

## TEST REPORT

Test report no.: 1-3791/11-01-13



### 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

**Sennheiser electronic GmbH & Co. KG**  
 Am Labor 1  
 30900 Wedemark / GERMANY  
 Phone: +49 5130 600-0  
 Fax: +49 5130 600-574  
 Contact: Marco Happ  
 e-mail: [marco.happ@sennheiser.com](mailto:marco.happ@sennheiser.com)  
 Phone: +49 5130 600-2621

### Manufacturer

**Sennheiser electronic GmbH & Co. KG**  
 Am Labor 1  
 30900 Wedemark / GERMANY

### 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:** Wireless conference system  
**Model name:** ADN-W AM-US  
**FCC ID:** DMOADNWAM  
**IC:** 2099A-ADNWAM  
 Frequency: UNII band 5150 MHz to 5250 MHz  
 (lowest channel 5180 MHz;  
 highest channel 5240 MHz)  
 Technology tested: Proprietary wireless audio transmission system  
 Antenna: External rod. antennas  
 Power Supply: 52.8V DC by POE power supply  
 Temperature Range: +5°C to +45°C



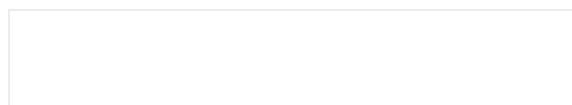
This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

### Test report authorised:



Marco Bertolino  
 Testing Manager

### Test performed:



Andreas Luckenbill  
 Expert

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## 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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This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

### 2.2 Application details

Date of receipt of order:	2011-09-30
Date of receipt of test item:	2013-02-26
Start of test:	2013-02-26
End of test:	2013-03-15
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
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

### 3.1 Measurement guidance

UNII: KDB 789033	2011-10	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E
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#### 4 Test environment

Temperature:	$T_{nom}$	+22 °C during room temperature tests
	$T_{max}$	+45 °C during high temperature tests
	$T_{min}$	+5 °C during low temperature tests
Relative humidity content:		42 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	$V_{nom}$	52.8 V DC by POE power supply
	$V_{max}$	54.0 V
	$V_{min}$	33.0 V

#### 5 Test item

Kind of test item	:	Wireless conference system
Type identification	:	ADN-W AM-US
S/N serial number	:	Conducted / radiated units: 1462100048; 1462100049 (EUT)
HW hardware status	:	FPGA: 2_8_5_prod2/ AM1.bin
SW software status	:	ADNW_TERMINAL.EXE from 16.11.2012; APP:001120
Frequency band [MHz]	:	UNII band 5150 MHz to 5250 MHz (lowest channel 5180 MHz; highest channel 5240 MHz)
Type of radio transmission	:	OFDM
Use of frequency spectrum	:	
Type of modulation	:	QPSK with coding rate 1/2
Number of channels	:	4
Antenna	:	External rod. antennas
Power supply	:	52.8 V DC by POE power supply
Temperature range	:	+5 °C to +45 °C

#### 5.1 Additional information

Test setup - and EUT - photos are included in the following test reports:

External EUT photos: 1-3791/12-01-01\_AnnexA  
 Internal EUT photos: 1-3791/12-01-01\_AnnexB  
 Test setup: 1-3791/12-01-01\_AnnexD

#### 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 9	Passed	2013-03-22	-/-

Test specification clause	Test case	Temperature conditions	Power source voltages	Pass	Fail	NA	NP	Remark
-/-	System gain	Nominal	Nominal					No passed / fail criteria!
U-NII Part 15	Duty cycle	Nominal	Nominal					No passed / fail criteria!
§15.407(a) RSS-210	Maximum output power (conducted & radiated)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.407(a) RSS-210	Power spectral density	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.407(a) RSS-210	Spectrum bandwidth 26dB bandwidth	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.407(a) RSS-210	Peak excursion measurements	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.205 RSS-210	Band edge compliance radiated	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.407(b) RSS-210	TX spurious emissions radiated	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.109 RSS-Gen	Unintentional radiator spurious emissions radiated	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.209(a) RSS-Gen	Spurious emissions radiated < 30 MHz	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.107(a)	Spurious emissions conducted emissions < 30 MHz	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies

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

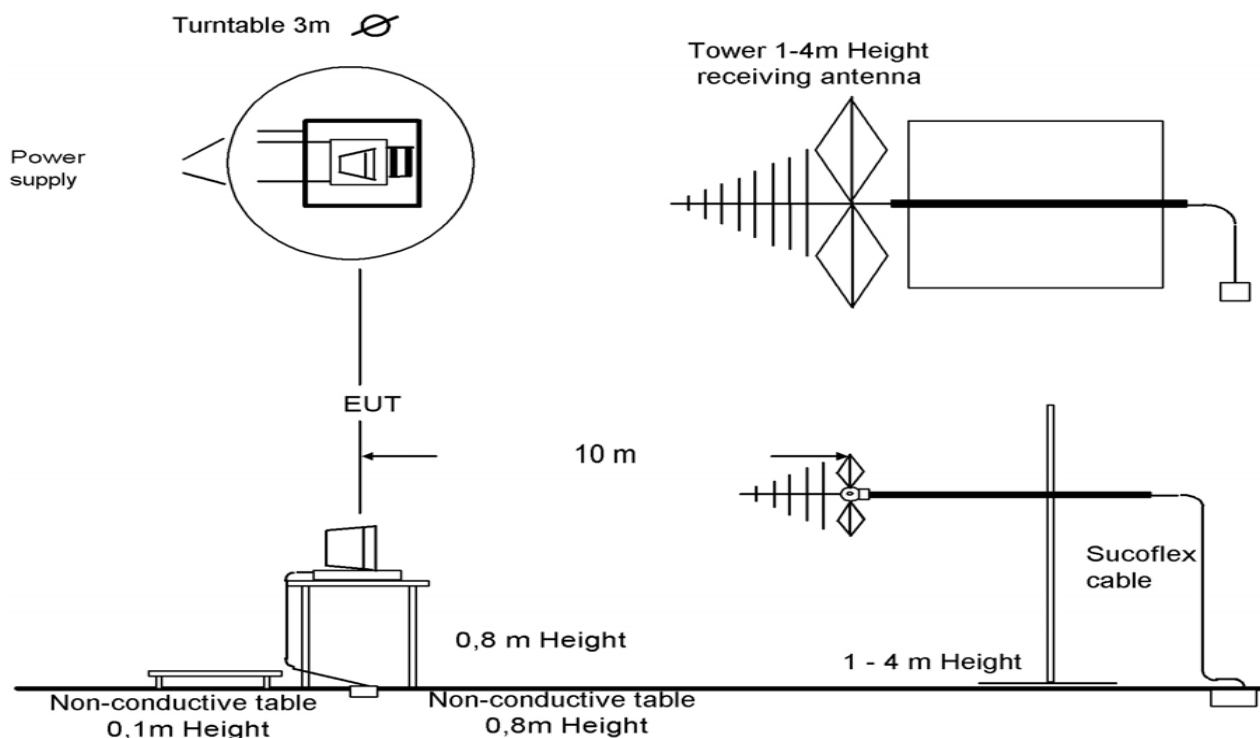
## 8 RF measurements

### 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. 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. Antennas are confirmed with ANSI C63.

Semi anechoic chamber



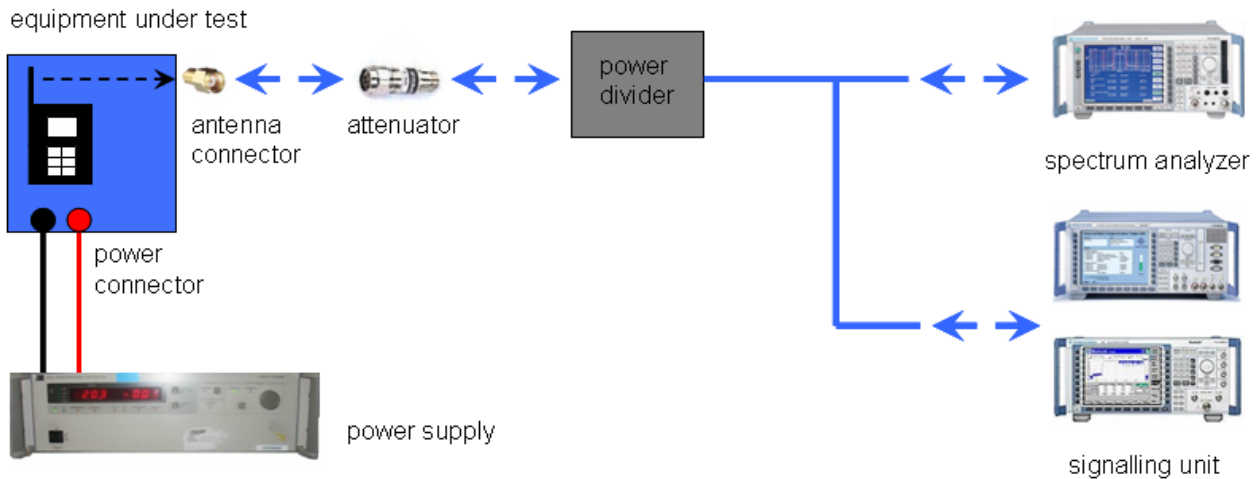
Picture 1: Diagram radiated measurements

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

### 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: ANT\_AM1

Special test descriptions: None

Configuration descriptions: None

Test mode:

- No test mode available.
- 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	:	1-3791/11-01-13			
Equipment model number	:	ADN-W AM-US			
Certification number	:	2099A-ADNWAM			
Manufacturer (complete address)	:	Sennheiser electronic GmbH & Co. KG Am Labor 1 30900 Wedemark / GERMANY			
Tested to radio standards specification no.	:	RSS 210, Issue 8, Annex 9			
Open area test site IC No.	:	IC 3462C-1			
Frequency range	:	UNII bands: 5150 MHz to 5250 MHz			
RF-power [mW] (max.)	:	Conducted values:			
		Band	OFDM antenna port 1	OFDM antenna port 2	-/-
		5180 – 5240 MHz	1.25 mW	1.03 mW	
		5190 – 5230 MHz			-/-
		5260 – 5320 MHz	-/-	-/-	
		5270 – 5310 MHz			-/-
		5500 – 5700 MHz	-/-	-/-	
		5510 – 5670 MHz			-/-
		Radiated values:			
		Band	OFDM antenna port 1	OFDM antenna port 2	-/-
		5180 – 5240 MHz	1.95 mW	1.62 mW	
		5190 – 5230 MHz			-/-
		5260 – 5320 MHz	-/-	-/-	
		5270 – 5310 MHz			-/-
5500 – 5700 MHz	-/-	-/-			
5510 – 5670 MHz			-/-		
Occupied bandwidth (99%-BW) [MHz] / Emission designator (TRC-43)	:	Band	OFDM antenna port 1	OFDM antenna port 2	-/-
		5180 – 5240 MHz	16.36 MHz / 16M4G7D	16.35 MHz / 16M4G7D	
		5190 – 5230 MHz			-/-
		5260 – 5320 MHz	-/-	-/-	
		5270 – 5310 MHz			-/-
		5500 – 5700 MHz	-/-	-/-	
5510 – 5670 MHz			-/-		
Type of modulation	:	OFDM technology with QPSK modulation.			
Antenna information	:	External rod. antennas			
Transmitter spurious (worst case)[dBµV/m @ 3m]:	:	48.63 dBµV/m @ 6.22 GHz (peak)			

#### 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:

2013-03-22

Andreas Luckenbill

Date

Name

Signature



## 9 Measurement results

### 9.1 System gain

#### Description:

Measurement of the maximum output power conducted and radiated

#### Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	5s
Resolution bandwidth:	3 MHz
Video bandwidth:	8 MHz / 10 MHz
Span:	See complete signal!
Trace-Mode:	Max Hold

#### Limits:

Antenna Gain
Maximum 6 dBi or 50 mW / 4 dBm + 10 log B (radiated)

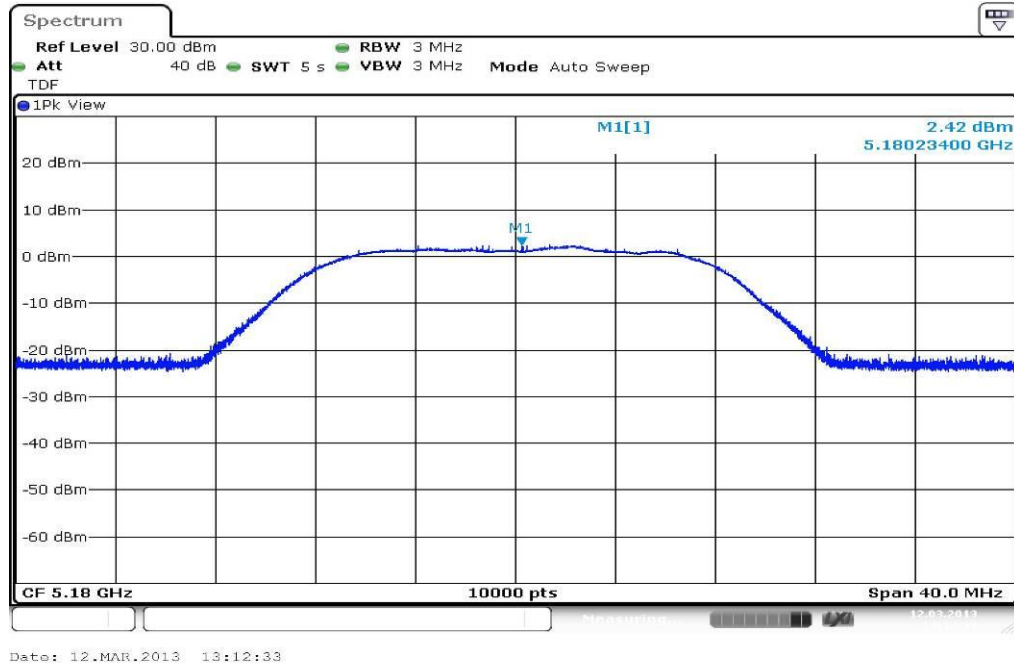
#### Result:

OFDM Band 5150 MHz to 5250 MHz  Channel	Gain		
	Lowest 5180 MHz	Lowest 5200 MHz	Highest 5240 MHz
Radiated power for gain calculation	3.86	4.11	4.97
Conducted power for gain calculation	2.42	2.42	3.02
System gain	1.44	1.69	1.95
Measurement uncertainty	± 3 dB		

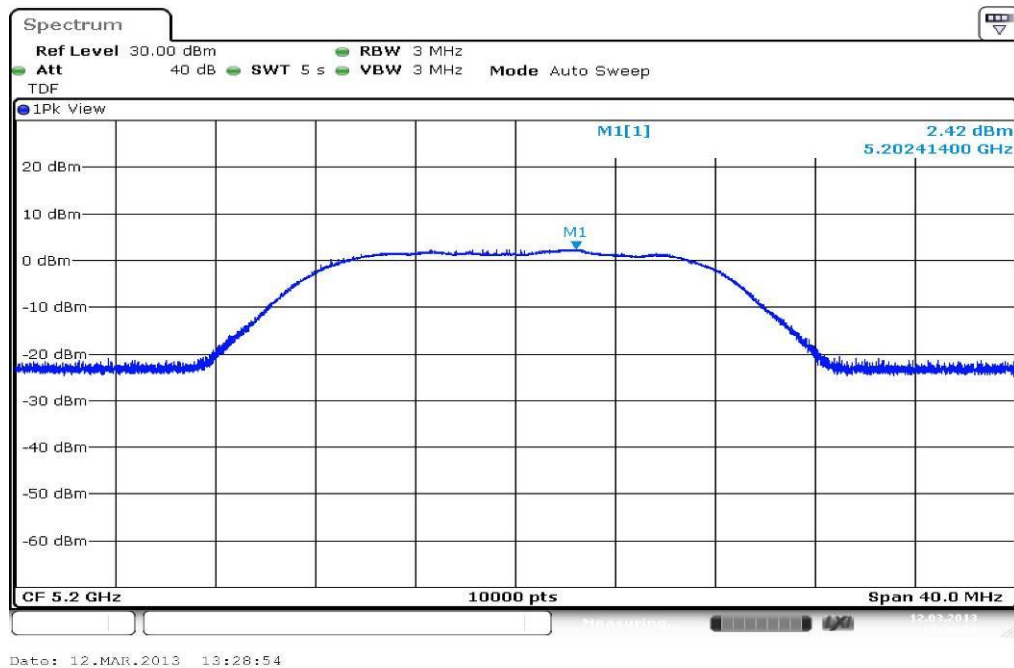
Result: **Passed**

**Plots: conducted power for gain calculation**

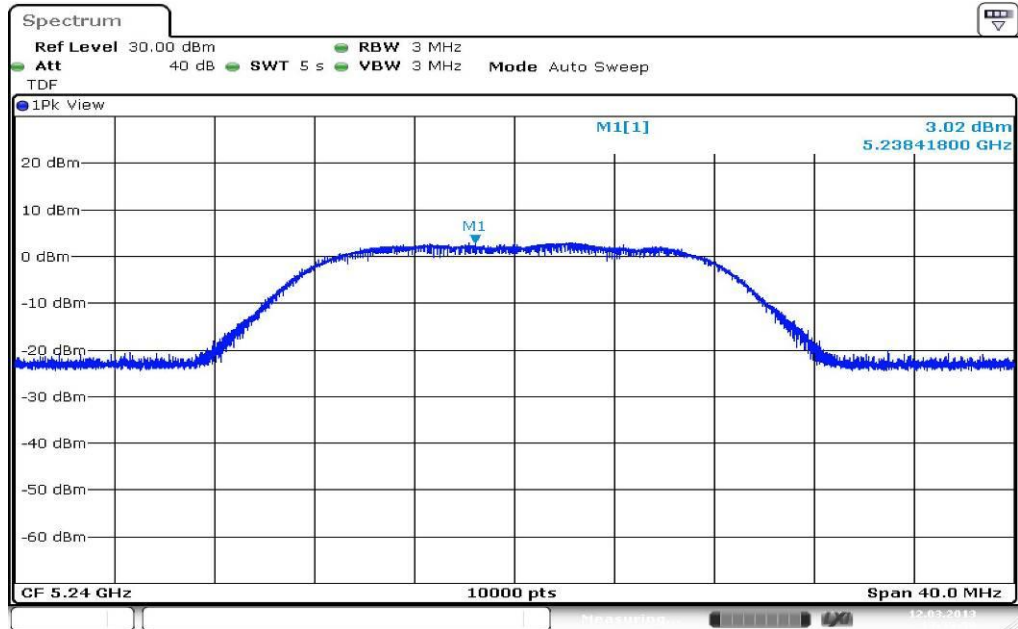
**Plot 1: TX mode, lowest channel**



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



Plot 3: TX mode, highest channel



Date: 12.MAR.2013 18:35:50

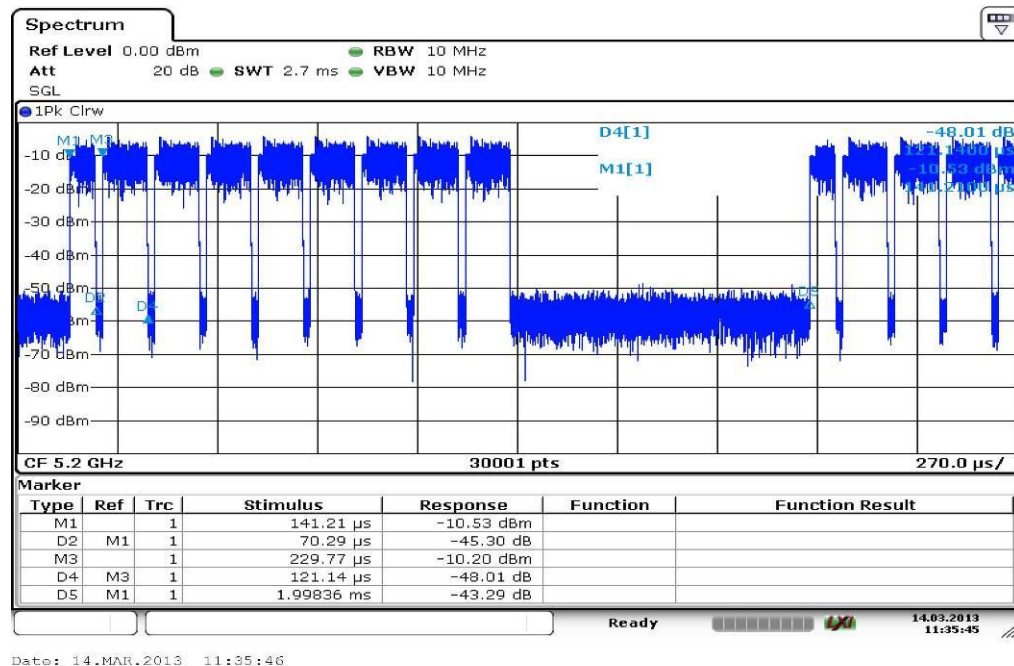
## 9.2 Duty cycle

### Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	2.7 ms
Resolution bandwidth:	10 MHz
Video bandwidth:	10 MHz
Span:	Zero
Trace-Mode:	single sweep

### Plots:

Plot 1: duty cycle of the transmitter – OFDM antenna port 1 & 2



### Results:

Burst No. 1 = 70 μs  
 Burst No. 2 = 121.14 μs → 8 burst @ 121.14 μs = 969.12 μs  
 $T_{on\ time} = 969.12\ \mu s + 70\ \mu s = 1.03912\ ms$   
 $T_{complete\ time} = 1.99836\ ms$   
 Duty cycle = 52 % → 2.84 dB (duty cycle correction factor)

