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

## TEST REPORT

Test report no.: 1-6965/13-12-10-A

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 Communications &amp; EMC (RCE)

### Applicant

**Sony Mobile Communications AB**

Nya Vattentornet

22188 Lund / SWEDEN

Phone: +46 46 19 30 00

Fax: -/-

Contact: Mikael Nilsson

e-mail: [Micke.nilsson@sonymobile.com](mailto:Micke.nilsson@sonymobile.com)

Phone: +46 7 03 22 75 03

### 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

|                           |                                                                                                                                                        |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Kind of test item:</b> | <b>Tablet PC GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/II/V; LTE FDD1/3/17/18; LTE TDD41; CDMA 2K C00/C06; WLAN b/g/n/a/ac; BT 4.0; RFID; A-GPS</b> |
| <b>FCC ID:</b>            | <b>PY7TM-0044</b>                                                                                                                                      |
| <b>Frequency:</b>         | DTS band 2400 MHz to 2483.5 MHz<br>(lowest channel 01 – 2412 MHz; highest channel 11 – 2462 MHz)                                                       |
| <b>Technology tested:</b> | WLAN (DSSS/b – mode; OFDM/g – & n HT20 – mode)                                                                                                         |
| <b>Antenna:</b>           | Integrated antenna                                                                                                                                     |
| <b>Power supply:</b>      | 3.7 V DC by Li - polymer battery                                                                                                                       |
| <b>Temperature range:</b> | -30°C to +60°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:

cn=Andreas Luckenbill, o=CETECOM ICT  
Services GmbH, ou=LUC-111202,  
email=andreas.luckenbill@cetecom.com,  
c=DE  
2014.03.17 11:41:03 +01'00'

Andreas Luckenbill  
Expert

### Test performed:

cn=Marco Bertolino, o=CETECOM ICT  
Services GmbH, ou=BTL-100826,  
email=marco.bertolino@cetecom.com, c=DE  
2014.03.17 11:31:49 +01'00'

Marco Bertolino  
Testing Manager

## 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  |
| 5.1     | Additional information .....                        | 4  |
| 6       | Test laboratories sub-contracted .....              | 4  |
| 7       | Description of the test setup .....                 | 5  |
| 7.1     | Radiated measurements chamber F.....                | 5  |
| 7.2     | Radiated measurements chamber C .....               | 6  |
| 7.3     | Radiated measurements 12.75 GHz to 26 GHz .....     | 7  |
| 7.4     | AC conducted .....                                  | 8  |
| 8       | Summary of measurement results .....                | 9  |
| 9       | Additional comments .....                           | 10 |
| 10      | Measurement results .....                           | 11 |
| 10.1    | Band edge compliance radiated .....                 | 11 |
| 10.2    | TX spurious emissions radiated.....                 | 21 |
| 10.3    | RX spurious emissions radiated .....                | 50 |
| 10.4    | Spurious emissions radiated < 30 MHz .....          | 54 |
| 10.5    | Spurious emissions conducted < 30 MHz .....         | 56 |
| 11      | Test equipment and ancillaries used for tests ..... | 59 |
| 12      | Observations .....                                  | 60 |
| Annex A | Document history .....                              | 61 |
| Annex B | Further information.....                            | 61 |
| Annex C | Accreditation Certificate .....                     | 62 |

## 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.

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM ICT Services GmbH.

The testing service provided by CETECOM ICT Services GmbH has been rendered under the current "General Terms and Conditions for CETECOM ICT Services GmbH".

CETECOM ICT Services GmbH will not be liable for any loss or damage resulting from false, inaccurate, inappropriate or incomplete product information provided by the customer.

Under no circumstances does the CETECOM ICT Services GmbH test report include any endorsement or warranty regarding the functionality, quality or performance of any other product or service provided.

Under no circumstances does the CETECOM ICT Services GmbH test report include or imply any product or service warranties from CETECOM ICT Services GmbH, including, without limitation, any implied warranties of merchantability, fitness for purpose, or non-infringement, all of which are expressly disclaimed by CETECOM ICT Services GmbH.

All rights and remedies regarding vendor's products and services for which CETECOM ICT Services GmbH has prepared this test report shall be provided by the party offering such products or services and not by CETECOM ICT Services GmbH.

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

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:          | 2013-12-19 |
| Date of receipt of test item:      | 2014-02-17 |
| Start of test:                     | 2014-02-17 |
| End of test:                       | 2014-02-21 |
| Person(s) present during the test: | -/-        |

## 3 Test standard/s

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

### 3.1 Measurement guidance

|                  |         |                                                                                                               |
|------------------|---------|---------------------------------------------------------------------------------------------------------------|
| DTS : KDB 558074 | 2013-04 | Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 |
|------------------|---------|---------------------------------------------------------------------------------------------------------------|

#### 4 Test environment

|                            |           |                                       |
|----------------------------|-----------|---------------------------------------|
| Temperature:               | $T_{nom}$ | +22 °C during room temperature tests  |
|                            | $T_{max}$ | +60 °C during high temperature tests  |
|                            | $T_{min}$ | -30 °C during low temperature tests   |
| Relative humidity content: |           | 42 %                                  |
| Barometric pressure:       |           | not relevant for this kind of testing |
| Power supply:              | $V_{nom}$ | 3.7 V DC by Li - polymer battery      |
|                            | $V_{max}$ | 4.2 V                                 |
|                            | $V_{min}$ | 3.3 V                                 |

#### 5 Test item

|                              |                                                                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Kind of test item :          | Tablet PC GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/III/V; LTE FDD1/3/17/18; LTE TDD41; CDMA 2K C00/C06; WLAN b/g/n/a/ac; BT 4.0; RFID; A-GPS |
| S/N serial number :          | Radiated units: CB5126DAHf; CB5126DAHx                                                                                                           |
| HW hardware status :         | AP1                                                                                                                                              |
| SW software status :         | RF test software!                                                                                                                                |
| Frequency band [MHz] :       | DTS band 2400 MHz to 2483.5 MHz<br>(lowest channel 01– 2412 MHz; highest channel 11 – 2462 MHz)                                                  |
| Type of radio transmission : | DSSS; OFDM                                                                                                                                       |
| Use of frequency spectrum :  |                                                                                                                                                  |
| Type of modulation :         | BPSK; QPSK; 16 – QAM and 64 – QAM                                                                                                                |
| Number of channels :         | 11                                                                                                                                               |
| Antenna :                    | Integrated antenna                                                                                                                               |
| Power supply :               | 3.7 V DC by Li - polymer battery                                                                                                                 |
| Temperature range :          | -30°C to +60 °C                                                                                                                                  |

##### 5.1 Additional information

Test setup- and EUT-photos are included in test report: 1-6965/13-12-01\_AnnexA  
 1-6965/13-12-01\_AnnexB  
 1-6965/13-12-01\_AnnexD

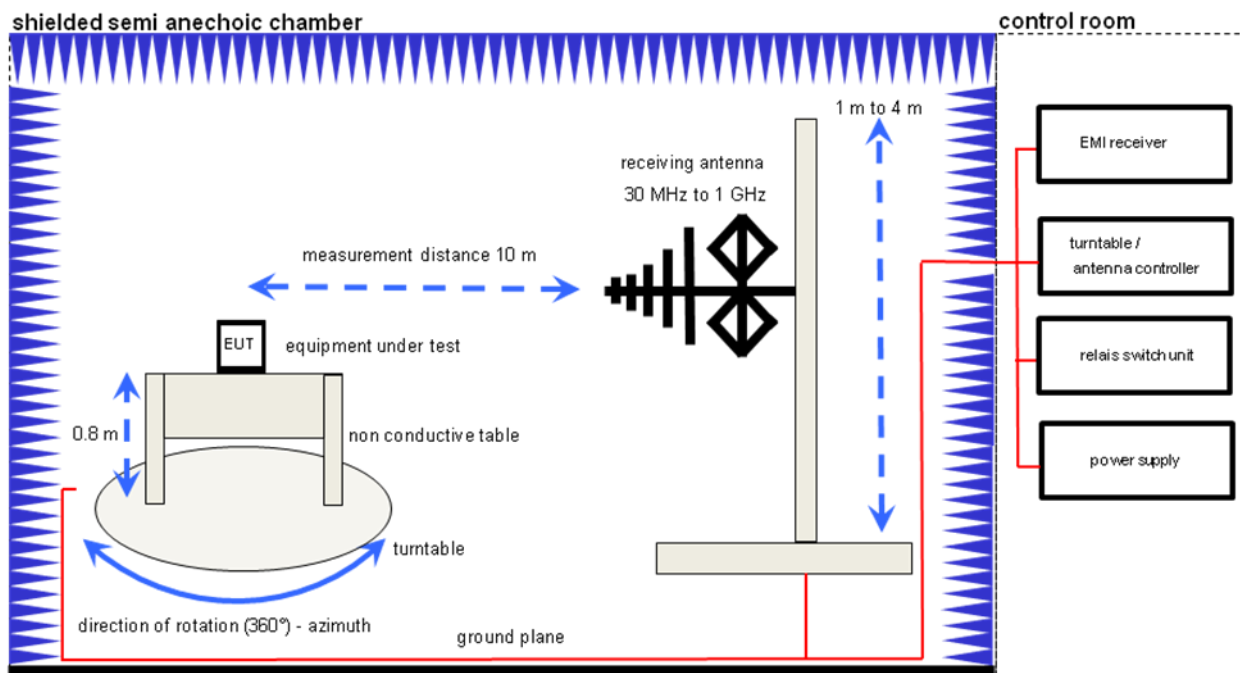
#### 6 Test laboratories sub-contracted

None

## 7 Description of the test setup

### 7.1 Radiated measurements chamber F

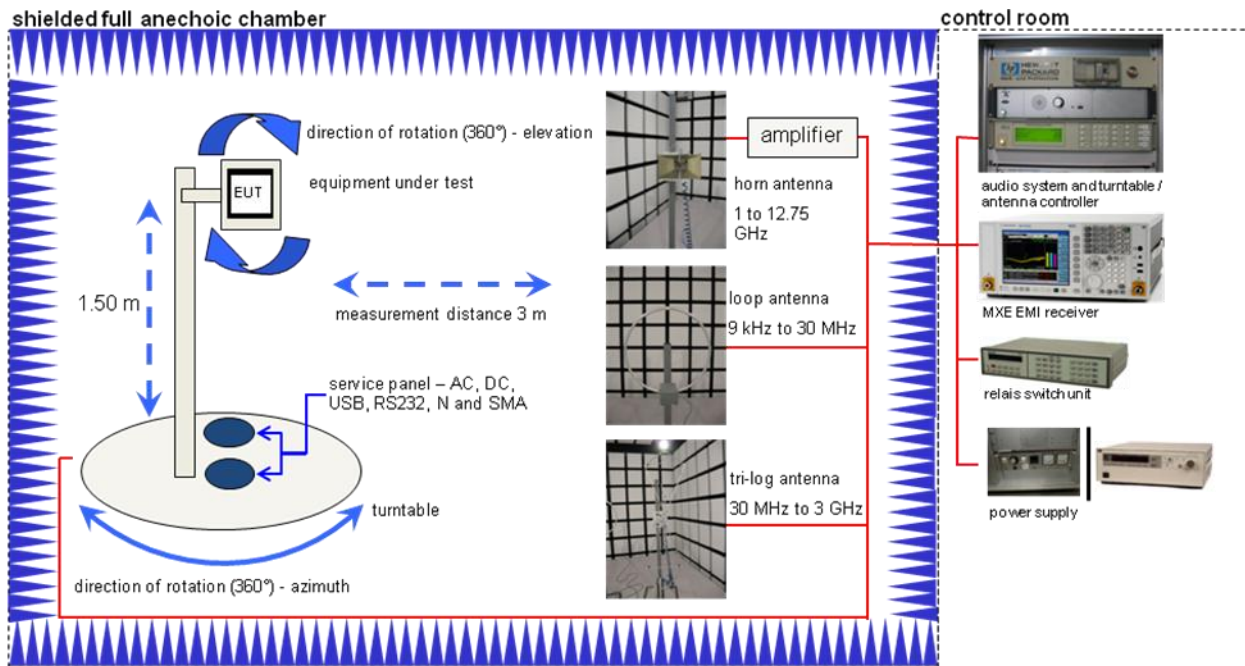
The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 1 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63. 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.



#### Equipment table:

| Equipment                                    | Type                | Manufacturer  | Serial No. | INV. No Cetecom |
|----------------------------------------------|---------------------|---------------|------------|-----------------|
| Switch-Unit                                  | 3488A               | HP Meßtechnik | 2719A14505 | 300000368       |
| DC power supply, 60Vdc, 50A, 1200 W          | 6032A               | HP Meßtechnik | 2920A04466 | 300000580       |
| EMI Test Receiver                            | ESCI 3              | R&S           | 100083     | 300003312       |
| Amplifier                                    | JS42-00502650-28-5A | MITEQ         | 1084532    | 300003379       |
| Antenna Tower                                | Model 2175          | ETS-LINDGREN  | 64762      | 300003745       |
| Positioning Controller                       | Model 2090          | ETS-LINDGREN  | 64672      | 300003746       |
| Turntable Interface-Box                      | Model 105637        | ETS-LINDGREN  | 44583      | 300003747       |
| TRILOG Broadband Test-Antenna 30 MHz - 3 GHz | VULB9163            | Schwarzbeck   | 295        | 300003787       |

## 7.2 Radiated measurements chamber C



### Equipment table:

| Equipment                                      | Type                            | Manufacturer         | Serial No. | INV. No Cetecom |
|------------------------------------------------|---------------------------------|----------------------|------------|-----------------|
| MXE EMI Receiver 20 Hz bis 26,5 GHz            | N9038A                          | Agilent Technologies | MY51210197 | 300004405       |
| TRILOG Broadband Test-Antenna 30 MHz - 3 GHz   | VULB9163                        | Schwarzbeck          | 371        | 300003854       |
| Band Reject filter                             | WRCG2400/2483-2375/2505-50/10SS | Wainwright           | 11         | 300003351       |
| Highpass Filter                                | WHKX7.0/18G-8SS                 | Wainwright           | 18         | 300003789       |
| Double-Ridged Waveguide Horn Antenna 1-18.0GHz | 3115                            | EMCO                 | 8812-3088  | 300001032       |
| Active Loop Antenna                            | 6502                            | EMCO                 | 8905-2342  | 300000256       |
| Anechoic chamber                               | FAC 3/5m                        | MWB / TDK            | 87400/02   | 300000996       |
| Switch / Control Unit                          | 3488A                           | HP Meßtechnik        | *          | 300000199       |
| Switch / Control Unit                          | 3488A                           | HP Meßtechnik        | 2719A15013 | 300001156       |
| Isolating Transformer                          | MPL IEC625 Bus Regeltrenntravo  | Erfi                 | 91350      | 300001155       |
| Three-Way Power Splitter, 50 Ohm               | 11850C                          | HP Meßtechnik        |            | 300000997       |
| Amplifier                                      | js42-00502650-28-5a             | Parzich GMBH         | 928979     | 300003143       |

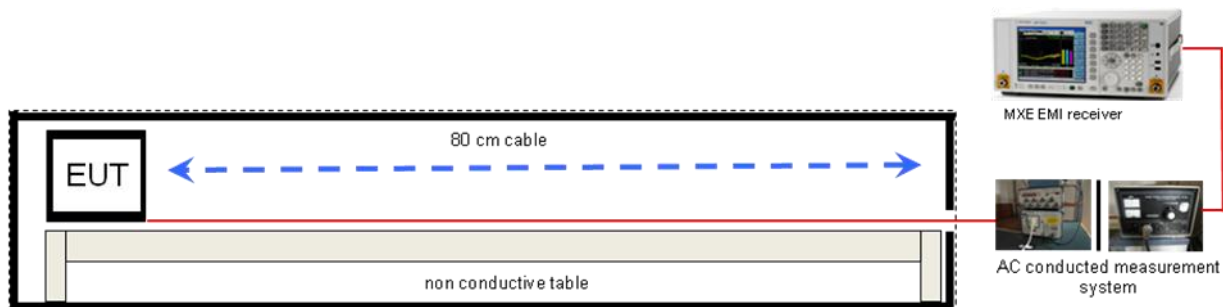
### 7.3 Radiated measurements 12.75 GHz to 26 GHz



#### Equipment table:

| Equipment                                | Type   | Manufacturer  | Serial No. | INV. No Cetecom |
|------------------------------------------|--------|---------------|------------|-----------------|
| Std. Gain Horn Antenna 12.4 to 18.0 GHz  | 639    | Narda         | 8402       | 300000787       |
| Std. Gain Horn Antenna 18.0 to 26.5 GHz  | 638    | Narda         | 8205       | 300002442       |
| Microwave System Amplifier, 0.5-26.5 GHz | 83017A | HP Meßtechnik | 00419      | 300002268       |
| Spectrum Analyzer 20 Hz - 50 GHz         | FSU50  | R&S           | 200012     | 300003443       |
| Signal Analyzer 40 GHz                   | FSV40  | R&S           | 101042     | 300004517       |

## 7.4 AC conducted



### Equipment table:

| Equipment                           | Type                           | Manufacturer         | Serial No. | INV. No Cetecom |
|-------------------------------------|--------------------------------|----------------------|------------|-----------------|
| MXE EMI Receiver 20 Hz bis 26,5 GHz | N9038A                         | Agilent Technologies | MY51210197 | 300004405       |
| Isolating Transformer               | MPL IEC625 Bus Regeltrenntravo | Erft                 | 91350      | 300001155       |
| Switch / Control Unit               | 3488A                          | HP Meßtechnik        | *          | 300000199       |
| Switch / Control Unit               | 3488A                          | HP Meßtechnik        | 2719A15013 | 300001168       |
| Artificial Mains 9 kHz to 30 MHz    | ESH3-Z5                        | R&S                  | 828576/020 | 300001210       |

## 8 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  | 2014-03-17 | Delta tests according to manufacturer test plan! |

| Test specification clause | Test case                               | Guideline                             | Temperature conditions | Power source voltages | Mode               | Pass                                                                       | Fail                                                 | NA                                                   | NP                                                                         | Remark   |
|---------------------------|-----------------------------------------|---------------------------------------|------------------------|-----------------------|--------------------|----------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------|----------|
| §15.247(b)(4)             | Antenna gain                            | -/-                                   | Nominal                | Nominal               | DSSS               | <input type="checkbox"/>                                                   | <input type="checkbox"/>                             | <input type="checkbox"/>                             | <input checked="" type="checkbox"/>                                        | -/-      |
| §15.247(e)                | Power spectral density                  | KDB 558074<br>DTS clause: 10.2        | Nominal                | Nominal               | DSSS<br>OFDM g & n | <input type="checkbox"/><br><input type="checkbox"/>                       | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | -/-      |
| §15.247(a)(2)             | Spectrum bandwidth – 6 dB bandwidth     | KDB 558074<br>DTS clause: 8.2         | Nominal                | Nominal               | DSSS<br>OFDM g & n | <input type="checkbox"/><br><input type="checkbox"/>                       | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | -/-      |
| -/-                       | Occupied bandwidth                      | -/-                                   | Nominal                | Nominal               | DSSS<br>OFDM g & n | <input type="checkbox"/><br><input type="checkbox"/>                       | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | -/-      |
| §15.247(b)(3)             | Maximum output power                    | KDB 558074<br>DTS clause: 9.1.2       | Nominal                | Nominal               | DSSS<br>OFDM g & n | <input type="checkbox"/><br><input type="checkbox"/>                       | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | -/-      |
| §15.247(d)                | Band edge compliance conducted          | KDB 558074<br>DTS clause: 13.2.1      | Nominal                | Nominal               | DSSS<br>OFDM g & n | <input type="checkbox"/><br><input type="checkbox"/>                       | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | -/-      |
| §15.205                   | Band edge compliance radiated           | -/-                                   | Nominal                | Nominal               | DSSS<br>OFDM g & n | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/>                       | complies |
| §15.247(d)                | TX spurious emissions conducted         | KDB 558074<br>DTS clause: 11.1 & 11.2 | Nominal                | Nominal               | DSSS<br>OFDM g & n | <input type="checkbox"/><br><input type="checkbox"/>                       | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | -/-      |
| §15.247(d)                | TX spurious emissions radiated          | -/-                                   | Nominal                | Nominal               | DSSS<br>OFDM g & n | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><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<br>OFDM g & n | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/>                       | complies |
| §15.107(a)<br>§15.207     | Conducted emissions < 30 MHz            | -/-                                   | Nominal                | Nominal               | DSSS<br>OFDM g & n | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/>                       | complies |

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

## 9 Additional comments

Reference documents: Main report: 1-6965/13-05-14 / PY7TM-0040 (conducted values)

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

## 10 Measurement results

### 10.1 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          |
| Resolution bandwidth: | 1 MHz / 1 MHz |
| Video bandwidth:      | 1 MHz / 10 Hz |
| Span:                 | See plot!     |
| Trace-Mode:           | Max Hold      |

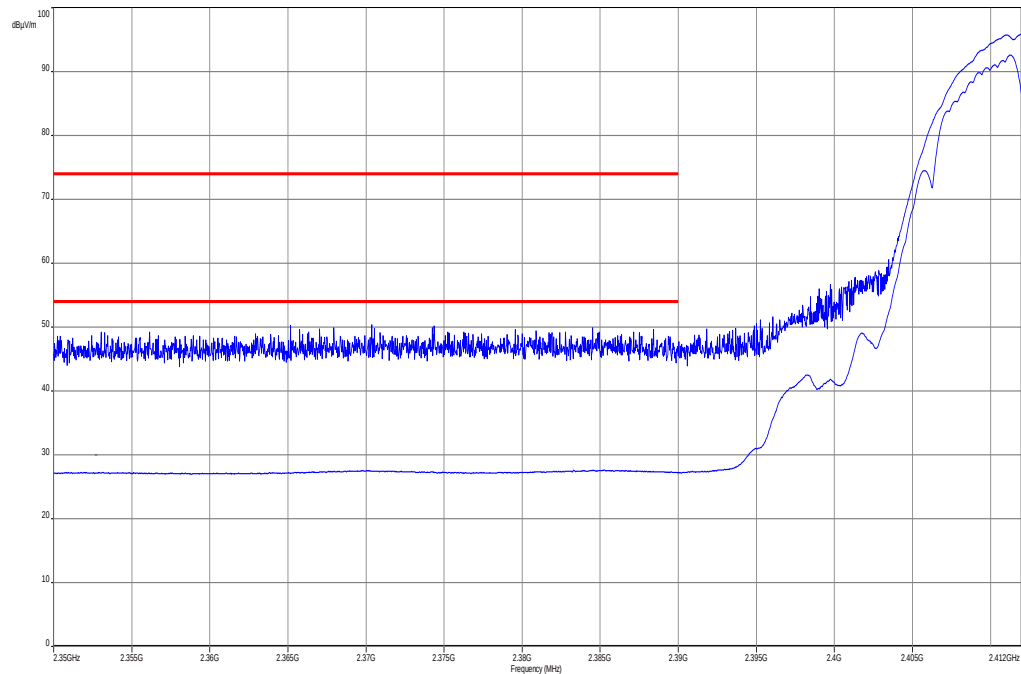
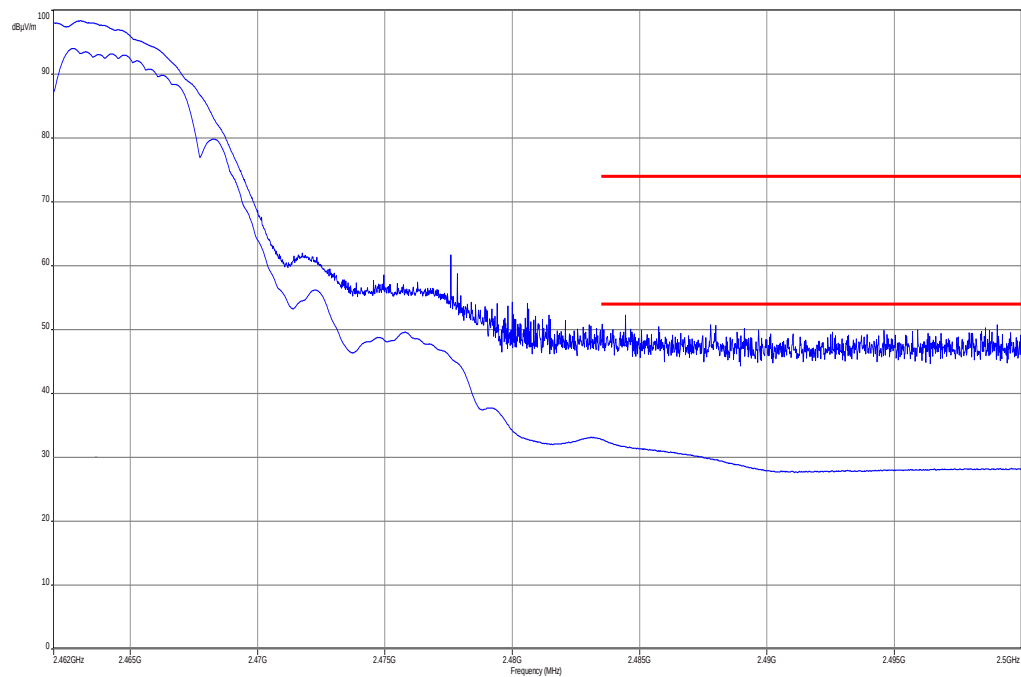
#### Limits:

