

## 11.8 Band edge compliance radiated

### Description:

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

### Measurement:

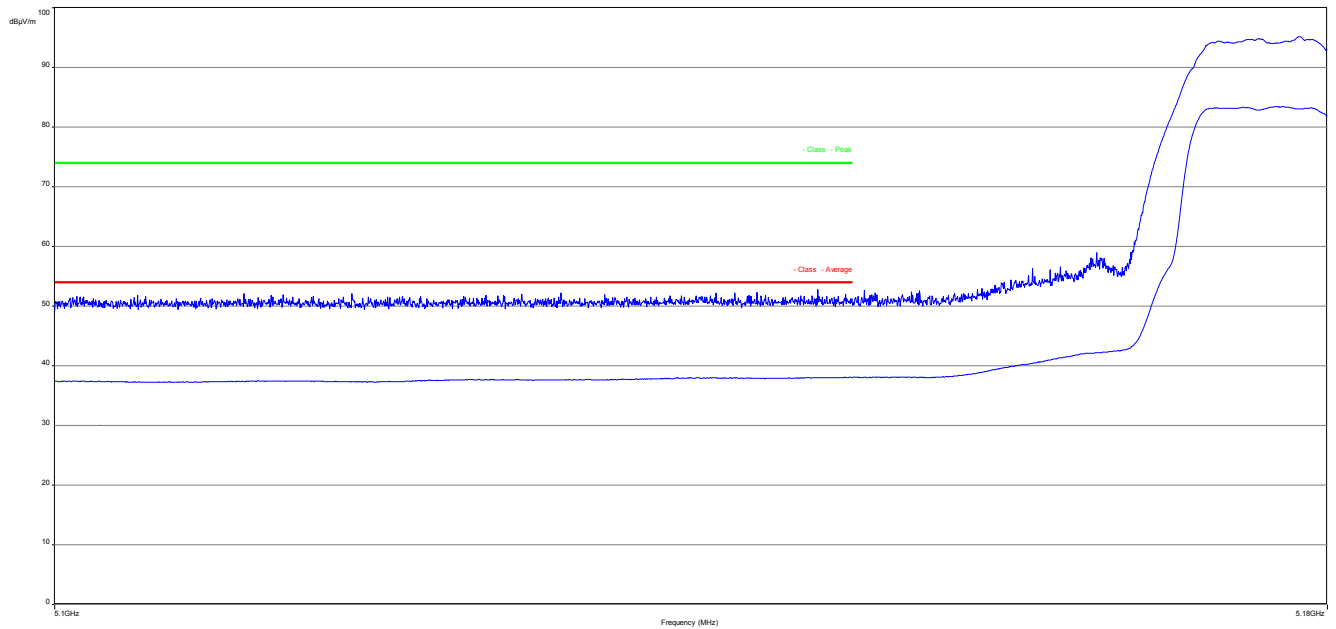
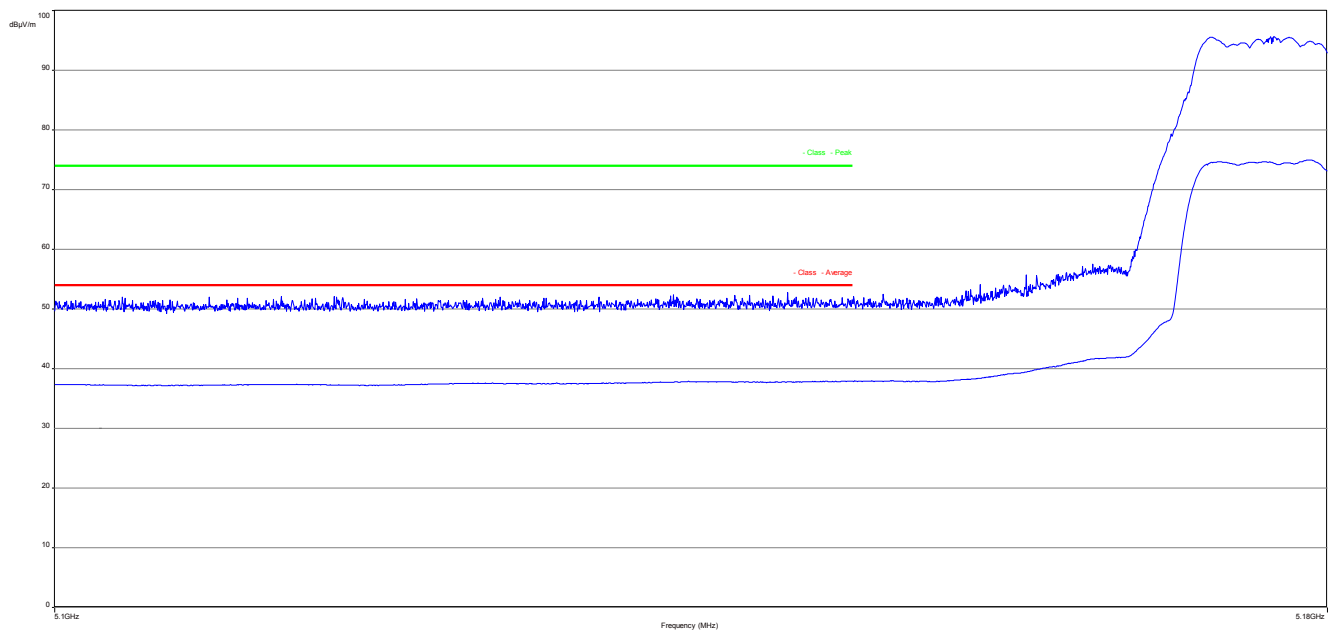
| Measurement parameter |               |
|-----------------------|---------------|
| Detector:             | Peak / RMS    |
| Sweep time:           | Auto          |
| Resolution bandwidth: | 1 MHz         |
| Video bandwidth:      | 10 Hz / 1 MHz |
| Span:                 | See plots!    |
| Trace-Mode: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

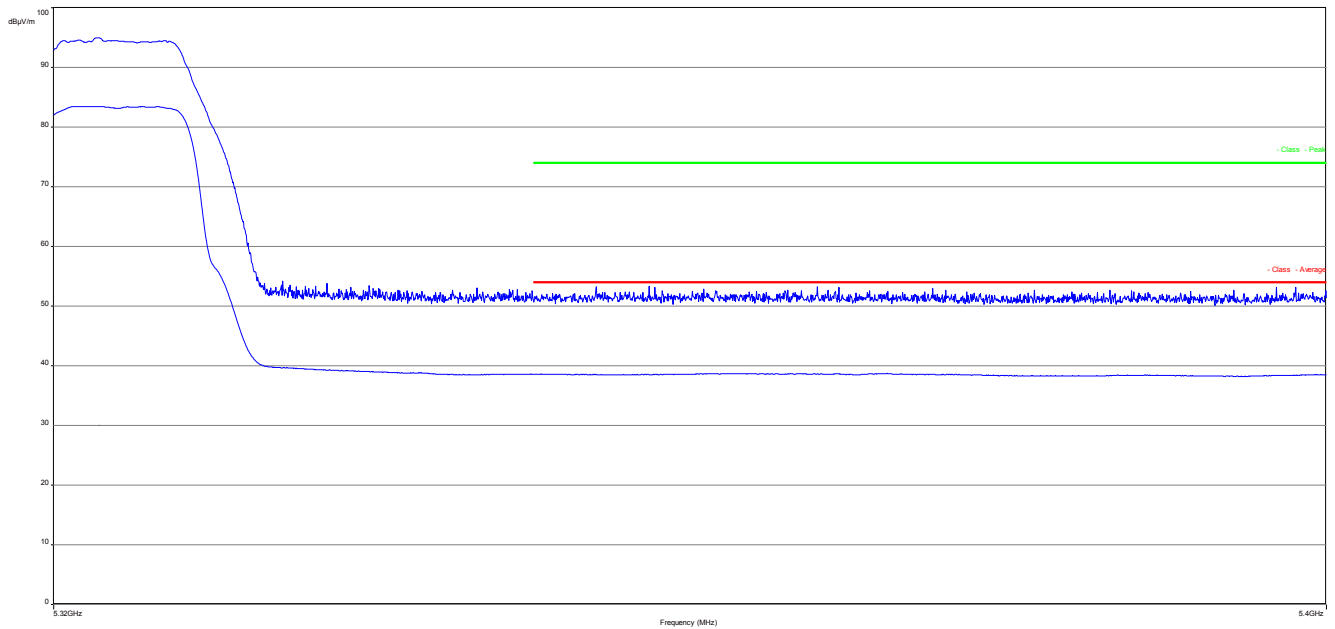
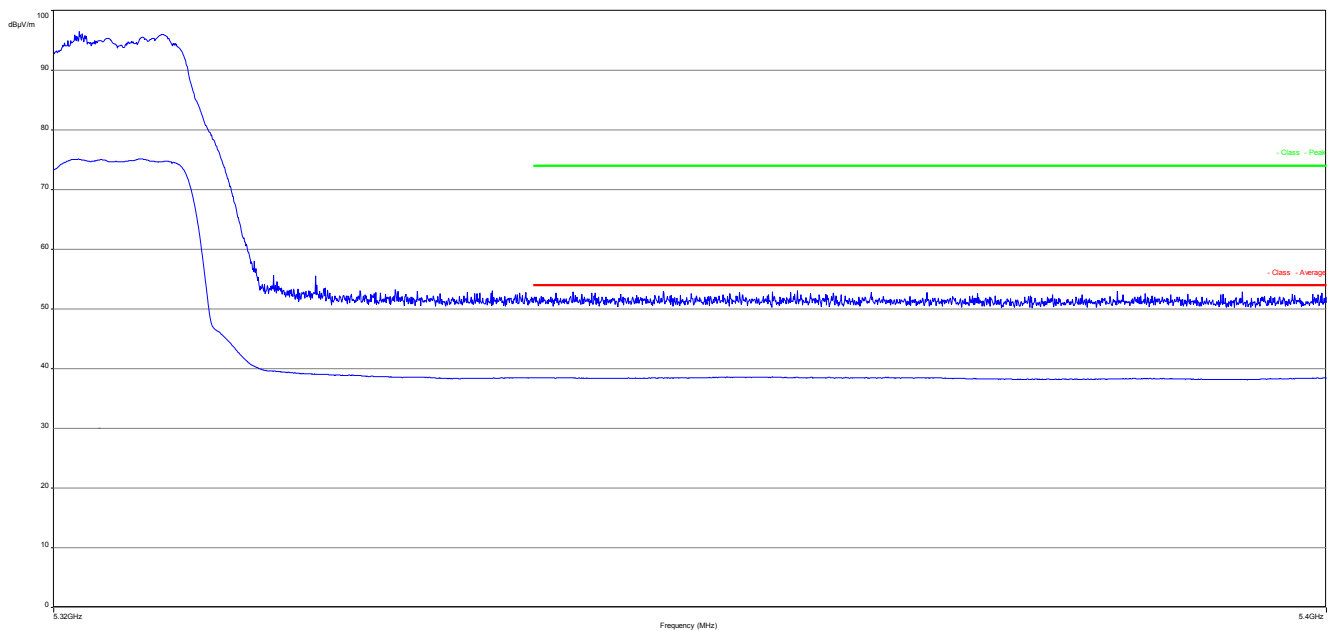
### Limits:

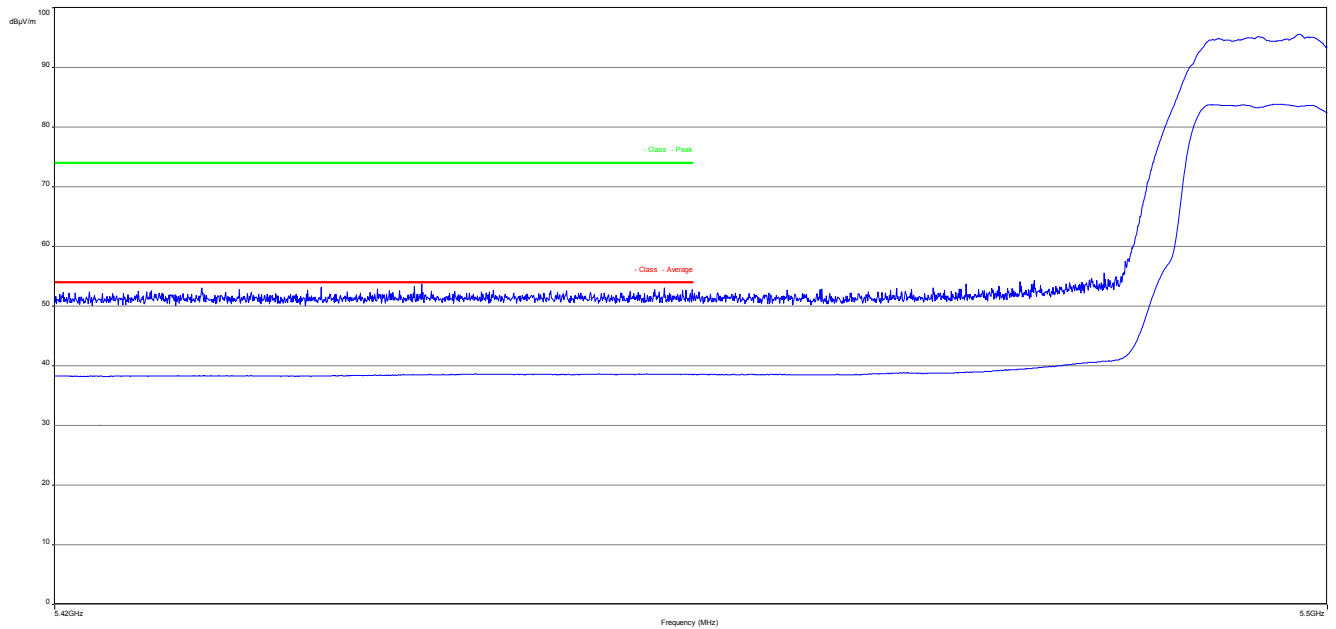
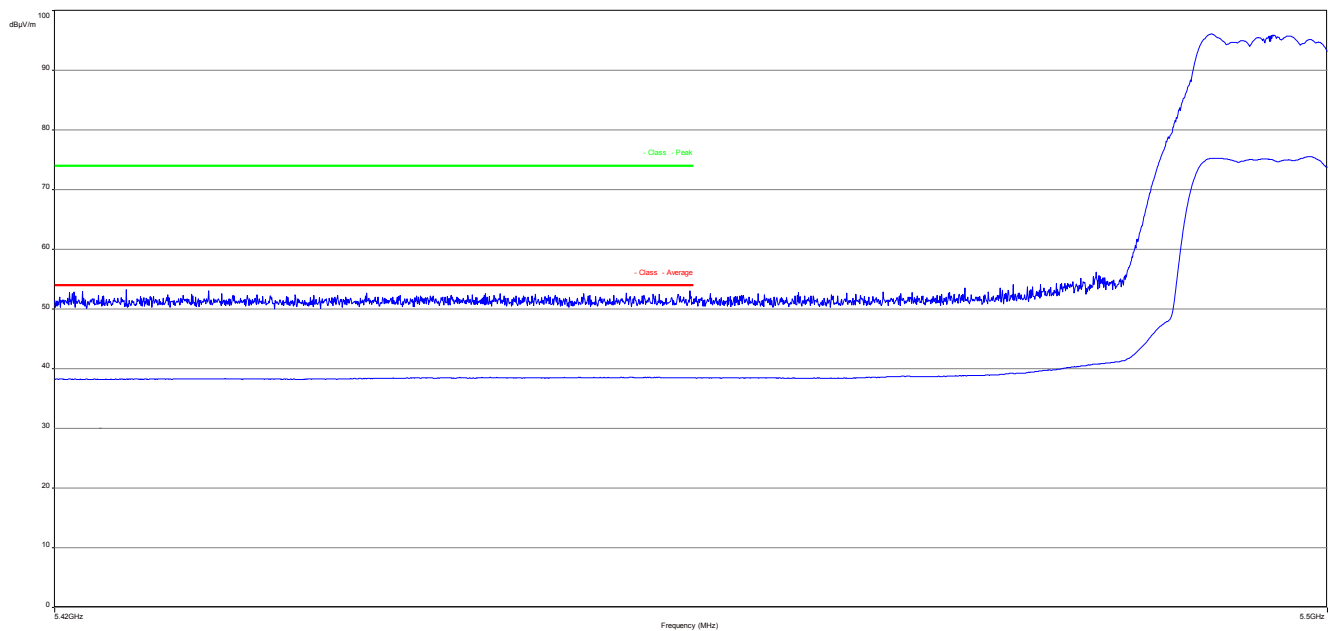
| Band Edge Compliance Radiated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)). |
| 74 dB $\mu$ V/m Peak<br>54 dB $\mu$ V/m AVG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

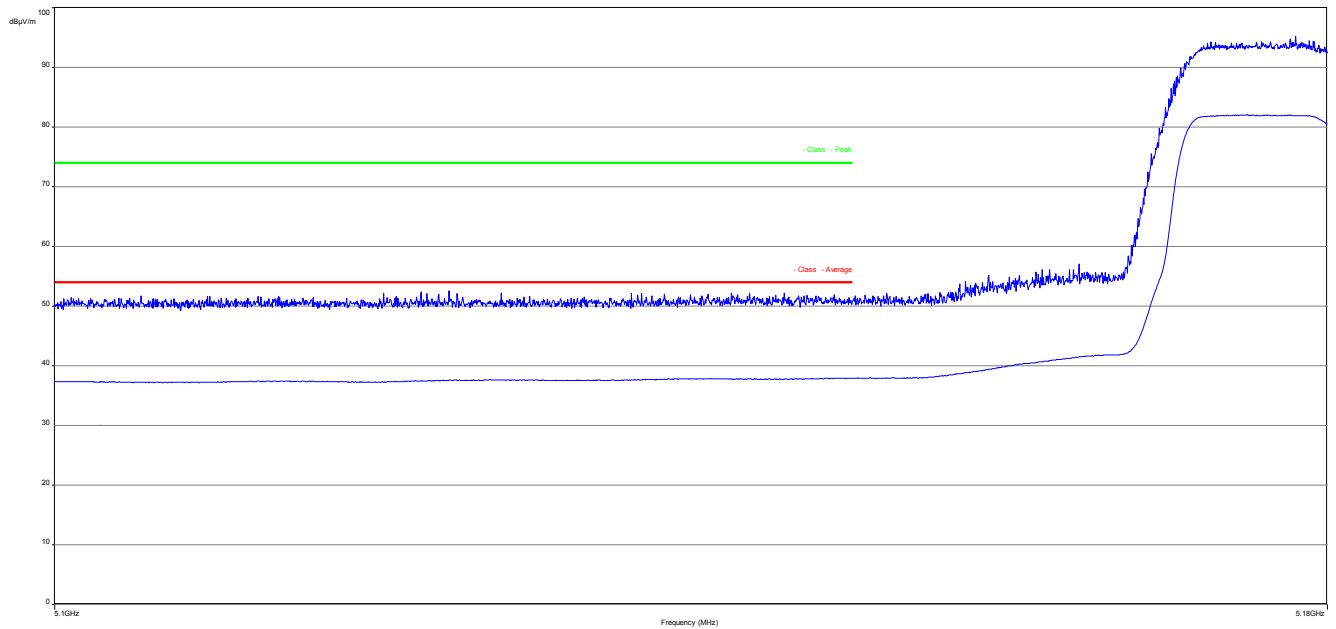
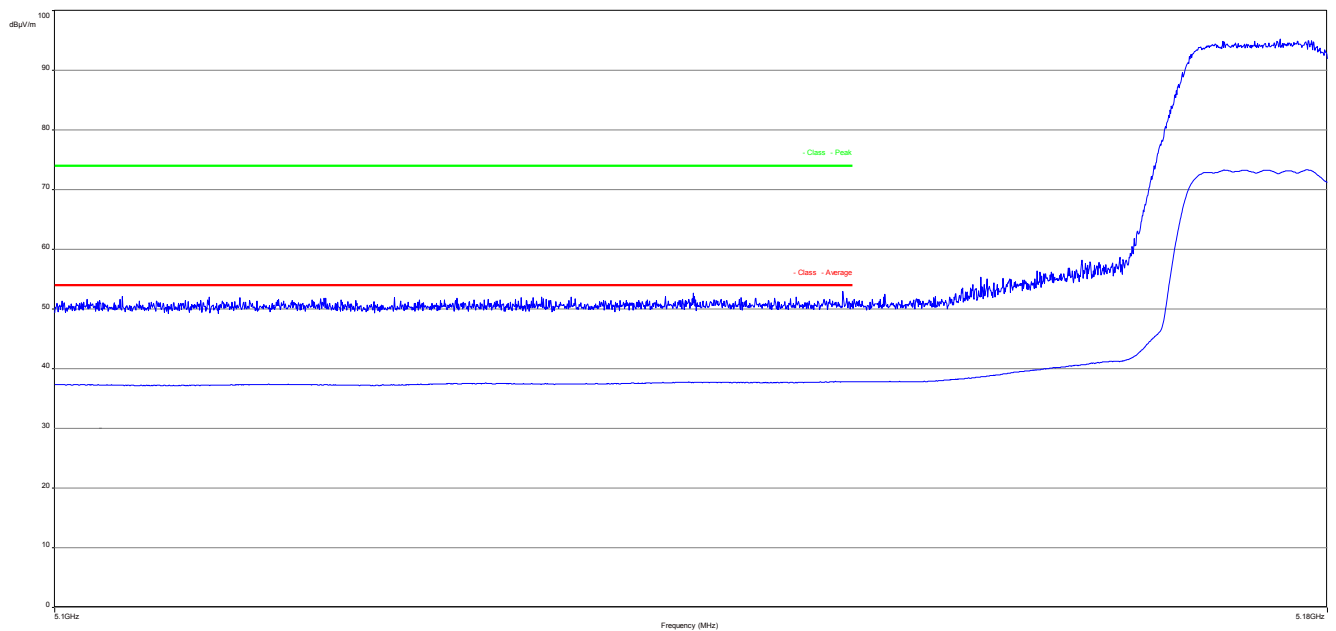
### Result:

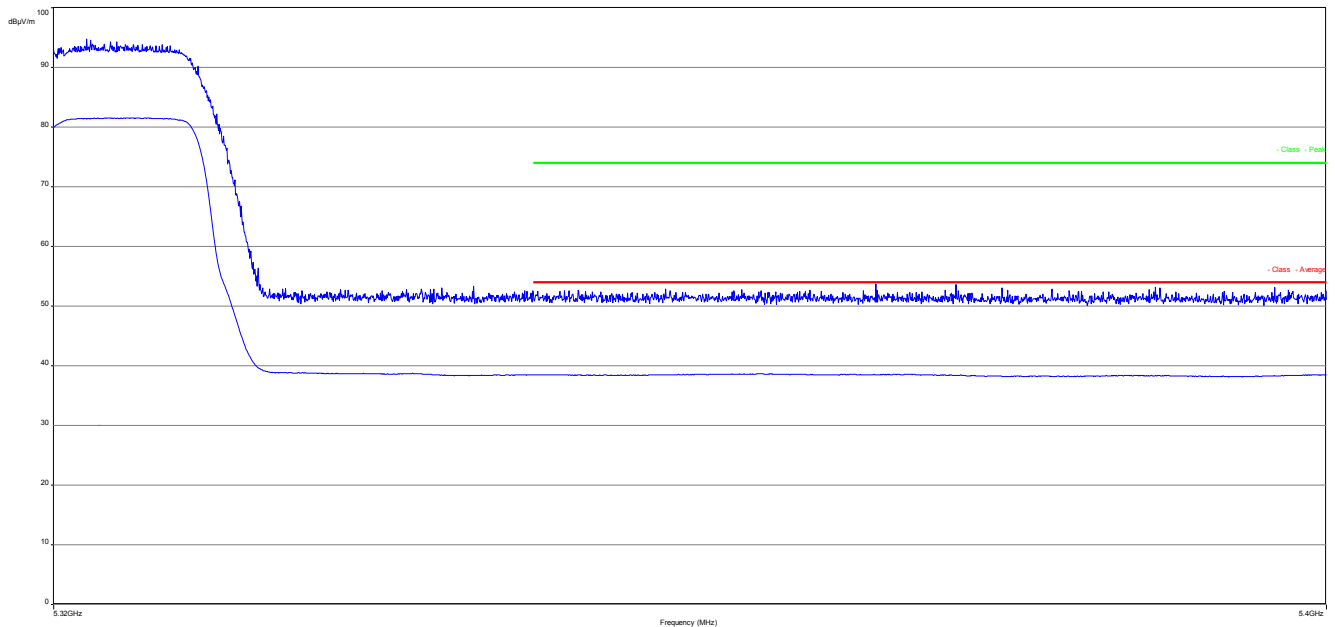
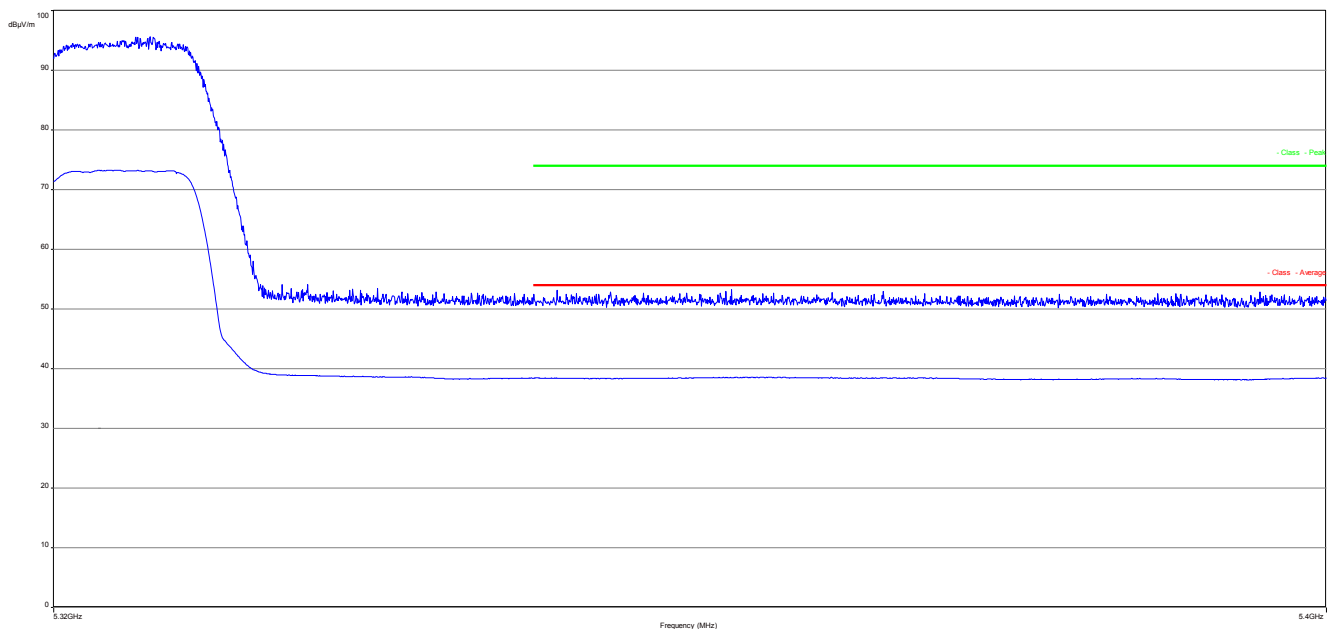
| Scenario                | Band Edge Compliance Radiated [dB $\mu$ V/m]        |
|-------------------------|-----------------------------------------------------|
| band edge               | < 74 dB $\mu$ V/m (Peak)<br>< 54 dB $\mu$ V/m (AVG) |
| Measurement uncertainty | $\pm 3$ dB                                          |

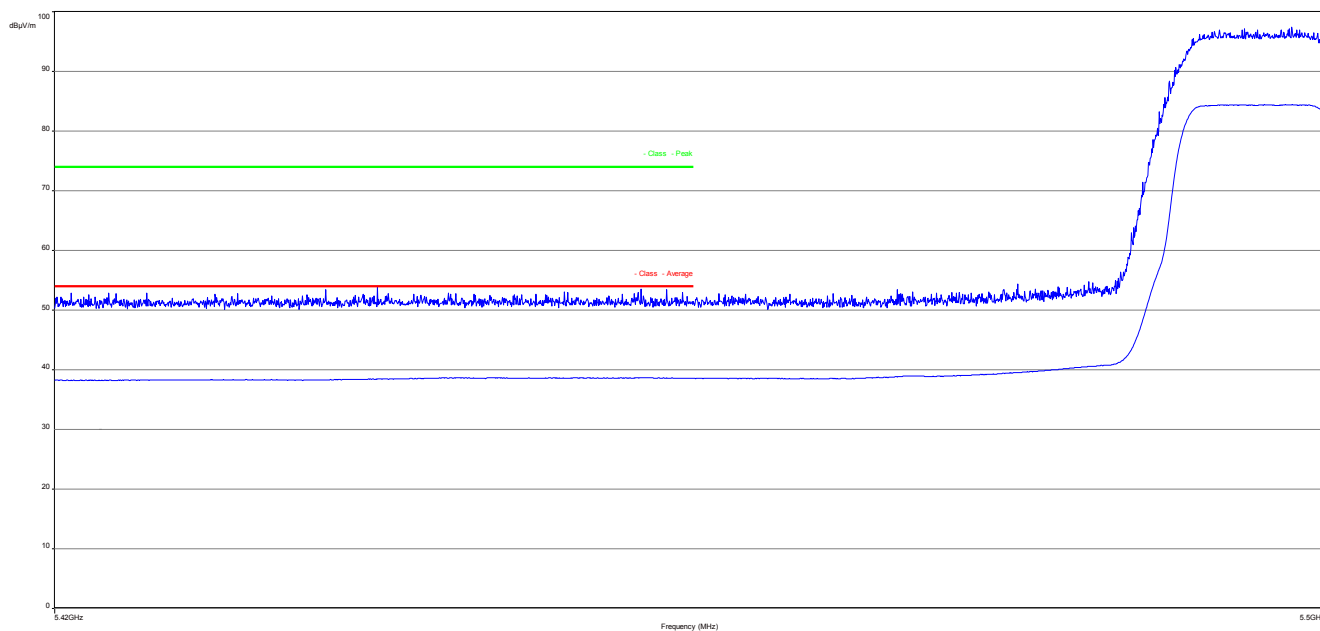
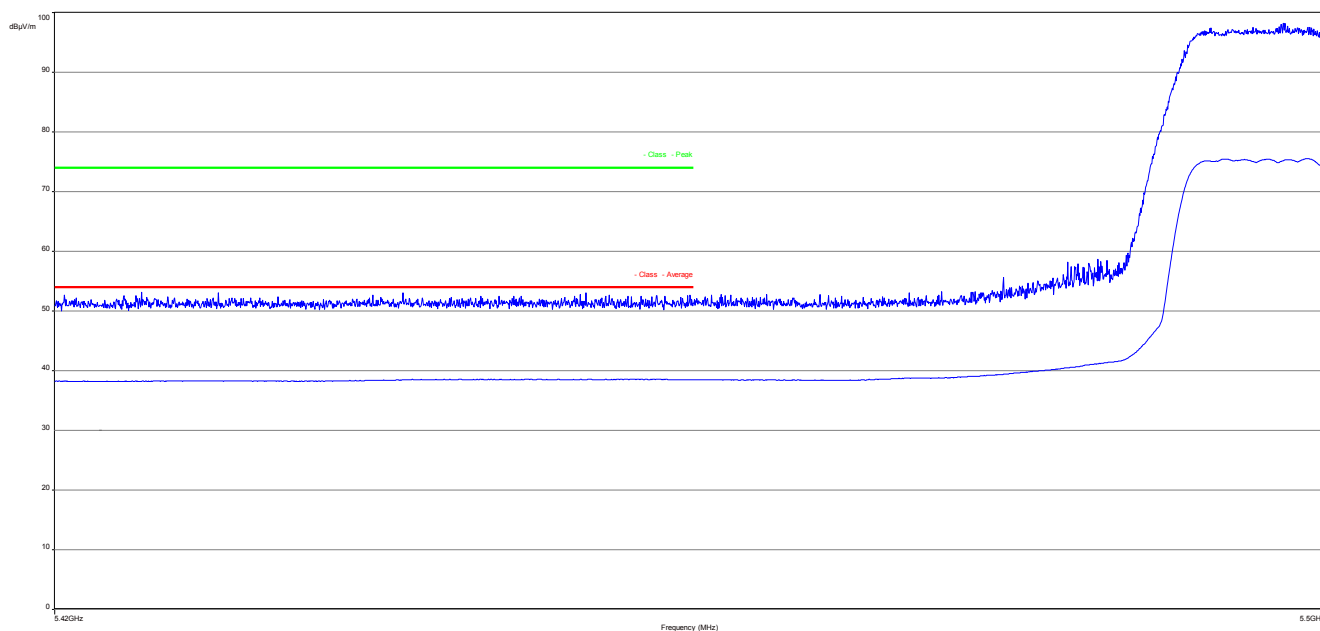
**Plots:****Plot 1:** lower band edge, vertical & horizontal polarization (a mode), channel 36, low data rate**Plot 2:** lower band edge, vertical & horizontal polarization (a mode), channel 36, high data rate

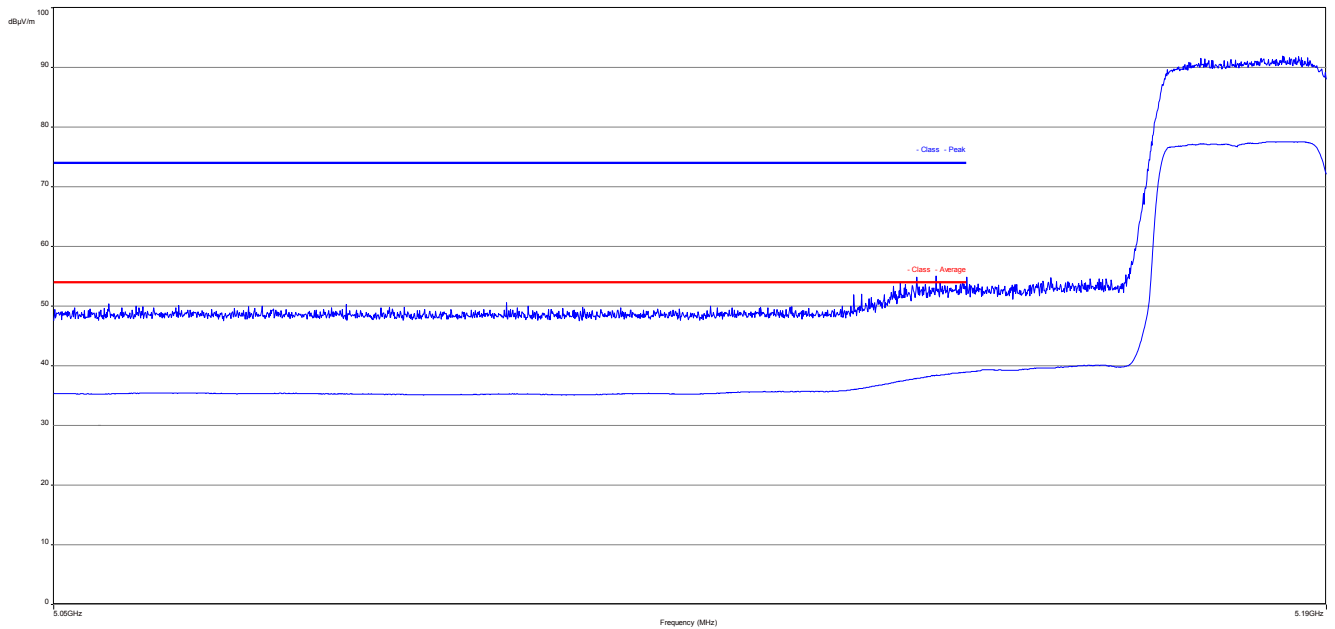
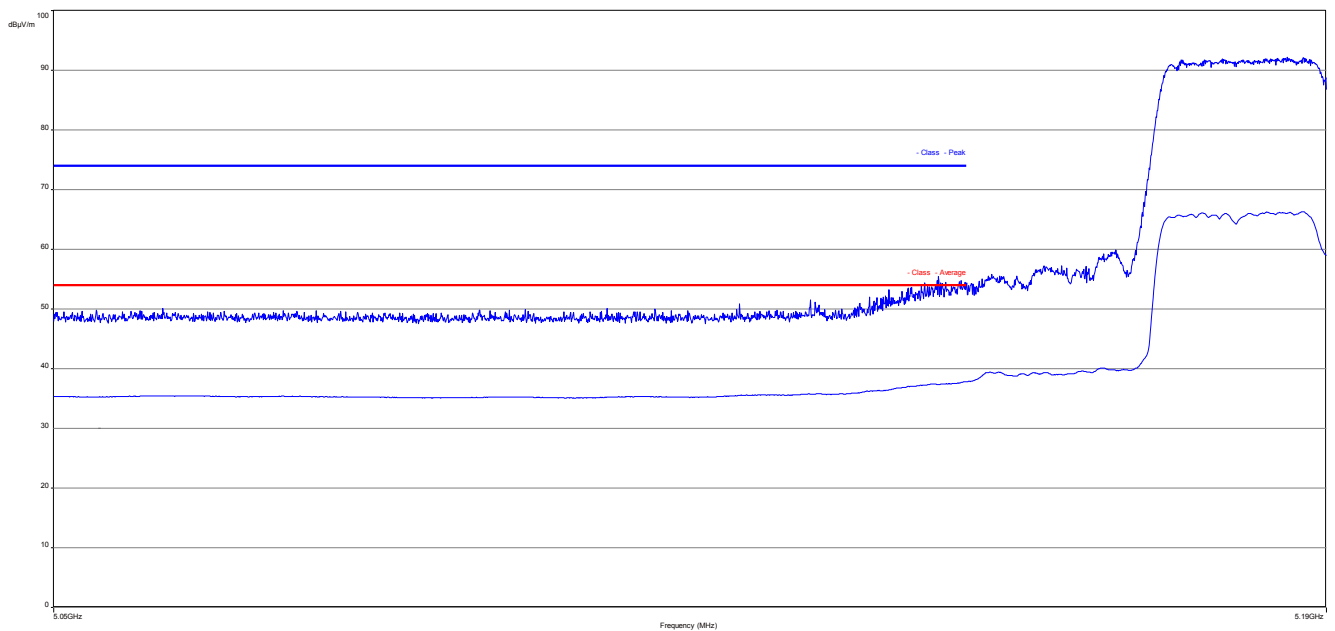
**Plot 3:** upper band edge, vertical & horizontal polarization (a mode), channel 64, low data rate**Plot 4:** upper band edge, vertical & horizontal polarization (a mode), channel 64, high data rate

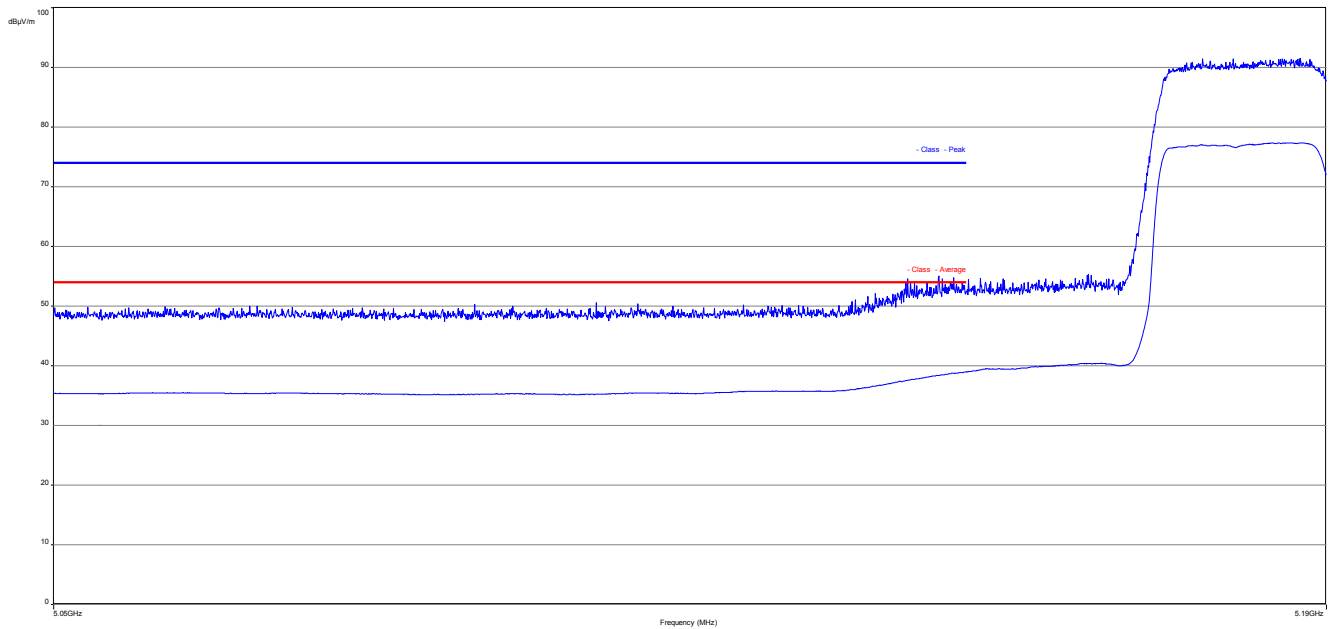
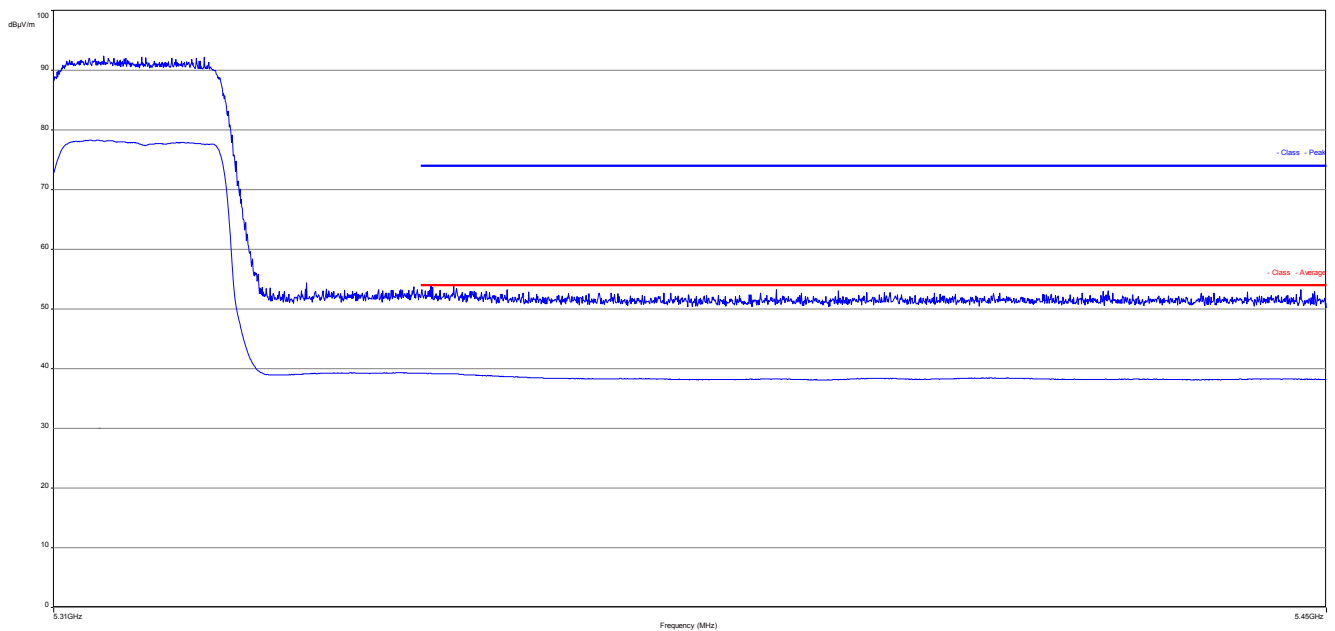
**Plot 5:** lower band edge, vertical & horizontal polarization (a mode), channel 100, low data rate**Plot 6:** lower band edge, vertical & horizontal polarization (a mode), channel 100, high data rate

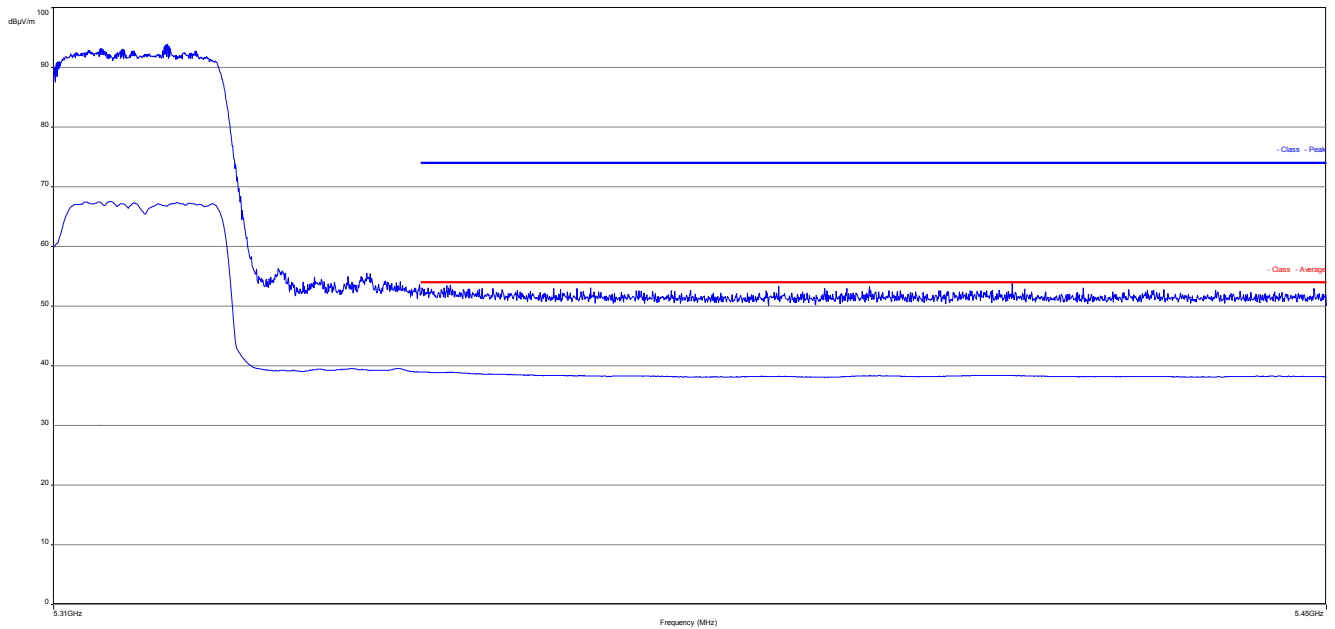
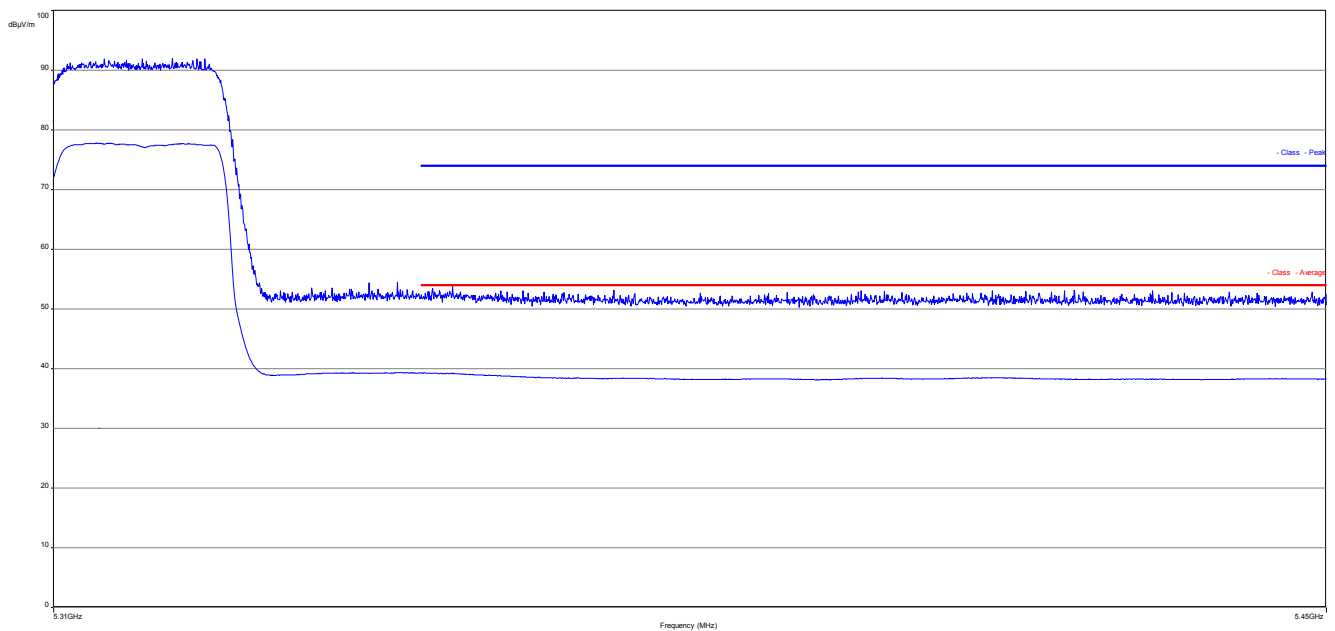
**Plot 7:** lower band edge, vertical & horizontal polarization (n/ac HT 20 mode), channel 36, low data rate**Plot 8:** lower band edge, vertical & horizontal polarization (n/ac HT 20 mode), channel 36, high data rate

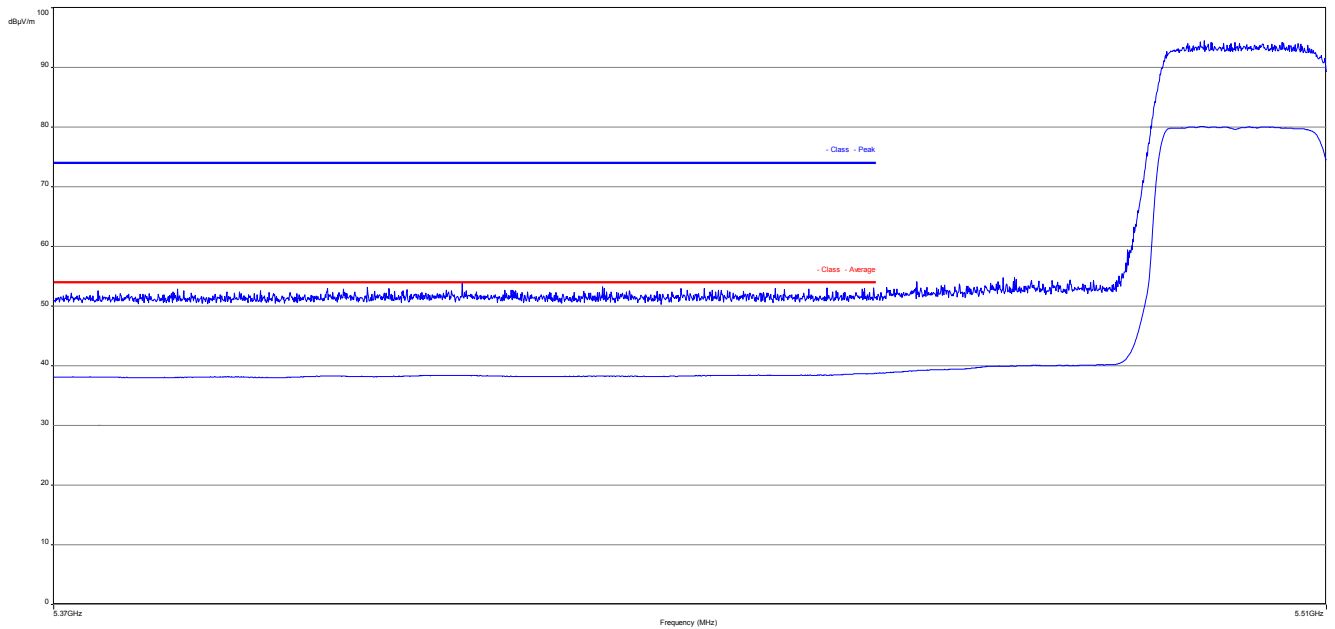
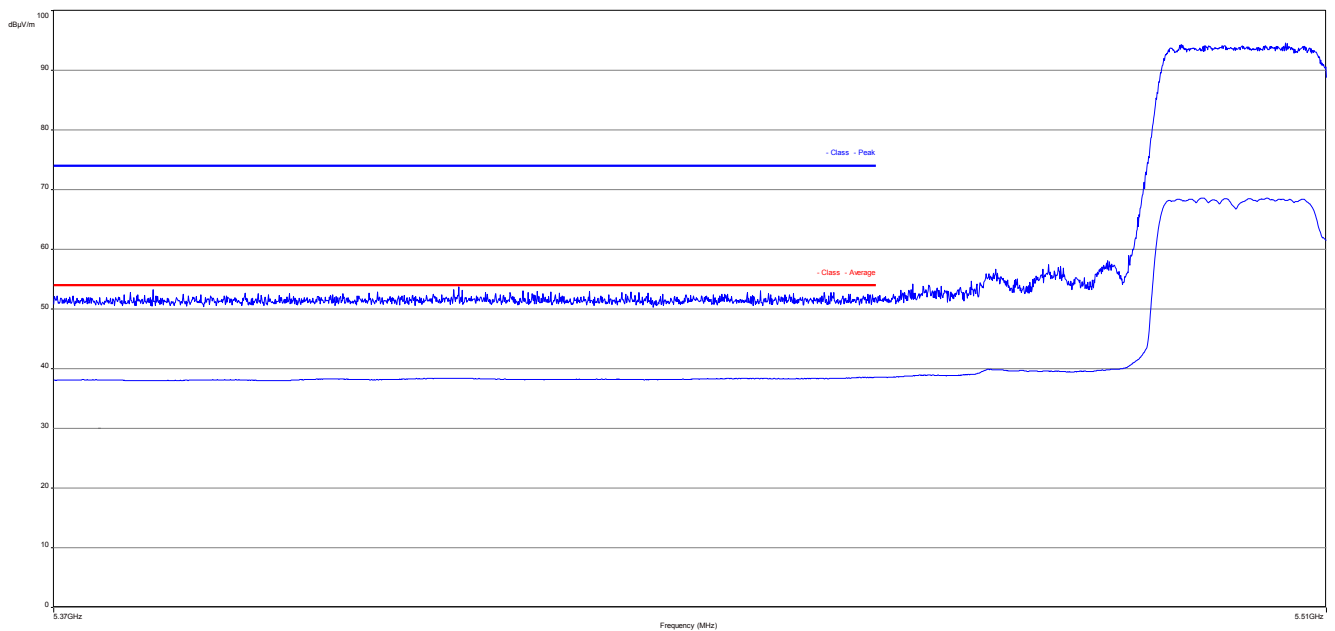
**Plot 9:** upper band edge, vertical & horizontal polarization (n/ac HT 20 mode), channel 64, low data rate**Plot 10:** upper band edge, vertical & horizontal polarization (n/ac HT 20 mode), channel 64, high data rate

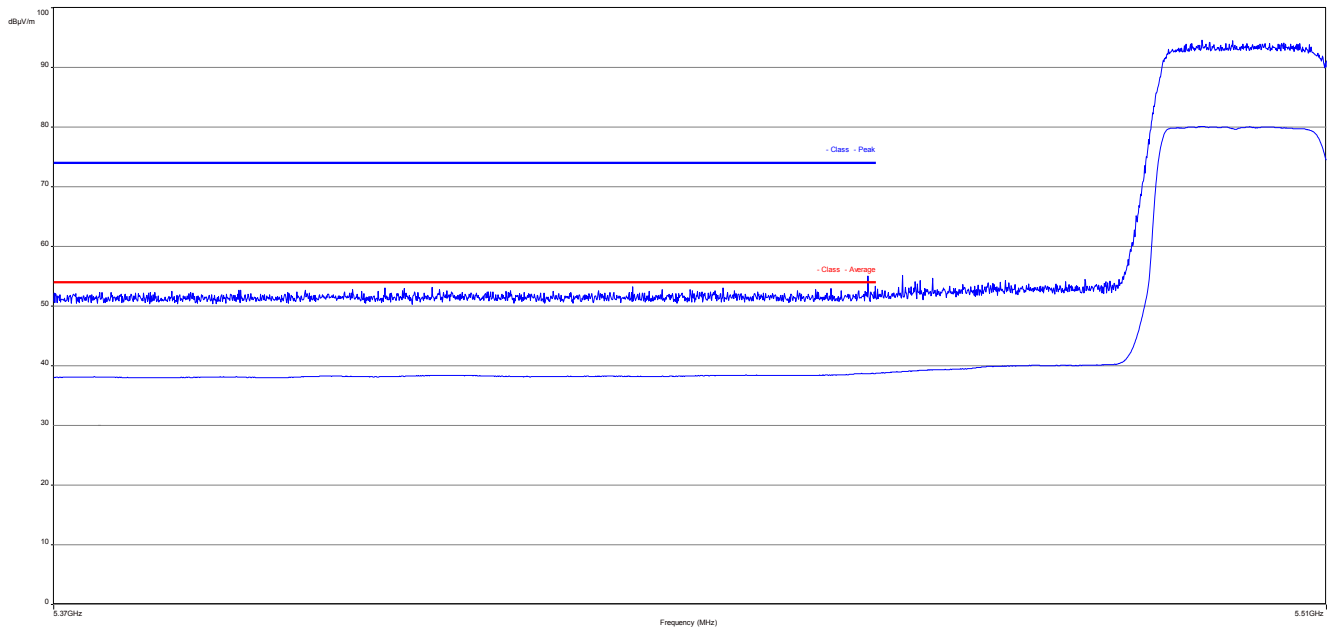
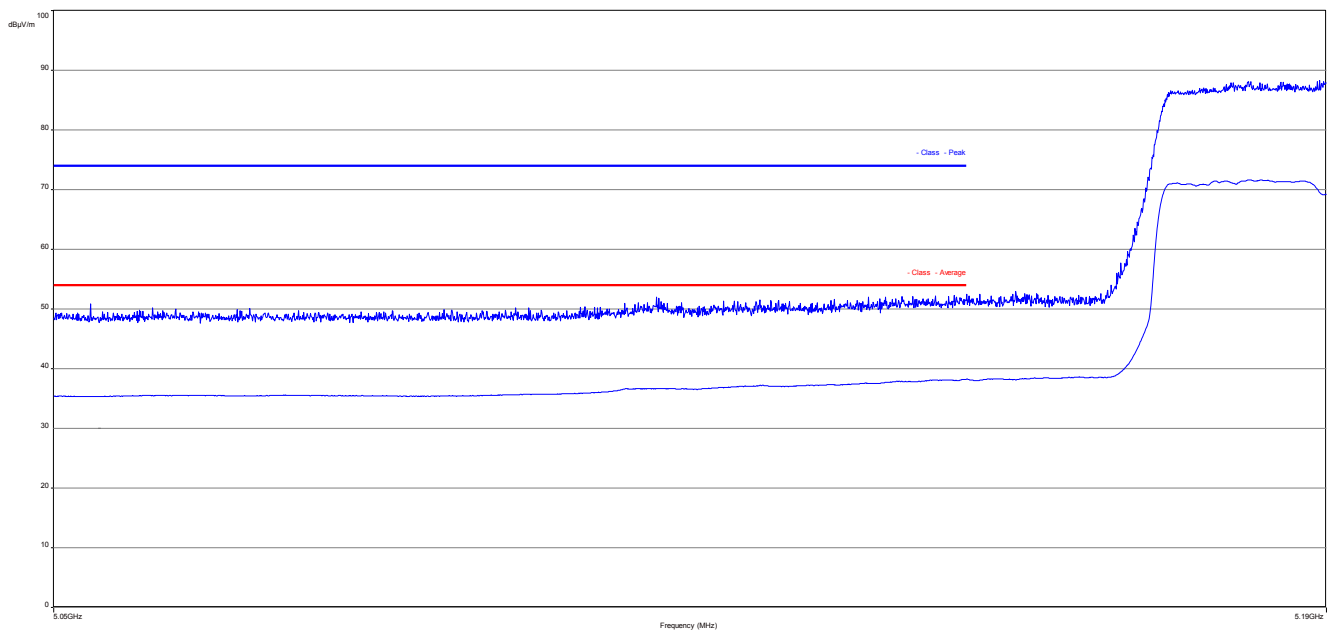
**Plot 11:** lower band edge, vertical & horizontal polarization (n/ac HT 20 mode), channel 100, low data rate**Plot 12:** lower band edge, vertical & horizontal polarization (n/ac HT 20 mode), channel 100, high data rate

