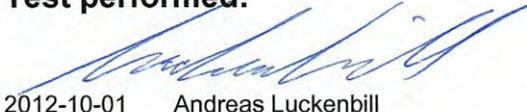
**CETECOM™****CETECOM ICT Services**  
consulting - testing - certification >>>**TEST REPORT**

Test report no.: 1-4254/12-50-09

Deutsche  
Akkreditierungsstelle  
D-PL-12076-01-01**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](mailto:ict@cetecom.com)**Accredited Testing Laboratory:**The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS). The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01  
Area of Testing: Radio/Satellite Communications**Applicant****Sony Mobile Communications AB**Nya Vattentornet  
22188 Lund / SWEDEN  
Phone: +46 46 19 30 00  
Fax: +46 46 19 32 95  
Contact: Håkan Sjöberg  
e-mail: [hakan.sjoberg@sonymobile.com](mailto:hakan.sjoberg@sonymobile.com)  
Phone: +46 46 19 35 59**Manufacturer****Sony 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

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

**Test Item****Kind of test item:** GSM Mobile Phone GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/V/VIII; LTE FDD 1/3/5/7/20; WLAN a/b/g/n; BT 3.1; RFID; FM Rx; A-GPS  
**Model name:** PM-0060-BV  
**FCC ID:** PY7PM-0060  
**IC:** -/-  
**Frequency:** ISM band 2400 MHz to 2483.5 MHz  
(lowest channel 01 – 2412 MHz, highest channel 11 – 2462 MHz)  
**Technology tested:** WLAN (DSSS b – mode, OFDM g & n HT20 – mode)  
**Antenna:** Integrated antenna  
**Power Supply:** 3.7 V DC by Li-polymer battery  
**Temperature Range:** -20°C to +55 °C**Test report authorised:**2012-10-01   
Marco Bertolino  
Testing Manager**Test performed:**2012-10-01   
Andreas Luckenbill

## 1 Table of contents

1	Table of contents .....	2
2	General information .....	3
2.1	Notes and disclaimer .....	3
2.2	Application details .....	3
3	Test standard/s .....	3
3.1	Measurement guidance.....	3
4	Test environment.....	4
5	Test item .....	4
6	Test laboratories sub-contracted .....	4
7	Summary of measurement results .....	5
8	RF measurements .....	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
9	Measurement results.....	8
9.1	Maximum output power (conducted) .....	8
9.2	Antenna gain .....	19
9.3	Maximum output power .....	20
9.4	Power spectral density .....	27
9.5	Spectrum bandwidth of a FHSS system – 6 dB bandwidth .....	33
9.6	Spectrum bandwidth of a FHSS system – 20 dB bandwidth .....	39
9.7	Band edge compliance conducted .....	45
9.8	Band edge compliance radiated .....	49
9.9	TX spurious emissions conducted.....	52
9.10	TX spurious emissions radiated.....	64
9.11	RX spurious emissions radiated .....	90
9.12	TX spurious emissions radiated < 30 MHz .....	95
9.13	TX spurious emissions conducted < 30 MHz.....	97
10	Test equipment and ancillaries used for tests .....	100
11	Observations .....	101
Annex A	Photographs of the test setup .....	102
Annex B	External photographs of the EUT .....	106
Annex C	Internal photographs of the EUT .....	111
Annex D	Document history .....	118
Annex E	Further information.....	118
Annex F	Accreditation Certificate .....	119

## 2 General information

### 2.1 Notes and disclaimer

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 generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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In no case this test report can be considered as a Letter of Approval.

### 2.2 Application details

Date of receipt of order:	2012-09-05
Date of receipt of test item:	2012-09-10
Start of test:	2012-09-10
End of test:	2012-09-24
Person(s) present during the test:	-/-

## 3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices

### 3.1 Measurement guidance

DTS : KDB 558074	2012-01	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247
UNII: KDB 789033	2011-10	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E

#### 4 Test environment

Temperature:	$T_{nom}$	+22 °C during room temperature tests
	$T_{max}$	+55 °C during high temperature tests
	$T_{min}$	-20 °C during low temperature tests
Relative humidity content:		60 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	$V_{nom}$	3.7 V DC by Li-polymer battery
	$V_{max}$	4.1 V
	$V_{min}$	3.3 V

#### 5 Test item

Kind of test item	:	GSM Mobile Phone GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/V/VIII; LTE FDD 1/3/5/7/20; WLAN a/b/g/n; BT 3.1; RFID; FM Rx; A-GPS
Type identification	:	PM-0060-BV
S/N serial number	:	Cond: CB5A1KTH5B, CB5A1KTHA6 Rad: CB5A1KT6B0, CB5A1KTHFC
HW hardware status	:	AP1.1
SW software status	:	9.0.D.0.164, s_atp_tsubasa_2_0_s
Frequency band [MHz]	:	ISM band 2400 MHz to 2483.5 MHz (lowest channel 01 – 2412 MHz, highest channel 11 – 2462 MHz)
Type of radio transmission	:	DSSS & OFDM
Use of frequency spectrum	:	
Channel access method	:	FDMA
Type of modulation	:	BPSK, QPSK, 16 – QAM & 64 – QAM
Number of channels	:	11
Antenna	:	Integrated antenna
Power supply	:	3.7 V DC by Li-polymer battery
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	Passed	2012-10-01	-/-

Test specification clause	Test case	Temperature conditions	Power source voltages	Mode	Pass	Fail	NA	NP	Remark
§15.247(b)(4)	Antenna gain	Nominal	Nominal	DSSS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.247(e)	Power spectral density	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(a)(2)	Spectrum bandwidth of a FHSS system 6dB bandwidth	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(a)(2)	Spectrum bandwidth of a FHSS system 20dB bandwidth	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(b)(3)	Maximum output power	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(d)	Band edge compliance conducted	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.205	Band edge compliance radiated	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(d)	TX spurious emissions conducted	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(d)	TX spurious emissions radiated	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.109	RX spurious emissions radiated	Nominal	Nominal	-/-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.209(a)	TX spurious emissions radiated < 30 MHz	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.107(a)	Conducted emissions < 30 MHz	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies

**Note:** NA = Not Applicable; NP = Not Performed

## 8 RF measurements

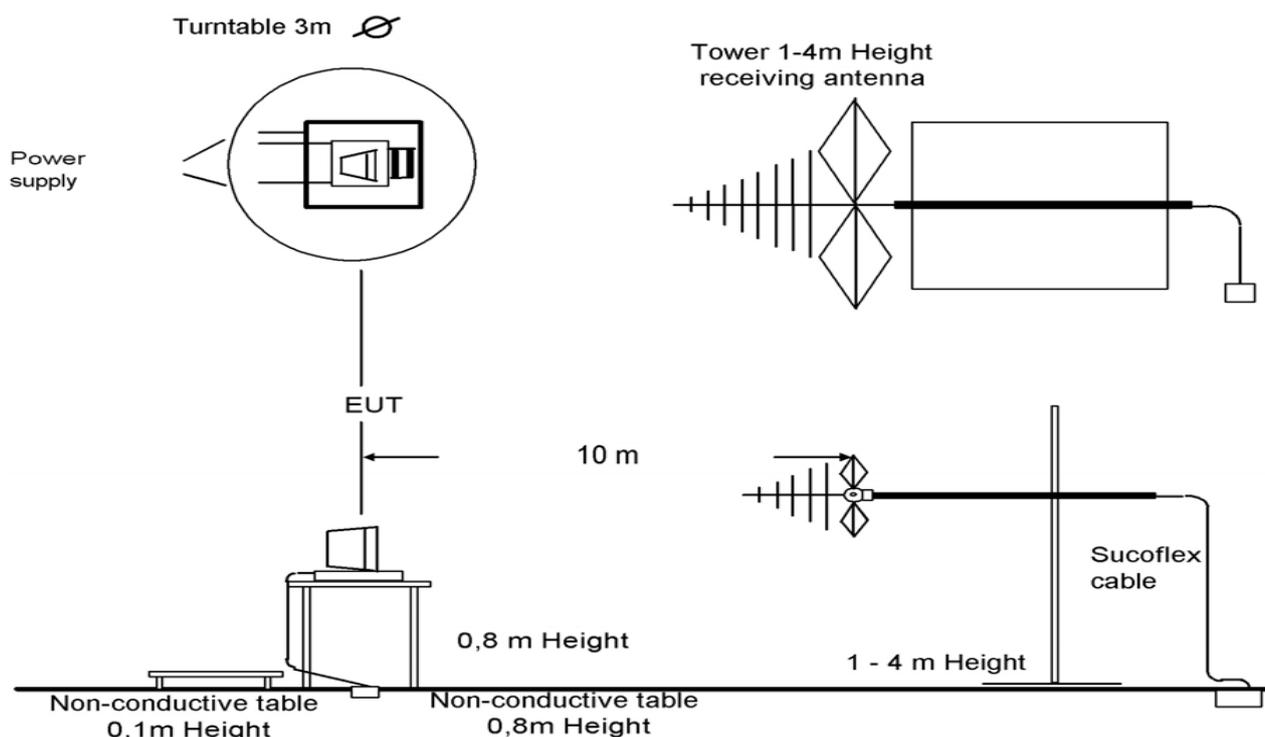
### 8.1 Description of test setup

#### 8.1.1 Radiated measurements

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

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

Semi anechoic chamber



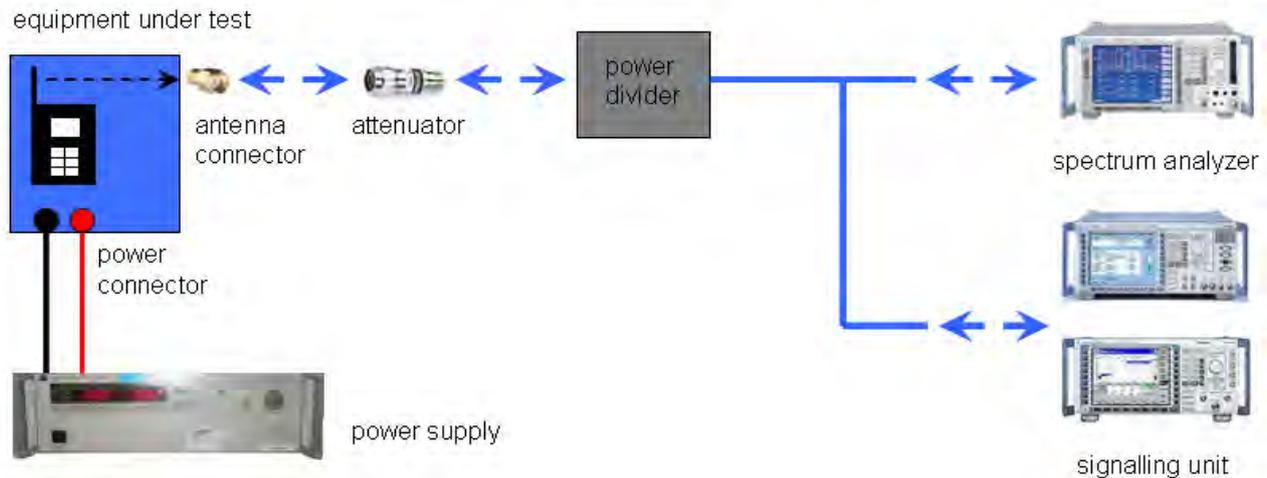
Picture 1: Diagram radiated measurements

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

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

### 8.1.2 Conducted measurements

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



Picture 2: Diagram conducted measurements

### 8.2 Additional comments

Reference documents: 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

## 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	18.08	18.46	18.45	18.08
Measurement uncertainty	± 0.5 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	21.87	21.85	21.76	21.71	21.75	21.83	21.78	21.84
Measurement uncertainty	± 0.5 dB							

OFDM / n – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]							
	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Ch 6 - 2437 MHz	21.15	21.33	21.30	21.52	21.30	21.30	21.28	21.17
Measurement uncertainty	± 0.5 dB							

**Result:** Selected data rate for all measurements:

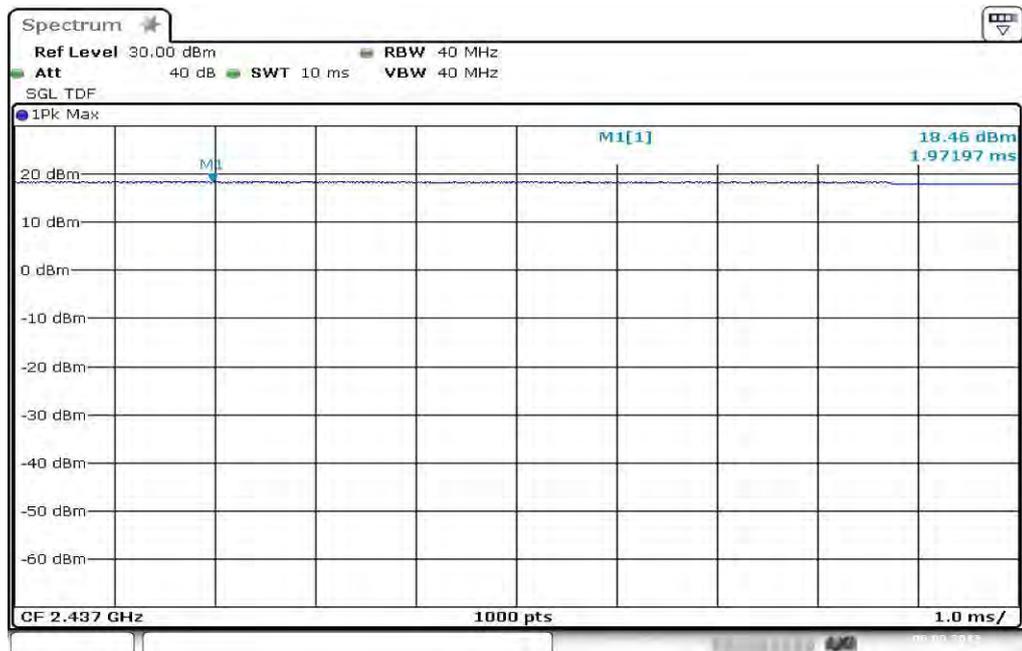
DSSS / b – mode: 2 MBit/s  
 OFDM / g – mode: 6 MBit/s  
 OFDM / n – mode: MCS3

**Plots: DSSS / b - mode**

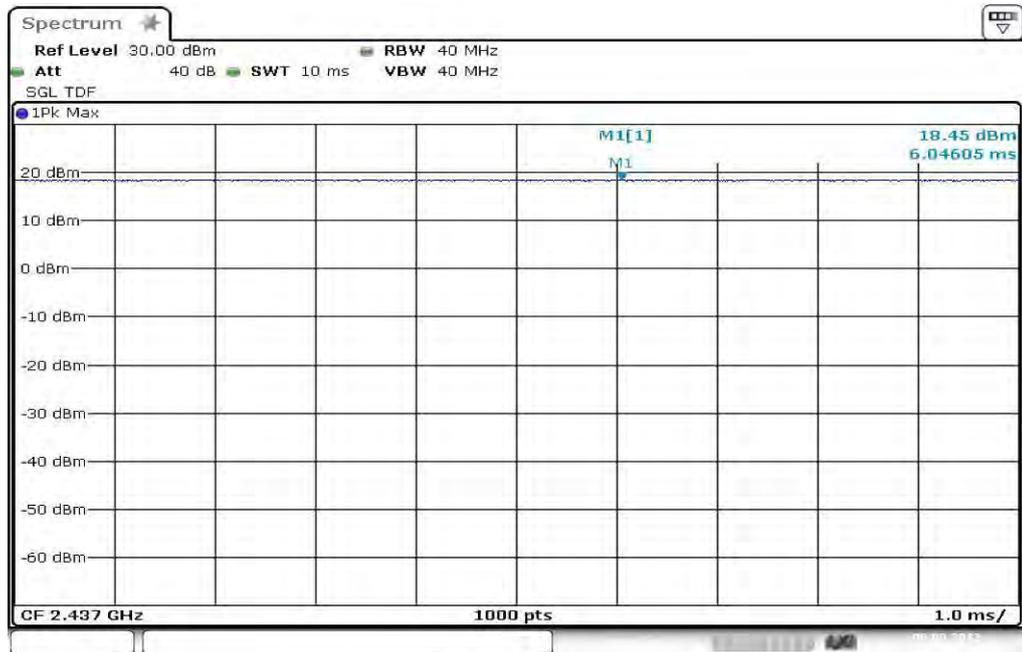
**Plot 1: TX mode, middle channel, 1 MBit/s**



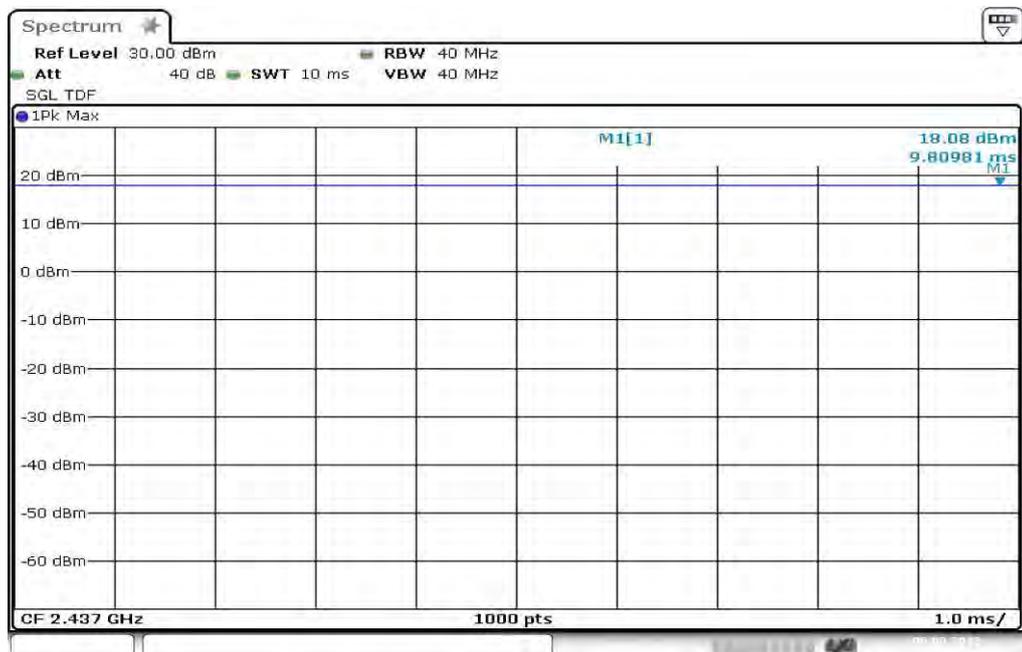
**Plot 2: TX mode, middle channel, 2 MBit/s**



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

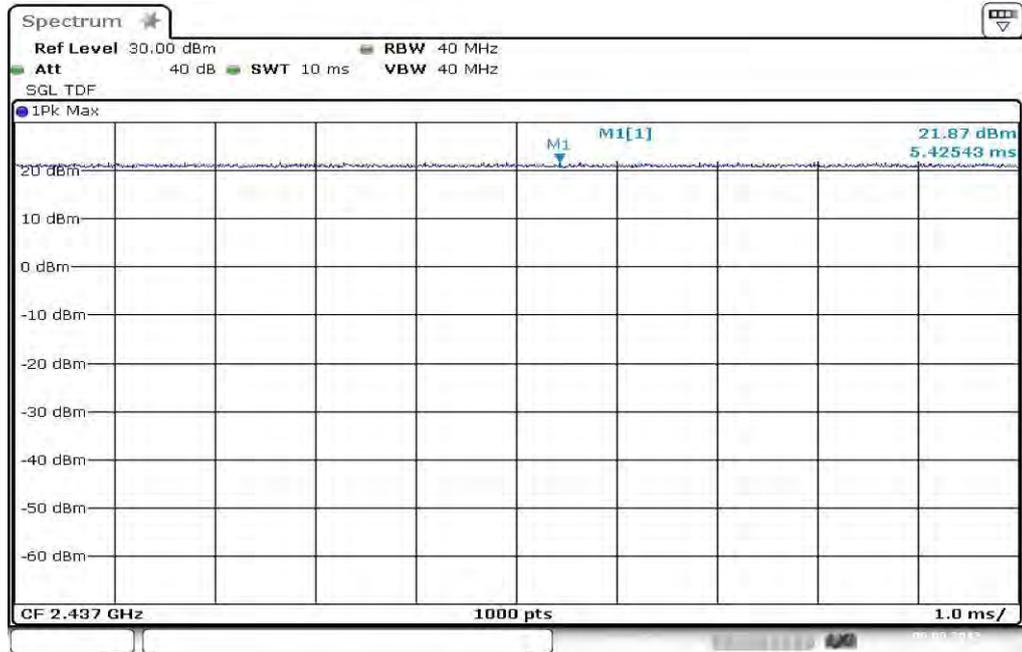


Plot 4: TX mode, middle channel, 11 MBit/s

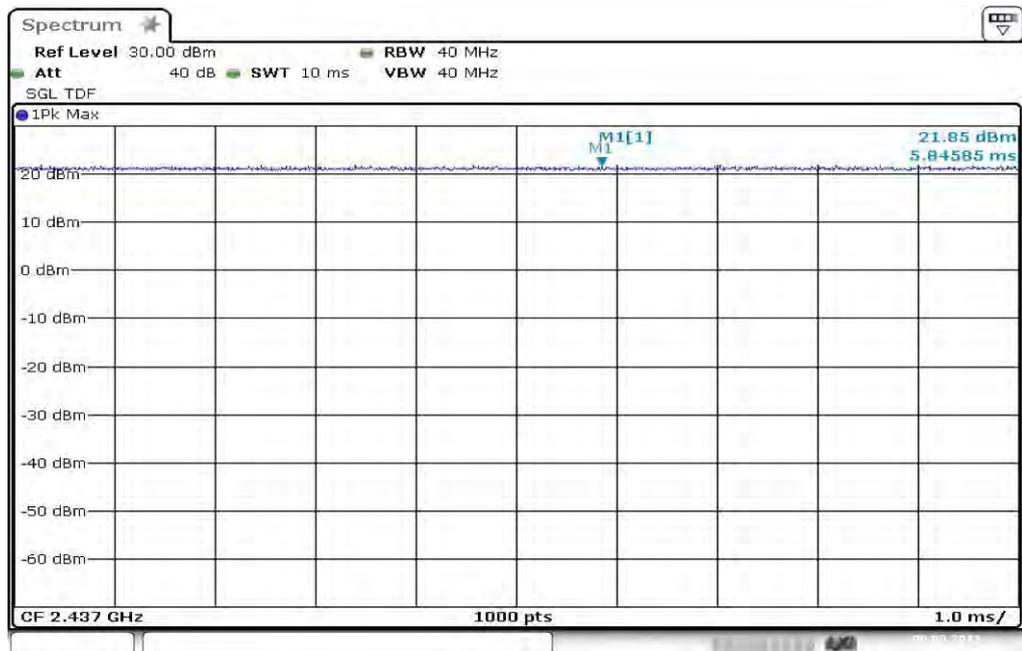


**Plots: OFDM / g - mode**

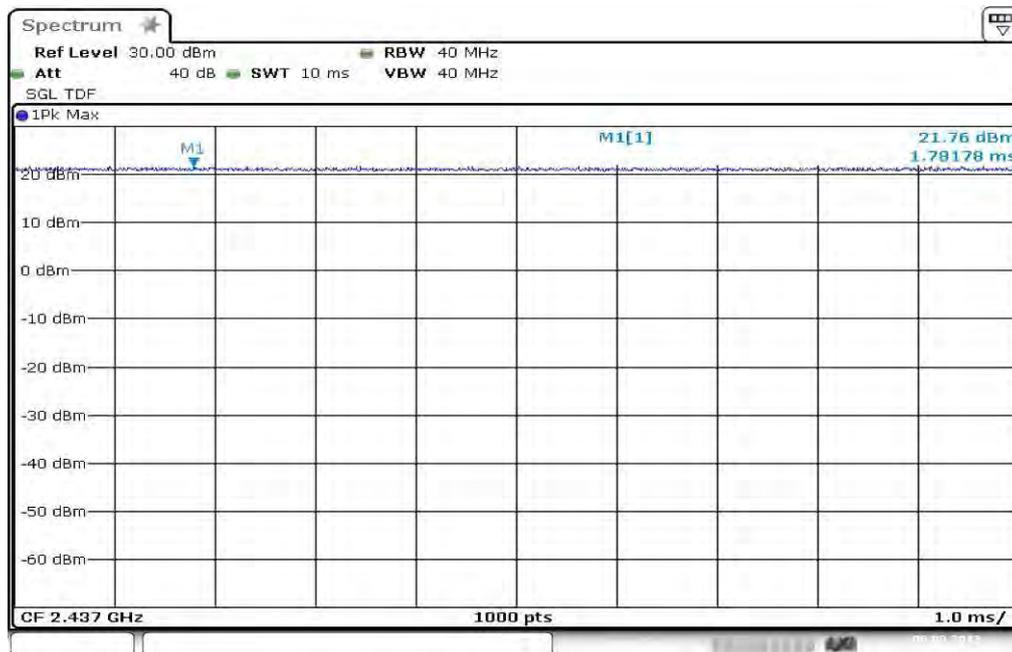
**Plot 1: TX mode, middle channel, 6 MBit/s**



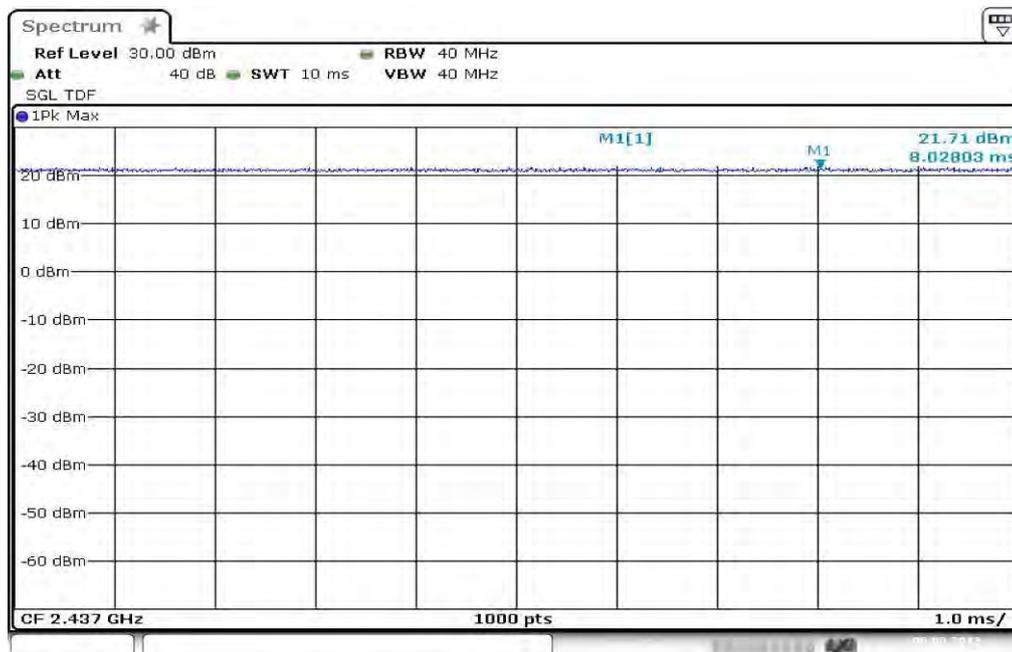
**Plot 2: TX mode, middle channel, 9 MBit/s**



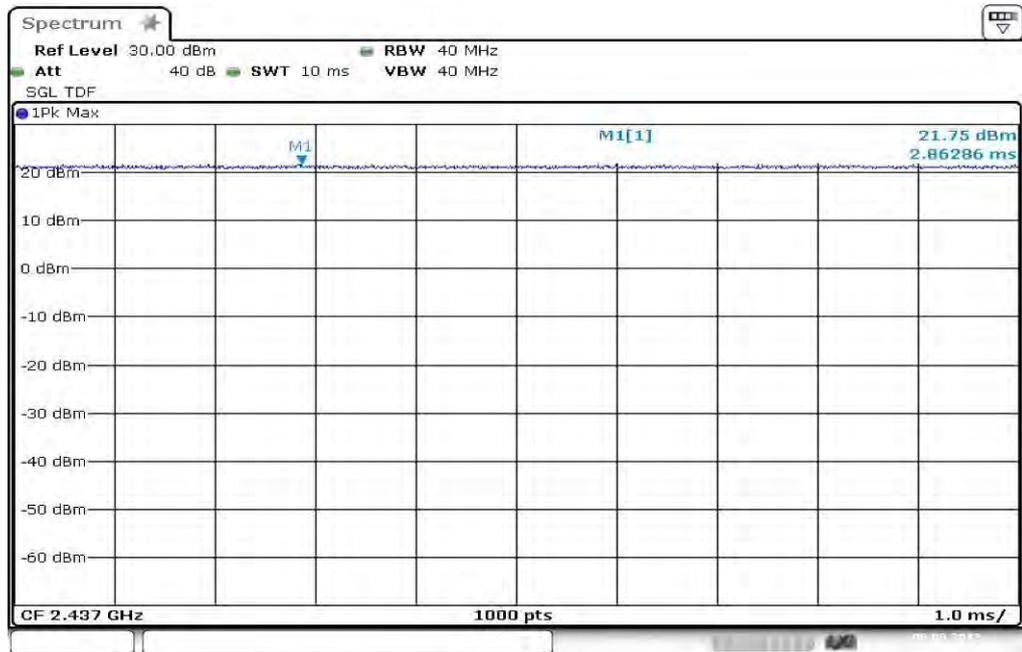
Plot 3: TX mode, middle channel, 12 MBit/s



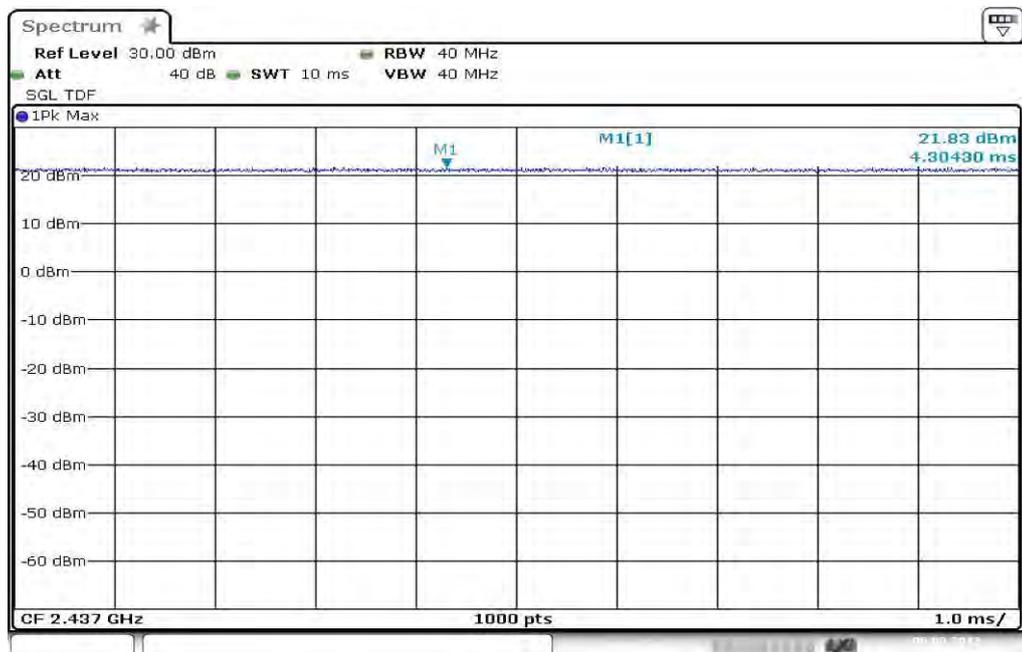
Plot 4: TX mode, middle channel, 18 MBit/s



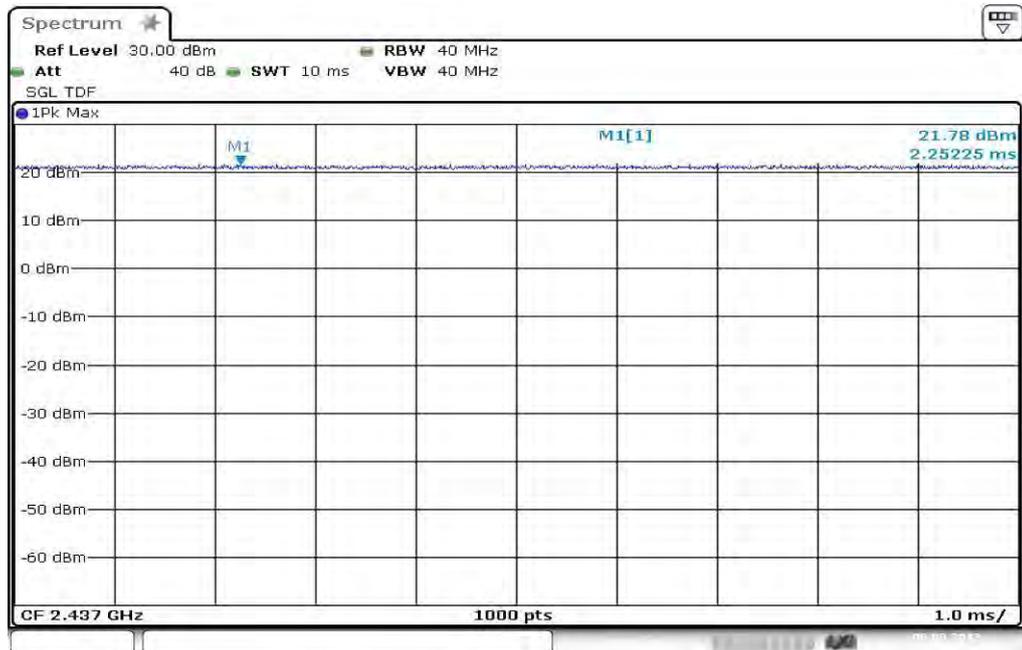
Plot 5: TX mode, middle channel, 24 MBit/s



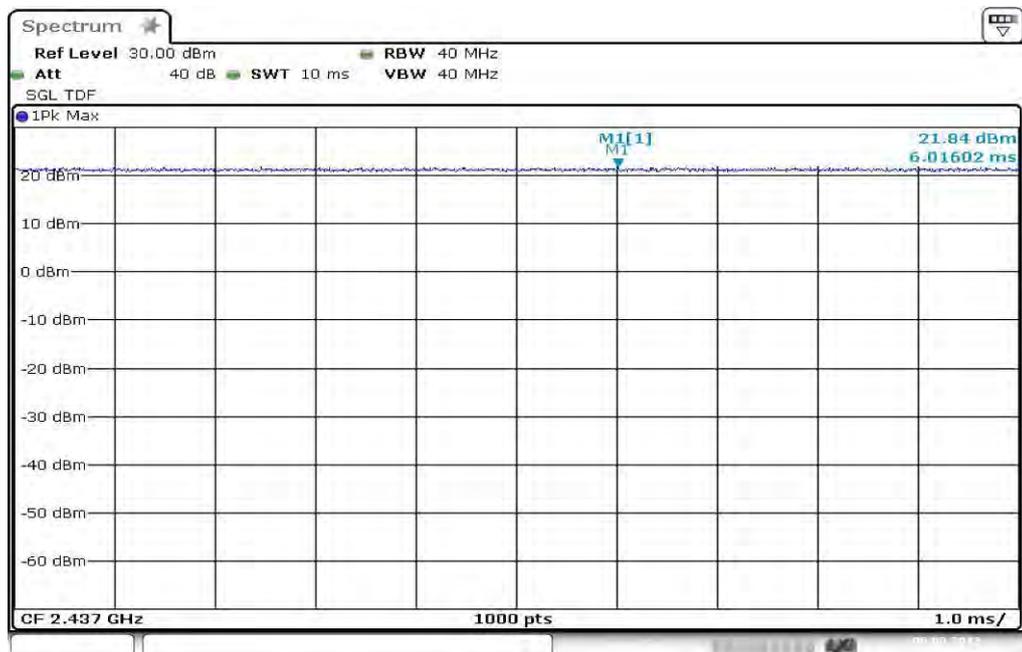
Plot 6: TX mode, middle channel, 36 MBit/s