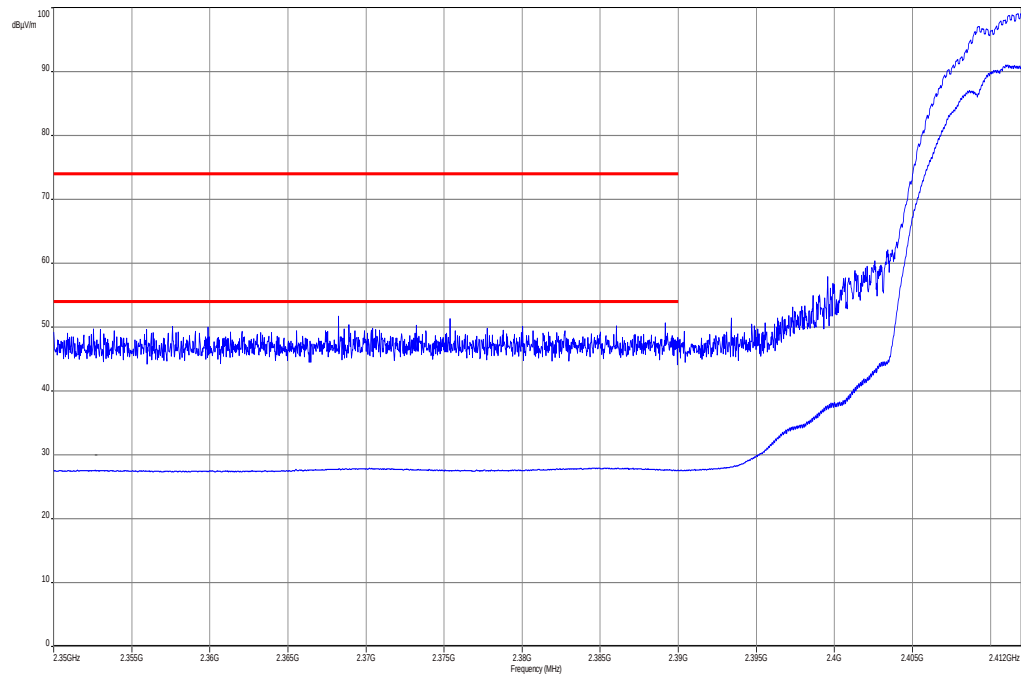
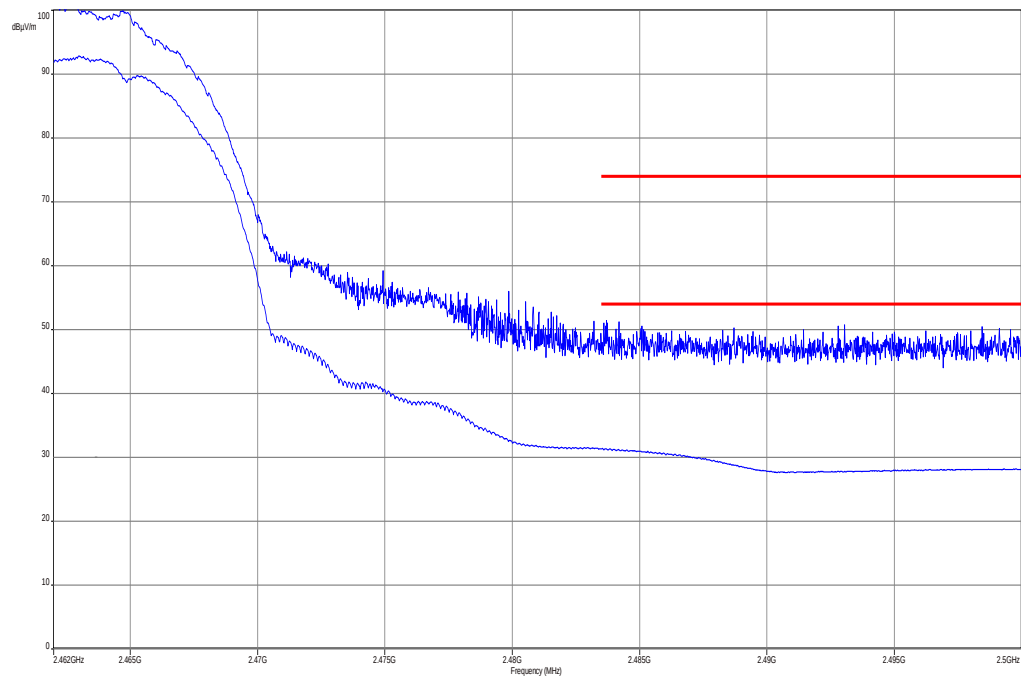
| FCC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 dBμV/m Peak<br>54 dBμV/m AVG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

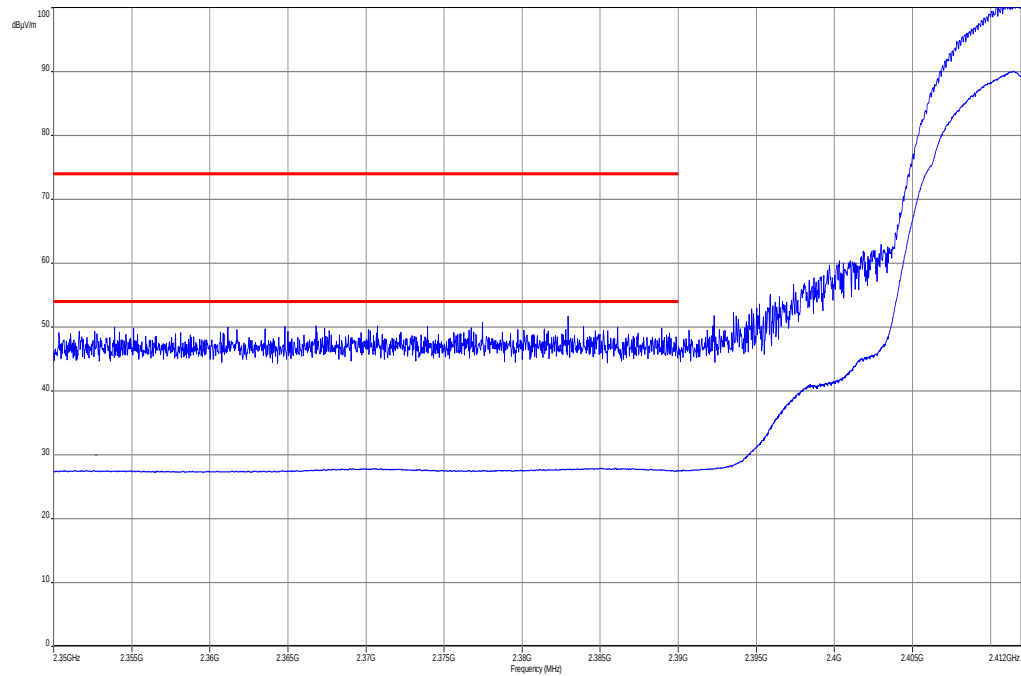
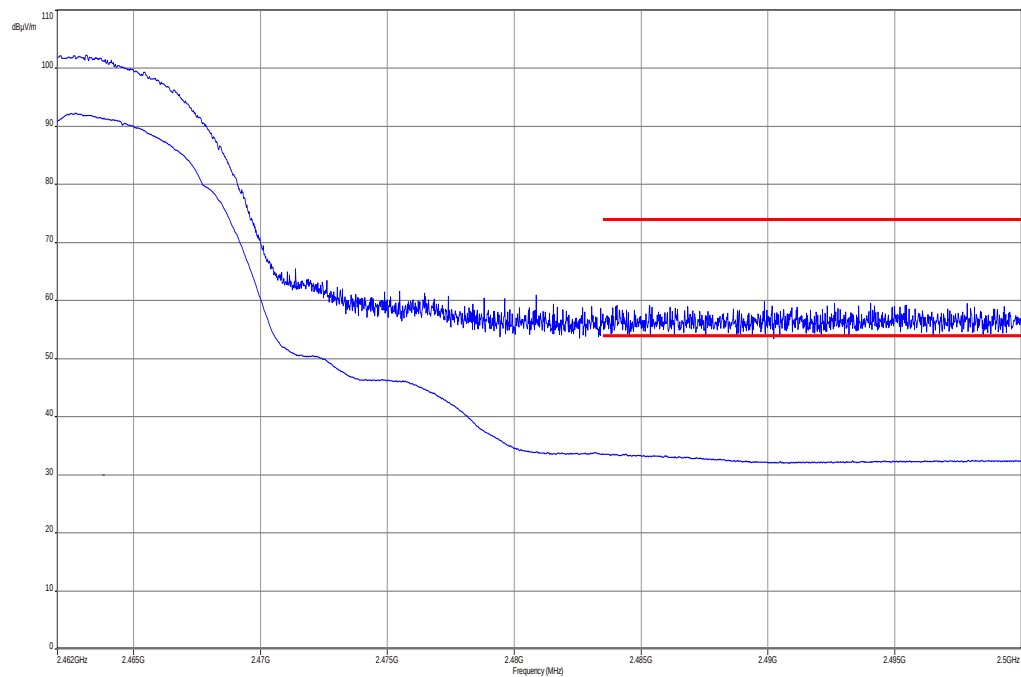
#### Results:

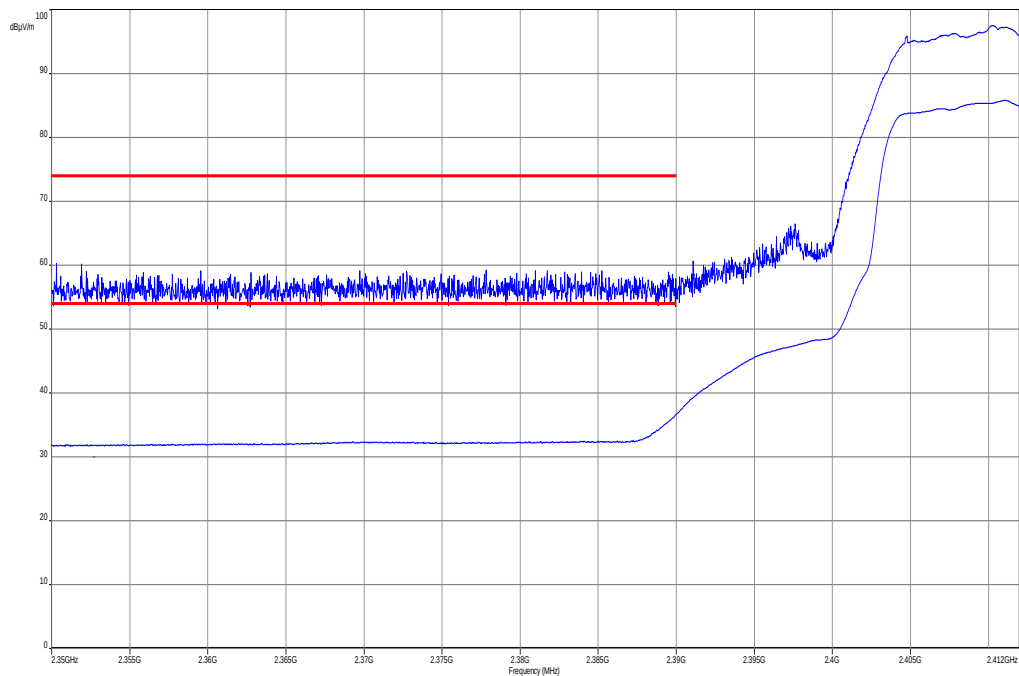
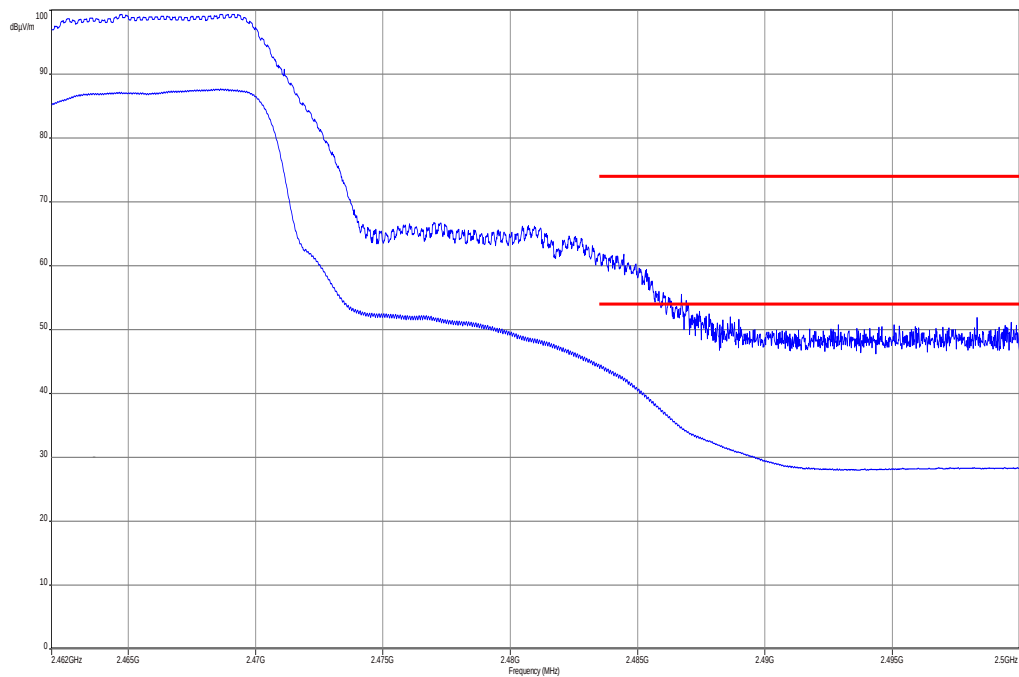
| Scenario<br><br>Modulation   | Band Edge Compliance Conducted [dB] |                                 |                                 |
|------------------------------|-------------------------------------|---------------------------------|---------------------------------|
|                              | DSSS /<br>b – mode                  | OFDM /<br>g – mode              | OFDM /<br>n HT20 – mode         |
| Lower Band Edge – Channel 1  | > 10 dB (Peak)<br>> 10 dB (AVG)     | > 10 dB (Peak)<br>> 10 dB (AVG) | > 10 dB (Peak)<br>> 10 dB (AVG) |
| Upper Band Edge – Channel 11 | > 10 dB (Peak)<br>> 10 dB (AVG)     | > 10 dB (Peak)<br>> 10 dB (AVG) | > 10 dB (Peak)<br>> 10 dB (AVG) |
| Measurement uncertainty      | ± 3 dB                              |                                 |                                 |

**Result:** Passed

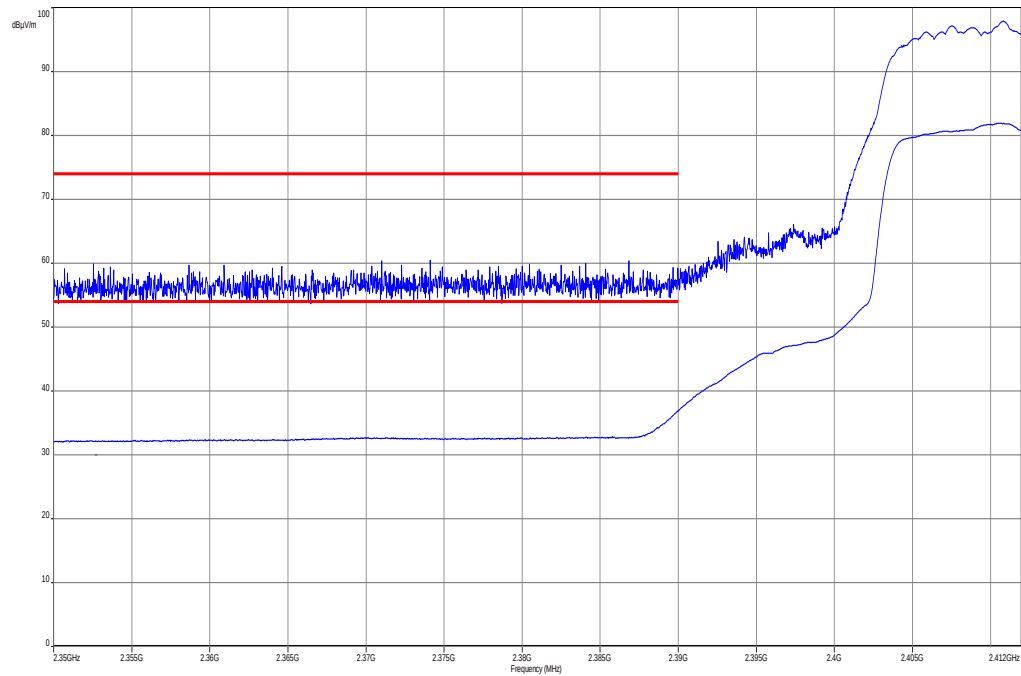
**Plots: DSSS/ b – mode peak / average****Plot 1: TX mode, lower band edge, vertical & horizontal polarization, low data rate****Plot 2: TX mode, upper band edge, vertical & horizontal polarization, low data rate**

**Plot 3:** TX mode, lower band edge, vertical & horizontal polarization, highest power data rate**Plot 4:** TX mode, upper band edge, vertical & horizontal polarization, highest power data rate

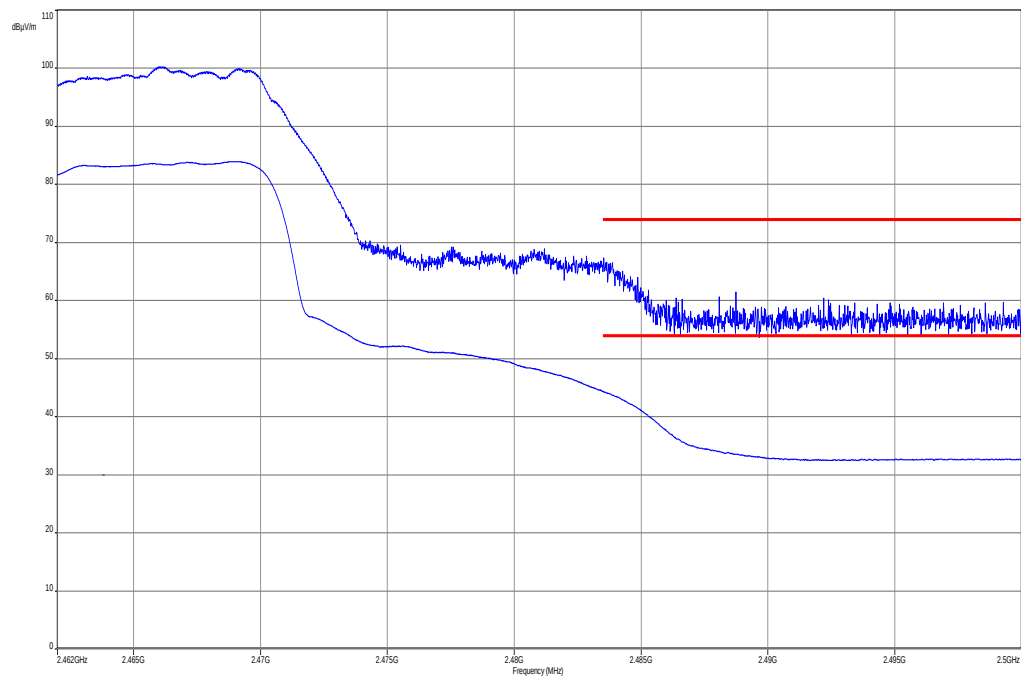
**Plot 5:** TX mode, lower band edge, vertical & horizontal polarization, high data rate**Plot 6:** TX mode, upper band edge, vertical & horizontal polarization, high data rate

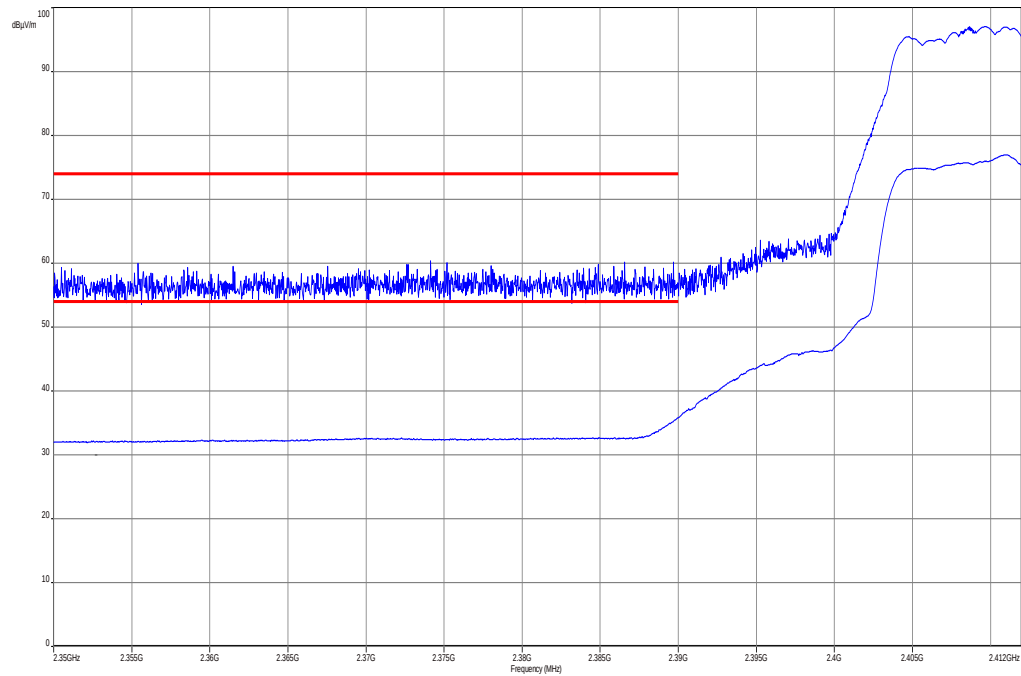
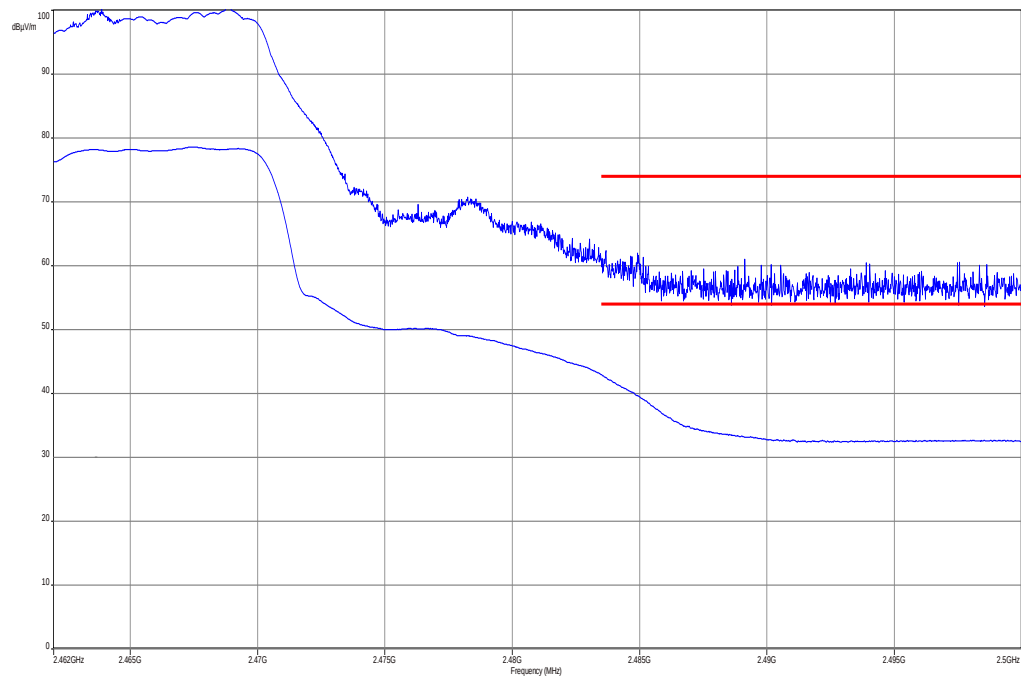
**Plots: OFDM / g – mode peak / average****Plot 1: TX mode, lower band edge, vertical & horizontal polarization, low data rate****Plot 2: TX mode, upper band edge, vertical & horizontal polarization, low data rate**