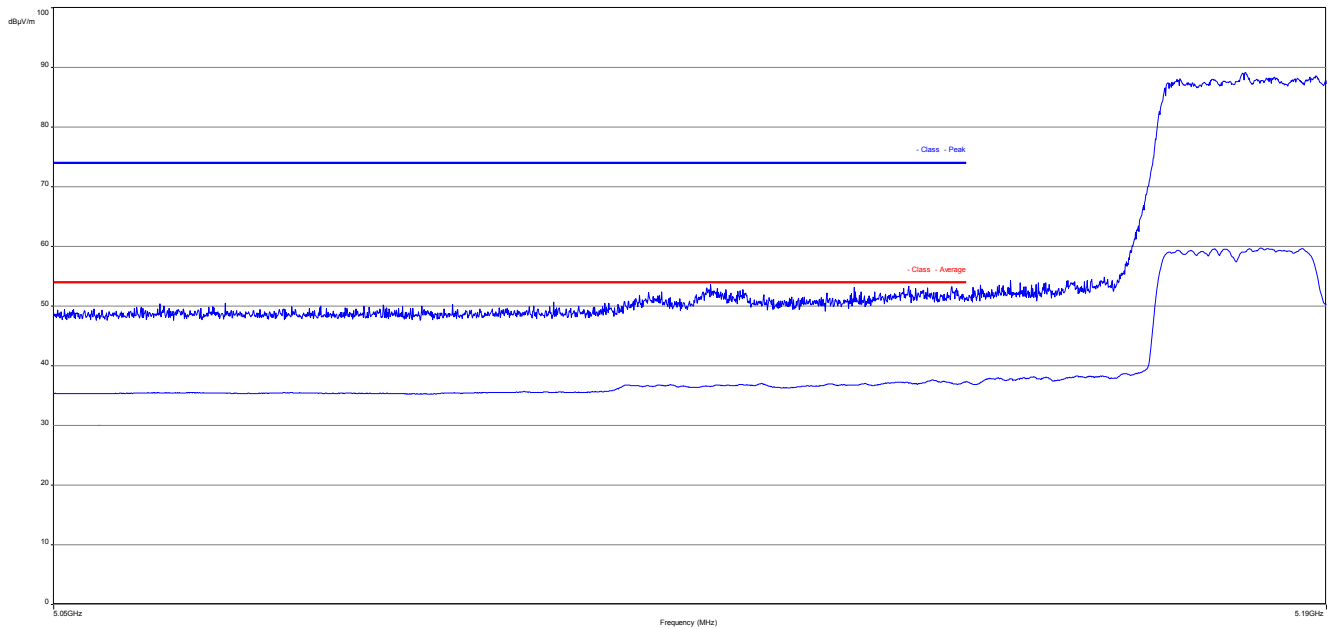
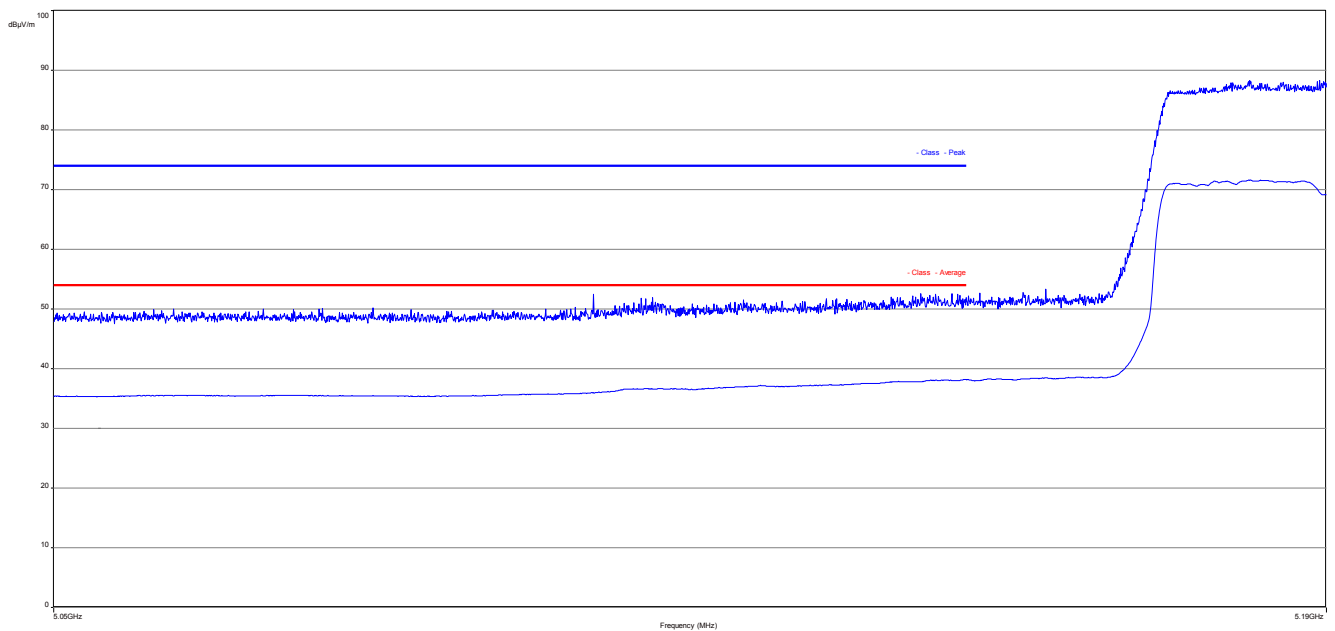
**Plot 13:** lower band edge, vertical & horizontal polarization (n/ac HT 40 mode), channel 38, low data rate**Plot 14:** lower band edge, vertical & horizontal polarization (n/ac HT 40 mode), channel 38, high data rate

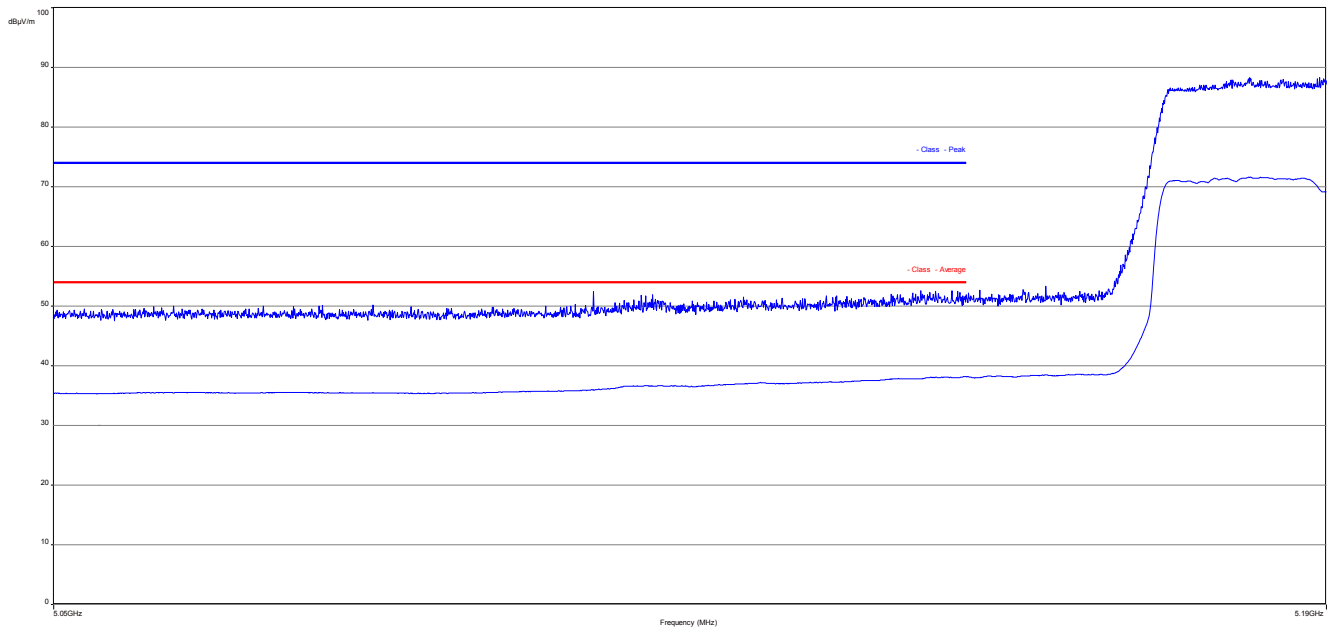
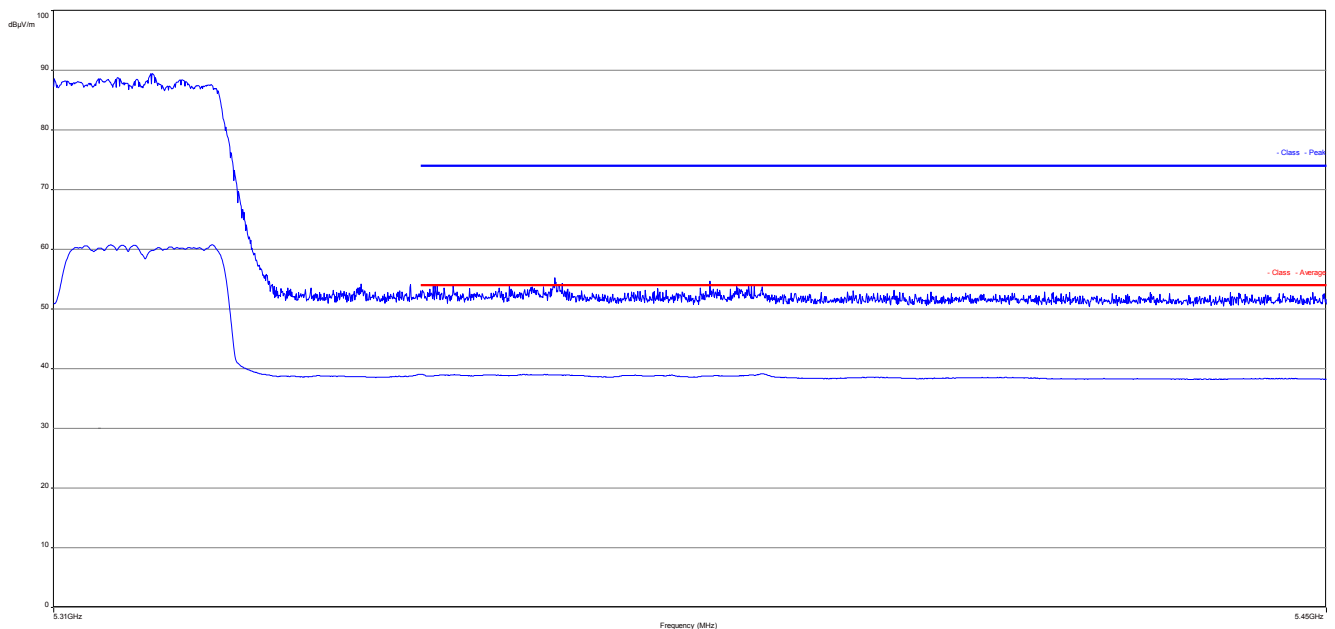
**Plot 15:** lower band edge, vertical & horizontal polarization (n/ac HT 40 mode), channel 38, highest power d. r.**Plot 16:** upper band edge, vertical & horizontal polarization (n/ac HT 40 mode), channel 62, low data rate

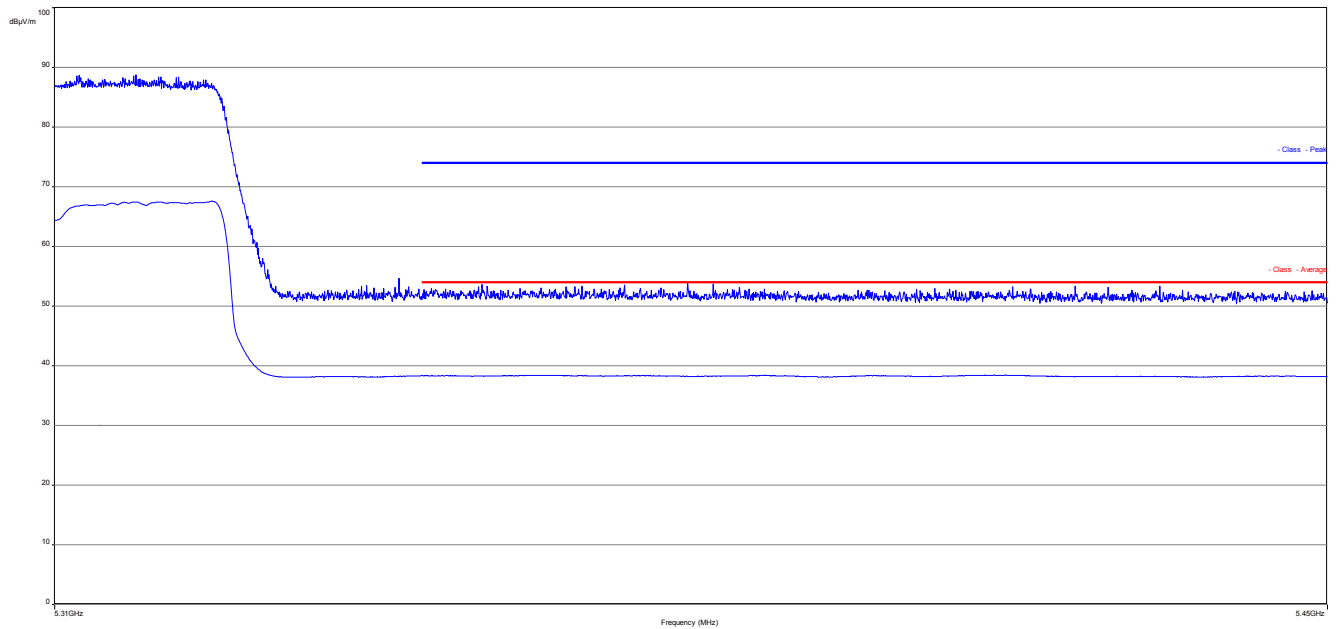
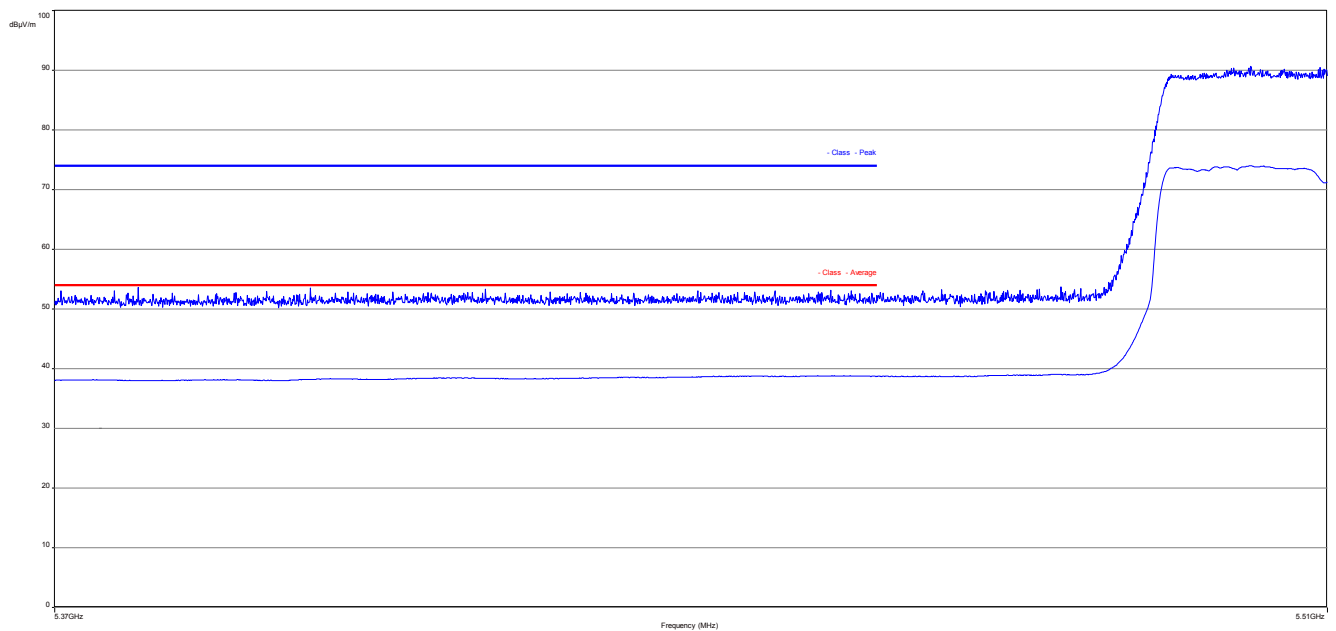
**Plot 17:** upper band edge, vertical & horizontal polarization (n/ac HT 40 mode), channel 62, high data rate**Plot 18:** upper band edge, vertical & horizontal polarization (n/ac HT 40 mode), channel 62, highest power d. r.

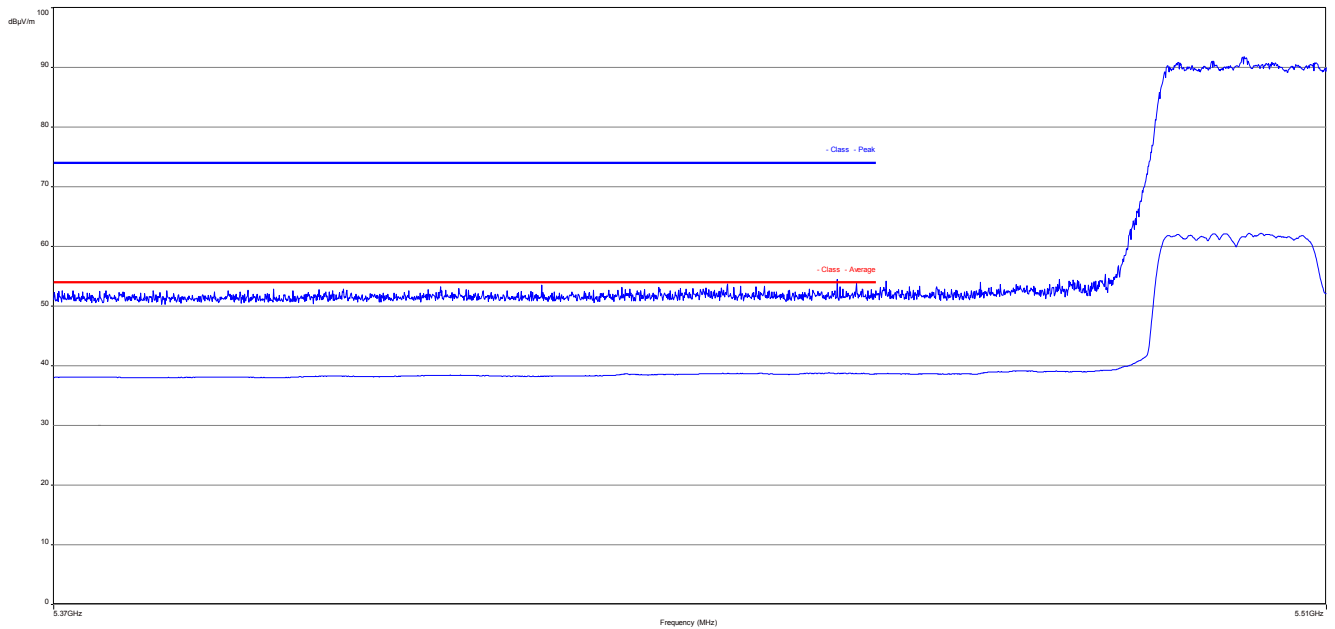
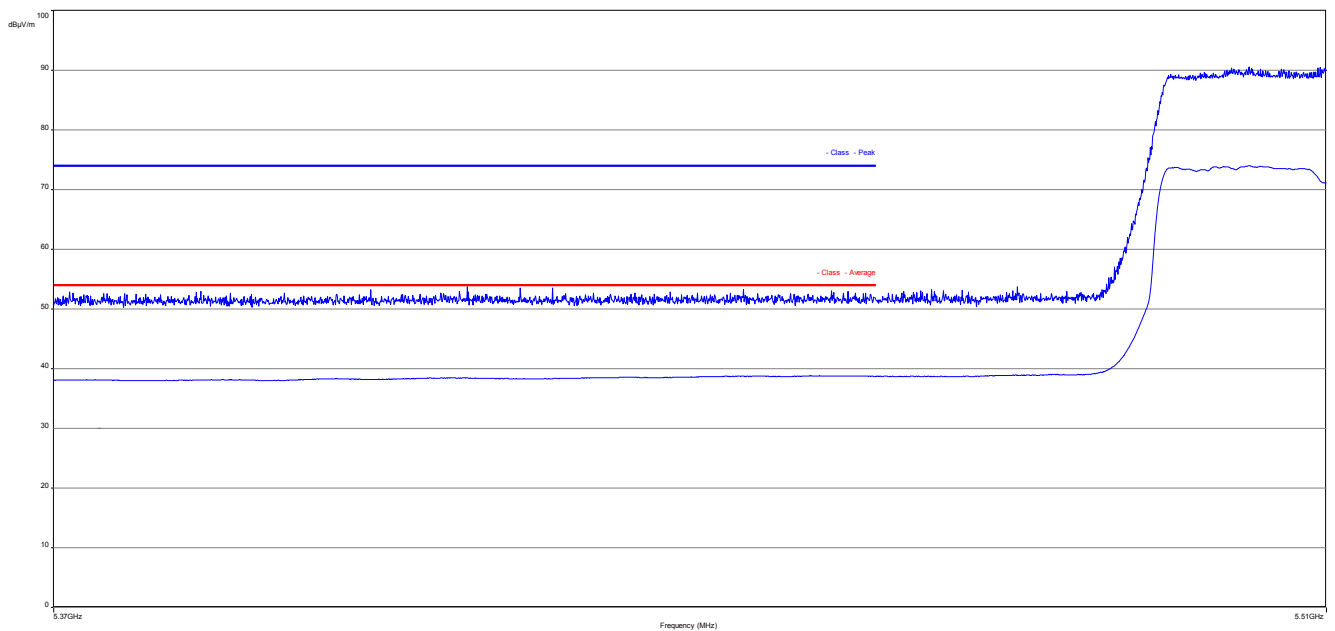
**Plot 19:** lower band edge, vertical & horizontal polarization (n/ac HT 40 mode), channel 102, low data rate**Plot 20:** lower band edge, vertical & horizontal polarization (n/ac HT 40 mode), channel 102, high data rate

**Plot 21:** lower band edge, vertical & horizontal polarization (n/ac HT 40 mode), channel 102, highest power d. r.**Plot 22:** lower band edge, vertical & horizontal polarization (ac HT 80 mode), channel 42, low data rate

**Plot 23:** lower band edge, vertical & horizontal polarization (ac HT 80 mode), channel 42, high data rate**Plot 24:** lower band edge, vertical & horizontal polarization (ac HT 80 mode), channel 42, highest power d. r.

**Plot 25:** upper band edge, vertical & horizontal polarization (ac HT 80 mode), channel 58, low data rate**Plot 26:** upper band edge, vertical & horizontal polarization (ac HT 80 mode), channel 58, high data rate

**Plot 27:** upper band edge, vertical & horizontal polarization (ac HT 80 mode), channel 58, highest power d. r.**Plot 28:** lower band edge, vertical & horizontal polarization (ac HT 80 mode), channel 106, low data rate

**Plot 29:** lower band edge, vertical & horizontal polarization (ac HT 80 mode), channel 106, high data rate**Plot 30:** lower band edge, vertical & horizontal polarization (ac HT 80 mode), channel 106, highest power d. r.**Result:** Passed

## 11.9 TX spurious emissions radiated

### Description:

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

### Measurement:

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

### Limits:

| TX Spurious Emissions Radiated |                               |                      |
|--------------------------------|-------------------------------|----------------------|
| §15.209                        |                               |                      |
| 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                    |
| §15.407                        |                               |                      |
| Outside the restricted bands!  | -27 dBm / MHz                 |                      |

**Results: OFDM / a – mode**

| TX Spurious Emissions Radiated [dB $\mu$ V/m] / dBm                              |          |                         |            |          |                         |                                                                                  |          |                         |
|----------------------------------------------------------------------------------|----------|-------------------------|------------|----------|-------------------------|----------------------------------------------------------------------------------|----------|-------------------------|
| OFDM a – mode                                                                    |          |                         |            |          |                         |                                                                                  |          |                         |
| Lowest<br>5180 MHz                                                               |          |                         | -/-        |          |                         | Highest<br>5240 MHz                                                              |          |                         |
| F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]    | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/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. |          |                         |
| All detected peaks are below the average limit!                                  |          |                         |            |          |                         | All detected peaks are below the average limit!                                  |          |                         |
|                                                                                  |          |                         |            |          |                         |                                                                                  |          |                         |
| Measurement uncertainty                                                          |          |                         | $\pm 3$ dB |          |                         |                                                                                  |          |                         |

| TX Spurious Emissions Radiated [dB $\mu$ V/m] / dBm                              |          |                         |            |          |                         |                                                                                  |          |                         |
|----------------------------------------------------------------------------------|----------|-------------------------|------------|----------|-------------------------|----------------------------------------------------------------------------------|----------|-------------------------|
| OFDM a – mode                                                                    |          |                         |            |          |                         |                                                                                  |          |                         |
| Lowest<br>5260 MHz                                                               |          |                         | -/-        |          |                         | Highest<br>5320 MHz                                                              |          |                         |
| F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]    | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/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. |          |                         |
| All detected peaks are below the average limit!                                  |          |                         |            |          |                         | All detected peaks are below the average limit!                                  |          |                         |
|                                                                                  |          |                         |            |          |                         |                                                                                  |          |                         |
| Measurement uncertainty                                                          |          |                         | $\pm 3$ dB |          |                         |                                                                                  |          |                         |

| TX Spurious Emissions Radiated [dB $\mu$ V/m] / dBm                              |          |                         |                                                                                  |          |                         |                                                                                  |          |                         |
|----------------------------------------------------------------------------------|----------|-------------------------|----------------------------------------------------------------------------------|----------|-------------------------|----------------------------------------------------------------------------------|----------|-------------------------|
| OFDM a – mode                                                                    |          |                         |                                                                                  |          |                         |                                                                                  |          |                         |
| Lowest<br>5500 MHz                                                               |          |                         | Middle<br>5600 MHz                                                               |          |                         | Highest<br>5700 MHz                                                              |          |                         |
| F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/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. |          |                         |
| All detected peaks are below the average limit!                                  |          |                         | All detected peaks are below the average limit!                                  |          |                         | All detected peaks are below the average limit!                                  |          |                         |
|                                                                                  |          |                         |                                                                                  |          |                         |                                                                                  |          |                         |
| Measurement uncertainty                                                          |          |                         | $\pm 3$ dB                                                                       |          |                         |                                                                                  |          |                         |

**Result:** Passed

**Results: OFDM / n/ac – modeHT20**

| TX Spurious Emissions Radiated [dBμV/m] / dBm                                    |          |                   |         |          |                   |                                                                                  |          |                   |
|----------------------------------------------------------------------------------|----------|-------------------|---------|----------|-------------------|----------------------------------------------------------------------------------|----------|-------------------|
| OFDM n/ac – mode HT20                                                            |          |                   |         |          |                   |                                                                                  |          |                   |
| Lowest<br>5180 MHz                                                               |          |                   | -/-     |          |                   | Highest<br>5240 MHz                                                              |          |                   |
| F [MHz]                                                                          | Detector | Level<br>[dBμV/m] | F [MHz] | Detector | Level<br>[dBμV/m] | F [MHz]                                                                          | Detector | Level<br>[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. |          |                   |
| All detected peaks are below the average limit!                                  |          |                   |         |          |                   | All detected peaks are below the average limit!                                  |          |                   |
|                                                                                  |          |                   |         |          |                   |                                                                                  |          |                   |
| Measurement uncertainty                                                          |          |                   | ± 3 dB  |          |                   |                                                                                  |          |                   |

| TX Spurious Emissions Radiated [dBμV/m] / dBm                                    |          |                   |         |          |                   |                                                                                  |          |                   |
|----------------------------------------------------------------------------------|----------|-------------------|---------|----------|-------------------|----------------------------------------------------------------------------------|----------|-------------------|
| OFDM n/ac – mode HT20                                                            |          |                   |         |          |                   |                                                                                  |          |                   |
| Lowest<br>5260 MHz                                                               |          |                   | -/-     |          |                   | Highest<br>5320 MHz                                                              |          |                   |
| F [MHz]                                                                          | Detector | Level<br>[dBμV/m] | F [MHz] | Detector | Level<br>[dBμV/m] | F [MHz]                                                                          | Detector | Level<br>[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. |          |                   |
| All detected peaks are below the average limit!                                  |          |                   |         |          |                   | All detected peaks are below the average limit!                                  |          |                   |
|                                                                                  |          |                   |         |          |                   |                                                                                  |          |                   |
| Measurement uncertainty                                                          |          |                   | ± 3 dB  |          |                   |                                                                                  |          |                   |

| TX Spurious Emissions Radiated [dBμV/m] / dBm                                    |          |                   |                                                                                  |          |                   |                                                                                  |          |                   |
|----------------------------------------------------------------------------------|----------|-------------------|----------------------------------------------------------------------------------|----------|-------------------|----------------------------------------------------------------------------------|----------|-------------------|
| OFDM n/ac – mode HT20                                                            |          |                   |                                                                                  |          |                   |                                                                                  |          |                   |
| Lowest<br>5500 MHz                                                               |          |                   | Middle<br>5600 MHz                                                               |          |                   | Highest<br>5700 MHz                                                              |          |                   |
| F [MHz]                                                                          | Detector | Level<br>[dBμV/m] | F [MHz]                                                                          | Detector | Level<br>[dBμV/m] | F [MHz]                                                                          | Detector | Level<br>[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. |          |                   |
| All detected peaks are below the average limit!                                  |          |                   | All detected peaks are below the average limit!                                  |          |                   | All detected peaks are below the average limit!                                  |          |                   |
|                                                                                  |          |                   |                                                                                  |          |                   |                                                                                  |          |                   |
| Measurement uncertainty                                                          |          |                   | ± 3 dB                                                                           |          |                   |                                                                                  |          |                   |

**Result: Passed**

**Results: OFDM / n/ac – modeHT40**

| TX Spurious Emissions Radiated [dB $\mu$ V/m] / dBm                              |          |                         |            |          |                         |                                                                                  |          |                         |
|----------------------------------------------------------------------------------|----------|-------------------------|------------|----------|-------------------------|----------------------------------------------------------------------------------|----------|-------------------------|
| OFDM n/ac – mode HT40                                                            |          |                         |            |          |                         |                                                                                  |          |                         |
| Lowest<br>5190 MHz                                                               |          |                         | -/-        |          |                         | Highest<br>5270 MHz                                                              |          |                         |
| F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]    | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/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. |          |                         |
| All detected peaks are below the average limit!                                  |          |                         |            | !        |                         | All detected peaks are below the average limit                                   |          |                         |
|                                                                                  |          |                         |            |          |                         |                                                                                  |          |                         |
| Measurement uncertainty                                                          |          |                         | $\pm 3$ dB |          |                         |                                                                                  |          |                         |

| TX Spurious Emissions Radiated [dB $\mu$ V/m] / dBm                              |          |                         |            |          |                         |                                                                                  |          |                         |
|----------------------------------------------------------------------------------|----------|-------------------------|------------|----------|-------------------------|----------------------------------------------------------------------------------|----------|-------------------------|
| OFDM n/ac – mode HT40                                                            |          |                         |            |          |                         |                                                                                  |          |                         |
| Lowest<br>5310 MHz                                                               |          |                         | -/-        |          |                         | Highest<br>5590 MHz                                                              |          |                         |
| F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]    | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/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. |          |                         |
| All detected peaks are below the average limit!                                  |          |                         |            |          |                         | All detected peaks are below the average limit!                                  |          |                         |
|                                                                                  |          |                         |            |          |                         |                                                                                  |          |                         |
| Measurement uncertainty                                                          |          |                         | $\pm 3$ dB |          |                         |                                                                                  |          |                         |

| TX Spurious Emissions Radiated [dB $\mu$ V/m] / dBm                              |          |                         |                                                                                  |          |                         |                                                                                  |          |                         |
|----------------------------------------------------------------------------------|----------|-------------------------|----------------------------------------------------------------------------------|----------|-------------------------|----------------------------------------------------------------------------------|----------|-------------------------|
| OFDM n/ac – mode HT40                                                            |          |                         |                                                                                  |          |                         |                                                                                  |          |                         |
| Lowest<br>5670 MHz                                                               |          |                         | Middle<br>5765 MHz                                                               |          |                         | Highest<br>5795 MHz                                                              |          |                         |
| F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/m] | F [MHz]                                                                          | Detector | Level<br>[dB $\mu$ V/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. |          |                         |
| All detected peaks are below the average limit!                                  |          |                         | All detected peaks are below the average limit!                                  |          |                         | All detected peaks are below the average limit!                                  |          |                         |
|                                                                                  |          |                         |                                                                                  |          |                         |                                                                                  |          |                         |
| Measurement uncertainty                                                          |          |                         | $\pm 3$ dB                                                                       |          |                         |                                                                                  |          |                         |

**Result:** Passed

**Results: OFDM / ac – modeHT80**

| TX Spurious Emissions Radiated [dBμV/m] / dBm                                    |          |                   |         |          |                   |                                                                                  |          |                   |
|----------------------------------------------------------------------------------|----------|-------------------|---------|----------|-------------------|----------------------------------------------------------------------------------|----------|-------------------|
| OFDM ac – mode HT80                                                              |          |                   |         |          |                   |                                                                                  |          |                   |
| Lowest<br>5210 MHz                                                               |          |                   | -/-     |          |                   | Highest<br>5290 MHz                                                              |          |                   |
| F [MHz]                                                                          | Detector | Level<br>[dBμV/m] | F [MHz] | Detector | Level<br>[dBμV/m] | F [MHz]                                                                          | Detector | Level<br>[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. |          |                   |
| All detected peaks are below the average limit!                                  |          |                   |         |          |                   | All detected peaks are below the average limit!                                  |          |                   |
|                                                                                  |          |                   |         |          |                   |                                                                                  |          |                   |
| Measurement uncertainty                                                          |          |                   | ± 3 dB  |          |                   |                                                                                  |          |                   |

| TX Spurious Emissions Radiated [dBμV/m] / dBm                                    |          |                   |         |          |                   |                                                                                  |          |                   |
|----------------------------------------------------------------------------------|----------|-------------------|---------|----------|-------------------|----------------------------------------------------------------------------------|----------|-------------------|
| OFDM ac – mode HT80                                                              |          |                   |         |          |                   |                                                                                  |          |                   |
| Lowest<br>5530 MHz                                                               |          |                   | -/-     |          |                   | Highest<br>5610 MHz                                                              |          |                   |
| F [MHz]                                                                          | Detector | Level<br>[dBμV/m] | F [MHz] | Detector | Level<br>[dBμV/m] | F [MHz]                                                                          | Detector | Level<br>[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. |          |                   |
| All detected peaks are below the average limit!                                  |          |                   |         |          |                   | All detected peaks are below the average limit!                                  |          |                   |
|                                                                                  |          |                   |         |          |                   |                                                                                  |          |                   |
| 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:** OFDM / a – mode

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

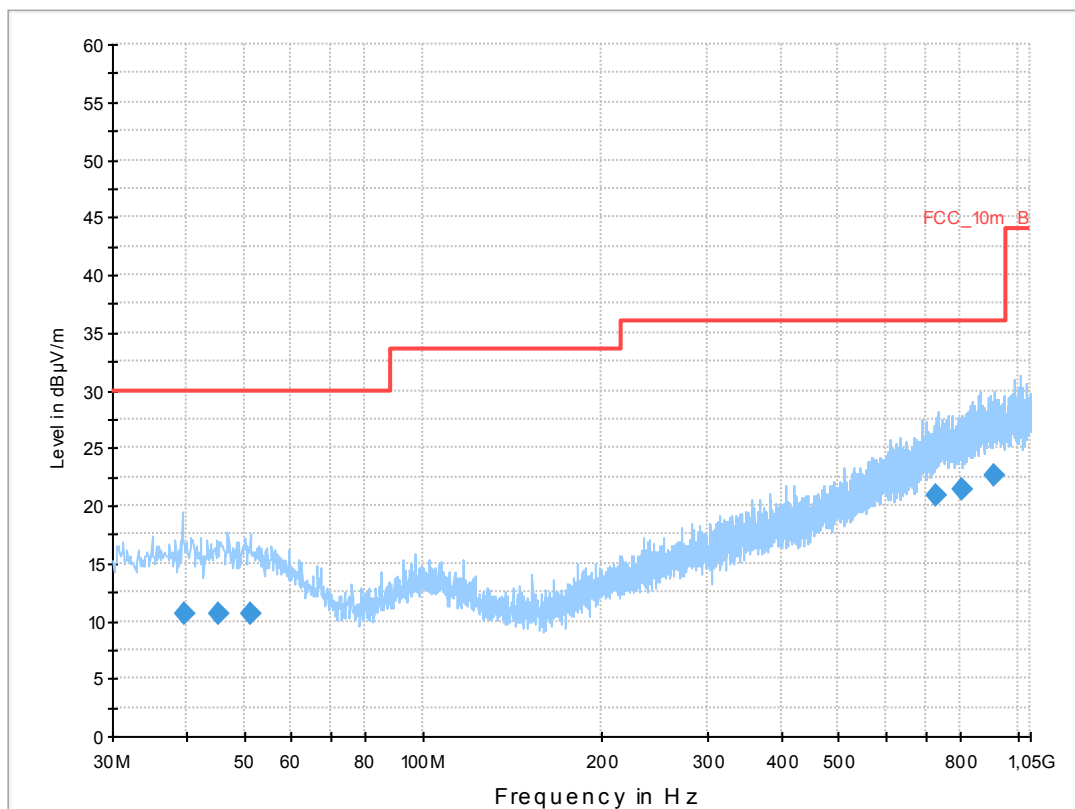
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan a-mode tx ch 36  
 Operator Name: Hennemann  
 Comment: battery powered

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

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

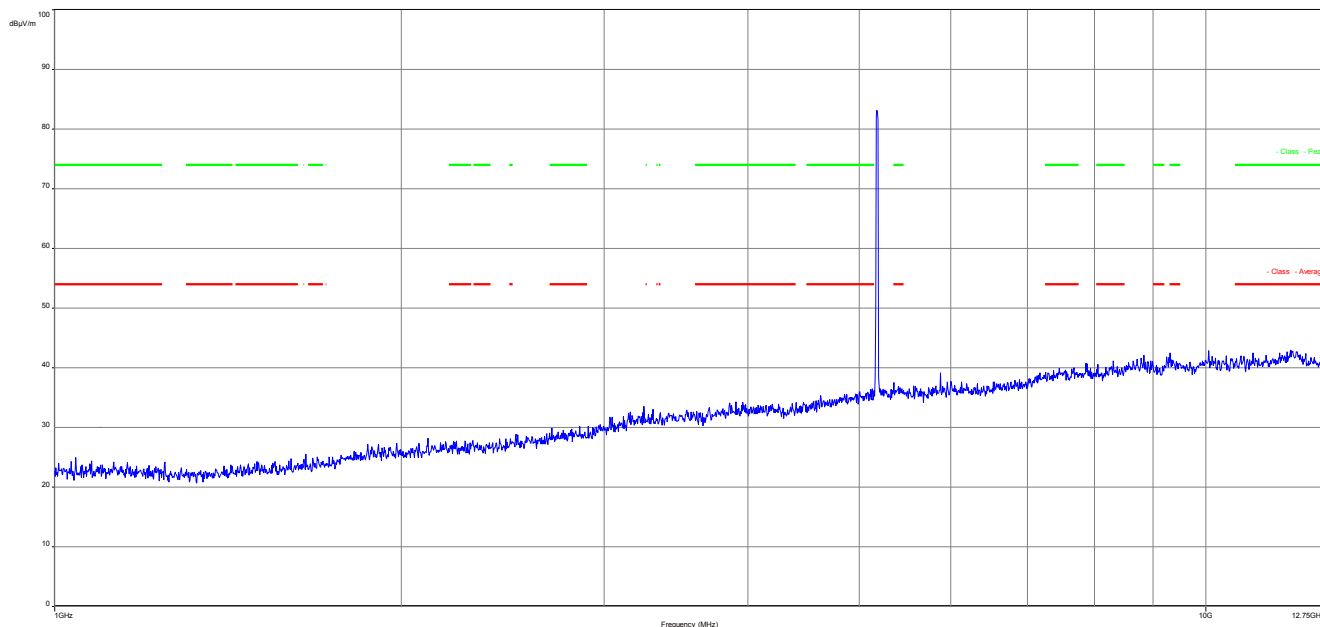
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



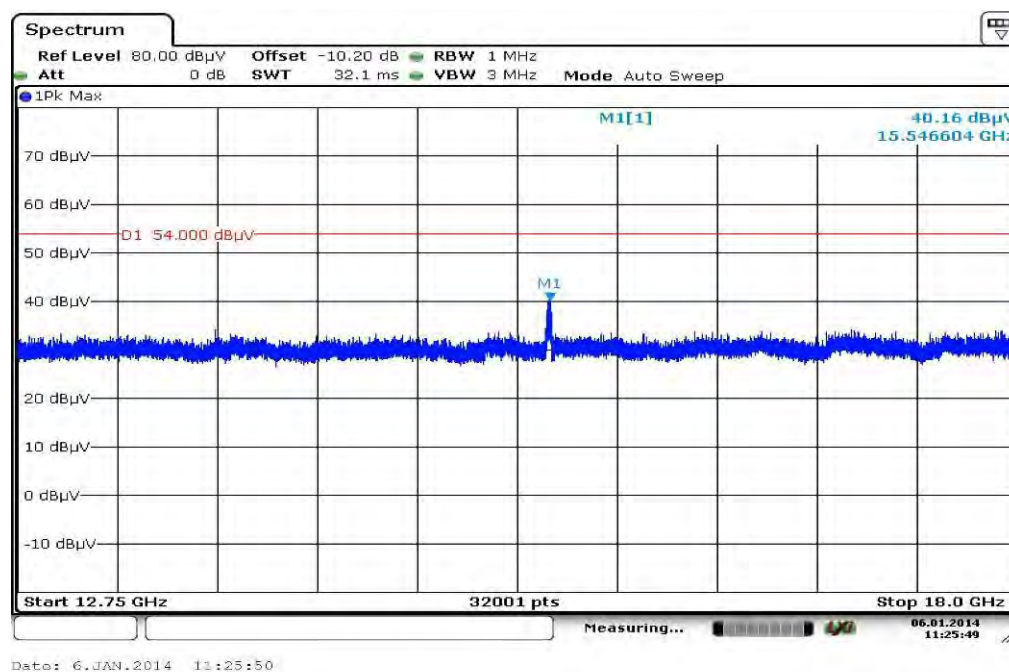
## Final Result 1

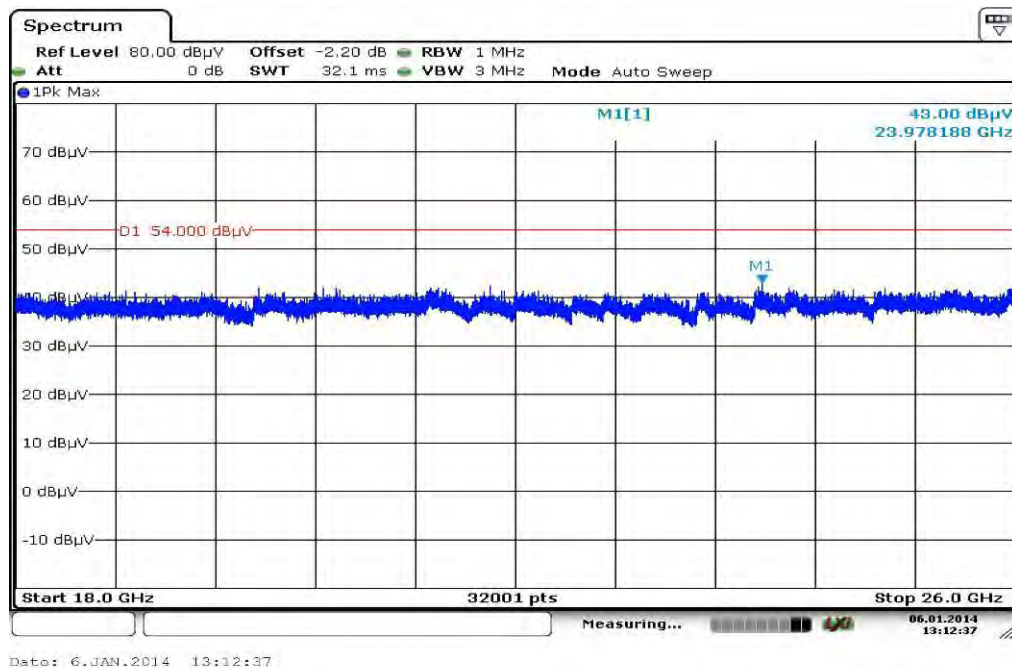
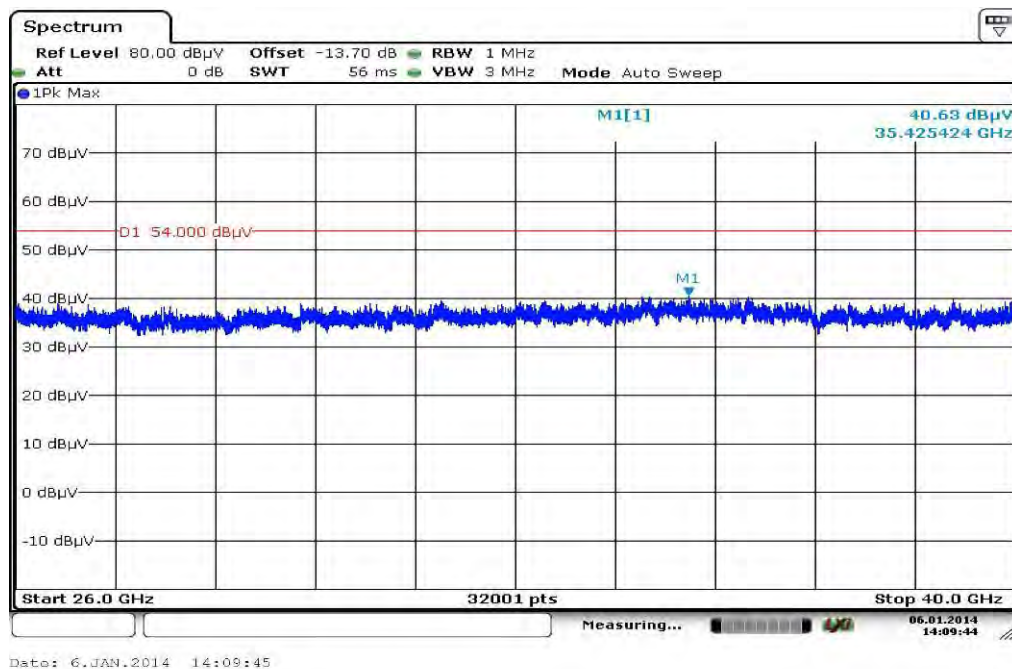
| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 39.807600       | 10.6                     | 1000.0          | 120.000         | 170.0       | V            | 190.0         | 13.4       | 19.4        | 30.0                 |         |
| 45.358800       | 10.6                     | 1000.0          | 120.000         | 170.0       | H            | -10.0         | 13.3       | 19.4        | 30.0                 |         |
| 51.081450       | 10.6                     | 1000.0          | 120.000         | 111.0       | V            | 88.0          | 13.3       | 19.4        | 30.0                 |         |
| 731.799000      | 20.8                     | 1000.0          | 120.000         | 170.0       | H            | 88.0          | 23.2       | 15.2        | 36.0                 |         |
| 806.678100      | 21.3                     | 1000.0          | 120.000         | 170.0       | H            | 10.0          | 23.9       | 14.7        | 36.0                 |         |
| 909.720750      | 22.7                     | 1000.0          | 120.000         | 161.0       | H            | 190.0         | 25.2       | 13.3        | 36.0                 |         |

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



**Plot 3:** 12 GHz to 18 GHz, 5180 MHz, vertical & horizontal polarization



**Plot 4:** 18 GHz to 26 GHz, 5180 MHz, vertical & horizontal polarization**Plot 5:** 26 GHz to 40 GHz, 5180 MHz, vertical & horizontal polarization

**Plot 6:** 30 MHz to 1 GHz, 5240 MHz, vertical & horizontal polarization

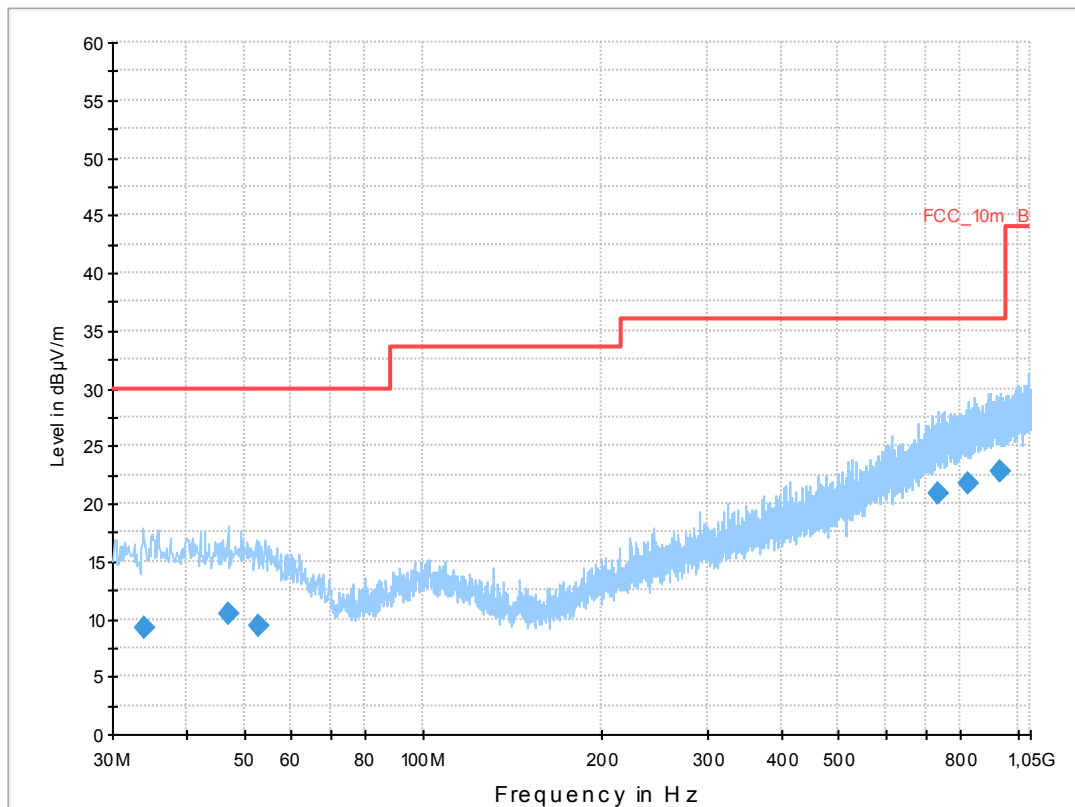
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan a-mode tx ch 48  
 Operator Name: Hennemann  
 Comment: battery powered

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

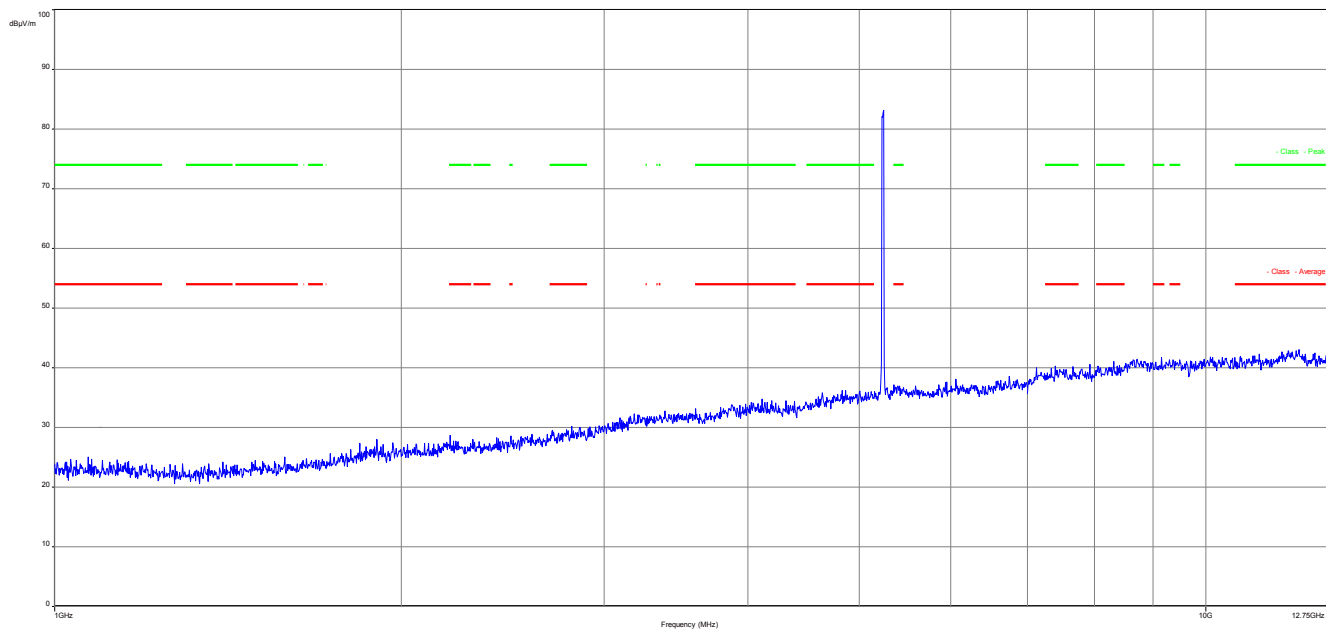
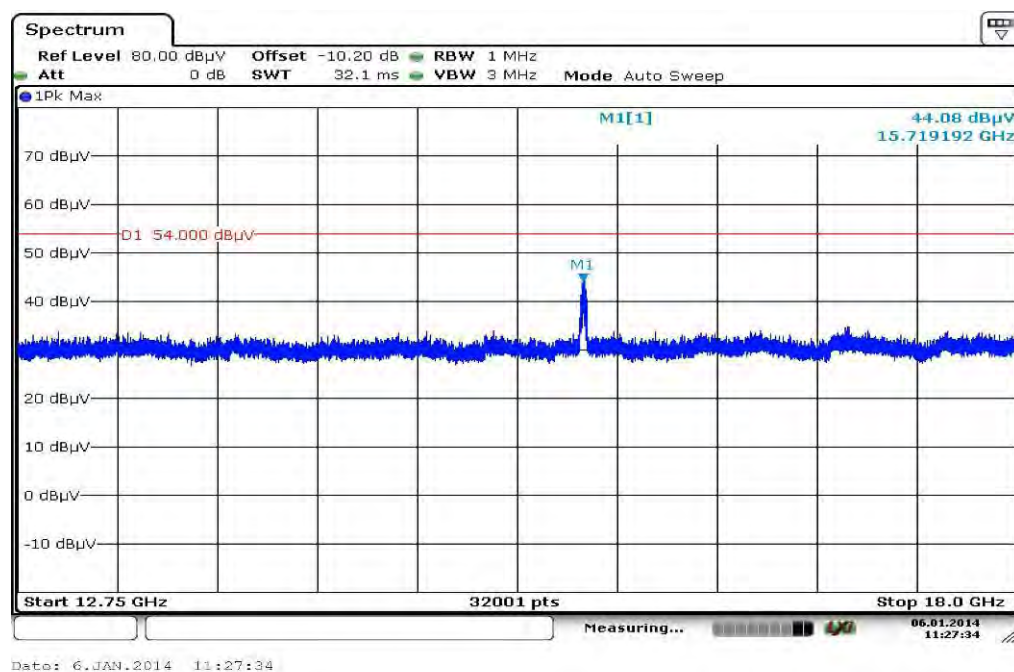
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

