

TEST REPORT

Test report no.: 1-2977-02-07/11



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

Sony Ericsson Mobile Communications AB
 Nya Vattentornet
 22188 Lund / Sweden

Test standard/s

47 CFR Part 15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	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:	Mobile Phone GSM900/1800/1900; CDMA2000 BC0/BC1/BC3/BC6; BT2.1+EDR, WLAN ,GPS
Model name:	AAH-5880011-BV
FCC ID:	PY7A5880011
IC:	4170B-A5880011
Frequency [MHz]:	2400 MHz to 2483.5 MHz ISM – band (lowest channel 2412 MHz; highest channel 2462)
Power supply:	3.7V DC by battery SO004UAA / power supply
Temperature range:	-20 °C to +55 °C

Test performed:

Test report authorised:

2011-02-01 
 Andreas Keller

2011-02-01 
 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:	2011-01-12
Date of receipt of test item:	2011-01-28
Start of test:	2011-01-29
End of test:	2011-02-01
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 Part 15 - Radio frequency devices
RSS - 210 Issue 8	2010-12	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}	22 °C during room temperature tests
	T_{max}	+55 °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}	3.7 V DC by battery SO004UAA / power supply
	V_{max}	4.1 V
	V_{min}	3.6 V *)

*) Stable operation requires a minimum voltage of 3.6 V. In the range from 3.3 V to 3.5 V the EUT stated a "LOW BATTERY" state and switched off automatically after a few seconds.

5 Test item

Kind of test item	:	Mobile Phone GSM900/1800/1900; CDMA2000 BC0/BC1/BC3/BC6; BT2.1+EDR, WLAN ,GPS
Type identification	:	AAH-5880011-BV
S/N serial number	:	Radiated units: SSOGJ000582; SSOGJ000586 Conducted units: SSOGJ000617; SSOGJ000628
HW hardware status	:	FP2
SW software status	:	00.20.00
Frequency band [MHz]	:	2400 MHz to 2483.5 MHz ISM – band (lowest channel 2412 MHz; highest channel 2462)
Type of modulation	:	DSSS & OFDM technology with BPSK, QPSK, 16- and 64 QAM.
Number of channels	:	11
Antenna	:	Integrated antenna → for more information, please take a look at the annex – internal photos of the EUT.
Power supply	:	3.7 V DC by battery SO004UAA / power supply
Temperature range	:	-20°C to +55 °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	CFR Part 15 RSS 210, Issue 8, Annex 8	Passed	2011-02-02	-/-

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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.247(e) RSS 210 / A8.2(b)	Power spectral density	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(a)(2) RSS 210 / A8.2(a)	Spectrum bandwidth 6dB bandwidth	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(a)(2) RSS 210 / A8.2(a)	Spectrum bandwidth 20dB bandwidth	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(b)(3) RSS-210 / A8.4(4)	Maximum output power	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(d) RSS-210 / A8.5	Band edge compliance conducted	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.205 RSS-210 / A8.5	Band edge compliance radiated	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions conducted	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions radiated	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.109 RSS-Gen.	RX spurious emissions radiated	Nominal	Nominal	-/-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.209(a) RSS-Gen	TX spurious emissions radiated < 30 MHz	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.107(a)	Conducted emissions < 30 MHz	Nominal	Nominal	DSSS OFDM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies

Note: NA = Not Applicable; NP = Not Performed

8 RF measurement testing

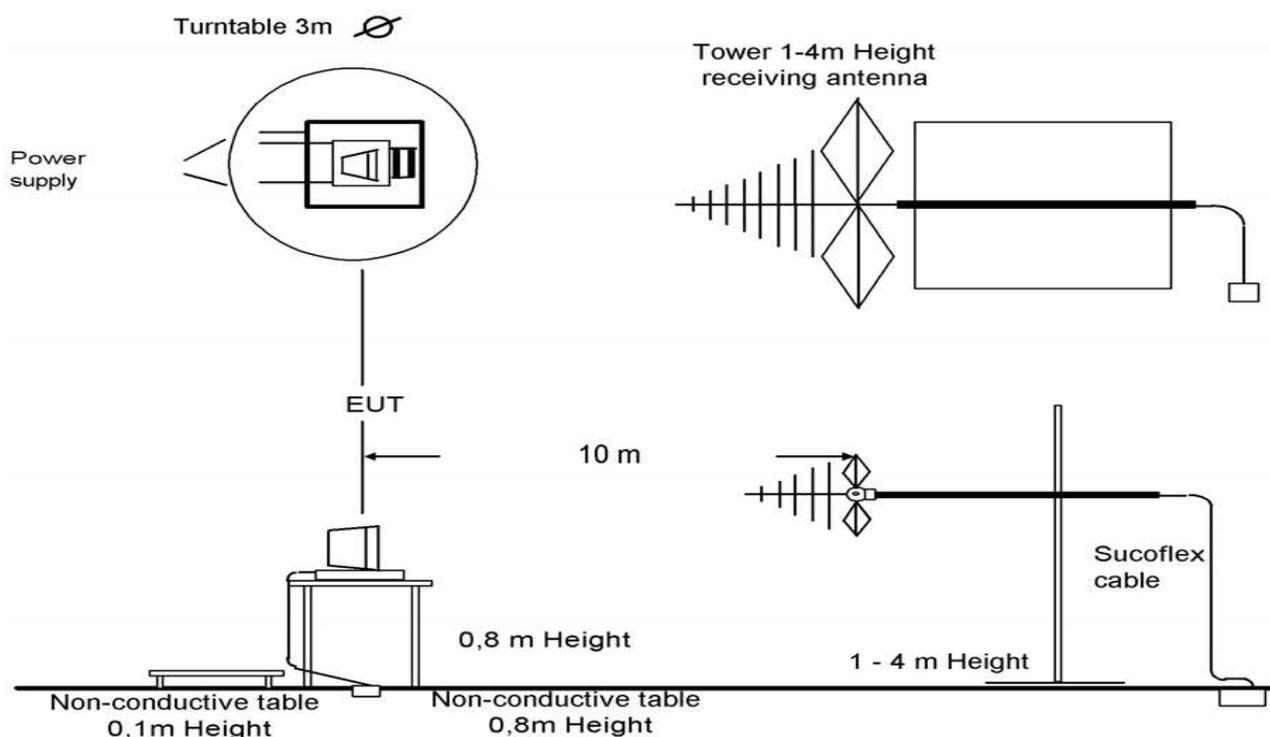
8.1 Description of test setup

8.1.1 Radiated measurements

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



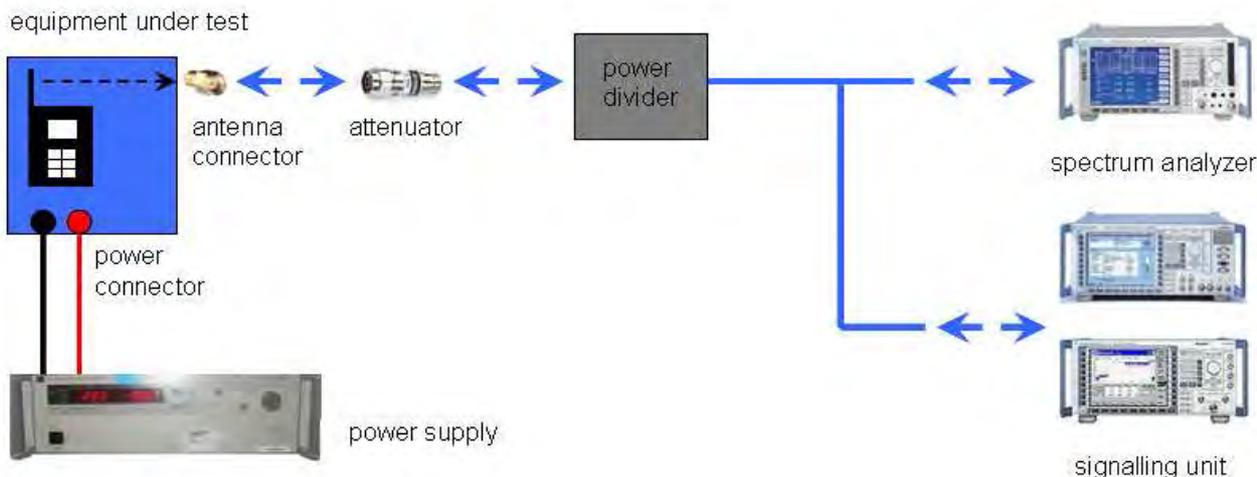
Picture 1: Diagram radiated measurements

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.

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 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

8.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

- Test mode:
- No test mode available.
lperf was used to ping another device with the largest support packet size
 - Special software is used.
EUT is transmitting pseudo random data by itself

8.3 RSP100 test report cover sheet / performance test data

Test report number	:	1-2977-02-07/11
Equipment model number	:	AAH-5880011-BV
Certification number	:	4170B-A5880011
Manufacturer (complete address)	:	Sony Ericsson Mobile Communications AB Nya Vattentorget 22188 Lund / Sweden
Tested to radio standards specification no.	:	RSS 210, Issue 8, Annex 8
Open area test site IC No.	:	IC 3462C-1
Frequency range	:	2400 MHz to 2483.5 MHz ISM – band (lowest channel 2412 MHz; highest channel 2462)
RF-power [W] (max.)	:	cond.: 32.36 mW (DSSS) 173.78 mW (OFDM) EIRP: 16.22 mW (DSSS) 87.10 mW (OFDM)
Occupied bandwidth (99%-BW)	:	DSSS: 18.3 MHz OFDM: 20.4 MHz
Type of modulation	:	DSSS & OFDM technology with BPSK, QPSK, 16- and 64 QAM.
Emission designator (TRC-43)	:	18M3G1D (DSSS) 20M4G7D (OFDM)
Antenna information	:	Integrated antenna → for more information, please take a look at the annex – internal photos of the EUT.
Transmitter spurious (worst case) [dB μ V/m @ 3m]:		45.0 dB μ V/m @ 12.6 MHz (noise floor / RBW&VBW 1MHz)
Receiver spurious (worst case) [dB μ V/m @ 3m]:		44.5 dB μ V/m @ 11.8 MHz (noise floor / RBW&VBW 1MHz)

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:

2011-02-01

Andreas Keller



Date

Name

Signature

9 Measurement results

9.1 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
Video bandwidth:	30 MHz
Resolution bandwidth:	50 MHz
Span:	ZERO Span
Trace-Mode:	Max Hold

Results:

DSSS	Maximum Output Power Conducted [dBm]			
	1	2	5.5	11
Data Rate [MBit/s]				
Ch 6 - 2437 MHz	15.1	15.0	15.0	15.0
Measurement uncertainty	± 0.5 dB			

OFDM	Maximum Output Power Conducted [dBm]							
	6	9	12	18	24	36	48	54
Data Rate [MBit/s]								
Ch 6 - 2437 MHz	21.8	21.8	22.4	22.2	22.0	21.9	21.8	21.9
Measurement uncertainty	± 0.5 dB							

Result: Selected data rate for all measurements:

DSSS: 1 MBit/s
 OFDM: 12 MBit/s

9.2 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:	3 MHz
Resolution bandwidth:	3 MHz
Span:	30 MHz
Trace-Mode:	Max hold

Limits:

FCC	IC
CFR Part 15.247 (b)(4)	RSS 210, Issue 8, 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		11.1	11.4	11.2
Radiated power [dBm] Measured with DSSS modulation		8.2	8.4	8.1
Gain [dBi] Calculated		-2.9	-3.0	-3.1

Result: The result of the measurement is passed.

9.3 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:	1.5 MHz
Trace-Mode:	Max Hold

Limits:

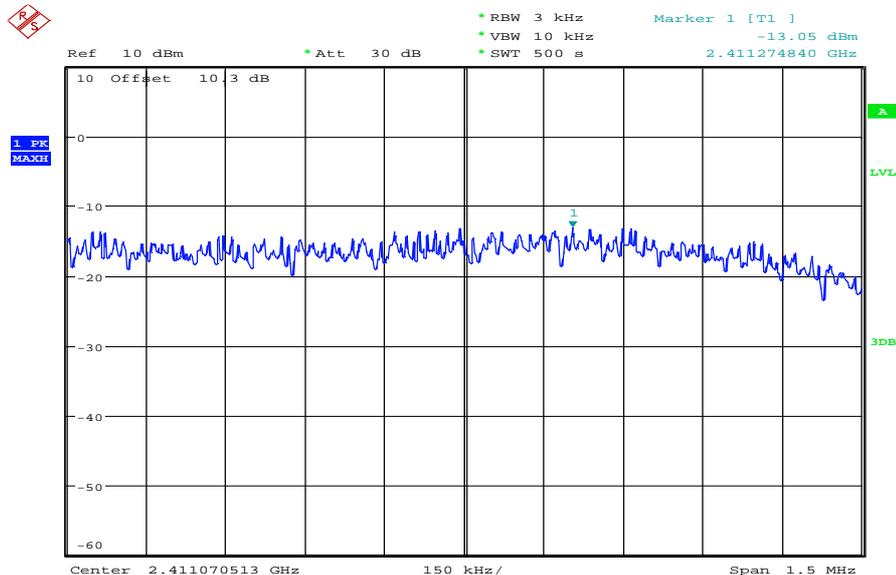
FCC	IC
CFR Part 15.247 (e)	RSS 210, Issue 8, A 8.2(b)
Power Spectral Density	
The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission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

Results:

Modulation	Power Spectral density [dBm/3kHz]			
	Frequency	2412 MHz	2437 MHz	2462 MHz
DSSS		-13.1	-12.7	-12.4
OFDM		-12.1	-11.5	-11.7
Measurement uncertainty		± 0.5 dB		

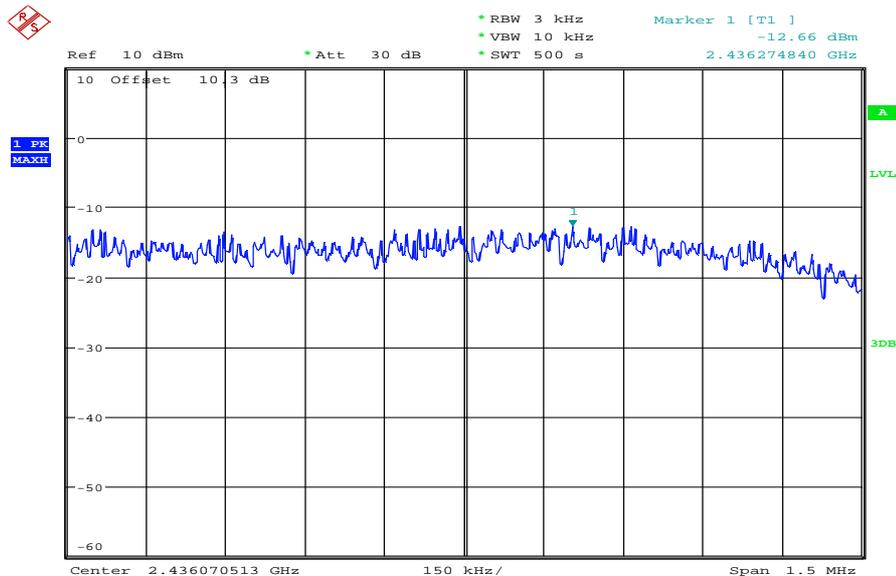
Result: The result of the measurement is passed.

Plot 1: Channel 1 (DSSS)



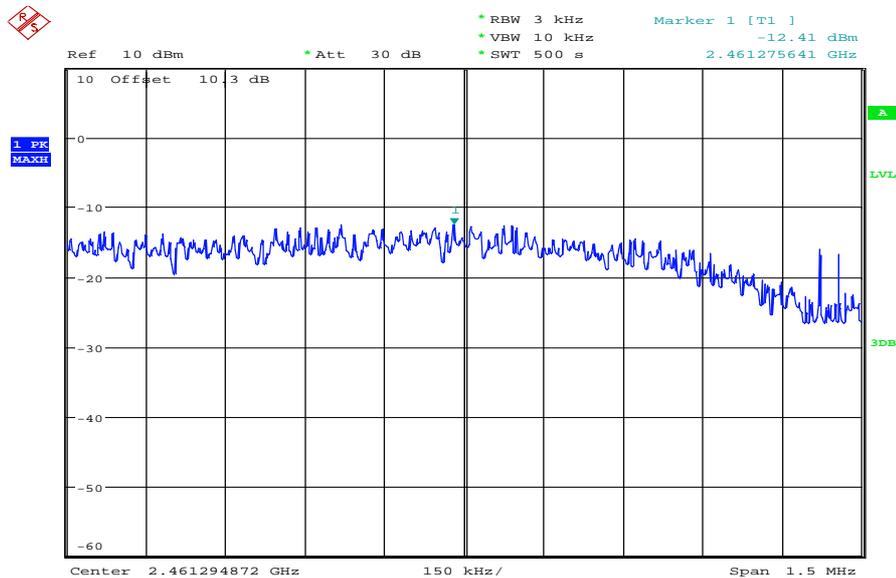
Date: 29.JAN.2011 09:51:23

Plot 2: Channel 6 (DSSS)



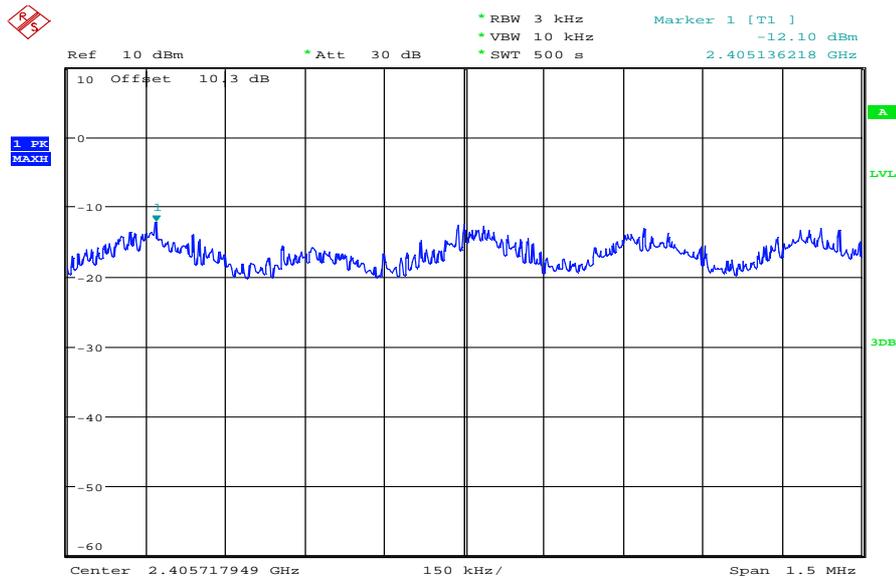
Date: 29.JAN.2011 10:01:23

Plot 3: Channel 11 (DSSS)



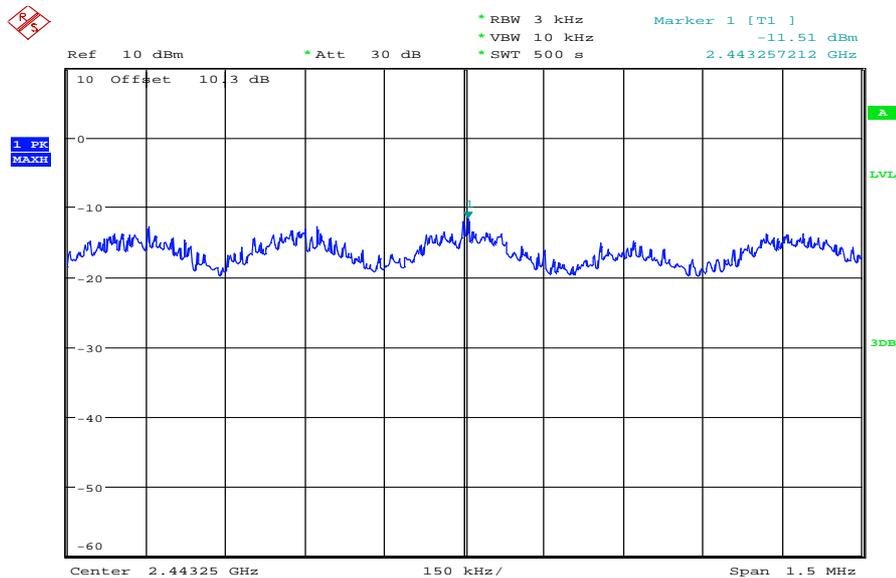
Date: 29.JAN.2011 10:12:47

Plot 4: Channel 1 (OFDM)



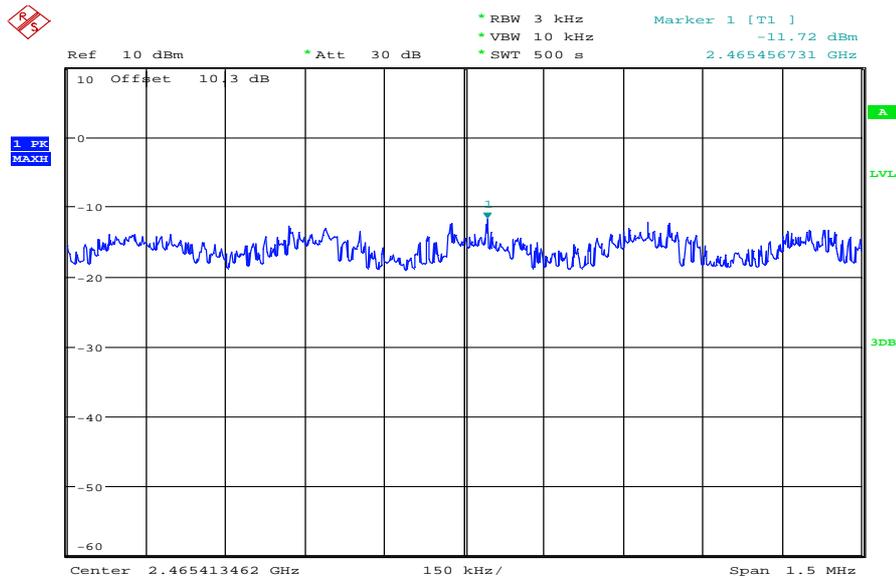
Date: 29.JAN.2011 09:40:33

Plot 5: Channel 6 (OFDM)



Date: 29.JAN.2011 09:19:21

Plot 6: Channel 11 (OFDM)



Date: 29.JAN.2011 09:07:41

9.4 Spectrum bandwidth – 6 dB bandwidth

Description:

Measurement of the 6 dB bandwidth of the modulated signal.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	300 kHz
Resolution bandwidth:	300 kHz
Span:	30 MHz
Trace-Mode:	Max Hold

Limits:

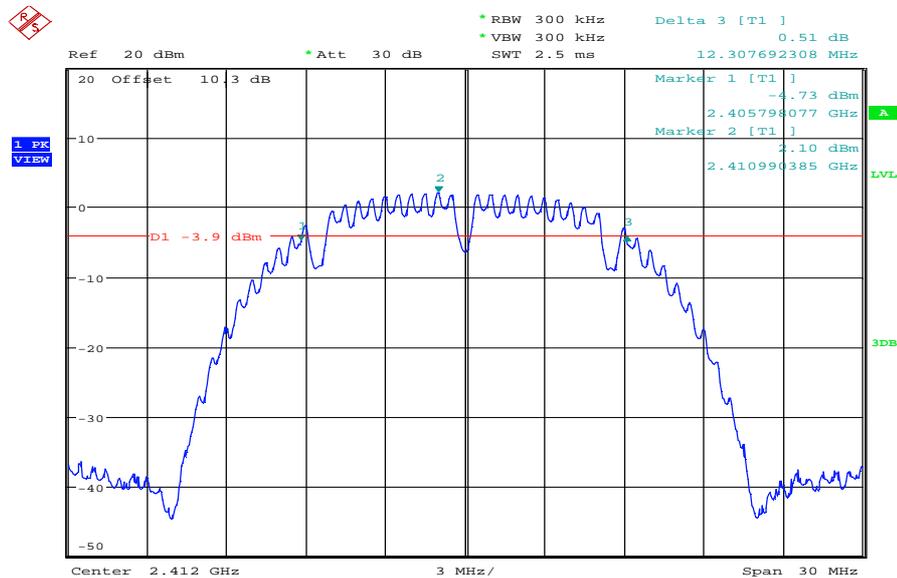
FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 8, A 8.2(a)
Spectrum Bandwidth – 6 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

Results:

Modulation Frequency	6 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS	12.3	12.4	12.7
OFDM	16.7	16.7	16.7
Measurement uncertainty	± 300 kHz		

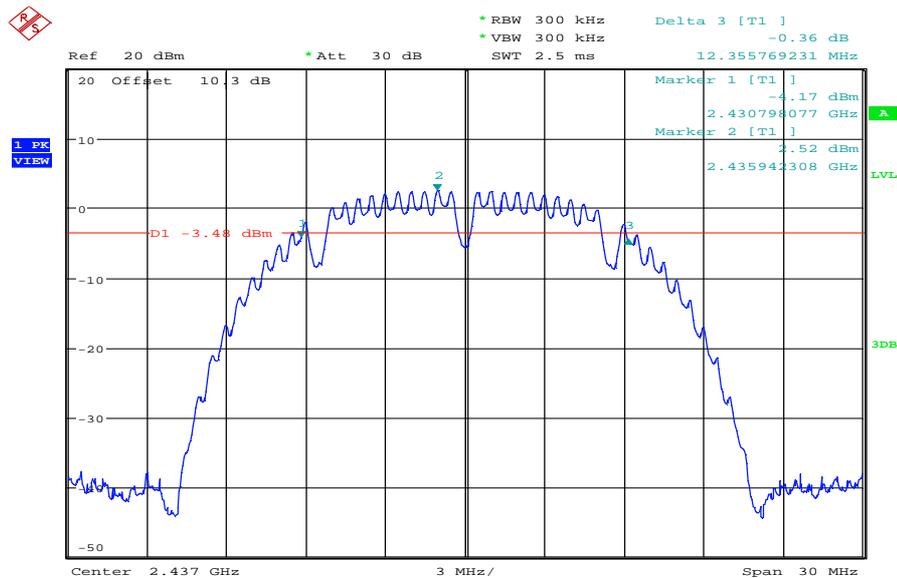
Result: The result of the measurement is passed.