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

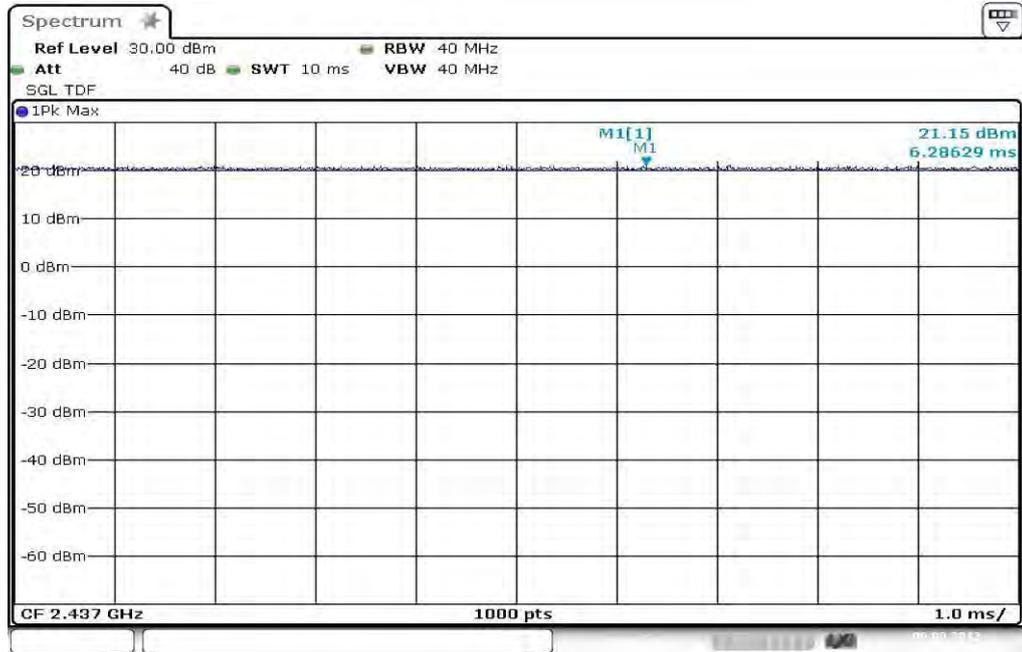


Plot 8: TX mode, middle channel, 54 MBit/s

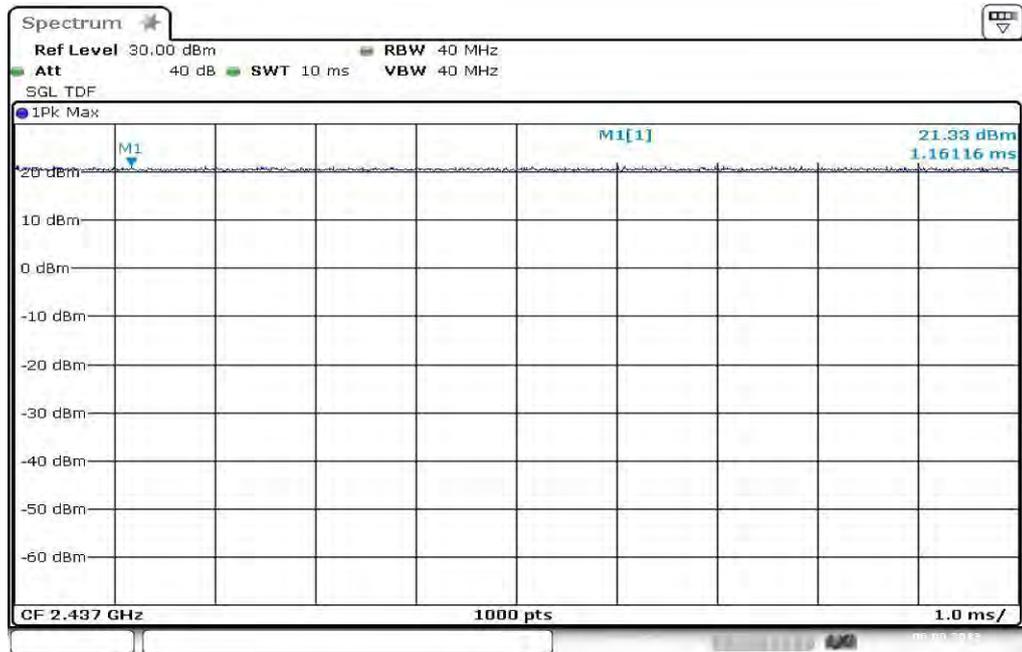


**Plots: OFDM / n - mode**

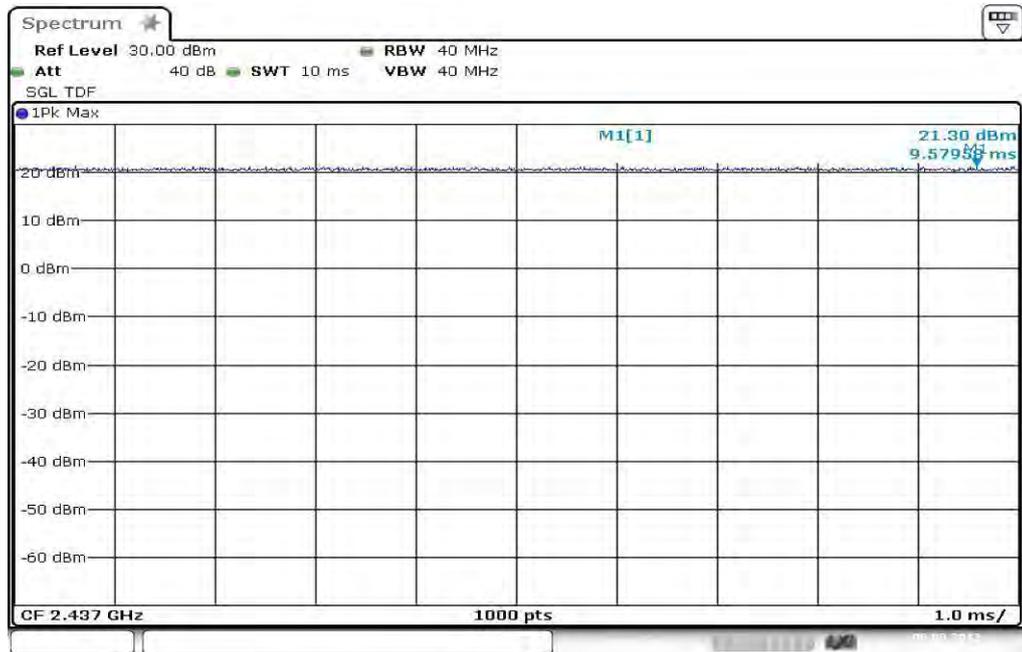
**Plot 1: TX mode, middle channel, MCS0**



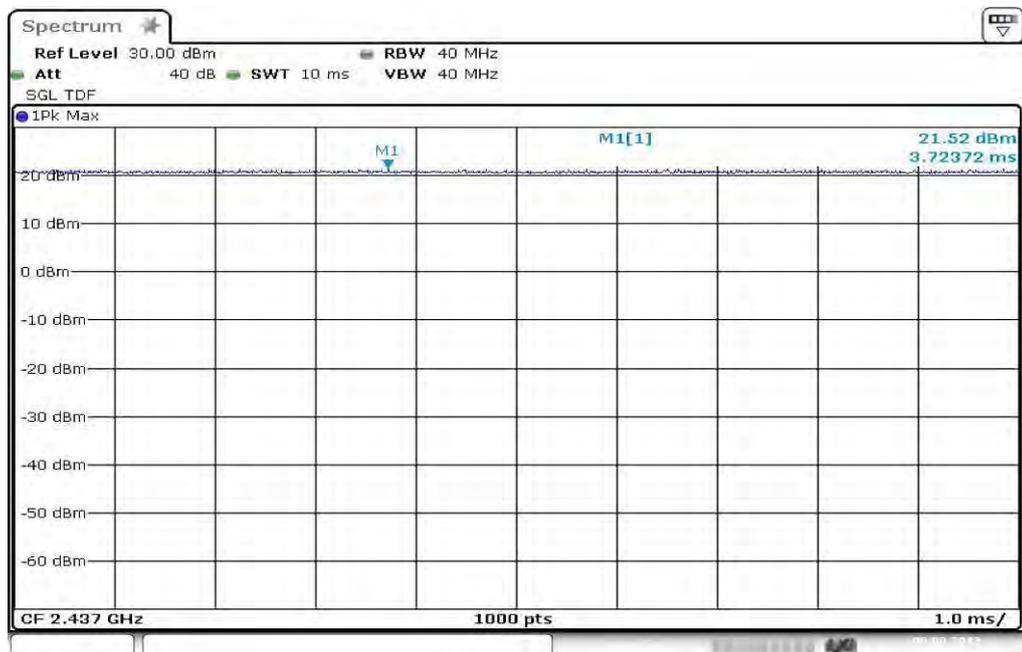
**Plot 2: TX mode, middle channel, MCS1**



Plot 3: TX mode, middle channel, MCS2

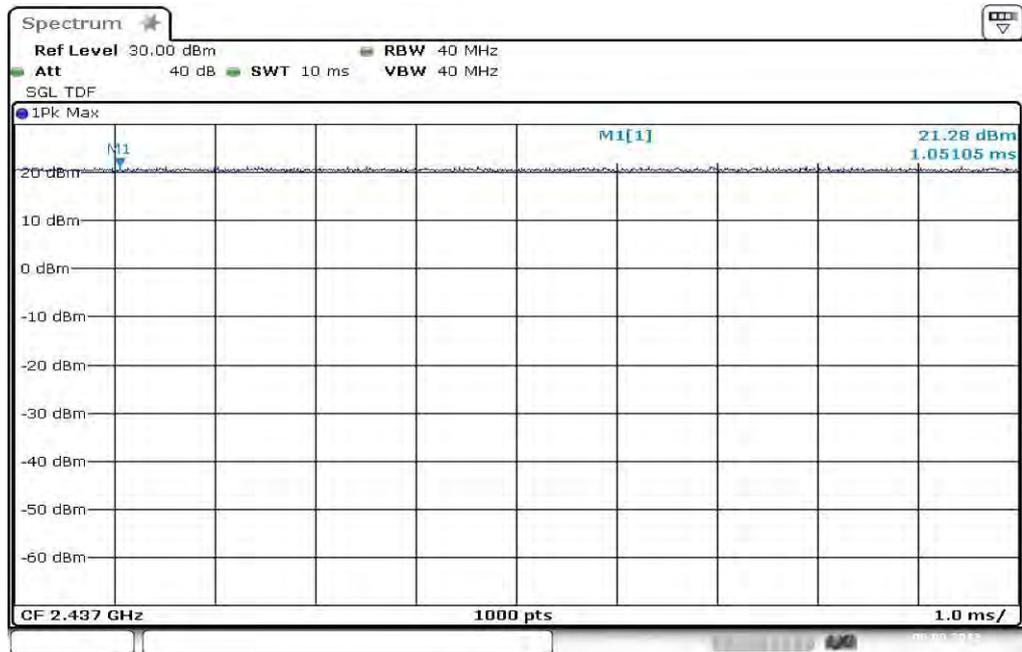


Plot 4: TX mode, middle channel, MCS3

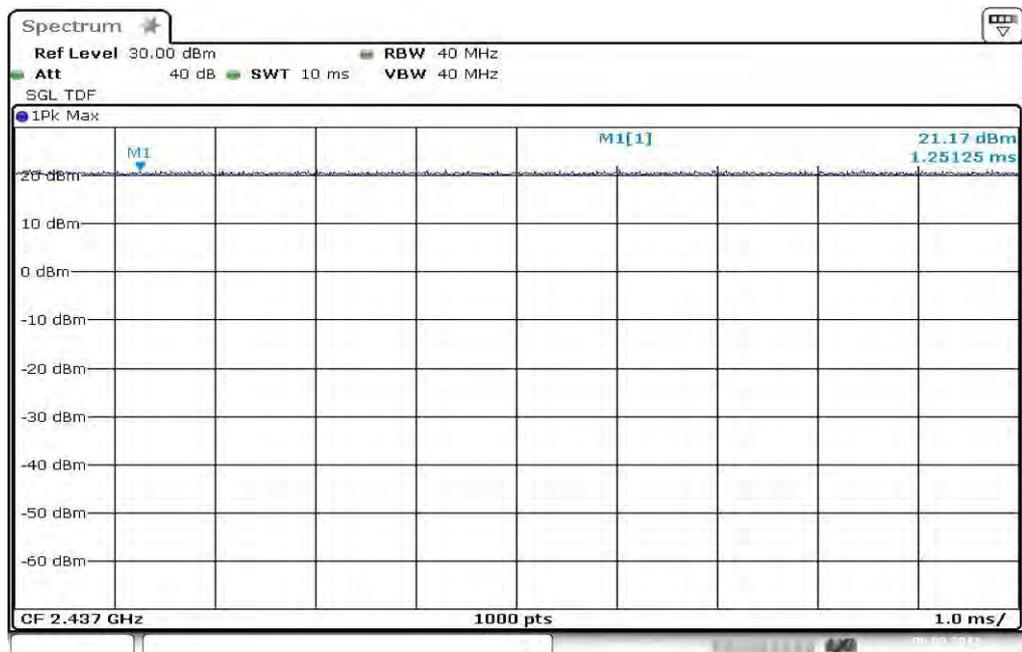




Plot 7: TX mode, middle channel, MCS6



Plot 8: TX mode, middle channel, MCS7



## 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:	3 MHz
Resolution bandwidth:	3 MHz
Trace-Mode:	Max hold

### Limits:

FCC	IC
CFR Part 15.247 (b)(4)	-/-
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		15.55	16.09	17.25
Radiated power [dBm] Measured with DSSS modulation		14.78	14.38	14.70
Gain [dBi] Calculated		-0.77	-1.71	-2.55
Measurement uncertainty			± 1.5 dB (cond.) / ± 3 dB (rad.)	

**Result: 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)	-/-
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	18.36	18.17	18.41
Output Power Radiated – EIRP*)	17.59	16.46	15.86
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

\*) calculated with Antenna gain

**Result: Passed**

**Results: OFDM / g – mode**

OFDM / g – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	21.67	21.71	21.96
Output Power Radiated – EIRP*)	20.90	20.00	19.41
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

\*)calculated with Antenna gain

**Result: Passed****Results: OFDM / n – mode**

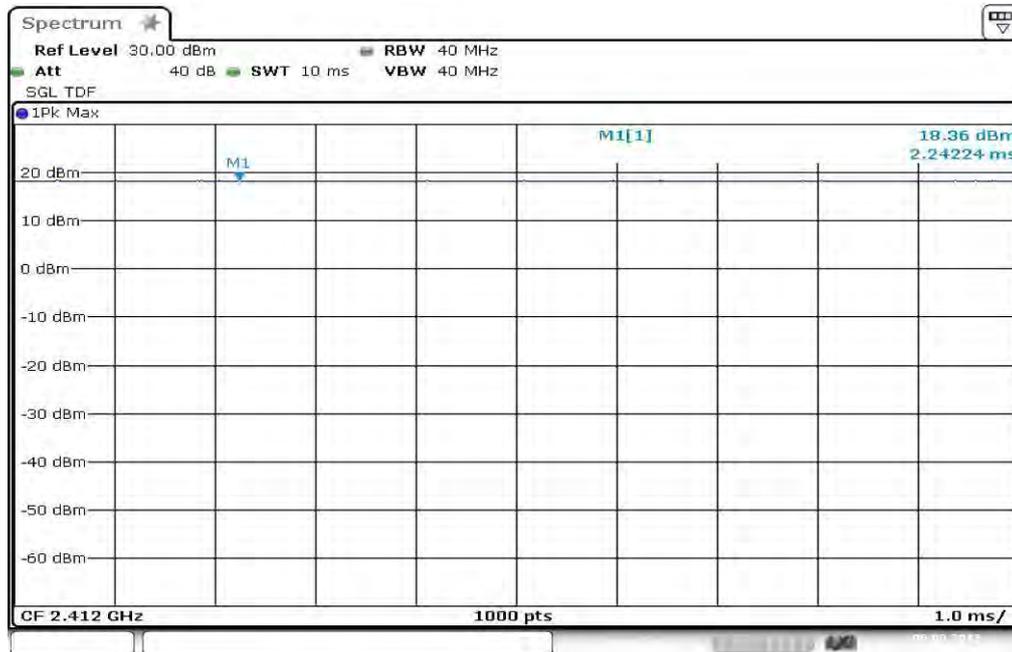
OFDM / n – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	20.94	21.16	21.59
Output Power Radiated – EIRP*)	20.17	19.45	19.04
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

\*)calculated with Antenna gain

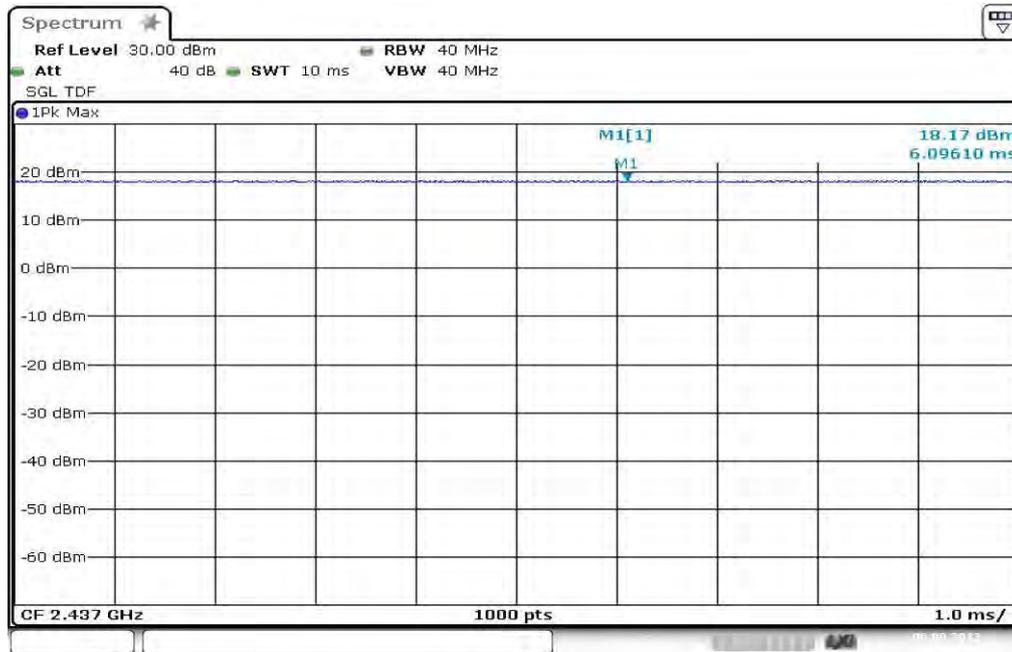
**Result: Passed**

**Plots: DSSS / b – mode**

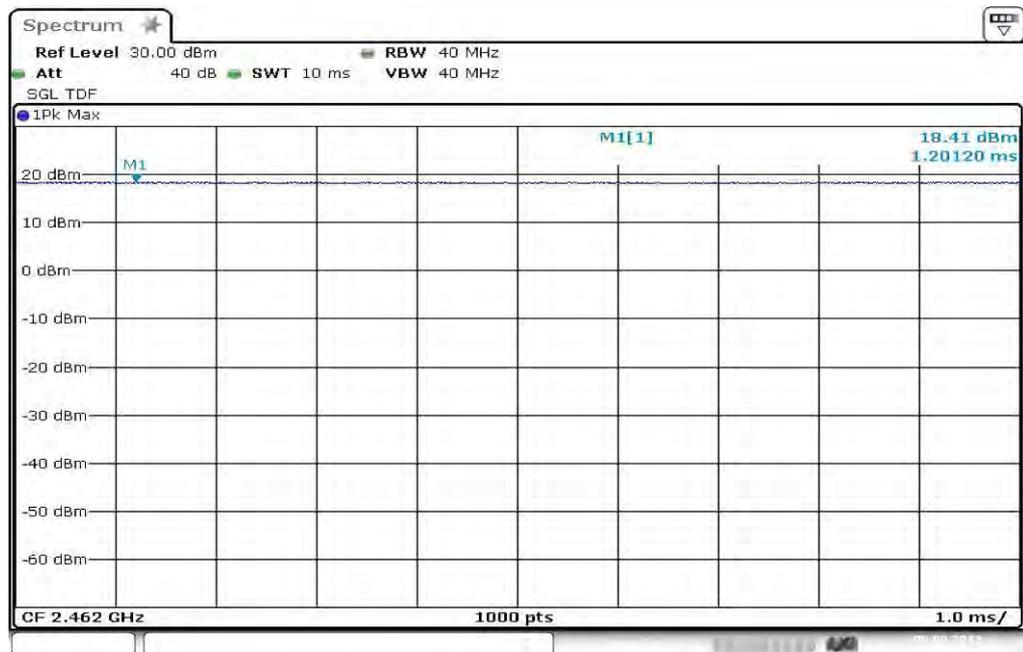
**Plot 1: TX mode, lowest channel**



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

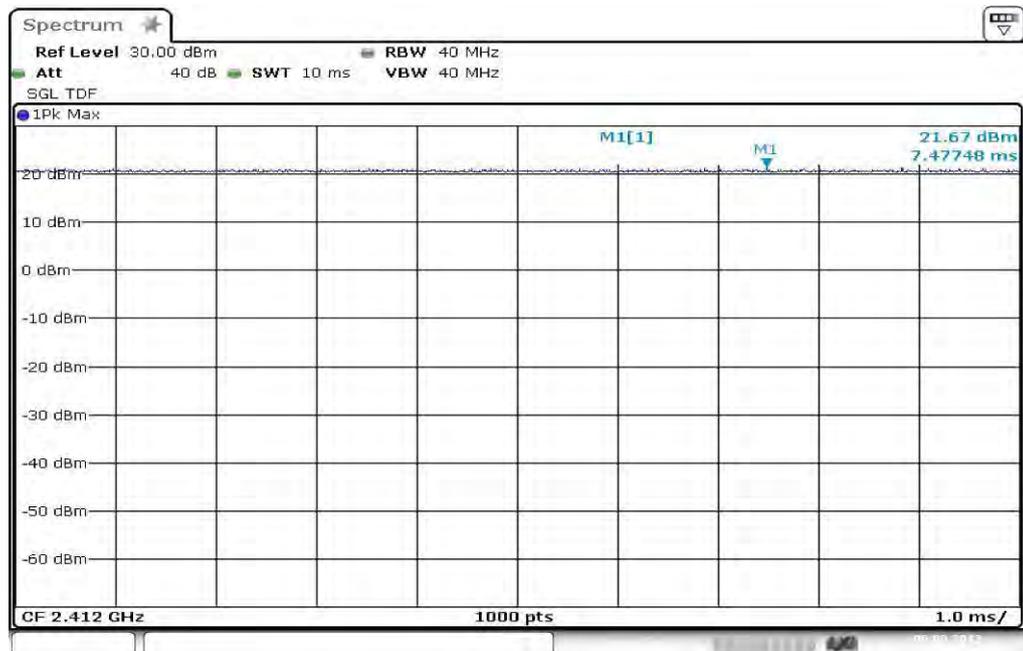


Plot 3: TX mode, highest channel

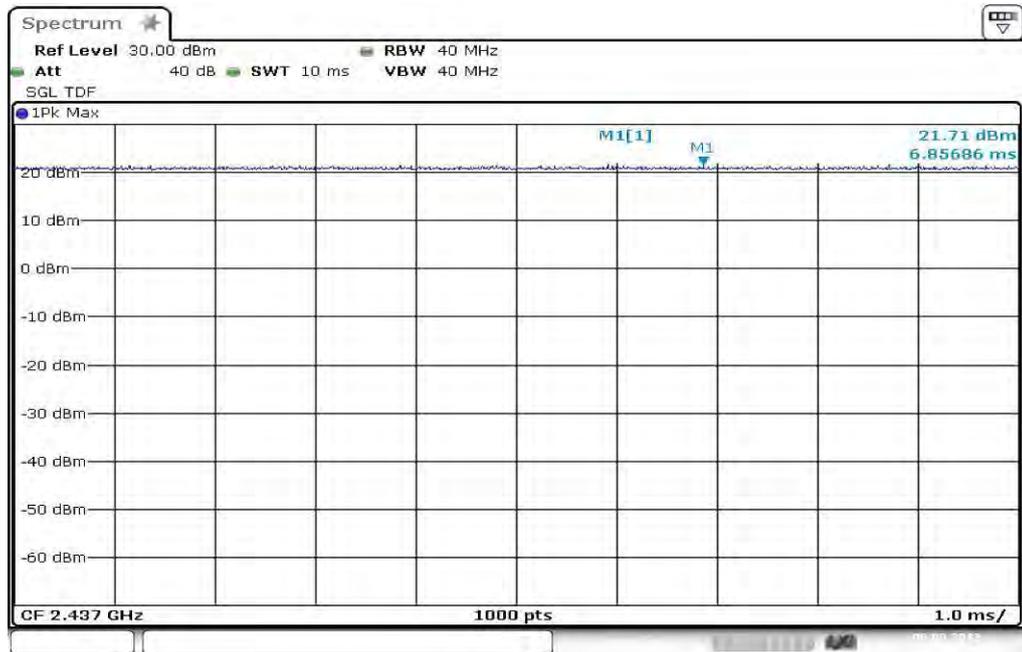


**Plots: OFDM / g – mode**

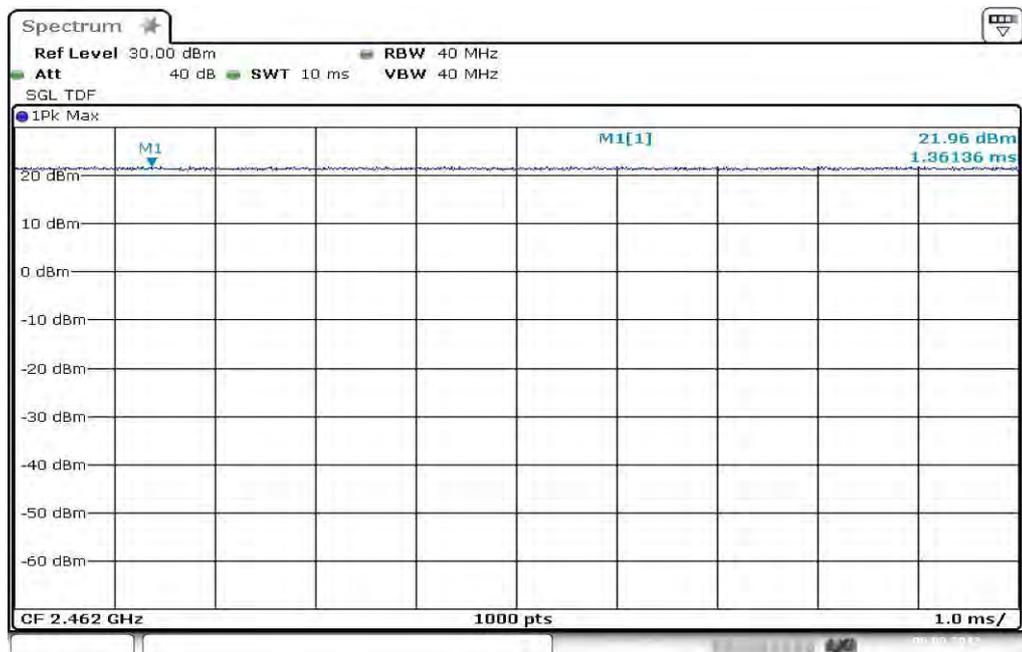
Plot 1: TX mode, lowest channel



Plot 2: TX mode, middle channel

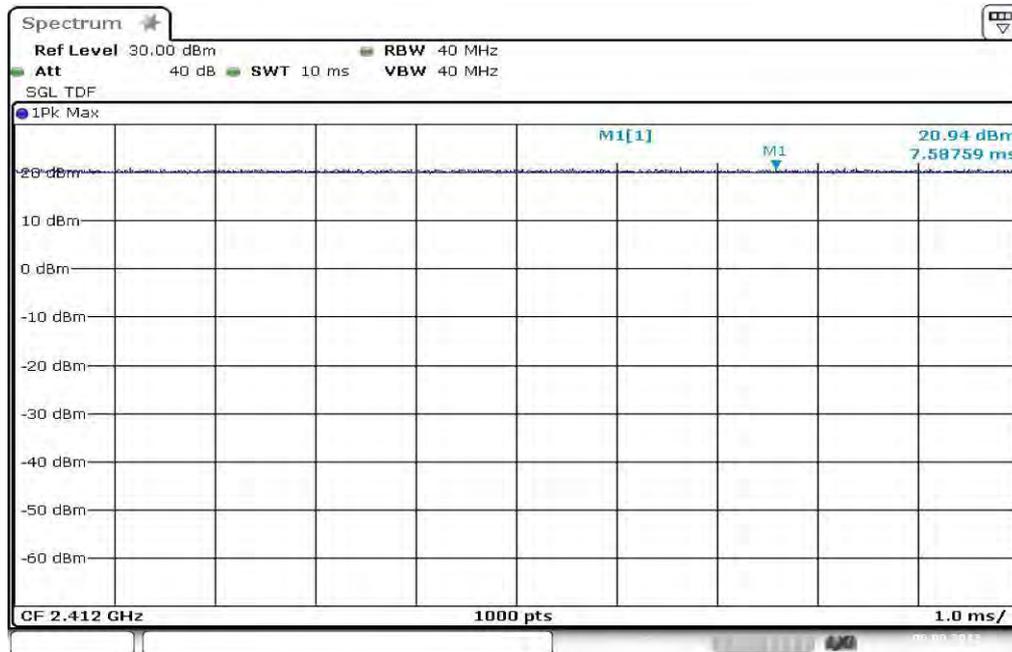


Plot 3: TX mode, highest channel

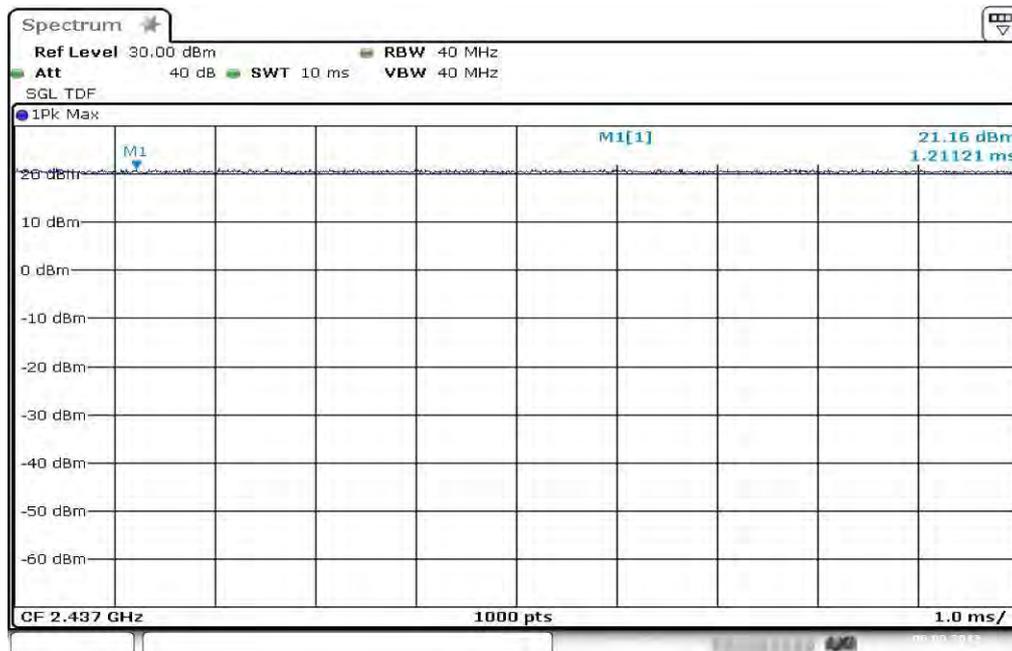


**Plots: OFDM / n – mode**

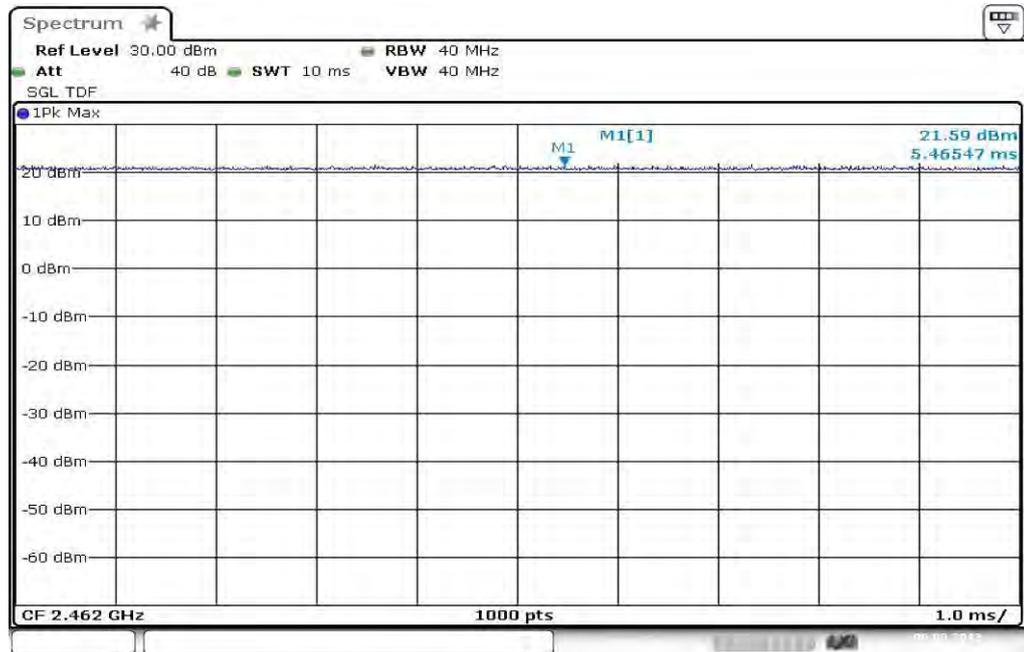
**Plot 1: TX mode, lowest channel**



**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)	-/-
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.	

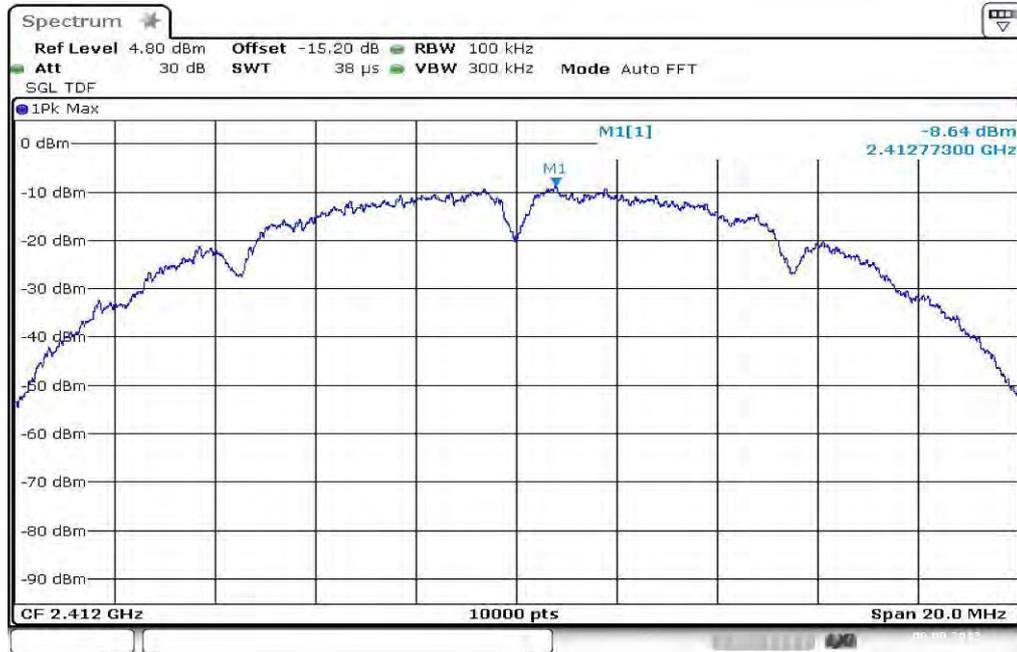
### Results:

Modulation Frequency	Power Spectral density [dBm/3kHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	-8.64	-9.75	-9.16
OFDM / g – mode	-14.13	-14.27	-12.16
OFDM / n – mode	-14.78	-15.07	-13.76
Measurement uncertainty	± 1.5 dB		

