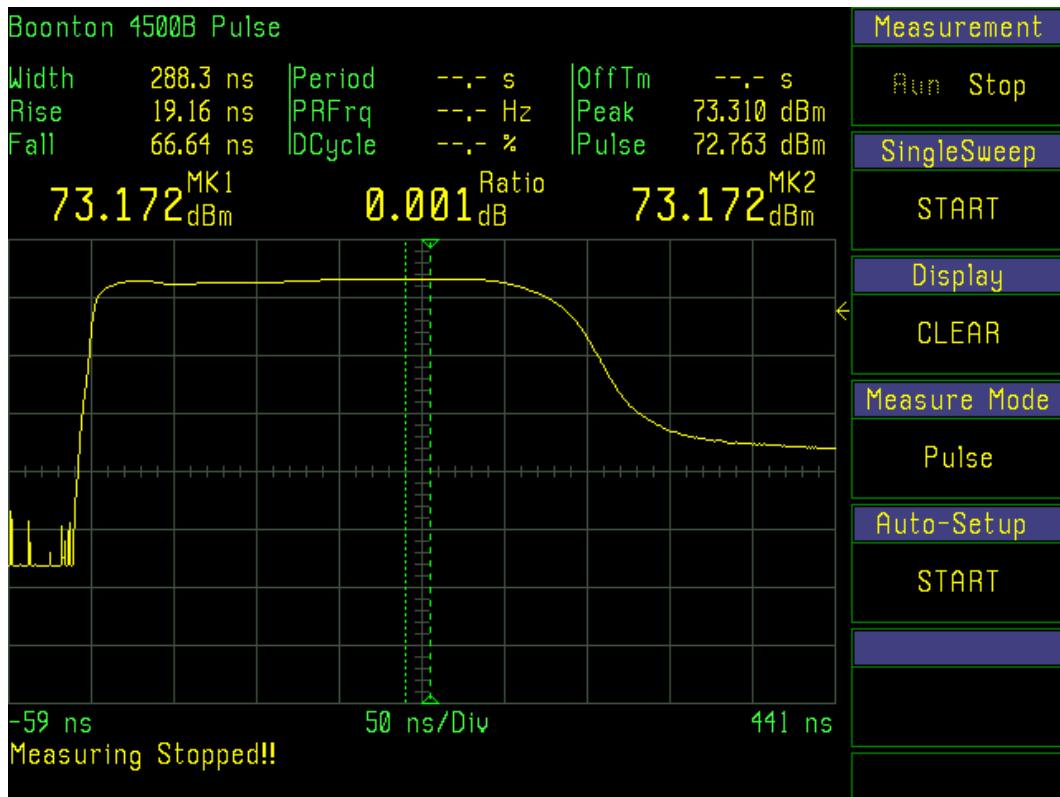
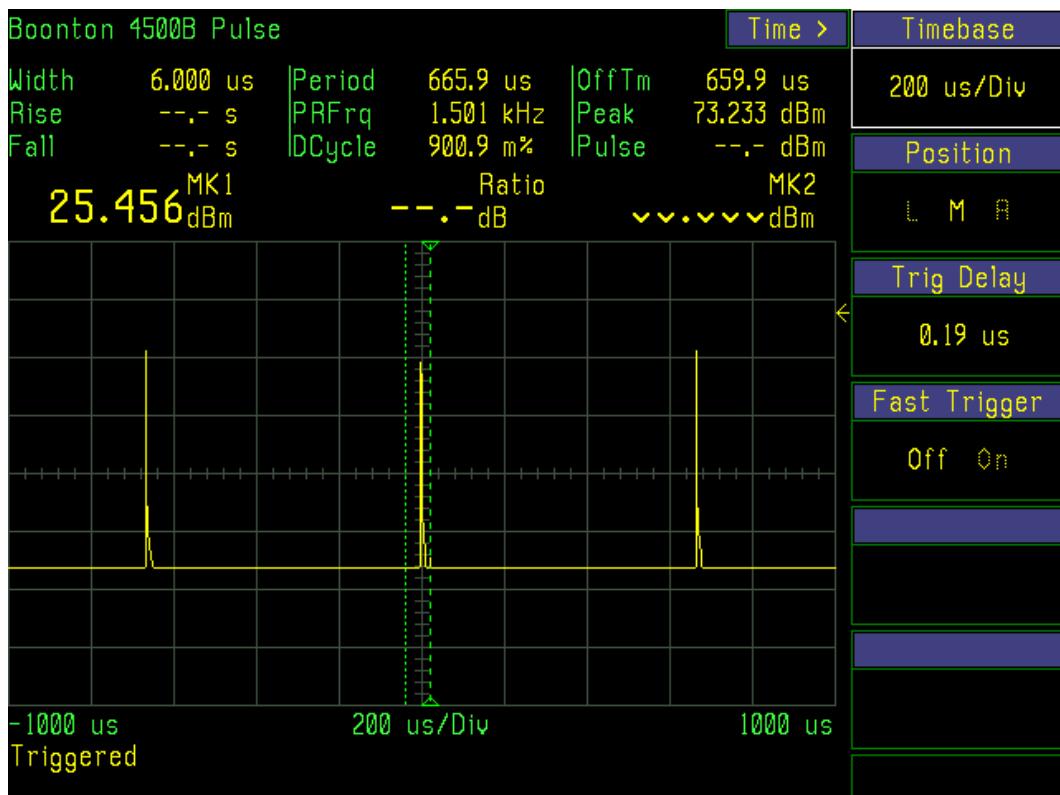
- EEV Magnetron, Type MG5223

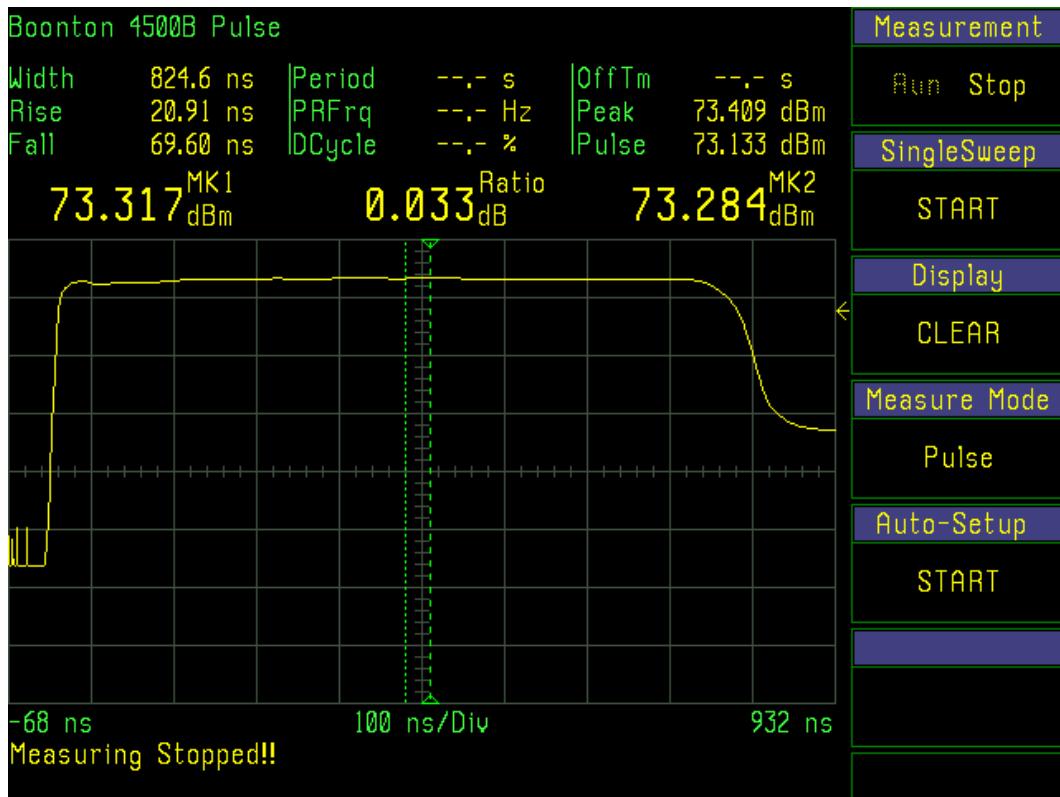
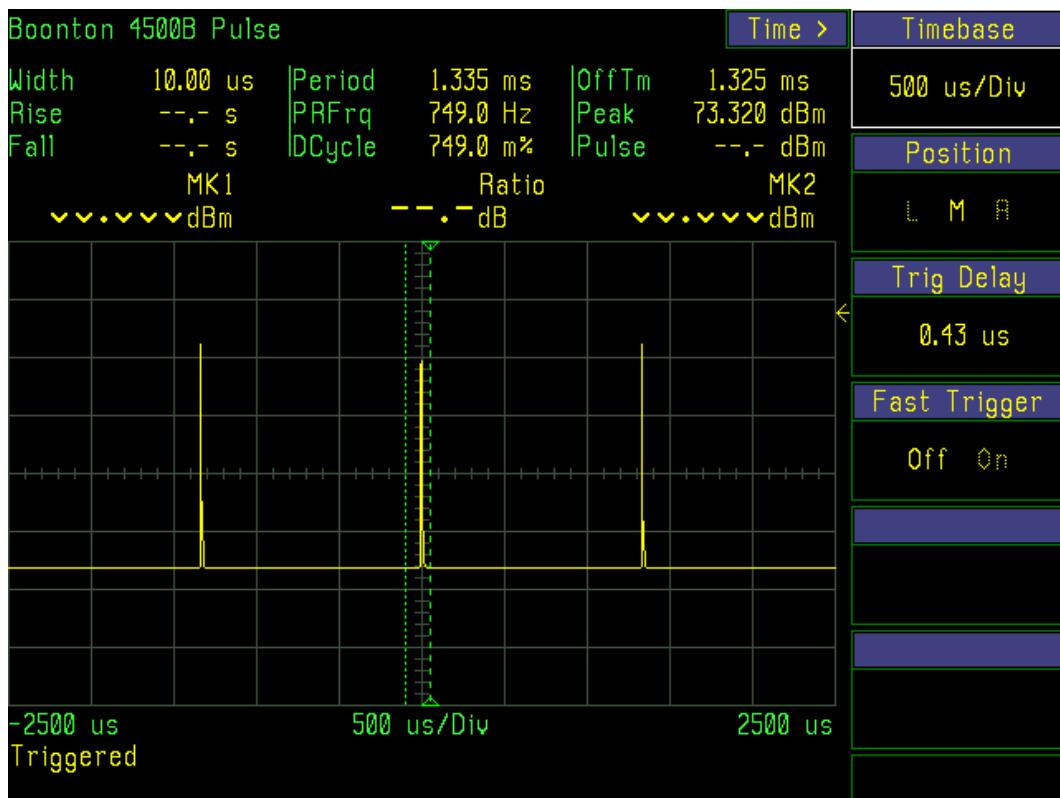
Plot No. 1: EEV Magnetron, Type MG5223, short pulse



Plot No. 2: EEV Magnetron, Type MG5223, short pulse



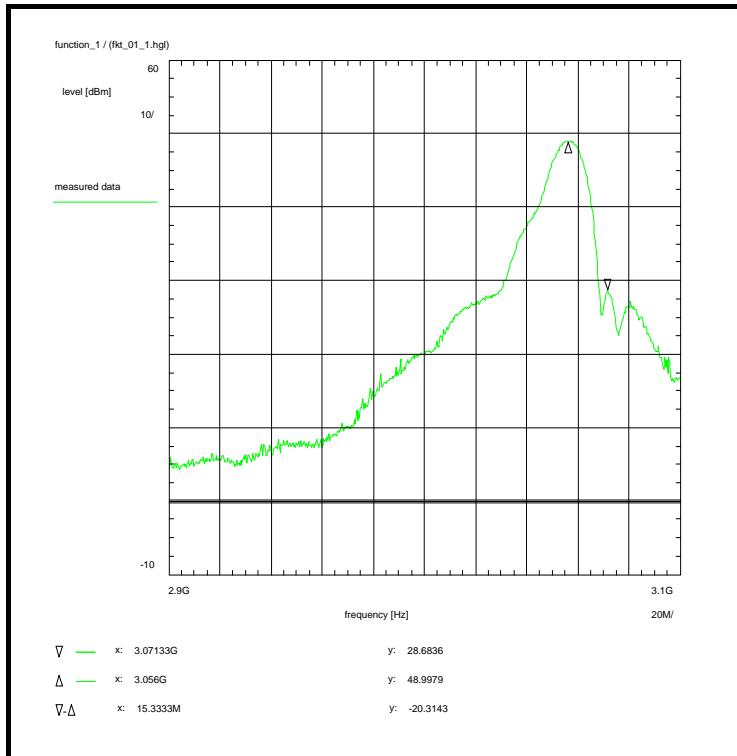
Plot No. 3: EEV Magnetron, Type MG5223, medium pulse**Plot No. 4: EEV Magnetron, Type MG5223, medium pulse**

Plot No. 5: EEV Magnetron, Type MG5223, long pulse

Plot No. 6: EEV Magnetron, Type MG5223, long pulse


Annex B Measurement results, part 2

Annex B consists of 57 pages including this page.

Plot No. 1 (60)



Information on the measurement:

Environment condition:
Date & Time: Tue 17/Jan/2012 15:22:22
Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
Temperature: 23 °C
Humidity: 35 %
Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	2.9	GHz
Stop frequency:	3.1	GHz
Center frequency:	3	GHz
Frequency span:	200	MHz
Input attenuation:	10	dB
Resolution-BW:	1	MHz
Video-BW:	1	MHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+	30.2	dB
Coaxial cable (C217)	+	1.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Attenuation (U214)	+	9.8	dB
Attenuator (U024)	+	20.1	dB
TOTAL CORRECTION:	+	61.1	dB

Limit:

limits
no limits defined

This test serves to verify the general function of the EUT and to orientate regarding to the spurious emissions which are expected within the band, furthermore for comparison of the measured power with the rated value.

Subclause: -/- Function test, frequency and power
Short pulse / medium pulse / long pulse
Measurement within the allocated band: 2.9 - 3.1 GHz

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
operating condition 1, see section 1.5.2
short pulse

Test setup:

Test equipment:

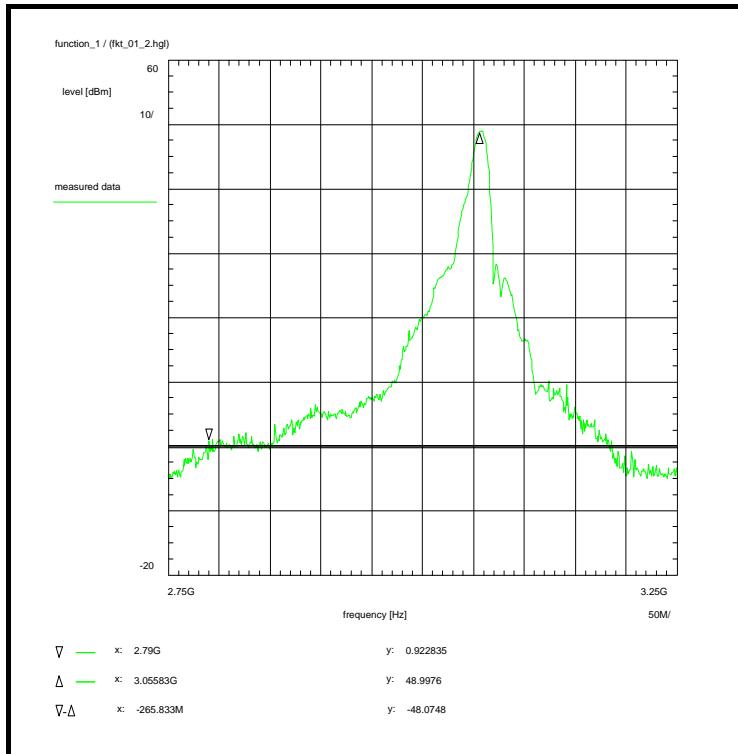
Data of correction:
See annex 4

Remark:

Test result: measurement for orientation

Remarks: Test of general function of the EIT and measurement for orientation

Plot No. 2 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 15:23:07
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	2.75 GHz
Stop frequency:	3.25 GHz
Center frequency:	3 GHz
Frequency span:	500 MHz
Input attenuation:	10 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.1 dB
Coaxial cable (C217)	+ 1.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (U214)	+ 9.8 dB
Attenuator (U024)	+ 20.1 dB
TOTAL CORRECTION:	+ 61.0 dB

Limit:
 no limits defined

This test serves to verify the general function of the EUT and to orientate regarding to the spurious emissions which are expected within the band, furthermore for comparison of the measured power with the rated value.

Subclause: /- Function test, frequency and power
 Short pulse / medium pulse / long pulse
 Measurement within the allocated band: 2.9 - 3.1 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, U214, W075, W076

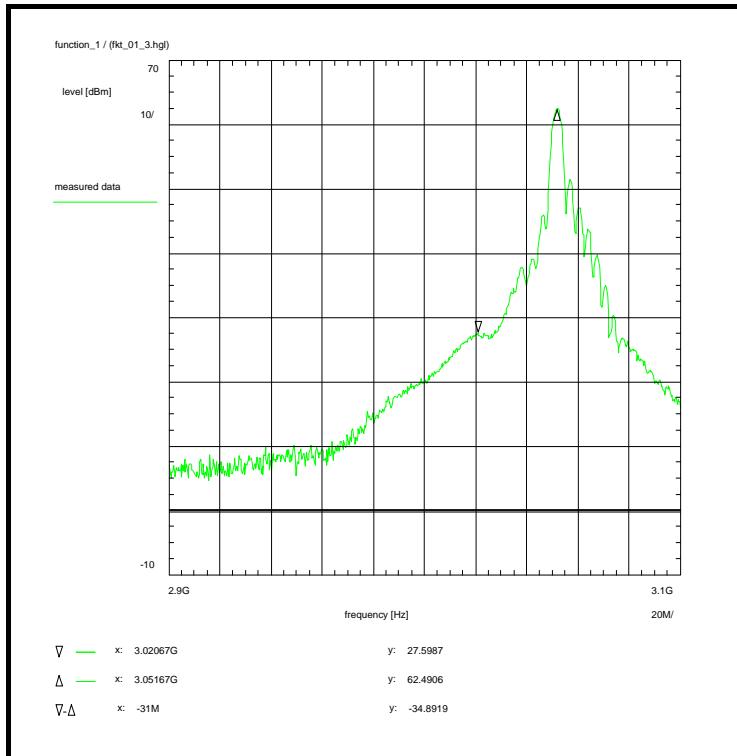
Data of correction:
 see annex 4

Remark:

Test result: measurement for orientation

Remarks:
 Test of general function of the EUT and measurement for orientation

Plot No. 3 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 15:24:08
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	2.9 GHz
Stop frequency:	3.1 GHz
Center frequency:	3 GHz
Frequency span:	200 MHz
Input attenuation:	20 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.2 dB
Coaxial cable (C217)	+ 1.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (U214)	+ 9.8 dB
Attenuator (U024)	+ 20.1 dB
TOTAL CORRECTION:	+ 61.1 dB

Limit:
 no limits defined

This test serves to verify the general function of the EUT and to orientate regarding to the spurious emissions which are expected within the band, furthermore for comparison of the measured power with the rated value.

Subclause: -/- Function test, frequency and power
 Short pulse / medium pulse / long pulse
 Measurement within the allocated band: 2.9 - 3.1 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, U214, W075, W076

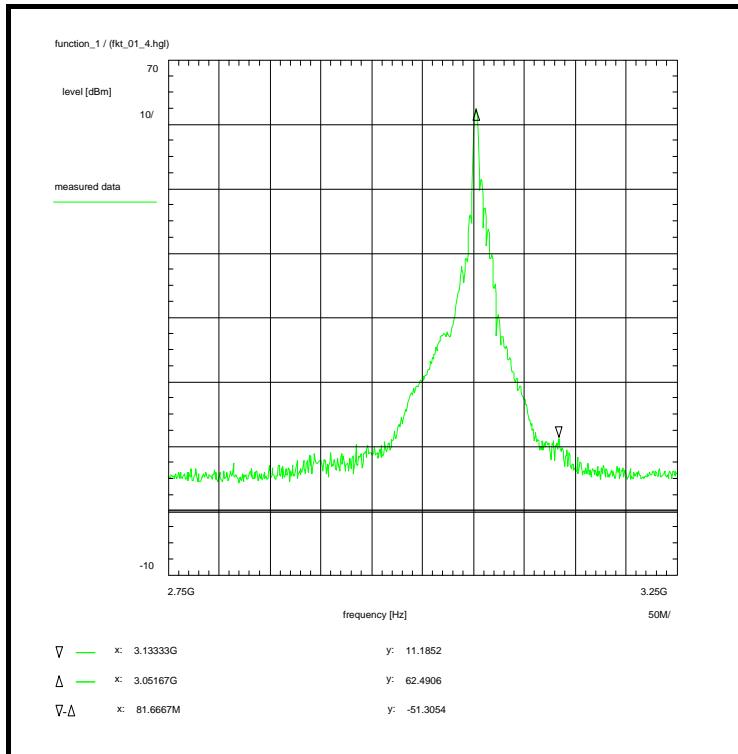
Data of correction:
 see annex 4

Remark:

Test result: measurement for orientation

Remarks:
 Test of general function of the EUT and measurement for orientation

Plot No. 4 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 15:24:42
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 2.75 GHz
 Stop frequency: 3.25 GHz
 Center frequency: 3 GHz
 Frequency span: 500 MHz
 Input attenuation: 20 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.1 dB
Coaxial cable (C217)	+ 1.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (U214)	+ 9.8 dB
Attenuator (U024)	+ 20.1 dB
TOTAL CORRECTION:	+ 61.0 dB

Limit:
 no limits defined

This test serves to verify the general function of the EUT and to orientate regarding to the spurious emissions which are expected within the band, furthermore for comparison of the measured power with the rated value.