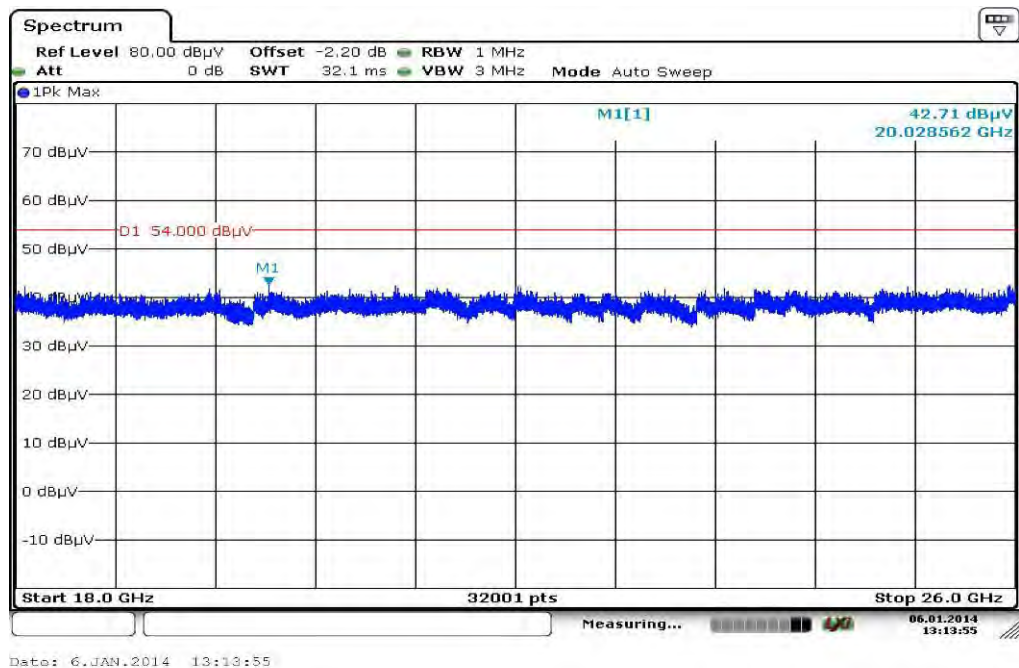
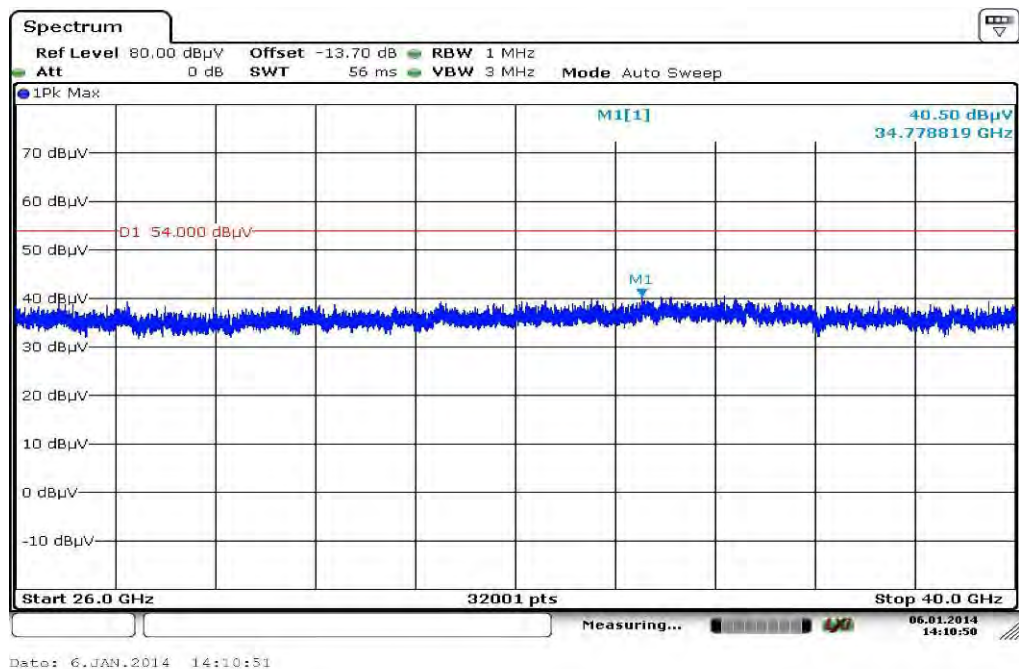
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 33.925650       | 9.3                      | 1000.0          | 120.000         | 98.0        | H            | 100.0         | 12.9       | 20.7        | 30.0                 |         |
| 46.887450       | 10.4                     | 1000.0          | 120.000         | 111.0       | V            | 270.0         | 13.3       | 19.6        | 30.0                 |         |
| 52.867800       | 9.4                      | 1000.0          | 120.000         | 170.0       | H            | 100.0         | 13.1       | 20.6        | 30.0                 |         |
| 735.162300      | 20.9                     | 1000.0          | 120.000         | 98.0        | V            | 272.0         | 23.3       | 15.1        | 36.0                 |         |
| 826.775400      | 21.7                     | 1000.0          | 120.000         | 170.0       | H            | 100.0         | 24.2       | 14.3        | 36.0                 |         |
| 932.493150      | 22.7                     | 1000.0          | 120.000         | 170.0       | H            | 190.0         | 25.3       | 13.3        | 36.0                 |         |

**Plot 7:** 1 GHz to 12.75 GHz, 5240 MHz, vertical & horizontal polarization**Plot 8:** 12 GHz to 18 GHz, 5240 MHz, vertical & horizontal polarization

**Plot 9:** 18 GHz to 26 GHz, 5240 MHz, vertical & horizontal polarization**Plot 10:** 26 GHz to 40 GHz, 5240 MHz, vertical & horizontal polarization

**Plot 11:** 30 MHz to 1 GHz, 5260 MHz, vertical & horizontal polarization

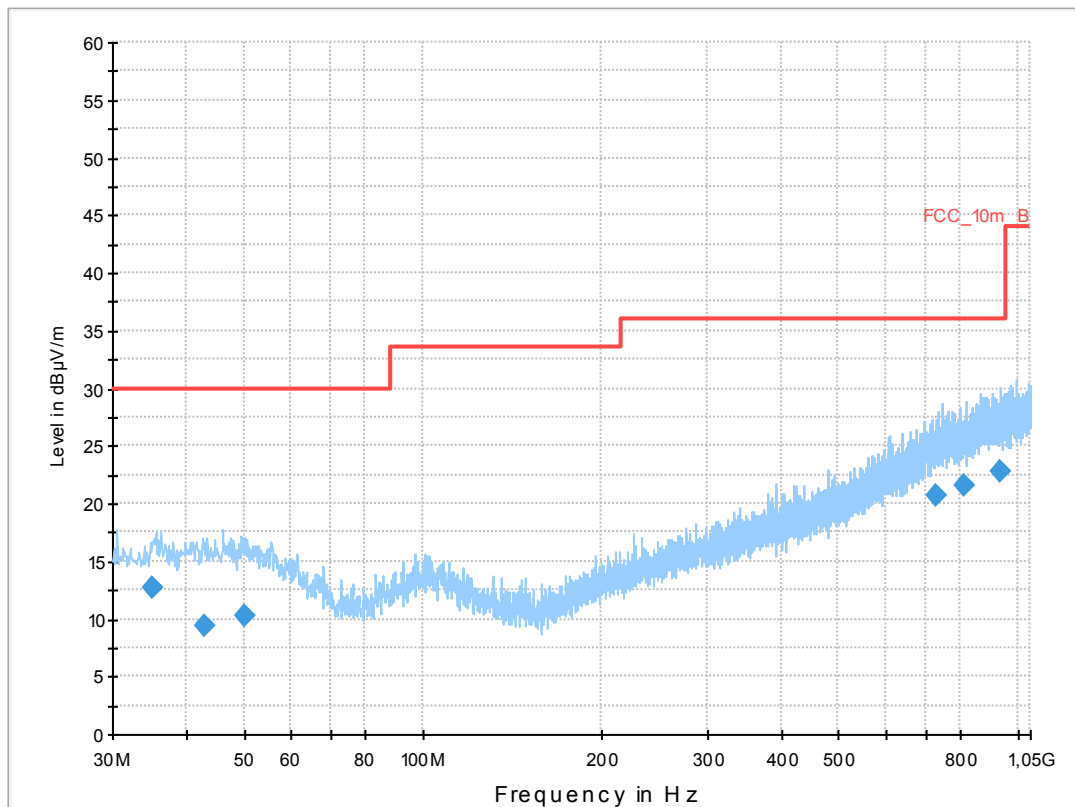
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan a-mode tx ch 52  
 Operator Name: Hennemann  
 Comment: battery powered

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

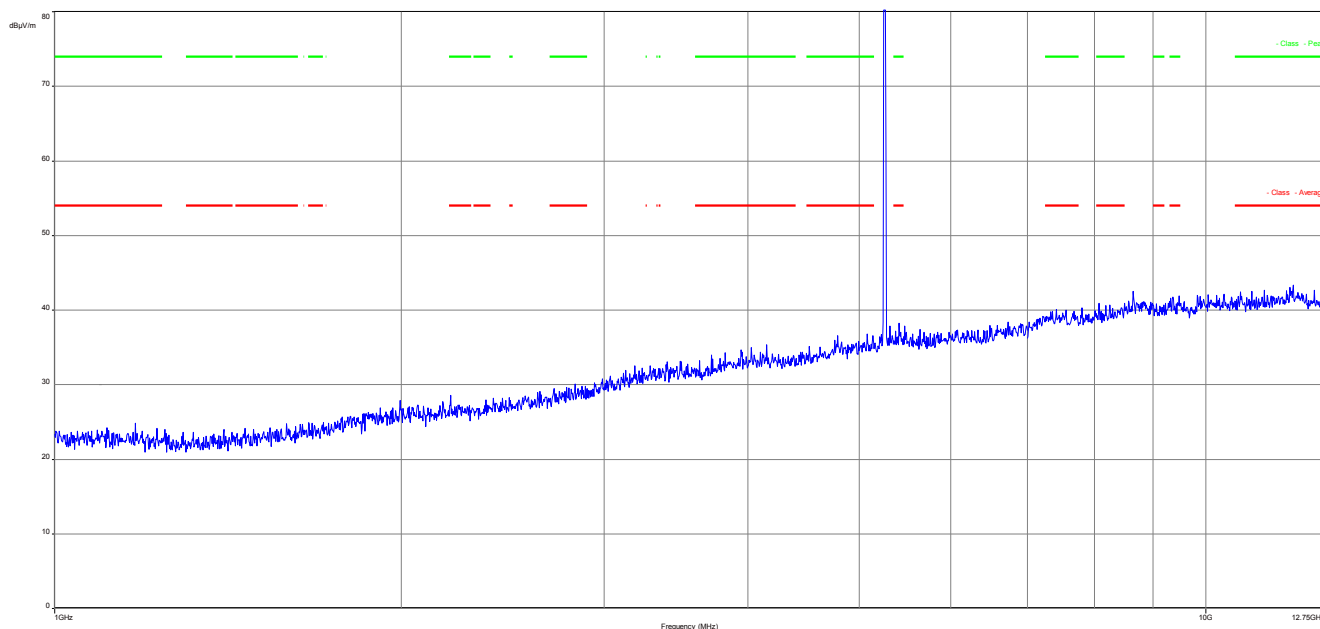
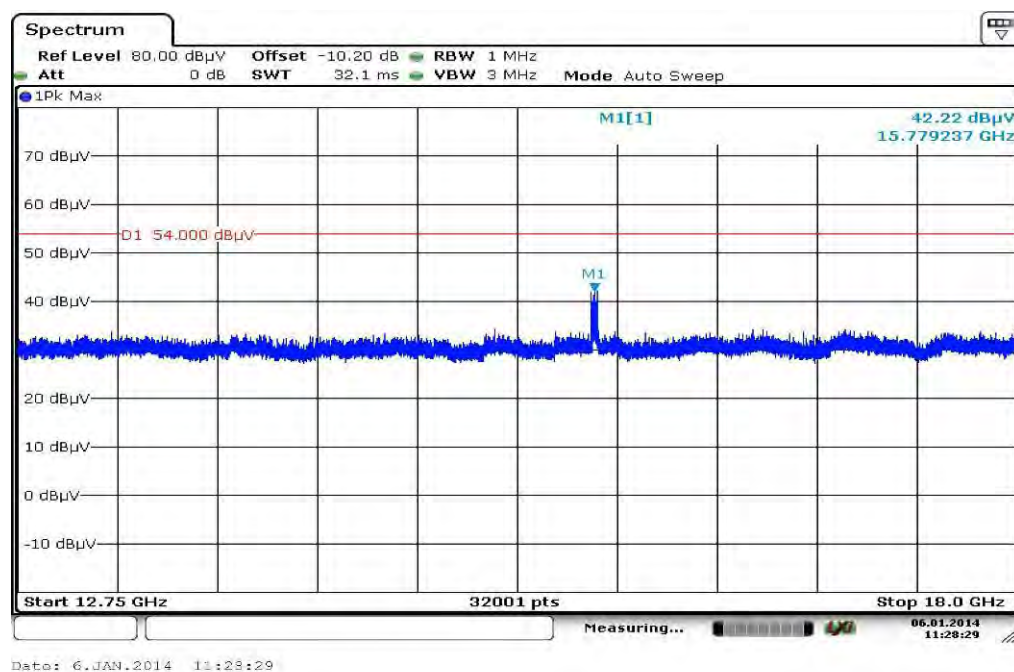
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

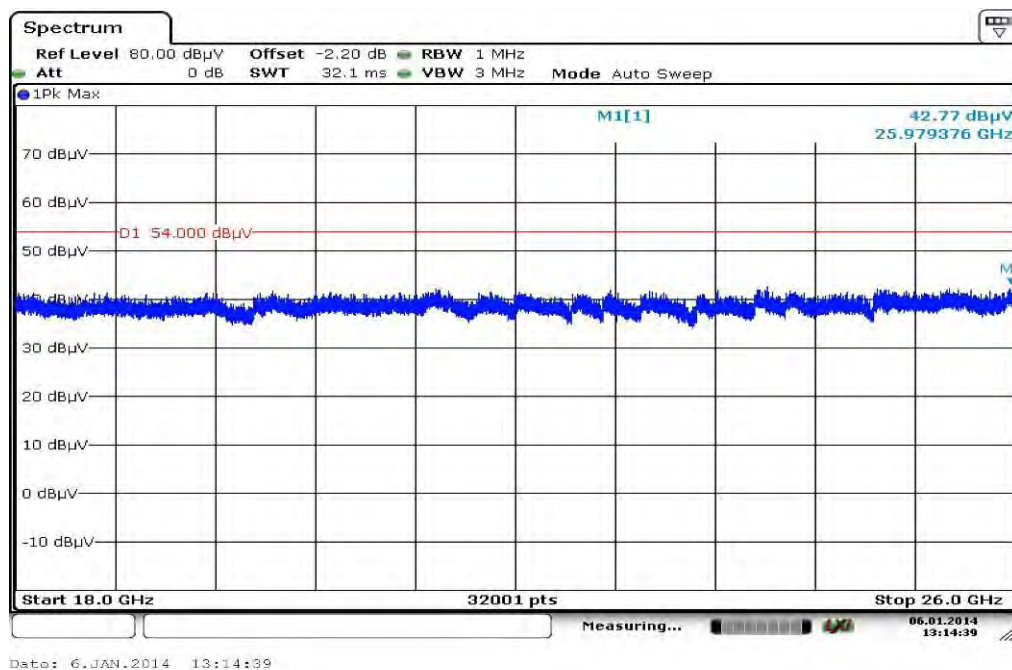
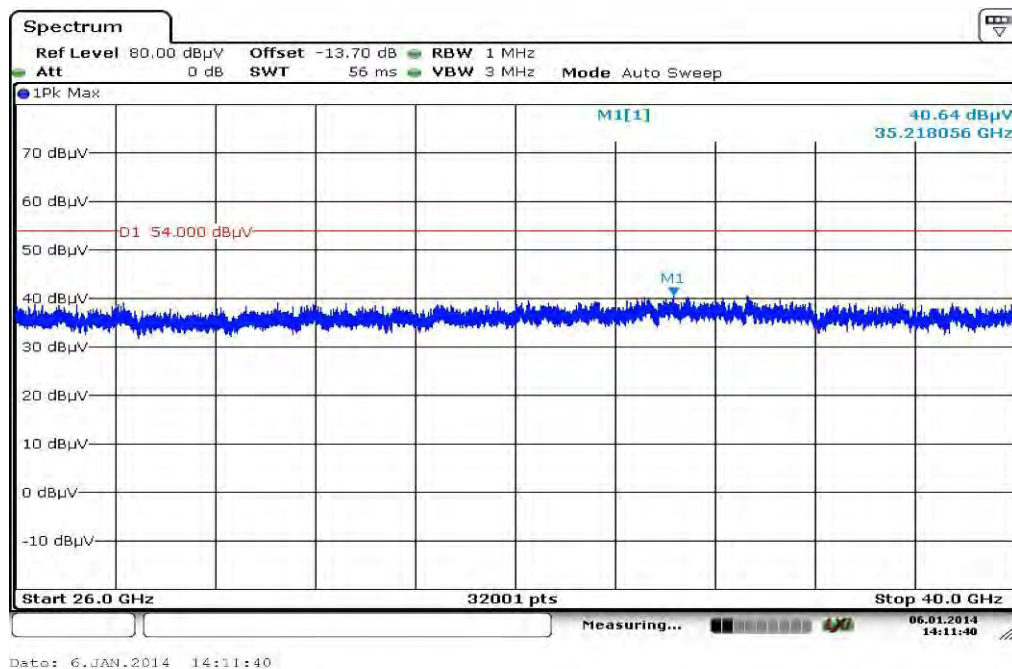
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 35.002950       | 12.7                     | 1000.0          | 120.000         | 120.0       | V            | 80.0          | 13.0       | 17.4        | 30.0                 |         |
| 42.869100       | 9.4                      | 1000.0          | 120.000         | 170.0       | H            | 100.0         | 13.3       | 20.6        | 30.0                 |         |
| 49.914600       | 10.2                     | 1000.0          | 120.000         | 170.0       | V            | 280.0         | 13.4       | 19.8        | 30.0                 |         |
| 731.244750      | 20.7                     | 1000.0          | 120.000         | 170.0       | V            | 265.0         | 23.2       | 15.3        | 36.0                 |         |
| 815.622000      | 21.5                     | 1000.0          | 120.000         | 142.0       | V            | 2.0           | 24.0       | 14.5        | 36.0                 |         |
| 932.273250      | 22.7                     | 1000.0          | 120.000         | 98.0        | V            | 270.0         | 25.3       | 13.3        | 36.0                 |         |

**Plot 12:** 1 GHz to 12.75 GHz, 5260 MHz, vertical & horizontal polarization**Plot 13:** 12 GHz to 18 GHz, 5260 MHz, vertical & horizontal polarization

**Plot 14:** 18 GHz to 26 GHz, 5260 MHz, vertical & horizontal polarization**Plot 15:** 26 GHz to 40 GHz, 5260 MHz, vertical & horizontal polarization

**Plot 16:** 30 MHz to 1 GHz, 5320 MHz, vertical & horizontal polarization

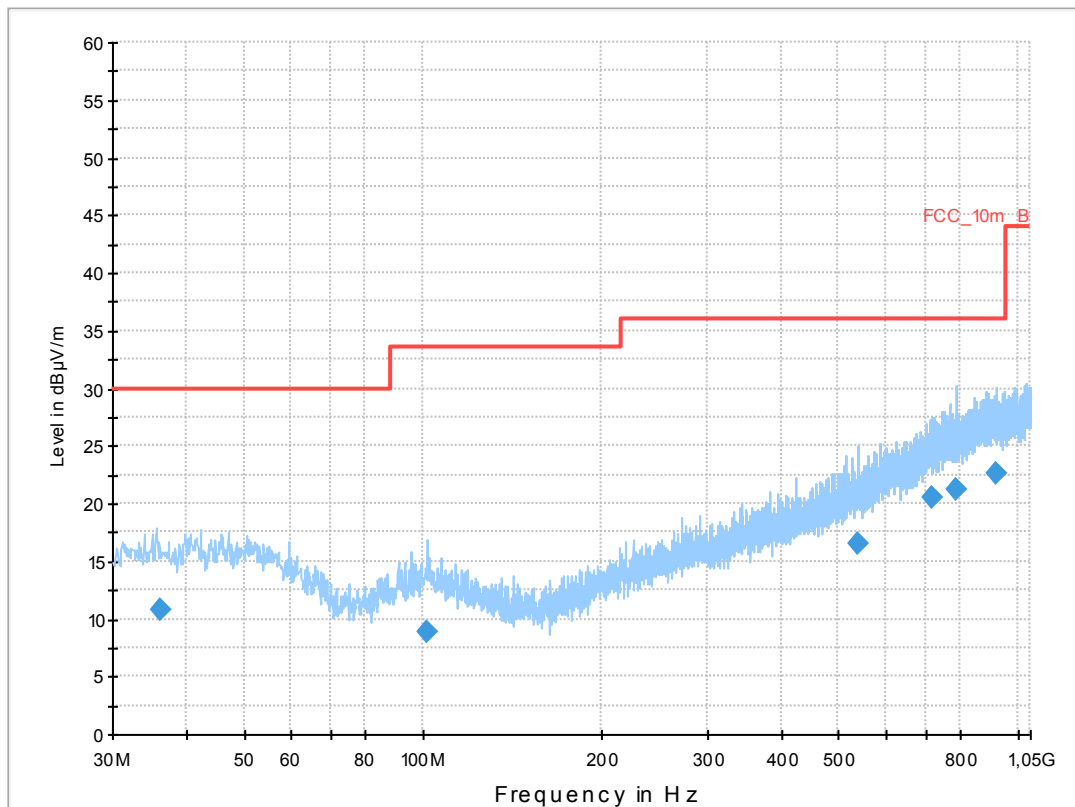
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan a-mode tx ch 64  
 Operator Name: Hennemann  
 Comment: battery powered

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

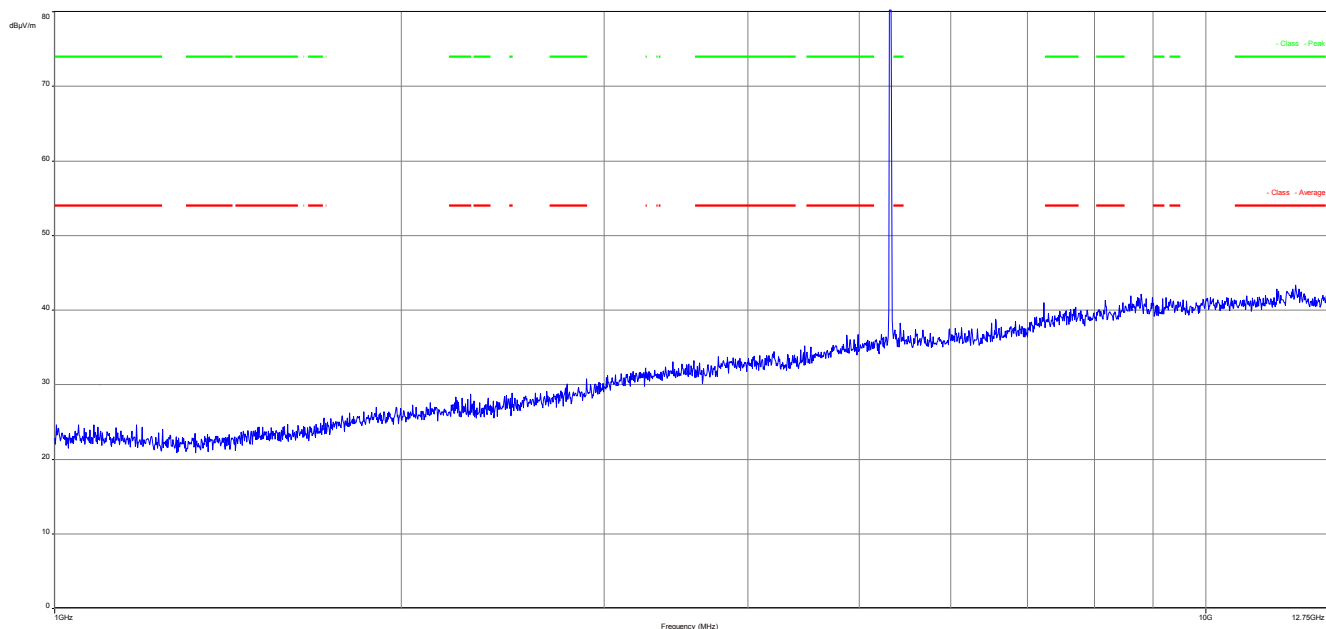
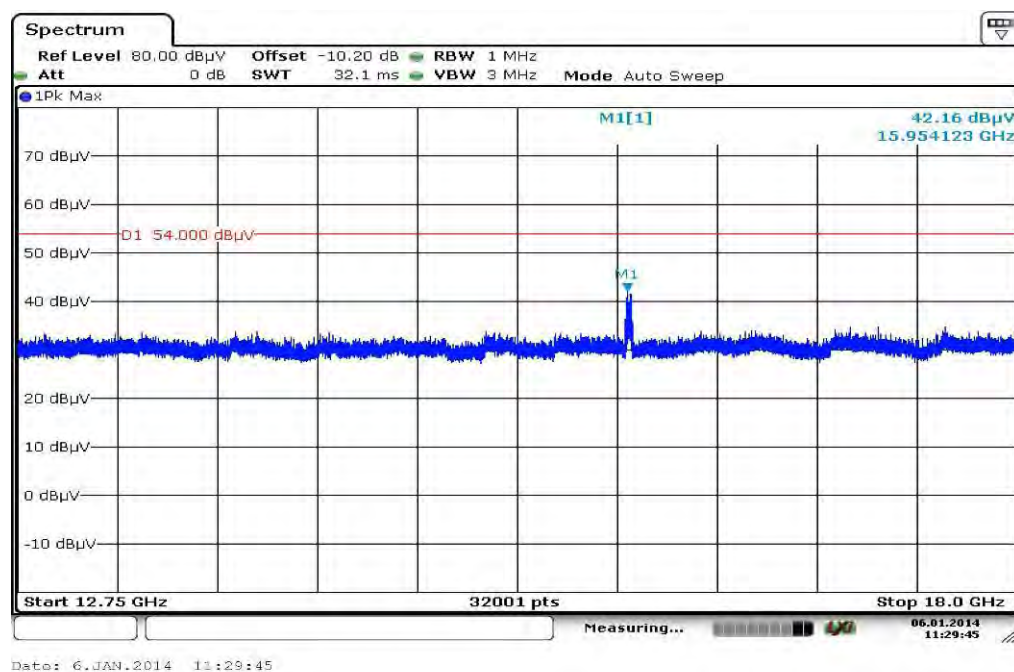
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

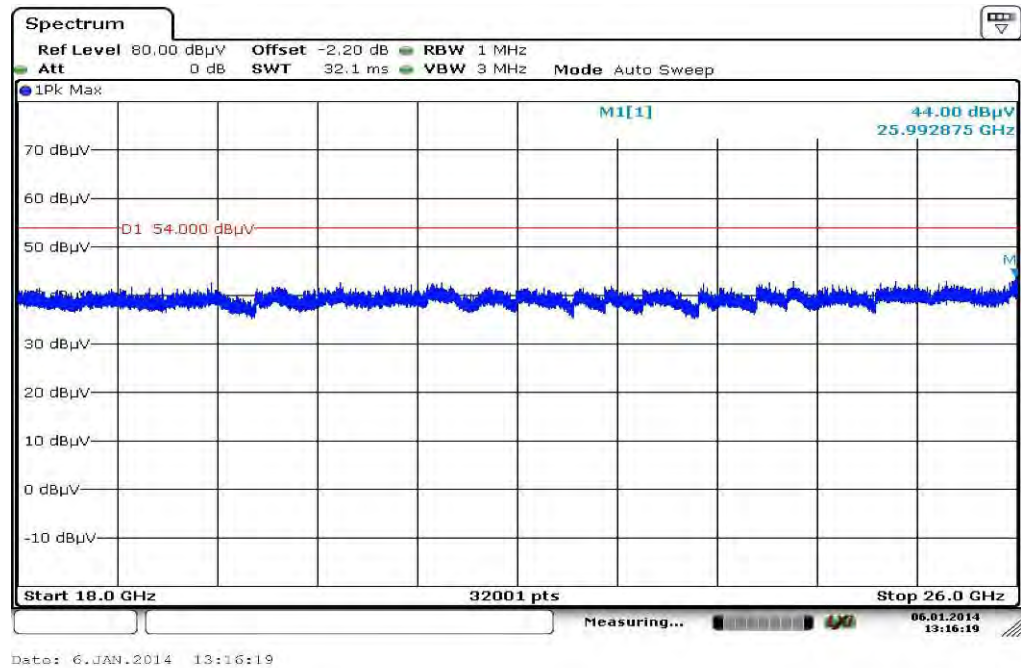
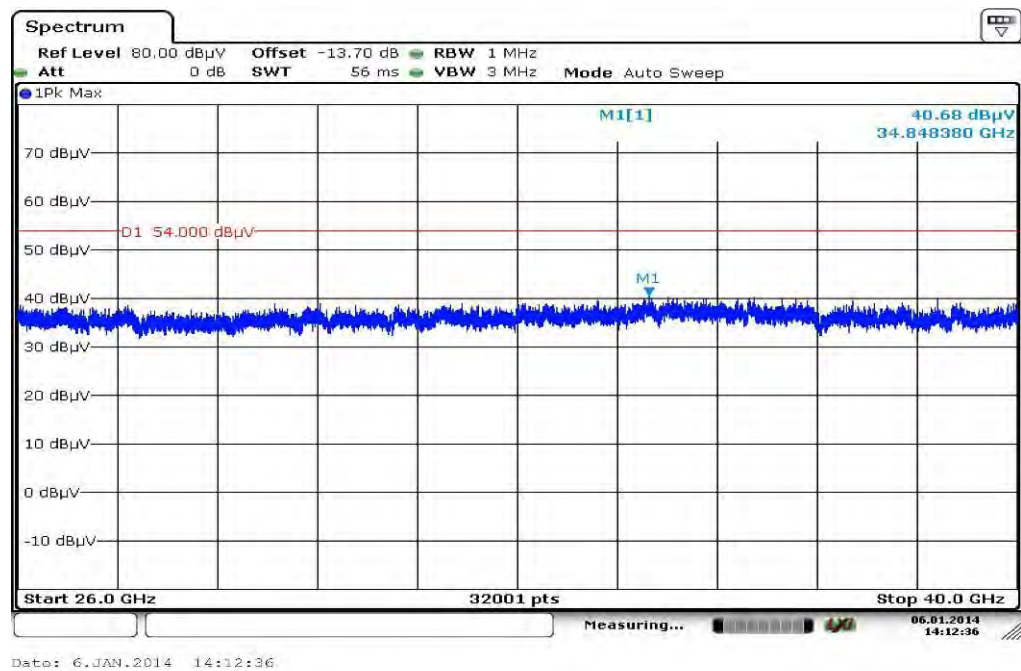
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 36.039900       | 10.8                     | 1000.0          | 120.000         | 155.0       | V            | 261.0         | 13.1       | 19.2        | 30.0                 |         |
| 101.722200      | 8.9                      | 1000.0          | 120.000         | 170.0       | V            | 190.0         | 11.7       | 24.6        | 33.5                 |         |
| 538.823400      | 16.5                     | 1000.0          | 120.000         | 111.0       | H            | 10.0          | 19.2       | 19.5        | 36.0                 |         |
| 719.757600      | 20.6                     | 1000.0          | 120.000         | 170.0       | H            | 10.0          | 23.0       | 15.4        | 36.0                 |         |
| 788.410050      | 21.2                     | 1000.0          | 120.000         | 111.0       | V            | 178.0         | 23.8       | 14.8        | 36.0                 |         |
| 919.756800      | 22.7                     | 1000.0          | 120.000         | 170.0       | V            | 81.0          | 25.3       | 13.3        | 36.0                 |         |

**Plot 17:** 1 GHz to 12.75 GHz, 5320 MHz, vertical & horizontal polarization**Plot 18:** 12 GHz to 18 GHz, 5320 MHz, vertical & horizontal polarization

**Plot 19:** 18 GHz to 26 GHz, 5320 MHz, vertical & horizontal polarization**Plot 20:** 26 GHz to 40 GHz, 5320 MHz, vertical & horizontal polarization

**Plot 21:** 30 MHz to 1 GHz, 5500 MHz, vertical & horizontal polarization

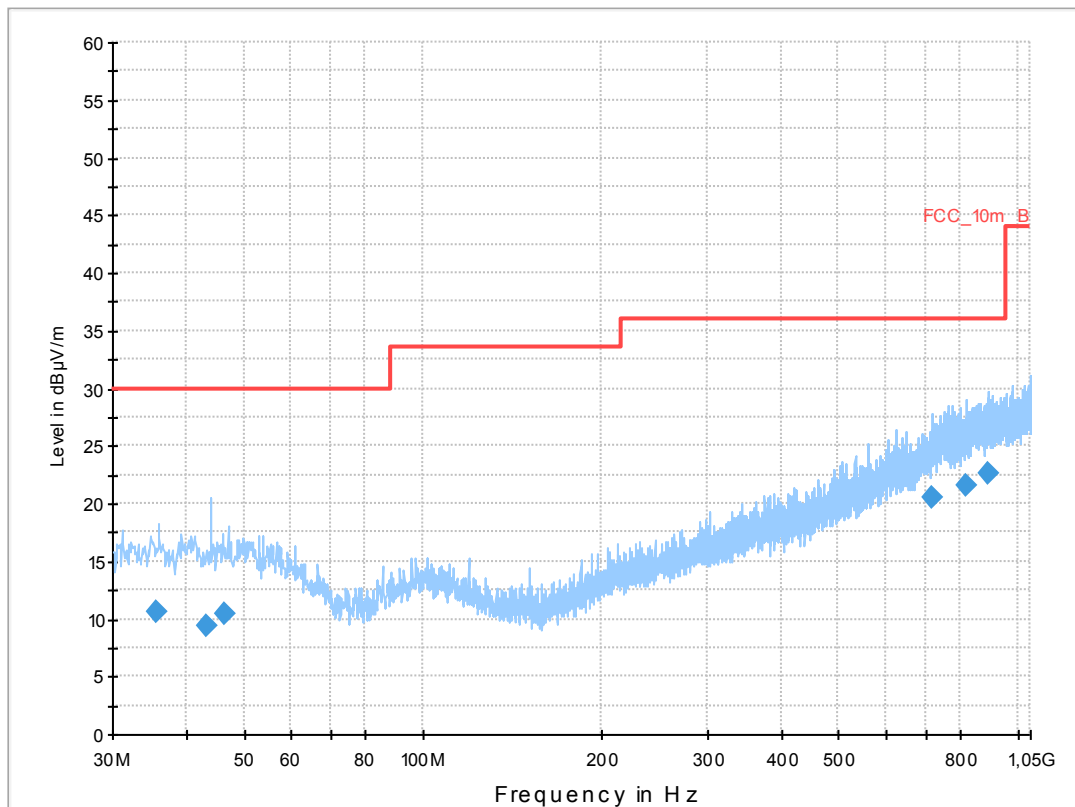
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan a-mode tx ch 100  
 Operator Name: Hennemann  
 Comment: battery powered

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

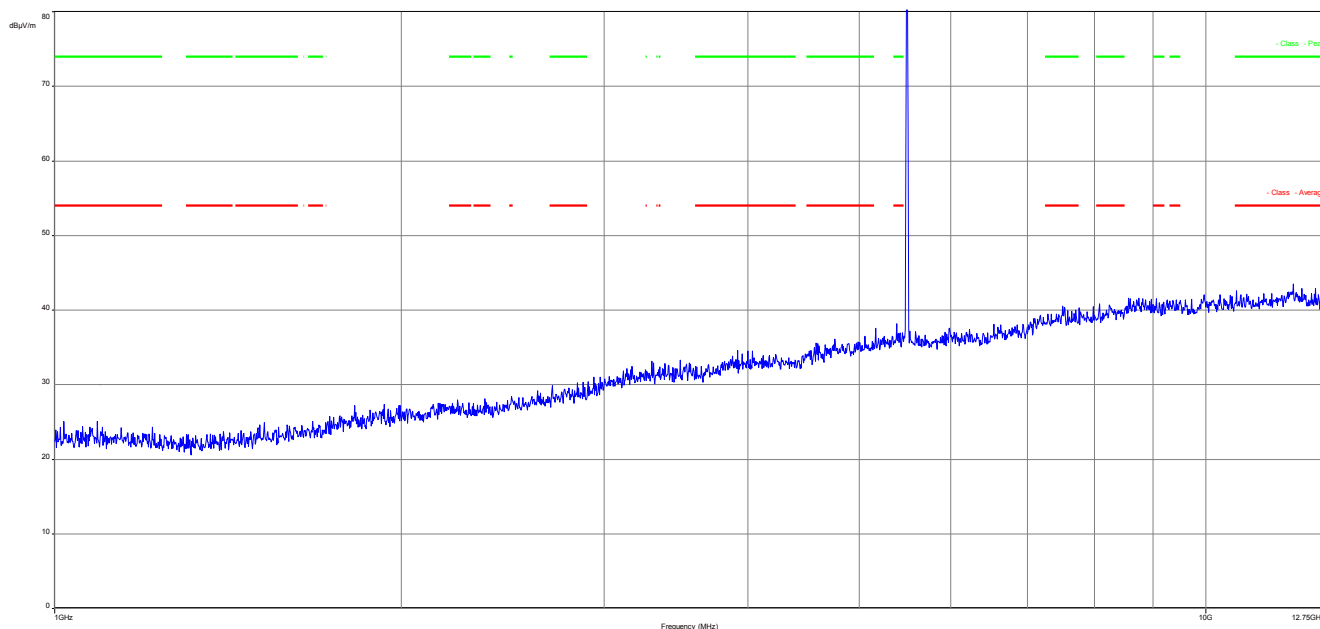
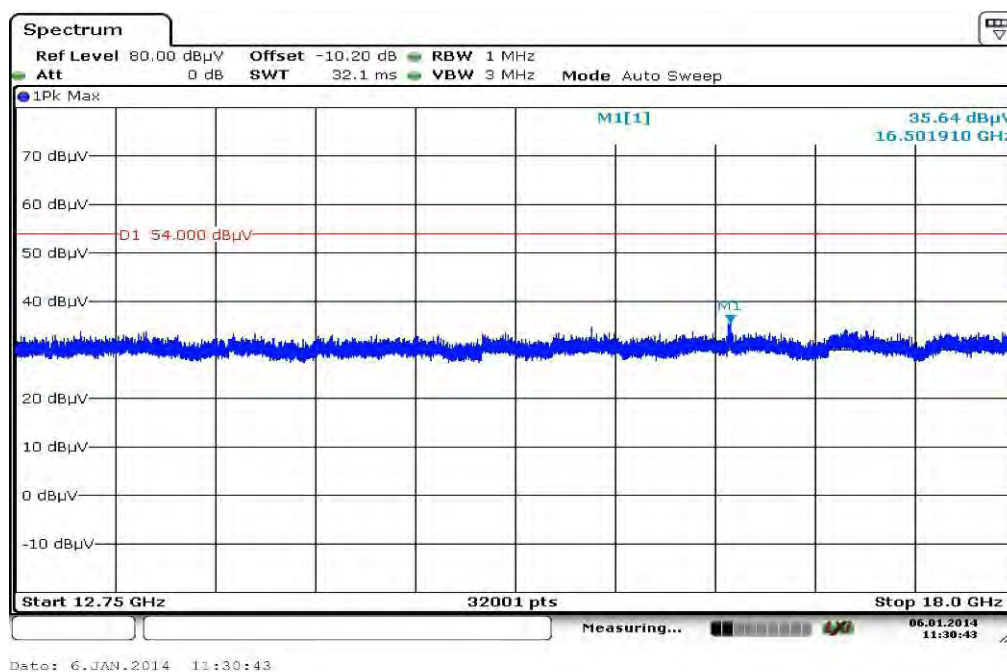
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

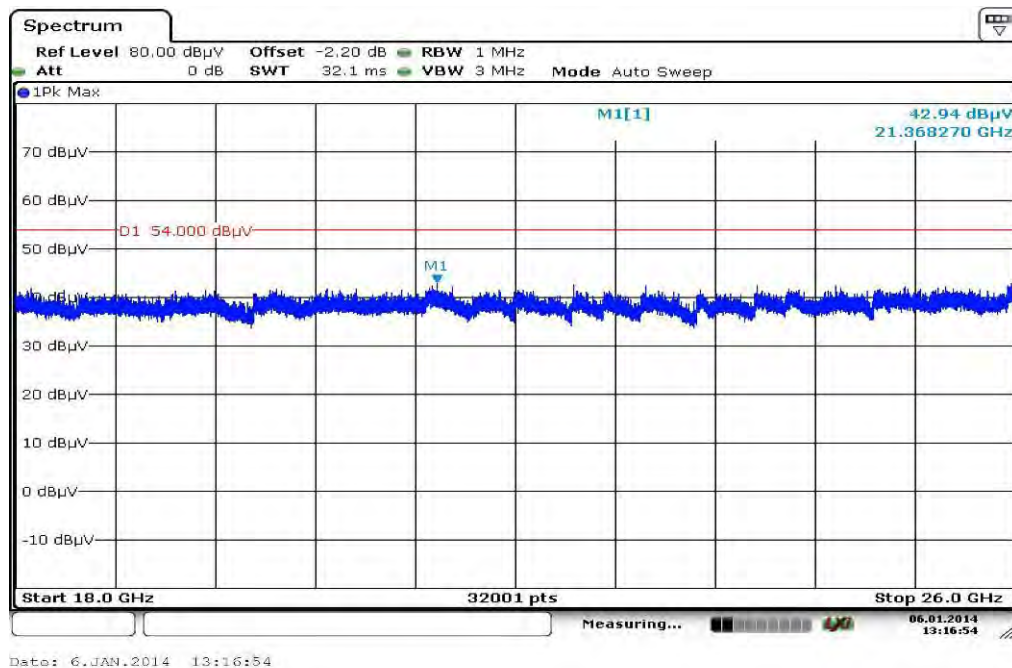
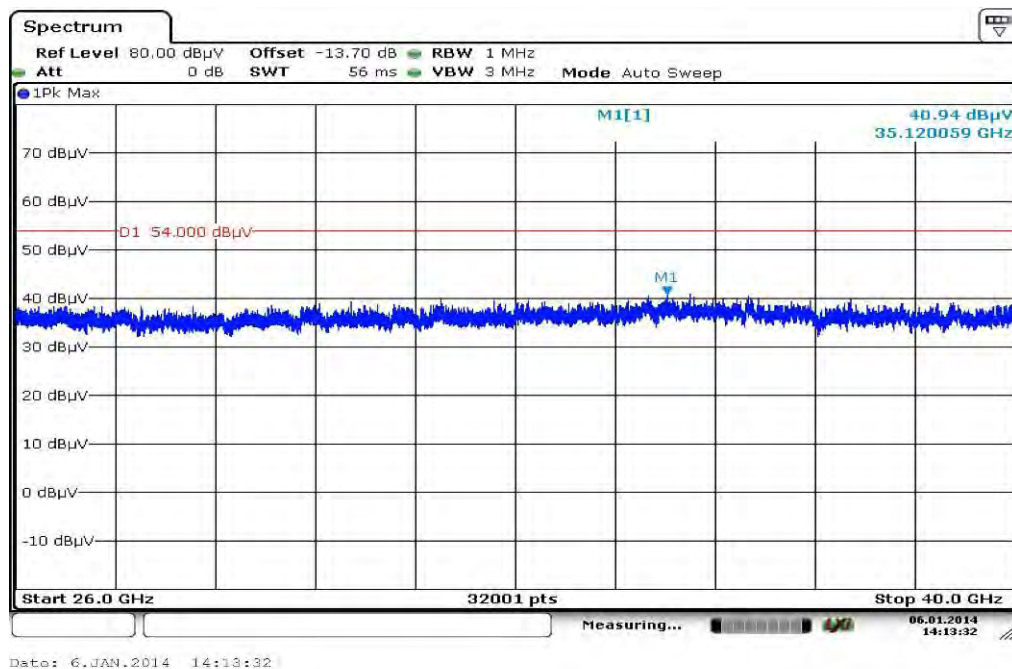
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 35.678250       | 10.7                     | 1000.0          | 120.000         | 170.0       | H            | 190.0         | 13.1       | 19.3        | 30.0                 |         |
| 43.345200       | 9.4                      | 1000.0          | 120.000         | 112.0       | V            | 190.0         | 13.3       | 20.6        | 30.0                 |         |
| 46.503000       | 10.5                     | 1000.0          | 120.000         | 170.0       | H            | 190.0         | 13.3       | 19.5        | 30.0                 |         |
| 719.086800      | 20.6                     | 1000.0          | 120.000         | 135.0       | V            | 190.0         | 22.9       | 15.4        | 36.0                 |         |
| 819.024300      | 21.6                     | 1000.0          | 120.000         | 98.0        | V            | 100.0         | 24.1       | 14.4        | 36.0                 |         |
| 892.898850      | 22.7                     | 1000.0          | 120.000         | 170.0       | H            | 10.0          | 25.1       | 13.3        | 36.0                 |         |

**Plot 22:** 1 GHz to 12.75 GHz, 5500 MHz, vertical & horizontal polarization**Plot 23:** 12 GHz to 18 GHz, 5500 MHz, vertical & horizontal polarization

**Plot 24:** 18 GHz to 26 GHz, 5500 MHz, vertical & horizontal polarization**Plot 25:** 26 GHz to 40 GHz, 5500 MHz, vertical & horizontal polarization

**Plot 26:** 30 MHz to 1 GHz, 5600 MHz, vertical & horizontal polarization

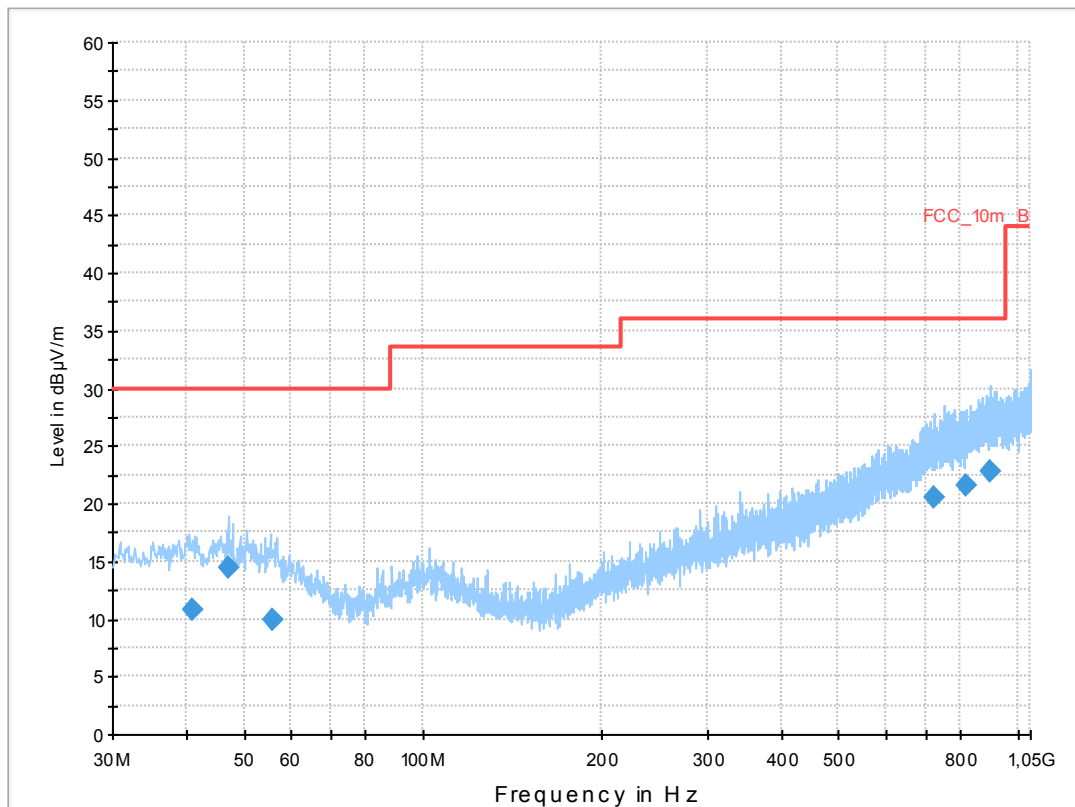
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan a-mode tx ch 120  
 Operator Name: Hennemann  
 Comment: battery powered

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

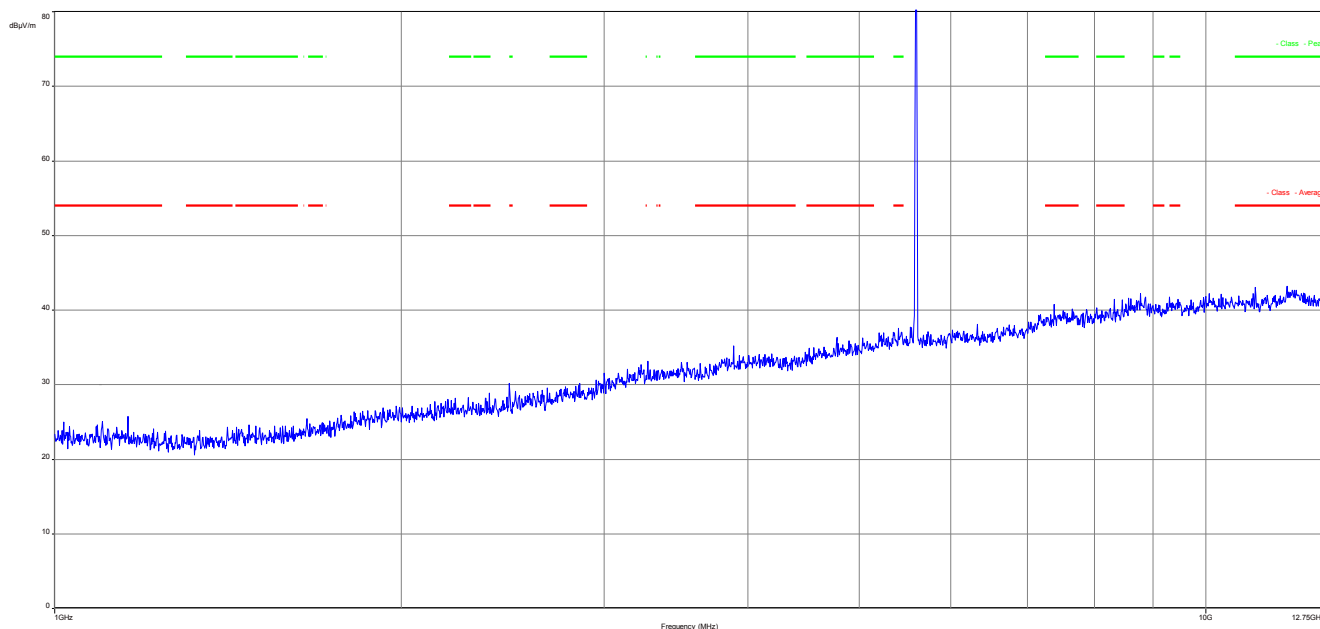
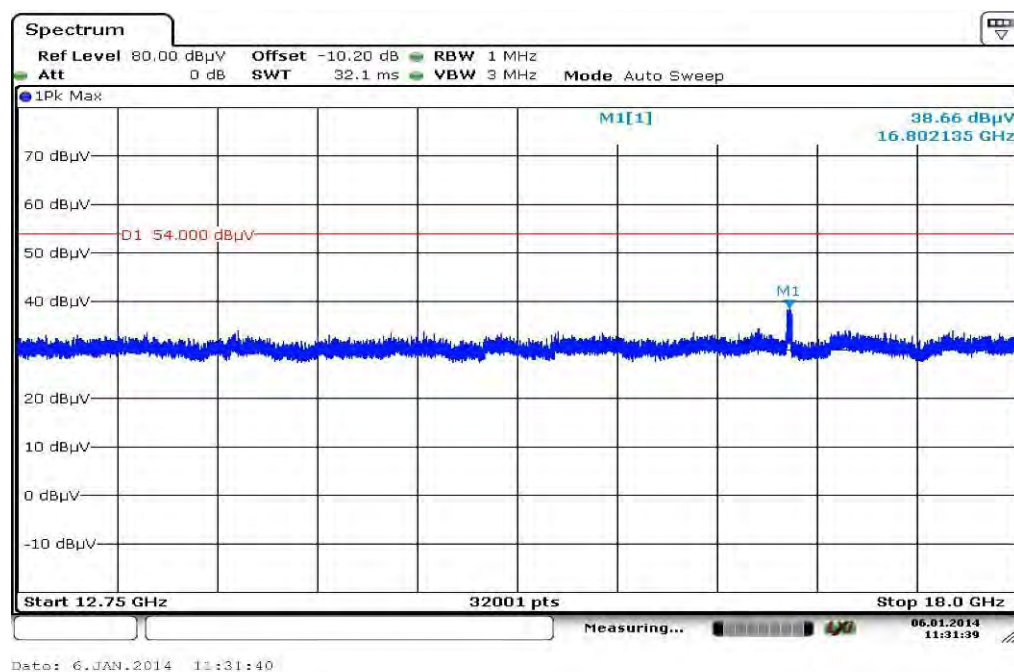
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

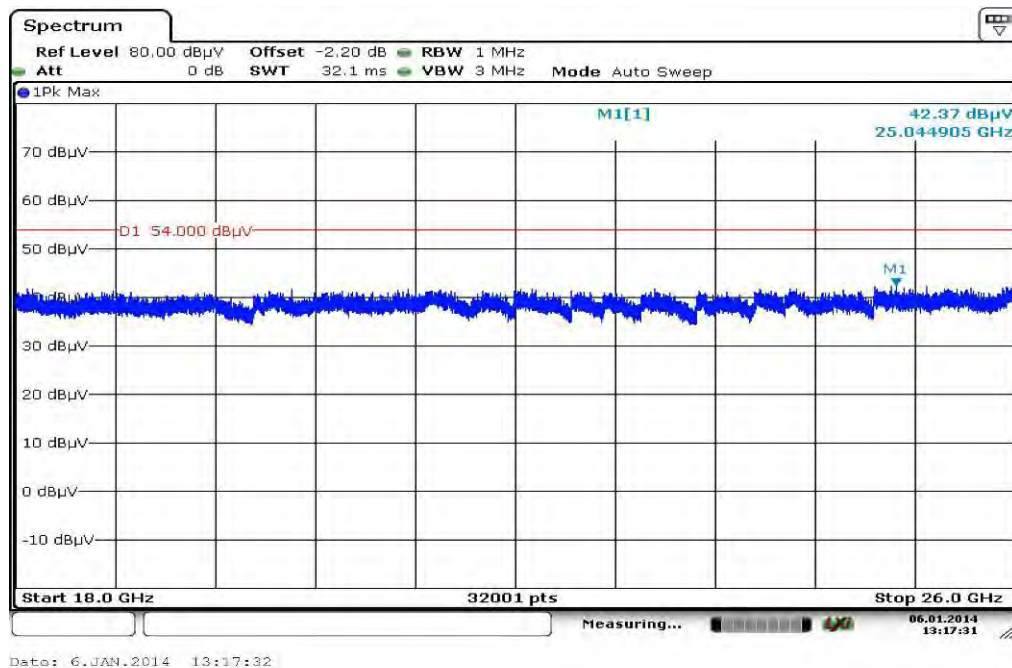
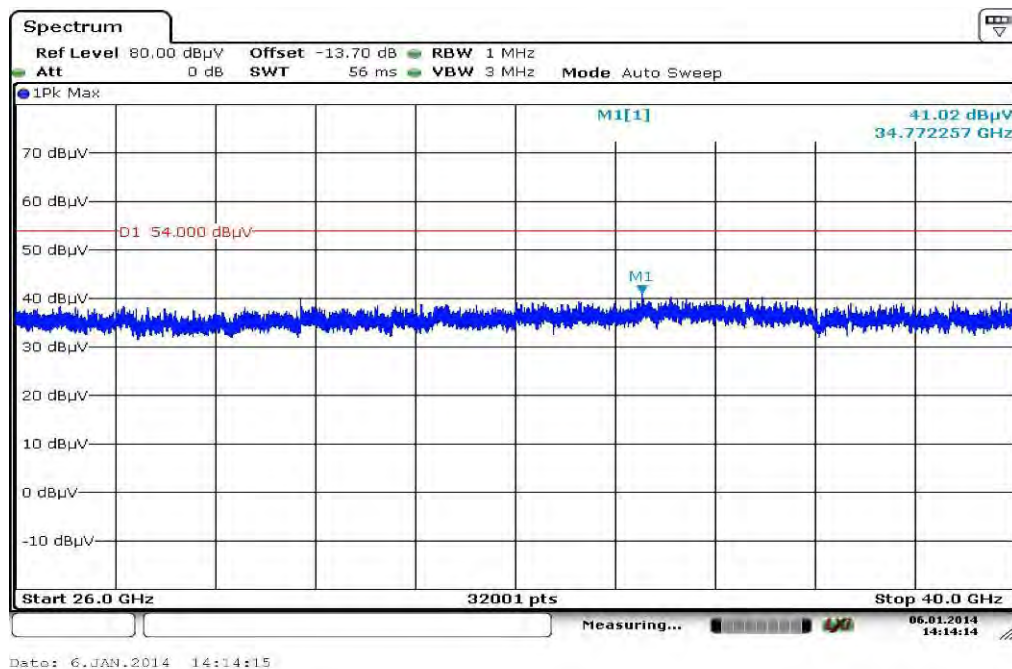
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 40.942800       | 10.8                     | 1000.0          | 120.000         | 153.0       | H            | 190.0         | 13.4       | 19.2        | 30.0                 |         |
| 47.013900       | 14.4                     | 1000.0          | 120.000         | 105.0       | V            | 178.0         | 13.3       | 15.6        | 30.0                 |         |
| 55.816200       | 9.9                      | 1000.0          | 120.000         | 146.0       | H            | 170.0         | 12.7       | 20.1        | 30.0                 |         |
| 724.034550      | 20.6                     | 1000.0          | 120.000         | 170.0       | V            | 261.0         | 23.1       | 15.4        | 36.0                 |         |
| 816.286800      | 21.5                     | 1000.0          | 120.000         | 170.0       | H            | 270.0         | 24.0       | 14.5        | 36.0                 |         |
| 899.902050      | 22.7                     | 1000.0          | 120.000         | 144.0       | V            | 81.0          | 25.2       | 13.3        | 36.0                 |         |