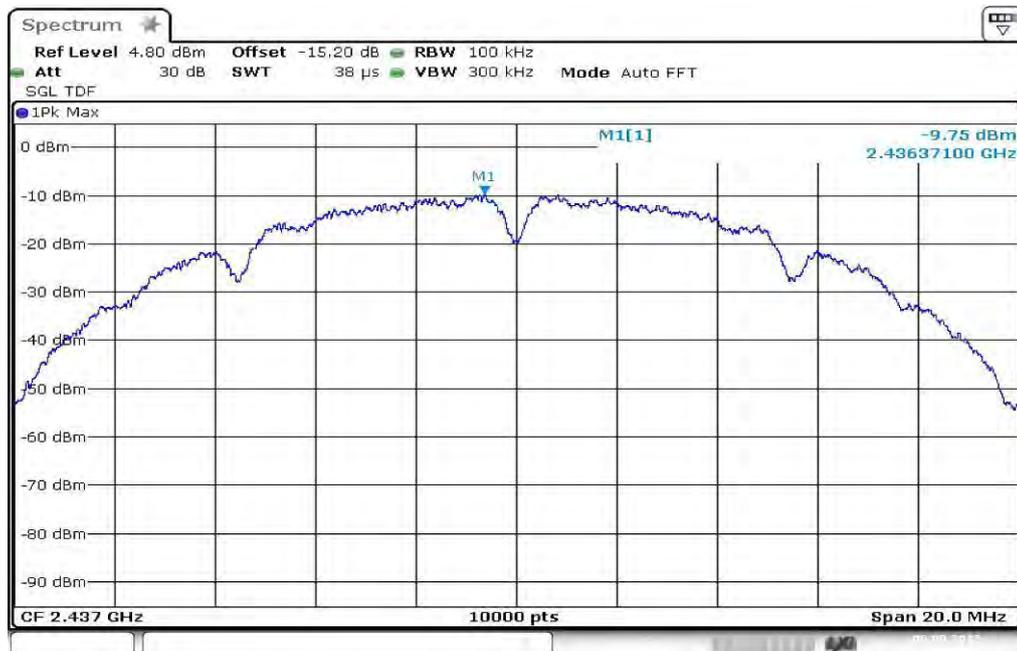
**Result: Passed**

**Plots: DSSS / b – mode**

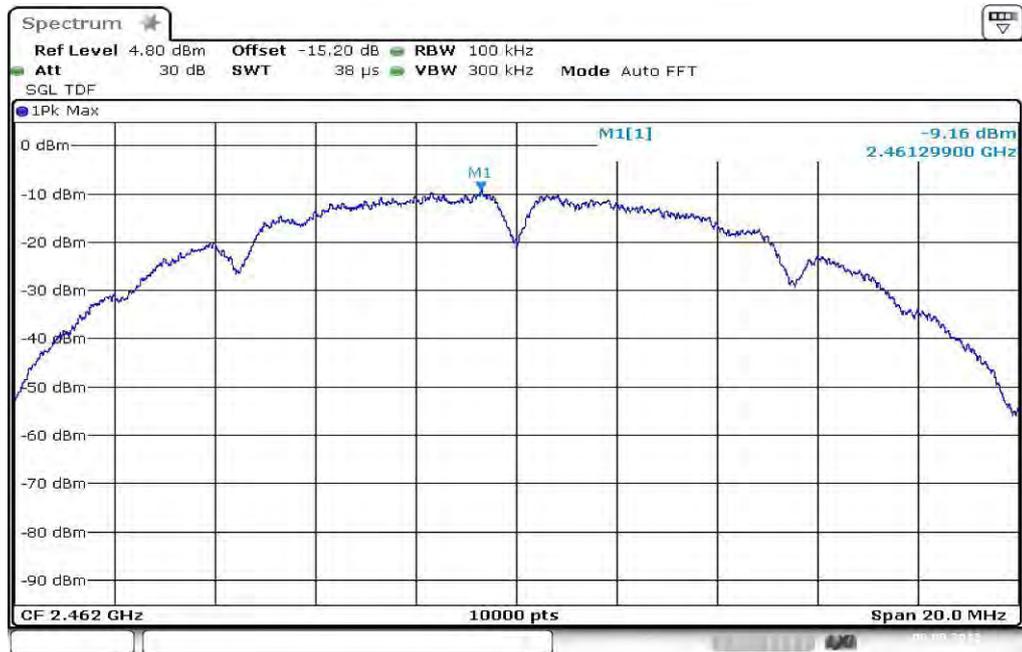
**Plot 1: TX mode, lowest channel**



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

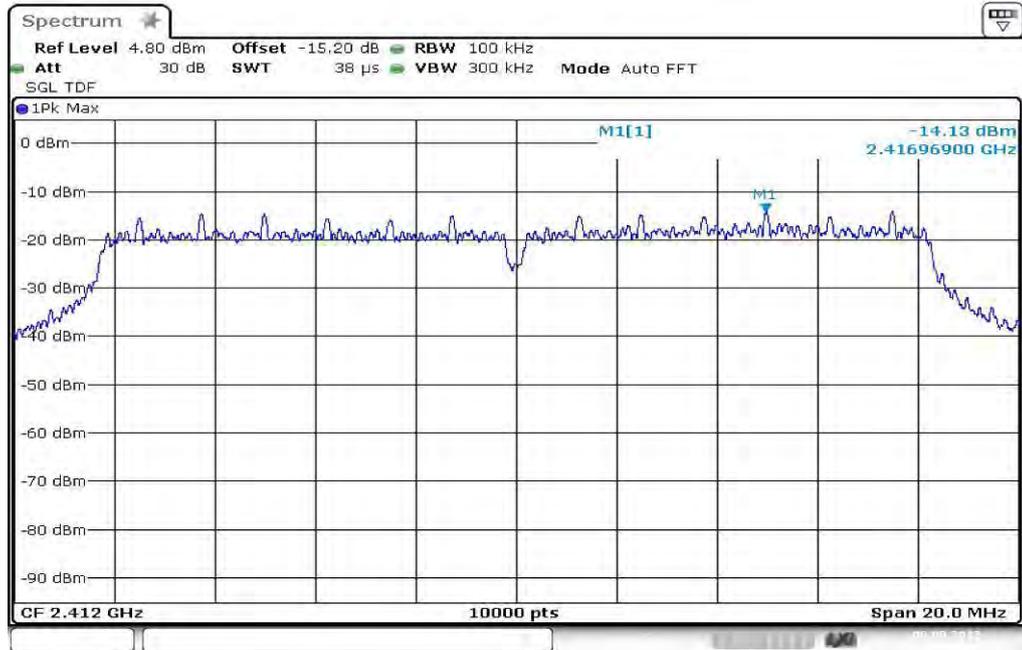


Plot 3: TX mode, highest channel

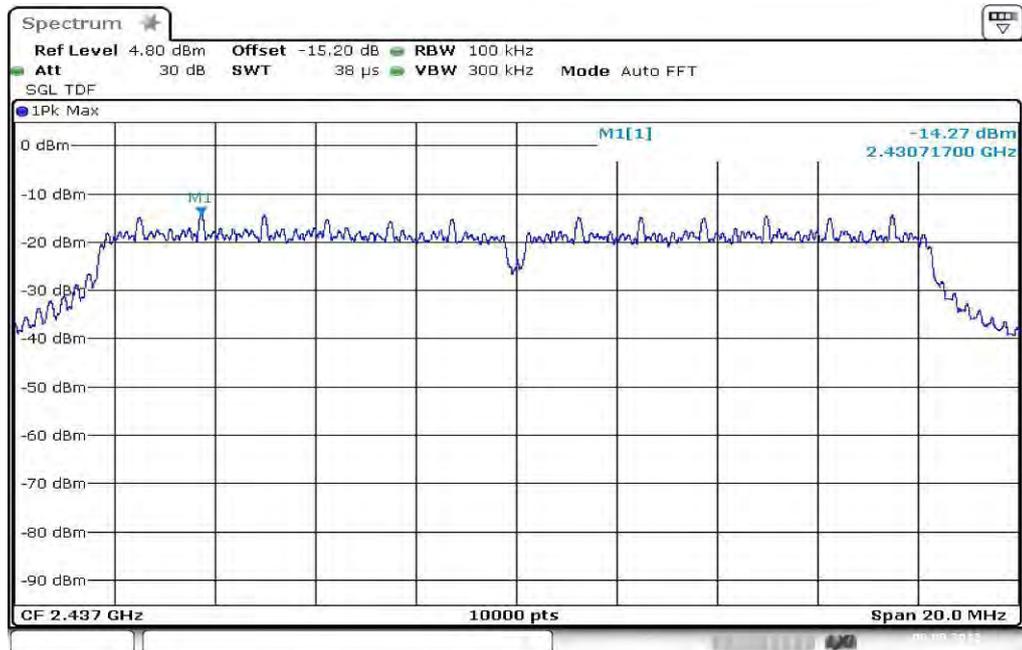


**Plots: OFDM / g - mode**

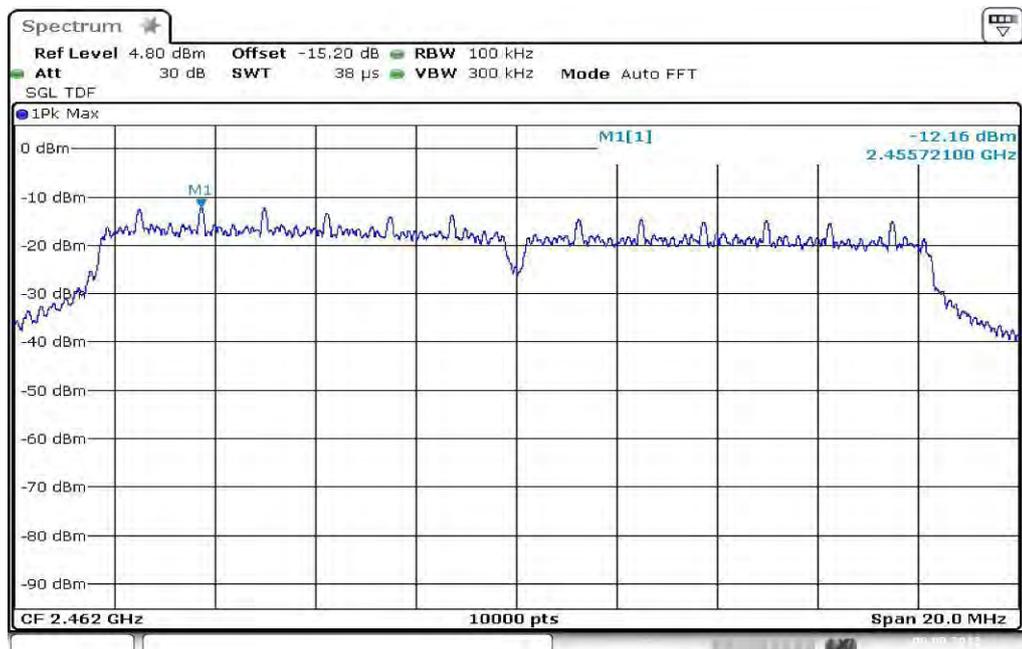
Plot 1: TX mode, lowest channel



Plot 2: TX mode, middle channel

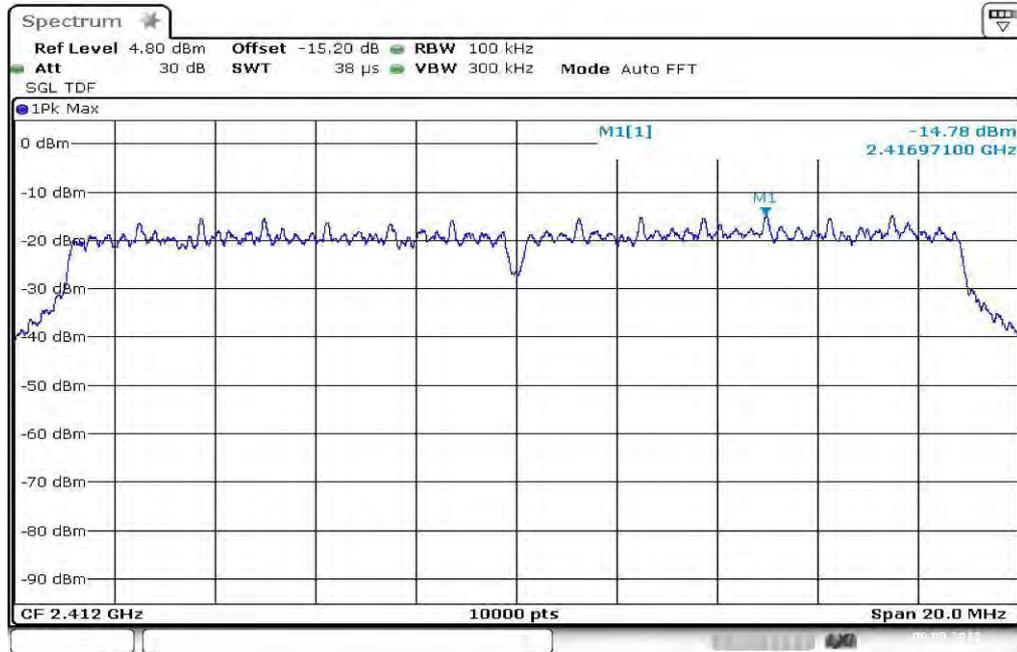


Plot 3: TX mode, highest channel

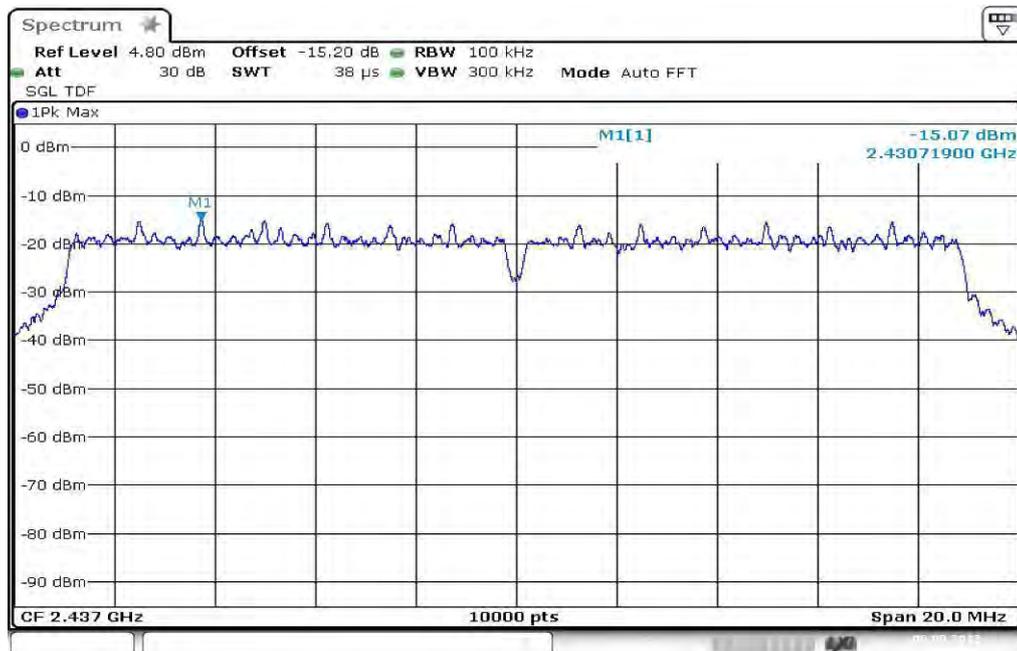


**Plots: OFDM / n – mode**

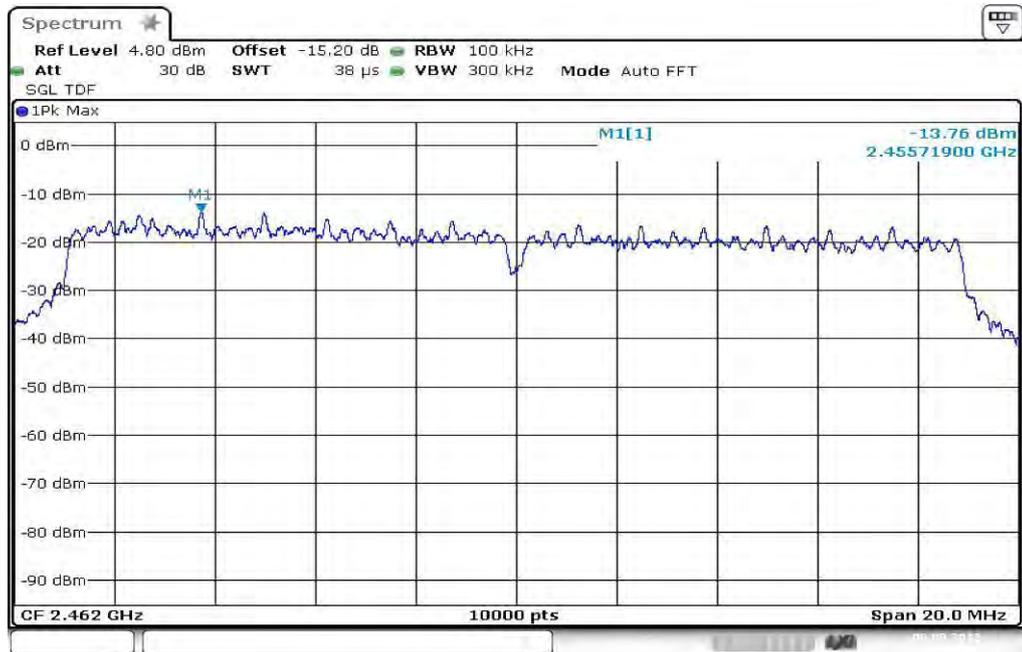
**Plot 1: TX mode, lowest channel**



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



Plot 3: TX mode, highest channel



## 9.5 Spectrum bandwidth of a FHSS system – 6 dB bandwidth

### Description:

Measurement of the 6 dB bandwidth of the modulated signal.

### Measurement:

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

### Limits:

FCC	IC
CFR Part 15.247 (a)(2)	-/-
Spectrum Bandwidth of a FHSS System – 6 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

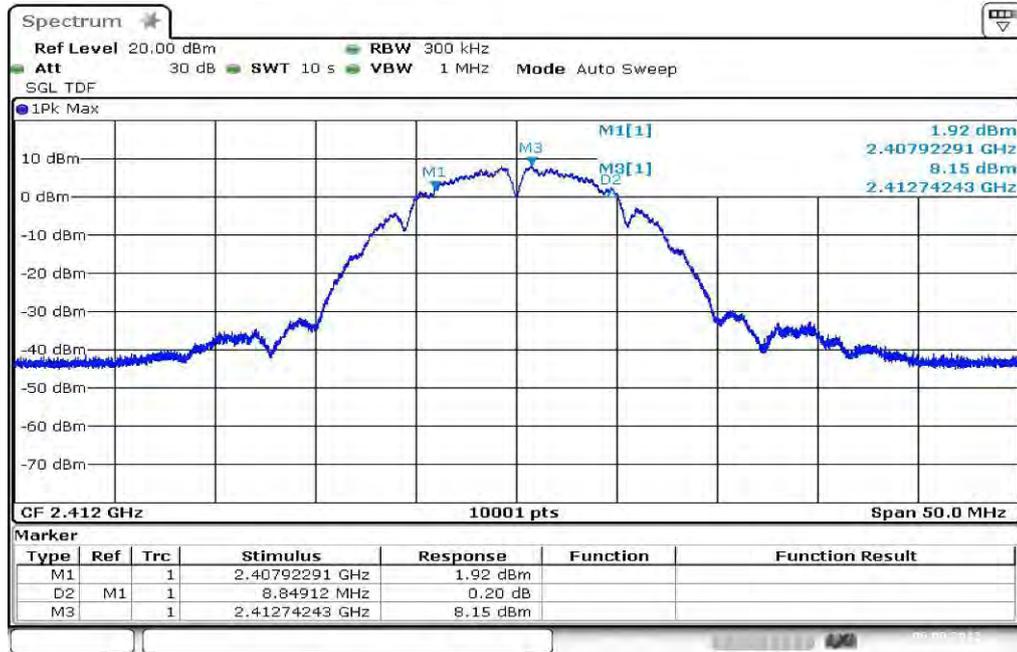
### Results:

Modulation Frequency	6 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	8.85	8.09	8.80
OFDM / g – mode	16.45	16.61	16.55
OFDM / n – mode	17.80	17.92	17.70
Measurement uncertainty	± 100 kHz		

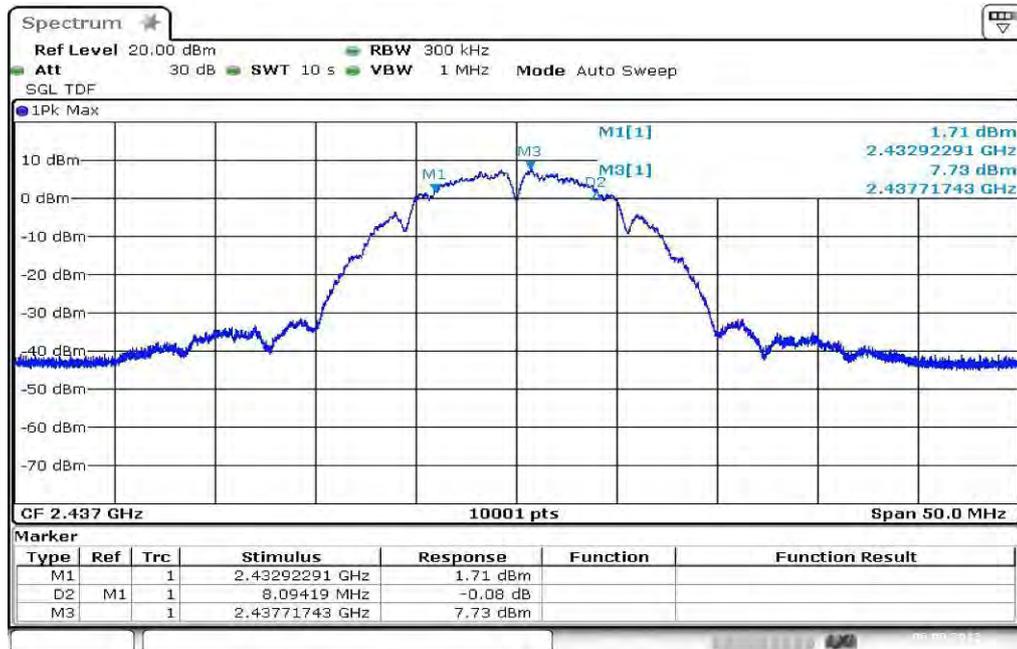
**Result: Passed**

**Plots: DSSS / b – mode**

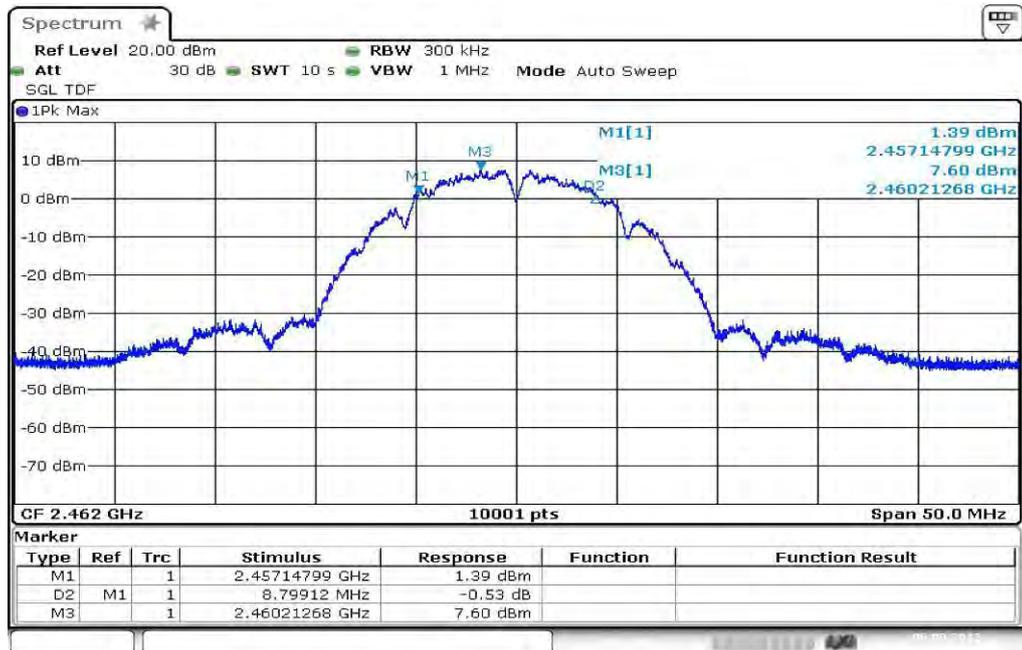
**Plot 1: TX mode, lowest channel, 6 dB bandwidth**



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

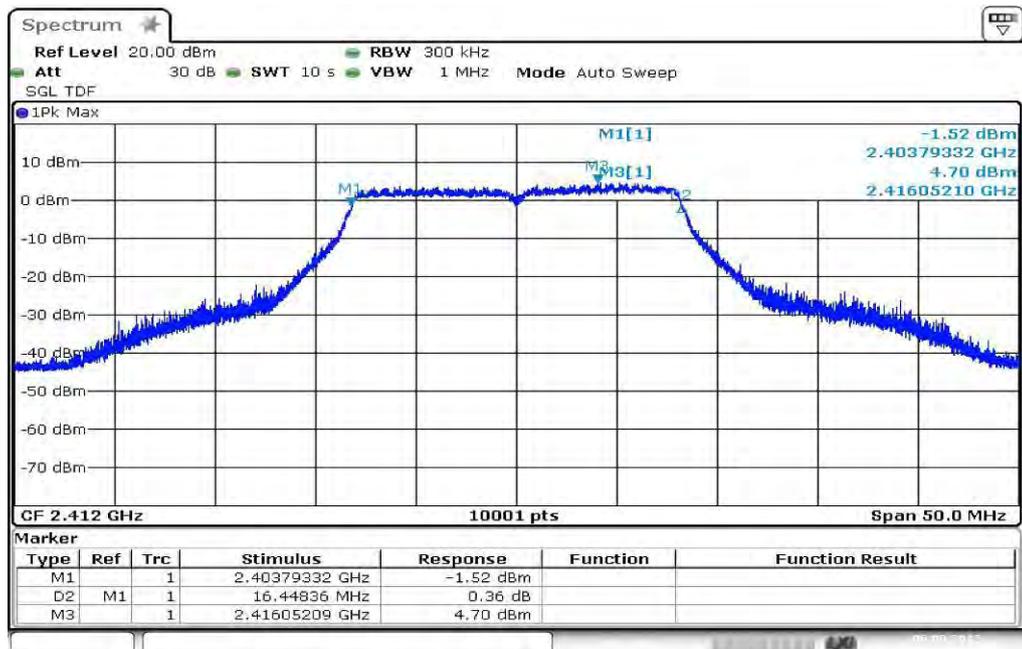


Plot 3: TX mode, highest channel, 6 dB bandwidth

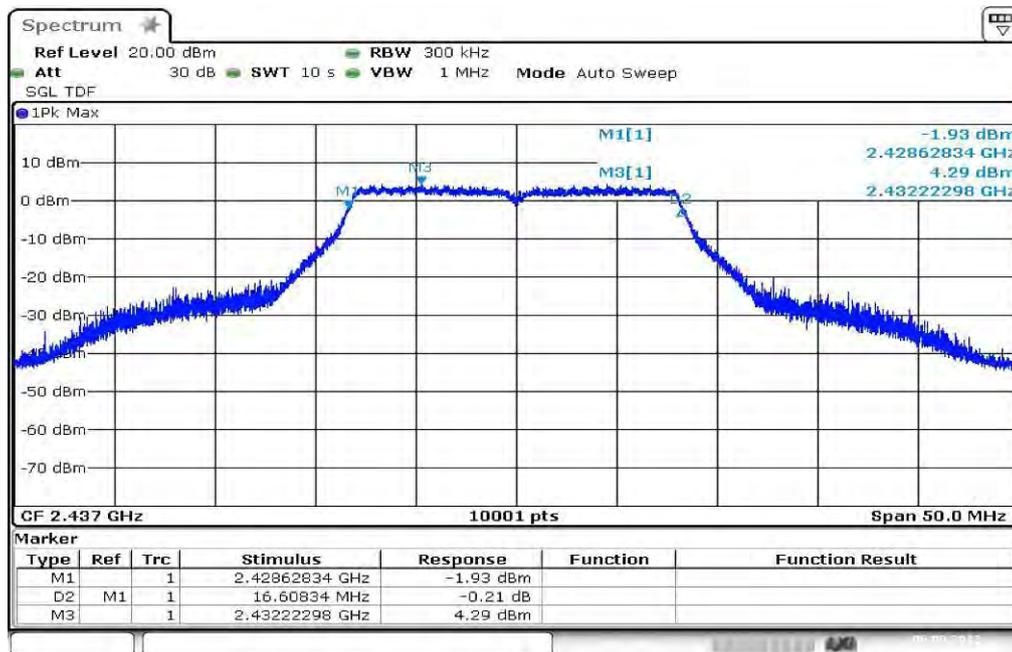


**Plots: OFDM / g – mode**

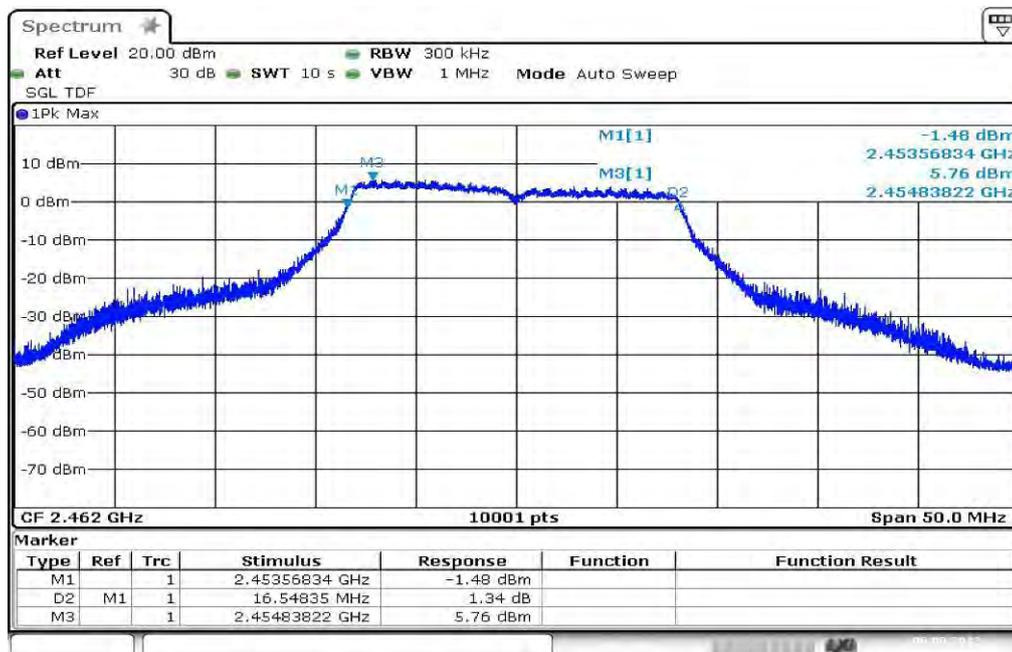
Plot 1: TX mode, lowest channel, 6 dB bandwidth



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

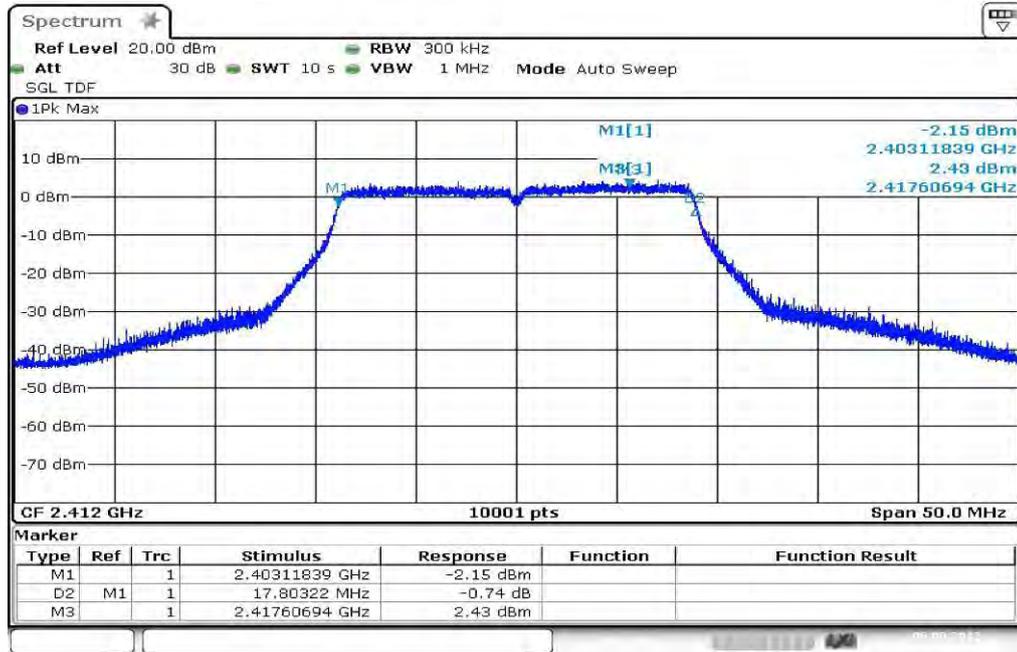


Plot 3: TX mode, highest channel, 6 dB bandwidth

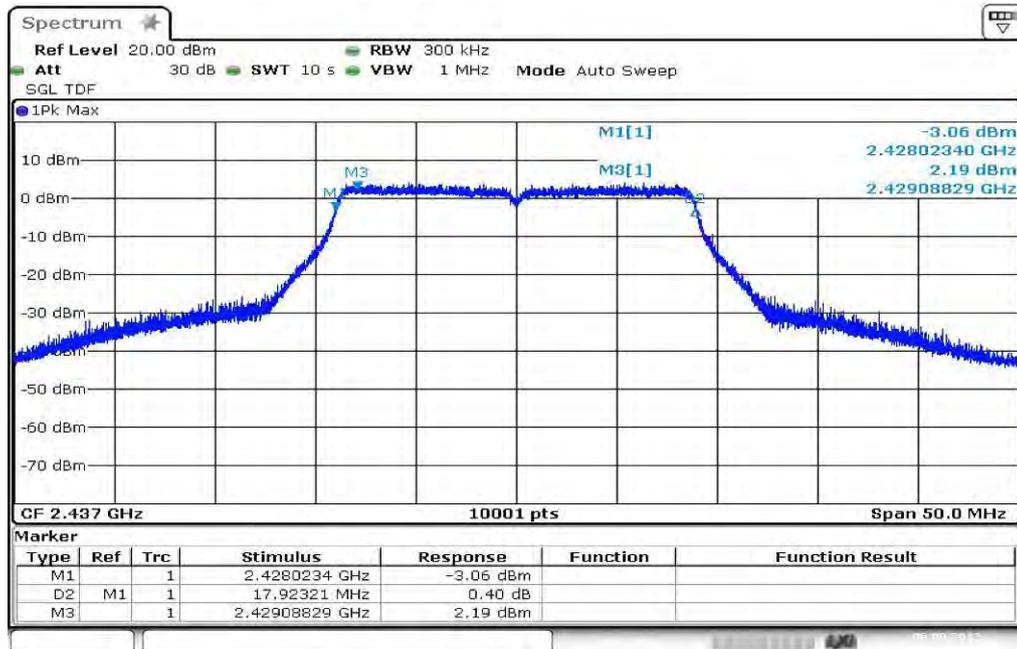


**Plots: OFDM / n – mode**

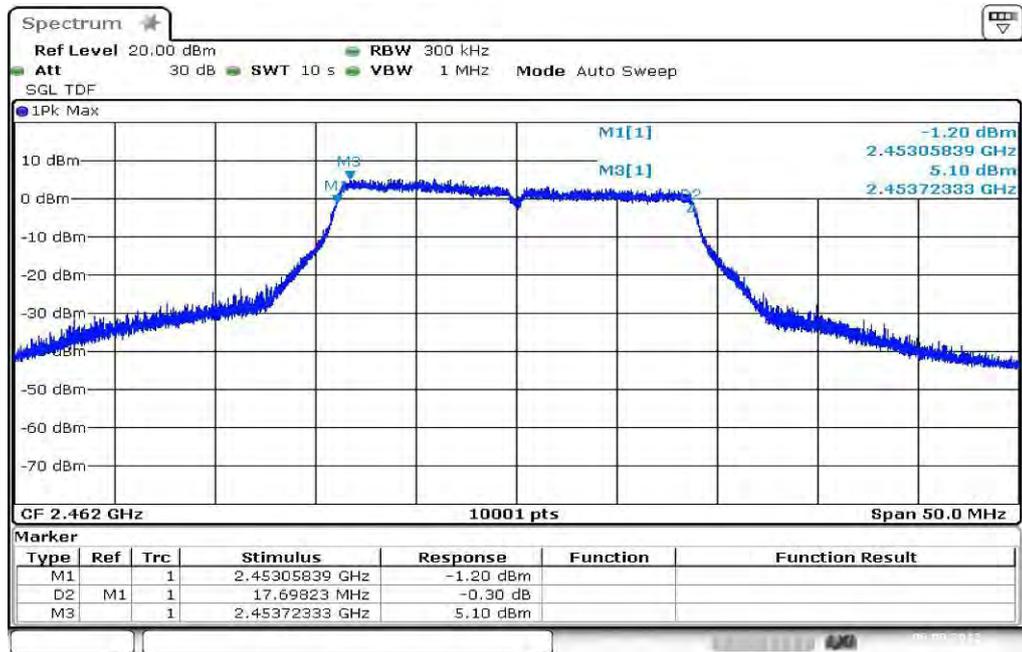
**Plot 1: TX mode, lowest channel, 6 dB bandwidth**



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



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



## 9.6 Spectrum bandwidth of a FHSS system – 20 dB bandwidth

### Description:

Measurement of the 20 dB bandwidth of the modulated signal.

