



TEST REPORT

Test report no.: 1-2977-35-06/11



Testing laboratory

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Accredited test laboratory:

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

Area of Testing: Radio/Satellite Communications

Applicant

Sony Ericsson Mobile Communications AB
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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: GSM Mobile Phone 850 / 900 / 1800 / 1900 / GPRS / EGPRS / UMTS / HSDPA / HSUPA / BT + EDR / WLAN + Hotspot / A-GPS / ANTplus
Model name: AAD-3880104-BV
FCC ID: PY7A3880104
IC: 4170B-A3880104
Frequency: ISM band 2400 MHz to 2483.5 MHz
(Lowest channel 01 – 2412 MHz, highest channel 11 – 2462 MHz)
Power supply: 3.70 V DC by power supply or battery EP500 CBA-0002019 + charger EP800 CAA-0002016-BV
Temperature range: -20 °C to +55 °C

Test performed:

2011-05-18 Marco Bertolino

Test report authorised:

2011-05-18 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:	2011-05-03
Date of receipt of test item:	2011-05-09
Start of test:	2011-05-09
End of test:	2011-05-13
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Version	Test standard description
47 CFR Part 15	2009-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	2010-12	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

4 Test environment

Temperature:	T_{nom}	+23 °C during room temperature tests
	T_{max}	+55 °C during high temperature test
	T_{min}	-20 °C during low temperature test
Relative humidity content:		52 %
Air pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.70 V DC by power supply or battery EP500 CBA-0002019 + charger EP800 CAA-0002016-BV
	V_{max}	4.07 V
	V_{min}	3.33 V

5 Test item

Kind of test item	:	GSM Mobile Phone 850 / 900 / 1800 / 1900 / GPRS / EGPRS / UMTS / HSDPA / HSUPA / BT + EDR / WLAN + Hotspot / A-GPS /ANTplus
Type identification	:	AAD-3880104-BV
S/N serial number	:	WLAN radiated units: BX902C78TH, BX902C6RWR WLAN conducted units: BX902C7937, BX902C6RXK
HW hardware status	:	AP
SW software status	:	4.0.A.0.195 ATP R1A034
Frequency band [MHz]	:	ISM band 2400 MHz to 2483.5 MHz (Lowest channel 01 – 2412 MHz, highest channel 11 – 2462 MHz)
Type of modulation	:	DSSS and OFDM technology with BPSK, QPSK, 16 - & 64 - QAM modulation.
Number of channels	:	11
Antenna	:	Integrated printed antenna → for more information, please take a look at the annex – internal photos of the EUT.
Power supply	:	3.70 V DC by power supply or battery EP500 CBA-0002019 + charger EP800 CAA-0002016-BV
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	2011-05-18	-/-

Test specification clause	Test case	Temperature conditions	Power source voltages	Mode	Pass	Fail	NA	NP	Results (max.)
§15.247(b)(4) RSS 210 / A8.4(2)	Antenna gain	Nominal	Nominal	DSSS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.247(e) RSS 210 / A8.2(b)	Power spectral density	Nominal	Nominal	DSSS OFDM 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
§15.107(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 measurement testing

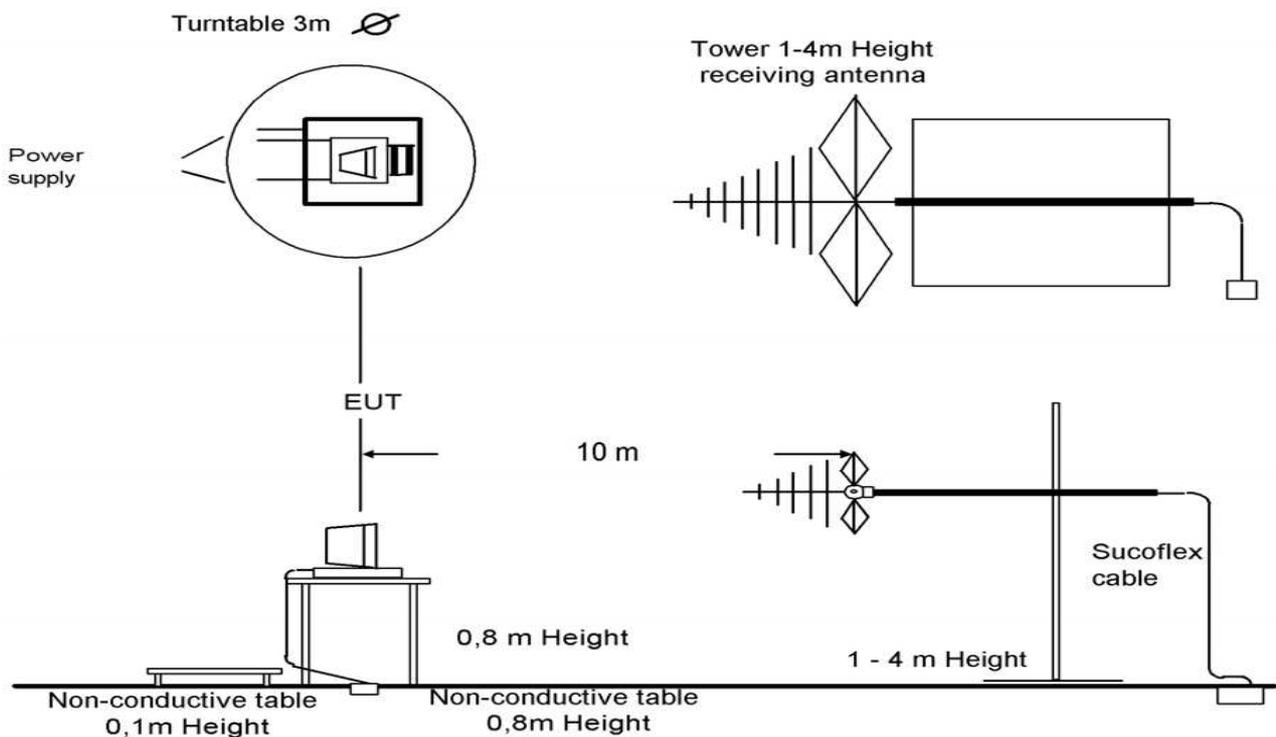
8.1 Description of test setup

8.1.1 Radiated measurements

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

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

Semi anechoic chamber



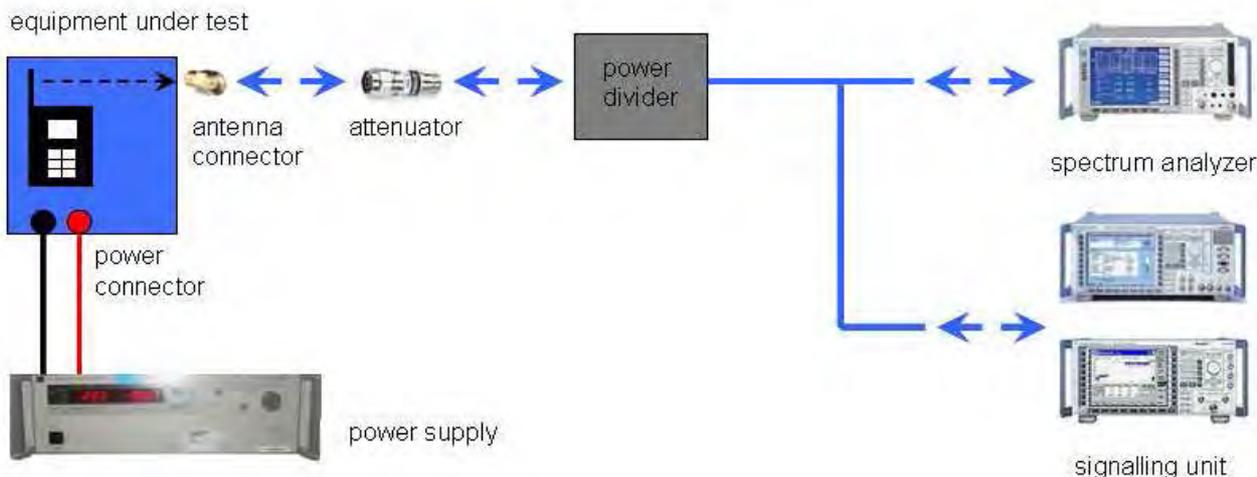
Picture 1: Diagram radiated measurements

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

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

8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

8.2 Additional comments

Reference documents: WBTX command list

Special test descriptions:

Worst case configurations:	DSSS / b – mode	X,0,1,1500,25,0,21
	OFDM / g – mode	X,5,2,1500,25,0,17
	OFDM / n – mode	X,17,3,1500,25,0,17

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	:	1-2977-35-06/11
Equipment model number	:	AAD-3880104-BV
Certification number	:	4170B-A3880104
Manufacturer (complete address)	:	Sony Ericsson Mobile Communications AB Nya Vattentornet 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 01 – 2412 MHz, highest channel 11 – 2462 MHz)
RF-power [W] (max.)	:	<u>Conducted:</u> DSSS / b – mode: 224.39 mW OFDM / g – mode: 331.89 mW OFDM / n – mode: 328.85 mW <u>Radiated:</u> DSSS / b – mode: 180.72 mW OFDM / g – mode: 250.61 mW OFDM / n – mode: 248.31 mW
Occupied bandwidth (99%-BW) [kHz]	:	DSSS / b – mode: 16.11 MHz OFDM / g – mode: 18.12 MHz OFDM / n – mode: 18.86 MHz
Type of modulation	:	DSSS & OFDM technology with BPSK, QPSK, 16- and 64 QAM modulation.
Emission designator (TRC-43)	:	DSSS / b – mode: 16M1G1D OFDM / g – mode: 18M1G7D OFDM / n – mode: 18M9G7D
Antenna information	:	Integrated printed antenna → for more information, please take a look at the annex – internal photos of the EUT.
Transmitter spurious (worst case) [dBμV/m @ 3m]:		DSSS / b – mode: 49.6 @ 4824 MHz (1 MHz / 10 Hz) OFDM / g – mode: 51.5 @ 2390 MHz (1 MHz / 10 Hz) OFDM / n – mode: 50.0 @ 2390 MHz (1 MHz / 10 Hz)
Receiver spurious (worst case) [dBμV/m @ 3m]:		43.0 dBμV/m @ 3m @ 12 GHz (noise floor)

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.

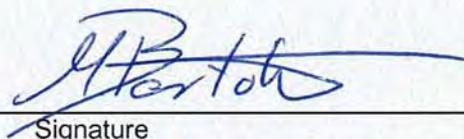
Laboratory manager:

2011-05-18

Marco Bertolino

Date

Name



Signature

9 Measurement results

9.1 Maximum output power (conducted)

Description:

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

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	1s
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	22.83	22.78	22.03	22.02
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	24.53	24.44	24.41	24.49	24.38	24.40	24.37	24.41
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	24.43	24.46	24.39	24.53	24.56	24.43	24.36	23.82
Measurement uncertainty	± 1.5 dB							

Result: Selected data rate for all measurements:

DSSS / b – mode:

OFDM / g – mode:

OFDM / n – mode:

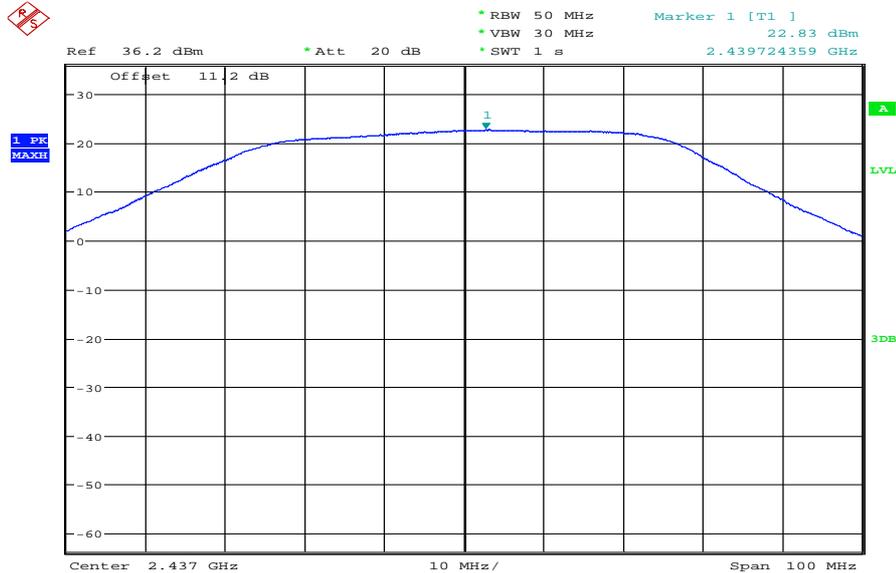
1 MBit/s

6 MBit/s

MCS4

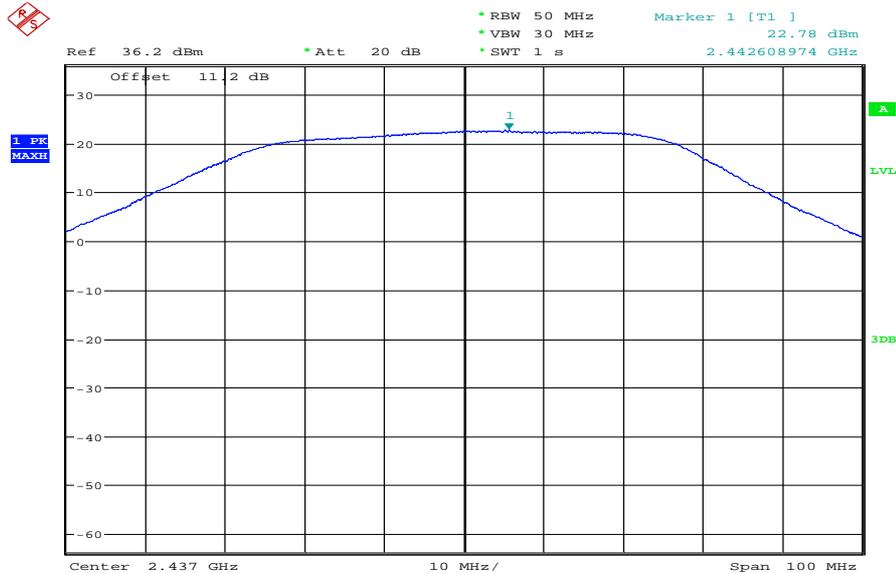
Plots: DSSS / b – mode

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



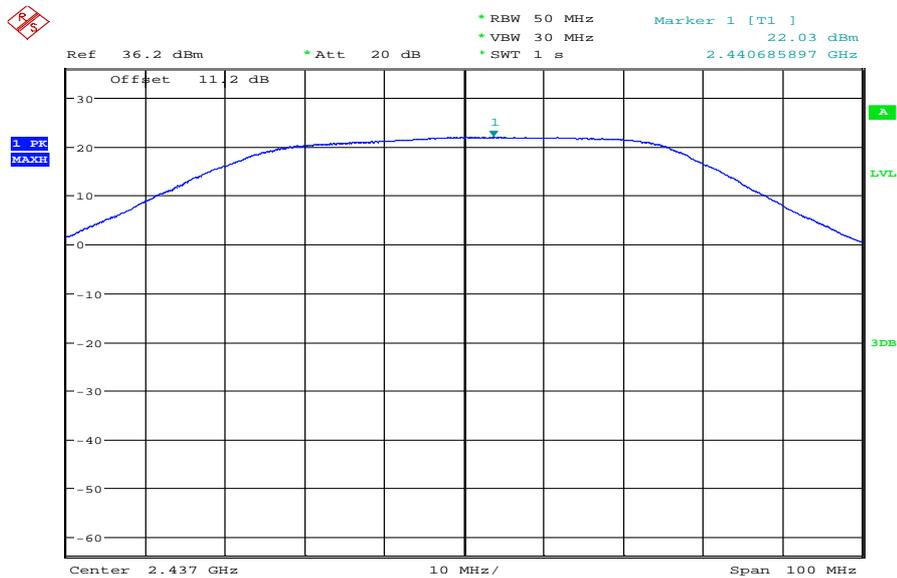
Date: 9.MAY.2011 18:50:26

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



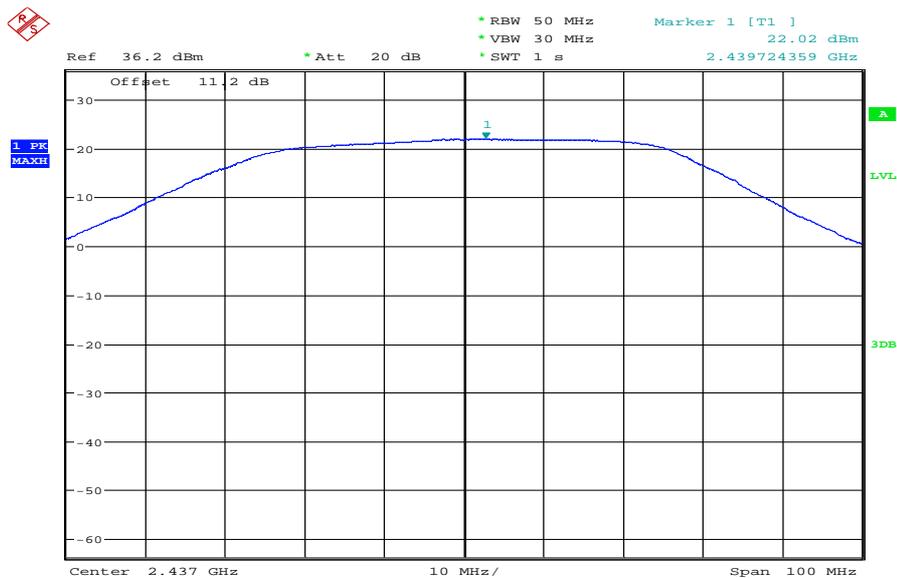
Date: 9.MAY.2011 18:51:55

Plot 3: TX mode, middle channel, 5.5 MBit/s



Date: 9.MAY.2011 18:53:10

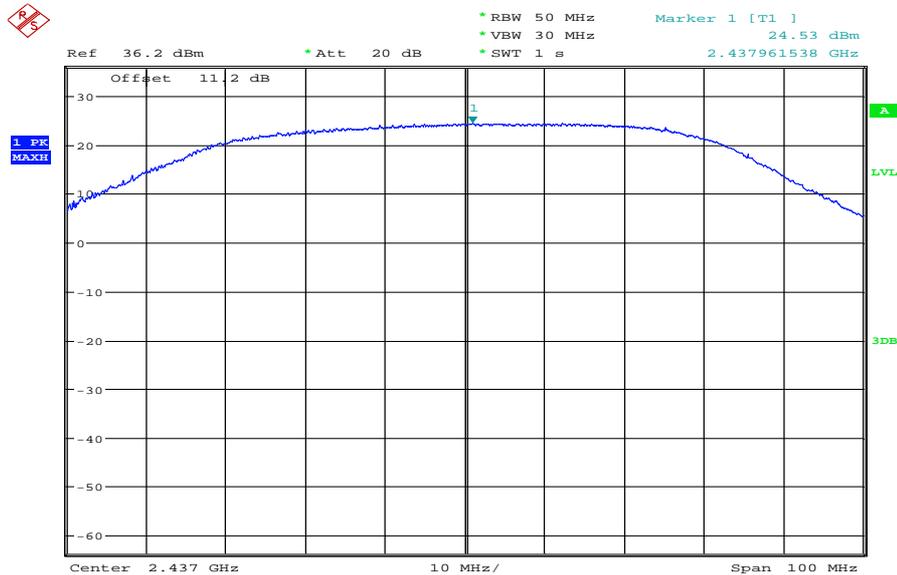
Plot 4: TX mode, middle channel, 11 MBit/s



Date: 9.MAY.2011 18:54:33

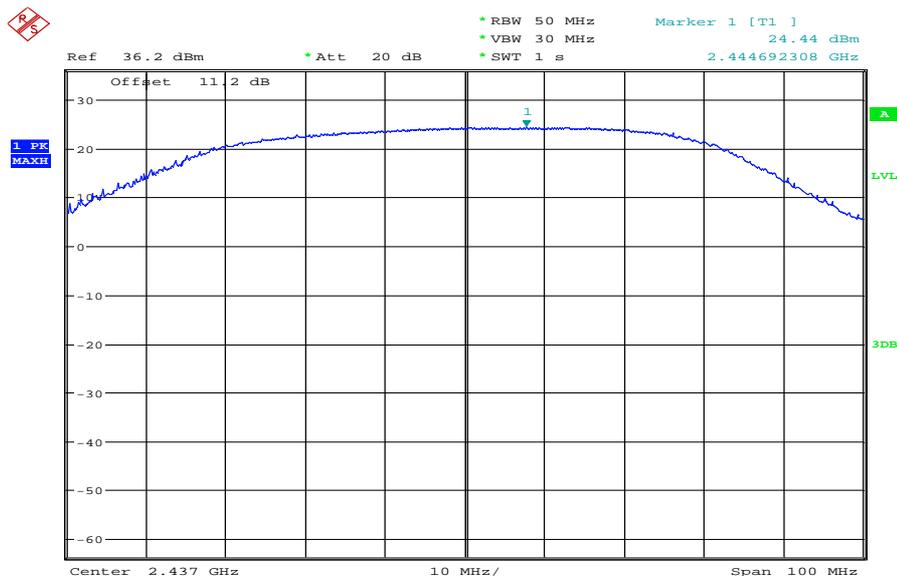
Plots: OFDM / g – mode

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



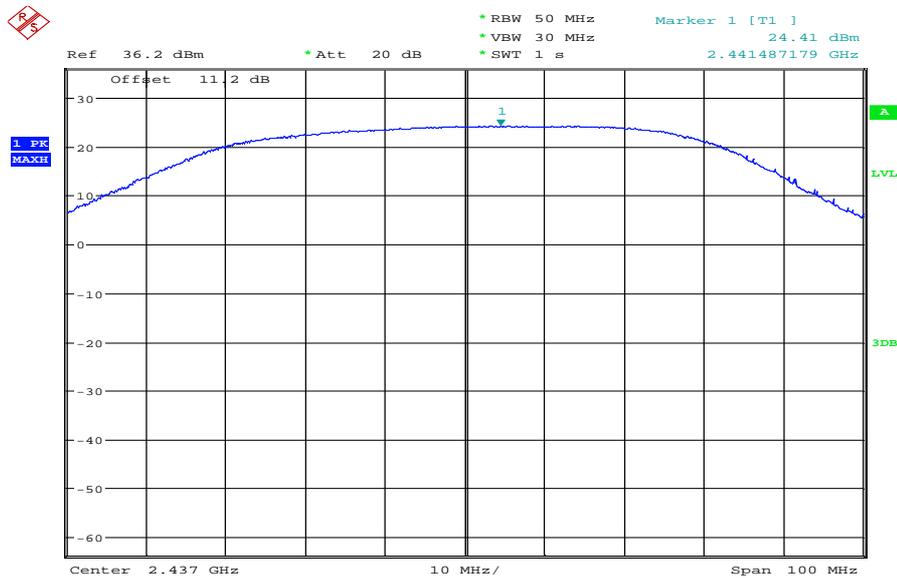
Date: 9.MAY.2011 18:59:38

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



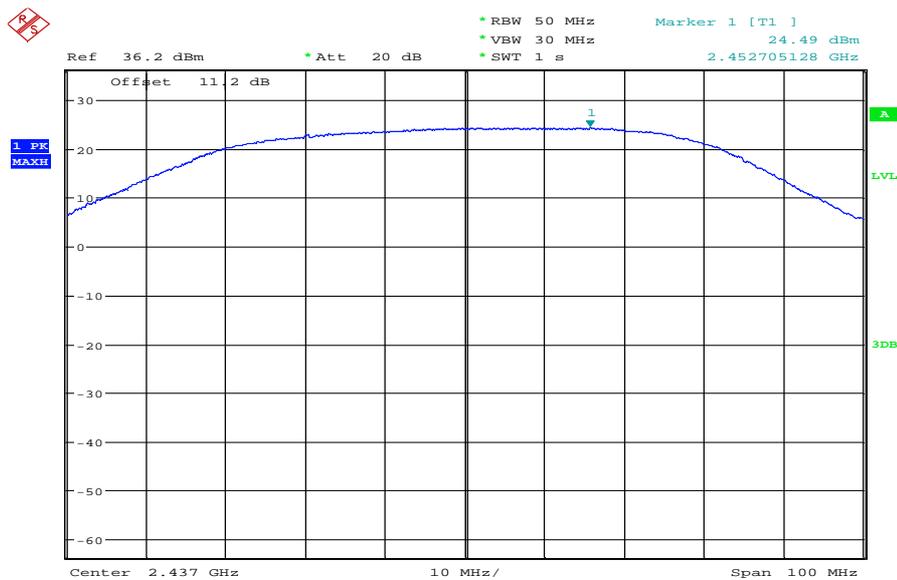
Date: 9.MAY.2011 19:01:22

Plot 3: TX mode, middle channel, 12 MBit/s



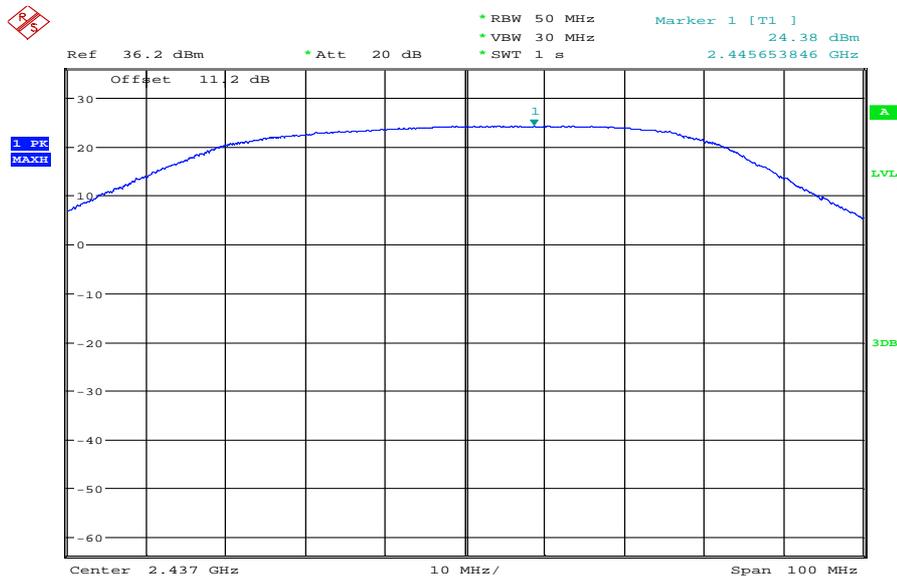
Date: 9.MAY.2011 19:02:47

Plot 4: TX mode, middle channel, 18 MBit/s



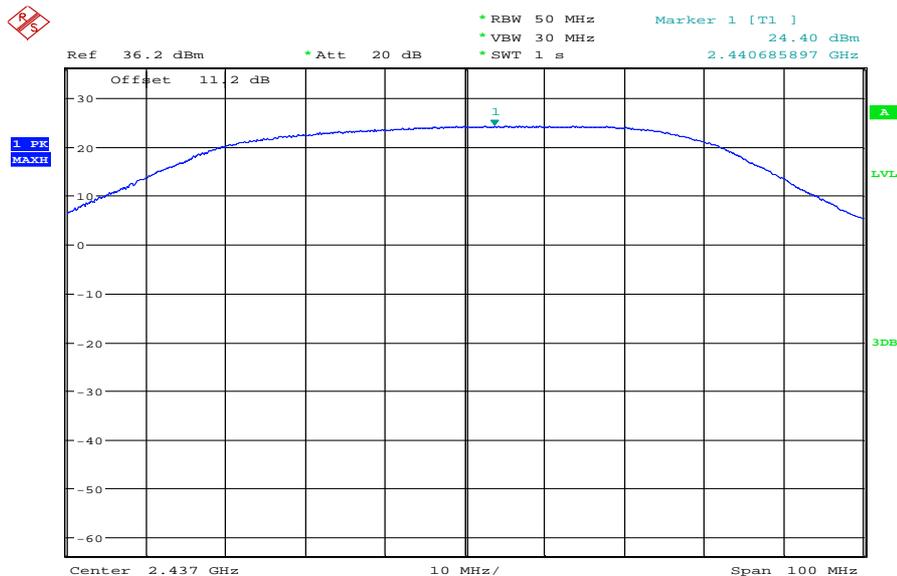
Date: 9.MAY.2011 19:04:21

Plot 5: TX mode, middle channel, 24 MBit/s



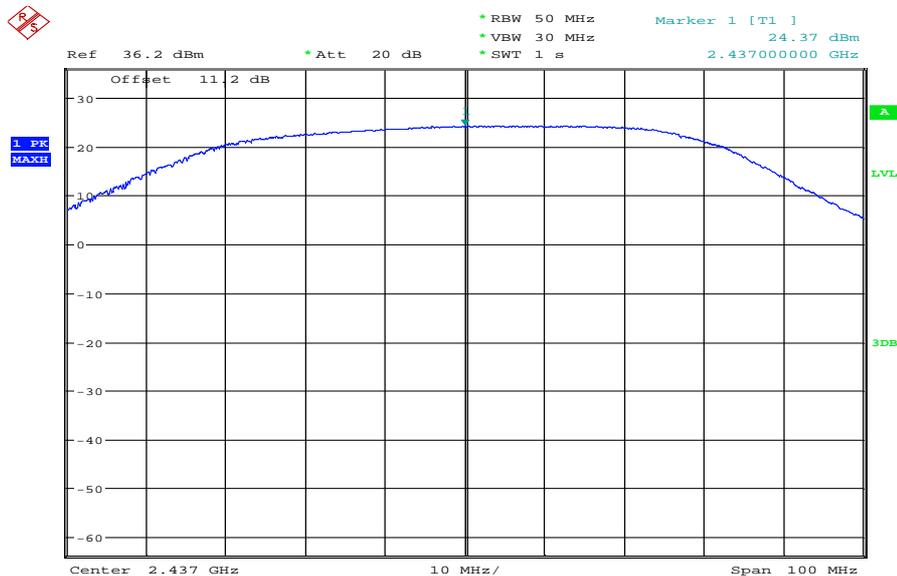
Date: 9.MAY.2011 19:05:23

Plot 6: TX mode, middle channel, 36 MBit/s



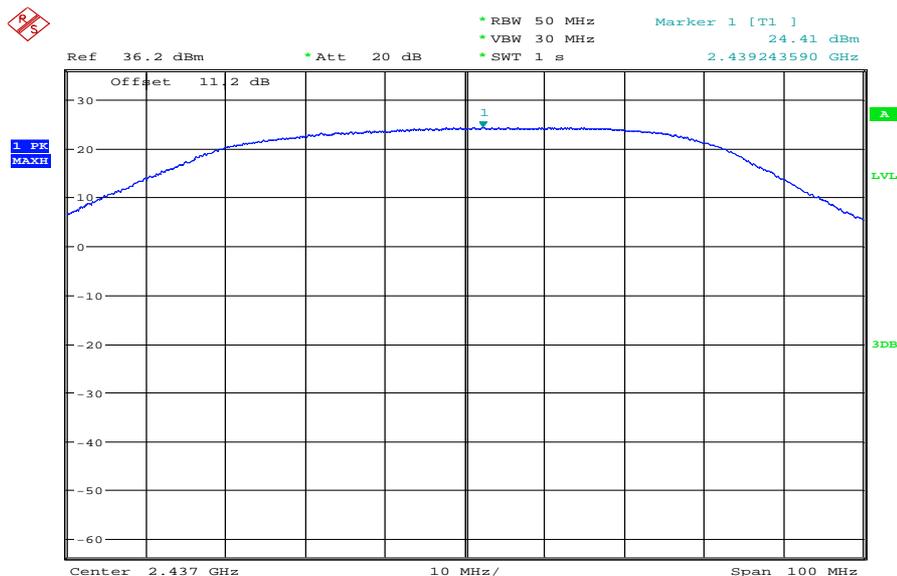
Date: 9.MAY.2011 19:06:40

Plot 7: TX mode, middle channel, 48 MBit/s



Date: 9.MAY.2011 19:07:55

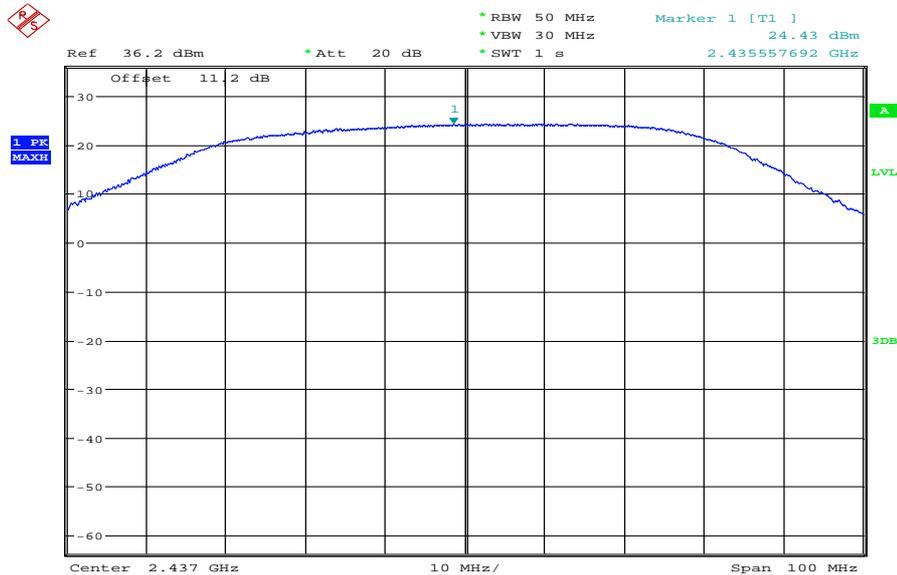
Plot 8: TX mode, middle channel, 54 MBit/s



Date: 9.MAY.2011 19:09:03

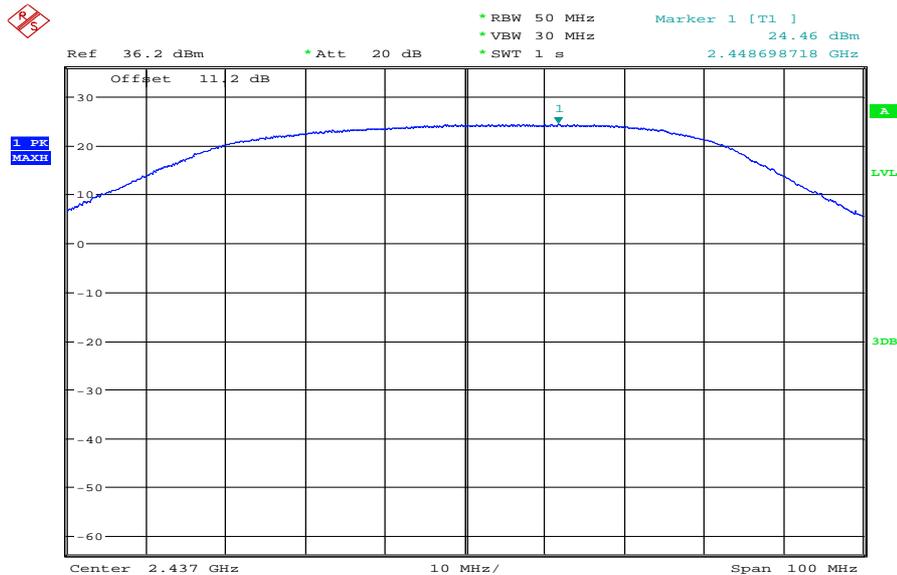
Plots: OFDM / n – mode

Plot 1: TX mode, middle channel, MCS0



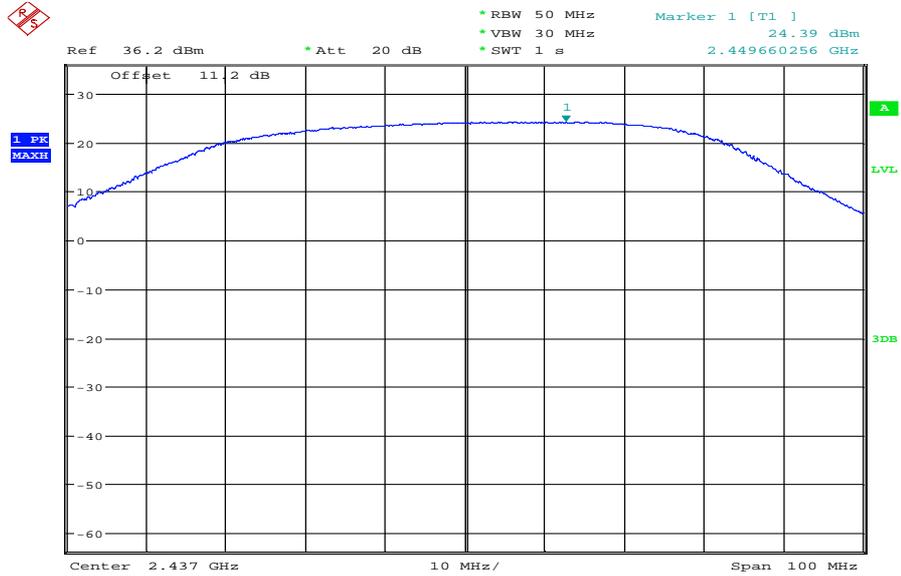
Date: 9.MAY.2011 19:17:37

Plot 2: TX mode, middle channel, MCS1



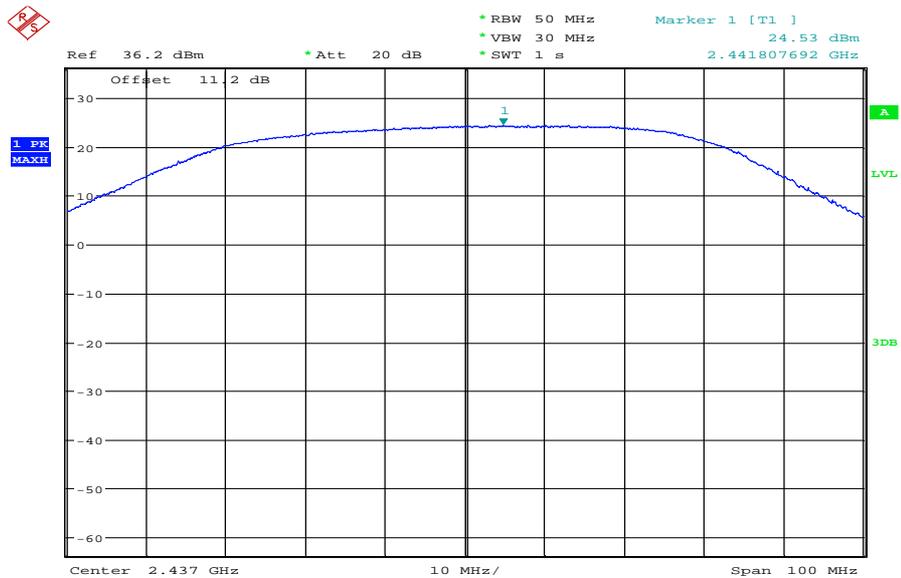
Date: 9.MAY.2011 19:18:53

Plot 3: TX mode, middle channel, MCS2



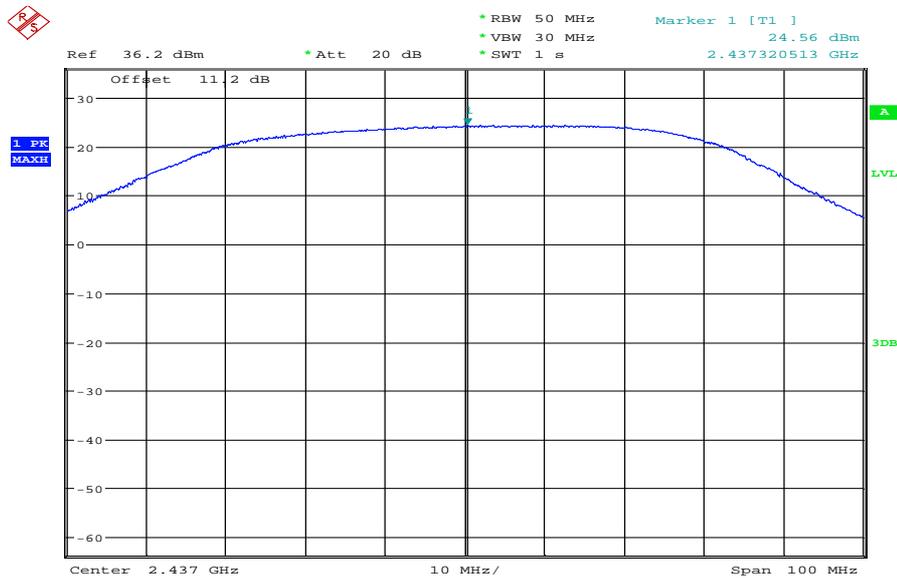
Date: 9.MAY.2011 19:20:05

Plot 4: TX mode, middle channel, MCS3



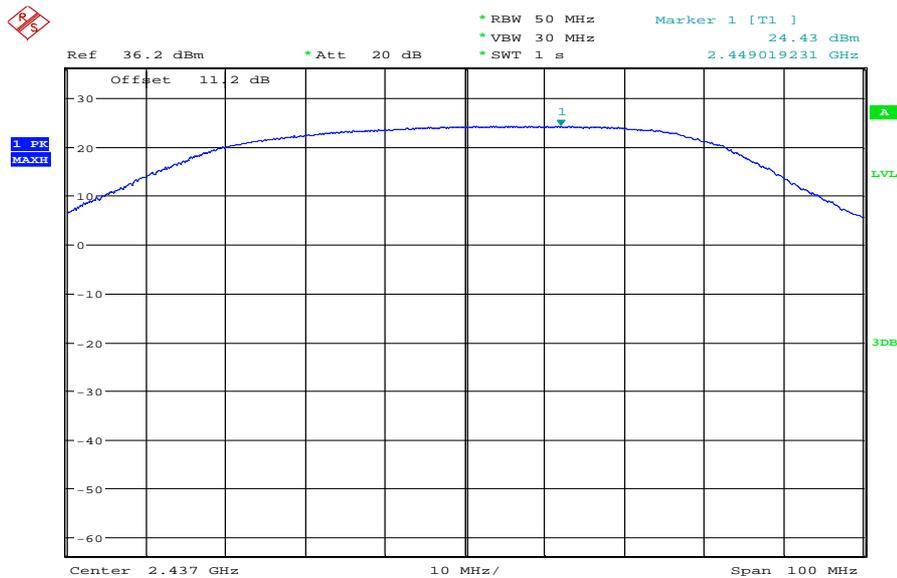
Date: 9.MAY.2011 19:22:00

Plot 5: TX mode, middle channel, MCS4



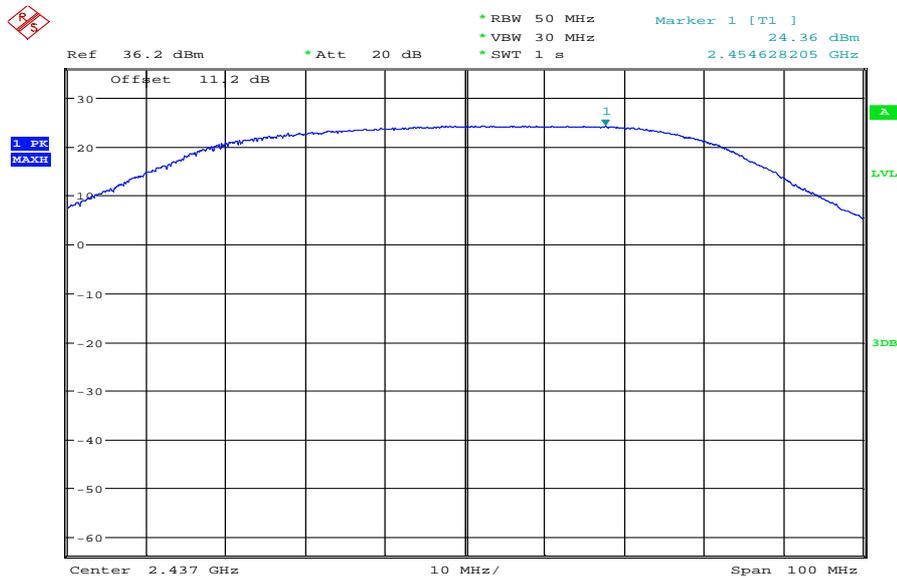
Date: 9.MAY.2011 19:23:47

Plot 6: TX mode, middle channel, MCS5



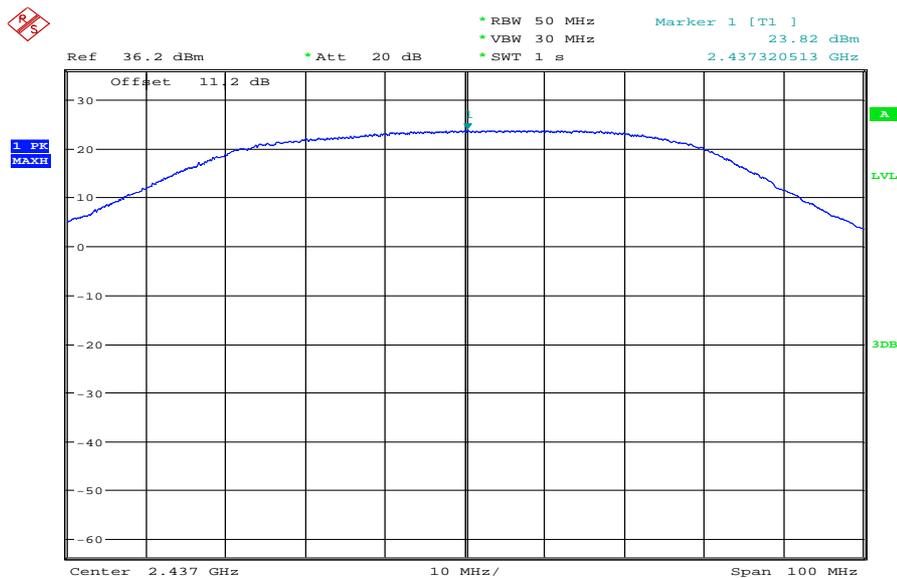
Date: 9.MAY.2011 19:24:48

Plot 7: TX mode, middle channel, MCS6



Date: 9.MAY.2011 19:26:07

Plot 8: TX mode, middle channel, MCS7



Date: 9.MAY.2011 19:27:16

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:	1s
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	

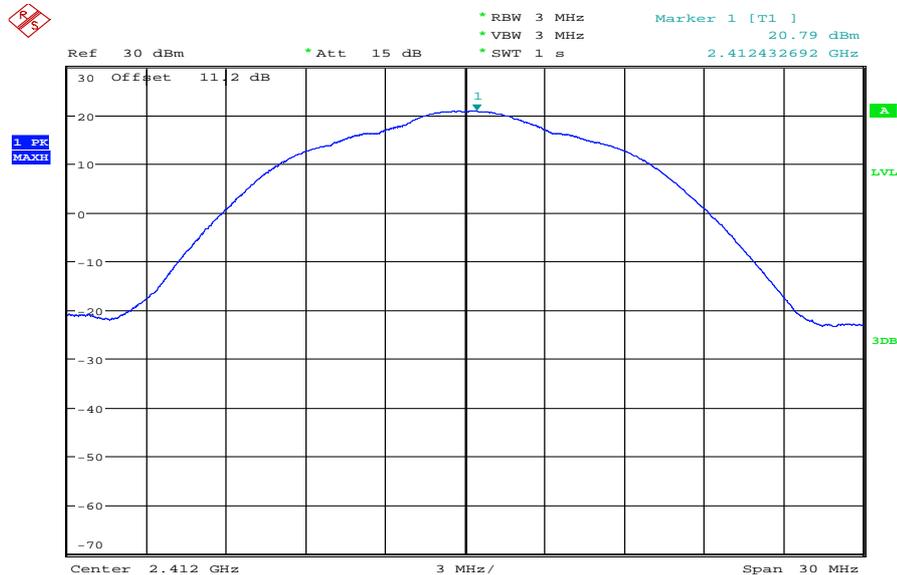
Results:

T _{nom}	V _{nom}	lowest channel 2412 MHz	middle channel 2437 MHz	highest channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		20.79	19.97	20.12
Radiated power [dBm] Measured with DSSS modulation		19.57	19.29	19.88
Gain [dBi] Calculated		-1.22	-0.68	-0.24
Measurement uncertainty			± 1.5 dB (cond.) / ± 3 dB (rad.)	