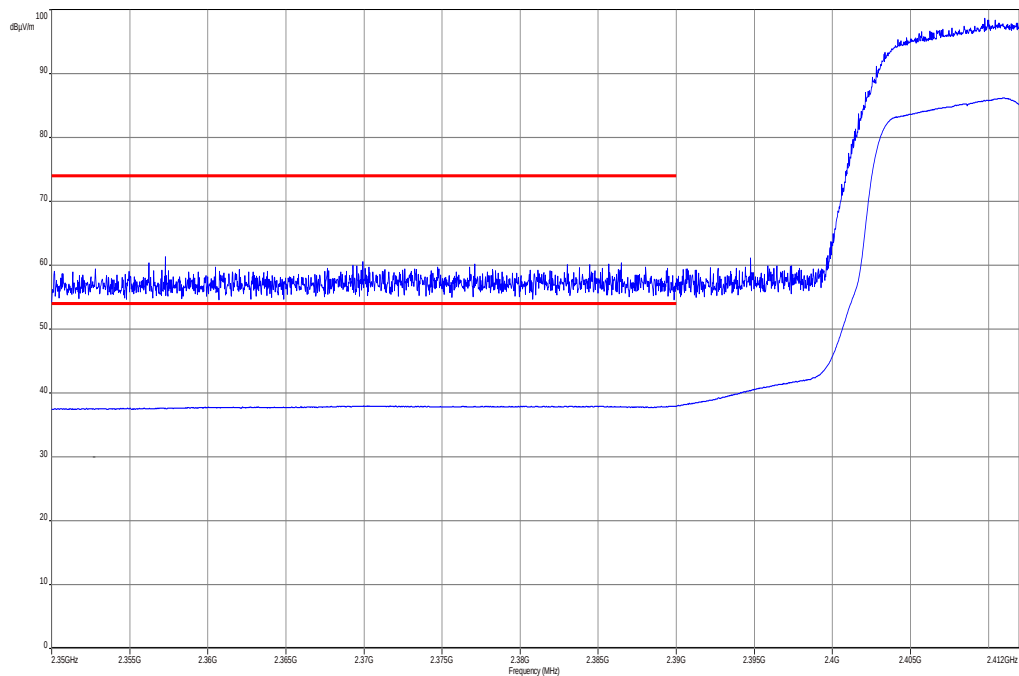
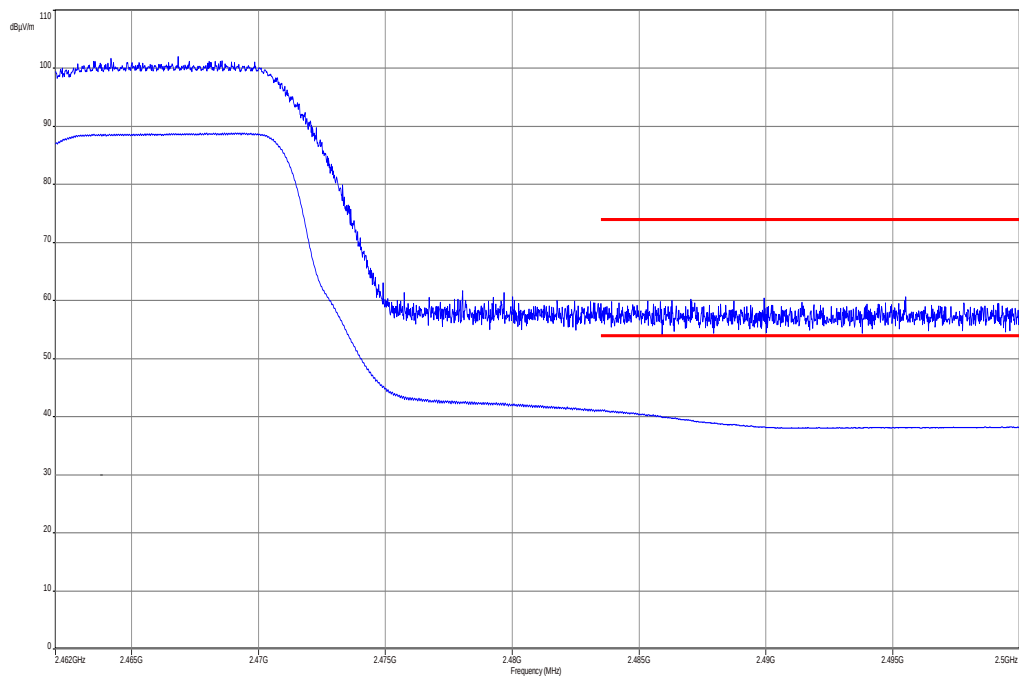
**Plot 3:** TX mode, lower band edge, vertical & horizontal polarization, highest power data rate



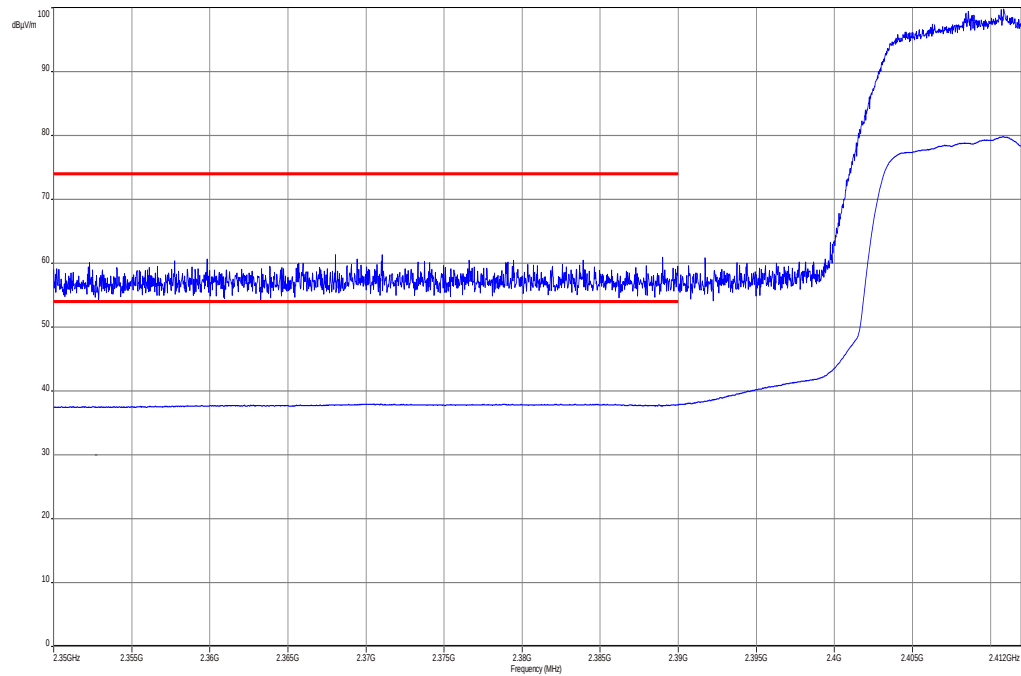
**Plot 4:** TX mode, upper band edge, vertical & horizontal polarization, highest power data rate



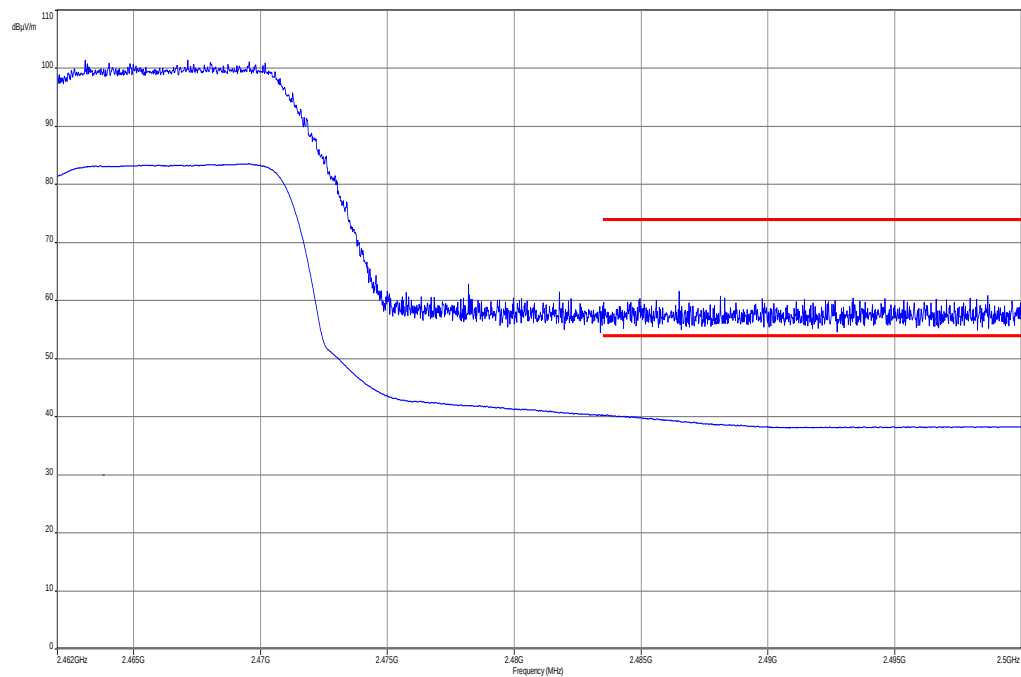
**Plot 5:** TX mode, lower band edge, vertical & horizontal polarization, high data rate**Plot 6:** TX mode, upper band edge, vertical & horizontal polarization, high data rate

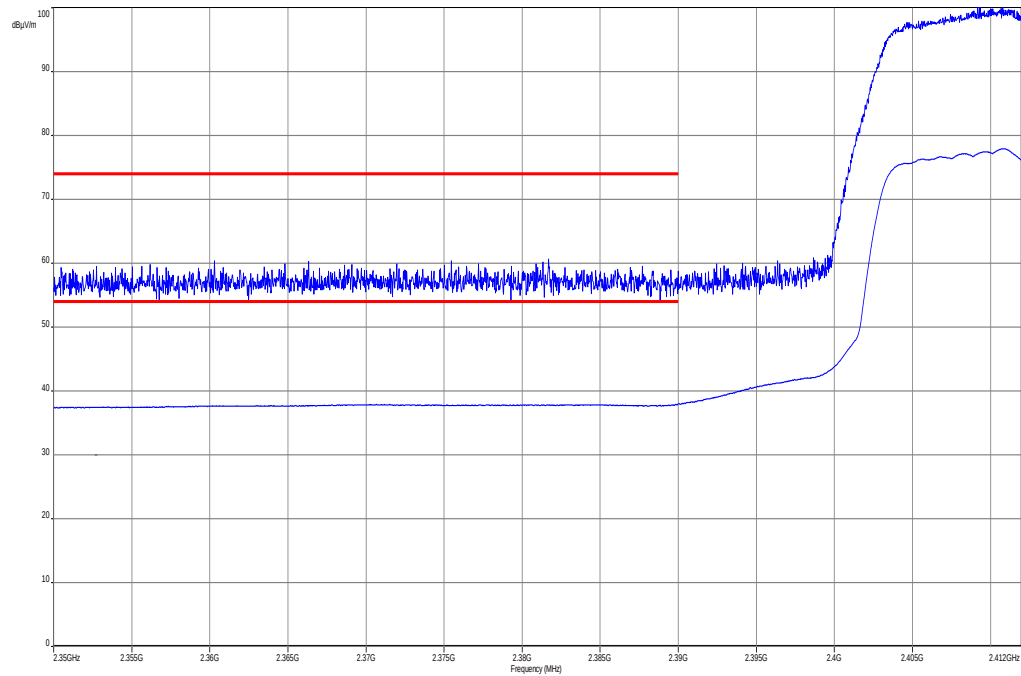
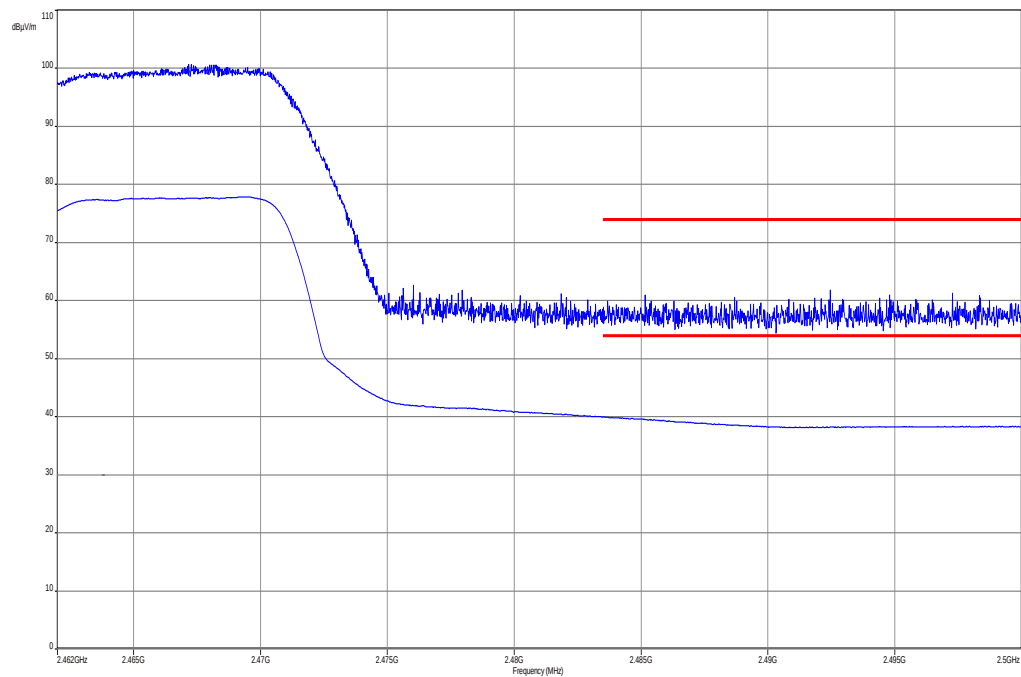
**Plots: OFDM / n HT20 – mode peak / average****Plot 1: TX mode, lower band edge, vertical & horizontal polarization, low data rate****Plot 2: TX mode, upper band edge, vertical & horizontal polarization, low data rate**

**Plot 3:** TX mode, lower band edge, vertical & horizontal polarization, highest power data rate



**Plot 4:** TX mode, upper band edge, vertical & horizontal polarization, highest power data rate



**Plot 5:** TX mode, lower band edge, vertical & horizontal polarization, high data rate**Plot 6:** TX mode, upper band edge, vertical & horizontal polarization, high data rate

## 10.2 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 / RMS                                                                                                                                     |
| Sweep time:           | Auto                                                                                                                                                        |
| Resolution bandwidth: | F > 1 GHz: 1 MHz<br>F < 1 GHz: 100 kHz                                                                                                                      |
| Video bandwidth:      | 3 x RBW<br>Re-measurement: 10 Hz / 3 MHz                                                                                                                    |
| Span:                 | 30 MHz to 26 GHz                                                                                                                                            |
| Trace-Mode:           | Max Hold                                                                                                                                                    |
| Measured Modulation   | <input checked="" type="checkbox"/> DSSS b – mode<br><input checked="" type="checkbox"/> OFDM g – mode<br><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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------|
| 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)). |                         |                      |
| 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. |          |                |
| No spurious emissions above 1 GHz detected.                                      |          |                | No spurious emissions above 1 GHz detected.                                      |          |                | No spurious emissions above 1 GHz detected.                                      |          |                |
|                                                                                  |          |                |                                                                                  |          |                |                                                                                  |          |                |
| Measurement uncertainty                                                          |          |                | ± 3 dB                                                                           |          |                |                                                                                  |          |                |

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

| TX Spurious Emissions Radiated [dBμV/m]                                          |          |                |                                                                                  |          |                |                                                                                  |          |                |
|----------------------------------------------------------------------------------|----------|----------------|----------------------------------------------------------------------------------|----------|----------------|----------------------------------------------------------------------------------|----------|----------------|
| OFDM / g – 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. |          |                |
| No spurious emissions above 1 GHz detected.                                      |          |                | No spurious emissions above 1 GHz detected.                                      |          |                | No spurious emissions above 1 GHz detected.                                      |          |                |
|                                                                                  |          |                |                                                                                  |          |                |                                                                                  |          |                |
| Measurement uncertainty                                                          |          |                | ± 3 dB                                                                           |          |                |                                                                                  |          |                |

**Result:** Passed**Results: OFDM / n HT20 – 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. |          |                |
| No spurious emissions above 1 GHz detected.                                      |          |                | No spurious emissions above 1 GHz detected.                                      |          |                | No spurious emissions above 1 GHz detected.                                      |          |                |
|                                                                                  |          |                |                                                                                  |          |                |                                                                                  |          |                |
| Measurement uncertainty                                                          |          |                | ± 3 dB                                                                           |          |                |                                                                                  |          |                |

**Result:** Passed

**Note:** The limit was recalculated with 20 dB / decade (Part 15.31) for all radiated spurious emissions 30 MHz to 1 GHz from 3 meter limit to a 10 meter distance. (40dB/decade for emissions < 30MHz)

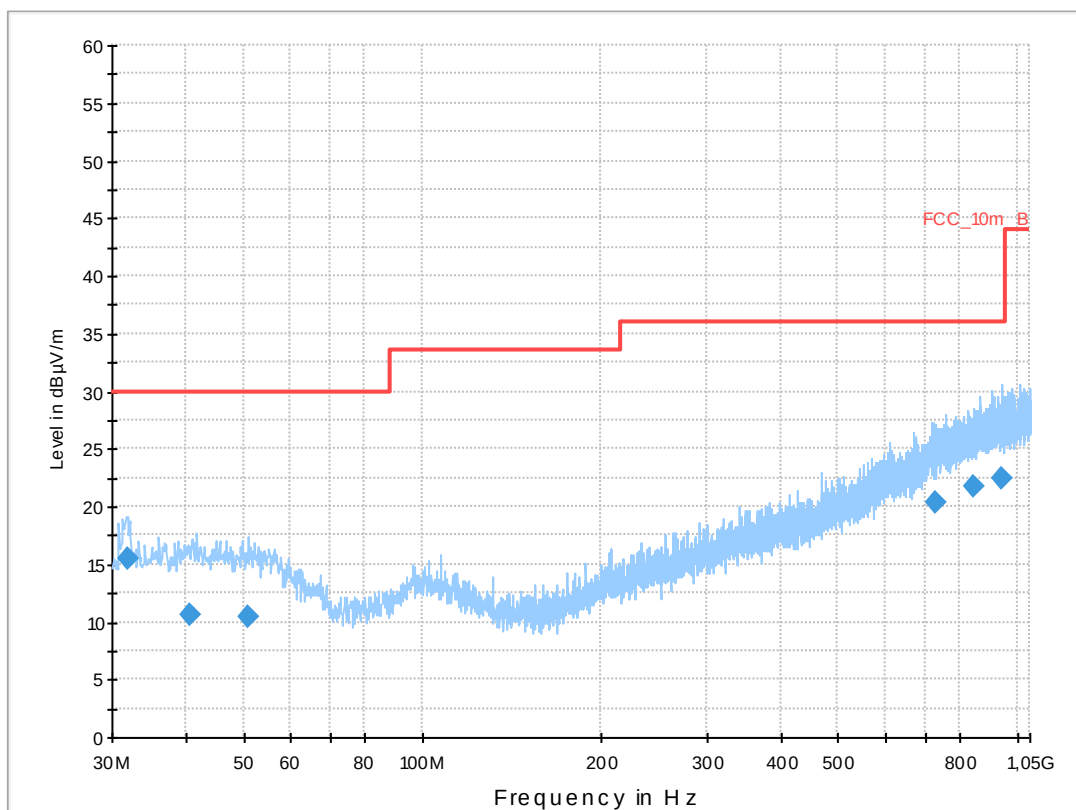
**Plots: DSSS / b – mode****Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN TX b-mode Ch. 1  
 Operator Name: Hennemann  
 Comment: battery powered

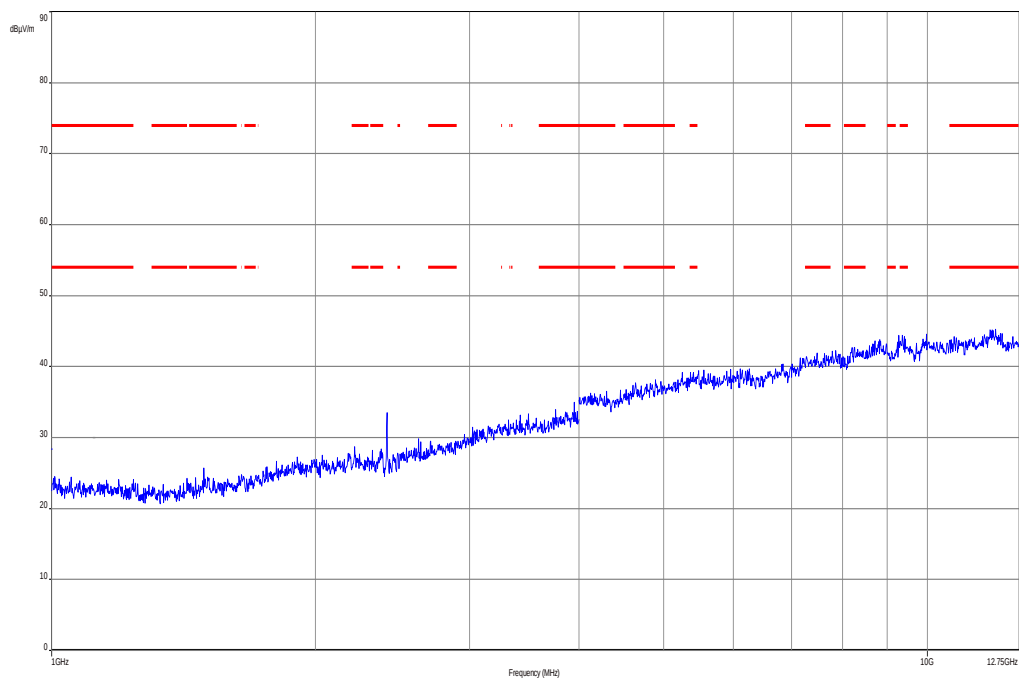
**Scan Setup: STAN\_Fin [EMI radiated]**