### 9.3 Maximum output power conducted and radiated

#### Description:

Measurement of the maximum output power conducted and radiated

#### Measurement:

Measurement parameter	
Detector:	RMS
Sweep time:	60s
Resolution bandwidth:	1 MHz
Video bandwidth:	≥ 3 MHz
Span:	> EBW
Trace-Mode:	Max hold
Analyzer function	Band power / channel power Interval > 26 dB EBW

#### Limits:

Radiated output power	Conducted output power
Conducted power + 6dBi antenna gain	The lesser one of 50mW or 4 dBm + 10 log Bandwidth 5.150-5.250 GHz (where Bandwidth is the 26dB Bandwidth [MHz])

**Result: OFDM antenna port 1**

OFDM antenna port 1 Channel	Maximum output power conducted [dBm]			
	Lowest 5180 MHz	Middle 5200 MHz	Highest 5240 MHz	-/-
+2.84 dB duty cycle correction	0.24	0.41	0.96	-/-
Measurement uncertainty	± 1 dB			

**Result: Passed**

OFDM antenna port 1 Channel	Maximum output power radiated [dBm]			
	Lowest 5180 MHz	Middle 5200 MHz	Highest 5240 MHz	-/-
+2.84 dB duty cycle correction	1.68	2.10	2.91	-/-
Measurement uncertainty	± 3 dB			

**Result: Passed****Result: OFDM antenna port 2**

OFDM antenna port 2 Channel	Maximum output power conducted [dBm]			
	Lowest 5180 MHz	Middle 5200 MHz	Highest 5240 MHz	-/-
+2.84 dB duty cycle correction	-0.76	-0.58	0.14	-/-
Measurement uncertainty	± 1 dB			

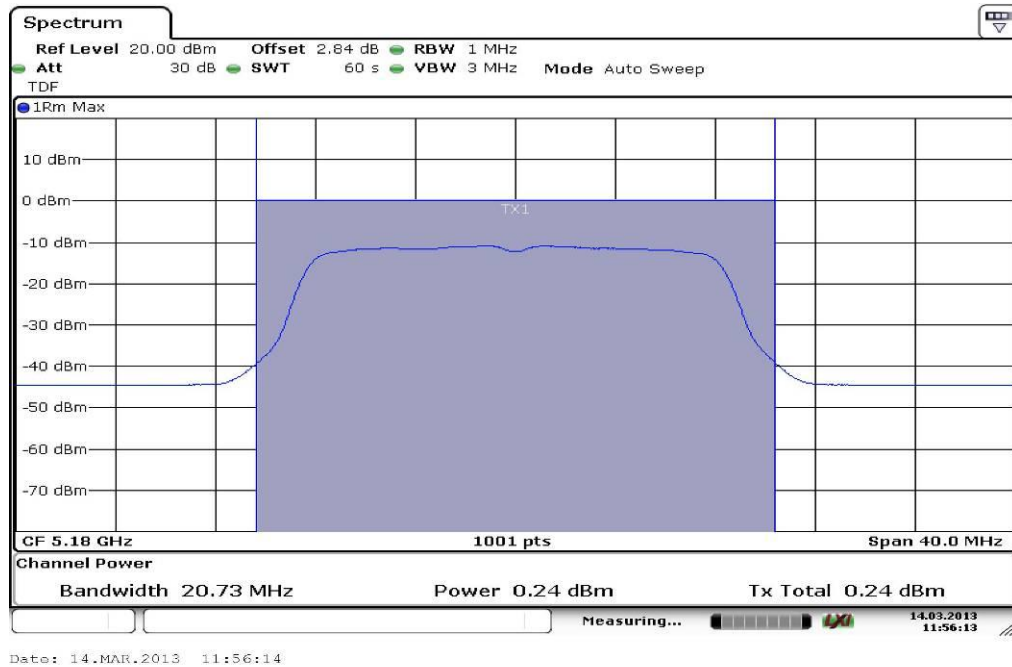
**Result: Passed**

OFDM antenna port 2 Channel	Maximum output power radiated [dBm]			
	Lowest 5180 MHz	Middle 5200 MHz	Highest 5240 MHz	-/-
+2.84 dB duty cycle correction	0.68	1.11	2.09	-/-
Measurement uncertainty	± 3 dB			

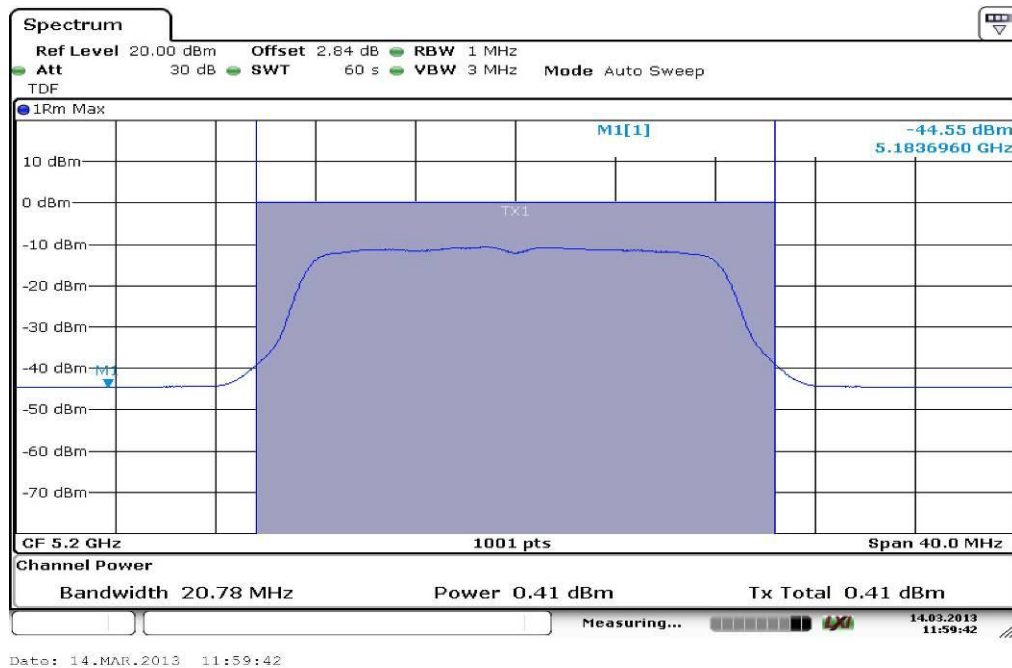
**Result: Passed**

**Plots: OFDM, antenna port 1**

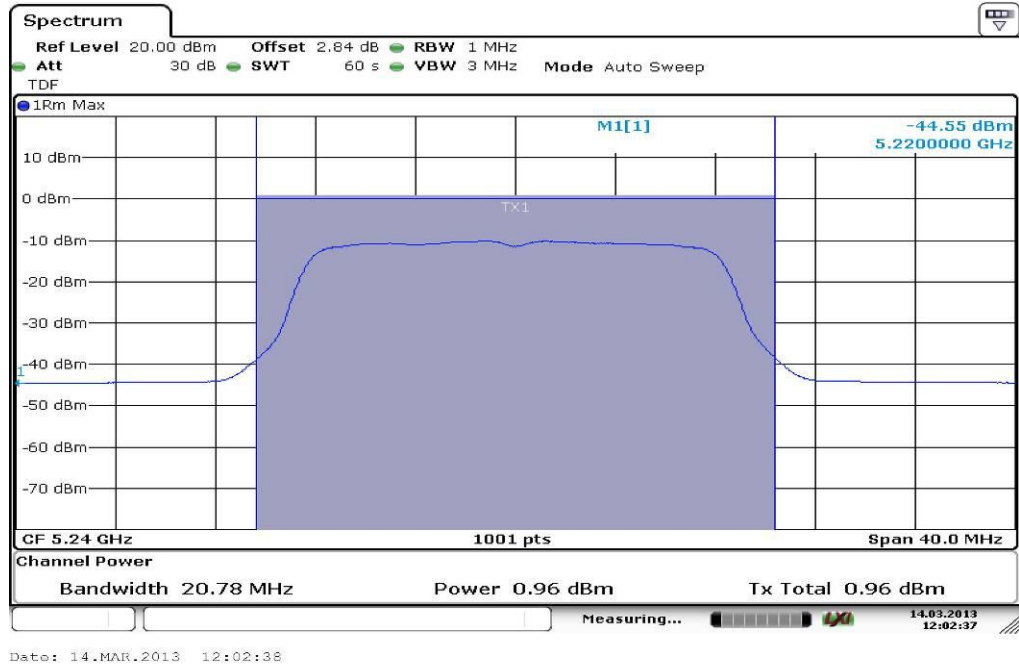
**Plot 1: TX mode, lowest channel**



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



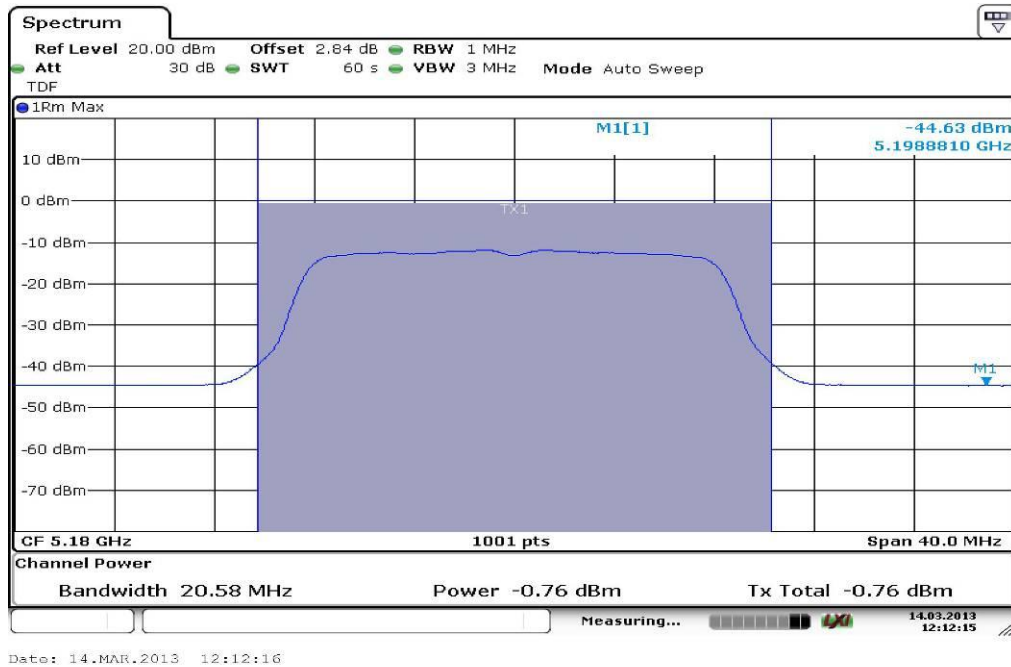
Plot 3: TX mode, highest channel



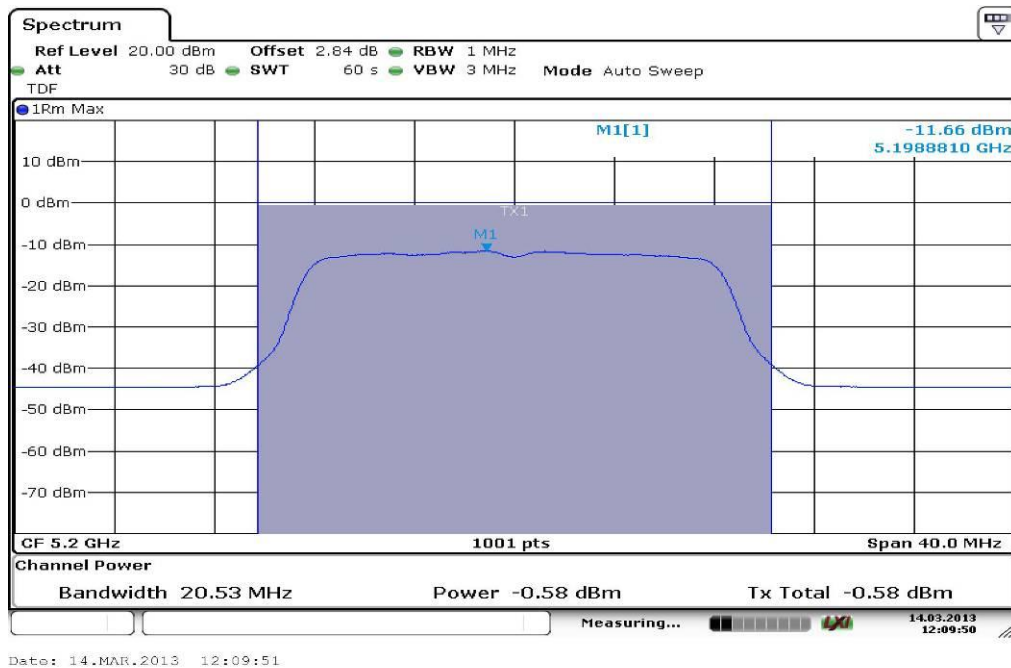


**Plots: OFDM, antenna port 2**

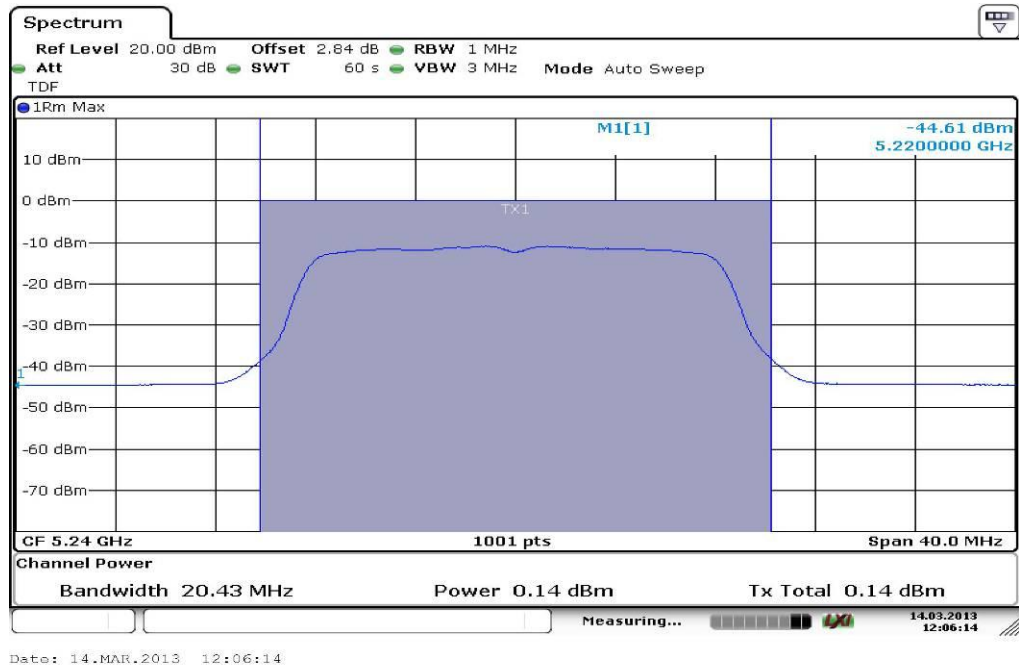
**Plot 1: TX mode, lowest channel**



**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 at the lowest, middle and highest channel.

### Measurement:

Measurement parameter	
Detector:	RMS
Sweep time:	60 s / 120 s
Resolution bandwidth:	1 MHz
Video bandwidth:	≥ 3 MHz
Span:	> EBW
Trace-Mode:	Max hold

### Limits:

Power Spectral Density
power spectral density conducted ≤ 4 dBm in any 1 MHz band (band 5150 – 5250 MHz)

### Result: OFDM antenna port 1

OFDM antenna port 1 Channel	Power Spectral density [dBm/MHz]			
	Lowest 5180 MHz	Middle 5200 MHz	Highest 5240 MHz	-/-
+2.84 dB duty cycle correction	-10.54	-10.36	-9.85	-/-
Measurement uncertainty	± 1 dB			

**Result: Passed**

### Result: OFDM antenna port 2

OFDM antenna port 2 Channel	Power Spectral density [dBm/MHz]			
	Lowest 5180 MHz	Middle 5200 MHz	Highest 5240 MHz	-/-
+2.84 dB duty cycle correction	-11.64	-11.38	-10.74	-/-
Measurement uncertainty	± 1 dB			

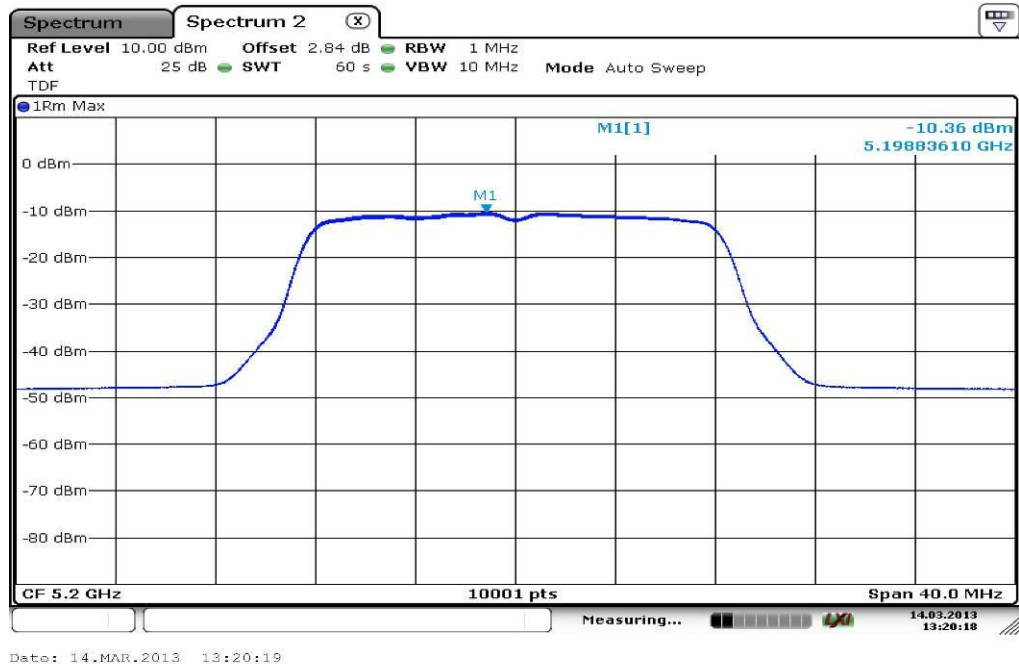
**Result: Passed**

**Plots: OFDM, antenna port 1**

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



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



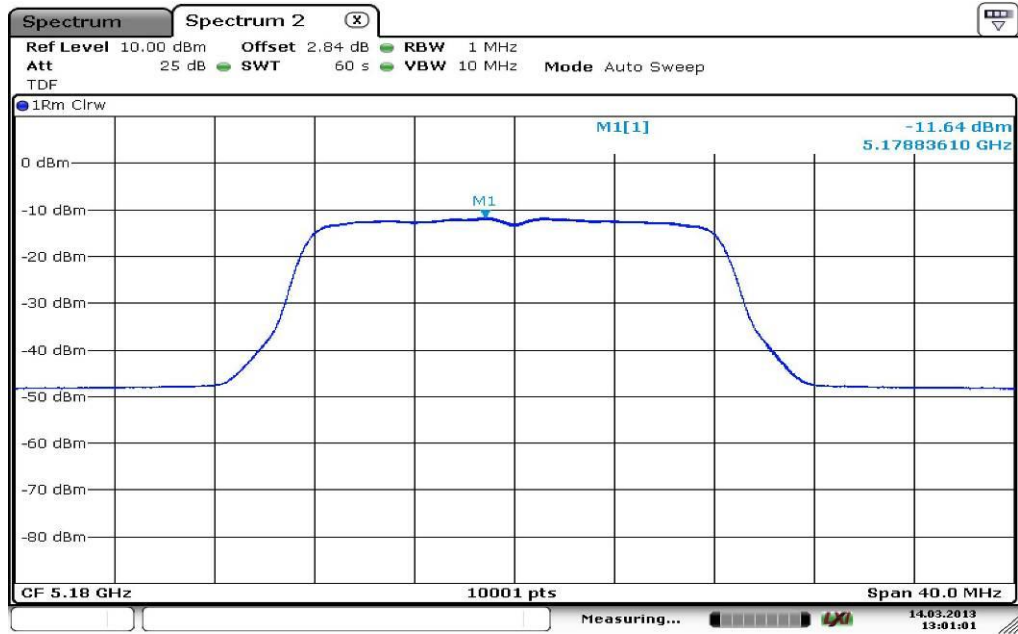
Plot 3: TX mode, highest channel



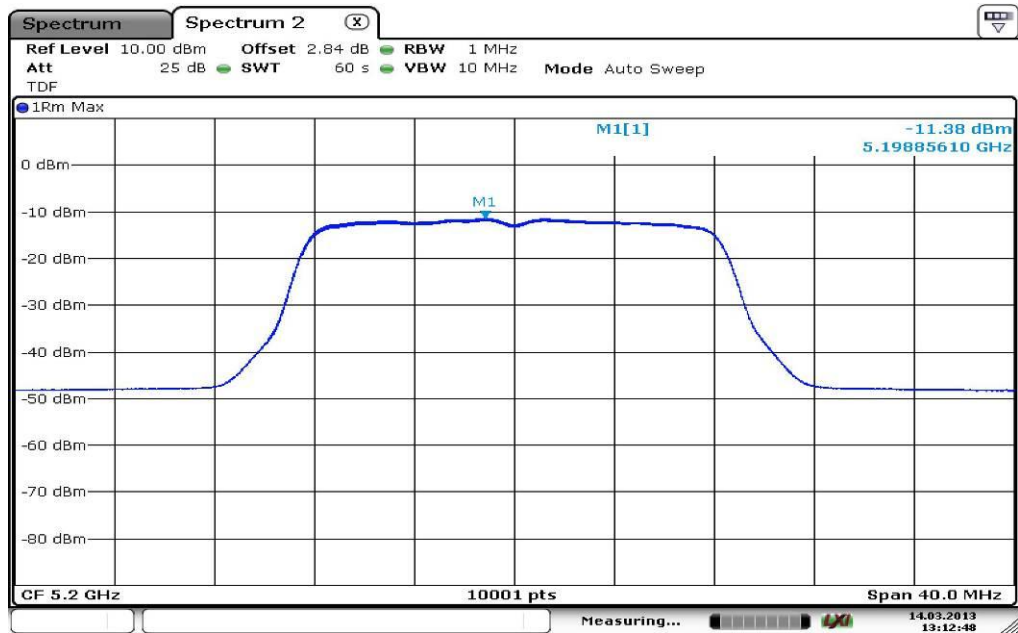
Date: 14.MAR.2013 13:18:39

**Plots: OFDM, antenna port 2**

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



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



Plot 3: TX mode, highest channel



Date: 14.MAR.2013 13:15:52

## 9.5 Spectrum bandwidth – 26 dB bandwidth

### Description:

Measurement of the 26 dB bandwidth of the modulated signal.

### Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1% EBW
Video bandwidth:	≥ RBW
Span:	> complete signal!
Trace-Mode:	Max hold

### Limits:

Spectrum Bandwidth – 26 dB Bandwidth
-/-

### Result: OFDM antenna port 1

OFDM antenna port 1 Channel	26 dB BANDWIDTH [MHz]			
	Lowest 5180 MHz	Middle 5200 MHz	Highest 5240 MHz	-/-
	20.73	20.78	20.78	-/-
Measurement uncertainty	± 1 dB			

Result: **Passed**

### Result: OFDM antenna port 2

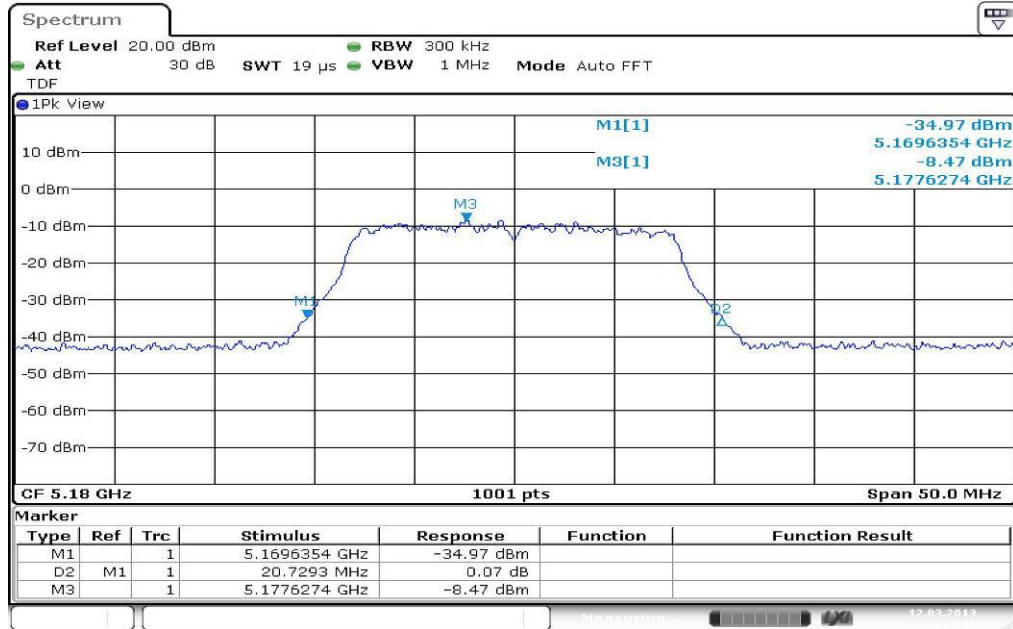
OFDM antenna port 2 Channel	26 dB BANDWIDTH [MHz]			
	Lowest 5180 MHz	Middle 5200 MHz	Highest 5240 MHz	-/-
	20.58	20.53	20.43	-/-
Measurement uncertainty	± 1 dB			

Result: **Passed**



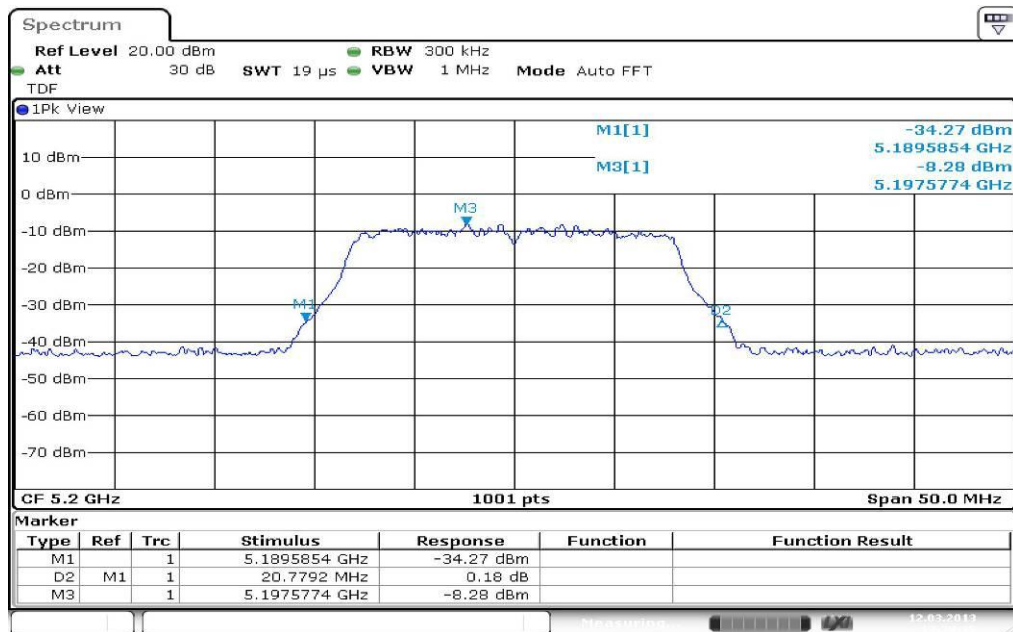
**Plots: OFDM, antenna port 1**

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



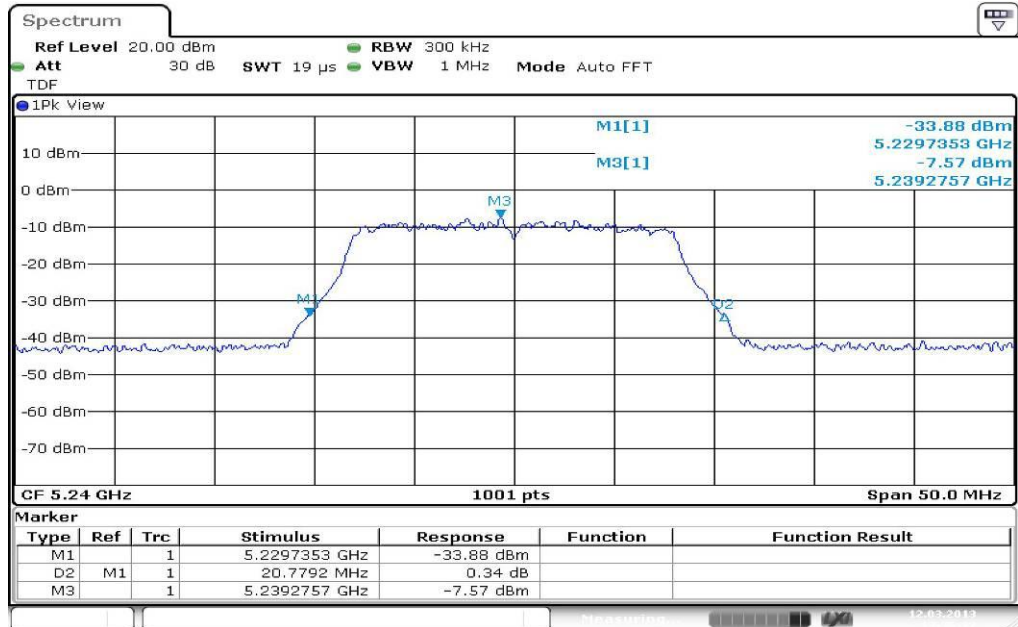
Date: 12.MAR.2013 13:13:16

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



Date: 12.MAR.2013 13:29:36

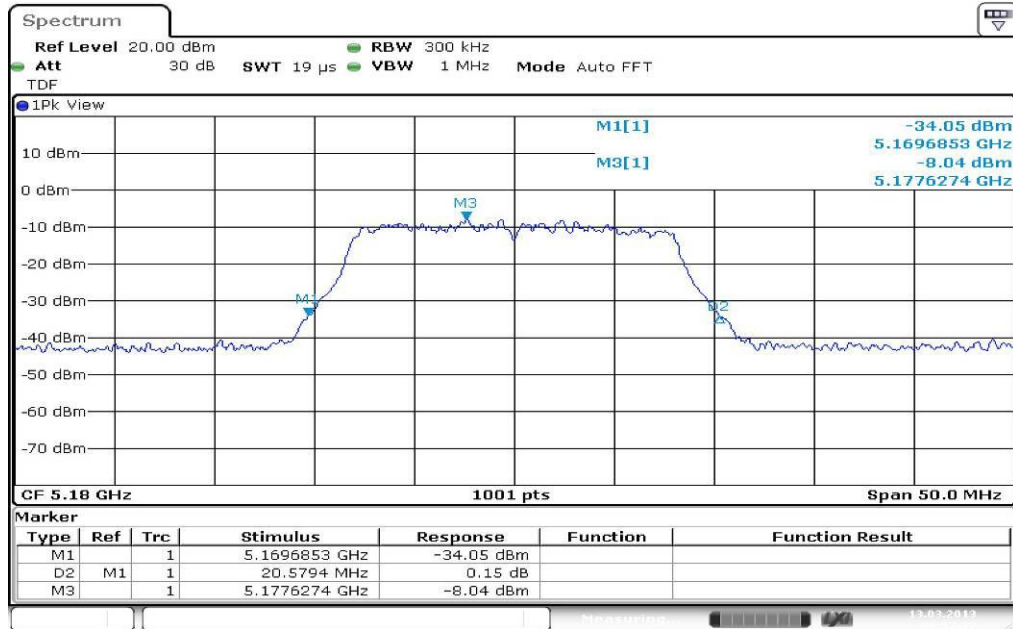
Plot 3: TX mode, highest channel



Date: 12.MAR.2013 13:36:33

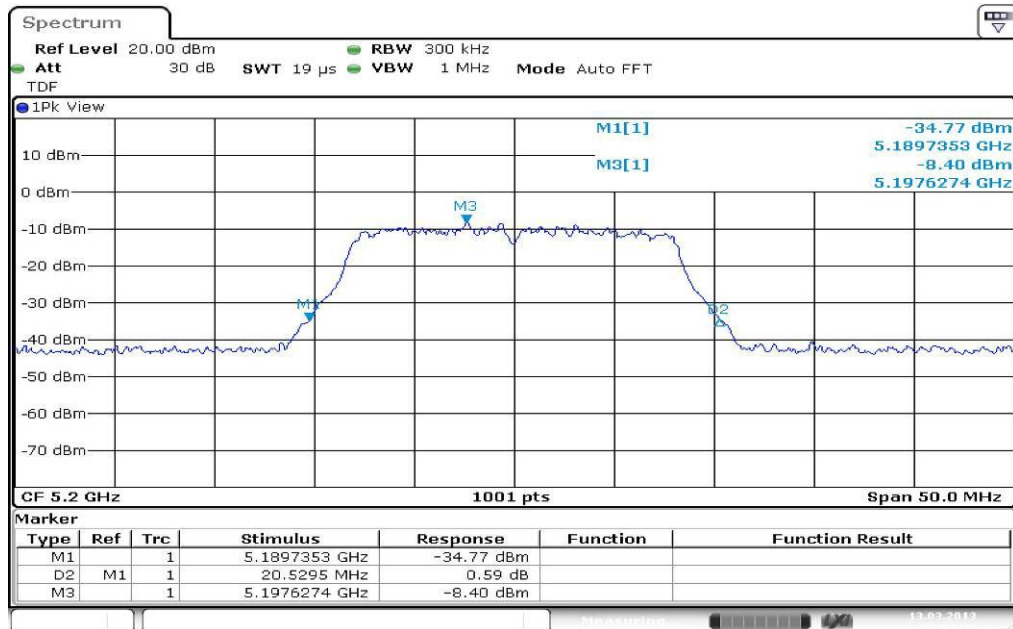
**Plots: OFDM, antenna port 2**

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



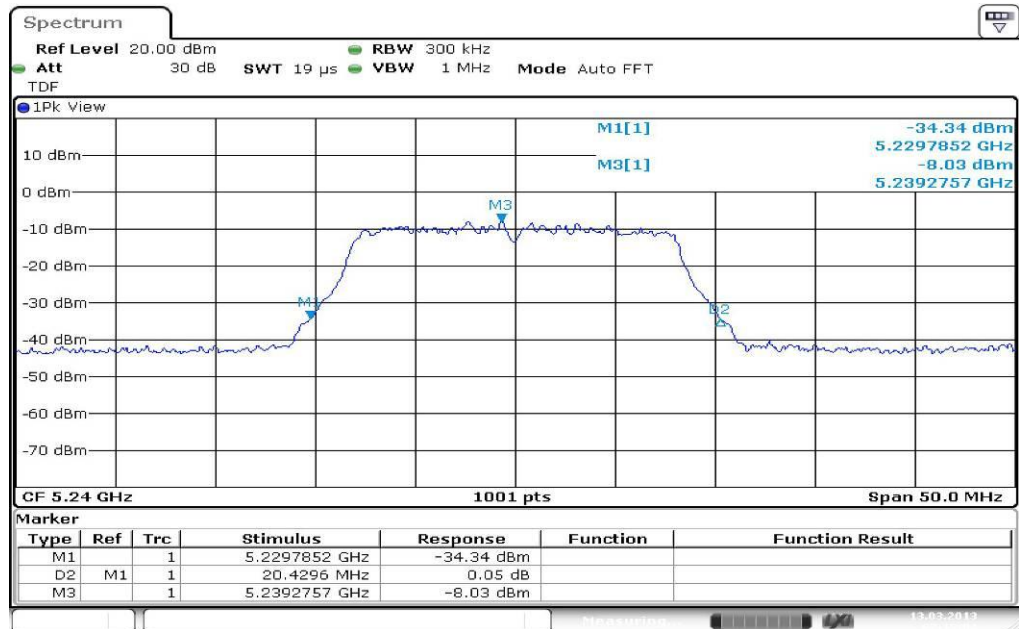
Date: 13.MAR.2013 06:57:22

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



Date: 13.MAR.2013 07:04:44

Plot 3: TX mode, highest channel



Date: 13.MAR.2013 07:15:05

## 9.6 Peak excursion measurements

### Description:

Peak to average value.

### Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	60 s / 120 s
Resolution bandwidth:	1 MHz
Video bandwidth:	≥ 3 MHz
Span:	> Complete signal
Trace-Mode:	Max hold

### Limits:

Peak excursion value
Does not exceed 13 dB.

### Results:

Modulation OFDM antenna port 1	Peak excursion value		
	5180 MHz	5200 MHz	5240 MHz
Channel			
RMS	-10.54	-10.36	-9.85
Peak	-2.43	-2.16	-1.71
Peak excursion value	8.11	8.20	8.14
Measurement uncertainty	± 1 dB		

**Result: Passed**

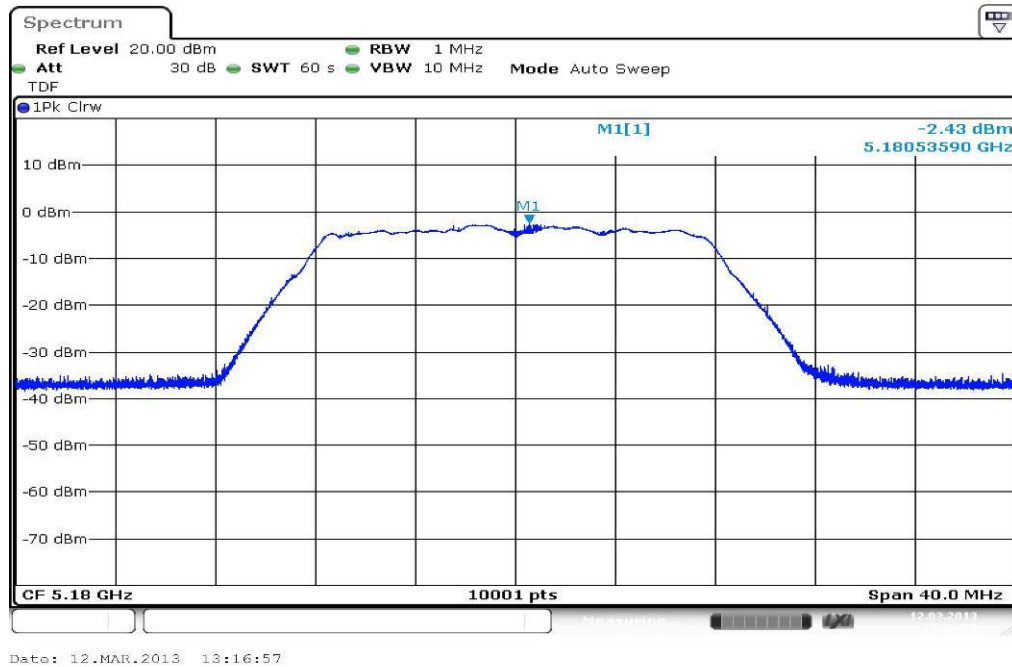
### Results:

Modulation OFDM antenna port 2	Peak excursion value		
	5180 MHz	5200 MHz	5240 MHz
Channel			
RMS	-11.64	-11.38	-10.74
Peak	-2.01	-2.19	-2.20
Peak excursion value	9.63	9.19	8.54
Measurement uncertainty	± 1 dB		