**Plot 27:** 1 GHz to 12.75 GHz, 5600 MHz, vertical & horizontal polarization**Plot 28:** 12 GHz to 18 GHz, 5600 MHz, vertical & horizontal polarization

**Plot 29:** 18 GHz to 26 GHz, 5600 MHz, vertical & horizontal polarization**Plot 30:** 26 GHz to 40 GHz, 5600 MHz, vertical & horizontal polarization

**Plot 31:** 30 MHz to 1 GHz, 5700 MHz, vertical & horizontal polarization

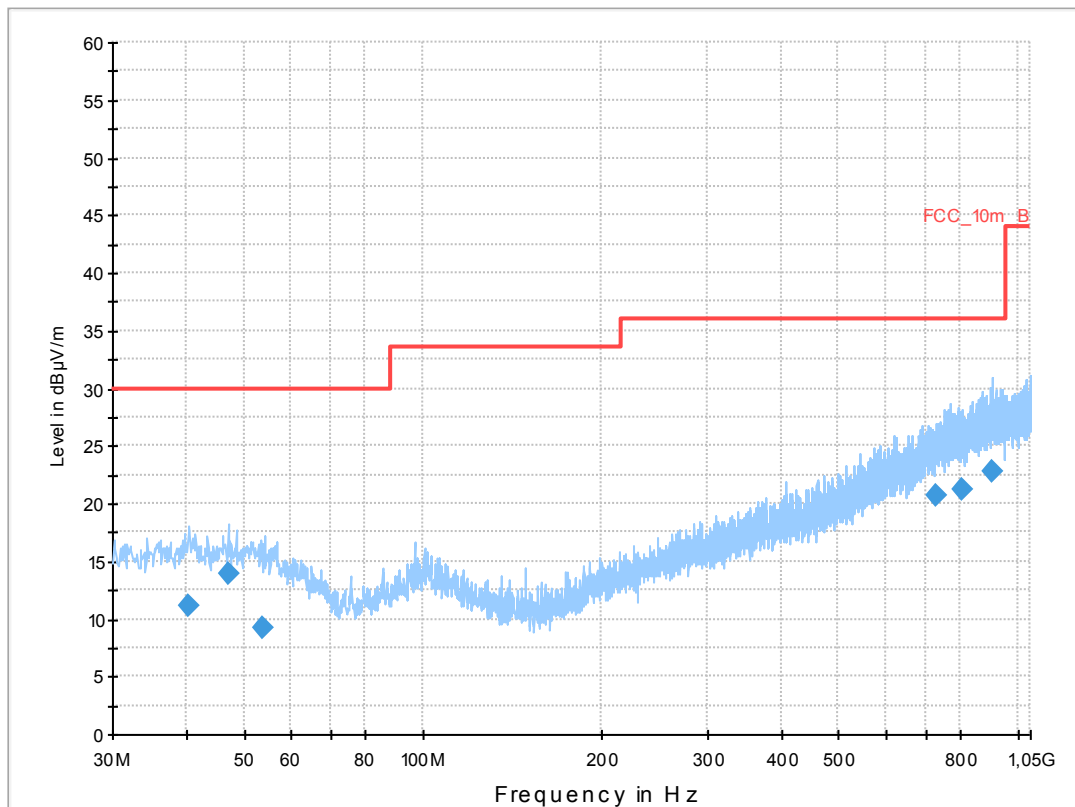
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan a-mode tx ch 140  
 Operator Name: Hennemann  
 Comment: battery powered

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

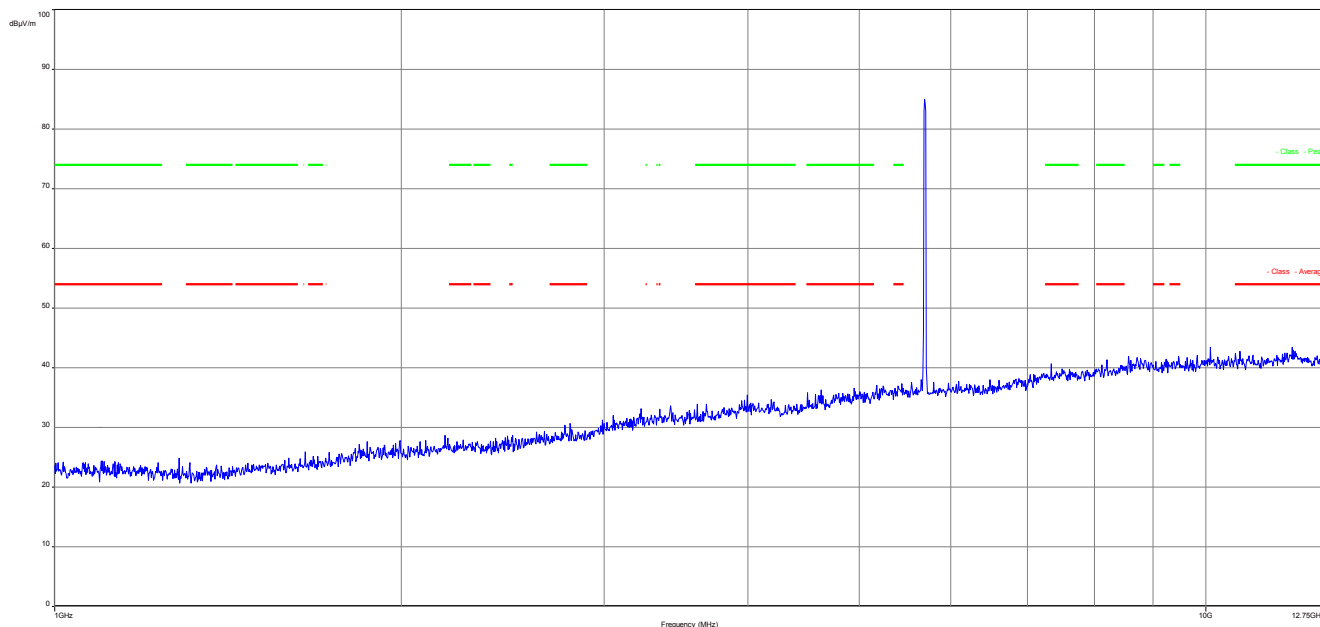
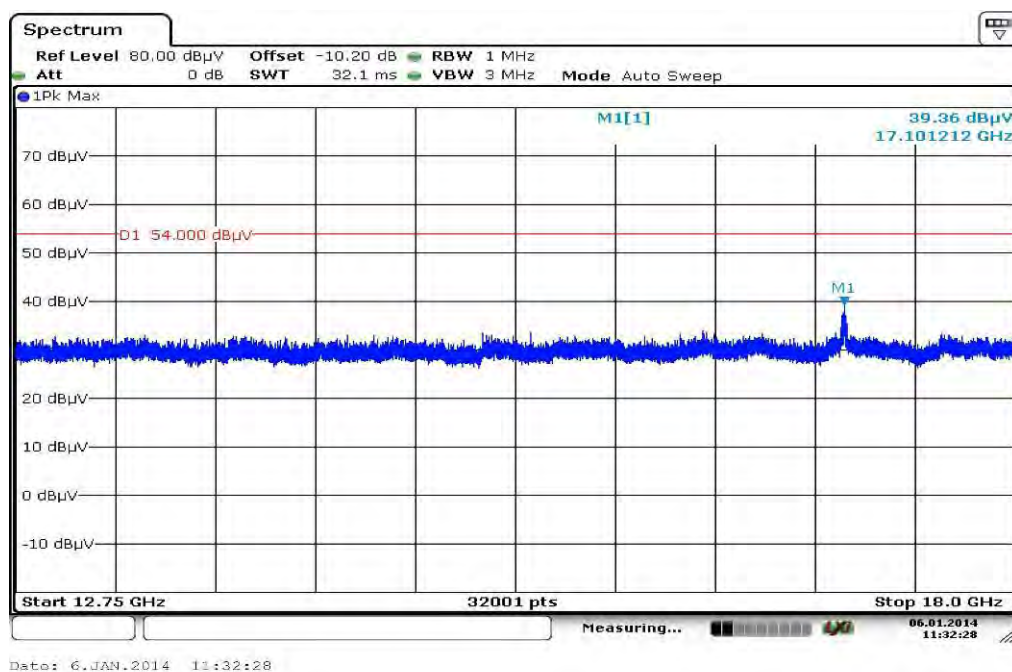
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

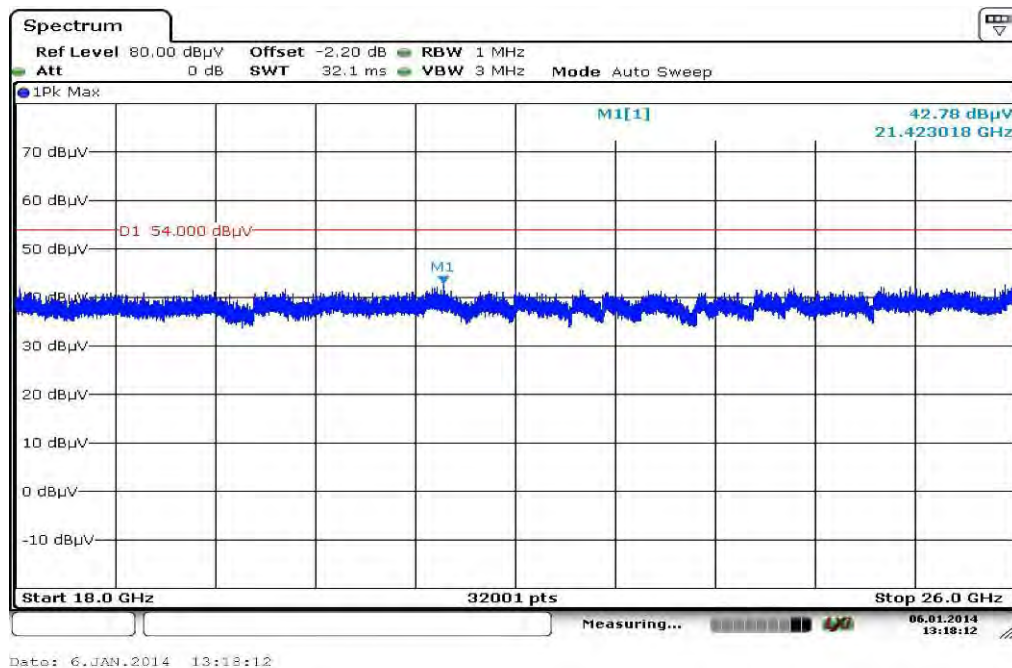
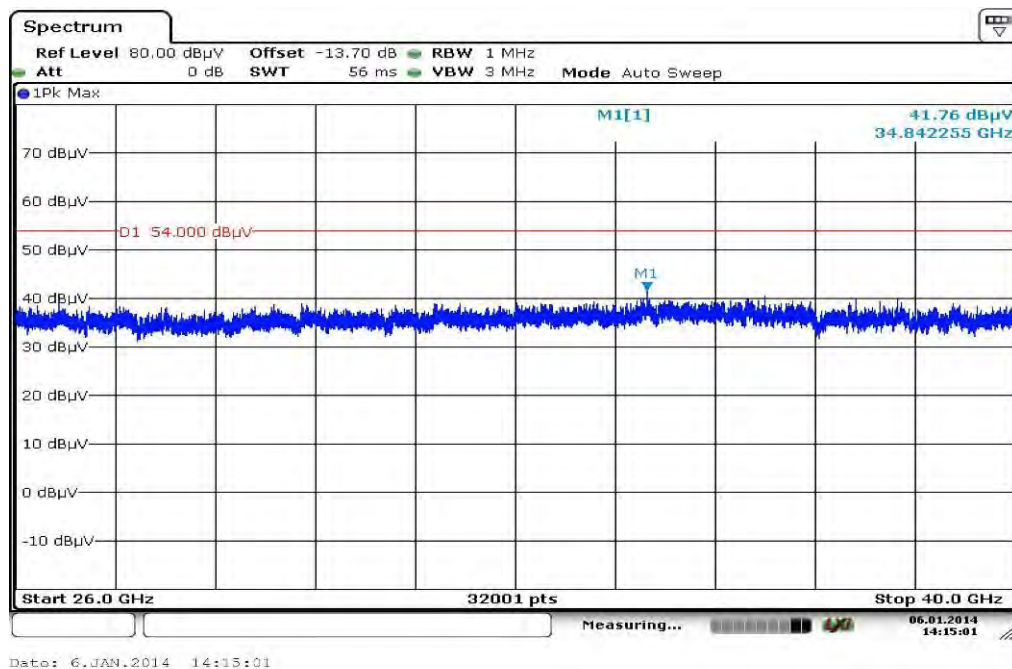
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 40.330050       | 11.0                     | 1000.0          | 120.000         | 170.0       | V            | 81.0          | 13.4       | 19.0        | 30.0                 |         |
| 47.030550       | 13.9                     | 1000.0          | 120.000         | 98.0        | V            | 180.0         | 13.3       | 16.1        | 30.0                 |         |
| 53.583000       | 9.2                      | 1000.0          | 120.000         | 98.0        | H            | 190.0         | 13.0       | 20.8        | 30.0                 |         |
| 726.663750      | 20.7                     | 1000.0          | 120.000         | 170.0       | H            | 268.0         | 23.1       | 15.3        | 36.0                 |         |
| 805.246500      | 21.3                     | 1000.0          | 120.000         | 170.0       | V            | 2.0           | 23.9       | 14.7        | 36.0                 |         |
| 903.104100      | 22.8                     | 1000.0          | 120.000         | 170.0       | V            | 280.0         | 25.2       | 13.2        | 36.0                 |         |

**Plot 32:** 1 GHz to 12.75 GHz, 5700 MHz, vertical & horizontal polarization**Plot 33:** 12 GHz to 18 GHz, 5700 MHz, vertical & horizontal polarization

**Plot 34:** 18 GHz to 26 GHz, 5700 MHz, vertical & horizontal polarization**Plot 35:** 26 GHz to 40 GHz, 5700 MHz, vertical & horizontal polarization

**Plots:** OFDM / ac – mode HT20

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

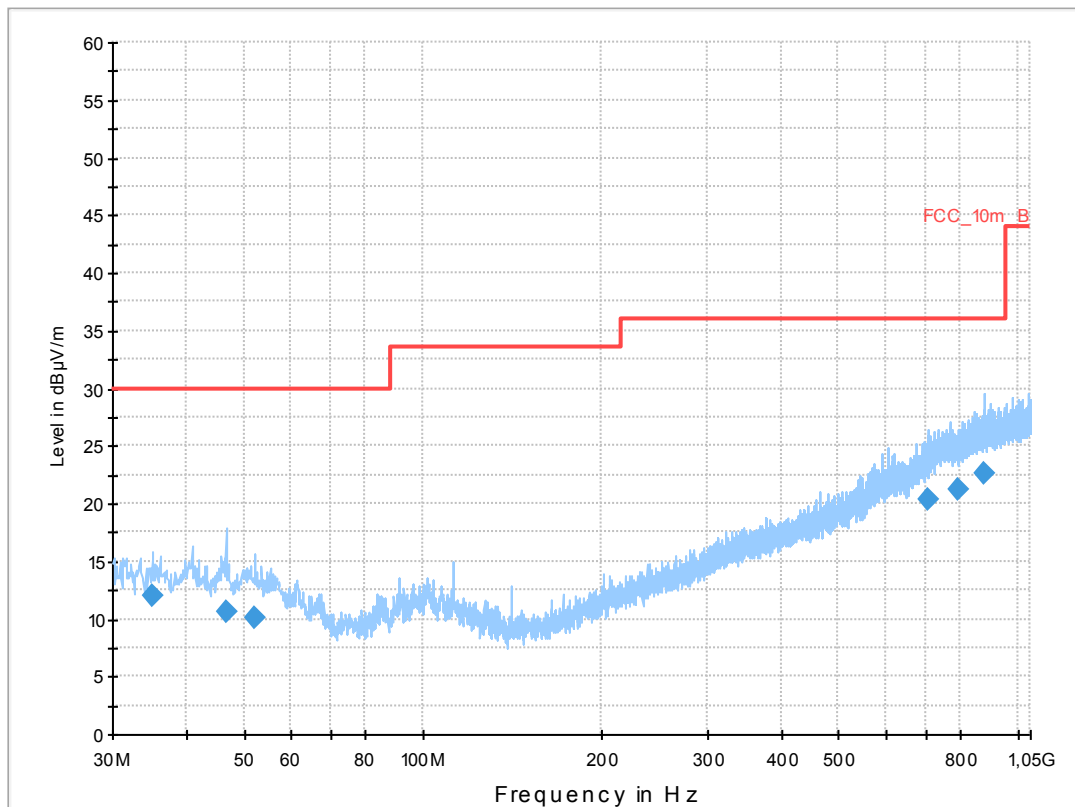
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT20) tx ch 36  
 Operator Name: Hennemann  
 Comment: battery powered

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

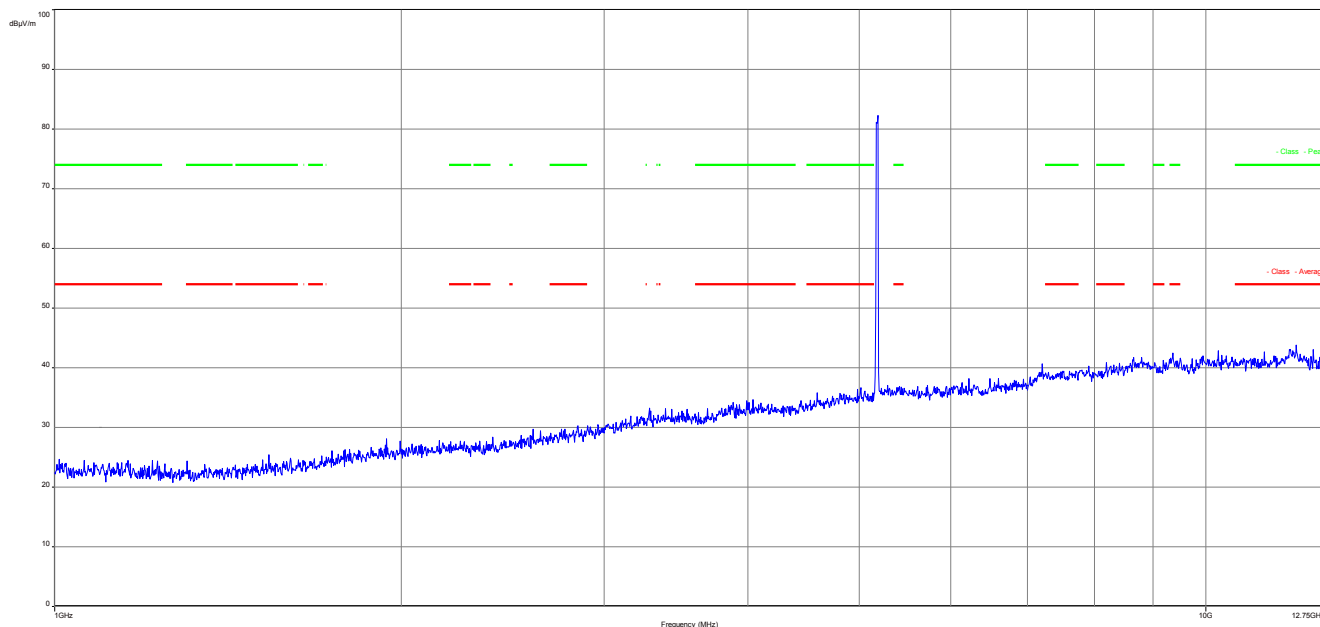
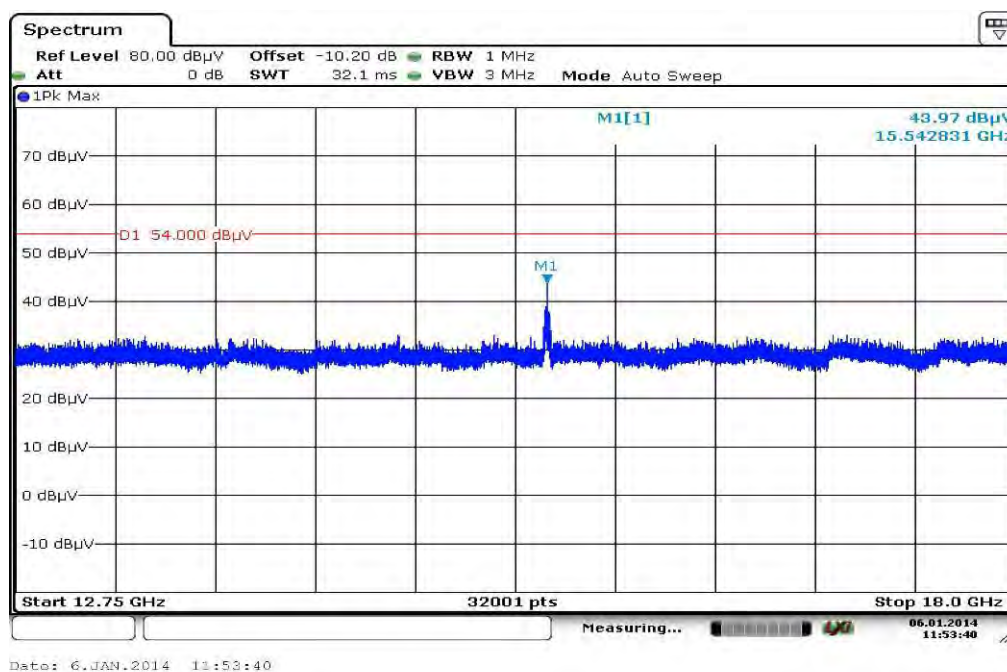
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dB $\mu$ V/m

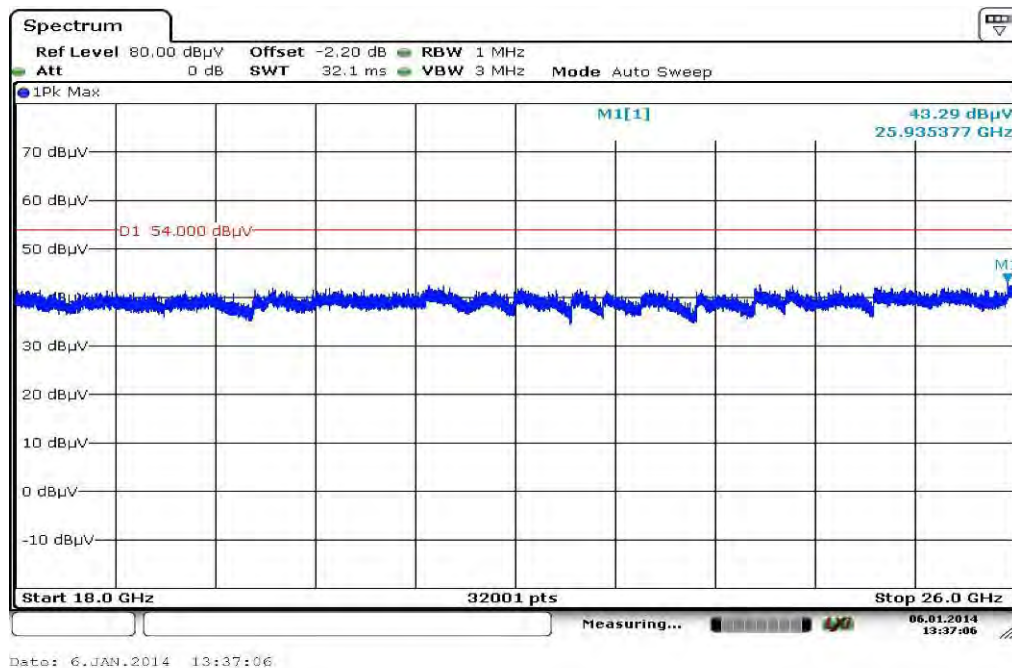
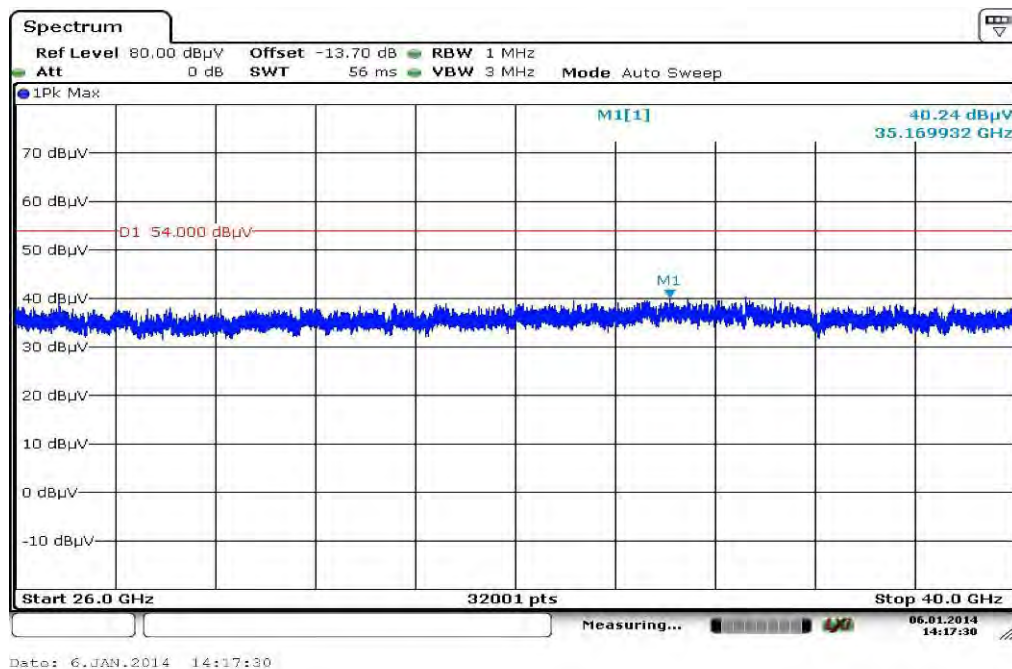
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 35.040000       | 12.0                     | 1000.0          | 120.000         | 195.0       | V            | 35.0          | 13.0       | 18.0        | 30.0                 |         |
| 46.560000       | 10.5                     | 1000.0          | 120.000         | 111.0       | V            | 137.0         | 13.3       | 19.5        | 30.0                 |         |
| 52.080000       | 10.1                     | 1000.0          | 120.000         | 258.0       | V            | 144.0         | 13.2       | 19.9        | 30.0                 |         |
| 707.280000      | 20.3                     | 1000.0          | 120.000         | 270.0       | V            | 46.0          | 22.7       | 15.7        | 36.0                 |         |
| 796.440000      | 21.2                     | 1000.0          | 120.000         | 270.0       | V            | 294.0         | 23.8       | 14.8        | 36.0                 |         |
| 878.760000      | 22.6                     | 1000.0          | 120.000         | 270.0       | H            | 223.0         | 24.9       | 13.4        | 36.0                 |         |

**Plot 2:** 1 GHz to 12.75 GHz, 5180 MHz, vertical & horizontal polarization**Plot 3:** 12 GHz to 18 GHz, 5180 MHz, vertical & horizontal polarization

**Plot 4:** 18 GHz to 26 GHz, 5180 MHz, vertical & horizontal polarization**Plot 5:** 26 GHz to 40 GHz, 5180 MHz, vertical & horizontal polarization

**Plot 6:** 30 MHz to 1 GHz, 5240 MHz, vertical & horizontal polarization

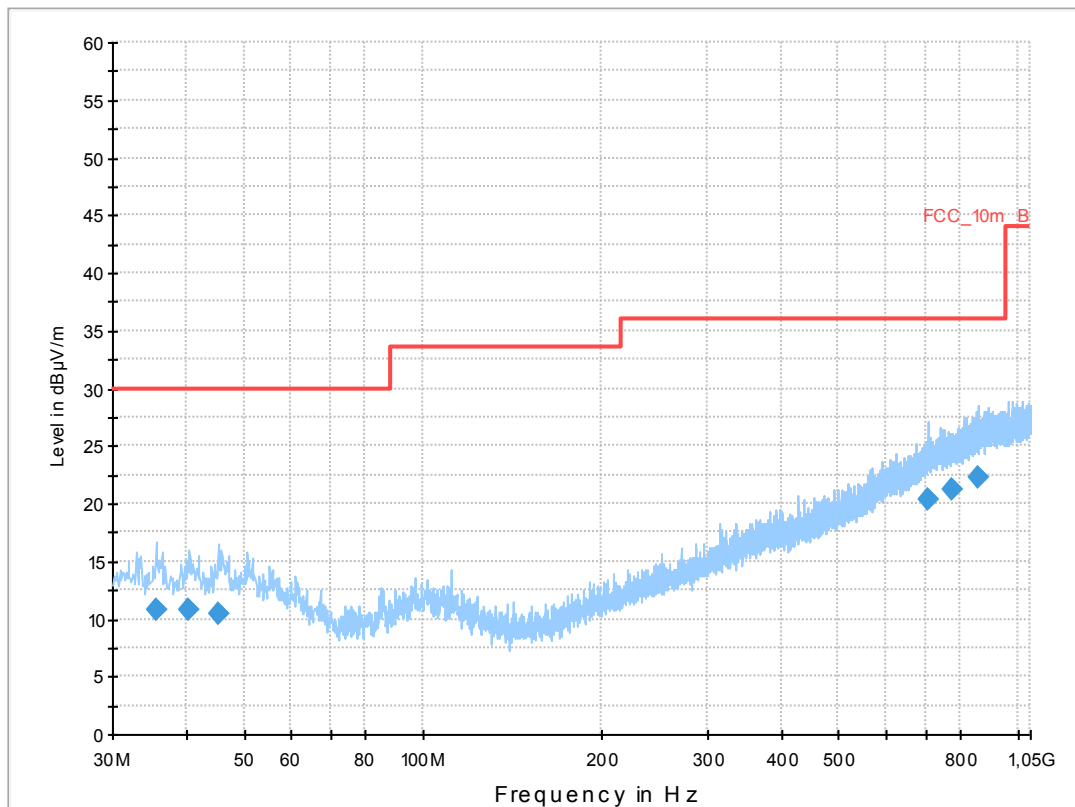
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT20) tx ch 48  
 Operator Name: Hennemann  
 Comment: battery powered

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

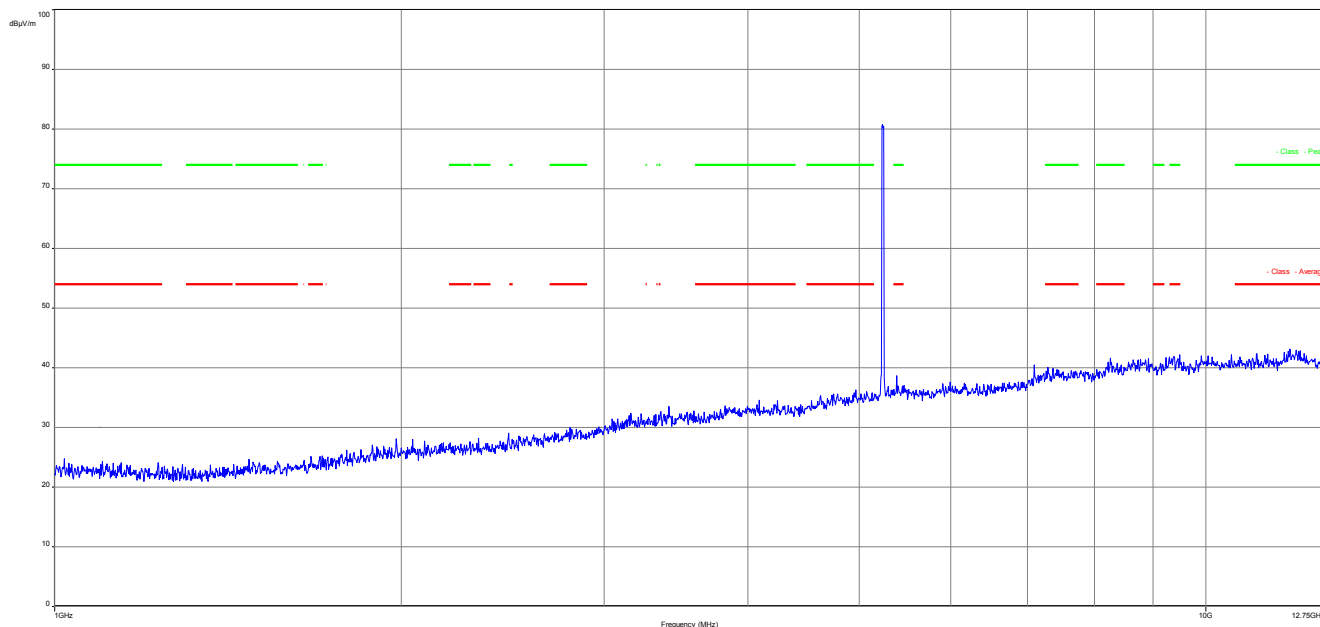
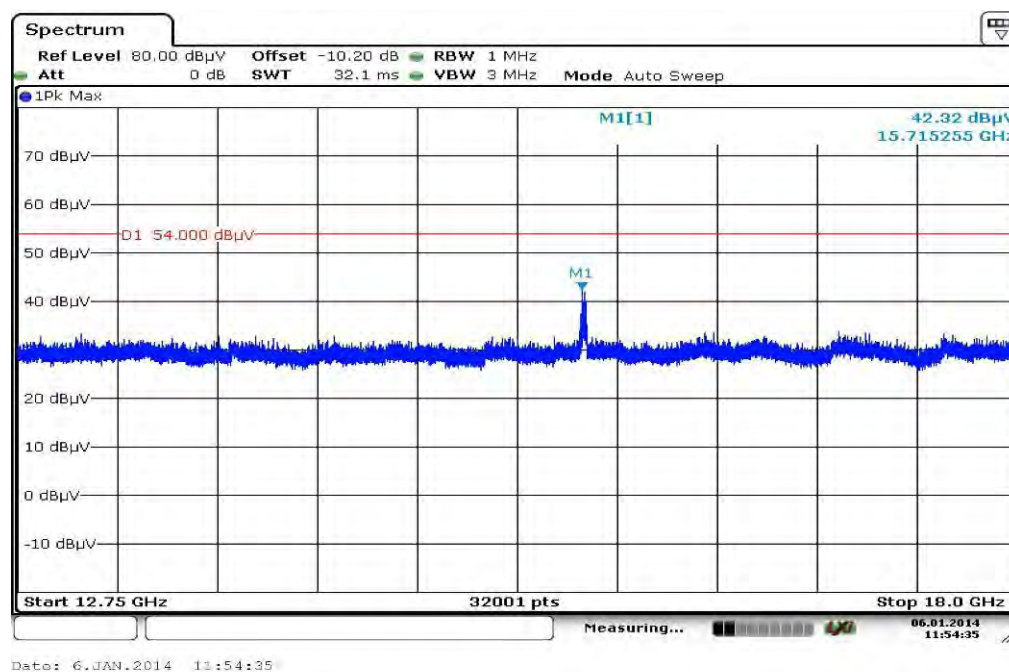
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

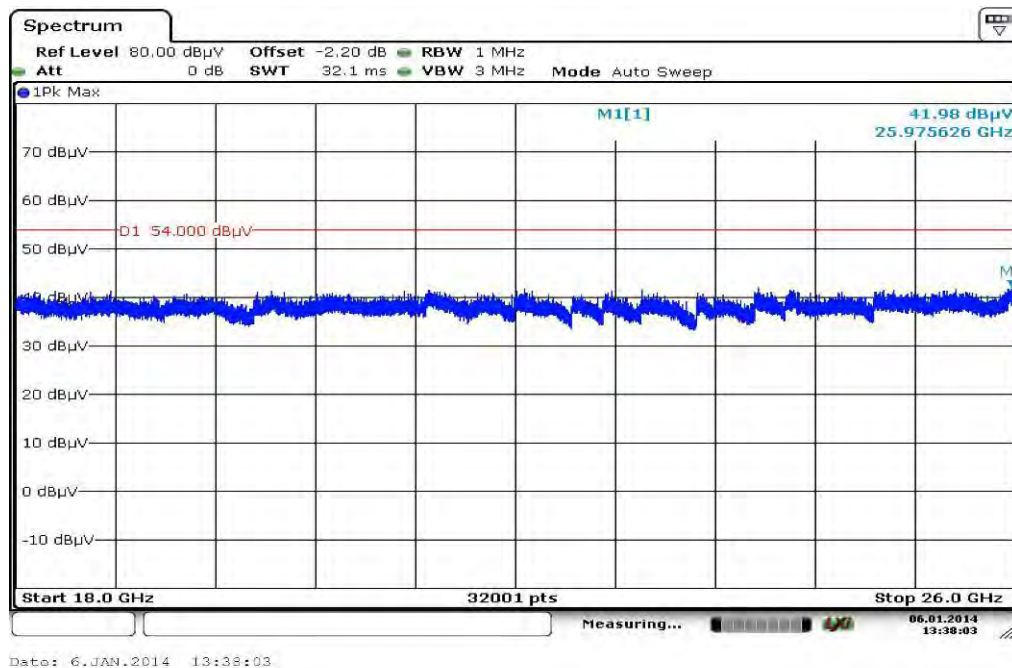
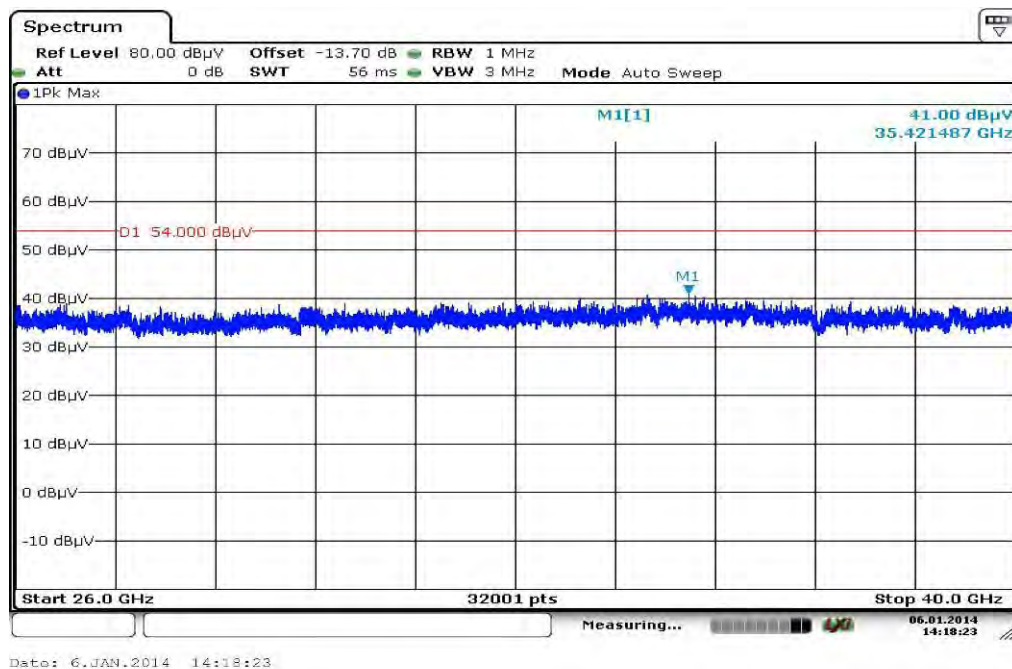
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 35.520000       | 10.7                     | 1000.0          | 120.000         | 224.0       | V            | 240.0         | 13.1       | 19.3        | 30.0                 |         |
| 40.200000       | 10.8                     | 1000.0          | 120.000         | 270.0       | H            | 52.0          | 13.4       | 19.2        | 30.0                 |         |
| 45.120000       | 10.4                     | 1000.0          | 120.000         | 270.0       | H            | 114.0         | 13.3       | 19.6        | 30.0                 |         |
| 708.240000      | 20.3                     | 1000.0          | 120.000         | 270.0       | H            | 206.0         | 22.7       | 15.7        | 36.0                 |         |
| 774.000000      | 21.2                     | 1000.0          | 120.000         | 270.0       | V            | 68.0          | 23.7       | 14.8        | 36.0                 |         |
| 859.080000      | 22.3                     | 1000.0          | 120.000         | 110.0       | H            | 177.0         | 24.7       | 13.7        | 36.0                 |         |

**Plot 7:** 1 GHz to 12.75 GHz, 5240 MHz, vertical & horizontal polarization**Plot 8:** 12 GHz to 18 GHz, 5240 MHz, vertical & horizontal polarization

**Plot 9:** 18 GHz to 26 GHz, 5240 MHz, vertical & horizontal polarization**Plot 10:** 26 GHz to 40 GHz, 5240 MHz, vertical & horizontal polarization

**Plot 11:** 30 MHz to 1 GHz, 5260 MHz, vertical & horizontal polarization

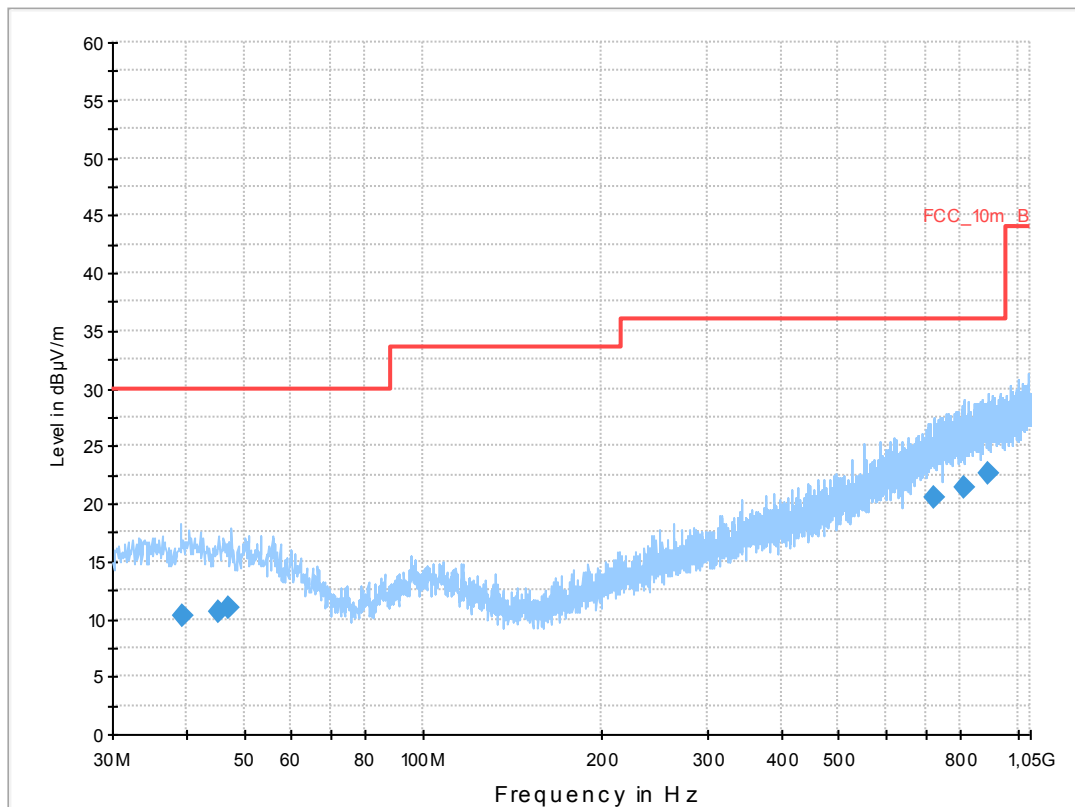
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT20) tx ch 52  
 Operator Name: Hennemann  
 Comment: battery powered

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

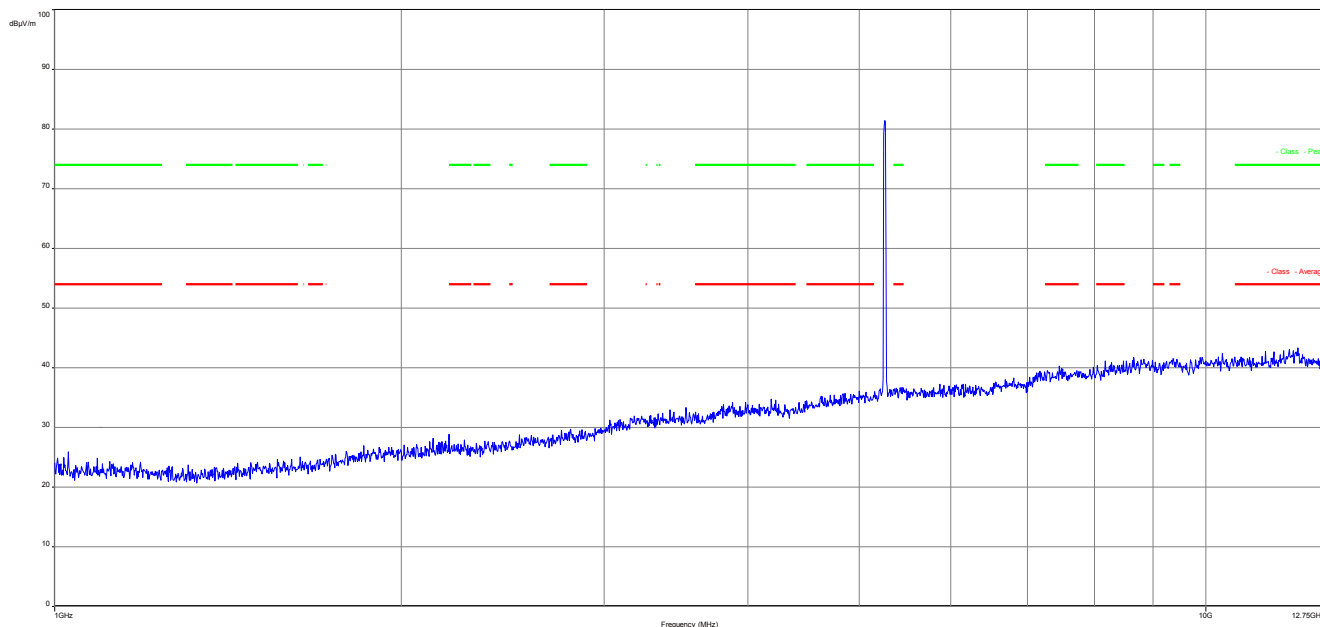
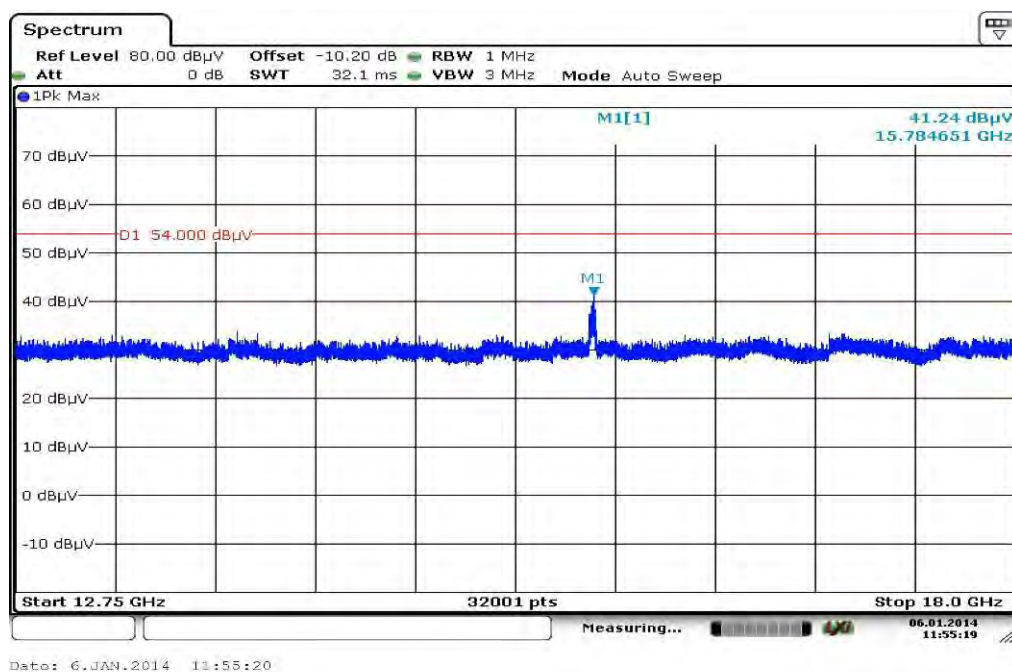
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

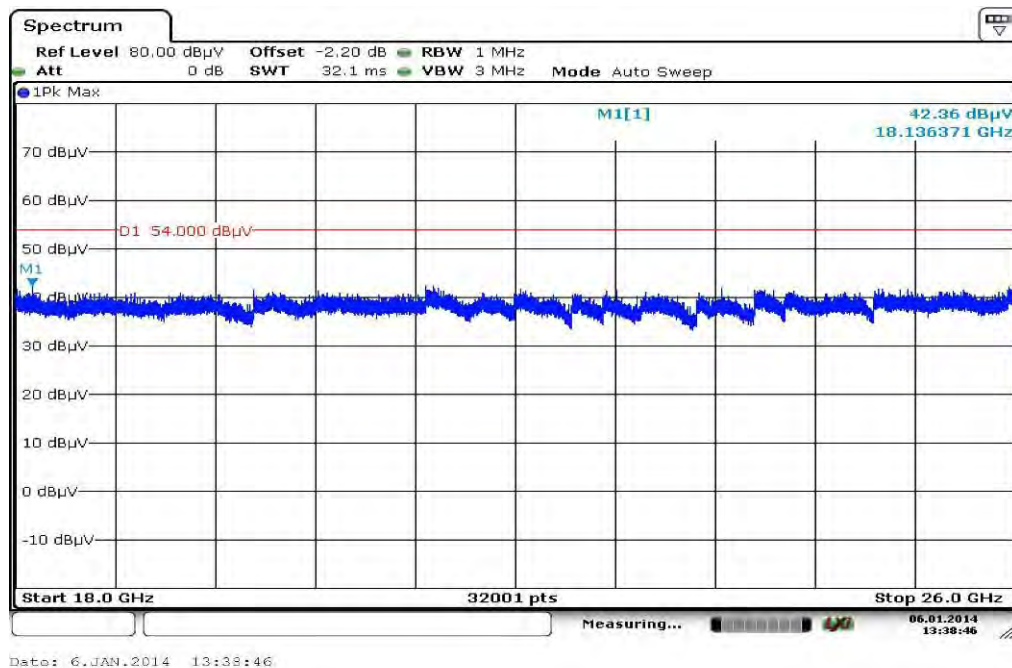
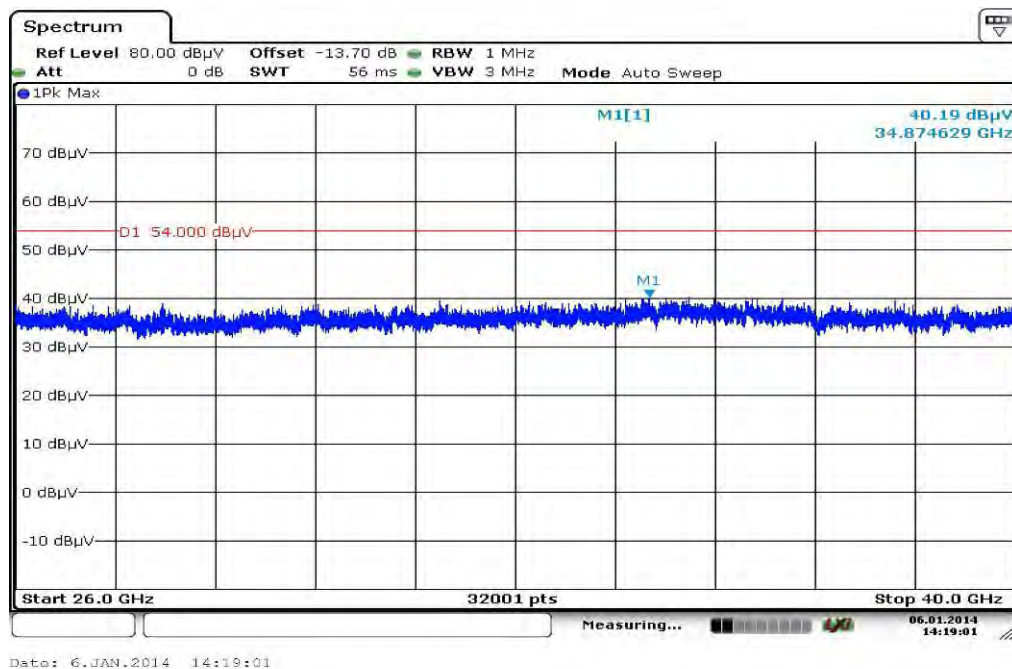
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 39.355500       | 10.3                     | 1000.0          | 120.000         | 98.0        | V            | 270.0         | 13.4       | 19.7        | 30.0                 |         |
| 45.403200       | 10.6                     | 1000.0          | 120.000         | 170.0       | H            | 190.0         | 13.3       | 19.4        | 30.0                 |         |
| 47.059950       | 10.9                     | 1000.0          | 120.000         | 98.0        | V            | 2.0           | 13.3       | 19.1        | 30.0                 |         |
| 721.805700      | 20.6                     | 1000.0          | 120.000         | 170.0       | V            | 272.0         | 23.0       | 15.4        | 36.0                 |         |
| 810.724950      | 21.4                     | 1000.0          | 120.000         | 104.0       | V            | 267.0         | 24.0       | 14.6        | 36.0                 |         |
| 894.081600      | 22.6                     | 1000.0          | 120.000         | 170.0       | H            | 10.0          | 25.1       | 13.4        | 36.0                 |         |

**Plot 12:** 1 GHz to 12.75 GHz, 5260 MHz, vertical & horizontal polarization**Plot 13:** 12 GHz to 18 GHz, 5260 MHz, vertical & horizontal polarization

**Plot 14:** 18 GHz to 26 GHz, 5260 MHz, vertical & horizontal polarization**Plot 15:** 26 GHz to 40 GHz, 5260 MHz, vertical & horizontal polarization

**Plot 16:** 30 MHz to 1 GHz, 5320 MHz, vertical & horizontal polarization

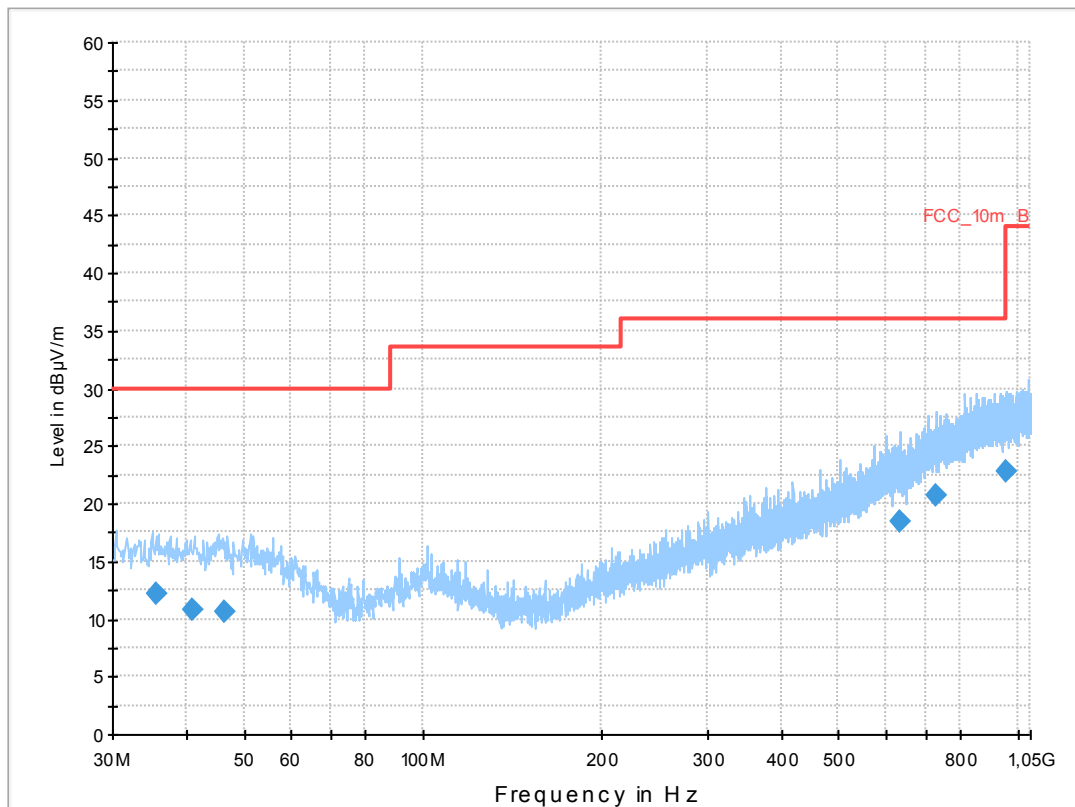
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT20) tx ch 64  
 Operator Name: Hennemann  
 Comment: battery powered

