

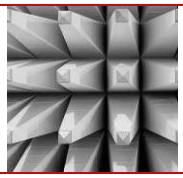

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TEST REPORT

Deutscher Akkreditierungs Rat DAR

Test Report No.: 1-2387-01-03/10-A

Testing Laboratory

CETECOM ICT Services GmbH
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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

Pixavi AS
Dusavikveien 39
4007 Stavanger / Norway
Phone: +47 40201704
Contact: Christian Rokseth
e-mail: christian@pixavi.com
Phone: +1 4434504523

Manufacturer

Pixavi AS
Dusavikveien 39
4007 Stavanger / Norway

Test Standard/s

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

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

Test Item

Kind of test item:	Wireless Video Communication (WLAN/BT)
Model name:	ST 5000, EX 5000, EX 4000
FCC ID:	YML-XSERIES
IC:	9249A-XSERIES
Frequency [MHz]:	2412 MHz – 2462 MHz (2.4 GHz ISM Band)
Power supply:	115V AC by power supply
Temperature range:	-20 °C to +50 °C

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

Test performed:

cn=Jakob Reschke, o=CETECOM ICT Services GmbH, ou=RES-100323, email=Jakob.Reschke@ict.cetecom.de, c=DE
2010.10.04 09:39:31 +02'00'

For
Daniel Muyunga

Test Report authorised:

cn=Stefan Boes, o=Cetecom ICT Services GmbH, ou=BOE-100817, email=Stefan.Boes@cetecom.com, c=DE
2010.10.05 11:03:09 +02'00'

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.
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2.2 Application details

Date of receipt of order:	2010-07-16
Date of receipt of test item:	2010-08-11
Start of test:	2010-08-11
End of test:	2010-09-14
Person(s) present during the test:	-/-

3 Test standard/s

Test Standard	Version	Test Standard Description
47 CFR Part 15	2009-10	Title 47 of the Code of Federal Regulations; Chapter I-Federal Communications Commission subchapter A - general, Part 15-Radio frequency devices
RSS - 210 Issue 7	2007-06	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

4 Test environment

Temperature:	T_{nom}	+20 °C	during room temperature tests
	T_{max}	+50 °C	during high temperature test
	T_{min}	-20 °C	during low temperature test
Relative humidity content:		53 %	
Air pressure:		not relevant for this kind of testing	
Power supply:	V_{nom}	115 V	AC by power supply
	V_{max}	-/- V	
	V_{min}	-/- V	

5 Test laboratories sub-contracted

None

6 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	CFR Part 15 RSS 210, Issue 7, Annex 8	Passed	2010-10-04	-/-

Test Specification Clause	Test Case	Temperature Conditions	Power Source Voltages	Mode	Pass	Fail	NA	NP	Results (max.)
§15.247(b)(4) RSS 210 / A8.4(2)	Antenna Gain	Nominal	Nominal	DSSS	☒	☐	☐	☐	complies
§15.247(e) RSS 210 / A8.2(b)	Power spectral density	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(a)(2) RSS 210 / A8.2(a)	Spectrum bandwidth of a FHSS system 6dB bandwidth	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(a)(2) RSS 210 / A8.2(a)	Spectrum bandwidth of a FHSS system 20dB bandwidth	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(b)(3) RSS-210 / A8.4(4)	Maximum output power	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	Band edge compliance conducted	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.205 RSS-210 / A8.5	Band edge compliance radiated	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions conducted	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions radiated	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.109 RSS-Gen.	RX spurious emissions radiated	Nominal	Nominal	-/-	☒	☐	☐	☐	complies
§15.209(a) RSS-Gen	TX spurious emissions radiated < 30 MHz	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.107(a)	Conducted emissions < 30 MHz	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies

Note: NA = Not Applicable; NP = Not Performed

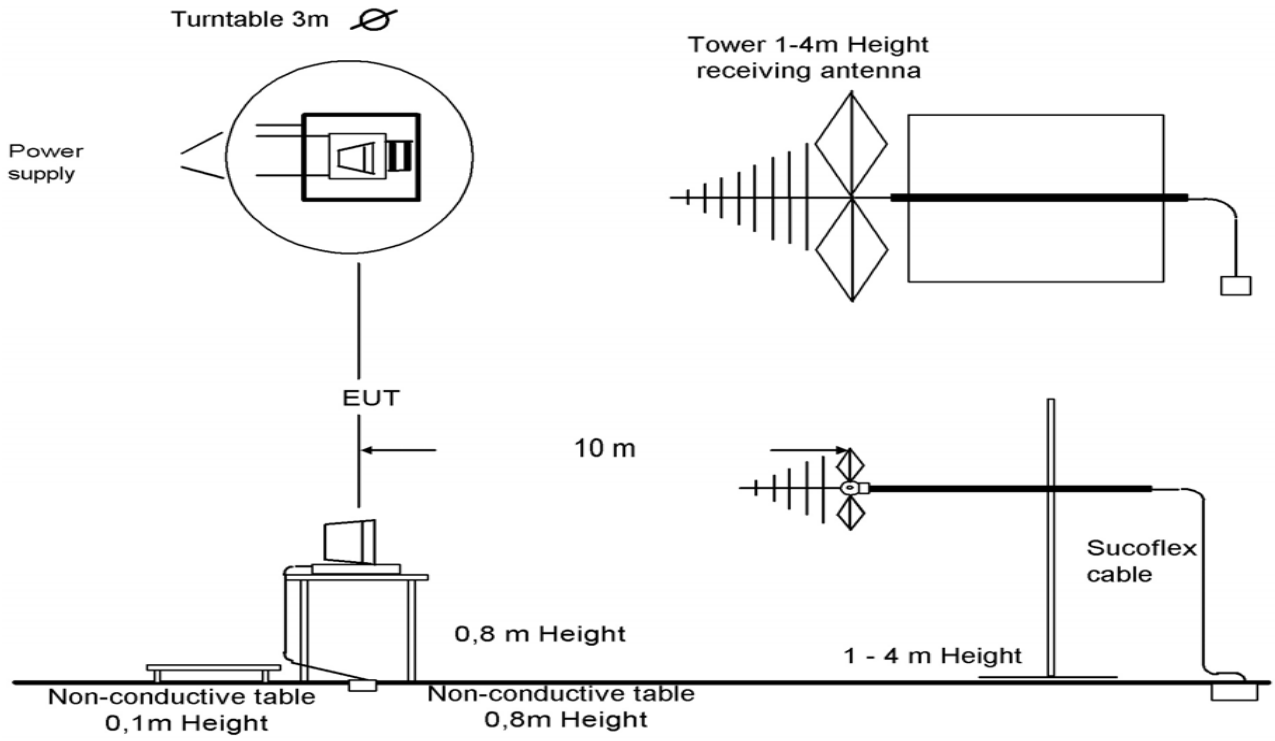
7 RF measurement testing

7.1 Description of test setup

7.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2009 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2009 clause 4.2.
Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



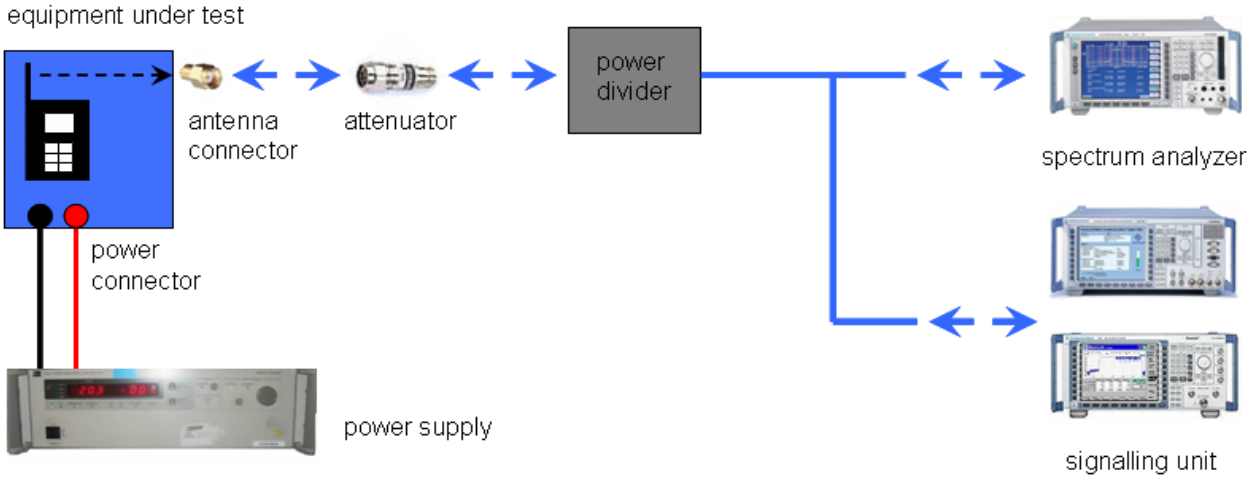
Picture 1: Diagram radiated measurements

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

The EUT is powered by an external power supply with nominal voltage. The signalling is performed from outside the chamber with a signalling unit (CMU200 or other) by air link using signalling antenna.

7.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/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.



Picture 2: Diagram conducted measurements

7.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

Test mode:

☒ No test mode available.
Iperf was used to ping another device with the largest support packet size

☐ Special software is used.
EUT is transmitting pseudo random data by itself

7.3 Test item

Kind of test item	:	Wireless Video Communication (WLAN/BT)
Type identification	:	ST 5000, EX 5000, EX 4000
S/N serial number	:	VW-09-1405070
HW hardware status	:	Not specified
SW software status	:	XCASTER_0_9_1_36_TEST
Frequency Band [MHz]	:	2412 MHz – 2462 MHz (2.4 GHz ISM Band)
Type of Modulation	:	DSSS & OFDM - BPSK, QPSK, 16 QAM, 64 QAM
Number of channels	:	11
Antenna	:	External omnidirectional “rubber-duck” antenna, please see photo 12 in annex B
Power Supply	:	115 V AC by power supply
Temperature Range	:	-20 °C to +50 °C

7.4 RSP100 test report cover sheet / performance test data

Test Report Number	:	1-2387-01-03/10-A
Equipment Model Number	:	ST 5000, EX 5000, EX 4000
Certification Number	:	9249A-XSERIES
Manufacturer (complete Address)	:	Pixavi AS Dusavikveien 39 4007 Stavanger / Norway
Tested to radio standards specification no.	:	RSS 210, Issue 7, Annex 8
Open Area Test Site IC No.	:	IC 3462C-1
Frequency Range	:	2400 – 2483.5 MHz-band (2412 – 2462 MHz)
RF-power [W] (max.)	:	cond.: 8.01 mW (DSSS) 16.44 mW (OFDM) EIRP: 9.81 mW (DSSS) 23.93 mW (OFDM)
Occupied bandwidth (99%-BW) [kHz]	:	DSSS: 15.67 MHz OFDM: 18.22 MHz
Type of modulation	:	DSSS & OFDM - BPSK, QPSK, 16 QAM, 64 QAM
Emission Designator (TRC-43)	:	15M7G1D (DSSS) 18M2G7D (OFDM)
Antenna Information	:	External omnidirectional “rubber-duck” antenna, please see photo 12 in annex B
Transmitter Spurious [dBµV/m @ 10m]: (worst case)		39.2 dBµV/m @ 244.6 MHz
Receiver Spurious [dBµV/m @ 10m]: (worst case)		38.2 dBµV/m @ 244.6 MHz

ATTESTATION:
DECLARATION OF COMPLIANCE:

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

Laboratory Manager:

2010-10-04	Daniel Muyunga	
Date	Name	Signature

8 Measurement results

8.1 Maximum output power (conducted)

Description:

Measurement of the maximum output power conducted. This measurement is performed only at the middle channel in both modes and all data rates to determine the data rate per mode which results in the highest output power. This mode will be selected for all further measurements.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	20 MHz
Video bandwidth:	30 MHz
Span:	50 MHz
Trace-Mode:	Max Hold

Result:

DSSS	Maximum Output Power Conducted [dBm]			
Data Rate [MBit/s]	1	2	5.5	11
Ch 6 - 2437 MHz	8.11	7.57	7.30	**9.04**
Measurement uncertainty	± 0.5 dB			

OFDM	Maximum Output Power Conducted [dBm]									
Data Rate [MBit/s]	6	9	12	18	22	24	36	48 (58)	54	72
Ch 6 - 2437 MHz	**12.14**	10.91	10.72	10.62	10.29	11.56	11.53	11.39	11.29	8.52
Measurement uncertainty	± 0.5 dB									

Result: **Selected data rate for all measurements:** **DSSS: 11 MBit/s**
OFDM: 6 MBit/s

8.2 Antenna gain

Measurement:

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal WLAN devices, the DSSS mode is used.

Measurement parameters:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	30 MHz
Resolution bandwidth:	50 MHz
Span:	30 MHz
Trace-Mode:	Max hold

Limits:

FCC	IC
CFR Part 15.247 (b)(4)	RSS 210, Issue 7, A 8.4(2)
Antenna Gain	
6 dBi	

Results:

T_{nom}	V_{nom}	lowest channel 2412 MHz	middle channel 2437 MHz	highest channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		8.98	9.04	7.58
Radiated power [dBm] Measured with DSSS modulation		9.92	9.57	9.47
Gain [dBi] Calculated		0.94	0.53	1.89

Result: **The result of the measurement is passed.**

8.3 Power spectral density

Description:

Measurement of the power spectral density of a digital modulated system. The measurement is repeated for both modulations at the lowest, middle and highest channel.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	500 s
Video bandwidth:	10 kHz
Resolution bandwidth:	3 kHz
Span:	150 kHz
Trace-Mode:	Max Hold

Limits:

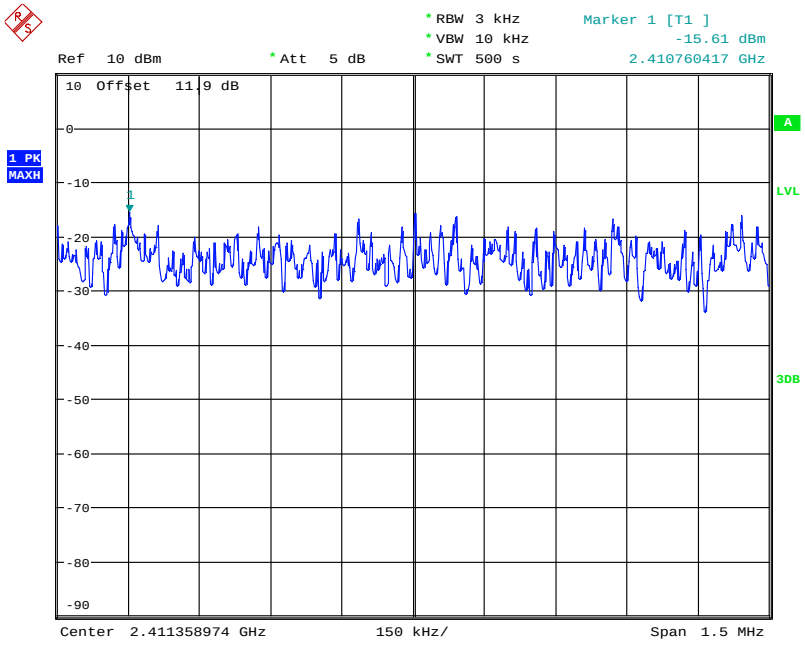
FCC	IC
CFR Part 15.247 (e)	RSS 210, Issue 7, A 8.2(b)
Power Spectral Density	
The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0-second duration.	

Result:

Modulation	Power Spectral density [dBm/3kHz]		
Frequency	2412 MHz	2437 MHz	2462 MHz
DSSS	-15.61	-15.22	-16.07
OFDM	-21.89	-21.14	-23.25
Measurement uncertainty	± 0.5 dB		

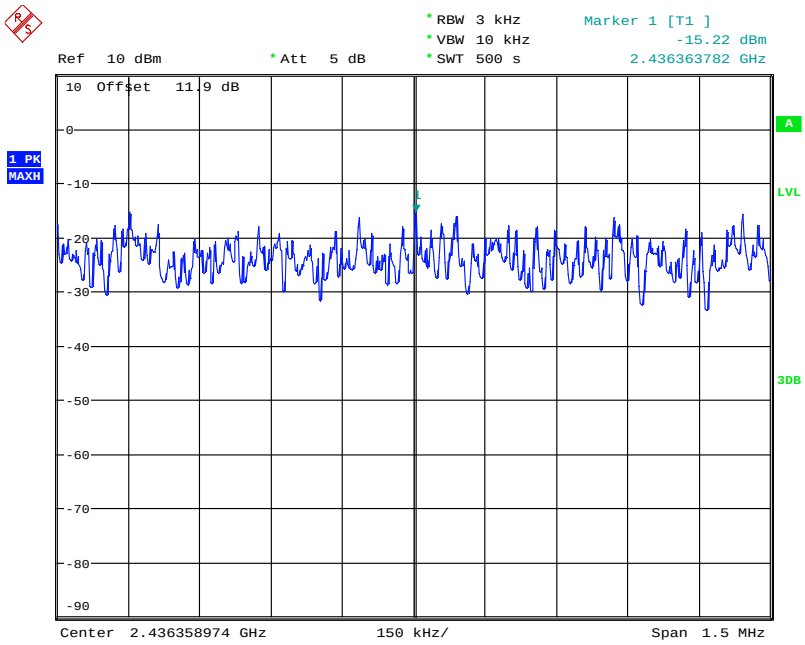
Result: **The result of the measurement is passed.**

Plot 1: Channel 1 (DSSS)



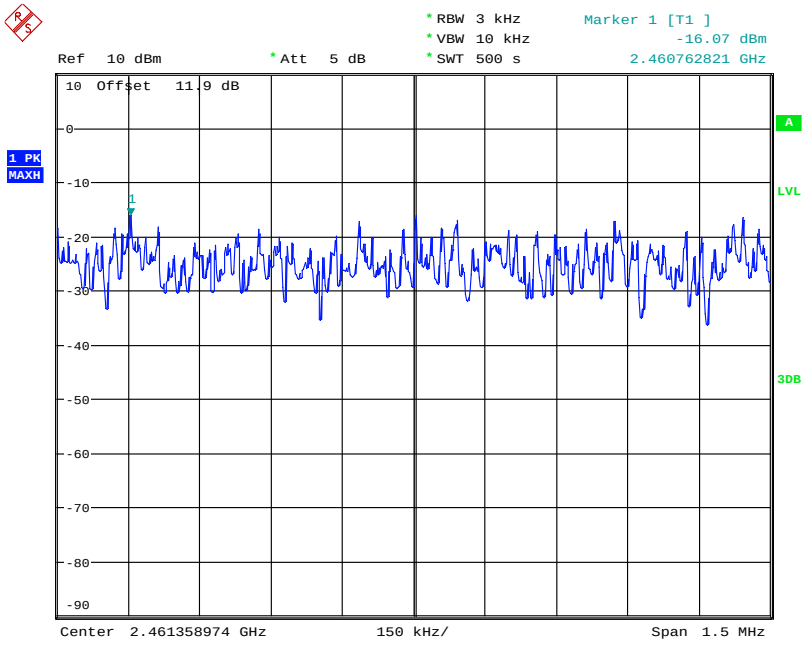
Date: 9.SEP.2010 18:07:18

Plot 2: Channel 6 (DSSS)



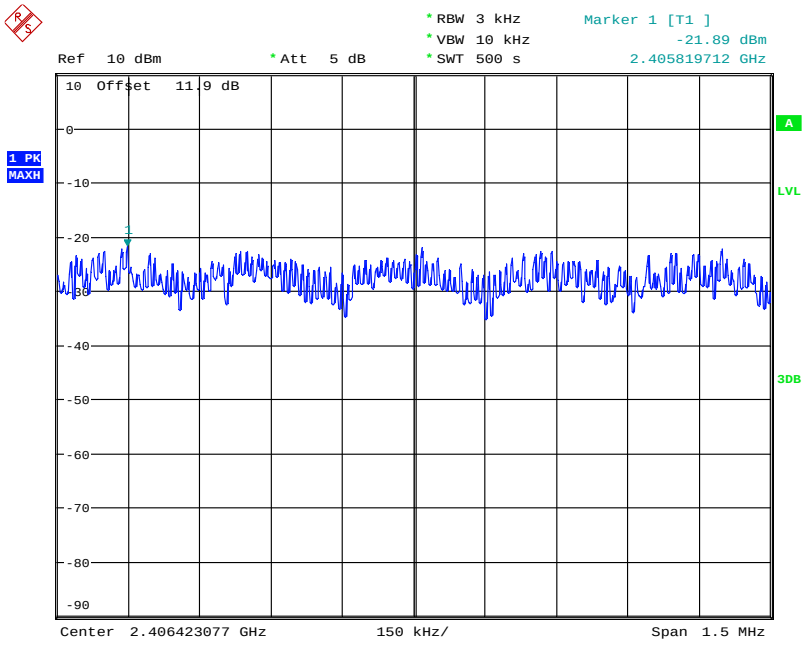
Date: 9.SEP.2010 17:56:30

Plot 3: Channel 11 (DSSS)



