

TEST REPORT

Test report no.: 1-2977-83-04/11



Testing laboratory

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Accredited test laboratory:

The test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025
 DAkkS registration number: D-PL-12076-01-01

Area of Testing: Radio/Satellite Communications

Applicant

Sony Ericsson Mobile Communications AB
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 22188 Lund / SWEDEN
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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 GPRS/EGPRS 850/900/1800/1900; UMTS HSDPA/HSUPA FDDI/FDDVIII; BT+EDR; WLAN; A-GPS; FM-Rx; ANT+
Model name:	AAD-3880123-BV
FCC ID:	PY7A3880123
IC:	4170A-A3880123
Frequency:	2400 MHz – 2483.5 MHz (Lowest channel 2412 MHz / Highest channel 2462 MHz)
Power supply:	3.7 V DC by LiPolymer battery or power supply
Temperature range:	-20 °C to +55 °C

Test performed:

2011-09-02  Marco Bertolino

Test report authorised:

2011-09-02  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.

2.2 Application details

Date of receipt of order:	2011-08-09
Date of receipt of test item:	2011-08-15
Start of test:	2011-08-15
End of test:	2011-09-02
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
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}	+20 °C during room temperature tests
	T_{max}	+55 °C during high temperature tests
	T_{min}	-20 °C during low temperature tests
Relative humidity:		53 %
Air pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.7 V DC by LiPolymer battery or power supply
	V_{max}	4.1 V
	V_{min}	3.3 V

5 Test item

Kind of test item	:	Mobile Phone GPRS/EGPRS 850/900/1800/1900; UMTS HSDPA/HSUPA FDDI/FDDVIII; BT+EDR; WLAN; A-GPS; FM-Rx; ANT+
Type identification	:	AAD-3880123-BV
S/N serial number	:	Rad. BX902GJNS1, BX902GHWNL Cond. BX902GHWN6, BX902GK57K
HW hardware status	:	AP2
SW software status	:	4.0.1.A.0.99 ATP R1A034
Frequency band [MHz]	:	2400 MHz – 2483.5 MHz (Lowest channel 2412 MHz / Highest channel 2462 MHz)
Type of modulation	:	DSSS & OFDM technology with BPSK, QPSK, 16 – & 64 – QAM modulation.
Number of channels	:	11
Antenna	:	Integrated PCB antenna → for more information, please take a look at the annex – internal photos of the EUT.
Power supply	:	3.7 V DC by LiPolymer battery or 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	2011-09-02	-/-

Test specification clause	Test case	Temperature conditions	Power source voltages	Mode	Pass	Fail	NA	NP	Remark
§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 g & n	<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 of a FHSS system 6dB bandwidth	Nominal	Nominal	DSSS OFDM g & n	<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 of a FHSS system 20dB bandwidth	Nominal	Nominal	DSSS OFDM g & n	<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 g & n	<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 g & n	<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 g & n	<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 g & n	<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 g & n	<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 g & n	<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
§15.207(a)	Conducted emissions < 30 MHz	Nominal	Nominal	DSSS OFDM g & n	<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 measurements

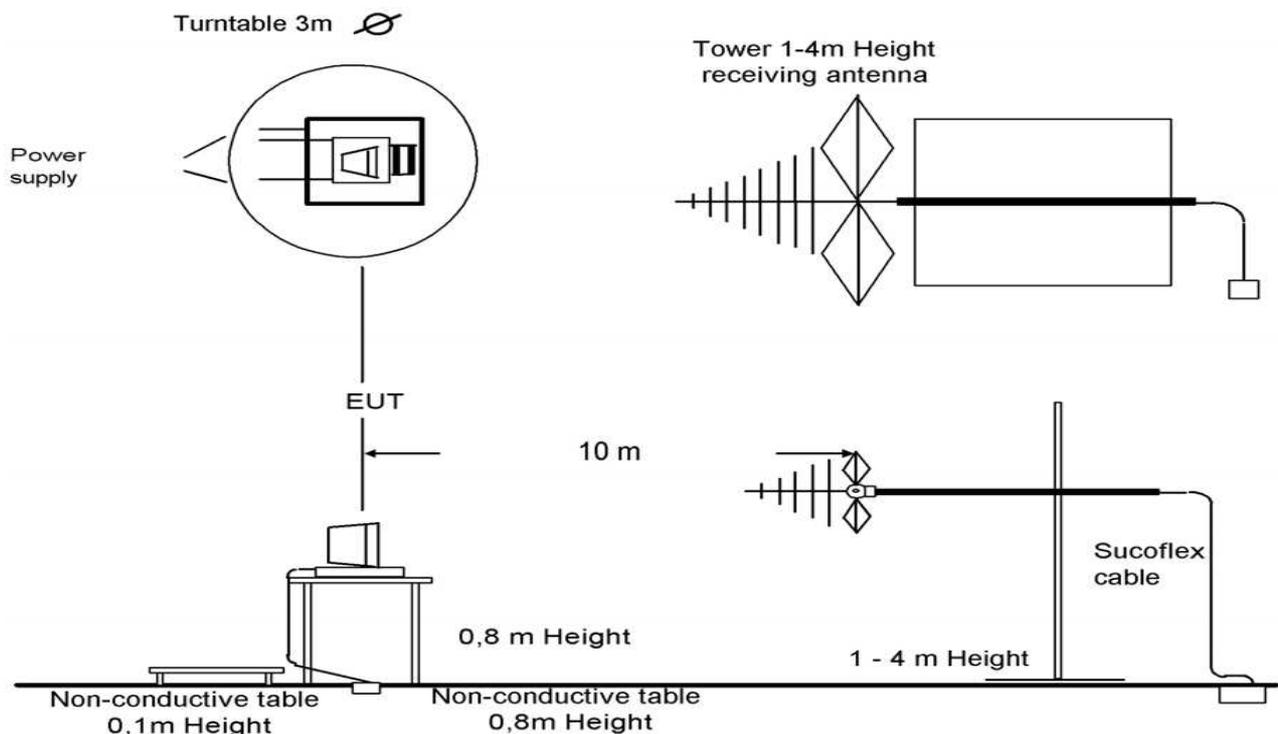
8.1 Description of test setup

8.1.1 Radiated measurements

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

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

Semi anechoic chamber



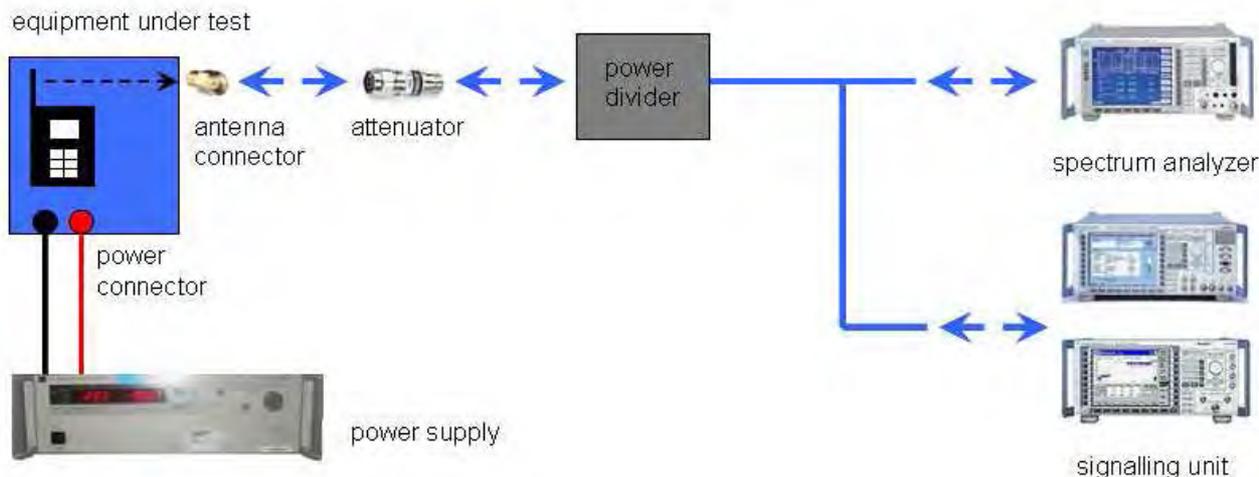
Picture 1: Diagram radiated measurements

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

The EUT is powered by an external power supply with nominal voltage. The signaling is performed from outside the chamber with a signaling unit (CMU200 or other) by air link using signaling 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 signaling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signaling 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	:	1-2977-83-04/11
Equipment model number	:	AAD-3880123-BV
Certification number	:	4170A-A3880123
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	:	ISM band 2400 MHz to 2483.5 MHz (lowest channel 2412 MHz, highest channel 2462 MHz)
RF-power [W] (max.)	:	cond.: 83 mW (b-mode) 282 mW (g-mode) 282 mW (g-mode) EIRP: 141 mW (b-mode) 461 mW (g-mode) 461 mW (g-mode)
Occupied bandwidth (99%-BW)	:	b-mode: 15.8 MHz g-mode: 18.0 MHz n-mode: 19.1 MHz
Type of modulation	:	DSSS & OFDM technology with BPSK, QPSK, 16- and 64 QAM modulation.
Emission designator (TRC-43)	:	15M8G1D (b-mode) 18M0G7D (g-mode) 19M1G7D (n-mode)
Antenna information	:	Integrated PCB antenna
Transmitter spurious (worst case) [dB μ V/m @ 3m]:		44 @ 12.4 MHz (Noise)
Receiver spurious (worst case) [dB μ V/m @ 3m]:		44 @ 12.4 MHz (Noise)

ATTESTATION:

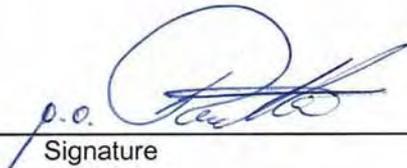
DECLARATION OF COMPLIANCE:

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:

2011-09-02
Date

Marco Bertolino
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:	30 MHz
Trace-Mode:	Max Hold

Results:

DSSS / b – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]			
	1	2	5.5	11
Ch 6 - 2437 MHz	19.09	19.11	18.88	18.84
Measurement uncertainty	± 1.5 dB			

OFDM / g – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]							
	6	9	12	18	24	36	48	54
Ch 6 - 2437 MHz	24.45	24.51	24.29	24.39	24.48	24.41	24.31	24.40
Measurement uncertainty	± 1.5 dB							

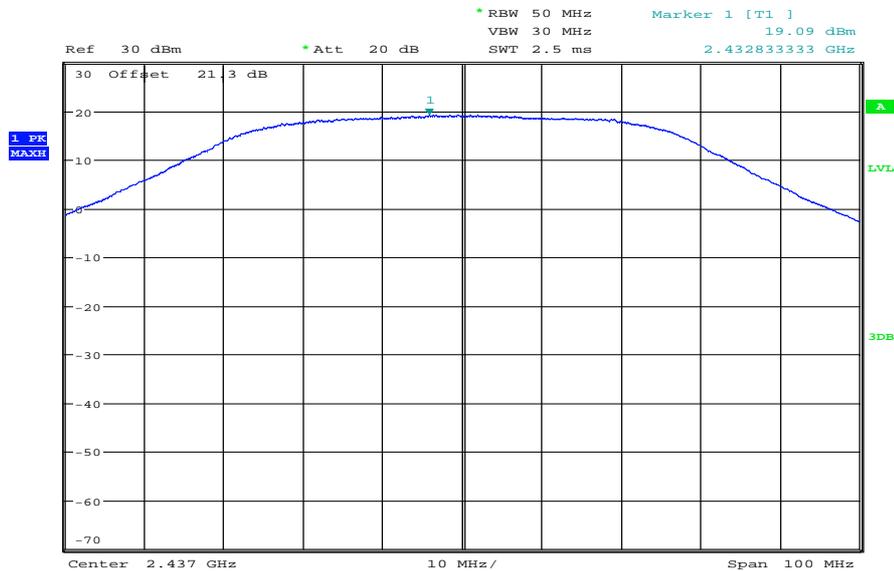
OFDM / n – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]							
	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Ch 6 - 2437 MHz (Long guard interval)	24.51	24.37	24.29	24.46	24.29	24.25	24.41	24.11
Ch 6 - 2437 MHz (Short guard interval)	24.48	24.31	24.35	24.25	24.35	24.39	24.41	24.14
Measurement uncertainty	± 1.5 dB							

Result: Selected data rate for all measurements:

DSSS / b – mode: 2 MBit/s
 OFDM / g – mode: 9 MBit/s
 OFDM / n – mode: MCS0 (LGI)

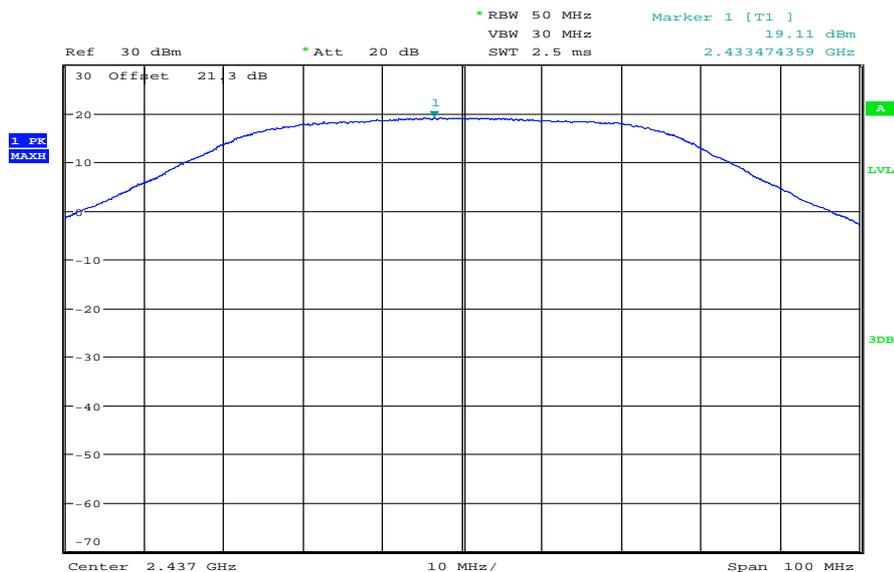
Plots: DSSS / b – mode

Plot 1: TX mode, middle channel, 1 MBit/s



Date: 30.AUG.2011 18:06:20

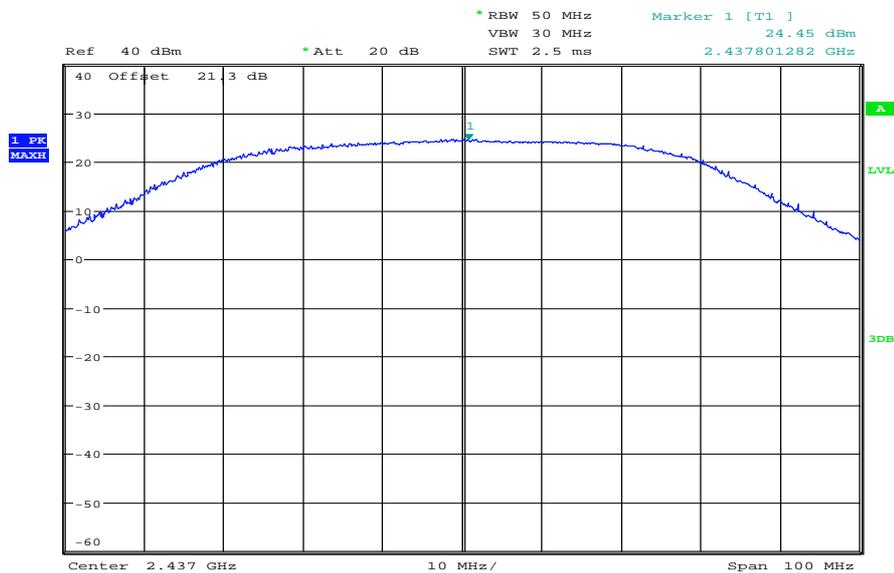
Plot 2: TX mode, middle channel, 2 MBit/s



Date: 30.AUG.2011 15:55:04

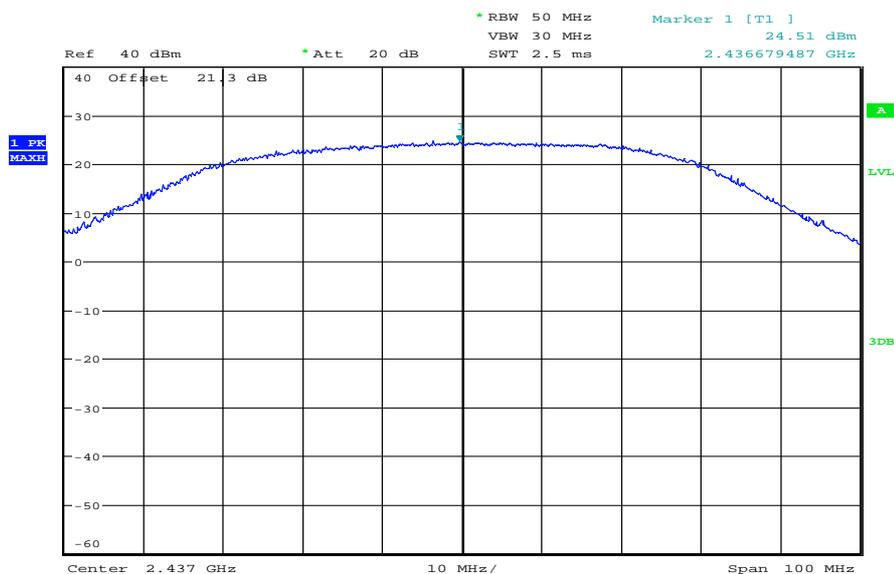
Plots: OFDM / g – mode

Plot 1: TX mode, middle channel, 6 MBit/s



Date: 30.AUG.2011 17:14:05

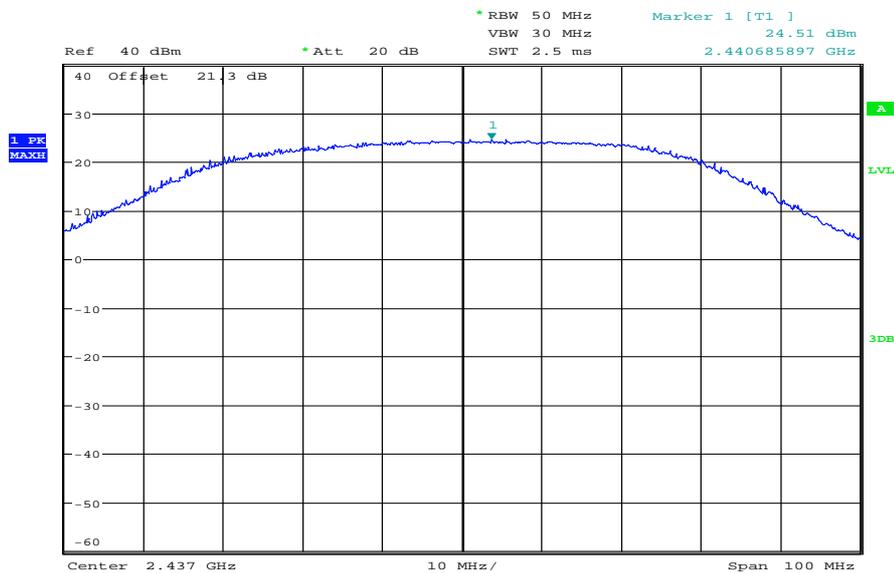
Plot 2: TX mode, middle channel, 9 MBit/s



Date: 30.AUG.2011 17:16:55

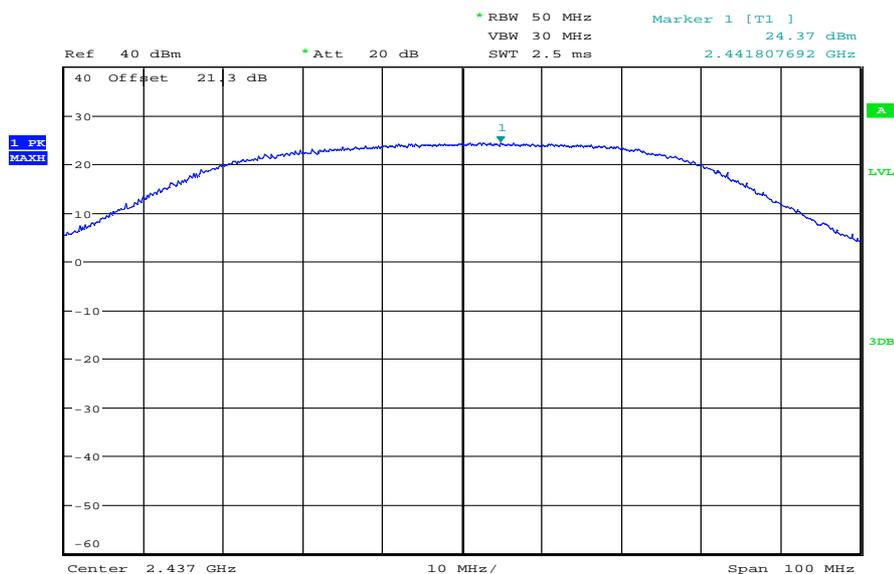
Plots: OFDM / n – mode (Long guard interval)

Plot 1: TX mode, middle channel, MCS0



Date: 30.AUG.2011 17:25:56

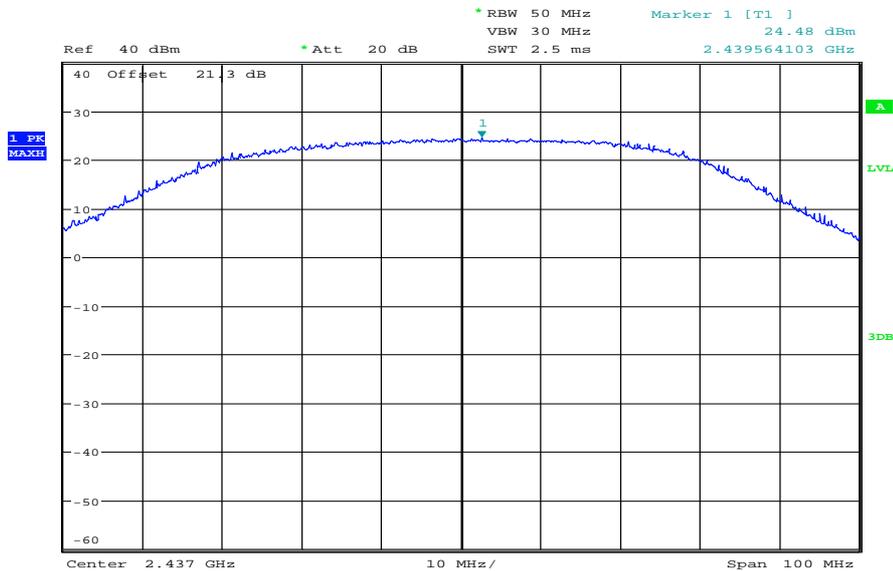
Plot 2: TX mode, middle channel, MCS1



Date: 30.AUG.2011 17:26:47

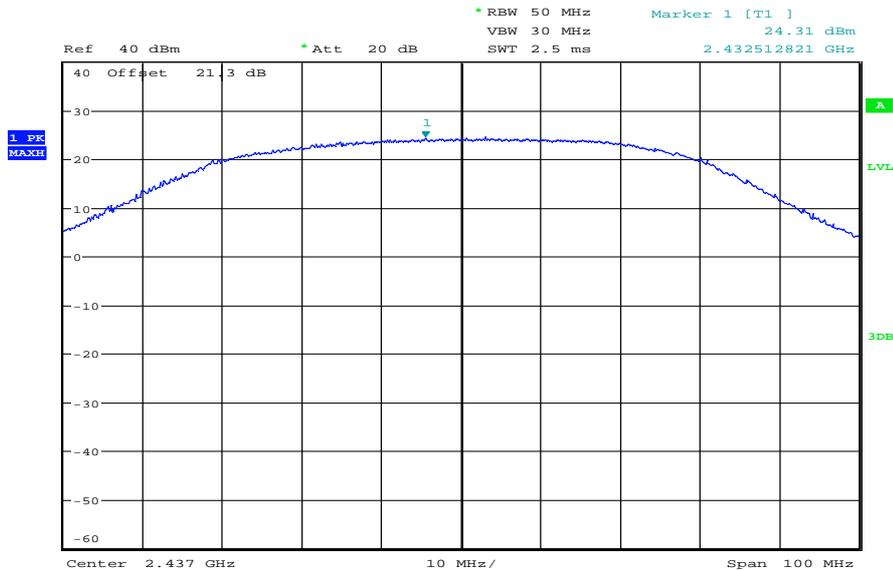
Plots: OFDM / n – mode (Short guard interval)

Plot 1: TX mode, middle channel, MCS0



Date: 30.AUG.2011 17:58:07

Plot 2: TX mode, middle channel, MCS1



Date: 30.AUG.2011 17:58:43

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
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		16.16	16.15	15.82
Radiated power [dBm] Measured with DSSS modulation		18.18	18.28	18.37
Gain [dBi] Calculated		2.02	2.13	2.55
Measurement uncertainty			± 1.5 dB (cond.) / ± 3 dB (rad.)	

Result: The measurement is passed.

9.3 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.

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 / b – mode

DSSS / b – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	19.19	19.11	18.94
Output Power Radiated – EIRP*)	21.21	21.24	21.49
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*) calculated with Antenna gain

Result: The measurement is passed.

Results: OFDM / g – mode

OFDM / g – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	24.20	24.51	23.21
Output Power Radiated – EIRP*)	26.22	26.64	25.76
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*)calculated with Antenna gain

Result: The measurement is passed.**Results: OFDM / n – mode**

OFDM / n – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	24.20	24.51	23.27
Output Power Radiated – EIRP*)	26.22	26.64	25.82
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*)calculated with Antenna gain

Result: The measurement is passed.

9.4 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:	3 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.	

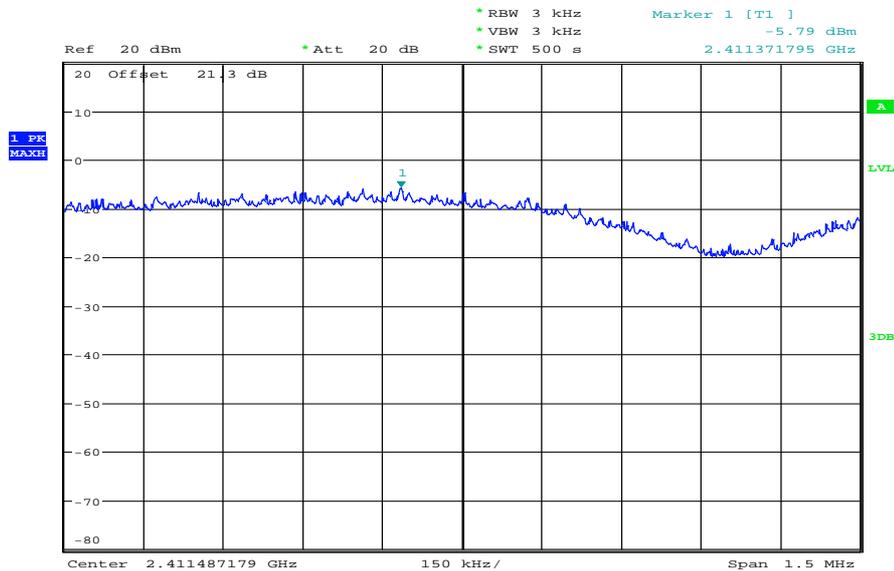
Results:

Modulation Frequency	Power Spectral density [dBm/3kHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	-5.79	-6.06	-6.32
OFDM / g – mode	-8.03	-8.01	-8.62
OFDM / n – mode	-9.32	-9.18	-10.33
Measurement uncertainty	± 1.5 dB		

Result: The measurement is passed.

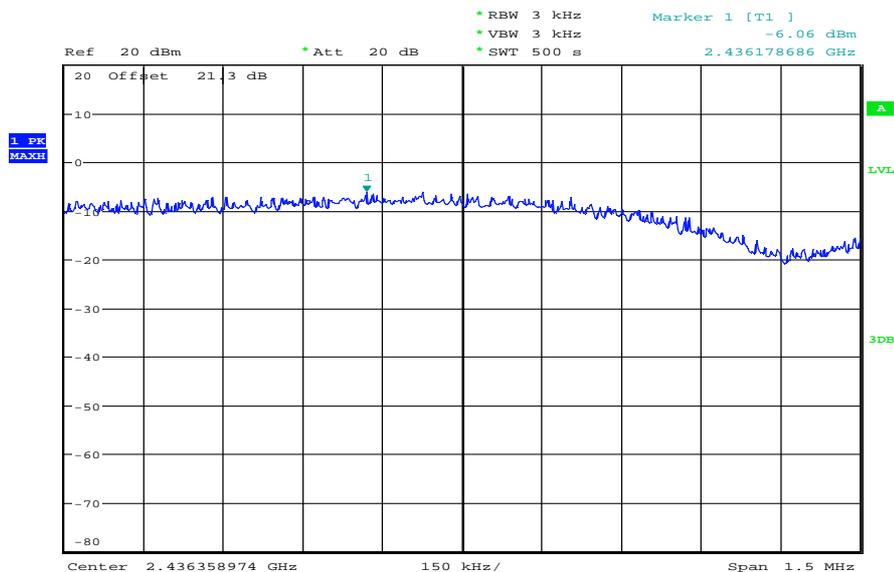
Plots: DSSS / b – mode

Plot 1: TX mode, lowest channel



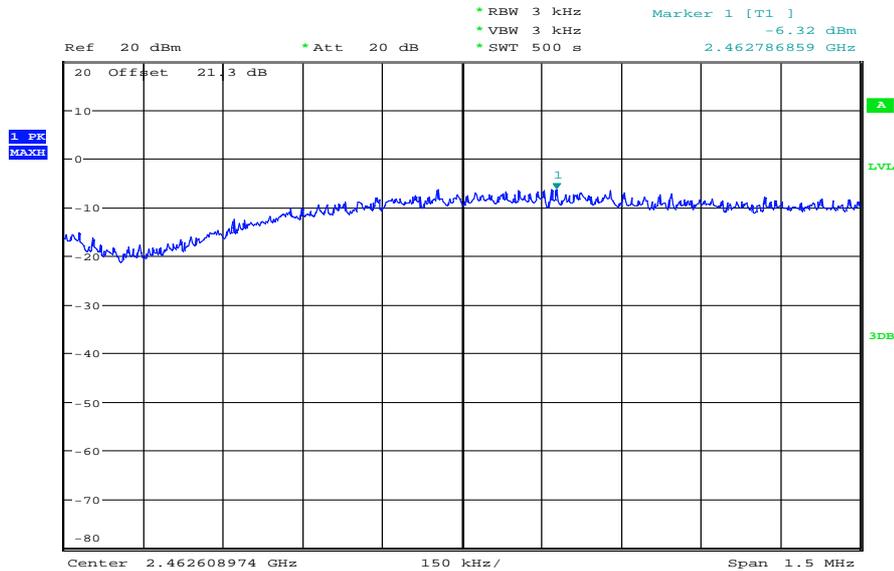
Date: 30.AUG.2011 18:38:44

Plot 2: TX mode, middle channel



Date: 30.AUG.2011 18:54:12

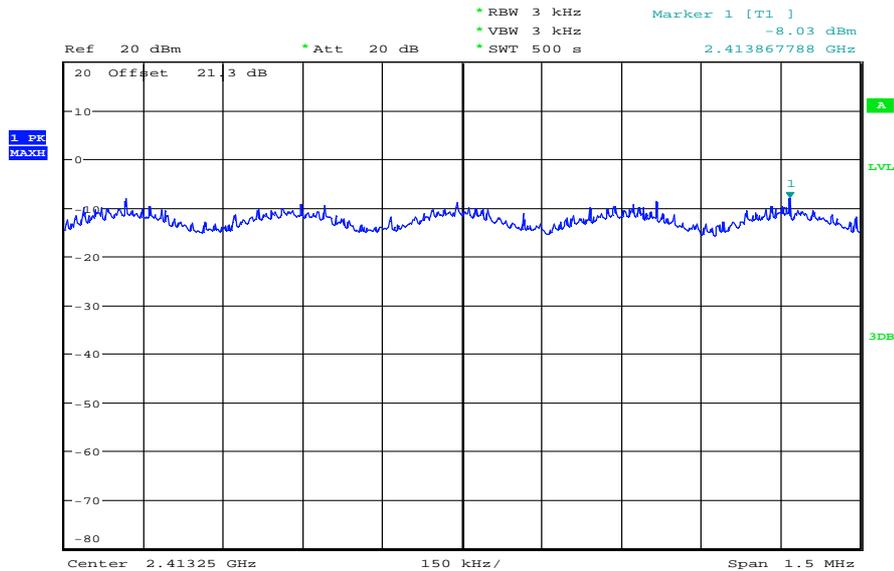
Plot 3: TX mode, highest channel



Date: 30.AUG.2011 19:05:52

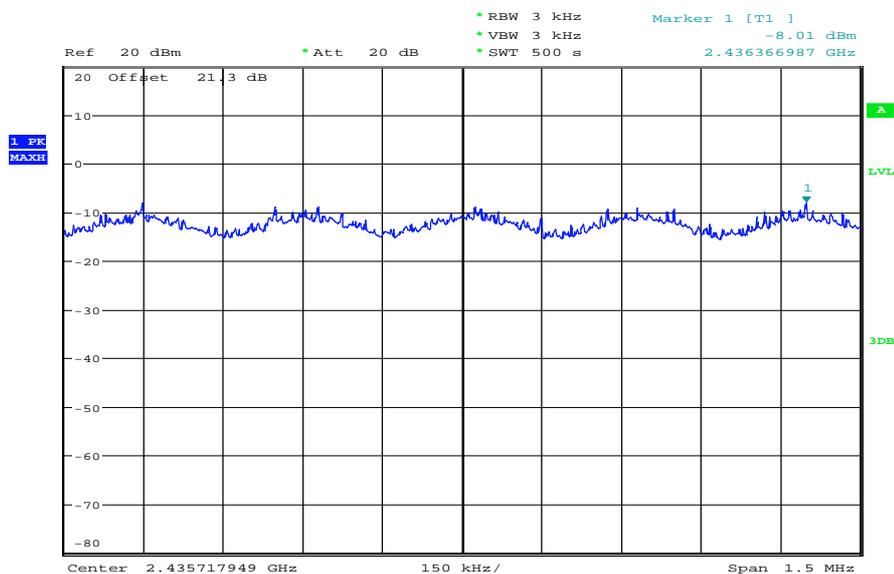
Plots: OFDM / g – mode

Plot 1: TX mode, lowest channel



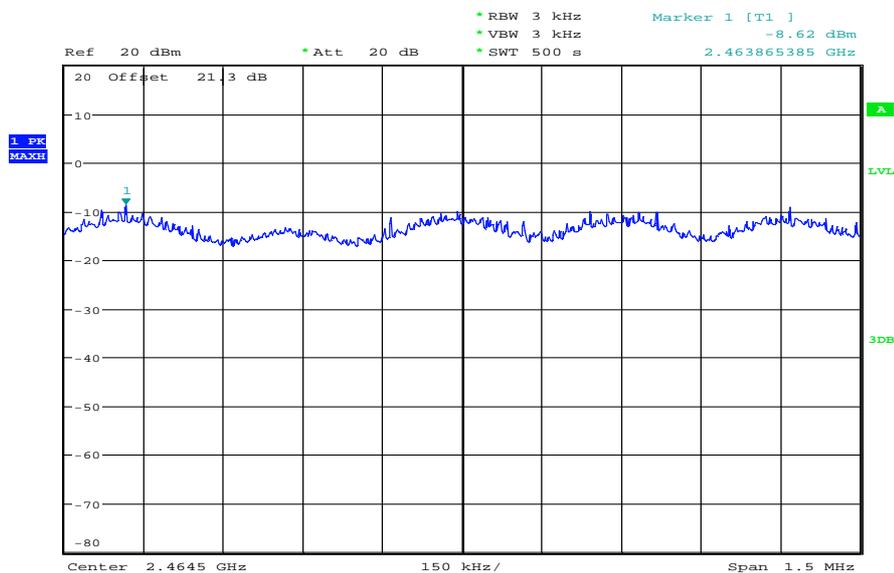
Date: 30.AUG.2011 19:20:52

Plot 2: TX mode, middle channel



Date: 30.AUG.2011 19:35:11

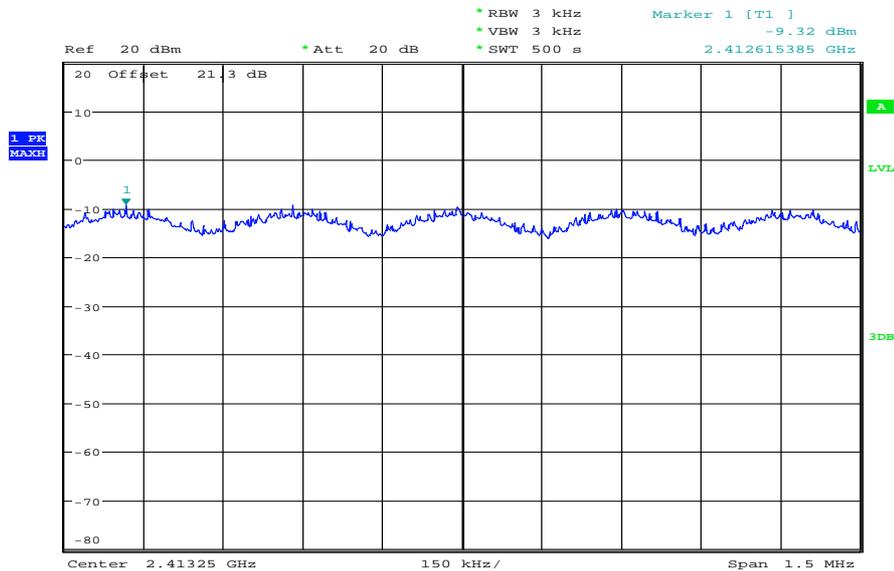
Plot 3: TX mode, highest channel



Date: 30.AUG.2011 19:47:41

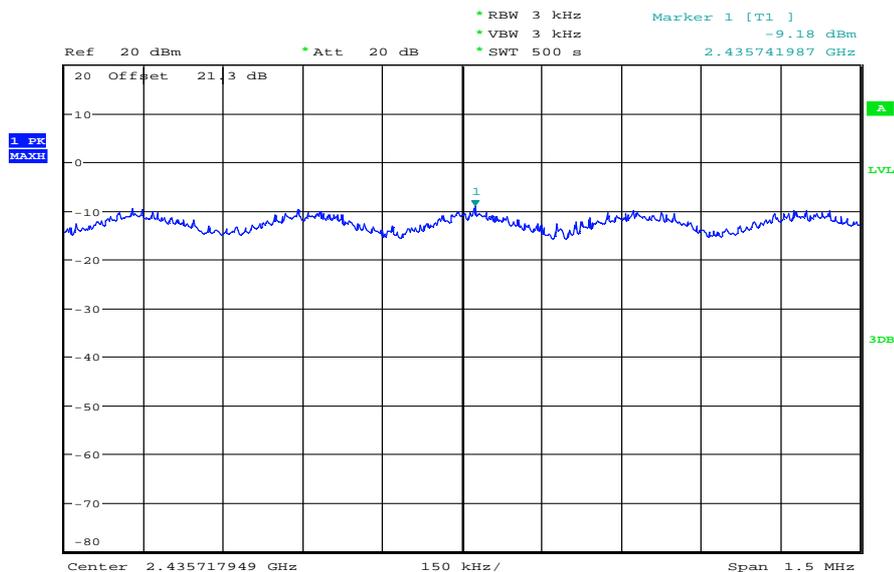
Plots: OFDM / n – mode

Plot 1: TX mode, lowest channel



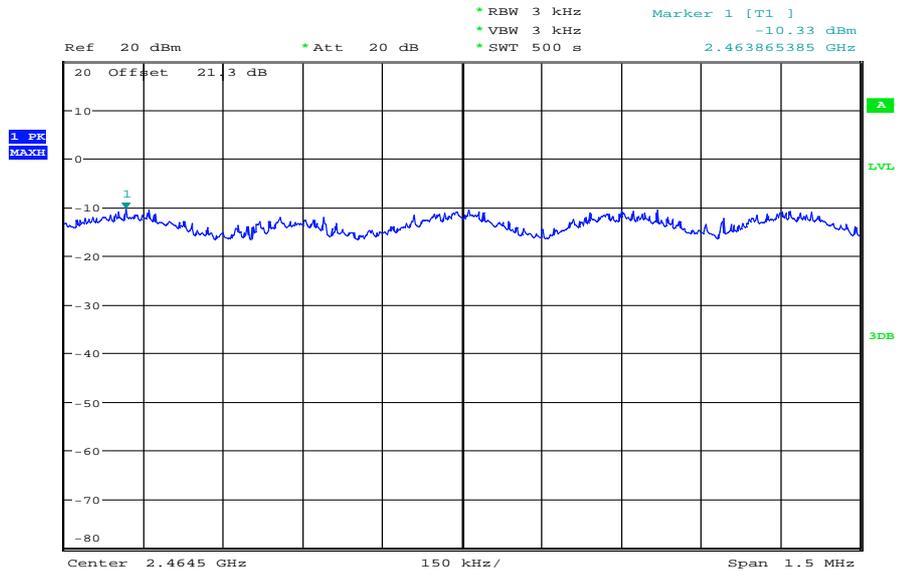
Date: 30.AUG.2011 20:03:15

Plot 2: TX mode, middle channel



Date: 30.AUG.2011 20:15:07

Plot 3: TX mode, highest channel



Date: 30.AUG.2011 20:24:37

9.5 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:	See plots
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 8, 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.	

