



Accredited testing-laboratory

DAR registration number: DAT-P-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. : 1-1065-52-06/09
Type identification : AAD-3880043-BV
Applicant : Sony Ericsson Mobile Communications AB
FCC ID : PY7A3880043
IC Certification No : 4170B-A3880043
Test standards : 47 CFR Part 15
RSS - 210 Issue 7

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1 General information

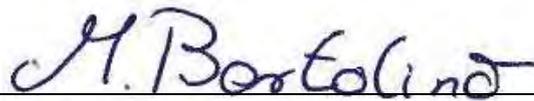
1.1 Notes

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:

2009-09-22

Marco Bertolino



Date

Name

Signature

Technical responsibility for area of testing:

2009-09-22

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: DAT-P-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:	Mobilvägen 10
Town:	22188 Lund
Country:	Sweden
Telephone:	+46-46-19-3000
Fax:	+46-10-800-2441
Contact:	Peter Lindeborg
E-mail:	peter.lindeborg@sonyericsson.com
Telephone:	+46-10-802-43 68

1.4 Application details

Date of receipt of order:	2009-08-14
Date of receipt of test item:	2009-09-15
Date of start test:	2009-09-16
Date of end test:	2009-09-18
Persons(s) who have been present during the test:	-/-

2 Test standard/s

47 CFR Part 15

RSS - 210 Issue 7

Title 47 of the Code of Federal Regulations; Chapter I-
Federal Communications Commission
subchapter A - general, Part 15-Radio frequency devices

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:	Mobilvägen 10
Town:	22188 Lund
Country:	Sweden

3.1.1 Test item

Kind of test item :	Mobile Phone 850/900/1800/1900/UMTS /HSDPA/HSUPA/ BT2.0+EDR, A-GPS, FM Rx, WLAN
Type identification :	AAD-3880043-BV
S/N serial number :	Radiated: Sample 1: CB511DSBL4 Sample 2: CB511DSBNR Conducted: Sample 1: CB511DSBPD Sample 2: CB511DSBPB
HW hardware status :	API
SW software status :	R1AA037
Frequency Band [MHz] :	ISM band 2.400 - 2.483,5 (2412 – 2462 MHz)
Type of Modulation :	BPSK (DSSS) & 64-QAM* (OFDM)
Number of channels :	11
Antenna :	Integrated PCB antenna (For more information → please take a look at the sub clause 8 - photos of the EUT)
Power Supply :	4.0 / 115 V DC by power supply / battery BST-41+AC/DC charger
Temperature Range :	-20 °C to +55 °C

*Note: Pilot carrier QPSK

Max. power radiated: 14.18 dBm DSSS mode
Max. power conducted: 14.69 dBm DSSS mode

Max. power radiated: 22.40 dBm OFDM mode
Max. power conducted: 22.91 dBm OFDM mode

FCC ID: PY7A3880043
IC: 4170B-A3880043

3.1.2 Additional EUT information For IC Canada (appendix 2)

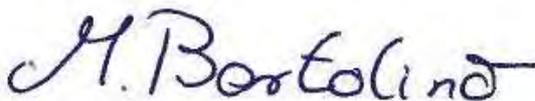
IC Registration Number:	4170B-A3880043
Model Name:	AAD-3880043-BV
Manufacturer (complete Address):	Sony Ericsson Mobile Communications AB Mobilvägen 10 22188 Lund Sweden
Tested to Radio Standards Specification (RSS) No.:	RSS-210 Issue 7
Open Area Test Site Industry Canada Number:	IC 3462C-1
Frequency Range (or fixed frequency) [MHz]:	ISM band 2.400 - 2.483,5 (2412 – 2462 MHz)
RF: Power [W] (max):	DSSS - mode: Rad. EIRP: 26.18 mW Conducted : 29.44 mW OFDM - mode: Rad. EIRP: 173.78 mW Conducted : 195.43 mW
Antenna Type:	Integrated PCB antenna (For more information → please take a look at the sub clause 8 - photos of the EUT)
Field Strength [dBμV/m in 3m]:	-75.1
Occupied Bandwidth (99% BW) [kHz]:	DSSS: 18.23 OFDM: 18.99
Type of Modulation:	BPSK (DSSS) & 64-QAM* (OFDM)
Emission Designator (TRC-43):	18M2G1D (DSSS) 19M0G7D (OFDM)
Transmitter Spurious (worst case) [dBμV/m in 3m]:	46.89
Receiver Spurious (worst case) [dBμV/m in 3m]:	47.03

*Note: Pilot carrier QPSK

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: Marco Bertolino

Date: 2009-09-22

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-3880043-BV**
3. MANUFACTURER: **Sony Ericsson Mobile Communications AB**
4. TYPE OF EVALUATION: **N / A**

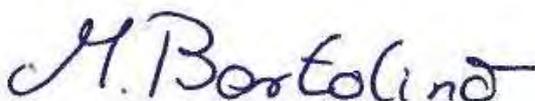
Declaration of RF Exposure Compliance

ATTESTATION:

I attest that the information provided in this test report 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. (FH) Marco Bertolino
Title: Engineer
Company: Cetecom ICT Services GmbH

Signature:



Date: 2009-09-22

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	21
Nominal Humidity	H _{nom}	%	62
Nominal Power Source	V _{nom}	V	4.0 / 115

Type of power source: DC by power supply / battery BST-41+AC/DC 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	PASSED	2009-09-22	-/-

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.

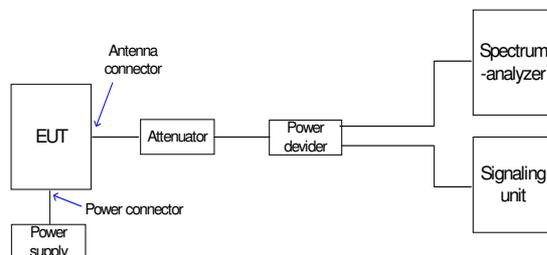
Antennas are confirmed with ANSI C63.2-1996 item 15.

- 9 kHz - 150 MHz: Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.
- 150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, passive loop antenna.
- 30 MHz - 200 MHz: Quasi Peak measurement, 120 kHz Bandwidth, biconical antenna
- 200MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, log periodic antenna
- >1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide 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.



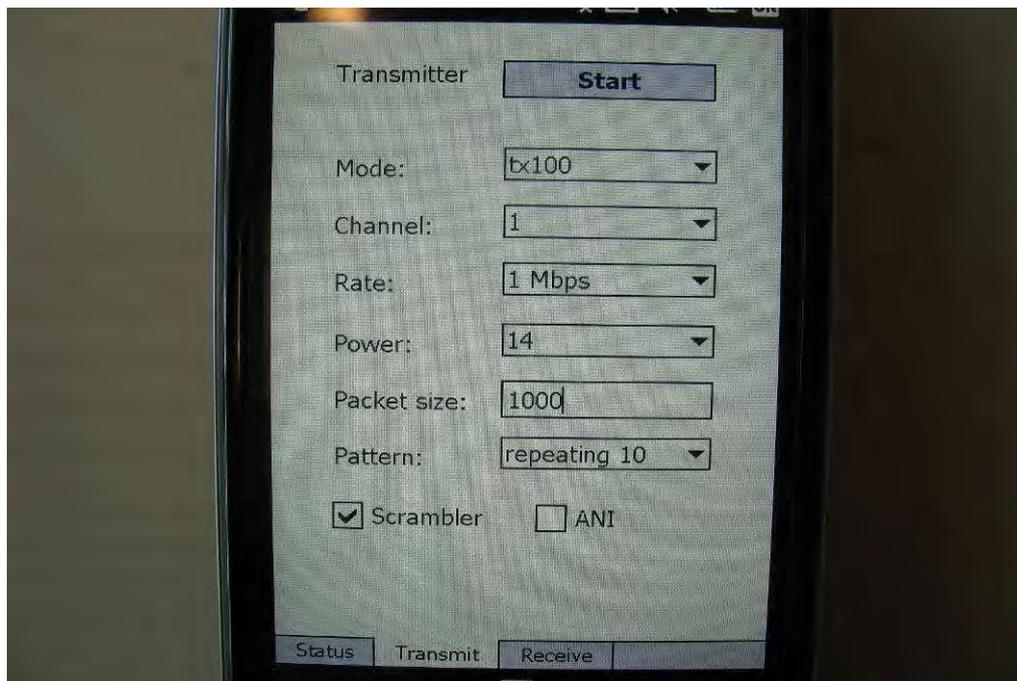
5.2 Referenced Documents

WLAN test mode description

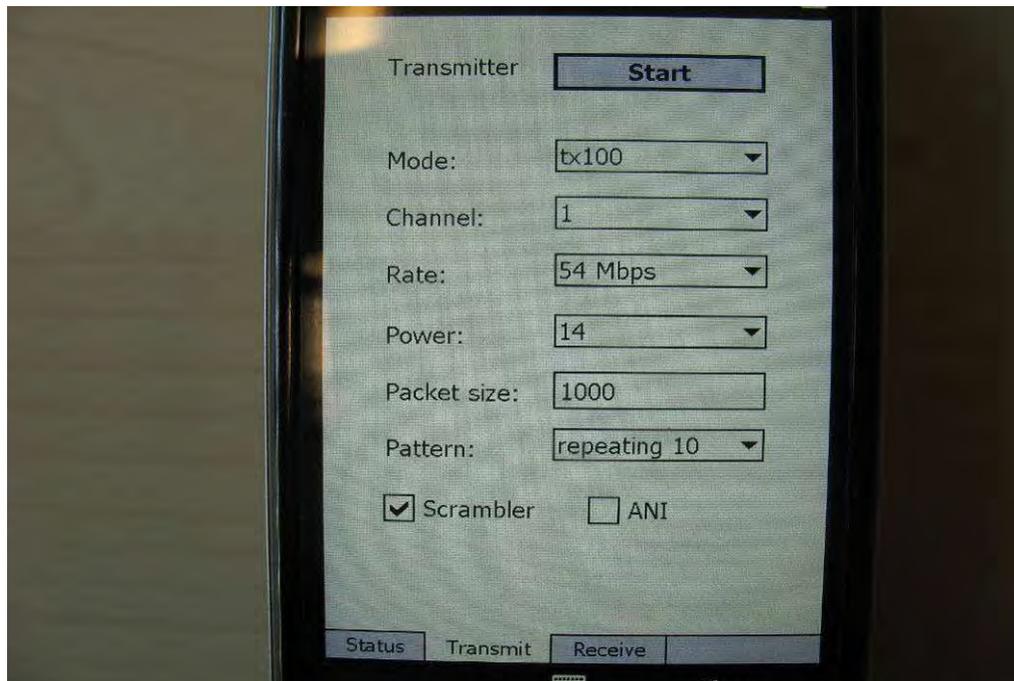
Document number: 4/1050-FCP 119 0763 Uen
Revision: PA2
Date: 2009-08-25

5.3 Additional comments

DSSS – mode:



OFDM – mode:



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.

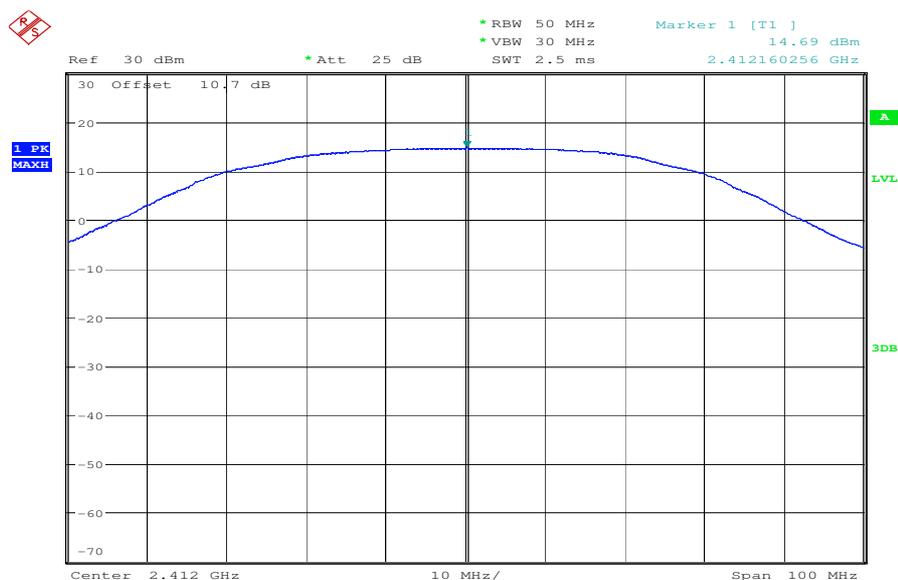
DSSS – mode	Lowest channel 2412 MHz	Mid channel 2437 MHz	Highest channel 2462 MHz
Conducted power [dBm] <i>(measured)</i>	14.69	14.49	14.33
Radiated power [dBm] <i>(measured)</i>	14.18	13.74	13.67
Gain [dBi] <i>(calculated)</i>	-0.51	-0.75	-0.66

Note:

Measurement settings: RBW 50 MHz
 VBW 30 MHz
 Detector Positive Peak
 Span 100 MHz
 Sweep Time auto
 Trace mode Max hold

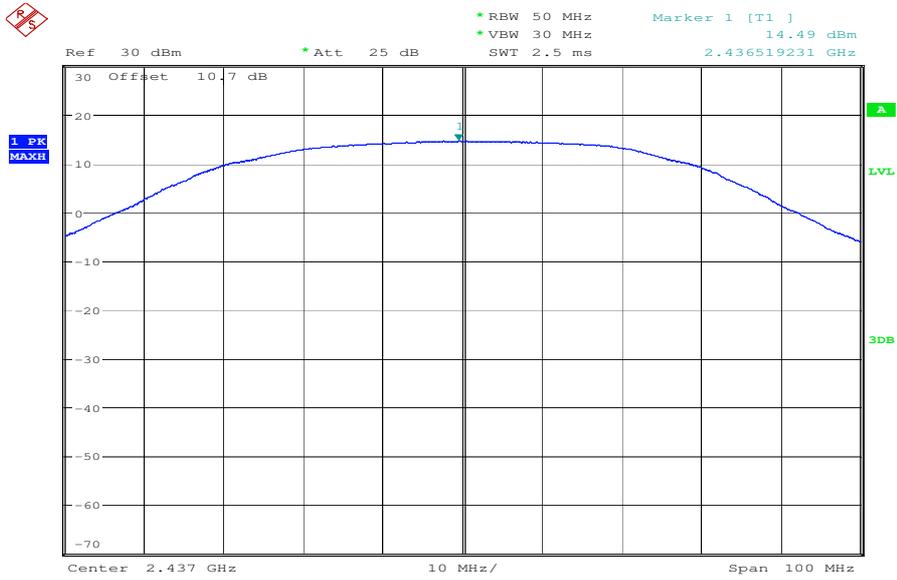
DSSS – mode: (conducted plots)

Plot 1:



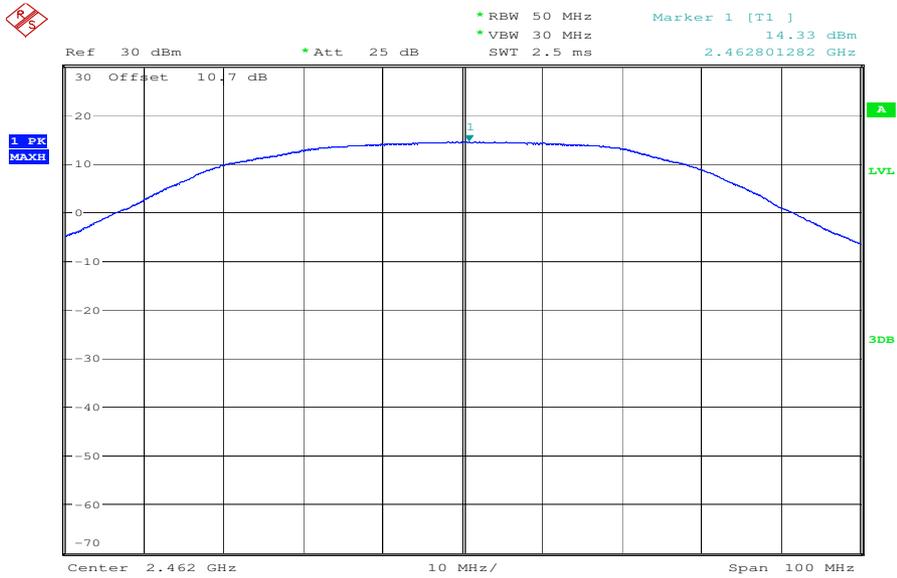
Date: 16.SEP.2009 07:43:19

Plot 2:



Date: 16.SEP.2009 08:14:38

Plot 3:

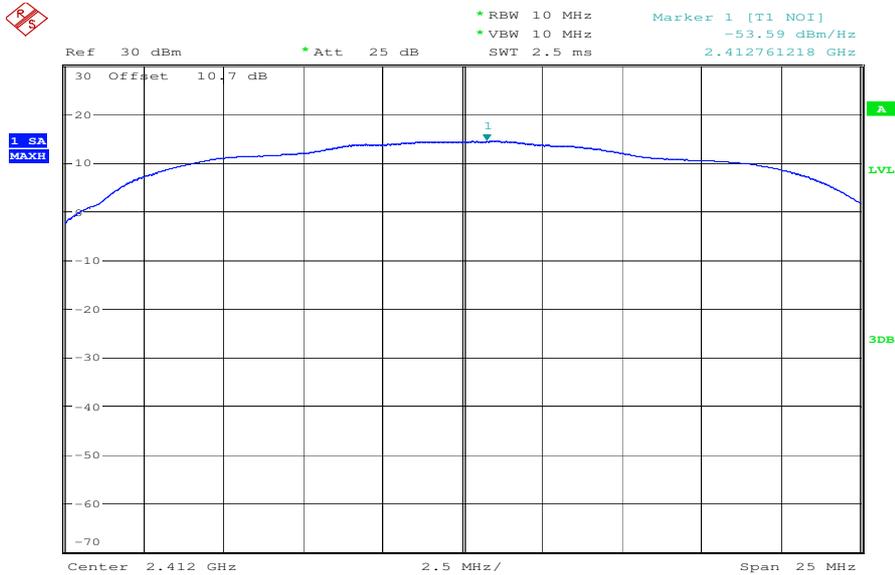


Date: 16.SEP.2009 08:16:35

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

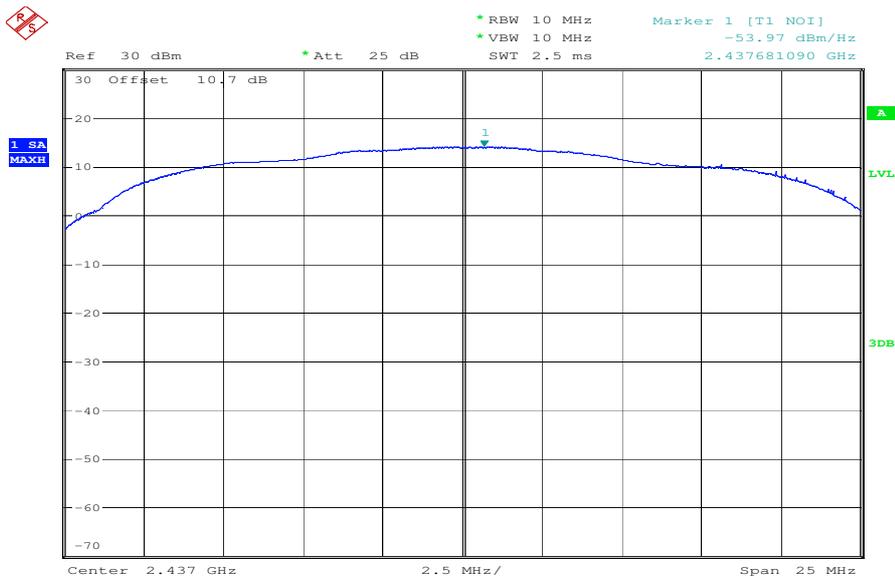
DSSS – mode:

Plot 1: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)



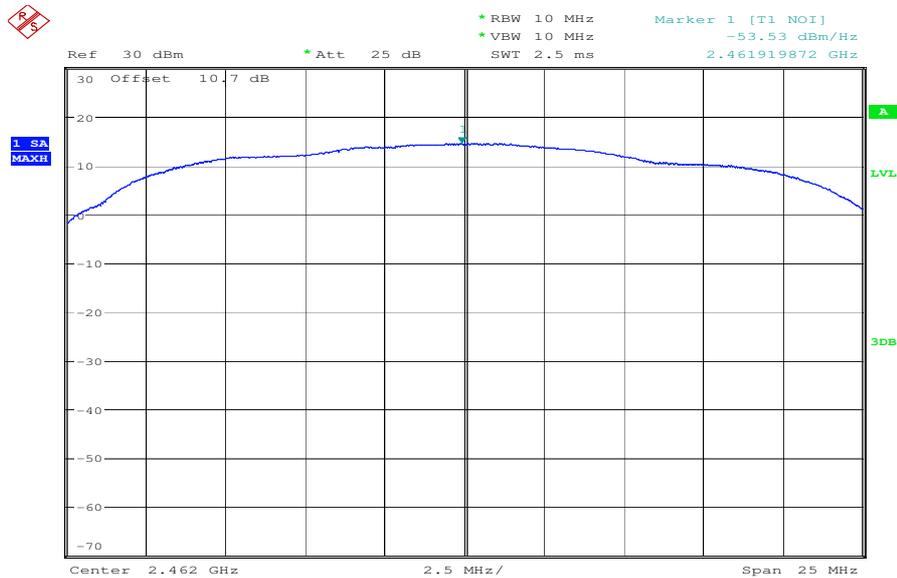
Date: 16.SEP.2009 06:57:41

Plot 2: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)



Date: 16.SEP.2009 07:00:41

Plot 3: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)



Date: 16.SEP.2009 07:02:29

Results:
 Plot 1: Power density: -53.59 dBm / Hz = -18.79 dBm / 3 kHz (conducted)
 Plot 2: Power density: -53.97 dBm / Hz = -19.17 dBm / 3 kHz (conducted)
 Plot 3: Power density: -53.53 dBm / Hz = -18.73 dBm / 3 kHz (conducted)

Correction factor from dBm/Hz to dBm/3 kHz is +34.8 dB

Plot 1: Power density: -18.79 dBm / 3 kHz = -19.30 dBm / 3 kHz (radiated)
 Plot 2: Power density: -19.17 dBm / 3 kHz = -19.92 dBm / 3 kHz (radiated)
 Plot 3: Power density: -18.73 dBm / 3 kHz = -19.39 dBm / 3 kHz (radiated)

Note:

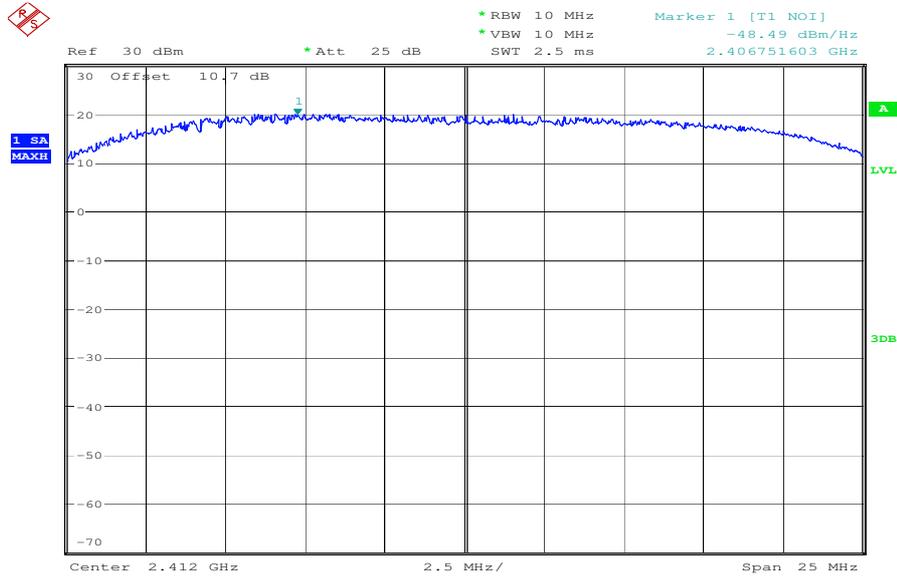
Measurement settings:
 RBW 10 MHz
 VBW 10 MHz
 Detector Sample
 Span 25 MHz
 Sweep Time auto
 Trace mode Max Hold
 Marker Marker Noise Function

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
-----------------------------------	---

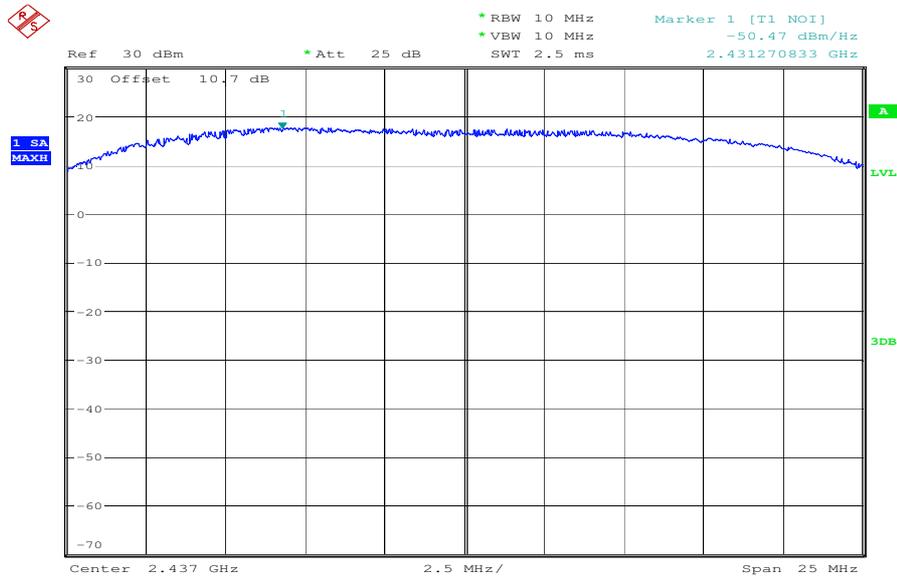
OFDM – mode:

Plot 1: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)



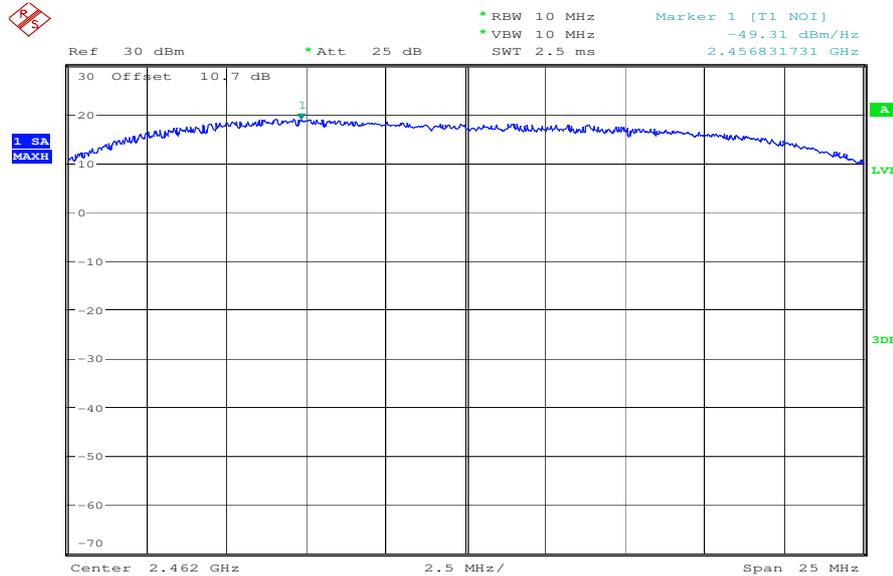
Date: 16.SEP.2009 07:09:22

Plot 2: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)



Date: 16.SEP.2009 07:07:42

Plot 3: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)



Date: 16.SEP.2009 07:05:26

Results:
 Plot 1: Power density: -48.49 dBm / Hz = -13.69 dBm / 3 kHz (conducted)
 Plot 2: Power density: -50.47 dBm / Hz = -15.67 dBm / 3 kHz (conducted)
 Plot 3: Power density: -49.31 dBm / Hz = -14.51 dBm / 3 kHz (conducted)

Correction factor from dBm/Hz to dBm/3 kHz is +34.8 dB

Plot 1: Power density: -13.69 dBm / 3 kHz = -14.20 dBm / 3 kHz (radiated)
 Plot 2: Power density: -15.67 dBm / 3 kHz = -16.42 dBm / 3 kHz (radiated)
 Plot 3: Power density: -14.51 dBm / 3 kHz = -15.17 dBm / 3 kHz (radiated)

Note:

Measurement settings:
 RBW 10 MHz
 VBW 10 MHz
 Detector Sample
 Span 25 MHz
 Sweep Time auto
 Trace mode Max Hold
 Marker Marker Noise Function

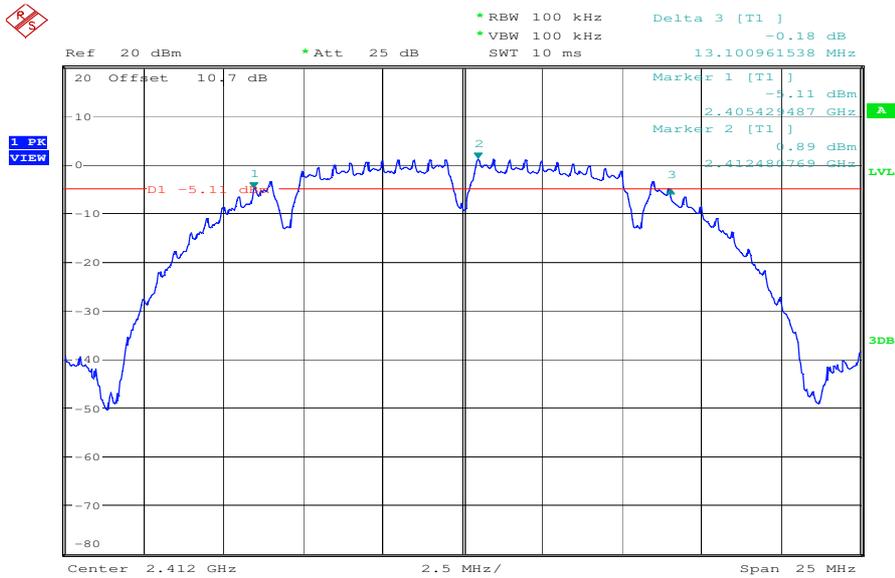
Limits:

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)

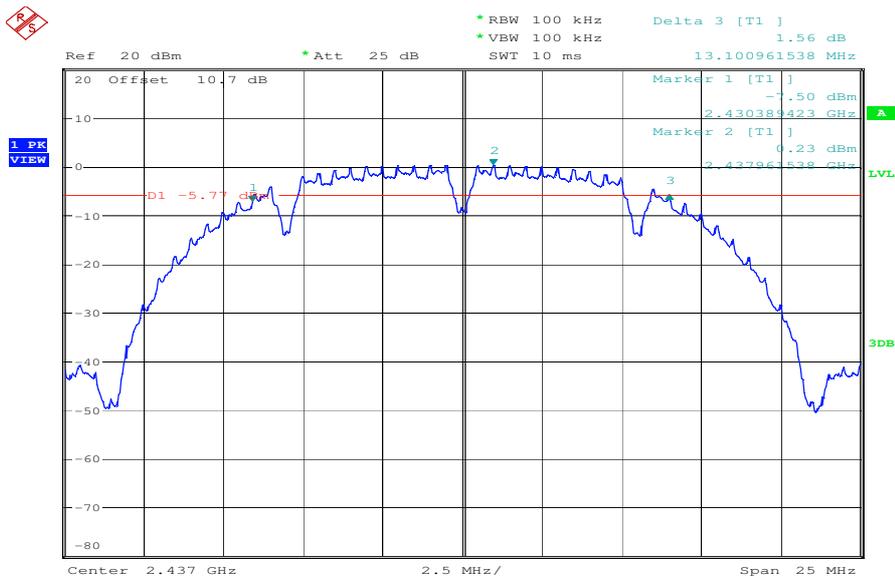
DSSS – mode:

Plot 1:



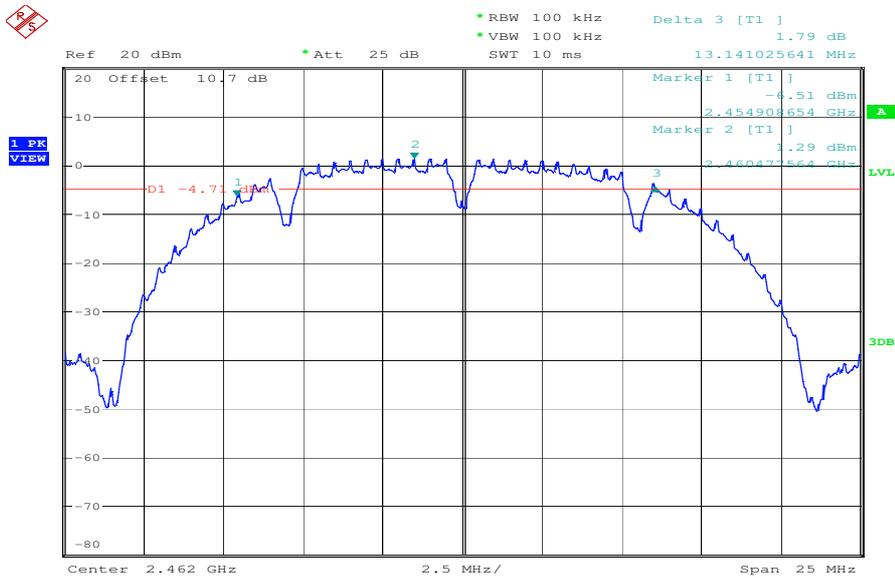
Date: 16.SEP.2009 07:17:12

Plot 2:



Date: 16.SEP.2009 07:29:20

Plot 3:



Date: 16.SEP.2009 07:34:47

Results:

Test conditions		6 dB BANDWIDTH [MHz]		
		Lowest channel 2412 MHz	Mid channel 2437 MHz	Highest channel 2462 MHz
T_{nom}	V_{nom}	13.10	13.10	13.14
Measurement uncertainty		±1kHz		

Note:

Measurement settings:

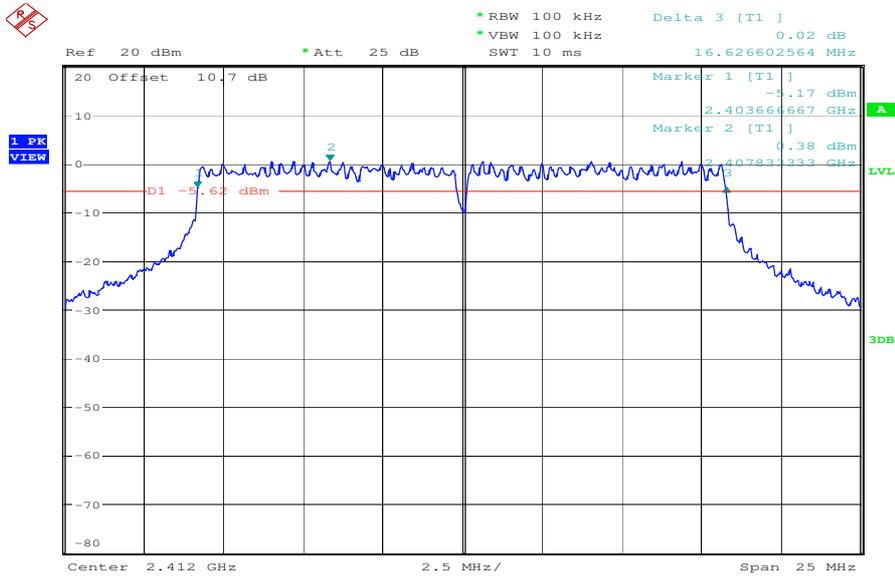
RBW	100 kHz
VBW	100 kHz
Detector	Positive Peak
Span	25 MHz
Sweep Time	auto
Trace mode	View