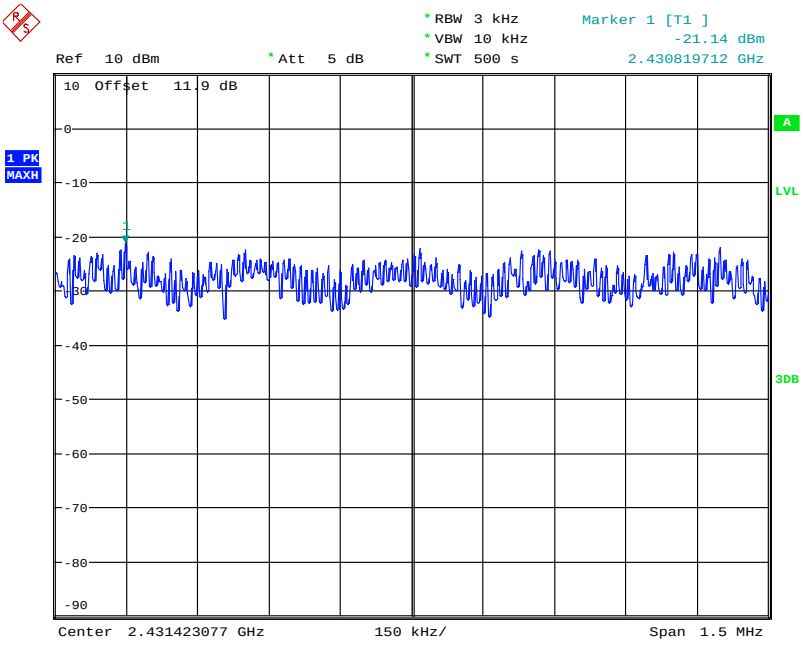
Date: 9.SEP.2010 17:47:07

Plot 4: Channel 1 (OFDM)



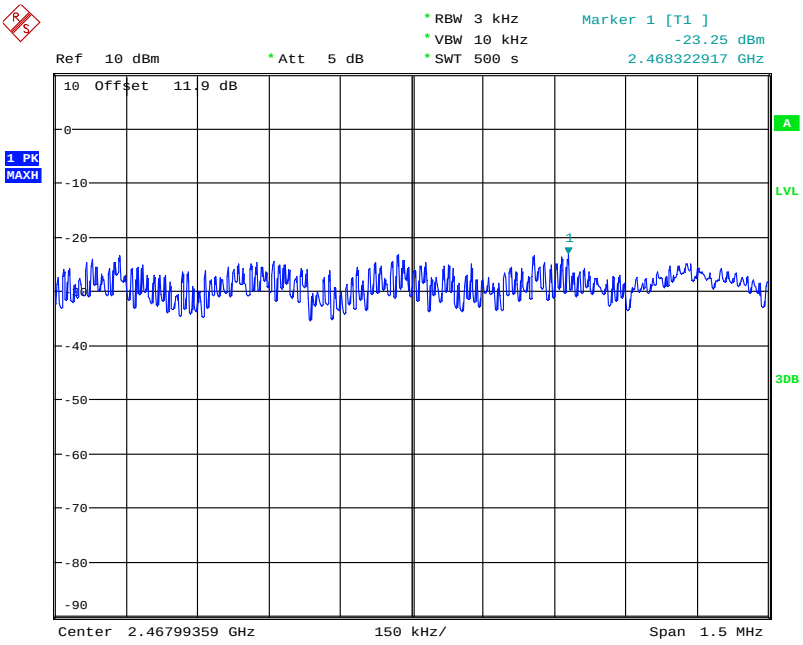
Date: 9.SEP.2010 17:16:49

Plot 5: Channel 6 (OFDM)



Date: 9.SEP.2010 17:26:43

Plot 6: Channel 11 (OFDM)



Date: 9.SEP.2010 17:37:29

8.4 Spectrum bandwidth of a FHSS system – 6 dB bandwidth

Description:

Measurement of the 6 dB bandwidth of the modulated signal.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	100 kHz
Resolution bandwidth:	100 kHz
Span:	30 MHz
Trace-Mode:	Max Hold

Limits:

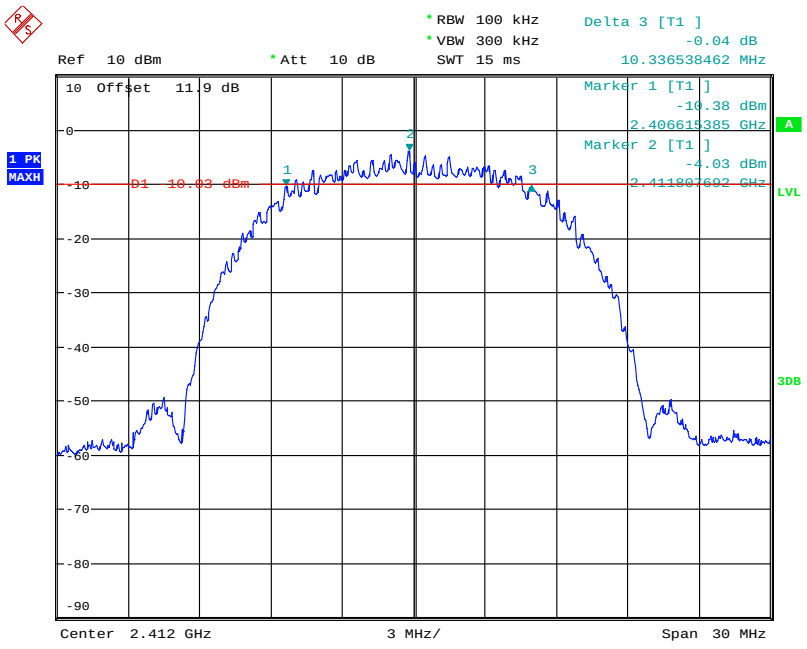
FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 7, A 8.2(a)
Spectrum Bandwidth of a FHSS System – 6 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

Result:

Modulation	6 dB BANDWIDTH [MHz]		
Frequency	2412 MHz	2437 MHz	2462 MHz
DSSS	10.33	10.33	10.38
OFDM	16.58	16.58	16.59
Measurement uncertainty	± 100 kHz		

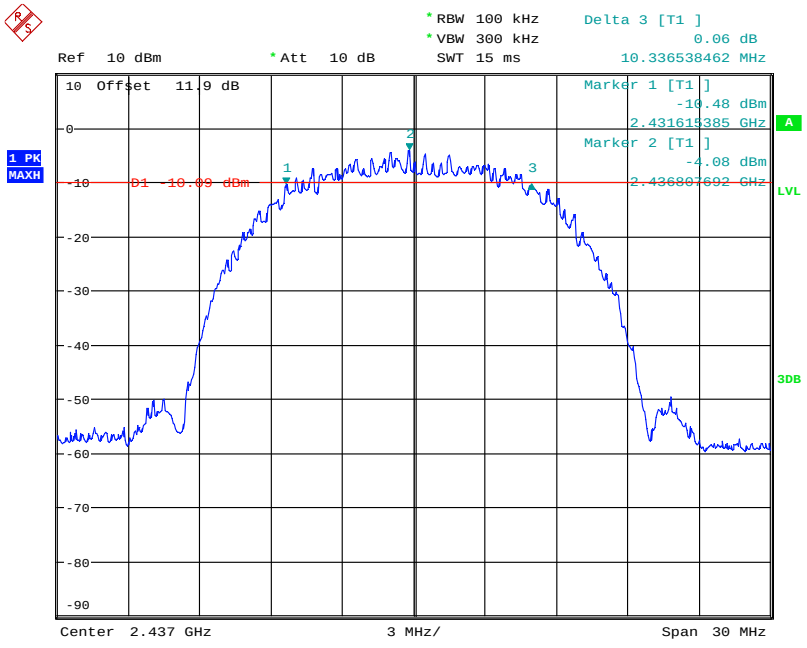
Result: **The result of the measurement is passed.**

Plot 1: Channel 1 (DSSS)



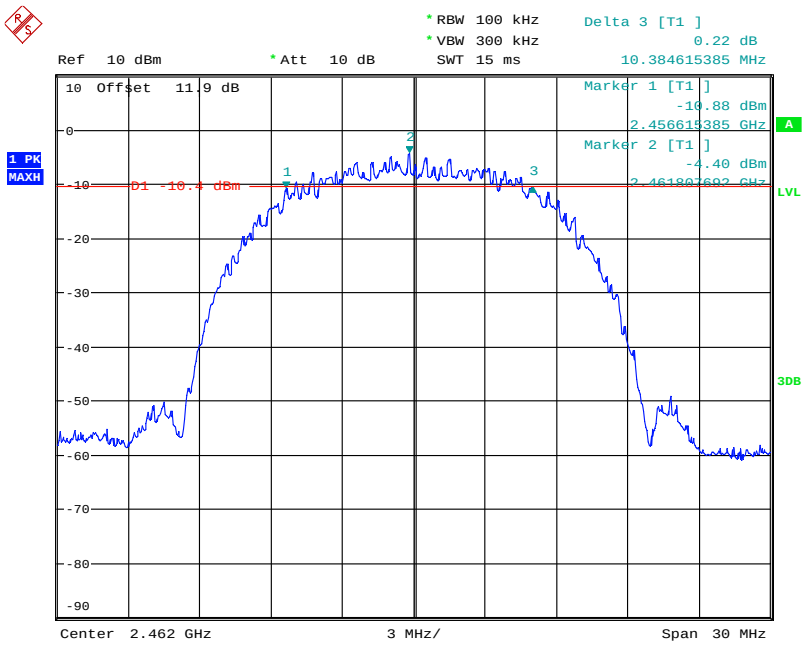
Date: 9.SEP.2010 14:06:41

Plot 2: Channel 6 (DSSS)



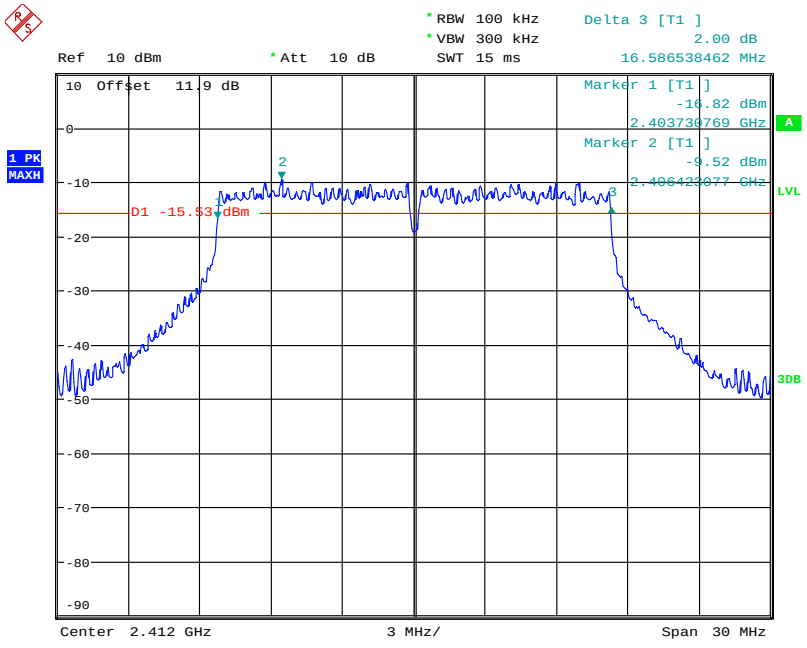
Date: 9.SEP.2010 14:12:07

Plot 3: Channel 11 (DSSS)



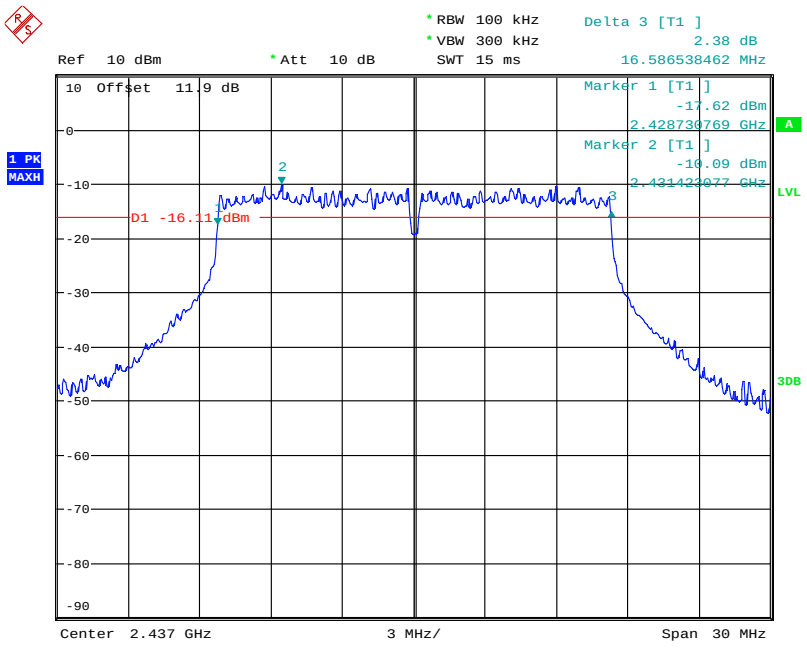
Date: 9.SEP.2010 14:14:56

Plot 4: Channel 1 (OFDM)



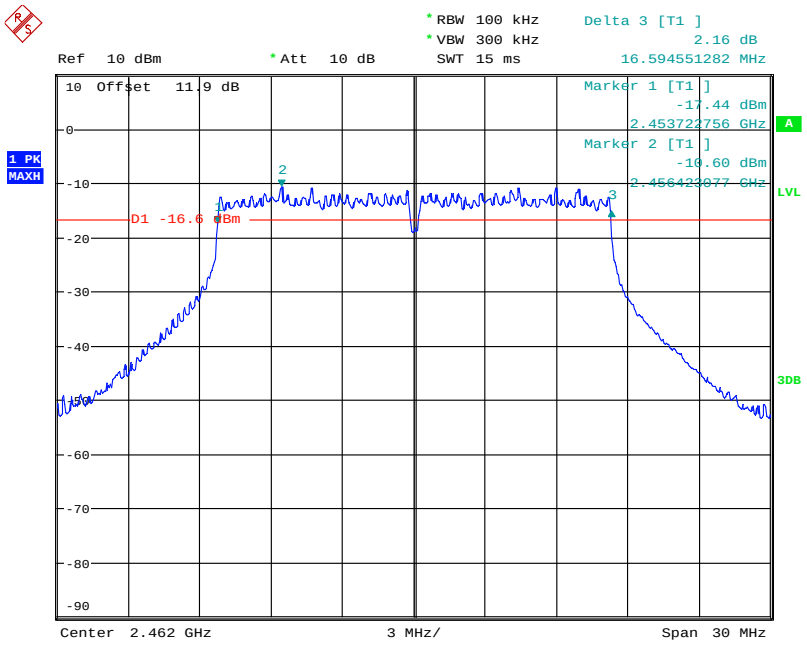
Date: 9.SEP.2010 15:04:42

Plot 5: Channel 6 (OFDM)



Date: 9.SEP.2010 15:01:34

Plot 6: Channel 11 (OFDM)



Date: 9.SEP.2010 14:59:28

8.5 Spectrum bandwidth of a FHSS system – 20 dB bandwidth

Description:

Measurement of the 20 dB bandwidth of the modulated signal.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	100 kHz
Resolution bandwidth:	100 kHz
Span:	30 MHz
Trace-Mode:	Max Hold

Limits:

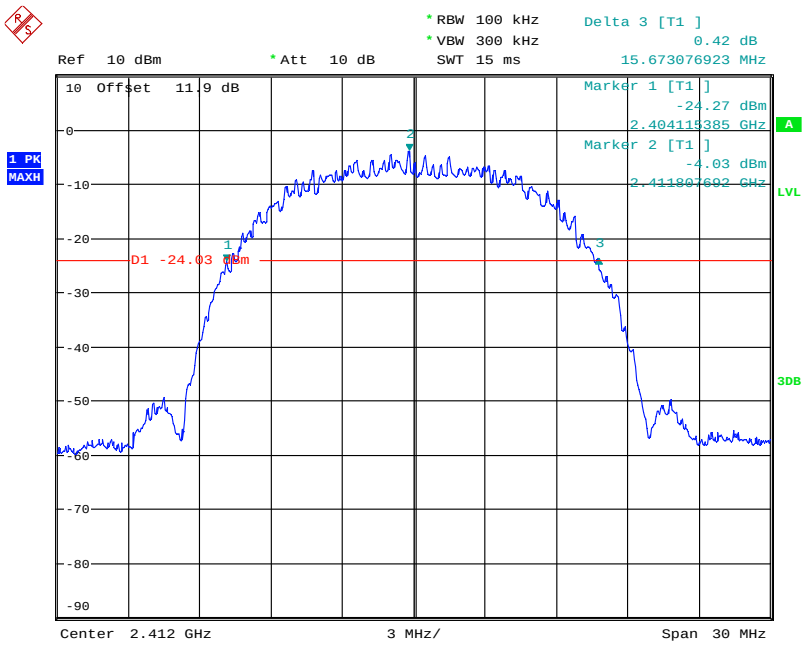
FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 7, A 8.2(a)
Spectrum Bandwidth of a FHSS System – 20 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

Result:

Modulation	20 dB BANDWIDTH [MHz]		
Frequency	2412 MHz	2437 MHz	2462 MHz
DSSS	15.67	15.67	15.57
OFDM	18.22	18.02	18.18
Measurement uncertainty	± 100 kHz		

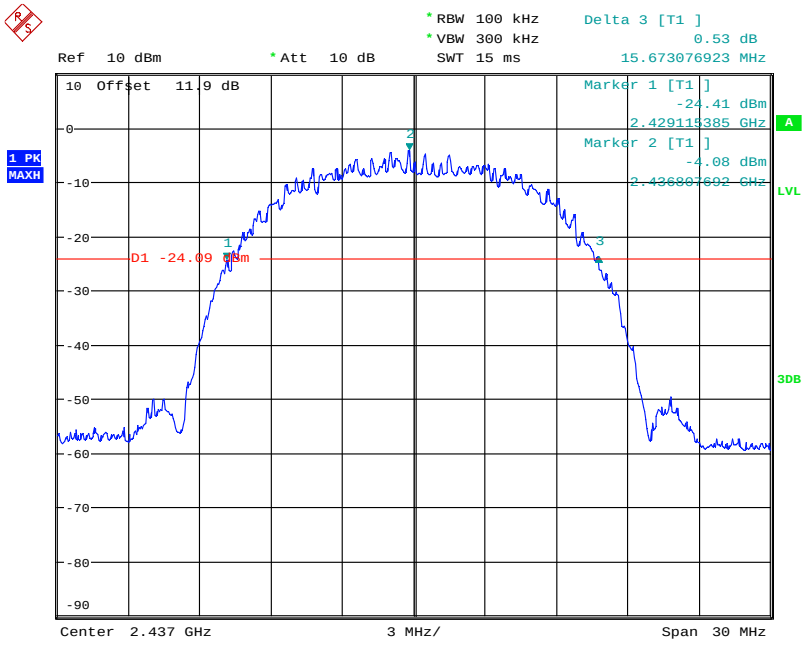
Result: **The result of the measurement is passed.**

Plot 1: Channel 1 (DSSS)



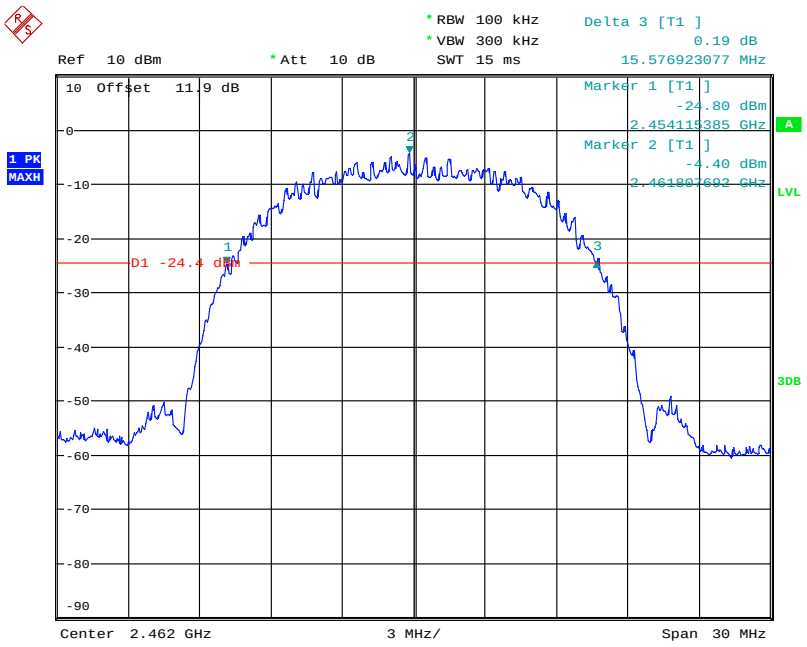
Date: 9.SEP.2010 14:07:59

Plot 2: Channel 6 (DSSS)