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

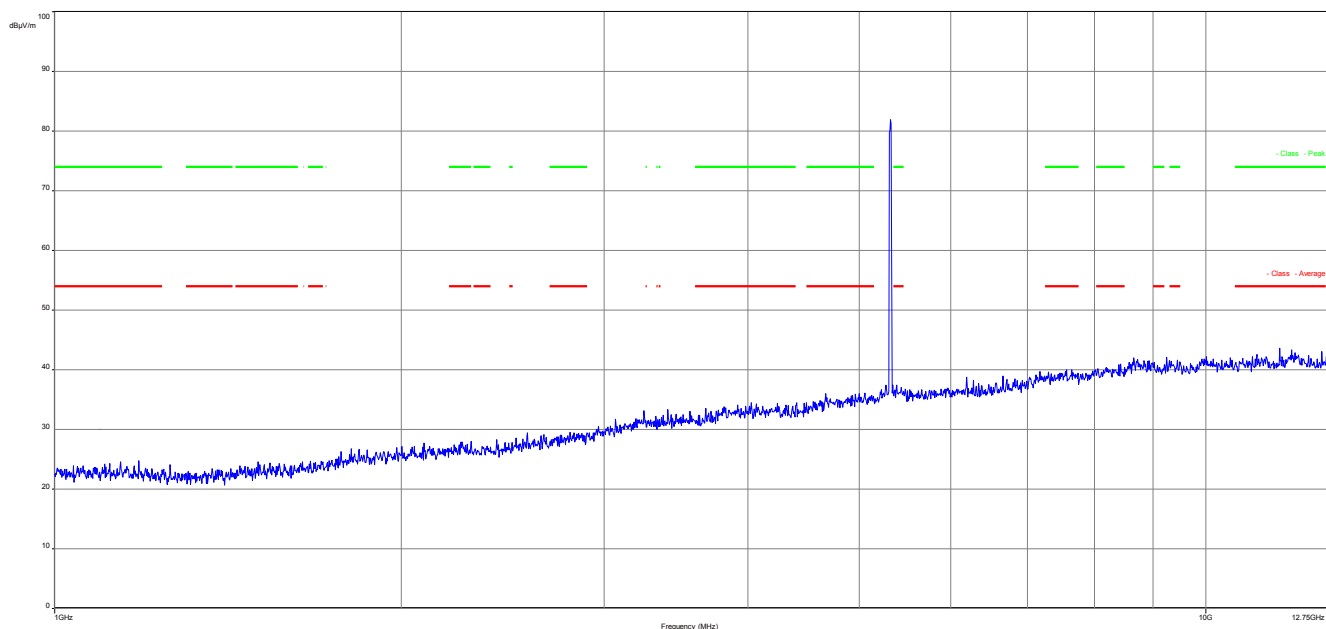
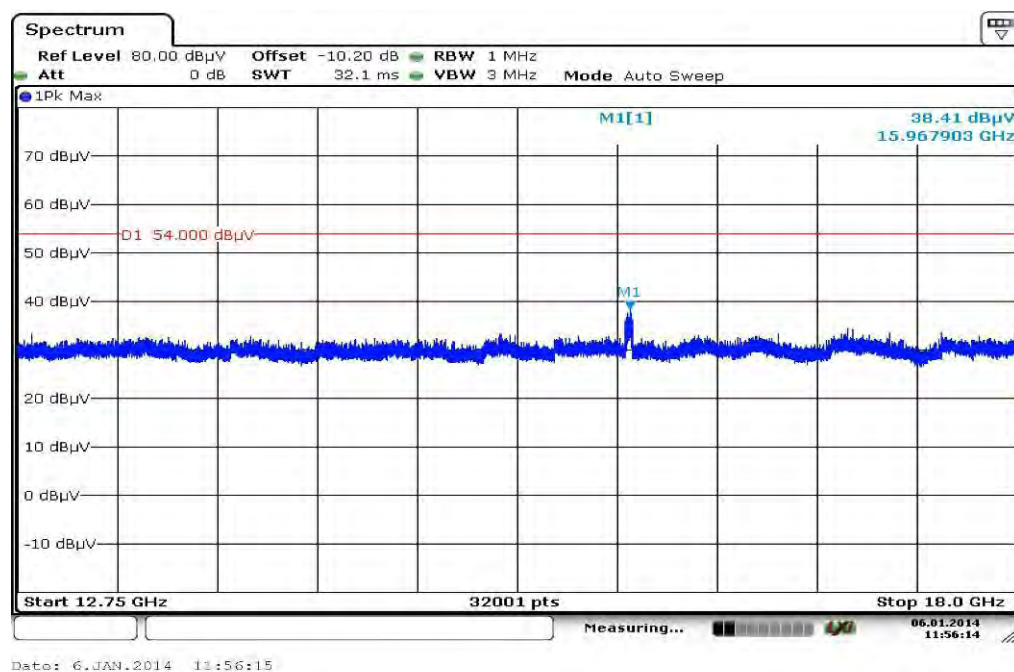
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

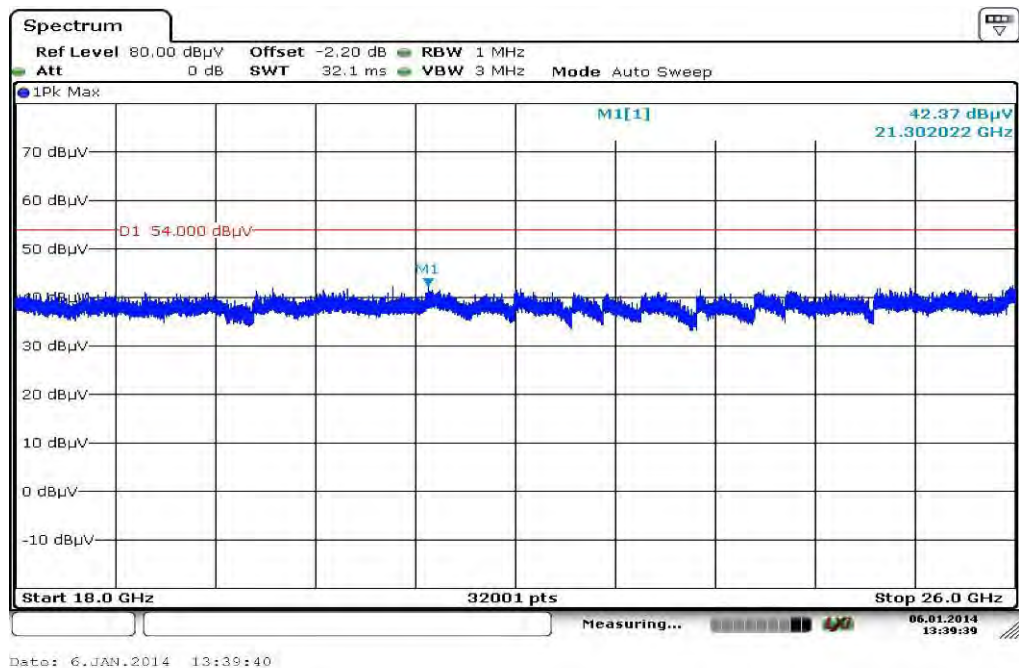
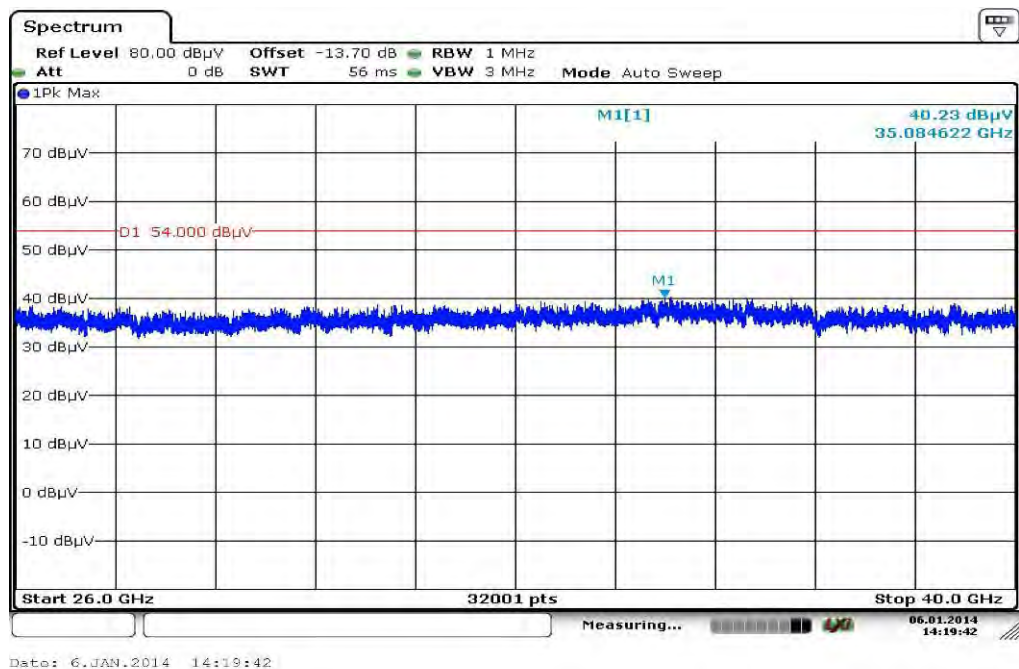
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 35.454600       | 12.1                     | 1000.0          | 120.000         | 170.0       | V            | -10.0         | 13.1       | 17.9        | 30.0                 |         |
| 40.940250       | 10.8                     | 1000.0          | 120.000         | 170.0       | V            | 0.0           | 13.4       | 19.2        | 30.0                 |         |
| 46.316850       | 10.6                     | 1000.0          | 120.000         | 98.0        | H            | 182.0         | 13.3       | 19.4        | 30.0                 |         |
| 632.521950      | 18.5                     | 1000.0          | 120.000         | 170.0       | V            | 100.0         | 21.0       | 17.5        | 36.0                 |         |
| 730.302000      | 20.7                     | 1000.0          | 120.000         | 170.0       | H            | 10.0          | 23.2       | 15.3        | 36.0                 |         |
| 956.672400      | 22.8                     | 1000.0          | 120.000         | 170.0       | H            | -1.0          | 25.4       | 13.2        | 36.0                 |         |

**Plot 17:** 1 GHz to 12.75 GHz, 5320 MHz, vertical & horizontal polarization**Plot 18:** 12 GHz to 18 GHz, 5320 MHz, vertical & horizontal polarization

**Plot 19:** 18 GHz to 26 GHz, 5320 MHz, vertical & horizontal polarization**Plot 20:** 26 GHz to 40 GHz, 5320 MHz, vertical & horizontal polarization

**Plot 21:** 30 MHz to 1 GHz, 5500 MHz, vertical & horizontal polarization

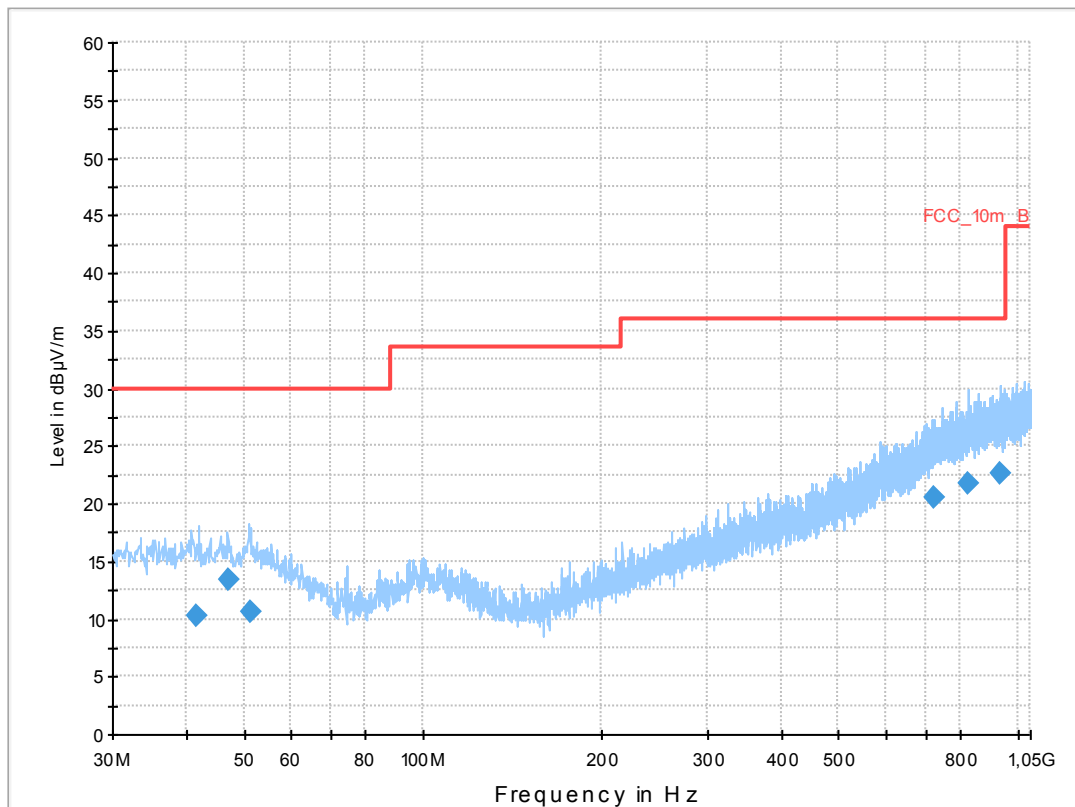
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT20) tx ch 100  
 Operator Name: Hennemann  
 Comment: battery powered

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

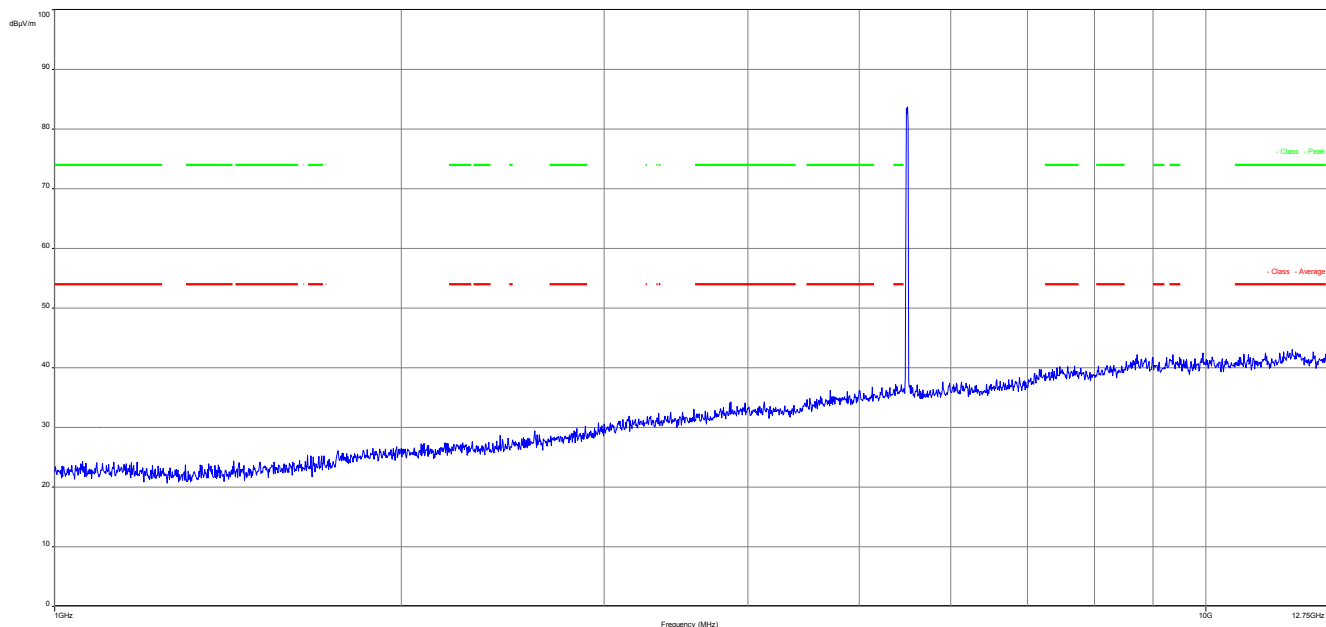
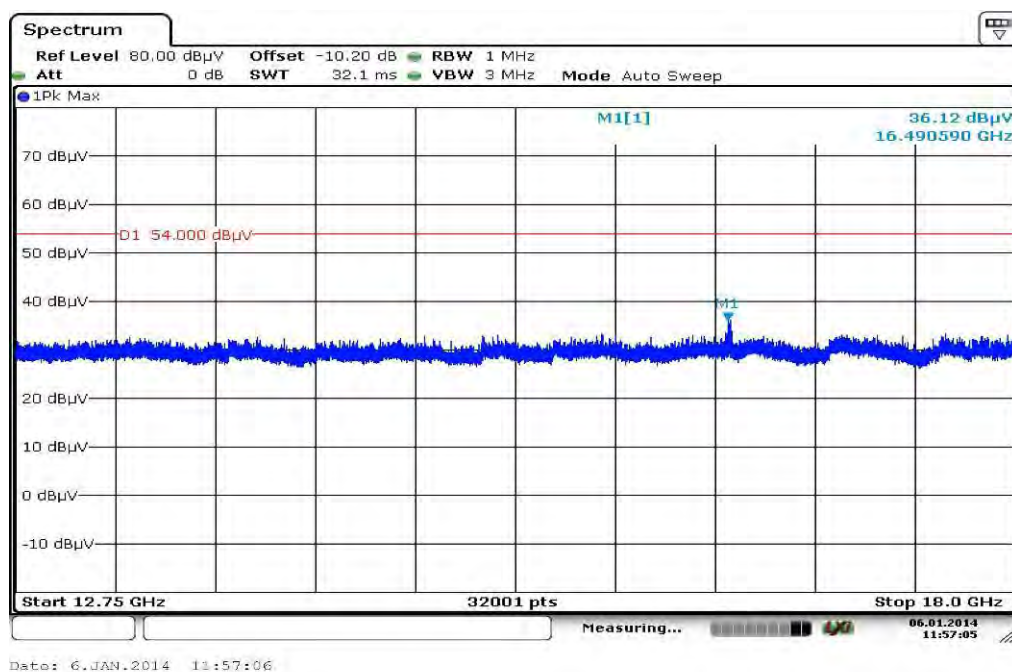
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

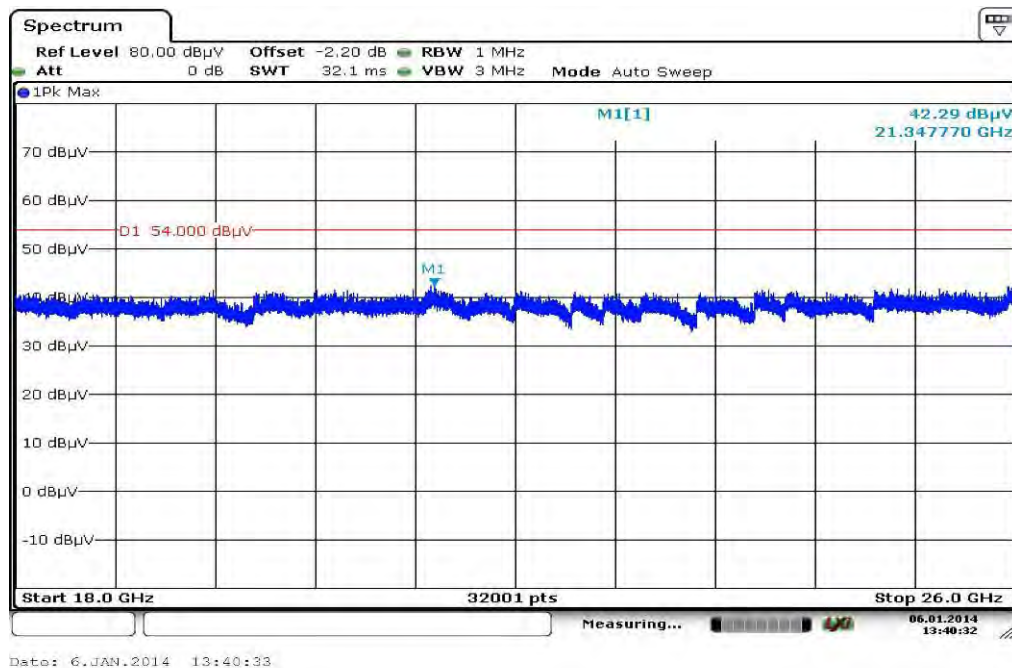
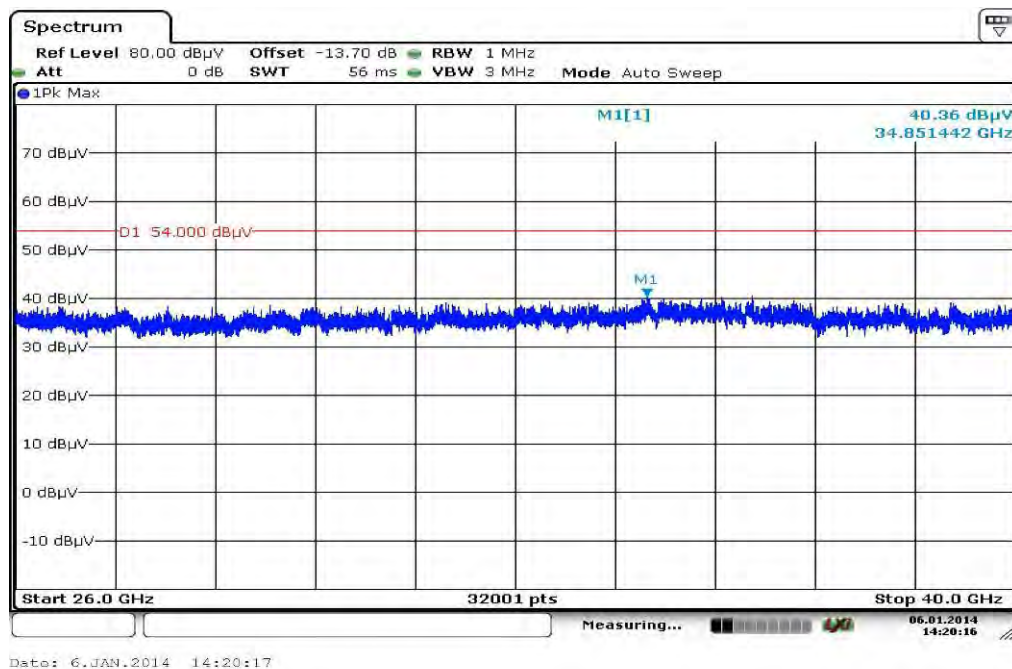
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 41.667900       | 10.2                     | 1000.0          | 120.000         | 170.0       | H            | 10.0          | 13.4       | 19.8        | 30.0                 |         |
| 46.969350       | 13.4                     | 1000.0          | 120.000         | 98.0        | V            | 100.0         | 13.3       | 16.6        | 30.0                 |         |
| 51.124950       | 10.6                     | 1000.0          | 120.000         | 170.0       | V            | 265.0         | 13.3       | 19.4        | 30.0                 |         |
| 720.852300      | 20.5                     | 1000.0          | 120.000         | 170.0       | H            | 280.0         | 23.0       | 15.5        | 36.0                 |         |
| 826.802700      | 21.7                     | 1000.0          | 120.000         | 170.0       | V            | 270.0         | 24.2       | 14.3        | 36.0                 |         |
| 934.521600      | 22.6                     | 1000.0          | 120.000         | 170.0       | V            | 190.0         | 25.3       | 13.4        | 36.0                 |         |

**Plot 22:** 1 GHz to 12.75 GHz, 5500 MHz, vertical & horizontal polarization**Plot 23:** 12 GHz to 18 GHz, 5500 MHz, vertical & horizontal polarization

**Plot 24:** 18 GHz to 26 GHz, 5500 MHz, vertical & horizontal polarization**Plot 25:** 26 GHz to 40 GHz, 5500 MHz, vertical & horizontal polarization

**Plot 26:** 30 MHz to 1 GHz, 5600 MHz, vertical & horizontal polarization

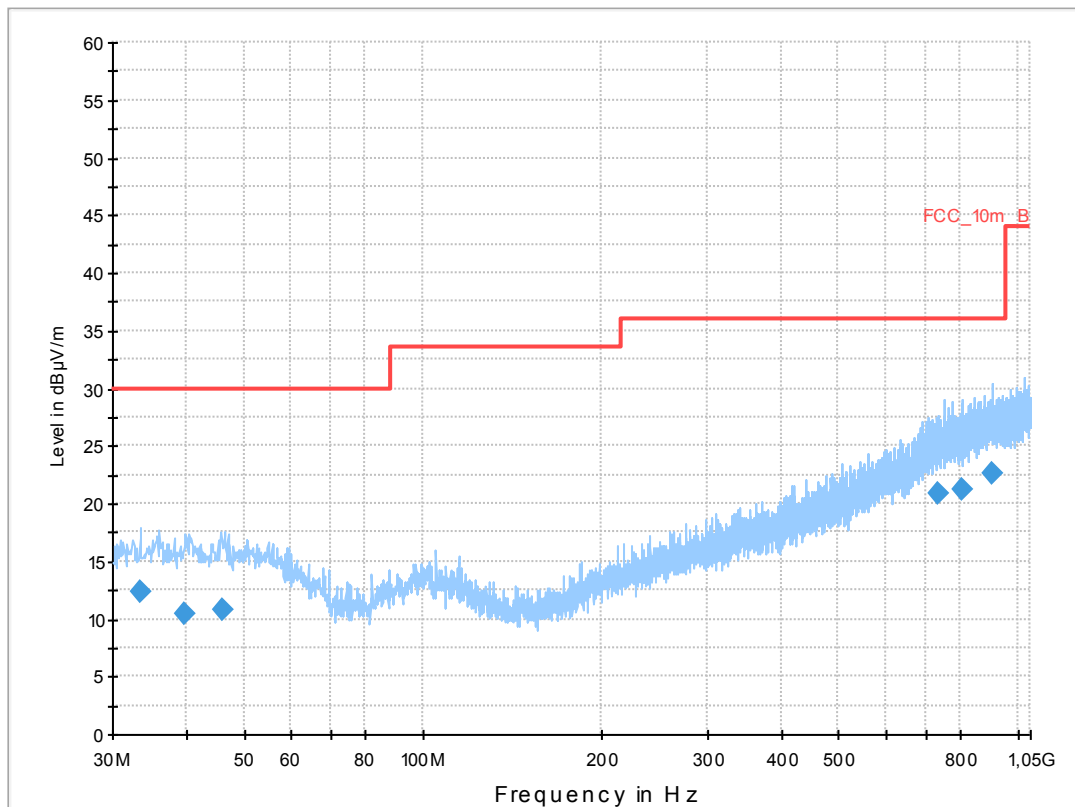
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT20) tx ch 120  
 Operator Name: Hennemann  
 Comment: battery powered

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

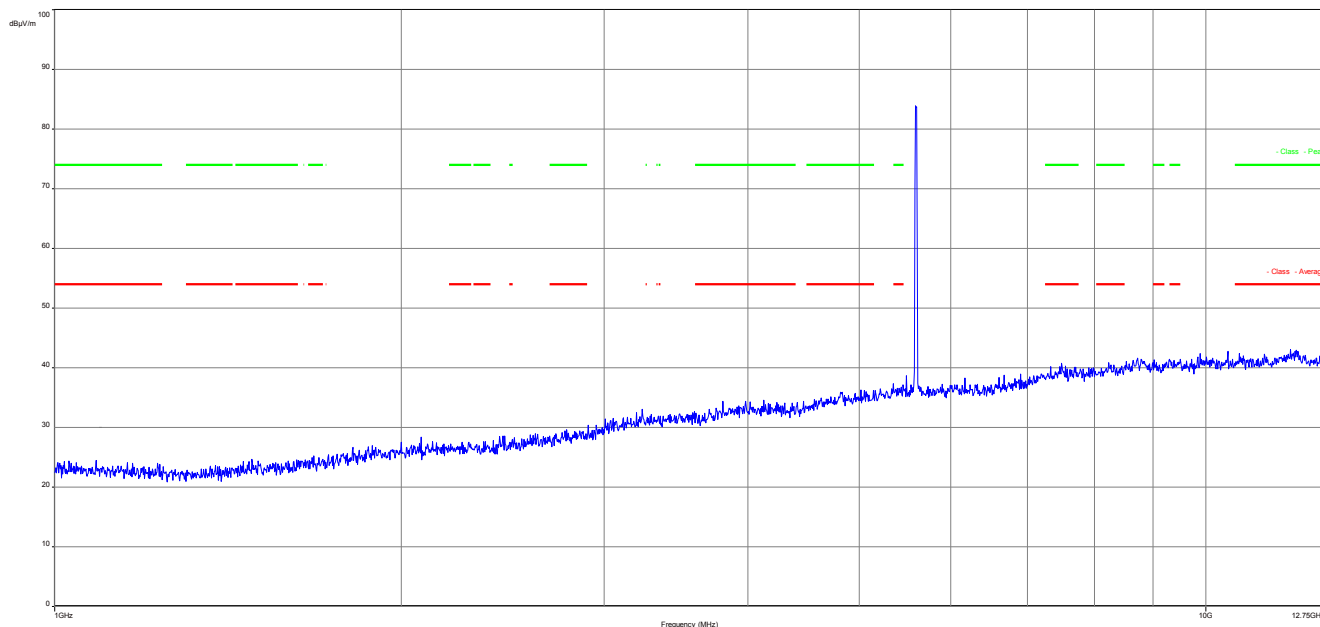
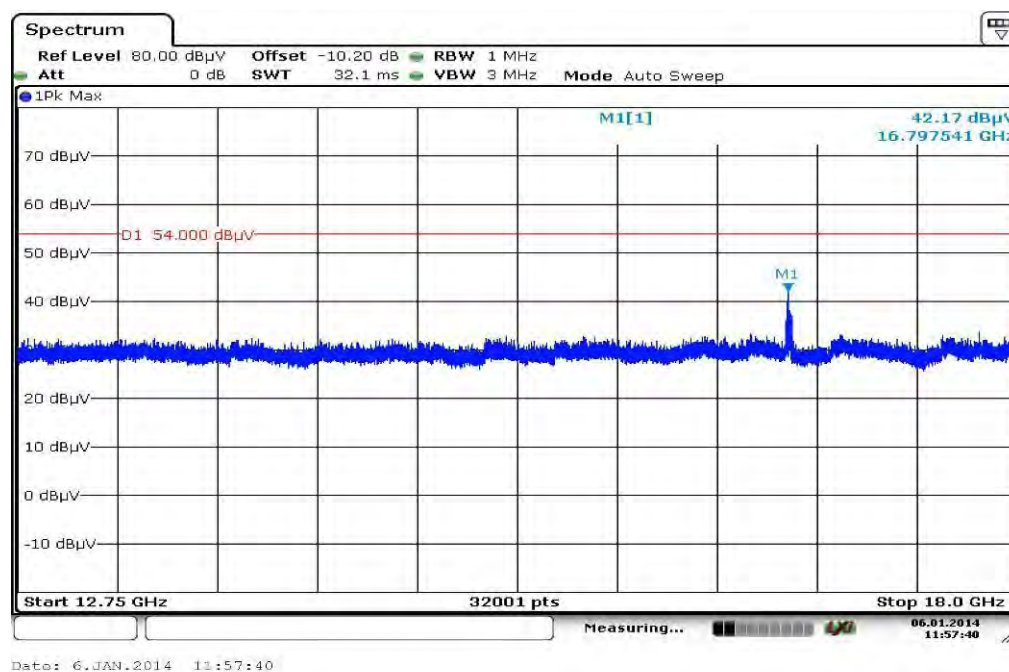
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

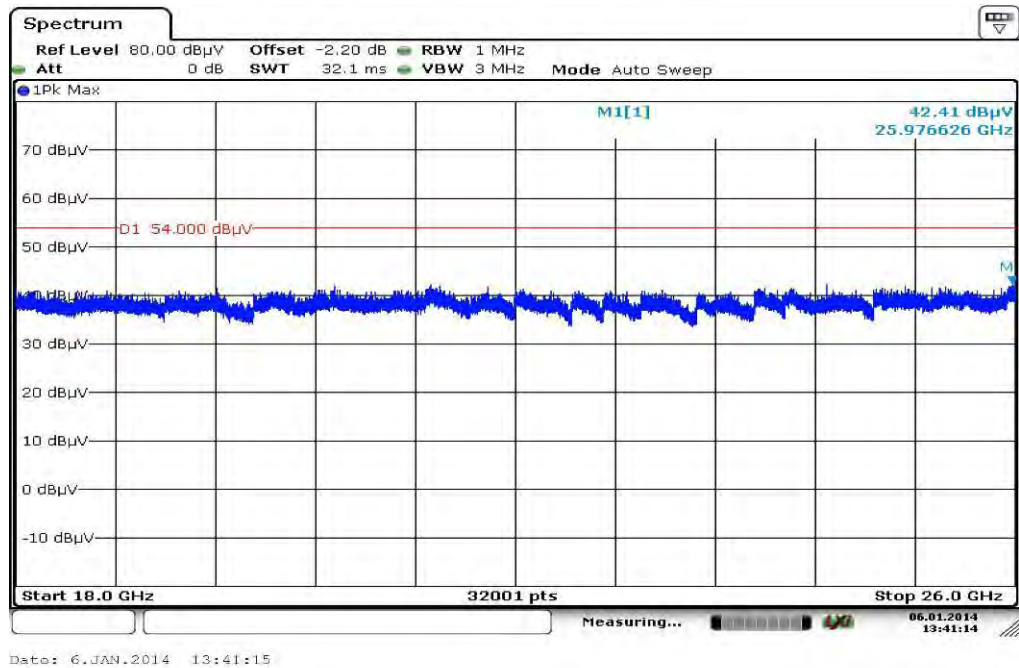
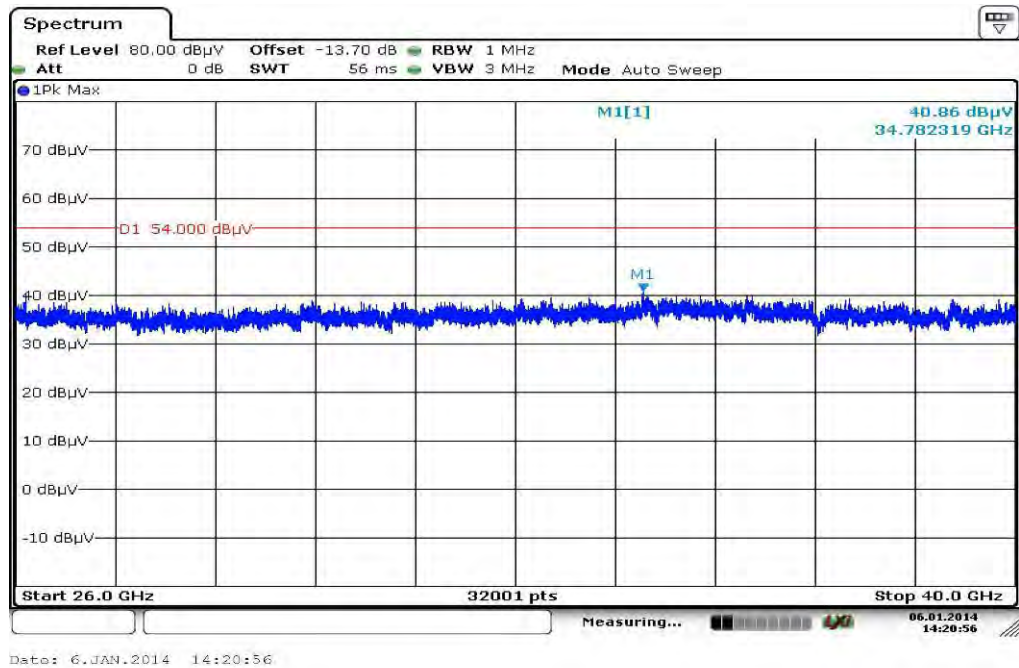
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 33.326250       | 12.4                     | 1000.0          | 120.000         | 98.0        | V            | 87.0          | 12.9       | 17.6        | 30.0                 |         |
| 39.594300       | 10.5                     | 1000.0          | 120.000         | 98.0        | V            | 182.0         | 13.4       | 19.5        | 30.0                 |         |
| 46.132650       | 10.8                     | 1000.0          | 120.000         | 105.0       | V            | -10.0         | 13.3       | 19.2        | 30.0                 |         |
| 732.105000      | 20.8                     | 1000.0          | 120.000         | 170.0       | V            | 100.0         | 23.2       | 15.2        | 36.0                 |         |
| 803.562450      | 21.3                     | 1000.0          | 120.000         | 98.0        | V            | 10.0          | 23.9       | 14.7        | 36.0                 |         |
| 904.871250      | 22.6                     | 1000.0          | 120.000         | 170.0       | V            | 280.0         | 25.2       | 13.4        | 36.0                 |         |

**Plot 27:** 1 GHz to 12.75 GHz, 5600 MHz, vertical & horizontal polarization**Plot 28:** 12 GHz to 18 GHz, 5600 MHz, vertical & horizontal polarization

**Plot 29:** 18 GHz to 26 GHz, 5600 MHz, vertical & horizontal polarization**Plot 30:** 26 GHz to 40 GHz, 5600 MHz, vertical & horizontal polarization

**Plot 31:** 30 MHz to 1 GHz, 5700 MHz, vertical & horizontal polarization

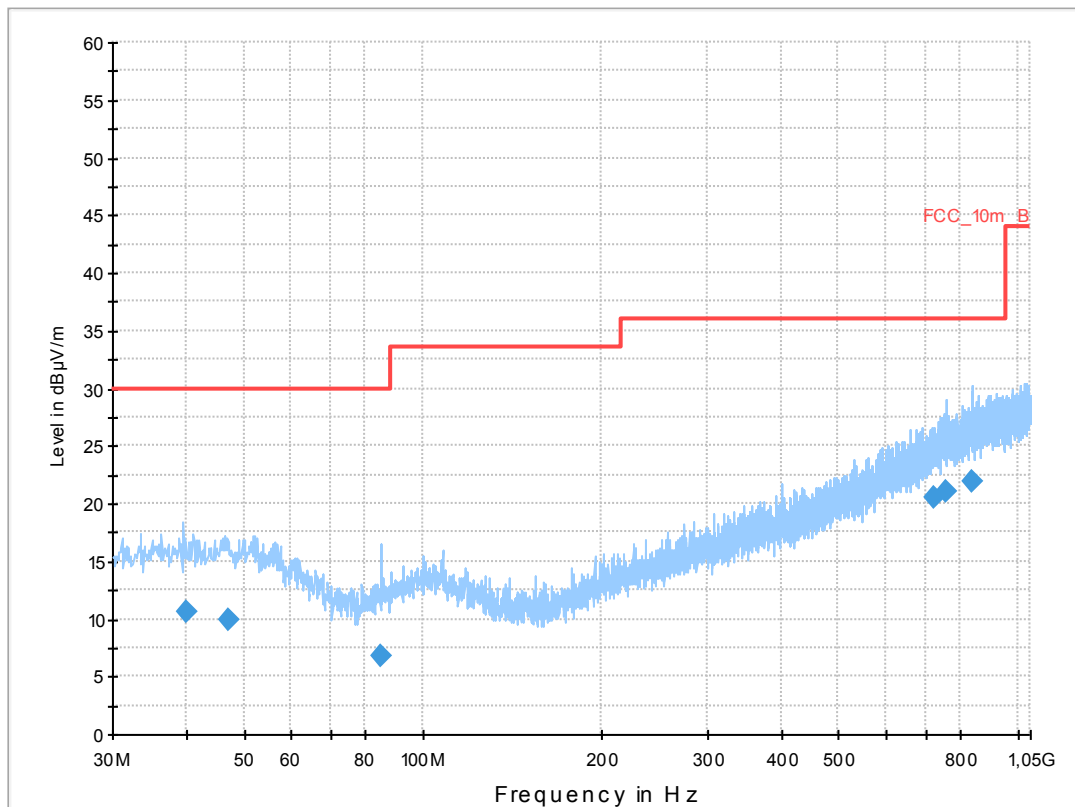
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT20) tx ch 140  
 Operator Name: Hennemann  
 Comment: battery powered

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

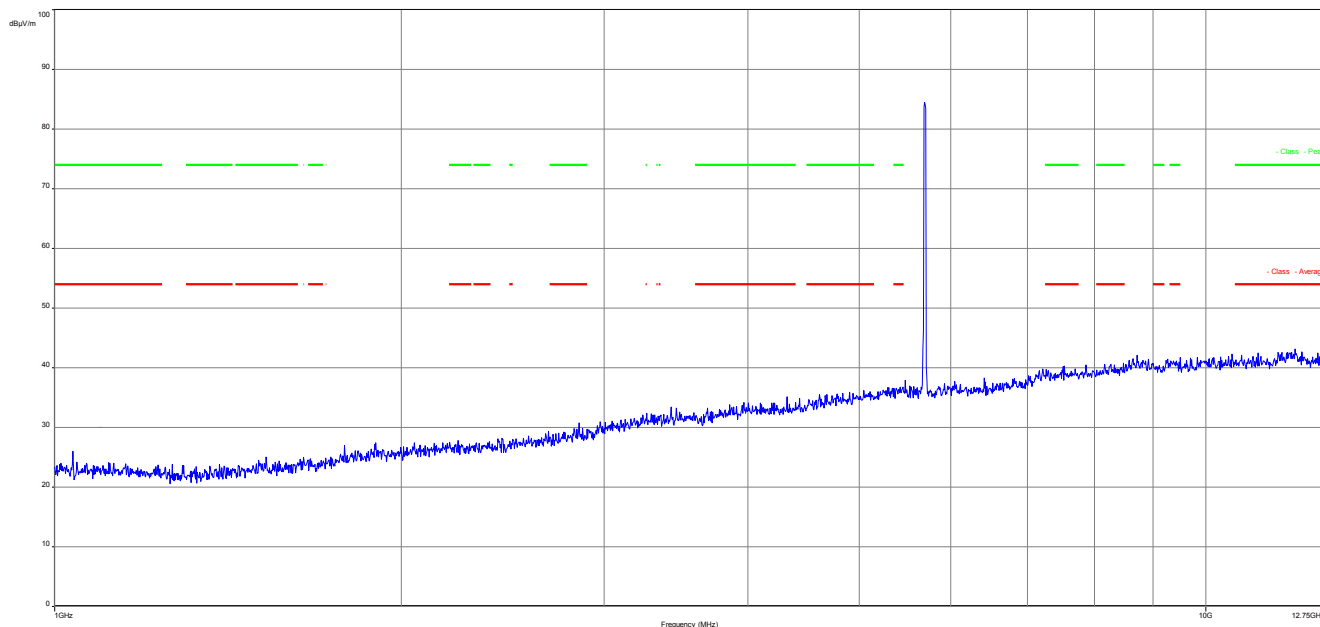
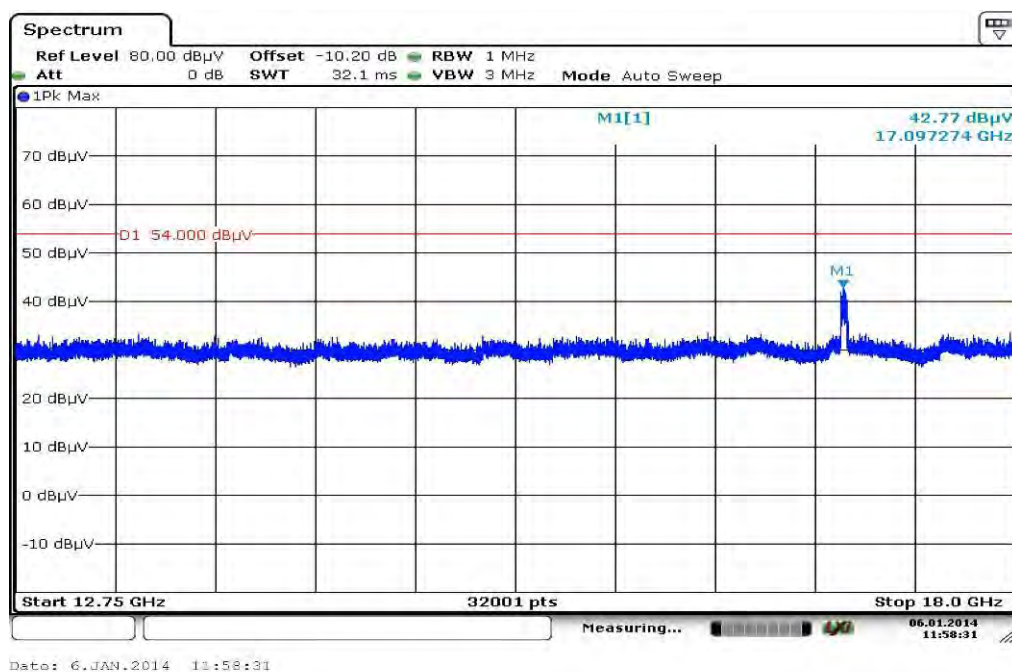
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBμV/m

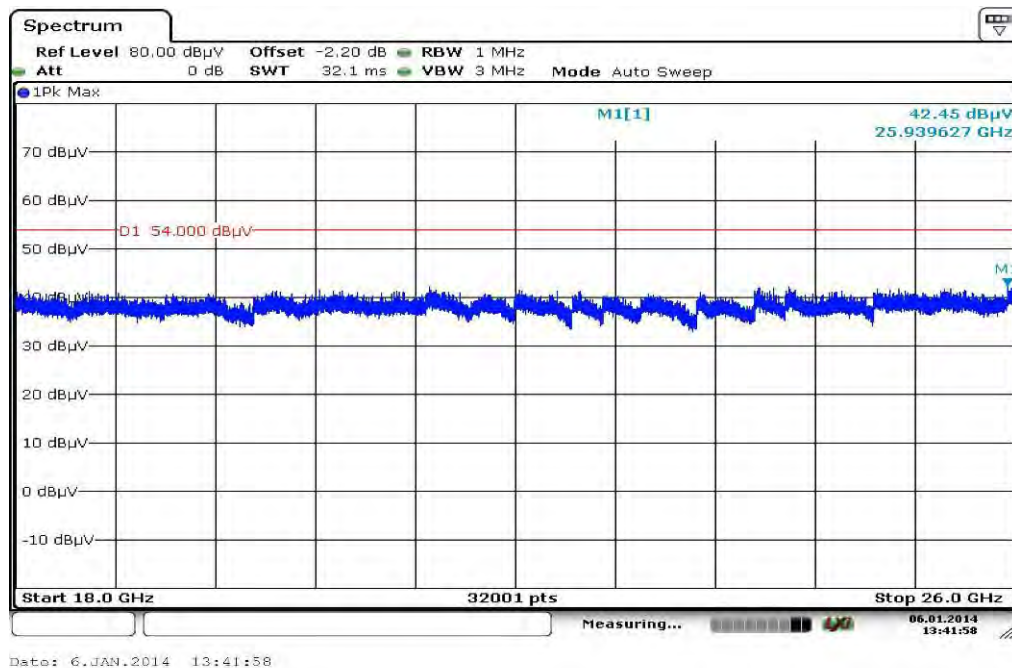
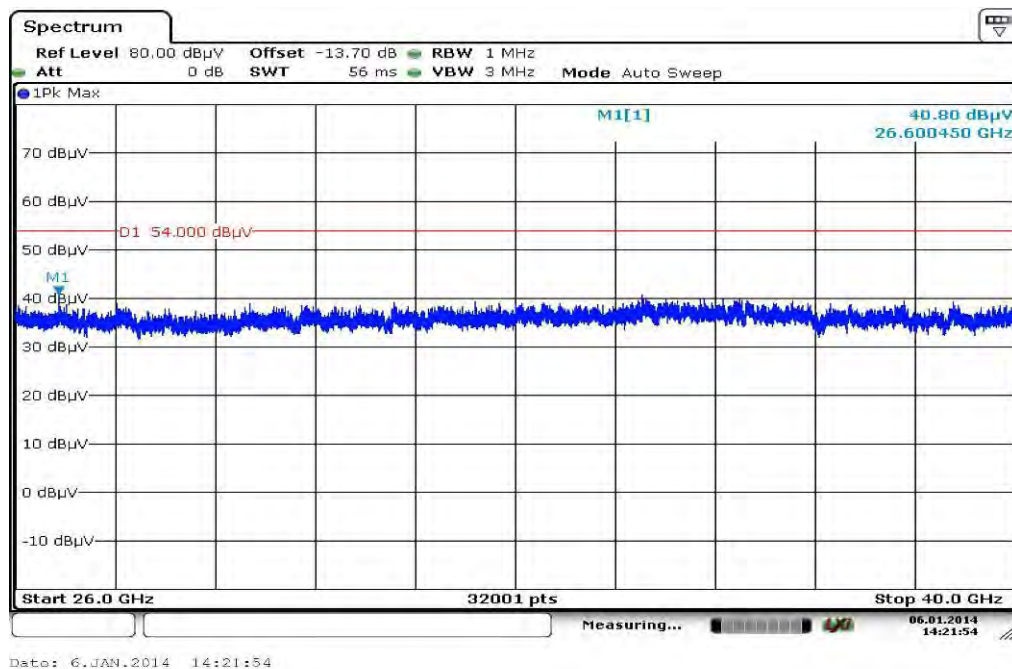
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## 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 |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 39.854250       | 10.6               | 1000.0          | 120.000         | 170.0       | H            | 175.0         | 13.4       | 19.4        | 30.0           |         |
| 47.113950       | 9.9                | 1000.0          | 120.000         | 104.0       | H            | 260.0         | 13.3       | 20.1        | 30.0           |         |
| 85.085100       | 6.8                | 1000.0          | 120.000         | 170.0       | H            | 280.0         | 9.8        | 23.2        | 30.0           |         |
| 723.616500      | 20.6               | 1000.0          | 120.000         | 170.0       | V            | 88.0          | 23.1       | 15.4        | 36.0           |         |
| 759.132300      | 21.1               | 1000.0          | 120.000         | 143.0       | H            | 265.0         | 23.7       | 14.9        | 36.0           |         |
| 839.068500      | 22.0               | 1000.0          | 120.000         | 170.0       | V            | -2.0          | 24.4       | 14.0        | 36.0           |         |

**Plot 32:** 1 GHz to 12.75 GHz, 5700 MHz, vertical & horizontal polarization**Plot 33:** 12 GHz to 18 GHz, 5700 MHz, vertical & horizontal polarization

**Plot 34:** 18 GHz to 26 GHz, 5700 MHz, vertical & horizontal polarization**Plot 35:** 26 GHz to 40 GHz, 5700 MHz, vertical & horizontal polarization

**Plots:** OFDM / ac – mode HT40

**Plot 1:** 30 MHz to 1 GHz, 5190 MHz, vertical & horizontal polarization

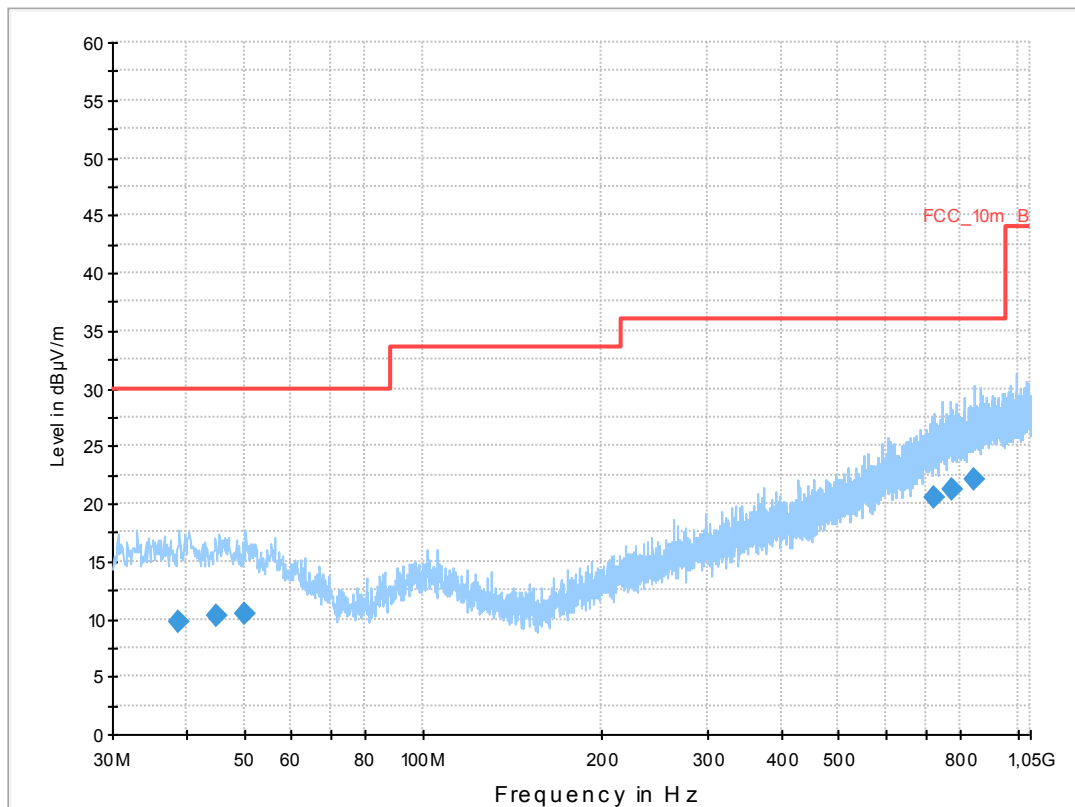
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT40) tx ch 38  
 Operator Name: Hennemann  
 Comment: battery powered

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

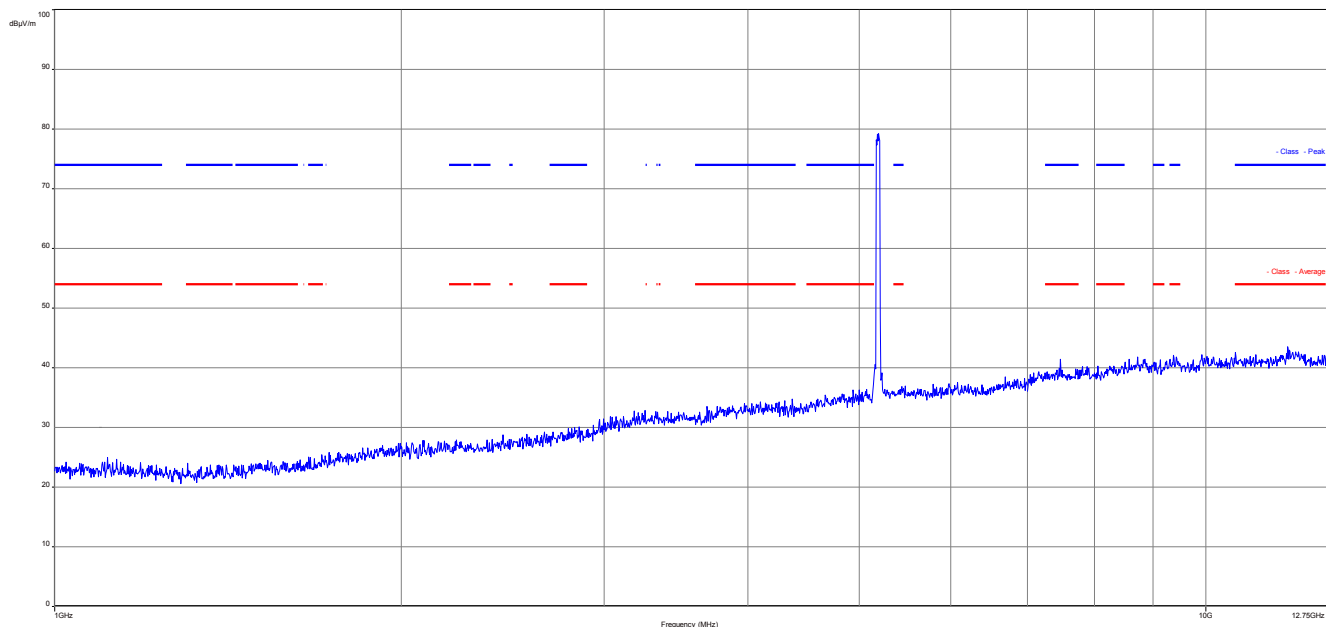
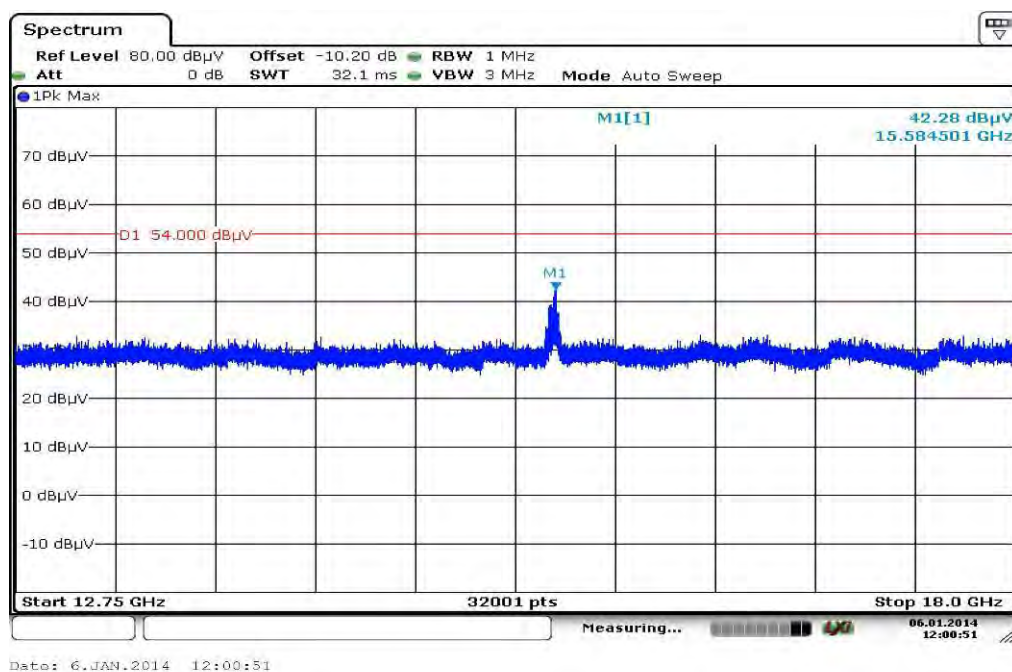
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

