



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. : 1-1954-10-06/10-A
Type identification : AAD-3880069-BV
Applicant : Sony Ericsson Mobile Communications AB
FCC ID : PY7A3880069
IC Certification No : 4170B-3880069
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.

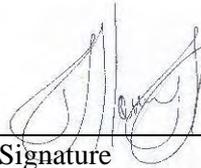
Test laboratory manager:

2010-04-30 **Daniel Muyunga**

Date

Name

Signature



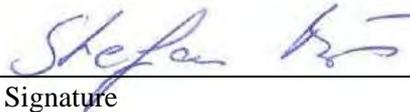
Technical responsibility for area of testing:

2010-04-30 **Stefan Bös**

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:	2010-02-19
Date of receipt of test item:	2010-02-12
Date of start test:	2010-03-09
Date of end test:	2010-03-14
Persons(s) who have been present during the test:	-/-

2 Test standard/s

47 CFR Part 15	2008-07	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 Vattentornet
Town:	22188 Lund
Country:	Sweden

3.1.1 Test item

Kind of test item :	Mobile Phone GSM 850/900/1800/1900, UMTS FDD1/FDD8, HSDPA / HSUPA, BT2.0+EDR, A-GPS, FM-Rx, WLan
Type identification :	AAD-3880069-BV
S/N serial number :	Rad. CB511G2KZX Cond. CB511G27P9, CB511G29ZA
HW hardware status :	AP1.1
SW software status :	100114-0113 ATP
Frequency Band [MHz] :	ISM 2.400 - 2.483,5
Frequency of the EUT [MHz]:	2412, 2417, 2422, 2427, 2432, 2437, 2442, 2447, 2452, 2457 and 2462
Number of channels :	11
Type of Modulation :	DSSS & OFDM - BPSK, QPSK, 16 QAM, 64 QAM
Antenna :	Internal PCB Antenna
Power Supply :	3.90 V DC by Li-Polymer Battery and Power Supply
Temperature Range :	-20 °C to +55 °C

DSSS

Max. power radiated: 19.99 dBm

Max. power conducted: 18.46 dBm

OFDM

Max. power radiated: 23.86 dBm

Max. power conducted: 22.22 dBm

FCC ID: PY7A3880069

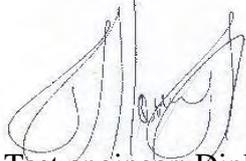
IC: 4170B-3880069

3.1.2 Additional EUT information For IC Canada (appendix 2)

IC Registration Number:	4170B-3880069
Model Name:	AAD-3880069-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]:	2400 – 2483.5 2412, 2417, 2422, 2427, 2432, 2437, 2442, 2447, 2452, 2457 and 2462
RF: Power [W] (max):	<u>DSSS:</u> Rad. EIRP: 99.8 mW Conducted : 70.1 mW <u>OFDM:</u> Rad. EIRP: 243.2 mW Conducted : 166.7 mW
Antenna Type:	Internal PCB Antenna Please also see EUT pictures
Occupied Bandwidth (99% BW) [kHz]:	DSSS: 16780 OFDM: 17730
Type of Modulation:	DSSS & OFDM
Emission Designator (TRC-43):	16M8G1D (DSSS) 17M7G1D (OFDM)
Transmitter Spurious (worst case) [dB μ V/m in 10m]:	16.0 (Ch. 11 mode B)
Receiver Spurious (worst case) [μ V/m in 3m]:	354.8

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: Dipl.-Ing. Daniel K. Muyunga

Date: 2010-04-30

3.1.3 RF Technical Brief Cover Sheet acc. To RSS-102

All Fields must be completed with the requested information or the following codes: N/A for Not Applicable, N/P for Not Performed or N/V for Not Available. Where applicable, check appropriate box.

- 1. COMPANY NUMBER: **4170B**
- 2. MODEL NUMBER: **AAD-3880069-BV**
- 3. MANUFACTURER: **Sony Ericsson Mobile Communications AB**
- 4. TYPE OF EVALUATION: **(c) RF Evaluation**

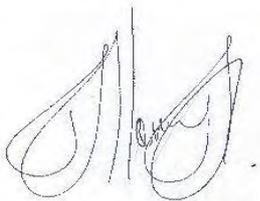
(c) RF Evaluation

- Evaluated against exposure limits: General Public Use Controlled Use
- Duty cycle used in evaluation: 99 %
- Standard used for evaluation: RSS-102 Issue 2 (2005-11)
- Measurement distance: 0.20 m
- RF value: 0.484 V/m A/m W/m²
- Measured Computed Calculated

Declaration of RF Exposure Compliance

ATTESTATION: I attest that the information provided in this testreport is correct; that a Technical Brief was prepared and the information it contains is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR and/or RF exposure limits of RSS-102.

Name: Dipl.-Ing. Daniel K. Muyunga
Title: Expert
Company: Cetecom ICT Services GmbH



3.1.4 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

3.1.5 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T _{nom}	°C	+23
Nominal Humidity	H _{nom}	%	43
Nominal Power Source	V _{nom}	V	3.90

Type of power source: **DC by Li-Polymer Battery and Power Supply**

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	2010-04-30	

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.

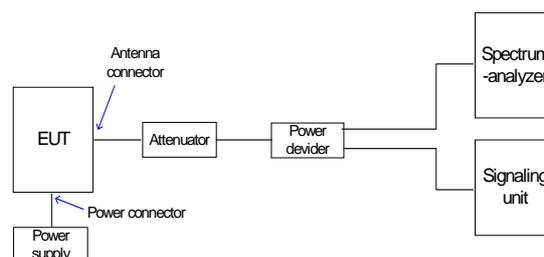
30 MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, Trilog antenna

>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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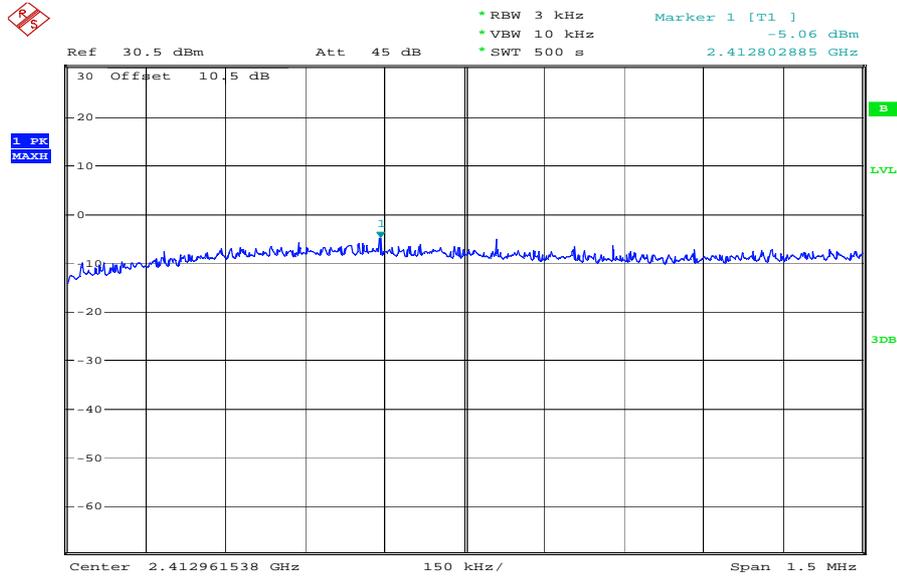
5.4 Antenna gain

TEST				
T _{nom}	V _{nom}	lowest frequency	middle frequency	highest frequency
Conducted power [dBm] <i>(measured)</i>		16.65	16.95	17.35
Radiated power [dBm] <i>(measured)</i>		18.17	18.59	18.88
Gain [dBi] <i>(calculated)</i>		1.52	1.64	1.53

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

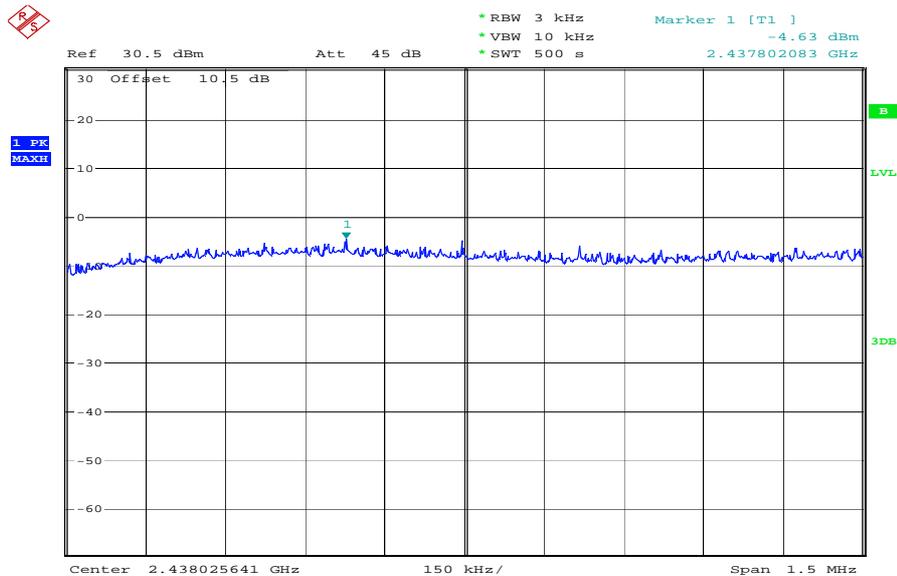
DSSS

Plot 1: Channel 1, 1 Mbits/s, Power Level 17



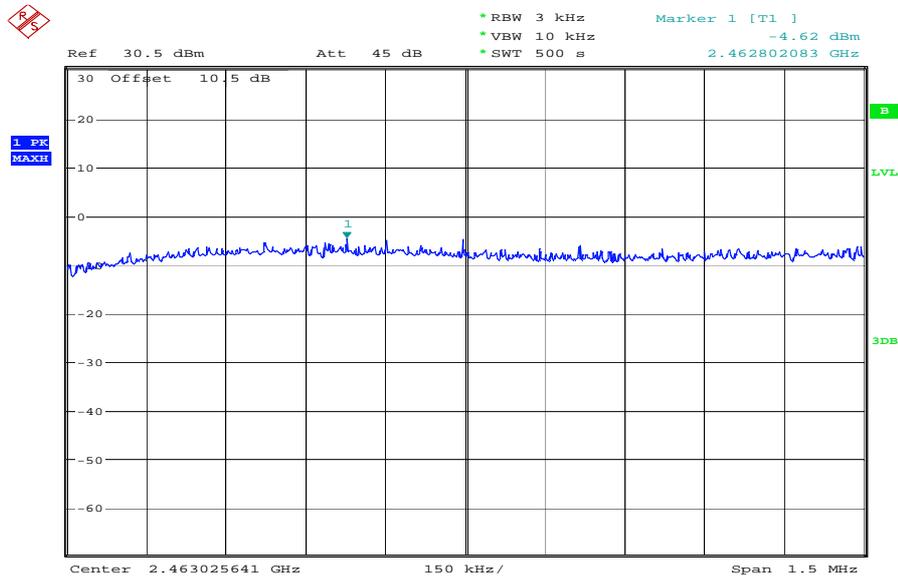
Date: 10.MAR.2010 17:53:46

Plot 2: Channel 6, 1 Mbits/s, Power Level 17



Date: 10.MAR.2010 18:04:08

Plot 3: Channel 11, 1 Mbits/s, Power Level 17

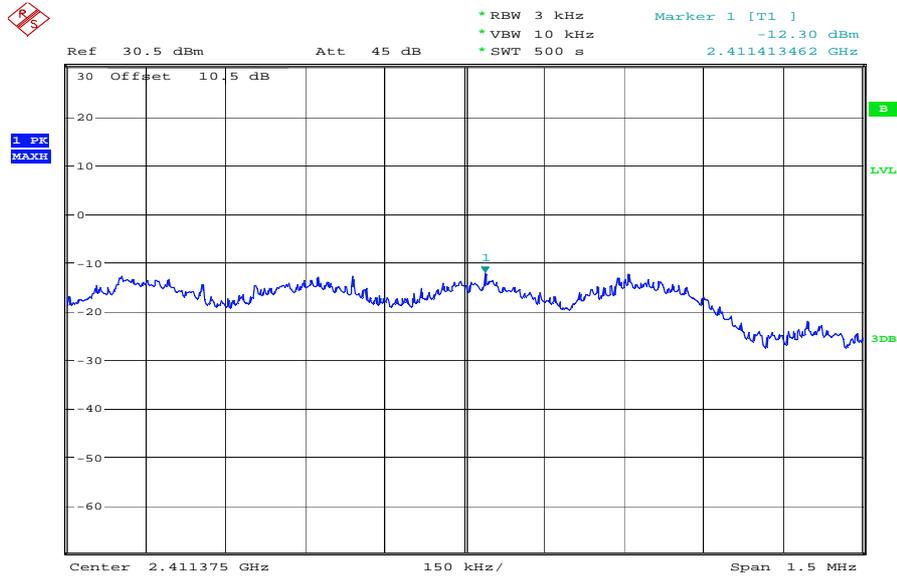


Date: 10.MAR.2010 18:14:45

Results: Plot 1: Power density: -5.06 dBm / 3 kHz
Plot 2: Power density: -4.63 dBm / 3 kHz
Plot 3: Power density: -4.62 dBm / 3 kHz

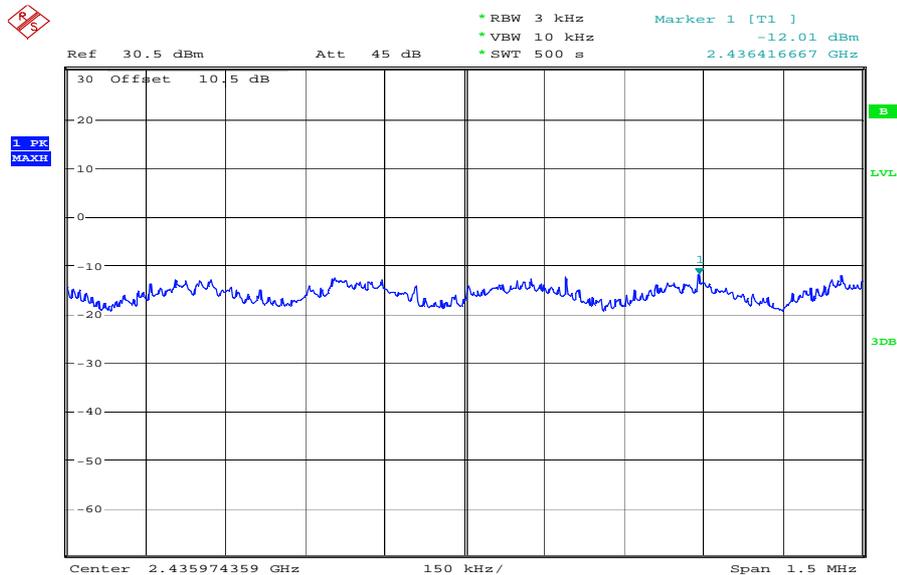
OFDM

Plot 1: Channel 1, 6 Mbits/s, Power Level 13



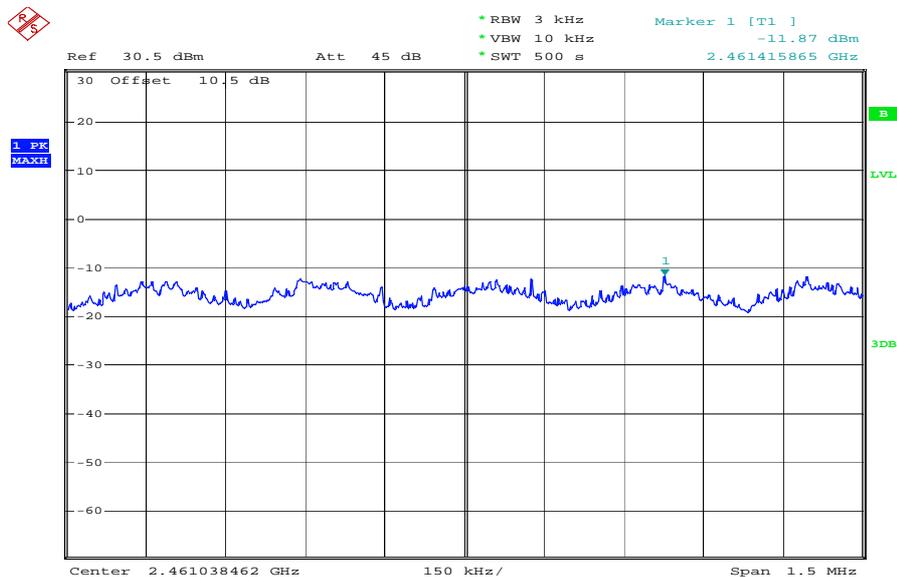
Date: 10.MAR.2010 15:37:04

Plot 2: Channel 1, 6 Mbits/s, Power Level 13



Date: 10.MAR.2010 15:49:02

Plot 3: Channel 11, 6 Mbps/s, Power Level 13



Date: 10.MAR.2010 17:41:36

Results: Plot 1: Power density: -12.30 dBm / 3 kHz
 Plot 2: Power density: -12.01 dBm / 3 kHz
 Plot 3: Power density: -11.87 dBm / 3 kHz

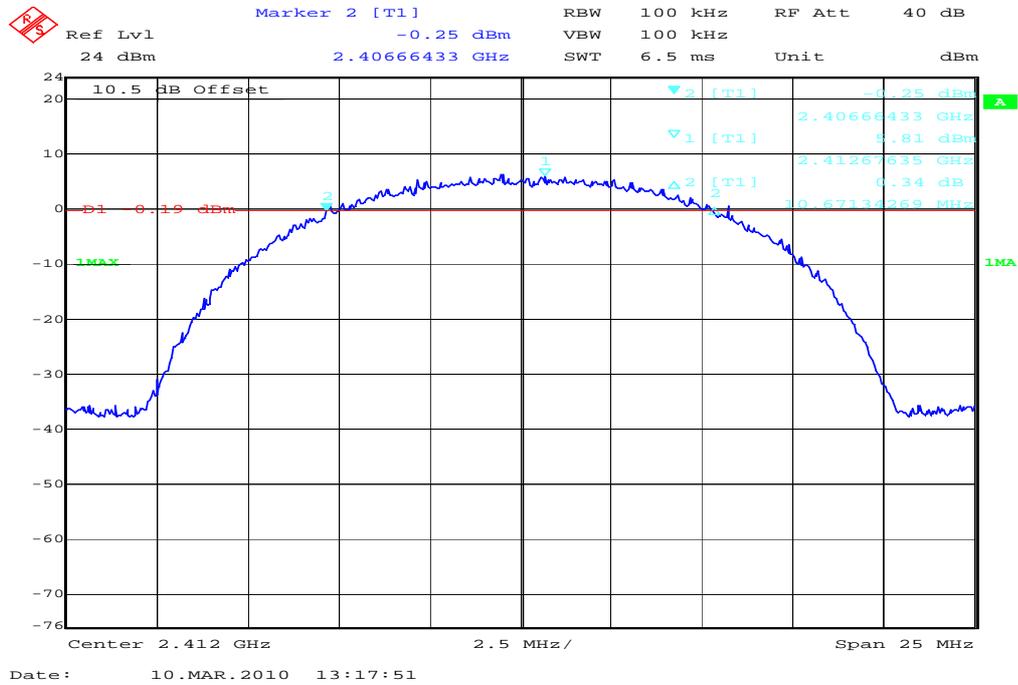
Limits :