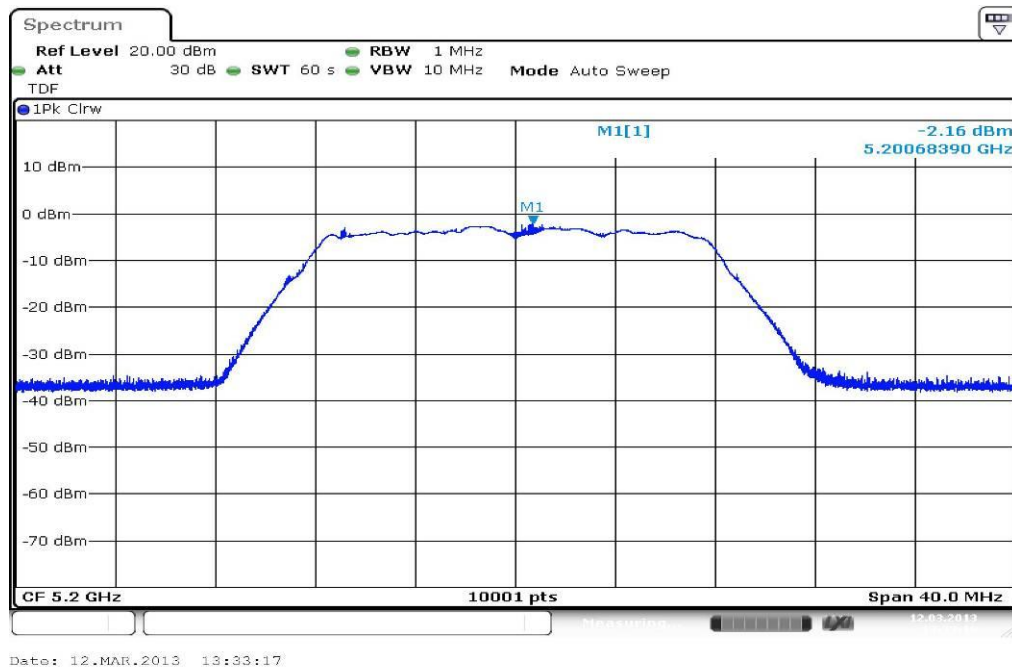
**Result: Passed**

**Plots: OFDM, antenna port 1**

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



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



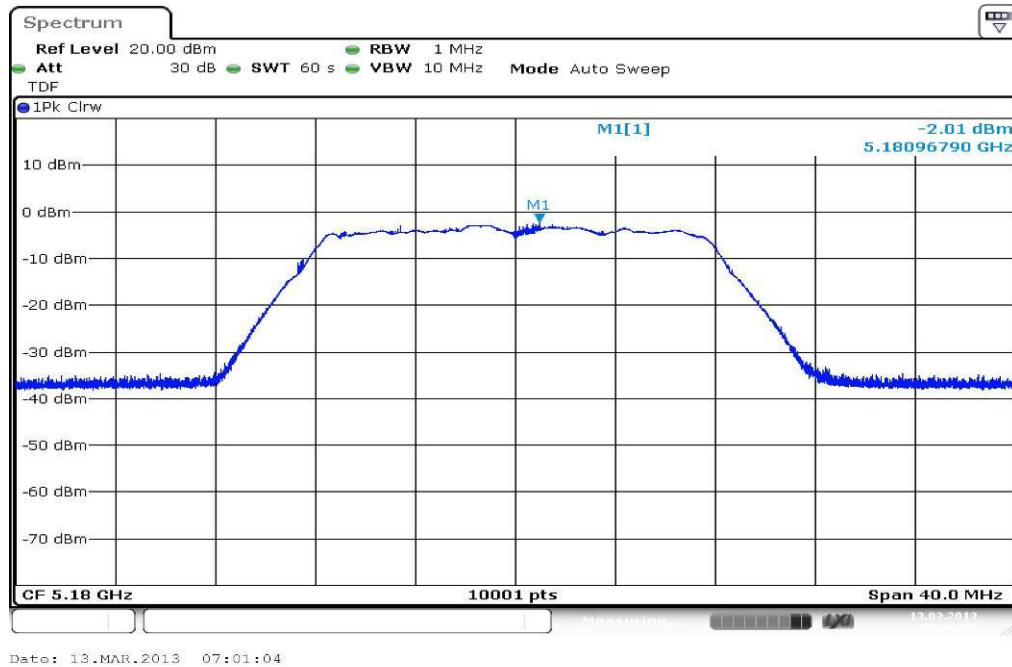
Plot 3: TX mode, highest channel



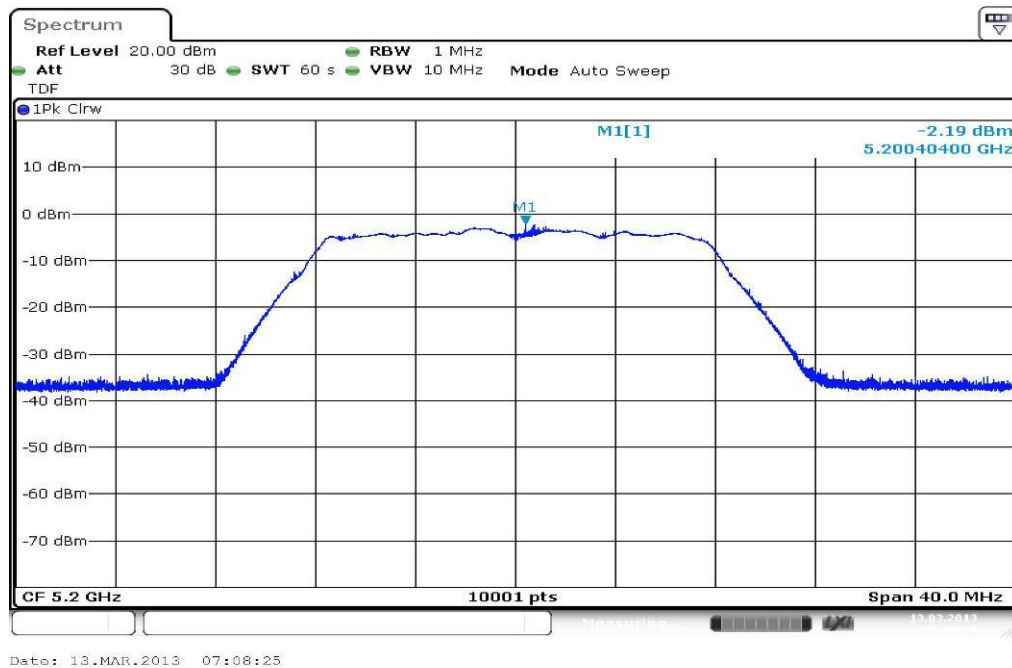
Date: 12.MAR.2013 18:40:14

**Plots: OFDM, antenna port 2**

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

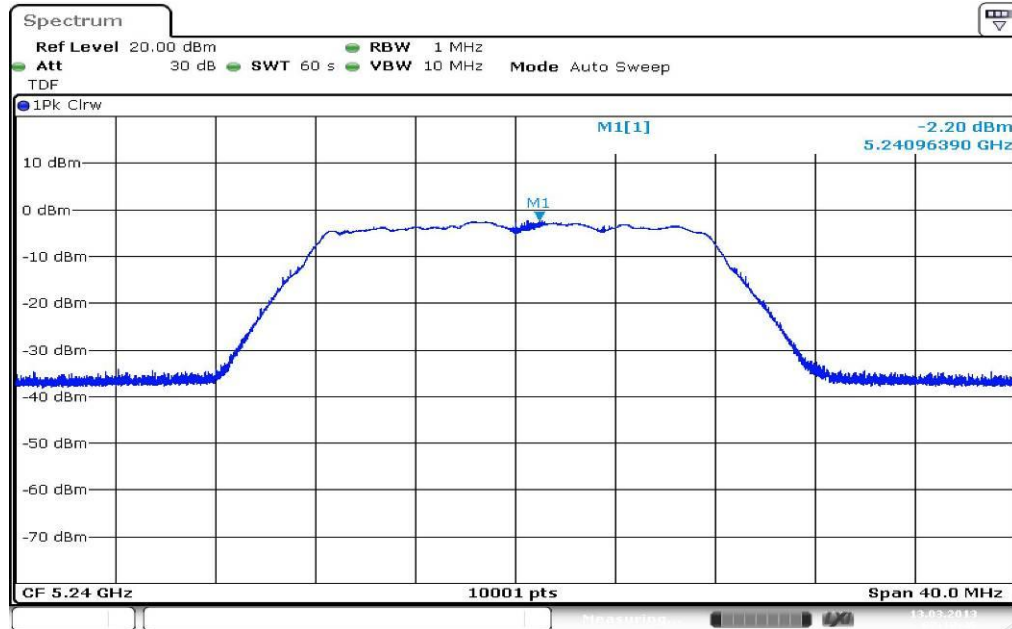


**Plot 2: TX mode, middle channel**





Plot 3: TX mode, highest channel



Date: 13.MAR.2013 07:18:46

## 9.7 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 the lowest channel for the lower restricted band and to the highest channel for the upper restricted band. Measurement distance is 3m.

### Measurement:

Measurement parameter	
Detector:	Peak / RMS
Sweep time:	Auto
Resolution bandwidth:	1 MHz
Video bandwidth:	10 Hz / 1 MHz / 3 MHz
Span:	See plots!
Trace-Mode:	Max Hold

### Limits:

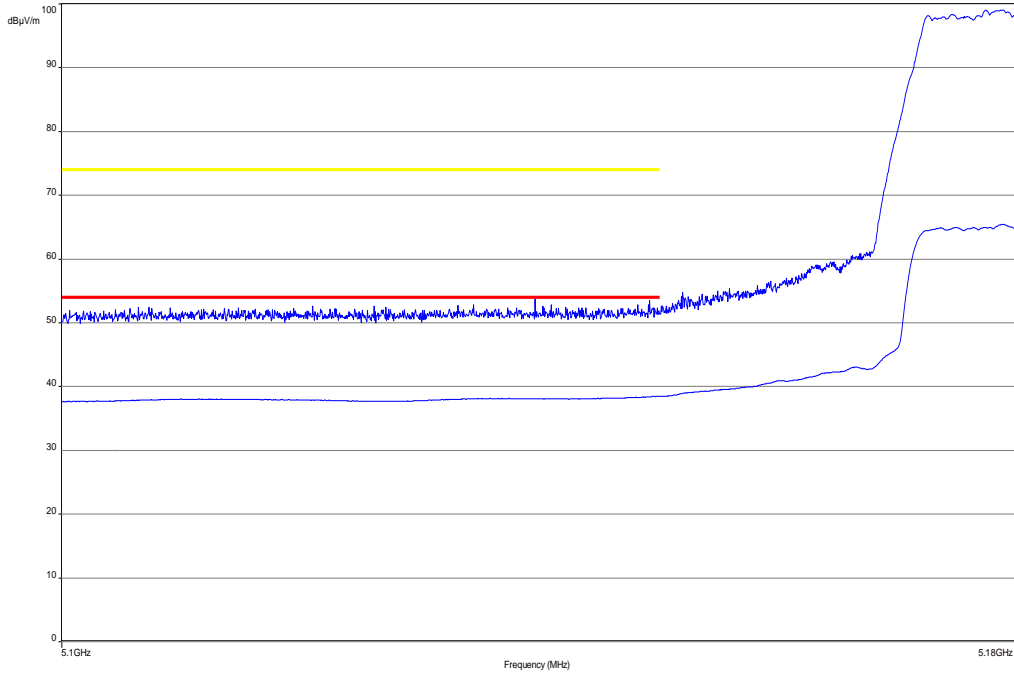
Band Edge Compliance Radiated
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within 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)).
74 dB $\mu$ V/m PEAK 54 dB $\mu$ V/m AVG or -27 dBm/MHz PEAK (acc. Part 15.407)

### Result:

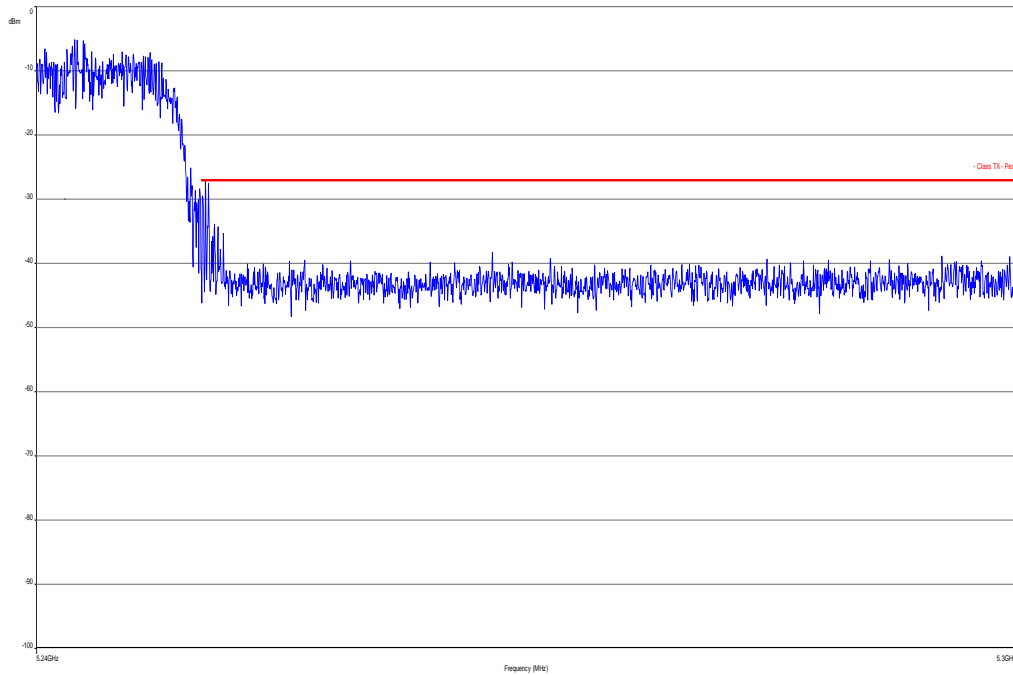
Scenario	Band Edge Compliance Radiated
band edge	< 74 dB $\mu$ V/m (AVG) < 54 dB $\mu$ V/m (PEAK) <-27 dBm/MHz (PEAK)
Measurement uncertainty	$\pm$ 3 dB

**Plots:**

**Plot 1:** lower band edge, vertical & horizontal polarization, antenna port 1, peak & average



**Plot 2:** upper band edge, vertical & horizontal polarization, antenna port 1, peak (acc. Part 15.407)



**Result:** Passed

## 9.8 TX spurious emissions radiated

### Description:

Measurement of the radiated spurious emissions in transmit mode. The measurement is performed at lowest, middle and highest channel.

### Measurement:

Measurement parameter	
Detector:	Quasi Peak below 1 GHz (alternative Peak)  Peak above 1 GHz / RMS
Sweep time:	Auto
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Video bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: ≥ 3 MHz /10 Hz
Span:	30 MHz to 40 GHz
Trace-Mode:	Max Hold / Average with 100 counts + 20 log (1 / X) for duty cycle lower than 100 %

### Limits:

TX Spurious Emissions Radiated		
§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
§15.407		
Outside the restricted bands!	-27 dBm / MHz	

**Results: OFDM antenna port 1**

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM antenna port 1								
Lowest 5180 MHz			Middle 5200 MHz			Highest 5240 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.		
6.22	Peak	48.63	6.24	Peak	45.09	6.29	Peak	46.09
For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.		
Measurement uncertainty					± 3 dB			

**Result: Passed**

**Results: OFDM antenna port 2**

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM antenna port 2								
Lowest 5180 MHz			Middle 5200 MHz			Highest 5240 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.			-/-		
-/-			6.24	Peak	46.49	-/-		
-/-			For emissions above 12.75 GHz, please take a look at the plots.			-/-		
Measurement uncertainty					± 3 dB			

**Result: Passed**

**Note:**

The antenna port 1 shows the same behaviour as antenna port 2 and is measured to see the fulfilment according to the FCC Part 15.407 standard.

**Plots:** OFDM antenna port 1

**Plot 1:** 30 MHz to 1 GHz, 5180 MHz, vertical & horizontal polarization

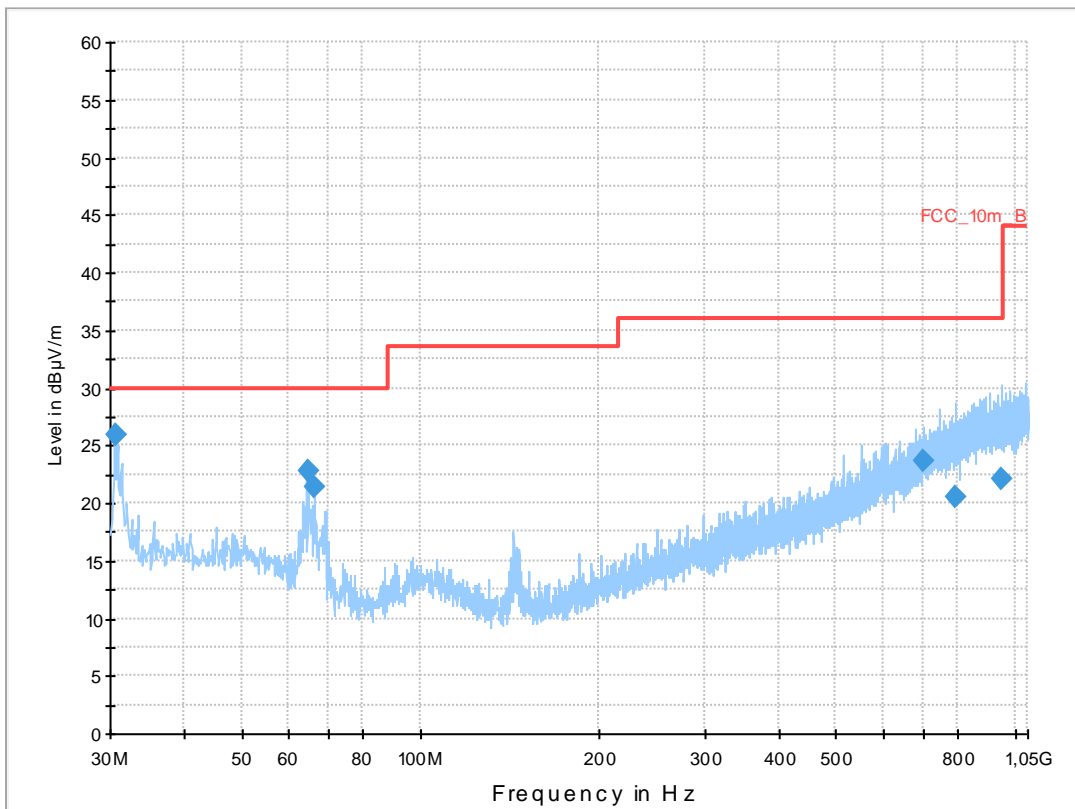
### Common Information

EUT: ADN-W AM FM02  
 Serial Number: 1462100049  
 Test Description: FCC part 15 class B @ 10m  
 Operating Conditions: TX 5180 MHz | Ant. 1  
 Operator Name: Hennemann  
 Comment: powered by main unit

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

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

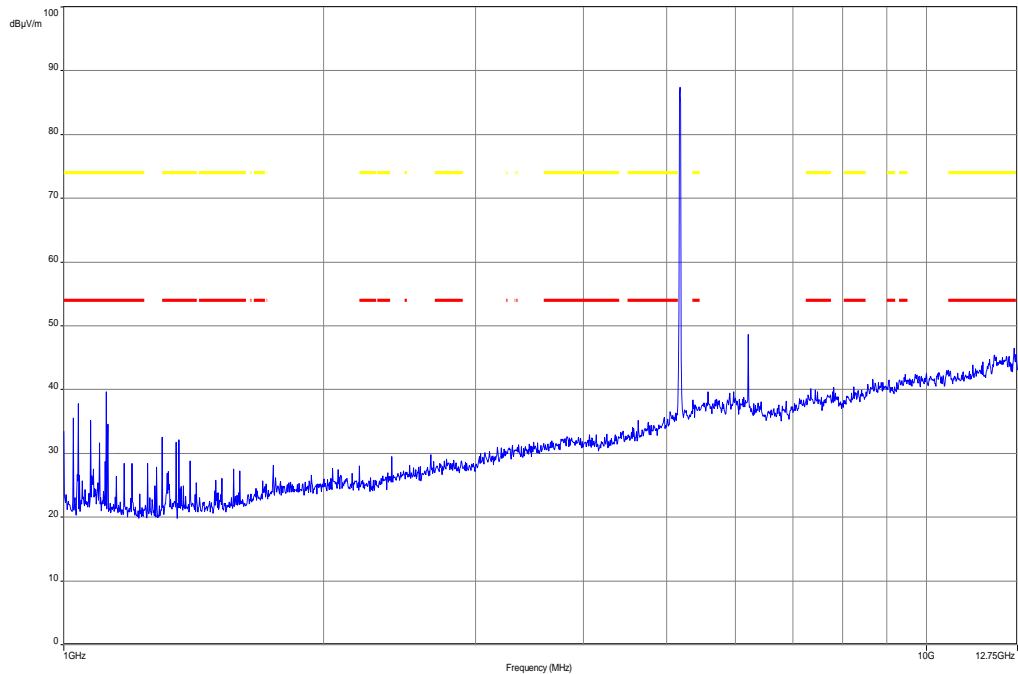
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



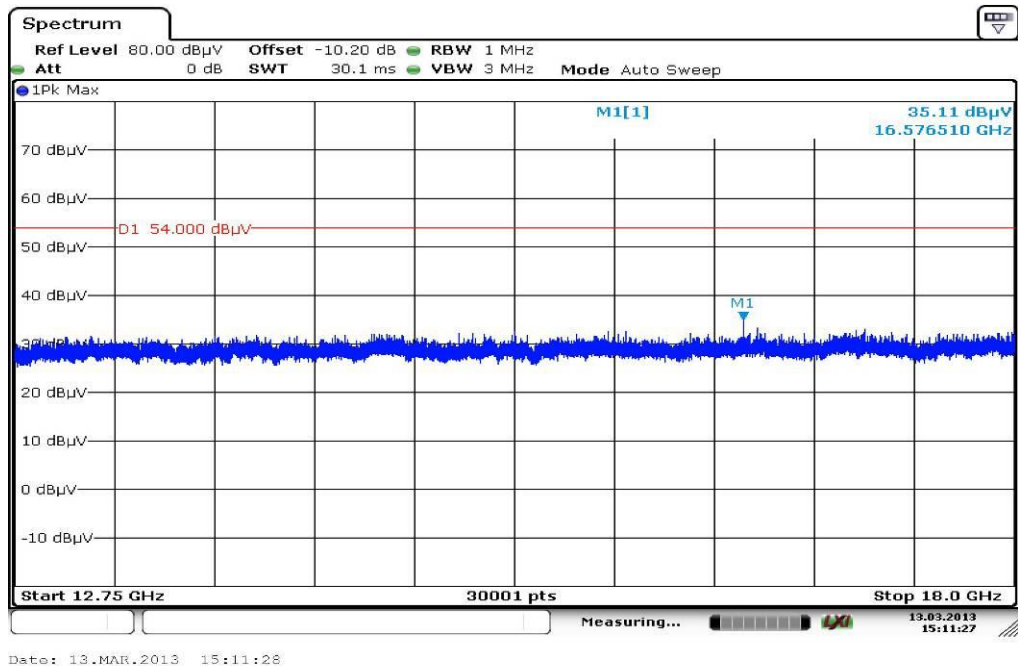
### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.603979	26.0	1000.0	120.000	145.0	V	81.0	12.6	4.0	30.0	
64.762050	22.7	1000.0	120.000	170.0	V	100.0	10.5	7.3	30.0	
66.302100	21.4	1000.0	120.000	170.0	V	260.0	10.1	8.6	30.0	
700.005000	23.6	1000.0	120.000	120.0	H	100.0	22.5	12.4	36.0	
792.994800	20.5	1000.0	120.000	160.0	H	2.0	23.8	15.5	36.0	
951.572550	22.1	1000.0	120.000	170.0	H	190.0	25.4	13.9	36.0	