Limits:

Under normal test conditions only	> 500 kHz
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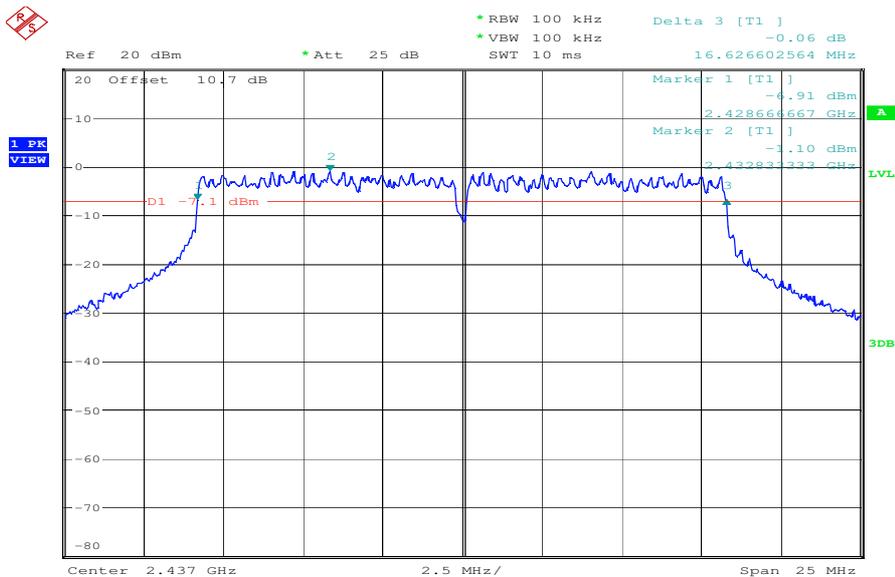
OFDM – mode:

Plot 1:



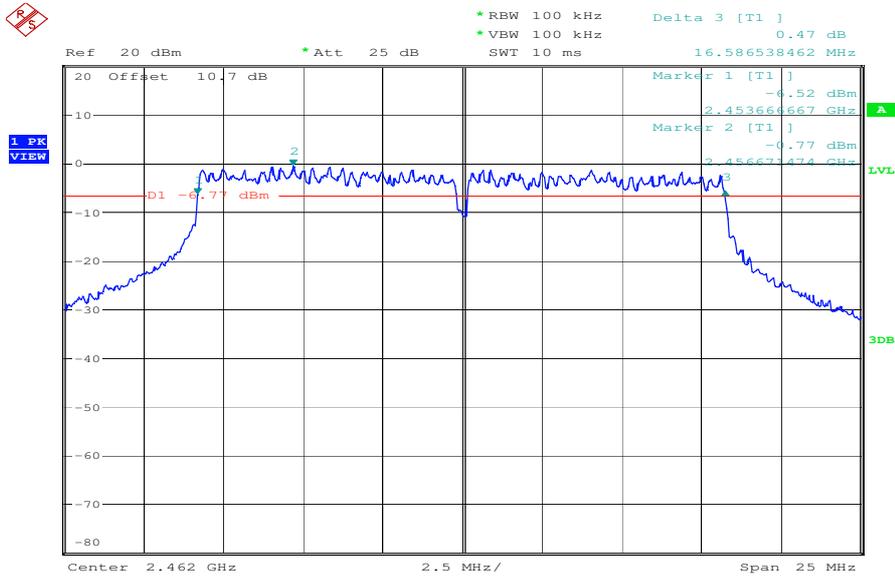
Date: 16.SEP.2009 07:25:56

Plot 2:



Date: 16.SEP.2009 07:32:22

Plot 3:



Date: 16.SEP.2009 07:37:15

Results:

Test conditions		6 dB BANDWIDTH [MHz]		
		Lowest channel 2412 MHz	Mid channel 2437 MHz	Highest channel 2462 MHz
T _{nom}	V _{nom}	16.63	16.63	16.59
Measurement uncertainty		±1kHz		

Note:

Measurement settings:

RBW	100 kHz
VBW	100 kHz
Detector	Positive Peak
Span	25 MHz
Sweep Time	auto
Trace mode	View

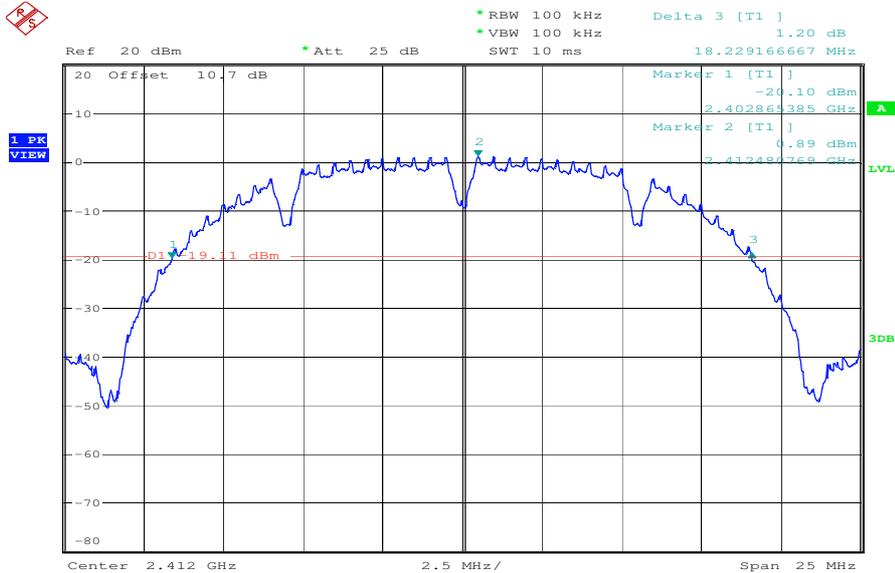
Limits:

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

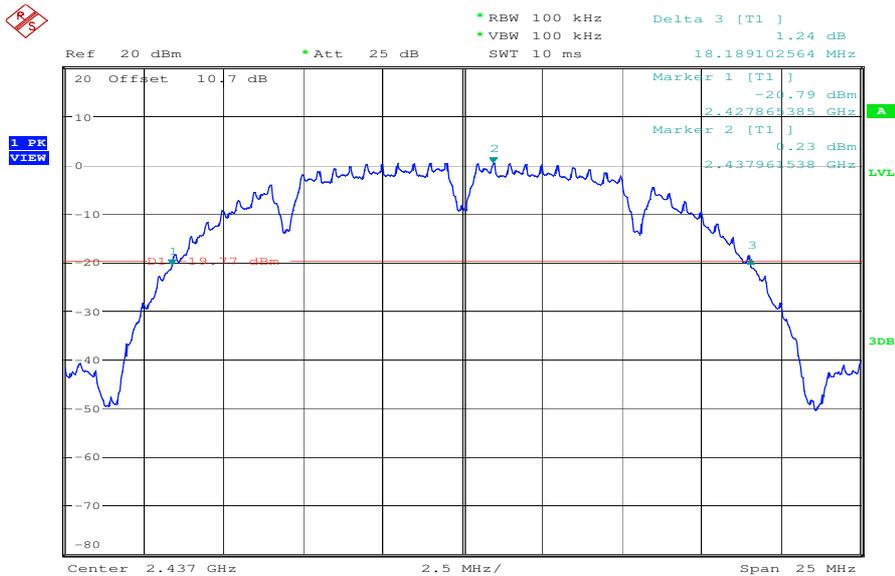
DSSS – mode:

Plot 1:



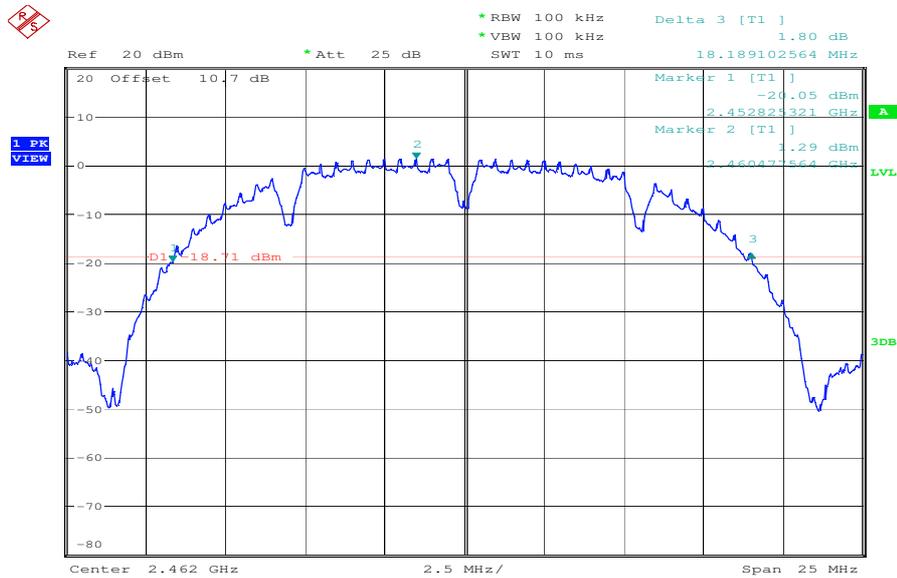
Date: 16.SEP.2009 07:19:27

Plot 2:



Date: 16.SEP.2009 07:29:57

Plot 3:



Date: 16.SEP.2009 07:35:43

Results:

Test conditions		20 dB BANDWIDTH [MHz]		
		Lowest channel 2412 MHz	Mid channel 2437 MHz	Highest channel 2462 MHz
T_{nom}	V_{nom}	18.23	18.19	18.19
Measurement uncertainty		±1kHz		

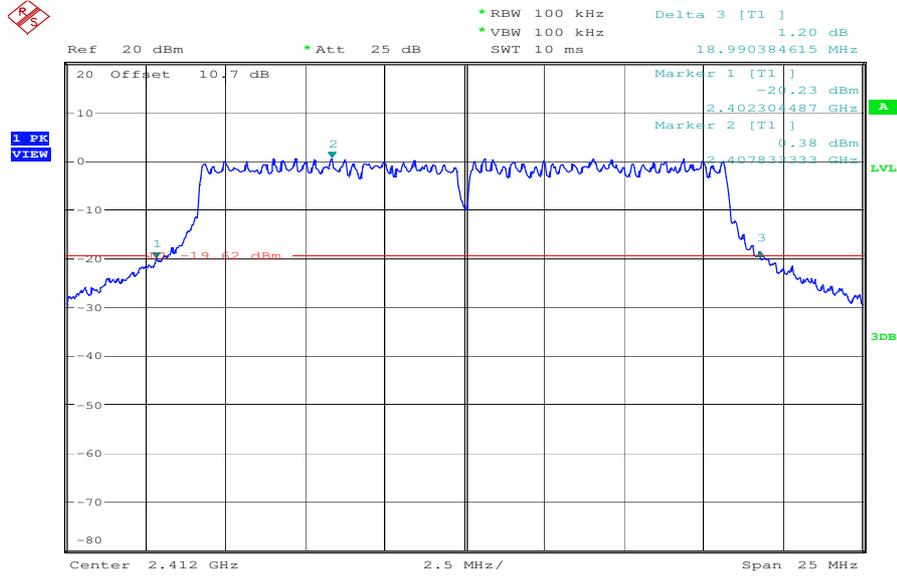
Note:

Measurement settings:

RBW	100 kHz
VBW	100 kHz
Detector	Positive Peak
Span	25 MHz
Sweep Time	auto
Trace mode	View

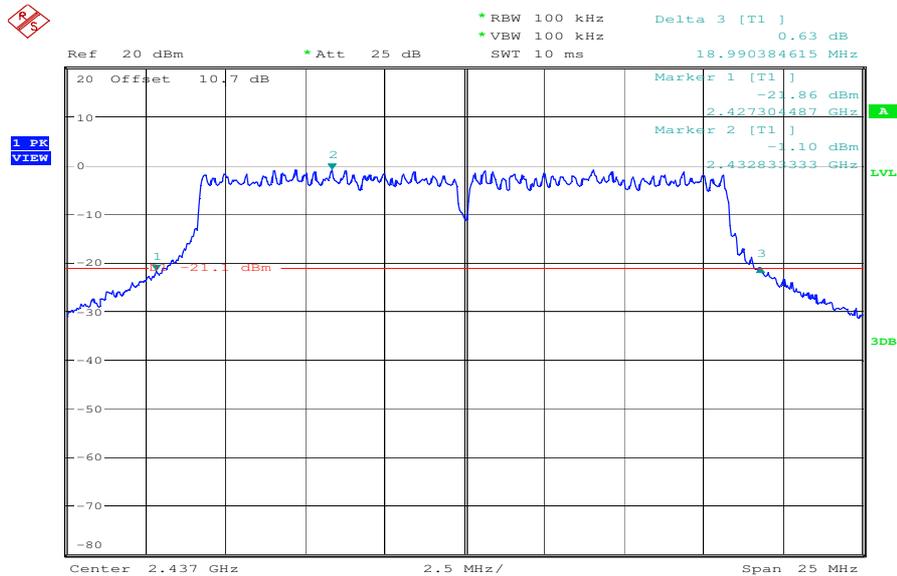
OFDM – mode:

Plot 1:



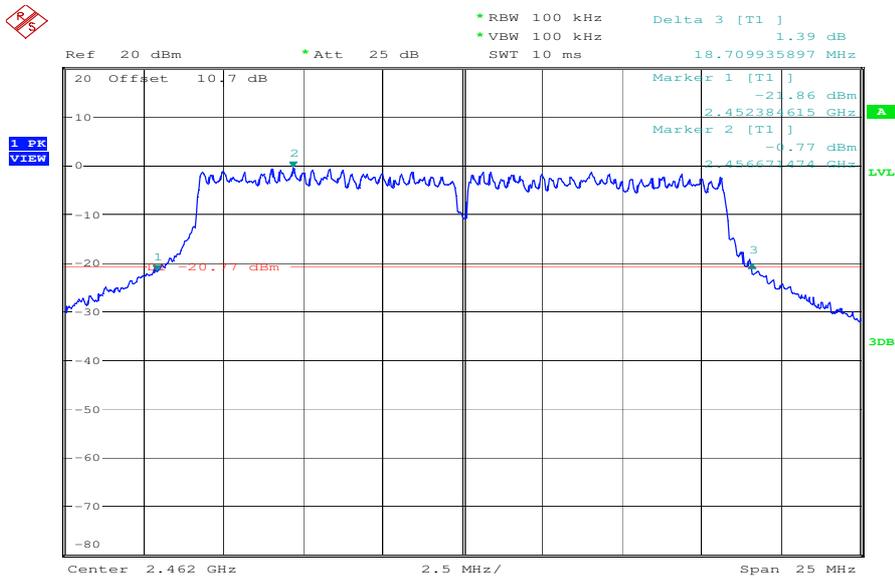
Date: 16.SEP.2009 07:26:48

Plot 2:



Date: 16.SEP.2009 07:32:59

Plot 3:



Date: 16.SEP.2009 07:38:03

Results:

Test conditions		20 dB BANDWIDTH [MHz]		
		Lowest channel 2412 MHz	Mid channel 2437 MHz	Highest channel 2462 MHz
T_{nom}	V_{nom}	18.99	18.99	18.71
Measurement uncertainty		±1kHz		

Note:

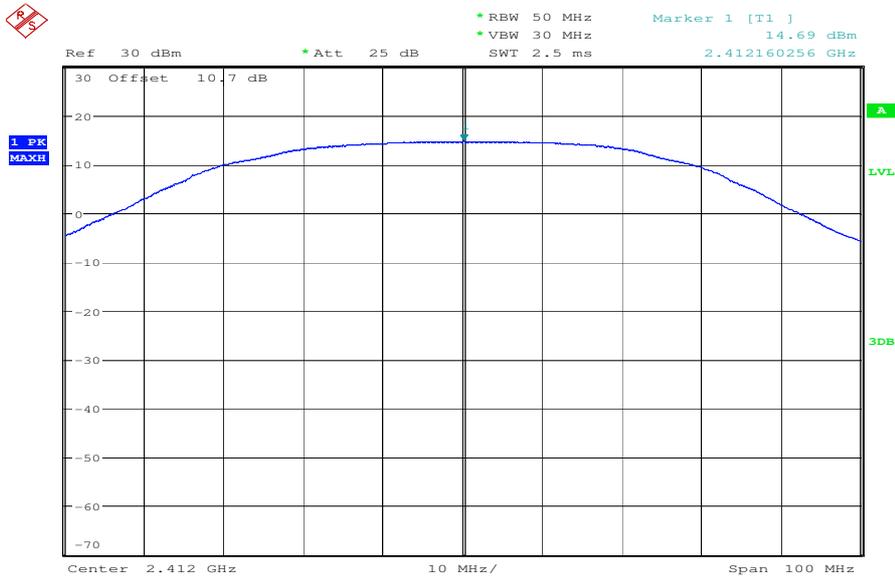
Measurement settings:

- RBW: 100 kHz
- VBW: 100 kHz
- Detector: Positive Peak
- Span: 25 MHz
- Sweep Time: auto
- Trace mode: View

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

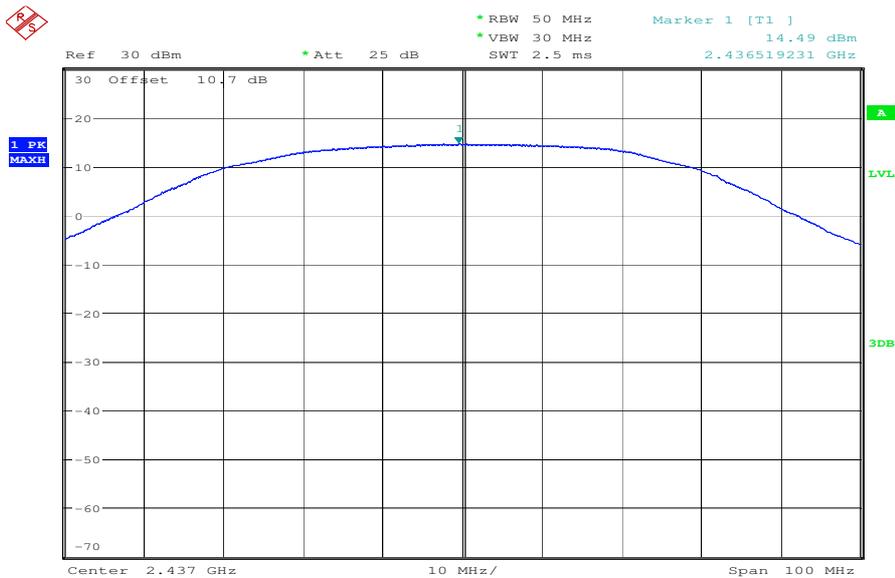
DSSS – mode:

Plot 1:



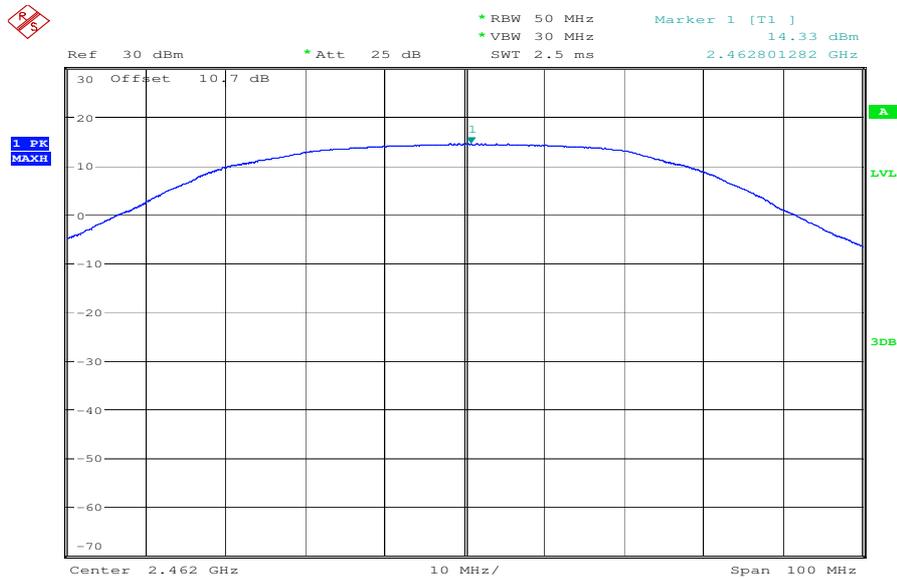
Date: 16.SEP.2009 07:43:19

Plot 2:



Date: 16.SEP.2009 08:14:38

Plot 3:



Date: 16.SEP.2009 08:16:35

Results:

Test conditions		Max. peak output power [dBm]		
		Lowest channel 2412 MHz	Mid channel 2437 MHz	Highest channel 2462 MHz
T _{nom}	V _{nom}	14.69	14.49	14.33
Measurement uncertainty		±3dB		

Note:

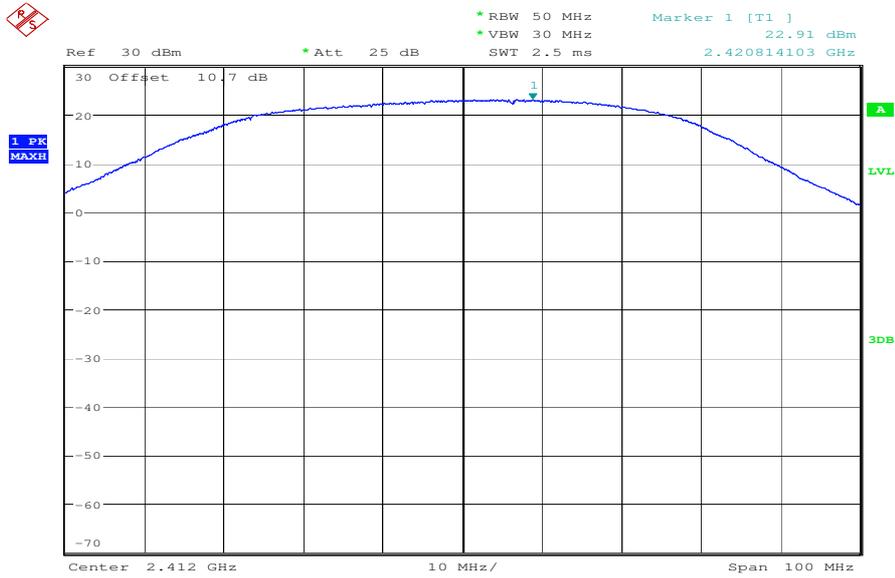
Measurement settings: RBW 50 MHz
 VBW 30 MHz
 Detector Positive Peak
 Span 100 MHz
 Sweep Time auto
 Trace mode Max hold

Limits:

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

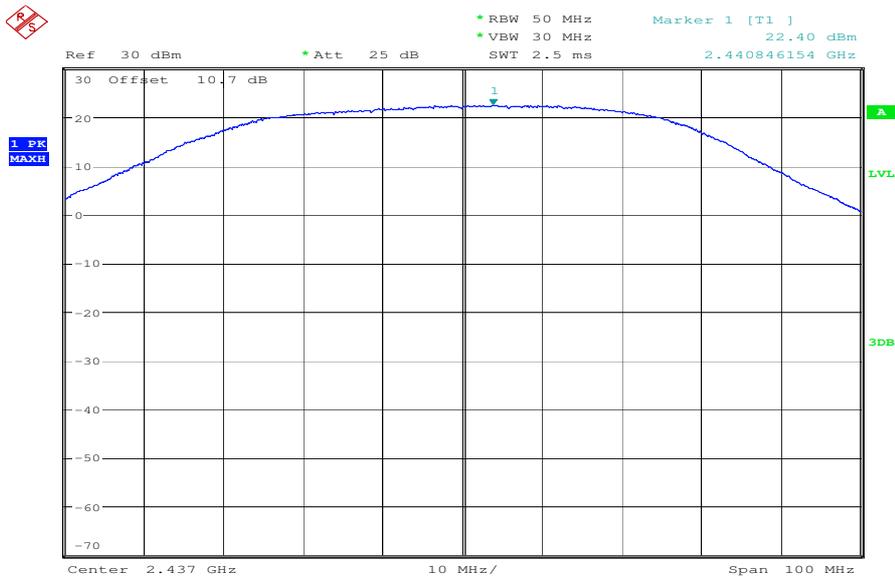
OFDM – mode:

Plot 1:



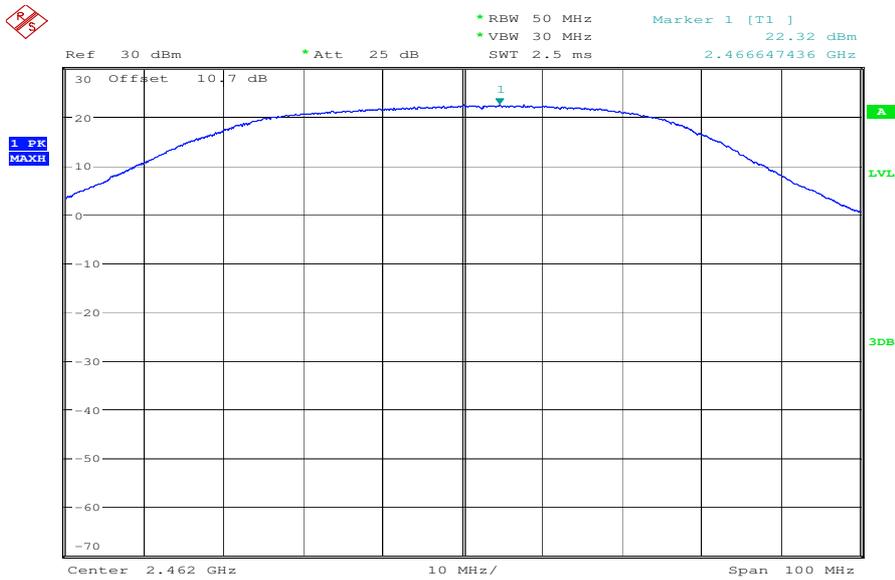
Date: 16.SEP.2009 07:47:06

Plot 2:



Date: 16.SEP.2009 08:15:40

Plot 3:



Date: 16.SEP.2009 08:17:27

Results:

Test conditions		Max. peak output power [dBm]		
		Lowest channel 2412 MHz	Mid channel 2437 MHz	Highest channel 2462 MHz
T_{nom}	V_{nom}	22.91	22.40	22.32
Measurement uncertainty		±3dB		

Note:

Measurement settings: RBW 50 MHz
 VBW 30 MHz
 Detector Positive Peak
 Span 100 MHz
 Sweep Time auto
 Trace mode Max hold

Limits:

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

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: 22.40 dBm (173.78 mW)

calculated at distance of 20 cm:

power density $173.78 \text{ mW} / 4\pi 20^2 \text{ cm}^2 = 0.0346 \text{ mW} / \text{cm}^2$

Limit:

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

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

DSSS

Results:

Test conditions		Max. peak output power EIRP [dBm]		
		Lowest channel 2412 MHz	Mid channel 2437 MHz	Highest channel 2462 MHz
Frequency [MHz]				
T _{nom}	V _{nom}	14.18	13.74	13.67
Measurement uncertainty		±3dB		

OFDM

Results:

Test conditions		Max. peak output power EIRP [dBm]		
		Lowest channel 2412 MHz	Mid channel 2437 MHz	Highest channel 2462 MHz
Frequency [MHz]				
T _{nom}	V _{nom}	22.40	21.65	21.66
Measurement uncertainty		±3dB		

Note:

Measurement settings:

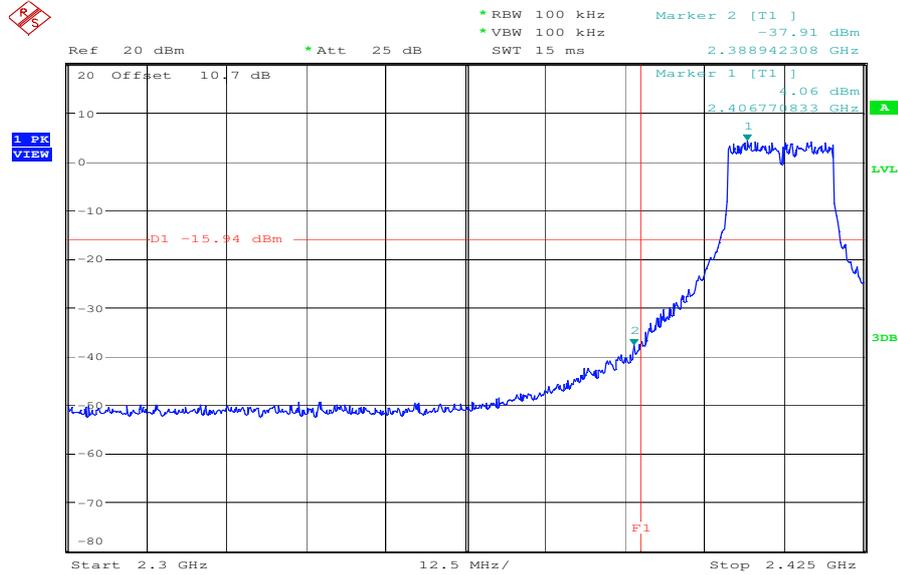
RBW	50 MHz
VBW	30 MHz
Detector	Positive Peak
Span	100 MHz
Sweep Time	auto
Trace mode	Max hold

Limits:

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

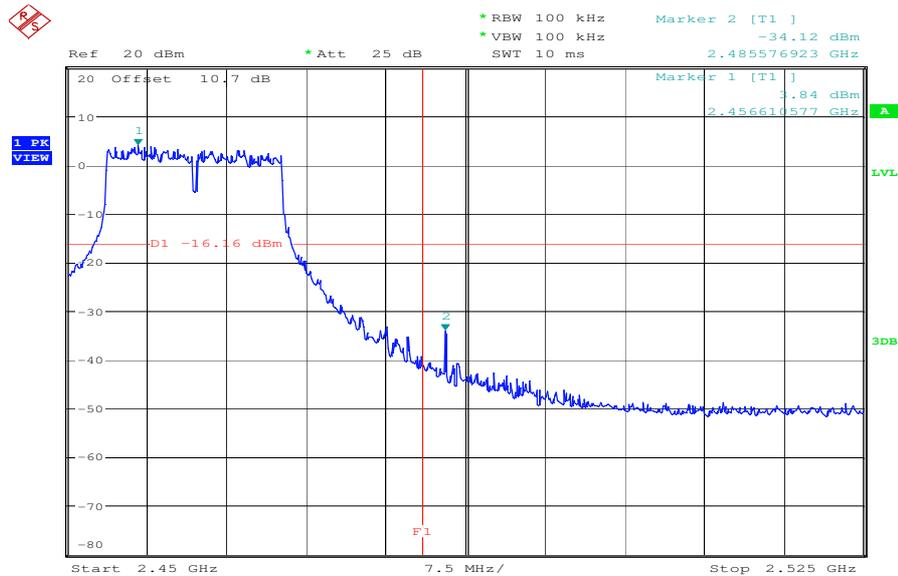
OFDM – mode:

Plot 3: lowest channel - 2412 MHz, OFDM mode – 54 MBit/s



Date: 16.SEP.2009 08:23:33

Plot 4: highest channel - 2462 MHz, OFDM mode – 54 MBit/s



Date: 16.SEP.2009 08:32:28

Note:

Measurement settings:

RBW	100 kHz
VBW	100 kHz
Detector	Positive Peak
Sweep Time	auto
Trace mode	View

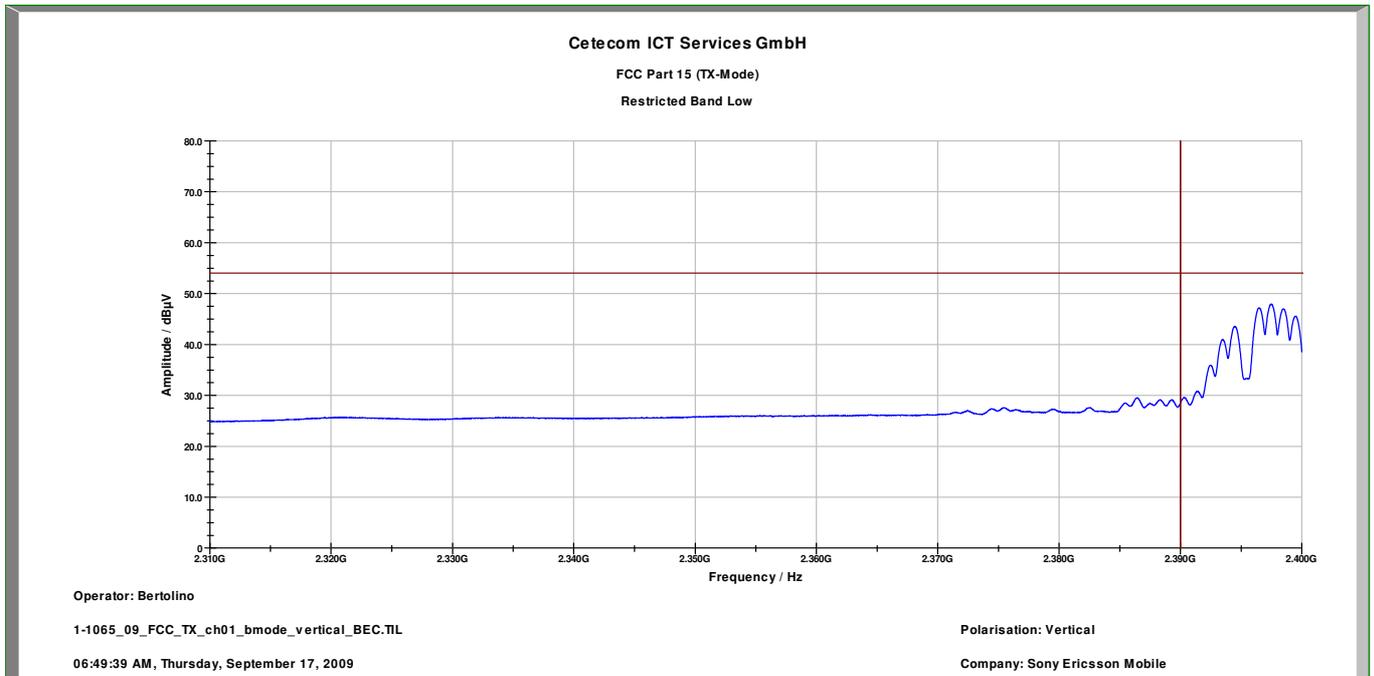
Limits:

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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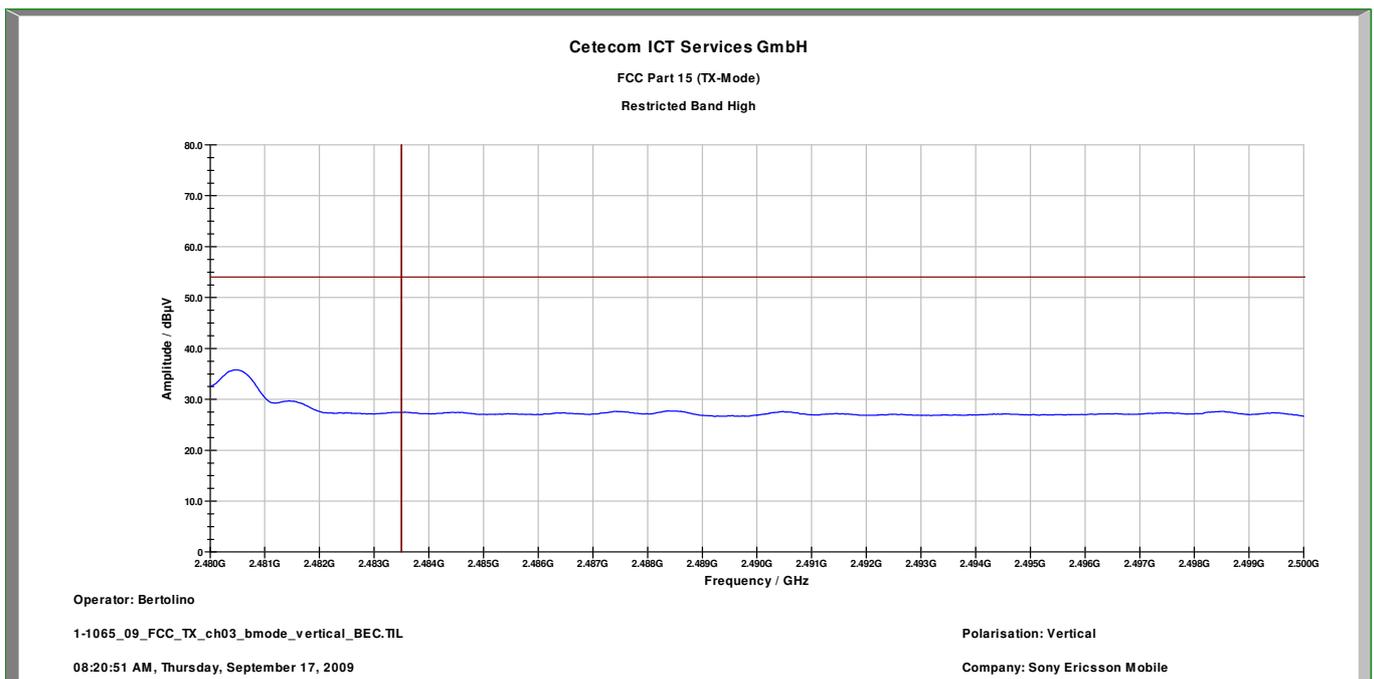
5.11 Band-edge compliance of radiated emissions §15.205

DSSS – mode:

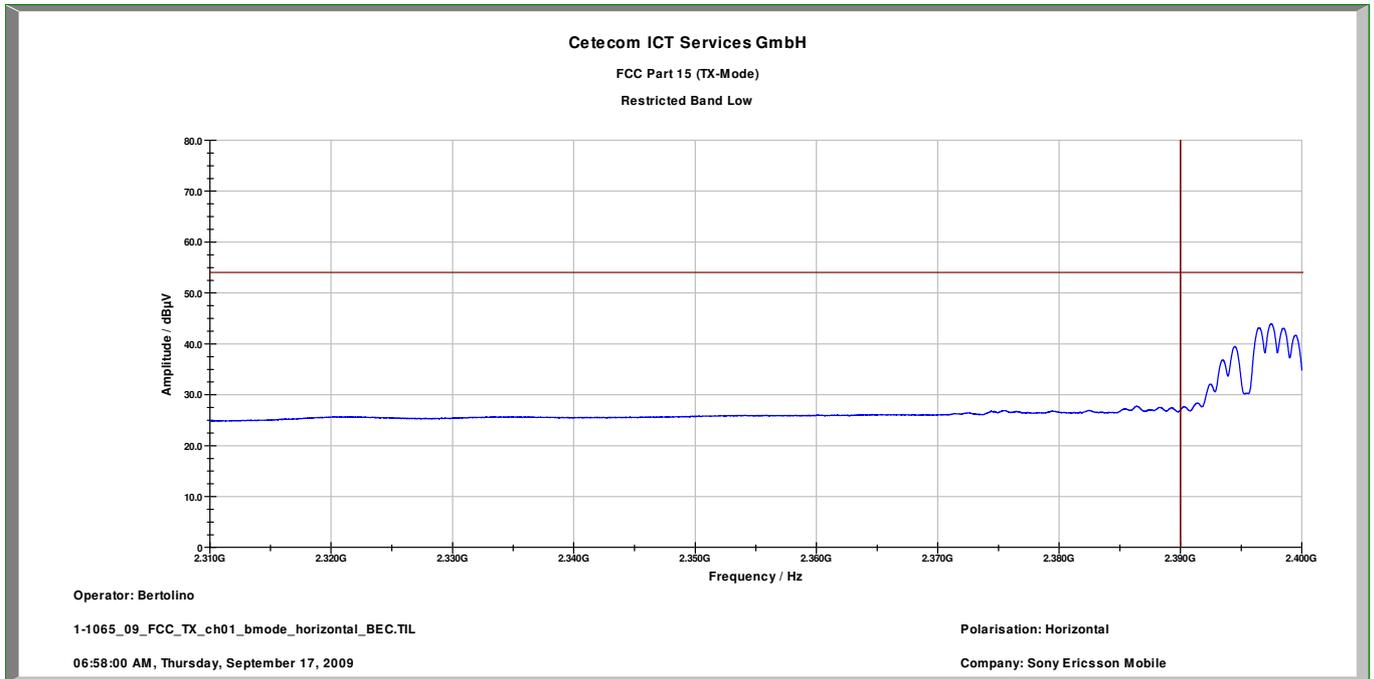
Plot 1: lowest channel - 2412 MHz, DSSS mode – 1 MBit/s, vertical polarization



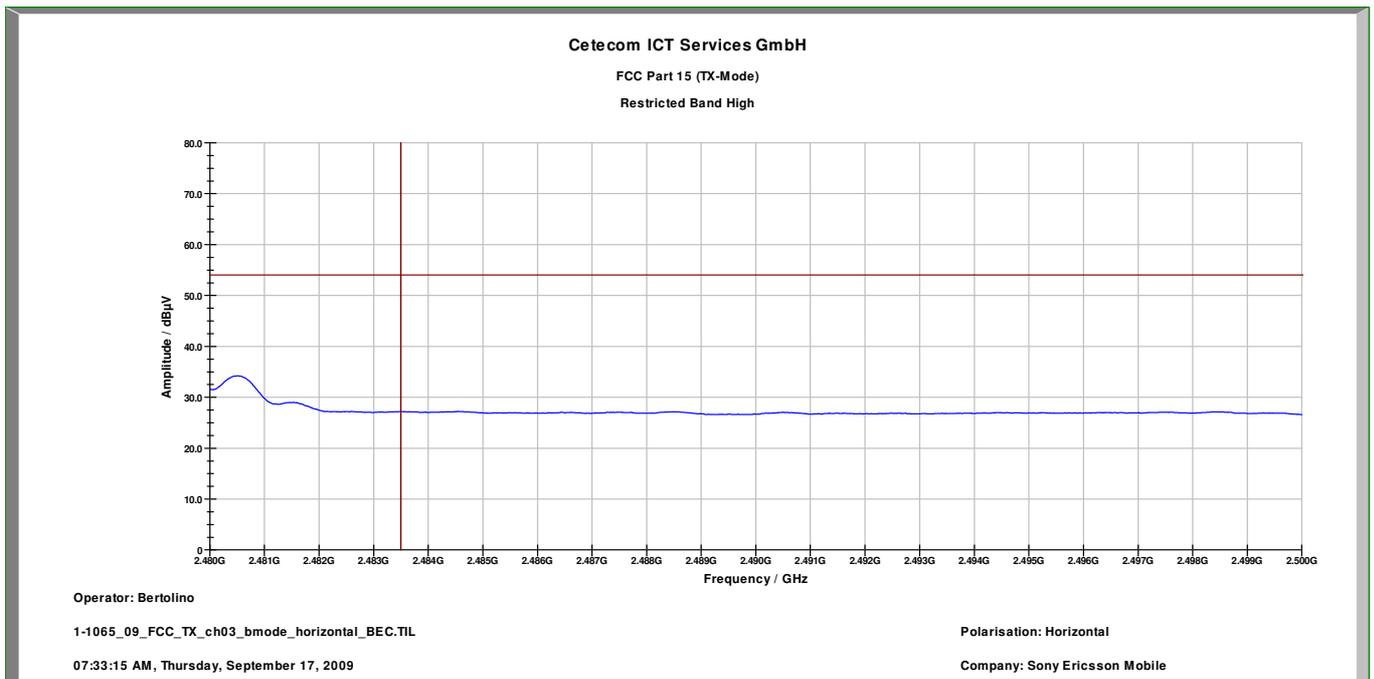
Plot 2: highest channel - 2462 MHz, DSSS mode – 1 MBit/s, vertical polarization



Plot 3: lowest channel - 2412 MHz, DSSS mode – 1 MBit/s, horizontal polarization

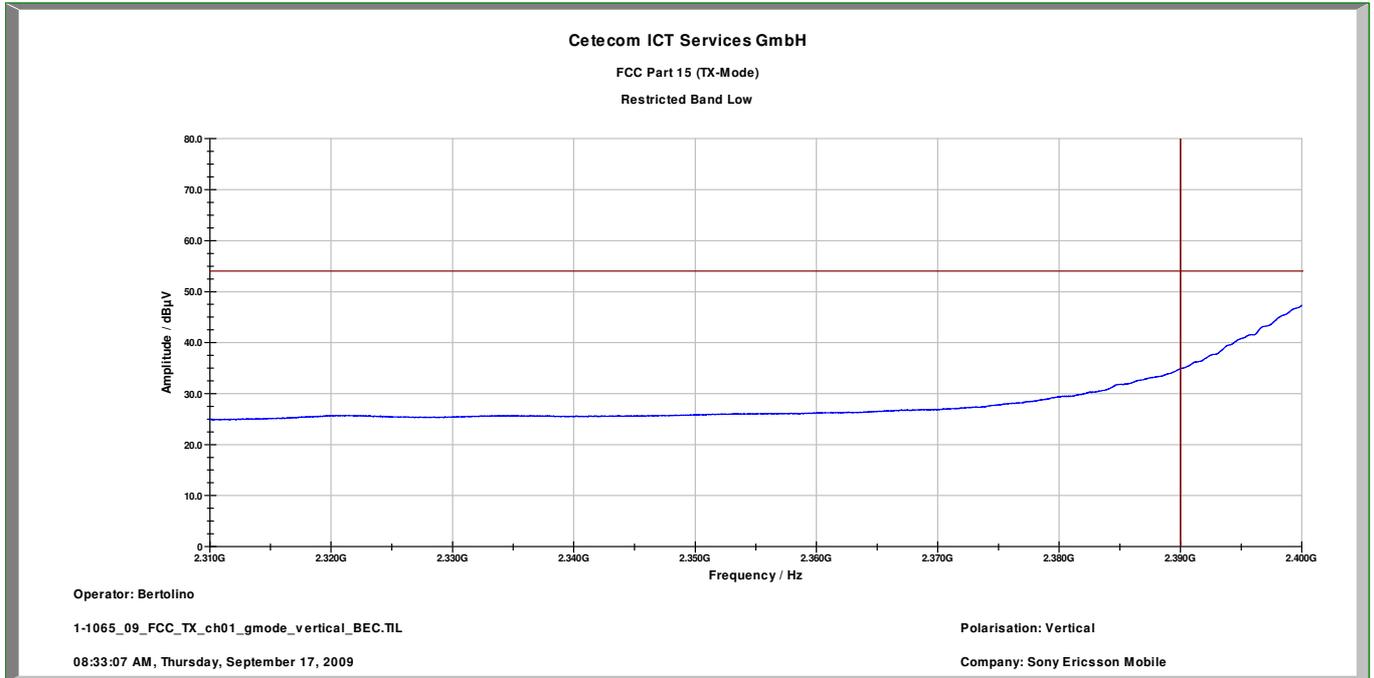


Plot 4: highest channel - 2462 MHz, DSSS mode – 1 MBit/s, horizontal polarization

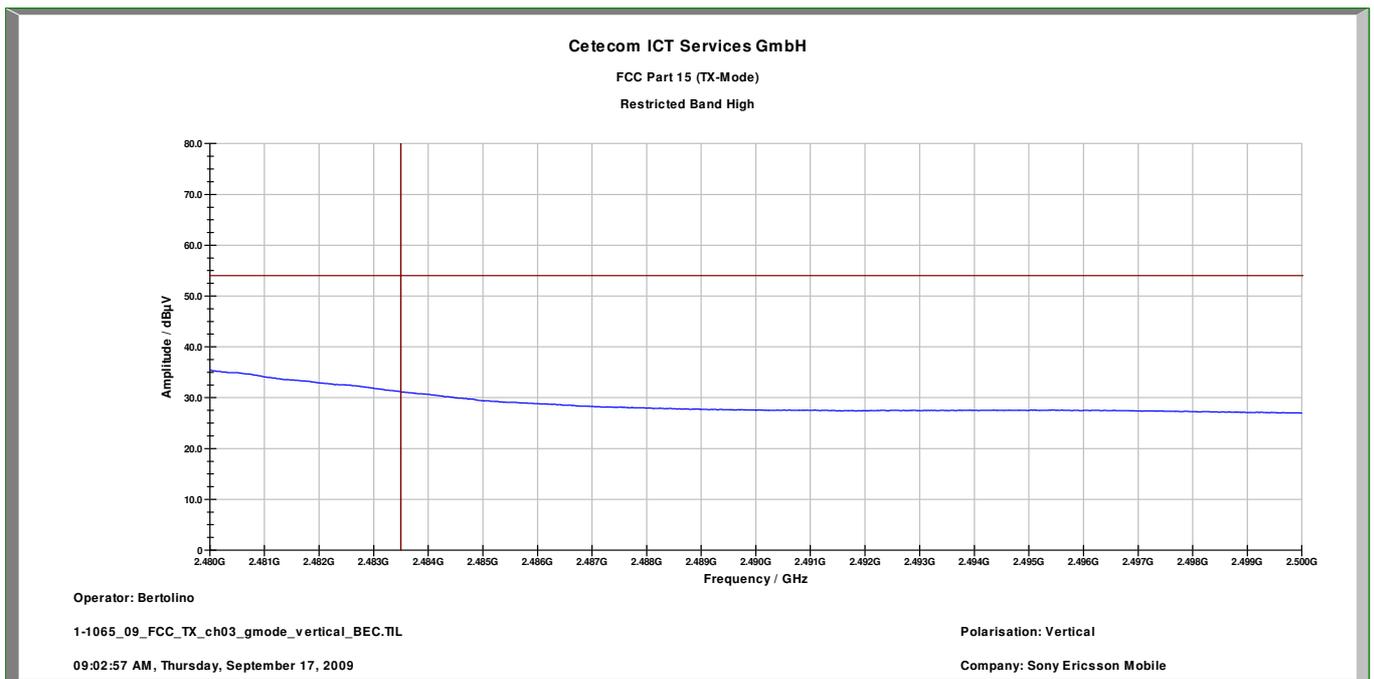


OFDM – mode:

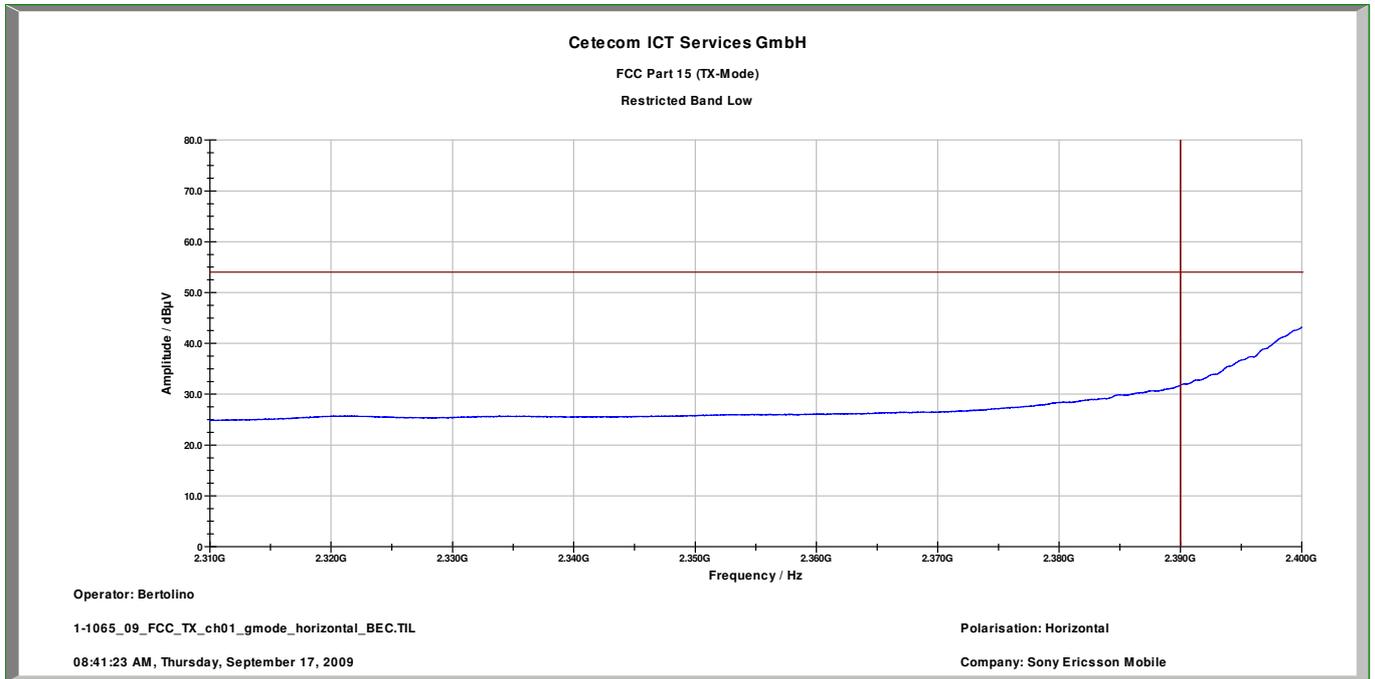
Plot 1: lowest channel - 2412 MHz, OFDM mode – 54 MBit/s, vertical polarization



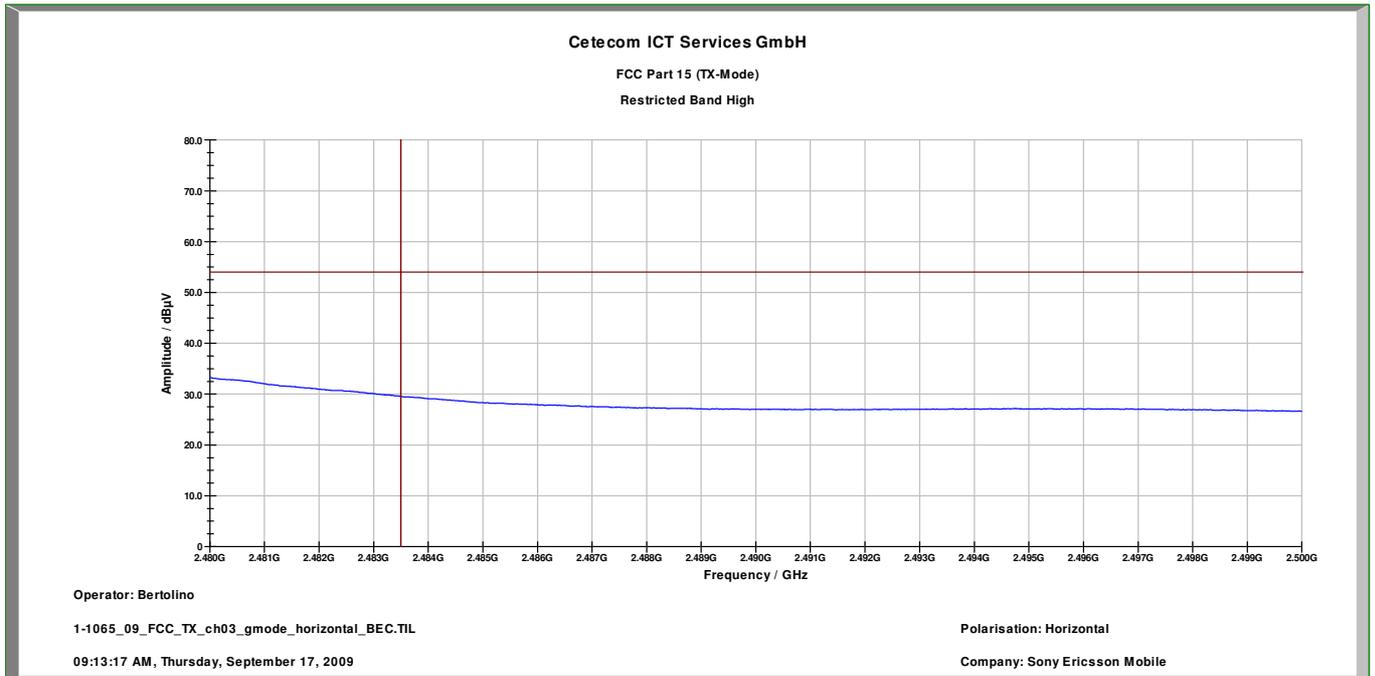
Plot 2: highest channel - 2462 MHz, OFDM mode – 54 MBit/s, vertical polarization



Plot 3: lowest channel - 2412 MHz, OFDM mode – 54 MBit/s, horizontal polarization



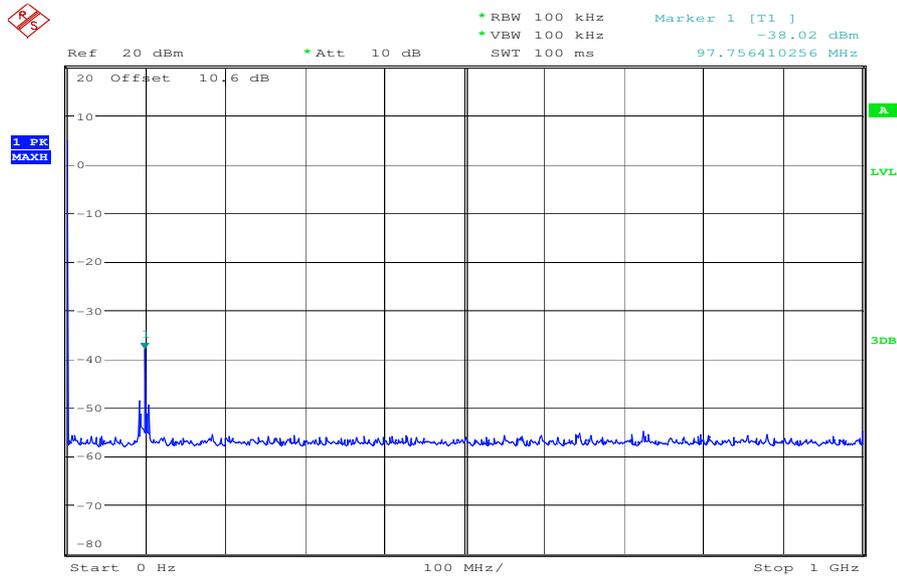
Plot 4: highest channel - 2462 MHz, OFDM mode – 54 MBit/s, horizontal polarization