Result: The result of the measurement is passed.

Conducted plots:

Plot 1: lowest channel



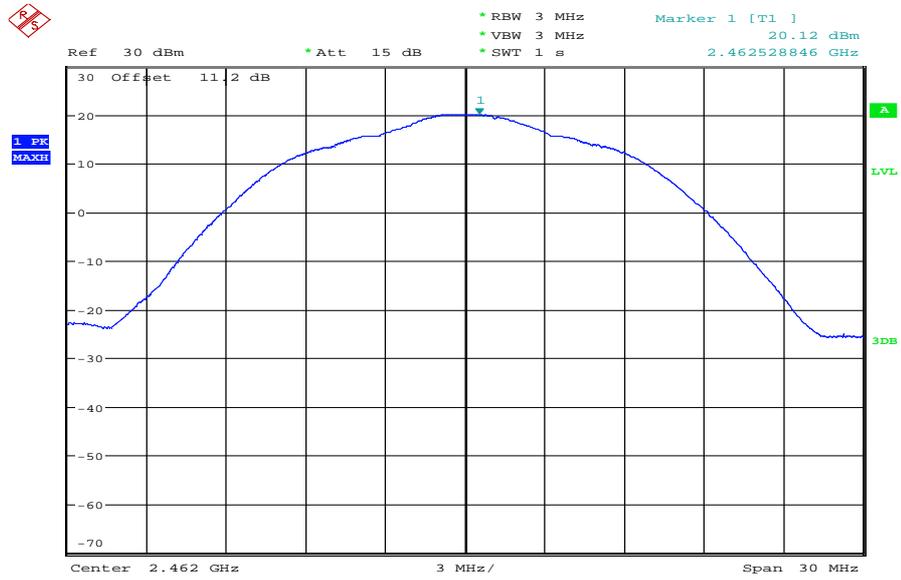
Date: 13.MAY.2011 07:07:55

Plot 2: middle channel



Date: 9.MAY.2011 19:38:54

Plot 3: highest channel



Date: 9.MAY.2011 19:41:50

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:	1s
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	23.51	22.83	22.81
Output Power Radiated – EIRP*)	22.29	22.15	22.57
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*) calculated with Antenna gain

Result: The result of 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	25.21	24.53	23.99
Output Power Radiated – EIRP*)	23.99	23.85	23.75
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*) calculated with Antenna gain

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

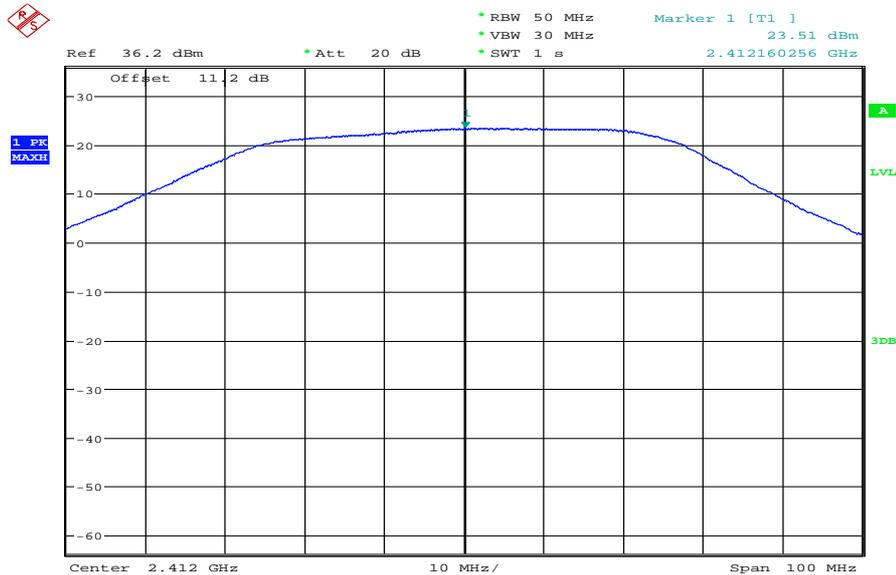
OFDM / n – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	25.17	24.56	23.89
Output Power Radiated – EIRP*)	23.95	23.88	23.65
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*) calculated with Antenna gain

Result: The result of the measurement is passed.

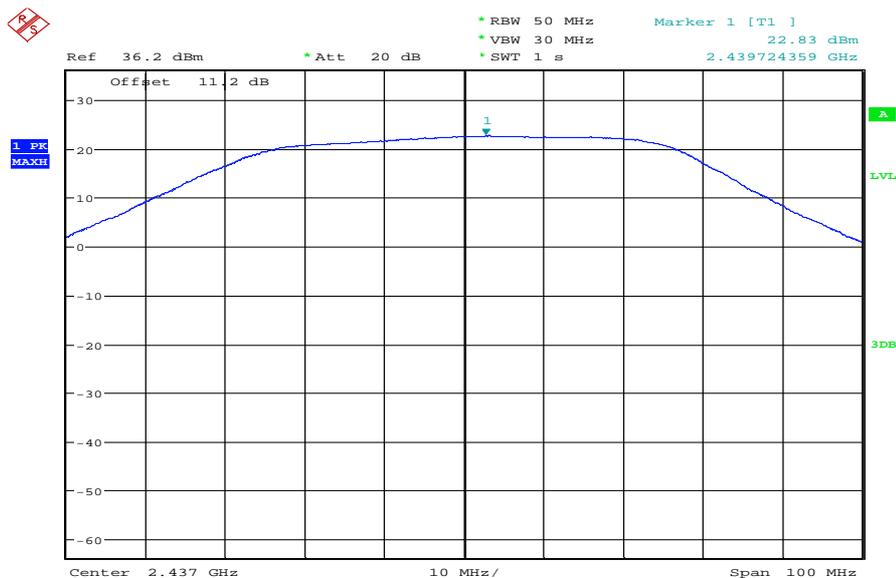
Plots: DSSS / b – mode

Plot 1: TX mode, lowest channel



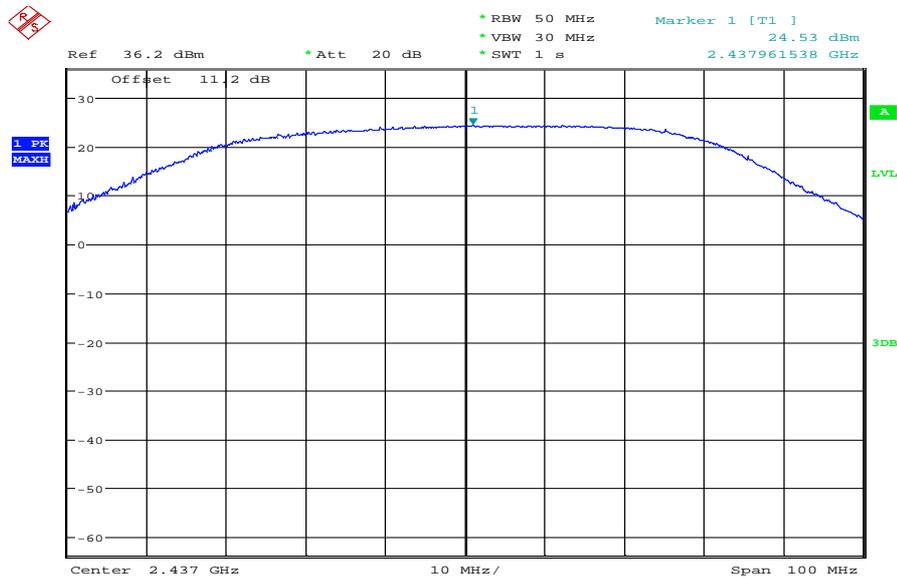
Date: 9.MAY.2011 18:56:00

Plot 2: TX mode, middle channel



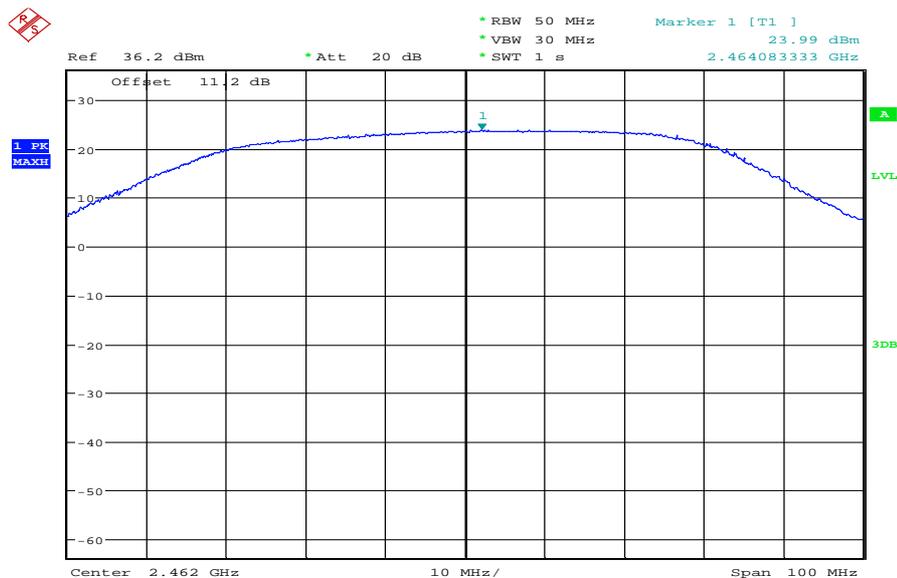
Date: 9.MAY.2011 18:50:26

Plot 2: TX mode, middle channel



Date: 9.MAY.2011 18:59:38

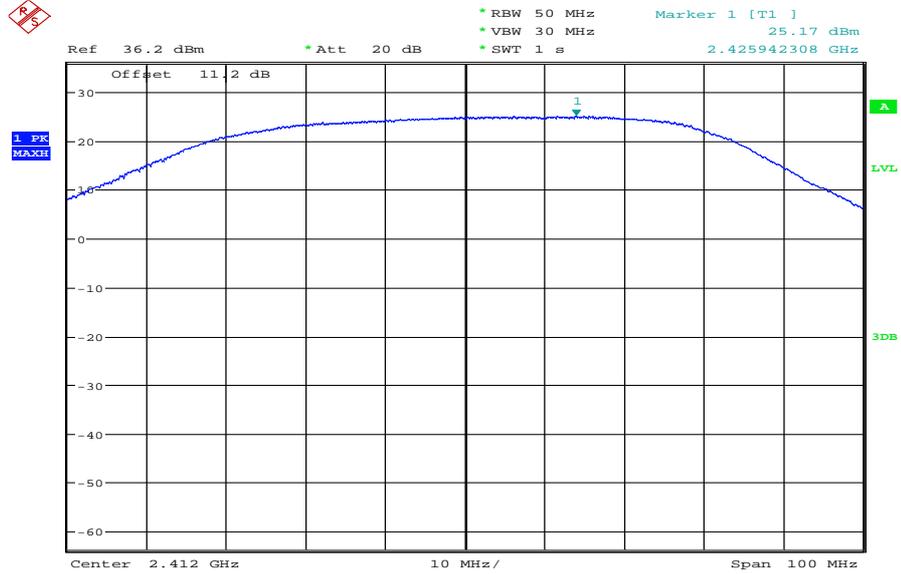
Plot 3: TX mode, highest channel



Date: 9.MAY.2011 19:14:22

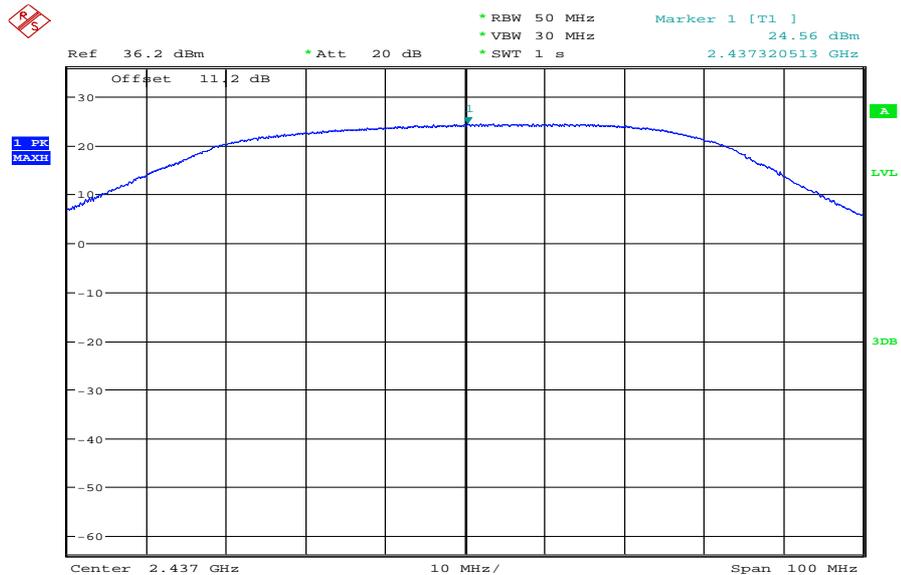
Plots: OFDM / n – mode

Plot 1: TX mode, lowest channel



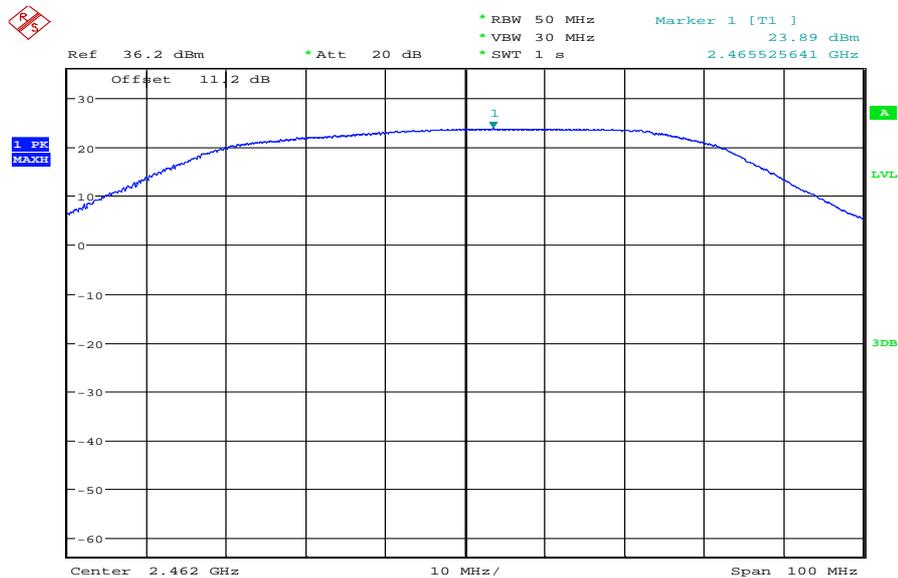
Date: 9.MAY.2011 19:28:29

Plot 2: TX mode, middle channel



Date: 9.MAY.2011 19:23:47

Plot 3: TX mode, highest channel



Date: 9.MAY.2011 19:29:47

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.	

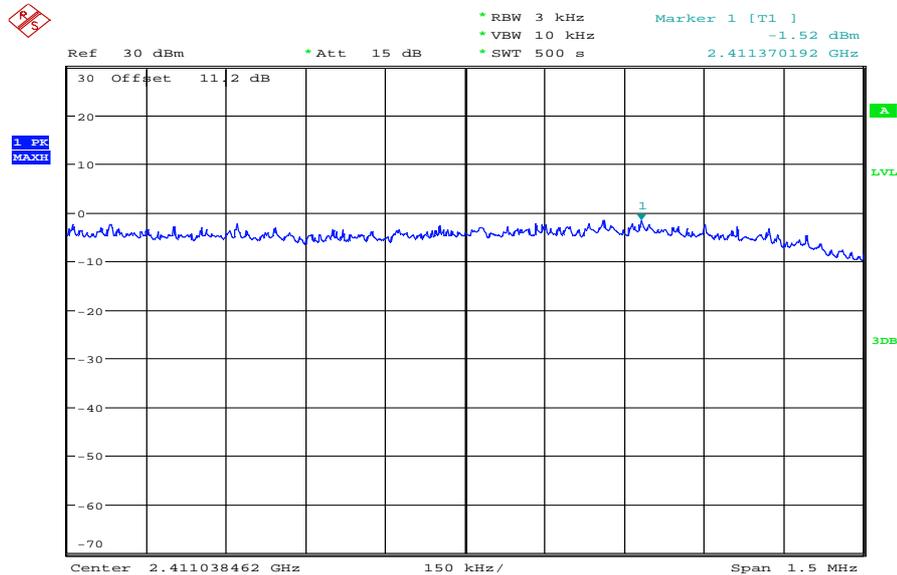
Results:

Modulation Frequency	Power Spectral density [dBm/3kHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	-1.52	-2.09	-2.00
OFDM / g – mode	-5.03	-6.66	-6.96
OFDM / n – mode	-6.79	-6.99	-7.07
Measurement uncertainty	± 1.5 dB		

Result: The result of the measurement is passed.

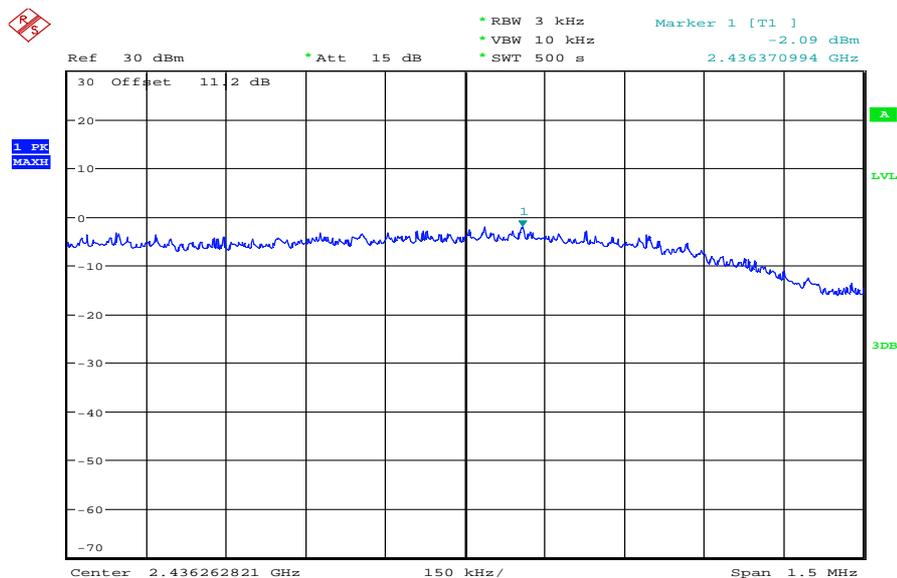
Plots: DSSS / b – mode

Plot 1: TX mode, lowest channel



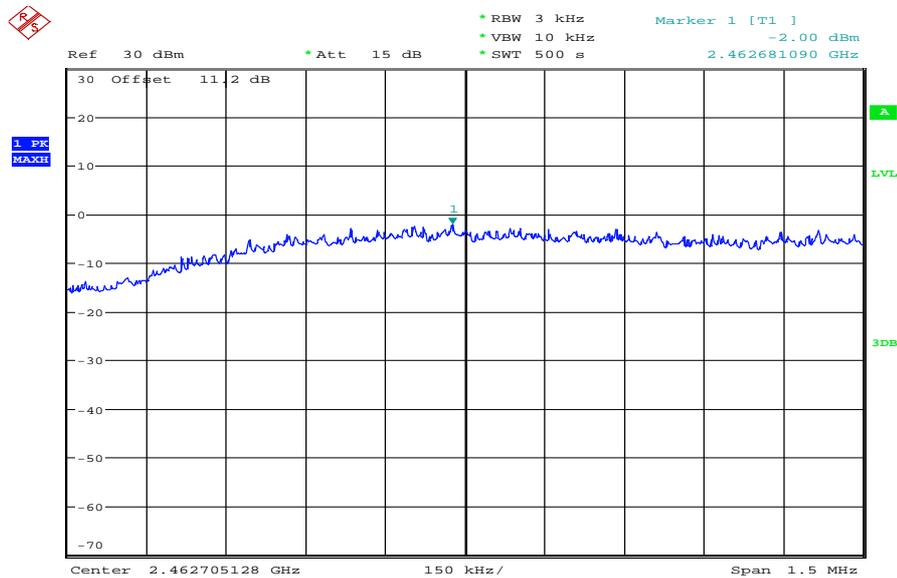
Date: 9.MAY.2011 19:56:39

Plot 2: TX mode, middle channel



Date: 9.MAY.2011 20:08:08

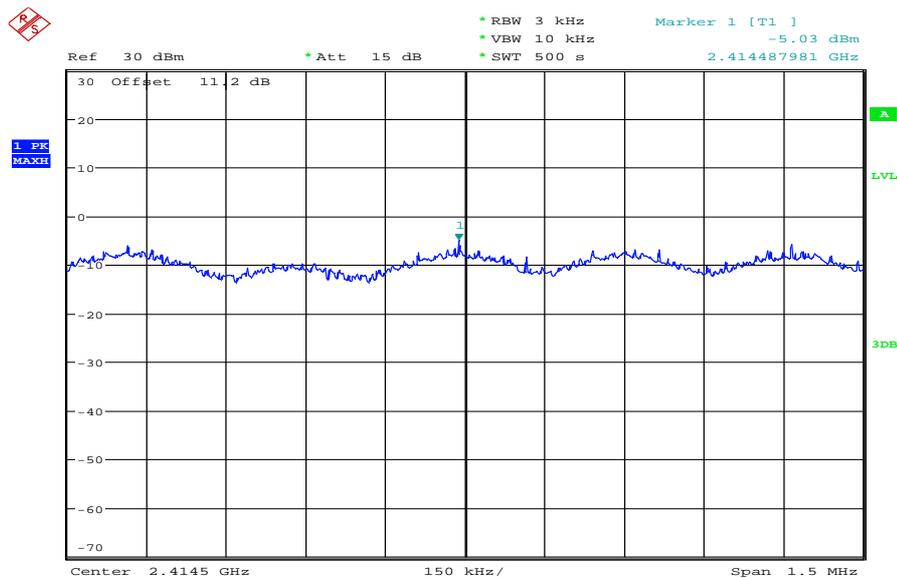
Plot 3: TX mode, highest channel



Date: 9.MAY.2011 20:17:06

Plots: OFDM / g – mode

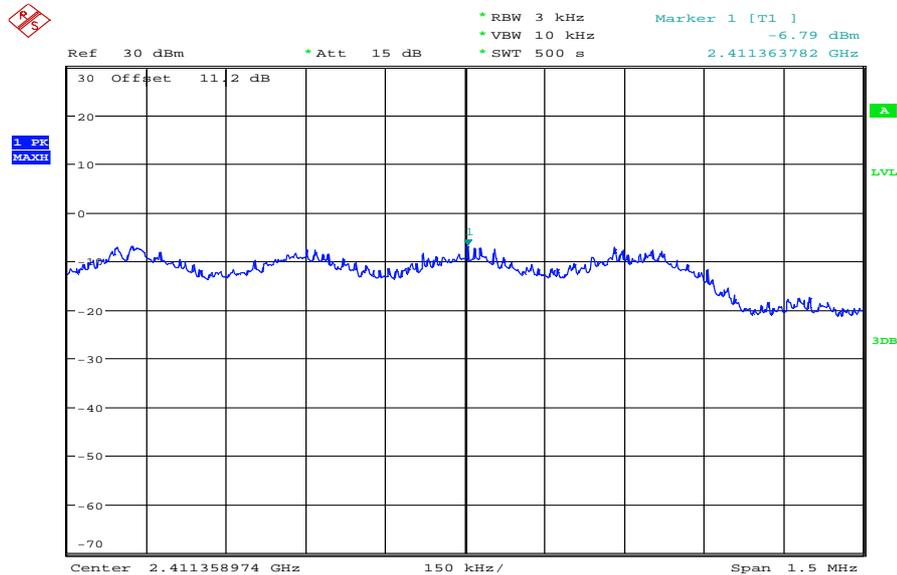
Plot 1: TX mode, lowest channel



Date: 9.MAY.2011 20:26:41

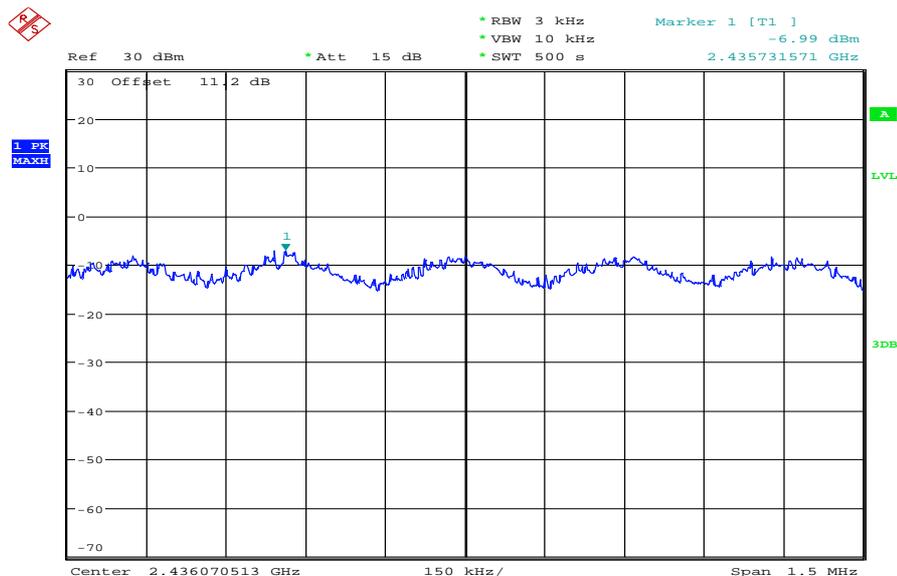
Plots: OFDM / n – mode

Plot 1: TX mode, lowest channel



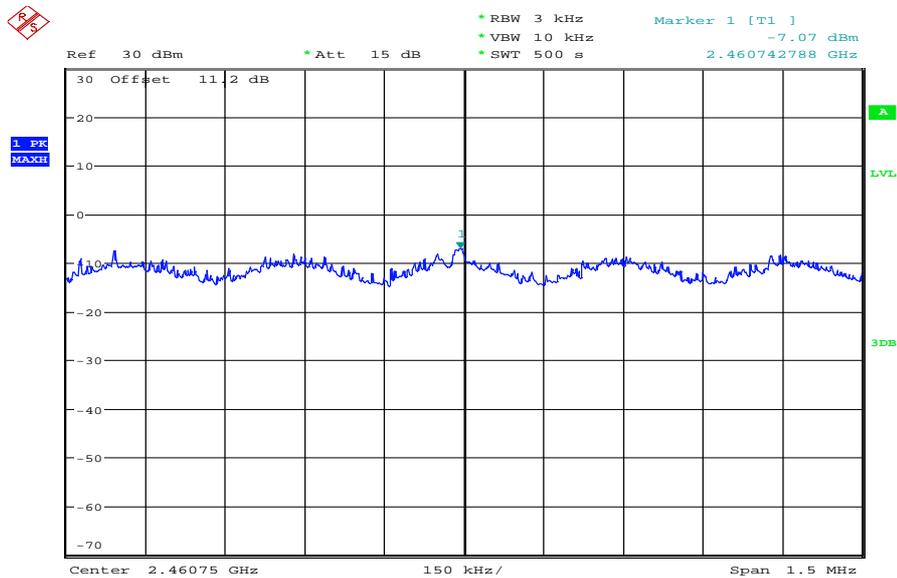
Date: 9.MAY.2011 20:58:52

Plot 2: TX mode, middle channel



Date: 9.MAY.2011 21:08:04

Plot 3: TX mode, highest channel



Date: 9.MAY.2011 21:17:22

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:	35 MHz
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.	

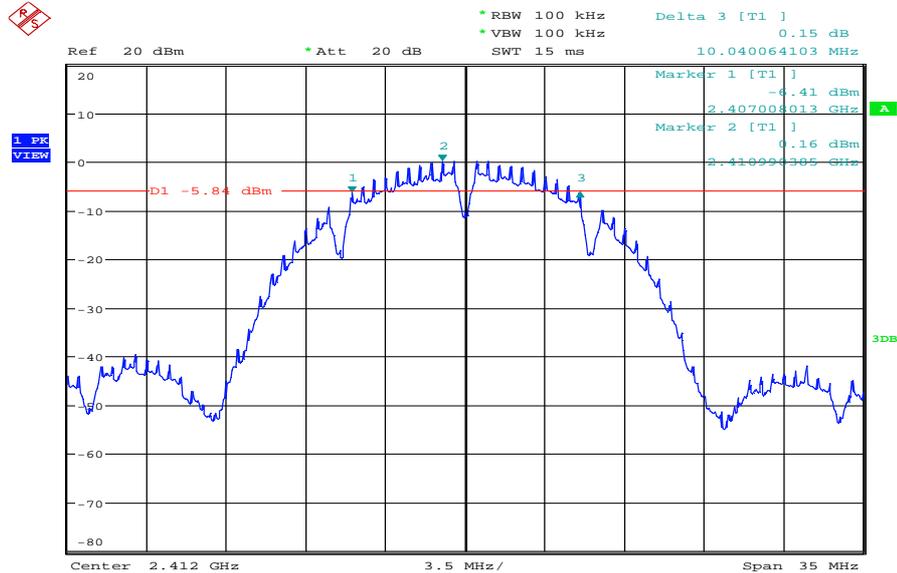
Results:

Modulation Frequency	6 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	10.04	10.06	9.96
OFDM / g – mode	16.27	16.28	16.02
OFDM / n – mode	17.28	17.44	17.63
Measurement uncertainty	± 100 kHz		

Result: The result of the measurement is passed.

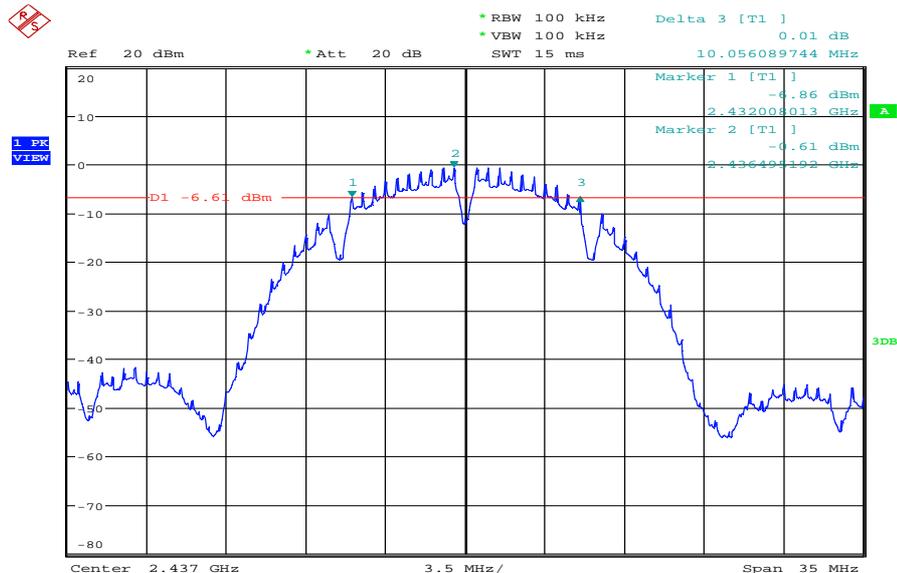
Plots: DSSS / b – mode

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



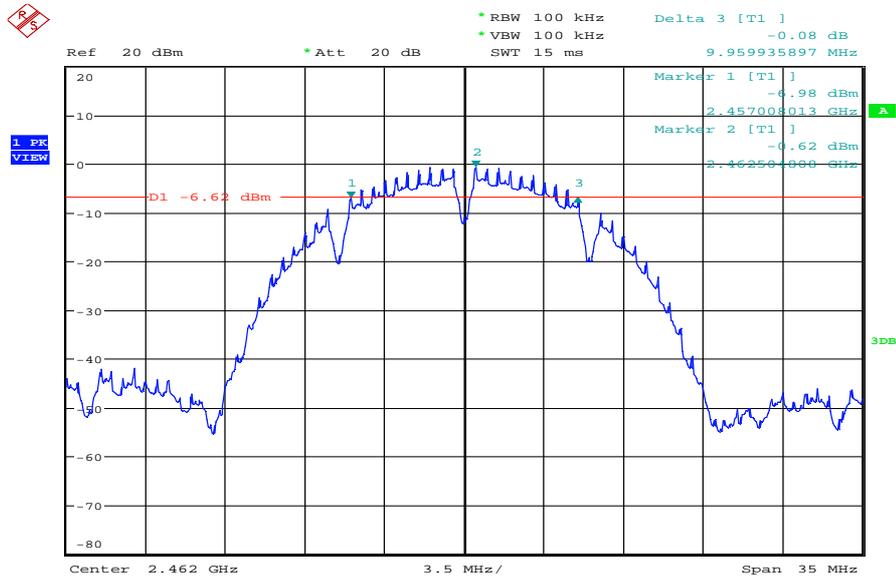
Date: 10.MAY.2011 12:22:42

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



Date: 10.MAY.2011 12:26:59

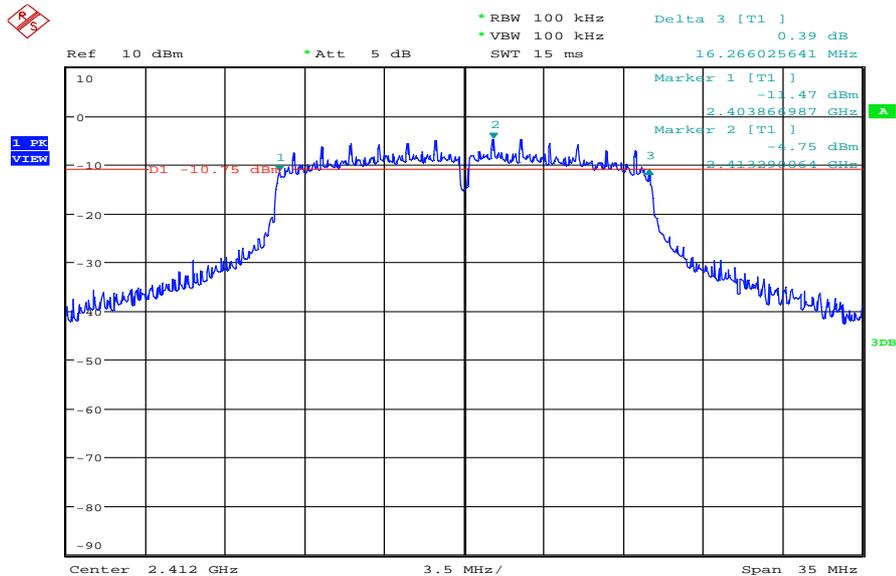
Plot 3: TX mode, highest channel, 6 dB bandwidth



Date: 10.MAY.2011 12:31:04

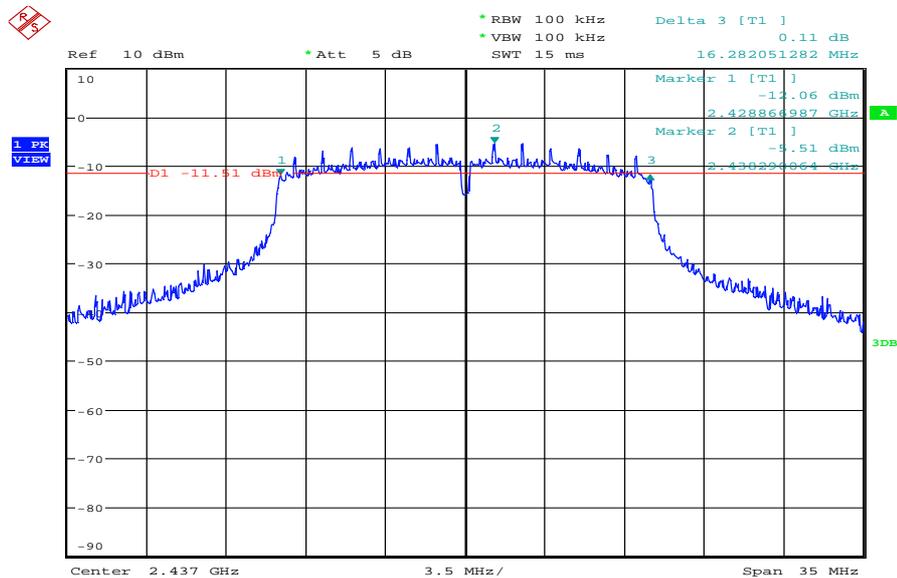
Plots: OFDM / g – mode

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



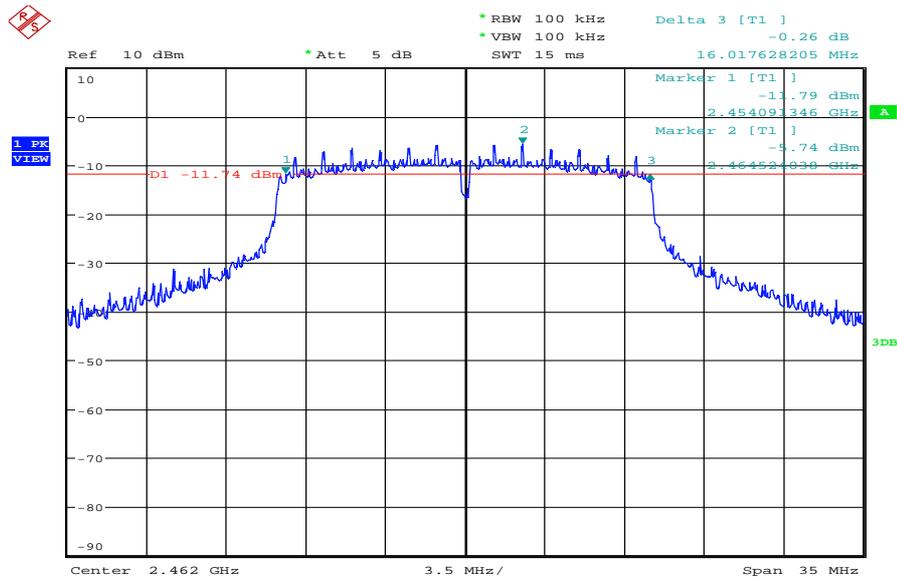
Date: 10.MAY.2011 12:35:51

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



Date: 10.MAY.2011 12:38:50

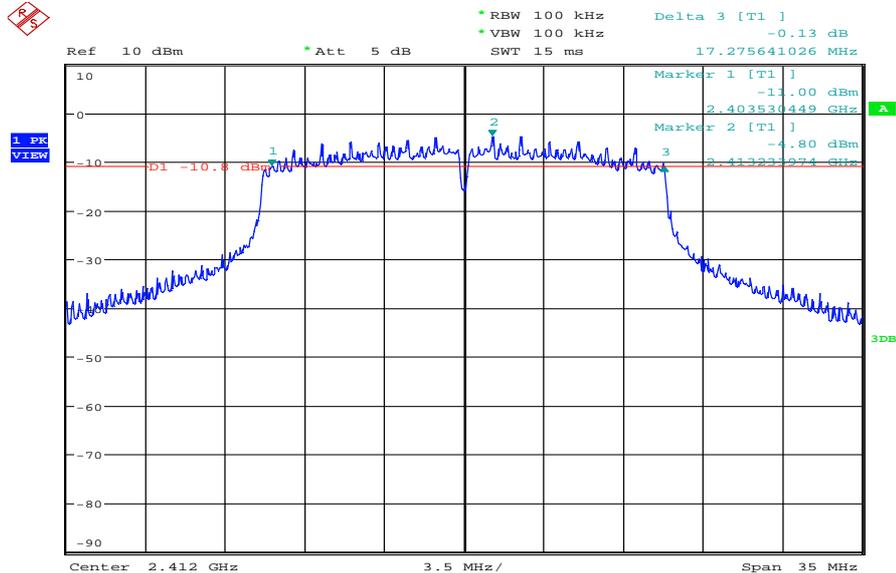
Plot 3: TX mode, highest channel, 6 dB bandwidth



Date: 10.MAY.2011 12:41:29

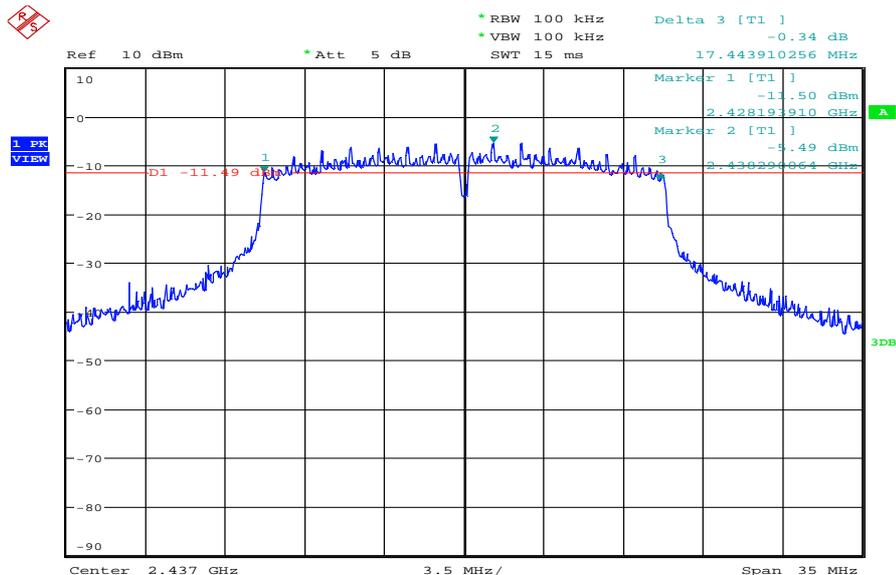
Plots: OFDM / n – mode

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



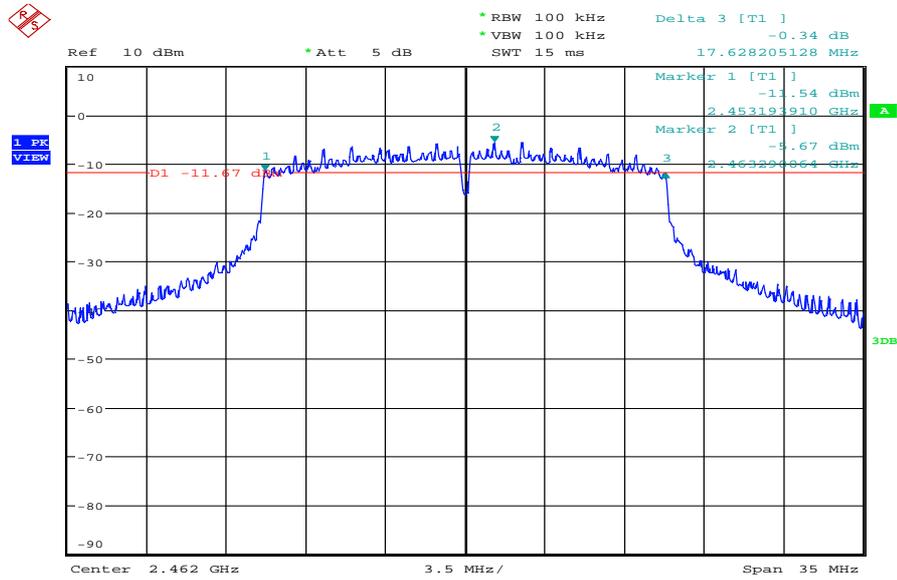
Date: 10.MAY.2011 12:44:57

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



Date: 10.MAY.2011 12:47:16

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



Date: 10.MAY.2011 12:53:54

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:	35 MHz
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.	