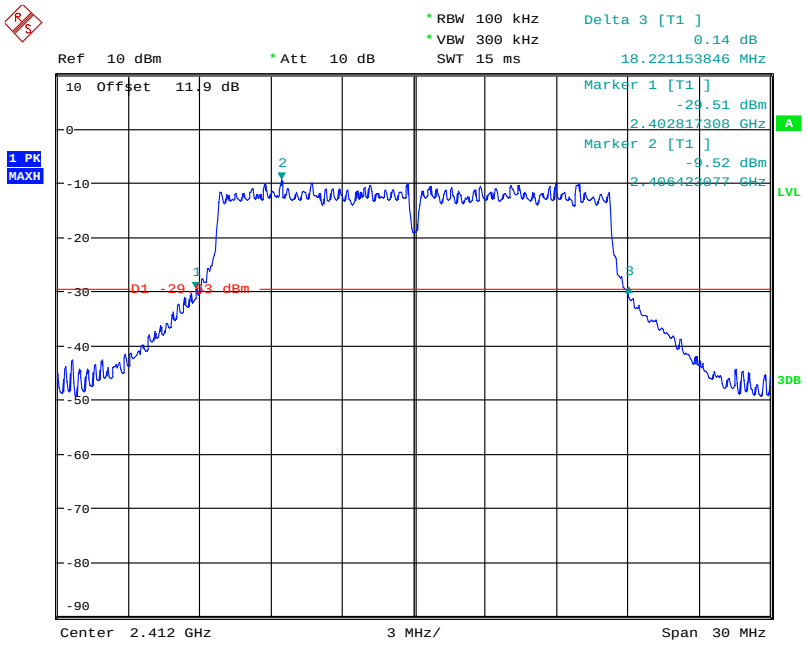
Date: 9.SEP.2010 14:12:56

Plot 3: Channel 11 (DSSS)



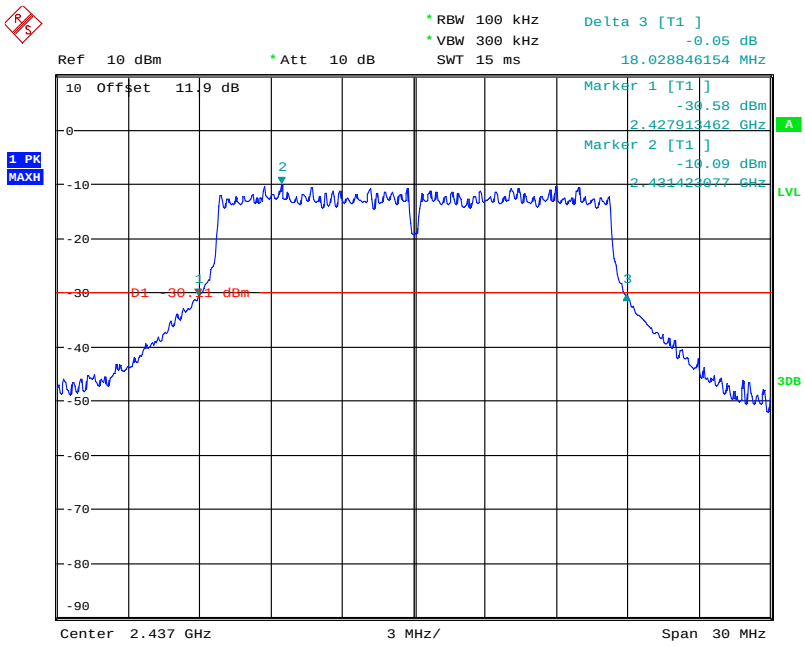
Date: 9.SEP.2010 14:16:12

Plot 4: Channel 1 (OFDM)



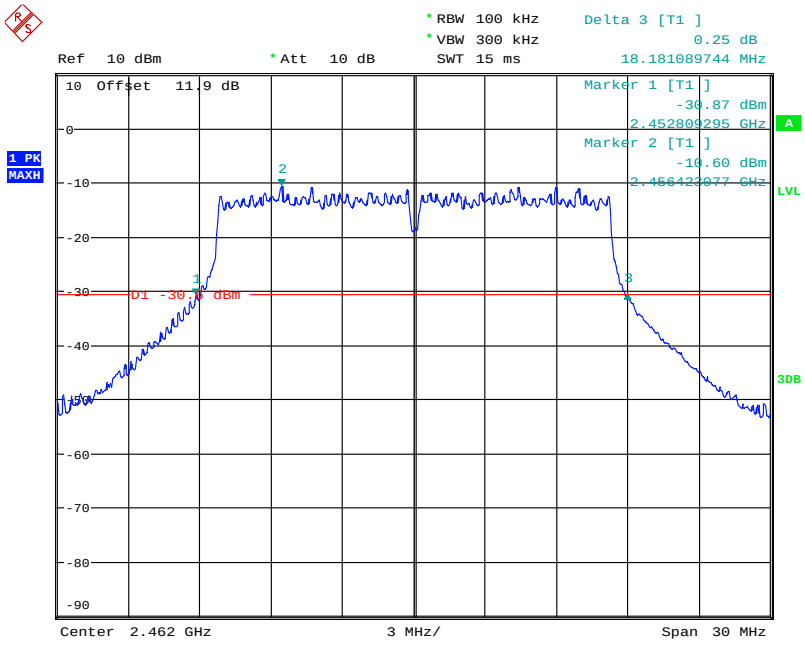
Date: 9.SEP.2010 15:05:26

Plot 5: Channel 6 (OFDM)



Date: 9.SEP.2010 15:02:39

Plot 6: Channel 11 (OFDM)



Date: 9.SEP.2010 15:00:15

8.6 Maximum output power

Description:

Measurement of the maximum output power conducted and radiated. The measurements are performed using the data rate producing the highest conducted output power. The determination of these data rates was performed at the beginning of the tests. Additionally the average power is measured using a wideband power meter.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	20 MHz
Video bandwidth:	30 MHz
Span:	50 MHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (b)(3)	RSS 210, Issue 7, A 8.4(4)
Maximum Output Power	
Conducted: 1.0 W – Antenna Gain max. 6 dBi	

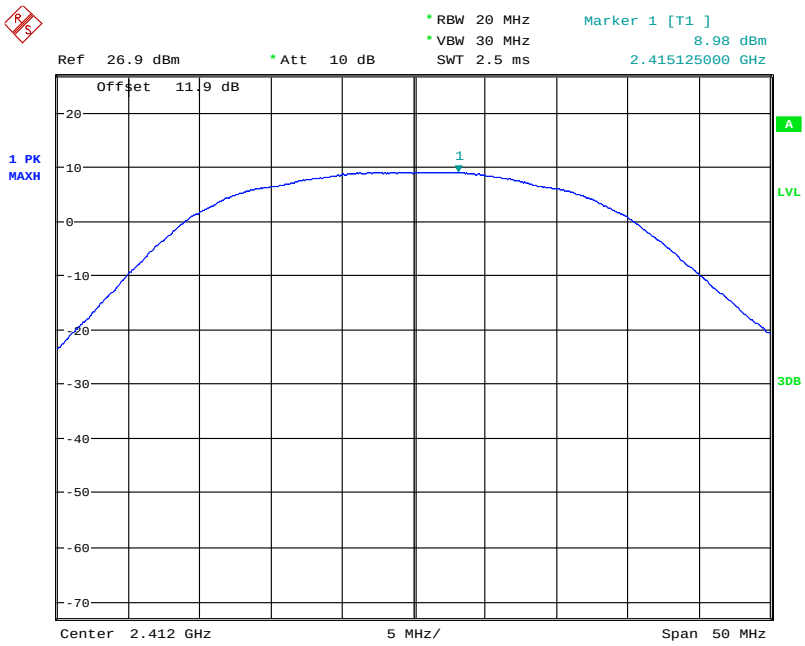
Result:

DSSS	Maximum Output Power [dBm]		
Frequency	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	8.98	9.04	7.58
Output Power Radiated - EIRP	9.92	9.57	9.47
Measurement uncertainty	± 0.5 dB (cond.) / ± 2 dB (rad.)		

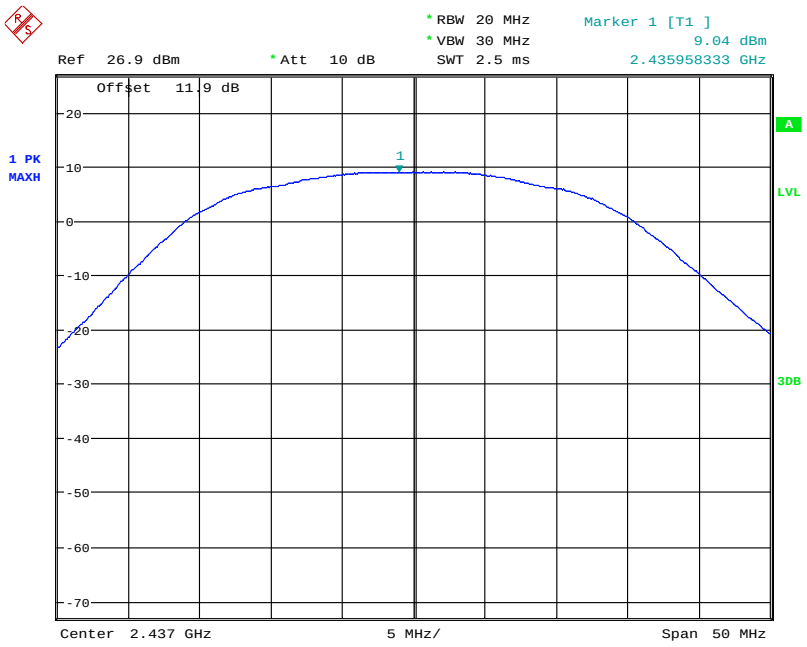
OFDM	Maximum Output Power [dBm]		
Frequency	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	12.16	12.14	11.90
Output Power Radiated - EIRP	13.10	12.67	13.79
Measurement uncertainty	± 0.5 dB (cond.) / ± 2 dB (rad.)		

Result: **The result of the measurement is passed.**

Plot 1: Channel 1 / DSSS (conducted)

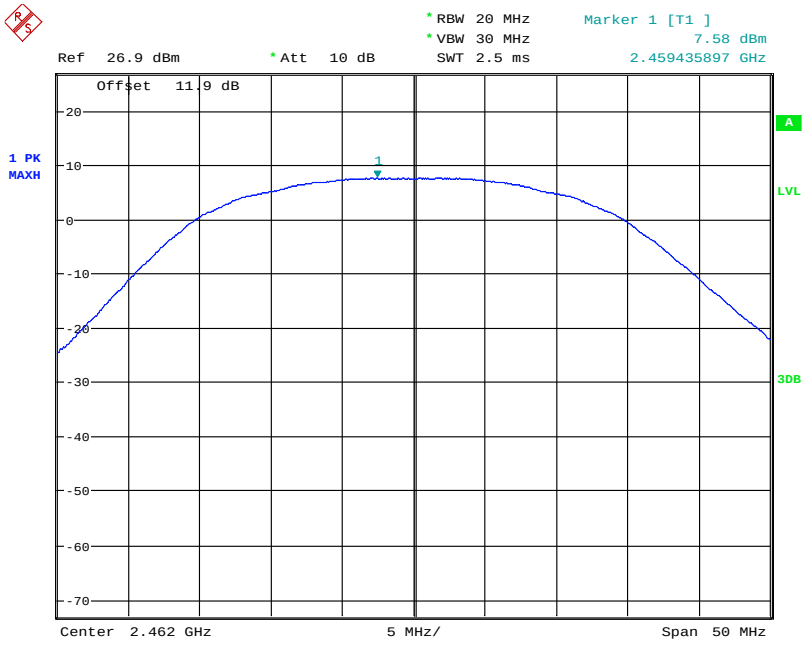


Plot 2: Channel 6 / DSSS (conducted)



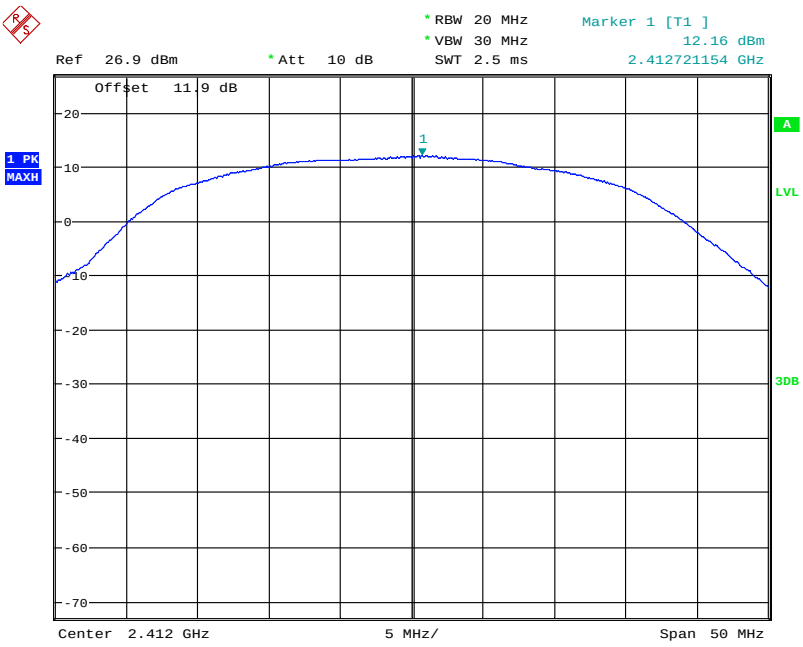
Date: 9.SEP.2010 15:32:52

Plot 3: Channel 11 / DSSS (conducted)



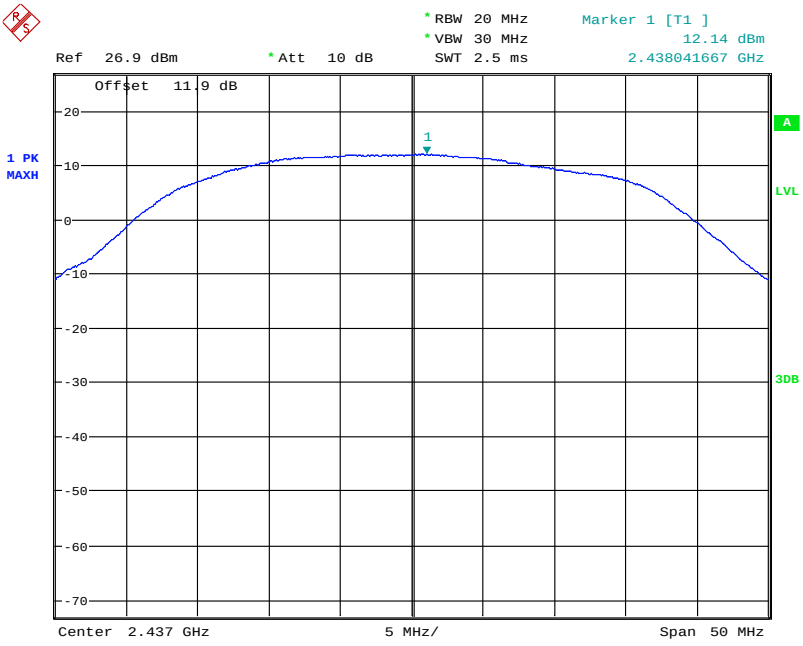
Date: 9.SEP.2010 15:33:47

Plot 4: Channel 1 / OFDM (conducted)



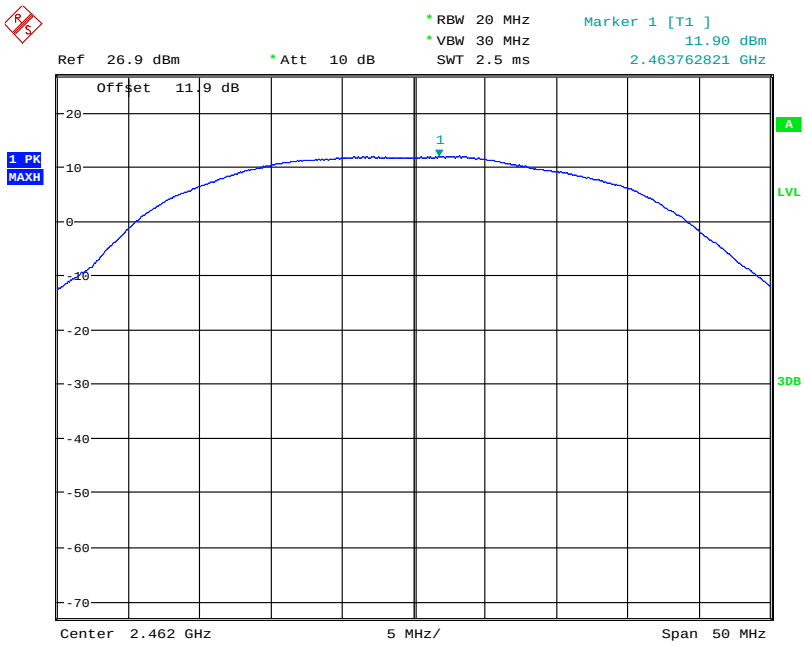
Date: 9.SEP.2010 15:19:53

Plot 5: Channel 6 / OFDM (conducted)



Date: 9.SEP.2010 15:11:23

Plot 6: Channel 11 / OFDM (conducted)



Date: 9.SEP.2010 15:21:13

8.7 Band edge compliance conducted

Description:

Measurement of the conducted band edge compliance. EUT is measured at the lower and upper band edge in both modes.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	100 kHz
Resolution bandwidth:	100 kHz
Span:	Lower Band Edge: 2300 – 2425 MHz Upper Band Edge: 2450 – 2500 MHz
Trace-Mode:	Max Hold

Limits:

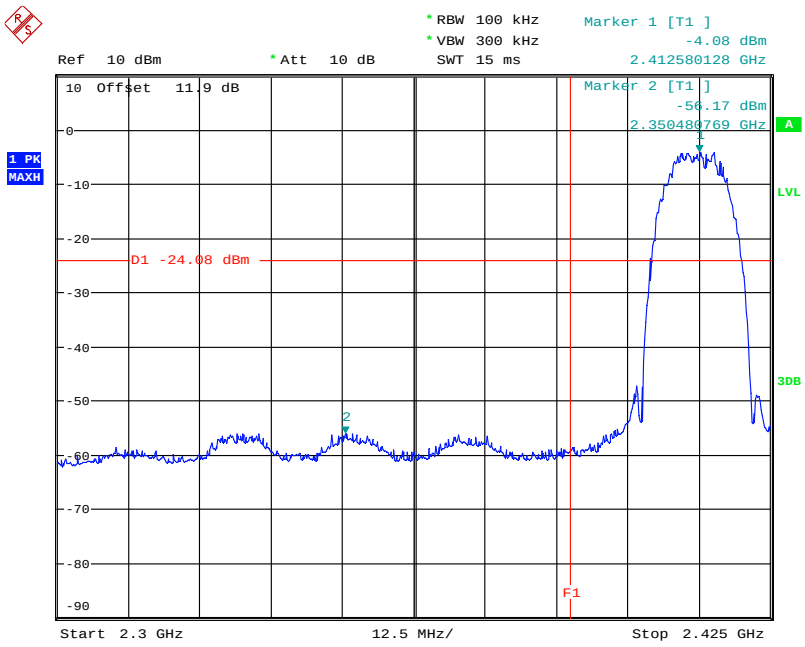
FCC	IC
CFR Part 15.247 (d)	RSS 210, Issue 7, A 8.5
Band Edge Compliance Conducted	
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.	