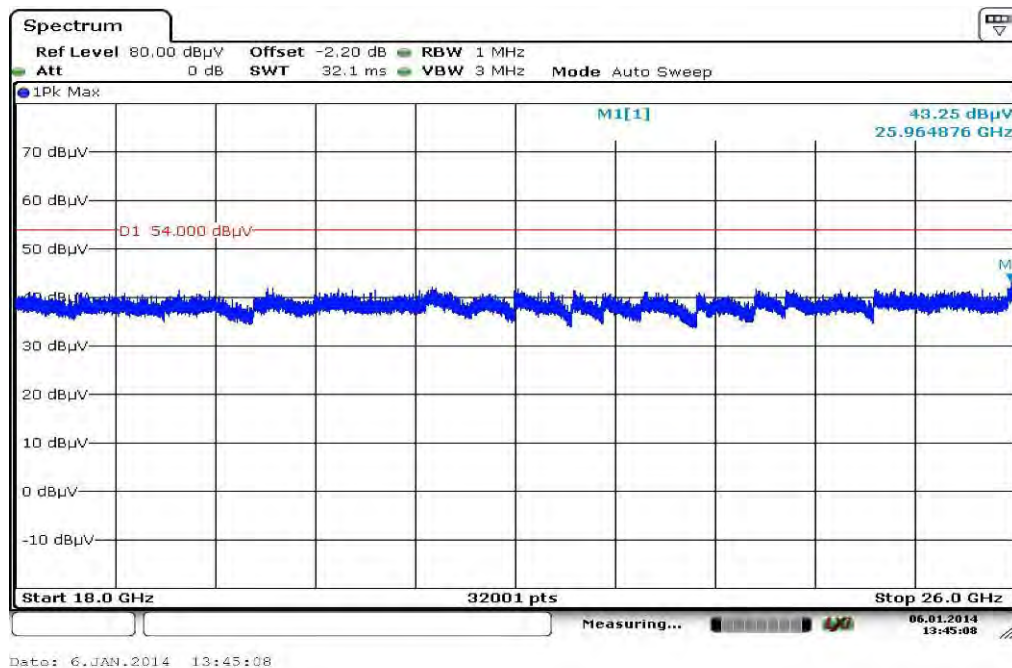
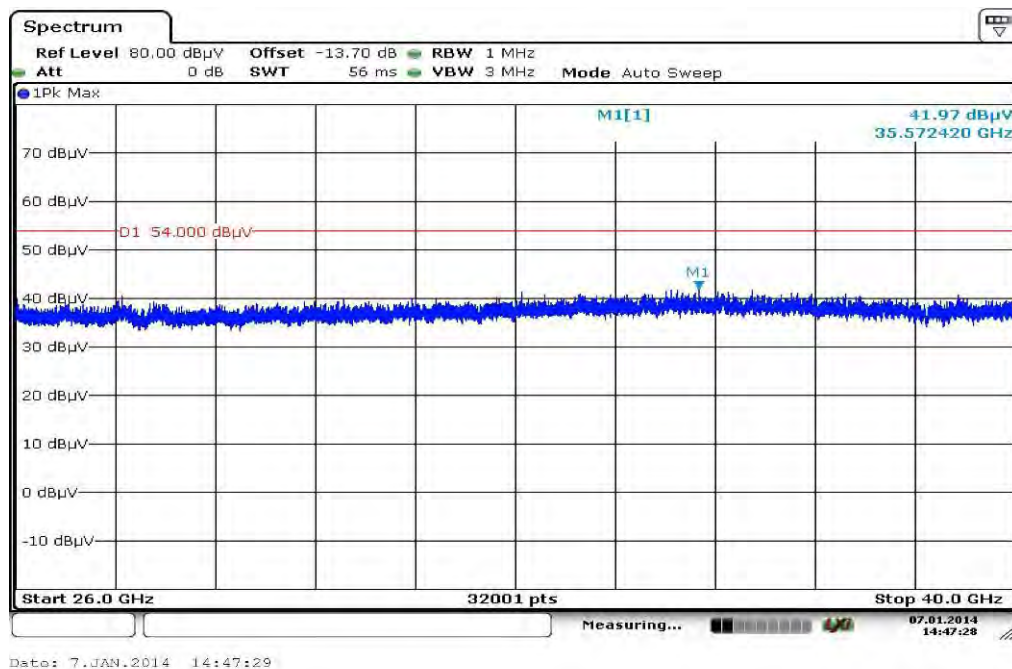
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 38.831550       | 9.7                      | 1000.0          | 120.000         | 124.0       | V            | 100.0         | 13.3       | 20.3        | 30.0                 |         |
| 44.795400       | 10.2                     | 1000.0          | 120.000         | 170.0       | V            | 10.0          | 13.3       | 19.8        | 30.0                 |         |
| 50.270100       | 10.4                     | 1000.0          | 120.000         | 170.0       | V            | 3.0           | 13.3       | 19.6        | 30.0                 |         |
| 724.585950      | 20.5                     | 1000.0          | 120.000         | 170.0       | H            | 280.0         | 23.1       | 15.5        | 36.0                 |         |
| 774.082500      | 21.2                     | 1000.0          | 120.000         | 170.0       | V            | 3.0           | 23.7       | 14.8        | 36.0                 |         |
| 847.251000      | 22.1                     | 1000.0          | 120.000         | 98.0        | H            | 170.0         | 24.5       | 13.9        | 36.0                 |         |

**Plot 2:** 1 GHz to 12.75 GHz, 5190 MHz, vertical & horizontal polarization**Plot 3:** 12 GHz to 18 GHz, 5190 MHz, vertical & horizontal polarization

**Plot 4:** 18 GHz to 26 GHz, 5190 MHz, vertical & horizontal polarization**Plot 5:** 26 GHz to 40 GHz, 5190 MHz, vertical & horizontal polarization

**Plot 6:** 30 MHz to 1 GHz, 5230 MHz, vertical & horizontal polarization

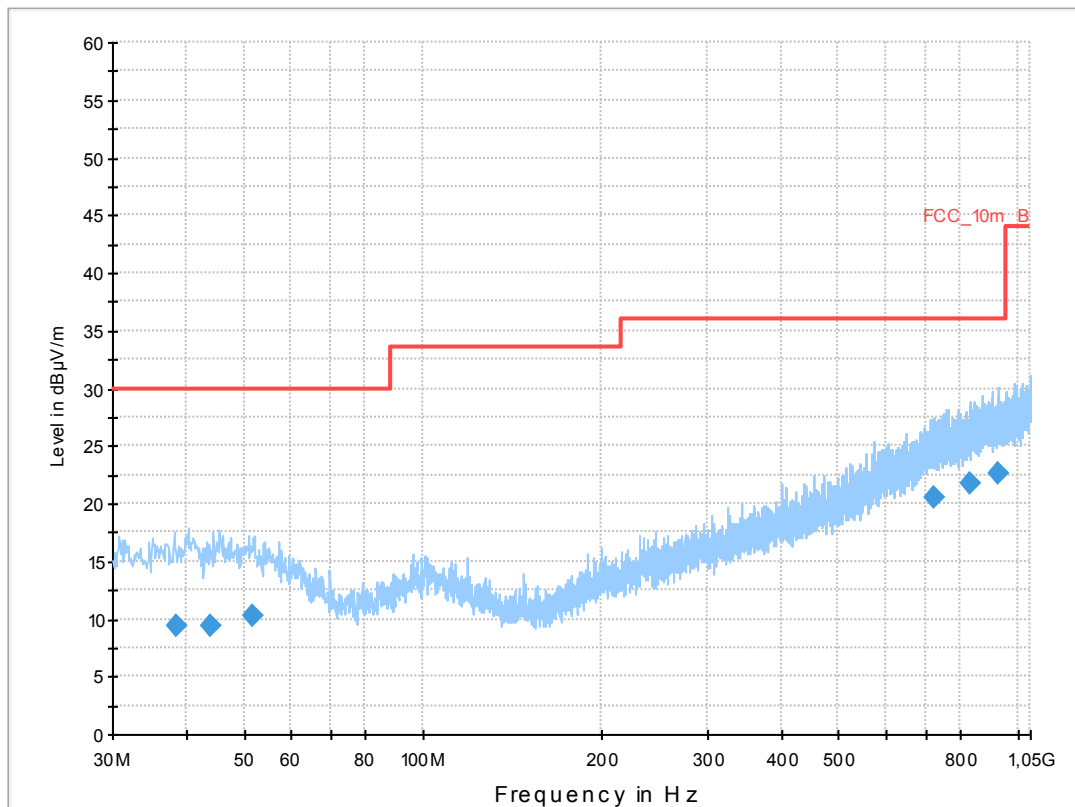
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT40) tx ch 46  
 Operator Name: Hennemann  
 Comment: battery powered

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

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

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



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 38.515200       | 9.4                      | 1000.0          | 120.000         | 111.0       | H            | -6.0          | 13.3       | 20.6        | 30.0                 |         |
| 43.760700       | 9.5                      | 1000.0          | 120.000         | 170.0       | V            | 272.0         | 13.3       | 20.5        | 30.0                 |         |
| 51.718350       | 10.3                     | 1000.0          | 120.000         | 170.0       | H            | 182.0         | 13.2       | 19.7        | 30.0                 |         |
| 726.041700      | 20.6                     | 1000.0          | 120.000         | 155.0       | H            | 272.0         | 23.1       | 15.4        | 36.0                 |         |
| 829.393650      | 21.8                     | 1000.0          | 120.000         | 170.0       | H            | 178.0         | 24.2       | 14.2        | 36.0                 |         |
| 923.795250      | 22.6                     | 1000.0          | 120.000         | 120.0       | H            | 190.0         | 25.3       | 13.4        | 36.0                 |         |

The graph displays the frequency response of a Class-D amplifier. The x-axis represents Frequency in MHz on a logarithmic scale, ranging from 10kHz to 12.75GHz. The y-axis represents the signal level in dBuV/m, ranging from 0 to 80. Two data series are plotted: a blue line for the peak response and a red line for the average response. The peak response (blue line) shows a significant resonance peak at approximately 1.5 MHz, reaching a value of about 80 dBuV/m. The average response (red line) is much flatter, maintaining a level around 53 dBuV/m across the entire frequency range. The noise floor for the peak response starts at approximately 22 dBuV/m at 10kHz and rises to about 40 dBuV/m at higher frequencies.

| Frequency (MHz) | Peak Response (dBuV/m) | Average Response (dBuV/m) |
|-----------------|------------------------|---------------------------|
| 10kHz           | ~22                    | ~53                       |
| 1MHz            | ~35                    | ~53                       |
| 1.5MHz          | ~80                    | ~53                       |
| 10MHz           | ~40                    | ~53                       |
| 12.75GHz        | ~40                    | ~53                       |

**Spectrum**

Ref Level 80.00 dBμV Offset -10.20 dB RBW 1 MHz  
 Att 0 dB SWT 32.1 ms VBW 3 MHz Mode Auto Sweep

1Pk Max

M1[1] 42.61 dBμV  
 15.669811 GHz

D1 54.000 dBμV

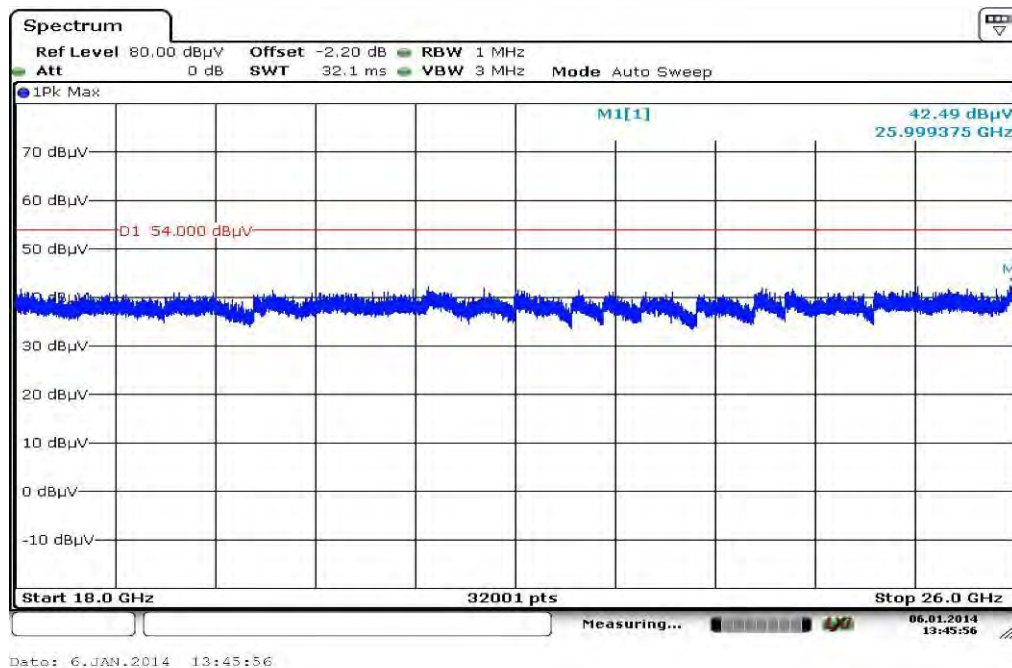
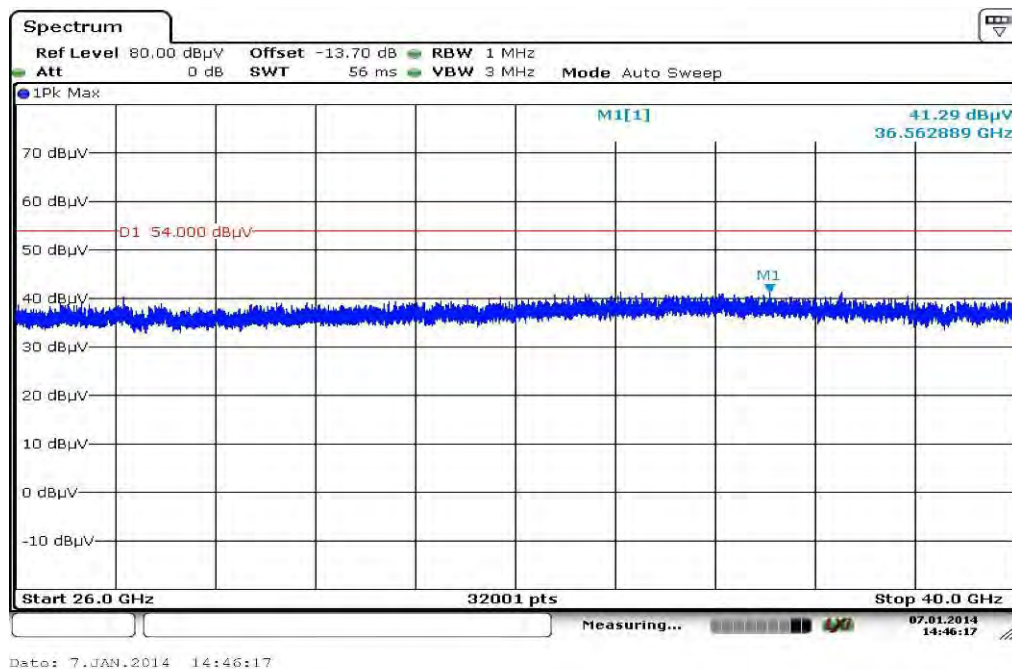
M1

Start 12.75 GHz 32001 pts Stop 18.0 GHz

Measuring...

06.01.2014 12:01:25

Date: 6.JAN.2014 12:01:26

**Plot 9:** 18 GHz to 26 GHz, 5230 MHz, vertical & horizontal polarization**Plot 10:** 26 GHz to 40 GHz, 5230 MHz, vertical & horizontal polarization

**Plot 11:** 30 MHz to 1 GHz, 5270 MHz, vertical & horizontal polarization

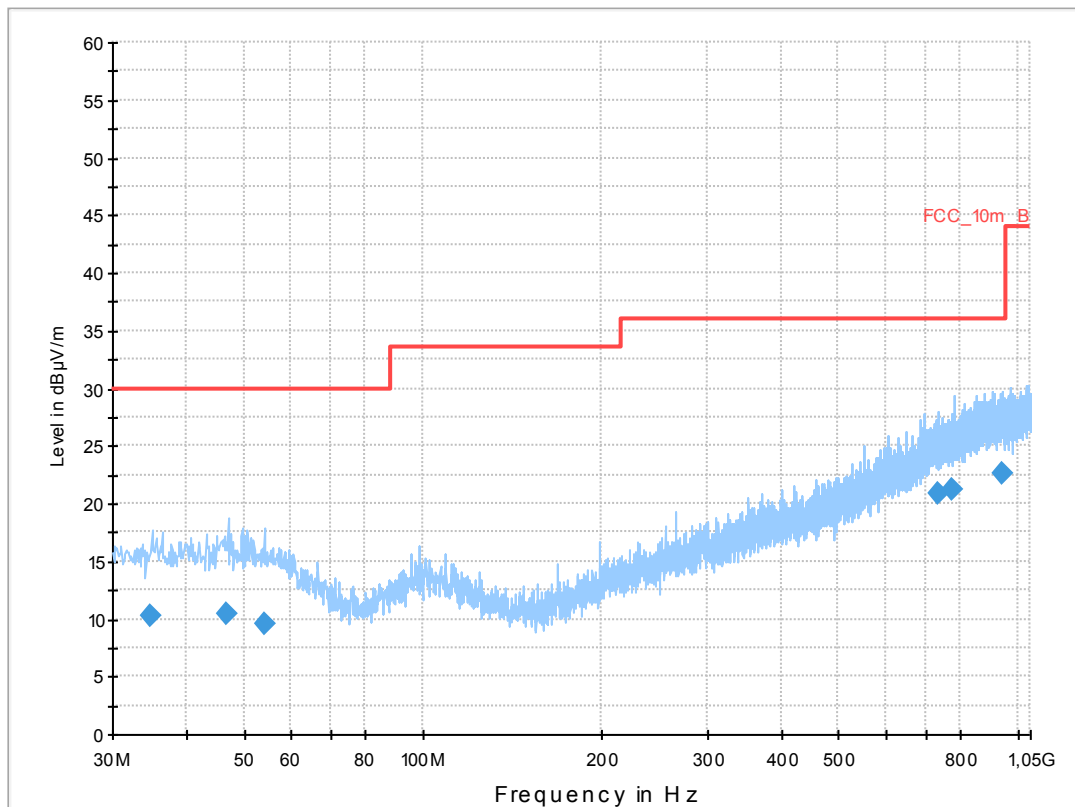
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT40) tx ch 54  
 Operator Name: Hennemann  
 Comment: battery powered

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

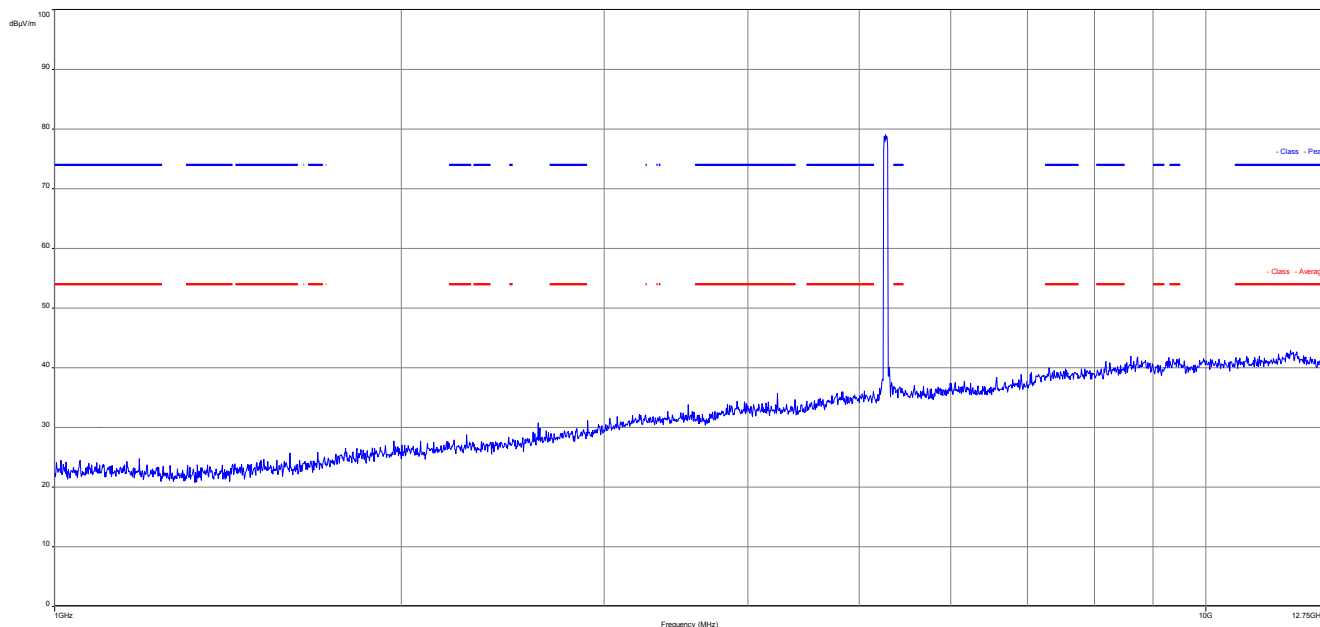
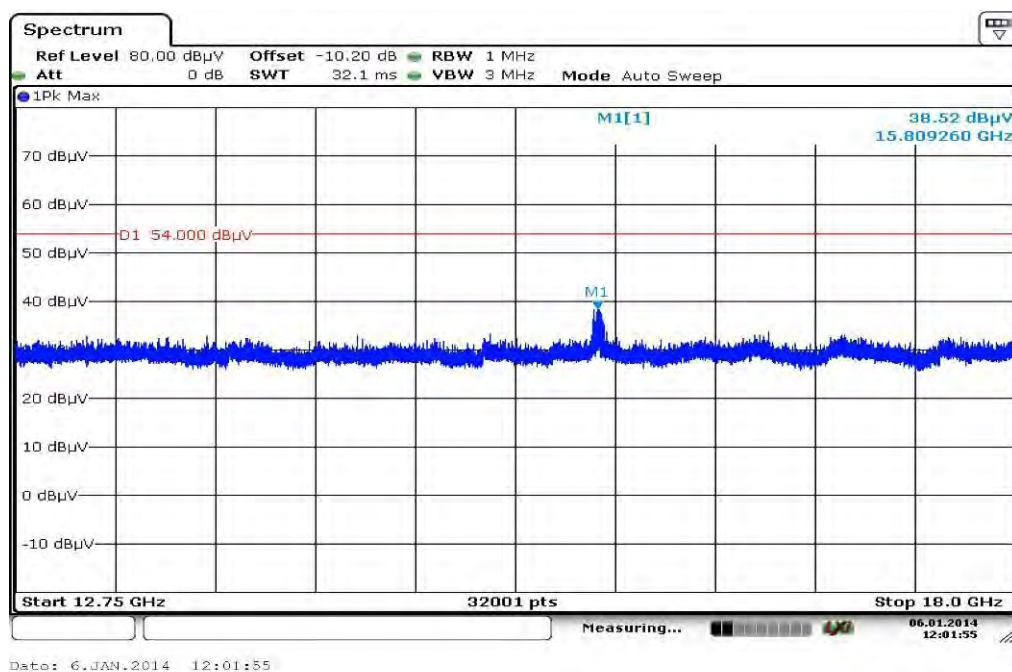
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dB $\mu$ V/m

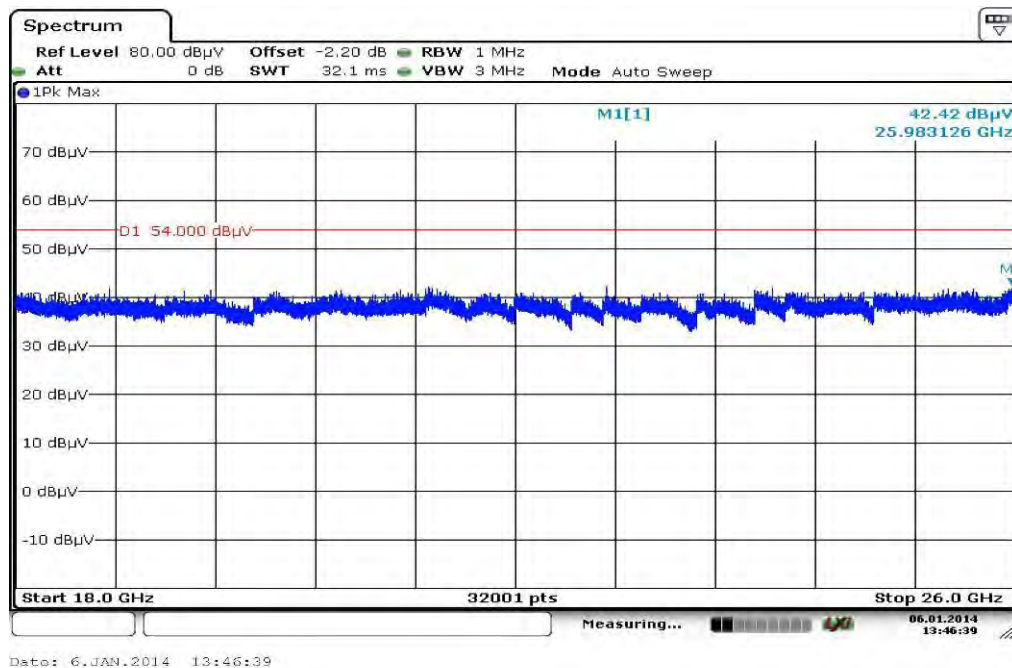
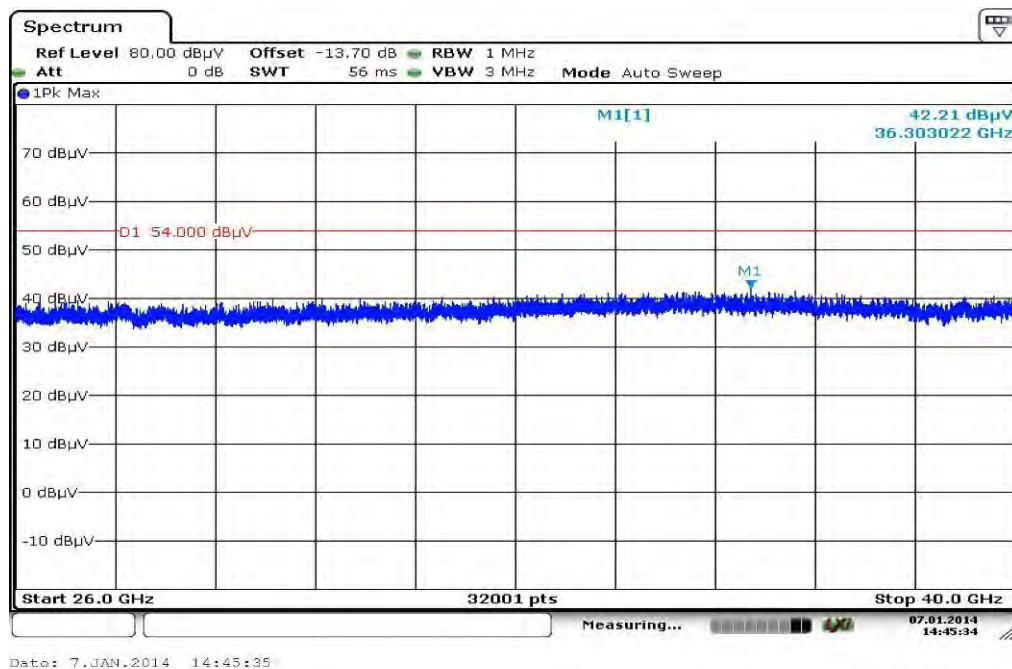
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 34.894350       | 10.2                     | 1000.0          | 120.000         | 105.0       | V            | 280.0         | 13.0       | 19.8        | 30.0                 |         |
| 46.829400       | 10.4                     | 1000.0          | 120.000         | 120.0       | V            | 190.0         | 13.3       | 19.6        | 30.0                 |         |
| 54.146700       | 9.6                      | 1000.0          | 120.000         | 120.0       | V            | 88.0          | 13.0       | 20.4        | 30.0                 |         |
| 733.107600      | 20.9                     | 1000.0          | 120.000         | 170.0       | V            | 84.0          | 23.3       | 15.1        | 36.0                 |         |
| 777.047850      | 21.2                     | 1000.0          | 120.000         | 120.0       | V            | 270.0         | 23.7       | 14.8        | 36.0                 |         |
| 943.589100      | 22.7                     | 1000.0          | 120.000         | 111.0       | H            | 182.0         | 25.3       | 13.3        | 36.0                 |         |

**Plot 12:** 1 GHz to 12.75 GHz, 5270 MHz, vertical & horizontal polarization**Plot 13:** 12 GHz to 18 GHz, 5270 MHz, vertical & horizontal polarization

**Plot 14:** 18 GHz to 26 GHz, 5270 MHz, vertical & horizontal polarization**Plot 15:** 26 GHz to 40 GHz, 5270 MHz, vertical & horizontal polarization

**Plot 16:** 30 MHz to 1 GHz, 5310 MHz, vertical & horizontal polarization

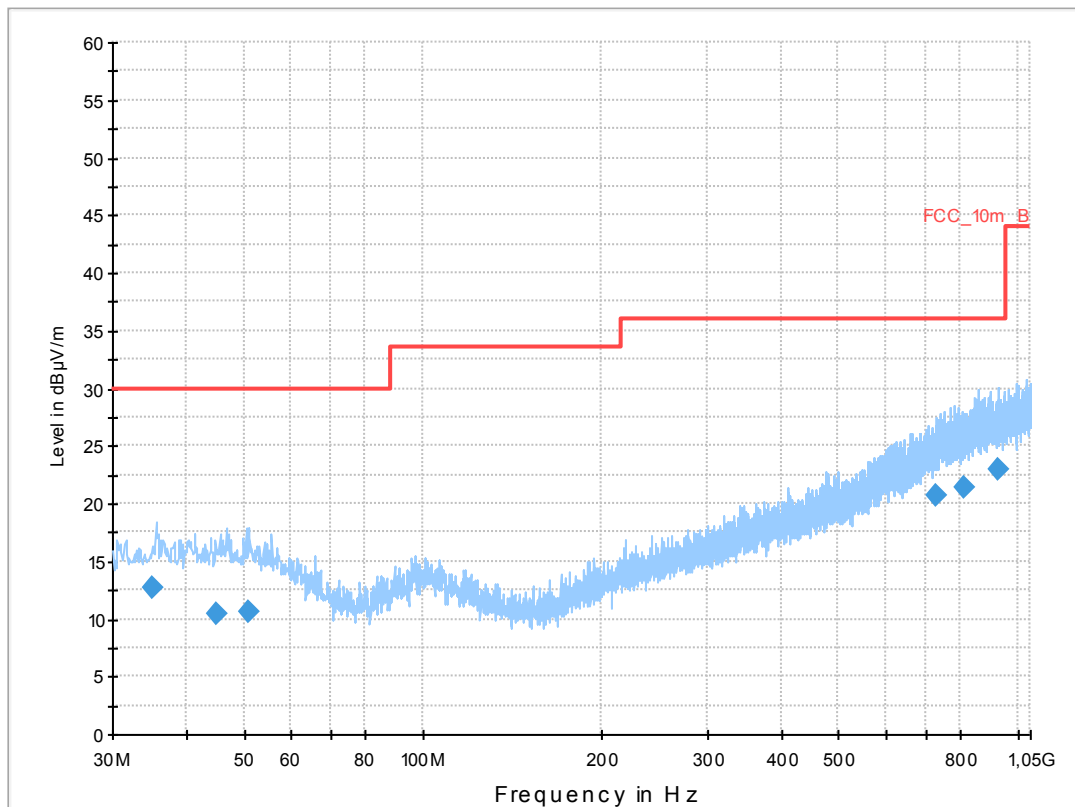
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT40) tx ch 62  
 Operator Name: Hennemann  
 Comment: battery powered

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

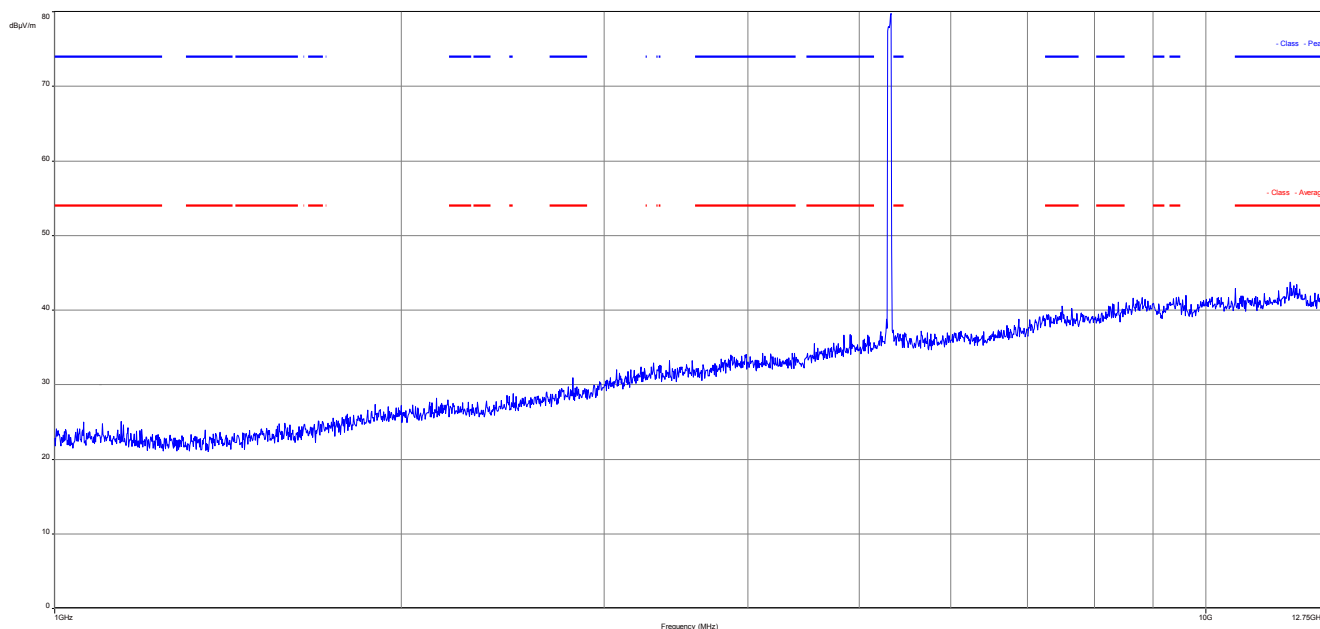
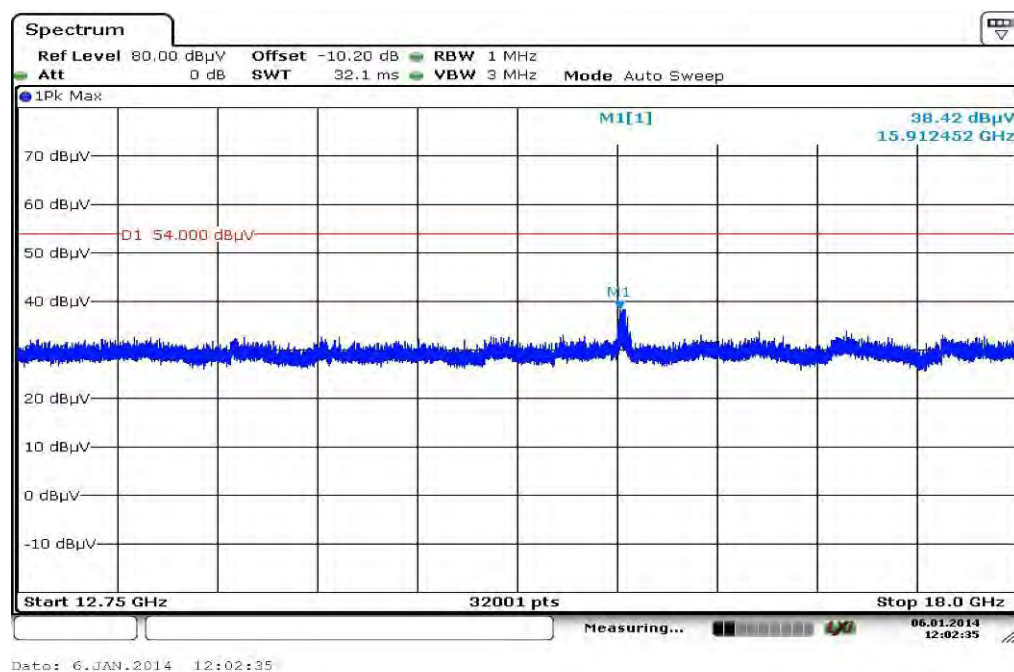
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dB $\mu$ V/m

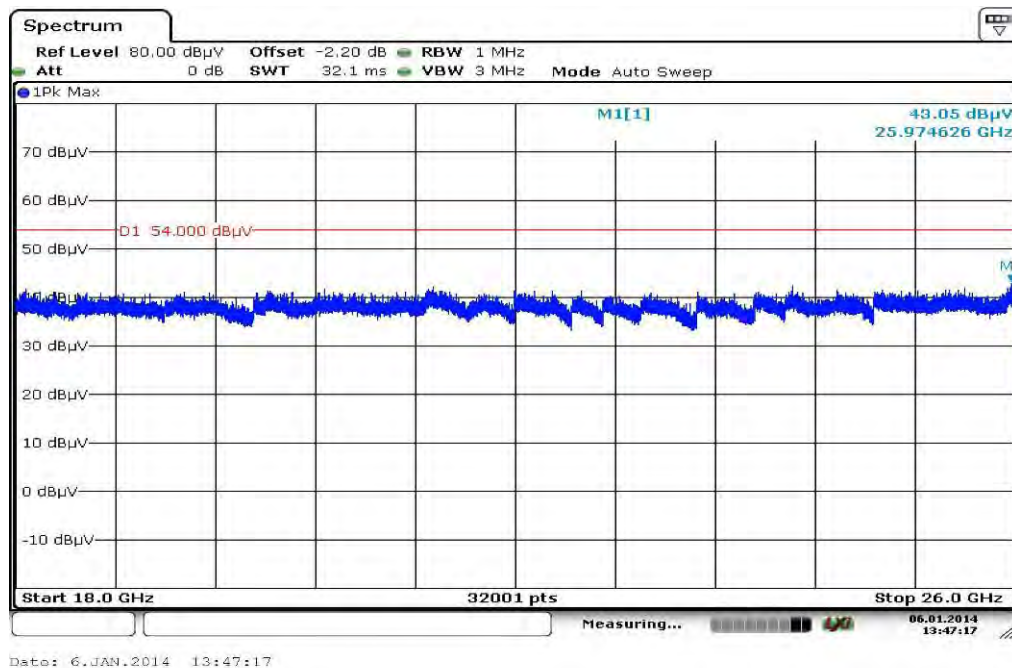
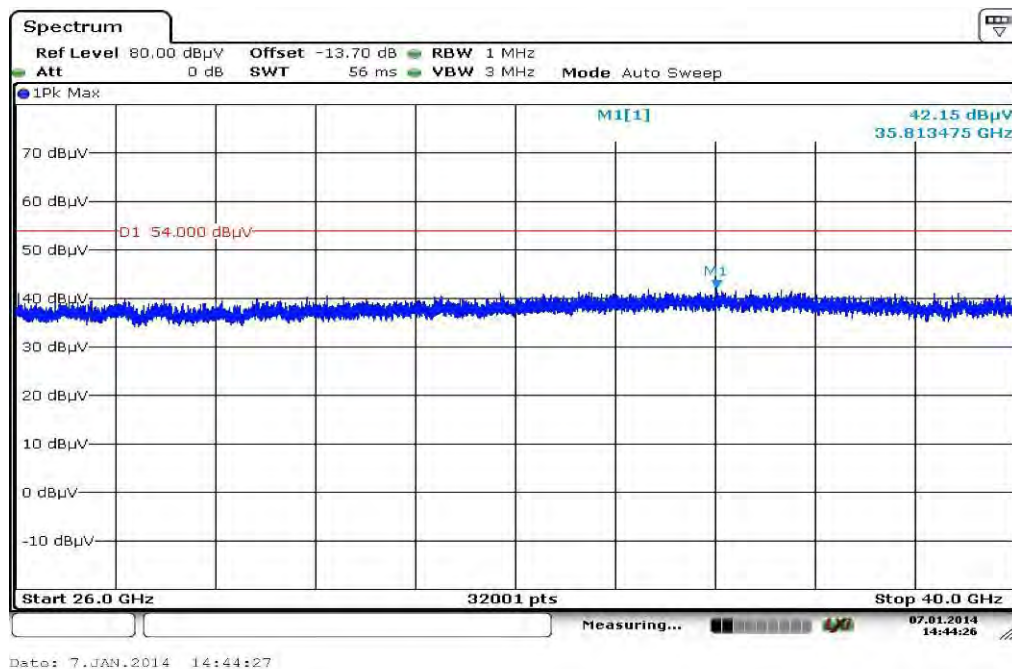
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 35.032800       | 12.7                     | 1000.0          | 120.000         | 143.0       | V            | 268.0         | 13.0       | 17.3        | 30.0                 |         |
| 45.061200       | 10.4                     | 1000.0          | 120.000         | 104.0       | V            | 180.0         | 13.3       | 19.6        | 30.0                 |         |
| 50.932200       | 10.6                     | 1000.0          | 120.000         | 170.0       | V            | 280.0         | 13.3       | 19.4        | 30.0                 |         |
| 728.592450      | 20.8                     | 1000.0          | 120.000         | 170.0       | H            | 260.0         | 23.2       | 15.2        | 36.0                 |         |
| 811.546200      | 21.4                     | 1000.0          | 120.000         | 170.0       | V            | 268.0         | 24.0       | 14.6        | 36.0                 |         |
| 927.288600      | 22.9                     | 1000.0          | 120.000         | 170.0       | V            | 261.0         | 25.3       | 13.1        | 36.0                 |         |

**Plot 17:** 1 GHz to 12.75 GHz, 5310 MHz, vertical & horizontal polarization**Plot 18:** 12 GHz to 18 GHz, 5310 MHz, vertical & horizontal polarization

**Plot 19:** 18 GHz to 26 GHz, 5310 MHz, vertical & horizontal polarization**Plot 20:** 26 GHz to 40 GHz, 5310 MHz, vertical & horizontal polarization

**Plot 21:** 30 MHz to 1 GHz, 5510 MHz, vertical & horizontal polarization

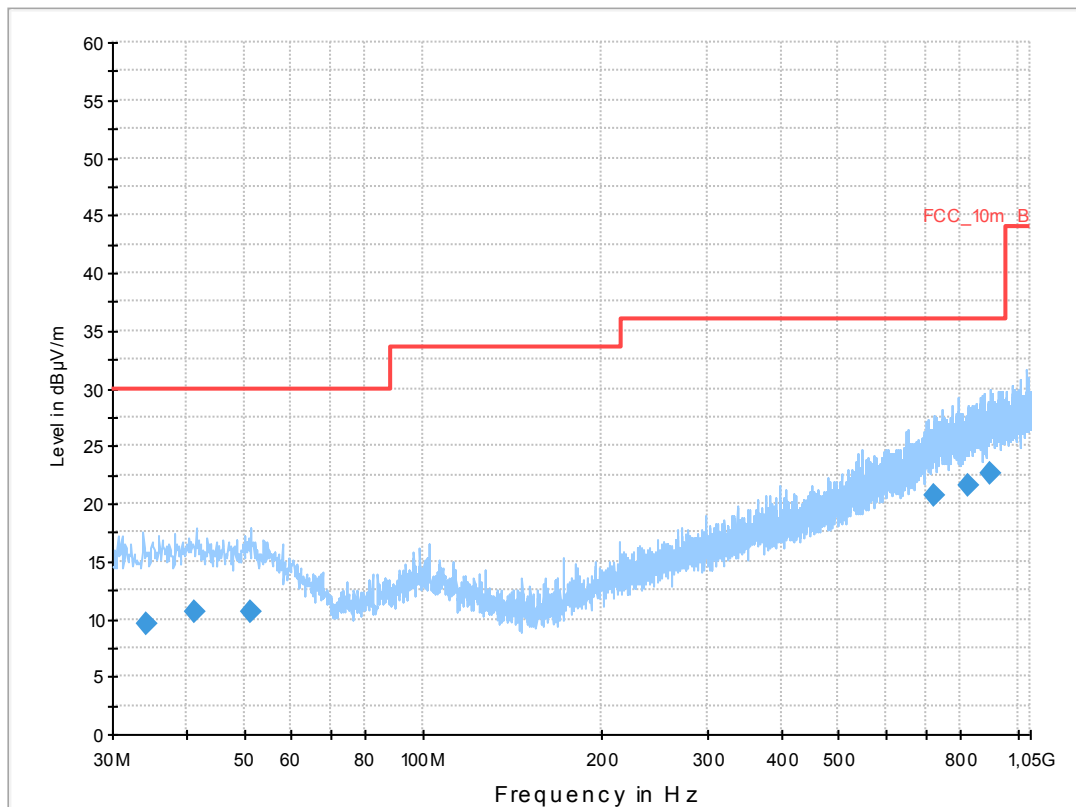
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT40) tx ch 102  
 Operator Name: Hennemann  
 Comment: battery powered

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

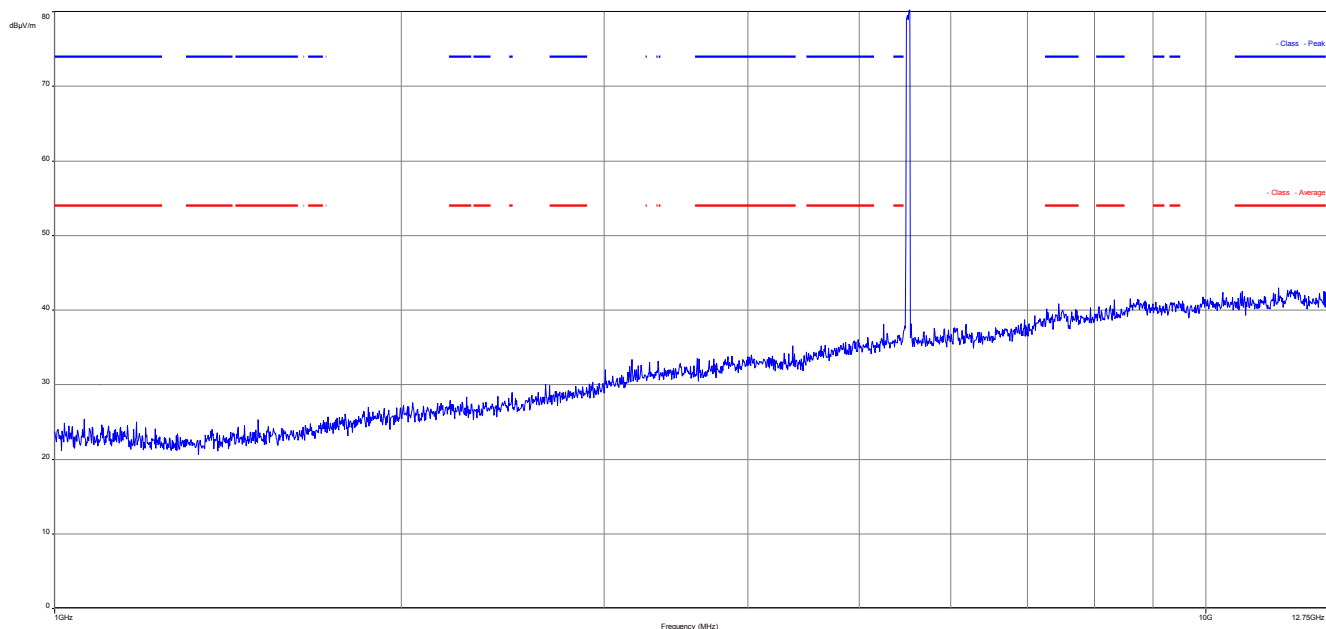
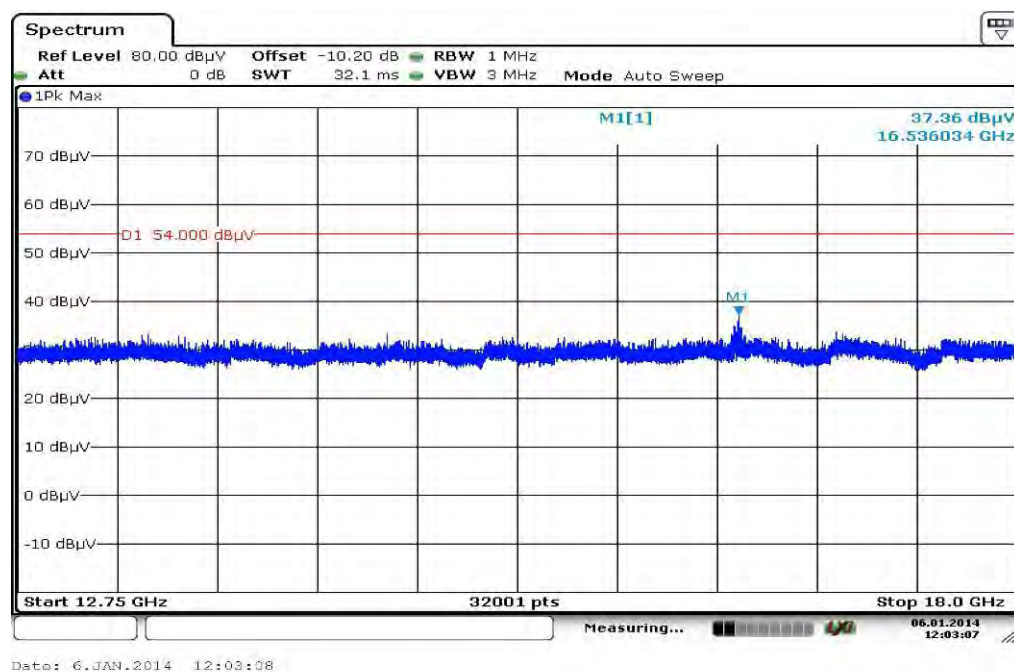
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dB $\mu$ V/m

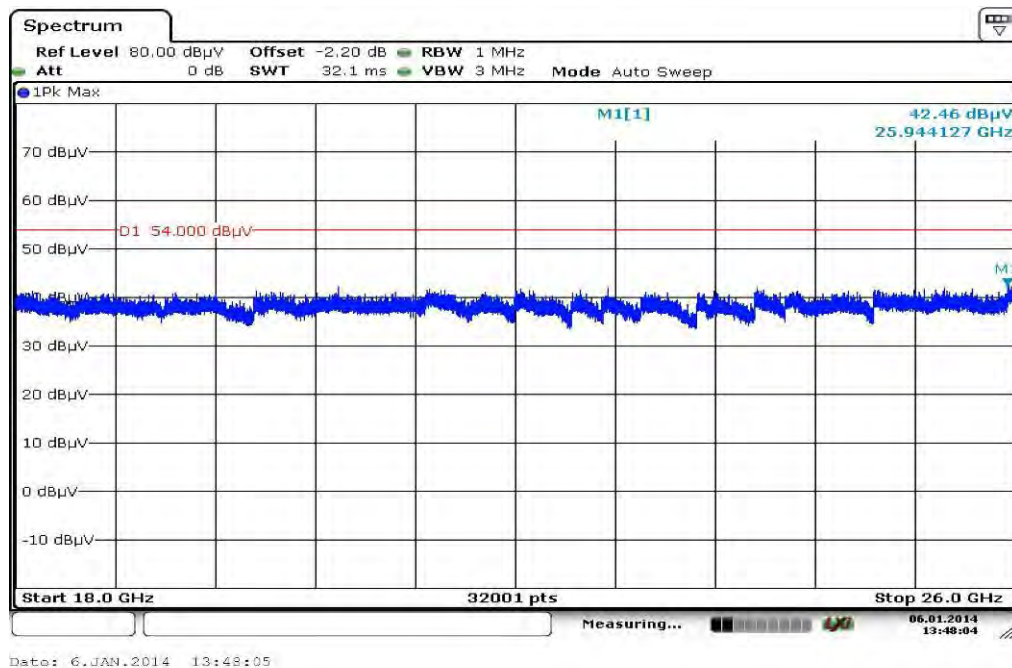
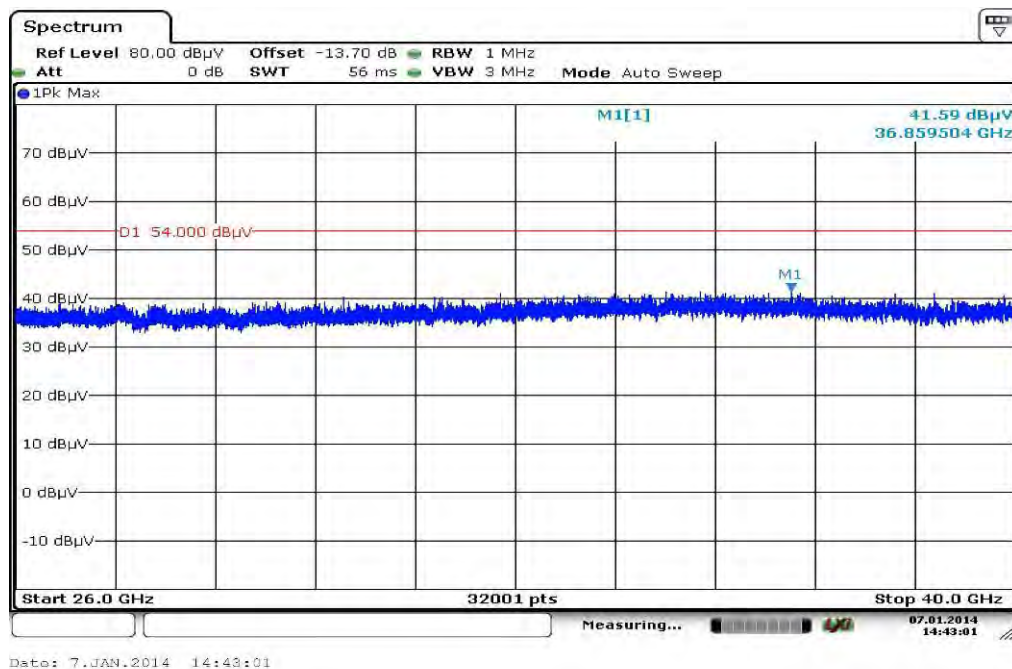
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 34.260450       | 9.5                      | 1000.0          | 120.000         | 170.0       | H            | 10.0          | 12.9       | 20.5        | 30.0                 |         |
| 41.226750       | 10.6                     | 1000.0          | 120.000         | 170.0       | H            | 190.0         | 13.4       | 19.4        | 30.0                 |         |
| 51.146400       | 10.6                     | 1000.0          | 120.000         | 98.0        | V            | 280.0         | 13.3       | 19.4        | 30.0                 |         |
| 723.168900      | 20.6                     | 1000.0          | 120.000         | 98.0        | V            | 170.0         | 23.0       | 15.4        | 36.0                 |         |
| 822.498900      | 21.6                     | 1000.0          | 120.000         | 170.0       | V            | 280.0         | 24.1       | 14.4        | 36.0                 |         |
| 899.861400      | 22.7                     | 1000.0          | 120.000         | 170.0       | H            | 80.0          | 25.2       | 13.3        | 36.0                 |         |

**Plot 22:** 1 GHz to 12.75 GHz, 5510 MHz, vertical & horizontal polarization**Plot 23:** 12 GHz to 18 GHz, 5510 MHz, vertical & horizontal polarization

**Plot 24:** 18 GHz to 26 GHz, 5510 MHz, vertical & horizontal polarization**Plot 25:** 26 GHz to 40 GHz, 5510 MHz, vertical & horizontal polarization

**Plot 26:** 30 MHz to 1 GHz, 5590 MHz, vertical & horizontal polarization

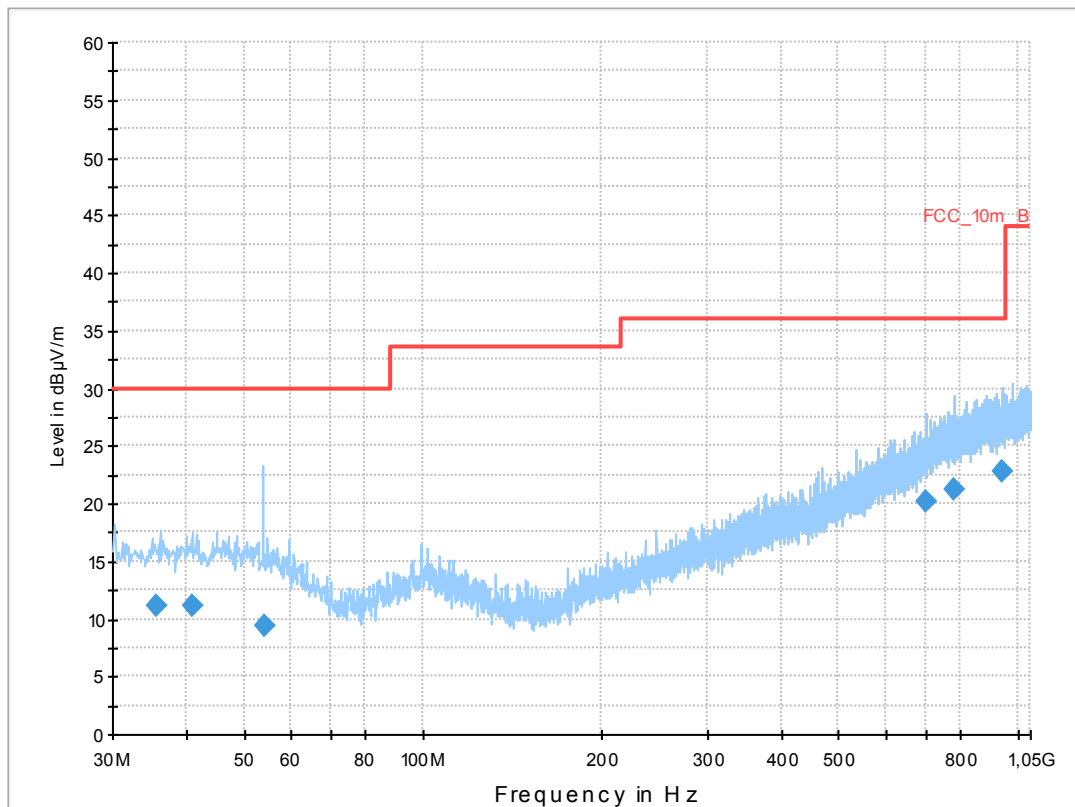
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT40) tx ch 118  
 Operator Name: Hennemann  
 Comment: battery powered