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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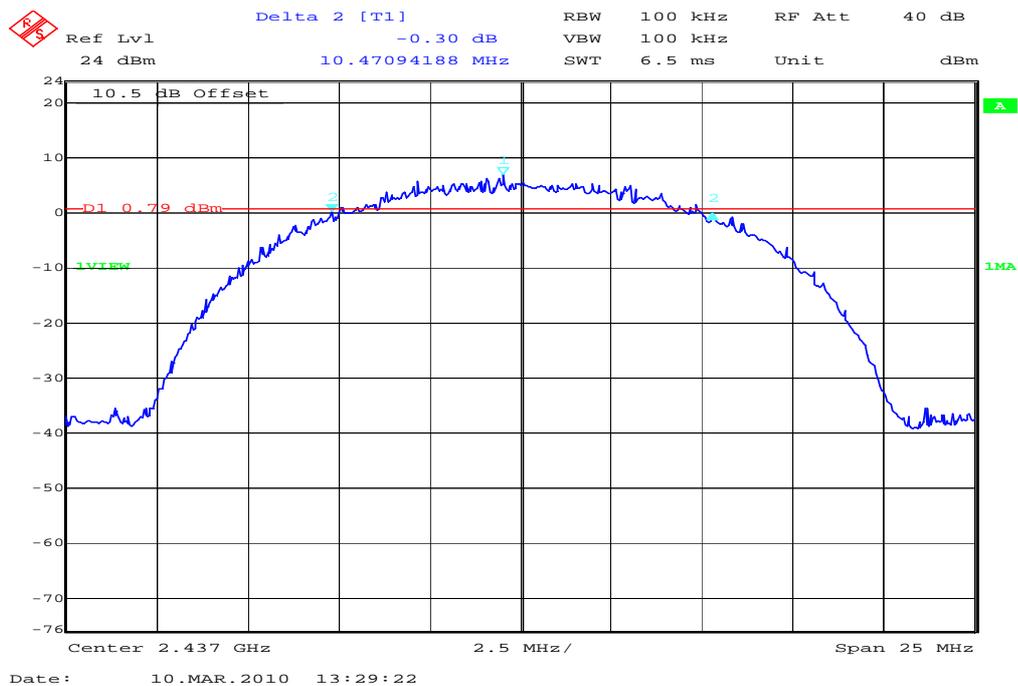
5.6 Spectrum Bandwidth of a DSSS System / 6 dB Bandwidth §15.247(a)(2)

DSSS

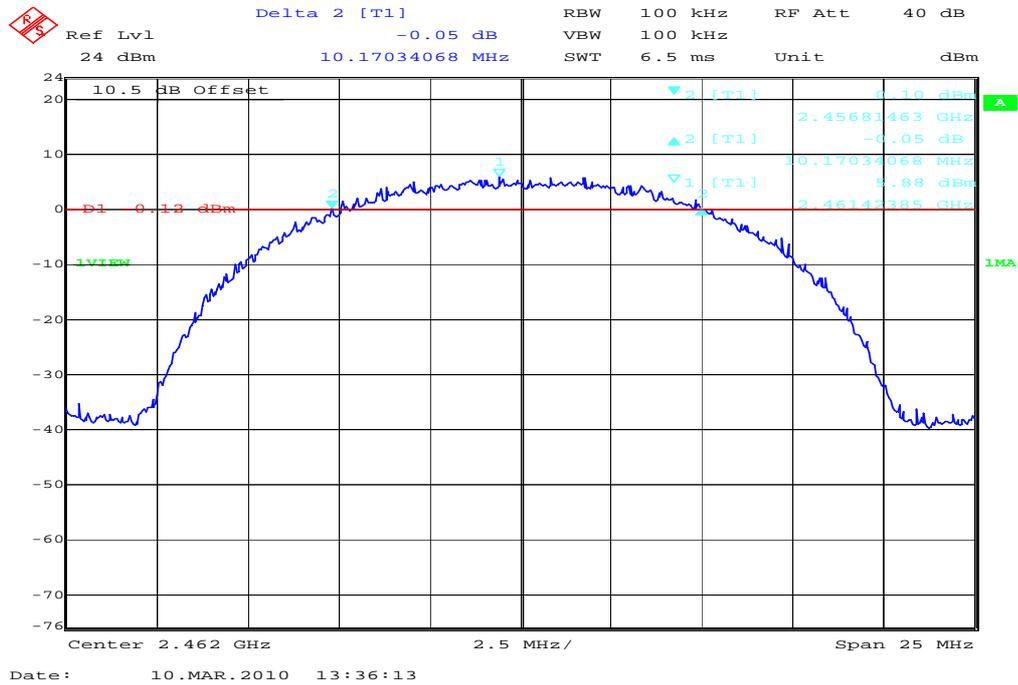
Plot 1: Channel 1, 11 Mbits/s, Power Level 17



Plot 2: Channel 6, 11 Mbits/s, Power Level 17



Plot 3: Channel 11, 11 Mbits/s, Power Level 17



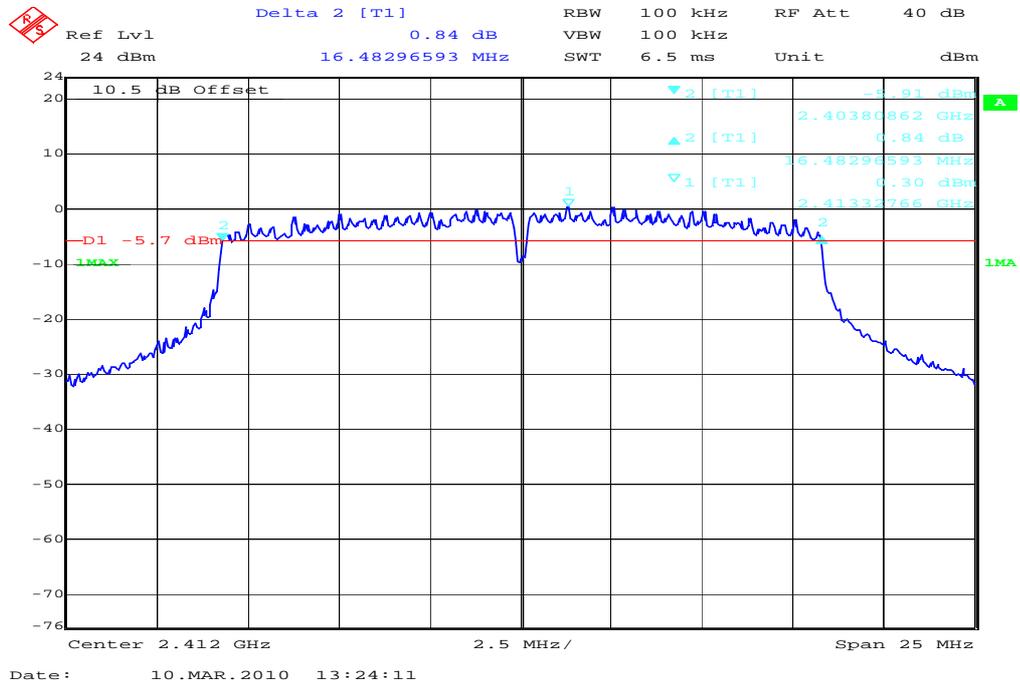
Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	10.67	10.47	10.17
Measurement uncertainty		±100 kHz		

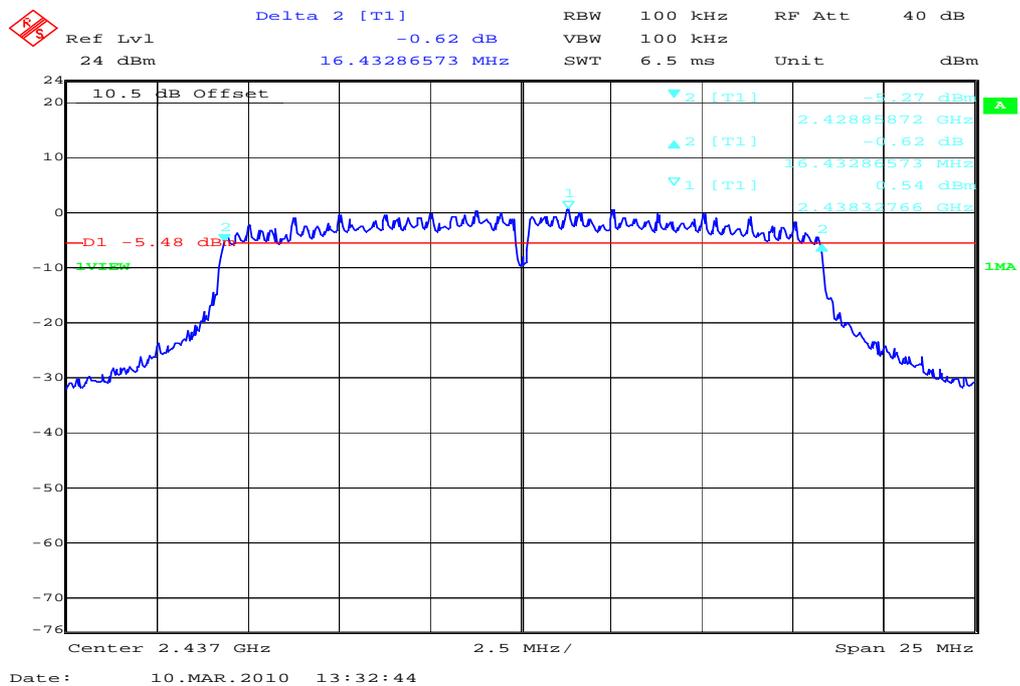
RBW: 100 kHz / VBW 100 kHz

OFDM

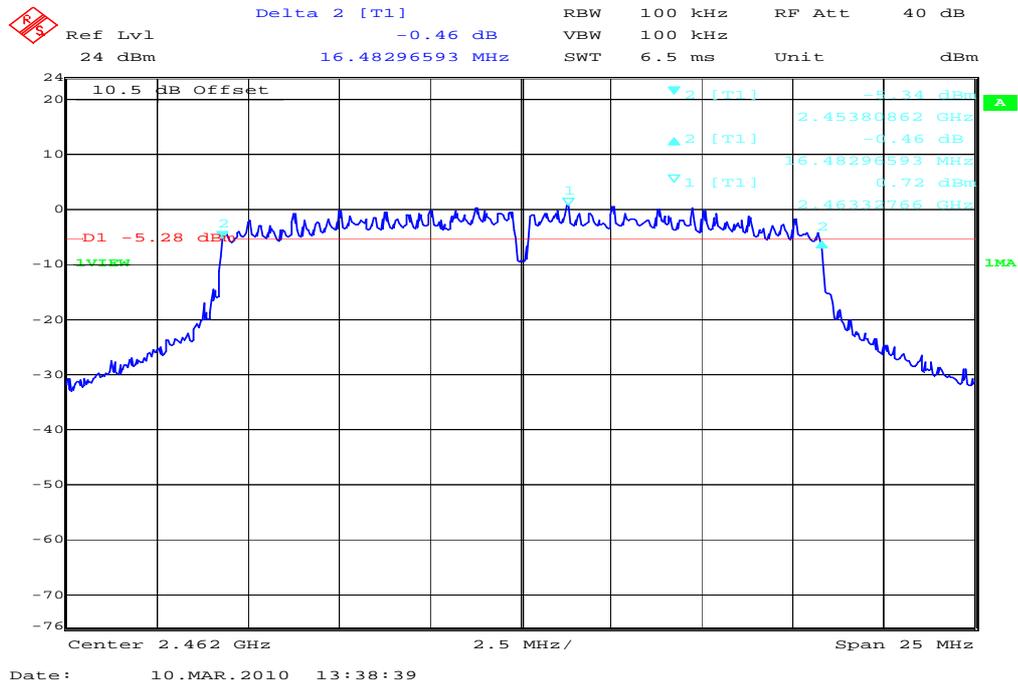
Plot 1: Channel 1, 54 Mbits/s, Power Level 13



Plot 2: Channel 6, 54 Mbits/s, Power Level 13



Plot 3: Channel 11, 54 Mbits/s, Power Level 13



Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	16.48	16.43	16.48
Measurement uncertainty		±100 kHz		

RBW: 100 kHz / VBW 100 kHz

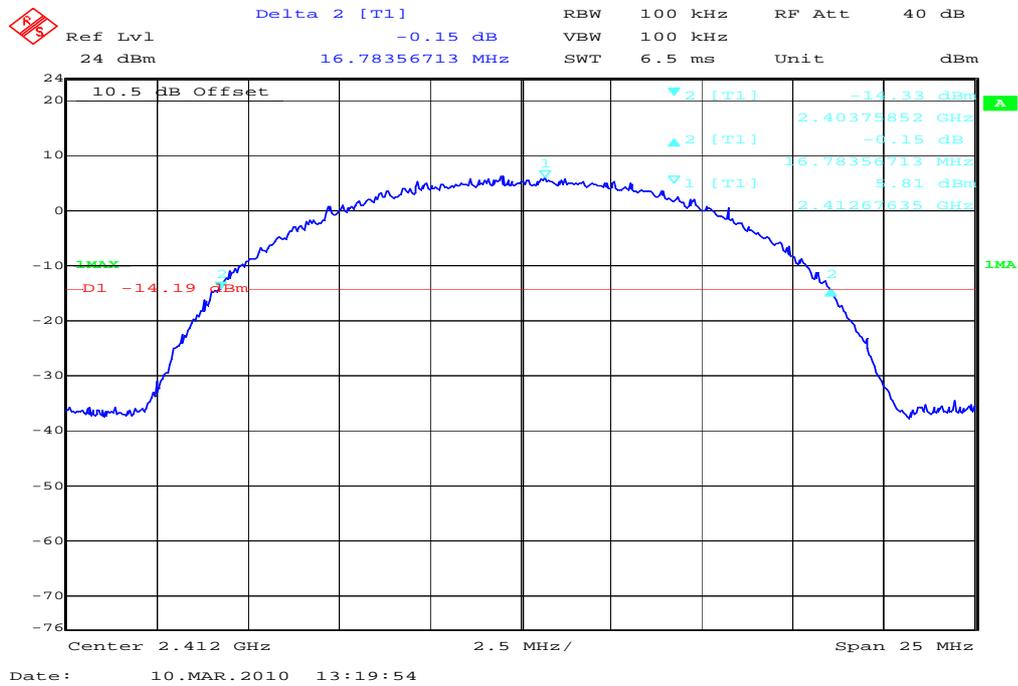
Limits:

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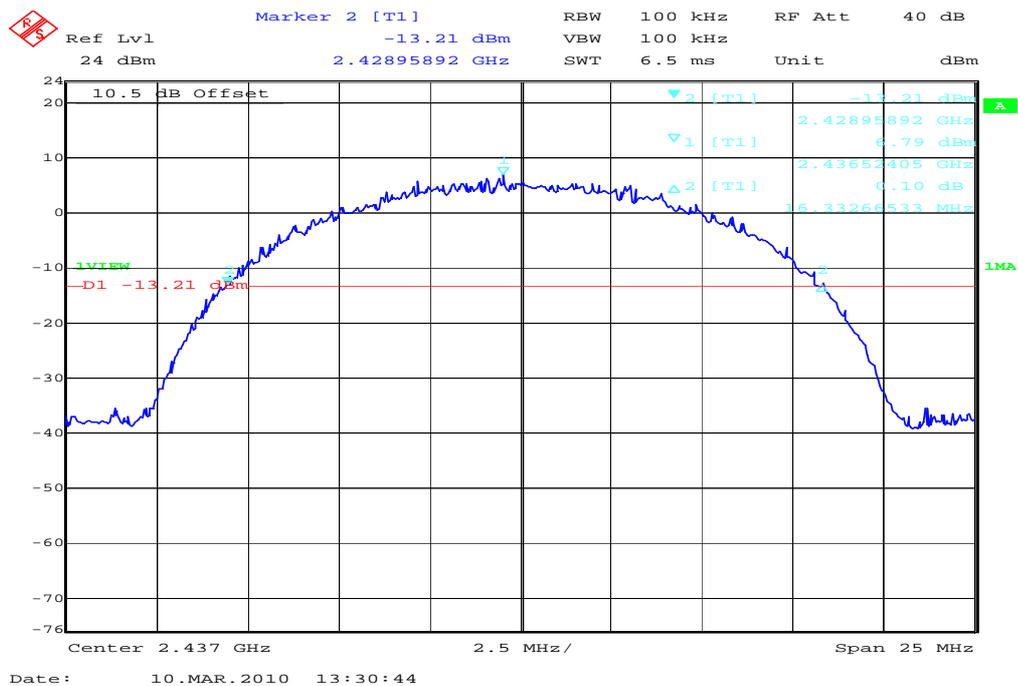
5.7 Spectrum Bandwidth of a DSSS System / 20 dB Bandwidth

DSSS

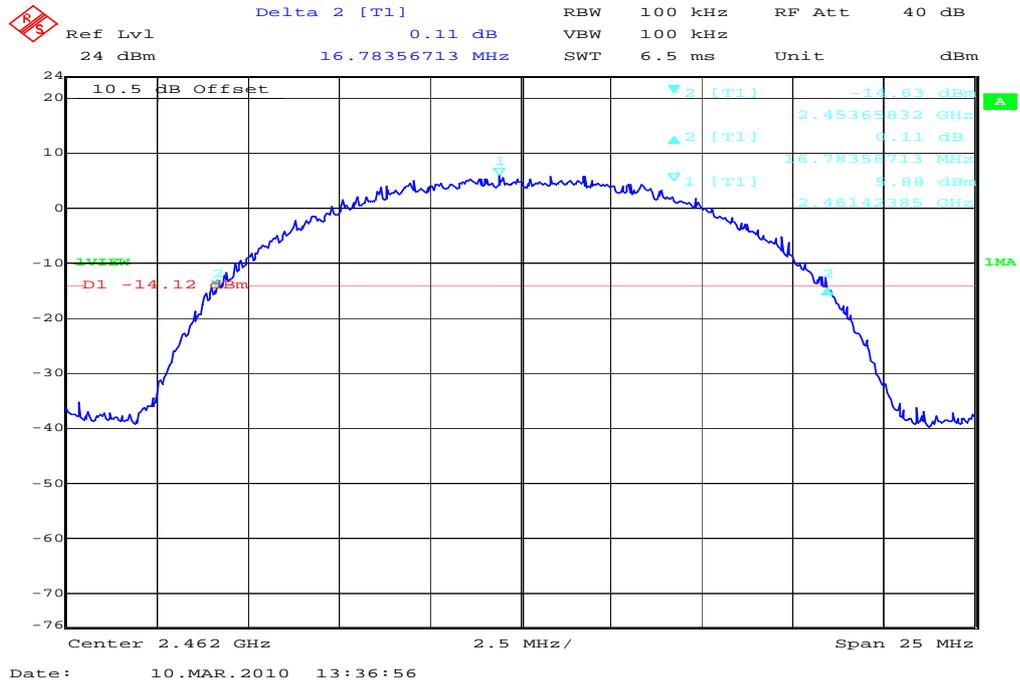
Plot 1: Channel 1, 11 Mbits/s, Power Level 17