Result:

Szenario	Band Edge Compliance Conducted [dB]	
Modulation	DSSS	OFDM
Lower Band Edge – Channel 1	> 20 dB (see plot 1)	> 20 dB (see plot 3)
Upper Band Edge – Channel 11	> 20 dB (see plot 2)	> 20 dB (see plot 4)
Measurement uncertainty	± 1.5 dB	

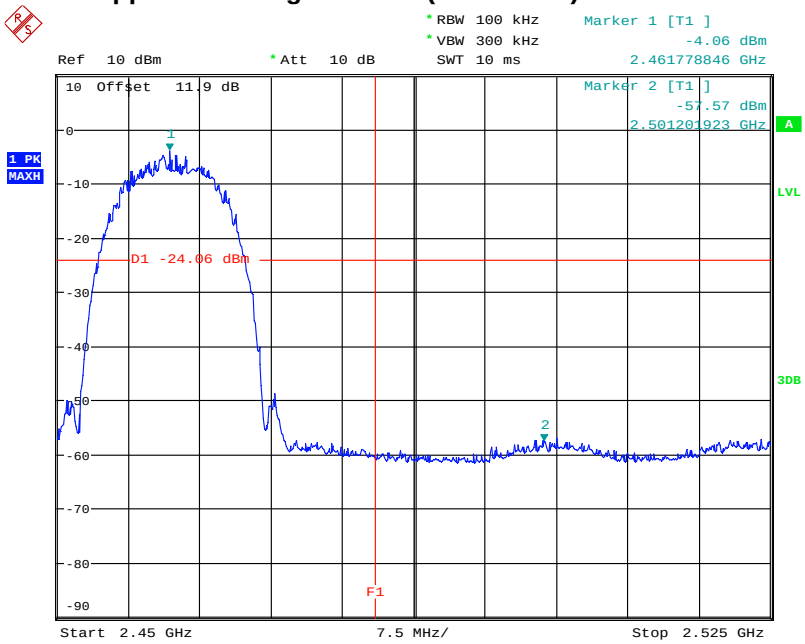
Result: **The result of the measurement is passed.**

Plot 1: Lower Band Edge – DSSS (conducted)



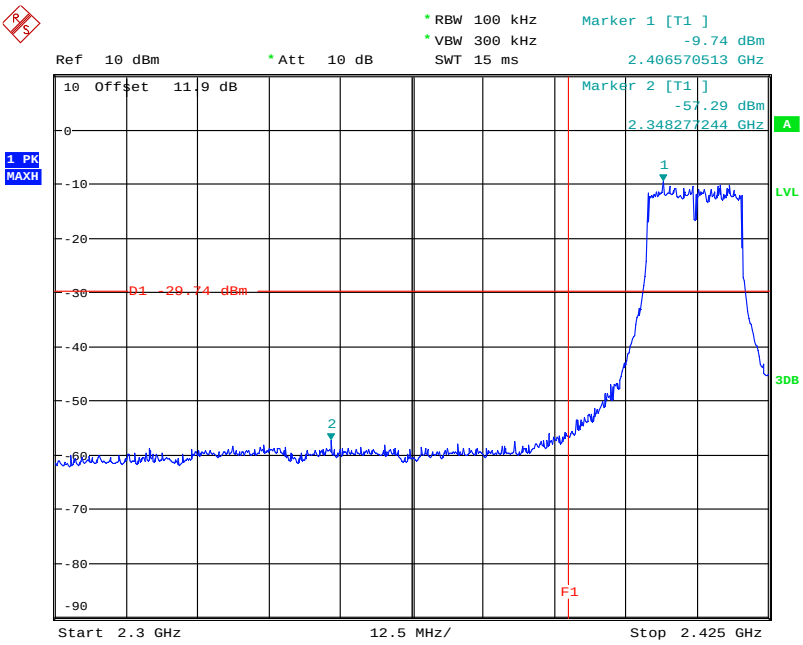
Date: 9.SEP.2010 15:54:06

Plot 2: Upper Band Edge – DSSS (conducted)



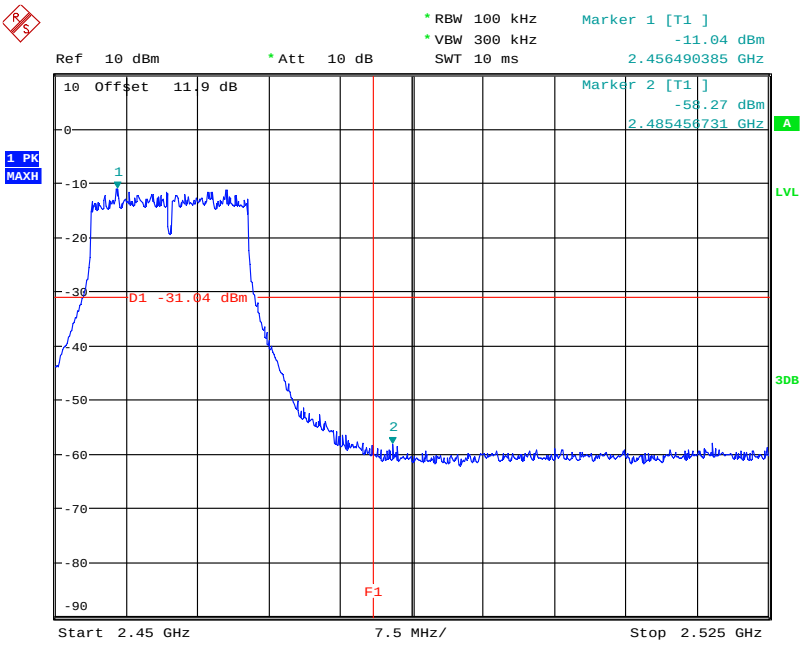
Date: 9.SEP.2010 15:48:19

Plot 3: Lower Band Edge – OFDM (conducted)



Date: 9.SEP.2010 15:52:17

Plot 4: Upper Band Edge – OFDM (conducted)



Date: 9.SEP.2010 15:49:47

8.8 Band edge compliance radiated

Description:

Measurement of the radiated band edge compliance. The EUT is turned in the position that results in the maximum level at the band edge. Then a sweep over the corresponding restricted band is performed. The EUT is set to channel 1 for the lower restricted band and to channel 11 for the upper restricted band. The measurement is repeated for all modulations. Measurement distance is 3m.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	10 Hz
Resolution bandwidth:	1 MHz
Span:	Lower Band: 2300 – 2400 MHz Higher Band: 2480 – 2500 MHz
Trace-Mode:	Max Hold

Limits:

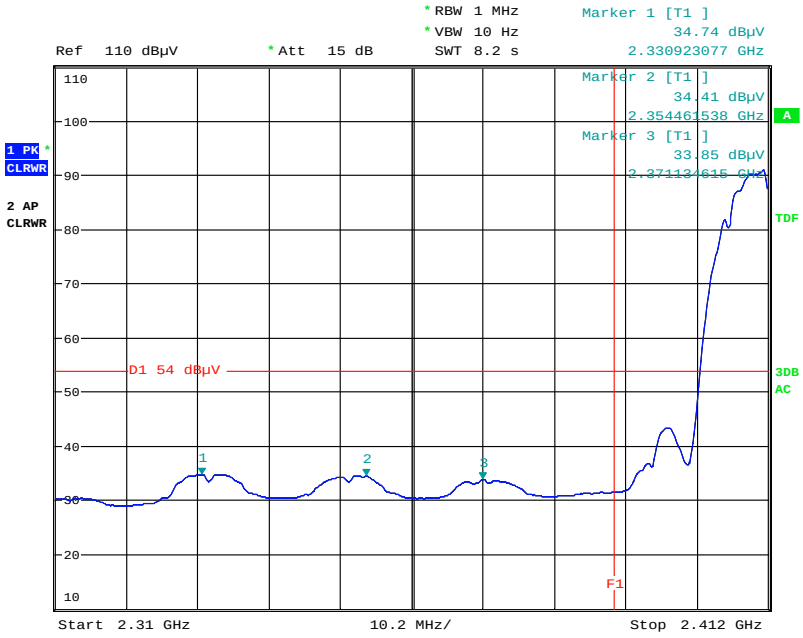
FCC	IC
CFR Part 15.205	RSS 210, Issue 7, A 8.5
Band Edge Compliance Radiated	
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)).	
54 dBµV/m AVG	

Result:

Szenario	Band Edge Compliance Radiated [dBµV/m]	
Modulation	DSSS	OFDM
Lower Band Edge – Channel 1	< 54 dBµV/m (see plot 1)	< 54 dBµV/m (see plot 3)
Upper Band Edge – Channel 11	< 54 dBµV/m (see plot 2)	< 54 dBµV/m (see plot 4)
Measurement uncertainty	± 3 dB	

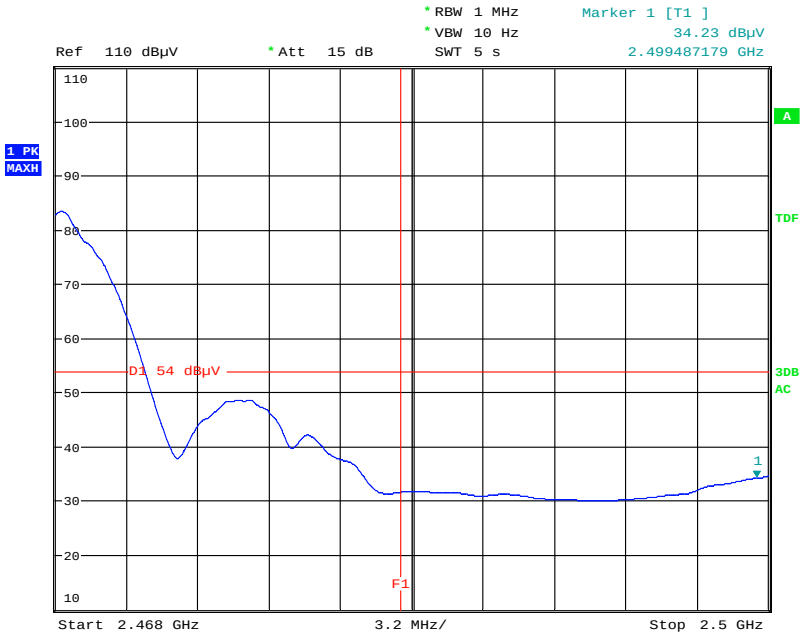
Result: **The result of the measurement is passed.**

Plot 1: Lower Band Edge – DSSS (radiated)



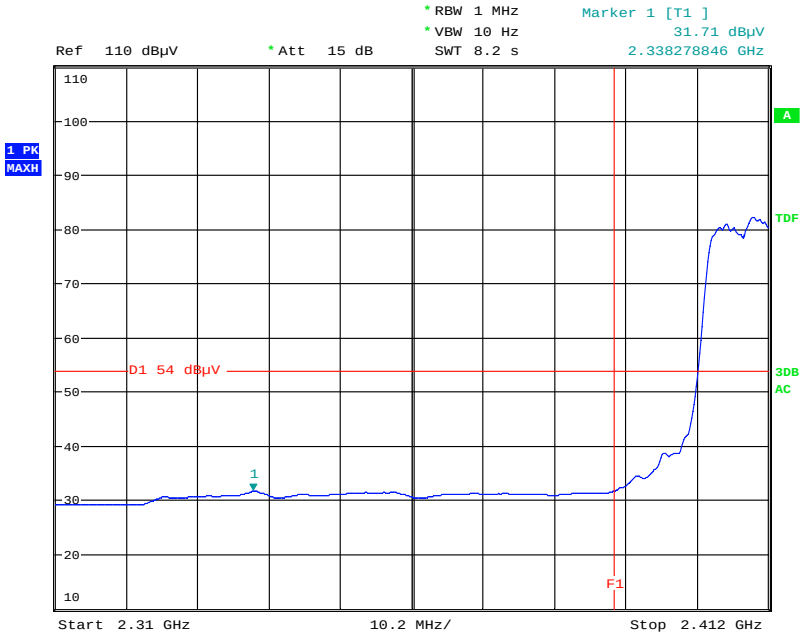
Date: 8.SEP.2010 11:25:16

Plot 2: Upper Band Edge – DSSS (radiated)



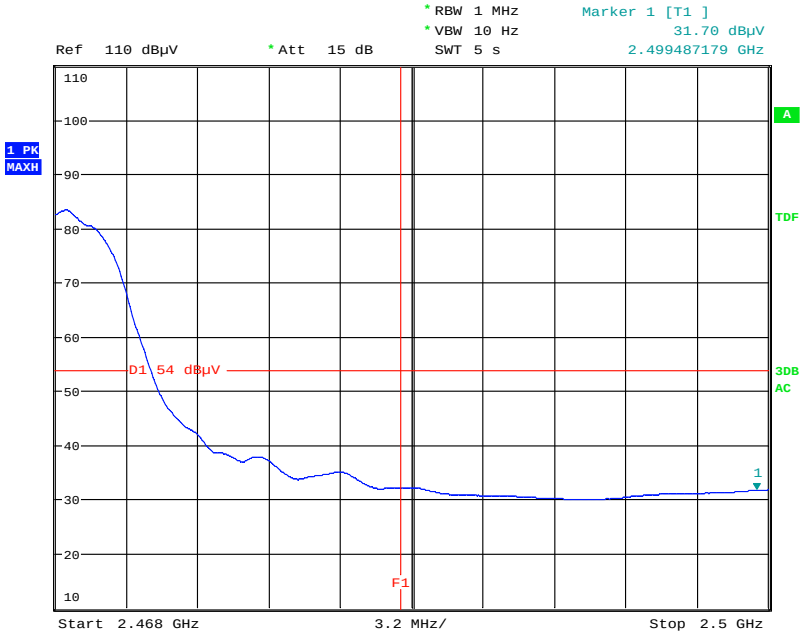
Date: 8.SEP.2010 11:42:05

Plot 3: Lower Band Edge – OFDM (radiated)



Date: 8.SEP.2010 11:29:10

Plot 4: Upper Band Edge – OFDM (radiated)



Date: 8.SEP.2010 11:35:07

8.9 TX spurious emissions conducted

Description:

Measurement of the conducted spurious emissions in transmit mode. The measurement is performed at channel 1, 6 and 11. The measurement is repeated for all modulations.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	9 kHz to 25 GHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247(d)	RSS 210, Issue 7, A 8.5
TX Spurious Emissions Conducted	
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required	

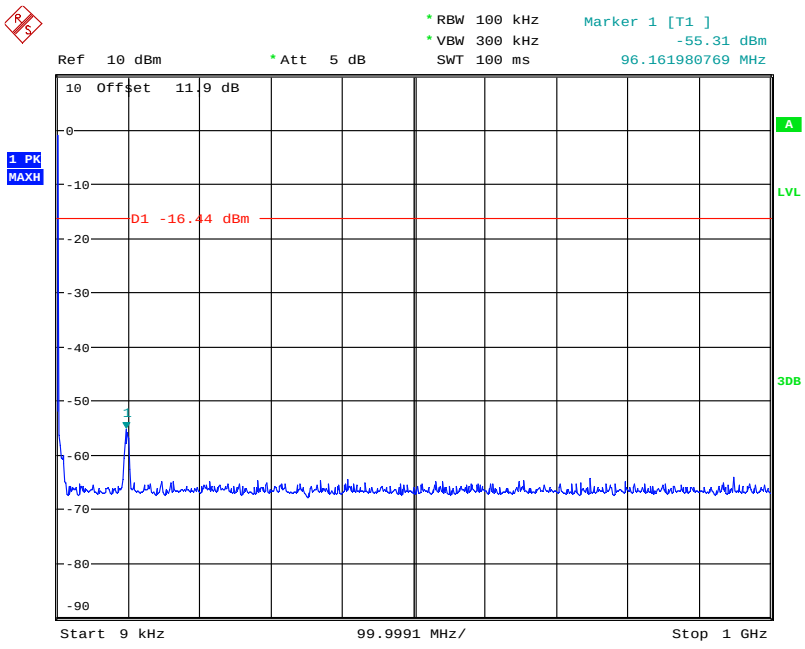
Result: **Also see plots**

TX Spurious Emissions Conducted					
DSSS - mode					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		4.06	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2437		3.66	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2462		2.48	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
Measurement uncertainty		± 3 dB			

TX Spurious Emissions Conducted					
OFDM - mode					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		-1.48	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2437		-0.65	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2462		-0.53	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: **The result of the measurement is passed.**

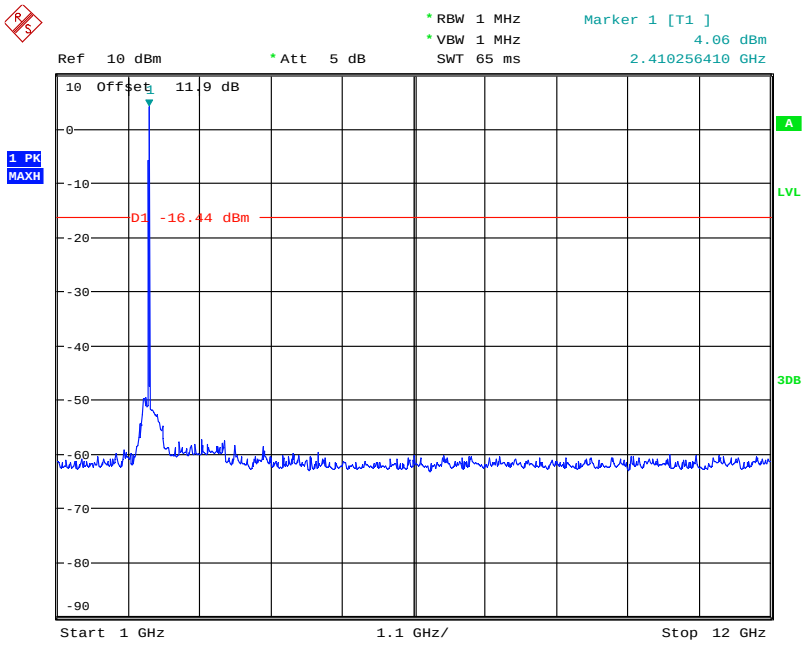
Plot 1.1: Channel 1 / DSSS



Date: 9.SEP.2010 16:40:14

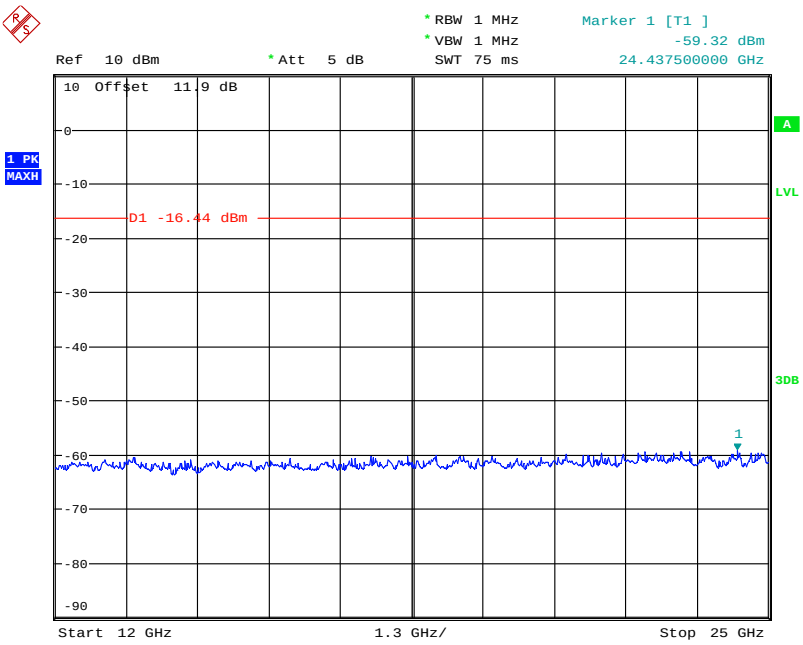
The peak at the beginning of the plot is the LO from the SA

