

TEST REPORT

Test report no.: 1-2651-01-02/10

Testing laboratory

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Accredited test laboratory:

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

Area of Testing: Radio/Satellite Communications

Applicant

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Manufacturer

Grass Valley Nederland B.V.
Kapittelweg 10
4827 HG Breda / Netherlands

Test standard/s

47 CFR Part 74

Title 47 of the Code of Federal Regulations; Chapter I-Federal Communications Commission
Experimental radio, auxiliary, special broadcast and other program distribution services

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

Test item

Kind of test item: SD Wireless RF Module 2.4 GHz – 2.5 GHz
Model name: SD Wireless RF Module 2.4 GHz – 2.5 GHz
FCC ID: Y2ULDK5451-24
IC: -/-
Frequency [MHz]: 2450 MHz – 2483.5 MHz
Power supply: 13.8 V DC or power supply (DC Power Unit. IA-200a)
Temperature range: -20 °C to +45 °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 performed:

Test report authorised:

Meheza Walla

Stefan Bös

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2 General information

2.1 Notes

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 generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM ICT Services GmbH.

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.

2.2 Application details

Date of receipt of order:	2010-09-30
Date of receipt of test item:	2010-10-01
Start of test:	2010-10-04
End of test:	2010-11-22
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Version	Test standard description
47 CFR Part 74	2006-10	Title 47 of the Code of Federal Regulations; Chapter I-Federal Communications Commission Experimental radio, auxiliary, special broadcast and other program distribution services

4 Test environment

Temperature:	T _{nom}	+22 °C during room temperature tests
	T _{max}	+45 °C during high temperature test
	T _{min}	-20 °C during low temperature test
Relative humidity content:		55 %
Air pressure:		not relevant for this kind of testing
Power supply:	V _{nom}	13.8 V DC from DC or Power Unit. IA-200a power supply
	V _{max}	17.0 V
	V _{min}	11.0 V

5 Test item

Kind of test item	:	SD Wireless RF Module 2.4 GHz – 2.5 GHz
Type identification	:	SD Wireless RF Module 2.4 GHz – 2.5 GHz
S/N serial number	:	2185 – 1407 (additional equipment) LDK 300/52 – 1558 (additional equipment) LDK 5450/02 – 867 (additional equipment) LDK 5451/24 – 919 (EUT)
HW hardware status	:	-/-
SW software status	:	-/-
Frequency band [MHz]	:	2450 MHz – 2483.5 MHz
Type of modulation	:	COFDM DVB-T modulation in 2k mode
Number of channels	:	3 (2460 MHz; 2467 MHz; 2474 MHz)
Occupied Bandwidth	:	7.564 MHz (99% BW)
Emission Designator	:	7M60D7M
Antenna	:	External antenna
Power supply	:	13.8 V DC or power supply (DC Power Unit. IA-200a)
Temperature range	:	-20 °C to +45 °C

6 Test laboratories sub-contracted

None

7 Summary of measurement results



No deviations from the technical specifications were ascertained



There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	FCC CFR 47 Part 74	Passed	2010-12-07	-/-

Test Specification Clause	Test Case	Temperature Conditions	Power Source Voltages	Pass	Fail	NA	NP	Results (max.)
§ 2.1046 / § 74.636	RF power output Power limitations (conducted)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 2.1046 / § 74.636	RF power output Power limitations (radiated)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 2.1049	Occupied bandwidth	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 2.1051 / § 74.637	Spurious emissions at antenna terminals Emission mask	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 2.1051 / § 74.637	Spurious emissions at antenna terminals Spurious Emissions (conducted)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 2.1051 / § 74.637	Spurious emissions at antenna terminals Band-Edge compliance	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 2.1053 / § 74.637	Field strength of spurious radiation Spurious Emissions (radiated)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 2.1055 / § 74.661	Frequency stability Frequency tolerance	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies

Note: NA = Not Applicable; NP = Not Performed

8 RF measurement testing

8.1 Description of test setup

8.1.1 Radiated measurements

EIRP Measurements

Measuring the EIRP using Substitution Method:

- (a) The measurements were performed with full rf output power and modulation.
- (b) Test was performed at listed 3m test site (listed with FCC, IC).
- (c) The transmitter under test was placed at the specified height on a non-conducting turntable (80 cm height)
- (d) The TRILOG antenna (20 MHz to 1 GHz) or HORN antenna (1 GHz to 18 GHz) was used for measuring.
- (e) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level
Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
 $E \text{ (dBuV/m)} = \text{Reading (dBuV)} + \text{Total Correction Factor (dB/m)}$
- (f) Set the EMI Receiver and #2 as follows:
 - Center Frequency : test frequency
 - Resolution BW : 100 kHz
 - Video BW : same
 - Detector Mode : positive
 - Average : off
 - Span : 3 x the signal bandwidth
- (g) The test antenna was lowered or raised from 1 to 4 meters until the maximum signal level was detected.
- (h) The transmitter was rotated through 360° about a vertical axis until a higher maximum signal was received.
- (i) The test antenna was lowered or raised again from 1 to 4 meters until a maximum was obtained. This level was recorded.
- (j) The recorded reading was corrected to the true field strength level by adding the antenna factor, cable loss and subtracting the pre-amplifier gain.
- (k) The above steps were repeated with both transmitters' antenna and test receiving antenna placed in vertical and horizontal polarization. Both readings with the antennas placed in vertical and horizontal polarization shall be recorded.
- (l) Repeat for all different test signal frequencies

Measuring the EIRP of Spurious/Harmonic Emissions using Substitution Method

- (a) Set the EMI Receiver (for measuring E-Field) and Receiver #2 (for measuring EIRP) as follows:
 - Center Frequency : equal to the signal source
 - Resolution BW : 10 kHz
 - Video BW : same
 - Detector Mode : positive
 - Average : off
 - Span : 3 x the signal bandwidth
- (b) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level
Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
 $E \text{ (dBuV/m)} = \text{Reading (dBuV)} + \text{Total Correction Factor (dB/m)}$
- (c) Select the frequency and E-field levels for ERP/EIRP measurements.
- (d) Substitute the EUT by a signal generator and one of the following transmitting antennas (substitution antenna): DIPOLE antenna for frequency from 30-1000 MHz or .HORN antenna for frequency above 1 GHz}.
- (e) Mount the transmitting antenna at 1.5 meter high from the ground plane.
- (f) Use one of the following antenna as a receiving antenna: .DIPOLE antenna for frequency from 30-1000 MHz or .HORN antenna for frequency above 1 GHz }.
- (g) If the DIPOLE antenna is used, tune its elements to the frequency as specified in the calibration manual.
- (h) Adjust both transmitting and receiving antenna in a VERTICAL polarization.
- (i) Tune the EMI Receivers to the test frequency.

- (j) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
- (k) The transmitter was rotated through 360° about a vertical axis until a higher maximum signal was received.
- (l) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
- (m) Adjust input signal to the substitution antenna until an equal or a known related level to that detected from the transmitter was obtained in the test receiver.
- (n) Record the power level read from the Average Power Meter and calculate the ERP/EIRP as follows:

$$P = P_1 - L_1 = (P_2 + L_2) - L_1 = P_3 + A + L_2 - L_1$$

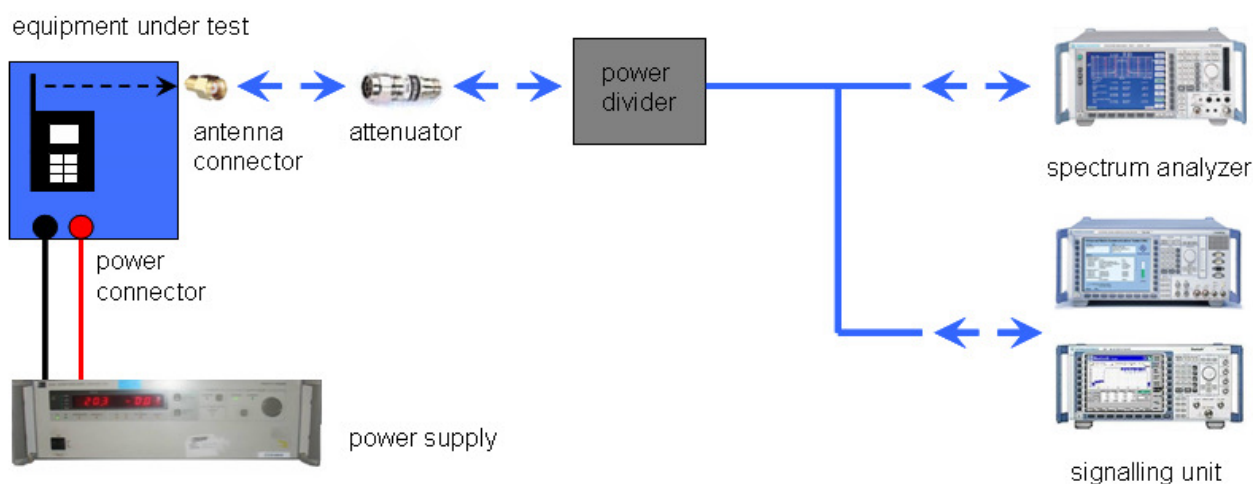
$$\text{EIRP} = P + G_1 = P_3 + L_2 - L_1 + A + G_1$$

$$\text{ERP} = \text{EIRP} - 2.15 \text{ dB}$$
 Total Correction factor in EMI Receiver # 2 = $L_2 - L_1 + G_1$
 Where: P: Actual RF Power fed into the substitution antenna port after corrected.
 P1: Power output from the signal generator
 P2: Power measured at attenuator A input
 P3: Power reading on the Average Power Meter
 EIRP: EIRP after correction
 ERP: ERP after correction
- (o) Adjust both transmitting and receiving antenna in a HORIZONTAL polarization, then repeat step (k) to (o)
- (p) Repeat step (d) to (o) for different test frequency
- (q) Repeat steps (c) to (j) with the substitution antenna oriented in horizontal polarization.
- (r) Actual gain of the EUT's antenna is the difference of the measured EIRP and measured RF power at the RF port. Correct the antenna gain if necessary.

8.1.2 Conducted measurements

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

Exemplary test setup:



8.1.3 Additional comments

Specifications

Wireless adapter unit

Dimensions	Adapter: 191mm x 120mm x 180mm (L x W x H) Camera head with adapter (without viewfinder): 330mm x 120mm x 205mm (L x W x H)
Weight	2.2 kg (4.8 Kg incl. camera head and 1.5-inch viewfinder)
Operating temperature	-20°C to +45°C
Storage temperature	-20°C to +60°C
Power	12V DC, 42W including LDK 300 head and 1.5-inch VF
Battery plate	Anton Bauer type
DC In	12V (11 to 17V); 3.5A (excluding DC Out); XLR 4
DC Out	11 to 17V (battery voltage) 1.5A; 6-pin Hirose
Video	SDI monitoring quality output
VF signal	B&W video 1.0 Vp-p, 75 Ohm output
Antennas	RX antenna; BNC connector, RF signal input antenna; SMA connector, RF signal output
RF module	COFDM DVB-T modulation in 2k mode
Frequency ranges	2.2 - 2.4 GHz, 2.4 - 2.5 GHz or 2.5 - 2.7 GHz depending on module
Number of channels	16 per band (3 per band for US market)
Emitted Power	15 dBm \pm 1.5 dBm (conducted) for 2.4 - 2.5 GHz band 18 dBm \pm 1.5 dBm (conducted) for all other bands measured at 20°C ambient temperature
Bandwidth	7.8 MHz per channel (-3dB)
Bitrate	22 Mbit/s (wavelet compression)
Range	150m line-of-sight in open field conditions
Latency	1.5 Frame, NTSC 50mSec, Pal 60mSec
Intercom	Speech quality; latency to camera 250mS Microphone level -44 to -24 dBu switchable Input impedance > 10 KOhm Telephone level +12 dBu nominal Telephone output impedance < 50 Ohm
Audio	1 channel full bandwidth (22 kHz, S/N 63dB typical) or 2 channels reduced bandwidth (15 kHz, S/N 60dB typical) Input impedance > 10 KOhm Sensitivity range: -64 to -22 dBu or line (0dBu)
Tally out	On: +5Vdc CMOS level
External video	1 Vpp (C)VBS input