Plot 2: Channel 6, 11 Mbits/s, Power Level 17



Plot 3: Channel 11, 11 Mbits/s, Power Level 17



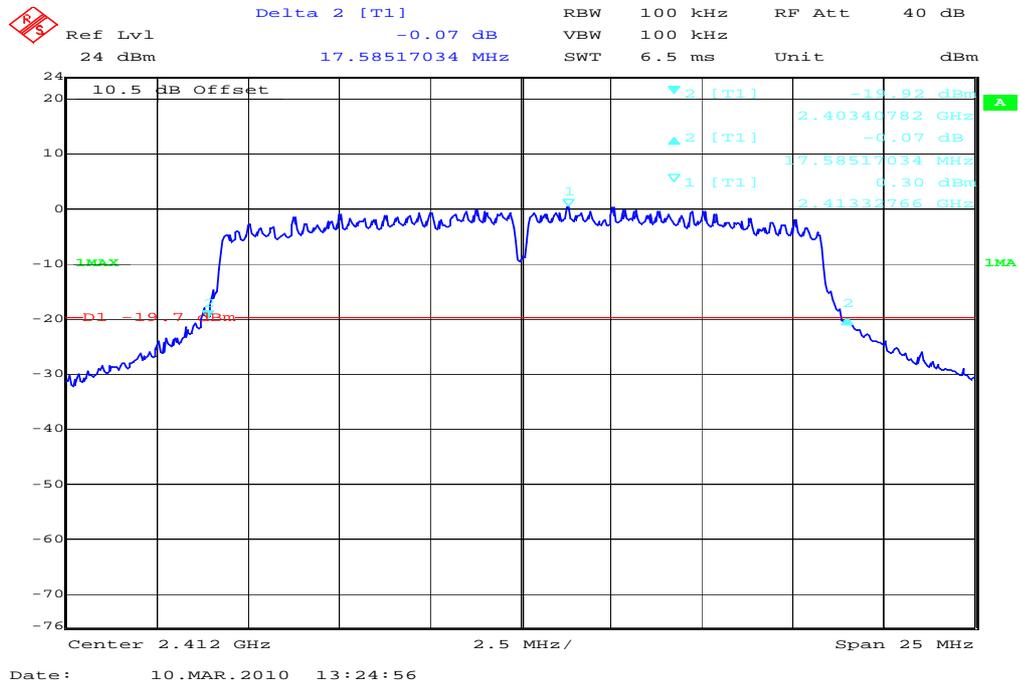
Results:

Test conditions		20 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	16.78	16.33	16.78
Measurement uncertainty		±100 kHz		

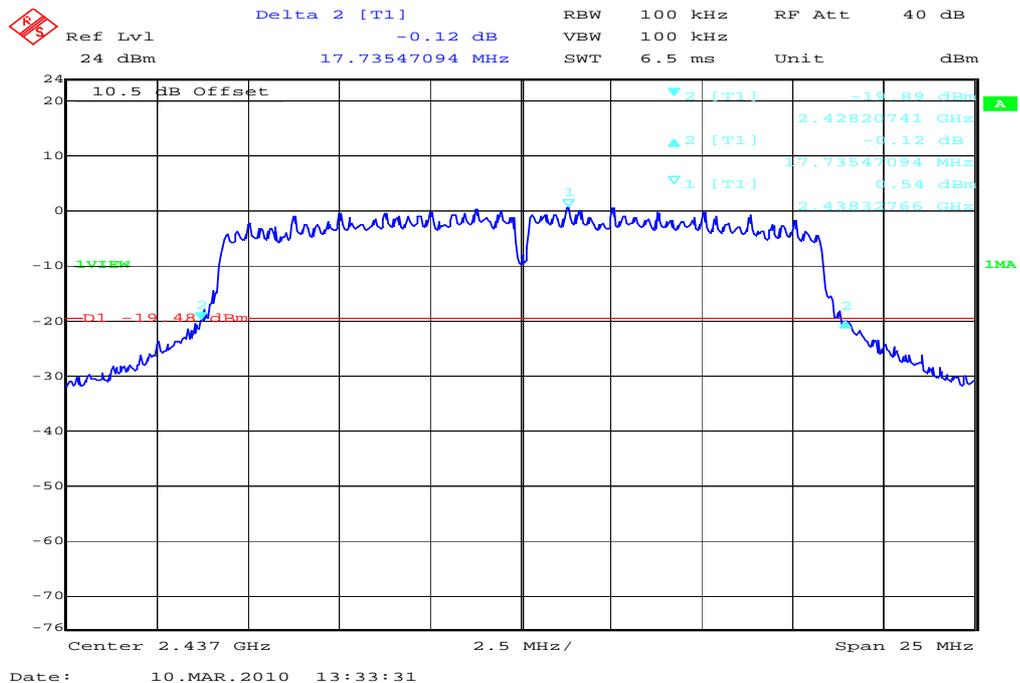
RBW: 100 kHz / VBW 100 kHz

OFDM

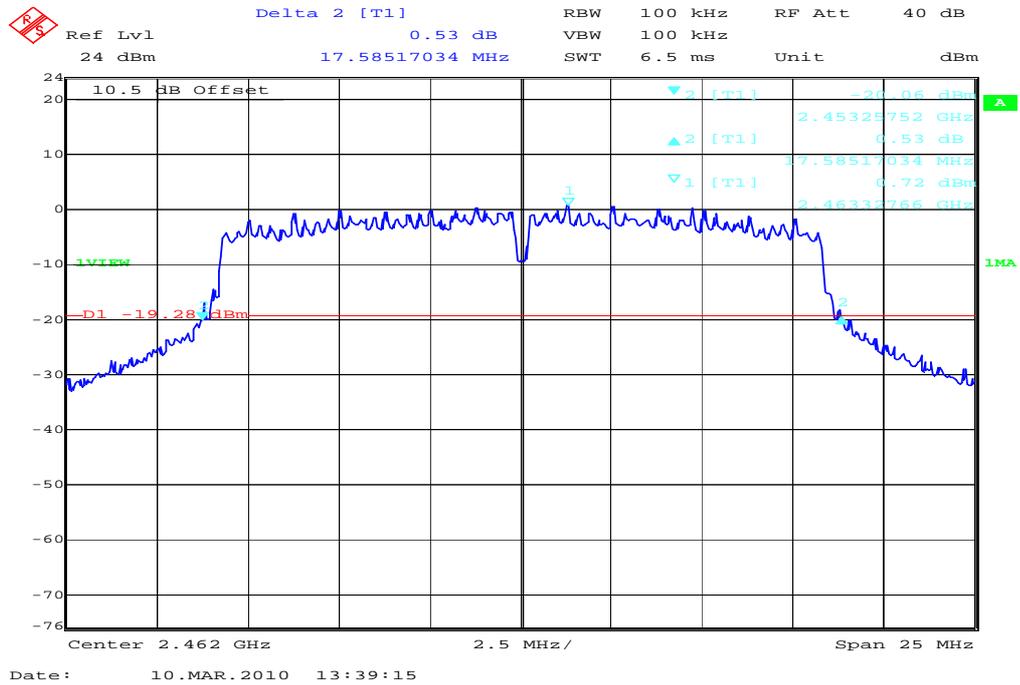
Plot 1: Channel 1, 54 Mbits/s, Power Level 13



Plot 2: Channel 6, 54 Mbits/s, Power Level 13



Plot 3: Channel 11, 54 Mbits/s, Power Level 13



Results:

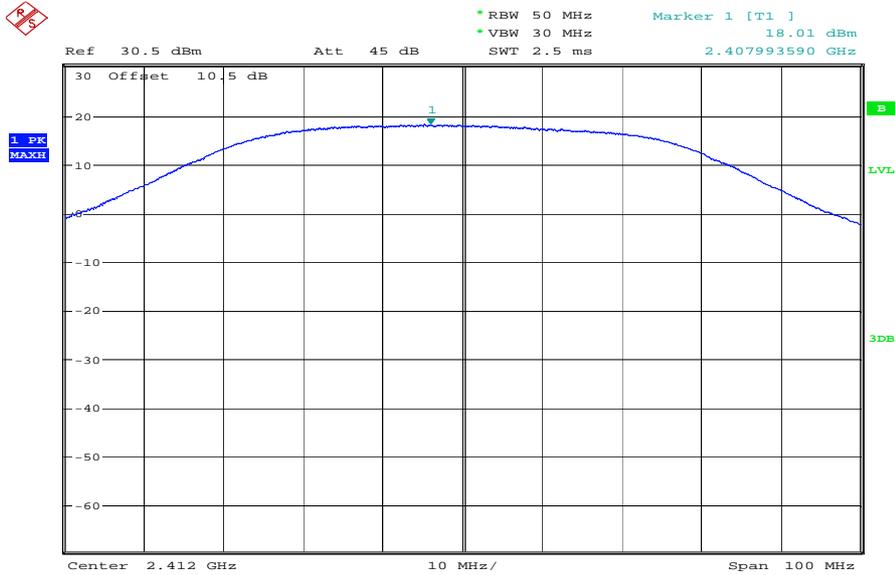
Test conditions		20 dB BANDWIDTH [MHz]		
		2412	2437	2462
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	17.58	17.73	17.58
Measurement uncertainty		±100 kHz		

RBW: 100 kHz / VBW 100 kHz

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

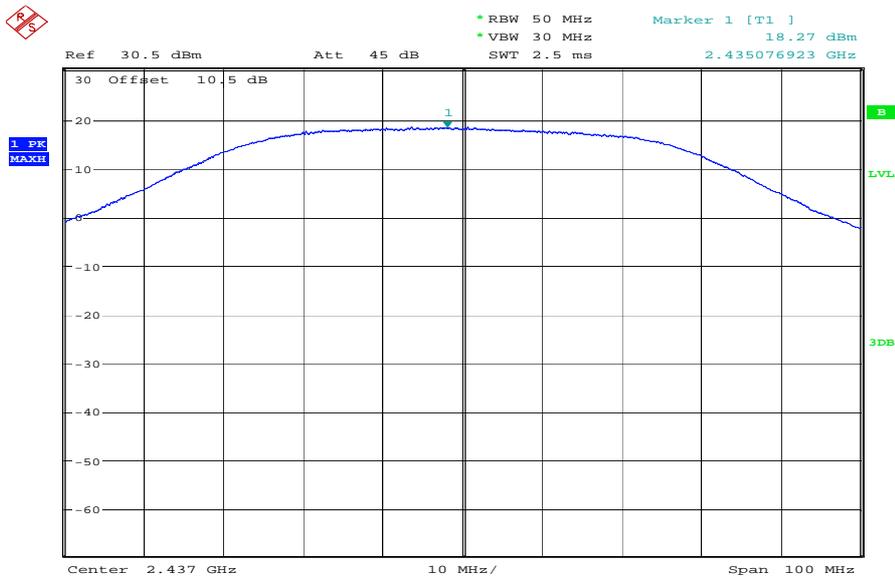
DSSS

Plot 1: Channel 1, 11 Mbits/s, Power Level 17



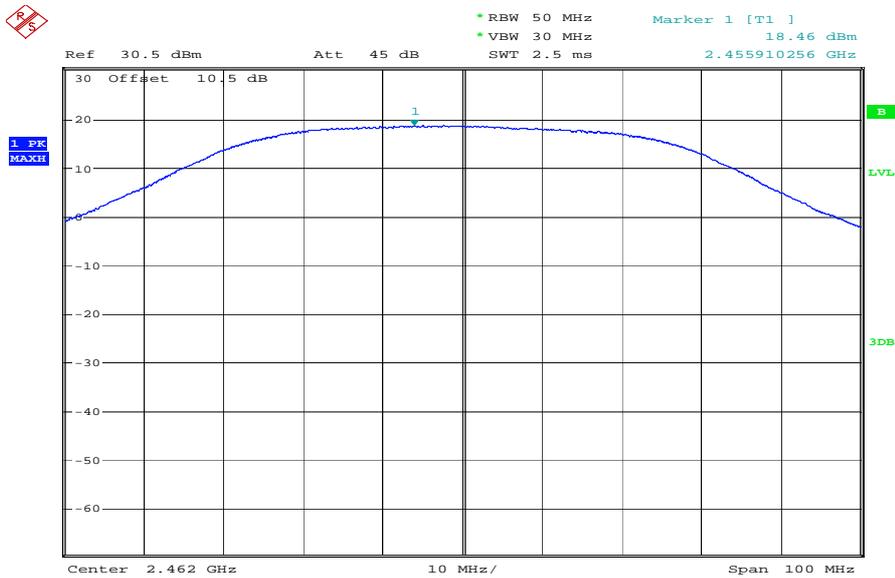
Date: 10.MAR.2010 15:01:29

Plot 2: Channel 6, 11 Mbits/s, Power Level 17



Date: 10.MAR.2010 15:02:33

Plot 3: Channel 11, 11 Mbits/s, Power Level 17



Date: 10.MAR.2010 15:03:09

Results:

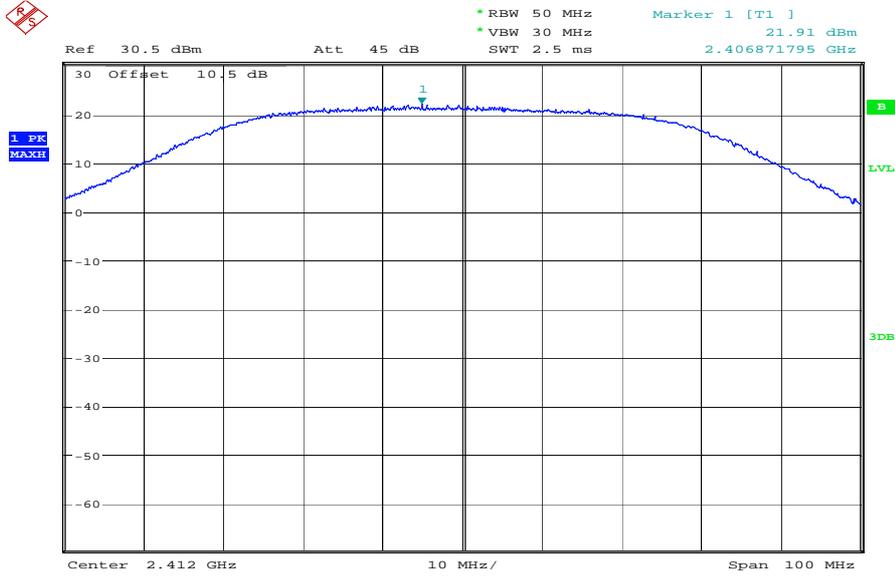
Test conditions		Max. peak output power [dBm] (Peak values measured with spectrum analyzer)		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	18.01	18.27	18.46
Measurement uncertainty		±3dB		

RBW / VBW: 50/30 MHz

TEST CONDITIONS		TRANSMITTER POWER [dBm] (Average values measured with power meter)		
		lowest frequency	middle frequency	highest frequency
T _{nom}	V _{nom}	16.65	16.95	17.35

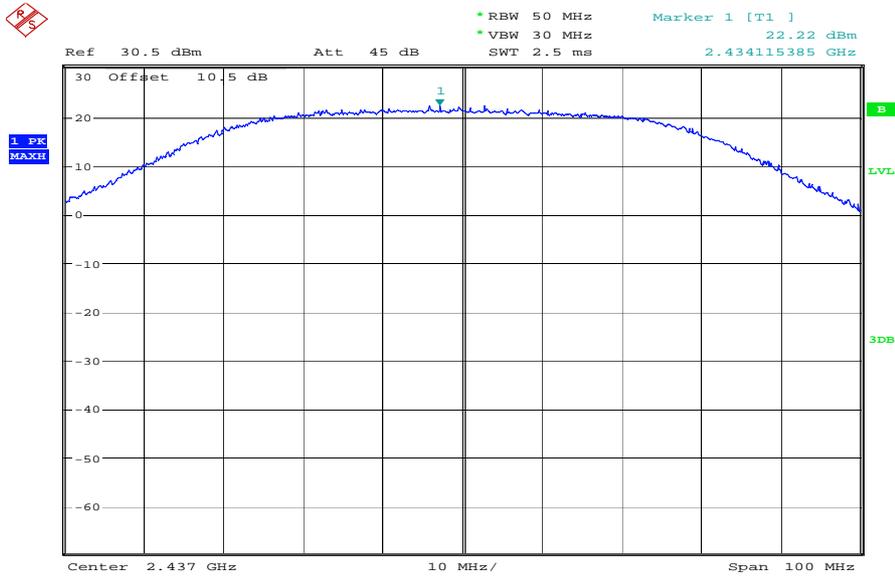
OFDM

Plot 1: Channel 1, 54 Mbits/s, Power Level 13



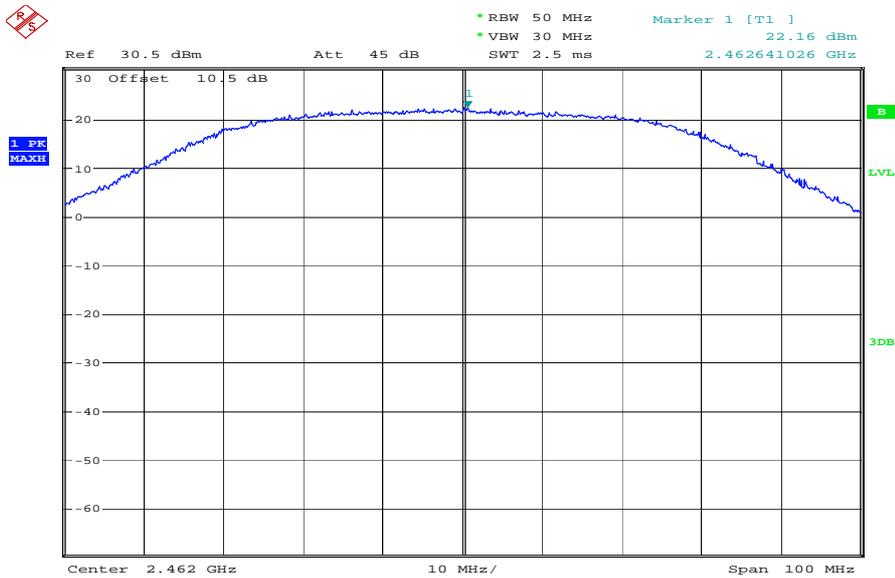
Date: 10.MAR.2010 15:08:19

Plot 2: Channel 6, 54 Mbits/s, Power Level 13



Date: 10.MAR.2010 15:05:09

Plot 3: Channel 11, 54 Mbits/s, Power Level 13



Date: 10.MAR.2010 15:04:01

Results:

Test conditions		Max. peak output power [dBm] (Peak values measured with spectrum analyzer)		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	21.91	22.22	22.16
Measurement uncertainty		±3dB		

RBW / VBW: 50/30 MHz

TEST CONDITIONS		TRANSMITTER POWER [dBm] (Average values measured with power meter)		
		lowest frequency	middle frequency	highest frequency
T _{nom}	V _{nom}	12.68	13.34	13.35

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

Results:

Test conditions		Max. peak output power EIRP [dBm] (Peak values measured with spectrum analyzer)		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	19.53	19.91	19.99
Measurement uncertainty		±3dB		

RBW / VBW: 50/30 MHz

TEST CONDITIONS		Max. peak output power EIRP [dBm] (Average values calculated with antenna gain)		
		lowest frequency	middle frequency	highest frequency
T _{nom}	V _{nom}	18.17	18.59	18.88