### Measurement:

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

### Limits:

FCC	IC
CFR Part 15.247 (a)(2)	-/-
Spectrum Bandwidth of a FHSS System – 20 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

### Results:

Modulation Frequency	20 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	14.85	14.78	14.61
OFDM / g – mode	18.53	18.66	18.02
OFDM / n – mode	19.22	19.21	18.99
Measurement uncertainty	± 100 kHz		

**Result: Passed**

**Plots: DSSS / b – mode**

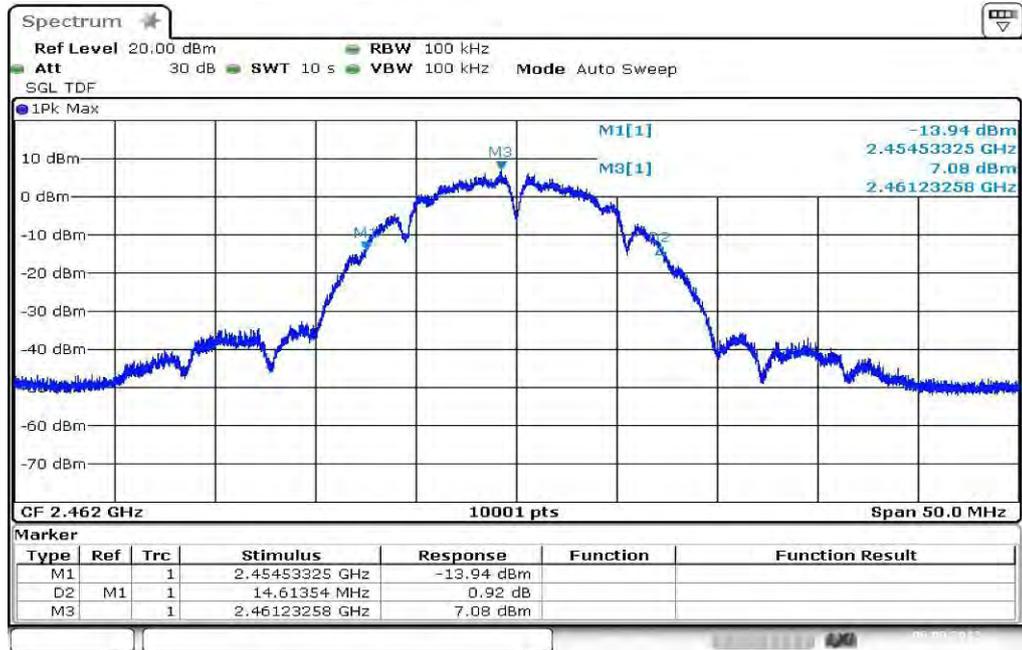
**Plot 1: TX mode, lowest channel, 20 dB bandwidth**



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

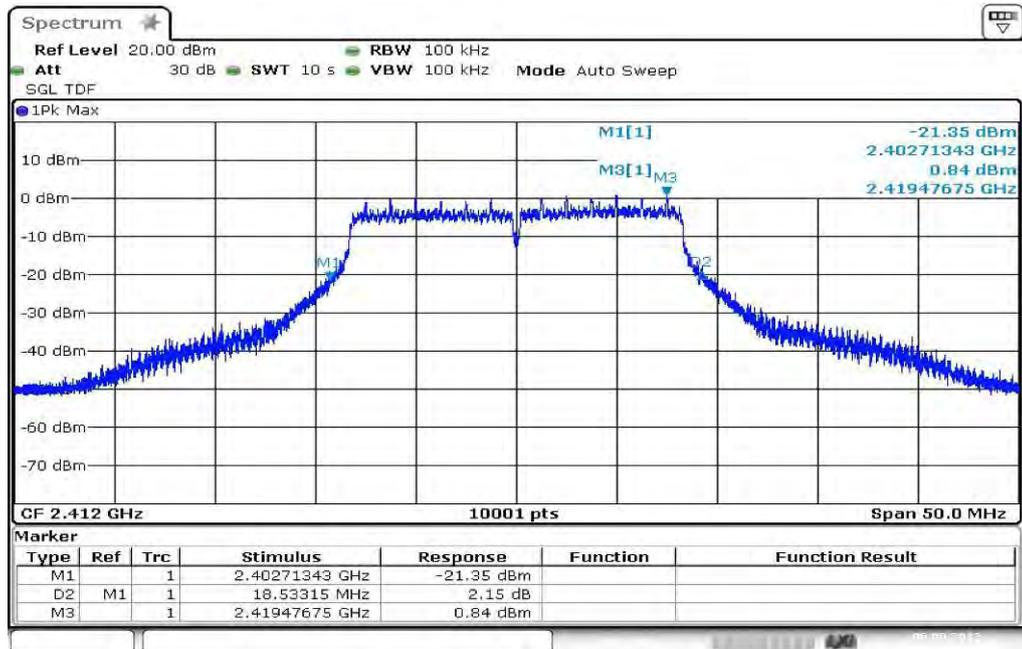


Plot 3: TX mode, highest channel, 20 dB bandwidth

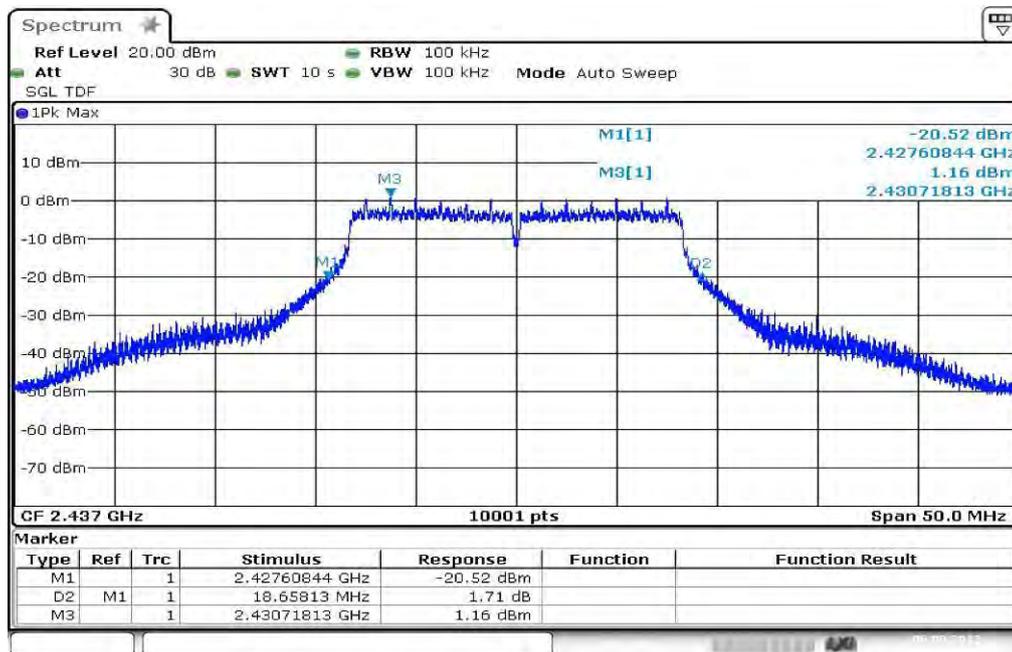


**Plots: OFDM / g – mode**

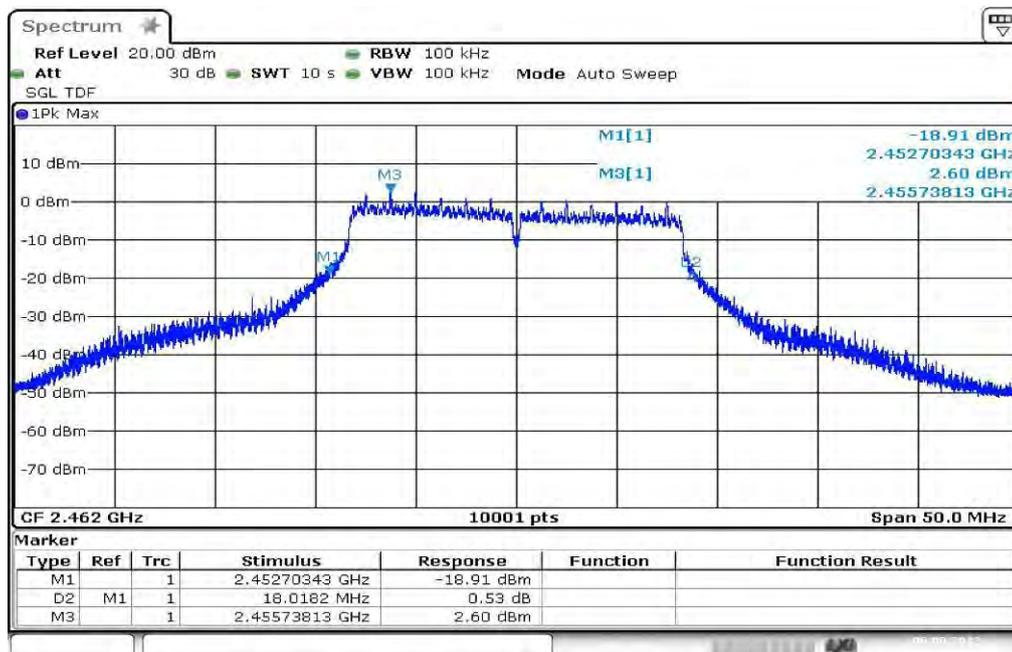
Plot 1: TX mode, lowest channel, 20 dB bandwidth



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

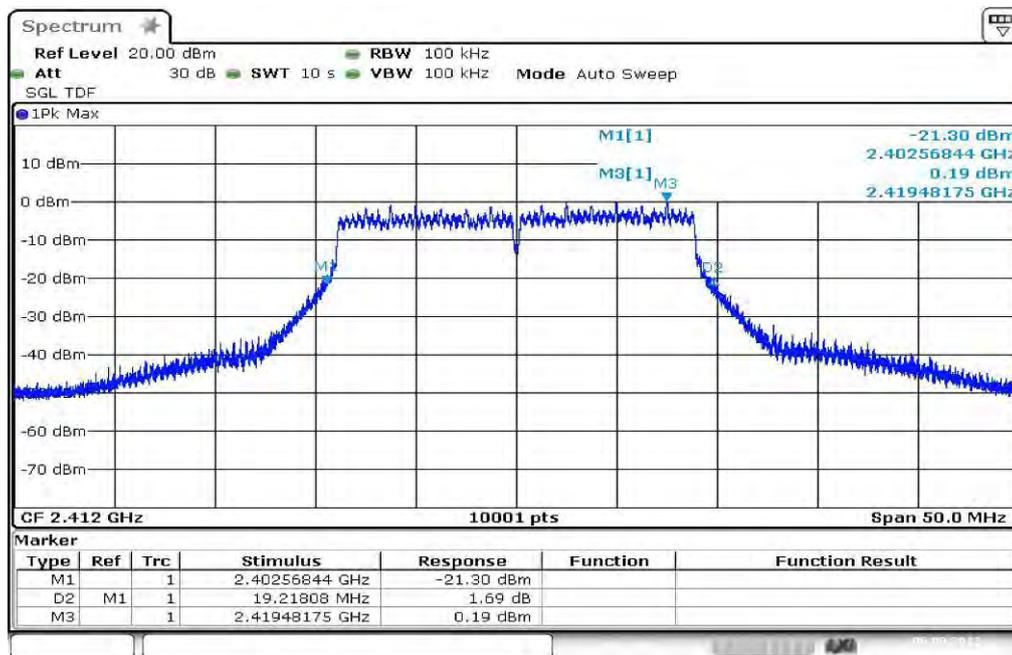


Plot 3: TX mode, highest channel, 20 dB bandwidth

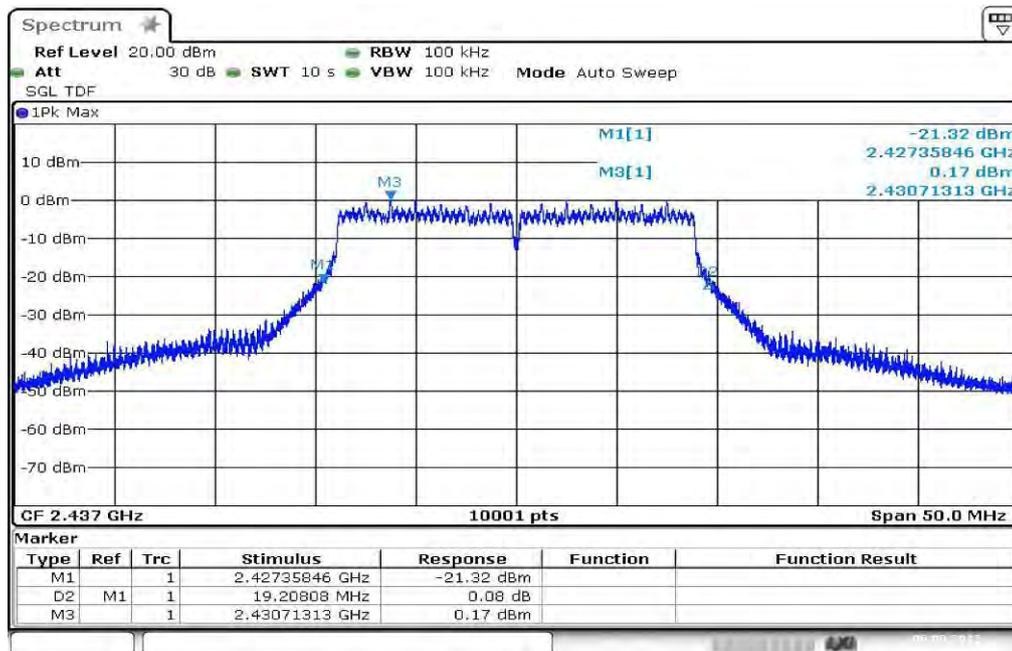


**Plots: OFDM / n – mode**

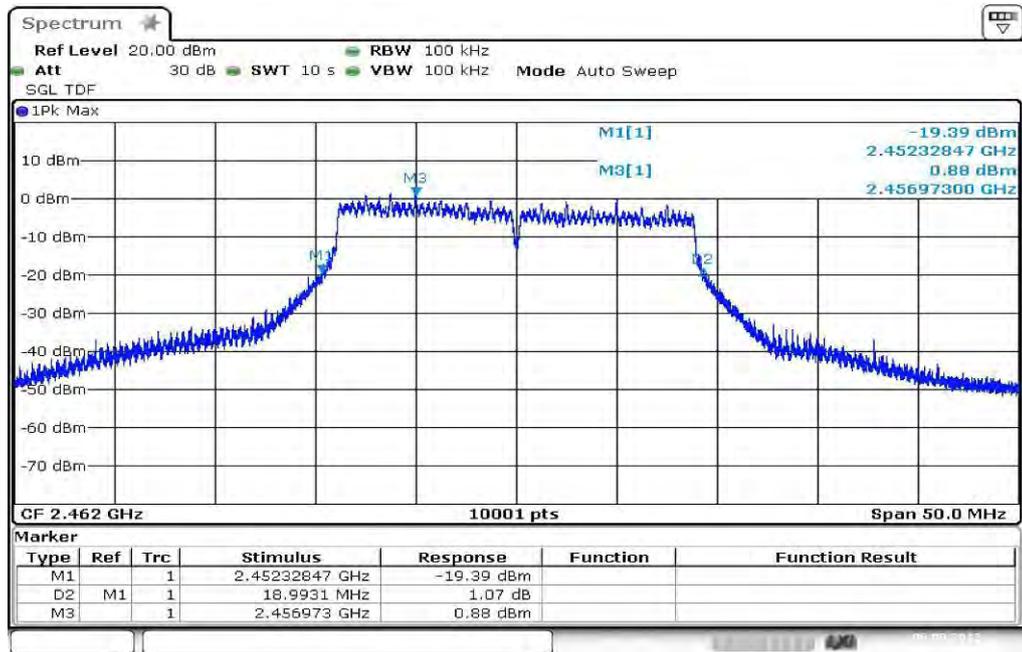
**Plot 1: TX mode, lowest channel, 20 dB bandwidth**



**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)	-/-
Band Edge Compliance Conducted	
<p>In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.</p>	

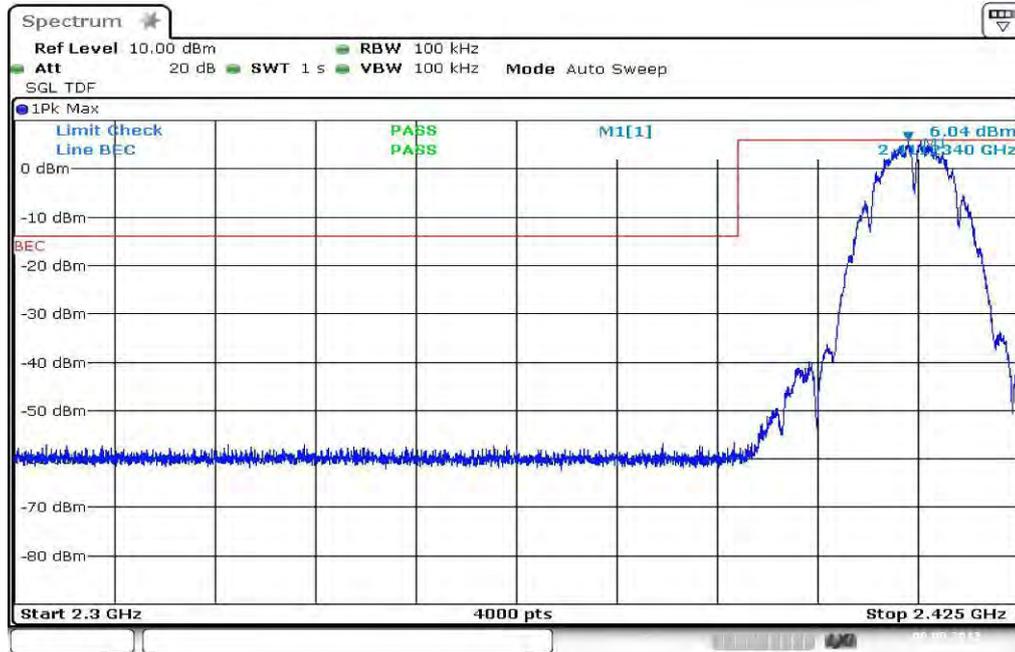
### Results:

Scenario 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: Passed**

**Plots: DSSS / b – mode**

**Plot 1: TX mode, lower band edge**

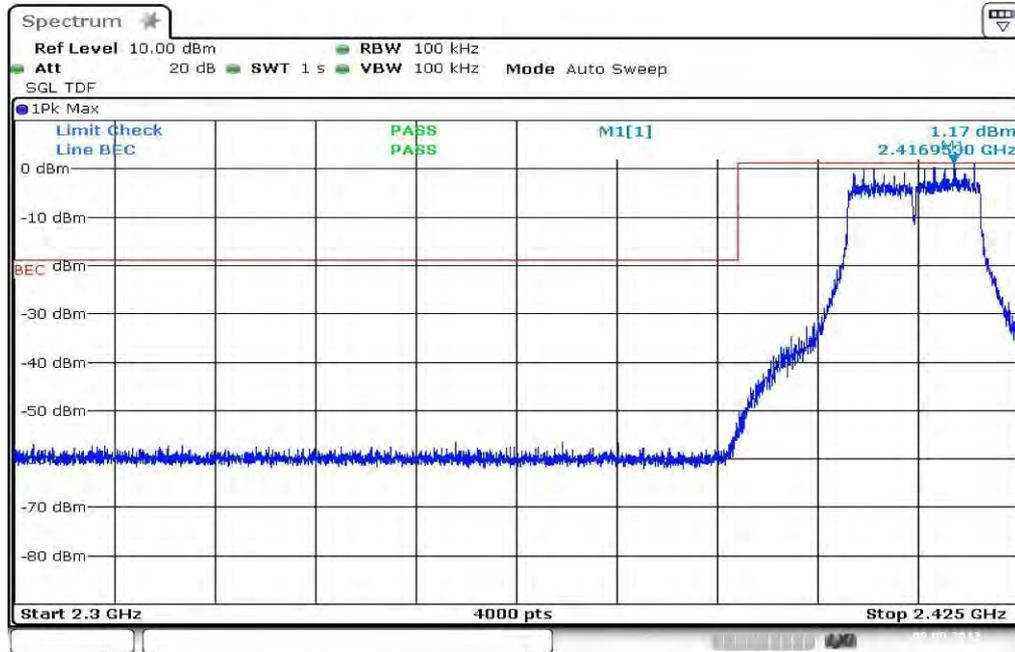


**Plot 2: TX mode, upper band edge**

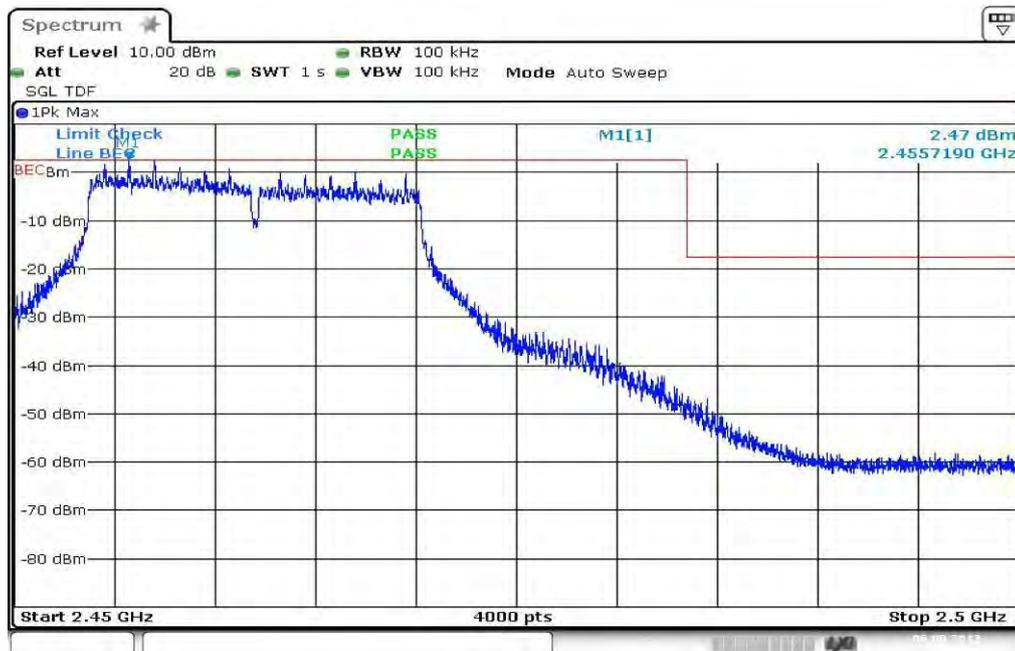


**Plots: OFDM / g – mode**

**Plot 3: TX mode, lower band edge**

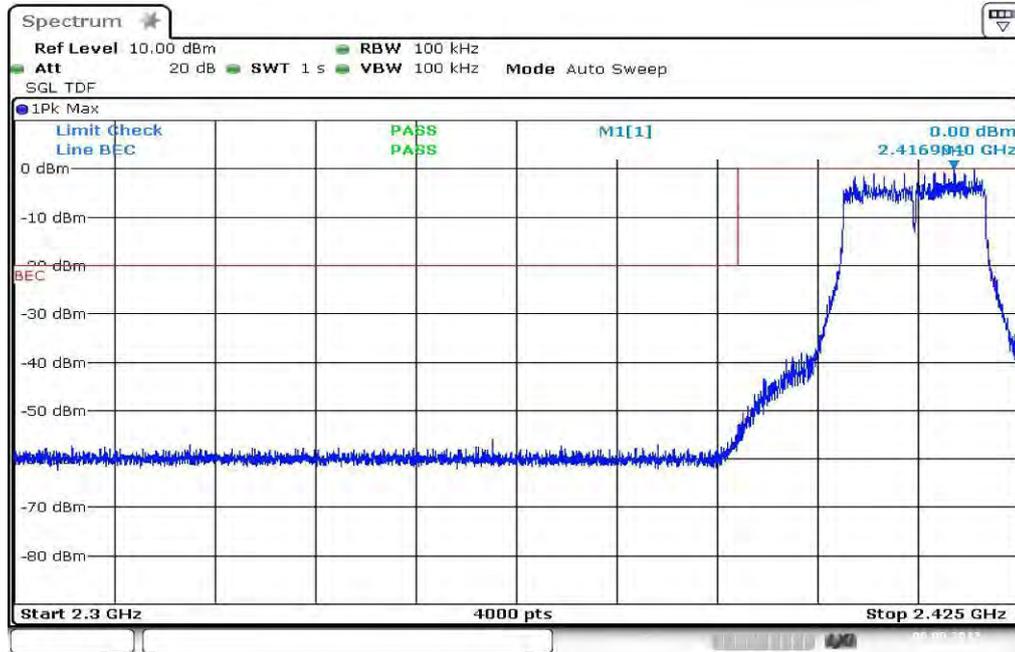


**Plot 4: TX mode, upper band edge**

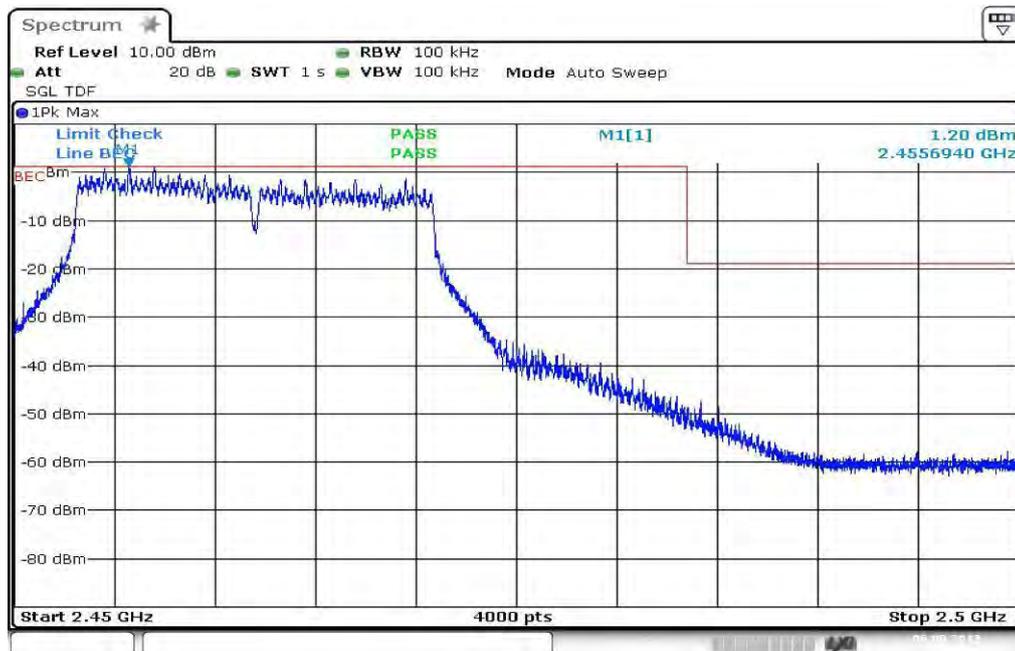


**Plots: OFDM / n – mode**

**Plot 5: TX mode, lower band edge**



**Plot 6: 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 Upper Band: 2480 – 2500 MHz
Trace-Mode:	Max Hold

### Limits:

FCC	IC
CFR Part 15.205	-/-
Band Edge Compliance Radiated	
<p>In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)).</p>	
54 dBµV/m AVG	

### Results:

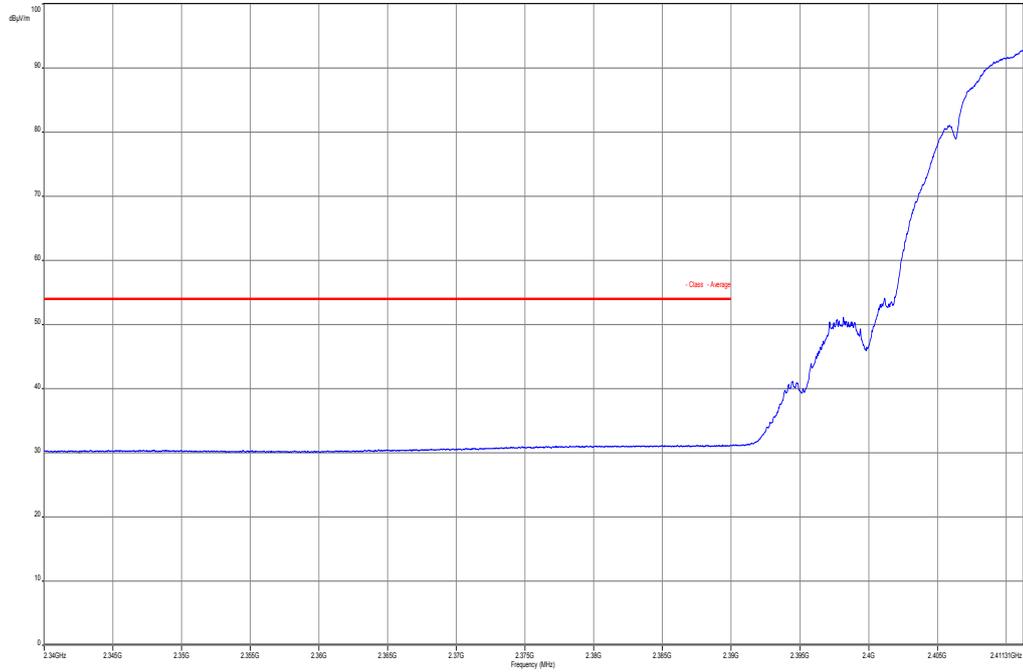
Scenario Modulation	Band Edge Compliance Conducted [dB]		
	DSSS / b – mode	OFDM / g – mode	OFDM / n – mode
Lower Band Edge – Channel 1	> 20 dB	> 20 dB	> 20 dB
Upper Band Edge – Channel 11	> 20 dB	> 20 dB	> 20 dB
Measurement uncertainty	± 3 dB		

**Result:** Passed

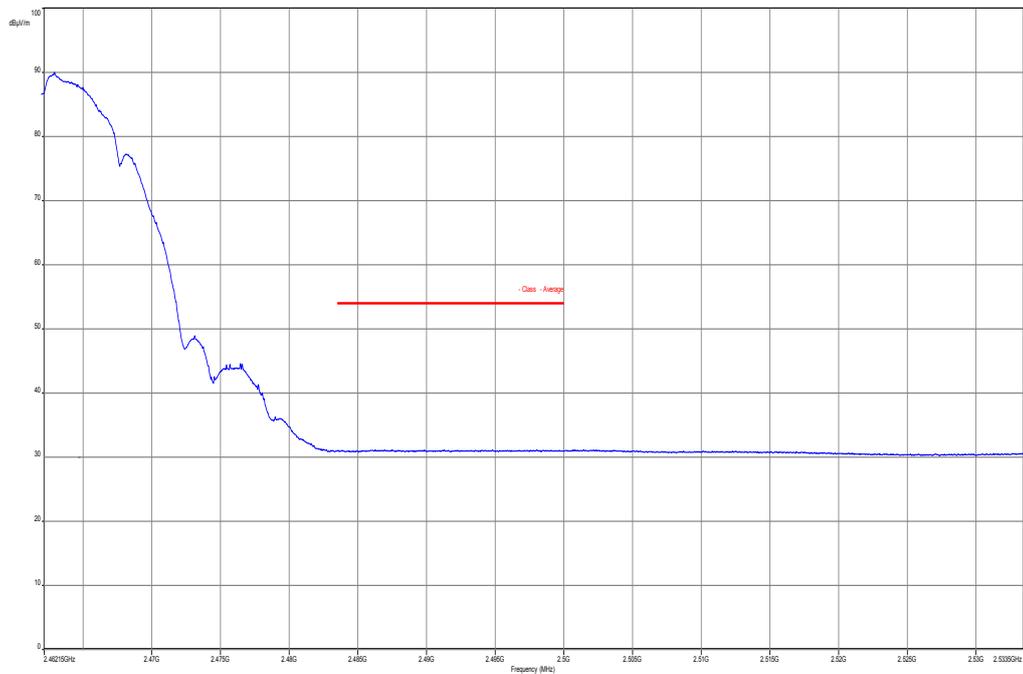
**Note:** Results of OFDM g – mode are added to show the compliance with the standard for all OFDM modes.

**Plots: DSSS / b – mode**

**Plot 1: TX mode, lower band edge, vertical & horizontal polarization**

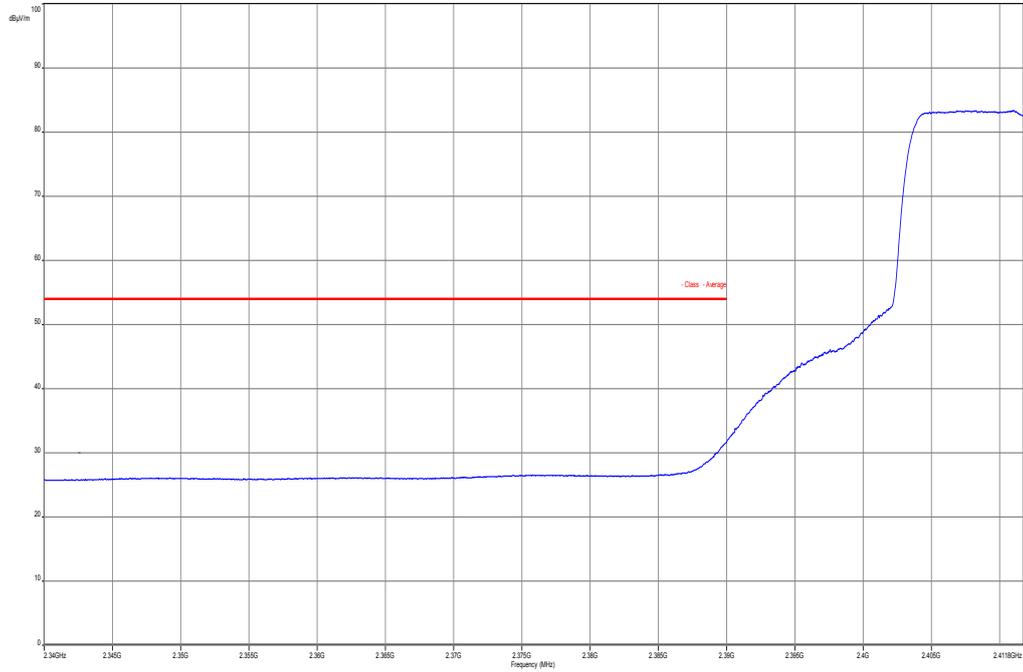


**Plot 2: TX mode, upper band edge, vertical & horizontal polarization**

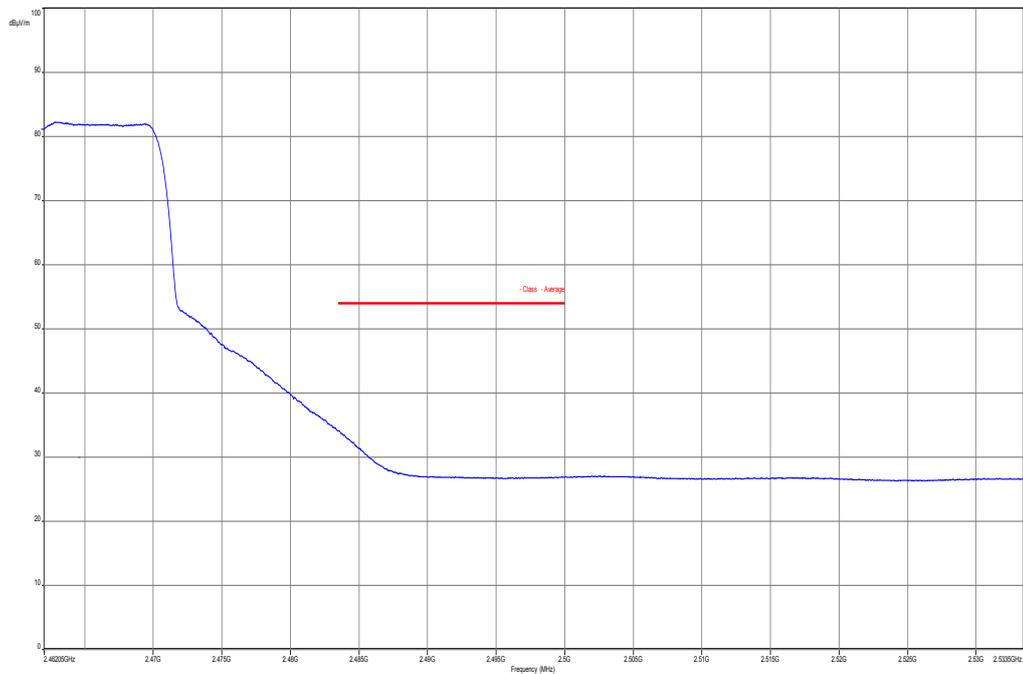


**Plots: OFDM / g – mode**

**Plot 1: TX mode, lower band edge, vertical & horizontal polarization**



**Plot 2: TX mode, upper band edge, vertical & 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)	-/-
TX Spurious Emissions Conducted	
<p>In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required</p>	

**Results: DSSS / b – mode**

TX Spurious Emissions Conducted					
DSSS - mode					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		6.21	30 dBm		Operating frequency
<i>No critical peaks detected</i>			-20 dBc		complies
2437		6.10	30 dBm		Operating frequency
<i>No critical peaks detected</i>			-20 dBc		complies
2462		5.68	30 dBm		Operating frequency
<i>No critical peaks detected</i>			-20 dBc		complies
Measurement uncertainty		± 3 dB			

**Result: 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		1.36	30 dBm		Operating frequency
<i>No critical peaks detected</i>			-20 dBc		complies
2437		0.80	30 dBm		Operating frequency
<i>No critical peaks detected</i>			-20 dBc		complies
2462		2.52	30 dBm		Operating frequency
<i>No critical peaks detected</i>			-20 dBc		complies
Measurement uncertainty		± 3 dB			

**Result: Passed**

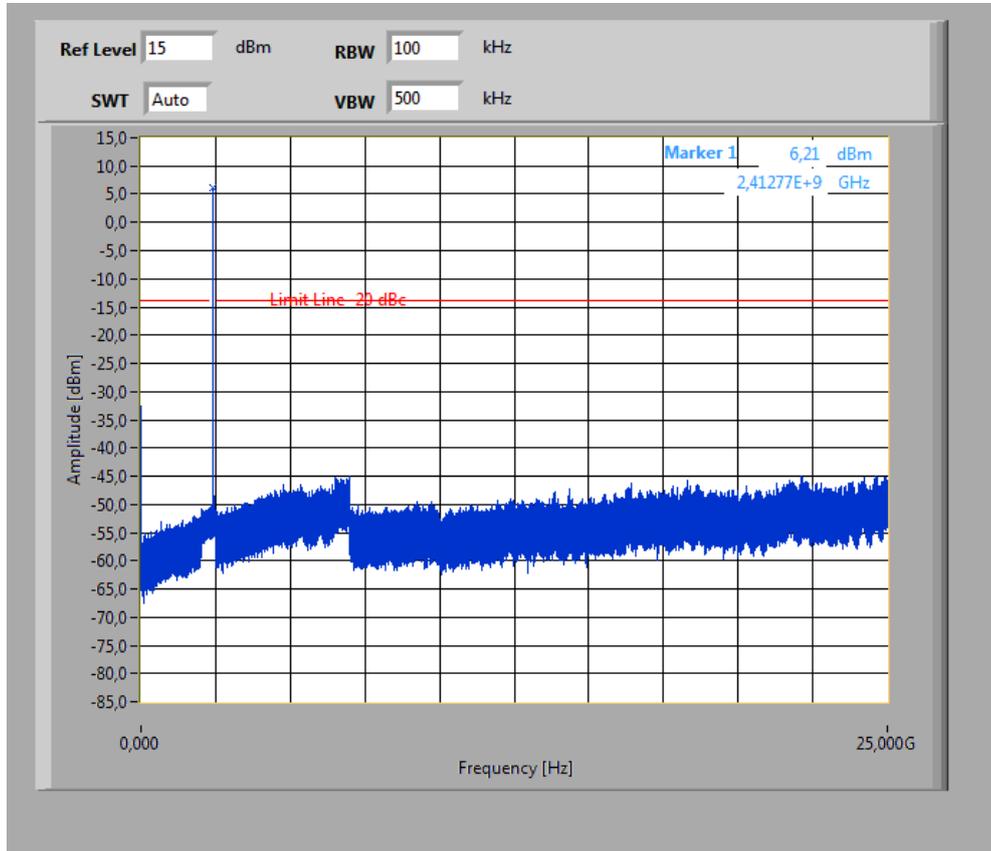
**Results: OFDM / n – mode**

TX Spurious Emissions Conducted					
OFDM - mode					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		0.27	30 dBm		Operating frequency
		<i>No critical peaks detected</i>			complies
			-20 dBc		
2437		0.57	30 dBm		Operating frequency
		<i>No critical peaks detected</i>			complies
			-20 dBc		
2462		1.65	30 dBm		Operating frequency
		<i>No critical peaks detected</i>			complies
			-20 dBc		
Measurement uncertainty			± 3 dB		

