



TEST REPORT

Test report no.: 1-2977-25-06/11



Testing laboratory

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
Internet: <http://www.cetecom.com>
e-mail: ict@cetecom.com

Accredited test laboratory:

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

Area of Testing: Radio/Satellite Communications

Applicant

Sony Ericsson Mobile Communications AB
Nya Vattentornet
22188 Lund / Sweden
Phone: +46 46 19 30 00
Fax: +46 46 19 32 95
Contact: Johan Wedin
e-mail: johan.wedin@sonyericsson.com
Phone: +46 70 71 95 73 6

Manufacturer

Sony Ericsson Mobile Communications AB
Nya Vattentornet
22188 Lund / Sweden

Test standard/s

47 CFR Part 15

Title 47 of the Code of Federal Regulations; Chapter I
Part 15 - Radio frequency devices

RSS - 210 Issue 8

Spectrum Management and Telecommunications - Radio Standards Specification
Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands):
Category I Equipment

For further applied test standards please refer to section 3 of this test report.

Test item

Kind of test item: Mobile Phone 900/1800/1900/BT2.1+EDR, WLAN ,GPS, CDMA2000
Model name: AAH-5880012-BV
FCC ID: PY7A5880012
IC: 4170B-A5880012
Frequency: ISM band 2400 – 2483.5 MHz
(lowest channel 2412 MHz – highest channel 2462 MHz)
Power supply: 3.7 V DC by power supply / battery SO004UAA + charger
Temperature range: -20 °C to 55 °C

Test performed:

2011-04-15 Joerg Warken

Test report authorised:

2011-04-15 Stefan Börs

1 Table of contents

1	Table of contents	2
2	General information	3
2.1	Notes	3
2.2	Application details	3
3	Test standard/s	3
4	Test environment	3
5	Test item	4
6	Test laboratories sub-contracted	4
7	Summary of measurement results	5
8	RF measurement testing	6
8.1	Description of test setup	6
8.1.1	Radiated measurements	6
8.1.2	Conducted measurements	7
8.2	Additional comments	7
8.3	RSP100 test report cover sheet / performance test data	8
9	Measurement results	9
9.1	Maximum output power (conducted)	9
9.2	Antenna gain	16
9.3	Maximum output power	17
9.4	Power spectral density	22
9.5	Spectrum bandwidth – 6 dB bandwidth	29
9.6	Spectrum bandwidth – 20 dB bandwidth	33
9.7	Band edge compliance conducted	37
9.8	Band edge compliance radiated	40
9.9	TX spurious emissions conducted	43
9.10	TX spurious emissions radiated	48
9.11	RX spurious emissions radiated	68
9.12	TX spurious emissions radiated < 30 MHz	72
9.13	TX spurious emissions conducted < 30 MHz	74
10	Test equipment and ancillaries used for tests	76
Annex A	Photographs of the test setup	79
Annex B	External photographs of the EUT	80
Annex C	Internal photographs of the EUT	84
Annex D	Document history	89
Annex E	Further information	89

2 General information

2.1 Notes

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM ICT Services GmbH.

2.2 Application details

Date of receipt of order:	2011-03-15
Date of receipt of test item:	2011-03-17
Start of test:	2011-04-06
End of test:	2011-04-11
Person(s) present during the test:	-/-

3 Test standard/s

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

4 Test environment

Temperature:	T_{nom}	+21 °C during room temperature tests	
	T_{max}	+55 °C during high temperature test	
	T_{min}	-20 °C during low temperature test	
Relative humidity content:		50 %	
Air pressure:		not relevant for this kind of testing	
Power supply:	V_{nom}	3.7 V	DC by power supply / battery SO004UAA + charger
	V_{max}	4.1 V	
	V_{min}	3.4 V	

5 Test item

Kind of test item	:	Mobile Phone 900/1800/1900/BT2.1+EDR, WLAN ,GPS, CDMA2000
Type identification	:	AAH-5880012-BV
S/N serial number	:	SSOGO001104, SSOGO001105, SSOGO001092
HW hardware status	:	FP2
SW software status	:	00.26.10
Frequency band [MHz]	:	ISM band 2400 – 2483.5 MHz (lowest channel 2412 MHz – highest channel 2462 MHz)
Type of modulation	:	DSSS & OFDM technology with BPSK, QPSK, 16 – and 64– QAM
Number of channels	:	11
Antenna	:	Integrated PCB antenna → for more information, please take a look at the annex – internal photos of the EUT.
Power supply	:	3.7 V DC by power supply / battery SO004UAA + charger
Temperature range	:	-20°C to 55 °C

6 Test laboratories sub-contracted

None

7 Summary of measurement results



No deviations from the technical specifications were ascertained



There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Part 15 RSS 210, Issue 8, Annex 8	Passed	2011-04-15	-/-

Test specification clause	Test case	Temperature conditions	Power source voltages	Mode	Pass	Fail	NA	NP	Results (max.)
§15.247(b)(4) RSS 210 / A8.4(2)	Antenna gain	Nominal	Nominal	DSSS	☒	☐	☐	☐	complies
§15.247(e) RSS 210 / A8.2(b)	Power spectral density	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(a)(2) RSS 210 / A8.2(a)	Spectrum bandwidth of a FHSS system 6dB bandwidth	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(a)(2) RSS 210 / A8.2(a)	Spectrum bandwidth of a FHSS system 20dB bandwidth	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(b)(3) RSS-210 / A8.4(4)	Maximum output power	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	Band edge compliance conducted	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.205 RSS-210 / A8.5	Band edge compliance radiated	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions conducted	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions radiated	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.109 RSS-Gen.	RX spurious emissions radiated	Nominal	Nominal	-/-	☒	☐	☐	☐	complies
§15.209(a) RSS-Gen	TX spurious emissions radiated < 30 MHz	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.107(a)	Conducted emissions < 30 MHz	Nominal	Nominal	DSSS OFDM	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies

Note: NA = Not Applicable; NP = Not Performed

8 RF measurement testing

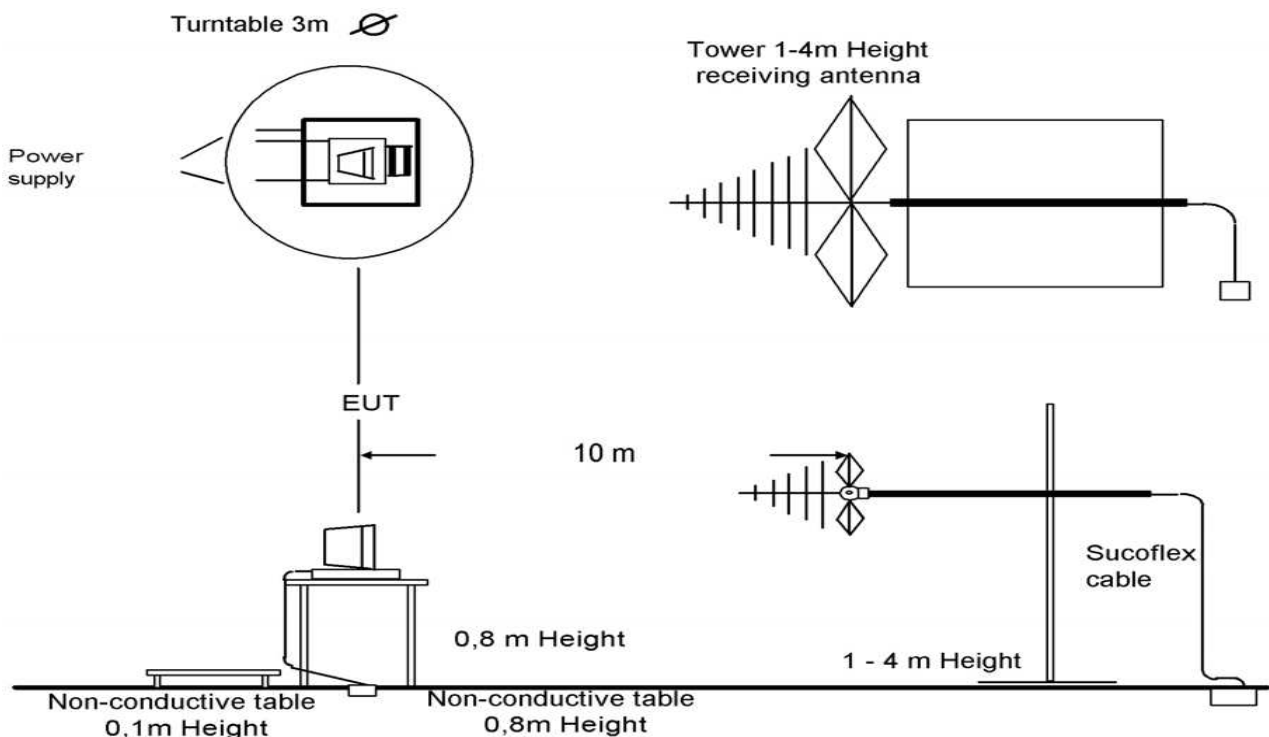
8.1 Description of test setup

8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 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 setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2003 clause 4.2.

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

Semi anechoic chamber



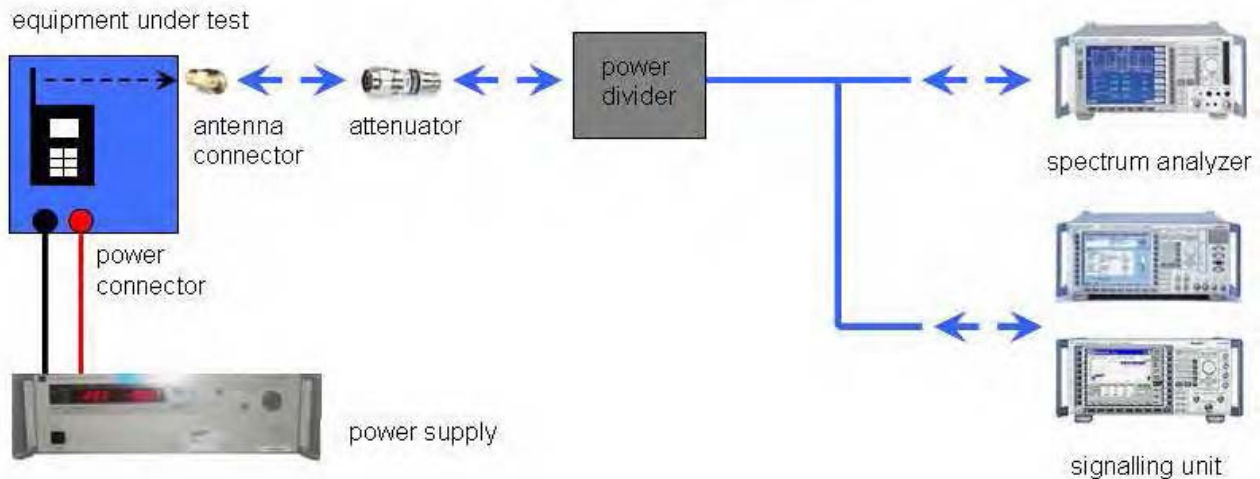
Picture 1: Diagram radiated measurements

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

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

8.1.2 Conducted measurements

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



Picture 2: Diagram conducted measurements

8.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

Test mode:

- ☐ No test mode available.
Iperf was used to ping another device with the largest support packet size
- ☒ Special software is used.
EUT is transmitting pseudo random data by itself

8.3 RSP100 test report cover sheet / performance test data

Test report number	:	1-2977-25-06/11
Equipment model number	:	AAH-5880012-BV
Certification number	:	4170B-A5880012
Manufacturer (complete address)	:	Sony Ericsson Mobile Communications AB Nya Vattentorget 22188 Lund / Sweden
Tested to radio standards specification no.	:	RSS 210, Issue 8, Annex 8
Open area test site IC No.	:	IC 3462C-1
Frequency range	:	ISM band 2400 MHz to 2483.5 MHz (lowest channel 2412 MHz, highest channel 2462 MHz)
RF-power [W] (max.)	:	cond.: 27.5 mW (DSSS) 131.8 mW (OFDM) EIRP: 30.9 mW (DSSS) 169.8mW (OFDM)
Occupied bandwidth (99%-BW) [kHz]	:	DSSS: 17856 OFDM: 18337
Type of modulation	:	DSSS & OFDM technology with BPSK, QPSK, 16 – and 64– QAM
Emission designator (TRC-43)	:	17M9G1D (DSSS) 18M3G7D (OFDM)
Antenna information	:	Integrated PCB antenna → for more information, please take a look at the annex – internal photos of the EUT.
Transmitter spurious (worst case)	:	45.0 dBμV/m @ (noise floor)
Receiver spurious (worst case)	:	45.1 dBμV/m @ (noise floor)

ATTESTATION:

DECLARATION OF COMPLIANCE:

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

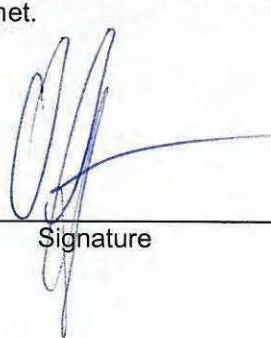
Laboratory manager:

2011-04-15

Date

Joerg Warken

Name



Signature

9 Measurement results

9.1 Maximum output power (conducted)

Description:

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

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	30 MHz
Resolution bandwidth:	50 MHz
Span:	30 MHz
Trace-Mode:	Max Hold

Results:

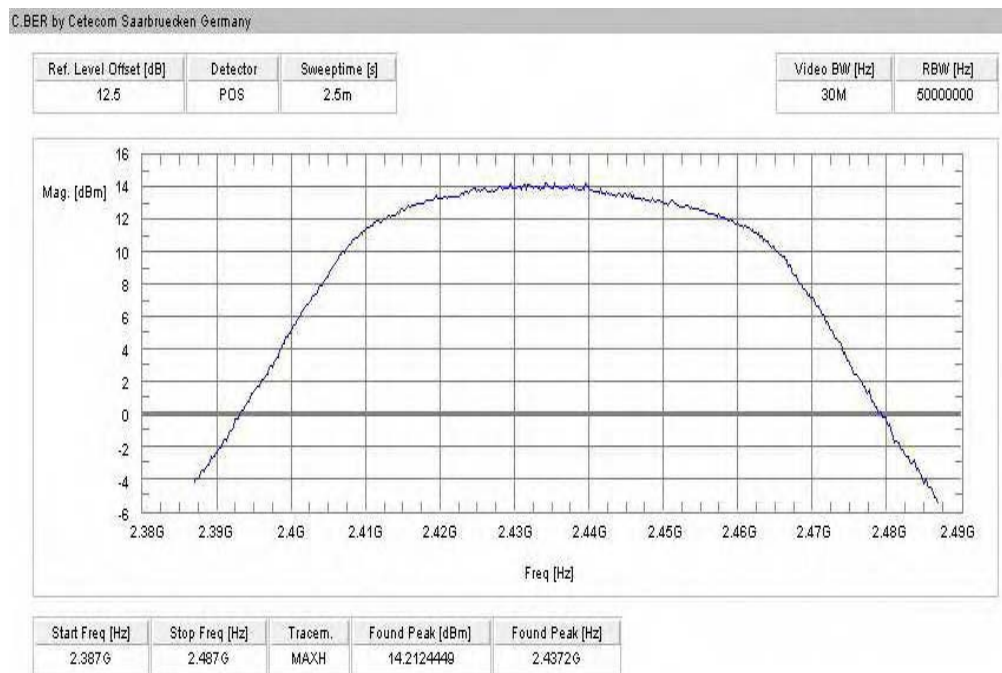
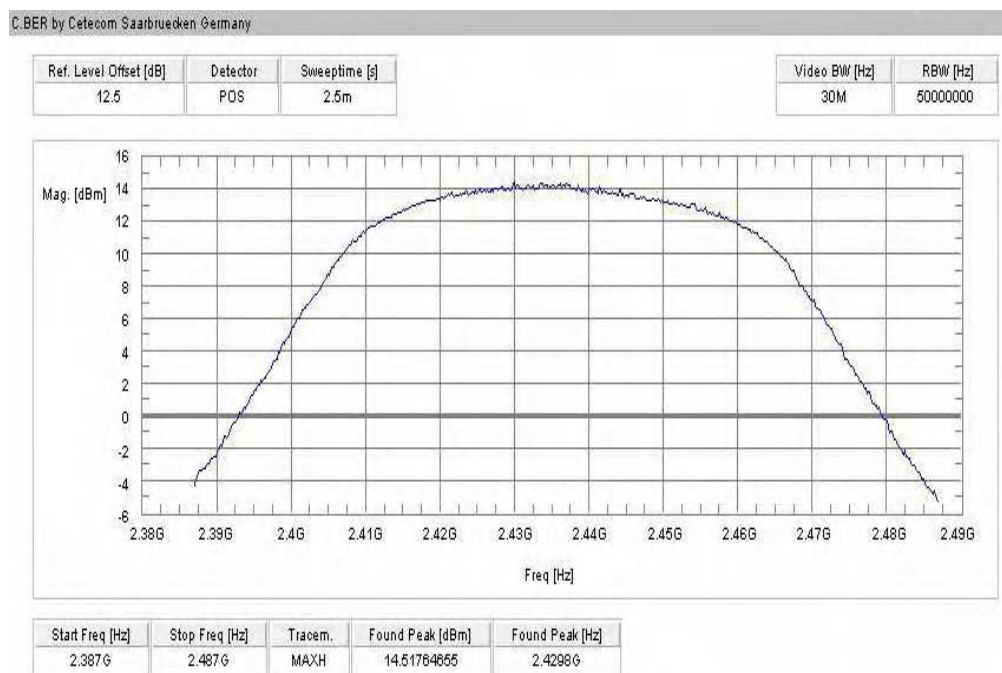
DSSS / b – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]			
	1	2	5.5	11
Ch 6 - 2437 MHz	14.3	14.0	14.2	14.5
Measurement uncertainty	± 1.5 dB			

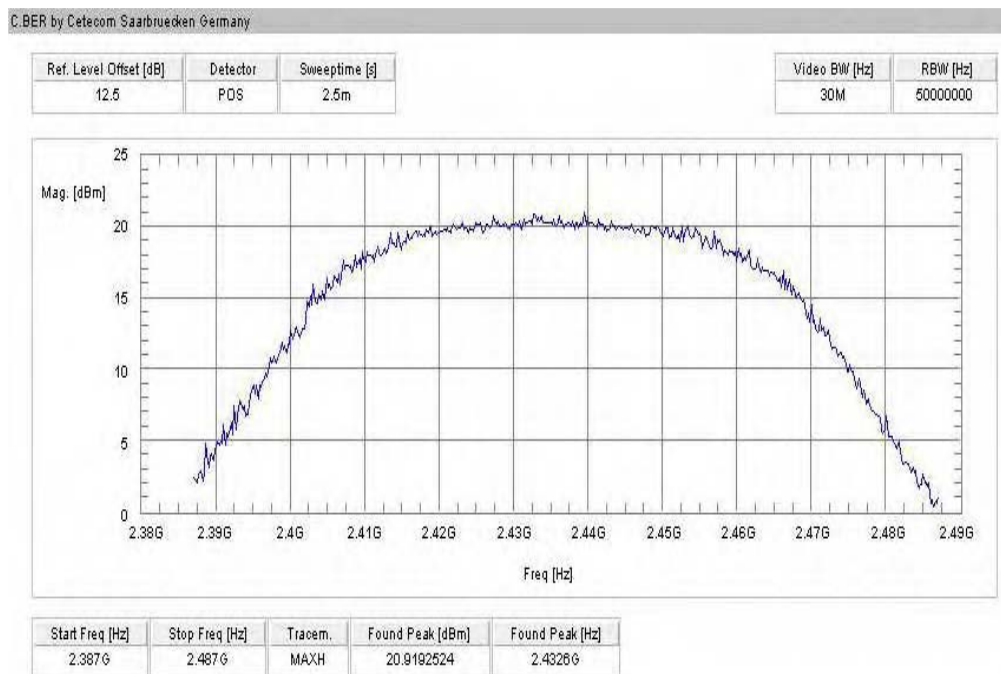
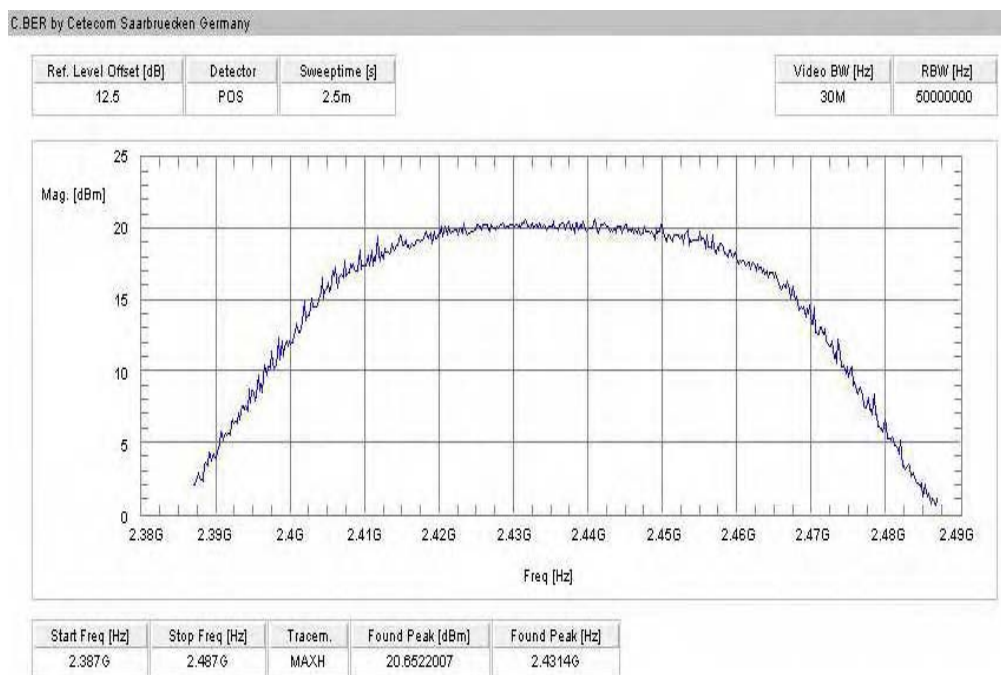
OFDM / g – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]							
	6	9	12	18	24	36	48	54
Ch 6 - 2437 MHz	20.9	20.7	21.3	21.2	21.1	21.0	20.8	20.8
Measurement uncertainty	± 1.5 dB							

Result: Selected data rate for all measurements:

DSSS / b – mode: 11 MBit/s
OFDM / g – mode: 12 MBit/s

Plots: DSSS / b – mode**Plot 1: TX mode, middle channel, 1 MBit/s****Plot 2: TX mode, middle channel, 2 MBit/s**

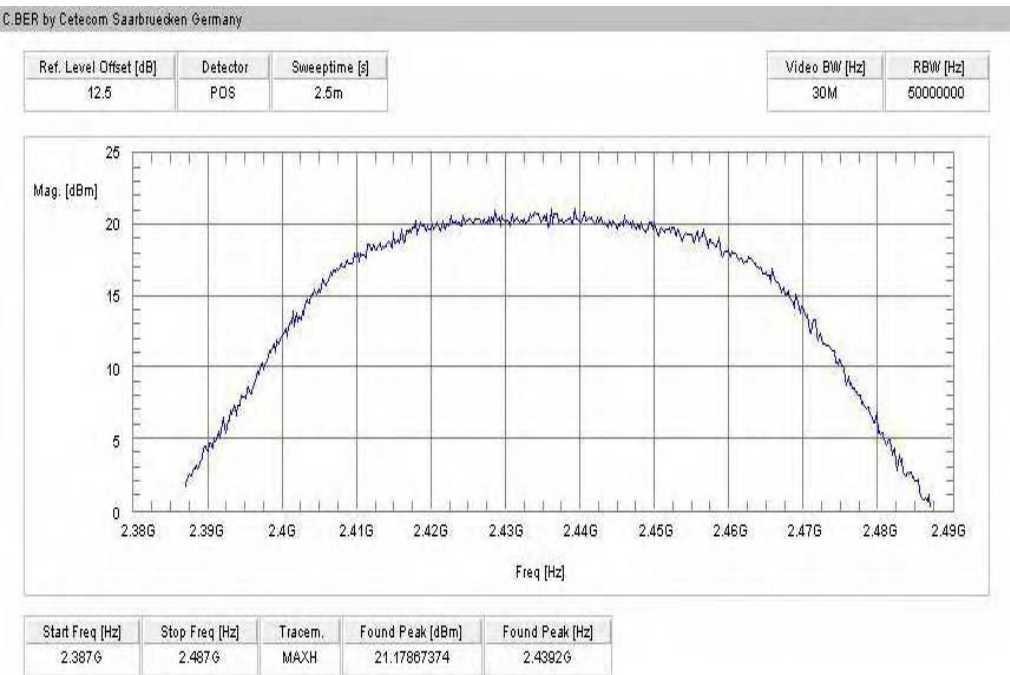
Plot 3: TX mode, middle channel, 5.5 MBit/s**Plot 4: TX mode, middle channel, 11 MBit/s**

Plots: OFDM / g – mode**Plot 1: TX mode, middle channel, 6 MBit/s****Plot 2: TX mode, middle channel, 9 MBit/s**

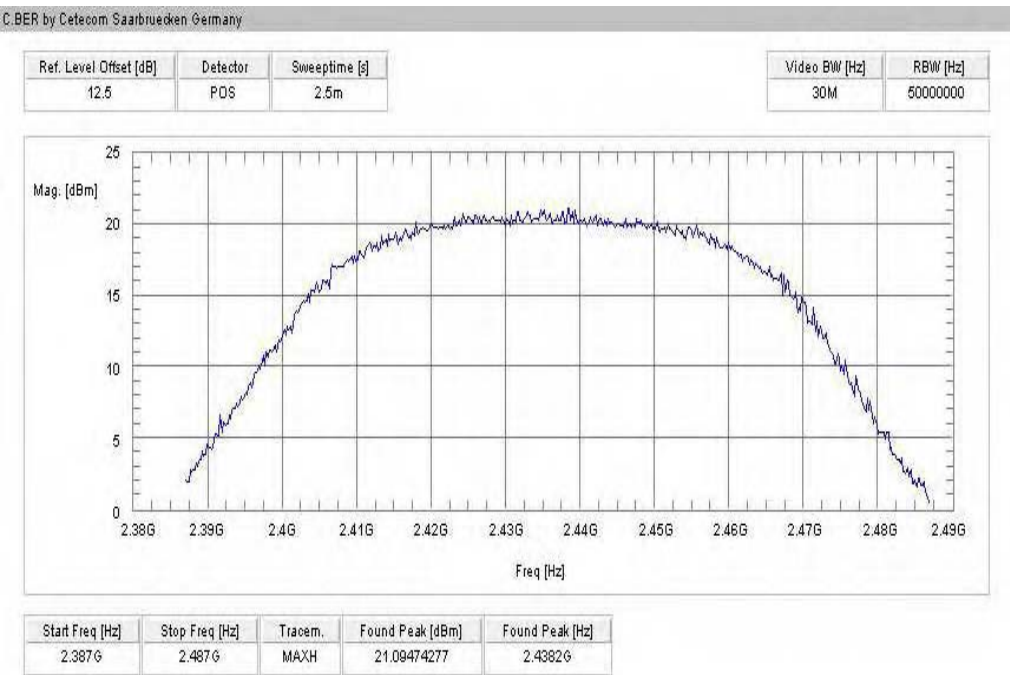
Plot 3: TX mode, middle channel, 12 MBit/s



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



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



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



Plot 7: TX mode, middle channel, 48 MBit/s**Plot 8: TX mode, middle channel, 54 MBit/s**

9.2 Antenna gain

Measurement:

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal WLAN devices, the DSSS mode is used.

Measurement parameters:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	30 MHz
Resolution bandwidth:	50 MHz
Trace-Mode:	Max hold

Limits:

FCC	IC
CFR Part 15.247 (b)(4)	RSS 210, Issue 8, A 8.4(2)
Antenna Gain	
6 dBi	

Results:

T _{nom}	V _{nom}	lowest channel 2412 MHz	middle channel 2437 MHz	highest channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		13.1	14.4	13.4
Radiated power [dBm] Measured with DSSS modulation		14.3	14.9	14.5
Gain [dBi] Calculated		1.2	0.5	1.1
Measurement uncertainty			± 1.5 dB (cond.) / ± 3 dB (rad.)	

Result: The result of the measurement is passed.

9.3 Maximum output power

Description:

Measurement of the maximum output power conducted and radiated. The measurements are performed using the data rate producing the highest conducted output power. The determination of these data rates was performed at the beginning of the tests.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	30 MHz
Resolution bandwidth:	50 MHz
Span:	30 MHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (b)(3)	RSS 210, Issue 8, A 8.4(4)
Maximum Output Power	
Conducted: 1.0 W – Antenna Gain max. 6 dBi	

Results: DSSS / b – mode

DSSS / b – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	13.1	14.4	13.4
Output Power Radiated – EIRP*)	14.3	14.9	14.5
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*) calculated with Antenna gain

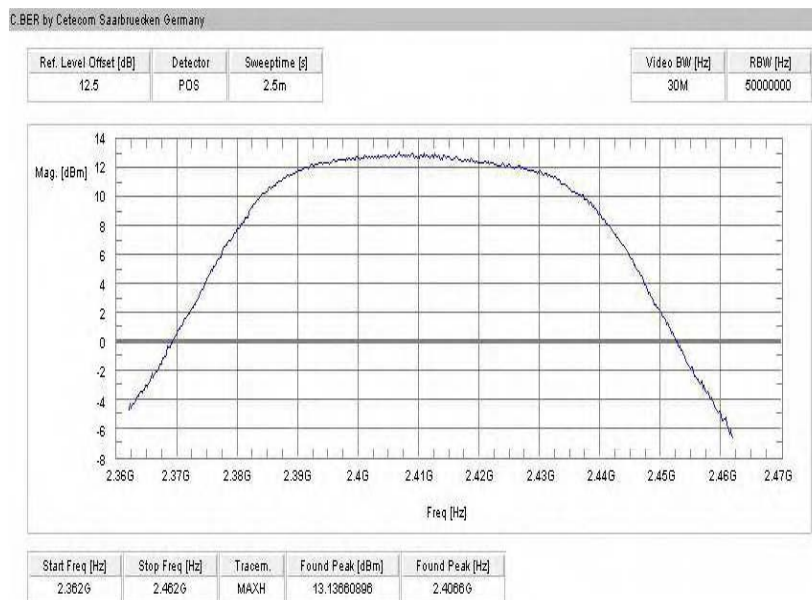
Result: The result of the measurement is passed.