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

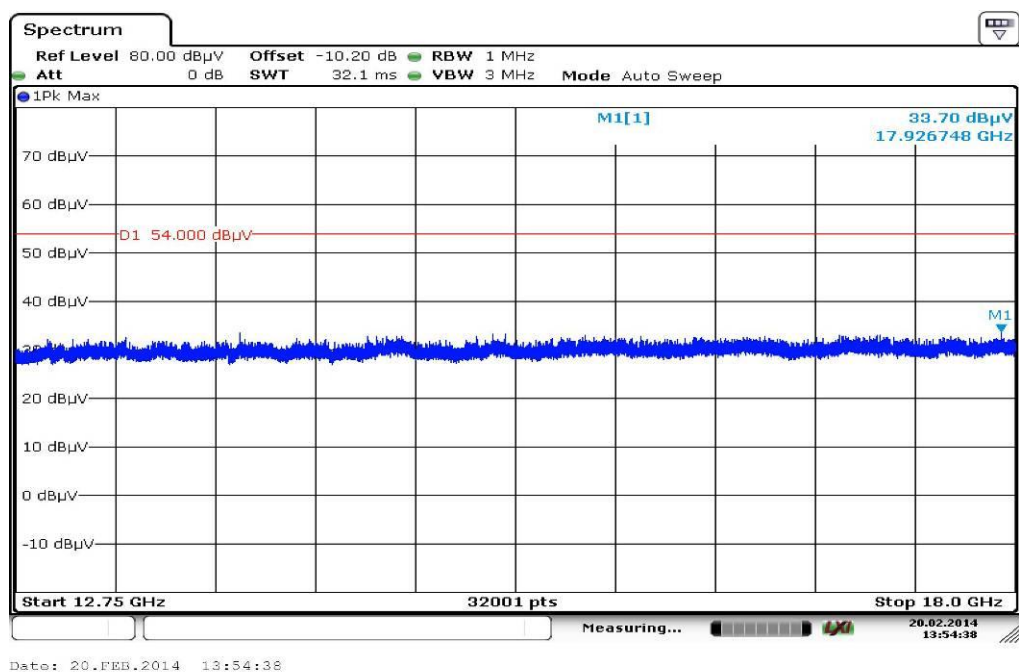
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |

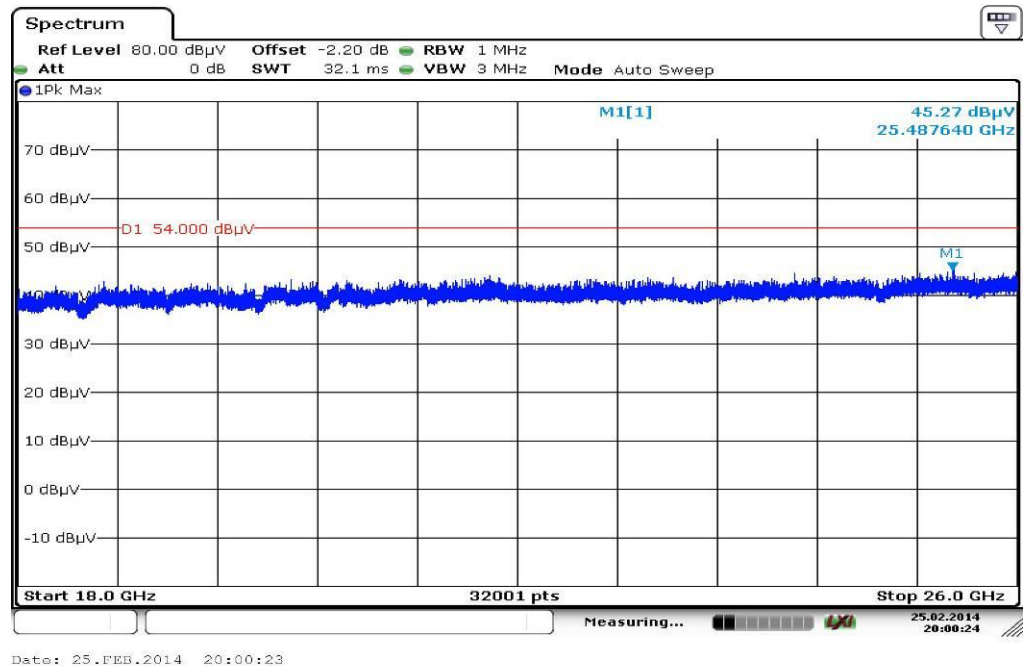
**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 31.881450       | 15.5               | 1000.0          | 120.000         | 98.0        | V            | 280.0         | 12.7       | 14.5        | 30.0           |         |
| 40.658550       | 10.6               | 1000.0          | 120.000         | 142.0       | H            | 0.0           | 13.4       | 19.4        | 30.0           |         |
| 50.891850       | 10.5               | 1000.0          | 120.000         | 170.0       | V            | 190.0         | 13.3       | 19.5        | 30.0           |         |
| 726.232050      | 20.3               | 1000.0          | 120.000         | 170.0       | V            | 190.0         | 23.1       | 15.7        | 36.0           |         |
| 843.374250      | 21.7               | 1000.0          | 120.000         | 98.0        | V            | 88.0          | 24.5       | 14.3        | 36.0           |         |
| 941.453700      | 22.4               | 1000.0          | 120.000         | 170.0       | V            | 81.0          | 25.3       | 13.6        | 36.0           |         |

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

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

**Plot 3:** Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

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

**Plot 5:** Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

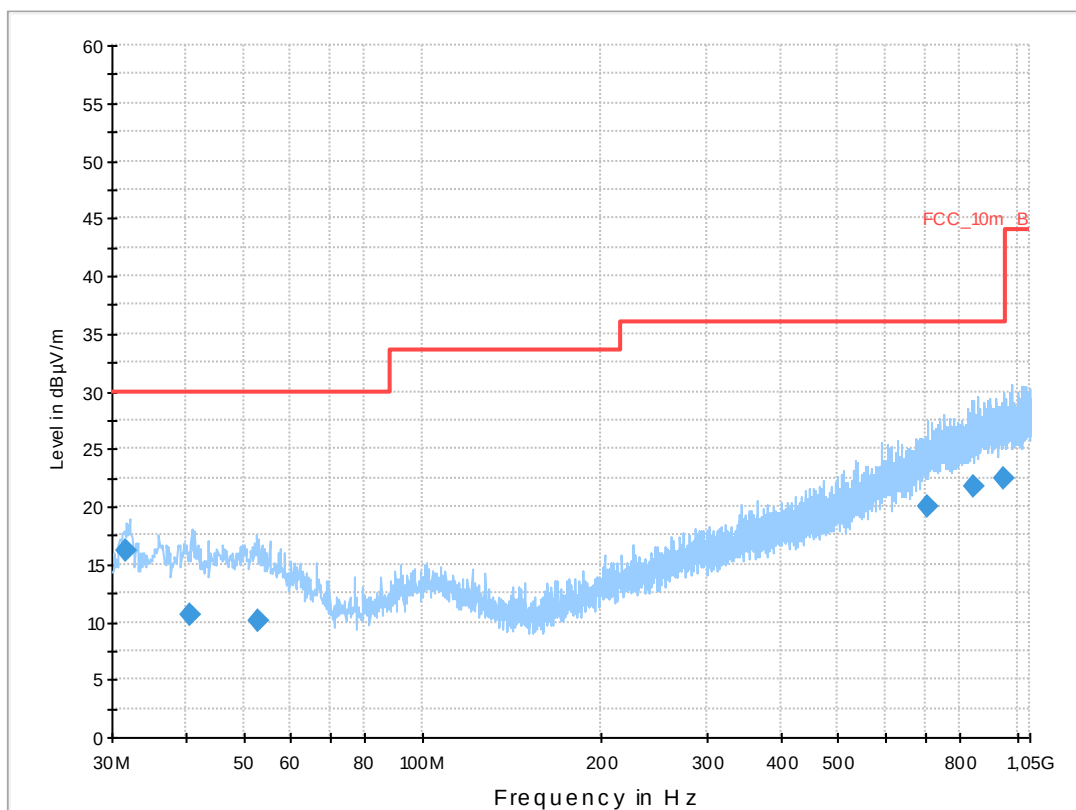
## Common Information

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN TX b-mode Ch. 6  
 Operator Name: Hennemann  
 Comment: battery powered

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

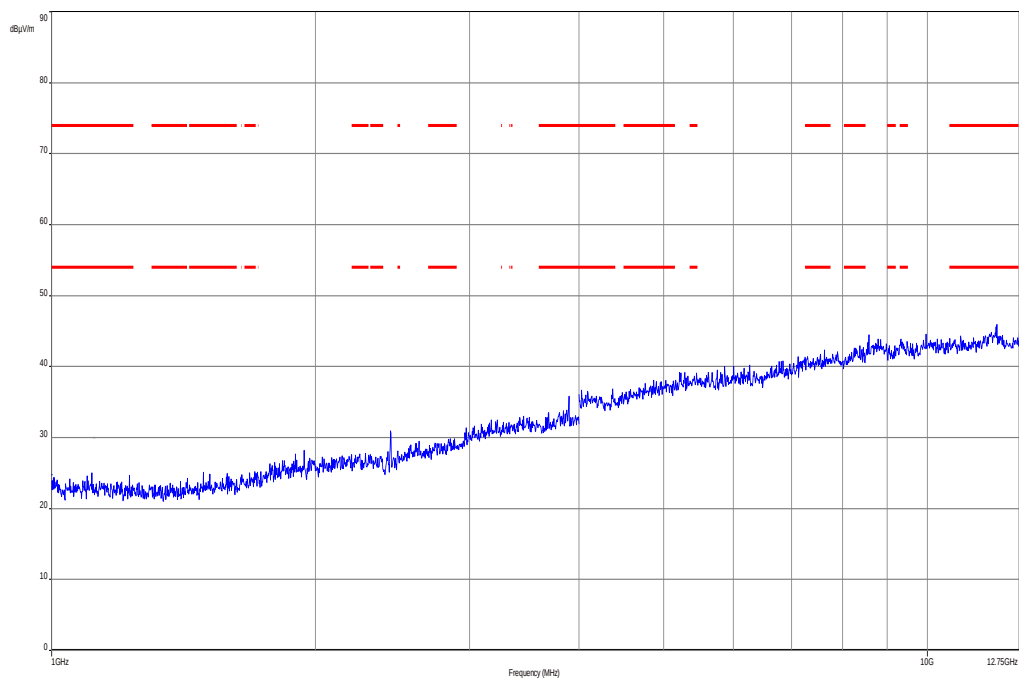
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBμV/m

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

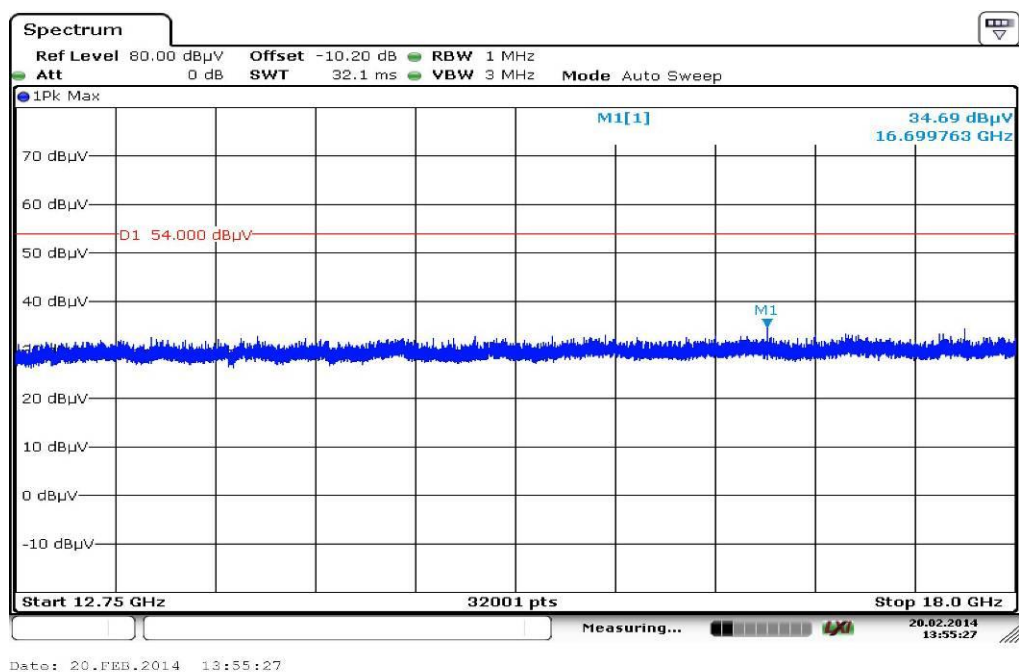


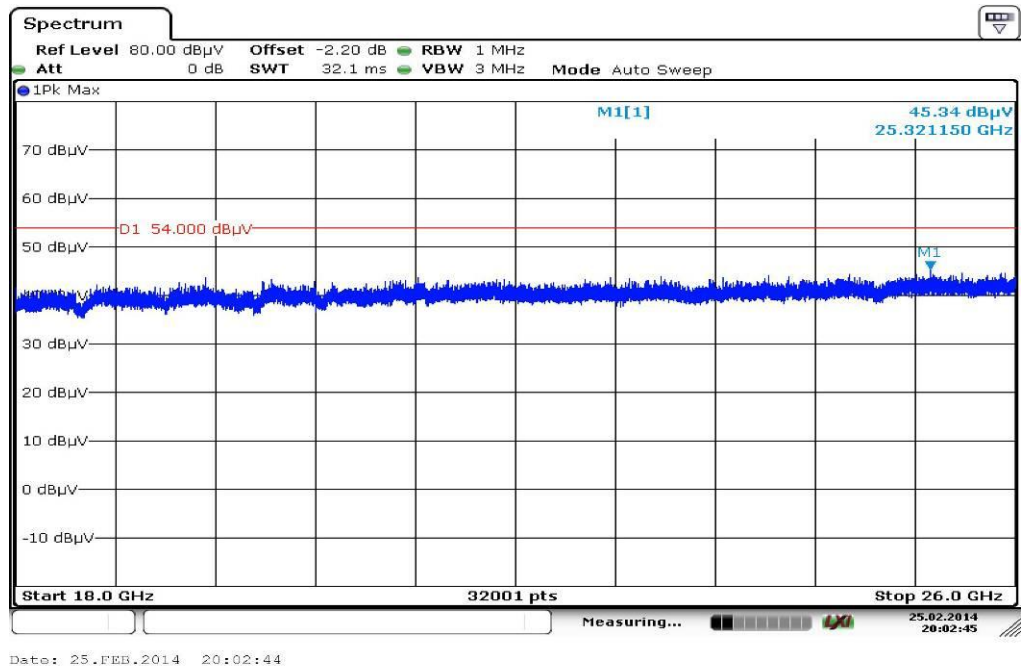
## Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 31.659600       | 16.2               | 1000.0          | 120.000         | 98.0        | V            | 100.0         | 12.7       | 13.8        | 30.0           |         |
| 40.546650       | 10.6               | 1000.0          | 120.000         | 170.0       | H            | 280.0         | 13.4       | 19.4        | 30.0           |         |
| 53.070000       | 10.1               | 1000.0          | 120.000         | 105.0       | V            | -10.0         | 13.1       | 19.9        | 30.0           |         |
| 707.454450      | 19.9               | 1000.0          | 120.000         | 170.0       | H            | 100.0         | 22.7       | 16.1        | 36.0           |         |
| 847.623600      | 21.8               | 1000.0          | 120.000         | 170.0       | H            | 280.0         | 24.5       | 14.2        | 36.0           |         |
| 947.724450      | 22.4               | 1000.0          | 120.000         | 170.0       | V            | 170.0         | 25.3       | 13.6        | 36.0           |         |

**Plot 6:** Middle channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

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

**Plot 7:** Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

**Plot 8:** Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization

**Plot 9:** Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

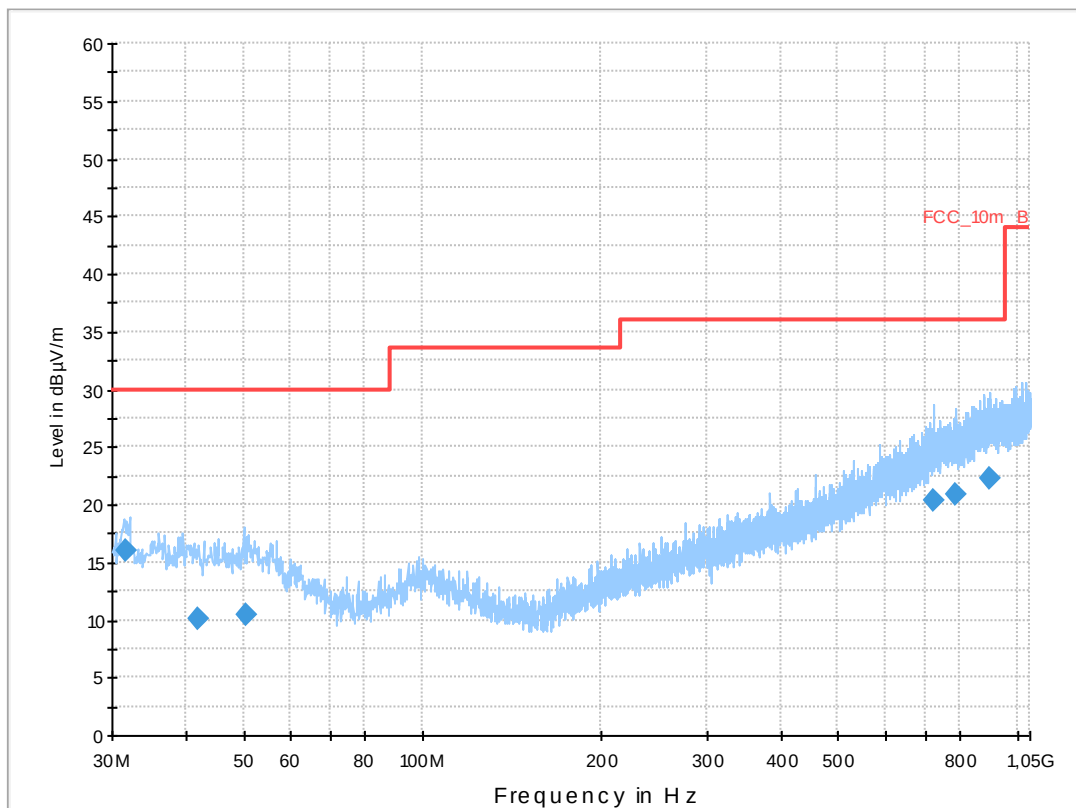
## Common Information

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN TX b-mode Ch. 11  
 Operator Name: Hennemann  
 Comment: battery powered

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

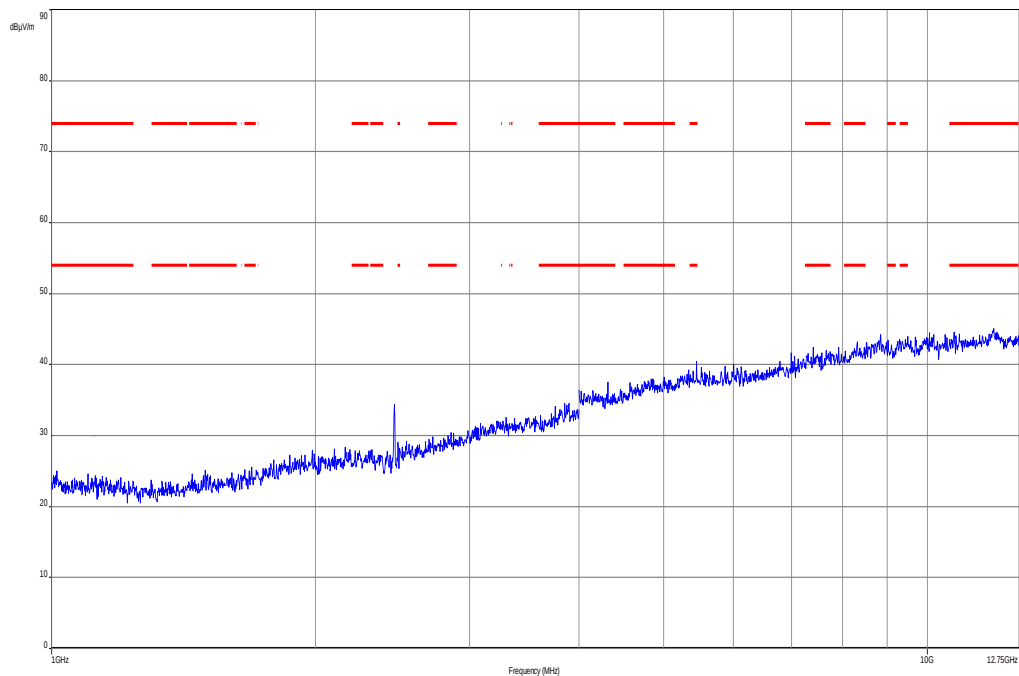
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBμV/m

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

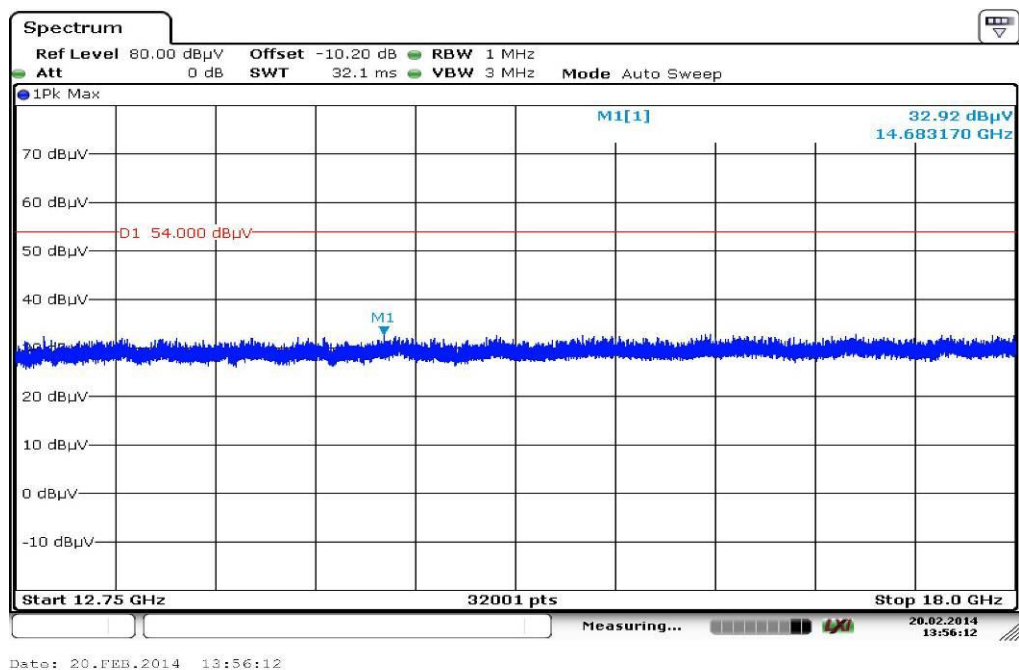


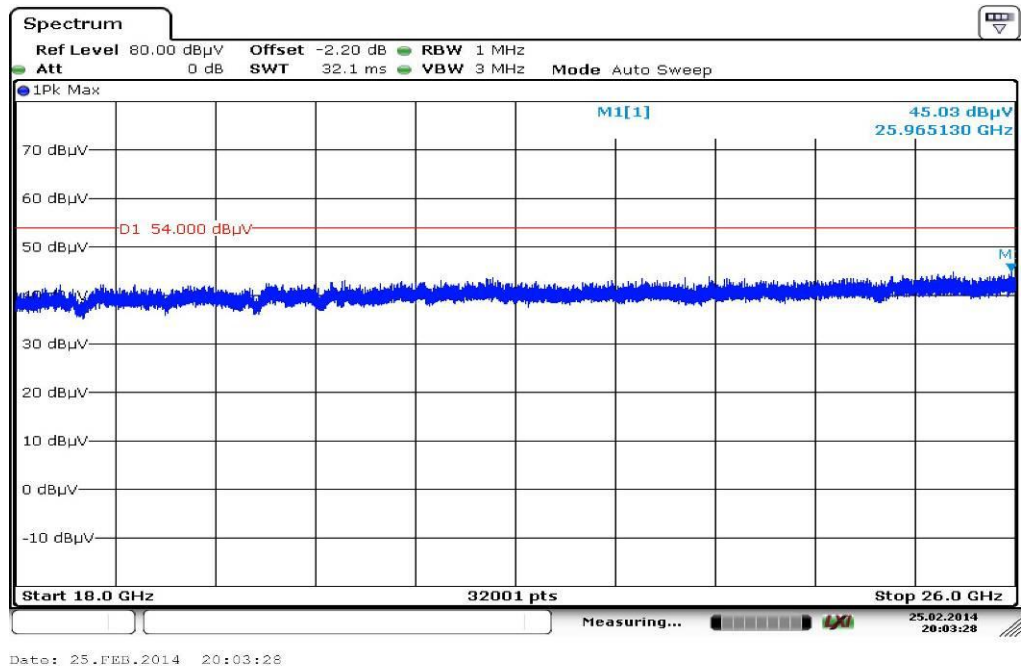
## Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 31.794000       | 16.0               | 1000.0          | 120.000         | 98.0        | V            | 100.0         | 12.7       | 14.0        | 30.0           |         |
| 41.976450       | 10.1               | 1000.0          | 120.000         | 120.0       | V            | 272.0         | 13.4       | 19.9        | 30.0           |         |
| 50.302650       | 10.4               | 1000.0          | 120.000         | 98.0        | V            | 190.0         | 13.3       | 19.6        | 30.0           |         |
| 723.293400      | 20.3               | 1000.0          | 120.000         | 105.0       | V            | -5.0          | 23.0       | 15.7        | 36.0           |         |
| 790.090200      | 20.9               | 1000.0          | 120.000         | 170.0       | H            | 3.0           | 23.8       | 15.1        | 36.0           |         |
| 899.936250      | 22.3               | 1000.0          | 120.000         | 170.0       | V            | 260.0         | 25.2       | 13.7        | 36.0           |         |