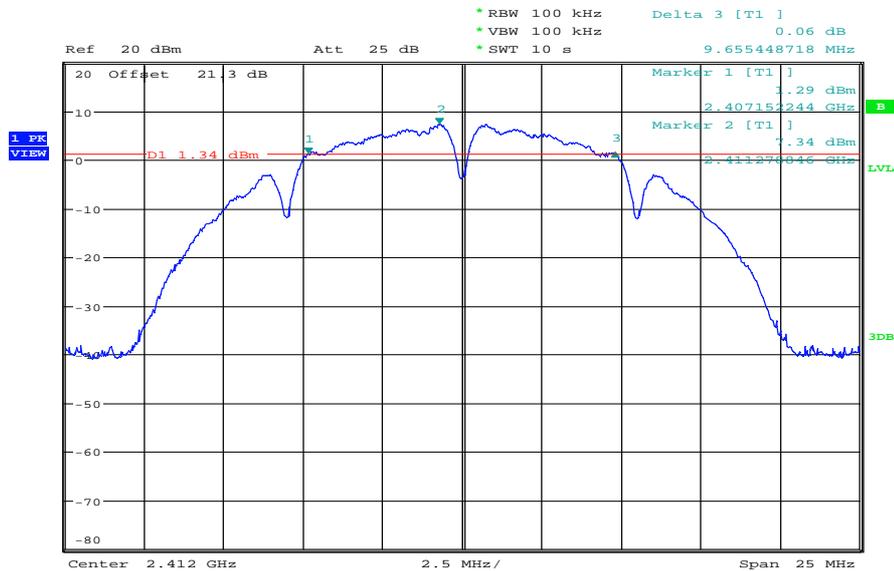
Results:

Modulation Frequency	6 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	9.66	9.70	9.66
OFDM / g – mode	16.31	16.31	16.27
OFDM / n – mode	17.51	17.15	17.51
Measurement uncertainty	± 100 kHz		

Result: The measurement is passed.

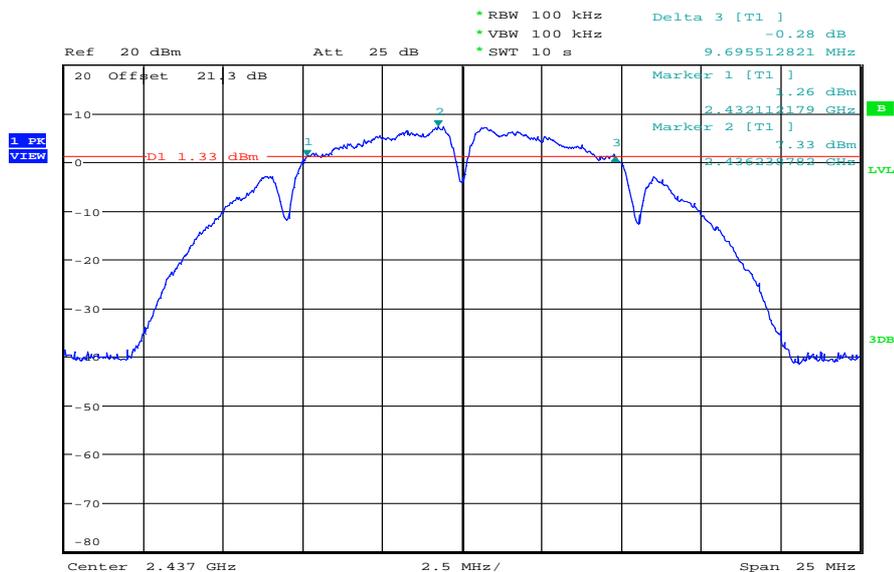
Plots: DSSS / b – mode

Plot 1: TX mode, lowest channel, 6 dB bandwidth



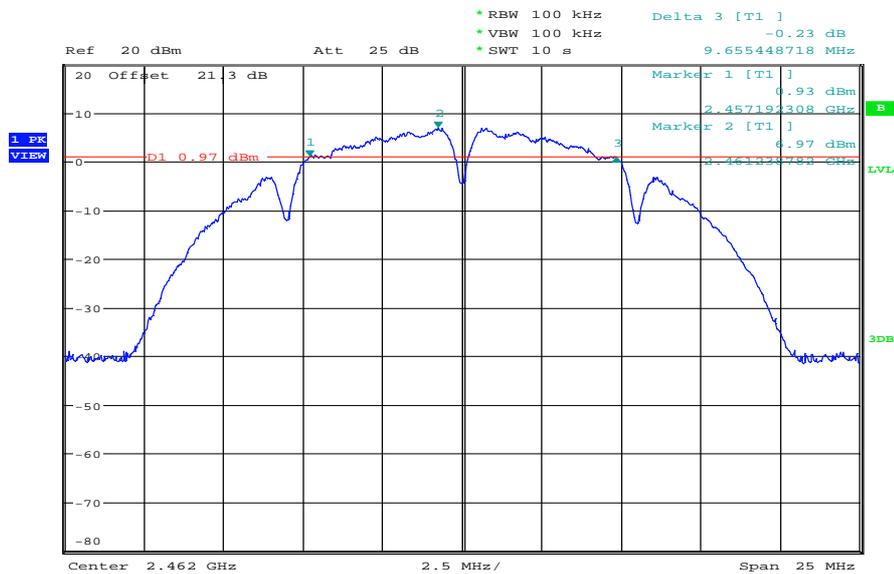
Date: 30.AUG.2011 18:42:06

Plot 2: TX mode, middle channel, 6 dB bandwidth



Date: 30.AUG.2011 18:44:13

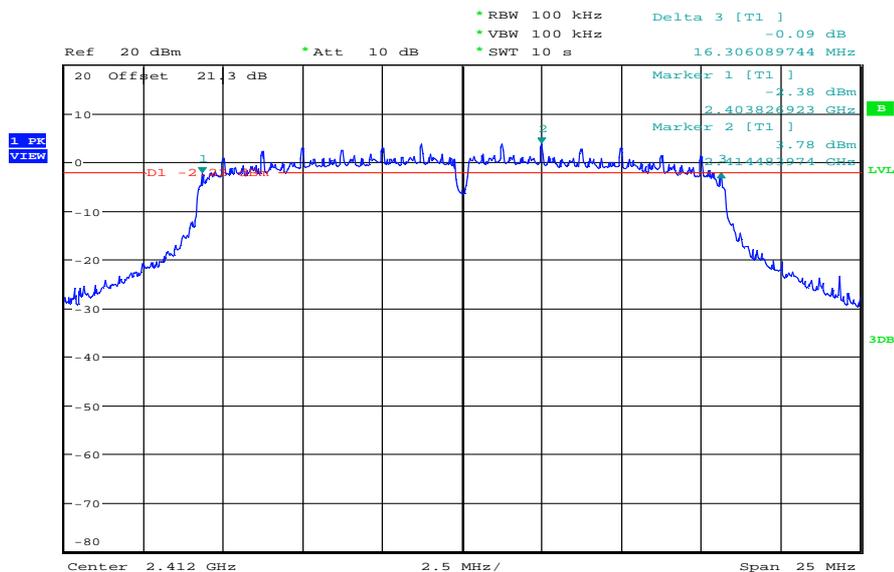
Plot 3: TX mode, highest channel, 6 dB bandwidth



Date: 30.AUG.2011 18:55:57

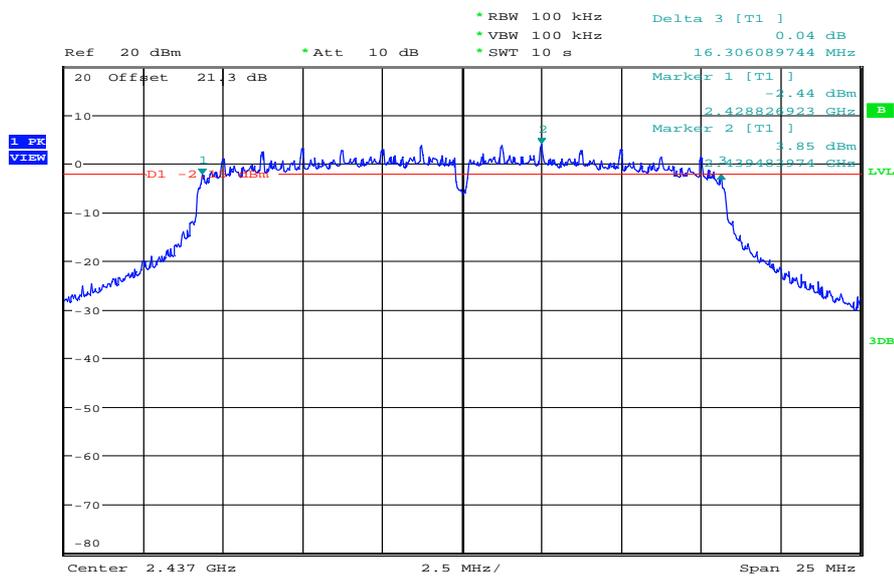
Plots: OFDM / g – mode

Plot 1: TX mode, lowest channel, 6 dB bandwidth



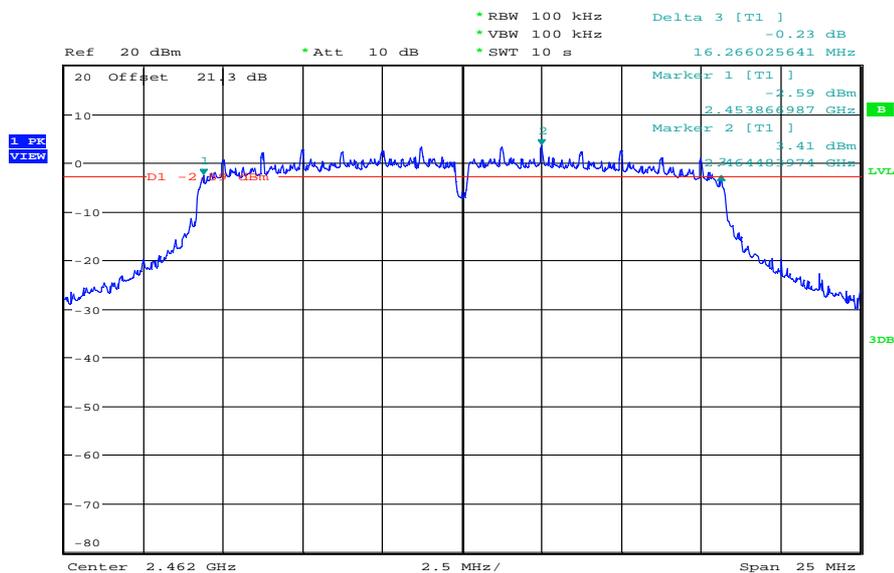
Date: 30.AUG.2011 19:09:57

Plot 2: TX mode, middle channel, 6 dB bandwidth



Date: 30.AUG.2011 19:22:44

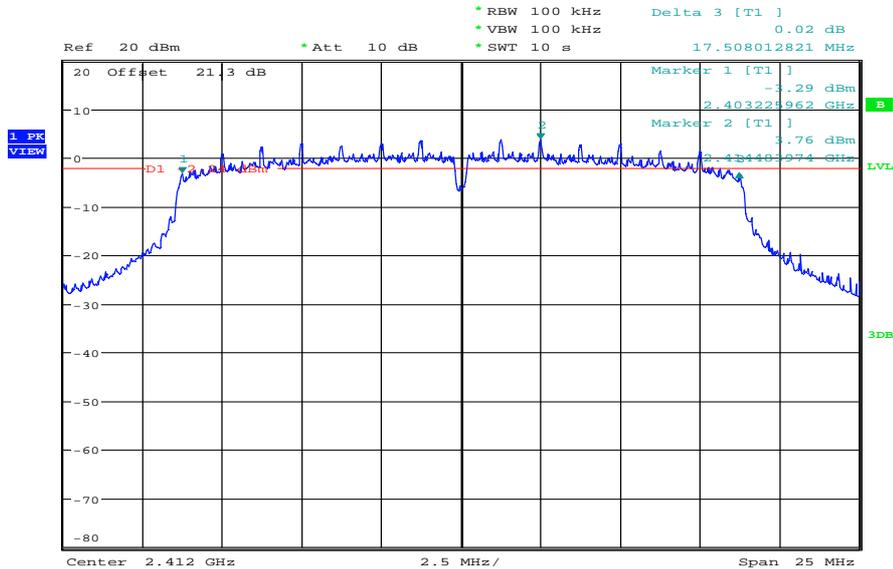
Plot 3: TX mode, highest channel, 6 dB bandwidth



Date: 30.AUG.2011 19:37:53

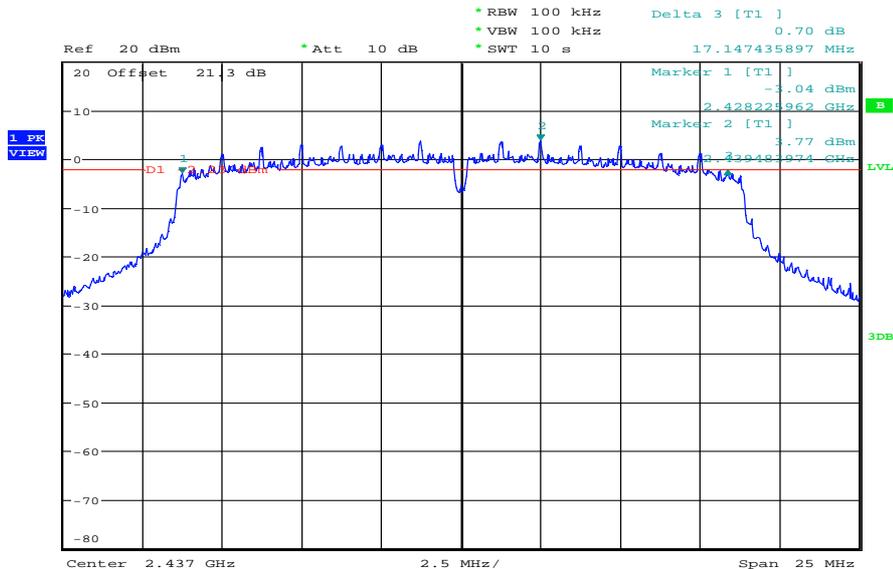
Plots: OFDM / n – mode

Plot 1: TX mode, lowest channel, 6 dB bandwidth



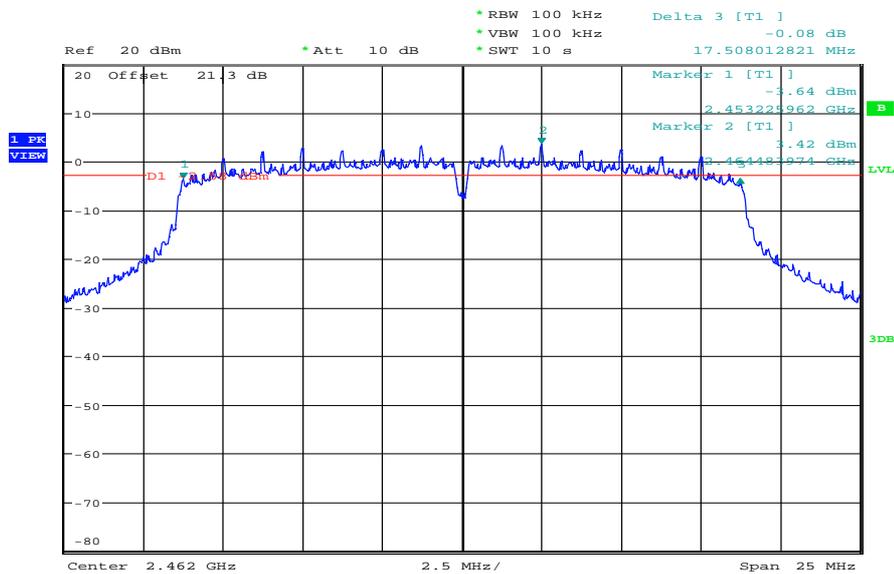
Date: 30.AUG.2011 19:52:20

Plot 2: TX mode, middle channel, 6 dB bandwidth



Date: 30.AUG.2011 20:05:05

Plot 3: TX mode, highest channel, 6 dB bandwidth



Date: 30.AUG.2011 20:26:58

9.6 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:	See plots
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 8, 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.	

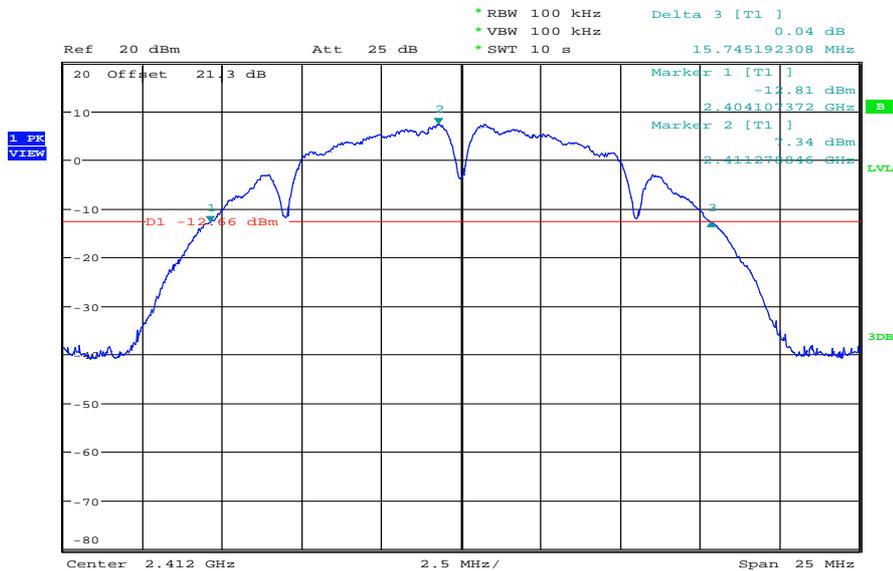
Results:

Modulation Frequency	20 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	15.75	15.67	15.79
OFDM / g – mode	17.63	17.91	18.03
OFDM / n – mode	19.11	18.75	18.83
Measurement uncertainty	± 100 kHz		

Result: The measurement is passed.

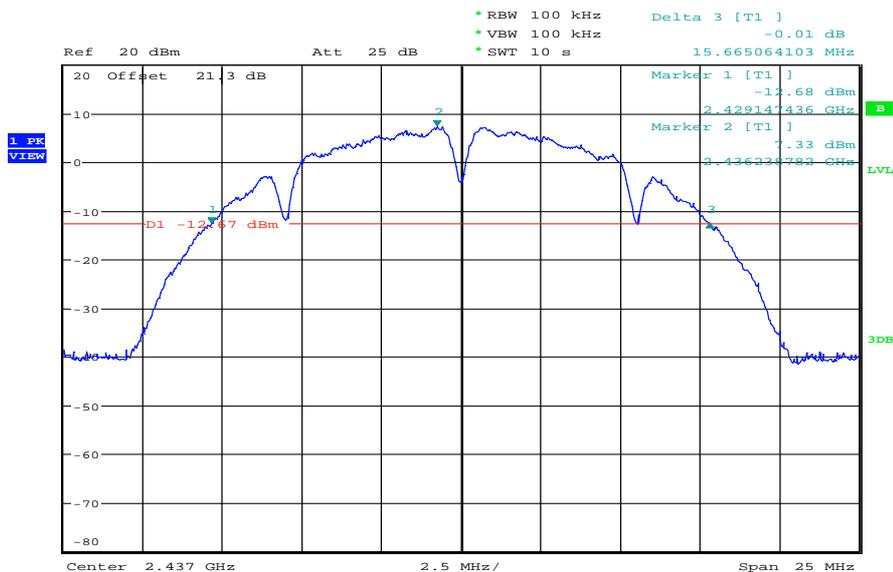
Plots: DSSS / b – mode

Plot 1: TX mode, lowest channel, 20 dB bandwidth



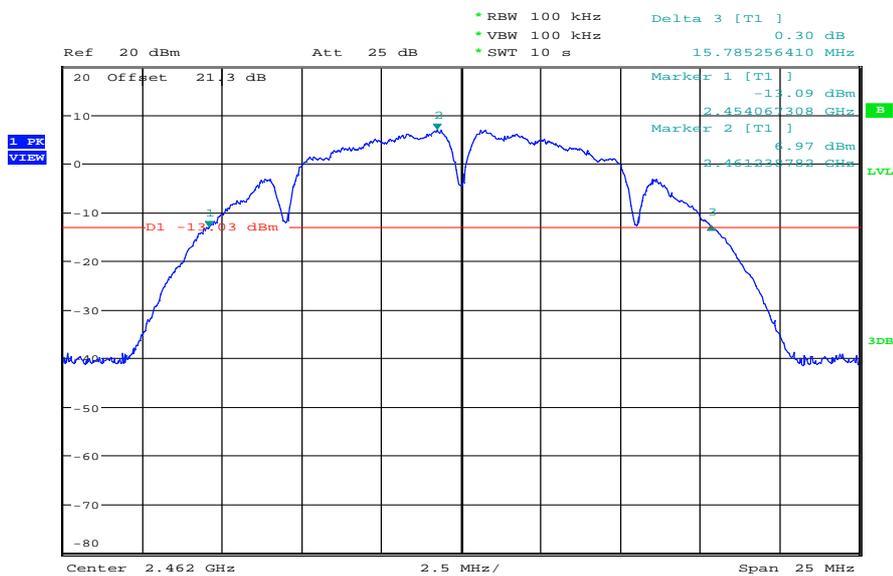
Date: 30.AUG.2011 18:42:41

Plot 2: TX mode, middle channel, 20 dB bandwidth



Date: 30.AUG.2011 18:44:49

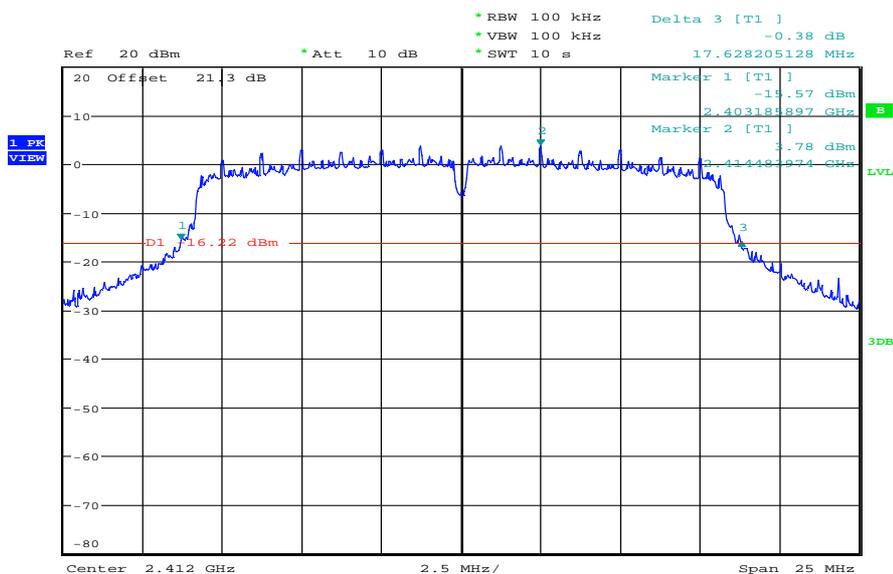
Plot 3: TX mode, highest channel, 20 dB bandwidth



Date: 30.AUG.2011 18:56:36

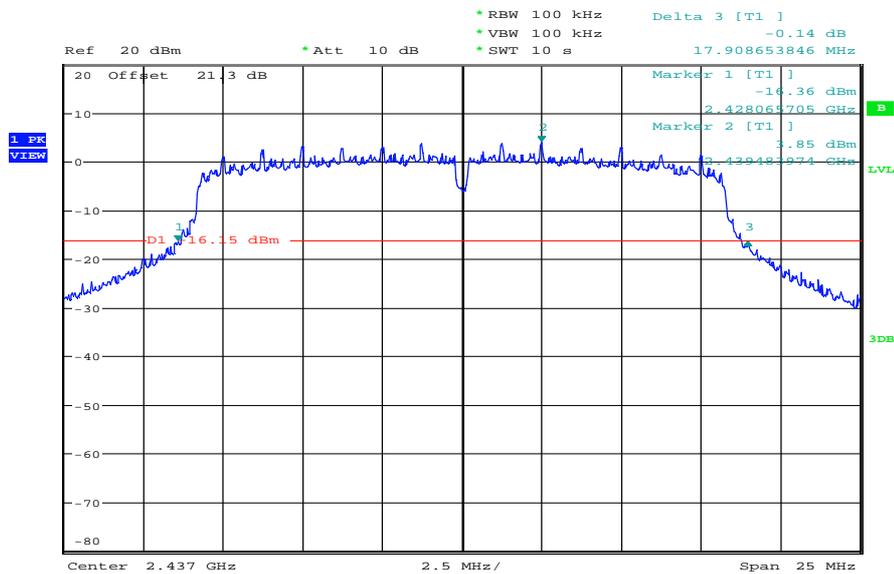
Plots: OFDM / g – mode

Plot 1: TX mode, lowest channel, 20 dB bandwidth



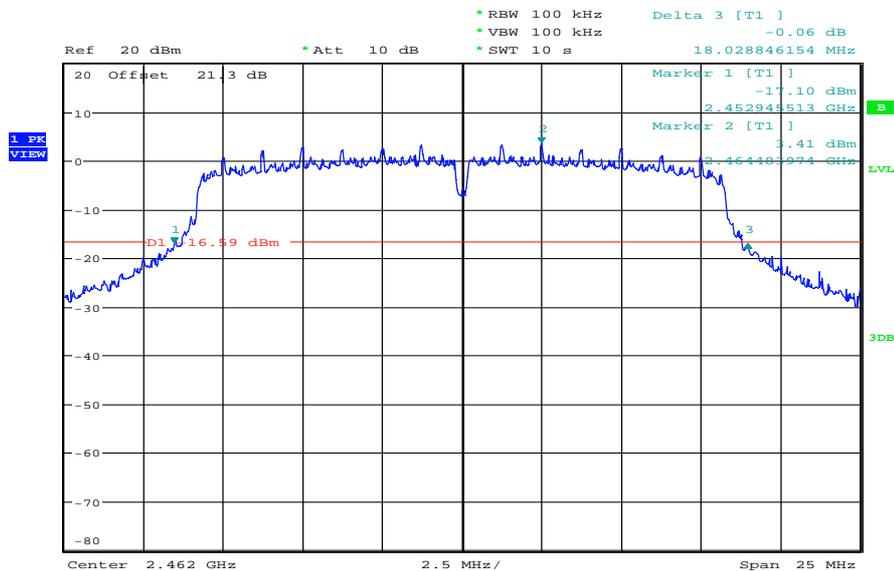
Date: 30.AUG.2011 19:10:58

Plot 2: TX mode, middle channel, 20 dB bandwidth



Date: 30.AUG.2011 19:24:01

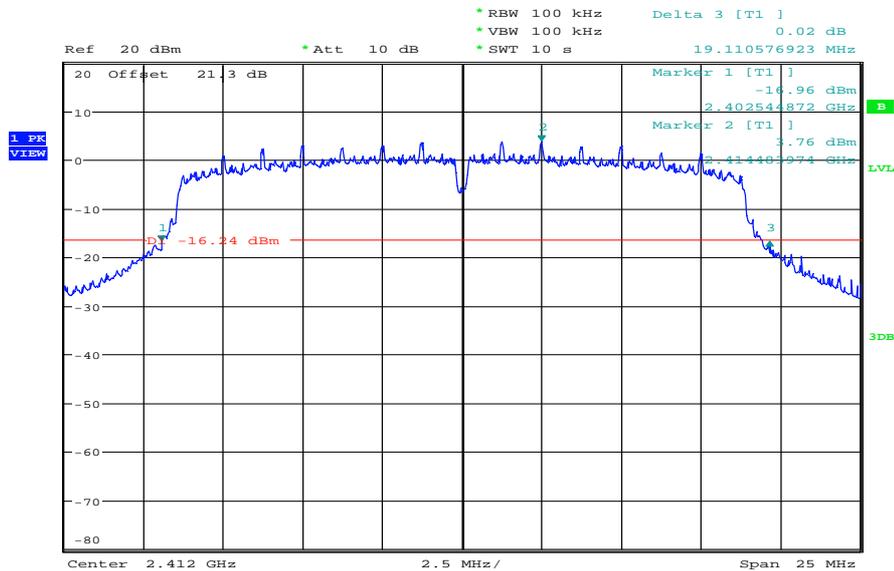
Plot 3: TX mode, highest channel, 20 dB bandwidth



Date: 30.AUG.2011 19:38:29

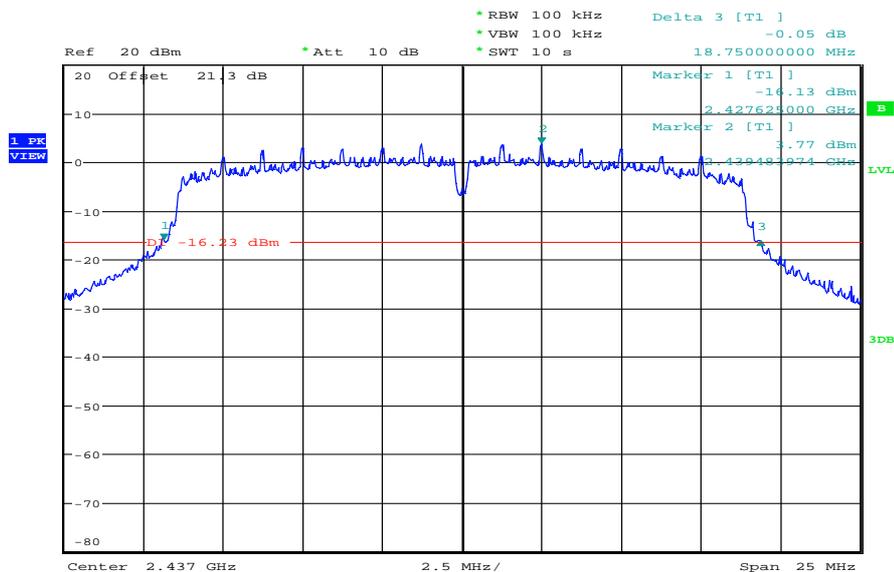
Plots: OFDM / n – mode

Plot 1: TX mode, lowest channel, 20 dB bandwidth



Date: 30.AUG.2011 19:53:04

Plot 2: TX mode, middle channel, 20 dB bandwidth



Date: 30.AUG.2011 20:05:46

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:	500 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>	

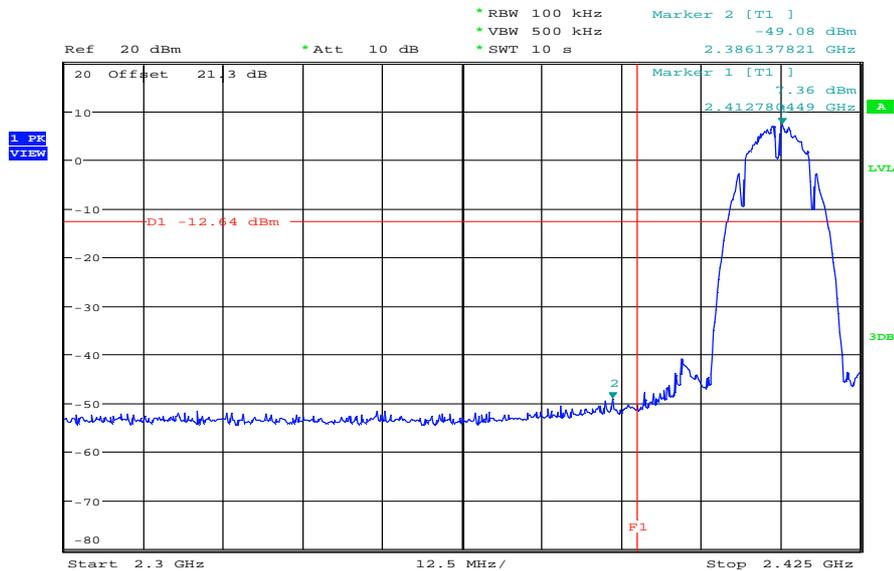
Results:

Scenario Modulation	Band Edge Compliance Conducted [dB]		
	DSSS / b – mode	OFDM / g – mode	OFDM / n – mode
Lower Band Edge – Channel 1	> 20 dB (see plot 1)	> 20 dB (see plot 3)	> 20 dB (see plot 5)
Upper Band Edge – Channel 11	> 20 dB (see plot 2)	> 20 dB (see plot 4)	> 20 dB (see plot 6)
Measurement uncertainty	± 1.5 dB		

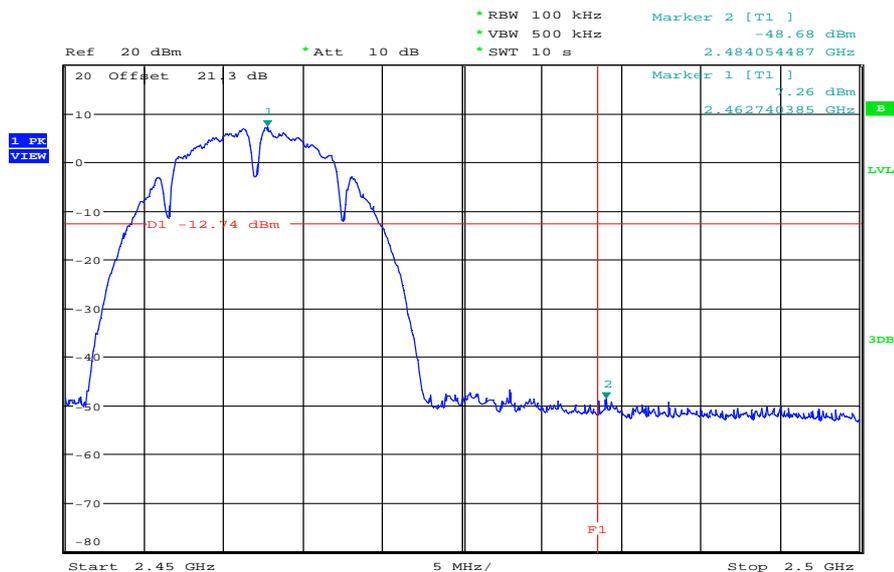
Result: The measurement is passed.

Plots: DSSS / b – mode

Plot 1: TX mode, lower band edge

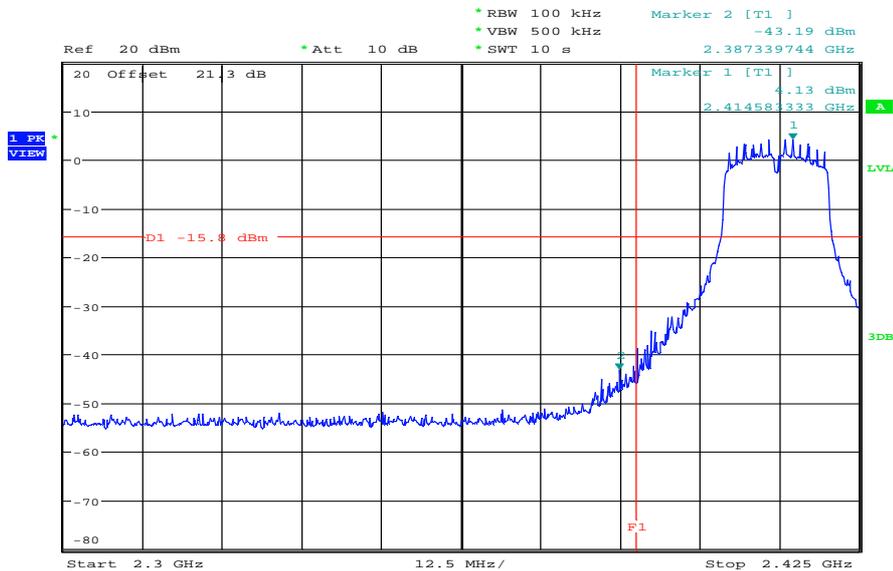


Plot 2: TX mode, upper band edge



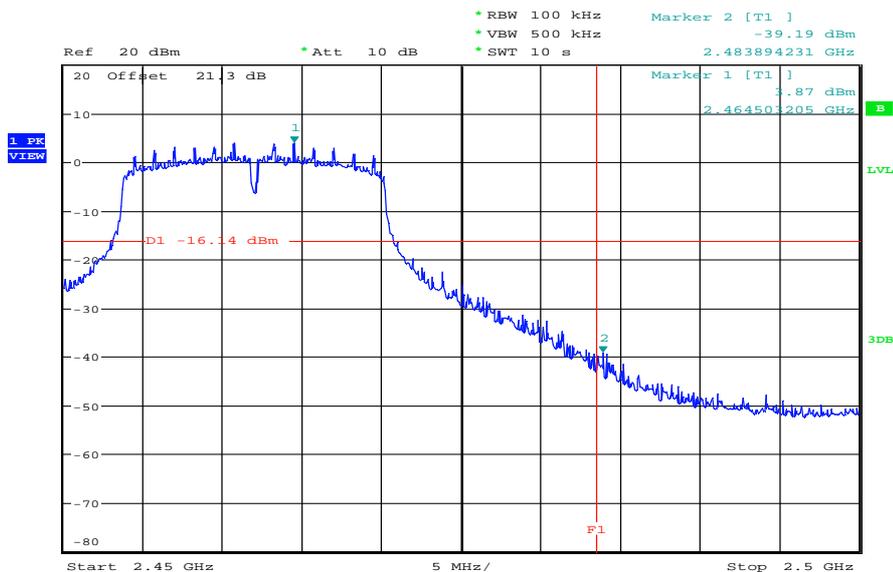
Plots: OFDM / g – mode

Plot 1: TX mode, lower band edge



Date: 30.AUG.2011 20:39:13

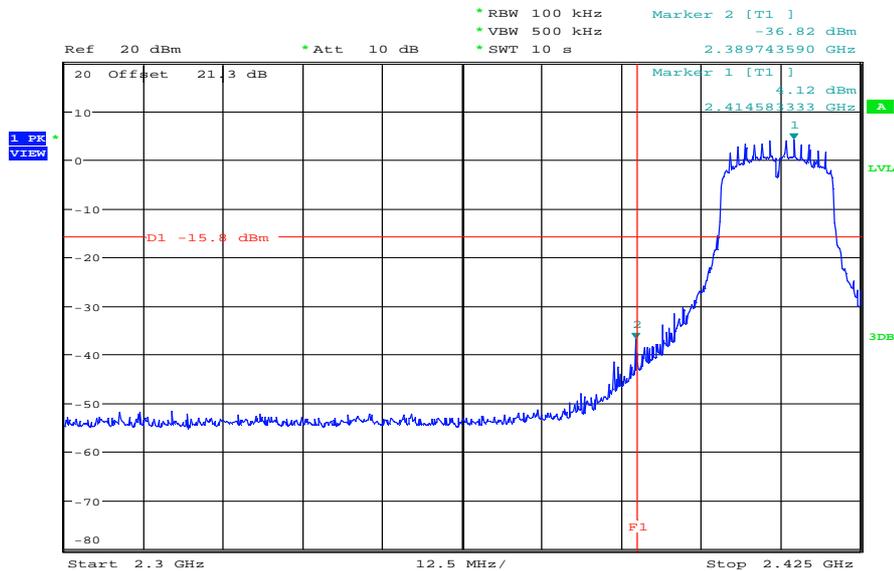
Plot 2: TX mode, upper band edge



Date: 30.AUG.2011 20:37:25

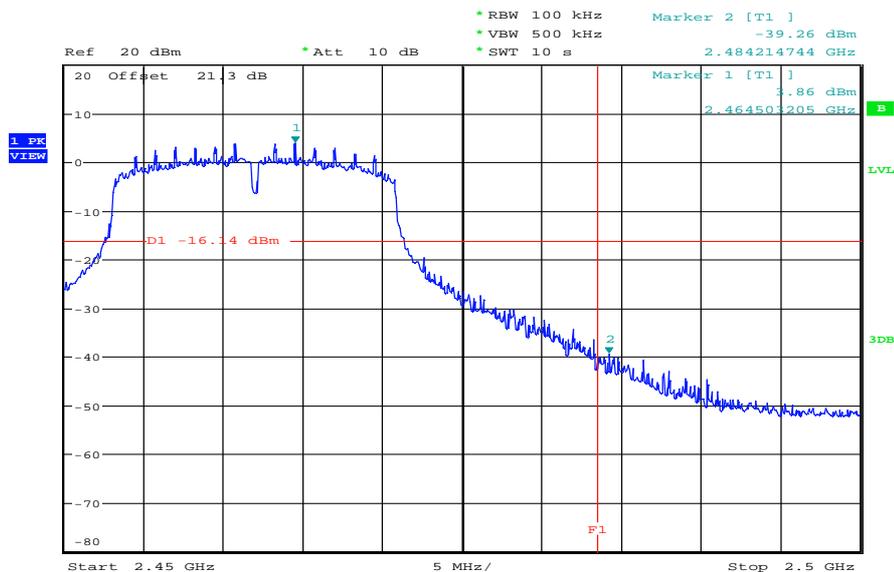
Plots: OFDM / n – mode

Plot 1: TX mode, lower band edge



Date: 30.AUG.2011 20:40:30

Plot 2: TX mode, upper band edge



Date: 30.AUG.2011 20:31:29

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	

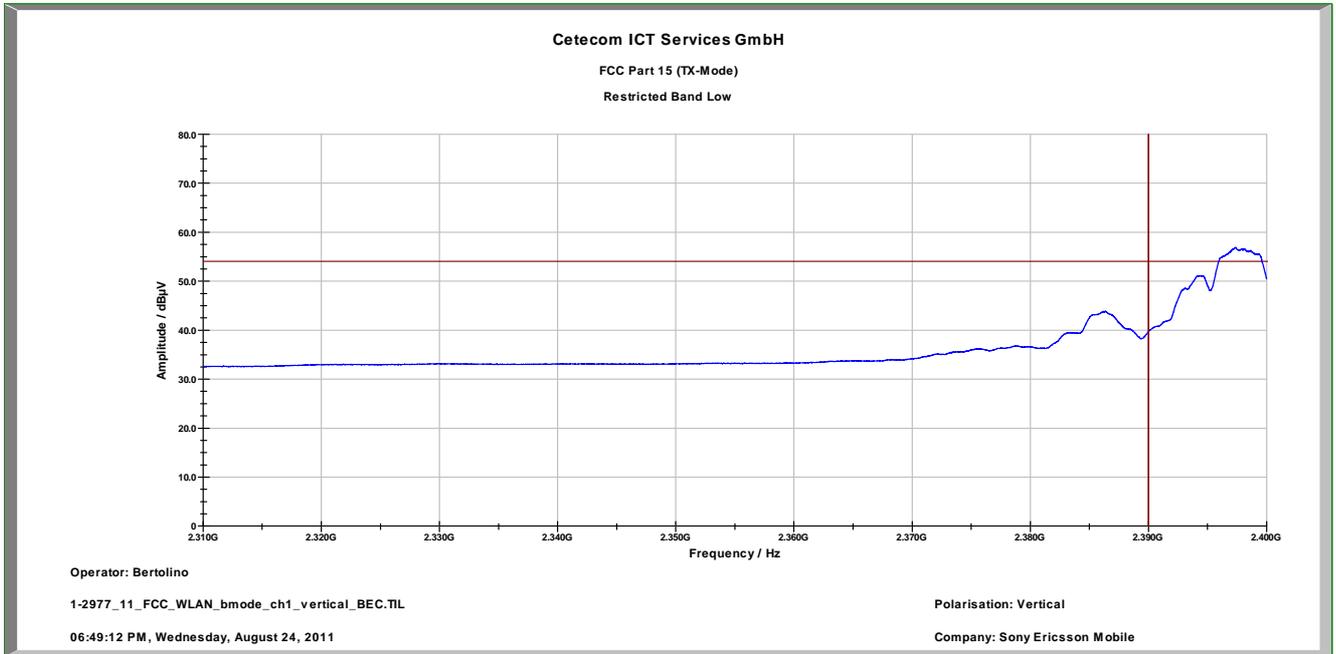
Results:

Scenario Modulation	Band Edge Compliance Conducted [dB]		
	DSSS / b – mode	OFDM / g – mode	OFDM / n – mode
Lower Band Edge – Channel 1	> 20 dB	> 20 dB	> 20 dB
Upper Band Edge – Channel 11	> 20 dB	> 20 dB	> 20 dB
Measurement uncertainty	± 3 dB		

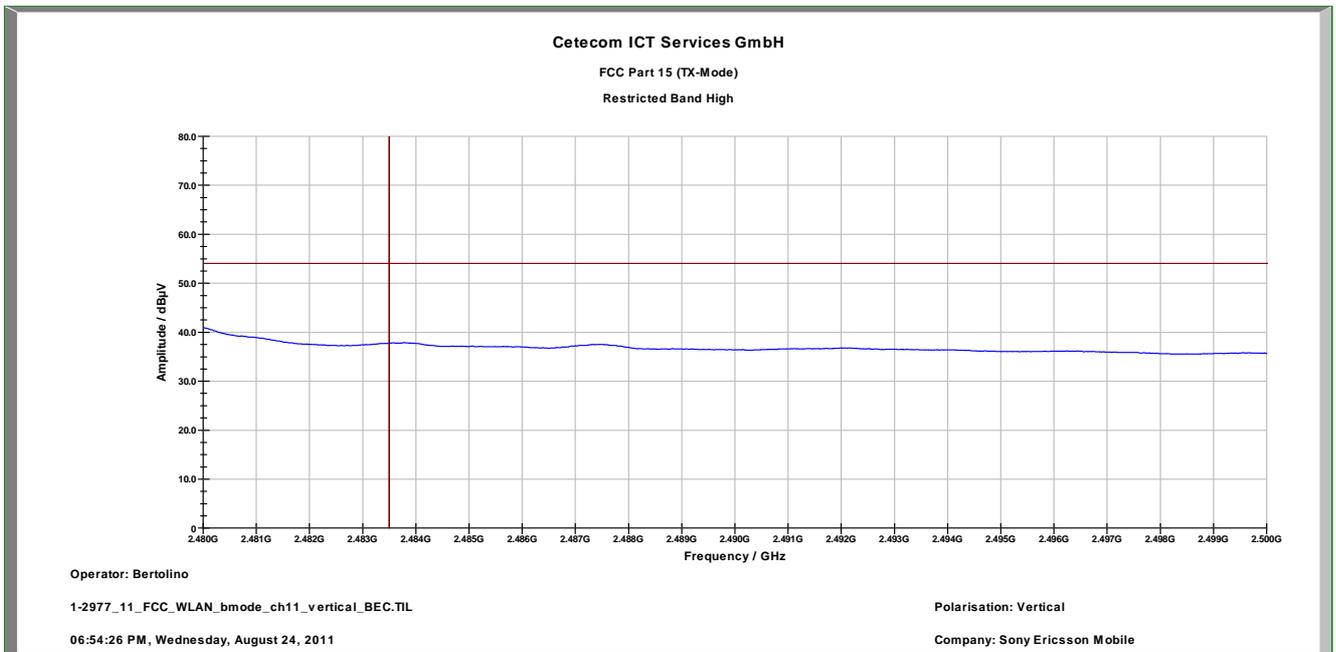
Result: The measurement is passed.

