



Accredited testing-laboratory

DAR registration number: DGA-PL-176/94-D1

**Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97**

Recognized by the Federal Communications Commission

Anechoic chamber registration no.: 90462 (FCC)

Anechoic chamber registration no.: 3462C-1 (IC)

Certification ID: DE 0001

Accreditation ID: DE 0002

Accredited Bluetooth® Test Facility (BQTF)

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Test report no. : 1-1954-22-06/10-A
Type identification : AAD-3880072-BV
Applicant : Sony Ericsson Mobile Communications AB
FCC ID : PY7A3880072
IC Certification No : 4170B-A3880072
Test standards : 47 CFR Part 15
RSS - 210 Issue 7

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1 General information

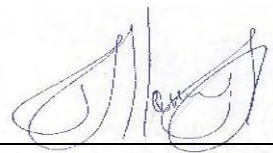
1.1 Notes

The test results of this test report relate exclusively to the test item specified in 3.1.1. The 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 the CETECOM ICT Services GmbH.

Test laboratory manager:

2010-06-10

Daniel Muyunga



Date

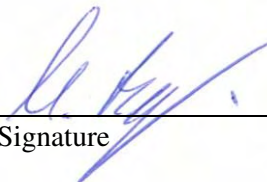
Name

Signature

Technical responsibility for area of testing:

2010-06-10

Michael Berg



Date

Name

Signature

1.2 Testing laboratory

CETECOM ICT Services GmbH

Untertürkheimer Straße 6 - 10

66117 Saarbrücken

Germany

Phone: + 49 681 5 98 - 0

Fax: + 49 681 5 98 - 9075

e-mail: info@ICT.cetecom.de

Internet: http://www.cetecom-ict.de

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

Accredited by: Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97

Testing location, if different from CETECOM ICT Services GmbH:

Name :
Street :
Town :
Country :
Phone :
Fax :

1.3 Details of applicant

Name:	Sony Ericsson Mobile Communications AB
Street:	Nya Vattentornet
Town:	22188 Lund
Country:	Sweden
Telephone:	+46 (0) 46 19 30 00
Fax:	+46 (0) 46 19 32 95
Contact:	Johan Wedin
E-mail:	johan.wedin@sonyericsson.com
Telephone:	+46 (0) 707 19 57 36

1.4 Application details

Date of receipt of order:	2010-04-19
Date of receipt of test item:	2010-04-19
Date of start test:	2010-04-21
Date of end test	2010-06-10
Persons(s) who have been present during the test:	-/-

2 Test standard/s

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

3 Technical tests

3.1 Details of manufacturer

Name:	Sony Ericsson Mobile Communications AB
Street:	Nya Vattentorget
Town:	22188 Lund
Country:	Sweden

3.1.1 Test item

Kind of test item	:	GSM Mobile Phone 850/900/1800/1900 UMTS FDD1/FDD8, HSUPA/HSDPA, BT2.0+EDR, A-GPS, FM Rx, WLAN
Type identification	:	AAD-3880072-BV
S/N serial number	:	Cond.: CB511H8BGZ, CB511H8BW7 Rad.: CB511H8XFV, CB511H8C1V
HW hardware status	:	AP1.2
SW software status	:	s_atp_delta_0_0_44
Frequency Band [MHz]	:	2412 MHz – 2462 MHz (ISM 2.400 MHz - 2.483,5 MHz)
Type of Modulation	:	DSSS & OFDM - BPSK, QPSK, 16 QAM, 64 QAM
Number of channels	:	11
Antenna	:	Integral antenna
Power Supply	:	4.0 V DC by power supply / battery + charger
Temperature Range	:	-20 °C to +55 °C

DSSS

Max. power conducted: 21.41 dBm
Max. power radiated: 23.46 dBm

OFDM

Max. power conducted: 24.15 dBm
Max. power radiated: 26.14 dBm

FCC ID: PY7A3880072
IC: 4170B-A3880072

3.1.2 Additional EUT information For IC Canada (appendix 2)

IC Registration Number:	4170B-A3880072
Model Name:	AAD-3880072-BV
Manufacturer (complete Address):	Sony Ericsson Mobile Communications AB Nya Vattentorget 22188 Lund Sweden
Tested to Radio Standards Specification (RSS) No.:	RSS-210 Issue 7
Open Area Test Site Industry Canada Number:	IC 3462C-1
Frequency Range (or fixed frequency) [MHz]:	2412 MHz – 2462 MHz (ISM 2.400 MHz - 2.483,5 MHz)
RF: Power [W] (max):	DSSS: Conducted : 138.4 mW Rad. EIRP: 221.8 mW OFDM: Conducted : 260.02 mW Rad. EIRP: 411.15 mW
Antenna Type:	Integral antenna
Occupied Bandwidth (99% BW) [MHz]:	DSSS: 17.06 OFDM: 18.37
Type of Modulation:	DSSS & OFDM - BPSK, QPSK, 16 QAM, 64 QAM
Emission Designator (TRC-43):	17M1G1D (DSSS) 18M4G7D (OFDM)
Transmitter Spurious (worst case) [μ V/m in 3m]:	128 AV
Receiver Spurious (worst case) [μ V/m in 3m]:	316 PK

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

Signature:



Test engineer: Daniel Muyunga

Date: 2010-06-10

3.1.3 EUT operating modes

EUT operating mode no. *)	Description of operating modes	Additional information
Op. 0	Normal mode	Normal temperature and power source conditions
Op. 1		low temperature, low power source conditions
Op. 2		low temperature, high power source conditions
Op. 3		high temperature, low power source conditions
Op. 4		high temperature, high power source conditions

*) EUT operating mode no. is used to simplify the test plan

3.1.4 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T _{nom}	°C	20
Nominal Humidity	H _{nom}	%	41
Nominal Power Source	V _{nom}	V	4.0

Type of power source: DC by power supply / battery + charger

4 Summary of Measurement Results and list of all performed test cases

- ☒ No deviations from the technical specifications were ascertained
☐ There were deviations from the technical specifications ascertained

TC identifier	Description	verdict	date	Remark
RF-Testing	FCC Part 15 §15.247 - CANADA RSS-210	PASS	2010-06-10	-/-

Test Specification Clause	Test Case	Pass	Fail	Not applicable	Not performed
None	Antenna Gain	Yes			
§15.247 (e)	Peak power spectral density	Yes			
§15.247(a)(2)	Spectrum Bandwidth of a DSSS System / 6dB BW	Yes			
§15.247(a)(2)	Spectrum Bandwidth of a DSSS System / 20dB BW	Yes			
§ 15.247 (b)(3)	Maximum output power (conducted)	Yes			
§ 15.247 (b)(3)	Max. peak output power (radiated)	Yes			
§15.247 (d)	Band-edge compliance of conducted emissions	Yes			
§15.205	Band-edge compliance of radiated emissions	Yes			
§15.247 (d)	Spurious Emission - conducted (Transmitter)	Yes			
§ 15.209	Spurious Emission -radiated (Transmitter)	Yes			
§ 15.109	Spurious Emissions-radiated (Receiver)	Yes			
§ 15.209	Spurious Emissions-radiated <30 MHz	Yes			
§ 15.107/207	Conducted Emissions <30 MHz	Yes			

5 RF measurement testing

5.1 Description of test set-up

5.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 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 C63.4-2003 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 set-ups 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 C63.4-2003 clause 4.2.

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

9 kHz - 150 kHz: Quasi Peak measurement, 200 Hz Bandwidth, active loop antenna.

150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, active loop antenna.

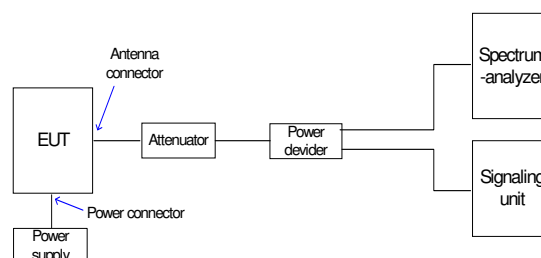
30 MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, Trilog antenna

>1GHz: Average, RBW 1MHz, VBW 10 Hz, waveguide horn

All measurement settings are according to FCC 15.209 and 15.207

5.1.2 Conducted measurements

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



5.2 Referenced Documents

None

5.3 Additional comments

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5.4 Antenna gain

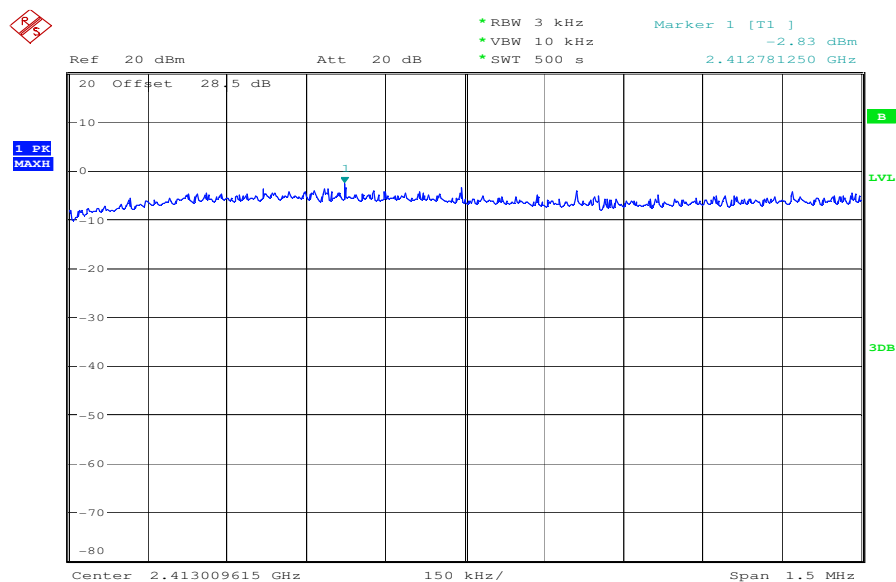
The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module.

	low channel	mid channel	high channel
Conducted power [dBm] (<i>measured with DSSS</i>)	21.22	21.36	21.41
Radiated power [dBm] (<i>measured with DSSS</i>)	22.50	23.46	23.40
Gain [dBi] (<i>calculated</i>)	1.28	2.10	1.99

5.5 Peak Power Spectral density (digitally modulated systems) §15.247(e)

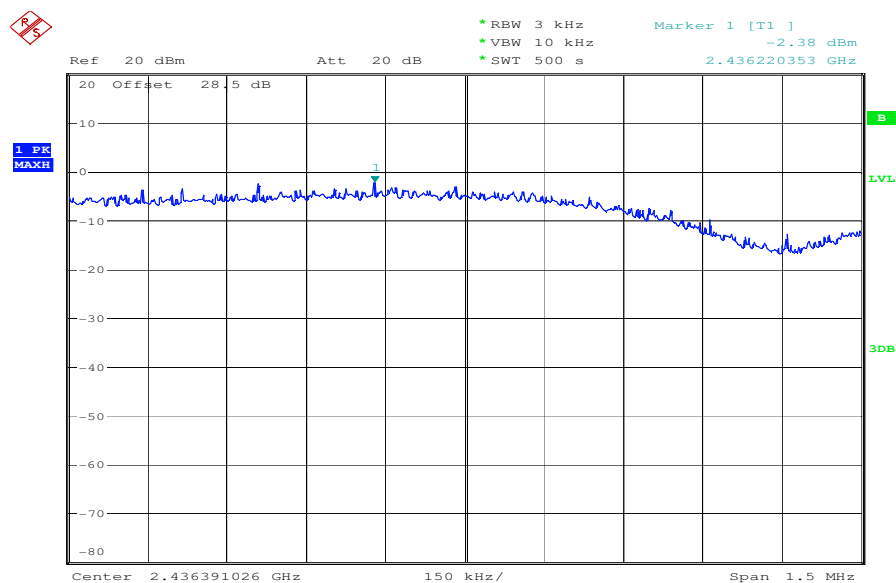
DSSS

Plot 1: Channel 1, 1 Mbits/s, PL 18



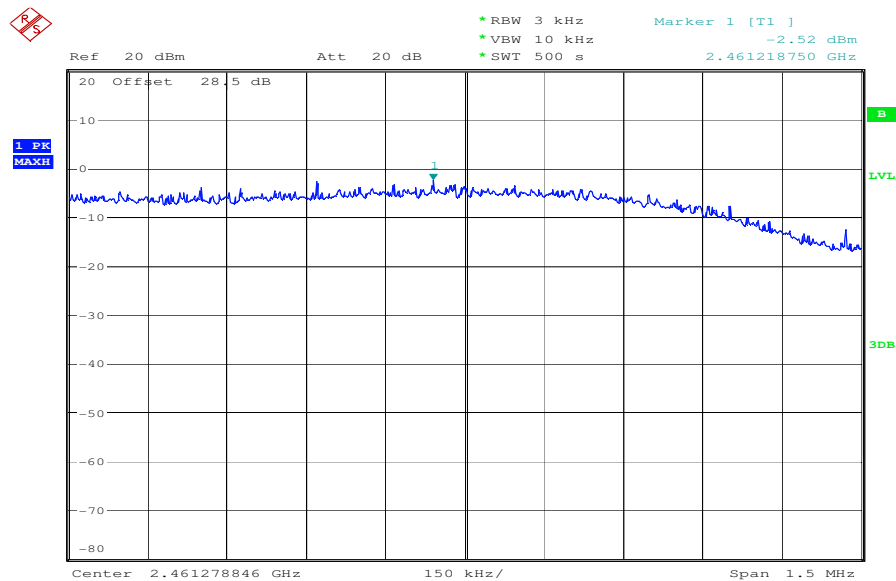
Date: 23.APR.2010 06:45:20

Plot 2: Channel 6, 1 Mbits/s, PL 18



Date: 23.APR.2010 07:05:36

Plot 3: Channel 11, 1 Mbits/s, PL 18



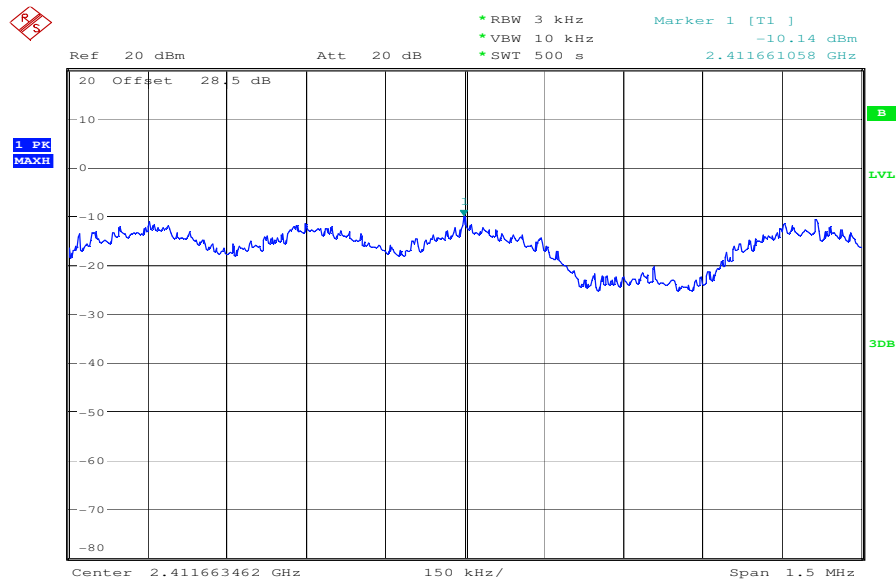
Date: 23.APR.2010 07:23:12

Results:

Plot 1: Power density:	-2.83 dBm / 3 kHz
Plot 2: Power density:	-2.38 dBm / 3 kHz
Plot 3: Power density:	-2.52 dBm / 3 kHz

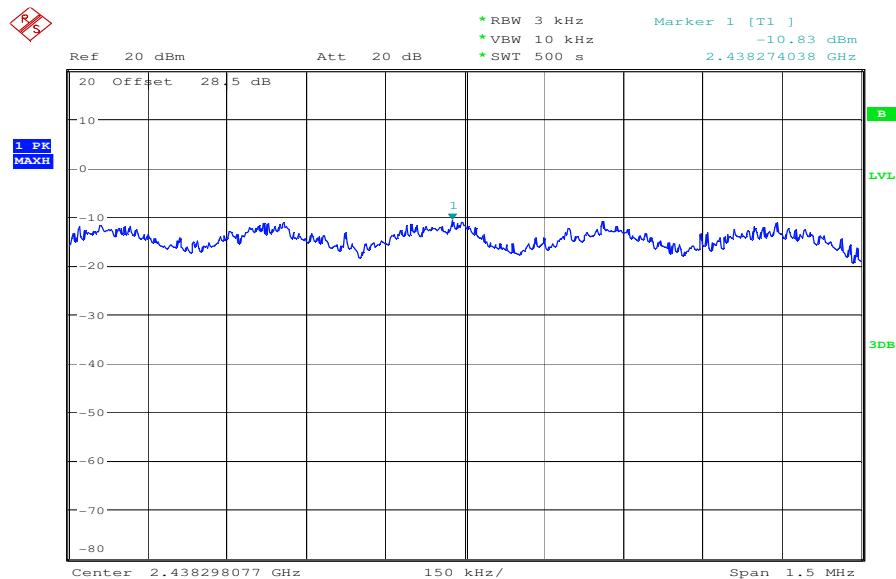
OFDM

Plot 1: Channel 1, 6 Mbits/s, PL 15



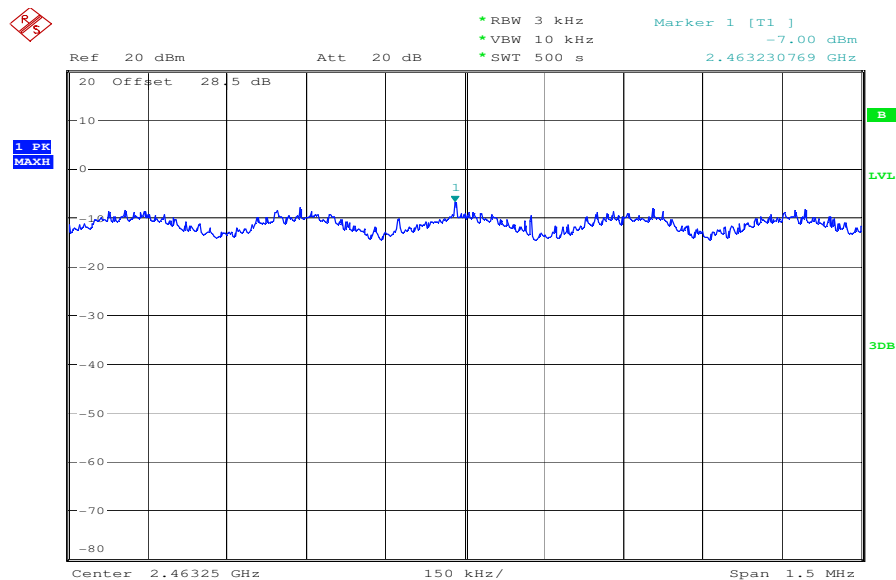
Date: 23.APR.2010 07:41:02

Plot 2: Channel 6, 6 Mbits/s, PL 15



Date: 23.APR.2010 07:58:41

Plot 3: Channel 11, 6 Mbits/s, PL 15



Date: 23.APR.2010 08:17:43

Results: Plot 1: Power density: -10.14 dBm / 3 kHz
Plot 2: Power density: -10.83 dBm / 3 kHz
Plot 3: Power density: -7.00 dBm / 3 kHz

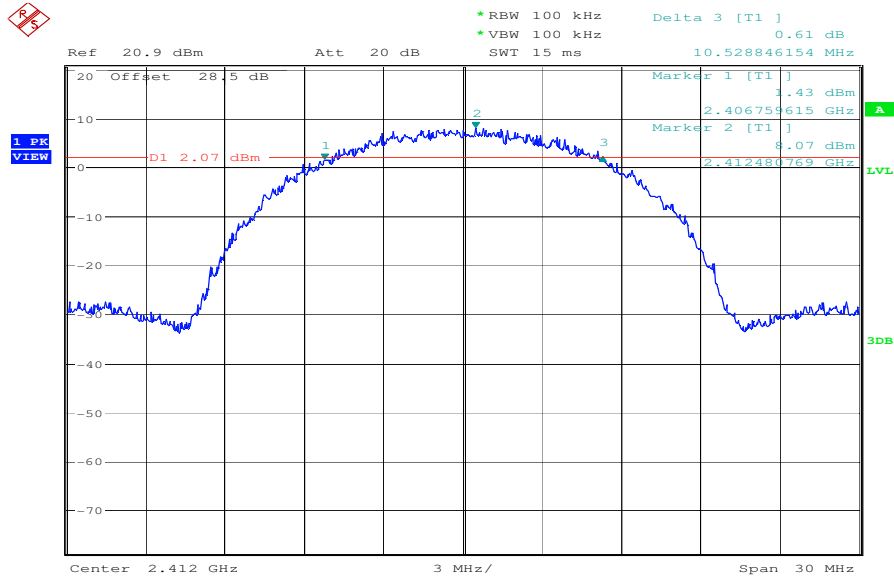
Limits:

Under normal test conditions only	For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission
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5.6 Spectrum Bandwidth of a DSSS System / 6 dB Bandwidth §15.247(a)(2)

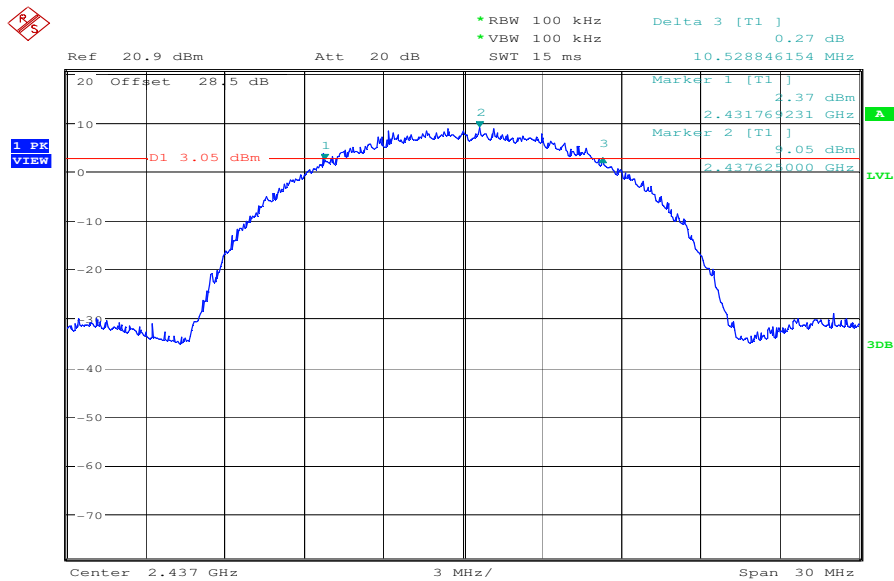
DSSS

Plot 1: Channel 1, 1 Mbits/s, PL 18



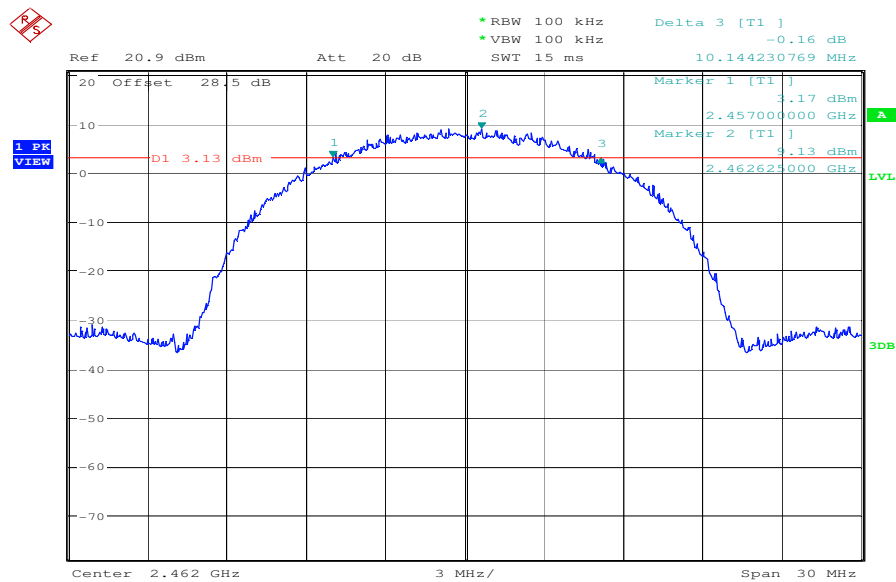
Date: 22.APR.2010 15:02:31

Plot 2: Channel 6, 1 Mbits/s, PL 18



Date: 22.APR.2010 15:12:56

Plot 3: Channel 11, 1 Mbits/s, PL 18



Date: 22.APR.2010 15:20:08

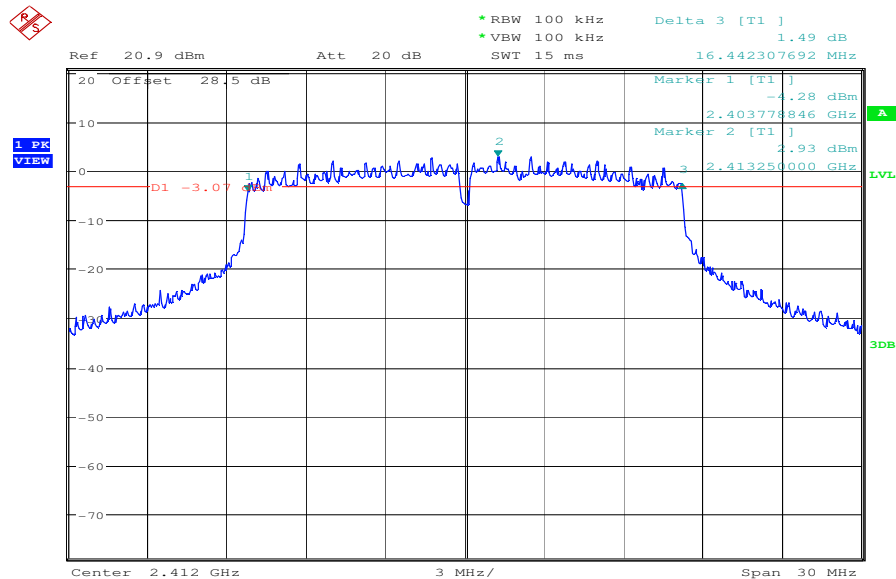
Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	10.53	10.53	10.14
Measurement uncertainty		±100kHz		

RBW: 100 kHz / VBW 100 kHz

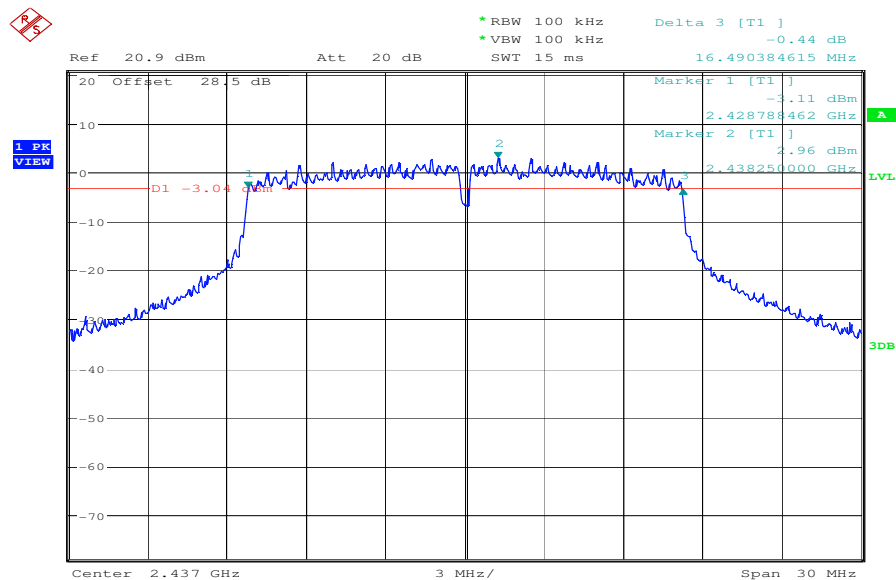
OFDM

Plot 1: Channel 1, 54 Mb/s, PL 15



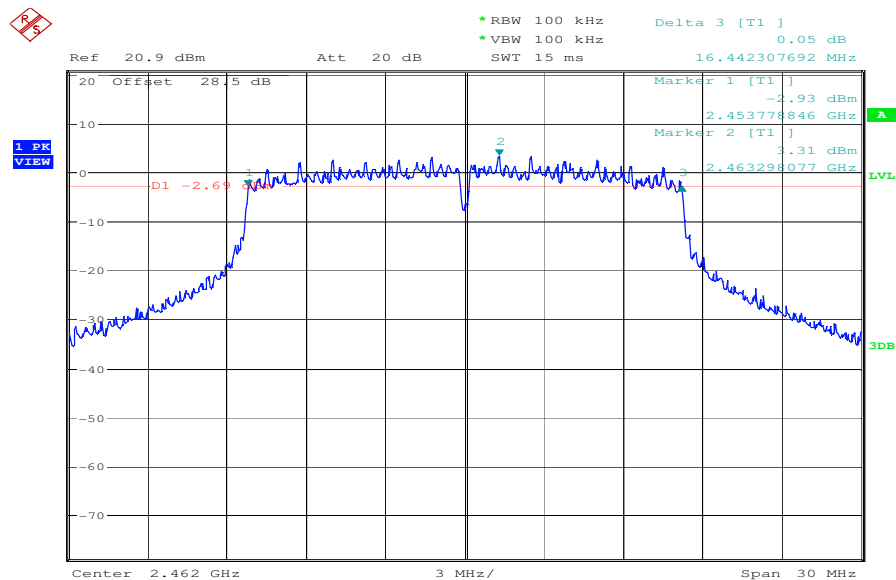
Date: 22.APR.2010 14:58:46

Plot 2: Channel 6, 54 Mb/s, PL 15



Date: 22.APR.2010 15:09:05

Plot 3: Channel 11, 54 Mb/s, PL 15



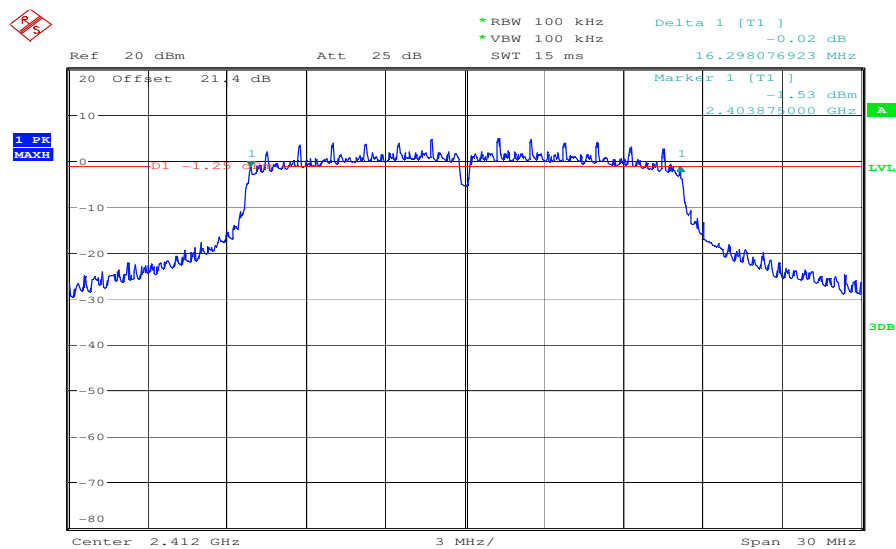
Date: 22.APR.2010 15:16:10

Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	16.44	16.49	16.44
Measurement uncertainty		±100kHz		

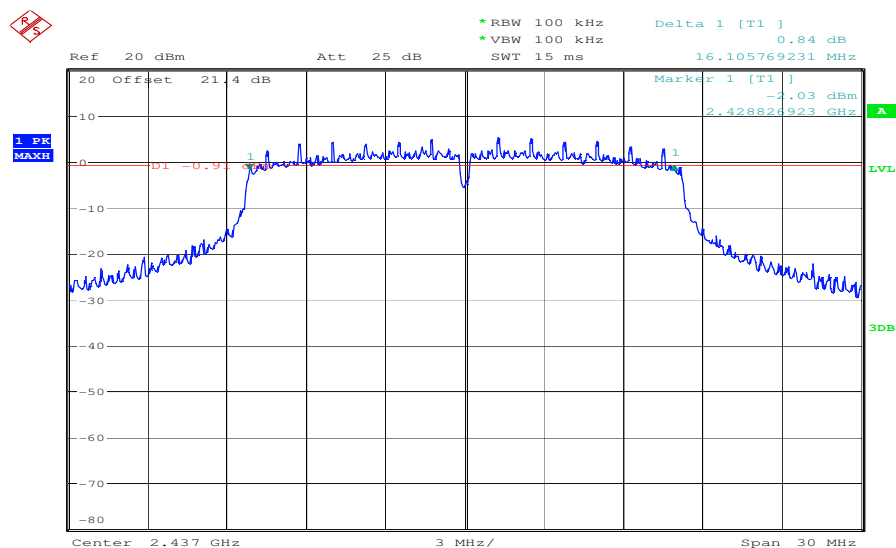
RBW: 100 kHz / VBW 100 kHz

Plot 1: Channel 1, 6 Mbits/s, PL 15



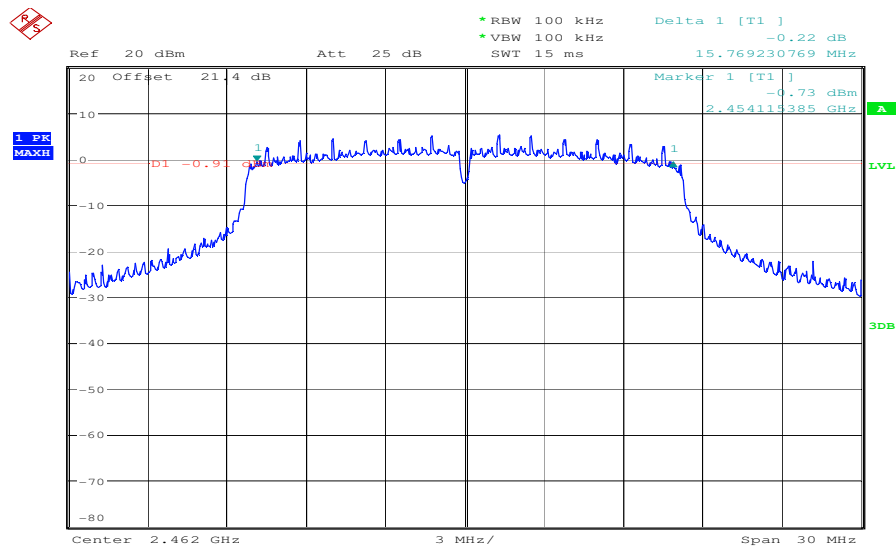
8UF CFH_1826C
Date: 10.JUN.2010 10:17:34

Plot 2: Channel 6, 6 Mbits/s, PL 15



8UF CFH_1826C
Date: 10.JUN.2010 10:16:10

Plot 3: Channel 11, 6 Mbps/s, PL 15



8UFCFH_1826C
Date: 10.JUN.2010 10:13:36

Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	16.30	16.11	15.77
Measurement uncertainty		±100kHz		

RBW: 100 kHz / VBW 100 kHz

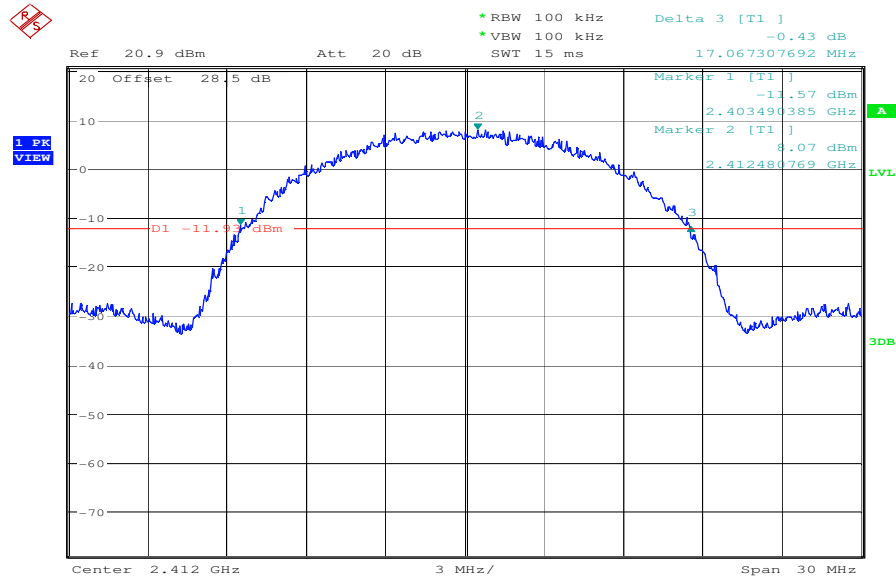
Limits:

Under normal test conditions only	> 500 kHz
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5.7 Spectrum Bandwidth of a DSSS System / 20 dB Bandwidth

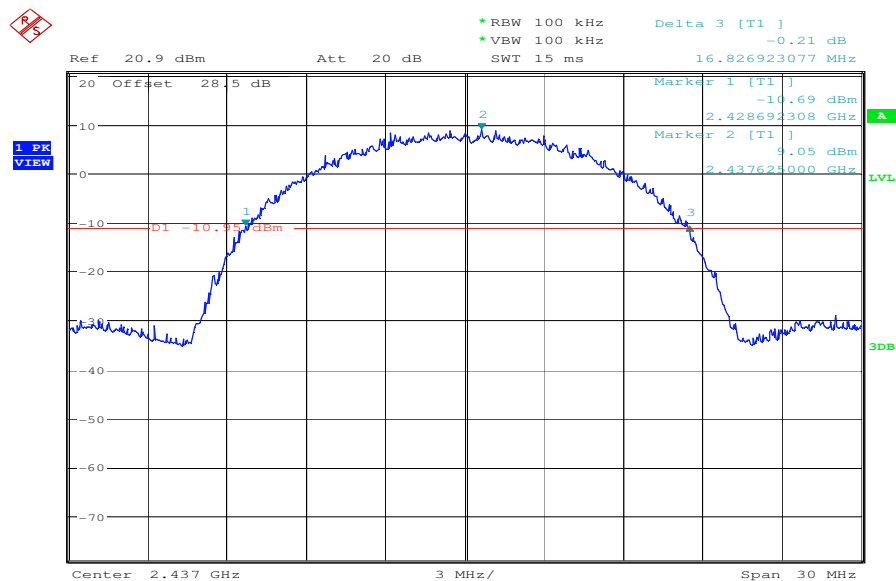
DSSS

Plot 1: Channel 1, 1 Mb/s, PL 18



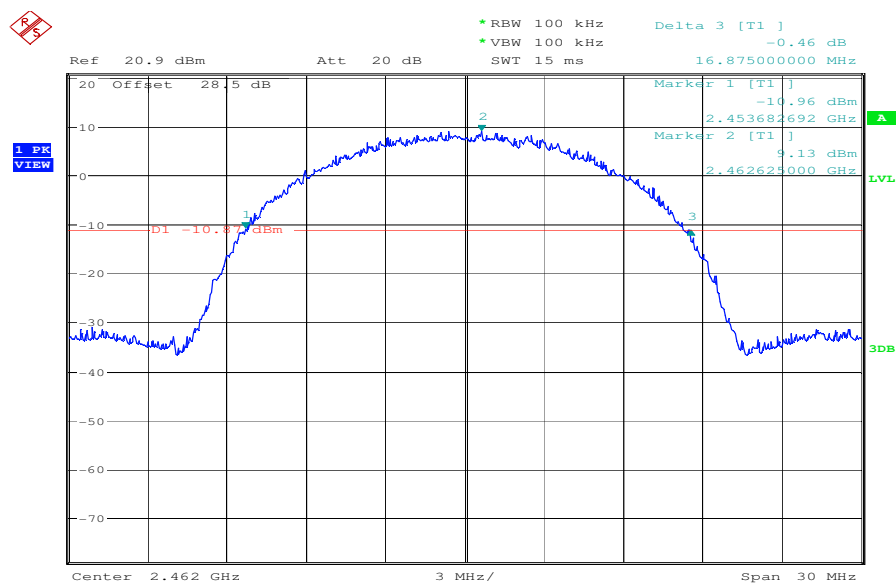
Date: 22.APR.2010 15:03:13

Plot 2: Channel 6, 1 Mb/s, PL 18



Date: 22.APR.2010 15:13:50

Plot 3: Channel 11, 1 Mbits/s, PL 18



Date: 22.APR.2010 15:20:42

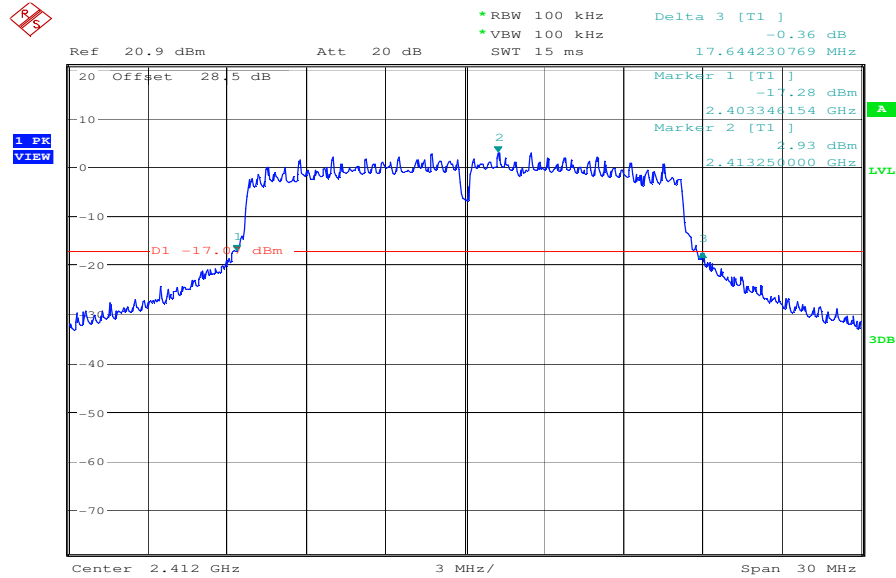
Results:

Test conditions		20 dB BANDWIDTH [MHz]		
		2412	2437	2462
Frequency [MHz]				
T _{nom}	V _{nom}	17.07	16.83	16.88
Measurement uncertainty		±100kHz		

RBW: 100 kHz / VBW 100 kHz

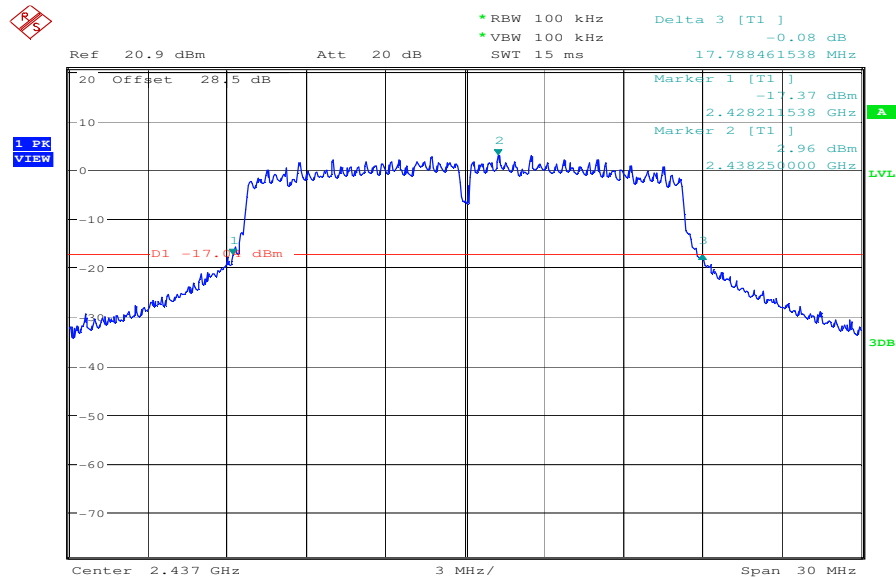
OFDM

Plot 1: Channel 1, 54 Mb/s, PL 15



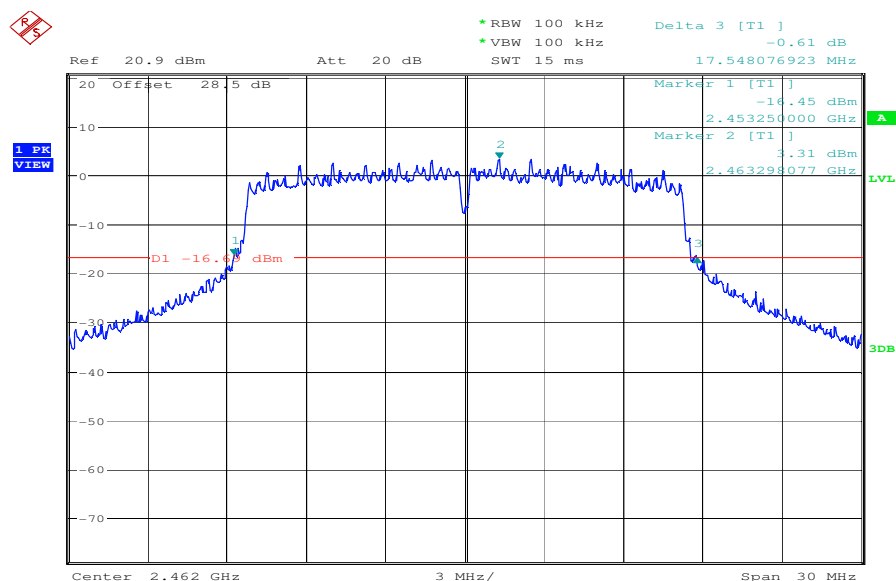
Date: 22.APR.2010 14:59:47

Plot 2: Channel 6, 54 Mb/s, PL 15



Date: 22.APR.2010 15:10:01

Plot 3: Channel 11, 54 Mb/s, PL 15



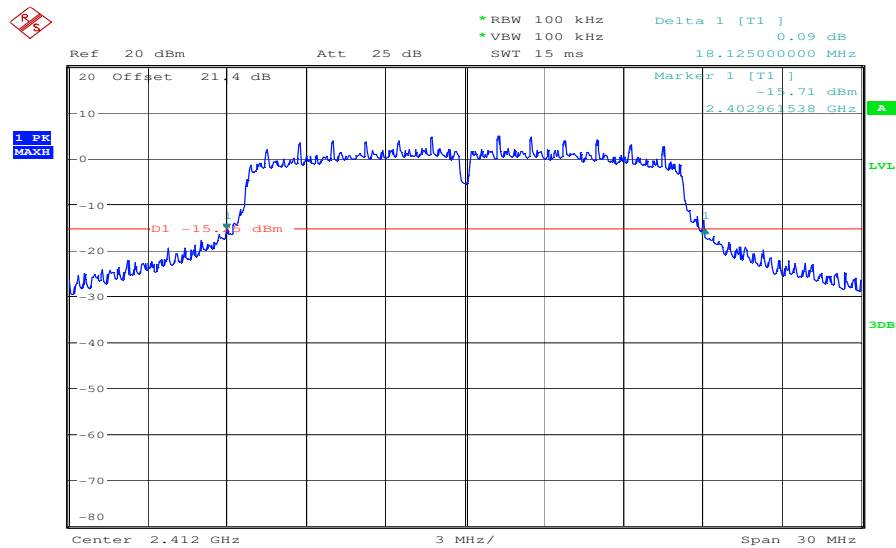
Date: 22.APR.2010 15:17:38

Results:

Test conditions		20 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	17.64	17.79	17.55
Measurement uncertainty		±100kHz		

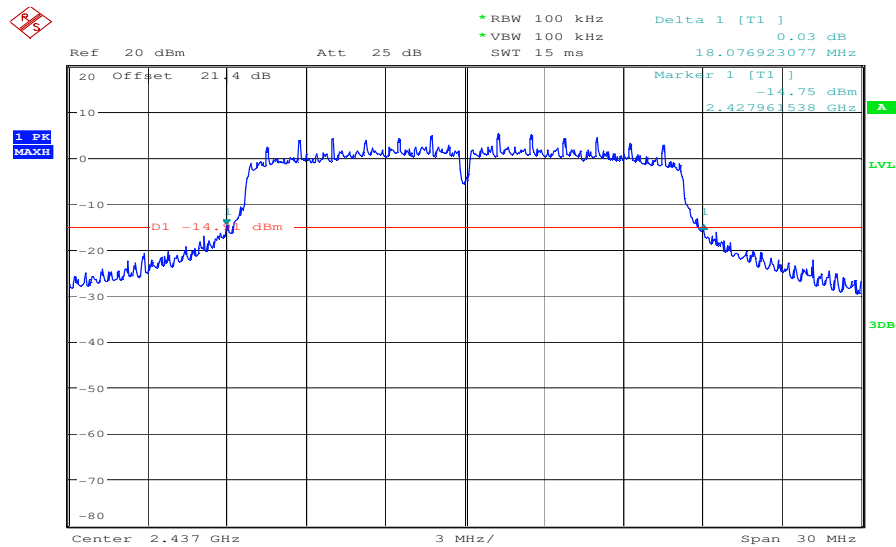
RBW: 100 kHz / VBW 100 kHz

Plot 1: Channel 1, 6 Mbits/s, PL 15



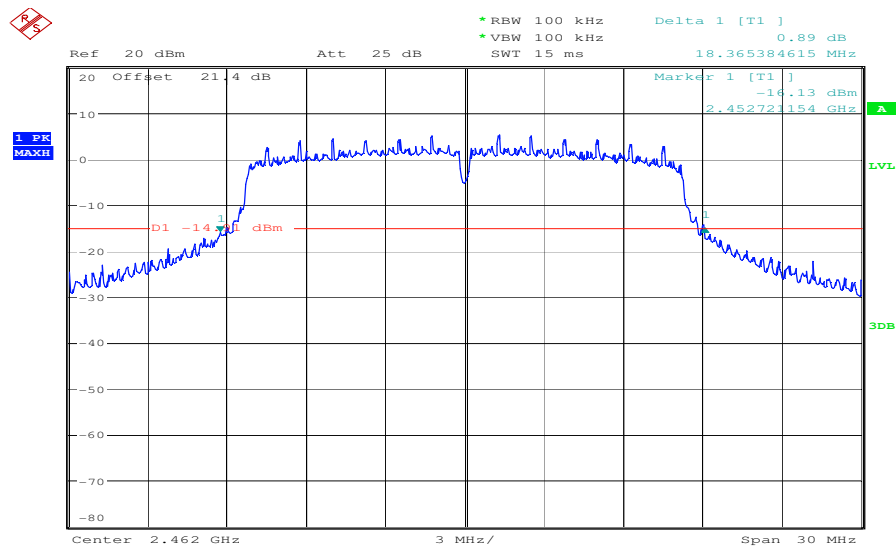
8UFCEH_1826C
Date: 10.JUN.2010 10:18:08

Plot 2: Channel 6, 6 Mbits/s, PL 15



8UFCEH_1826C
Date: 10.JUN.2010 10:15:25

Plot 3: Channel 11, 6 Mbps/s, PL 15



8UFCFH_1826C
Date: 10.JUN.2010 10:14:10

Results:

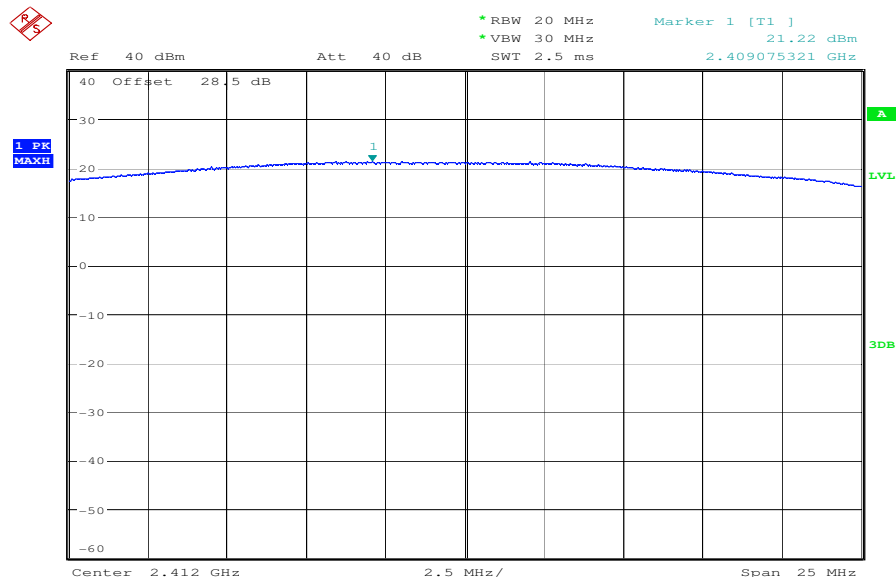
Test conditions		20 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	18.13	18.08	18.37
Measurement uncertainty		±100kHz		

RBW: 100 kHz / VBW 100 kHz

5.8 Maximum output power (conducted) §15.247 (b)(3)

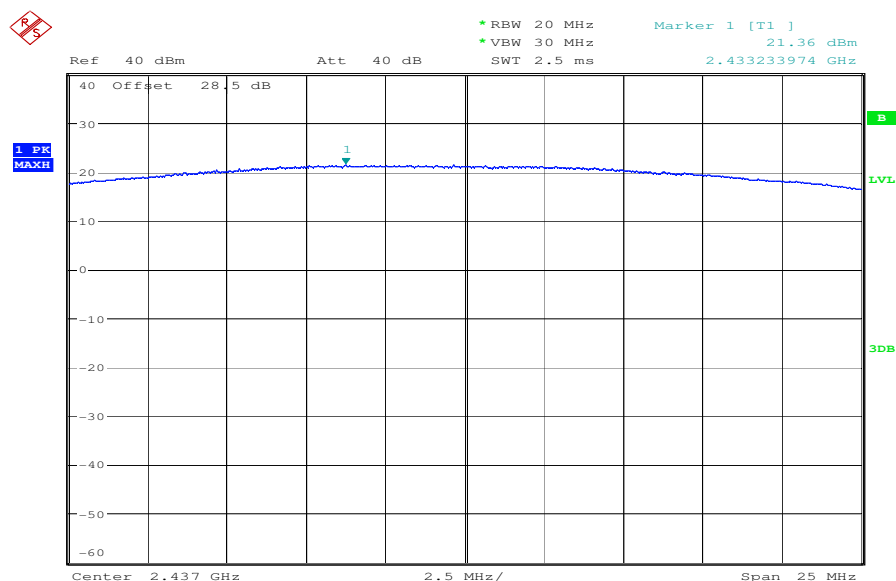
DSSS

Plot 1: Channel 1, 1 Mbits/s, PL 18



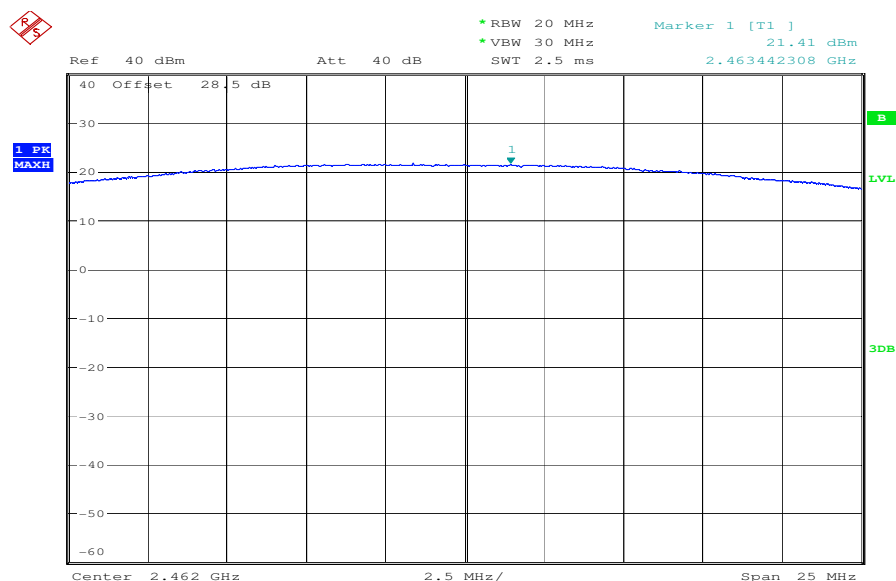
Date: 23.APR.2010 11:49:49

Plot 2: Channel 6, 1 Mbits/s, PL 18



Date: 22.APR.2010 14:13:15

Plot 3: Channel 11, 1 Mb/s, PL 18



Date: 22.APR.2010 14:16:53

Results:

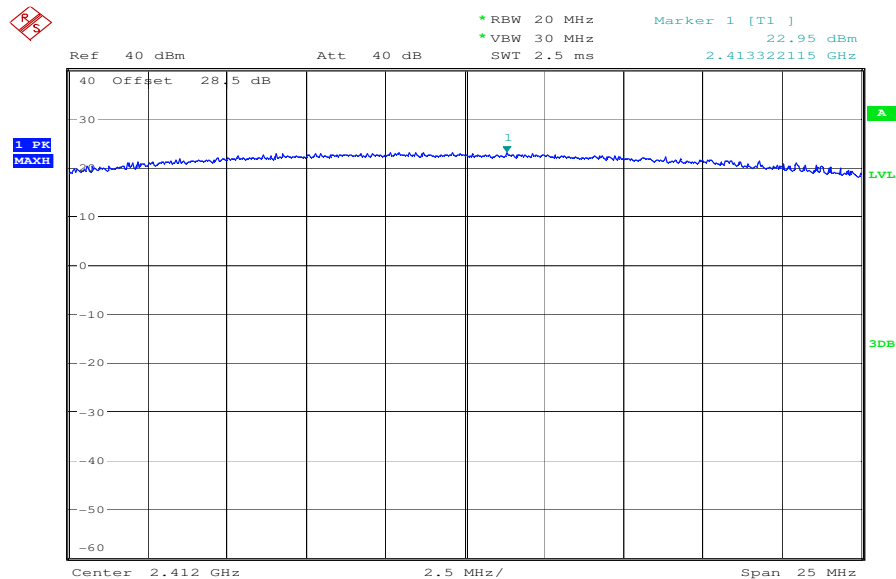
Test conditions		Max. peak output power [dBm]		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	21.22	21.36	21.41
Measurement uncertainty		±1.5dB		

RBW / VBW: 20/30 MHz

Test conditions		Max. peak output power [dBm]		
Frequency [MHz]		Average values measured with power meter		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	17.92	17.39	17.12
Measurement uncertainty		±1.5dB		

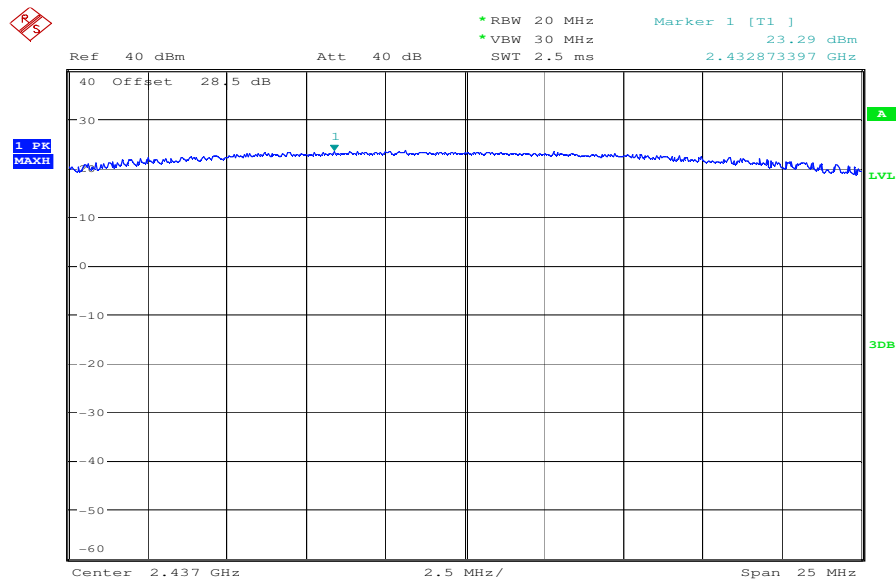
OFDM

Plot 1: Channel 1, 54 Mb/s, PL 15



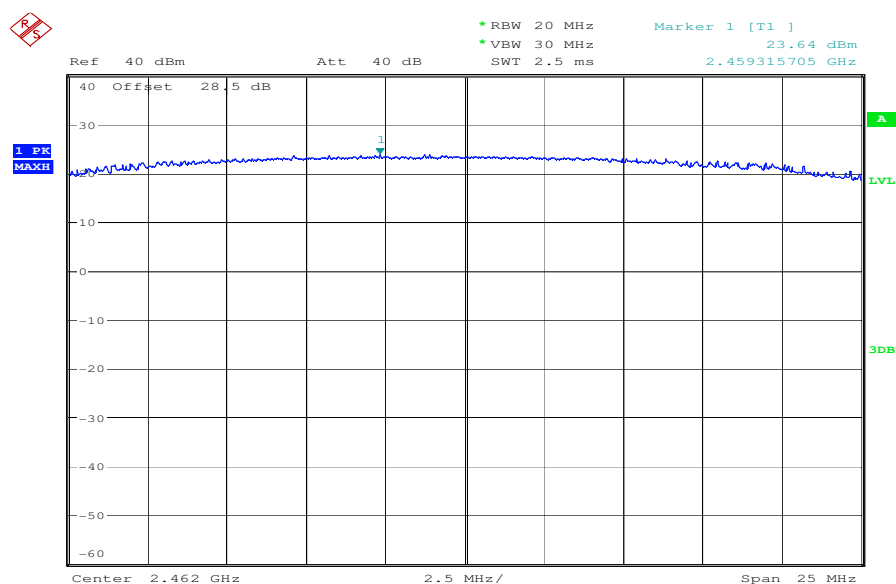
Date: 23.APR.2010 11:50:45

Plot 2: Channel 6, 54 Mb/s, PL 15



Date: 23.APR.2010 11:53:16

Plot 3: Channel 11, 54 Mbits/s, PL 15



Date: 23.APR.2010 11:54:00

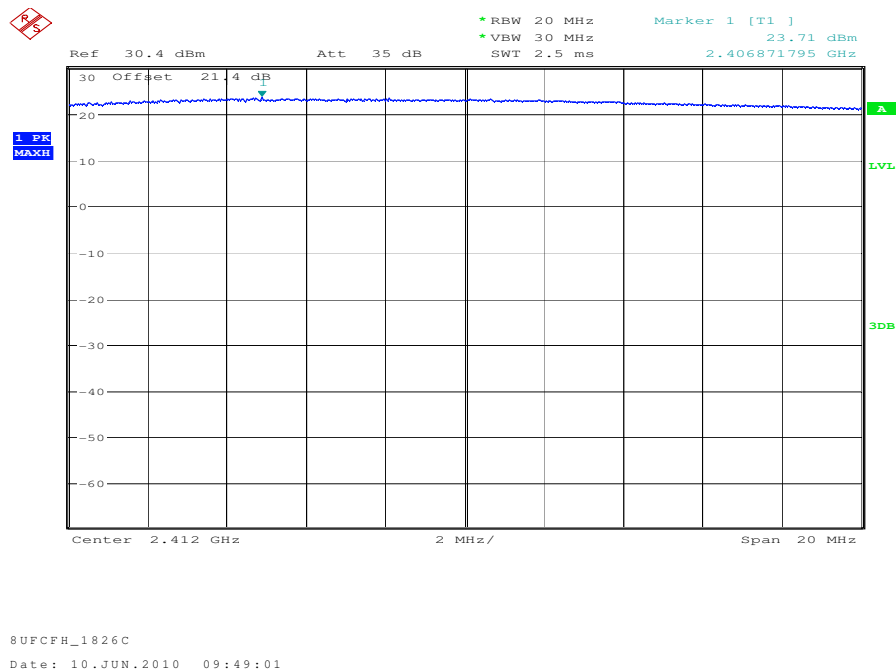
Results:

Test conditions		Max. peak output power [dBm] Peak values measured with spectrum analyzer		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	22.95	23.29	23.64
Measurement uncertainty		±3dB		

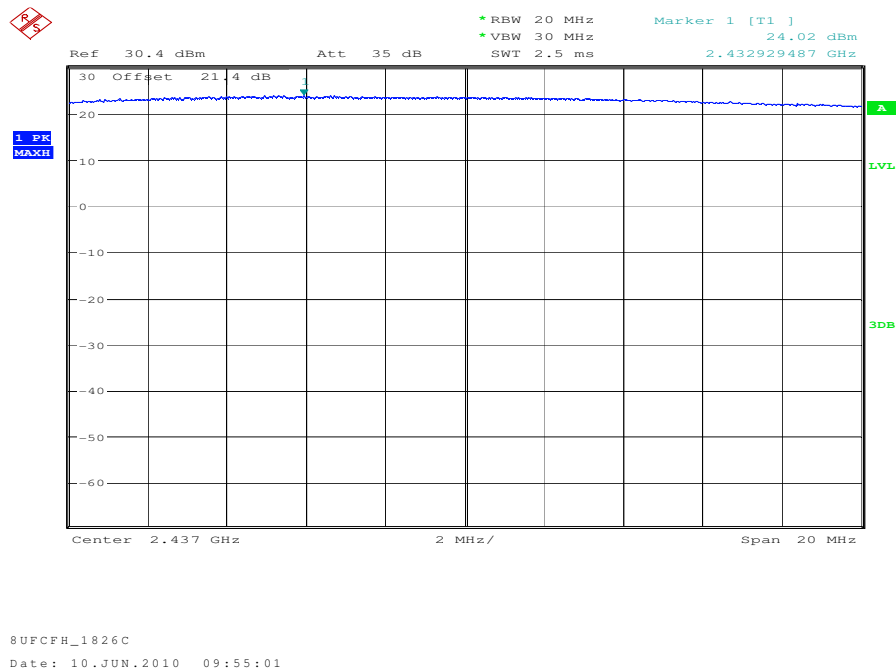
RBW / VBW: 20/30 MHz

Test conditions		Max. peak output power [dBm] Average values measured with power meter		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	12.87	13.51	13.36
Measurement uncertainty		±1.5dB		

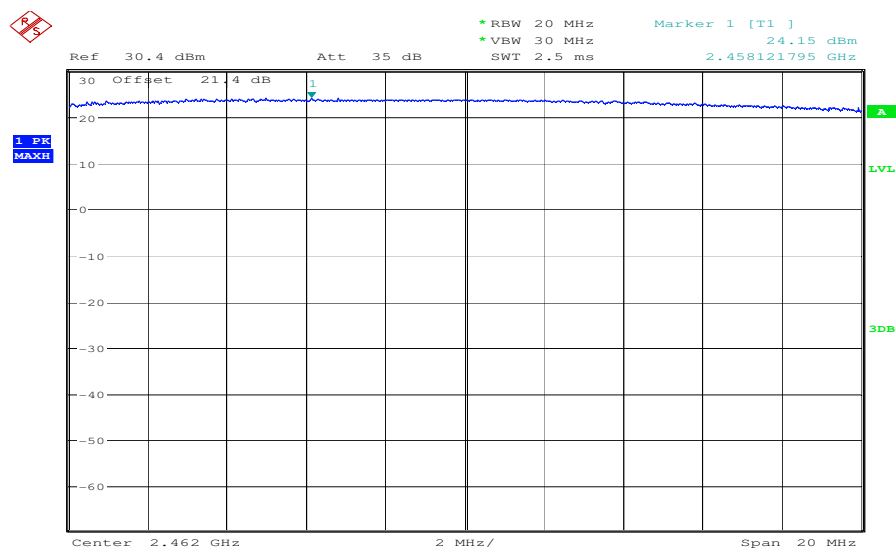
Plot 1: Channel 1, 6 Mbits/s, PL 15



Plot 2: Channel 6, 6 Mbits/s, PL 15



Plot 3: Channel 11, 6 Mbps/s, PL 15



8UFCEH_1826C
Date: 10.JUN.2010 09:56:42

Results:

Test conditions		Max. peak output power [dBm] Peak values measured with spectrum analyzer		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	23.71	24.02	24.15
Measurement uncertainty		±3dB		

RBW / VBW: 20/30 MHz

Test conditions		Max. peak output power [dBm] Average values measured with power meter		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	13.70	14.22	13.95
Measurement uncertainty		±1.5dB		

Limits:

Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt / 30 dBm
--	------------------------

5.9 Max. peak output power (radiated) §15.247 (b)(3)

DSSS

Test conditions		Max. peak output power EIRP [dBm] Peak values measured with spectrum analyzer		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	22.50	23.46	23.40
Measurement uncertainty		±3dB		

RBW / VBW: 20/30 MHz

Measured at a distance of 3m

Test conditions		Max. peak output power EIRP [dBm] Average values calculated with antenna gain		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	19.20	19.49	19.11
Measurement uncertainty		±3dB		

OFDM

Test conditions		Max. peak output power EIRP [dBm] Peak values calculated with antenna gain		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	24.99	26.12	26.14
Measurement uncertainty		±3dB		

RBW / VBW: 20/30 MHz

Test conditions		Max. peak output power EIRP [dBm] Average values calculated with antenna gain		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	14.98	16.32	15.94
Measurement uncertainty		±3dB		

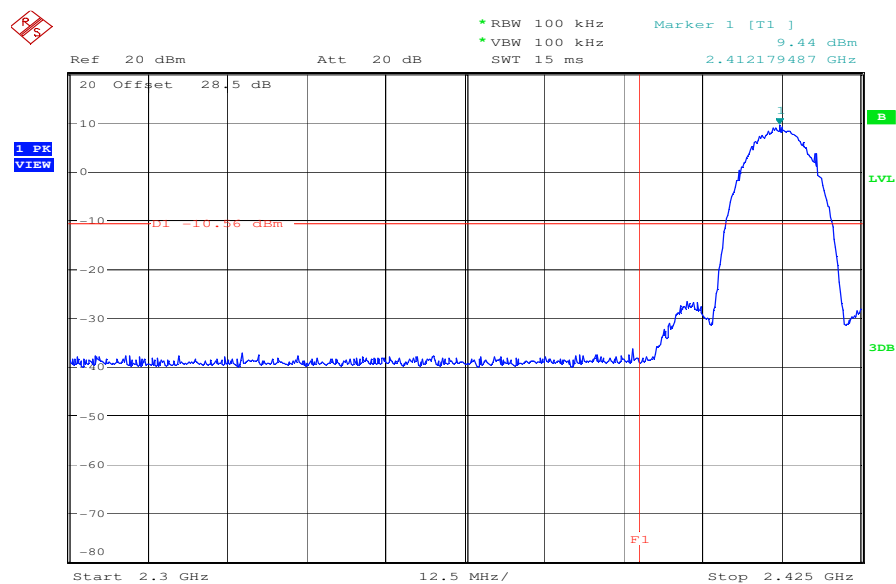
Limits:

Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt
--	---------------

5.10 Band-edge compliance of conducted emissions §15.247 (d)

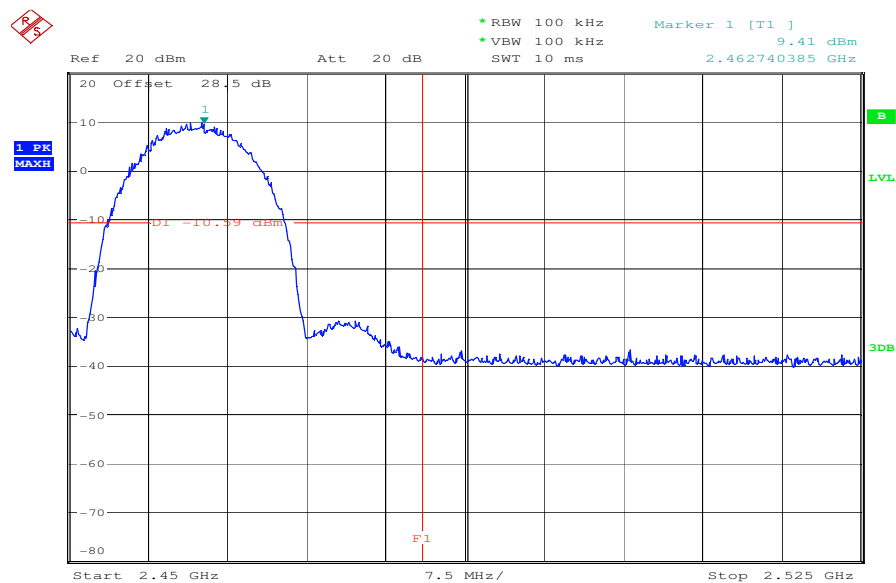
DSSS

Plot 1: lowest channel, 1 Mbits/s, PL 18



Date: 23.APR.2010 09:01:07

Plot 2: highest channel, 1 Mbits/s, PL 18



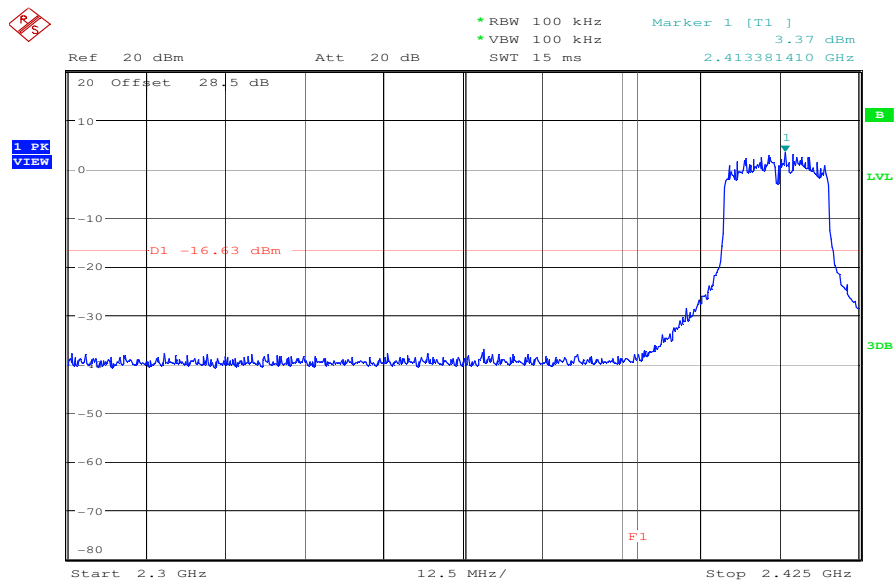
Date: 23.APR.2010 09:05:02

Limits:

Under normal test conditions only	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)).
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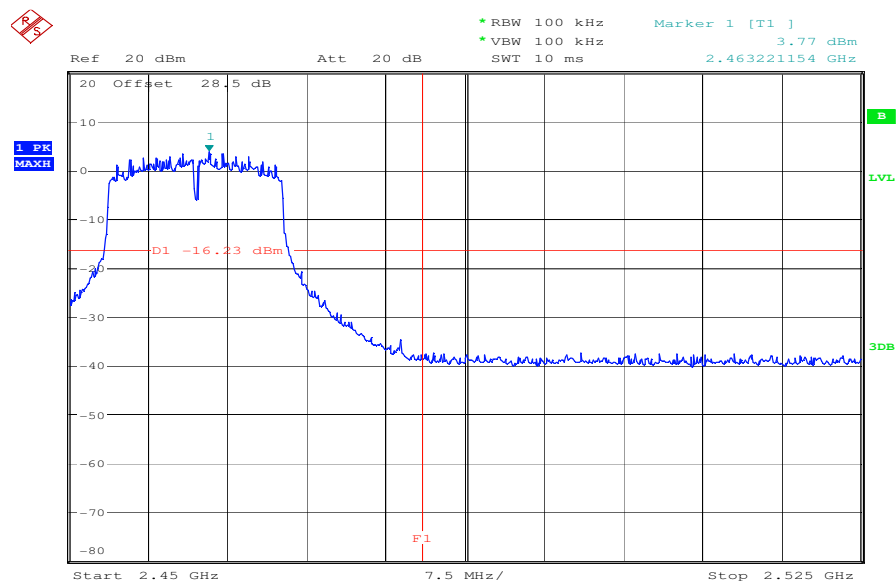
OFDM

Plot 1: lowest channel, 54 Mbits/s, PL 15



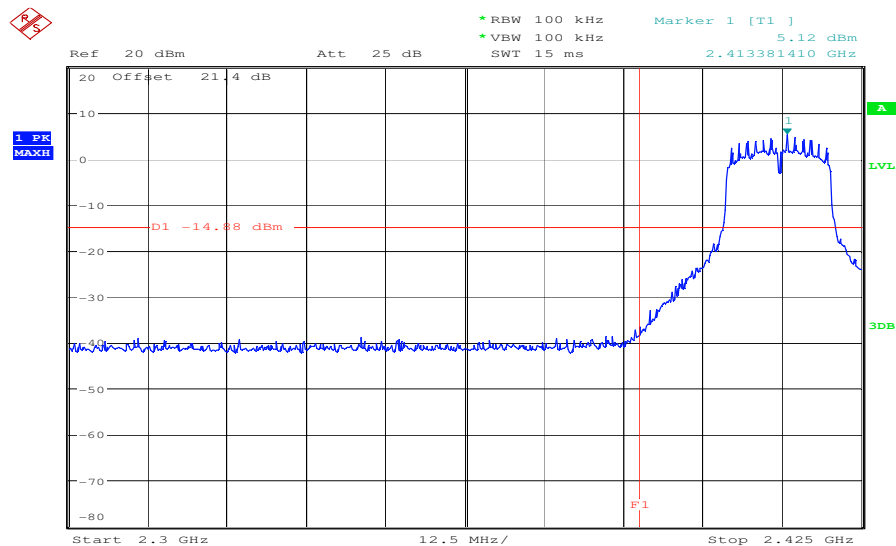
Date: 23.APR.2010 09:02:25

Plot 2: highest channel, 54 Mbits/s, PL 15



Date: 23.APR.2010 09:06:05

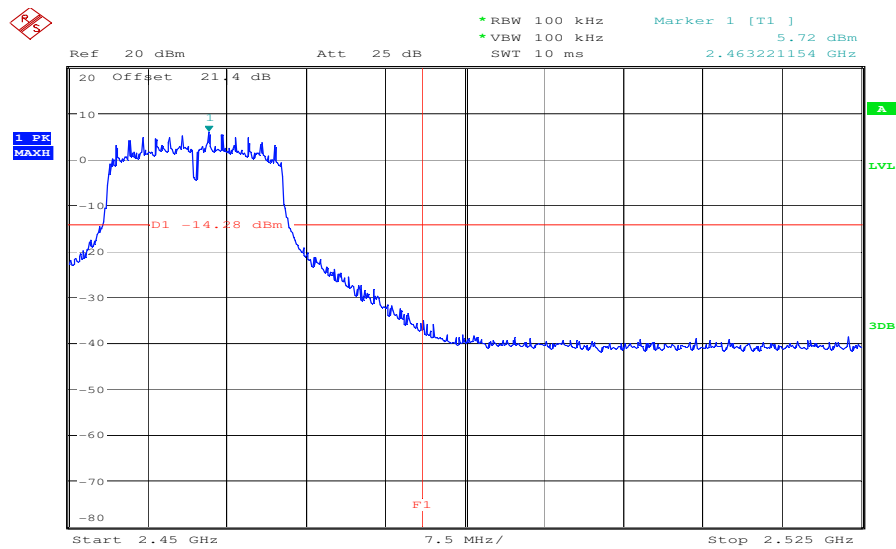
Plot 3: lowest channel, 6 Mbits/s, PL 15



8UFCFH_1826C

Date: 10.JUN.2010 10:22:27

Plot 4: highest channel, 6 Mbps/s, PL 15



8UFCEH_1826C
Date: 10.JUN.2010 10:23:59

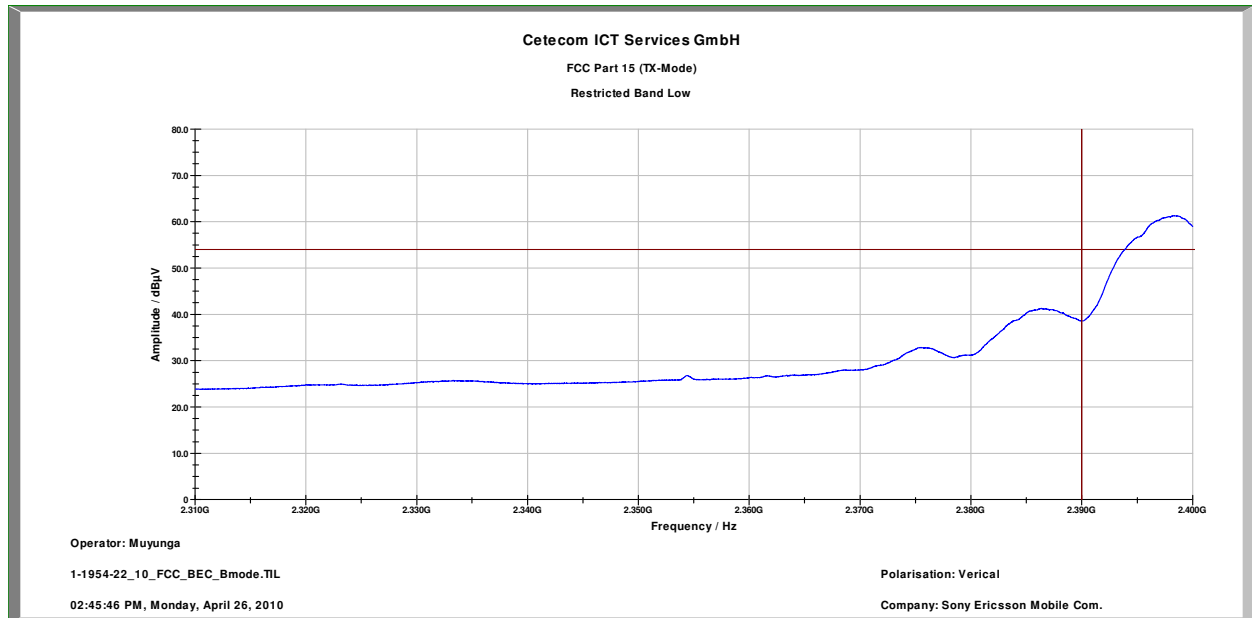
Limits:

Under normal test conditions only	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)).
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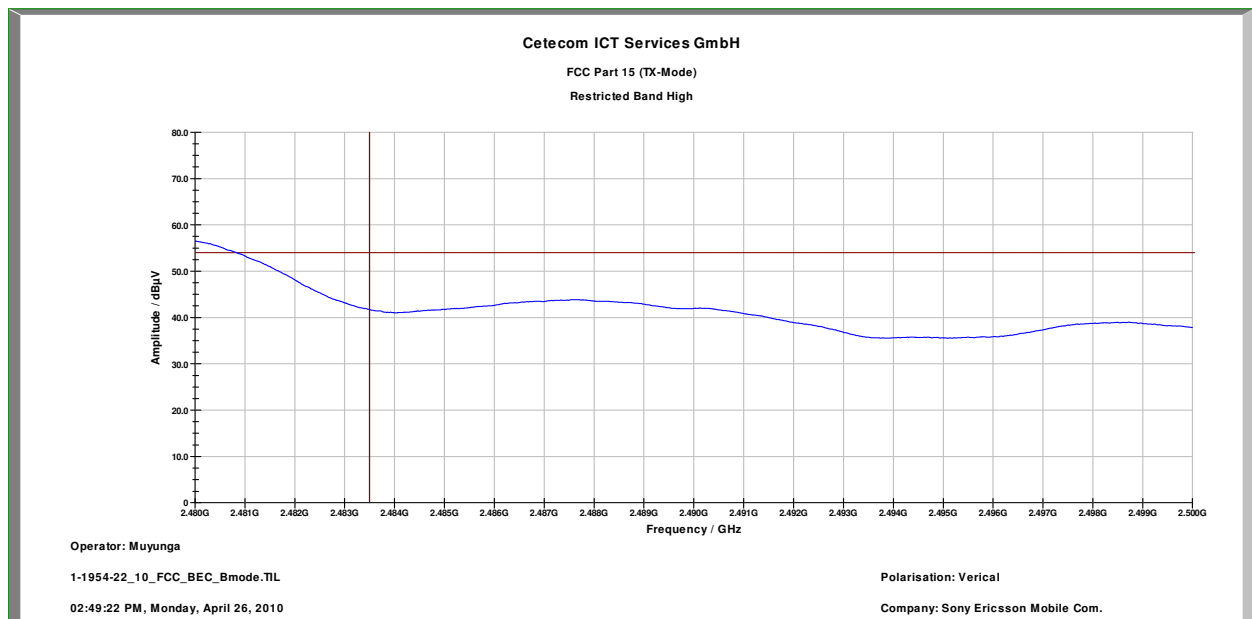
5.11 Band-edge compliance of radiated emissions §15.205