**Plot 10:** Highest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

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

**Plot 11:** Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

**Plot 12:** Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization

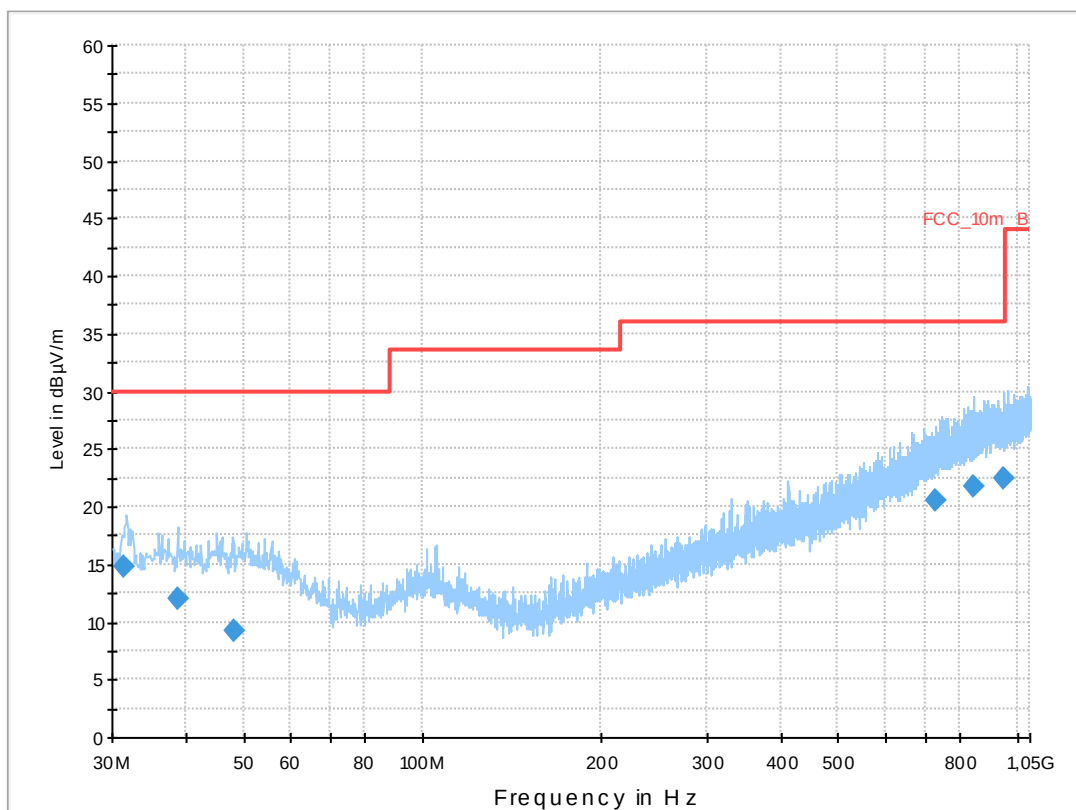
**Plots: OFDM / g – mode****Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN TX g-mode Ch. 1  
 Operator Name: Hennemann  
 Comment: battery powered

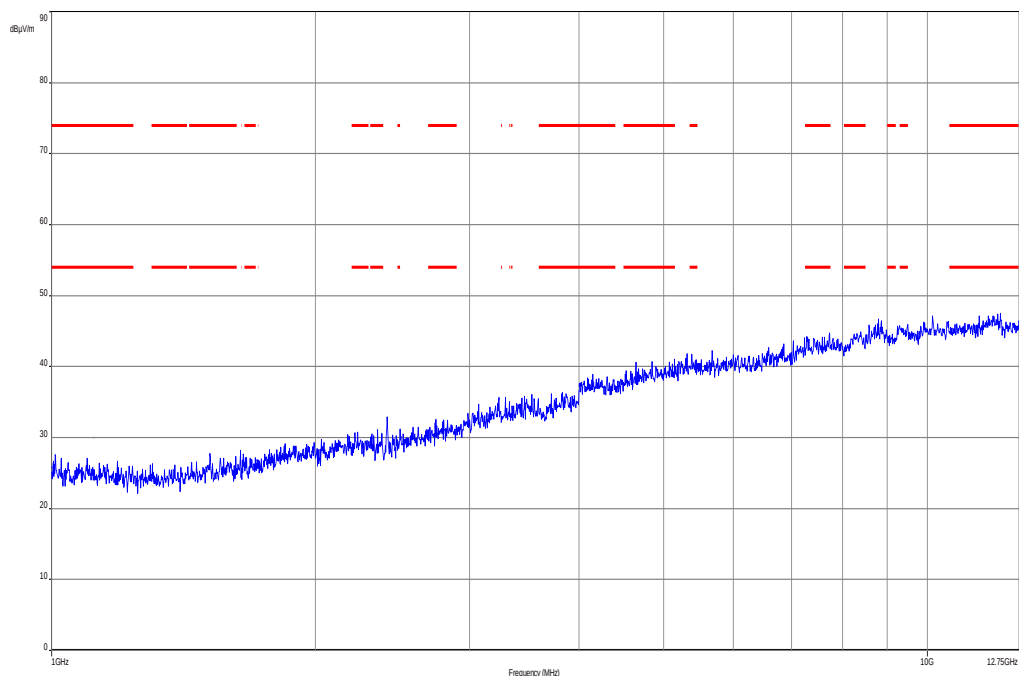
**Scan Setup: STAN\_Fin [EMI radiated]**

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

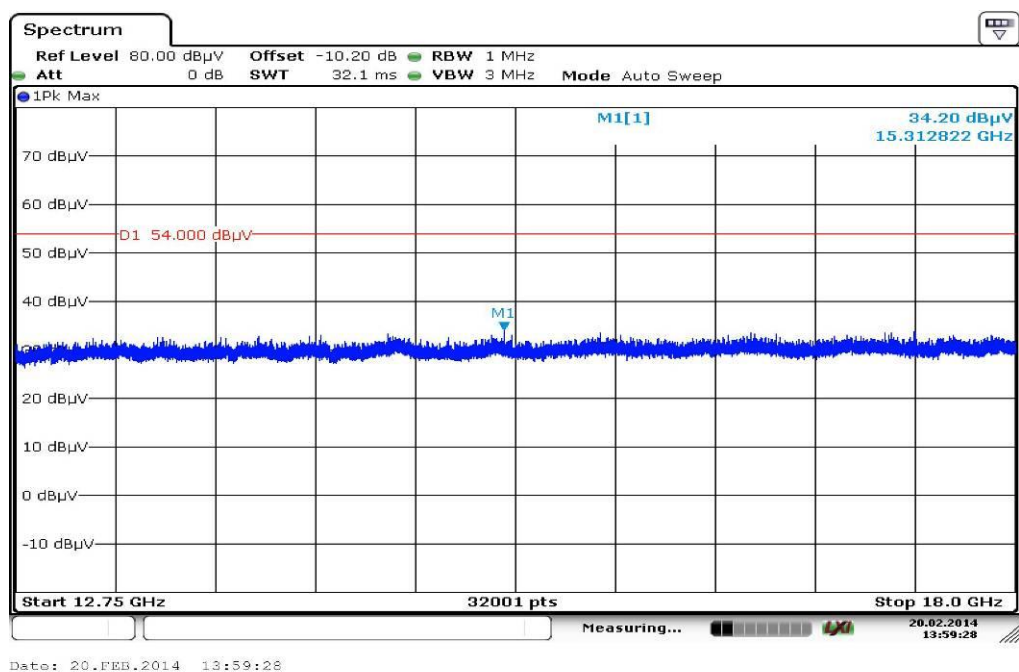
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |

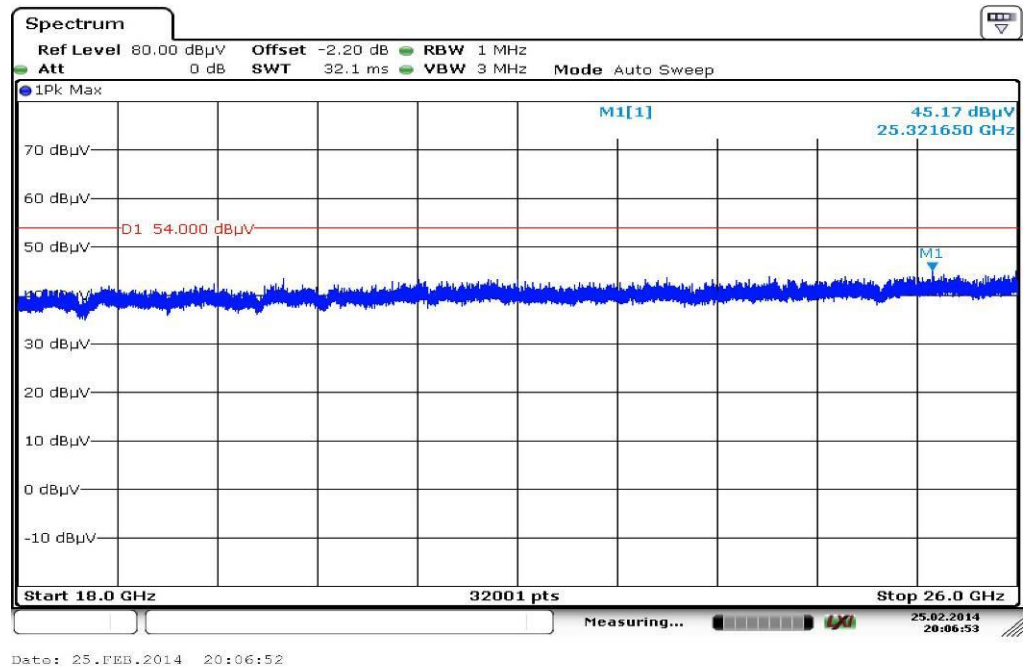
**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 31.415250       | 14.7               | 1000.0          | 120.000         | 121.0       | V            | 10.0          | 12.7       | 15.3        | 30.0           |         |
| 38.740800       | 12.1               | 1000.0          | 120.000         | 153.0       | V            | 270.0         | 13.3       | 17.9        | 30.0           |         |
| 48.167250       | 9.2                | 1000.0          | 120.000         | 170.0       | V            | 265.0         | 13.3       | 20.8        | 30.0           |         |
| 729.152850      | 20.4               | 1000.0          | 120.000         | 98.0        | V            | 80.0          | 23.2       | 15.6        | 36.0           |         |
| 847.519800      | 21.7               | 1000.0          | 120.000         | 106.0       | V            | 270.0         | 24.5       | 14.3        | 36.0           |         |
| 950.659650      | 22.4               | 1000.0          | 120.000         | 98.0        | H            | 171.0         | 25.4       | 13.6        | 36.0           |         |

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

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

**Plot 3:** Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

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

**Plot 5:** Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

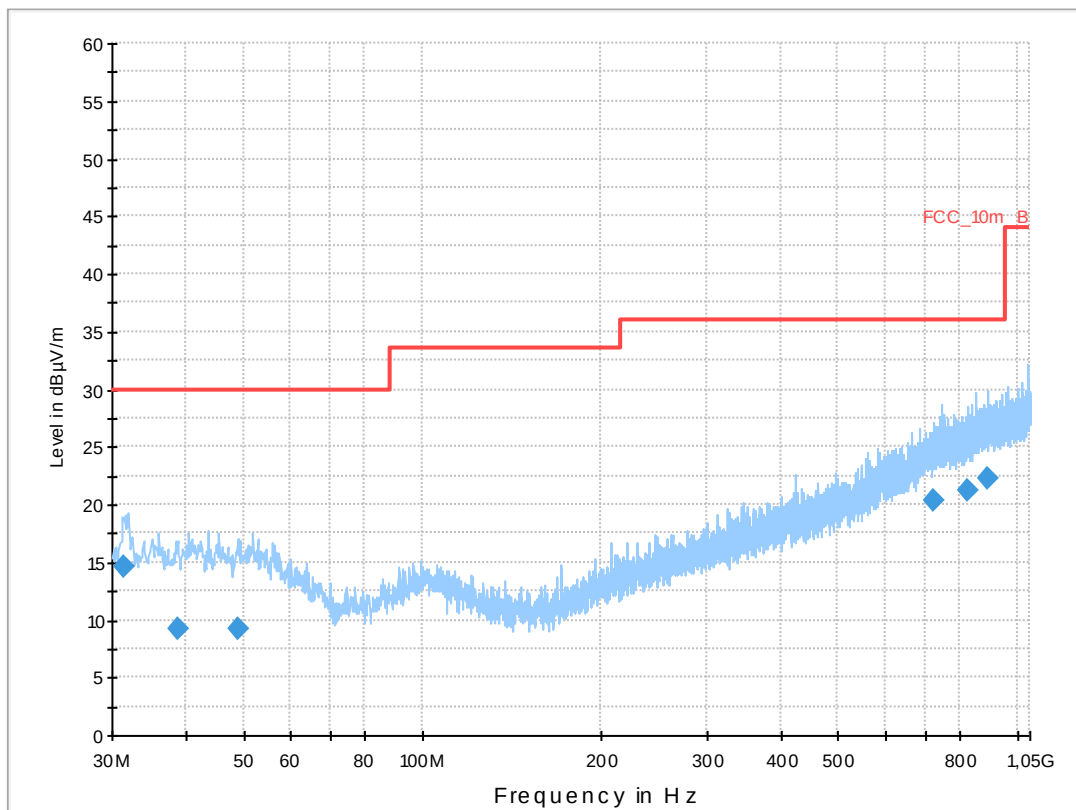
## Common Information

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN TX g-mode Ch. 6  
 Operator Name: Hennemann  
 Comment: battery powered

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

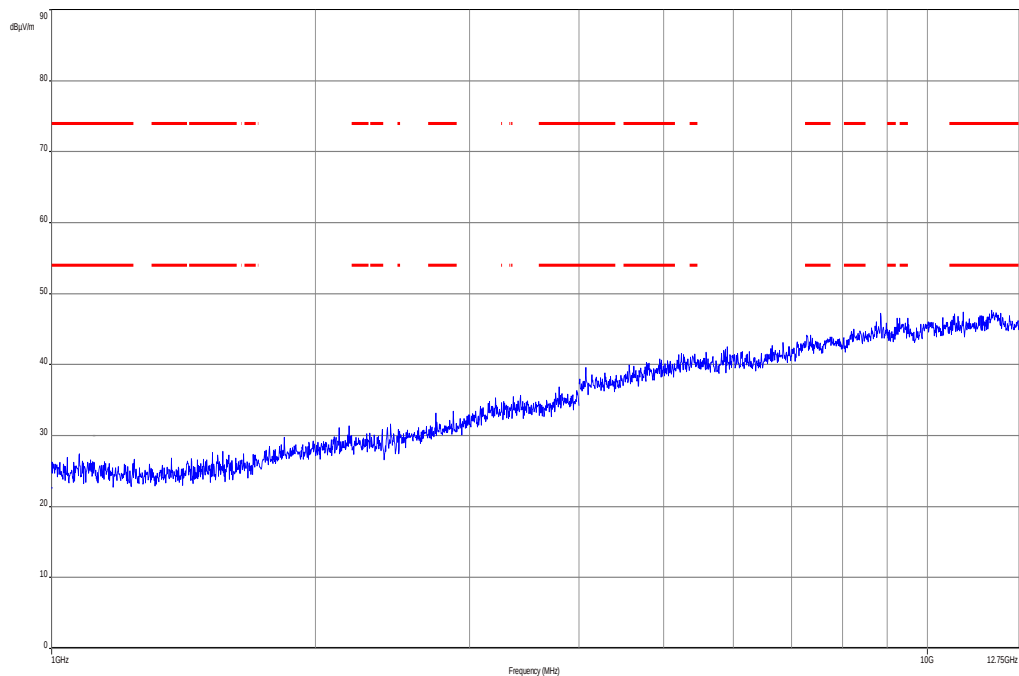
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBμV/m

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

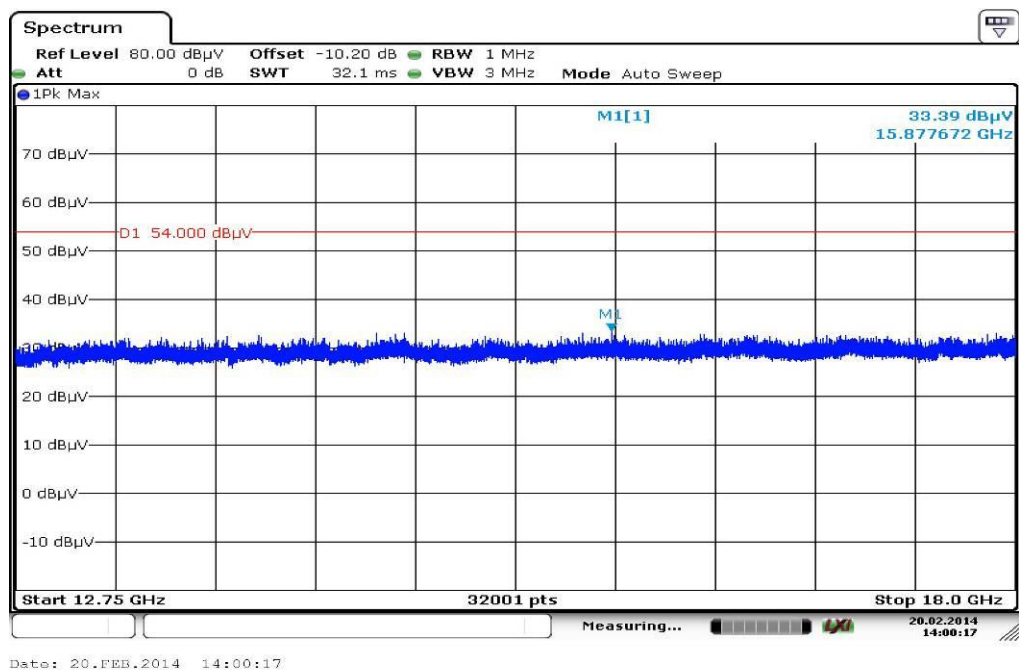


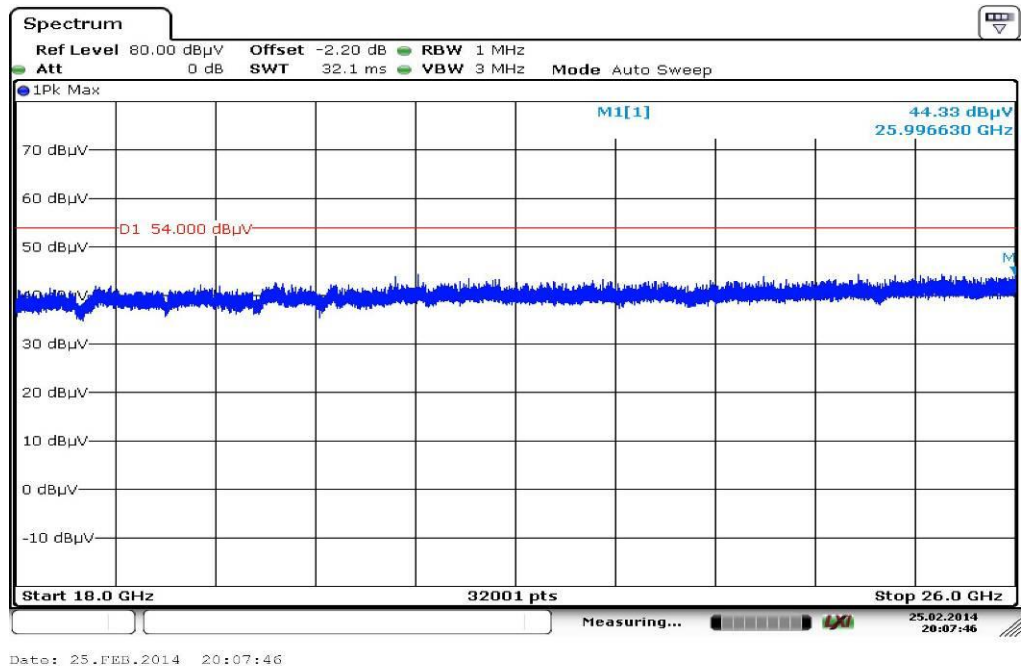
## Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 31.514700       | 14.6               | 1000.0          | 120.000         | 170.0       | V            | 265.0         | 12.7       | 15.4        | 30.0           |         |
| 38.635650       | 9.3                | 1000.0          | 120.000         | 170.0       | H            | 92.0          | 13.3       | 20.7        | 30.0           |         |
| 48.741750       | 9.3                | 1000.0          | 120.000         | 170.0       | V            | 280.0         | 13.3       | 20.7        | 30.0           |         |
| 723.347250      | 20.4               | 1000.0          | 120.000         | 98.0        | H            | 190.0         | 23.0       | 15.6        | 36.0           |         |
| 822.346500      | 21.3               | 1000.0          | 120.000         | 170.0       | V            | 190.0         | 24.1       | 14.7        | 36.0           |         |
| 894.807300      | 22.3               | 1000.0          | 120.000         | 170.0       | H            | 88.0          | 25.1       | 13.7        | 36.0           |         |

**Plot 6:** Middle channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

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

**Plot 7:** Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

**Plot 8:** Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization

**Plot 9:** Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

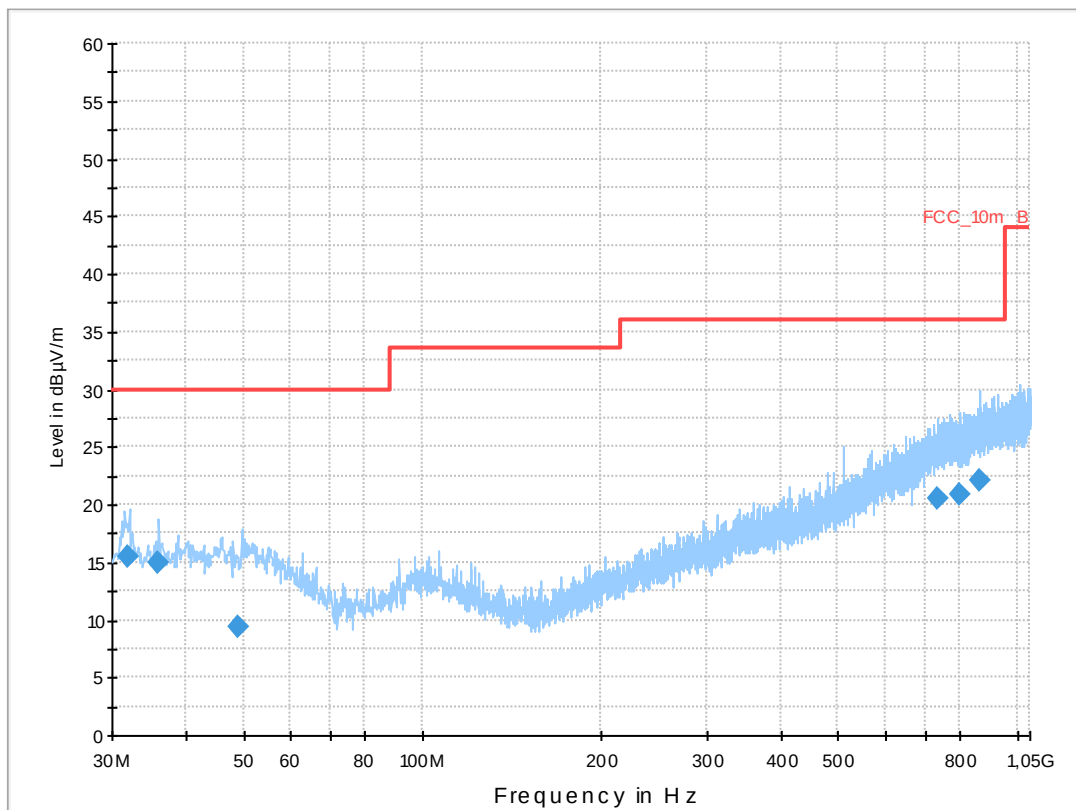
## Common Information

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN TX g-mode Ch.11  
 Operator Name: Hennemann  
 Comment: battery powered