Plot 1: Channel 1 (DSSS)



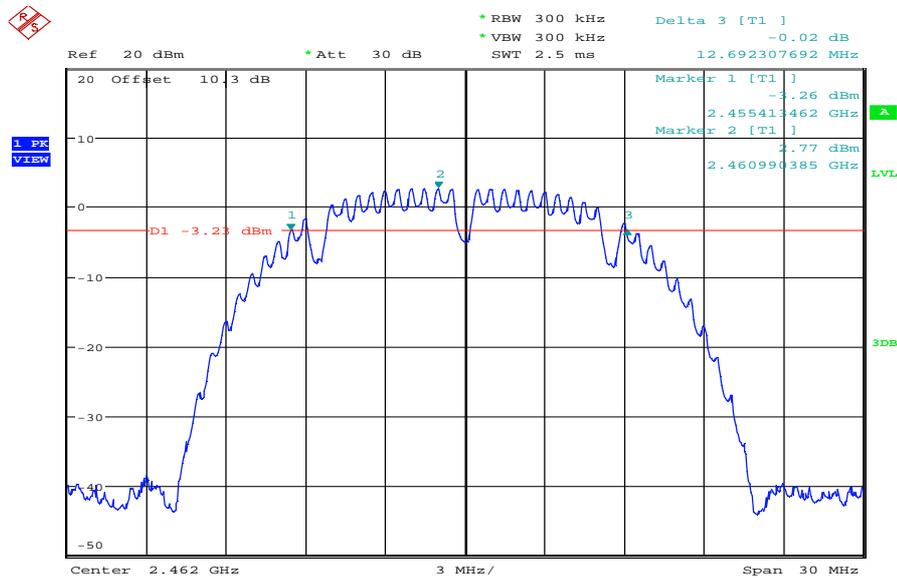
Date: 29.JAN.2011 07:46:52

Plot 2: Channel 6 (DSSS)



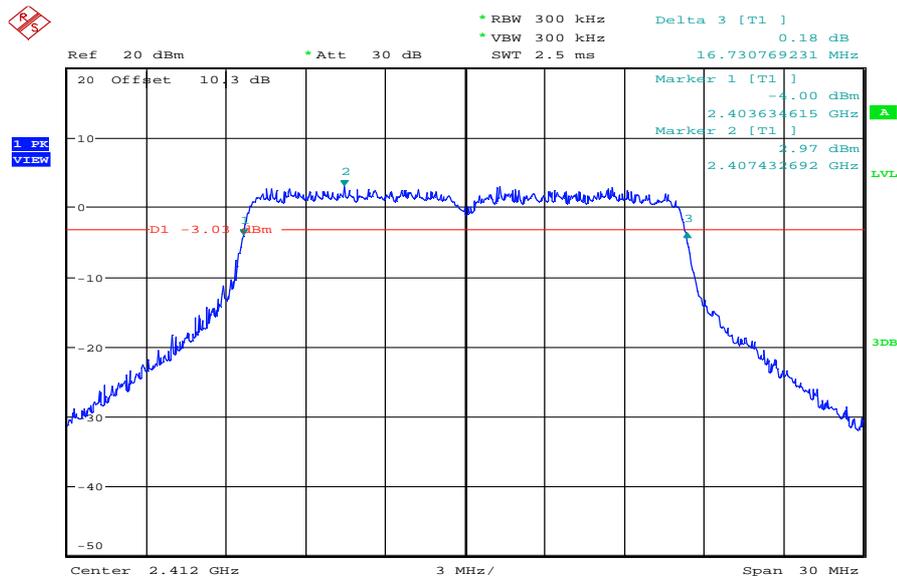
Date: 29.JAN.2011 07:50:33

Plot 3: Channel 11 (DSSS)



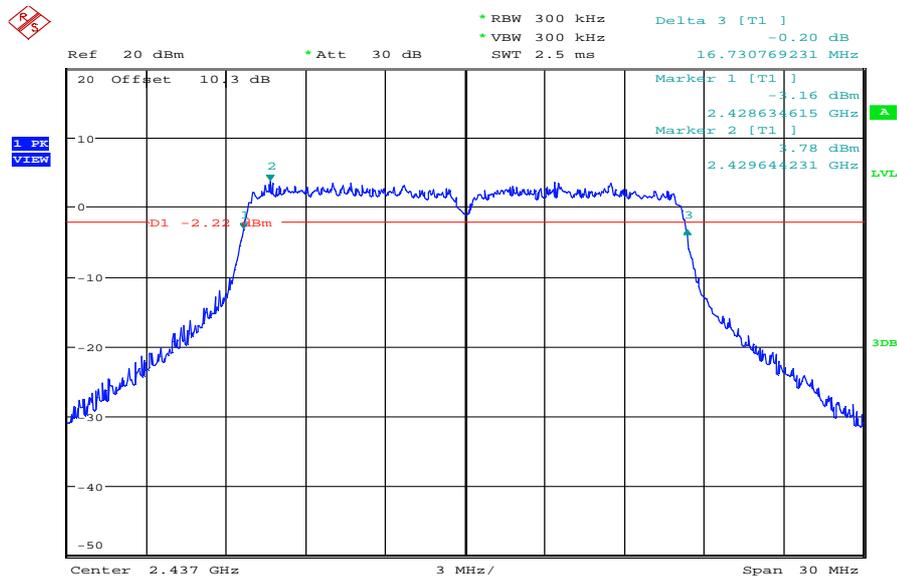
Date: 29.JAN.2011 07:53:51

Plot 4: Channel 1 (OFDM)



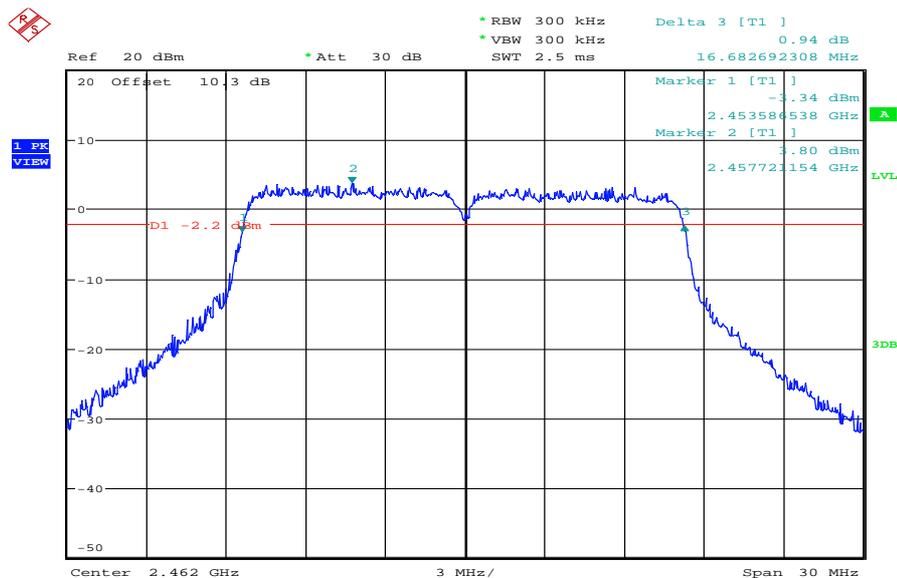
Date: 29.JAN.2011 08:08:41

Plot 5: Channel 6 (OFDM)



Date: 29.JAN.2011 08:05:30

Plot 6: Channel 11 (OFDM)



Date: 29.JAN.2011 07:58:44

9.5 Spectrum bandwidth – 20 dB bandwidth

Description:

Measurement of the 20 dB bandwidth of the modulated signal.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	300 kHz
Resolution bandwidth:	300 kHz
Span:	30 MHz
Trace-Mode:	Max Hold

Limits:

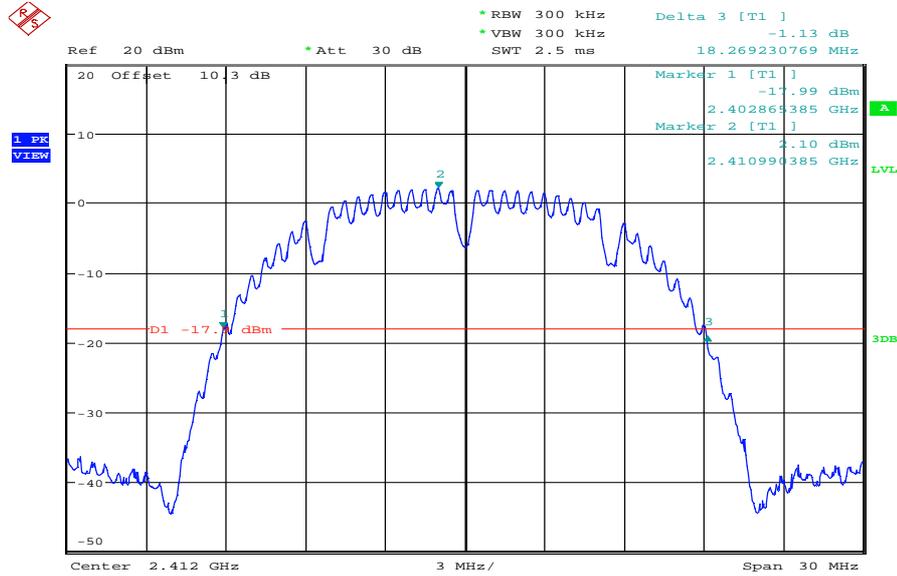
FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 8, A 8.2(a)
Spectrum Bandwidth – 20 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

Results:

Modulation Frequency	20 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS	18.3	18.2	18.3
OFDM	20.0	20.4	20.3
Measurement uncertainty	± 300 kHz		

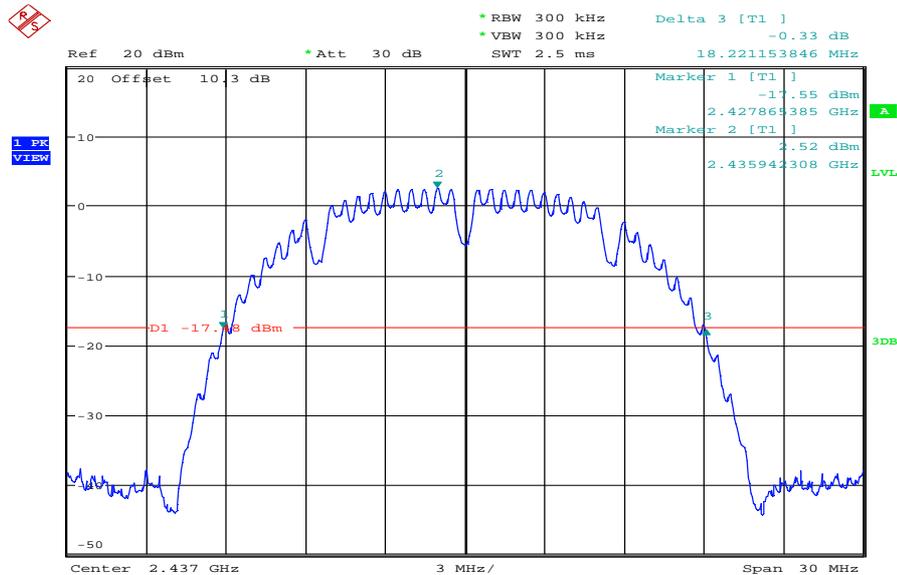
Result: The result of the measurement is passed.

Plot 1: Channel 1 (DSSS)



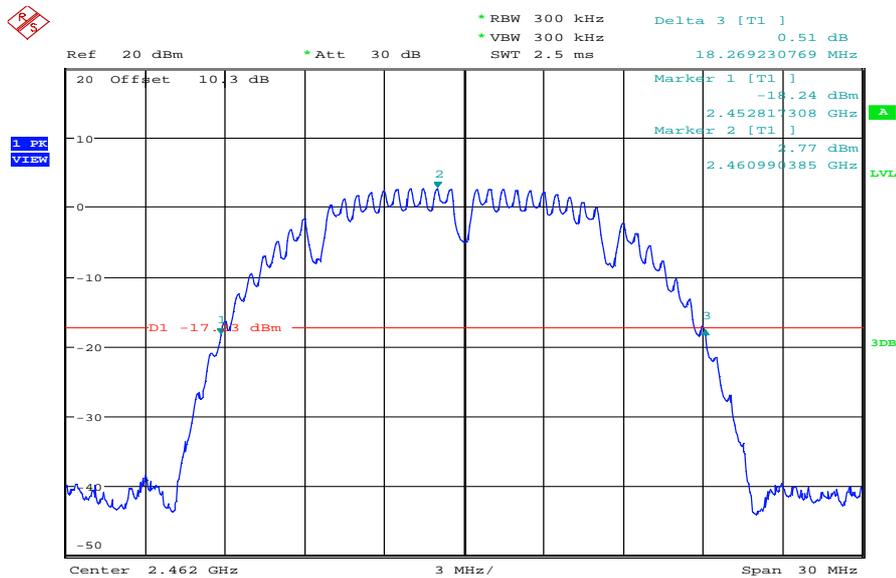
Date: 29.JAN.2011 07:48:29

Plot 2: Channel 6 (DSSS)



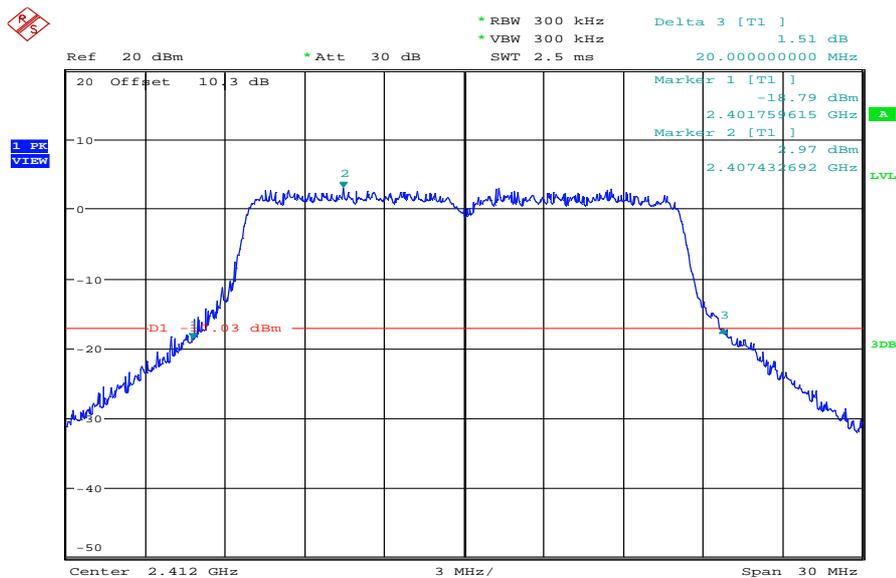
Date: 29.JAN.2011 07:51:45

Plot 3: Channel 11 (DSSS)



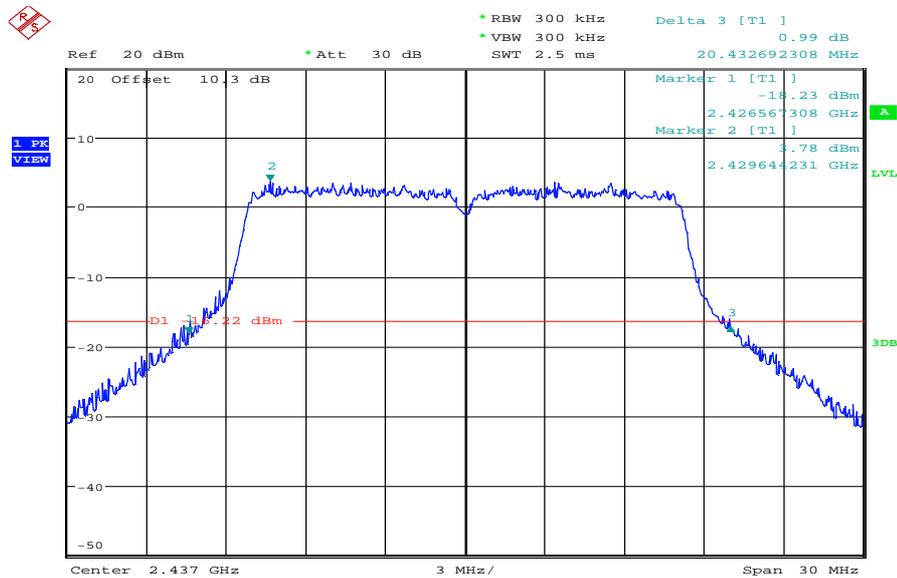
Date: 29.JAN.2011 07:55:14

Plot 4: Channel 1 (OFDM)



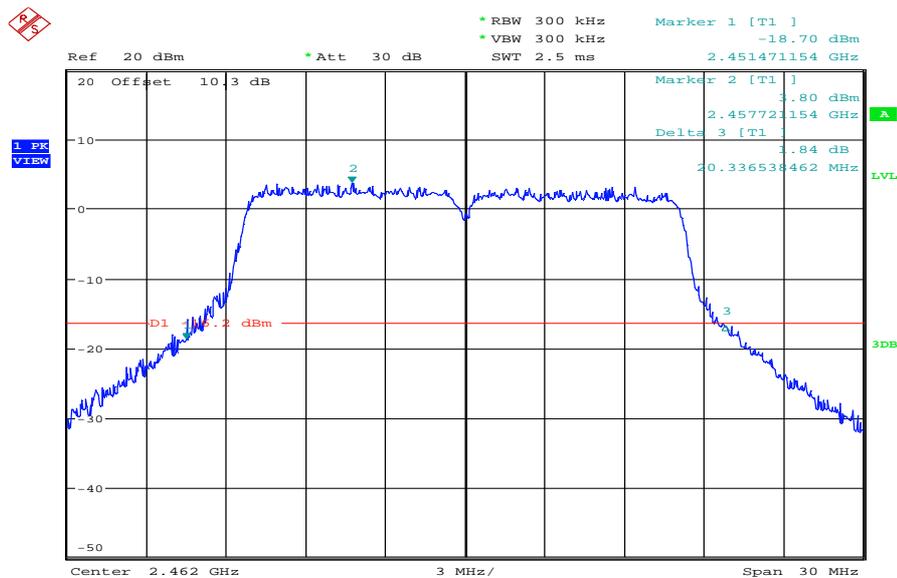
Date: 29.JAN.2011 08:10:55

Plot 5: Channel 6 (OFDM)



Date: 29.JAN.2011 08:06:29

Plot 6: Channel 11 (OFDM)



Date: 29.JAN.2011 08:00:16

9.6 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
Video bandwidth:	30 MHz
Resolution bandwidth:	50 MHz
Span:	30 MHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (b)(3)	RSS 210, Issue 8, A 8.4(4)
Maximum Output Power	
Conducted: 1.0 W – Antenna Gain max. 6 dBi	

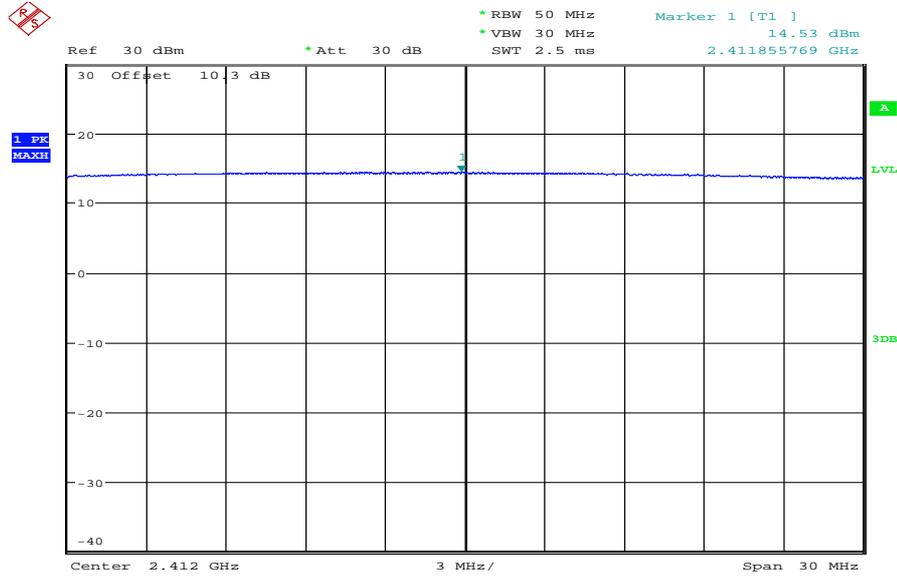
Results:

DSSS Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	14.5	15.1	14.8
Output Power Radiated - EIRP	11.6	12.1	11.7
Measurement uncertainty	± 0.5 dB (cond.) / ± 2 dB (rad.)		

OFDM Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	22.2	22.4	22.3
Output Power Radiated - EIRP	19.3	19.4	19.2
Measurement uncertainty	± 0.5 dB (cond.) / ± 2 dB (rad.)		

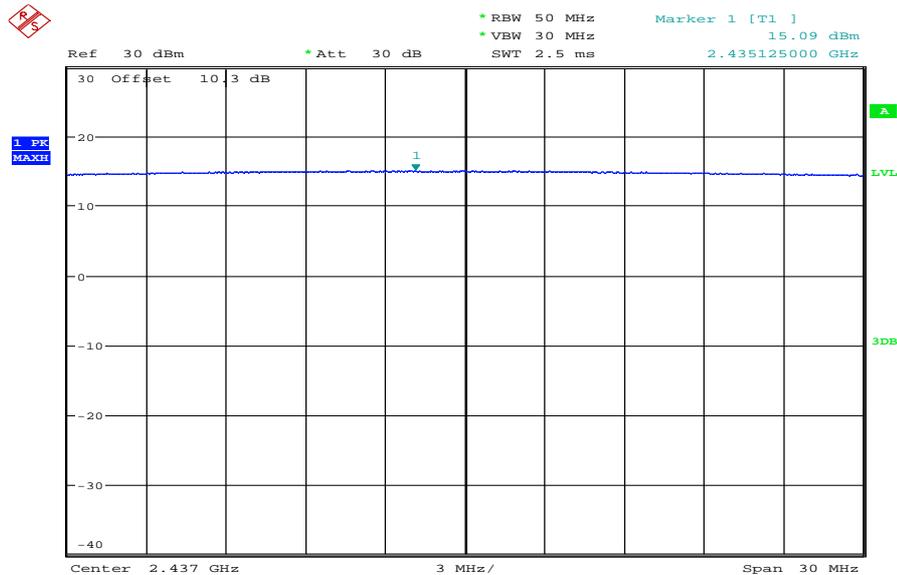
Result: The result of the measurement is passed.

Plot 1: Channel 1 / DSSS (conducted)



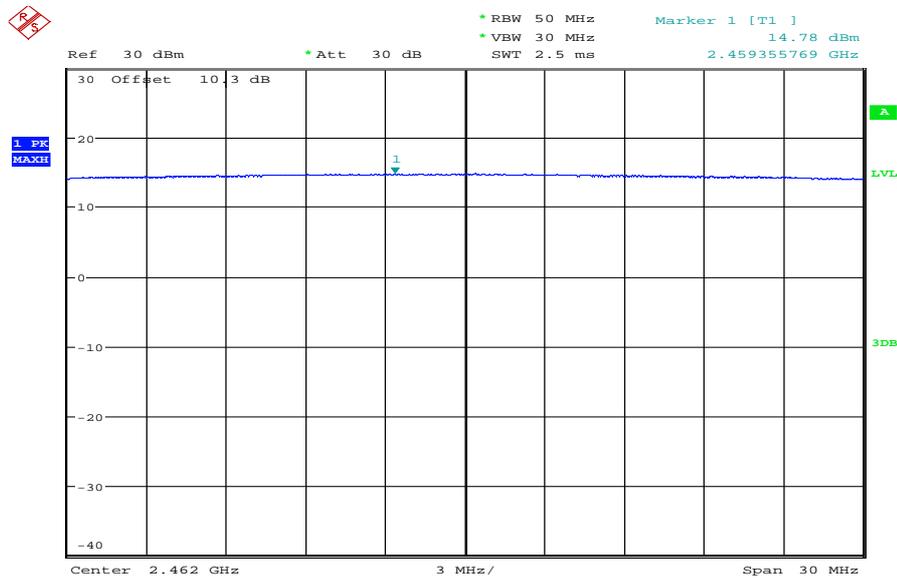
Date: 29.JAN.2011 08:44:56

Plot 2: Channel 6 / DSSS (conducted)



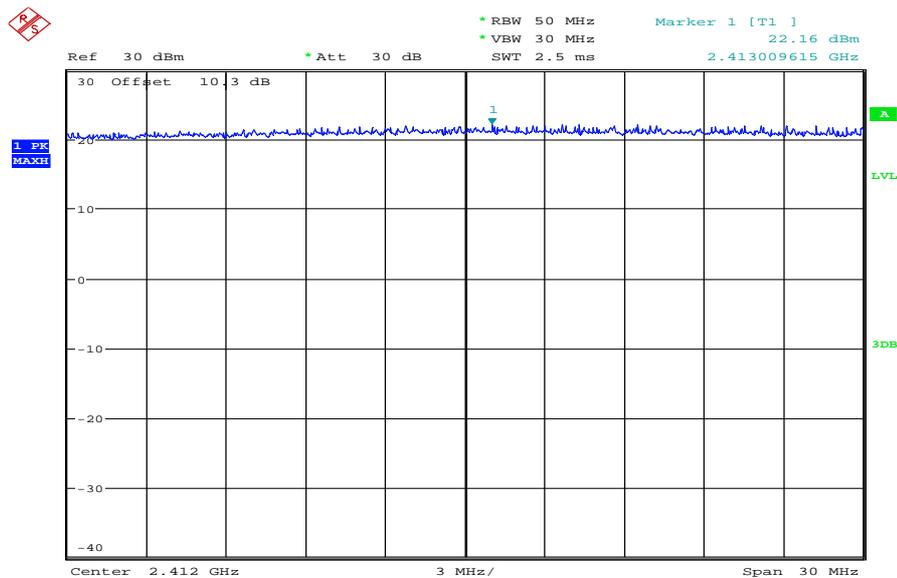
Date: 29.JAN.2011 08:43:30

Plot 3: Channel 11 / DSSS (conducted)



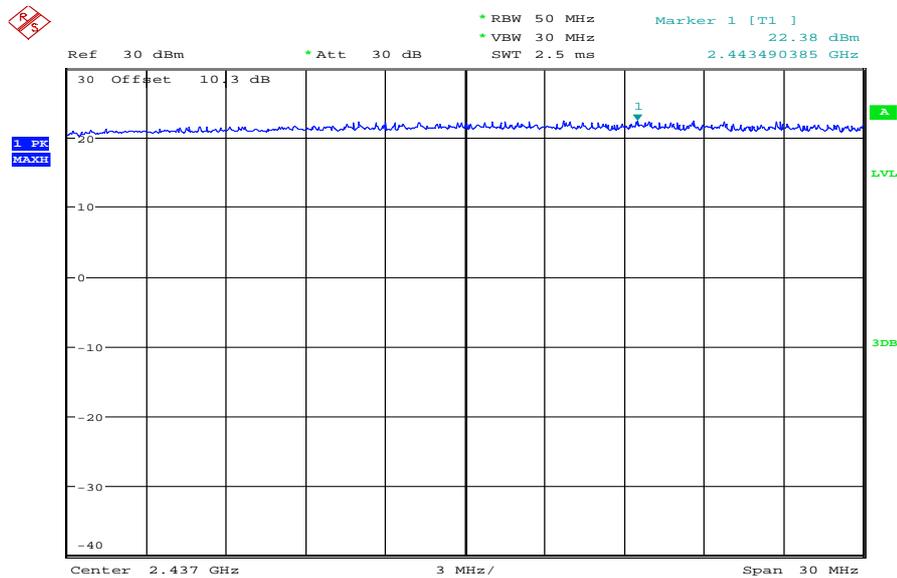
Date: 29.JAN.2011 08:45:52

Plot 4: Channel 1 / OFDM (conducted)



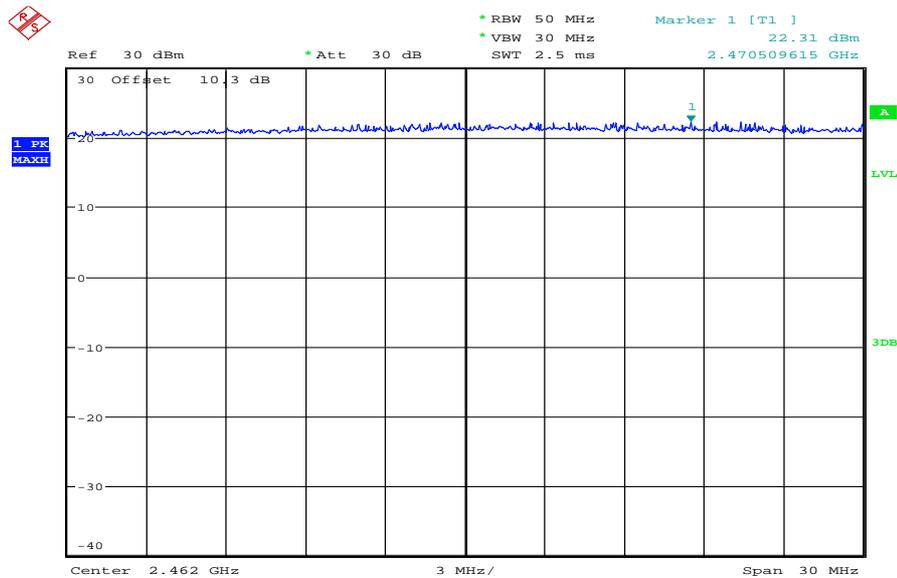
Date: 29.JAN.2011 08:48:49

Plot 5: Channel 6 / OFDM (conducted)