OFDM

Results:

Test conditions		Max. peak output power EIRP [dBm] (Peak values calculated with antenna gain)		
Frequency [MHz]		2412	2437	2462
T _{nom}	V _{nom}	23.43	23.86	23.69
Measurement uncertainty		±3dB		

RBW / VBW: 50/30 MHz

TEST CONDITIONS		TRANSMITTER POWER [dBm] (Average values calculated with antenna gain)		
		lowest frequency	middle frequency	highest frequency
T _{nom}	V _{nom}	14.20	14.98	14.88

Limits:

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

MPE calculation

These equations are generally accurate in the far field of an antenna but will over predict power density in the near field, where they could be used for making a “worst case” prediction.

$$S = PG/4\pi R^2$$

where S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units e.g. mW)
G = power gain of the antenna in the direction of interest relative to the isotropic radiator
R = distance to the centre of radiation of the antenna (appropriate units e.g. cm)

Or

$$S = EIRP/4\pi R^2$$

where EIRP = equivalent isotropically radiated power

Calculation:

(Calculated for max. EIRP)

EIRP: 23.86 dBm (243.2mW)

calculated at distance of 20 cm:

power density = $243.2/4\pi 20^2 = 0.0484 \text{ mW/cm}^2$

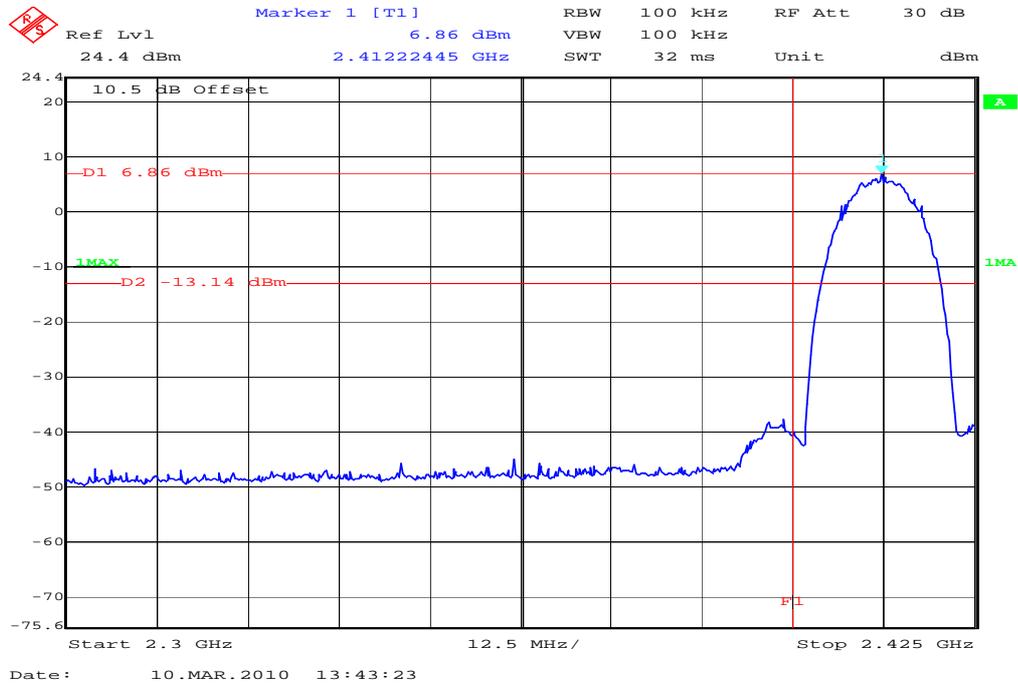
Limit:

1mW/cm² is the reference level for general public exposure according to the OET Bulletin 65,
Edition 97-01 Table 1.

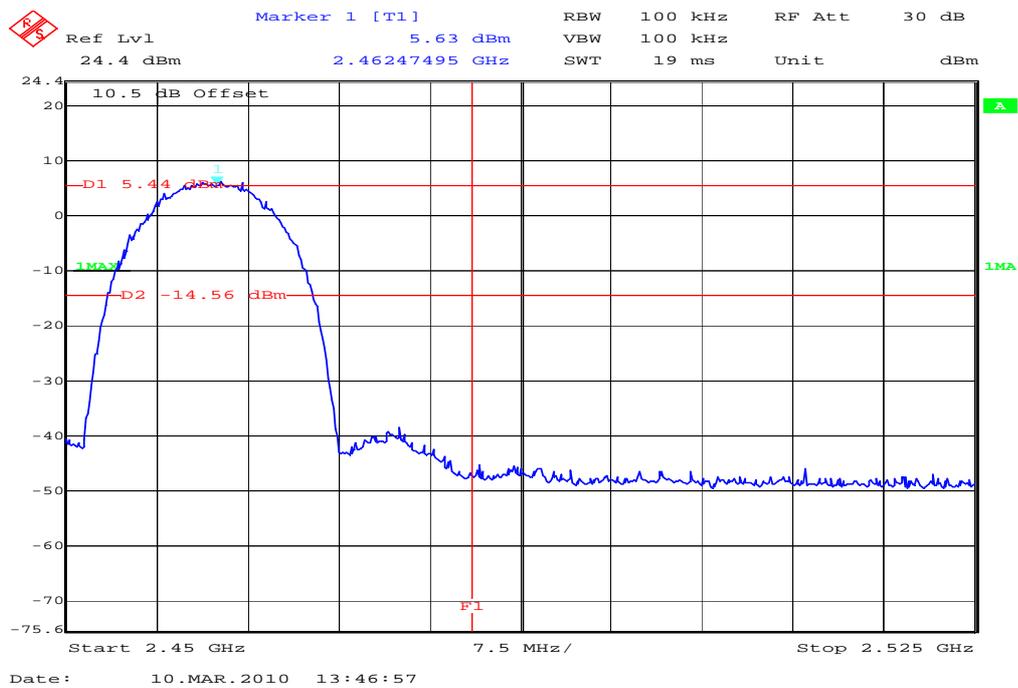
5.10 Band-edge compliance of conducted emissions §15.247 (d)

DSSS

Plot 1: lowest channel, 11 Mbits/s, Power Level 17

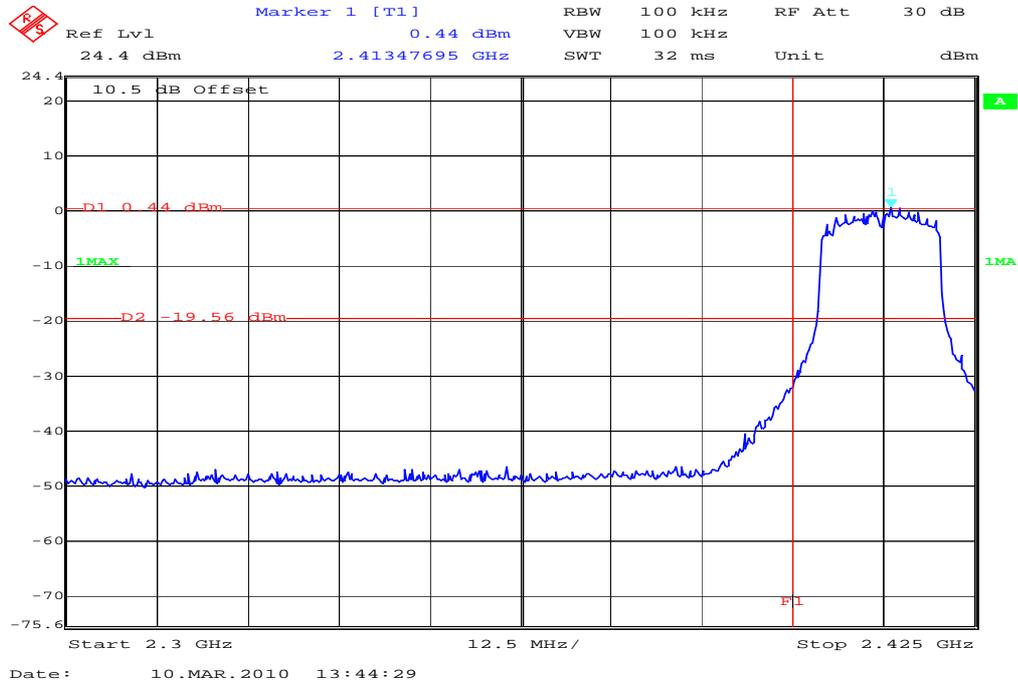


Plot 2: highest channel, 11 Mbits/s, Power Level 17

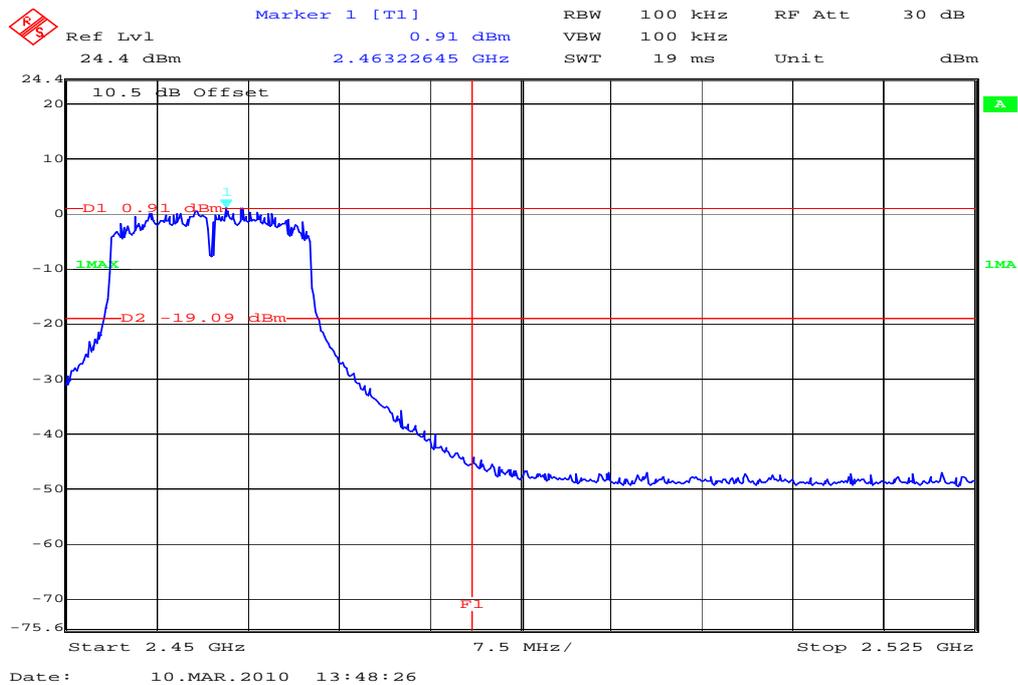


OFDM

Plot 1: lowest channel, 54 Mbits/s, Power Level 13



Plot 2: highest channel, 54 Mbits/s, Power Level 13



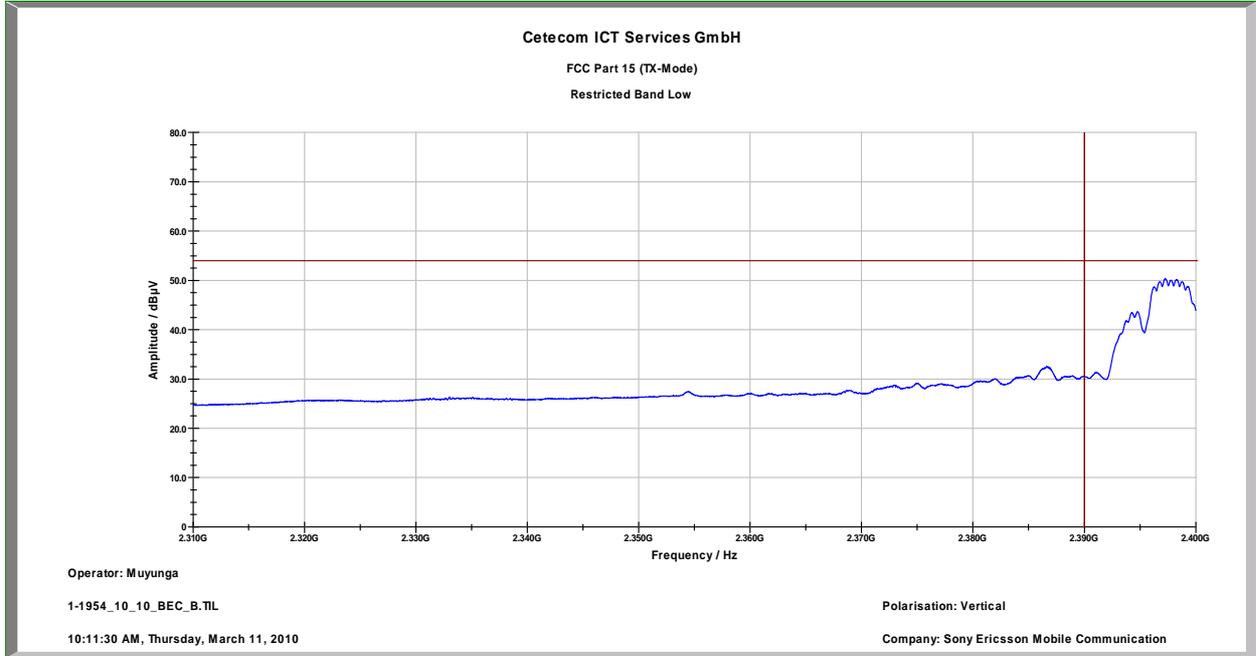
Limits:

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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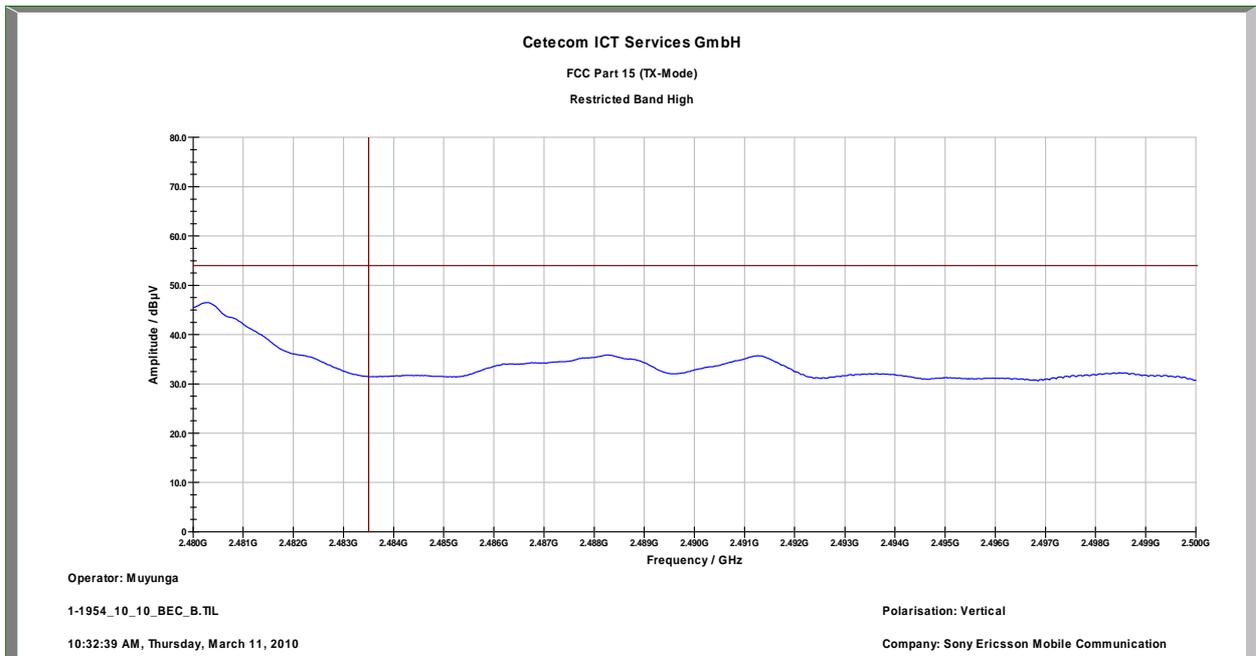
5.11 Band-edge compliance of radiated emissions §15.205