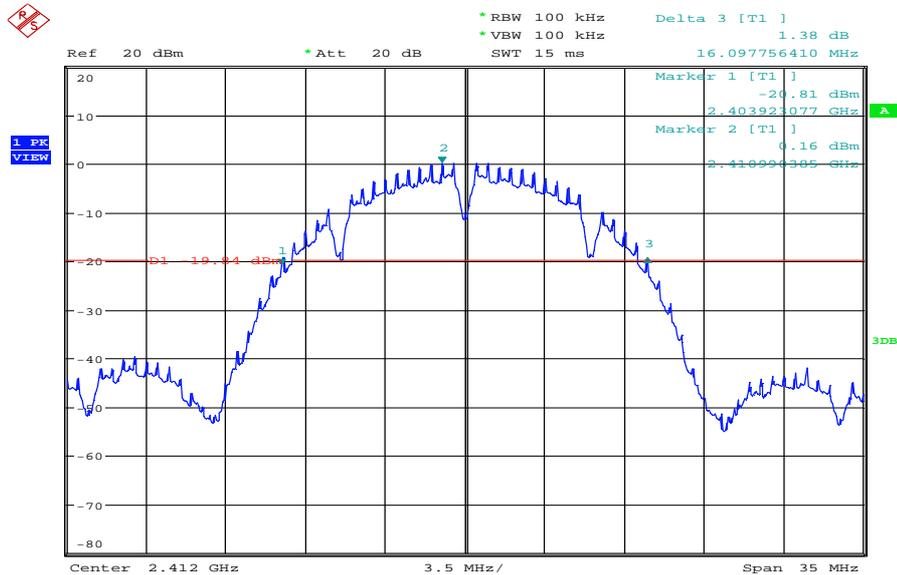
Results:

Modulation Frequency	20 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	16.10	16.11	16.07
OFDM / g – mode	18.12	18.08	17.59
OFDM / n – mode	18.68	18.73	18.86
Measurement uncertainty	± 100 kHz		

Result: The result of the measurement is passed.

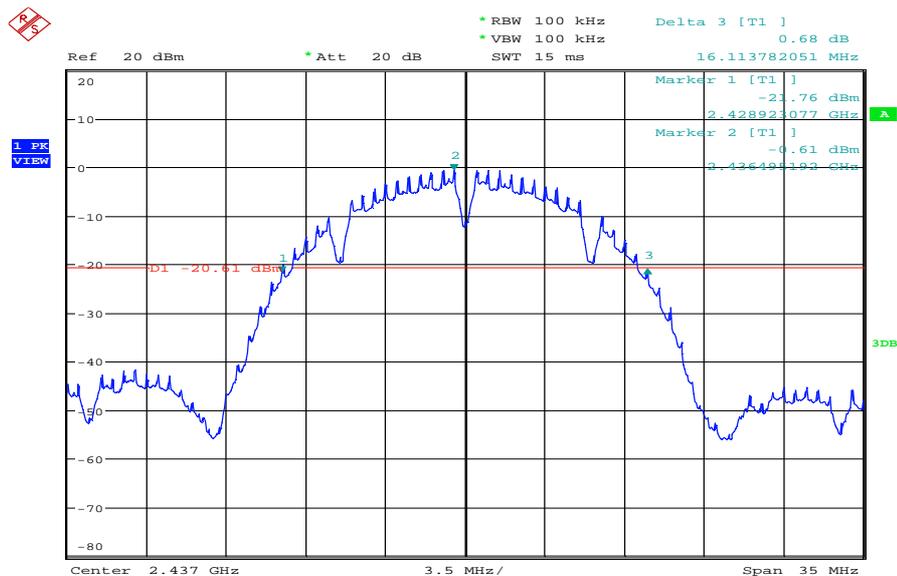
Plots: DSSS / b – mode

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



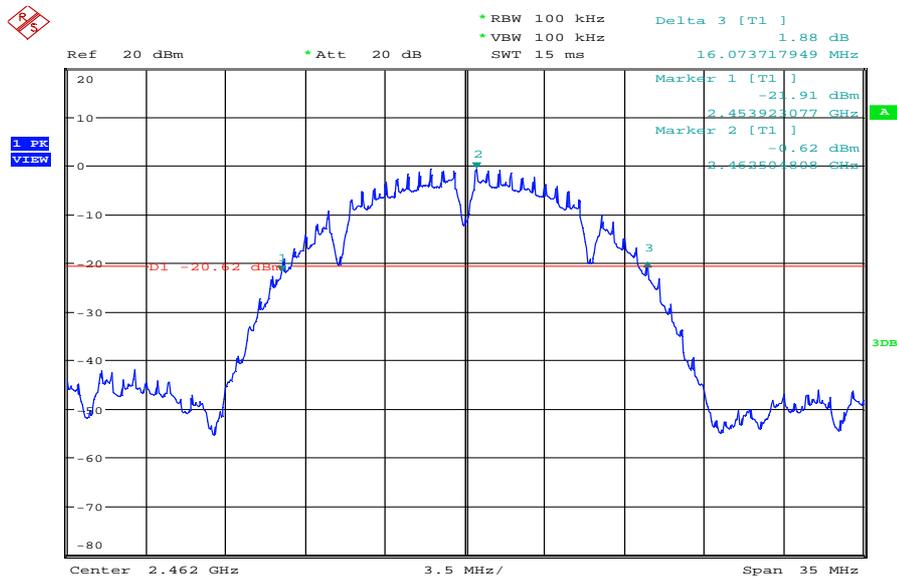
Date: 10.MAY.2011 12:23:51

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



Date: 10.MAY.2011 12:28:33

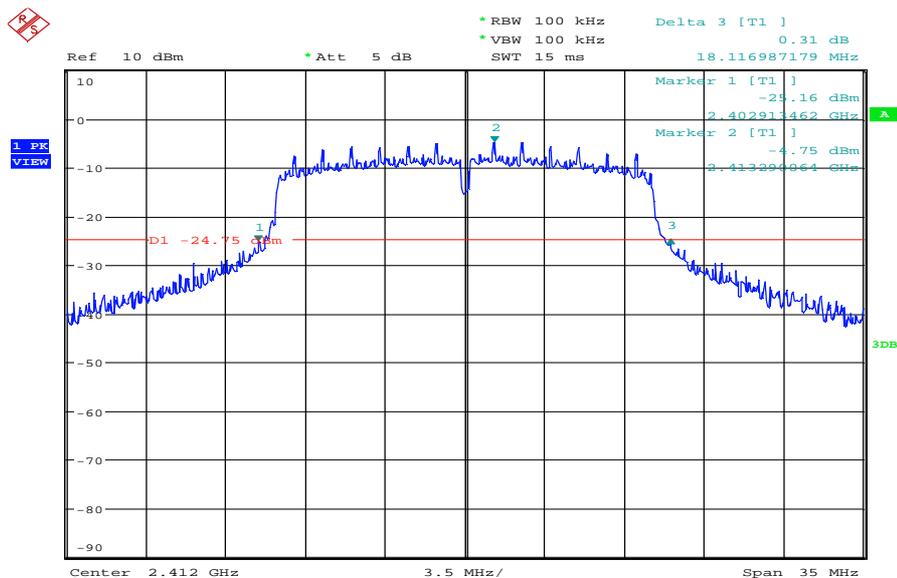
Plot 3: TX mode, highest channel, 20 dB bandwidth



Date: 10.MAY.2011 12:31:40

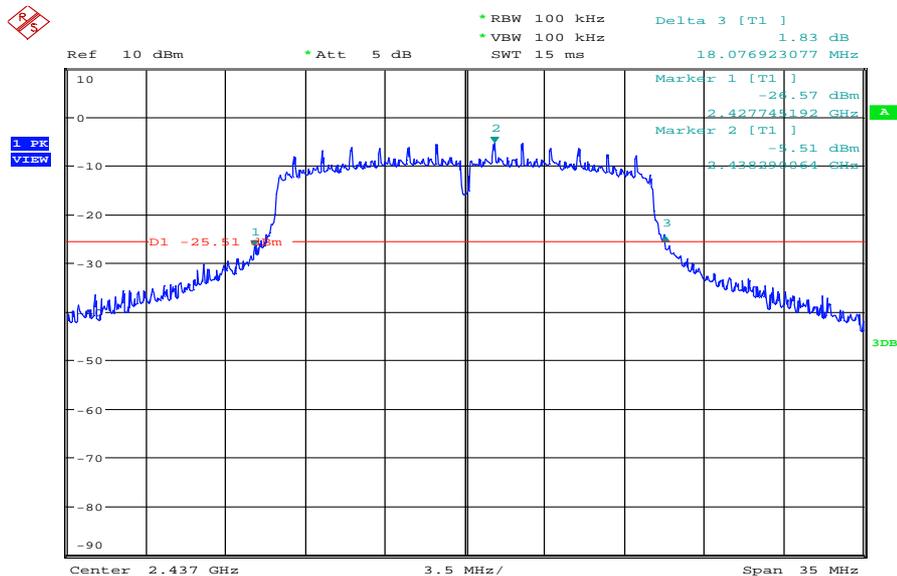
Plots: OFDM / g – mode

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



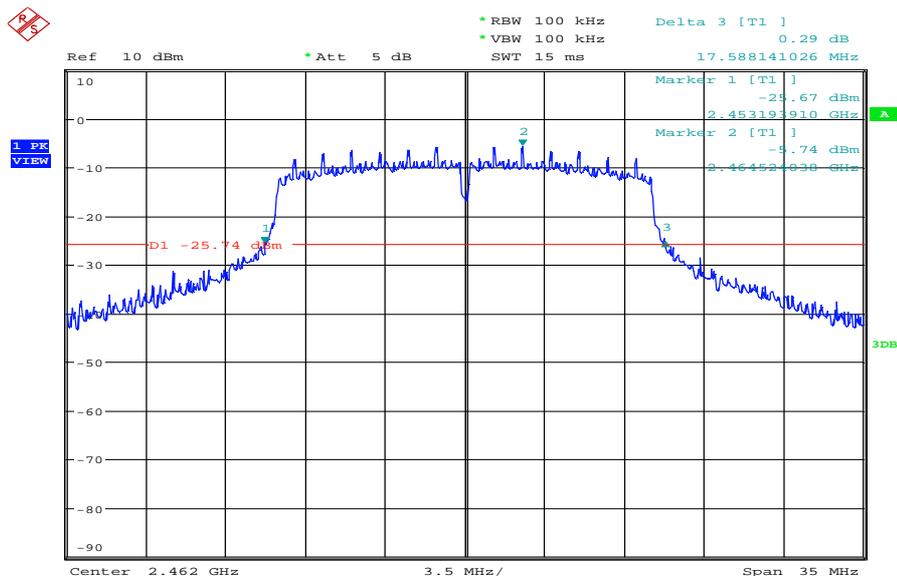
Date: 10.MAY.2011 12:36:56

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



Date: 10.MAY.2011 12:39:26

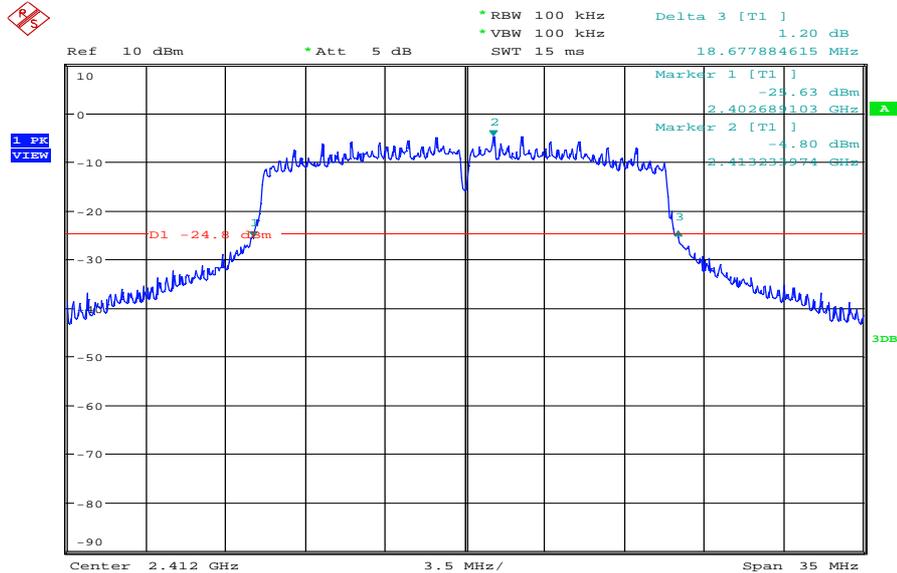
Plot 3: TX mode, highest channel, 20 dB bandwidth



Date: 10.MAY.2011 12:42:31

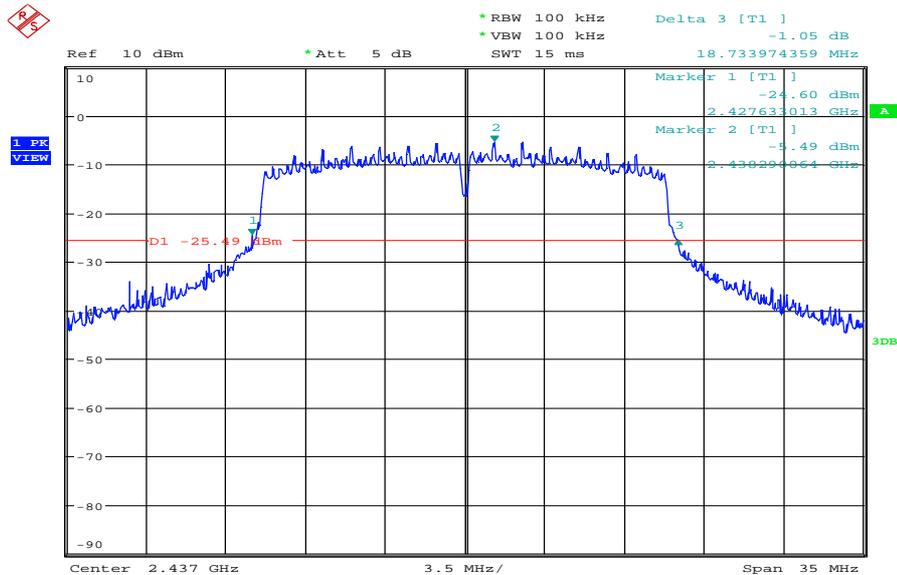
Plots: OFDM / n – mode

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



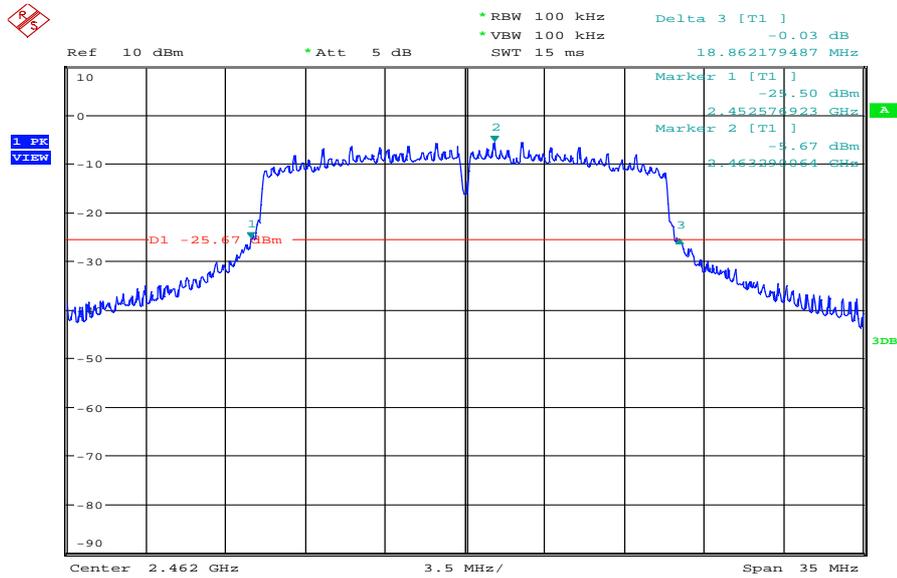
Date: 10.MAY.2011 12:45:33

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



Date: 10.MAY.2011 12:47:50

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



Date: 10.MAY.2011 12:54:43

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>	

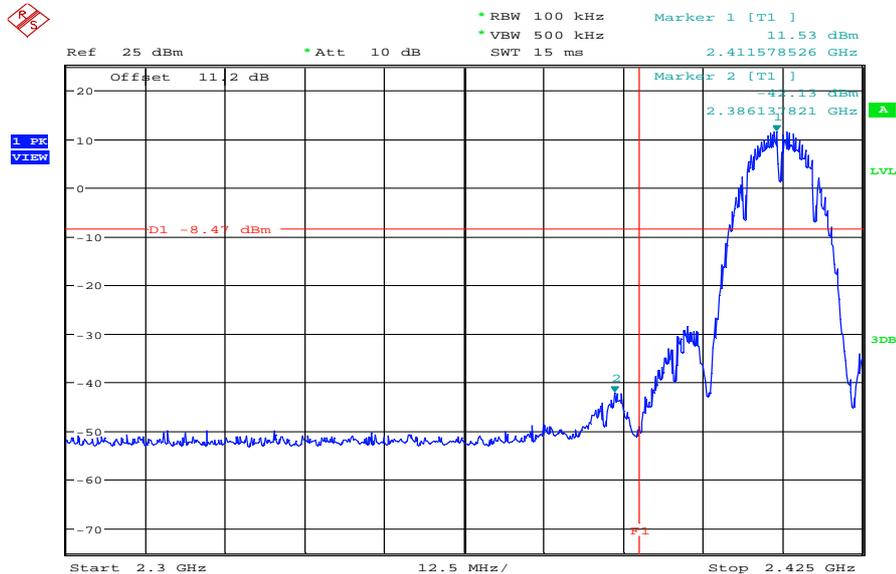
Results:

Szenario 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	± 1.5 dB		

Result: The result of the measurement is passed.

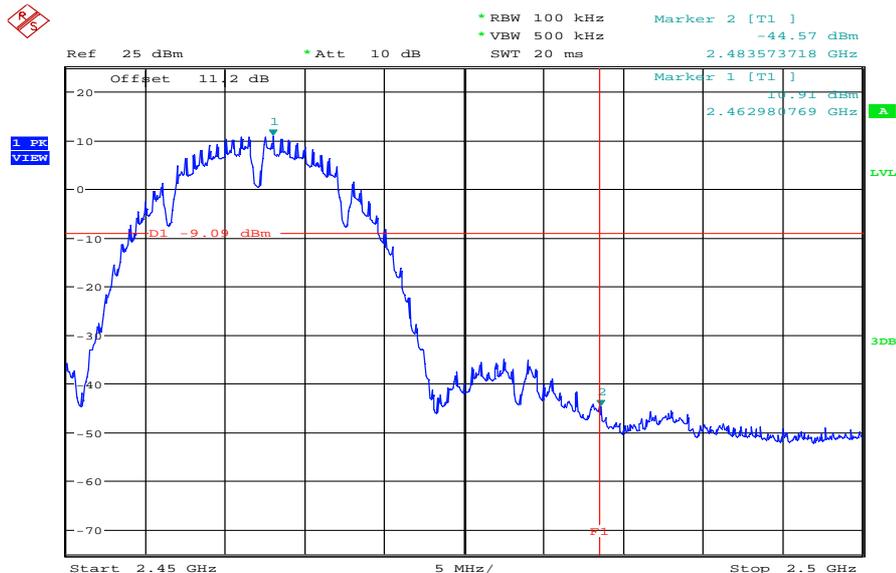
Plots: DSSS / b – mode

Plot 1: TX mode, lower band edge



Date: 10.MAY.2011 13:04:04

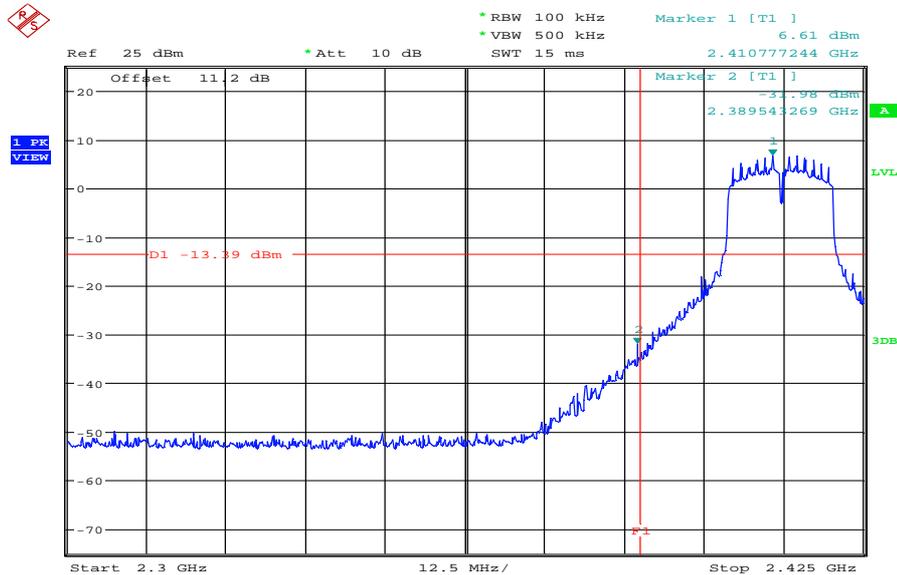
Plot 2: TX mode, upper band edge



Date: 10.MAY.2011 13:17:17

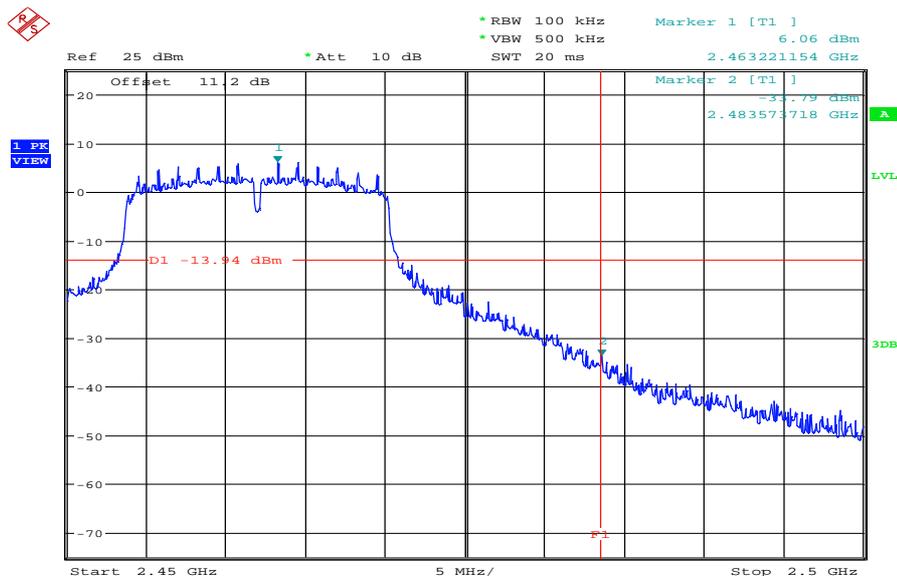
Plots: OFDM / g – mode

Plot 1: TX mode, lower band edge



Date: 10.MAY.2011 13:08:46

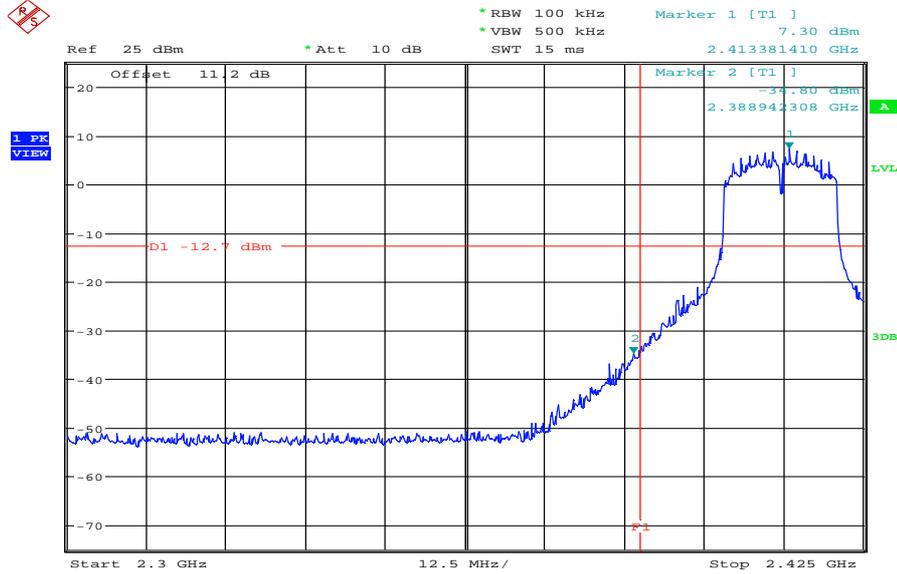
Plot 2: TX mode, upper band edge



Date: 10.MAY.2011 13:20:34

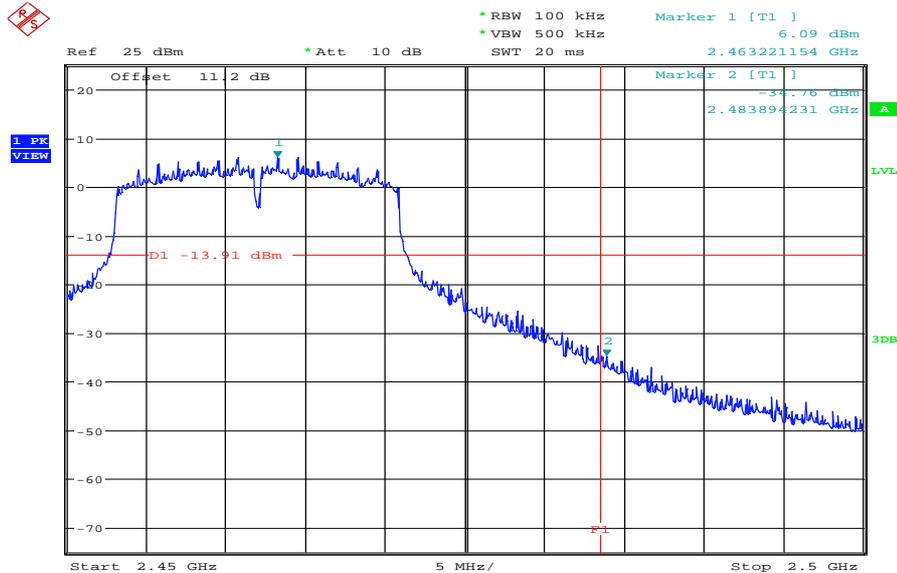
Plots: OFDM / n – mode

Plot 1: TX mode, lower band edge



Date: 10.MAY.2011 13:12:06

Plot 2: TX mode, upper band edge



Date: 10.MAY.2011 13:23:24

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	

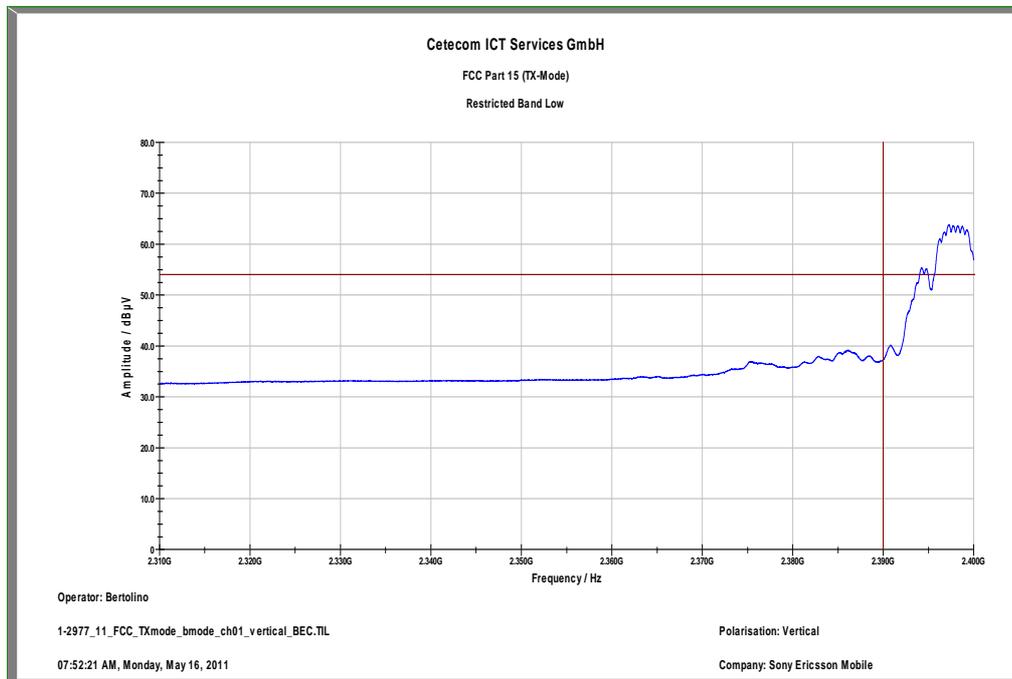
Results:

Szenario 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		

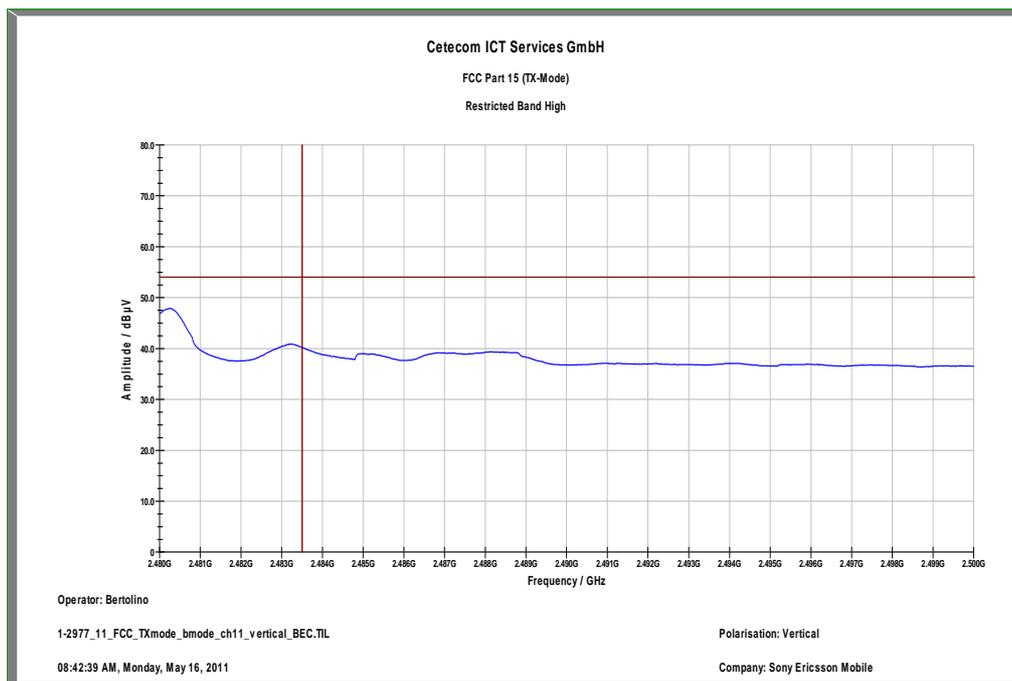
Result: The result of the measurement is passed.

Plots: DSSS / b – mode

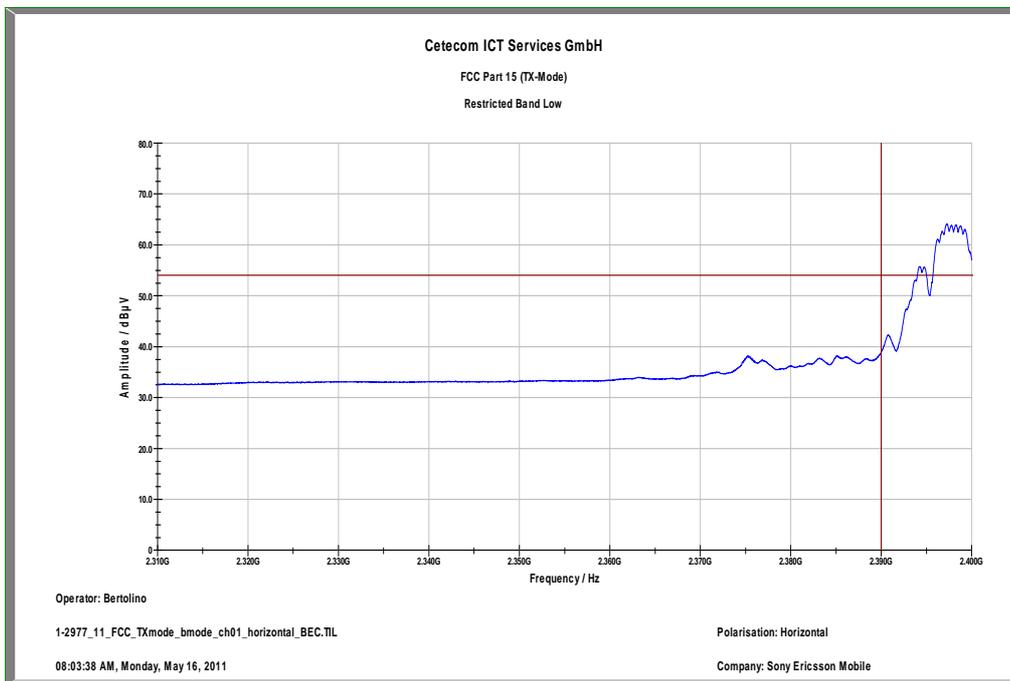
Plot 1: TX mode, lower band edge, vertical polarization



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



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

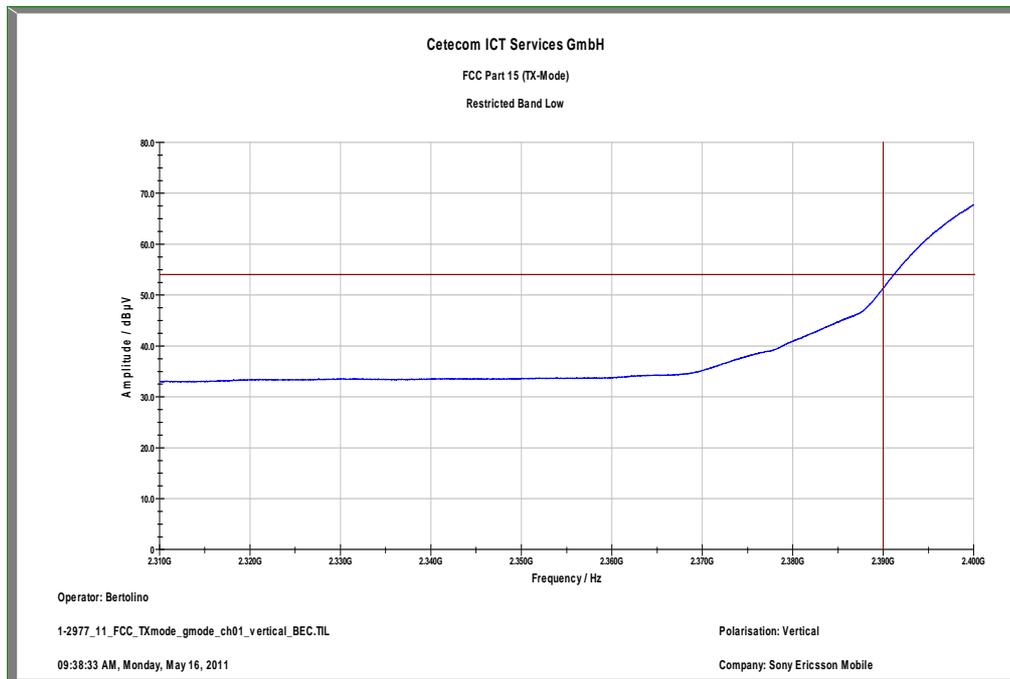


Plot 4: TX mode, upper band edge, horizontal polarization

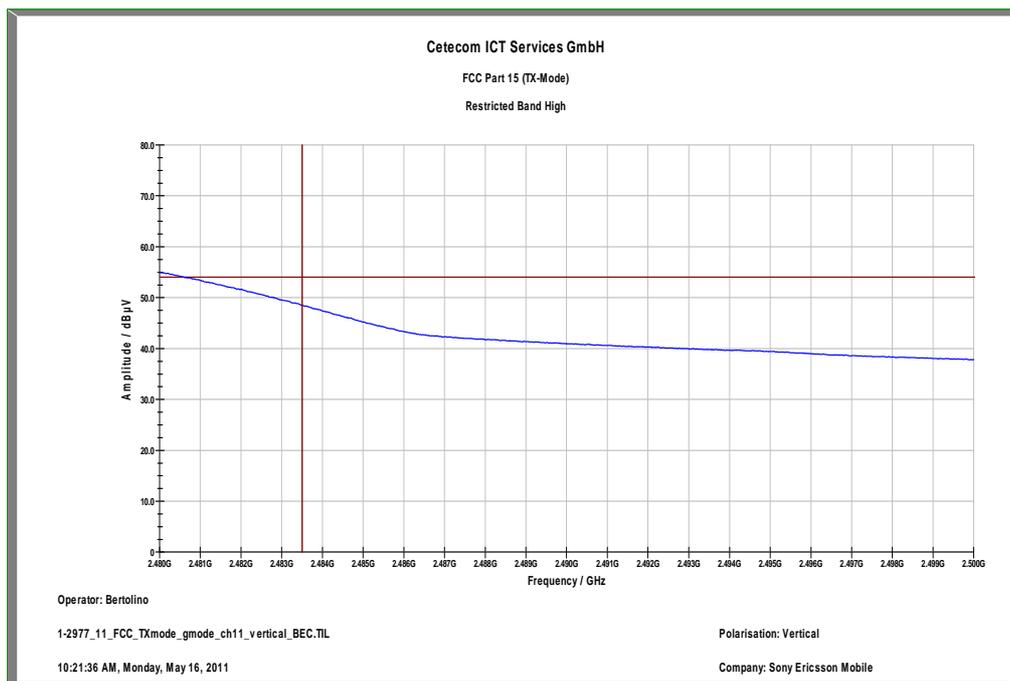


Plots: OFDM / g – mode

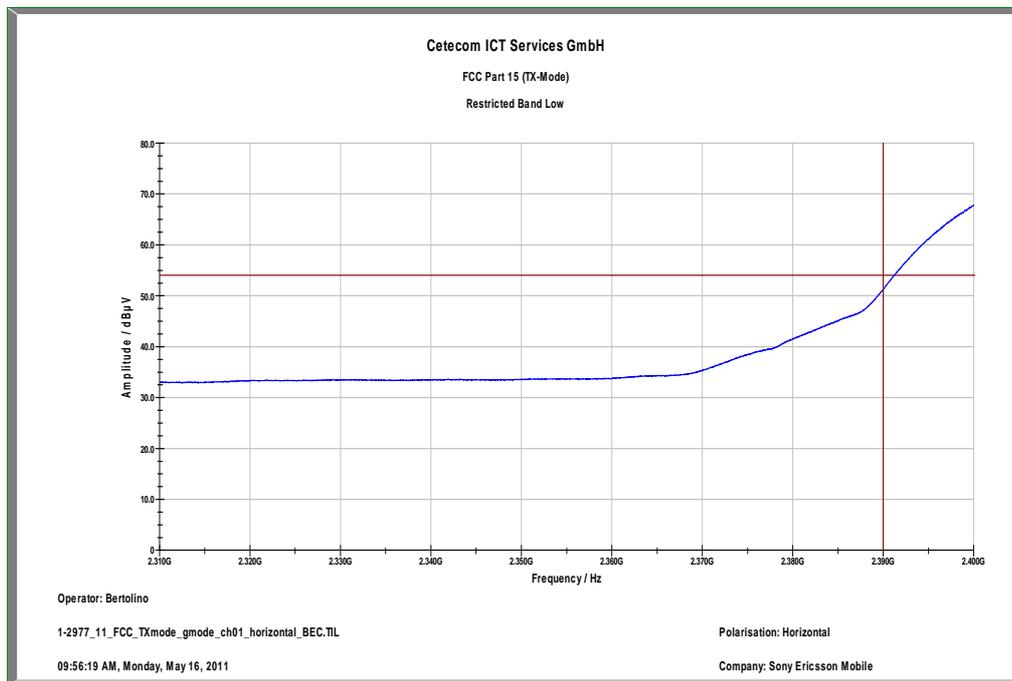
Plot 1: TX mode, lower band edge, vertical polarization