Results: OFDM / g – mode

OFDM / g – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	21.1	21.2	20.5
Output Power Radiated – EIRP*)	22.3	21.7	21.6
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*)calculated with Antenna gain

Result: The result of the measurement is passed.

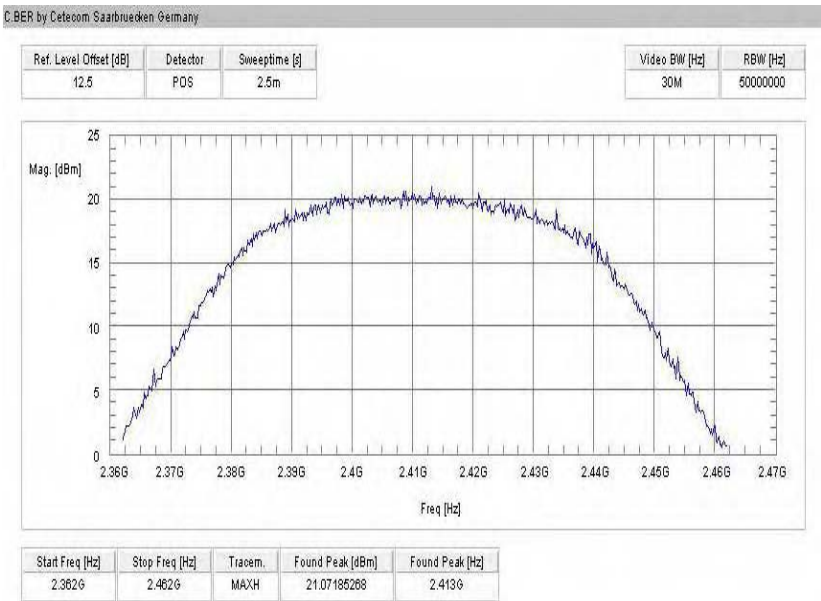
Plots: DSSS / b – mode**Plot 1: TX mode, lowest channel****Plot 2: TX mode, middle channel**

Plot 3: TX mode, highest channel



Plots: OFDM / g – mode

Plot 1: TX mode, lowest channel



Plot 2: TX mode, middle channel**Plot 3: TX mode, highest channel**

9.4 Power spectral density

Description:

Measurement of the power spectral density of a digital modulated system. The measurement is repeated for both modulations at the lowest, middle and highest channel.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	500 s
Video bandwidth:	3 kHz
Resolution bandwidth:	3 kHz
Span:	1.5 MHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (e)	RSS 210, Issue 8, A 8.2(b)
Power Spectral Density	
The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0-second duration.	

Results:

Modulation Frequency	Power Spectral density [dBm/3kHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	-14	-13.8	-13.8
OFDM / g – mode	-13.5	-12.6	-13.8
Measurement uncertainty	± 1.5 dB		

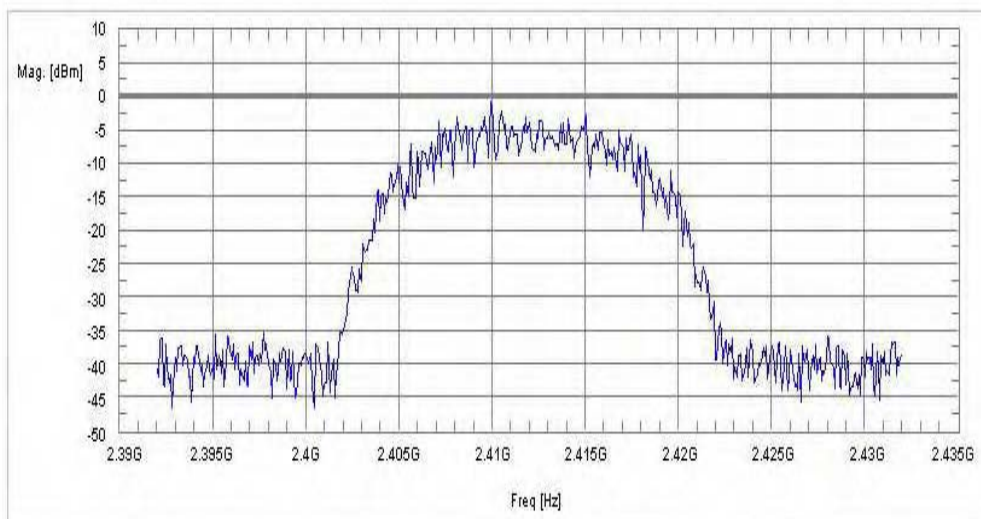
Result: The result of the measurement is passed.

Plots: DSSS / b – mode**Plot 1: TX mode, lowest channel**

C.BER by Cetecom Saarbruecken Germany

Ref. Level Offset [dB]	Detector	Sweep time [s]
12.5	POS	10m

Video BW [Hz]	RBW [Hz]
100k	100000

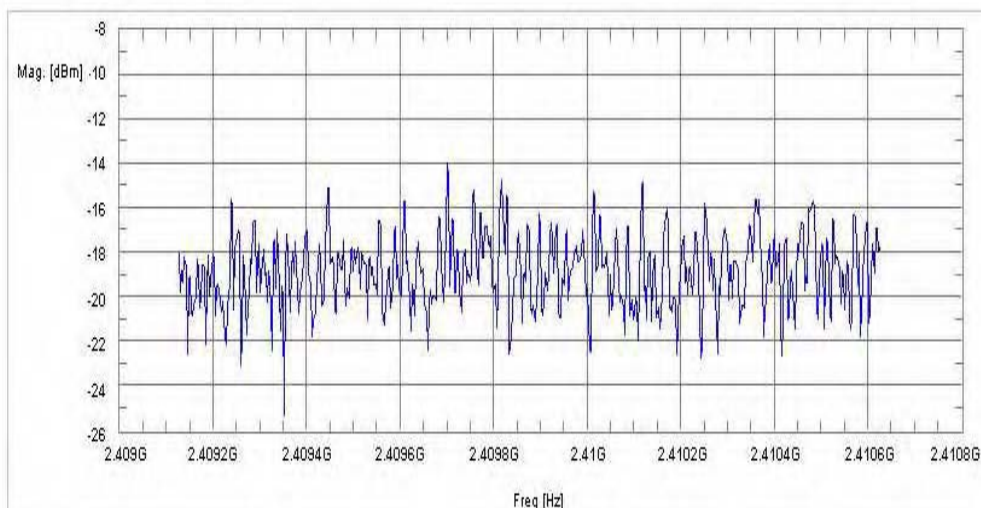


Start Freq [Hz]	Stop Freq [Hz]	TraceM.	Found Peak [dBm]	Found Peak [Hz]
2.392 G	2.432 G	MAXH	-0.6363449097	2.409875752 G

C.BER by Cetecom Saarbruecken Germany

Ref. Level Offset [dB]	Detector	Sweep time [s]
12.5	POS	500

Video BW [Hz]	RBW [Hz]
3000	3000



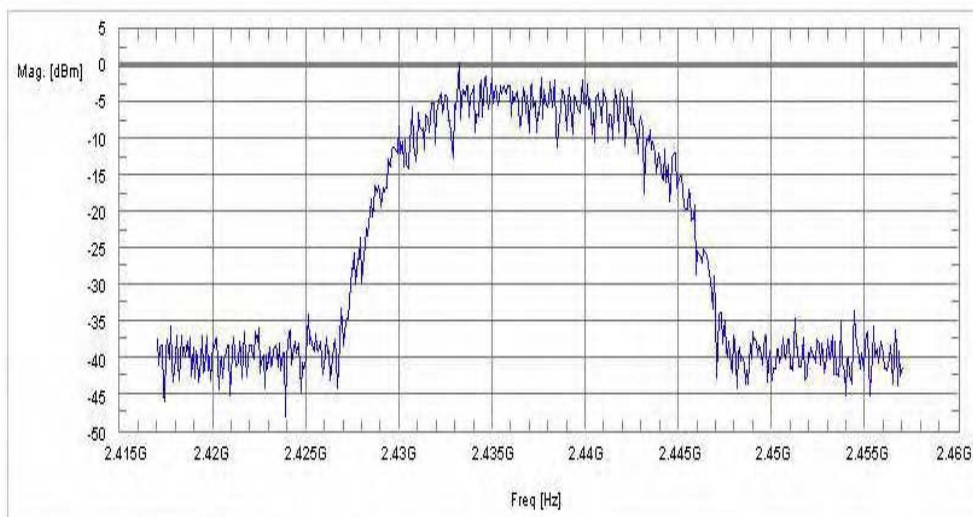
Start Freq [Hz]	Stop Freq [Hz]	TraceM.	Found Peak [dBm]	Found Peak [Hz]
2.409125752 G	2.410625752 G	MAXH	-13.98992167	2.4096999 G

Plot 2: TX mode, middle channel

C.BER by Cetecom Saarbruecken Germany

Ref. Level Offset [dB]	Detector	Sweeptime [s]
12.5	POS	10m

Video BW [Hz]	RBW [Hz]
100k	100000

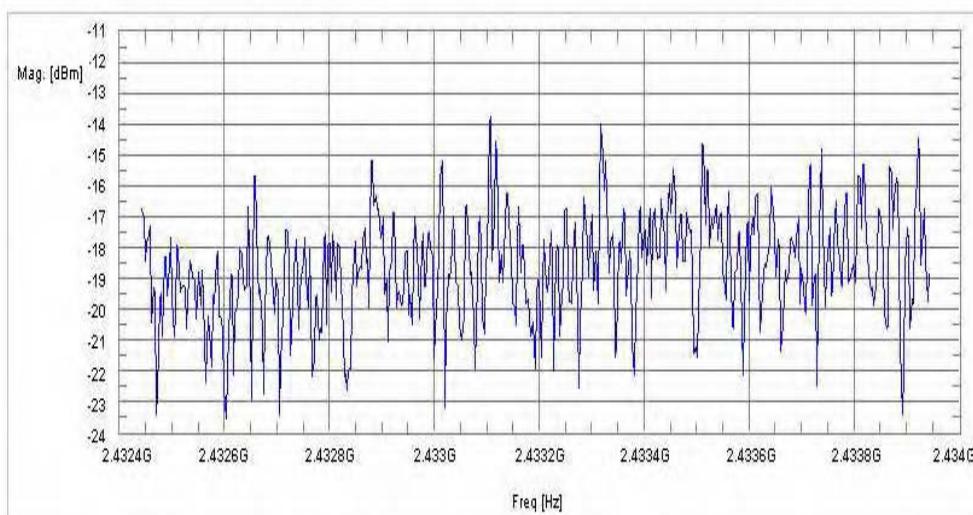


Start Freq [Hz]	Stop Freq [Hz]	Tracem.	Found Peak [dBm]	Found Peak [Hz]
2.417 G	2.457 G	MAXH	0.5025482178	2.433192385 G

C.BER by Cetecom Saarbruecken Germany

Ref. Level Offset [dB]	Detector	Sweeptime [s]
12.5	POS	500

Video BW [Hz]	RBW [Hz]
3000	3000



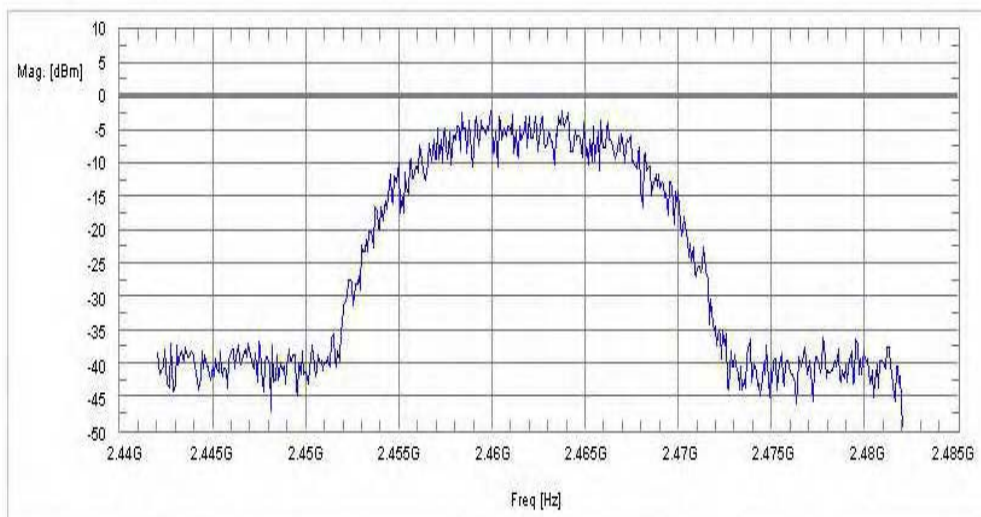
Start Freq [Hz]	Stop Freq [Hz]	Tracem.	Found Peak [dBm]	Found Peak [Hz]
2.432442385 G	2.433942385 G	MAXH	-13.7743454	2.433106713 G

Plot 3: TX mode, highest channel

C.BER by Cetecom Saarbruecken Germany

Ref. Level Offset [dB]	Detector	Sweep time [s]
12.6	POS	10m

Video BW [Hz]	RBW [Hz]
100k	100000

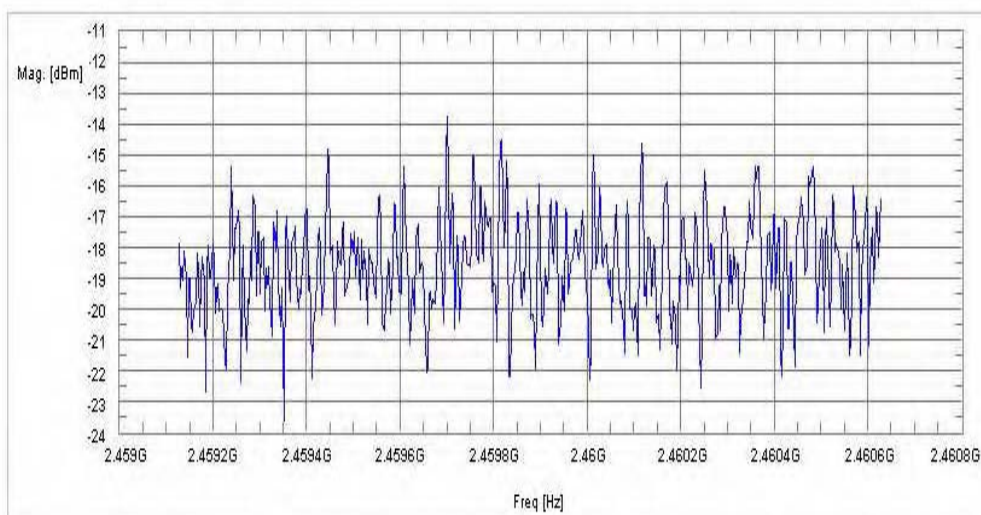


Start Freq [Hz]	Stop Freq [Hz]	TraceM.	Found Peak [dBm]	Found Peak [Hz]
2.442G	2.482G	MAXH	-2.249105835	2.459875752G

C.BER by Cetecom Saarbruecken Germany

Ref. Level Offset [dB]	Detector	Sweep time [s]
12.6	POS	500

Video BW [Hz]	RBW [Hz]
3000	3000



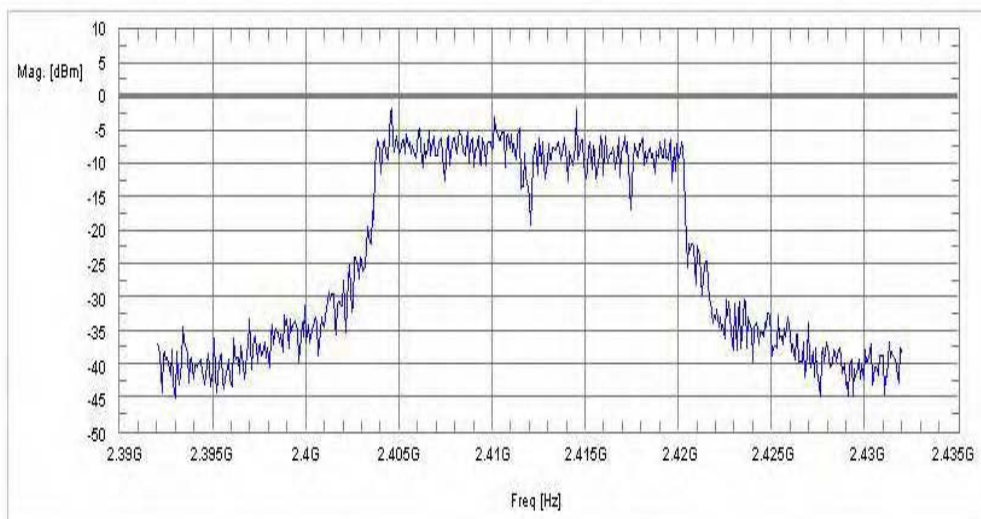
Start Freq [Hz]	Stop Freq [Hz]	TraceM.	Found Peak [dBm]	Found Peak [Hz]
2.459125751G	2.460625751G	MAXH	-13.77231445	2.45989999G

Plots: OFDM / g – mode**Plot 1: TX mode, lowest channel**

C.BER by Cetecom Saarbruecken Germany

Ref. Level Offset [dB]	Detector	Sweep time [s]
12.5	POS	10m

Video BW [Hz]	RBW [Hz]
100k	100000

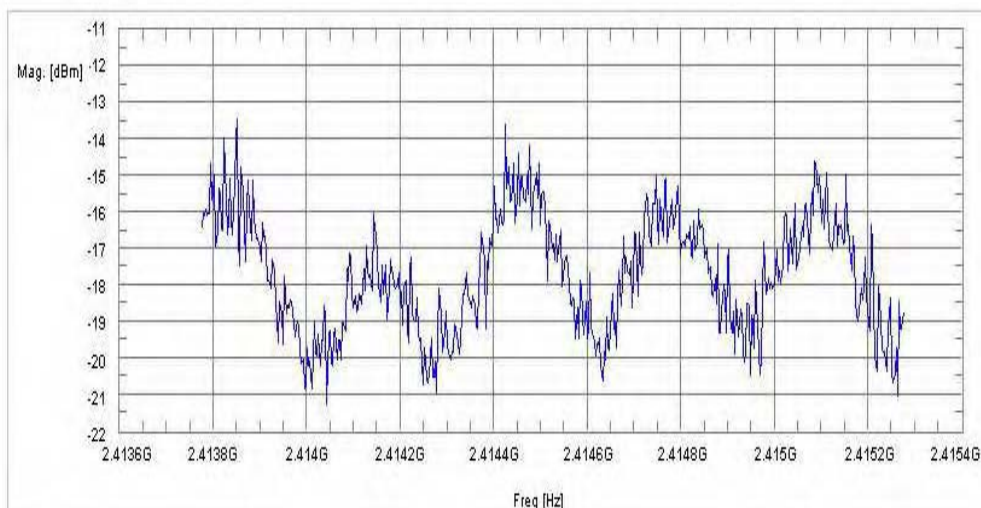


Start Freq [Hz]	Stop Freq [Hz]	TraceM.	Found Peak [dBm]	Found Peak [Hz]
2.392G	2.432G	MAXH	-1.718299866	2.41452505G

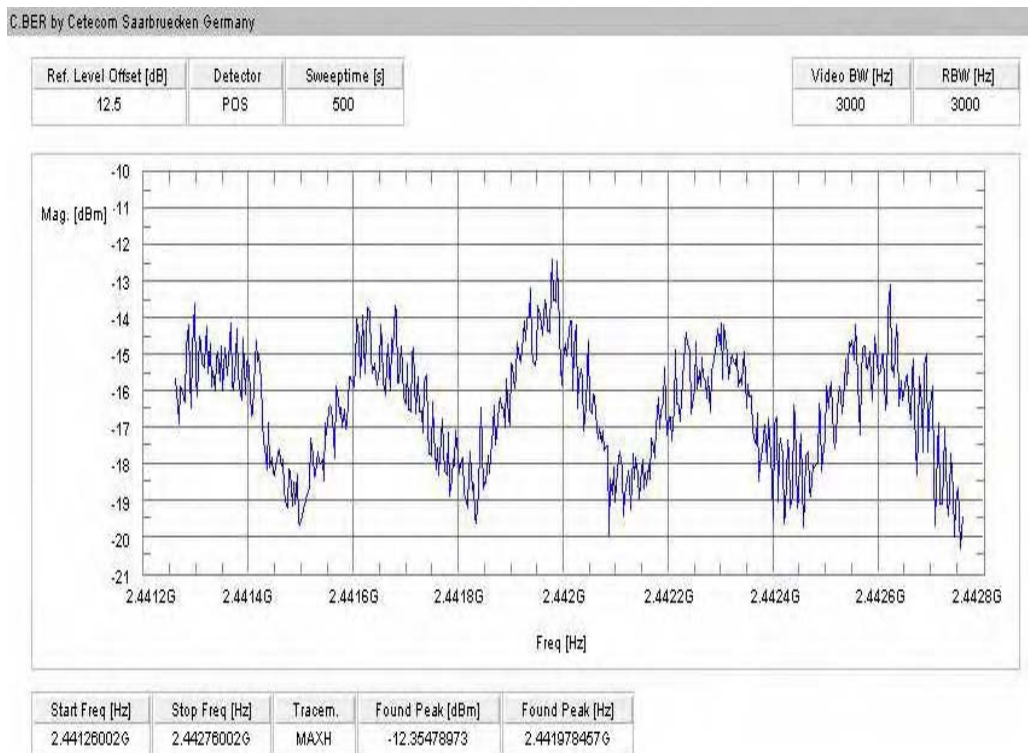
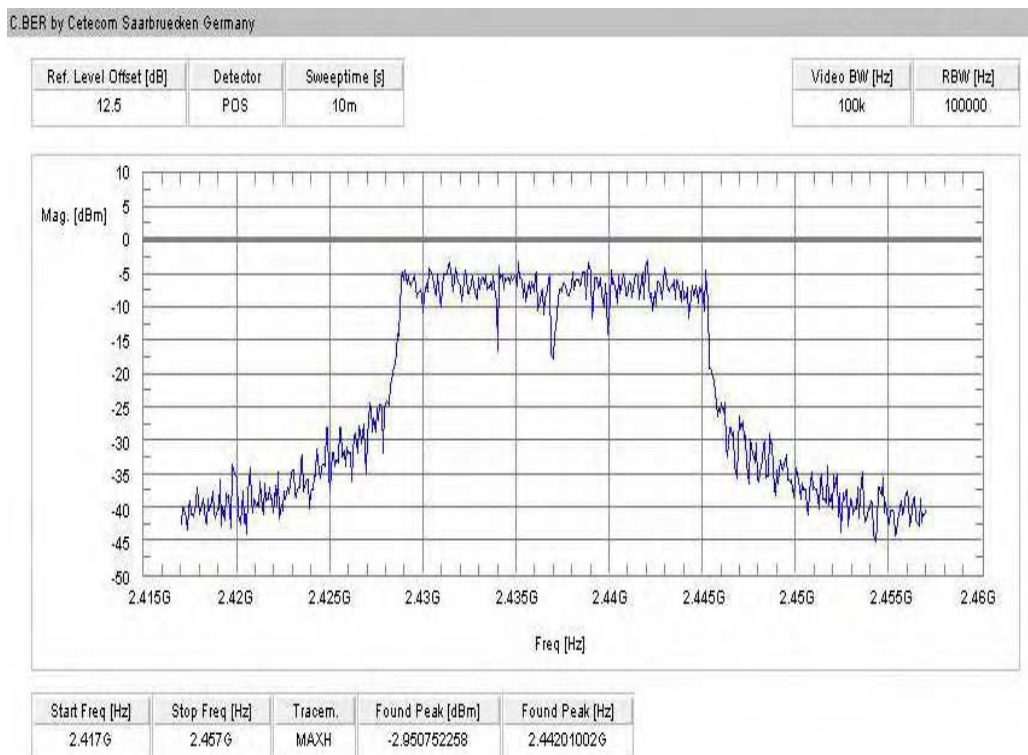
C.BER by Cetecom Saarbruecken Germany

Ref. Level Offset [dB]	Detector	Sweep time [s]
12.5	POS	500

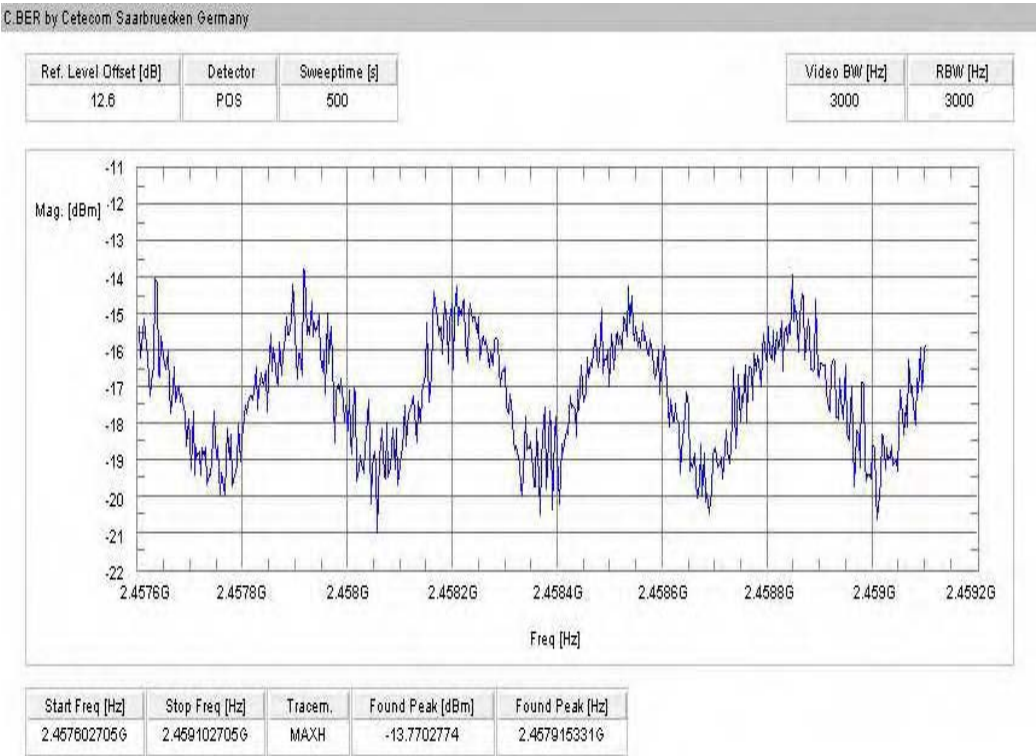
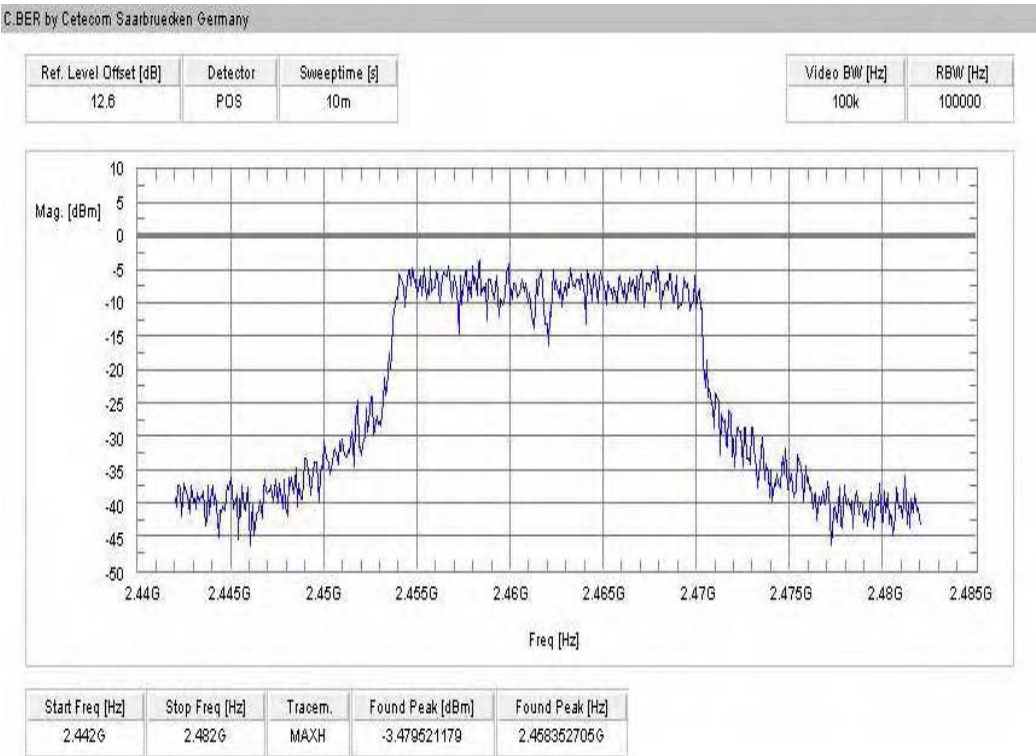
Video BW [Hz]	RBW [Hz]
3000	3000



Start Freq [Hz]	Stop Freq [Hz]	TraceM.	Found Peak [dBm]	Found Peak [Hz]
2.41377505G	2.41527505G	MAXH	-13.46504781	2.4138502G