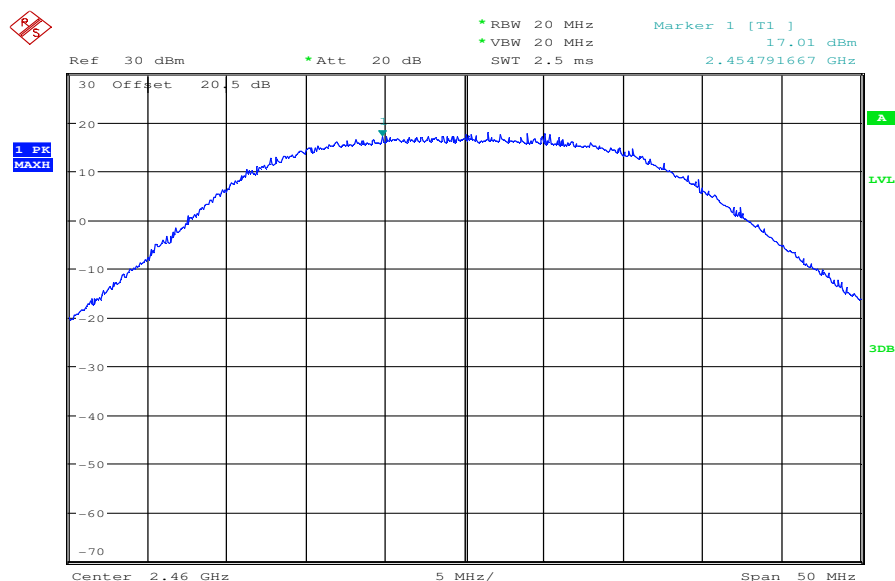
9 Measurement results

9.1 RF output power (conducted)

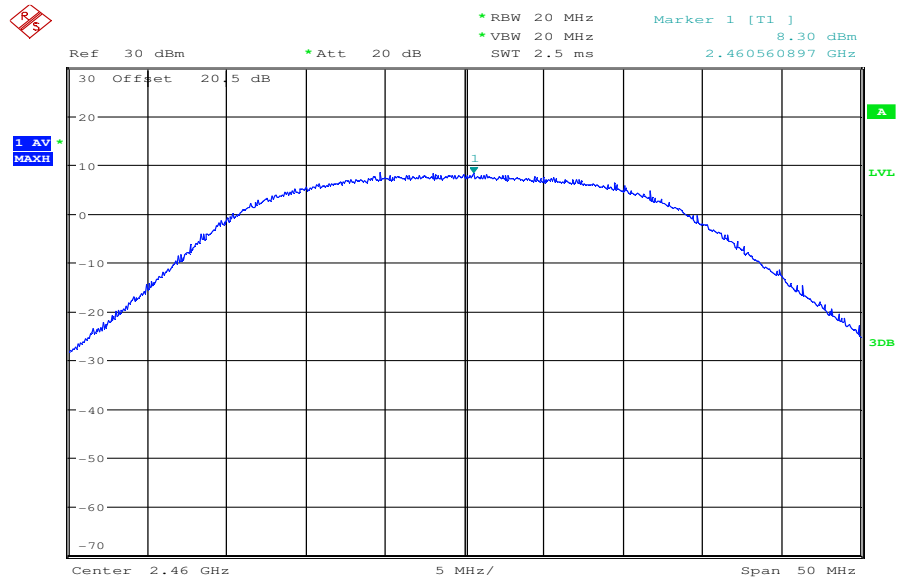
TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER [dBm]		
Frequency (MHz)		2460 MHz	2467 MHz	2474 MHz
T _{nom}	V _{nom}	17.01 (Peak)	17.25 (Peak)	17.17 (Peak)
		8.30 (Average)	8.10 (Average)	8.02 (Average)
Measurement uncertainty		± 3dB		

RBW / VBW: 20 MHz

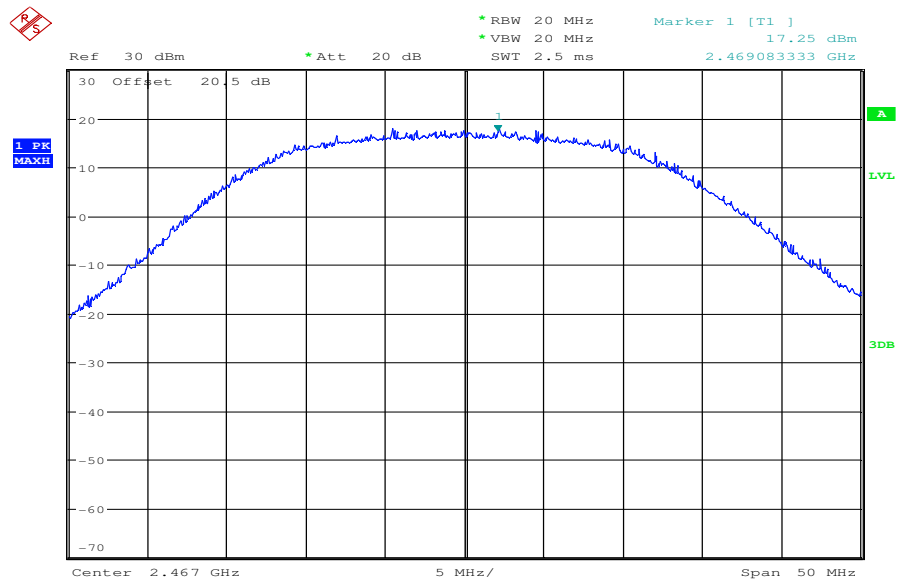
Plot 1: Peak RF output power 2460 MHz (Conducted)



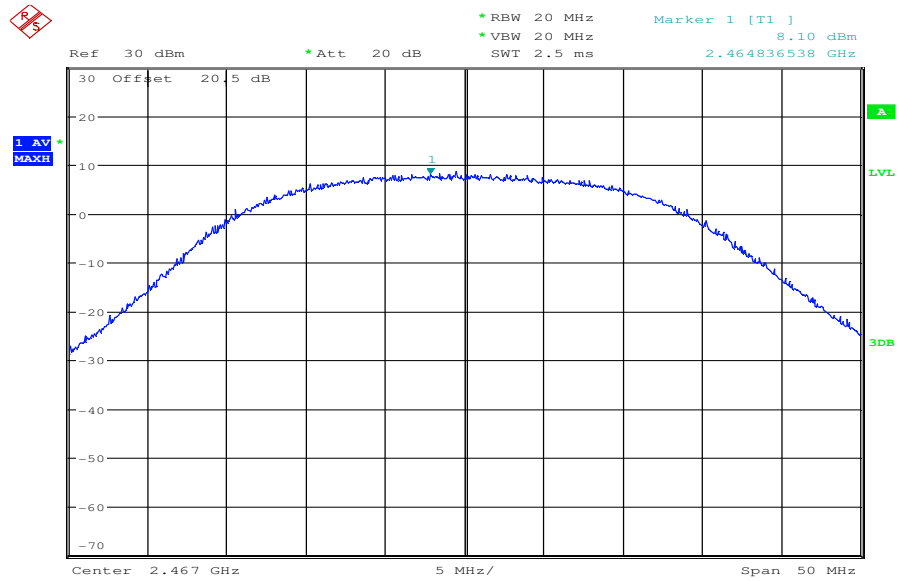
Plot 2: Average RF output power 2460 MHz (Conducted)



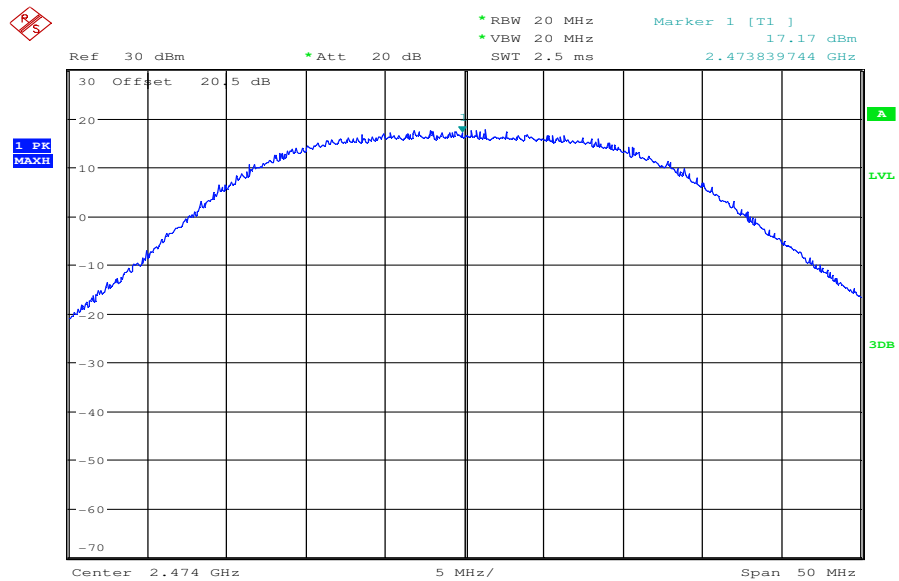
Plot 3: Peak RF output power 2467 MHz (Conducted)



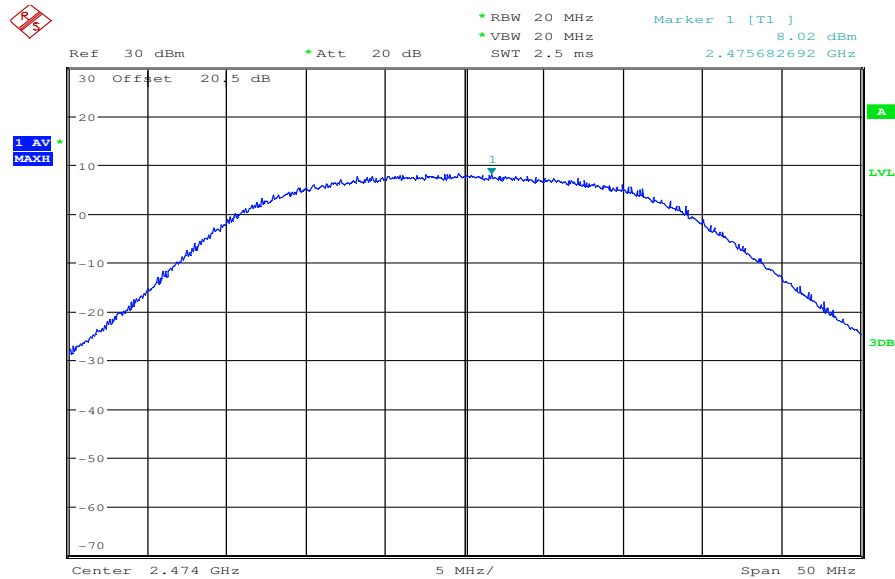
Plot 4: Average RF output power 2467 MHz (Conducted)



Plot 5: Peak RF output power 2474 MHz (Conducted)



Plot 6: Average RF output power 2474 MHz (Conducted)



Limits:

CFR Part SUBCLAUSE §74.636(a)	
Under normal test conditions only	For the frequency band 2450 to 2483.5 MHz: Maximum allowable transmitter power: 12.0 W / 40.8 dBm

Result: The result of the measurement is passed.

9.2 RF output power (radiated)

TEST CONDITIONS		MAXIMUM PEAK EIRP [dBm]		
Frequency (MHz)		2460 MHz	2467 MHz	2474 MHz
T _{nom}	V _{nom}	17.98	18.15	18.11
Measurement uncertainty		± 3dB		

Limits:

CFR Part SUBCLAUSE §74.636(a)	
Under normal test conditions only	For the frequency band 2450 to 2483.5 MHz: Maximum allowable EIRP: 35.0 W / 65.0 dBm

Result: The result of the measurement is passed.