**Result: Passed**

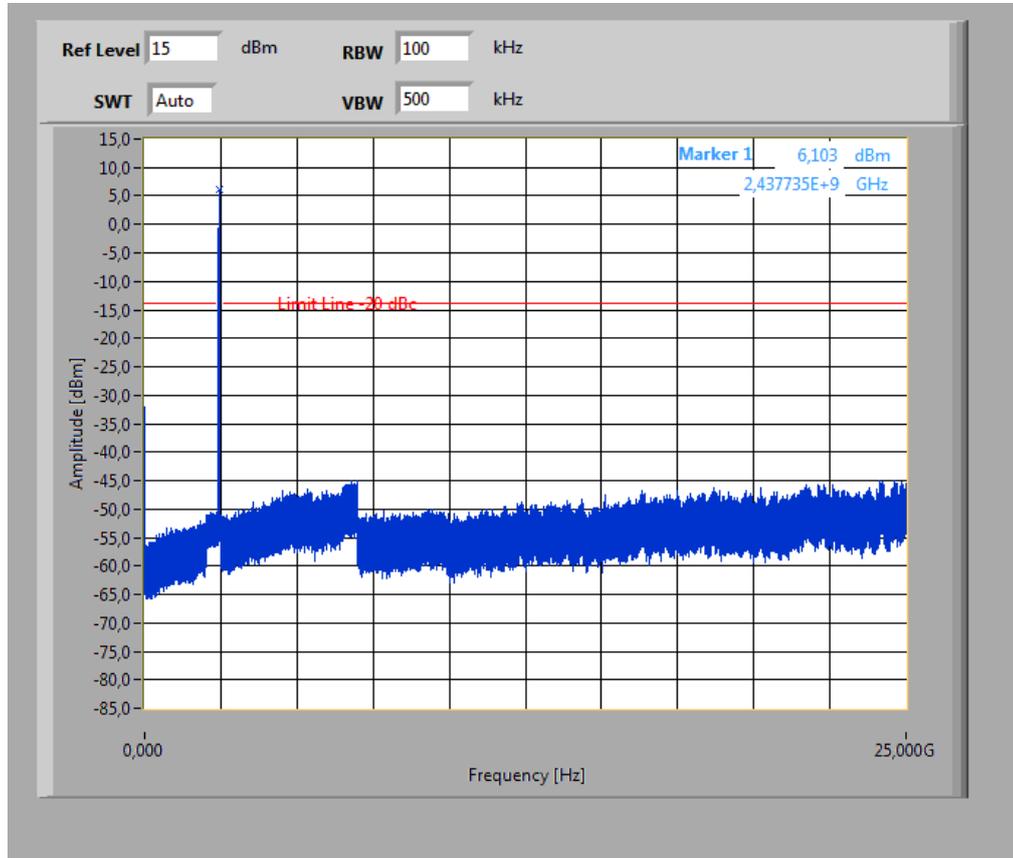
**Plots: DSSS / b – mode**

**Plot 1:** TX mode, lowest channel, up to 25 GHz



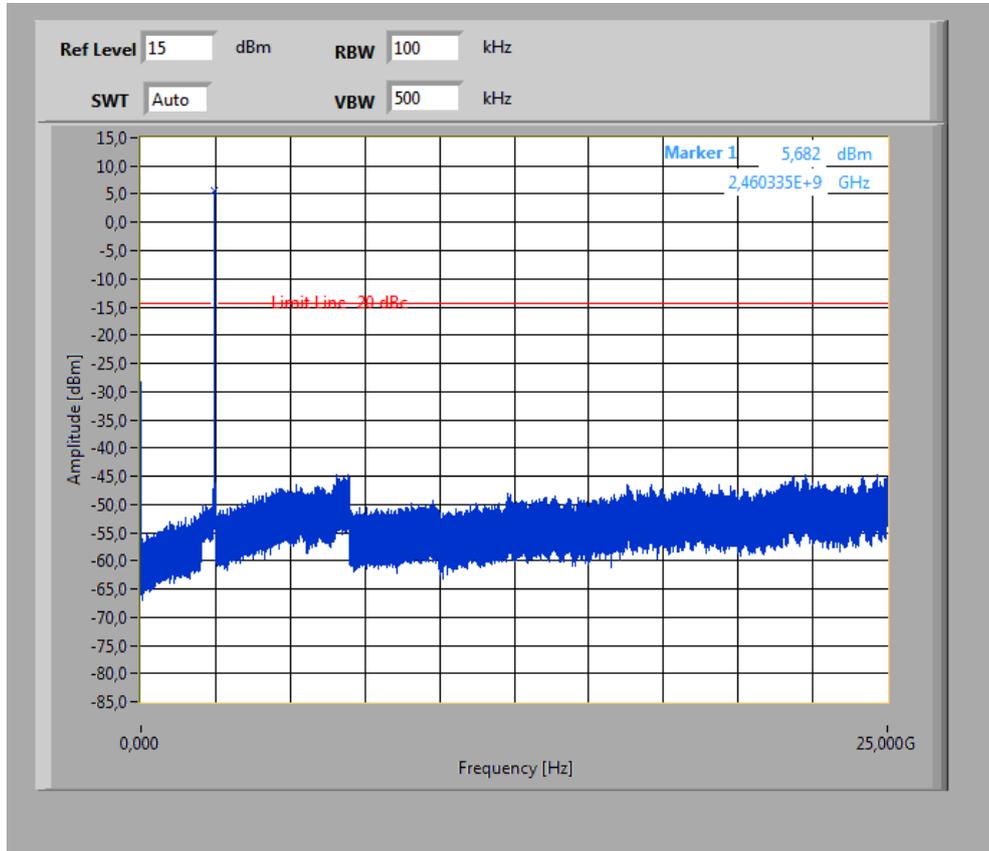
The peak at the beginning of the plot is the LO from the SA.

**Plot 2:** TX mode, middle channel, up to 25 GHz



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

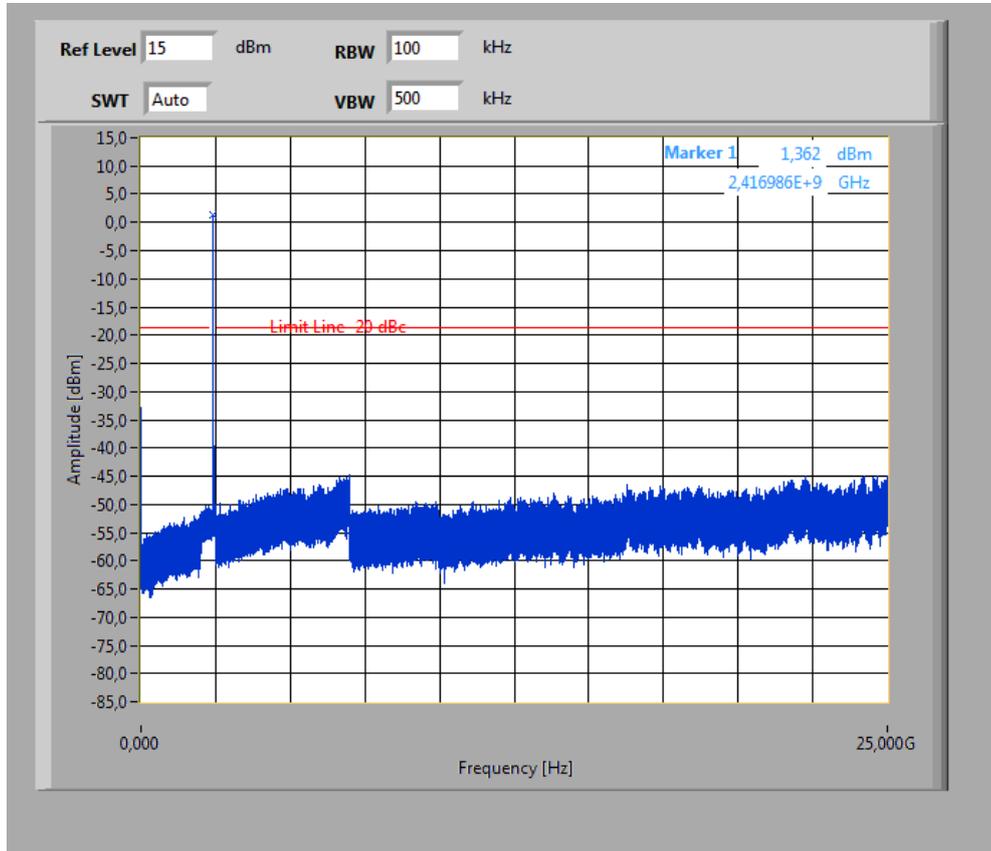
Plot 3: TX mode, highest channel, up to 25 GHz



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

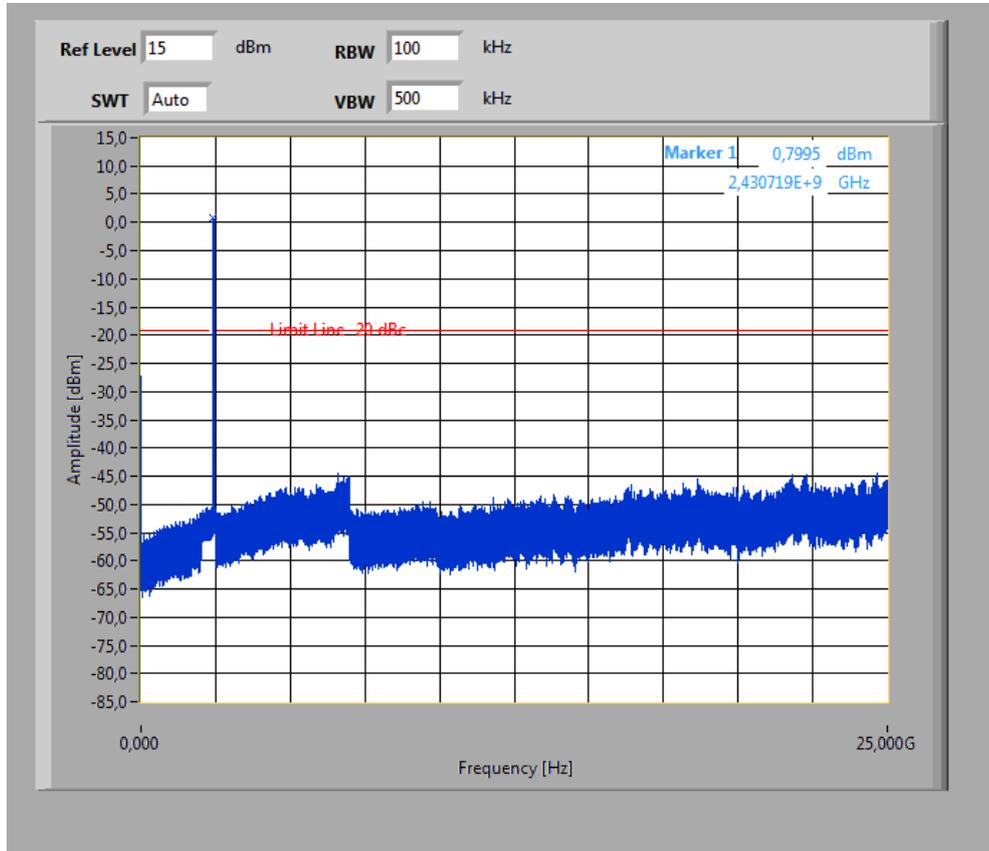
**Plots: OFDM / g – mode**

**Plot 1: TX mode, lowest channel, up to 25 GHz**



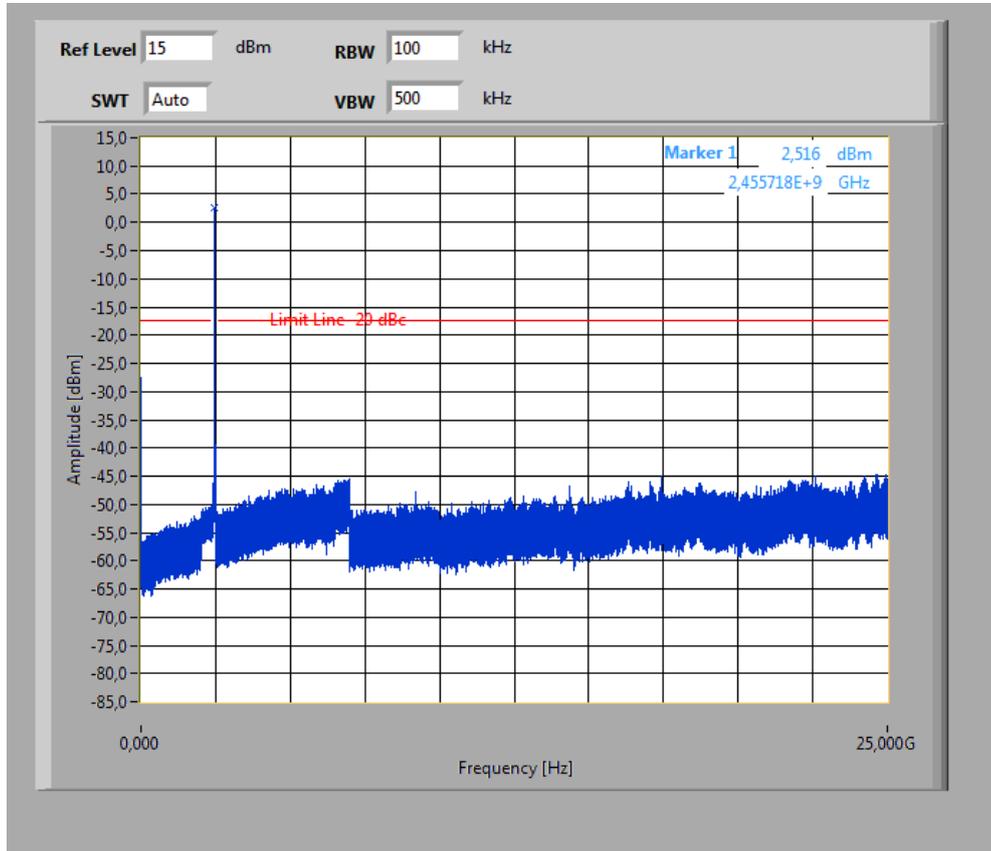
The peak at the beginning of the plot is the LO from the SA.

Plot 2: TX mode, middle channel, up to 25 GHz



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

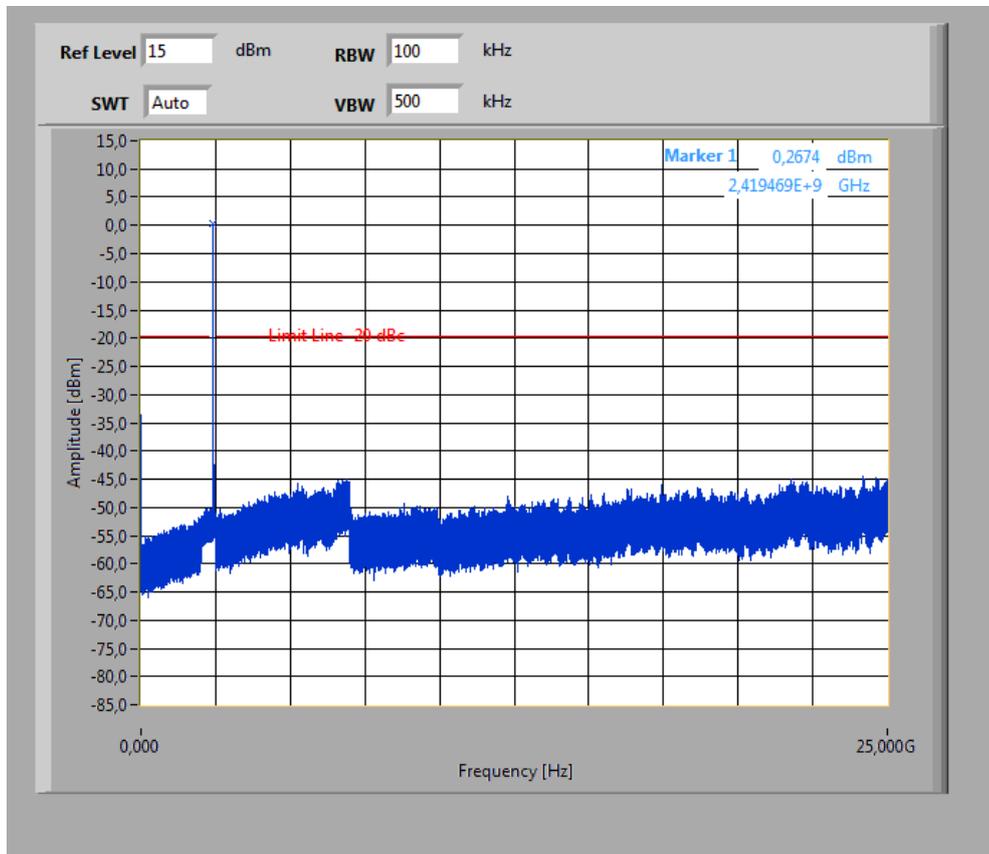
Plot 3: TX mode, highest channel, up to 25 GHz



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

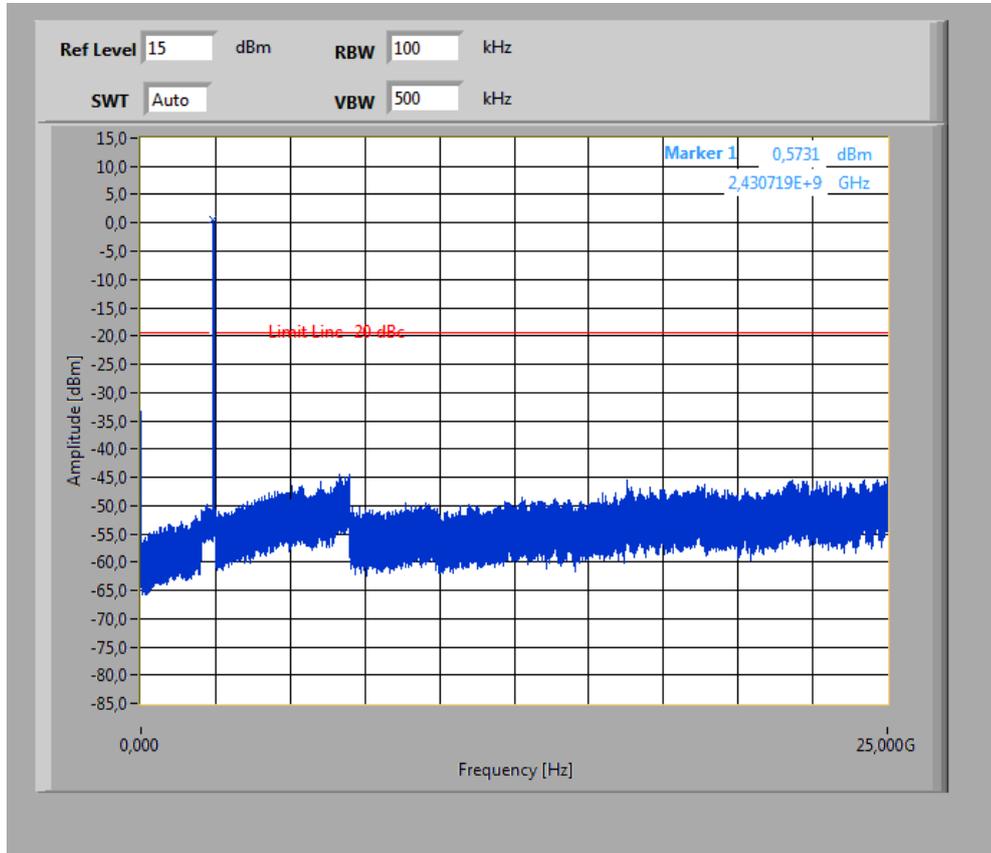
**Plots: OFDM / n – mode**

**Plot 1:** TX mode, lowest channel, up to 25 GHz



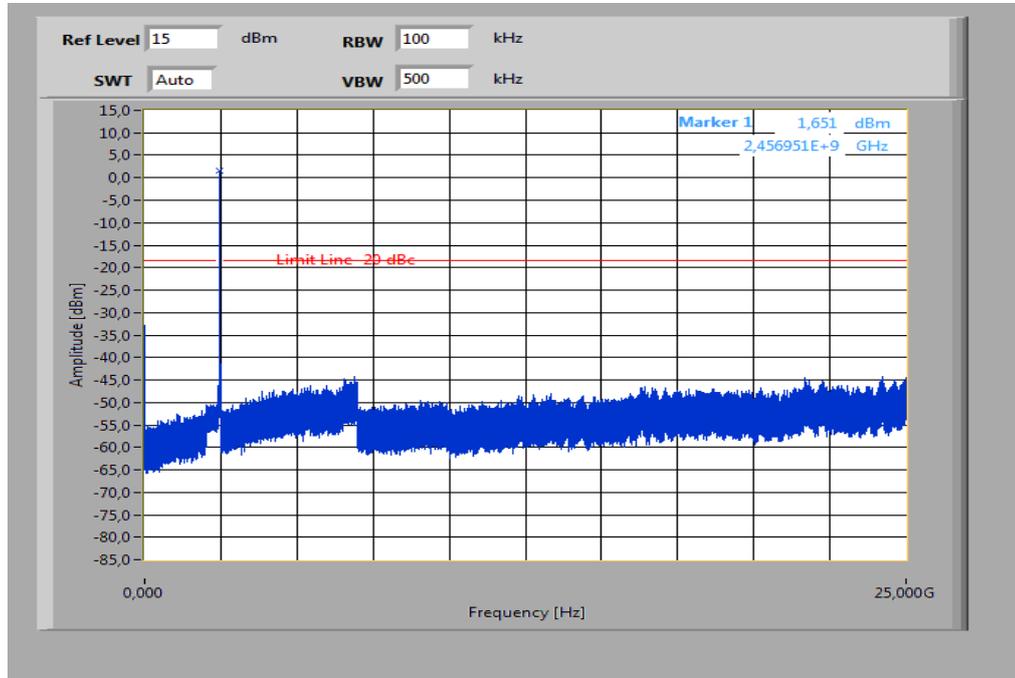
The peak at the beginning of the plot is the LO from the SA.

**Plot 2:** TX mode, middle channel, up to 25 GHz



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

Plot 3: TX mode, highest channel, up to 25 GHz



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	<input checked="" type="checkbox"/> DSSS b – mode <input type="checkbox"/> OFDM g – mode <input checked="" type="checkbox"/> OFDM n – mode

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

**Limits:**

FCC	IC	
CFR Part 15.247(d)	-/-	
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 [dBµV/m]								
DSSS / b – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
Above 1 GHz: All detected emissions are below the limit – see plots!			Above 1 GHz: All detected emissions are below the limit – see plots!			Above 1 GHz: All detected emissions are below the limit – see plots!		
Measurement uncertainty			± 3 dB					

**Result: Passed**

**Results: OFDM / g - mode and n – mode**

TX Spurious Emissions Radiated [dBµV/m]								
OFDM / n – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
Above 1 GHz: All detected emissions are below the limit – see plots!			Above 1 GHz: All detected emissions are below the limit – see plots!			Above 1 GHz: All detected emissions are below the limit – see plots!		
Measurement uncertainty			± 3 dB					

**Result: Passed**

**Note:** Results of OFDM n – mode are added to show the compliance with the standard for all OFDM modes.

**Plots: DSSS / b – mode**

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

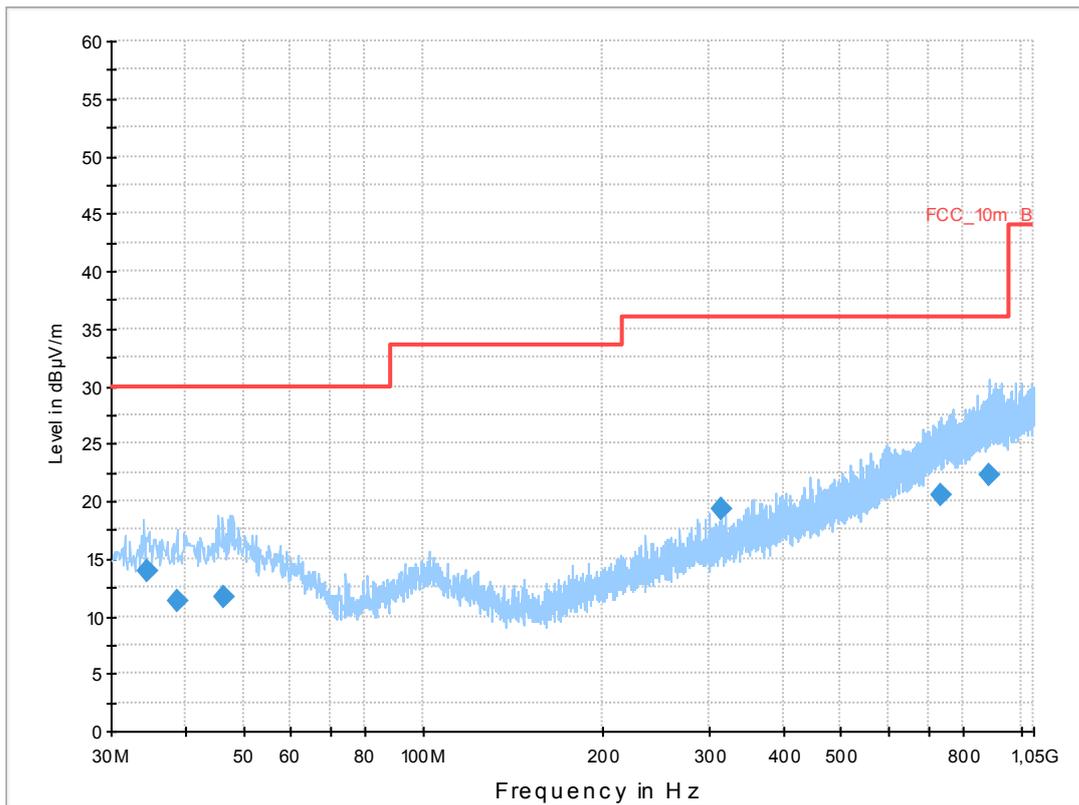
**Common Information**

EUT: PM-0060-BV  
 Serial Number: CB5A1KT6B0  
 Test Description: FCC part 15 C class B @ 10 m  
 Operating Conditions: W-LAN b-mode ch 1 + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
34.400550	13.8	1000.0	120.000	162.0	V	171.0	13.0	16.2	30.0	
38.736150	11.4	1000.0	120.000	152.0	V	10.0	13.3	18.6	30.0	
46.289550	11.7	1000.0	120.000	98.0	V	10.0	13.3	18.3	30.0	
315.006750	19.3	1000.0	120.000	120.0	V	93.0	15.0	16.7	36.0	
732.345600	20.5	1000.0	120.000	112.0	H	100.0	23.3	15.5	36.0	
888.222150	22.3	1000.0	120.000	161.0	V	10.0	25.1	13.7	36.0	

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

Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.42

Signal Path: without Notch  
FW 1.0

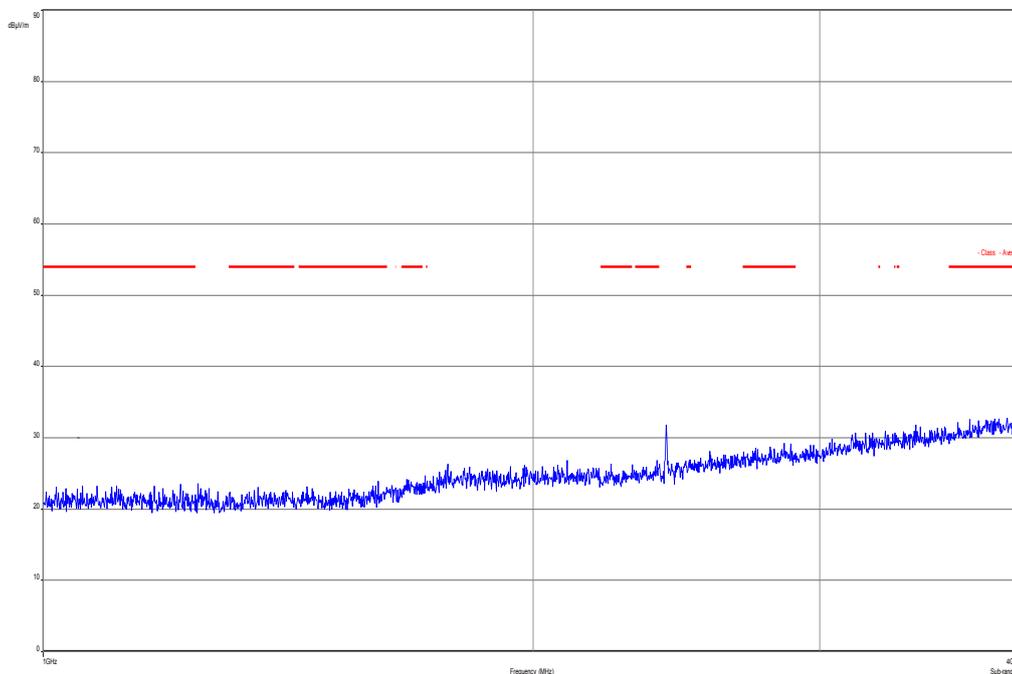
Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table (vertical): Cable\_EN\_1GHz (1005)  
Correction Table (horizontal): Cable\_EN\_1GHz (1005)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12

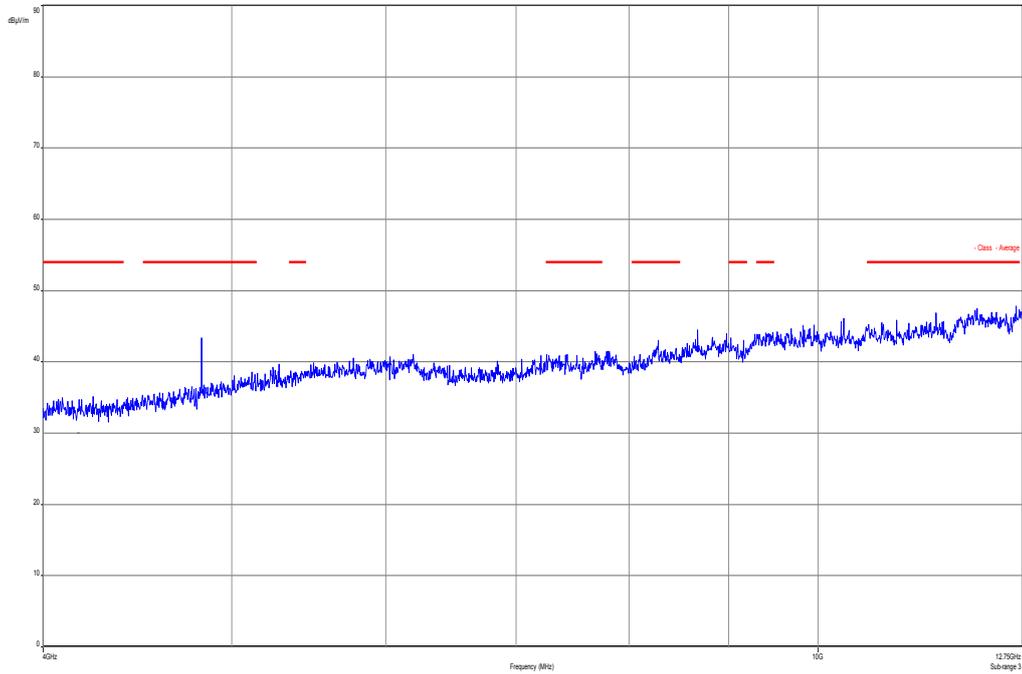
EMC 32 Version 8.52

Plot 2: Lowest channel, 1 GHz to 4 GHz, vertical & horizontal polarization

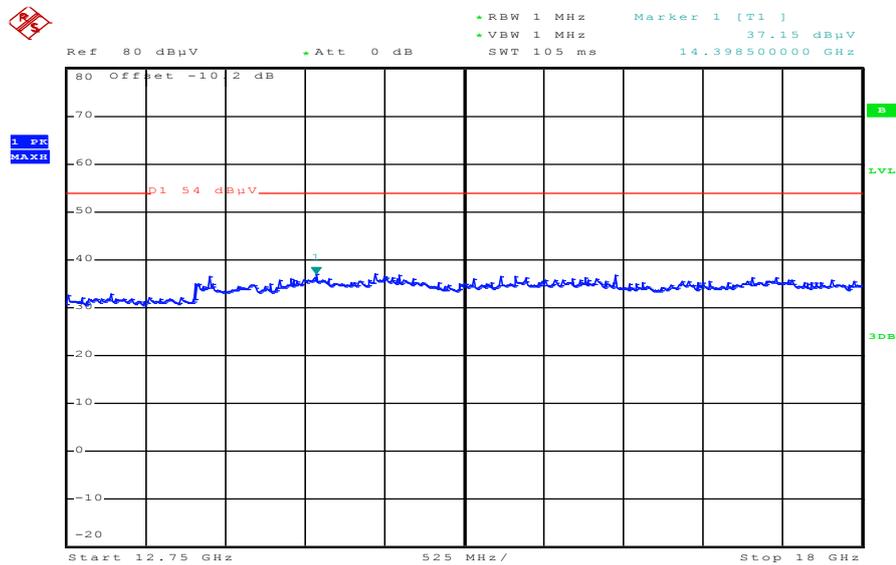


The carrier signal is notched with a 2.4 GHz band rejection filter.