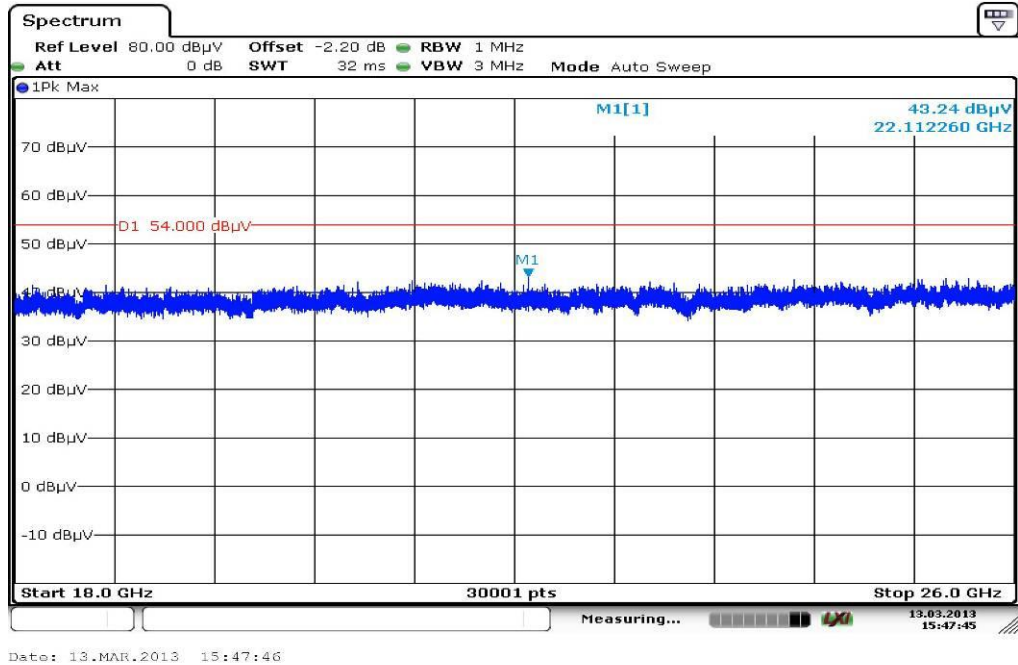
**Plot 2:** 1 GHz to 12.75 GHz, 5180 MHz, vertical & horizontal polarization



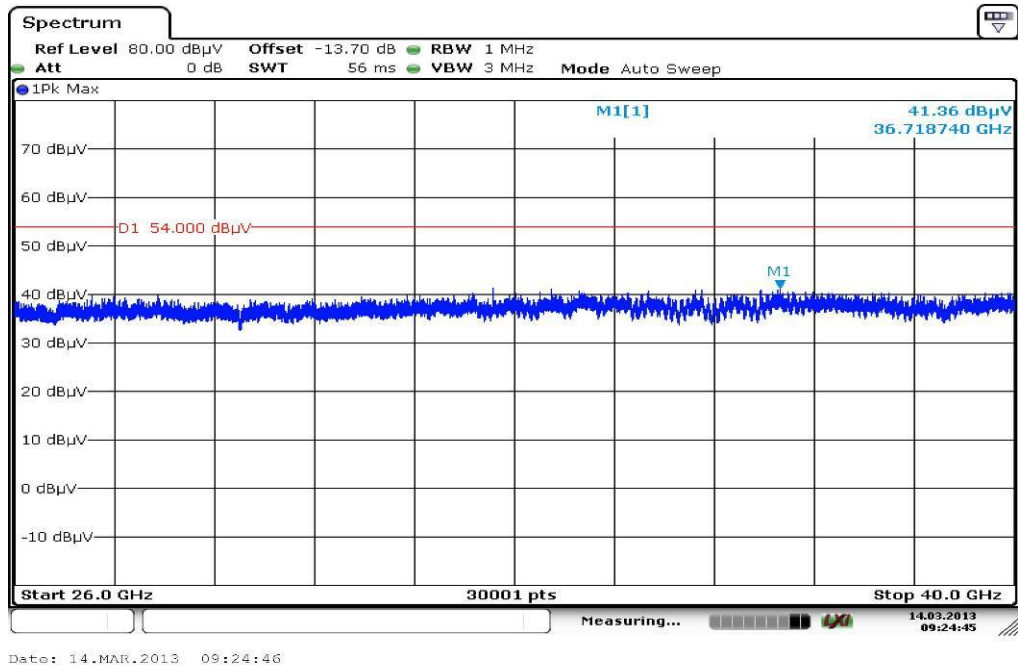
**Plot 3:** 12.75 GHz to 18 GHz, 5180 MHz, vertical & horizontal polarization



**Plot 4:** 18 GHz to 26 GHz, 5180 MHz, vertical & horizontal polarization



**Plot 5:** 26 GHz to 40 GHz, 5180 MHz, vertical & horizontal polarization





**Plot 6:** 30 MHz to 1 GHz, 5200 MHz, vertical & horizontal polarization

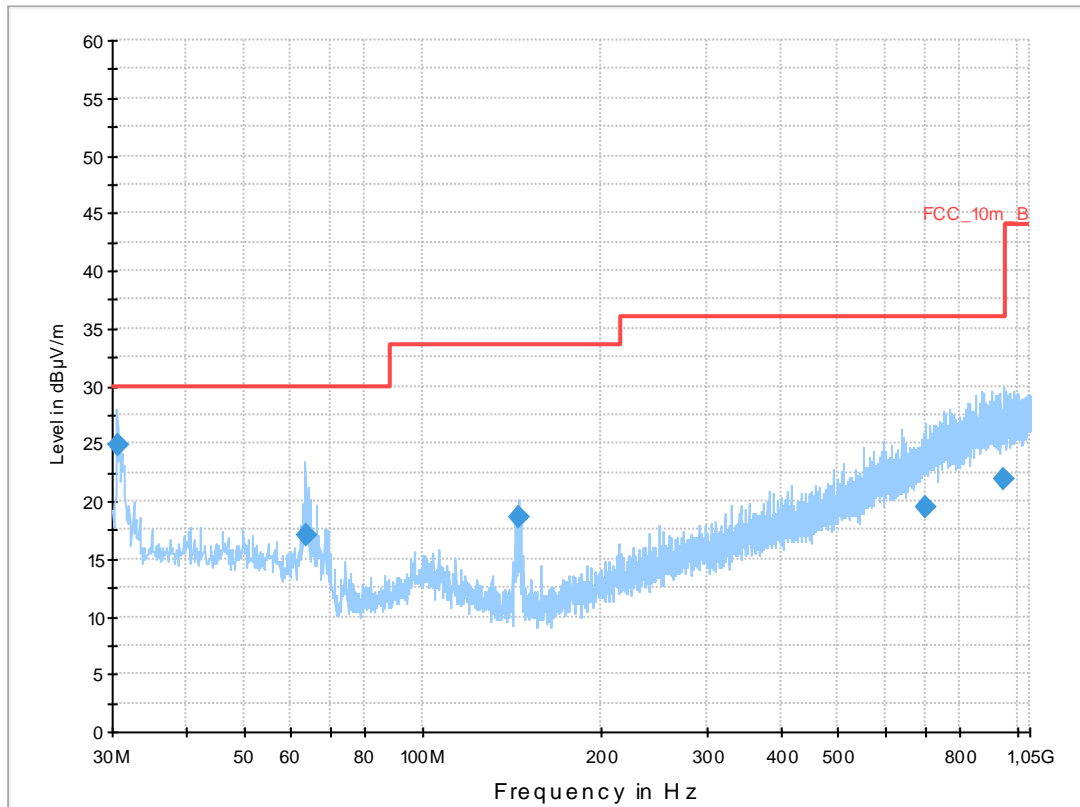
### Common Information

EUT: ADN-W AM FM02  
 Serial Number: 1462100049  
 Test Description: FCC part 15 class B @ 10m  
 Operating Conditions: TX 5200 MHz | Ant. 1  
 Operator Name: Hennemann  
 Comment: powered by main unit

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

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

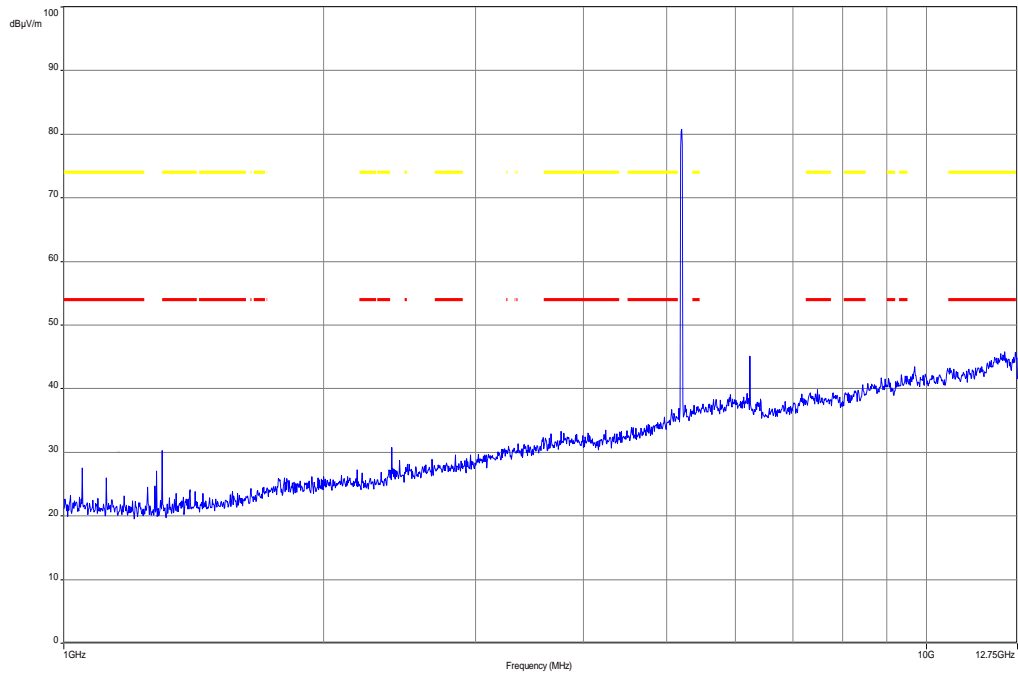
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



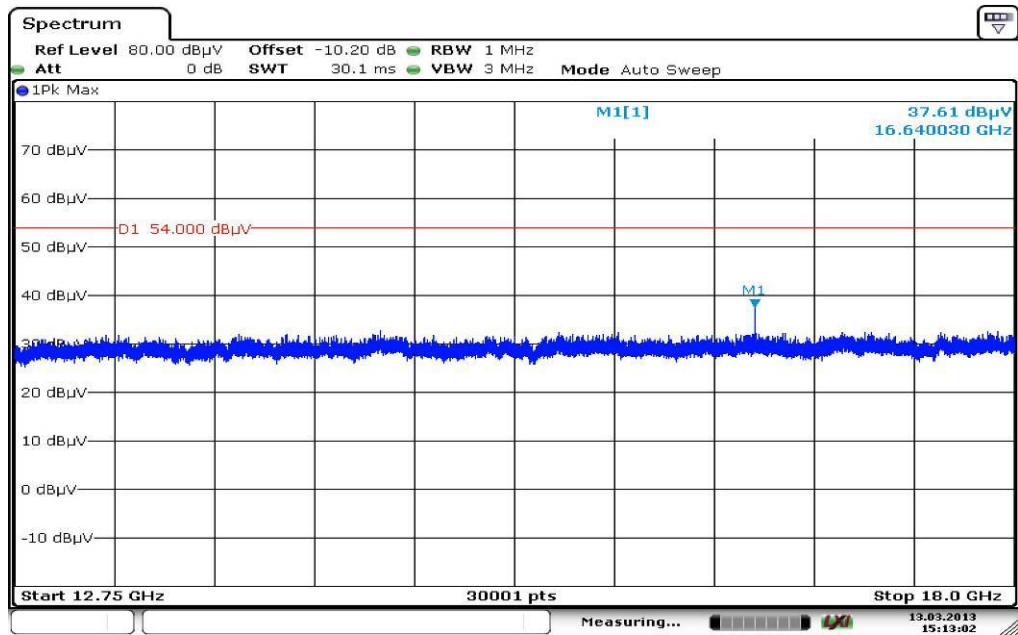
### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.627844	24.9	1000.0	120.000	154.0	V	190.0	12.6	5.1	30.0	
63.483300	17.1	1000.0	120.000	170.0	V	171.0	10.8	12.9	30.0	
145.275750	18.6	1000.0	120.000	121.0	V	-10.0	8.8	14.9	33.5	
699.924750	19.5	1000.0	120.000	170.0	V	100.0	22.5	16.5	36.0	
945.888150	22.0	1000.0	120.000	121.0	H	10.0	25.3	14.0	36.0	

**Plot 7:** 1 GHz to 12.75 GHz, 5200 MHz, vertical & horizontal polarization

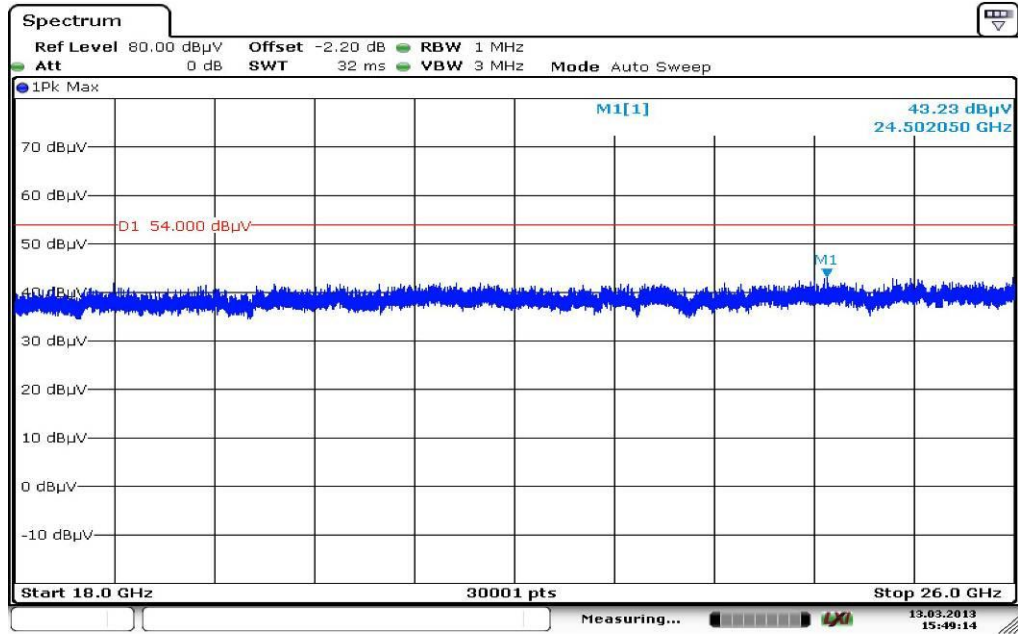


**Plot 8:** 12.75 GHz to 18 GHz, 5200 MHz, vertical & horizontal polarization

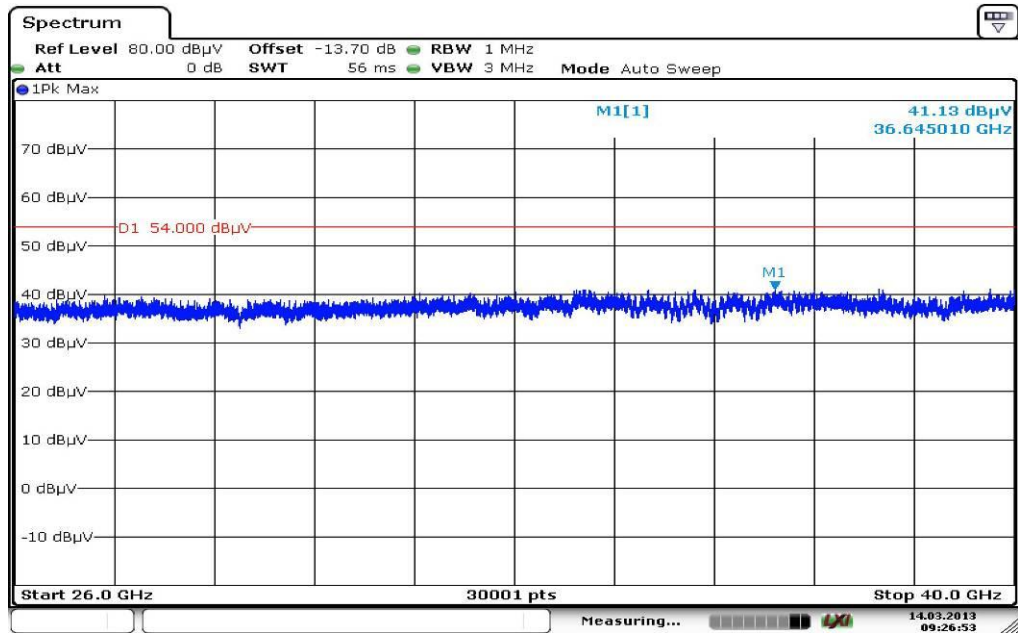


Date: 13.MAR.2013 15:13:03

**Plot 9:** 18 GHz to 26 GHz, 5200 MHz, vertical & horizontal polarization



**Plot 10:** 26 GHz to 40 GHz, 5200 MHz, vertical & horizontal polarization



Plot 11: 30 MHz to 1 GHz, 5240 MHz, vertical & horizontal polarization

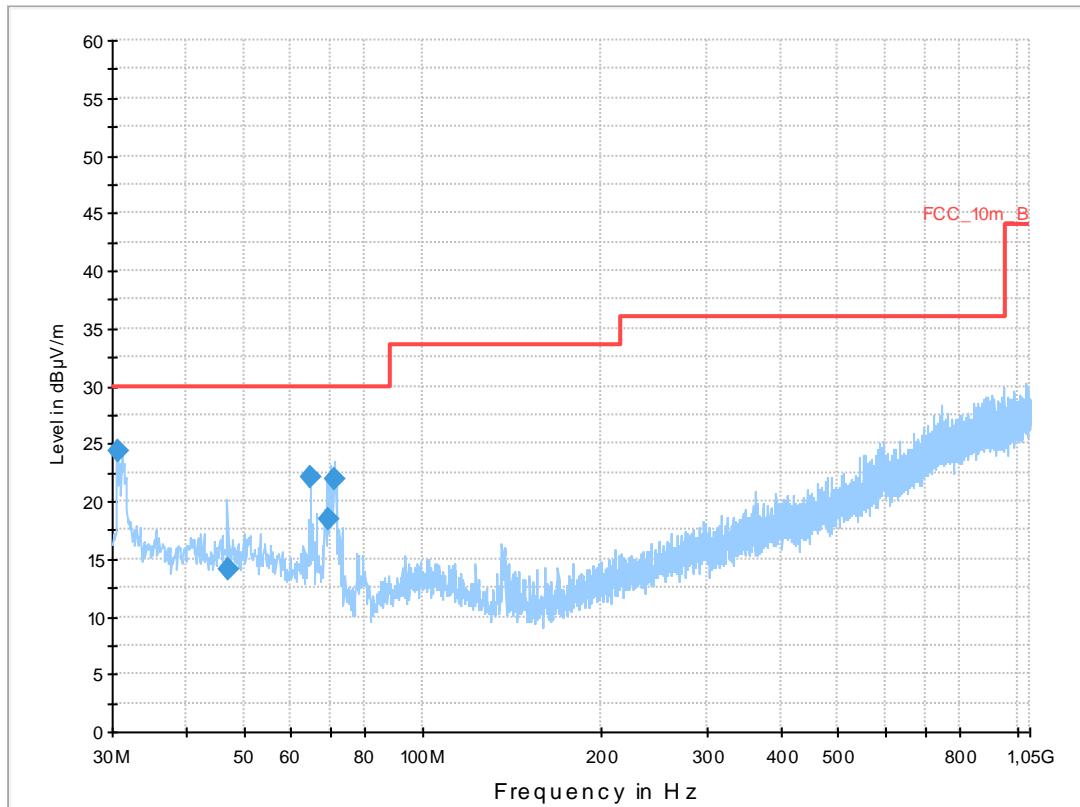
### Common Information

EUT: ADN-W AM FM02  
 Serial Number: 1462100049  
 Test Description: FCC part 15 class B @ 10m  
 Operating Conditions: TX 5240 MHz | Ant. 1  
 Operator Name: Hennemann  
 Comment: powered by main unit