9.3 Occupied bandwidth

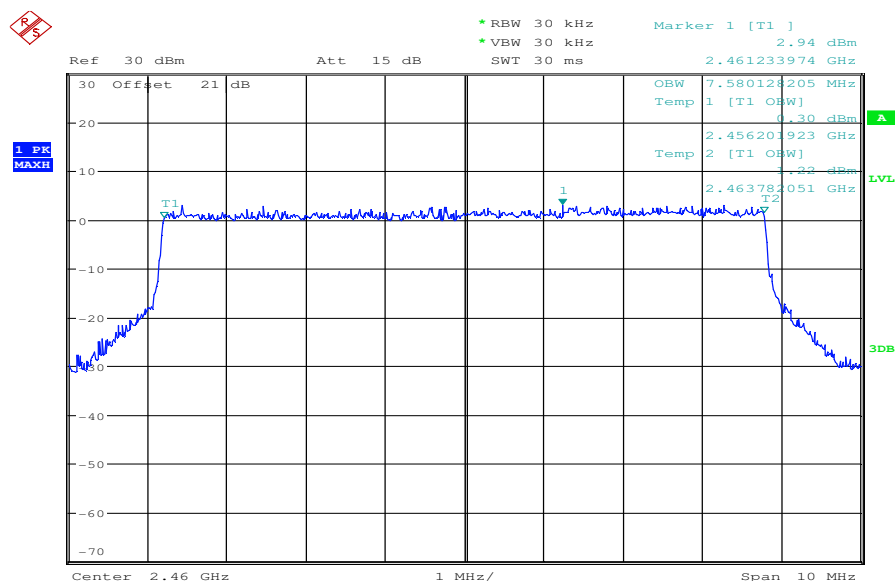
TEST CONDITIONS		OCCUPIED BANDWIDTH [MHz]		
Frequency (MHz)		2460 MHz	2467 MHz	2474 MHz
T_{nom}	V_{nom}	7.580	7.580	7.564
Measurement uncertainty		± 30 kHz		

RBW / VBW: 30 kHz

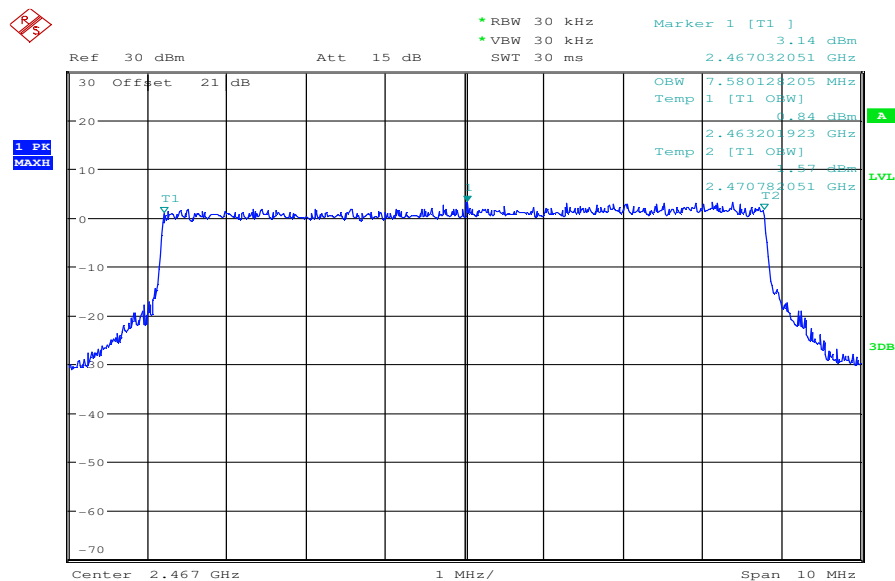
Remark:

The internal function of the spectrum analyzer was used to determine the occupied bandwidth (99%).

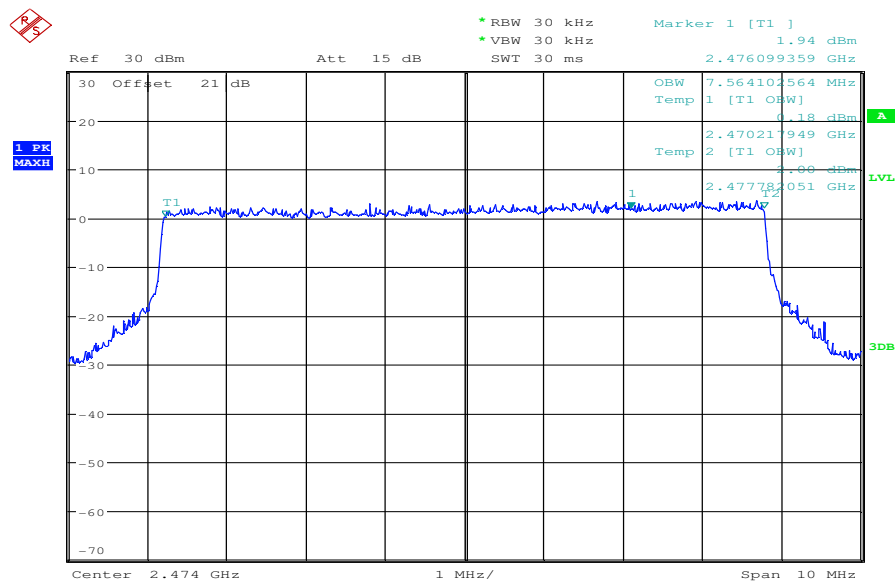
Plot 7: Occupied Bandwidth 2460 MHz



Plot 8: Occupied Bandwidth 2467 MHz



Plot 9: Occupied Bandwidth 2474 MHz



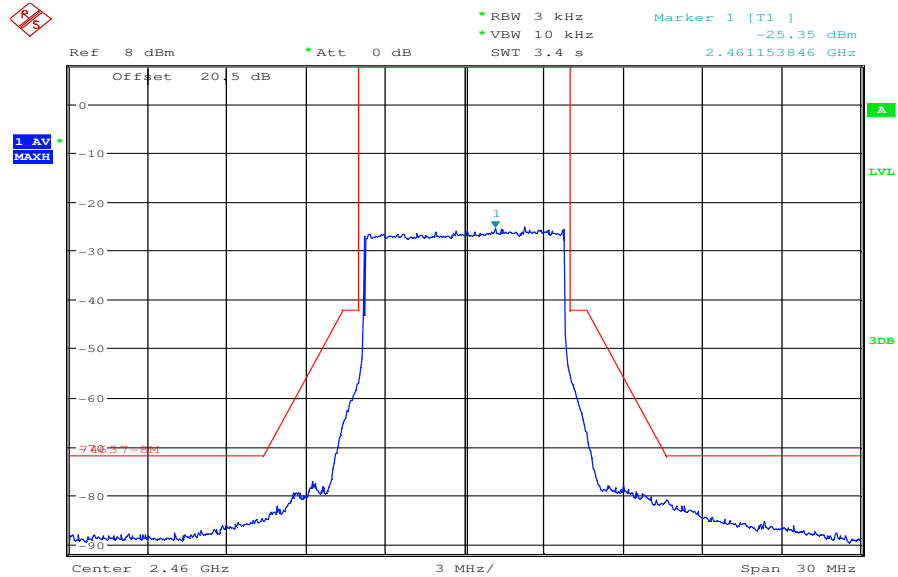
Limits:

CFR Part SUBCLAUSE §74.636(g)	
Under normal test conditions only	For the frequency band 2450 to 2483.5 MHz: No limitations given

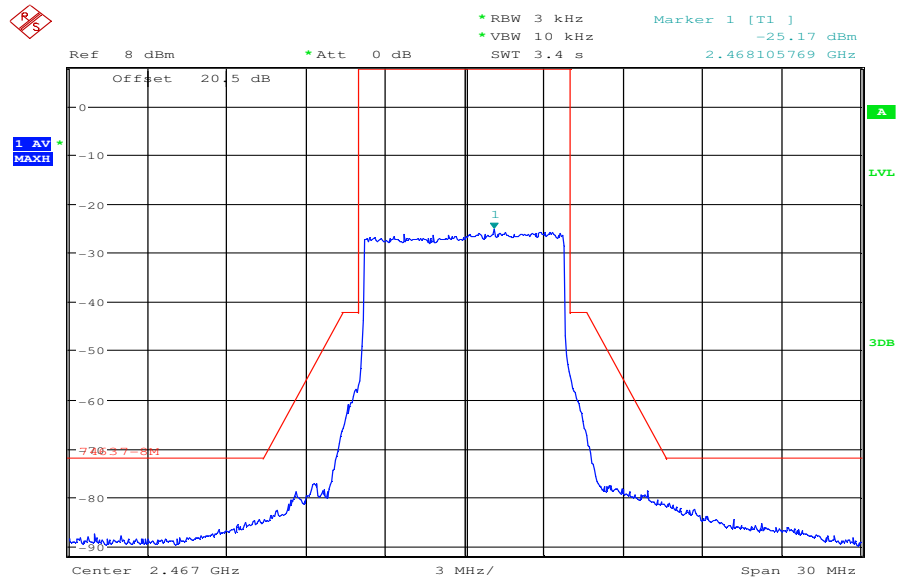
Result: The result of the measurement is passed.

9.4 Emission Mask

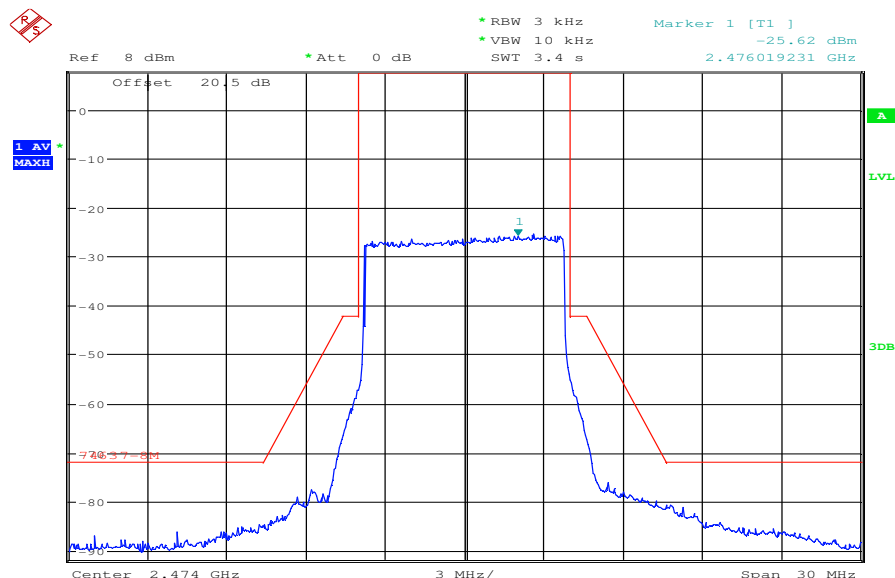
Plot 10: Emission Mask 2460 MHz



Plot 11: Emission Mask 2467 MHz



Plot 12: Emission Mask 2474 MHz



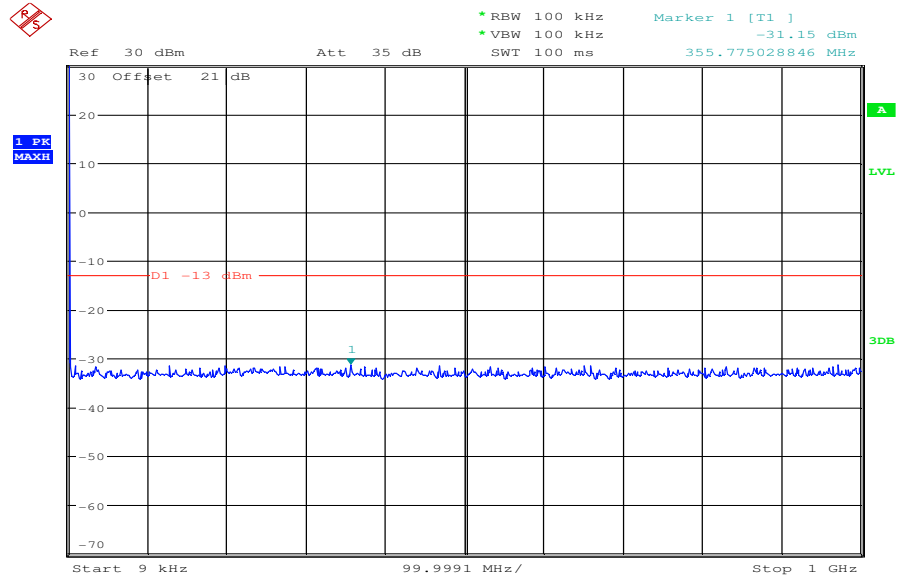
Limits:

CFR Part SUBCLAUSE §74.637(a)(2)(i)	
Under normal test conditions only	<p>The mean power of emissions shall be attenuated below the mean transmitter power (P_{MEAN}) in accordance with the following schedule:</p> <p>When using transmissions employing digital modulation techniques:</p> <p>For operating frequencies below 15 GHz, in any 4 kHz reference bandwidth (B_{REF}), the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth: As specified by the following equation but in no event less than 50 decibels:</p> $A = 35 + 0.8 (G - 50) + 10 \text{ Log}_{10} B$ <p>Attenuation greater than 80 decibels is not required.</p>

Result: The result of the measurement is passed.