Plot 1.2: Channel 1 / DSSS



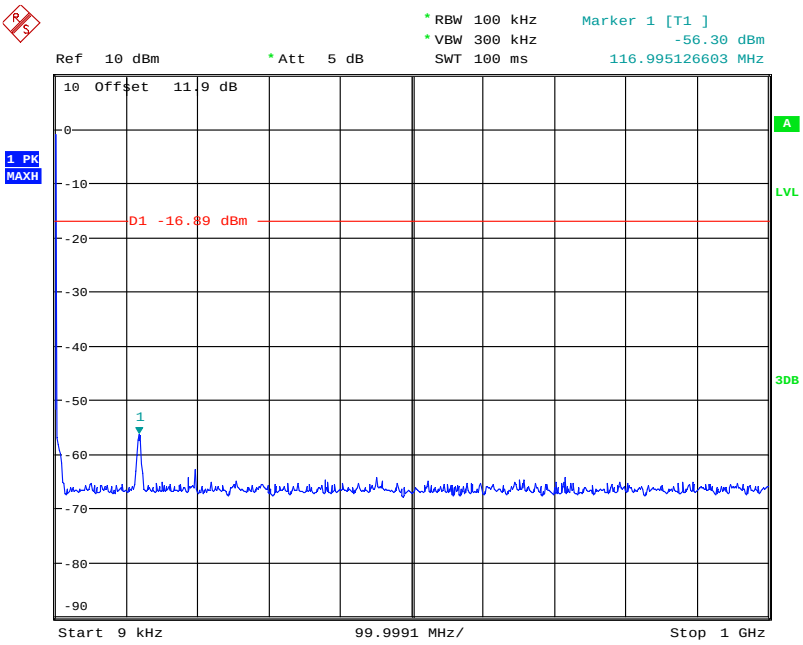
Date: 9.SEP.2010 16:38:56

Plot 1.3: Channel 1 / DSSS



Date: 9.SEP.2010 16:39:30

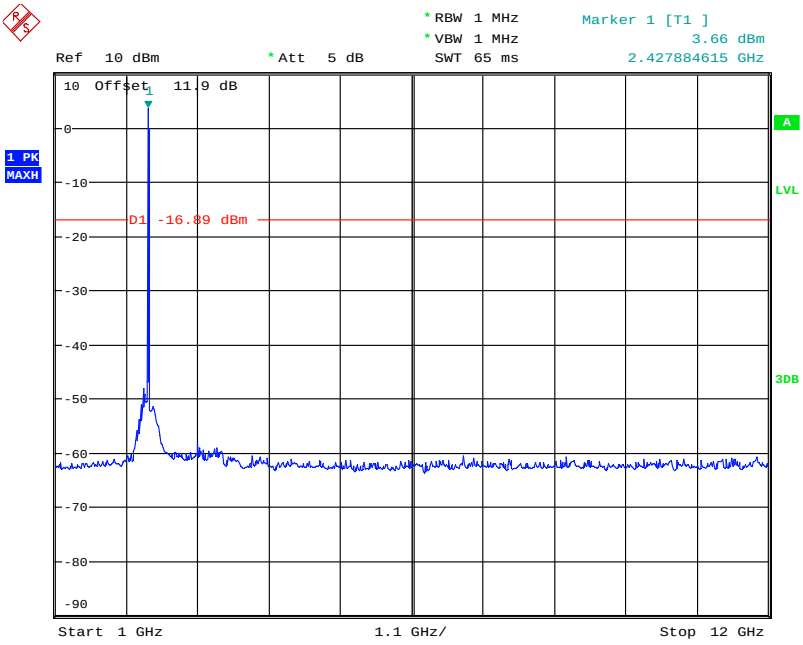
Plot 2.1: Channel 6 / DSSS



Date: 9.SEP.2010 16:44:13

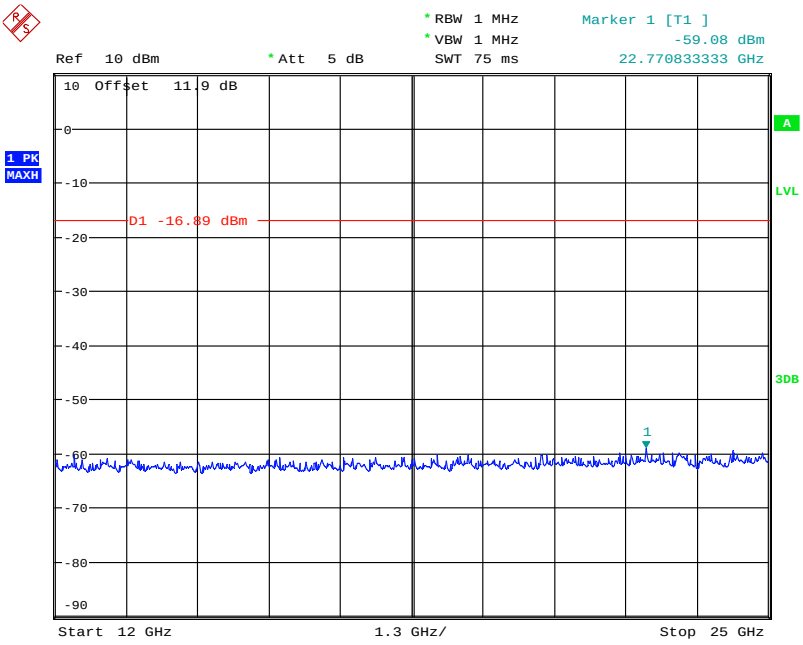
The peak at the beginning of the plot is the LO from the SA

Plot 2.2: Channel 6 / DSSS



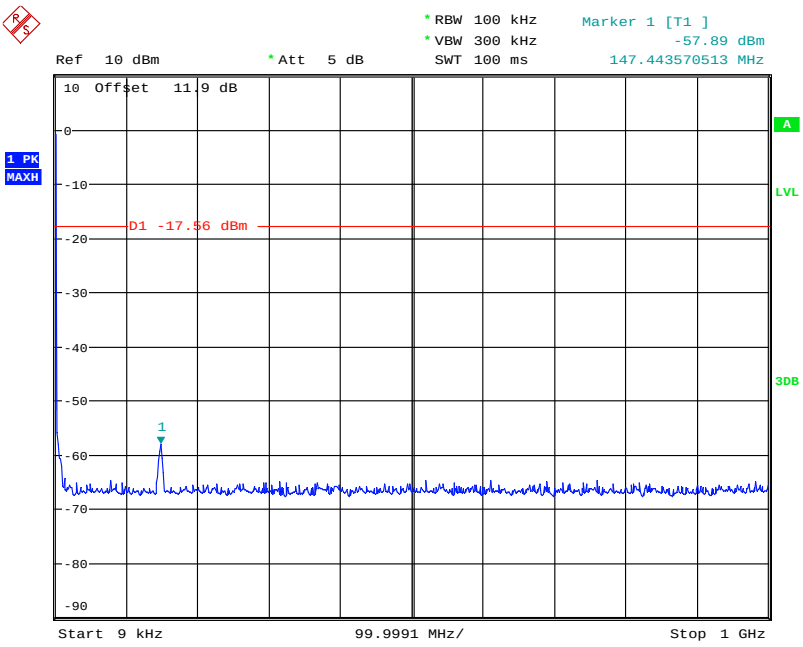
Date: 9.SEP.2010 16:41:42

Plot 2.3: Channel 6 / DSSS



Date: 9.SEP.2010 16:42:01

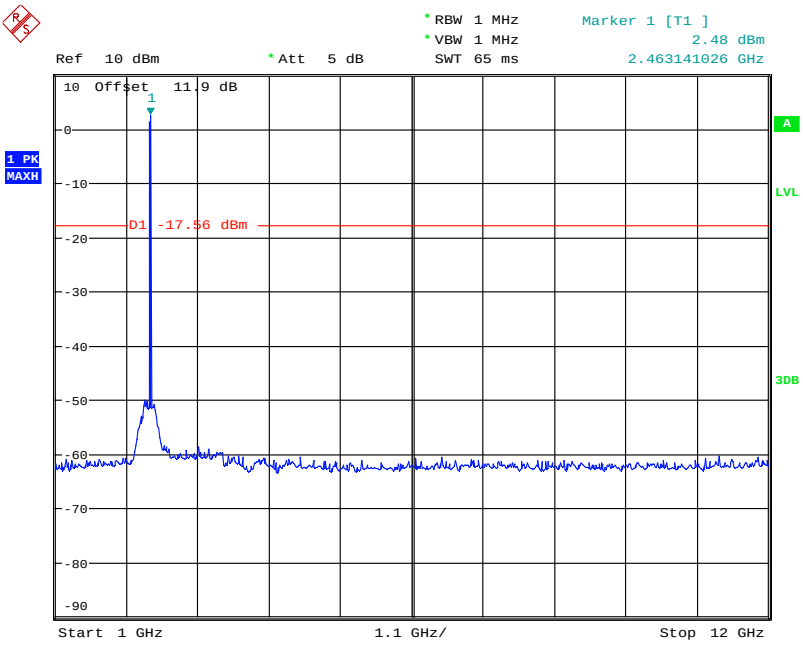
Plot 3.1: Channel 11 / DSSS



Date: 9.SEP.2010 16:46:55

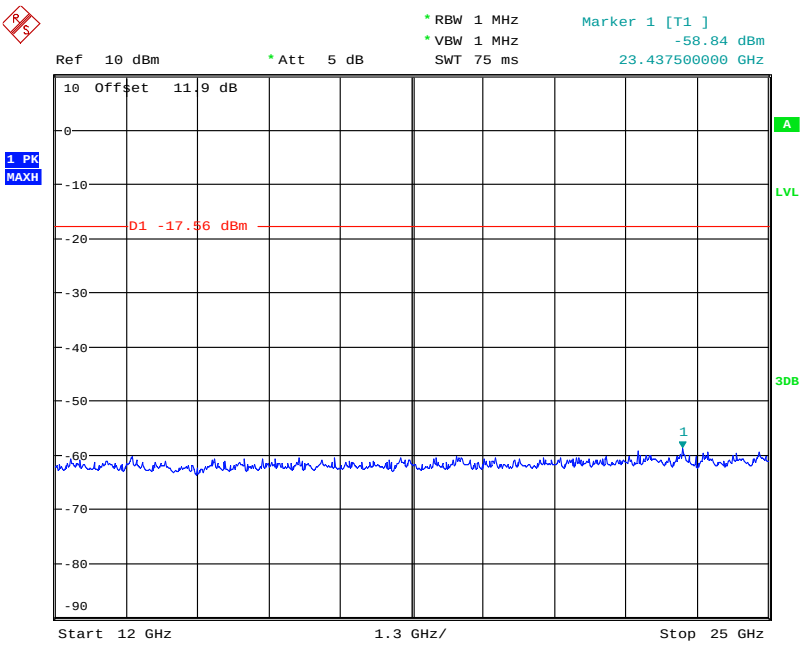
The peak at the beginning of the plot is the LO from the SA

Plot 3.2: Channel 11 / DSSS



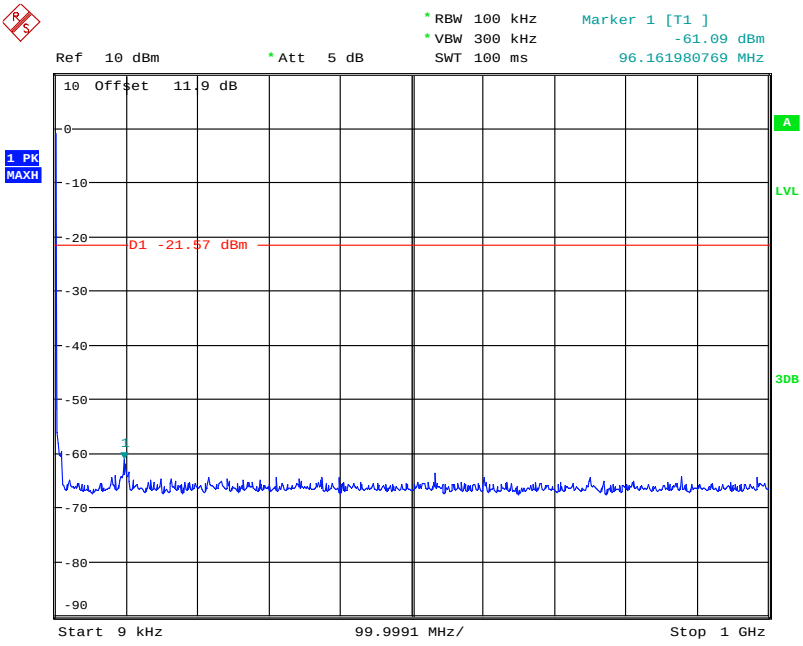
Date: 9.SEP.2010 16:45:50

Plot 3.3: Channel 11 / DSSS



Date: 9.SEP.2010 16:46:18

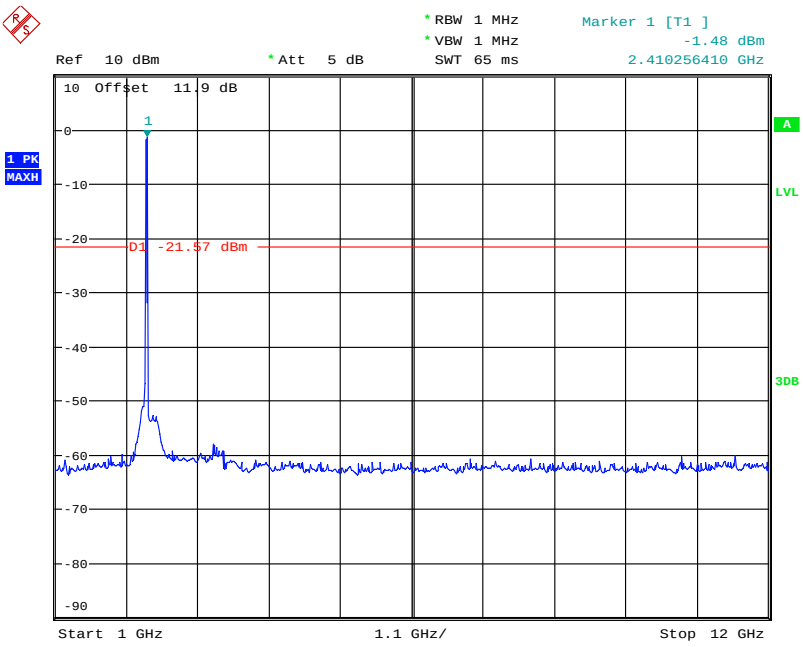
Plot 4.1: Channel 1 / OFDM



Date: 9.SEP.2010 16:49:37

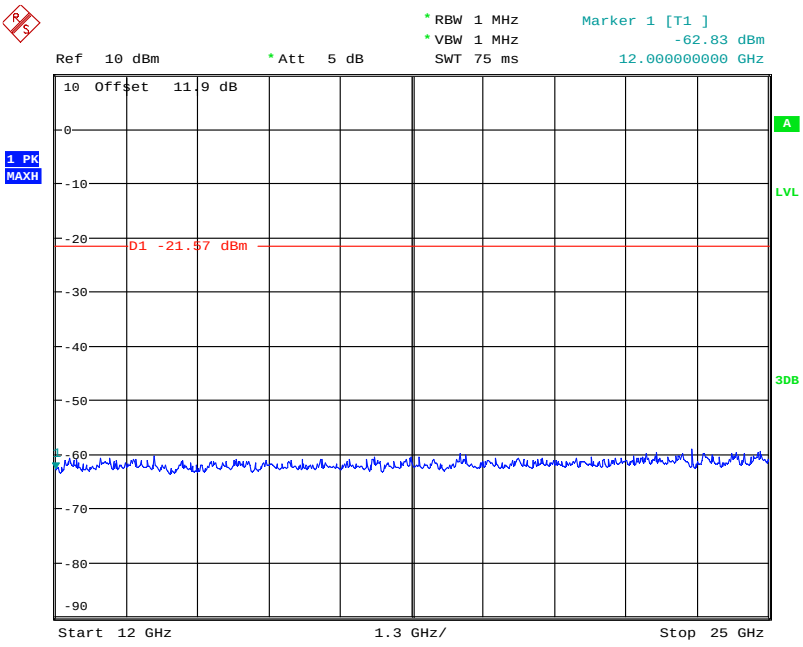
The peak at the beginning of the plot is the LO from the SA

Plot 4.2: Channel 1 / OFDM



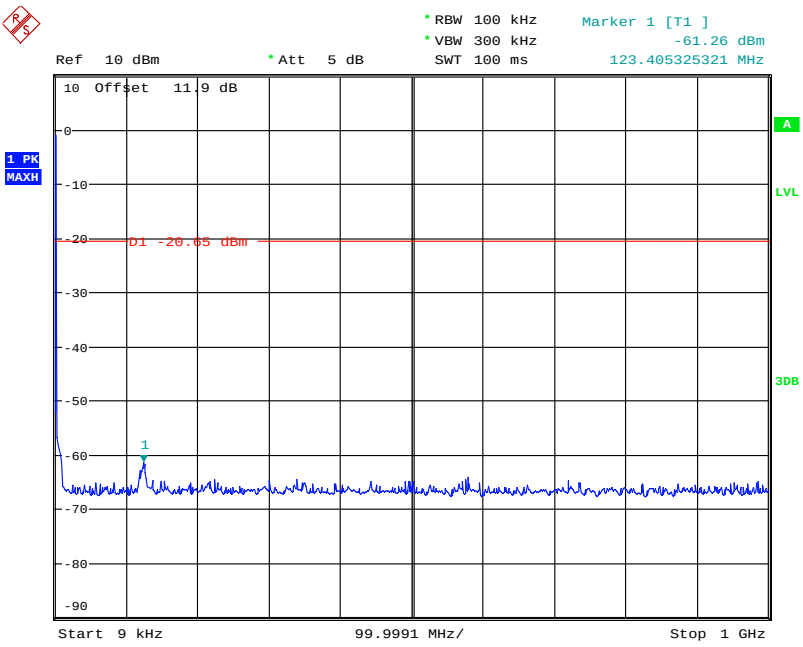
Date: 9.SEP.2010 16:48:29

Plot 4.3: Channel 1 / OFDM



Date: 9.SEP.2010 16:48:52

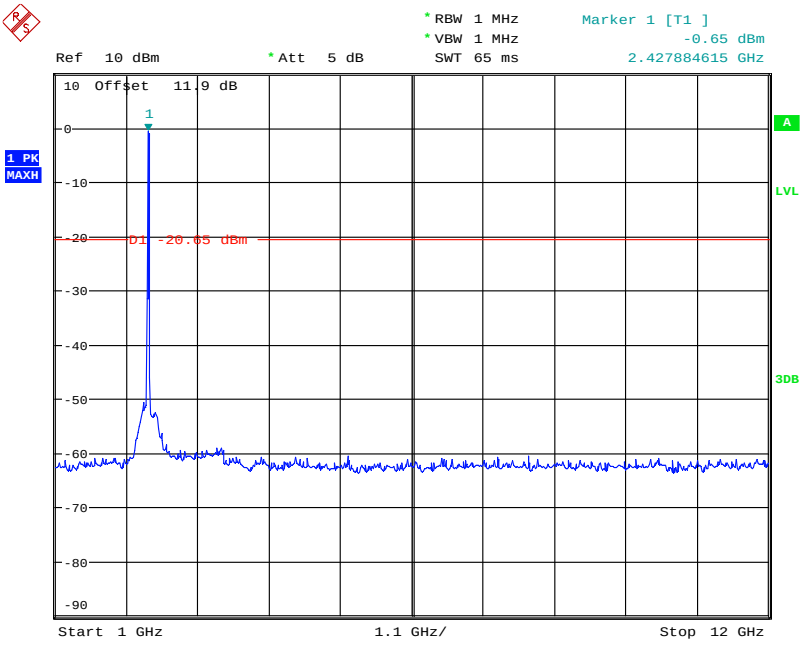
Plot 5.1: Channel 6 / OFDM



Date: 9.SEP.2010 16:51:47

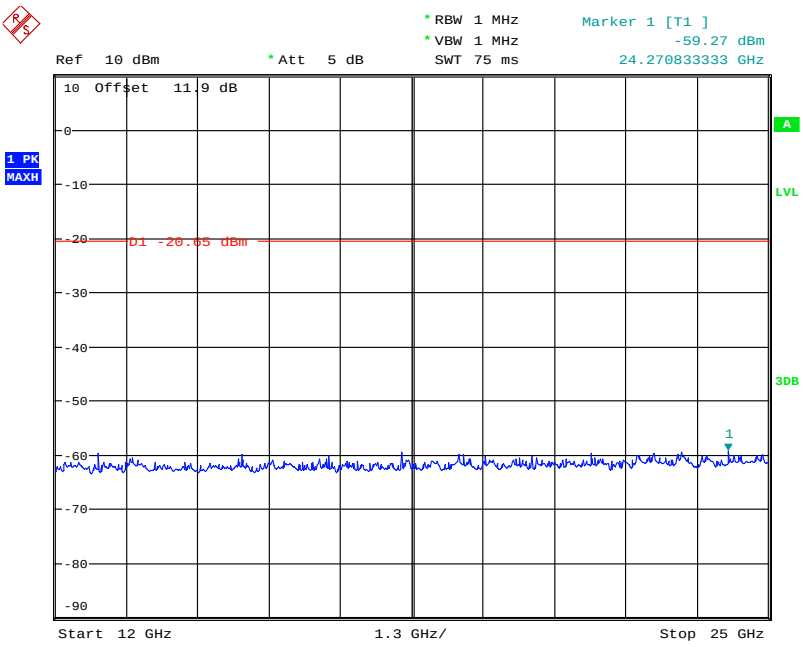
The peak at the beginning of the plot is the LO from the SA