Date: 29.JAN.2011 08:47:41

Plot 6: Channel 11 / OFDM (conducted)



Date: 29.JAN.2011 08:49:51

9.7 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:

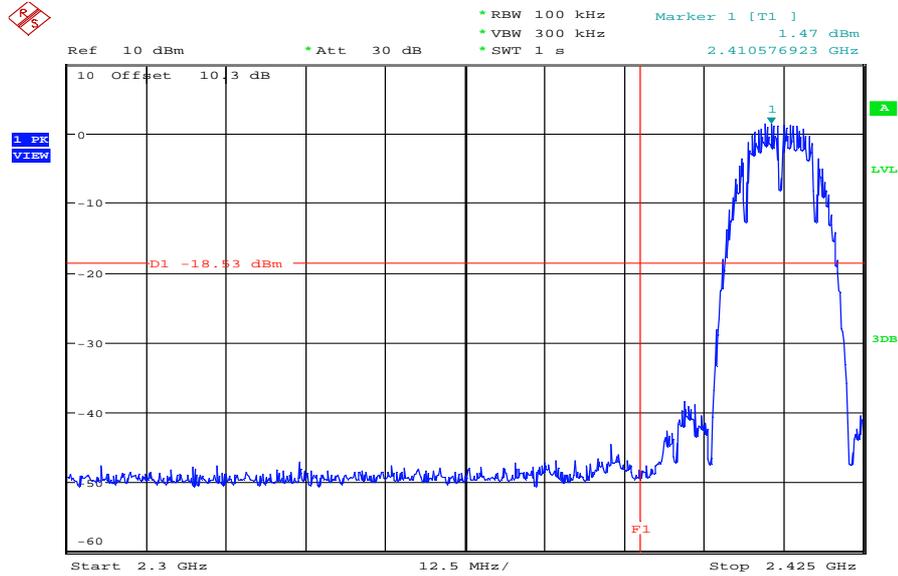
FCC	IC
CFR Part 15.247 (d)	RSS 210, Issue 8, A 8.5
Band Edge Compliance Conducted	
<p>In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall 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.</p>	

Results:

Scenario	Band Edge Compliance Conducted [dB]	
	DSSS	OFDM
Modulation		
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	

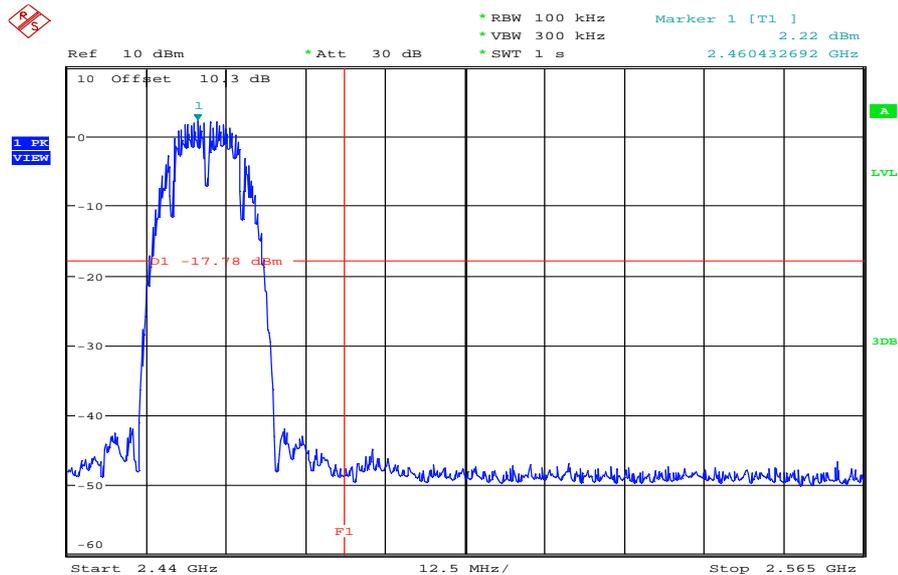
Result: The result of the measurement is passed.

Plot 1: Lower Band Edge – DSSS (conducted)



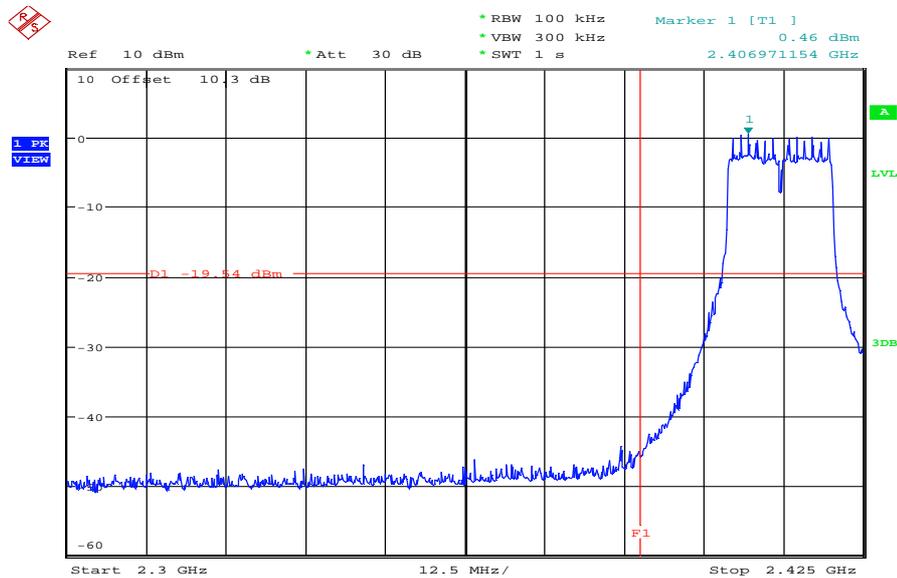
Date: 29.JAN.2011 12:30:11

Plot 2: Upper Band Edge – DSSS (conducted)



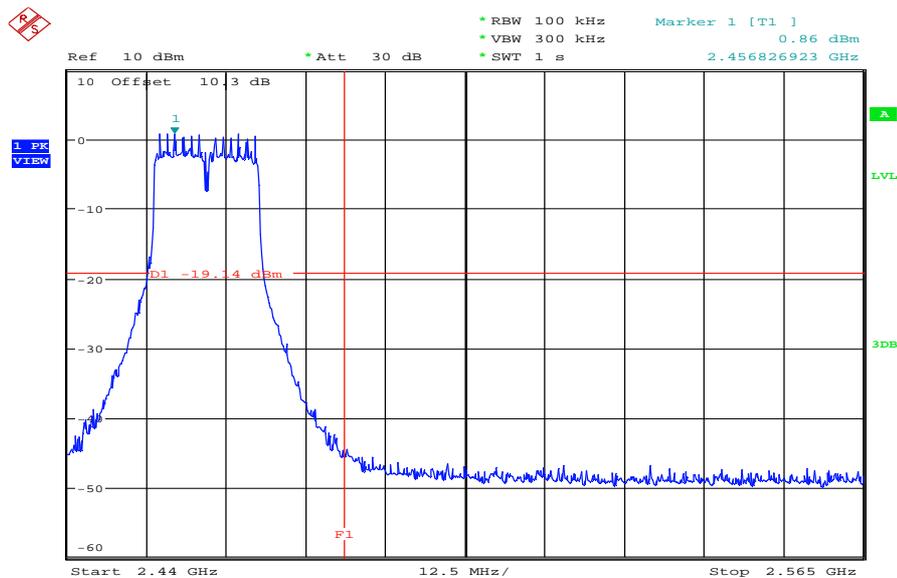
Date: 29.JAN.2011 12:34:00

Plot 3: Lower Band Edge – OFDM (conducted)



Date: 29.JAN.2011 12:27:48

Plot 4: Upper Band Edge – OFDM (conducted)



Date: 29.JAN.2011 12:35:36

9.8 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 8, A 8.5
Band Edge Compliance Radiated	
<p>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)).</p>	
54 dB μ V/m AVG	

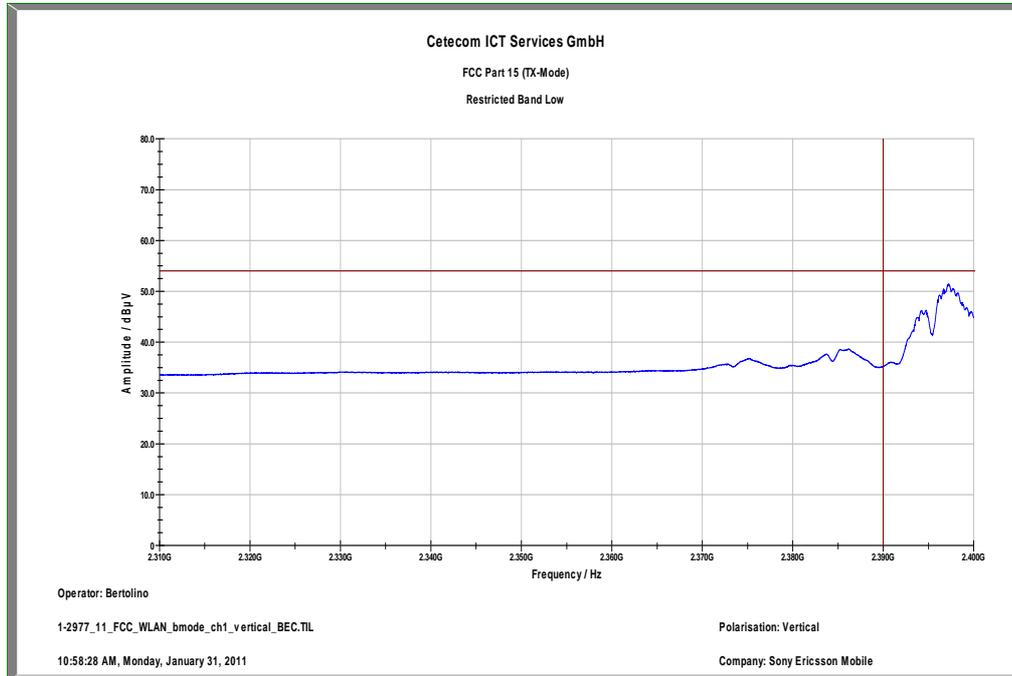
Results:

Scenario Modulation	Band Edge Compliance Radiated [dB μ V/m]	
	DSSS	OFDM
Lower Band Edge – Channel 1	< 54 dB μ V/m (see plots 1/3)	< 54 dB μ V/m (see plots 5/7)
Upper Band Edge – Channel 11	< 54 dB μ V/m (see plots 2/4)	< 54 dB μ V/m (see plots 6/8)
Measurement uncertainty	\pm 3 dB	

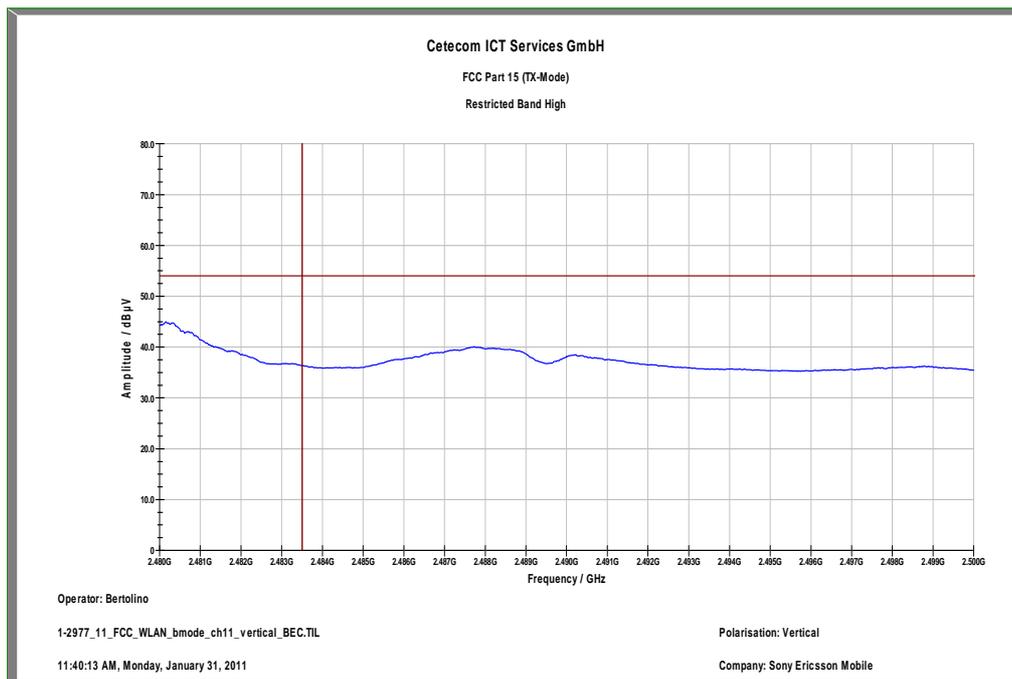
Result: The result of the measurement is passed.

Plots: DSSS / b – mode

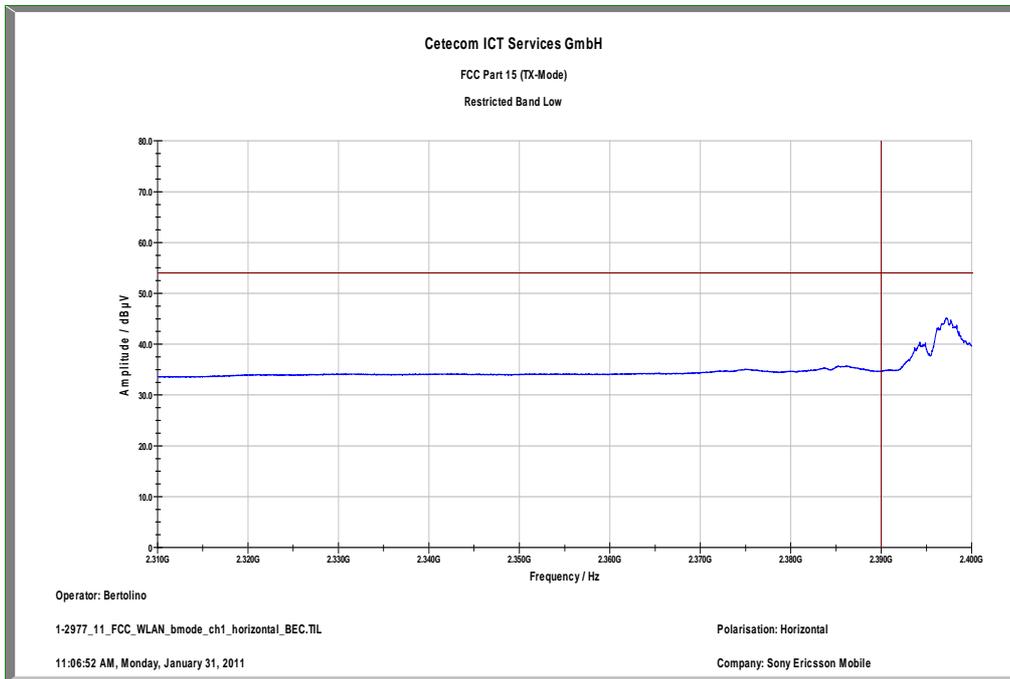
Plot 1: DSSS / b – mode, lower band edge, vertical polarization



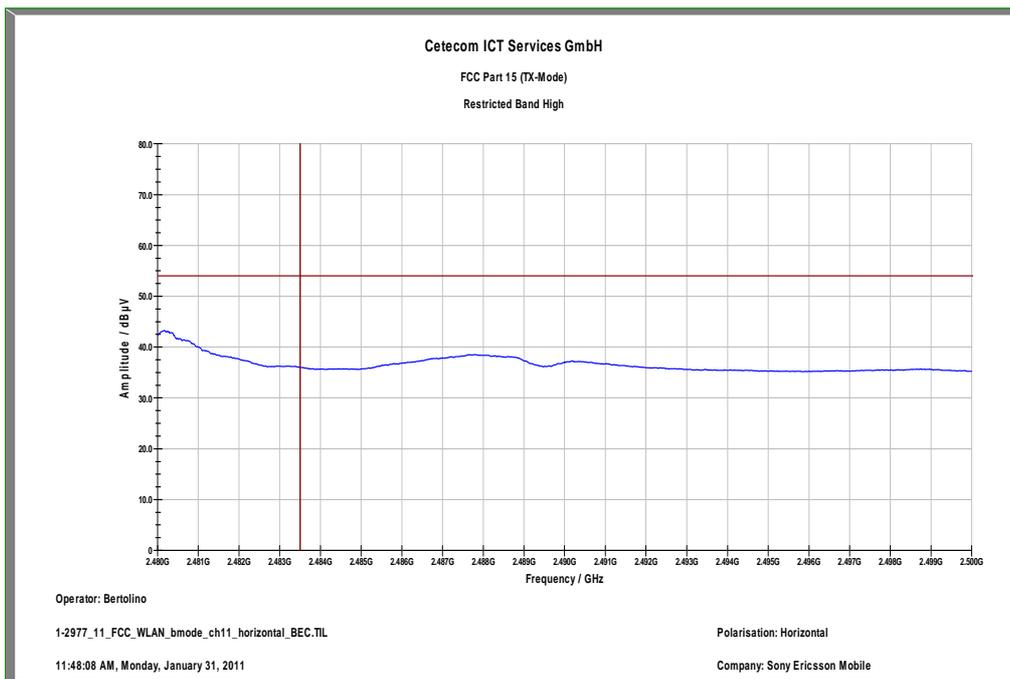
Plot 2: DSSS / b – mode, upper band edge, vertical polarization



Plot 3: DSSS / b – mode, lower band edge, horizontal polarization

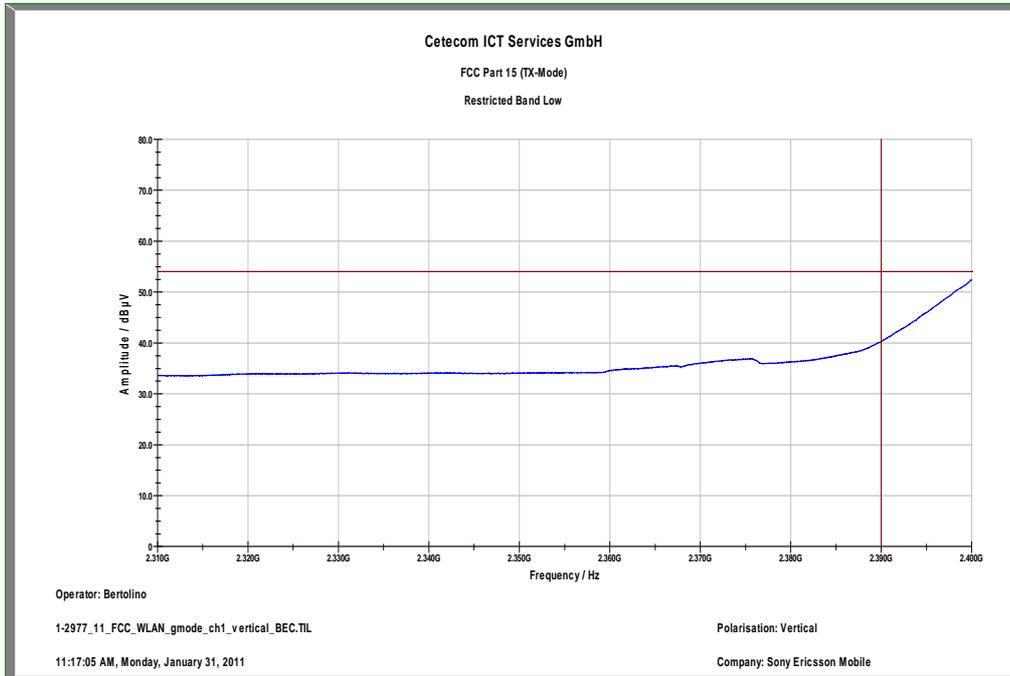


Plot 4: DSSS / b – mode, upper band edge, horizontal polarization

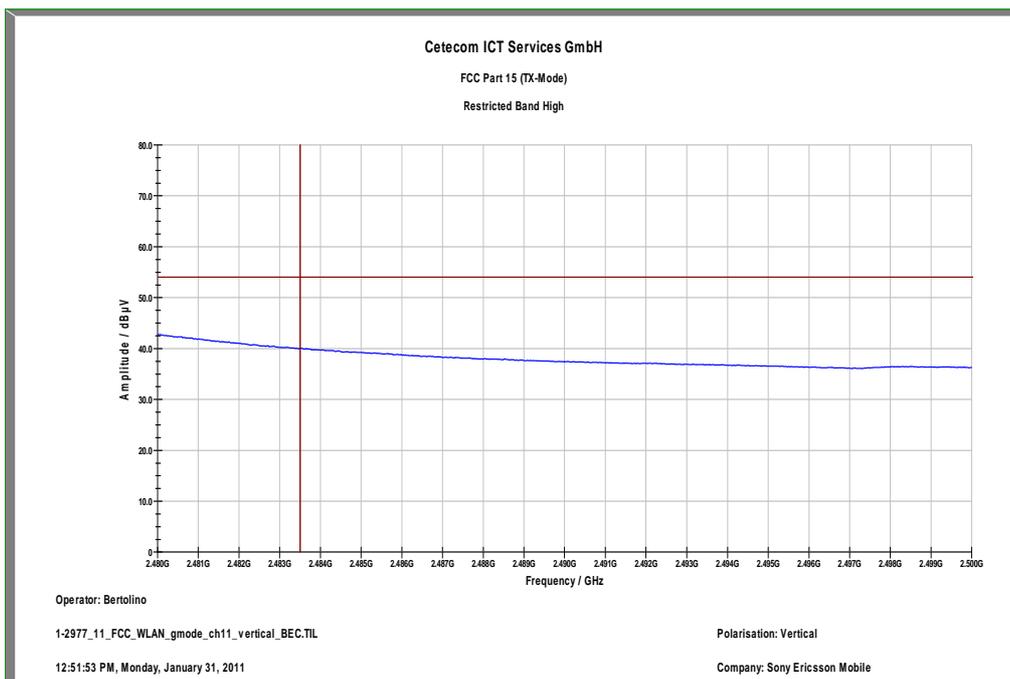


Plots: OFDM / g – mode

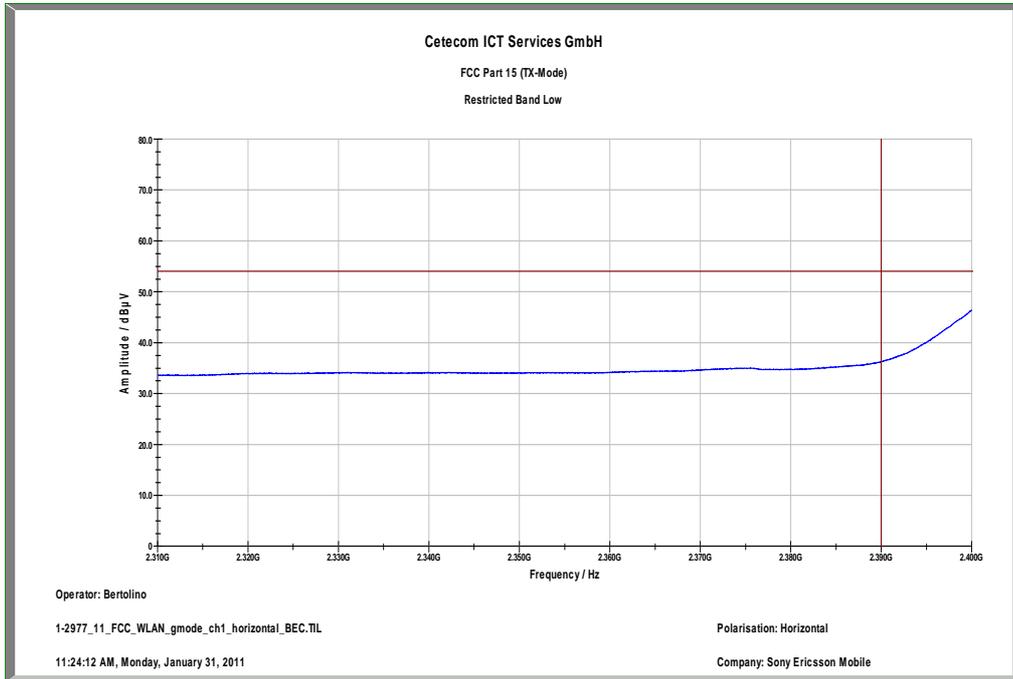
Plot 5: OFDM / g – mode, lower band edge, vertical polarization



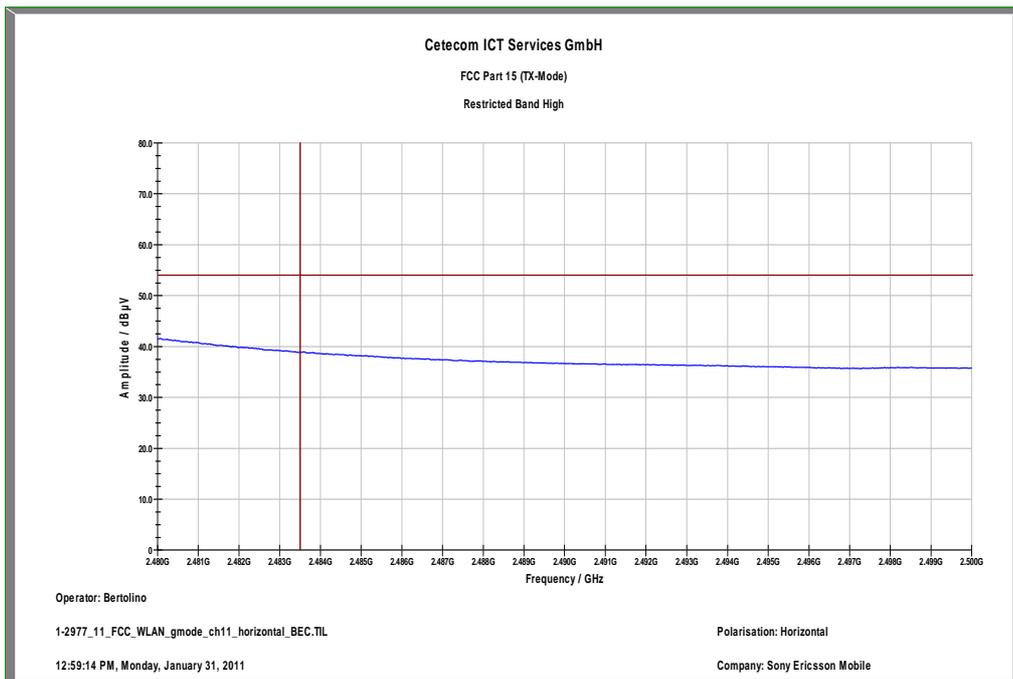
Plot 6: OFDM / g – mode, upper band edge, vertical polarization



Plot 7: OFDM / g – mode, lower band edge, horizontal polarization



Plot 8: OFDM / g – mode, upper band edge, horizontal polarization



9.9 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:	300 kHz
Resolution bandwidth:	100 kHz
Span:	9 kHz to 25 GHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247(d)	RSS 210, Issue 8, A 8.5
TX Spurious Emissions Conducted	
<p>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</p>	

Results:

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		0.7	30 dBm		Operating frequency
No peaks found.			-20 dBc		complies
2437		1.2	30 dBm		Operating frequency
No peaks found.			-20 dBc		complies
2462		1.7	30 dBm		Operating frequency
No peaks found.			-20 dBc		complies
Measurement uncertainty		± 3 dB			

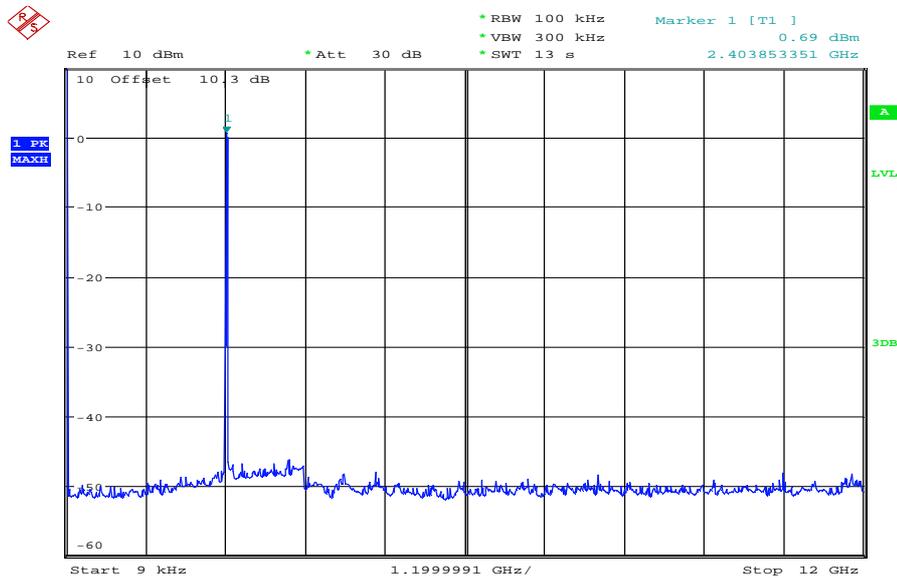
Result: The result of the measurement is passed.