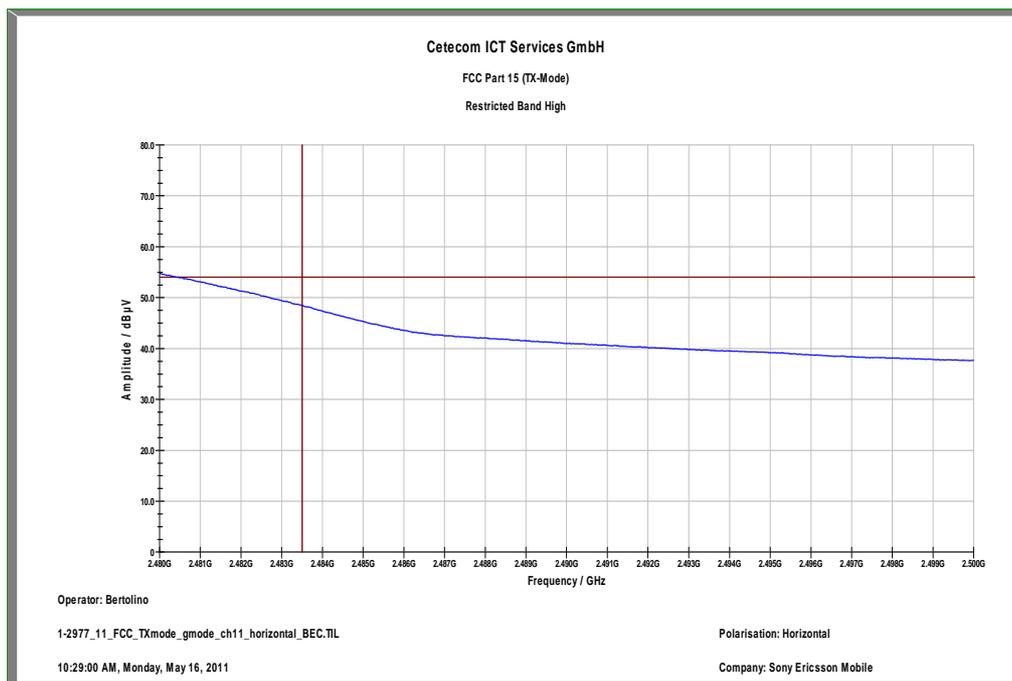
Plot 2: TX mode, upper band edge, vertical polarization



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

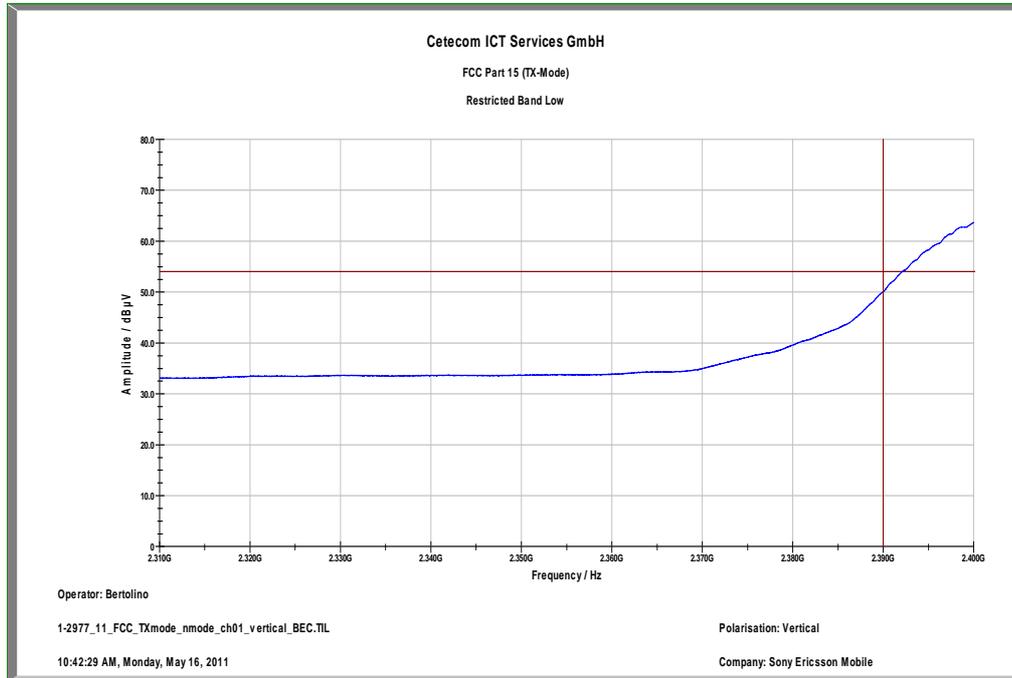


Plot 4: TX mode, upper band edge, horizontal polarization

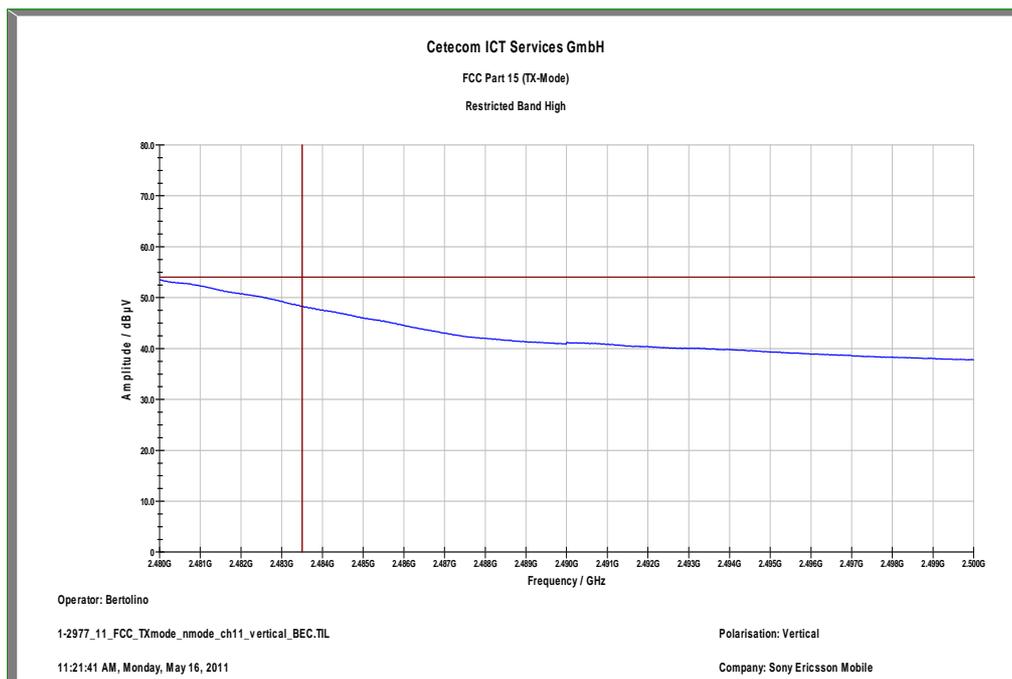


Plots: OFDM / n – mode

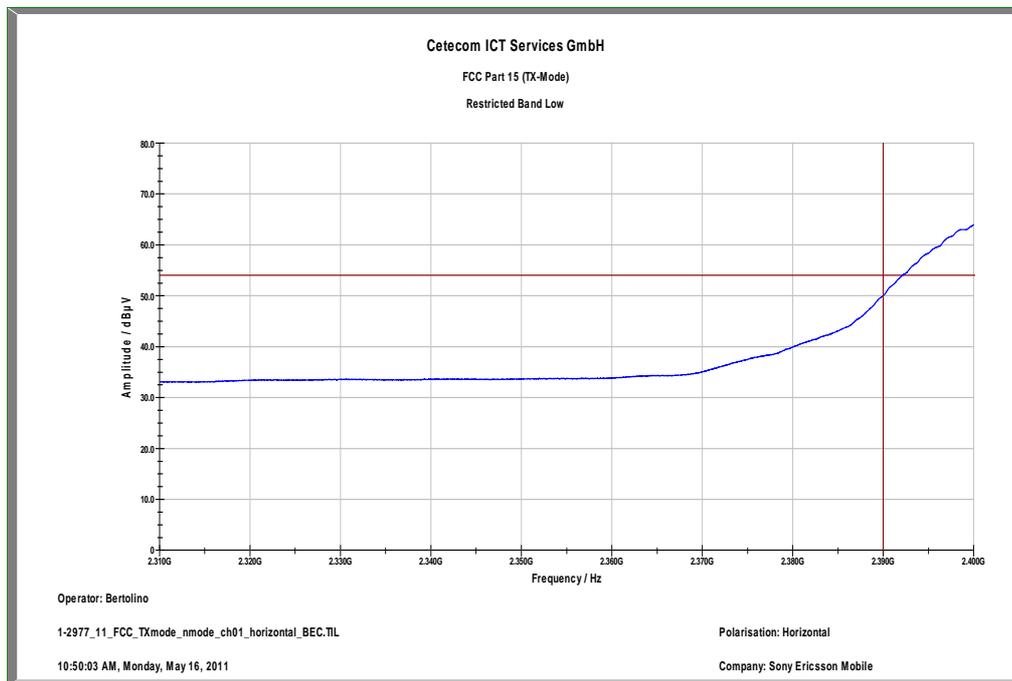
Plot 1: TX mode, lower band edge, vertical polarization



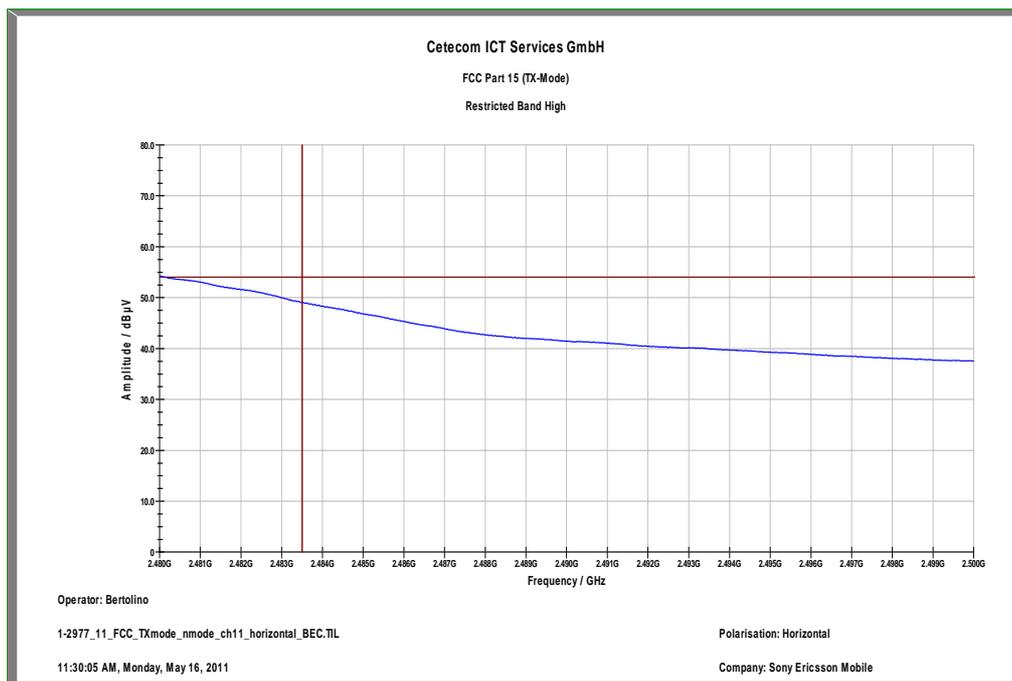
Plot 2: TX mode, upper band edge, vertical polarization



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:	1 s / 1 GHz
Video bandwidth:	F < 1 GHz: 500 kHz F > 1 GHz: 500 kHz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 100 kHz
Span:	0 Hz to 26 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		12.40	30 dBm		Operating frequency
No critical peaks found. All detected emissions are below the 20 dBc criteria.			-20 dBc		complies
2437		11.83	30 dBm		Operating frequency
No critical peaks found. All detected emissions are below the 20 dBc criteria.			-20 dBc		complies
2462		11.85	30 dBm		Operating frequency
No critical peaks found. All detected emissions are below the 20 dBc criteria.			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: The result of 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		6.86	30 dBm		Operating frequency
No critical peaks found. All detected emissions are below the 20 dBc criteria.			-20 dBc		complies
2437		4.89	30 dBm		Operating frequency
No critical peaks found. All detected emissions are below the 20 dBc criteria.			-20 dBc		complies
2462		6.95	30 dBm		Operating frequency
No critical peaks found. All detected emissions are below the 20 dBc criteria.			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: The result of the measurement is passed.

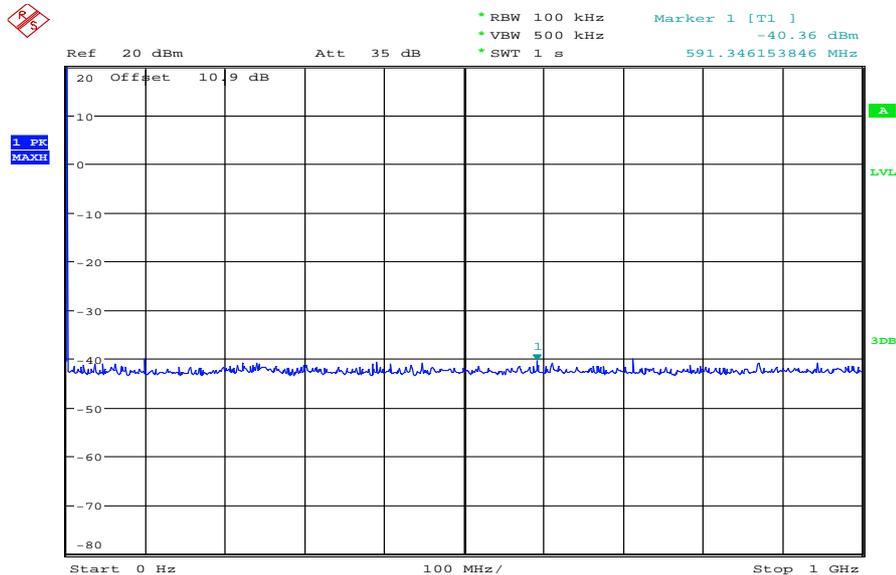
Results: OFDM / n – mode

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		8.45	30 dBm		Operating frequency
No critical peaks found. All detected emissions are below the 20 dBc criteria.			-20 dBc		complies
2437		7.80	30 dBm		Operating frequency
No critical peaks found. All detected emissions are below the 20 dBc criteria.			-20 dBc		complies
2462		7.58	30 dBm		Operating frequency
No critical peaks found. All detected emissions are below the 20 dBc criteria.			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: The result of the measurement is passed.

Plots: DSSS / b – mode

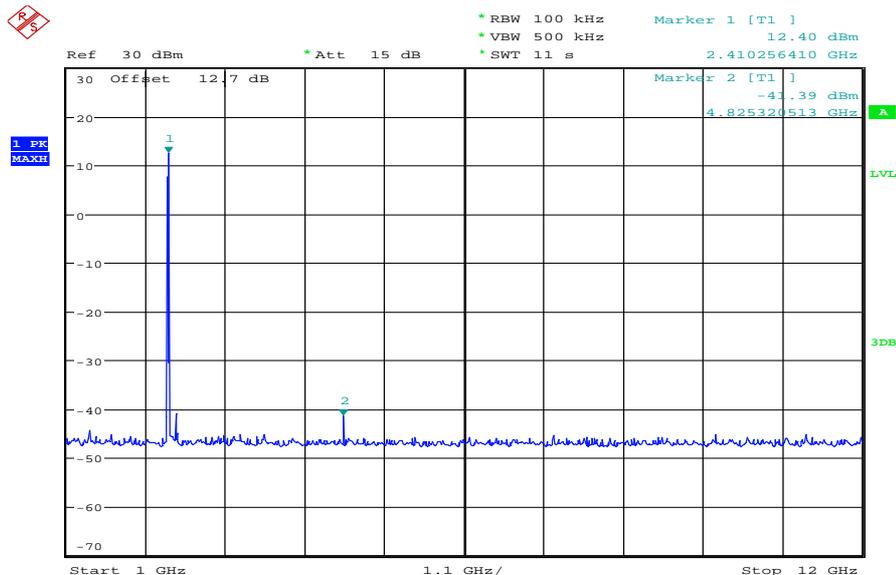
Plot 1: TX mode, lowest channel, up to 1 GHz



Date: 10.MAY.2011 13:41:22

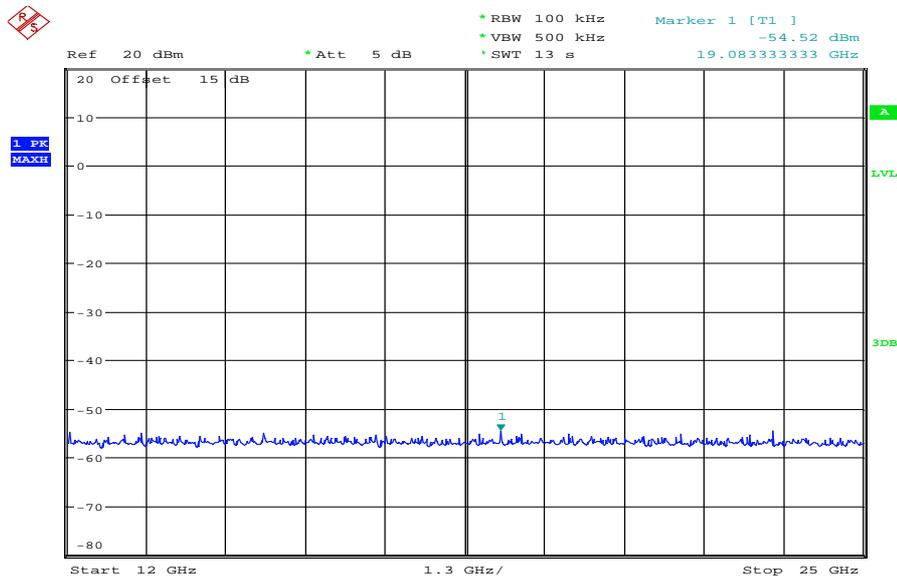
The peak at the beginning of the plot is the LO from the SA.

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



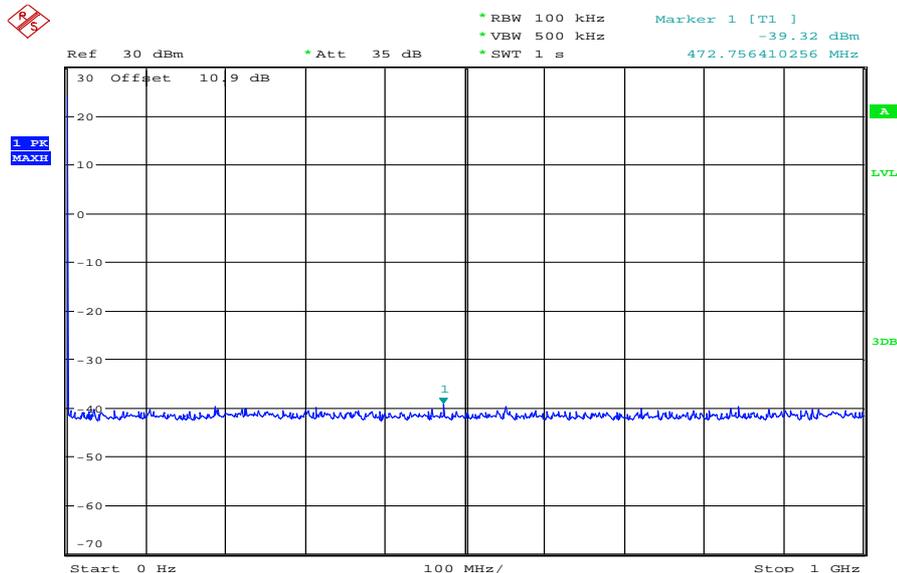
Date: 10.MAY.2011 13:59:27

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



Date: 10.MAY.2011 14:11:29

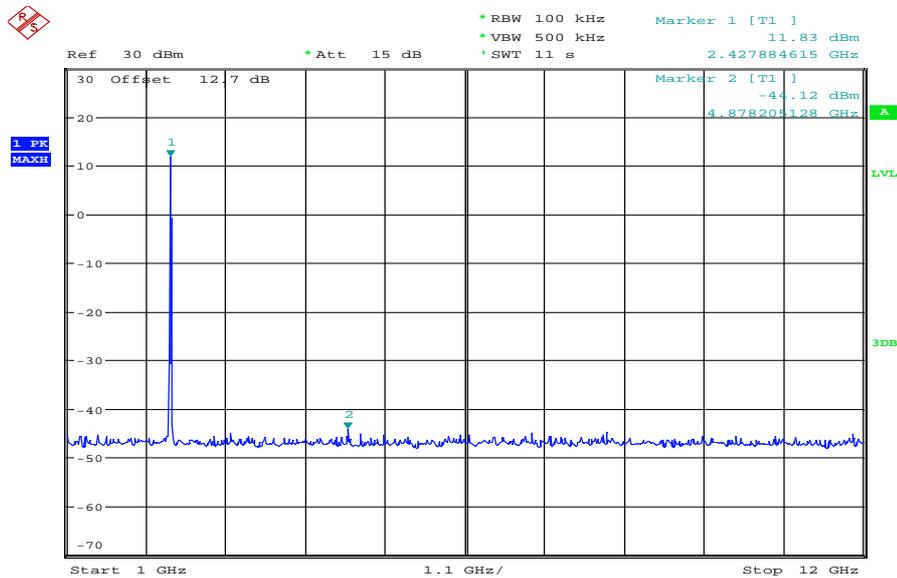
Plot 4: TX mode, middle channel, up to 1 GHz



Date: 10.MAY.2011 13:51:57

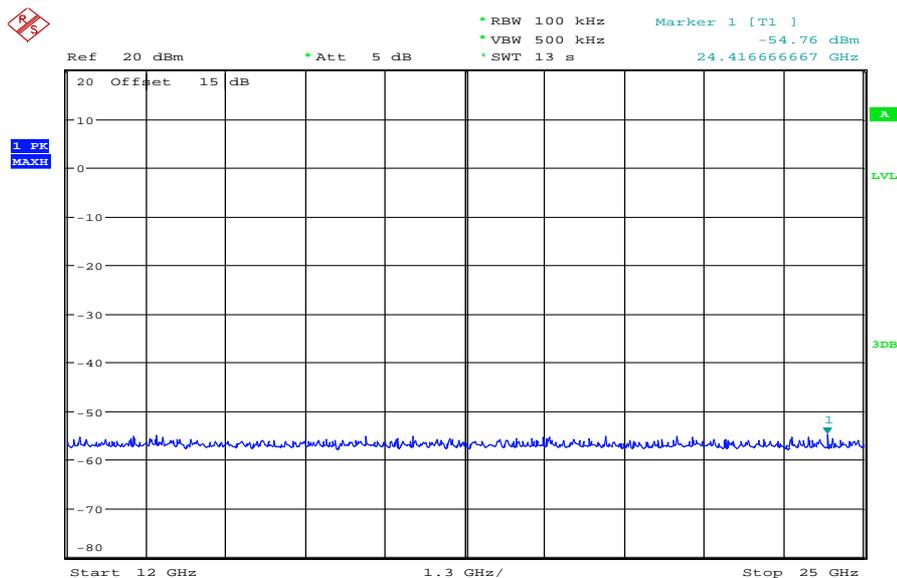
The peak at the beginning of the plot is the LO from the SA.

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



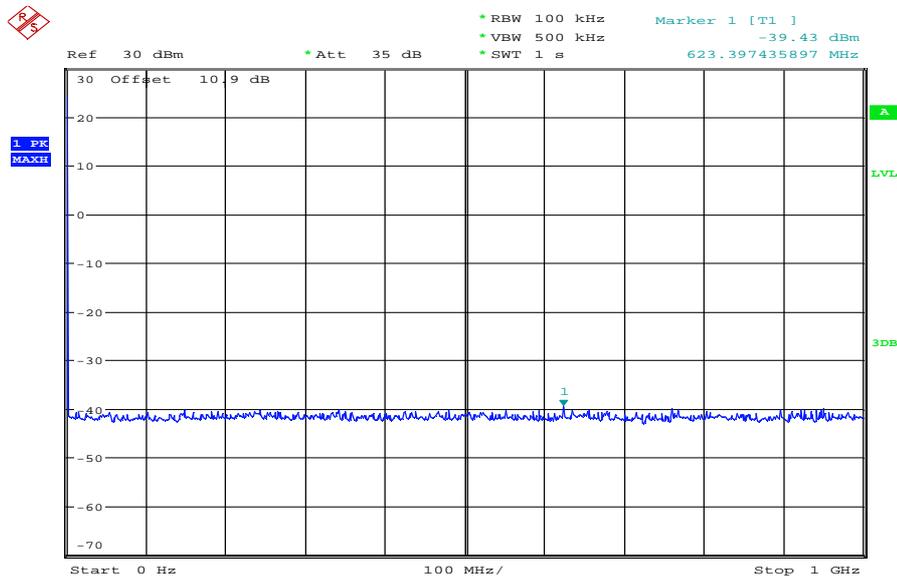
Date: 10.MAY.2011 14:00:41

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



Date: 10.MAY.2011 14:12:33

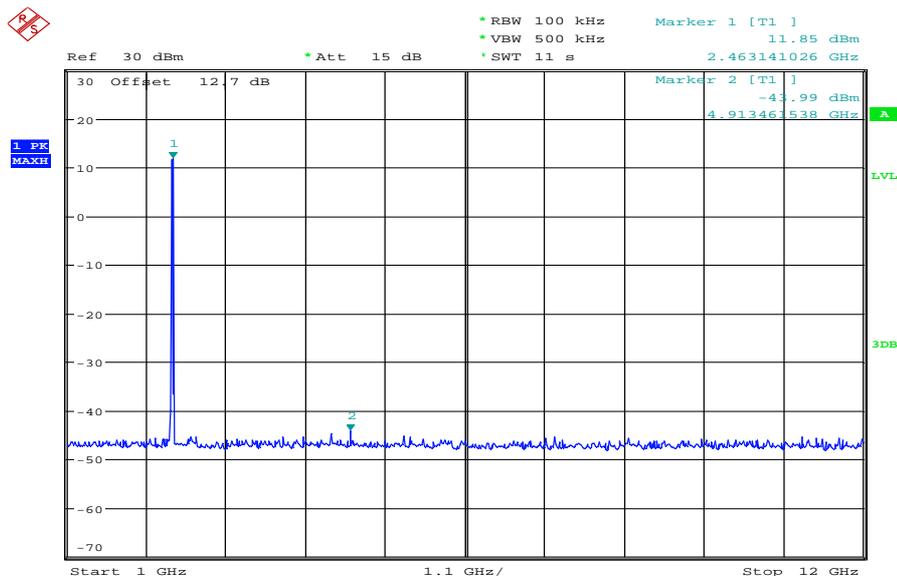
Plot 7: TX mode, highest channel, up to 1 GHz



Date: 10.MAY.2011 13:50:56

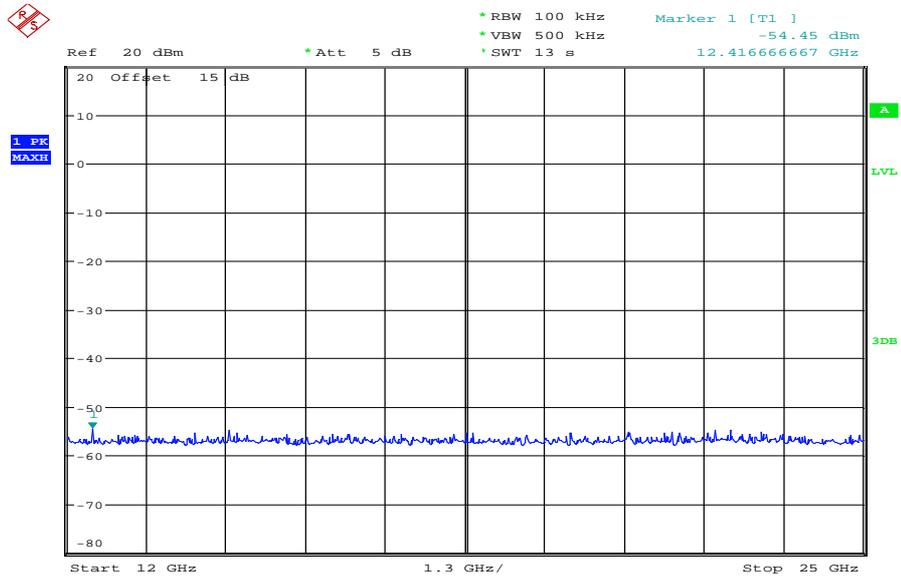
The peak at the beginning of the plot is the LO from the SA.

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



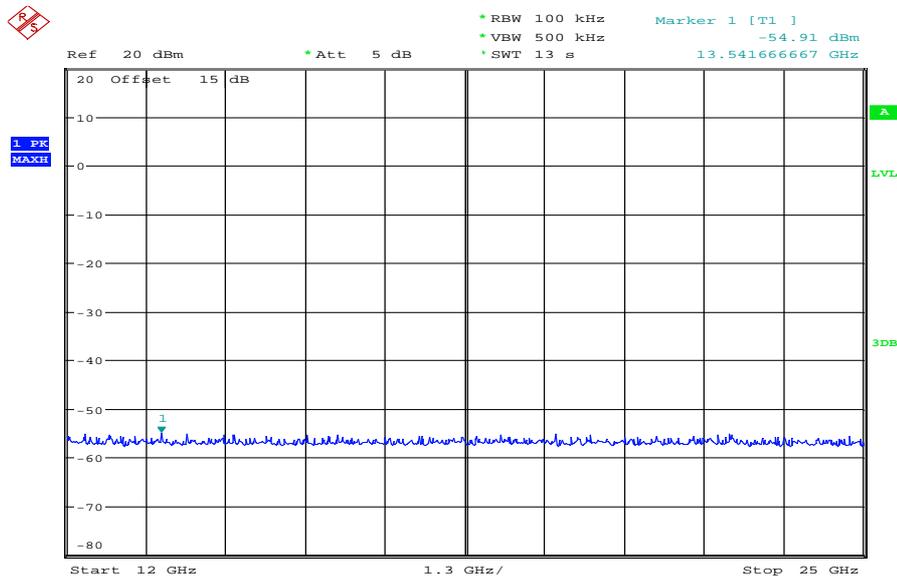
Date: 10.MAY.2011 14:01:41

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



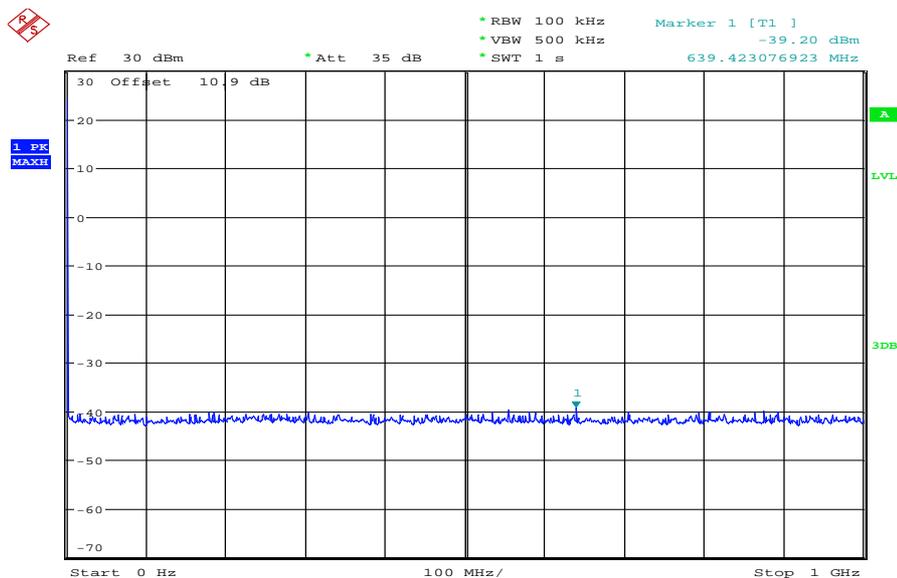
Date: 10.MAY.2011 14:13:42

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



Date: 10.MAY.2011 14:14:58

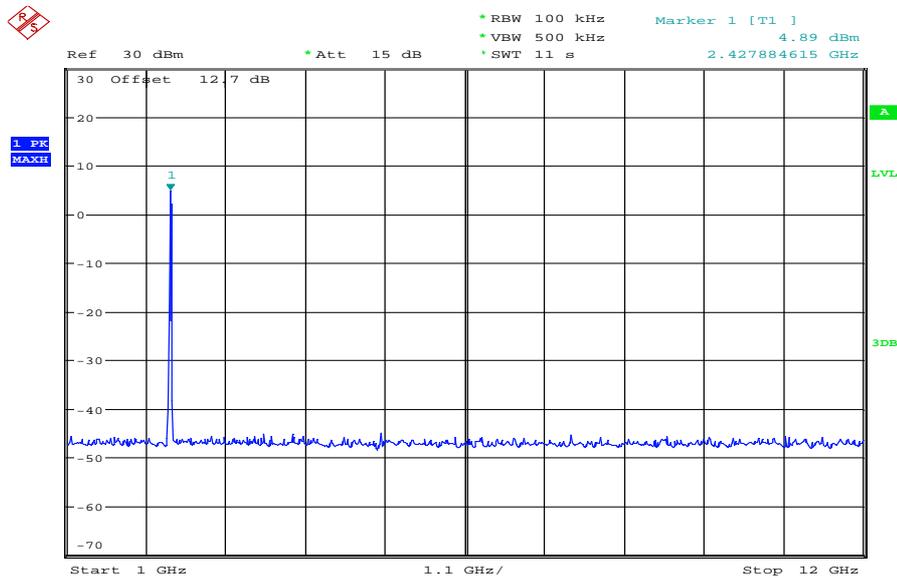
Plot 4: TX mode, middle channel, up to 1 GHz



Date: 10.MAY.2011 13:53:50

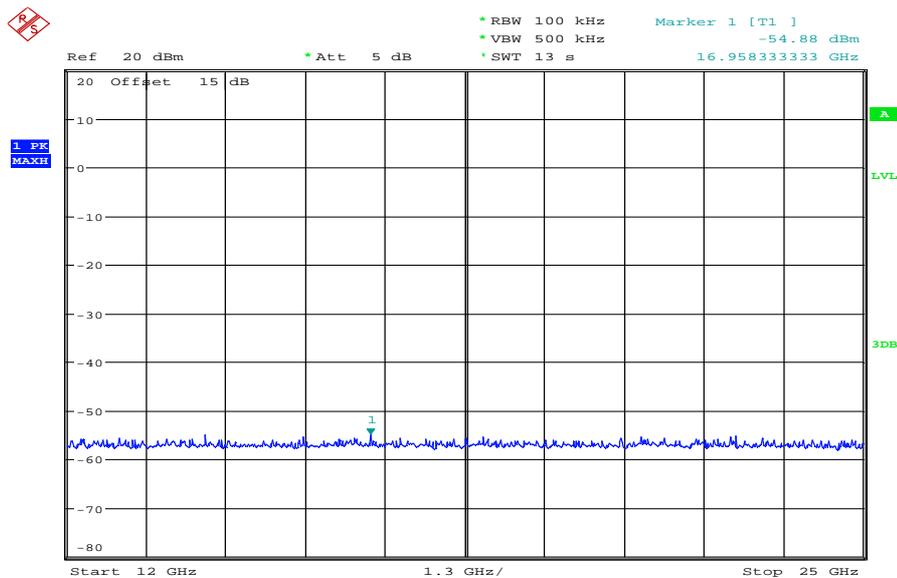
The peak at the beginning of the plot is the LO from the SA.

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



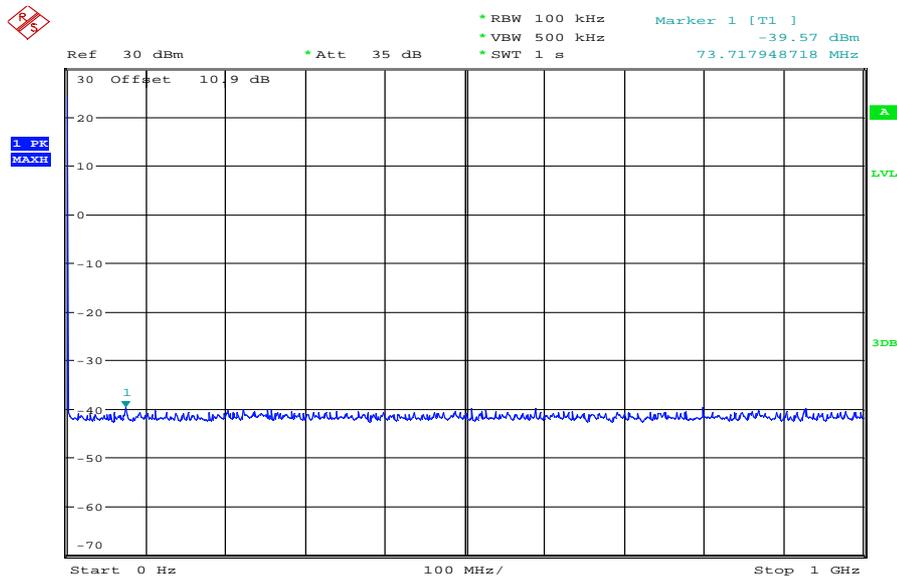
Date: 10.MAY.2011 14:04:38

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



Date: 10.MAY.2011 14:15:54

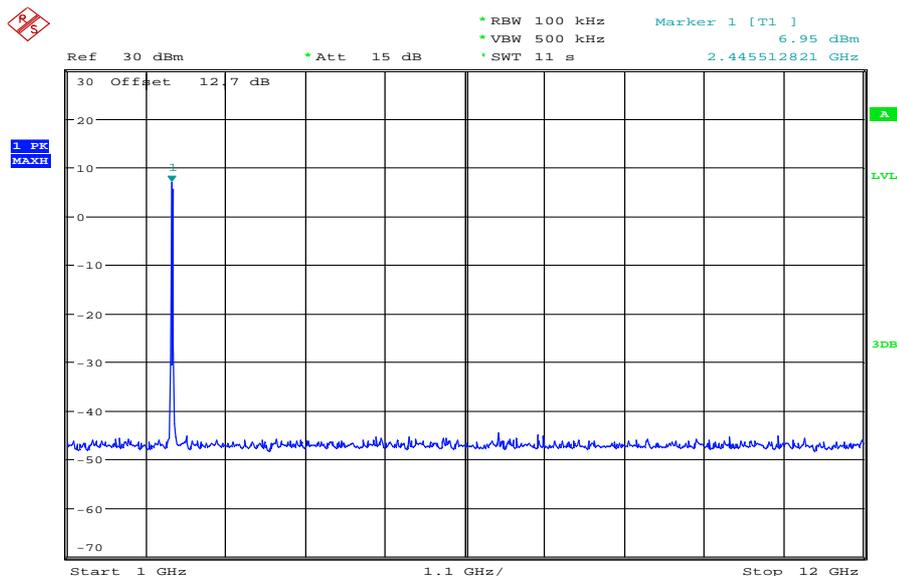
Plot 7: TX mode, highest channel, up to 1 GHz



Date: 10.MAY.2011 13:54:43

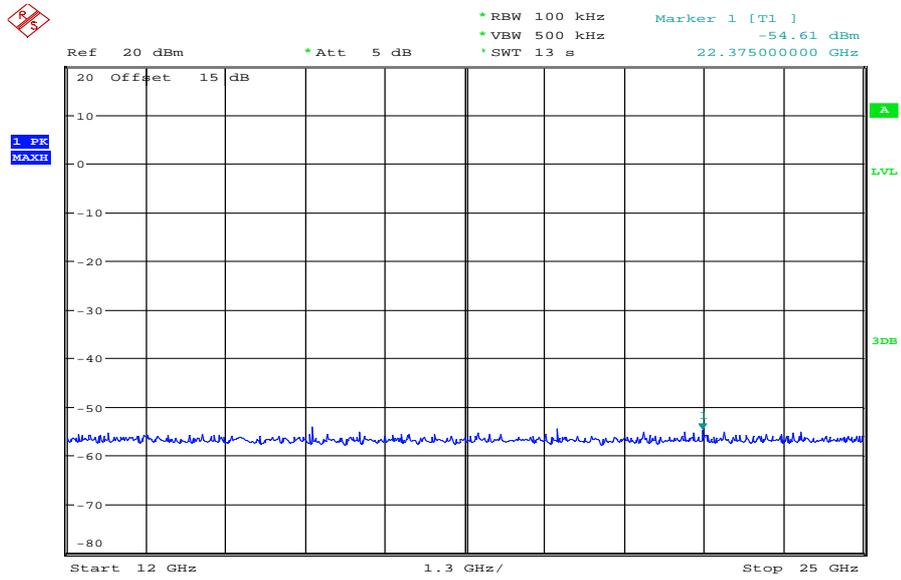
The peak at the beginning of the plot is the LO from the SA.

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



Date: 10.MAY.2011 14:05:48

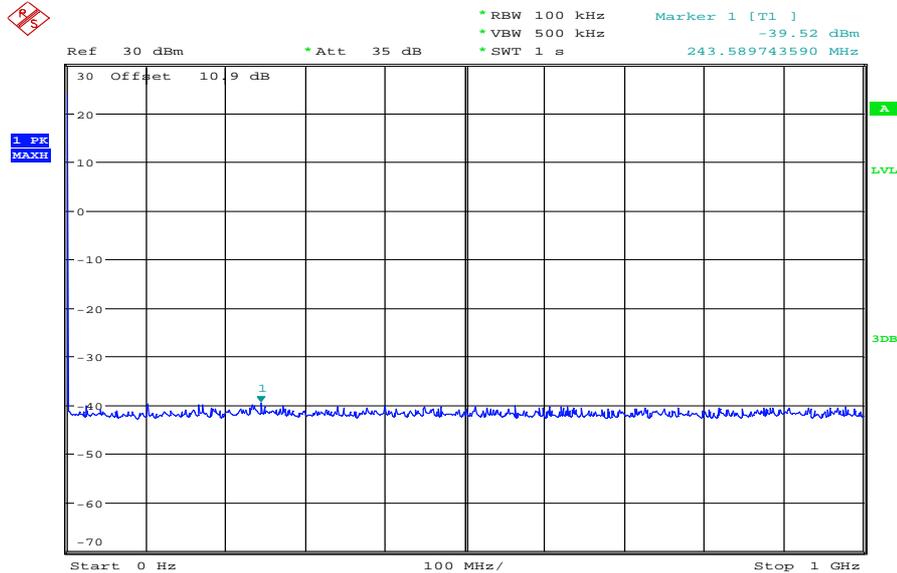
Plot 9: TX mode, highest channel, 12 GHz to 25 GHz



Date: 10.MAY.2011 14:17:08

Plots: OFDM / n – mode

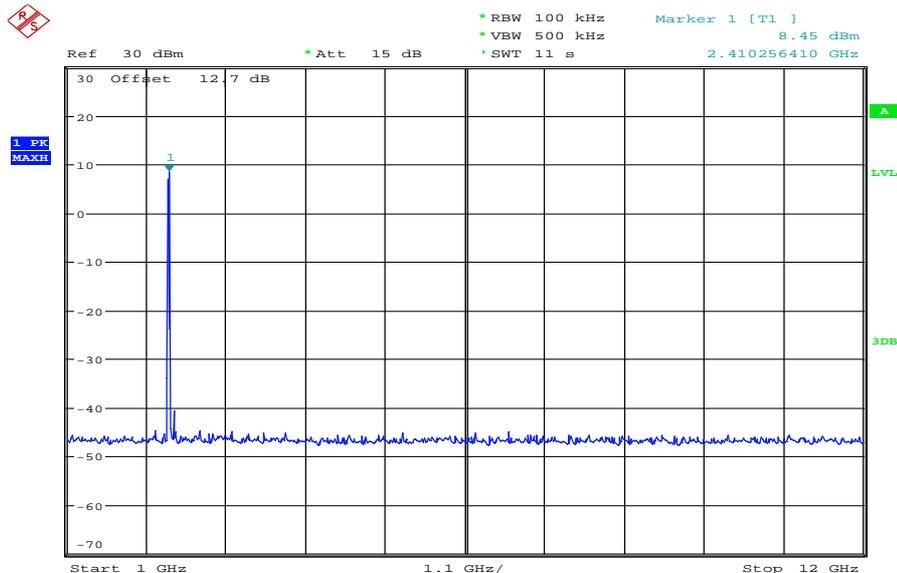
Plot 1: TX mode, lowest channel, up to 1 GHz



Date: 10.MAY.2011 13:55:30

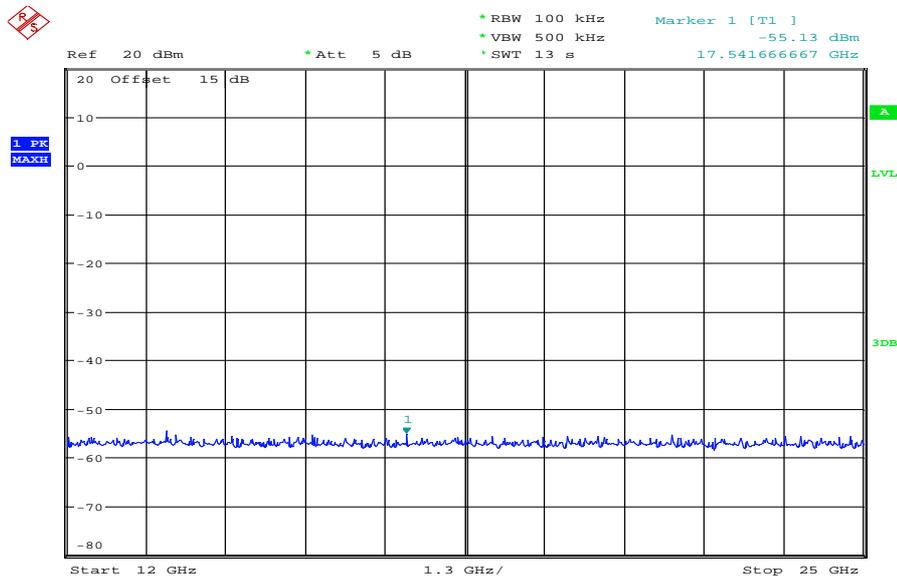
The peak at the beginning of the plot is the LO from the SA.