Plot 2: TX mode, middle channel

Plot 3: TX mode, highest channel



9.5 Spectrum bandwidth – 6 dB bandwidth

Description:

Measurement of the 6 dB bandwidth of the modulated signal.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	100 kHz
Resolution bandwidth:	100 kHz
Span:	See plots
Trace-Mode:	Max Hold

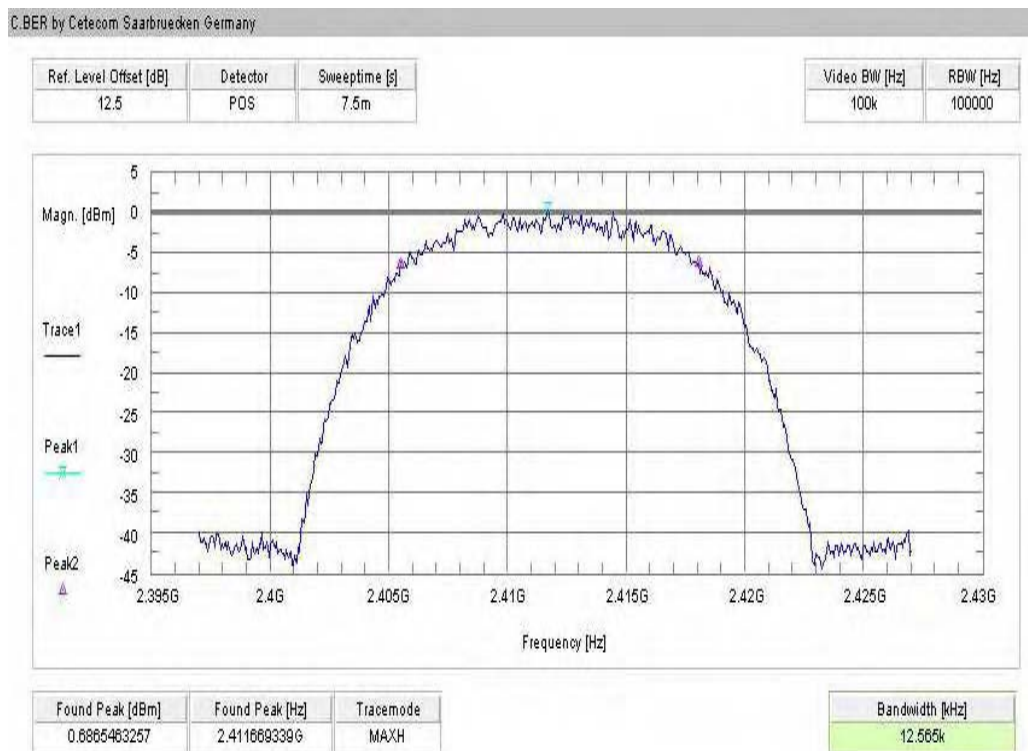
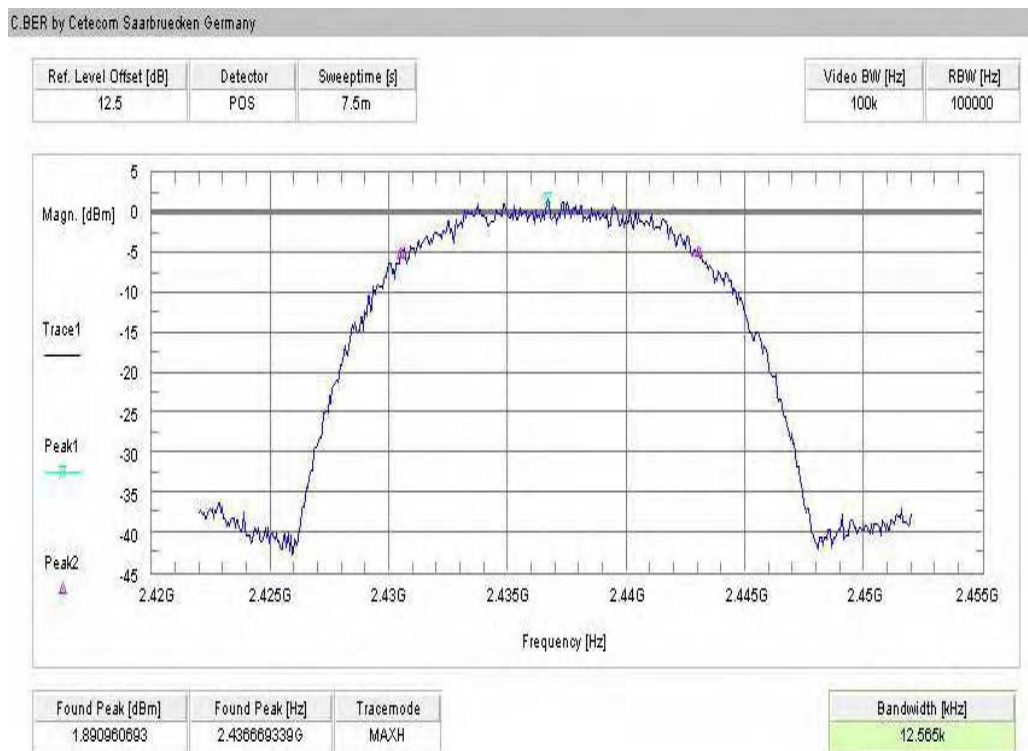
Limits:

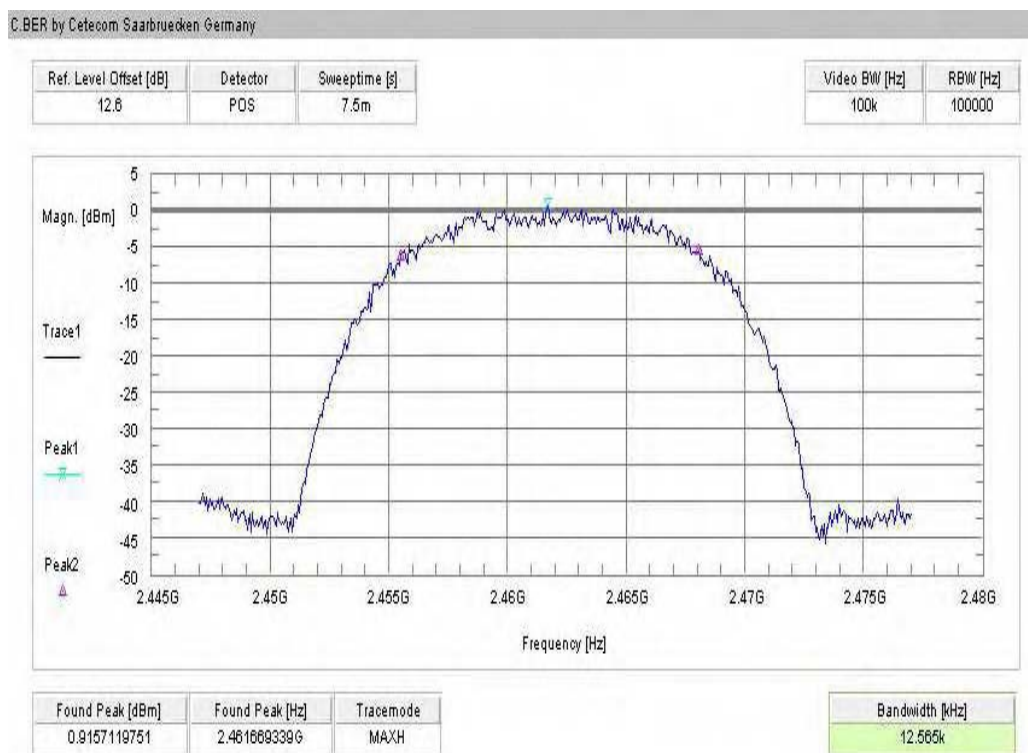
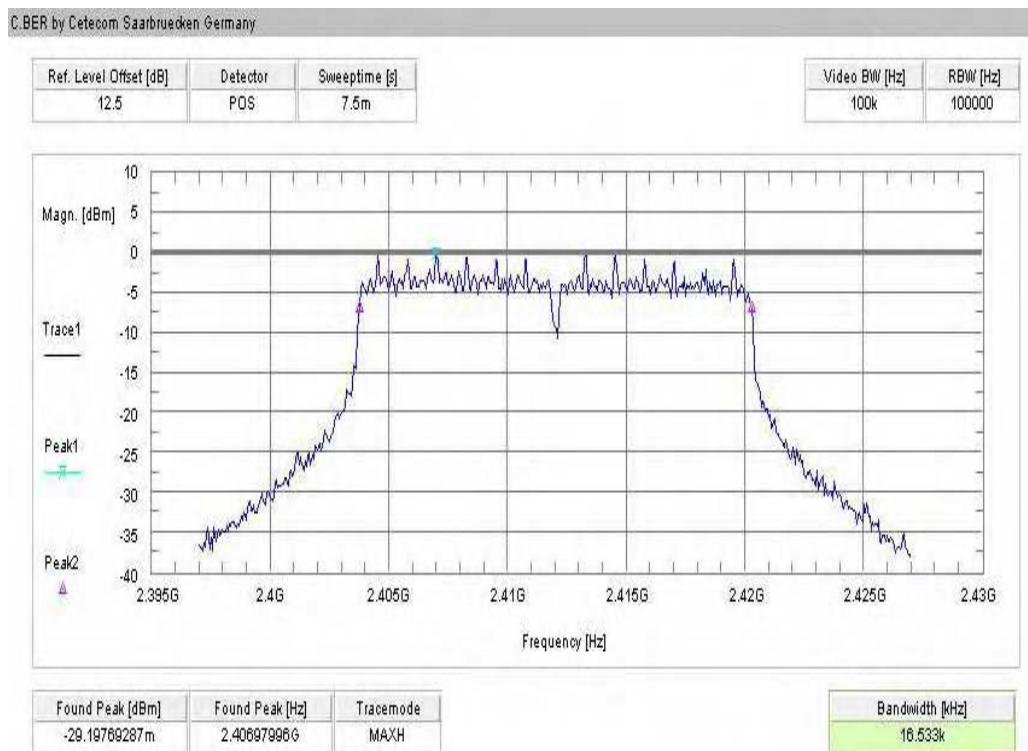
FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 8, A 8.2(a)
Spectrum Bandwidth– 6 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

Results:

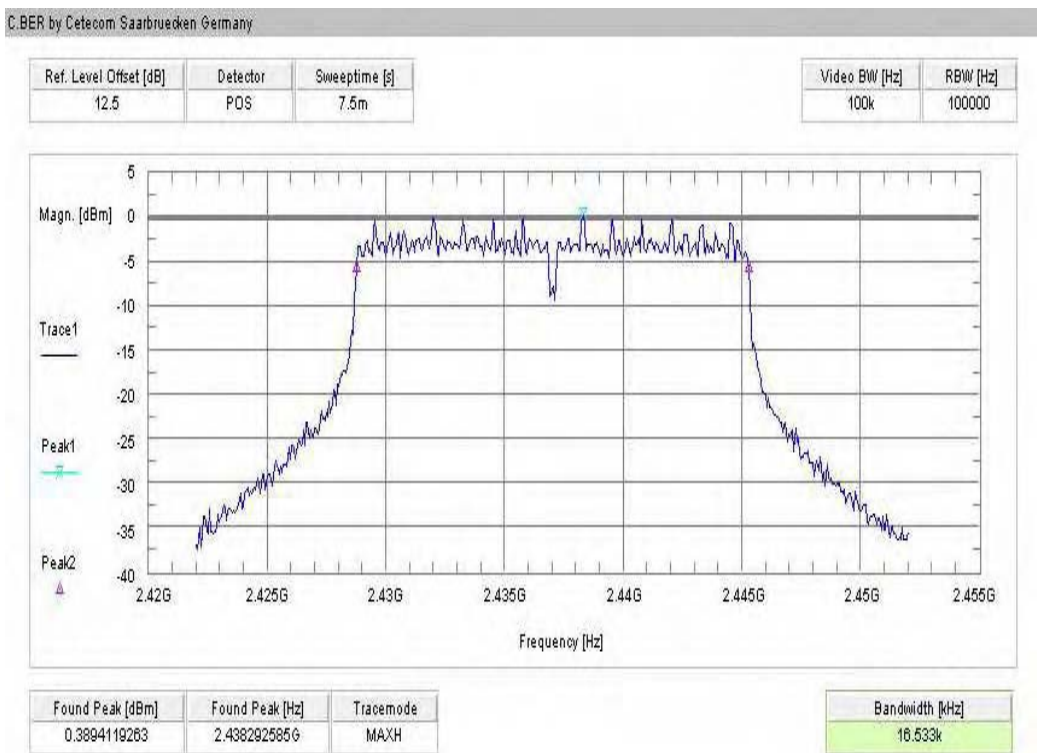
Modulation Frequency	6 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	12565	12565	12565
OFDM / g – mode	16533	16533	16533
Measurement uncertainty	± 100 kHz		

Result: The result of the measurement is passed.

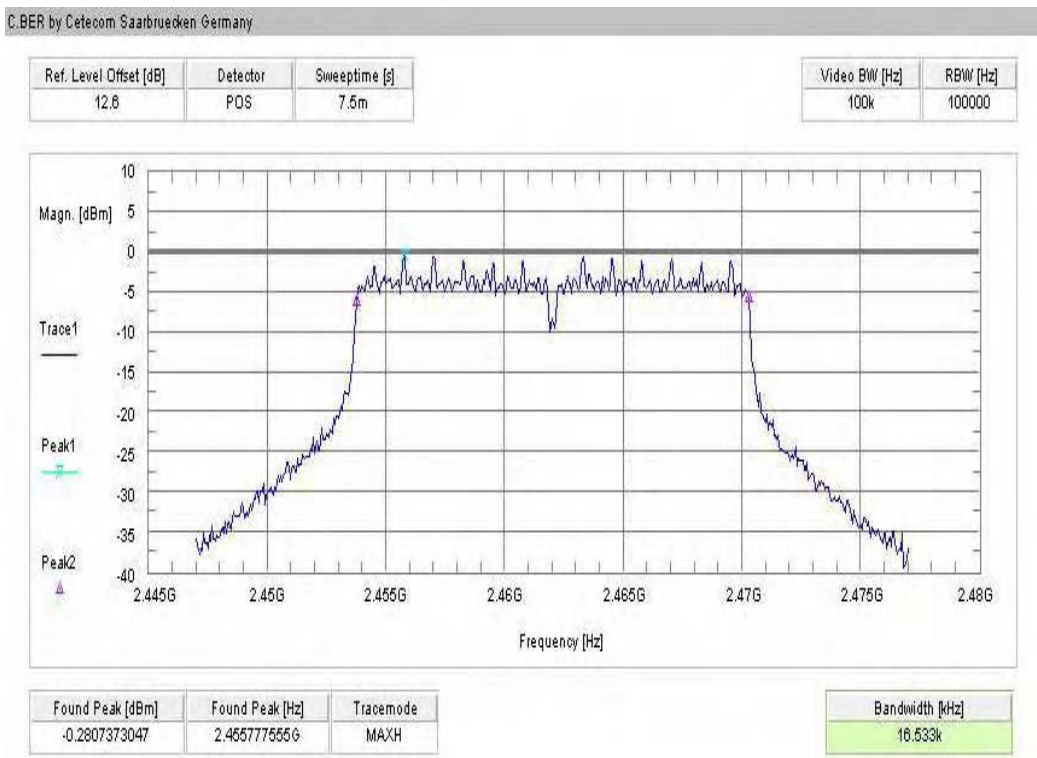
Plots: DSSS / b – mode**Plot 1: TX mode, lowest channel, 6 dB bandwidth****Plot 2: TX mode, middle channel, 6 dB bandwidth**

Plot 3: TX mode, highest channel, 6 dB bandwidth**Plots: OFDM / g – mode****Plot 1: TX mode, lowest channel, 6 dB bandwidth**

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



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



9.6 Spectrum bandwidth – 20 dB bandwidth

Description:

Measurement of the 20 dB bandwidth of the modulated signal.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	100 kHz
Resolution bandwidth:	100 kHz
Span:	See plots
Trace-Mode:	Max Hold

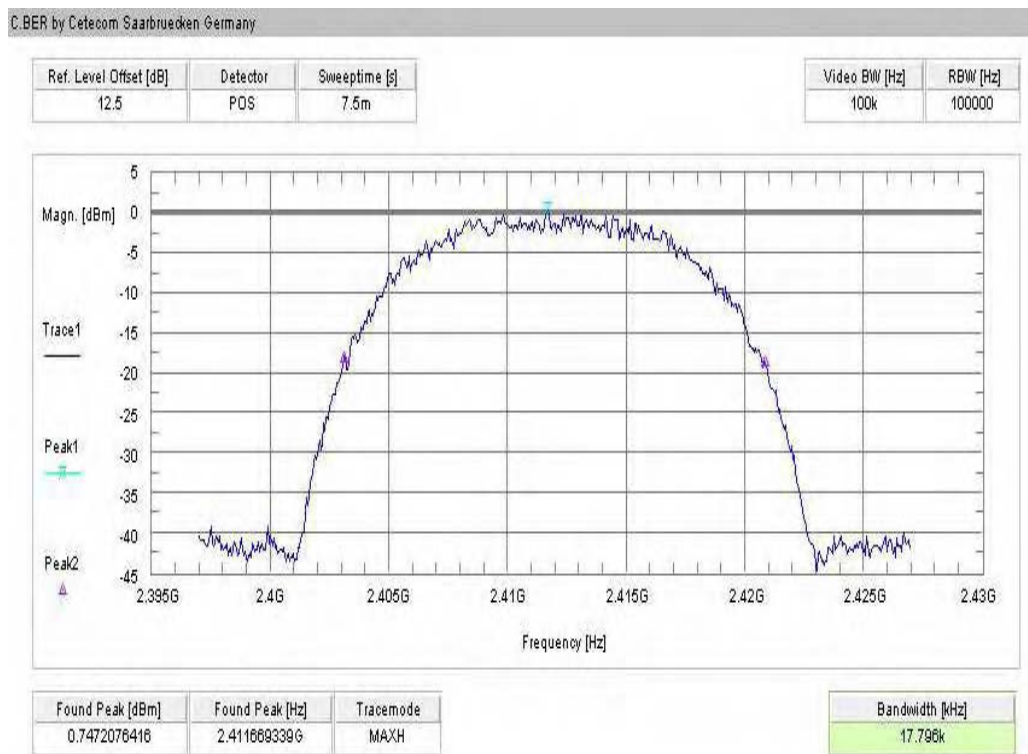
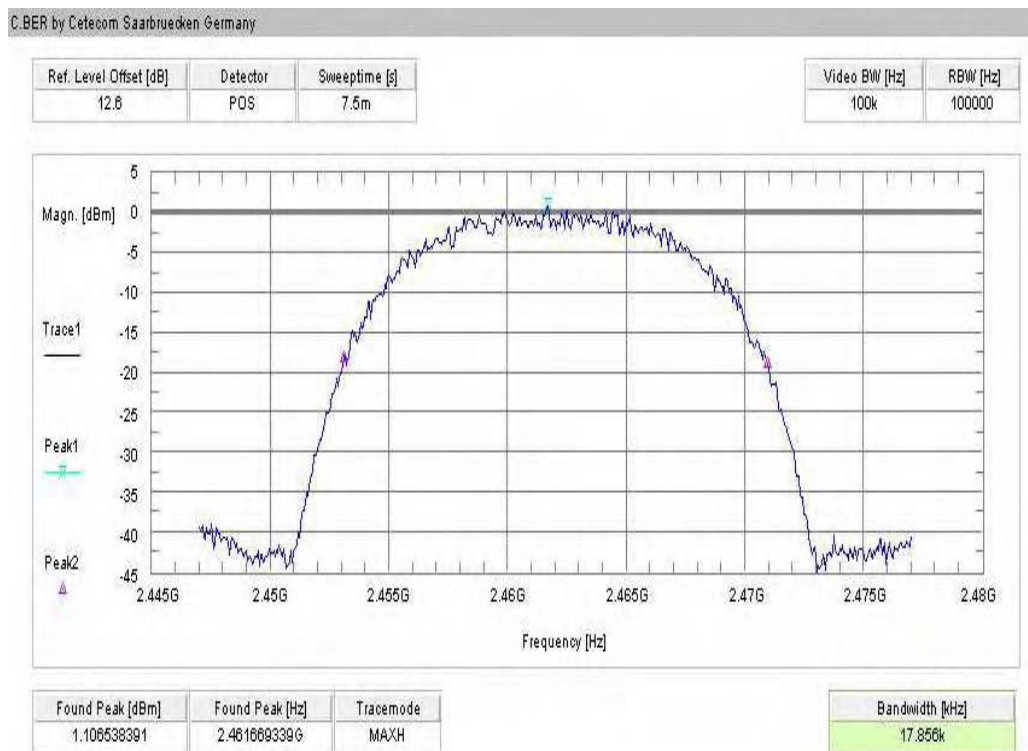
Limits:

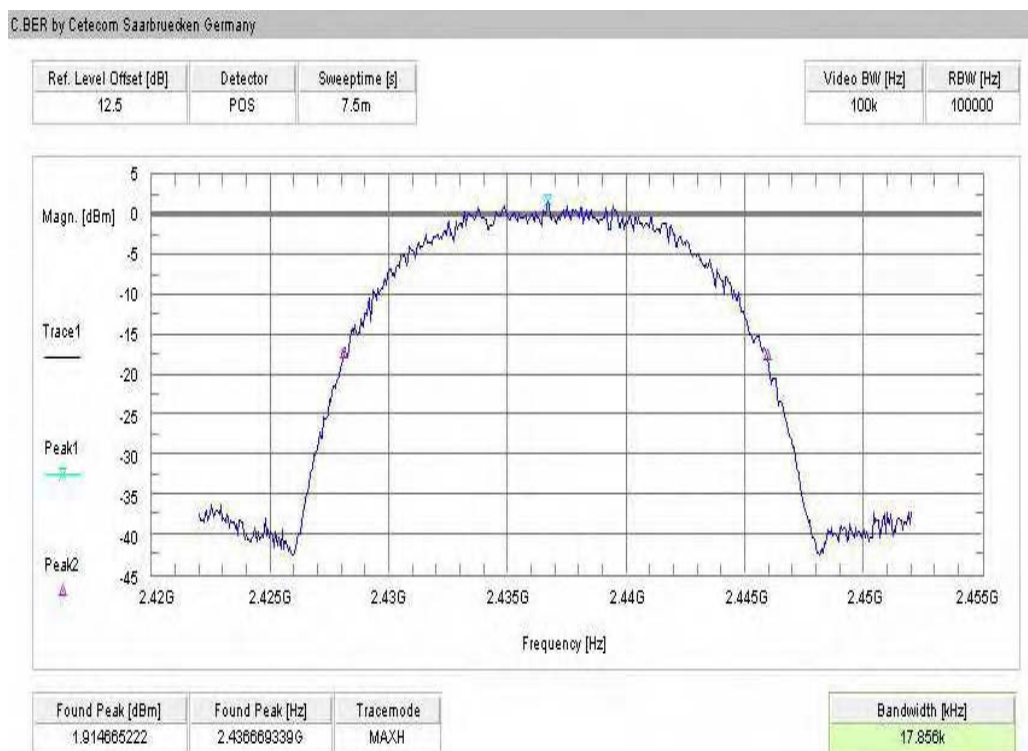
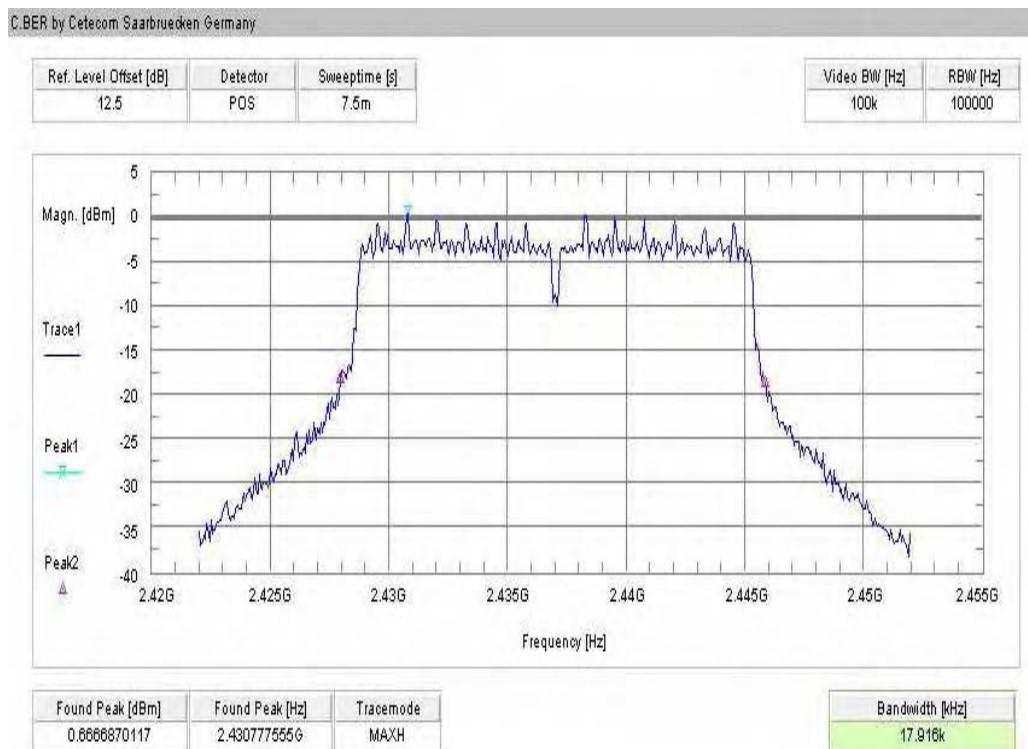
FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 8, A 8.2(a)
Spectrum Bandwidth – 20 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

Results:

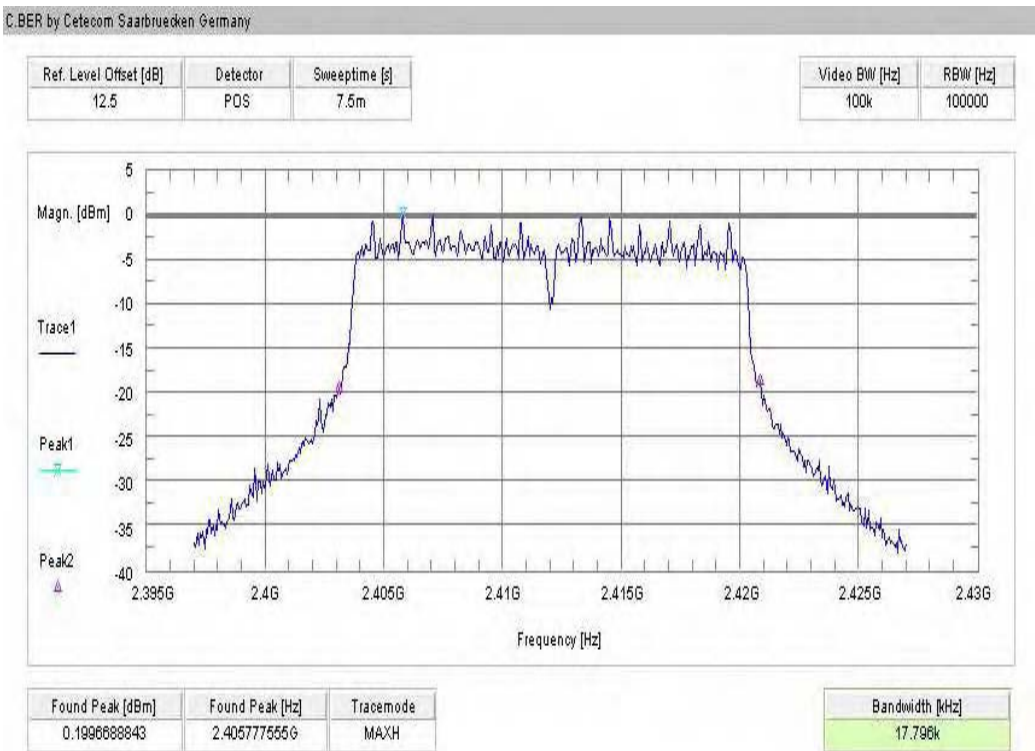
Modulation Frequency	20 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	17796	17856	17856
OFDM / g – mode	17916	17796	18337
Measurement uncertainty	± 100 kHz		

Result: The result of the measurement is passed.