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

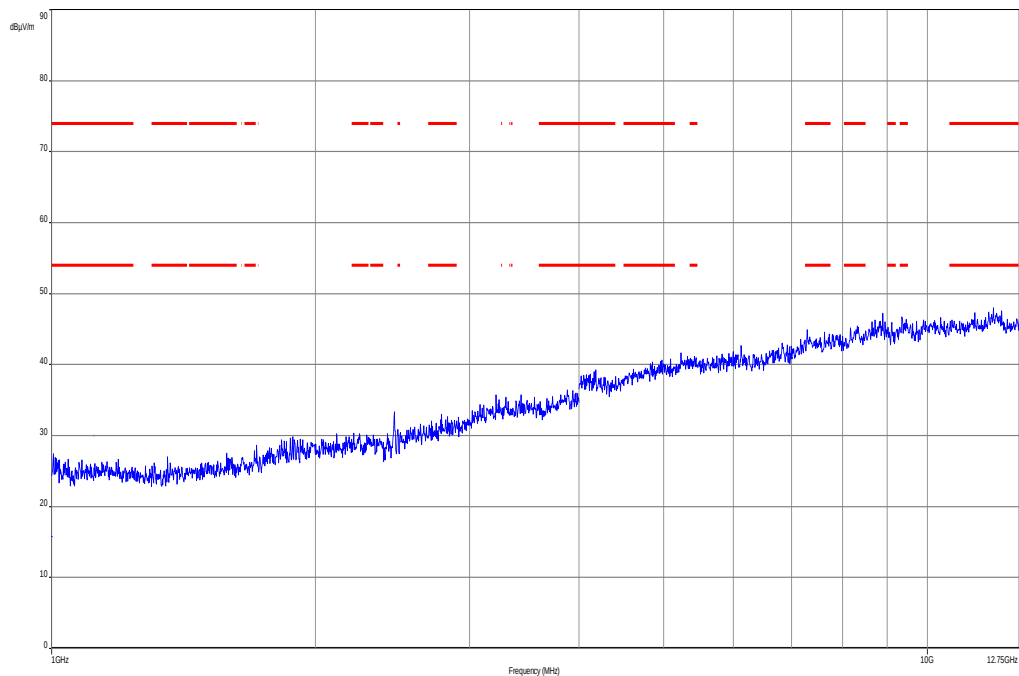
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBμV/m

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

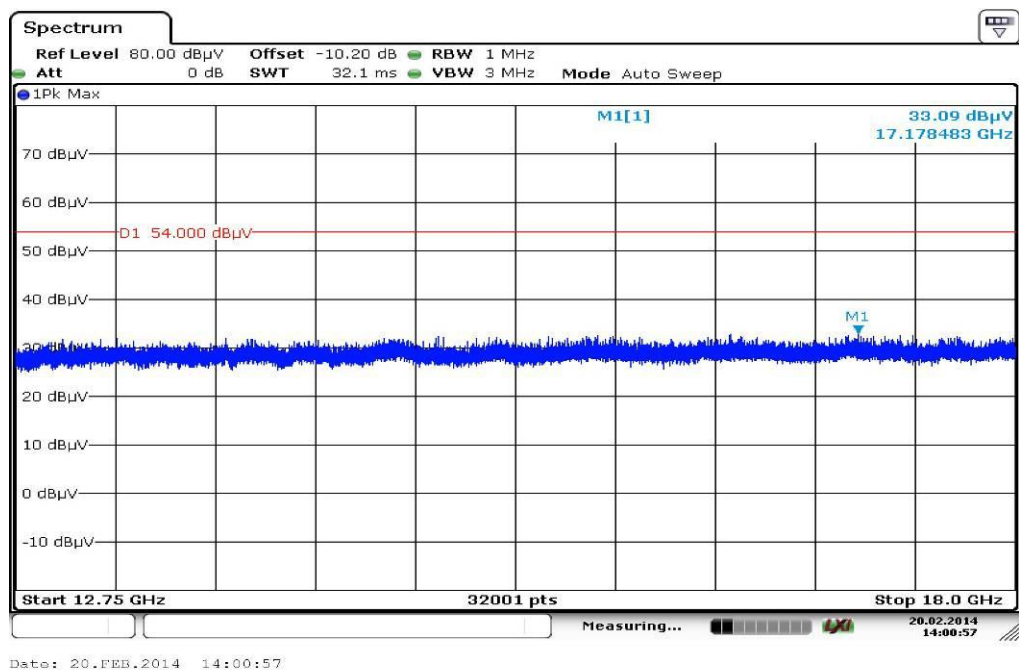


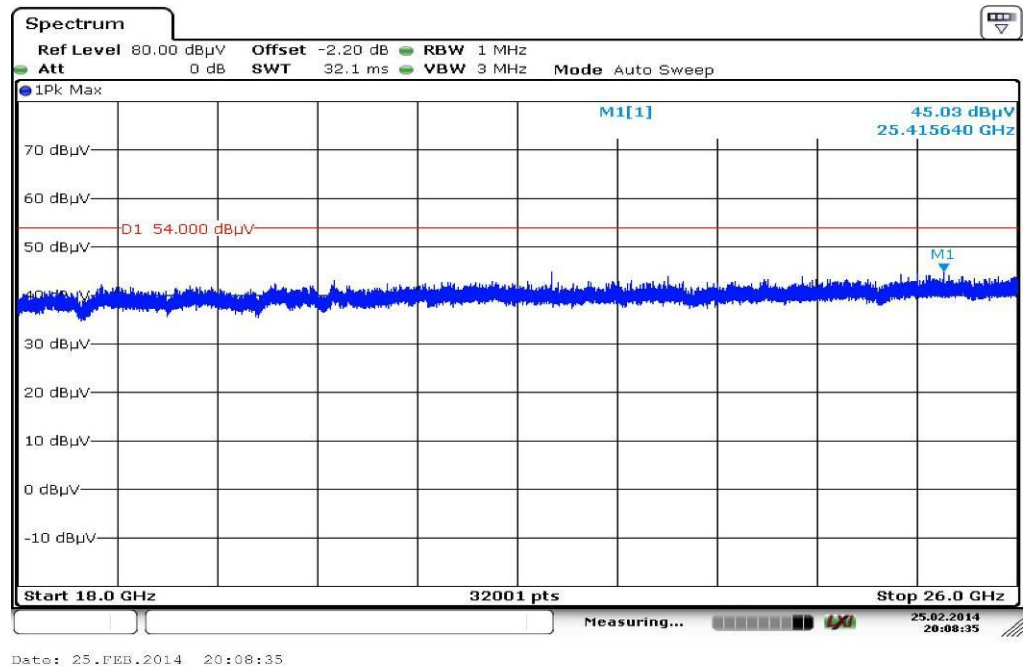
## Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 31.879350       | 15.4               | 1000.0          | 120.000         | 104.0       | V            | 10.0          | 12.7       | 14.6        | 30.0           |         |
| 35.994450       | 14.9               | 1000.0          | 120.000         | 98.0        | V            | 100.0         | 13.1       | 15.1        | 30.0           |         |
| 49.050750       | 9.4                | 1000.0          | 120.000         | 170.0       | H            | 10.0          | 13.4       | 20.6        | 30.0           |         |
| 734.779500      | 20.6               | 1000.0          | 120.000         | 123.0       | V            | 178.0         | 23.3       | 15.4        | 36.0           |         |
| 799.721100      | 20.9               | 1000.0          | 120.000         | 170.0       | H            | 90.0          | 23.8       | 15.1        | 36.0           |         |
| 866.976600      | 22.1               | 1000.0          | 120.000         | 170.0       | H            | 90.0          | 24.8       | 13.9        | 36.0           |         |

**Plot 10:** Highest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

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

**Plot 11:** Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

**Plot 12:** Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization

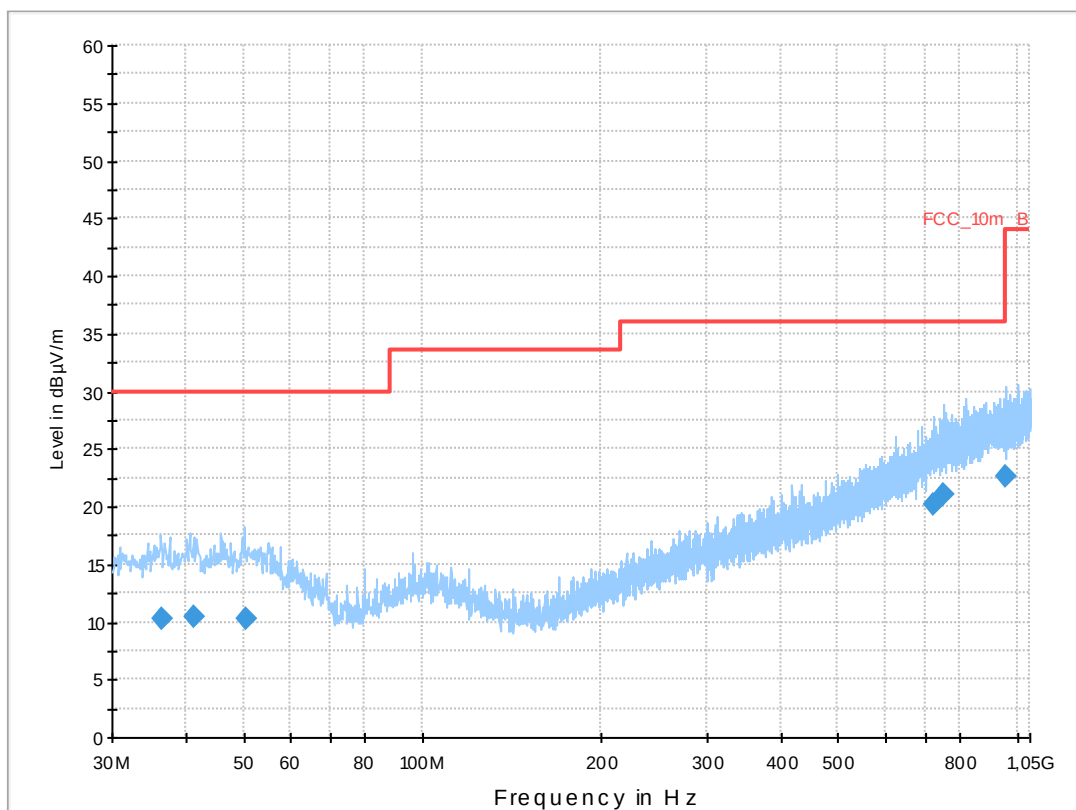
**Plots: OFDM / n – mode****Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN TX n-mode (HT20) Ch.1  
 Operator Name: Hennemann  
 Comment: battery powered

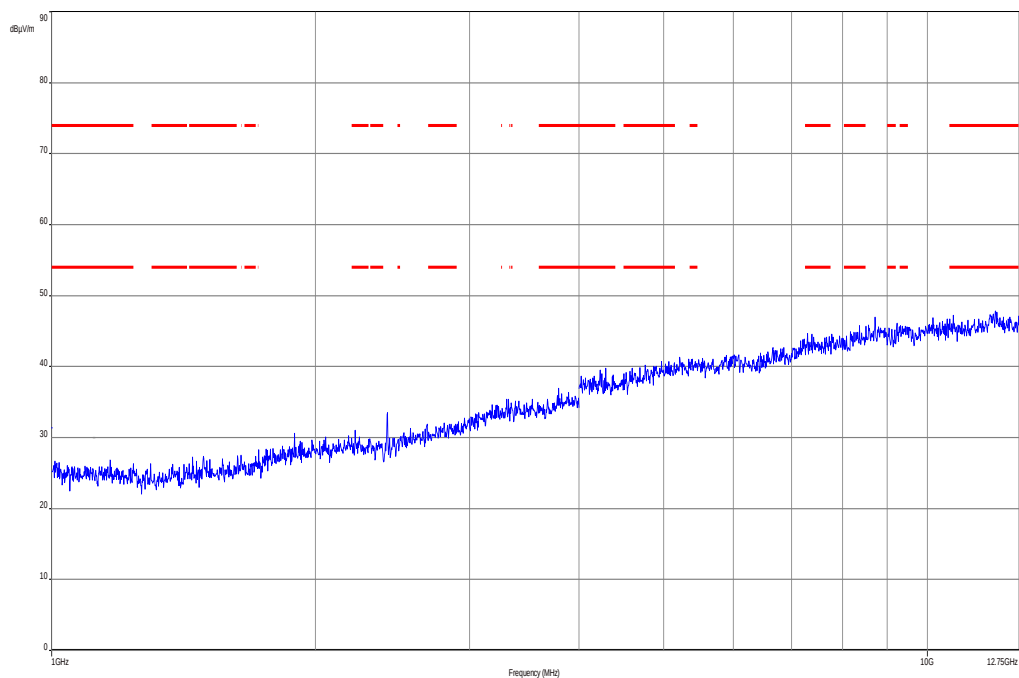
**Scan Setup: STAN\_Fin [EMI radiated]**

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

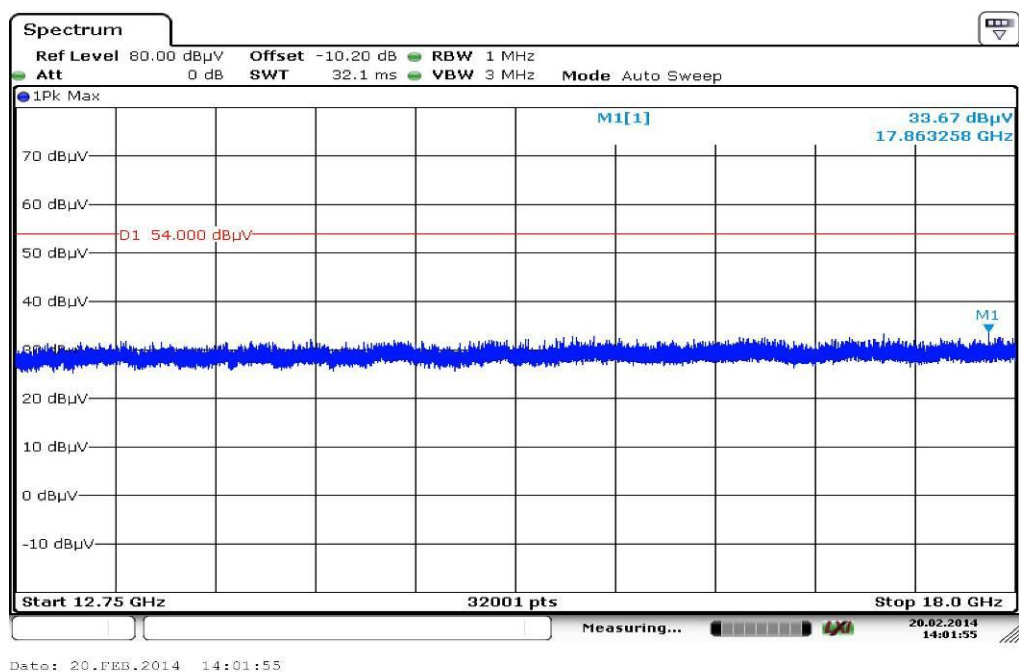
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |

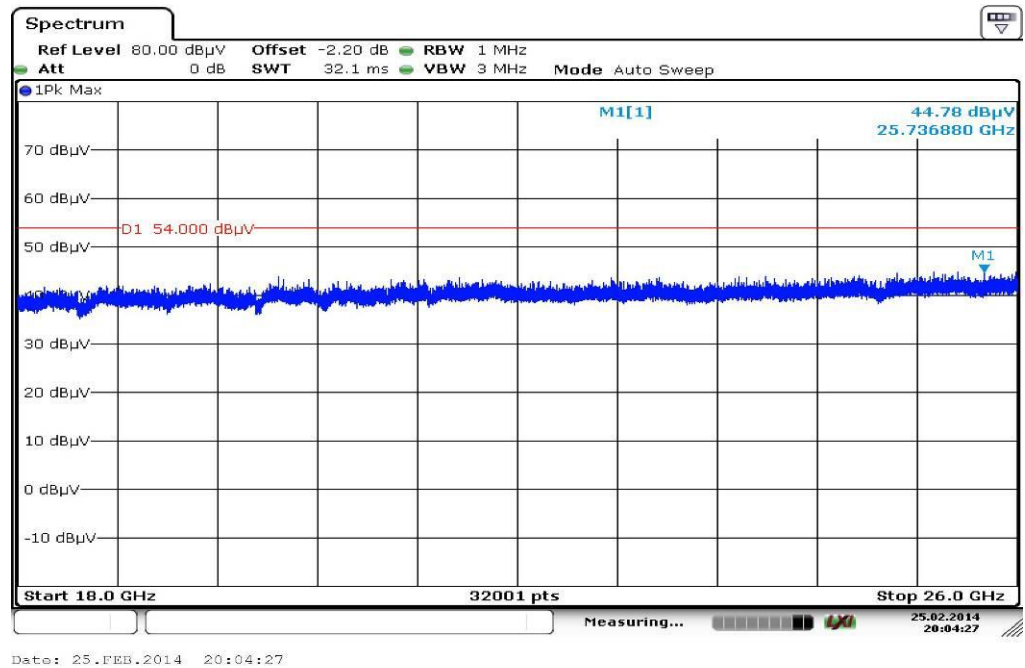
**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 36.395700       | 10.3               | 1000.0          | 120.000         | 119.0       | H            | 270.0         | 13.1       | 19.7        | 30.0           |         |
| 41.278650       | 10.4               | 1000.0          | 120.000         | 143.0       | V            | -10.0         | 13.4       | 19.6        | 30.0           |         |
| 50.363550       | 10.3               | 1000.0          | 120.000         | 170.0       | V            | 272.0         | 13.3       | 19.8        | 30.0           |         |
| 720.630000      | 20.2               | 1000.0          | 120.000         | 98.0        | V            | 190.0         | 23.0       | 15.8        | 36.0           |         |
| 751.369200      | 21.0               | 1000.0          | 120.000         | 170.0       | V            | 100.0         | 23.7       | 15.0        | 36.0           |         |
| 958.777800      | 22.6               | 1000.0          | 120.000         | 161.0       | H            | 92.0          | 25.4       | 13.4        | 36.0           |         |

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

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

**Plot 3:** Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

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

**Plot 5:** Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

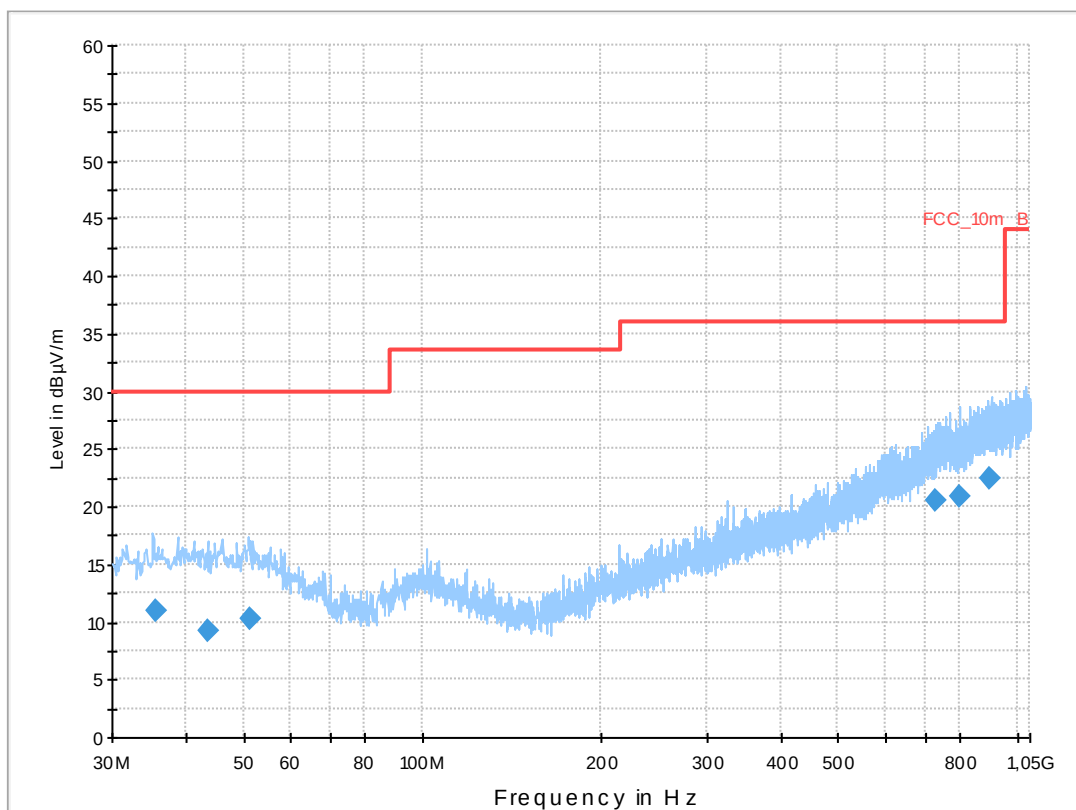
## Common Information

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN TX n-mode (HT20) Ch.6  
 Operator Name: Hennemann  
 Comment: battery powered

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

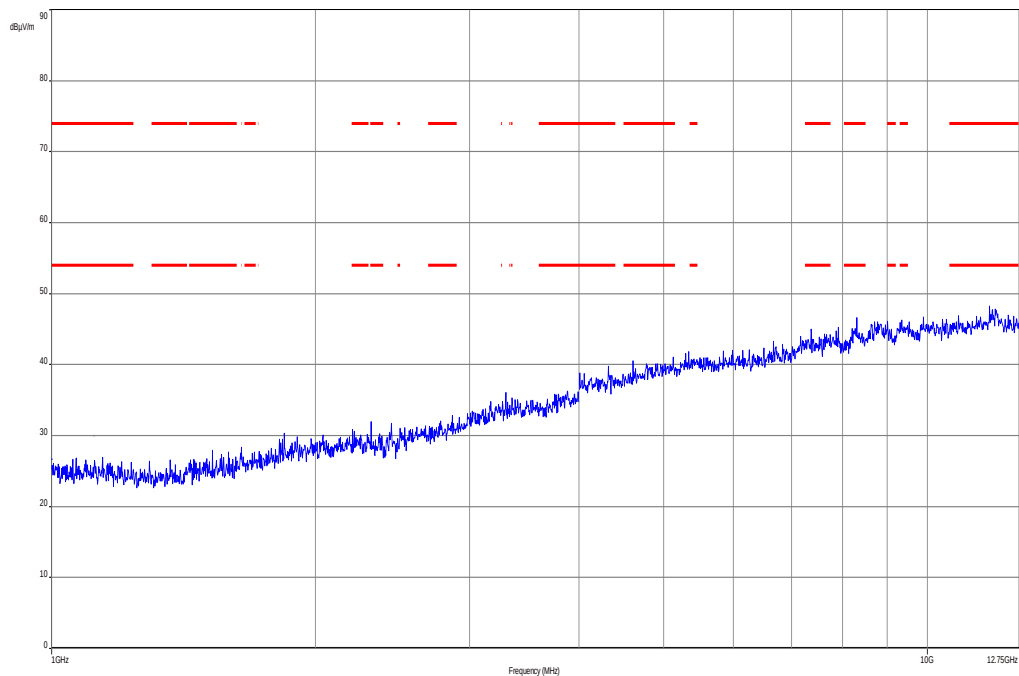
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dBμV/m