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



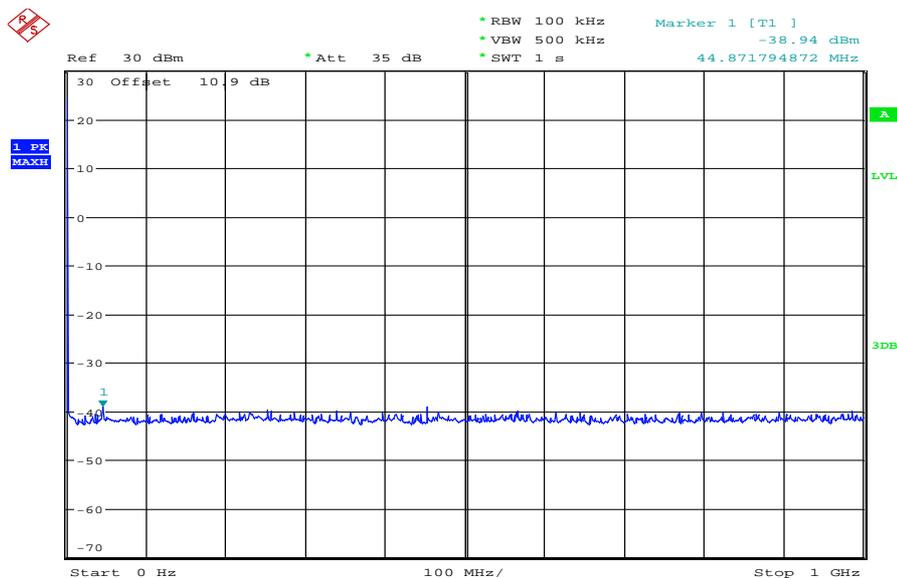
Date: 10.MAY.2011 14:07:29

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



Date: 10.MAY.2011 14:18:30

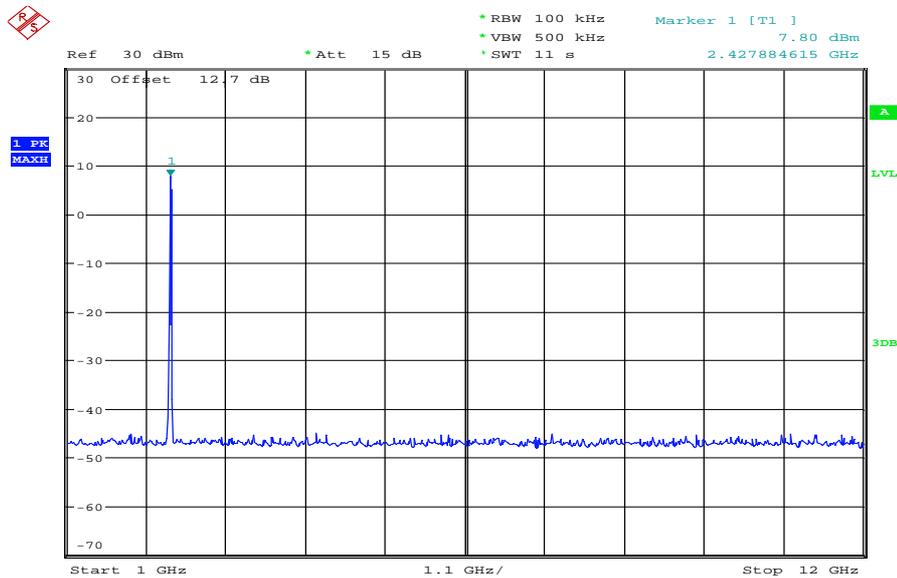
Plot 4: TX mode, middle channel, up to 1 GHz



Date: 10.MAY.2011 13:56:27

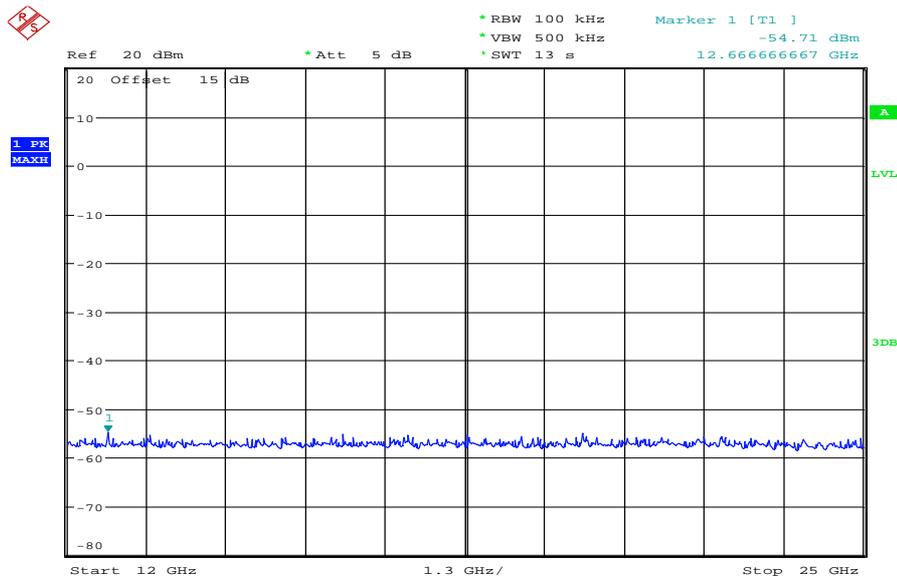
The peak at the beginning of the plot is the LO from the SA.

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



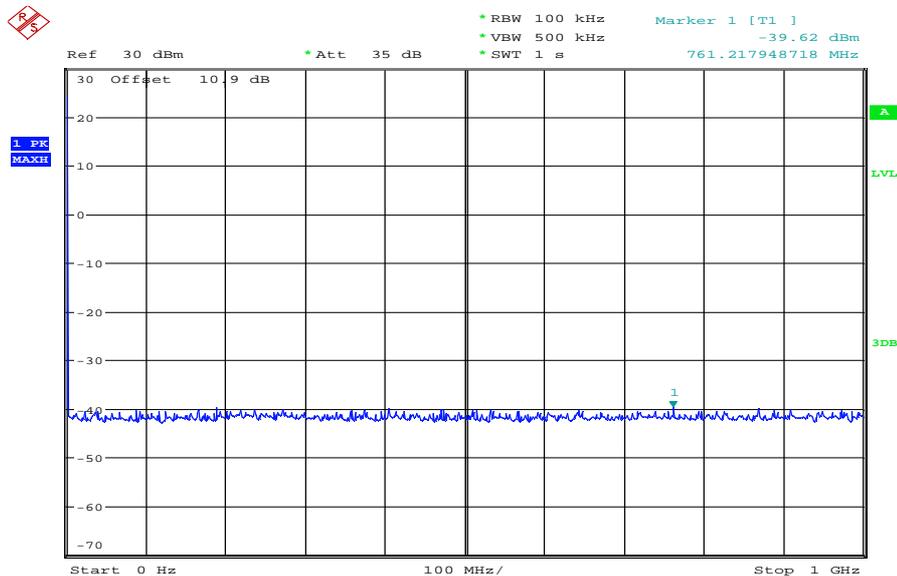
Date: 10.MAY.2011 14:08:36

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



Date: 10.MAY.2011 14:19:14

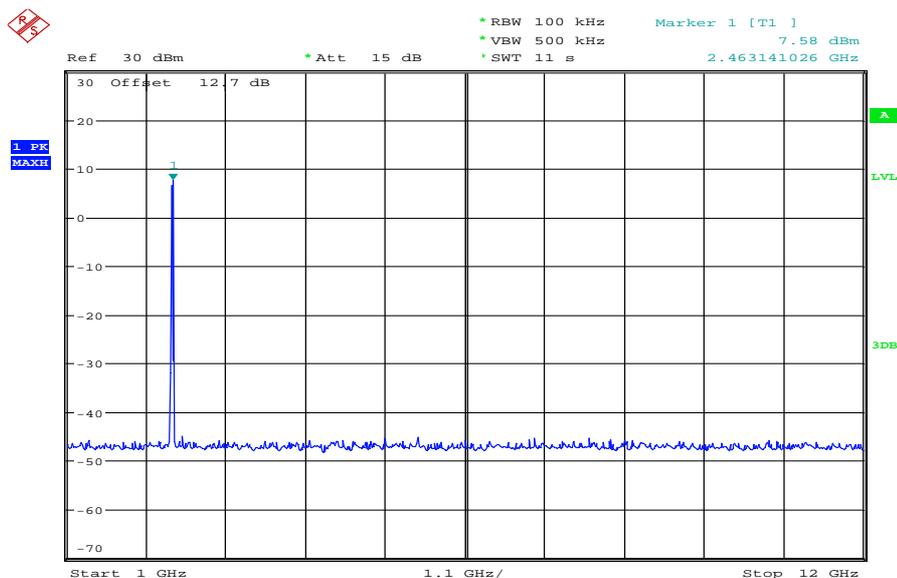
Plot 7: TX mode, highest channel, up to 1 GHz



Date: 10.MAY.2011 13:57:15

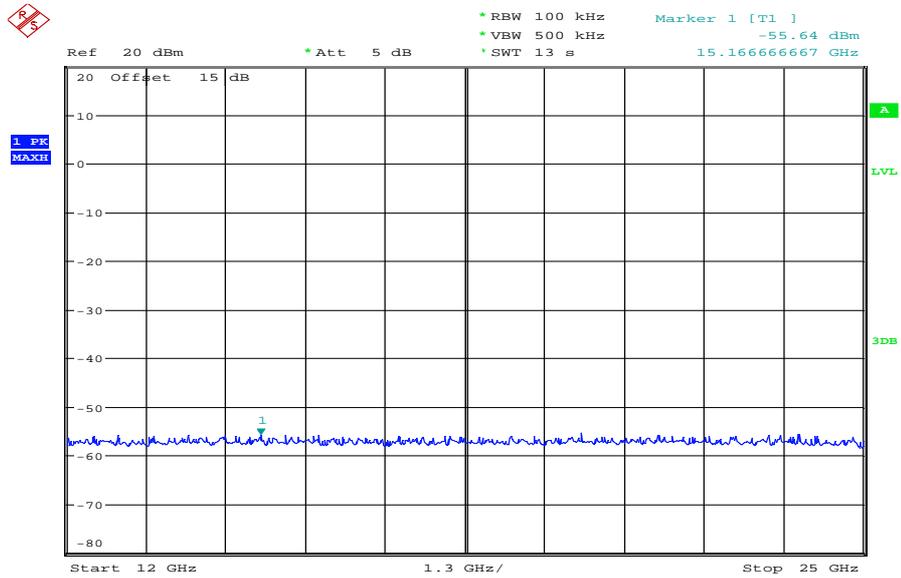
The peak at the beginning of the plot is the LO from the SA.

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



Date: 10.MAY.2011 14:09:28

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



Date: 10.MAY.2011 14:19:56

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]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
4824	1 MHz / 1 MHz PP	53.94 (v) 53.61 (h)	4874	1 MHz / 1 MHz PP	52.13 (v) 51.43 (h)	4924	1 MHz / 1 MHz PP	50.94 (v) 50.39 (h)
	1 MHz / 10 Hz PP	49.63 (v) 49.61 (h)		1 MHz / 10 Hz PP	45.87 (v) 44.96 (h)		1 MHz / 10 Hz PP	43.37 (v) 42.92 (h)
For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.		
Measurement uncertainty			± 3 dB					

Result: The result of the measurement is passed.

Results: OFDM / g – mode

TX Spurious Emissions Radiated [dBµV/m]								
OFDM – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
No critical peaks detected between 1 GHz and 12.75 GHz. (noise floor)			No critical peaks detected between 1 GHz and 12.75 GHz. (noise floor)			No critical peaks detected between 1 GHz and 12.75 GHz. (noise floor)		
For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.		
Measurement uncertainty			± 3 dB					

Result: The result of 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]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
No critical peaks detected between 1 GHz and 12.75 GHz. (noise floor)			No critical peaks detected between 1 GHz and 12.75 GHz. (noise floor)			No critical peaks detected between 1 GHz and 12.75 GHz. (noise floor)		
For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.		
Measurement uncertainty			± 3 dB					

Result: The result of the measurement is passed.

Plots: DSSS / b – mode

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

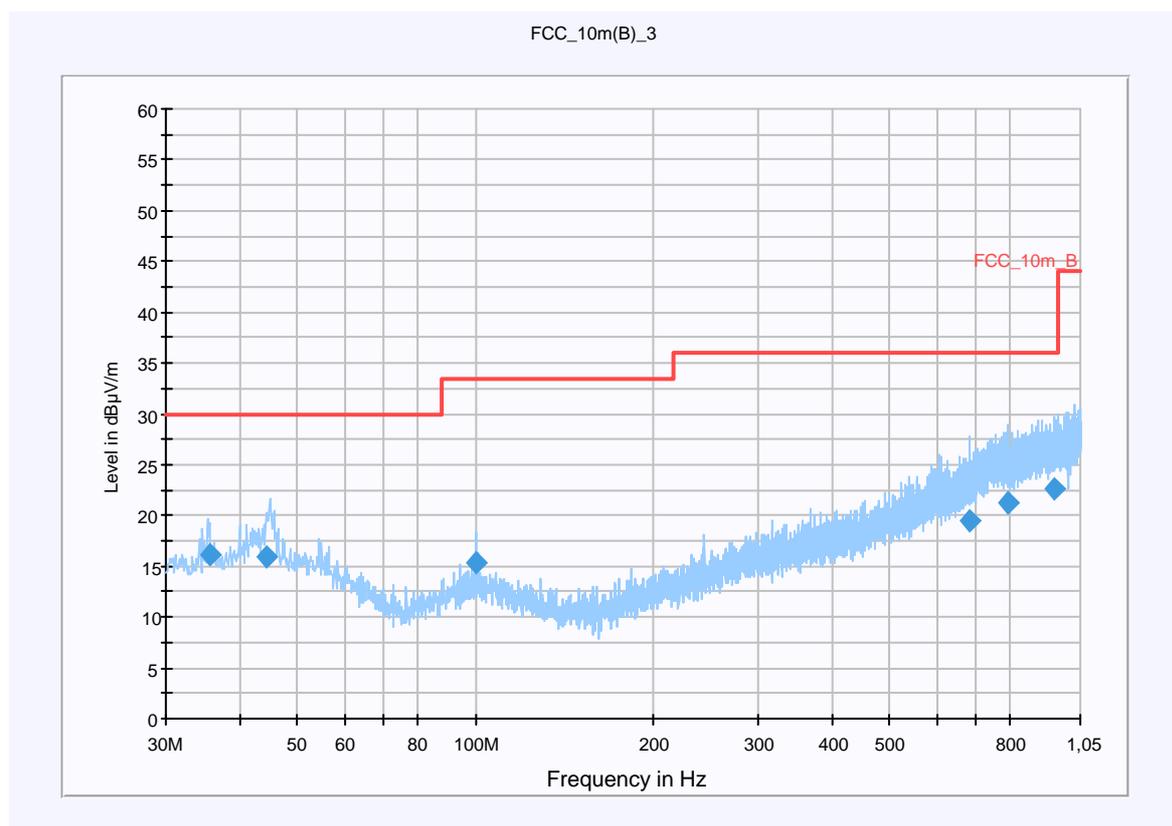
CETECOM ICT Services GmbH

Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN tx CH:1 b mode
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dBµV/m
Subrange **Detectors** **IF Bandwidth** **Meas. Time** **Receiver**
 30 MHz - 2 GHz QuasiPeak 120 kHz 15 s Receiver



Final Result 1

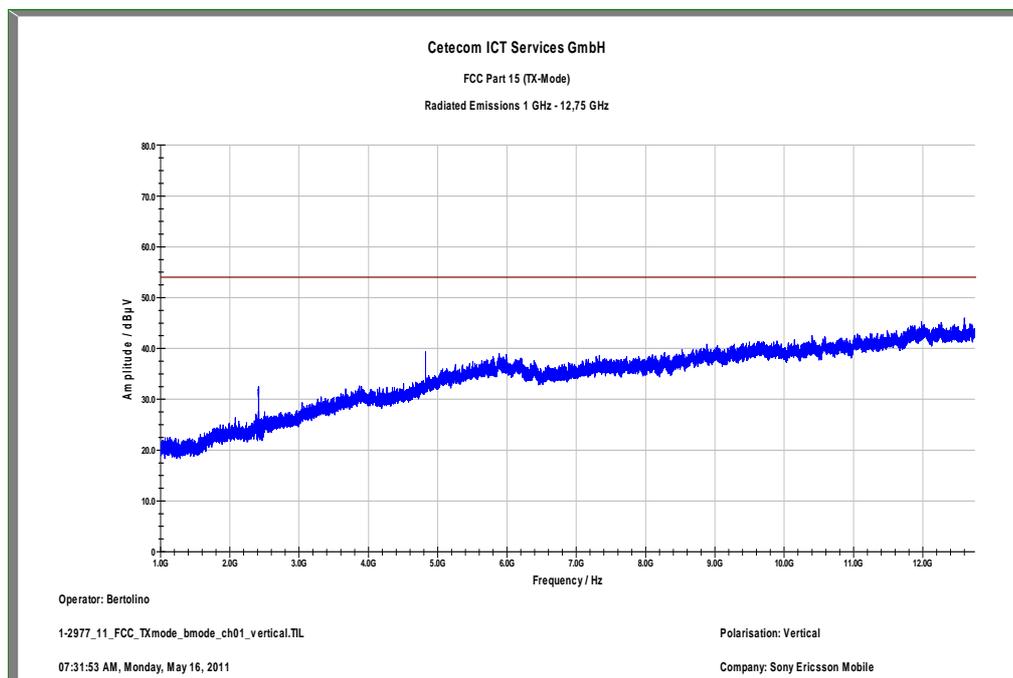
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.587050	16.1	15000.000	120.000	170.0	V	8.0	13.1	13.9	30.0	
44.358000	15.9	15000.000	120.000	114.0	V	-2.0	13.3	14.1	30.0	
100.006950	15.4	15000.000	120.000	170.0	V	179.0	11.9	18.1	33.5	
681.186450	19.4	15000.000	120.000	98.0	V	196.0	22.0	16.6	36.0	
791.489700	21.2	15000.000	120.000	170.0	H	274.0	23.8	14.8	36.0	
946.276950	22.6	15000.000	120.000	146.0	H	274.0	25.3	13.4	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: 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

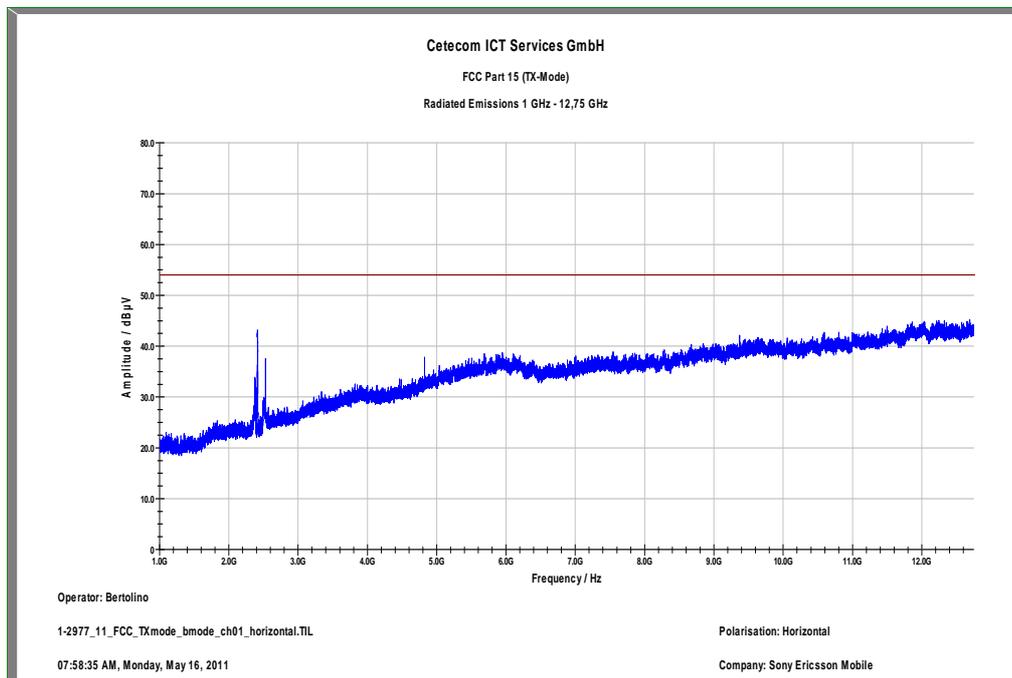
EMC 32 Version 8.10.00

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



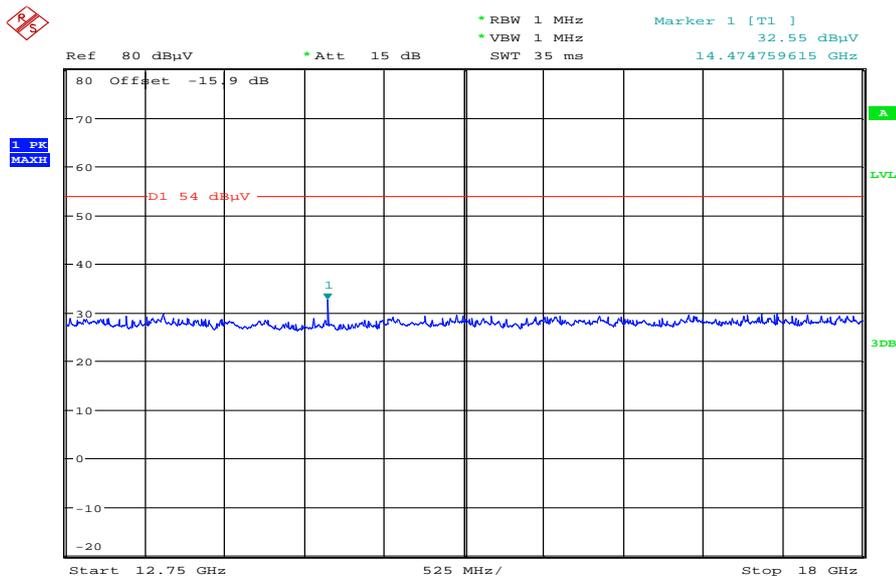
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



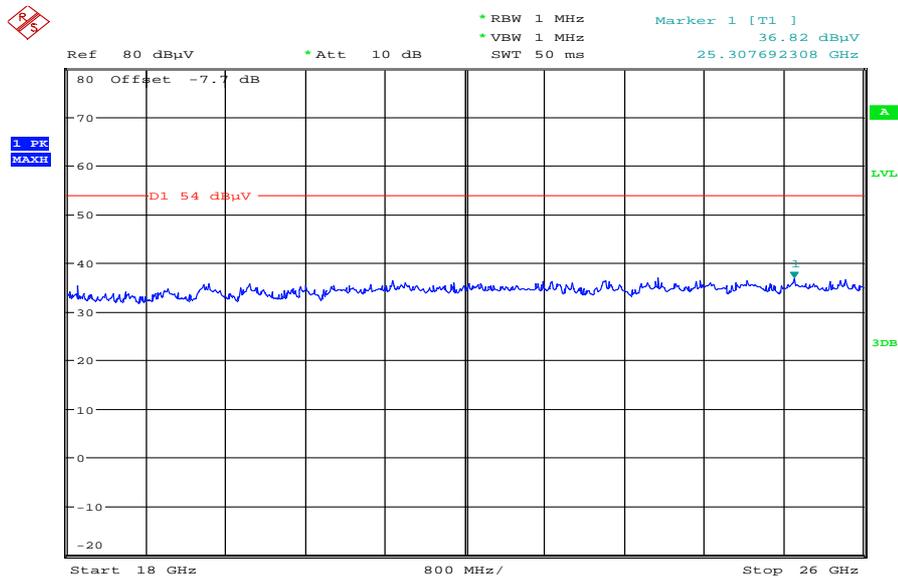
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 12.MAY.2011 07:19:36

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



Date: 12.MAY.2011 08:50:52

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

CETECOM ICT Services GmbH

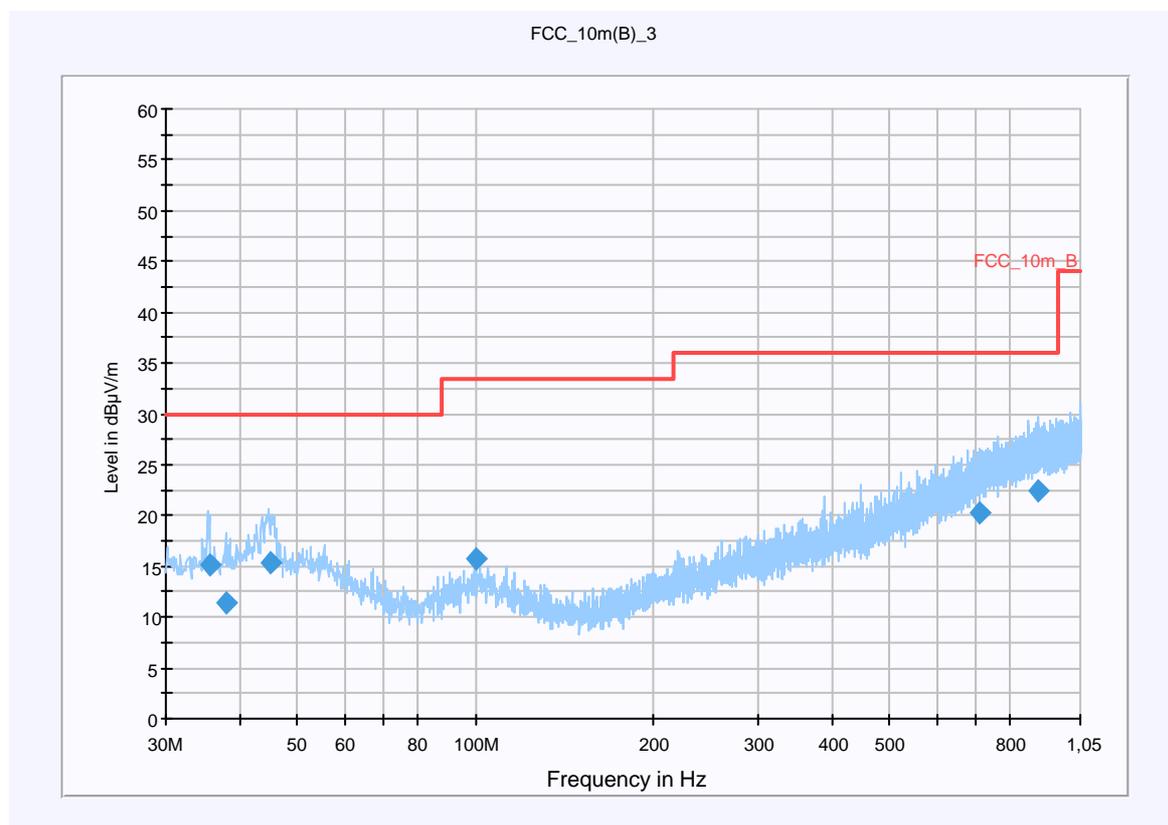
Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN tx CH:6 b mode
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

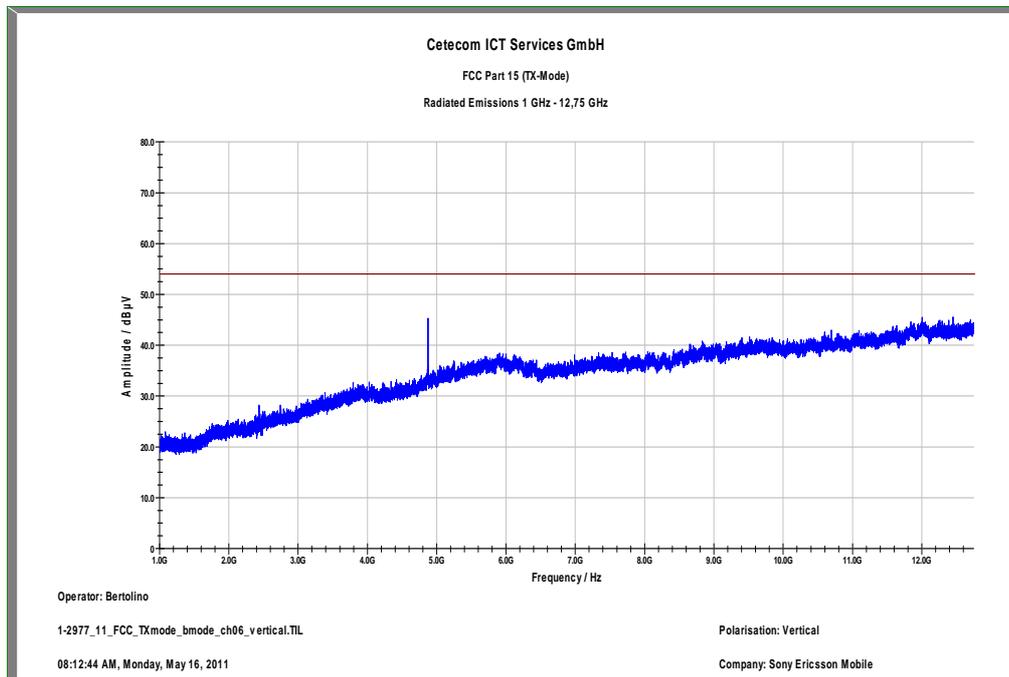
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.580750	15.1	15000.000	120.000	170.0	V	89.0	13.1	14.9	30.0	
38.005050	11.3	15000.000	120.000	170.0	V	196.0	13.3	18.7	30.0	
45.094050	15.4	15000.000	120.000	170.0	V	176.0	13.3	14.6	30.0	
99.987900	15.7	15000.000	120.000	124.0	V	179.0	11.9	17.8	33.5	
711.732600	20.3	15000.000	120.000	170.0	H	196.0	22.8	15.7	36.0	
892.138050	22.5	15000.000	120.000	170.0	H	196.0	25.1	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: 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

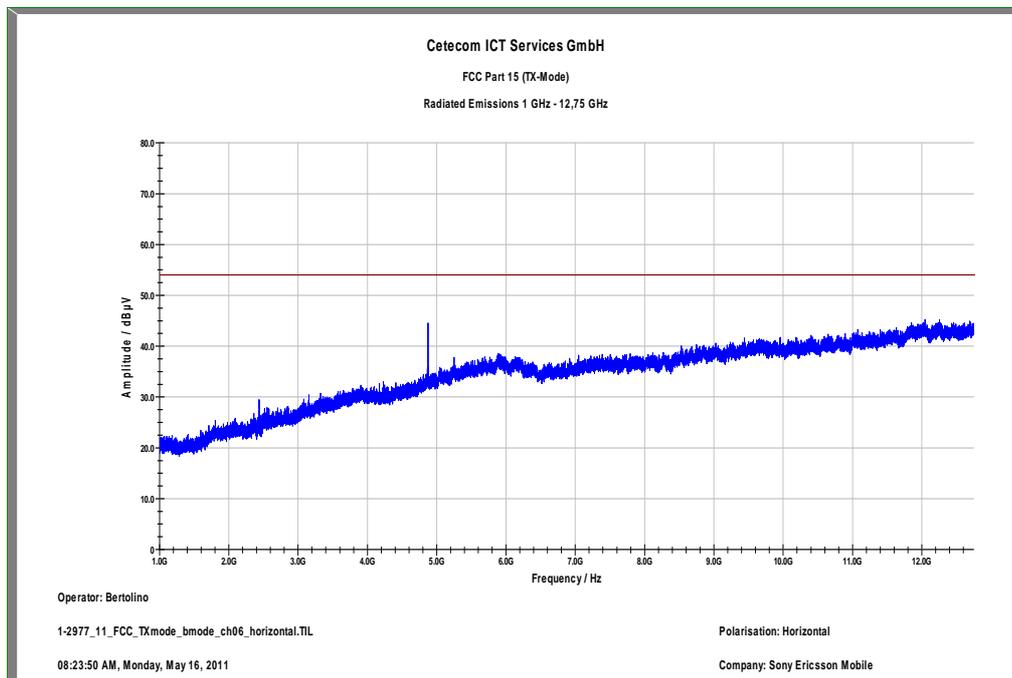
EMC 32 Version 8.10.00

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



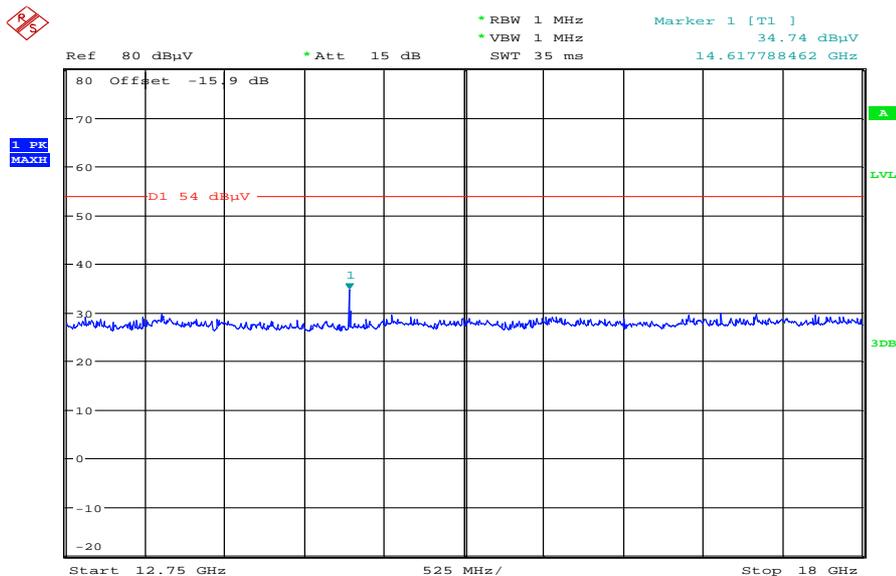
The carrier signal is notched with a 2.4 GHz band rejection filter.

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

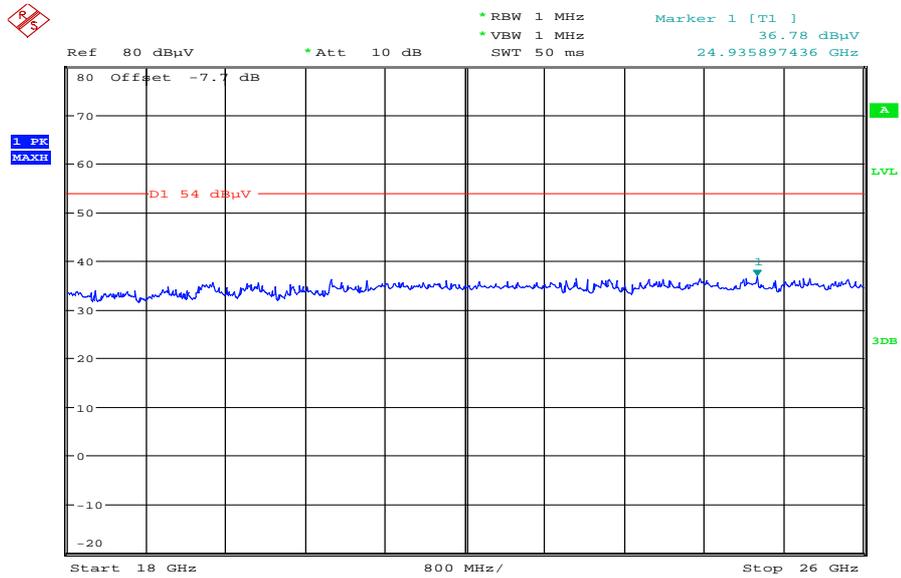


The carrier signal is notched with a 2.4 GHz band rejection filter.