Results:

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		-0.1	30 dBm		Operating frequency
No peaks found.			-20 dBc		complies
2437		0.8	30 dBm		Operating frequency
No peaks found.			-20 dBc		complies
2462		0.7	30 dBm		Operating frequency
No peaks found.			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: The result of the measurement is passed.

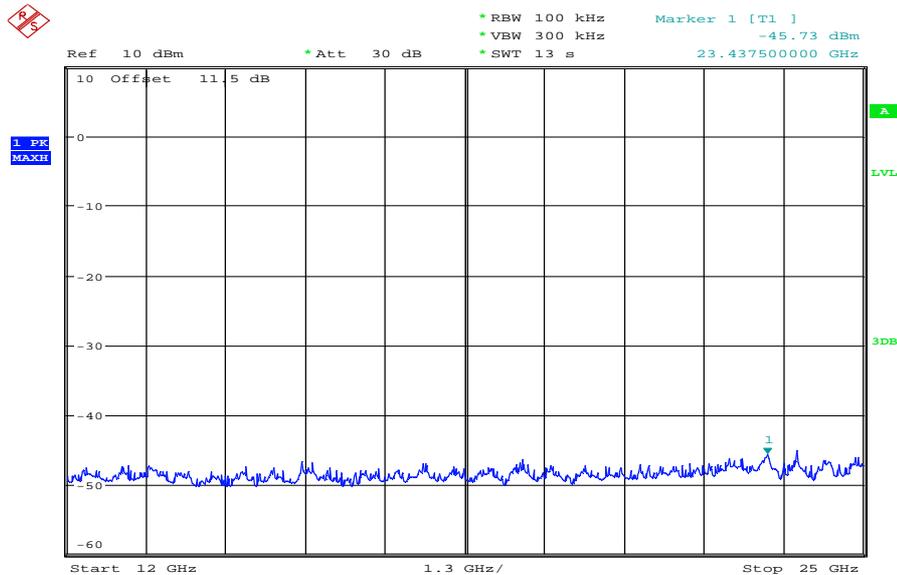
Plot 1: Channel 1 / DSSS



Date: 29.JAN.2011 11:55:54

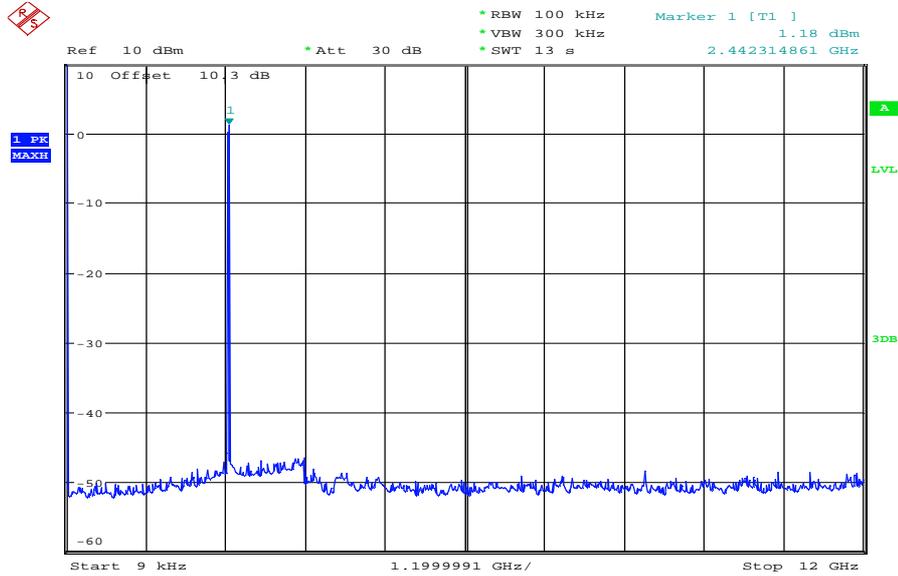
The peak at the beginning of the plot is the LO from the SA

Plot 2: Channel 1 / DSSS



Date: 29.JAN.2011 12:04:28

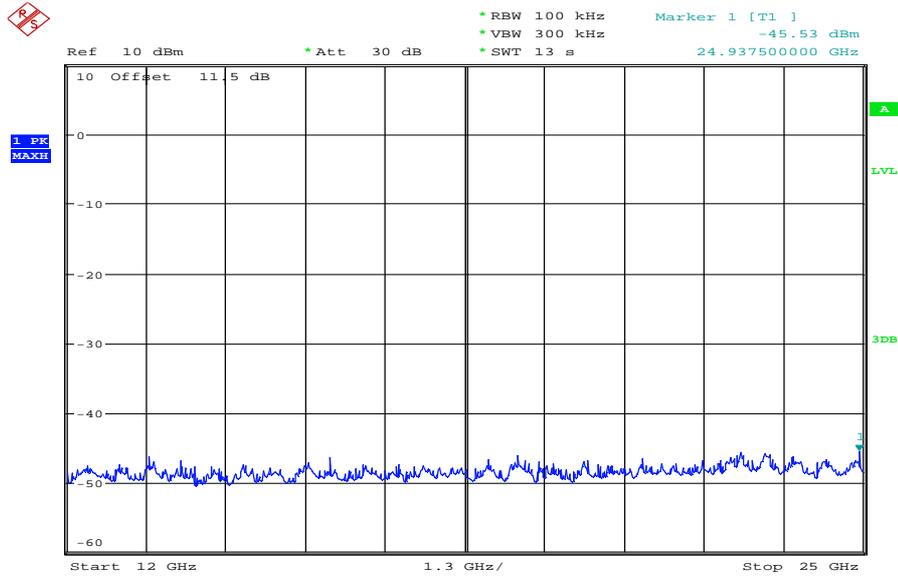
Plot 3: Channel 6 / DSSS



Date: 29.JAN.2011 11:48:08

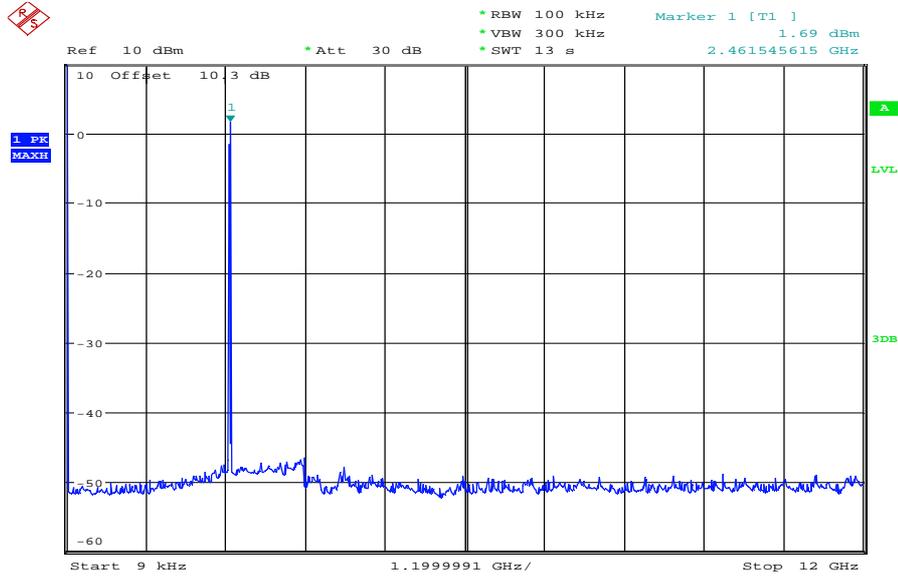
The peak at the beginning of the plot is the LO from the SA

Plot 4: Channel 6 / DSSS



Date: 29.JAN.2011 12:10:00

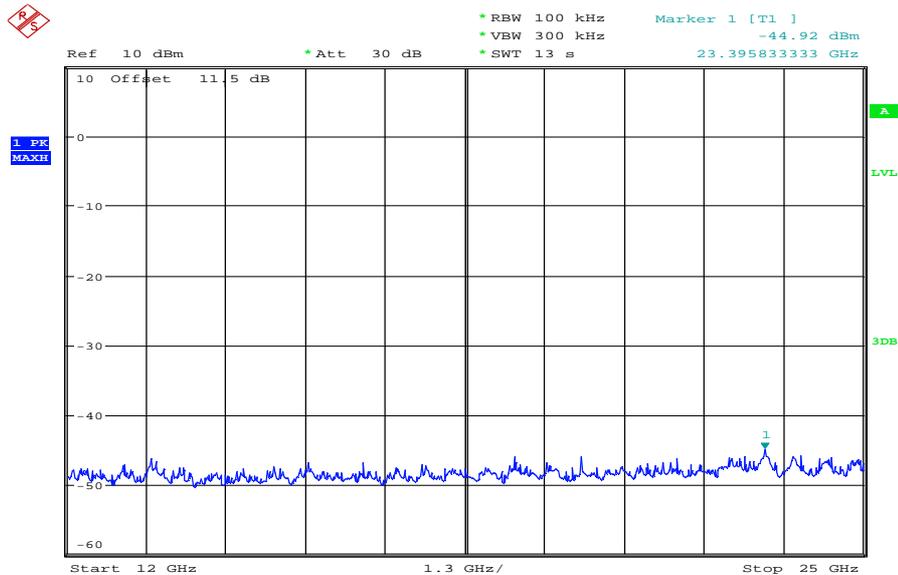
Plot 5: Channel 11 / DSSS



Date: 29.JAN.2011 11:49:30

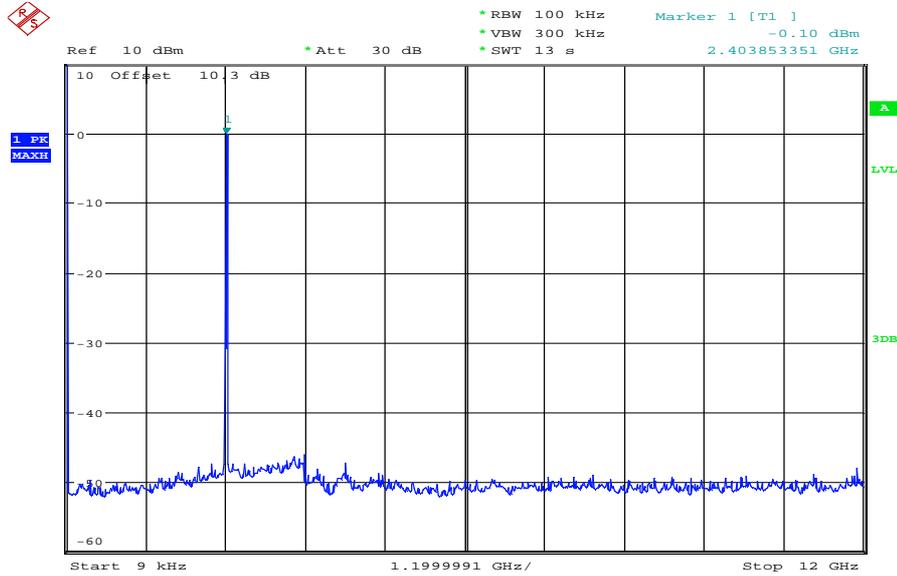
The peak at the beginning of the plot is the LO from the SA

Plot 6: Channel 11 / DSSS



Date: 29.JAN.2011 12:05:38

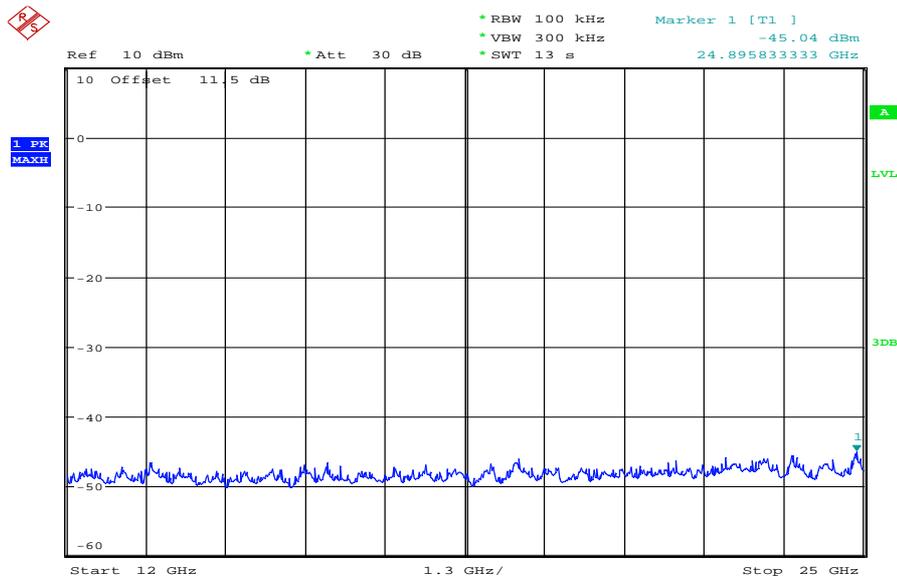
Plot 7: Channel 1 / OFDM



Date: 29.JAN.2011 11:50:48

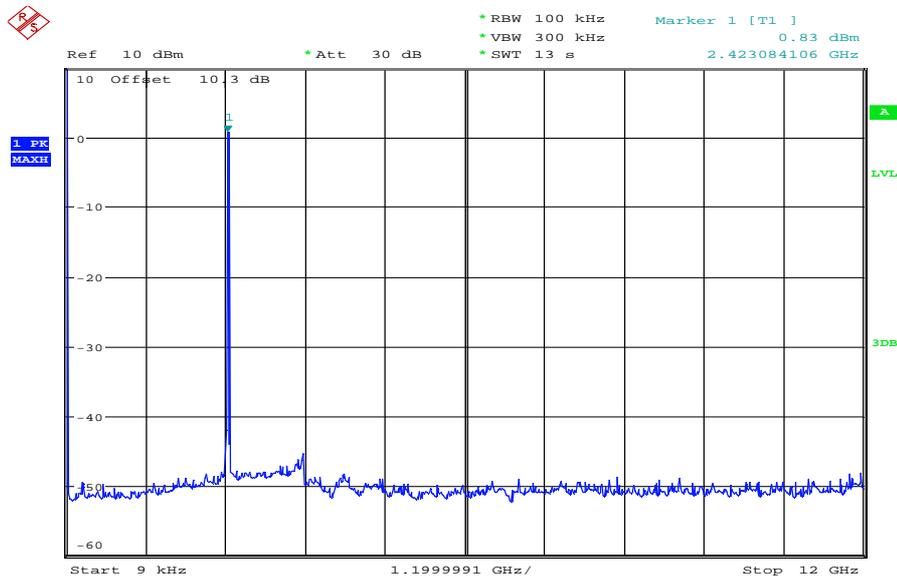
The peak at the beginning of the plot is the LO from the SA

Plot 8: Channel 1 / OFDM



Date: 29.JAN.2011 12:00:34

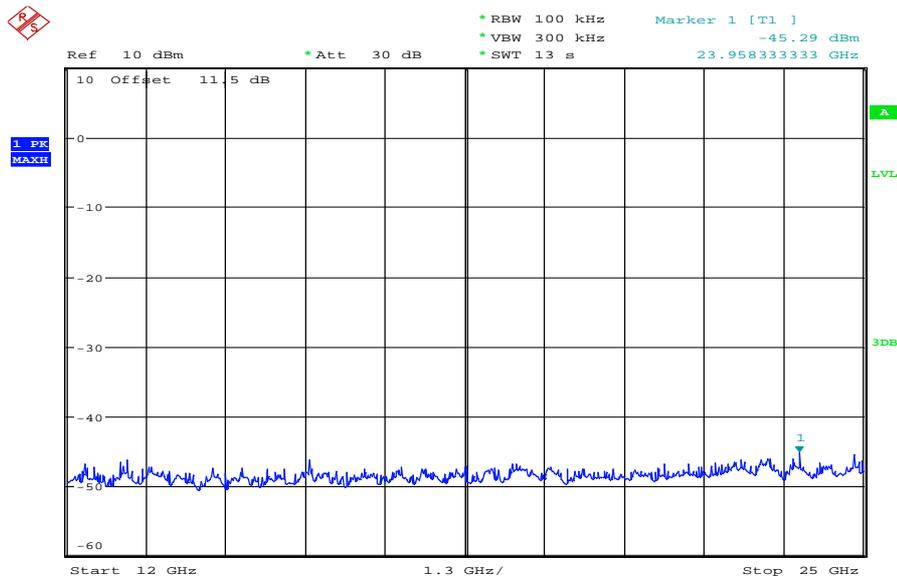
Plot 9: Channel 6 / OFDM



Date: 29.JAN.2011 11:51:50

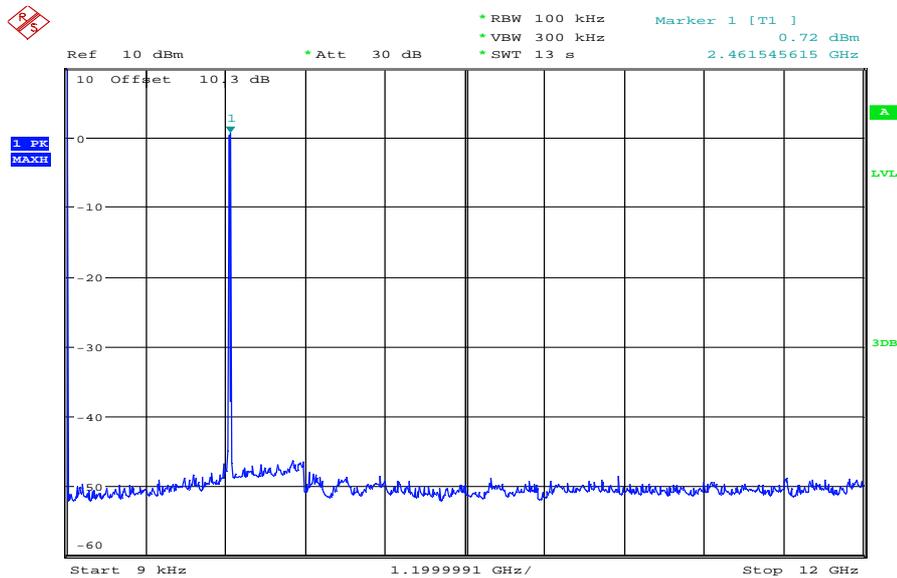
The peak at the beginning of the plot is the LO from the SA

Plot 10: Channel 6 / OFDM



Date: 29.JAN.2011 12:01:37

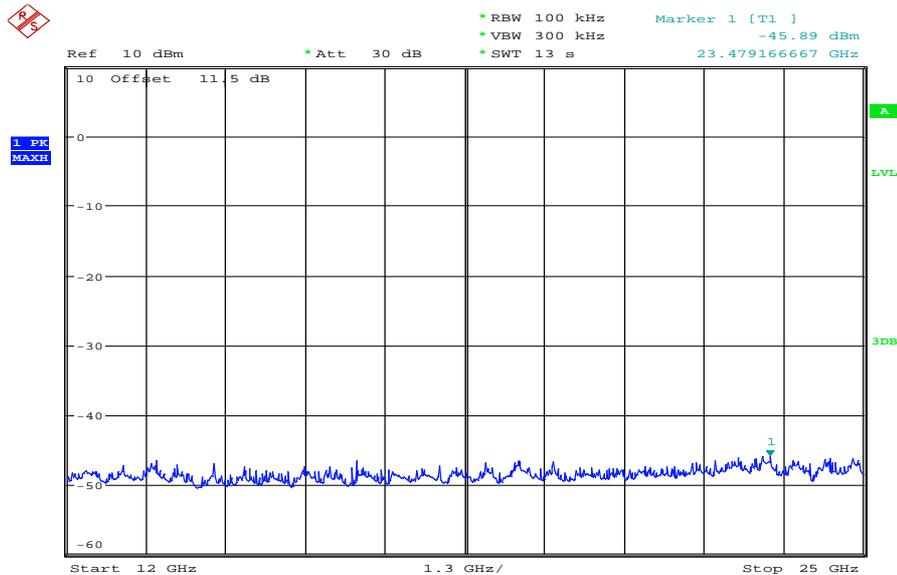
Plot 11: Channel 11 / OFDM



Date: 29.JAN.2011 11:53:00

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

Plot 12: Channel 11 / OFDM



Date: 29.JAN.2011 12:03:27

9.10 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	<input checked="" type="checkbox"/> DSSS <input checked="" type="checkbox"/> 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 8, A 8.5	
TX Spurious Emissions Radiated			
<p>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)).</p>			
§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	

Results: DSSS / b – mode

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]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
No peaks detected up to 12.75 GHz.			No peaks detected up to 12.75 GHz.			No peaks detected up to 12.75 GHz.		
For emissions over 12.75 GHz, please take a look at the plots.			For emissions over 12.75 GHz, please take a look at the plots.			For emissions over 12.75 GHz, please take a look at the plots.		
Measurement uncertainty			± 3 dB					

Result: The result of the measurement is passed.

Results: OFDM / g – mode

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]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
No peaks detected up to 12.75 GHz.			No peaks detected up to 12.75 GHz.			No peaks detected up to 12.75 GHz.		
For emissions over 12.75 GHz, please take a look at the plots.			For emissions over 12.75 GHz, please take a look at the plots.			For emissions over 12.75 GHz, please take a look at the plots.		
Measurement uncertainty			± 3 dB					

Result: The result of the measurement is passed.