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

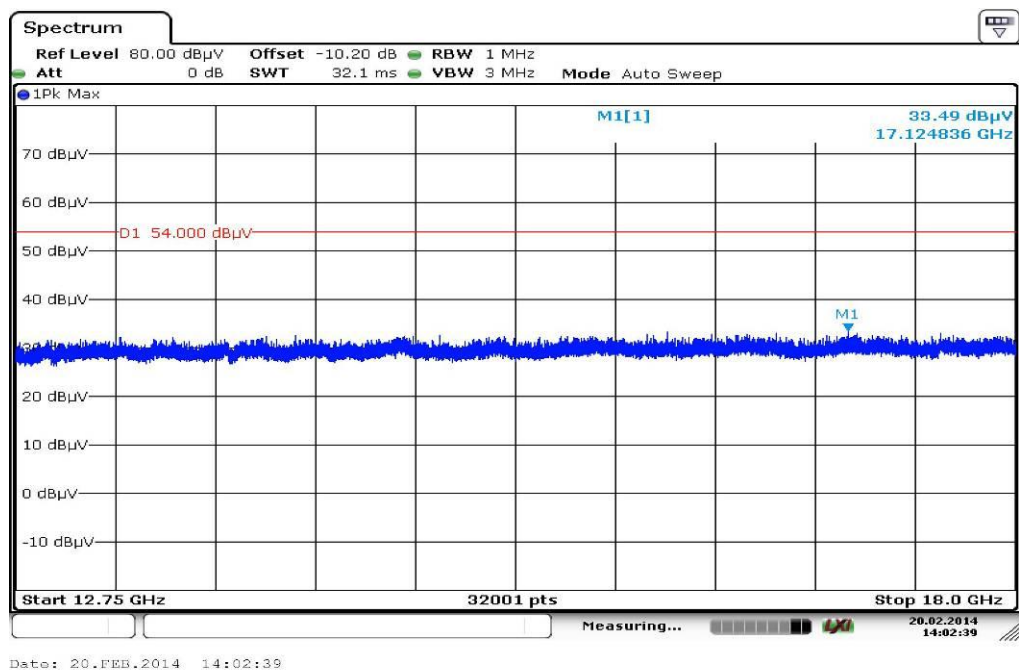


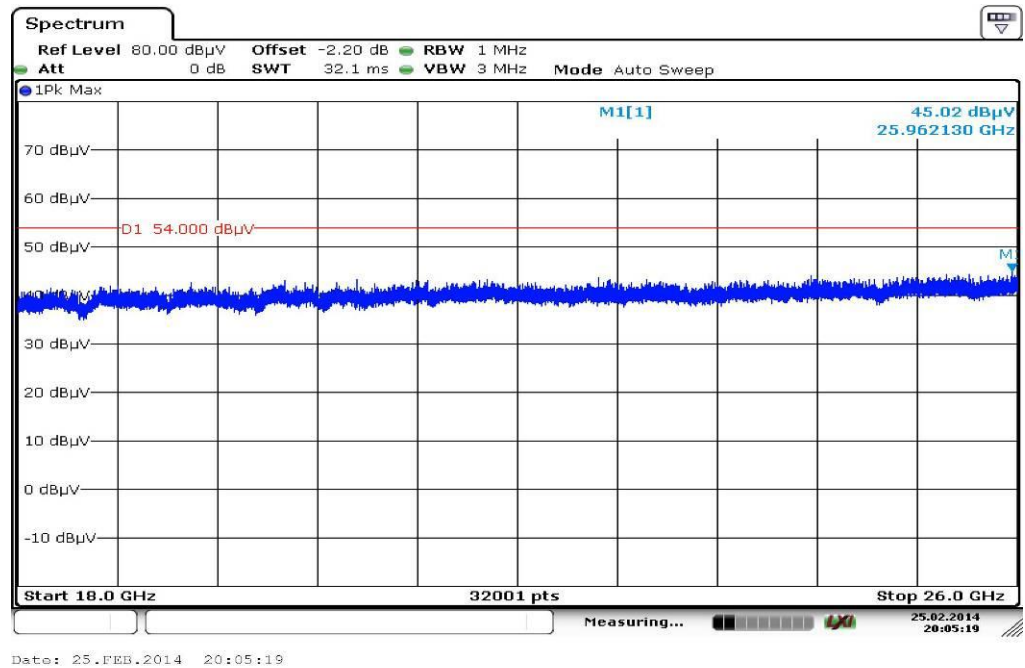
## Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 35.462100       | 11.0               | 1000.0          | 120.000         | 154.0       | V            | 280.0         | 13.1       | 19.0        | 30.0           |         |
| 43.642500       | 9.3                | 1000.0          | 120.000         | 113.0       | V            | 100.0         | 13.3       | 20.7        | 30.0           |         |
| 51.267600       | 10.2               | 1000.0          | 120.000         | 120.0       | H            | 2.0           | 13.2       | 19.8        | 30.0           |         |
| 731.830800      | 20.5               | 1000.0          | 120.000         | 153.0       | H            | 180.0         | 23.2       | 15.5        | 36.0           |         |
| 797.843850      | 20.9               | 1000.0          | 120.000         | 170.0       | H            | 2.0           | 23.8       | 15.1        | 36.0           |         |
| 902.050200      | 22.4               | 1000.0          | 120.000         | 120.0       | V            | 190.0         | 25.2       | 13.6        | 36.0           |         |

**Plot 6:** Middle channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

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

**Plot 7:** Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

**Plot 8:** Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization

**Plot 9:** Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

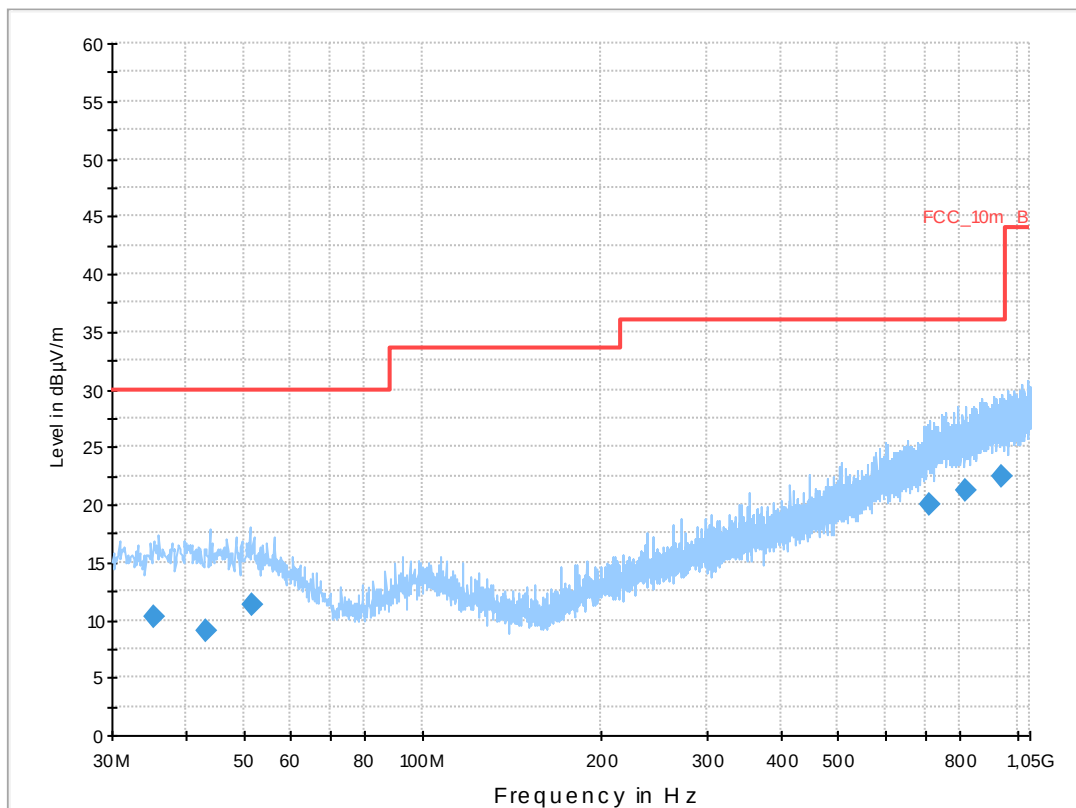
## Common Information

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN TX n-mode (HT20) Ch.11  
 Operator Name: Hennemann  
 Comment: battery powered

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

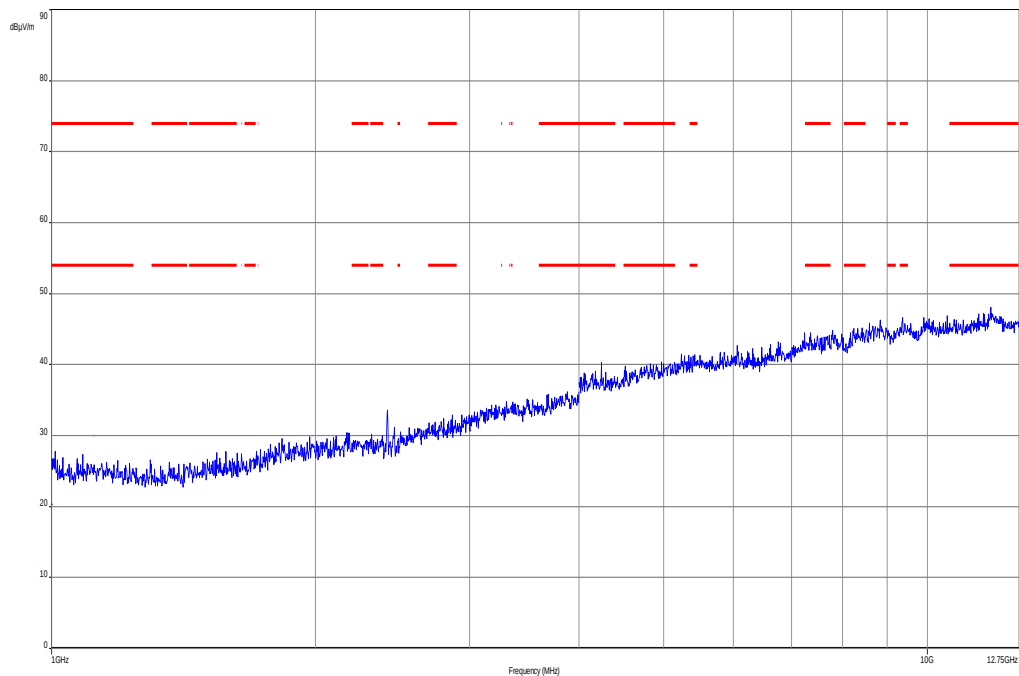
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBμV/m

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

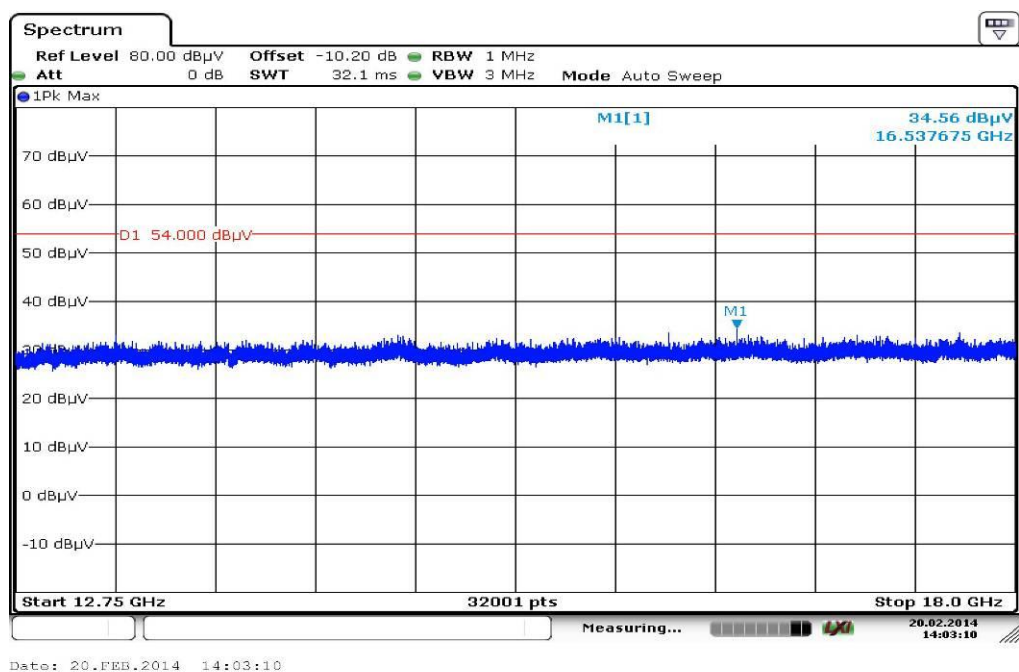


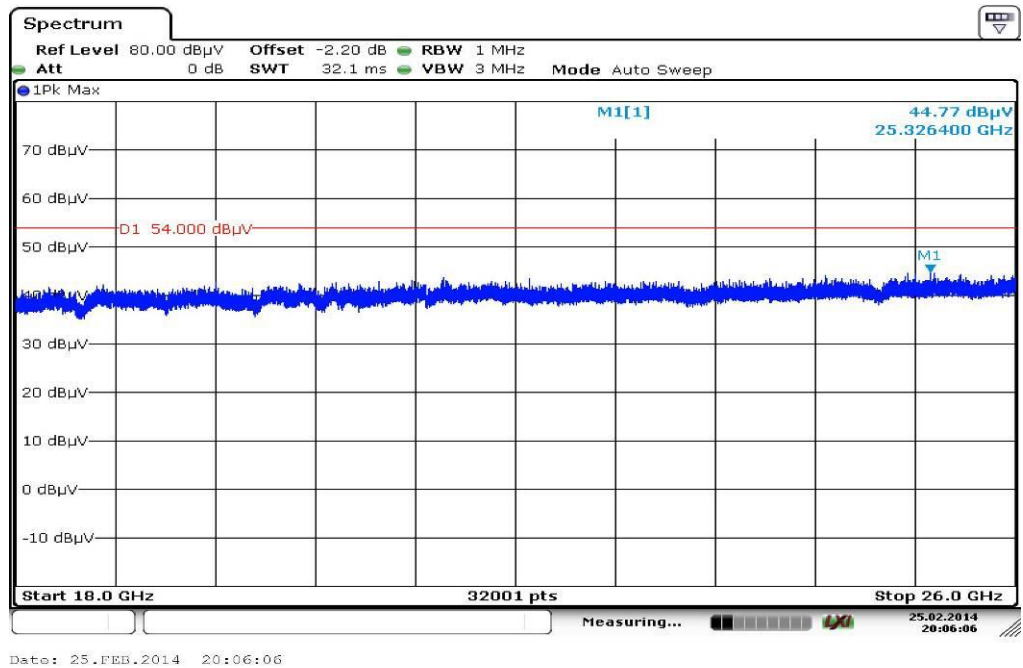
## Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 35.384850       | 10.2               | 1000.0          | 120.000         | 143.0       | H            | 90.0          | 13.1       | 19.8        | 30.0           |         |
| 43.256100       | 9.1                | 1000.0          | 120.000         | 170.0       | V            | 178.0         | 13.3       | 20.9        | 30.0           |         |
| 51.716400       | 11.3               | 1000.0          | 120.000         | 98.0        | V            | 178.0         | 13.2       | 18.7        | 30.0           |         |
| 713.091750      | 20.1               | 1000.0          | 120.000         | 170.0       | H            | 100.0         | 22.8       | 15.9        | 36.0           |         |
| 816.431550      | 21.2               | 1000.0          | 120.000         | 170.0       | V            | 170.0         | 24.1       | 14.8        | 36.0           |         |
| 941.376450      | 22.4               | 1000.0          | 120.000         | 170.0       | H            | 266.0         | 25.3       | 13.6        | 36.0           |         |

**Plot 10:** Highest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

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

**Plot 11:** Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

**Plot 12:** Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization

### 10.3 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 / RMS                  |
| Sweep time:           | Auto                                     |
| Resolution bandwidth: | F > 1 GHz: 1 MHz<br>F < 1 GHz: 100 kHz   |
| Video bandwidth:      | 3 x RBW<br>Re-measurement: 10 Hz / 3 MHz |
| Span:                 | 30 MHz to 26 GHz                         |
| Trace-Mode:           | Max Hold                                 |

#### Limits:

| FCC                            |                               |                      |
|--------------------------------|-------------------------------|----------------------|
| RX 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:

| RX 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. |            |                      |
| No spurious emissions above 1 GHz detected.                                      |            |                      |
| Measurement uncertainty                                                          | $\pm 3$ dB |                      |

**Result:** Passed.

**Note:** The limit was recalculated with 20 dB / decade (Part 15.31) for all radiated spurious emissions 30 MHz to 1 GHz from 3 meter limit to a 10 meter distance. (40dB/decade for emissions < 30MHz)

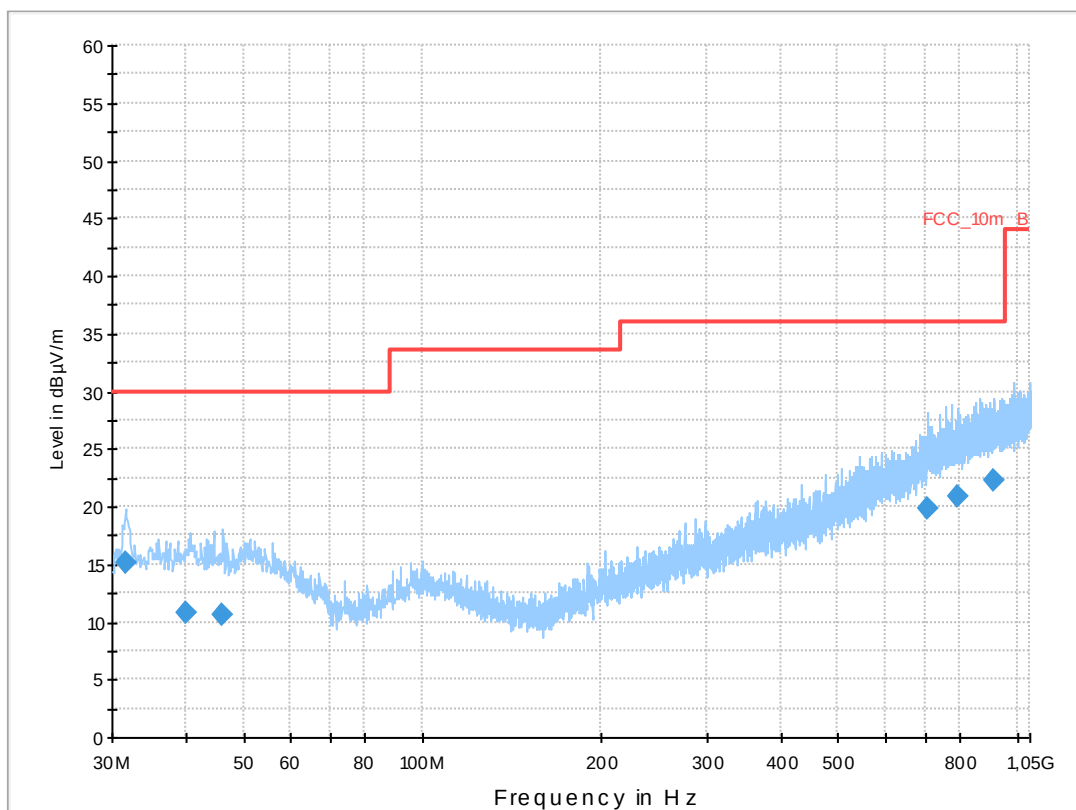
**Plots: RX / Idle – mode****Plot 1:** 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

Serial Number: CB5126DAHf  
 Test Description: FCC part 15 class B  
 Operating Conditions: WLAN RX  
 Operator Name: Hennemann  
 Comment: battery powered

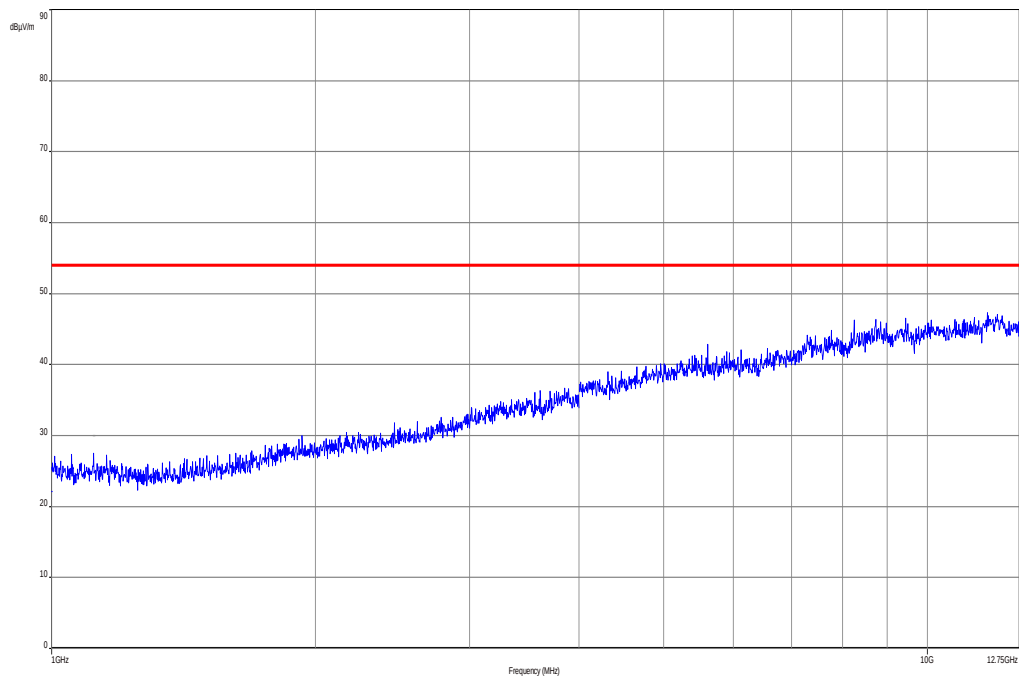
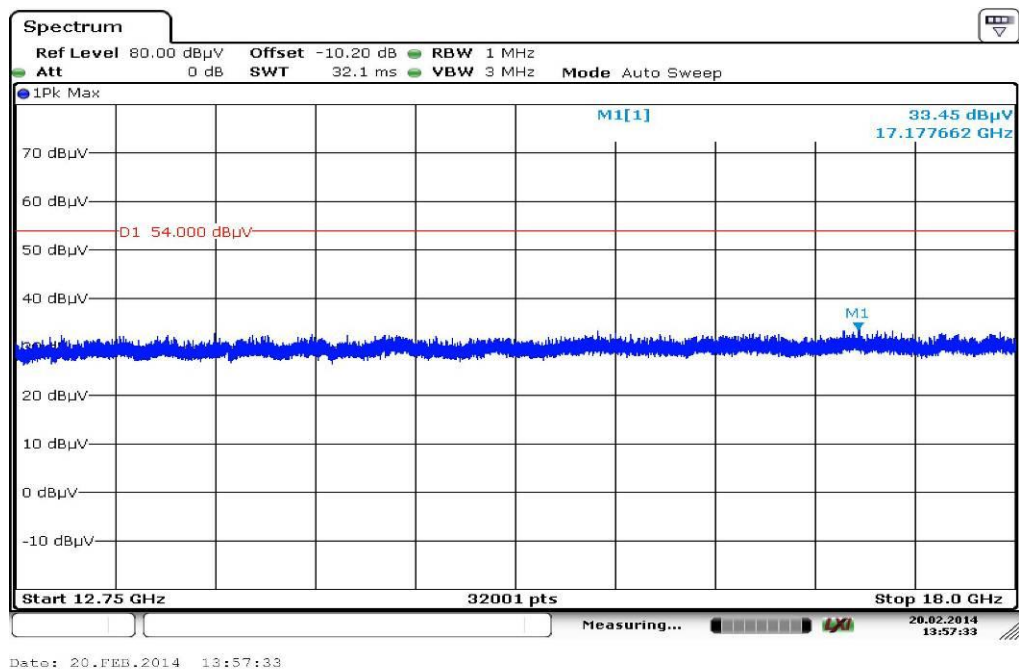
**Scan Setup: STAN\_Fin [EMI radiated]**