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

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

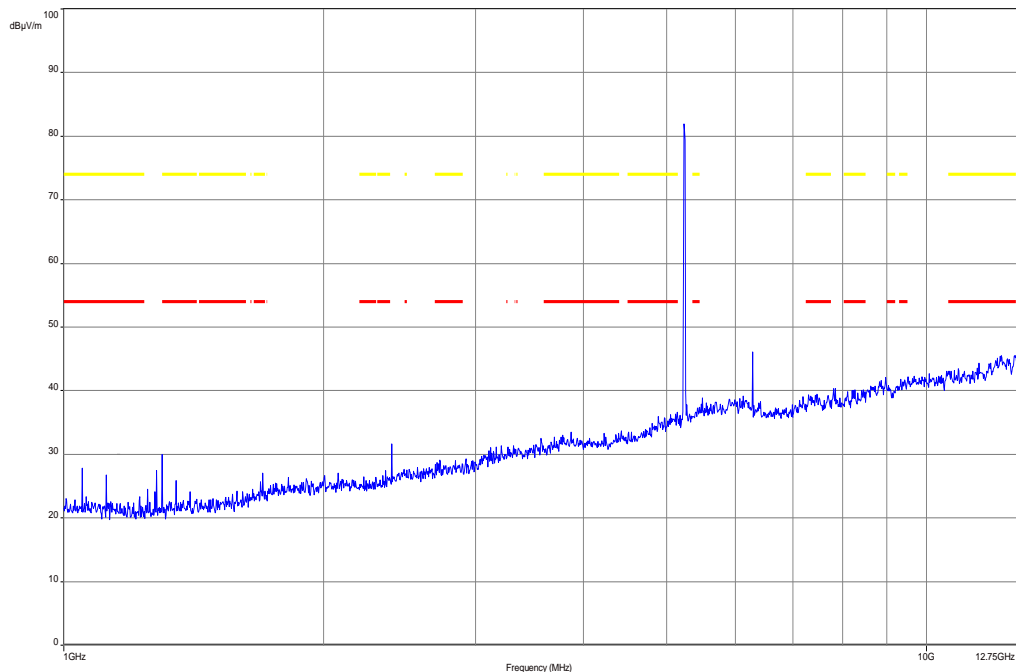
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



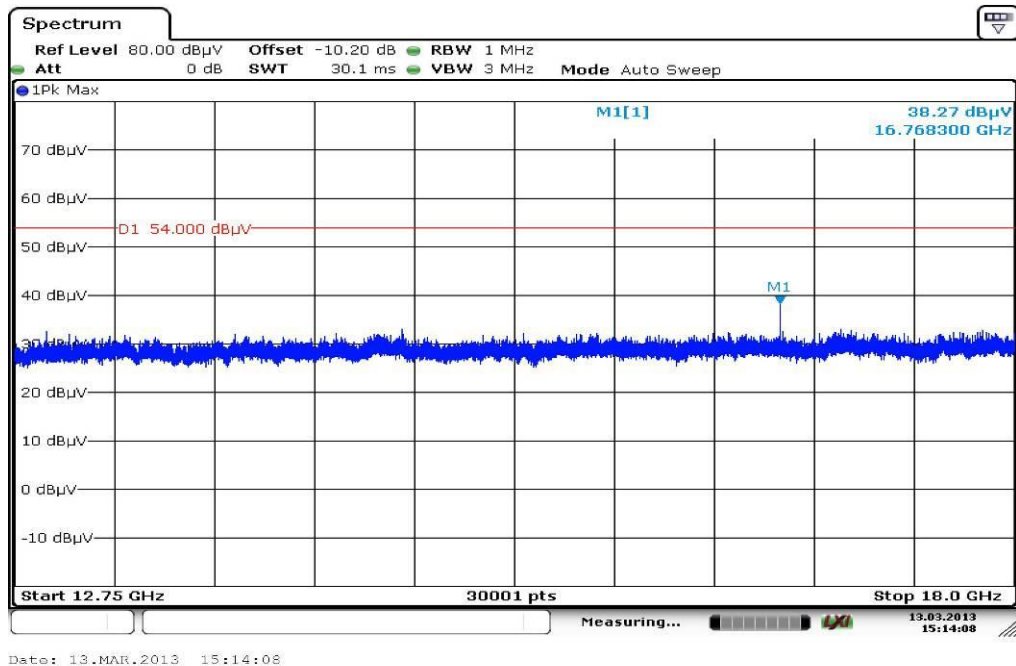
### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.624652	24.3	1000.0	120.000	120.0	V	100.0	12.6	5.7	30.0	
47.025600	14.2	1000.0	120.000	112.0	V	178.0	13.3	15.8	30.0	
64.777950	22.1	1000.0	120.000	170.0	V	170.0	10.5	7.9	30.0	
69.132900	18.4	1000.0	120.000	153.0	V	10.0	9.5	11.6	30.0	
70.805550	21.8	1000.0	120.000	170.0	V	180.0	9.3	8.2	30.0	

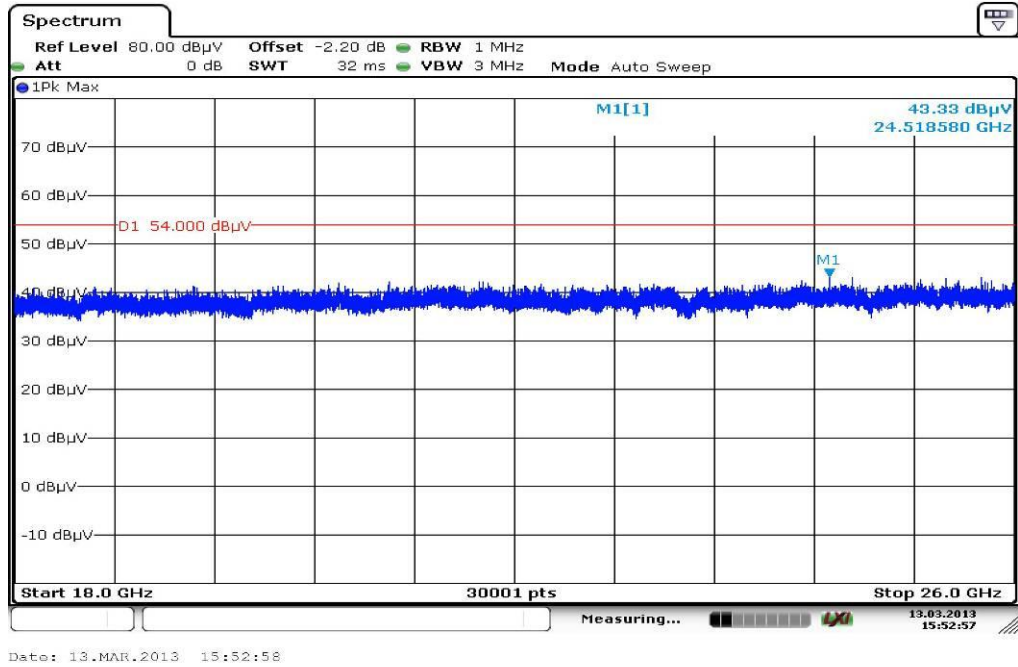
Plot 12: 1 GHz to 12.75 GHz, 5240 MHz, vertical & horizontal polarization



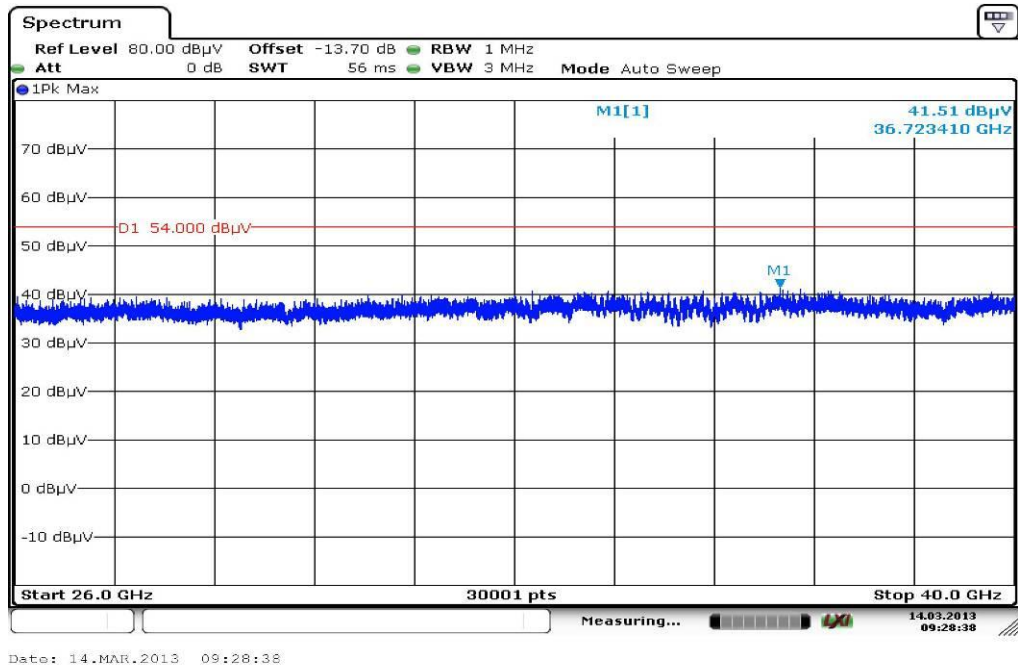
Plot 13: 12.75 GHz to 18 GHz, 5240 MHz, vertical & horizontal polarization



**Plot 14:** 18 GHz to 26 GHz, 5240 MHz, vertical & horizontal polarization



**Plot 15:** 26 GHz to 40 GHz, 5240 MHz, vertical & horizontal polarization



**Plots:** OFDM antenna port 2

**Plot 1:** 30 MHz to 1 GHz, 5200 MHz, vertical & horizontal polarization

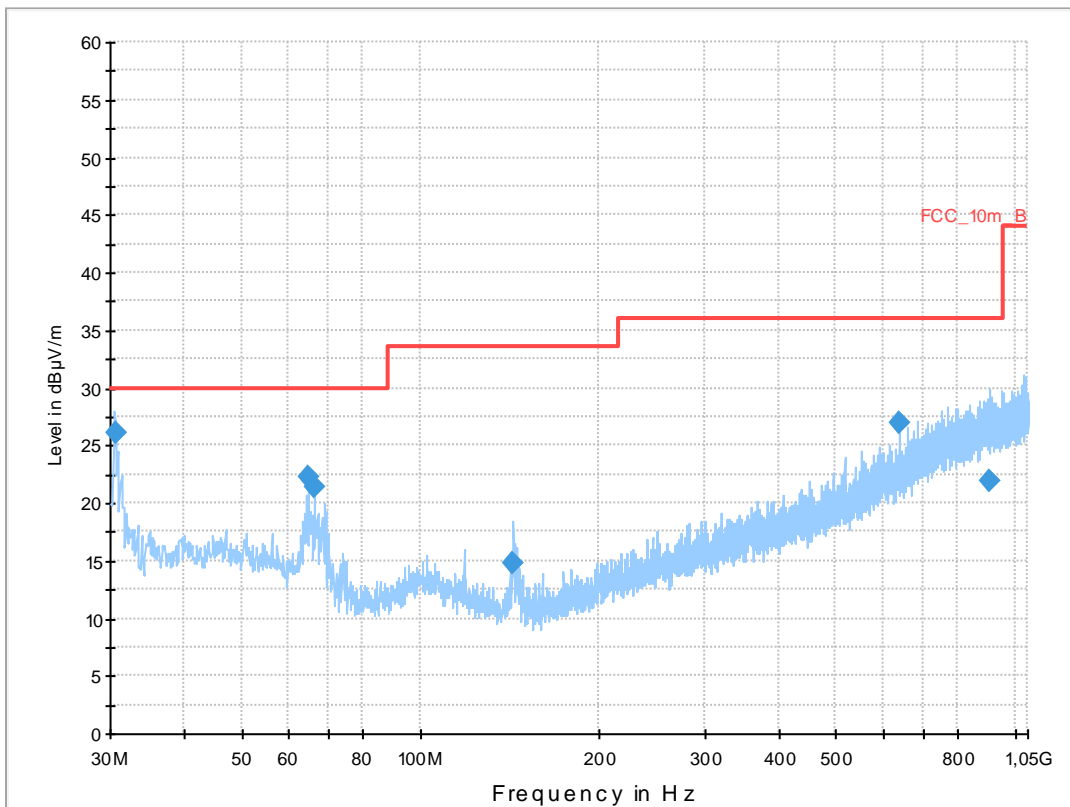
### Common Information

EUT: ADN-W AM FM02  
 Serial Number: 1462100049  
 Test Description: FCC part 15 class B @ 10m  
 Operating Conditions: TX 5200 MHz | Ant. 2  
 Operator Name: Hennemann  
 Comment: powered by main unit

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

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

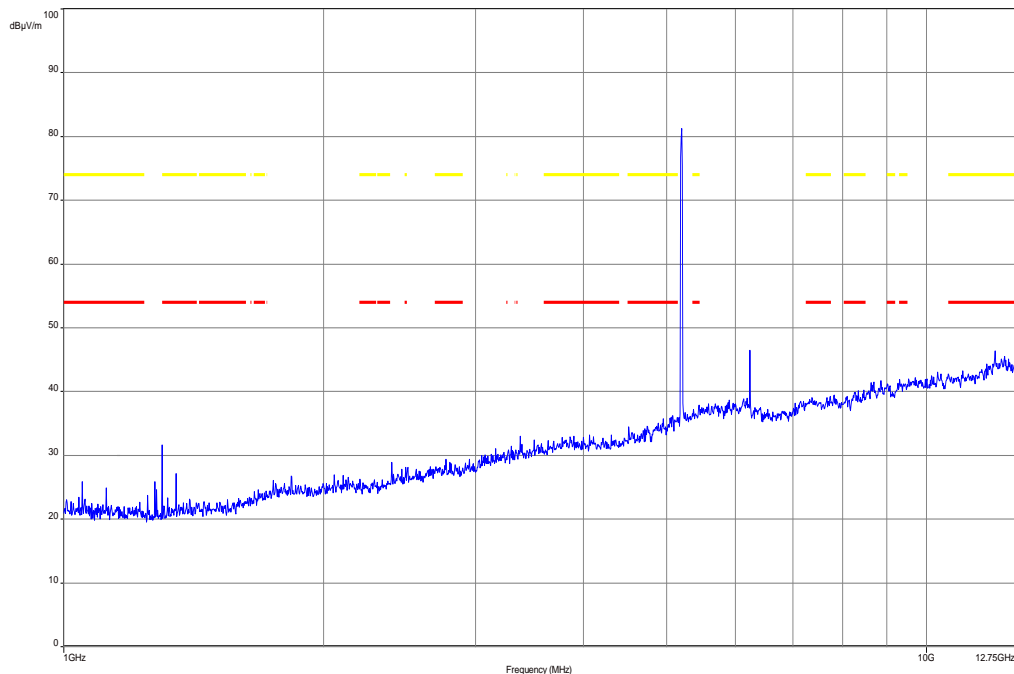
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



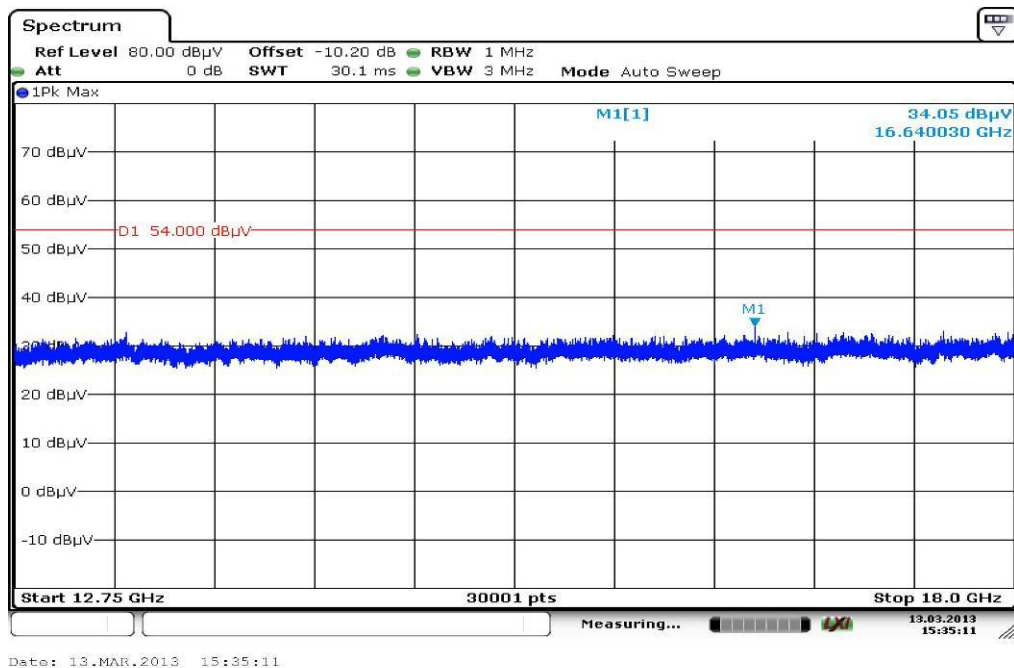
### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.603146	26.0	1000.0	120.000	143.0	V	100.0	12.6	4.0	30.0	
64.813500	22.2	1000.0	120.000	170.0	V	85.0	10.5	7.8	30.0	
66.273450	21.4	1000.0	120.000	170.0	V	190.0	10.1	8.6	30.0	
143.289600	14.9	1000.0	120.000	104.0	V	0.0	8.7	18.6	33.5	
640.008600	26.9	1000.0	120.000	170.0	H	272.0	21.0	9.1	36.0	
908.769450	21.9	1000.0	120.000	143.0	V	85.0	25.2	14.1	36.0	

**Plot 2:** 1 GHz to 12.75 GHz, 5200 MHz, vertical & horizontal polarization

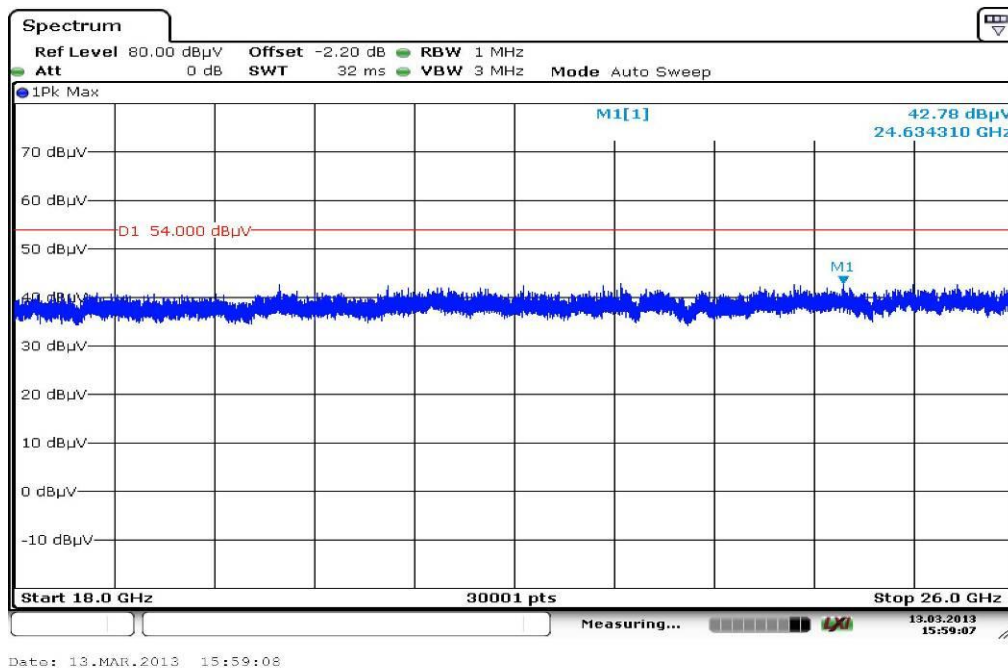


**Plot 3:** 12.75 GHz to 18 GHz, 5200 MHz, vertical & horizontal polarization

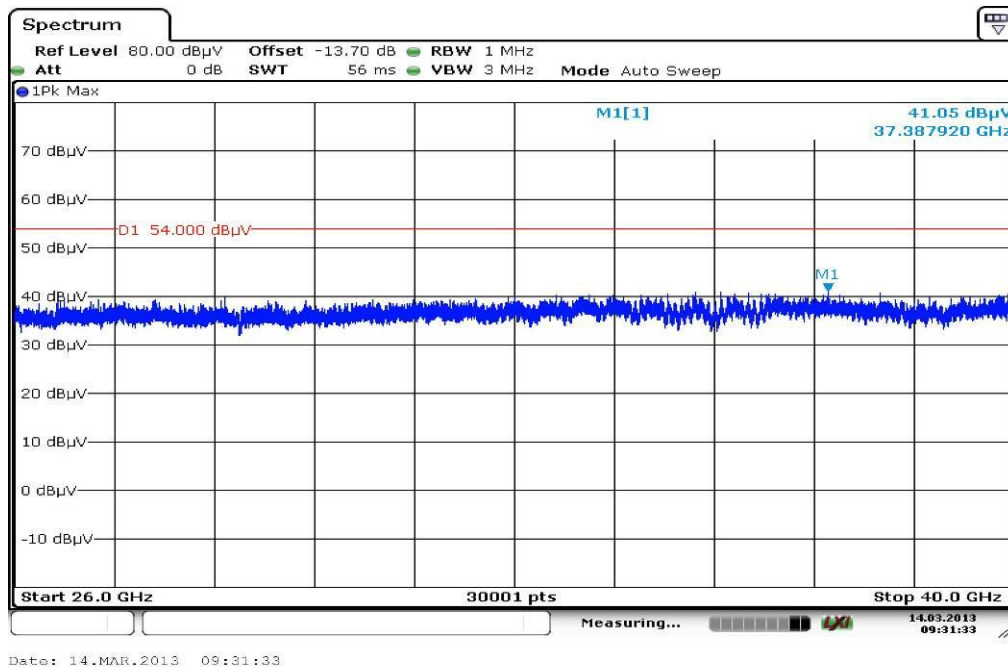




Plot 4: 18 GHz to 26 GHz, 5200 MHz, vertical & horizontal polarization



Plot 5: 26 GHz to 40 GHz, 5200 MHz, vertical & horizontal polarization



## 9.9 Unintentional radiator spurious emissions radiated

### Description:

Measurement of the radiated spurious emissions in idle/receive mode.