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



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



Date: 12.MAY.2011 08:52:29

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

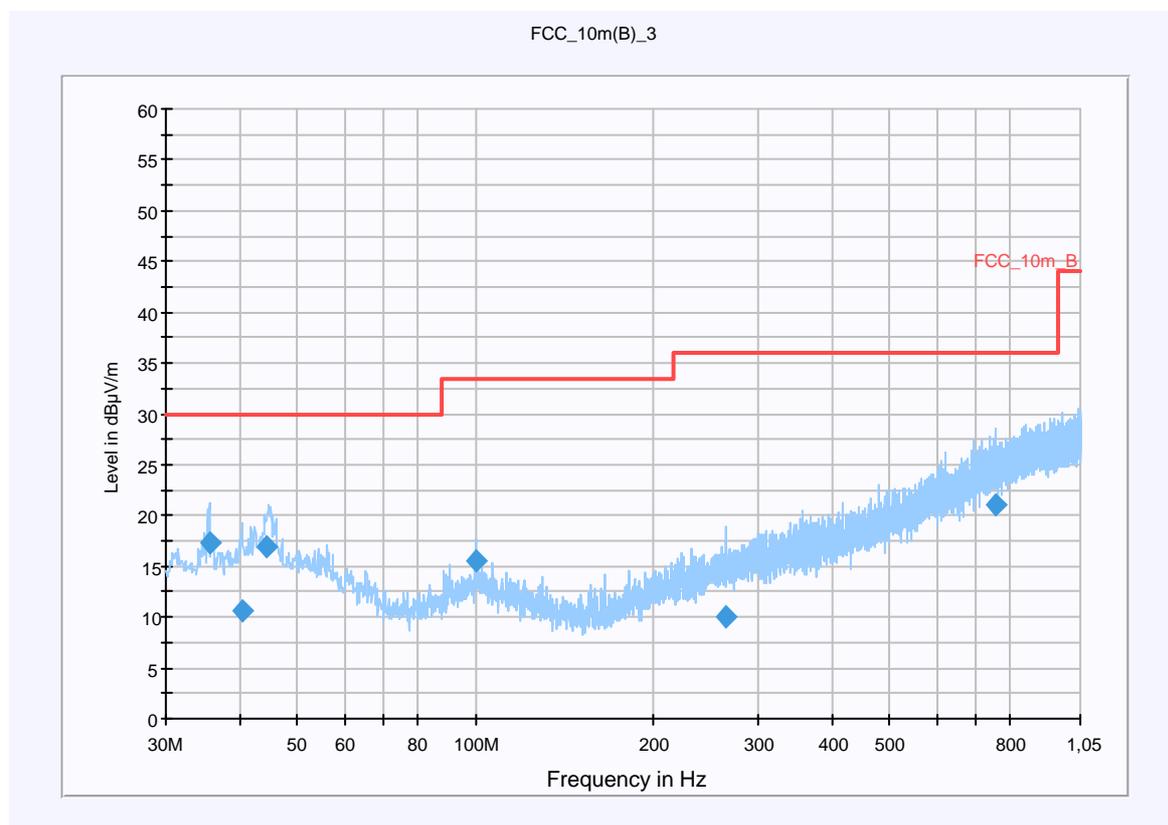
CETECOM ICT Services GmbH

Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN tx CH:11 b mode
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dBµV/m
Subrange **Detectors** **IF Bandwidth** **Meas. Time** **Receiver**
 30 MHz - 2 GHz QuasiPeak 120 kHz 15 s Receiver



Final Result 1

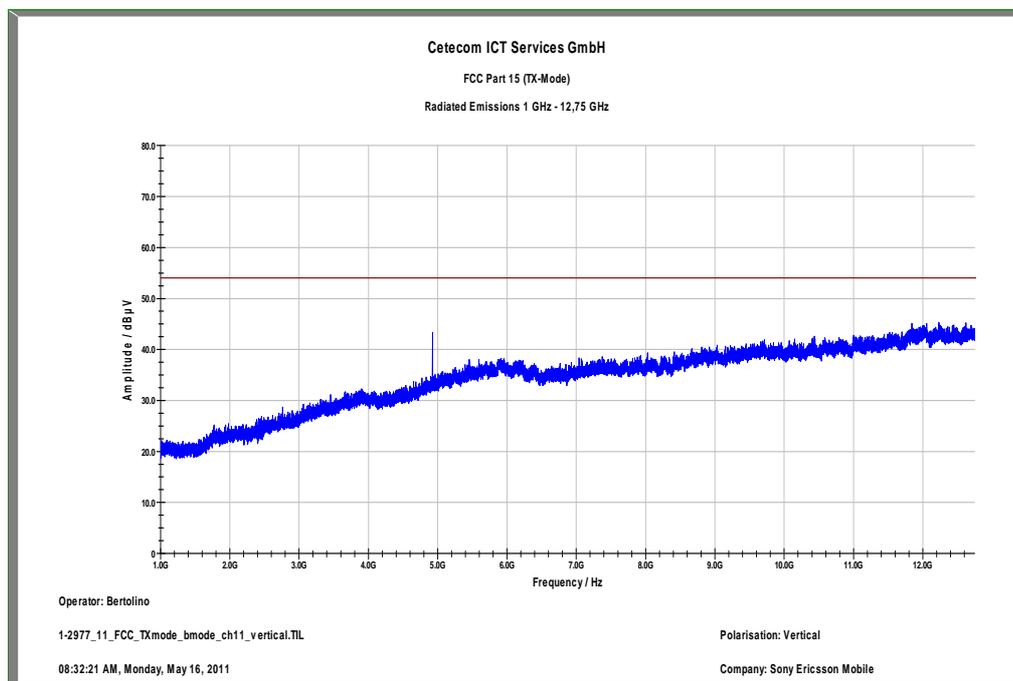
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.657400	17.4	15000.000	120.000	106.0	V	260.0	13.1	12.6	30.0	
40.325550	10.7	15000.000	120.000	170.0	H	106.0	13.4	19.3	30.0	
44.263050	16.9	15000.000	120.000	98.0	V	-1.0	13.3	13.1	30.0	
100.013700	15.6	15000.000	120.000	98.0	V	0.0	11.9	17.9	33.5	
265.391700	10.1	15000.000	120.000	106.0	H	92.0	13.7	25.9	36.0	
755.926350	21.1	15000.000	120.000	113.0	H	86.0	23.7	14.9	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: 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

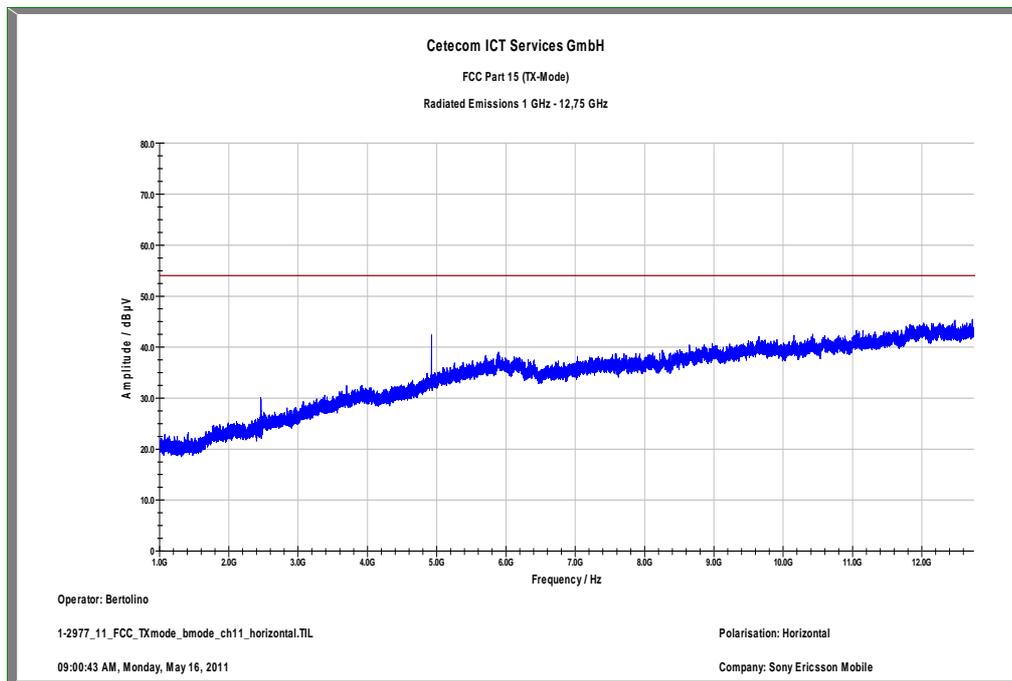
EMC 32 Version 8.10.00

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



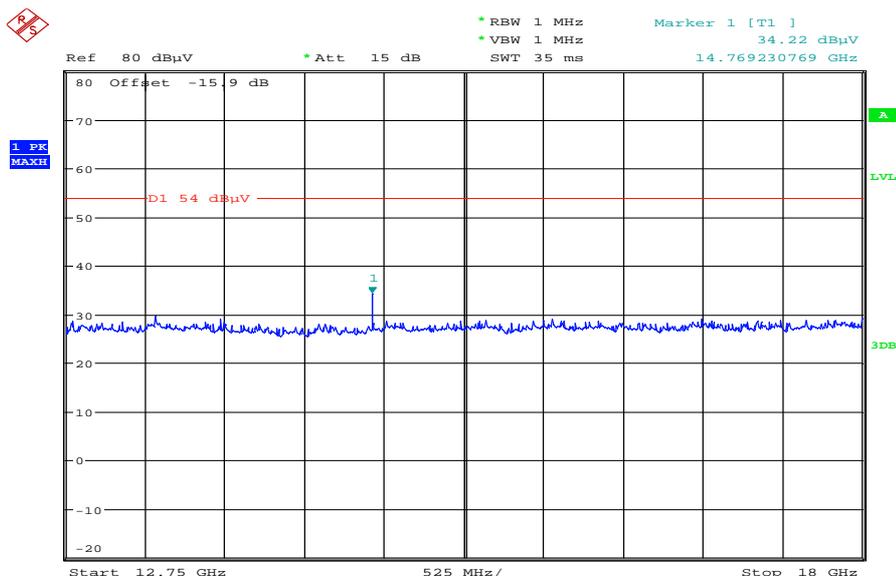
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



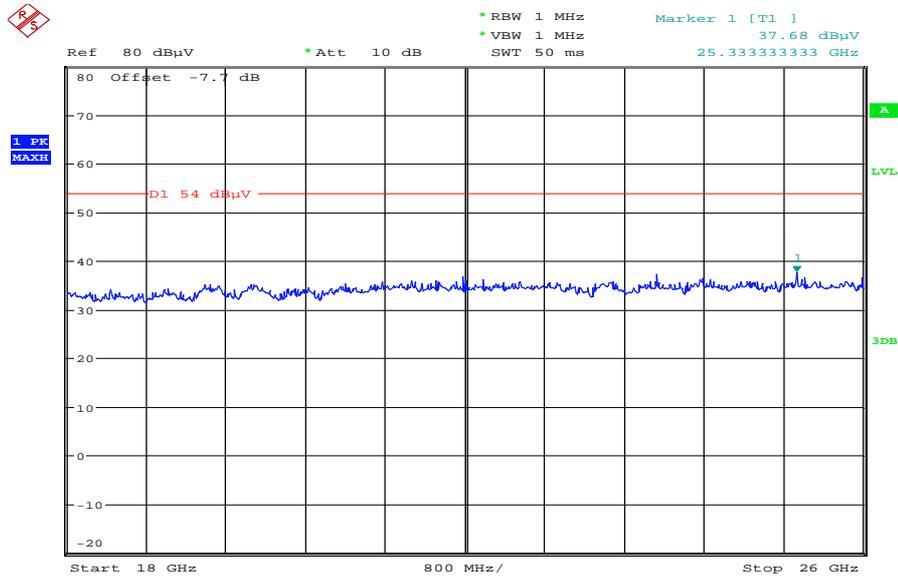
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 12.MAY.2011 07:24:02

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



Date: 12.MAY.2011 08:53:29

Plots: OFDM / g – mode

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

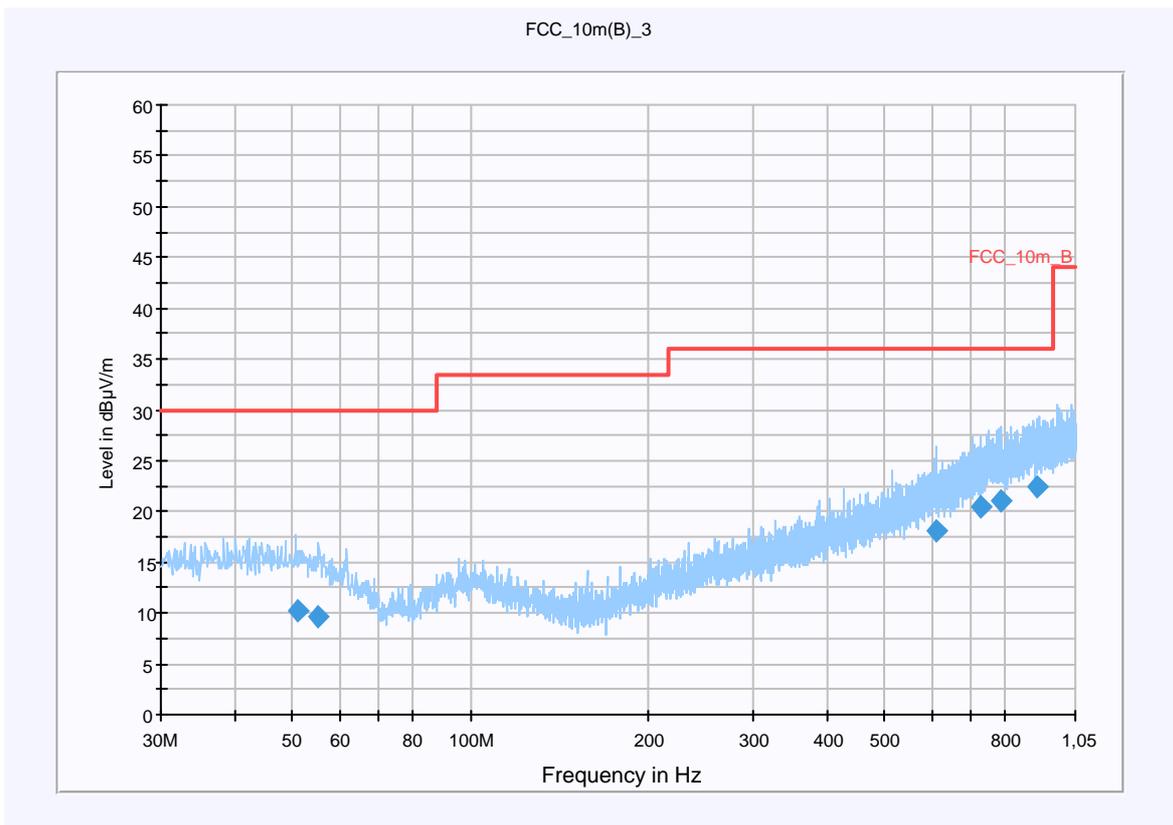
CETECOM ICT Services GmbH

Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN tx CH: 1 g- mode
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dBµV/m
Subrange **Detectors** **IF Bandwidth** **Meas. Time** **Receiver**
 30 MHz - 2 GHz QuasiPeak 120 kHz 15 s Receiver



Final Result 1

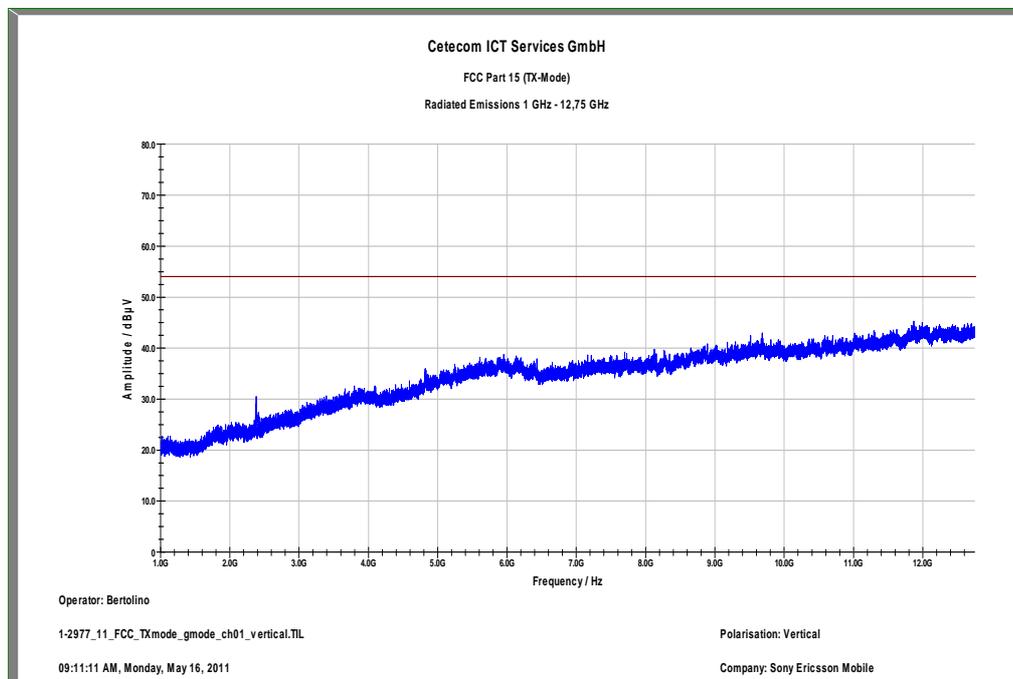
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
51.187200	10.3	15000.000	120.000	170.0	H	196.0	13.3	19.7	30.0	
55.200750	9.6	15000.000	120.000	107.0	V	174.0	12.8	20.4	30.0	
613.097700	18.1	15000.000	120.000	170.0	H	268.0	20.9	17.9	36.0	
728.630100	20.5	15000.000	120.000	170.0	V	270.0	23.2	15.5	36.0	
784.827750	21.0	15000.000	120.000	170.0	V	86.0	23.8	15.0	36.0	
908.347350	22.4	15000.000	120.000	170.0	V	8.0	25.2	13.6	36.0	

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

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: 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

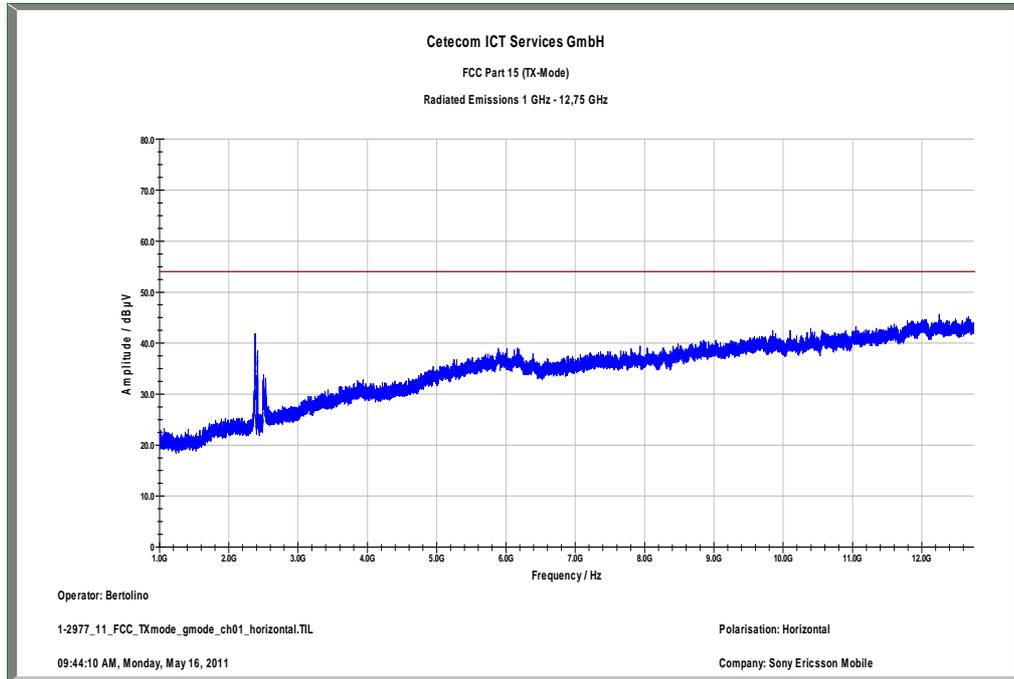
EMC 32 Version 8.10.00

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



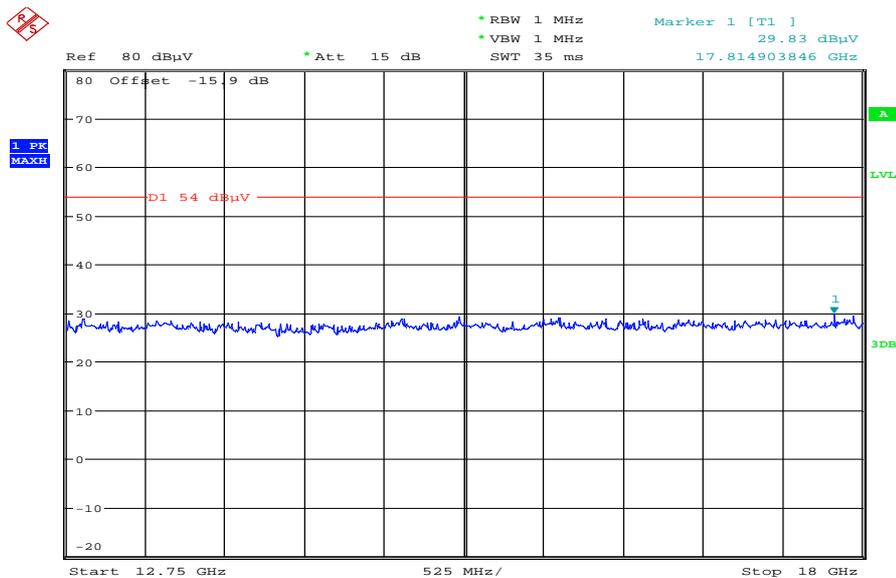
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



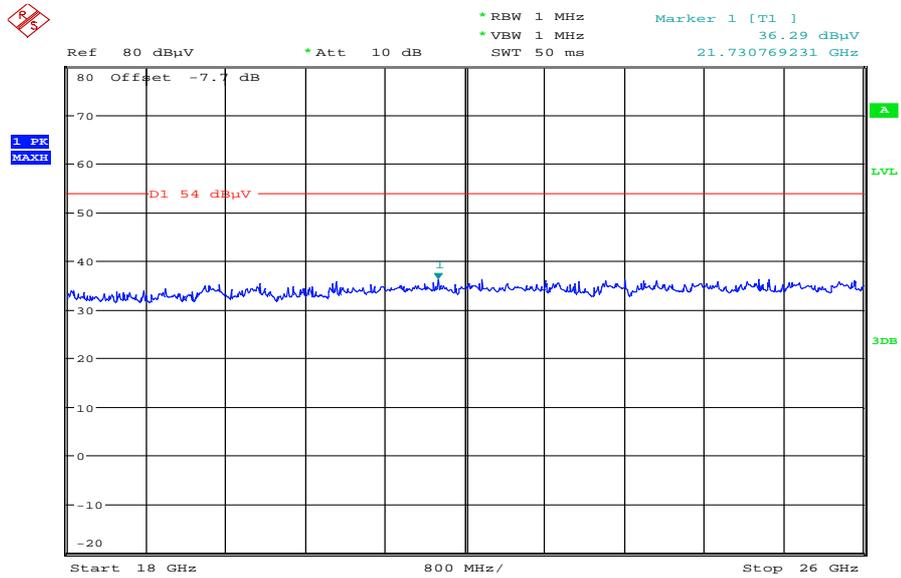
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 12.MAY.2011 07:25:32

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



Date: 12.MAY.2011 08:59:40

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

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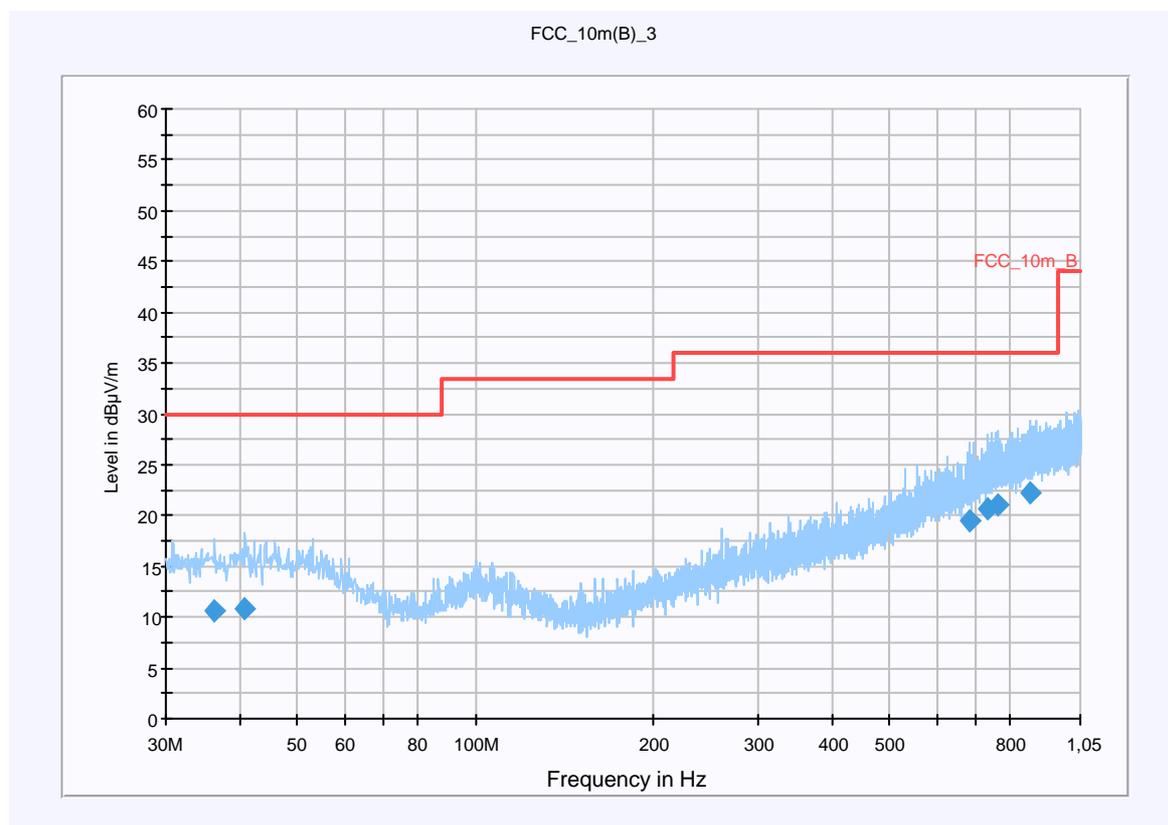
Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN tx CH: 6 g- mode
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

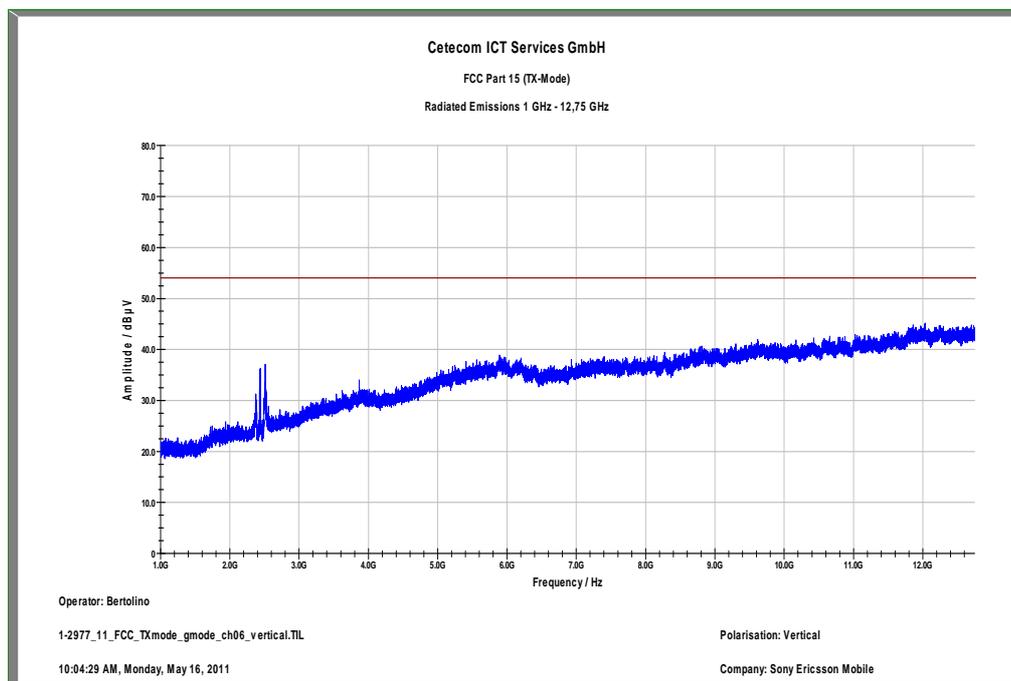
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
36.309150	10.6	15000.000	120.000	98.0	V	270.0	13.1	19.4	30.0	
40.629750	10.8	15000.000	120.000	106.0	V	179.0	13.4	19.2	30.0	
683.214750	19.4	15000.000	120.000	98.0	H	-4.0	22.0	16.6	36.0	
732.954300	20.7	15000.000	120.000	170.0	V	196.0	23.3	15.3	36.0	
759.225750	21.0	15000.000	120.000	98.0	V	12.0	23.7	15.0	36.0	
865.942950	22.3	15000.000	120.000	170.0	V	-4.0	24.8	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: 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

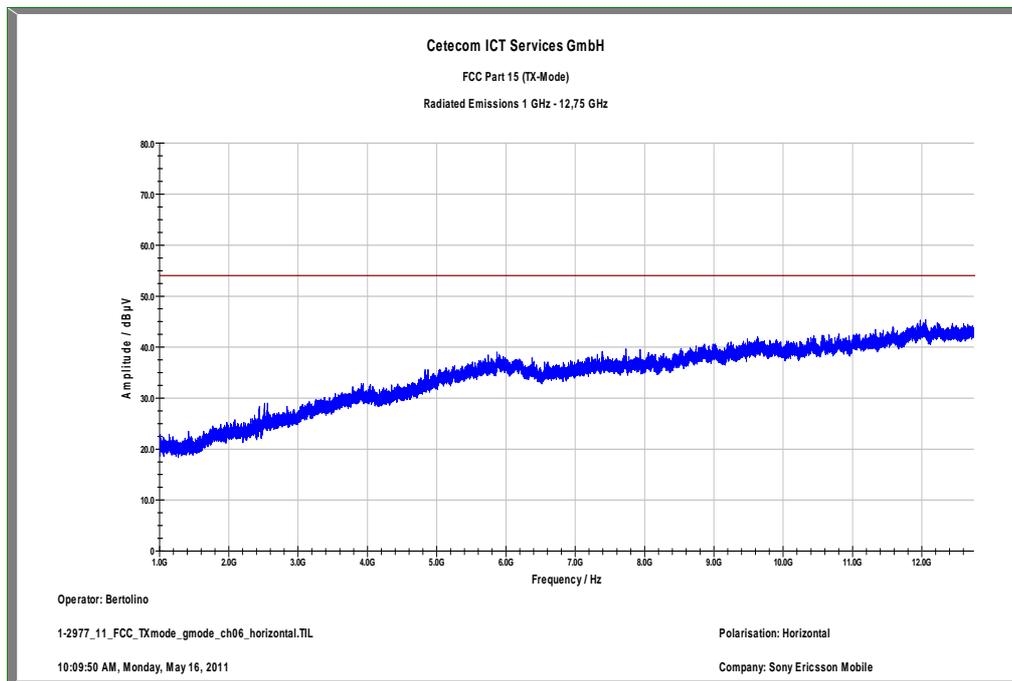
EMC 32 Version 8.10.00

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



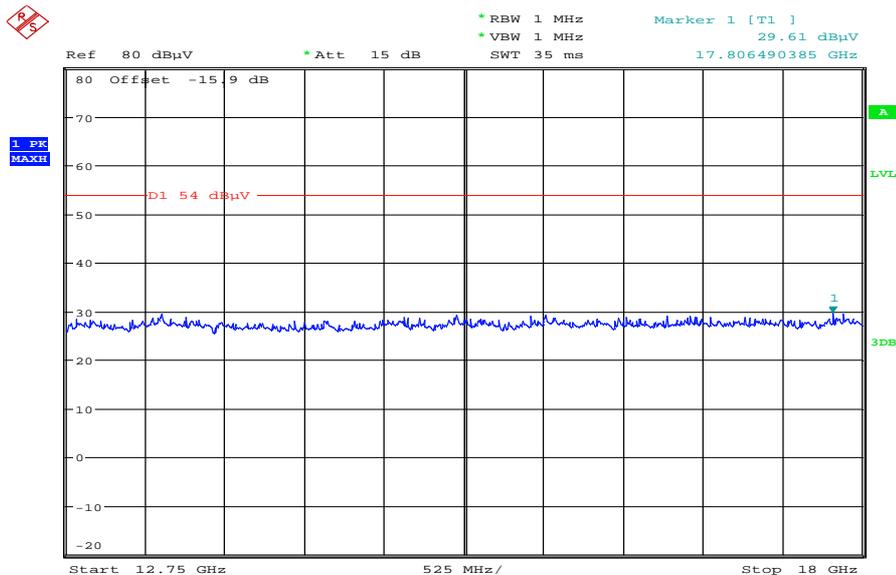
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



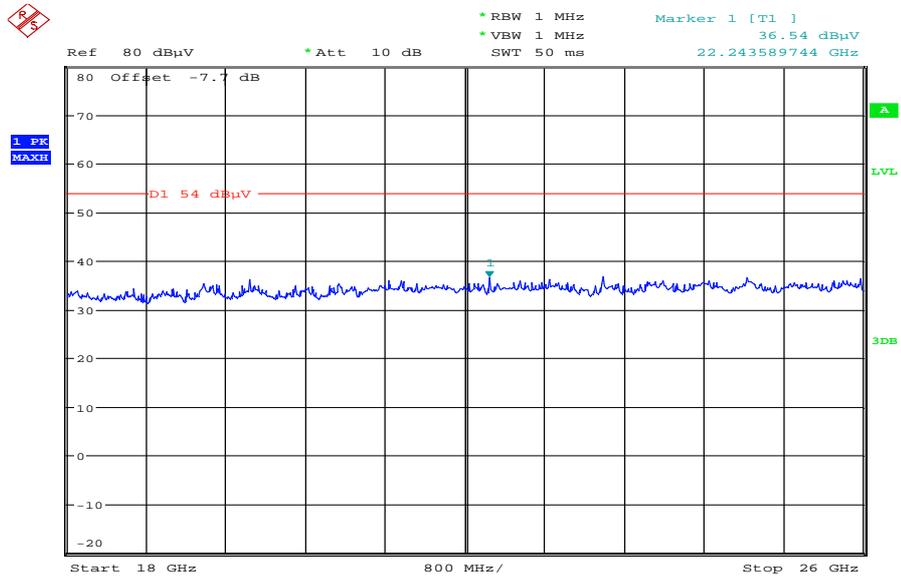
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 12.MAY.2011 07:26:58

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



Date: 12.MAY.2011 09:00:39

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

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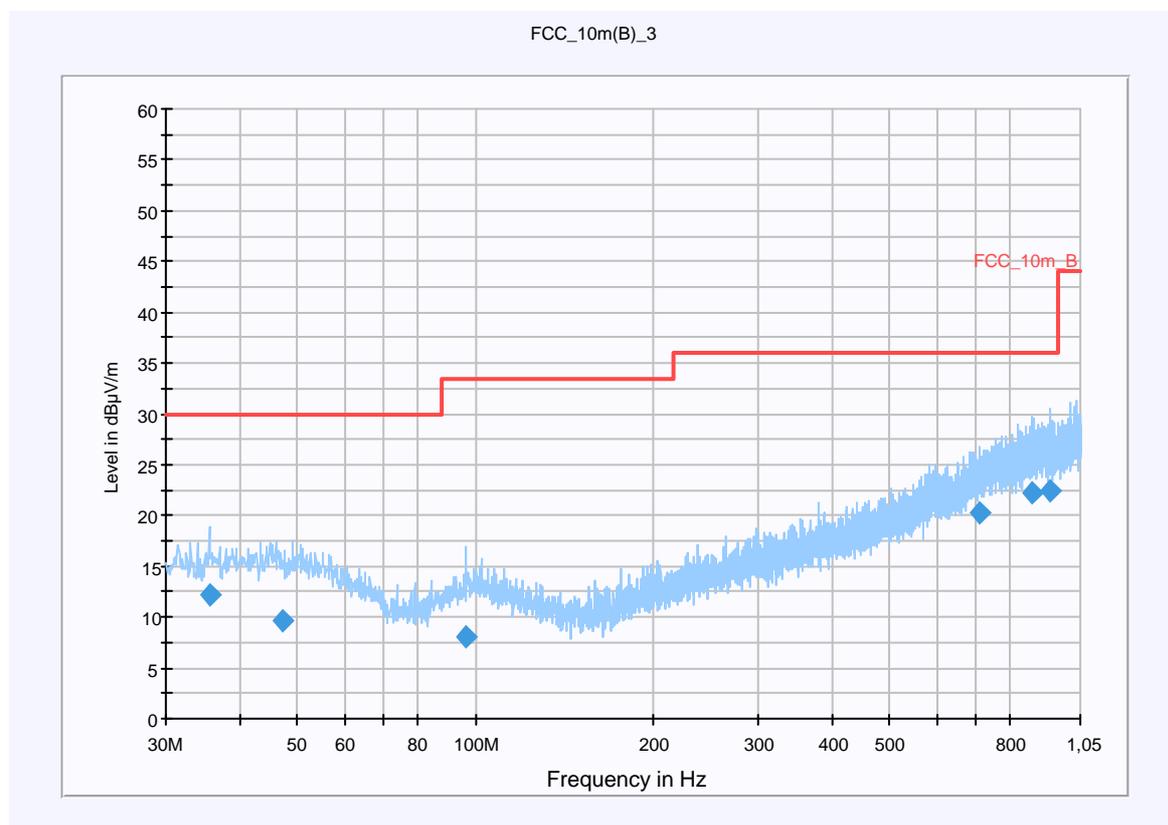
Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN tx CH: 11 g- mode
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

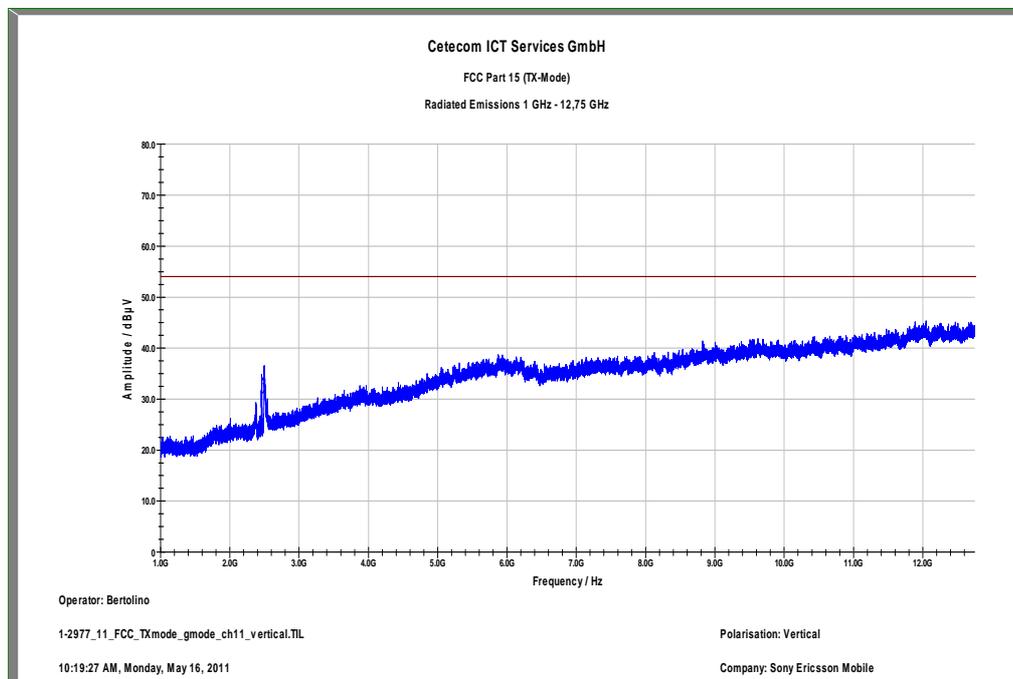
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.669850	12.2	15000.000	120.000	124.0	V	196.0	13.1	17.8	30.0	
47.392200	9.6	15000.000	120.000	149.0	V	196.0	13.3	20.4	30.0	
96.628500	8.1	15000.000	120.000	98.0	V	273.0	11.5	25.4	33.5	
708.490350	20.2	15000.000	120.000	170.0	H	173.0	22.7	15.8	36.0	
868.023150	22.3	15000.000	120.000	170.0	H	264.0	24.8	13.7	36.0	
937.194150	22.5	15000.000	120.000	170.0	H	85.0	25.3	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: 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

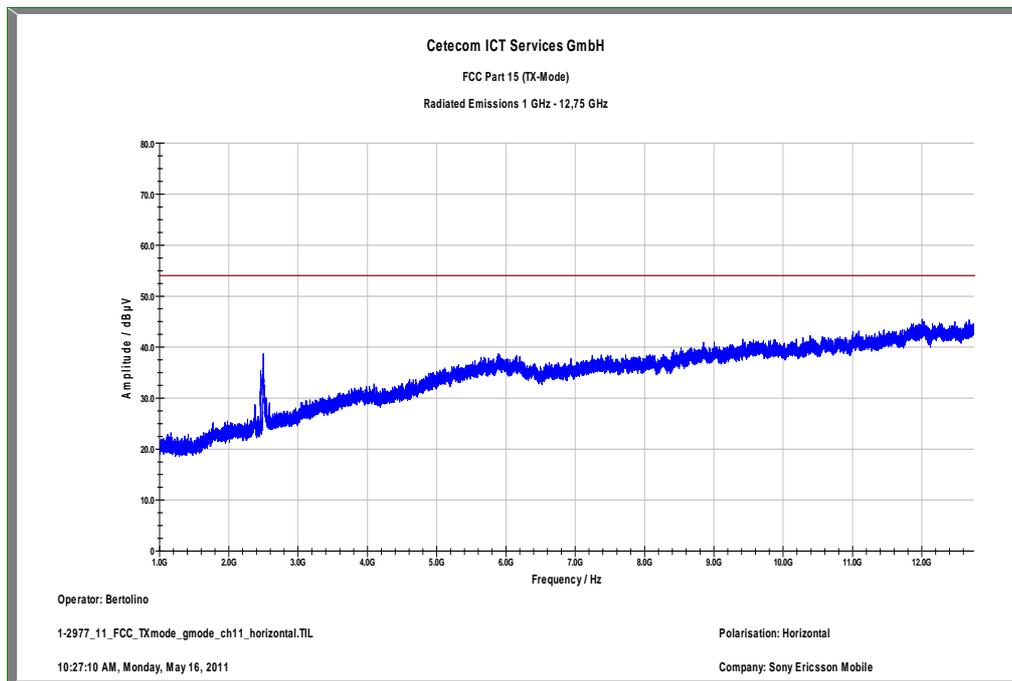
EMC 32 Version 8.10.00

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



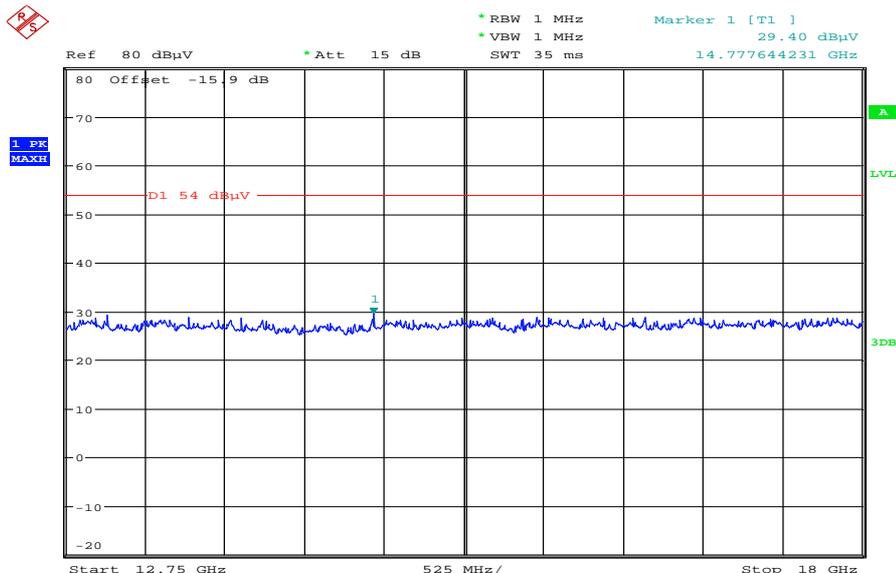
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



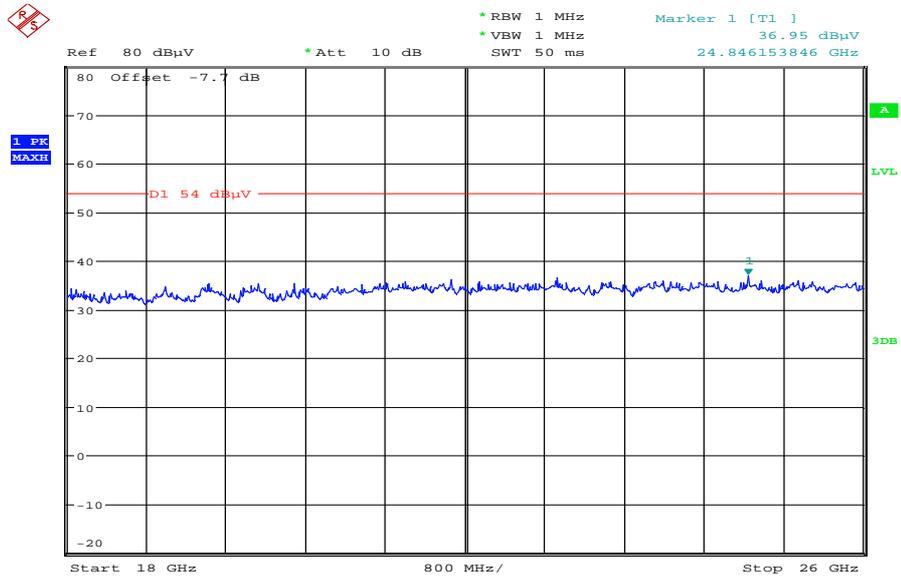
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 12.MAY.2011 07:28:01

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



Date: 12.MAY.2011 09:01:25

Plots: OFDM / n – mode

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

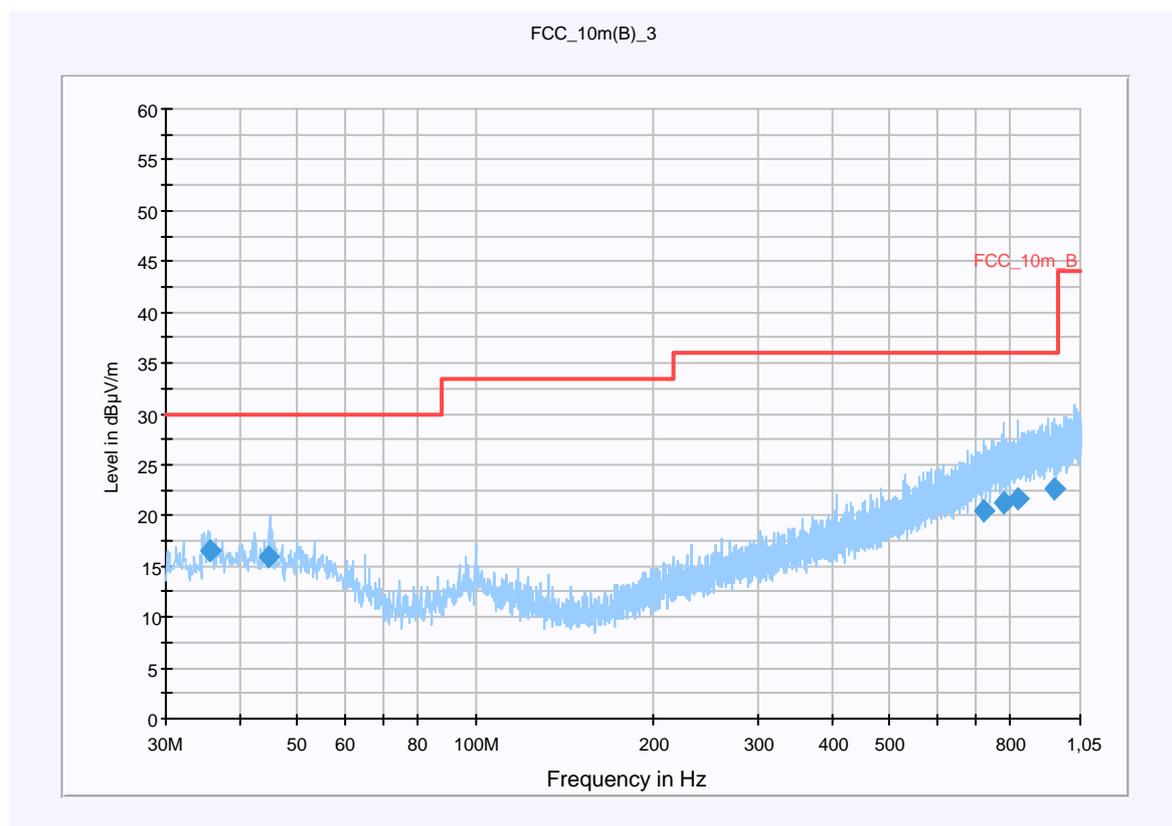
CETECOM ICT Services GmbH

Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN tx CH: 1 n mode
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dBµV/m
Subrange **Detectors** **IF Bandwidth** **Meas. Time** **Receiver**
 30 MHz - 2 GHz QuasiPeak 120 kHz 15 s Receiver