**Plot 3:** Lowest channel, 4 GHz to 12.75 GHz, vertical & horizontal polarization

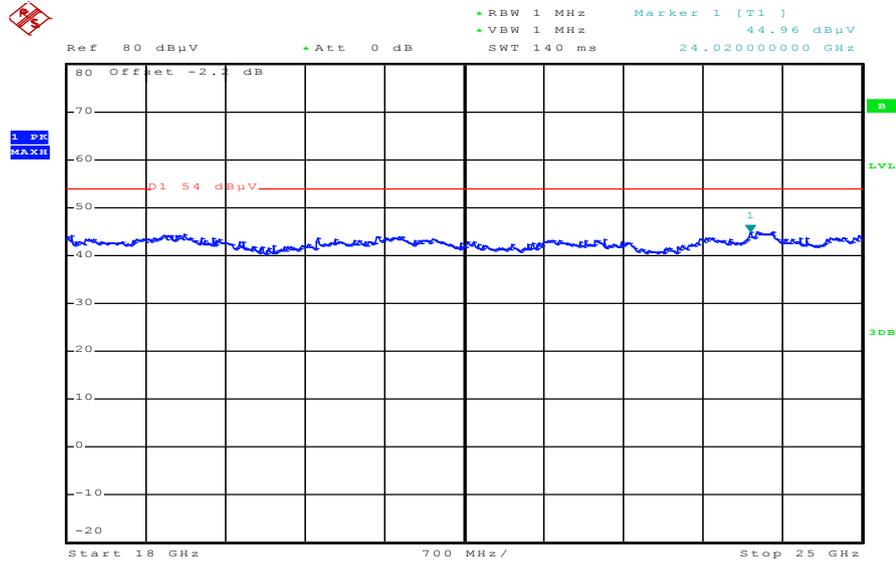


**Plot 4:** Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 25.SEP.2012 10:00:51

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



Date: 25.SEP.2012 09:40:30

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

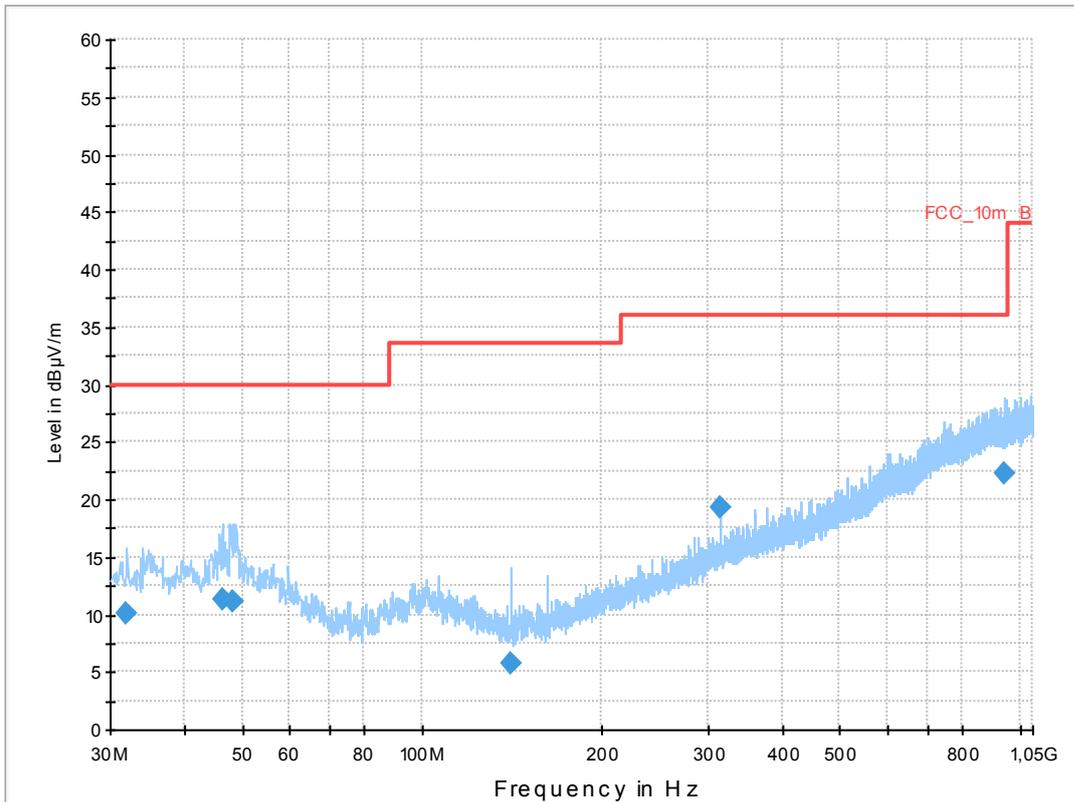
### Common Information

EUT: PM-0060-BV  
 Serial Number: CB5A1KT6B0  
 Test Description: FCC part 15 C class B @ 10 m  
 Operating Conditions: W-LAN b-mode ch 6 + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
32.040000	10.1	1000.0	120.000	158.0	V	167.0	12.7	19.9	30.0	
46.200000	11.2	1000.0	120.000	215.0	V	134.0	13.3	18.8	30.0	
48.240000	11.2	1000.0	120.000	215.0	V	214.0	13.3	18.8	30.0	
140.400000	5.7	1000.0	120.000	270.0	V	250.0	8.7	27.8	33.5	
315.000000	19.3	1000.0	120.000	98.0	V	312.0	15.0	16.7	36.0	
942.480000	22.3	1000.0	120.000	120.0	V	68.0	25.3	13.7	36.0	

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

Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.42

Signal Path: without Notch  
FW 1.0

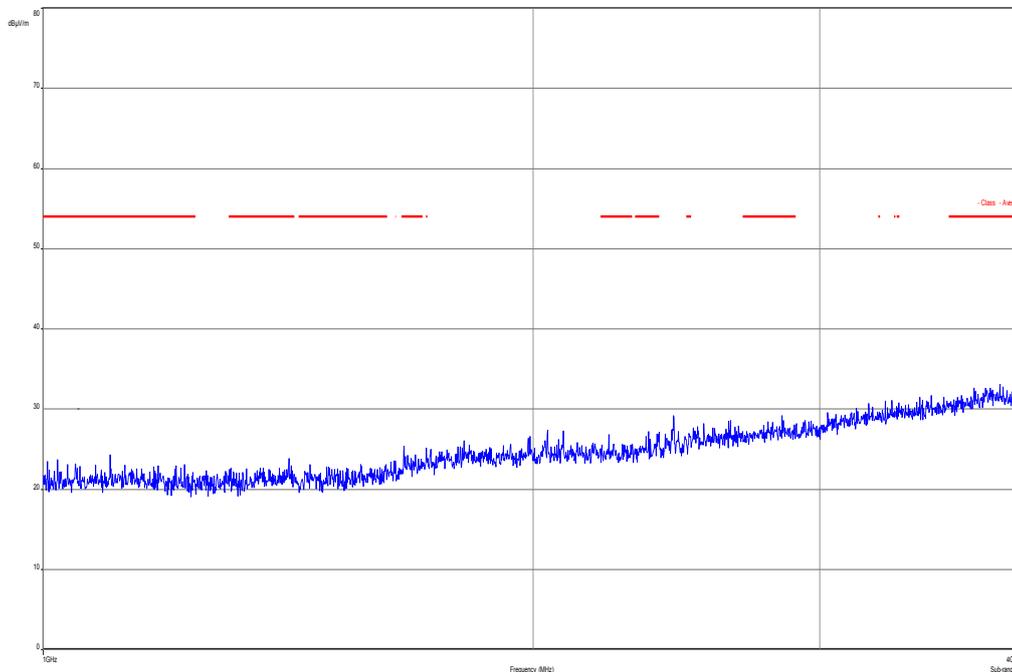
Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table (vertical): Cable\_EN\_1GHz (1005)  
Correction Table (horizontal): Cable\_EN\_1GHz (1005)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12

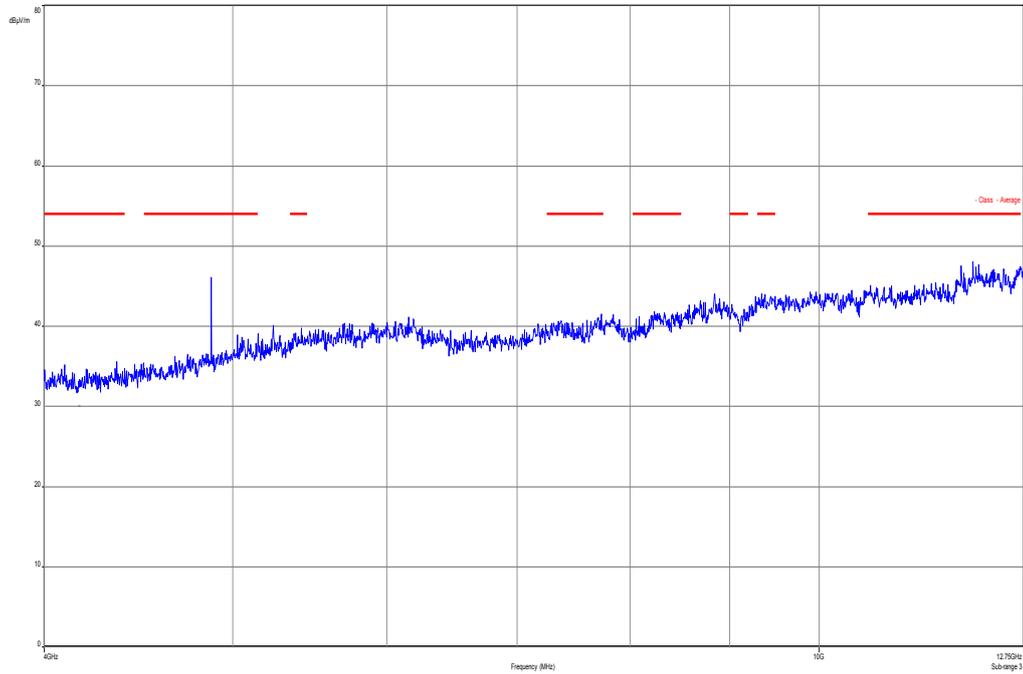
EMC 32 Version 8.52

**Plot 7:** Middle channel, 1 GHz to 4 GHz, vertical & horizontal polarization

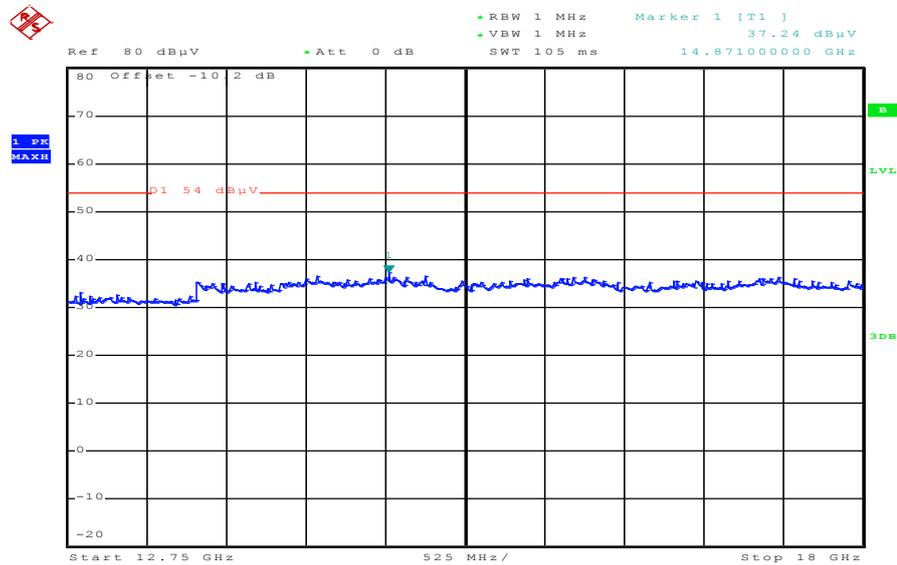


The carrier signal is notched with a 2.4 GHz band rejection filter.

**Plot 8:** Middle channel, 4 GHz to 12.75 GHz, vertical & horizontal polarization

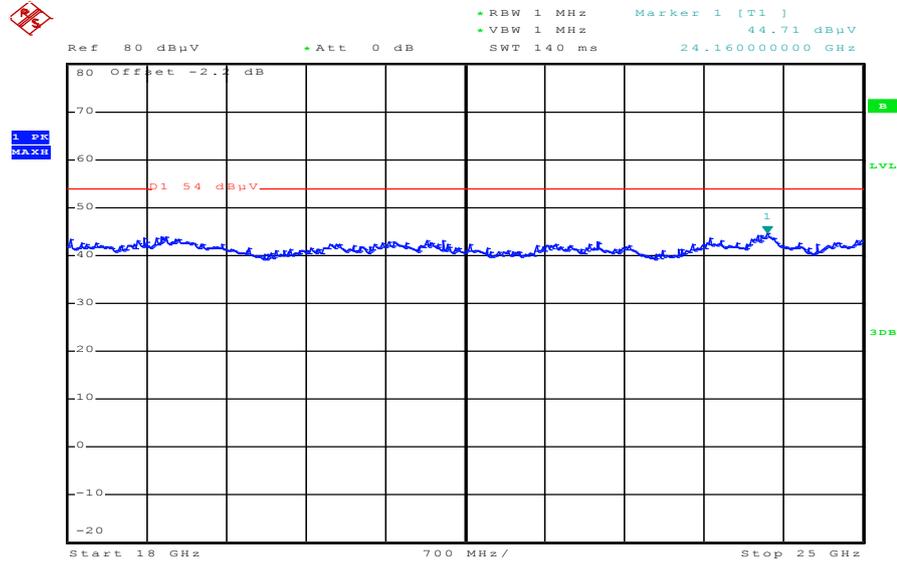


**Plot 9:** Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 25.SEP.2012 10:01:43

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



Date: 25.SEP.2012 09:41:29

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

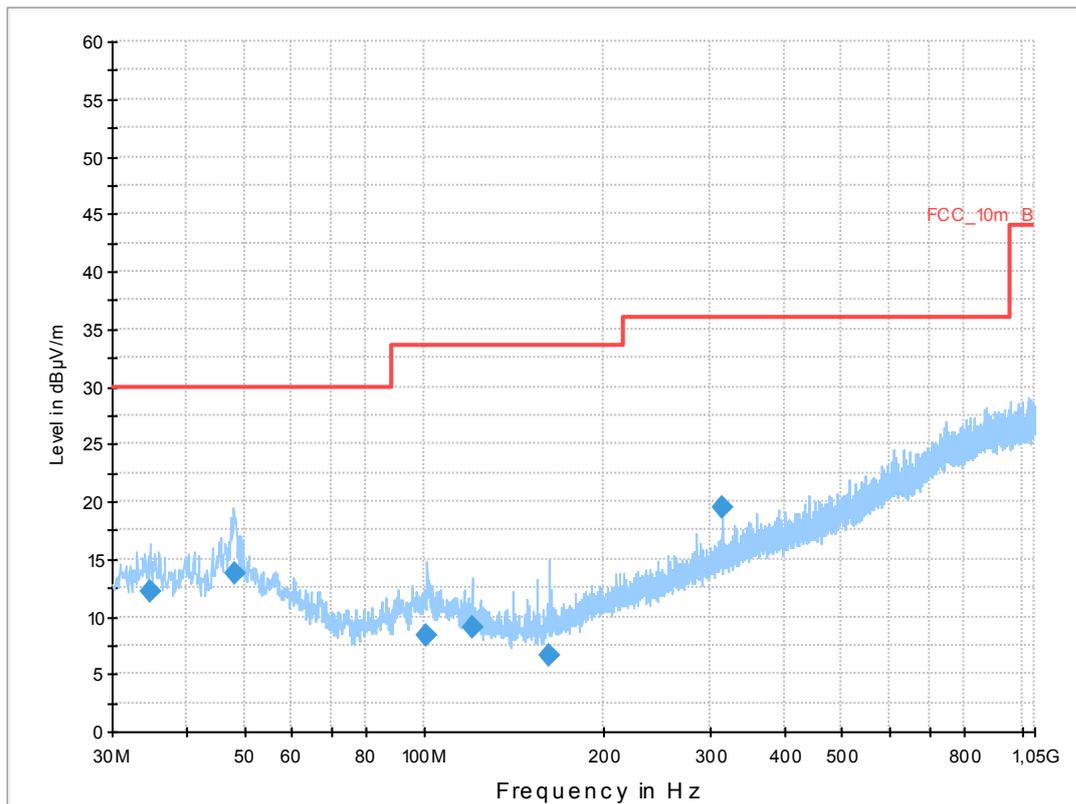
### Common Information

EUT: PM-0060-BV  
 Serial Number: CB5A1KT6B0  
 Test Description: FCC part 15 C class B @ 10 m  
 Operating Conditions: W-LAN b-mode ch 11 + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
34.680000	12.2	1000.0	120.000	144.0	V	25.0	13.0	17.8	30.0	
48.240000	13.7	1000.0	120.000	207.0	V	352.0	13.3	16.3	30.0	
101.040000	8.3	1000.0	120.000	98.0	V	207.0	11.8	25.2	33.5	
120.000000	9.1	1000.0	120.000	202.0	V	0.0	10.2	24.4	33.5	
162.000000	6.7	1000.0	120.000	208.0	V	207.0	9.3	26.8	33.5	
315.000000	19.4	1000.0	120.000	98.0	V	142.0	15.0	16.6	36.0	

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

Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.42

Signal Path: without Notch  
FW 1.0

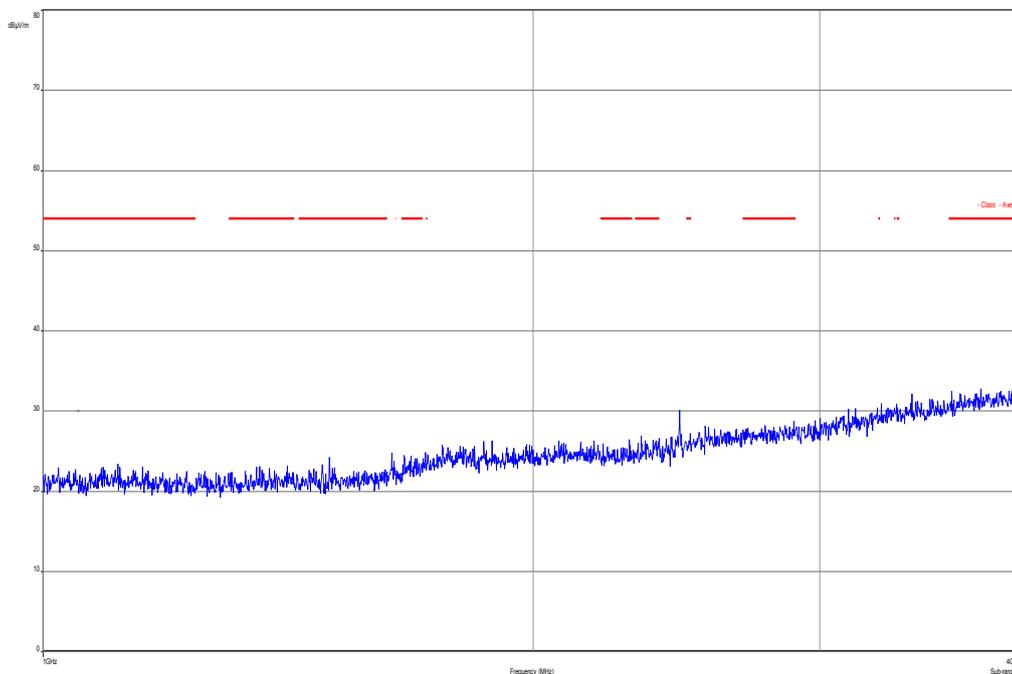
Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table (vertical): Cable\_EN\_1GHz (1005)  
Correction Table (horizontal): Cable\_EN\_1GHz (1005)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12

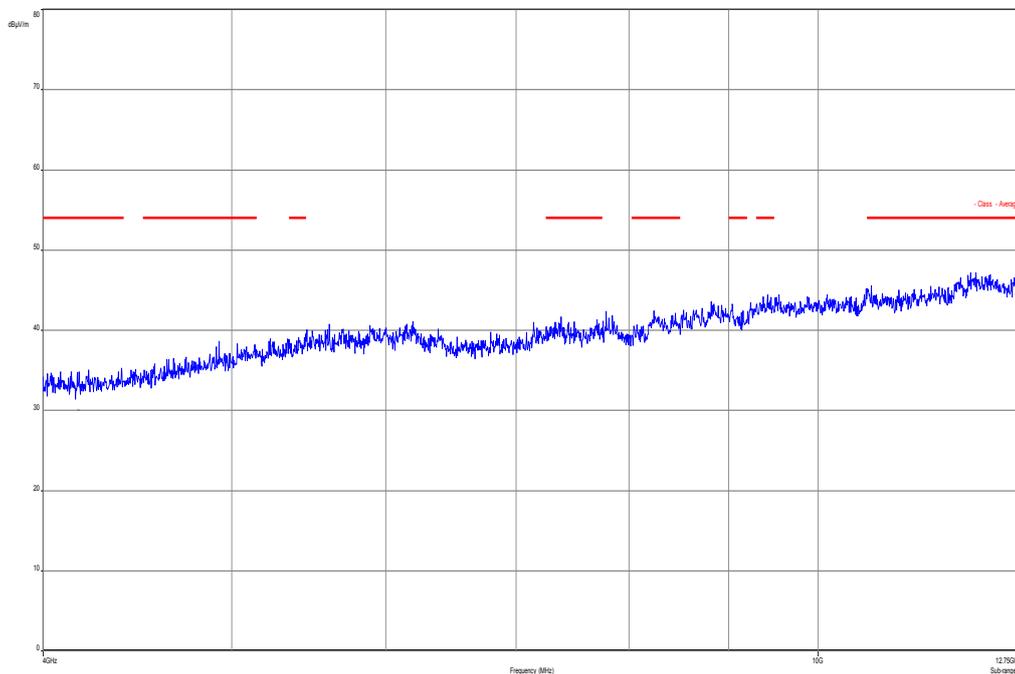
EMC 32 Version 8.52

**Plot 12:** Highest channel, 1 GHz to 4 GHz, vertical & horizontal polarization

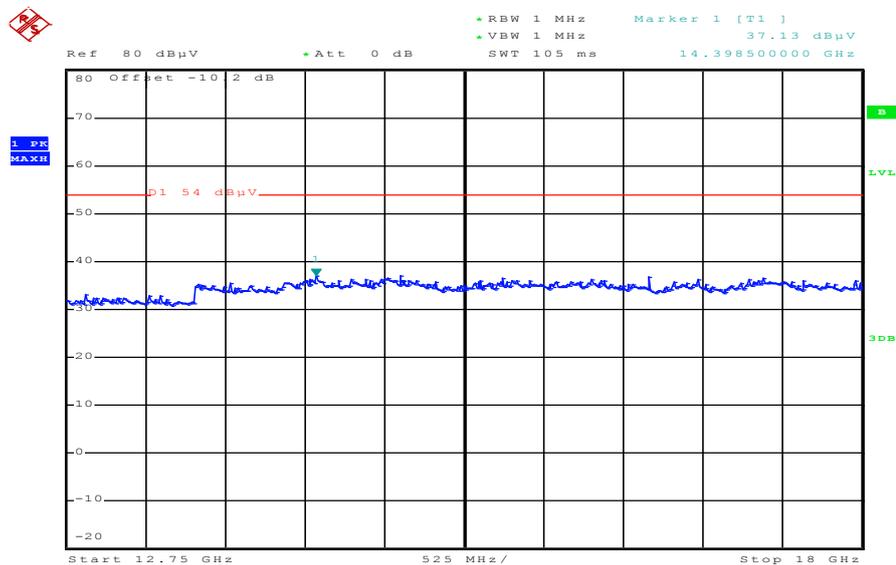


The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 13: Highest channel, 4 GHz to 12.75 GHz, vertical & horizontal polarization

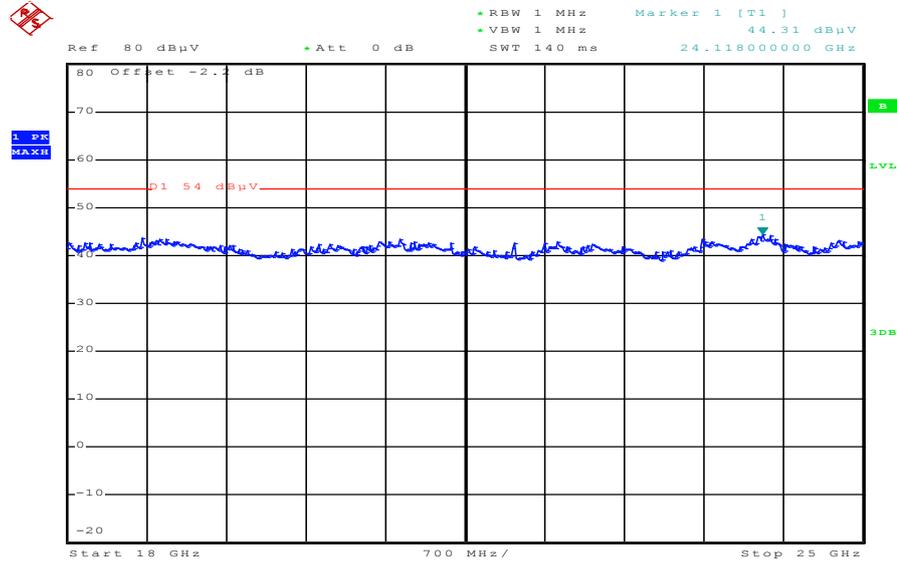


Plot 14: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 25.SEP.2012 10:03:04

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



Date: 25.SEP.2012 09:51:49

**Plots: OFDM / n – mode**

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

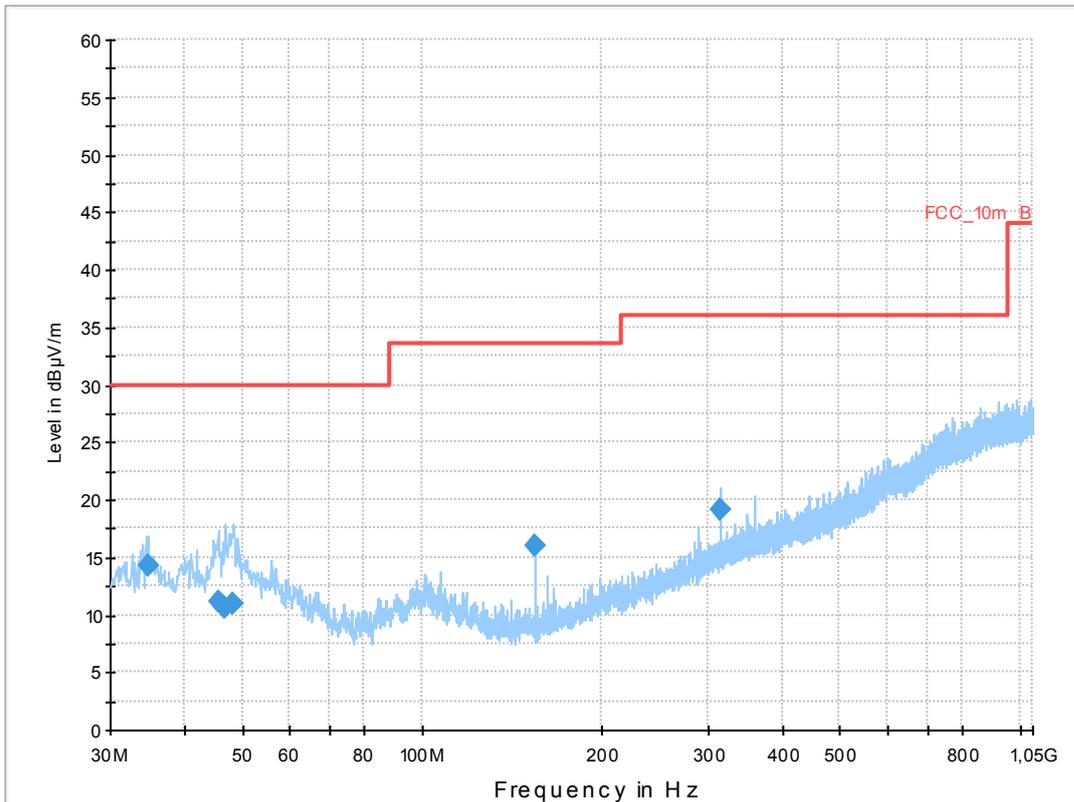
**Common Information**

EUT: PM-0060-BV  
 Serial Number: CB5A1KT6B0  
 Test Description: FCC part 15 C class B @ 10 m  
 Operating Conditions: W-LAN n-mode ch 1 + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
34.680000	14.3	1000.0	120.000	227.0	V	18.0	13.0	15.7	30.0	
45.480000	11.1	1000.0	120.000	200.0	V	79.0	13.3	18.9	30.0	
46.800000	10.6	1000.0	120.000	210.0	V	298.0	13.3	19.4	30.0	
48.240000	11.0	1000.0	120.000	211.0	V	86.0	13.3	19.0	30.0	
154.080000	16.1	1000.0	120.000	105.0	V	94.0	9.0	17.4	33.5	
315.000000	19.2	1000.0	120.000	122.0	V	39.0	15.0	16.8	36.0	

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

Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.42

Signal Path: without Notch  
FW 1.0

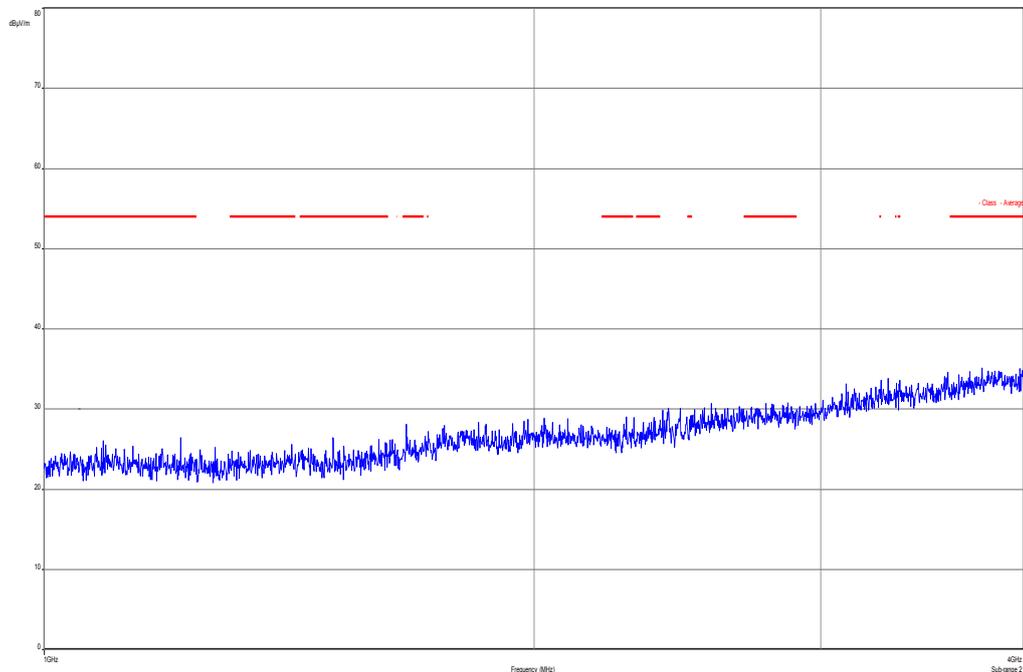
Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table (vertical): Cable\_EN\_1GHz (1005)  
Correction Table (horizontal): Cable\_EN\_1GHz (1005)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12

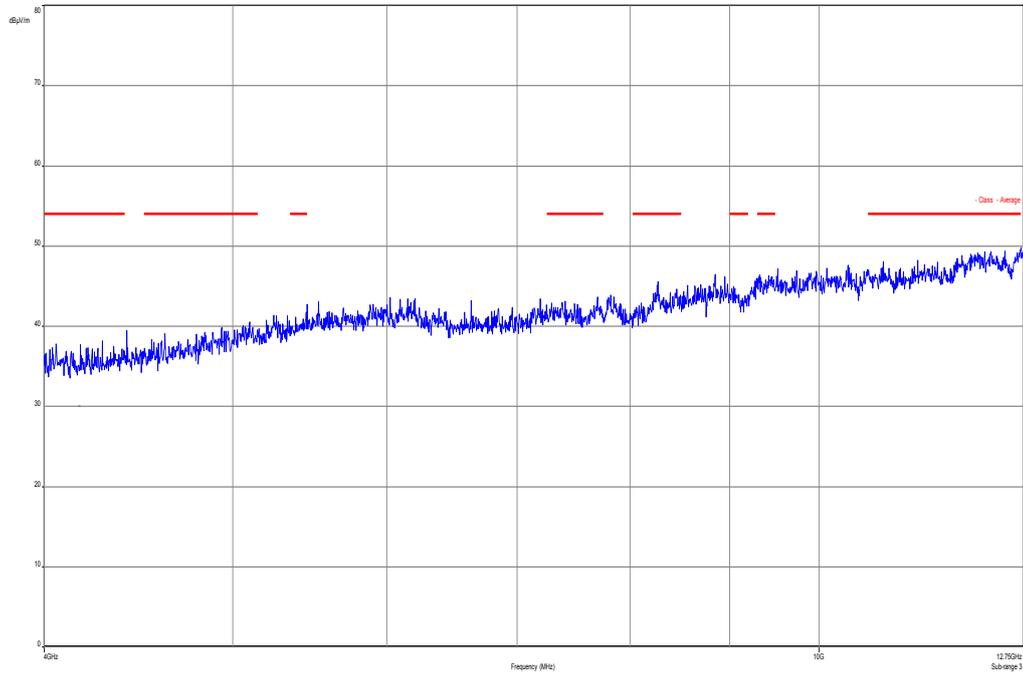
EMC 32 Version 8.52

**Plot 2:** Lowest channel, 1 GHz to 4 GHz, vertical & horizontal polarization

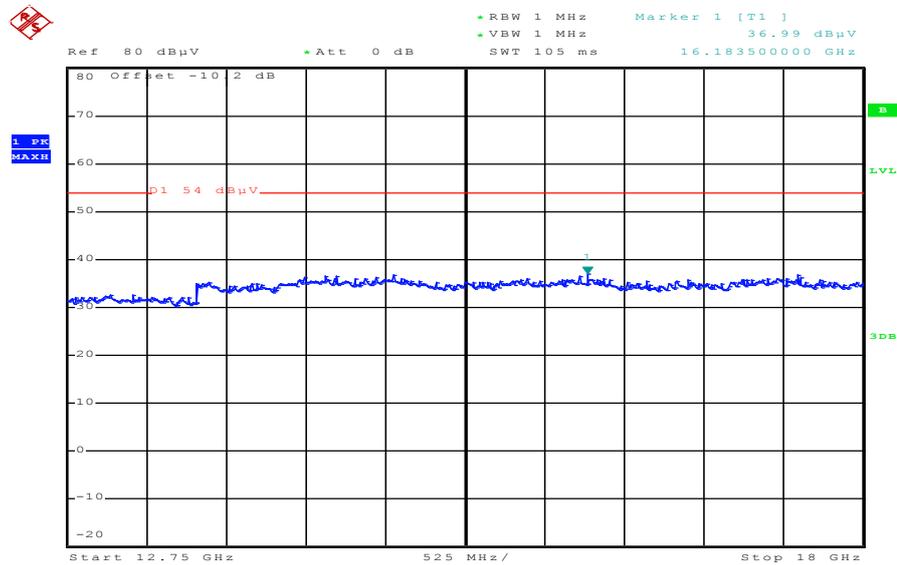


The carrier signal is notched with a 2.4 GHz band rejection filter.

**Plot 3:** Lowest channel, 4 GHz to 12.75 GHz, vertical & horizontal polarization

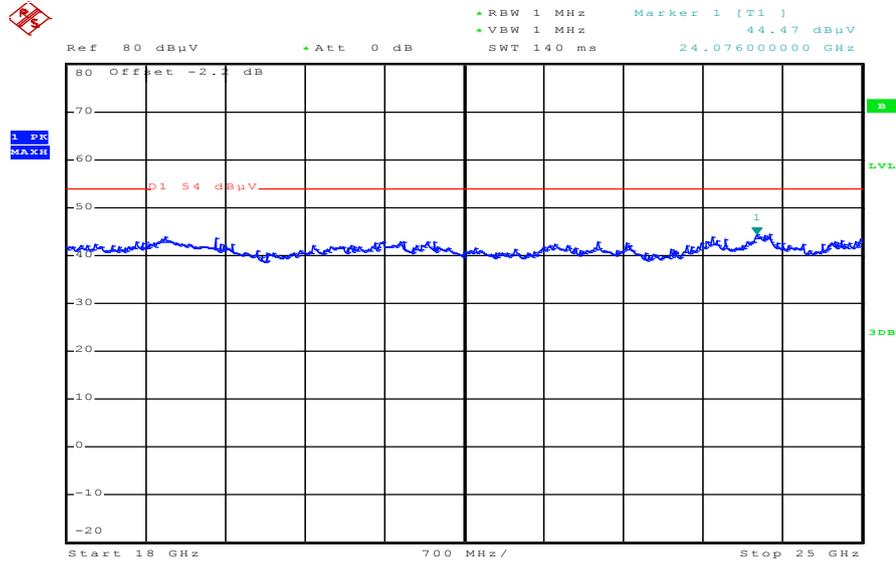


**Plot 4:** Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 25.SEP.2012 10:06:05

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



Date: 25.SEP.2012 09:54:31

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

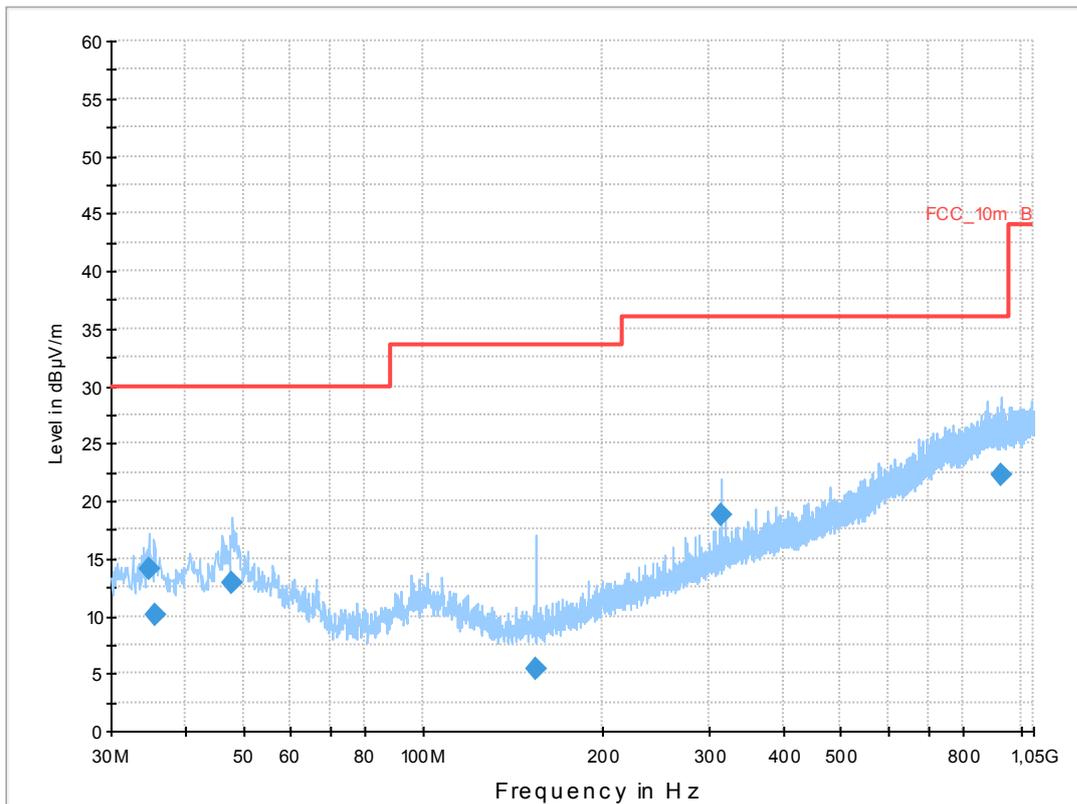
### Common Information

EUT: PM-0060-BV  
 Serial Number: CB5A1KT6B0  
 Test Description: FCC part 15 C class B @ 10 m  
 Operating Conditions: W-LAN n-mode ch 6 + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dB $\mu$ V/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



### Final Result 1

Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)	Comment
34.680000	14.2	1000.0	120.000	132.0	V	15.0	13.0	15.8	30.0	
35.520000	10.2	1000.0	120.000	270.0	H	15.0	13.1	19.8	30.0	
47.880000	12.8	1000.0	120.000	107.0	V	222.0	13.3	17.2	30.0	
154.080000	5.3	1000.0	120.000	120.0	V	112.0	9.0	28.2	33.5	
315.000000	18.8	1000.0	120.000	186.0	V	251.0	15.0	17.2	36.0	
926.880000	22.3	1000.0	120.000	174.0	H	346.0	25.3	13.7	36.0	