Subclause: -/- Function test, frequency and power
 Short pulse / medium pulse / long pulse
 Measurement within the allocated band: 2.9 - 3.1 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, U214, W075, W076

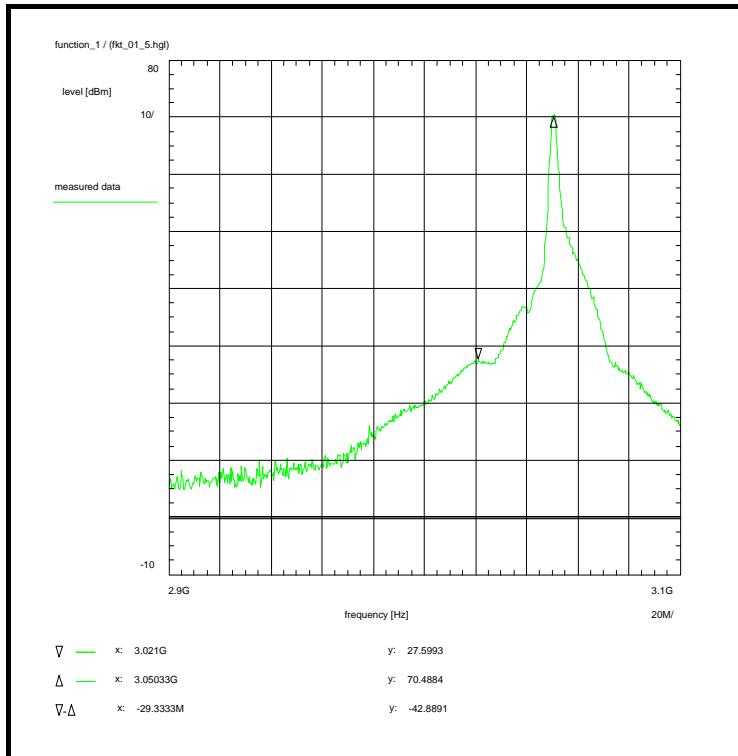
Data of correction:
 see annex 4

Remark:

Test result: measurement for orientation

Remarks:
 Test of general function of the EUT and measurement for orientation

Plot No. 5 (60)



Information on the measurement:

Environment condition:
Date & Time: Tue 17/Jan/2012 15:25:21
Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
Temperature: 23 °C
Humidity: 35 %
Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	2.9 GHz
Stop frequency:	3.1 GHz
Center frequency:	3 GHz
Frequency span:	200 MHz
Input attenuation:	20 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

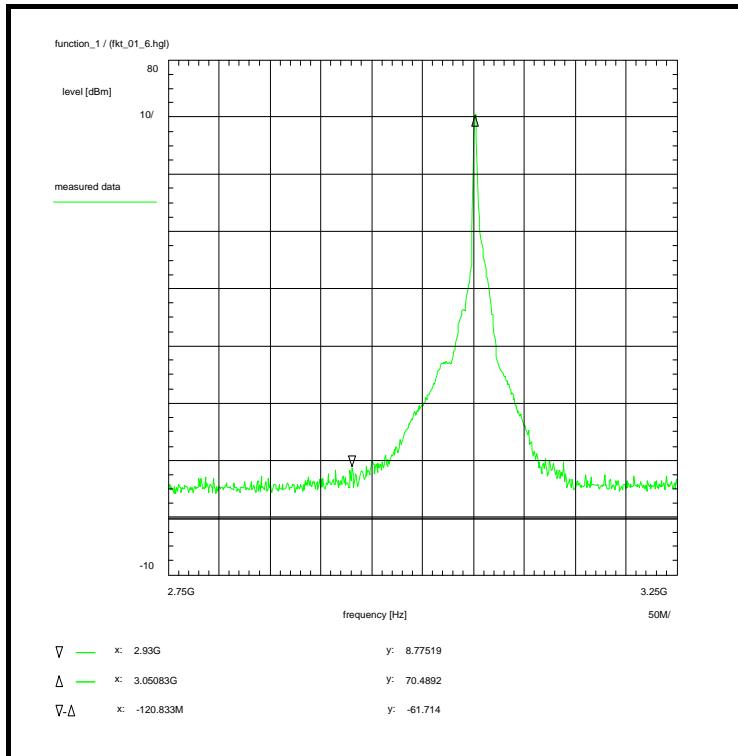
Correction (average):

Directional coupler (W075)	+ 30.2 dB
Coaxial cable (C217)	+ 1.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (U214)	+ 9.8 dB
Attenuator (U024)	+ 20.1 dB
TOTAL CORRECTION:	+ 61.1 dB

Limit:
no limits defined

This test serves to verify the general function of the EUT and to orientate regarding to the spurious emissions which are expected within the band, furthermore for comparison of the measured power with the rated value.

Plot No. 6 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 15:25:59
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 2.75 GHz
 Stop frequency: 3.25 GHz
 Center frequency: 3 GHz
 Frequency span: 500 MHz
 Input attenuation: 20 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.1 dB
Coaxial cable (C217)	+ 1.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (U214)	+ 9.8 dB
Attenuator (U024)	+ 20.1 dB
TOTAL CORRECTION:	+ 61.0 dB

Limit:
 no limits defined

This test serves to verify the general function of the EUT and to orientate regarding to the spurious emissions which are expected within the band, furthermore for comparison of the measured power with the rated value.

Subclause: -/- Function test, frequency and power
 Short pulse / medium pulse / long pulse
 Measurement within the allocated band: 2.9 - 3.1 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, U214, W075, W076

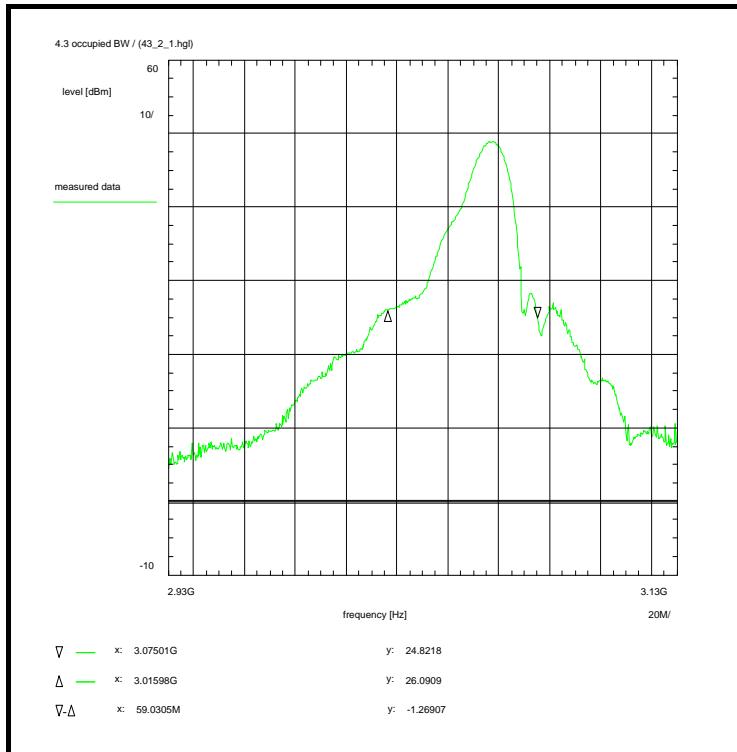
Data of correction:
 see annex 4

Remark:

Test result: measurement for orientation

Remarks:
 Test of general function of the EUT and measurement for orientation

Plot No. 7 (60)



<u>Subclause:</u> 4.3	Verification of the occupied bandwidth (99% bandwidth) Short pulse / medium pulse / long pulse Measurement within the allocated band: 2.9 - 3.1 GHz
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Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
operating condition 1, see section 1.5.2
short pulse

Test setup:

Test equipment:
see annex 2: C217, R001, U214, W075

Data of correction:
see annex 4

Remark:

Test result: Verification of the occupied bandwidth

Information on the measurement:

Environment condition:
Date & Time: Tue 17/Jan/2012 13:44:57
Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
Temperature: 23 °C
Humidity: 35 %
Voltage: 233 Vac

Setup of measurement equipment:

<u>Parameter</u>	<u>Value</u>
Start frequency:	2.93 GHz
Stop frequency:	3.13 GHz
Center frequency:	3.03 GHz
Frequency span:	200 MHz
Input attenuation:	10 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

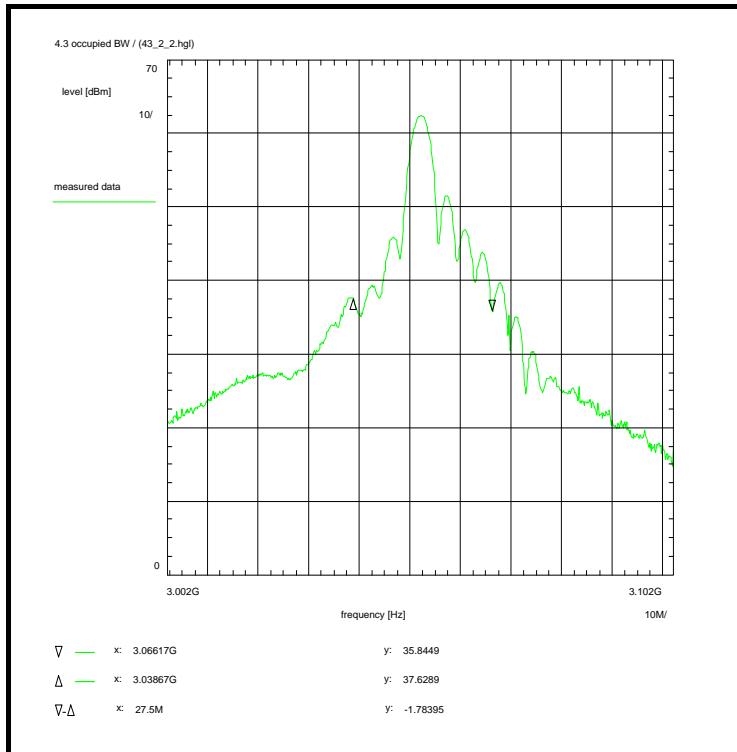
Correction (average):

Directional coupler (W075)	+	30.2	dB
Coaxial cable (C217)	+	1.0	dB
DUT-Antenna (on-axis)	+	0.0	dB _i
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Attenuation (U214)	+	9.8	dB
Attenuator (U024)	+	20.1	dB
TOTAL CORRECTION:	+	61.1	dB

Limit:

The occupied bandwidth is defined as the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to 0.5% of the emitted power. This is also known as the 99% emission bandwidth

Plot No. 8 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 13:46:20
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	3.002	GHz
Stop frequency:	3.102	GHz
Center frequency:	3.052	GHz
Frequency span:	100	MHz
Input attenuation:	20	dB
Resolution-BW:	1	MHz
Video-BW:	1	MHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.3	dB
Coaxial cable (C217)	+ 1.0	dB
DUT-Antenna (on-axis)	+ 0.0	dBi
Test antenna	+ 0.0	dB
BW correction factor	+ 0.0	dB
Atten. between HPA and feedhorn	- 0.0	dB
Attenuation (U214)	+ 9.8	dB
Attenuator (U024)	+ 20.1	dB
TOTAL CORRECTION:	+ 61.2	dB

Limit:

The occupied bandwidth is defined as the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to 0.5% of the emitted power. This is also known as the 99% emission bandwidth.

Subclause: 4.3 Verification of the occupied bandwidth (99% bandwidth)
 Short pulse / medium pulse / long pulse
 Measurement within the allocated band: 2.9 - 3.1 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, U214, W075

Data of correction:
 see annex 4

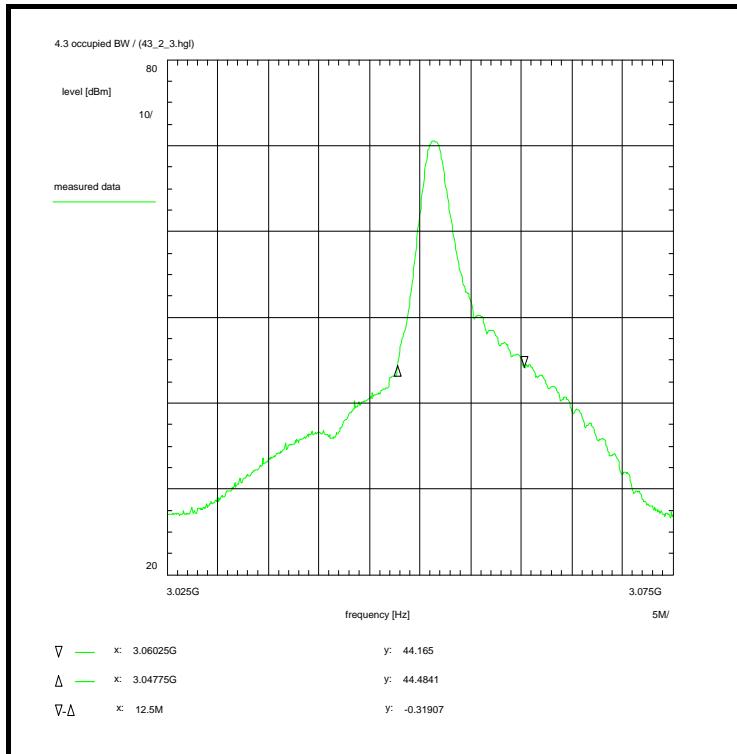
Remark:

Test result: Verification of the occupied bandwidth

Remarks:
 The measured value is about 27.5 MHz (delta marker).

The internal function of the spectrum analyzer was user for determination the 'occupied bandwidth'.

Plot No. 9 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 13:53:38
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	3.025	GHz
Stop frequency:	3.075	GHz
Center frequency:	3.05	GHz
Frequency span:	50	MHz
Input attenuation:	20	dB
Resolution-BW:	1	MHz
Video-BW:	1	MHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.3	dB
Coaxial cable (C217)	+ 1.0	dB
DUT-Antenna (on-axis)	+ 0.0	dBi
Test antenna	+ 0.0	dB
BW correction factor	+ 0.0	dB
Atten. between HPA and feedhorn	- 0.0	dB
Attenuation (U214)	+ 9.8	dB
Attenuator (U024)	+ 20.1	dB
TOTAL CORRECTION:	+ 61.2	dB

Limit:

The occupied bandwidth is defined as the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to 0.5% of the emitted power. This is also known as the 99% emission bandwidth.

Subclause: 4.3 Verification of the occupied bandwidth (99% bandwidth)
 Short pulse / medium pulse / long pulse
 Measurement within the allocated band: 2.9 - 3.1 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, U214, W075

Data of correction:
 see annex 4

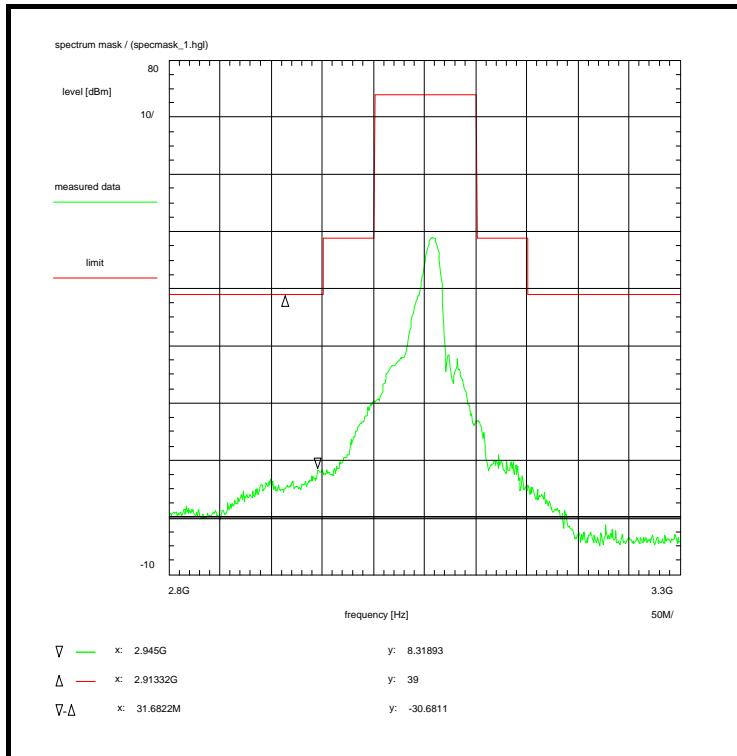
Remark:

Test result: Verification of the occupied bandwidth

Remarks:
 The measured value is about 12.5 MHz (delta marker).

The internal function of the spectrum analyzer was user for determination the 'occupied bandwidth'.

Plot No. 10 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 15:57:39
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	2.8 GHz
Stop frequency:	3.3 GHz
Center frequency:	3.05 GHz
Frequency span:	500 MHz
Input attenuation:	10 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.2 dB
Coaxial cable (C217)	+ 1.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (U214)	+ 9.8 dB
Attenuator (U024)	+ 20.1 dB
TOTAL CORRECTION:	+ 61.1 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Spectrum Mask
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, U214, W075, W076

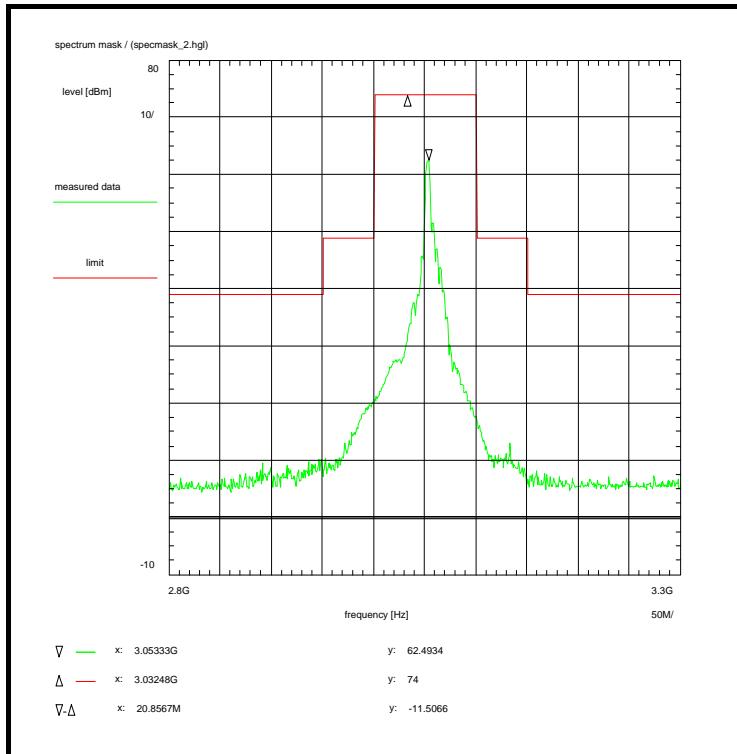
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:

Plot No. 11 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 15:58:20
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	2.8 GHz
Stop frequency:	3.3 GHz
Center frequency:	3.05 GHz
Frequency span:	500 MHz
Input attenuation:	20 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.2 dB
Coaxial cable (C217)	+ 1.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (U214)	+ 9.8 dB
Attenuator (U024)	+ 20.1 dB
TOTAL CORRECTION:	+ 61.1 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Spectrum Mask
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cdhg

Test equipment:
 see annex 2: C217, R001, U214, W075, W076

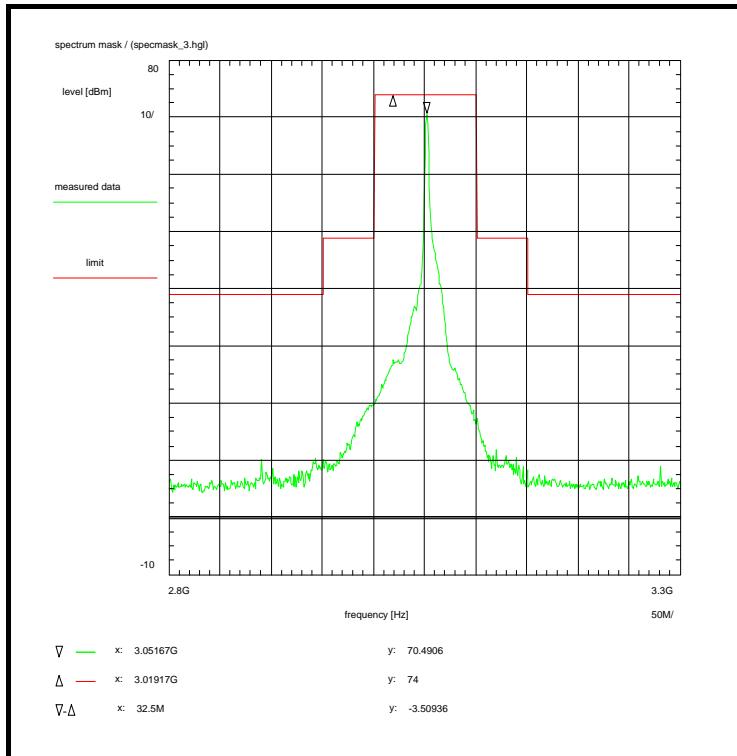
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:

Plot No. 12 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 15:59:09
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	2.8 GHz
Stop frequency:	3.3 GHz
Center frequency:	3.05 GHz
Frequency span:	500 MHz
Input attenuation:	20 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.2 dB
Coaxial cable (C217)	+ 1.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (U214)	+ 9.8 dB
Attenuator (U024)	+ 20.1 dB
TOTAL CORRECTION:	+ 61.1 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Spectrum Mask
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cdhg

Test equipment:
 see annex 2: C217, R001, U214, W075, W076

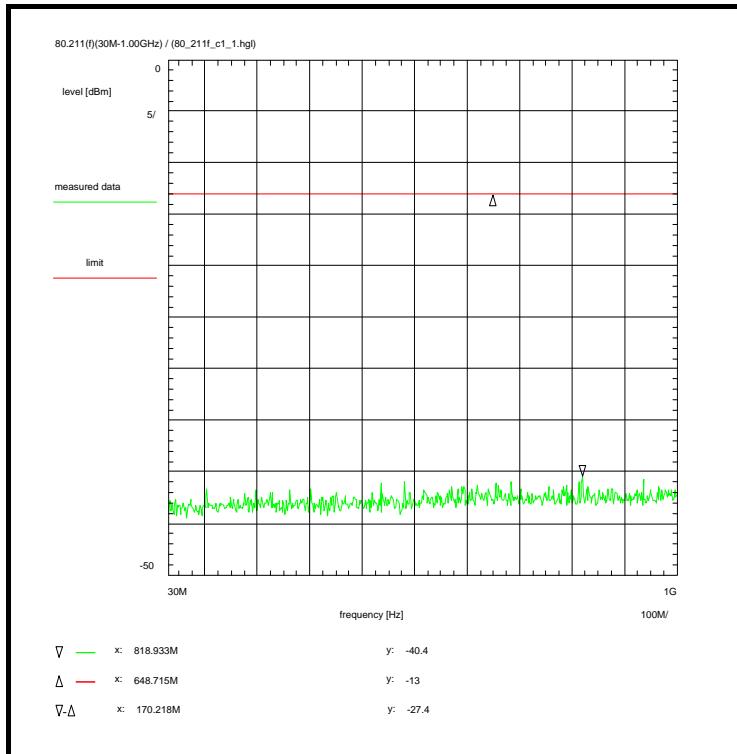
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:

Plot No. 13 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:03:04
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 30 MHz
 Stop frequency: 1 GHz
 Center frequency: 515 MHz
 Frequency span: 970 MHz
 Input attenuation: 10 dB
 Resolution-BW: 100 kHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.0 dB
Coaxial cable (C217)	+ 0.6 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (UStu)	+ 1.0 dB
TOTAL CORRECTION:	+ 31.6 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 30 MHz - 1.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W075, W076

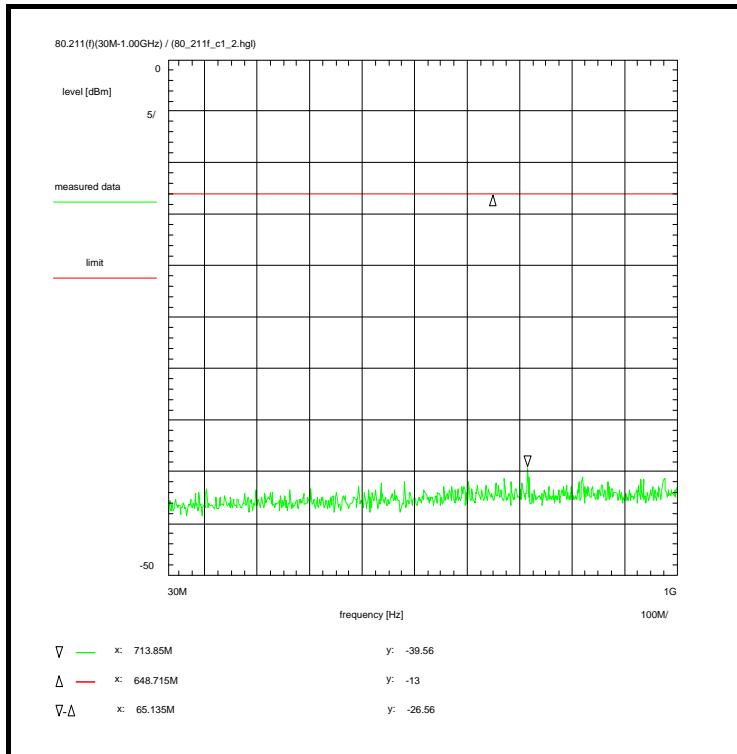
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 14 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:03:35
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	30	MHz
Stop frequency:	1	GHz
Center frequency:	515	MHz
Frequency span:	970	MHz
Input attenuation:	10	dB
Resolution-BW:	100	kHz
Video-BW:	100	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.0	dB
Coaxial cable (C217)	+ 0.6	dB
DUT-Antenna	+ 0.0	dBi
Test antenna	+ 0.0	dBi
BW correction factor	+ 0.0	dB
Atten. between HPA and feedhorn	- 0.0	dB
Attenuation (UStu)	+ 1.0	dB
TOTAL CORRECTION:	+ 31.6	dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 30 MHz - 1.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W075, W076