Final Result 1

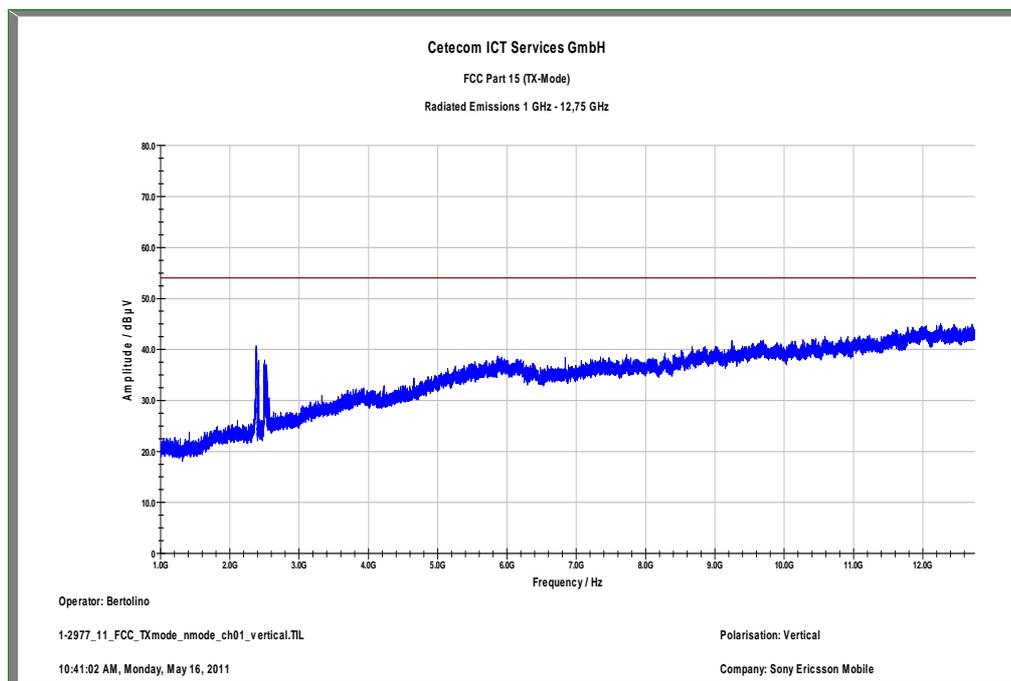
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.633250	16.6	15000.000	120.000	170.0	V	2.0	13.1	13.4	30.0	
44.865300	15.8	15000.000	120.000	98.0	V	196.0	13.3	14.2	30.0	
718.985400	20.4	15000.000	120.000	98.0	H	274.0	22.9	15.6	36.0	
782.322000	21.2	15000.000	120.000	170.0	V	11.0	23.7	14.8	36.0	
824.220900	21.7	15000.000	120.000	170.0	H	83.0	24.2	14.3	36.0	
946.246800	22.7	15000.000	120.000	126.0	V	106.0	25.3	13.3	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: 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

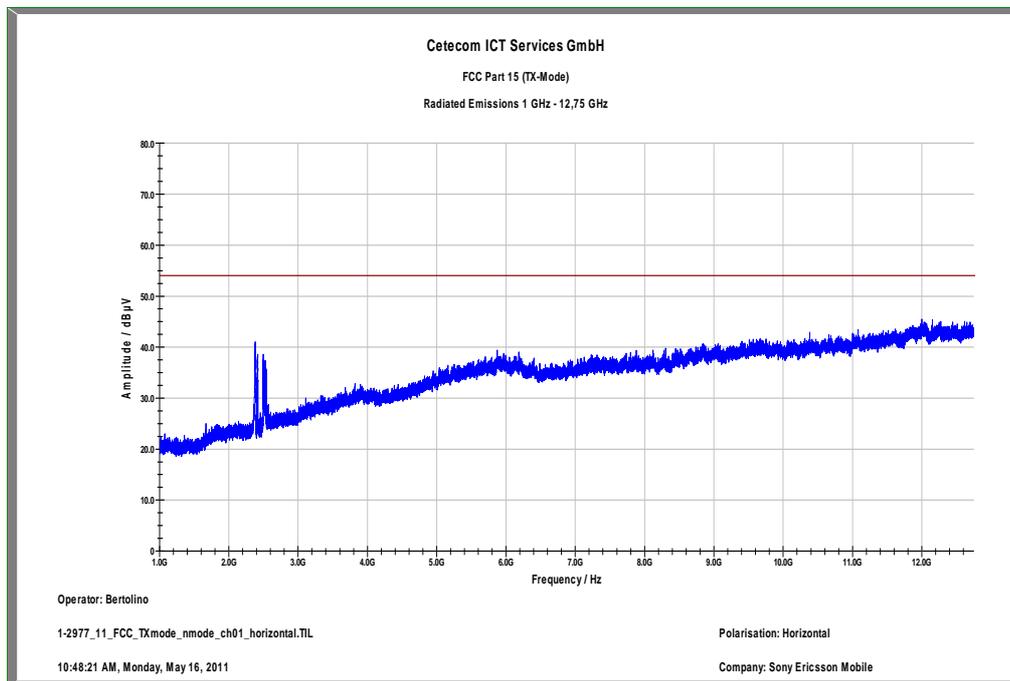
EMC 32 Version 8.10.00

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



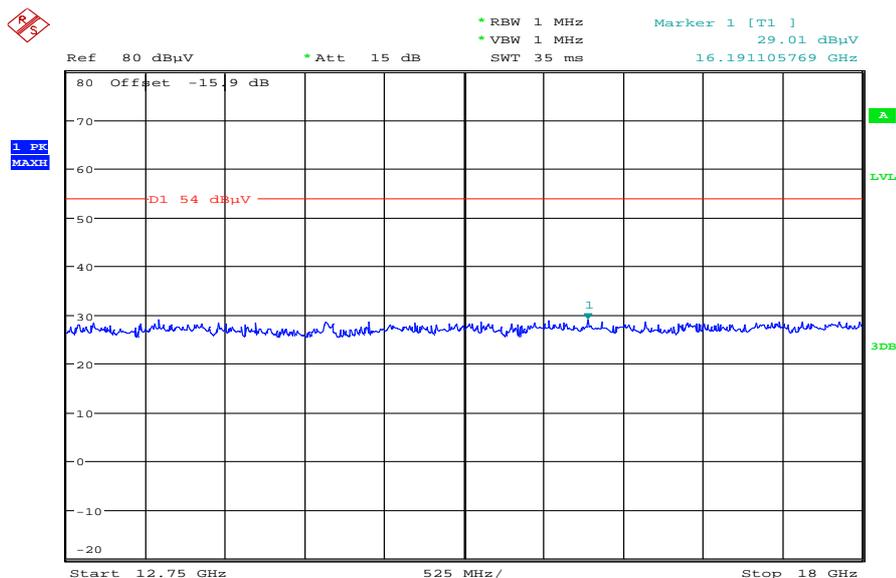
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



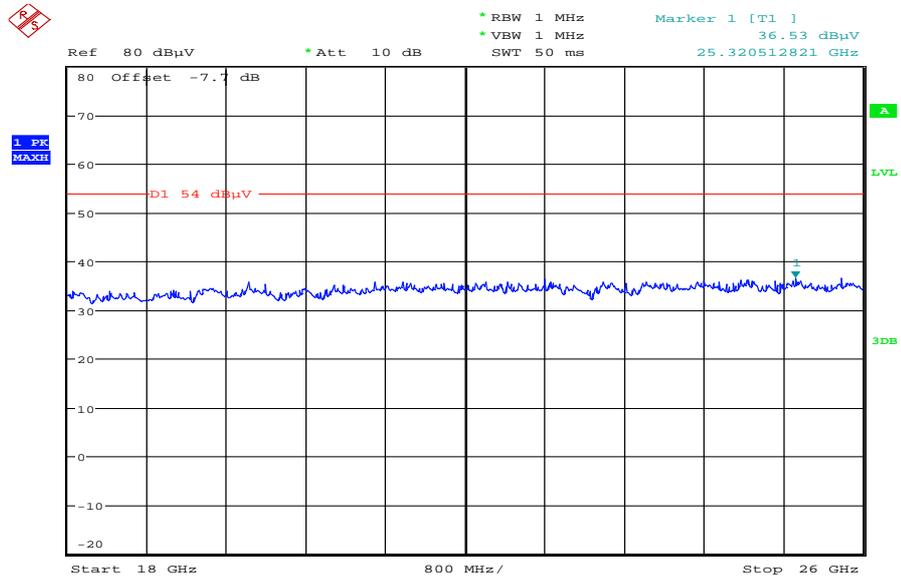
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 12.MAY.2011 07:29:27

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



Date: 12.MAY.2011 08:56:51

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

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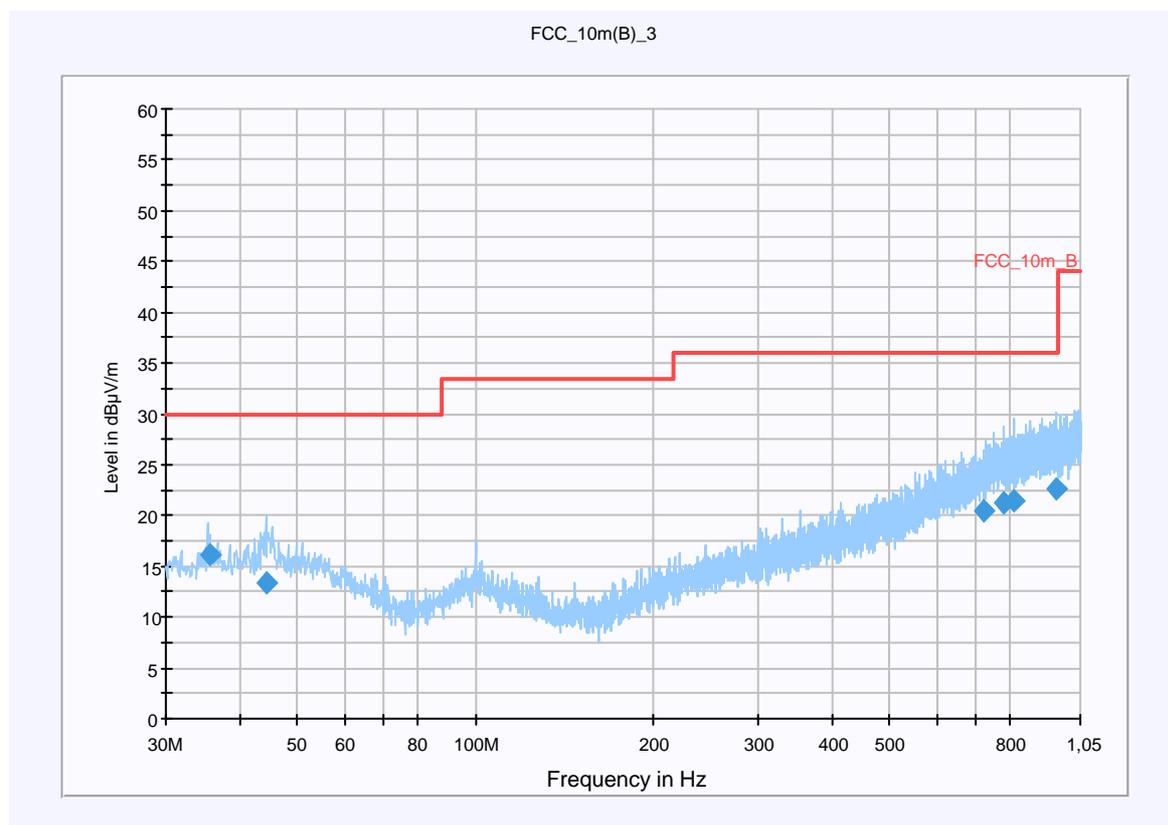
Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN tx CH: 6 n mode
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

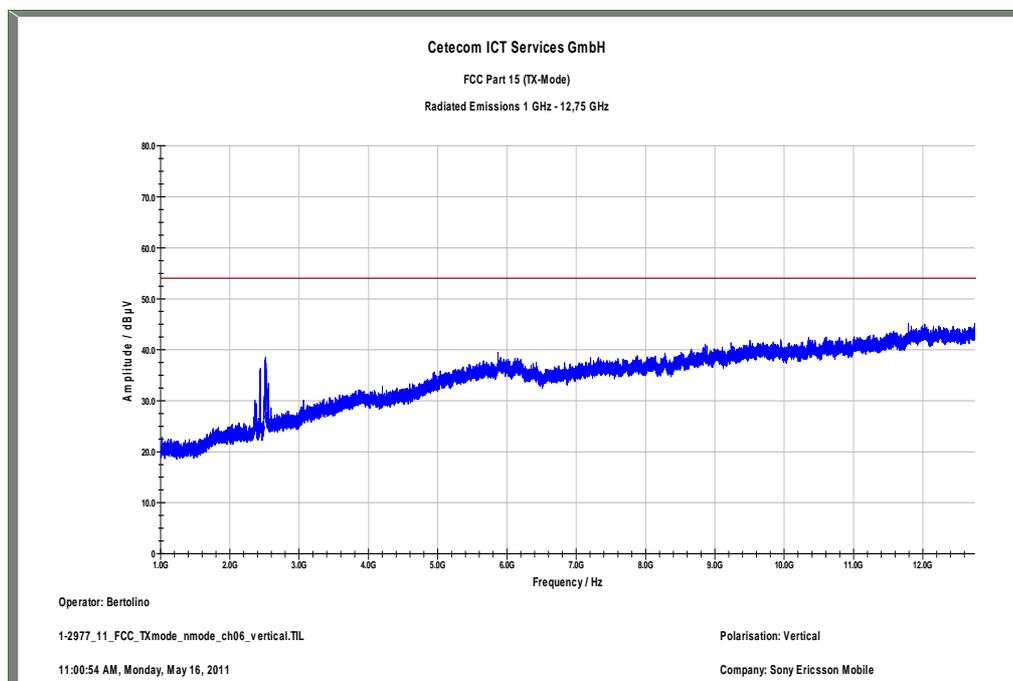
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.687850	16.1	15000.000	120.000	98.0	V	94.0	13.1	13.9	30.0	
44.513550	13.5	15000.000	120.000	98.0	V	186.0	13.3	16.5	30.0	
723.777900	20.5	15000.000	120.000	170.0	V	13.0	23.1	15.5	36.0	
780.145050	21.1	15000.000	120.000	157.0	H	0.0	23.7	14.9	36.0	
812.531550	21.4	15000.000	120.000	170.0	H	283.0	24.0	14.6	36.0	
959.331000	22.7	15000.000	120.000	98.0	H	13.0	25.4	13.3	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: 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

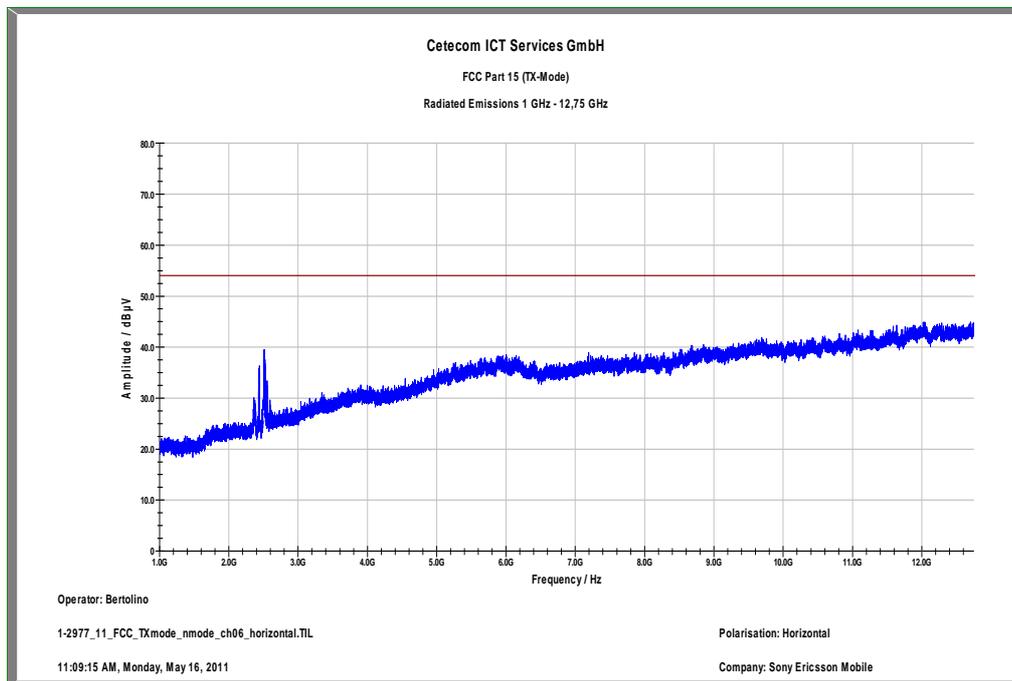
EMC 32 Version 8.10.00

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



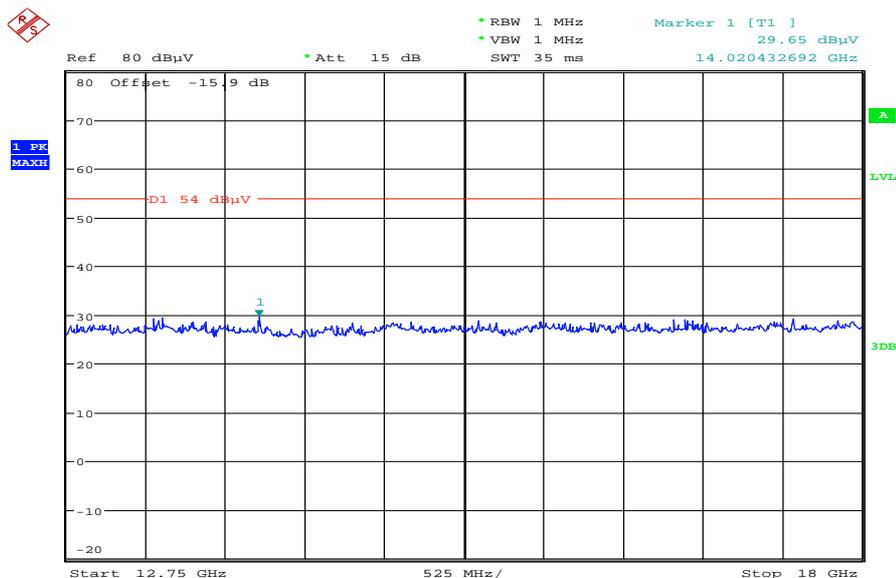
The carrier signal is notched with a 2.4 GHz band rejection filter.

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

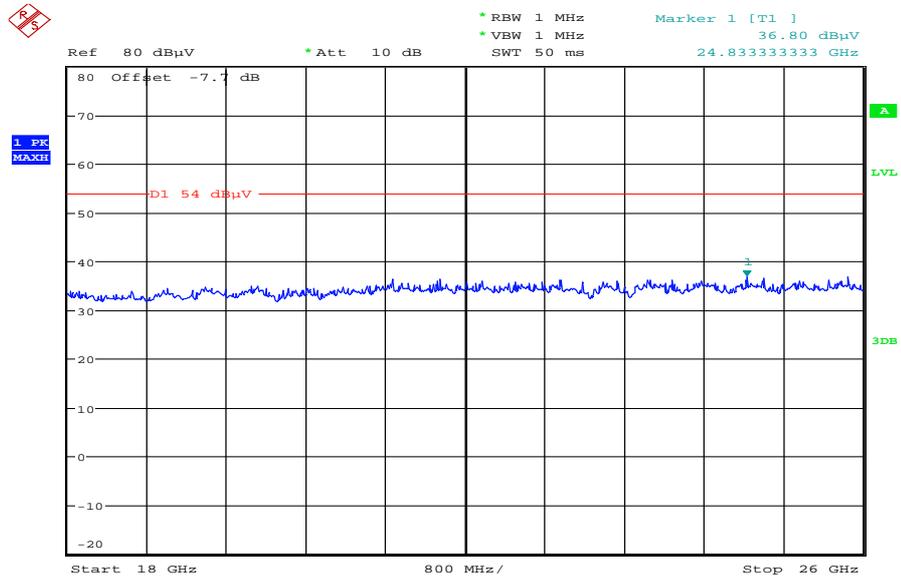


The carrier signal is notched with a 2.4 GHz band rejection filter.

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



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



Date: 12.MAY.2011 08:57:56

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

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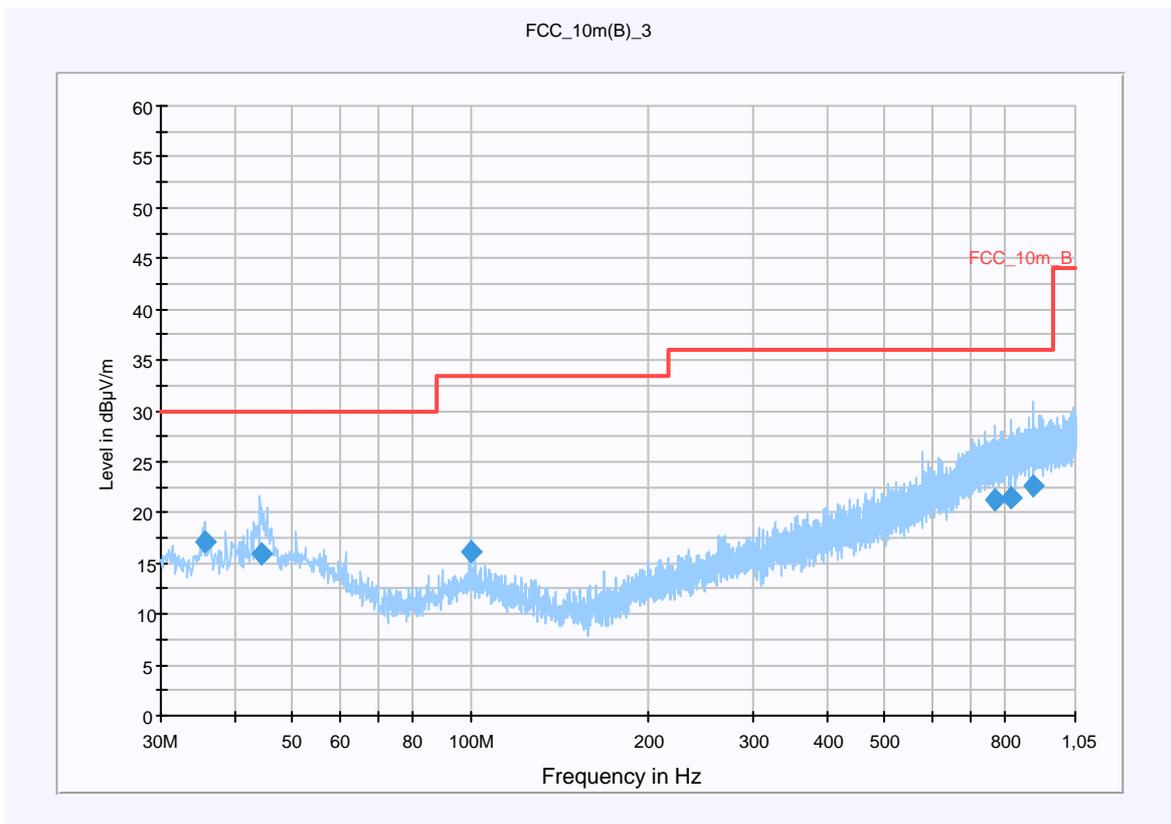
Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN tx CH: 11 n mode
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

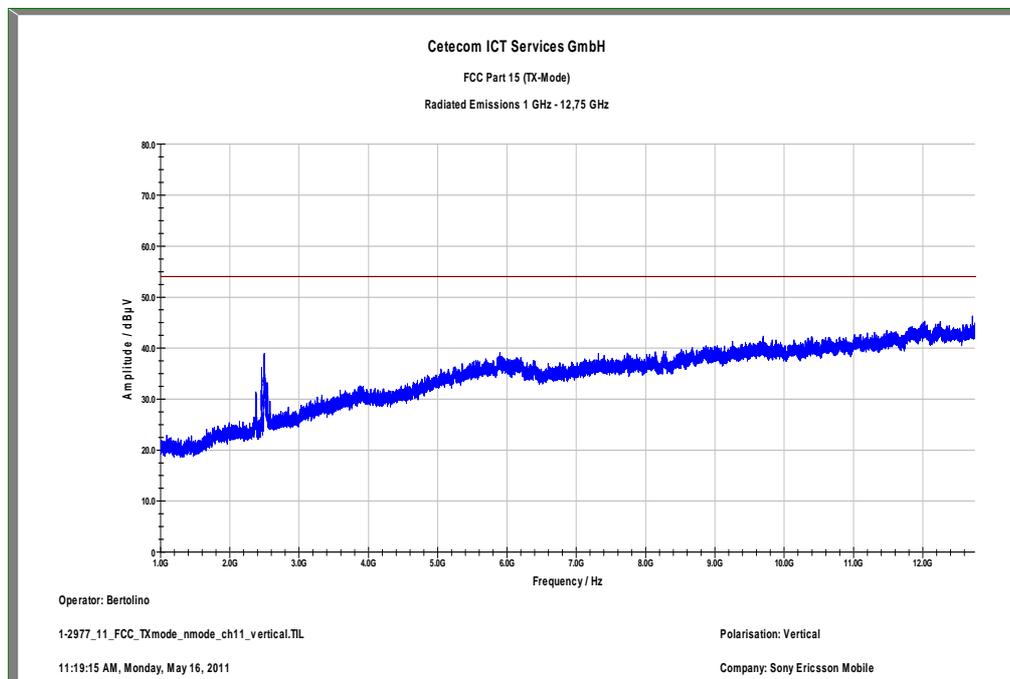
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.659500	17.2	15000.000	120.000	98.0	V	12.0	13.1	12.8	30.0	
44.232750	15.9	15000.000	120.000	98.0	V	173.0	13.3	14.1	30.0	
99.996600	16.1	15000.000	120.000	120.0	V	176.0	11.9	17.4	33.5	
766.465200	21.2	15000.000	120.000	115.0	H	83.0	23.7	14.8	36.0	
816.007350	21.5	15000.000	120.000	170.0	V	184.0	24.0	14.5	36.0	
888.119550	22.6	15000.000	120.000	98.0	H	283.0	25.0	13.4	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: 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

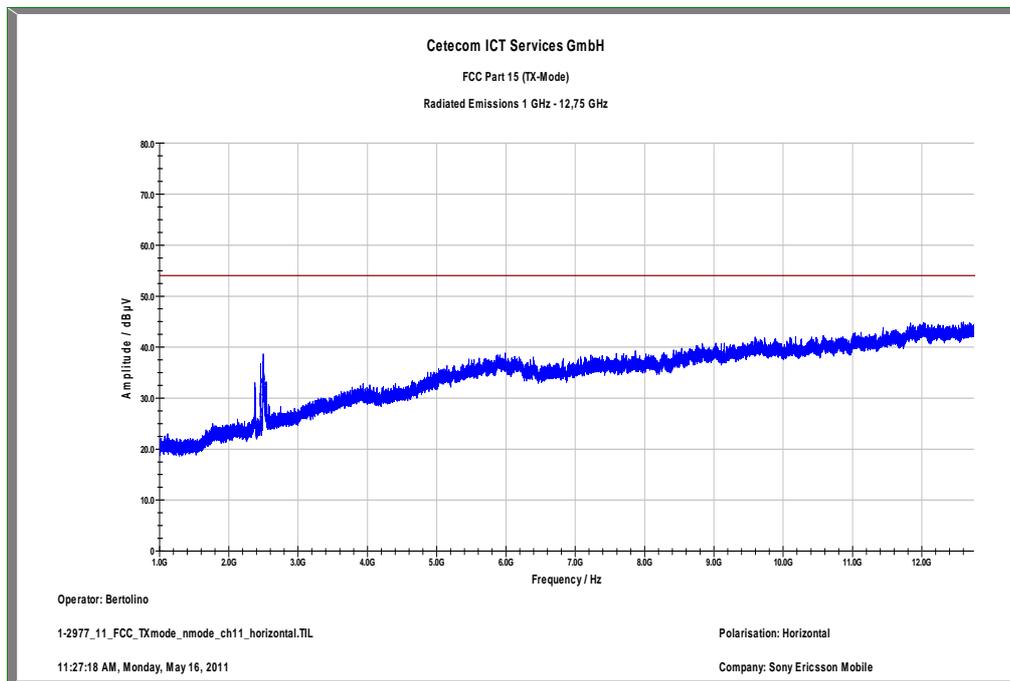
EMC 32 Version 8.10.00

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



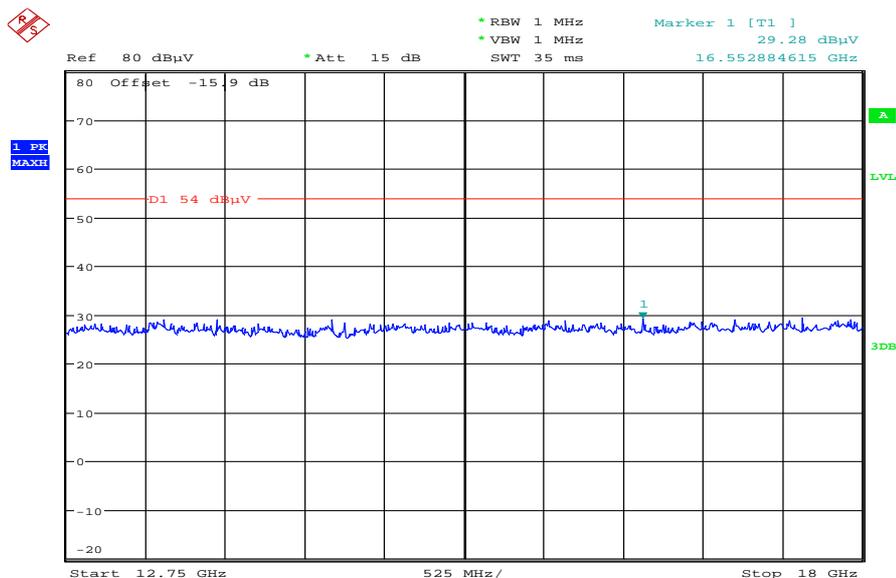
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



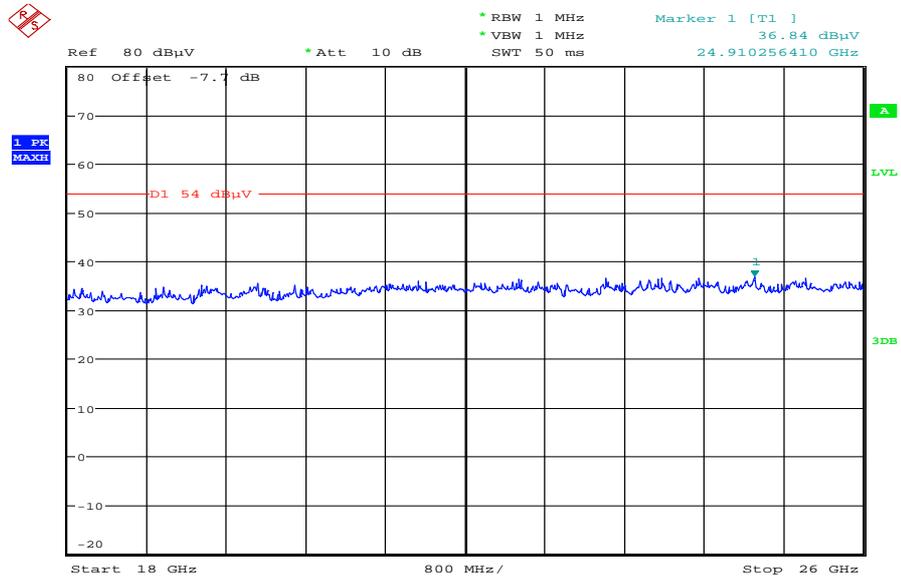
The carrier signal is notched with a 2.4 GHz band rejection filter.

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



Date: 12.MAY.2011 07:31:45

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



Date: 12.MAY.2011 08:58:46

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. All detected emissions are more than 20 dB below the limit.		
Measurement uncertainty	± 3 dB	

Result: The result of the measurement is passed.

Plots: RX / Idle – mode

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

CETECOM ICT Services GmbH

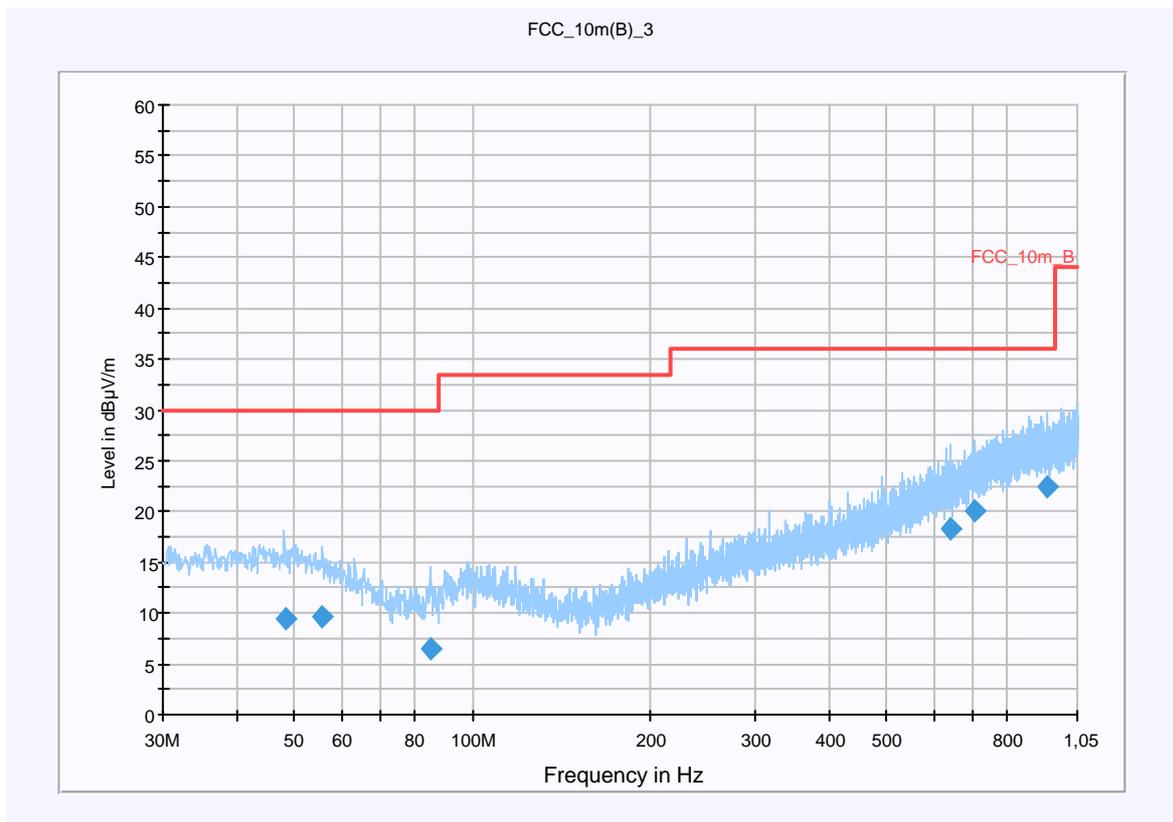
Common Information

EUT: AAD-3880104-BV + CAA-0002016-BV
 Serial Number: BX902C78TH | IMEI: 00440214-117250-6
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: WLAN RX
 Operator Name: Langer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

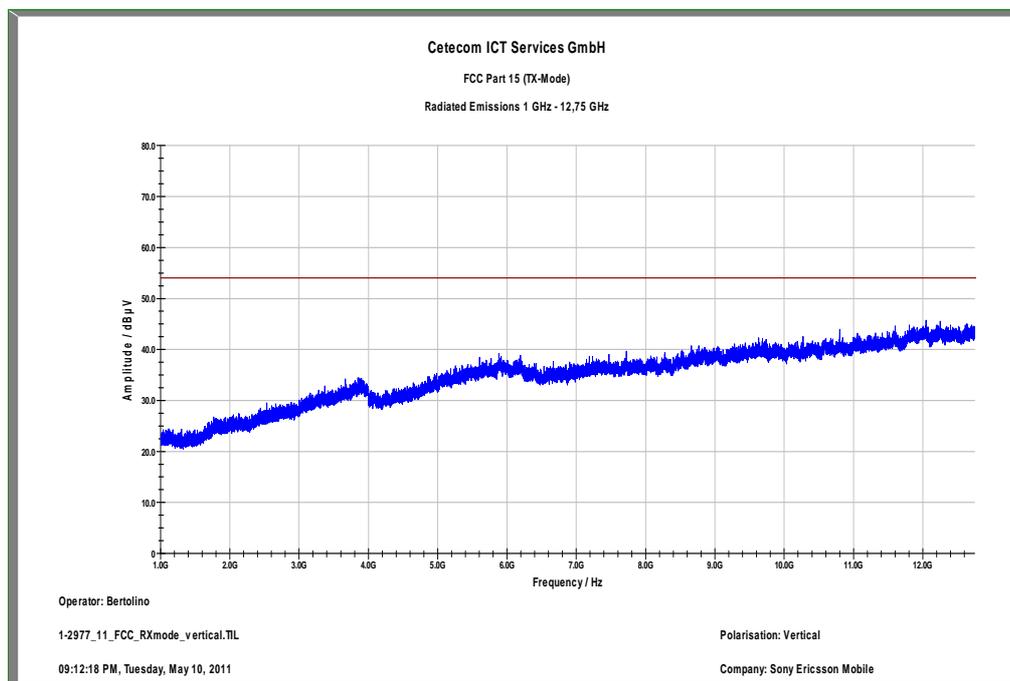
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
48.322800	9.5	15000.000	120.000	159.0	V	96.0	13.3	20.5	30.0	
55.586700	9.7	15000.000	120.000	164.0	H	273.0	12.7	20.3	30.0	
85.118550	6.6	15000.000	120.000	170.0	H	106.0	9.8	23.4	30.0	
640.215600	18.4	15000.000	120.000	170.0	V	274.0	21.0	17.6	36.0	
702.940800	20.1	15000.000	120.000	170.0	V	106.0	22.6	15.9	36.0	
937.251150	22.4	15000.000	120.000	170.0	H	8.0	25.3	13.6	36.0	

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

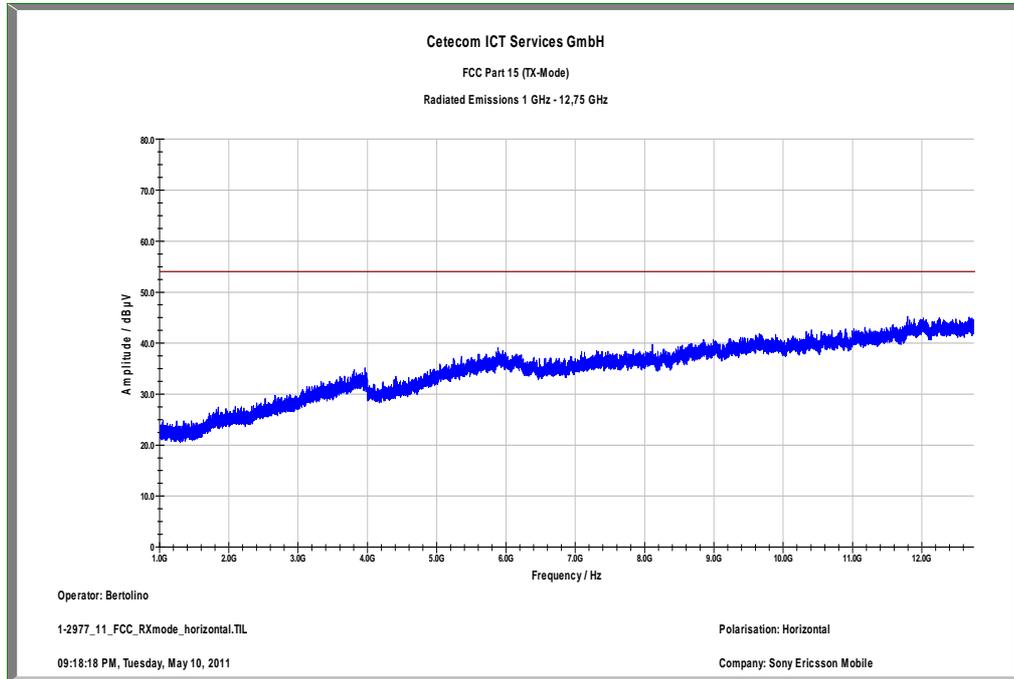
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
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

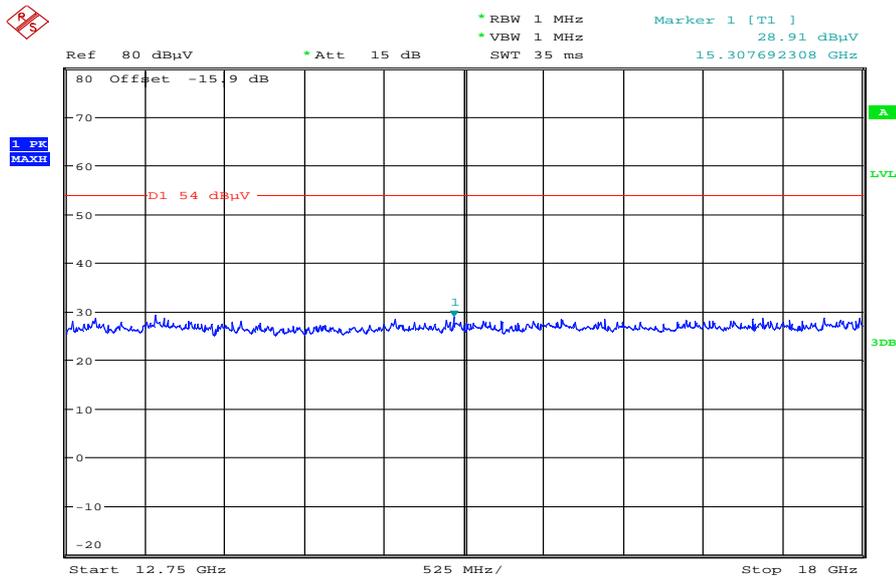
Plot 2: 1 GHz to 12.75 GHz, vertical polarization



Plot 3: 1 GHz to 12.75 GHz, horizontal polarization

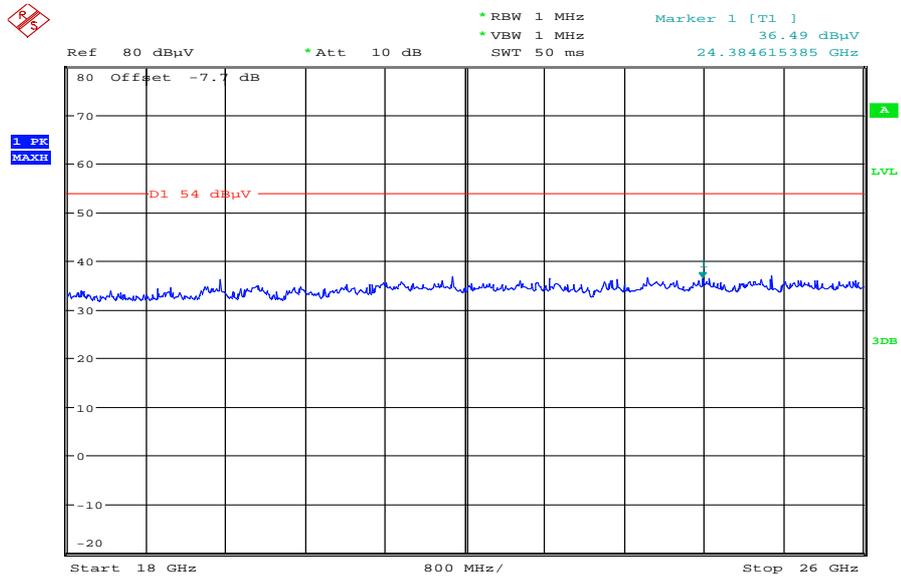


Plot 4: 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 12.MAY.2011 11:42:25

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



Date: 12.MAY.2011 11:40:41

9.12 TX spurious emissions radiated < 30 MHz

Description:

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

Measurement:

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

Limits:

FCC		IC
CFR Part 15.209(a)		RSS –Gen
TX Spurious Emissions Radiated < 30 MHz		
Frequency (MHz)	Field Strength (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

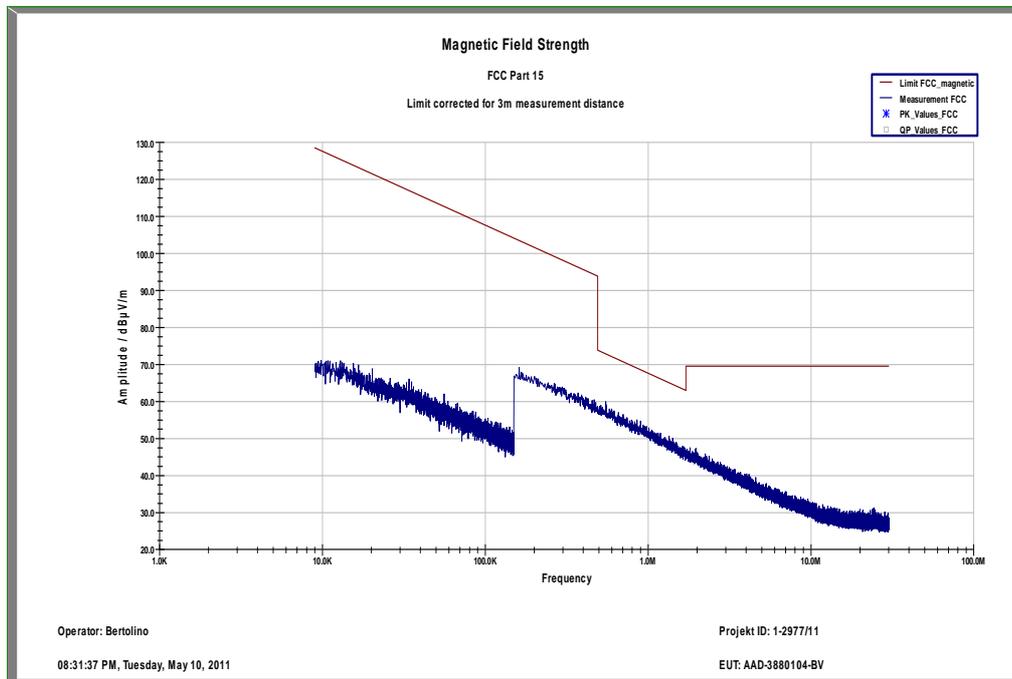
Results:

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

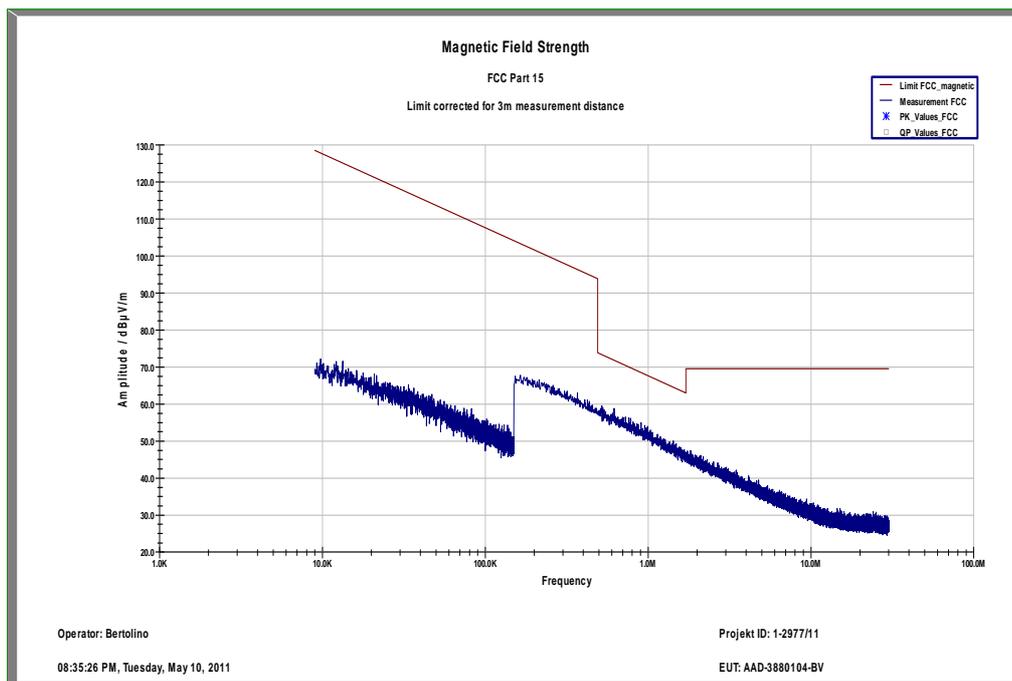
Result: The result of the measurement is passed.