DSSS

Plot 1: lowest channel, 1 Mbits/s, PL 18



Plot 2: highest channel, 1 Mbits/s, PL 18

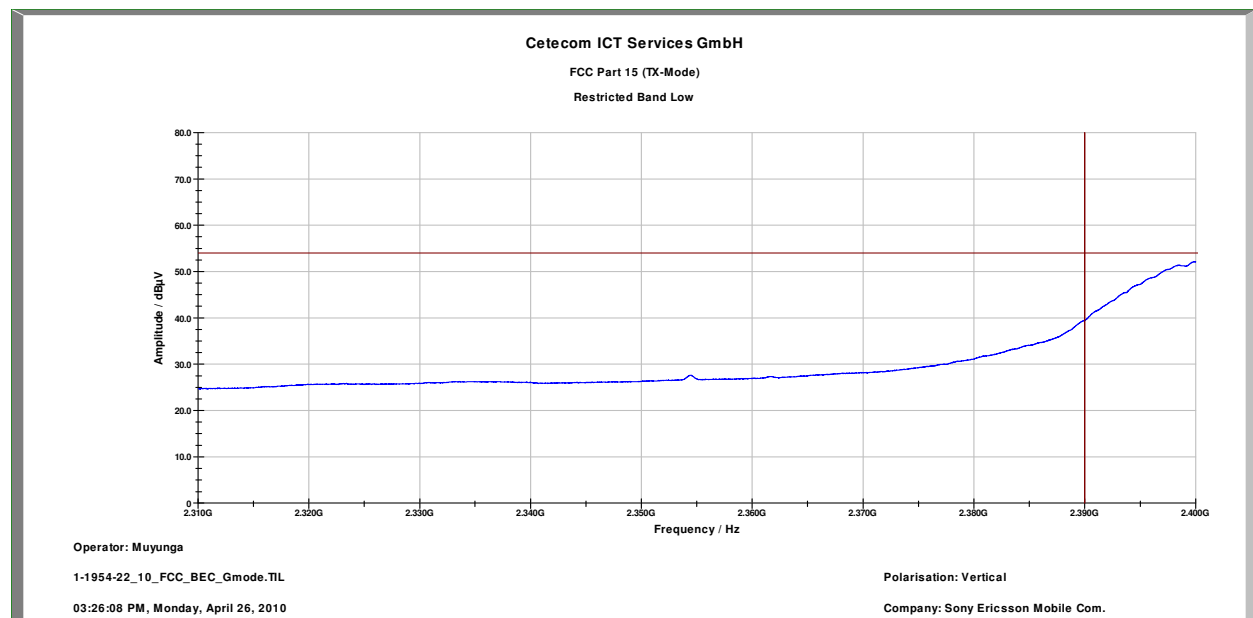


Limits:

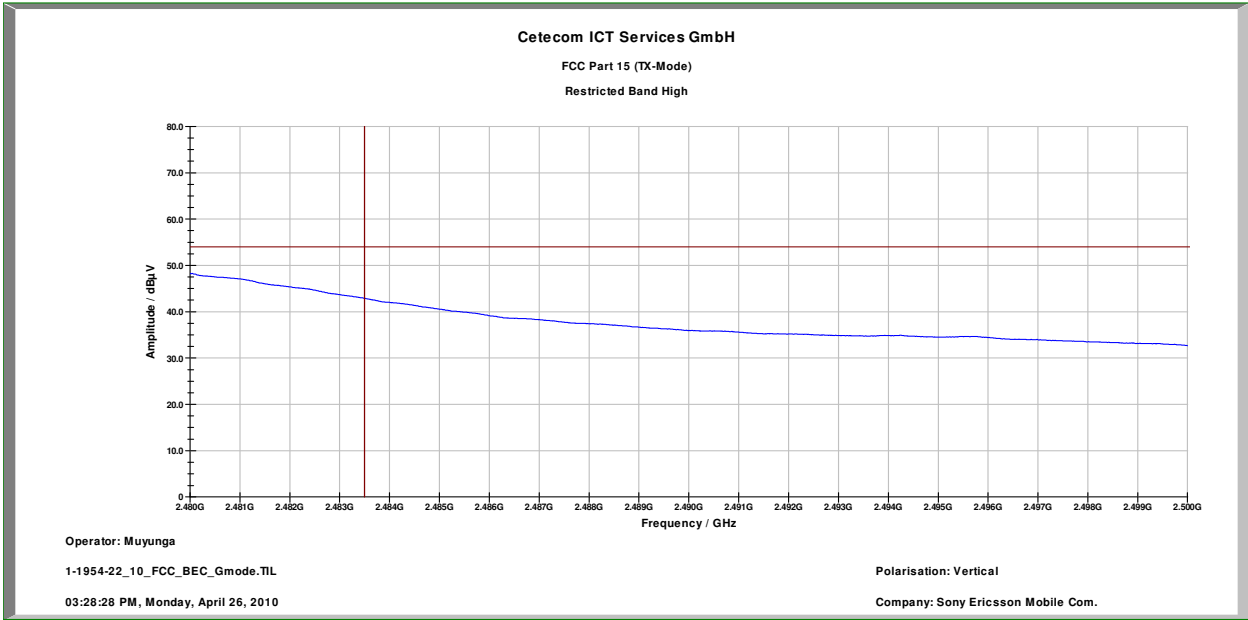
Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth 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)).
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OFDM

Plot 1: lowest channel, 6 Mbits/s, PL 15



Plot 2: highest channel, 6 Mbits/s, PL 15

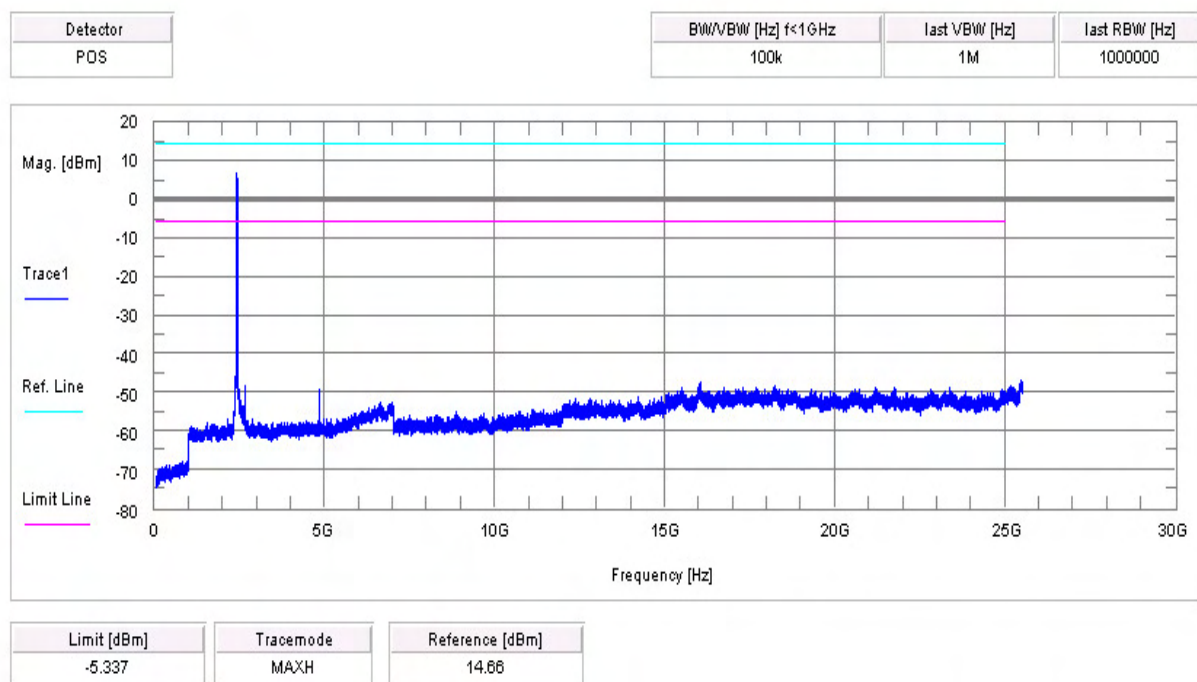


Limits:

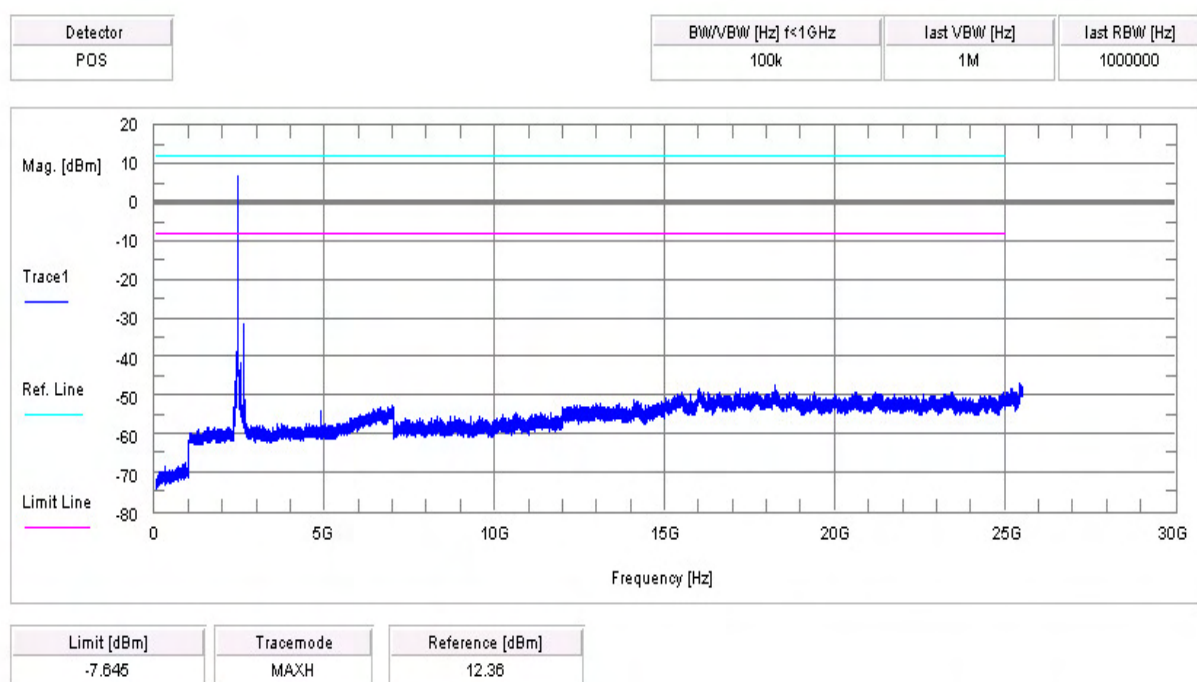
Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth 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)).
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5.12 Spurious Emissions - conducted (Transmitter) §15.247 (c)**DSSS**

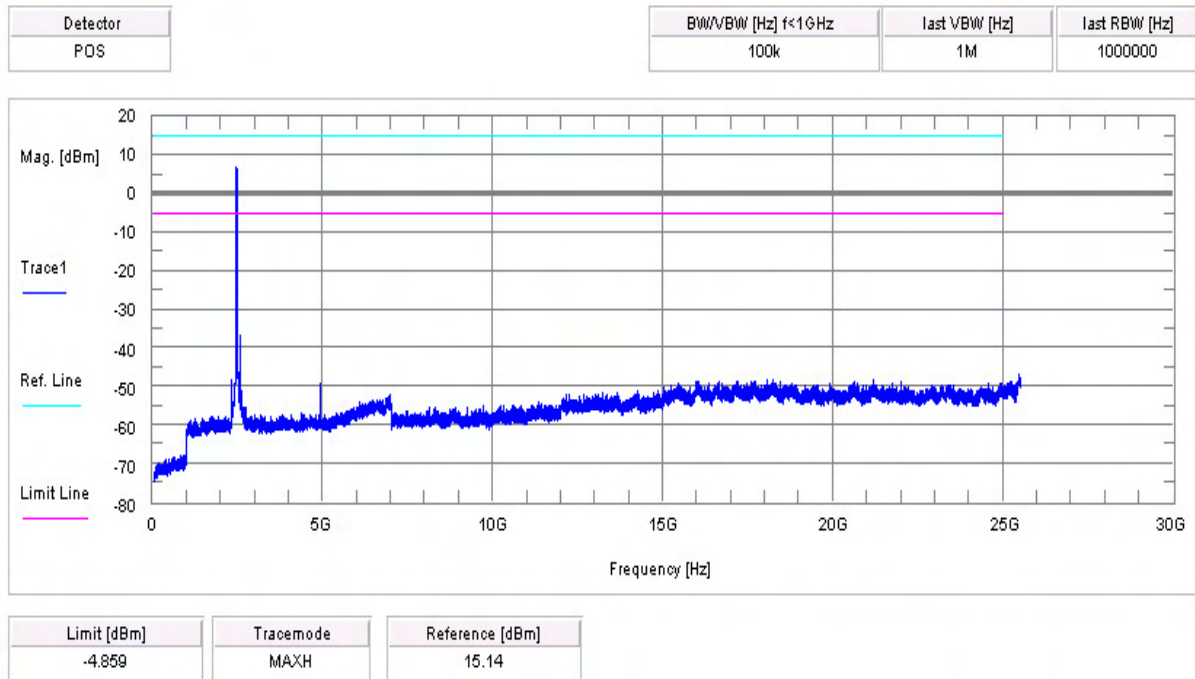
Plot 1: Lowest Channel, 1 Mbits/s, PL 18



Plot 2: Middle Channel, 1 Mbits/s, PL 18



Plot 3: Highest Channel, 1 Mbits/s, PL 18



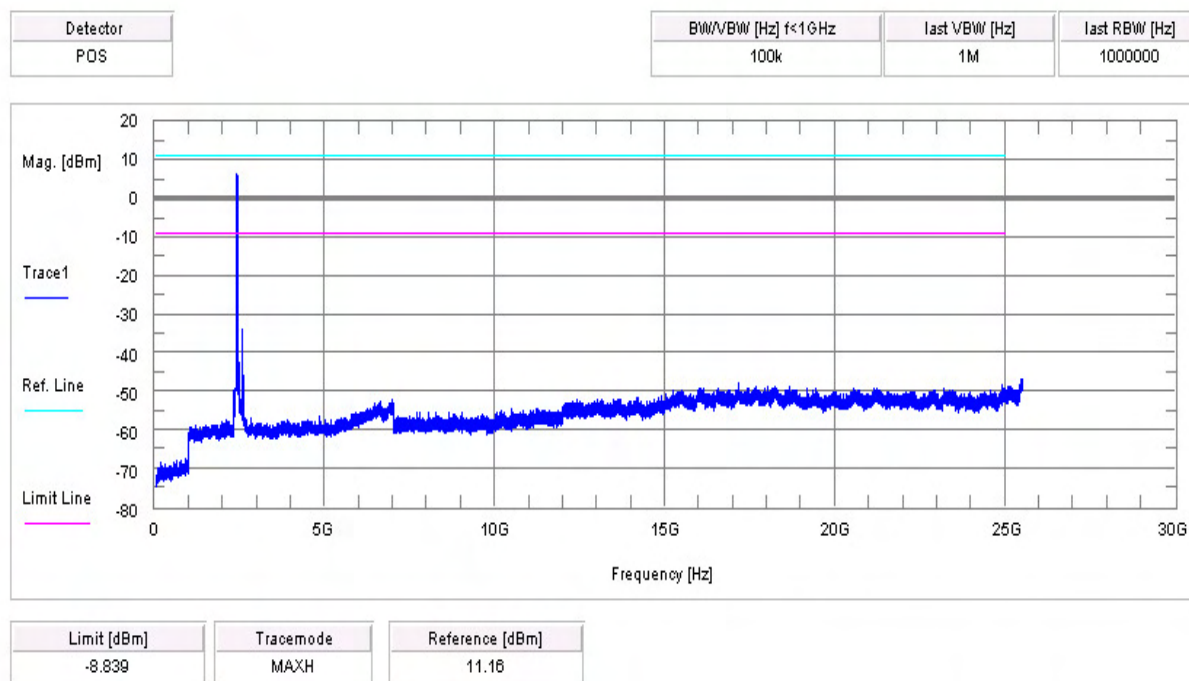
Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emmission power	actual attenuation below frequency of operation [dB]	results
2412		14.66	30 dBm	-	Operating frequency
			-20 dBc		
2437		12.36	30 dBm		Operating frequency
			-20 dBc		
2462		15.14	30 dBm		Operating frequency
			-20 dBc		
Measurement uncertainty		± 3dB			

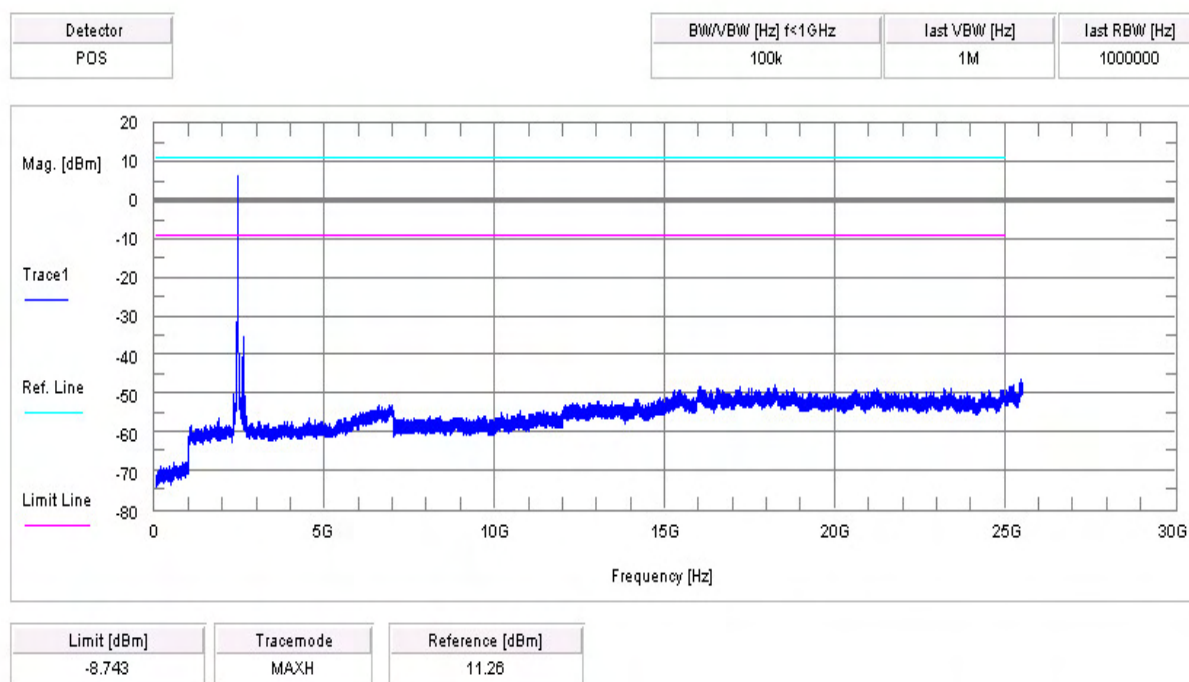
F < 1 GHz: RBW: 100 kHz VBW: 100 kHz
 F > 1 GHz: RBW: 1 MHz VBW: 1 MHz

OFDM

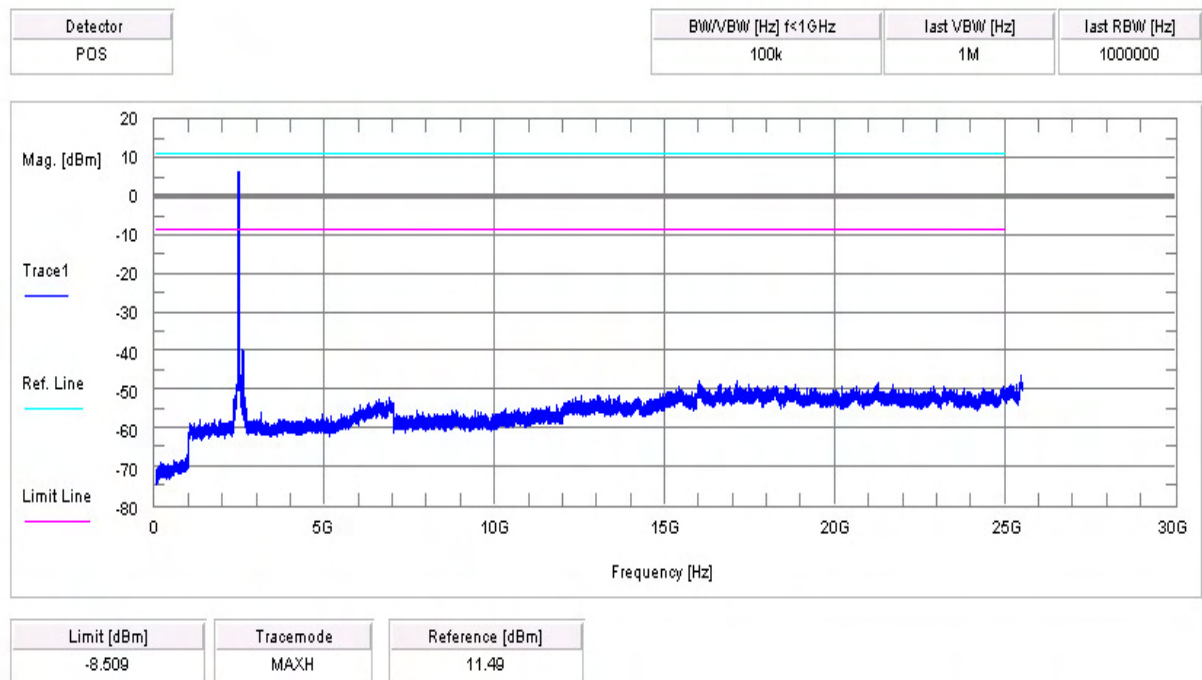
Plot 1: Lowest Channel, 6 Mbits/s, PL 15



Plot 2: Middle Channel, 6 Mbits/s, PL 15



Plot 3: Highest Channel, 6 Mbits/s, PL 15



Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		11.16	30 dBm	-	Operating frequency
			-20 dBc		
2437		11.26	30 dBm		Operating frequency
			-20 dBc		
2462		11.49	30 dBm		Operating frequency
			-20 dBc		
Measurement uncertainty		± 3dB			

F < 1 GHz: RBW: 100 kHz VBW: 100 kHz
 F > 1 GHz: RBW: 1 MHz VBW: 1 MHz

Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. 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)).
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Note: For emissions that fall into restricted bands you find the radiated emissions later in the report.