DSSS

Plot 1: lowest channel, 11 Mbits/s, Power Level 17

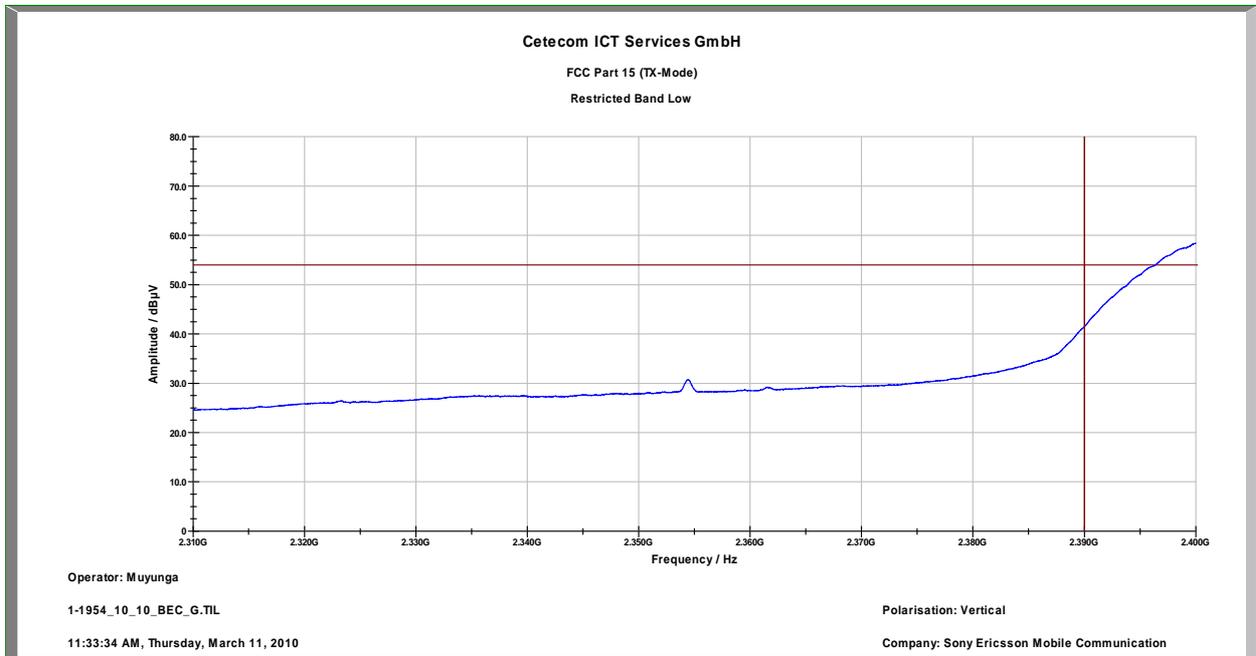


Plot 2: highest channel, 11 Mbits/s, Power Level 17

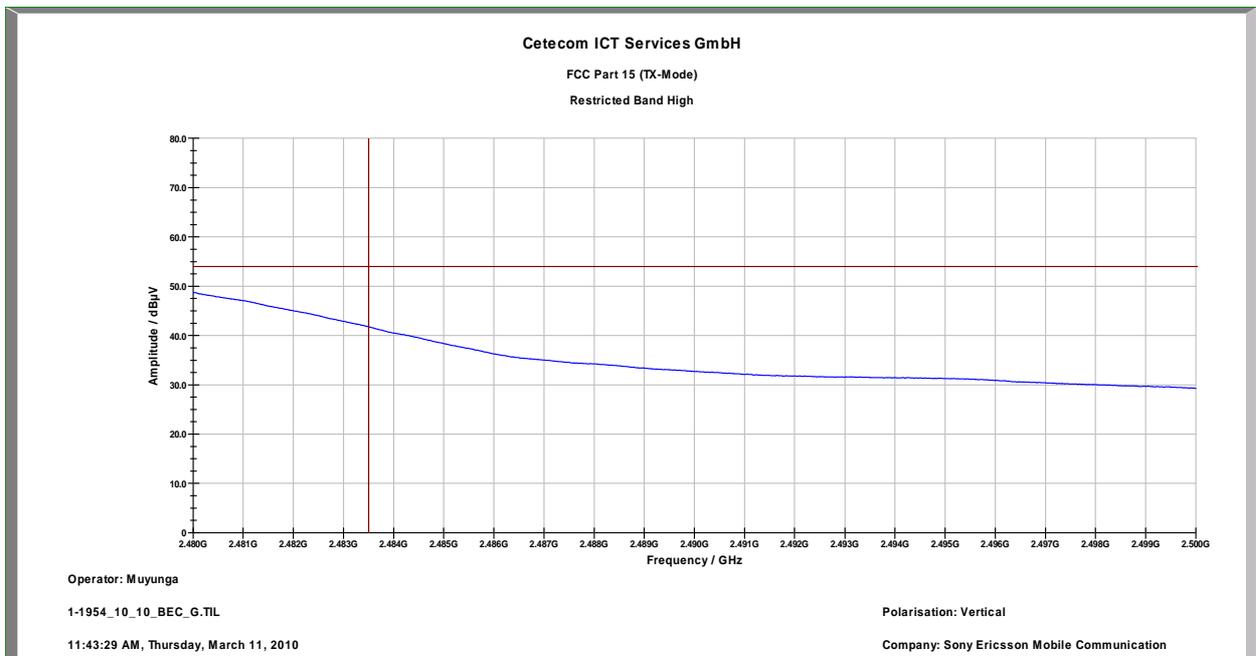


OFDM

Plot 3: lowest channel, 54 Mbits/s, Power Level 13



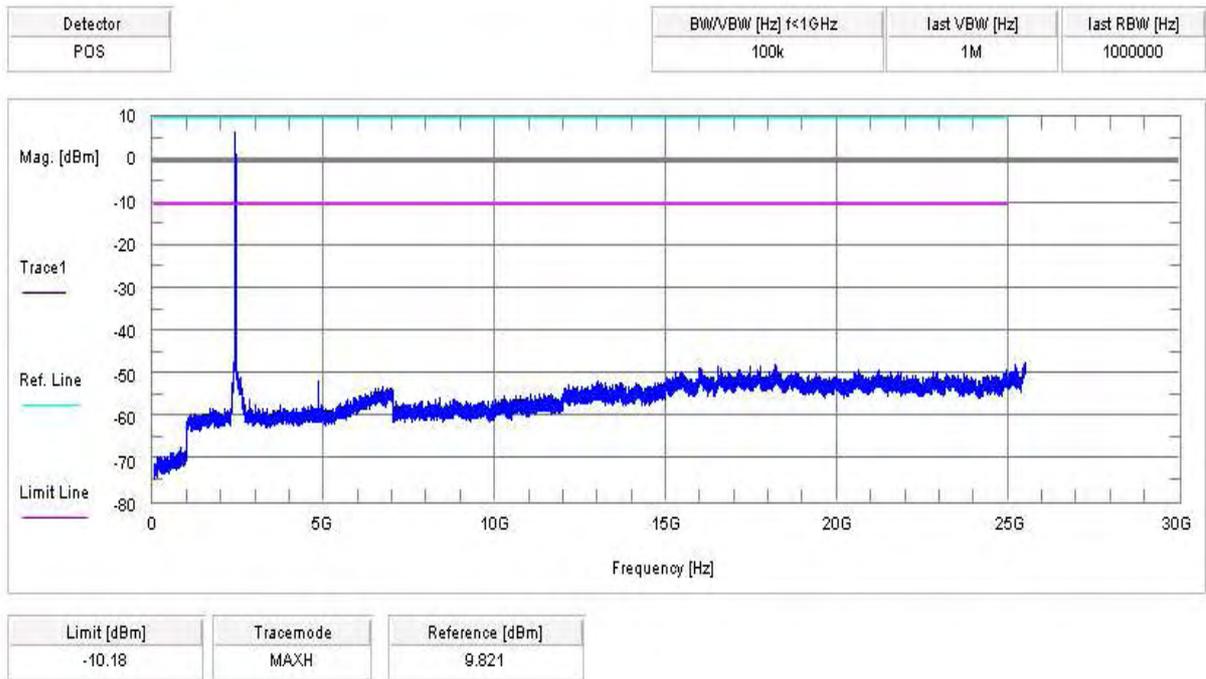
Plot 4: highest channel, 54 Mbits/s, Power Level 13



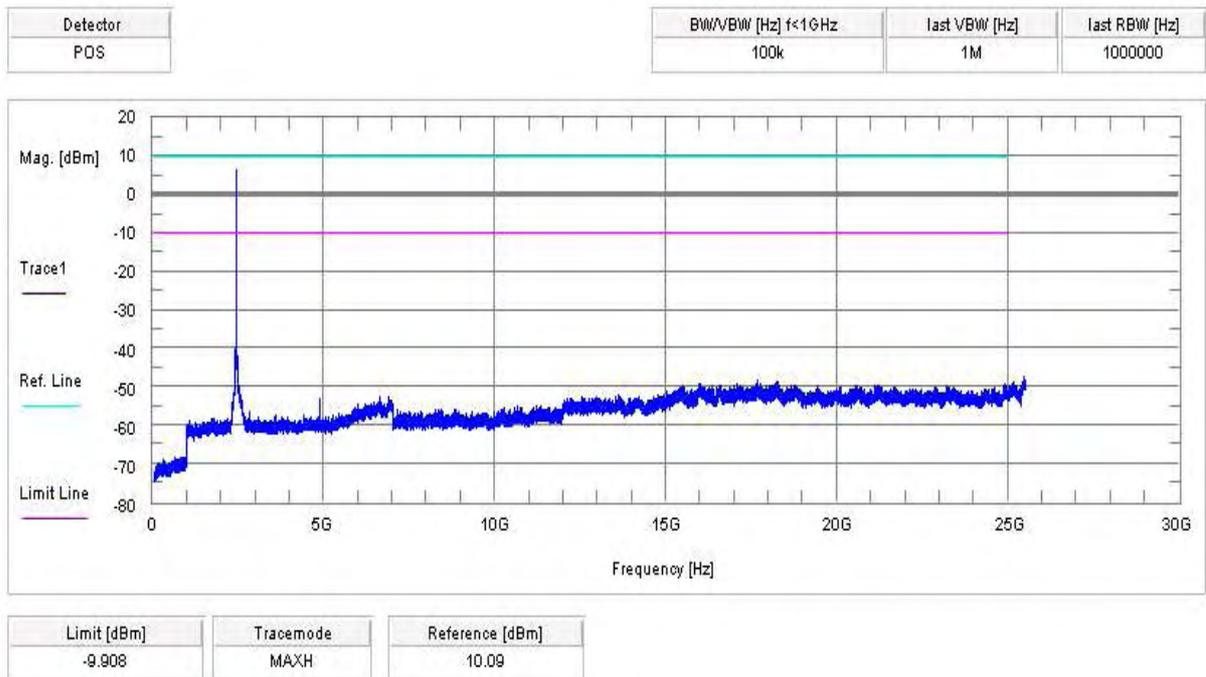
5.12 Spurious Emissions - conducted (Transmitter) §15.247 (c)

DSSS

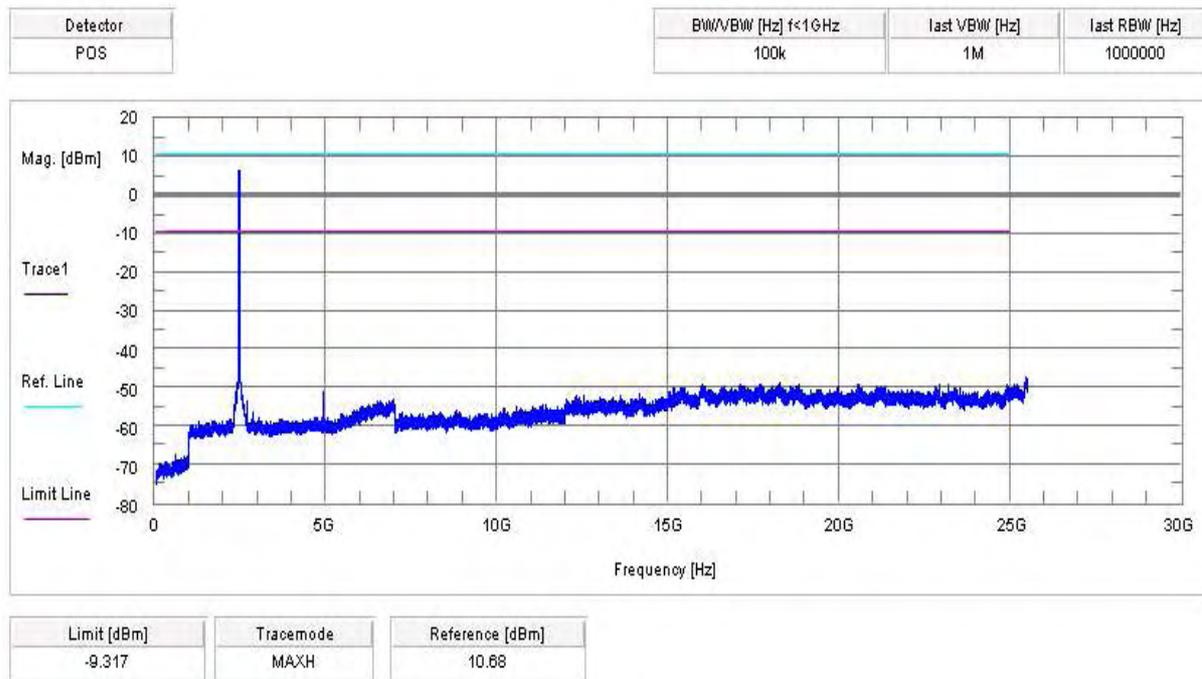
Plot 1: Channel 1, 11 Mb/s, Power Level 17



Plot 2: Channel 6, 11 Mb/s, Power Level 17



Plot 3: Channel 11, 11 Mbits/s, Power Level 17



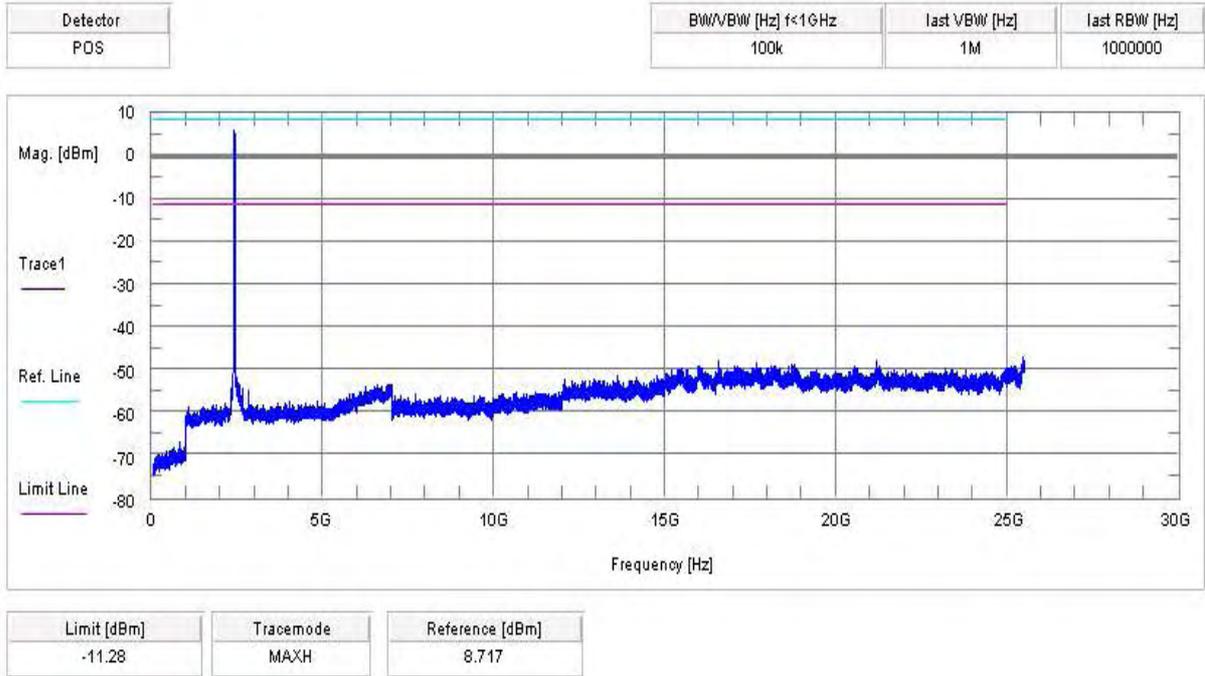
Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emmission power	actual attenuation below frequency of operation [dB]	results
2412		9.82	30 dBm	-	Operating frequency
No critical peak detected			-20 dBc		Complies
2437		10.09	30 dBm		Operating frequency
No critical peak detected			-20 dBc		Complies
2462		10.68	30 dBm		Operating frequency
No critical peak detected			-20 dBc		Complies
Measurement uncertainty		± 3dB			

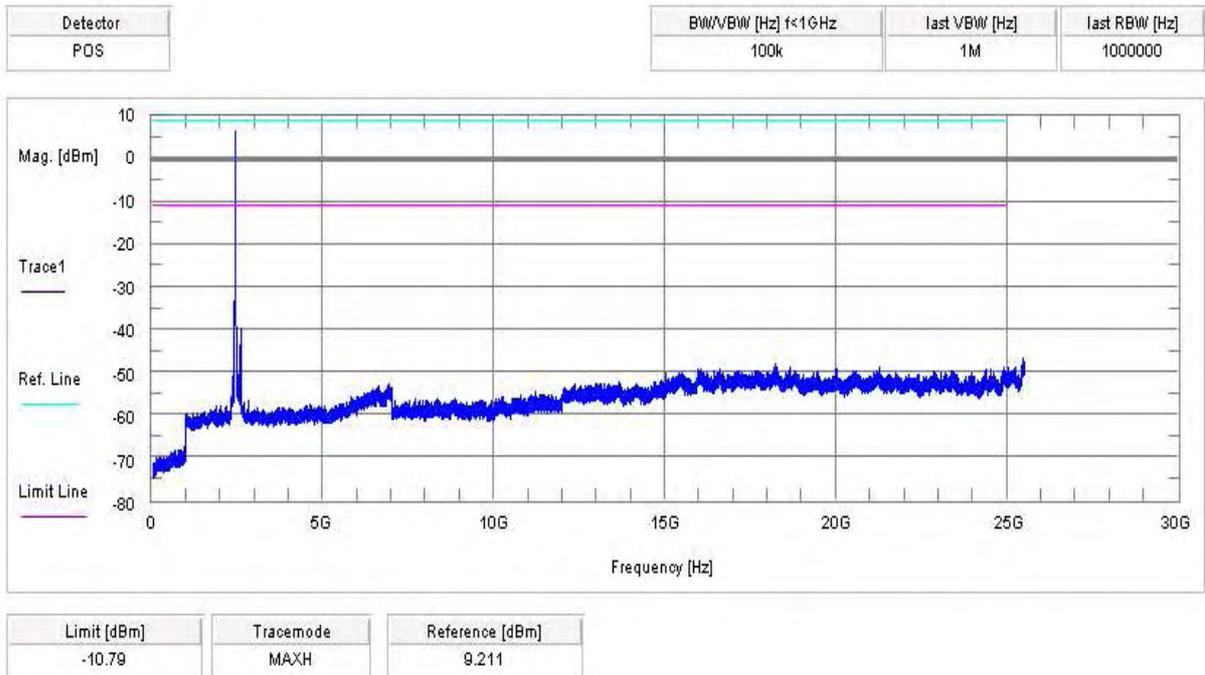
F < 1 GHz: RBW: 100 kHz VBW: 100 kHz
 F > 1 GHz: RBW: 1 MHz VBW: 1 MHz

OFDM

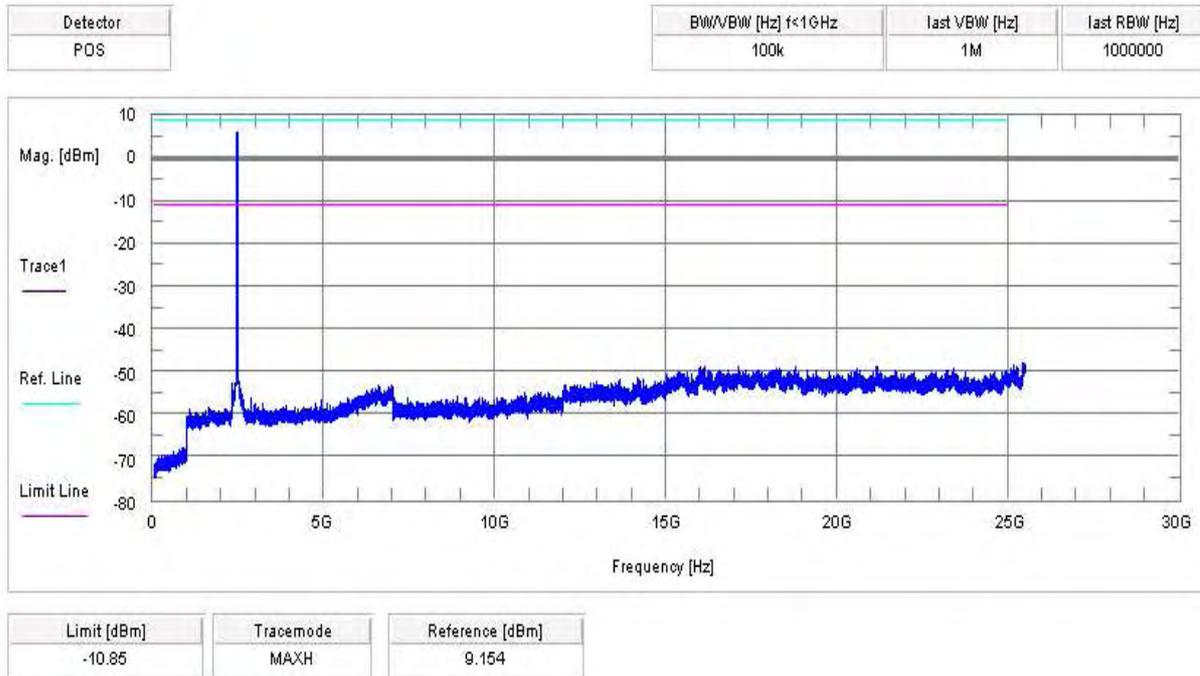
Plot 1: Channel 1, 54 Mbits/s, Power Level 13