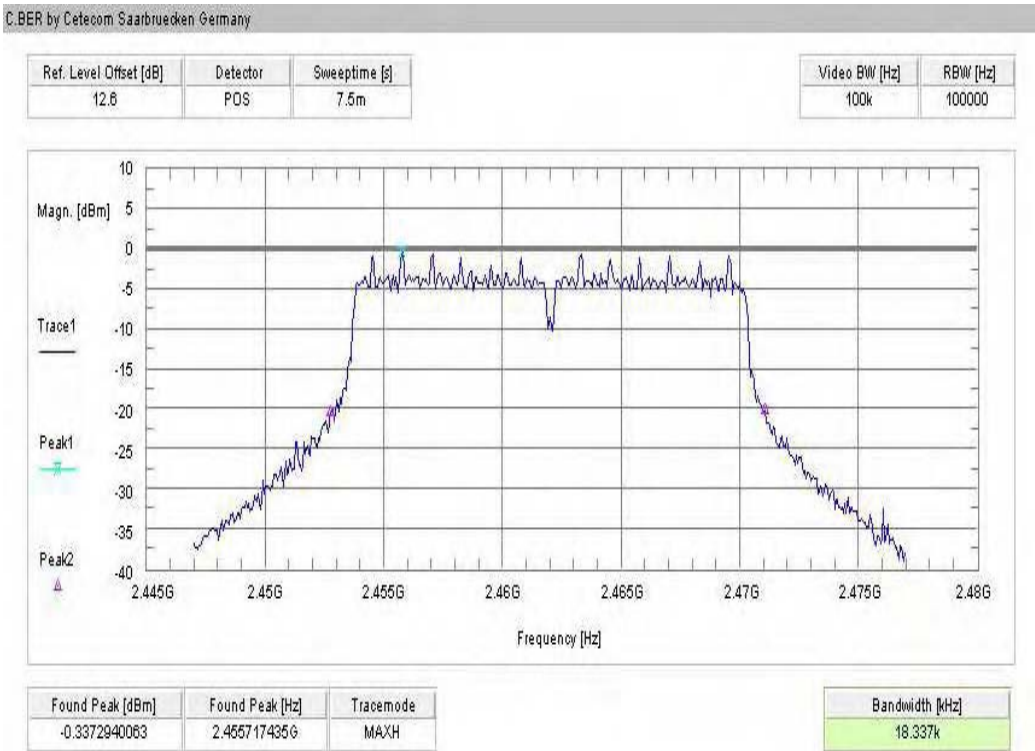
Plots: DSSS / b – mode**Plot 1: TX mode, lowest channel, 20 dB bandwidth****Plot 2: TX mode, middle channel, 20 dB bandwidth**

Plot 3: TX mode, highest channel, 20 dB bandwidth**Plots: OFDM / g – mode****Plot 1: TX mode, lowest channel, 20 dB bandwidth**

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



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



9.7 Band edge compliance conducted

Description:

Measurement of the conducted band edge compliance. EUT is measured at the lower and upper band edge in both modes.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	500 kHz
Resolution bandwidth:	100 kHz
Span:	Lower Band Edge: 2300 – 2425 MHz Upper Band Edge: 2450 – 2500 MHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (d)	RSS 210, Issue 8, A 8.5
Band Edge Compliance Conducted	
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.	

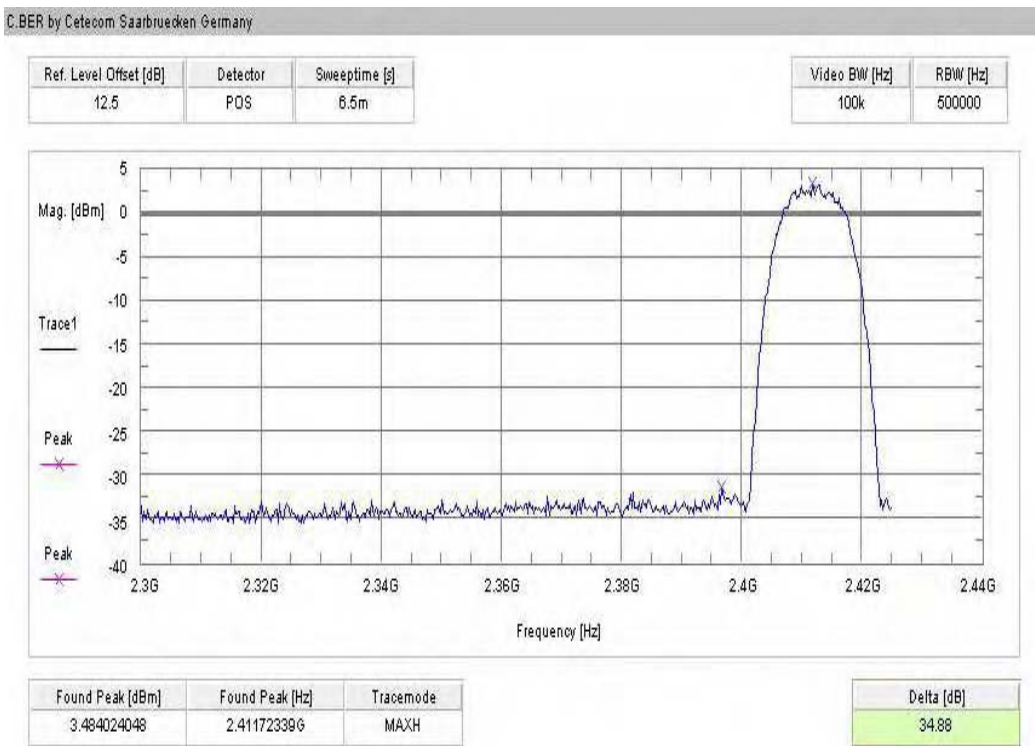
Results:

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

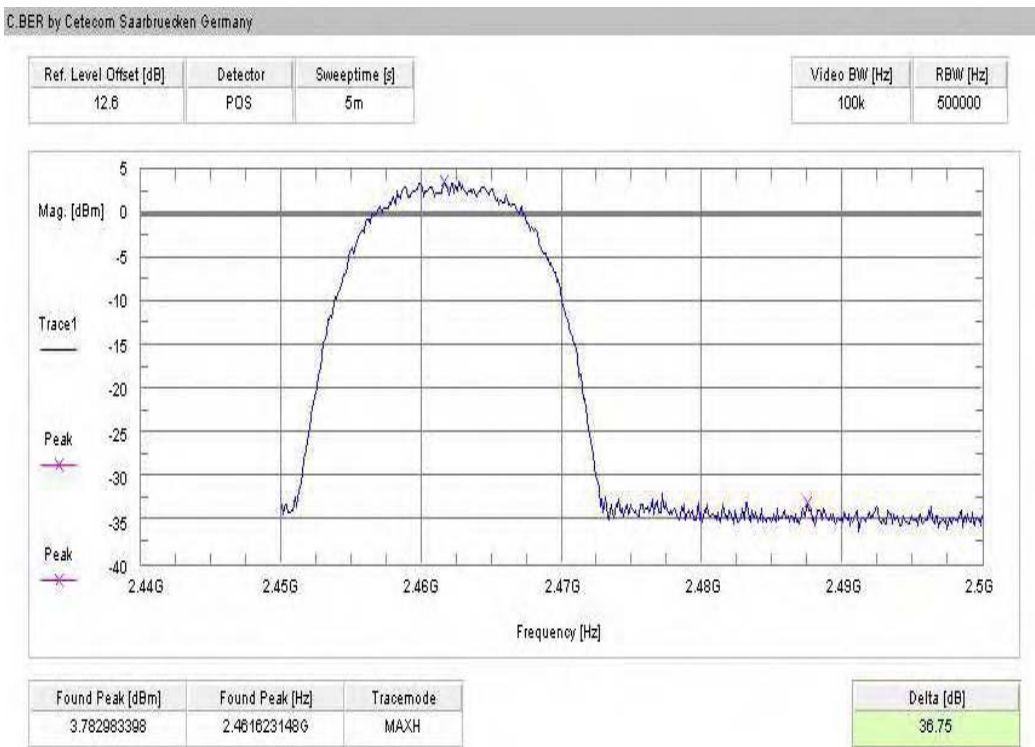
Result: The result of the measurement is passed.

Plots: DSSS / b – mode

Plot 1: TX mode, lower band edge

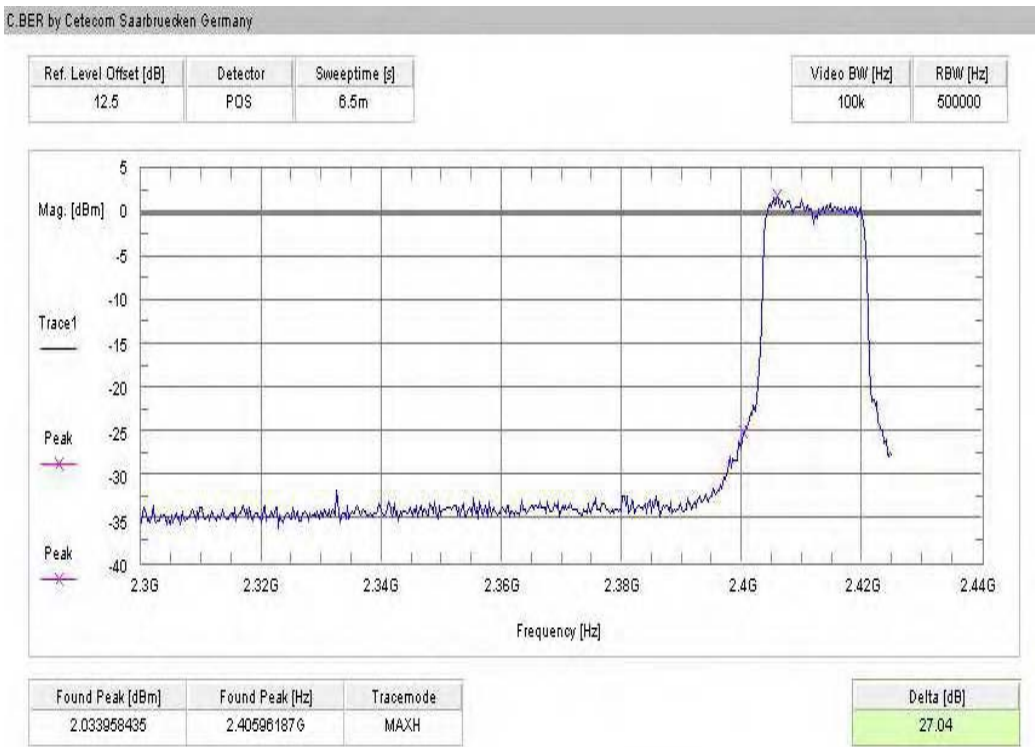


Plot 2: TX mode, upper band edge

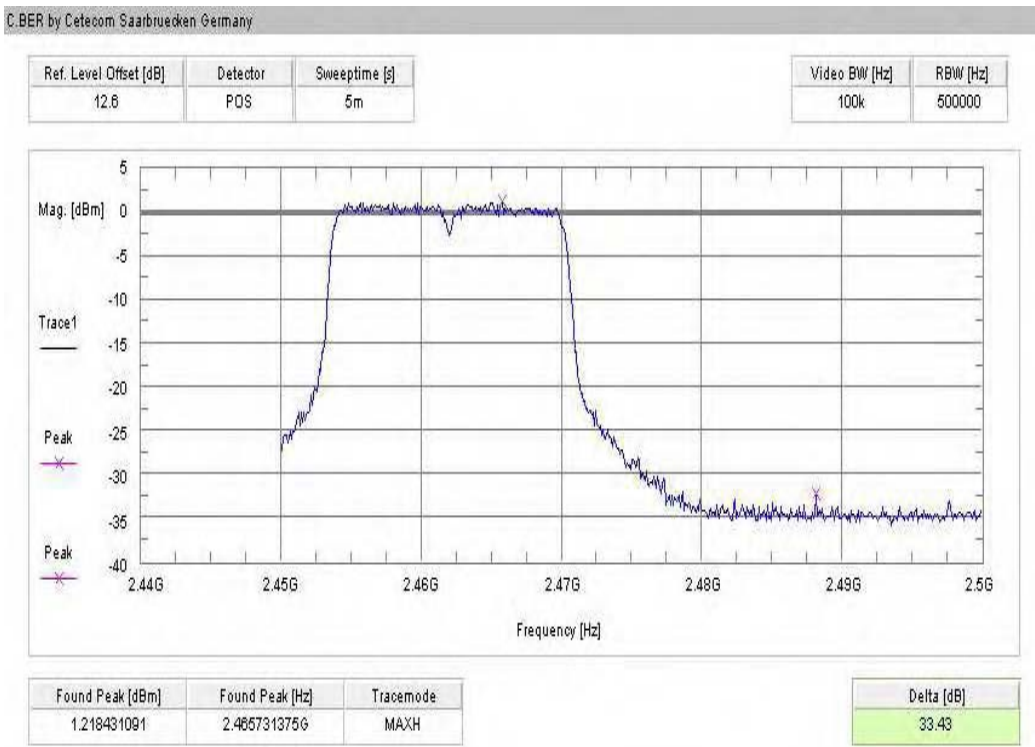


Plots: OFDM / g – mode

Plot 1: TX mode, lower band edge



Plot 2: TX mode, upper band edge



9.8 Band edge compliance radiated

Description:

Measurement of the radiated band edge compliance. The EUT is turned in the position that results in the maximum level at the band edge. Then a sweep over the corresponding restricted band is performed. The EUT is set to channel 1 for the lower restricted band and to channel 11 for the upper restricted band. The measurement is repeated for all modulations. Measurement distance is 3m.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	10 Hz
Resolution bandwidth:	1 MHz
Span:	Lower Band: 2300 – 2400 MHz higher Band: 2480 – 2500 MHz
Trace-Mode:	Max Hold

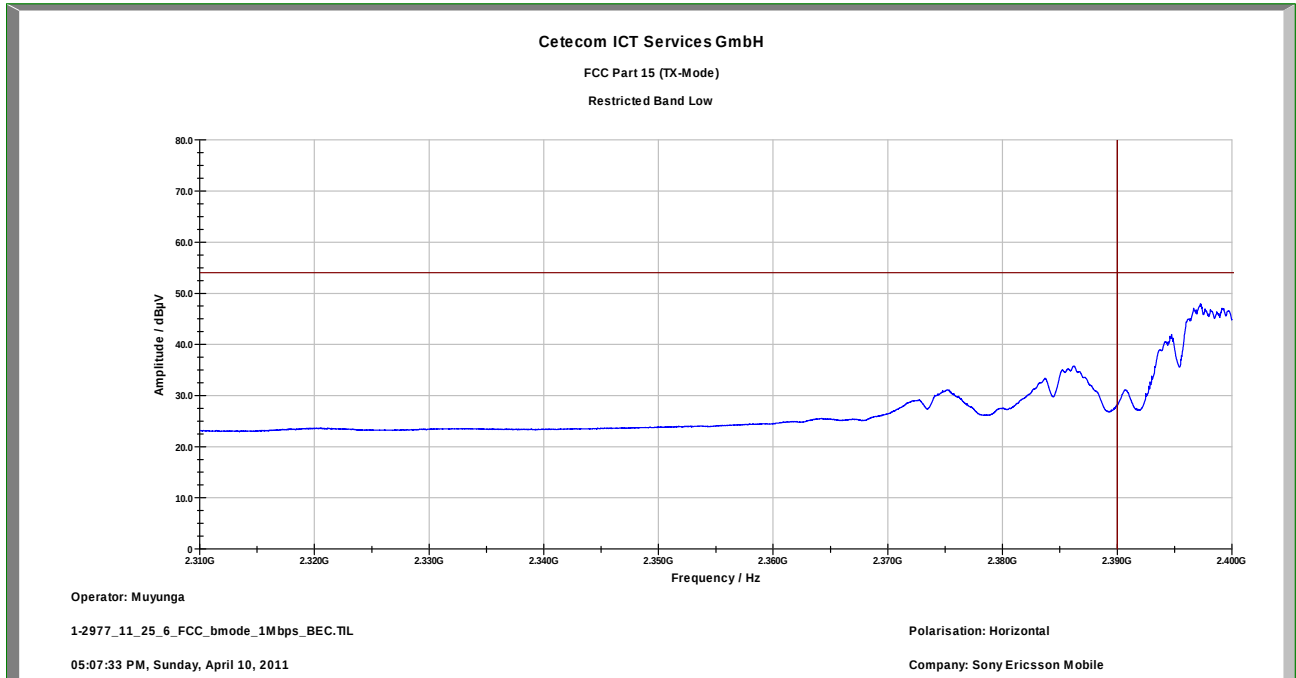
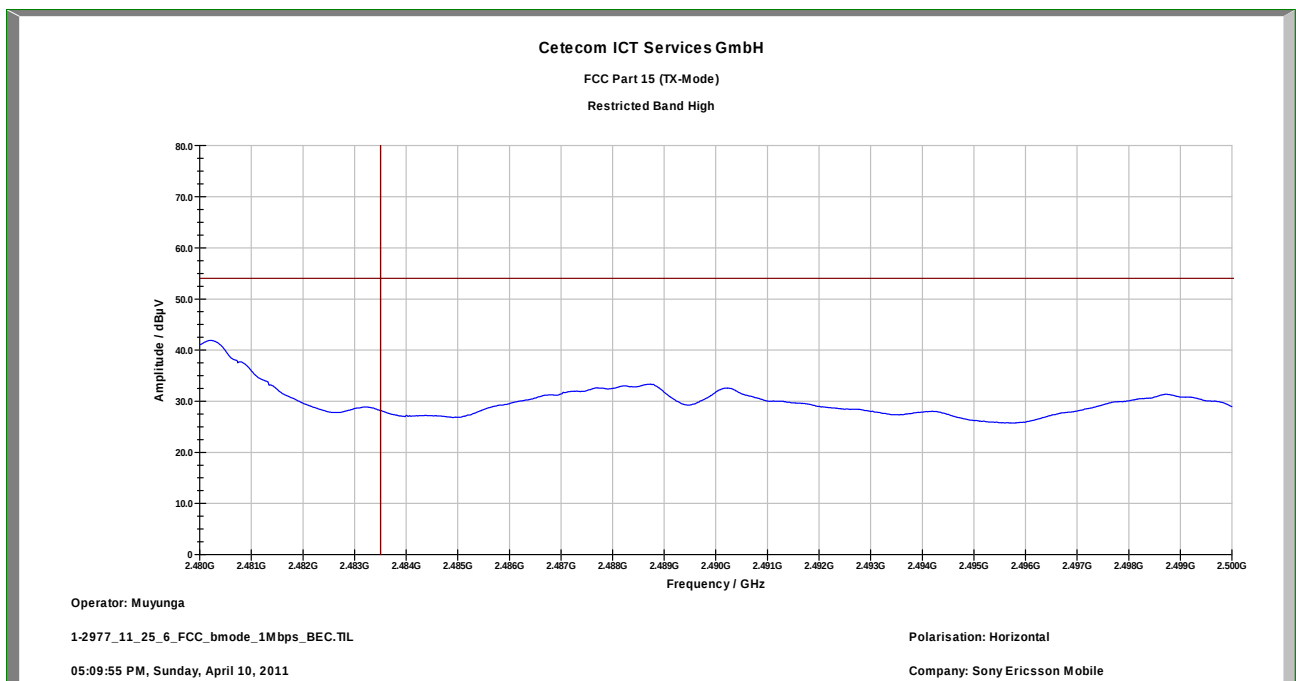
Limits:

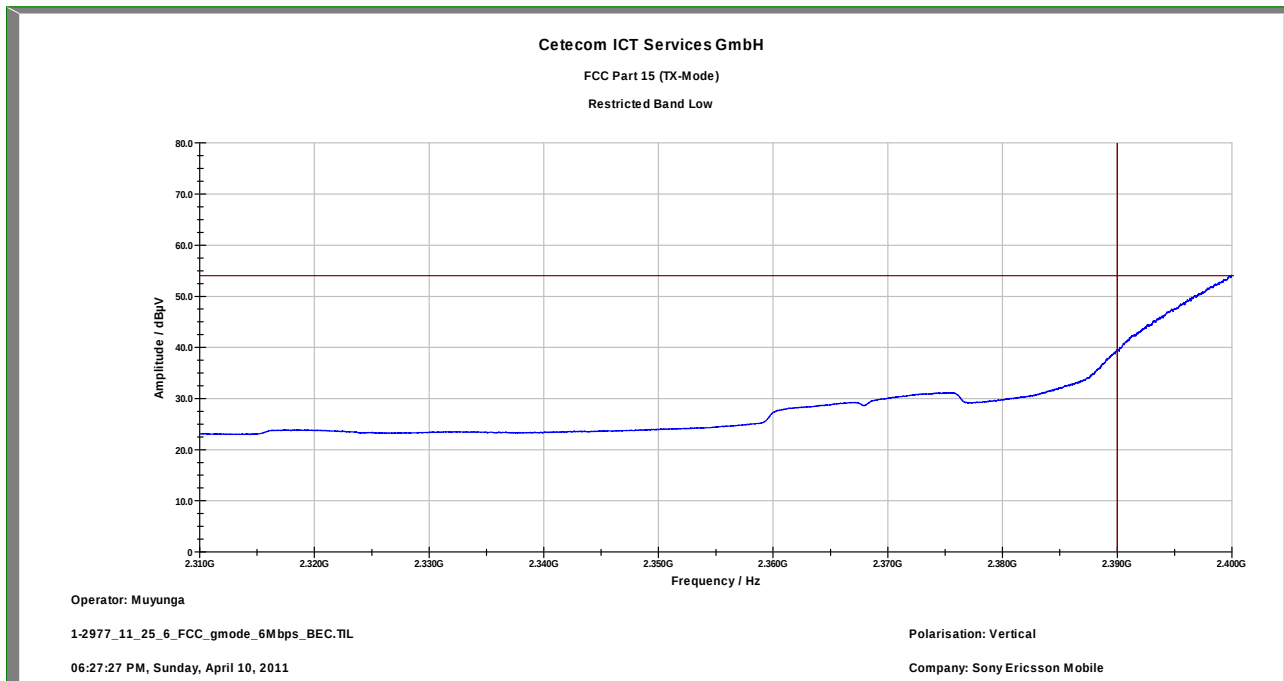
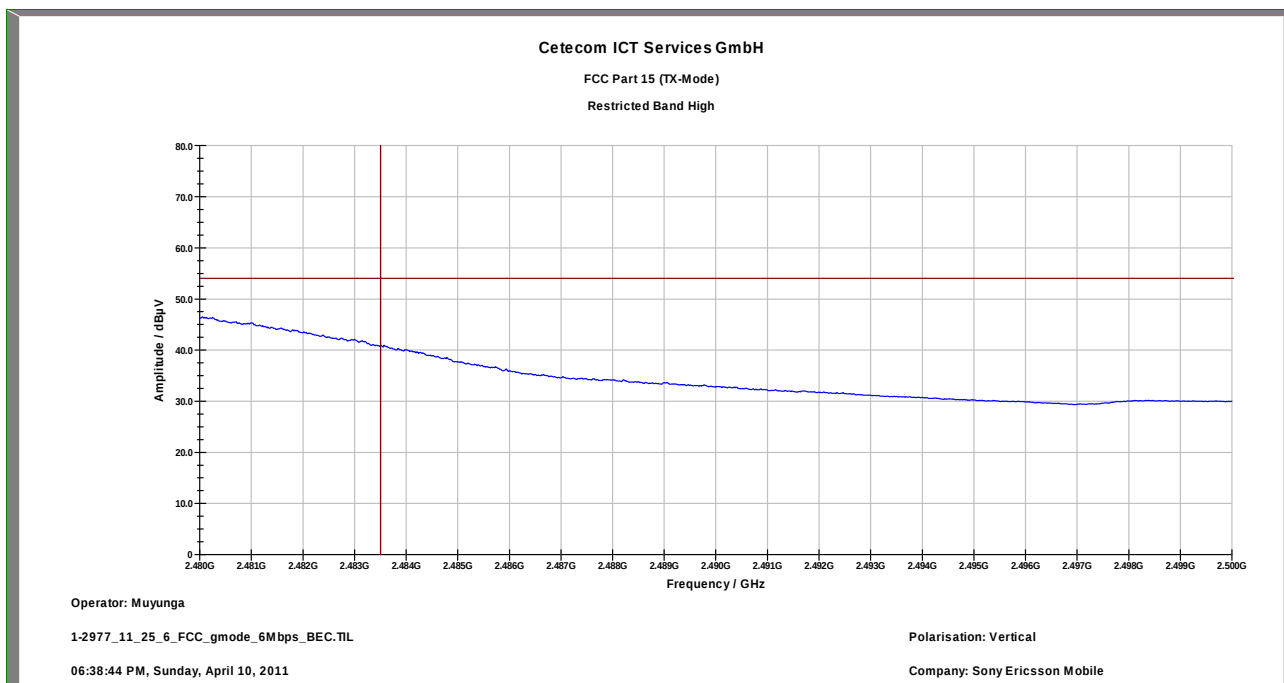
FCC	IC
CFR Part 15.205	RSS 210, Issue 8, A 8.5
Band Edge Compliance Radiated	
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 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)).	
54 dBμV/m AVG	

Results:

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

Result: The result of the measurement is passed.

Plots: DSSS / b – mode**Plot 1: TX mode, lower band edge, horizontal polarization****Plot 2: TX mode, upper band edge, horizontal polarization**

Plots: OFDM / g – mode**Plot 1: TX mode, lower band edge, horizontal polarization****Plot 2: TX mode, upper band edge, horizontal polarization**

9.9 TX spurious emissions conducted

Description:

Measurement of the conducted spurious emissions in transmit mode. The measurement is performed at channel 1, 6 and 11. The measurement is repeated for all modulations.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 100 kHz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 100 kHz
Span:	9 kHz to 25 GHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247(d)	RSS 210, Issue 8, A 8.5
TX Spurious Emissions Conducted	
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	

Results: DSSS / b – mode

TX Spurious Emissions Conducted					
DSSS - mode					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		1.5	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2437		2.9	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2462		1.7	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
Measurement uncertainty		± 3 dB			

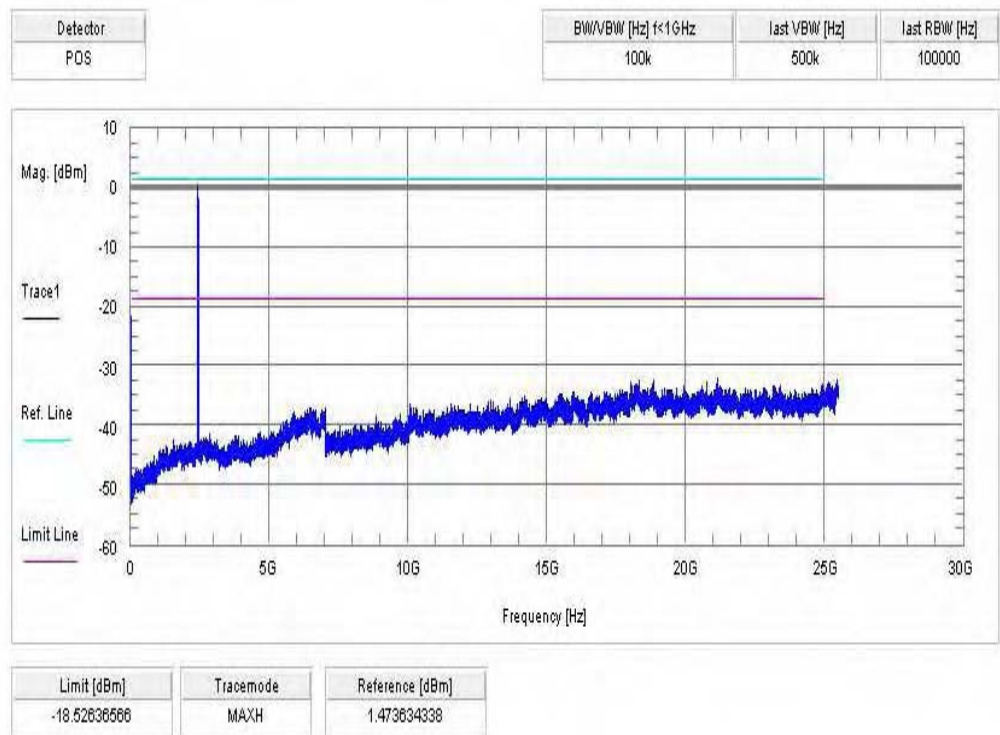
Result: The result of the measurement is passed.**Results: OFDM / g – mode**

TX Spurious Emissions Conducted					
OFDM - mode					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		1.0	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2437		1.2	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2462		0.4	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: The result of the measurement is passed.

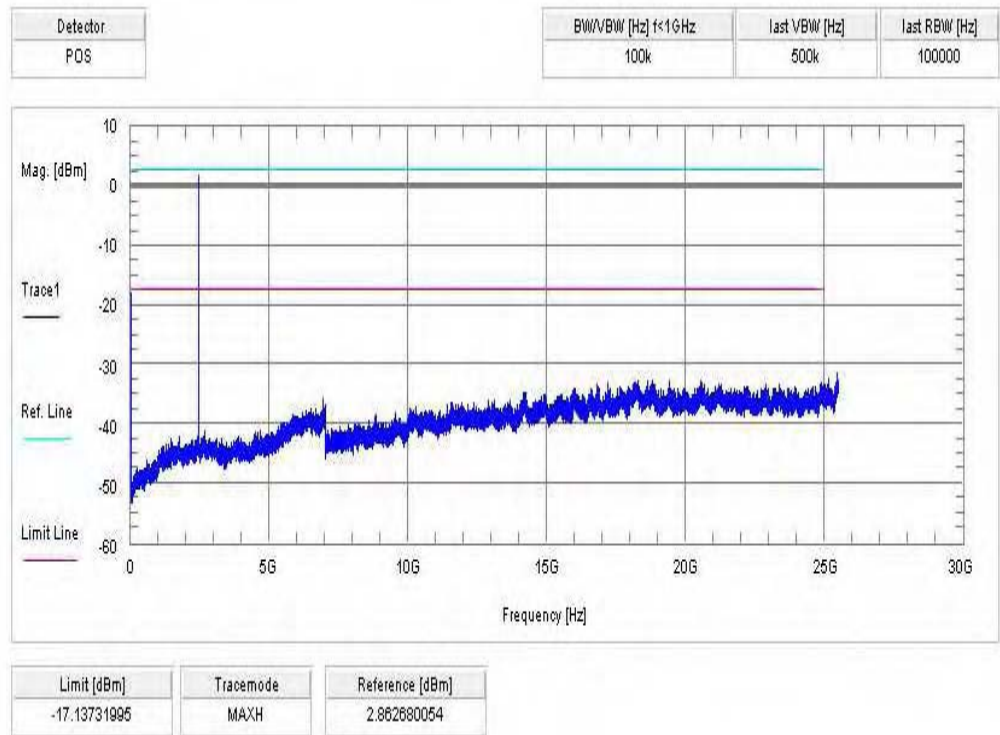
Plots: DSSS / b – mode

Plot 1: TX mode, lowest channel



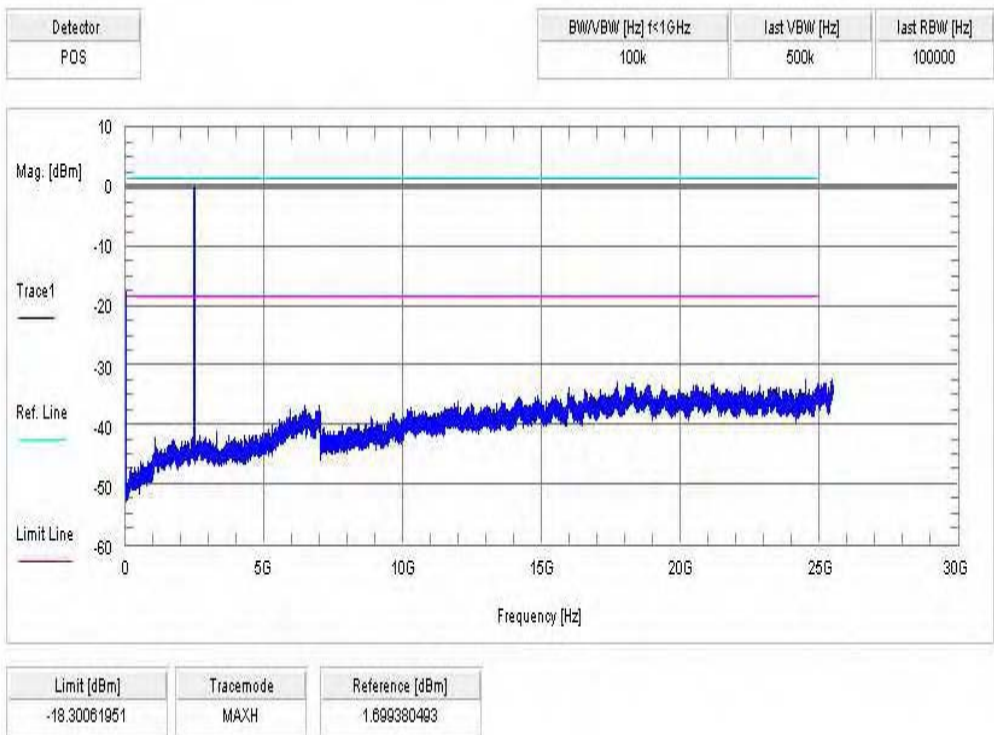
The peak at the beginning of the plot is the LO from the SA.