Plots: DSSS / b – mode

Plot 1: Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

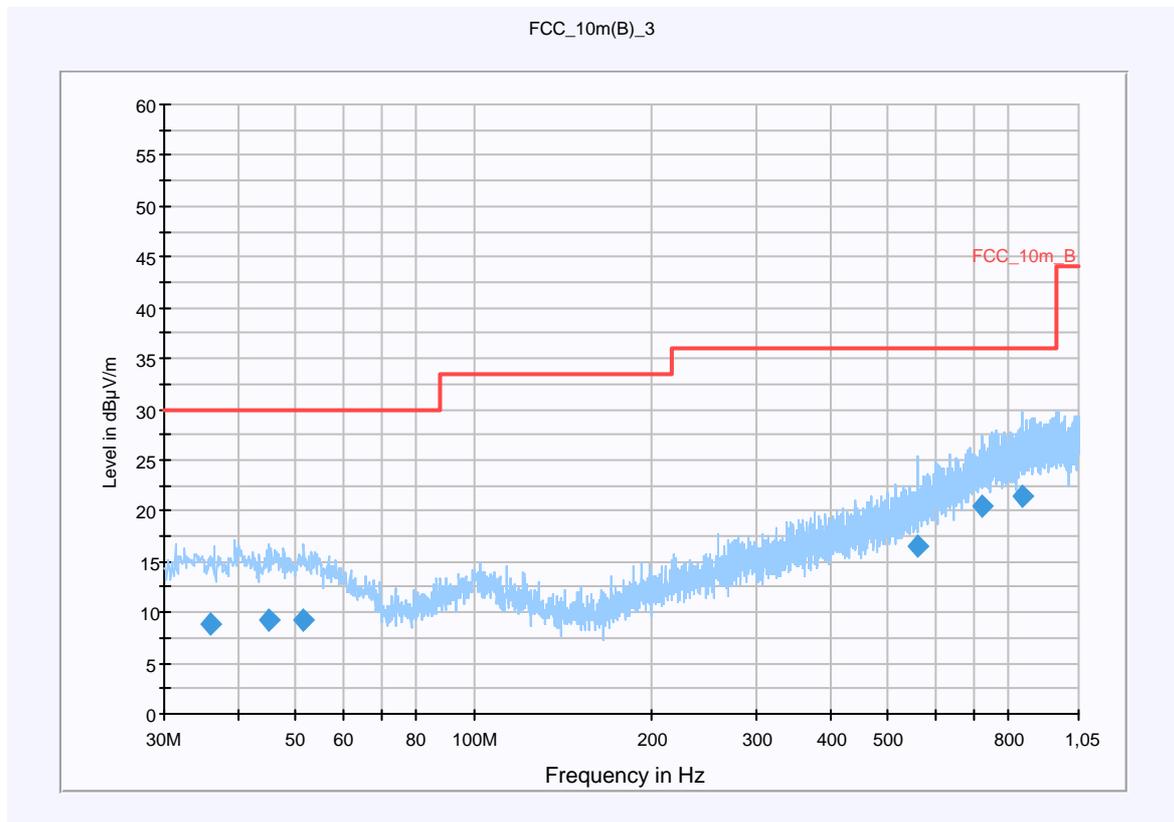
Common Information

EUT: Sony Ericsson AAH-5880011-B
 Serial Number: SSÖGL000586
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX WLAN CH 1 / DSSS & OFDM mode
 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

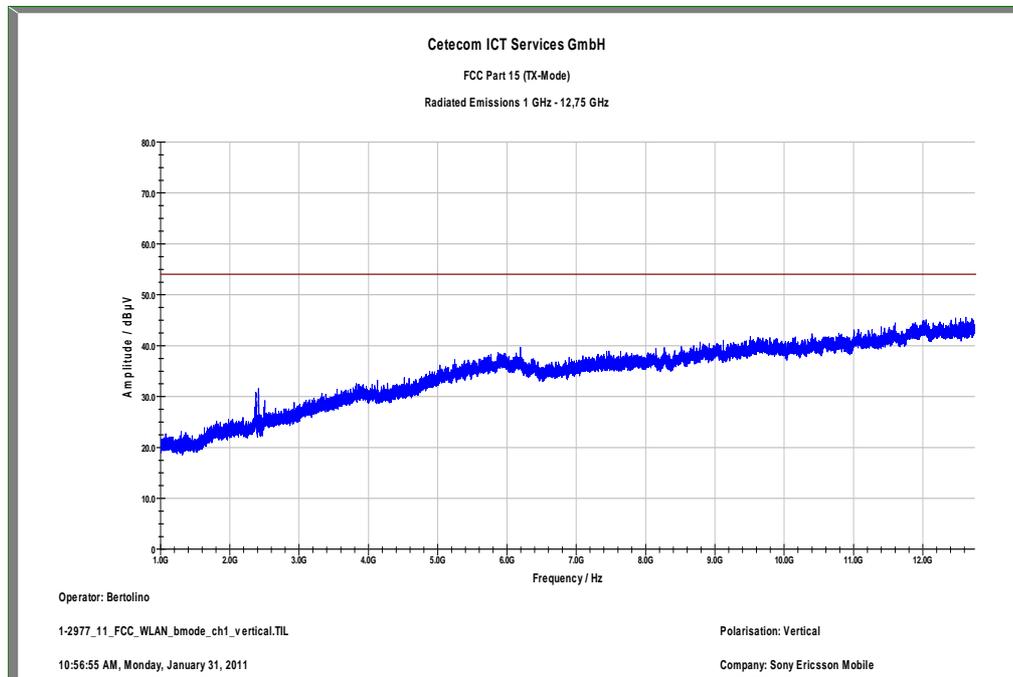
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
36.008400	8.9	15000.000	120.000	98.0	V	70.0	13.1	21.1	30.0	
45.117750	9.2	15000.000	120.000	220.0	V	235.0	13.3	20.8	30.0	
51.476850	9.2	15000.000	120.000	161.0	H	300.0	13.2	20.8	30.0	
560.527950	16.5	15000.000	120.000	172.0	V	29.0	19.7	19.5	36.0	
720.511350	20.5	15000.000	120.000	98.0	H	315.0	23.0	15.5	36.0	
841.951800	21.5	15000.000	120.000	151.0	V	235.0	24.4	14.5	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

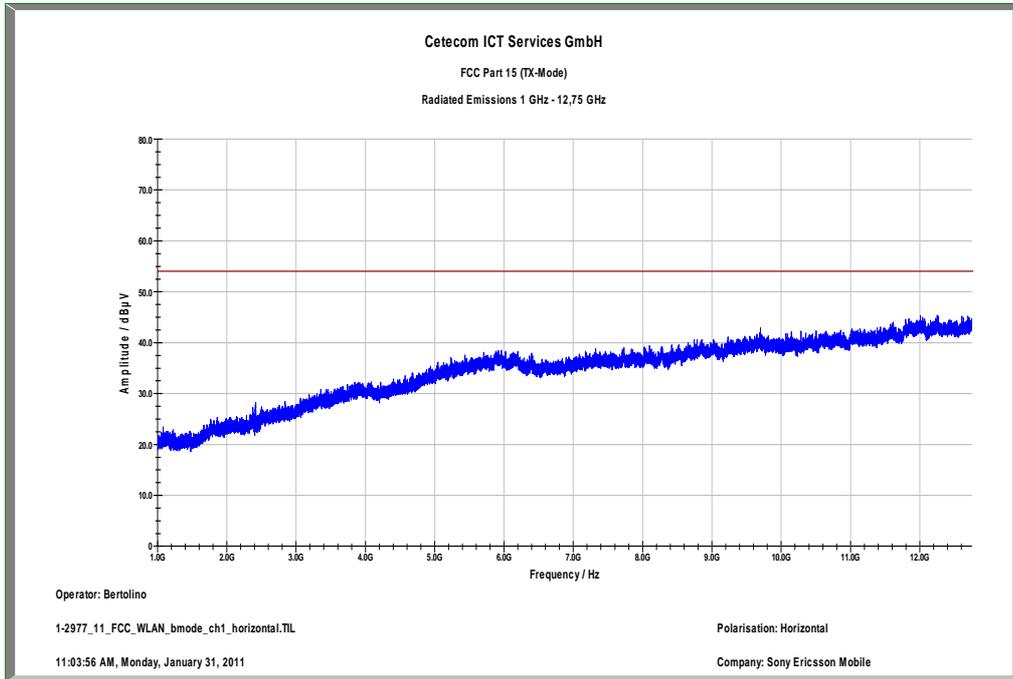
EMC 32 Version 8.10.00

Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical polarization



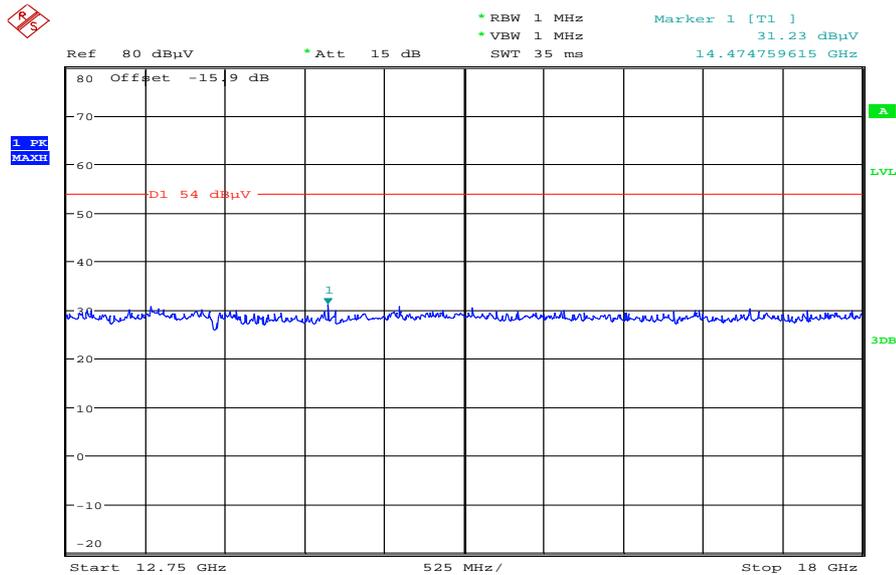
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 3: Lowest channel, 1 GHz to 12.75 GHz, horizontal polarization



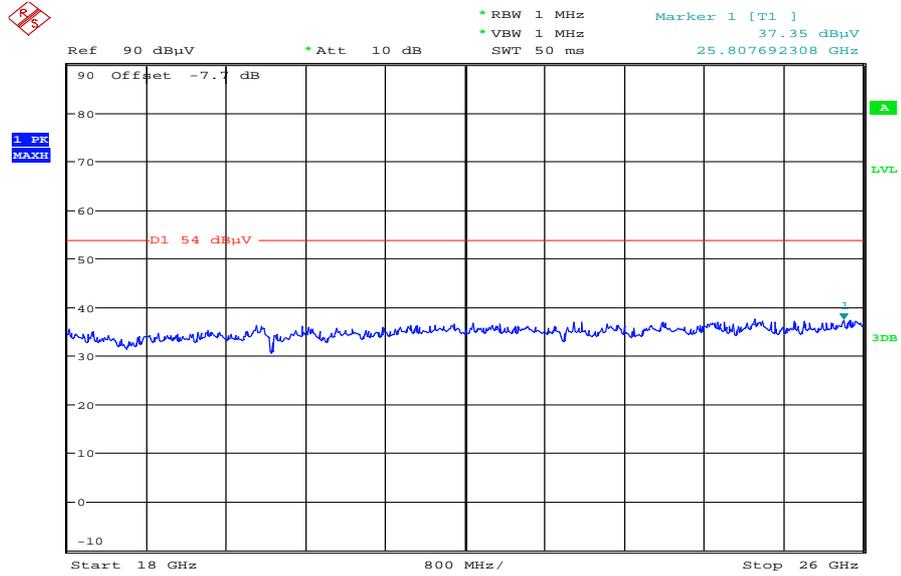
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 4: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:02:14

Plot 5: Lowest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:27:14

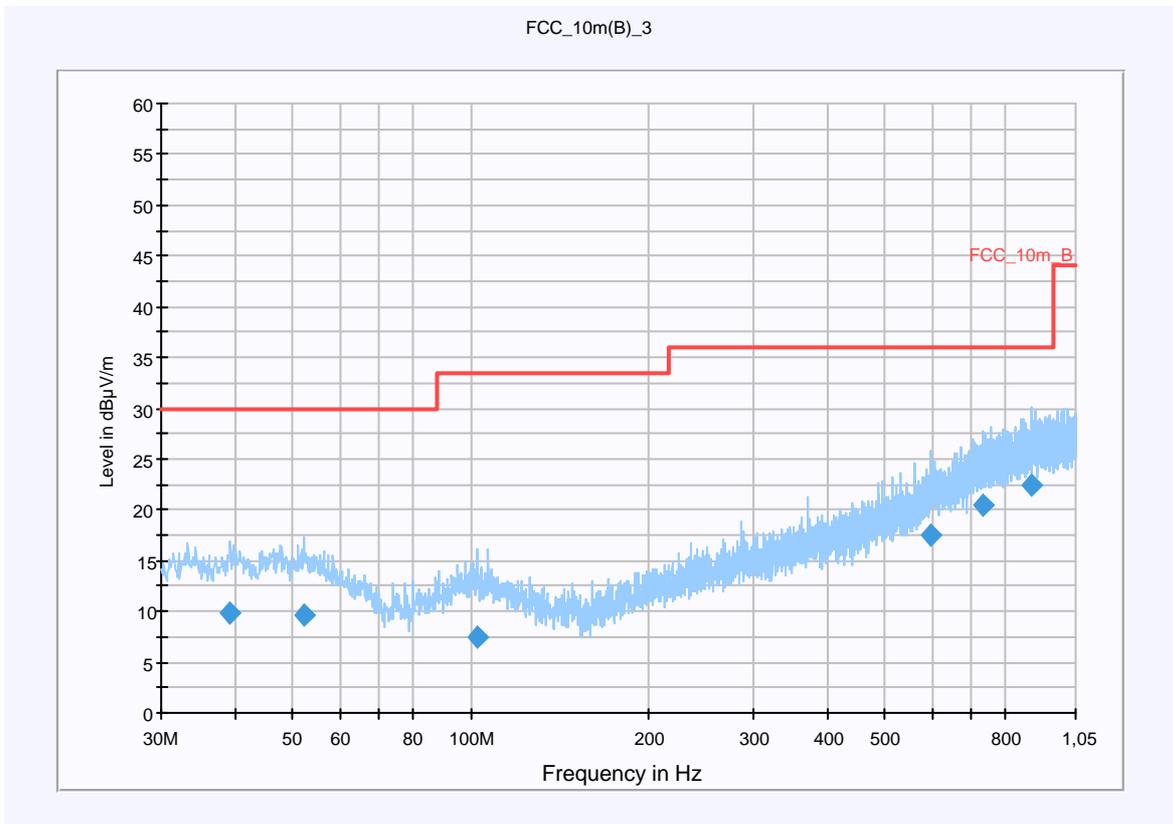
Plot 6: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

Common Information

EUT: Sony Ericsson AAH-5880011-B
 Serial Number: SSÖGL000586
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX WLAN CH 6 / DSSS & OFDM mode
 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

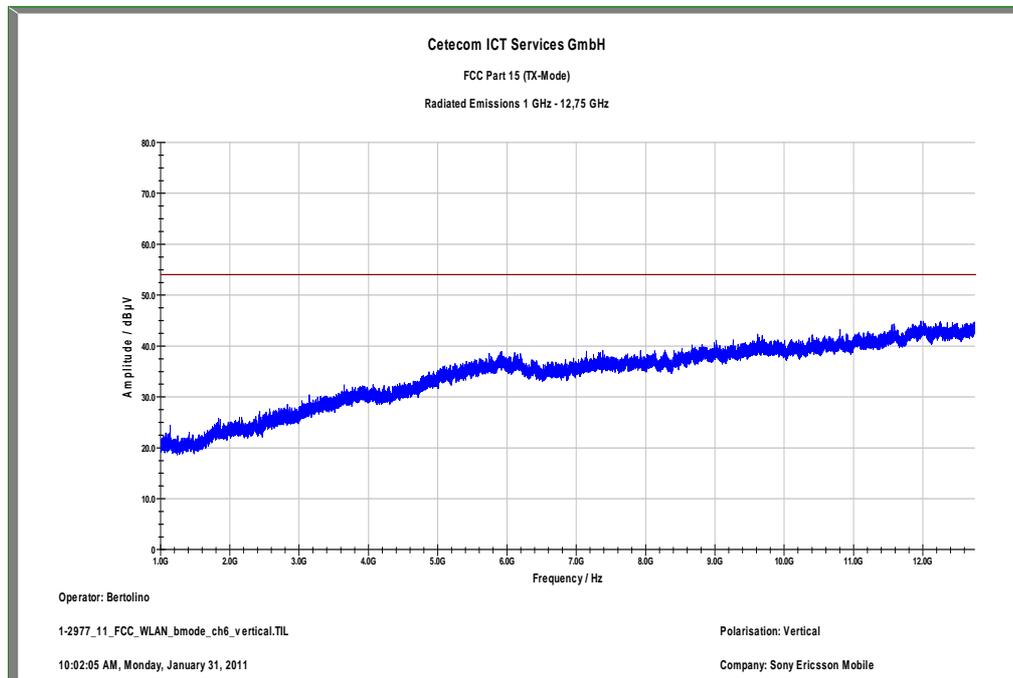
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
39.285150	9.8	15000.000	120.000	220.0	V	92.0	13.4	20.2	30.0	
52.147050	9.6	15000.000	120.000	193.0	V	17.0	13.2	20.4	30.0	
102.968400	7.5	15000.000	120.000	220.0	V	68.0	11.6	26.0	33.5	
596.643900	17.5	15000.000	120.000	220.0	H	7.0	20.7	18.5	36.0	
733.125750	20.5	15000.000	120.000	220.0	H	217.0	23.3	15.5	36.0	
880.989150	22.4	15000.000	120.000	220.0	V	62.0	25.0	13.6	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

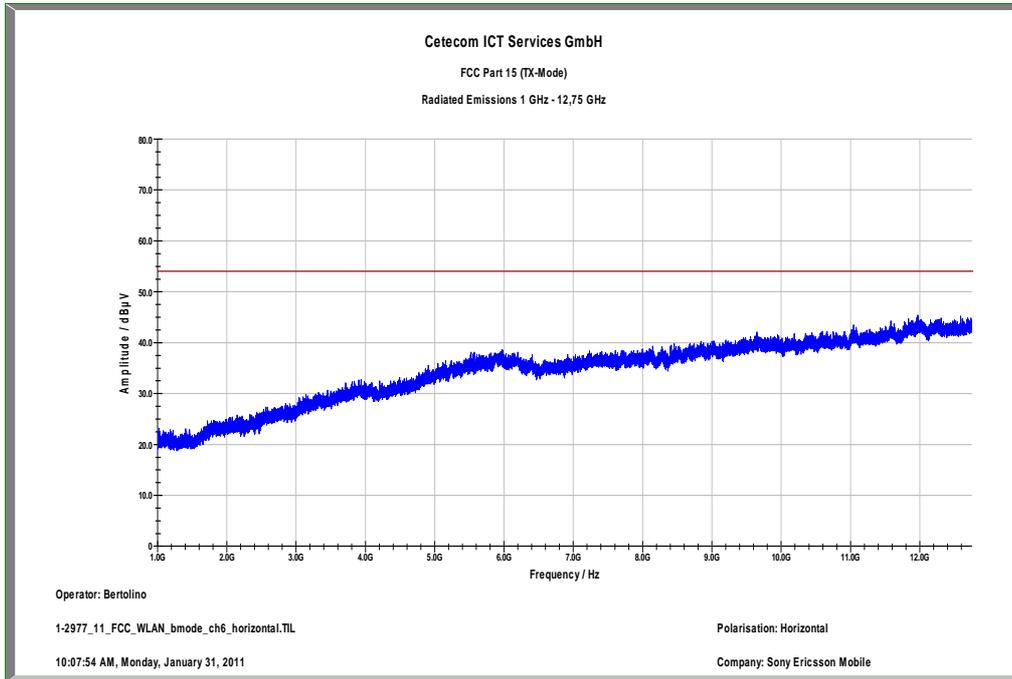
EMC 32 Version 8.10.00

Plot 7: Middle channel, 1 GHz to 12.75 GHz, vertical polarization



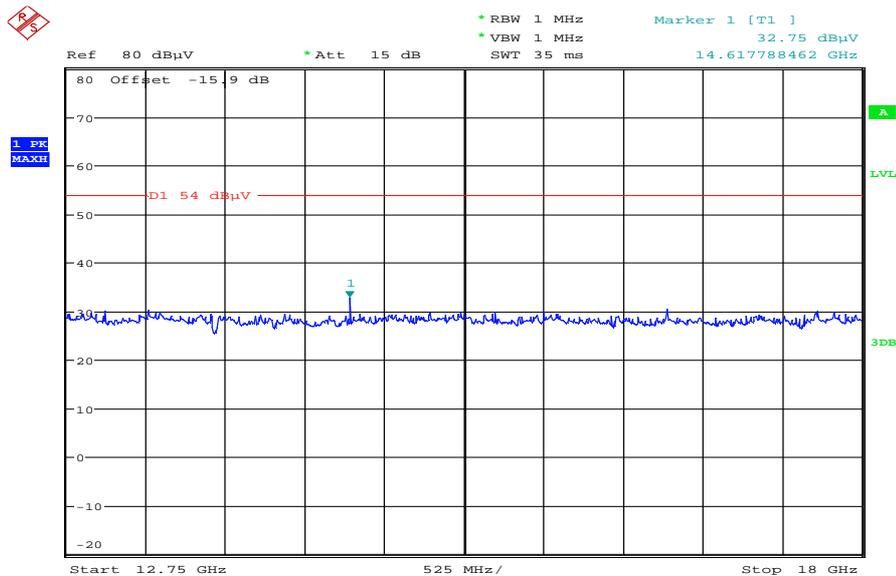
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 8: Middle channel, 1 GHz to 12.75 GHz, horizontal polarization



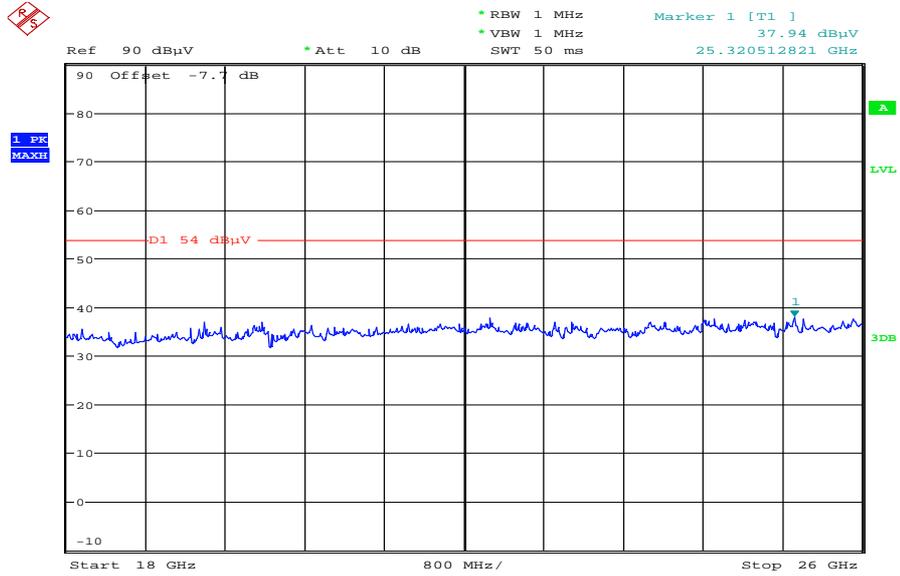
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 9: Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:04:08

Plot 10: Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:28:10

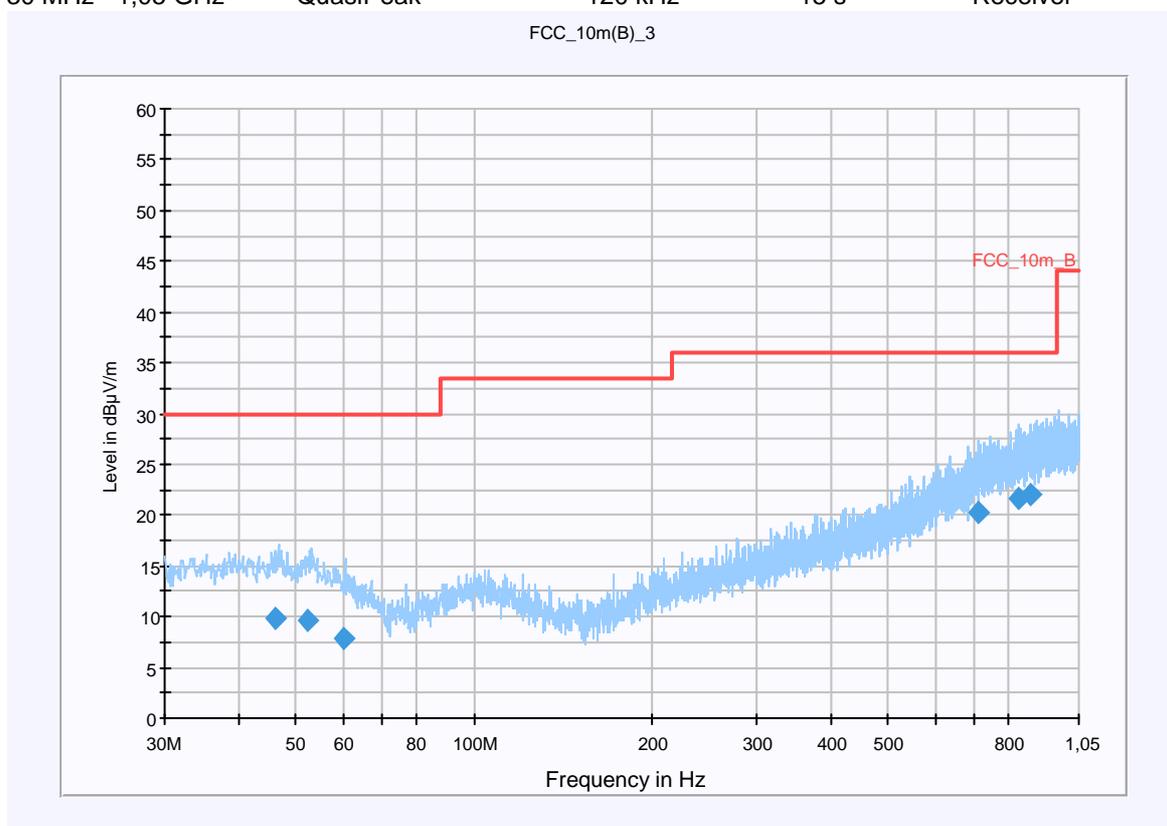
Plot 11: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

Common Information

EUT: Sony Ericsson AAH-5880011-B
 Serial Number: SSÖGL000586
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX WLAN CH 11 / DSSS & OFDM mode
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

can Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
Subrange 30 MHz - 1,05 GHz **Detectors** QuasiPeak **IF Bandwidth** 120 kHz **Meas. Time** 15 s **Receiver** Receiver



Fnal Result 1

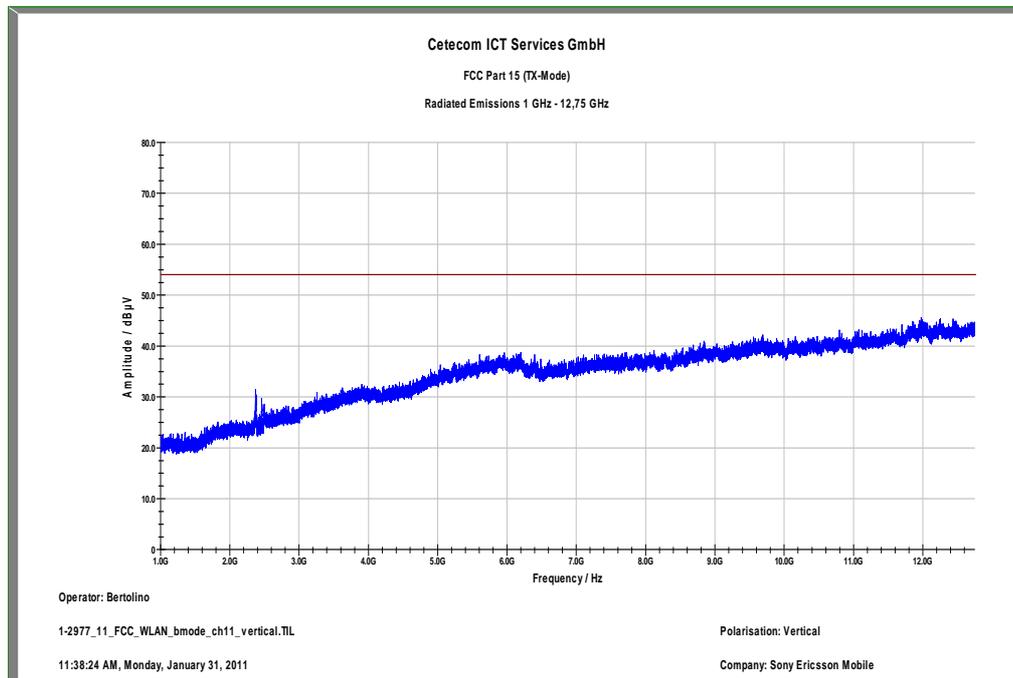
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
46.319850	9.8	15000.000	120.000	220.0	V	194.0	13.3	20.2	30.0	
52.310100	9.6	15000.000	120.000	98.0	V	187.0	13.1	20.4	30.0	
60.388650	7.9	15000.000	120.000	220.0	V	247.0	11.5	22.1	30.0	
709.644300	20.2	15000.000	120.000	98.0	H	142.0	22.7	15.8	36.0	
833.173500	21.6	15000.000	120.000	220.0	V	59.0	24.3	14.4	36.0	
870.197700	22.0	15000.000	120.000	212.0	H	132.0	24.8	14.0	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