Plots: DSSS / b – mode

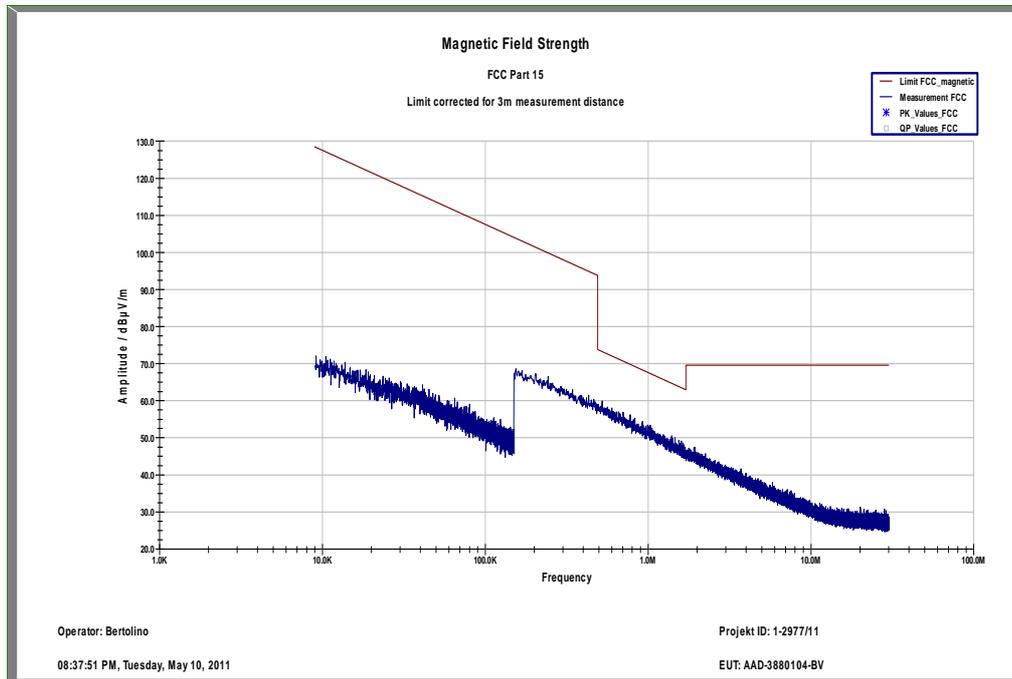
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

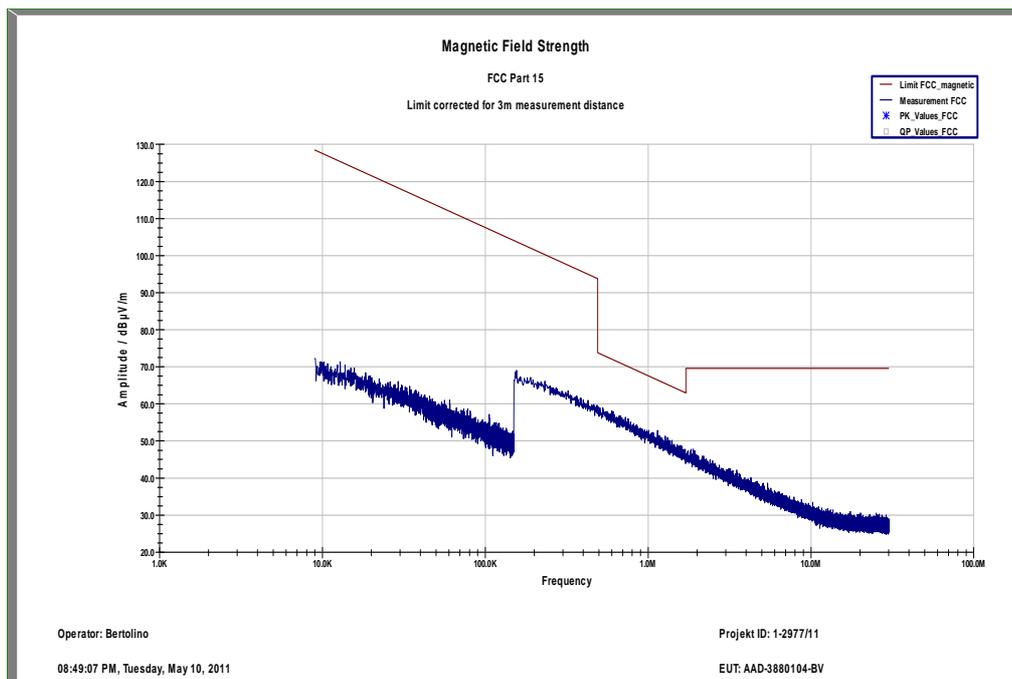


Plot 3: Highest channel, 9 kHz to 30 MHz

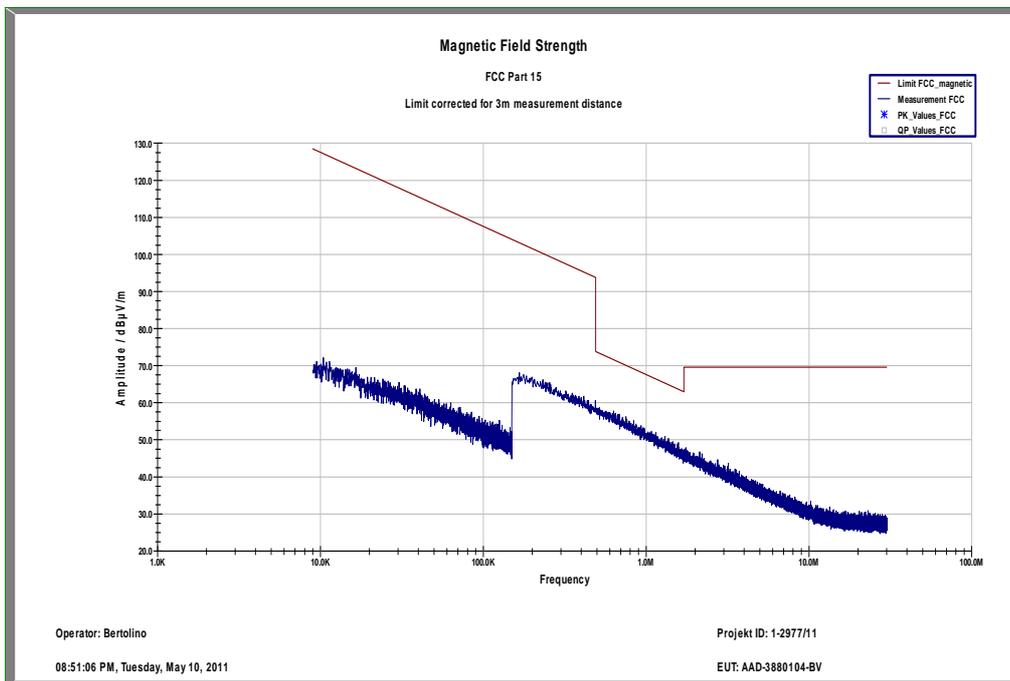


Plots: OFDM / g – mode

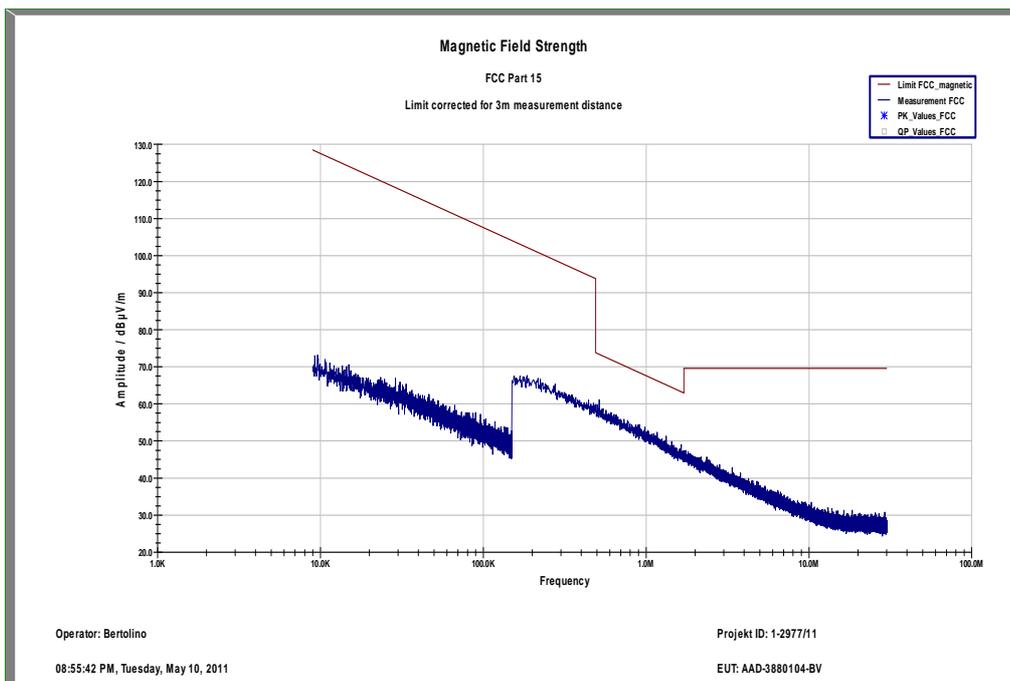
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

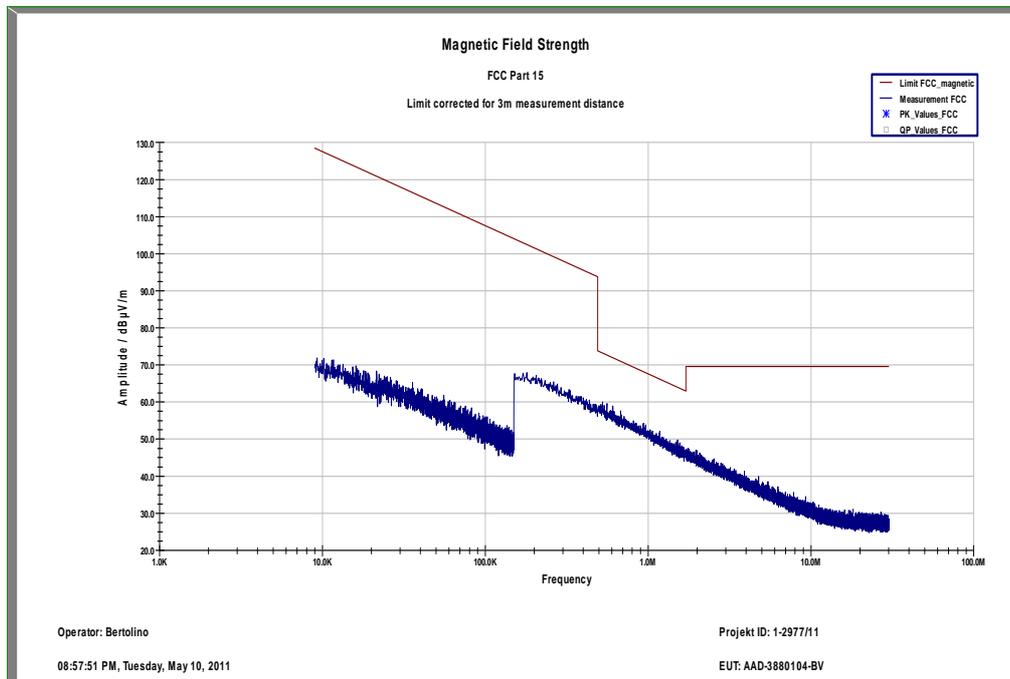


Plot 3: Highest channel, 9 kHz to 30 MHz

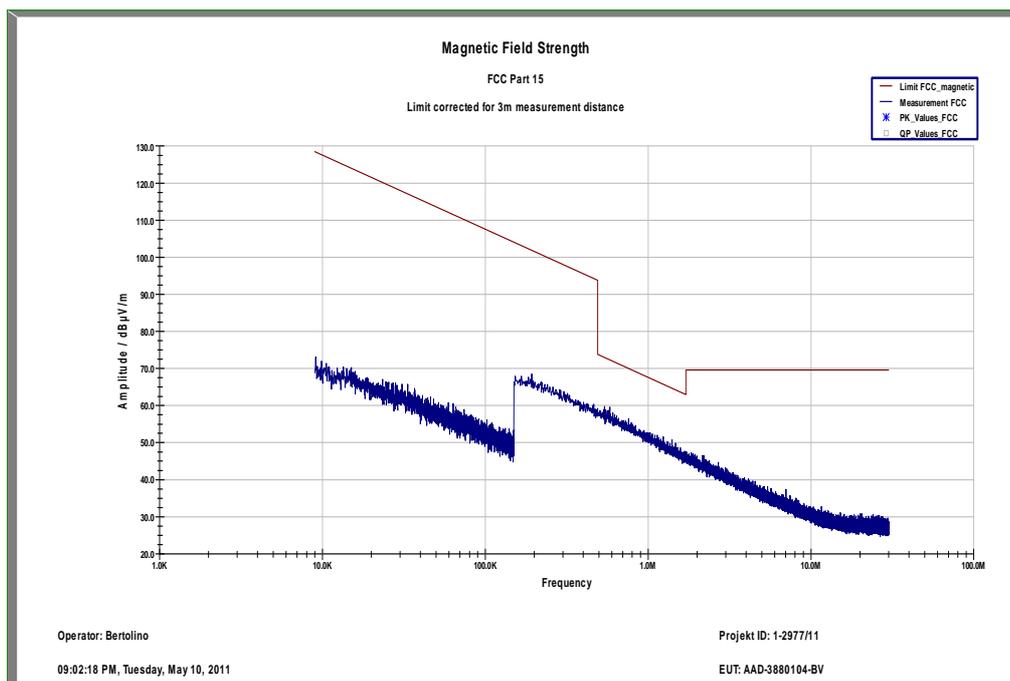


Plots: OFDM / n – mode

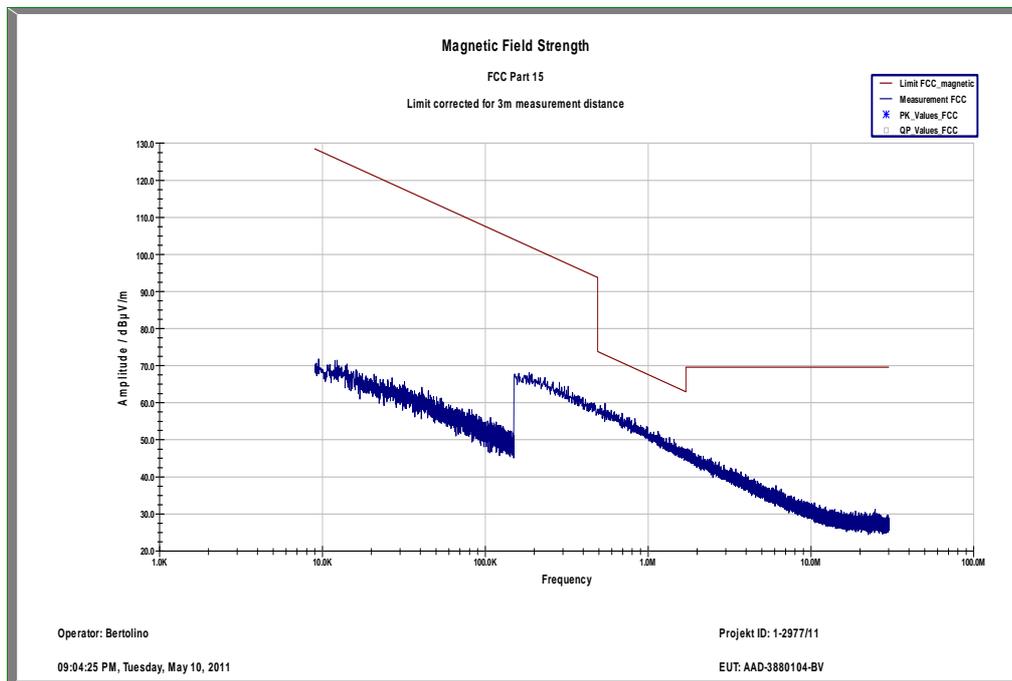
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

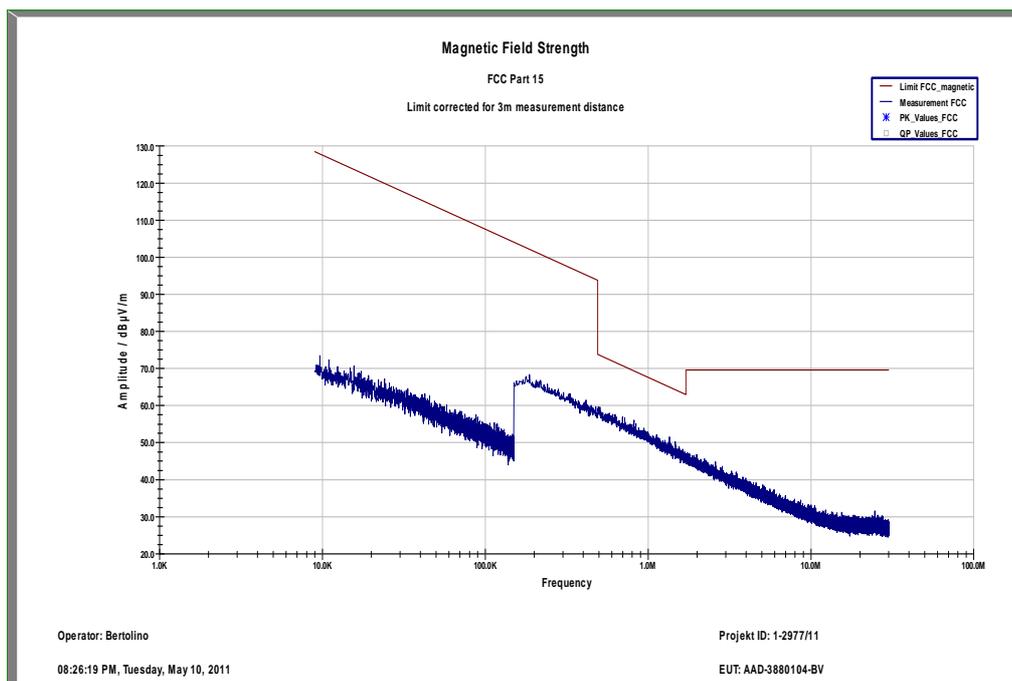


Plot 3: Highest channel, 9 kHz to 30 MHz



Plots: RX / Idle – mode

Plot 1: 9 kHz to 30 MHz



9.13 TX spurious emissions conducted < 30 MHz

Description:

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

Measurement:

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

Limits:

FCC		IC	
CFR Part 15.107(a)		ICES-003, Issue 4	
TX Spurious Emissions Conducted < 30 MHz			
Frequency (MHz)	Quasi-Peak (dBµV/m)	Average (dBµV/m)	
0.15 – 0.5	66 to 56*	56 to 46*	
0.5 – 5	56	46	
5 – 30.0	60	50	

*Decreases with the logarithm of the frequency

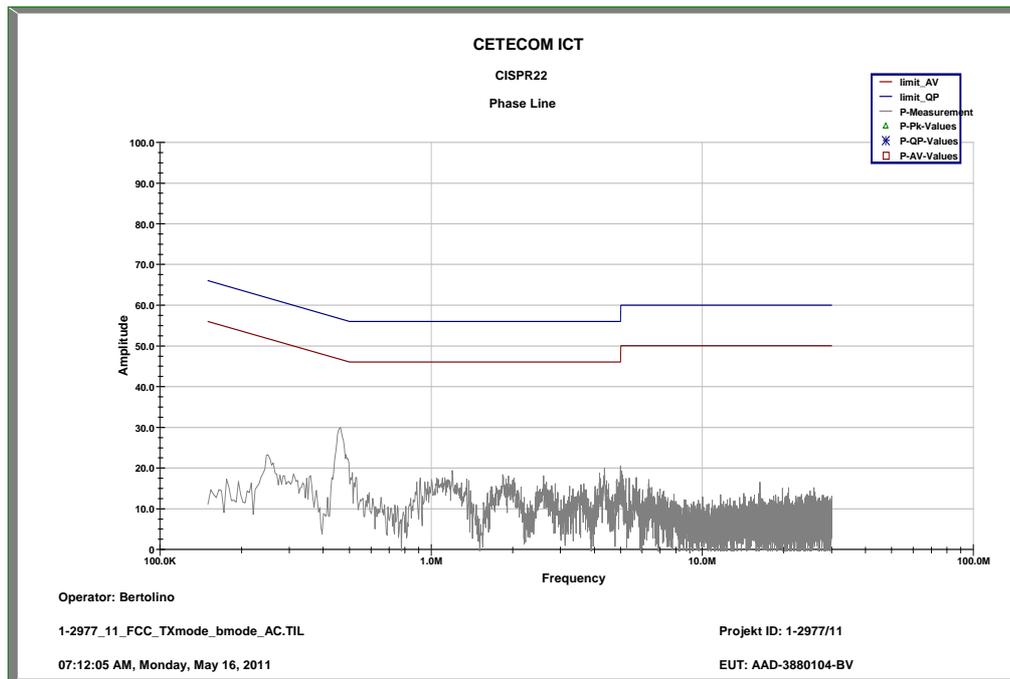
Results:

TX Spurious Emissions Conducted < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
No critical peaks found. All detected emissions are below the limit.		
Measurement uncertainty	± 3 dB	

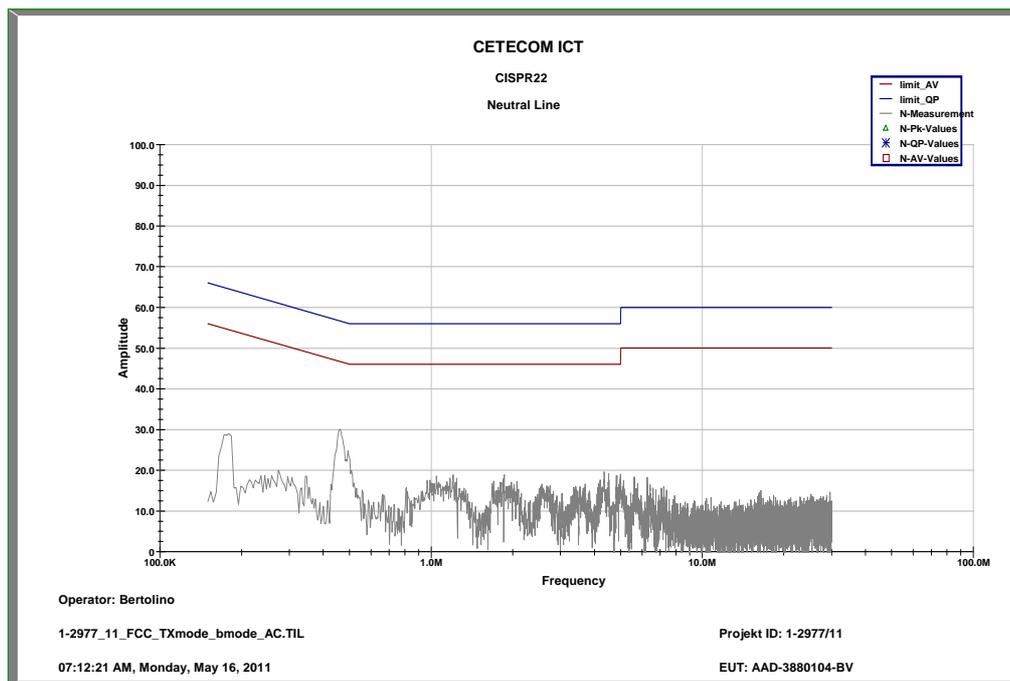
Result: The result of the measurement is passed.

Plots:

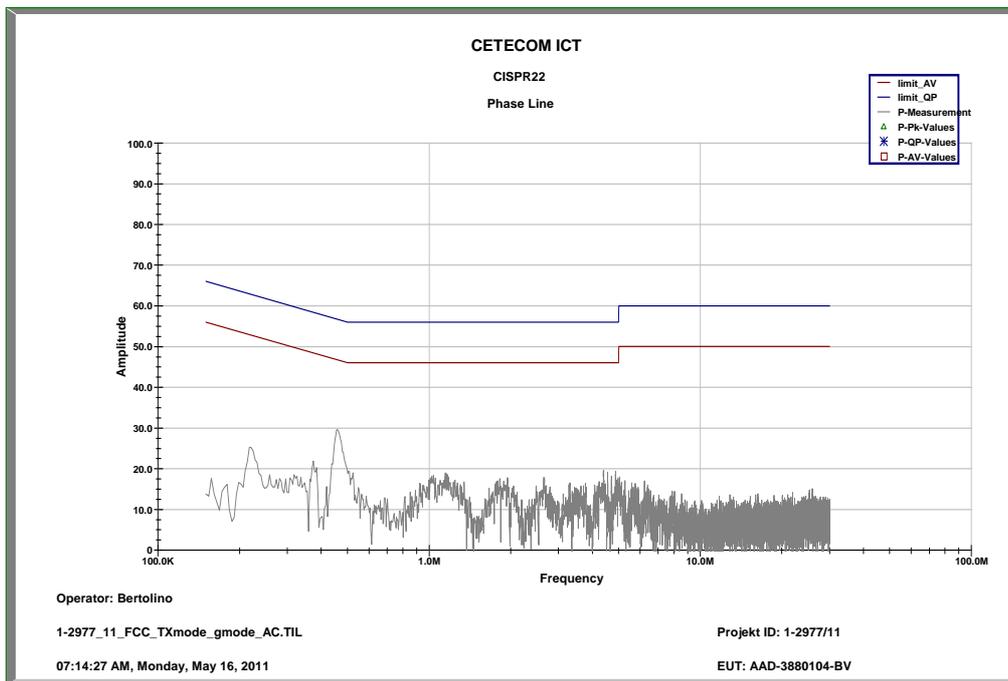
Plot 1: DSSS / b – mode, 9 kHz to 30 MHz, phase line



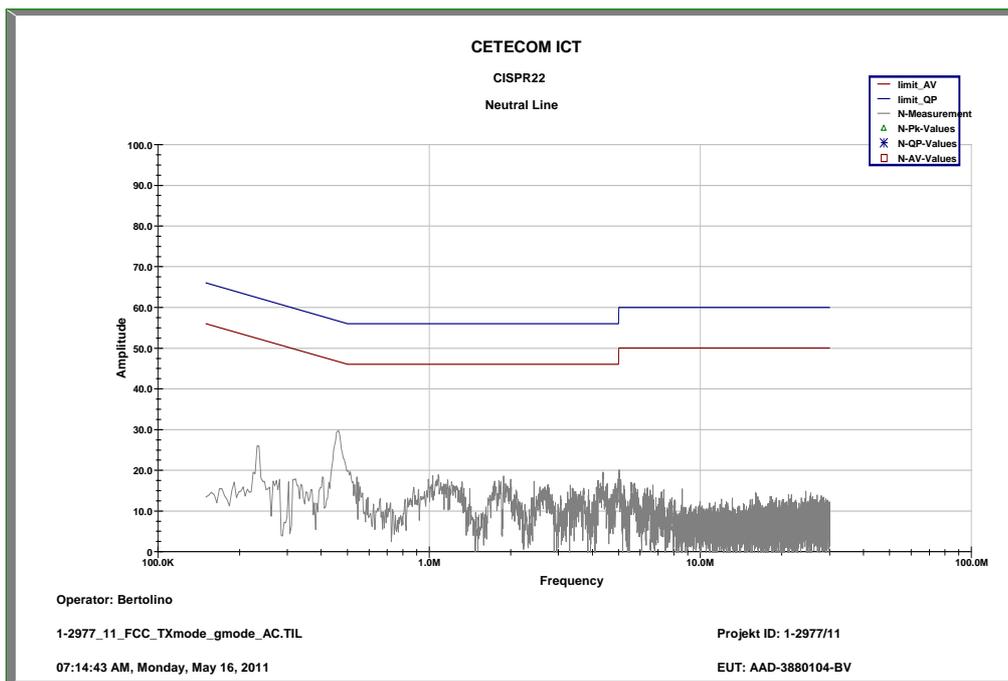
Plot 2: DSSS / b – mode, 9 kHz to 30 MHz, neutral line



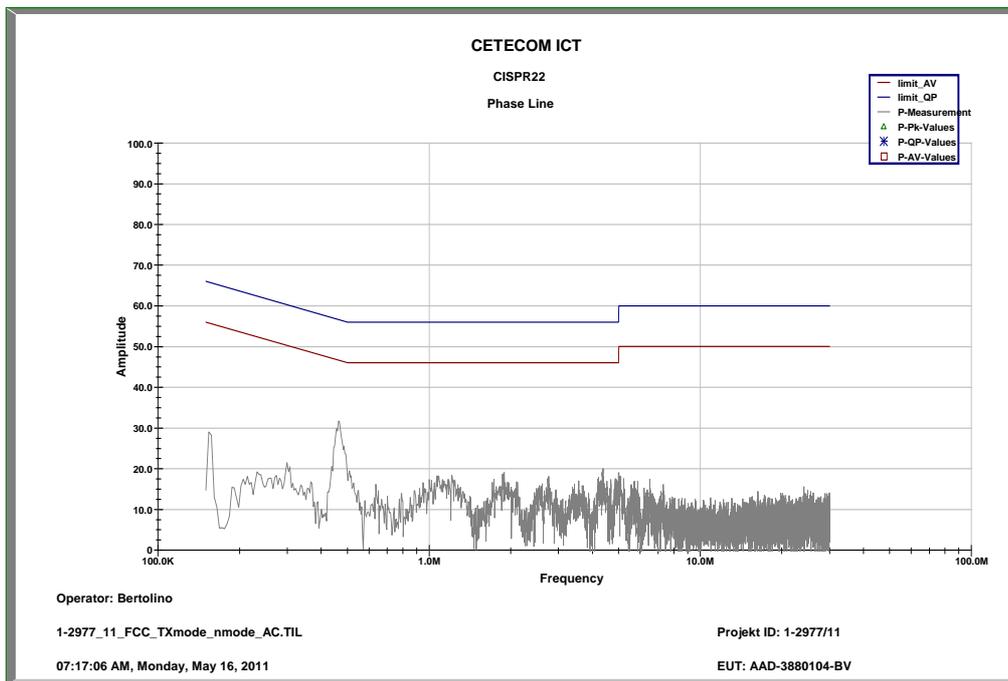
Plot 3: OFDM / g – mode, 9 kHz to 30 MHz, phase line



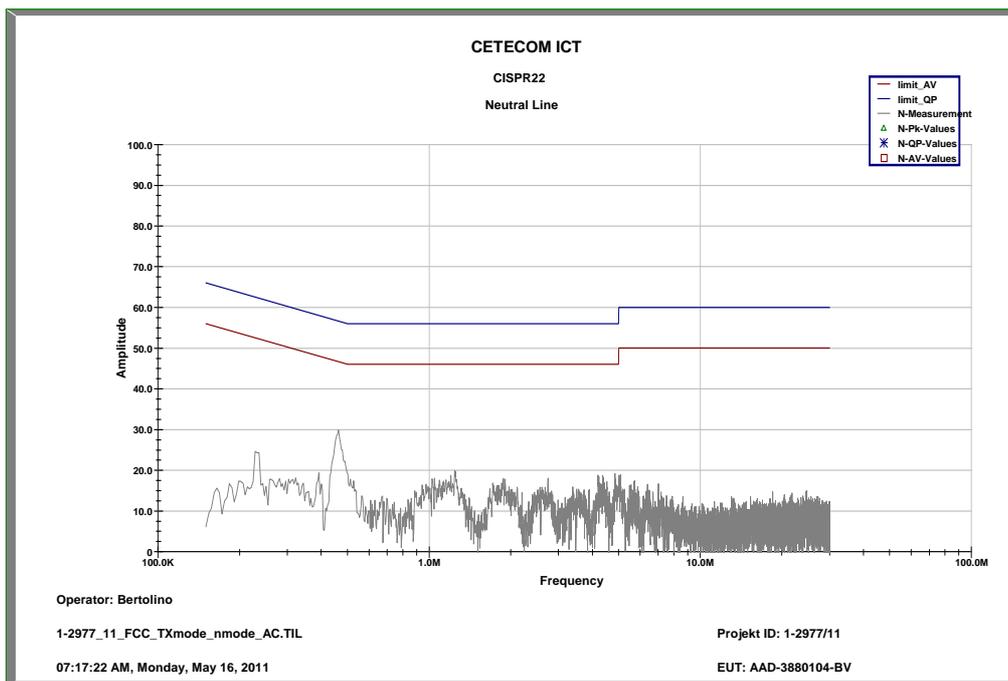
Plot 4: OFDM / g – mode, 9 kHz to 30 MHz, neutral line



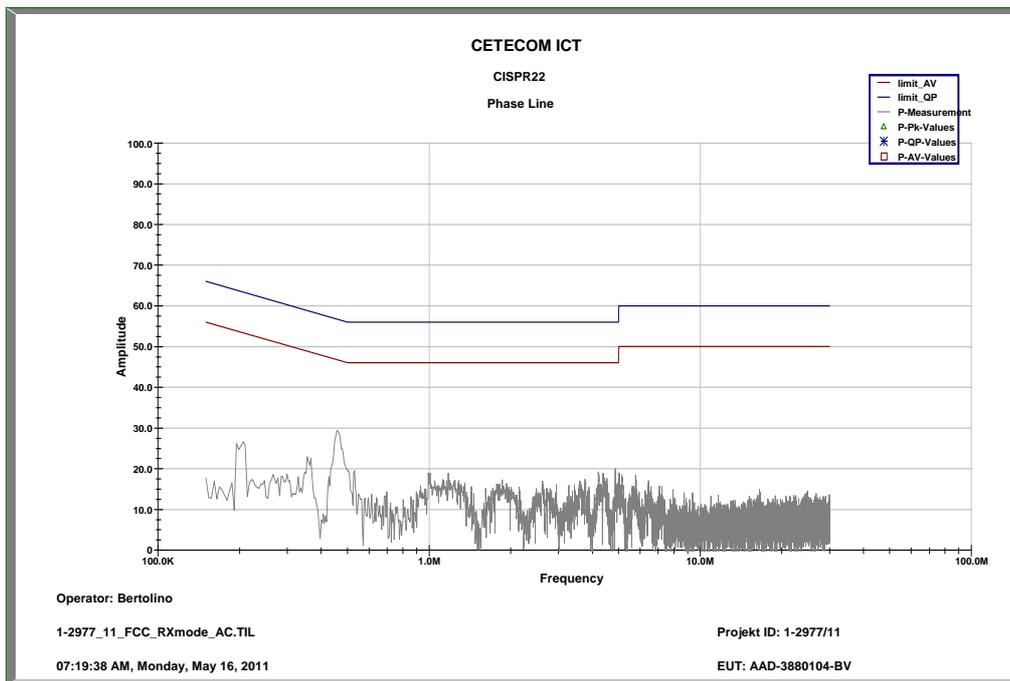
Plot 5: OFDM / n – mode, 9 kHz to 30 MHz, phase line



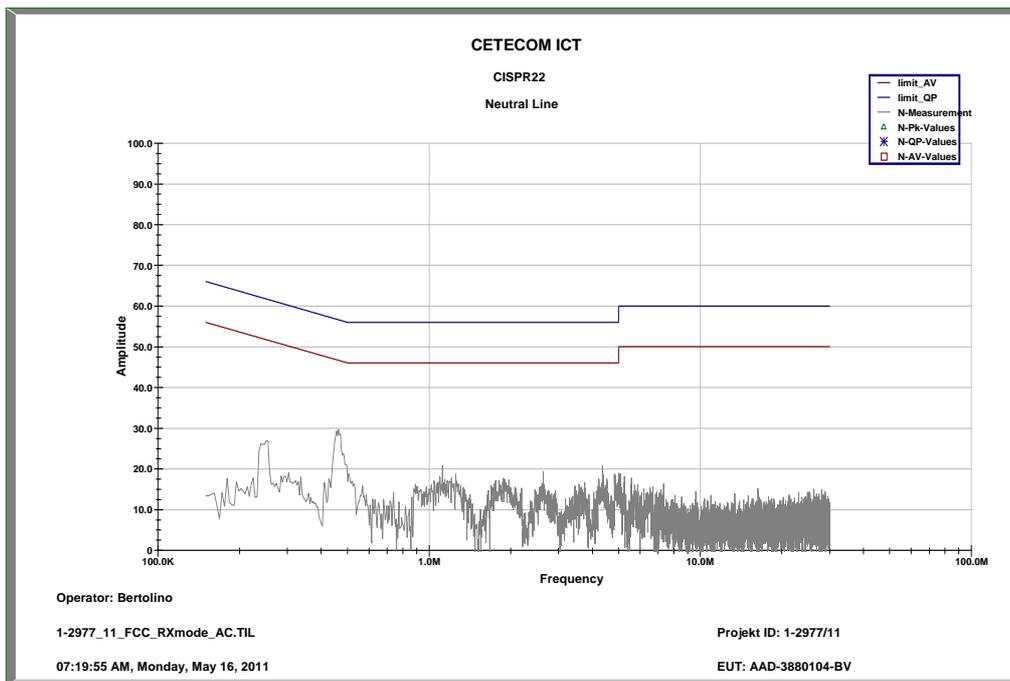
Plot 6: OFDM / n – mode, 9 kHz to 30 MHz, neutral line



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
1	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
3	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	05.01.2011	05.01.2013
4	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	01.06.2009	01.06.2011
5	n. a.	Amplifier	JS42-00502650- 28-5A	MITEQ	1084532	300003379	ev		
6	n. a.	Antenna Tower	Model 2175	ETS- LINDGREN	64762	300003745	izw		
7	n. a.	Positioning Controller	Model 2090	ETS- LINDGREN	64672	300003746	izw		
8	n. a.	Turntable Interface-Box	Model 105637	ETS- LINDGREN	44583	300003747	izw		
9	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
10	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	10.01.2011	10.01.2013
11	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
12	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKI!	05.03.2009	05.09.2011
13	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
14	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
15	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
16	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
17	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
18	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
19	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
20	n. a.	Amplifier	js42-00502650- 28-5a	Parzich GMBH	928979	300003143	ne		
21	n. a.	Band Reject filter	WRCG2400/2483- 2375/2505- 50/10SS	Wainwright	11	300003351	ev		
22	n. a.	TILE-Software Emission	Quantum Change, Modell TILE- ICS/FULL	EMCO	none	300003451	ne		
23	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
24	n. a.	RF Filter	N9039A	Agilent	MY48260003	300003825	vIKI!	08.09.2010	08.09.2012

		Section 9kHz - 1GHz		Technologies					
25	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKI!	17.12.2008	17.12.2011
26	11b	Microwave System Amplifier, 0.5- 26.5 GHz; 25 dB gain	83017A	HP Meßtechnik	00419	300002268	ev	10.03.2011	
27	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000787	ne		
28	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002442	ne		
29	n. a.	Spectrum Analyzer 20 Hz - 50 GHz	FSU50	R&S	200012	300003443	ve	01.07.2010	01.07.2012
30	n. a.	Temperature Test Chamber	T-40/50	CTS GmbH	064023	300003540	vlKI!	04.06.2009	04.06.2011
31	n. a.	DC Power Supply 0 – 32V	1108-32	Heiden	001802	300001383	Ve	23.06.2010	23.06.2013

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
 vlk! Attention: extended calibration interval
 NK! Attention: not calibrated

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