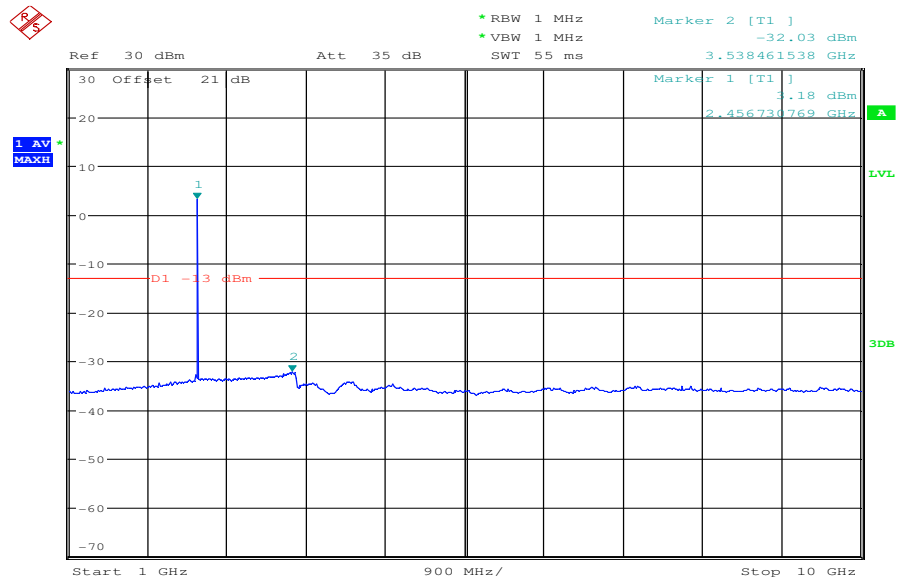
9.5 Spurious emissions (conducted)

Plot 13: 9 kHz – 1 GHz (2460 MHz)

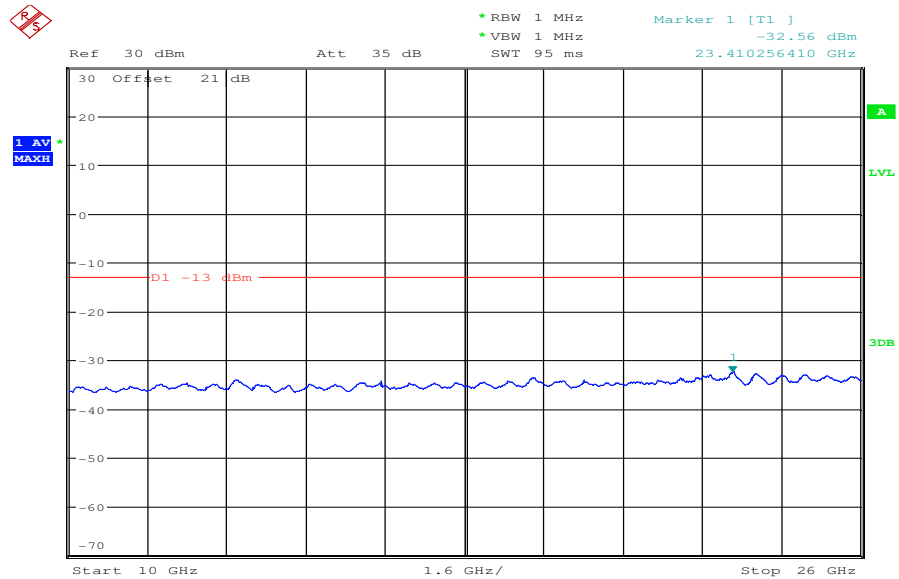


The peak at the beginning of the Plot is the LO from the measuring spectrum Analyzer and not from the EUT.

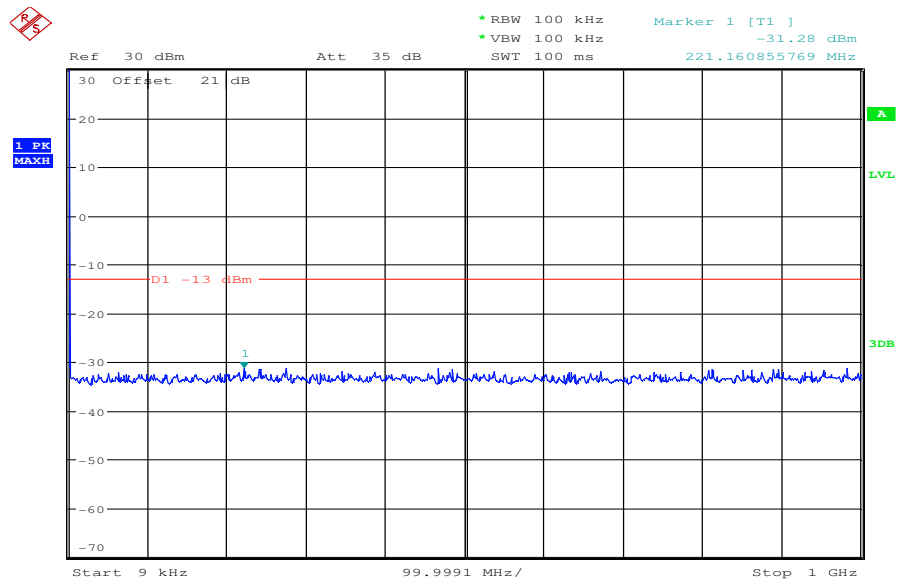
Plot 14: 1 GHz – 10 GHz (2460 MHz)



Plot 15: 10 GHz – 26 GHz (2460 MHz)

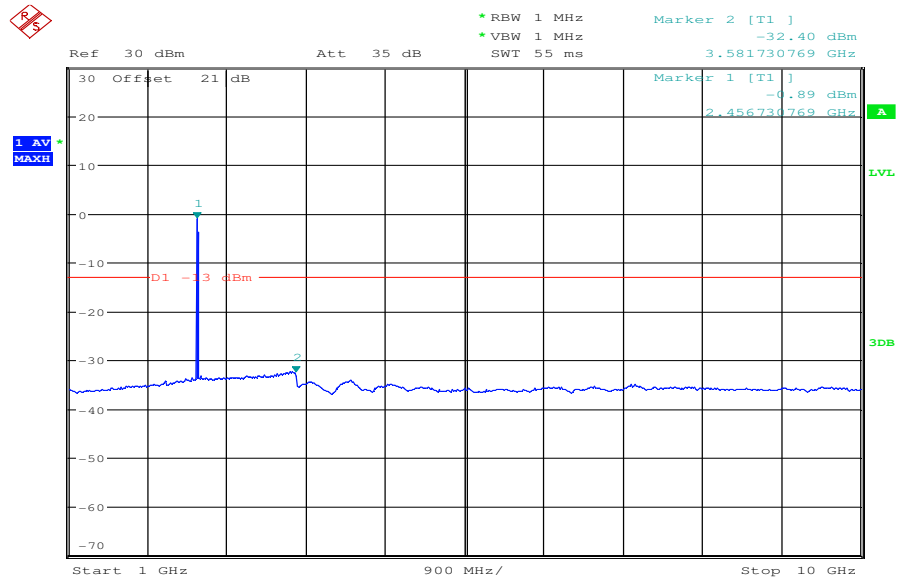


Plot 16: 9 kHz – 1 GHz (2467 MHz)

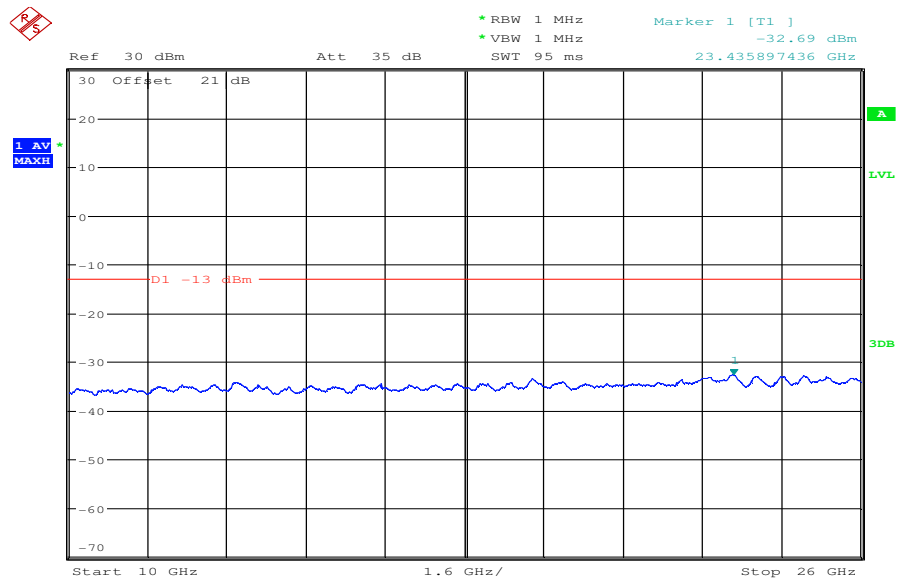


The peak at the beginning of the Plot is the LO from the measuring spectrum Analyzer and not from the EUT.

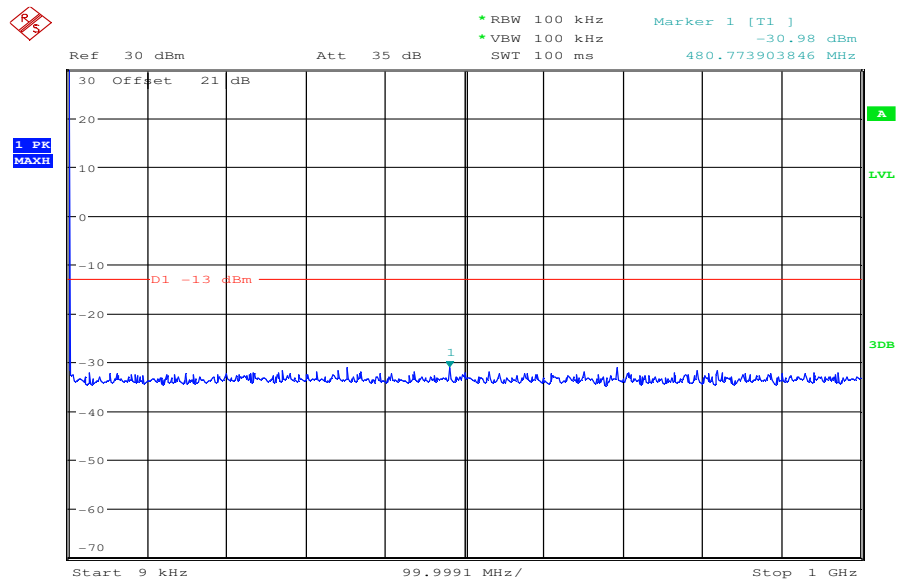
Plot 17: 1 GHz – 10 GHz (2467 MHz)



Plot 18: 10 GHz – 26 GHz (2467 MHz)

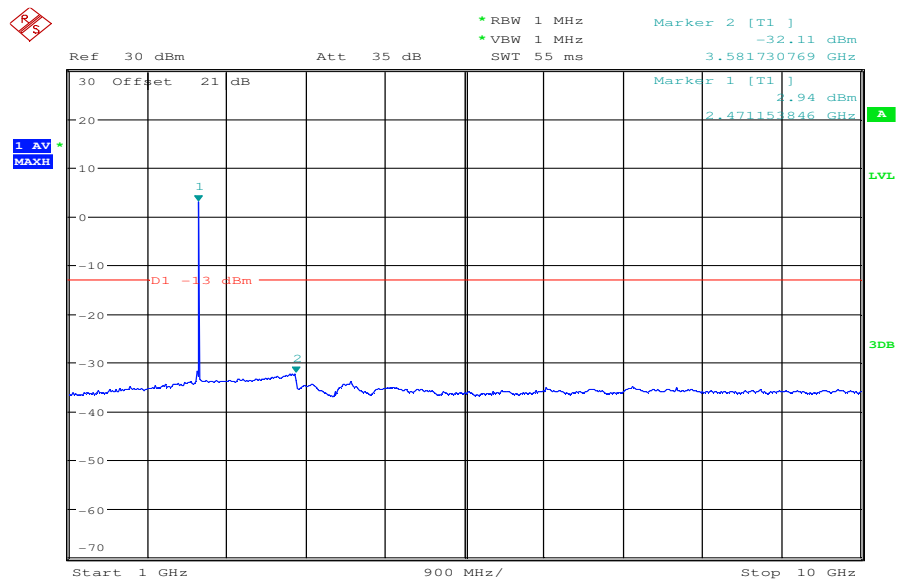


Plot 19: 9 kHz – 1 GHz (2474 MHz)

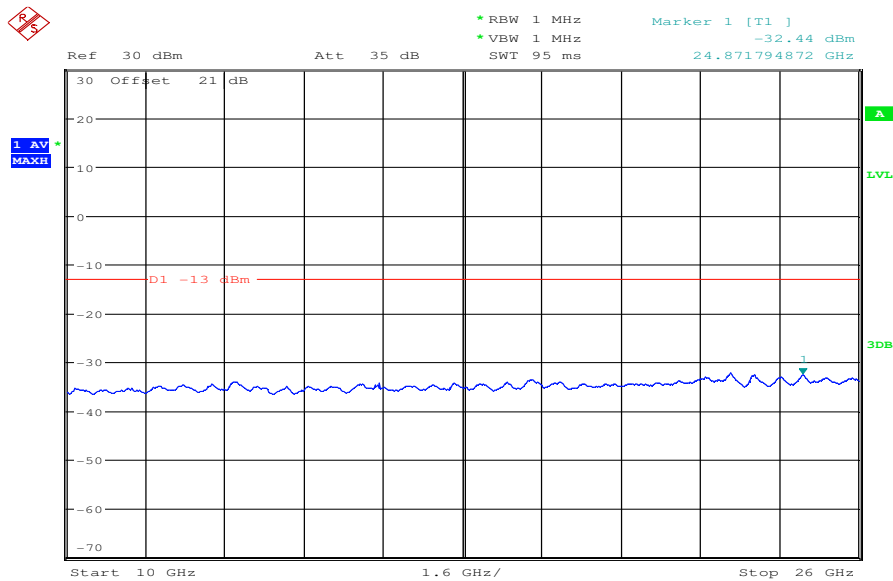


The peak at the beginning of the Plot is the LO from the measuring spectrum Analyzer and not from the EUT.