Plots: DSSS / b – mode

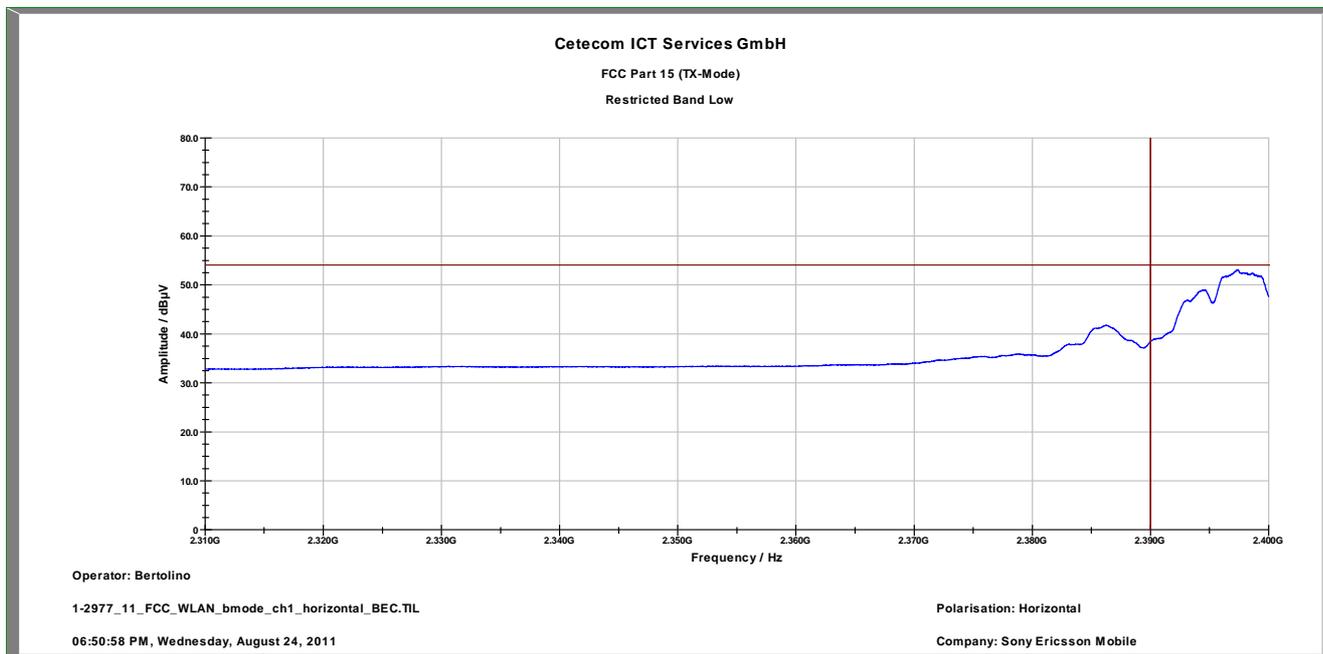
Plot 1: TX mode, lower band edge, vertical polarization



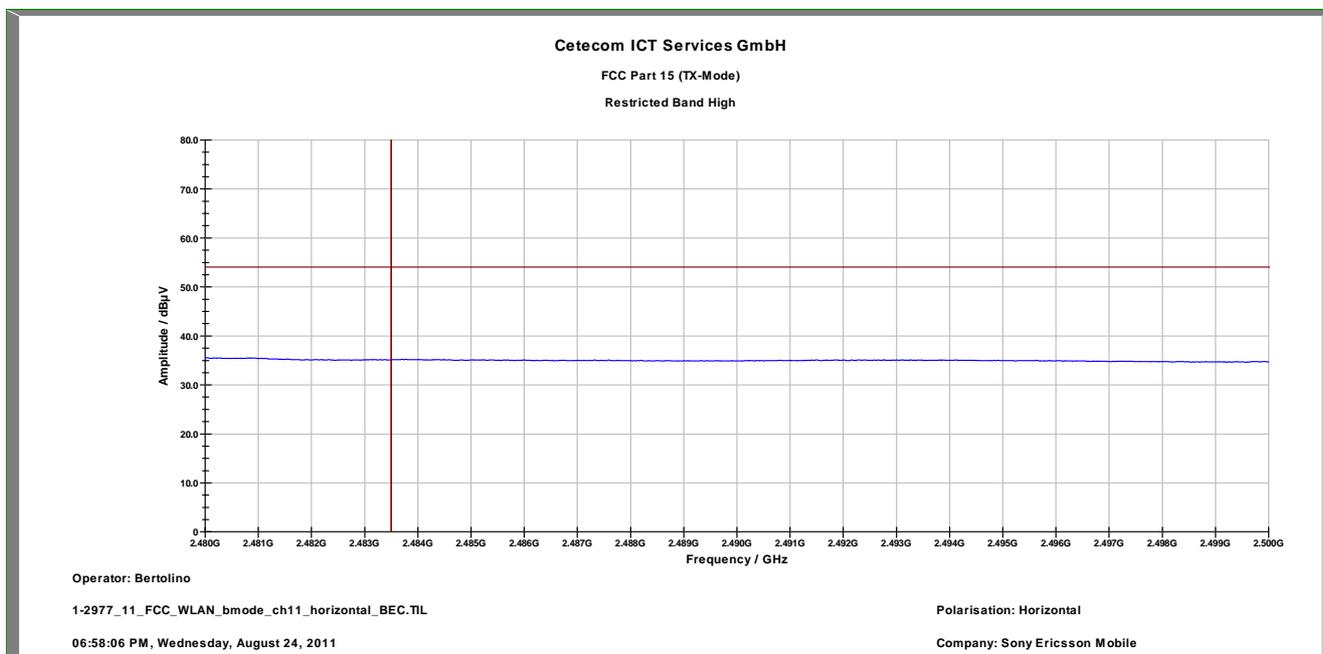
Plot 2: TX mode, upper band edge, vertical polarization



Plot 3: TX mode, lower band edge, horizontal polarization

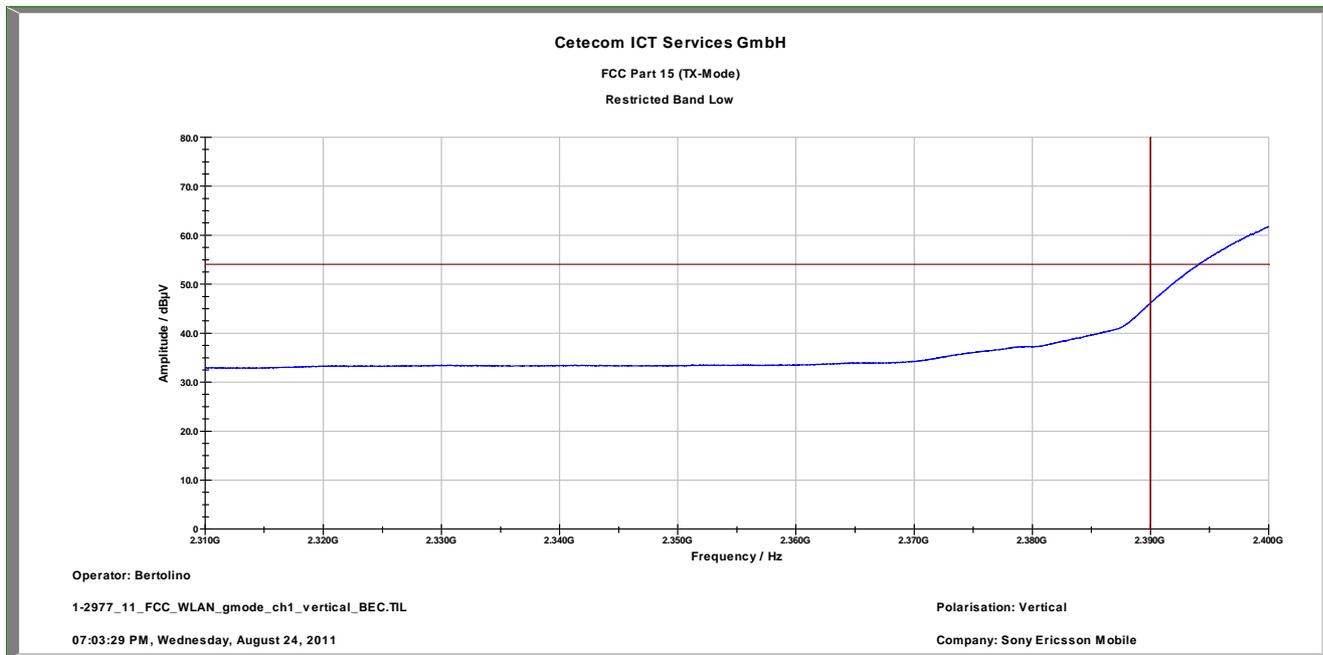


Plot 4: TX mode, upper band edge, horizontal polarization

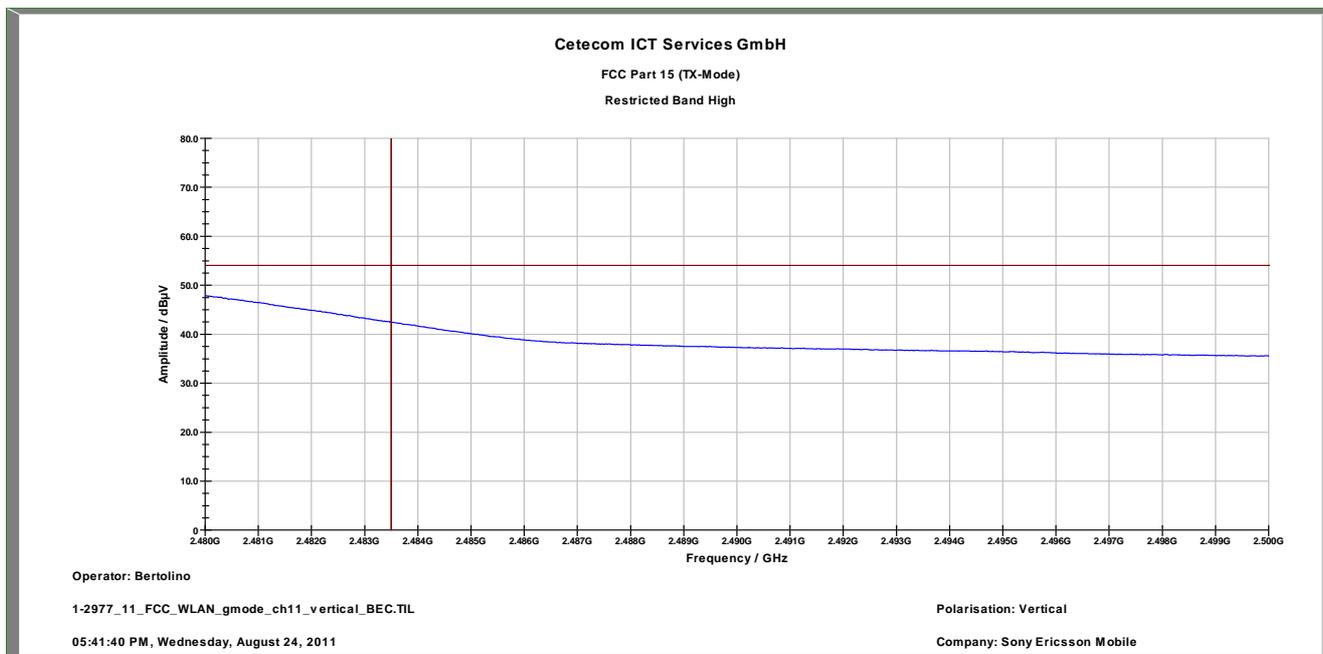


Plots: OFDM / g – mode

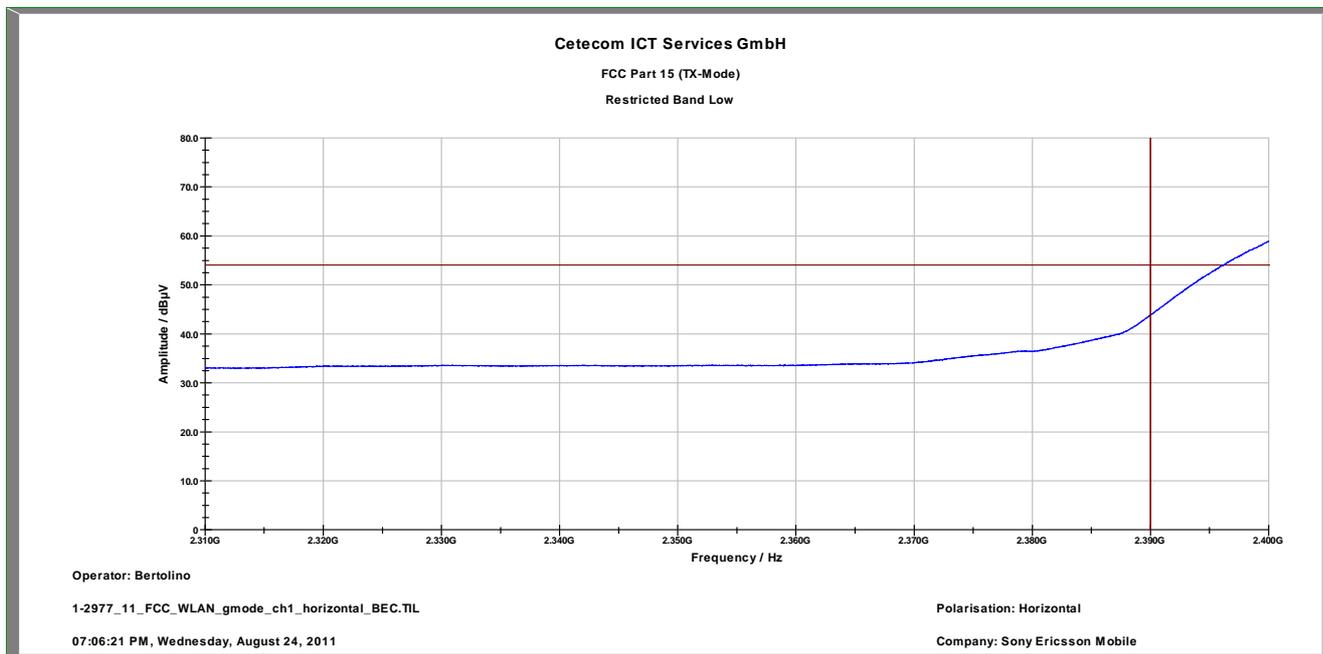
Plot 1: TX mode, lower band edge, vertical polarization



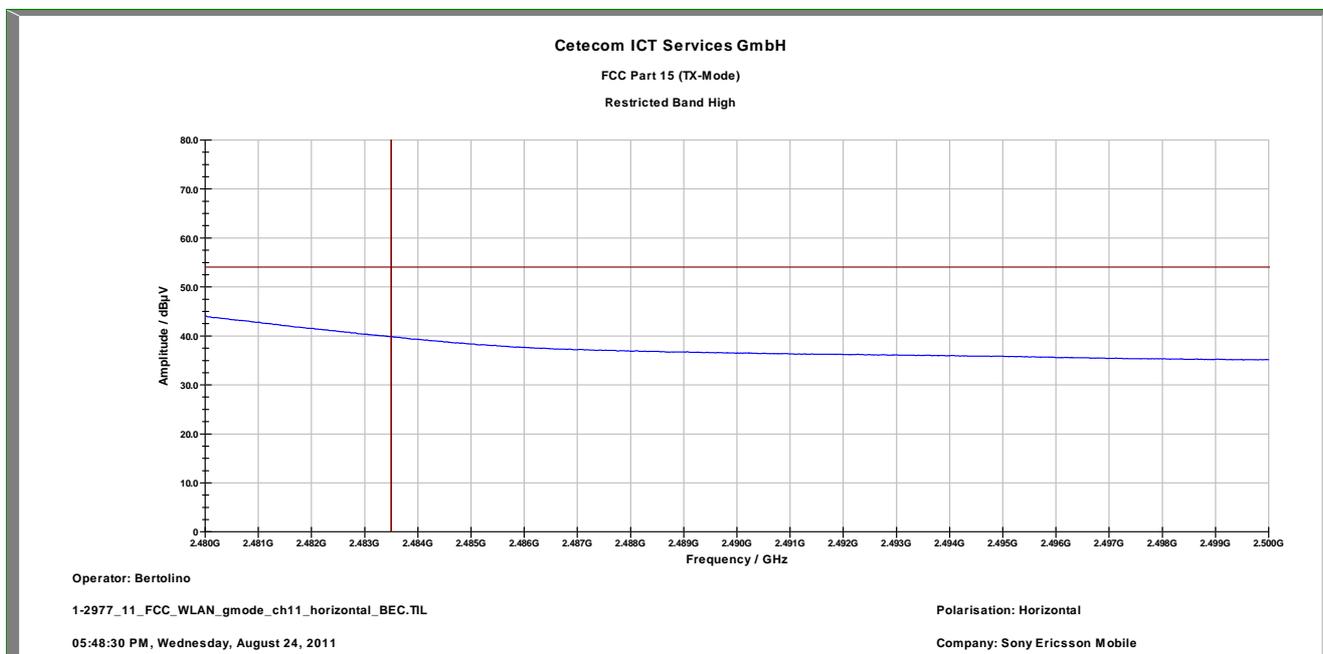
Plot 2: TX mode, upper band edge, vertical polarization



Plot 3: TX mode, lower band edge, horizontal polarization

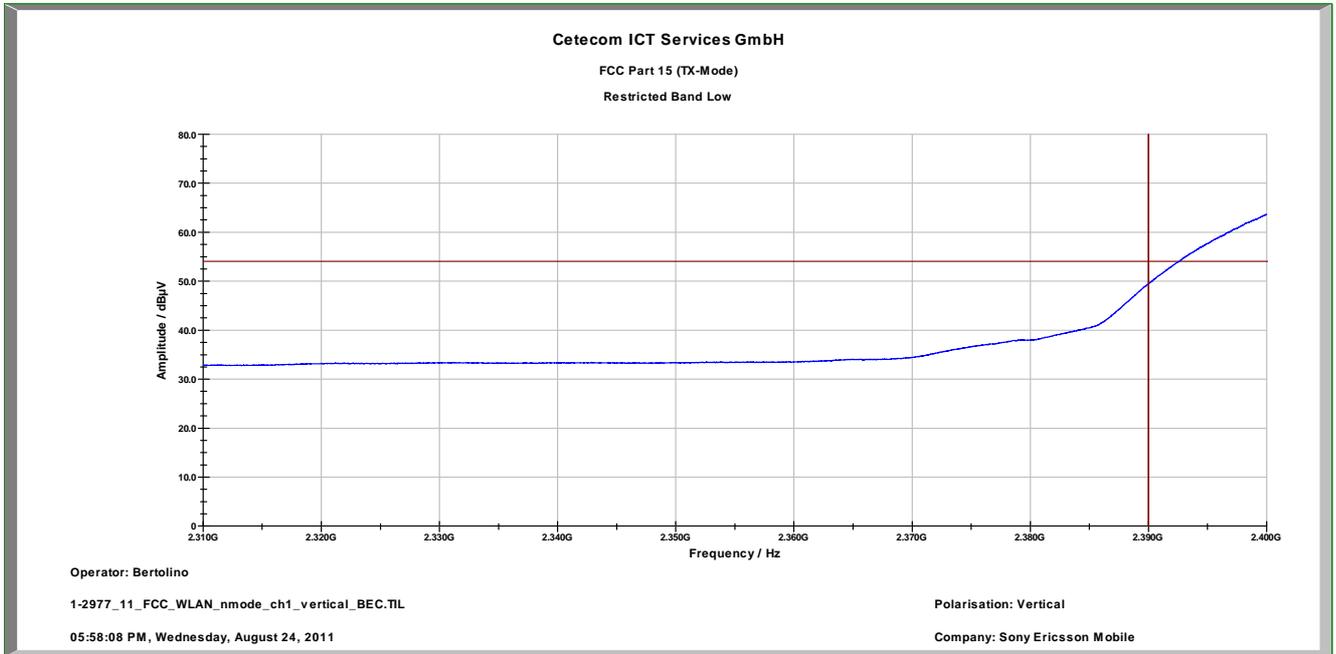


Plot 4: TX mode, upper band edge, horizontal polarization

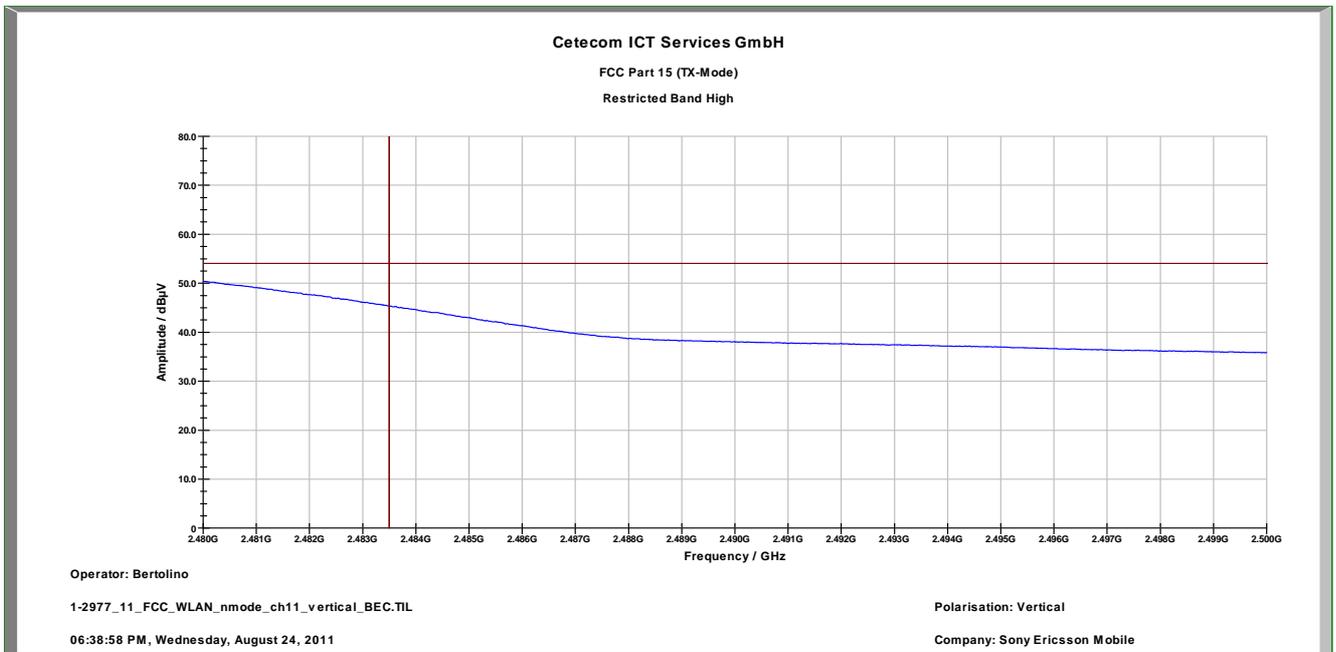


Plots: OFDM / n – mode

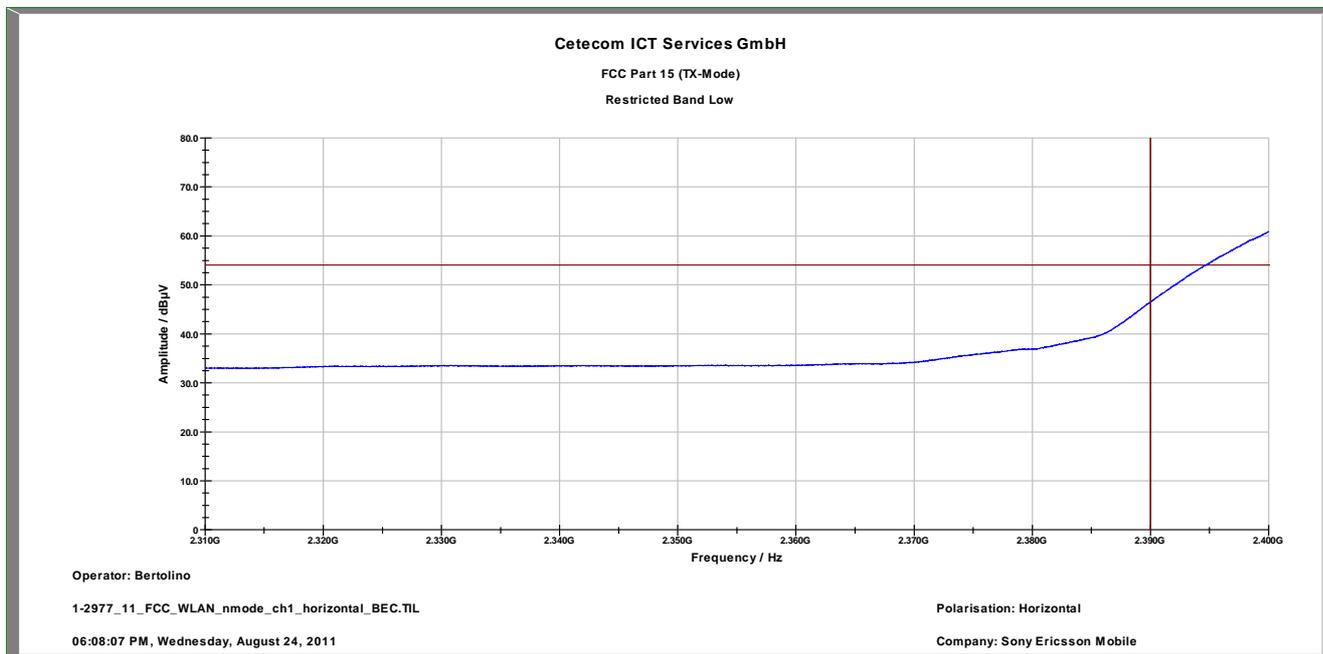
Plot 1: TX mode, lower band edge, vertical polarization



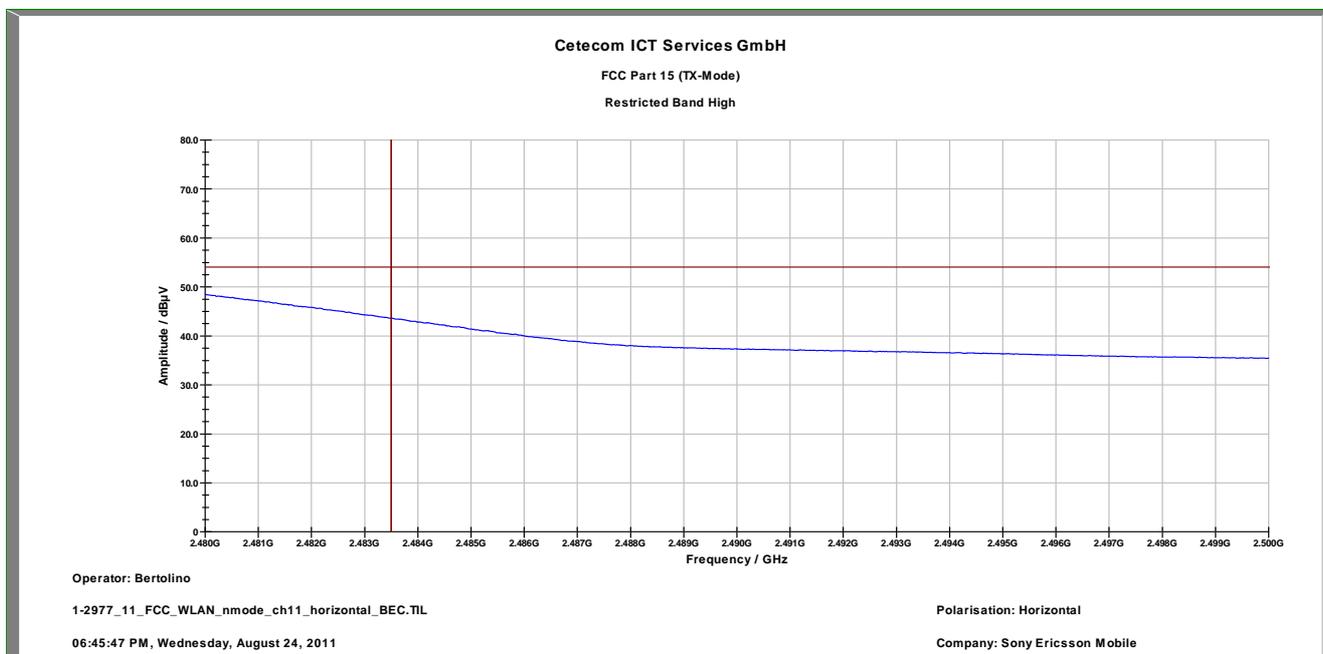
Plot 2: TX mode, upper band edge, vertical polarization



Plot 3: TX mode, lower band edge, horizontal polarization



Plot 4: TX 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:	F < 1 GHz: 100 kHz F > 1 GHz: 100 kHz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 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: DSSS / b – mode

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		7.66	30 dBm		Operating frequency
<i>No critical peaks found</i>			-20 dBc		complies
2437		7.01	30 dBm		Operating frequency
<i>No critical peaks found</i>			-20 dBc		complies
2462		6.83	30 dBm		Operating frequency
<i>No critical peaks found</i>			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: The measurement is passed.

Results: OFDM / g – mode

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		4.74	30 dBm		Operating frequency
<i>No critical peaks found</i>			-20 dBc		complies
2437		4.89	30 dBm		Operating frequency
<i>No critical peaks found</i>			-20 dBc		complies
2462		3.62	30 dBm		Operating frequency
<i>No critical peaks found</i>			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: The measurement is passed.

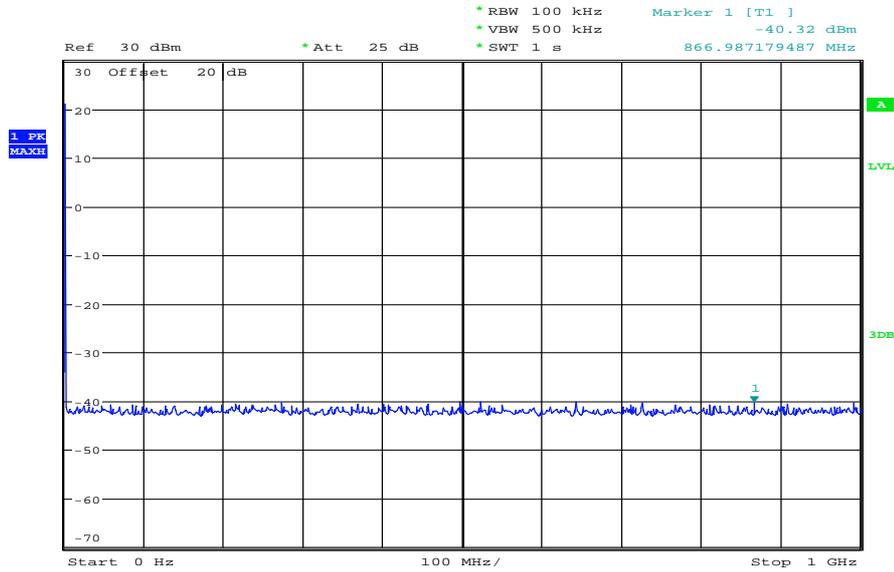
Results: OFDM / n – mode

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		4.64	30 dBm		Operating frequency
<i>No critical peaks found</i>			-20 dBc		complies
2437		4.75	30 dBm		Operating frequency
<i>No critical peaks found</i>			-20 dBc		complies
2462		3.79	30 dBm		Operating frequency
<i>No critical peaks found</i>			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: The measurement is passed.

Plots: DSSS / b – mode

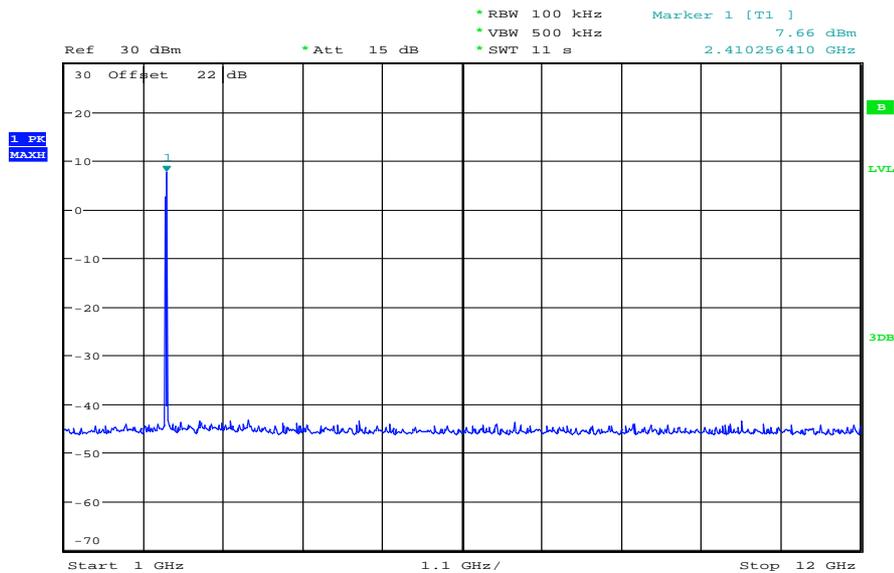
Plot 1: TX mode, lowest channel, up to 1 GHz



Date: 31.AUG.2011 14:05:34

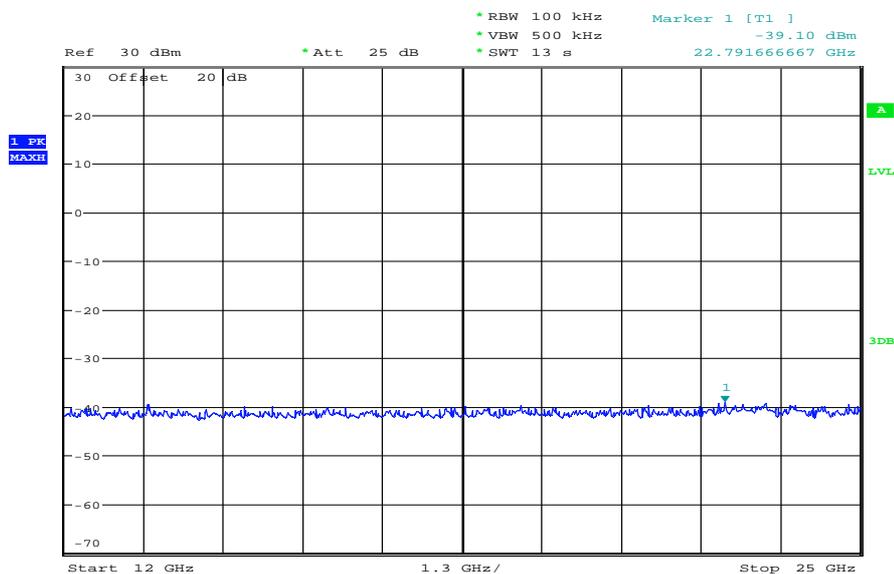
The peak at the beginning of the plot is the LO from the SA.