### Measurement:

Measurement parameter	
Detector:	Quasi Peak below 1 GHz (alternative Peak)  Peak above 1 GHz / RMS
Sweep time:	Auto
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Video bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: ≥ 3 MHz / 10 Hz
Span:	30 MHz to 40 GHz
Trace-Mode:	Max Hold / Average with 100 counts + 20 log (1 / X) for duty cycle lower than 100 %

### Limits:

Unintentional radiator spurious emissions radiated		
Frequency (MHz)	Field Strength (dB $\mu$ 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:

Unintentional radiator spurious emissions radiated [dB $\mu$ V/m]		
F [MHz]	Detector	Level [dB $\mu$ V/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
All detected peak emissions between 1 GHz and 12.75 GHz are more than 10 dB below the average limit.		
For emissions above 12.75 GHz, please take a look at the plots.		
Measurement uncertainty	± 3 dB	

**Result: Passed**

**Plots:**

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

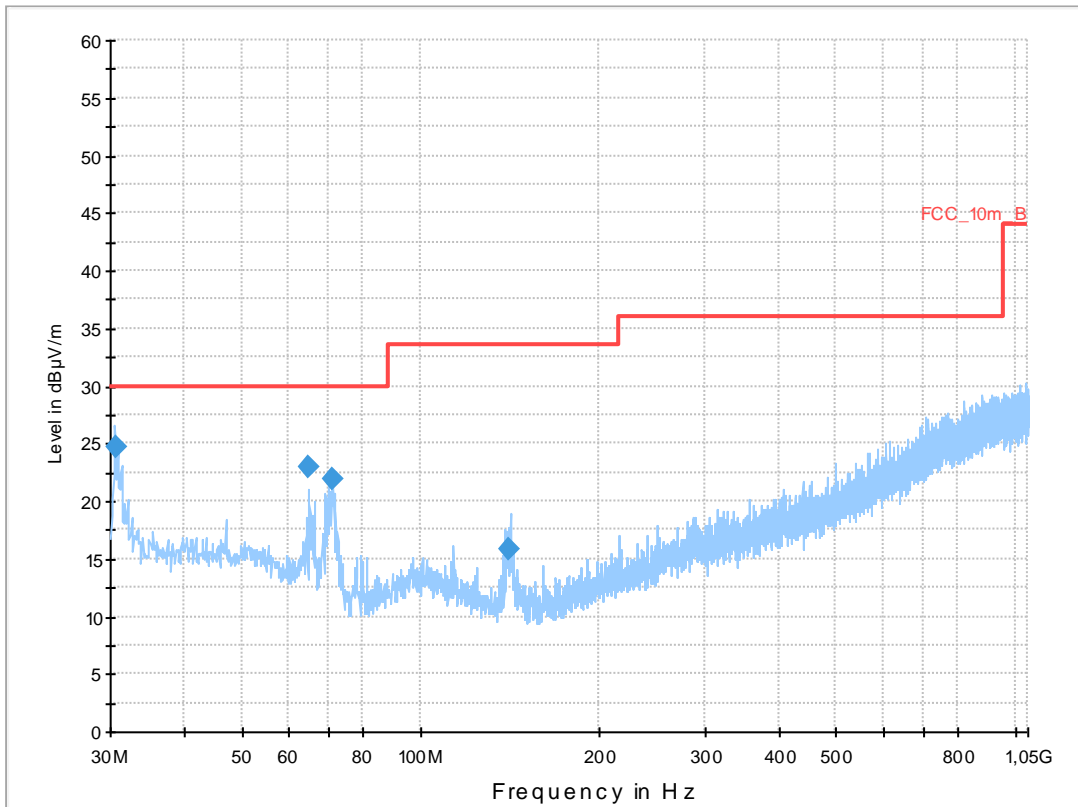
**Common Information**

EUT: ADN-W AM FM02  
 Serial Number: 1462100048  
 Test Description: FCC part 15 class B @ 10m  
 Operating Conditions: RX | Ant. 1  
 Operator Name: Hennemann  
 Comment: powered by main unit

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

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

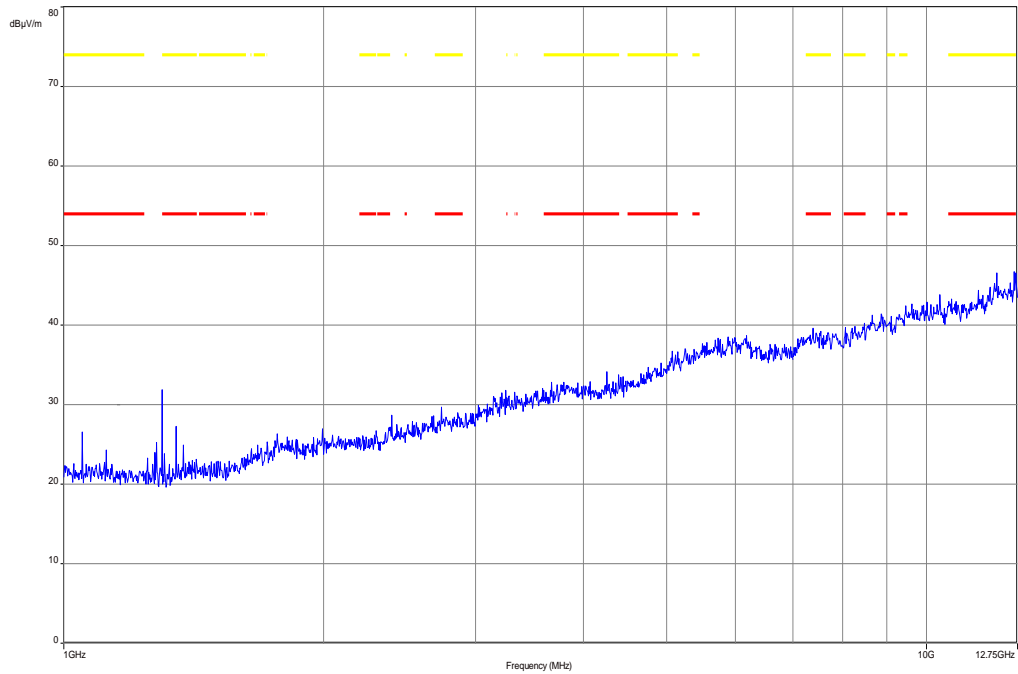
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



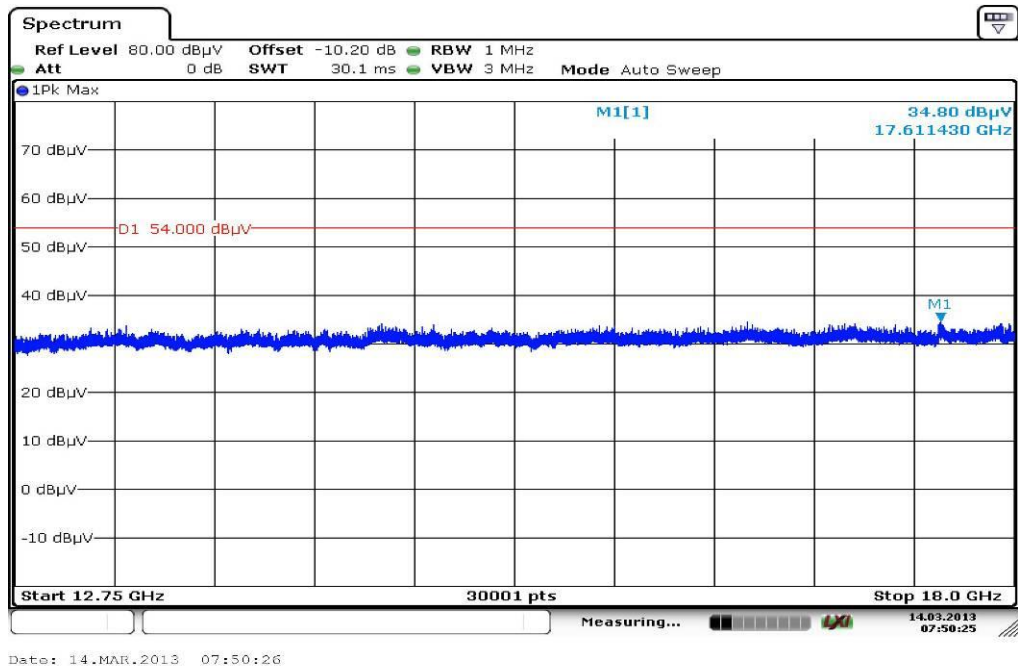
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.631590	24.7	1000.0	120.000	98.0	V	88.0	12.6	5.3	30.0	
64.795950	22.9	1000.0	120.000	163.0	V	88.0	10.5	7.1	30.0	
70.813500	21.9	1000.0	120.000	152.0	V	260.0	9.3	8.1	30.0	
141.150900	15.8	1000.0	120.000	111.0	V	261.0	8.7	17.7	33.5	

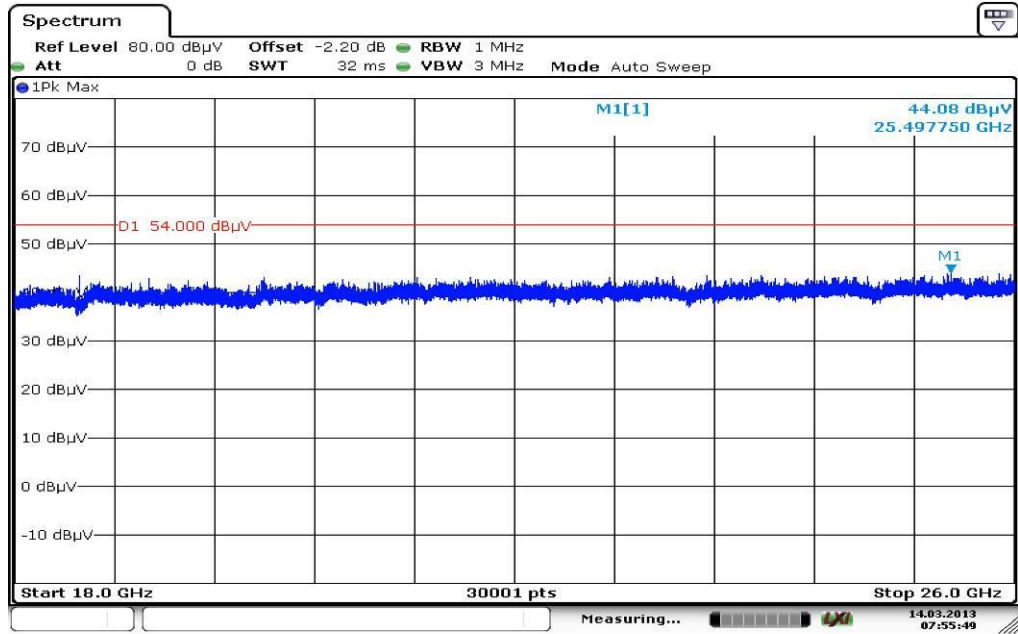
**Plot 2:** 1 GHz to 12.75 GHz, vertical & horizontal polarization



**Plot 3:** 12 GHz to 18 GHz, vertical & horizontal polarization

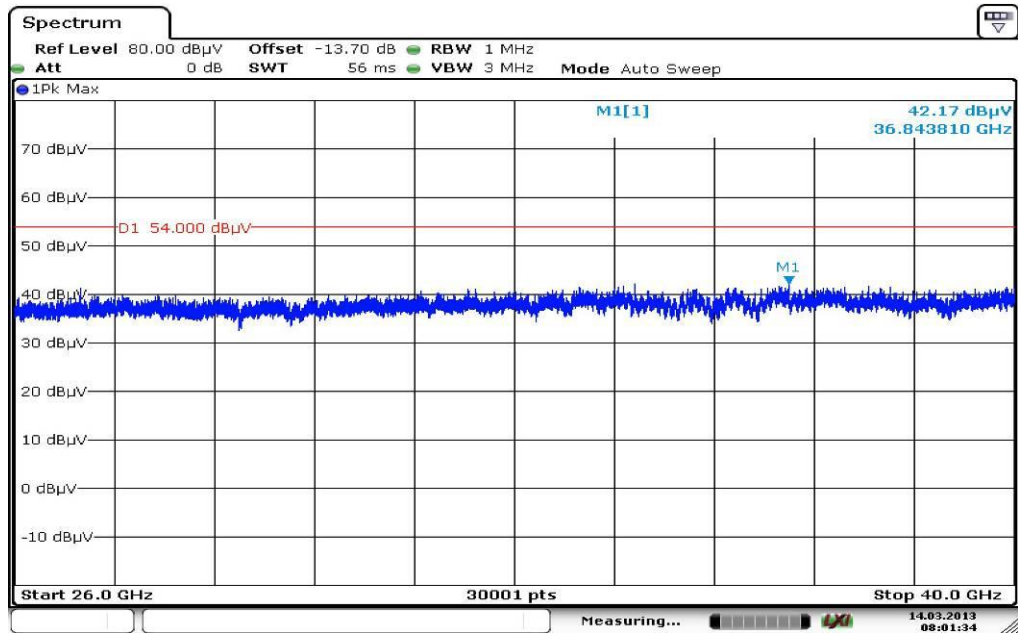


Plot 4: 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 14.MAR.2013 07:55:49

Plot 5: 26 GHz to 40 GHz, vertical & horizontal polarization



Date: 14.MAR.2013 08:01:35

## 9.10 Spurious emissions radiated < 30 MHz

### Description:

Measurement of the radiated spurious emissions in transmit mode and receive mode below 30 MHz. The EUT is set first to middle channel. This measurement is representative for all channels and modes. If peaks are found the lowest channel and the highest channel will be measured too. Then the EUT is set to receive or idle mode. 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:

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

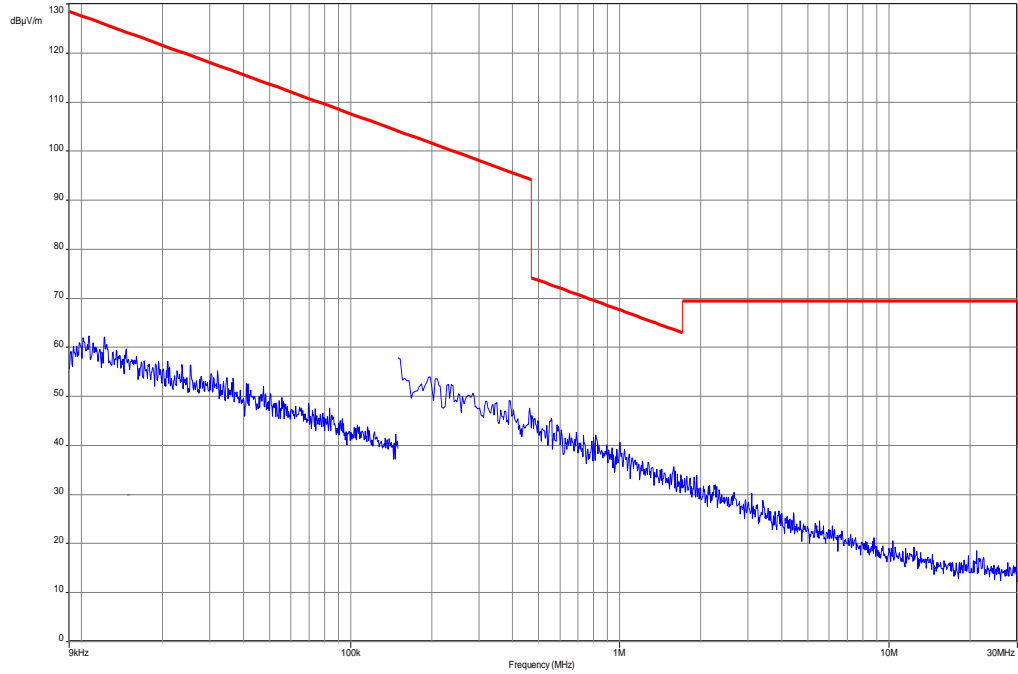
### Results:

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	

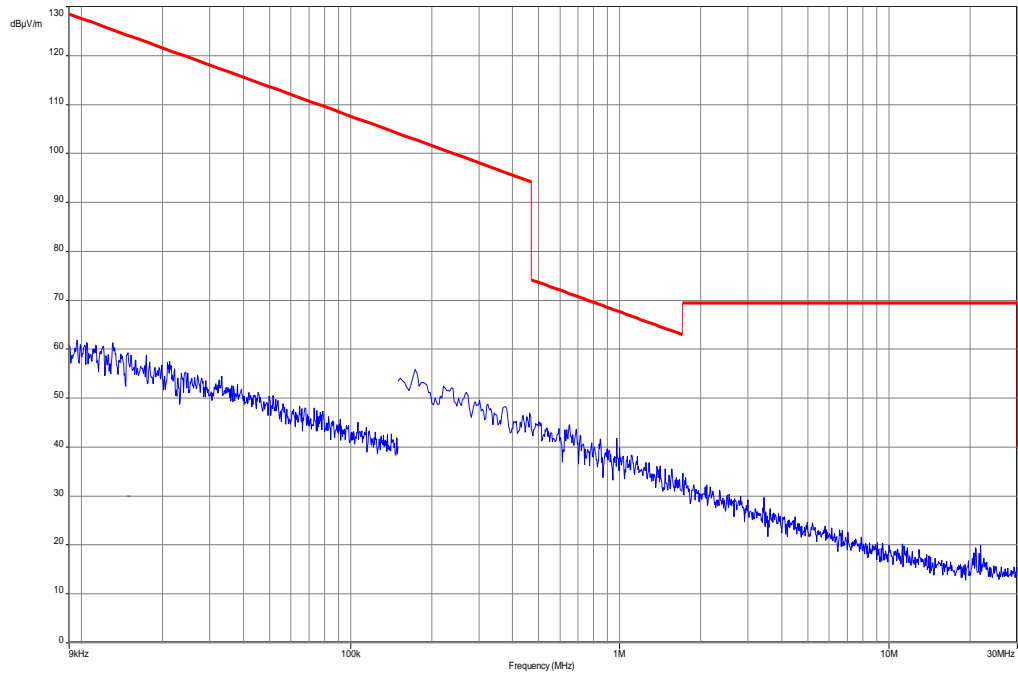
**Result: Passed**

**Plots:**

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



**Plot 2:** 9 kHz to 30 MHz, RX mode



### 9.11 Spurious emissions conducted < 30 MHz

**Description:**

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to middle channel. If peaks are found the lowest channel and the highest channel will be measured too. 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: 9 kHz
Resolution bandwidth:	F > 150 kHz: 100 kHz
Span:	150 kHz to 30 MHz
Trace-Mode:	Max Hold

**Limits:**

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:**

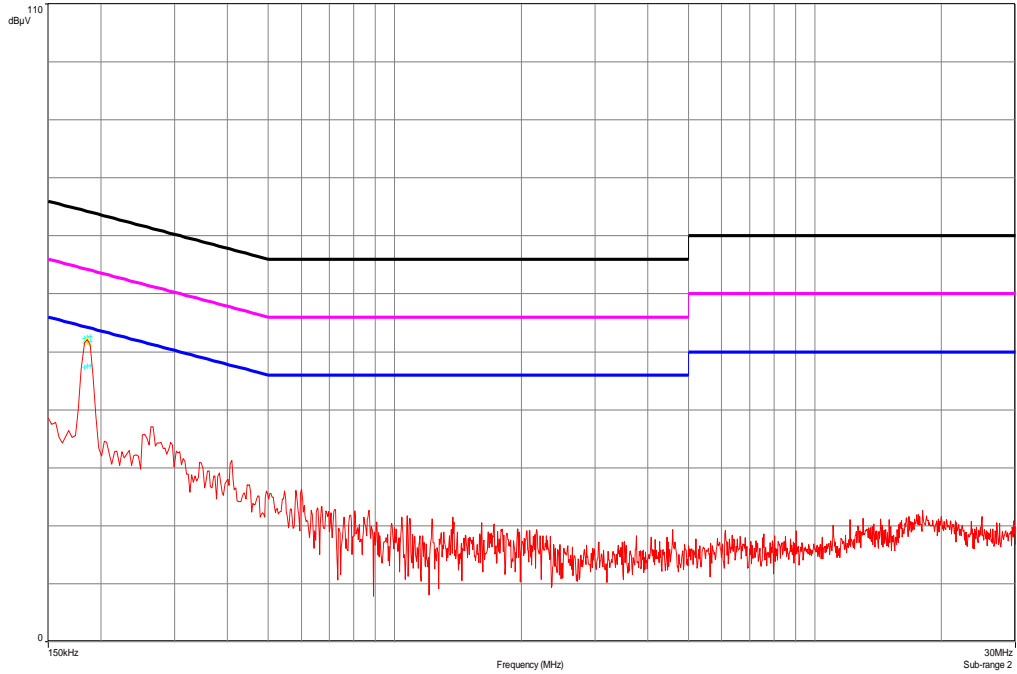
Spurious Emissions Conducted < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
All detected peaks are below the limit. Please take a look at zoomed plots.		
Measurement uncertainty	± 3 dB	