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

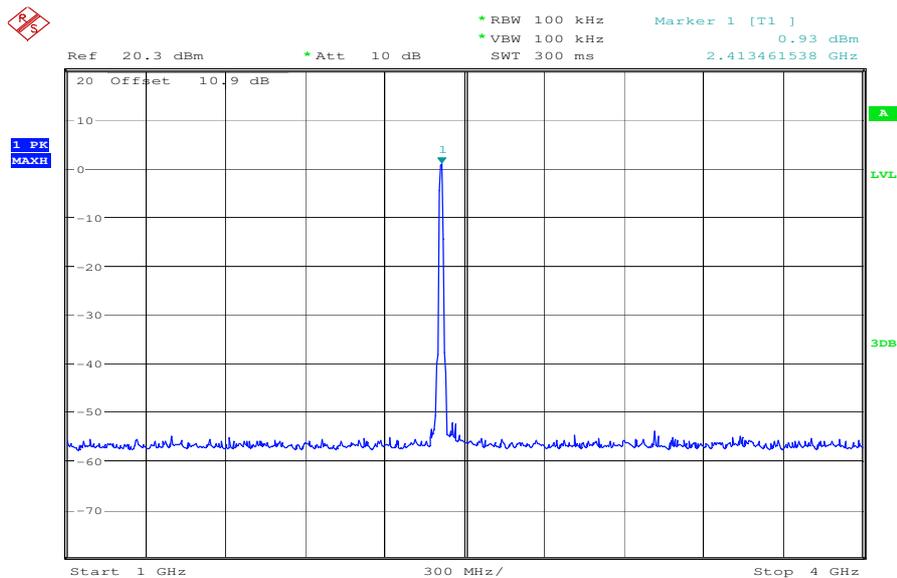
DSSS

Plot 1: Lowest Channel - 2412 MHz, DSSS mode – 1 MBit/s



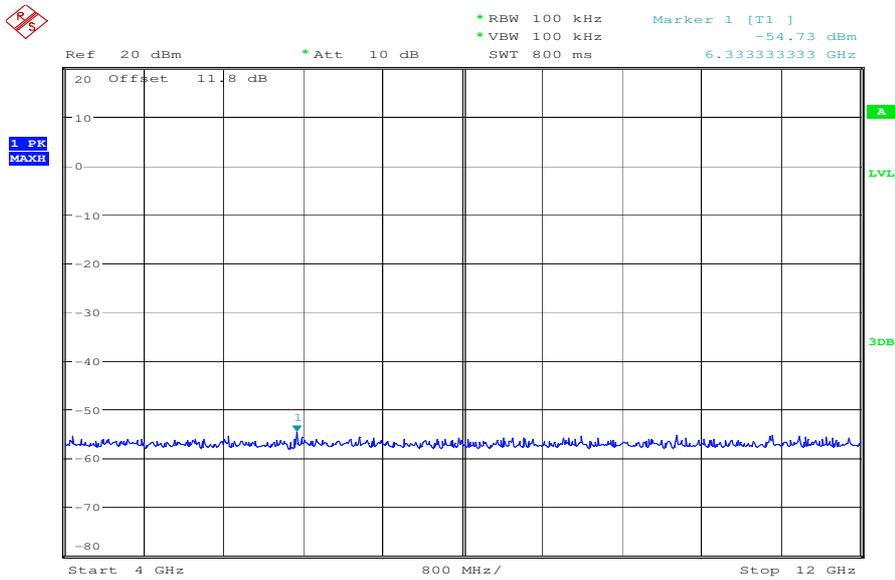
Date: 16.SEP.2009 09:06:25

Plot 2: Lowest Channel - 2412 MHz, DSSS mode – 1 MBit/s



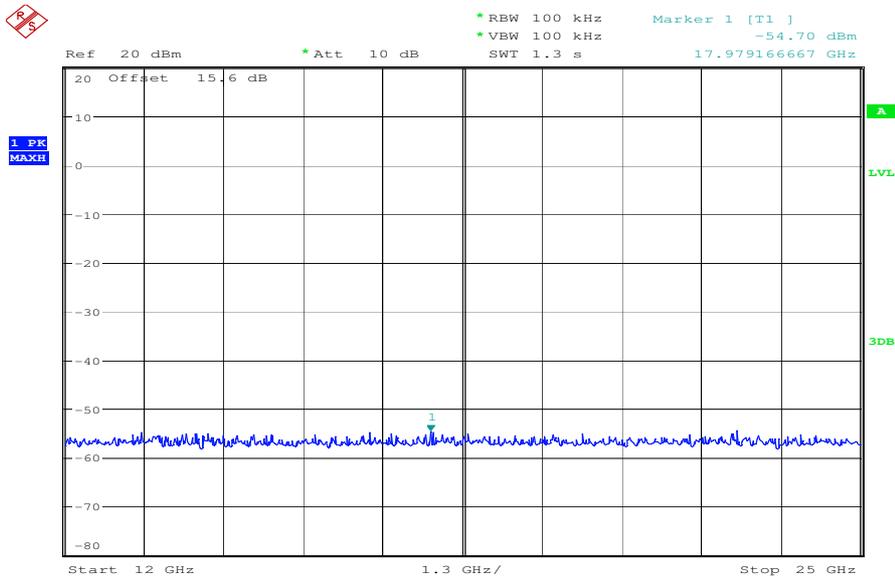
Date: 16.SEP.2009 09:48:06

Plot 3: Lowest Channel - 2412 MHz, DSSS mode – 1 MBit/s



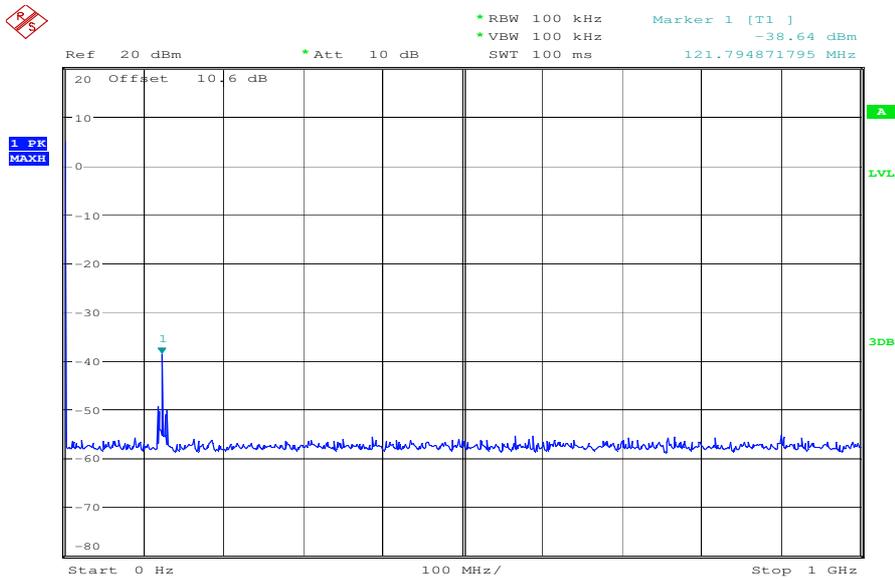
Date: 16.SEP.2009 09:58:23

Plot 4: Lowest Channel - 2412 MHz, DSSS mode – 1 MBit/s



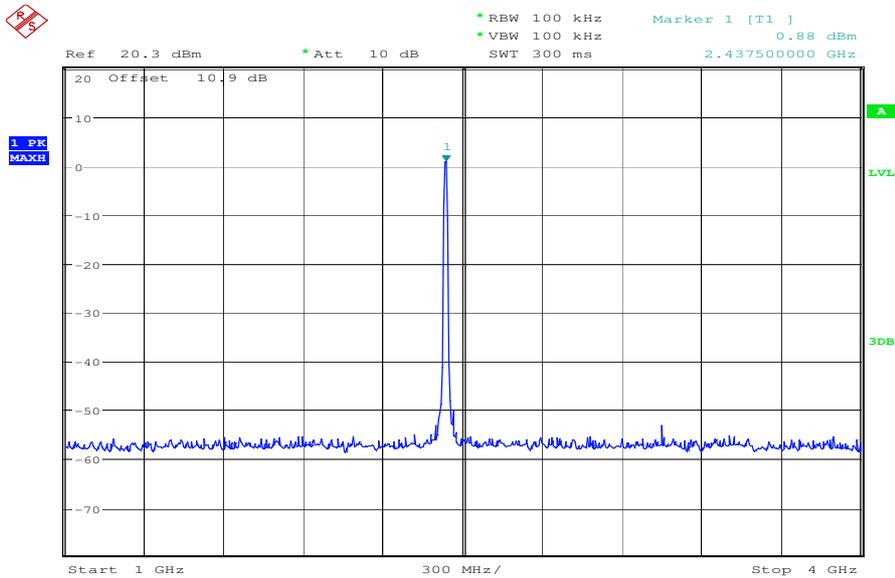
Date: 16.SEP.2009 10:06:39

Plot 5: Middle Channel - 2437 MHz, DSSS mode – 1 MBit/s



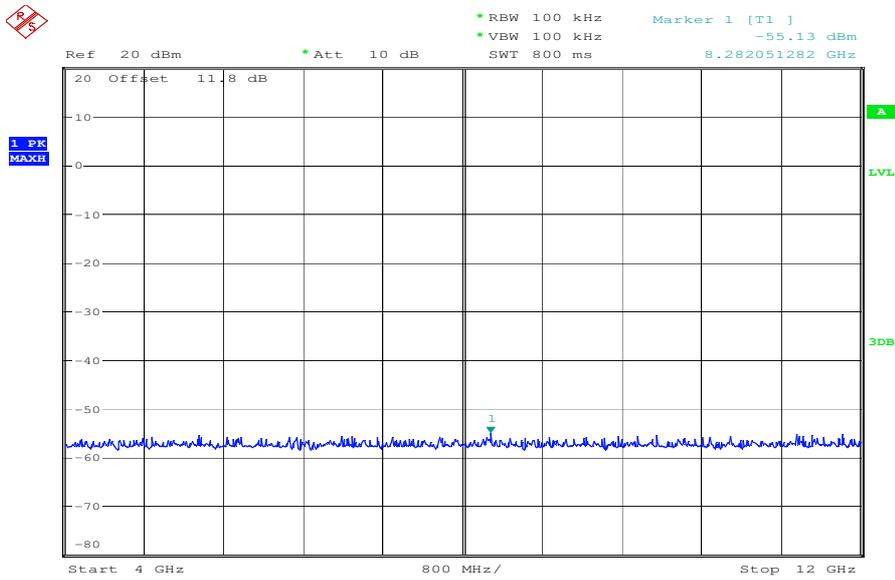
Date: 16.SEP.2009 09:07:02

Plot 6: Middle Channel - 2437 MHz, DSSS mode – 1 MBit/s



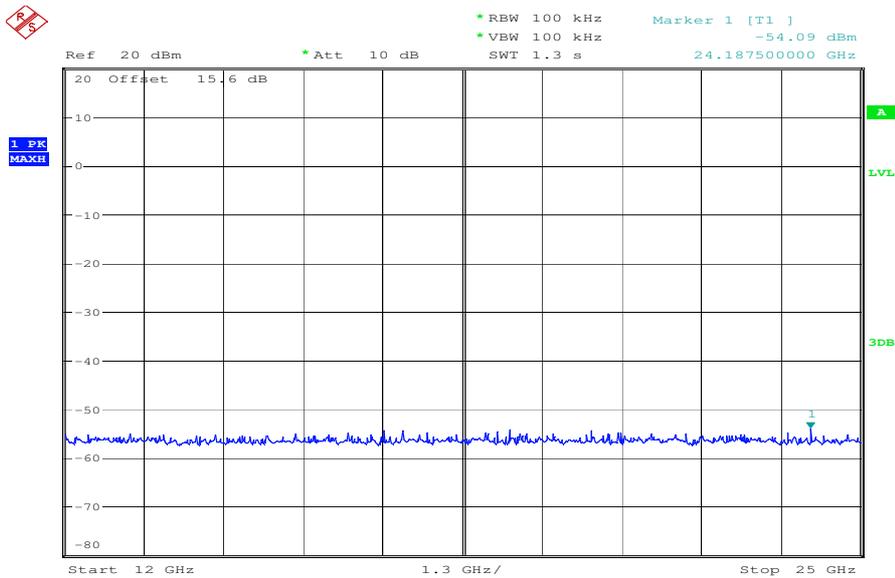
Date: 16.SEP.2009 09:48:44

Plot 7: Middle Channel - 2437 MHz, DSSS mode – 1 MBit/s



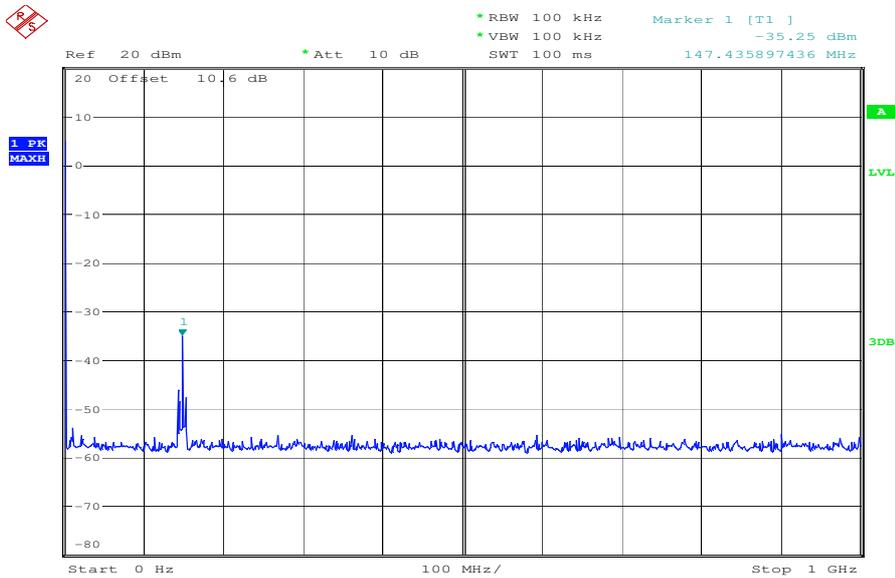
Date: 16.SEP.2009 10:00:29

Plot 8: Middle Channel - 2437 MHz, DSSS mode – 1 MBit/s



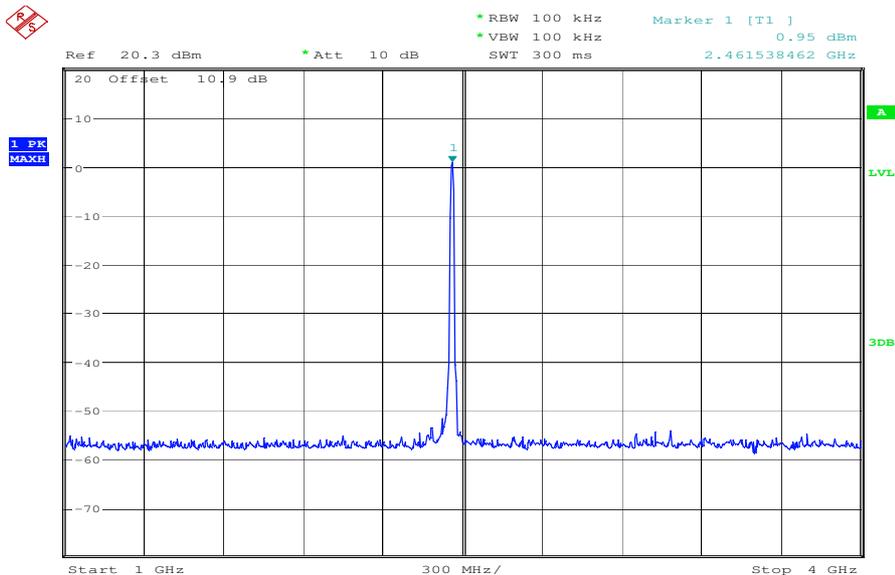
Date: 16.SEP.2009 10:07:32

Plot 9: Highest Channel - 2462 MHz, DSSS mode – 1 MBit/s



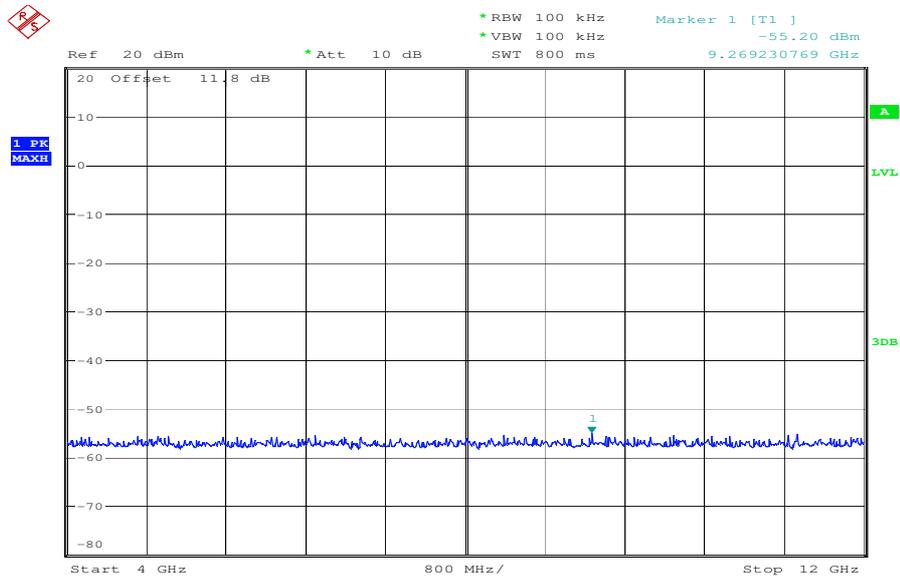
Date: 16.SEP.2009 09:07:31

Plot 10: Highest Channel - 2462 MHz, DSSS mode – 1 MBit/s



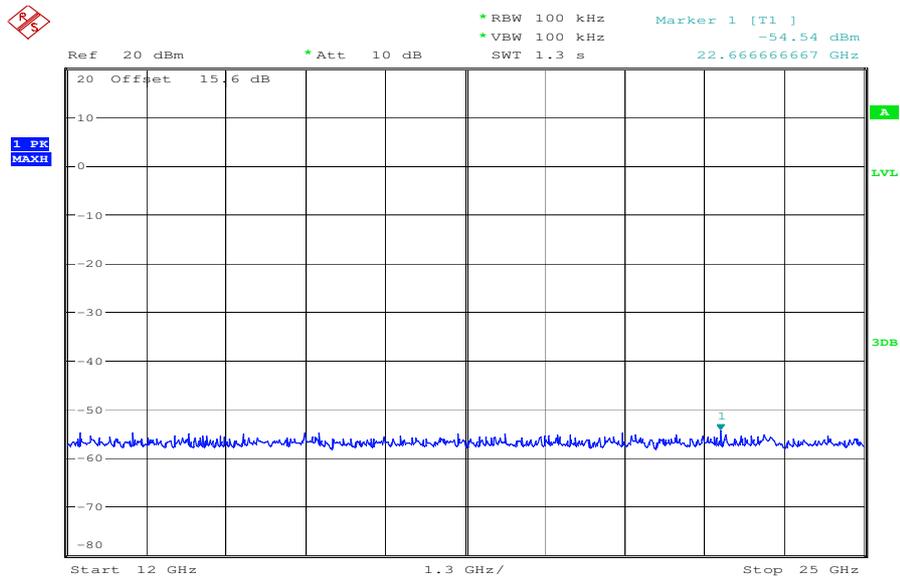
Date: 16.SEP.2009 09:50:04

Plot 11: Highest Channel - 2462 MHz, DSSS mode – 1 MBit/s



Date: 16.SEP.2009 10:01:19

Plot 12: Highest Channel - 2462 MHz, DSSS mode – 1 MBit/s



Date: 16.SEP.2009 10:08:03

Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		0.93	30 dBm		Operating frequency
97.76		-38.02	-20 dBc		Complies
2437		0.88	30 dBm		Operating frequency
121.79		-38.64	-20 dBc		Complies
2462		0.95	30 dBm		Operating frequency
147.44		-35.25	-20 dBc		Complies
Measurement uncertainty		± 3dB			

Note:

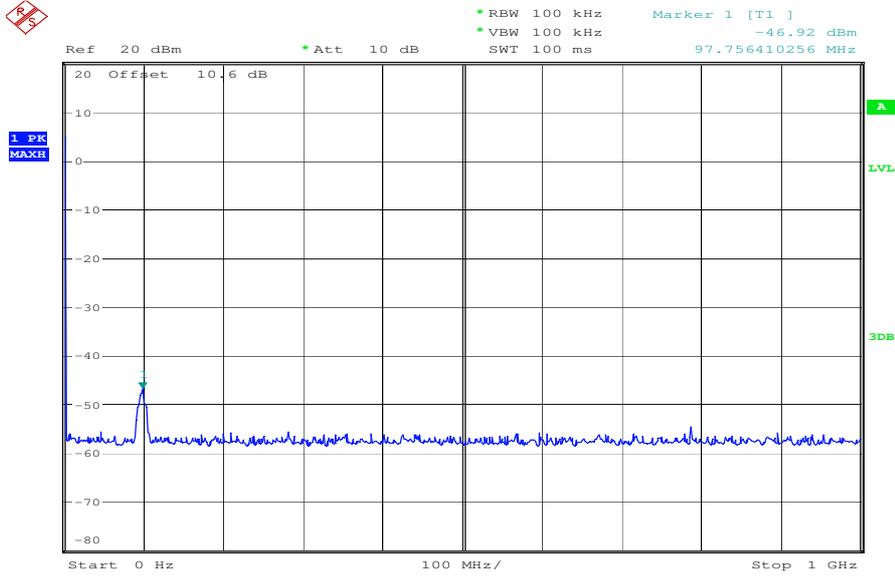
Measurement settings: RBW 100 kHz
 VBW 100 kHz
 Detector Positive Peak
 Sweep Time auto
 Trace mode Max Hold

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.

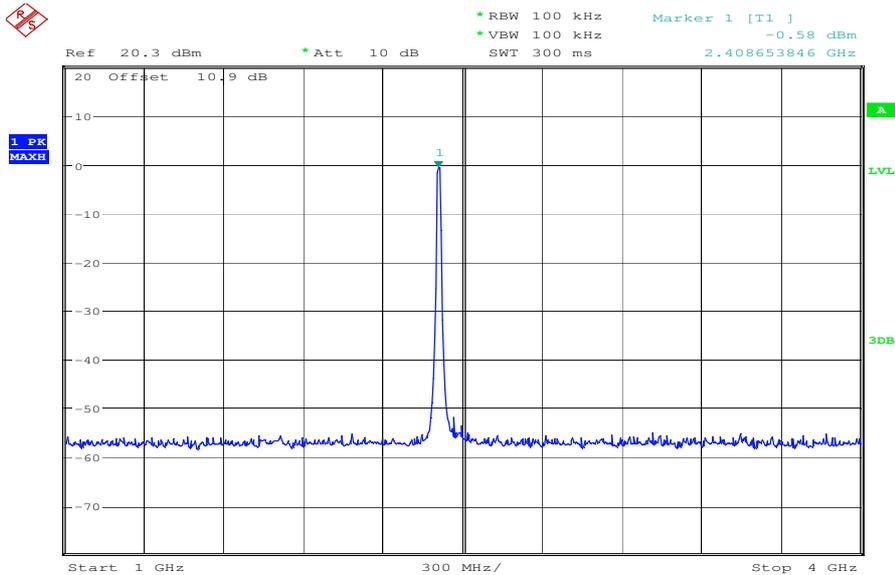
OFDM

Plot 1: Lowest Channel - 2412 MHz, OFDM mode – 54 MBit/s



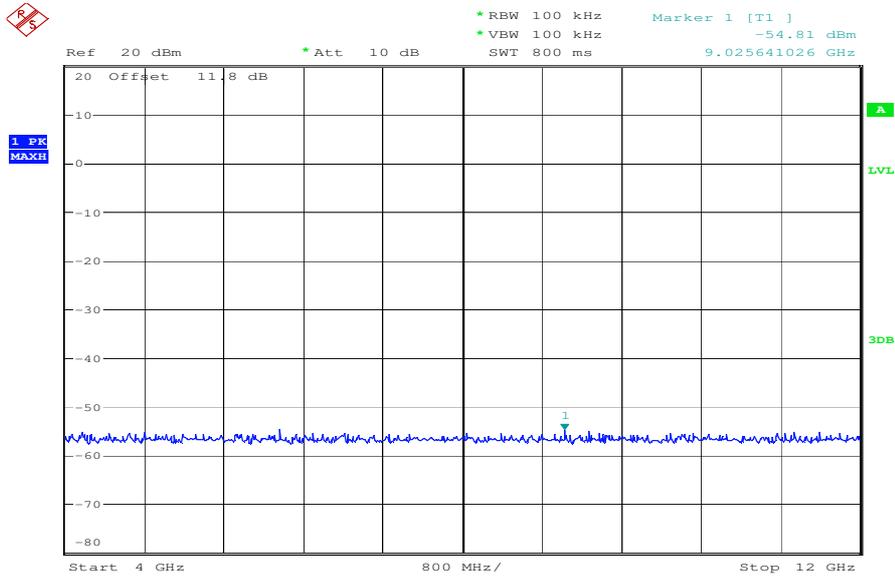
Date: 16.SEP.2009 09:34:27

Plot 2: Lowest Channel - 2412 MHz, OFDM mode – 54 MBit/s



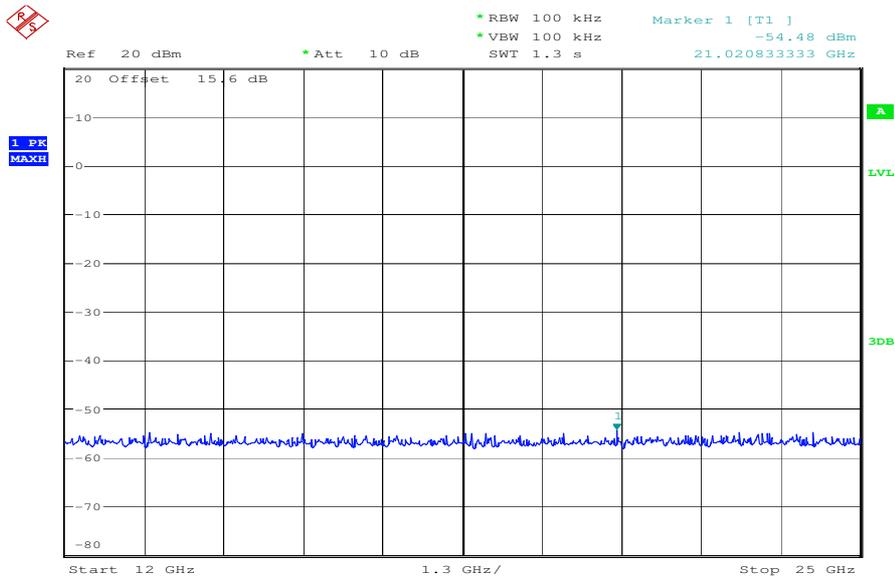
Date: 16.SEP.2009 09:51:26

Plot 3: Lowest Channel - 2412 MHz, OFDM mode – 54 MBit/s



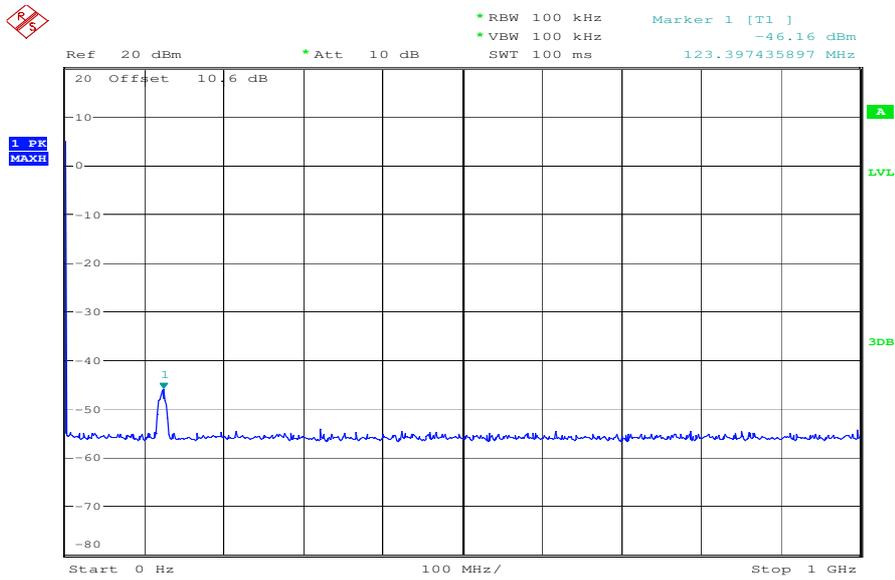
Date: 16.SEP.2009 10:02:36

Plot 4: Lowest Channel - 2412 MHz, OFDM mode – 54 MBit/s



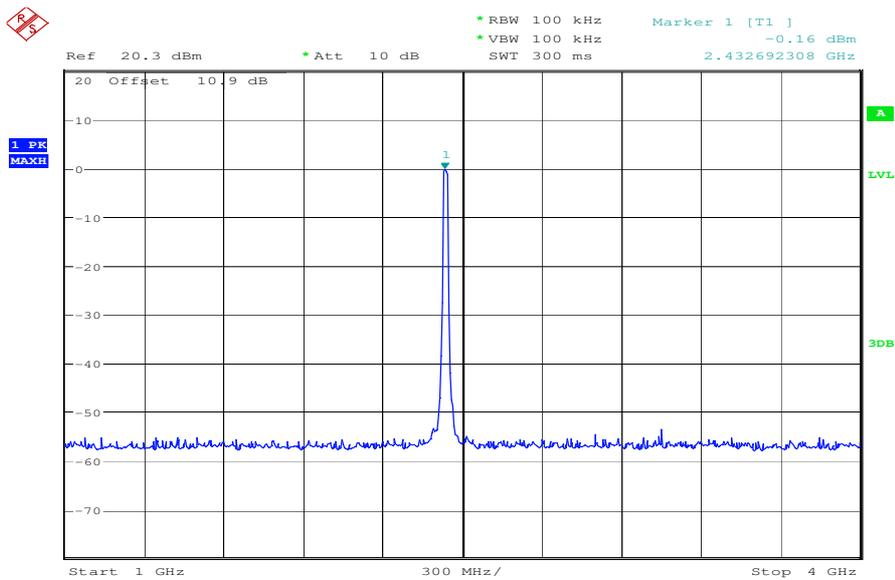
Date: 16.SEP.2009 10:06:04

Plot 5: Middle Channel - 2437 MHz, OFDM mode – 54 MBit/s



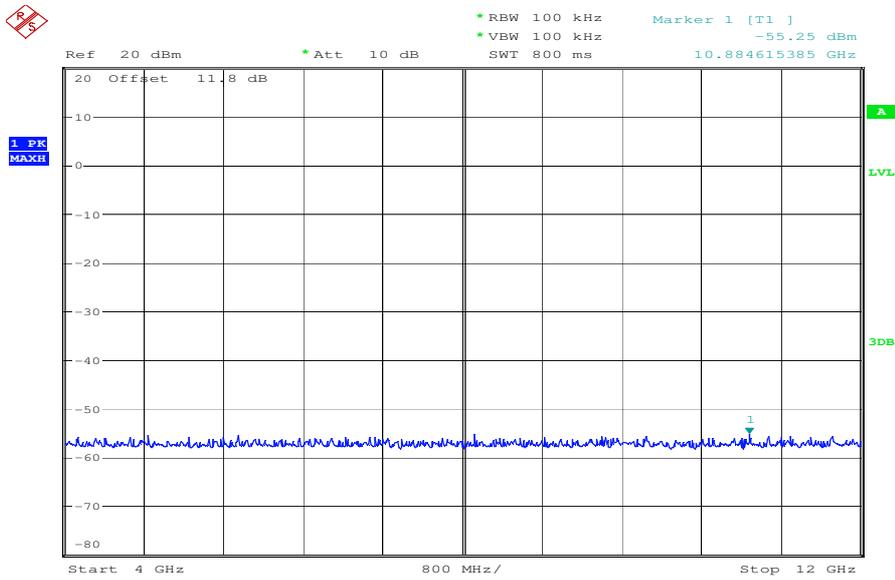
Date: 16.SEP.2009 09:32:43

Plot 6: Middle Channel - 2437 MHz, OFDM mode – 54 MBit/s



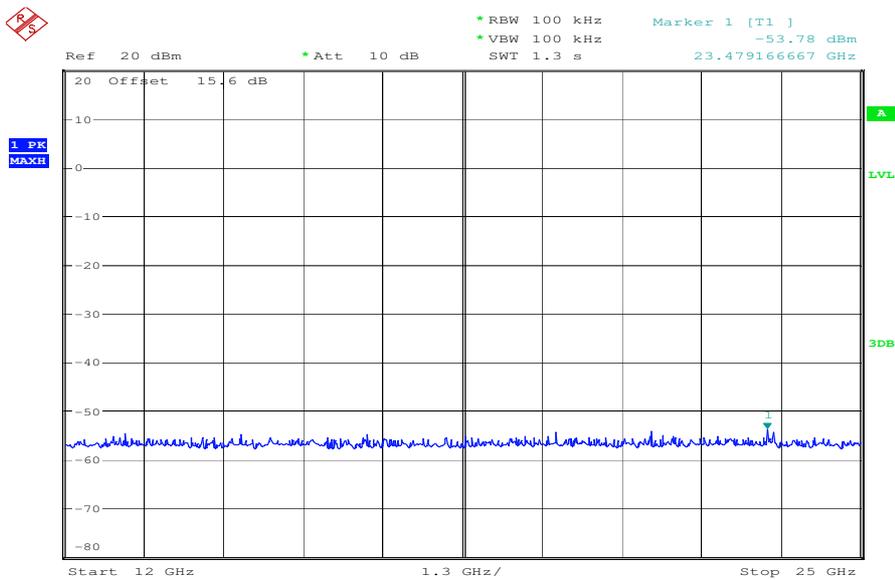
Date: 16.SEP.2009 09:52:47

Plot 7: Middle Channel - 2437 MHz, OFDM mode – 54 MBit/s



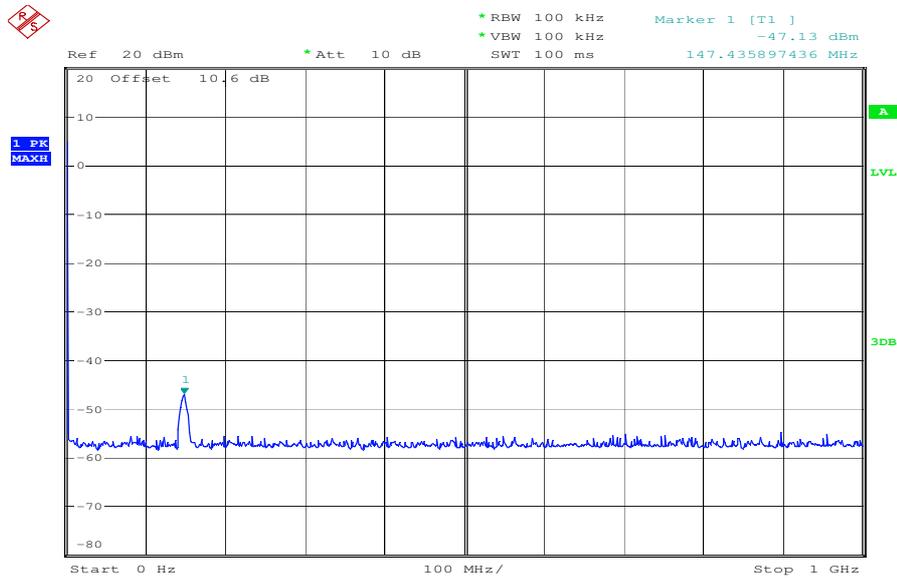
Date: 16.SEP.2009 10:03:26

Plot 8: Middle Channel - 2437 MHz, OFDM mode – 54 MBit/s



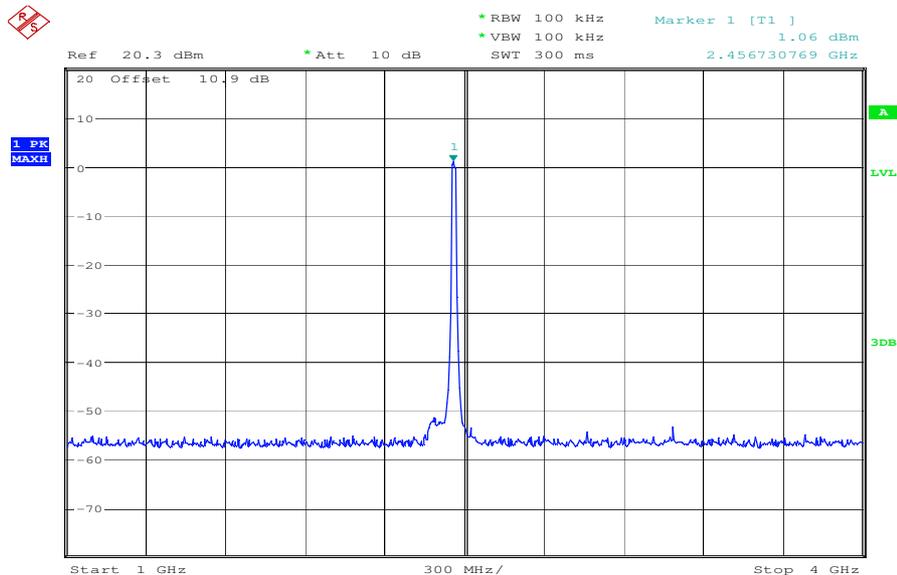
Date: 16.SEP.2009 10:05:40

Plot 9: Highest Channel - 2462 MHz, OFDM mode – 54 MBit/s



Date: 16.SEP.2009 09:33:52

Plot 10: Highest Channel - 2462 MHz, OFDM mode – 54 MBit/s



Date: 16.SEP.2009 09:55:40

Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		-0.58	30 dBm		Operating frequency
97.76		-46.92	-20 dBc		Complies
2437		-0.16	30 dBm		Operating frequency
123.40		-46.16	-20 dBc		Complies
2462		1.06	30 dBm		Operating frequency
147.44		-47.13	-20 dBc		Complies
Measurement uncertainty		± 3dB			

Note:

Measurement settings: RBW 100 kHz
 VBW 100 kHz
 Detector Positive Peak
 Sweep Time auto
 Trace mode Max Hold

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

Photo 1:



EUT: Slider open (Max output power radiated)

DSSS – mode:

Plot 1: 0.03 - 1 GHz (lowest channel) - 2412 MHz, DSSS mode – 1 MBit/s, vertical & horizontal polarization

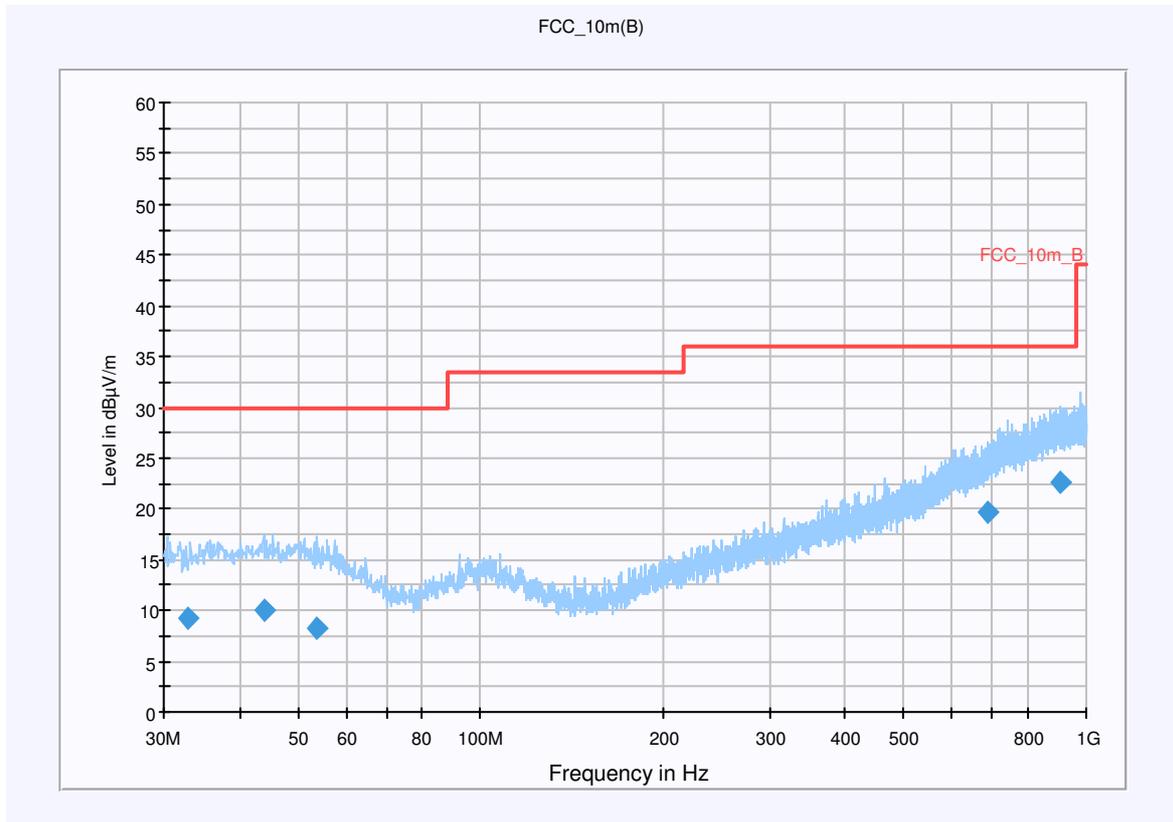
Common Information

EUT: AAD-3880043-BV
 Serial Number: CB511DSBNI: 00440107-875852-7 SVN 00
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX Ch. 1 + charging
 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

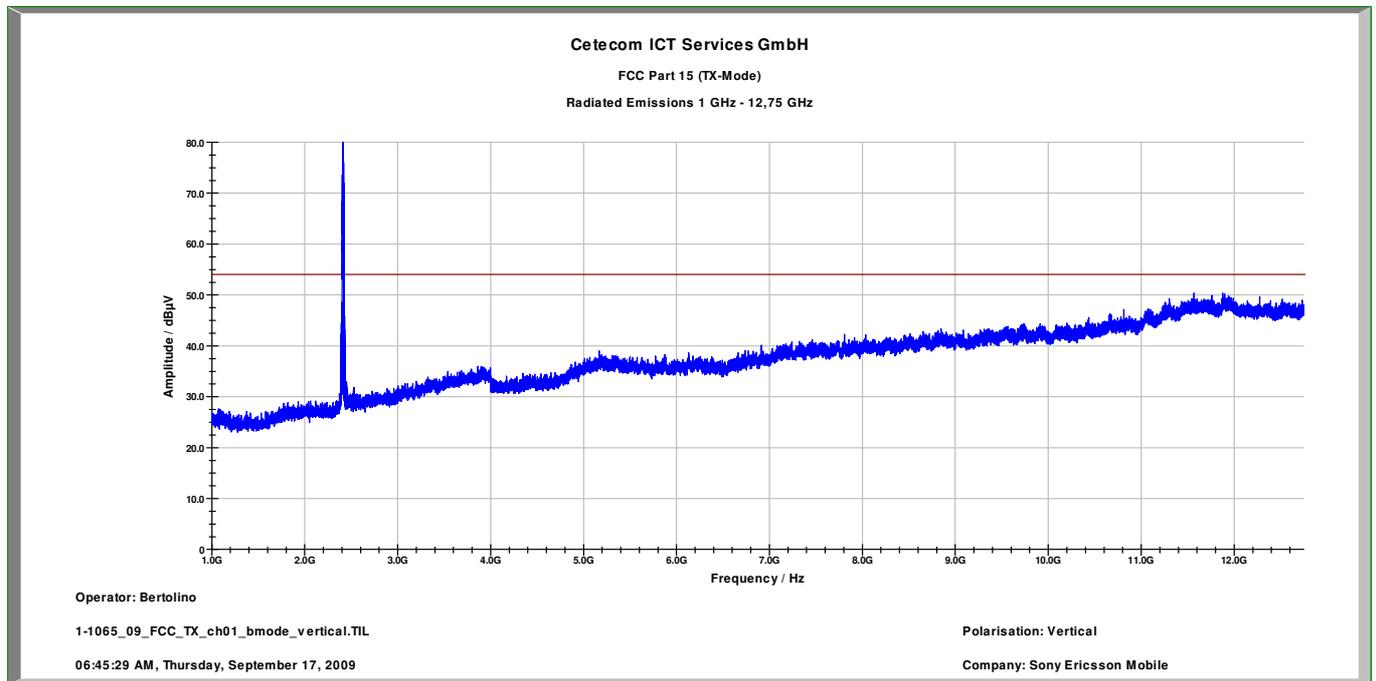
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
32.959450	9.2	15000.000	120.000	319.0	V	44.0	12.9	20.8	30.0	
44.007050	10.1	15000.000	120.000	255.0	V	14.0	13.4	19.9	30.0	
53.718250	8.3	15000.000	120.000	159.0	H	126.0	13.2	21.7	30.0	
688.874200	19.6	15000.000	120.000	200.0	V	61.0	22.7	16.4	36.0	
906.389200	22.7	15000.000	120.000	400.0	V	114.0	25.7	13.3	36.0	

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

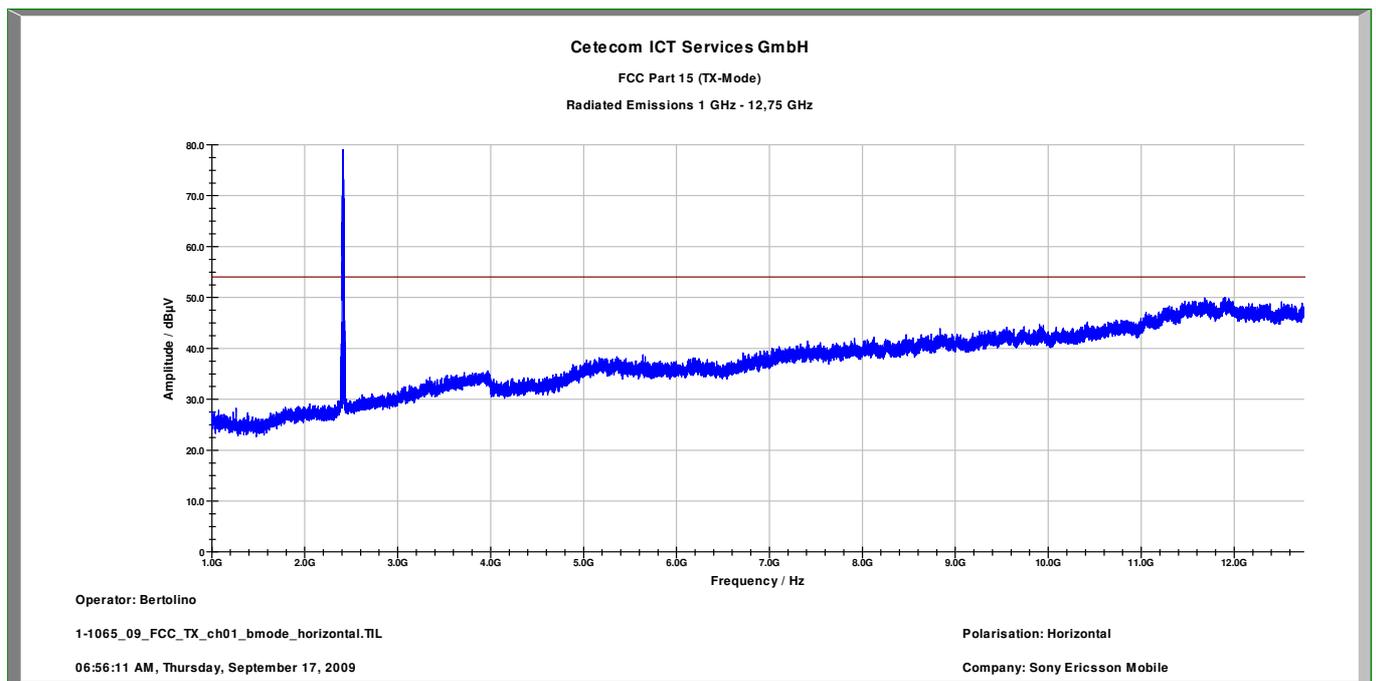
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/0033, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