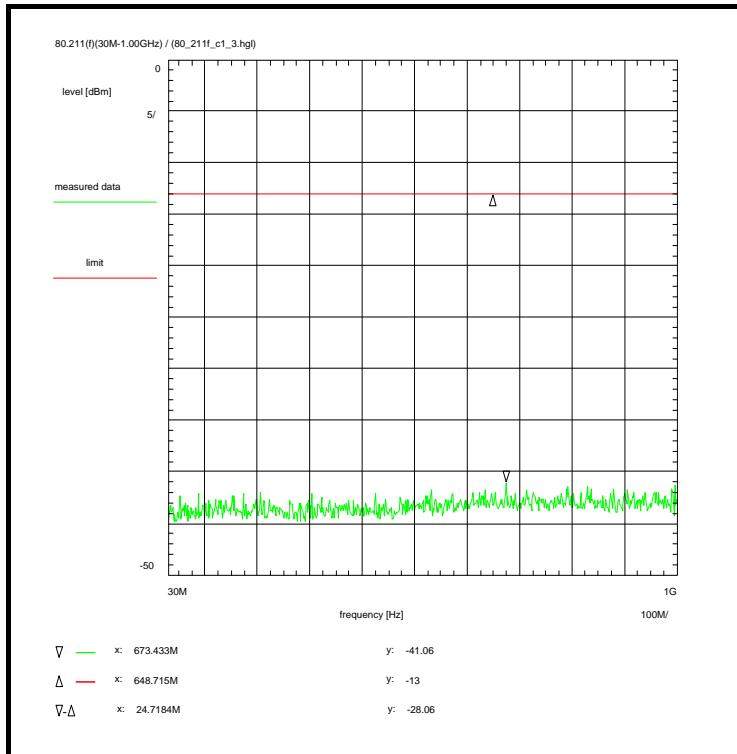
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 15 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:03:58
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	30	MHz
Stop frequency:	1	GHz
Center frequency:	515	MHz
Frequency span:	970	MHz
Input attenuation:	10	dB
Resolution-BW:	100	kHz
Video-BW:	100	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.0	dB
Coaxial cable (C217)	+ 0.6	dB
DUT-Antenna	+ 0.0	dBi
Test antenna	+ 0.0	dB
BW correction factor	+ 0.0	dB
Atten. between HPA and feedhorn	- 0.0	dB
Attenuation (UStu)	+ 1.0	dB
TOTAL CORRECTION:	+ 31.6	dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 30 MHz - 1.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W075, W076

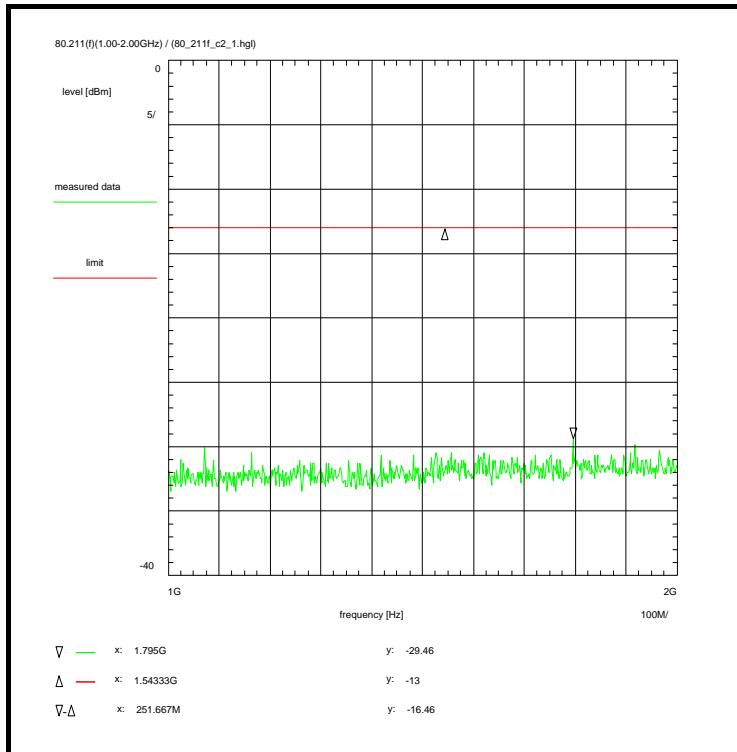
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 16 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:04:57
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	1 GHz
Stop frequency:	2 GHz
Center frequency:	1.5 GHz
Frequency span:	1 GHz
Input attenuation:	10 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.0 dB
Coaxial cable (C217)	+ 0.7 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (UStu)	+ 1.0 dB
TOTAL CORRECTION:	+ 31.7 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 1.0 - 2.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W076

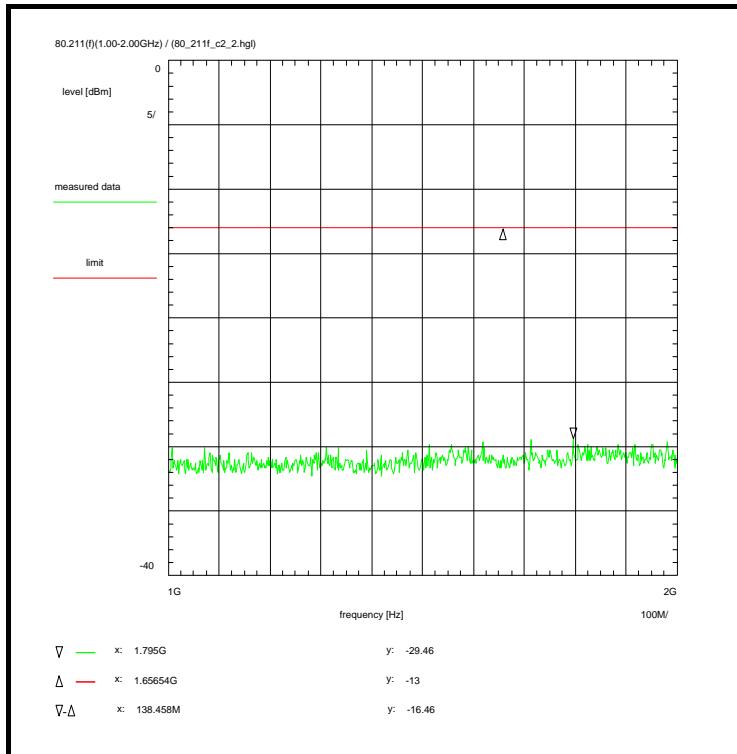
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 17 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:06:30
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	1 GHz
Stop frequency:	2 GHz
Center frequency:	1.5 GHz
Frequency span:	1 GHz
Input attenuation:	10 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.0 dB
Coaxial cable (C217)	+ 0.7 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (UStu)	+ 1.0 dB
TOTAL CORRECTION:	+ 31.7 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 1.0 - 2.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W076

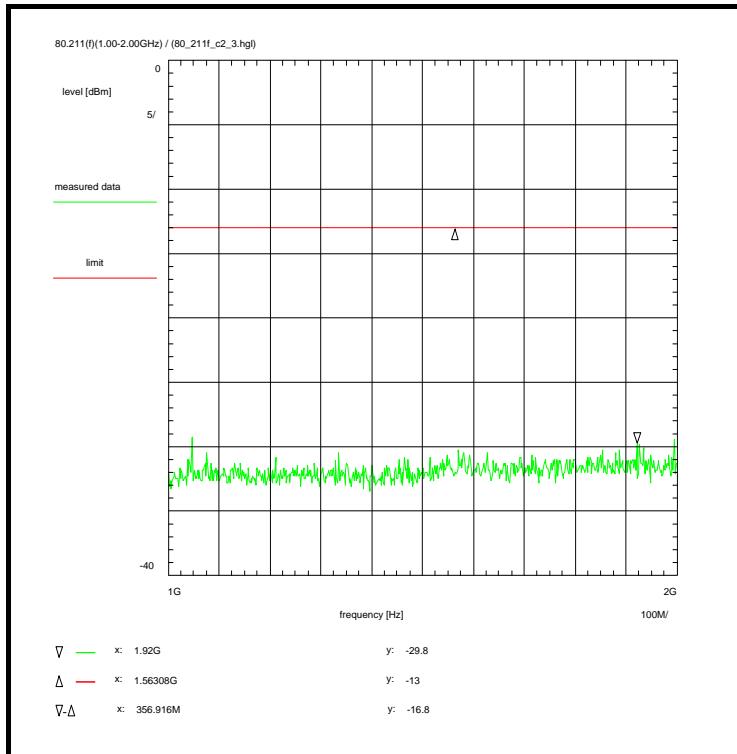
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 18 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:06:54
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	1 GHz
Stop frequency:	2 GHz
Center frequency:	1.5 GHz
Frequency span:	1 GHz
Input attenuation:	10 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.0 dB
Coaxial cable (C217)	+ 0.7 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (UStu)	+ 1.0 dB
TOTAL CORRECTION:	+ 31.7 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 1.0 - 2.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W076

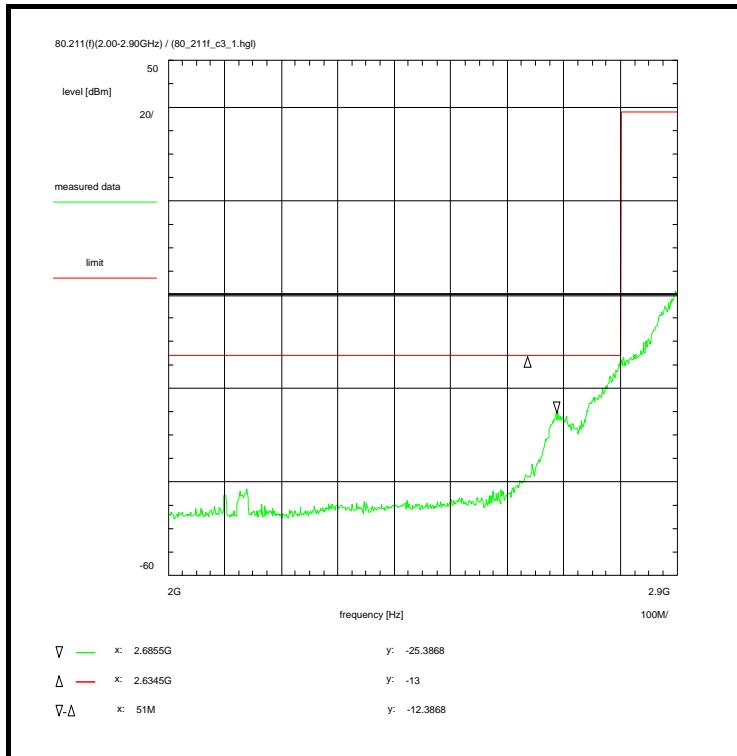
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 19 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:14:32
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 2 GHz
 Stop frequency: 2.9 GHz
 Center frequency: 2.45 GHz
 Frequency span: 900 MHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075) + 30.0 dB
 Coaxial cable (C217) + 0.9 dB
 DUT-Antenna + 0.0 dBi
 Test antenna + 0.0 dB
 BW correction factor + 0.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Attenuation (UStu) + 6.4 dB
 TOTAL CORRECTION: + 37.3 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 6.5 - 8.5 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W076

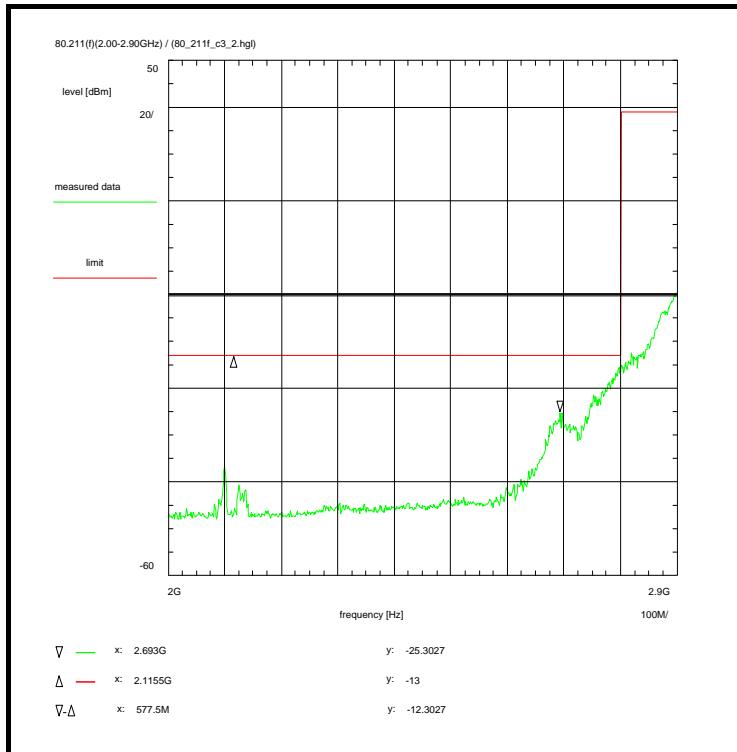
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 20 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:15:02
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 2 GHz
 Stop frequency: 2.9 GHz
 Center frequency: 2.45 GHz
 Frequency span: 900 MHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.0 dB
Coaxial cable (C217)	+ 0.9 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (UStu)	+ 6.4 dB
TOTAL CORRECTION:	+ 37.3 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 6.5 - 8.5 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W076

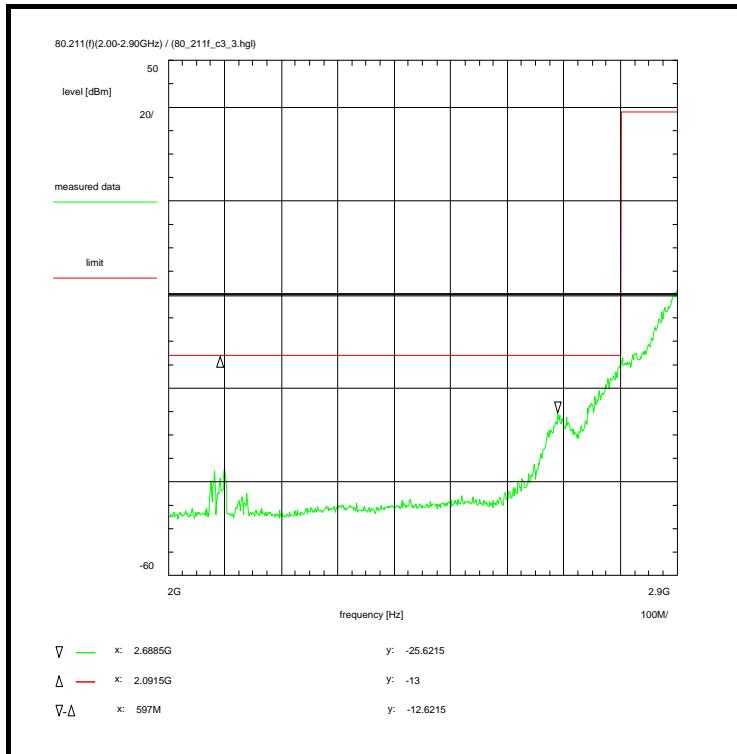
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 21 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:16:02
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 2 GHz
 Stop frequency: 2.9 GHz
 Center frequency: 2.45 GHz
 Frequency span: 900 MHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.0 dB
Coaxial cable (C217)	+ 0.9 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (UStu)	+ 6.4 dB
TOTAL CORRECTION:	+ 37.3 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 6.5 - 8.5 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W076

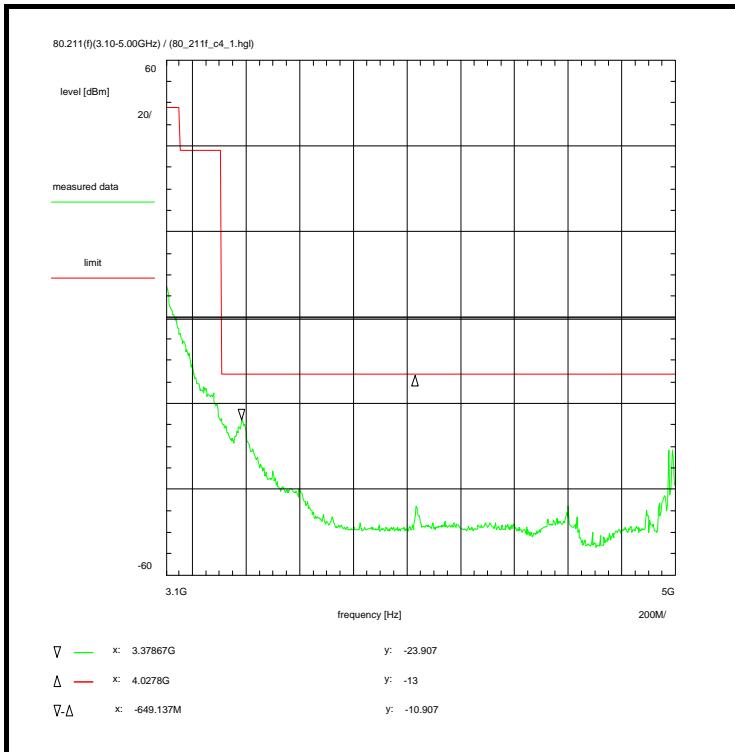
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 22 (60)



Subclause: 80.211(f) Conducted Spurious Emissions
Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
Examination of the frequency range 3.1 - 5.0 GHz

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
operating condition 1, see section 1.5.2
short pulse

Test setup:
see annex 1: 1.2cdhg

Test equipment:

Data of correction:
see annex 4

Remark:

Test result: Test passed

Information on the measurement:

Environment condition:
Date & Time: Tue 17/Jan/2012 16:19:32
Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
Temperature: 23 °C
Humidity: 35 %
Voltage: 233 Vac

Setup of measurement equipment:

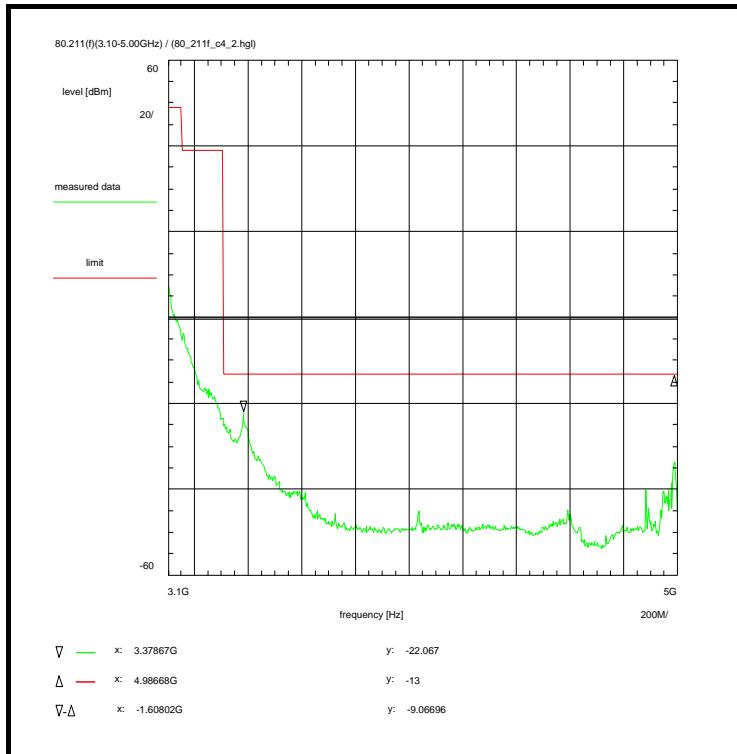
Start frequency:	3.1	GHz
Stop frequency:	5	GHz
Center frequency:	4.05	GHz
Frequency span:	1.9	GHz
Input attenuation:	0	dB
Resolution-BW:	1	MHz
Video-BW:	100	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+	30.0	dB
Coaxial cable (C217)	+	1.1	dB
DUT-Antenna	+	0.0	dB
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Attenuation (UStu)	+	6.4	dB
TOTAL CORRECTION:	+	37.5	dB

Limit:
Limit acc. to FCC 47 CFR §80.211(f)

Plot No. 23 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:20:07
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	3.1 GHz
Stop frequency:	5 GHz
Center frequency:	4.05 GHz
Frequency span:	1.9 GHz
Input attenuation:	0 dB
Resolution-BW:	1 MHz
Video-BW:	100 kHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 30.0 dB
Coaxial cable (C217)	+ 1.1 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (UStu)	+ 6.4 dB
TOTAL CORRECTION:	+ 37.5 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 3.1 - 5.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W075, W076

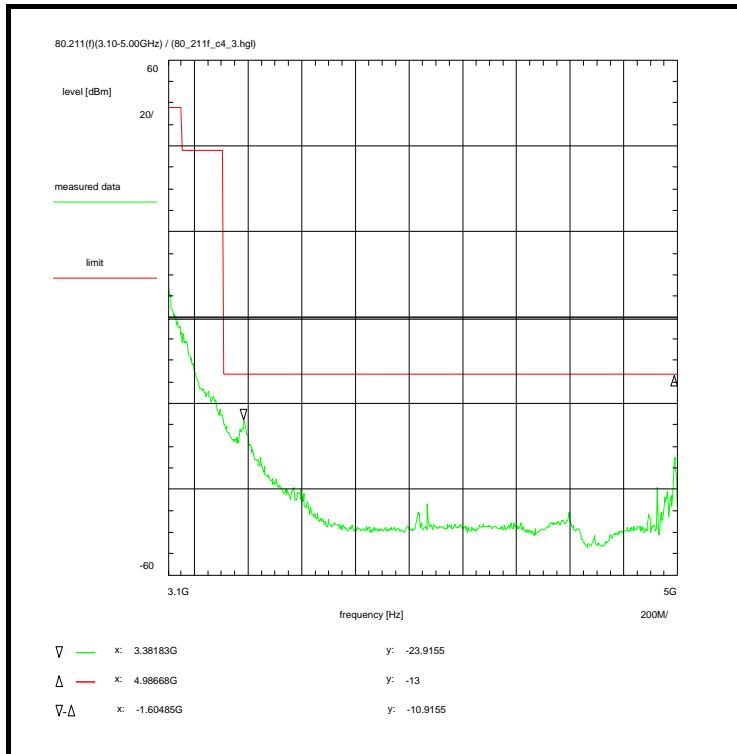
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 24 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:20:44
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	3.1 GHz
Stop frequency:	5 GHz
Center frequency:	4.05 GHz
Frequency span:	1.9 GHz
Input attenuation:	0 dB
Resolution-BW:	1 MHz
Video-BW:	100 kHz
Video-Average:	1 sweep(s) (>1) 2 Pos Peak (Maximum-Hold)
Detector-Mode:	

Correction (average):

Directional coupler (W075)	+ 30.0 dB
Coaxial cable (C217)	+ 1.1 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation (UStu)	+ 6.4 dB
TOTAL CORRECTION:	+ 37.5 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 3.1 - 5.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cdhgj

Test equipment:
 see annex 2: C217, R001, UStu, W075, W076

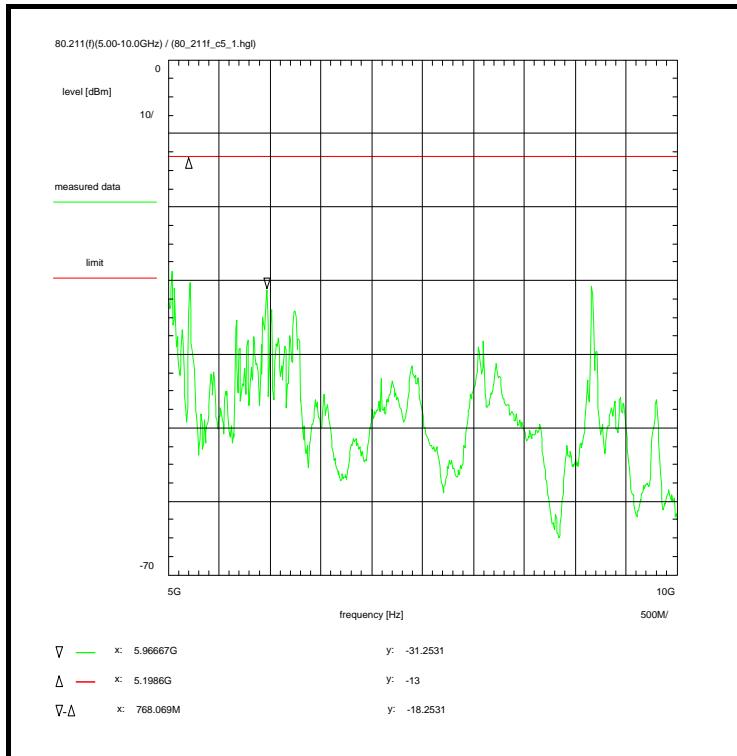
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with Stub Tuner.