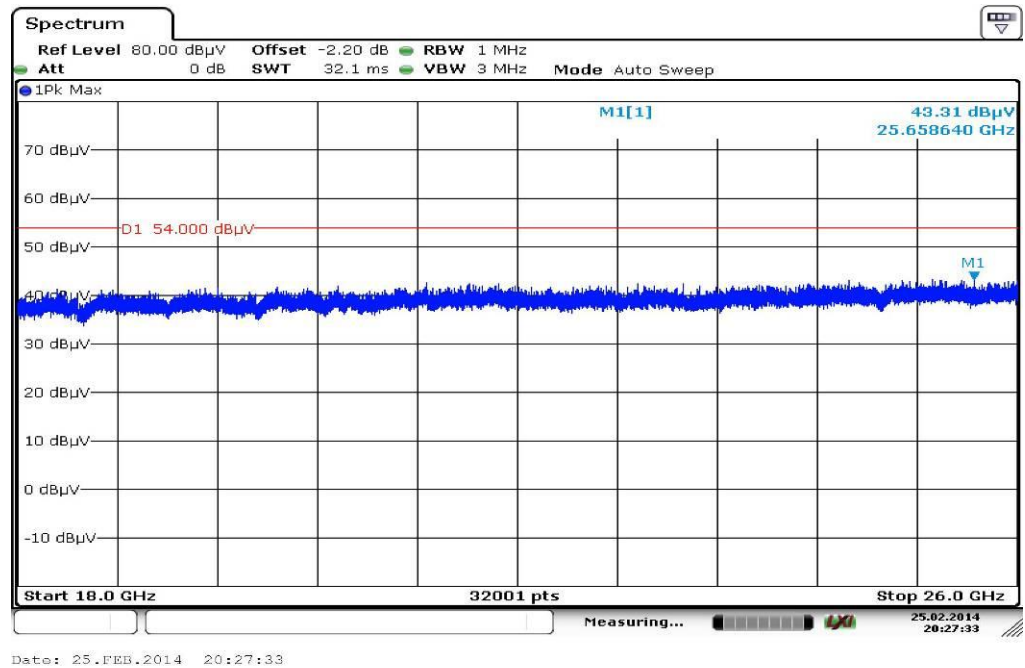
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBμV/m

| 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 |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 31.703100       | 15.2               | 1000.0          | 120.000         | 98.0        | V            | 100.0         | 12.7       | 14.8        | 30.0           |         |
| 40.063950       | 10.7               | 1000.0          | 120.000         | 170.0       | V            | 178.0         | 13.4       | 19.3        | 30.0           |         |
| 46.012500       | 10.7               | 1000.0          | 120.000         | 98.0        | V            | -10.0         | 13.3       | 19.3        | 30.0           |         |
| 704.545950      | 19.9               | 1000.0          | 120.000         | 170.0       | H            | 100.0         | 22.6       | 16.1        | 36.0           |         |
| 794.278350      | 20.9               | 1000.0          | 120.000         | 170.0       | V            | 100.0         | 23.8       | 15.1        | 36.0           |         |
| 910.534050      | 22.3               | 1000.0          | 120.000         | 154.0       | V            | 10.0          | 25.2       | 13.7        | 36.0           |         |

**Plot 2:** 1 GHz to 12.75 GHz, vertical & horizontal polarization**Plot 3:** 12.75 GHz to 18 GHz, vertical & horizontal polarization

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

## 10.4 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 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<br>F > 150 kHz: 9 kHz  |
| Resolution bandwidth: | F < 150 kHz: 1 kHz<br>F > 150 kHz: 100 kHz |
| Span:                 | 9 kHz to 30 MHz                            |
| Trace-Mode:           | Max Hold                                   |

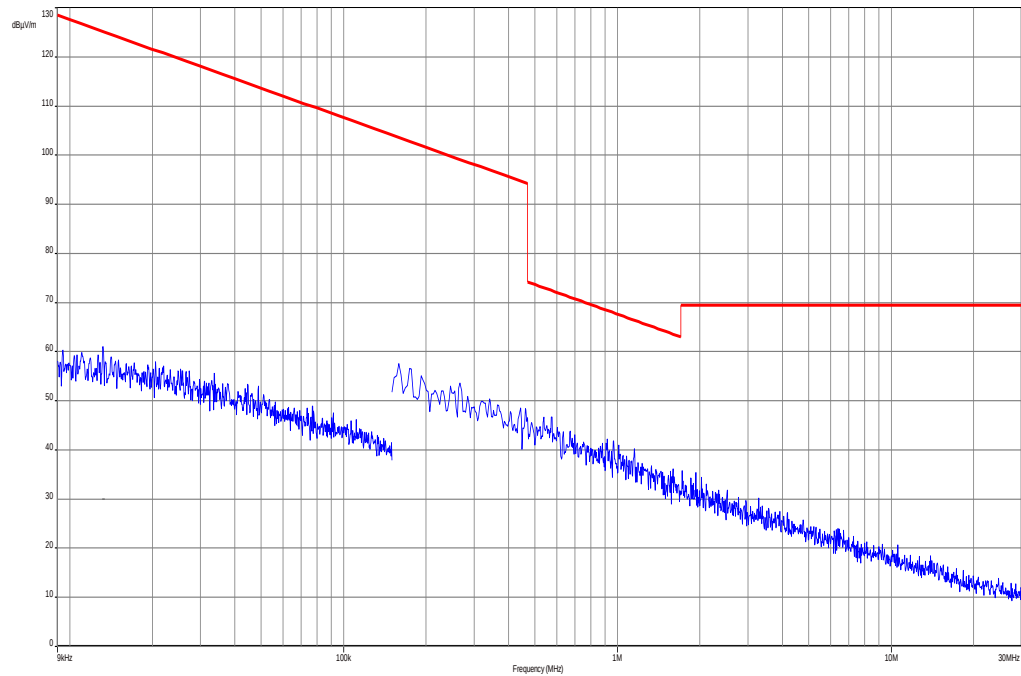
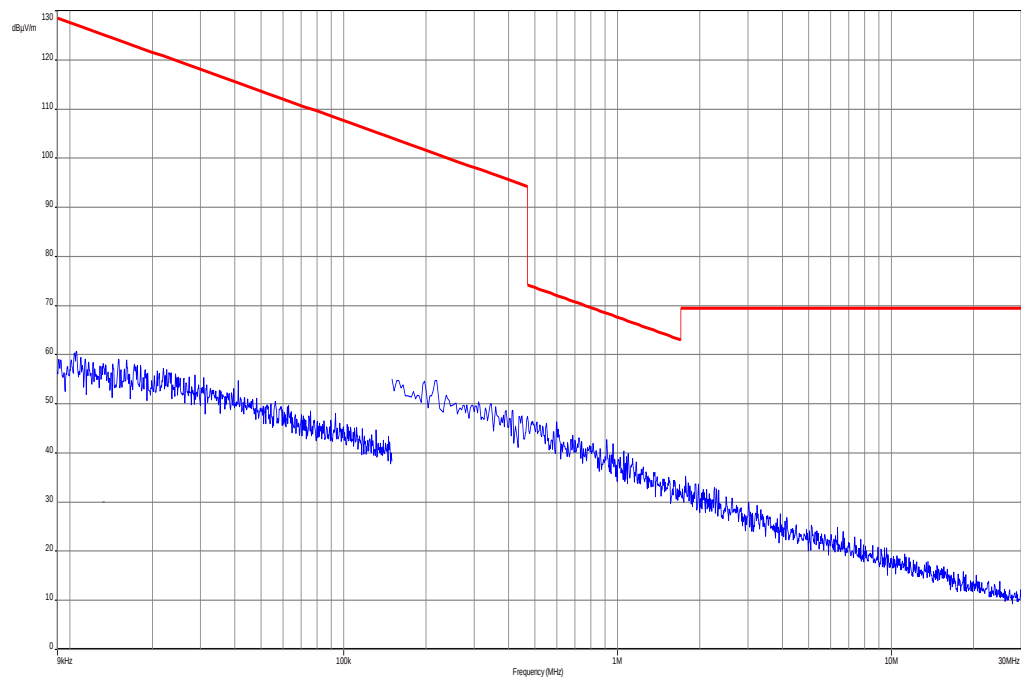
### Limits:

| FCC                                     |                         |                      |
|-----------------------------------------|-------------------------|----------------------|
| TX Spurious Emissions Radiated < 30 MHz |                         |                      |
| Frequency (MHz)                         | Field Strength (dBμV/m) | Measurement distance |
| 0.009 – 0.490                           | 2400/F(kHz)             | 300                  |
| 0.490 – 1.705                           | 24000/F(kHz)            | 30                   |
| 1.705 – 30.0                            | 30                      | 30                   |

### Results:

| TX Spurious Emissions Radiated < 30 MHz [dBμV/m] |          |                |
|--------------------------------------------------|----------|----------------|
| F [MHz]                                          | Detector | Level [dBμV/m] |
| No peaks detected.                               |          |                |
| 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**

## 10.5 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 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<br>F > 150 kHz: 9 kHz  |
| Resolution bandwidth: | F < 150 kHz: 1 kHz<br>F > 150 kHz: 100 kHz |
| Span:                 | 9 kHz to 30 MHz                            |
| Trace-Mode:           | Max Hold                                   |

### Limits:

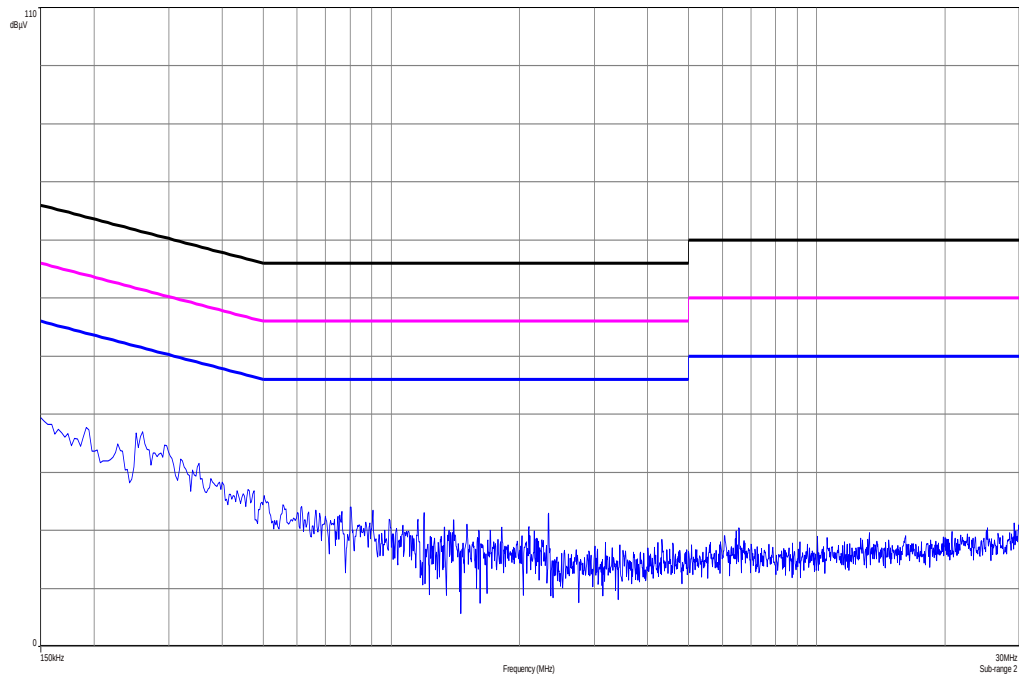
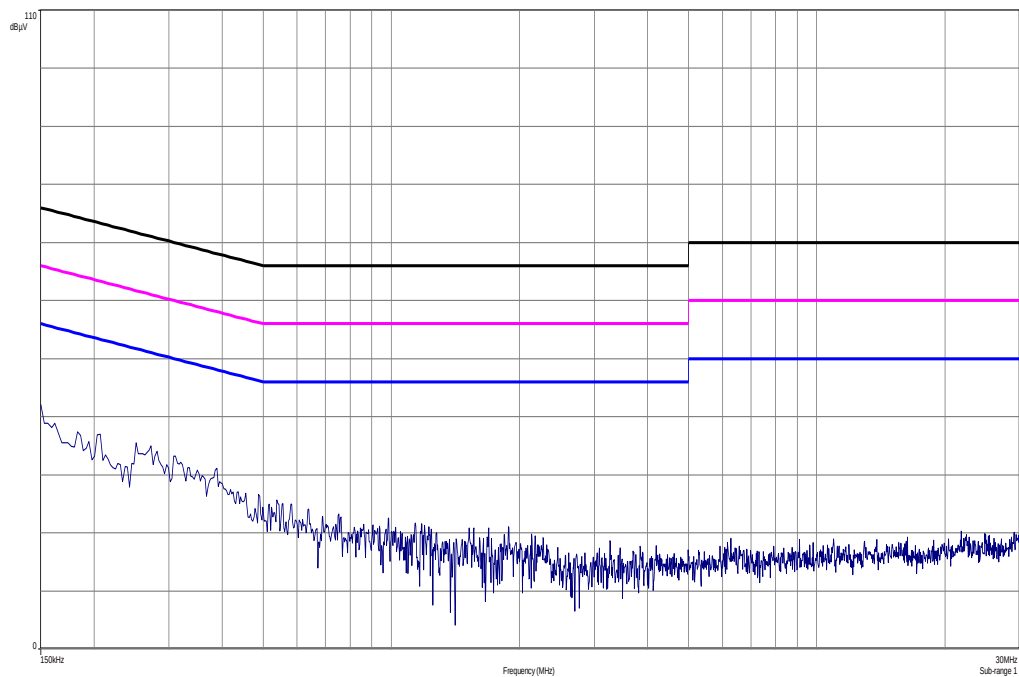
| FCC                                      |                     |                  |
|------------------------------------------|---------------------|------------------|
| TX Spurious Emissions Conducted < 30 MHz |                     |                  |
| Frequency (MHz)                          | 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

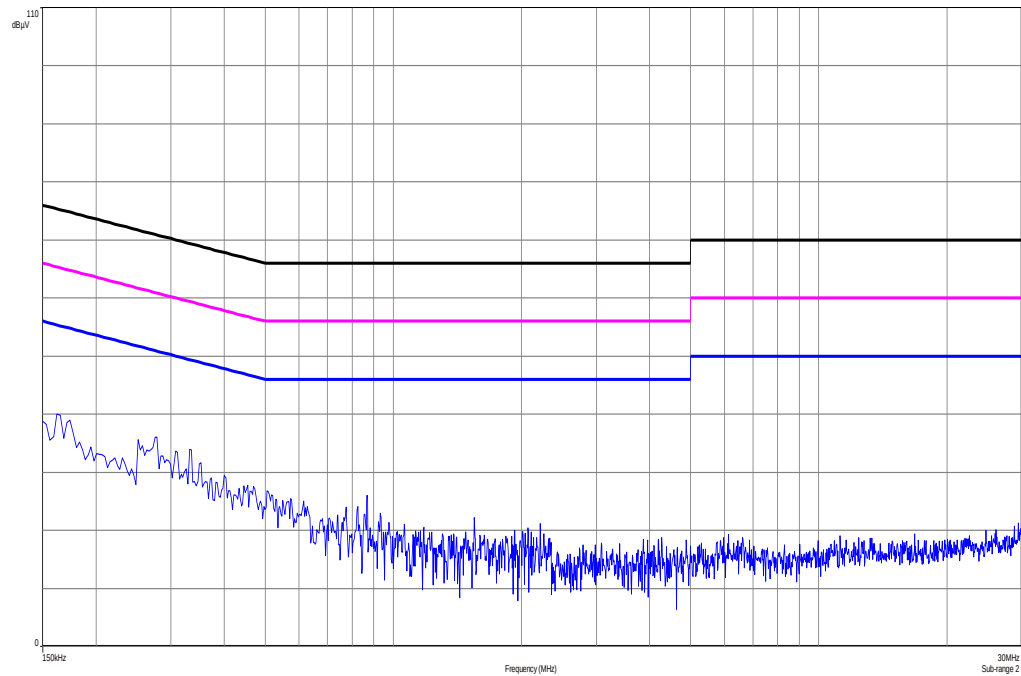
### Results:

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

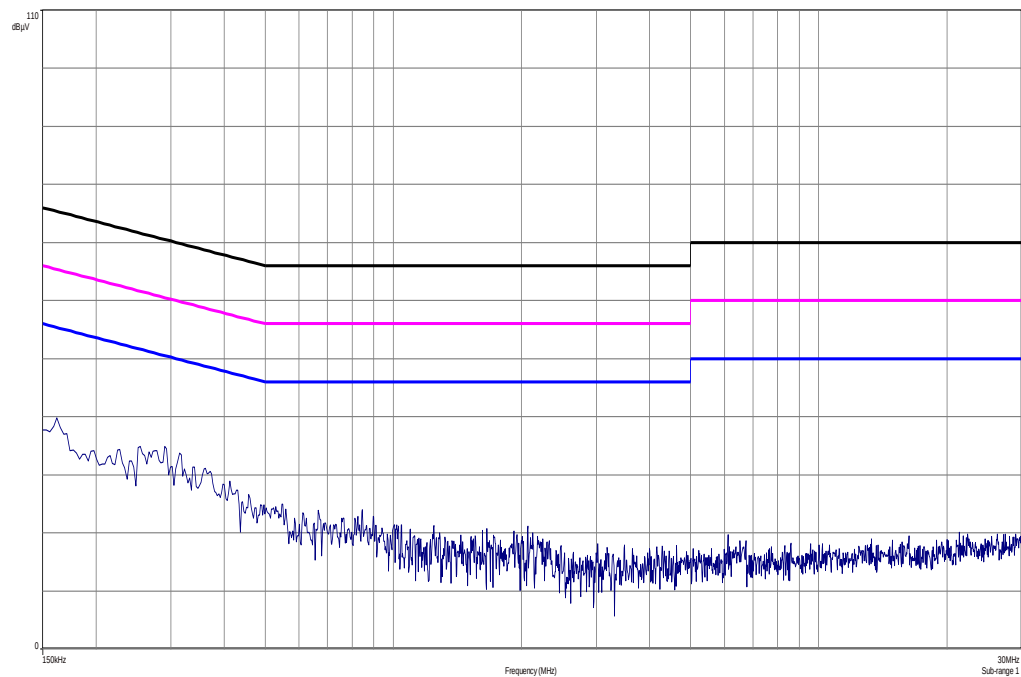
**Result:** Passed

**Plots:****Plot 1: TX mode, 150 kHz to 30 MHz, phase line****Plot 2: TX mode, 150 kHz to 30 MHz, neutral line**

**Plot 3: RX / Idle – mode, 150 kHz to 30 MHz, phase line**



**Plot 4: RX / Idle – mode, 150 kHz to 30 MHz, neutral line**



## 11 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 (Lab/Item).

| No. | Lab / Item | Equipment                                            | Type                                        | Manufact.                   | Serial No. | INV. No<br>Cetecom | Kind of<br>Calibration | Last<br>Calibration | Next<br>Calibration |
|-----|------------|------------------------------------------------------|---------------------------------------------|-----------------------------|------------|--------------------|------------------------|---------------------|---------------------|
| 1   | 45         | Switch-Unit                                          | 3488A                                       | HP<br>Meßtechnik            | 2719A14505 | 300000368          | g                      |                     |                     |
| 2   | 50         | DC power supply,<br>60Vdc, 50A, 1200 W               | 6032A                                       | HP<br>Meßtechnik            | 2920A04466 | 300000580          | ne                     |                     |                     |
| 3   | n. a.      | EMI Test Receiver                                    | ESCI 3                                      | R&S                         | 100083     | 300003312          | k                      | 27.01.2014          | 27.01.2015          |
| 4   | n. a.      | Antenna Tower                                        | Model 2175                                  | ETS-<br>LINDGREN            | 64762      | 300003745          | izw                    |                     |                     |
| 5   | n. a.      | Positioning Controller                               | Model 2090                                  | ETS-<br>LINDGREN            | 64672      | 300003746          | izw                    |                     |                     |
| 6   | n. a.      | Turntable Interface-<br>Box                          | Model<br>105637                             | ETS-<br>LINDGREN            | 44583      | 300003747          | izw                    |                     |                     |
| 7   | n. a.      | TRILOG Broadband<br>Test-Antenna 30<br>MHz - 3 GHz   | VULB9163                                    | Schwarzbe<br>ck             | 295        | 300003787          | k                      | 12.04.2012          | 12.04.2014          |
| 8   | n. a.      | Double-Ridged<br>Waveguide Horn<br>Antenna 1-18.0GHz | 3115                                        | EMCO                        | 8812-3088  | 300001032          | vIKI!                  | 08.05.2013          | 08.05.2015          |
| 9   | n. a.      | Anechoic chamber                                     | FAC 3/5m                                    | MWB /<br>TDK                | 87400/02   | 300000996          | ev                     |                     |                     |
| 10  | n. a.      | Switch / Control Unit                                | 3488A                                       | HP<br>Meßtechnik            | *          | 300000199          | ne                     |                     |                     |
| 11  | n. a.      | Switch / Control Unit                                | 3488A                                       | HP<br>Meßtechnik            | 2719A15013 | 300001156          | ne                     |                     |                     |
| 12  | 9          | Isolating Transformer                                | MPL<br>IEC625<br>Bus<br>Regeltrennt<br>ravo | Erfi                        | 91350      | 300001155          | ne                     |                     |                     |
| 13  | n. a.      | Three-Way Power<br>Splitter, 50 Ohm                  | 11850C                                      | HP<br>Meßtechnik            |            | 300000997          | ne                     |                     |                     |
| 14  | 90         | Active Loop Antenna<br>10 kHz to 30 MHz              | 6502                                        | Kontron<br>Psychotech       | 8905-2342  | 300000256          | k                      | 13.06.2013          | 13.06.2015          |
| 15  | n. a.      | Amplifier                                            | js42-<br>00502650-<br>28-5a                 | Parzich<br>GMBH             | 928979     | 300003143          | ne                     |                     |                     |
| 16  | n. a.      | Band Reject filter                                   | WRCG240<br>0/2483-<br>2375/2505-<br>50/10SS | Wainwright                  | 11         | 300003351          | ev                     |                     |                     |
| 17  | n. a.      | TRILOG Broadband<br>Test-Antenna 30<br>MHz - 3 GHz   | VULB9163                                    | Schwarzbe<br>ck             | 371        | 300003854          | vIKI!                  | 14.10.2011          | 14.10.2014          |
| 18  | n. a.      | MXE EMI Receiver<br>20 Hz bis 26,5 GHz               | N9038A                                      | Agilent<br>Technologi<br>es | MY51210197 | 300004405          | k                      | 21.02.2013          | 21.02.2015          |
| 19  | 11b        | Microwave System<br>Amplifier, 0.5-26.5<br>GHz       | 83017A                                      | HP<br>Meßtechnik            | 00419      | 300002268          | ev                     |                     |                     |
| 20  | A026       | Std. Gain Horn<br>Antenna 12.4 to 18.0<br>GHz        | 639                                         | Narda                       | 8402       | 300000787          | k                      | 22.07.2013          | 22.07.2015          |
| 21  | A029       | Std. Gain Horn<br>Antenna 18.0 to 26.5<br>GHz        | 638                                         | Narda                       | 8205       | 300002442          | k                      | 19.07.2013          | 19.07.2015          |
| 22  | n. a.      | Signal Analyzer 40<br>GHz                            | FSV40                                       | R&S                         | 101042     | 300004517          | k                      | 21.01.2014          | 21.01.2015          |

**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   |     |                                                      |
| NK!  | Attention: not calibrated                  | *)  | next calibration ordered / currently in progress     |

**12 Observations**

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

**Annex A Document history**

| Version | Applied changes  | Date of release |
|---------|------------------|-----------------|
|         | Initial release  | 2014-02-26      |
| A       | Editorial change | 2014-03-17      |

**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



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