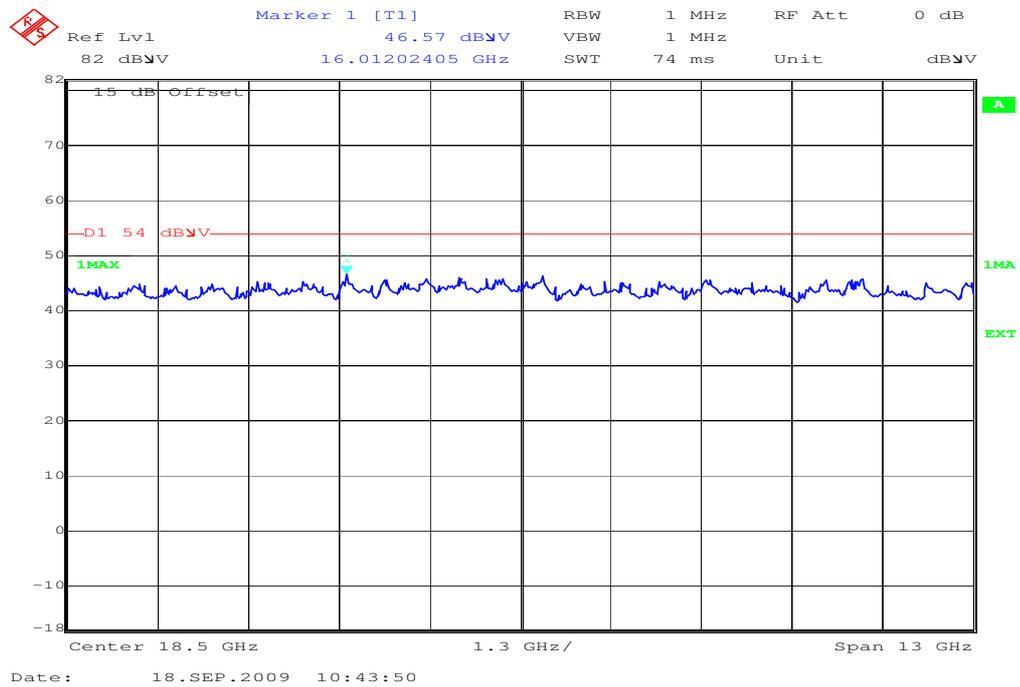
Plot 2: 1 – 12.75 GHz (lowest channel) - 2412 MHz, DSSS mode – 1 MBit/s, vertical polarization



Plot 3: 1 – 12.75 GHz (lowest channel) - 2412 MHz, DSSS mode – 1 MBit/s, horizontal polarization



Plot 4: 12 - 25 GHz (valid for all channels) - 2412 MHz, DSSS mode – 1 MBit/s, vertical & horizontal polarization



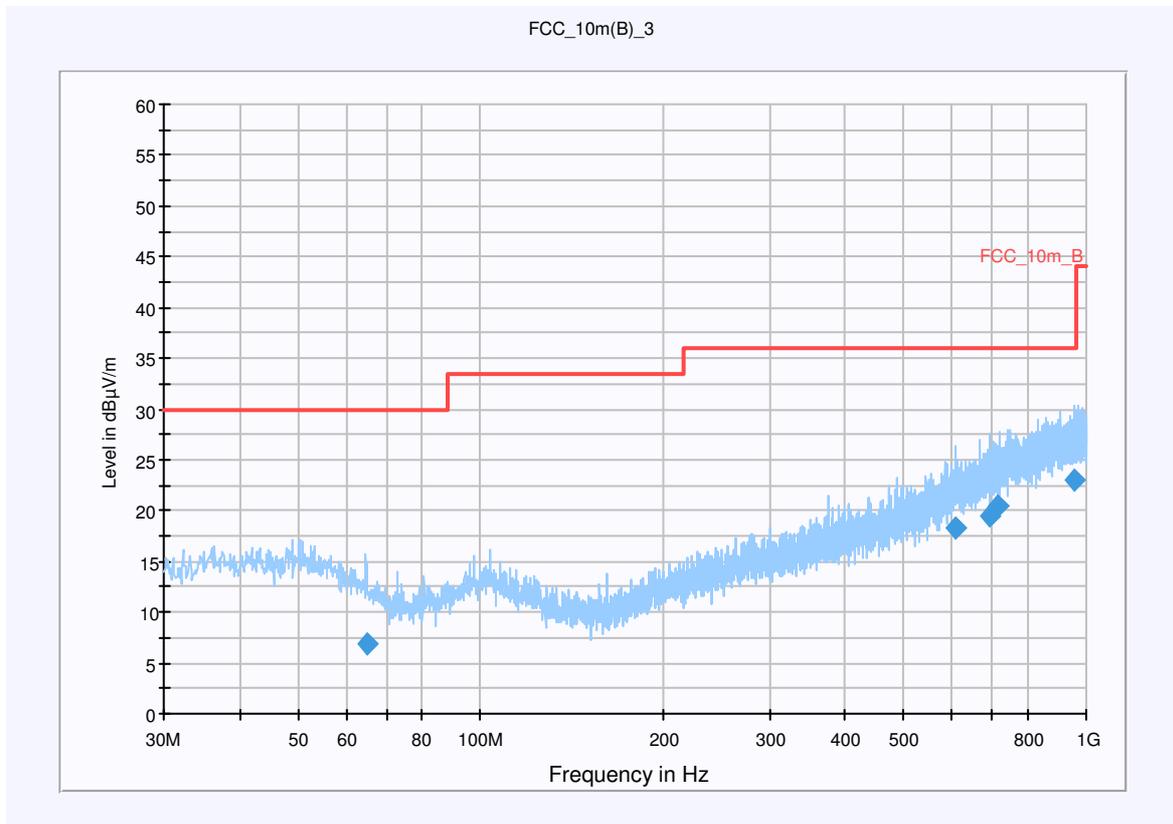
Plot 5: 0.03 - 1 GHz (middle channel) - 2437 MHz, DSSS mode – 1 MBit/s, vertical & horizontal polarization

Common Information

EUT: AAD-3880043-BV
 Serial Number: CB511DSBNR IMEI: 00440107-875852-7 SVN 00
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX Ch. 6 + charging
 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

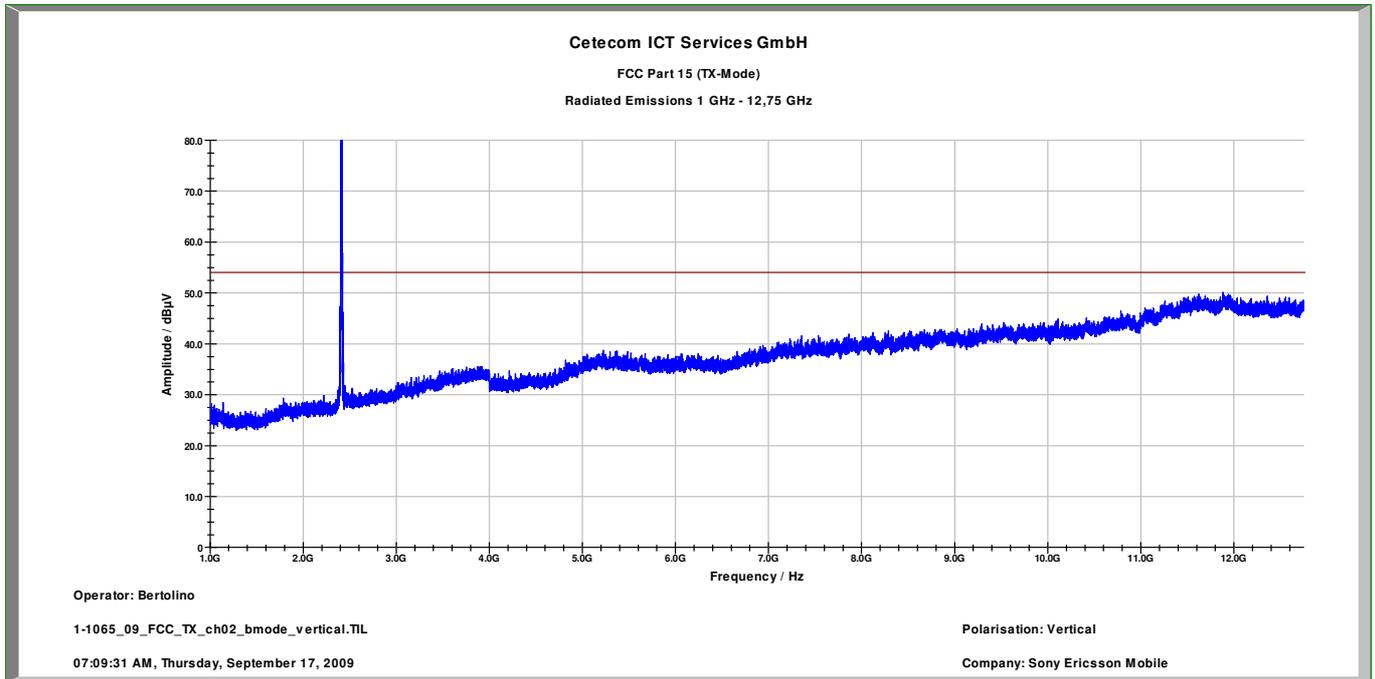
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
65.156600	6.8	15000.000	120.000	191.0	V	323.0	10.6	23.2	30.0	
607.018200	18.3	15000.000	120.000	220.0	H	269.0	21.4	17.7	36.0	
690.902400	19.5	15000.000	120.000	180.0	V	253.0	22.8	16.5	36.0	
716.644750	20.4	15000.000	120.000	191.0	H	207.0	23.4	15.6	36.0	
954.060300	23.0	15000.000	120.000	174.0	H	225.0	25.9	13.0	36.0	

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

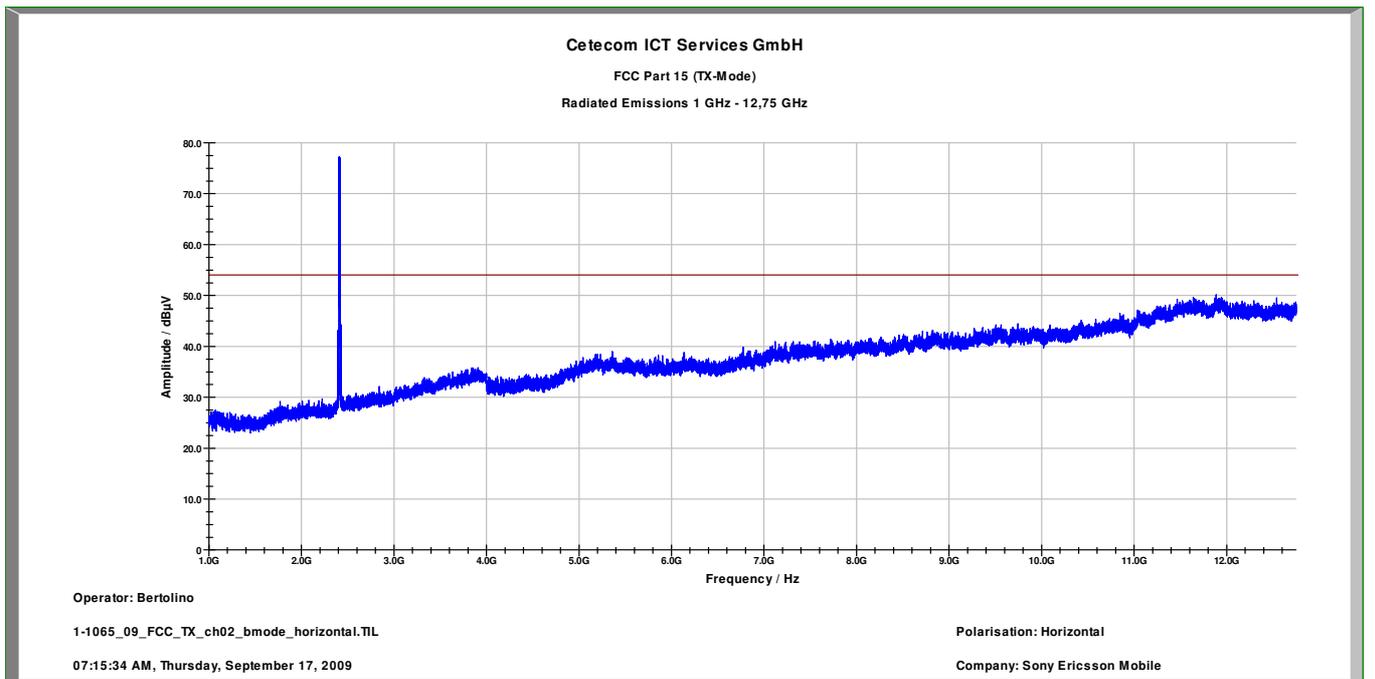
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/0033, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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Plot 6: 1 – 12.75 GHz (middle channel) - 2437 MHz, DSSS mode – 1 MBit/s, vertical polarization



Plot 7: 1 – 12.75 GHz (middle channel) - 2437 MHz, DSSS mode – 1 MBit/s, horizontal polarization



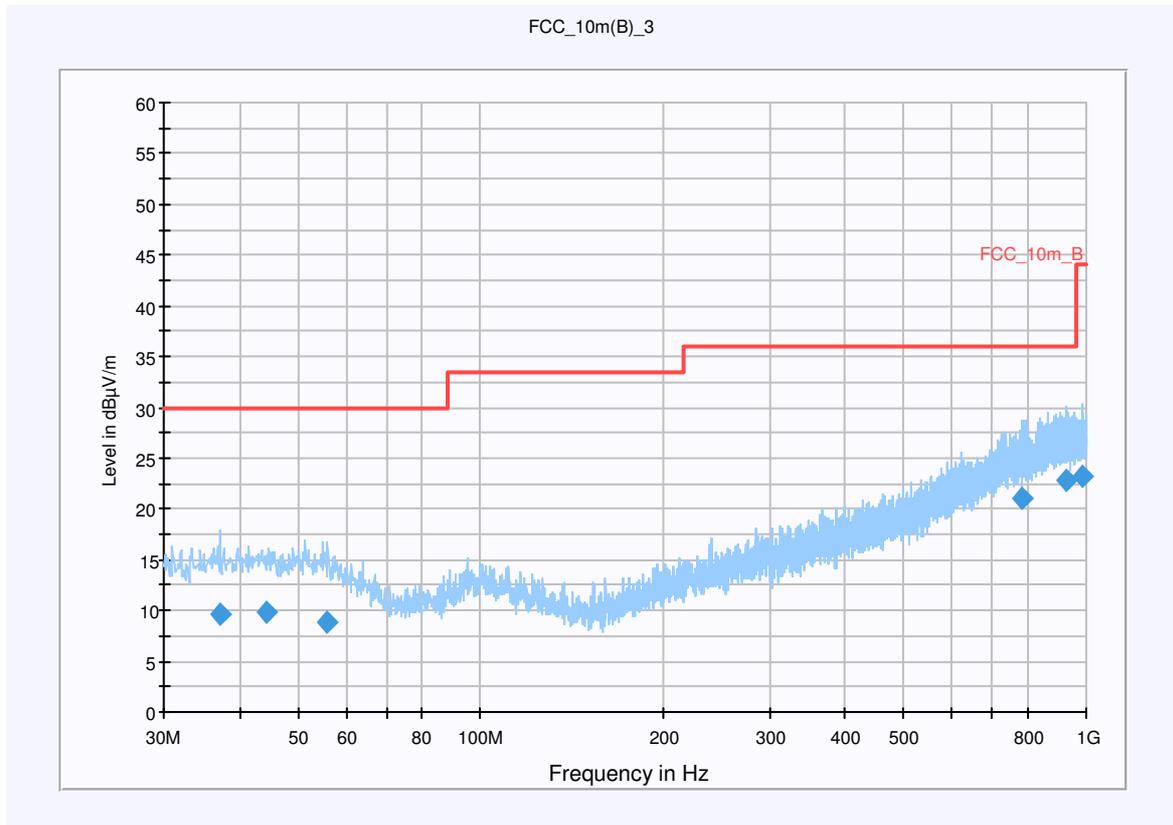
Plot 8: 0.03 - 1 GHz (highest channel) - 2462 MHz, DSSS mode – 1 MBit/s, vertical & horizontal polarization

Common Information

EUT: AAD-3880043-BV
 Serial Number: CB511DSBNR IMEI: 00440107-875852-7 SVN 00
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX Ch. 11 + charging
 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

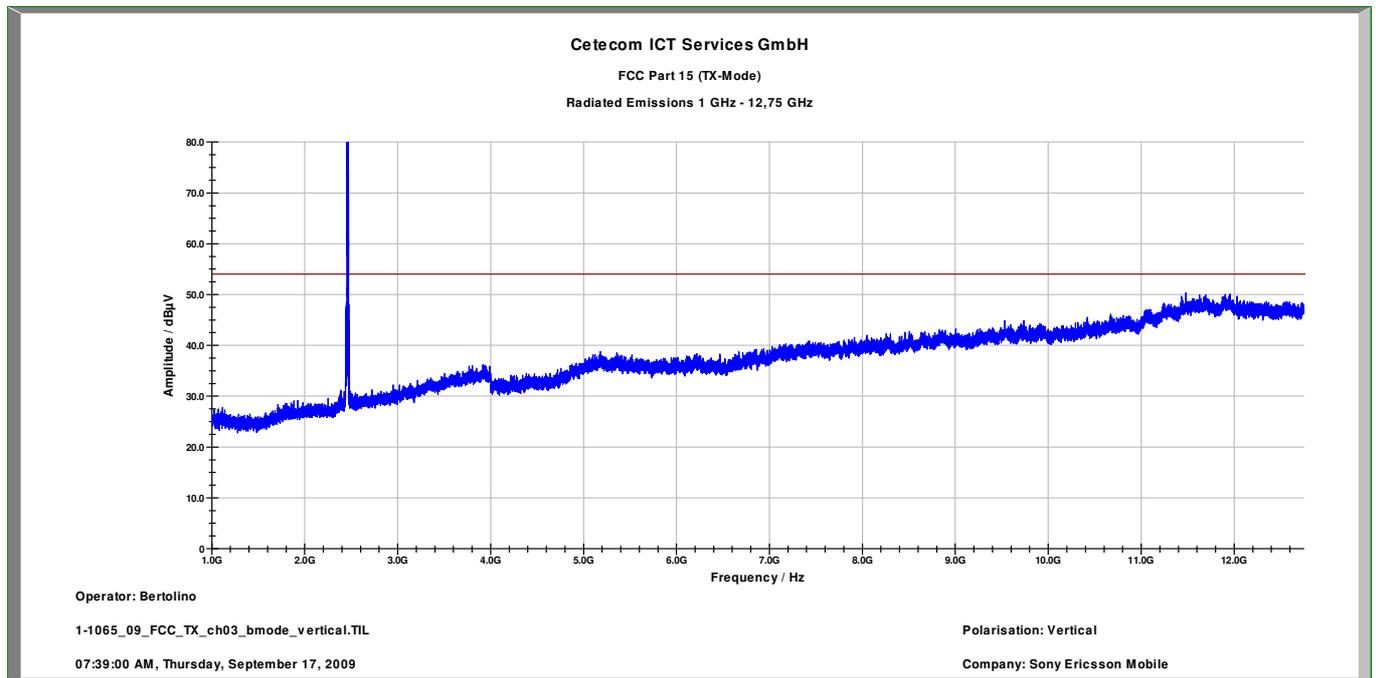
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
37.078000	9.6	15000.000	120.000	98.0	V	-7.0	13.3	20.4	30.0	
44.293150	9.8	15000.000	120.000	128.0	V	324.0	13.4	20.2	30.0	
55.623350	8.8	15000.000	120.000	166.0	V	-2.0	12.9	21.2	30.0	
783.693200	21.0	15000.000	120.000	188.0	H	184.0	24.3	15.0	36.0	
929.727250	22.8	15000.000	120.000	220.0	H	311.0	25.8	13.2	36.0	
986.061800	23.2	15000.000	120.000	220.0	V	98.0	26.2	20.8	44.0	

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

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/0033, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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Plot 9: 1 – 12.75 GHz (highest channel) - 2462 MHz, DSSS mode – 1 MBit/s, vertical polarization



Plot 10: 1 – 12.75 GHz (highest channel) - 2462 MHz, DSSS mode – 1 MBit/s, horizontal polarization

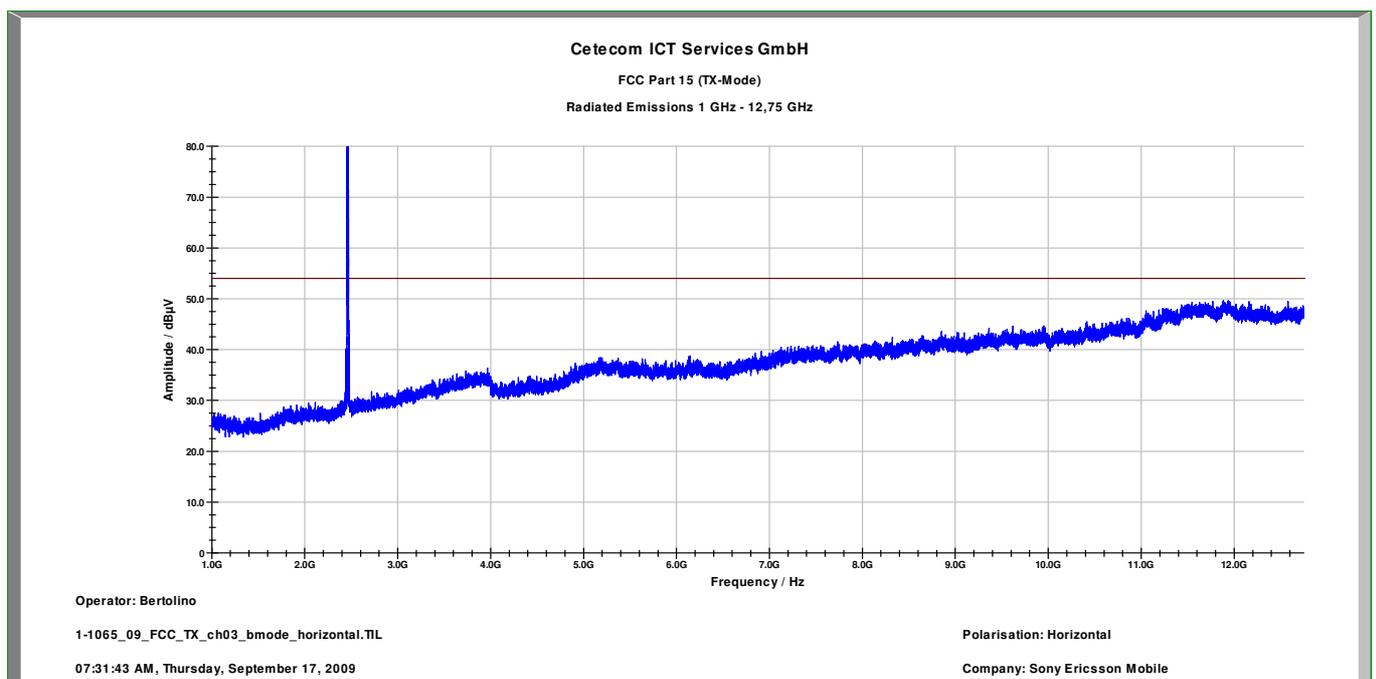


Photo 2:



EUT: Slider closed

Plot 1: 0.03 - 1 GHz (lowest channel) - 2412 MHz, DSSS mode – 1 MBit/s, vertical & horizontal polarization

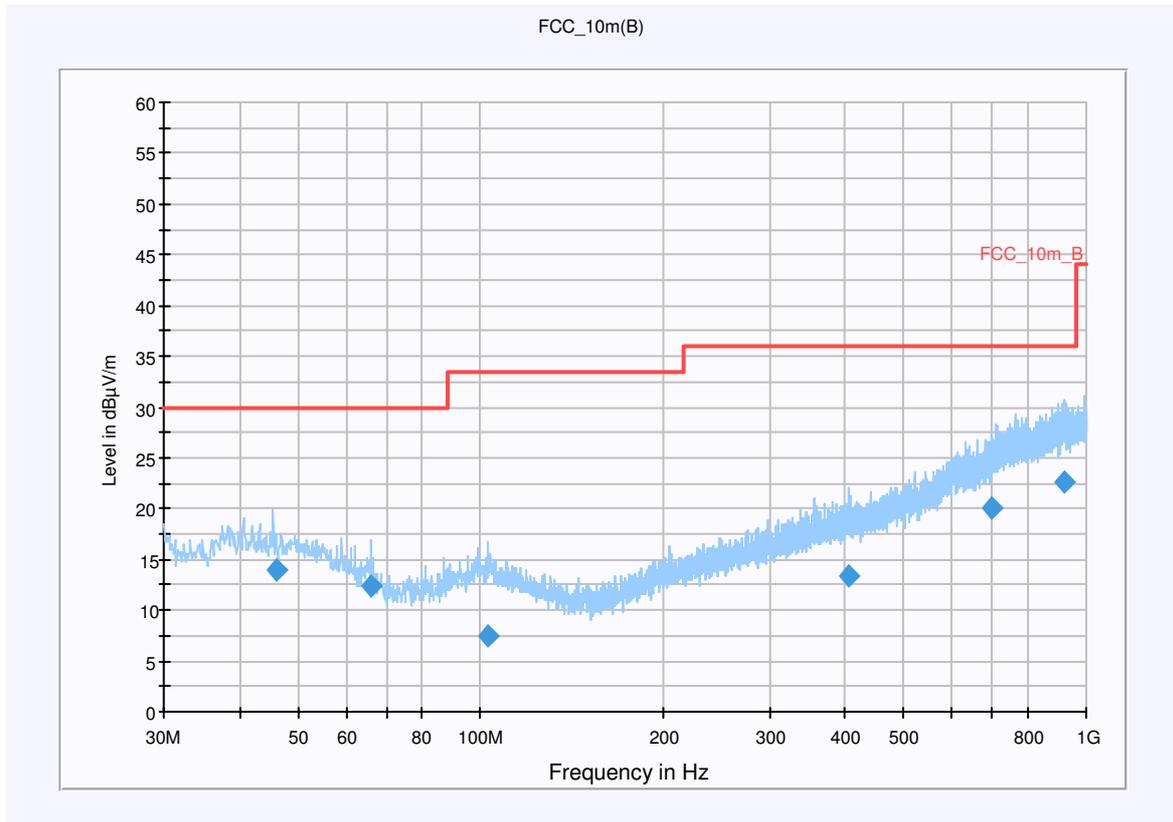
Common Information

EUT: AAD-3880043-BV
 Serial Number: CB511DSB NR IMEI: 00440107-875852-7 SVN 00
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX Ch. 6 + charging
 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

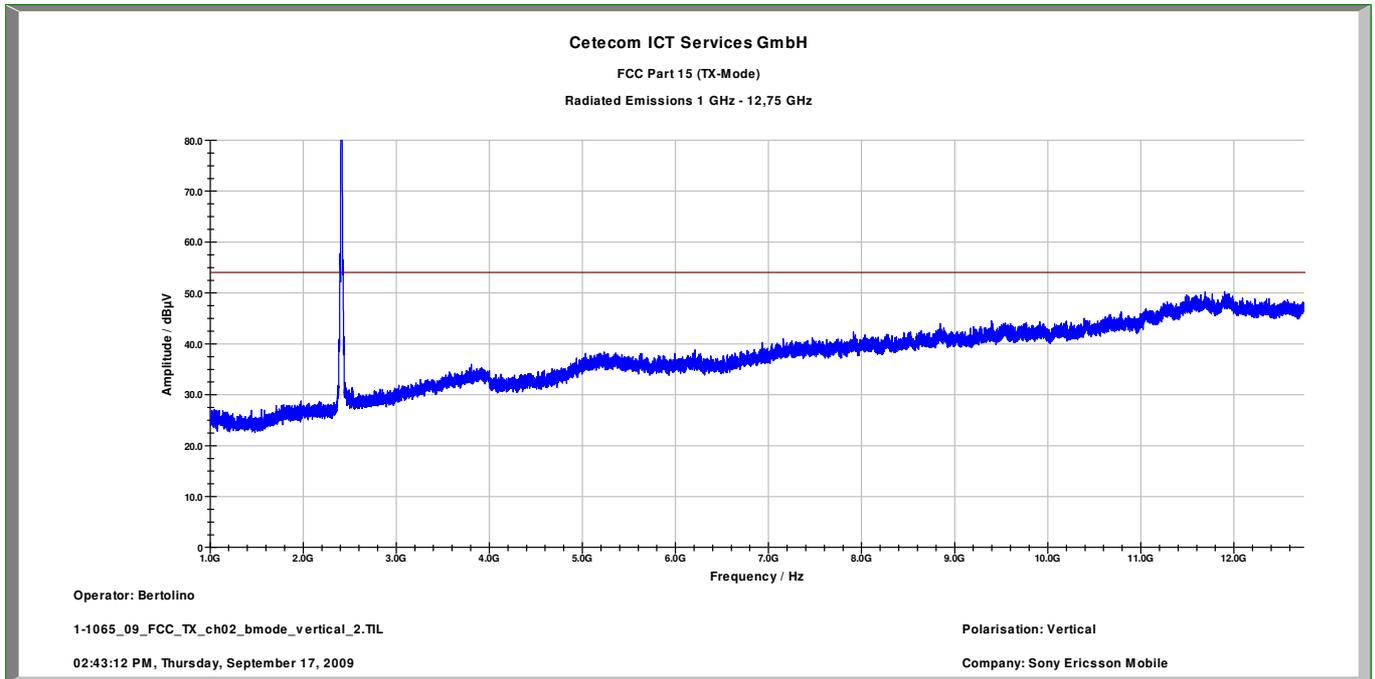
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
45.984700	13.9	15000.000	120.000	238.0	V	194.0	13.4	16.1	30.0	
65.991300	12.4	15000.000	120.000	316.0	V	139.0	10.4	17.6	30.0	
102.889500	7.5	15000.000	120.000	142.0	V	127.0	12.0	26.0	33.5	
404.976750	13.3	15000.000	120.000	400.0	V	33.0	17.4	22.7	36.0	
700.379250	20.0	15000.000	120.000	200.0	V	223.0	23.0	16.0	36.0	
918.484250	22.7	15000.000	120.000	107.0	V	202.0	25.8	13.3	36.0	

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

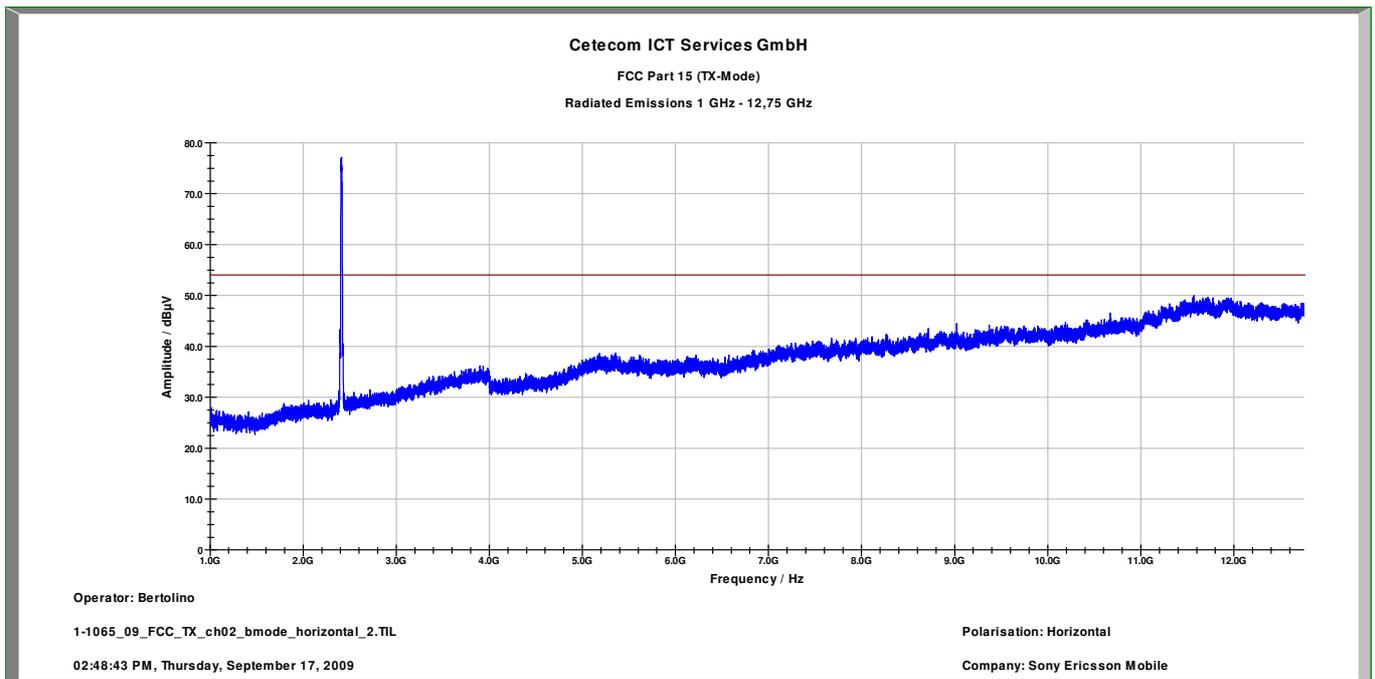
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/0033, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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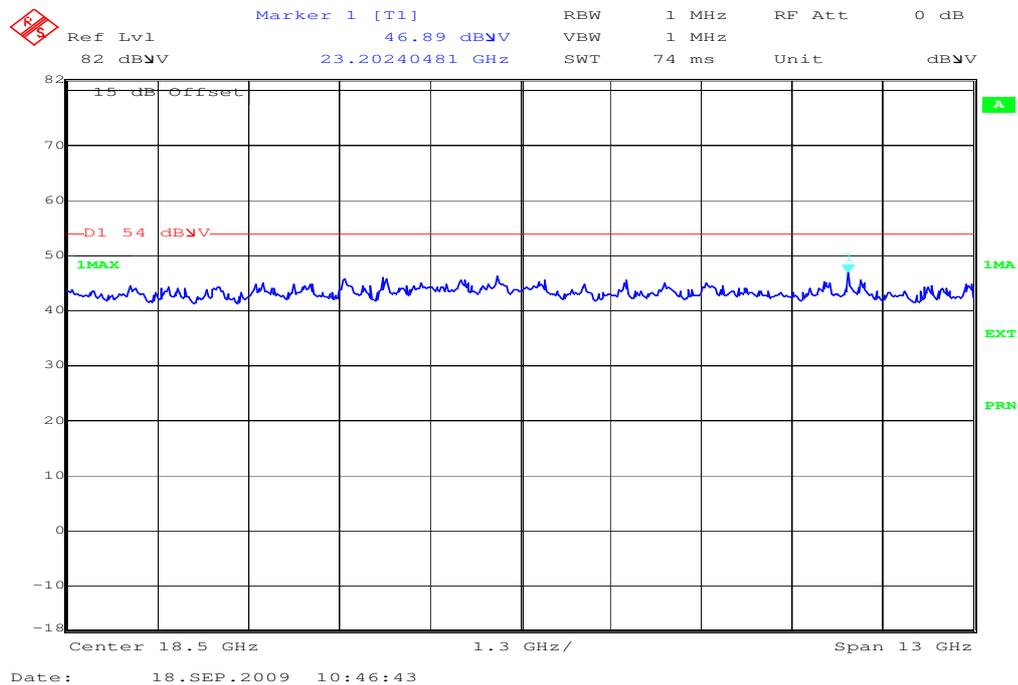
Plot 2: 1 – 12.75 GHz (lowest channel) - 2412 MHz, DSSS mode – 1 MBit/s, vertical polarization



Plot 3: 1 – 12.75 GHz (lowest channel) - 2412 MHz, DSSS mode – 1 MBit/s, horizontal polarization



Plot 4: 12 - 25 GHz (valid for all channels) - 2412 MHz, DSSS mode – 1 MBit/s, vertical & horizontal polarization



Results:

SPURIOUS EMISSIONS LEVEL §15.209								
2412 MHz slider open			2437 MHz slider open			2462 MHz slider open		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No critical peaks detected.			No critical peaks detected.			No critical peaks detected.		
			2437 MHz slider closed					
			F [MHz]	Detector	Level [dBµV/m]			
			No critical peaks 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

Photo 1:



EUT: Slider open (Max output power radiated)

OFDM – mode:

Plot 1: 0.03 - 1 GHz (lowest channel) - 2412 MHz, OFDM mode – 1 MBit/s, vertical & horizontal polarization

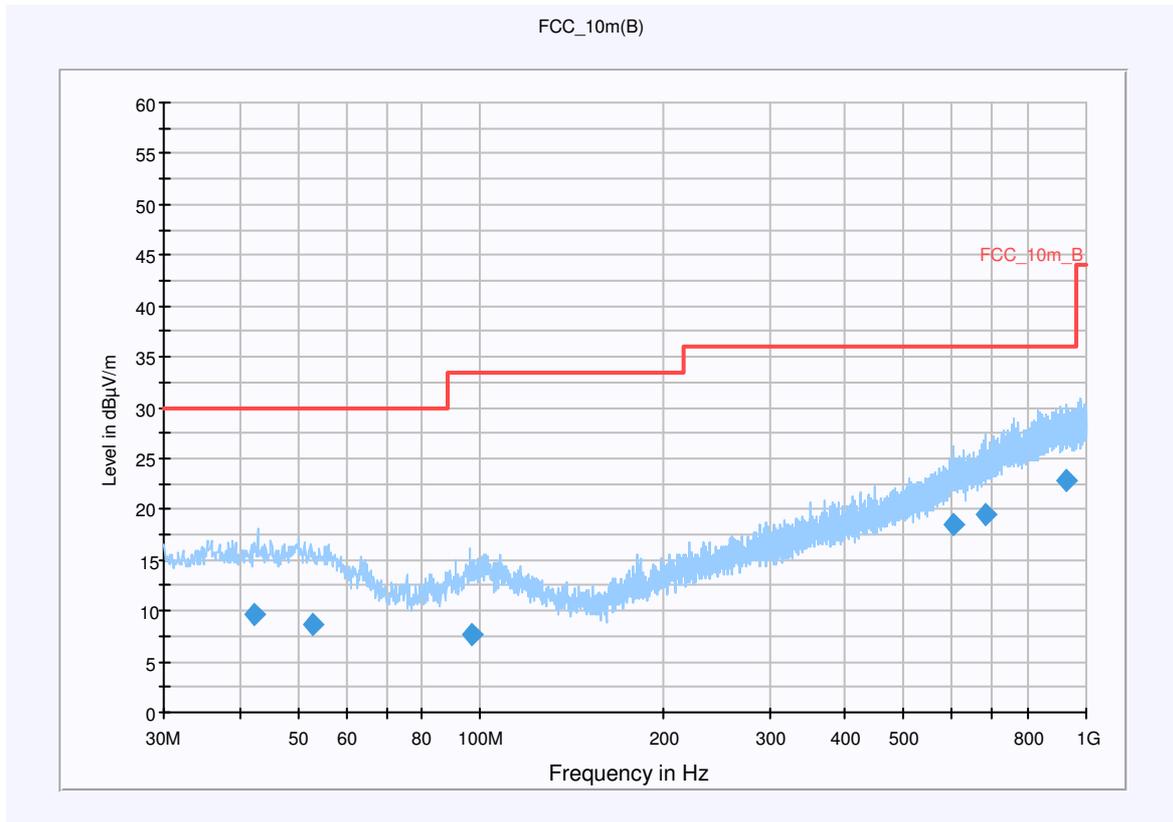
Common Information

EUT: AAD-3880043-BV
 Serial Number: CB511DSBNR IMEI: 00440107-875852-7 SVN 00
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX Ch. 1 + charging
 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

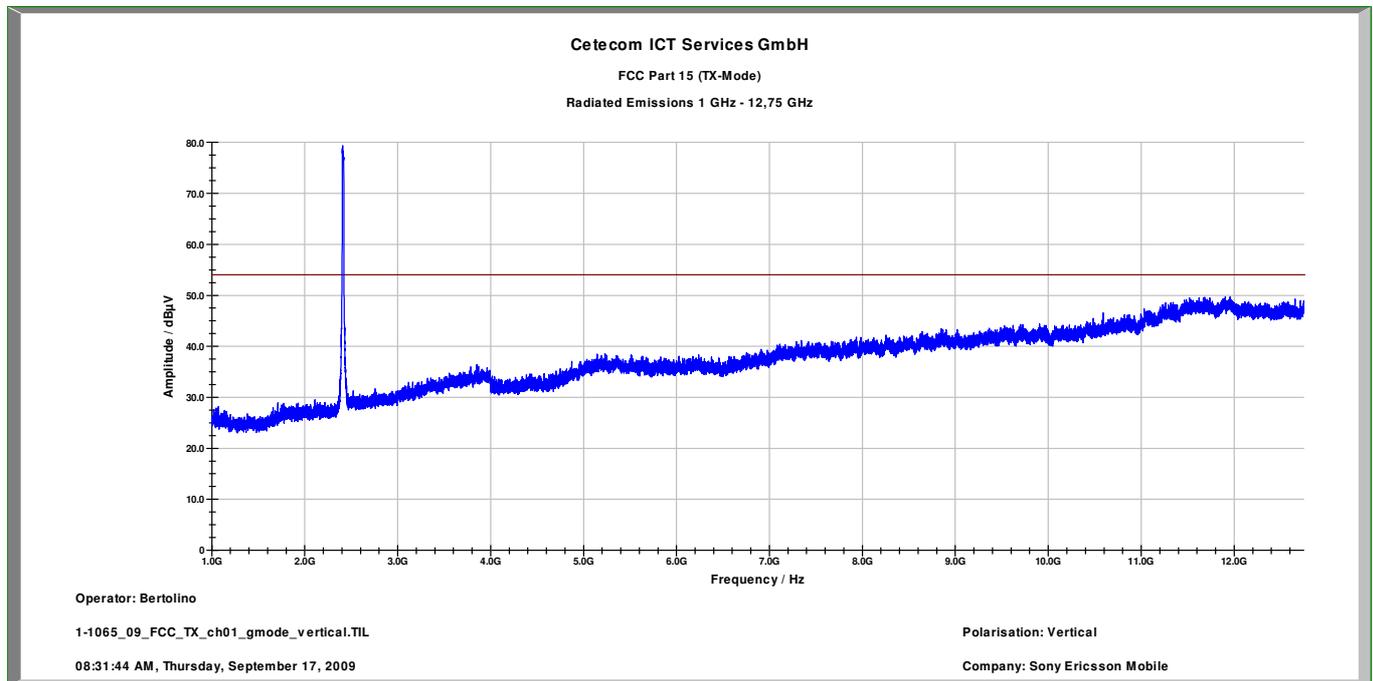
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
42.290900	9.6	15000.000	120.000	126.0	V	221.0	13.5	20.4	30.0	
52.744650	8.6	15000.000	120.000	200.0	V	70.0	13.3	21.4	30.0	
96.503950	7.7	15000.000	120.000	297.0	V	300.0	11.8	25.8	33.5	
603.244050	18.4	15000.000	120.000	200.0	V	281.0	21.4	17.6	36.0	
680.100800	19.4	15000.000	120.000	200.0	H	41.0	22.5	16.6	36.0	
924.969600	22.8	15000.000	120.000	107.0	V	20.0	25.8	13.2	36.0	

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

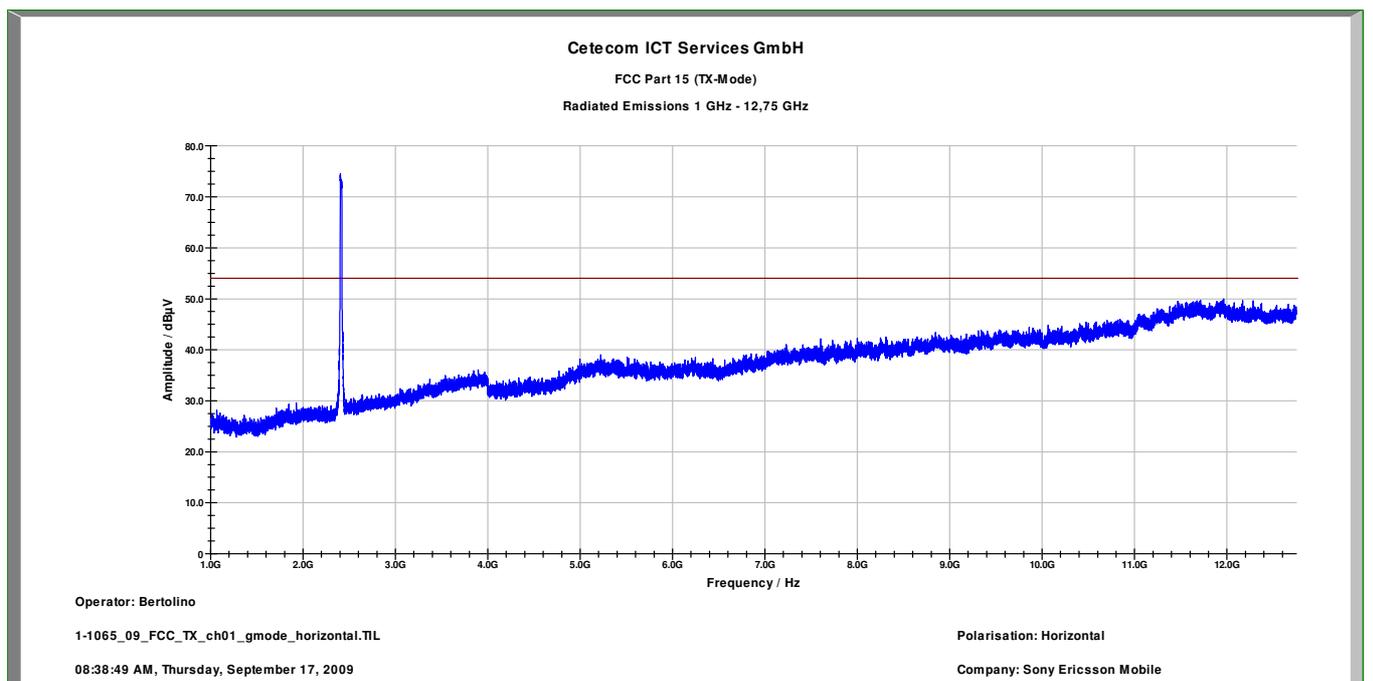
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/0033, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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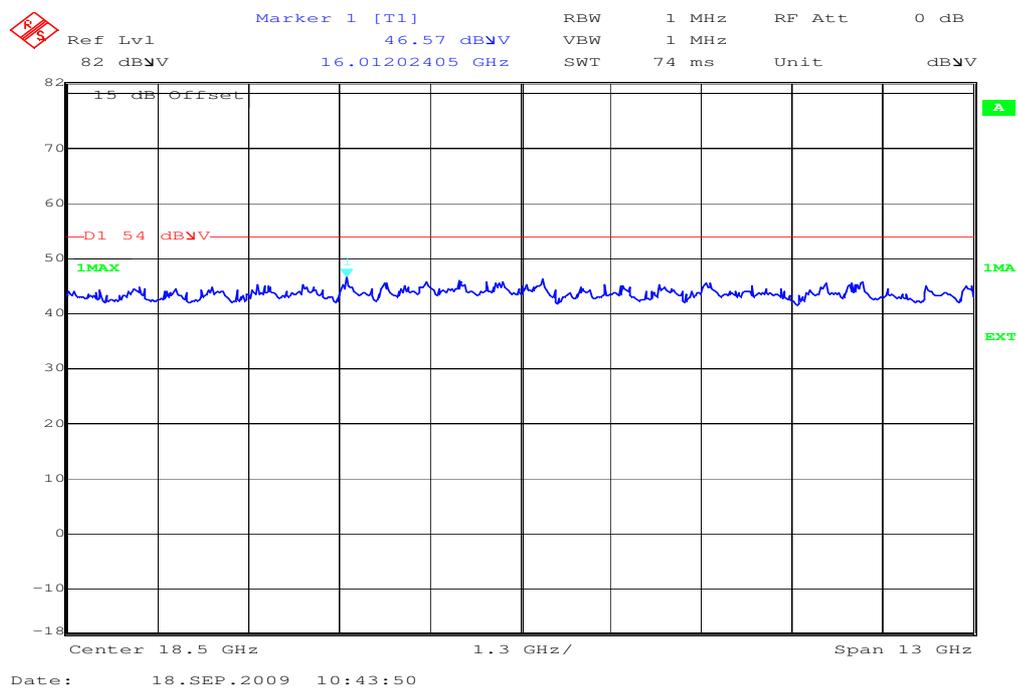
Plot 2: 1 – 12.75 GHz (lowest channel) - 2412 MHz, OFDM mode – 1 MBit/s, vertical polarization



Plot 3: 1 – 12.75 GHz (lowest channel) - 2412 MHz, OFDM mode – 1 MBit/s, horizontal polarization



Plot 4: 12 - 25 GHz (valid for all channels) - 2412 MHz, OFDM mode – 1 MBit/s, vertical & horizontal polarization



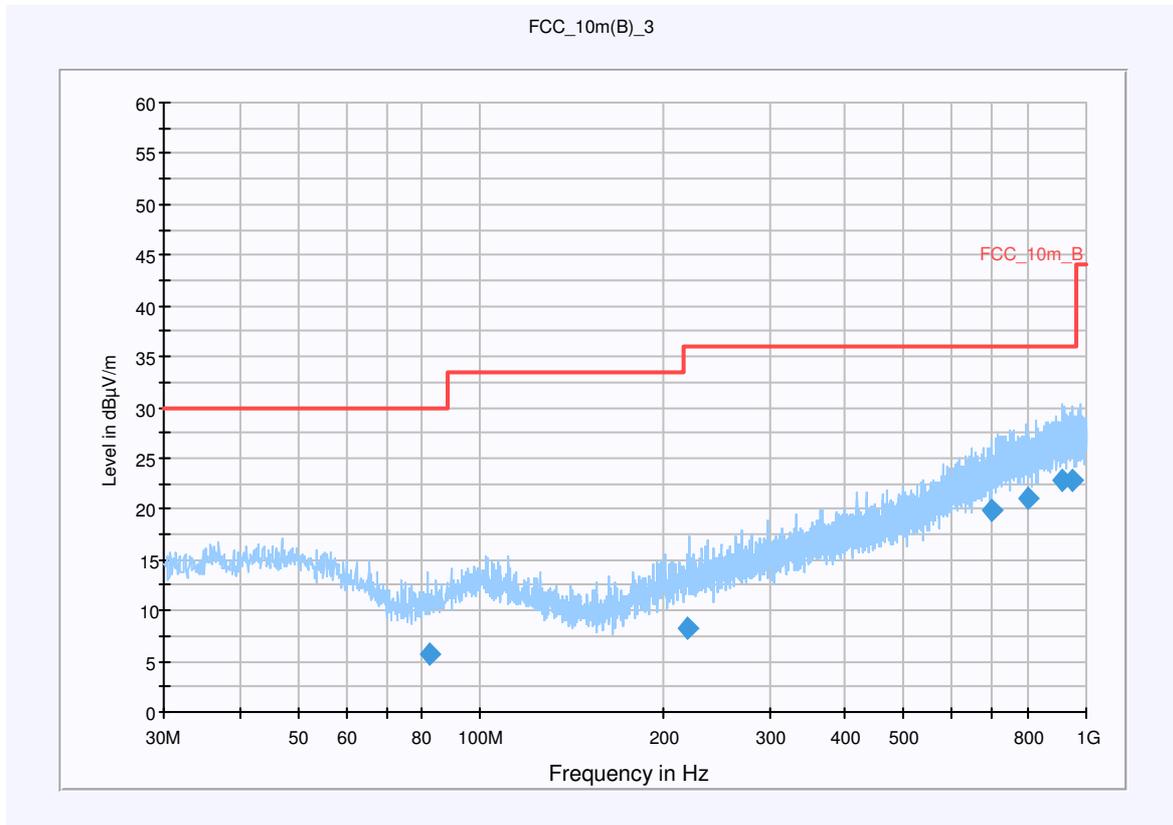
Plot 5: 0.03 - 1 GHz (middle channel) - 2437 MHz, OFDM mode – 1 MBit/s, vertical & horizontal polarization

Common Information

EUT: AAD-3880043-BV
 Serial Number: CB511DSB NR IMEI: 00440107-875852-7 SVN 00
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX Ch. 6 + charging
 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

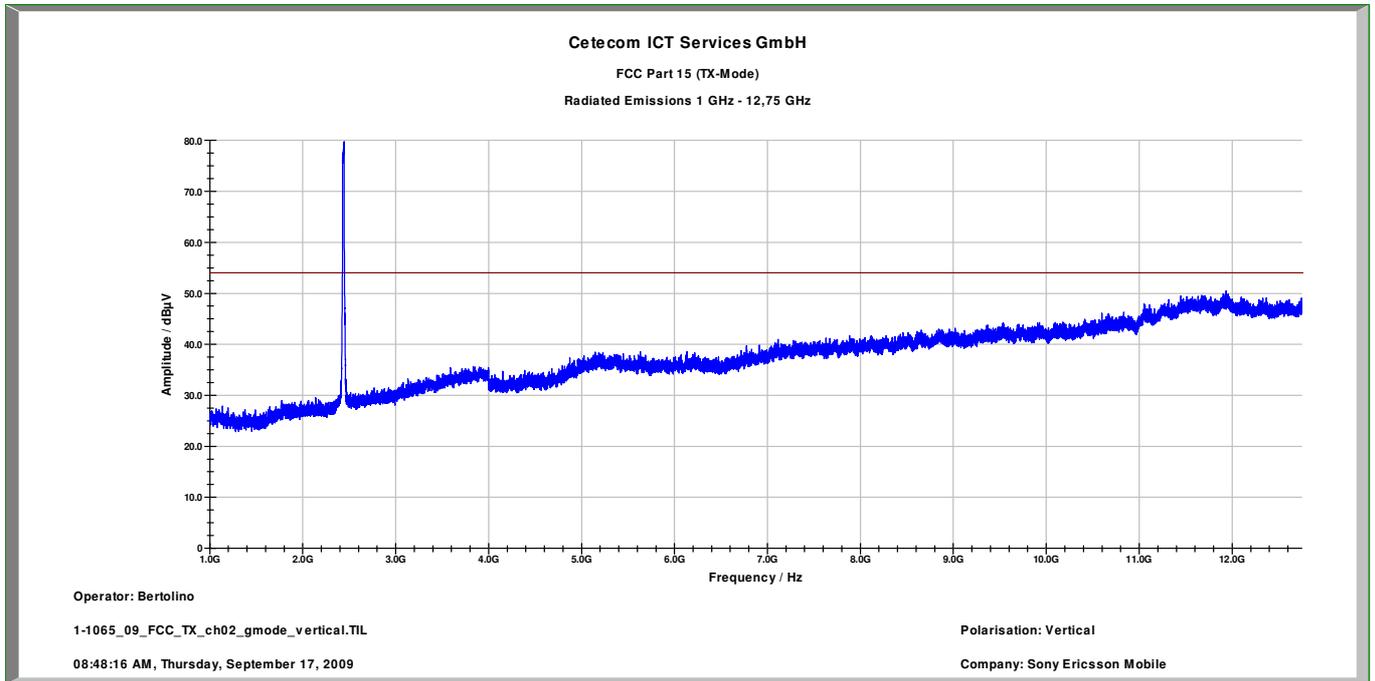
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
82.367500	5.7	15000.000	120.000	220.0	V	253.0	9.8	24.3	30.0	
220.395000	8.2	15000.000	120.000	220.0	H	304.0	12.7	27.8	36.0	
699.494700	19.9	15000.000	120.000	220.0	H	5.0	23.0	16.1	36.0	
797.978050	21.1	15000.000	120.000	214.0	V	152.0	24.3	14.9	36.0	
915.058500	22.8	15000.000	120.000	116.0	V	43.0	25.7	13.2	36.0	
949.731050	22.8	15000.000	120.000	220.0	V	204.0	25.9	13.2	36.0	

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

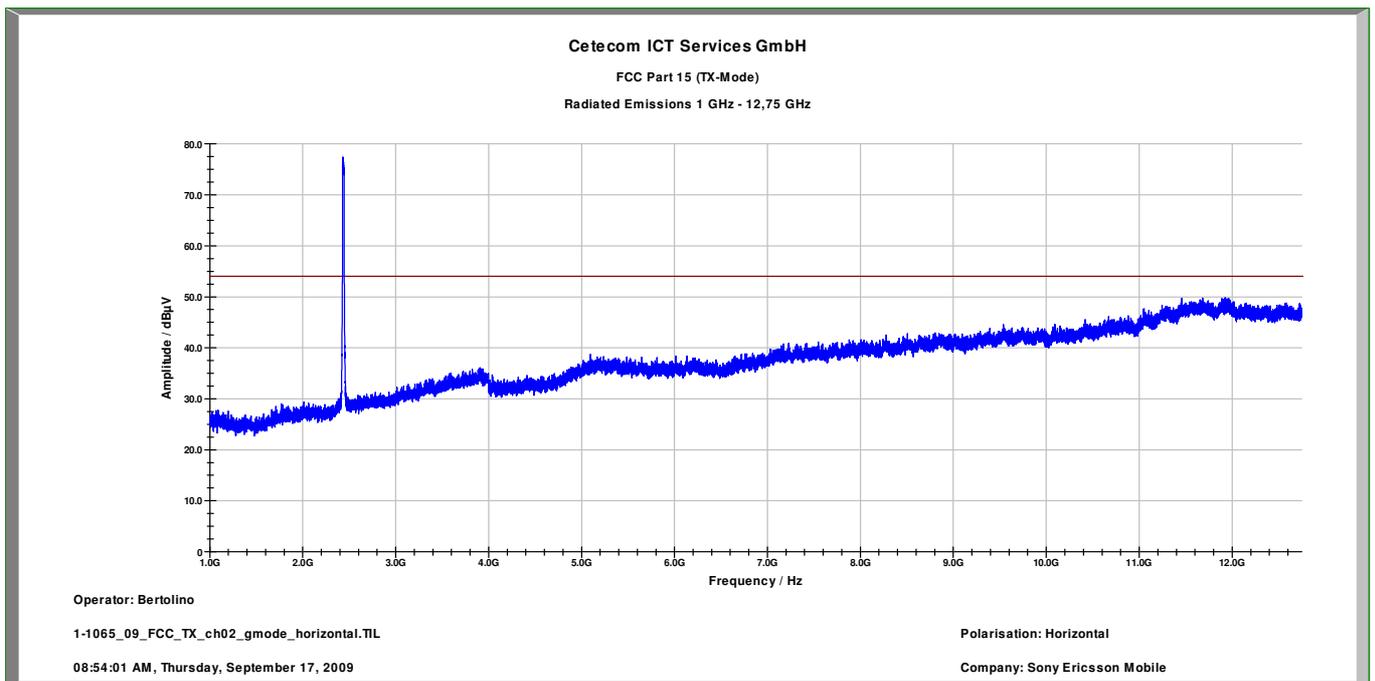
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/0033, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

Plot 6: 1 – 12.75 GHz (middle channel) - 2437 MHz, OFDM mode – 1 MBit/s, vertical polarization



Plot 7: 1 – 12.75 GHz (middle channel) - 2437 MHz, OFDM mode – 1 MBit/s, horizontal polarization



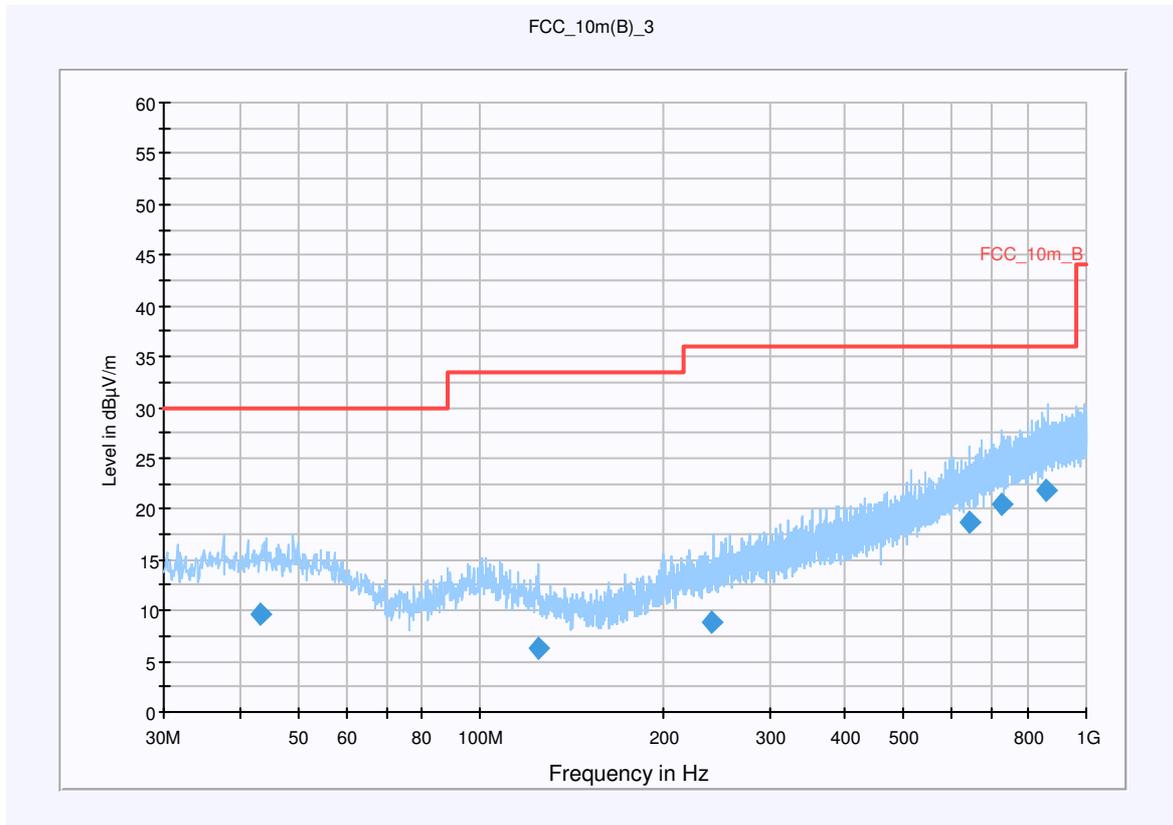
Plot 8: 0.03 - 1 GHz (highest channel) - 2462 MHz, OFDM mode – 1 MBit/s, vertical & horizontal polarization

Common Information

EUT: AAD-3880043-BV
 Serial Number: CB511DSBNR IMEI: 00440107-875852-7 SVN 00
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX Ch. 11 + charging
 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

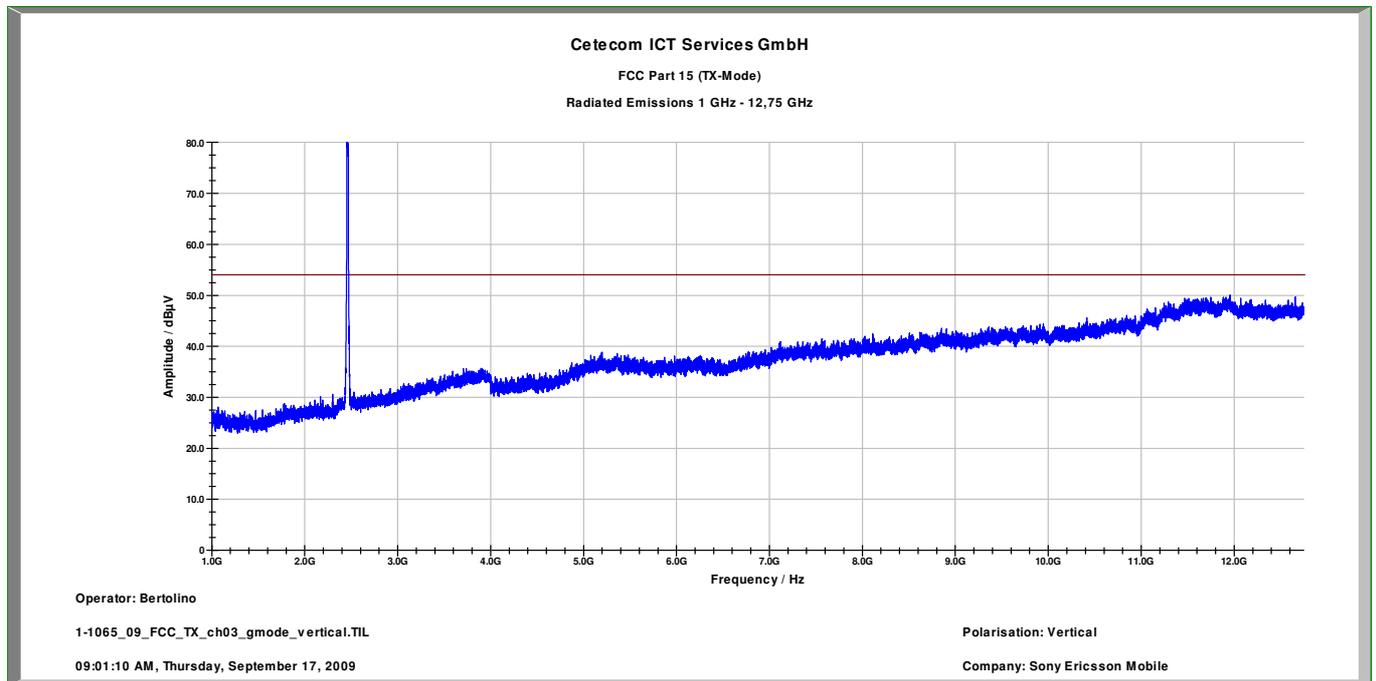
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
43.470950	9.6	15000.000	120.000	220.0	V	127.0	13.5	20.4	30.0	
124.235650	6.4	15000.000	120.000	98.0	V	183.0	10.2	27.1	33.5	
241.464850	8.8	15000.000	120.000	122.0	H	286.0	13.4	27.2	36.0	
641.514300	18.6	15000.000	120.000	152.0	V	323.0	21.6	17.4	36.0	
724.707500	20.6	15000.000	120.000	220.0	H	269.0	23.6	15.4	36.0	
861.111600	21.9	15000.000	120.000	165.0	V	252.0	25.2	14.1	36.0	

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

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/0033, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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Plot 9: 1 – 12.75 GHz (highest channel) - 2462 MHz, OFDM mode – 1 MBit/s, vertical polarization



Plot 10: 1 – 12.75 GHz (highest channel) - 2462 MHz, OFDM mode – 1 MBit/s, horizontal polarization

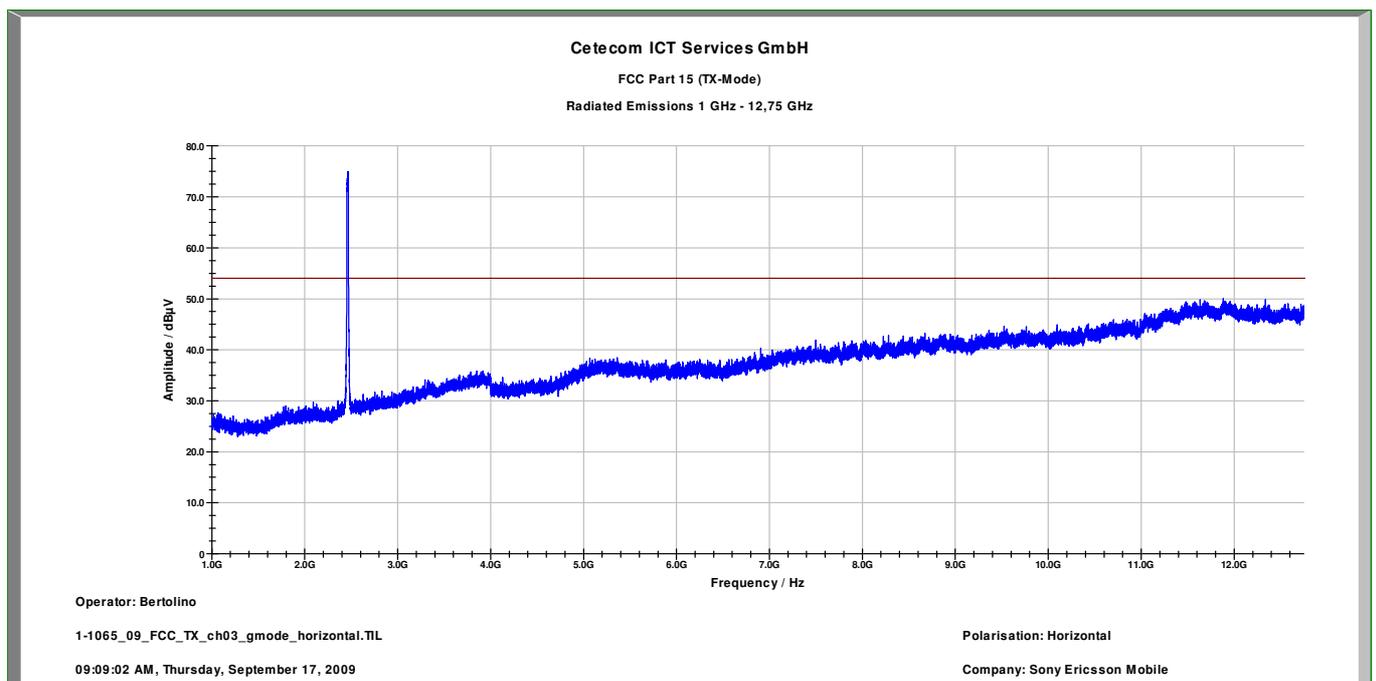


Photo 2:



EUT: Slider closed

Plot 1: 0.03 - 1 GHz (lowest channel) - 2412 MHz, OFDM mode – 1 MBit/s, vertical & horizontal polarization

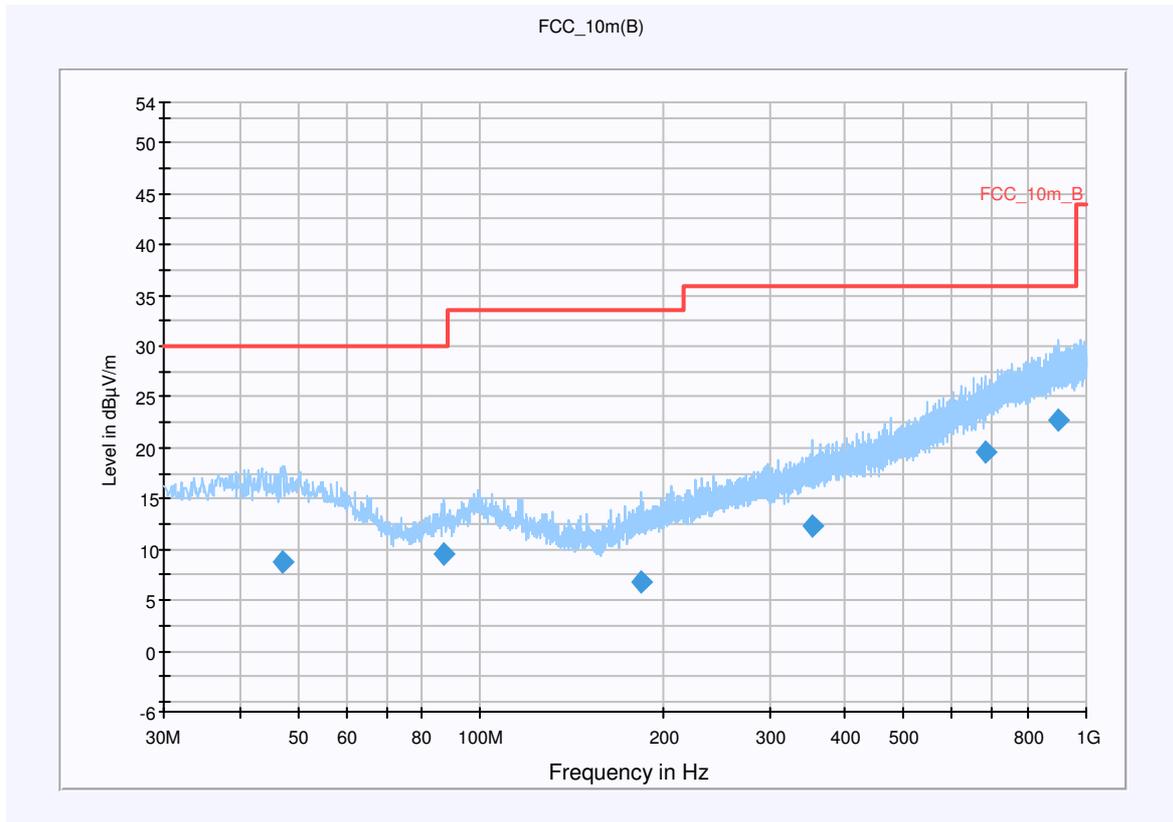
Common Information

EUT: AAD-3880043-BV
 Serial Number: CB511DSB NR IMEI: 00440107-875852-7 SVN 00
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: TX Ch. 6 + charging
 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