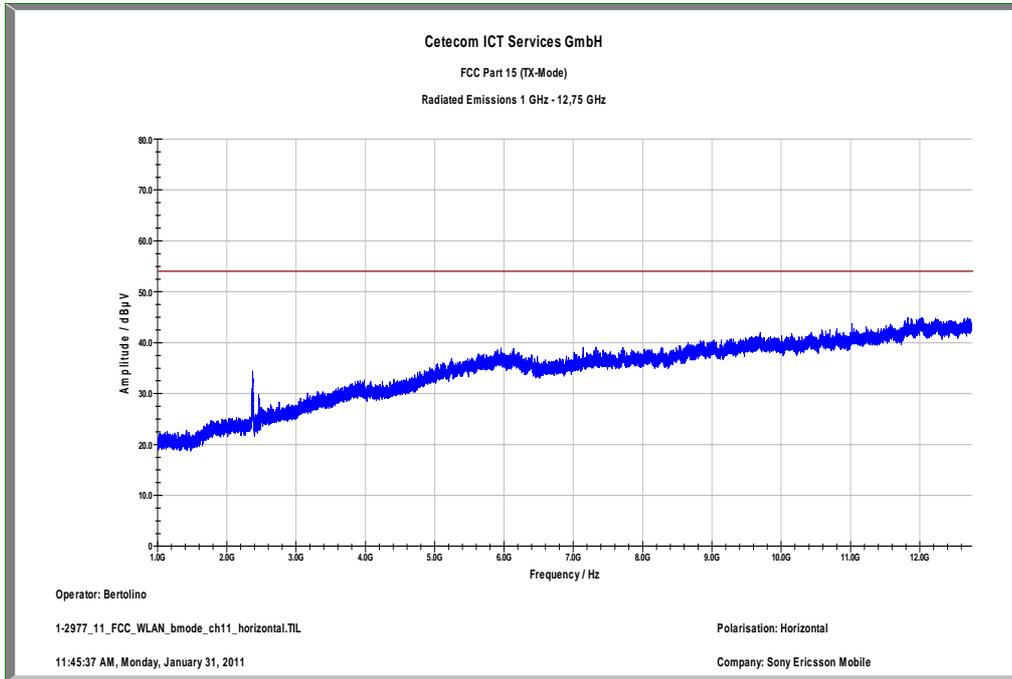
EMC 32 Version 8.10.00

Plot 12: Highest channel, 1 GHz to 12.75 GHz, vertical polarization



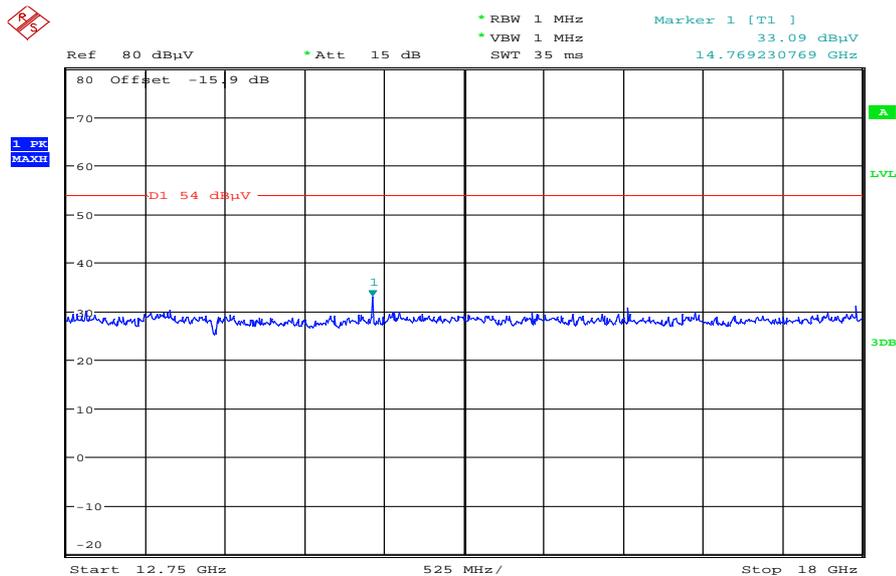
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 13: Highest channel, 1 GHz to 12.75 GHz, horizontal polarization



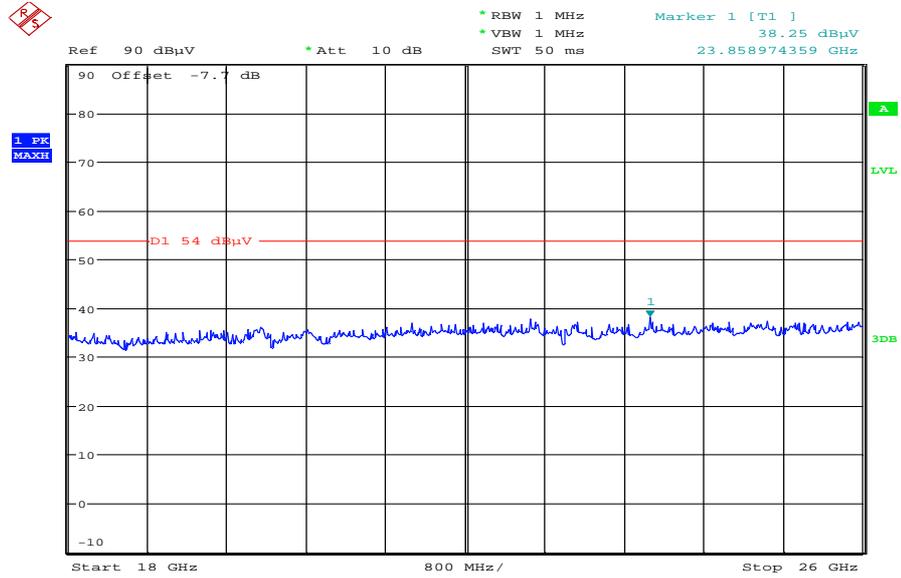
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 14: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:05:59

Plot 15: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:28:56

Plots: OFDM / g – mode

Plot 1: Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

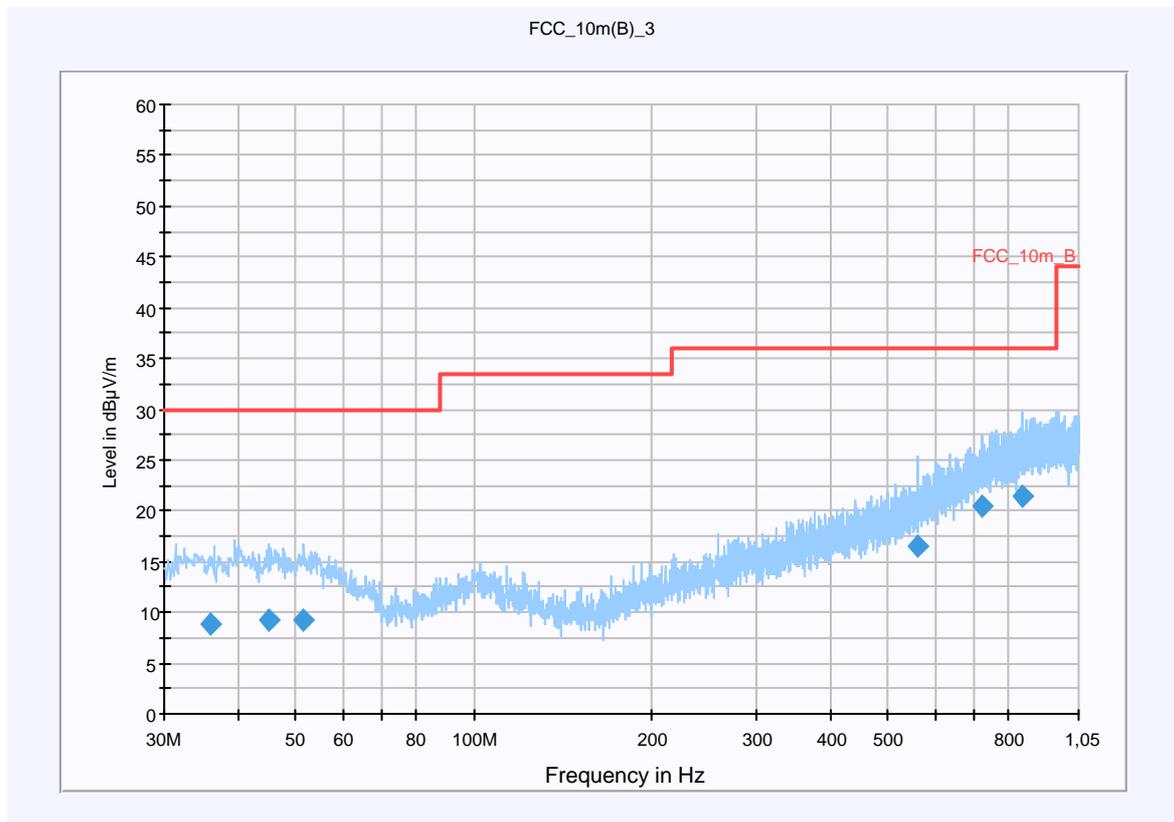
Common Information

EUT: Sony Ericsson AAH-5880011-B
 Serial Number: SSÖGL000586
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX WLAN CH 1 / DSSS & OFDM mode
 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

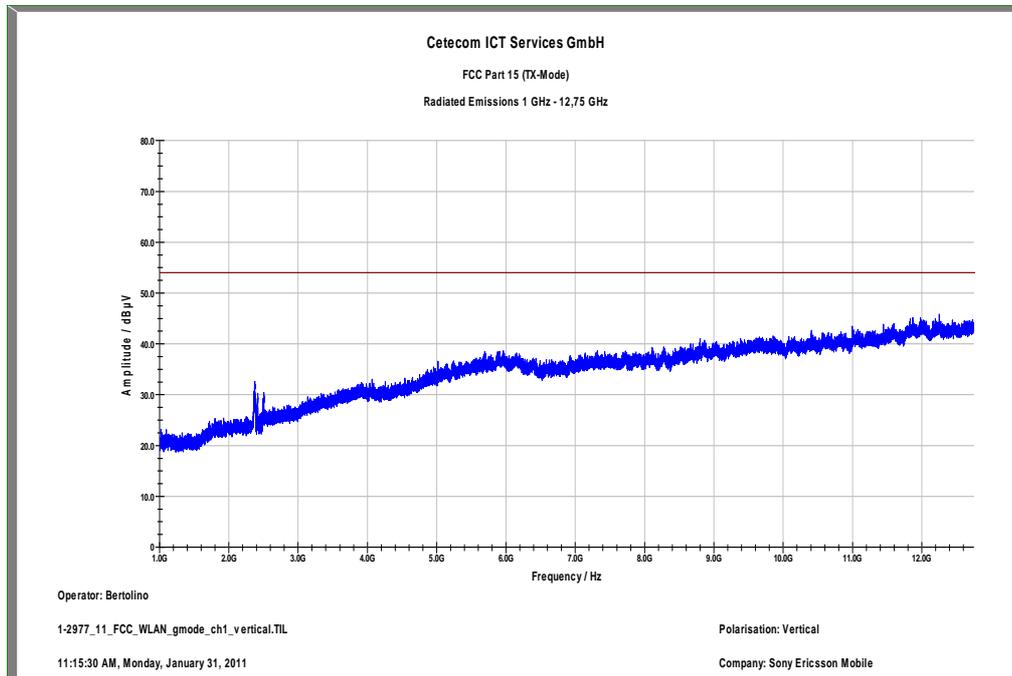
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
36.008400	8.9	15000.000	120.000	98.0	V	70.0	13.1	21.1	30.0	
45.117750	9.2	15000.000	120.000	220.0	V	235.0	13.3	20.8	30.0	
51.476850	9.2	15000.000	120.000	161.0	H	300.0	13.2	20.8	30.0	
560.527950	16.5	15000.000	120.000	172.0	V	29.0	19.7	19.5	36.0	
720.511350	20.5	15000.000	120.000	98.0	H	315.0	23.0	15.5	36.0	
841.951800	21.5	15000.000	120.000	151.0	V	235.0	24.4	14.5	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

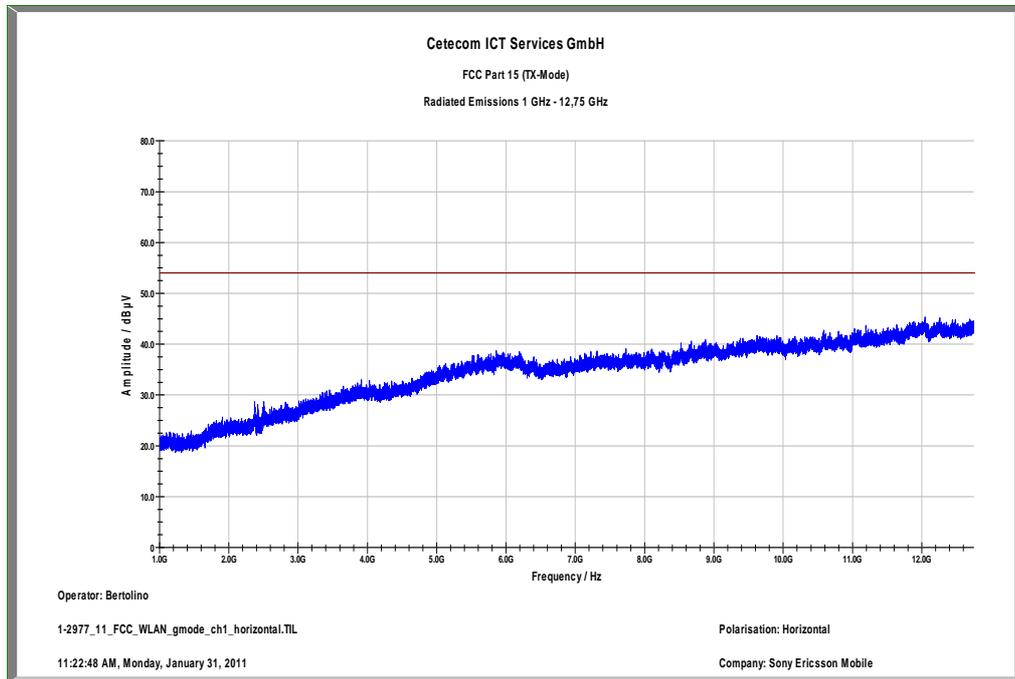
EMC 32 Version 8.10.00

Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical polarization



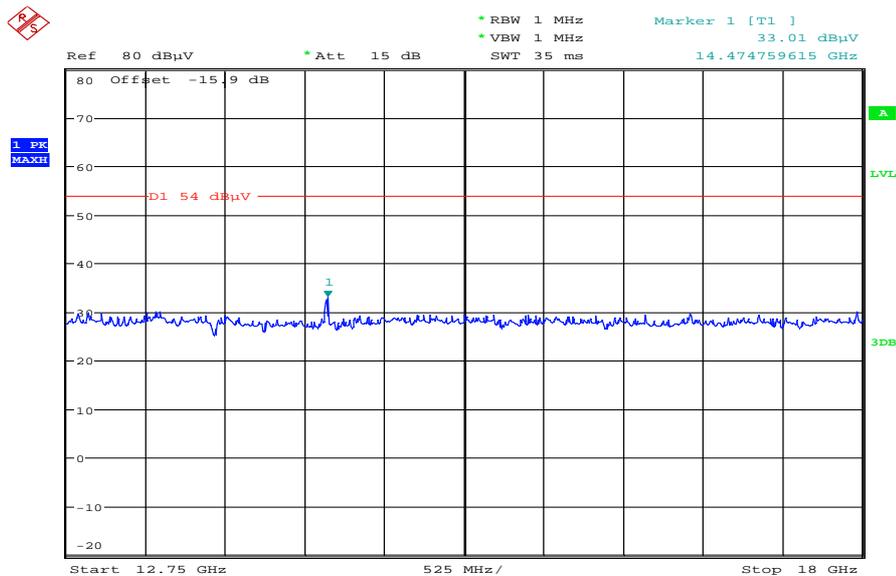
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 3: Lowest channel, 1 GHz to 12.75 GHz, horizontal polarization



The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 4: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



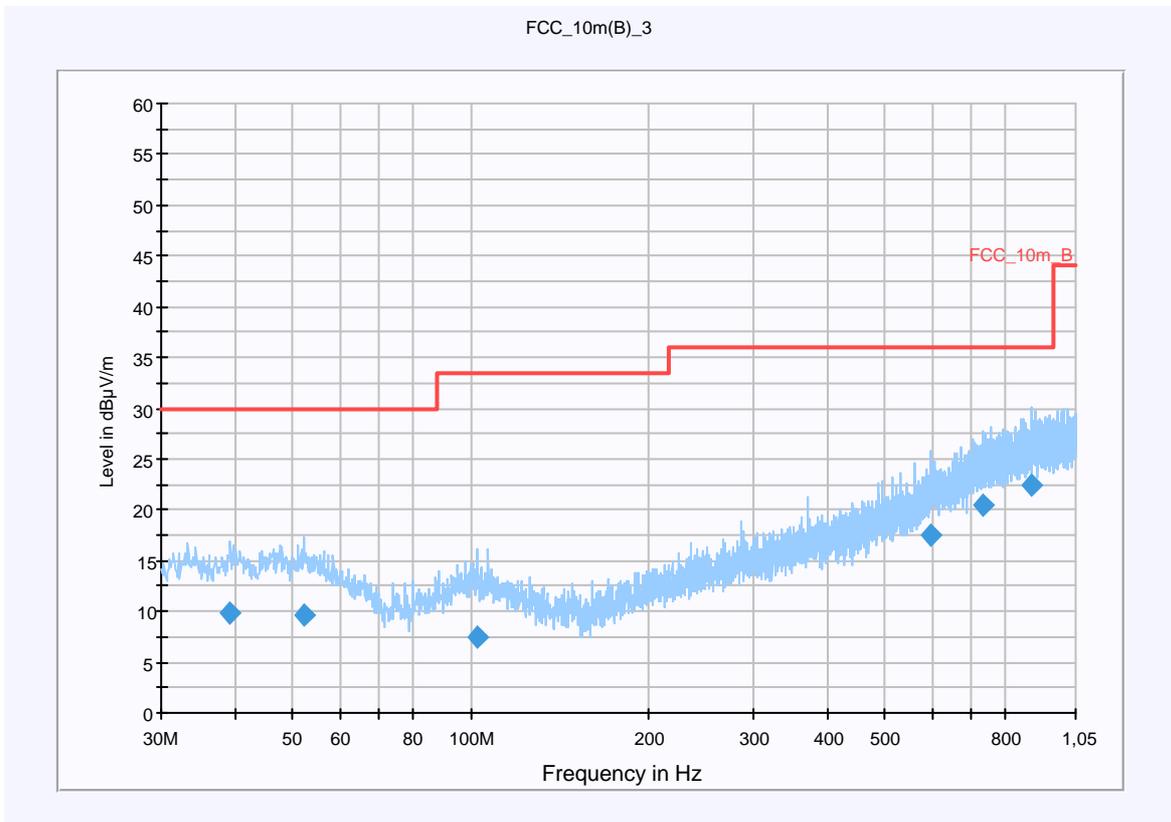
Plot 6: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

Common Information

EUT: Sony Ericsson AAH-5880011-B
 Serial Number: SSÖGL000586
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX WLAN CH 6 / DSSS & OFDM mode
 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

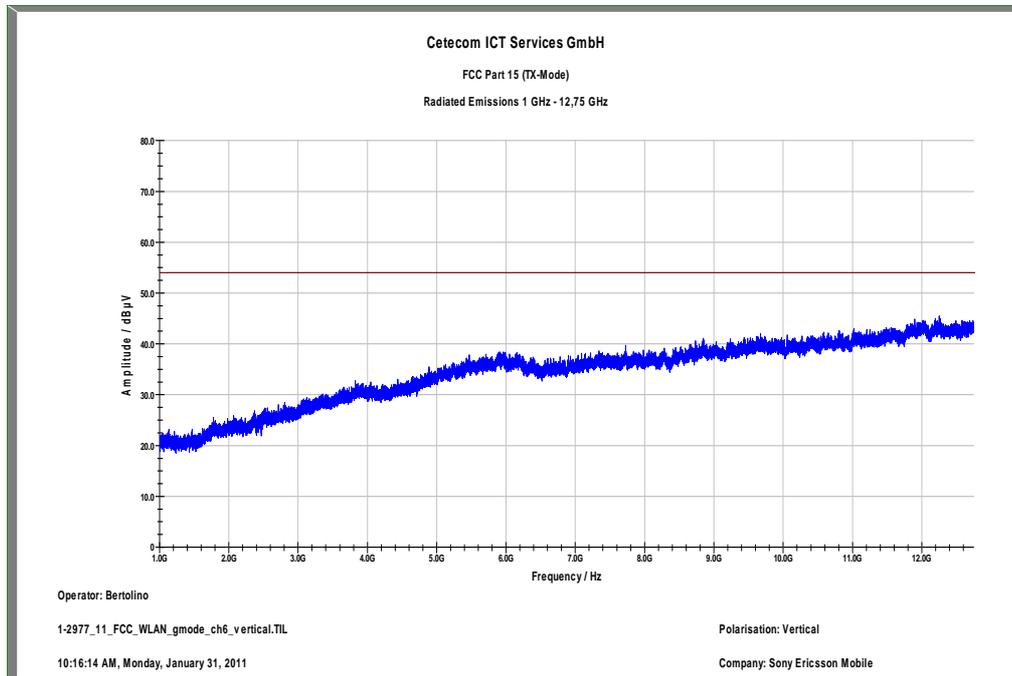
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
39.285150	9.8	15000.000	120.000	220.0	V	92.0	13.4	20.2	30.0	
52.147050	9.6	15000.000	120.000	193.0	V	17.0	13.2	20.4	30.0	
102.968400	7.5	15000.000	120.000	220.0	V	68.0	11.6	26.0	33.5	
596.643900	17.5	15000.000	120.000	220.0	H	7.0	20.7	18.5	36.0	
733.125750	20.5	15000.000	120.000	220.0	H	217.0	23.3	15.5	36.0	
880.989150	22.4	15000.000	120.000	220.0	V	62.0	25.0	13.6	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

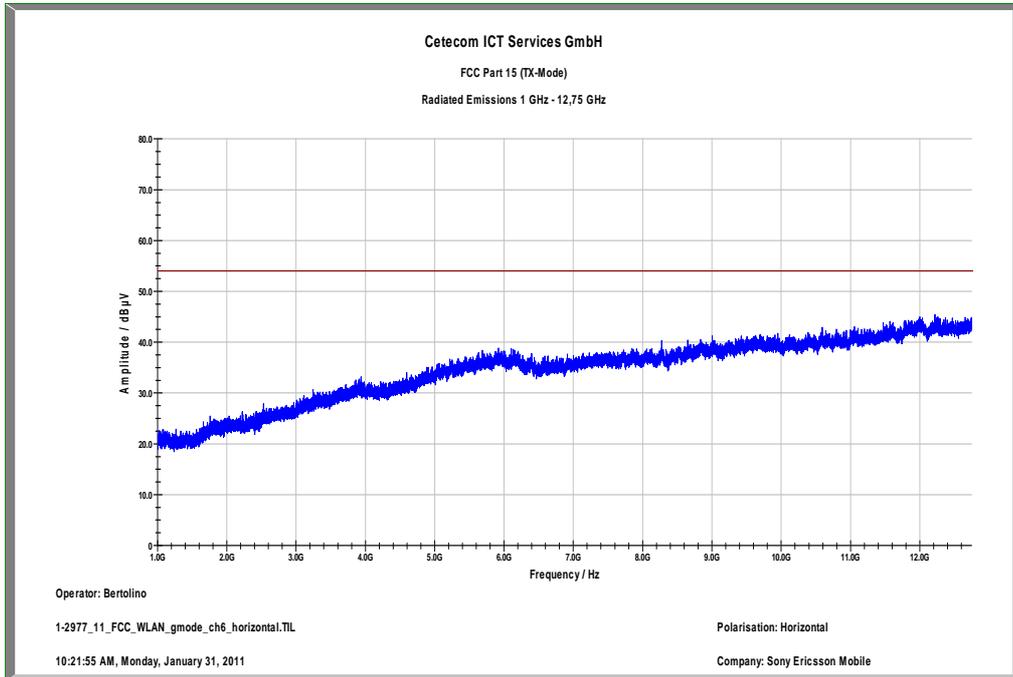
EMC 32 Version 8.10.00

Plot 7: Middle channel, 1 GHz to 12.75 GHz, vertical polarization



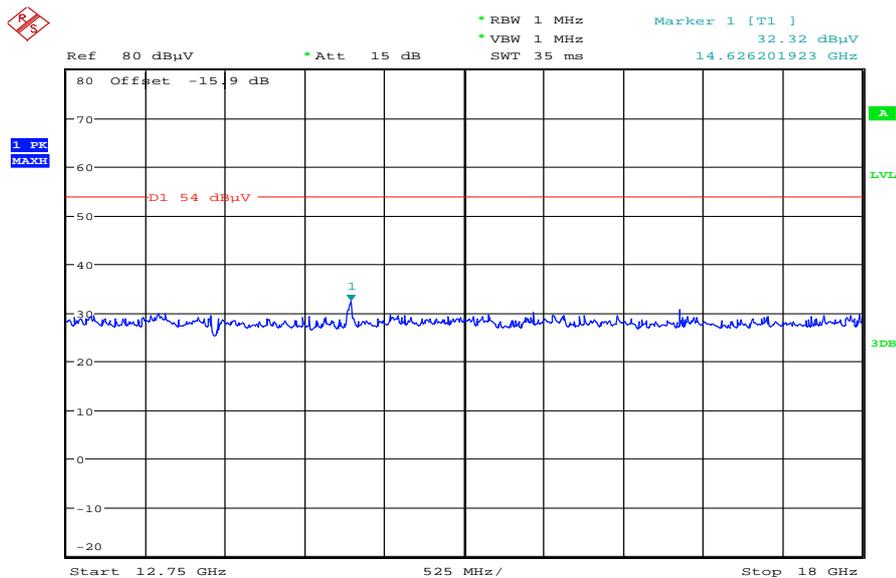
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 8: Middle channel, 1 GHz to 12.75 GHz, horizontal polarization



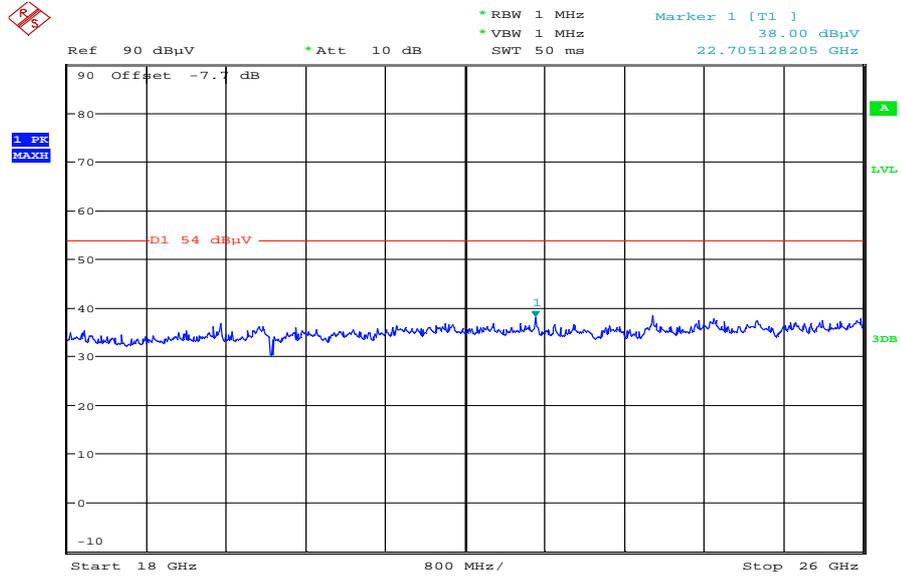
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 9: Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:09:35