Plot 2: TX mode, lowest channel, 1 GHz to 12 GHz



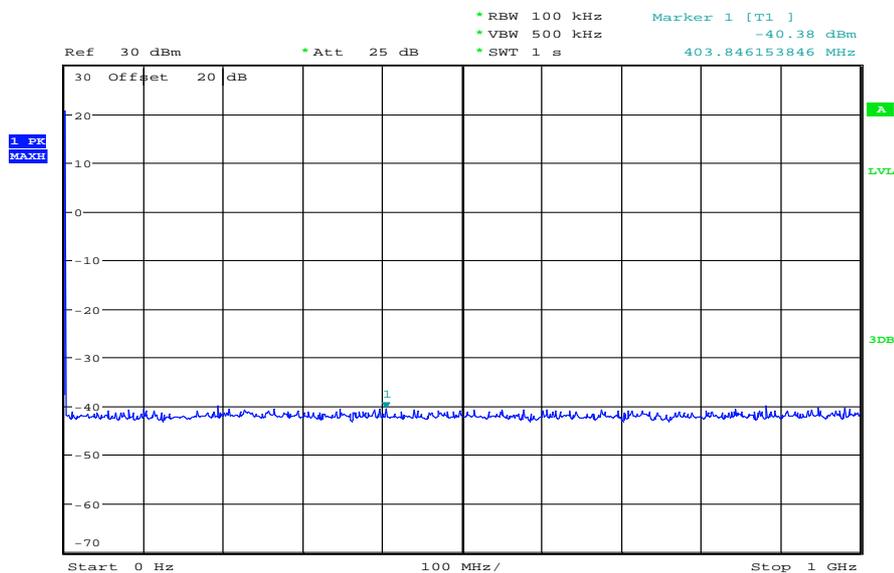
Date: 31.AUG.2011 14:05:02

Plot 3: TX mode, lowest channel, 12 GHz to 25 GHz



Date: 31.AUG.2011 15:10:45

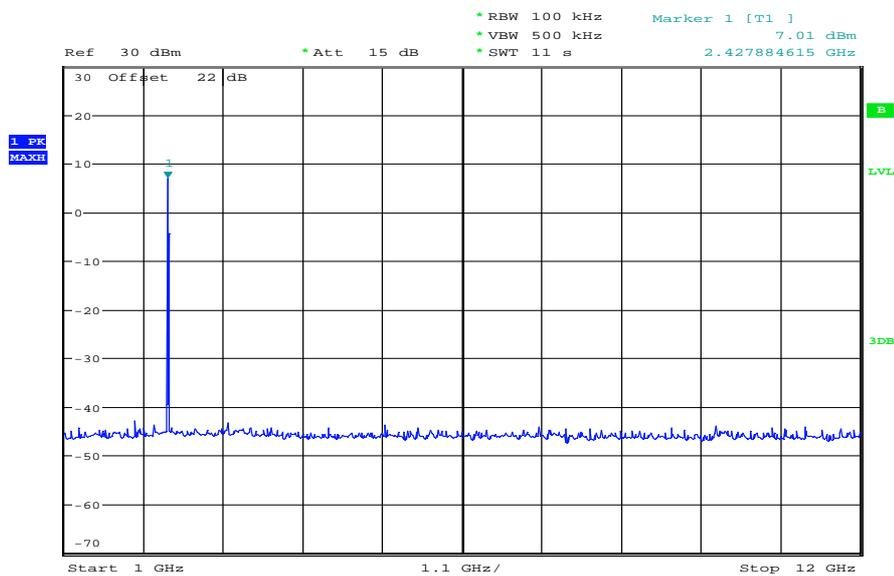
Plot 4: TX mode, middle channel, up to 1 GHz



Date: 31.AUG.2011 14:07:42

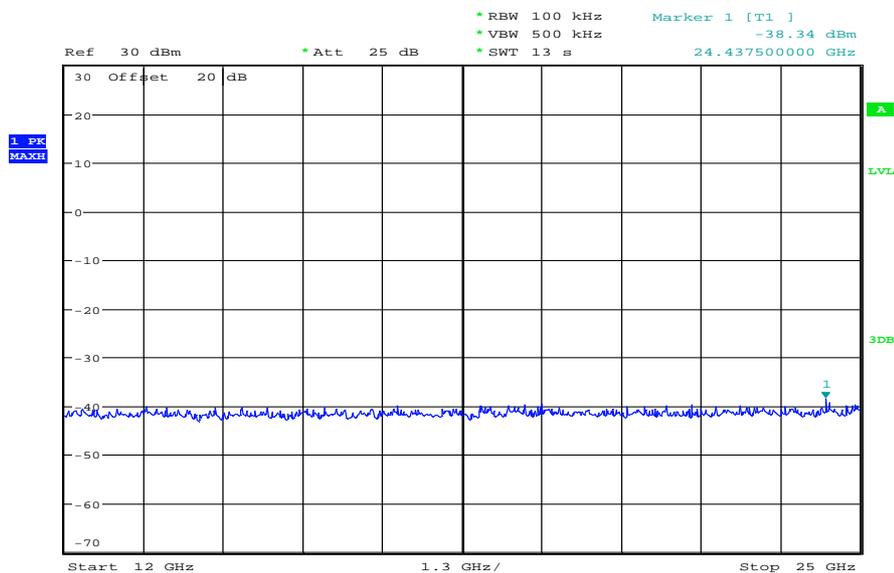
The peak at the beginning of the plot is the LO from the SA.

Plot 5: TX mode, middle channel, 1 GHz to 12 GHz



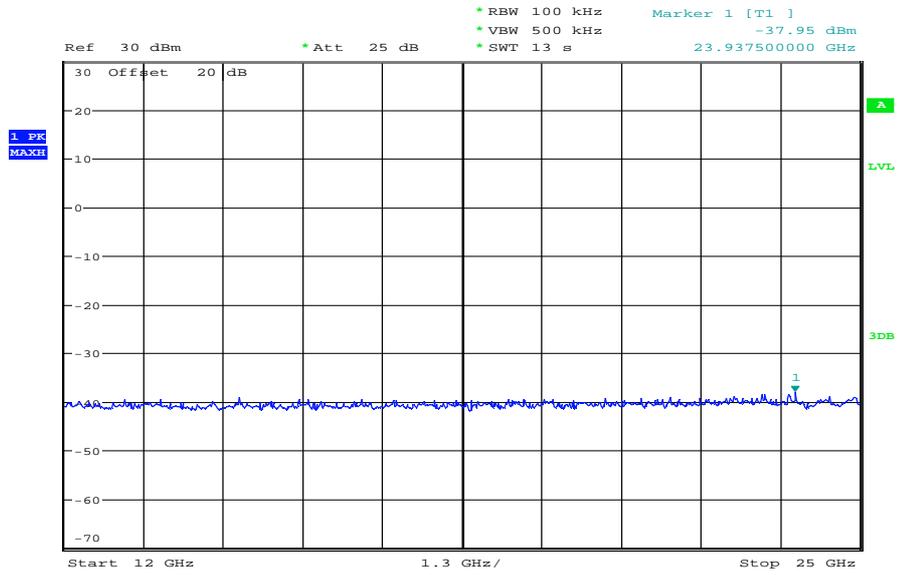
Date: 31.AUG.2011 14:08:15

Plot 6: TX mode, middle channel, 12 GHz to 25 GHz



Date: 31.AUG.2011 15:09:49

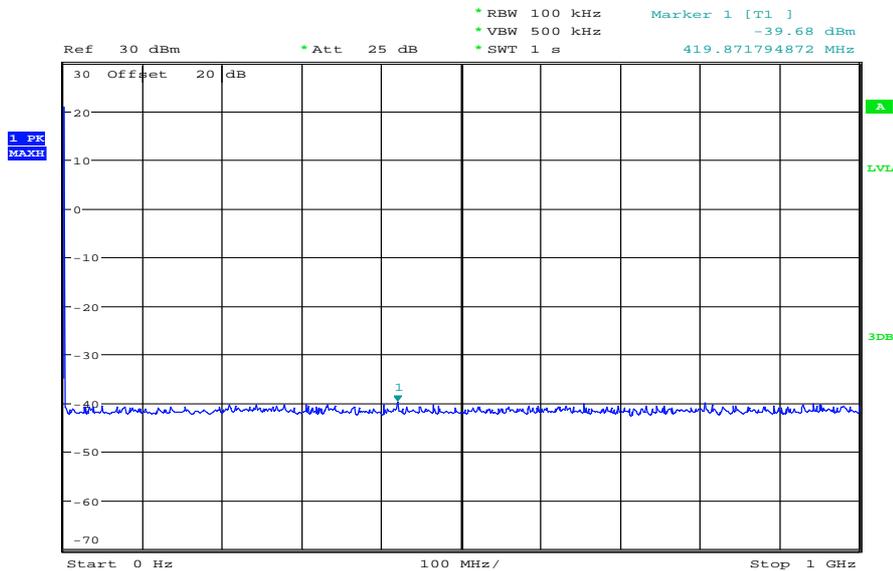
Plot 9: TX mode, highest channel, 12 GHz to 25 GHz



Date: 31.AUG.2011 15:02:55

Plots: OFDM / g – mode

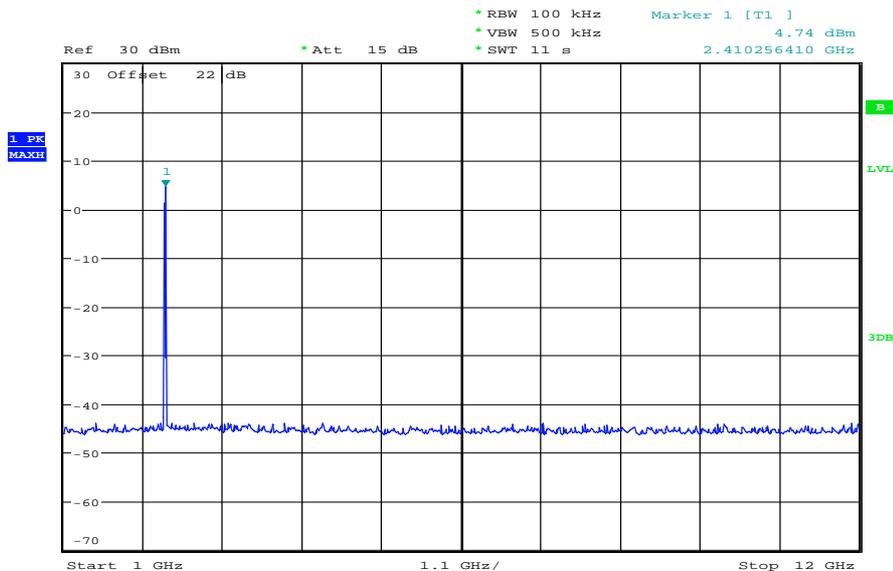
Plot 1: TX mode, lowest channel, up to 1 GHz



Date: 31.AUG.2011 14:13:13

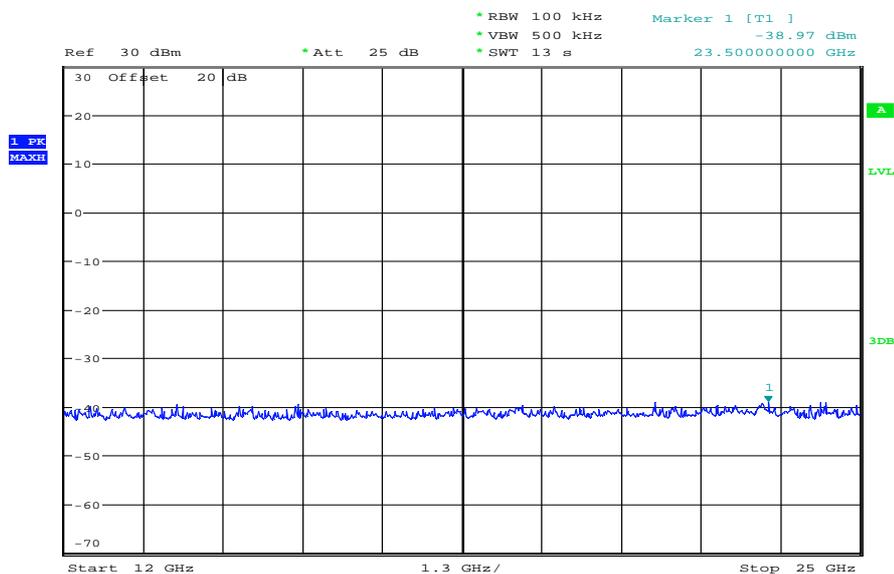
The peak at the beginning of the plot is the LO from the SA.

Plot 2: TX mode, lowest channel, 1 GHz to 12 GHz



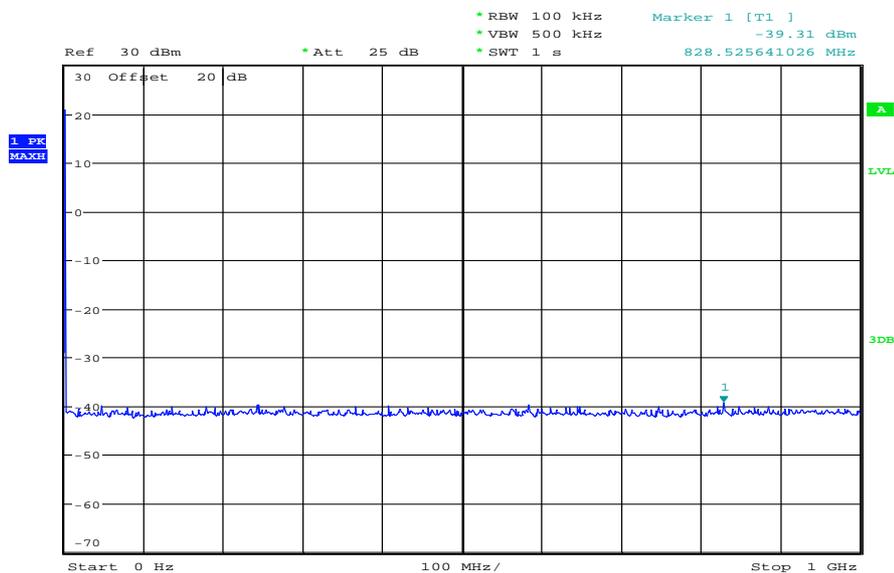
Date: 31.AUG.2011 14:14:52

Plot 3: TX mode, lowest channel, 12 GHz to 25 GHz



Date: 31.AUG.2011 14:58:09

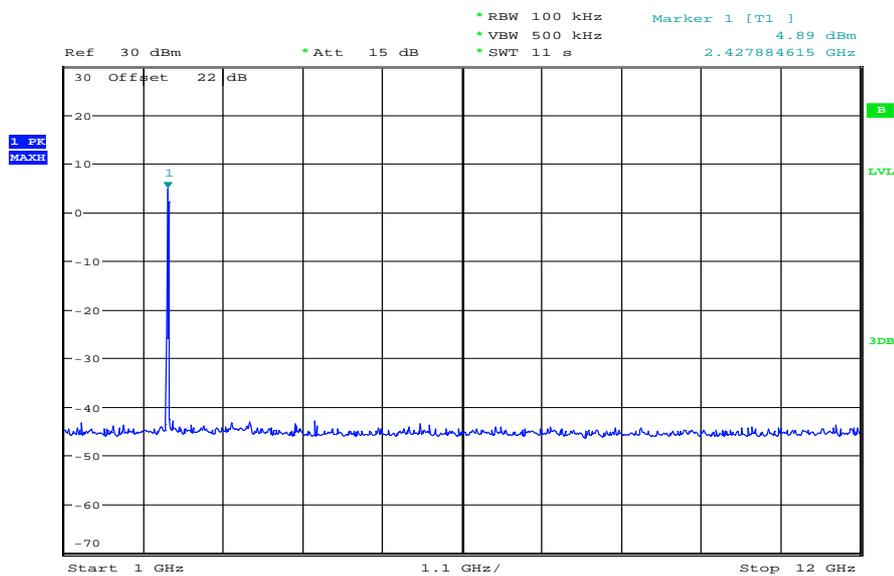
Plot 4: TX mode, middle channel, up to 1 GHz



Date: 31.AUG.2011 14:17:36

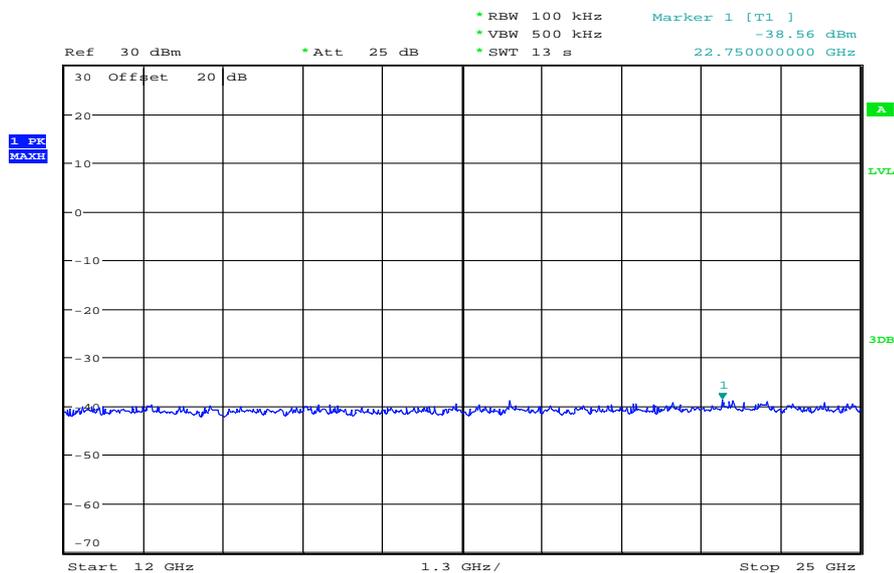
The peak at the beginning of the plot is the LO from the SA.

Plot 5: TX mode, middle channel, 1 GHz to 12 GHz



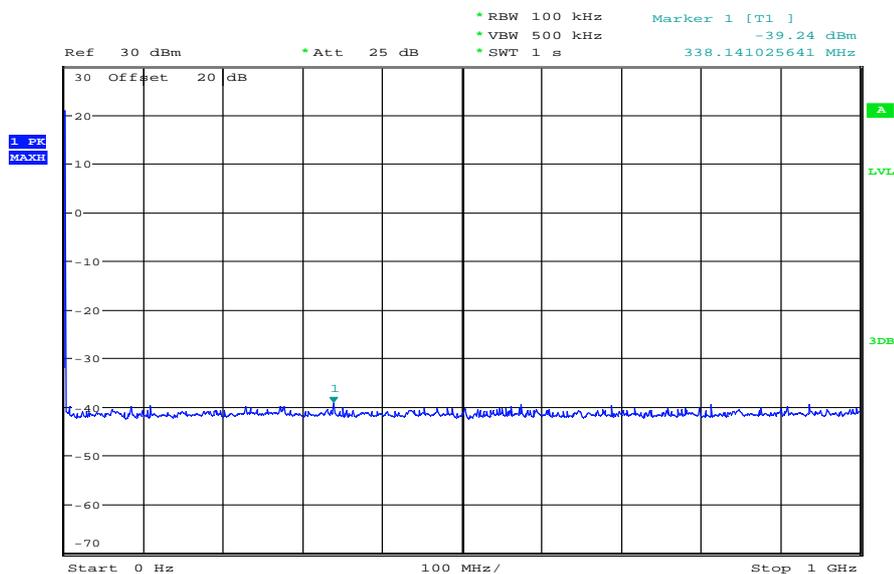
Date: 31.AUG.2011 14:19:55

Plot 6: TX mode, middle channel, 12 GHz to 25 GHz



Date: 31.AUG.2011 14:55:01

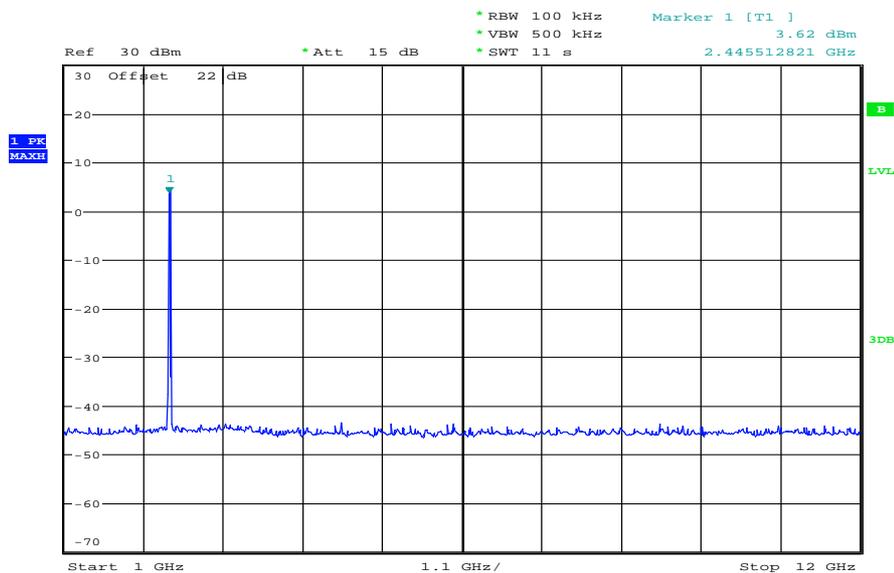
Plot 7: TX mode, highest channel, up to 1 GHz



Date: 31.AUG.2011 14:22:23

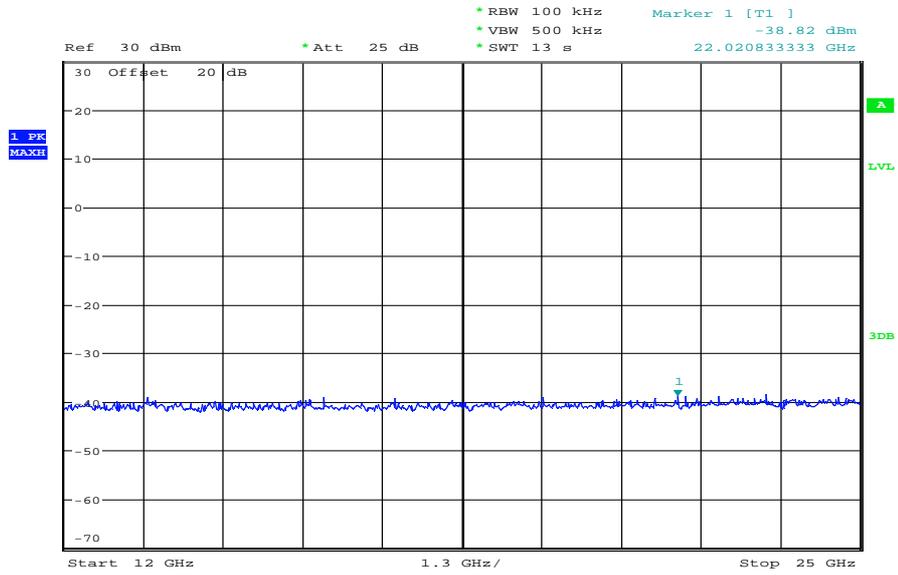
The peak at the beginning of the plot is the LO from the SA.

Plot 8: TX mode, highest channel, 1 GHz to 12 GHz



Date: 31.AUG.2011 14:24:00

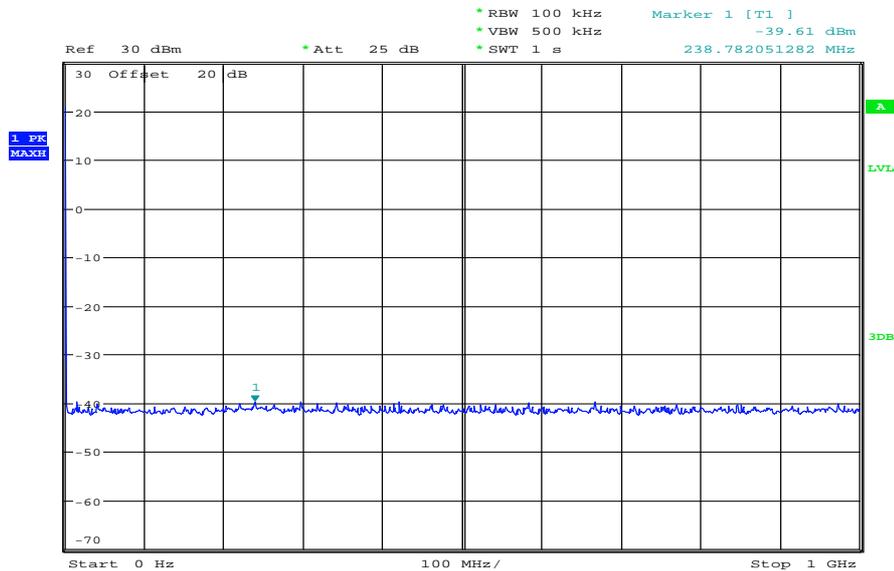
Plot 9: TX mode, highest channel, 12 GHz to 25 GHz



Date: 31.AUG.2011 14:53:14

Plots: OFDM / n – mode

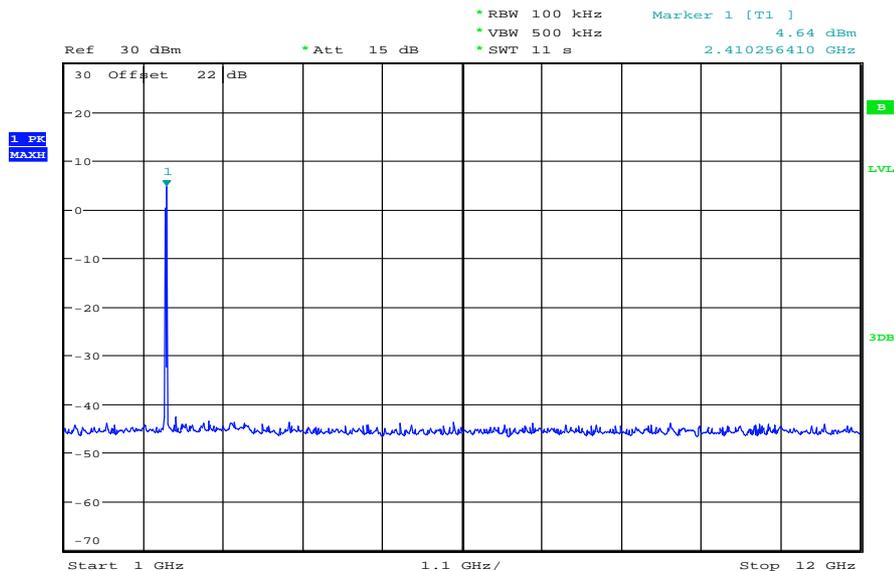
Plot 1: TX mode, lowest channel, up to 1 GHz



Date: 31.AUG.2011 14:26:33

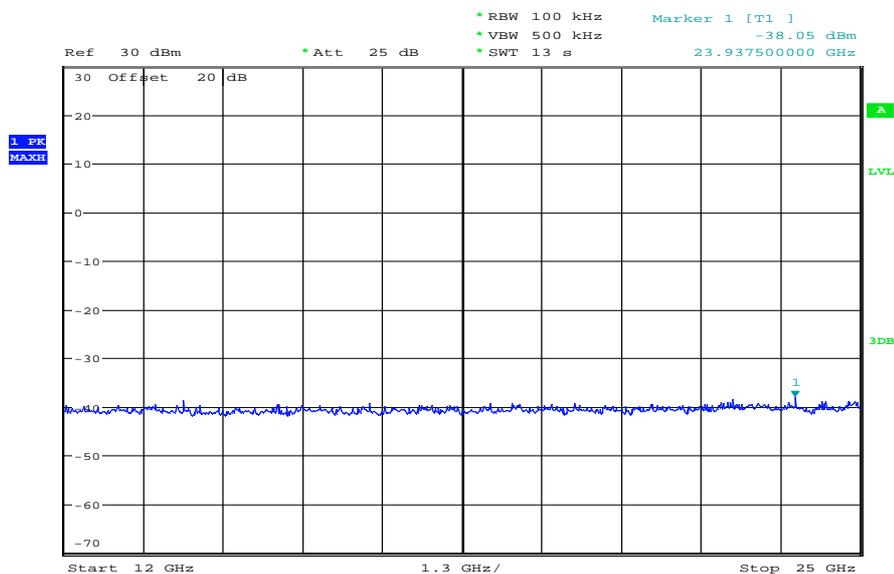
The peak at the beginning of the plot is the LO from the SA.

Plot 2: TX mode, lowest channel, 1 GHz to 12 GHz



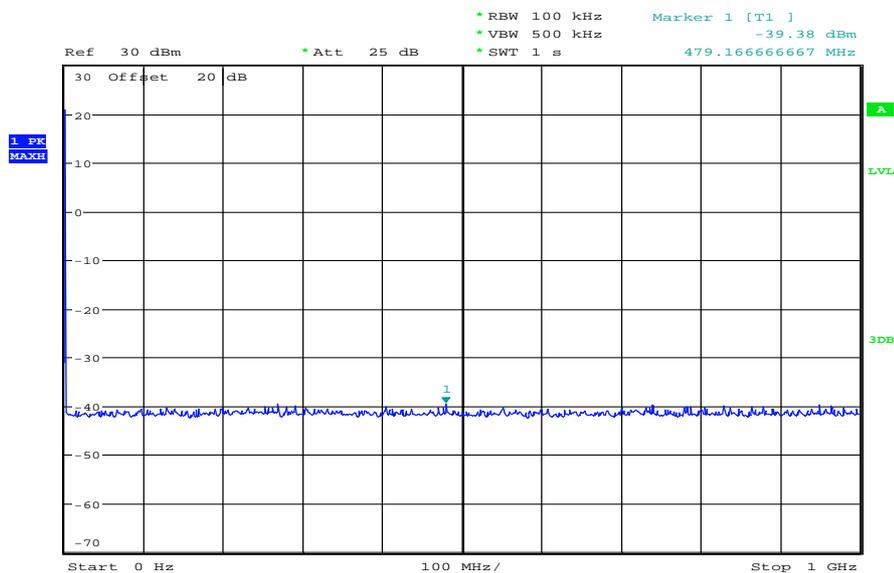
Date: 31.AUG.2011 14:27:48

Plot 3: TX mode, lowest channel, 12 GHz to 25 GHz



Date: 31.AUG.2011 14:50:37

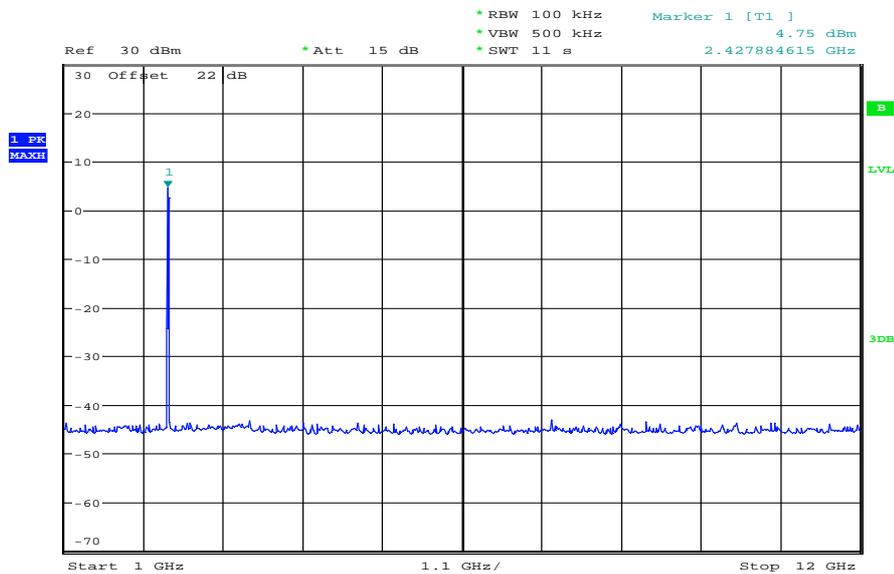
Plot 4: TX mode, middle channel, up to 1 GHz



Date: 31.AUG.2011 14:30:25

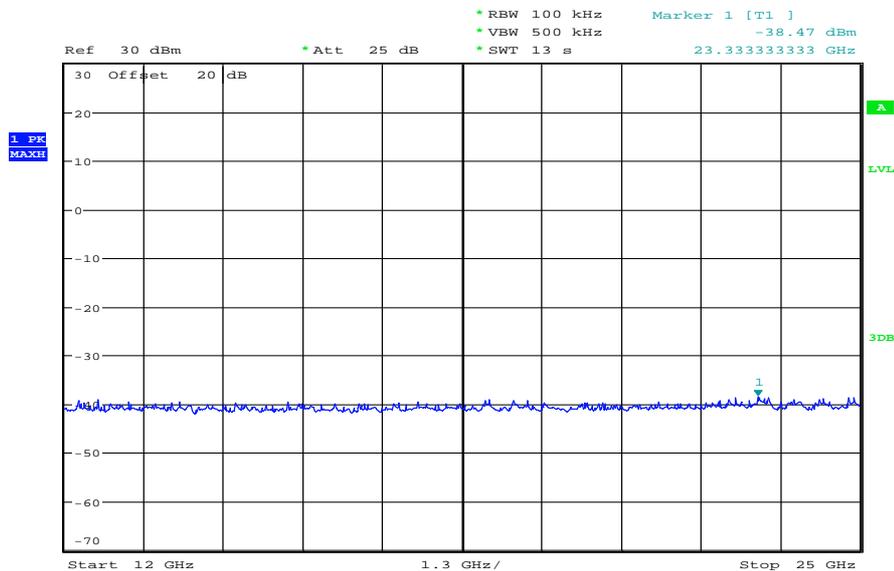
The peak at the beginning of the plot is the LO from the SA.

Plot 5: TX mode, middle channel, 1 GHz to 12 GHz



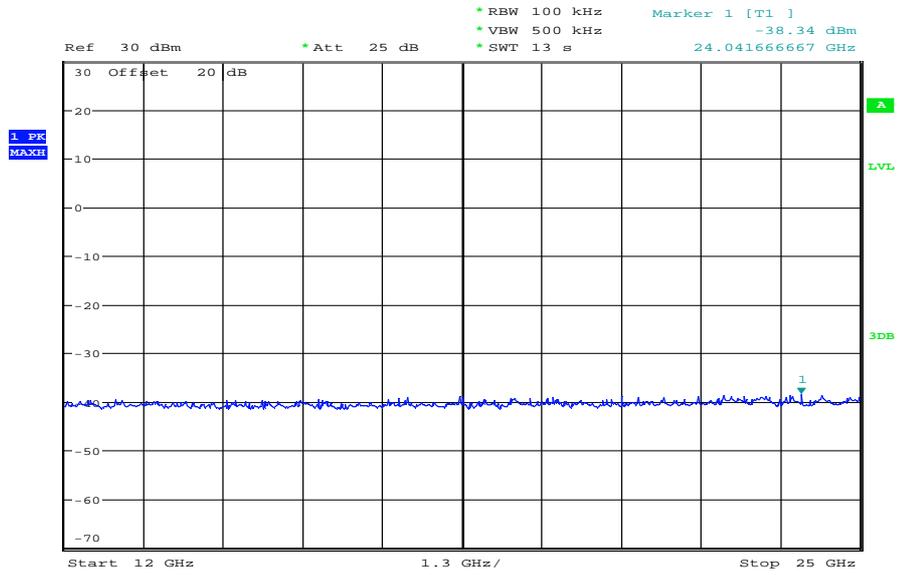
Date: 31.AUG.2011 14:32:58

Plot 6: TX mode, middle channel, 12 GHz to 25 GHz



Date: 31.AUG.2011 14:47:19

Plot 9: TX mode, highest channel, 12 GHz to 25 GHz



Date: 31.AUG.2011 14:44:33

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 26 GHz
Trace-Mode:	Max Hold
Measured Modulation	<input checked="" type="checkbox"/> DSSS b – mode <input checked="" type="checkbox"/> OFDM g – mode <input checked="" type="checkbox"/> OFDM n – mode

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]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

Result: 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]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

Result: The measurement is passed.

Results: OFDM / n – 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]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

Result: The measurement is passed.

Plots: DSSS / b – mode

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

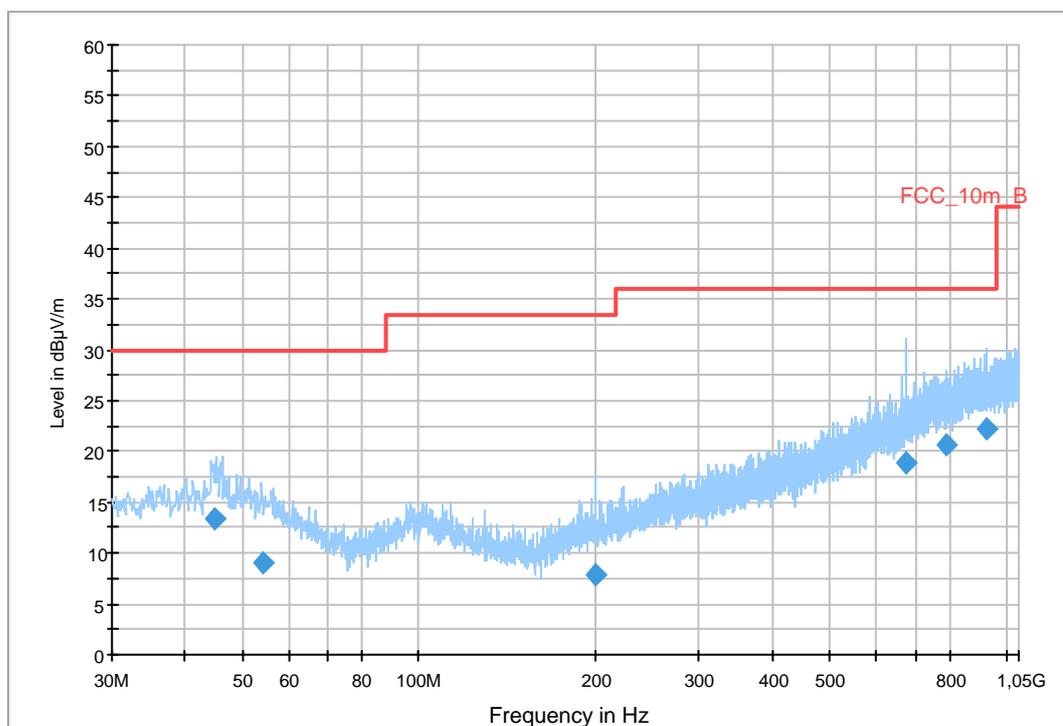
Common Information

EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN TX Ch. 1 b-mode (2 Mbit/s) + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC1 3]
 Level Unit: dBµV/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
44.719950	13.4	1000.0	120.000	170.0	V	102.0	13.3	16.6	30.0	
54.404550	9.1	1000.0	120.000	170.0	H	283.0	12.9	20.9	30.0	
199.920300	7.8	1000.0	120.000	113.0	V	273.0	11.7	25.7	33.5	
675.039150	18.8	1000.0	120.000	170.0	H	258.0	21.8	17.2	36.0	
792.054600	20.7	1000.0	120.000	124.0	H	102.0	23.8	15.3	36.0	
922.842600	22.3	1000.0	120.000	170.0	V	78.0	25.3	13.7	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 4.42

Signal Path: without Notch
FW 1.0

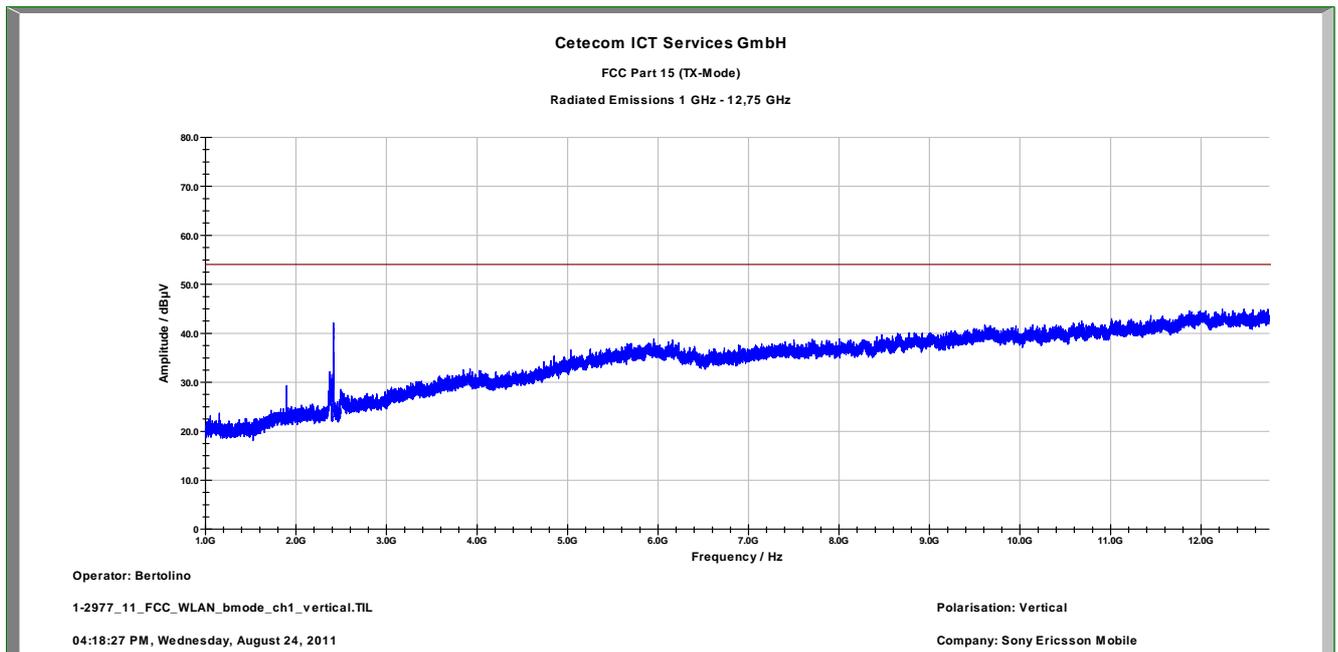
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