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

Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.42

Signal Path: without Notch  
FW 1.0

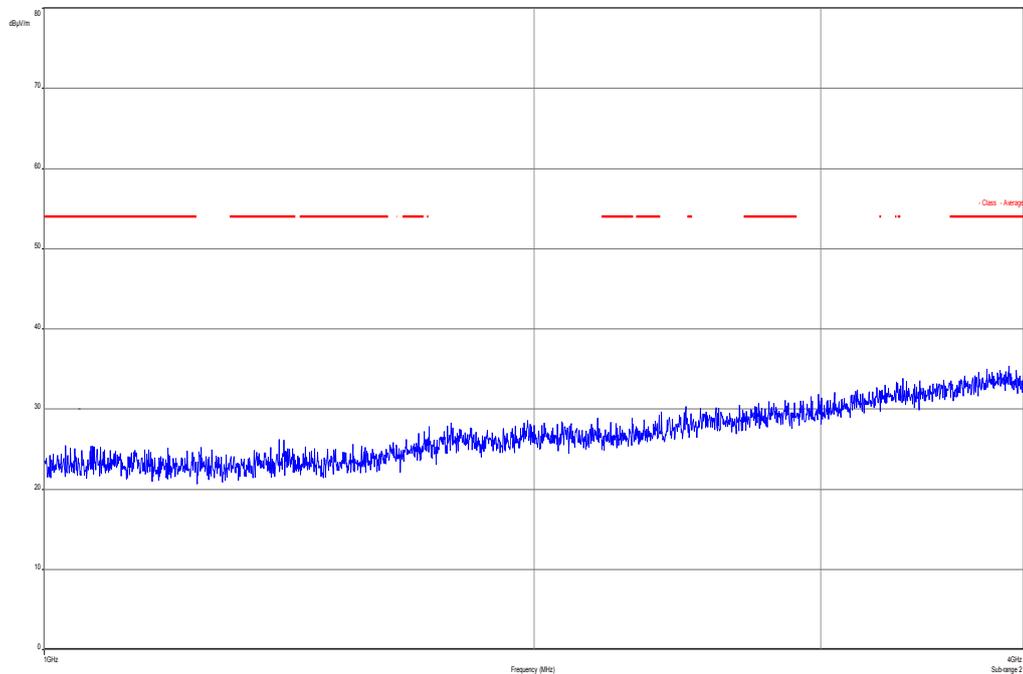
Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table (vertical): Cable\_EN\_1GHz (1005)  
Correction Table (horizontal): Cable\_EN\_1GHz (1005)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.52

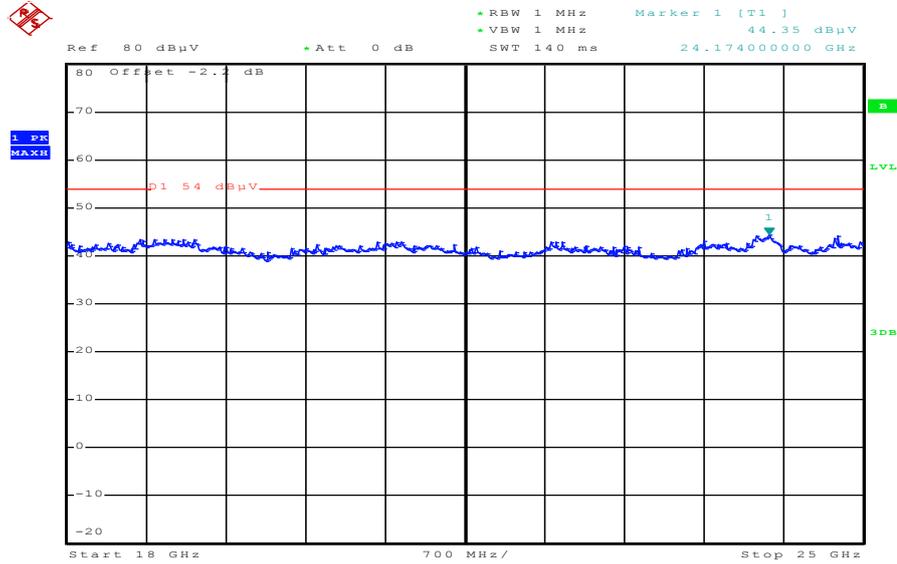
**Plot 7:** Middle channel, 1 GHz to 4 GHz, vertical & horizontal polarization



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



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



Date: 25.SEP.2012 09:53:42

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

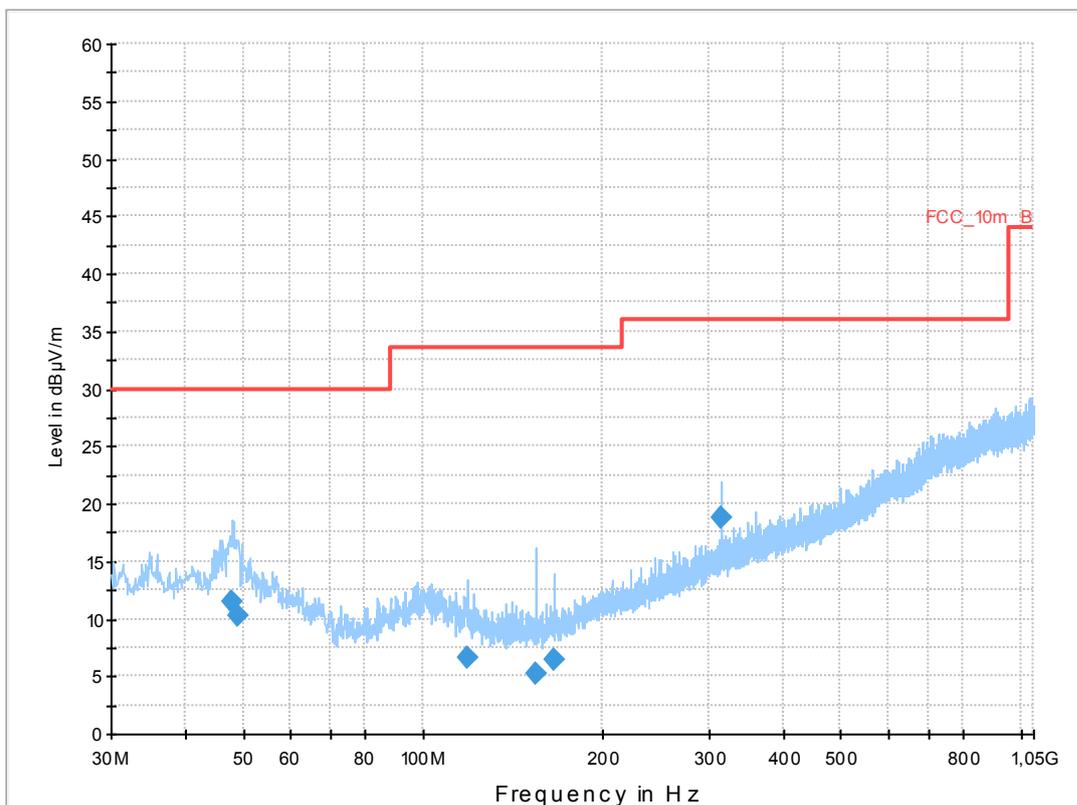
### Common Information

EUT: PM-0060-BV  
 Serial Number: CB5A1KT6B0  
 Test Description: FCC part 15 C class B @ 10 m  
 Operating Conditions: W-LAN n-mode ch 11 + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
47.760000	11.5	1000.0	120.000	230.0	V	222.0	13.3	18.5	30.0	
49.080000	10.3	1000.0	120.000	212.0	V	120.0	13.4	19.7	30.0	
118.560000	6.6	1000.0	120.000	196.0	V	157.0	10.3	26.9	33.5	
154.080000	5.3	1000.0	120.000	270.0	V	120.0	9.0	28.2	33.5	
165.600000	6.4	1000.0	120.000	122.0	V	243.0	9.5	27.1	33.5	
315.000000	18.8	1000.0	120.000	270.0	V	120.0	15.0	17.2	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 100083/003, FW 4.42

Signal Path: without Notch  
FW 1.0

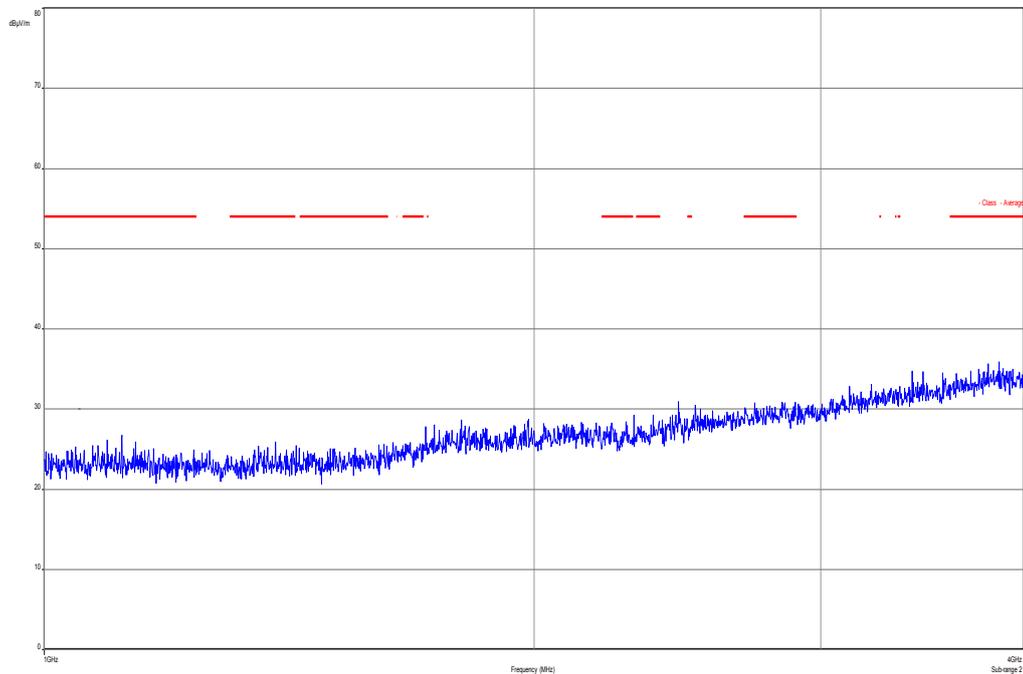
Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table (vertical): Cable\_EN\_1GHz (1005)  
Correction Table (horizontal): Cable\_EN\_1GHz (1005)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12

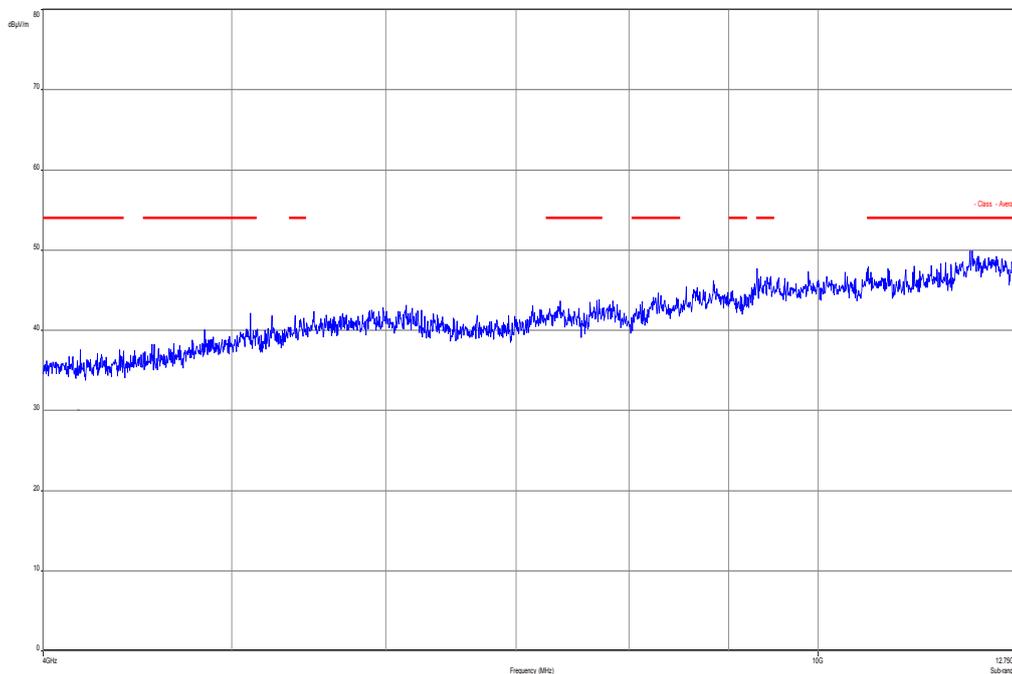
EMC 32 Version 8.52

**Plot 12:** Highest channel, 1 GHz to 4 GHz, vertical & horizontal polarization

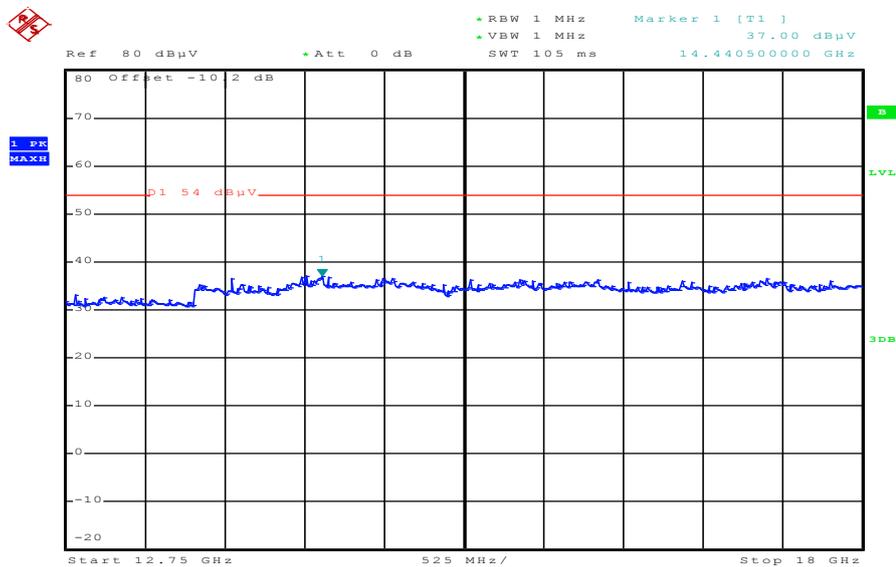


The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 13: Highest channel, 4 GHz to 12.75 GHz, vertical & horizontal polarization

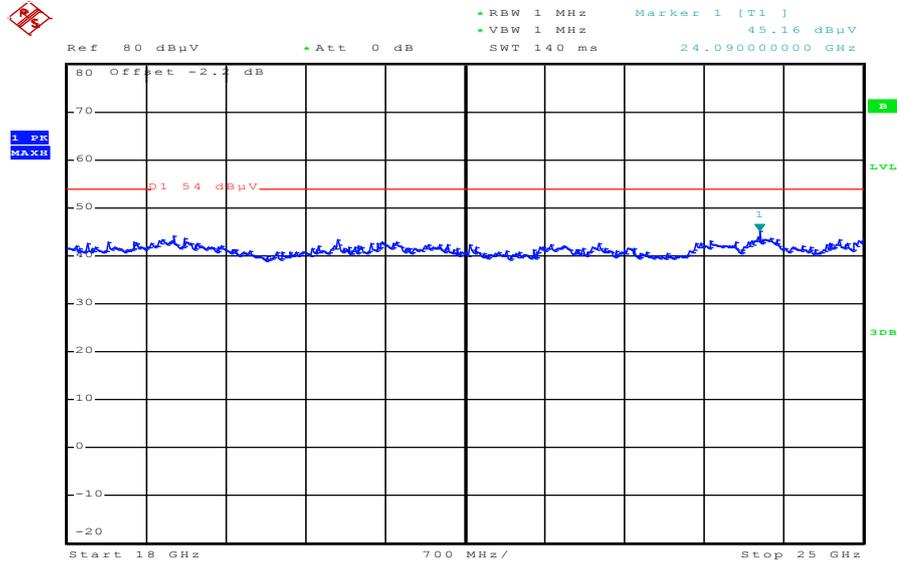


Plot 14: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 25.SEP.2012 10:04:13

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



Date: 25.SEP.2012 09:52:54

### 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		-/-
RX Spurious Emissions Radiated		
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:**

RX Spurious Emissions Radiated [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
Above 1 GHz: All detected emissions are below the limit – see plots!		
Measurement uncertainty	± 3 dB	

**Result: Passed**

**Plots: RX / Idle – mode**

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

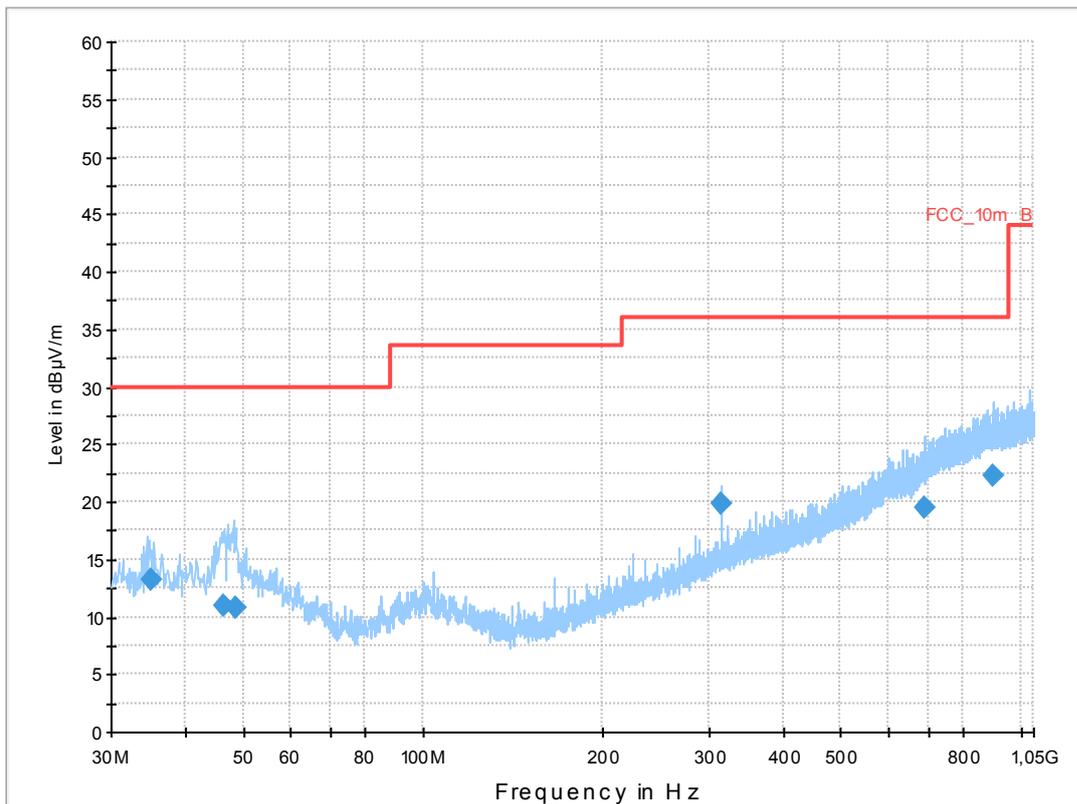
**Common Information**

EUT: PM-0060-BV  
 Serial Number: CB5A1KT6B0  
 Test Description: FCC part 15 B class B @ 10 m  
 Operating Conditions: W-LAN RX mode + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.040000	13.3	1000.0	120.000	216.0	V	298.0	13.0	16.7	30.0	
46.440000	11.0	1000.0	120.000	224.0	V	11.0	13.3	19.0	30.0	
48.600000	10.7	1000.0	120.000	209.0	V	135.0	13.3	19.3	30.0	
315.000000	19.8	1000.0	120.000	98.0	V	283.0	15.0	16.2	36.0	
691.440000	19.4	1000.0	120.000	270.0	H	229.0	22.3	16.6	36.0	
897.360000	22.3	1000.0	120.000	270.0	H	283.0	25.2	13.7	36.0	

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

Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.42

Signal Path: without Notch  
FW 1.0

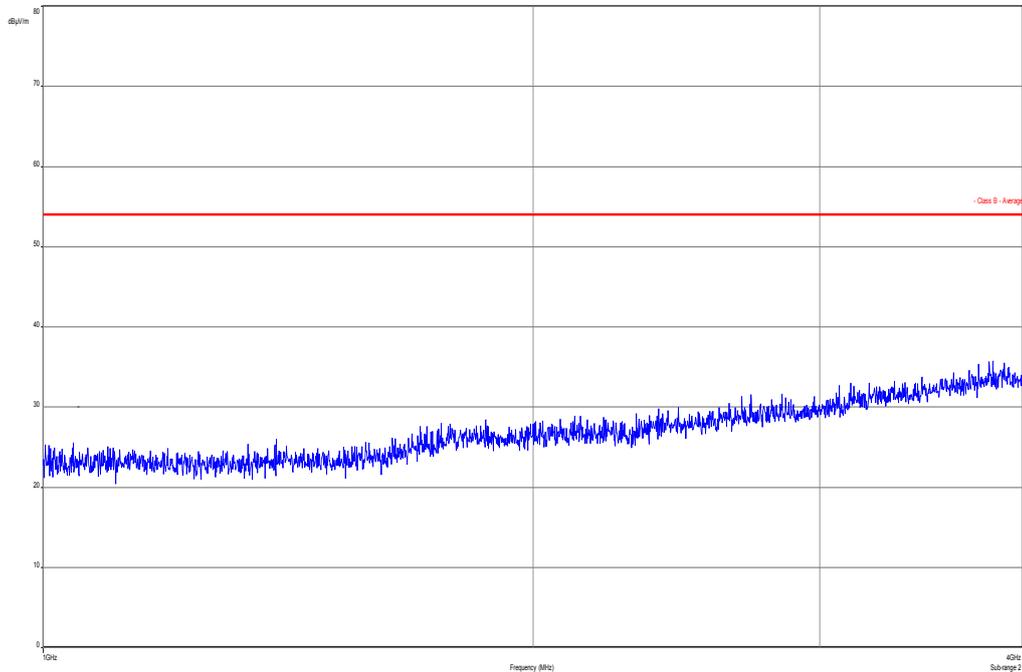
Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table (vertical): Cable\_EN\_1GHz (1005)  
Correction Table (horizontal): Cable\_EN\_1GHz (1005)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

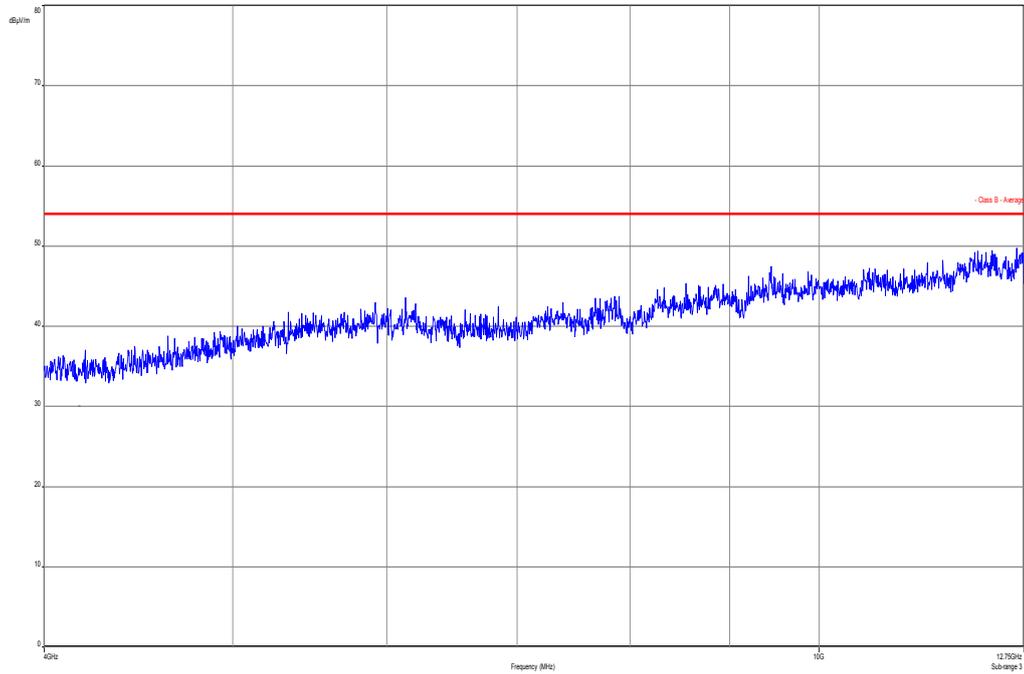
Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.52

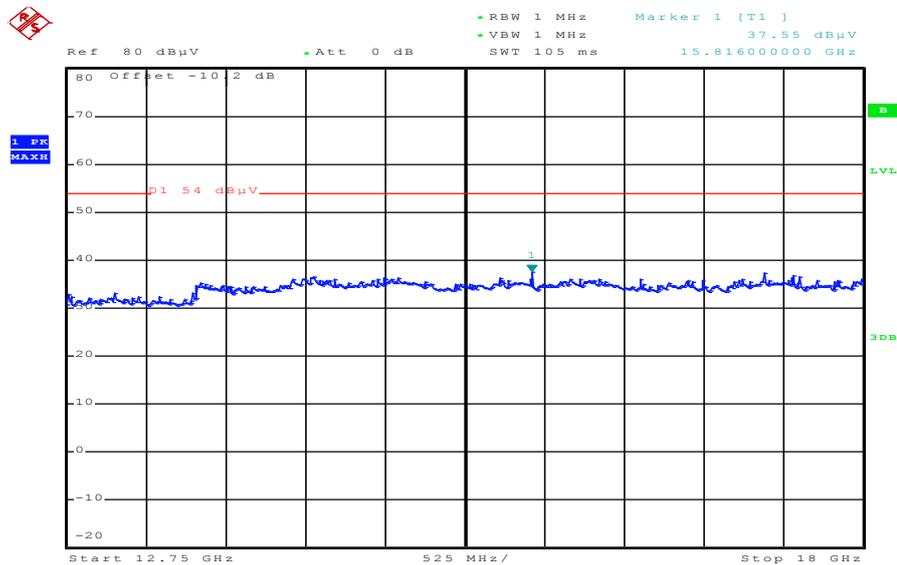
**Plot 2:** 1 GHz to 4 GHz, vertical & horizontal polarization



Plot 3: 4 GHz to 12.75 GHz, vertical & horizontal polarization

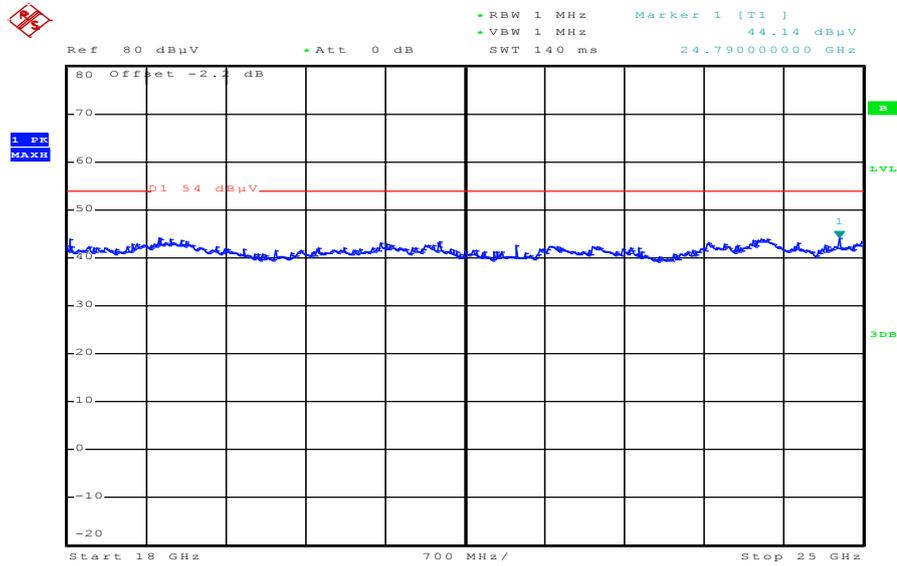


Plot 4: 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 25.SEP.2012 09:58:44

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



Date: 25.SEP.2012 09:56:05

## 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)	-/-	
TX Spurious Emissions Radiated < 30 MHz		
Frequency (MHz)	Field Strength (dB $\mu$ V/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

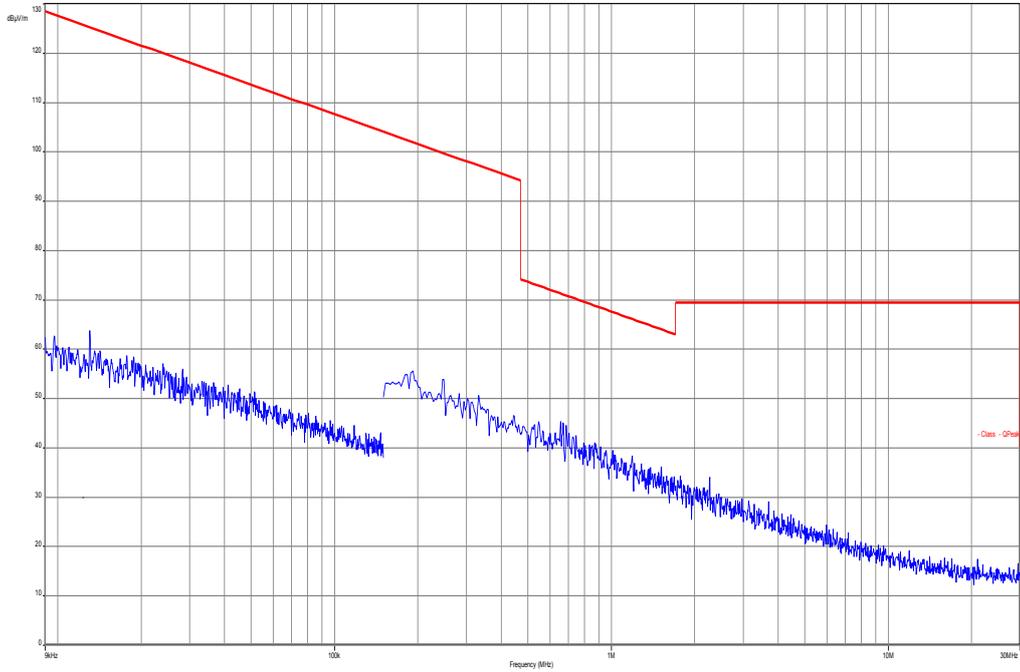
### Results:

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

**Result: Passed**

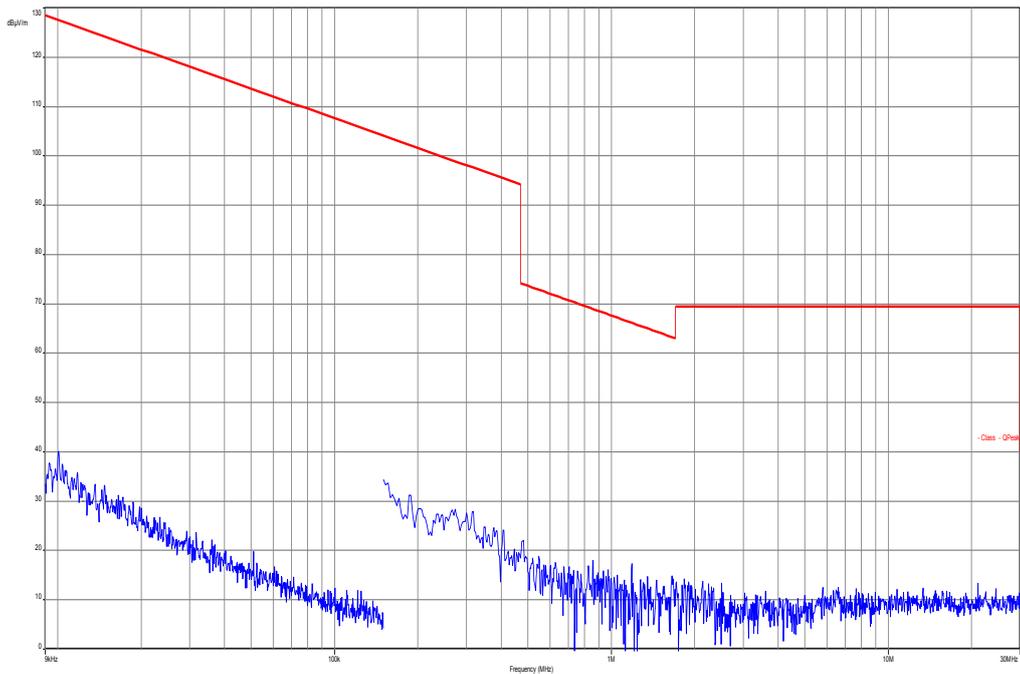
**Plots: TX mode**

**Plot 1: 9 kHz to 30 MHz**



**Plots: RX / Idle – mode**

**Plot 1: 9 kHz to 30 MHz**



### 9.13 TX spurious emissions conducted < 30 MHz

**Description:**

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

**Measurement:**

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

**Limits:**

FCC	IC	
CFR Part 15.107(a)	-/-	
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

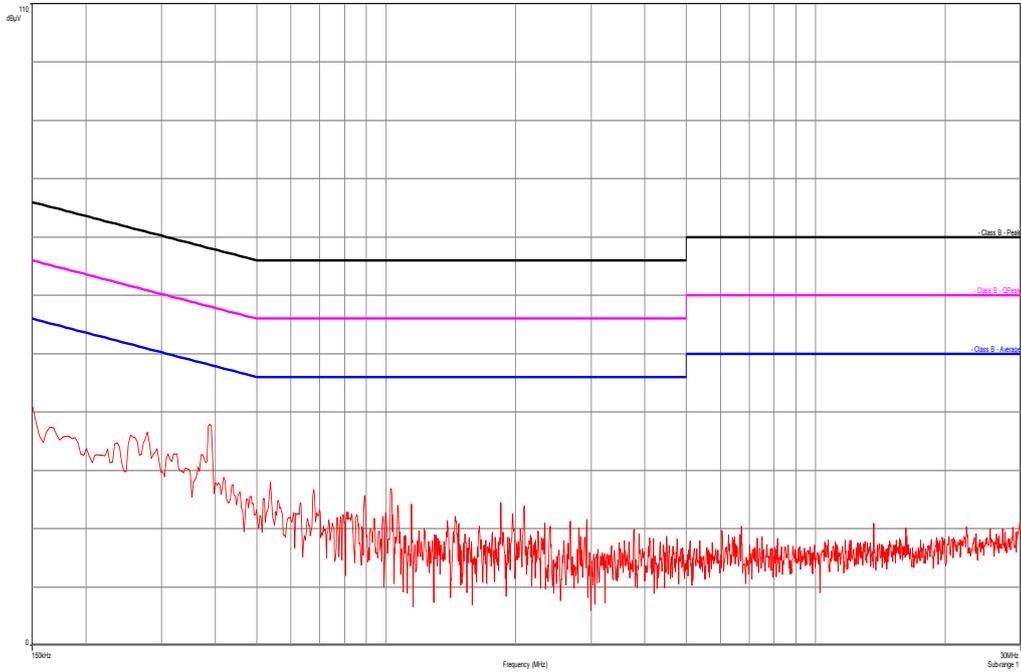
**Results:**

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

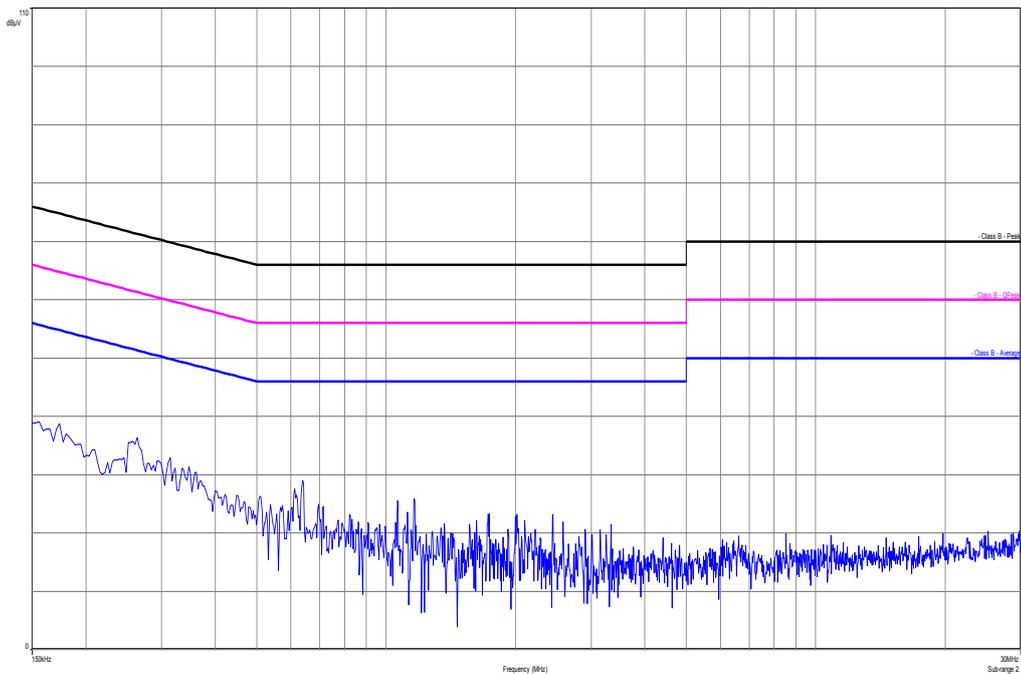
**Result: Passed**

**Plots:**

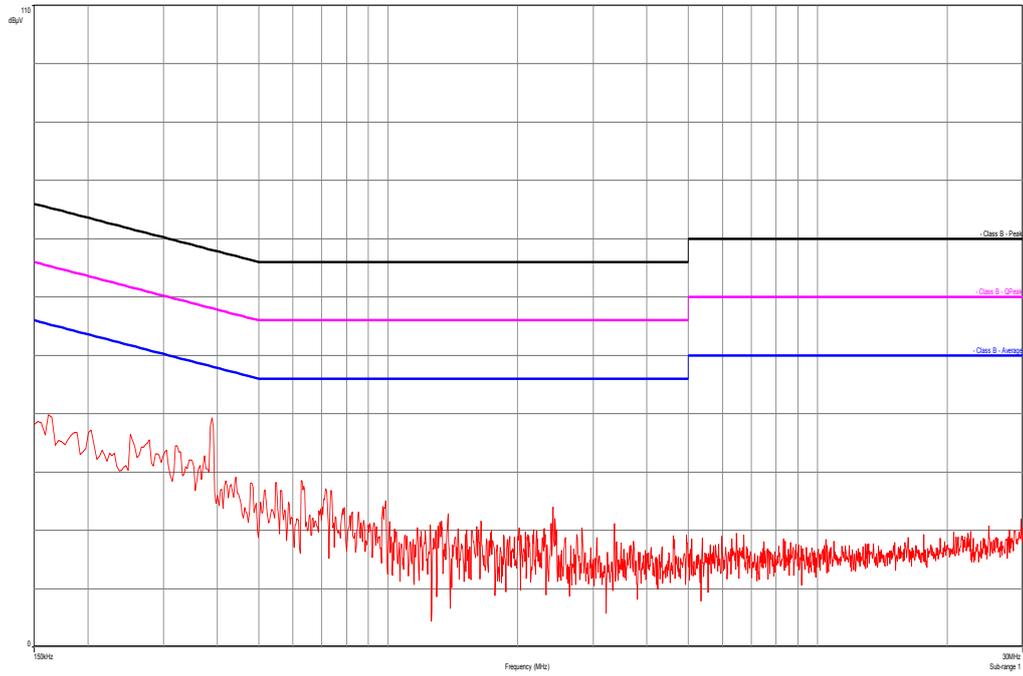
**Plot 1:** TX mode, 9 kHz to 30 MHz, phase line



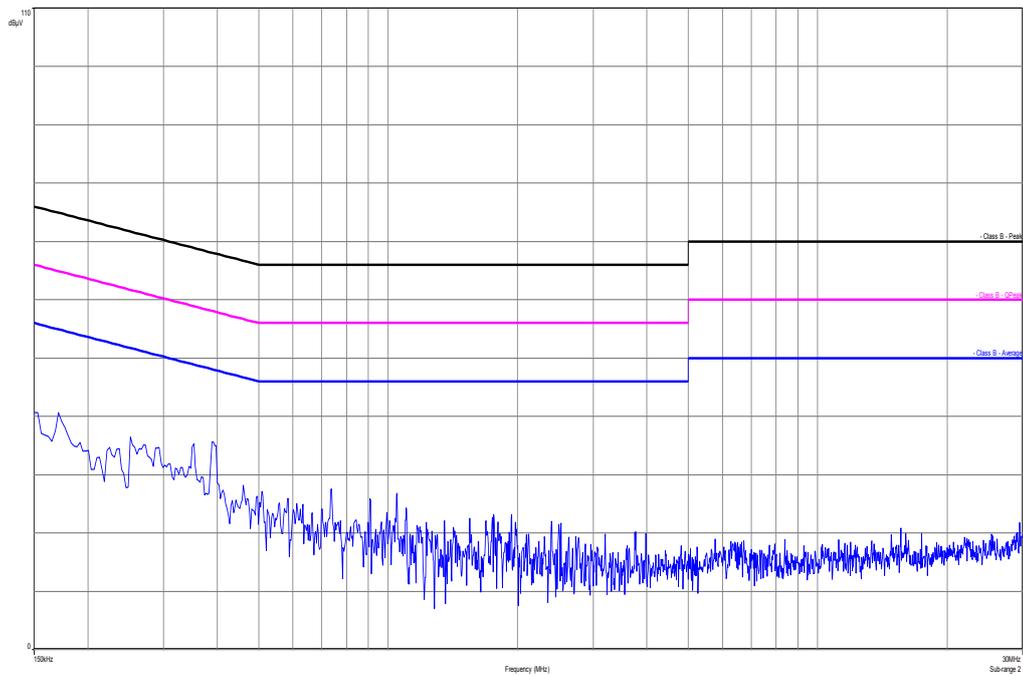
**Plot 2:** TX mode, 9 kHz to 30 MHz, neutral line



Plot 3: RX / Idle – mode, 9 kHz to 30 MHz, phase line



Plot 4: RX / Idle – mode, 9 kHz to 30 MHz, neutral line



## 10 Test equipment and ancillaries used for tests

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

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

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
2	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	12.01.2012	12.01.2015
3	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKII	11.05.2011	11.05.2013
4	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
5	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
6	Spec.A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
7	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2012	06.01.2014
8	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
9	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
10	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
11	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
12	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
13	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
14	n. a.	Band Reject filter	WRCG185 5/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
15	n. a.	Band Reject filter	WRCG240 0/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
16	n. a.	Highpass Filter	WHKX2.9/1 8G-12SS	Wainwright	1	300003492	ev		
17	n. a.	Highpass Filter	WHK1.1/15 G-10SS	Wainwright	3	300003255	ev		
18	n. a.	Highpass Filter	WHKX7.0/1 8G-8SS	Wainwright	18	300003789	ne		
19	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vIKII	14.10.2011	14.10.2014
20	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	19.12.2011	19.12.2012

**Agenda:** Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vk!!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

## 11 Observations

No observations exceeding those reported with the single test cases have been made.