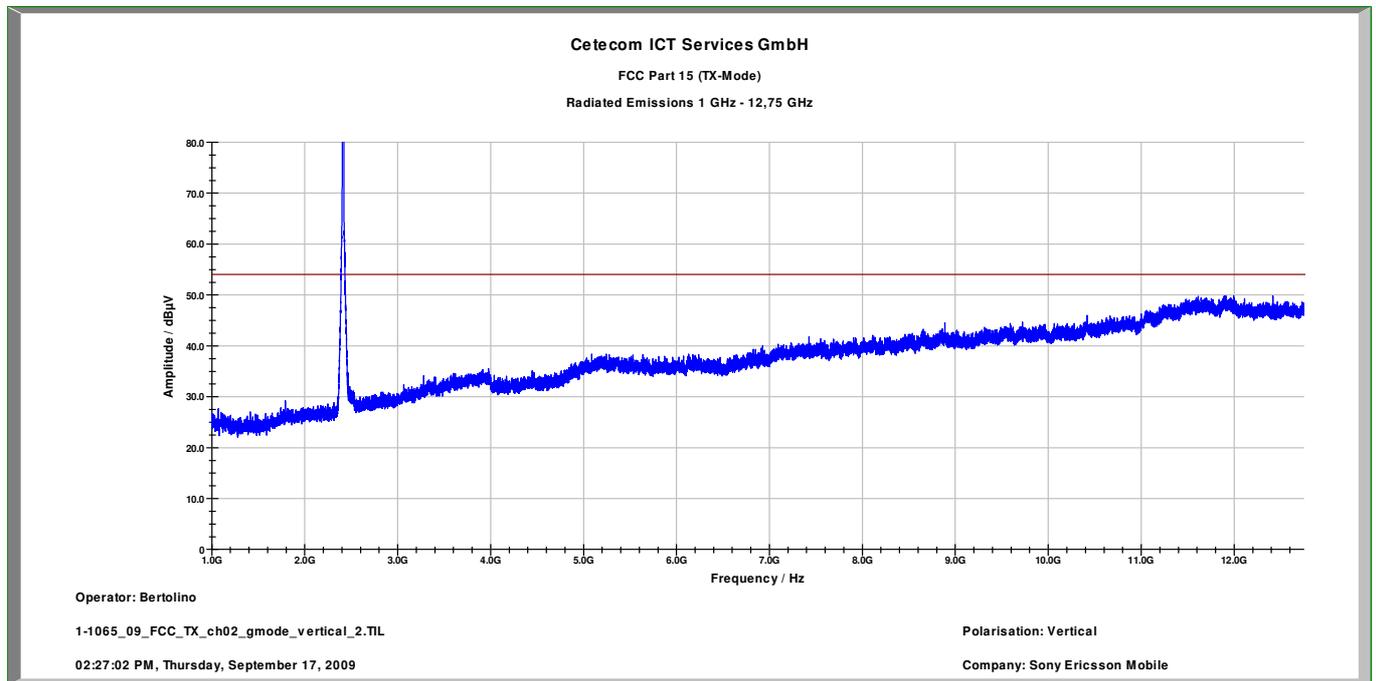
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
47.222750	8.7	15000.000	120.000	200.0	H	243.0	13.5	21.3	30.0	
86.990500	9.6	15000.000	120.000	316.0	V	226.0	10.5	20.4	30.0	
184.566750	6.9	15000.000	120.000	100.0	V	49.0	11.0	26.6	33.5	
353.649200	12.2	15000.000	120.000	400.0	V	33.0	16.5	23.8	36.0	
681.750800	19.5	15000.000	120.000	200.0	V	125.0	22.5	16.5	36.0	
896.126600	22.7	15000.000	120.000	400.0	H	34.0	25.7	13.3	36.0	

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

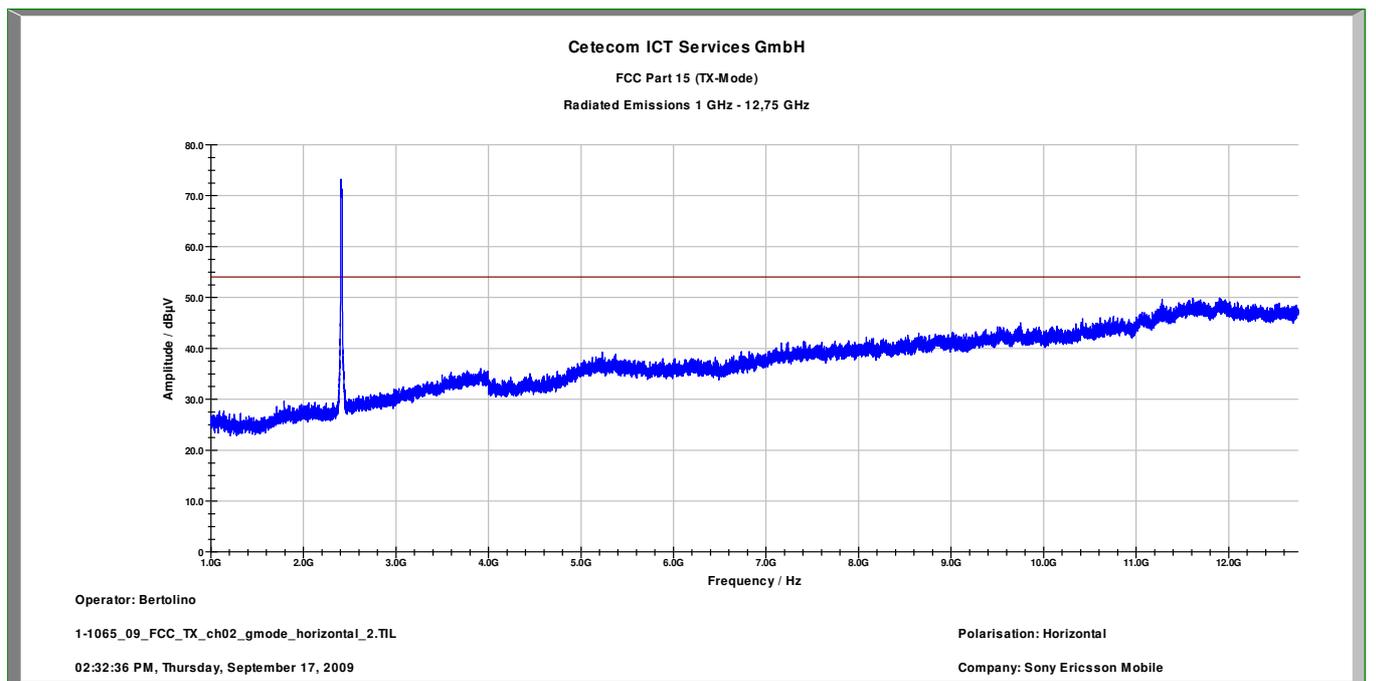
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/0033, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

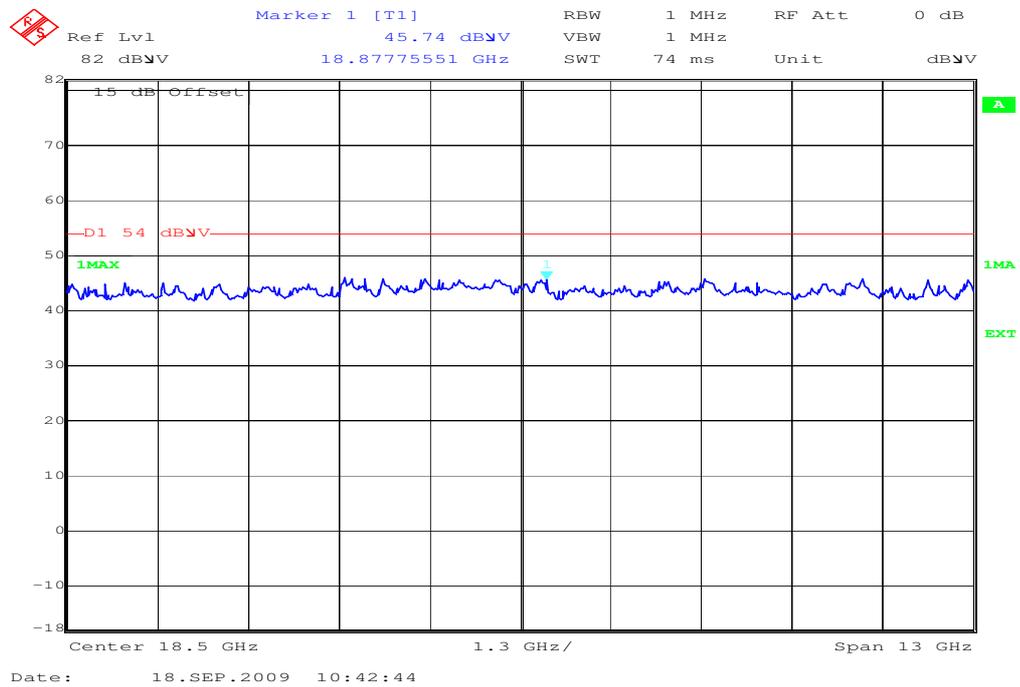
Plot 2: 1 – 12.75 GHz (lowest channel) - 2412 MHz, OFDM mode – 1 MBit/s, vertical polarization



Plot 3: 1 – 12.75 GHz (lowest channel) - 2412 MHz, OFDM mode – 1 MBit/s, horizontal polarization



Plot 4: 12 - 25 GHz (valid for all channels) - 2412 MHz, OFDM mode – 1 MBit/s, vertical & horizontal polarization



Results:

SPURIOUS EMISSIONS LEVEL §15.209								
2412 MHz slider open			2437 MHz slider open			2462 MHz slider open		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No critical peaks detected.			No critical peaks detected.			No critical peaks detected.		
			2437 MHz slider closed					
			F [MHz]	Detector	Level [dBµV/m]			
			No critical peaks 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 (receiver), vertical & horizontal polarization

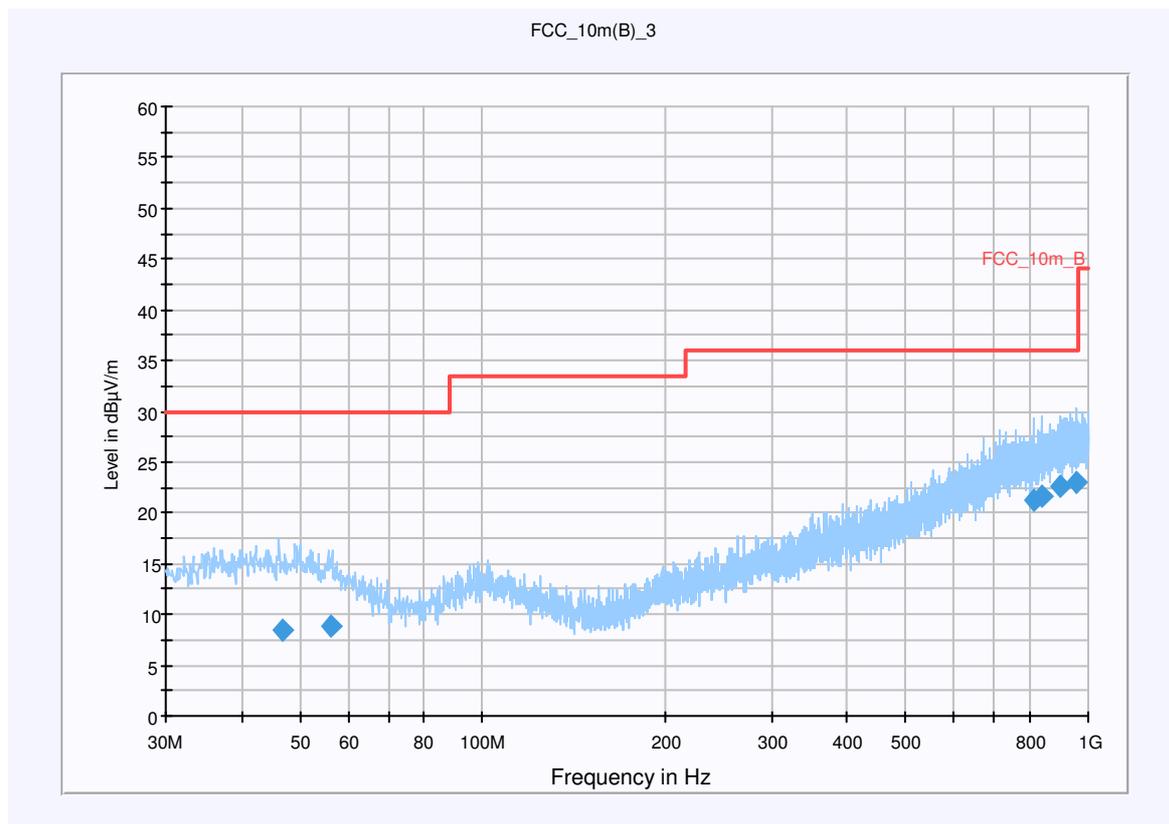
Common Information

EUT: AAD-3880043-BV
 Serial Number: CB511DSBNR IMEI: 00440107-875852-7 SVN 00
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: RX + charging
 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

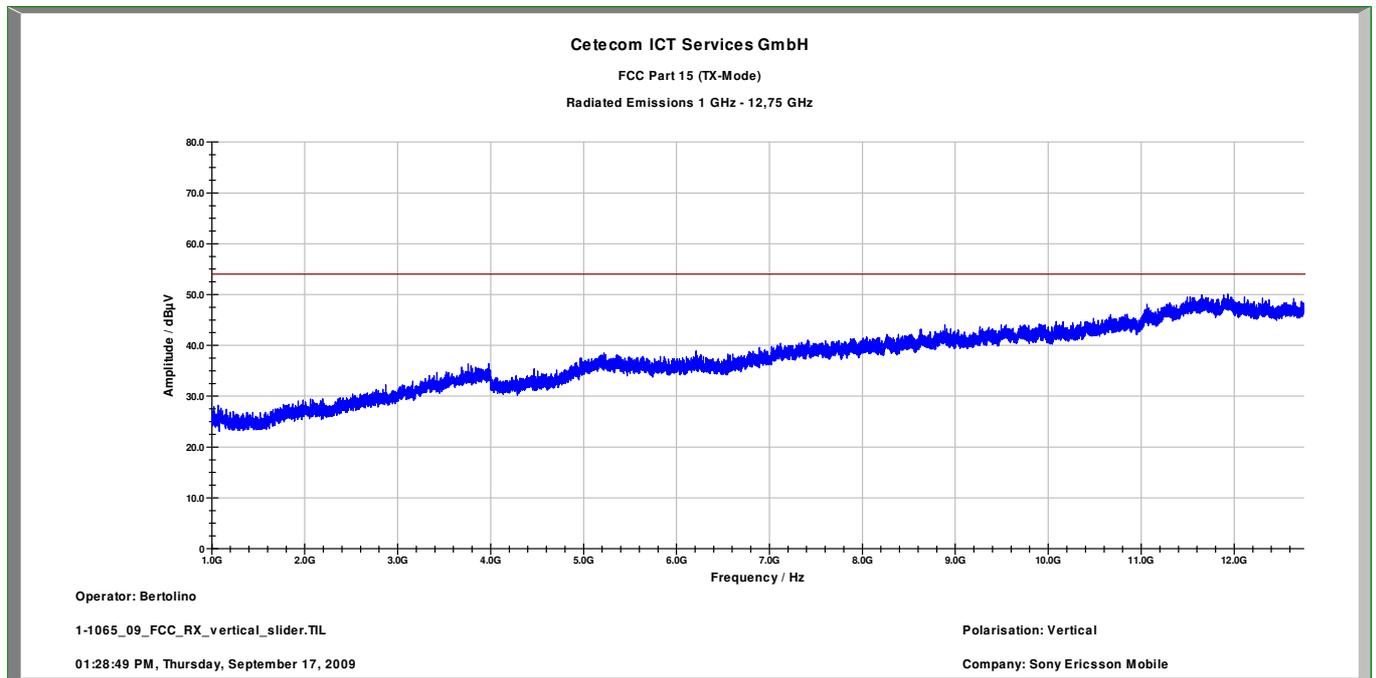
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
46.664000	8.4	15000.000	120.000	220.0	H	236.0	13.5	21.6	30.0	
56.124400	8.9	15000.000	120.000	220.0	V	146.0	12.8	21.1	30.0	
814.973200	21.3	15000.000	120.000	98.0	H	51.0	24.5	14.7	36.0	
838.712950	21.6	15000.000	120.000	220.0	V	284.0	24.9	14.4	36.0	
895.146000	22.6	15000.000	120.000	220.0	H	-7.0	25.6	13.4	36.0	
955.613250	22.9	15000.000	120.000	105.0	H	22.0	25.9	13.1	36.0	

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

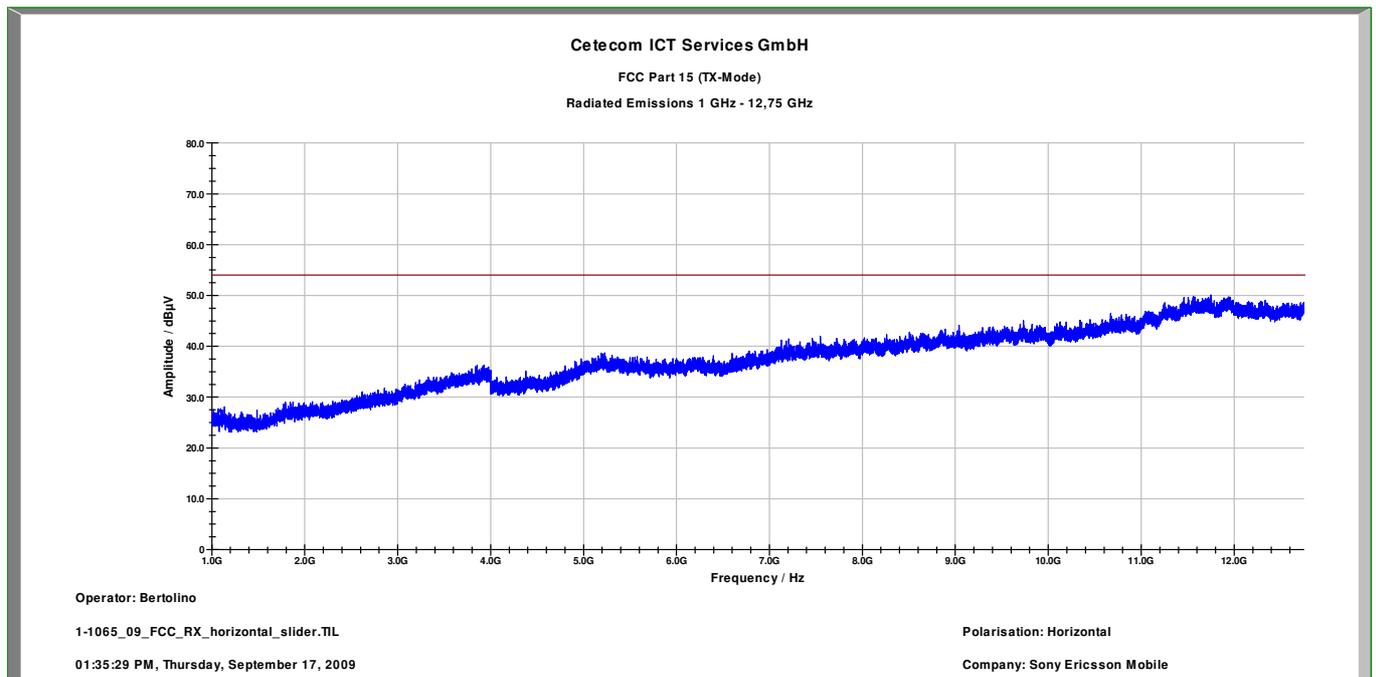
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/0033, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

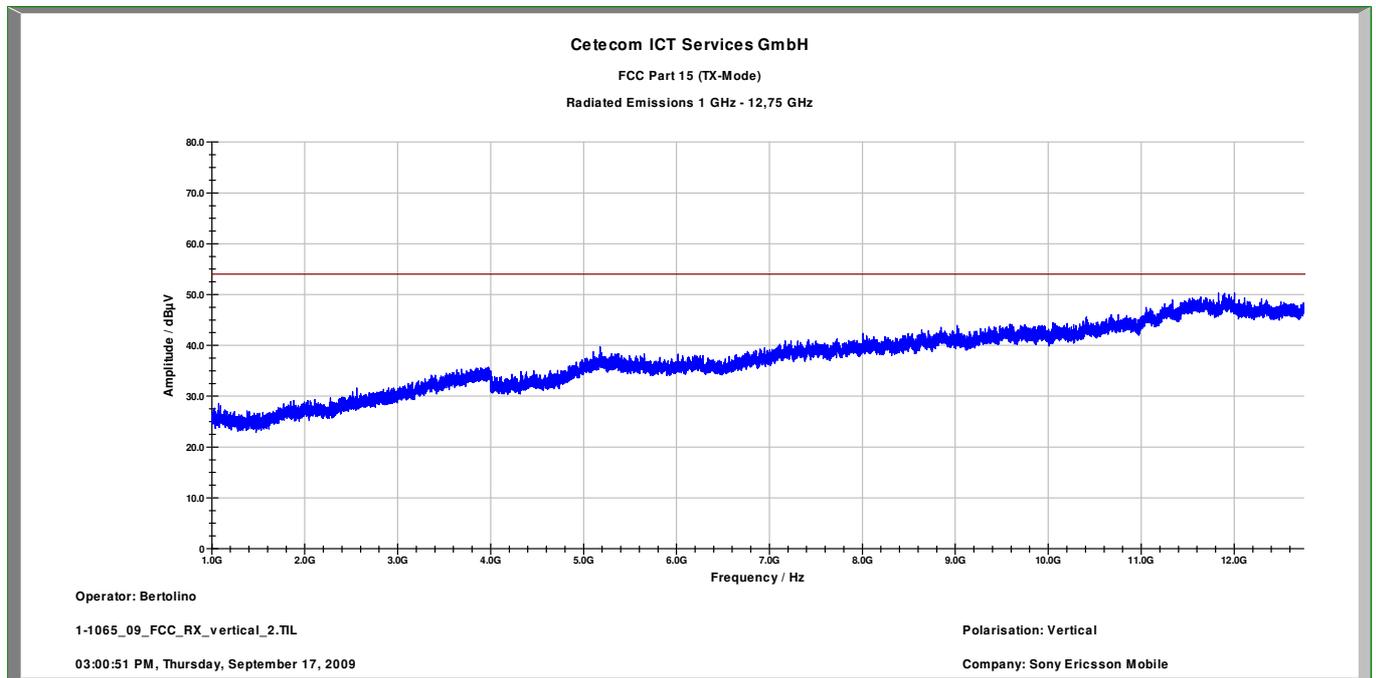
Plot 2: 1 – 12.75 GHz (receiver), vertical polarization, slider open



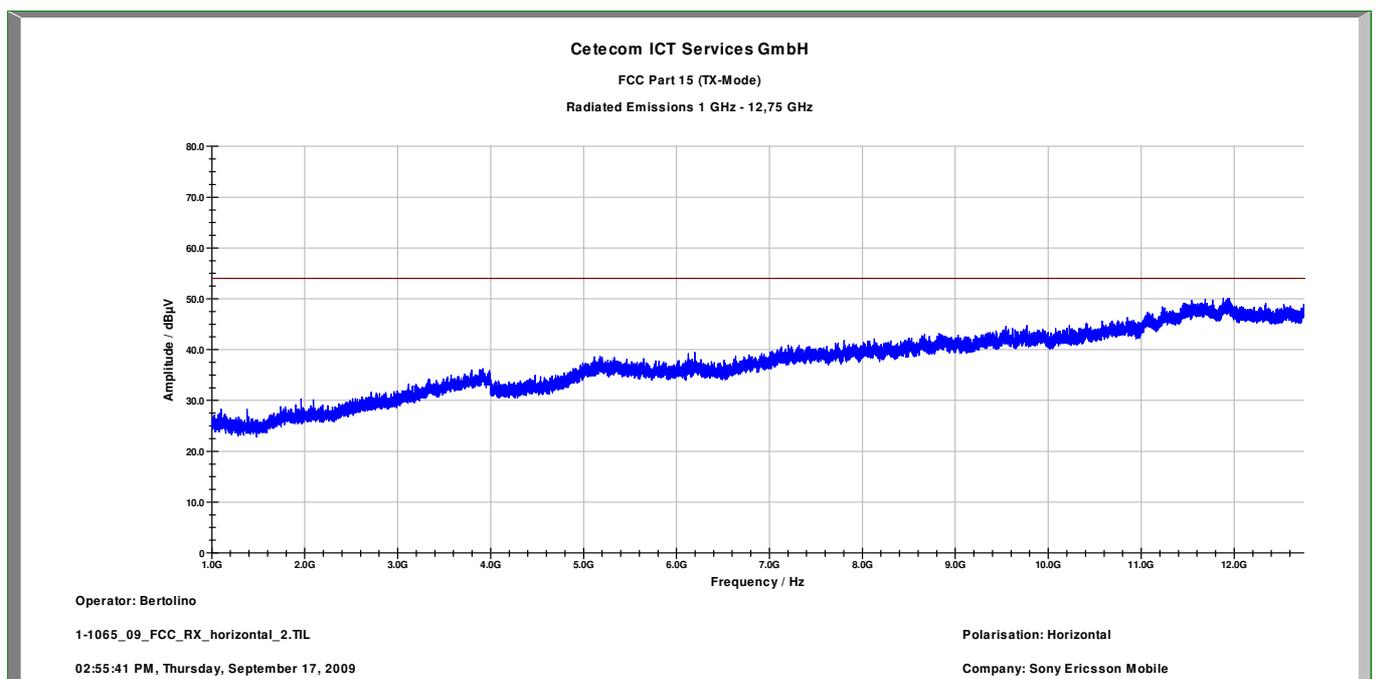
Plot 3: 1 – 12.75 GHz (receiver), horizontal polarization, slider open



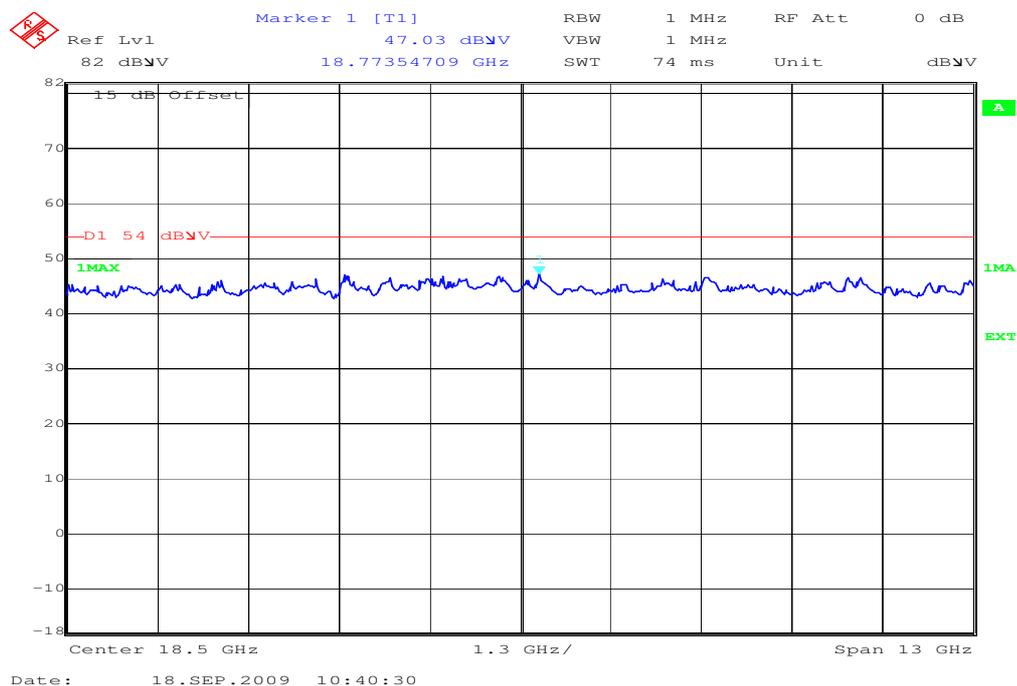
Plot 4: 1 – 12.75 GHz (receiver), vertical polarization, slider closed



Plot 5: 1 – 12.75 GHz (receiver), horizontal polarization, slider closed



Plot 6: 12 - 25 GHz (receiver), vertical & horizontal polarization



Results:

Spurious Emissions level [dBμV/m]		
f[MHz]	Detector	Level [dBμV/m]
No critical peaks detected.		
Measurement uncertainty		±3 dB

f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW/VBW: 1 MHz
 See above plots

Measurement distance see table

Limits: § 15.109

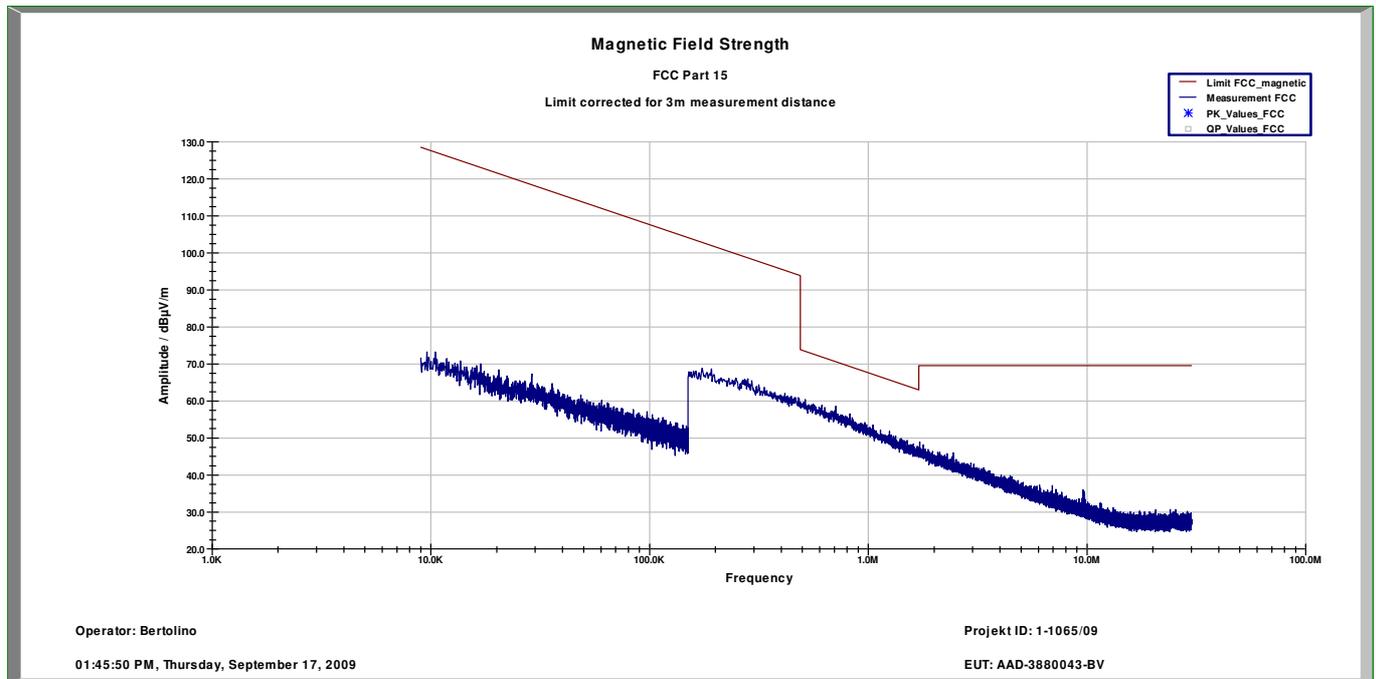
Frequency (MHz)	Field strength (dBμV/m)	Measurement distance (m)
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

5.15 Spurious Emissions - radiated <30 MHz §15.209

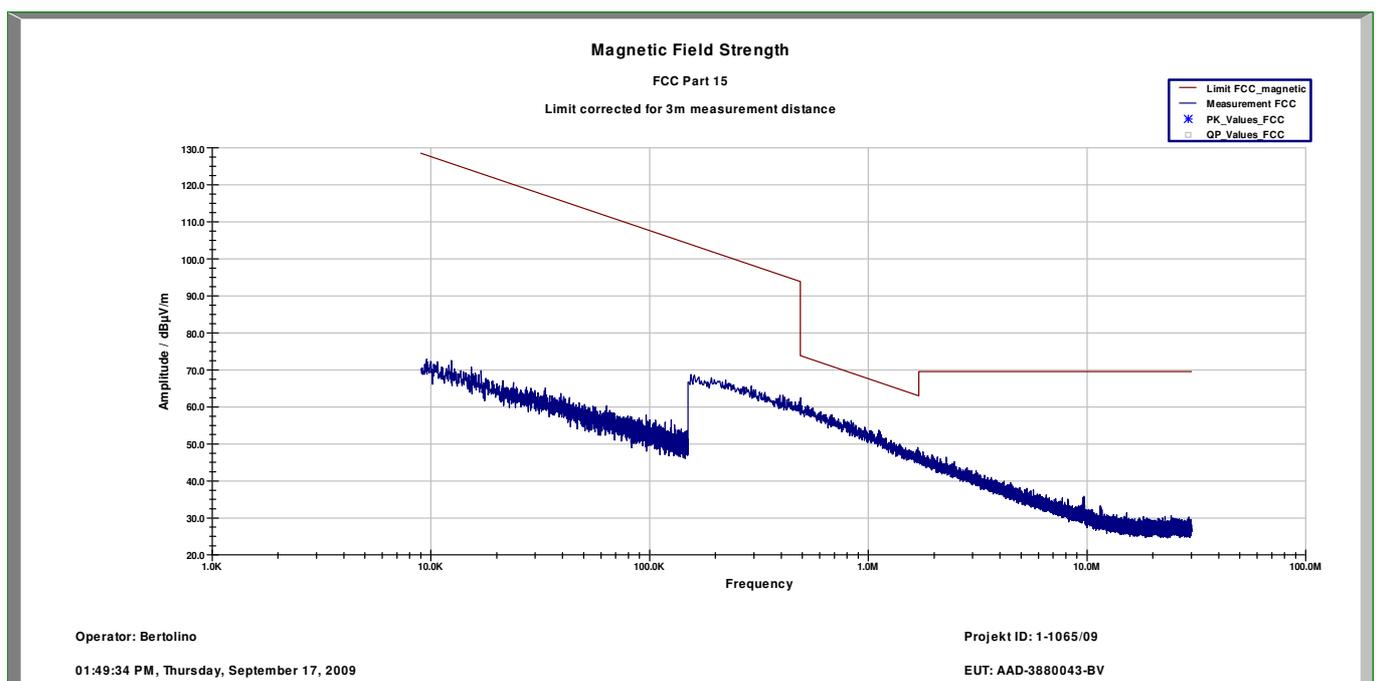
Measured at 3 m distance.