Plot 2: Channel 6, 54 Mbits/s, Power Level 13



Plot 3: Channel 11, 54 Mbits/s, Power Level 13



Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		8.71	30 dBm	-	Operating frequency
No peak detected			-20 dBc		Complies
2437		9.21	30 dBm		Operating frequency
No peak detected			-20 dBc		Complies
2462		9.15	30 dBm		Operating frequency
No peak detected			-20 dBc		Complies
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

DSSS

Plot 1: 0.03 - 1 GHz (lowest channel)
11 Mbits/s, Power Level 17

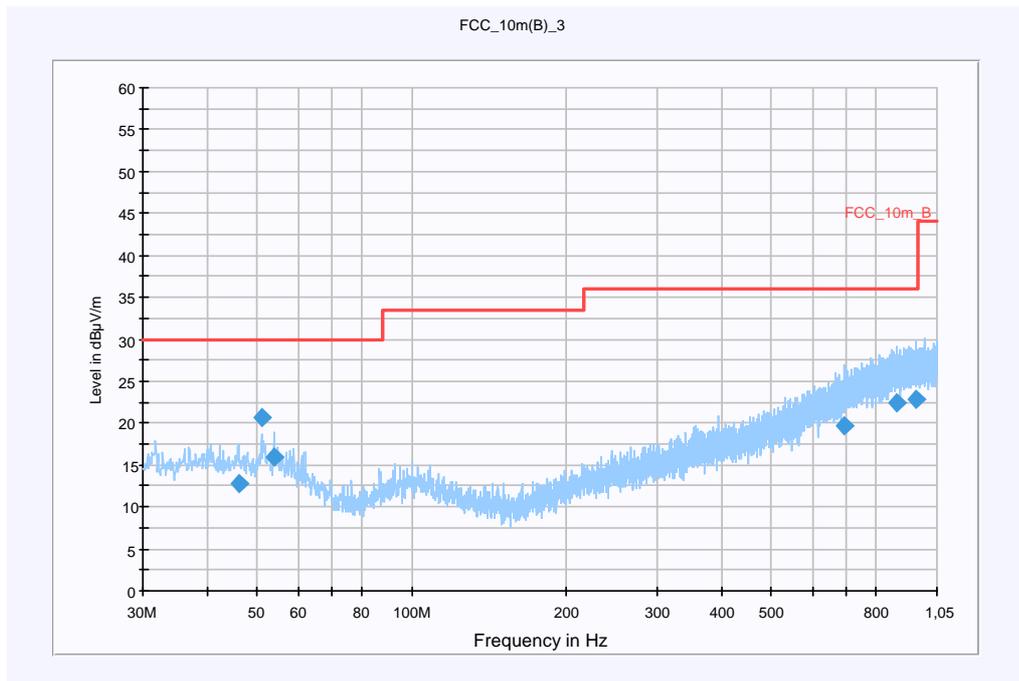
Information

EUT:	AAD-3880069-BV
Serial Number:	CB511G3KZX (IMEI: 00440214-000645-7)
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	WLAN Ch. 1 (mode B)
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

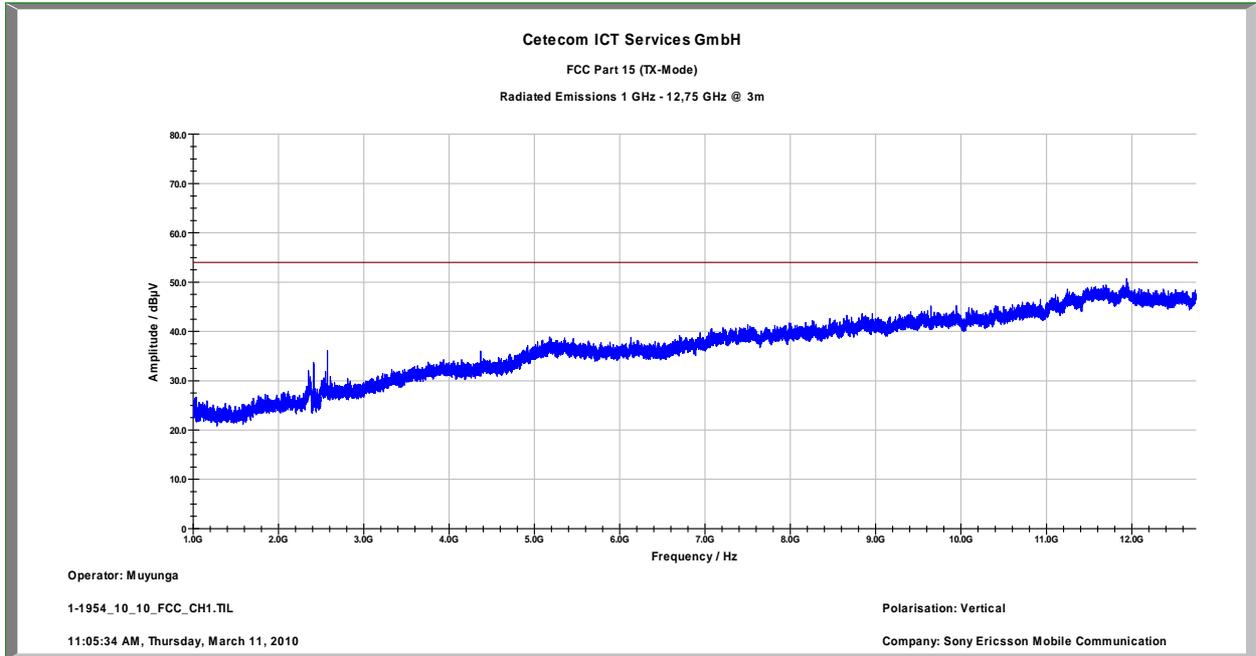
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

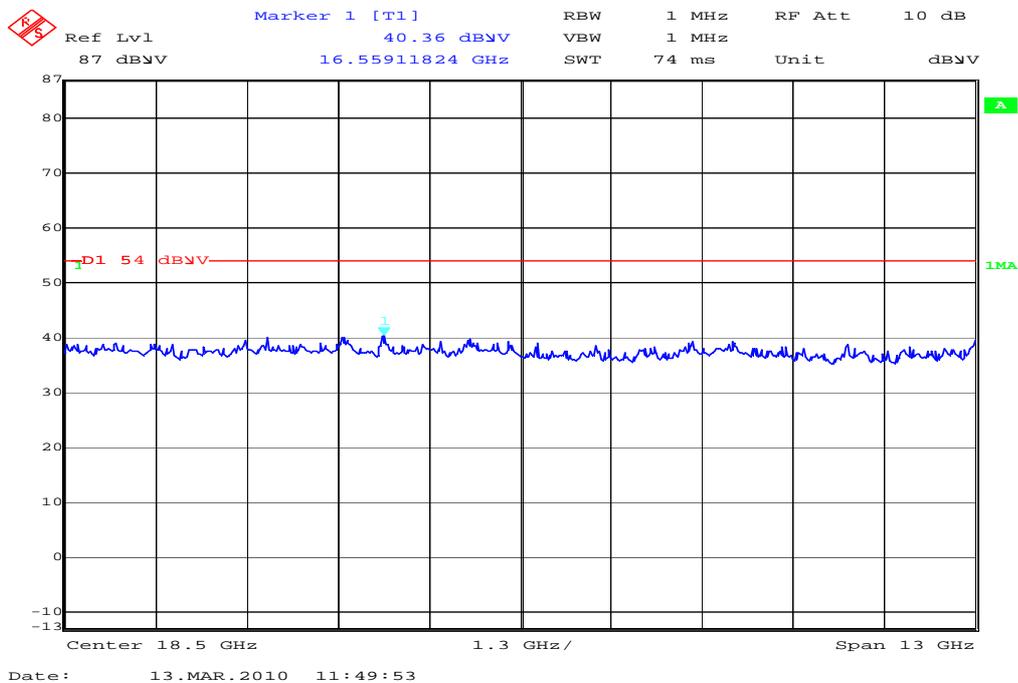
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
46.069350	12.9	15000.000	120.000	168.0	V	309.0	13.3	17.1	30.0
51.034050	20.6	15000.000	120.000	123.0	V	28.0	13.3	9.4	30.0
54.012150	15.9	15000.000	120.000	122.0	V	3.0	13.0	14.1	30.0
694.680300	19.6	15000.000	120.000	116.0	H	60.0	22.3	16.4	36.0
875.651550	22.4	15000.000	120.000	175.0	H	158.0	24.9	13.6	36.0
958.041750	22.8	15000.000	120.000	220.0	H	143.0	25.4	13.2	36.0

Plot 2: 1 - 12 GHz (lowest channel)
11 Mbits/s, Power Level 17



Carrier suppressed with a 2.4 GHz band-reject filter

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



Plot 4: 0.03 - 1 GHz (middle channel)
11 Mbits/s, Power Level 17

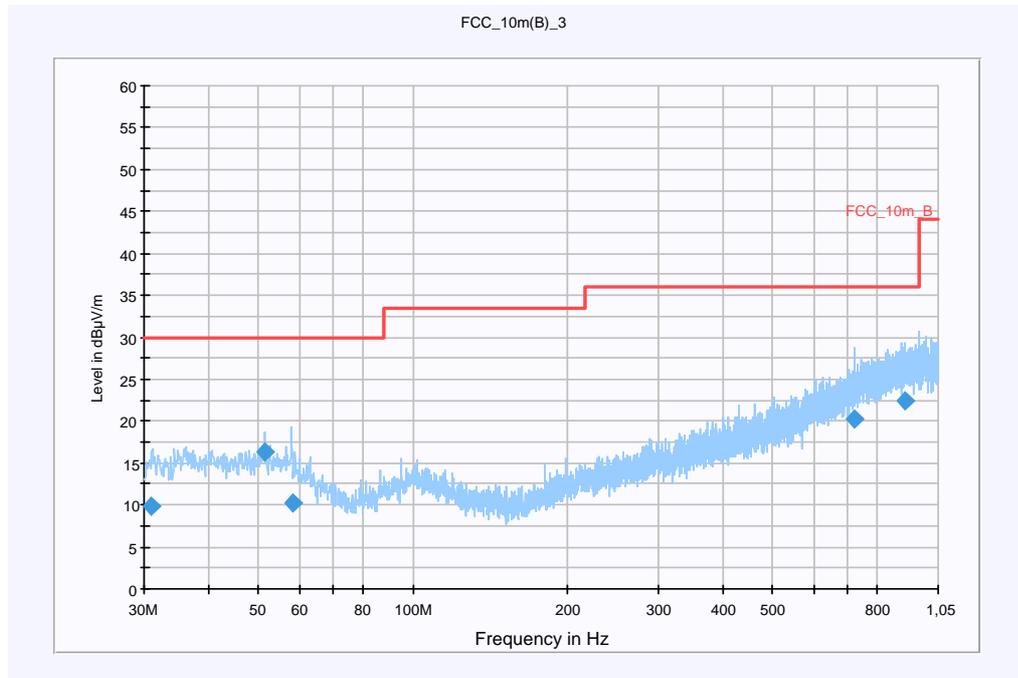
Information

EUT:	AAD-3880069-BV
Serial Number:	CB511G3KZX (IMEI: 00440214-000645-7)
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	WLAN Ch. 6 (mode B)
Operator Name:	Langer
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

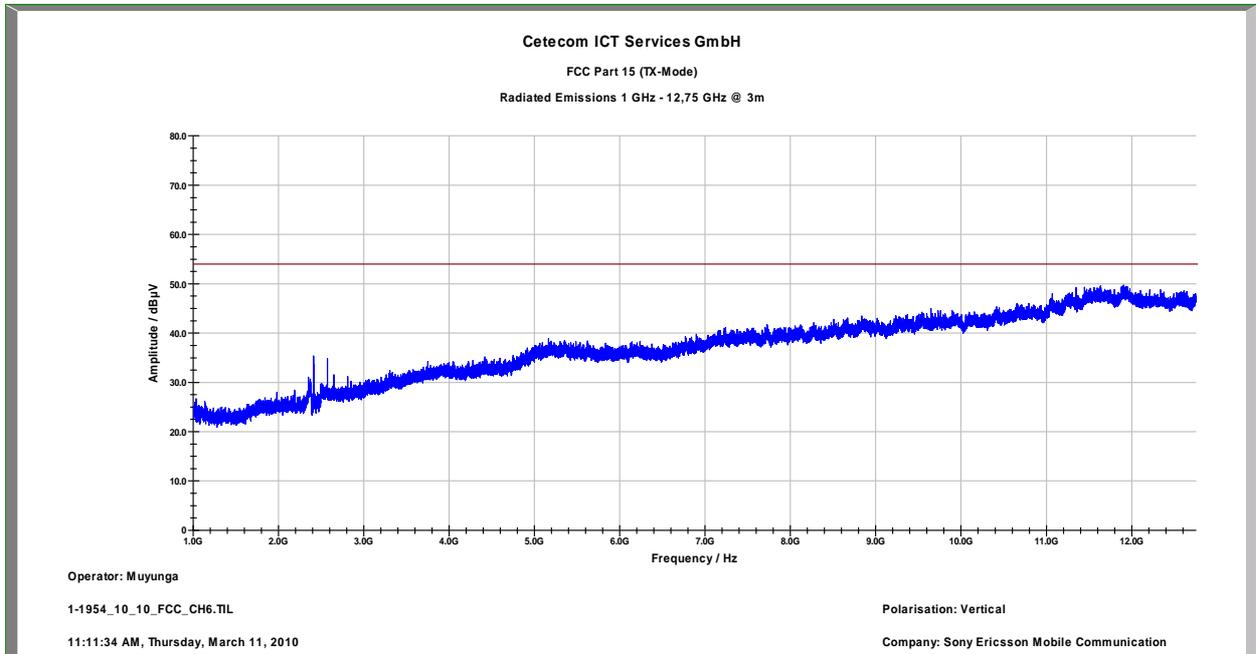
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



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)
31.057050	9.9	15000.000	120.000	121.0	H	313.0	12.6	20.1	30.0
51.600000	16.3	15000.000	120.000	98.0	V	138.0	13.2	13.7	30.0
58.245450	10.2	15000.000	120.000	176.0	V	19.0	12.1	19.8	30.0
719.312400	20.2	15000.000	120.000	214.0	H	1.0	22.9	15.8	36.0
903.461400	22.5	15000.000	120.000	115.0	V	118.0	25.2	13.5	36.0
31.057050	9.9	15000.000	120.000	121.0	H	313.0	12.6	20.1	30.0

Plot 5: 1 - 12 GHz (middle channel)
11 Mbits/s, Power Level 17



Carrier suppressed with a 2.4 GHz band-reject filter

Plot 6: 0.03 - 1 GHz (highest channel)
11 Mbits/s, Power Level 17

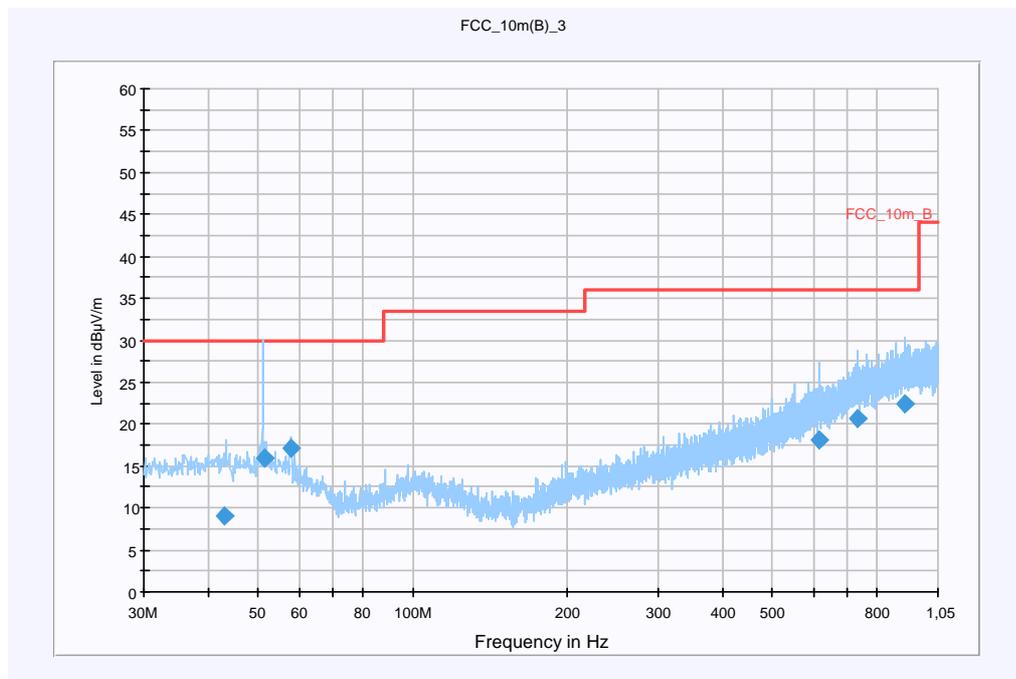
Information

EUT:	AAD-3880069-BV
Serial Number:	CB511G3KZX (IMEI: 00440214-000645-7)
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	WLAN Ch. 11 (mode B)
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

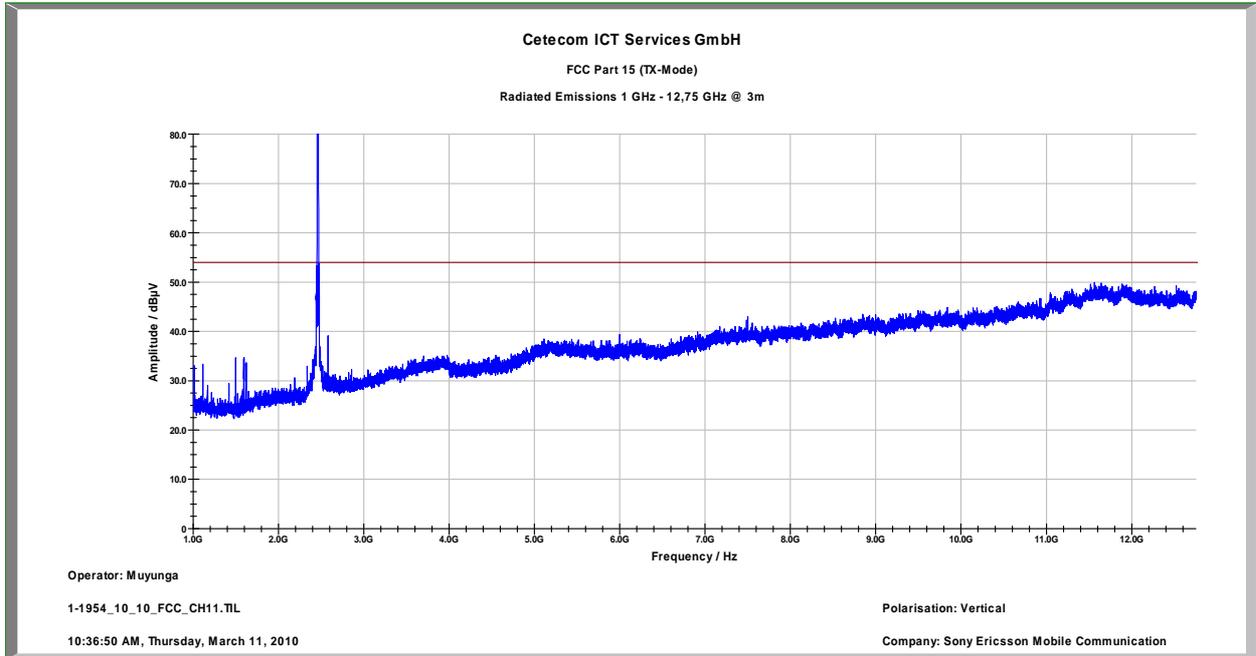
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