Plot 2: TX mode, middle channel



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

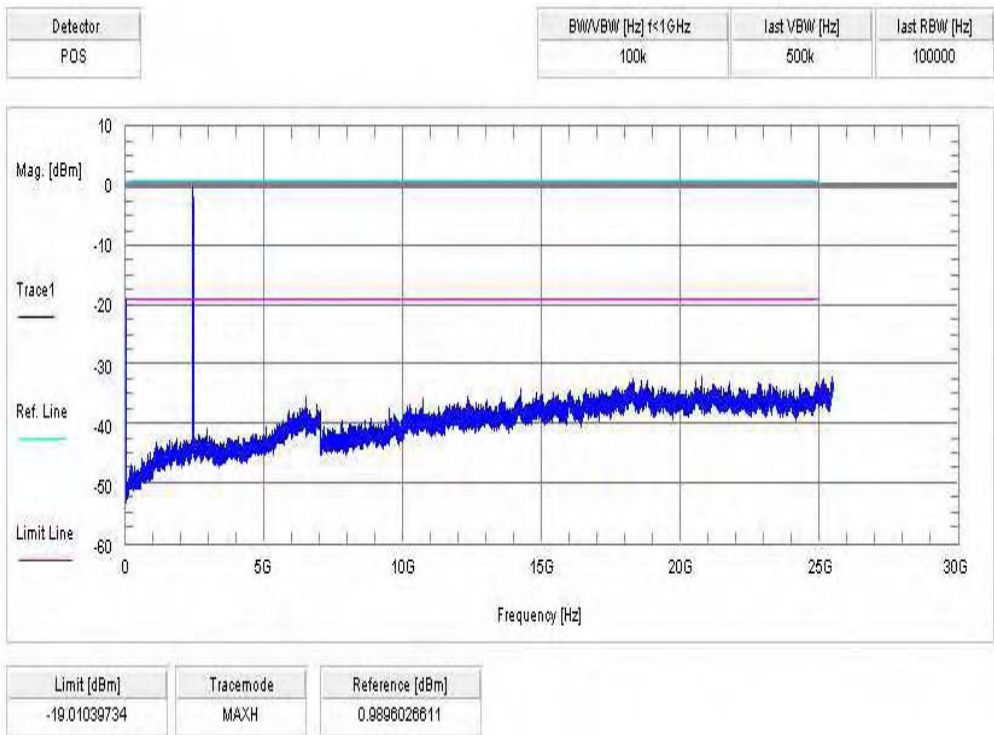
Plot 3: TX mode, highest channel



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

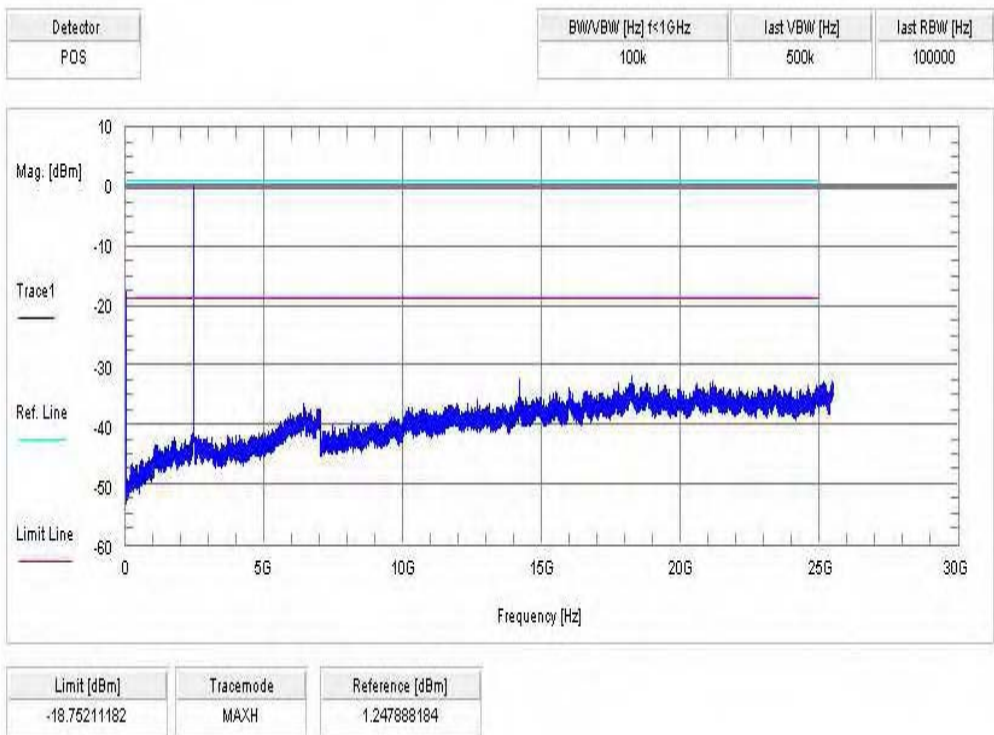
Plots: OFDM / g – mode

Plot 1: TX mode, lowest channel



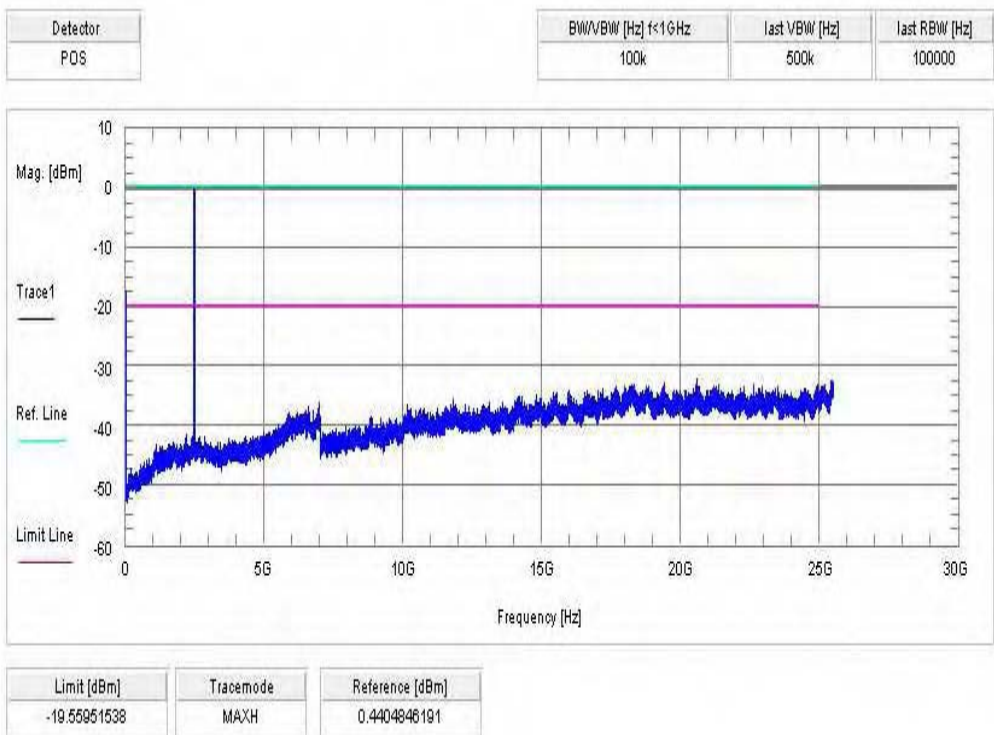
The peak at the beginning of the plot is the LO from the SA.

Plot 2: TX mode, middle channel



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

Plot 3: TX mode, highest channel



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

9.10 TX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in transmit mode. The measurement is performed at channel 1, 6 and 11. The measurement is repeated for all modulations.

Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak
Sweep time:	Auto
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	30 MHz to 26 GHz
Trace-Mode:	Max Hold
Measured Modulation	☒ DSSS b – mode ☒ OFDM g – mode ☐ OFDM n – mode

The modulation with the highest output power was used to perform the transmitter spurious emissions. If spurious were detected a re-measurement was performed on the detected frequency with each modulation.

Limits:

FCC		IC	
CFR Part 15.247(d)		RSS 210, Issue 8, A 8.5	
TX Spurious Emissions Radiated			
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).			
§15.209			
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance	
30 - 88	30.0	10	
88 – 216	33.5	10	
216 – 960	36.0	10	
Above 960	54.0	3	

Results: DSSS / b – mode

TX Spurious Emissions Radiated [dB μ V/m]								
DSSS – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

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

TX Spurious Emissions Radiated [dB μ V/m]								
OFDM – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

Result: The result of the measurement is passed.

Plots: DSSS / b – mode**Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

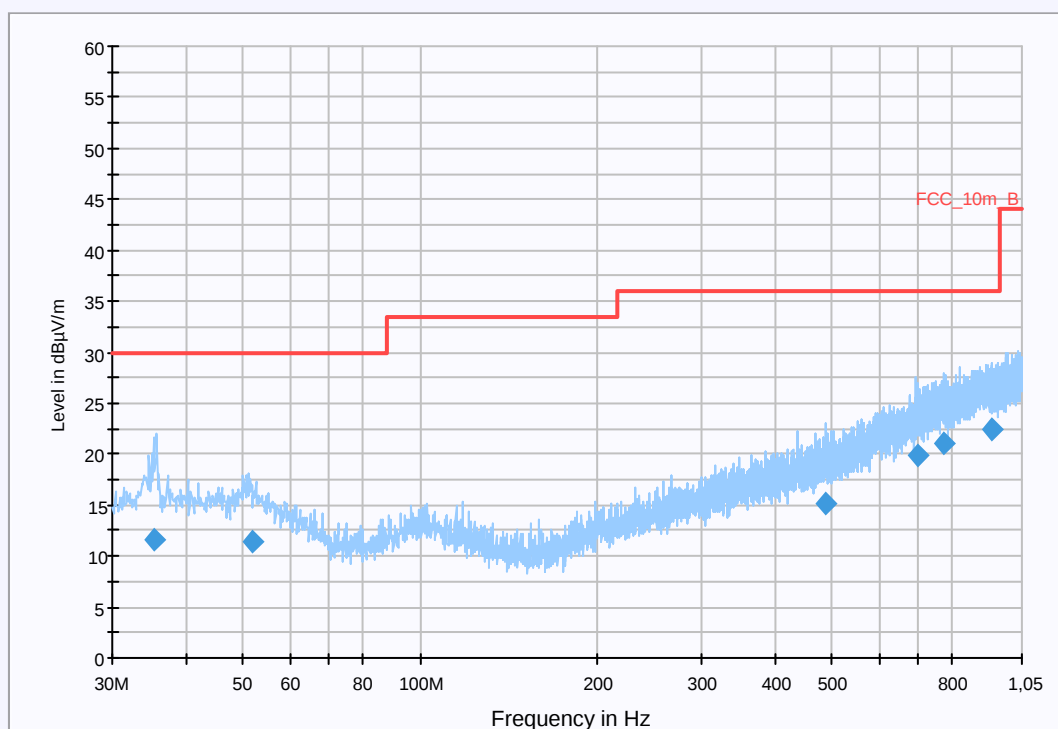
EUT: AAH-5880012-.BV
 Serial Number:
 Test Description: FCC Part 15 C <1 GHz @ 10m
 Operating Conditions: WLAN 1Mbit/s CH:1 Tx
 Operator Name: LANGER
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

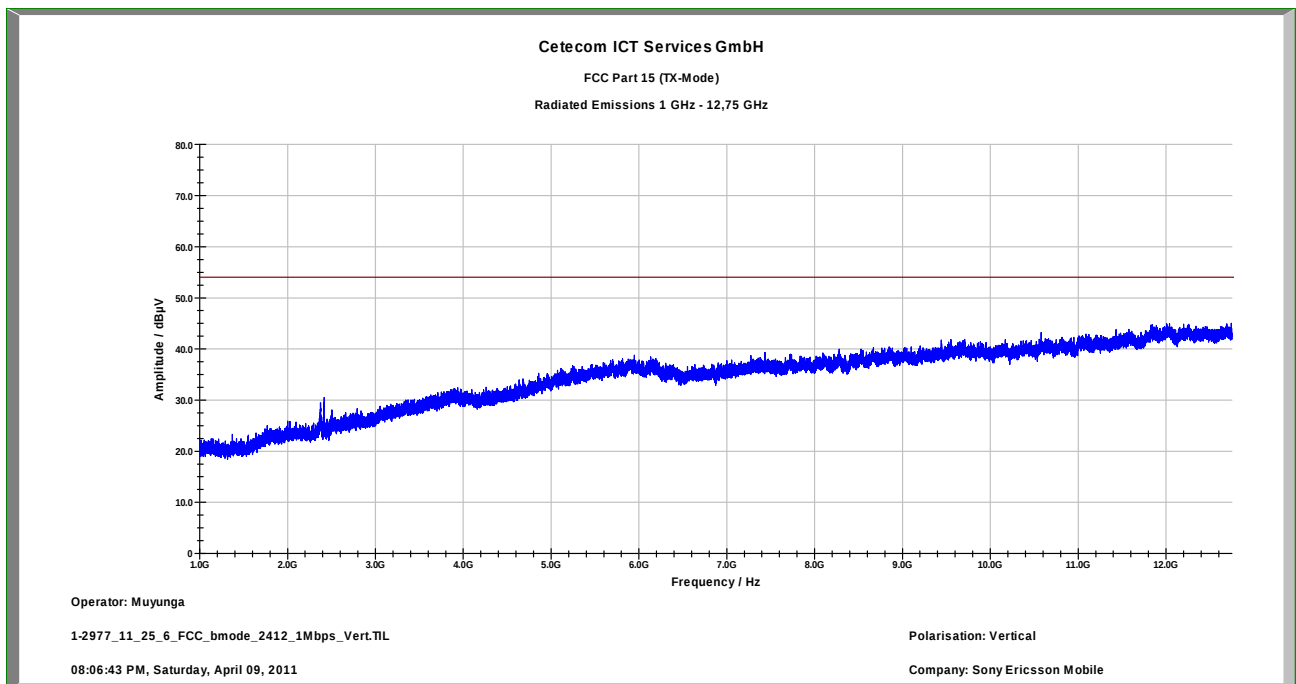
Level Unit: dBμV/m

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

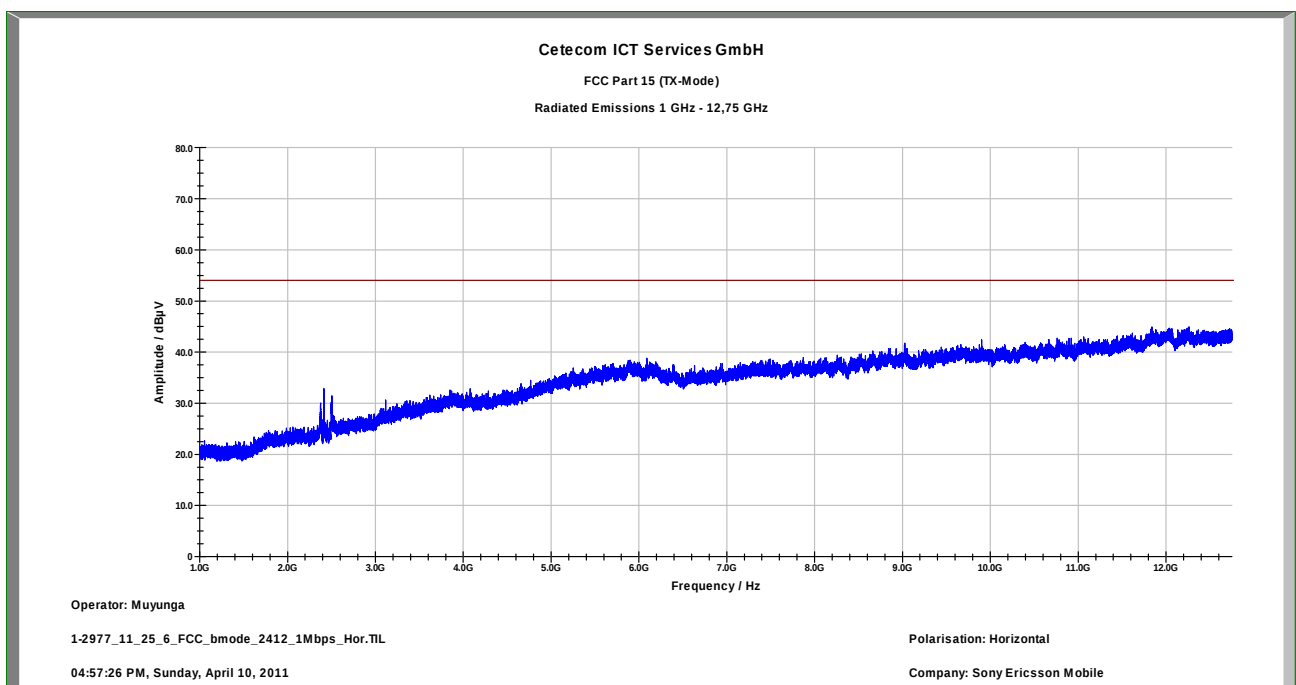
FCC_10m(B)_3

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
35.480700	11.6	15000.000	120.000	220.0	H	48.0	13.1	18.4	30.0	
51.714750	11.4	15000.000	120.000	114.0	V	98.0	13.2	18.6	30.0	
488.341800	15.2	15000.000	120.000	98.0	H	324.0	18.5	20.8	36.0	
696.141150	19.8	15000.000	120.000	220.0	H	216.0	22.4	16.2	36.0	
776.173200	21.0	15000.000	120.000	220.0	H	22.0	23.7	15.0	36.0	
934.207650	22.5	15000.000	120.000	220.0	V	121.0	25.3	13.5	36.0	

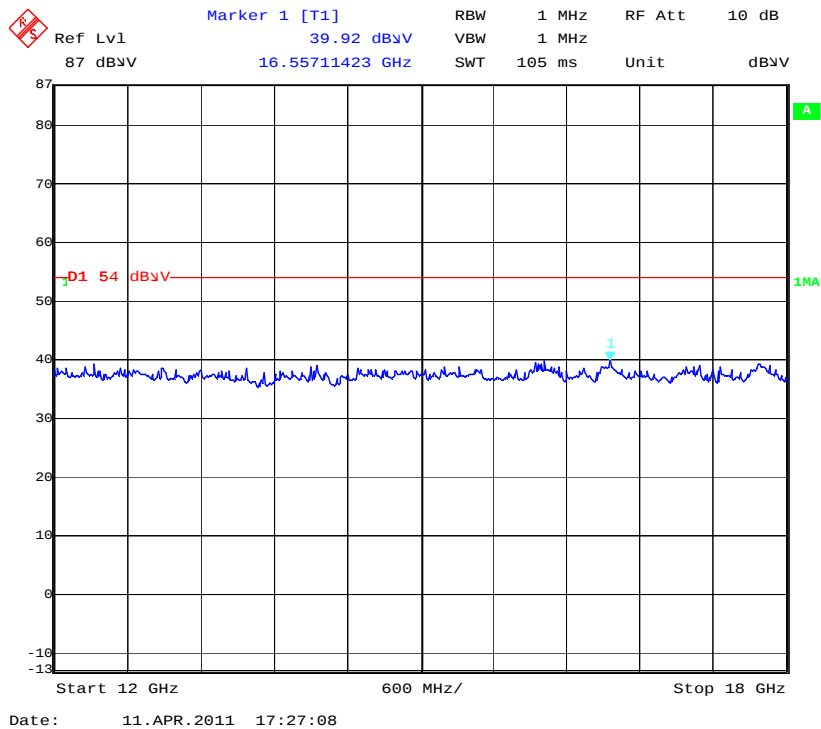
Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical polarization

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

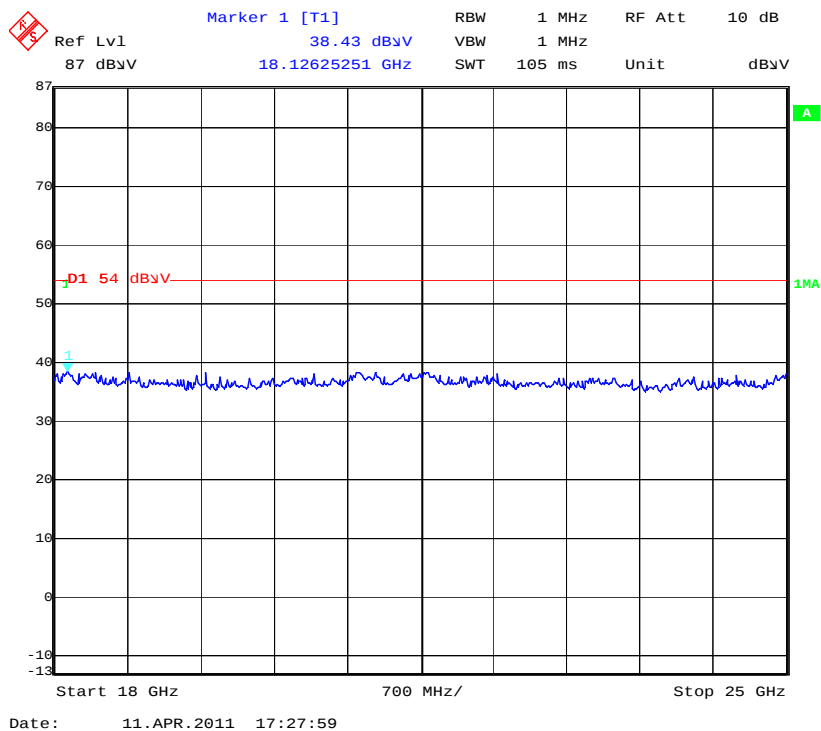
Plot 3: Lowest channel, 1 GHz to 12.75 GHz, horizontal polarization

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

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



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



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

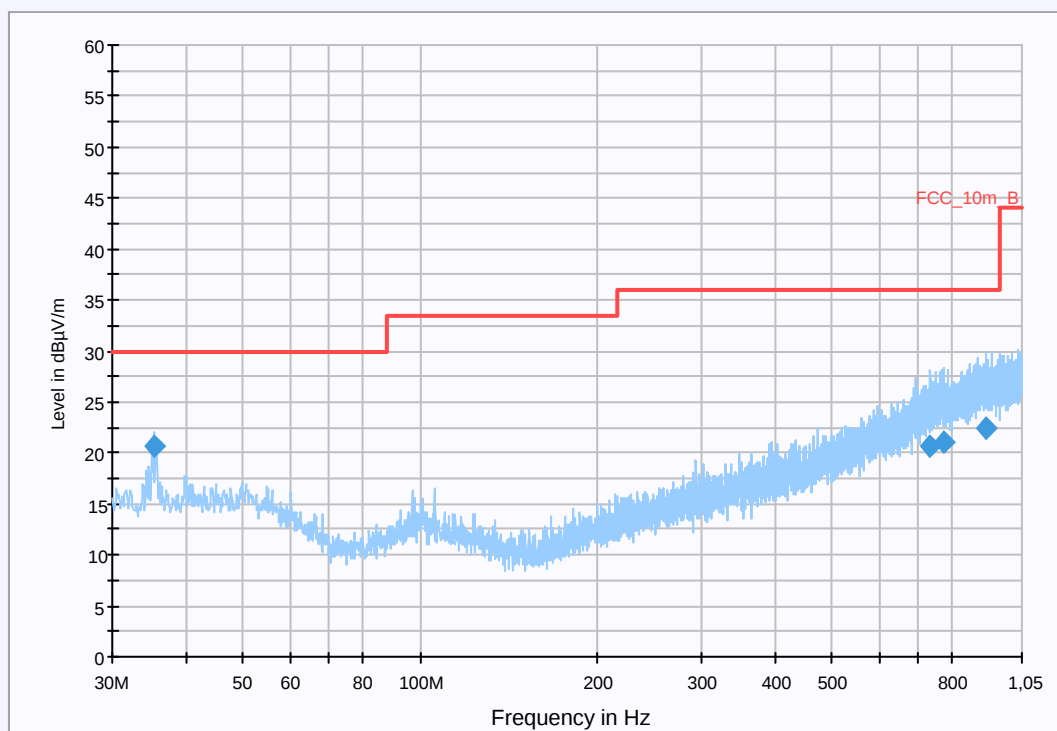
EUT: AAH-5880012-.BV
 Serial Number:
 Test Description: FCC Part 15 C <1 GHz @ 10m
 Operating Conditions: WLAN 1Mbit/s CH:6 Tx
 Operator Name: LANGER
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

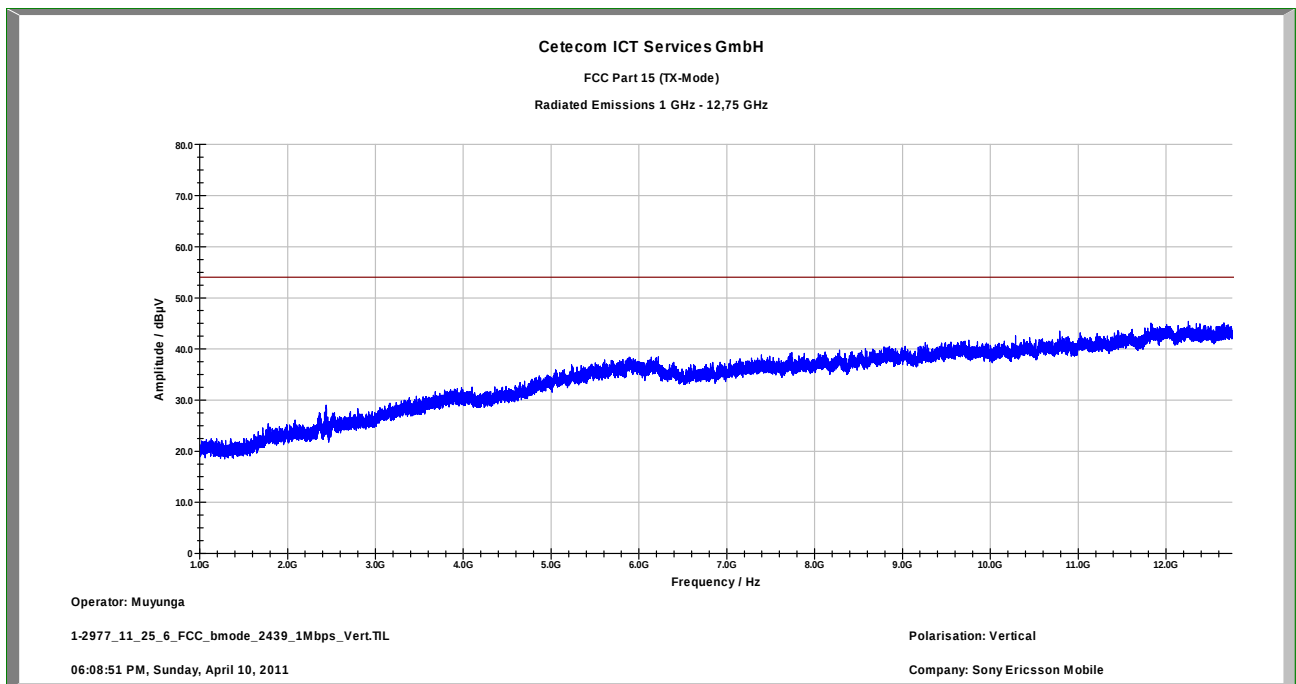
Hardware Setup: Electric Field (NOS)
 Level Unit: dBμV/m