Plot 20: 1 GHz – 10 GHz (2474 MHz)



Plot 21: 10 GHz – 26 GHz (2474 MHz)



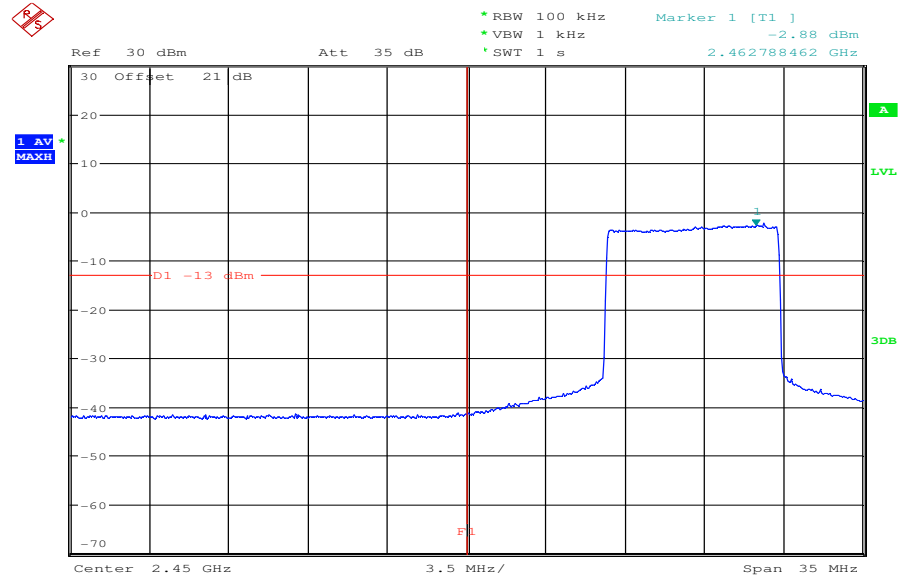
Limits:

CFR Part SUBCLAUSE §74.637(a)(2)(iii)	
Under normal test conditions only	The mean power of emissions shall be attenuated below the mean transmitter power (P_{MEAN}) in accordance with the following schedule: When using transmissions employing digital modulation techniques: In any 4 kHz reference bandwidth (B_{REF}), the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log_{10} (P_{\text{MEAN}}$ in watts) decibels, or 80 decibels, whichever is the lesser attenuation.

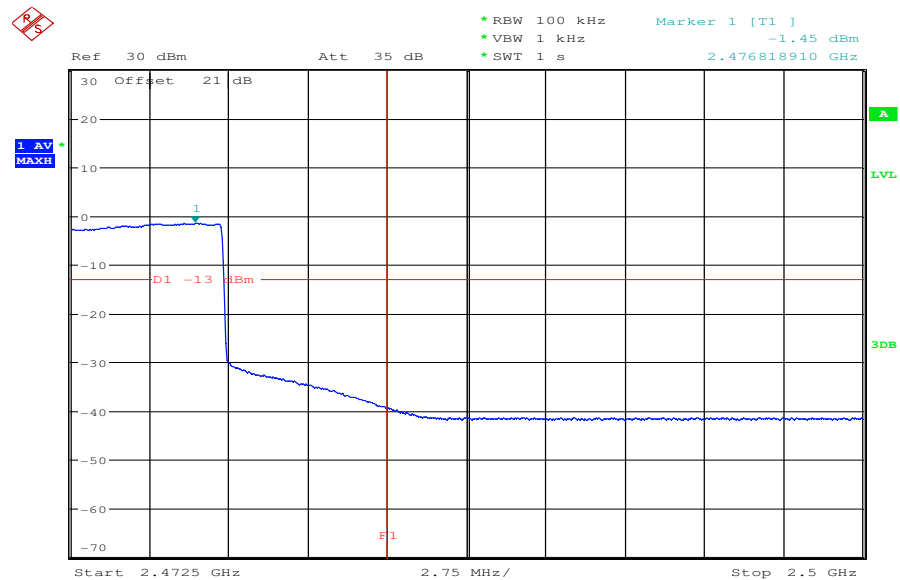
Result: The result of the measurement is passed.