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

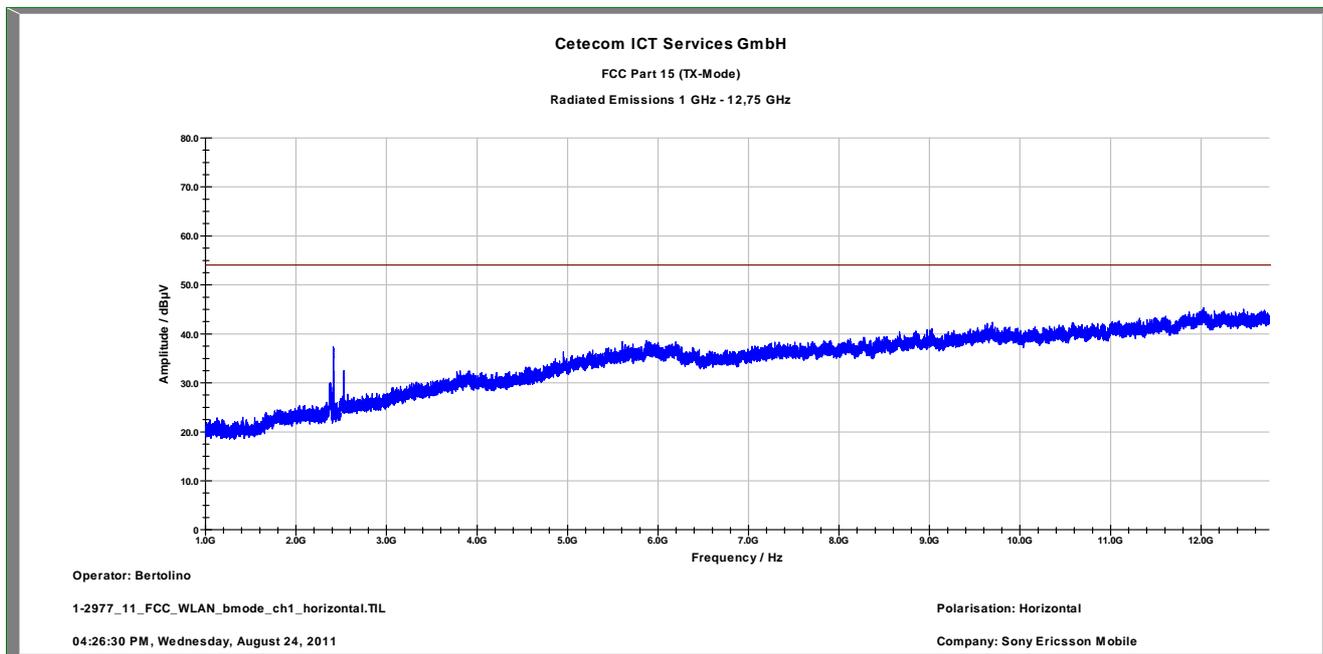
EMC 32 Version 8.10.00

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



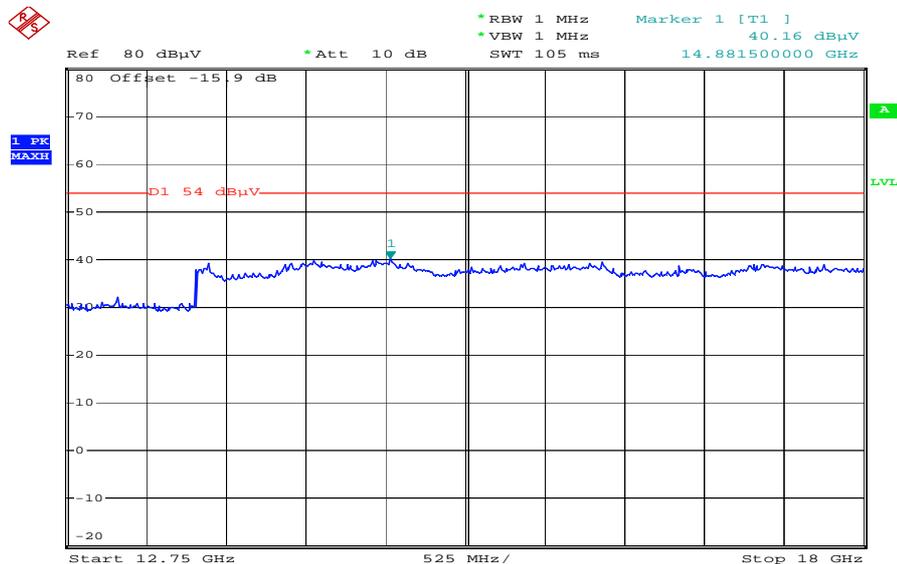
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



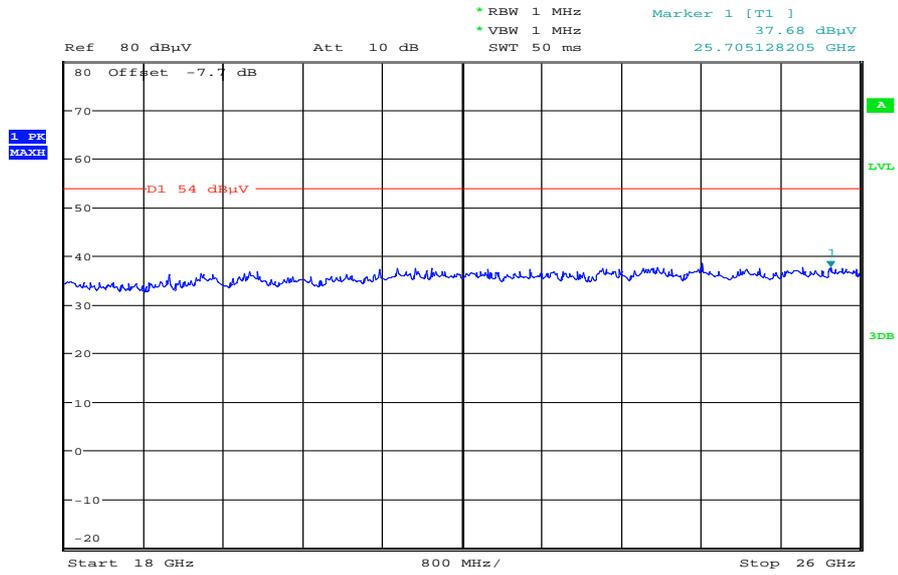
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 2.SEP.2011 11:51:05

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



Date: 2.SEP.2011 12:13:32

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

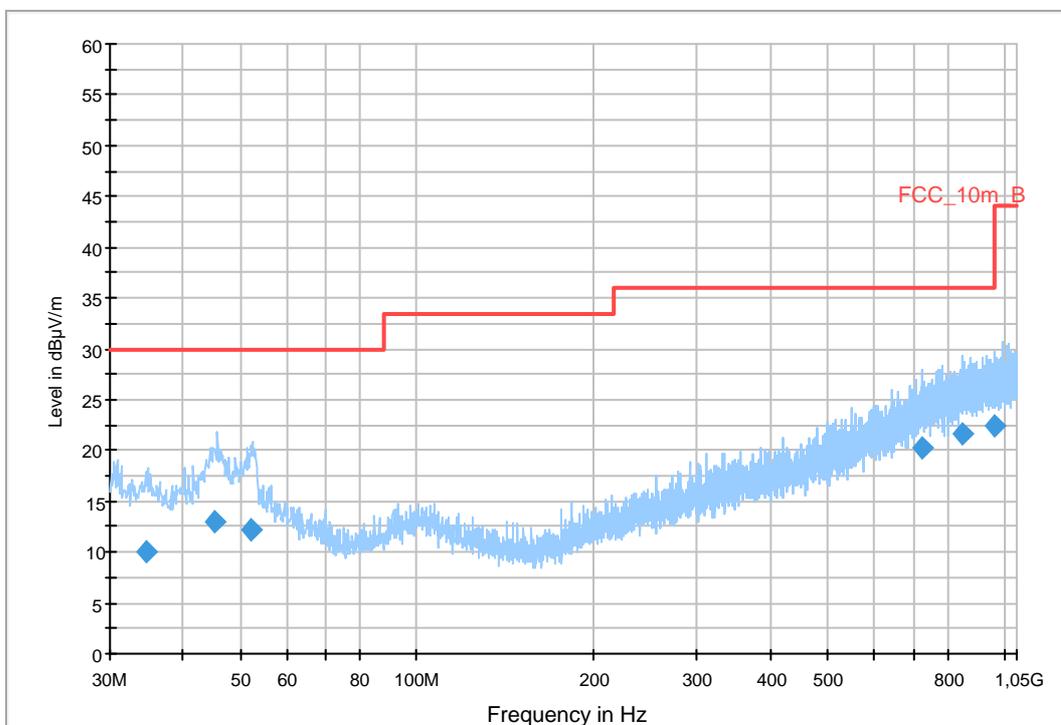
Common Information

EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN TX Ch. 6 b-mode (2 Mbit/s) + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dBµV/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
34.464000	10.0	1000.0	120.000	170.0	V	88.0	13.0	20.0	30.0	
45.320550	13.0	1000.0	120.000	170.0	V	106.0	13.3	17.0	30.0	
52.305000	12.2	1000.0	120.000	98.0	V	8.0	13.1	17.8	30.0	
726.191400	20.3	1000.0	120.000	98.0	V	-7.0	23.1	15.7	36.0	
845.799150	21.7	1000.0	120.000	170.0	H	106.0	24.5	14.3	36.0	
958.937700	22.5	1000.0	120.000	170.0	V	284.0	25.4	13.5	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 4.42

Signal Path: without Notch
FW 1.0

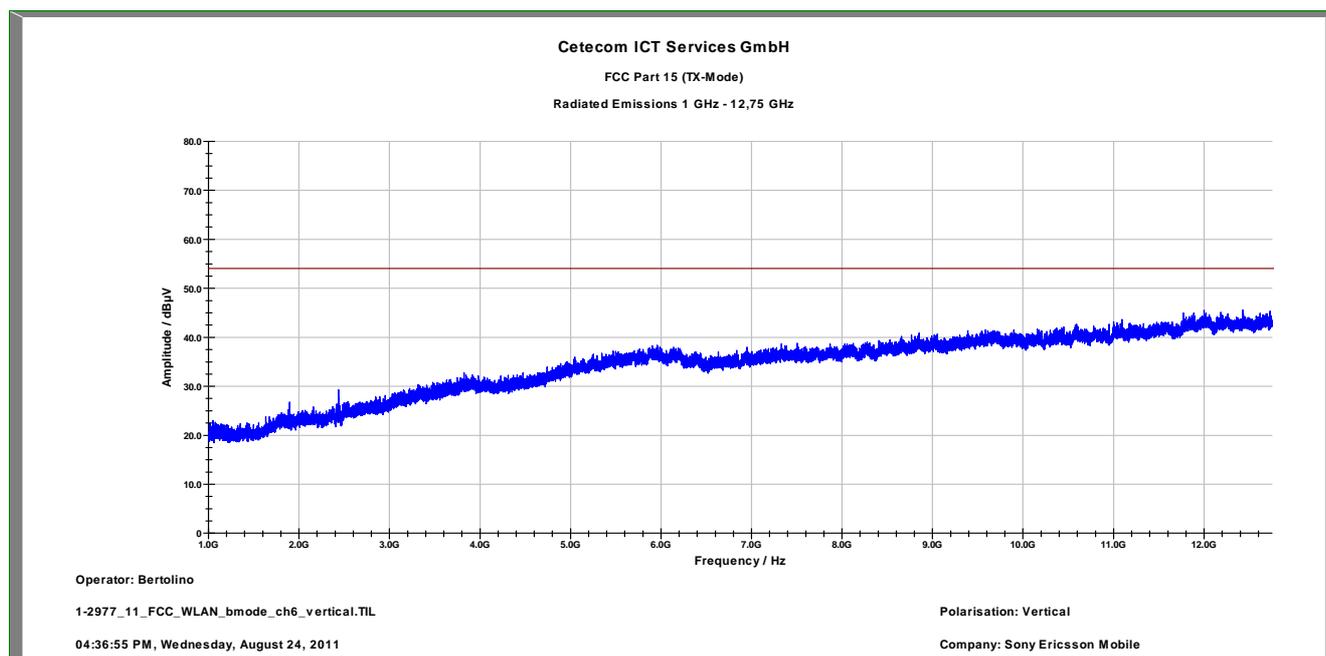
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

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

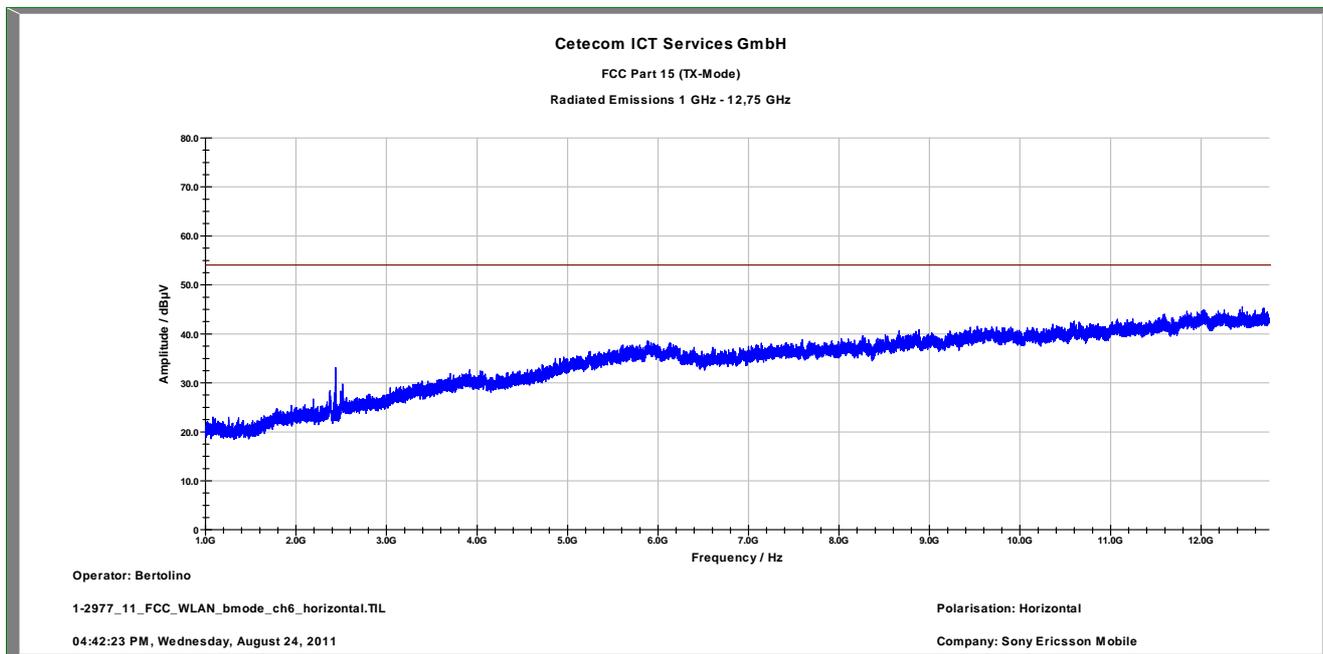
EMC 32 Version 8.10.00

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



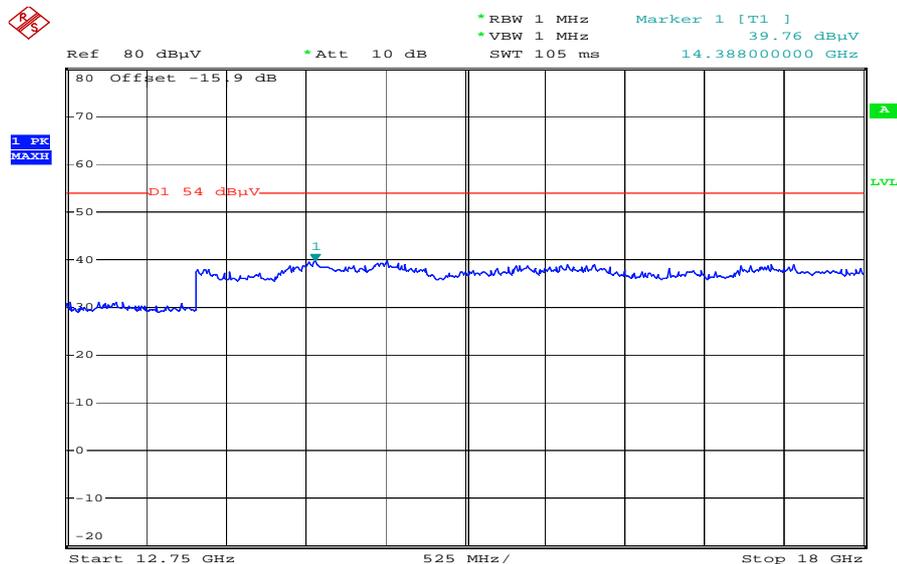
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



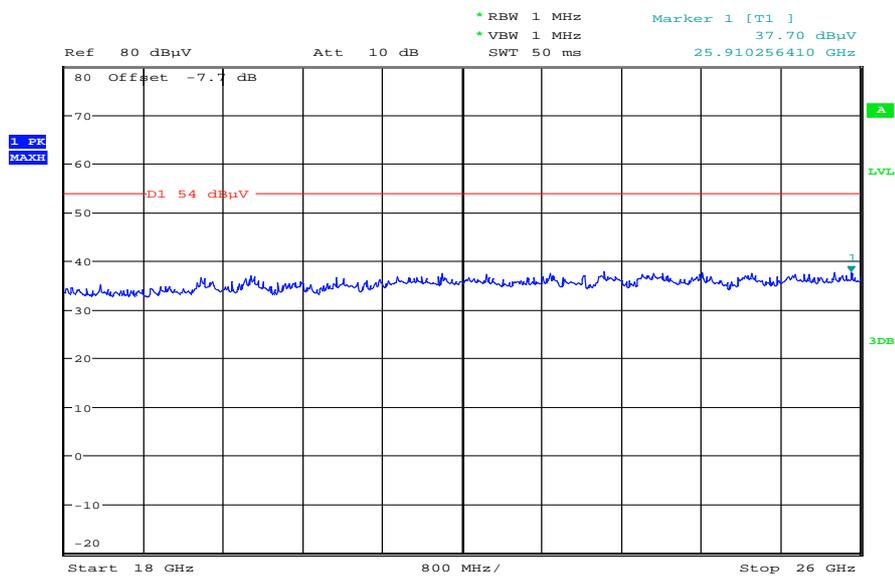
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 2.SEP.2011 12:12:19

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



Date: 2.SEP.2011 12:15:06

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

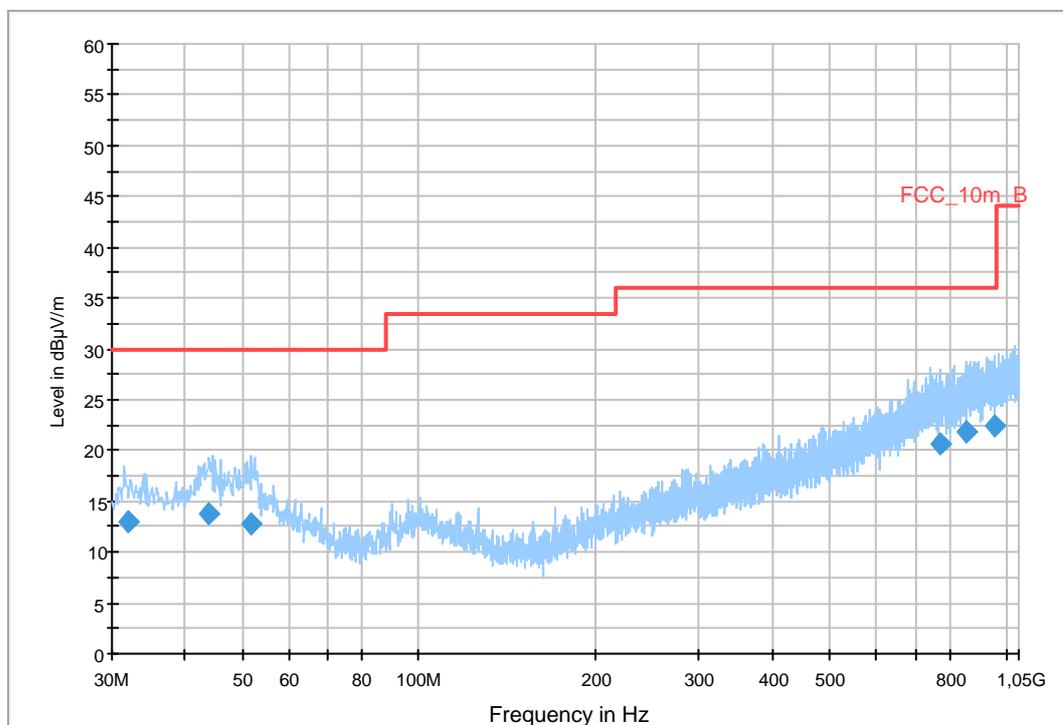
Common Information

EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN TX Ch. 11 b-mode (2 Mbit/s) + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dBµV/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
32.035500	13.0	1000.0	120.000	98.0	V	102.0	12.7	17.0	30.0	
43.989750	13.7	1000.0	120.000	98.0	V	102.0	13.3	16.3	30.0	
51.742500	12.8	1000.0	120.000	105.0	V	176.0	13.2	17.2	30.0	
774.402000	20.7	1000.0	120.000	170.0	H	261.0	23.7	15.3	36.0	
853.031850	21.8	1000.0	120.000	124.0	V	184.0	24.6	14.2	36.0	
958.183950	22.5	1000.0	120.000	170.0	H	102.0	25.4	13.5	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 4.42

Signal Path: without Notch
FW 1.0

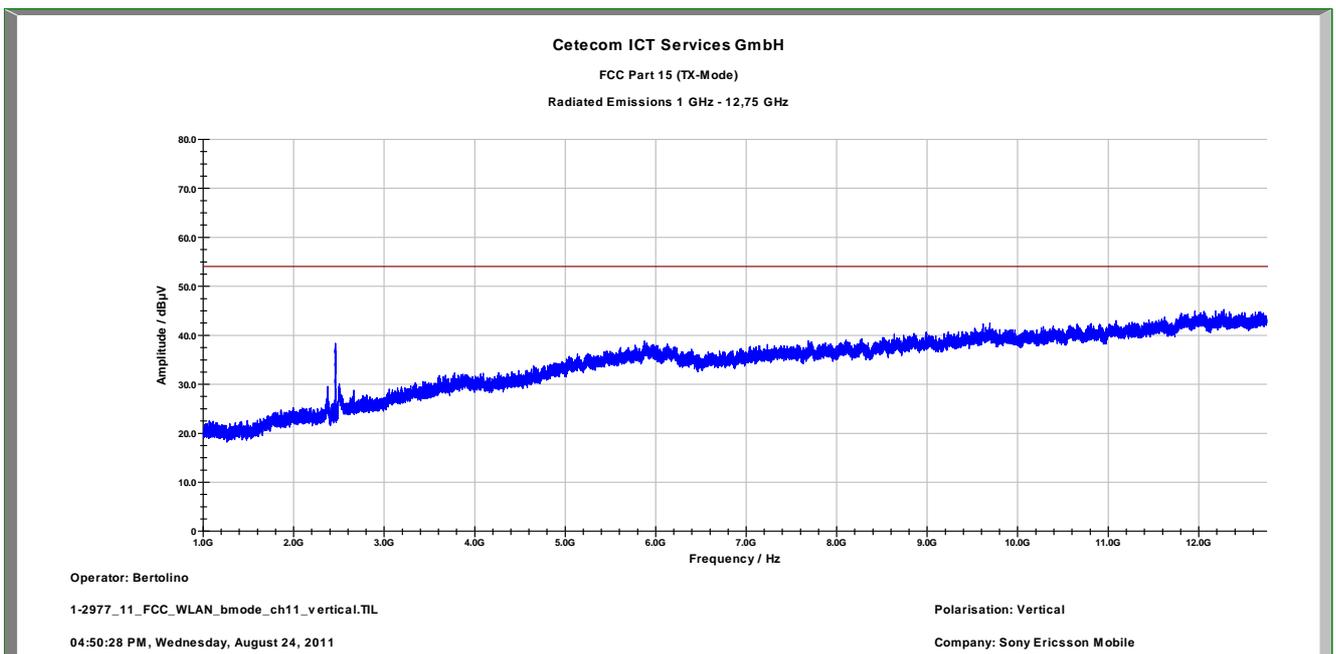
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

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

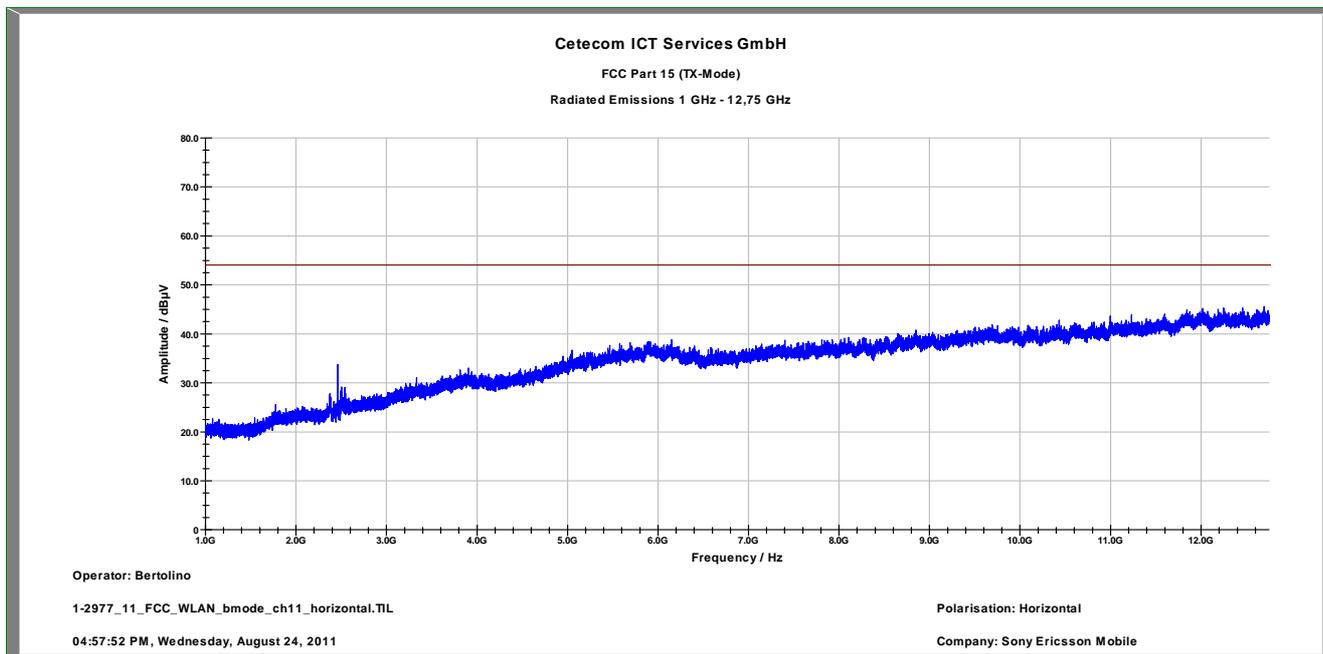
EMC 32 Version 8.10.00

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



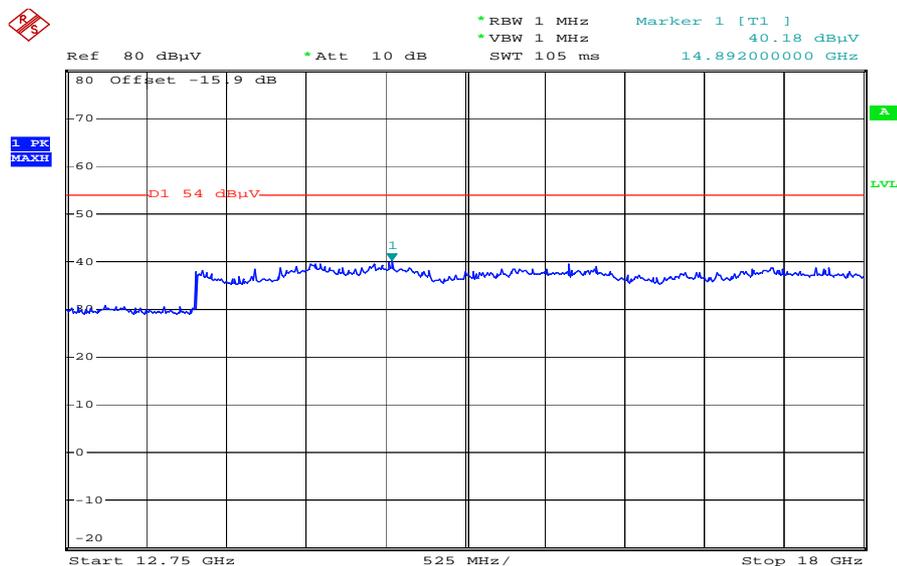
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



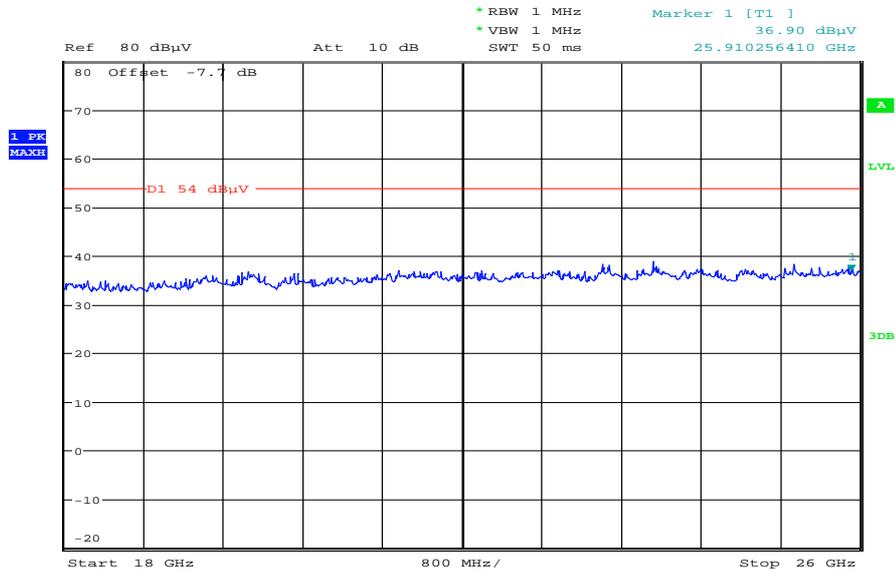
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 2.SEP.2011 12:13:53

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



Date: 2.SEP.2011 12:16:53

Plots: OFDM / g – mode

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

Common Information

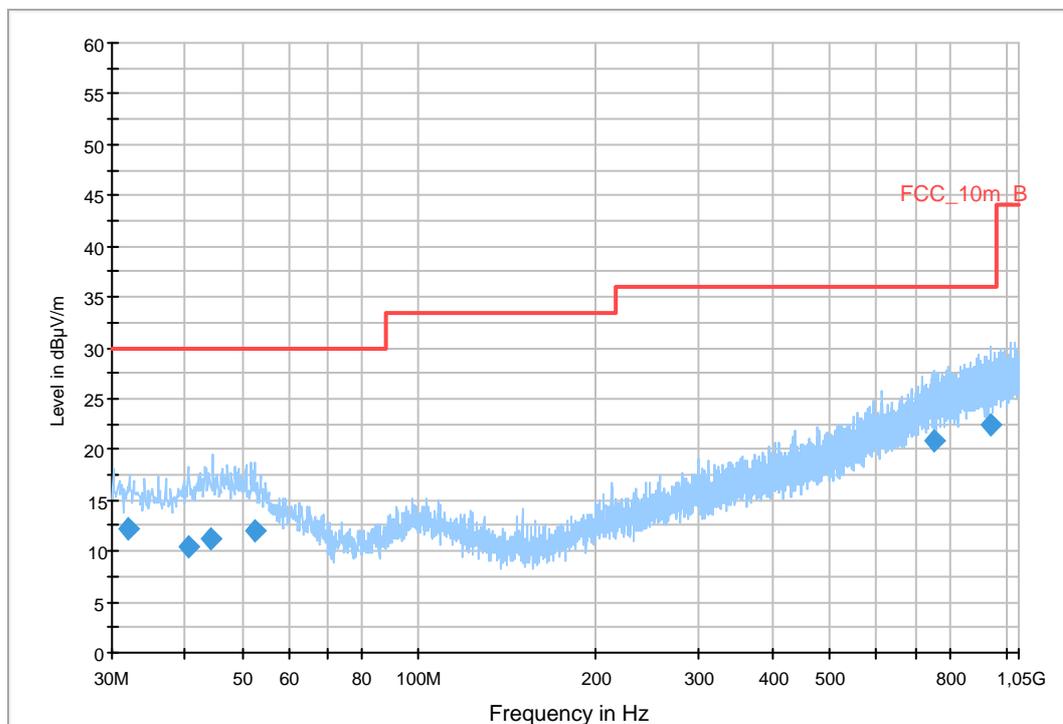
EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN TX Ch. 1 g-mode (9 Mbit/s) + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC1 3]
 Level Unit: dBµV/m

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

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
32.054850	12.1	1000.0	120.000	163.0	V	262.0	12.7	17.9	30.0	
40.570800	10.4	1000.0	120.000	170.0	H	285.0	13.4	19.6	30.0	
44.139000	11.1	1000.0	120.000	170.0	V	286.0	13.3	18.9	30.0	
52.435200	12.1	1000.0	120.000	106.0	V	102.0	13.1	17.9	30.0	
755.712450	20.8	1000.0	120.000	170.0	H	86.0	23.7	15.2	36.0	
937.636800	22.3	1000.0	120.000	162.0	H	102.0	25.3	13.7	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 4.42

Signal Path: without Notch
FW 1.0

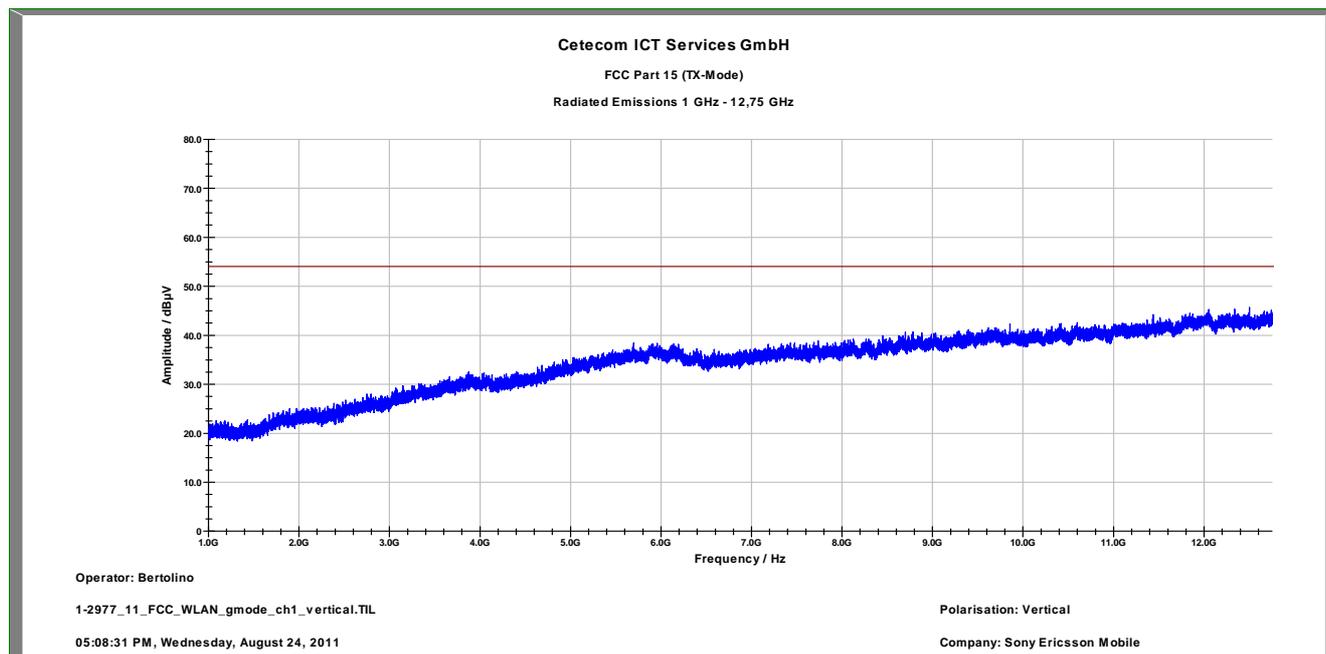
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

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

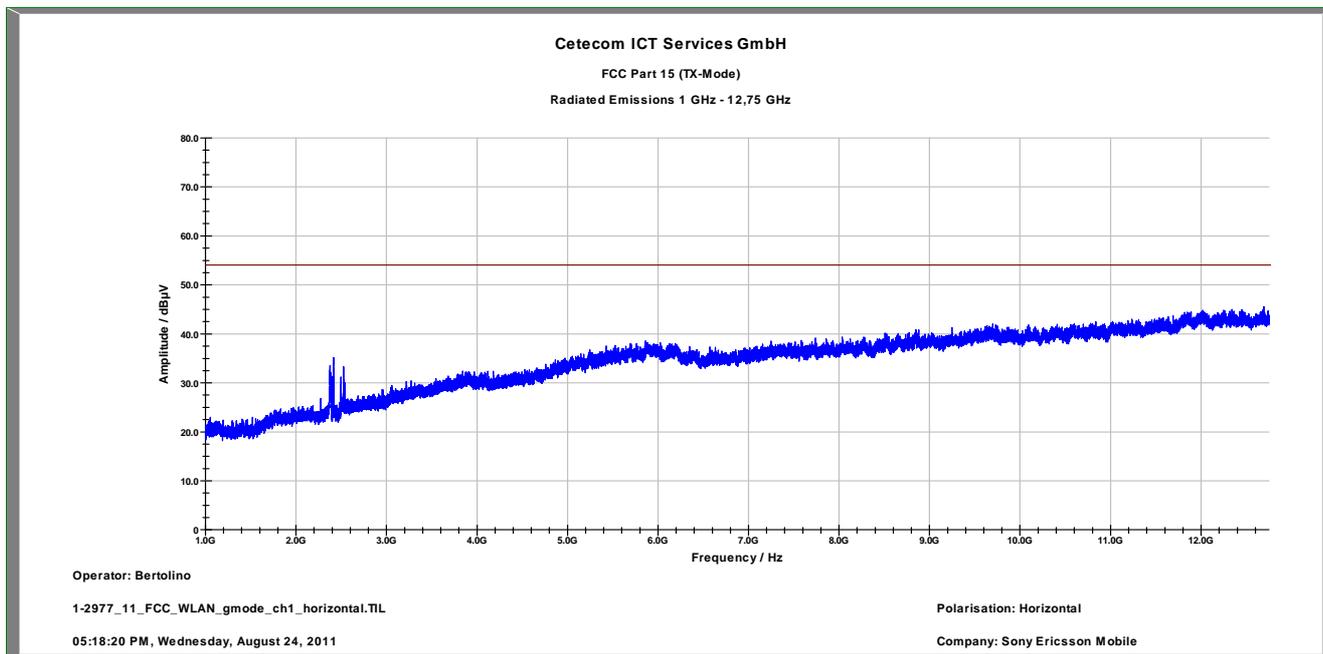
EMC 32 Version 8.10.00

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



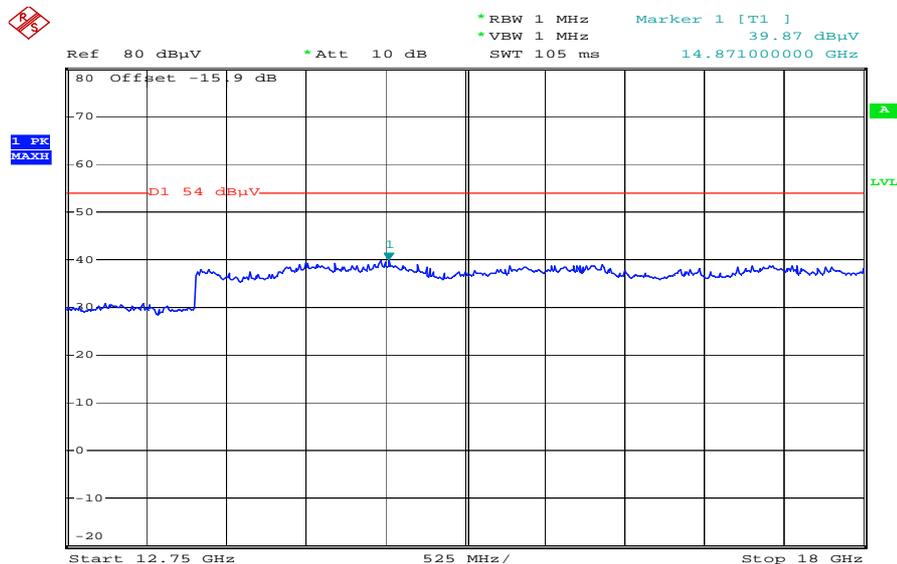
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



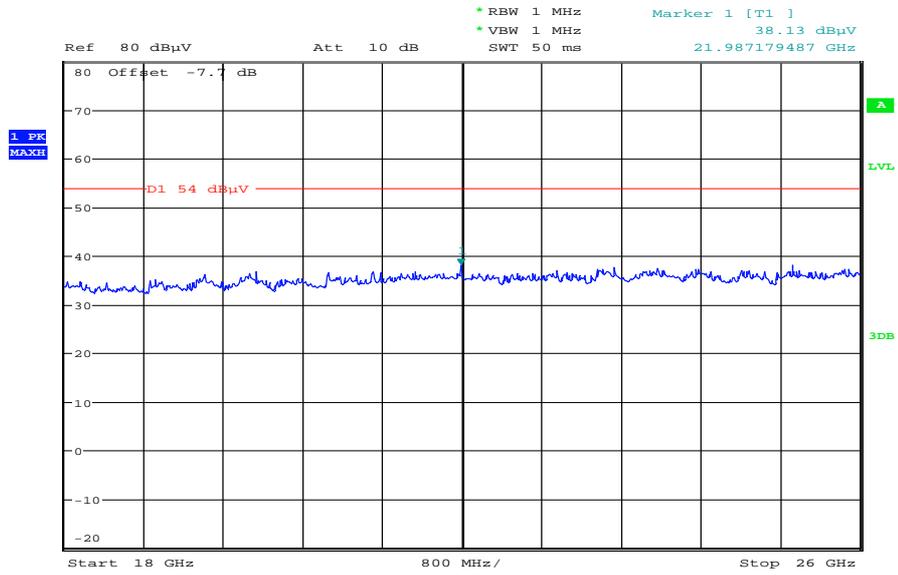
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 2.SEP.2011 12:16:16