5.13 Spurious Emissions - radiated (Transmitter) §15.209

OFDM

The transmitter radiated spurious tests were performed for both DSSS and OFDM modulations but only data plots for OFDM radiated spurious evaluations up to 1 GHz are documented in this sub-clause, as OFDM represents the worst-case scenario.

Plot 1: 0.03 - 1 GHz (lowest channel, 6 Mbits/s, PL 15)

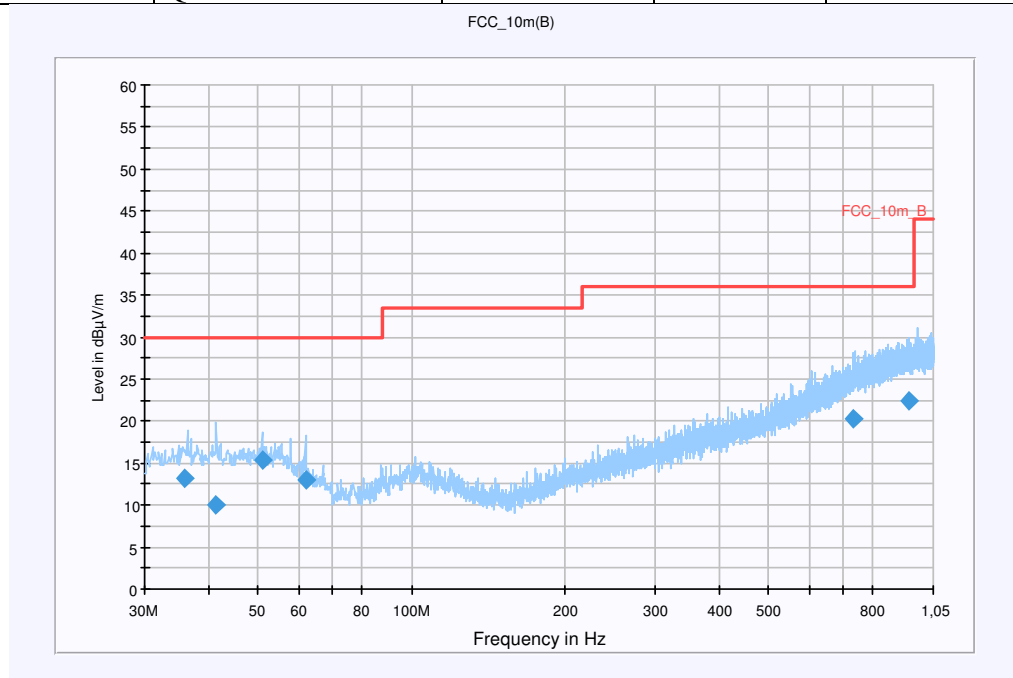
Information

EUT:	AAD-3880072-BV + CAA-0002016 (EP800)
Serial Number:	IMEI:00440214-048213-8
Test Description:	FCC part 15 C Class B @ 10 m
Operating Conditions:	WLAN-Testmode; Cont. Tx Ch:1; 6 MBit/s
Operator Name:	Lang
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

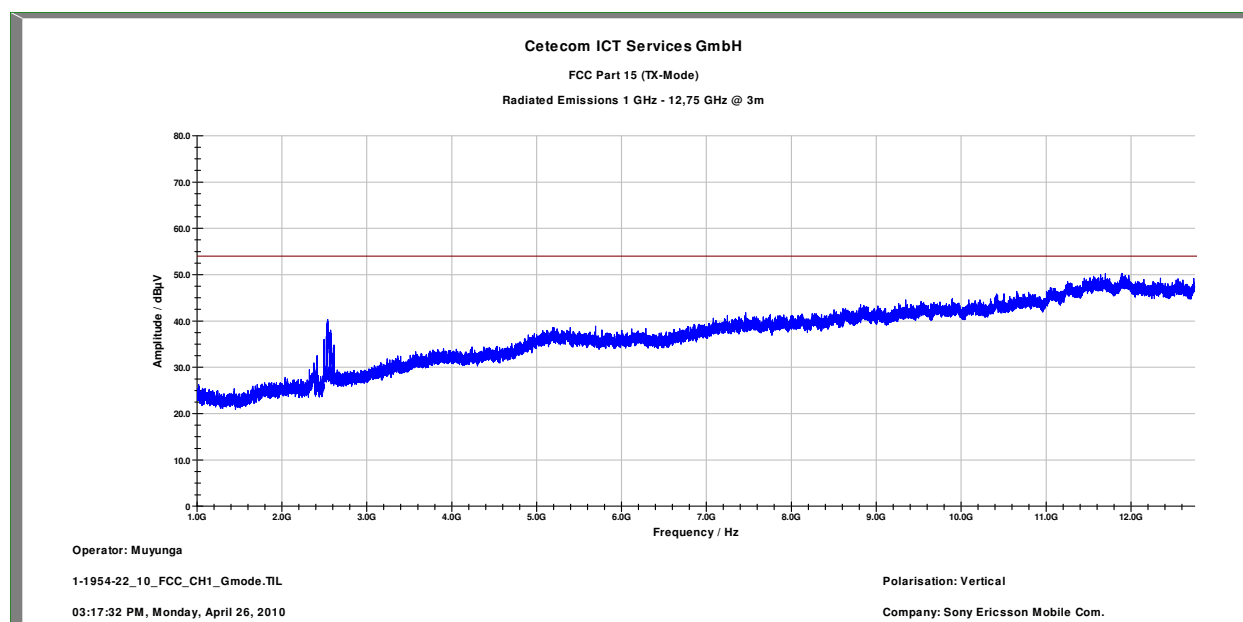
Hardware Setup:	Electric Field (NOS)
Level Unit:	dBμV/m

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



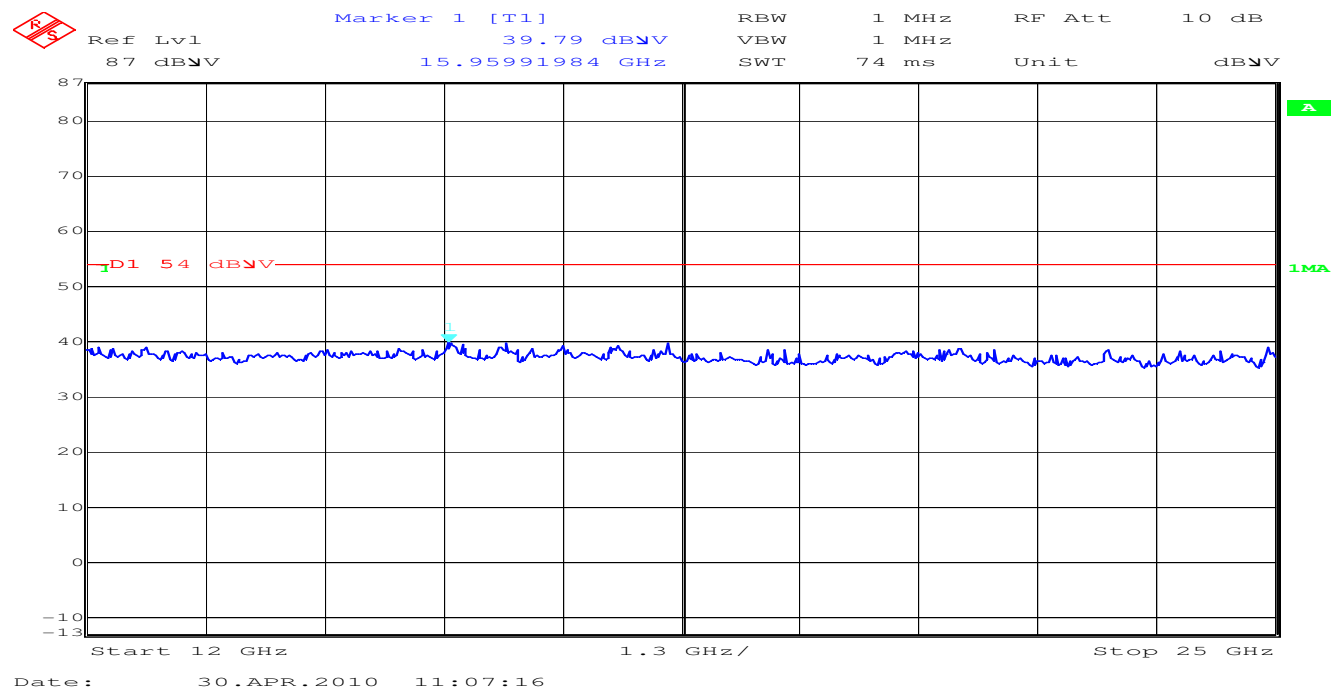
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
35.992200	13.2	15000.000	120.000	198.0	V	-6.0	13.1	16.8	30.0
41.483250	10.0	15000.000	120.000	198.0	V	148.0	13.4	20.0	30.0
50.999700	15.3	15000.000	120.000	111.0	V	2.0	13.3	14.7	30.0
62.015700	13.0	15000.000	120.000	326.0	V	184.0	11.1	17.0	30.0
731.991450	20.3	15000.000	120.000	393.0	H	277.0	23.2	15.7	36.0
940.486200	22.5	15000.000	120.000	400.0	V	339.0	25.3	13.5	36.0

Plot 2: 1 - 12 GHz (lowest channel, 6 Mbits/s, PL 15)



Signal suppressed with a 2.4 GHz band-reject filter

Plot 3: 12- 25 GHz (valid for all channels)



Plot 4: 0.03 - 1 GHz (middle channel, 6 Mbits/s, PL 15)

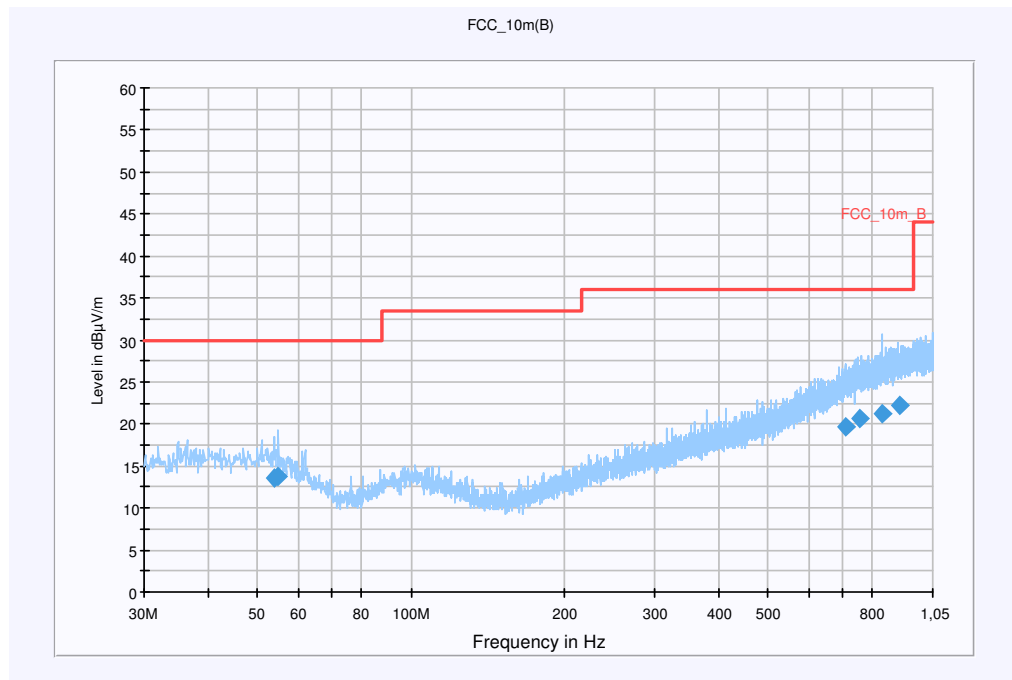
Information

EUT:	AAD-3880072-BV + CAA-0002016 (EP800)
Serial Number:	IMEI:00440214-048213-8
Test Description:	FCC part 15 C Class B @ 10 m
Operating Conditions:	WLAN-Testmode; Cont. Tx Ch:6; 6 MBit/s
Operator Name:	Lang
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

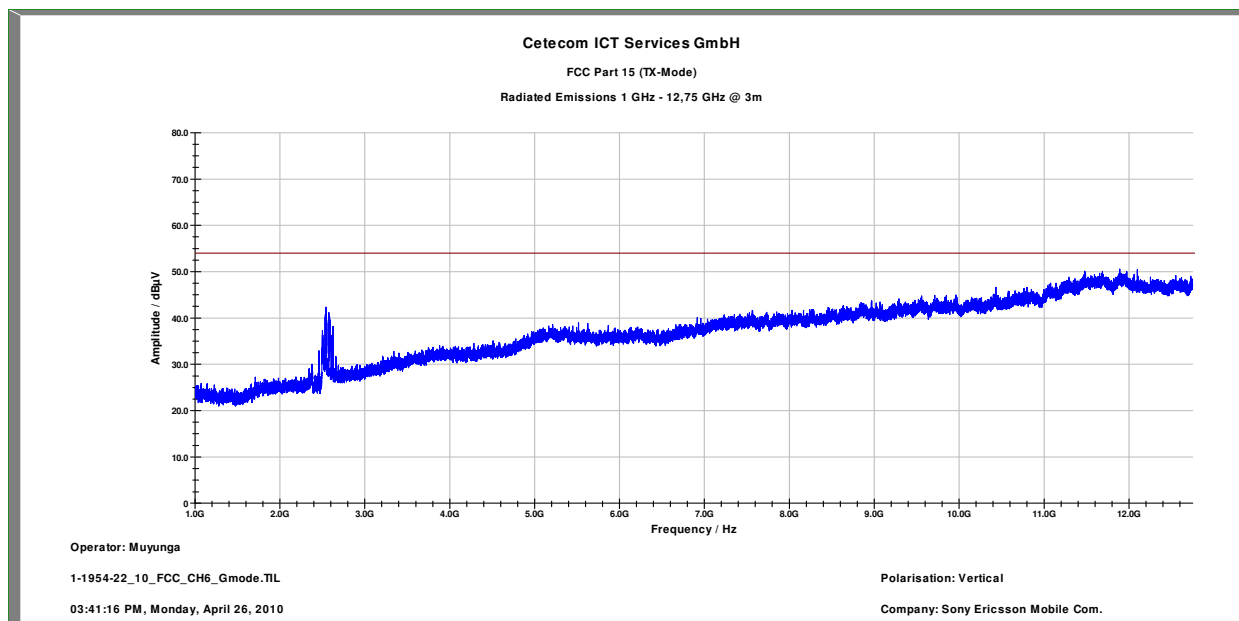
Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

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



Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
54.022200	13.5	15000.000	120.000	322.0	V	230.0	13.0	16.5	30.0
54.990450	13.7	15000.000	120.000	331.0	V	253.0	12.9	16.3	30.0
710.194350	19.7	15000.000	120.000	198.0	H	284.0	22.7	16.3	36.0
758.645700	20.6	15000.000	120.000	112.0	H	26.0	23.6	15.4	36.0
838.699500	21.3	15000.000	120.000	270.0	H	162.0	24.4	14.7	36.0
901.654800	22.3	15000.000	120.000	198.0	H	-3.0	25.2	13.7	36.0

Plot 5: 1 - 12 GHz (middle channel, 6 Mbits/s, PL 15)



Signal suppressed with a 2.4 GHz band-reject filter

Plot 6: 0.03 - 1 GHz (highest channel, 6 Mbits/s, PL 15)

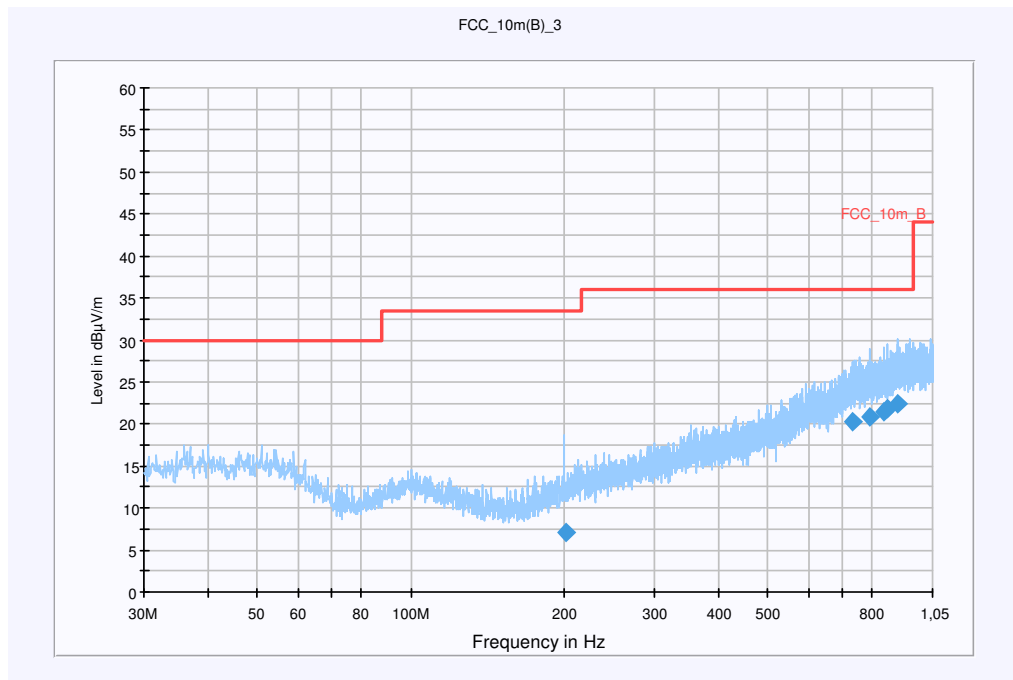
Information

EUT:	AAD-3880072-BV + CAA-0002016 (EP800)
Serial Number:	IMEI:00440214-048213-8
Test Description:	FCC part 15 C Class B @ 10 m
Operating Conditions:	WLAN-Testmode; Cont. Tx Ch:11; 6 MBit/s
Operator Name:	Lang
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

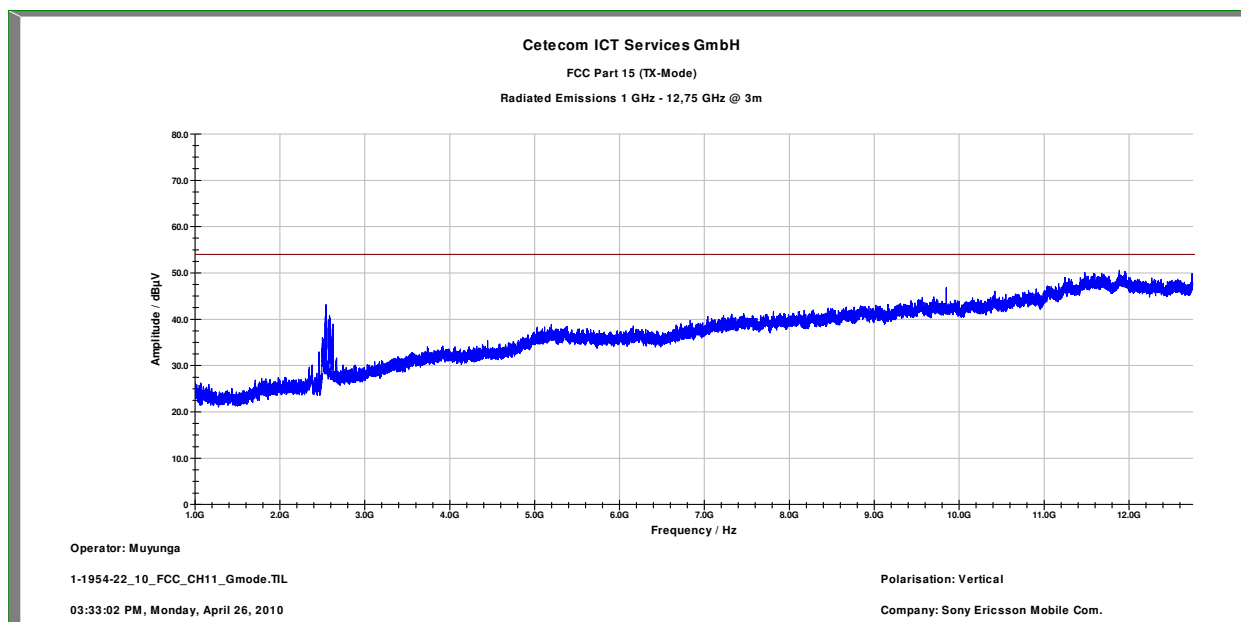
Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

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



Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
200.487750	7.1	15000.000	120.000	208.0	V	267.0	11.6	26.4	33.5
729.745800	20.3	15000.000	120.000	220.0	V	176.0	23.1	15.7	36.0
793.634250	20.8	15000.000	120.000	220.0	H	183.0	23.8	15.2	36.0
843.153900	21.5	15000.000	120.000	149.0	H	285.0	24.5	14.5	36.0
857.964150	21.8	15000.000	120.000	98.0	V	281.0	24.7	14.2	36.0
899.654700	22.5	15000.000	120.000	98.0	V	200.0	25.2	13.5	36.0

Plot 7: 1 - 12 GHz (highest channel, 6 Mbits/s, PL 15)



Signal suppressed with a 2.4 GHz band-reject filter

Results:

SPURIOUS EMISSIONS LEVEL §15.209								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peak detected			No peak detected			No peak detected		
Measurement uncertainty			±3 dB					

f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

Limits: § 15.247 (c)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. 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)).