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

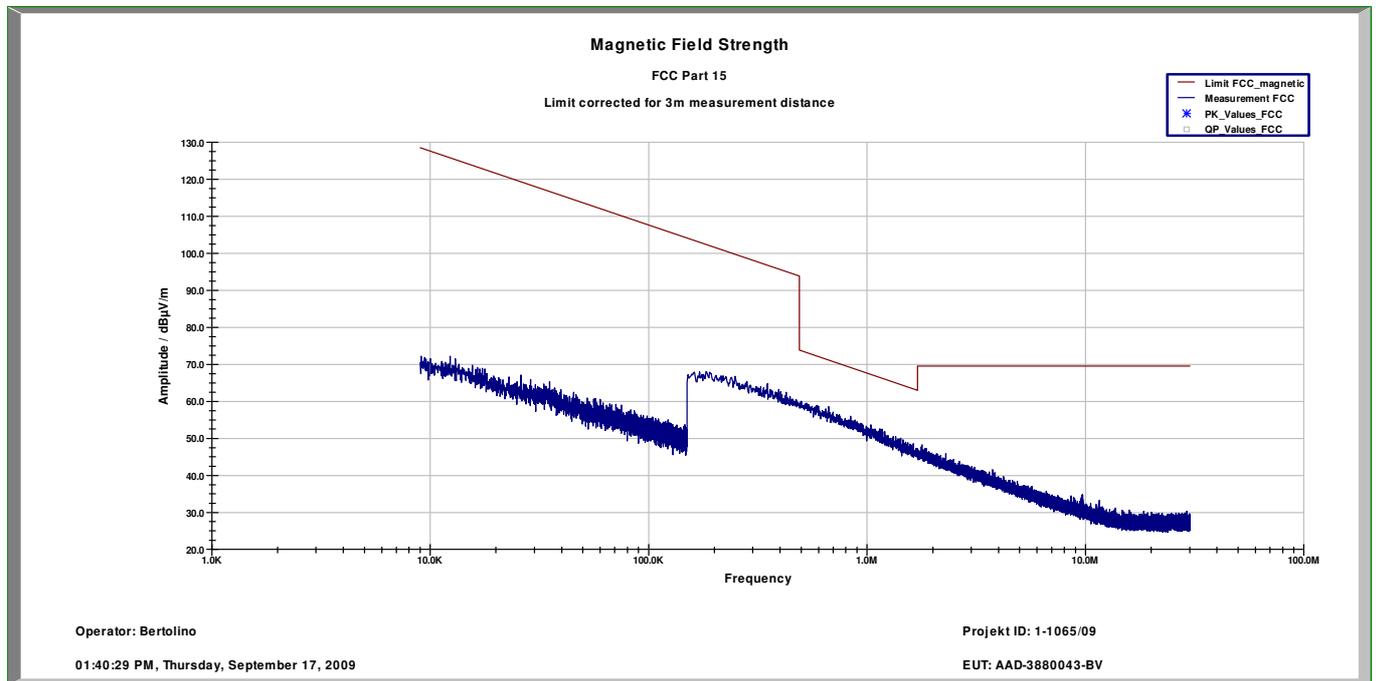
Plot 1: TX mode, DSSS – mode, slider open



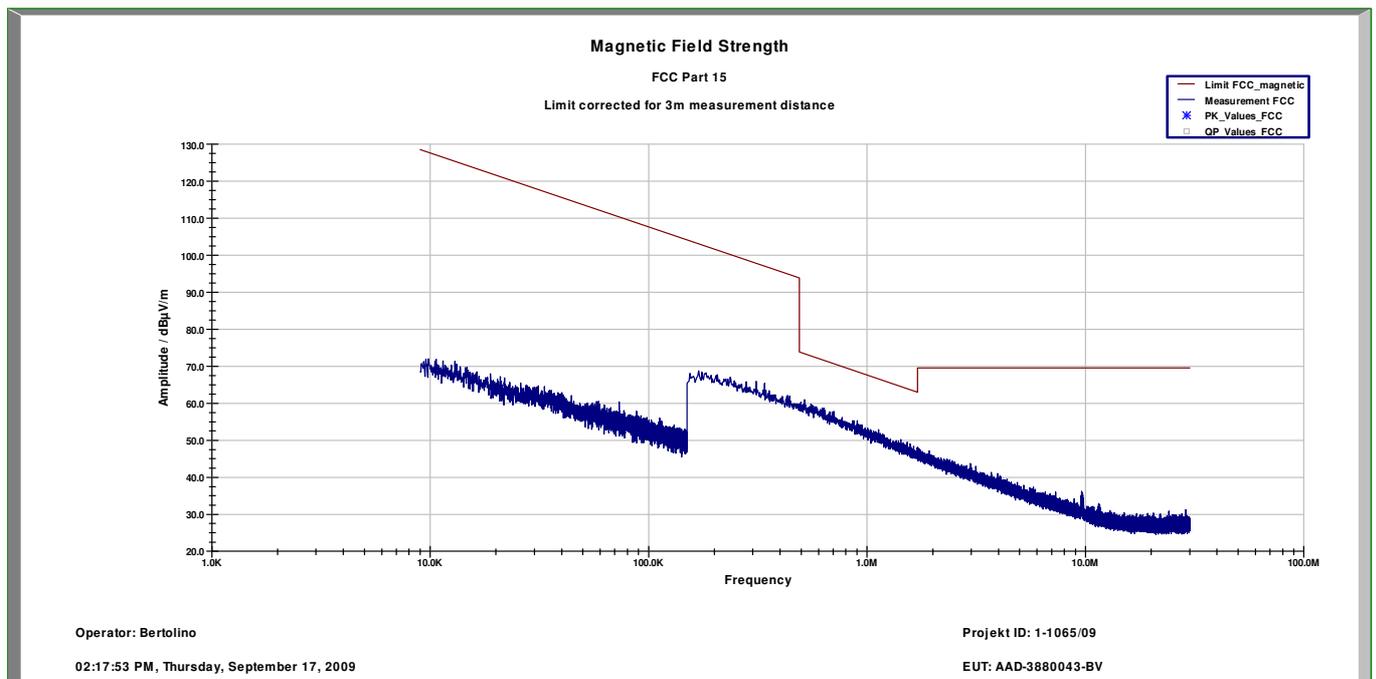
Plot 2: TX mode, OFDM – mode, slider open



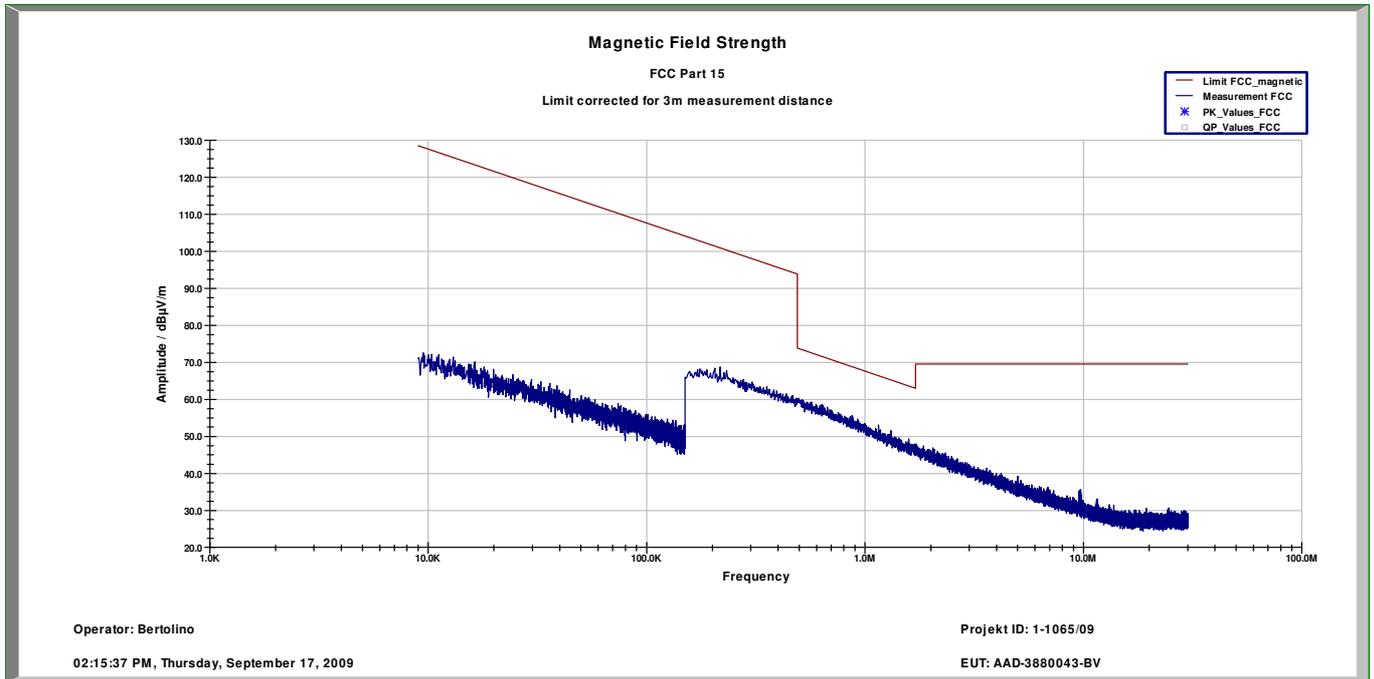
Plot 3: RX mode, slider open



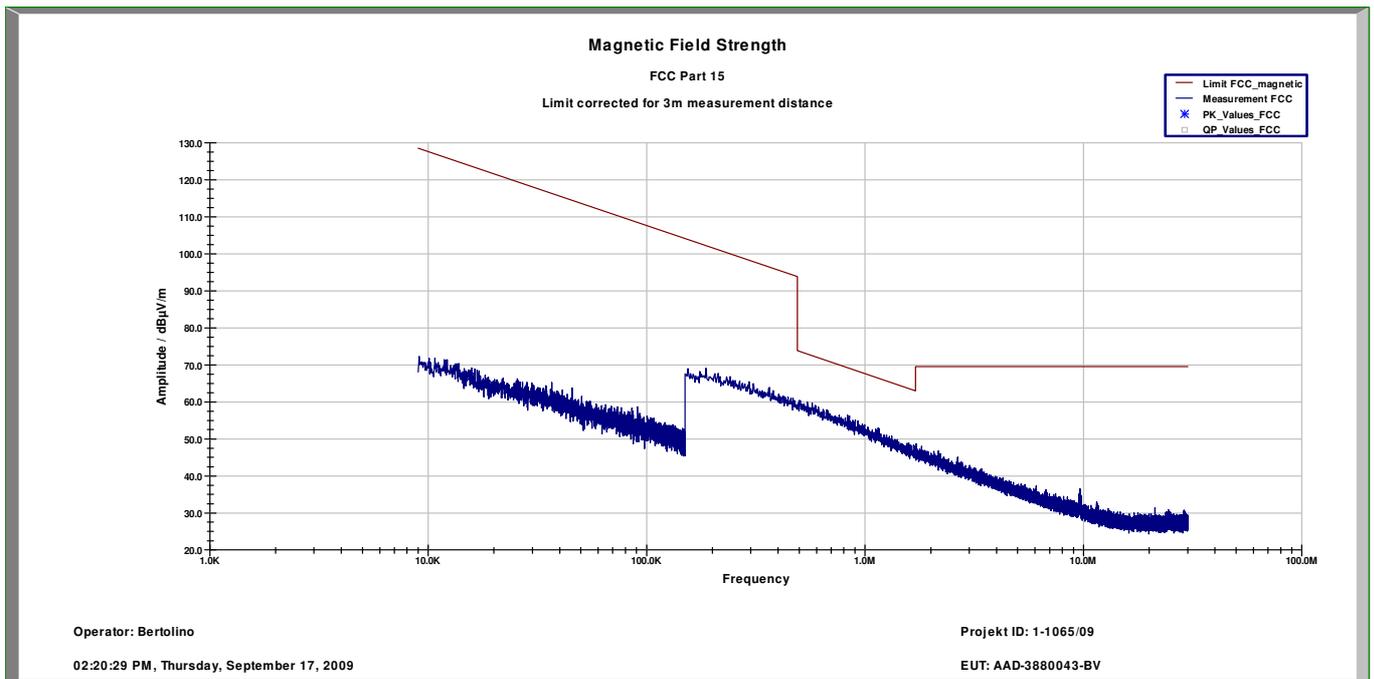
Plot 4: TX mode, DSSS – mode, slider closed



Plot 5: TX mode, OFDM – mode, slider closed



Plot 6: RX mode, slider closed

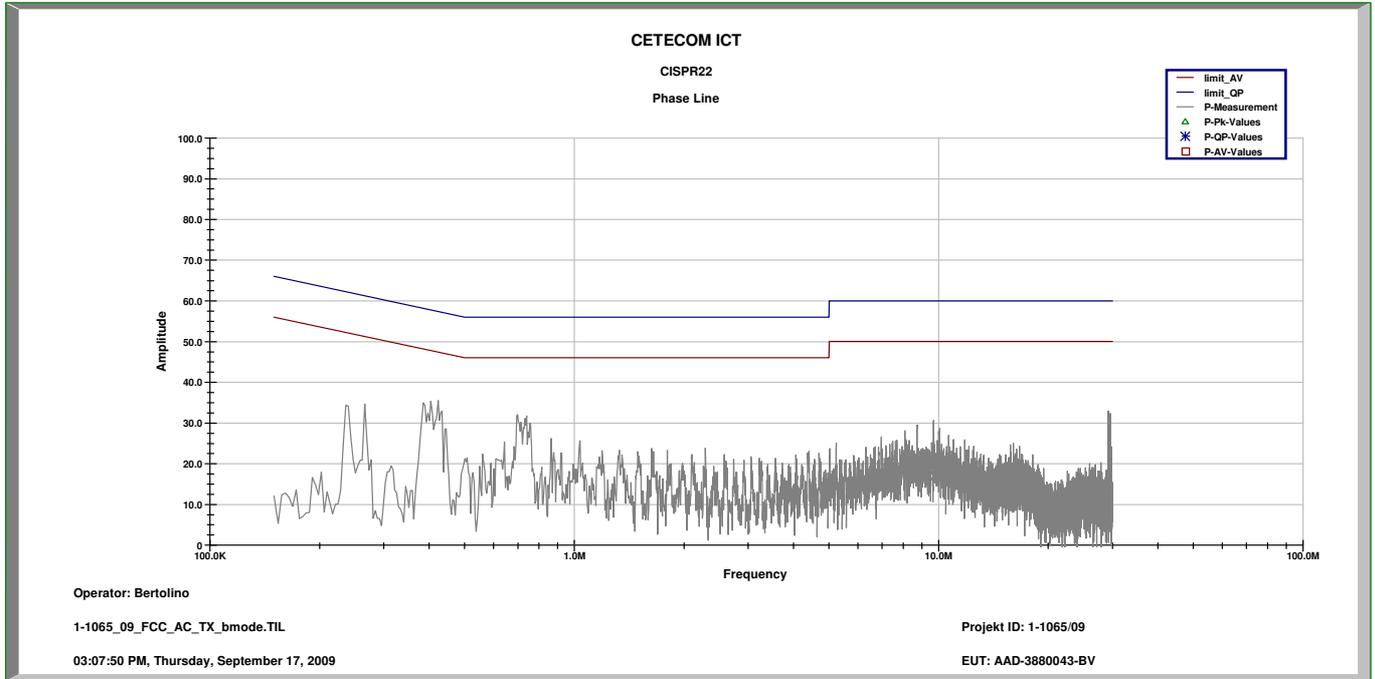


Limits:

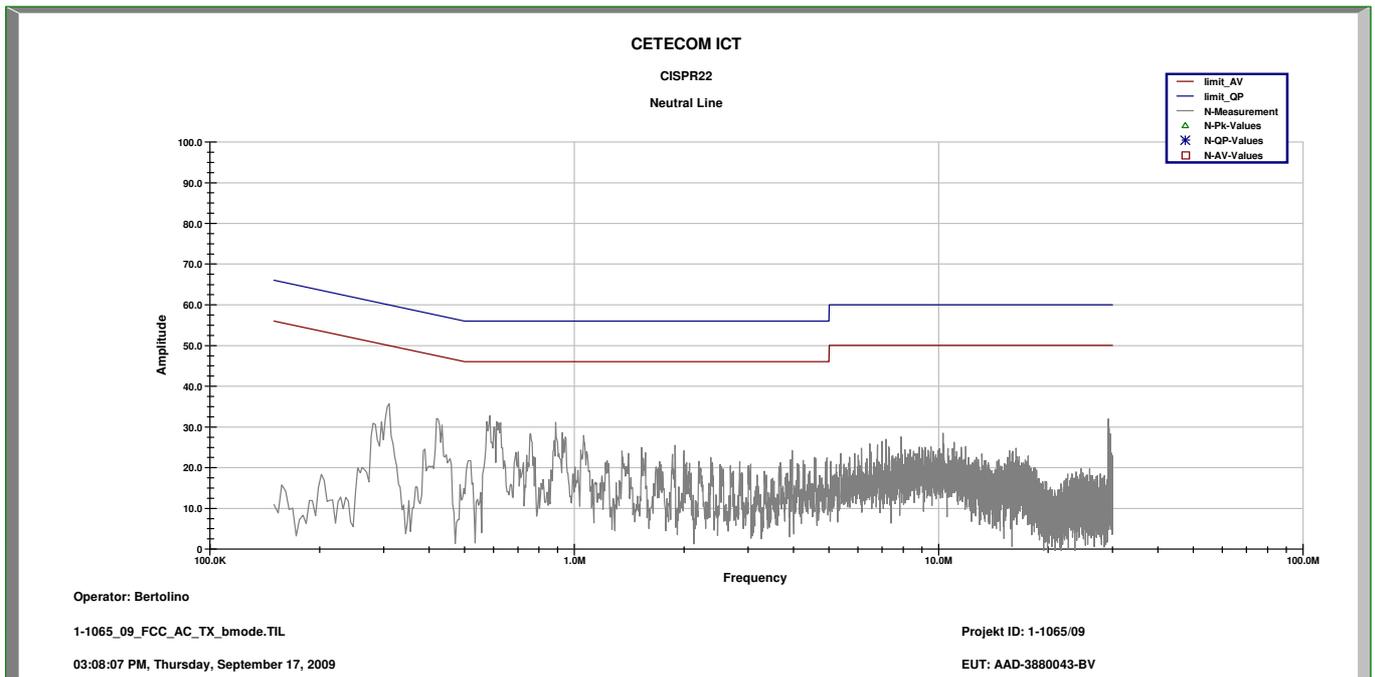
Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dB $\mu\text{V/m}$	30
30 - 88	100 / 40 dB $\mu\text{V/m}$	3
88 - 216	150 / 43.5 dB $\mu\text{V/m}$	3
216 - 960	200 / 46 dB $\mu\text{V/m}$	3
above 960	54 dB $\mu\text{V/m}$	3

5.16 Conducted Emissions <30 MHz §15.107/207

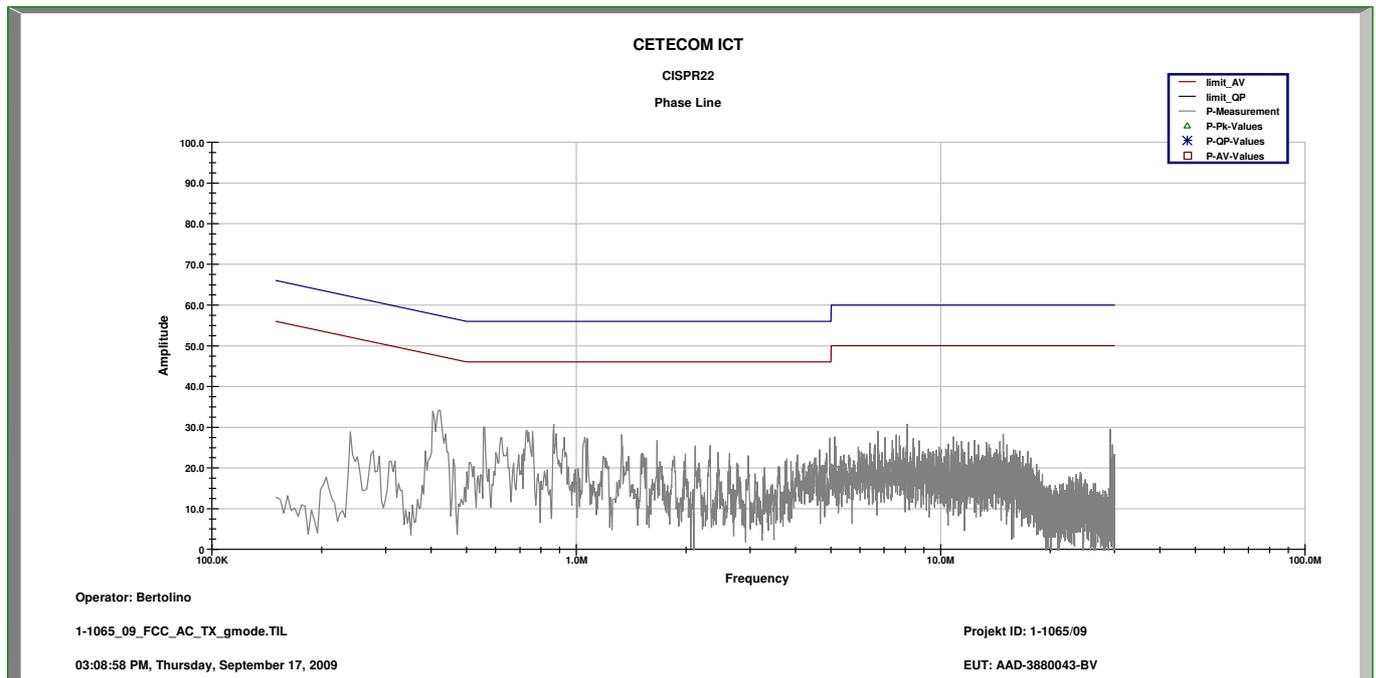
Plot 1: TX mode, DSSS – mode, phase line



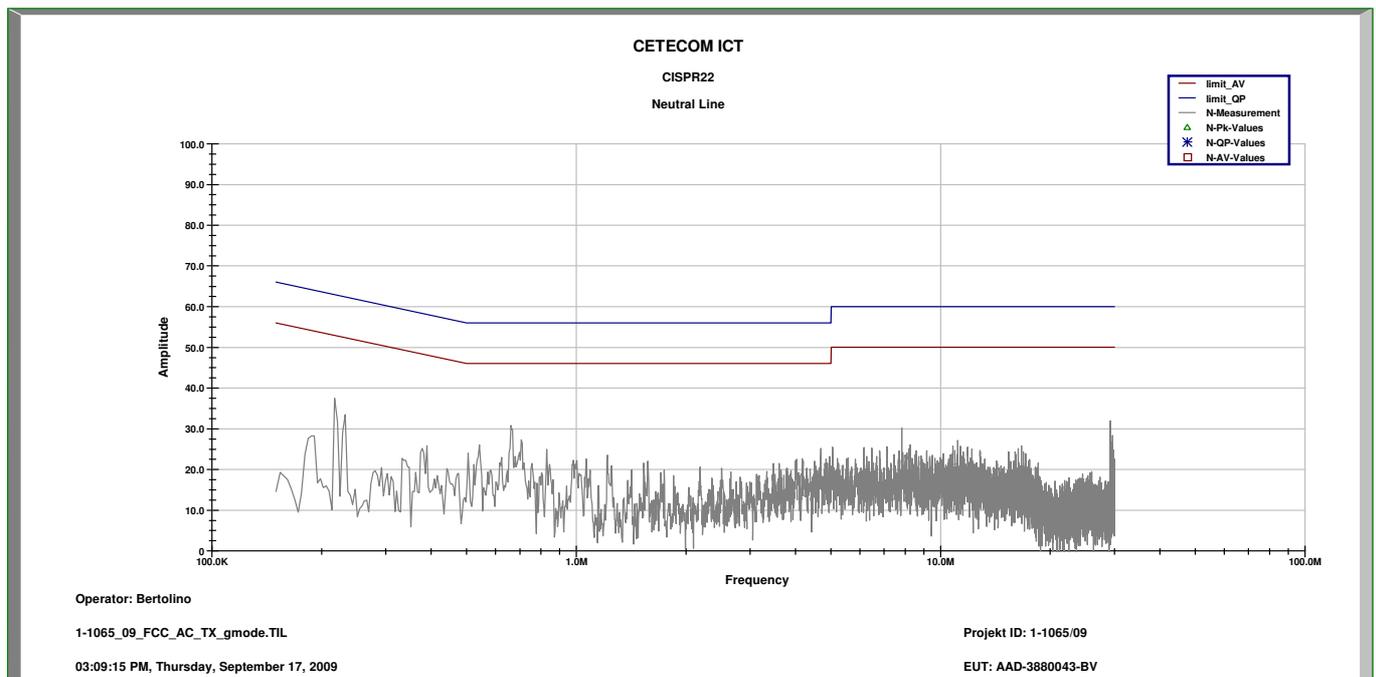
Plot 2: TX mode, DSSS – mode, neutral line



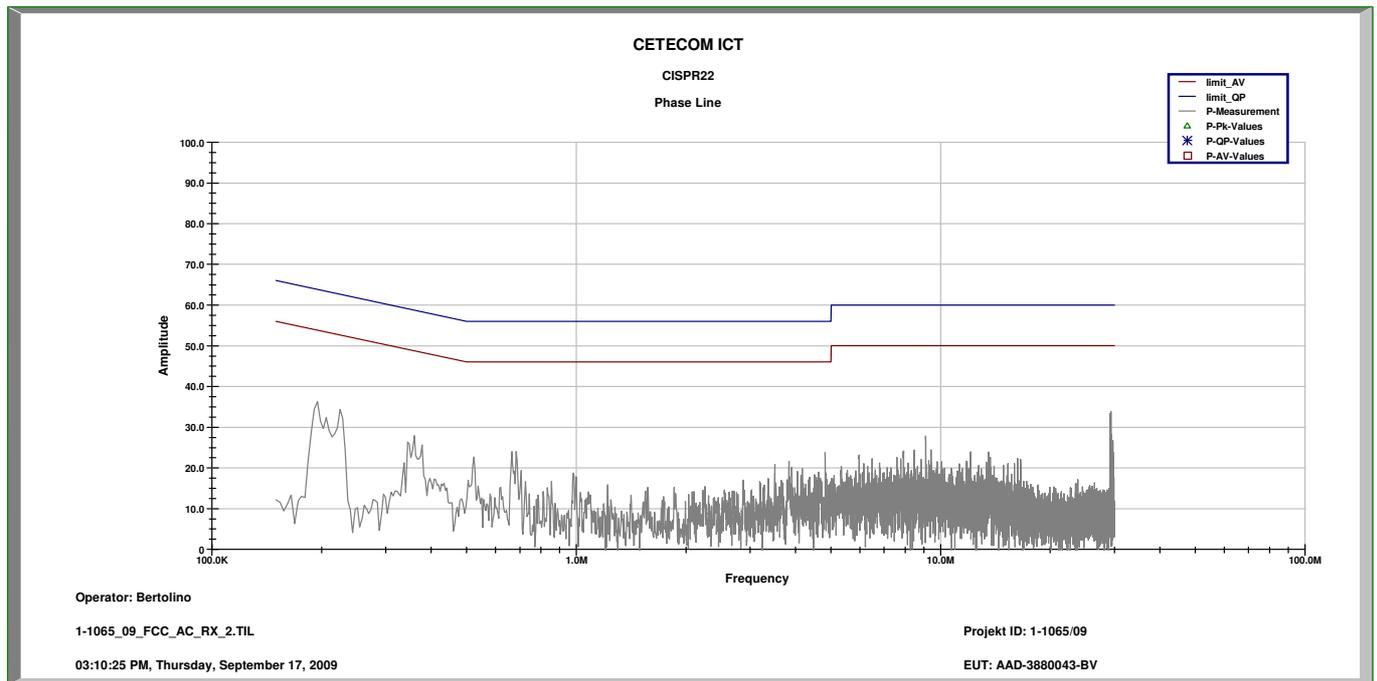
Plot 3: TX mode, OFDM – mode, phase line



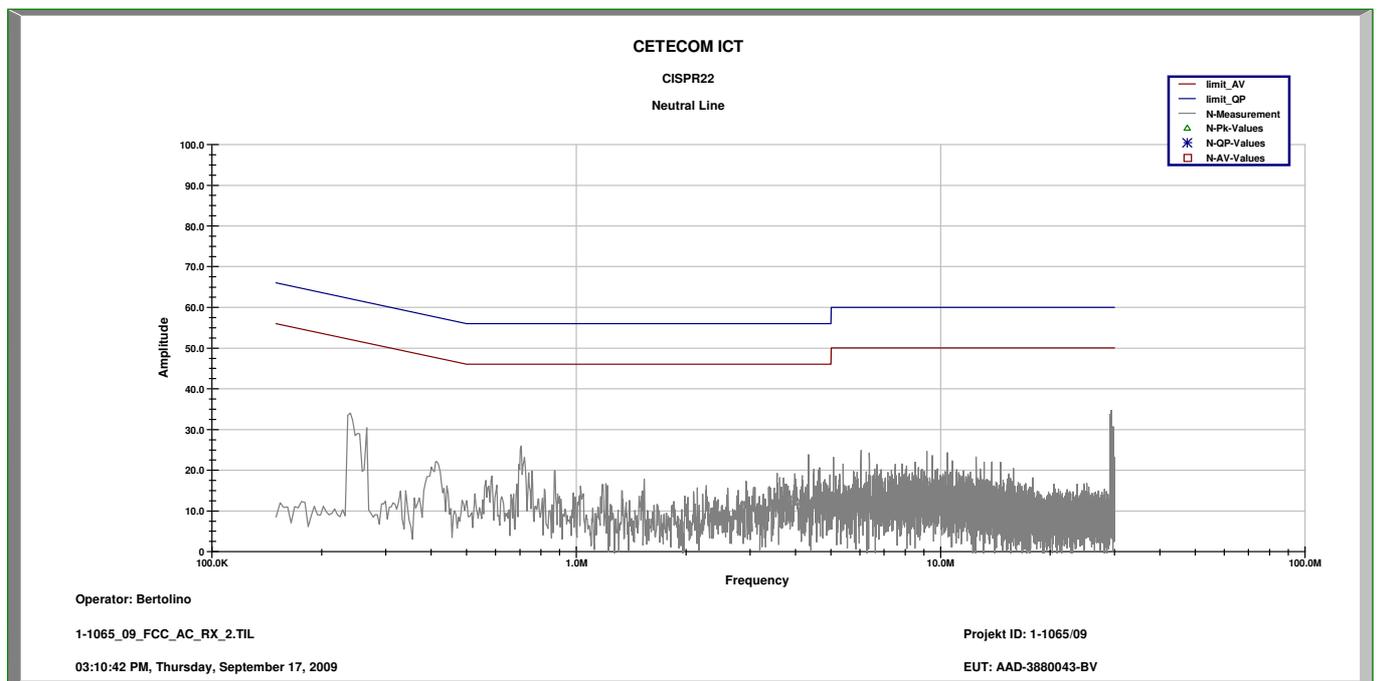
Plot 4: TX mode, OFDM – mode, neutral line



Plot 5: RX mode, phase line



Plot 6: RX mode, neutral 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

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

All reported calibration intervals are calibrations according to the EN/ISO/IEC 17025 standard. These calibrations were performed from an accredited external calibration laboratory.

Additional to these calibrations the laboratory performed comparison measurements with other calibrated systems and performed a weekly chamber inspection.

All used devices are connected with a 10 MHz external reference.

According to the manufacturers' instruction is it possible to establish a calibration interval for the FSP unit of 24 month, if the device has an external 10 MHz reference.

Anechoic chamber C:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Anechoic chamber	MWB	87400/02	300000996	Monthly verification		
2	System-Rack 85900	HP I.V.	*	300000222	n.a.		
3	Measurement System 1						
4	PSA-Spektrumanalysator 3 Hz - 26.5 GHz (E4440A)	Agilent	MY48250080	300003812	05.08.2008	24	05.08.2010
5	EMI Preselector 9 kHz - 1 GHz (N9039A)	Agilent	MY48260003	300003825	19.08.2008	24	19.08.2010
6	Microwave Analog Signal Generator (N5183A)	Agilent	MY47420220	300003813	06.08.2008	24	06.08.2010
7	PC	F+W			n.a.		
8	TILE	TILE			n.a.		
9	TRILOG Super Broadband Antenna (VULB9163)	Schwarzbeck	371	300003854	Monthly verification (System cal.)		
10	Double Ridged Antenna 3115	EMCO	3088	300001032	Monthly verification (System cal.)		
11	Active Loop Antenna 6502	EMCO	2210	300001015	Monthly verification (System cal.)		
12	Switch / Control Unit 3488A	HP	2719A15013	300001156	n.a.		
13	Power Supply 6032A	HP	2818A03450	300001040	08.01.2009	36	08.01.2012
14	Busisolator	Kontron		300001056	n.a.		
15	Leitungsteiler 11850C	HP		300000997	Monthly verification (System cal.)		
16	Power attenuator 8325	Byrd	1530	300001595	Monthly verification (System cal.)		
17	Band reject filter WRCG1855/1910	Wainwright	7	300003350	Monthly verification (System cal.)		
18	Band reject filter WRCG2400/2483	Wainwright	11	300003351	Monthly verification (System cal.)		
19	Hochpassfilter WHK1.1/15G-10SS	Wainwright	3	300003255	Monthly verification (System cal.)		
20	Hochpassfilter WHKX2.9/18G-12SS	Wainwright	1	300003492	Monthly verification (System cal.)		
21	Hochpassfilter WHKX7.0/18G-8SS	Wainwright	18	300003789	Monthly verification (System cal.)		
22	Switch / Control Unit 3488A	HP	2605e08770	300001443	n.a.		
23	Trenntrafo RT5A	Grundig	9242	300001263	n.a.		
24	Relais Matrix PSU	R&S	890167/024	300001168	n.a.		
25	Netznachbildung ESH3-Z5	R&S	828576/020	300001210	n.a.		

System Rack Room 005:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	FSP 30	R&S	100886	300003575	25.08.2008	24	25.08.2010
2	CBT	R&S	100313	300003516	03.09.2008	24	03.09.2010
3	Switch Matrix	HP		300000929	n.a.		
4	Power Supply 6625A	HP	3041A00544	300002270	13.05.2007	36	13.05.2010
5	Signal Generator SMIQ03B	R&S	836206/0092	300002680	30.05.2007	36	30.05.2010

SRD Laboratory Room 005:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Spektrum Analyzer 8566B	HP	2747A05275	300000219	18.01.2008	24	18.01.2010
2	Spektrum Analyzer Display 85662A	HP	2816A16497	300001690	23.01.2008	24	23.01.2010
3	Quasi-Peak-Adapter 85650A	HP	2811A01135	300000216	23.01.2008	24	23.01.2010
4	Power Supply	Heiden	003202	300001187	12.05.2007	36	12.05.2010
5	Power Supply	Heiden	1701	300001392	12.05.2007	36	12.05.2010

Anechoic chamber F:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Control Computer	F+W	FW0502032	300003303	-/-	-/-	-/-
2	Trilog Antenna VULB 9163	Schwarzbeck	295	300003787	01.04.2008	24	01.04.2010
3	Amplifier - 0518C-138	Veritech Micro-wave Inc.	-/-	-/-	-/-	-/-	-/-
4	Switch - 3488A	HP		300000368	-/-	-/-	-/-
5	EMI Test receiver - ESCI	R&S	100083	300003312	01.06.2009	24	01.06.2011
6	Turntable Controller - 1061 3M	EMCO	1218	300000661	-/-	-/-	-/-
7	Tower Controller 1051 Controller	EMCO	1262	300000625	-/-	-/-	-/-
8	Tower - 1051	EMCO	1262	300000625	-/-	-/-	-/-
10	Ultra Notch-Filter Rejected band Ch. 62	WRCD	9	-/-	-/-	-/-	-/-