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



Date: 2.SEP.2011 12:18:46

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

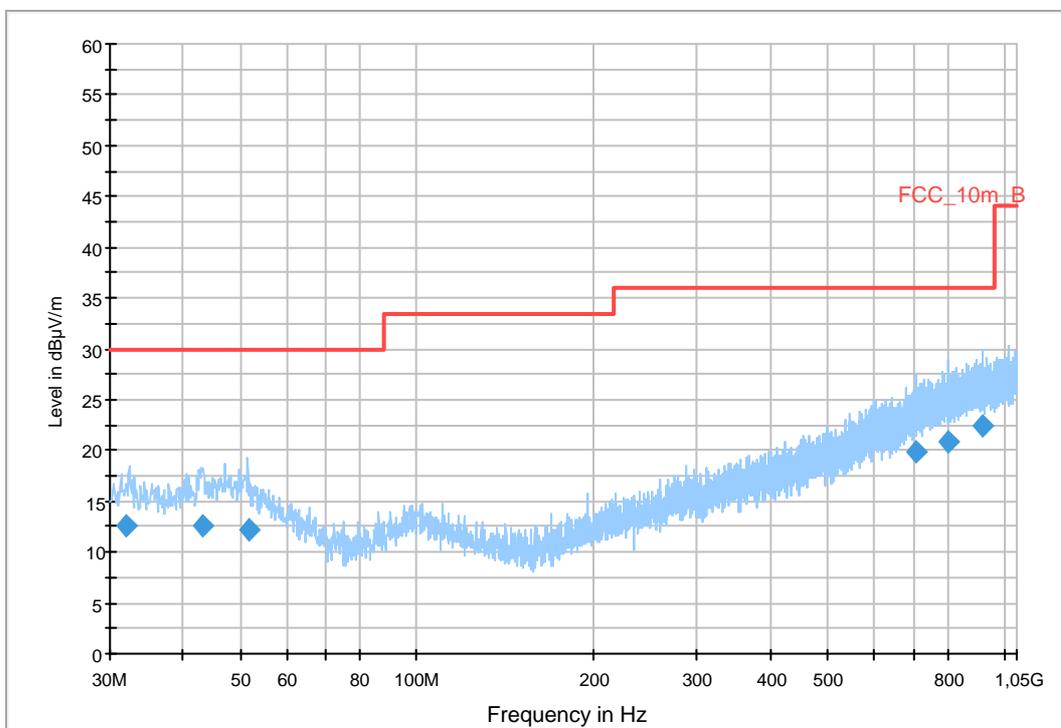
Common Information

EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN TX Ch. 6 g-mode (9 Mbit/s) + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dBµV/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
31.890900	12.5	1000.0	120.000	156.0	V	106.0	12.7	17.5	30.0	
43.178400	12.7	1000.0	120.000	98.0	V	8.0	13.3	17.3	30.0	
51.825450	12.1	1000.0	120.000	120.0	V	86.0	13.2	17.9	30.0	
705.289200	19.8	1000.0	120.000	98.0	H	-7.0	22.6	16.2	36.0	
802.539300	20.9	1000.0	120.000	106.0	H	284.0	23.8	15.1	36.0	
918.357150	22.3	1000.0	120.000	112.0	H	8.0	25.3	13.7	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 4.42

Signal Path: without Notch
FW 1.0

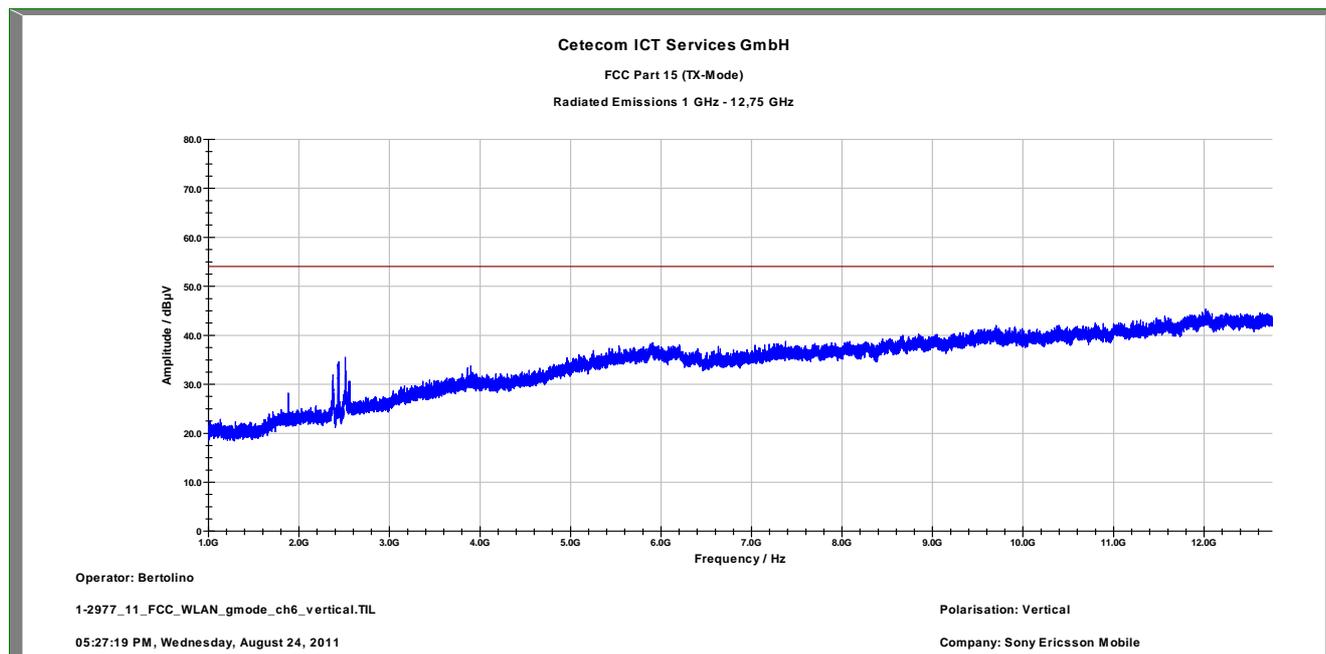
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

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

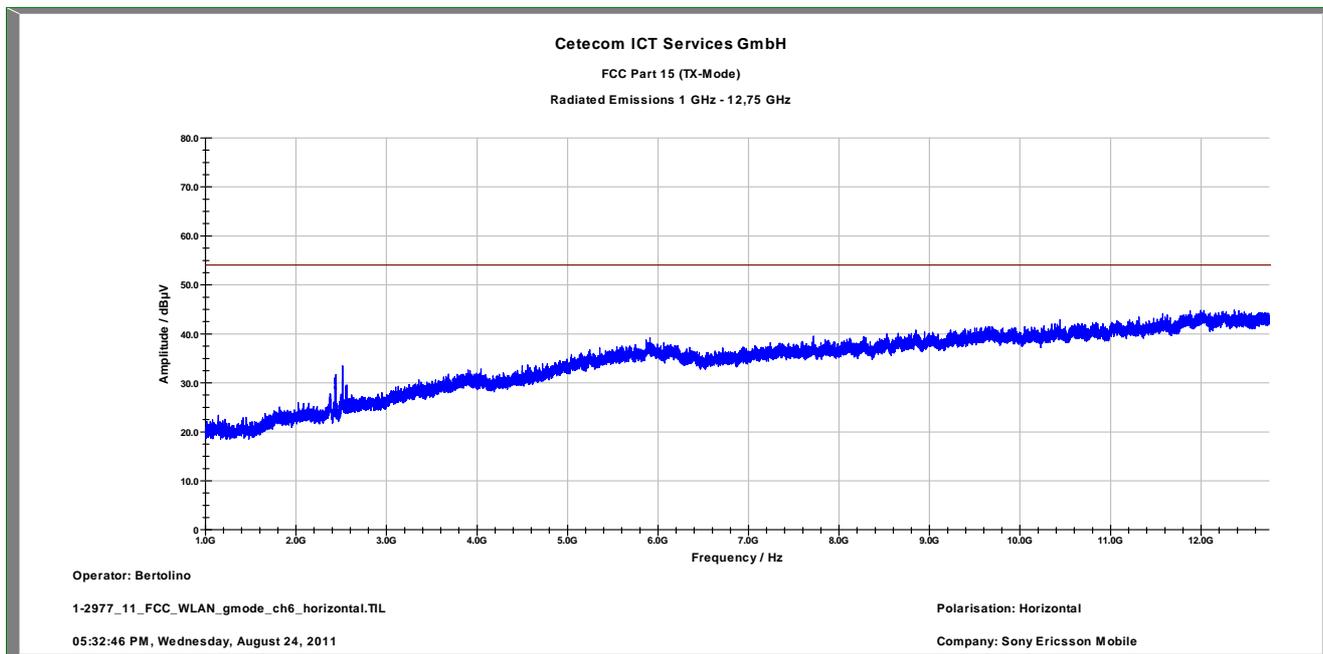
EMC 32 Version 8.10.00

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



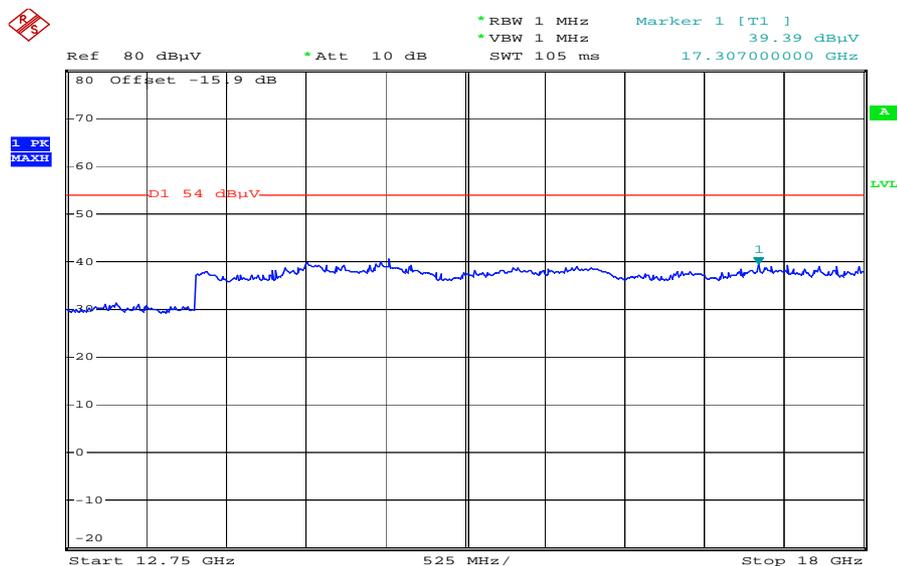
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



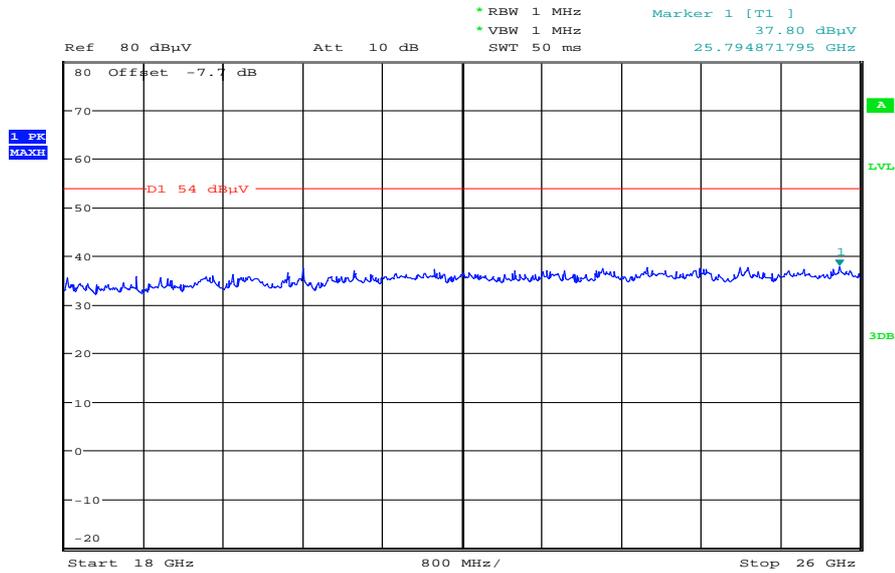
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 2.SEP.2011 12:19:34

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



Date: 2.SEP.2011 12:20:14

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

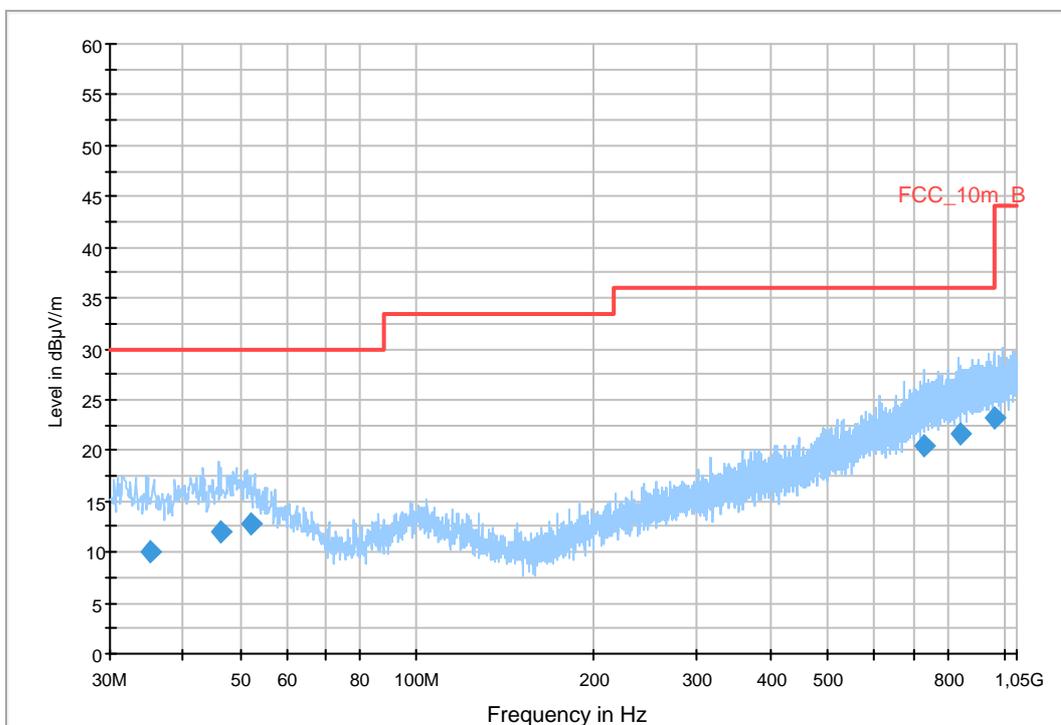
Common Information

EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN TX Ch. 11 g-mode (9 Mbit/s) + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dB μ V/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
35.059050	9.9	1000.0	120.000	170.0	H	284.0	13.0	20.1	30.0	
46.286550	12.1	1000.0	120.000	106.0	V	103.0	13.3	17.9	30.0	
52.233900	12.7	1000.0	120.000	98.0	V	103.0	13.2	17.3	30.0	
730.744950	20.4	1000.0	120.000	170.0	H	269.0	23.2	15.6	36.0	
838.455000	21.6	1000.0	120.000	170.0	V	267.0	24.4	14.4	36.0	
960.024000	23.2	1000.0	120.000	125.0	H	170.0	25.4	20.8	44.0	

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 4.42

Signal Path: without Notch
FW 1.0

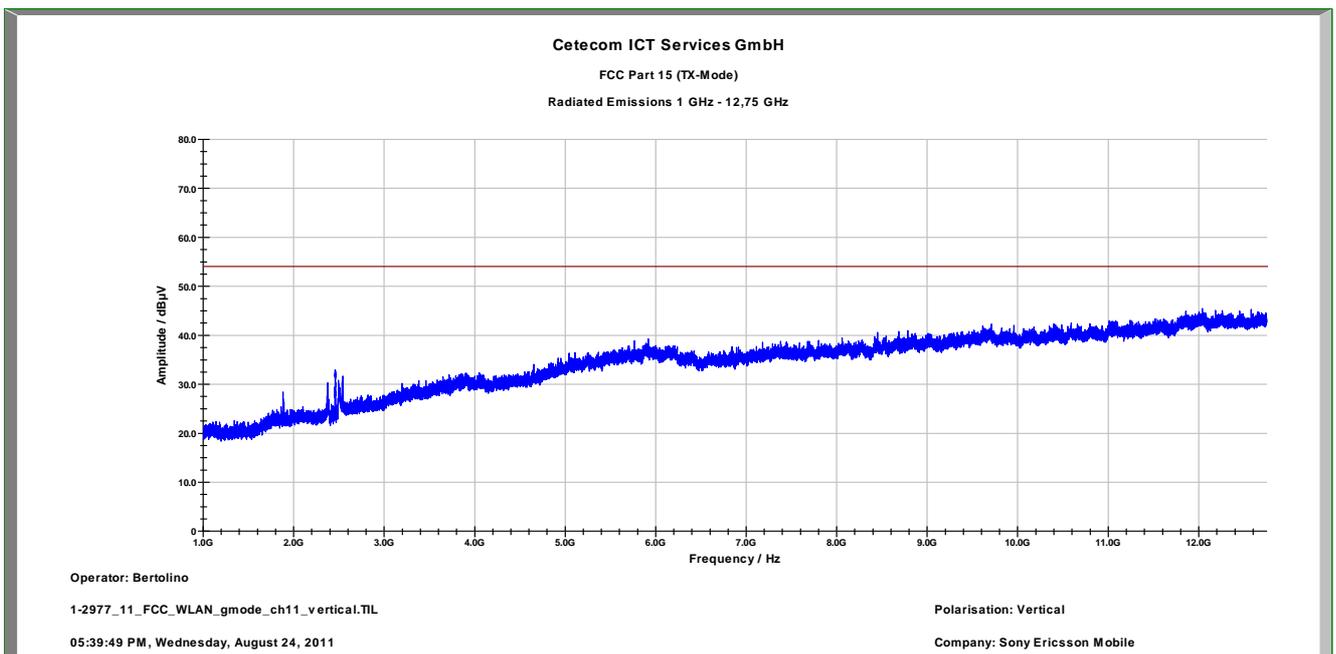
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

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

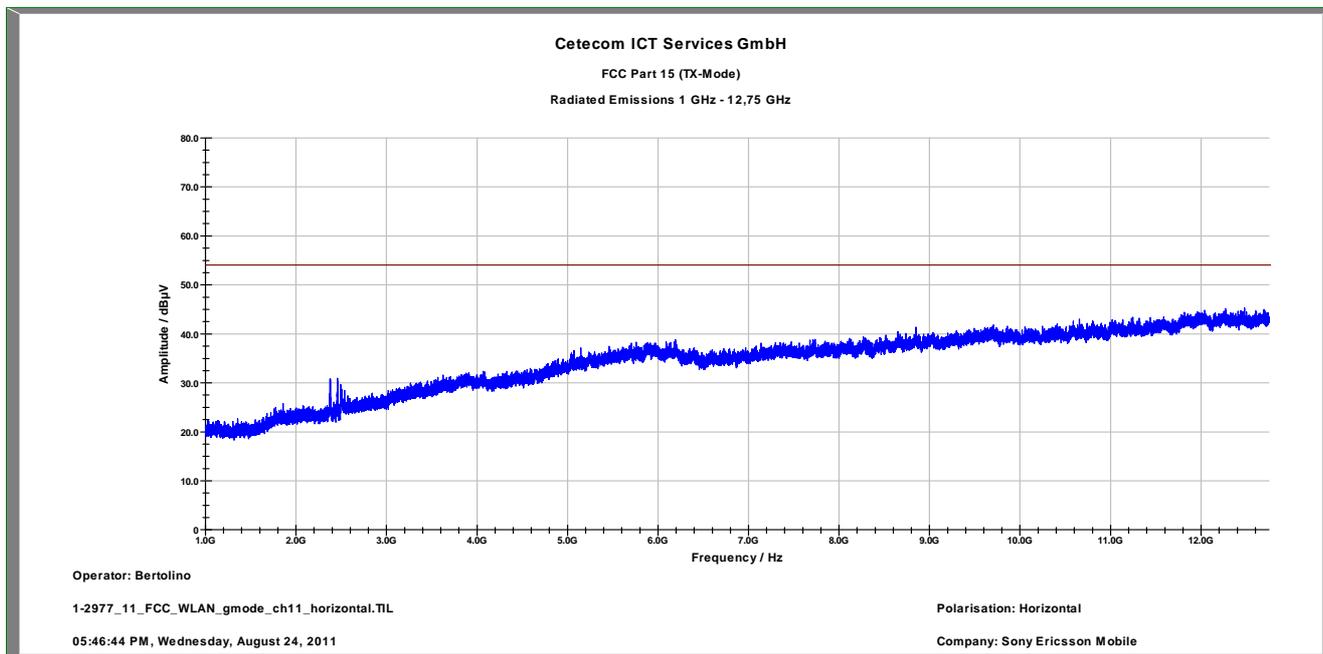
EMC 32 Version 8.10.00

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



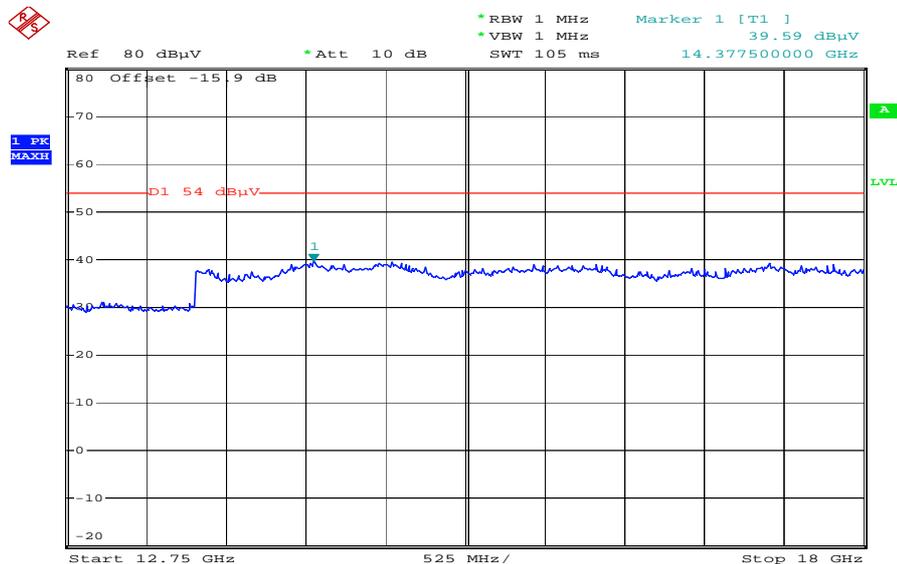
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



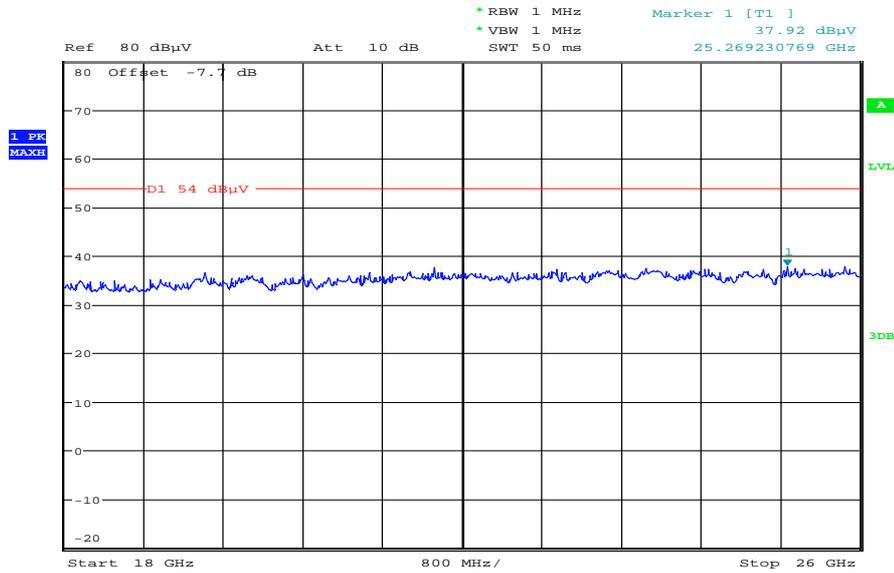
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 2.SEP.2011 12:21:55

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



Date: 2.SEP.2011 12:21:32

Plots: OFDM / n – mode

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

Common Information

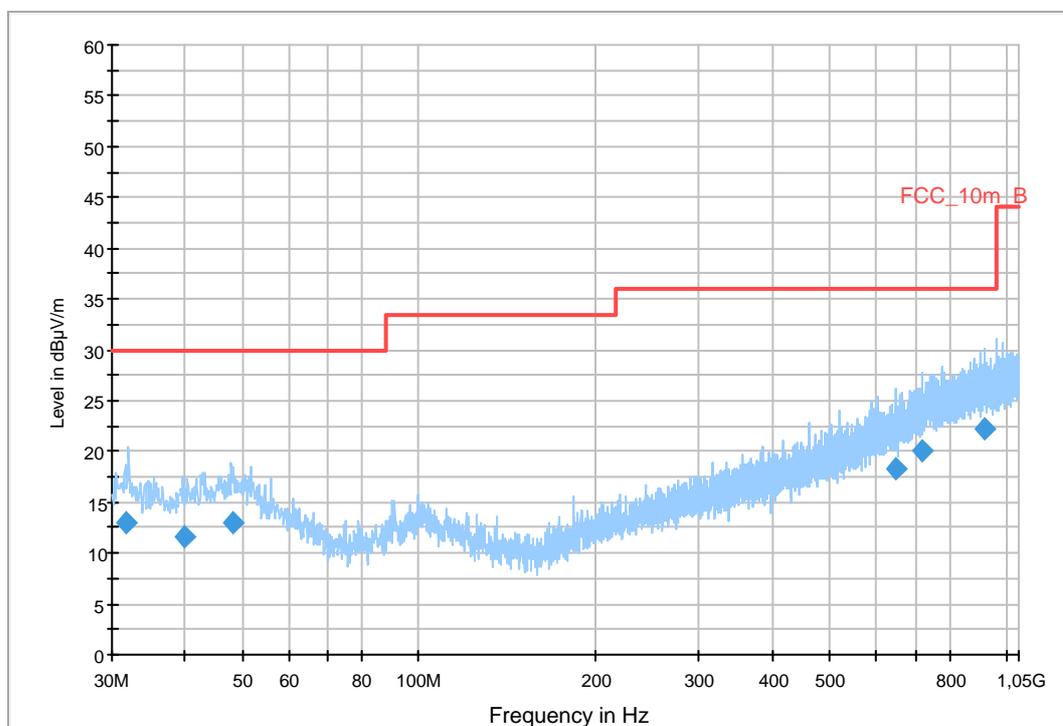
EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN TX Ch. 1 n-mode (MCS0 Mbit/s - LGI) + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC1 3]
 Level Unit: dBµV/m

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

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
31.620300	13.0	1000.0	120.000	135.0	V	8.0	12.7	17.0	30.0	
39.731400	11.6	1000.0	120.000	120.0	V	172.0	13.4	18.4	30.0	
48.340800	12.9	1000.0	120.000	170.0	V	-6.0	13.3	17.1	30.0	
648.975000	18.2	1000.0	120.000	170.0	V	92.0	21.1	17.8	36.0	
716.821500	20.1	1000.0	120.000	170.0	H	274.0	22.9	15.9	36.0	
921.659400	22.3	1000.0	120.000	170.0	H	106.0	25.3	13.7	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 4.42

Signal Path: without Notch
FW 1.0

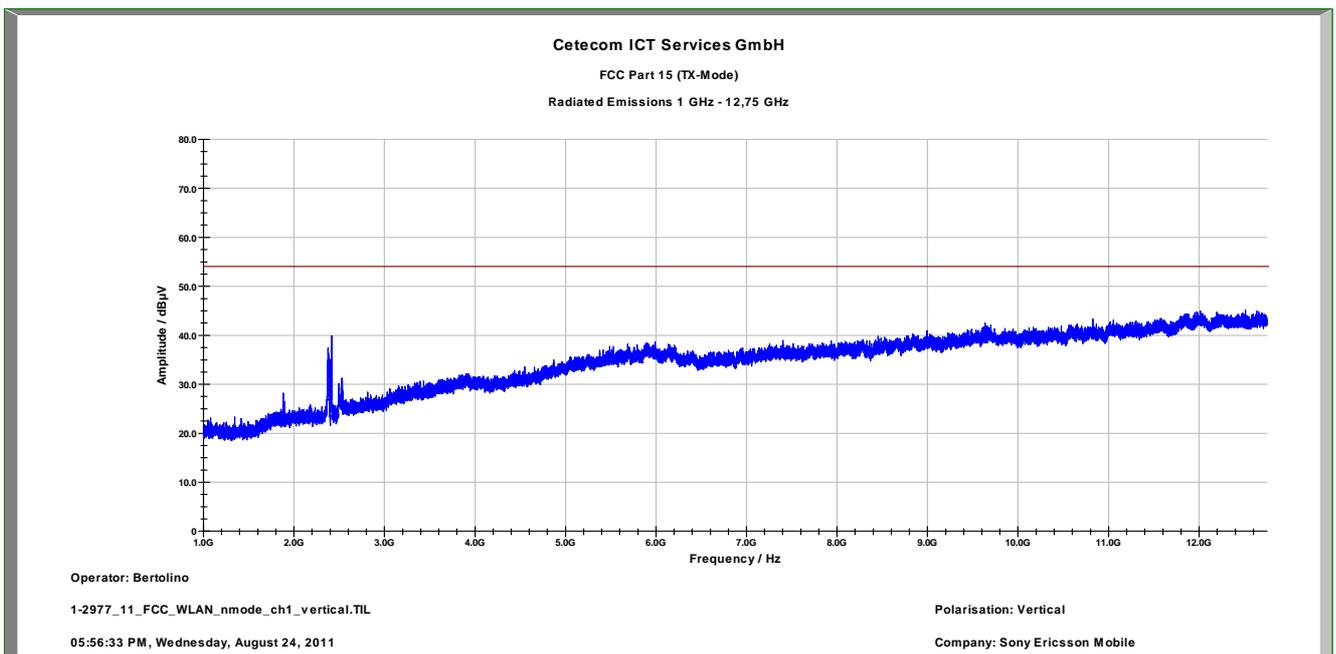
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

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

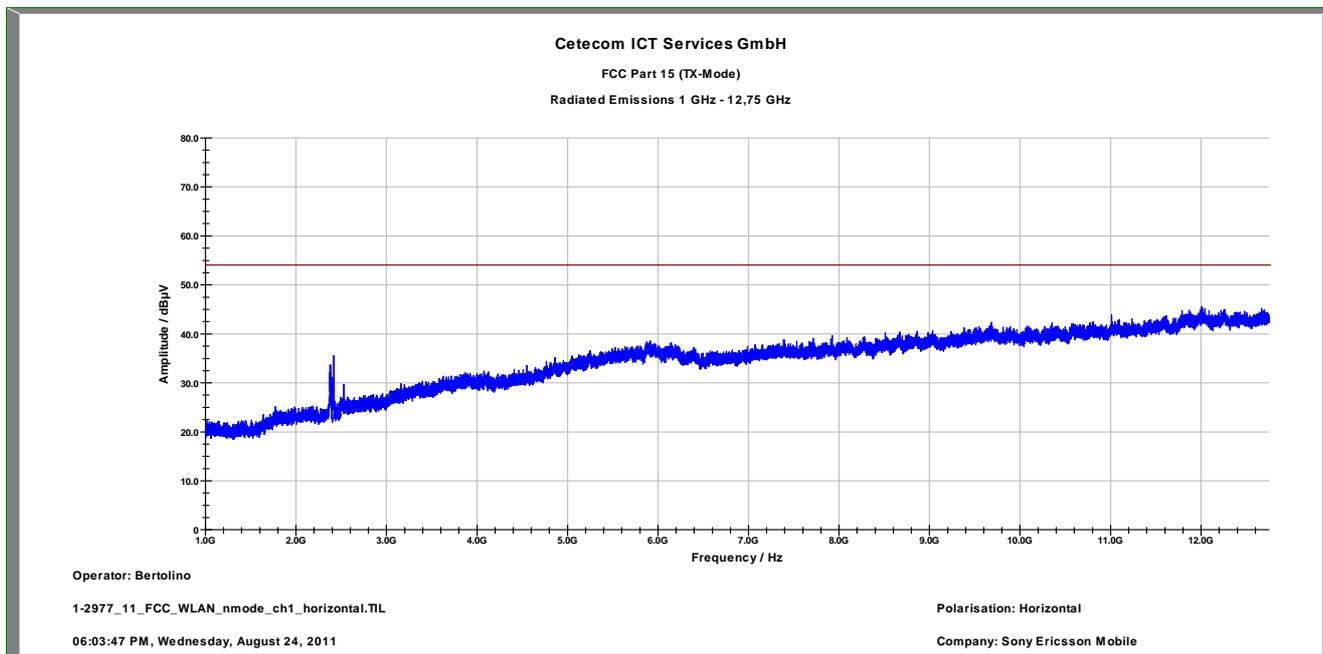
EMC 32 Version 8.10.00

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



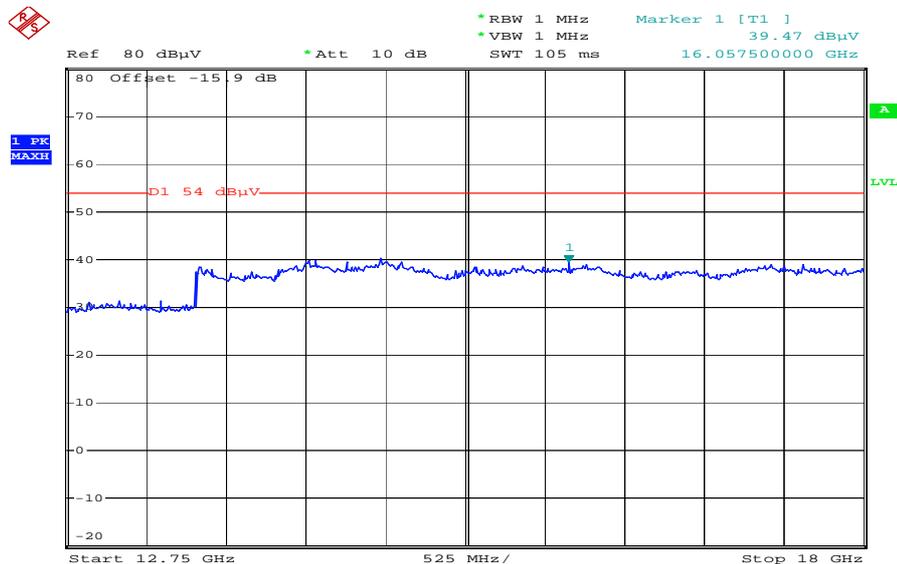
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



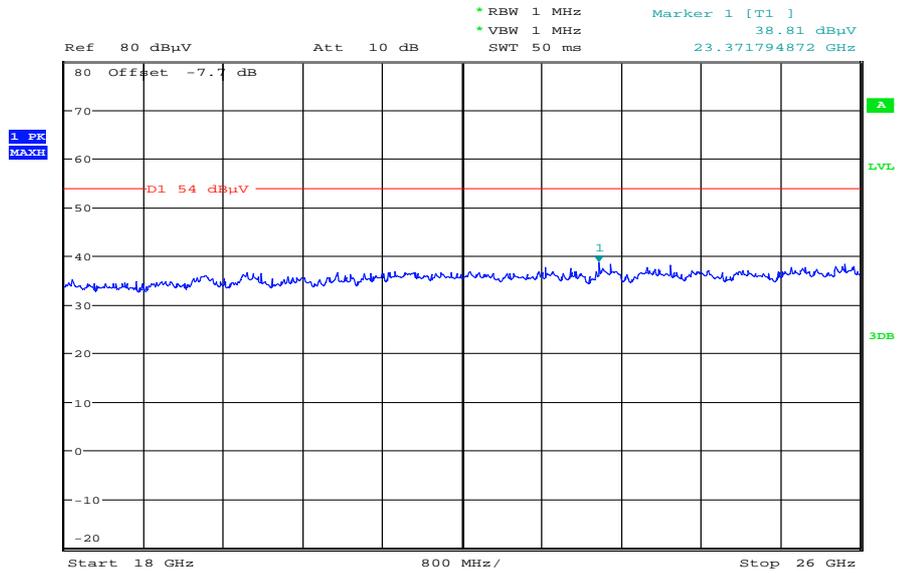
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 2.SEP.2011 12:24:17

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



Date: 2.SEP.2011 12:23:28

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

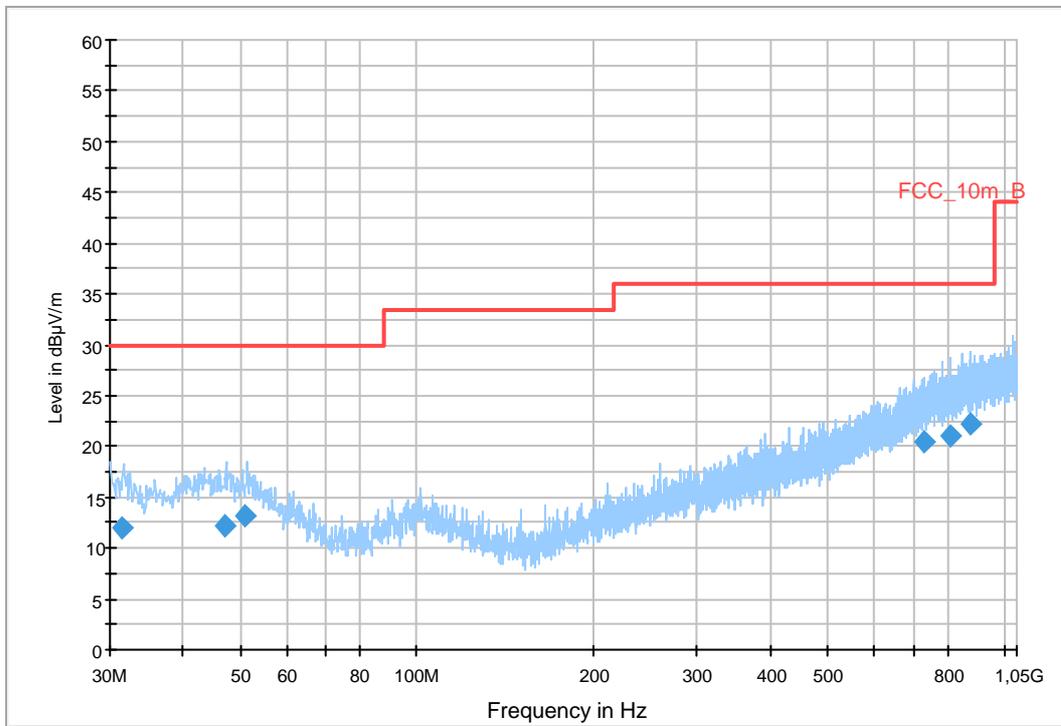
Common Information

EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN TX Ch. 6 n-mode (MCS0 Mbit/s - LGI) + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dBµV/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
31.337550	12.1	1000.0	120.000	170.0	V	8.0	12.6	17.9	30.0	
47.076600	12.3	1000.0	120.000	98.0	V	106.0	13.3	17.7	30.0	
50.999550	13.1	1000.0	120.000	124.0	V	285.0	13.3	16.9	30.0	
729.175200	20.5	1000.0	120.000	170.0	H	8.0	23.2	15.5	36.0	
811.174650	21.1	1000.0	120.000	106.0	V	265.0	24.0	14.9	36.0	
876.805500	22.3	1000.0	120.000	98.0	V	80.0	24.9	13.7	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 4.42

Signal Path: without Notch
FW 1.0

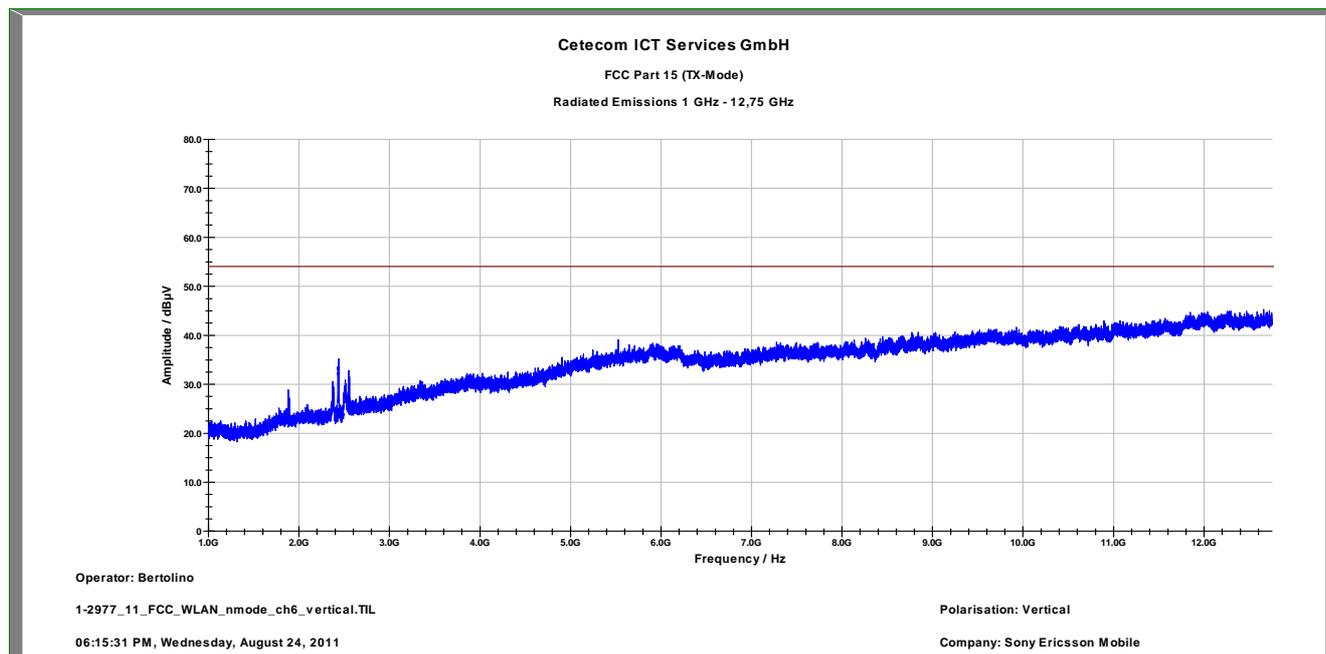
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