Plot 10: Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:30:40

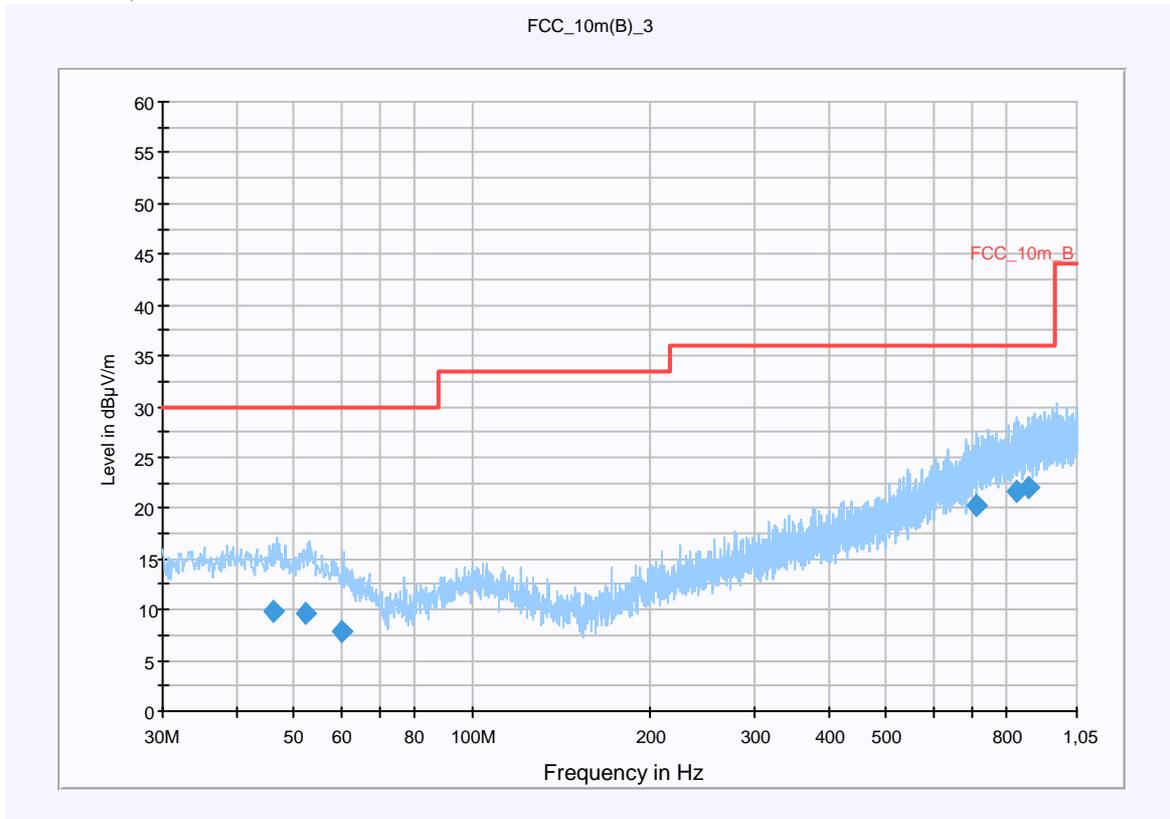
Plot 11: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

Common Information

EUT: Sony Ericsson AAH-5880011-B
 Serial Number: SSÖGL000586
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX WLAN CH 11 / DSSS & OFDM mode
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

can Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
Subrange **Detectors** **IF Bandwidth** **Meas. Time** **Receiver**
 30 MHz - 1,05 GHz QuasiPeak 120 kHz 15 s Receiver



Fnal Result 1

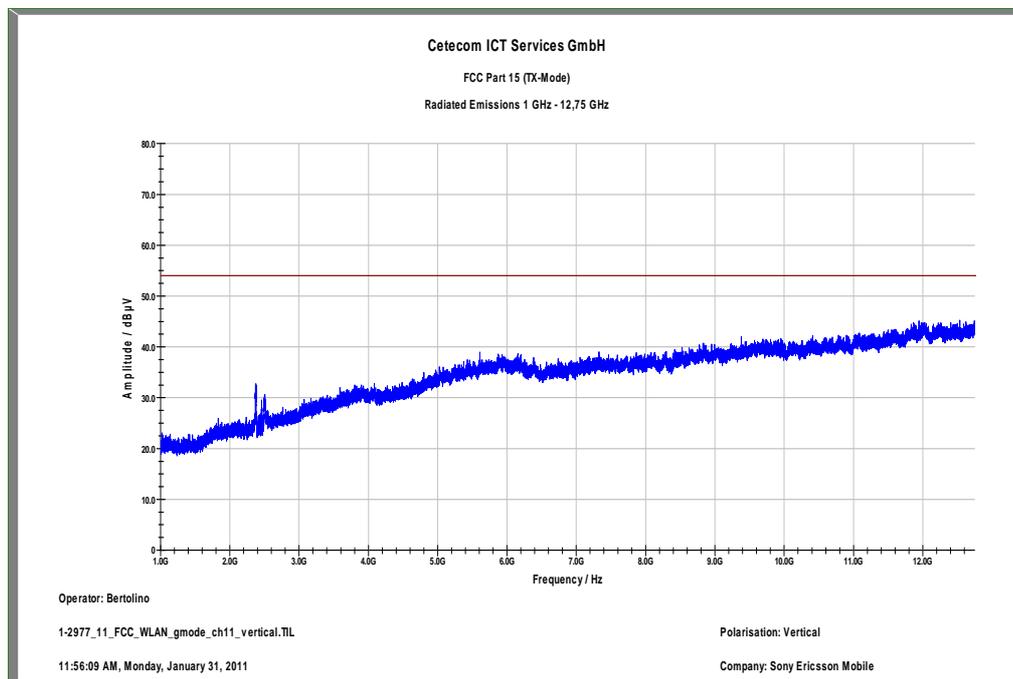
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
46.319850	9.8	15000.000	120.000	220.0	V	194.0	13.3	20.2	30.0	
52.310100	9.6	15000.000	120.000	98.0	V	187.0	13.1	20.4	30.0	
60.388650	7.9	15000.000	120.000	220.0	V	247.0	11.5	22.1	30.0	
709.644300	20.2	15000.000	120.000	98.0	H	142.0	22.7	15.8	36.0	
833.173500	21.6	15000.000	120.000	220.0	V	59.0	24.3	14.4	36.0	
870.197700	22.0	15000.000	120.000	212.0	H	132.0	24.8	14.0	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

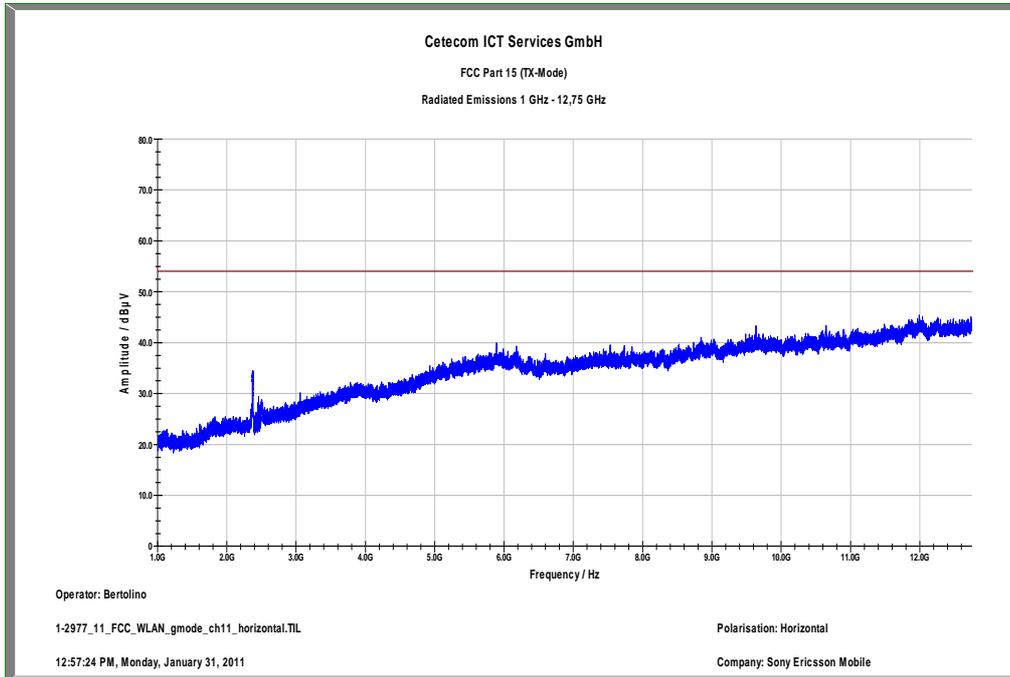
EMC 32 Version 8.10.00

Plot 12: Highest channel, 1 GHz to 12.75 GHz, vertical polarization



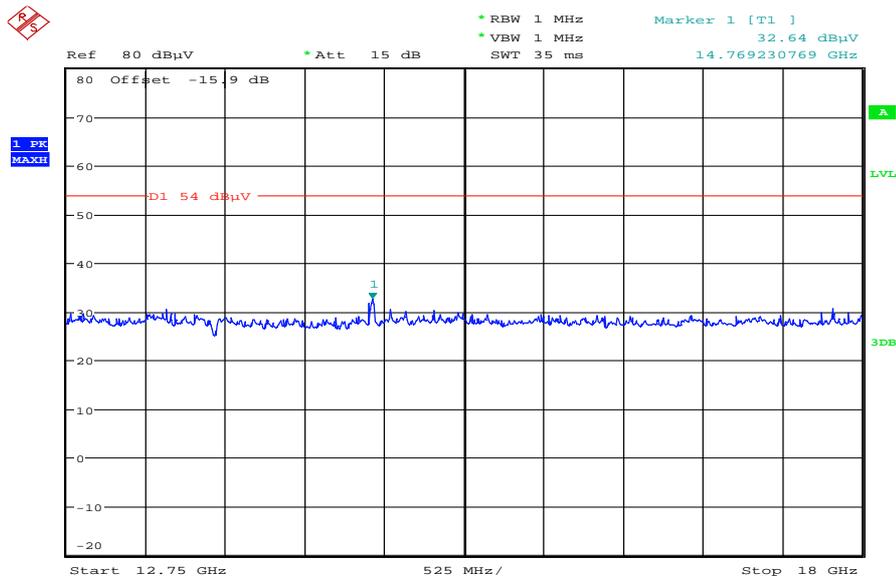
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 13: Highest channel, 1 GHz to 12.75 GHz, horizontal polarization



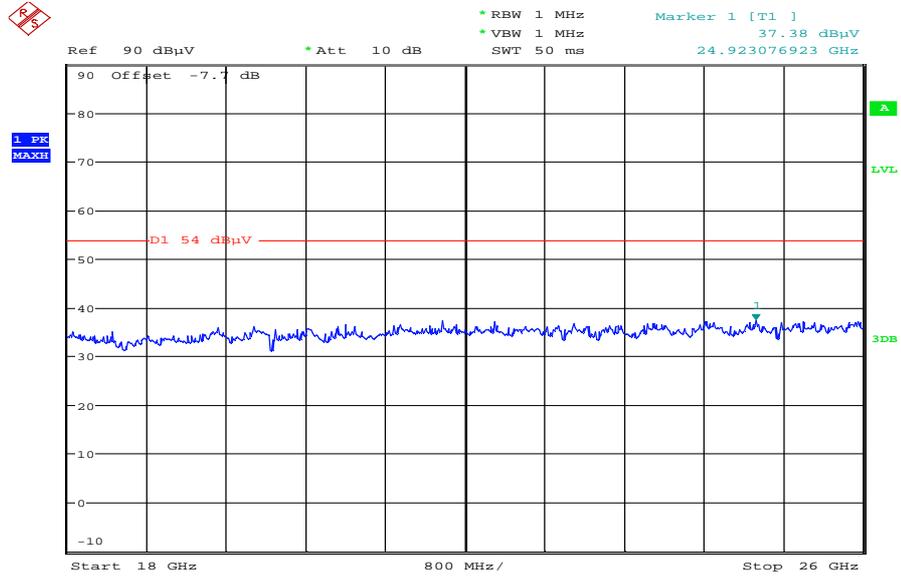
The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 14: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:10:32

Plot 15: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:31:12

9.11 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 (dB μ V/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Result:

RX Spurious Emissions Radiated [dB μ V/m]		
F [MHz]	Detector	Level [dB μ V/m]
No peaks found.		
Measurement uncertainty	± 3 dB	

Result: The result of the measurement is passed.

Plots: RX / Idle – mode

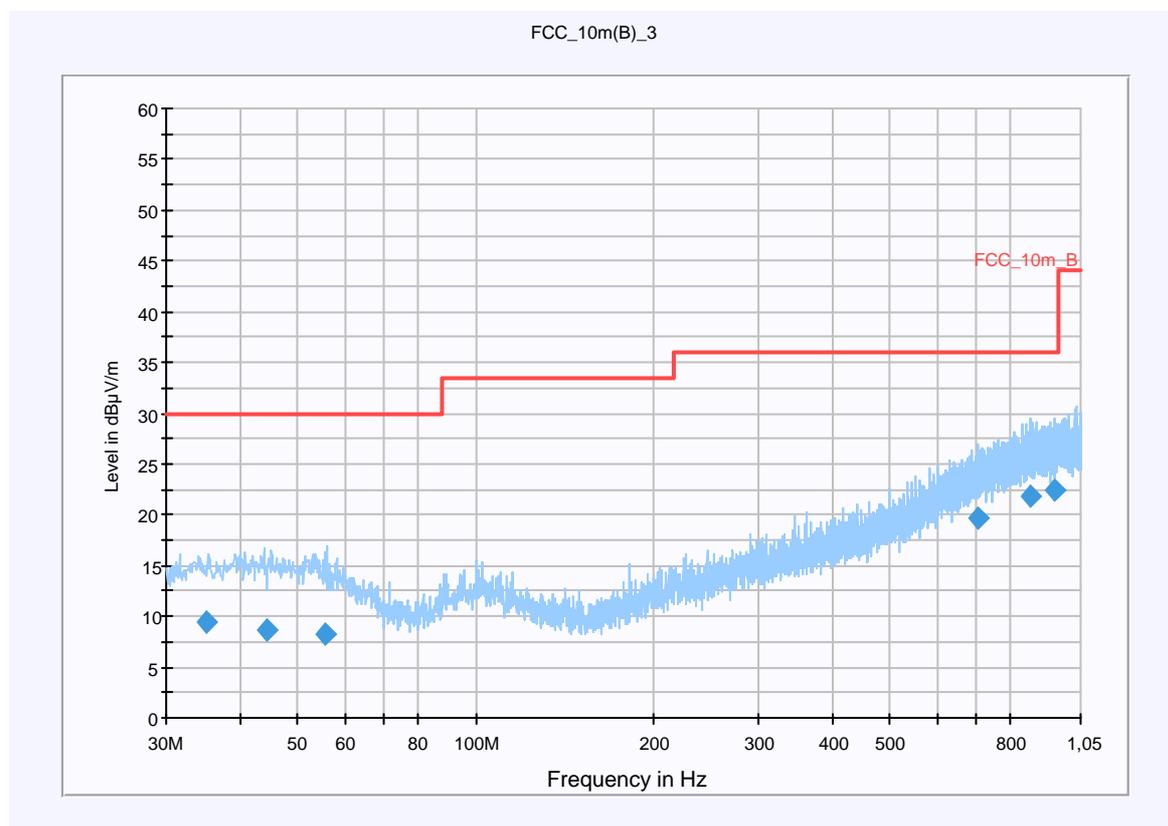
Plot 1: 30 MHz to 1 GHz, vertical & horizontal polarization

Common Information

EUT: Sony Ericsson AAH-5880011-B
 Serial Number: SSÖGL000586
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: WLAN RX
 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

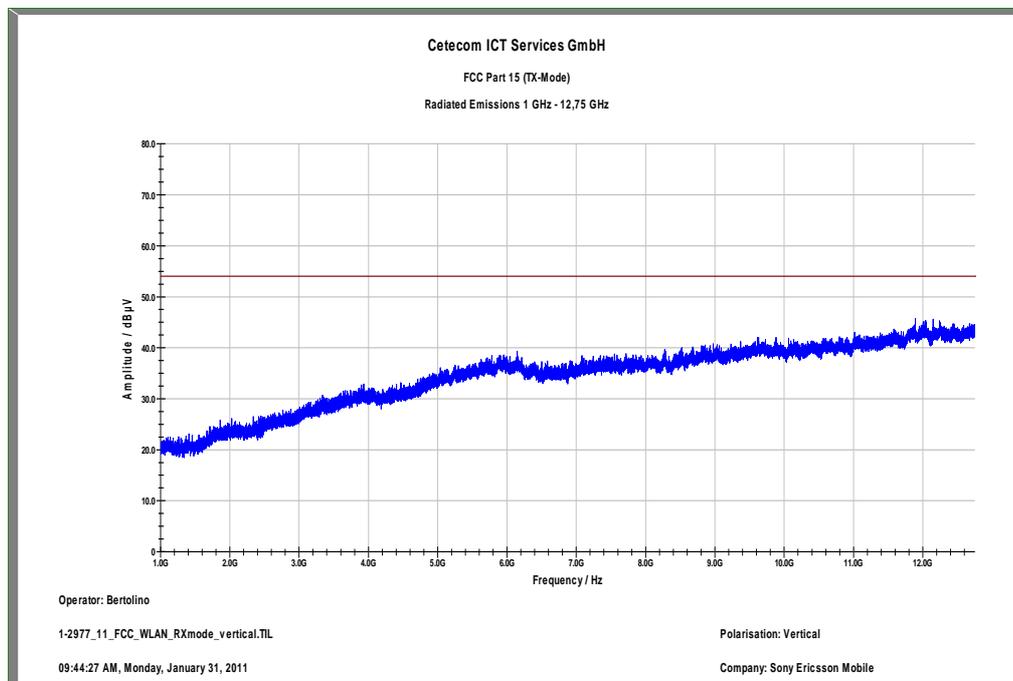
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.047650	9.4	15000.000	120.000	185.0	V	103.0	13.0	20.6	30.0	
44.261400	8.6	15000.000	120.000	220.0	V	201.0	13.3	21.4	30.0	
55.695750	8.2	15000.000	120.000	220.0	H	52.0	12.7	21.8	30.0	
704.550600	19.7	15000.000	120.000	98.0	V	314.0	22.6	16.4	36.0	
863.756400	21.9	15000.000	120.000	197.0	H	26.0	24.7	14.1	36.0	
949.435200	22.4	15000.000	120.000	127.0	H	183.0	25.3	13.6	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

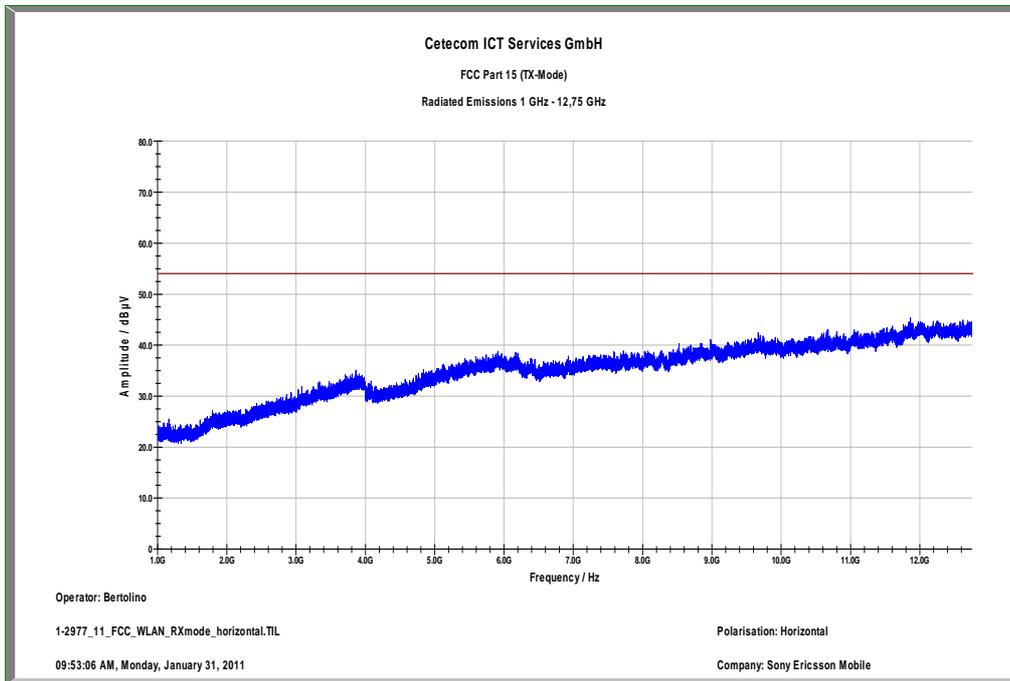
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

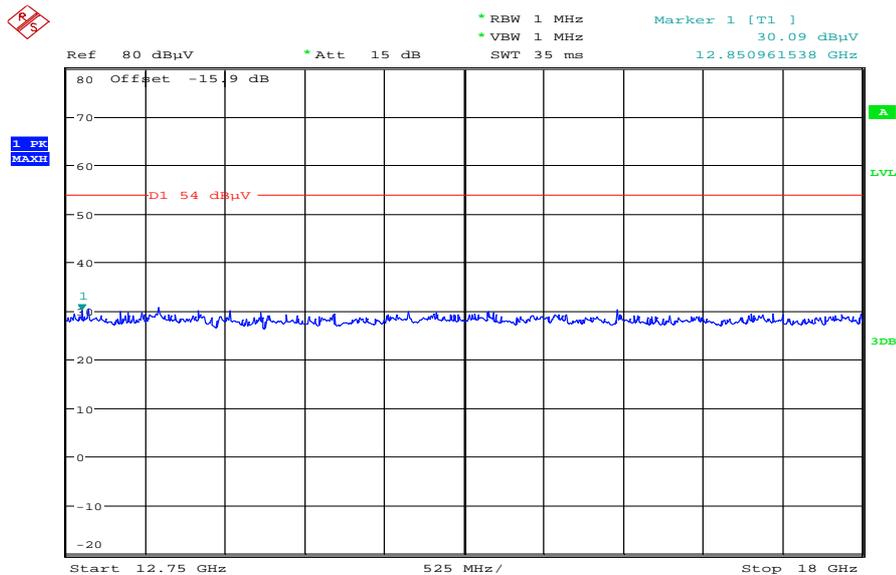
Plot 2: 1 GHz to 12.75 GHz, vertical polarization



Plot 3: 1 GHz to 12.75 GHz, horizontal polarization

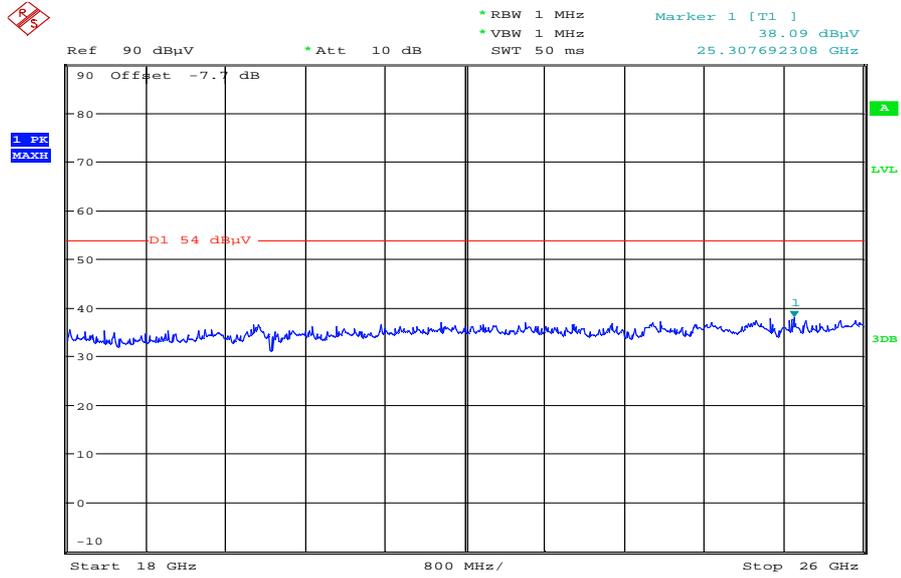


Plot 4: 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:11:41

Plot 5: 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 1.FEB.2011 08:32:00

9.12 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 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.

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 (dB μ V/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	

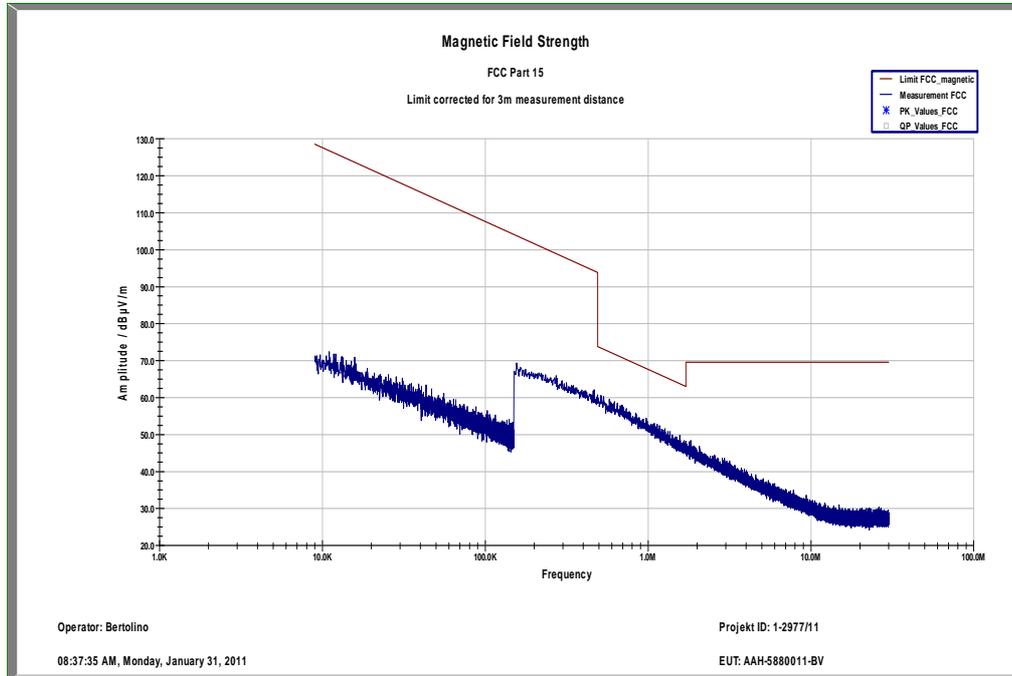
Results:

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

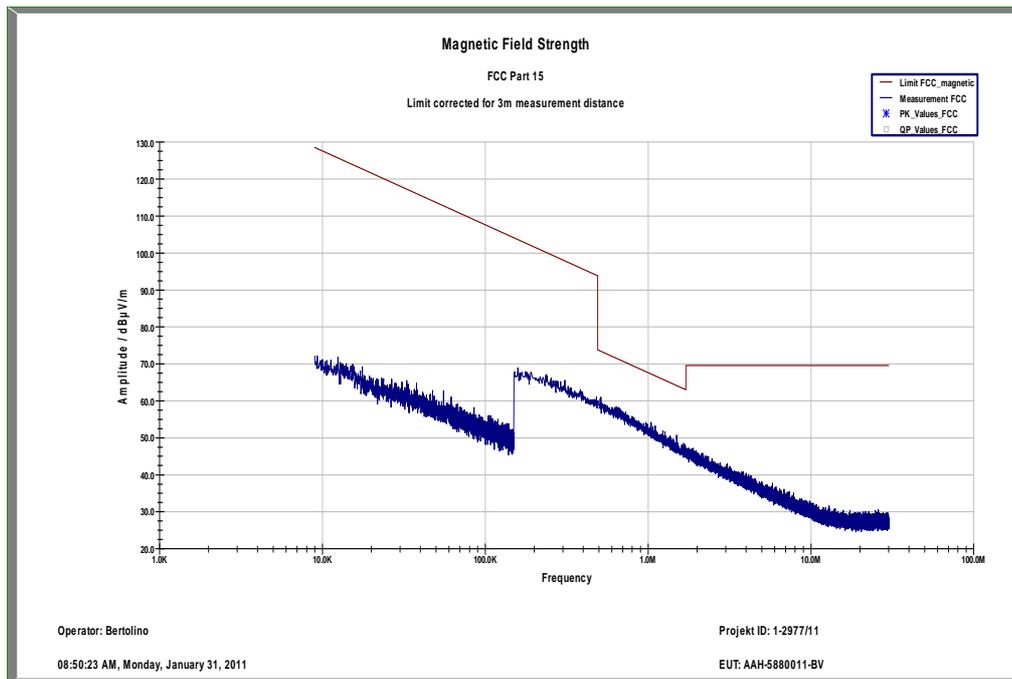
Result: The result of the measurement is passed.