9.6 Band edge compliance (conducted)

Plot 22: Band edge compliance, restricted band low

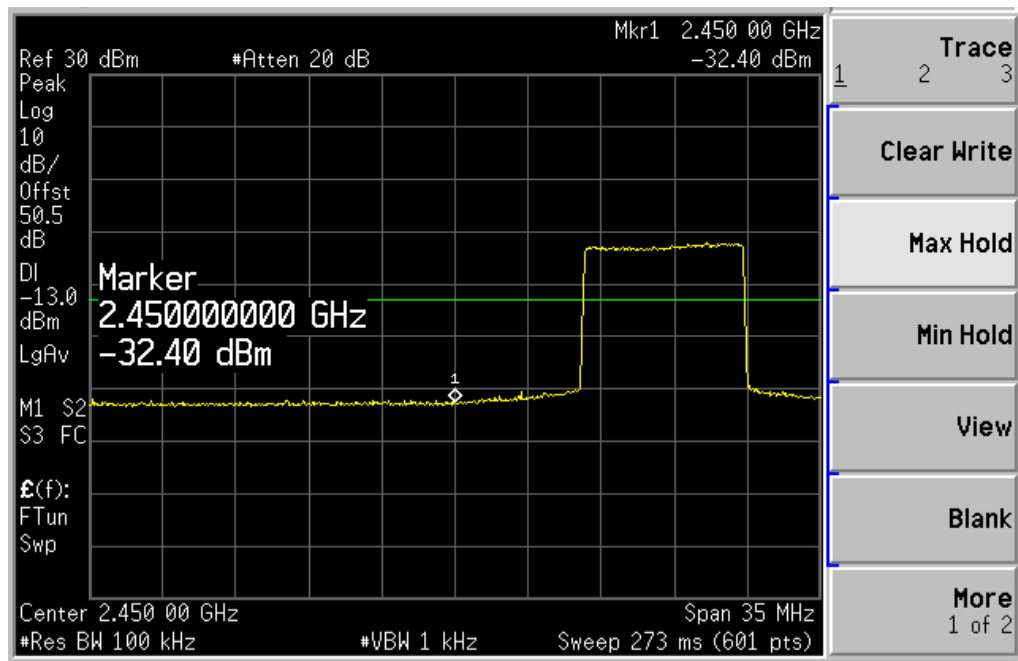


Plot 23: Band edge compliance, restricted band high

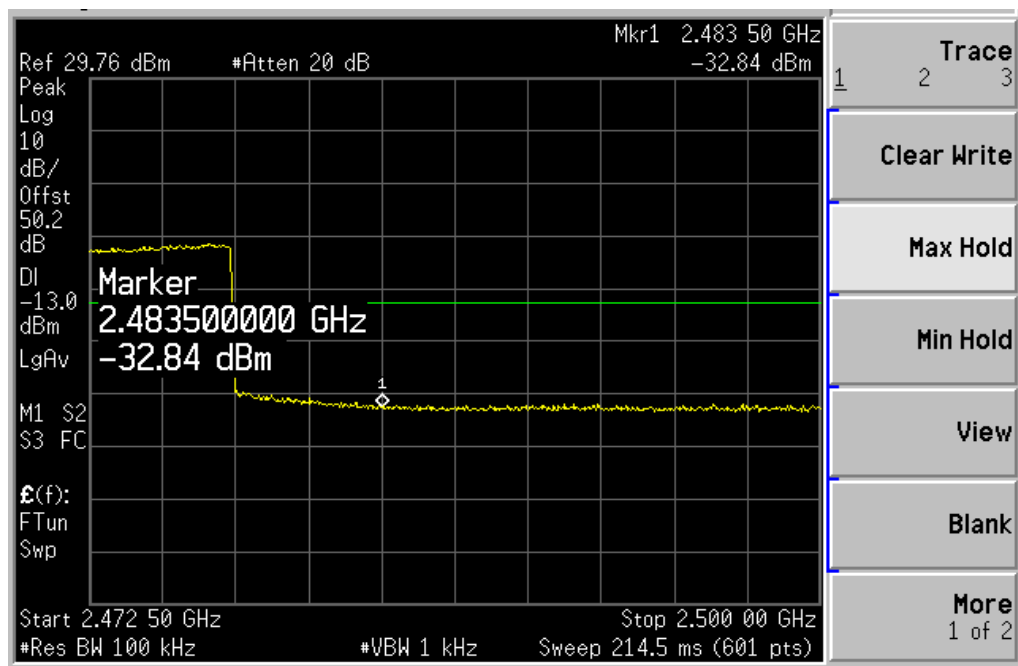


9.7 Band edge compliance (radiated)

Plot 24: Band edge compliance, restricted band low

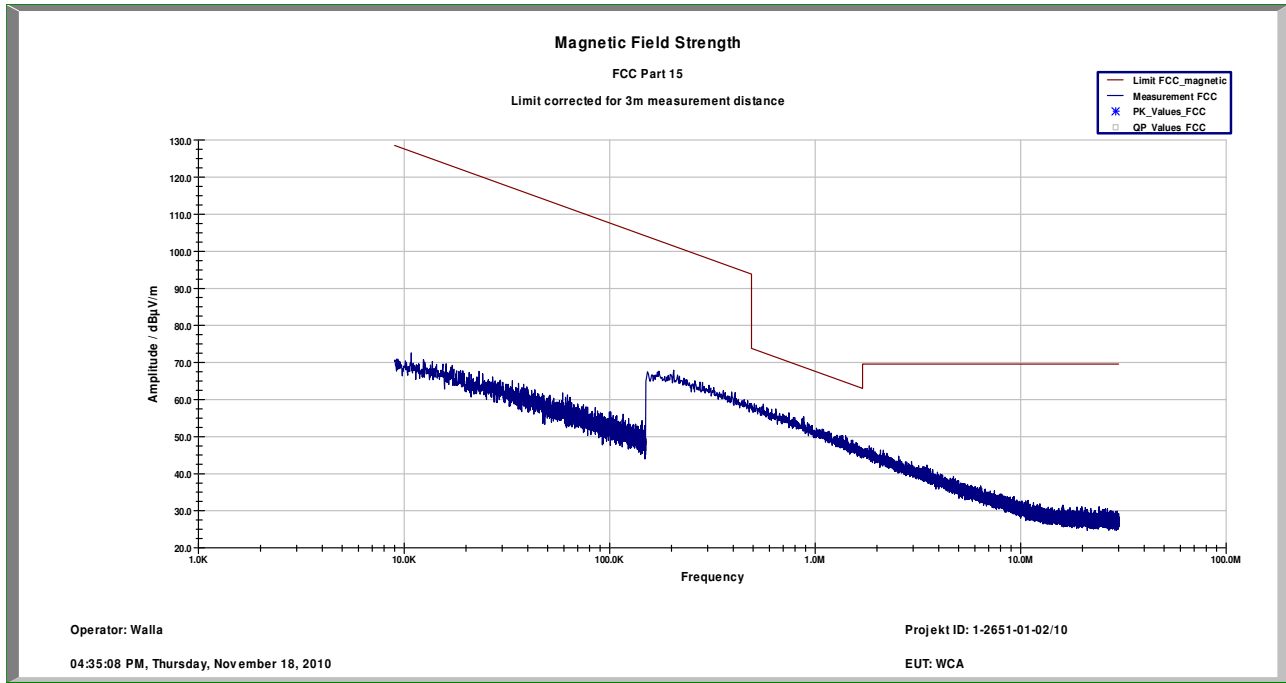


Plot 25: Band edge compliance, restricted band high

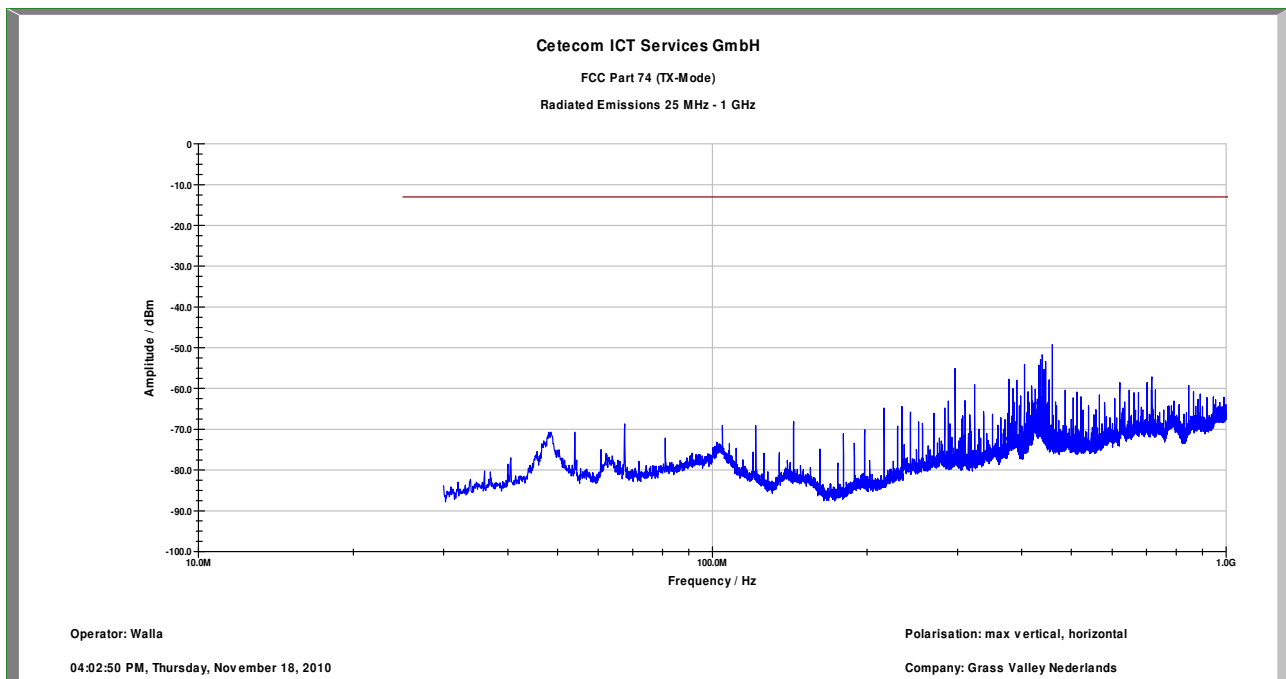


9.8 Spurious emissions (radiated)

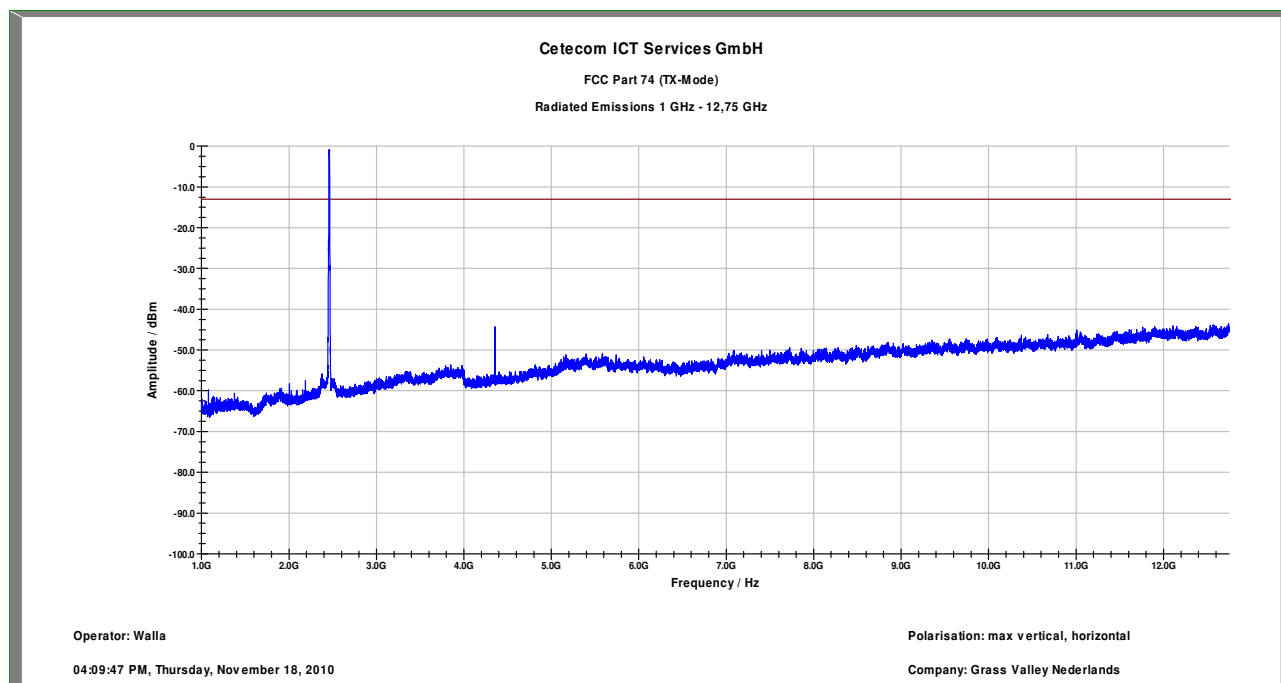
Plot 26: 9 kHz – 30 MHz (valid for all channels)



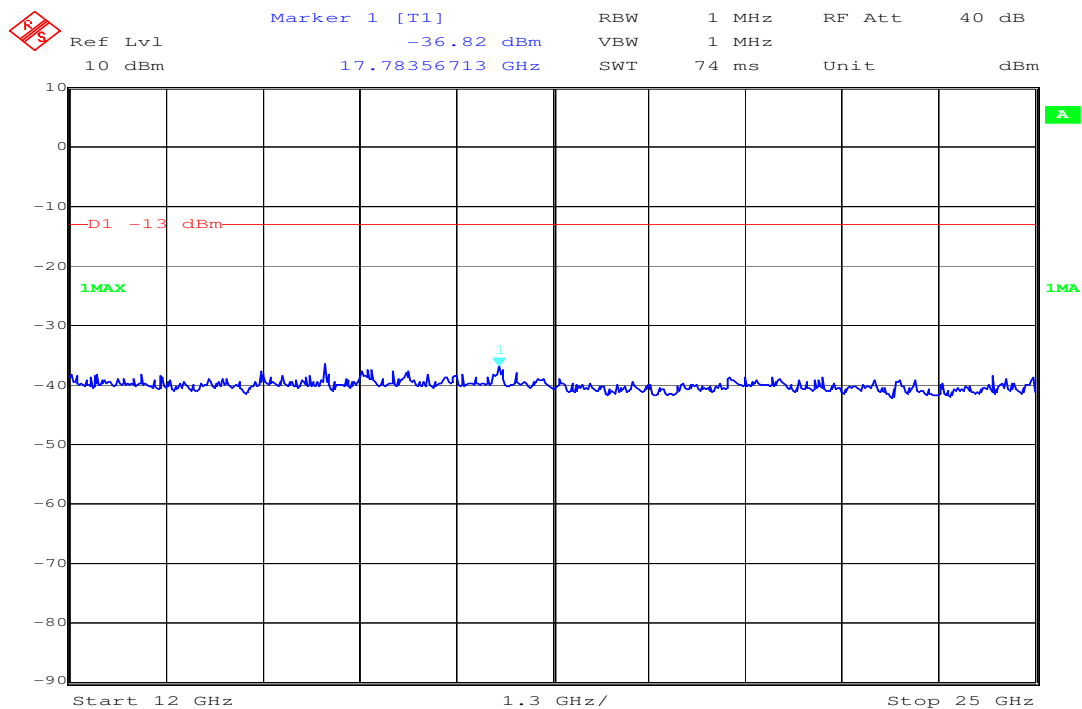
Plot 27: 30 MHz – 1 GHz, 2460 MHz, antenna vertical / horizontal



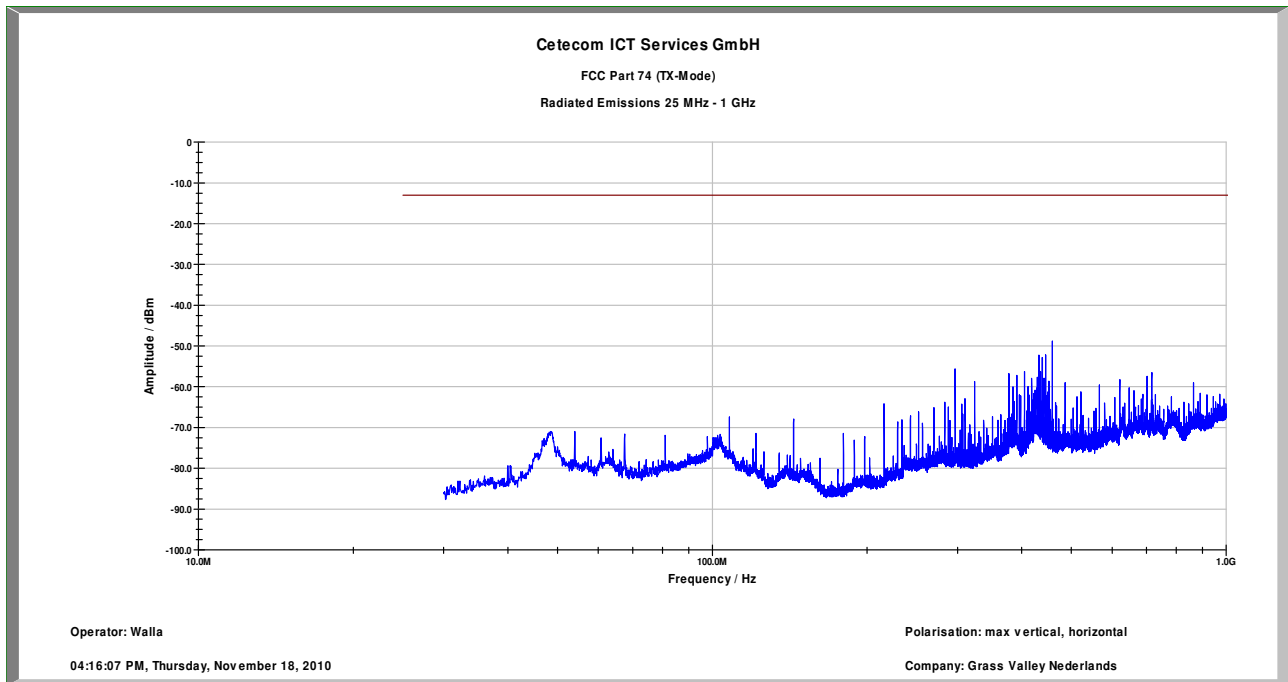
Plot 28: 1 GHz – 12 GHz, 2460 MHz, antenna vertical / horizontal