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)
43.029300	9.1	15000.000	120.000	221.0	H	8.0	13.3	20.9	30.0
51.590850	16.0	15000.000	120.000	98.0	V	233.0	13.2	14.0	30.0
57.988200	17.1	15000.000	120.000	160.0	V	69.0	12.1	12.9	30.0
618.201450	18.1	15000.000	120.000	221.0	H	51.0	20.9	17.9	36.0
733.351500	20.6	15000.000	120.000	121.0	V	85.0	23.2	15.4	36.0
43.029300	9.1	15000.000	120.000	221.0	H	8.0	13.3	20.9	30.0

Plot 7: 1 - 12 GHz (highest channel)
11 Mbits/s, Power Level 17



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 critical peak detected			No critical peak detected			No critical 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

OFDM

Plot 1: 0.03 - 1 GHz (lowest channel)

54 Mbits/s, Power Level 13

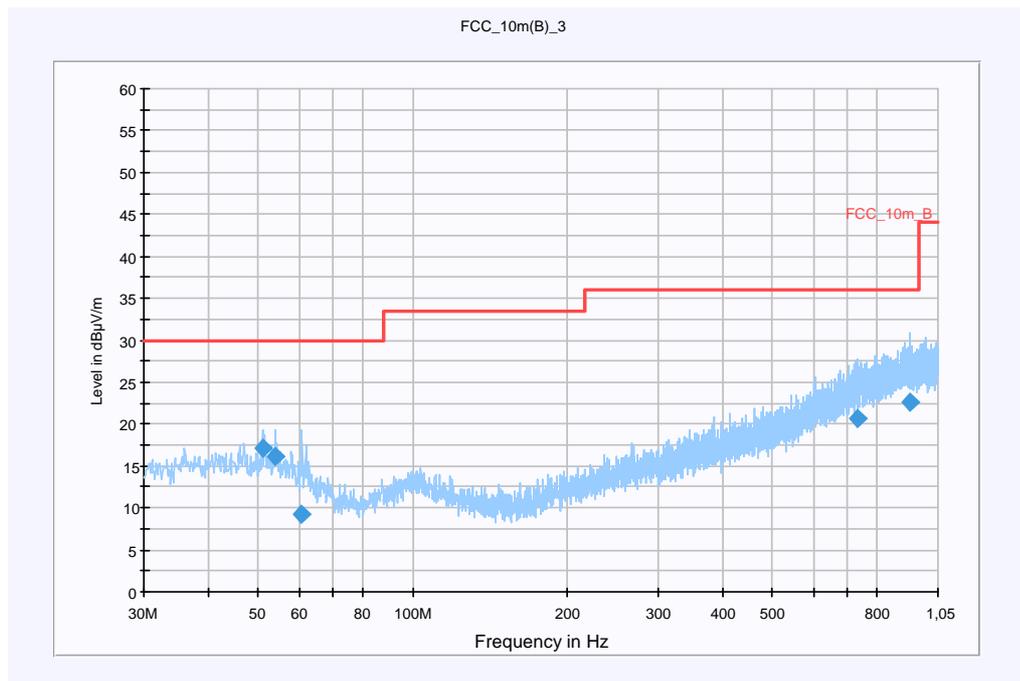
Information

EUT:	AAD-3880069-BV
Serial Number:	CB511G3KZX (IMEI: 00440214-000645-7)
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	WLAN Ch. 1 (mode G)
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

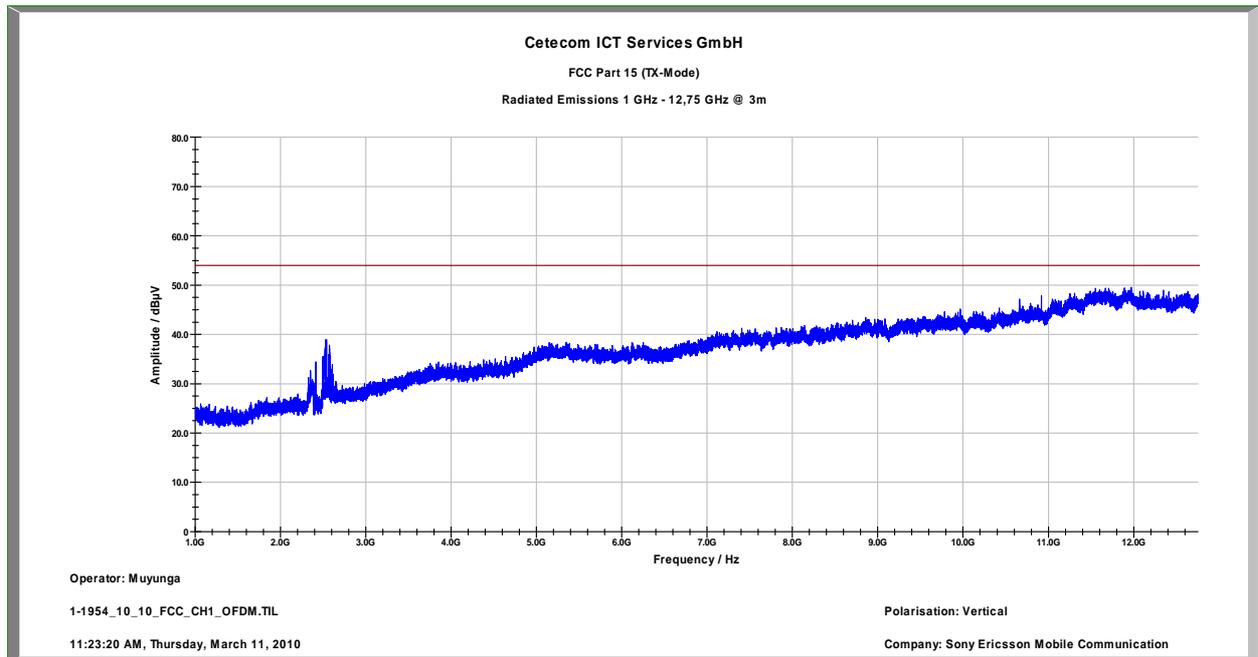
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



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)
51.002850	17.0	15000.000	120.000	159.0	V	29.0	13.3	13.0	30.0
53.991600	16.2	15000.000	120.000	178.0	V	51.0	13.0	13.8	30.0
60.529800	9.3	15000.000	120.000	148.0	V	149.0	11.5	20.7	30.0
735.163800	20.6	15000.000	120.000	220.0	H	323.0	23.3	15.4	36.0
927.292050	22.6	15000.000	120.000	220.0	V	210.0	25.3	13.4	36.0
51.002850	17.0	15000.000	120.000	159.0	V	29.0	13.3	13.0	30.0

Plot 2: 1 - 12 GHz (lowest channel)
54 Mbits/s, Power Level 13



Carrier suppressed with a 2.4 GHz band-reject filter

Plot 4: 0.03 - 1 GHz (middle channel)
54 Mbits/s, Power Level 13

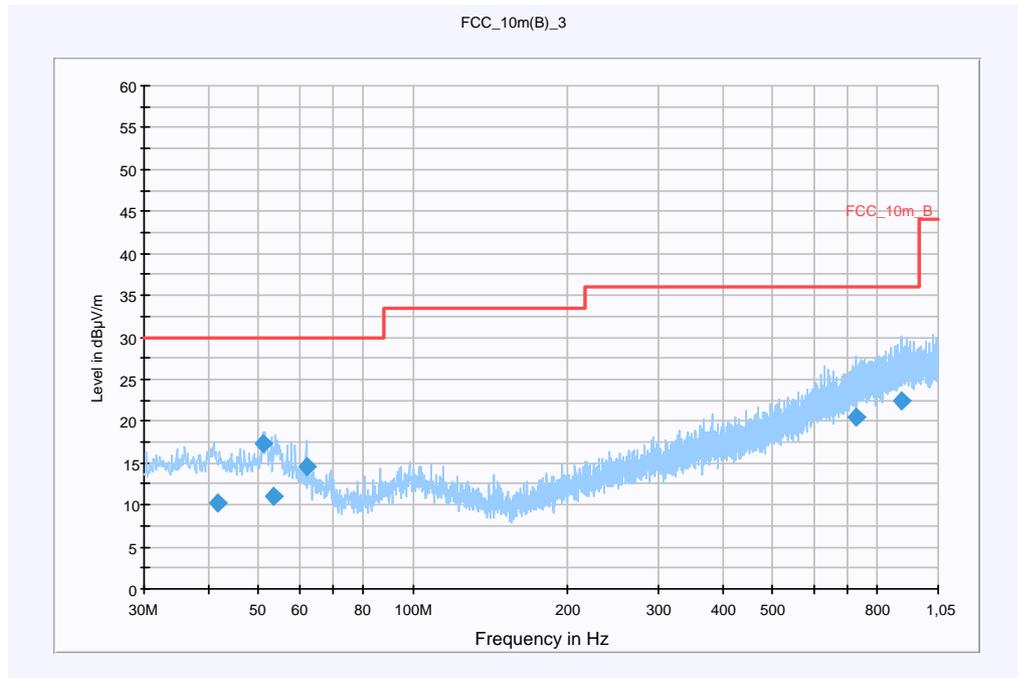
Information

EUT:	AAD-3880069-BV
Serial Number:	CB511G3KZX (IMEI: 00440214-000645-7)
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	WLAN Ch. 6 (mode G)
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

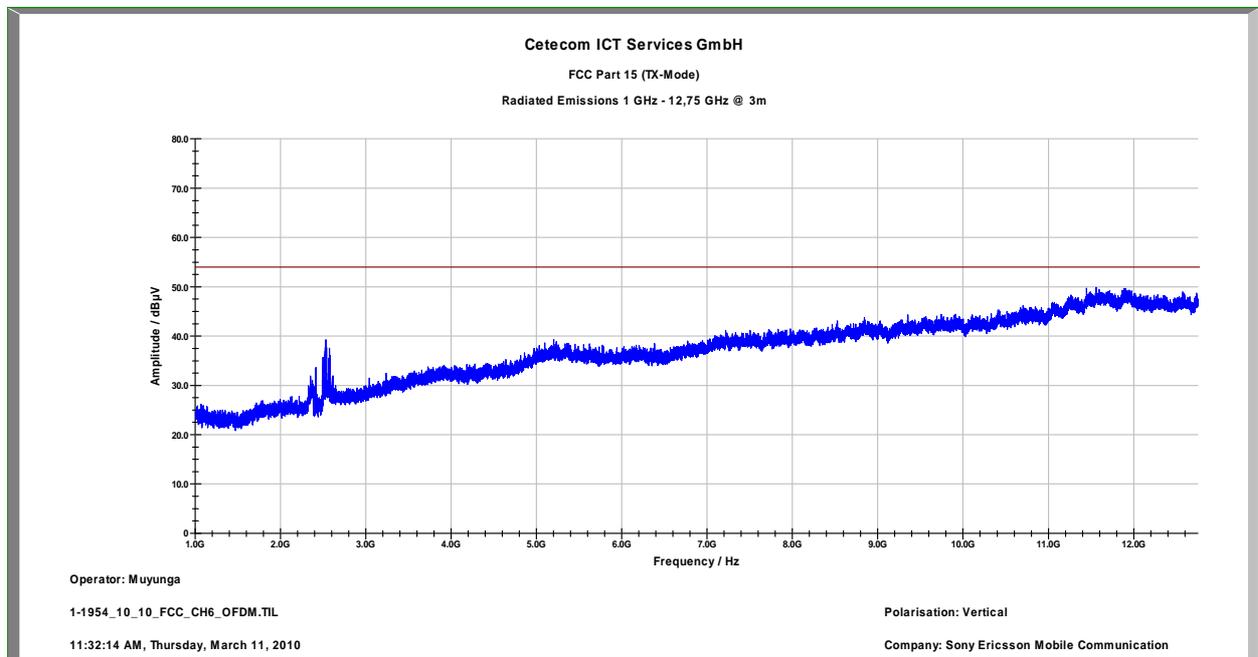
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

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)
41.539800	10.3	15000.000	120.000	220.0	V	227.0	13.4	19.7	30.0
50.990850	17.4	15000.000	120.000	105.0	V	248.0	13.3	12.6	30.0
53.700750	11.1	15000.000	120.000	98.0	V	28.0	13.0	18.9	30.0
62.015100	14.6	15000.000	120.000	194.0	V	40.0	11.1	15.4	30.0
726.514800	20.4	15000.000	120.000	140.0	H	63.0	23.0	15.6	36.0
890.155200	22.4	15000.000	120.000	220.0	H	225.0	25.1	13.6	36.0

Plot 5: 1 - 12 GHz (middle channel)
54 Mbits/s, Power Level 13



Carrier suppressed with a 2.4 GHz band-reject filter

Plot 6: 0.03 - 1 GHz (highest channel)
54 Mbits/s, Power Level 13

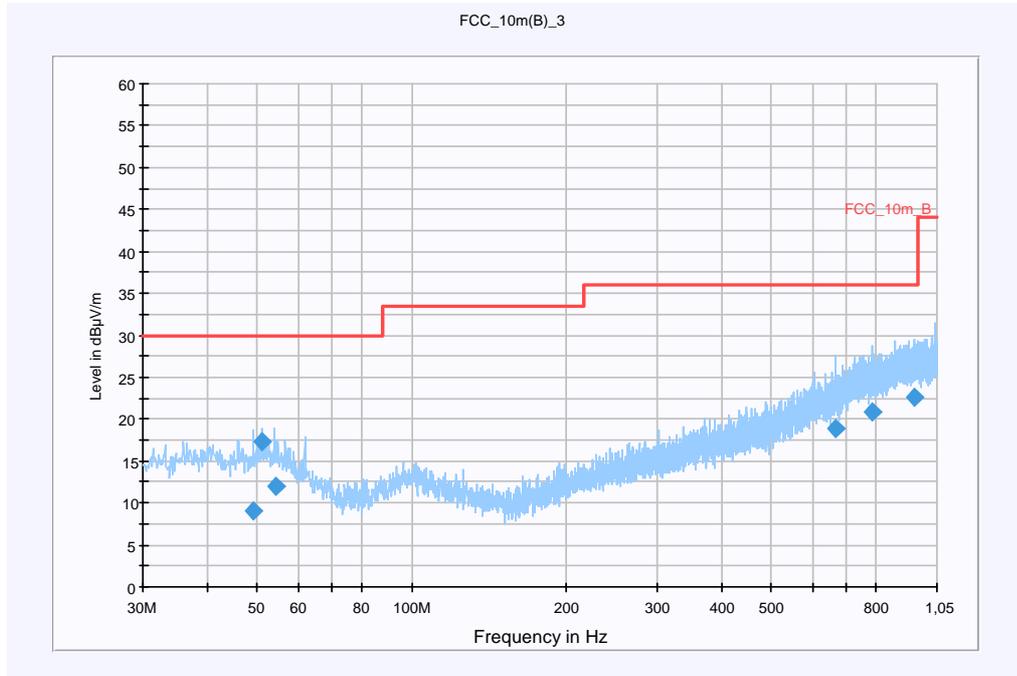
Information

EUT:	AAD-3880069-BV
Serial Number:	CB511G3KZX (IMEI: 00440214-000645-7)
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	WLAN Ch. 11 (mode G)
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

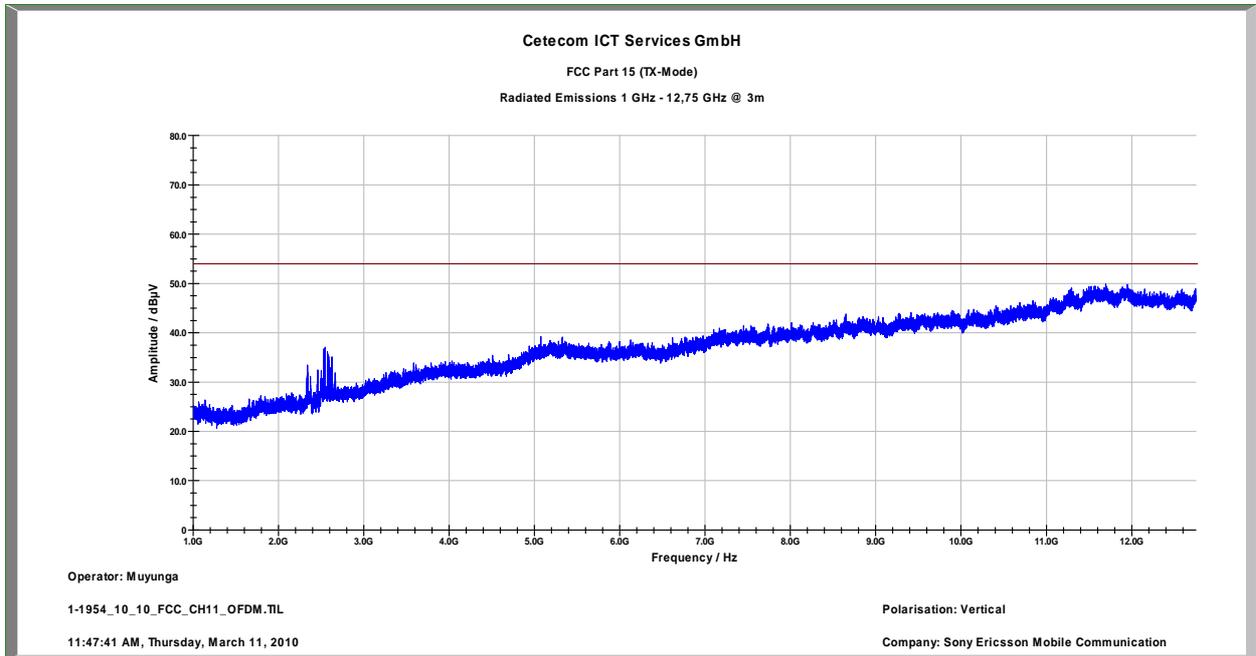
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



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)
49.164150	9.1	15000.000	120.000	220.0	V	51.0	13.4	20.9	30.0
51.012000	17.3	15000.000	120.000	105.0	V	0.0	13.3	12.7	30.0
54.314250	12.0	15000.000	120.000	141.0	V	323.0	13.0	18.0	30.0
666.812250	18.9	15000.000	120.000	220.0	V	220.0	21.5	17.1	36.0
785.247300	20.9	15000.000	120.000	98.0	V	223.0	23.7	15.1	36.0
947.189550	22.7	15000.000	120.000	174.0	V	203.0	25.3	13.3	36.0

Plot 7: 1 - 12 GHz (highest channel)
54 Mbits/s, Power Level 13



Carrier 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 critical peak detected			No critical peak detected			No critical 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