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

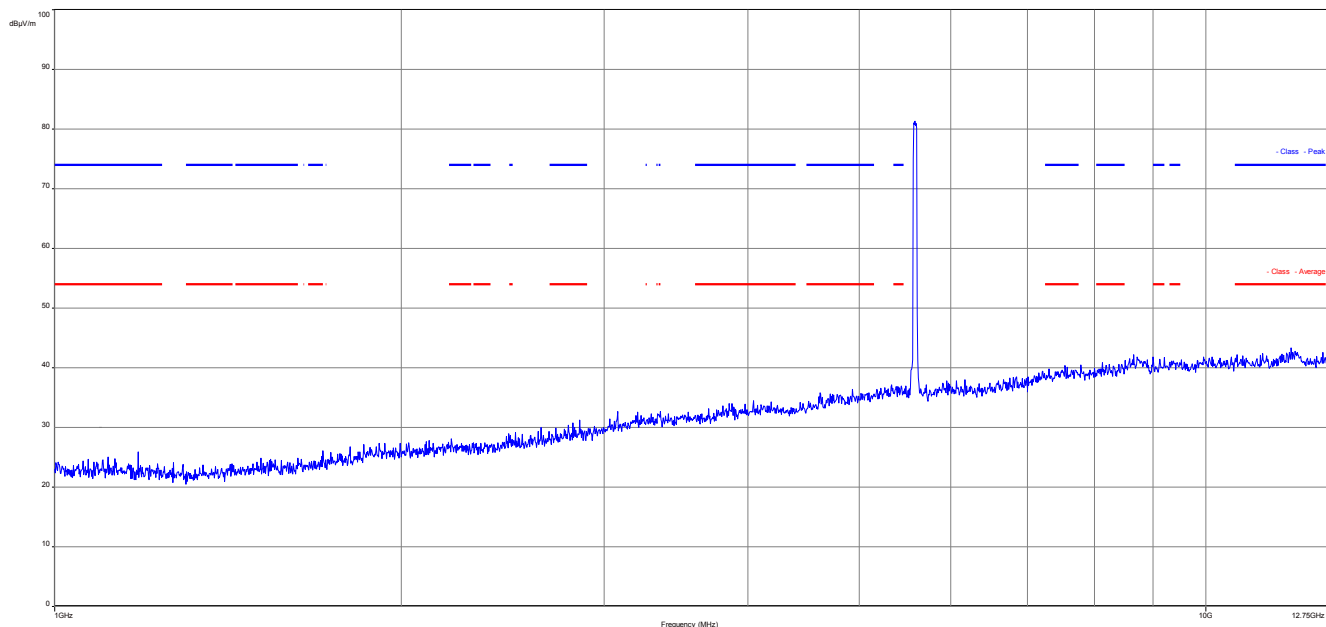
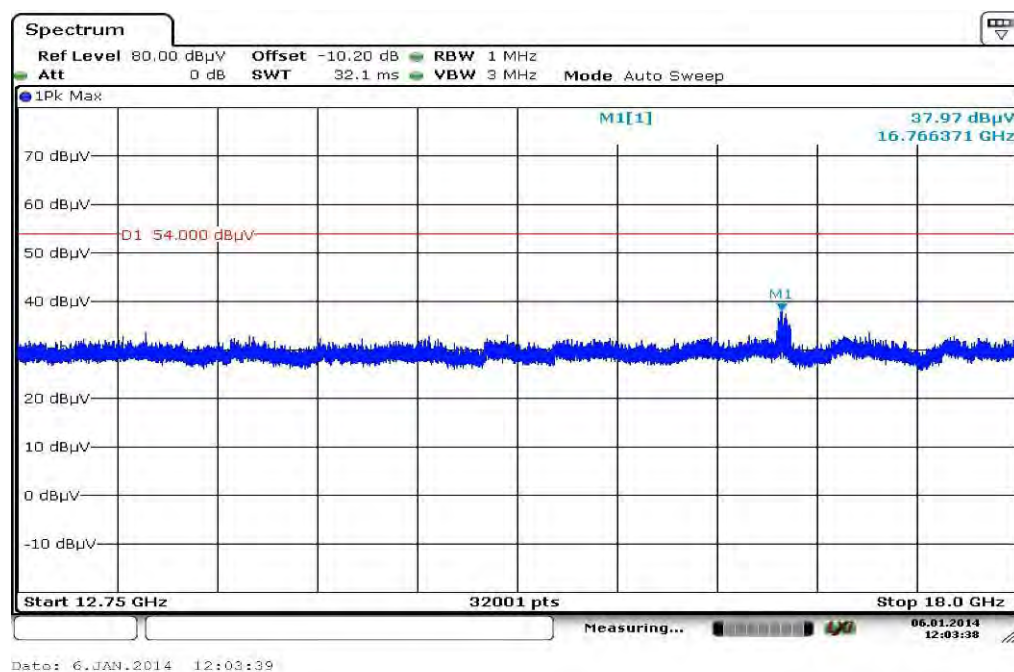
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

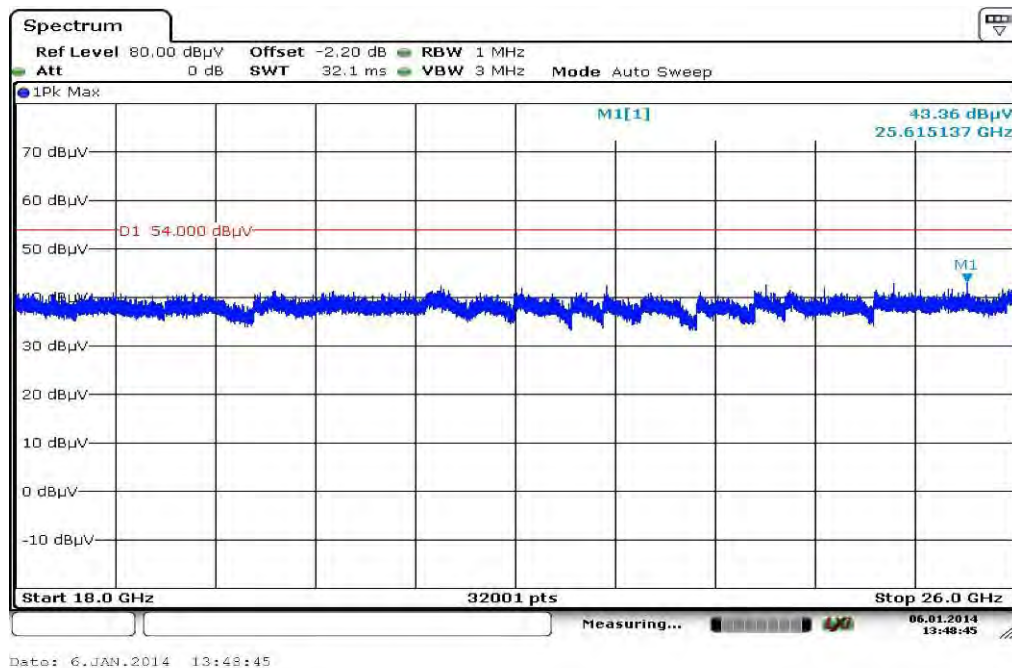
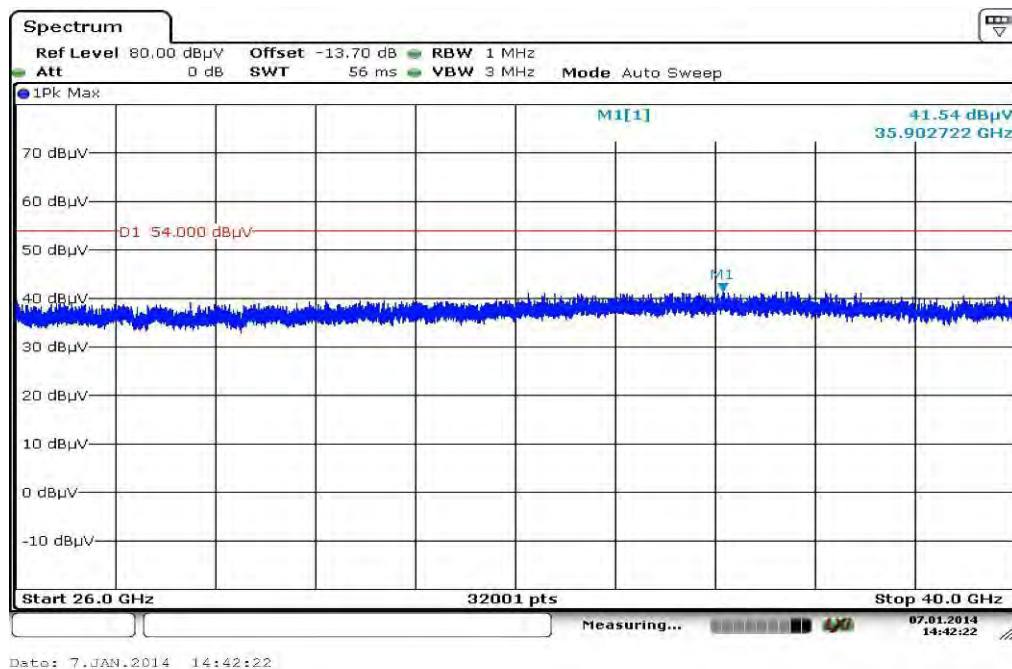
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 35.522250       | 11.1                     | 1000.0          | 120.000         | 132.0       | V            | 261.0         | 13.1       | 18.9        | 30.0                 |         |
| 40.765200       | 11.1                     | 1000.0          | 120.000         | 98.0        | V            | 85.0          | 13.4       | 18.9        | 30.0                 |         |
| 53.933400       | 9.4                      | 1000.0          | 120.000         | 170.0       | V            | -9.0          | 13.0       | 20.6        | 30.0                 |         |
| 700.070700      | 20.1                     | 1000.0          | 120.000         | 170.0       | V            | -9.0          | 22.5       | 15.9        | 36.0                 |         |
| 780.766800      | 21.1                     | 1000.0          | 120.000         | 170.0       | H            | 81.0          | 23.7       | 14.9        | 36.0                 |         |
| 942.734250      | 22.7                     | 1000.0          | 120.000         | 120.0       | V            | 178.0         | 25.3       | 13.3        | 36.0                 |         |

**Plot 27:** 1 GHz to 12.75 GHz, 5590 MHz, vertical & horizontal polarization**Plot 28:** 12 GHz to 18 GHz, 5590 MHz, vertical & horizontal polarization

**Plot 29:** 18 GHz to 26 GHz, 5590 MHz, vertical & horizontal polarization**Plot 30:** 26 GHz to 40 GHz, 5590 MHz, vertical & horizontal polarization

**Plot 31:** 30 MHz to 1 GHz, 5670 MHz, vertical & horizontal polarization

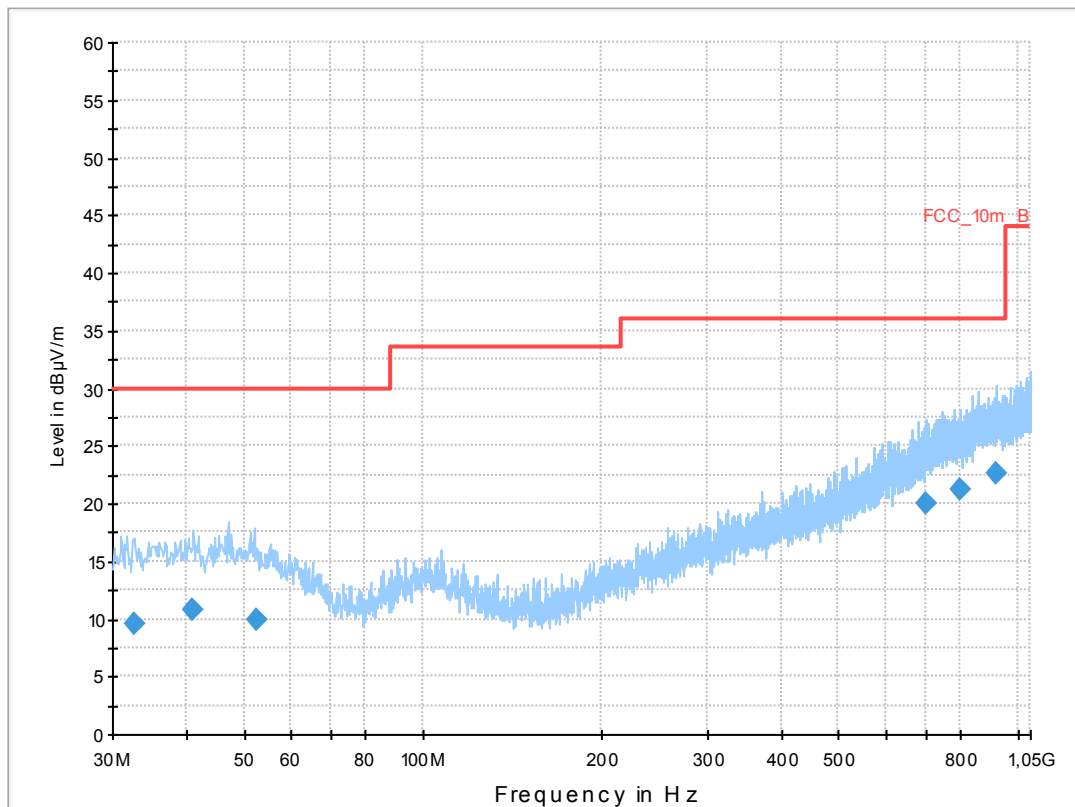
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT40) tx ch 134  
 Operator Name: Hennemann  
 Comment: battery powered

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

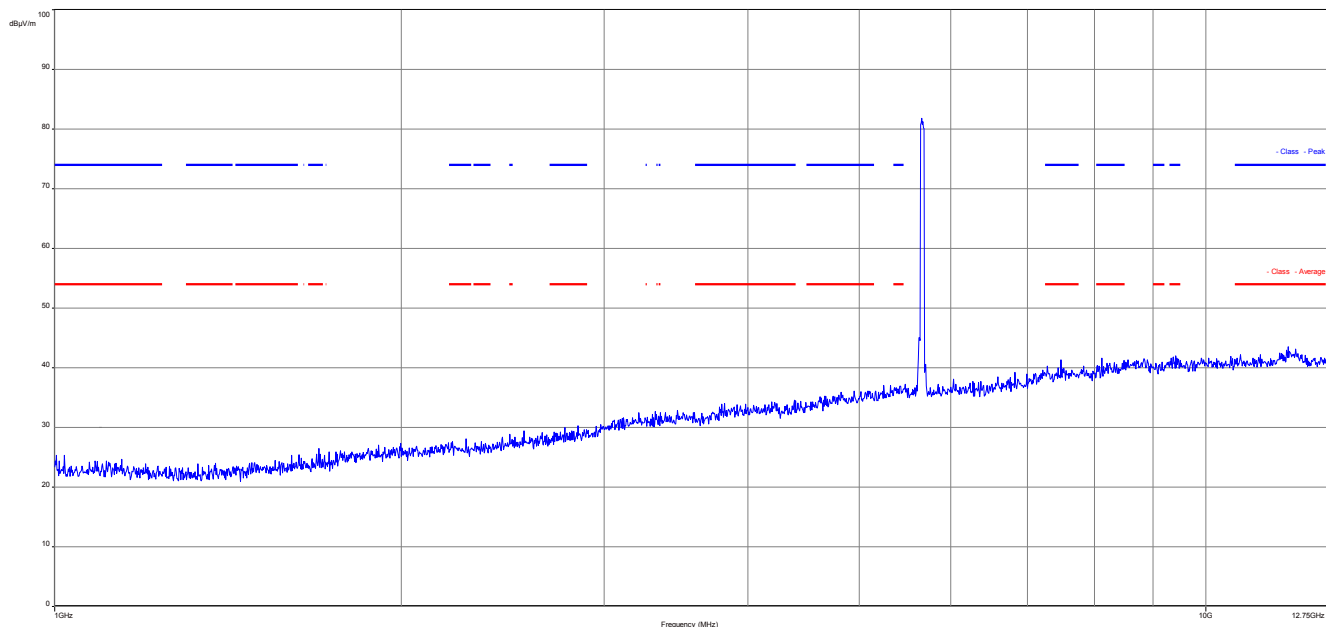
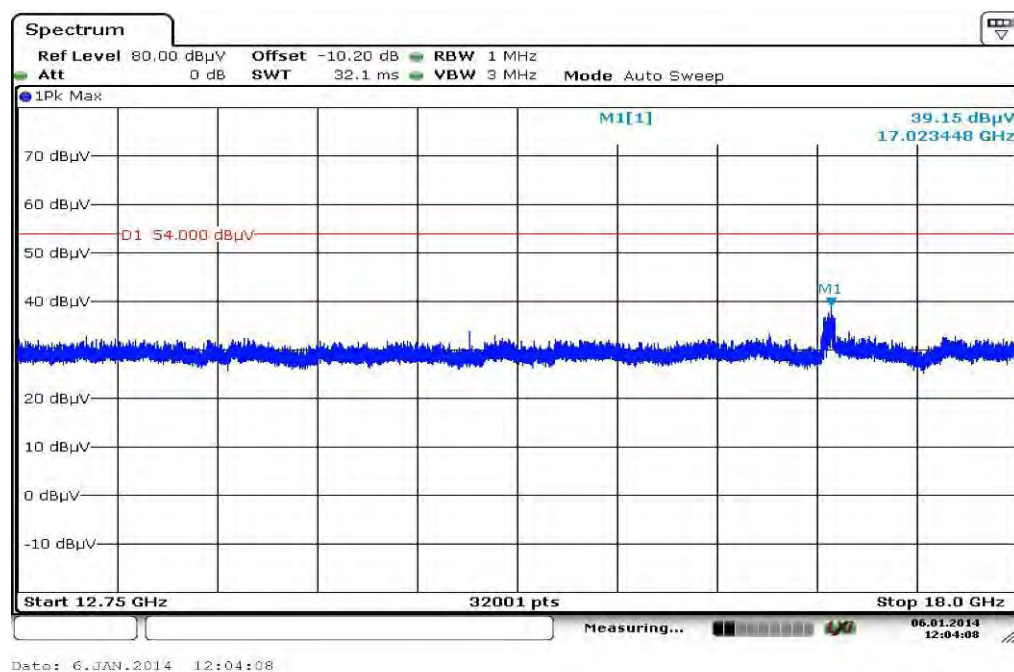
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dB $\mu$ V/m

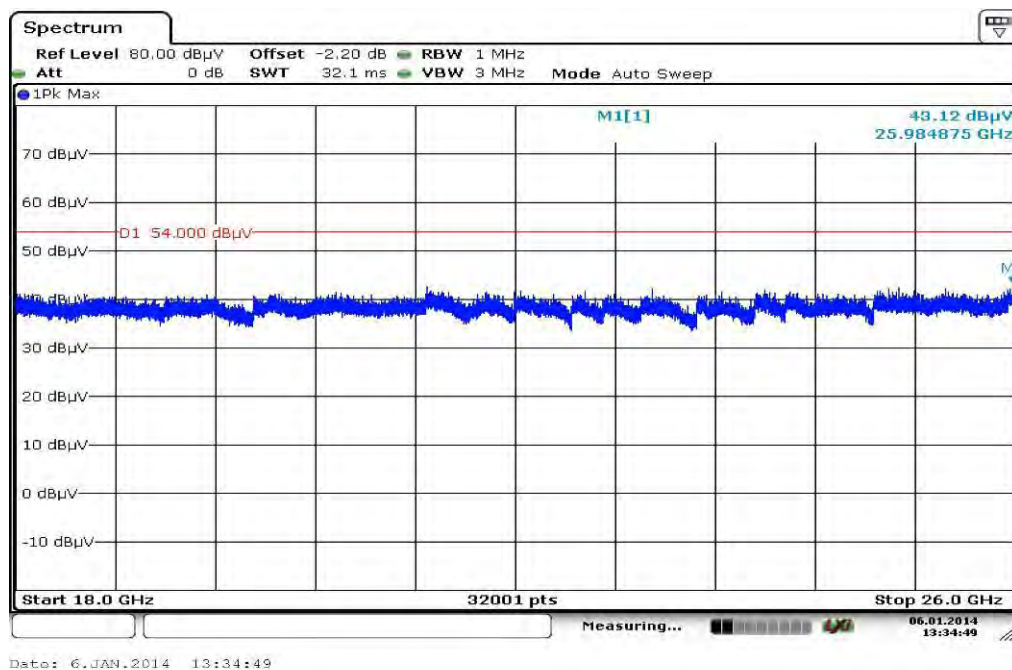
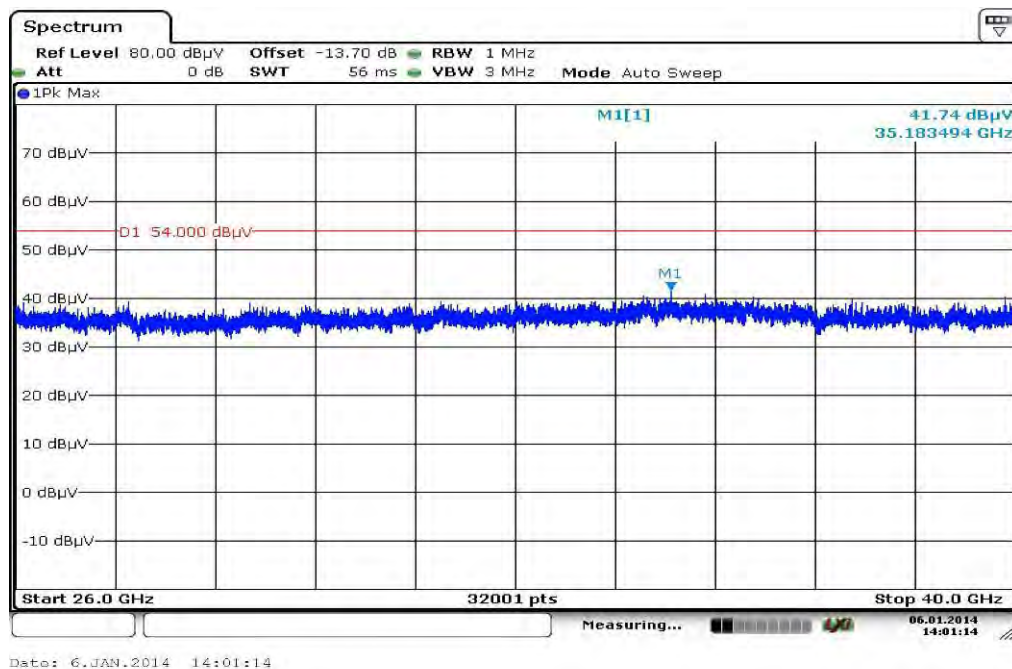
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 32.784000       | 9.6                      | 1000.0          | 120.000         | 142.0       | V            | 100.0         | 12.8       | 20.4        | 30.0                 |         |
| 40.983450       | 10.8                     | 1000.0          | 120.000         | 170.0       | H            | 269.0         | 13.4       | 19.2        | 30.0                 |         |
| 52.340250       | 9.9                      | 1000.0          | 120.000         | 121.0       | V            | 81.0          | 13.1       | 20.1        | 30.0                 |         |
| 700.309350      | 20.1                     | 1000.0          | 120.000         | 170.0       | H            | -5.0          | 22.5       | 15.9        | 36.0                 |         |
| 800.352150      | 21.2                     | 1000.0          | 120.000         | 170.0       | H            | 10.0          | 23.8       | 14.8        | 36.0                 |         |
| 920.406000      | 22.6                     | 1000.0          | 120.000         | 170.0       | V            | 2.0           | 25.3       | 13.4        | 36.0                 |         |

**Plot 32:** 1 GHz to 12.75 GHz, 5670 MHz, vertical & horizontal polarization**Plot 33:** 12 GHz to 18 GHz, 5670 MHz, vertical & horizontal polarization

**Plot 34:** 18 GHz to 26 GHz, 5670 MHz, vertical & horizontal polarization**Plot 35:** 26 GHz to 40 GHz, 5670 MHz, vertical & horizontal polarization

**Plots:** OFDM / ac – mode HT80

**Plot 36:** 30 MHz to 1 GHz, 5210 MHz, vertical & horizontal polarization

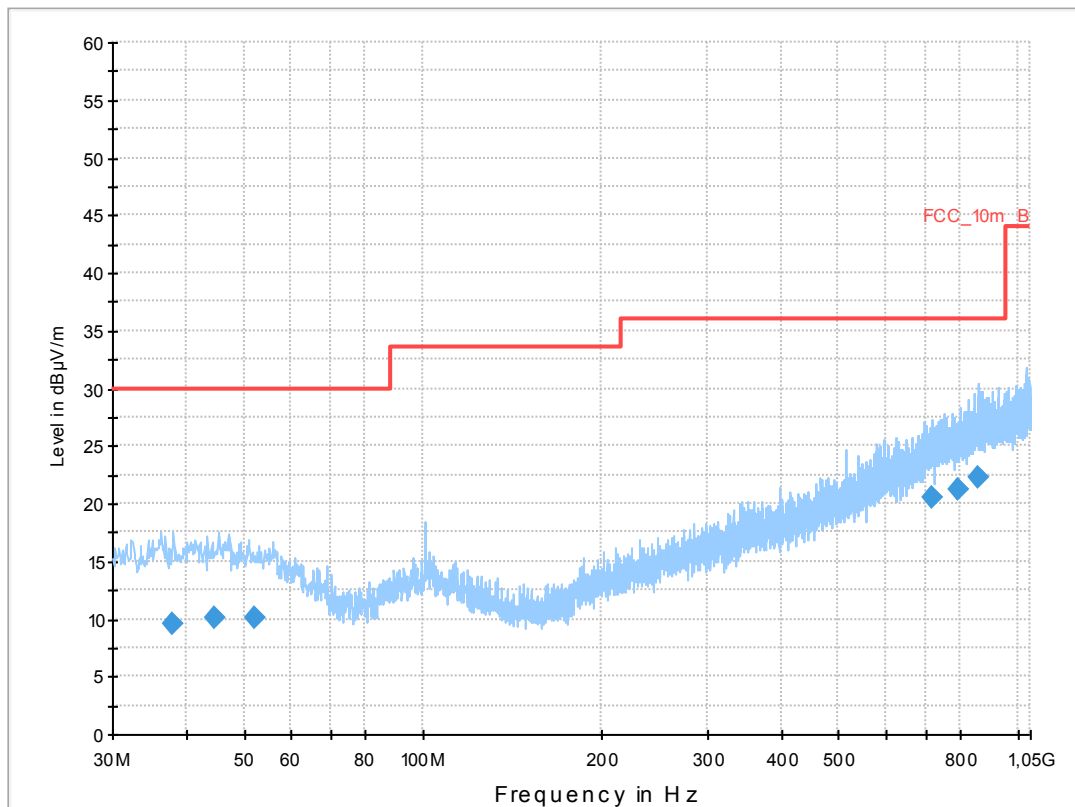
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT80) tx ch 42  
 Operator Name: Hennemann  
 Comment: battery powered

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

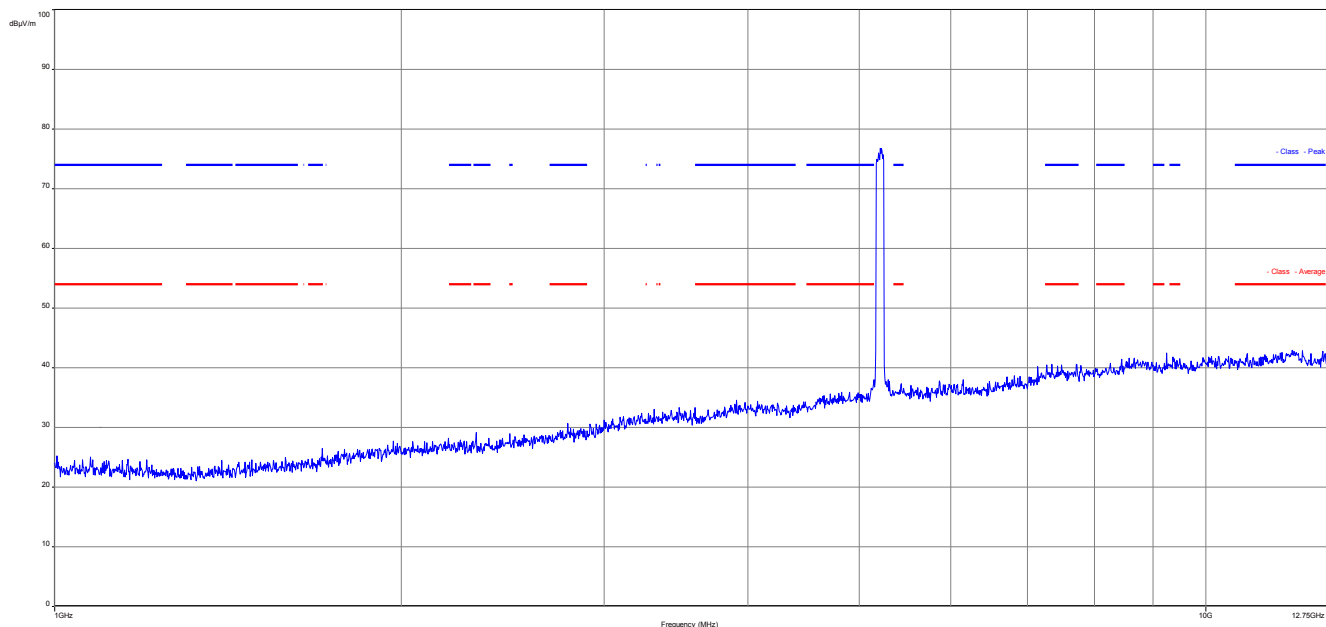
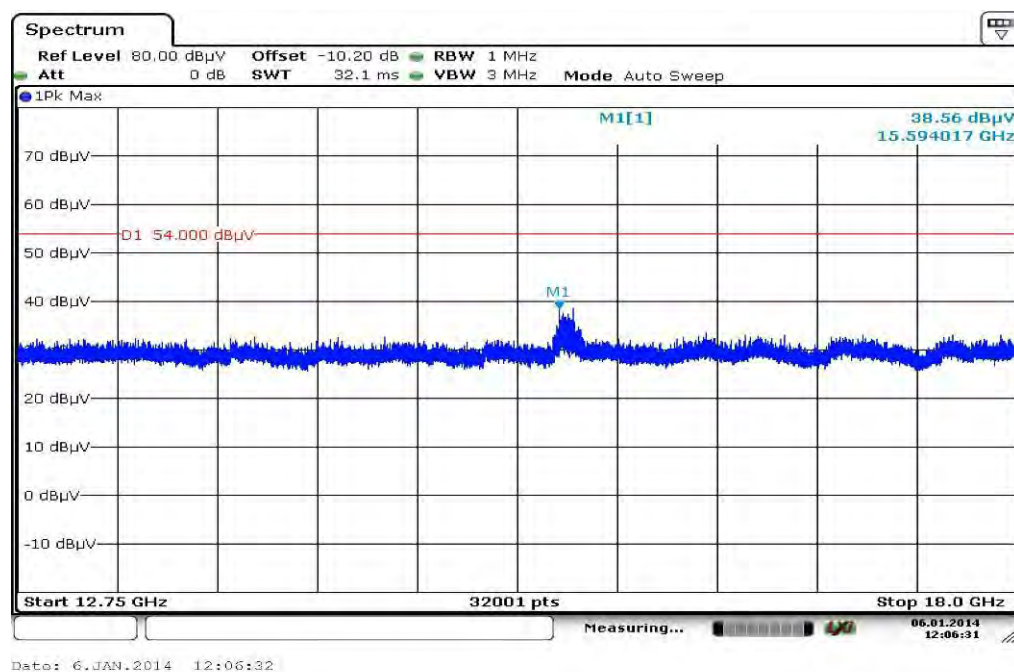
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

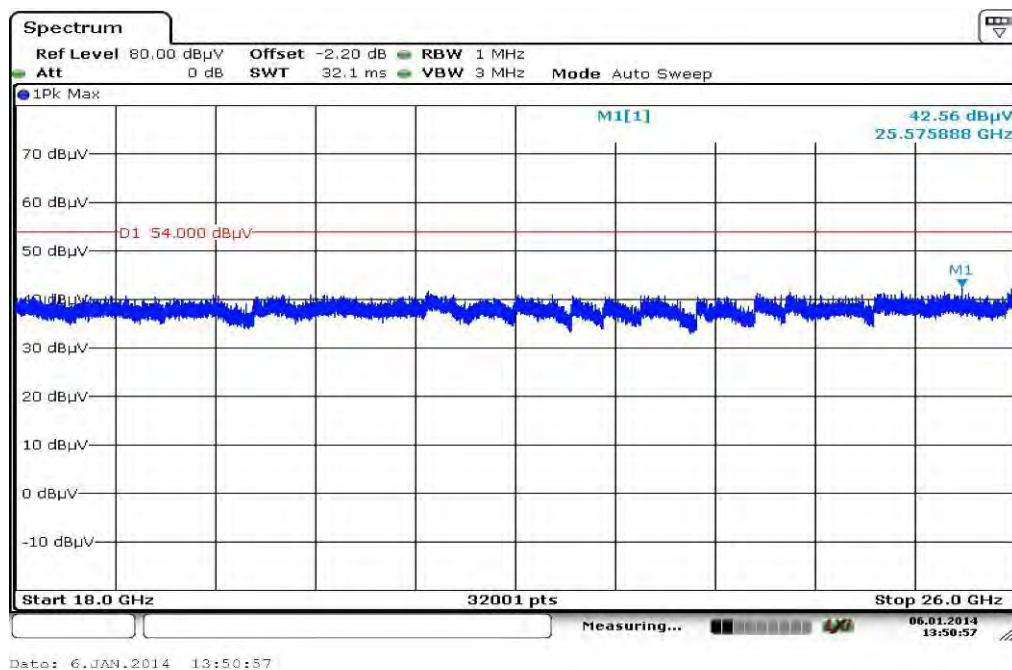
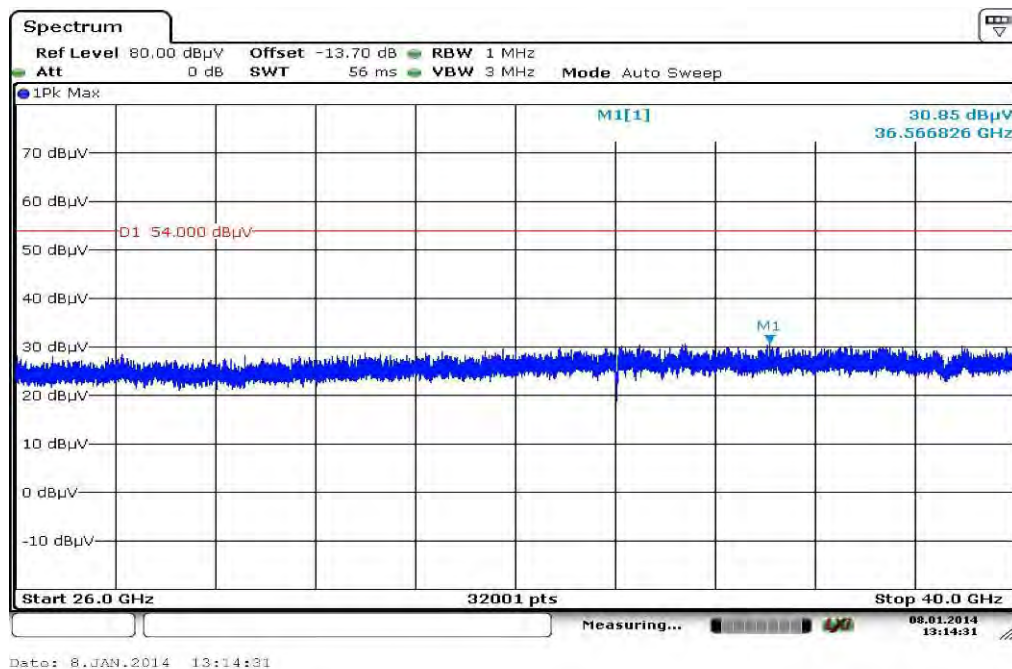
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 37.773900       | 9.6                      | 1000.0          | 120.000         | 109.0       | V            | 260.0         | 13.3       | 20.4        | 30.0                 |         |
| 44.652150       | 10.1                     | 1000.0          | 120.000         | 98.0        | H            | -2.0          | 13.3       | 19.9        | 30.0                 |         |
| 52.083000       | 10.1                     | 1000.0          | 120.000         | 170.0       | V            | 92.0          | 13.2       | 19.9        | 30.0                 |         |
| 715.905900      | 20.4                     | 1000.0          | 120.000         | 170.0       | V            | 190.0         | 22.9       | 15.6        | 36.0                 |         |
| 793.071600      | 21.2                     | 1000.0          | 120.000         | 170.0       | V            | 190.0         | 23.8       | 14.8        | 36.0                 |         |
| 860.142450      | 22.3                     | 1000.0          | 120.000         | 111.0       | V            | 88.0          | 24.7       | 13.7        | 36.0                 |         |

**Plot 37:** 1 GHz to 12.75 GHz, 5210 MHz, vertical & horizontal polarization**Plot 38:** 12 GHz to 18 GHz, 5210 MHz, vertical & horizontal polarization

**Plot 39:** 18 GHz to 26 GHz, 5210 MHz, vertical & horizontal polarization**Plot 40:** 26 GHz to 40 GHz, 5210 MHz, vertical & horizontal polarization

**Plot 41:** 30 MHz to 1 GHz, 5290 MHz, vertical & horizontal polarization

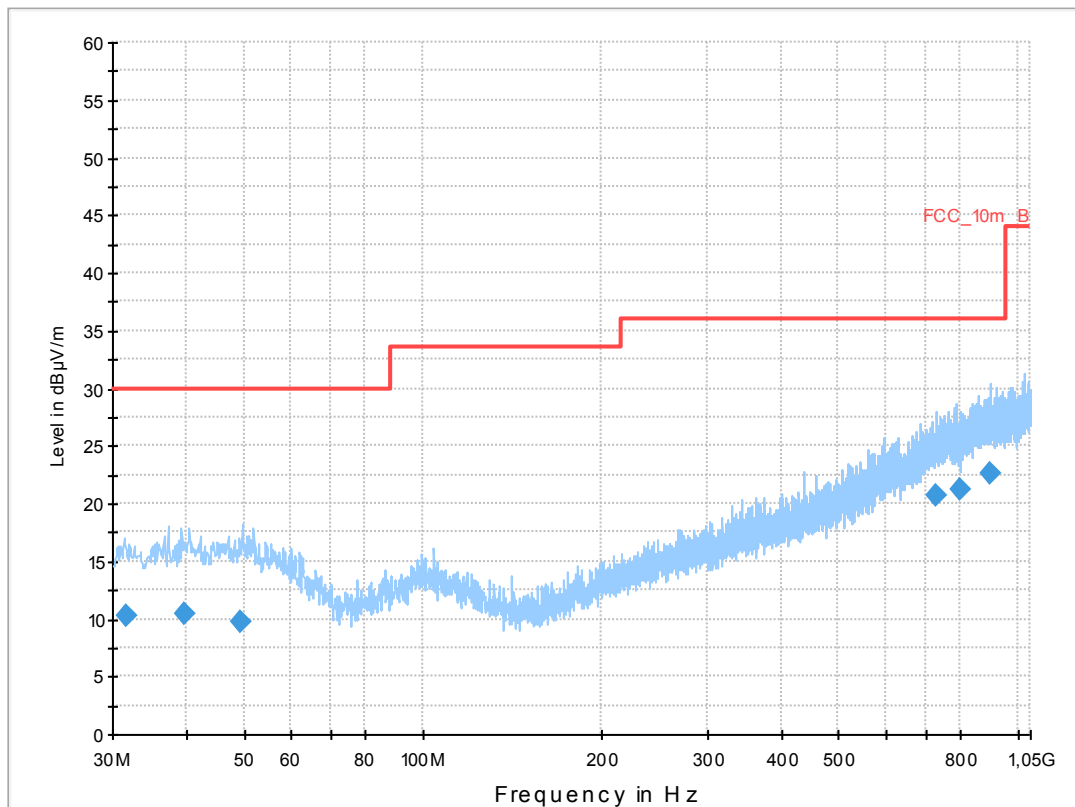
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT80) tx ch 58  
 Operator Name: Hennemann  
 Comment: battery powered

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

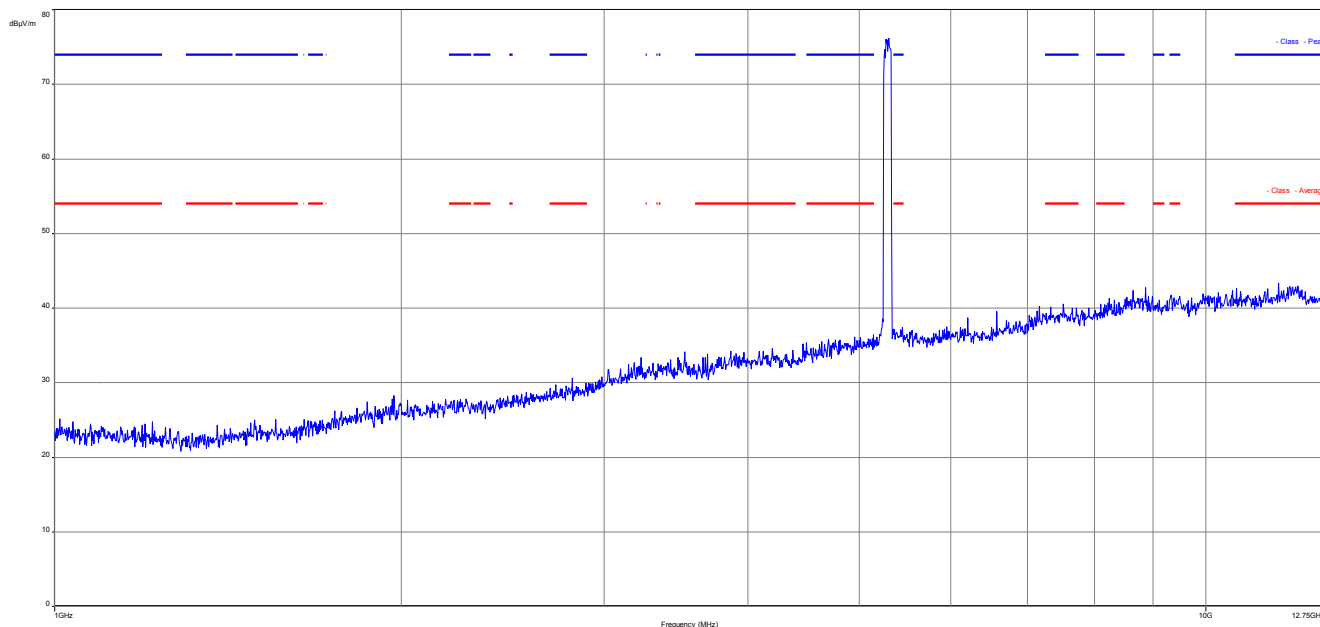
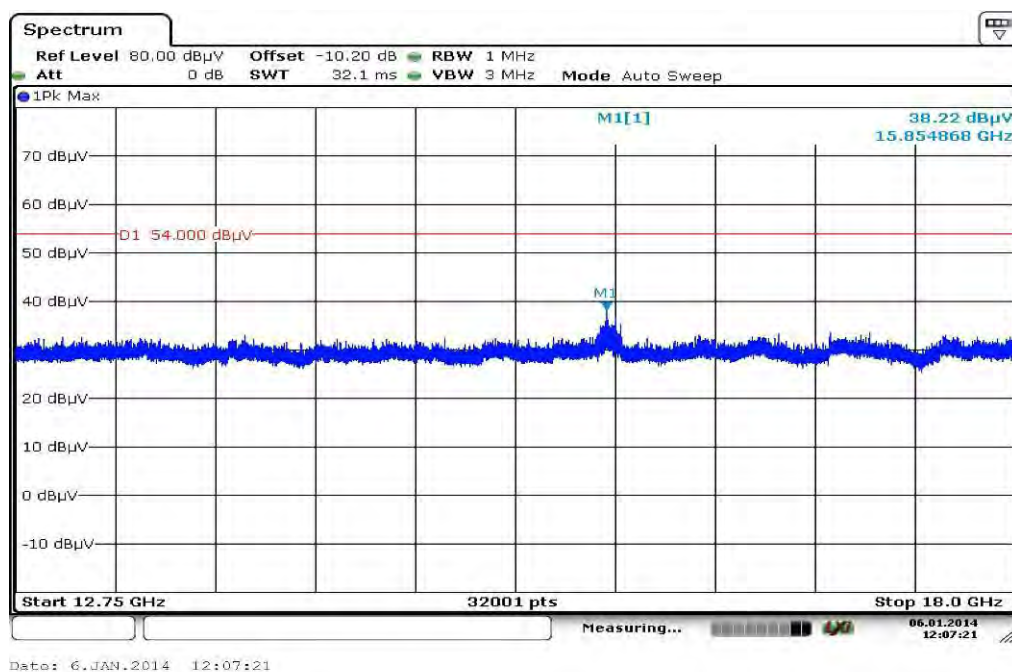
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

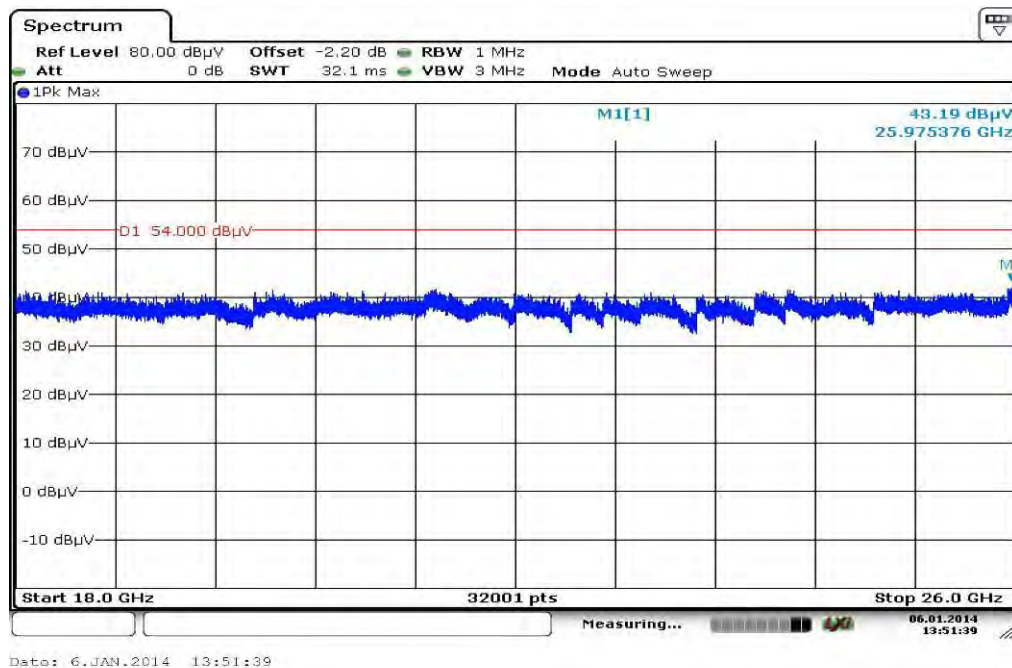
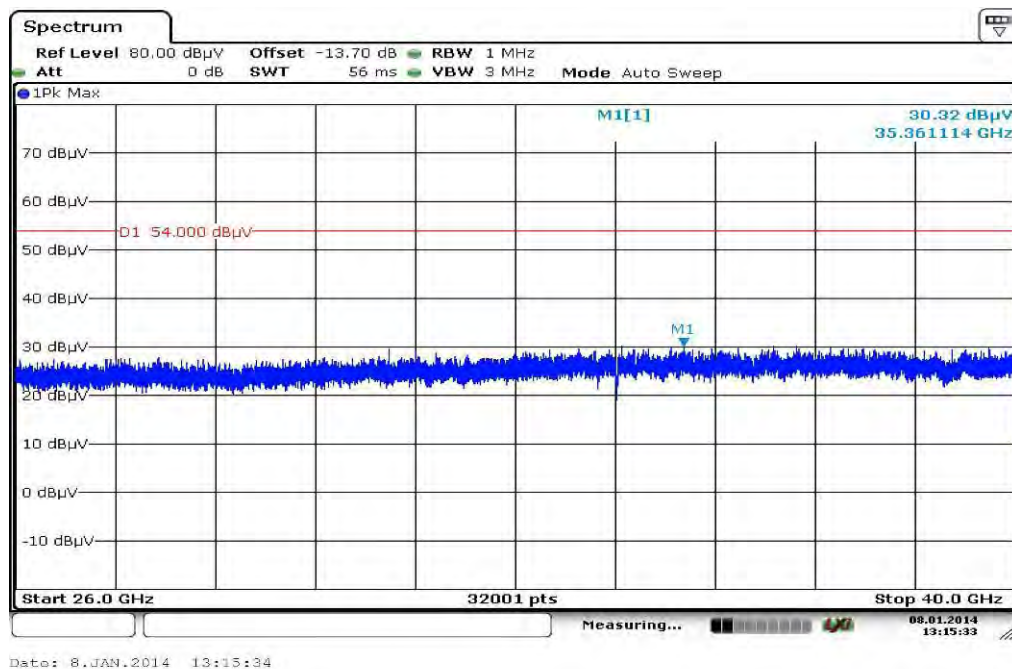
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 31.772550       | 10.3                     | 1000.0          | 120.000         | 170.0       | H            | 170.0         | 12.7       | 19.7        | 30.0                 |         |
| 39.745350       | 10.4                     | 1000.0          | 120.000         | 170.0       | H            | 280.0         | 13.4       | 19.6        | 30.0                 |         |
| 49.179000       | 9.7                      | 1000.0          | 120.000         | 132.0       | V            | 190.0         | 13.4       | 20.3        | 30.0                 |         |
| 731.140050      | 20.8                     | 1000.0          | 120.000         | 170.0       | H            | 261.0         | 23.2       | 15.2        | 36.0                 |         |
| 802.993200      | 21.3                     | 1000.0          | 120.000         | 170.0       | H            | 190.0         | 23.8       | 14.7        | 36.0                 |         |
| 897.214200      | 22.7                     | 1000.0          | 120.000         | 170.0       | H            | 85.0          | 25.2       | 13.3        | 36.0                 |         |

**Plot 42:** 1 GHz to 12.75 GHz, 5290 MHz, vertical & horizontal polarization**Plot 43:** 12 GHz to 18 GHz, 5290 MHz, vertical & horizontal polarization

**Plot 44:** 18 GHz to 26 GHz, 5290 MHz, vertical & horizontal polarization**Plot 45:** 26 GHz to 40 GHz, 5290 MHz, vertical & horizontal polarization

**Plot 46:** 30 MHz to 1 GHz, 5530 MHz, vertical & horizontal polarization

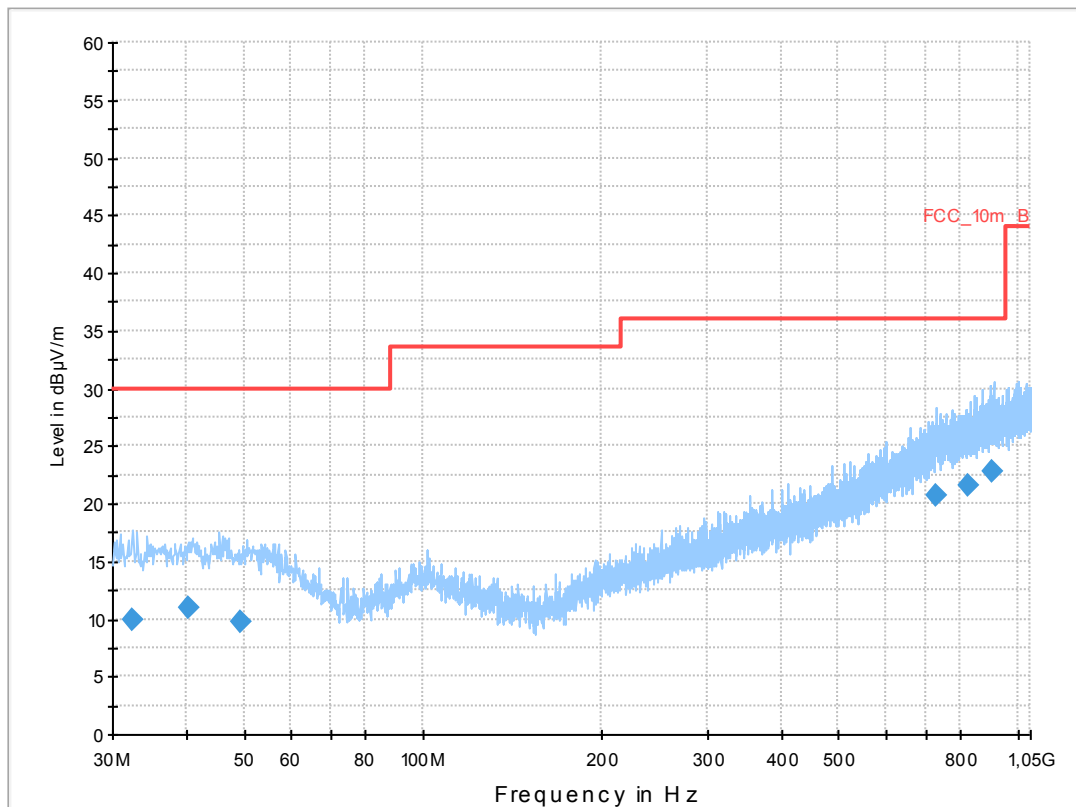
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT80) tx ch 106  
 Operator Name: Hennemann  
 Comment: battery powered

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

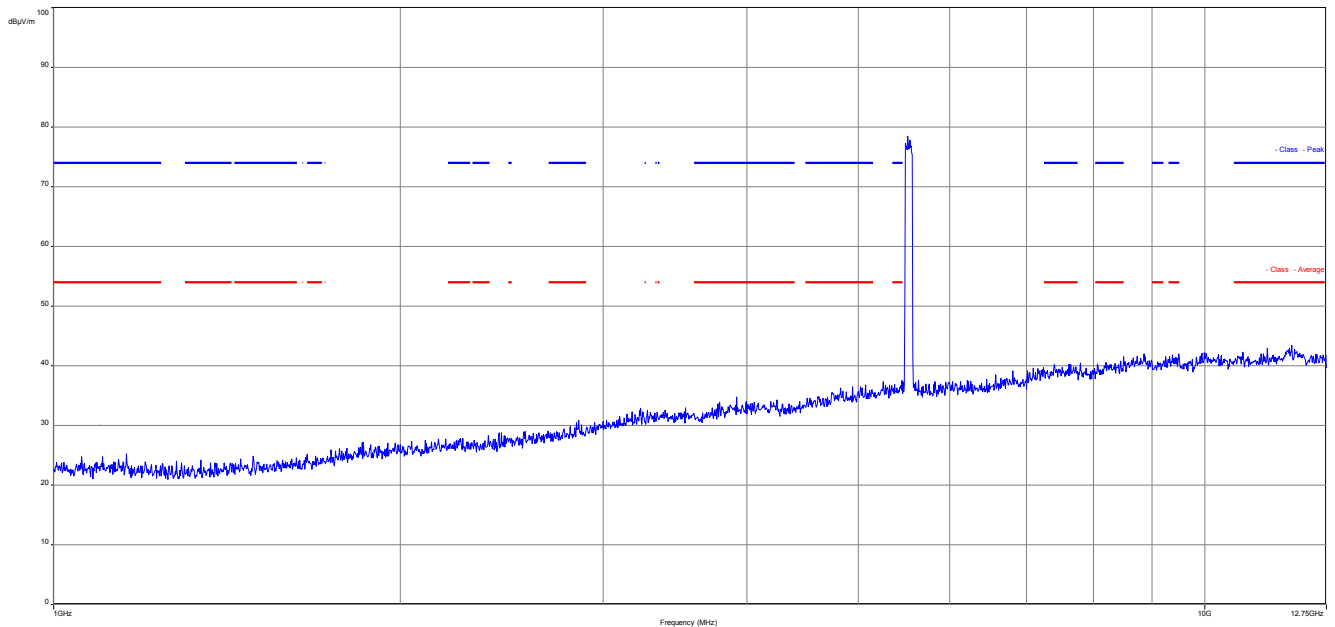
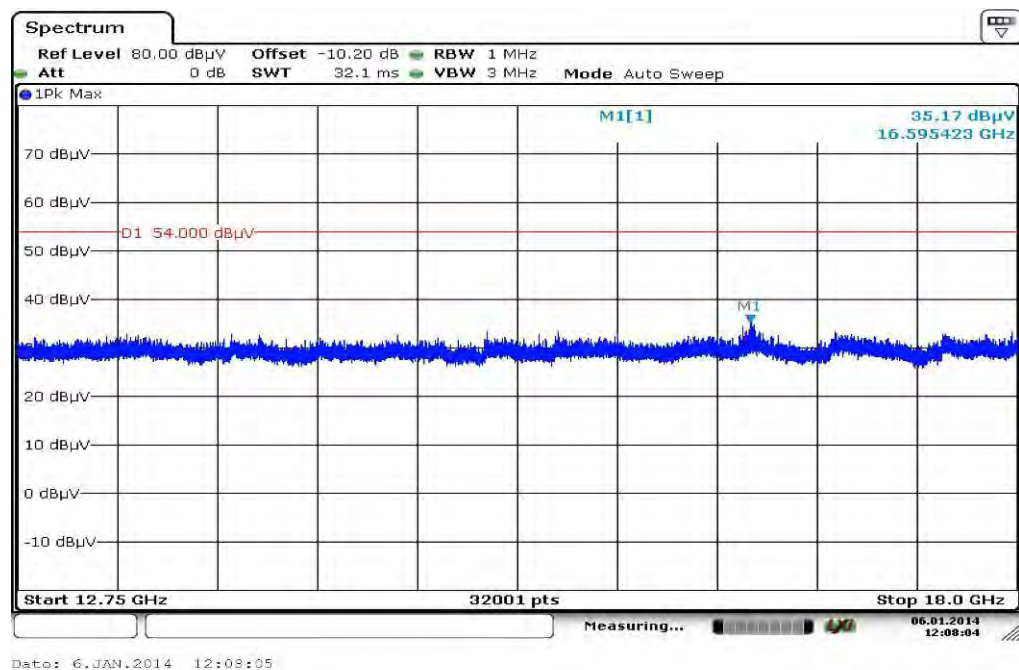
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dB $\mu$ V/m