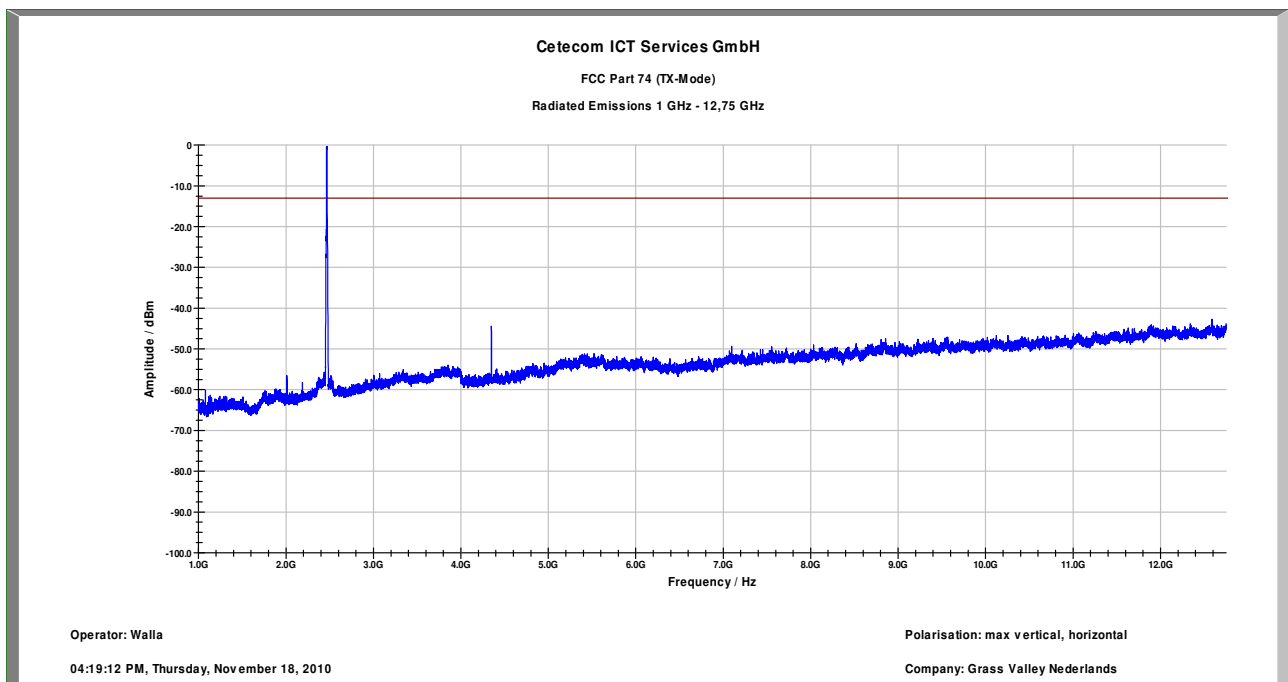
Plot 29: 12 GHz – 25 GHz, antenna vertical / horizontal (valid for all channels)



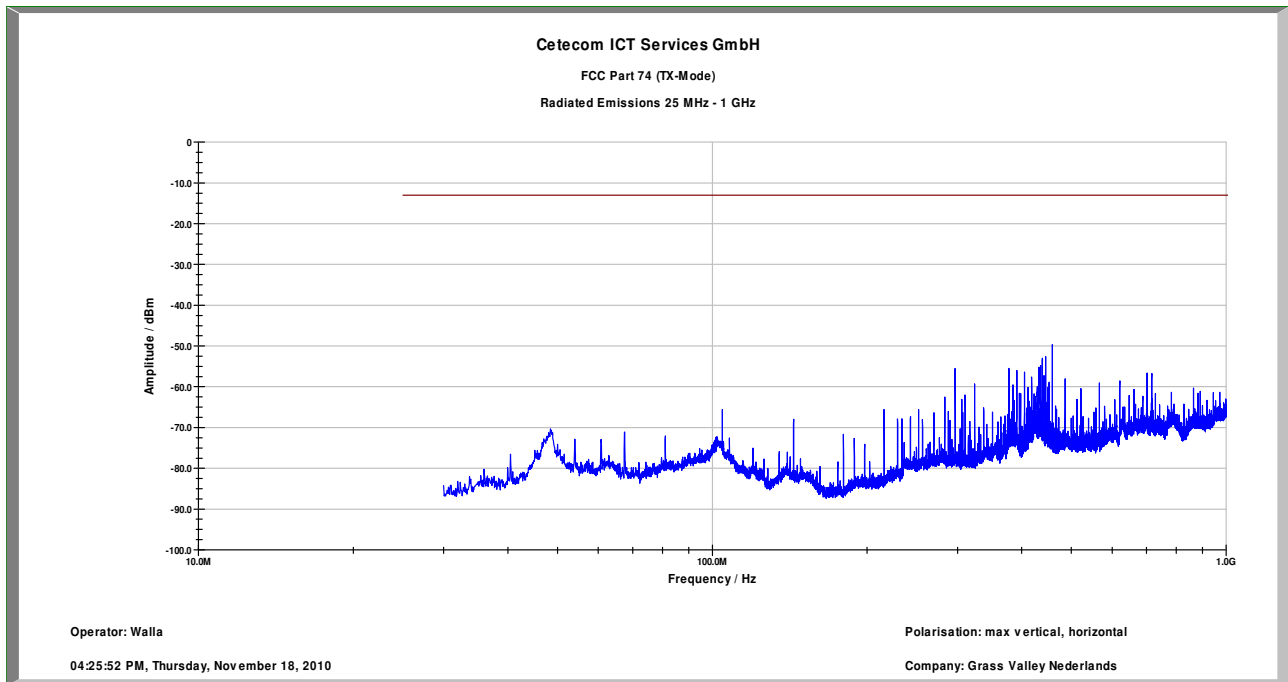
Plot 30: 30 MHz – 1 GHz, 2467 MHz, antenna vertical / horizontal



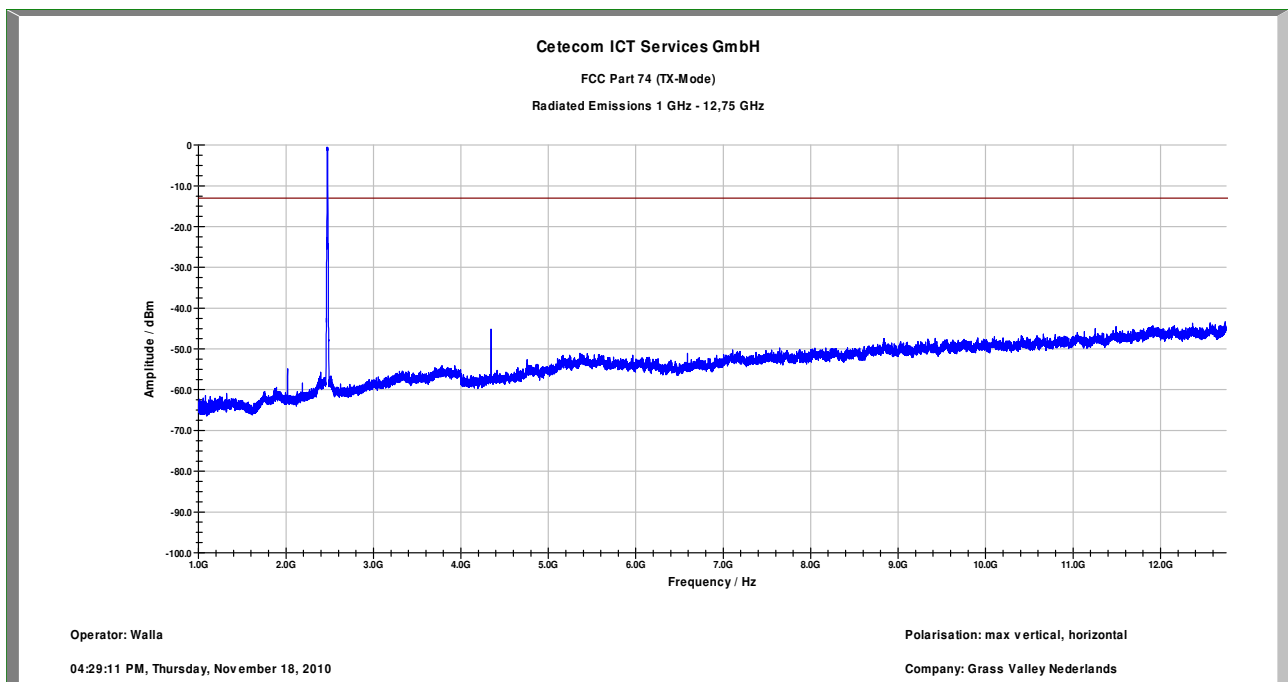
Plot 31: 1 GHz – 12 GHz, 2467 MHz, antenna vertical / horizontal



Plot 32: 30 MHz – 1 GHz, 2474 MHz, antenna vertical / horizontal



Plot 33: 1 GHz – 12 GHz, 2474 MHz, antenna vertical / horizontal



TX Spurious Emissions Radiated [dBm]								
2460 MHz			2467 MHz			2474 MHz		
Frequency [MHz]	Detector	Level [dBm]	Frequency [MHz]	Detector	Level [dBm]	Frequency [MHz]	Detector	Level [dBm]
4332	Peak	-45.52 (v)	4348	Peak	-44.53 (v)	4352	Peak	-44.05 (v)
Measurement uncertainty			± 3 dB					

(v) = measurement antenna vertical

(h) = measurement antenna horizontal

Limits:

CFR Part SUBCLAUSE §74.637(a)(2)(iii)	
Under normal test conditions only	<p>The mean power of emissions shall be attenuated below the mean transmitter power (P_{MEAN}) in accordance with the following schedule:</p> <p>When using transmissions employing digital modulation techniques:</p> <p>In any 4 kHz reference bandwidth (B_{REF}), the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log_{10} (P_{\text{MEAN}}$ in watts) decibels, or 80 decibels, whichever is the lesser attenuation.</p>

Result: The result of the measurement is passed.

9.9 Frequency tolerance

Temperature [°C]	U _{DC} [V]	Carrier frequency [MHz]	Measured frequency [MHz]	Difference [kHz]	Difference [ppm]
-30.0	13.8	2467	2467.003852	3.852	1.6
-20.0	13.8	2467	2467.003745	3.745	1.5
-10.0	13.8	2467	2467.003415	3.415	1.4
0.0	13.8	2467	2467.003015	3.015	1.2
+10.0	11.0	2467	2467.002850	2.850	1.2
+20.0	11.0	2467	2467.002355	2.355	1.0
+20.0	13.8	2467	2467.002285	2.285	0.9
+20.0	17.0	2467	2467.002265	2.265	0.9
+30.0	13.8	2467	2467.002135	2.135	0.9
+40.0	13.8	2467	2467.002105	2.045	0.9
+50.0	13.8	2467	2467.002420	2.420	1.0

Remark:

For measuring the frequency stability it was not possible to switch off the modulation.
Resolution bandwidth was reduced until the carrier was clearly visible on the spectrum analyzer display.

Limits:

CFR Part SUBCLAUSE §74.661

Stations in this service shall maintain the carrier frequency of each authorized transmitter to within the following percentage of the assigned frequency: 2450 to 2483.5 MHz: 0.001% / 10 ppm.

Result: The result of the measurement is passed.

10 Test equipment and ancillaries used for tests

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

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

No.	Labor / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kal. Art	Last Calibration	Next Calibration
1	n. a.	Horn Antenne 1-26.5GHz	3115	EMCO	9005-3440	300002190	ev		
2	n. a.	Horn Antenne 1-26.5GHz	3115	EMCO Elektronik	9709-5290	300000212	ev		
3	n. a.	Ultra Stable Notch Filter	WRCD1887.82/1889.55-5EE		1	300000115	ne		
4	n. a.	Funkstörmesempfänger 20Hz- 26,5GHz	ESU26	R&S	100037	300003555	k	08.01.2010	08.01.2011
5	n. a.	HF-Schaltmatrixgrundgerät	TS-RSP 1144.1500K03	R&S	100300	300003556	ev		
6	n. a.	Signalgenerator 1-20 GHz	SMR20	R&S	101697/020	300003593	k	08.01.2010	08.01.2012
7	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
8	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	k	06.01.2009	06.01.2011
9	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
10	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	08.01.2010	08.01.2012
11	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	01.06.2009	01.06.2011
12	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
13	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
14	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
15	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
16	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
17	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	08.01.2010	08.01.2012
18	n. a.	Isolating Transformer	913501	Erfi		300001205	ne		
19	4	Radiocom. Analyzer	CMTA 54	R&S	894043/010	300001175	NK!	06.06.2007	
20	n. a.	DC Power Supply 0 – 32V	1108-32	Heiden	001802	300001383	Ve	23.06.2010	23.06.2013
21	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04590	300001041	Ve	08.01.2009	08.01.2012
22	n. a.	Temperature Test Chamber	VT 4002	Heraeus Voetsch	521/83761	300002326	Ve	28.05.2009	28.05.2011
23	n. a.	Signal Analyzer 20Hz-26.5GHz-150 to + 30 DBM	FSIQ26	R&S	835111/0004	300002678	Ve	06.01.2009	06.01.2011
24	n. a.	Temperature Test Chamber	T-40/50	CTS GmbH	064023	300003540	vIKI!	04.06.2009	04.06.2011

Agenda: Kind of Calibration

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

Annex A Photographs of the test setup

Photo 1:



Photo 2:



Photo 3:



Photo 4:



Annex B External photographs of the EUT

Photo 5:



Photo 6:



Photo 7:



Photo 8:



Photo 9:



Photo 10:



Photo 11:



Photo 12:



Photo 13:



Photo 14:



Photo 15:



Photo 16:



Annex C Internal photographs of the EUT

Photo 17:

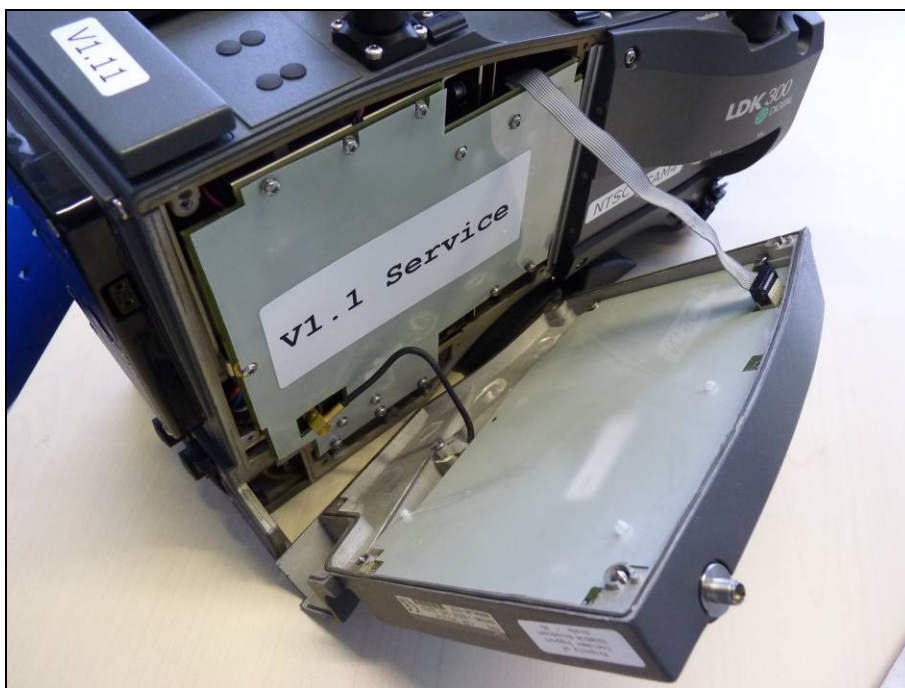


Photo 18:

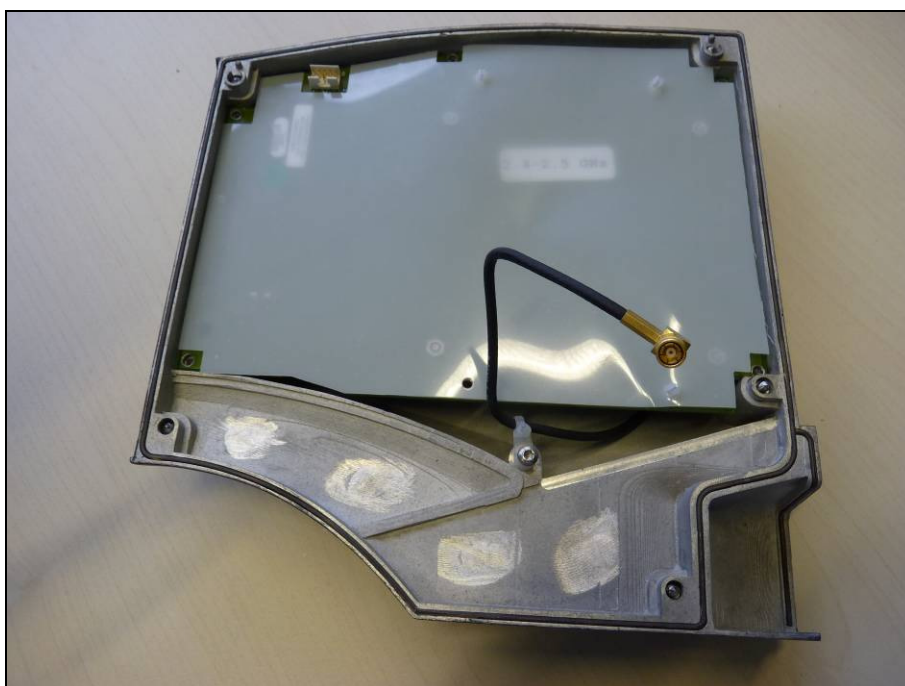


Photo 19:



Photo 20:



Photo 21:

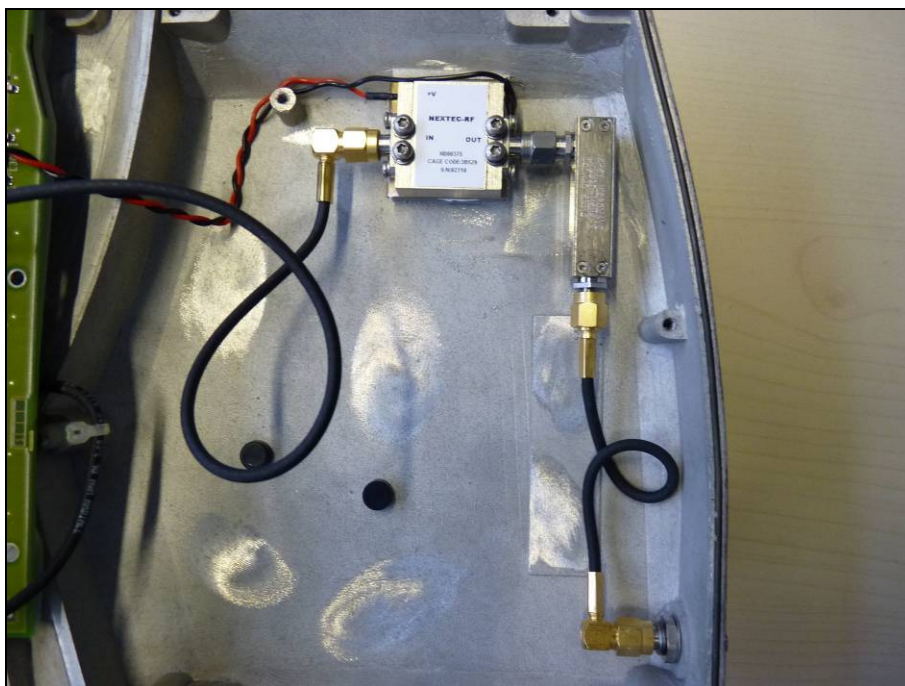


Photo 22:

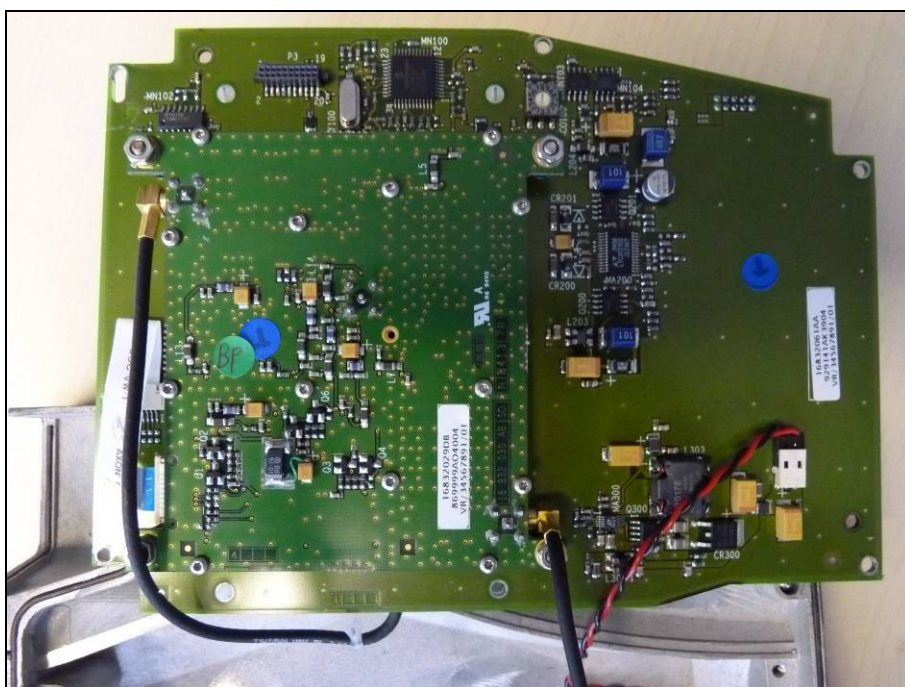


Photo 23:



Photo 24:

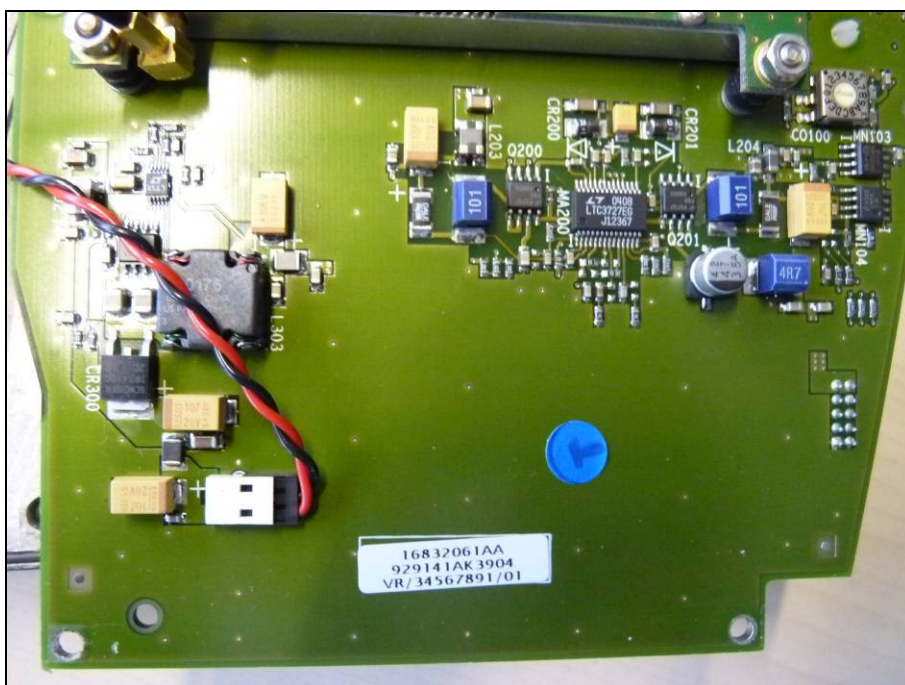
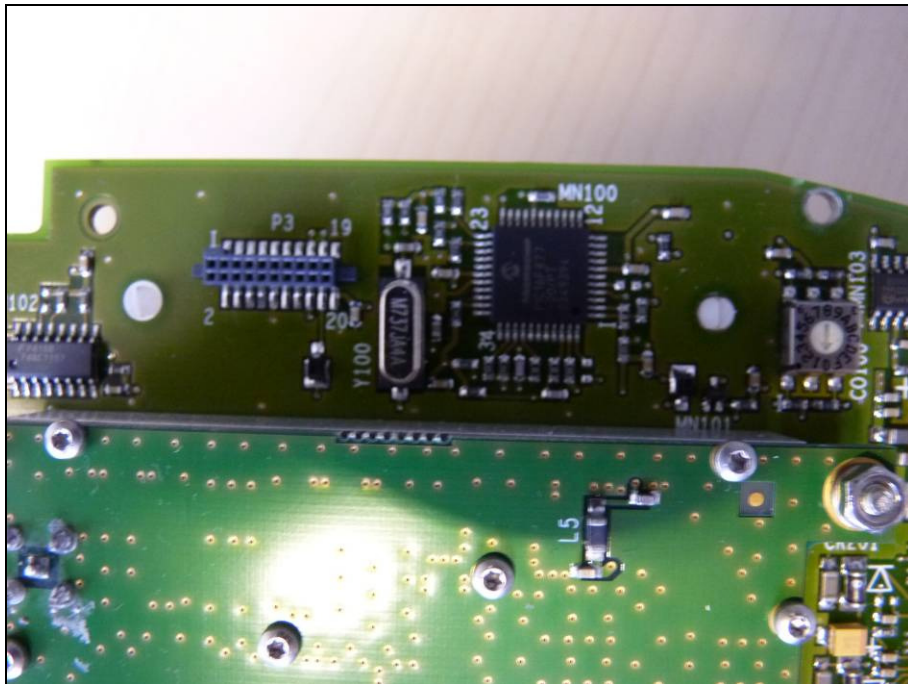


Photo 25:



Annex D Document history

Version	Applied changes	Date of release
1.0	Initial release	2010-12-07

Annex E Further information**Glossary**

DUT	-	Device under Test
EMC	-	Electromagnetic Compatibility
EUT	-	Equipment under Test
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	not applicable
S/N	-	Serial Number
SW	-	Software