Plot No. 25 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:32:18
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	5 GHz
Stop frequency:	10 GHz
Center frequency:	7.5 GHz
Frequency span:	5 GHz
Input attenuation:	0 dB
Resolution-BW:	1 MHz
Video-BW:	100 kHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 25.5 dB
Coaxial cable (C217)	+ 1.5 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 27.0 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 5.0 - 10.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W075, W076

Data of correction:
 see annex 4

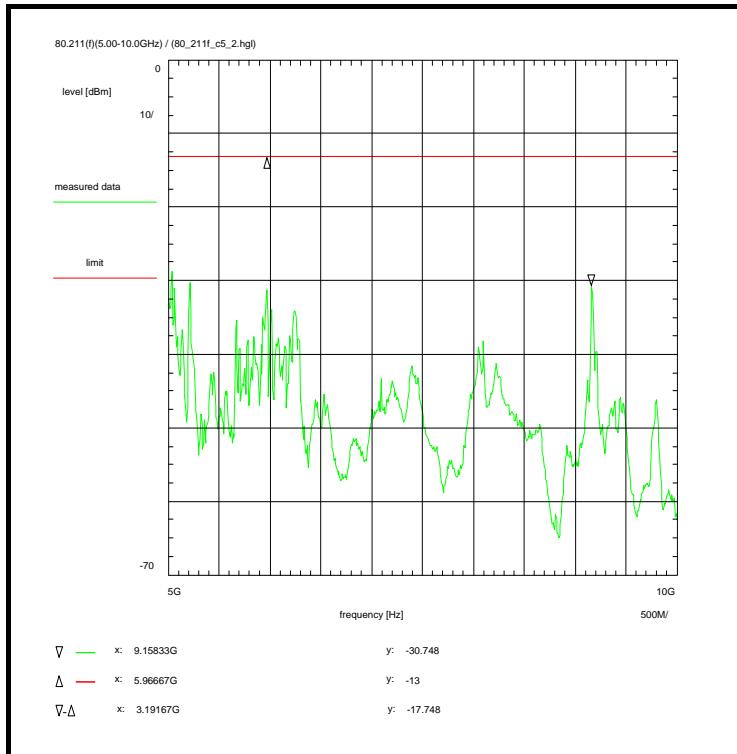
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R70

Markers show 2nd and 3rd harmonic.

Plot No. 26 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:29:54
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	5 GHz
Stop frequency:	10 GHz
Center frequency:	7.5 GHz
Frequency span:	5 GHz
Input attenuation:	0 dB
Resolution-BW:	1 MHz
Video-BW:	100 kHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 25.5 dB
Coaxial cable (C217)	+ 1.5 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 27.0 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 5.0 - 10.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W075, W076

Data of correction:
 see annex 4

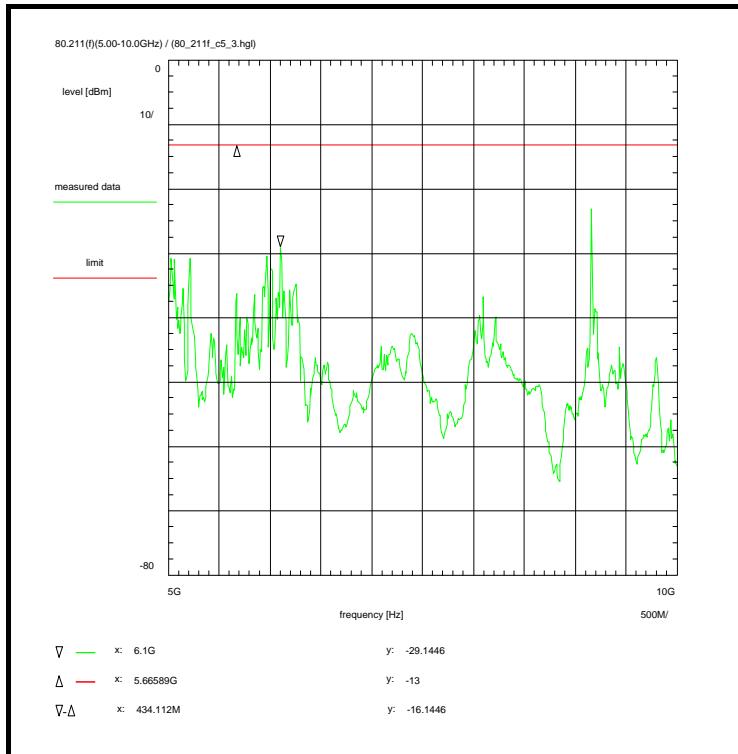
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R70

Markers show 2nd and 3rd harmonic.

Plot No. 27 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:33:45
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 5 GHz
 Stop frequency: 10 GHz
 Center frequency: 7.5 GHz
 Frequency span: 5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 25.5 dB
Coaxial cable (C217)	+ 1.5 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 27.0 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 5.0 - 10.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W075, W076

Data of correction:
 see annex 4

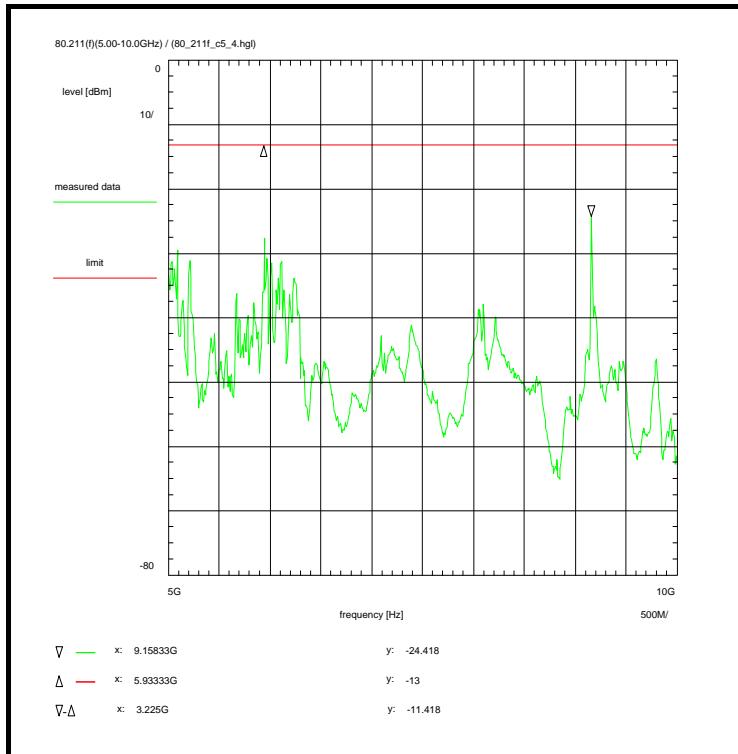
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R70

Markers show 2nd and 3rd harmonic.

Plot No. 28 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:40:14
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 5 GHz
 Stop frequency: 10 GHz
 Center frequency: 7.5 GHz
 Frequency span: 5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 25.5 dB
Coaxial cable (C217)	+ 1.5 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 27.0 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 5.0 - 10.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W075, W076

Data of correction:
 see annex 4

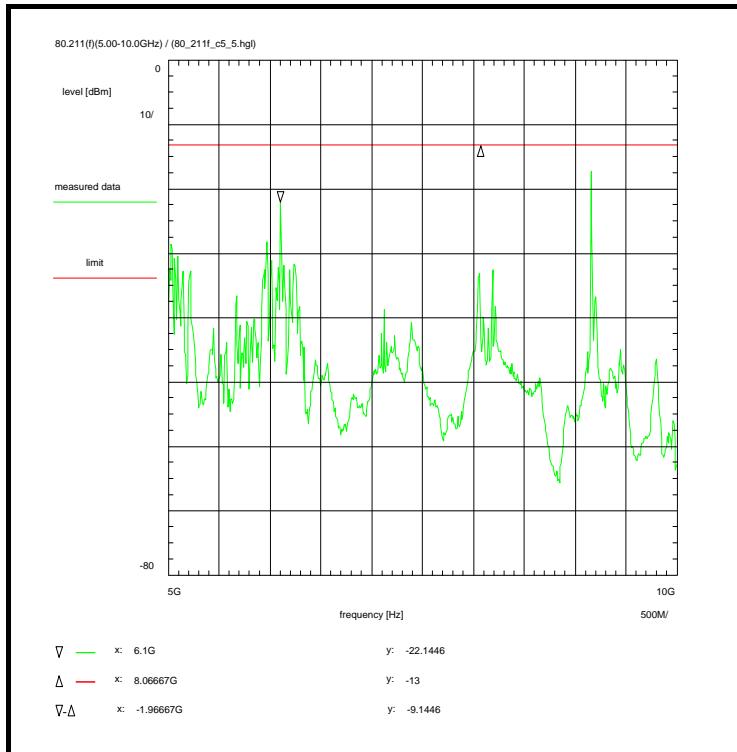
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R70

Markers show 2nd and 3rd harmonic.

Plot No. 29 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:41:02
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	5 GHz
Stop frequency:	10 GHz
Center frequency:	7.5 GHz
Frequency span:	5 GHz
Input attenuation:	0 dB
Resolution-BW:	1 MHz
Video-BW:	100 kHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 25.5 dB
Coaxial cable (C217)	+ 1.5 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 27.0 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 5.0 - 10.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W075, W076

Data of correction:
 see annex 4

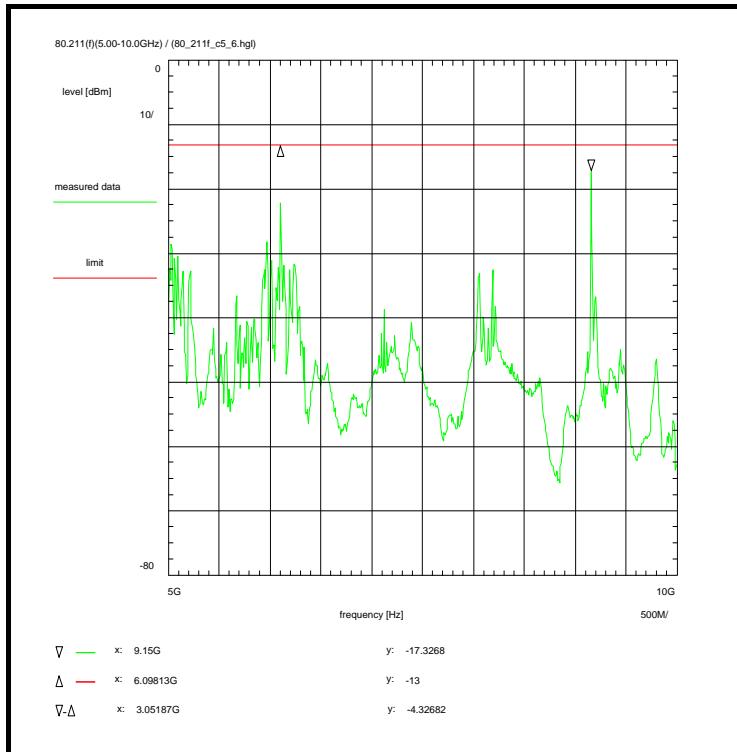
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R70

Markers show 2nd and 3rd harmonic.

Plot No. 30 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 16:41:12
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 5 GHz
 Stop frequency: 10 GHz
 Center frequency: 7.5 GHz
 Frequency span: 5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 25.5 dB
Coaxial cable (C217)	+ 1.5 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 27.0 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 5.0 - 10.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W075, W076

Data of correction:
 see annex 4

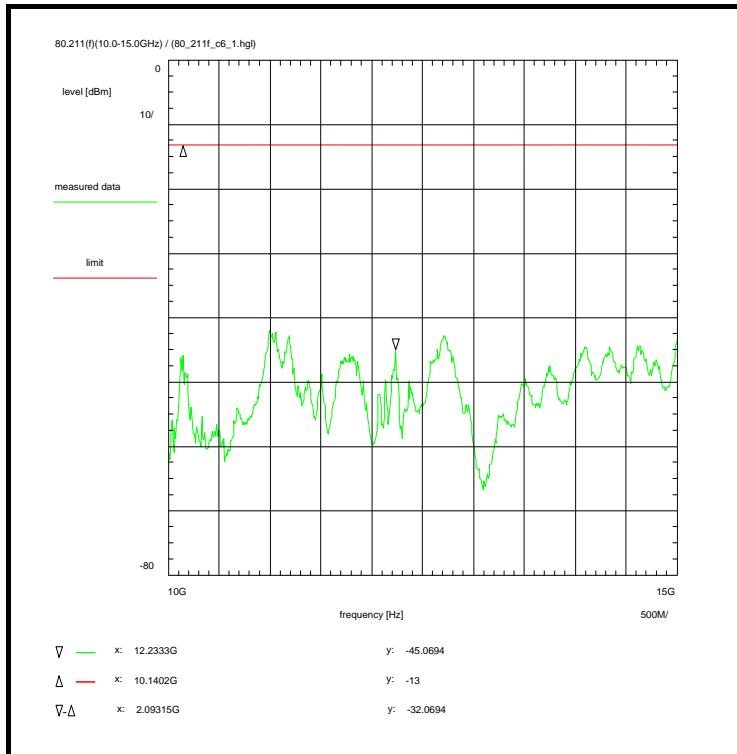
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R70

Markers show 2nd and 3rd harmonic.

Plot No. 31 (60)



Information on the measurement:

Environment condition:

Date & Time: Tue 17/Jan/2012 16:44:08
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 10 GHz
 Stop frequency: 15 GHz
 Center frequency: 12.5 GHz
 Frequency span: 5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 22.6 dB
Coaxial cable (C217)	+ 2.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 24.6 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 10.0 - 15.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W075, W076

Data of correction:
 see annex 4

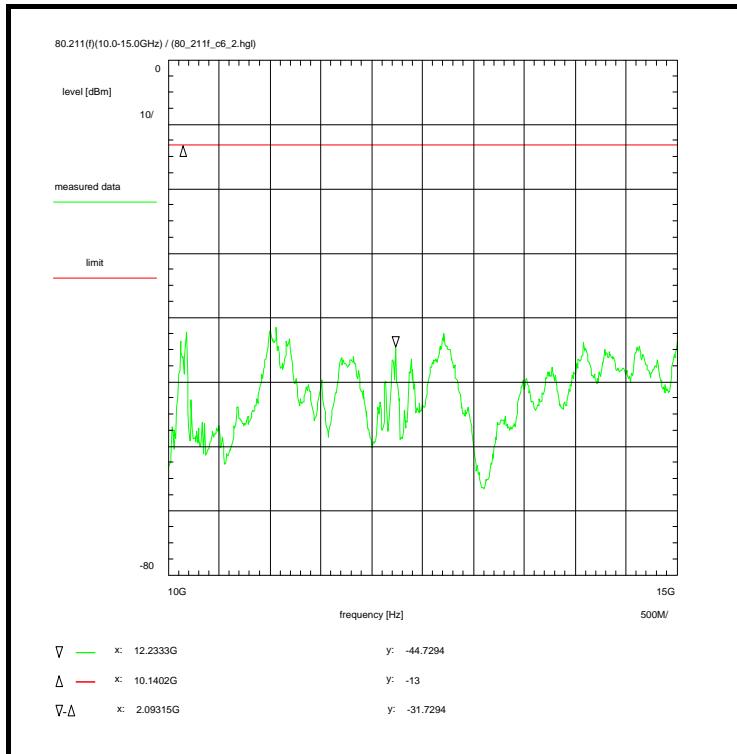
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R120

Marker shows 4th harmonic.

Plot No. 32 (60)



Information on the measurement:

Environment condition:

Date & Time: Tue 17/Jan/2012 16:44:44
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 10 GHz
 Stop frequency: 15 GHz
 Center frequency: 12.5 GHz
 Frequency span: 5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 22.6 dB
Coaxial cable (C217)	+ 2.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 24.6 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 10.0 - 15.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W075, W076

Data of correction:
 see annex 4

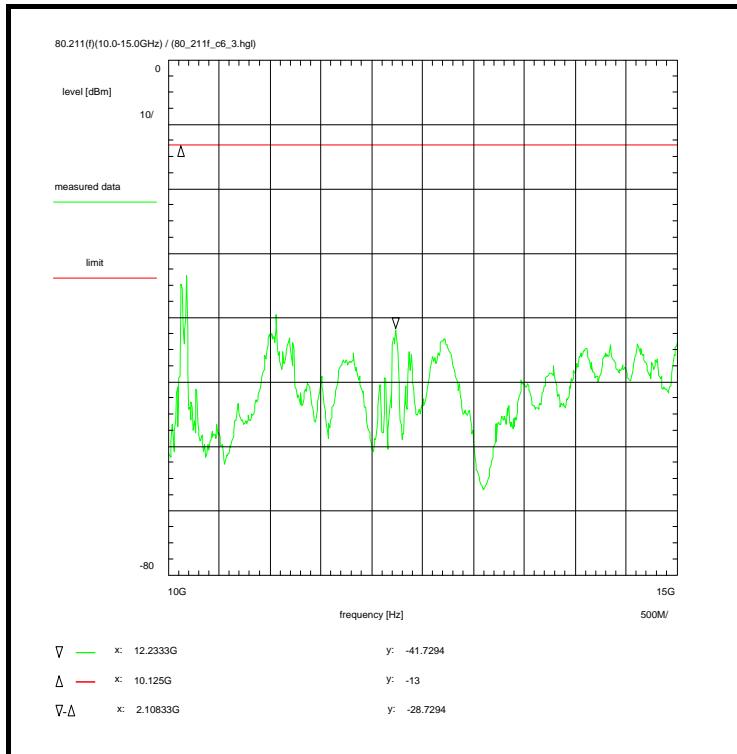
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R120

Marker shows 4th harmonic.

Plot No. 33 (60)



Information on the measurement:

Environment condition:

Date & Time: Tue 17/Jan/2012 16:45:33
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 10 GHz
 Stop frequency: 15 GHz
 Center frequency: 12.5 GHz
 Frequency span: 5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 22.6 dB
Coaxial cable (C217)	+ 2.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 24.6 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 10.0 - 15.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W075, W076

Data of correction:
 see annex 4

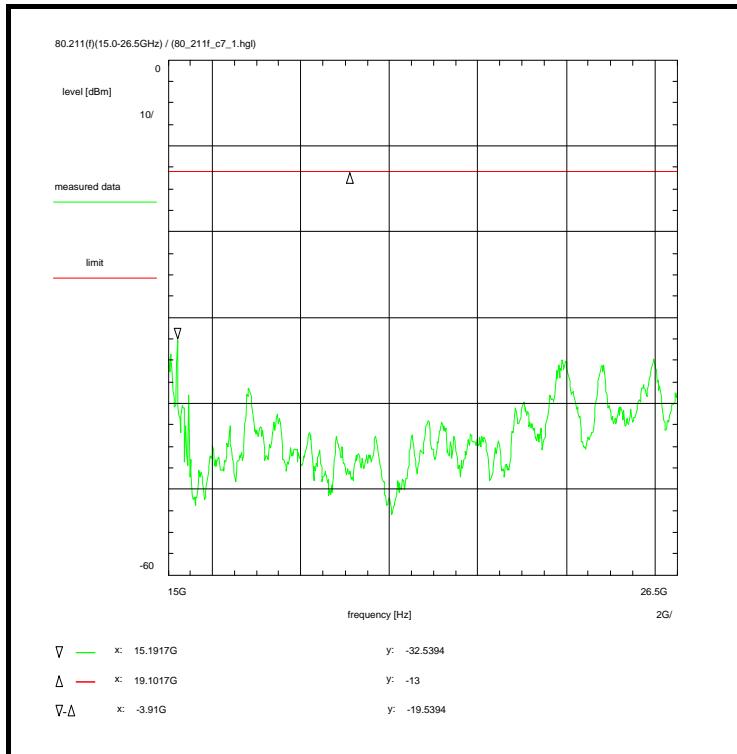
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R120

Marker shows 4th harmonic.

Plot No. 34 (60)



Information on the measurement:

Environment condition:

Date & Time: Tue 17/Jan/2012 16:49:36
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 15 GHz
 Stop frequency: 26.5 GHz
 Center frequency: 20.75 GHz
 Frequency span: 11.5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 23.3 dB
Coaxial cable (C217)	+ 2.6 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 25.9 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 15.0 - 26.5 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W022, W075, W076

Data of correction:
 see annex 4

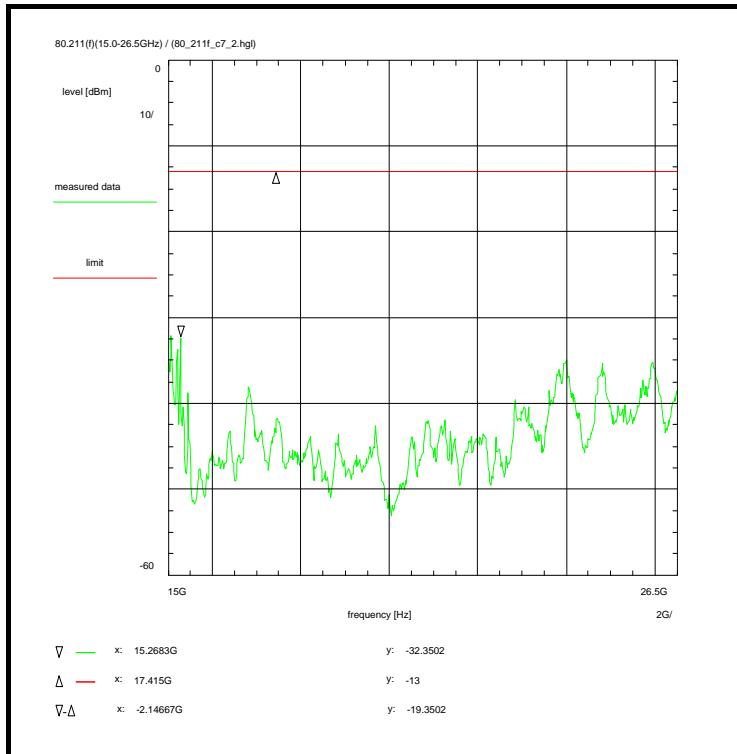
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R180

Marker shows 5th harmonic.