Plot 5.2: Channel 6 / OFDM



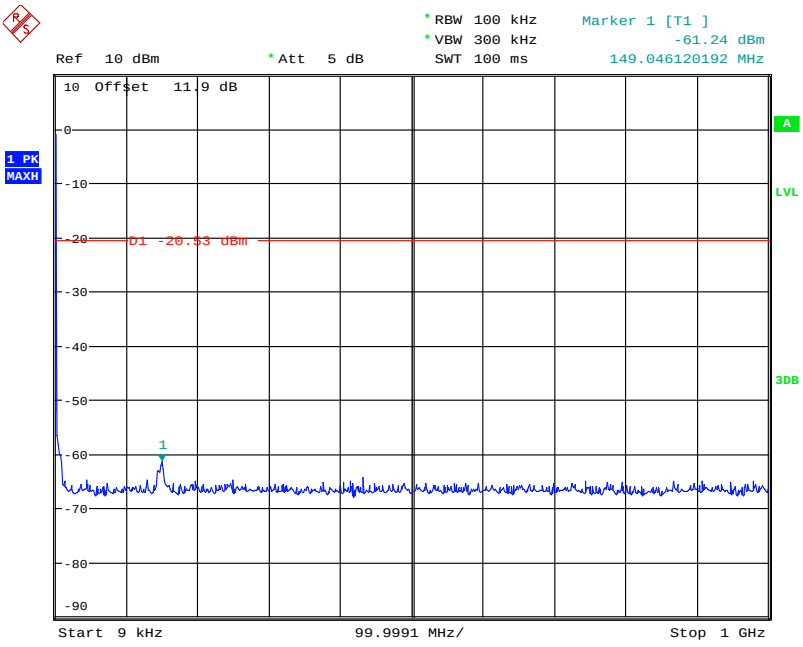
Date: 9.SEP.2010 16:50:51

Plot 5.3: Channel 6 / OFDM



Date: 9.SEP.2010 16:51:12

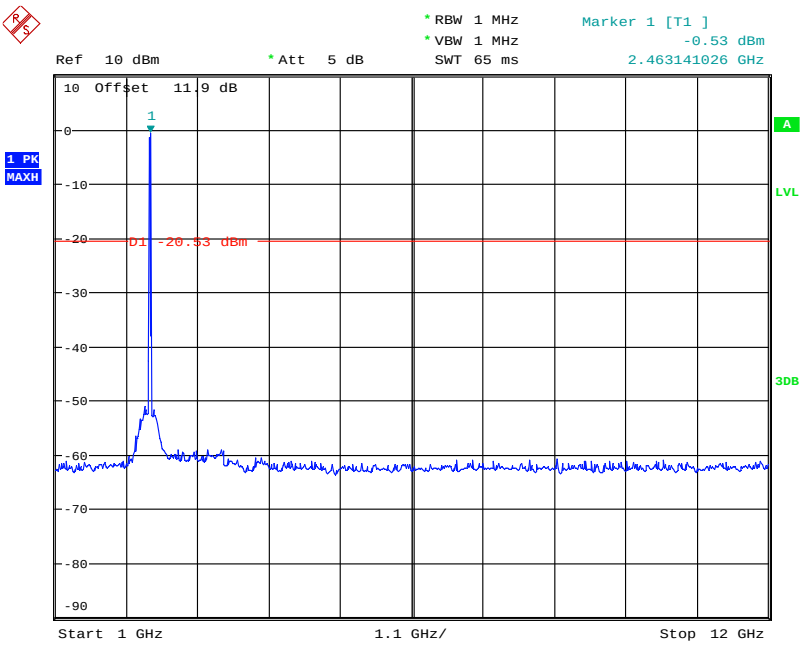
Plot 6.1: Channel 11 / OFDM



Date: 9.SEP.2010 16:54:07

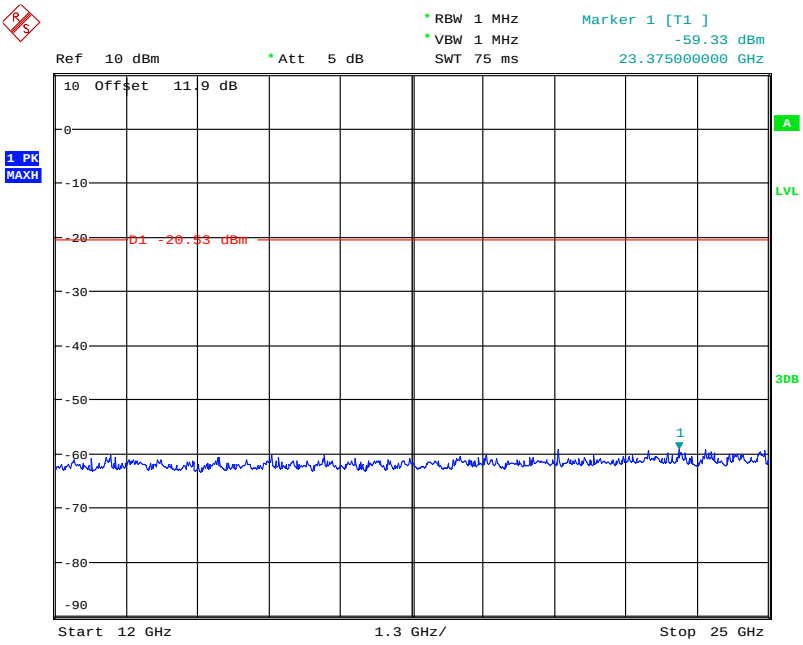
The peak at the beginning of the plot is the LO from the SA

Plot 6.2: Channel 11 / OFDM



Date: 9.SEP.2010 16:53:09

Plot 6.3: Channel 11 / OFDM



Date: 9.SEP.2010 16:53:34

8.10 TX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in transmit mode. The measurement is performed at channel 1, 6 and 11. The measurement is repeated for all modulations.

Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak
Sweep time:	Auto
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	30 MHz to 25 GHz
Trace-Mode:	Max Hold
Measured Modulation	☒ DSSS ☒ OFDM

The modulation with the highest output power was used to perform the transmitter spurious emissions. If spurious were detected a re-measurement was performed on the detected frequency with each modulation.

Limits:

FCC	IC	
CFR Part 15.247(d)	RSS 210, Issue 7, A 8.5	
TX Spurious Emissions Radiated		
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).		
§15.209		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Result: **Also see plots**

TX Spurious Emissions Radiated [dBµV/m]								
DSSS - mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

TX Spurious Emissions Radiated [dBµV/m]								
OFDM - mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

Result: **The result of the measurement is passed.**

Plot 1: 30 MHz to 1 GHz / Channel 1 - OFDM (horizontal/vertical)

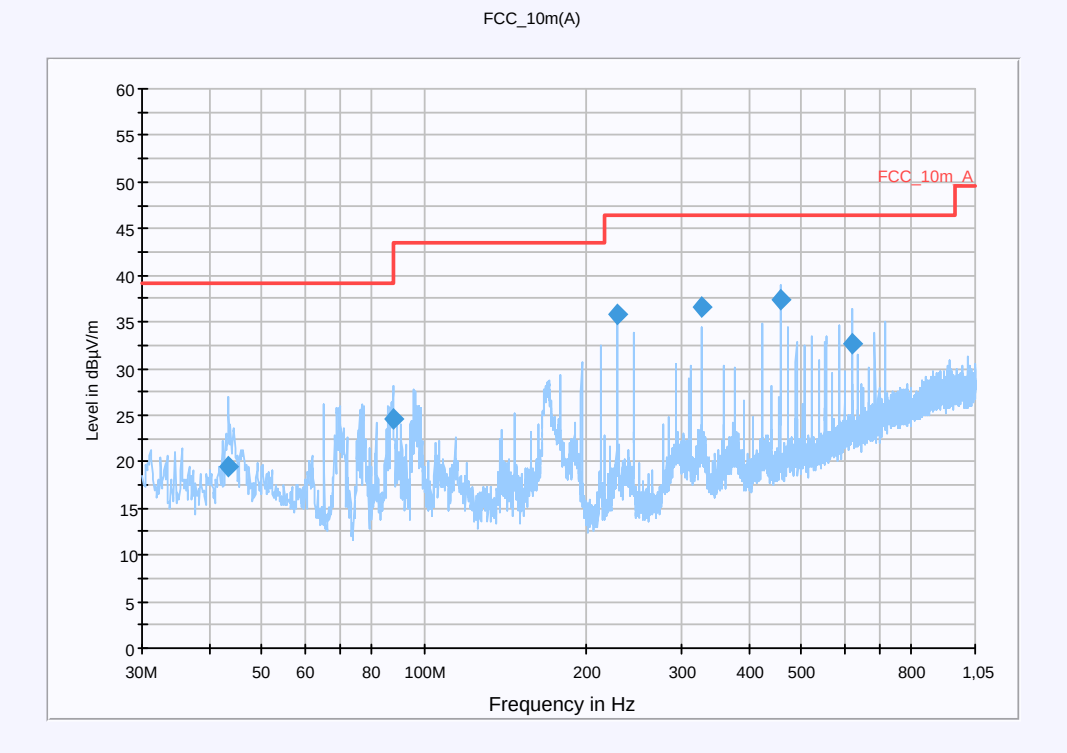
Common Information

EUT:	Pixavi AS + 3A-181WP06 + Headset
Serial Number:	unknown + EMS060300-P5P-SZ + unknown
Test Description:	FCC Part 15 class A @ 10 m
Operating Conditions:	Tx Ch: 1, Headset connected, USB terminated, LAN ping
Operator Name:	LANGER
Comment:	AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

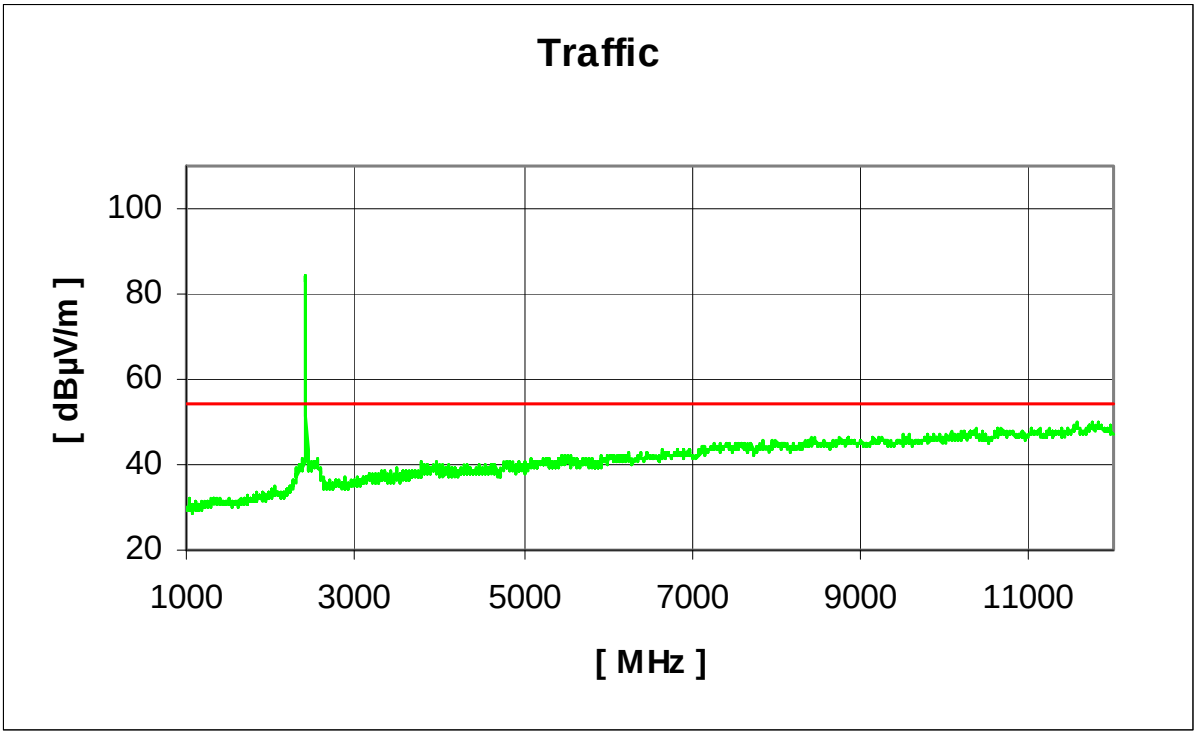
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



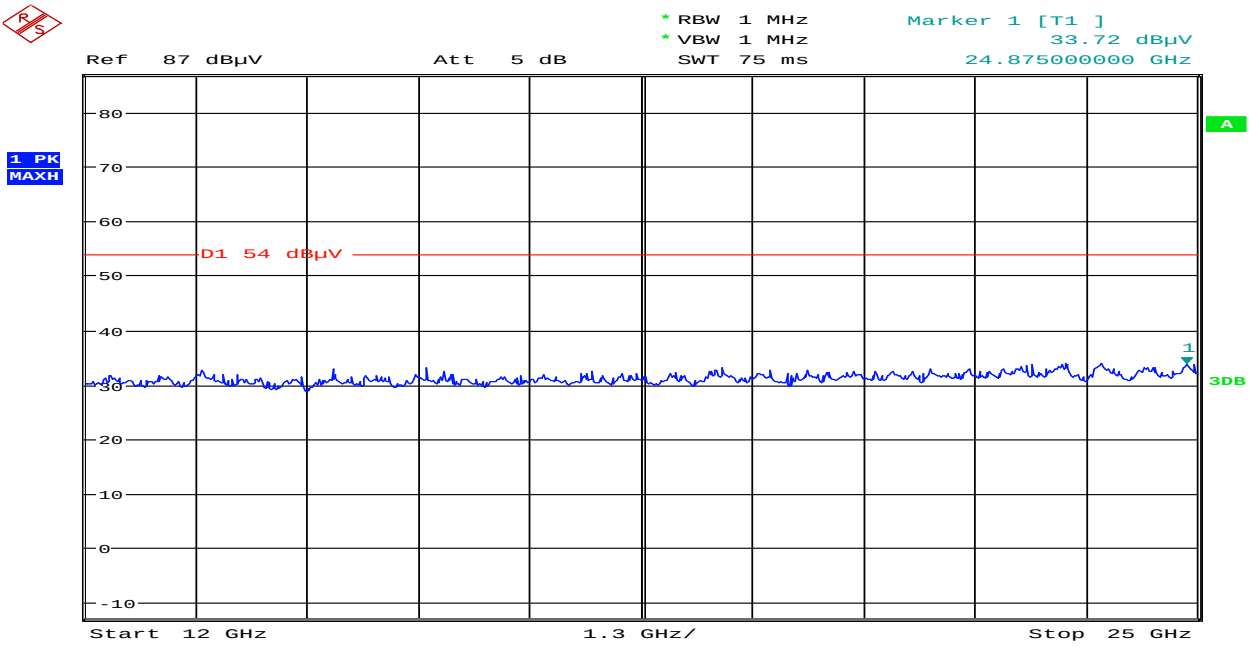
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
43.516500	19.4	15000.000	120.000	98.0	V	328.0	13.3	19.7	39.1
87.458400	24.5	15000.000	120.000	348.0	V	36.0	10.2	14.6	39.1
228.373350	35.8	15000.000	120.000	106.0	V	25.0	12.7	10.6	46.4
326.236350	36.6	15000.000	120.000	267.0	H	-7.0	15.3	9.8	46.4
456.753150	37.3	15000.000	120.000	379.0	V	263.0	17.8	9.1	46.4
619.860450	32.7	15000.000	120.000	124.0	H	217.0	20.9	13.7	46.4

Plot 2: 1 GHz to 12.75 GHz / Channel 1 - OFDM (horizontal/vertical)



Plot 3: 12 GHz to 25 GHz / Channel 1 - OFDM (horizontal/vertical) – valid for all channels



Date: 14.SEP.2010 13:52:59

Plot 4: 30 MHz to 1 GHz / Channel 6 - OFDM (horizontal/vertical)

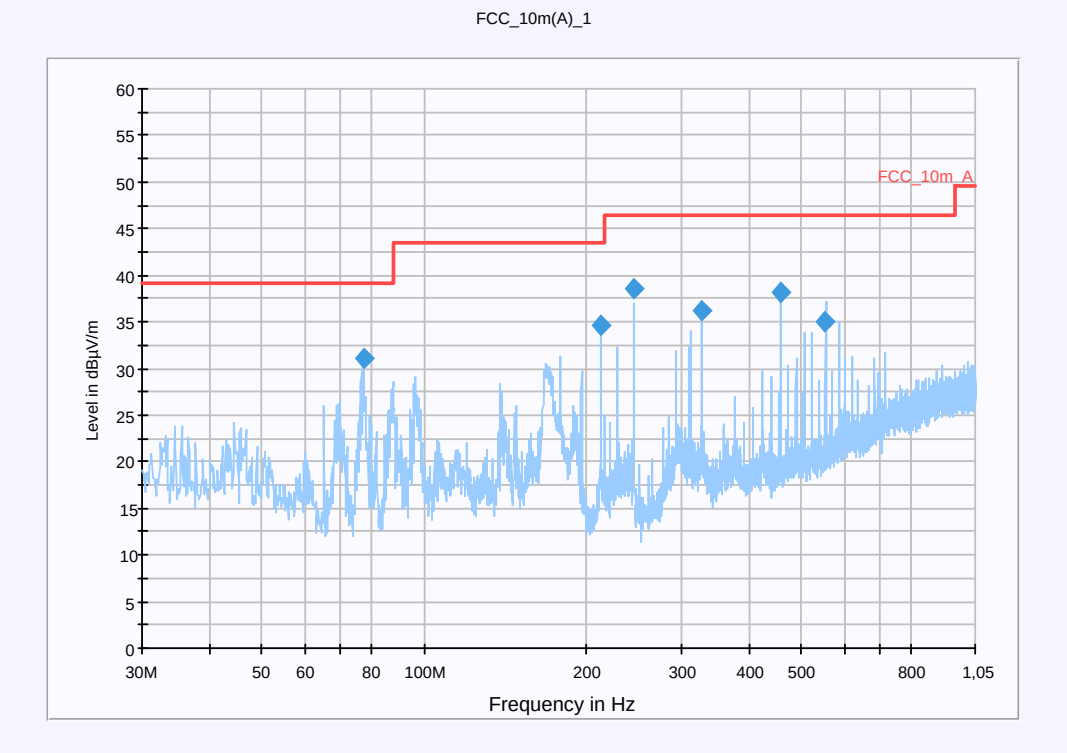
Common Information

EUT:	Pixavi AS + 3A-181WP06 + Headset
Serial Number:	unknown + EMS060300-P5P-SZ + unknown
Test Description:	FCC Part 15 class A @ 10 m
Operating Conditions:	TX Ch: 6, Headset connected, USB terminated, LAN ping
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

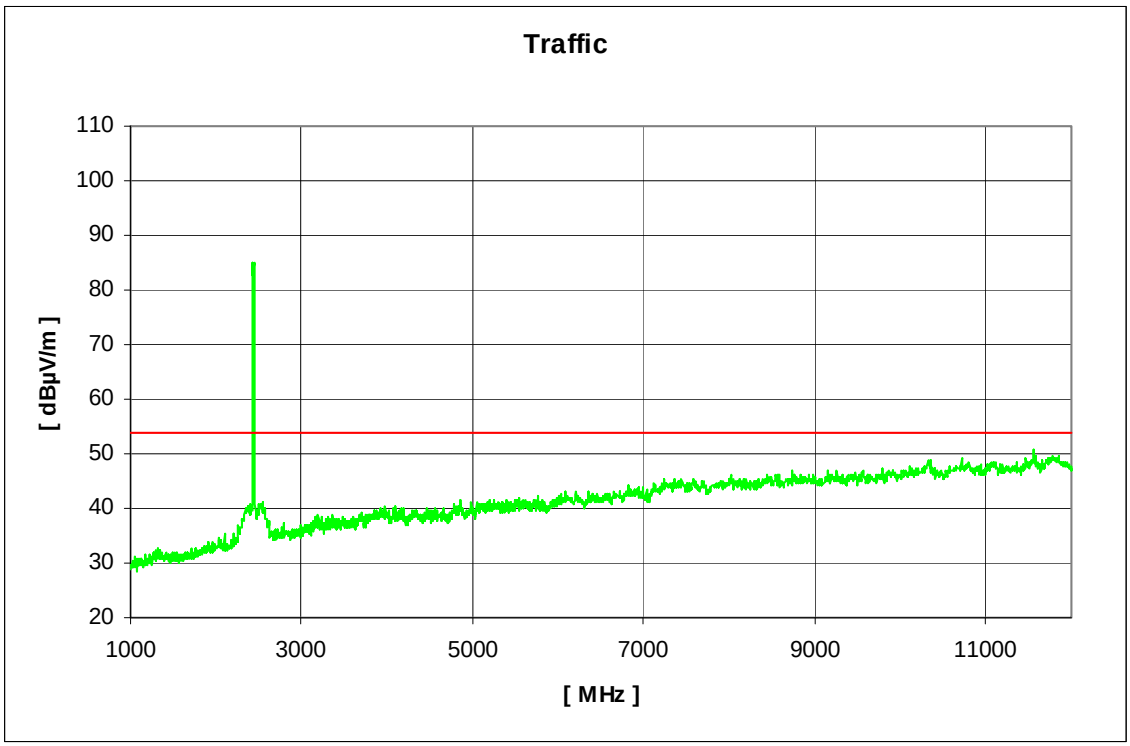
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
77.193600	31.1	15000.000	120.000	265.0	V	39.0	9.1	8.0	39.1
212.063250	34.6	15000.000	120.000	98.0	V	-6.0	12.1	8.9	43.5
244.681350	38.6	15000.000	120.000	133.0	V	291.0	13.2	7.8	46.4
326.238750	36.2	15000.000	120.000	307.0	H	-7.0	15.3	10.2	46.4
456.744750	38.1	15000.000	120.000	320.0	V	262.0	17.8	8.3	46.4
554.577000	34.9	15000.000	120.000	158.0	H	231.0	19.5	11.5	46.4

Plot 5: 1 GHz to 12.75 GHz / Channel 6 - OFDM (horizontal/vertical)



Plot 6: 30 MHz to 1 GHz / Channel 11 - OFDM (horizontal/vertical)