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

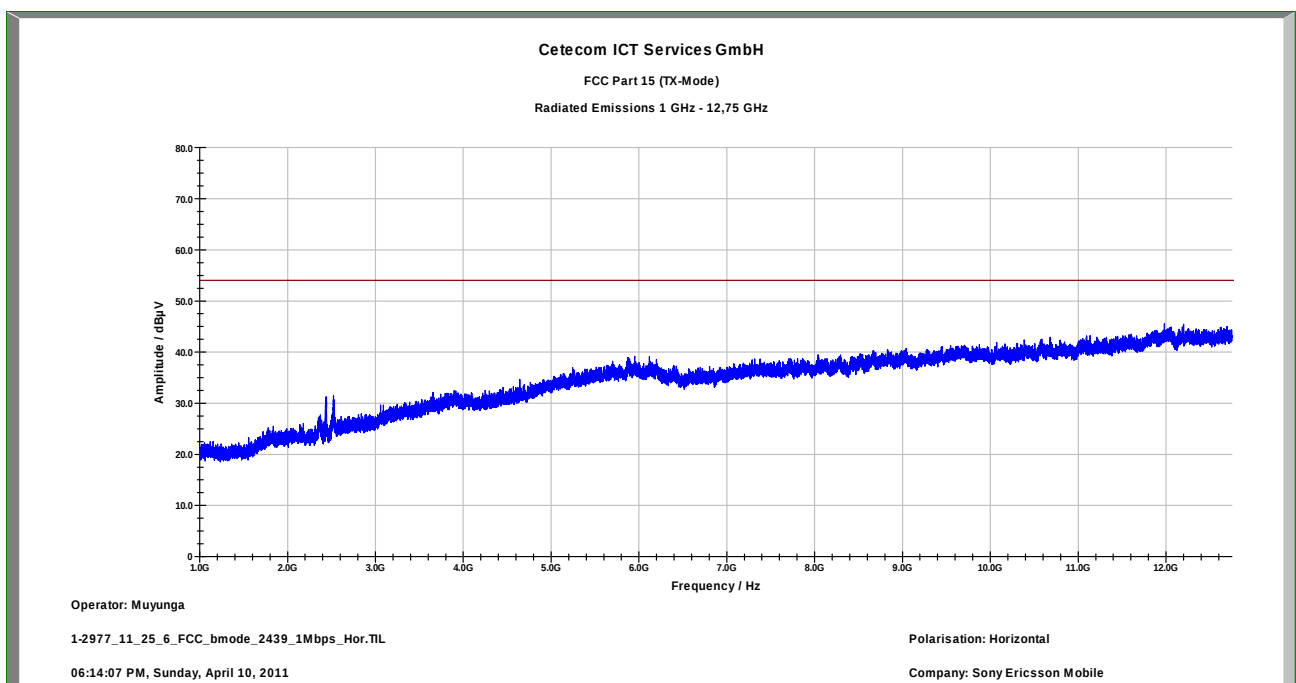
FCC_10m(B)_3

**Final Result 1**

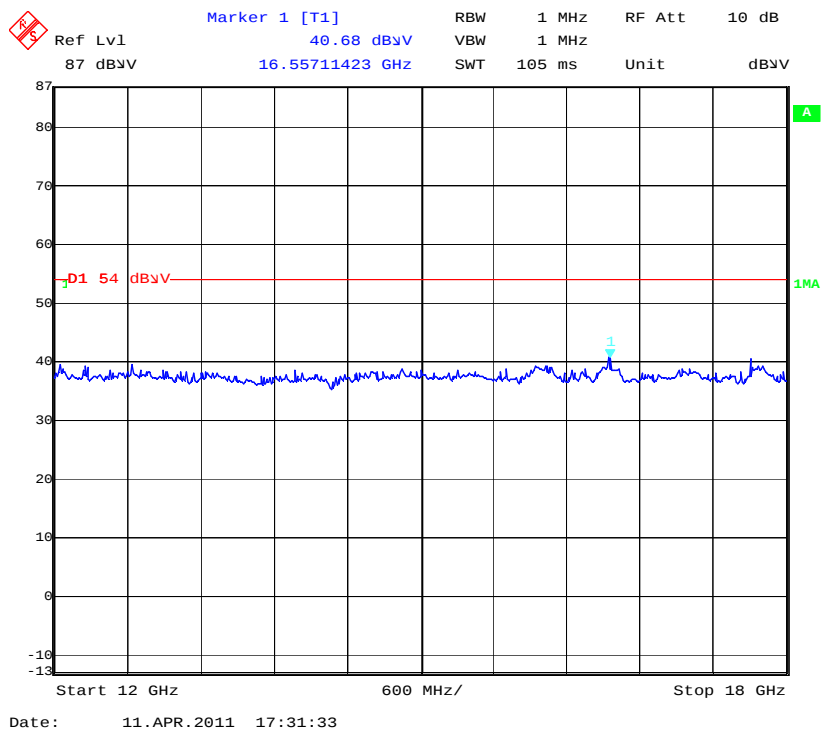
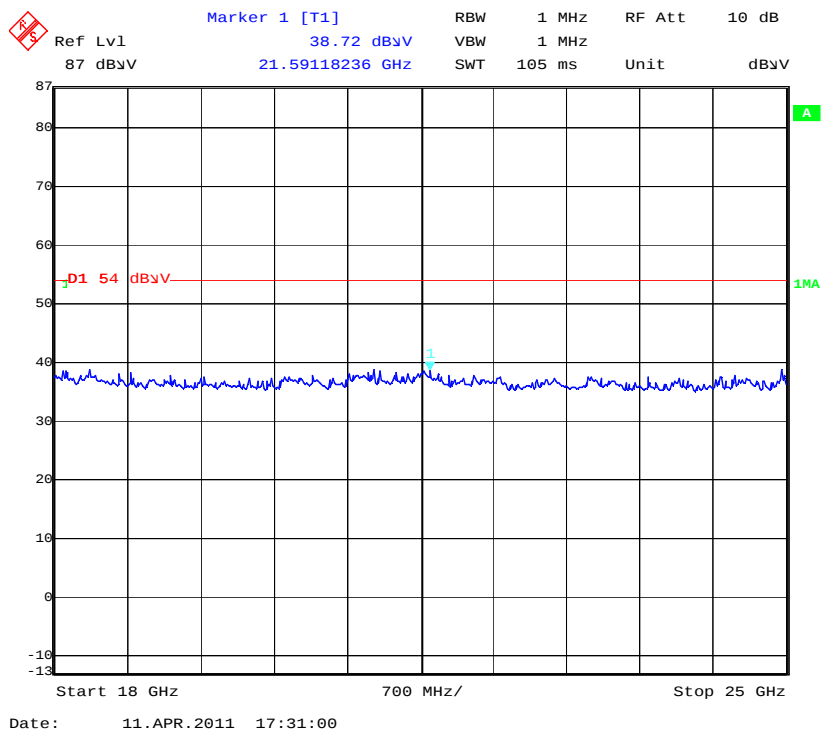
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
35.381250	20.6	15000.000	120.000	135.0	V	289.0	13.1	9.4	30.0	
734.639250	20.7	15000.000	120.000	98.0	H	132.0	23.3	15.3	36.0	
774.271650	21.0	15000.000	120.000	120.0	H	39.0	23.7	15.0	36.0	
913.708050	22.4	15000.000	120.000	220.0	V	154.0	25.2	13.6	36.0	

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

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

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

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

Plot 9: Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization**Plot 10:** Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization

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

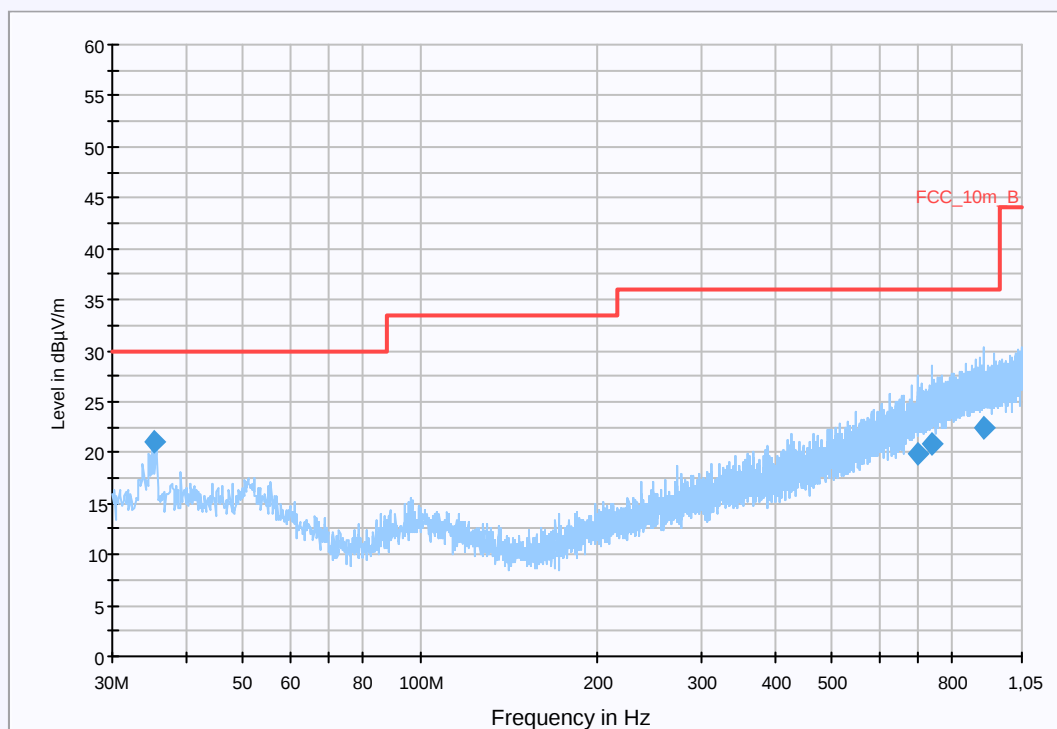
EUT: AAH-5880012-.BV
 Serial Number:
 Test Description: FCC Part 15 C <1 GHz @ 10m
 Operating Conditions: WLAN 1Mbit/s CH:11 Tx
 Operator Name: LANGER
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

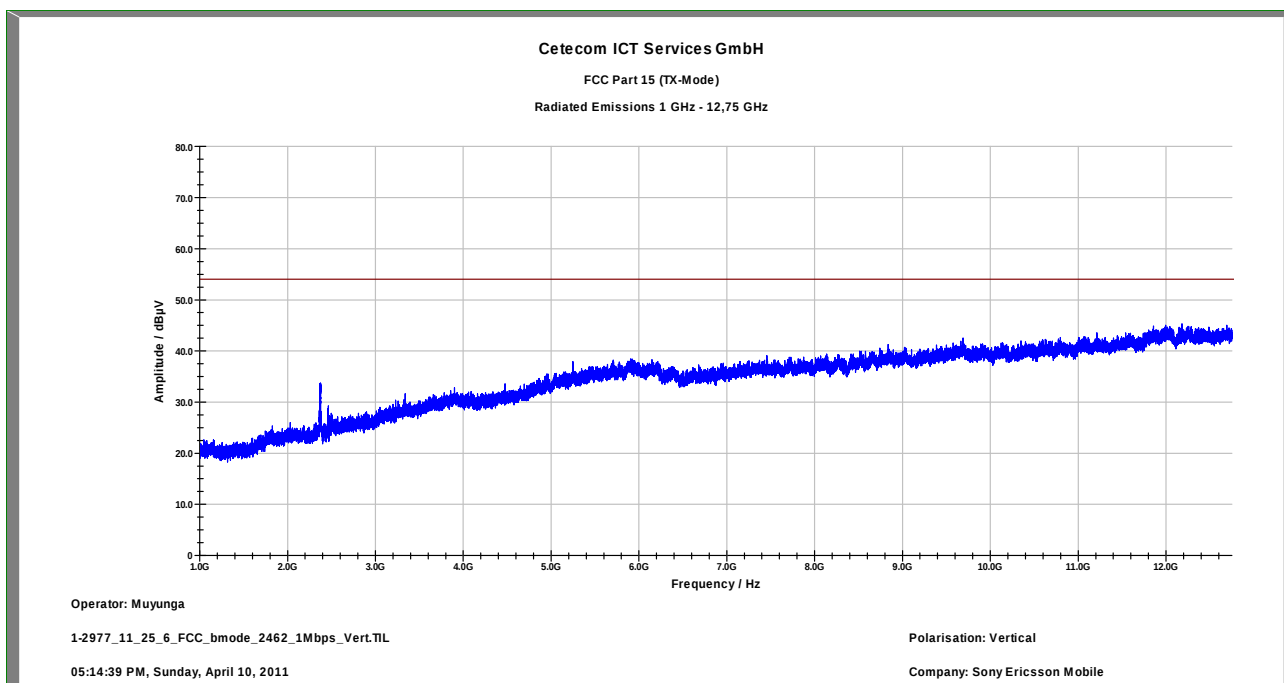
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver

FCC_10m(B)_3

**Final Result 1**

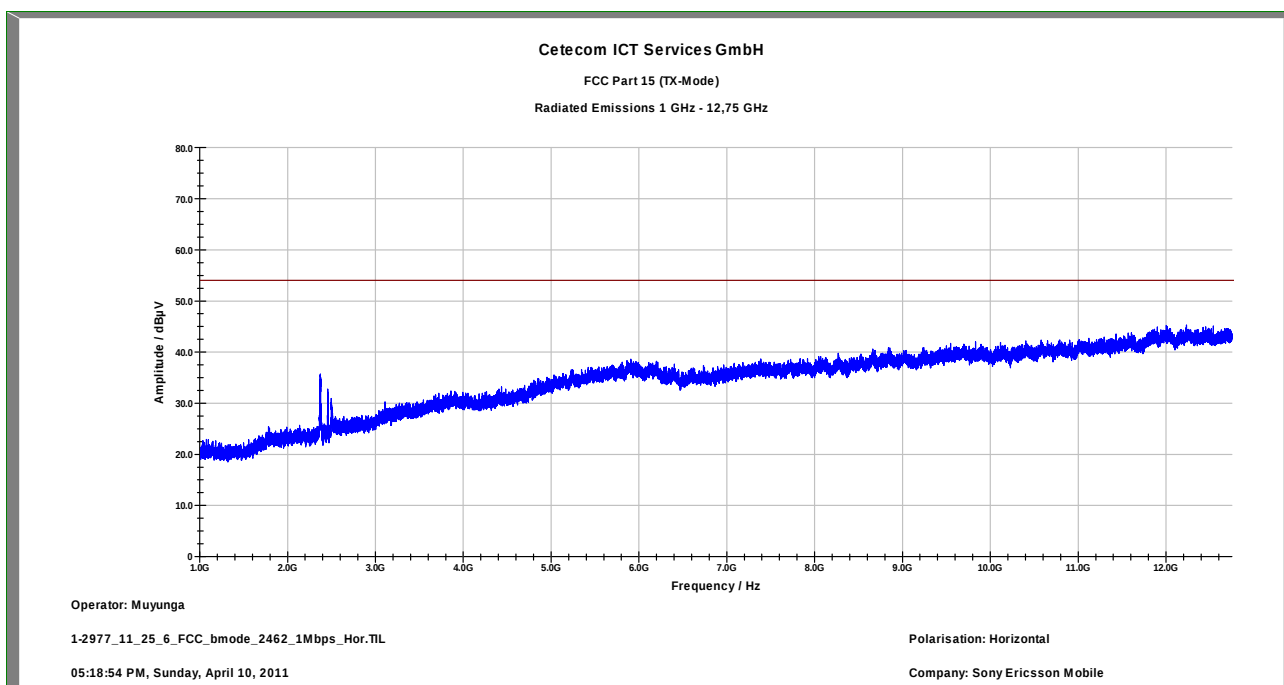
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
35.382750	21.1	15000.000	120.000	106.0	V	272.0	13.1	8.9	30.0	
697.798800	19.9	15000.000	120.000	220.0	H	64.0	22.4	16.1	36.0	
737.057400	20.8	15000.000	120.000	220.0	H	233.0	23.4	15.2	36.0	
903.903900	22.5	15000.000	120.000	114.0	V	104.0	25.2	13.5	36.0	

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



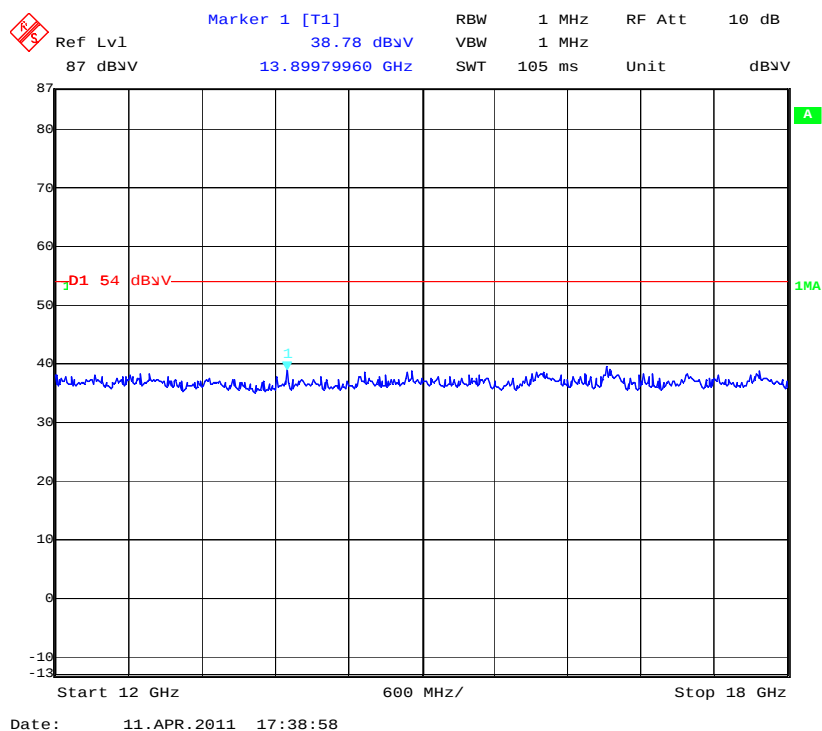
The carrier signal is notched with a 2.4 GHz band rejection filter.

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

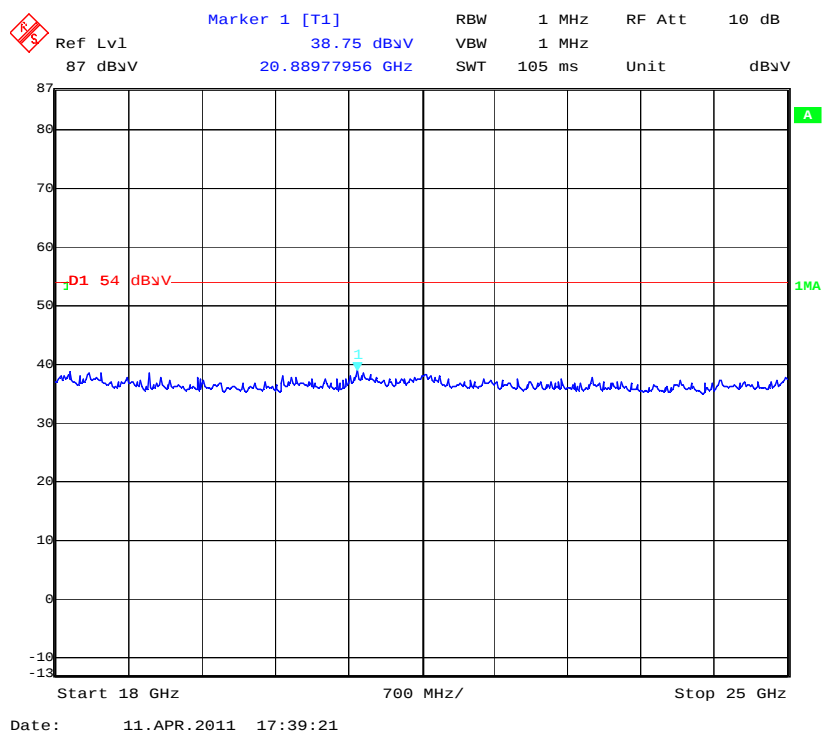


The carrier signal is notched with a 2.4 GHz band rejection filter.

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



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



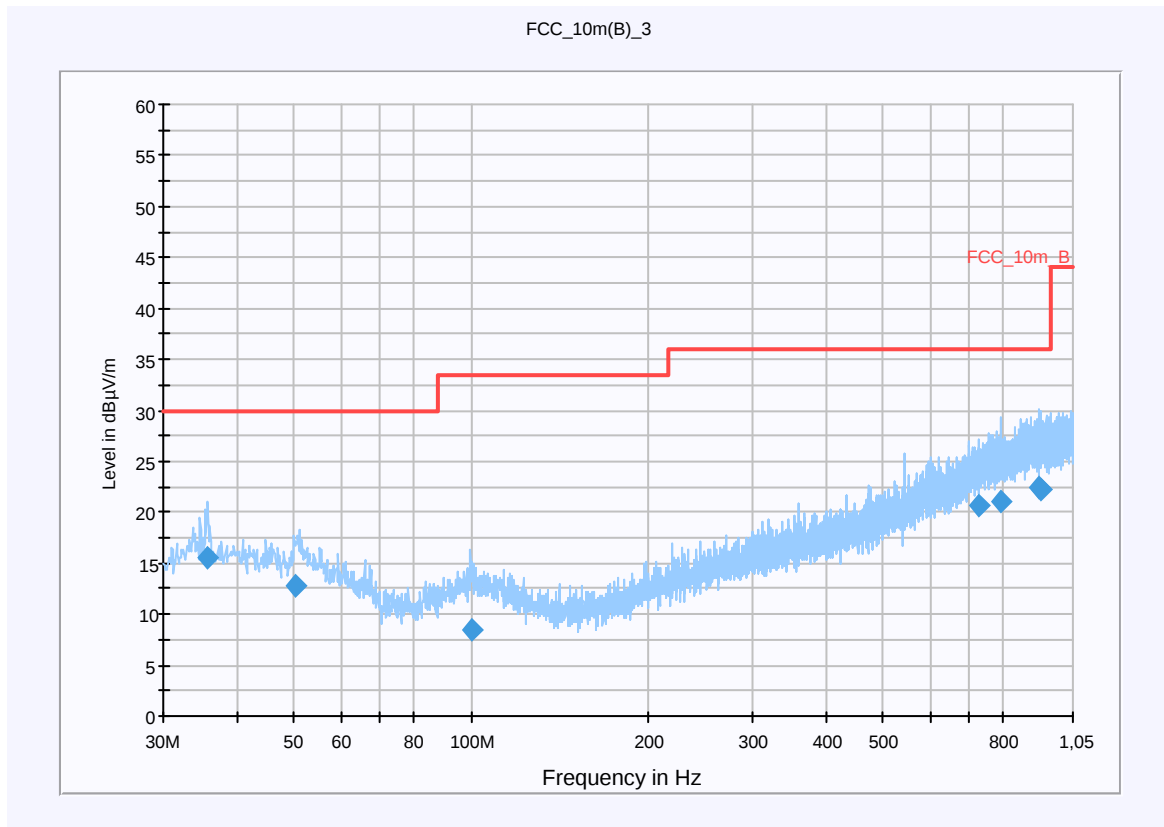
Plots: OFDM / g - mode**Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: AAH-5880012-BV
 Serial Number:
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: 6 Mbit/s , CH:1
 Operator Name: LANGER
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

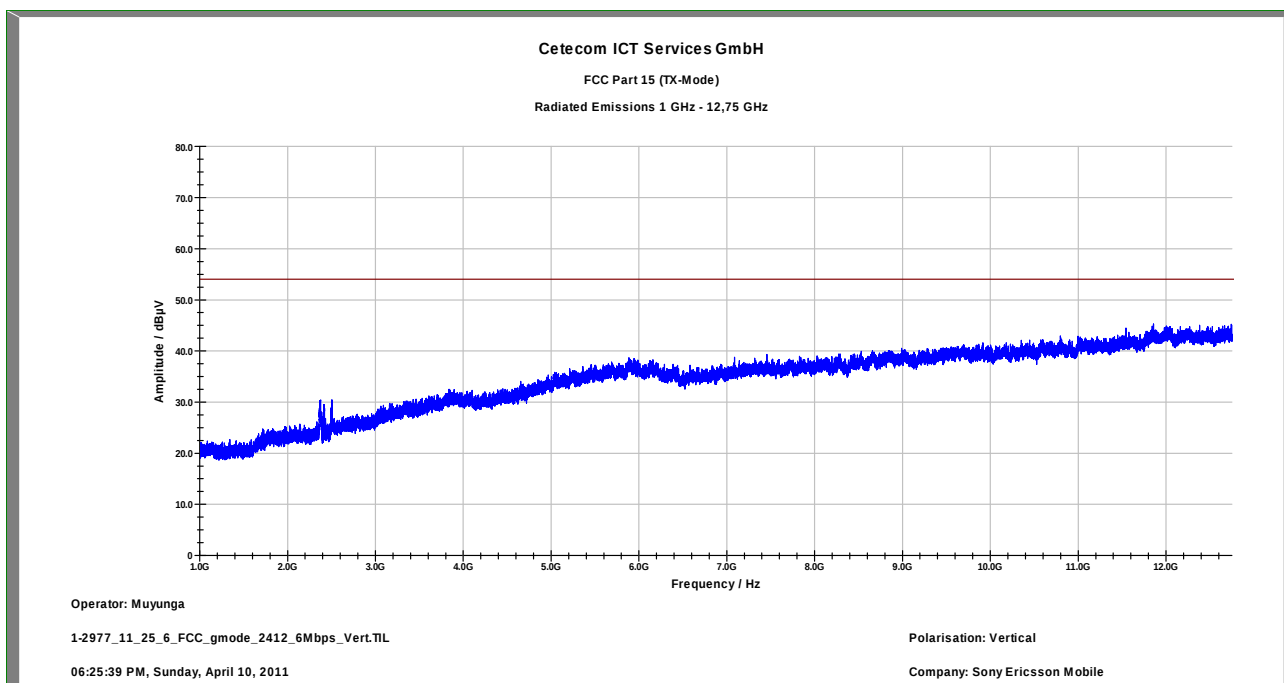
Hardware Setup: Electric Field (NOS)
 Level Unit: dBμV/m

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

**Final Result 1**

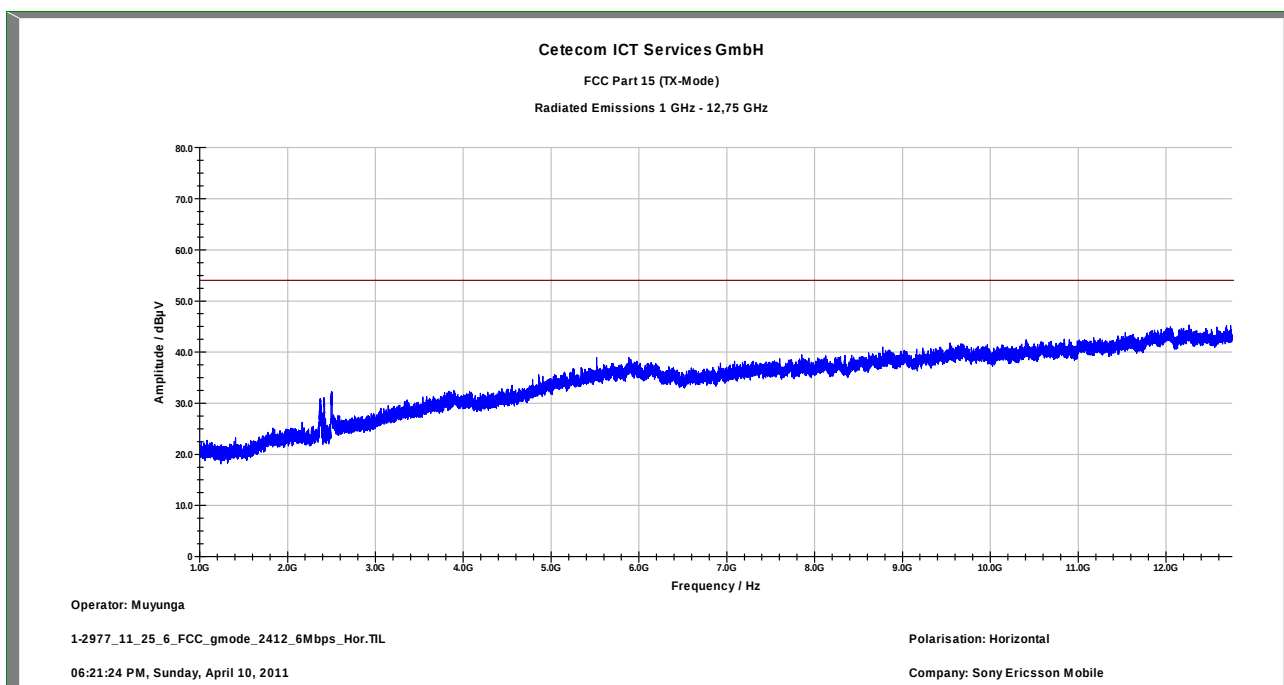
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
35.724450	15.5	15000.000	120.000	146.0	V	183.0	13.1	14.5	30.0	
50.481900	12.8	15000.000	120.000	98.0	V	62.0	13.3	17.2	30.0	
99.966600	8.5	15000.000	120.000	105.0	H	243.0	11.9	25.0	33.5	
729.364500	20.6	15000.000	120.000	220.0	V	48.0	23.2	15.4	36.0	
790.887900	21.0	15000.000	120.000	126.0	V	212.0	23.8	15.0	36.0	
917.212950	22.4	15000.000	120.000	220.0	H	129.0	25.3	13.6	36.0	
926.642100	22.3	15000.000	120.000	151.0	H	8.0	25.3	13.7	36.0	

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



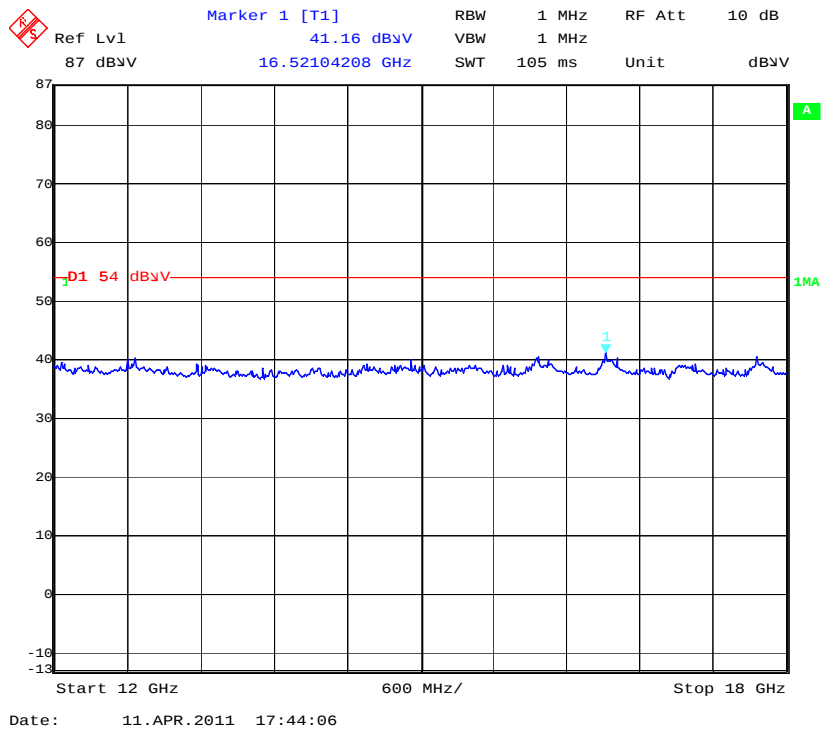
The carrier signal is notched with a 2.4 GHz band rejection filter.