**Result: Passed**

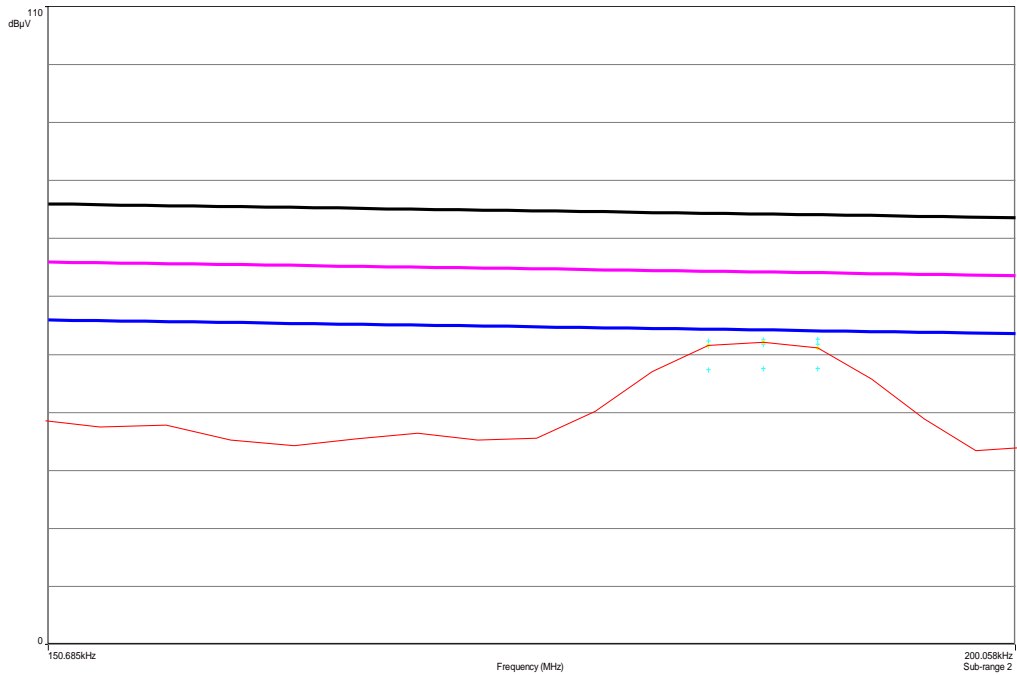


**Plots:**

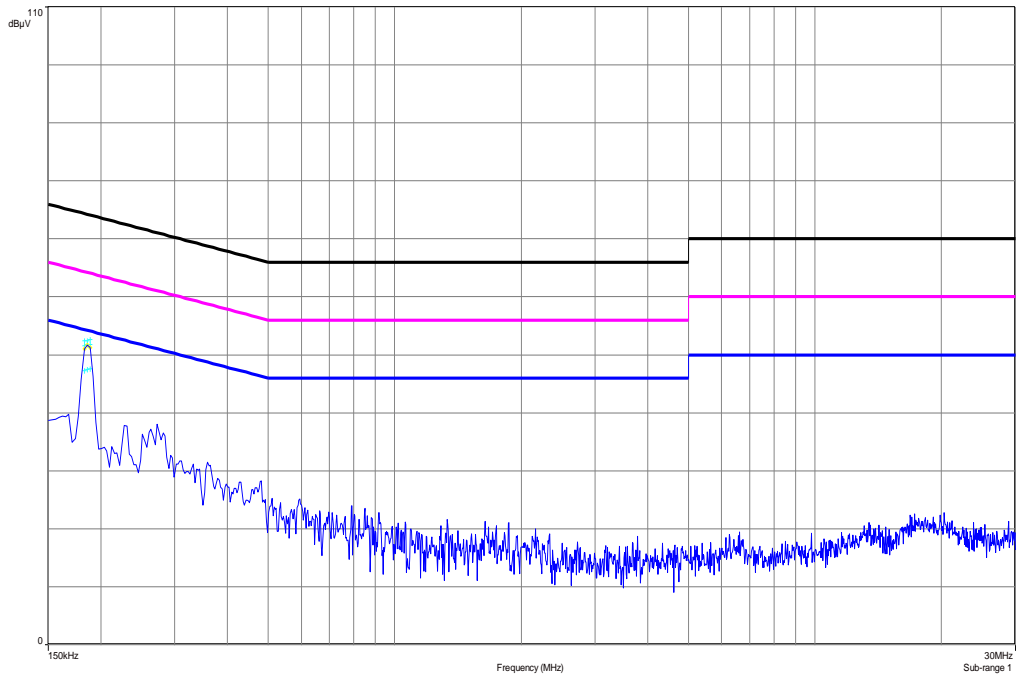
**Plot 1:** TX mode, 150 kHz to 30 MHz, phase line



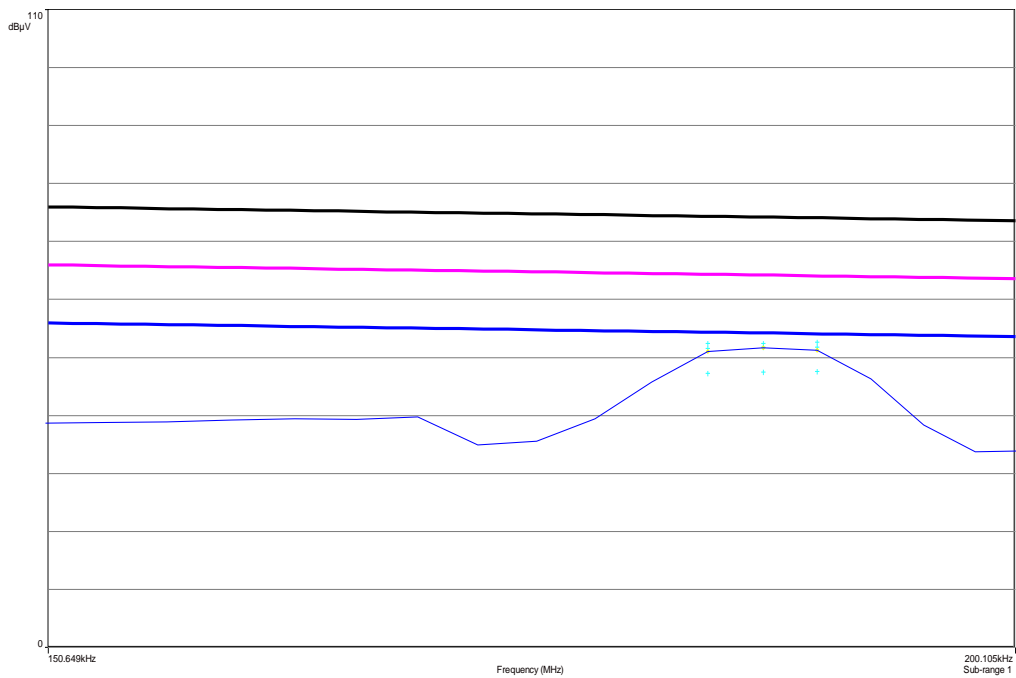
**Plot 2:** TX mode, 150 kHz to 30 MHz, phase line, zoomed



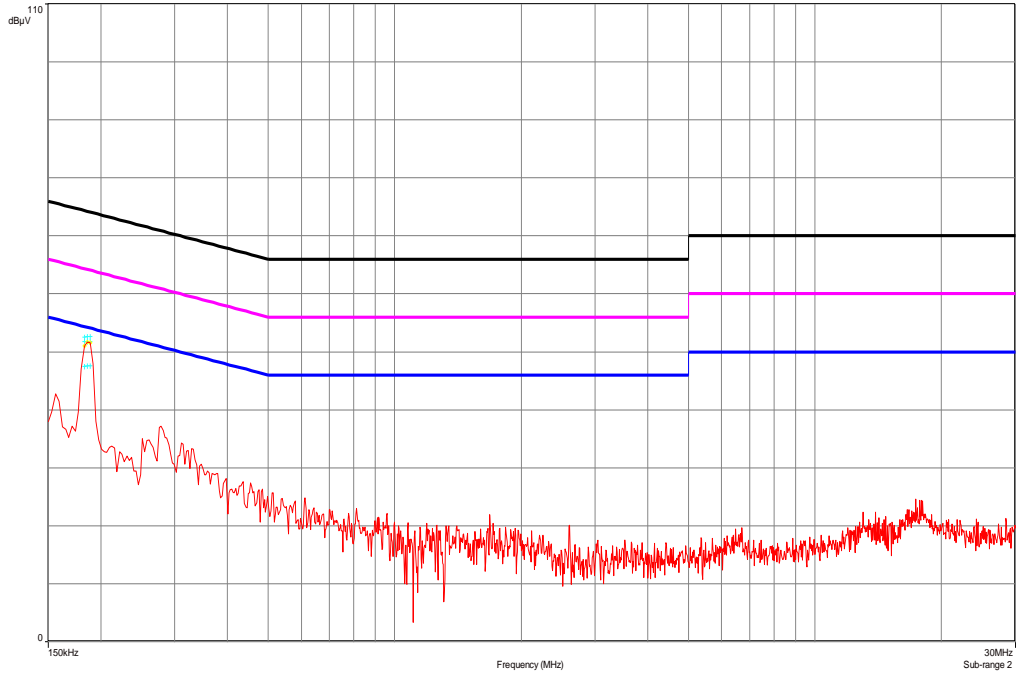
**Plot 3:** TX mode, 150 kHz to 30 MHz, neutral line



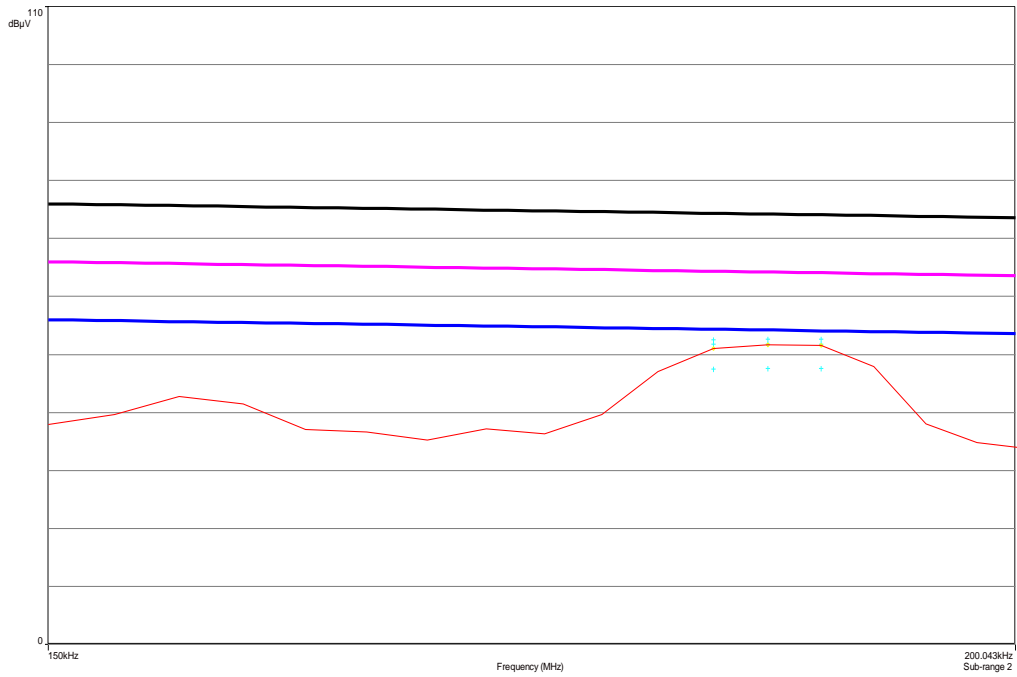
**Plot 4:** TX mode, 150 kHz to 30 MHz, neutral line, zoomed



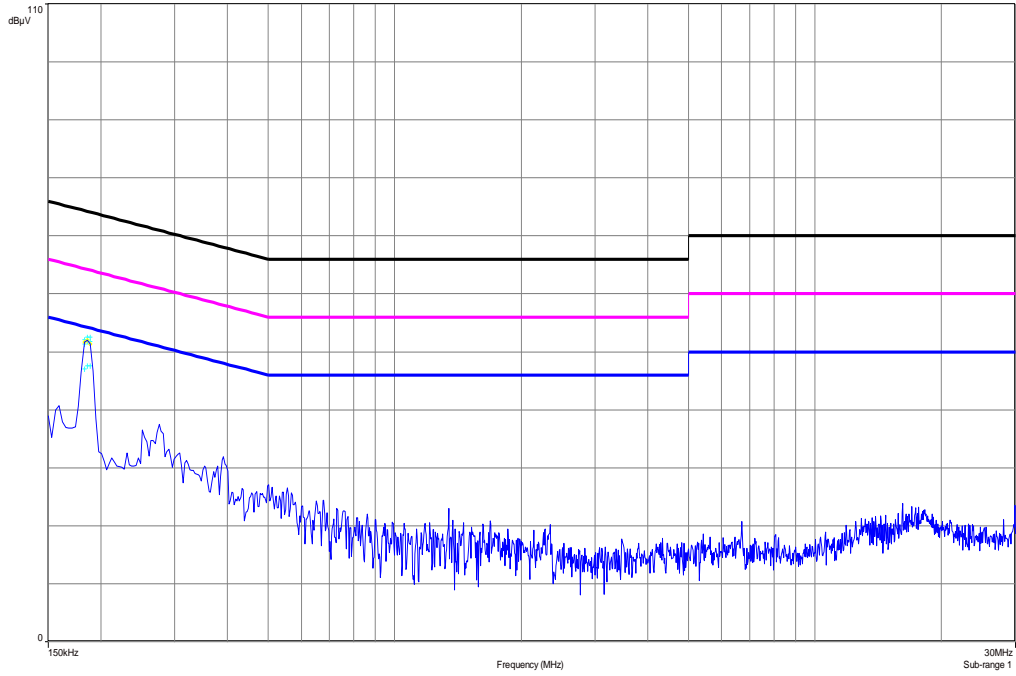
Plot 5: RX / Idle – mode, 150 kHz to 30 MHz, phase line



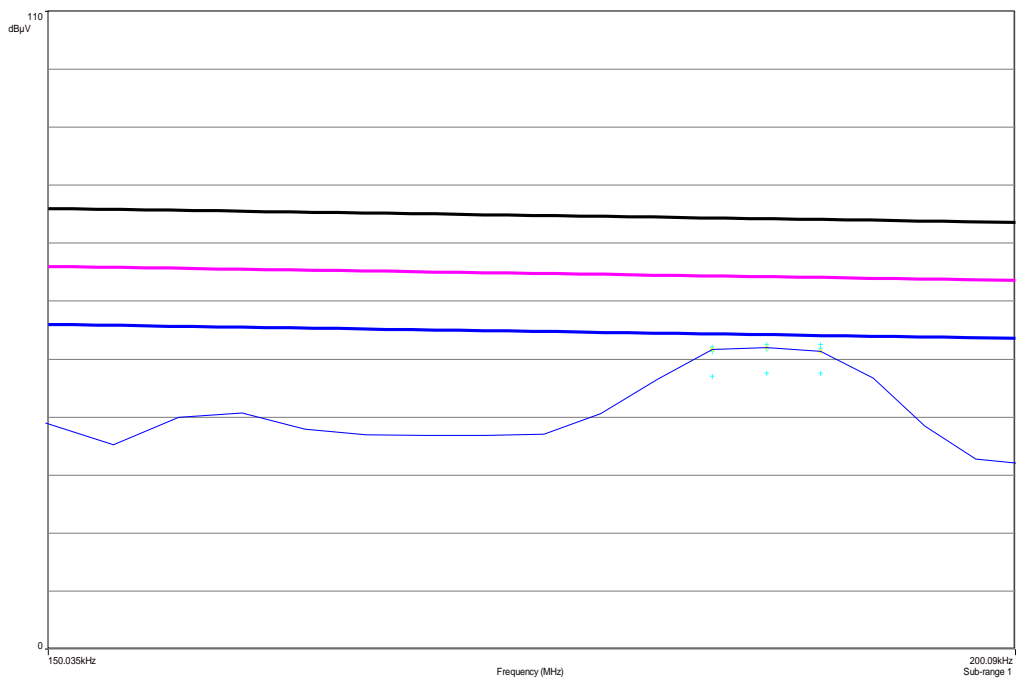
Plot 6: RX / Idle – mode, 150 kHz to 30 MHz, phase line, zoomed



**Plot 7:** RX / Idle – mode, 150 kHz to 30 MHz, neutral line



**Plot 8:** RX / Idle – mode, 150 kHz to 30 MHz, neutral line, zoomed



## 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	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B597 9	300000210	ne		
4	n. a.	EMI Test Receiver	ESCI 3	R&S	100083	300003312	k	09.01.2013	09.01.2014
5	n. a.	Analyzer- Reference- System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	14.07.2011	14.07.2013
6	n. a.	Amplifier	JS42- 00502650- 28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antenna Tower	Model 2175	ETS- LINDGREN	64762	300003745	izw		
8	n. a.	Positioning Controller	Model 2090	ETS- LINDGREN	64672	300003746	izw		
9	n. a.	Turntable Interface-Box	Model 105637	ETS- LINDGREN	44583	300003747	izw		
10	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbe ck	295	300003787	k	12.04.2012	12.04.2014
11	n. a.	Spectrum- Analyzer	FSU26	R&S	200809	300003874	k	16.01.2013	16.01.2015
12	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	12.01.2012	12.01.2015
13	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	viKI!	11.05.2011	11.05.2013
14	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
15	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
16	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	*	300000199	ne		
17	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001156	ne		
18	9	Isolating Transformer	MPL IEC625 Bus Regeltrennt ravo	Erfi	91350	300001155	ne		
19	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
20	n. a.	Amplifier	js42- 00502650- 28-5a	Parzich GMBH	928979	300003143	ne		
21	n. a.	Highpass Filter	WHKX7.0/1 8G-8SS	Wainwright	18	300003789	ne		
22	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbe ck	371	300003854	viKI!	14.10.2011	14.10.2014
23	n. a.	MXE EMI	N9038A	Agilent	MY51210197	300004405	k	21.02.2013	21.02.2014

		Receiver 20 Hz bis 26,5 GHz		Technologies					
24	11b	Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP Meßtechnik	00419	300002268	ev		
25	A025	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000786	ne		
26	A027	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300000486	ne		
27	n. a.	Std. Gain Horn Antenna 26.5-40.0 GHz	V637	Narda	7911	300001752	ne		
28	n. a.	Broadband Low Noise Amplifier 18-50 GHz	CBL18503 070-XX	CERNEX	19338	300004273	ne		
29	n. a.	Signal Analyzer 40 GHz	FSV40	R&S	101042	300004xxx	k	22.10.2012	22.10.2013

**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
vlk!	Attention: extended calibration interval	*	next calibration ordered / currently in progress
NK!	Attention: not calibrated		

## 11 Observations

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

**Annex A Document history**

Version	Applied changes	Date of release
1.0	Initial release	2013-03-22

**Annex B 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 C Accreditation Certificate**

Front side of certificate



Deutsche Akkreditierungsstelle GmbH

Befähigung gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV  
 Unterzeichnerin der Multilateralen Abkommen  
 von EA, ILAC und IAF zur gegenseitigen Anerkennung

**Akkreditierung**



Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

**CETECOM ICT Services GmbH**  
 Untertürkheimer Straße 6-10, 66117 Saarbrücken

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

- Drahtgebundene Kommunikation einschließlich xDSL
- VoIP und DECT
- Akustik
- Funk einschließlich WLAN
- Short Range Devices (SRD)
- RFID
- WiMax und Richtfunk
- Mobilfunk (GSM / GPRS, Over the Air (OTA) Performance)
- Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive
- Produktsicherheit
- SAR und Hearing Aid Compatibility (HAC)
- Umweltsimulation
- Smart Card Terminals
- Bluetooth
- Wi-Fi Services

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 18.01.2013 mit der Akkreditierungsnummer D-PL-12076-01 und ist gültig 17.01.2018. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 80 Seiten.

Registrierungsnummer der Urkunde: D-PL-12076-01-01

Frankfurt am Main, 18.01.2013  
 Bitte Hinweise auf der Rückseite

Im Auftrag  
 Dr. Jörg (FH) von Egnor  
 Abteilungsleiter

Back side of certificate

Deutsche Akkreditierungsstelle GmbH

Standort Berlin  
 Spittelmarkt 10  
 10117 Berlin

Standort Frankfurt am Main  
 Gartenstraße 6  
 60094 Frankfurt am Main

Standort Braunschweig  
 Bundesallee 100  
 38116 Braunschweig

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Die Akkreditierung erfolgte gemäß des Gesetzes über die Akkreditierungsstelle (AkkStelleG) vom 31. Juli 2009 (BGBl. I S. 2625) sowie der Verordnung (EG) Nr. 765/2008 des Europäischen Parlaments und des Rates vom 9. Juli 2008 über die Vorschriften für die Akkreditierung und Marktüberwachung im Zusammenhang mit der Vermarktung von Produkten (Abi. L 218 vom 9. Juli 2008, S. 30). Die DAkKS ist Unterzeichnerin der Multilateralen Abkommen zur gegenseitigen Anerkennung der European co-operation for Accreditation (EA), des International Accreditation Forum (IAF) und der International Laboratory Accreditation Cooperation (ILAC). Die Unterzeichner dieser Abkommen erkennen ihre Akkreditierungen gegenseitig an.

Der aktuelle Stand der Mitgliedschaft kann folgenden Webseiten entnommen werden:  
 EA: [www.european-accreditation.org](http://www.european-accreditation.org)  
 ILAC: [www.ilac.org](http://www.ilac.org)  
 IAF: [www.iaf.eu](http://www.iaf.eu)

**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/eu/de/cetecom-group/europa/deutschland-saarbruecken/akkreditierungen.html>