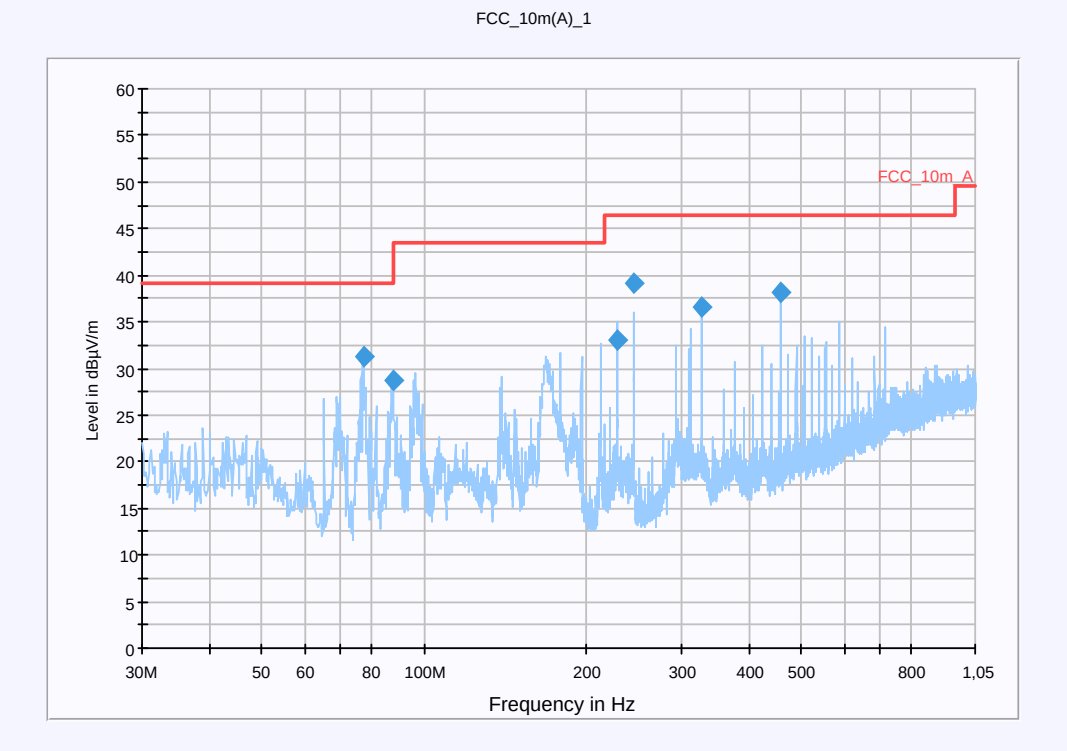
Common Information

EUT:	Pixavi AS + 3A-181WP06 + Headset
Serial Number:	unknown + EMS060300-P5P-SZ + unknown
Test Description:	FCC Part 15 class A @ 10 m
Operating Conditions:	TX Ch: 11, Headset connected, USB terminated, LAN ping
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

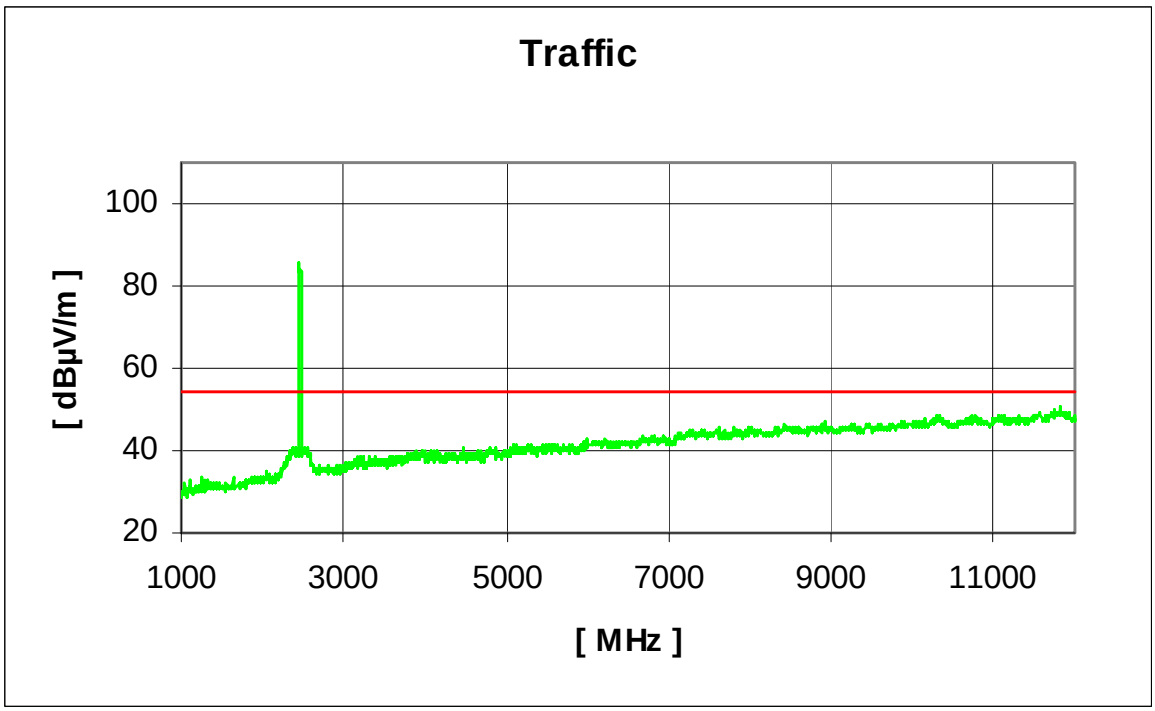
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
77.201400	31.3	15000.000	120.000	300.0	V	39.0	9.1	7.8	39.1
87.624300	28.8	15000.000	120.000	110.0	V	97.0	10.2	10.3	39.1
228.361350	33.0	15000.000	120.000	98.0	V	50.0	12.7	13.4	46.4
244.684950	39.2	15000.000	120.000	98.0	V	290.0	13.2	7.2	46.4
326.248800	36.5	15000.000	120.000	275.0	H	-7.0	15.3	9.9	46.4
456.727050	38.1	15000.000	120.000	377.0	V	262.0	17.8	8.3	46.4

Plot 7: 1 GHz to 12.75 GHz / Channel 11 - OFDM (horizontal/vertical)



8.11 RX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in idle/receive mode. The results are valid for both modes.

Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak
Sweep time:	Auto
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	30 MHz to 25 GHz
Trace-Mode:	Max Hold

Limits:

FCC		IC
CFR Part 15.109		RSS Gen, Issue 2, 4.10
RX Spurious Emissions Radiated		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Result: **Also see plots**

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
77.202150	31.3	15000.000	120.000	306.0	V	38.0	9.1	7.8	39.1
96.382050	28.8	15000.000	120.000	104.0	V	109.0	11.4	14.7	43.5
212.062650	34.8	15000.000	120.000	98.0	V	-2.0	12.1	8.7	43.5
244.662900	38.2	15000.000	120.000	98.0	V	293.0	13.2	8.2	46.4
326.238150	36.3	15000.000	120.000	250.0	H	-6.0	15.3	10.1	46.4
456.736950	38.0	15000.000	120.000	385.0	V	222.0	17.8	8.4	46.4

Result: **The result of the measurement is passed.**

Plot 1: 30 MHz to 1 GHz / Idle-mode (horizontal/vertical)

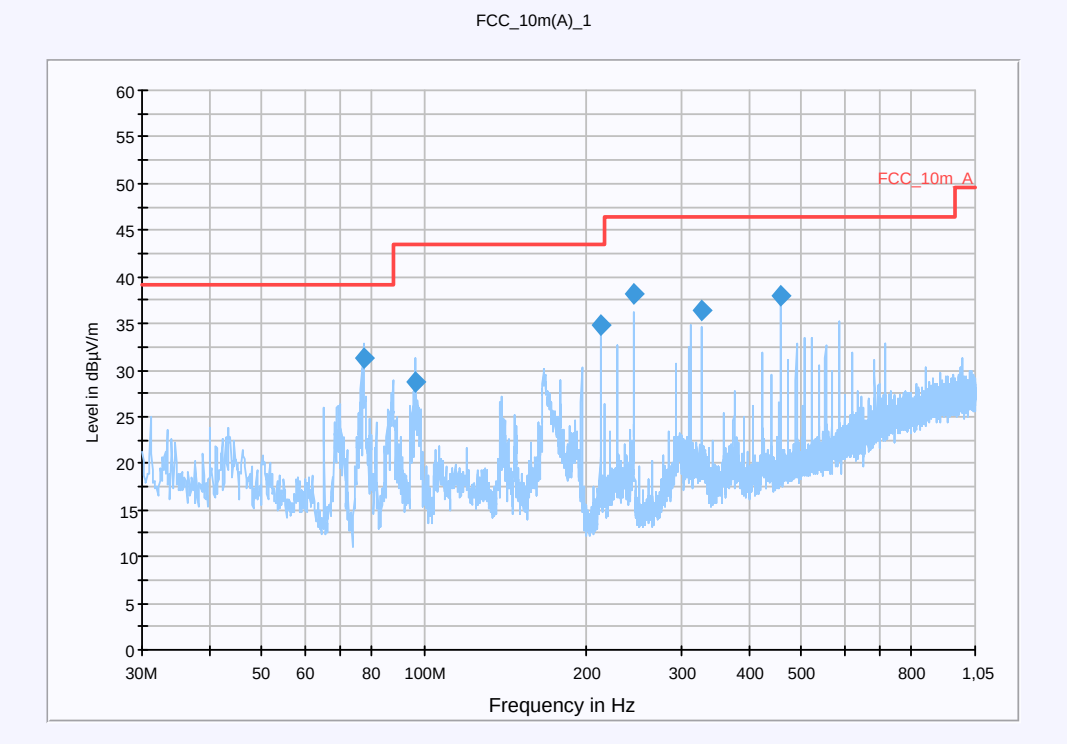
Common Information

EUT:	Pixavi AS + 3A-181WP06 + Headset
Serial Number:	unknown + EMS060300-P5P-SZ + unknown
Test Description:	FCC Part 15 class A @ 10 m
Operating Conditions:	RX, Headset connected, USB terminated, LAN ping
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

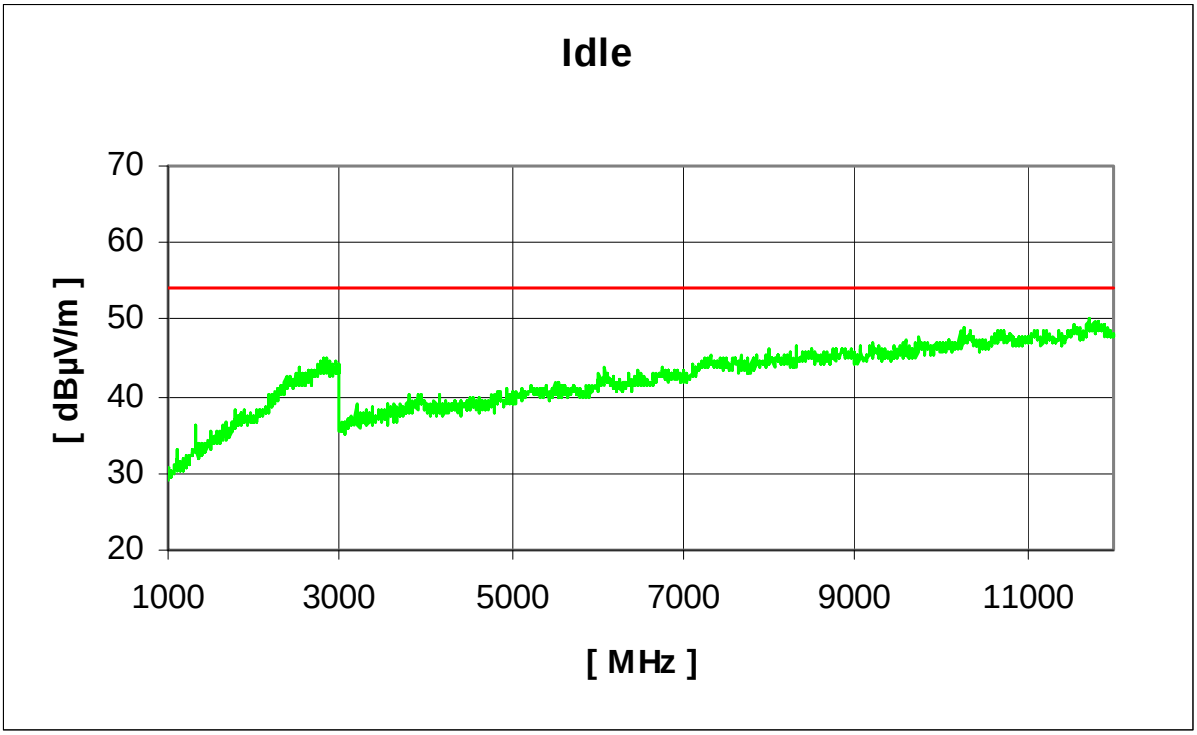
Scan Setup: STAN_Fin [EMI radiated]

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

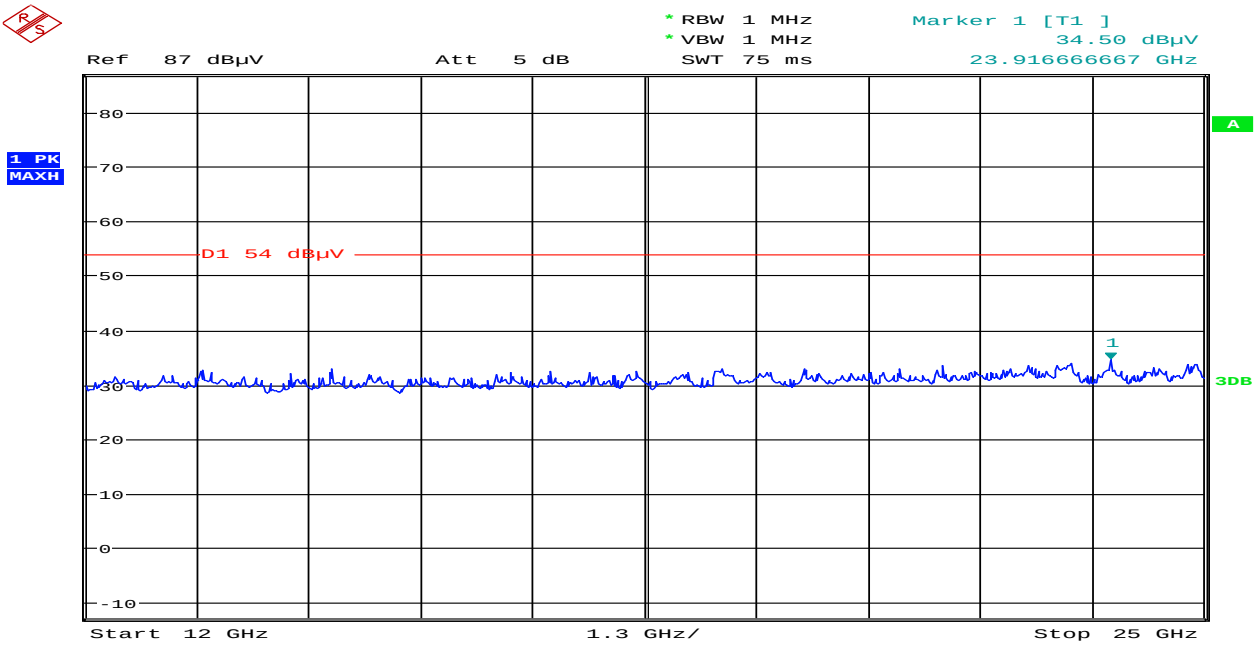
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



Plot 2: 1 GHz to 12.75 GHz / Idle-mode (horizontal/vertical)



Plot 3: 12 GHz to 25 GHz / Idle-mode (horizontal/vertical)



8.12 TX spurious emissions radiated < 30 MHz

Description:

Measurement of the radiated spurious emissions in transmit mode below 30 MHz. The EUT is set to channel 6. This measurement is representative for all channels and modes. If critical peaks are found channel 1 and channel 11 will be measured too. The measurement is performed with the mode and data rate producing the highest output power. The limits are recalculated to a measurement distance of 3 m with 40 dB/decade according CFR Part 2.

The measurement is also valid for RX mode. The plot shows the worst case.

Measurement:

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

Limits:

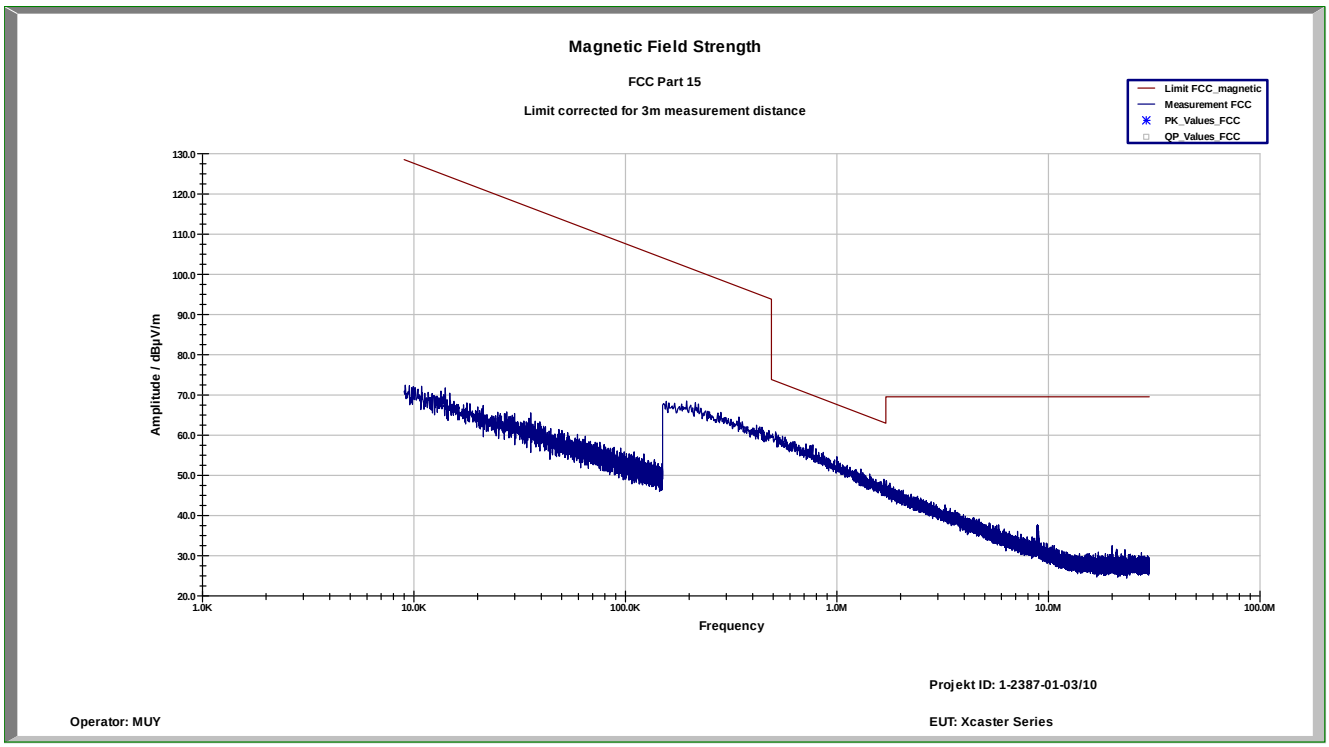
FCC		IC
CFR Part 15.209(a)		RSS –Gen
TX Spurious Emissions Radiated < 30 MHz		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

Result: **Also see plots**

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

Result: **The result of the measurement is passed.**

Plot 1: 9 kHz to 30 MHz / OFDM



8.13 AC line conducted < 30 MHz

Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to channel 6. This measurement is repeated for DSSS and OFDM modulation. If critical peaks are found channel 1 and channel 11 will be measured too. The measurement is performed with the mode and data rate producing the highest output power. Both power lines, phase and neutral line, are measured. Found peaks are remeasured with average and quasi peak detection to show compliance to the limits.

The measurement is also valid for RX mode. The plot shows the worst case.