Plot No. 35 (60)



Information on the measurement:

Environment condition:

Date & Time: Tue 17/Jan/2012 16:48:40
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 15 GHz
 Stop frequency: 26.5 GHz
 Center frequency: 20.75 GHz
 Frequency span: 11.5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 23.3 dB
Coaxial cable (C217)	+ 2.6 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 25.9 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 15.0 - 26.5 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W022, W075, W076

Data of correction:
 see annex 4

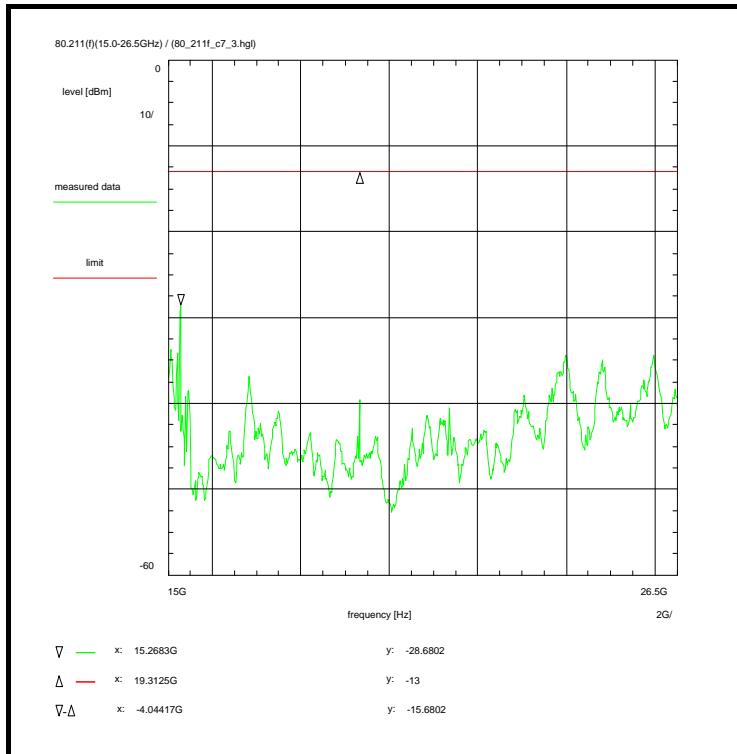
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R180

Marker shows 5th harmonic.

Plot No. 36 (60)



Information on the measurement:

Environment condition:

Date & Time: Tue 17/Jan/2012 16:47:36
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 15 GHz
 Stop frequency: 26.5 GHz
 Center frequency: 20.75 GHz
 Frequency span: 11.5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 23.3 dB
Coaxial cable (C217)	+ 2.6 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 25.9 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 15.0 - 26.5 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W022, W075, W076

Data of correction:
 see annex 4

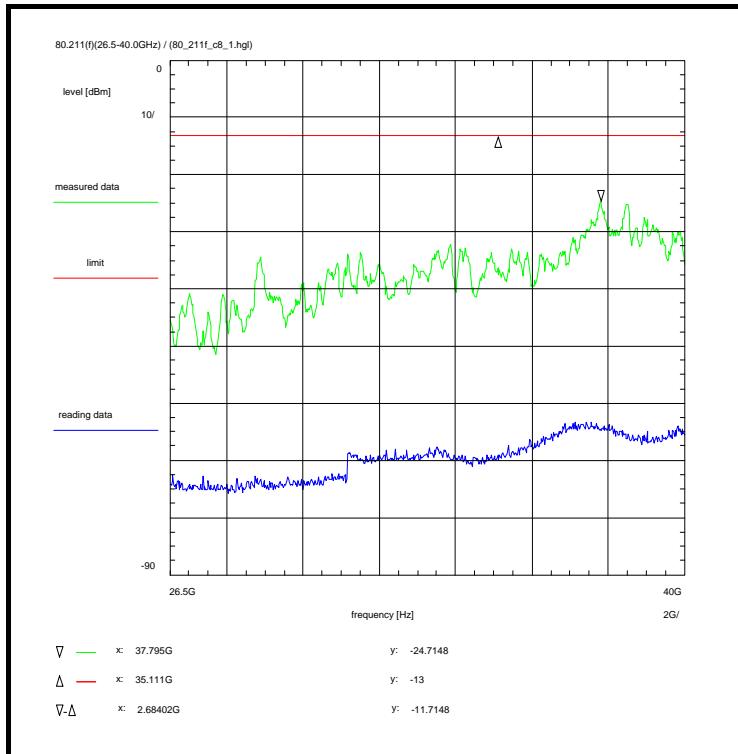
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R180

Marker shows 5th harmonic.

Plot No. 37 (60)



Information on the measurement:

Environment condition:

Date & Time: Tue 17/Jan/2012 16:54:27
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 40 GHz
 Center frequency: 33.25 GHz
 Frequency span: 13.5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 28.9 dB
Coaxial cable (C217)	+ 3.4 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 32.3 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 26.5 - 40.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 1.2cegj

Test equipment:
 see annex 2: C217, R001, W022, W075, W076

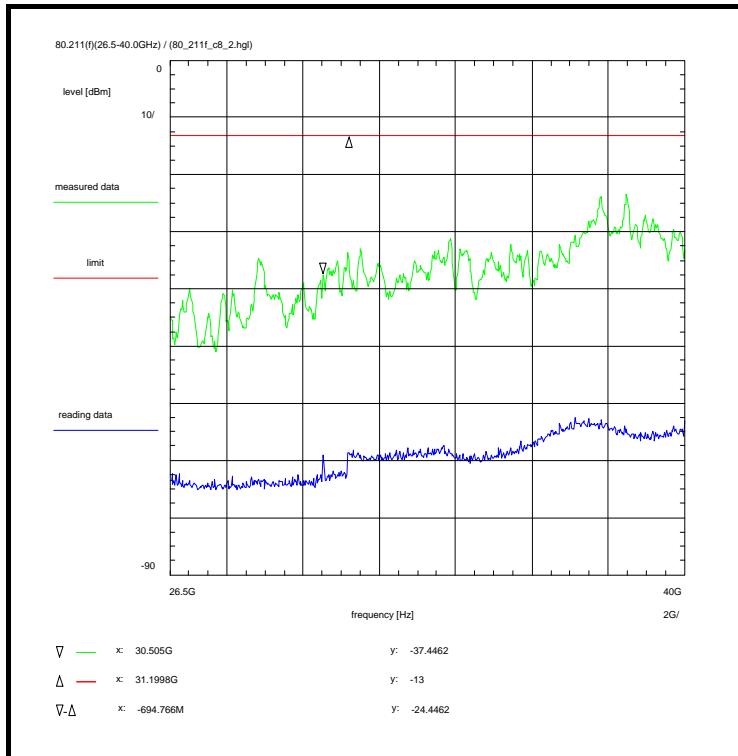
Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R320

Plot No. 38 (60)



Information on the measurement:

Environment condition:

Date & Time: Tue 17/Jan/2012 16:52:56
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 40 GHz
 Center frequency: 33.25 GHz
 Frequency span: 13.5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 28.9 dB
Coaxial cable (C217)	+ 3.4 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 32.3 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 26.5 - 40.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W022, W075, W076

Data of correction:
 see annex 4

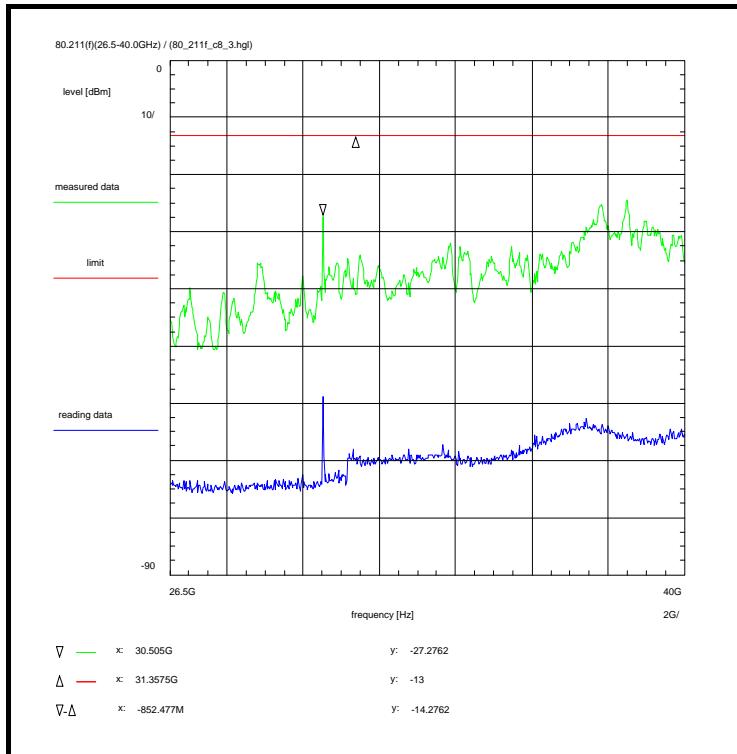
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R320

Marker shows 10th harmonic.

Plot No. 39 (60)



Information on the measurement:

Environment condition:

Date & Time: Tue 17/Jan/2012 16:53:39
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 40 GHz
 Center frequency: 33.25 GHz
 Frequency span: 13.5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler (W075)	+ 28.9 dB
Coaxial cable (C217)	+ 3.4 dB
DUT-Antenna	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Attenuation	+ 0.0 dB
TOTAL CORRECTION:	+ 32.3 dB

Limit:

Limit acc. to FCC 47 CFR §80.211(f)

Subclause: 80.211(f) Conducted Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 26.5 - 40.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 1.2cegi

Test equipment:
 see annex 2: C217, R001, W022, W075, W076

Data of correction:
 see annex 4

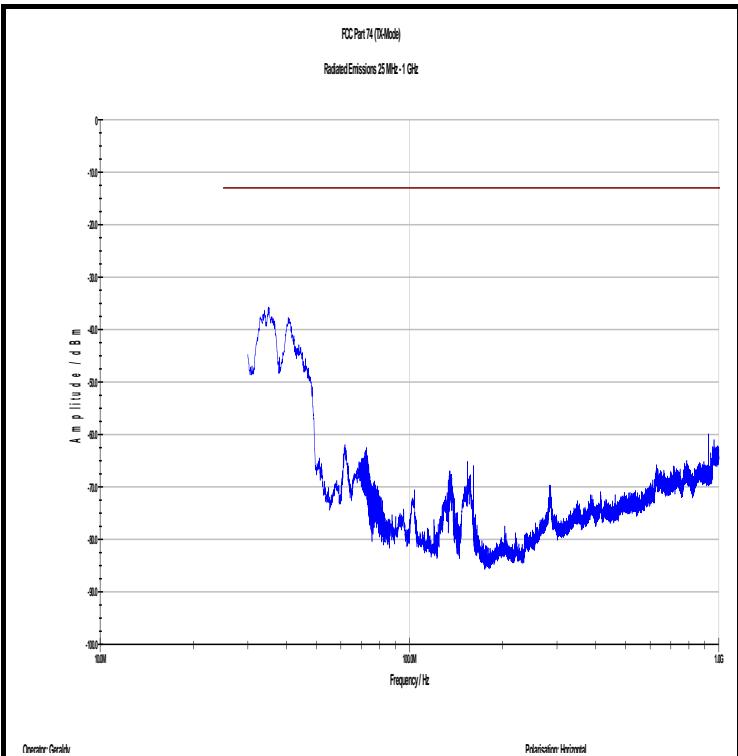
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode
 Test setup with taper transitions R32/R320

Marker shows 10th harmonic.

Plot No. 40 (60)

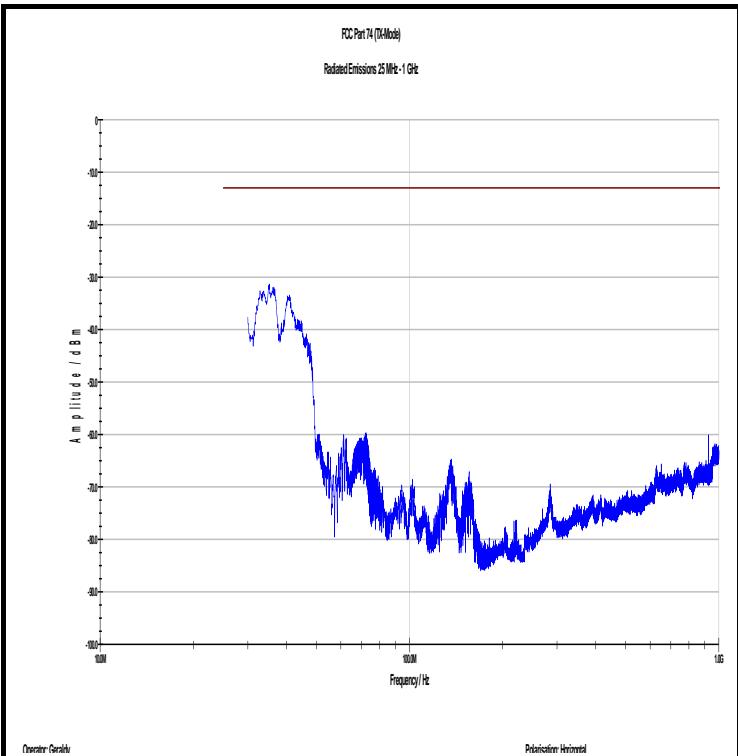


Information on the measurement:

horizontal polarization, short pulse

-/-

Plot No. 41 (60)

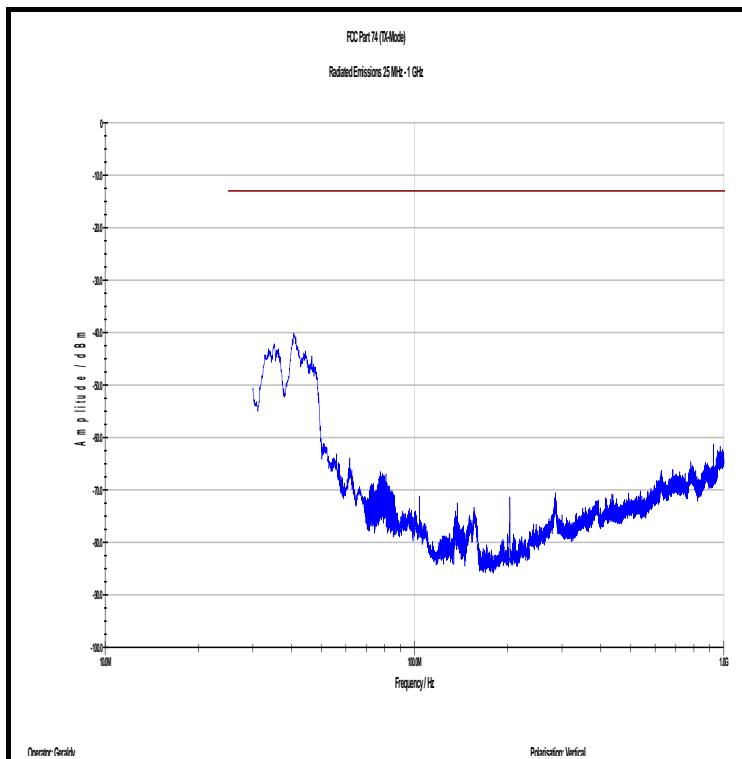


Information on the measurement:

horizontal polarization, long pulse

-/-

Plot No. 42 (60)

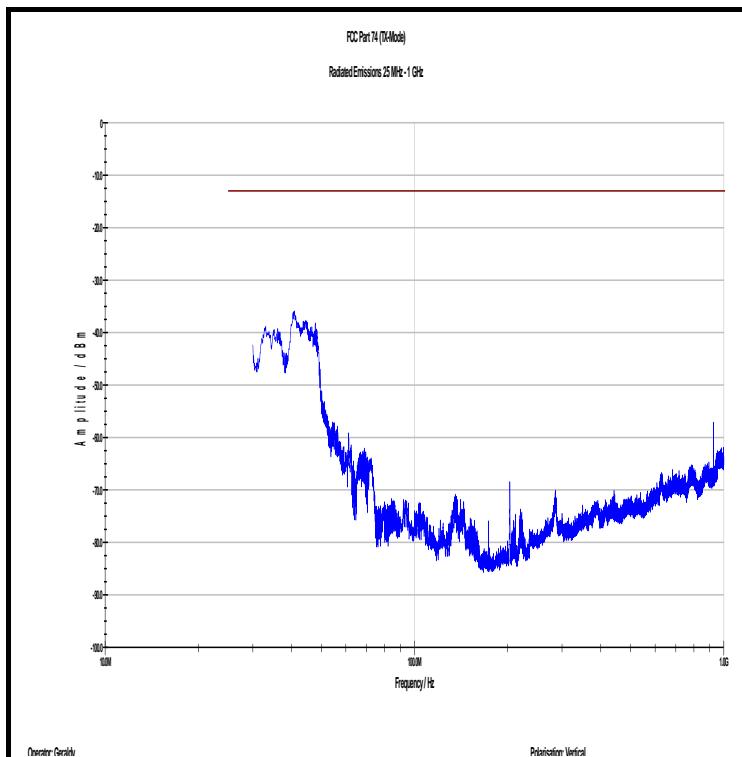


Information on the measurement:

vertical polarization, short pulse

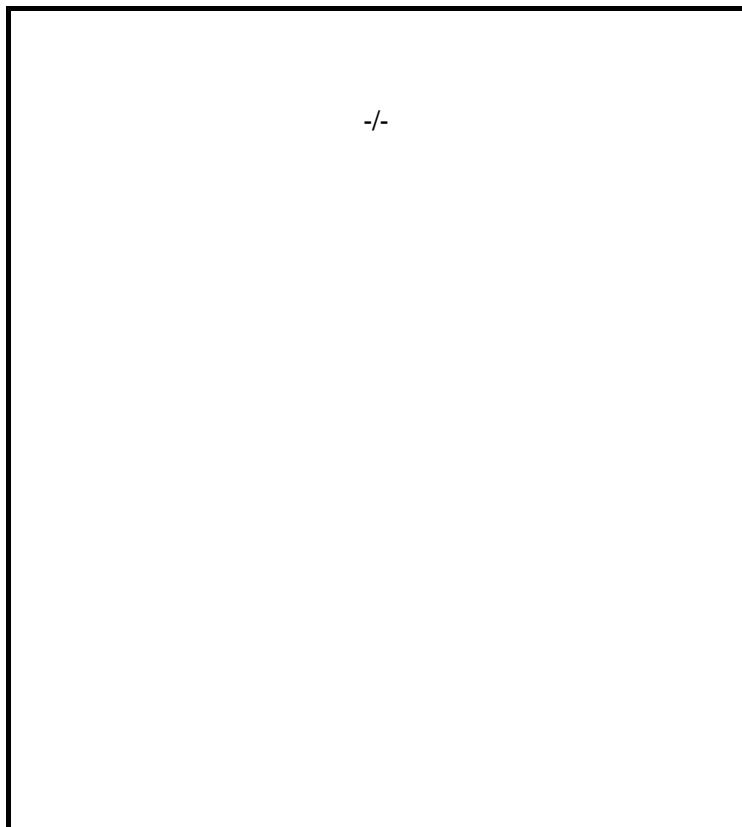
-/-

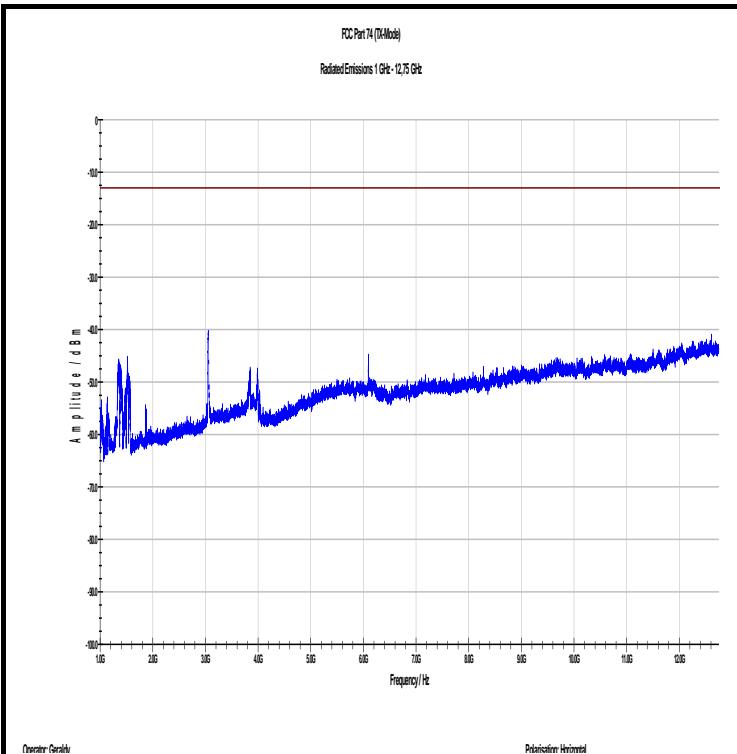
Plot No. 43 (60)



Information on the measurement:

vertical polarization, long pulse



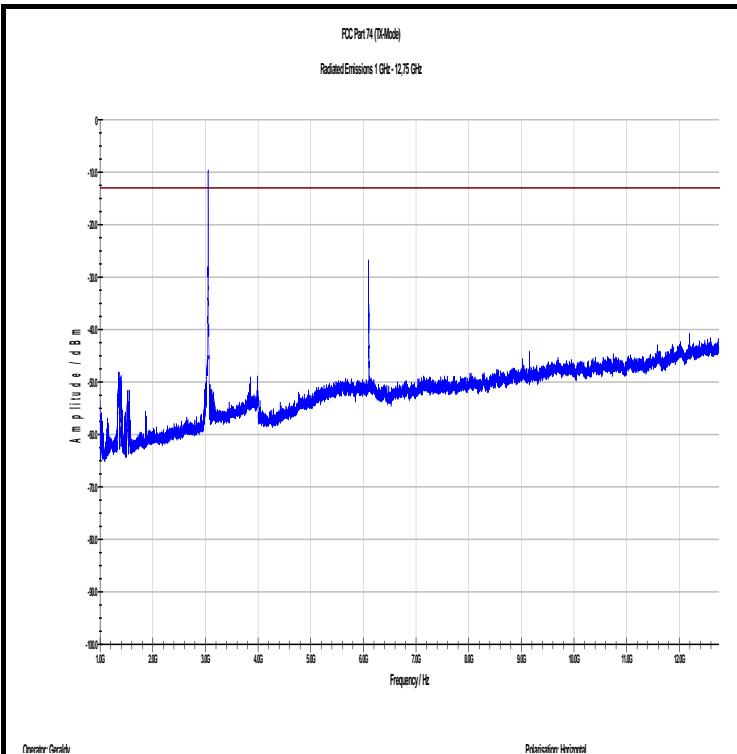
Plot No. 44 (60)**Information on the measurement:**

horizontal polarization, short pulse

Plot shows wanted signal at 3 GHz and 2nd harmonic.