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

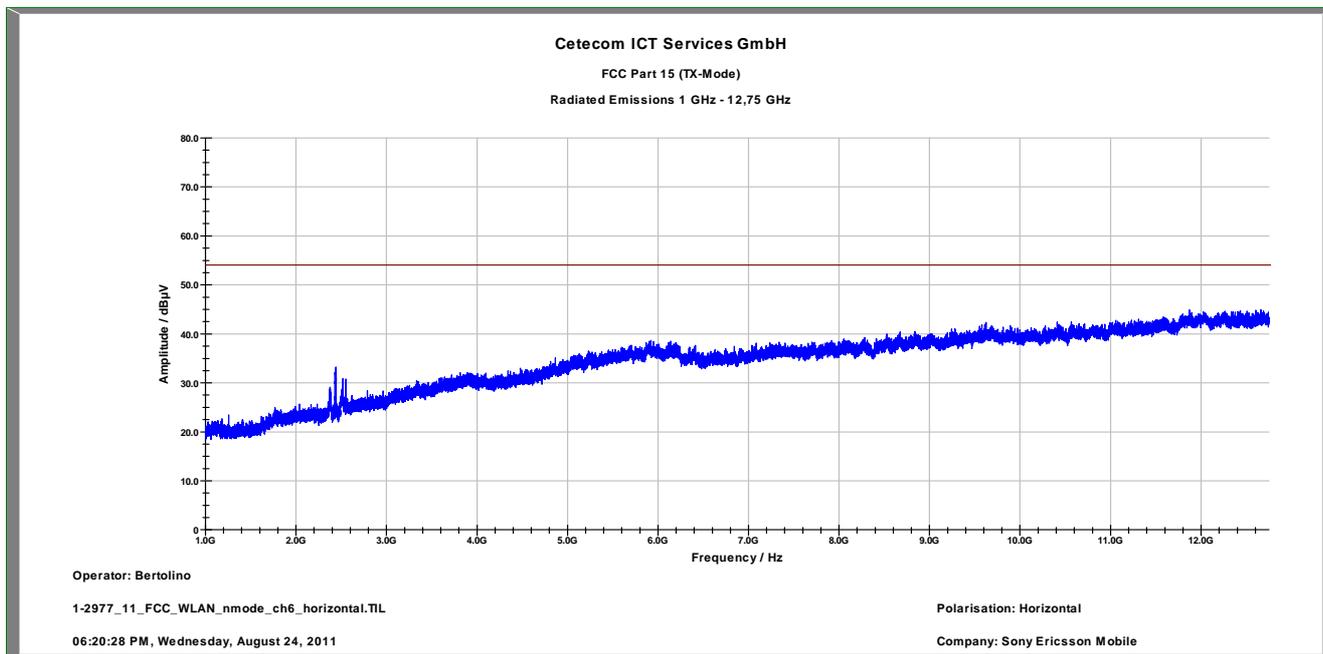
EMC 32 Version 8.10.00

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



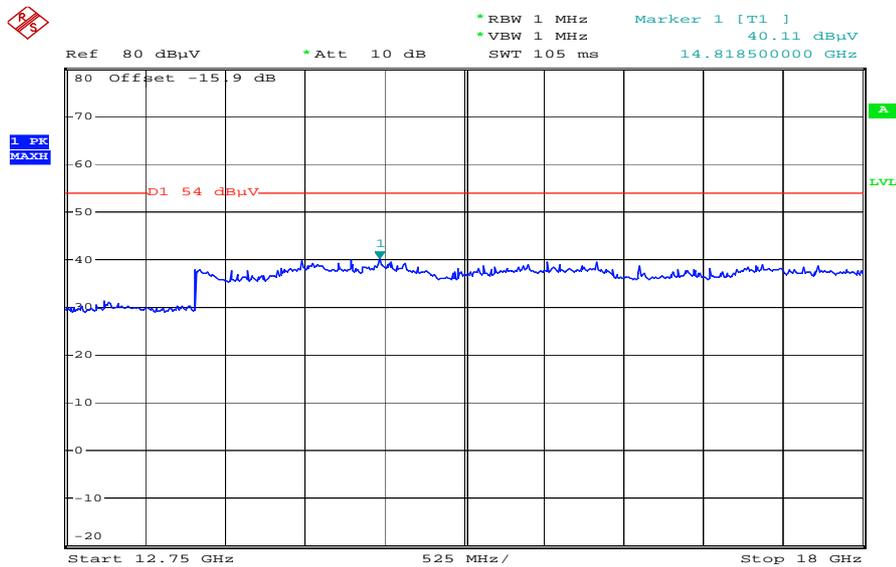
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



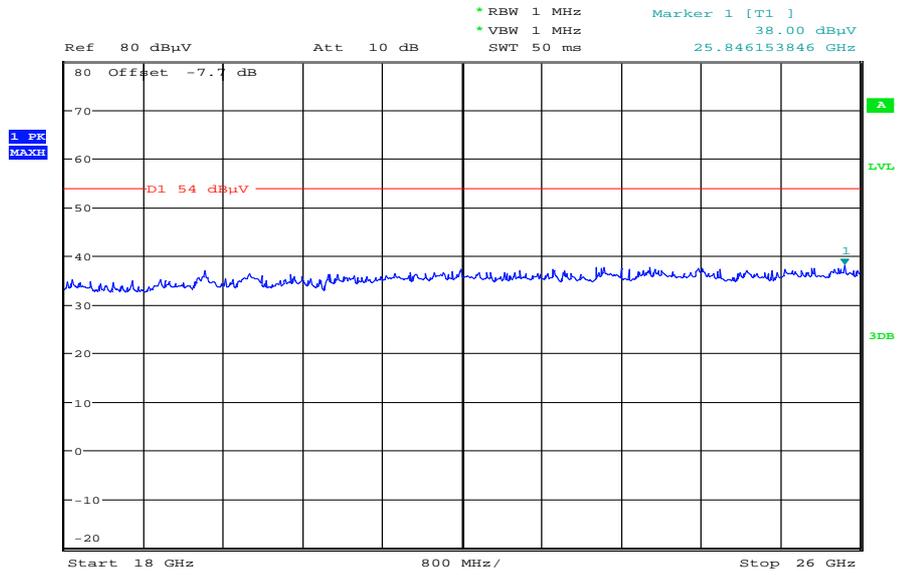
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 2.SEP.2011 12:26:23

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



Date: 2.SEP.2011 12:24:47

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

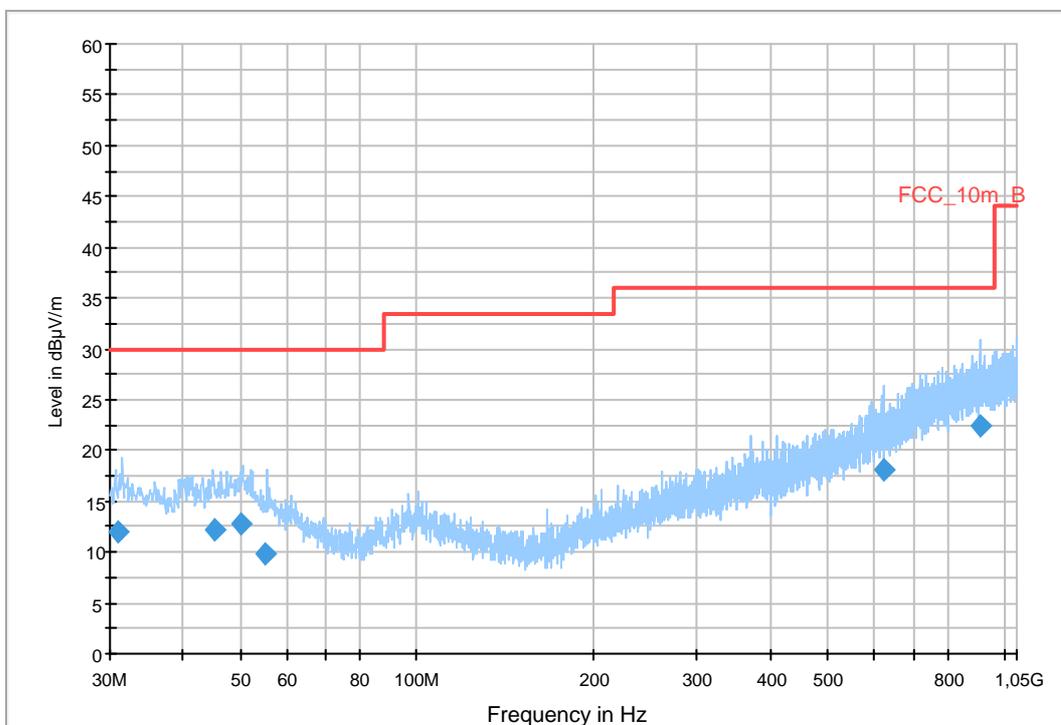
Common Information

EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN TX Ch. 11 n-mode (MCS0 Mbit/s - LGI) + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dB μ V/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
31.071150	12.0	1000.0	120.000	155.0	V	8.0	12.6	18.0	30.0	
45.307800	12.3	1000.0	120.000	98.0	V	286.0	13.3	17.7	30.0	
50.326500	12.7	1000.0	120.000	105.0	V	8.0	13.3	17.3	30.0	
55.324800	9.8	1000.0	120.000	170.0	V	263.0	12.8	20.2	30.0	
624.953400	18.1	1000.0	120.000	114.0	V	178.0	21.0	17.9	36.0	
907.234500	22.3	1000.0	120.000	170.0	H	8.0	25.2	13.7	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 4.42

Signal Path: without Notch
FW 1.0

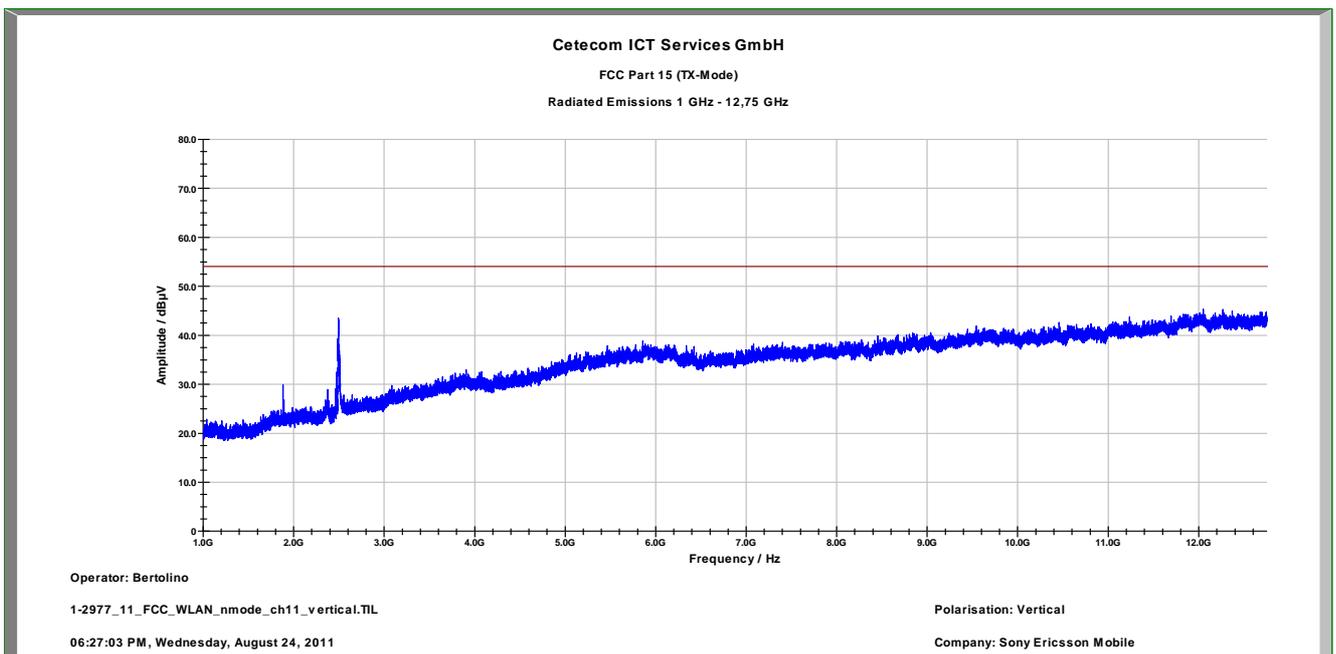
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

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

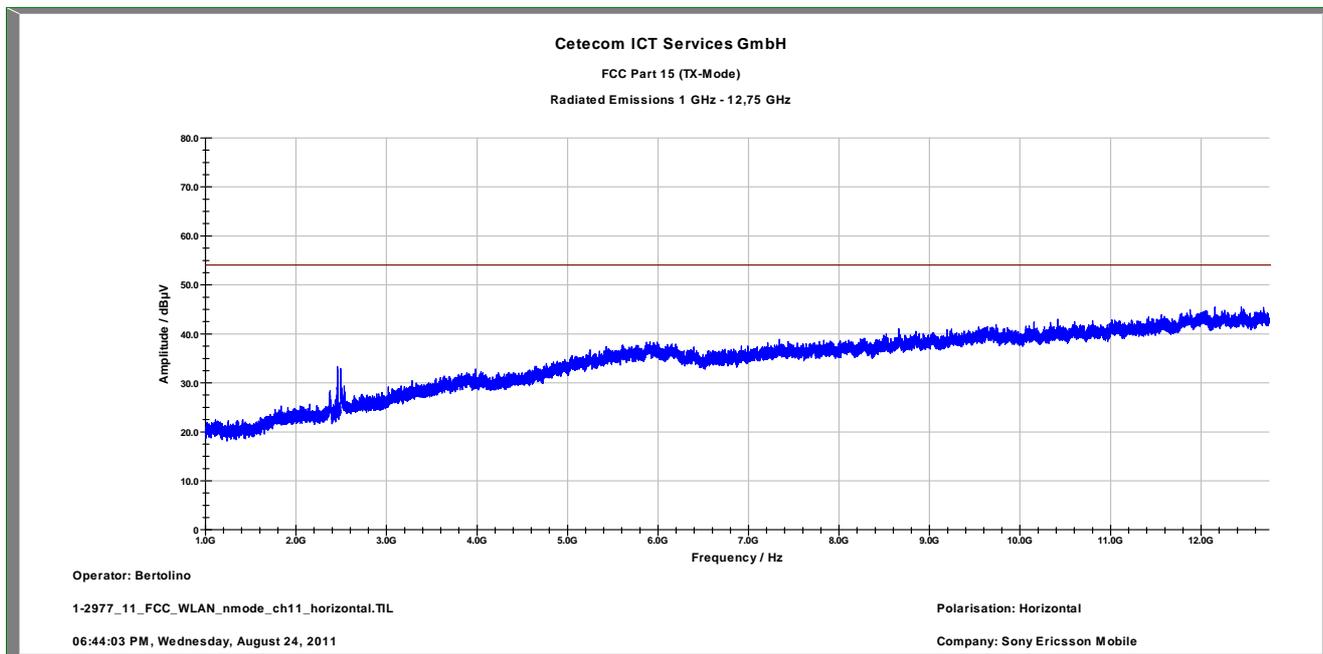
EMC 32 Version 8.10.00

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



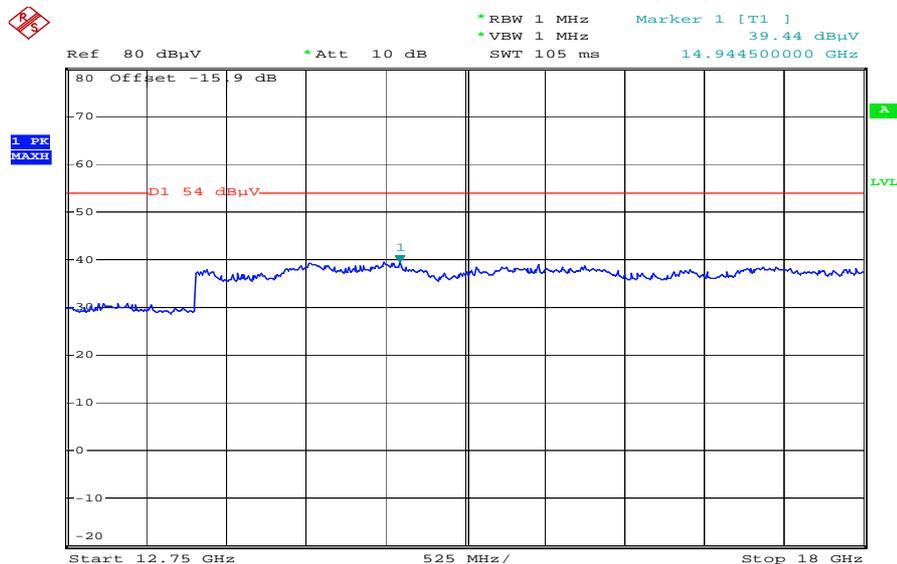
The carrier signal is notched with a 2.4 GHz band rejection filter.

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: 2.SEP.2011 12:28:11

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 26 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	

Results:

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

Result: The measurement is passed.

Plots: RX / Idle – mode

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

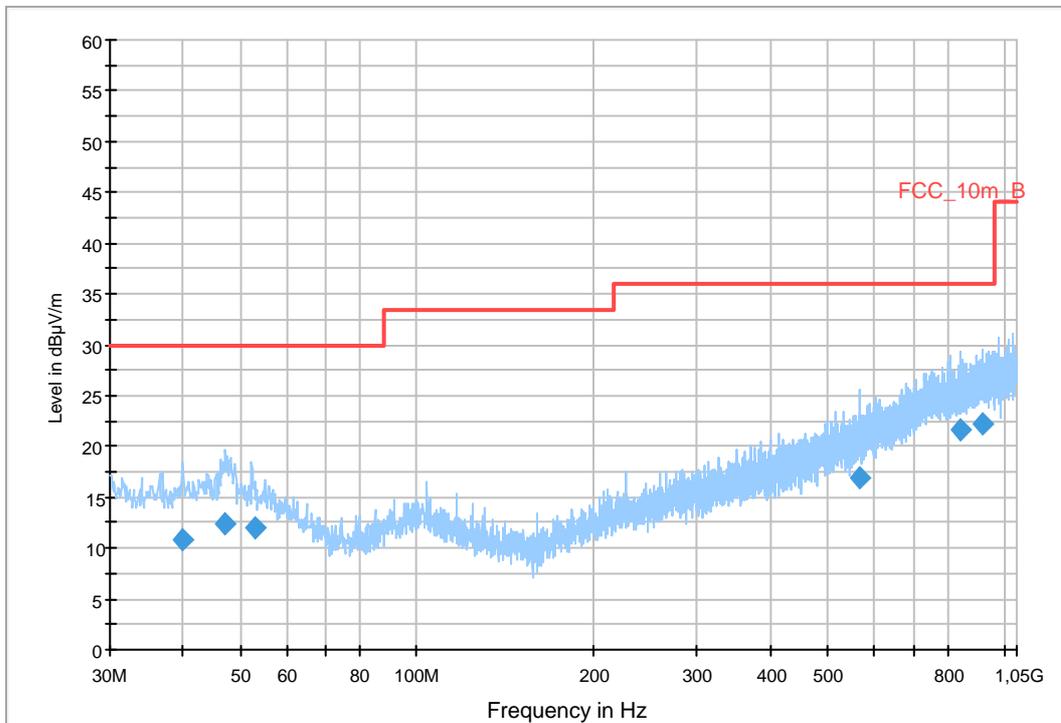
Common Information

EUT: AAD-3880123-BV
 Serial Number: BX902GHWNL (IMEI: 00440214 308402 2)
 Test Description: FCC part 15 B class B @ 10 m
 Operating Conditions: WLAN RX + charging
 Operator Name: Hennemann
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dBµV/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
39.759000	10.7	1000.0	120.000	125.0	V	85.0	13.4	19.3	30.0	
47.238450	12.5	1000.0	120.000	170.0	V	196.0	13.3	17.5	30.0	
52.878150	12.1	1000.0	120.000	98.0	V	83.0	13.1	17.9	30.0	
569.002050	17.0	1000.0	120.000	170.0	H	271.0	19.9	19.0	36.0	
841.665450	21.7	1000.0	120.000	170.0	H	102.0	24.4	14.3	36.0	
920.096100	22.3	1000.0	120.000	170.0	H	85.0	25.3	13.7	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 4.42

Signal Path: without Notch
FW 1.0

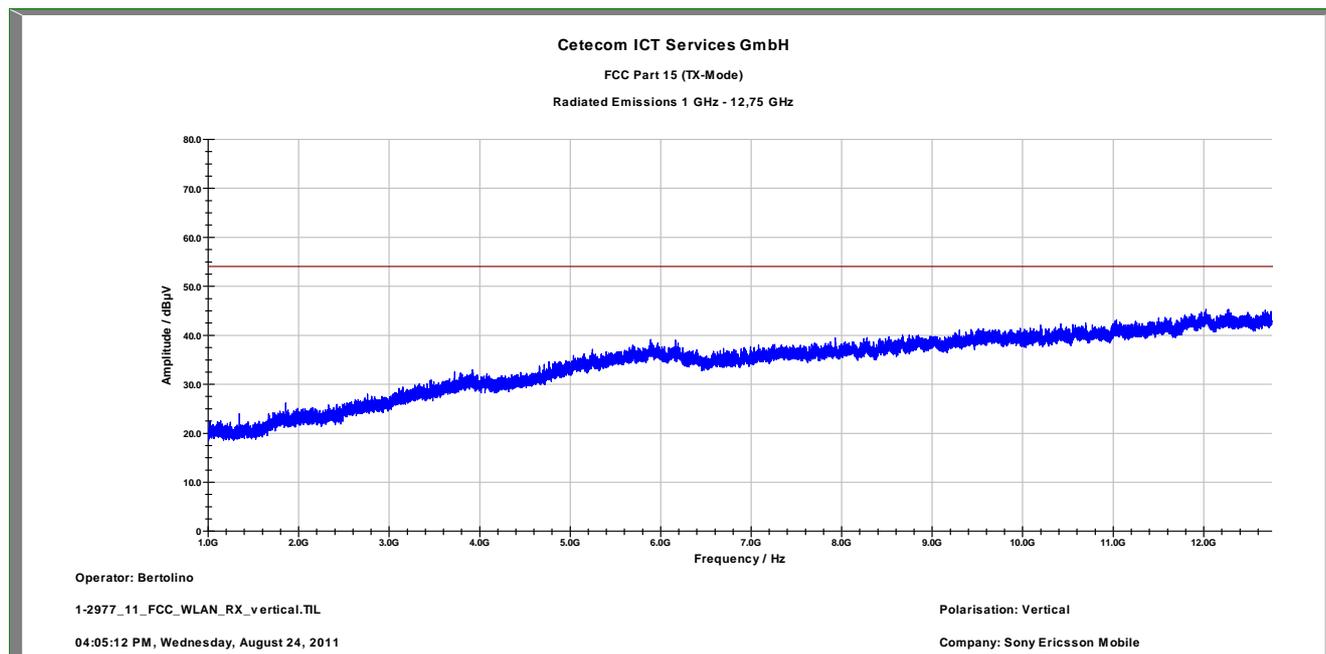
Antenna: VULB 9163
SN 9163-295, FW ---
Correction Table (vertical): VULP6113
Correction Table (horizontal): VULP6113
Correction Table (vertical): Cable_EN_1GHz (1005)
Correction Table (horizontal): Cable_EN_1GHz (1005)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]
@ GPIB0 (ADR 8), FW REV 3.12

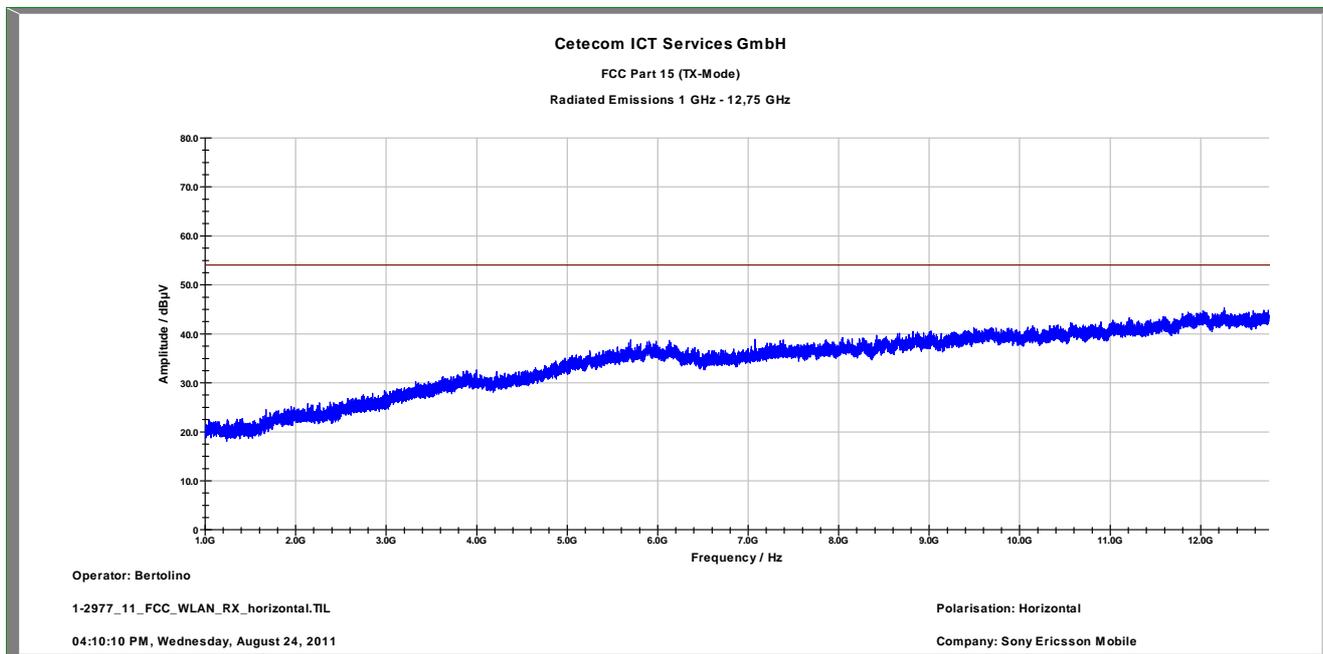
Turntable: Turntable [EMCO Turntable]
@ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

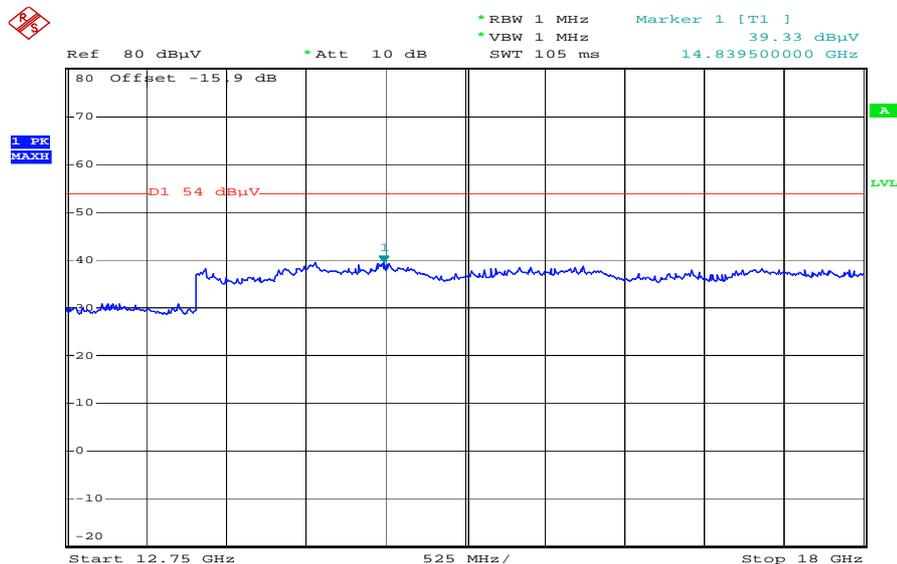
Plot 2: 1 GHz to 12.75 GHz, vertical polarization



Plot 3: 1 GHz to 12.75 GHz, horizontal polarization

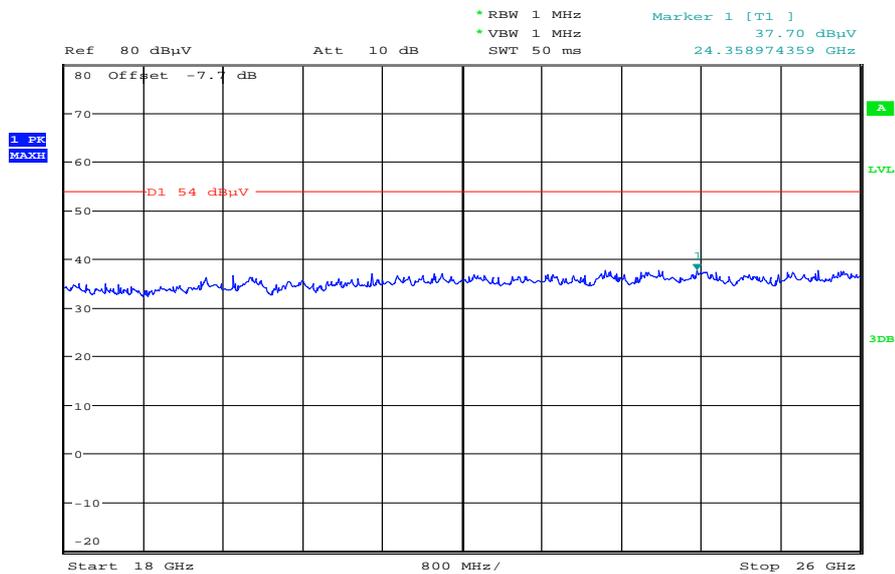


Plot 4: 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 2.SEP.2011 12:29:53

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



Date: 2.SEP.2011 12:10:50

9.12 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
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

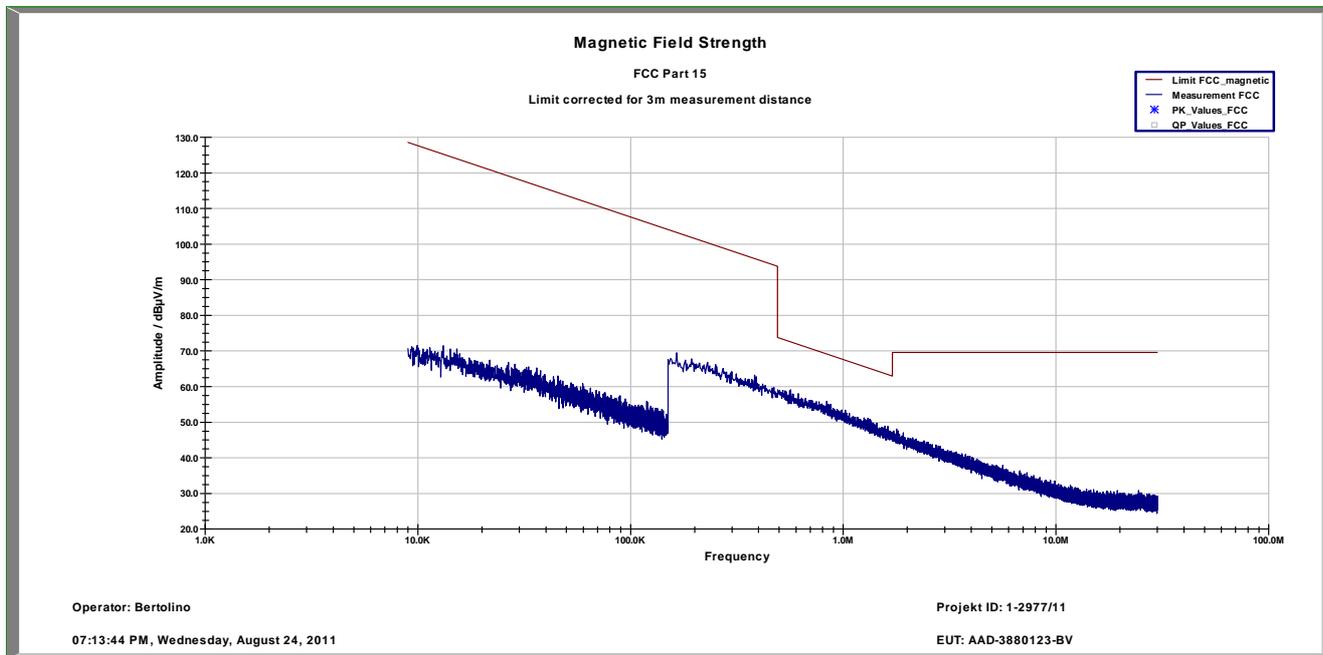
Results:

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

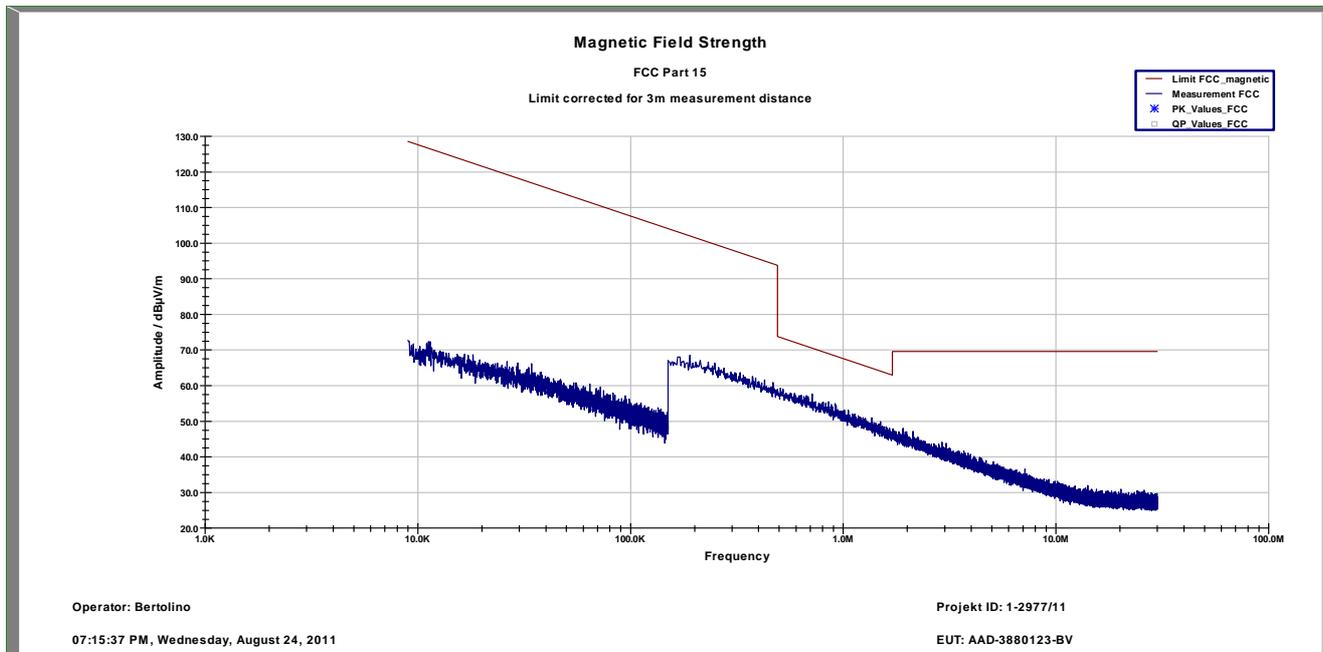
Result: The measurement is passed.