Measurement:

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

Limits:

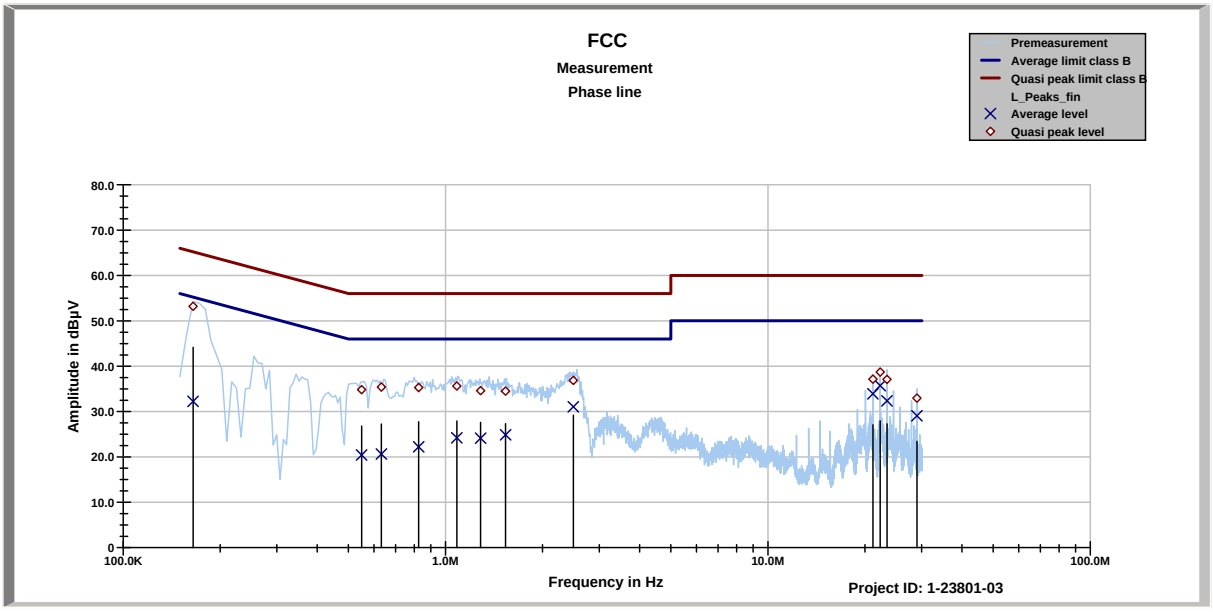
FCC		IC
CFR Part 15.207(a)		ICES-003, Issue 4
TX Spurious Emissions Conducted < 30 MHz		
Frequency (MHz)	Quasi-Peak (dBµV/m)	Average (dBµV/m)
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30.0	60	50

*Decreases with the logarithm of the frequency

Result: **The result of the measurement is passed.**

Plot 1: Phase line

Project ID - 1-2387-01-03
EUT - PIXAVI
Serial Number - VW-09-1405070
Operating mode – OFDM TX Ch 6, 6 MBit/s

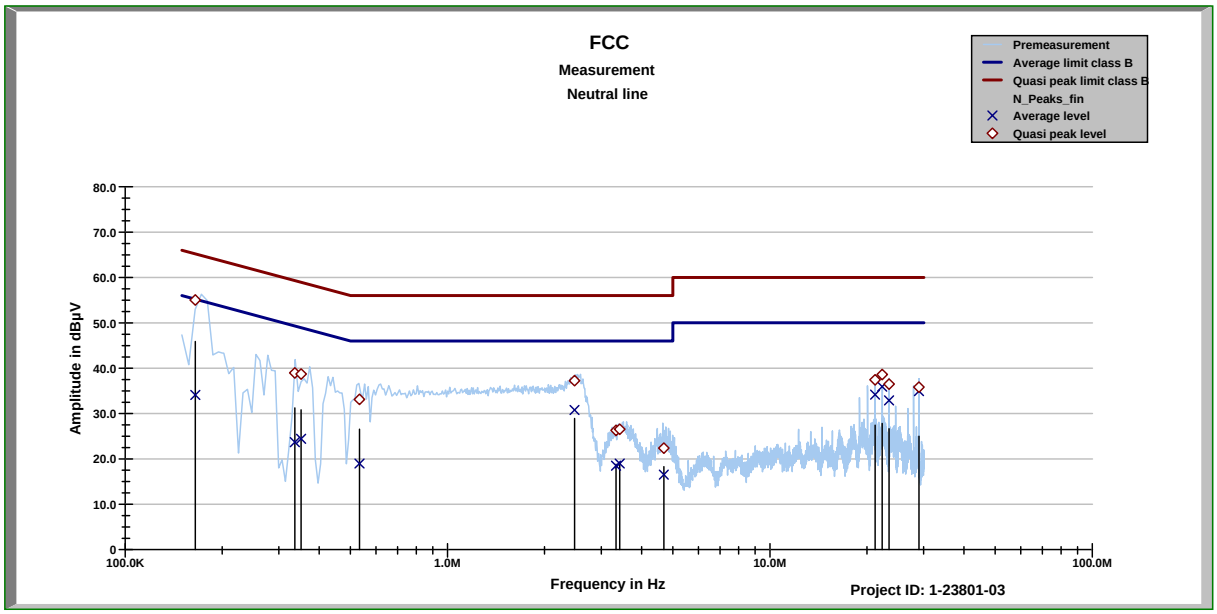


FCC
Project ID: 1-2387-01-03

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.16486	53.21	12.01	32.23	23.35
0.54931	34.82	21.18	20.39	25.61
0.63236	35.39	20.61	20.64	25.36
0.82501	35.30	20.70	22.21	23.79
1.08351	35.62	20.38	24.20	21.80
1.2845	34.60	21.40	24.10	21.90
1.5345	34.49	21.51	24.85	21.15
2.4903	36.86	19.14	31.05	14.95
21.16	37.15	22.85	33.90	16.10
22.275	38.69	21.31	35.69	14.31
23.391	37.07	22.93	32.35	17.65
28.96	32.96	27.04	29.06	20.94

Plot 2: Neutral line

Project ID - 1-2387-01-03
EUT - PIXAVI
Serial Number - VW-09-1405070
Operating mode – OFDM TX Ch 6, 6 MBit/s



FCC
Project ID: 1-2387-01-03

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.16504	55.02	10.18	34.08	21.49
0.33607	38.95	20.35	23.69	27.00
0.35148	38.70	20.23	24.42	25.82
0.53292	33.11	22.89	18.96	27.04
2.4754	37.25	18.75	30.78	15.22
3.3305	26.29	29.71	18.49	27.51
3.419	26.53	29.47	18.96	27.04
4.6852	22.37	33.63	16.51	29.49
21.171	37.42	22.58	34.16	15.84
22.281	38.58	21.42	35.92	14.08
23.399	36.47	23.53	32.89	17.11
28.967	35.81	24.19	34.92	15.08

9 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	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	k	06.01.2009	06.01.2011
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
4	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	08.01.2010	08.01.2012
5	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	01.06.2009	01.06.2011
6	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
8	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
9	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
10	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
11	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	08.01.2010	08.01.2012
12	n. a.	Horn Antenne 1-26.5GHz	3115	EMCO	9005-3440	300002190			
14	n. a.	Horn Antenne 1-26.5GHz	3115	EMCO Elektronik	9709-5290	300000212			
15	n. a.	Universal Communication Tester	CMU200	R&S	106826	300003346	k	12.01.2010	12.01.2011
16	n. a.	Software Option für CMU 200	CMU-Kxx	R&S		300003345	k	12.01.2010	12.01.2011
17	n. a.	Ultra Stable Notch Filter	WRCD1887.82/1889.55-5EE	Wainwright	1	300000115	ev		
18	n. a.	Funkstörmessempfänger 20Hz- 26,5GHz	ESU26	R&S	100037	300003555	k	08.01.2010	08.01.2011
19	n. a.	HF-Schaltmatrixgrundgerät	TS-RSP 1144.1500K03	R&S	100300	300003556	ev		
22	n. a.	Signalgenerator 1-20 GHz	SMR20	R&S	101697/020	300003593	k	08.01.2010	08.01.2012
23	n. a.	Turnable Band Reject	WRCT1850/2170-5/40-10EEK	Wainwright	7	300003386	ev		
24	n. a.	Software Option für CMU 200	CMU-K62	R&S	103288	300003600	k	12.01.2010	12.01.2011
25	n. a.	Software Option für CMU 200	CMU-K61	R&S	103354	300003612	k	12.01.2010	12.01.2011
26	n. a.	Software Option für CMU 200	CMU-K64	R&S	102017	300003613	k	12.01.2010	12.01.2011
27	n. a.	Software Option für CMU 200	CMU-K56	R&S	100251	300003614	k	12.01.2010	12.01.2011
29	n. a.	Tunable Band Reject	WRCT1850/2170-5/40-10EEK	Wainwright	40	300003872	ev		
30	n. a.	Tunable Band Reject	WRCT824/894-5/40-8EEK	Wainwright	27	300003873	ev		
32	n. a.	Isolating Transformer	913501	Erfi		300001205	ne		
33	4	Radiocom. Analyzer	CMTA 54	R&S	894043/010	300001175	NK!	06.06.2007	
34	9	Signal Generator 0.1-4320 MHz, AM/FM/PHIM/Puls Mod.	SMHU	R&S	894055/005	300001190	Ve	05.01.2010	05.01.2013
35	10	Signal Generator 0.1-2000 MHz	SMH	R&S	864219/033	300001410	Ve	18.08.2010	18.08.2013
36	n. a.	DC Power Supply 0 –	1108-32	Heiden	001802	300001383	Ve	23.06.2010	23.06.2013

		32V							
37	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04590	300001041	Ve	08.01.2009	08.01.2012
38	n. a.	Temperature Test Chamber	VT 4002	Heraeus Voetsch	521/83761	300002326	Ve	28.05.2009	28.05.2011
39	n. a.	Audio Analyzer 2Hz - 300 kHz	UPD	R&S	841074/009	300001236	k	08.01.2010	08.01.2012
40	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
41	n. a.	Signal Analyzer 20Hz-26,5GHz-150 to + 30 DBM	FSiQ26	R&S	835111/0004	300002678	Ve	06.01.2009	06.01.2011
42	n. a.	Temperature Test Chamber	T-40/50	CTS GmbH	064023	300003540	vlKl!	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
vlkl!	Attention: extended calibration interval			
NK!	Attention: not calibrated			

*) next calibration ordered / will be executed on …

Annex A Photographs of the test setup

Photo documentation

Photo 1: AC Line conducted

Photo 2: Radiated spurious emissions

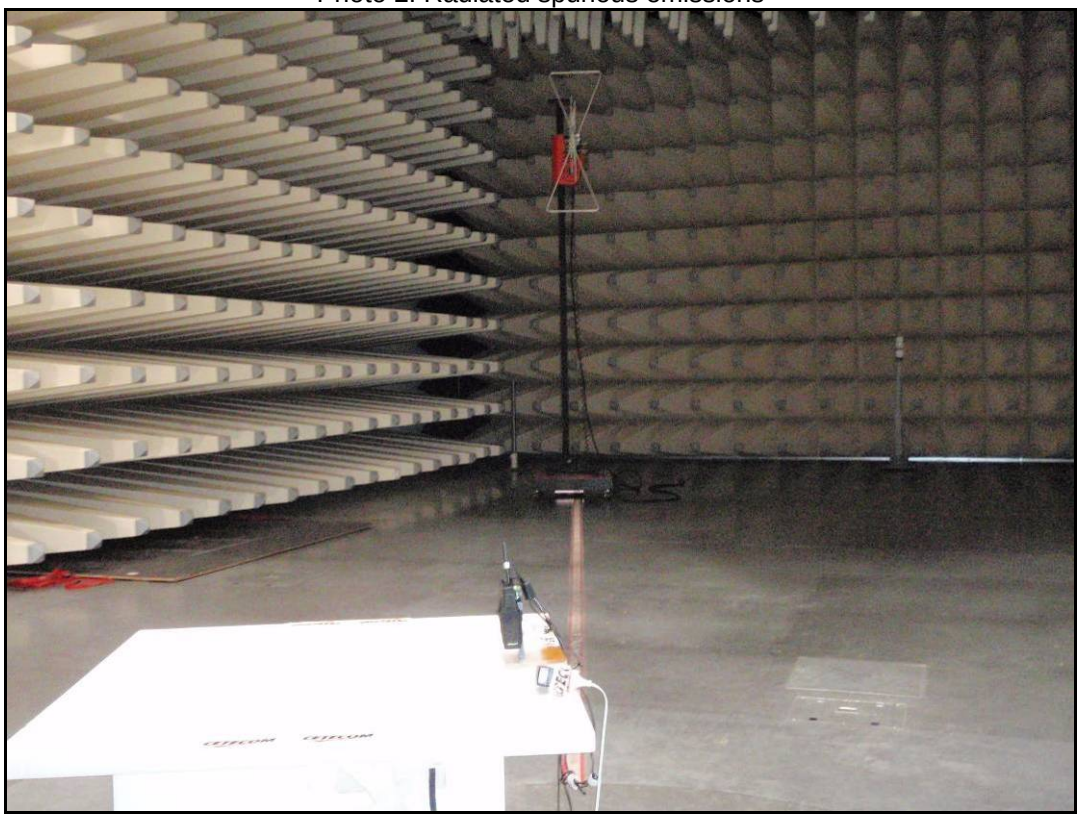
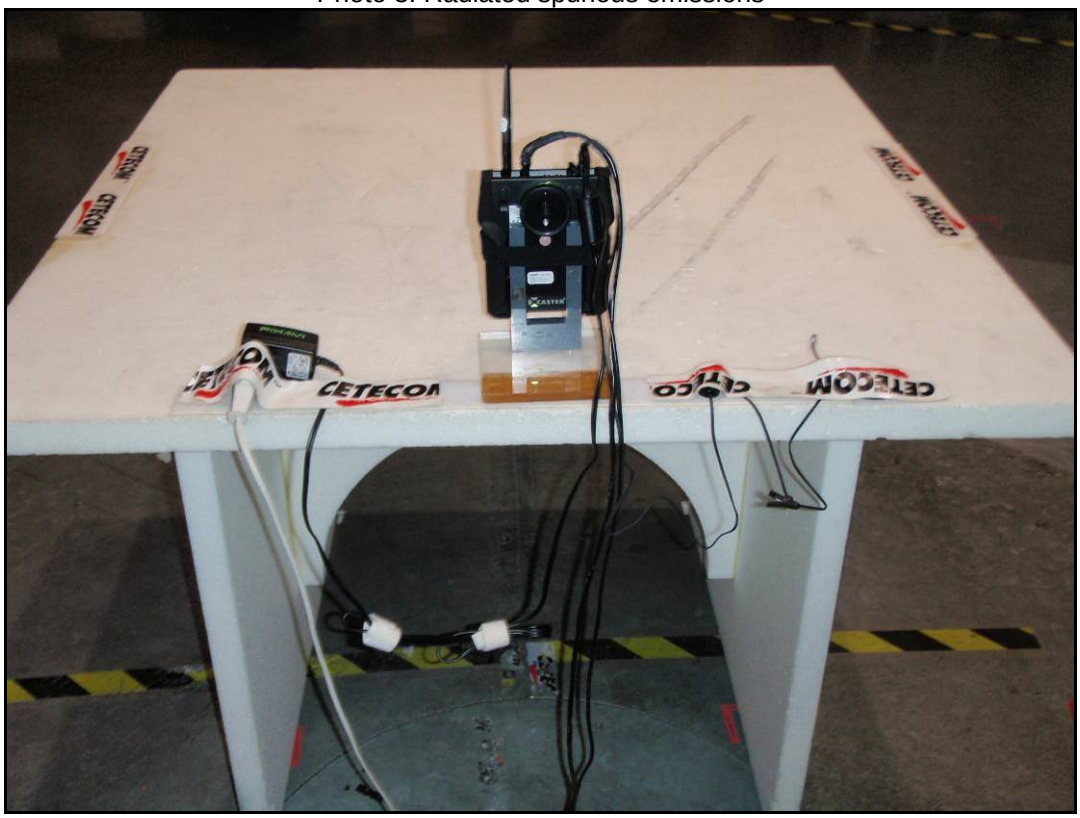


Photo 3: Radiated spurious emissions



Annex B External photographs of the EUT

Photo documentation

Photo 4: EUT

Photo 5: EUT

Photo 6: EUT

Photo 7: EUT

Photo 8: EUT

Photo 9: EUT

Photo 10:

Photo 11: EUT

Photo 12: External antenna

Photo 13: Accessory

Photo 14: Accessory

Photo 15: Power supply

Photo 16: Power supply

Annex C Internal photographs of the EUT

Photo documentation

Photo 17:

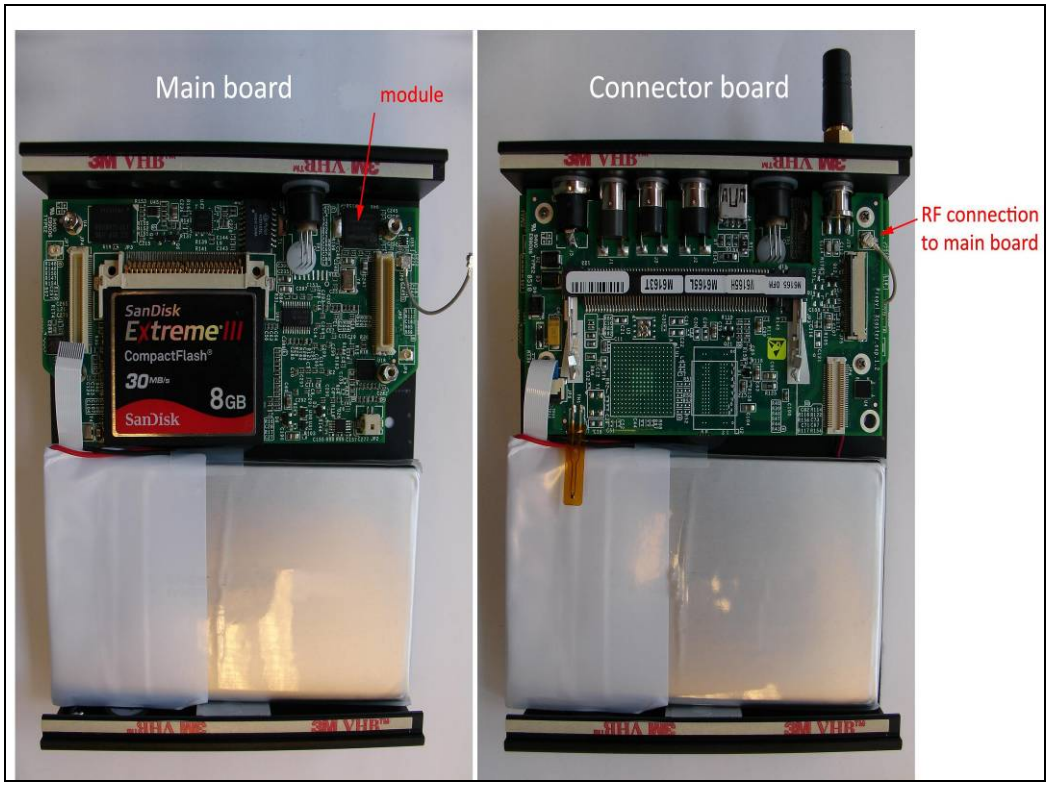
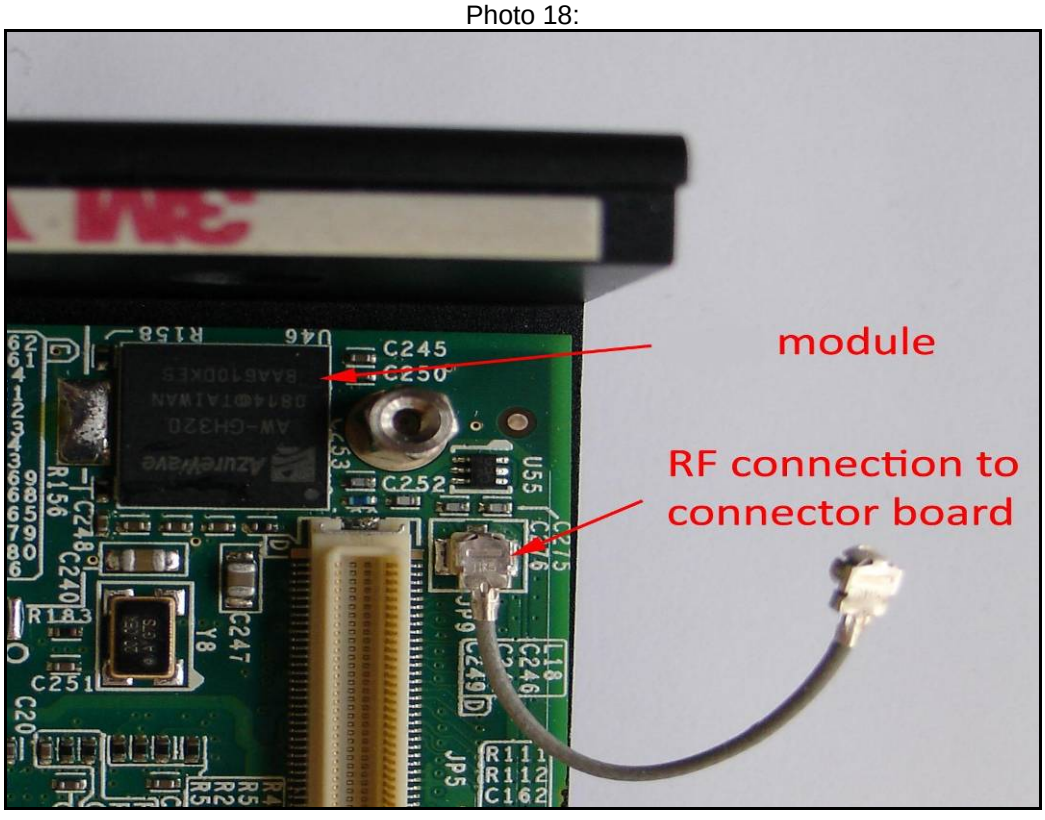


Photo 18:



Annex D Document history

Version	Applied changes	Date of release
1.0	Initial release	2010-09-22
-A	Model name changed Average values removed Additional comments added	2010-10-04

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