Plots: DSSS / b – mode

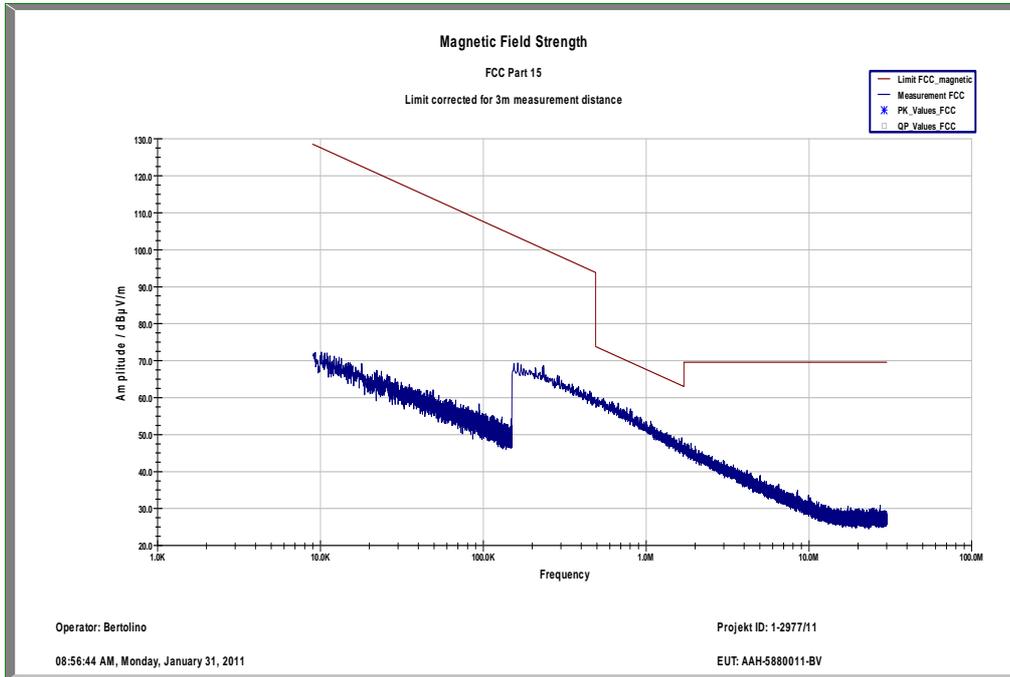
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

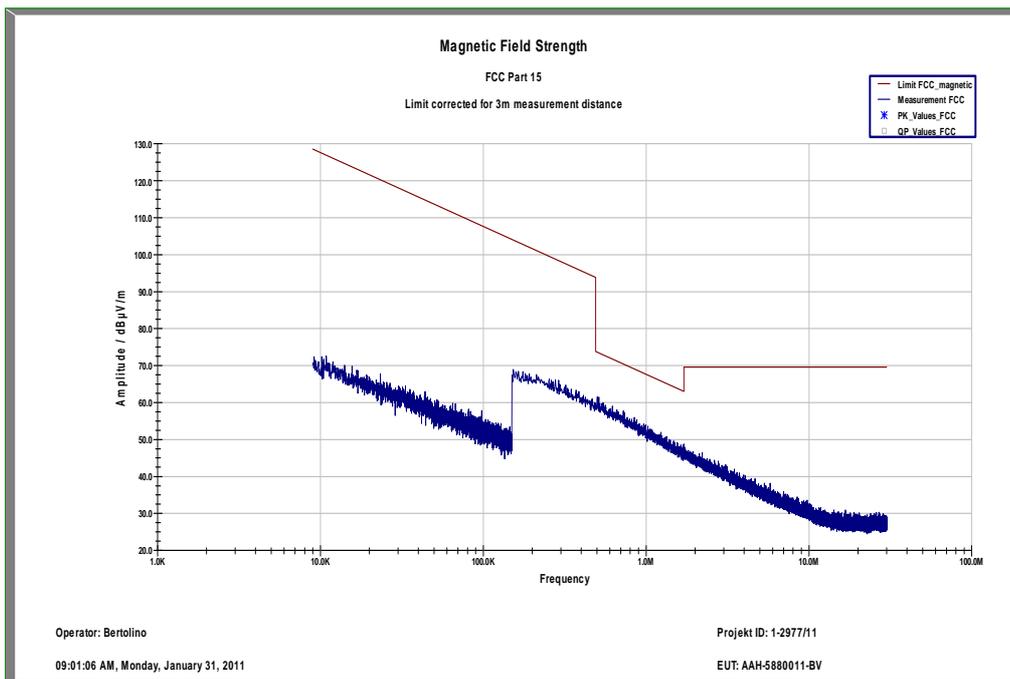


Plot 3: Highest channel, 9 kHz to 30 MHz

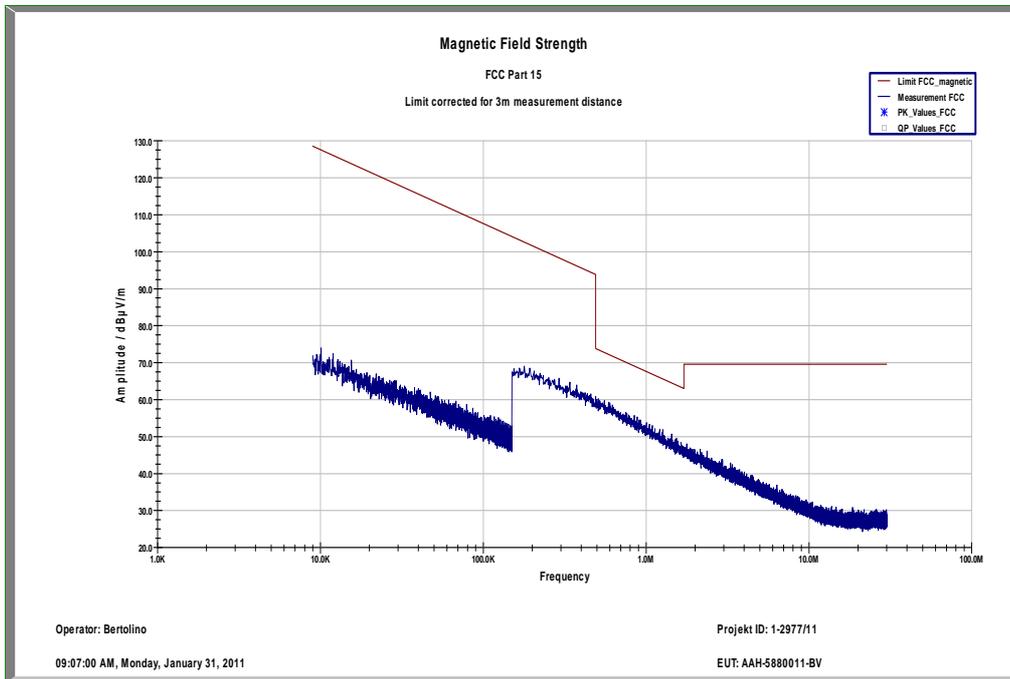


Plots: OFDM / g – mode

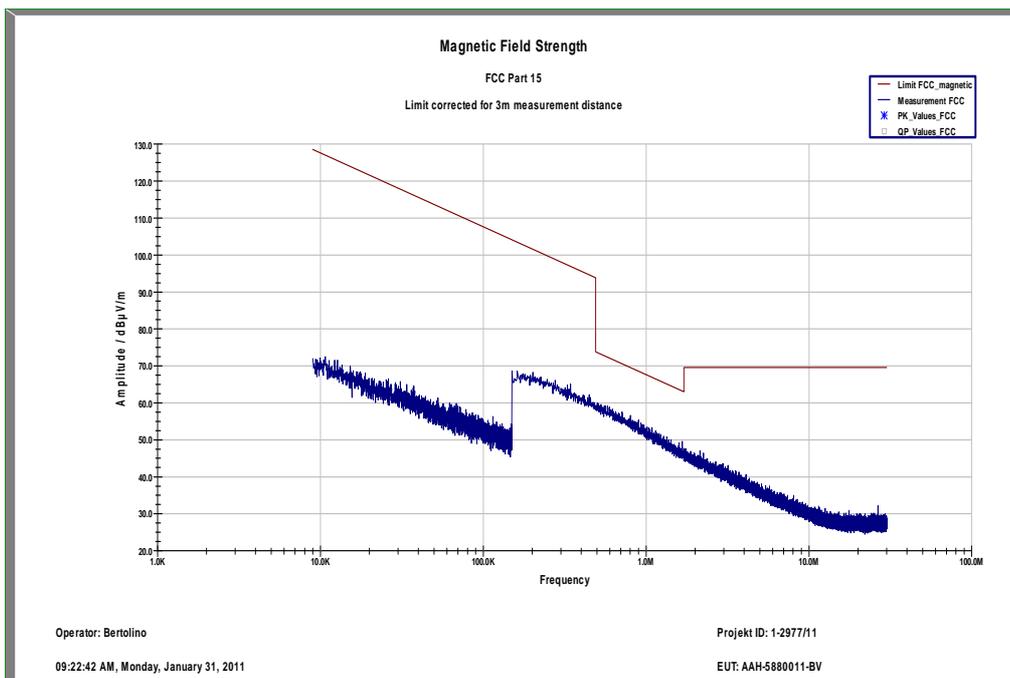
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

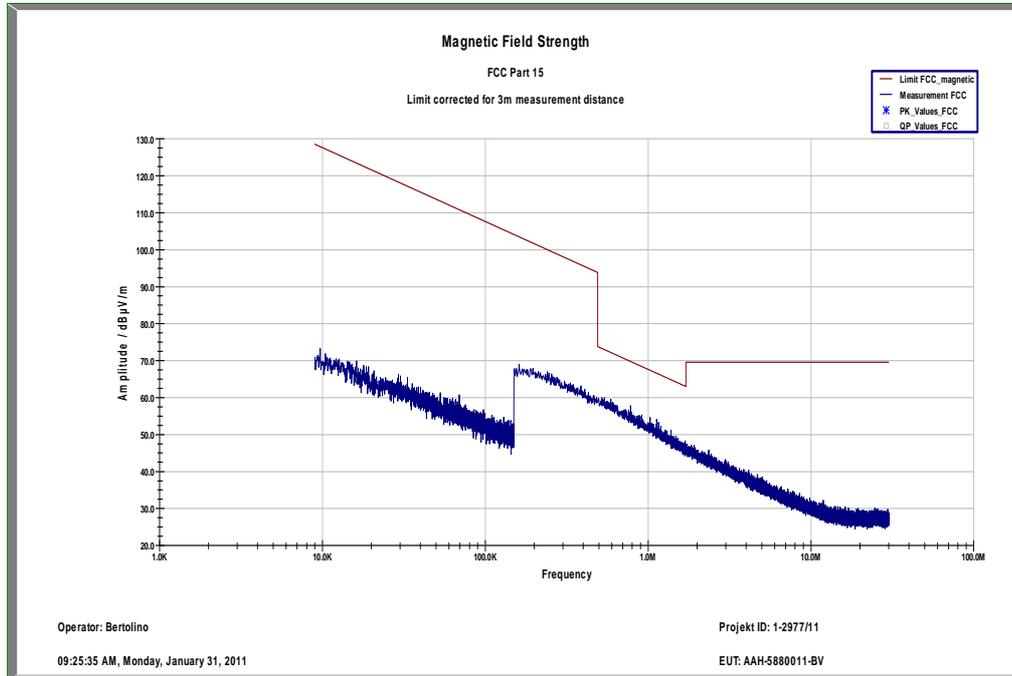


Plot 3: Highest channel, 9 kHz to 30 MHz



Plots: RX / Idle – mode

Plot 1: 9 kHz to 30 MHz



9.13 TX spurious emissions 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 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.

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 15.107(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

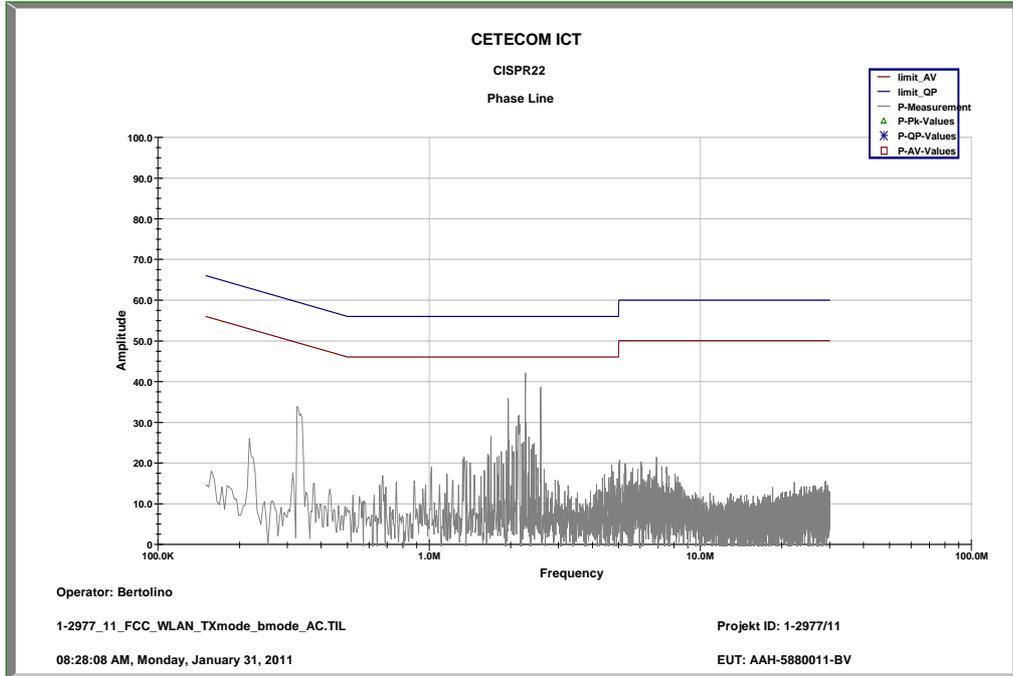
Result: Also see plots

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

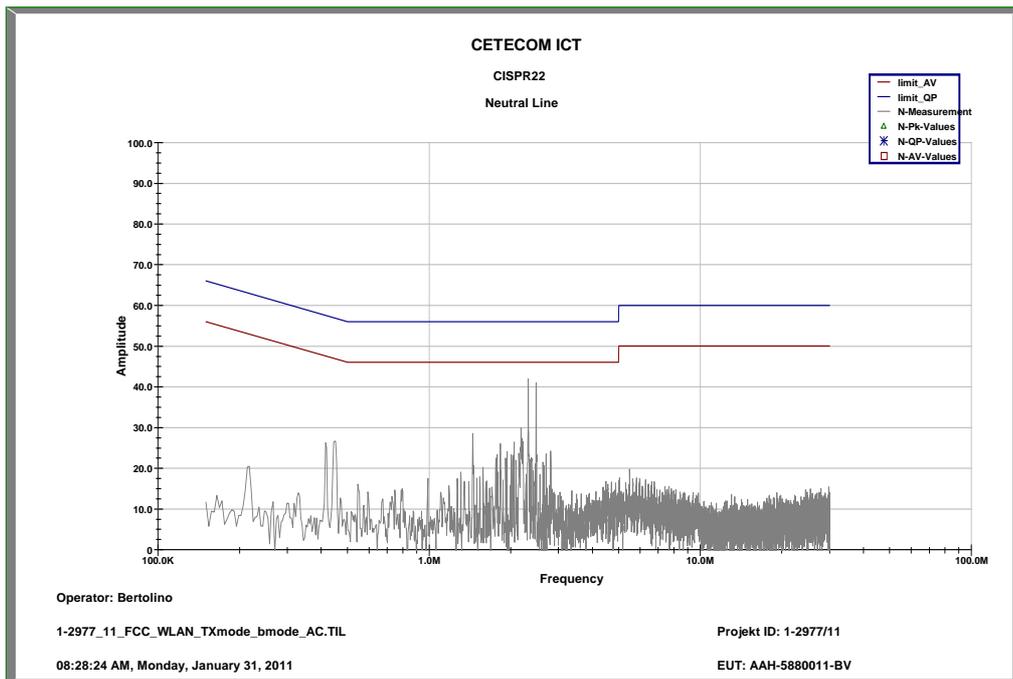
Result: The result of the measurement is passed.

Plots:

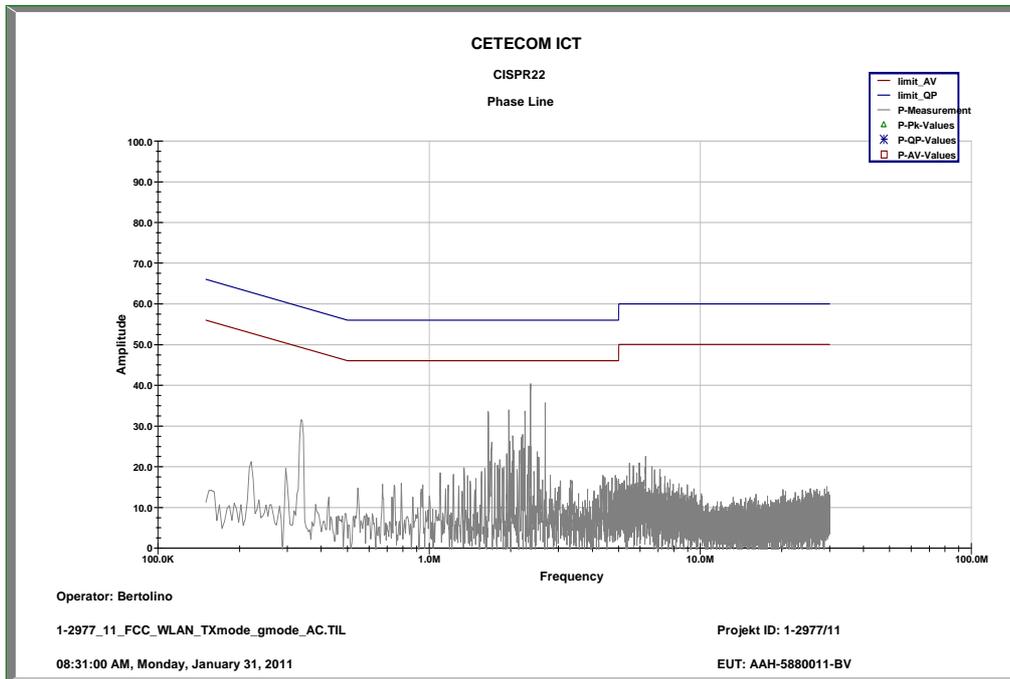
Plot 1: DSSS / b – mode, 9 kHz to 30 MHz, phase line



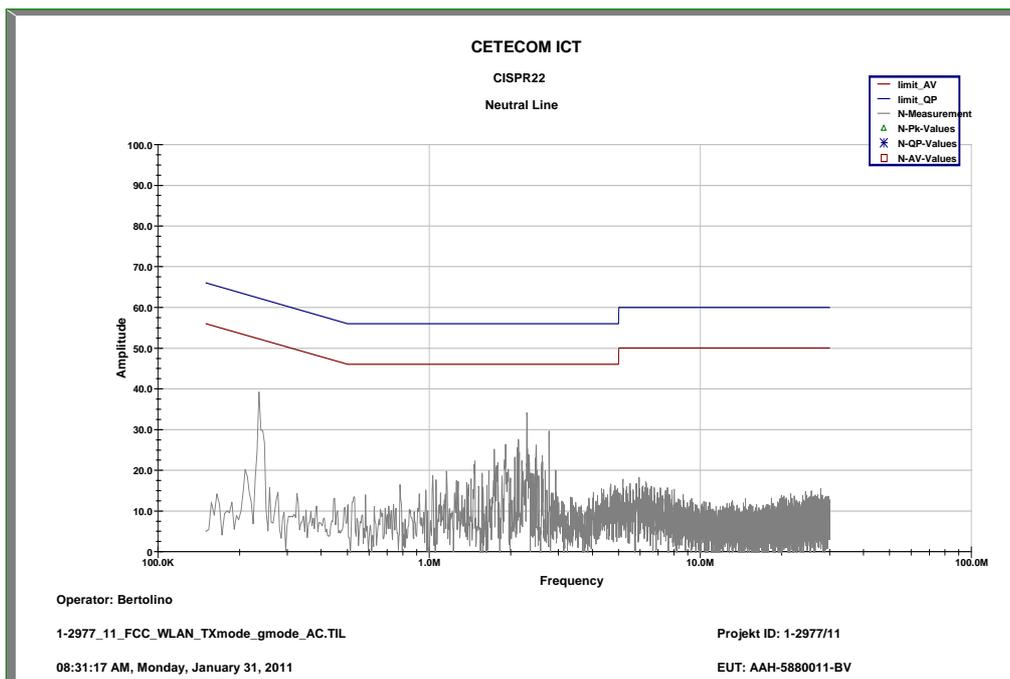
Plot 2: DSSS / b – mode, 9 kHz to 30 MHz, neutral line



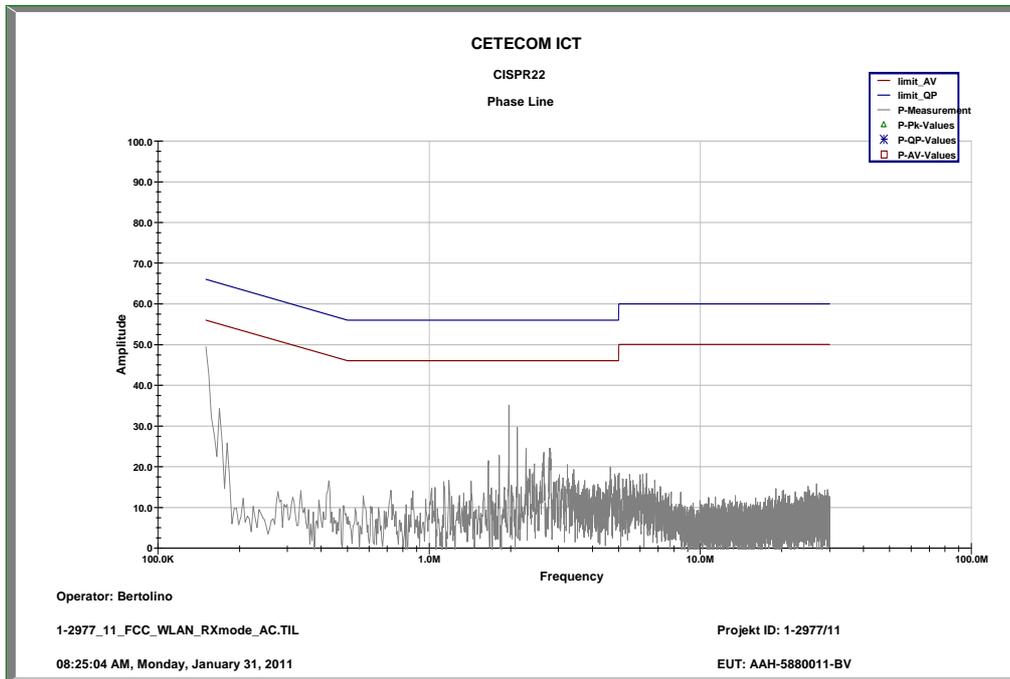
Plot 3: OFDM / g – mode, 9 kHz to 30 MHz, phase line



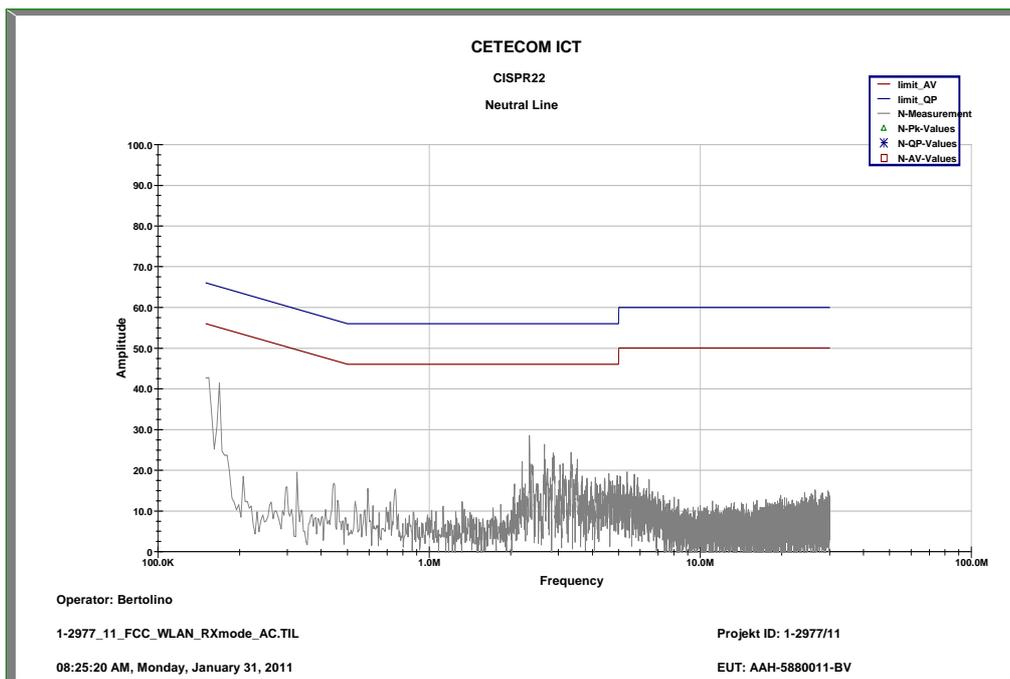
Plot 4: OFDM / g – mode, 9 kHz to 30 MHz, neutral line



Plot 5: RX / Idle – mode, 9 kHz to 30 MHz, phase line



Plot 6: RX / Idle – mode, 9 kHz to 30 MHz, neutral line



10 Test equipment and ancillaries used for tests

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

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

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	08.01.2010	08.01.2012
3	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
4	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
5	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
6	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
7	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
8	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	08.01.2010	08.01.2012
9	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
10	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
11	n. a.	PowerAttenuator	8325	Byrd	1530	300001595	ev		
12	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKI!	05.03.2009	05.03.2011
13	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
14	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
15	Spec.A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
16	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
17	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
18	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
19	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
20	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
21	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
22	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
23	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
24	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
25	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
26	n. a.	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev		
27	n. a.	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		

28	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
29	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
30	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Technologies	MY47420220	300003813	k	13.09.2010	13.09.2012
31	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	vlKI!	08.09.2010	08.09.2012
32	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKI!	17.12.2008	17.12.2011
33	n. a.	Spectrum Analyzer 20 Hz - 50 GHz	FSU50	R&S	200012	300003443	ve	01.07.2010	01.07.2012
34	n. a.	DC Power Supply 0 – 32V	1108-32	Heiden	001802	300001383	Ve	23.06.2010	23.06.2013
35	n. a.	NRP Power meter Display and control unit AC sup	NRP + NRP-Z81	R&S	100212 + 100010	300003780	vlKI!	08.01.2010	08.01.2012

Agenda: Kind of Calibration

k calibration / calibrated
 ne not required (k, ev, izw, zw not required)
 ev periodic self verification
 Ve long-term stability recognized
 vlk! Attention: extended calibration interval
 NK! Attention: not calibrated

EK limited calibration
 zw cyclical maintenance (external cyclical maintenance)
 izw internal cyclical maintenance
 g blocked for accredited testing
 *) next calibration ordered / currently in progress