-/-

Plot No. 45 (60)



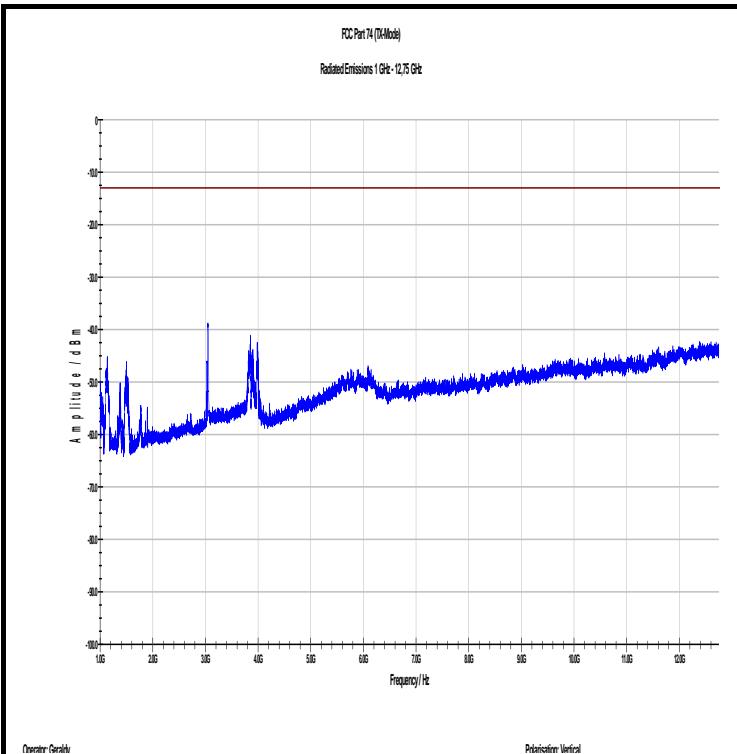
Information on the measurement:

horizontal polarization, long pulse

Plot shows wanted signal at 3 GHz and 2nd harmonic.

-/-

Plot No. 46 (60)



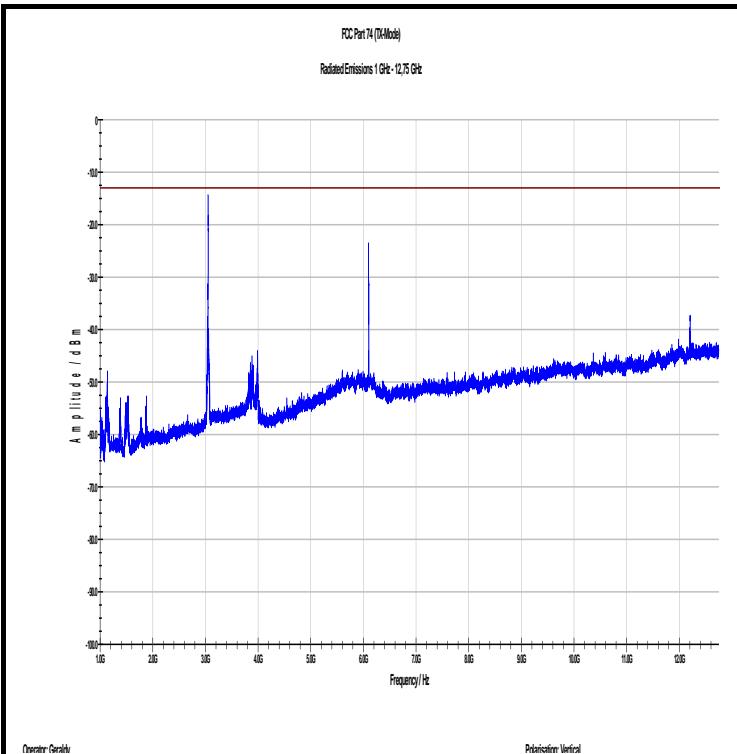
Information on the measurement:

vertical polarization, short pulse

Plot shows wanted signal at 3 GHz.

-/-

Plot No. 47 (60)



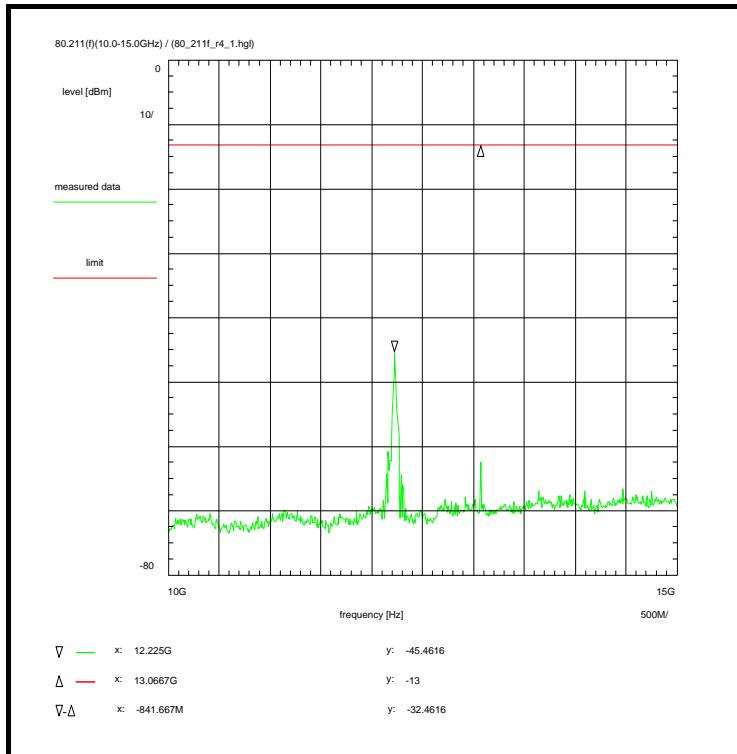
Information on the measurement:

vertical polarization, long pulse

Plot shows wanted signal at 3 GHz and 2nd harmonic.

-/-

Plot No. 48 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:08:03
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	10 GHz
Stop frequency:	15 GHz
Center frequency:	12.5 GHz
Frequency span:	5 GHz
Input attenuation:	0 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 2.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A014)	- 19.7 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (12.50GHz, 0.5m)	+ 48.4 dB
Pre-Amplifier (11b)	- 35.4 dB
TOTAL CORRECTION:	- 4.7 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 10.0 - 15.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: 11b, A014, C217, R001, W075, W076

Data of correction:
 see annex 4

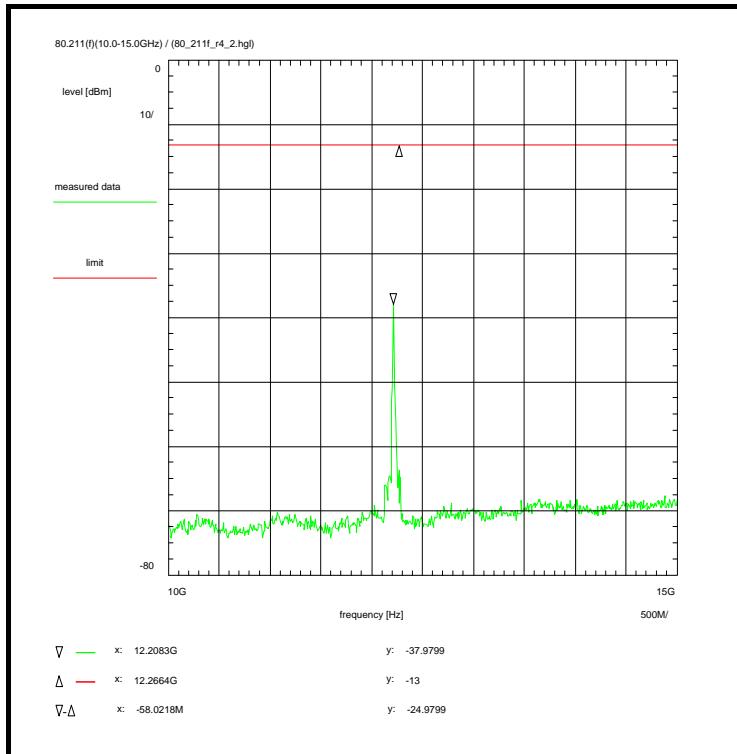
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 4th harmonic.

Plot No. 49 (60)



Information on the measurement:

Environment condition:
Date & Time: Tue 17/Jan/2012 17:08:55
Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
Temperature: 23 °C
Humidity: 35 %
Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	10 GHz
Stop frequency:	15 GHz
Center frequency:	12.5 GHz
Frequency span:	5 GHz
Input attenuation:	0 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 2.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A014)	- 19.7 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (12.50GHz, 0.5m)	+ 48.4 dB
Pre-Amplifier (11b)	- 35.4 dB
TOTAL CORRECTION:	- 4.7 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
operating condition 1, see section 1.5.2
medium pulse

Test setup:
see annex 1: 2.3

Test equipment:
see annex 2: 11b, A014, C217, R001, W075, W076

Data of correction:
see annex 4

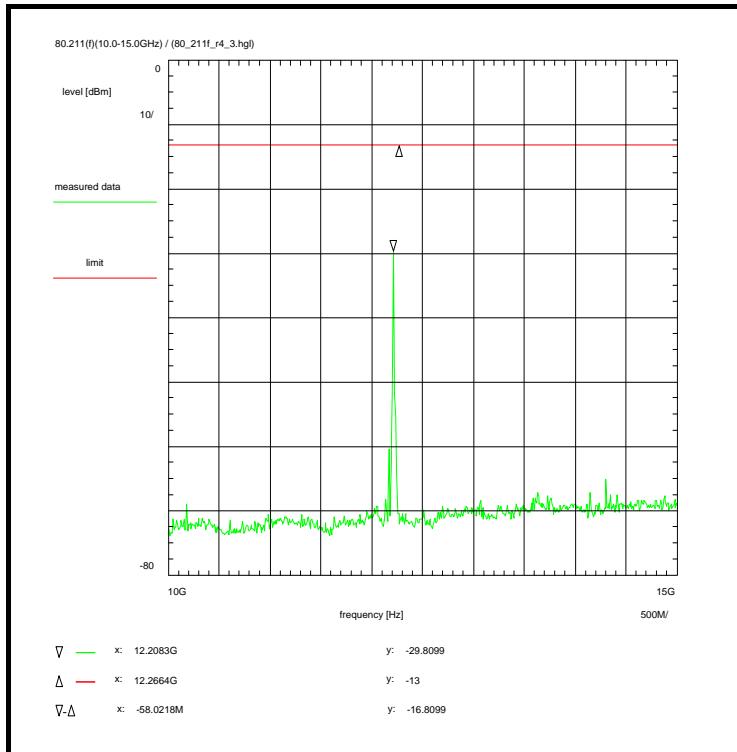
Remark:

Test result: Test passed

Remarks:
Max-Hold Mode

Plot shows 4th harmonic.

Plot No. 50 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:10:27
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	10 GHz
Stop frequency:	15 GHz
Center frequency:	12.5 GHz
Frequency span:	5 GHz
Input attenuation:	0 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 2.0 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A014)	- 19.7 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (12.50GHz, 0.5m)	+ 48.4 dB
Pre-Amplifier (11b)	- 35.4 dB
TOTAL CORRECTION:	- 4.7 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 10.0 - 15.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: 11b, A014, C217, R001, W075, W076

Data of correction:
 see annex 4

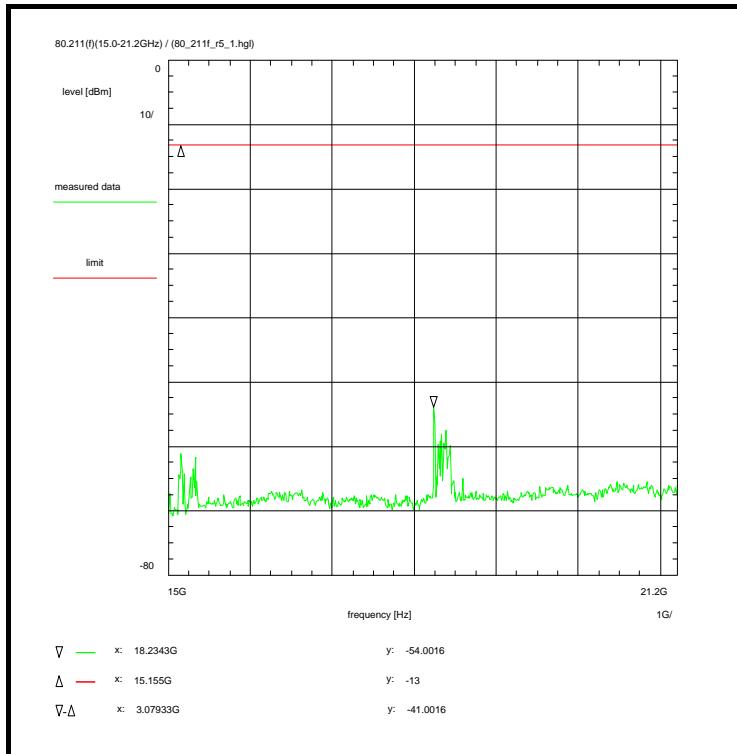
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 4th harmonic.

Plot No. 51 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:14:39
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 15 GHz
 Stop frequency: 21.2 GHz
 Center frequency: 18.1 GHz
 Frequency span: 6.2 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 2.5 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A016)	- 19.9 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (18.10GHz, 0.3m)	+ 47.1 dB
Pre-Amplifier (11b)	- 32.7 dB
TOTAL CORRECTION:	- 3.0 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 15.0 - 21.2 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: 11b, A016, C217, R001, W075, W076

Data of correction:
 see annex 4

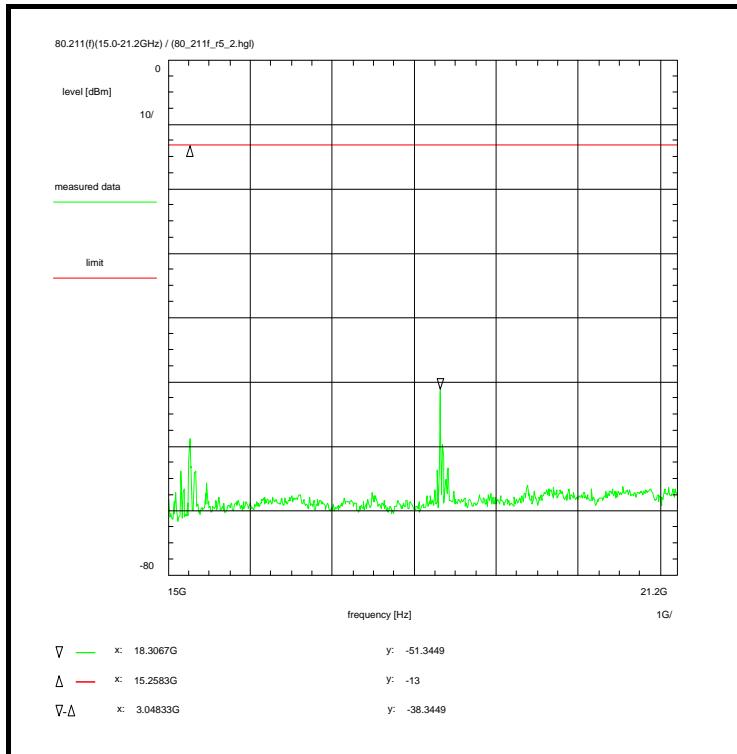
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 5th and 6th harmonic.

Plot No. 52 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:15:26
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 15 GHz
 Stop frequency: 21.2 GHz
 Center frequency: 18.1 GHz
 Frequency span: 6.2 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 2.5 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A016)	- 19.9 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (18.10GHz, 0.3m)	+ 47.1 dB
Pre-Amplifier (11b)	- 32.7 dB
TOTAL CORRECTION:	- 30 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 15.0 - 21.2 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: 11b, A016, C217, R001, W075, W076

Data of correction:
 see annex 4

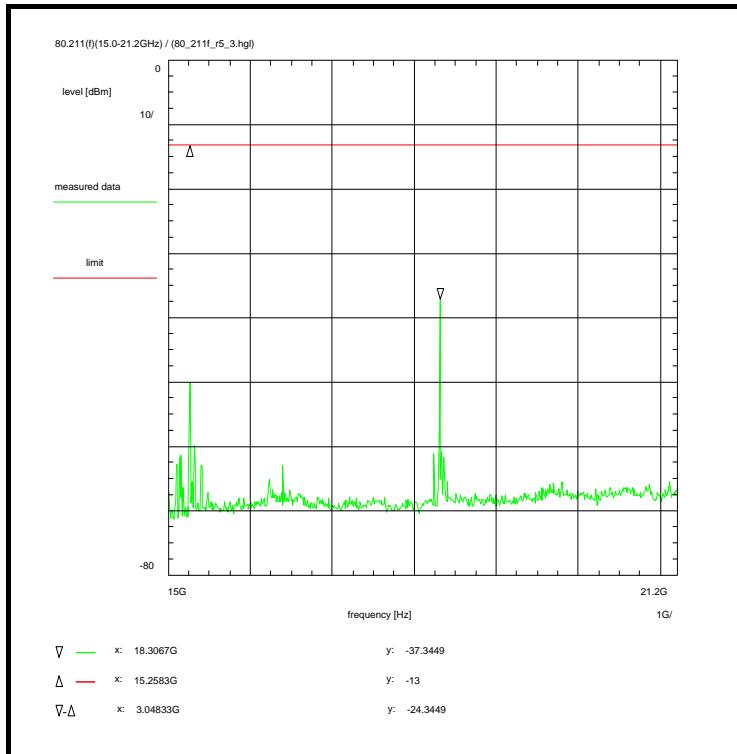
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 5th and 6th harmonic.

Plot No. 53 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:16:11
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency:	15 GHz
Stop frequency:	21.2 GHz
Center frequency:	18.1 GHz
Frequency span:	6.2 GHz
Input attenuation:	0 dB
Resolution-BW:	1 MHz
Video-BW:	1 MHz
Video-Average:	1 sweep(s) (>1)
Detector-Mode:	2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 2.5 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A016)	- 19.9 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (18.10GHz, 0.3m)	+ 47.1 dB
Pre-Amplifier (11b)	- 32.7 dB
TOTAL CORRECTION:	- 3.0 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 15.0 - 21.2 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: 11b, A016, C217, R001, W075, W076

Data of correction:
 see annex 4

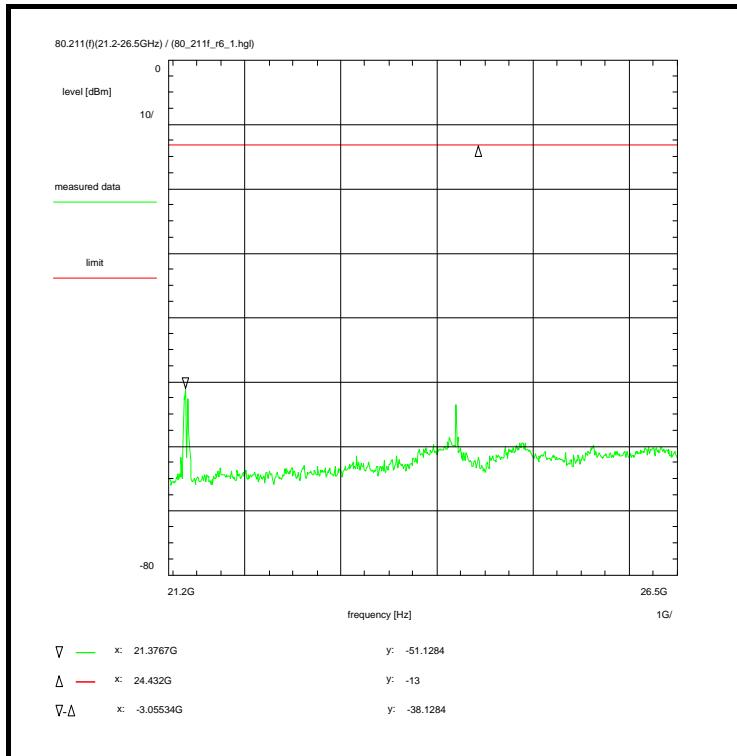
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 5th and 6th harmonic.

Plot No. 54 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:20:43
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 21.2 GHz
 Stop frequency: 26.5 GHz
 Center frequency: 23.85 GHz
 Frequency span: 5.3 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 2.8 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A019)	- 19.8 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (23.85GHz, 0.3m)	+ 49.5 dB
(11b)	- 31.3 dB
TOTAL CORRECTION:	+ 1.2 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 21.2 - 26.5 GHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2
 short pulse

Test setup:

see annex 1: 2.3

Test equipment:

see annex 2: 11b, A019, C217, R001, W075, W076

Data of correction:

see annex 4

Remark:

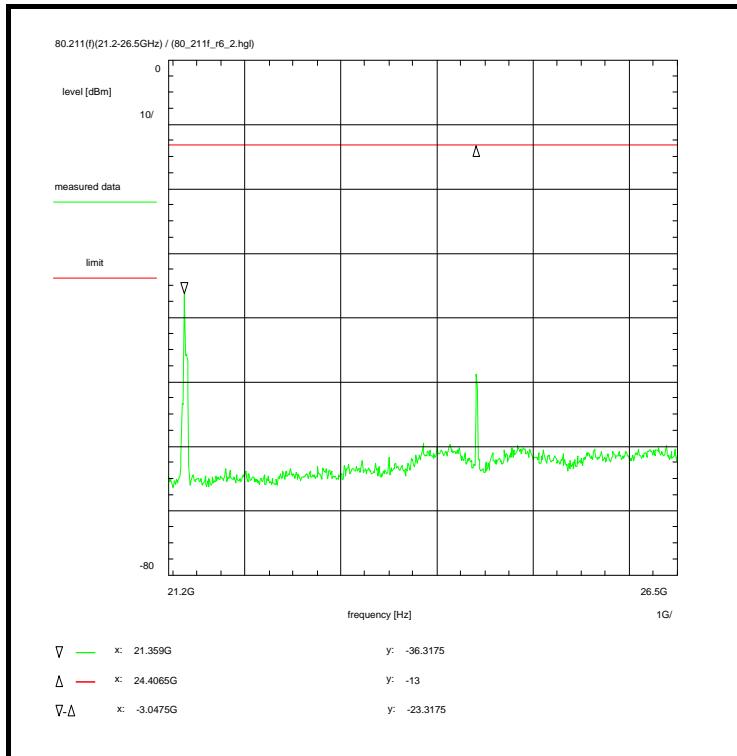
Test result: Test passed

Remarks:

Max-Hold Mode

Plot shows 7th and 8th harmonic.

Plot No. 55 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:24:52
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 21.2 GHz
 Stop frequency: 26.5 GHz
 Center frequency: 23.85 GHz
 Frequency span: 5.3 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 2.8 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A019)	- 19.8 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (23.85GHz, 0.3m)	+ 49.5 dB
(11b)	- 31.3 dB
TOTAL CORRECTION:	+ 1.2 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 21.2 - 26.5 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: 11b, A019, C217, R001, W075, W076

Data of correction:
 see annex 4

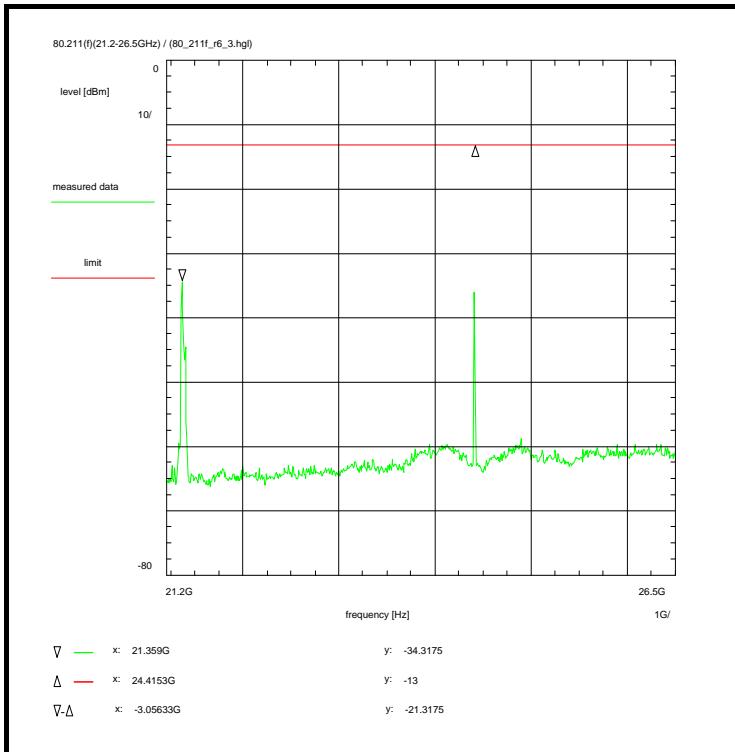
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 7th and 8th harmonic.