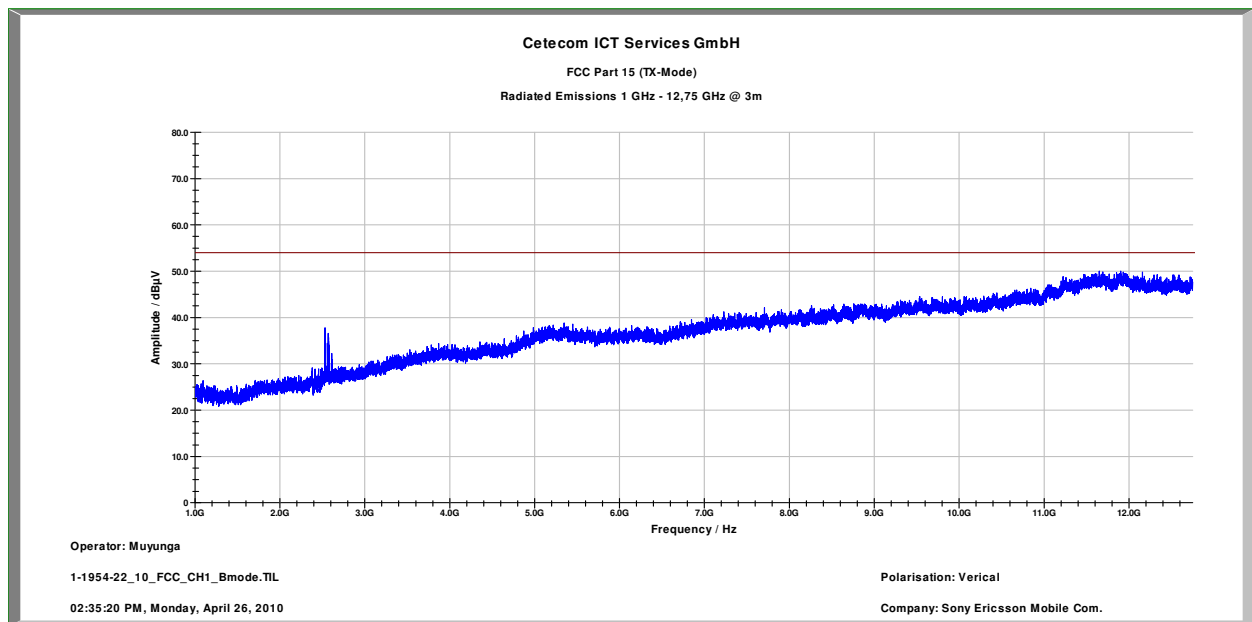
Limits: § 15.109

Frequency (MHz)	Field strength (dBµV/m)	Measurement distance (m)
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

DSSS

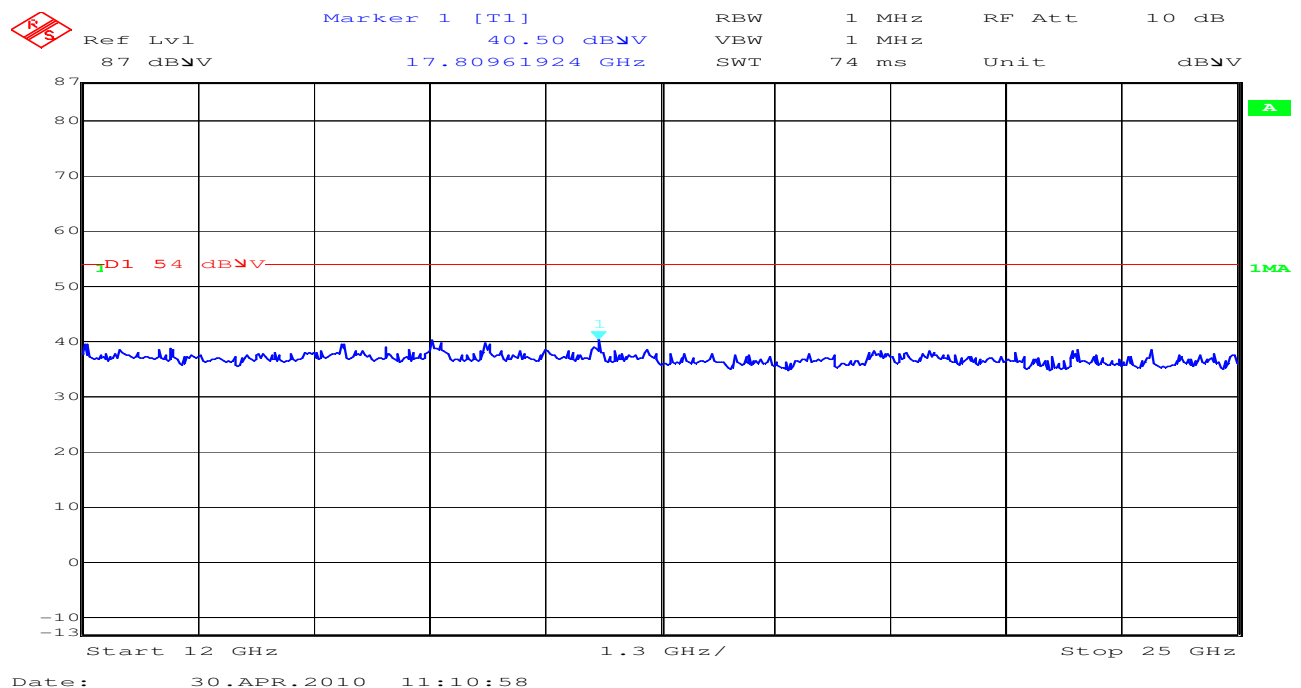
The transmitter radiated spurious tests were performed for both DSSS and OFDM modulations but only data plots for DSSS radiated spurious evaluations above 1 GHz are documented in this sub-clause, as OFDM represents the worst-case scenario for evaluations up to 1 GHz.

Plot 1: 1 - 12 GHz (lowest channel, 1 Mbits/s, PL 18)

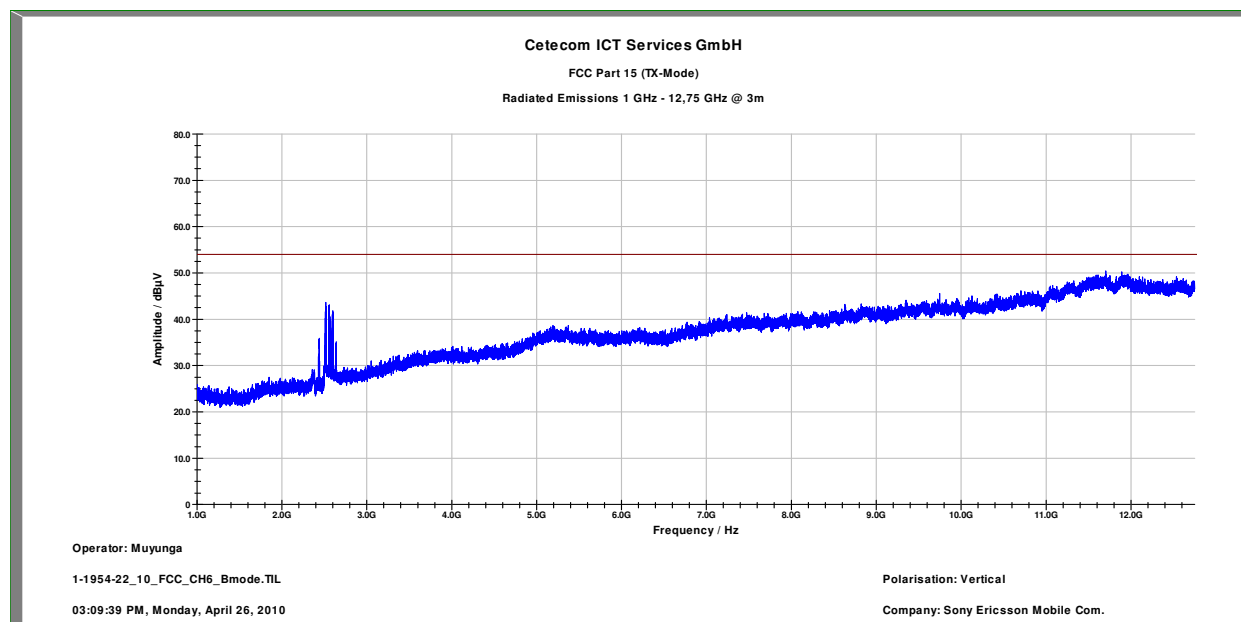


Signal suppressed with a 2.4 GHz band-reject filter

Plot 2: 12- 25 GHz (valid for all channels)

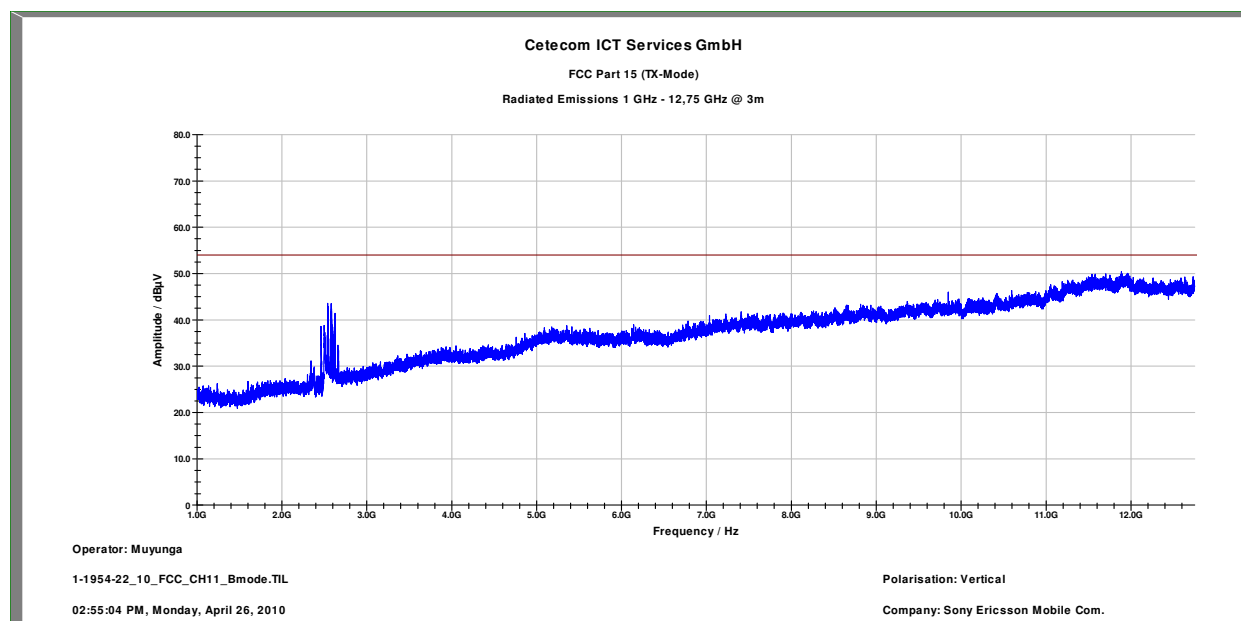


Plot 3: 1 - 12 GHz (middle channel, 1 Mbits/s, PL 18)



Signal suppressed with a 2.4 GHz band-reject filter

Plot 4: 1 - 12 GHz (highest channel, 1 Mbits/s, PL 18)



Signal suppressed with a 2.4 GHz band-reject filter

Results:

SPURIOUS EMISSIONS LEVEL §15.209								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]
No peak detected			No peak detected			No peak detected		
Measurement uncertainty			± 3 dB					

 $f < 1$ GHz : RBW/VBW: 100 kHz $f \geq 1$ GHz : RBW/VBW: 1 MHz

Limits: § 15.247 (c)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. 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)).

Limits: § 15.109

Frequency (MHz)	Field strength (dB μ V/m)	Measurement distance (m)
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

5.14 Spurious Emissions - radiated (Receiver) §15.109 / 209

Plot 1: 0.03 - 1 GHz vertical / horizontal (receiver)

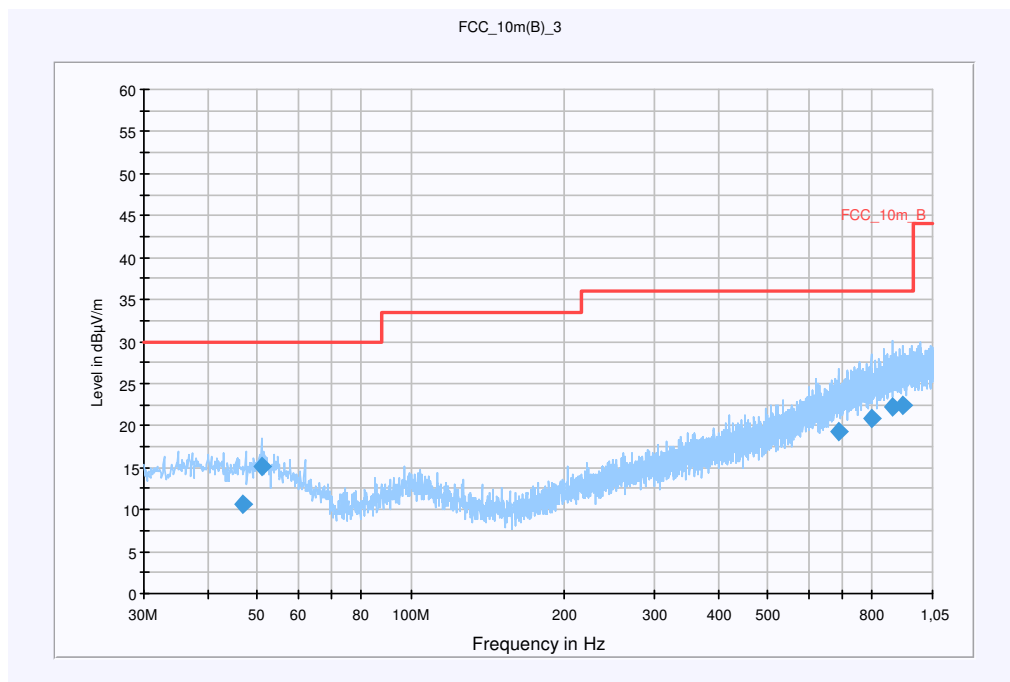
Information

EUT:	AAD-3880072-BV + CAA-0002016 (EP800)
Serial Number:	IMEI:00440214-048213-8
Test Description:	FCC part 15 C Class B @ 10 m
Operating Conditions:	WLAN-Testmode; Rx
Operator Name:	Lang
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

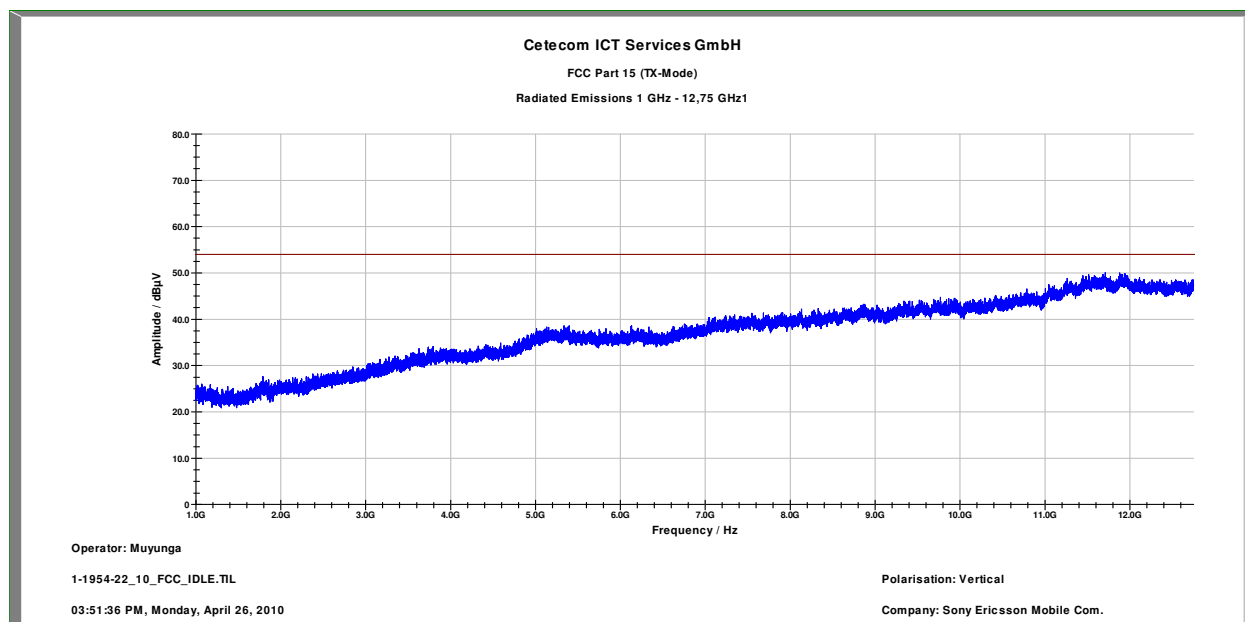
Hardware Setup:	Electric Field (NOS)
Level Unit:	dBμV/m