**Annex A Photographs of the test setup**

Photo documentation:

Photo 1:



Photo 2:

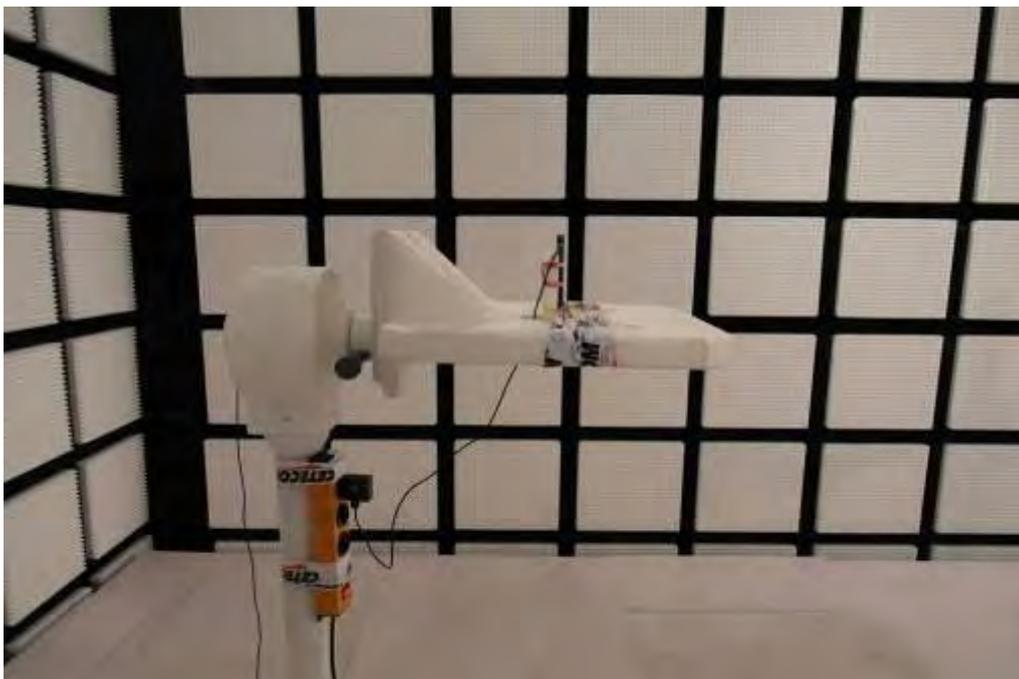


Photo 3:

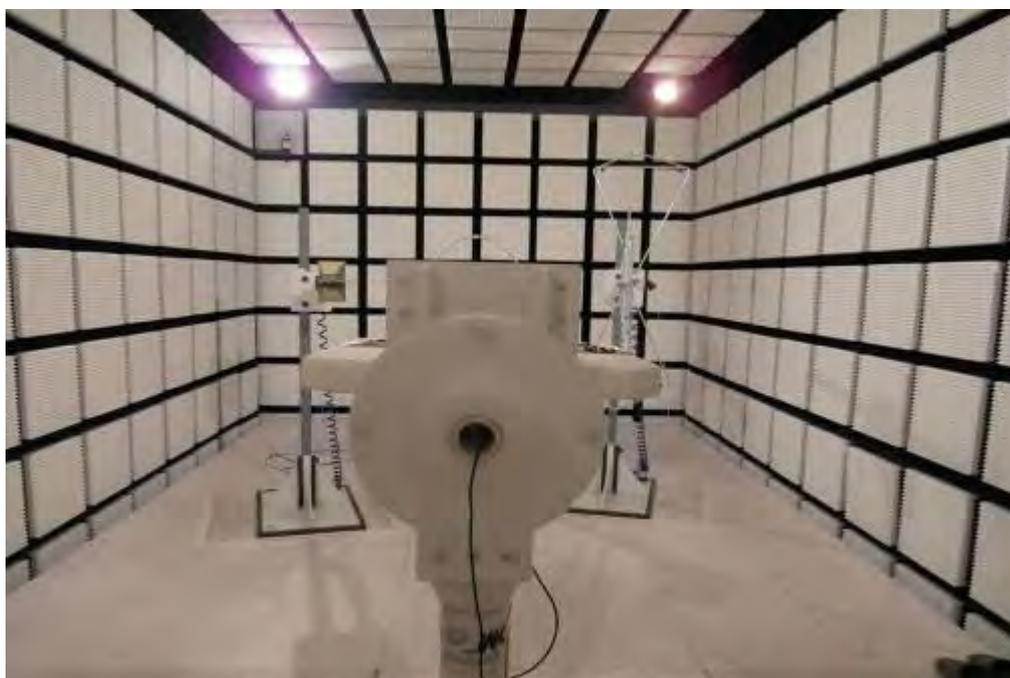


Photo 4:

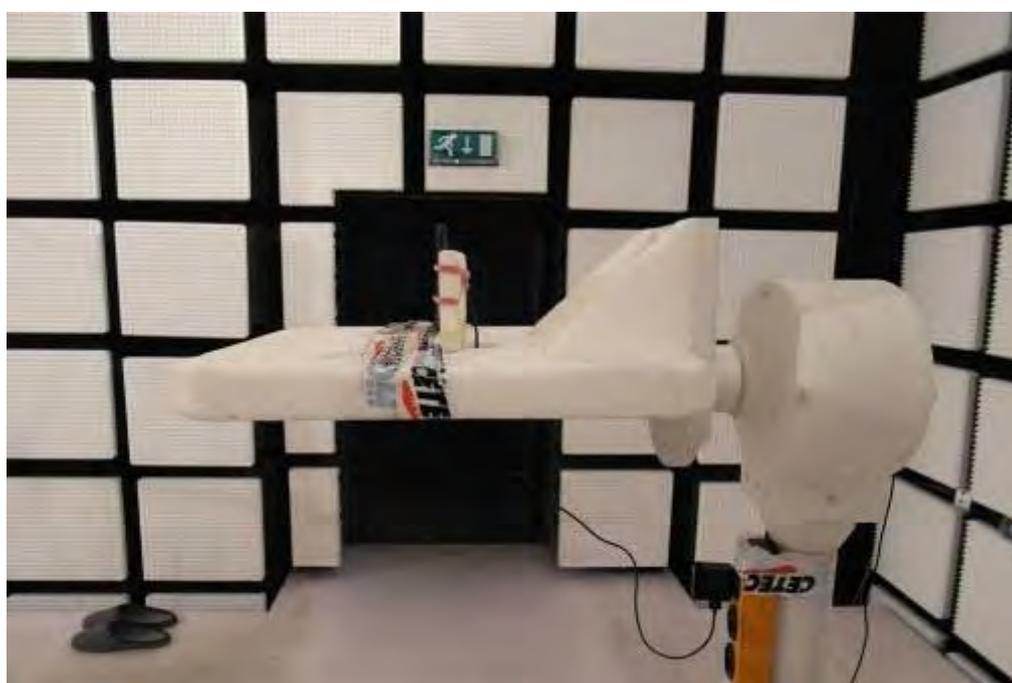


Photo 5:

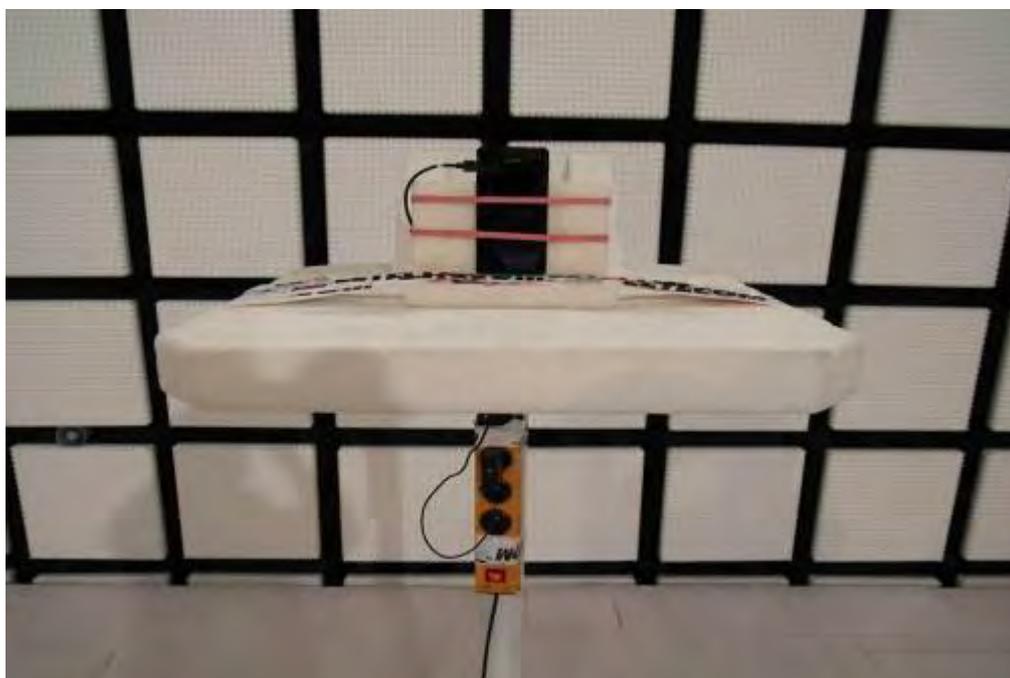


Photo 6:



Photo 7:



Photo 8:



**Annex B External photographs of the EUT**

Photo documentation:

Photo 1:



Photo 2:



Photo 3:

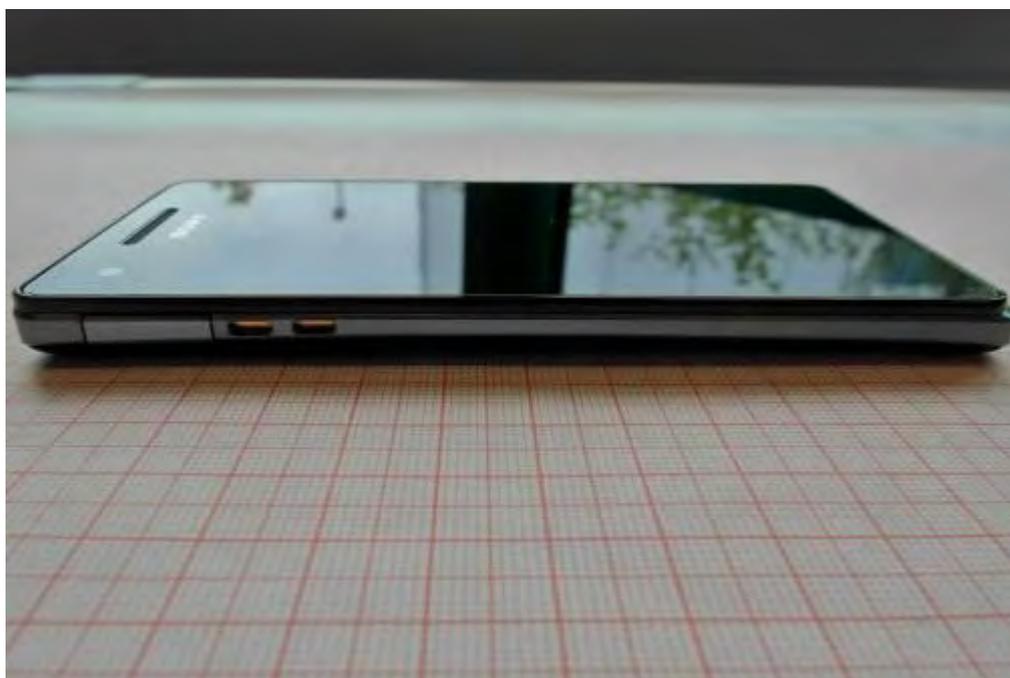


Photo 4:



Photo 5:

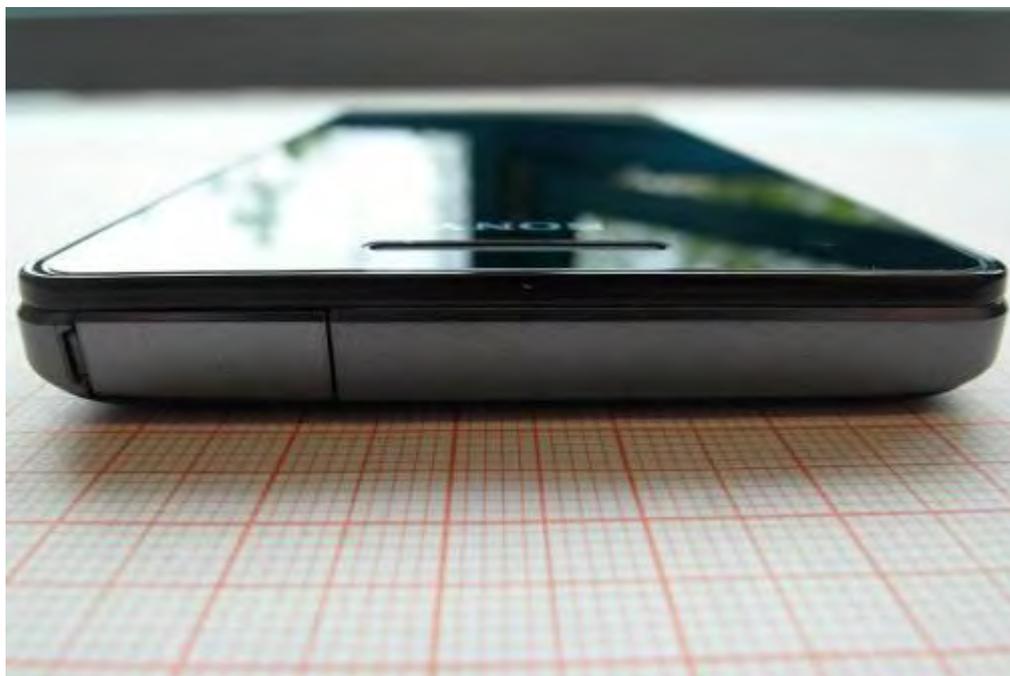


Photo 6:



Photo 7:



Photo 8:



Photo 9:



**Annex C Internal photographs of the EUT**

Photo documentation:

Photo 1:



Photo 2:



Photo 3:



Photo 4:

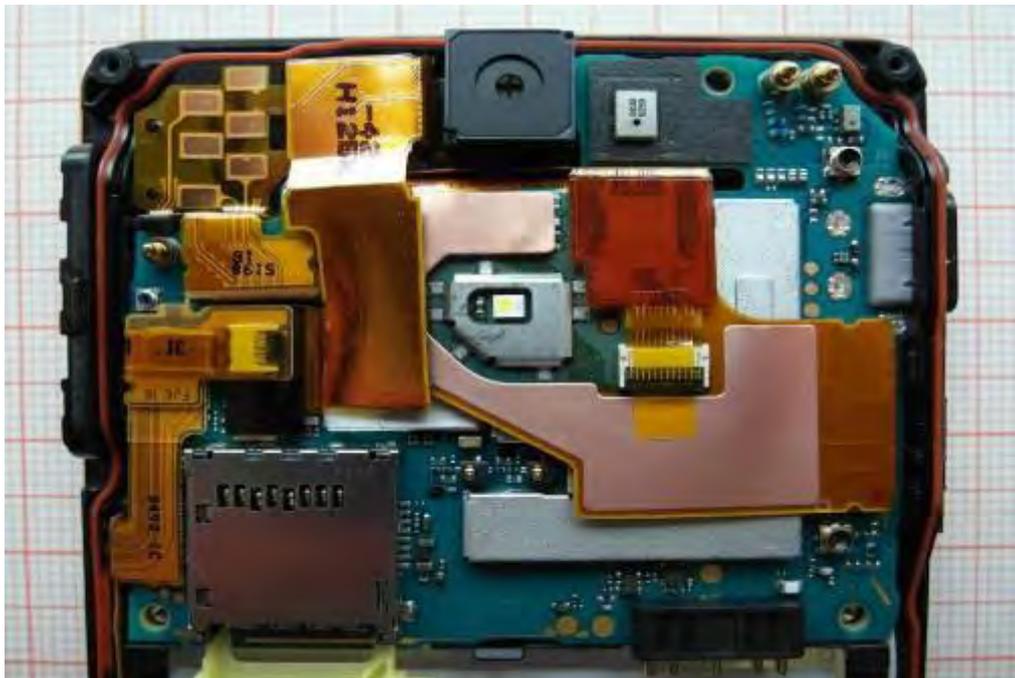


Photo 5:



Photo 6:

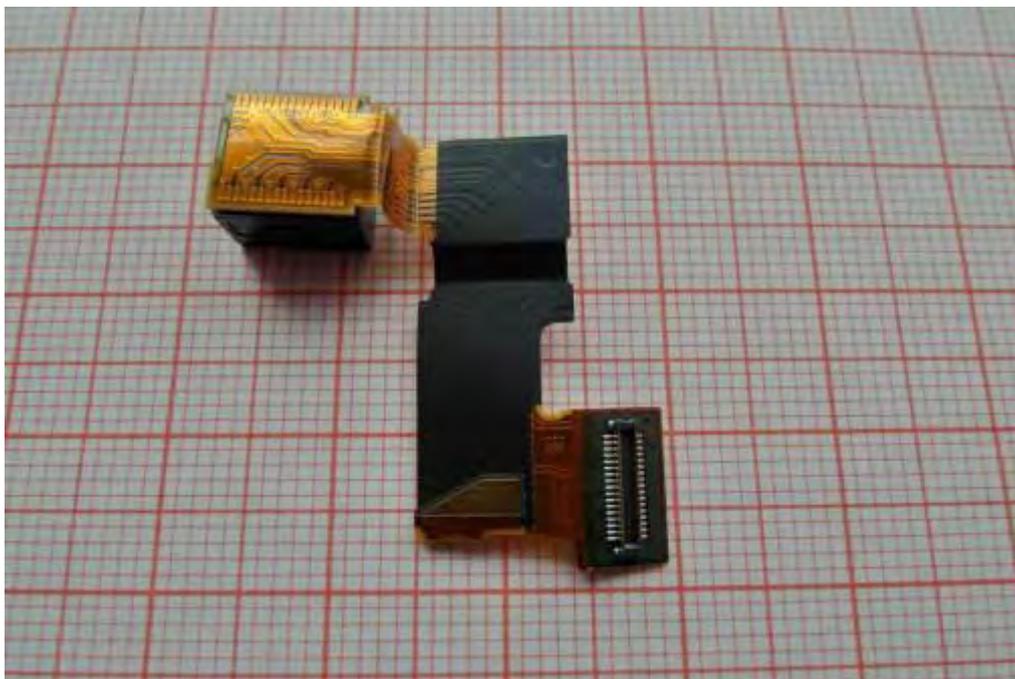


Photo 7:



Photo 8:

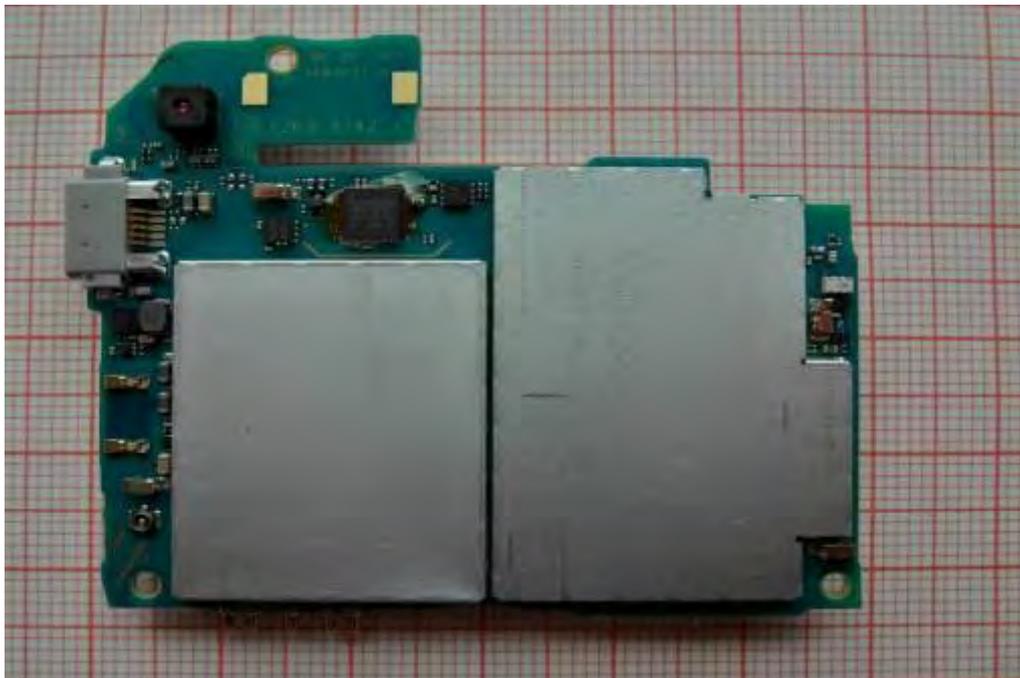


Photo 9:

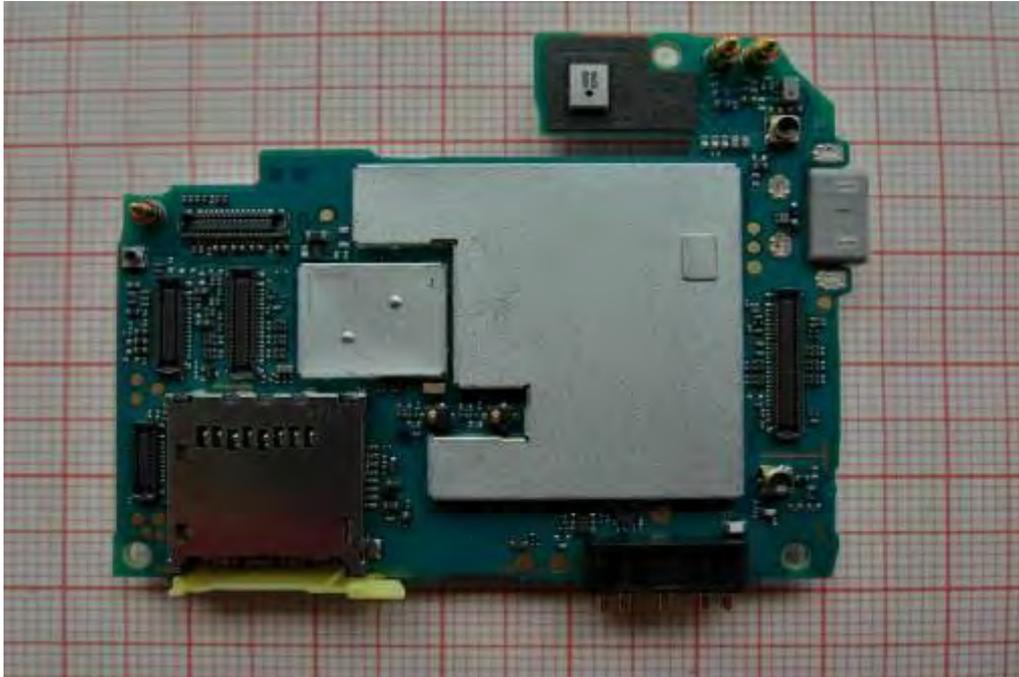


Photo 10:

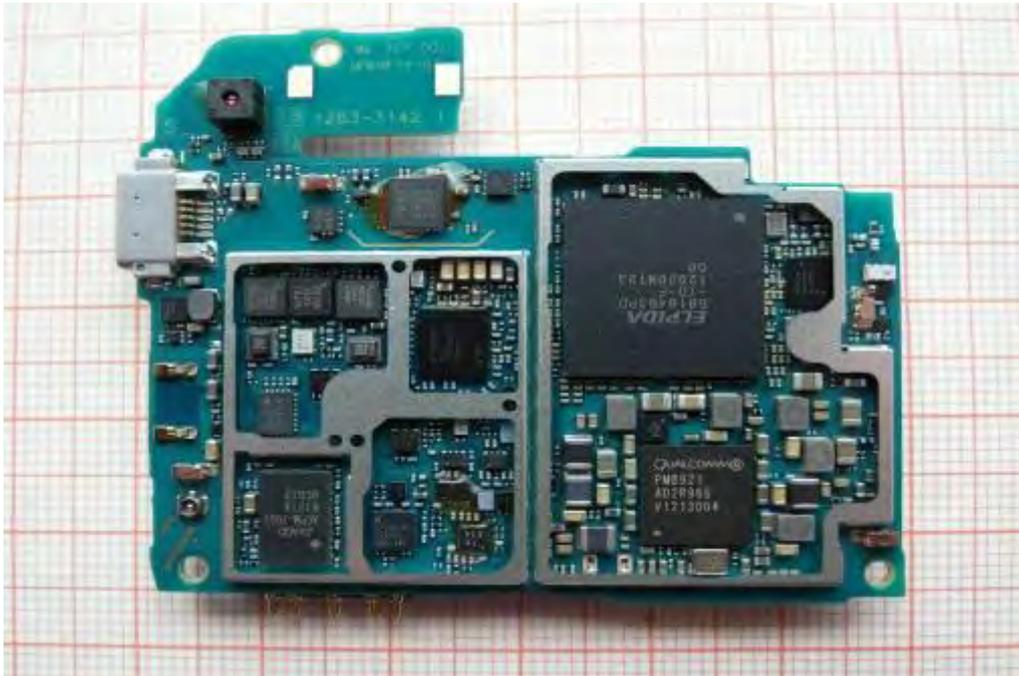


Photo 11:

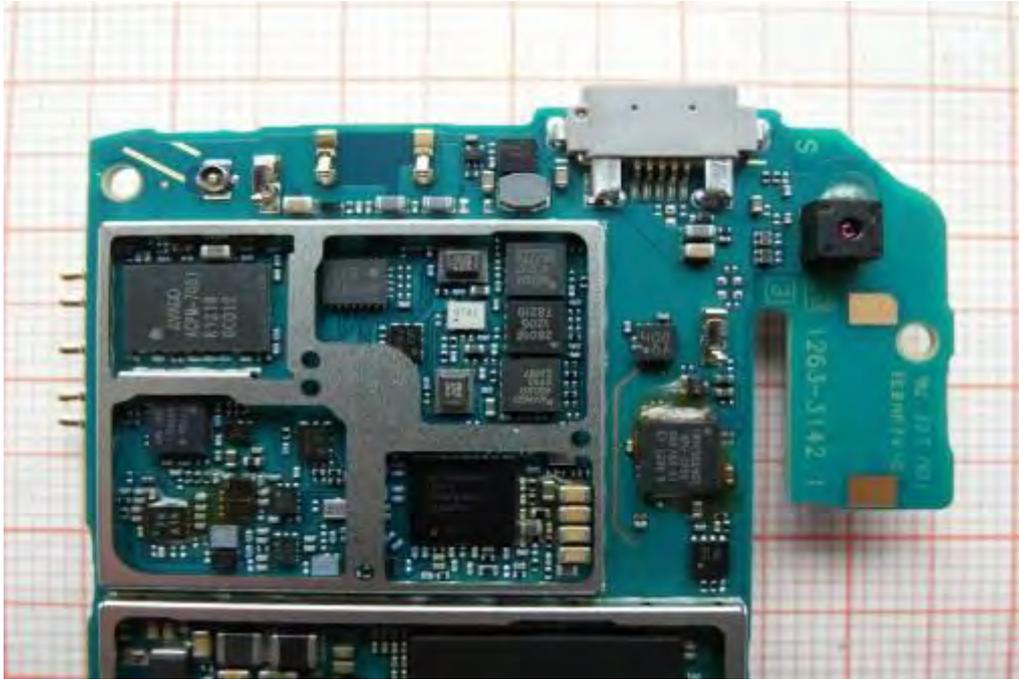


Photo 12:

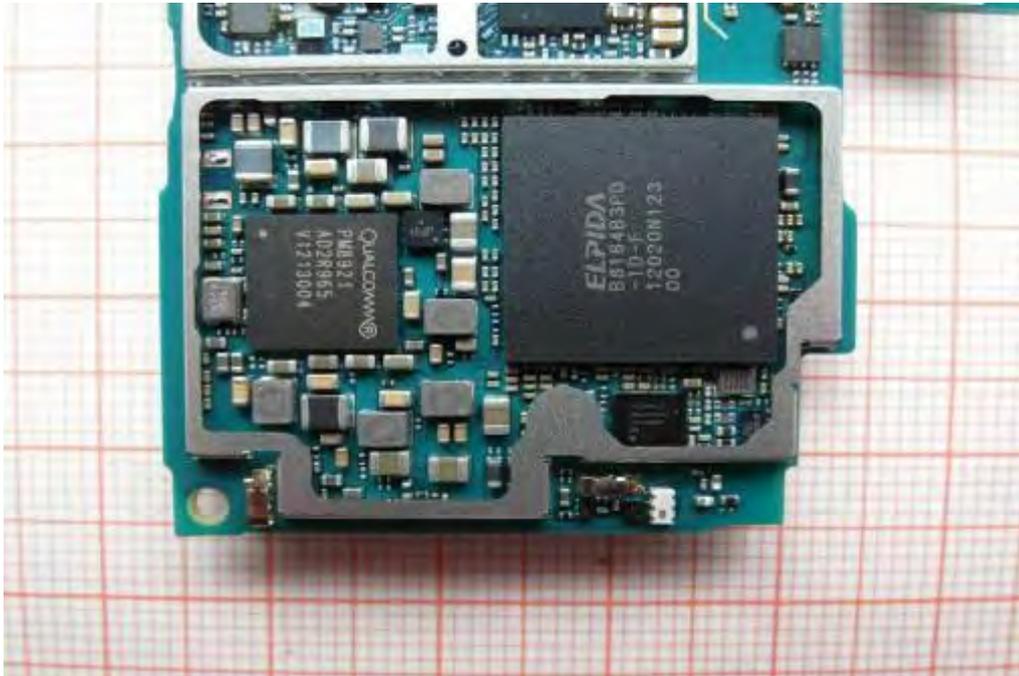
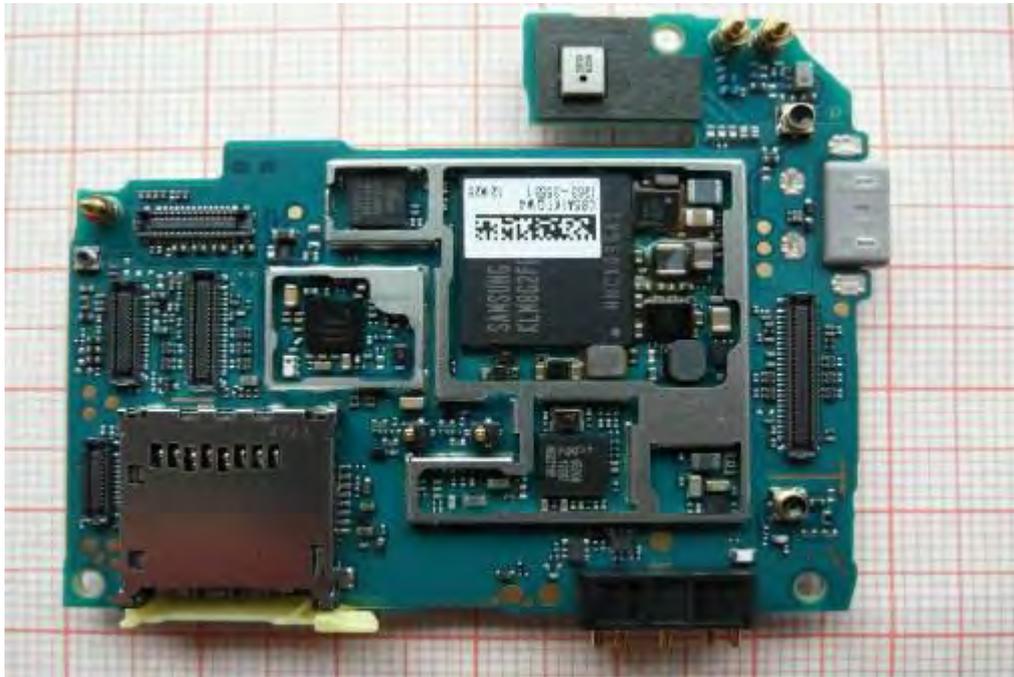


Photo 13:



**Annex D Document history**

Version	Applied changes	Date of release
1.0	Initial release	2012-10-01

**Annex E Further information****Glossary**

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software

## Annex F Accreditation Certificate



Front side of certificate



Back side of certificate

**Note:**

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

[http://www.cetecom.com/fileadmin/de/CETECOM\\_D\\_Saarbruecken/accreditations\\_Jan\\_2010/DAKKS\\_Akkredi\\_Urk\\_EN17025-En\\_incl\\_Annex.pdf](http://www.cetecom.com/fileadmin/de/CETECOM_D_Saarbruecken/accreditations_Jan_2010/DAKKS_Akkredi_Urk_EN17025-En_incl_Annex.pdf)