Plots: DSSS / b – mode

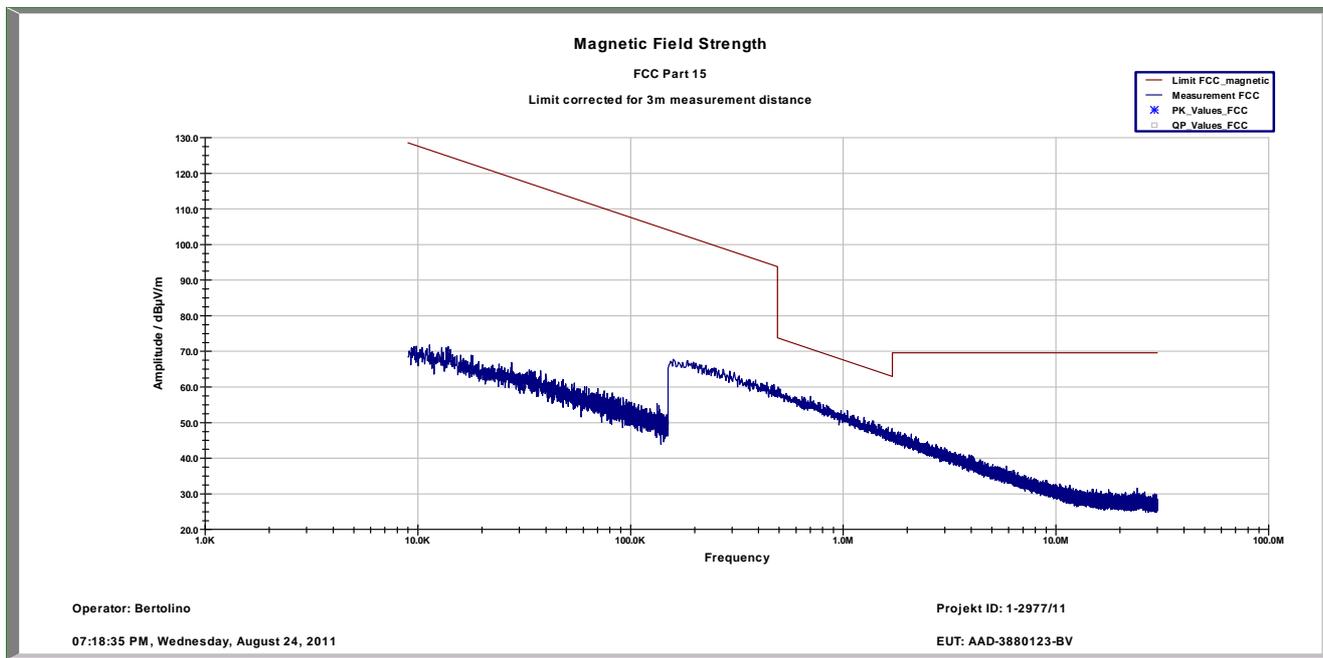
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

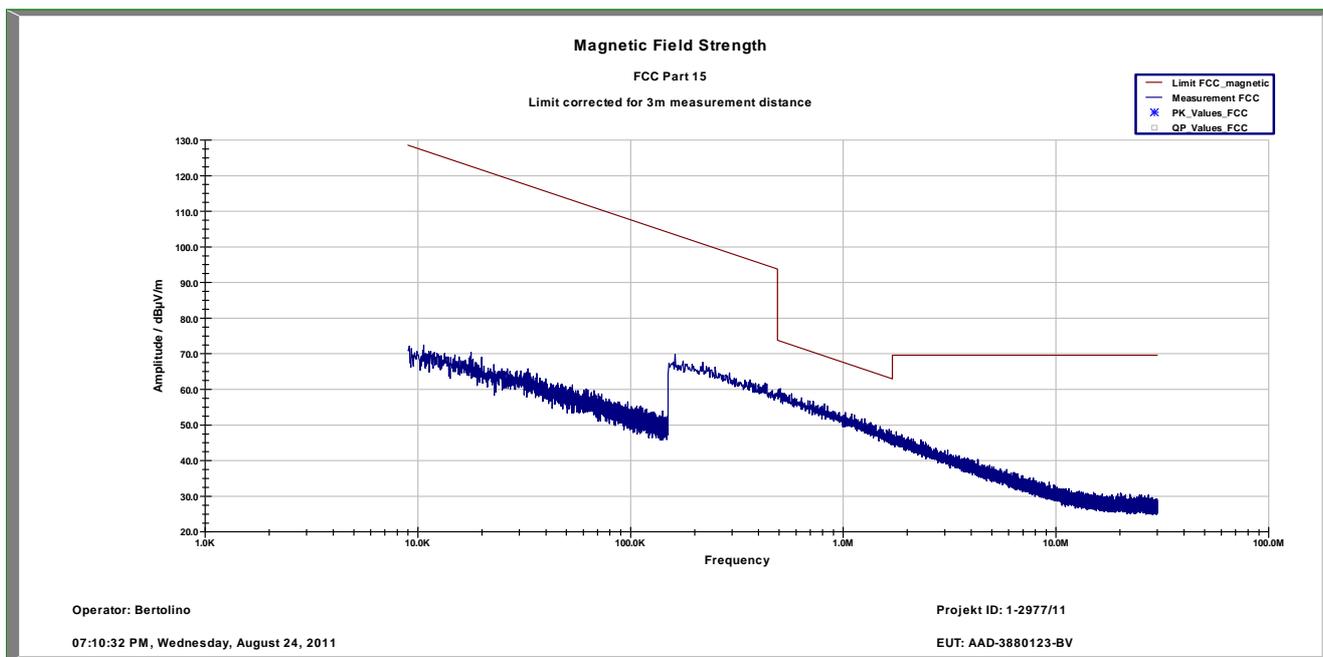


Plot 3: Highest channel, 9 kHz to 30 MHz

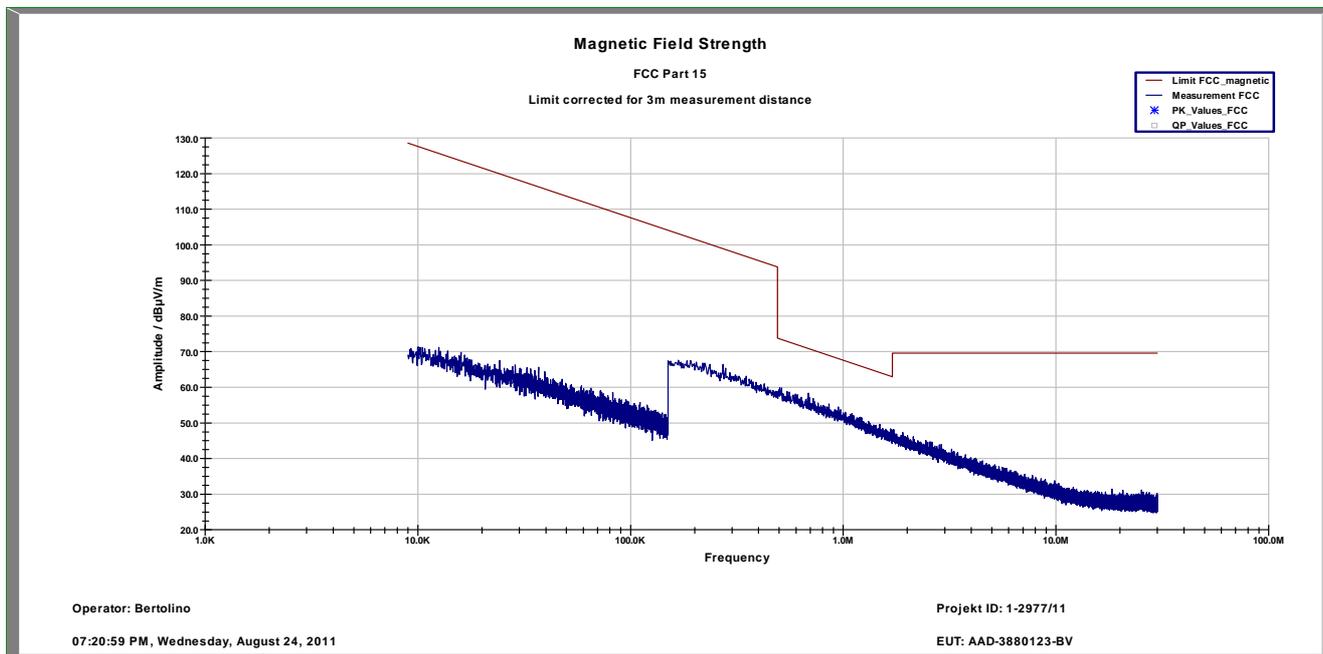


Plots: OFDM / g – mode

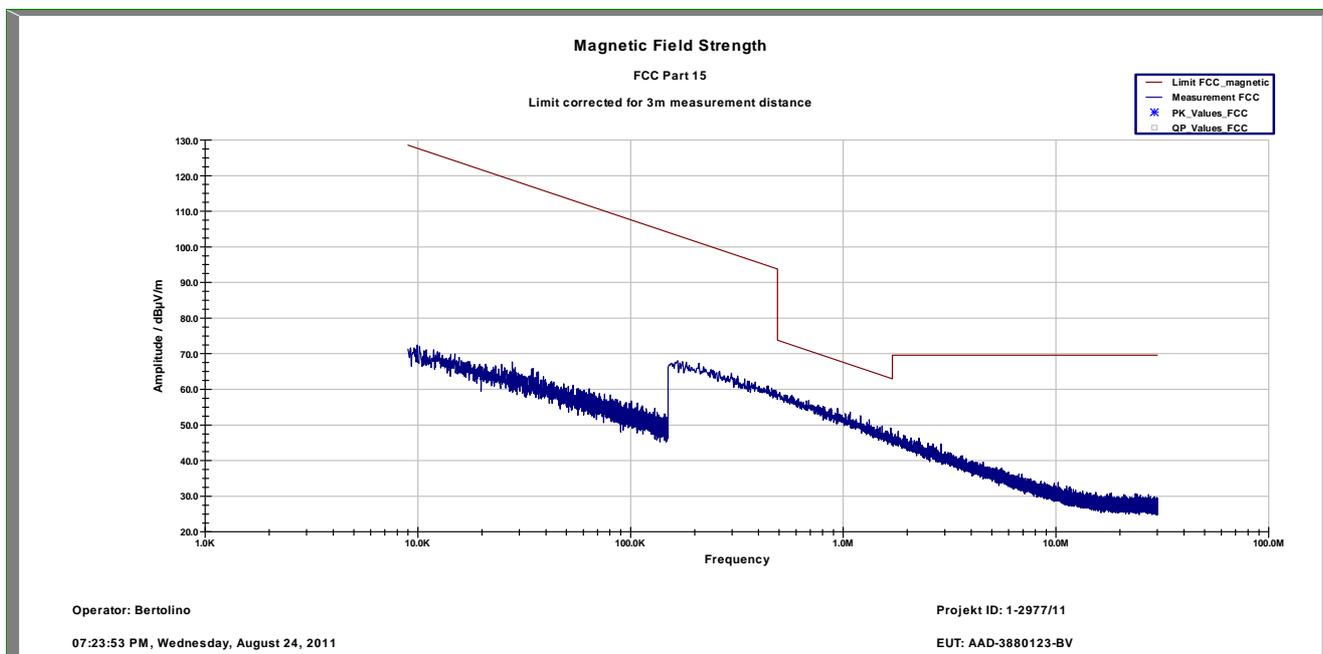
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

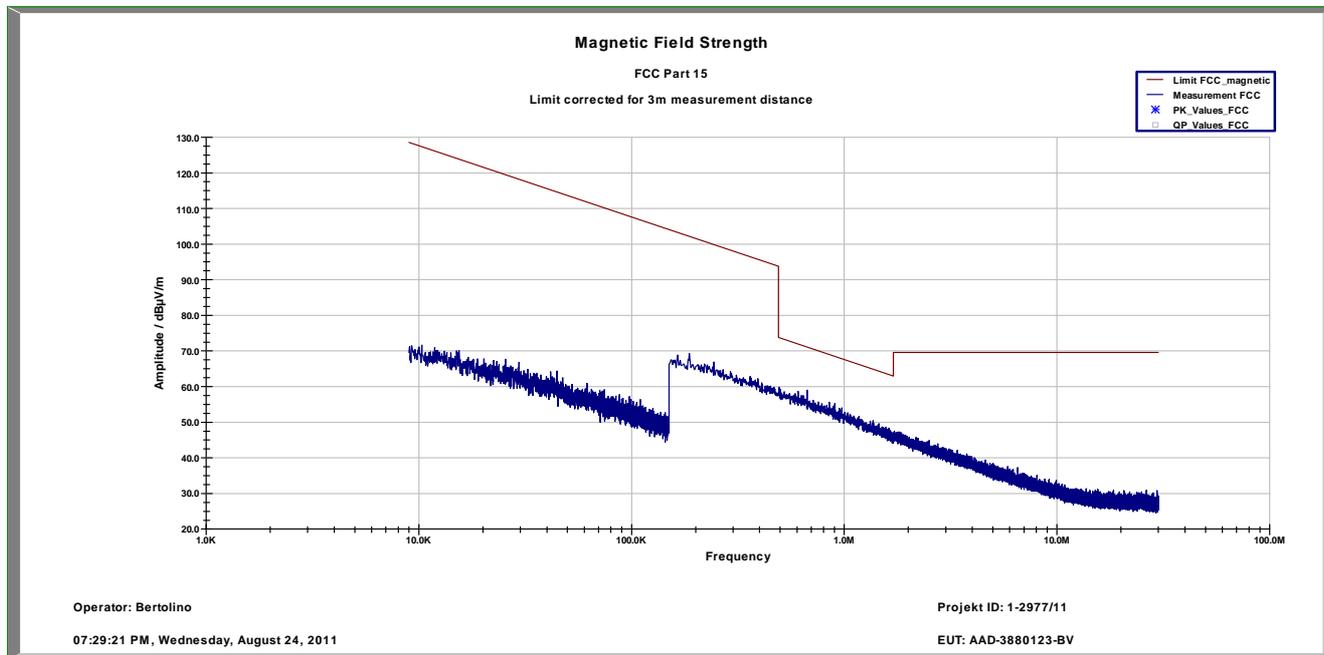


Plot 3: Highest channel, 9 kHz to 30 MHz

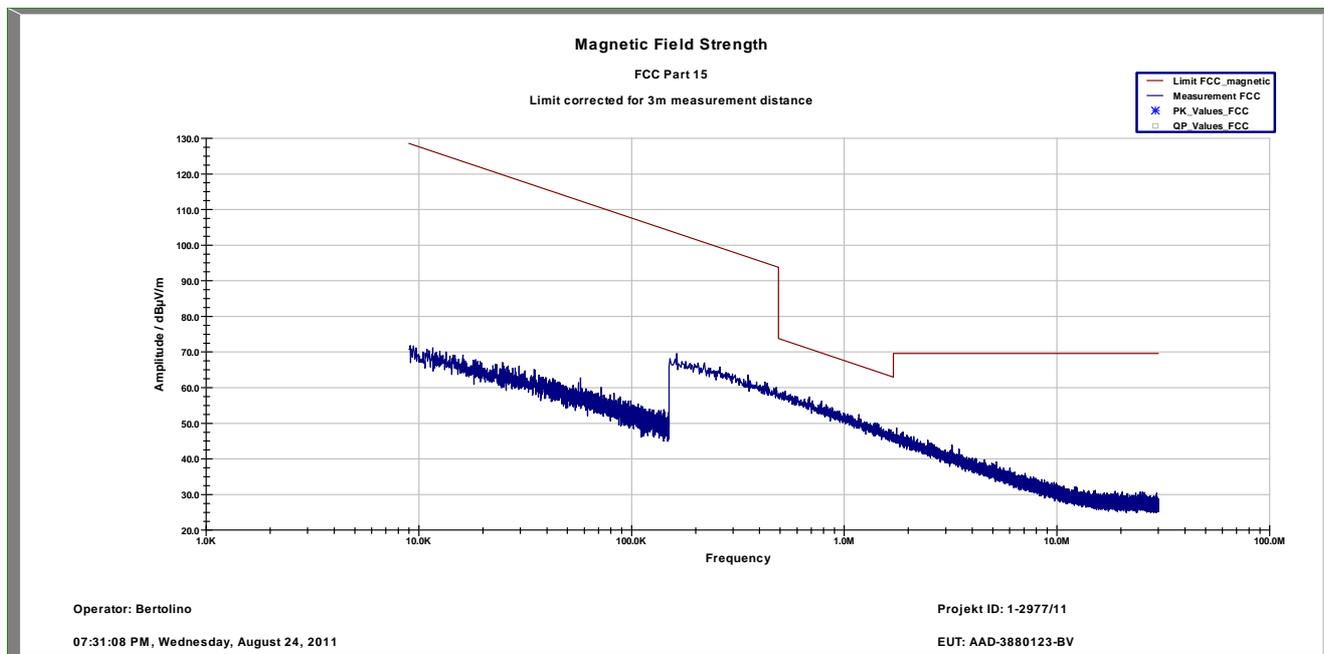


Plots: OFDM / n – mode

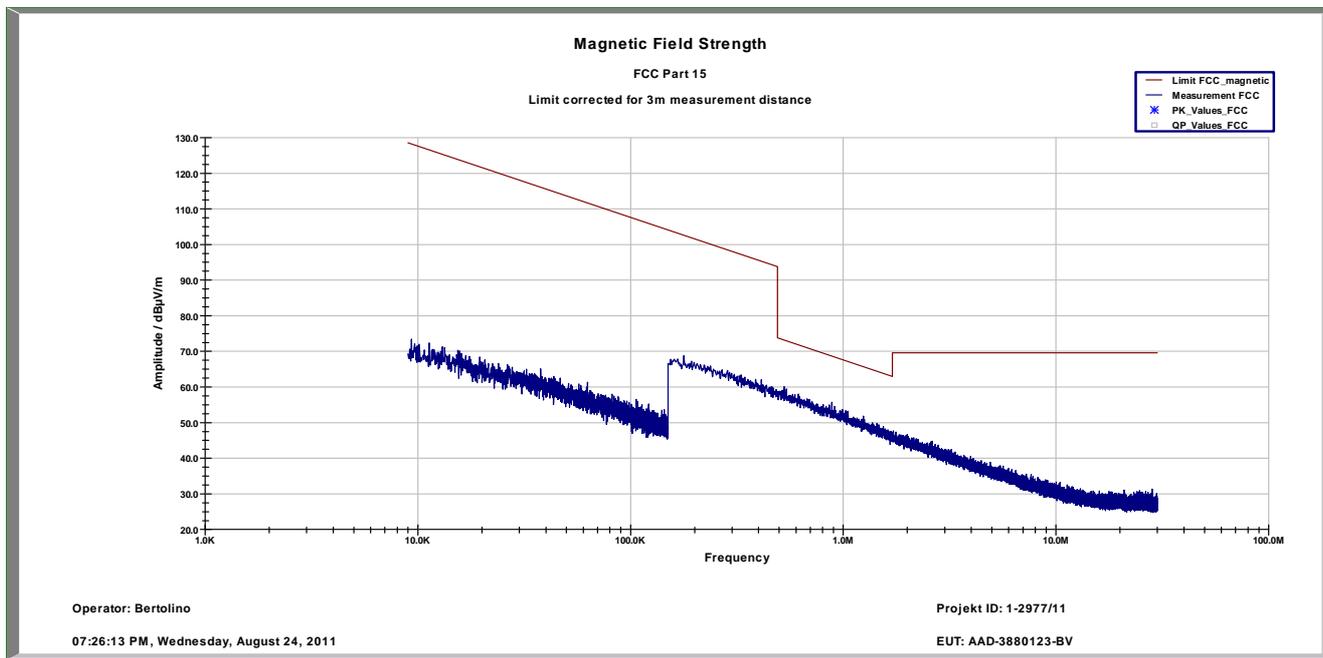
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

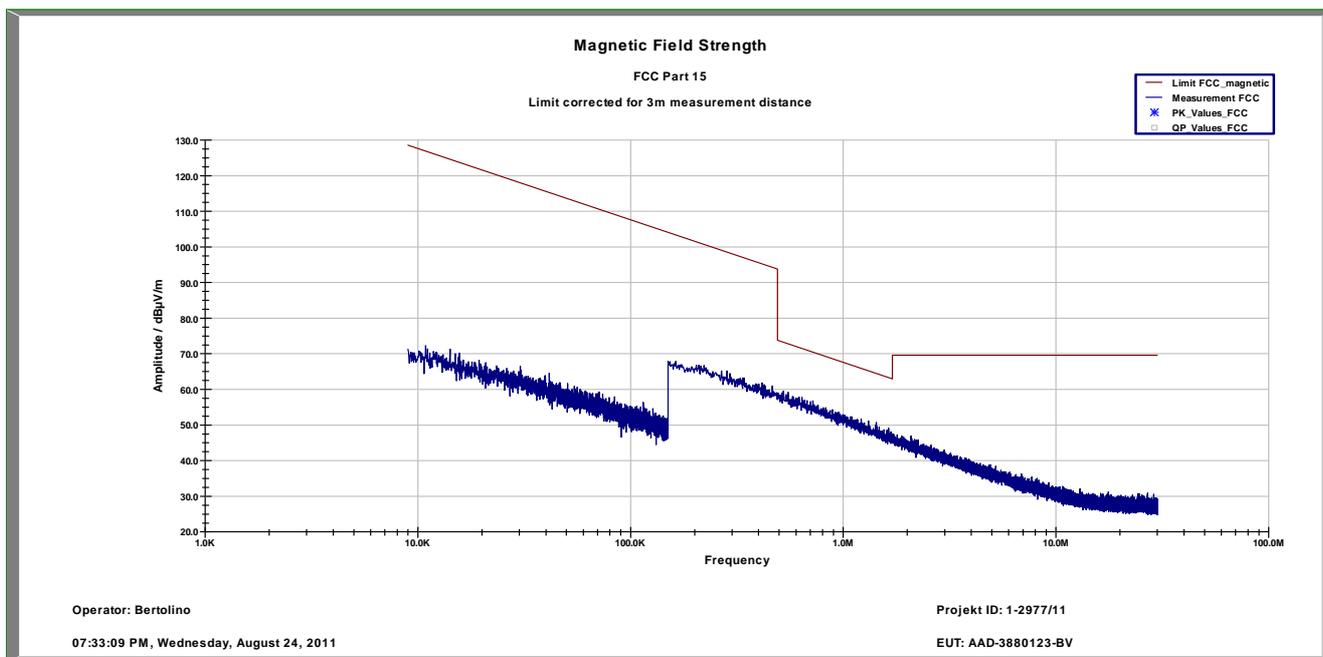


Plot 3: Highest channel, 9 kHz to 30 MHz



Plots: RX / Idle – mode

Plot 1: 9 kHz to 30 MHz



9.13 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 re-measured with average and quasi peak detection to show compliance to the limits.

Measurement:

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

Limits:

FCC		IC	
CFR Part 15.207(a)		ICES-003, Issue 4	
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

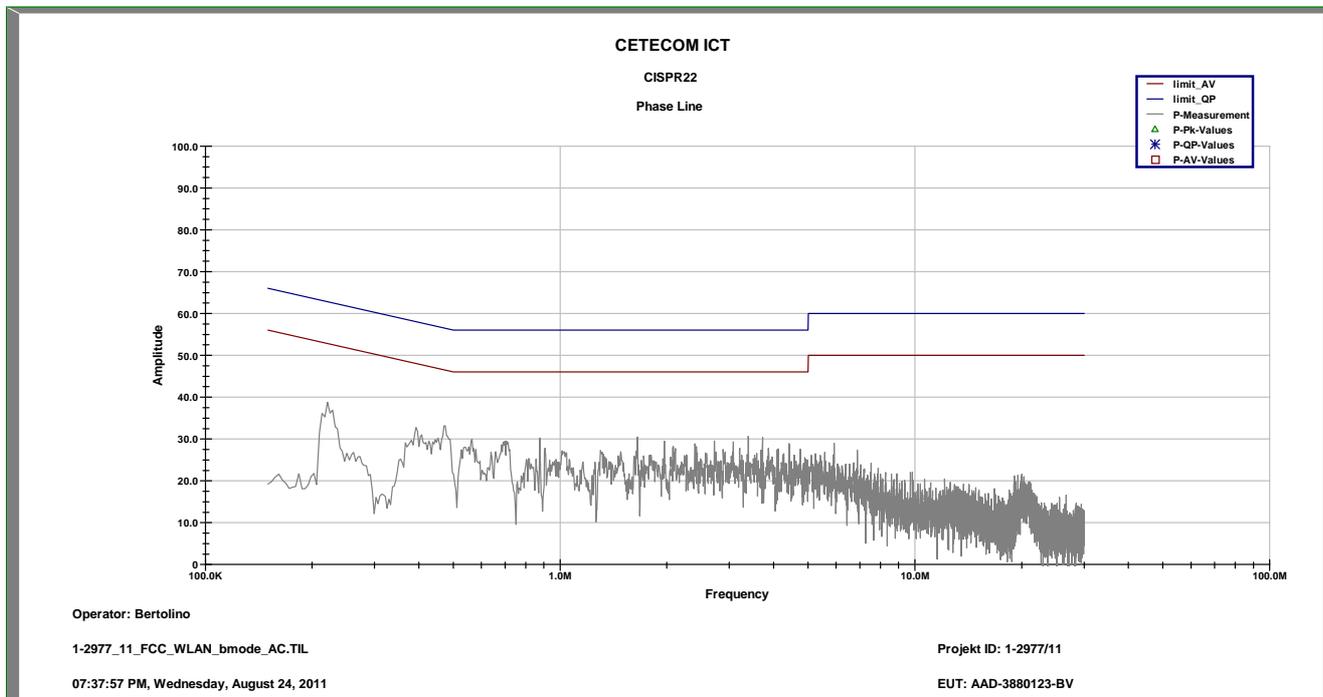
Results:

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

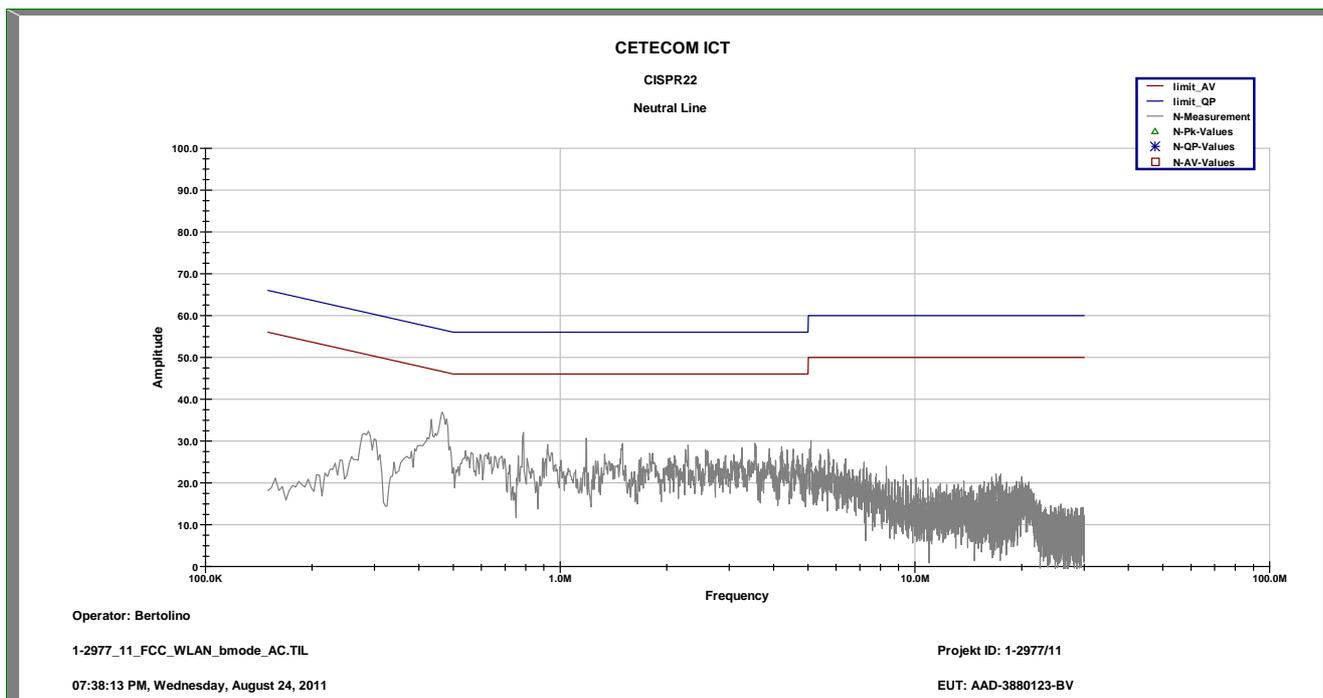
Result: The measurement is passed.

Plots:

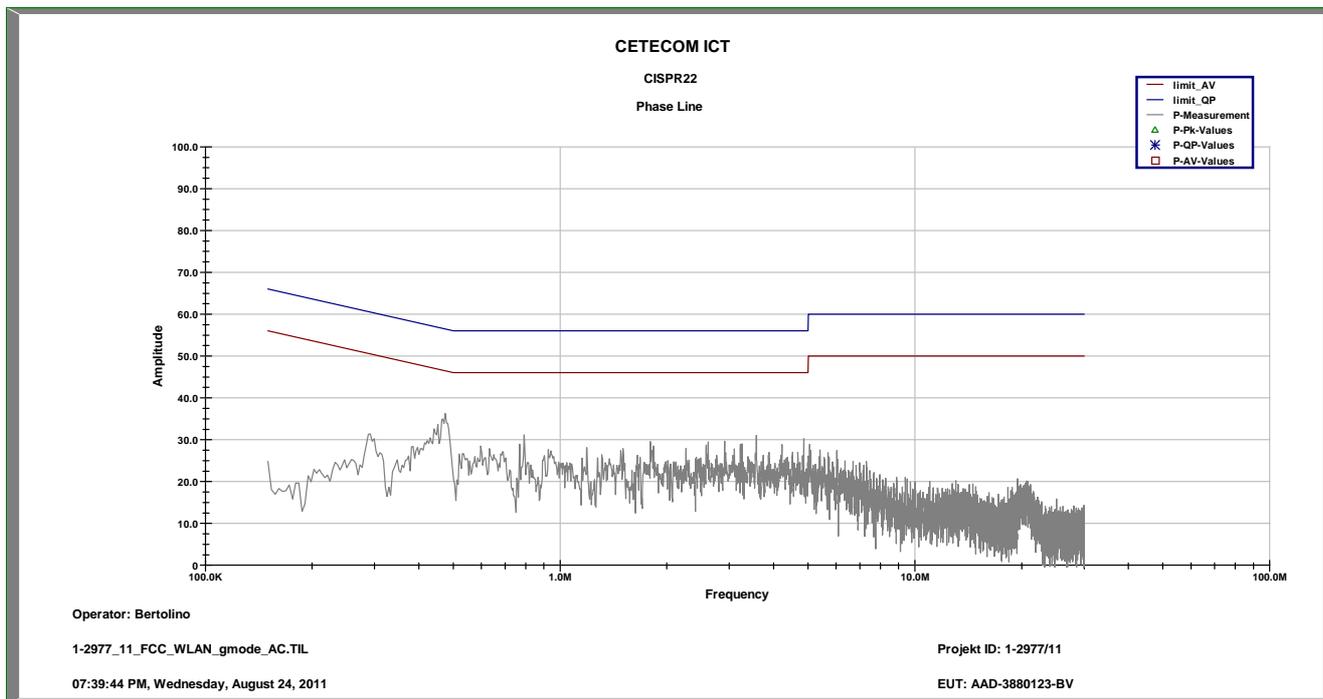
Plot 1: DSSS / b – mode, 9 kHz to 30 MHz, phase line



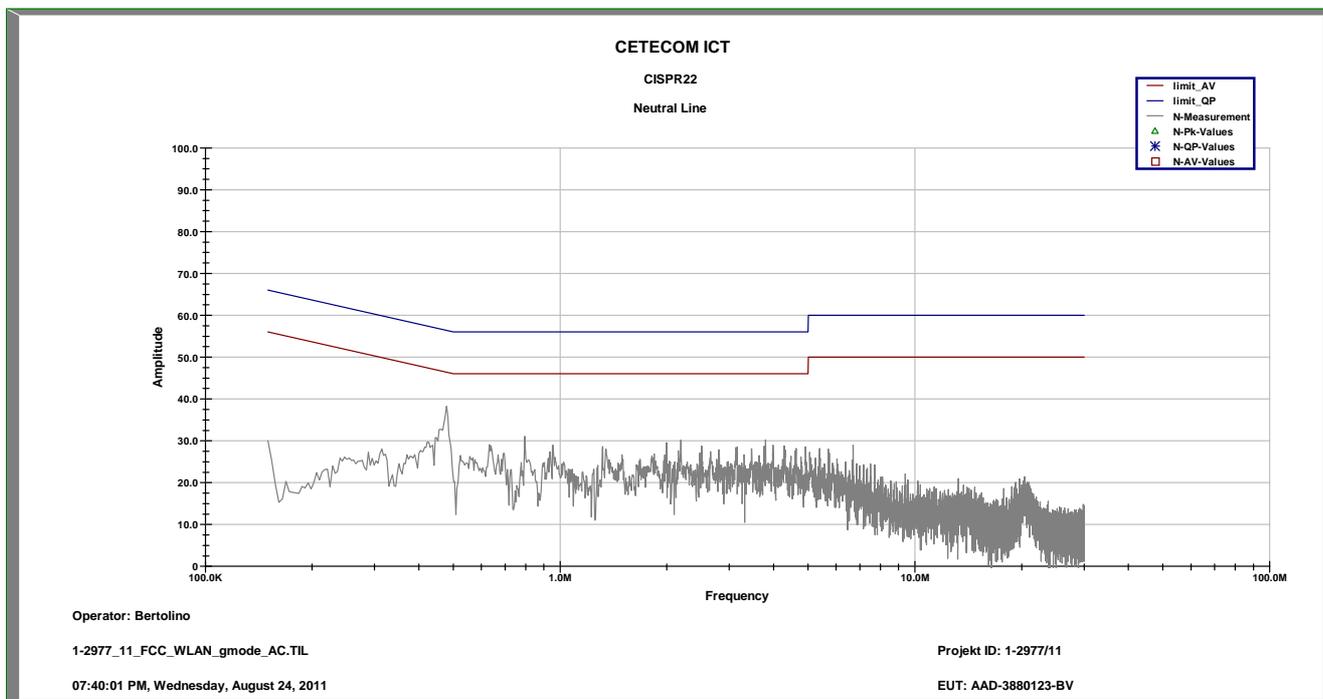
Plot 2: DSSS / b – mode, 9 kHz to 30 MHz, neutral line



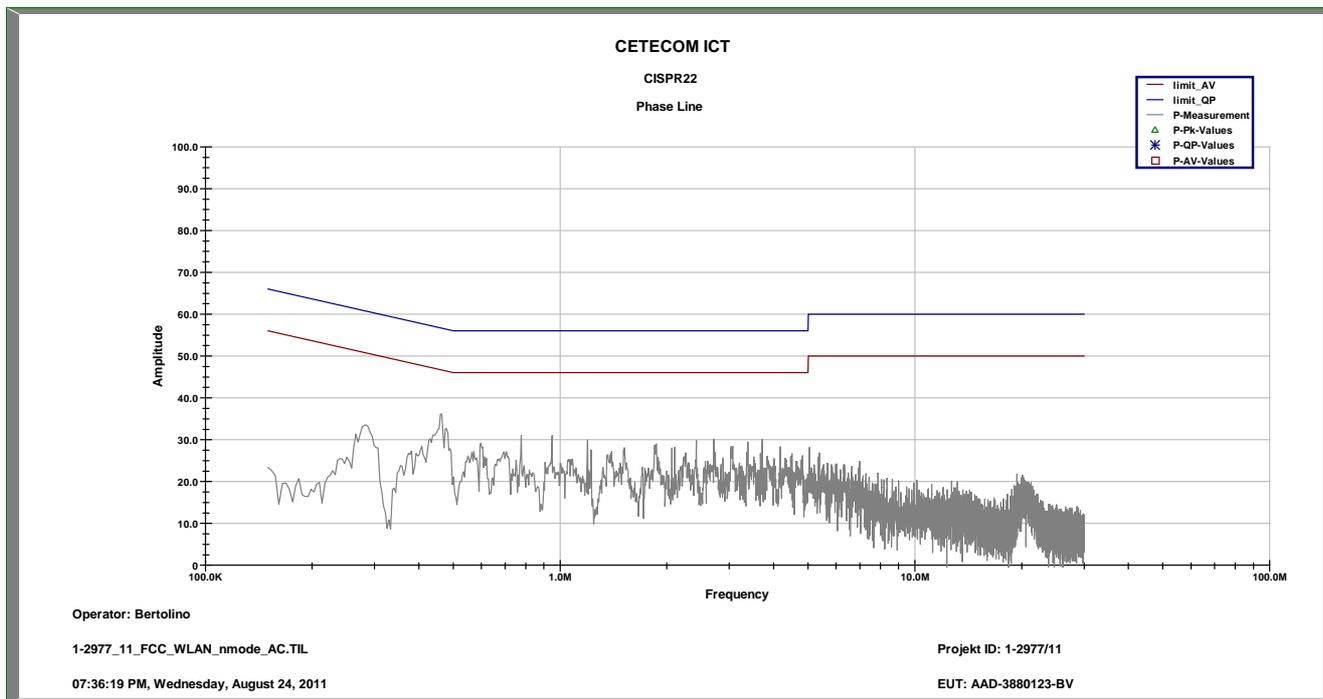
Plot 3: OFDM / g – mode, 9 kHz to 30 MHz, phase line



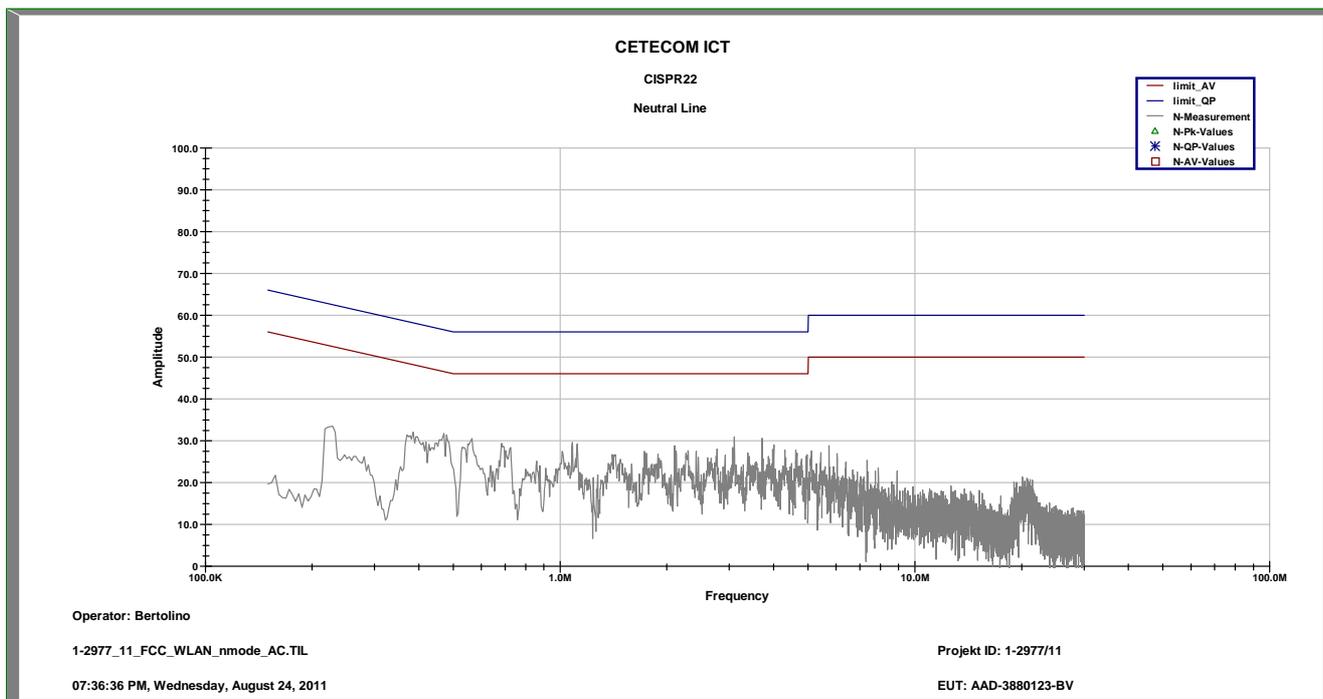
Plot 4: OFDM / g – mode, 9 kHz to 30 MHz, neutral line



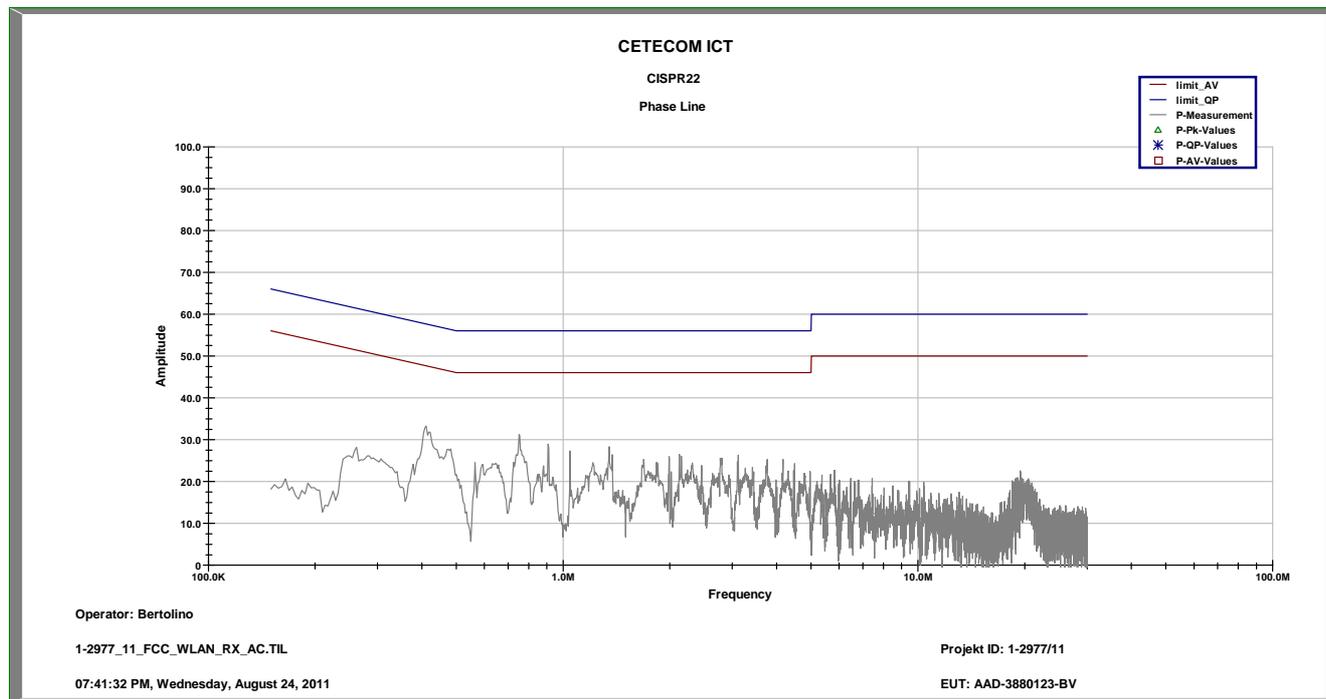
Plot 5: OFDM / n – mode, 9 kHz to 30 MHz, phase line



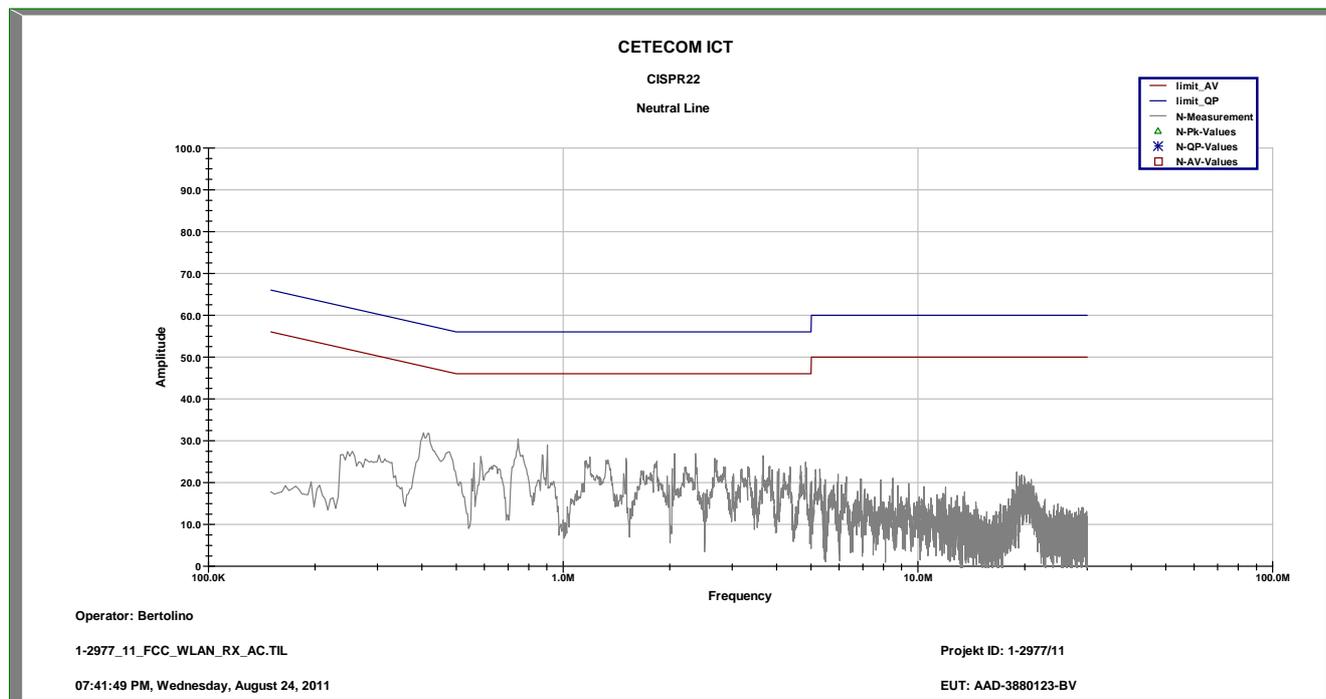
Plot 6: OFDM / n – mode, 9 kHz to 30 MHz, neutral line



Plot 7: RX / Idle – mode, 9 kHz to 30 MHz, phase line



Plot 8: 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
11	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
2	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKI!	11.05.2011	11.05.2013
3	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
4	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
5	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
6	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
7	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
8	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
9	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
10	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
11	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
12	n. a.	TILE- Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
13	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
14	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	vlKI!	08.09.2010	08.09.2012
15	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKI!	17.12.2008	17.12.2011
16	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000787	ne		
17	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002442	ne		
18	n. a.	Spectrum Analyzer 20 Hz - 50 GHz	FSU50	R&S	200012	300003443	ve	01.07.2010	01.07.2012
19	11b	Microwave System Amplifier, 0.5-26.5 GHz; 25 dB gain	83017A	HP Meßtechnik	00419	300002268	ev	10.03.2011	
20	n. a.	DC Power Supply 0 – 32V	1108-32	Heiden	001802	300001383	Ve	23.06.2010	23.06.2013

21	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
22	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
23	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
24	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	05.01.2011	05.01.2013
25	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	14.07.2011	14.07.2013
26	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
27	n. a.	Antenna Tower	Model 2175	ETS- LINDGREN	64762	300003745	izw		
28	n. a.	Positioning Controller	Model 2090	ETS- LINDGREN	64672	300003746	izw		
29	n. a.	Turntable Interface-Box	Model 105637	ETS- LINDGREN	44583	300003747	izw		
30	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
31	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	10.01.2011	10.01.2013

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
 vkl! 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