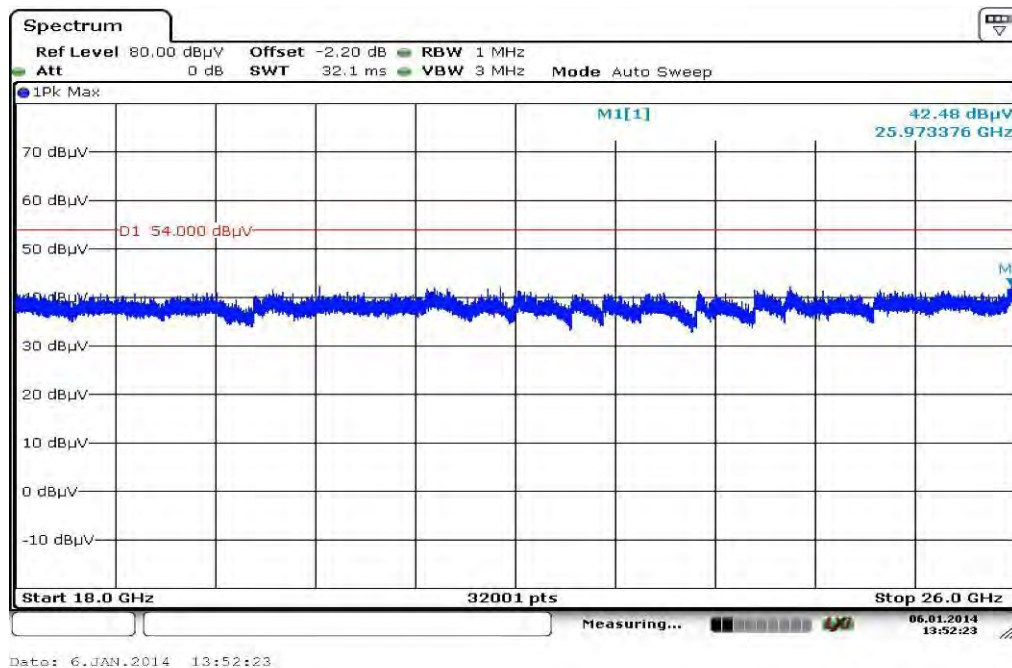
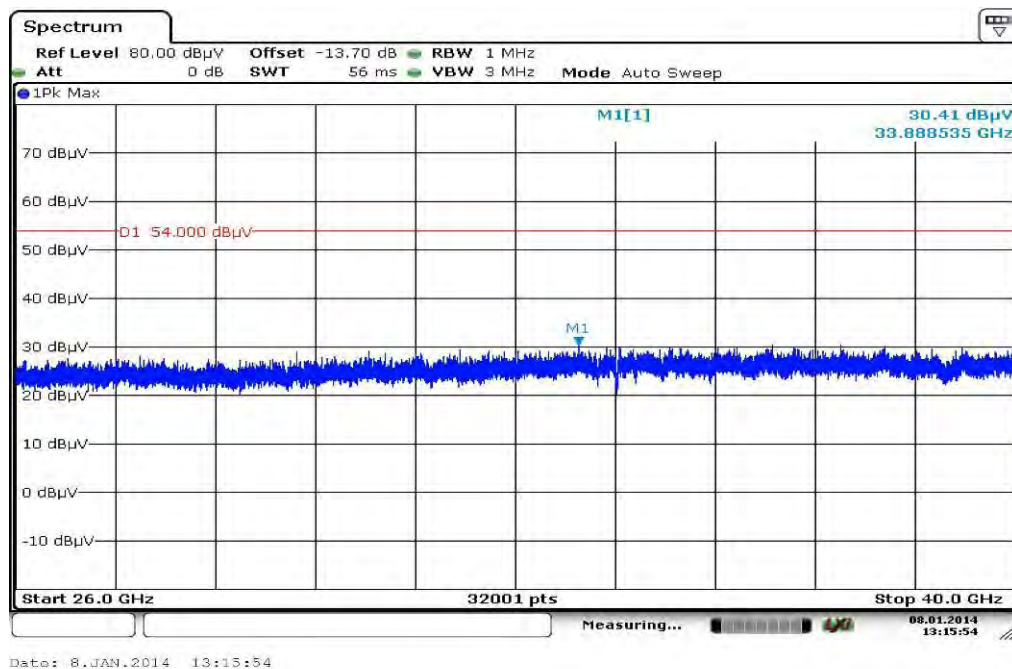
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 32.396550       | 9.9                      | 1000.0          | 120.000         | 143.0       | H            | 2.0           | 12.8       | 20.1        | 30.0                 |         |
| 40.421250       | 10.9                     | 1000.0          | 120.000         | 170.0       | H            | 170.0         | 13.4       | 19.1        | 30.0                 |         |
| 49.318800       | 9.8                      | 1000.0          | 120.000         | 170.0       | H            | 280.0         | 13.4       | 20.2        | 30.0                 |         |
| 727.276050      | 20.7                     | 1000.0          | 120.000         | 111.0       | H            | 92.0          | 23.1       | 15.3        | 36.0                 |         |
| 822.322350      | 21.6                     | 1000.0          | 120.000         | 155.0       | H            | 280.0         | 24.1       | 14.4        | 36.0                 |         |
| 909.114450      | 22.7                     | 1000.0          | 120.000         | 161.0       | V            | 170.0         | 25.2       | 13.3        | 36.0                 |         |

**Plot 47:** 1 GHz to 12.75 GHz, 5530 MHz, vertical & horizontal polarization**Plot 48:** 12 GHz to 18 GHz, 5530 MHz, vertical & horizontal polarization

**Plot 49:** 18 GHz to 26 GHz, 5530 MHz, vertical & horizontal polarization**Plot 50:** 26 GHz to 40 GHz, 5530 MHz, vertical & horizontal polarization

**Plot 51:** 30 MHz to 1 GHz, 5610 MHz, vertical & horizontal polarization

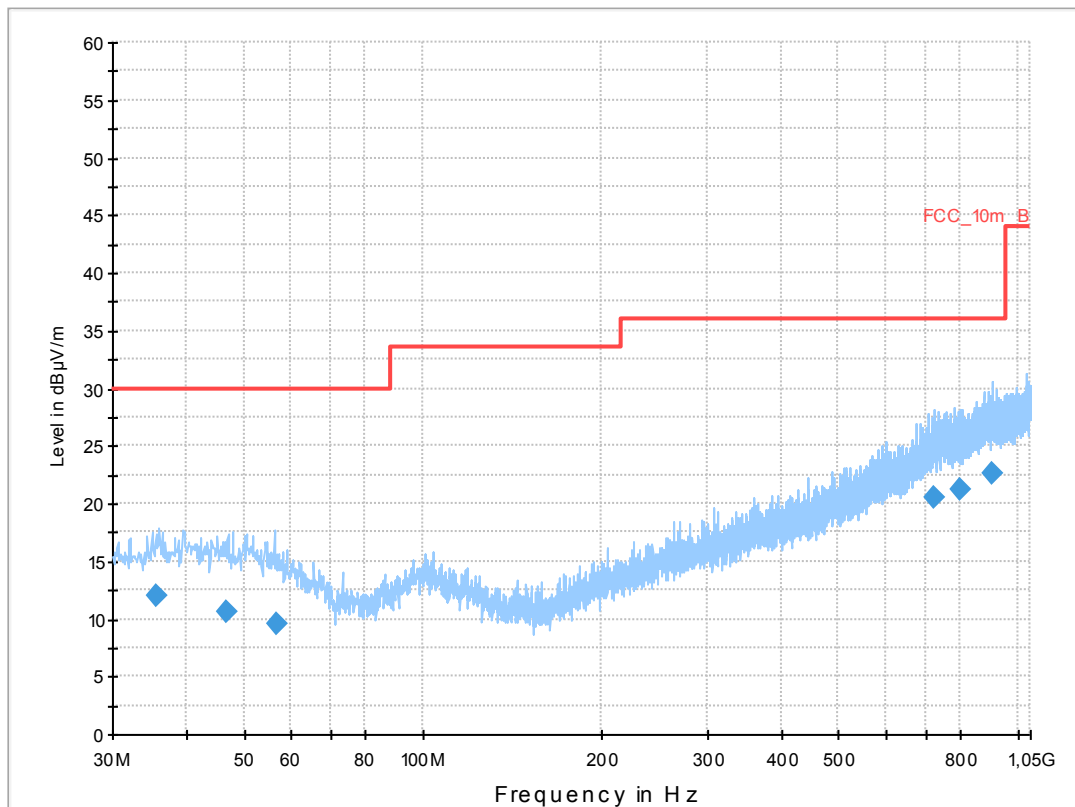
## Common Information

EUT: TM-0040-BV  
 Serial Number: CB51267Q67  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: w-lan ac-mode (HT80) tx ch 122  
 Operator Name: Hennemann  
 Comment: battery powered

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

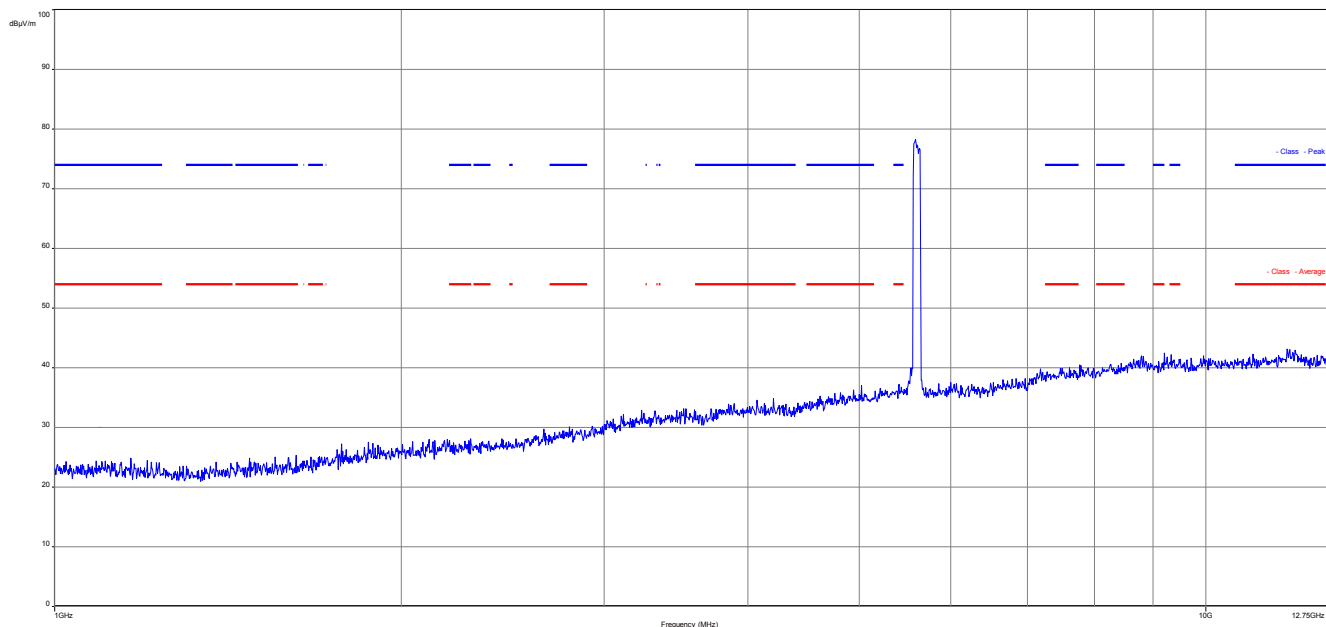
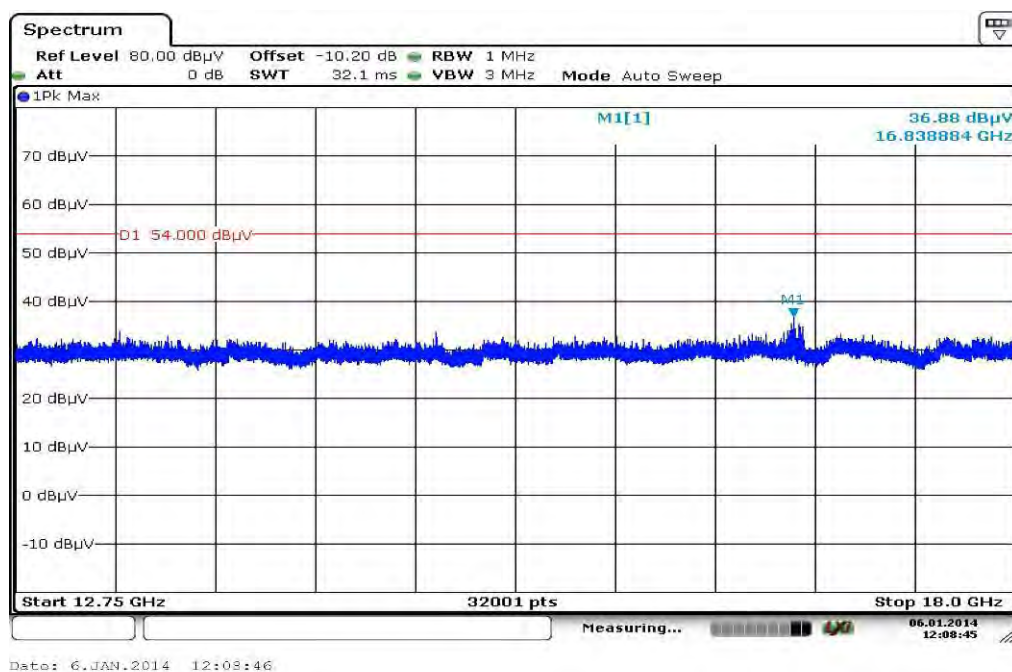
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dB $\mu$ V/m

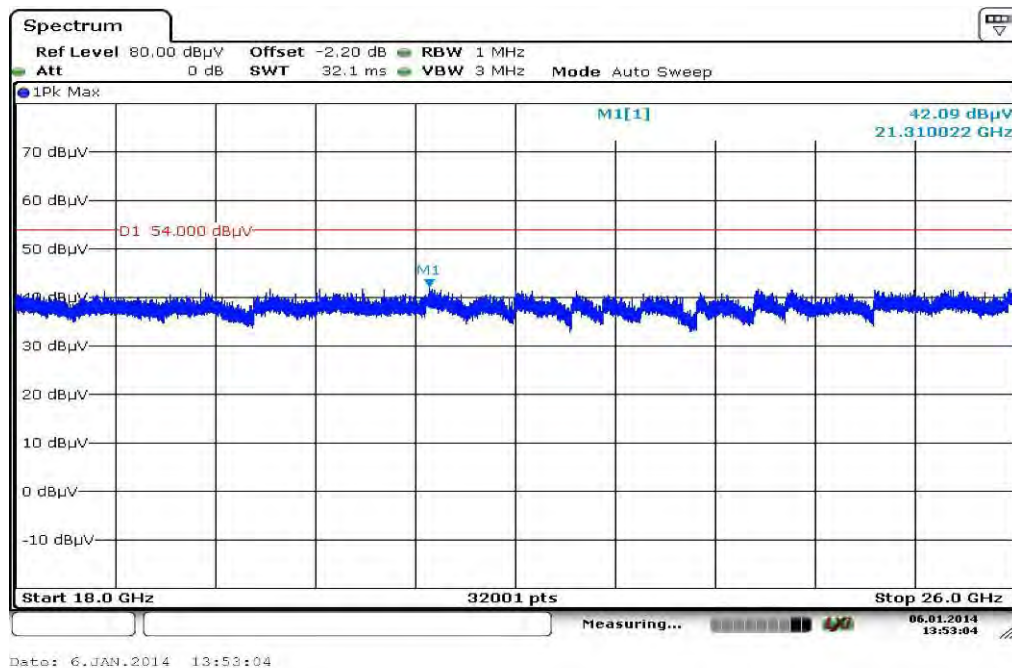
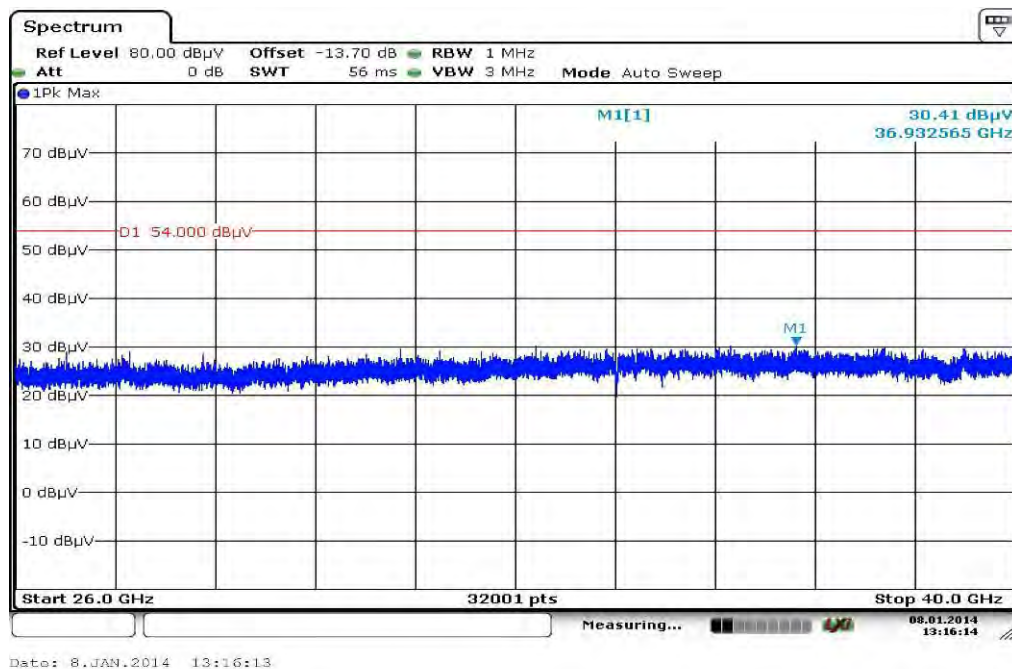
| Subrange       | Step Size | Detectors | IF BW   | Meas. Time | Preamp |
|----------------|-----------|-----------|---------|------------|--------|
| 30 MHz - 2 GHz | 60 kHz    | QPK       | 120 kHz | 1 s        | 20 dB  |



## Final Result 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 35.492100       | 11.9                     | 1000.0          | 120.000         | 170.0       | V            | 80.0          | 13.1       | 18.1        | 30.0                 |         |
| 46.683300       | 10.6                     | 1000.0          | 120.000         | 98.0        | V            | 100.0         | 13.3       | 19.4        | 30.0                 |         |
| 56.734650       | 9.6                      | 1000.0          | 120.000         | 170.0       | H            | 182.0         | 12.4       | 20.4        | 30.0                 |         |
| 724.833450      | 20.5                     | 1000.0          | 120.000         | 98.0        | V            | 10.0          | 23.1       | 15.5        | 36.0                 |         |
| 799.297800      | 21.2                     | 1000.0          | 120.000         | 105.0       | V            | 0.0           | 23.8       | 14.8        | 36.0                 |         |
| 903.595650      | 22.7                     | 1000.0          | 120.000         | 154.0       | H            | 10.0          | 25.2       | 13.3        | 36.0                 |         |

**Plot 52:** 1 GHz to 12.75 GHz, 5610 MHz, vertical & horizontal polarization**Plot 53:** 12 GHz to 18 GHz, 5610 MHz, vertical & horizontal polarization

**Plot 54:** 18 GHz to 26 GHz, 5610 MHz, vertical & horizontal polarization**Plot 55:** 26 GHz to 40 GHz, 5610 MHz, vertical & horizontal polarization

## 11.10 RX spurious emissions radiated

### Description:

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

### Measurement:

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

### Limits:

| 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<br>1 GHz plot. |            |                      |
| All detected peaks are below the average limit!                                     |            |                      |
| 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)

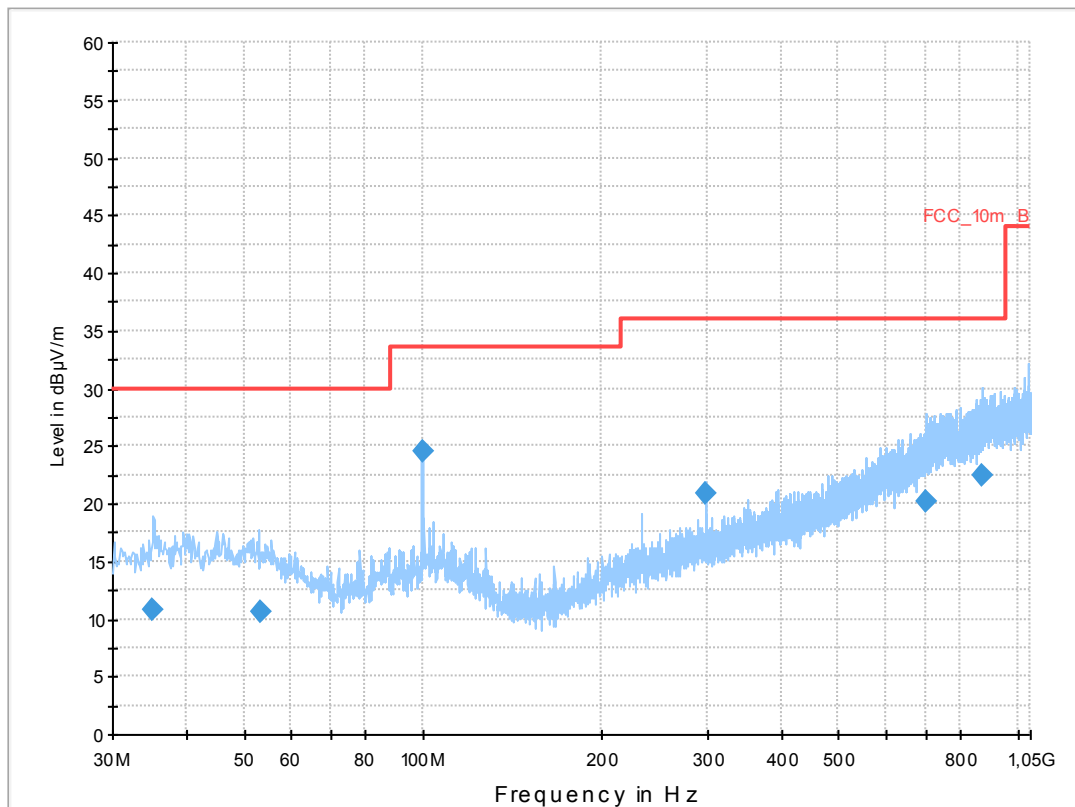
**Plots: RX / Idle – mode****Plot 1:** 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: TM-0040-BV  
 Serial Number: CB51267Q2F  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: idle + charging  
 Operator Name: Hennemann  
 Comment: connected to notebook

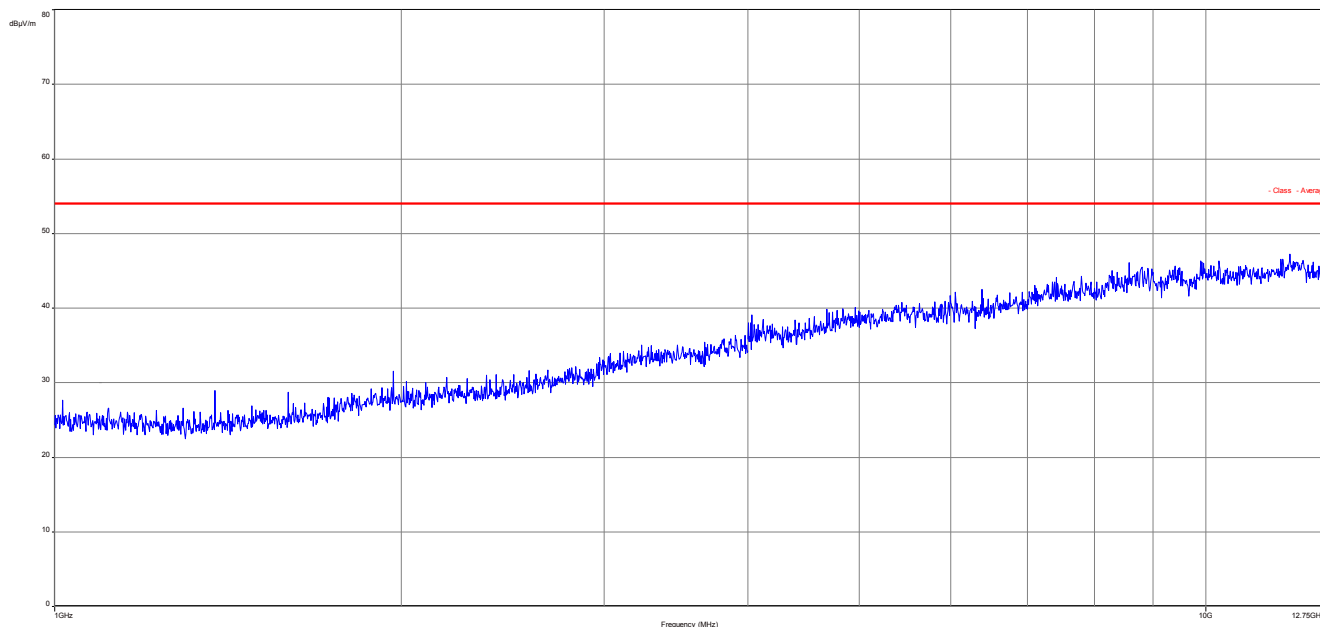
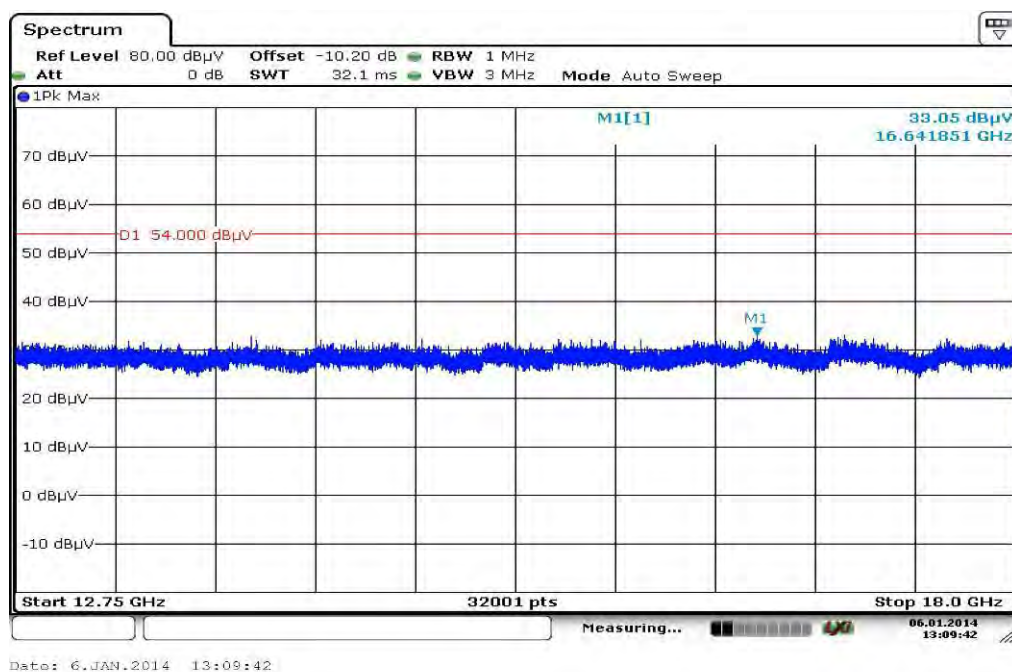
**Scan Setup: STAN\_Fin [EMI radiated]**

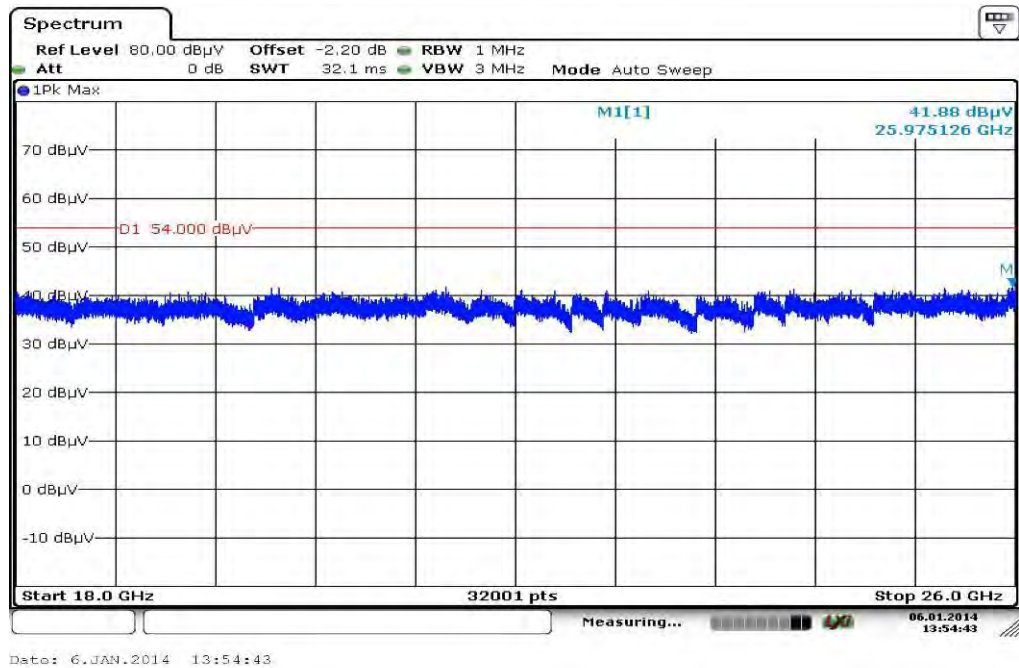
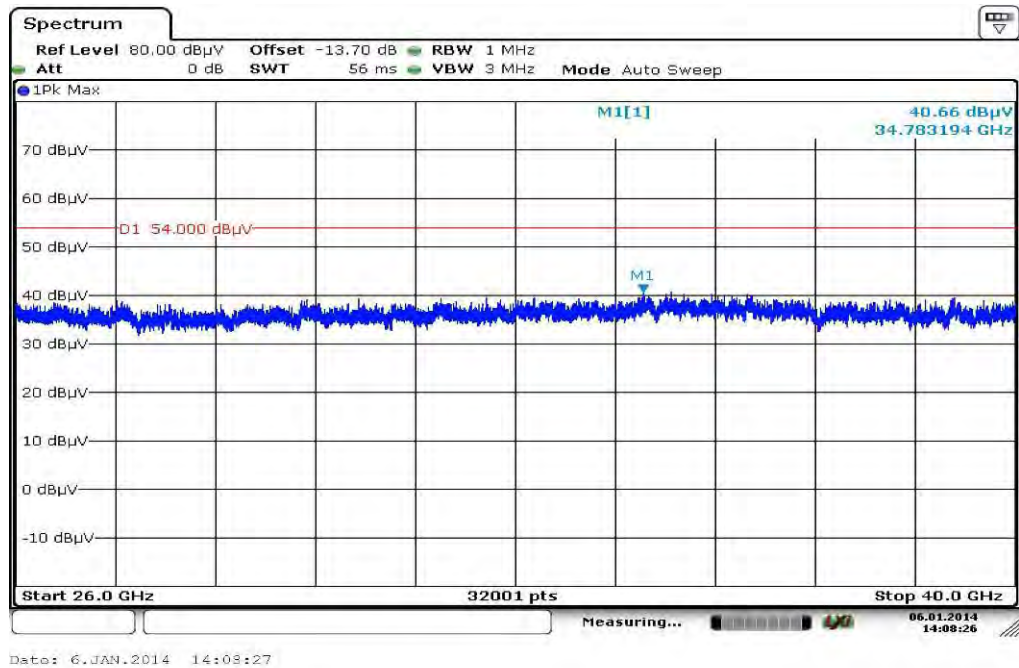
Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dB $\mu$ V/m

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

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 34.960800       | 10.8                     | 1000.0          | 120.000         | 153.0       | V            | 190.0         | 13.0       | 19.2        | 30.0                 |         |
| 53.477100       | 10.6                     | 1000.0          | 120.000         | 98.0        | V            | 170.0         | 13.0       | 19.4        | 30.0                 |         |
| 99.775200       | 24.6                     | 1000.0          | 120.000         | 98.0        | V            | -2.0          | 11.9       | 8.9         | 33.5                 |         |
| 299.341950      | 20.8                     | 1000.0          | 120.000         | 98.0        | V            | 100.0         | 14.5       | 15.2        | 36.0                 |         |
| 703.647900      | 20.2                     | 1000.0          | 120.000         | 132.0       | H            | 80.0          | 22.6       | 15.8        | 36.0                 |         |
| 870.385200      | 22.4                     | 1000.0          | 120.000         | 98.0        | H            | 88.0          | 24.8       | 13.6        | 36.0                 |         |

**Plot 2:** 1 GHz to 12.75 GHz, vertical & horizontal polarization**Plot 3:** 12 GHz to 18 GHz, vertical & horizontal polarization

**Plot 4:** 18 GHz to 26 GHz, vertical & horizontal polarization**Plot 5:** 26 GHz to 40 GHz, vertical & horizontal polarization

### 11.11 Spurious emissions radiated < 30 MHz

#### Description:

Measurement of the radiated spurious emissions in transmit mode and receive mode below 30 MHz. The EUT is set first to middle channel. This measurement is representative for all channels and modes. If critical peaks are found the lowest channel and the highest channel will be measured too. Then the EUT is set to receive or idle mode. The limits are recalculated to a measurement distance of 3 m with 40 dB/decade according CFR Part 2.

#### Measurement:

| Measurement parameter |                                            |
|-----------------------|--------------------------------------------|
| Detector:             | Peak / Quasi Peak                          |
| Sweep time:           | Auto                                       |
| Video bandwidth:      | F < 150 kHz: 200 Hz<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                                   |

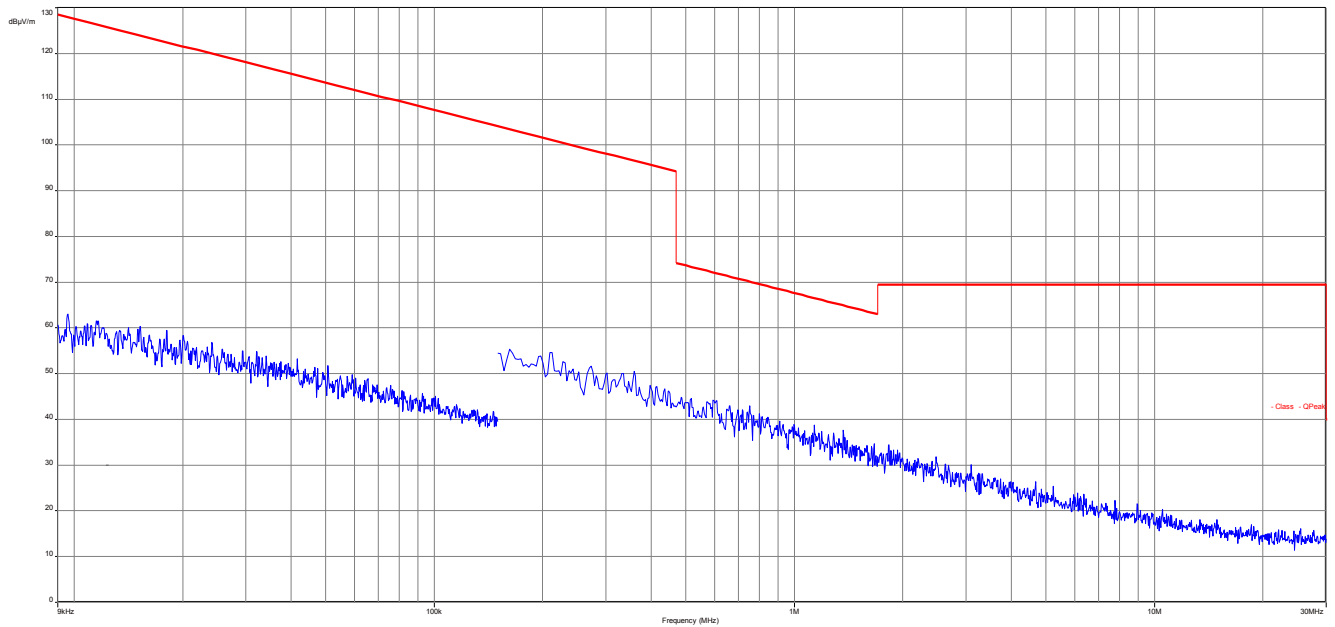
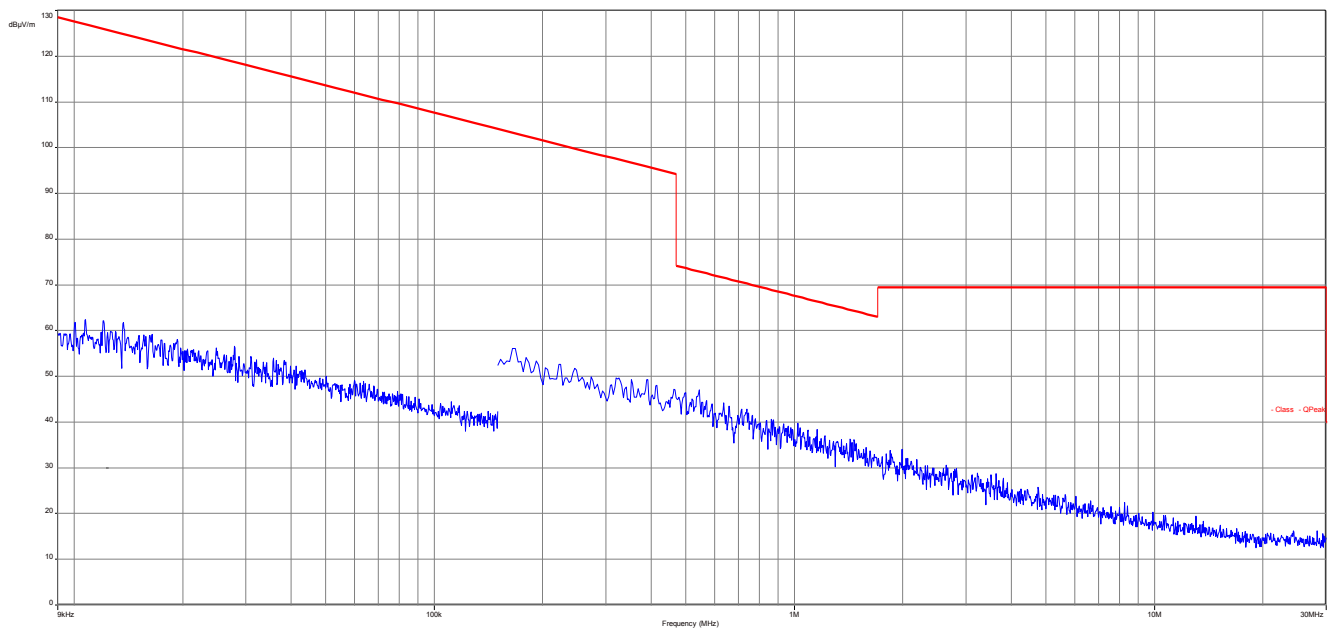
#### Limits:

| Spurious Emissions Radiated < 30 MHz |                               |                      |
|--------------------------------------|-------------------------------|----------------------|
| Frequency (MHz)                      | Field Strength (dB $\mu$ V/m) | Measurement distance |
| 0.009 – 0.490                        | 2400/F(kHz)                   | 300                  |
| 0.490 – 1.705                        | 24000/F(kHz)                  | 30                   |
| 1.705 – 30.0                         | 30                            | 30                   |

#### Results:

| Spurious Emissions Radiated < 30 MHz [dB $\mu$ V/m] |            |                      |
|-----------------------------------------------------|------------|----------------------|
| F [MHz]                                             | Detector   | Level [dB $\mu$ V/m] |
| No peaks detected.                                  |            |                      |
|                                                     |            |                      |
| Measurement uncertainty                             | $\pm 3$ dB |                      |

**Result:** Passed

**Plots:****Plot 1:** 9 kHz to 30 MHz, TX mode**Plot 2:** 9 kHz to 30 MHz, RX mode

## 11.12 Spurious emissions conducted < 30 MHz

### Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to middle channel. If critical peaks are found the lowest channel and the highest channel will be measured too. Both power lines, phase and neutral line, are measured. Found peaks are remeasured with average and quasi peak detection to show compliance to the limits.

### Measurement:

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

### Limits:

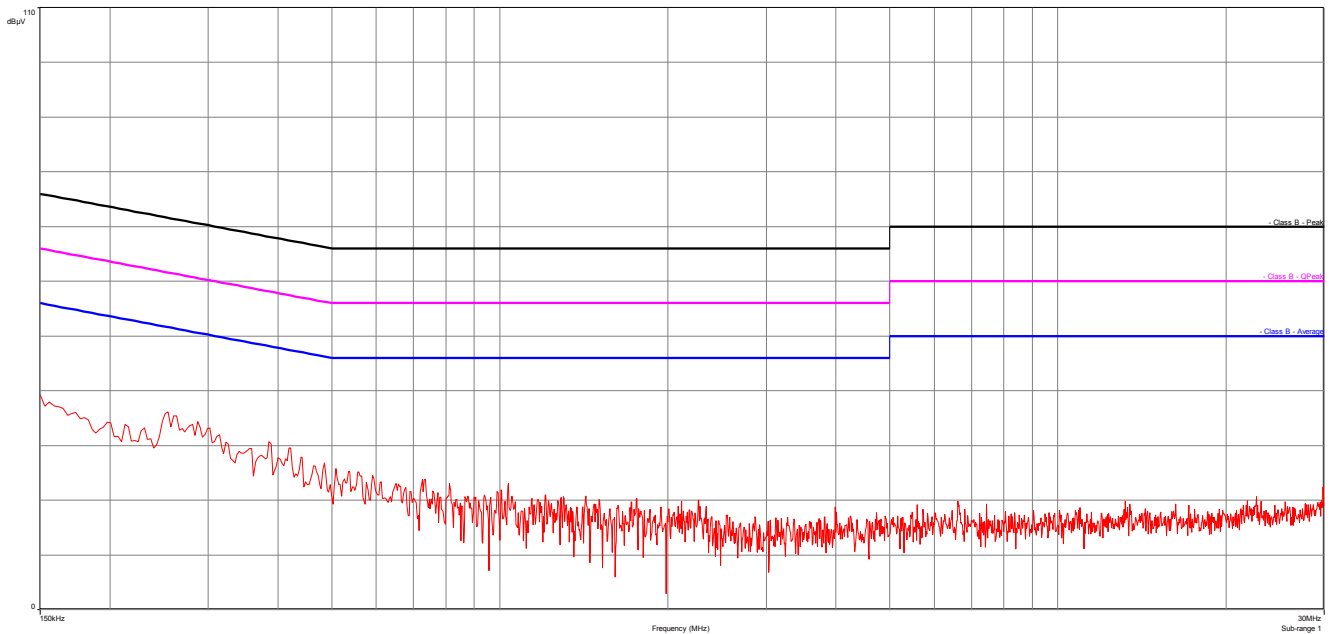
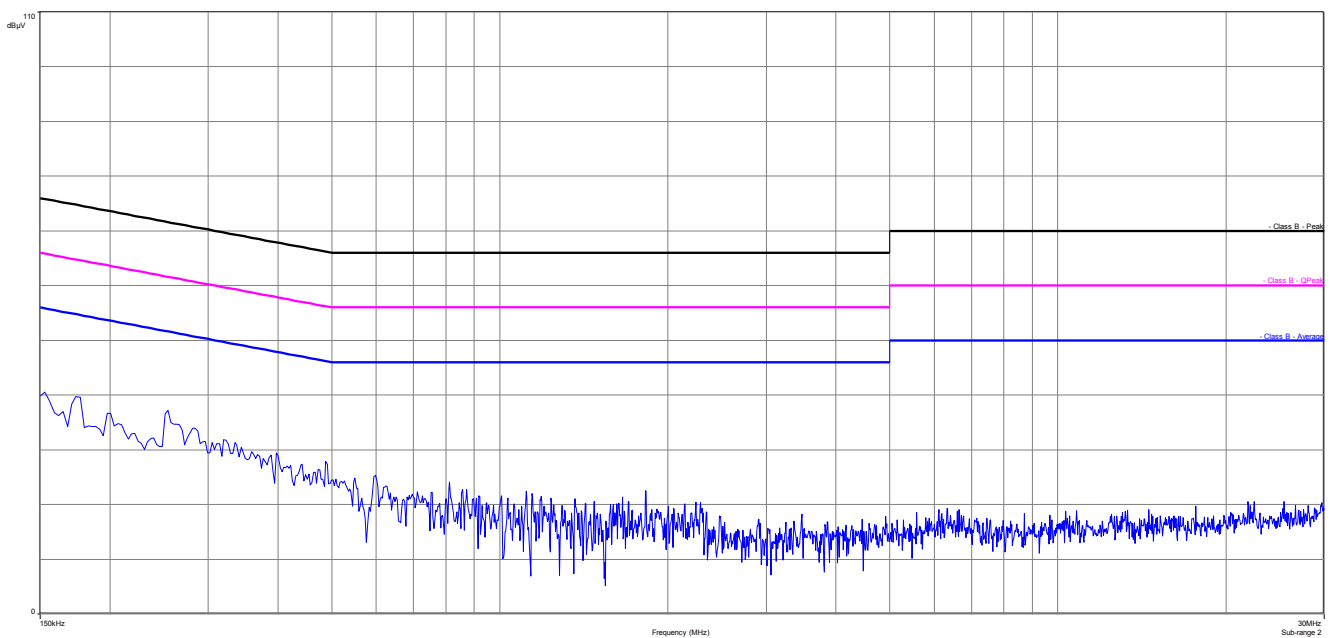
| Spurious Emissions Conducted < 30 MHz |                           |                        |
|---------------------------------------|---------------------------|------------------------|
| Frequency (MHz)                       | Quasi-Peak (dB $\mu$ V/m) | Average (dB $\mu$ V/m) |
| 0.15 – 0.5                            | 66 to 56*                 | 56 to 46*              |
| 0.5 – 5                               | 56                        | 46                     |
| 5 – 30.0                              | 60                        | 50                     |

\*Decreases with the logarithm of the frequency

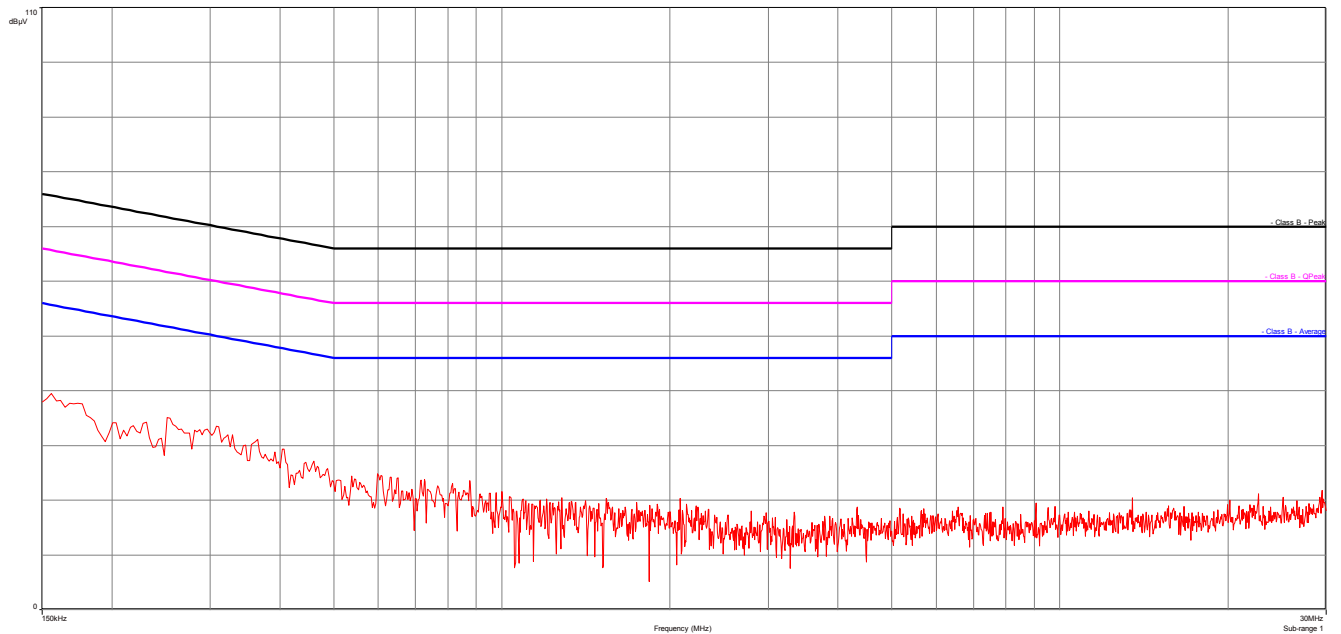
### Results:

| Spurious Emissions Conducted < 30 MHz [dB $\mu$ V/m] |            |                      |
|------------------------------------------------------|------------|----------------------|
| F [MHz]                                              | Detector   | Level [dB $\mu$ V/m] |
| No peaks detected.                                   |            |                      |
|                                                      |            |                      |
| Measurement uncertainty                              | $\pm 3$ dB |                      |

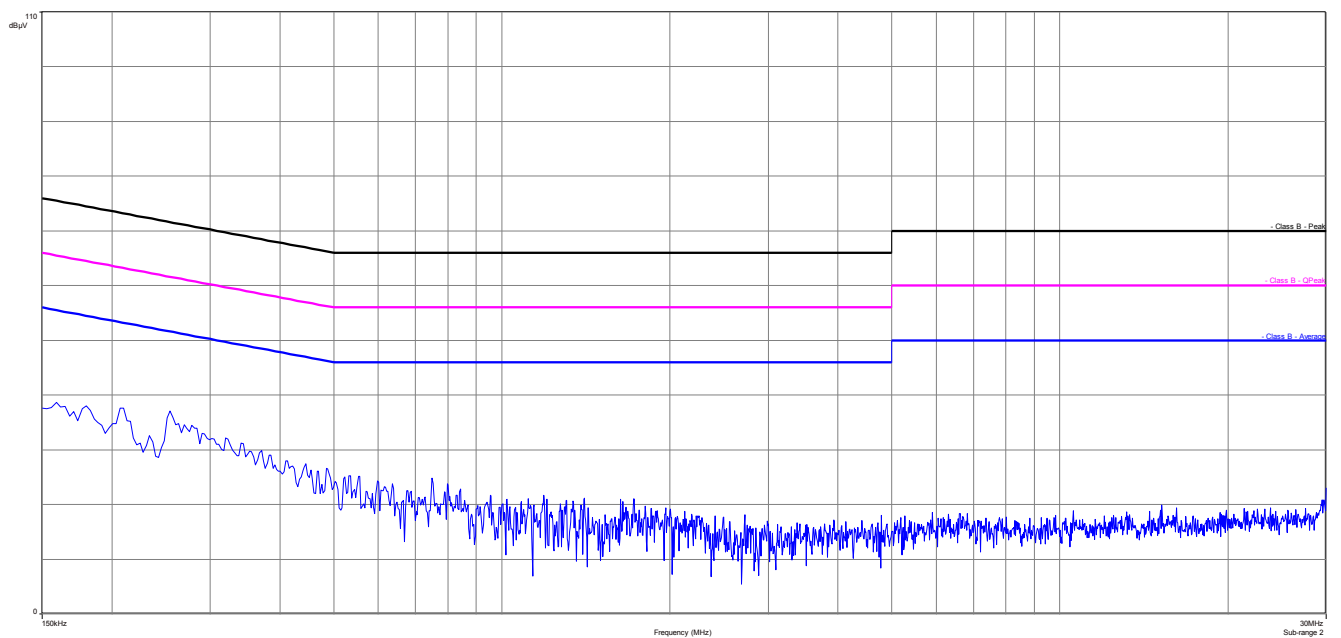
**Result:** Passed

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

**Plot 3:** 150 kHz to 30 MHz / phase Line, RX mode



**Plot 4:** 150 kHz to 30 MHz / neutral Line, RX mode



## 12 Test equipment and ancillaries used for tests

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

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

| No. | Lab / Item | Equipment                                         | Type                            | Manufact.           | Serial No.           | INV. No Cetecom | Kind of Calibration | Last Calibration | Next Calibration |
|-----|------------|---------------------------------------------------|---------------------------------|---------------------|----------------------|-----------------|---------------------|------------------|------------------|
| 1   | 45         | Switch-Unit                                       | 3488A                           | HP Meßtechnik       | 2719A14505           | 300000368       | g                   |                  |                  |
| 2   | 50         | DC power supply, 60Vdc, 50A, 1200 W               | 6032A                           | HP Meßtechnik       | 2920A04466           | 300000580       | ne                  |                  |                  |
| 3   | n. a.      | software                                          | SPS_PHE 1.4f                    | Spitzberger & Spieß | B5981; 5D1081; B5979 | 300000210       | ne                  |                  |                  |
| 4   | n. a.      | EMI Test Receiver                                 | ESCI 3                          | R&S                 | 100083               | 300003312       | k                   | 09.01.2013       | 09.01.2014       |
| 5   | n. a.      | Analyzer-Reference-System (Harmonics and Flicker) | ARS 16/1                        | SPS                 | A3509 07/0 0205      | 300003314       | Ve                  | 14.07.2011       | 14.01.2014       |
| 6   | n. a.      | Amplifier                                         | JS42-00502650-28-5A             | MITEQ               | 1084532              | 300003379       | ev                  |                  |                  |
| 7   | n. a.      | Antenna Tower                                     | Model 2175                      | ETS-LINDGREN        | 64762                | 300003745       | izw                 |                  |                  |
| 8   | n. a.      | Positioning Controller                            | Model 2090                      | ETS-LINDGREN        | 64672                | 300003746       | izw                 |                  |                  |
| 9   | n. a.      | Turntable Interface-Box                           | Model 105637                    | ETS-LINDGREN        | 44583                | 300003747       | izw                 |                  |                  |
| 10  | n. a.      | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz      | VULB9163                        | Schwarzbeck         | 295                  | 300003787       | k                   | 12.04.2012       | 12.04.2014       |
| 11  | n. a.      | Spectrum-Analyzer                                 | FSU26                           | R&S                 | 200809               | 300003874       | k                   | 16.01.2013       | 16.01.2014       |
| 12  | n. a.      | DC power supply, 60Vdc, 50A, 1200 W               | 6032A                           | HP Meßtechnik       | 2818A03450           | 300001040       | Ve                  | 12.01.2012       | 12.01.2015       |
| 13  | n. a.      | Double-Ridged Waveguide Horn Antenna 1-18.0GHz    | 3115                            | EMCO                | 8812-3088            | 300001032       | vIKII               | 08.05.2013       | 08.05.2015       |
| 14  | n. a.      | Anechoic chamber                                  | FAC 3/5m                        | MWB / TDK           | 87400/02             | 300000996       | ev                  |                  |                  |
| 15  | n. a.      | Switch / Control Unit                             | 3488A                           | HP Meßtechnik       | *                    | 300000199       | ne                  |                  |                  |
| 16  | n. a.      | Switch / Control Unit                             | 3488A                           | HP Meßtechnik       | 2719A15013           | 300001156       | ne                  |                  |                  |
| 17  | 9          | Isolating Transformer                             | MPL IEC625 Bus Regeltrennt ravo | Erfi                | 91350                | 300001155       | ne                  |                  |                  |
| 18  | n. a.      | Three-Way Power Splitter, 50 Ohm                  | 11850C                          | HP Meßtechnik       |                      | 300000997       | ne                  |                  |                  |
| 19  | 90         | Active Loop Antenna 10 kHz to 30 MHz              | 6502                            | Kontron Psychotech  | 8905-2342            | 300000256       | k                   | 13.06.2013       | 13.06.2015       |
| 20  | n. a.      | Amplifier                                         | js42-00502650-28-5a             | Parzich GMBH        | 928979               | 300003143       | ne                  |                  |                  |
| 21  | n. a.      | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz      | VULB9163                        | Schwarzbeck         | 371                  | 300003854       | vIKII               | 14.10.2011       | 14.10.2014       |
| 22  | n. a.      | MXE EMI Receiver 20 Hz                            | N9038A                          | Agilent Technologi  | MY51210197           | 300004405       | k                   | 21.02.2013       | 21.02.2014       |

|    |       |                                          |                 |                      |            |           |       |            |            |
|----|-------|------------------------------------------|-----------------|----------------------|------------|-----------|-------|------------|------------|
|    |       | bis 26.5 GHz                             |                 | es                   |            |           |       |            |            |
| 23 | 11b   | Microwave System Amplifier, 0.5-26.5 GHz | 83017A          | HP Meßtechnik        | 00419      | 300002268 | ev    |            |            |
| 24 | A026  | Std. Gain Horn Antenna 12.4 to 18.0 GHz  | 639             | Narda                | 8402       | 300000787 | k     | 22.07.2013 | 22.07.2015 |
| 25 | A029  | Std. Gain Horn Antenna 18.0 to 26.5 GHz  | 638             | Narda                | 8205       | 300002442 | k     | 19.07.2013 | 19.07.2015 |
| 26 | A031  | Std. Gain Horn Antenna 26.5 to 40.0 GHz  | 637             | Narda                | GB42110541 | 300000510 | k     | 19.07.2013 | 19.07.2015 |
| 27 | n. a. | Spectrum Analyzer 20 Hz - 50 GHz         | FSU50           | R&S                  | 200012     | 300003443 | Ve    | 09.10.2012 | 09.10.2014 |
| 28 | n. a. | Broadband Low Noise Amplifier 18-50 GHz  | CBL18503 070-XX | CERNEX               | 19338      | 300004273 | ne    |            |            |
| 29 | n. a. | Signal Analyzer 40 GHz                   | FSV40           | R&S                  | 101042     | 300004517 | k     | 22.10.2012 | 22.01.2014 |
| 30 | n. a. | Temperature Test Chamber                 | VT 4002         | Heraeus Voetsch      | 521/84193  | 300003889 | Ve    | 26.09.2013 | 26.09.2015 |
| 31 | n. a. | Power Supply 0-20V, 0-5A                 | 6632B           | Agilent Technologies | GB42110541 | 400000562 | vlk!! | 10.01.2013 | 10.01.2016 |

**Agenda:** Kind of Calibration

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

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

## 13 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 | 2014-02-07      |

**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>