Plot No. 56 (60)



Subclause: 80.211(f) Radiated Spurious Emissions
Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
Examination of the frequency range 21.2 - 26.5 GHz

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
operating condition 1, see section 1.5.2
long pulse

Test setup:

Test equipment:

Data of correction:
see annex 4

Remark:

Test result: **Test passed**

Information on the measurement:

Environment condition:
Date & Time: Tue 17/Jan/2012 17:23:53
Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
Temperature: 23 °C
Humidity: 35 %
Voltage: 233 Vac

Setup of measurement equipment:

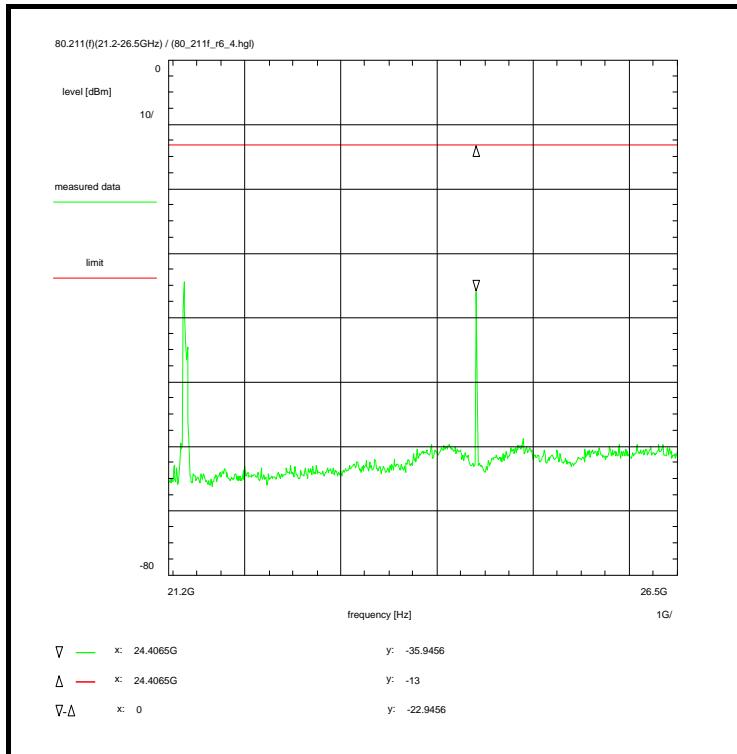
Start frequency:	21.2	GHz
Stop frequency:	26.5	GHz
Center frequency:	23.85	GHz
Frequency span:	5.3	GHz
Input attenuation:	0	dB
Resolution-BW:	1	MHz
Video-BW:	1	MHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C217)	+	2.8	dB
DUT-Antenna	+	0.0	dBi
Test antenna (A019)	-	19.8	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield Attenuation (23.85GHz, 0.3m)	+	49.5	dB
(11b)	-	31.3	dB
TOTAL CORRECTION:	+	1.2	dB

Limit:
Limit acc. to 80.211(f): -13 dBm

Plot No. 57 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:24:02
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 21.2 GHz
 Stop frequency: 26.5 GHz
 Center frequency: 23.85 GHz
 Frequency span: 5.3 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 2.8 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A019)	- 19.8 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (23.85GHz, 0.3m)	+ 49.5 dB
(11b)	- 31.3 dB
TOTAL CORRECTION:	+ 1.2 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 21.2 - 26.5 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: 11b, A019, C217, R001, W075, W076

Data of correction:
 see annex 4

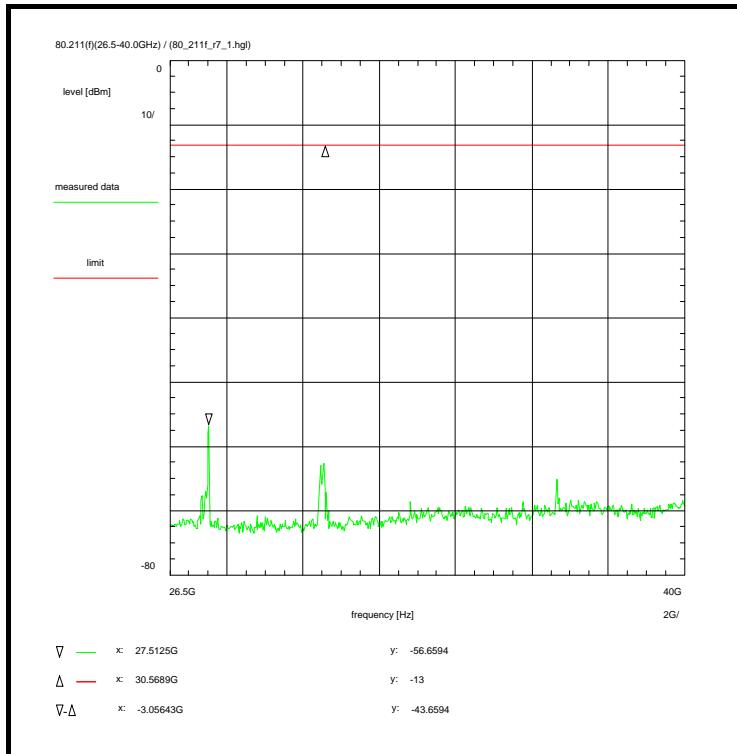
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 7th and 8th harmonic.

Plot No. 58 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:40:28
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 40 GHz
 Center frequency: 33.25 GHz
 Frequency span: 13.5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler + 0.0 dB
 Coaxial cable (C217) + 3.4 dB
 DUT-Antenna + 0.0 dBi
 Test antenna (A021) - 19.6 dB
 BW correction factor + 0.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Freefield Attenuation (33.25GHz, 0.2m) + 48.9 dB
 Pre-Amplifier - 46.0 dB
 TOTAL CORRECTION: - 13.3 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 26.5 - 40.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 short pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: A021, C217, R001, W075, W076

Data of correction:
 see annex 4

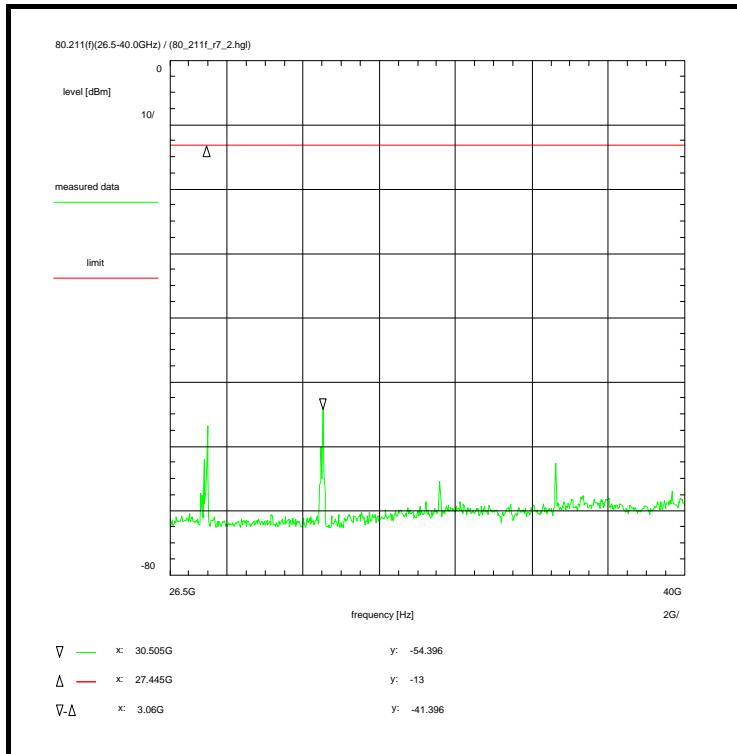
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 9th and 10th harmonic.

Plot No. 59 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:39:16
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 40 GHz
 Center frequency: 33.25 GHz
 Frequency span: 13.5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 3.4 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A021)	- 19.6 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (33.25GHz, 0.2m)	+ 48.9 dB
Pre-Amplifier	- 46.0 dB
TOTAL CORRECTION:	- -13.3 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 26.5 - 40.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 medium pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: A021, C217, R001, W075, W076

Data of correction:
 see annex 4

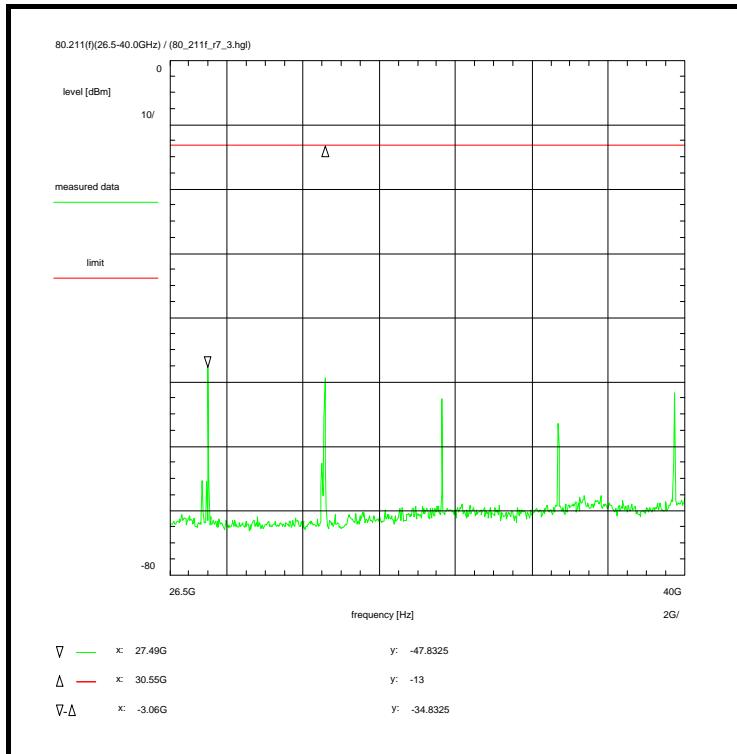
Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 9th - 13th harmonic.

Plot No. 60 (60)



Information on the measurement:

Environment condition:
 Date & Time: Tue 17/Jan/2012 17:44:02
 Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat
 Temperature: 23 °C
 Humidity: 35 %
 Voltage: 233 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 40 GHz
 Center frequency: 33.25 GHz
 Frequency span: 13.5 GHz
 Input attenuation: 0 dB
 Resolution-BW: 1 MHz
 Video-BW: 1 MHz
 Video-Average: 1 sweep(s) (>1)
 Detector-Mode: 2 Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+ 0.0 dB
Coaxial cable (C217)	+ 3.4 dB
DUT-Antenna	+ 0.0 dBi
Test antenna (A021)	- 19.6 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield Attenuation (33.25GHz, 0.2m)	+ 48.9 dB
Pre-Amplifier	- 46.0 dB
TOTAL CORRECTION:	- -13.3 dB

Limit:

Limit acc. to 80.211(f): -13 dBm

Subclause: 80.211(f) Radiated Spurious Emissions
 Pulsed rf-carrier in frequency range 2.9 - 3.1 GHz
 Examination of the frequency range 26.5 - 40.0 GHz

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see section 1.5.2
 long pulse

Test setup:
 see annex 1: 2.3

Test equipment:
 see annex 2: A021, C217, R001, W075, W076

Data of correction:
 see annex 4

Remark:

Test result: Test passed

Remarks:
 Max-Hold Mode

Plot shows 9th - 13th harmonic.

Annex C 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).

1. Laboratory 'Sat'

Item No.	Measuring-equipment	Manufacturer	Type	Serialnumber	Identnumber	#	Cal.-/Verif.-cycle
C217	1.5 m 50 Ω / K	Insulated Wire Inc.	KPS-1533-590	101995	300002290	1	12 Mon.
R001	Spectrum analyzer	Hewlett Packard	HP 8565E	3515A00283	300000916	1	12 Mon.
R031	Peak Power Analyser	Boonton	4500B	12331	-/-	1	12 Mon.
R032	Peak Power Sensor	Boonton	58318	6276	-/-	1	12 Mon.
U024	Attenuator 20dB, k-con.	Inmet	40A-20dB	-/-		3	12 Mon.
U214	Attenuator 10dB, N-con.	Spinner	BN 745379	7/93	400000047	1	12 Mon.
W022	Taper transitions	Flann	several	-/-	300001615	*	24 Mon.
W030	Transition to koaxial	Flann	10093NF10	110	300002174	1	24 Mon.
W036	Transition to koaxial	Flann	14093NF10	1637	300000791	1	24 Mon.
W053	Transition to koaxial	Flann	17093SF40	733	300000931	1	24 Mon.
W063	Transition to koaxial	Flann	20094KF	85	300000839	1	24 Mon.
W075	Directional coupler	EMCO	BCB284A-30-6-6-6 IFI	-/-	300003149	1	24 Mon.
W076	Dummy-Load	EMCO	WT284-B-6 IFI	-/-	300003158	1	24 Mon.
WStu	Stub Tuner (triple)	MICROLAB/FXR	S3-15N	-/-	300002831	1	24 Mon.

Annex D Photographs of the test setup

Photo No. 1: in-band measurements



Photo No. 2: in-band measurements



Photo No. 3: spurious measurements up to 5 GHz



Photo No. 4: spurious measurements up to 10 GHz

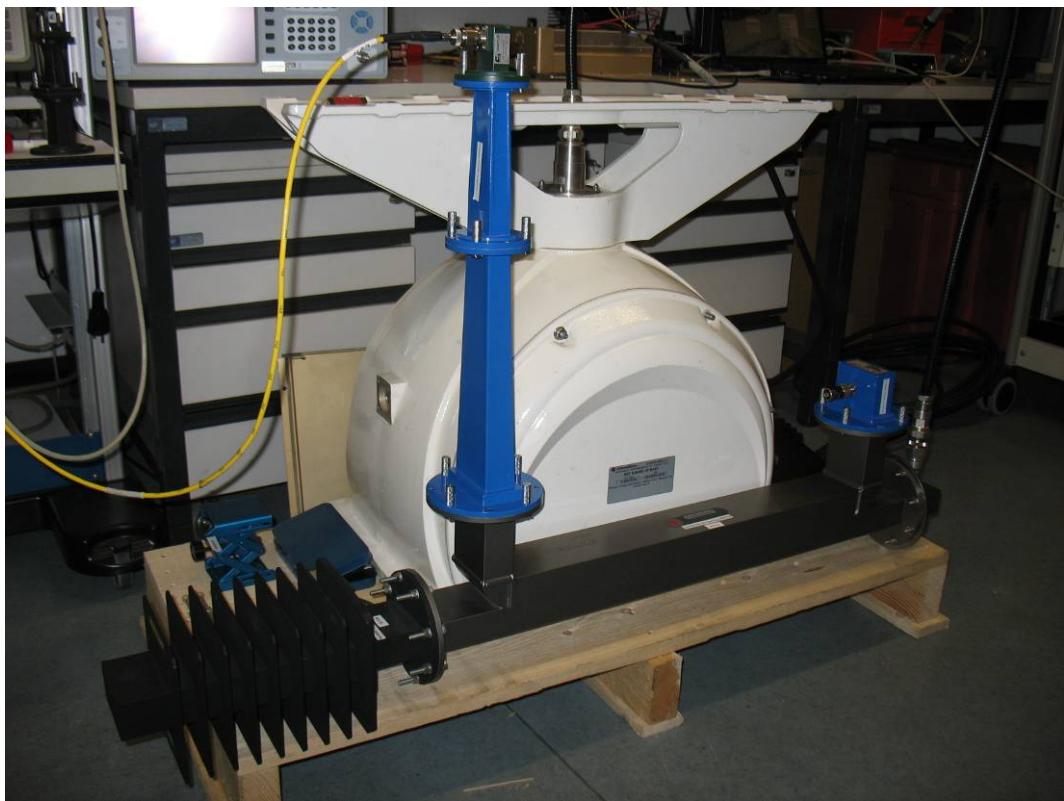
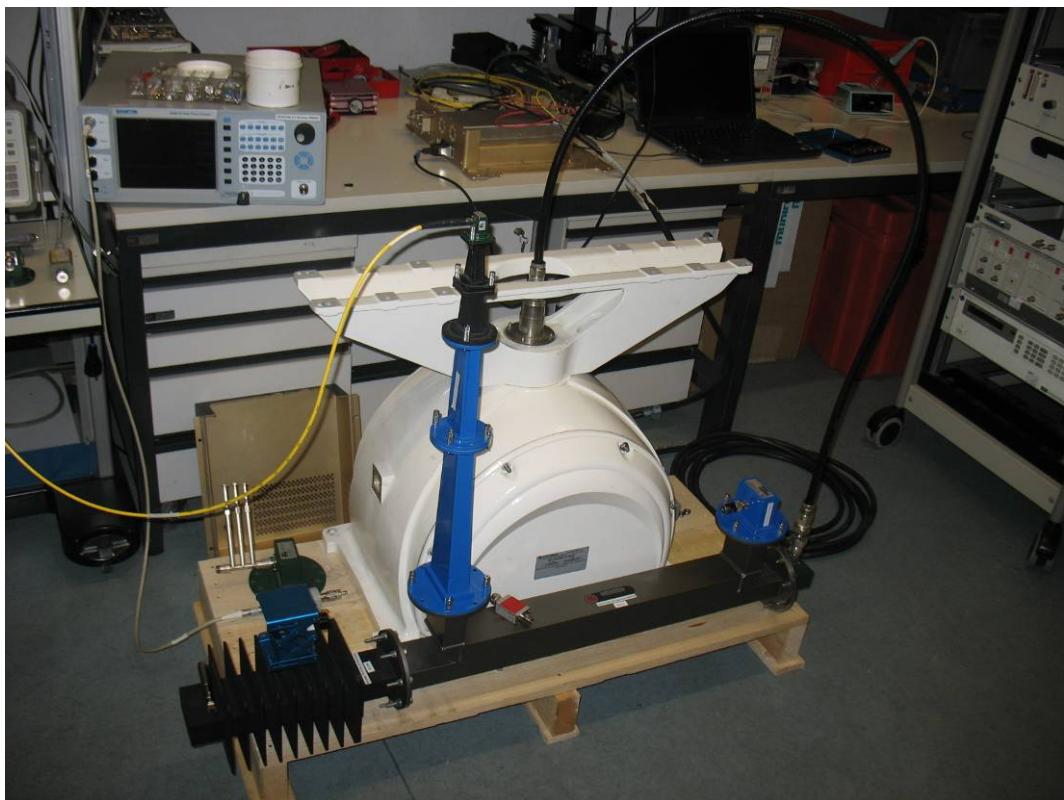


Photo No. 5: spurious measurements up to 21 GHz



Annex E External photographs of the EUT

Photo No. 1:



Photo No. 2:



Photo No. 3:



Photo No. 4:



Photo No. 5: transceiver in-/output, antenna connector



Annex F Internal photographs of the EUT

Photo No. 1: motor side

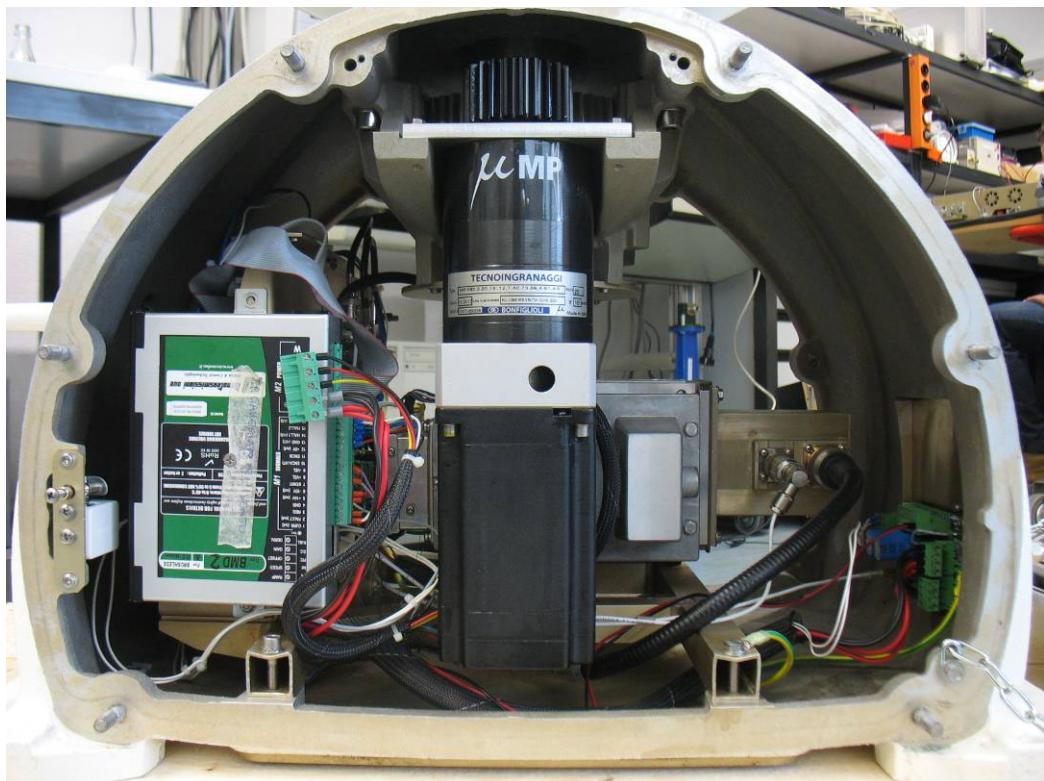


Photo No. 2:

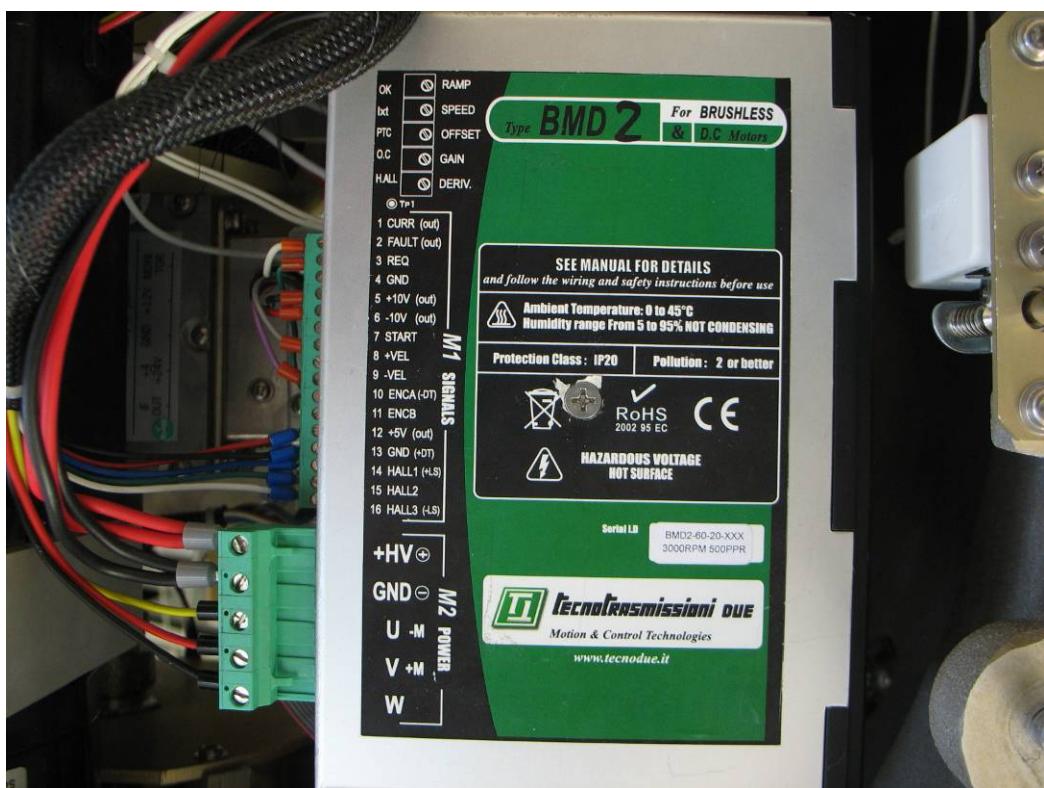


Photo No. 3: magnetron side

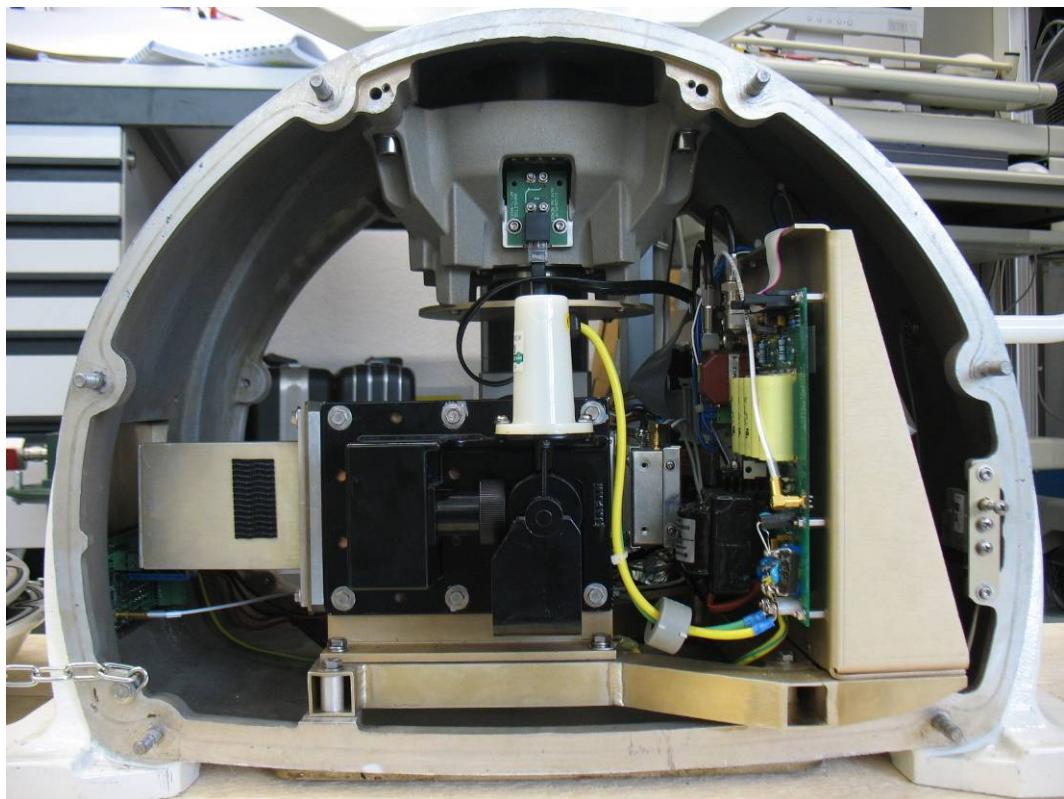


Photo No. 4: rotation sensor

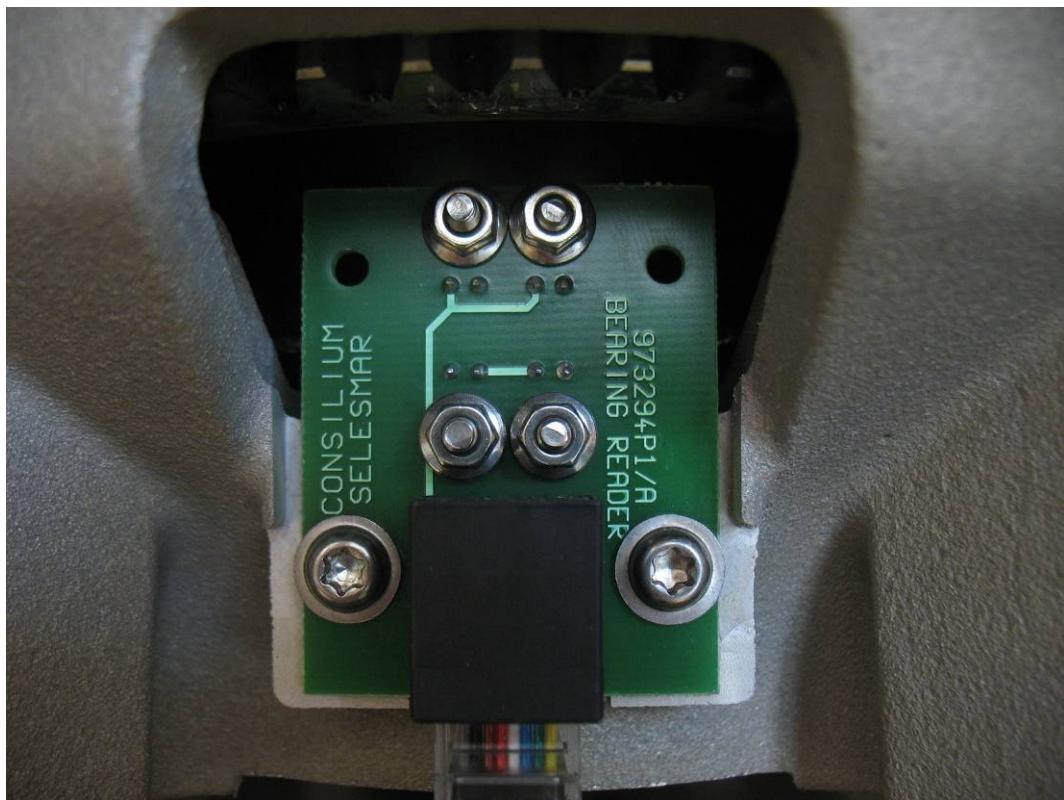


Photo No. 5: circulator, limiter and receiver



Photo No. 6: circulator and limiter

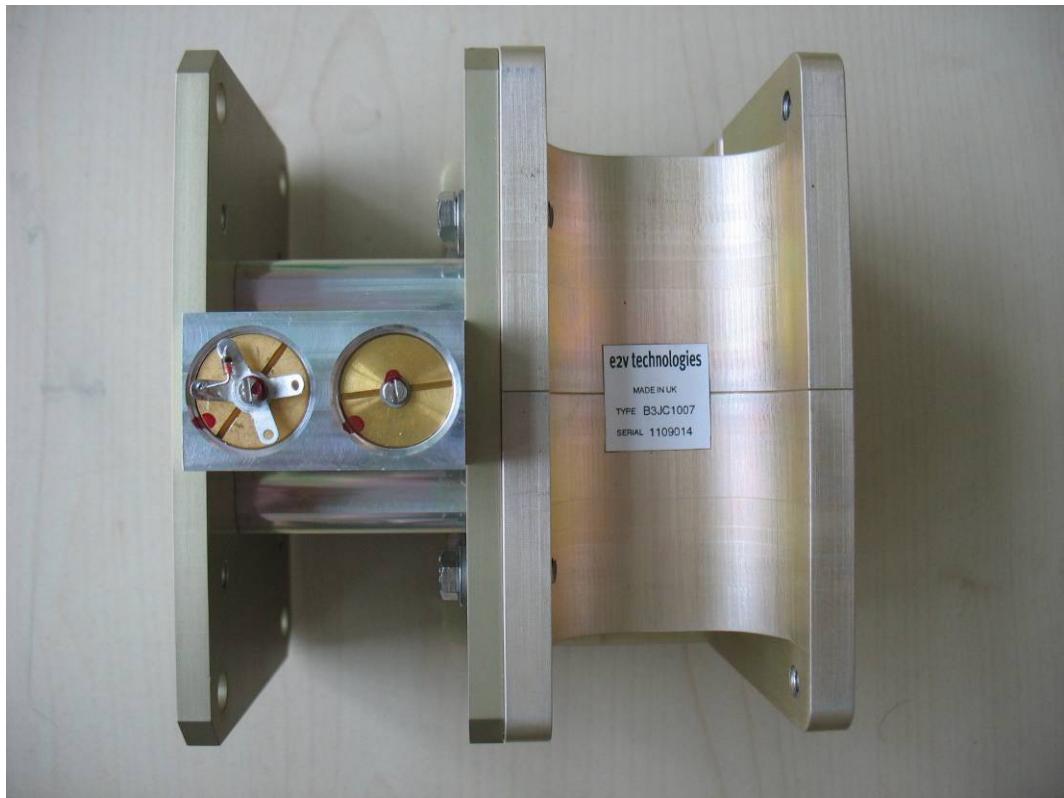


Photo No. 7: limiter



Photo No. 8: receiver

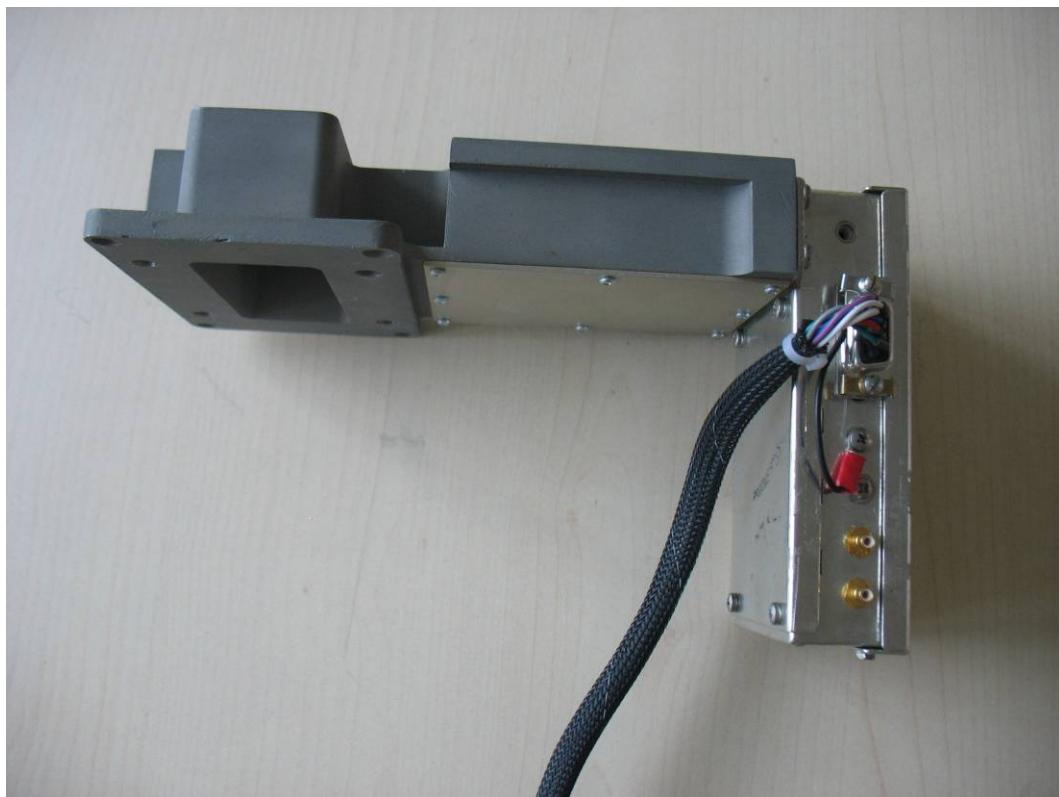


Photo No. 9: receiver



Photo No. 10: receiver



Photo No. 11: magnetron

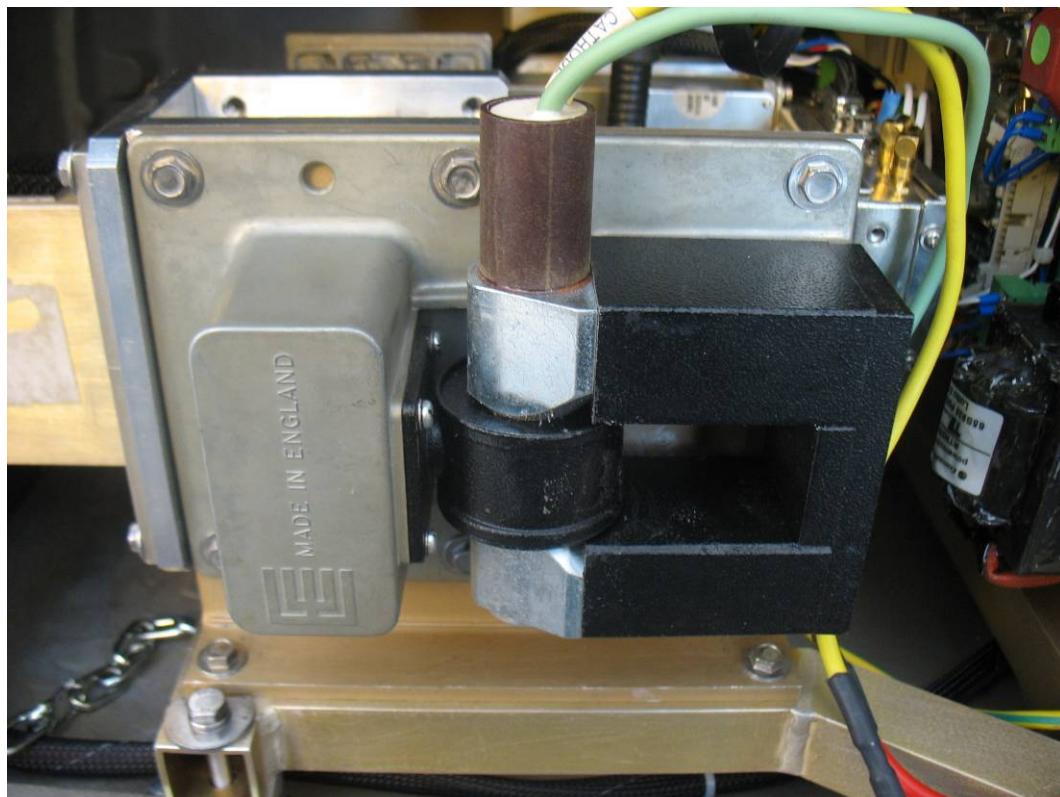


Photo No. 12: magnetron



Photo No. 13: external power supply

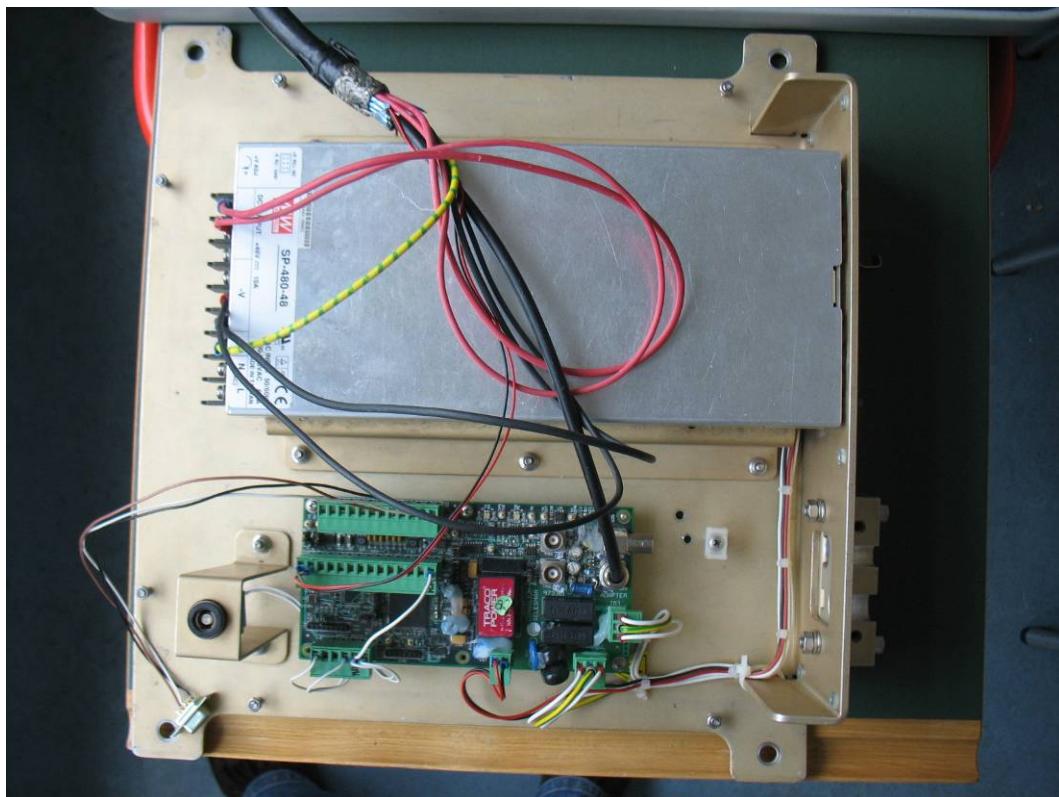


Photo No. 14:

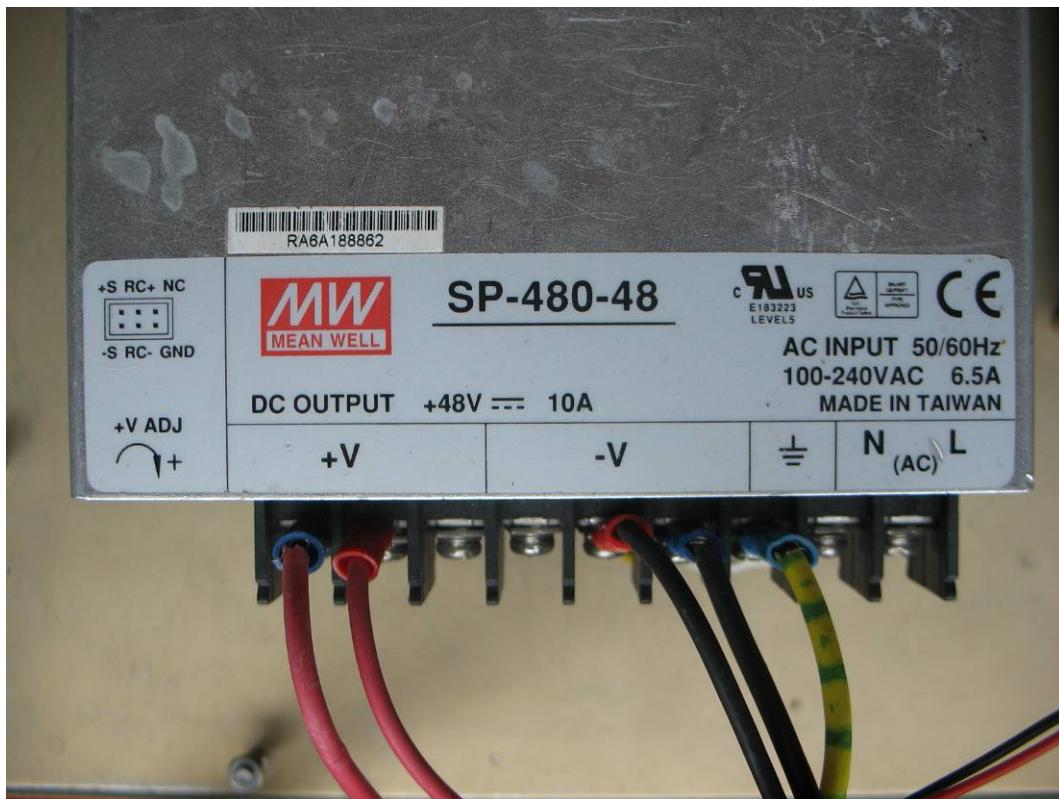
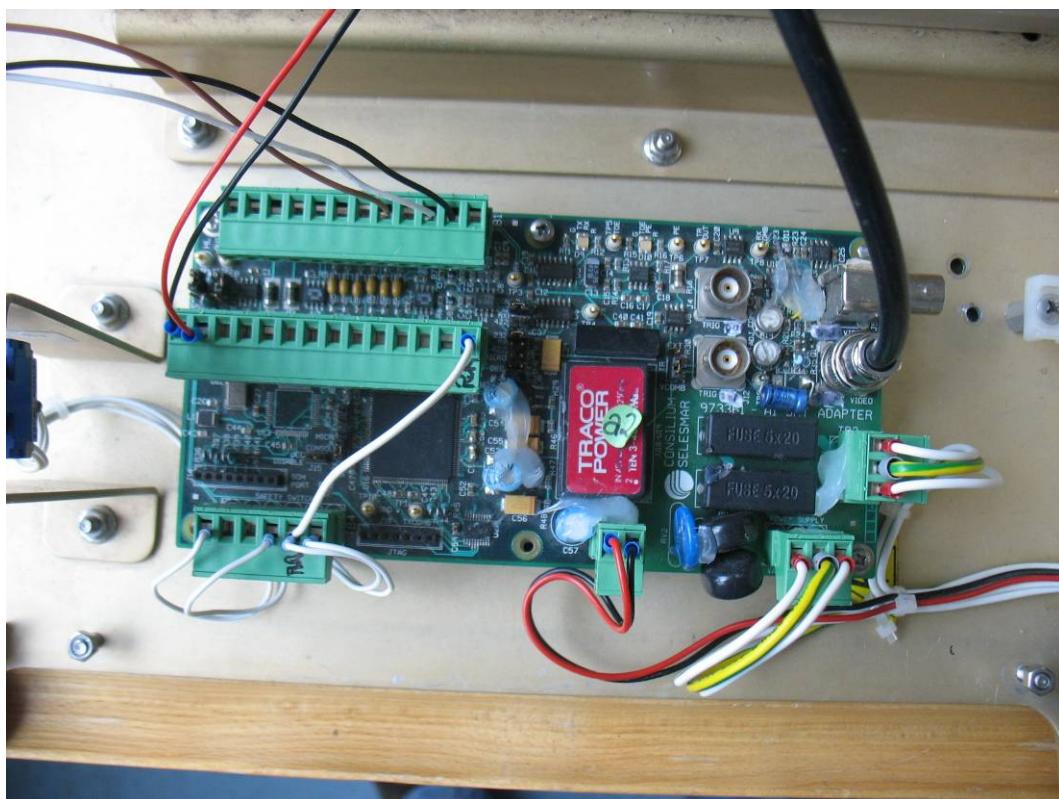


Photo No. 15:



Annex G Document history

Version	Applied changes	Date of release
1.0	Initial release	2012-08-10

Annex H 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