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

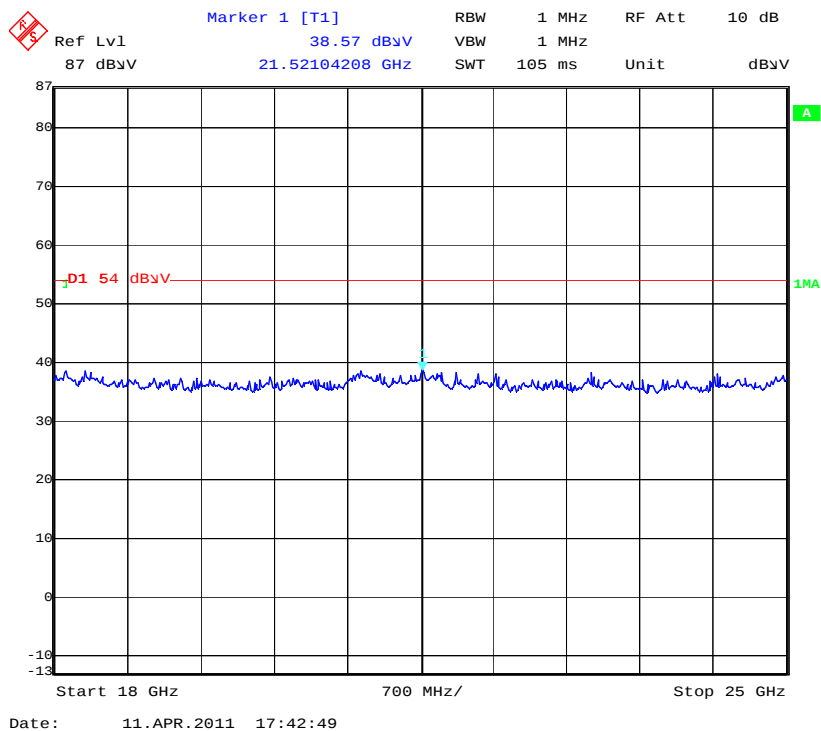


The carrier signal is notched with a 2.4 GHz band rejection filter.

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



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



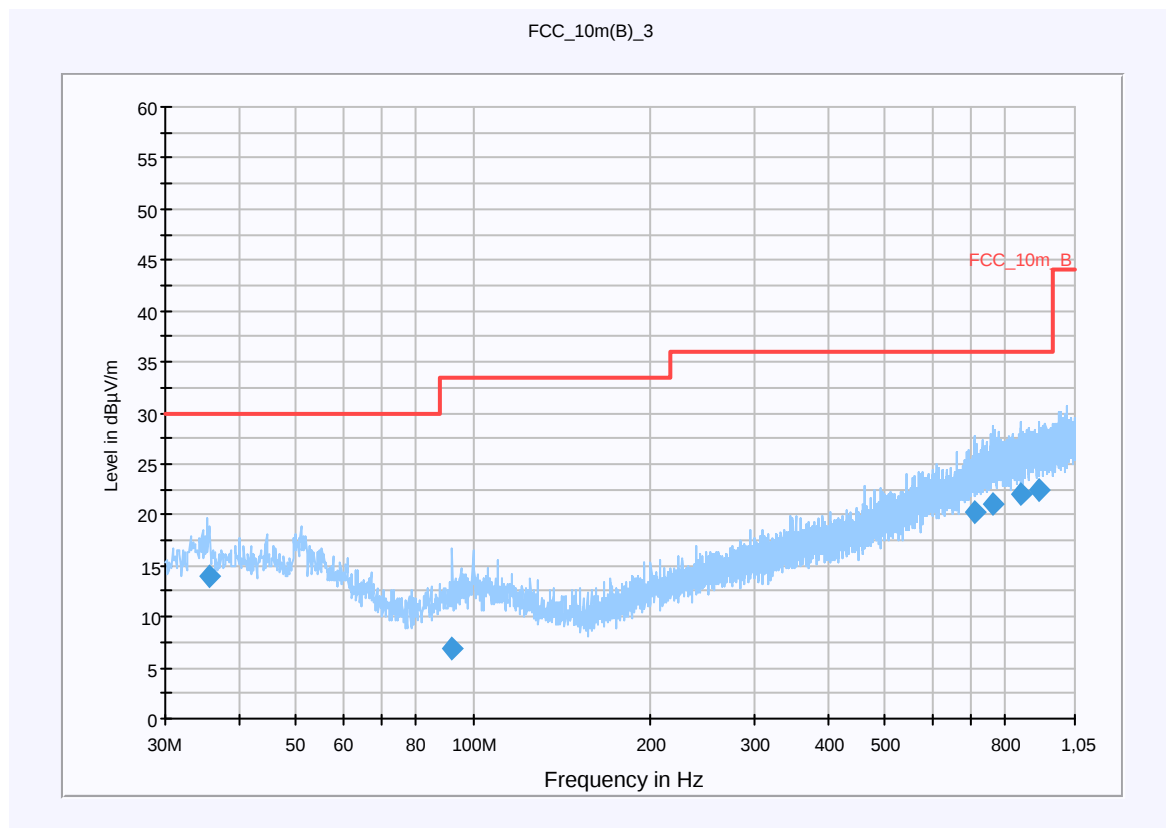
Plot 6: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: AAH-5880012-BV
 Serial Number:
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: 6 Mbit/s , CH:6
 Operator Name: LANGER
 Comment: AC 115 V / 60 Hz

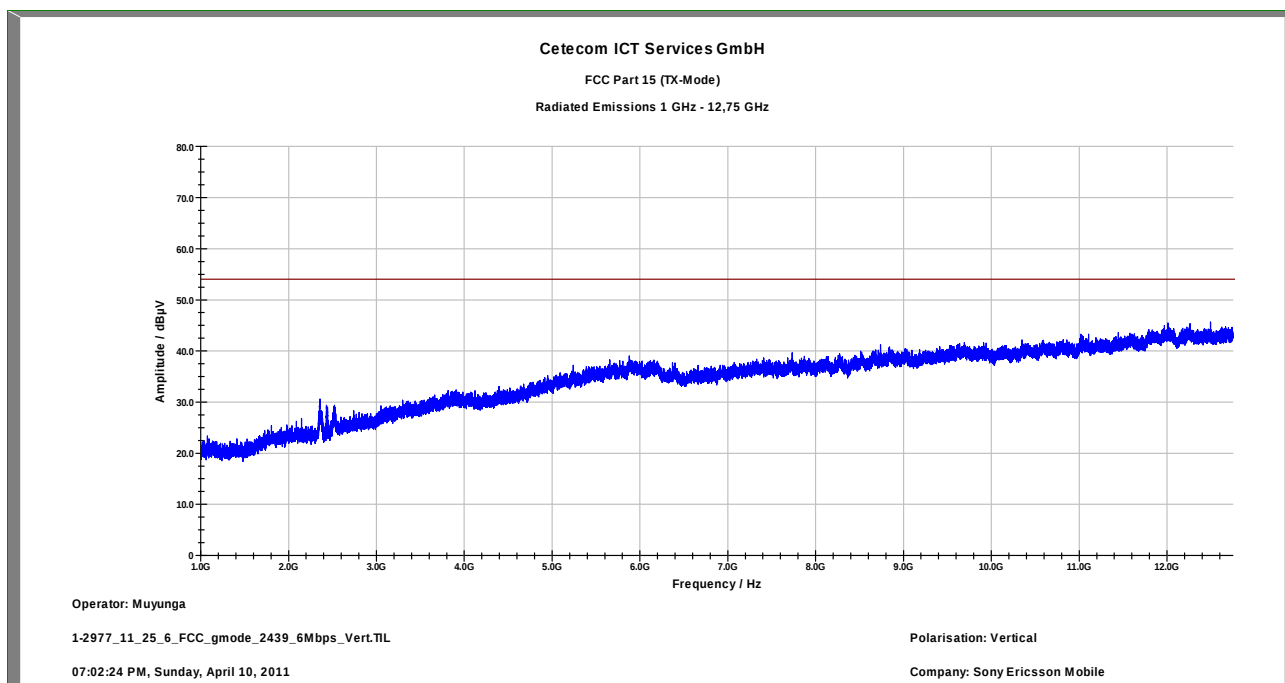
Scan Setup: STAN_Fin [EMI radiated]

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

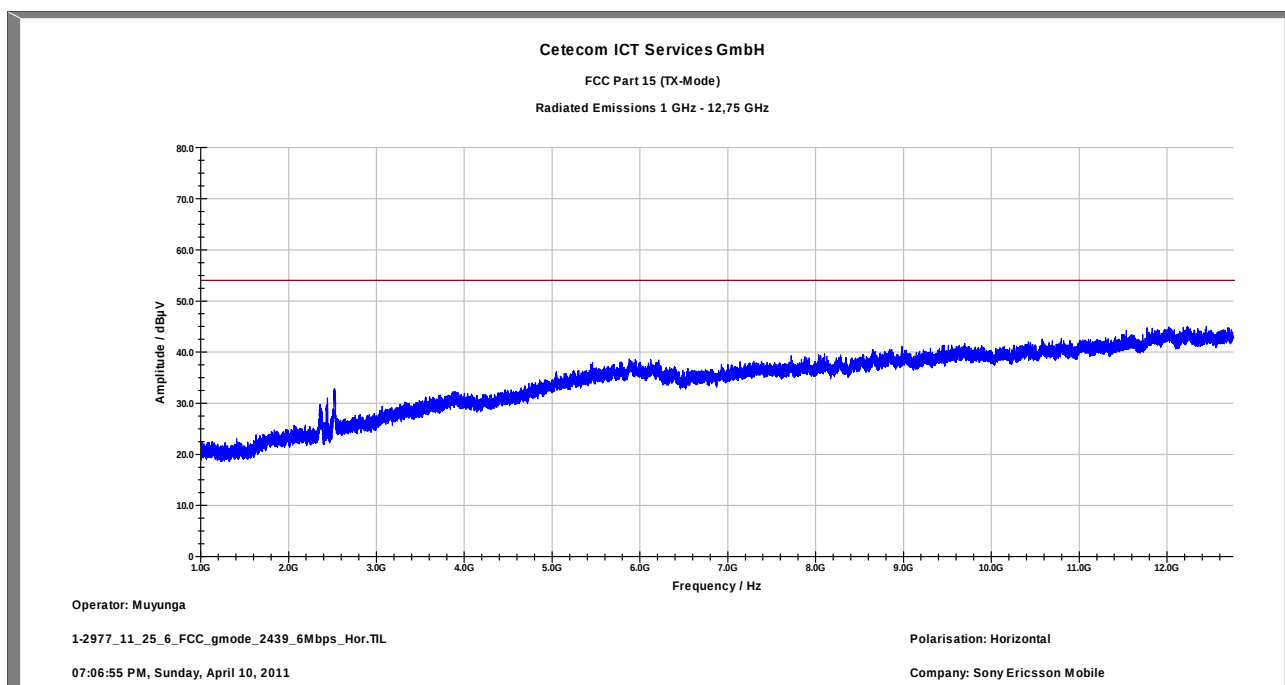
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver

**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)	Comment
35.771400	14.0	15000.000	120.000	114.0	V	324.0	13.1	16.0	30.0	
91.718550	6.9	15000.000	120.000	220.0	H	168.0	10.8	26.6	33.5	
710.057100	20.2	15000.000	120.000	177.0	H	255.0	22.7	15.8	36.0	
759.744450	21.0	15000.000	120.000	188.0	V	21.0	23.7	15.0	36.0	
850.287450	22.0	15000.000	120.000	98.0	V	262.0	24.6	14.0	36.0	
911.485200	22.5	15000.000	120.000	220.0	H	265.0	25.2	13.5	36.0	

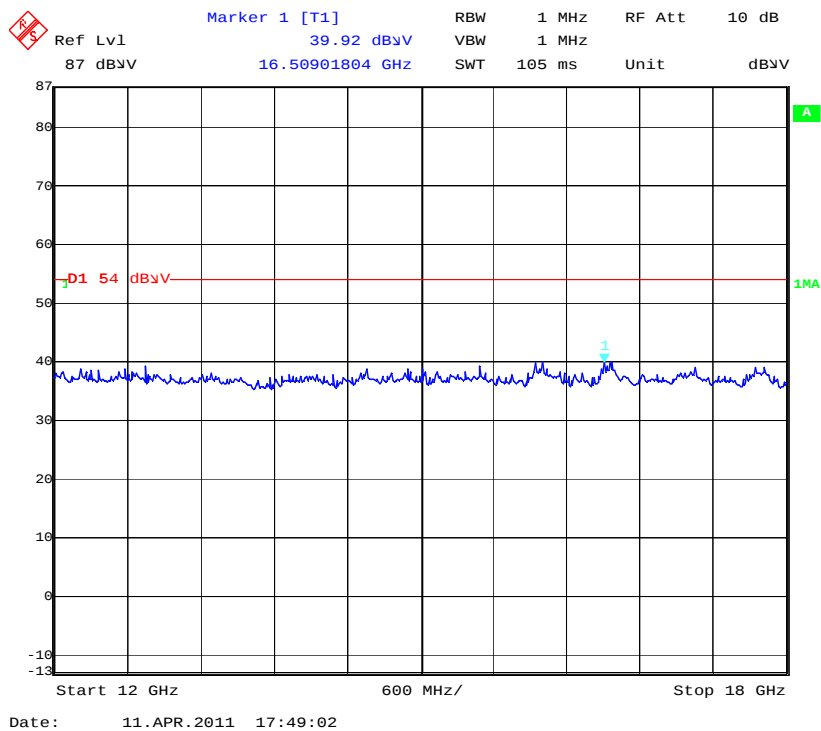
Plot 7: Middle channel, 1 GHz to 12.75 GHz, vertical polarization

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

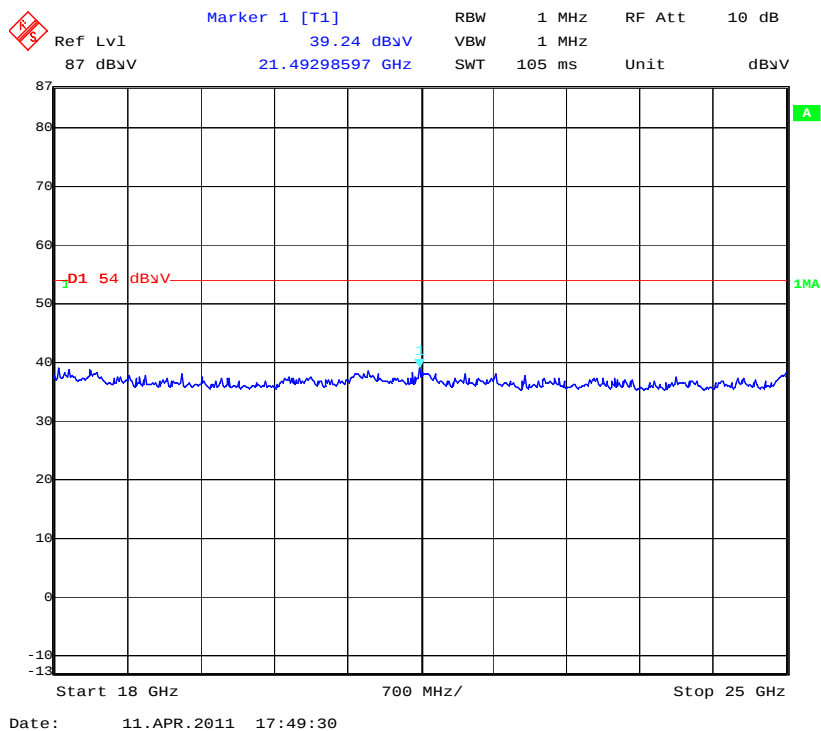
Plot 8: Middle channel, 1 GHz to 12.75 GHz, horizontal polarization

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

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



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



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

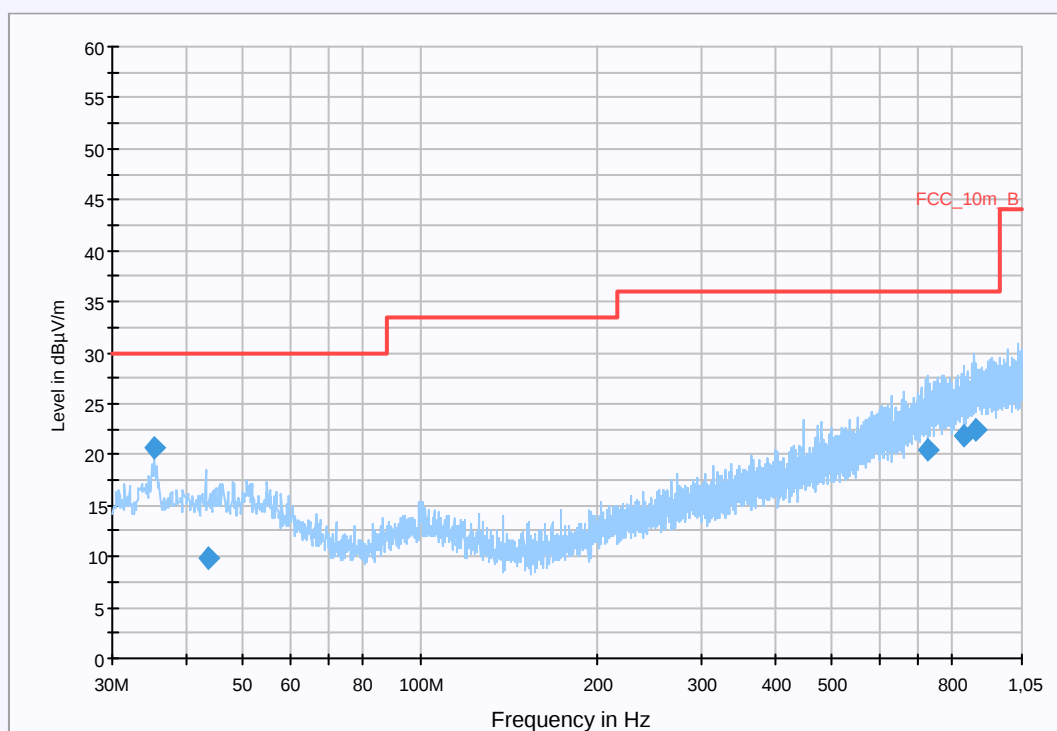
EUT: AAH-5880012-BV
 Serial Number:
 Test Description: FCC Part 15 C < 1GHz @ 10m
 Operating Conditions: 6 Mbit/s , CH:11
 Operator Name: LANGER
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

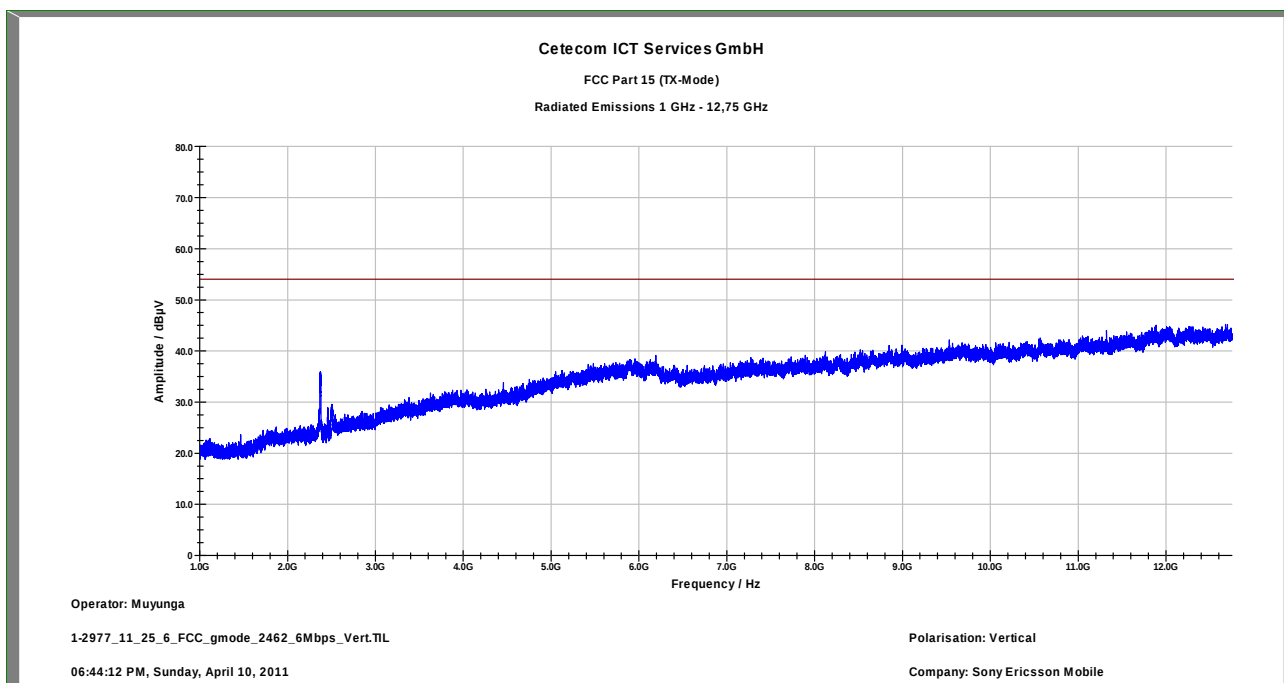
Hardware Setup: Electric Field (NOS)
 Level Unit: dBμV/m

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

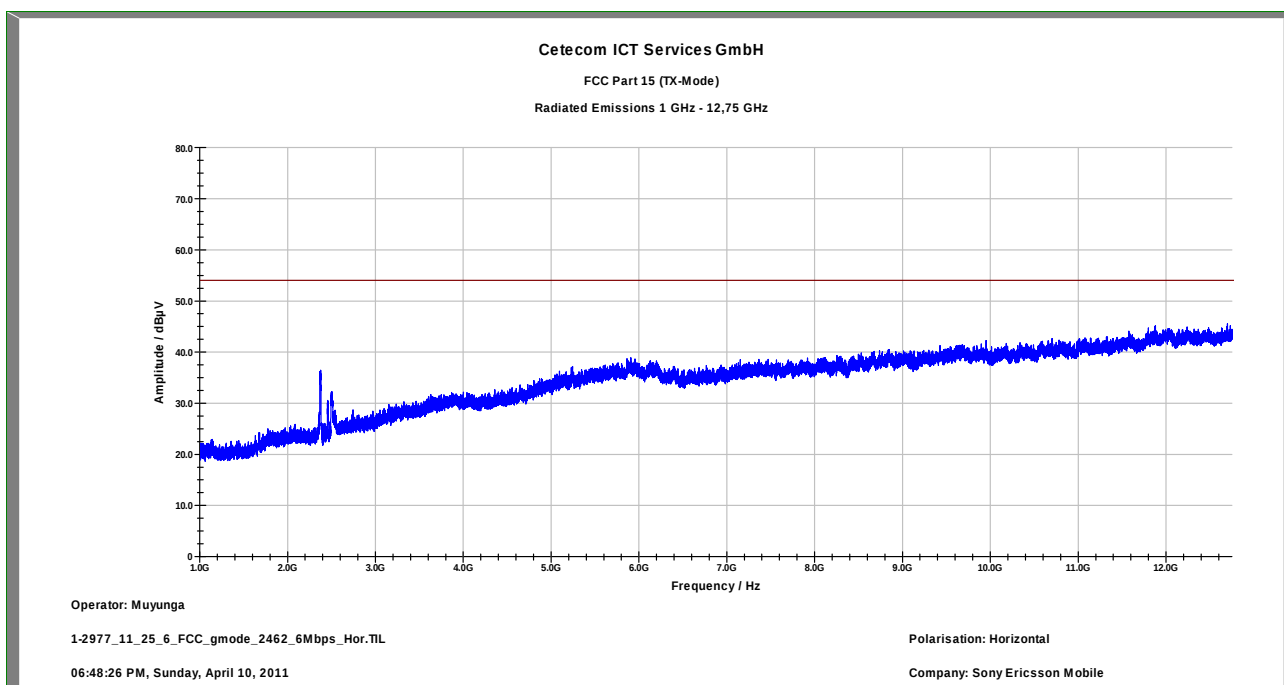
FCC_10m(B)_3

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
35.395950	20.7	15000.000	120.000	142.0	V	146.0	13.1	9.3	30.0	
43.775400	9.8	15000.000	120.000	188.0	V	209.0	13.3	20.2	30.0	
724.396500	20.5	15000.000	120.000	106.0	V	12.0	23.1	15.5	36.0	
837.275850	21.8	15000.000	120.000	220.0	V	52.0	24.4	14.2	36.0	
873.927150	22.4	15000.000	120.000	220.0	H	158.0	24.9	13.6	36.0	

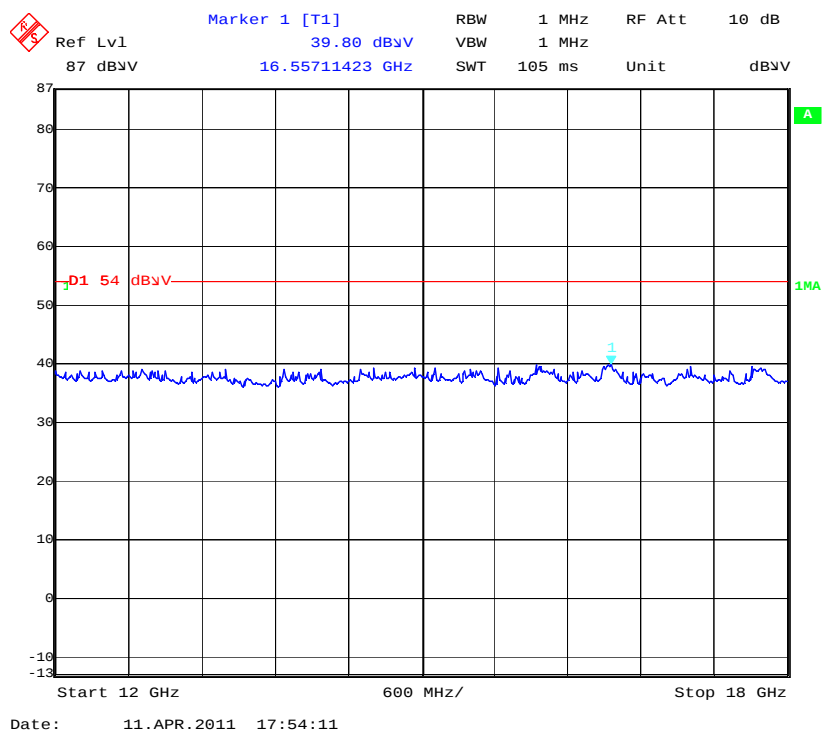
Plot 12: Highest channel, 1 GHz to 12.75 GHz, vertical polarization

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

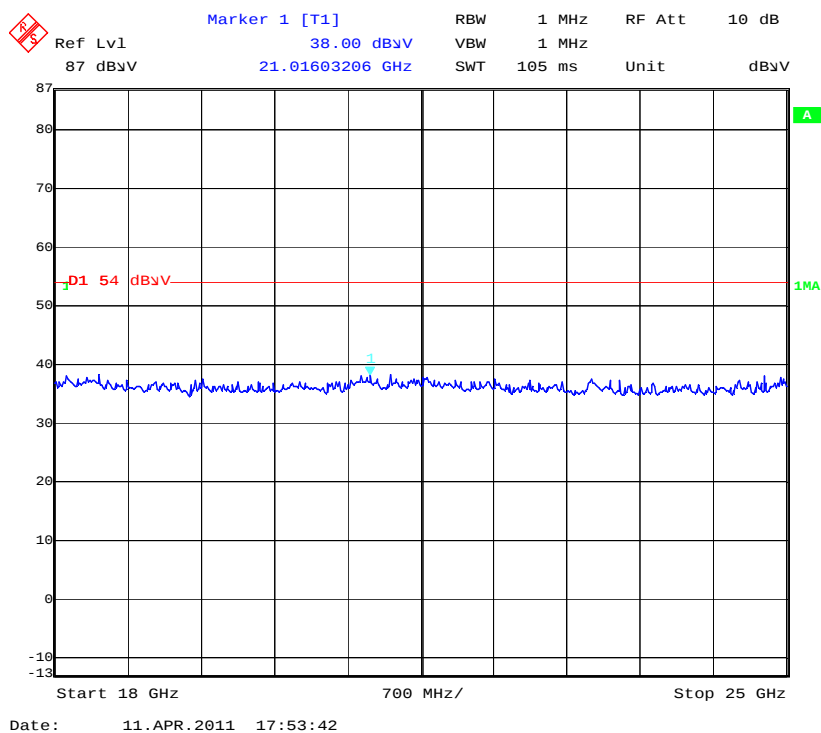
Plot 13: Highest channel, 1 GHz to 12.75 GHz, horizontal polarization

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

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



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



9.11 RX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in idle/receive mode. The results are valid for both modes.

Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak
Sweep time:	Auto
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	30 MHz to 26 GHz
Trace-Mode:	Max Hold

Limits:

FCC		IC
CFR Part 15.109		RSS Gen, Issue 2, 4.10
RX Spurious Emissions Radiated		
Frequency (MHz)	Field Strength (dB μ V/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Results:

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

Result: The result of the measurement is passed.