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

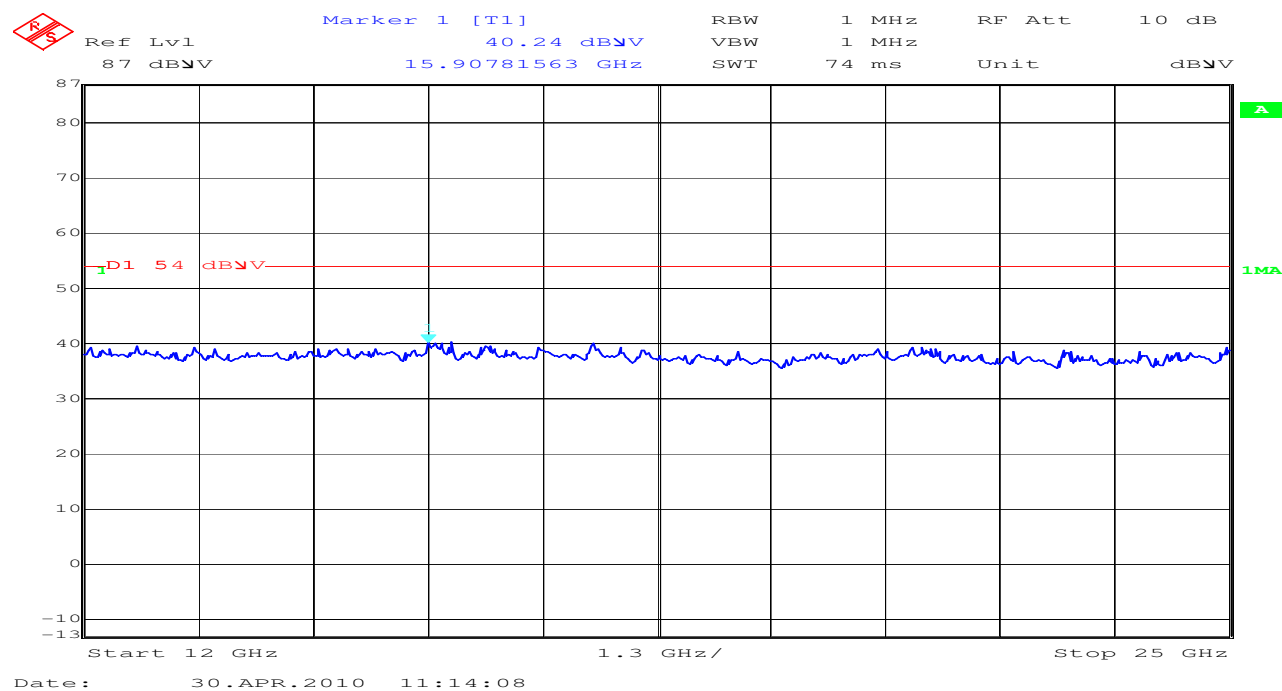


Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
46.994250	10.5	15000.000	120.000	168.0	V	236.0	13.3	19.5	30.0
51.001650	15.2	15000.000	120.000	139.0	V	324.0	13.3	14.8	30.0
690.019050	19.3	15000.000	120.000	160.0	V	141.0	22.1	16.7	36.0
795.572250	20.8	15000.000	120.000	166.0	H	236.0	23.8	15.2	36.0
877.416000	22.2	15000.000	120.000	220.0	V	45.0	24.9	13.8	36.0
916.500000	22.5	15000.000	120.000	131.0	V	24.0	25.3	13.5	36.0

Plot 2: 1 - 12 GHz vertical / horizontal (receiver)



Plot 3: 12- 25 GHz (receiver)



Results:

f[MHz]	Detector	Level [dB μ V/m]
No peak detected		
Measurement uncertainty		± 3 dB

$f < 1$ GHz : RBW/VBW: 100 kHz

$f \geq 1$ GHz : RBW/VBW: 1 MHz

See above plots

Measurement distance see table

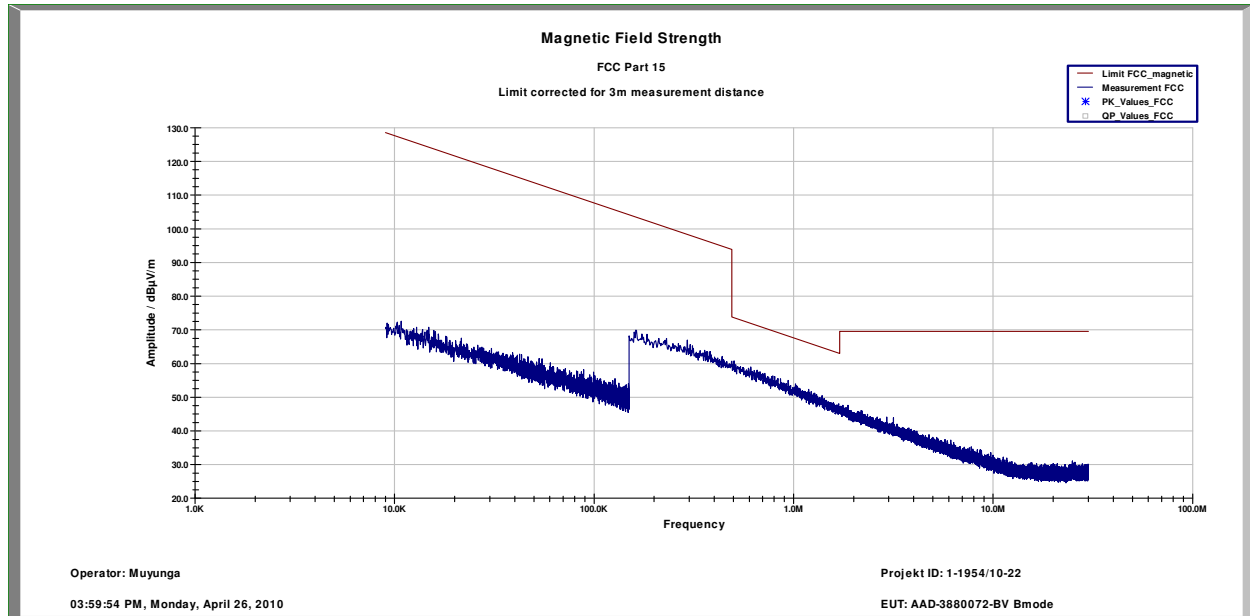
Limits: § 15.109

Frequency (MHz)	Field strength (dB μ V/m)	Measurement distance (m)
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

5.15 Spurious Emissions - radiated <30 MHz §15.209

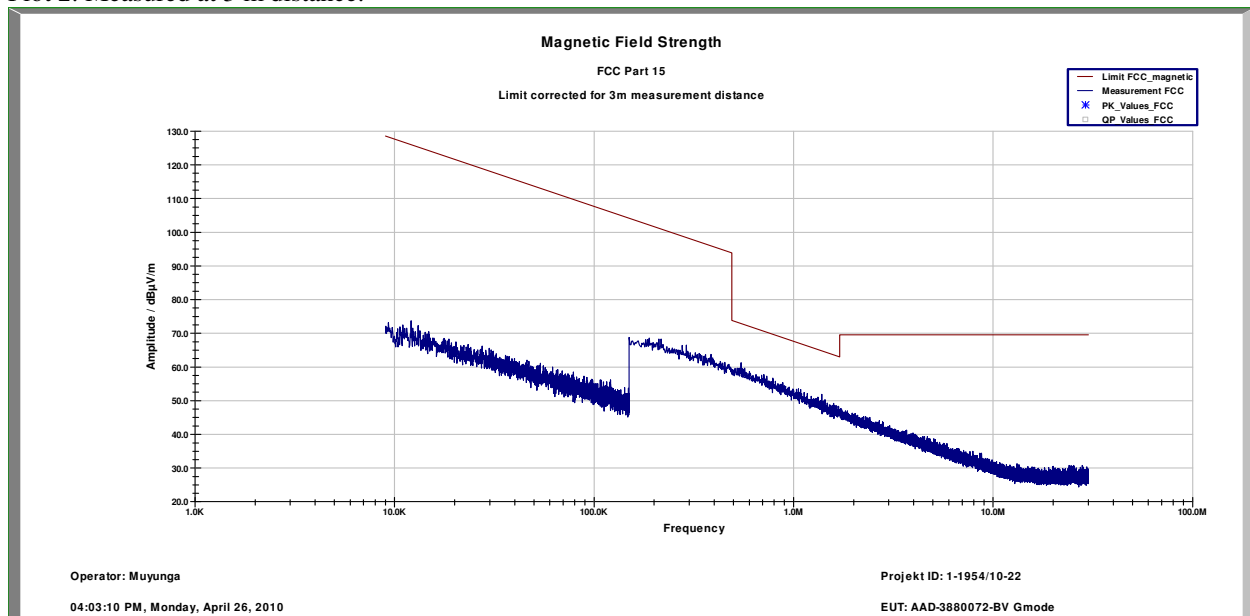
DSSS

Plot 1: Measured at 3 m distance.



OFDM

Plot 2: Measured at 3 m distance.



Limits

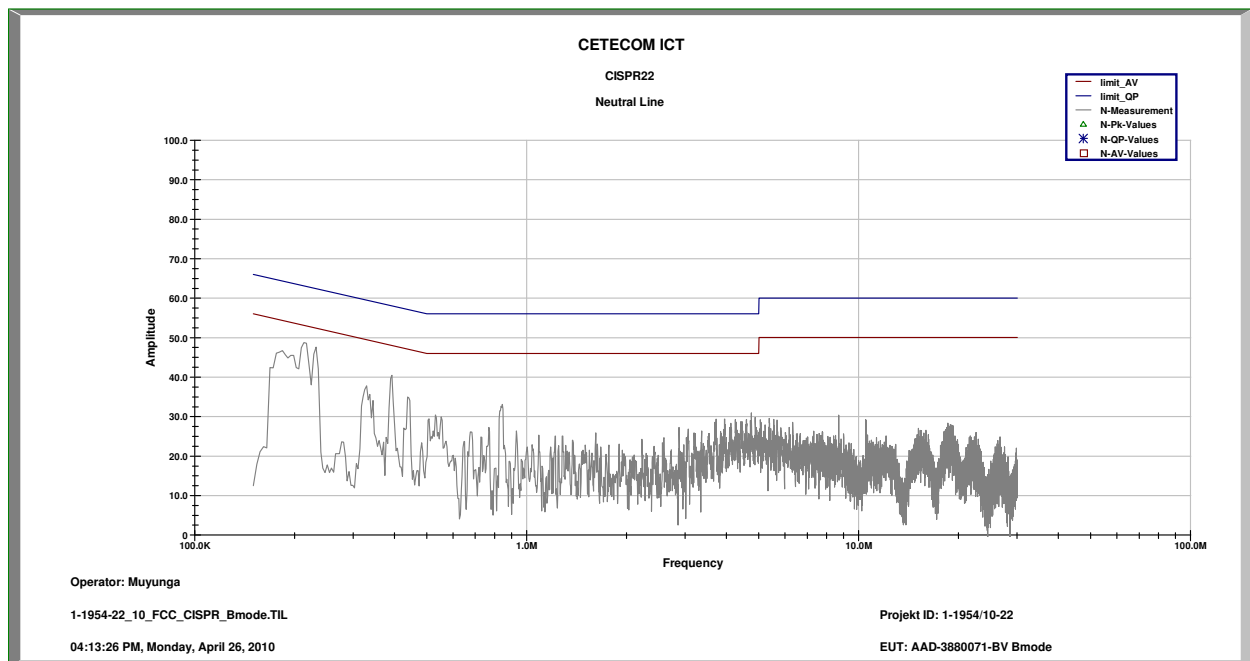
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dBµV/m	30

5.16 Conducted Emissions <30 MHz §15.107/207

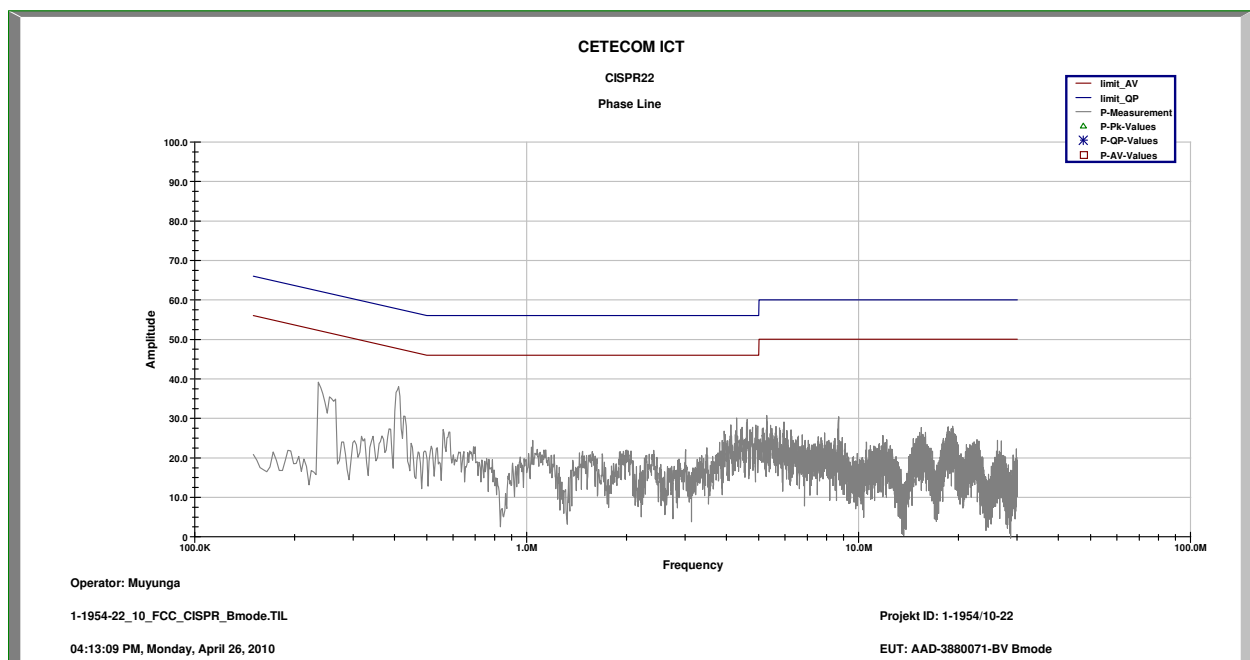
DSSS

We measured in TX and RX mode, L1 and N floating and grounded, max value was hold.

Plot 1: CISPR 22
Neutral Line



Plot 2: CISPR 22
Phase line

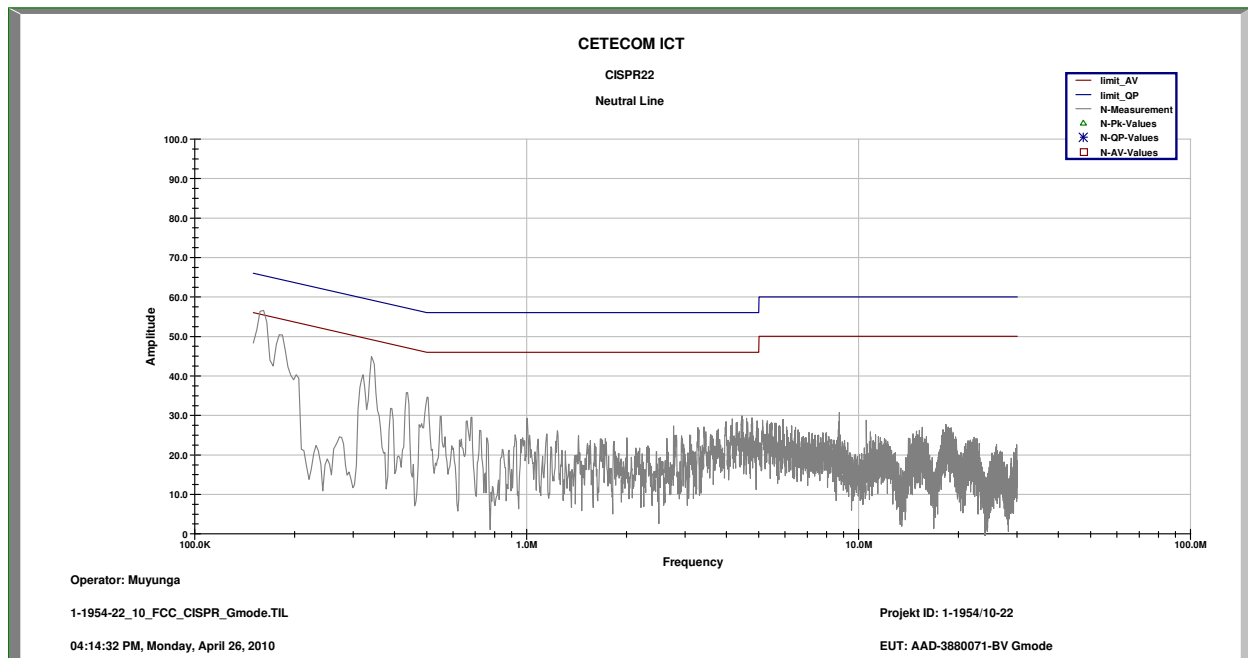


OFDM

We measured in TX and RX mode, L1 and N floating and grounded, max value was hold.

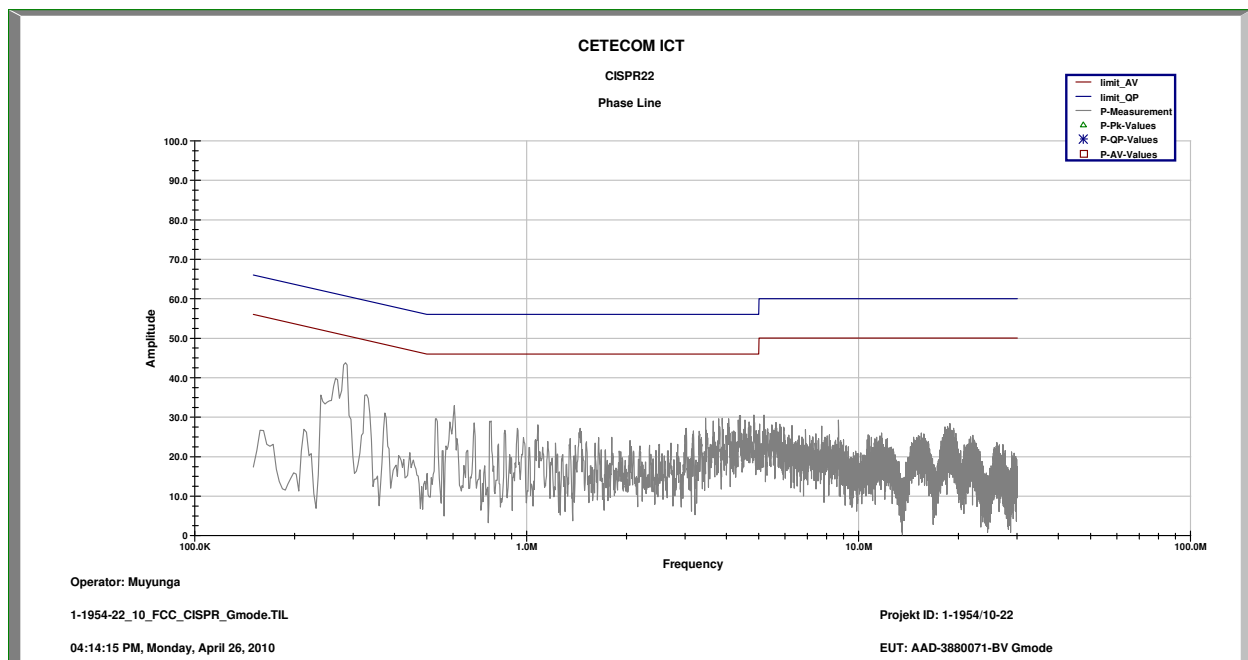
Plot 1: CISPR 22

Neutral Line



Plot 2: CISPR 22

Phase line



Limits:

Under normal test conditions only	See plots
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6 Test equipment and ancillaries used for tests

In order to simplify the identification of the equipment used at each specific test, each item of test equipment and ancillaries are provided with an identifier or number in the equipment list below.

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).

No.	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kal. Art	Last Calibration	Next Calibration
1	System Autoranging DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
2	PowerAttenuator	8325	Byrd	1530	300001595			
3	Double-Ridged Waveguide Horn Antenna 1-26.5GHz	3115	EMCO	8812-3088	300001032	vIKI!	05.03.2009	05.03.2011
4	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
5	Anechoic chamber		MWB	87400/02	300000996			
6	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
7	Artificial Mains 9 kHz to 30 MHz, 4 x 25 Ampere	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
8	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
9	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
10	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
11	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
12	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
13	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
14	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
15	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
16	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev		
17	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		
18	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
19	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Vertr. Bad Hom	MY48250080	300003812	k	05.08.2008	05.08.2010
20	MXG Microwave Analog Signal	N5183A	Agilent Vertr. Bad Hom	MY47420220	300003813	k	06.08.2008	06.08.2010

	Generator							
21	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Vertr. Bad Hom	MY48260003	300003825	vIKI!	19.08.2008	19.08.2010
22	TRILOG Super Breitband Antenne	VULB9163	Schwarzbeck	371	300003854	vIKI!	17.12.2008	17.12.2010
23	DC Power Supply 0 – 32V	1108-32	Heiden	1802	300001383	Ve		
24	Signal Analyzer 20Hz-26,5GHz- 150 to + 30 DBM	FSiQ26	R&S	835111/0004	300002678	Ve	06.01.2009	06.01.2011
25	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
26	Netzgerät	6032A	HP Meßtechnik	2920A04466	300000580	k	06.01.2009	06.01.2011
27	EMI- Messempefänger	ESCI 1166.5950.03	R&S	100083	300003312	k	08.01.2010	08.01.2012
28	Amplifier	JS42-00502650- 28-5A	MITEQ	1084532	300003379	ev		
29	Antennenmast	Model 2175	ETS- LINDGREN	64762	300003745	izw		
30	Steuergerät	Model 2090	ETS- LINDGREN	64672	300003746	izw		
31	Interface-Box für Drehtisch	Model 105637	ETS- LINDGREN	44583	300003747	izw		
32	Breitbandantenne	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
33	Spectrum- Analyzer	FSU26	R&S	200809	300003874	k	08.01.2010	08.01.2012