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

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

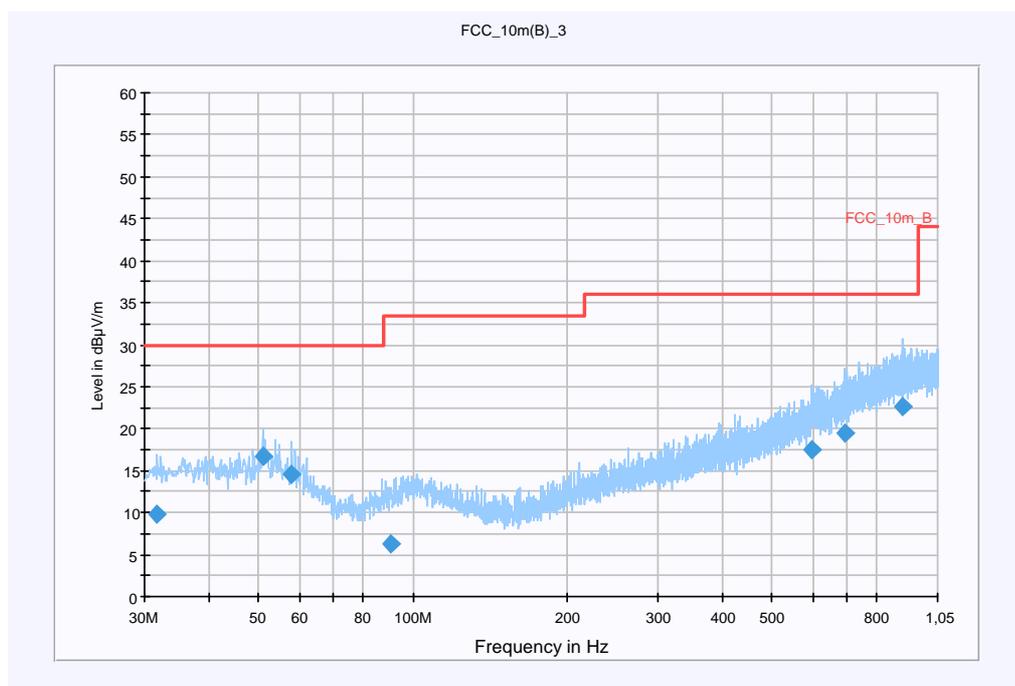
Information

EUT:	AAD-3880069-BV
Serial Number:	CB511G3KZX (IMEI: 00440214-000645-7)
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	WLAN RX
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

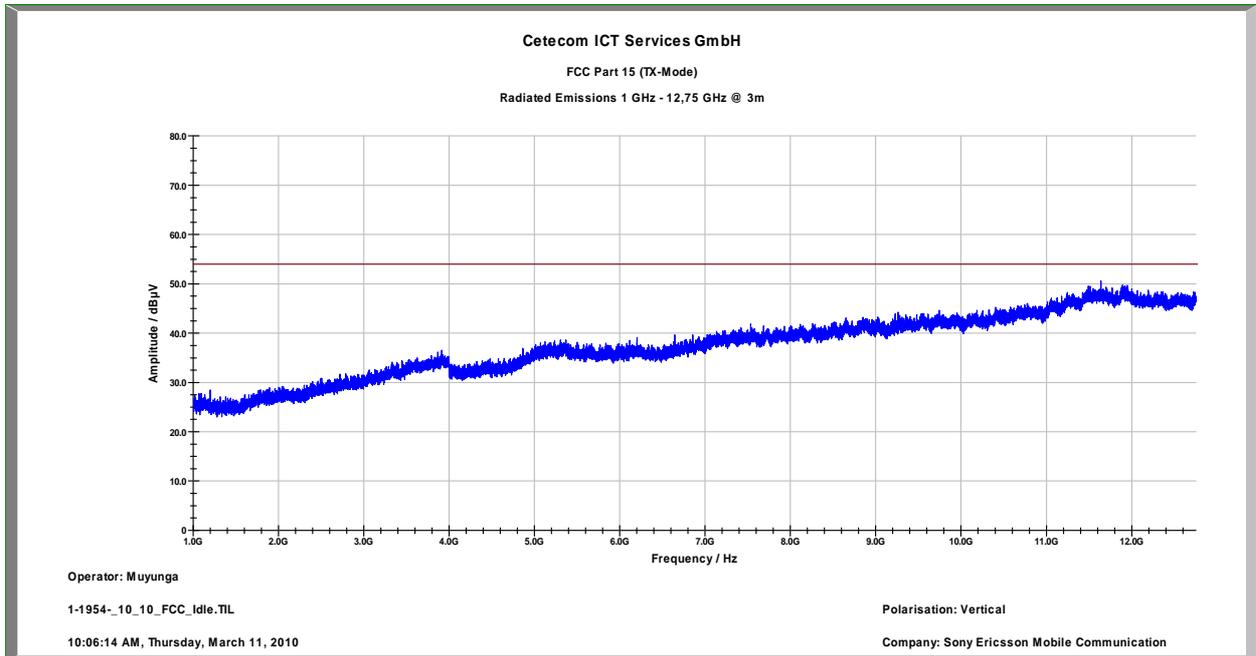
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



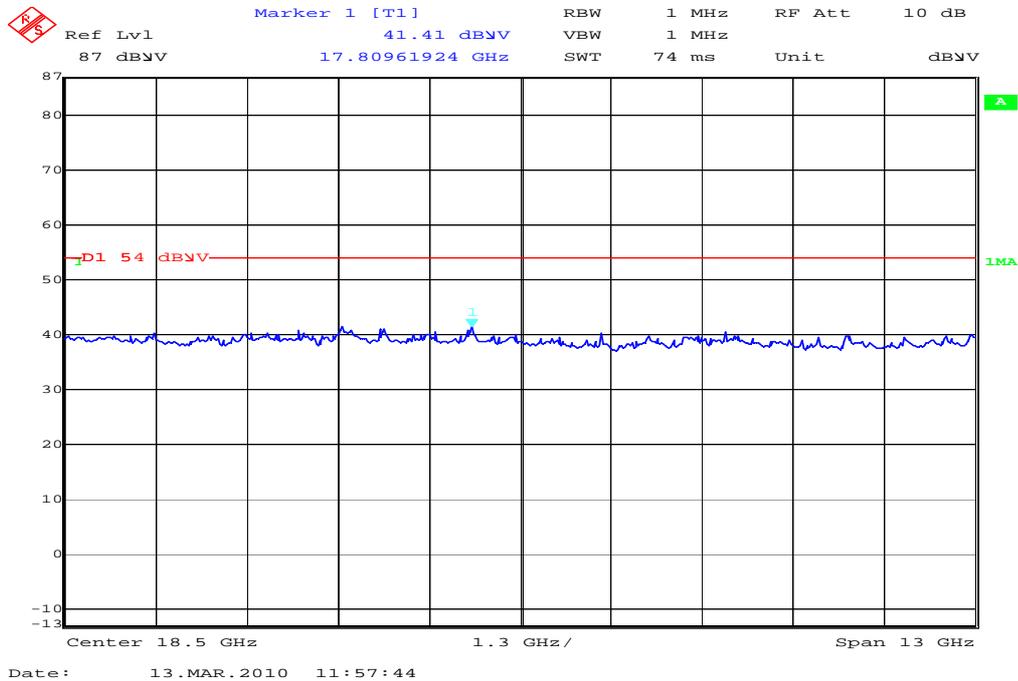
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
31.780650	9.8	15000.000	120.000	220.0	H	199.0	12.7	20.2	30.0
50.985300	16.7	15000.000	120.000	154.0	V	18.0	13.3	13.3	30.0
57.989250	14.5	15000.000	120.000	220.0	V	-2.0	12.1	15.5	30.0
90.593700	6.3	15000.000	120.000	98.0	H	35.0	10.6	27.2	33.5
596.827800	17.4	15000.000	120.000	188.0	H	190.0	20.7	18.6	36.0
691.014900	19.5	15000.000	120.000	131.0	V	323.0	22.2	16.5	36.0
899.979000	22.6	15000.000	120.000	136.0	H	51.0	25.2	13.4	36.0

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



Plot 3: 12- 25 GHz (receiver)

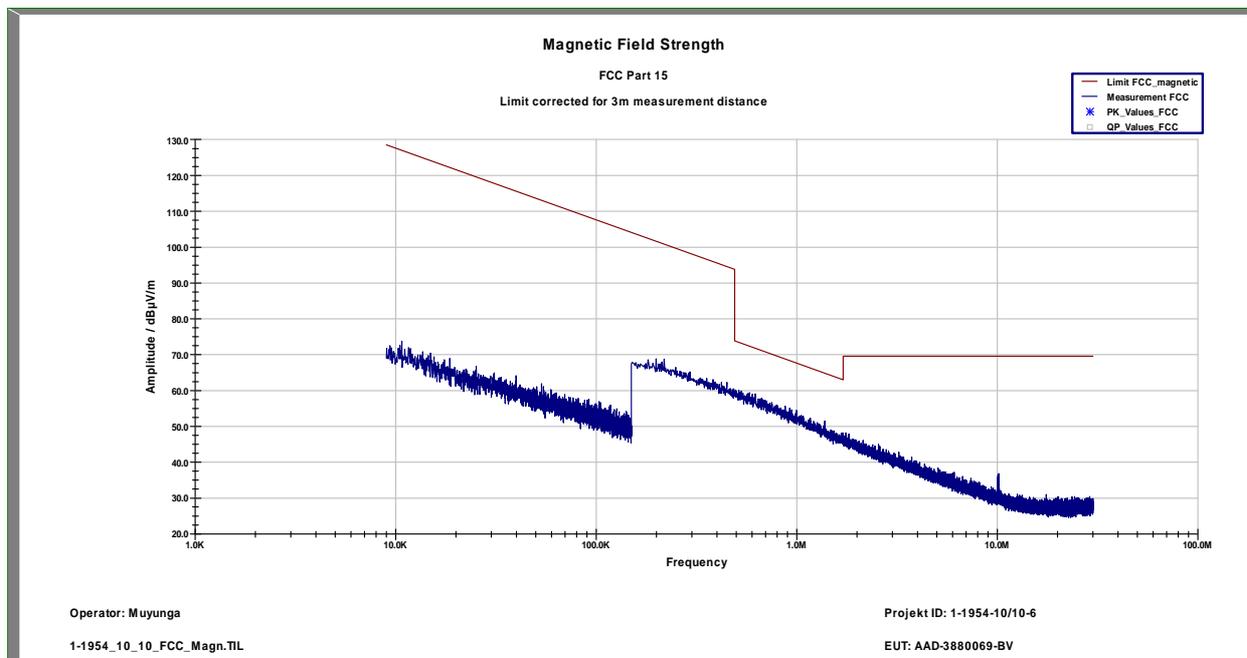


5.15 Spurious Emissions - radiated <30 MHz §15.209

Measured at 3 m distance.

Values recalculated with 40 dB/decade according to FCC rules.

Plot 1:

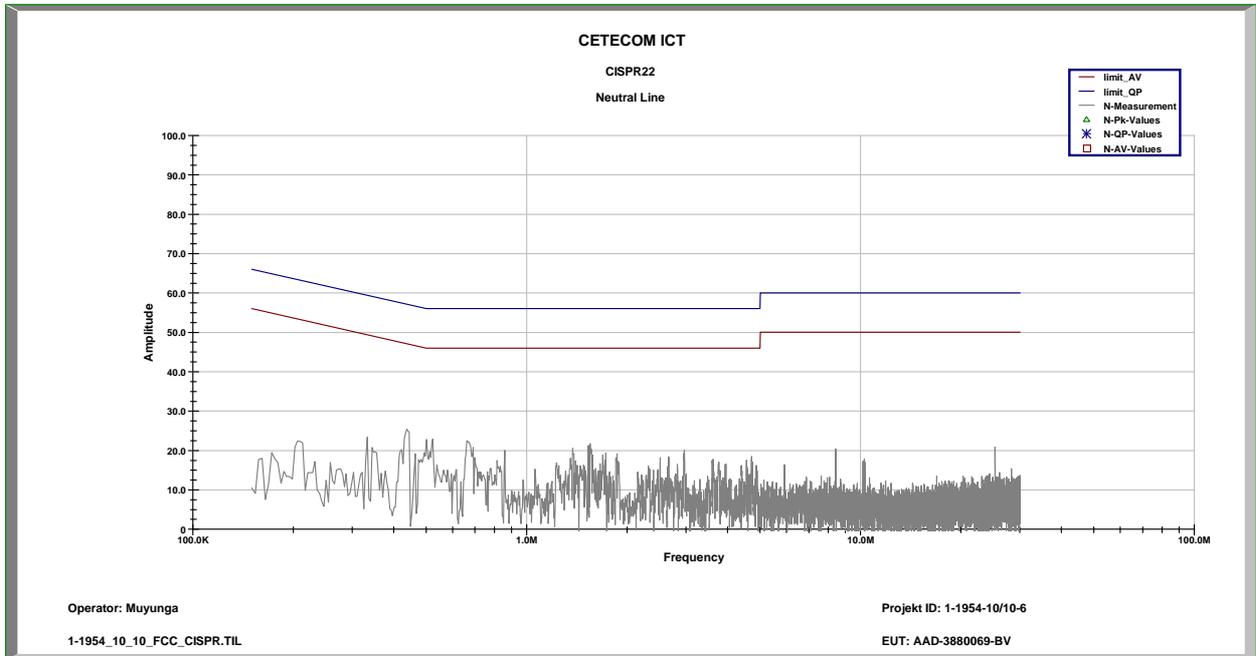


Limits:

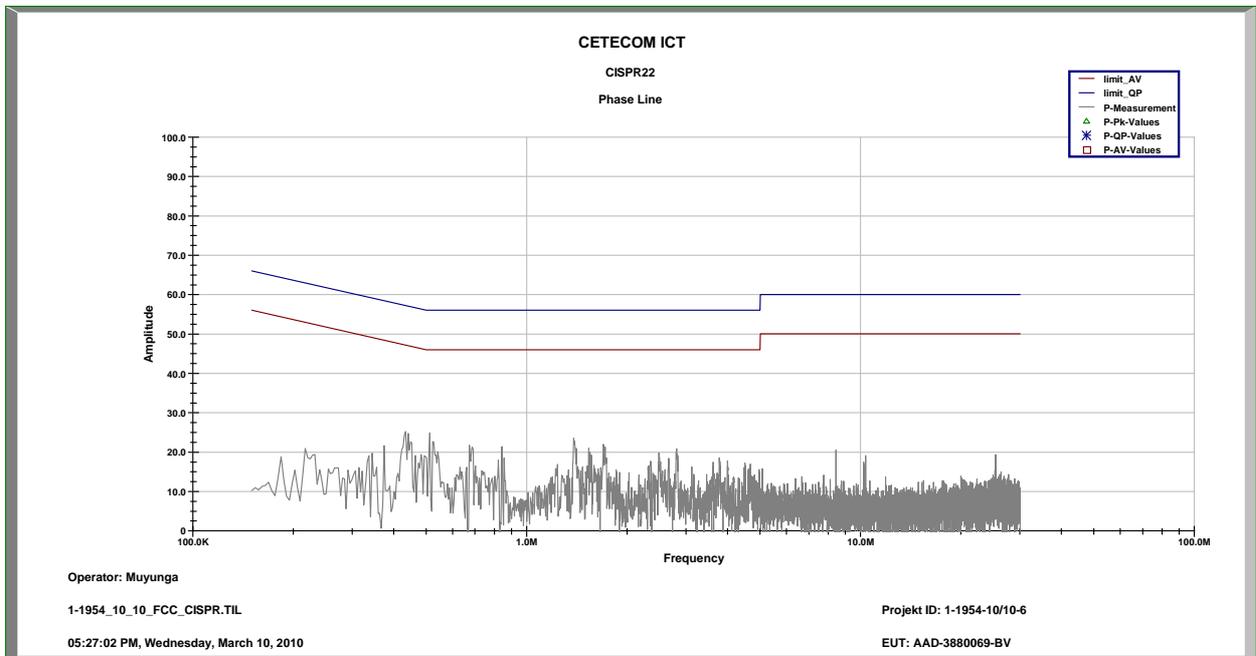
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dBµV/m	30
30 - 88	100 / 40 dBµV/m	3
88 - 216	150 / 43.5 dBµV/m	3
216 - 960	200 / 46 dBµV/m	3
above 960	54 dBµV/m	3

5.16 Conducted Emissions <30 MHz §15.107/207

Plot 1: CISPR 22, Neutral Line



Plot 2: CISPR 22, Phase Line



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

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	Power Dämpfungsglied	8325	Byrd	1530	300001595			
2	Horn Antenne 1-26,5GHz	3115	EMCO	8812-3088	300001032	vIKI!	05.03.2009	05.03.2011
3	Active Loop Antenne	6502	EMCO	2210	300001015	ne		
4	Absorberhalle		MWB	87400/02	300000996			
5	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
6	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
7	Hochpassfilter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		
8	Hochpassfilter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
9	PSA-Spektrumanalysator 3 Hz - 26,5 GHz	E4440A	Agilent Vertr. Bad Hom	MY48250080	300003812	k	05.08.2008	05.08.2010
10	Microwave Analog Signal Generator	N5183A	Agilent Vertr. Bad Hom	MY47420220	300003813	k	06.08.2008	06.08.2010
11	EMI Preselector 9kHz - 1 GHz	N9039A	Agilent Vertr. Bad Hom	MY48260003	300003825	vIKI!	19.08.2008	19.08.2010
12	TRILOG Super Breitband Antenne	VULB9163	Schwarzbeck	371	300003854	vIKI!	17.12.2008	17.12.2010
13	High Pass Filter	VHF-3500+	Mini Circuits	-/-	400000193	ne		
14	Netzgerät 0 – 32V	1108-32	Heiden	1802	300001383	Ve	13.05.2007	13.05.2010
15	Klimaschrank	VT 4002	Heraeus Voetsch	521/83761	300002326	Ve	28.05.2009	28.05.2011
16	Signal Analyzer 20Hz-26,5GHz-150 to + 30 DBM	FSiQ26	R&S	835111/0004	300002678	Ve	06.01.2009	06.01.2011
17	Power Meter	E4419B	HP Meßtechnik	GP39510924	300002627	vIKI!	27.08.2008	27.08.2011

No.		Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kal. Art	Last Calibration	Next Calibration
1	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	30000368	g		
2	50	Netzgerät	6032A	HP Meßtechnik	2920A04466	30000580	k	06.01.2009	06.01.2011
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	k	03.09.2001	03.09.2003
4	n. a.	EMI- Messempfänger	ESCI 1166.5950.03	R&S	100083	300003312	k	08.01.2010	08.01.2012
5	n. a.	Analysator- Referenz-System (Harmonics u. Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	06.06.2007	06.06.2009
6	n. a.	Amplifier	JS42- 00502650- 28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antennenmast	Model 2175	ETS- LINDGREN	64762	300003745	izw		
8	n. a.	Steuergerät	Model 2090	ETS- LINDGREN	64672	300003746	izw		
9	n. a.	Interface-Box für Drehtisch	Model 105637	ETS- LINDGREN	44583	300003747	izw		
10	n. a.	Breitbandantenne	VULB9163	Schwarzbeck	295	300003787	k	01.04.2008	01.04.2010
11	n. a.	Spectrum- Analyzer	FSU26	R&S	200809	300003874	k	08.01.2010	08.01.2012