Plots: RX / Idle – mode**Plot 1:** 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

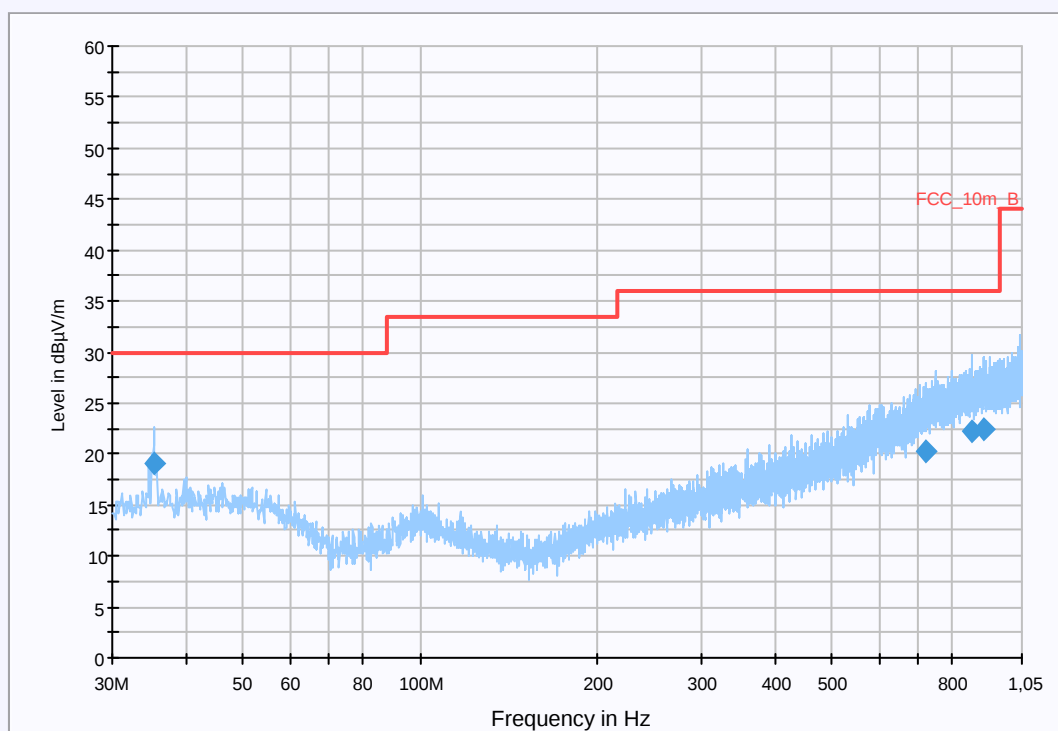
EUT: AAH-5880012-.BV
 Serial Number:
 Test Description: FCC Part 15 C <1 GHz @ 10m
 Operating Conditions: WLAN 1Mbit/s CH:6 rx
 Operator Name: LANGER
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

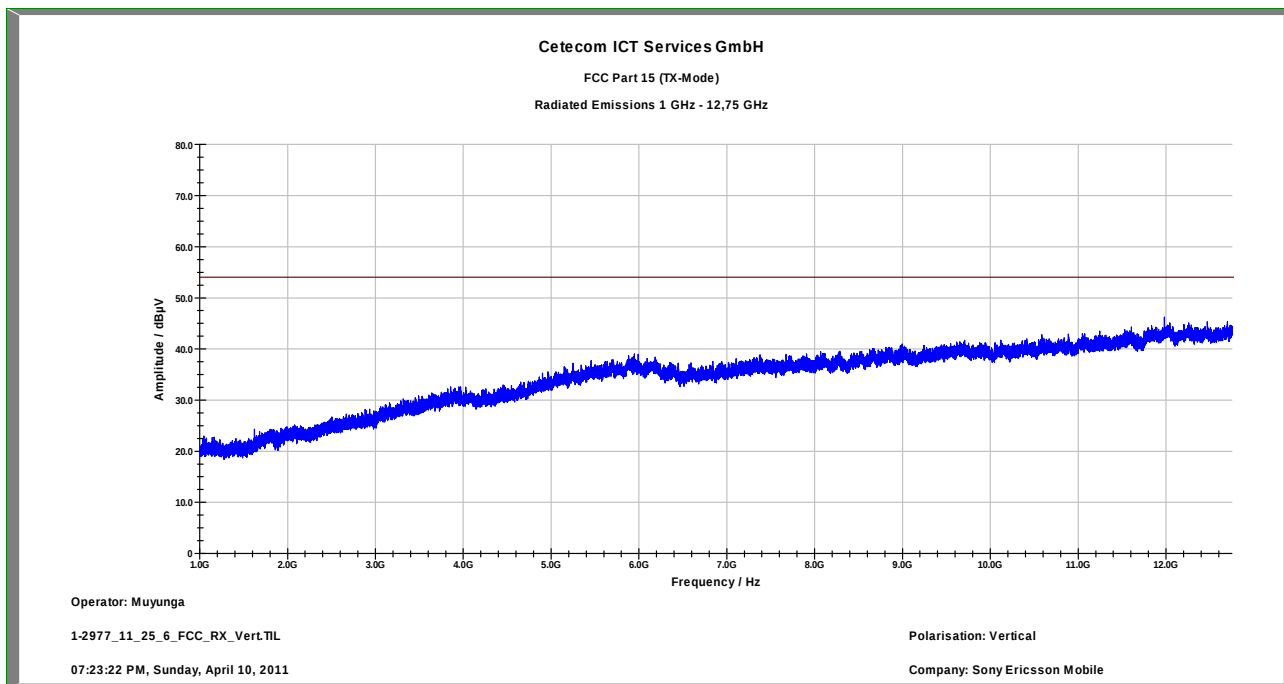
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver

FCC_10m(B)_3

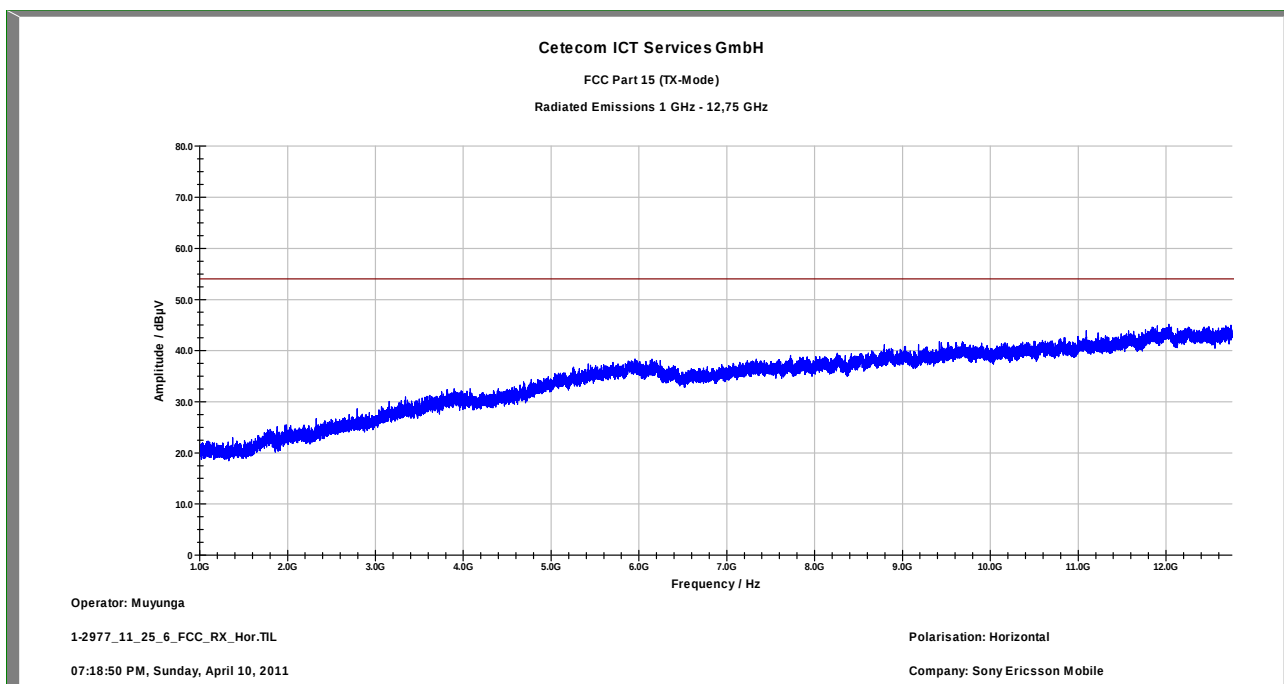
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
35.391750	19.1	15000.000	120.000	124.0	V	52.0	13.1	10.9	30.0	
718.192950	20.4	15000.000	120.000	220.0	V	234.0	22.9	15.6	36.0	
865.390500	22.2	15000.000	120.000	220.0	V	227.0	24.8	13.8	36.0	
908.103600	22.4	15000.000	120.000	220.0	V	146.0	25.2	13.6	36.0	

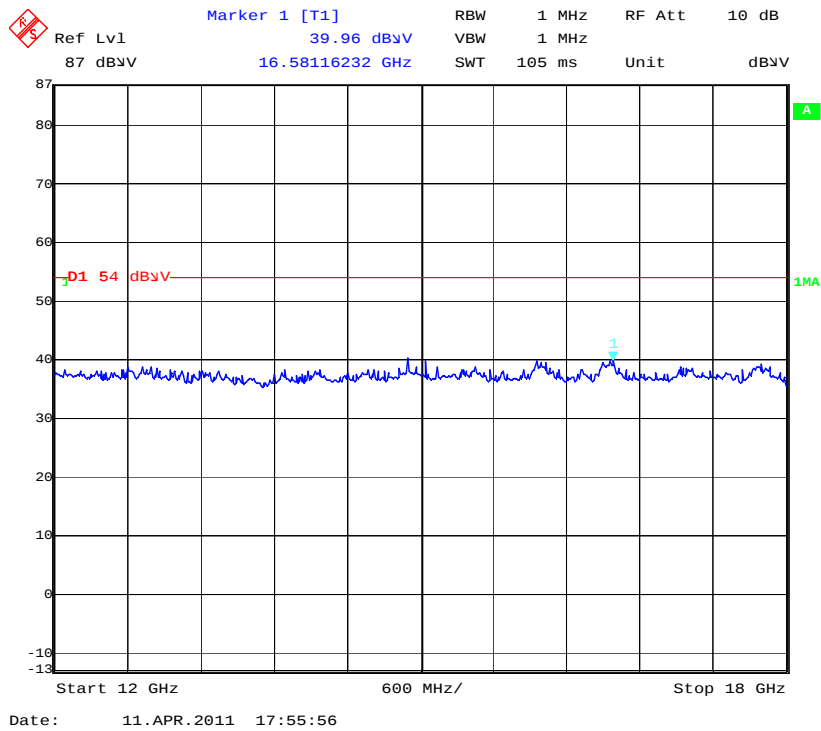
Plot 2: 1 GHz to 12.75 GHz, vertical polarization



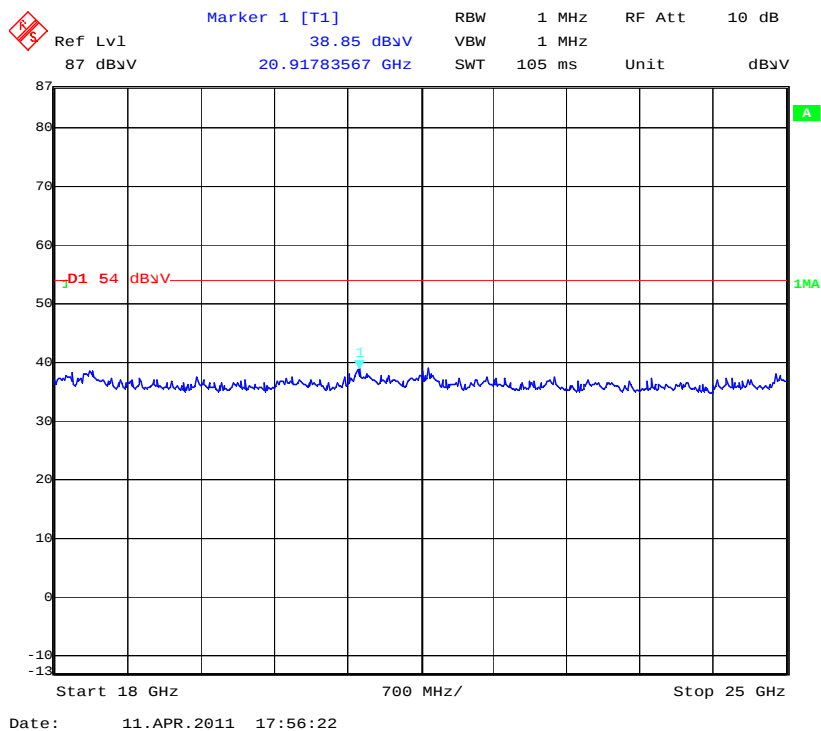
Plot 3: 1 GHz to 12.75 GHz, horizontal polarization



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



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



9.12 TX spurious emissions radiated < 30 MHz

Description:

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

Measurement:

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

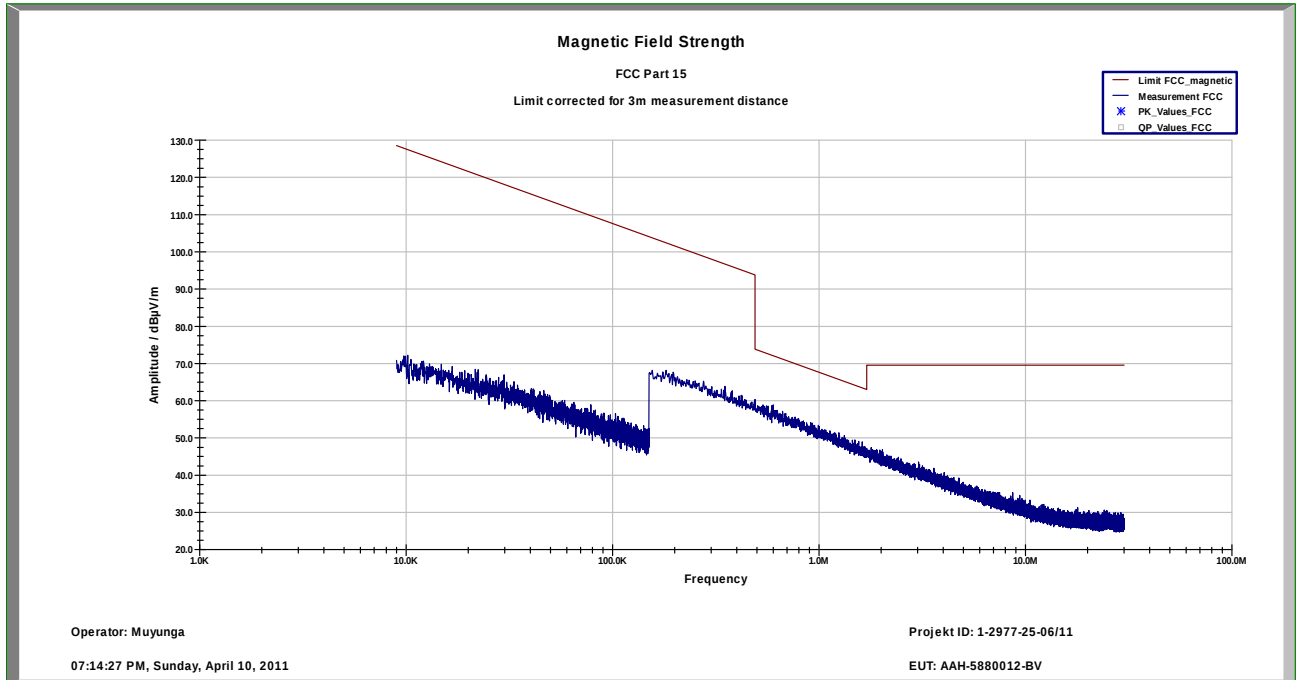
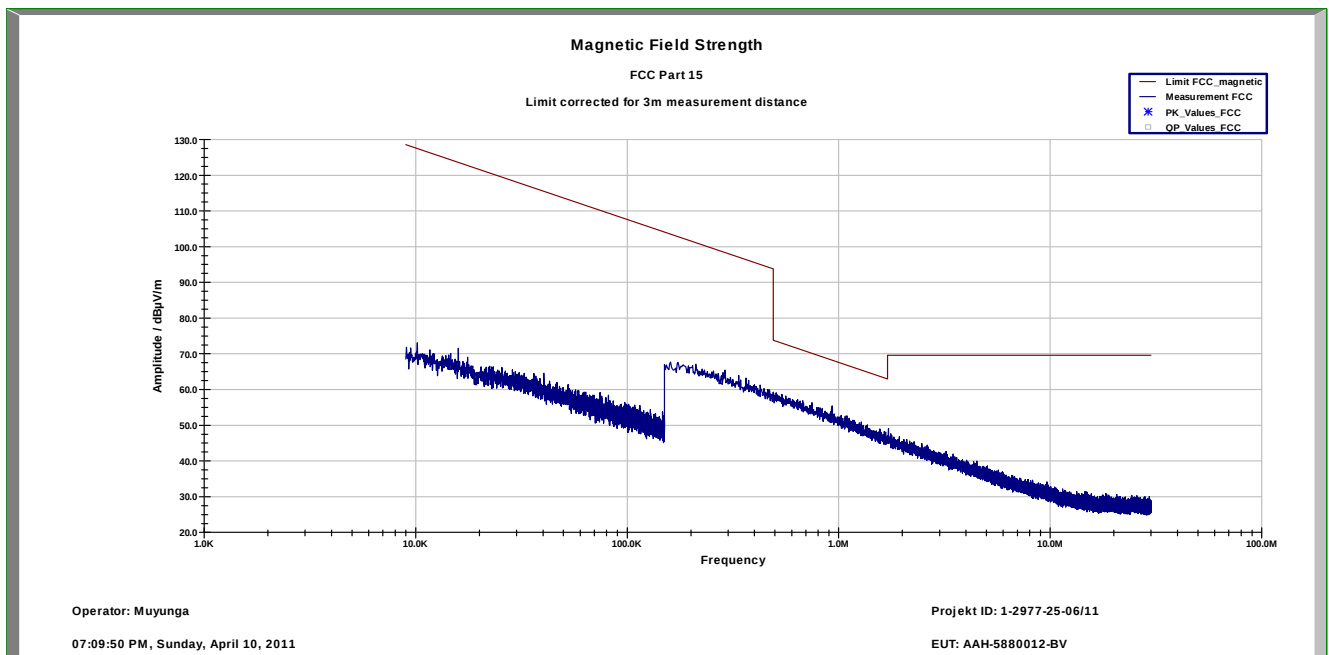
Limits:

FCC		IC
CFR Part 15.209(a)		RSS –Gen
TX Spurious Emissions Radiated < 30 MHz		
Frequency (MHz)	Field Strength (dBμV/m)	Measurement distance
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

Results:

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

Result: The result of the measurement is passed.

Plots:**Plot 1:** Tx mode, middle channel, 9 kHz to 30 MHz**Valid for all channels****Plot 2:** Rx mode, 9 kHz to 30 MHz

9.13 TX spurious emissions conducted < 30 MHz

Description:

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

Measurement:

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

Limits:

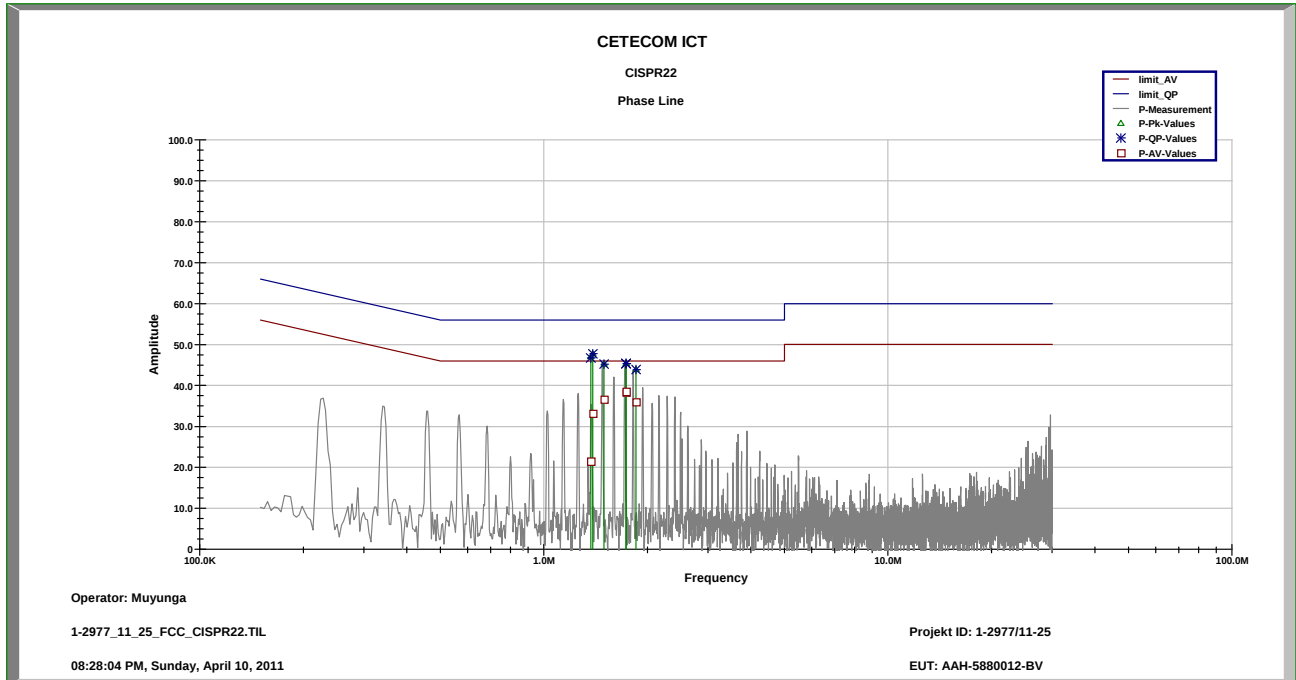
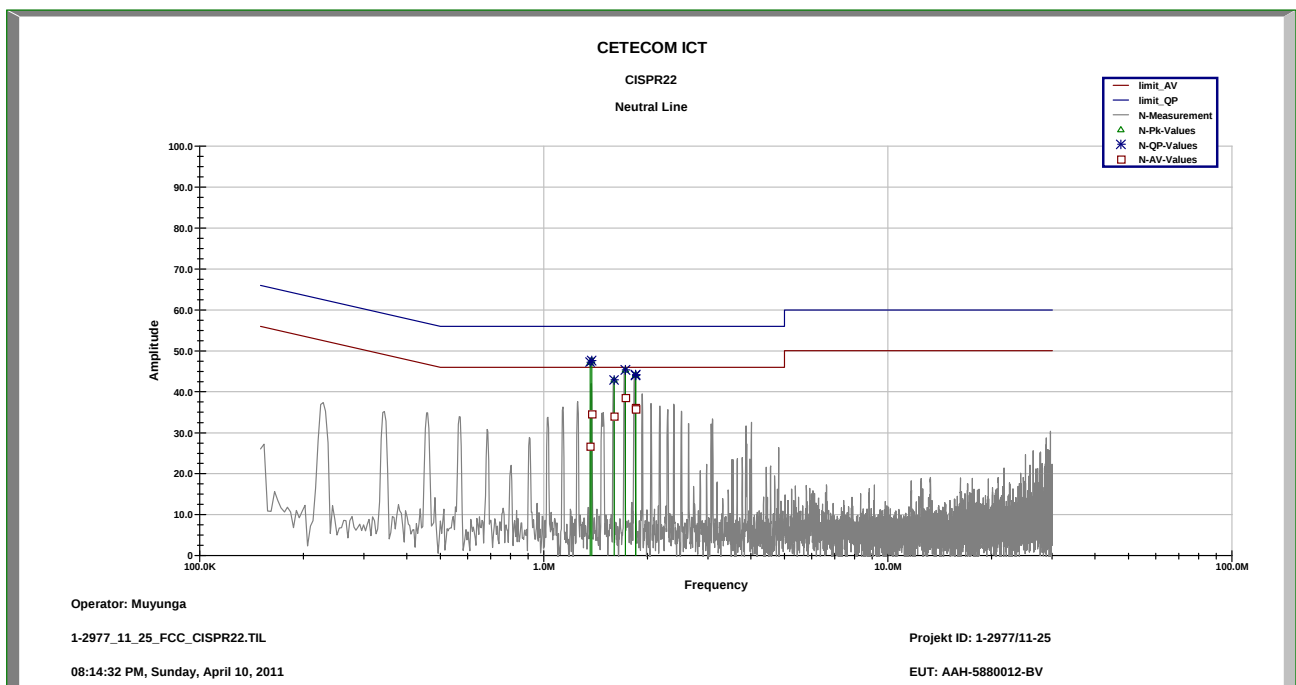
FCC		IC	
CFR Part 15.107(a)		ICES-003, Issue 4	
TX Spurious Emissions Conducted < 30 MHz			
Frequency (MHz)	Quasi-Peak (dBμV/m)	Average (dBμV/m)	
0.15 – 0.5	66 to 56*	56 to 46*	
0.5 – 5	56	46	
5 – 30.0	60	50	

*Decreases with the logarithm of the frequency

Results:

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

Result: The result of the measurement is passed.

Plots:**Plot 1: 9 kHz to 30 MHz, phase line****Plot 2: 9 kHz to 30 MHz, neutral line**

10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	Switch / Control Unit	3488A	HP Meßtechnik		300001691	ne		
2	n. a.	Power Supply DC	NGPE 40/40	R&S	388	400000078	vlKI!	13.09.2010	13.09.2012
3	n. a.	Power Sensor 50 Ohms, 10 MHz - 18 GHz, 1 nW - 20 mW	NRV-Z1	R&S	833894/011	300002681-0010	k	09.09.2010	09.09.2012
4	n. a.	Hygro-Thermometer	-/-, 5-45°C, 20-100%rF	Thies Clima	-/-	400000080	k	04.05.2010	04.05.2011
5	n. a.	Vector Signal Generator, 300 kHz to 2.2 GHz	SMIQ03B	R&S	835541/055	300002681-0001	k	25.08.2008	25.08.2011
6	n. a.	Vector Signal Generator, 300 kHz to 2.2 GHz	SMIQ03B	R&S	835541/056	300002681-0002	k	26.08.2008	26.08.2011
7	n. a.	Signal Generator 0.01/2 - 20 GHz, Frequ. Resol. 0.1Hz	SMP02	R&S	835133/011	300002681-0003	k	26.08.2008	26.08.2011
8	n. a.	Dual Channel Power Meter	NRVD	R&S	835430/044	300002681-0004	k	13.09.2010	13.09.2012
9	n. a.	Signal Analyzer 20Hz-26,5GHz-150 to + 30 DBM	FSIQ26	R&S	835540/018	300002681-0005	k	07.01.2010	07.01.2012
10	n. a.	Frequency Standard (Rubidium Frequency Standard)	MFS (Rubidium)	R&S (Datum)	002	300002681-0009	Ve	13.09.2010	13.09.2012
11	n. a.	Directional Coupler	101020010	Krytar	70215	300002840	ev		
12	n. a.	DC-Blocker	8143	Inmet Corp.	none	300002842	ne		
13	n. a.	Powersplitter	6005-3	Inmet Corp.		300002841	ev		
14	n. a.	Temperature Test Chamber	VT 4002	Heraeus Voetsch	58566046820010	300003019	Ve	28.05.2009	28.05.2011
15	n. a.	CBT (Bluetooth Tester + EDR Signalling)	CBT 1153.9000K35	R&S	100185	300003416	vlKI!	13.09.2010	13.09.2012
16	n. a.	Spectrum Analyzer 9kHz to 30GHz - 140..+30dBm	FSP30	R&S	100886	300003575	k	07.09.2010	07.09.2012
17	n. a.	CBT-K57 Software-Option for CBT/CBT32	CBT-K57	R&S	101051	300003910	ne		
18	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
19	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	k	11.01.2011	11.01.2013
20	n. a.	software	SPS_PHE 1.4f	Spitzberger &	B5981;	300000210	ne		

				Spieß	5D1081;B5979				
21	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	05.01.2011	05.01.2013
22	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	01.06.2009	01.06.2011
23	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
24	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
25	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
26	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
27	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
28	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	10.01.2011	10.01.2013
29	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
30	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
31	n. a.	Coaxial Attenuator 30dB/500W	8325	Bird	1530	300001595	ev		
32	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKI!	05.03.2009	05.09.2011
33	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
34	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
35	Spec.A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
36	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
37	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
38	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
39	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
40	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
41	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
42	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
43	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
44	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
45	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
46	n. a.	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev		
47	n. a.	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		
48	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
49	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
50	n. a.	MXG Microwave Analog Signal	N5183A	Agilent Technologies	MY47420220	300003813	k	13.09.2010	13.09.2012

		Generator							
51	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	vlKI!	08.09.2010	08.09.2012
52	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKI!	17.12.2008	17.12.2011

Agenda: Kind of Calibration

k calibration / calibrated
 ne not required (k, ev, izw, zw not required)
 ev periodic self verification
 Ve long-term stability recognized
 vlKI! Attention: extended calibration interval
 NK! Attention: not calibrated

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